



## wwPDB EM Map/Model Validation Report ⓘ

Apr 10, 2016 – 02:44 PM BST

PDB ID : 4V61  
EMDB ID: : EMD-1417  
Title : Homology model for the Spinach chloroplast 30S subunit fitted to 9.4Å cryo-EM map of the 70S chlororibosome.  
Authors : Sharma, M.R.; Wilson, D.N.; Datta, P.P.; Barat, C.; Schlutzenzen, F.; Fucini, P.; Agrawal, R.K.  
Deposited on : 2007-11-09  
Resolution : 9.40 Å (reported)  
Based on PDB ID : 2XYZ and 2ZXY for small and large subunit respectively

This is a wwPDB EM Map/Model Validation Report for a publicly released PDB/EMDB entry.  
For rigid body fitted models, validation errors reported here could stem from errors in the original structure(s) used in the fitting.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<http://wwpdb.org/validation/2016/EMValidationReportHelp>

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MolProbity : 4.02b-467  
Mogul : unknown  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)  
Validation Pipeline (wwPDB-VP) : trunk27241



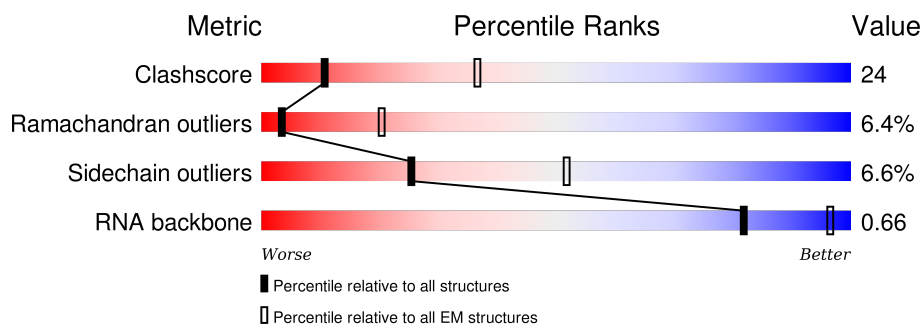
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 9.40 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



| Metric                | Whole archive<br>(#Entries) | EM structures<br>(#Entries) |
|-----------------------|-----------------------------|-----------------------------|
| Clashscore            | 114402                      | 924                         |
| Ramachandran outliers | 111179                      | 726                         |
| Sidechain outliers    | 111093                      | 686                         |
| RNA backbone          | 3027                        | 244                         |









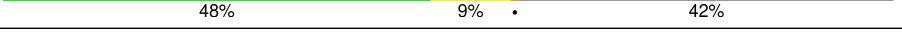
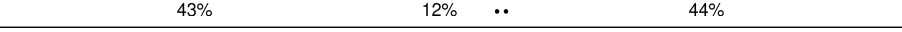
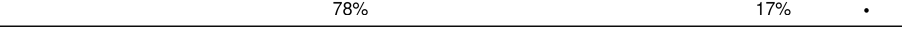
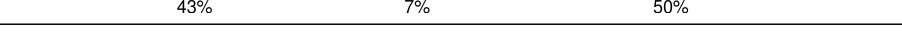
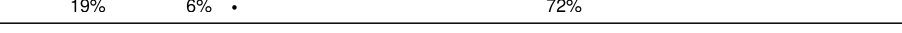


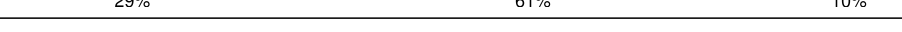
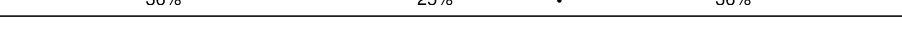








The table below summarises the geometric issues observed across the polymeric chains. The red, orange, yellow and green segments on the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ .

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | AA    | 1491   | 39% 46% 14% .    |
| 2   | AB    | 231    | 84% 13% .        |
| 3   | AC    | 218    | 85% 13% .        |
| 4   | AD    | 201    | 84% 15% .        |
| 5   | AE    | 308    | 43% 7% . 49%     |
| 6   | AF    | 168    | 48% 15% . 36%    |
| 7   | AG    | 155    | 87% 10% ..       |
| 8   | AH    | 134    | 84% 13% .        |

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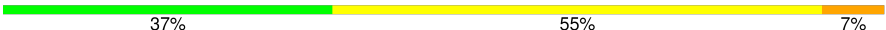


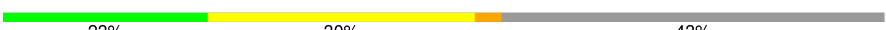
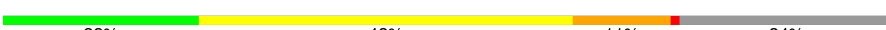





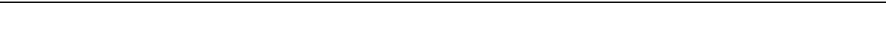

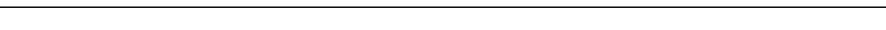
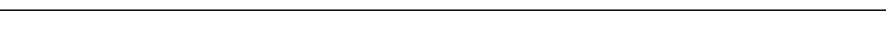
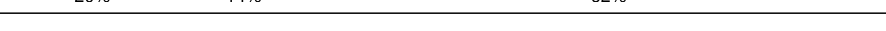
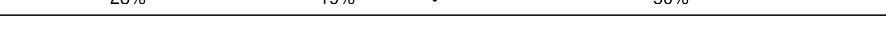
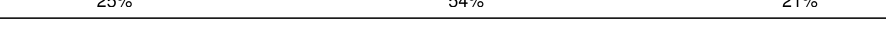



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| Mol | Chain | Length | Quality of chain   |
|-----|-------|--------|--|
| 9   | AI    | 197    |    |
| 10  | AJ    | 197    |    |
| 11  | AK    | 140    |    |
| 12  | AL    | 123    |    |
| 13  | AM    | 145    |    |
| 14  | AN    | 100    |    |
| 15  | AO    | 90     |    |
| 16  | AP    | 88     |    |
| 17  | AQ    | 142    |    |
| 18  | AR    | 103    |    |
| 19  | AS    | 92     |    |
| 20  | AT    | 202    |   |
| 21  | AU    | 190    |  |
| 22  | BA    | 2810   |  |
| 23  | BB    | 117    |  |
| 24  | BC    | 103    |  |
| 25  | BD    | 352    |  |
| 26  | BE    | 269    |  |
| 27  | BF    | 259    |  |
| 28  | BG    | 293    |  |
| 29  | BH    | 220    |  |
| 30  | BI    | 223    |  |
| 31  | BJ    | 197    |  |
| 32  | BK    | 224    |  |
| 33  | BL    | 250    |  |

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| Mol | Chain | Length | Quality of chain   |
|-----|-------|--------|--|
| 34  | BM    | 121    |    |
| 35  | BN    | 257    |    |
| 36  | BO    | 135    |    |
| 37  | BP    | 205    |    |
| 38  | BQ    | 161    |    |
| 39  | BR    | 233    |    |
| 40  | BS    | 119    |    |
| 41  | BT    | 257    |    |
| 42  | BU    | 199    |    |
| 43  | BV    | 198    |    |
| 44  | BW    | 191    |    |
| 45  | BX    | 198    |    |
| 46  | BY    | 151    |  |
| 47  | BZ    | 173    |  |
| 48  | B1    | 144    |  |
| 49  | B2    | 57     |  |
| 50  | B3    | 66     |  |
| 51  | B4    | 152    |  |
| 52  | B5    | 159    |  |
| 53  | B6    | 104    |  |



## 2 Entry composition

There are 53 unique types of molecules in this entry. The entry contains 142250 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a RNA chain called 16S rRNA.

| Mol | Chain | Residues | Atoms |       |      |       |      | AltConf | Trace |
|-----|-------|----------|-------|-------|------|-------|------|---------|-------|
| 1   | AA    | 1478     | Total | C     | N    | O     | P    | 0       | 0     |
|     |       |          | 31745 | 14154 | 5865 | 10249 | 1477 |         |       |

- Molecule 2 is a protein called Ribosomal Protein S2.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 2   | AB    | 231      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1827  | 1152 | 334 | 328 | 13 |         |       |

- Molecule 3 is a protein called Ribosomal Protein S3.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 3   | AC    | 217      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1744  | 1113 | 314 | 310 | 7 |         |       |

- Molecule 4 is a protein called Ribosomal Protein S4.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 4   | AD    | 199      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1632  | 1032 | 318 | 277 | 5 |         |       |

- Molecule 5 is a protein called Ribosomal Protein S5.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 5   | AE    | 158      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1190  | 742 | 230 | 212 | 6 |         |       |

- Molecule 6 is a protein called Ribosomal Protein S6.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 6   | AF    | 107      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 872   | 558 | 145 | 166 | 3 |         |       |



- Molecule 7 is a protein called Ribosomal Protein S7.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 7   | AG    | 154      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1211  | 753 | 244 | 211 | 3 |         |       |

- Molecule 8 is a protein called Ribosomal Protein S8.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 8   | AH    | 134      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1088  | 684 | 211 | 187 | 6 |         |       |

- Molecule 9 is a protein called Ribosomal Protein S9.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 9   | AI    | 127      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 988   | 627 | 188 | 172 | 1 |         |       |

- Molecule 10 is a protein called Ribosomal Protein S10.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 10  | AJ    | 99       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 803   | 515 | 144 | 139 | 5 |         |       |

- Molecule 11 is a protein called Ribosomal Protein S11.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 11  | AK    | 118      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 888   | 549 | 182 | 152 | 5 |         |       |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment   | Reference  |
|-------|---------|----------|--------|-----------|------------|
| AK    | 21      | SER      | -      | INSERTION | UNP P06506 |
| AK    | 22      | ALA      | -      | INSERTION | UNP P06506 |

- Molecule 12 is a protein called Ribosomal Protein S12.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 12  | AL    | 123      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 968   | 604 | 198 | 163 | 3 |         |       |

- Molecule 13 is a protein called Ribosomal Protein S13.



| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 13  | AM    | 99       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 824   | 513 | 168 | 141 | 2 |         |       |

- Molecule 14 is a protein called Ribosomal Protein S14.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 14  | AN    | 99       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 820   | 507 | 174 | 136 | 3 |         |       |

- Molecule 15 is a protein called Ribosomal Protein S15.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 15  | AO    | 85       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 713   | 454 | 134 | 124 | 1 |         |       |

- Molecule 16 is a protein called Ribosomal Protein S16.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 16  | AP    | 80       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 664   | 425 | 123 | 114 | 2 |         |       |

- Molecule 17 is a protein called Ribosomal Protein S17.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 17  | AQ    | 83       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 662   | 416 | 130 | 112 | 4 |         |       |

- Molecule 18 is a protein called Ribosomal Protein S18.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 18  | AR    | 58       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 478   | 300 | 94 | 83 | 1 |         |       |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment   | Reference  |
|-------|---------|----------|--------|-----------|------------|
| AR    | 81      | GLU      | -      | INSERTION | UNP Q9M3K7 |
| AR    | 82      | LYS      | -      | INSERTION | UNP Q9M3K7 |

- Molecule 19 is a protein called Ribosomal Protein S19.



| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 19  | AS    | 92       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 747   | 472 | 146 | 126 | 3 |         |       |

- Molecule 20 is a protein called Ribosomal Protein S20.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 20  | AT    | 102      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 799   | 493 | 163 | 142 | 1 |         |       |

- Molecule 21 is a protein called Ribosomal Protein S21.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 21  | AU    | 53       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 455   | 276 | 96 | 81 | 2 |         |       |

- Molecule 22 is a RNA chain called 23S rRNA.

| Mol | Chain | Residues | Atoms |       |       |       |      | AltConf | Trace |
|-----|-------|----------|-------|-------|-------|-------|------|---------|-------|
| 22  | BA    | 2732     | Total | C     | N     | O     | P    | 0       | 0     |
|     |       |          | 58665 | 26173 | 10857 | 18904 | 2731 |         |       |

- Molecule 23 is a RNA chain called 5S rRNA.

| Mol | Chain | Residues | Atoms |      |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|-----|---------|-------|
| 23  | BB    | 117      | Total | C    | N   | O   | P   | 0       | 0     |
|     |       |          | 2497  | 1116 | 452 | 813 | 116 |         |       |

- Molecule 24 is a RNA chain called 4.8S rRNA.

| Mol | Chain | Residues | Atoms |     |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---------|-------|
| 24  | BC    | 103      | Total | C   | N   | O   | P   | 0       | 0     |
|     |       |          | 2207  | 987 | 408 | 710 | 102 |         |       |

- Molecule 25 is a protein called Ribosomal Protein L1.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 25  | BD    | 227      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1760  | 1117 | 307 | 329 | 7 |         |       |

- Molecule 26 is a protein called Ribosomal Protein L2.



| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 26  | BE    | 266      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2049  | 1268 | 418 | 357 | 6 |         |       |

- Molecule 27 is a protein called Ribosomal Protein L3.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 27  | BF    | 154      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1196  | 756 | 230 | 205 | 5 |         |       |

- Molecule 28 is a protein called Ribosomal Protein L4.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 28  | BG    | 211      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1664  | 1057 | 309 | 295 | 3 |         |       |

- Molecule 29 is a protein called Ribosomal Protein L5.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 29  | BH    | 175      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1351  | 862 | 233 | 248 | 8 |         |       |

- Molecule 30 is a protein called Ribosomal Protein L6.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 30  | BI    | 182      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1429  | 907 | 257 | 262 | 3 |         |       |

- Molecule 31 is a protein called Ribosomal Protein L9.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 31  | BJ    | 148      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1177  | 753 | 206 | 215 | 3 |         |       |

- Molecule 32 is a protein called Ribosomal Protein L11.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 32  | BK    | 145      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1060  | 679 | 177 | 198 | 6 |         |       |

- Molecule 33 is a protein called Ribosomal Protein L13.



| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 33  | BL    | 125      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 998   | 634 | 192 | 169 | 3 |         |       |

- Molecule 34 is a protein called Ribosomal Protein L14.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 34  | BM    | 121      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 943   | 588 | 179 | 171 | 5 |         |       |

- Molecule 35 is a protein called Ribosomal Protein L15.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 35  | BN    | 176      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1333  | 835 | 257 | 235 | 6 |         |       |

- Molecule 36 is a protein called Ribosomal Protein L16.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 36  | BO    | 135      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1076  | 677 | 218 | 175 | 6 |         |       |

- Molecule 37 is a protein called Ribosomal Protein L17.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 37  | BP    | 116      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 948   | 594 | 195 | 155 | 4 |         |       |

- Molecule 38 is a protein called Ribosomal Protein L18.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 38  | BQ    | 122      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 962   | 597 | 183 | 178 | 4 |         |       |

- Molecule 39 is a protein called Ribosomal Protein L19.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 39  | BR    | 113      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 915   | 586 | 177 | 151 | 1 |         |       |

- Molecule 40 is a protein called Ribosomal Protein L20.



| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 40  | BS    | 119      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1030  | 653 | 213 | 161 | 3 |         |       |

- Molecule 41 is a protein called Ribosomal Protein L21.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 41  | BT    | 104      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 826   | 537 | 150 | 139 |   |         |       |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment   | Reference  |
|-------|---------|----------|--------|-----------|------------|
| BT    | 122     | ILE      | -      | INSERTION | UNP P24613 |

- Molecule 42 is a protein called Ribosomal Protein L22.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 42  | BU    | 122      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 986   | 627 | 178 | 175 | 6 |         |       |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| BU    | 126     | LEU      | LYS    | CONFLICT | UNP P09594 |

- Molecule 43 is a protein called Ribosomal Protein L23.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 43  | BV    | 85       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 677   | 436 | 115 | 124 | 2 |         |       |

- Molecule 44 is a protein called Ribosomal Protein L24.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 44  | BW    | 110      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 869   | 548 | 160 | 160 | 1 |         |       |

- Molecule 45 is a protein called Ribosomal Protein L27.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 45  | BX    | 86       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 660   | 419 | 127 | 114 |   |         |       |



- Molecule 46 is a protein called Ribosomal Protein L28.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 46  | BY    | 76       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 619   | 395 | 120 | 103 | 1 |         |       |

- Molecule 47 is a protein called Ribosomal Protein L29.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 47  | BZ    | 65       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 551   | 341 | 106 | 101 | 3 |         |       |

- Molecule 48 is a protein called Ribosomal Protein L31.

| Mol | Chain | Residues | Atoms |     |    |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|-----|---|---------|-------|
| 48  | B1    | 72       | Total | C   | N  | O   | S | 0       | 0     |
|     |       |          | 581   | 369 | 99 | 109 | 4 |         |       |

- Molecule 49 is a protein called Ribosomal Protein L32.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 49  | B2    | 57       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 469   | 305 | 87 | 76 | 1 |         |       |

- Molecule 50 is a protein called Ribosomal Protein L33.

| Mol | Chain | Residues | Atoms |     |     |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|-------|
| 50  | B3    | 65       | Total | C   | N   | O  | S | 0       | 0     |
|     |       |          | 524   | 326 | 105 | 88 | 5 |         |       |

- Molecule 51 is a protein called Ribosomal Protein L34.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 51  | B4    | 37       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 297   | 180 | 70 | 45 | 2 |         |       |

- Molecule 52 is a protein called Ribosomal Protein L35.

| Mol | Chain | Residues | Atoms |     |     |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|-------|
| 52  | B5    | 62       | Total | C   | N   | O  | S | 0       | 0     |
|     |       |          | 504   | 315 | 107 | 81 | 1 |         |       |

- Molecule 53 is a protein called Ribosomal Protein L36.



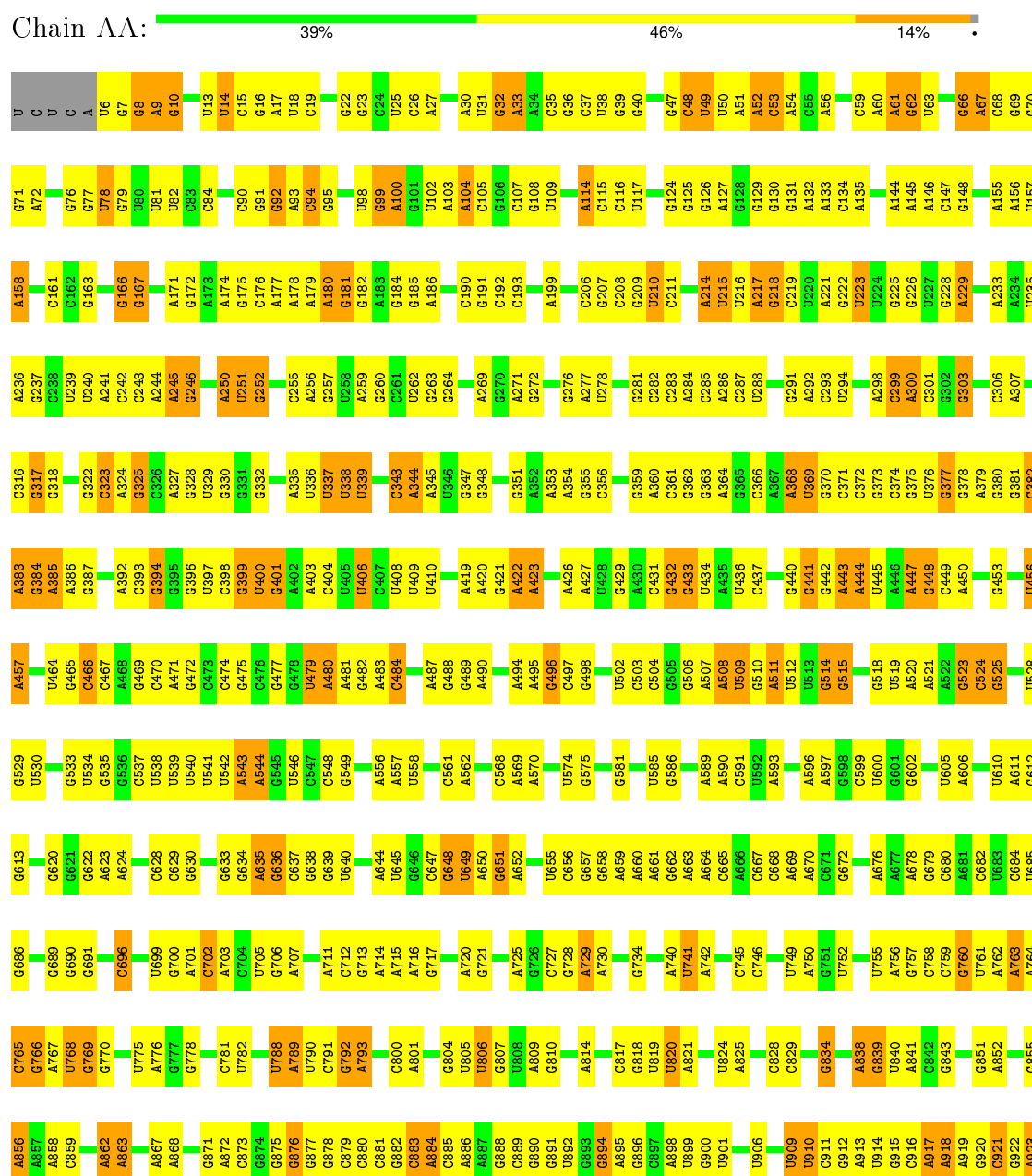
| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 53  | B6    | 38       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 309   | 190 | 65 | 49 | 5 |         |       |



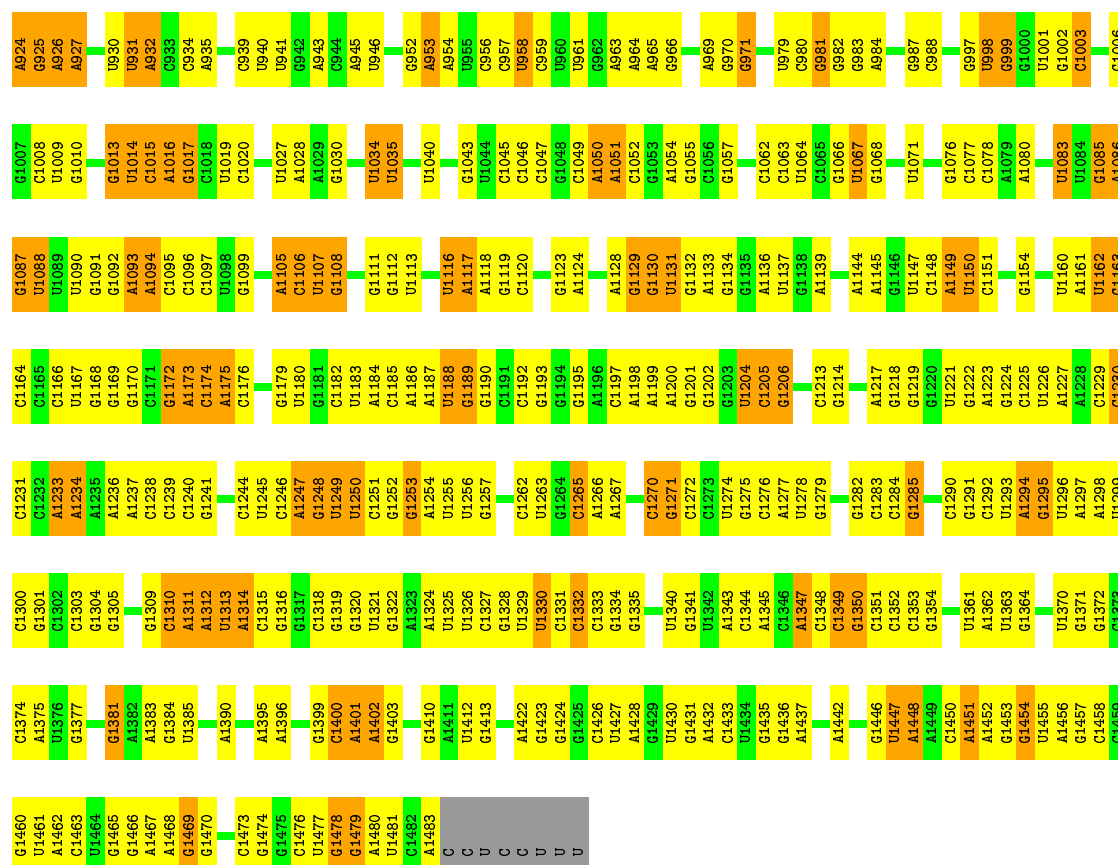
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

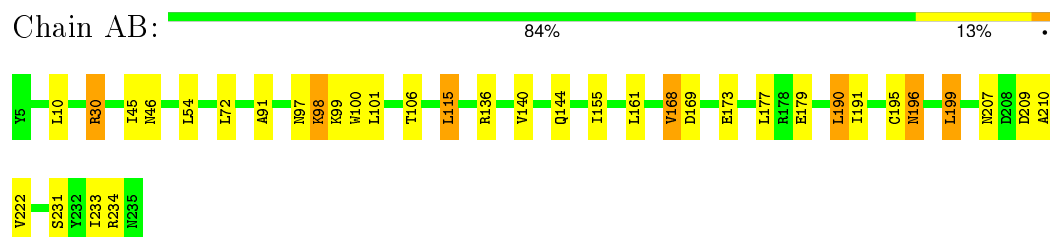
#### • Molecule 1: 16S rRNA



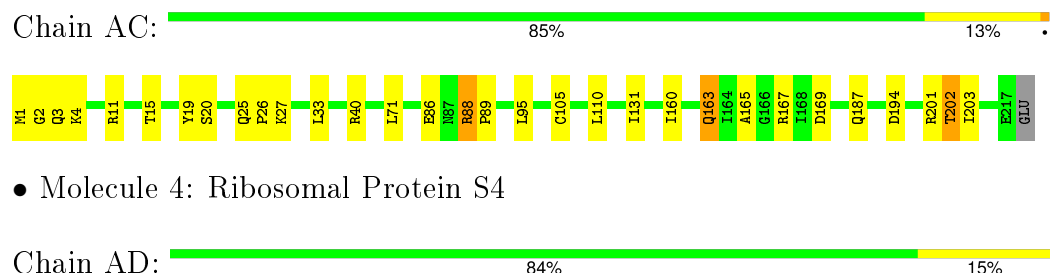




• Molecule 2: Ribosomal Protein S2



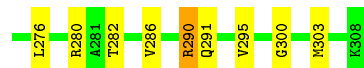
• Molecule 3: Ribosomal Protein S3



• Molecule 5: Ribosomal Protein S5



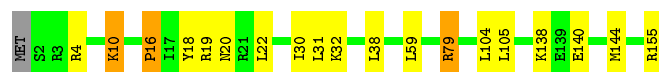
49%



## 36%



• •



## 13%

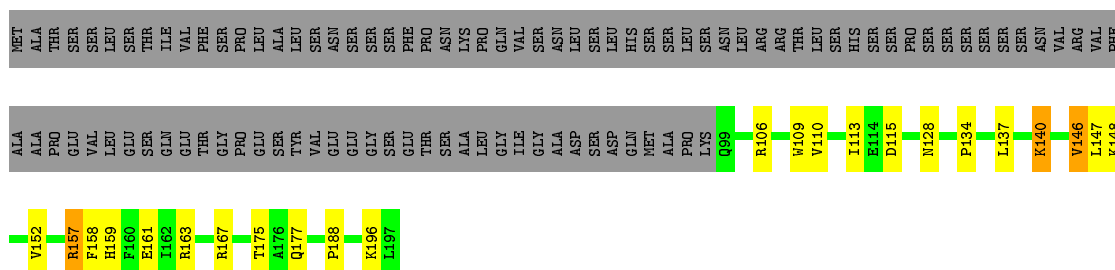


## 36%



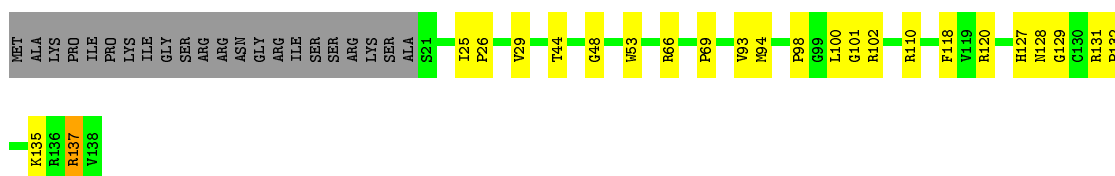
## 50%





- Molecule 11: Ribosomal Protein S11

Chain AK: 67% 16% 16%



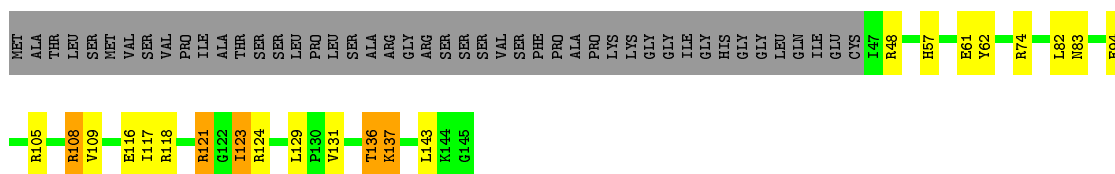
- Molecule 12: Ribosomal Protein S12

Chain AL: 82% 15% 3%



- Molecule 13: Ribosomal Protein S13

Chain AM: 53% 12% 32%



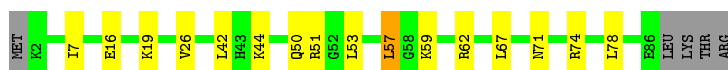
- Molecule 14: Ribosomal Protein S14

Chain AN: 76% 20% 4%



- Molecule 15: Ribosomal Protein S15

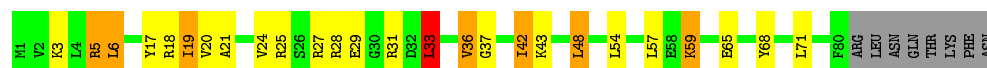
Chain AO: 77% 17% 6%



- Molecule 16: Ribosomal Protein S16

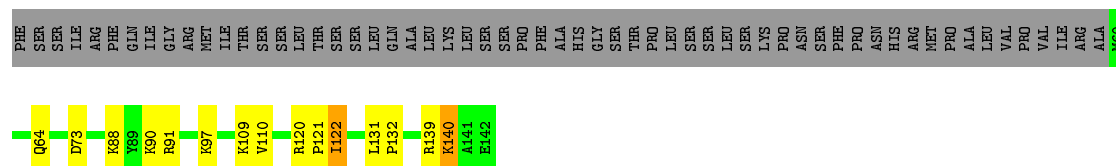


Chain AP: 



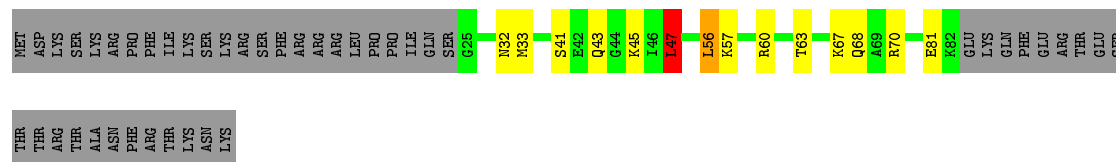
• Molecule 17: Ribosomal Protein S17

Chain AQ: 




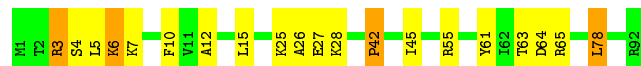
• Molecule 18: Ribosomal Protein S18

Chain AR: 



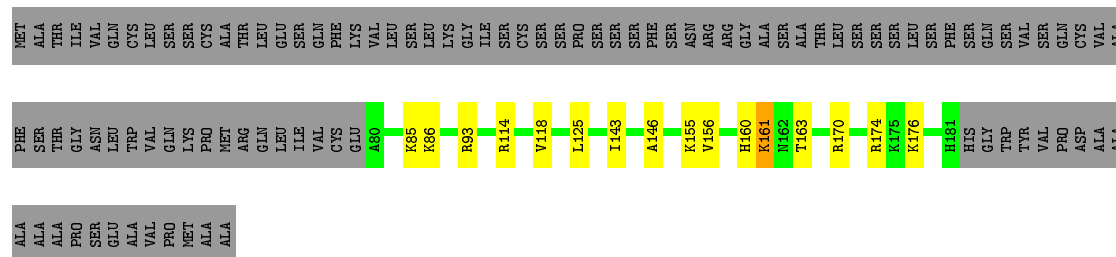
• Molecule 19: Ribosomal Protein S19

Chain AS: 



• Molecule 20: Ribosomal Protein S20

Chain AT: 



• Molecule 21: Ribosomal Protein S21

Chain AU: 



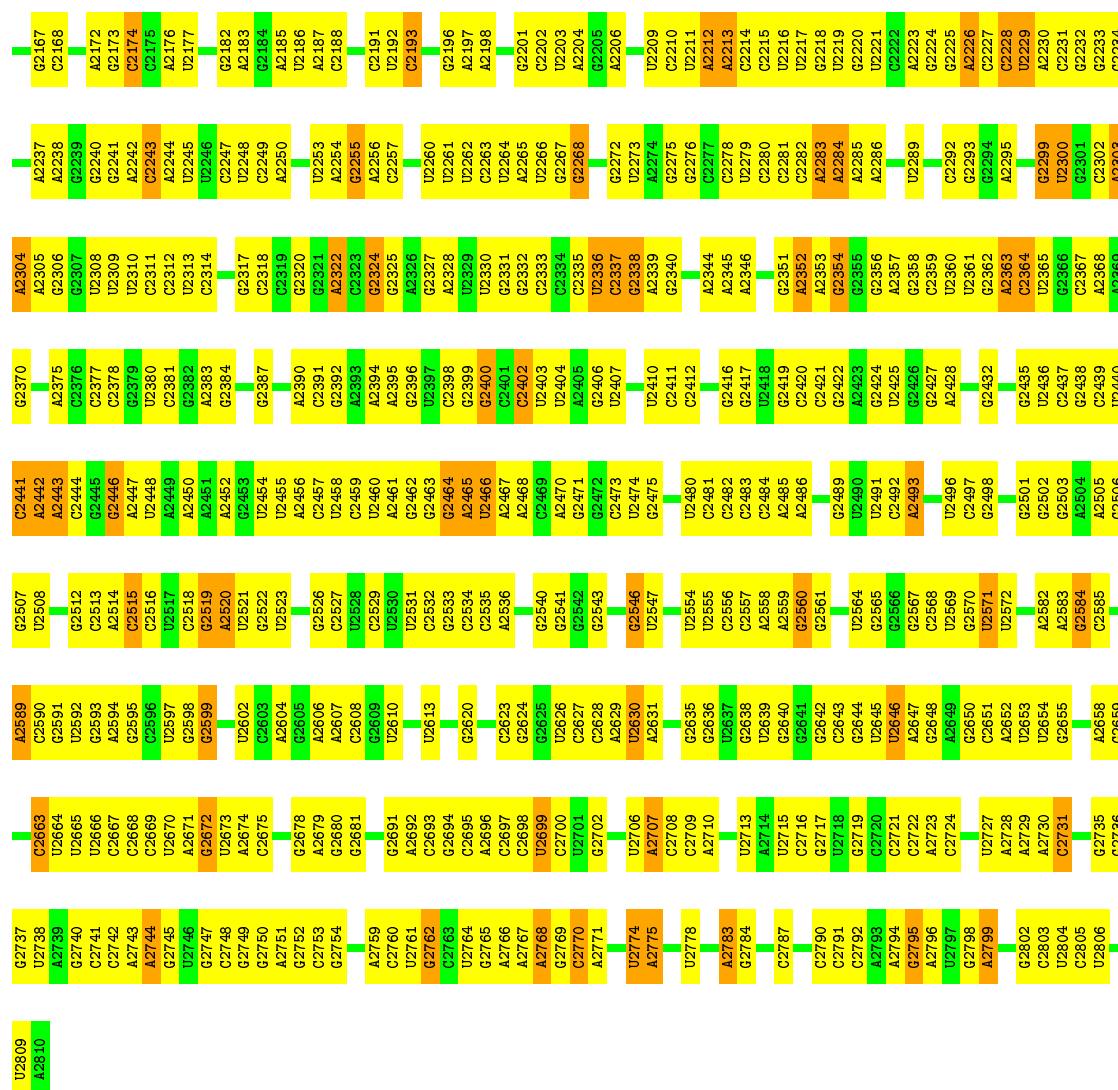




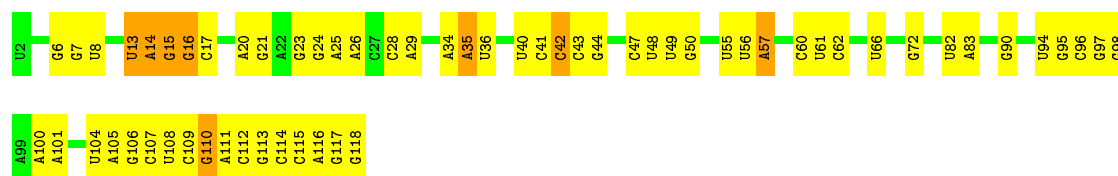




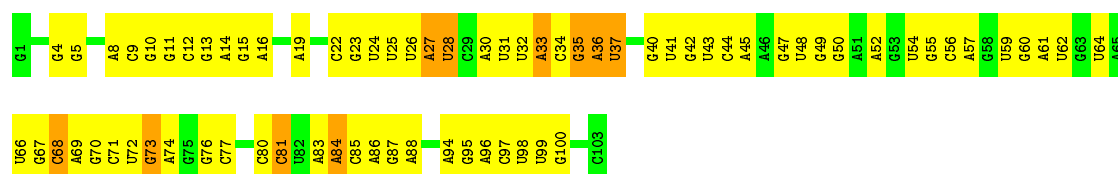


- Molecule 23: 5S rRNA

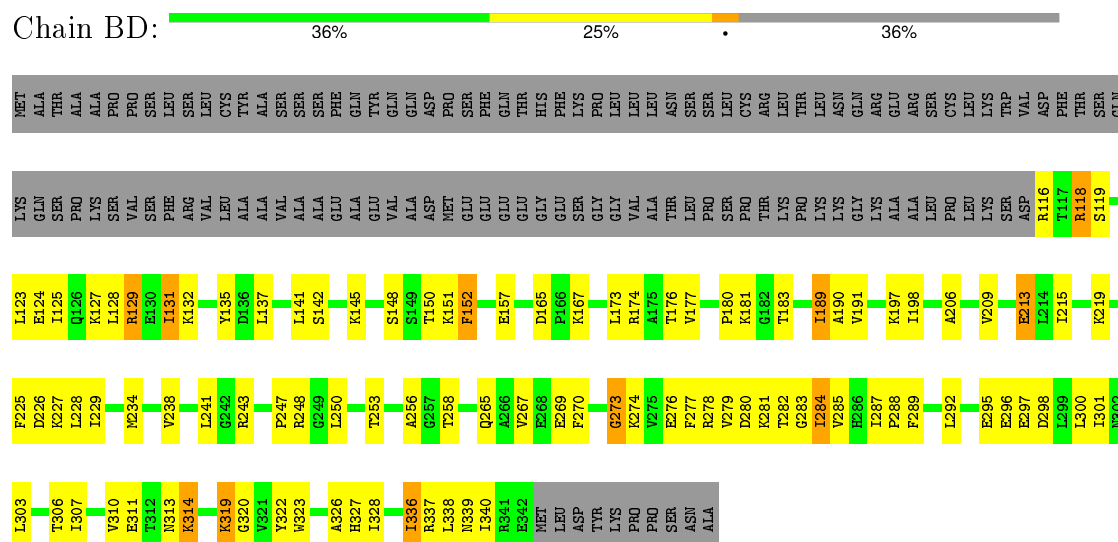


- Molecule 24: 4.8S rRNA

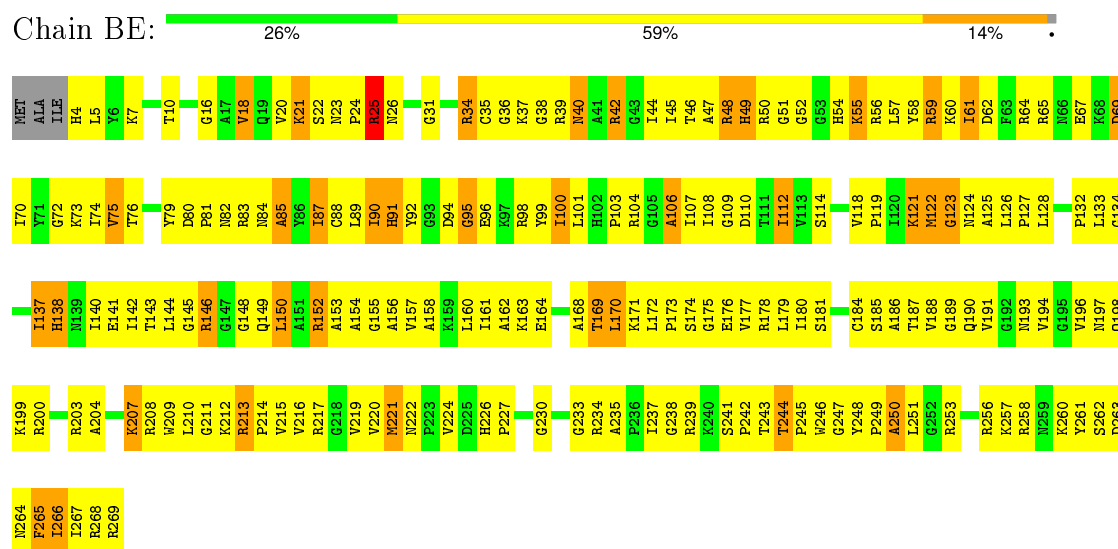




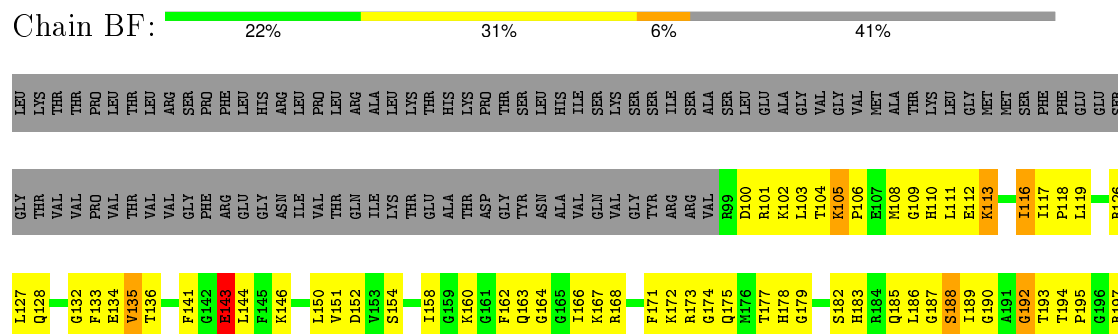
- Molecule 25: Ribosomal Protein L1



- Molecule 26: Ribosomal Protein L2



- Molecule 27: Ribosomal Protein L3

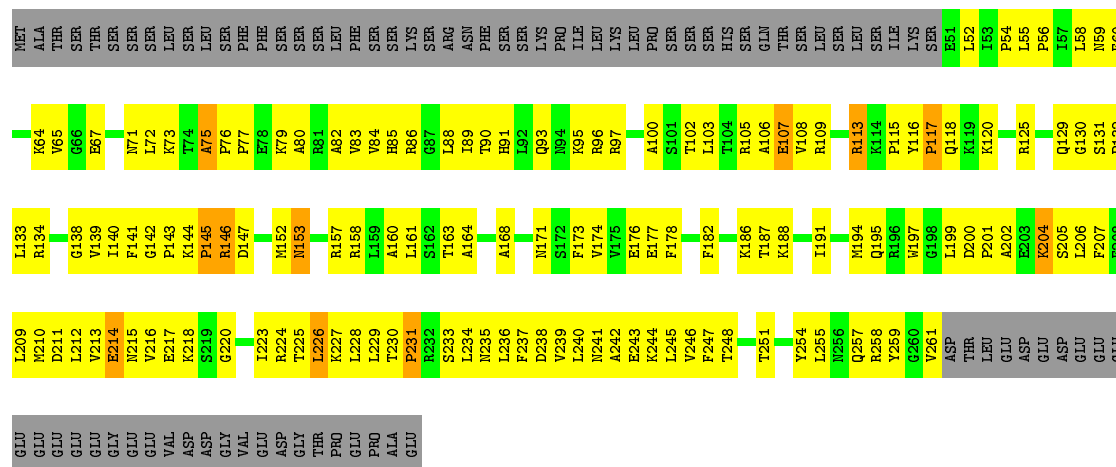






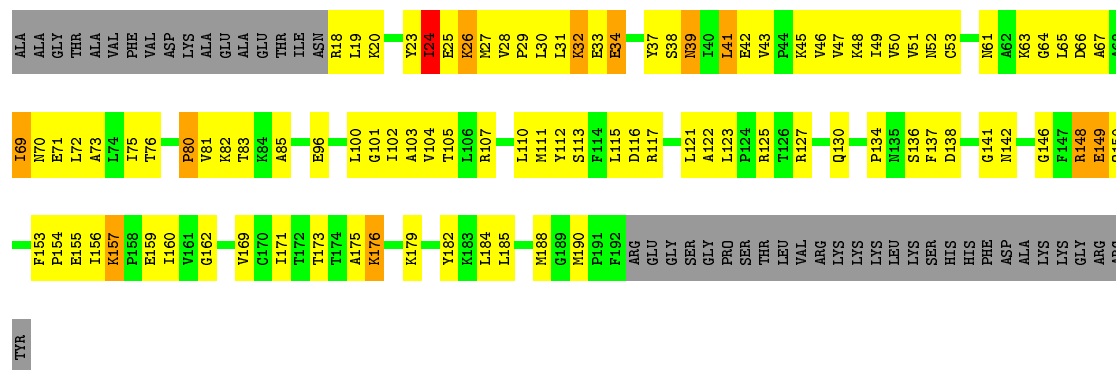
### • Molecule 28: Ribosomal Protein L4

Chain BG: 26% 43% • 28%



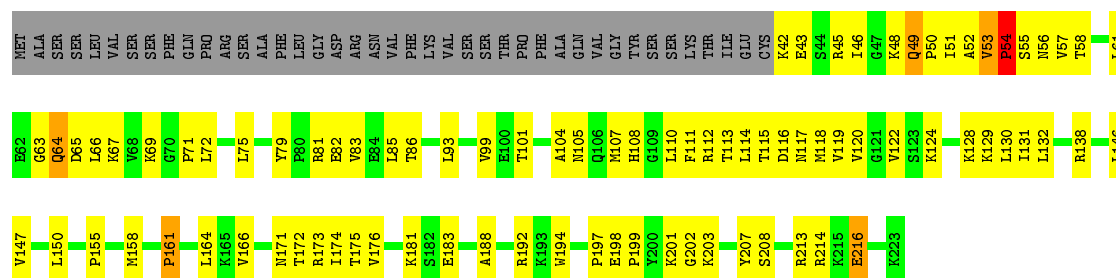
### • Molecule 29: Ribosomal Protein L5

Chain BH: 35% 39% 5% 20%



### • Molecule 30: Ribosomal Protein L6

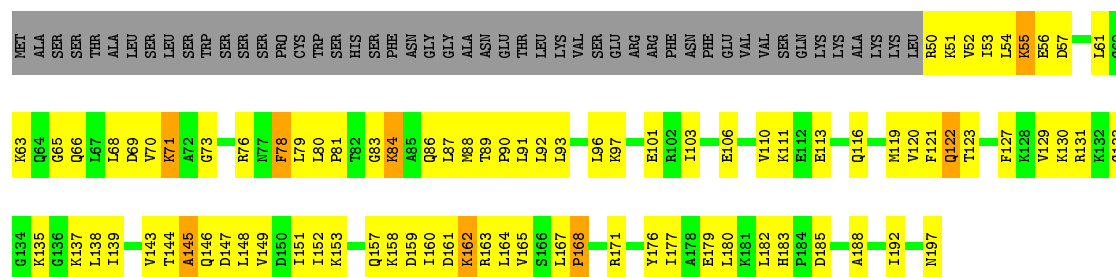
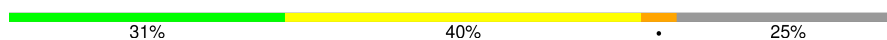
Chain BI: 43% 36% • 18%



### • Molecule 31: Ribosomal Protein L9

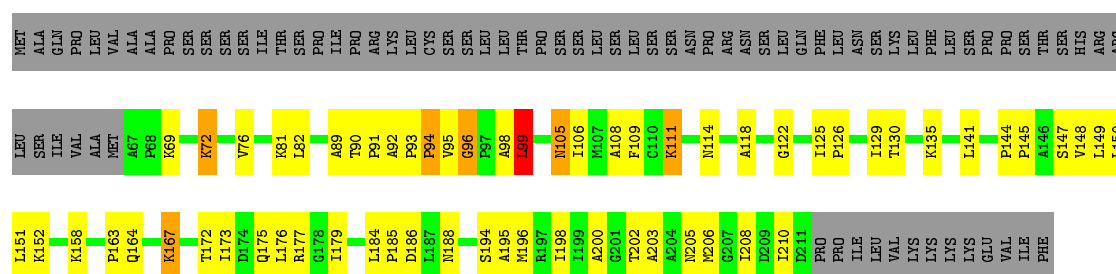
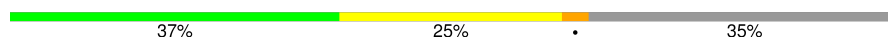


Chain BJ:



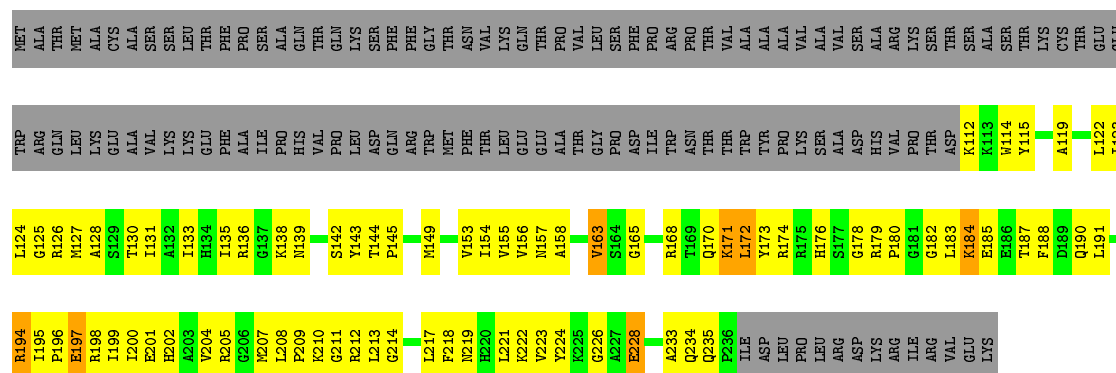
- Molecule 32: Ribosomal Protein L11

Chain BK:



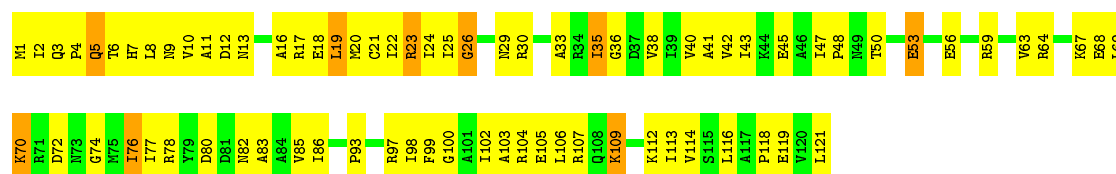
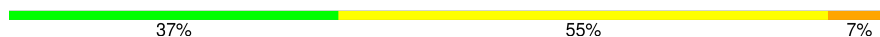
- Molecule 33: Ribosomal Protein L13

Chain BL:



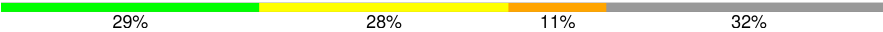
- Molecule 34: Ribosomal Protein L14

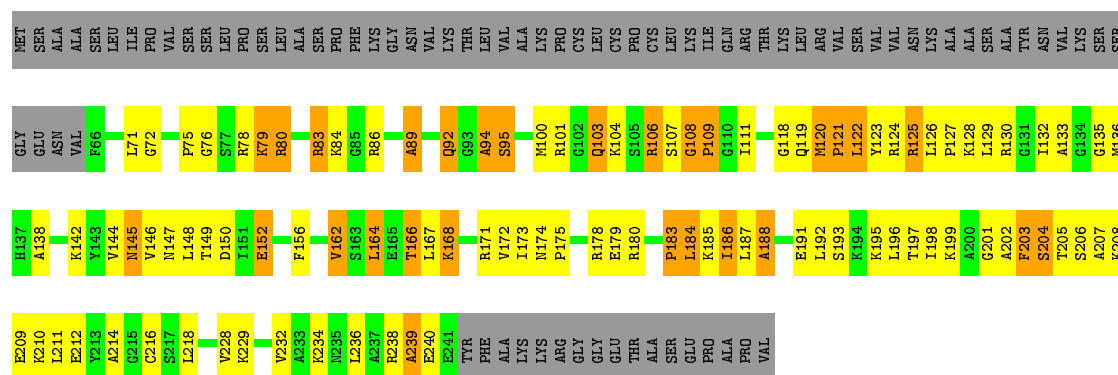
Chain BM:



- Molecule 35: Ribosomal Protein L15

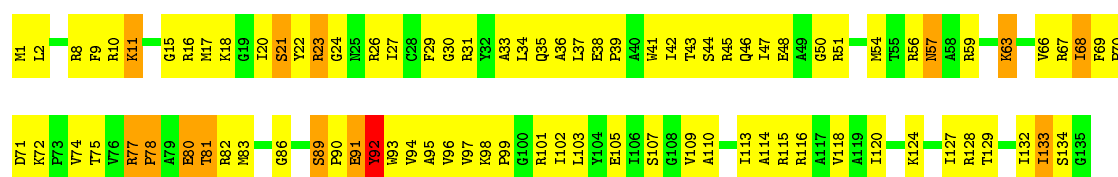


Chain BN: 




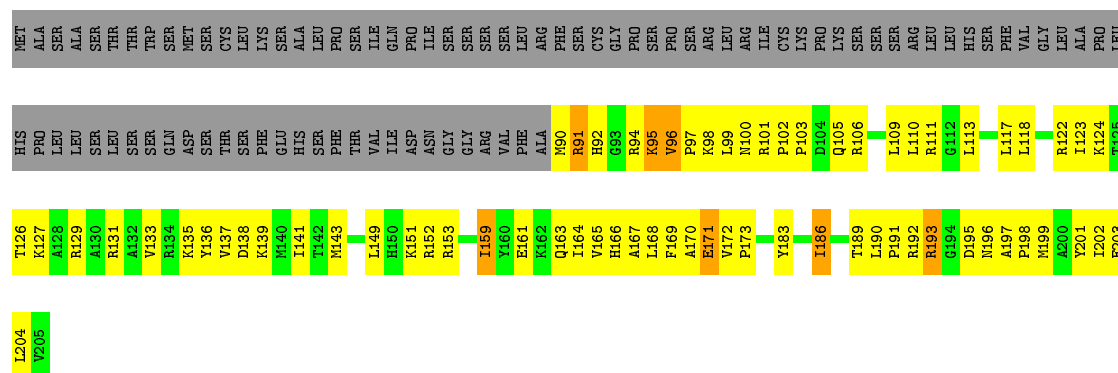
• Molecule 36: Ribosomal Protein L16

Chain BO: 




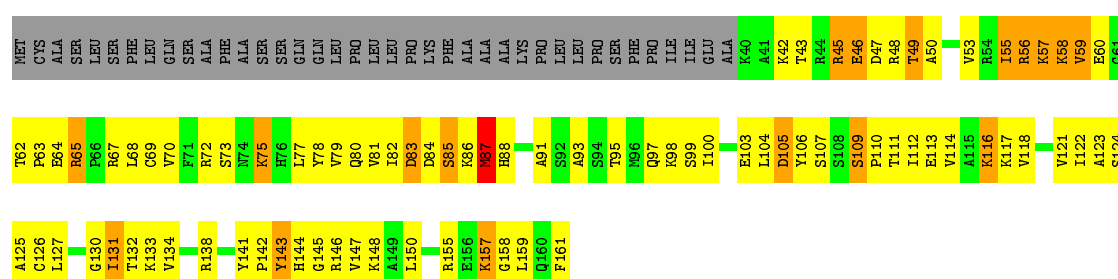
• Molecule 37: Ribosomal Protein L17

Chain BP: 

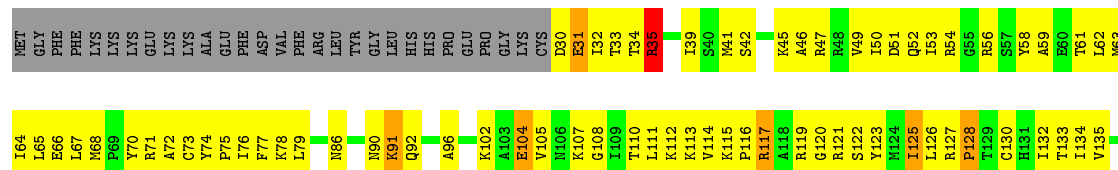
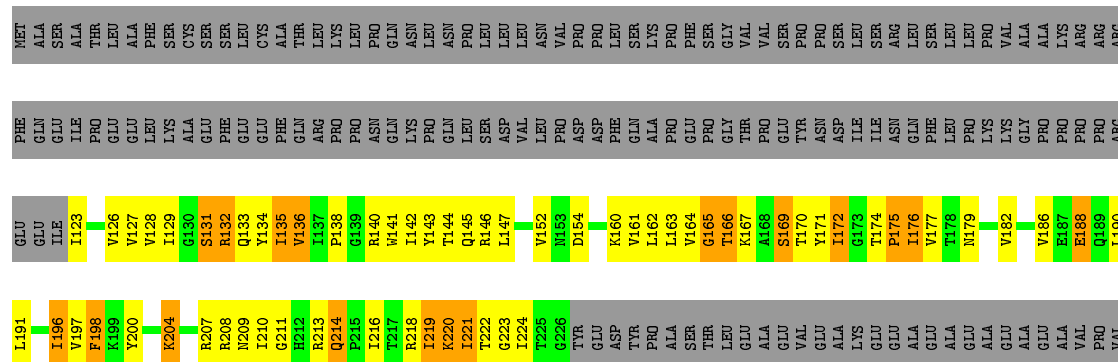
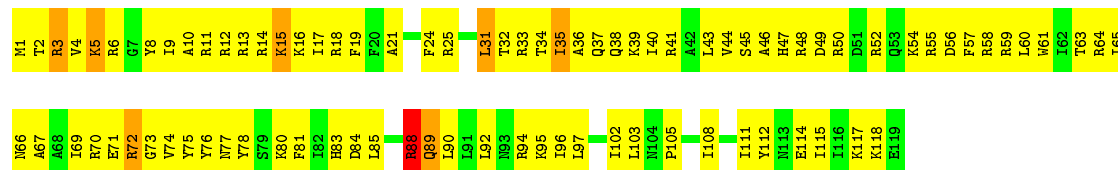
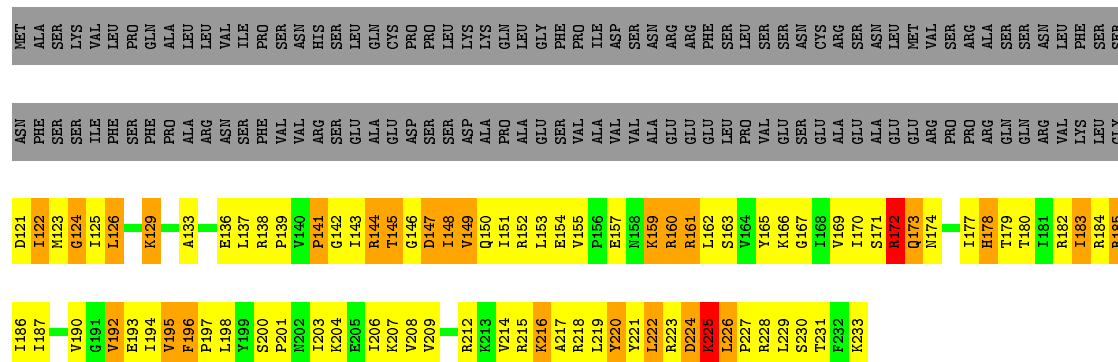


• Molecule 38: Ribosomal Protein L18

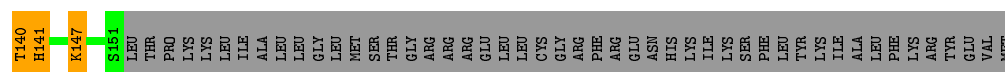
Chain BQ: 



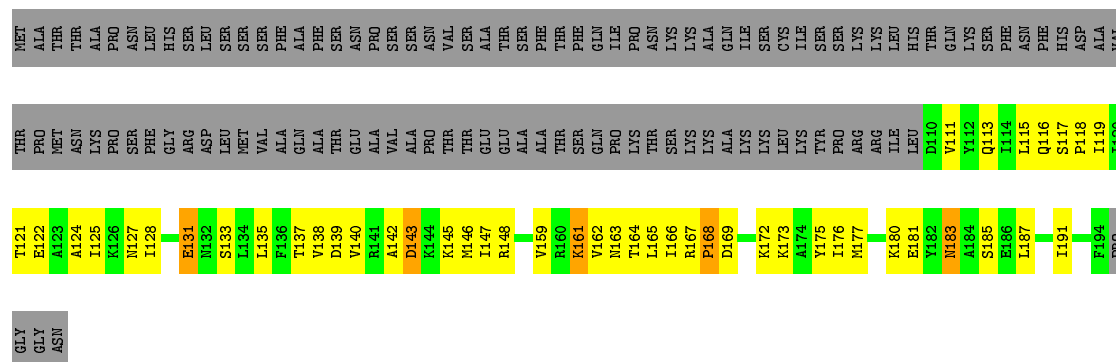




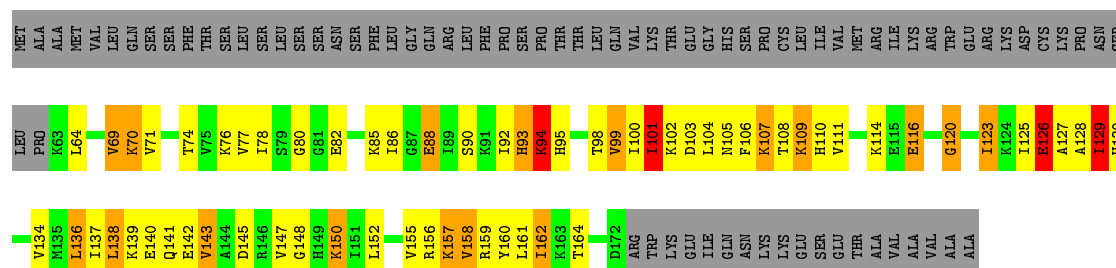
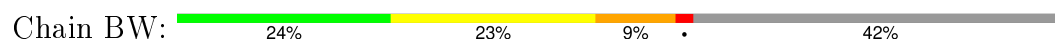




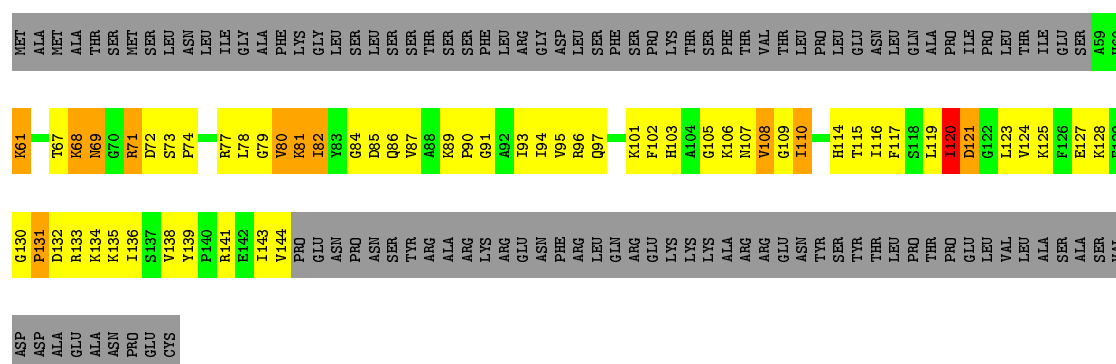
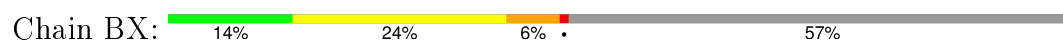
• Molecule 43: Ribosomal Protein L23



• Molecule 44: Ribosomal Protein L24



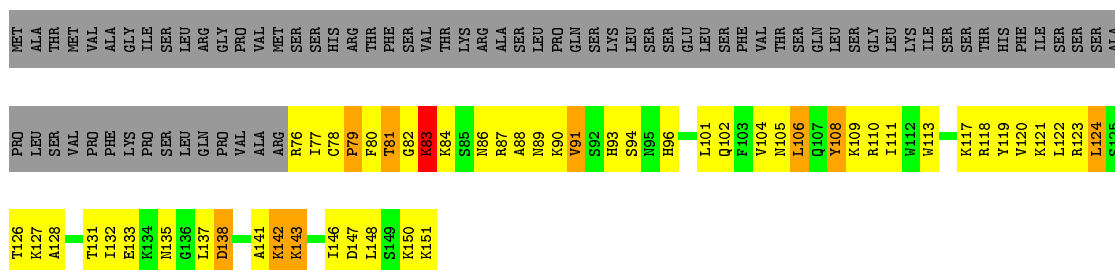
• Molecule 45: Ribosomal Protein L27



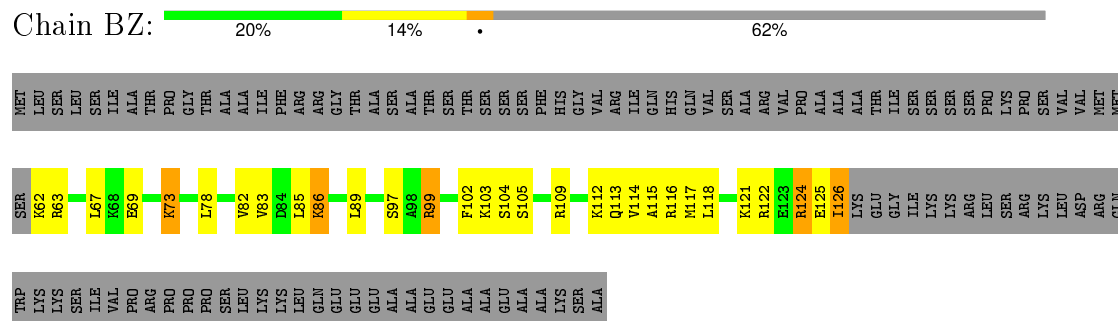
• Molecule 46: Ribosomal Protein L28



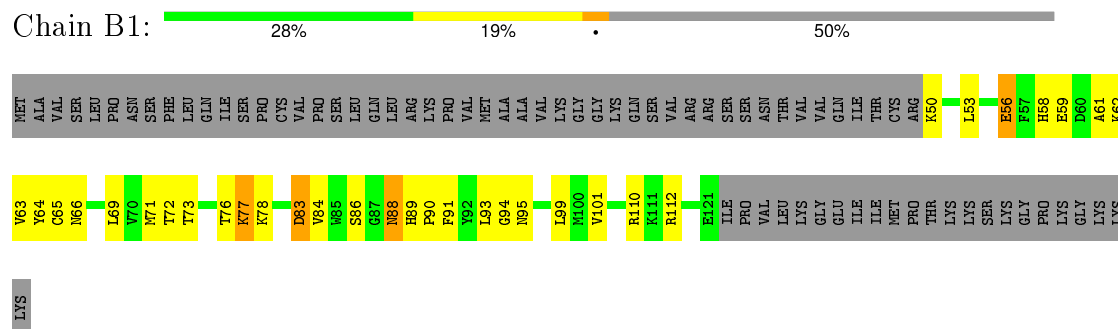




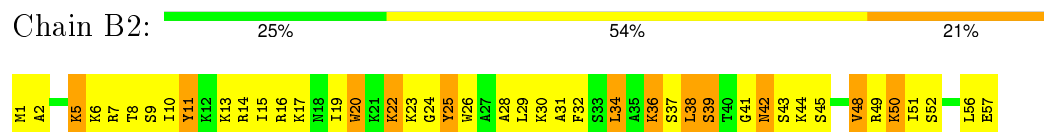
- Molecule 47: Ribosomal Protein L29



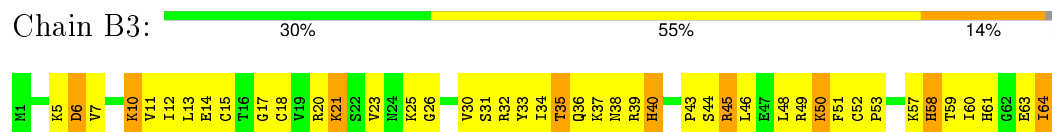
- Molecule 48: Ribosomal Protein L31



- Molecule 49: Ribosomal Protein L32



- Molecule 50: Ribosomal Protein L33



- Molecule 51: Ribosomal Protein L34









## 4 Experimental information

| Property                             | Value                              | Source    |
|--------------------------------------|------------------------------------|-----------|
| Reconstruction method                | SINGLE PARTICLE                    | Depositor |
| Imposed symmetry                     | POINT, Not provided                | Depositor |
| Number of images                     | Not provided                       | Depositor |
| Resolution determination method      | Not provided                       | Depositor |
| CTF correction method                | CTF correction for each Micrograph | Depositor |
| Microscope                           | Phillips Tecnai F20 FEG            | Depositor |
| Voltage (kV)                         | 200                                | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 2000                               | Depositor |
| Minimum defocus (nm)                 | 700                                | Depositor |
| Maximum defocus (nm)                 | 3500                               | Depositor |
| Magnification                        | 50000                              | Depositor |
| Image detector                       | Kodak S0163 Film                   | Depositor |



## 5 Model quality ⓘ

### 5.1 Standard geometry ⓘ

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

| Mol | Chain | Bond lengths |             | Bond angles |                |
|-----|-------|--------------|-------------|-------------|----------------|
|     |       | RMSZ         | # $ Z  > 2$ | RMSZ        | # $ Z  > 2$    |
| 1   | AA    | 0.22         | 0/35552     | 0.66        | 1/55472 (0.0%) |
| 10  | AJ    | 0.59         | 0/820       | 0.69        | 0/1108         |
| 11  | AK    | 0.57         | 0/902       | 0.68        | 0/1214         |
| 12  | AL    | 0.56         | 0/984       | 0.71        | 1/1323 (0.1%)  |
| 13  | AM    | 0.60         | 0/833       | 0.78        | 1/1108 (0.1%)  |
| 14  | AN    | 0.53         | 0/836       | 0.77        | 0/1116         |
| 15  | AO    | 0.63         | 0/721       | 0.69        | 0/956          |
| 16  | AP    | 0.72         | 0/674       | 0.86        | 2/902 (0.2%)   |
| 17  | AQ    | 0.57         | 0/672       | 0.69        | 1/898 (0.1%)   |
| 18  | AR    | 0.57         | 0/481       | 0.79        | 1/641 (0.2%)   |
| 19  | AS    | 0.59         | 0/762       | 0.67        | 0/1021         |
| 2   | AB    | 0.62         | 0/1860      | 0.69        | 3/2512 (0.1%)  |
| 20  | AT    | 0.47         | 0/803       | 0.64        | 0/1063         |
| 21  | AU    | 0.59         | 0/458       | 0.76        | 0/608          |
| 22  | BA    | 0.13         | 0/65708     | 0.63        | 0/102501       |
| 23  | BB    | 0.13         | 0/2793      | 0.63        | 0/4353         |
| 24  | BC    | 0.13         | 0/2472      | 0.63        | 0/3854         |
| 25  | BD    | 0.24         | 0/1786      | 0.40        | 0/2397         |
| 26  | BE    | 0.21         | 0/2085      | 0.42        | 0/2800         |
| 27  | BF    | 0.24         | 0/1214      | 0.42        | 0/1613         |
| 28  | BG    | 0.25         | 0/1696      | 0.43        | 0/2283         |
| 29  | BH    | 0.24         | 0/1372      | 0.41        | 0/1848         |
| 3   | AC    | 0.63         | 0/1771      | 0.75        | 3/2380 (0.1%)  |
| 30  | BI    | 0.23         | 0/1451      | 0.42        | 0/1944         |
| 31  | BJ    | 0.24         | 0/1189      | 0.40        | 0/1589         |
| 32  | BK    | 0.23         | 0/1077      | 0.43        | 0/1456         |
| 33  | BL    | 0.23         | 0/1019      | 0.40        | 0/1369         |
| 34  | BM    | 0.22         | 0/952       | 0.42        | 0/1282         |
| 35  | BN    | 0.23         | 0/1354      | 0.40        | 0/1806         |
| 36  | BO    | 0.24         | 0/1098      | 0.41        | 0/1471         |
| 37  | BP    | 0.23         | 0/964       | 0.41        | 0/1288         |
| 38  | BQ    | 0.23         | 0/976       | 0.41        | 0/1305         |
| 39  | BR    | 0.22         | 0/929       | 0.46        | 0/1248         |
| 4   | AD    | 0.61         | 0/1660      | 0.74        | 1/2228 (0.0%)  |



| Mol | Chain | Bond lengths |          | Bond angles |                  |
|-----|-------|--------------|----------|-------------|------------------|
|     |       | RMSZ         | # Z  >2  | RMSZ        | # Z  >2          |
| 40  | BS    | 0.24         | 0/1047   | 0.40        | 0/1394           |
| 41  | BT    | 0.23         | 0/839    | 0.43        | 0/1135           |
| 42  | BU    | 0.23         | 0/1003   | 0.40        | 0/1348           |
| 43  | BV    | 0.24         | 0/685    | 0.40        | 0/920            |
| 44  | BW    | 0.21         | 0/878    | 0.42        | 0/1171           |
| 45  | BX    | 0.25         | 0/672    | 0.41        | 0/896            |
| 46  | BY    | 0.25         | 0/629    | 0.44        | 0/835            |
| 47  | BZ    | 0.25         | 0/553    | 0.40        | 0/728            |
| 48  | B1    | 0.26         | 0/594    | 0.37        | 0/797            |
| 49  | B2    | 0.28         | 0/478    | 0.39        | 0/633            |
| 5   | AE    | 0.56         | 0/1204   | 0.64        | 0/1620           |
| 50  | B3    | 0.23         | 0/532    | 0.40        | 0/708            |
| 51  | B4    | 0.25         | 0/298    | 0.39        | 0/390            |
| 52  | B5    | 0.23         | 0/509    | 0.38        | 0/672            |
| 53  | B6    | 0.25         | 0/312    | 0.37        | 0/409            |
| 6   | AF    | 0.71         | 0/887    | 0.76        | 2/1195 (0.2%)    |
| 7   | AG    | 0.56         | 0/1227   | 0.70        | 2/1641 (0.1%)    |
| 8   | AH    | 0.59         | 0/1103   | 0.70        | 0/1477           |
| 9   | AI    | 0.63         | 0/1004   | 0.75        | 1/1347 (0.1%)    |
| All | All   | 0.27         | 0/154378 | 0.62        | 19/230273 (0.0%) |

There are no bond length outliers.

All (19) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|------------|-------|-------------|----------|
| 6   | AF    | 132 | LEU  | CA-CB-CG   | 7.67  | 132.94      | 115.30   |
| 13  | AM    | 82  | LEU  | CA-CB-CG   | 7.39  | 132.30      | 115.30   |
| 16  | AP    | 6   | LEU  | CA-CB-CG   | 7.02  | 131.45      | 115.30   |
| 7   | AG    | 31  | LEU  | CA-CB-CG   | 6.96  | 131.32      | 115.30   |
| 16  | AP    | 33  | LEU  | CA-CB-CG   | 6.96  | 131.30      | 115.30   |
| 12  | AL    | 81  | LEU  | CA-CB-CG   | 6.05  | 129.22      | 115.30   |
| 18  | AR    | 47  | LEU  | CA-CB-CG   | 6.01  | 129.13      | 115.30   |
| 9   | AI    | 155 | LEU  | CA-CB-CG   | 5.87  | 128.79      | 115.30   |
| 1   | AA    | 78  | U    | N1-C1'-C2' | 5.85  | 121.61      | 114.00   |
| 17  | AQ    | 131 | LEU  | CA-CB-CG   | 5.80  | 128.65      | 115.30   |
| 7   | AG    | 105 | LEU  | CA-CB-CG   | 5.68  | 128.37      | 115.30   |
| 3   | AC    | 95  | LEU  | CA-CB-CG   | 5.65  | 128.29      | 115.30   |
| 2   | AB    | 190 | LEU  | CA-CB-CG   | 5.63  | 128.25      | 115.30   |
| 4   | AD    | 48  | LEU  | CA-CB-CG   | 5.63  | 128.26      | 115.30   |
| 2   | AB    | 72  | LEU  | CA-CB-CG   | 5.56  | 128.10      | 115.30   |
| 2   | AB    | 199 | LEU  | CA-CB-CG   | 5.50  | 127.95      | 115.30   |
| 3   | AC    | 88  | ARG  | N-CA-C     | -5.39 | 96.43       | 111.00   |

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| Mol | Chain | Res | Type | Atoms    | Z    | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|------|-------------|----------|
| 3   | AC    | 71  | LEU  | CA-CB-CG | 5.29 | 127.47      | 115.30   |
| 6   | AF    | 145 | LEU  | CA-CB-CG | 5.04 | 126.89      | 115.30   |

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | AA    | 31745 | 0        | 15984    | 1134    | 0            |
| 2   | AB    | 1827  | 0        | 1867     | 17      | 0            |
| 3   | AC    | 1744  | 0        | 1831     | 18      | 0            |
| 4   | AD    | 1632  | 0        | 1734     | 17      | 0            |
| 5   | AE    | 1190  | 0        | 1245     | 18      | 0            |
| 6   | AF    | 872   | 0        | 884      | 41      | 0            |
| 7   | AG    | 1211  | 0        | 1284     | 11      | 0            |
| 8   | AH    | 1088  | 0        | 1149     | 14      | 0            |
| 9   | AI    | 988   | 0        | 1047     | 12      | 0            |
| 10  | AJ    | 803   | 0        | 845      | 14      | 0            |
| 11  | AK    | 888   | 0        | 933      | 10      | 0            |
| 12  | AL    | 968   | 0        | 1046     | 12      | 0            |
| 13  | AM    | 824   | 0        | 872      | 26      | 0            |
| 14  | AN    | 820   | 0        | 858      | 13      | 0            |
| 15  | AO    | 713   | 0        | 765      | 48      | 0            |
| 16  | AP    | 664   | 0        | 703      | 13      | 0            |
| 17  | AQ    | 662   | 0        | 715      | 11      | 0            |
| 18  | AR    | 478   | 0        | 519      | 14      | 0            |
| 19  | AS    | 747   | 0        | 787      | 22      | 0            |
| 20  | AT    | 799   | 0        | 879      | 11      | 0            |
| 21  | AU    | 455   | 0        | 466      | 10      | 0            |
| 22  | BA    | 58665 | 0        | 29550    | 2028    | 0            |
| 23  | BB    | 2497  | 0        | 1264     | 51      | 0            |
| 24  | BC    | 2207  | 0        | 1114     | 89      | 0            |
| 25  | BD    | 1760  | 0        | 1834     | 107     | 0            |
| 26  | BE    | 2049  | 0        | 2128     | 412     | 0            |
| 27  | BF    | 1196  | 0        | 1282     | 135     | 0            |

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| Mol | Chain | Non-H  | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|--------|----------|----------|---------|--------------|
| 28  | BG    | 1664   | 0        | 1731     | 187     | 0            |
| 29  | BH    | 1351   | 0        | 1405     | 129     | 0            |
| 30  | BI    | 1429   | 0        | 1510     | 94      | 0            |
| 31  | BJ    | 1177   | 0        | 1259     | 86      | 0            |
| 32  | BK    | 1060   | 0        | 1129     | 59      | 0            |
| 33  | BL    | 998    | 0        | 1038     | 94      | 0            |
| 34  | BM    | 943    | 0        | 996      | 101     | 0            |
| 35  | BN    | 1333   | 0        | 1406     | 155     | 0            |
| 36  | BO    | 1076   | 0        | 1134     | 127     | 0            |
| 37  | BP    | 948    | 0        | 1009     | 96      | 0            |
| 38  | BQ    | 962    | 0        | 992      | 120     | 0            |
| 39  | BR    | 915    | 0        | 1001     | 153     | 0            |
| 40  | BS    | 1030   | 0        | 1100     | 150     | 0            |
| 41  | BT    | 826    | 0        | 900      | 83      | 0            |
| 42  | BU    | 986    | 0        | 1025     | 106     | 0            |
| 43  | BV    | 677    | 0        | 716      | 55      | 0            |
| 44  | BW    | 869    | 0        | 929      | 107     | 0            |
| 45  | BX    | 660    | 0        | 693      | 92      | 0            |
| 46  | BY    | 619    | 0        | 672      | 97      | 0            |
| 47  | BZ    | 551    | 0        | 587      | 38      | 0            |
| 48  | B1    | 581    | 0        | 562      | 46      | 0            |
| 49  | B2    | 469    | 0        | 516      | 77      | 0            |
| 50  | B3    | 524    | 0        | 557      | 64      | 0            |
| 51  | B4    | 297    | 0        | 336      | 40      | 0            |
| 52  | B5    | 504    | 0        | 559      | 77      | 0            |
| 53  | B6    | 309    | 0        | 340      | 25      | 0            |
| All | All   | 142250 | 0        | 97687    | 5825    | 0            |

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 24.

All (5825) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:AA:755:U:H3    | 26:BE:5:LEU:CD1   | 1.02                     | 1.62              |
| 1:AA:1423:G:C4'  | 22:BA:1737:A:C2   | 1.80                     | 1.61              |
| 15:AO:44:LYS:HE3 | 26:BE:7:LYS:CE    | 1.25                     | 1.61              |
| 1:AA:660:A:C5'   | 26:BE:161:ILE:HA  | 1.32                     | 1.54              |
| 1:AA:1423:G:H4'  | 22:BA:1737:A:C2   | 1.37                     | 1.49              |
| 1:AA:660:A:H5'   | 26:BE:161:ILE:CG2 | 1.41                     | 1.48              |
| 1:AA:756:A:C5    | 26:BE:5:LEU:HD22  | 1.47                     | 1.47              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:756:A:N3      | 26:BE:5:LEU:HD23   | 1.29                     | 1.42              |
| 1:AA:1424:G:H5'    | 22:BA:1725:A:C4'   | 1.46                     | 1.42              |
| 1:AA:756:A:C2      | 26:BE:5:LEU:HD23   | 1.53                     | 1.40              |
| 15:AO:57:LEU:CD1   | 22:BA:726:G:O4'    | 1.70                     | 1.40              |
| 1:AA:755:U:O2      | 26:BE:5:LEU:CB     | 1.70                     | 1.38              |
| 1:AA:756:A:C2      | 26:BE:5:LEU:CD2    | 2.08                     | 1.36              |
| 15:AO:44:LYS:CE    | 26:BE:7:LYS:CE     | 2.06                     | 1.33              |
| 1:AA:756:A:C4      | 26:BE:5:LEU:HD23   | 1.62                     | 1.32              |
| 1:AA:660:A:H5''    | 26:BE:161:ILE:CA   | 1.58                     | 1.31              |
| 15:AO:57:LEU:HD11  | 22:BA:726:G:C1'    | 1.59                     | 1.31              |
| 1:AA:659:A:H4'     | 26:BE:164:GLU:OE2  | 1.25                     | 1.30              |
| 1:AA:1423:G:C4'    | 22:BA:1737:A:H2    | 1.21                     | 1.29              |
| 15:AO:50:GLN:NE2   | 22:BA:726:G:C6     | 1.98                     | 1.29              |
| 1:AA:1423:G:O4'    | 22:BA:1737:A:H2    | 1.02                     | 1.28              |
| 1:AA:756:A:C4      | 26:BE:5:LEU:CD2    | 2.15                     | 1.28              |
| 1:AA:756:A:C6      | 26:BE:5:LEU:CD2    | 2.18                     | 1.27              |
| 1:AA:660:A:C5'     | 26:BE:161:ILE:CA   | 2.09                     | 1.27              |
| 1:AA:1377:G:H4'    | 22:BA:1722:C:O2'   | 1.15                     | 1.27              |
| 1:AA:711:A:OP1     | 22:BA:728:A:N6     | 1.66                     | 1.26              |
| 1:AA:756:A:C5      | 26:BE:5:LEU:CD2    | 2.19                     | 1.26              |
| 1:AA:1381:G:H5'    | 39:BR:231:THR:OG1  | 1.27                     | 1.25              |
| 15:AO:50:GLN:NE2   | 22:BA:726:G:N1     | 1.85                     | 1.24              |
| 15:AO:57:LEU:CD1   | 22:BA:726:G:C1'    | 2.14                     | 1.24              |
| 1:AA:1432:A:H2     | 22:BA:1973:G:O2'   | 1.11                     | 1.23              |
| 1:AA:1424:G:H4'    | 22:BA:1725:A:C5'   | 1.69                     | 1.23              |
| 15:AO:44:LYS:CE    | 26:BE:7:LYS:HE3    | 1.66                     | 1.23              |
| 15:AO:57:LEU:HD11  | 22:BA:726:G:O4'    | 1.07                     | 1.22              |
| 1:AA:756:A:C6      | 26:BE:5:LEU:HD22   | 1.72                     | 1.21              |
| 1:AA:756:A:O4'     | 26:BE:5:LEU:O      | 1.56                     | 1.21              |
| 1:AA:1432:A:C2     | 22:BA:1973:G:O2'   | 1.84                     | 1.19              |
| 1:AA:755:U:C2      | 26:BE:5:LEU:HB3    | 1.76                     | 1.18              |
| 1:AA:755:U:C2      | 26:BE:5:LEU:HD13   | 1.75                     | 1.18              |
| 1:AA:755:U:N3      | 26:BE:5:LEU:HD13   | 0.85                     | 1.17              |
| 13:AM:109:VAL:HG21 | 29:BH:127:ARG:NE   | 1.57                     | 1.16              |
| 13:AM:48:ARG:NH2   | 29:BH:159:GLU:C    | 1.97                     | 1.16              |
| 1:AA:1424:G:C4'    | 22:BA:1725:A:H5'   | 1.76                     | 1.16              |
| 1:AA:660:A:C5'     | 26:BE:161:ILE:HG23 | 1.76                     | 1.15              |
| 1:AA:660:A:H5'     | 26:BE:161:ILE:CB   | 1.78                     | 1.12              |
| 1:AA:1422:A:H4'    | 22:BA:1738:G:H4'   | 1.20                     | 1.12              |
| 1:AA:755:U:O2      | 26:BE:5:LEU:HB3    | 1.37                     | 1.11              |
| 1:AA:756:A:N1      | 26:BE:5:LEU:HD21   | 1.65                     | 1.11              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 15:AO:50:GLN:NE2   | 22:BA:726:G:O6     | 1.83                     | 1.10              |
| 1:AA:756:A:N1      | 26:BE:5:LEU:CD2    | 2.12                     | 1.10              |
| 1:AA:755:U:O2      | 26:BE:5:LEU:HB2    | 1.44                     | 1.10              |
| 19:AS:45:ILE:HD11  | 48:B1:95:ASN:ND2   | 1.65                     | 1.10              |
| 19:AS:45:ILE:HD11  | 48:B1:95:ASN:HD21  | 1.10                     | 1.08              |
| 1:AA:1423:G:C5'    | 22:BA:1737:A:N3    | 2.17                     | 1.07              |
| 6:AF:117:ASN:HB3   | 26:BE:163:LYS:CE   | 1.81                     | 1.07              |
| 1:AA:1423:G:H5'    | 22:BA:1737:A:N3    | 1.69                     | 1.07              |
| 1:AA:1423:G:H4'    | 22:BA:1737:A:N3    | 1.71                     | 1.06              |
| 1:AA:721:G:H5'     | 26:BE:198:GLN:HG3  | 1.38                     | 1.05              |
| 1:AA:1424:G:C5'    | 22:BA:1725:A:C4'   | 2.34                     | 1.05              |
| 1:AA:1331:C:H3'    | 1:AA:1332:C:H5''   | 1.37                     | 1.04              |
| 1:AA:1423:G:O3'    | 22:BA:1736:A:N6    | 1.91                     | 1.03              |
| 22:BA:1286:A:H4'   | 22:BA:1287:G:H4'   | 1.39                     | 1.03              |
| 1:AA:1424:G:OP1    | 22:BA:1725:A:O4'   | 1.76                     | 1.03              |
| 36:BO:2:LEU:HA     | 36:BO:70:PRO:HD3   | 1.40                     | 1.03              |
| 1:AA:1424:G:H5'    | 22:BA:1725:A:H4'   | 1.08                     | 1.03              |
| 13:AM:48:ARG:HH22  | 29:BH:160:ILE:N    | 1.57                     | 1.02              |
| 26:BE:74:ILE:HA    | 26:BE:90:ILE:HA    | 1.42                     | 1.02              |
| 1:AA:1423:G:C4'    | 22:BA:1737:A:N3    | 2.22                     | 1.02              |
| 1:AA:1423:G:O4'    | 22:BA:1737:A:C2    | 1.93                     | 1.02              |
| 1:AA:660:A:C5'     | 26:BE:161:ILE:CG2  | 2.36                     | 1.01              |
| 1:AA:1422:A:O2'    | 22:BA:1738:G:H1'   | 1.60                     | 1.01              |
| 22:BA:575:C:H42    | 22:BA:585:A:H61    | 1.05                     | 1.01              |
| 39:BR:183:ILE:HG23 | 39:BR:184:ARG:H    | 1.26                     | 1.01              |
| 6:AF:118:LYS:HE3   | 26:BE:161:ILE:C    | 1.81                     | 1.01              |
| 39:BR:170:ILE:HD12 | 39:BR:186:ILE:HD12 | 1.43                     | 1.01              |
| 6:AF:118:LYS:HE3   | 26:BE:162:ALA:C    | 1.79                     | 1.00              |
| 1:AA:1424:G:OP1    | 22:BA:1725:A:C1'   | 2.09                     | 1.00              |
| 44:BW:70:LYS:HD2   | 44:BW:70:LYS:H     | 1.26                     | 1.00              |
| 22:BA:44:G:H5'     | 22:BA:45:A:H5'     | 1.40                     | 1.00              |
| 22:BA:577:G:H22    | 22:BA:2044:A:H61   | 1.06                     | 1.00              |
| 6:AF:117:ASN:HB3   | 26:BE:163:LYS:HE2  | 1.01                     | 1.00              |
| 22:BA:389:A:H61    | 22:BA:409:U:H3     | 1.05                     | 0.99              |
| 1:AA:660:A:H5'     | 26:BE:161:ILE:CA   | 1.83                     | 0.99              |
| 22:BA:1542:C:H2'   | 22:BA:1543:G:H4'   | 1.40                     | 0.99              |
| 38:BQ:56:ARG:H     | 38:BQ:56:ARG:NE    | 1.61                     | 0.99              |
| 15:AO:50:GLN:NE2   | 22:BA:726:G:H1     | 1.52                     | 0.99              |
| 27:BF:105:LYS:HD3  | 27:BF:105:LYS:H    | 1.24                     | 0.99              |
| 39:BR:192:VAL:HG13 | 39:BR:193:GLU:H    | 1.28                     | 0.99              |
| 1:AA:659:A:O3'     | 26:BE:161:ILE:HG22 | 1.62                     | 0.99              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 15:AO:53:LEU:CD1   | 22:BA:726:G:N2     | 2.26                     | 0.99              |
| 1:AA:343:C:H4'     | 1:AA:344:A:H5'     | 1.42                     | 0.99              |
| 1:AA:1377:G:C4'    | 22:BA:1722:C:O2'   | 2.11                     | 0.98              |
| 6:AF:118:LYS:CE    | 26:BE:162:ALA:C    | 2.29                     | 0.98              |
| 15:AO:53:LEU:HD13  | 22:BA:726:G:N2     | 1.78                     | 0.98              |
| 13:AM:109:VAL:HG21 | 29:BH:127:ARG:HE   | 1.23                     | 0.98              |
| 1:AA:1424:G:H4'    | 22:BA:1725:A:H5'   | 1.00                     | 0.98              |
| 15:AO:57:LEU:CD1   | 22:BA:726:G:H1'    | 1.92                     | 0.98              |
| 22:BA:2738:U:H3    | 24:BC:74:A:H62     | 1.10                     | 0.98              |
| 1:AA:660:A:H5'     | 26:BE:161:ILE:HG23 | 1.01                     | 0.98              |
| 1:AA:755:U:N3      | 26:BE:5:LEU:CD1    | 1.81                     | 0.97              |
| 1:AA:756:A:H1'     | 26:BE:5:LEU:HA     | 1.45                     | 0.97              |
| 1:AA:763:A:H62     | 1:AA:1458:C:H1'    | 1.26                     | 0.97              |
| 1:AA:1422:A:O4'    | 22:BA:1738:G:O2'   | 1.83                     | 0.97              |
| 1:AA:778:G:H22     | 1:AA:805:U:H1'     | 1.28                     | 0.96              |
| 6:AF:117:ASN:CB    | 26:BE:163:LYS:HE2  | 1.96                     | 0.96              |
| 22:BA:2629:A:H2'   | 49:B2:1:MET:HA     | 1.47                     | 0.95              |
| 22:BA:2116:C:H42   | 22:BA:2201:G:H1    | 1.14                     | 0.95              |
| 30:BI:57:VAL:HG11  | 30:BI:119:VAL:HG13 | 1.49                     | 0.95              |
| 1:AA:765:C:H1'     | 1:AA:767:A:H5'     | 1.45                     | 0.95              |
| 1:AA:1381:G:C5'    | 39:BR:231:THR:OG1  | 2.14                     | 0.95              |
| 1:AA:347:G:H5''    | 16:AP:5:ARG:HD3    | 1.44                     | 0.95              |
| 28:BG:240:LEU:HD23 | 35:BN:78:ARG:HB3   | 1.49                     | 0.94              |
| 13:AM:109:VAL:CG2  | 29:BH:127:ARG:HE   | 1.79                     | 0.94              |
| 22:BA:1870:U:H3    | 22:BA:1896:G:H22   | 1.12                     | 0.94              |
| 22:BA:1603:A:H4'   | 26:BE:57:LEU:HD11  | 1.50                     | 0.94              |
| 1:AA:660:A:OP1     | 26:BE:161:ILE:C    | 1.99                     | 0.94              |
| 49:B2:48:VAL:HG22  | 49:B2:49:ARG:H     | 1.30                     | 0.94              |
| 1:AA:71:G:H22      | 1:AA:82:U:H3       | 1.15                     | 0.94              |
| 1:AA:660:A:C4'     | 26:BE:171:LYS:NZ   | 2.30                     | 0.93              |
| 22:BA:164:A:H5'    | 22:BA:165:C:H5'    | 1.50                     | 0.93              |
| 1:AA:1468:A:H2'    | 1:AA:1469:G:H5'    | 1.50                     | 0.93              |
| 24:BC:68:C:H41     | 39:BR:143:ILE:HG22 | 1.33                     | 0.93              |
| 15:AO:53:LEU:HD22  | 22:BA:726:G:N3     | 1.83                     | 0.93              |
| 51:B4:104:SER:HA   | 51:B4:105:ARG:HH21 | 1.32                     | 0.93              |
| 1:AA:1424:G:C5'    | 22:BA:1725:A:H4'   | 1.96                     | 0.93              |
| 36:BO:133:ILE:HG23 | 36:BO:134:SER:H    | 1.32                     | 0.92              |
| 53:B6:7:VAL:HG13   | 53:B6:8:LYS:H      | 1.33                     | 0.92              |
| 1:AA:755:U:C4      | 26:BE:5:LEU:HD13   | 2.03                     | 0.92              |
| 15:AO:44:LYS:CE    | 26:BE:7:LYS:HE2    | 1.98                     | 0.92              |
| 1:AA:1377:G:H4'    | 22:BA:1722:C:HO2'  | 1.22                     | 0.92              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:755:U:C2      | 26:BE:5:LEU:CD1    | 2.45                     | 0.92              |
| 42:BU:51:ASP:HA    | 42:BU:54:ARG:HH12  | 1.33                     | 0.92              |
| 22:BA:1675:C:H2'   | 22:BA:1676:U:H5''  | 1.52                     | 0.92              |
| 22:BA:174:G:H21    | 22:BA:192:A:H62    | 1.15                     | 0.92              |
| 34:BM:3:GLN:HB2    | 34:BM:4:PRO:HD2    | 1.52                     | 0.91              |
| 49:B2:36:LYS:HE2   | 49:B2:36:LYS:H     | 1.35                     | 0.91              |
| 1:AA:756:A:C2      | 26:BE:5:LEU:HD21   | 1.96                     | 0.91              |
| 1:AA:647:C:H2'     | 1:AA:648:G:H5''    | 1.53                     | 0.91              |
| 1:AA:1422:A:C1'    | 22:BA:1738:G:O2'   | 2.19                     | 0.91              |
| 1:AA:1423:G:C5'    | 22:BA:1737:A:C2    | 2.52                     | 0.91              |
| 22:BA:1946:A:H62   | 22:BA:1982:G:H21   | 1.18                     | 0.91              |
| 1:AA:721:G:C2      | 26:BE:5:LEU:HD12   | 2.05                     | 0.91              |
| 30:BI:81:ARG:HG2   | 30:BI:82:GLU:H     | 1.34                     | 0.91              |
| 37:BP:197:ALA:HB1  | 37:BP:198:PRO:HA   | 1.50                     | 0.91              |
| 26:BE:161:ILE:HG12 | 26:BE:171:LYS:HE3  | 1.50                     | 0.91              |
| 22:BA:1272:A:H62   | 40:BS:3:ARG:HH21   | 1.19                     | 0.91              |
| 26:BE:213:ARG:HB3  | 26:BE:213:ARG:HH11 | 1.33                     | 0.91              |
| 15:AO:57:LEU:HD13  | 22:BA:726:G:O4'    | 1.71                     | 0.90              |
| 22:BA:2214:C:H42   | 22:BA:2240:G:H1    | 1.12                     | 0.90              |
| 6:AF:118:LYS:NZ    | 26:BE:162:ALA:N    | 2.18                     | 0.90              |
| 45:BX:108:VAL:HG22 | 45:BX:109:GLY:H    | 1.35                     | 0.90              |
| 1:AA:756:A:C1'     | 26:BE:5:LEU:HA     | 2.01                     | 0.90              |
| 52:B5:98:SER:HA    | 52:B5:101:ARG:HH12 | 1.36                     | 0.90              |
| 25:BD:135:TYR:HB2  | 25:BD:336:ILE:HD11 | 1.51                     | 0.90              |
| 19:AS:25:LYS:O     | 48:B1:101:VAL:HG21 | 1.72                     | 0.90              |
| 26:BE:64:ARG:HE    | 26:BE:145:GLY:HA2  | 1.33                     | 0.90              |
| 52:B5:105:THR:HG23 | 52:B5:106:GLY:H    | 1.37                     | 0.90              |
| 22:BA:460:U:H3     | 22:BA:593:G:H1'    | 1.34                     | 0.90              |
| 51:B4:112:HIS:HA   | 51:B4:117:ARG:HH22 | 1.37                     | 0.90              |
| 29:BH:24:ILE:H     | 29:BH:24:ILE:HD13  | 1.35                     | 0.90              |
| 1:AA:1270:C:H4'    | 1:AA:1271:G:H5'    | 1.53                     | 0.90              |
| 1:AA:721:G:O2'     | 26:BE:194:VAL:HG21 | 1.73                     | 0.89              |
| 22:BA:2223:A:H3'   | 22:BA:2224:G:H5'   | 1.54                     | 0.89              |
| 1:AA:1422:A:H4'    | 22:BA:1738:G:C4'   | 2.03                     | 0.89              |
| 1:AA:635:A:N6      | 1:AA:651:G:H1'     | 1.88                     | 0.89              |
| 13:AM:109:VAL:CG2  | 29:BH:127:ARG:NE   | 2.33                     | 0.89              |
| 1:AA:650:A:C2'     | 22:BA:1857:A:OP1   | 2.20                     | 0.89              |
| 1:AA:1424:G:C4'    | 22:BA:1725:A:C5'   | 2.43                     | 0.89              |
| 44:BW:70:LYS:HE2   | 44:BW:136:LEU:H    | 1.37                     | 0.88              |
| 1:AA:1331:C:H3'    | 1:AA:1332:C:C5'    | 2.03                     | 0.88              |
| 35:BN:208:LYS:HG2  | 35:BN:236:LEU:HD13 | 1.53                     | 0.88              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 32:BK:167:LYS:HD2  | 32:BK:167:LYS:H    | 1.38                     | 0.88              |
| 45:BX:143:ILE:HG22 | 45:BX:144:VAL:HG23 | 1.55                     | 0.88              |
| 23:BB:72:G:H21     | 23:BB:105:A:H62    | 1.15                     | 0.88              |
| 22:BA:2028:A:H4'   | 42:BU:122:SER:HB2  | 1.56                     | 0.88              |
| 1:AA:344:A:H1'     | 1:AA:429:G:H1'     | 1.53                     | 0.88              |
| 35:BN:79:LYS:NZ    | 35:BN:79:LYS:HA    | 1.88                     | 0.88              |
| 22:BA:514:A:H5''   | 22:BA:515:U:H5'    | 1.54                     | 0.88              |
| 1:AA:620:G:H1      | 1:AA:682:C:H42     | 1.22                     | 0.88              |
| 22:BA:868:G:H21    | 22:BA:2286:A:H5'   | 1.39                     | 0.87              |
| 1:AA:166:G:H22     | 1:AA:177:A:H61     | 0.90                     | 0.87              |
| 15:AO:44:LYS:HD2   | 26:BE:7:LYS:NZ     | 1.89                     | 0.87              |
| 22:BA:1189:G:H4'   | 41:BT:146:ARG:HB3  | 1.56                     | 0.87              |
| 1:AA:166:G:N2      | 1:AA:177:A:H61     | 1.71                     | 0.86              |
| 33:BL:145:PRO:HD3  | 40:BS:64:ARG:HH12  | 1.40                     | 0.86              |
| 22:BA:2775:A:H61   | 30:BI:110:LEU:HD23 | 1.39                     | 0.86              |
| 42:BU:35:ARG:HG2   | 42:BU:79:LEU:HD13  | 1.56                     | 0.86              |
| 45:BX:77:ARG:HA    | 45:BX:91:GLY:HA2   | 1.58                     | 0.86              |
| 13:AM:48:ARG:NH2   | 29:BH:159:GLU:O    | 2.08                     | 0.86              |
| 1:AA:217:A:H61     | 1:AA:252:G:H1'     | 1.38                     | 0.86              |
| 22:BA:1345:G:H1    | 22:BA:1351:C:H42   | 1.20                     | 0.86              |
| 6:AF:118:LYS:CE    | 26:BE:161:ILE:C    | 2.43                     | 0.86              |
| 26:BE:72:GLY:HA2   | 26:BE:92:TYR:HA    | 1.57                     | 0.86              |
| 36:BO:70:PRO:HA    | 36:BO:95:ALA:HB2   | 1.57                     | 0.86              |
| 1:AA:166:G:H22     | 1:AA:177:A:N6      | 1.72                     | 0.86              |
| 1:AA:1424:G:C5'    | 22:BA:1725:A:H5'   | 2.05                     | 0.85              |
| 22:BA:189:A:O2'    | 22:BA:190:G:H4'    | 1.76                     | 0.85              |
| 22:BA:1828:U:H4'   | 22:BA:1831:G:H1'   | 1.56                     | 0.85              |
| 1:AA:806:U:H2'     | 1:AA:807:G:H5''    | 1.58                     | 0.85              |
| 1:AA:1105:A:H5'    | 1:AA:1106:C:C6     | 2.11                     | 0.85              |
| 1:AA:400:U:O2'     | 1:AA:401:G:H5''    | 1.76                     | 0.85              |
| 1:AA:660:A:H4'     | 26:BE:171:LYS:NZ   | 1.90                     | 0.85              |
| 1:AA:399:G:H4'     | 1:AA:400:U:O5'     | 1.74                     | 0.85              |
| 22:BA:2674:A:H62   | 22:BA:2681:G:H21   | 1.23                     | 0.85              |
| 6:AF:118:LYS:HE3   | 26:BE:161:ILE:O    | 1.76                     | 0.85              |
| 29:BH:18:ARG:HH12  | 48:B1:66:ASN:HB2   | 1.42                     | 0.85              |
| 22:BA:1875:G:H21   | 22:BA:1891:A:H62   | 1.23                     | 0.85              |
| 40:BS:88:ARG:HD3   | 40:BS:89:GLN:HG2   | 1.59                     | 0.85              |
| 1:AA:1423:G:O2'    | 22:BA:1724:U:H4'   | 1.77                     | 0.84              |
| 33:BL:163:VAL:HG11 | 33:BL:168:ARG:HB2  | 1.59                     | 0.84              |
| 46:BY:80:PHE:H     | 46:BY:89:ASN:HD22  | 1.23                     | 0.84              |
| 37:BP:159:ILE:HD13 | 37:BP:159:ILE:H    | 1.42                     | 0.84              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 19:AS:45:ILE:HD11  | 48:B1:95:ASN:CG    | 1.98                     | 0.84              |
| 26:BE:134:GLY:HA3  | 26:BE:160:LEU:HD12 | 1.59                     | 0.84              |
| 26:BE:114:SER:HB3  | 26:BE:124:ASN:HD22 | 1.40                     | 0.84              |
| 39:BR:170:ILE:HG22 | 39:BR:171:SER:H    | 1.42                     | 0.84              |
| 42:BU:91:LYS:HE3   | 42:BU:91:LYS:HA    | 1.58                     | 0.84              |
| 44:BW:157:LYS:HD2  | 44:BW:157:LYS:H    | 1.41                     | 0.84              |
| 33:BL:115:TYR:HB2  | 33:BL:153:VAL:HG22 | 1.56                     | 0.84              |
| 34:BM:19:LEU:HD13  | 34:BM:19:LEU:H     | 1.39                     | 0.84              |
| 45:BX:101:LYS:HA   | 45:BX:121:ASP:HA   | 1.58                     | 0.84              |
| 29:BH:52:ASN:HD22  | 29:BH:103:ALA:HB2  | 1.43                     | 0.84              |
| 1:AA:756:A:N3      | 26:BE:4:HIS:O      | 2.11                     | 0.83              |
| 45:BX:119:LEU:HD13 | 45:BX:120:ILE:HG22 | 1.59                     | 0.83              |
| 28:BG:204:LYS:HG2  | 28:BG:205:SER:H    | 1.43                     | 0.83              |
| 27:BF:163:GLN:HG3  | 27:BF:167:LYS:HE3  | 1.59                     | 0.83              |
| 1:AA:755:U:C2      | 26:BE:5:LEU:CB     | 2.44                     | 0.83              |
| 51:B4:127:LEU:HD22 | 51:B4:138:LEU:HB3  | 1.60                     | 0.83              |
| 22:BA:2698:C:H42   | 22:BA:2742:C:H5''  | 1.44                     | 0.83              |
| 38:BQ:104:LEU:HB3  | 38:BQ:107:SER:HB3  | 1.60                     | 0.83              |
| 1:AA:659:A:C4'     | 26:BE:164:GLU:OE2  | 2.20                     | 0.83              |
| 51:B4:105:ARG:H    | 51:B4:105:ARG:HE   | 1.25                     | 0.83              |
| 37:BP:186:ILE:H    | 37:BP:186:ILE:HD13 | 1.43                     | 0.83              |
| 44:BW:123:ILE:H    | 44:BW:123:ILE:HD13 | 1.43                     | 0.83              |
| 22:BA:1078:A:H5'   | 30:BI:42:LYS:HA    | 1.61                     | 0.83              |
| 40:BS:94:ARG:HG2   | 40:BS:97:LEU:HG    | 1.59                     | 0.83              |
| 31:BJ:164:LEU:HD22 | 31:BJ:182:LEU:HA   | 1.59                     | 0.83              |
| 22:BA:2033:A:H4'   | 40:BS:34:THR:HG22  | 1.59                     | 0.83              |
| 39:BR:151:ILE:HG12 | 39:BR:208:VAL:HG13 | 1.61                     | 0.83              |
| 1:AA:650:A:C1'     | 22:BA:1857:A:OP1   | 2.26                     | 0.83              |
| 1:AA:635:A:H61     | 1:AA:651:G:H1'     | 1.42                     | 0.83              |
| 44:BW:71:VAL:HA    | 44:BW:92:ILE:HD12  | 1.61                     | 0.83              |
| 1:AA:1424:G:C5'    | 22:BA:1725:A:C5'   | 2.56                     | 0.83              |
| 39:BR:141:PRO:HG3  | 39:BR:208:VAL:HB   | 1.58                     | 0.83              |
| 51:B4:105:ARG:H    | 51:B4:105:ARG:NE   | 1.77                     | 0.83              |
| 1:AA:377:G:H4'     | 4:AD:5:ARG:HH21    | 1.43                     | 0.83              |
| 22:BA:1286:A:C4'   | 22:BA:1287:G:H4'   | 2.09                     | 0.82              |
| 1:AA:77:G:H2'      | 1:AA:78:U:H4'      | 1.61                     | 0.82              |
| 22:BA:2111:U:H3    | 22:BA:2206:A:H61   | 1.23                     | 0.82              |
| 40:BS:12:ARG:HA    | 40:BS:15:LYS:HD2   | 1.61                     | 0.82              |
| 36:BO:35:GLN:HE21  | 36:BO:132:ILE:HD13 | 1.43                     | 0.82              |
| 50:B3:50:LYS:HD2   | 50:B3:50:LYS:H     | 1.44                     | 0.82              |
| 25:BD:177:VAL:HG21 | 25:BD:306:THR:HA   | 1.61                     | 0.82              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:885:C:H1'     | 1:AA:1332:C:N3     | 1.94                     | 0.82              |
| 27:BF:166:ILE:HG22 | 27:BF:172:LYS:HD2  | 1.61                     | 0.82              |
| 1:AA:922:G:H3'     | 1:AA:923:A:H5''    | 1.61                     | 0.82              |
| 1:AA:650:A:H2'     | 22:BA:1857:A:OP1   | 1.80                     | 0.82              |
| 38:BQ:123:ALA:HB1  | 38:BQ:157:LYS:HG2  | 1.61                     | 0.82              |
| 46:BY:142:LYS:H    | 46:BY:142:LYS:HD3  | 1.44                     | 0.82              |
| 22:BA:829:G:H21    | 22:BA:1210:A:H62   | 1.23                     | 0.82              |
| 28:BG:73:LYS:HE2   | 28:BG:73:LYS:HA    | 1.62                     | 0.82              |
| 41:BT:191:LEU:HD23 | 41:BT:191:LEU:H    | 1.44                     | 0.82              |
| 6:AF:114:LYS:HE3   | 26:BE:163:LYS:HE3  | 1.62                     | 0.82              |
| 24:BC:67:G:H5'     | 24:BC:69:A:H5'     | 1.61                     | 0.82              |
| 1:AA:375:G:H4'     | 1:AA:410:U:H3      | 1.44                     | 0.82              |
| 25:BD:157:GLU:HG2  | 25:BD:288:PRO:HG3  | 1.62                     | 0.81              |
| 6:AF:114:LYS:CE    | 26:BE:163:LYS:HE3  | 2.10                     | 0.81              |
| 40:BS:45:SER:HA    | 40:BS:48:ARG:HE    | 1.44                     | 0.81              |
| 1:AA:660:A:H4'     | 26:BE:171:LYS:CE   | 2.10                     | 0.81              |
| 42:BU:71:ARG:HB3   | 42:BU:71:ARG:NH1   | 1.95                     | 0.81              |
| 36:BO:27:ILE:HD13  | 36:BO:33:ALA:HB2   | 1.63                     | 0.81              |
| 2:AB:196:ASN:H     | 2:AB:196:ASN:HD22  | 1.26                     | 0.81              |
| 22:BA:2432:G:H4'   | 35:BN:133:ALA:HA   | 1.62                     | 0.81              |
| 36:BO:1:MET:HG3    | 36:BO:68:ILE:HB    | 1.61                     | 0.81              |
| 44:BW:155:VAL:HB   | 44:BW:164:THR:HG21 | 1.62                     | 0.81              |
| 40:BS:50:ARG:HH22  | 41:BT:198:PHE:H    | 1.27                     | 0.81              |
| 45:BX:114:HIS:HB2  | 45:BX:136:ILE:HG12 | 1.62                     | 0.81              |
| 1:AA:1424:G:H5'    | 22:BA:1725:A:O4'   | 1.81                     | 0.81              |
| 45:BX:138:VAL:HG12 | 45:BX:139:TYR:HD1  | 1.42                     | 0.81              |
| 19:AS:45:ILE:CD1   | 48:B1:95:ASN:HD21  | 1.93                     | 0.81              |
| 44:BW:152:LEU:H    | 44:BW:152:LEU:HD23 | 1.44                     | 0.81              |
| 22:BA:698:C:H42    | 22:BA:798:C:H4'    | 1.43                     | 0.81              |
| 15:AO:57:LEU:HD11  | 22:BA:726:G:C4'    | 2.11                     | 0.81              |
| 29:BH:32:LYS:HE3   | 29:BH:32:LYS:HA    | 1.63                     | 0.81              |
| 39:BR:204:LYS:HE2  | 39:BR:204:LYS:HA   | 1.63                     | 0.81              |
| 1:AA:660:A:H4'     | 26:BE:171:LYS:HE3  | 1.63                     | 0.80              |
| 39:BR:173:GLN:HG3  | 39:BR:185:ARG:HB3  | 1.62                     | 0.80              |
| 22:BA:2774:U:H5''  | 22:BA:2775:A:OP1   | 1.81                     | 0.80              |
| 1:AA:229:A:H61     | 1:AA:239:U:H3      | 1.26                     | 0.80              |
| 15:AO:44:LYS:HE3   | 26:BE:7:LYS:HE2    | 1.52                     | 0.80              |
| 28:BG:72:LEU:HD23  | 28:BG:73:LYS:N     | 1.96                     | 0.80              |
| 1:AA:13:U:H2'      | 1:AA:14:U:H5''     | 1.62                     | 0.80              |
| 35:BN:192:LEU:HG   | 35:BN:193:SER:H    | 1.47                     | 0.80              |
| 35:BN:152:GLU:HB2  | 35:BN:162:VAL:HG22 | 1.62                     | 0.80              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 13:AM:48:ARG:HH22  | 29:BH:160:ILE:CA   | 1.93                     | 0.80              |
| 44:BW:104:LEU:HD12 | 44:BW:127:ALA:HB2  | 1.63                     | 0.80              |
| 1:AA:1348:C:H4'    | 1:AA:1349:C:H5'    | 1.64                     | 0.80              |
| 35:BN:129:LEU:HB3  | 52:B5:113:ARG:HE   | 1.46                     | 0.80              |
| 35:BN:83:ARG:HD3   | 35:BN:83:ARG:H     | 1.47                     | 0.80              |
| 30:BI:114:LEU:HA   | 30:BI:117:ASN:HD21 | 1.46                     | 0.80              |
| 31:BJ:52:VAL:HB    | 31:BJ:86:GLN:HB3   | 1.64                     | 0.80              |
| 1:AA:479:U:H5''    | 1:AA:480:A:OP1     | 1.82                     | 0.80              |
| 1:AA:1422:A:O2'    | 22:BA:1738:G:C1'   | 2.30                     | 0.80              |
| 22:BA:639:A:H4'    | 22:BA:640:G:H5'    | 1.63                     | 0.80              |
| 22:BA:1958:U:H4'   | 22:BA:1969:U:H1'   | 1.64                     | 0.80              |
| 22:BA:455:A:H2'    | 28:BG:96:ARG:HH12  | 1.46                     | 0.79              |
| 22:BA:2247:C:H5''  | 46:BY:105:ASN:HB2  | 1.64                     | 0.79              |
| 33:BL:133:ILE:HG13 | 33:BL:139:ASN:HD21 | 1.47                     | 0.79              |
| 45:BX:68:LYS:HE2   | 45:BX:68:LYS:HA    | 1.63                     | 0.79              |
| 32:BK:141:LEU:HD23 | 32:BK:141:LEU:H    | 1.46                     | 0.79              |
| 40:BS:80:LYS:HE2   | 40:BS:80:LYS:HA    | 1.64                     | 0.79              |
| 22:BA:1033:C:H5'   | 22:BA:1040:U:H5''  | 1.62                     | 0.79              |
| 22:BA:715:G:H2'    | 22:BA:737:G:H22    | 1.48                     | 0.79              |
| 22:BA:2024:G:H5''  | 42:BU:71:ARG:HH11  | 1.48                     | 0.79              |
| 34:BM:70:LYS:H     | 34:BM:70:LYS:HD3   | 1.48                     | 0.79              |
| 39:BR:185:ARG:HH22 | 39:BR:223:ARG:HH12 | 1.27                     | 0.79              |
| 28:BG:116:TYR:HB3  | 28:BG:117:PRO:HD2  | 1.65                     | 0.79              |
| 1:AA:199:A:H4'     | 16:AP:59:LYS:HD3   | 1.64                     | 0.79              |
| 22:BA:1385:G:H5'   | 22:BA:1819:A:H1'   | 1.65                     | 0.79              |
| 1:AA:980:C:H4'     | 1:AA:981:G:H5''    | 1.65                     | 0.79              |
| 33:BL:174:ARG:HH22 | 33:BL:183:LEU:HG   | 1.44                     | 0.79              |
| 22:BA:2692:A:H4'   | 34:BM:29:ASN:HD21  | 1.47                     | 0.79              |
| 22:BA:200:G:H5''   | 22:BA:201:A:OP1    | 1.82                     | 0.79              |
| 22:BA:786:G:H4'    | 22:BA:787:G:H5'    | 1.64                     | 0.79              |
| 13:AM:48:ARG:NH2   | 29:BH:160:ILE:N    | 2.24                     | 0.79              |
| 26:BE:104:ARG:HB2  | 26:BE:191:VAL:HG11 | 1.65                     | 0.79              |
| 46:BY:80:PHE:H     | 46:BY:89:ASN:ND2   | 1.79                     | 0.79              |
| 22:BA:469:A:O2'    | 22:BA:470:G:H4'    | 1.82                     | 0.79              |
| 28:BG:131:SER:HB3  | 28:BG:134:ARG:H    | 1.46                     | 0.79              |
| 1:AA:1254:A:N6     | 1:AA:1279:G:H1'    | 1.98                     | 0.79              |
| 22:BA:11:G:H21     | 22:BA:2643:C:H4'   | 1.48                     | 0.79              |
| 22:BA:2344:A:H61   | 22:BA:2404:U:H3    | 1.28                     | 0.79              |
| 2:AB:207:ASN:HD21  | 2:AB:210:ALA:H     | 1.27                     | 0.79              |
| 34:BM:68:GLU:HG3   | 34:BM:78:ARG:HD2   | 1.64                     | 0.79              |
| 45:BX:94:ILE:HG22  | 45:BX:125:LYS:HE3  | 1.64                     | 0.79              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 37:BP:149:LEU:HG   | 37:BP:153:ARG:HH11 | 1.48                     | 0.79              |
| 22:BA:1801:A:H5'   | 26:BE:204:ALA:HB2  | 1.64                     | 0.78              |
| 1:AA:214:A:H4'     | 1:AA:215:U:H5'     | 1.64                     | 0.78              |
| 36:BO:89:SER:H     | 36:BO:90:PRO:HD3   | 1.46                     | 0.78              |
| 15:AO:53:LEU:HD22  | 22:BA:726:G:C2     | 2.18                     | 0.78              |
| 26:BE:74:ILE:HG12  | 26:BE:90:ILE:HG22  | 1.66                     | 0.78              |
| 22:BA:51:A:H62     | 22:BA:117:A:N6     | 1.80                     | 0.78              |
| 46:BY:78:CYS:H     | 46:BY:86:ASN:HD21  | 1.31                     | 0.78              |
| 26:BE:79:TYR:HE1   | 26:BE:84:ASN:HA    | 1.48                     | 0.78              |
| 1:AA:396:G:H4'     | 4:AD:32:LEU:HD23   | 1.64                     | 0.78              |
| 35:BN:186:ILE:HD13 | 35:BN:186:ILE:H    | 1.49                     | 0.78              |
| 22:BA:226:A:H2'    | 22:BA:227:G:H4'    | 1.65                     | 0.78              |
| 27:BF:204:MET:HB3  | 27:BF:205:PRO:HD2  | 1.63                     | 0.78              |
| 31:BJ:53:ILE:HD13  | 31:BJ:96:LEU:HD12  | 1.65                     | 0.78              |
| 32:BK:72:LYS:HA    | 32:BK:72:LYS:HE3   | 1.65                     | 0.78              |
| 22:BA:2073:A:H4'   | 28:BG:120:LYS:HG3  | 1.66                     | 0.78              |
| 45:BX:71:ARG:HB2   | 45:BX:71:ARG:NH1   | 1.99                     | 0.78              |
| 22:BA:1158:U:H3    | 22:BA:2039:C:H5''  | 1.47                     | 0.78              |
| 28:BG:200:ASP:HB2  | 28:BG:201:PRO:HD3  | 1.65                     | 0.78              |
| 6:AF:114:LYS:HE3   | 26:BE:163:LYS:CE   | 2.13                     | 0.78              |
| 28:BG:234:LEU:HD21 | 28:BG:239:VAL:HB   | 1.64                     | 0.78              |
| 22:BA:386:A:H1'    | 22:BA:414:A:H62    | 1.48                     | 0.78              |
| 38:BQ:45:ARG:HH11  | 38:BQ:45:ARG:H     | 1.31                     | 0.78              |
| 1:AA:633:G:H2'     | 1:AA:634:G:C8      | 2.19                     | 0.78              |
| 26:BE:138:HIS:HB2  | 26:BE:189:GLY:H    | 1.48                     | 0.78              |
| 31:BJ:73:GLY:HA2   | 31:BJ:76:ARG:HH12  | 1.49                     | 0.78              |
| 39:BR:174:ASN:HA   | 39:BR:184:ARG:HB3  | 1.67                     | 0.77              |
| 22:BA:985:A:H61    | 22:BA:2475:G:H4'   | 1.49                     | 0.77              |
| 15:AO:44:LYS:CE    | 26:BE:7:LYS:NZ     | 2.46                     | 0.77              |
| 39:BR:187:ILE:HA   | 39:BR:195:VAL:HG12 | 1.66                     | 0.77              |
| 41:BT:219:ILE:HG22 | 41:BT:220:LYS:H    | 1.48                     | 0.77              |
| 22:BA:845:C:H5'    | 52:B5:140:ARG:HH11 | 1.48                     | 0.77              |
| 19:AS:61:TYR:HH    | 48:B1:91:PHE:HE1   | 1.31                     | 0.77              |
| 22:BA:2502:G:H5''  | 36:BO:46:GLN:HE21  | 1.48                     | 0.77              |
| 1:AA:93:A:H1'      | 1:AA:298:A:H1'     | 1.66                     | 0.77              |
| 50:B3:25:LYS:HD3   | 50:B3:26:GLY:H     | 1.49                     | 0.77              |
| 15:AO:57:LEU:HD12  | 22:BA:726:G:H1'    | 1.64                     | 0.77              |
| 52:B5:112:ARG:HE   | 52:B5:137:GLN:NE2  | 1.83                     | 0.77              |
| 22:BA:2041:G:H1    | 22:BA:2050:C:H42   | 1.30                     | 0.77              |
| 1:AA:756:A:H1'     | 26:BE:5:LEU:CA     | 2.14                     | 0.77              |
| 15:AO:53:LEU:HD11  | 22:BA:726:G:N2     | 2.00                     | 0.77              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:1535:A:H61   | 26:BE:91:HIS:HA    | 1.49                     | 0.77              |
| 29:BH:50:VAL:HG22  | 29:BH:105:THR:HB   | 1.64                     | 0.77              |
| 6:AF:118:LYS:NZ    | 26:BE:133:LEU:O    | 2.17                     | 0.77              |
| 1:AA:712:C:H4'     | 15:AO:51:ARG:HH22  | 1.49                     | 0.77              |
| 22:BA:798:C:H5''   | 22:BA:799:A:H5'    | 1.65                     | 0.77              |
| 22:BA:2040:U:H3    | 22:BA:2051:G:H1    | 1.33                     | 0.77              |
| 1:AA:1334:G:H2'    | 1:AA:1335:G:H8     | 1.49                     | 0.77              |
| 22:BA:1710:G:H1    | 22:BA:2003:A:H61   | 1.33                     | 0.77              |
| 39:BR:183:ILE:HG12 | 39:BR:184:ARG:HG2  | 1.66                     | 0.77              |
| 32:BK:111:LYS:HE3  | 32:BK:111:LYS:HA   | 1.65                     | 0.77              |
| 31:BJ:130:LYS:HD2  | 31:BJ:197:ASN:HB3  | 1.67                     | 0.77              |
| 22:BA:1814:G:H21   | 26:BE:48:ARG:HD2   | 1.50                     | 0.77              |
| 22:BA:1320:G:H4'   | 22:BA:1322:A:N3    | 1.99                     | 0.76              |
| 22:BA:624:A:O2'    | 22:BA:626:C:H5'    | 1.85                     | 0.76              |
| 1:AA:229:A:H5'     | 20:AT:174:ARG:HH22 | 1.49                     | 0.76              |
| 48:B1:63:VAL:HG13  | 48:B1:64:TYR:HD1   | 1.49                     | 0.76              |
| 51:B4:128:LYS:HA   | 51:B4:128:LYS:HE3  | 1.68                     | 0.76              |
| 22:BA:1702:G:H22   | 22:BA:2008:C:H42   | 1.32                     | 0.76              |
| 13:AM:48:ARG:HH22  | 29:BH:160:ILE:CB   | 1.98                     | 0.76              |
| 1:AA:1424:G:H5'    | 22:BA:1725:A:C5'   | 2.15                     | 0.76              |
| 22:BA:55:G:H1      | 22:BA:112:C:H42    | 1.31                     | 0.76              |
| 38:BQ:131:ILE:HD13 | 38:BQ:132:THR:N    | 2.01                     | 0.76              |
| 39:BR:172:ARG:HH22 | 39:BR:219:LEU:HG   | 1.49                     | 0.76              |
| 1:AA:1312:A:H4'    | 1:AA:1313:U:O5'    | 1.83                     | 0.76              |
| 22:BA:200:G:H4'    | 22:BA:201:A:H4'    | 1.66                     | 0.76              |
| 38:BQ:64:GLU:HB2   | 38:BQ:84:ASP:HB3   | 1.68                     | 0.76              |
| 45:BX:80:VAL:HG22  | 45:BX:81:LYS:H     | 1.50                     | 0.76              |
| 40:BS:102:ILE:HG13 | 40:BS:103:LEU:H    | 1.51                     | 0.76              |
| 51:B4:105:ARG:N    | 51:B4:105:ARG:HE   | 1.84                     | 0.76              |
| 46:BY:79:PRO:HA    | 46:BY:89:ASN:HA    | 1.68                     | 0.76              |
| 22:BA:591:C:H5''   | 40:BS:14:ARG:HH22  | 1.51                     | 0.76              |
| 1:AA:756:A:C6      | 26:BE:5:LEU:HD21   | 2.06                     | 0.76              |
| 34:BM:78:ARG:HG3   | 39:BR:195:VAL:HG23 | 1.67                     | 0.76              |
| 35:BN:79:LYS:HZ3   | 35:BN:79:LYS:HA    | 1.48                     | 0.76              |
| 22:BA:2320:G:H1    | 22:BA:2330:U:H3    | 1.32                     | 0.75              |
| 39:BR:146:GLY:HA2  | 39:BR:172:ARG:HH21 | 1.50                     | 0.75              |
| 22:BA:1450:G:H1    | 26:BE:25:ARG:HA    | 1.51                     | 0.75              |
| 1:AA:400:U:H5'     | 1:AA:401:G:OP1     | 1.85                     | 0.75              |
| 31:BJ:71:LYS:HA    | 31:BJ:71:LYS:HE3   | 1.68                     | 0.75              |
| 22:BA:224:G:H22    | 22:BA:243:U:H3     | 1.34                     | 0.75              |
| 1:AA:721:G:H5'     | 26:BE:198:GLN:CG   | 2.15                     | 0.75              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 28:BG:204:LYS:HB3  | 28:BG:206:LEU:HD13 | 1.69                     | 0.75              |
| 1:AA:1130:G:H5''   | 1:AA:1131:U:OP1    | 1.87                     | 0.75              |
| 34:BM:40:VAL:HG22  | 34:BM:59:ARG:HG2   | 1.68                     | 0.75              |
| 22:BA:425:C:H42    | 22:BA:2427:G:H1    | 1.33                     | 0.75              |
| 34:BM:35:ILE:HD12  | 34:BM:105:GLU:HB2  | 1.67                     | 0.75              |
| 36:BO:15:GLY:HA3   | 36:BO:72:LYS:HE3   | 1.69                     | 0.75              |
| 1:AA:464:U:H2'     | 1:AA:465:G:O4'     | 1.86                     | 0.75              |
| 22:BA:1003:A:H62   | 22:BA:1016:G:H21   | 1.33                     | 0.75              |
| 1:AA:756:A:C4      | 26:BE:5:LEU:HA     | 2.21                     | 0.75              |
| 38:BQ:56:ARG:H     | 38:BQ:56:ARG:HE    | 1.33                     | 0.75              |
| 46:BY:83:LYS:HG2   | 46:BY:84:LYS:H     | 1.50                     | 0.75              |
| 30:BI:53:VAL:HA    | 30:BI:54:PRO:C     | 2.07                     | 0.75              |
| 1:AA:721:G:C2      | 26:BE:5:LEU:CD1    | 2.70                     | 0.75              |
| 1:AA:712:C:H3'     | 1:AA:713:G:H21     | 1.52                     | 0.75              |
| 1:AA:635:A:H4'     | 1:AA:636:G:O5'     | 1.86                     | 0.75              |
| 43:BV:167:ARG:HH21 | 43:BV:173:LYS:NZ   | 1.85                     | 0.75              |
| 39:BR:152:ARG:HB3  | 39:BR:167:GLY:HA3  | 1.69                     | 0.75              |
| 1:AA:943:A:H2'     | 14:AN:8:GLN:HE22   | 1.52                     | 0.75              |
| 40:BS:15:LYS:HB2   | 40:BS:18:ARG:HH21  | 1.52                     | 0.74              |
| 29:BH:121:LEU:HD22 | 29:BH:154:PRO:HG2  | 1.69                     | 0.74              |
| 1:AA:606:A:H61     | 1:AA:696:C:H42     | 1.34                     | 0.74              |
| 22:BA:1167:C:H4'   | 22:BA:1170:A:H61   | 1.52                     | 0.74              |
| 22:BA:1321:A:H5'   | 22:BA:1322:A:N3    | 2.02                     | 0.74              |
| 29:BH:153:PHE:HB2  | 29:BH:156:ILE:HG12 | 1.68                     | 0.74              |
| 29:BH:157:LYS:H    | 29:BH:157:LYS:HD3  | 1.50                     | 0.74              |
| 22:BA:1074:A:H5'   | 22:BA:1075:G:H5''  | 1.69                     | 0.74              |
| 1:AA:920:G:H5''    | 1:AA:921:C:H5'     | 1.69                     | 0.74              |
| 22:BA:85:U:H4'     | 22:BA:102:U:H1'    | 1.68                     | 0.74              |
| 1:AA:209:G:H3'     | 1:AA:210:U:H5''    | 1.69                     | 0.74              |
| 22:BA:1286:A:H5''  | 22:BA:1287:G:OP1   | 1.87                     | 0.74              |
| 35:BN:146:VAL:HA   | 35:BN:173:ILE:HG22 | 1.68                     | 0.74              |
| 22:BA:1080:C:H42   | 22:BA:1135:A:H61   | 1.34                     | 0.74              |
| 22:BA:1459:U:H3    | 22:BA:1587:A:H62   | 1.32                     | 0.74              |
| 22:BA:164:A:H61    | 51:B4:117:ARG:HB3  | 1.53                     | 0.74              |
| 26:BE:137:ILE:HD11 | 26:BE:186:ALA:HB3  | 1.68                     | 0.74              |
| 22:BA:1456:G:H22   | 22:BA:1592:A:H61   | 1.35                     | 0.74              |
| 22:BA:1362:G:H5'   | 43:BV:165:LEU:HB3  | 1.68                     | 0.74              |
| 22:BA:1493:C:H2'   | 22:BA:1494:G:H5'   | 1.70                     | 0.74              |
| 1:AA:729:A:H2'     | 1:AA:730:A:H5'     | 1.70                     | 0.74              |
| 37:BP:129:ARG:HE   | 37:BP:129:ARG:HA   | 1.52                     | 0.74              |
| 45:BX:78:LEU:H     | 45:BX:91:GLY:H     | 1.33                     | 0.74              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 39:BR:160:ARG:HD3  | 39:BR:160:ARG:O    | 1.86                     | 0.74              |
| 36:BO:2:LEU:HB2    | 36:BO:47:ILE:HG21  | 1.69                     | 0.74              |
| 22:BA:1219:U:H4'   | 40:BS:9:ILE:HD11   | 1.69                     | 0.74              |
| 22:BA:727:A:H2'    | 22:BA:728:A:H5''   | 1.69                     | 0.74              |
| 1:AA:1270:C:H5''   | 1:AA:1271:G:OP1    | 1.88                     | 0.74              |
| 22:BA:1475:U:H1'   | 37:BP:149:LEU:HD13 | 1.70                     | 0.74              |
| 43:BV:165:LEU:HD11 | 43:BV:173:LYS:HB2  | 1.69                     | 0.74              |
| 31:BJ:120:VAL:HG13 | 31:BJ:121:PHE:HD1  | 1.50                     | 0.74              |
| 26:BE:137:ILE:HG23 | 26:BE:138:HIS:H    | 1.52                     | 0.73              |
| 26:BE:90:ILE:HD11  | 26:BE:98:ARG:HB2   | 1.70                     | 0.73              |
| 1:AA:702:C:H2'     | 1:AA:702:C:O2      | 1.88                     | 0.73              |
| 15:AO:44:LYS:CD    | 26:BE:7:LYS:NZ     | 2.51                     | 0.73              |
| 42:BU:71:ARG:HB3   | 42:BU:71:ARG:HH11  | 1.51                     | 0.73              |
| 22:BA:1710:G:H1    | 22:BA:2003:A:N6    | 1.85                     | 0.73              |
| 22:BA:554:G:H2'    | 22:BA:555:A:H5''   | 1.69                     | 0.73              |
| 15:AO:44:LYS:HE2   | 26:BE:7:LYS:CE     | 2.18                     | 0.73              |
| 22:BA:1809:G:N7    | 26:BE:175:GLY:HA3  | 2.03                     | 0.73              |
| 26:BE:57:LEU:HD23  | 26:BE:58:TYR:N     | 2.04                     | 0.73              |
| 1:AA:1093:A:H5'    | 1:AA:1094:A:OP1    | 1.88                     | 0.73              |
| 26:BE:157:VAL:HA   | 26:BE:190:GLN:HG3  | 1.70                     | 0.73              |
| 38:BQ:80:GLN:HE21  | 38:BQ:82:ILE:HB    | 1.52                     | 0.73              |
| 19:AS:45:ILE:CG1   | 48:B1:95:ASN:OD1   | 2.36                     | 0.73              |
| 22:BA:530:U:H5'    | 42:BU:47:ARG:HH22  | 1.53                     | 0.73              |
| 26:BE:158:ALA:H    | 26:BE:190:GLN:HE21 | 1.35                     | 0.73              |
| 22:BA:715:G:H1'    | 22:BA:738:A:H61    | 1.54                     | 0.73              |
| 1:AA:440:G:H2'     | 1:AA:441:G:H5''    | 1.69                     | 0.73              |
| 1:AA:441:G:H2'     | 1:AA:442:G:O4'     | 1.88                     | 0.73              |
| 52:B5:125:ASN:HB3  | 52:B5:128:ARG:HB3  | 1.70                     | 0.73              |
| 22:BA:1394:A:H4'   | 22:BA:2228:C:H42   | 1.53                     | 0.73              |
| 1:AA:70:G:H21      | 1:AA:84:C:H41      | 1.34                     | 0.73              |
| 6:AF:118:LYS:CE    | 26:BE:162:ALA:N    | 2.51                     | 0.73              |
| 22:BA:1410:G:H1    | 22:BA:1419:C:H42   | 1.36                     | 0.73              |
| 40:BS:35:ILE:HD13  | 40:BS:35:ILE:O     | 1.89                     | 0.73              |
| 51:B4:137:ILE:HG12 | 51:B4:139:CYS:H    | 1.53                     | 0.73              |
| 1:AA:180:A:C6      | 1:AA:192:C:H4'     | 2.22                     | 0.73              |
| 1:AA:67:A:H4'      | 1:AA:157:U:C4      | 2.24                     | 0.73              |
| 15:AO:44:LYS:HE2   | 26:BE:7:LYS:HE2    | 1.70                     | 0.73              |
| 15:AO:44:LYS:HE3   | 26:BE:7:LYS:NZ     | 2.02                     | 0.73              |
| 42:BU:39:ILE:HG21  | 42:BU:41:MET:HE2   | 1.71                     | 0.73              |
| 22:BA:577:G:N2     | 22:BA:2044:A:H61   | 1.86                     | 0.73              |
| 28:BG:164:ALA:HB1  | 28:BG:239:VAL:HG21 | 1.71                     | 0.73              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:1592:A:H5''  | 22:BA:1593:U:H5''  | 1.70                     | 0.73              |
| 36:BO:30:GLY:HA2   | 36:BO:107:SER:HB2  | 1.69                     | 0.73              |
| 22:BA:1088:U:H4'   | 22:BA:1090:U:H5'   | 1.69                     | 0.73              |
| 1:AA:906:U:H1'     | 1:AA:909:U:H5      | 1.52                     | 0.73              |
| 1:AA:1381:G:OP1    | 39:BR:230:SER:HB2  | 1.89                     | 0.72              |
| 22:BA:1047:U:H2'   | 22:BA:1048:C:H5'   | 1.71                     | 0.72              |
| 15:AO:53:LEU:CD2   | 22:BA:726:G:N3     | 2.52                     | 0.72              |
| 1:AA:1422:A:H1'    | 22:BA:1738:G:O2'   | 1.88                     | 0.72              |
| 41:BT:196:ILE:HA   | 41:BT:211:GLY:HA2  | 1.70                     | 0.72              |
| 38:BQ:99:SER:HA    | 38:BQ:103:GLU:HB3  | 1.71                     | 0.72              |
| 19:AS:45:ILE:HD11  | 48:B1:95:ASN:OD1   | 1.87                     | 0.72              |
| 34:BM:104:ARG:HH12 | 34:BM:107:ARG:NH1  | 1.88                     | 0.72              |
| 22:BA:1877:C:H2'   | 22:BA:1878:C:O4'   | 1.88                     | 0.72              |
| 1:AA:1424:G:P      | 22:BA:1725:A:O4'   | 2.47                     | 0.72              |
| 1:AA:1276:C:H4'    | 13:AM:74:ARG:NH1   | 2.04                     | 0.72              |
| 27:BF:203:LYS:NZ   | 27:BF:203:LYS:HA   | 2.04                     | 0.72              |
| 52:B5:124:LYS:HD3  | 52:B5:124:LYS:H    | 1.54                     | 0.72              |
| 1:AA:543:A:H5''    | 1:AA:544:A:OP1     | 1.89                     | 0.72              |
| 1:AA:228:G:H1      | 1:AA:240:U:H3      | 1.38                     | 0.72              |
| 31:BJ:68:LEU:HD23  | 31:BJ:69:ASP:N     | 2.02                     | 0.72              |
| 1:AA:1080:A:H61    | 1:AA:1091:G:H21    | 1.37                     | 0.72              |
| 22:BA:894:G:H21    | 22:BA:901:C:H41    | 1.36                     | 0.72              |
| 22:BA:1789:U:H5''  | 22:BA:1790:A:H5''  | 1.72                     | 0.72              |
| 1:AA:222:G:H4'     | 1:AA:223:U:H5'     | 1.71                     | 0.72              |
| 22:BA:2138:G:H2'   | 22:BA:2139:A:H5'   | 1.70                     | 0.72              |
| 1:AA:50:U:H4'      | 12:AL:25:ARG:HH11  | 1.54                     | 0.72              |
| 32:BK:184:LEU:H    | 32:BK:185:PRO:HD2  | 1.54                     | 0.72              |
| 26:BE:50:ARG:HD3   | 26:BE:215:VAL:HA   | 1.72                     | 0.72              |
| 44:BW:69:VAL:HB    | 44:BW:70:LYS:HD2   | 1.70                     | 0.72              |
| 22:BA:1449:C:H2'   | 22:BA:1450:G:H5'   | 1.71                     | 0.72              |
| 34:BM:63:VAL:HA    | 34:BM:106:LEU:HD11 | 1.72                     | 0.72              |
| 22:BA:1109:U:H4'   | 32:BK:194:SER:HB3  | 1.71                     | 0.72              |
| 1:AA:1076:G:H21    | 1:AA:1096:C:H42    | 1.38                     | 0.72              |
| 49:B2:29:LEU:H     | 49:B2:29:LEU:HD23  | 1.55                     | 0.72              |
| 28:BG:177:GLU:H    | 28:BG:248:THR:HA   | 1.55                     | 0.71              |
| 22:BA:1456:G:H1    | 22:BA:1592:A:H61   | 1.37                     | 0.71              |
| 1:AA:7:G:H4'       | 1:AA:269:A:H4'     | 1.72                     | 0.71              |
| 36:BO:68:ILE:H     | 36:BO:68:ILE:HD13  | 1.55                     | 0.71              |
| 22:BA:1535:A:H3'   | 22:BA:1536:A:H5'   | 1.71                     | 0.71              |
| 23:BB:21:G:H1      | 23:BB:62:C:H42     | 1.37                     | 0.71              |
| 22:BA:2120:U:H3    | 22:BA:2197:A:H61   | 1.36                     | 0.71              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:1309:G:H2'    | 1:AA:1310:C:H5''   | 1.71                     | 0.71              |
| 13:AM:108:ARG:CZ   | 29:BH:150:GLN:OE1  | 2.28                     | 0.71              |
| 1:AA:634:G:H1'     | 11:AK:53:TRP:NE1   | 2.05                     | 0.71              |
| 22:BA:839:G:H1     | 22:BA:2264:U:H4'   | 1.55                     | 0.71              |
| 22:BA:584:A:C6     | 22:BA:2047:A:H4'   | 2.26                     | 0.71              |
| 22:BA:1686:A:H4'   | 37:BP:192:ARG:HH22 | 1.55                     | 0.71              |
| 1:AA:923:A:H4'     | 1:AA:924:A:H5'     | 1.70                     | 0.71              |
| 1:AA:99:G:H5''     | 1:AA:100:A:OP1     | 1.89                     | 0.71              |
| 6:AF:118:LYS:HE3   | 26:BE:162:ALA:N    | 2.04                     | 0.71              |
| 13:AM:48:ARG:NH2   | 29:BH:160:ILE:HB   | 2.04                     | 0.71              |
| 1:AA:957:C:H3'     | 1:AA:958:U:H5''    | 1.72                     | 0.71              |
| 1:AA:1184:A:H4'    | 1:AA:1252:G:H4'    | 1.73                     | 0.71              |
| 1:AA:756:A:N9      | 26:BE:5:LEU:HA     | 2.05                     | 0.71              |
| 36:BO:89:SER:N     | 36:BO:90:PRO:HD3   | 2.04                     | 0.71              |
| 1:AA:209:G:C3'     | 1:AA:210:U:H5''    | 2.21                     | 0.71              |
| 1:AA:909:U:O2      | 1:AA:909:U:H2'     | 1.90                     | 0.71              |
| 36:BO:63:LYS:HZ1   | 36:BO:63:LYS:HA    | 1.55                     | 0.71              |
| 1:AA:720:A:C6      | 26:BE:5:LEU:HD21   | 2.09                     | 0.71              |
| 22:BA:2045:A:N6    | 22:BA:2515:C:H1'   | 2.06                     | 0.71              |
| 45:BX:68:LYS:HG3   | 45:BX:69:ASN:H     | 1.55                     | 0.71              |
| 31:BJ:139:ILE:HG13 | 31:BJ:171:ARG:HH21 | 1.54                     | 0.71              |
| 22:BA:117:A:H5'    | 22:BA:118:U:OP1    | 1.91                     | 0.71              |
| 1:AA:1016:A:H4'    | 1:AA:1017:G:O5'    | 1.90                     | 0.71              |
| 22:BA:693:G:H5'    | 51:B4:122:SER:HB2  | 1.73                     | 0.71              |
| 22:BA:652:C:H42    | 22:BA:660:G:H1     | 1.36                     | 0.71              |
| 1:AA:1106:C:O2     | 1:AA:1106:C:H2'    | 1.90                     | 0.71              |
| 1:AA:327:A:O2'     | 1:AA:339:U:H4'     | 1.91                     | 0.71              |
| 36:BO:39:PRO:HG3   | 36:BO:98:LYS:HA    | 1.71                     | 0.71              |
| 28:BG:72:LEU:HD23  | 28:BG:73:LYS:H     | 1.55                     | 0.71              |
| 5:AE:225:HIS:HE1   | 5:AE:290:ARG:H     | 1.39                     | 0.71              |
| 36:BO:1:MET:HA     | 36:BO:68:ILE:HG13  | 1.72                     | 0.70              |
| 1:AA:1447:U:H5''   | 1:AA:1448:A:OP1    | 1.90                     | 0.70              |
| 38:BQ:45:ARG:N     | 38:BQ:45:ARG:HH11  | 1.89                     | 0.70              |
| 42:BU:52:GLN:HB2   | 49:B2:22:LYS:HB3   | 1.74                     | 0.70              |
| 27:BF:175:GLN:HB2  | 27:BF:179:GLY:HA3  | 1.71                     | 0.70              |
| 30:BI:48:LYS:HA    | 30:BI:112:ARG:HD3  | 1.73                     | 0.70              |
| 27:BF:104:THR:H    | 27:BF:106:PRO:HD2  | 1.56                     | 0.70              |
| 27:BF:203:LYS:HZ1  | 27:BF:203:LYS:HA   | 1.57                     | 0.70              |
| 22:BA:1139:A:O2'   | 22:BA:1140:G:H4'   | 1.91                     | 0.70              |
| 28:BG:144:LYS:HB3  | 28:BG:145:PRO:HD2  | 1.72                     | 0.70              |
| 1:AA:647:C:C2'     | 1:AA:648:G:H5''    | 2.22                     | 0.70              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 40:BS:15:LYS:HD3   | 40:BS:16:LYS:N     | 2.06                     | 0.70              |
| 34:BM:16:ALA:HB1   | 34:BM:43:ILE:HD13  | 1.73                     | 0.70              |
| 47:BZ:73:LYS:HA    | 47:BZ:73:LYS:NZ    | 2.06                     | 0.70              |
| 22:BA:560:A:N6     | 41:BT:140:ARG:HH21 | 1.90                     | 0.70              |
| 43:BV:148:ARG:HB2  | 43:BV:162:VAL:HG21 | 1.74                     | 0.70              |
| 39:BR:185:ARG:HG2  | 39:BR:187:ILE:HG23 | 1.74                     | 0.70              |
| 1:AA:778:G:N2      | 1:AA:805:U:H1'     | 2.03                     | 0.70              |
| 22:BA:1331:G:H2'   | 22:BA:1332:G:H5'   | 1.72                     | 0.70              |
| 22:BA:84:G:H5'     | 44:BW:94:LYS:HB3   | 1.72                     | 0.70              |
| 22:BA:1235:A:H61   | 22:BA:1255:U:H3    | 1.38                     | 0.70              |
| 28:BG:217:GLU:HG3  | 28:BG:220:GLY:H    | 1.55                     | 0.70              |
| 36:BO:48:GLU:HA    | 36:BO:51:ARG:HH12  | 1.54                     | 0.70              |
| 22:BA:1201:A:H2'   | 22:BA:1202:A:H4'   | 1.73                     | 0.70              |
| 22:BA:1289:A:H62   | 22:BA:2026:G:H21   | 1.38                     | 0.70              |
| 22:BA:2234:G:H5''  | 46:BY:119:TYR:HB3  | 1.73                     | 0.70              |
| 35:BN:108:GLY:H    | 35:BN:109:PRO:CD   | 2.04                     | 0.70              |
| 22:BA:97:A:H2'     | 22:BA:98:G:H5'     | 1.72                     | 0.70              |
| 22:BA:763:A:N1     | 22:BA:1791:C:H1'   | 2.07                     | 0.70              |
| 1:AA:1040:U:H3'    | 7:AG:4:ARG:HH21    | 1.56                     | 0.70              |
| 37:BP:91:ARG:HA    | 37:BP:91:ARG:CZ    | 2.22                     | 0.70              |
| 22:BA:473:C:H42    | 22:BA:480:G:H1     | 1.39                     | 0.70              |
| 22:BA:200:G:H4'    | 22:BA:201:A:C4'    | 2.22                     | 0.70              |
| 1:AA:92:G:H5'      | 1:AA:93:A:H2       | 1.56                     | 0.70              |
| 49:B2:29:LEU:HG    | 49:B2:30:LYS:H     | 1.57                     | 0.70              |
| 1:AA:788:U:H3'     | 1:AA:789:A:C5'     | 2.22                     | 0.70              |
| 1:AA:775:U:H3      | 1:AA:821:A:H61     | 1.40                     | 0.70              |
| 22:BA:625:C:H5'    | 22:BA:626:C:OP1    | 1.92                     | 0.70              |
| 22:BA:1096:G:H21   | 22:BA:1124:A:H5'   | 1.55                     | 0.70              |
| 41:BT:172:ILE:H    | 41:BT:172:ILE:HD13 | 1.57                     | 0.70              |
| 18:AR:81:GLU:HB3   | 21:AU:100:VAL:HG13 | 1.72                     | 0.70              |
| 26:BE:150:LEU:HD23 | 26:BE:150:LEU:H    | 1.57                     | 0.70              |
| 26:BE:137:ILE:HG23 | 26:BE:138:HIS:N    | 2.07                     | 0.70              |
| 49:B2:36:LYS:N     | 49:B2:36:LYS:HE2   | 2.06                     | 0.70              |
| 49:B2:36:LYS:HE2   | 49:B2:37:SER:H     | 1.56                     | 0.70              |
| 42:BU:91:LYS:HG3   | 42:BU:92:GLN:H     | 1.57                     | 0.70              |
| 40:BS:50:ARG:NH1   | 41:BT:197:VAL:HB   | 2.06                     | 0.70              |
| 1:AA:1341:G:H21    | 1:AA:1451:A:H1'    | 1.54                     | 0.70              |
| 1:AA:351:G:H2'     | 1:AA:353:A:OP2     | 1.92                     | 0.70              |
| 22:BA:1233:G:H2'   | 22:BA:1257:G:H1    | 1.56                     | 0.70              |
| 1:AA:245:A:H4'     | 1:AA:246:G:O5'     | 1.90                     | 0.70              |
| 35:BN:125:ARG:HA   | 35:BN:125:ARG:HH11 | 1.57                     | 0.70              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 36:BO:63:LYS:HA    | 36:BO:63:LYS:NZ    | 2.05                     | 0.70              |
| 22:BA:1235:A:N6    | 22:BA:1255:U:H3    | 1.89                     | 0.70              |
| 22:BA:2636:G:H4'   | 27:BF:200:LYS:HB3  | 1.72                     | 0.70              |
| 22:BA:1156:G:H5''  | 22:BA:1157:A:OP1   | 1.92                     | 0.70              |
| 23:BB:6:G:H4'      | 23:BB:28:C:H4'     | 1.74                     | 0.70              |
| 22:BA:1353:A:H62   | 22:BA:1645:A:H61   | 1.40                     | 0.70              |
| 24:BC:49:G:HO2'    | 24:BC:50:G:H5'     | 1.57                     | 0.69              |
| 1:AA:648:G:H2'     | 1:AA:649:U:H5''    | 1.74                     | 0.69              |
| 22:BA:1875:G:N2    | 22:BA:1891:A:H62   | 1.89                     | 0.69              |
| 22:BA:386:A:H4'    | 22:BA:435:A:C2     | 2.26                     | 0.69              |
| 22:BA:1787:U:H3    | 22:BA:1797:A:H61   | 1.37                     | 0.69              |
| 1:AA:26:C:H41      | 1:AA:507:A:H61     | 1.39                     | 0.69              |
| 22:BA:26:G:H22     | 22:BA:523:G:H2'    | 1.56                     | 0.69              |
| 22:BA:1705:A:H2'   | 22:BA:1706:C:H5'   | 1.72                     | 0.69              |
| 42:BU:113:LYS:HB3  | 42:BU:125:ILE:HG21 | 1.74                     | 0.69              |
| 22:BA:2645:U:H3'   | 22:BA:2646:U:H5'   | 1.73                     | 0.69              |
| 15:AO:44:LYS:HE3   | 26:BE:7:LYS:HE3    | 0.70                     | 0.69              |
| 1:AA:701:A:H4'     | 1:AA:702:C:H5''    | 1.74                     | 0.69              |
| 22:BA:2192:U:H2'   | 25:BD:282:THR:HG21 | 1.73                     | 0.69              |
| 22:BA:616:U:H5''   | 28:BG:153:ASN:ND2  | 2.06                     | 0.69              |
| 26:BE:69:ASP:C     | 26:BE:70:ILE:HD12  | 2.13                     | 0.69              |
| 22:BA:1811:A:H3'   | 22:BA:1812:A:H5'   | 1.72                     | 0.69              |
| 22:BA:2536:A:H61   | 22:BA:2558:A:H2'   | 1.57                     | 0.69              |
| 1:AA:1002:G:O6     | 1:AA:1147:U:H2'    | 1.91                     | 0.69              |
| 22:BA:1827:G:H2'   | 22:BA:1828:U:O4'   | 1.92                     | 0.69              |
| 22:BA:625:C:HO2'   | 22:BA:626:C:H5     | 1.41                     | 0.69              |
| 28:BG:205:SER:HA   | 28:BG:225:THR:HB   | 1.73                     | 0.69              |
| 22:BA:1705:A:H2'   | 22:BA:1705:A:N3    | 2.06                     | 0.69              |
| 50:B3:13:LEU:HD23  | 50:B3:38:ASN:HD22  | 1.55                     | 0.69              |
| 22:BA:1364:G:H4'   | 22:BA:1633:A:H2'   | 1.73                     | 0.69              |
| 15:AO:50:GLN:HE22  | 22:BA:726:G:H1     | 0.70                     | 0.69              |
| 19:AS:25:LYS:O     | 48:B1:101:VAL:CG2  | 2.40                     | 0.69              |
| 34:BM:109:LYS:NZ   | 34:BM:109:LYS:HA   | 2.07                     | 0.69              |
| 26:BE:112:ILE:HA   | 26:BE:123:GLY:HA2  | 1.75                     | 0.69              |
| 38:BQ:62:THR:OG1   | 38:BQ:63:PRO:HD2   | 1.93                     | 0.69              |
| 30:BI:52:ALA:O     | 30:BI:53:VAL:HG12  | 1.92                     | 0.69              |
| 1:AA:506:G:H2'     | 1:AA:507:A:C2      | 2.28                     | 0.69              |
| 22:BA:314:G:H1     | 22:BA:322:C:H42    | 1.39                     | 0.69              |
| 22:BA:755:U:H5''   | 22:BA:1694:C:H5''  | 1.73                     | 0.69              |
| 24:BC:55:G:H1      | 24:BC:64:U:H3      | 1.38                     | 0.69              |
| 42:BU:140:THR:HG23 | 42:BU:141:HIS:H    | 1.56                     | 0.69              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:384:G:H4'     | 1:AA:385:A:H5''    | 1.75                     | 0.69              |
| 31:BJ:52:VAL:HG22  | 31:BJ:70:VAL:HG11  | 1.72                     | 0.69              |
| 22:BA:211:A:H2'    | 22:BA:212:A:O4'    | 1.93                     | 0.69              |
| 22:BA:1452:A:H61   | 22:BA:1595:C:N4    | 1.91                     | 0.69              |
| 16:AP:36:VAL:HG13  | 16:AP:37:GLY:H     | 1.57                     | 0.69              |
| 30:BI:201:LYS:HZ3  | 30:BI:203:LYS:HE2  | 1.58                     | 0.69              |
| 22:BA:740:G:H2'    | 22:BA:740:G:N3     | 2.05                     | 0.69              |
| 15:AO:44:LYS:HD2   | 26:BE:7:LYS:HZ1    | 1.58                     | 0.69              |
| 44:BW:70:LYS:HE2   | 44:BW:136:LEU:N    | 2.08                     | 0.69              |
| 1:AA:1468:A:C2'    | 1:AA:1469:G:H5'    | 2.23                     | 0.69              |
| 22:BA:1167:C:H4'   | 22:BA:1170:A:N6    | 2.07                     | 0.69              |
| 1:AA:700:G:H1'     | 1:AA:702:C:H41     | 1.56                     | 0.69              |
| 22:BA:1837:U:H2'   | 22:BA:1838:G:O4'   | 1.92                     | 0.68              |
| 1:AA:77:G:H2'      | 1:AA:78:U:C4'      | 2.23                     | 0.68              |
| 1:AA:862:A:H4'     | 1:AA:863:A:H4'     | 1.74                     | 0.68              |
| 15:AO:44:LYS:HD2   | 26:BE:7:LYS:HZ2    | 1.58                     | 0.68              |
| 26:BE:140:ILE:HG23 | 26:BE:149:GLN:HG3  | 1.74                     | 0.68              |
| 22:BA:750:A:H5'    | 22:BA:1794:A:N6    | 2.08                     | 0.68              |
| 22:BA:854:A:H61    | 22:BA:963:U:H3     | 1.38                     | 0.68              |
| 49:B2:36:LYS:CE    | 49:B2:36:LYS:H     | 2.04                     | 0.68              |
| 46:BY:79:PRO:HD2   | 46:BY:106:LEU:HB3  | 1.74                     | 0.68              |
| 35:BN:209:GLU:HB3  | 35:BN:218:LEU:HD22 | 1.74                     | 0.68              |
| 1:AA:806:U:C2'     | 1:AA:807:G:H5''    | 2.23                     | 0.68              |
| 22:BA:715:G:H1'    | 22:BA:738:A:N6     | 2.08                     | 0.68              |
| 1:AA:440:G:C2'     | 1:AA:441:G:H5''    | 2.24                     | 0.68              |
| 1:AA:9:A:O2'       | 1:AA:10:G:H5'      | 1.93                     | 0.68              |
| 33:BL:124:LEU:HD13 | 33:BL:125:GLY:N    | 2.09                     | 0.68              |
| 34:BM:76:ILE:HD13  | 34:BM:77:ILE:N     | 2.08                     | 0.68              |
| 28:BG:75:ALA:H     | 28:BG:76:PRO:CD    | 2.07                     | 0.68              |
| 22:BA:1340:G:H1    | 22:BA:1354:C:H42   | 1.41                     | 0.68              |
| 52:B5:150:LEU:HB2  | 52:B5:151:PRO:HD3  | 1.76                     | 0.68              |
| 1:AA:807:G:O6      | 1:AA:818:G:H3'     | 1.94                     | 0.68              |
| 1:AA:443:A:H5'     | 1:AA:444:A:OP1     | 1.94                     | 0.68              |
| 1:AA:1334:G:H2'    | 1:AA:1335:G:C8     | 2.29                     | 0.68              |
| 1:AA:699:U:H2'     | 1:AA:700:G:O4'     | 1.92                     | 0.68              |
| 22:BA:1766:G:H1'   | 22:BA:1768:G:N2    | 2.09                     | 0.68              |
| 33:BL:155:VAL:HG11 | 33:BL:158:ALA:HB2  | 1.74                     | 0.68              |
| 22:BA:407:C:H5'    | 46:BY:76:ARG:N     | 2.08                     | 0.68              |
| 22:BA:130:U:C2'    | 22:BA:131:C:H5'    | 2.23                     | 0.68              |
| 22:BA:83:A:C2      | 22:BA:84:G:H1'     | 2.29                     | 0.68              |
| 30:BI:130:LEU:HB2  | 30:BI:174:ILE:HB   | 1.74                     | 0.68              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 26:BE:133:LEU:HA   | 26:BE:162:ALA:HA   | 1.76                     | 0.68              |
| 1:AA:712:C:C4'     | 15:AO:51:ARG:HH22  | 2.06                     | 0.68              |
| 1:AA:1148:C:H5'    | 1:AA:1149:A:C5'    | 2.24                     | 0.68              |
| 41:BT:123:ILE:HD11 | 41:BT:164:VAL:HG13 | 1.76                     | 0.68              |
| 19:AS:45:ILE:HG13  | 48:B1:95:ASN:OD1   | 1.92                     | 0.68              |
| 1:AA:923:A:O2'     | 1:AA:925:G:H5''    | 1.93                     | 0.68              |
| 1:AA:382:C:C4      | 1:AA:384:G:H1'     | 2.29                     | 0.68              |
| 26:BE:121:LYS:HG3  | 26:BE:122:MET:H    | 1.58                     | 0.68              |
| 1:AA:1187:A:H1'    | 1:AA:1189:G:C4     | 2.29                     | 0.68              |
| 38:BQ:77:LEU:HD11  | 38:BQ:150:LEU:HD11 | 1.76                     | 0.68              |
| 36:BO:2:LEU:HG     | 36:BO:70:PRO:HB3   | 1.75                     | 0.68              |
| 33:BL:183:LEU:O    | 33:BL:183:LEU:HD23 | 1.94                     | 0.68              |
| 50:B3:25:LYS:HD3   | 50:B3:26:GLY:N     | 2.09                     | 0.68              |
| 37:BP:99:LEU:HD21  | 37:BP:129:ARG:NH2  | 2.08                     | 0.68              |
| 28:BG:254:TYR:HA   | 28:BG:257:GLN:HE21 | 1.58                     | 0.68              |
| 41:BT:143:TYR:HB2  | 41:BT:216:ILE:HB   | 1.76                     | 0.67              |
| 1:AA:862:A:H4'     | 1:AA:863:A:C4'     | 2.23                     | 0.67              |
| 44:BW:94:LYS:HG2   | 44:BW:95:HIS:H     | 1.58                     | 0.67              |
| 49:B2:42:ASN:ND2   | 49:B2:43:SER:H     | 1.91                     | 0.67              |
| 32:BK:147:SER:HA   | 32:BK:206:MET:HE1  | 1.76                     | 0.67              |
| 25:BD:141:LEU:HD21 | 25:BD:296:GLU:HB3  | 1.76                     | 0.67              |
| 2:AB:30:ARG:HH21   | 8:AH:20:ARG:NH1    | 1.90                     | 0.67              |
| 42:BU:35:ARG:HG3   | 42:BU:132:ILE:HG23 | 1.76                     | 0.67              |
| 22:BA:2631:A:C8    | 49:B2:1:MET:HB3    | 2.30                     | 0.67              |
| 1:AA:1270:C:H4'    | 1:AA:1271:G:C5'    | 2.23                     | 0.67              |
| 22:BA:1833:G:H5''  | 26:BE:48:ARG:HH21  | 1.58                     | 0.67              |
| 22:BA:580:G:H2'    | 22:BA:2044:A:N7    | 2.09                     | 0.67              |
| 1:AA:250:A:H5'     | 1:AA:252:G:C5'     | 2.25                     | 0.67              |
| 22:BA:625:C:H41    | 28:BG:216:VAL:HG11 | 1.58                     | 0.67              |
| 6:AF:118:LYS:HZ1   | 26:BE:162:ALA:N    | 1.93                     | 0.67              |
| 34:BM:78:ARG:HG2   | 39:BR:196:PHE:HB3  | 1.76                     | 0.67              |
| 46:BY:80:PHE:N     | 46:BY:89:ASN:HD22  | 1.90                     | 0.67              |
| 22:BA:2442:A:H4'   | 22:BA:2443:A:O5'   | 1.93                     | 0.67              |
| 1:AA:1381:G:H5'    | 39:BR:231:THR:CB   | 2.23                     | 0.67              |
| 39:BR:172:ARG:HB3  | 39:BR:172:ARG:NH1  | 2.09                     | 0.67              |
| 41:BT:152:VAL:HG23 | 41:BT:188:GLU:HA   | 1.76                     | 0.67              |
| 25:BD:310:VAL:HA   | 25:BD:313:ASN:HD22 | 1.60                     | 0.67              |
| 1:AA:1424:G:P      | 22:BA:1736:A:N6    | 2.67                     | 0.67              |
| 22:BA:345:C:H5''   | 44:BW:69:VAL:HG11  | 1.75                     | 0.67              |
| 27:BF:105:LYS:H    | 27:BF:105:LYS:CD   | 2.01                     | 0.67              |
| 26:BE:85:ALA:HB3   | 26:BE:152:ARG:HH21 | 1.60                     | 0.67              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:695:G:H2'    | 22:BA:696:A:H5''   | 1.76                     | 0.67              |
| 31:BJ:152:ILE:HG13 | 31:BJ:160:ILE:HD12 | 1.75                     | 0.67              |
| 22:BA:511:G:N2     | 22:BA:513:A:H3'    | 2.10                     | 0.67              |
| 1:AA:756:A:O4'     | 26:BE:5:LEU:C      | 2.33                     | 0.67              |
| 28:BG:236:LEU:O    | 28:BG:236:LEU:HD13 | 1.95                     | 0.67              |
| 1:AA:375:G:H4'     | 1:AA:410:U:N3      | 2.09                     | 0.67              |
| 45:BX:71:ARG:HH11  | 45:BX:71:ARG:HB2   | 1.58                     | 0.67              |
| 22:BA:1231:G:H5'   | 22:BA:1233:G:O4'   | 1.95                     | 0.67              |
| 22:BA:1284:U:H5''  | 49:B2:13:LYS:HD3   | 1.75                     | 0.67              |
| 35:BN:129:LEU:HD12 | 52:B5:118:GLN:HG2  | 1.76                     | 0.67              |
| 22:BA:1857:A:H2'   | 22:BA:1857:A:N3    | 2.09                     | 0.67              |
| 44:BW:157:LYS:HB2  | 44:BW:162:ILE:HA   | 1.77                     | 0.67              |
| 28:BG:209:LEU:HD23 | 28:BG:210:MET:N    | 2.10                     | 0.67              |
| 1:AA:921:C:H1'     | 10:AJ:152:VAL:HG13 | 1.76                     | 0.67              |
| 47:BZ:73:LYS:HA    | 47:BZ:73:LYS:HZ3   | 1.59                     | 0.67              |
| 22:BA:795:U:H5''   | 26:BE:222:ASN:HD21 | 1.58                     | 0.67              |
| 22:BA:2655:G:H21   | 22:BA:2796:A:H62   | 1.43                     | 0.67              |
| 22:BA:1734:A:O4'   | 22:BA:1736:A:H5''  | 1.95                     | 0.67              |
| 38:BQ:65:ARG:NE    | 38:BQ:65:ARG:H     | 1.92                     | 0.67              |
| 40:BS:15:LYS:HA    | 40:BS:18:ARG:HE    | 1.58                     | 0.67              |
| 28:BG:58:LEU:HD12  | 28:BG:176:GLU:HB2  | 1.77                     | 0.67              |
| 22:BA:1443:G:H22   | 22:BA:1611:G:H1'   | 1.60                     | 0.67              |
| 22:BA:2335:C:H5'   | 38:BQ:43:THR:HG21  | 1.76                     | 0.67              |
| 29:BH:117:ARG:HB3  | 29:BH:121:LEU:HD11 | 1.75                     | 0.67              |
| 22:BA:839:G:H22    | 22:BA:2264:U:H4'   | 1.58                     | 0.67              |
| 1:AA:1244:C:H4'    | 1:AA:1250:U:C4     | 2.29                     | 0.67              |
| 22:BA:2805:C:H4'   | 27:BF:108:MET:SD   | 2.35                     | 0.67              |
| 39:BR:183:ILE:HG23 | 39:BR:184:ARG:N    | 2.06                     | 0.66              |
| 46:BY:110:ARG:HD3  | 46:BY:121:LYS:HD2  | 1.77                     | 0.66              |
| 1:AA:1130:G:H4'    | 1:AA:1131:U:H5''   | 1.75                     | 0.66              |
| 39:BR:192:VAL:HG13 | 39:BR:193:GLU:N    | 2.08                     | 0.66              |
| 22:BA:1353:A:H62   | 22:BA:1645:A:N6    | 1.92                     | 0.66              |
| 22:BA:212:A:H61    | 22:BA:422:G:H21    | 1.43                     | 0.66              |
| 38:BQ:147:VAL:HG12 | 38:BQ:150:LEU:HD12 | 1.77                     | 0.66              |
| 44:BW:100:ILE:C    | 44:BW:101:ILE:HD13 | 2.16                     | 0.66              |
| 1:AA:1034:U:H5''   | 1:AA:1035:U:OP2    | 1.95                     | 0.66              |
| 22:BA:1403:A:N3    | 22:BA:1403:A:H2'   | 2.11                     | 0.66              |
| 53:B6:2:LYS:HG2    | 53:B6:4:ARG:HG3    | 1.77                     | 0.66              |
| 27:BF:150:LEU:HD22 | 27:BF:217:LYS:HE3  | 1.77                     | 0.66              |
| 1:AA:712:C:H3'     | 1:AA:713:G:N2      | 2.11                     | 0.66              |
| 53:B6:7:VAL:HB     | 53:B6:38:GLY:HA3   | 1.77                     | 0.66              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:1158:U:H4'   | 22:BA:2532:C:H4'   | 1.77                     | 0.66              |
| 32:BK:150:LEU:HD13 | 32:BK:203:ALA:HB2  | 1.76                     | 0.66              |
| 1:AA:756:A:C1'     | 26:BE:5:LEU:CA     | 2.72                     | 0.66              |
| 22:BA:575:C:N4     | 22:BA:585:A:H61    | 1.86                     | 0.66              |
| 34:BM:69:LEU:HD13  | 34:BM:70:LYS:N     | 2.11                     | 0.66              |
| 35:BN:130:ARG:NH2  | 52:B5:112:ARG:HG3  | 2.09                     | 0.66              |
| 35:BN:147:ASN:HD21 | 35:BN:172:VAL:N    | 1.93                     | 0.66              |
| 50:B3:6:ASP:OD1    | 50:B3:7:VAL:HG23   | 1.95                     | 0.66              |
| 26:BE:75:VAL:HG12  | 26:BE:76:THR:HG23  | 1.77                     | 0.66              |
| 22:BA:1320:G:O6    | 22:BA:1675:C:H5''  | 1.96                     | 0.66              |
| 52:B5:98:SER:HA    | 52:B5:101:ARG:NH1  | 2.08                     | 0.66              |
| 22:BA:1256:G:H2'   | 22:BA:1257:G:C8    | 2.31                     | 0.66              |
| 39:BR:228:ARG:HH21 | 39:BR:233:LYS:HE2  | 1.61                     | 0.66              |
| 22:BA:2077:C:H42   | 22:BA:2518:C:H1'   | 1.60                     | 0.66              |
| 22:BA:2135:G:H1    | 22:BA:2191:C:H42   | 1.43                     | 0.66              |
| 22:BA:647:C:O2'    | 22:BA:651:U:H5''   | 1.95                     | 0.66              |
| 22:BA:2560:G:N2    | 22:BA:2663:C:H5''  | 2.11                     | 0.66              |
| 22:BA:740:G:H1     | 26:BE:18:VAL:HG11  | 1.59                     | 0.66              |
| 45:BX:106:LYS:HG2  | 45:BX:107:ASN:H    | 1.60                     | 0.66              |
| 22:BA:310:A:H5''   | 44:BW:159:ARG:HE   | 1.60                     | 0.66              |
| 22:BA:1451:G:H21   | 26:BE:23:ASN:HB2   | 1.61                     | 0.66              |
| 22:BA:1816:C:H4'   | 26:BE:45:ILE:HG21  | 1.77                     | 0.66              |
| 1:AA:91:G:H2'      | 1:AA:92:G:H5''     | 1.77                     | 0.66              |
| 34:BM:107:ARG:HD3  | 39:BR:159:LYS:HG2  | 1.78                     | 0.66              |
| 22:BA:82:G:H21     | 22:BA:101:A:H62    | 1.43                     | 0.66              |
| 1:AA:511:A:H1'     | 1:AA:514:G:O2'     | 1.95                     | 0.66              |
| 29:BH:26:LYS:O     | 29:BH:30:LEU:HD23  | 1.96                     | 0.66              |
| 1:AA:1174:C:O2'    | 1:AA:1175:A:H5'    | 1.96                     | 0.66              |
| 6:AF:118:LYS:HZ2   | 26:BE:162:ALA:CA   | 2.08                     | 0.66              |
| 22:BA:1286:A:H4'   | 22:BA:1287:G:C4'   | 2.23                     | 0.66              |
| 25:BD:287:ILE:HD11 | 25:BD:306:THR:HG23 | 1.76                     | 0.66              |
| 22:BA:491:A:O2'    | 22:BA:492:A:H5'    | 1.96                     | 0.66              |
| 22:BA:2570:G:H3'   | 22:BA:2571:U:H5''  | 1.78                     | 0.66              |
| 22:BA:1814:G:H5'   | 26:BE:253:ARG:NH1  | 2.10                     | 0.66              |
| 22:BA:2119:U:H3    | 22:BA:2198:A:H61   | 1.43                     | 0.66              |
| 22:BA:522:U:H4'    | 22:BA:1256:G:O2'   | 1.95                     | 0.66              |
| 28:BG:146:ARG:CZ   | 28:BG:146:ARG:HA   | 2.26                     | 0.66              |
| 44:BW:104:LEU:HD13 | 44:BW:106:PHE:H    | 1.59                     | 0.66              |
| 43:BV:165:LEU:O    | 43:BV:172:LYS:HG3  | 1.95                     | 0.66              |
| 22:BA:1456:G:N2    | 22:BA:1592:A:H61   | 1.94                     | 0.66              |
| 1:AA:958:U:H3      | 1:AA:969:A:H61     | 1.44                     | 0.66              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:1006:G:H5''   | 3:AC:165:ALA:HB3   | 1.78                     | 0.66              |
| 50:B3:48:LEU:HD12  | 50:B3:48:LEU:O     | 1.96                     | 0.66              |
| 1:AA:1085:G:O2'    | 1:AA:1086:A:H5''   | 1.95                     | 0.66              |
| 45:BX:78:LEU:HB3   | 45:BX:90:PRO:HA    | 1.78                     | 0.65              |
| 35:BN:80:ARG:O     | 35:BN:80:ARG:HD2   | 1.96                     | 0.65              |
| 19:AS:45:ILE:CD1   | 48:B1:95:ASN:OD1   | 2.44                     | 0.65              |
| 49:B2:42:ASN:HD22  | 49:B2:43:SER:H     | 1.41                     | 0.65              |
| 42:BU:66:GLU:HG3   | 42:BU:67:LEU:HD22  | 1.77                     | 0.65              |
| 28:BG:176:GLU:HG3  | 28:BG:247:PHE:HB2  | 1.79                     | 0.65              |
| 22:BA:1585:C:H2'   | 22:BA:1586:G:H5''  | 1.78                     | 0.65              |
| 1:AA:361:C:H2'     | 1:AA:362:G:C8      | 2.31                     | 0.65              |
| 22:BA:298:G:H1     | 22:BA:361:C:H42    | 1.43                     | 0.65              |
| 30:BI:120:VAL:HG23 | 30:BI:124:LYS:HD3  | 1.78                     | 0.65              |
| 36:BO:23:ARG:HH21  | 36:BO:96:VAL:HG23  | 1.60                     | 0.65              |
| 39:BR:151:ILE:HG23 | 39:BR:153:LEU:HD21 | 1.78                     | 0.65              |
| 40:BS:60:LEU:O     | 40:BS:64:ARG:HG2   | 1.96                     | 0.65              |
| 1:AA:77:G:C2       | 1:AA:78:U:H1'      | 2.31                     | 0.65              |
| 22:BA:2344:A:N6    | 22:BA:2404:U:H3    | 1.95                     | 0.65              |
| 22:BA:1039:A:H4'   | 40:BS:77:ASN:HD21  | 1.61                     | 0.65              |
| 1:AA:1185:C:H3'    | 1:AA:1186:A:H5'    | 1.77                     | 0.65              |
| 25:BD:191:VAL:HG22 | 25:BD:229:ILE:HD11 | 1.78                     | 0.65              |
| 22:BA:1726:A:H62   | 22:BA:1733:G:H21   | 1.44                     | 0.65              |
| 1:AA:109:U:H3      | 1:AA:207:G:H1      | 1.43                     | 0.65              |
| 26:BE:196:VAL:HG23 | 26:BE:197:ASN:OD1  | 1.96                     | 0.65              |
| 1:AA:612:G:H22     | 1:AA:689:G:H1      | 1.44                     | 0.65              |
| 53:B6:1:MET:HG2    | 53:B6:34:LYS:HG2   | 1.79                     | 0.65              |
| 1:AA:717:G:H4'     | 1:AA:1462:A:H4'    | 1.78                     | 0.65              |
| 1:AA:765:C:C1'     | 1:AA:767:A:H5'     | 2.25                     | 0.65              |
| 1:AA:1105:A:H1'    | 1:AA:1129:G:C2     | 2.30                     | 0.65              |
| 36:BO:37:LEU:HD23  | 36:BO:128:ARG:HG3  | 1.78                     | 0.65              |
| 26:BE:50:ARG:NH2   | 26:BE:217:ARG:HB2  | 2.12                     | 0.65              |
| 1:AA:1272:C:H5'    | 1:AA:1310:C:O2'    | 1.95                     | 0.65              |
| 25:BD:141:LEU:HD22 | 25:BD:300:LEU:HD21 | 1.79                     | 0.65              |
| 44:BW:76:LYS:HG2   | 44:BW:86:ILE:HG22  | 1.79                     | 0.65              |
| 23:BB:44:G:H1'     | 23:BB:47:C:N4      | 2.11                     | 0.65              |
| 1:AA:1205:C:H5'    | 1:AA:1206:G:OP2    | 1.97                     | 0.65              |
| 22:BA:181:A:N3     | 22:BA:181:A:H2'    | 2.12                     | 0.65              |
| 36:BO:89:SER:N     | 36:BO:90:PRO:CD    | 2.60                     | 0.65              |
| 35:BN:120:MET:SD   | 35:BN:121:PRO:HD3  | 2.37                     | 0.65              |
| 22:BA:1718:G:H1    | 22:BA:1742:U:H3    | 1.44                     | 0.65              |
| 35:BN:129:LEU:HB3  | 52:B5:113:ARG:NE   | 2.12                     | 0.65              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 29:BH:48:LYS:HD3   | 29:BH:107:ARG:HH22 | 1.60                     | 0.65              |
| 30:BI:201:LYS:NZ   | 30:BI:203:LYS:HE2  | 2.12                     | 0.65              |
| 29:BH:33:GLU:HG3   | 29:BH:34:GLU:OE1   | 1.96                     | 0.65              |
| 30:BI:101:THR:HG23 | 30:BI:104:ALA:H    | 1.60                     | 0.65              |
| 30:BI:71:PRO:HG2   | 30:BI:72:LEU:HD12  | 1.79                     | 0.65              |
| 1:AA:660:A:H5''    | 26:BE:161:ILE:HA   | 0.68                     | 0.65              |
| 1:AA:634:G:H1'     | 11:AK:53:TRP:HE1   | 1.61                     | 0.65              |
| 1:AA:650:A:N1      | 22:BA:1857:A:O4'   | 2.23                     | 0.65              |
| 36:BO:75:THR:HB    | 36:BO:86:GLY:HA3   | 1.79                     | 0.65              |
| 22:BA:2410:U:H5''  | 35:BN:127:PRO:HA   | 1.79                     | 0.65              |
| 22:BA:593:G:H1     | 22:BA:1278:U:H3    | 1.45                     | 0.65              |
| 22:BA:1087:G:H21   | 32:BK:198:ILE:HG23 | 1.62                     | 0.65              |
| 22:BA:1966:A:H5'   | 34:BM:42:VAL:HG21  | 1.77                     | 0.65              |
| 9:AI:75:THR:HG23   | 9:AI:76:GLY:H      | 1.62                     | 0.65              |
| 22:BA:2045:A:H61   | 22:BA:2515:C:H1'   | 1.63                     | 0.64              |
| 38:BQ:45:ARG:NH1   | 38:BQ:45:ARG:HB2   | 2.11                     | 0.64              |
| 43:BV:159:VAL:HB   | 43:BV:176:ILE:HD11 | 1.77                     | 0.64              |
| 22:BA:1269:G:H4'   | 40:BS:1:MET:HE3    | 1.79                     | 0.64              |
| 28:BG:113:ARG:HH11 | 28:BG:113:ARG:HA   | 1.62                     | 0.64              |
| 24:BC:25:U:H4'     | 24:BC:27:A:H5'     | 1.79                     | 0.64              |
| 1:AA:1030:G:H5''   | 5:AE:173:ARG:NH2   | 2.11                     | 0.64              |
| 36:BO:68:ILE:HA    | 36:BO:101:ARG:NH2  | 2.12                     | 0.64              |
| 40:BS:54:LYS:HE3   | 40:BS:58:ARG:HH21  | 1.63                     | 0.64              |
| 22:BA:318:A:H4'    | 44:BW:80:GLY:HA3   | 1.79                     | 0.64              |
| 22:BA:1033:C:H42   | 22:BA:1165:G:H1    | 1.45                     | 0.64              |
| 22:BA:2536:A:H5'   | 22:BA:2584:G:N2    | 2.11                     | 0.64              |
| 22:BA:2106:U:H5'   | 22:BA:2242:A:N1    | 2.12                     | 0.64              |
| 22:BA:621:G:H1     | 22:BA:629:C:H42    | 1.44                     | 0.64              |
| 1:AA:1381:G:H5'    | 39:BR:231:THR:HG1  | 1.60                     | 0.64              |
| 36:BO:23:ARG:HD3   | 36:BO:98:LYS:HD2   | 1.80                     | 0.64              |
| 22:BA:2708:C:H42   | 22:BA:2736:G:H1    | 1.45                     | 0.64              |
| 22:BA:639:A:H61    | 35:BN:187:LEU:HD23 | 1.61                     | 0.64              |
| 30:BI:114:LEU:HA   | 30:BI:117:ASN:ND2  | 2.12                     | 0.64              |
| 22:BA:2570:G:H1'   | 22:BA:2599:G:H21   | 1.61                     | 0.64              |
| 22:BA:83:A:H2      | 22:BA:84:G:H1'     | 1.61                     | 0.64              |
| 1:AA:209:G:H2'     | 1:AA:210:U:H5''    | 1.80                     | 0.64              |
| 22:BA:1456:G:H1    | 22:BA:1592:A:N6    | 1.94                     | 0.64              |
| 25:BD:228:LEU:HD23 | 25:BD:250:LEU:HB3  | 1.78                     | 0.64              |
| 47:BZ:124:ARG:HA   | 47:BZ:124:ARG:HH11 | 1.63                     | 0.64              |
| 26:BE:226:HIS:ND1  | 26:BE:227:PRO:HD2  | 2.13                     | 0.64              |
| 26:BE:248:TYR:N    | 26:BE:249:PRO:HD2  | 2.12                     | 0.64              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 15:AO:53:LEU:HD11  | 22:BA:726:G:H21    | 1.61                     | 0.64              |
| 19:AS:61:TYR:OH    | 48:B1:91:PHE:HE1   | 1.81                     | 0.64              |
| 39:BR:144:ARG:HD3  | 39:BR:145:THR:N    | 2.12                     | 0.64              |
| 22:BA:1675:C:C2'   | 22:BA:1676:U:H5''  | 2.26                     | 0.64              |
| 35:BN:173:ILE:HG21 | 35:BN:180:ARG:HE   | 1.63                     | 0.64              |
| 45:BX:127:GLU:HG3  | 45:BX:128:LYS:H    | 1.62                     | 0.64              |
| 22:BA:698:C:N4     | 22:BA:798:C:H4'    | 2.11                     | 0.64              |
| 1:AA:432:G:O4'     | 1:AA:434:U:H5'     | 1.97                     | 0.64              |
| 44:BW:129:ILE:HD13 | 44:BW:130:HIS:H    | 1.61                     | 0.64              |
| 22:BA:1296:A:H2'   | 22:BA:1297:C:O4'   | 1.97                     | 0.64              |
| 22:BA:1383:C:H4'   | 22:BA:2232:G:H4'   | 1.79                     | 0.64              |
| 1:AA:763:A:H4'     | 1:AA:765:C:C4      | 2.32                     | 0.64              |
| 22:BA:840:A:H5'    | 22:BA:842:G:N7     | 2.11                     | 0.64              |
| 22:BA:1599:C:H1'   | 26:BE:24:PRO:HG3   | 1.80                     | 0.64              |
| 22:BA:1331:G:C2'   | 22:BA:1332:G:H5'   | 2.27                     | 0.64              |
| 40:BS:15:LYS:HD3   | 40:BS:16:LYS:H     | 1.63                     | 0.64              |
| 22:BA:427:A:O4'    | 22:BA:1875:G:H4'   | 1.98                     | 0.64              |
| 22:BA:2536:A:N6    | 22:BA:2558:A:H2'   | 2.12                     | 0.64              |
| 22:BA:2365:U:H5''  | 50:B3:33:TYR:HE2   | 1.63                     | 0.64              |
| 24:BC:49:G:O2'     | 24:BC:50:G:H5'     | 1.97                     | 0.64              |
| 22:BA:2377:C:H5''  | 52:B5:112:ARG:HH21 | 1.61                     | 0.64              |
| 1:AA:667:C:H42     | 18:AR:70:ARG:HH22  | 1.45                     | 0.64              |
| 42:BU:66:GLU:HG3   | 42:BU:67:LEU:CD2   | 2.28                     | 0.64              |
| 33:BL:188:PHE:HA   | 33:BL:191:LEU:HD13 | 1.80                     | 0.64              |
| 22:BA:2364:C:H4'   | 50:B3:51:PHE:HE1   | 1.62                     | 0.64              |
| 34:BM:86:ILE:H     | 34:BM:86:ILE:HD12  | 1.61                     | 0.64              |
| 33:BL:194:ARG:O    | 33:BL:194:ARG:HD3  | 1.97                     | 0.64              |
| 22:BA:1335:C:N4    | 22:BA:1359:G:H1    | 1.96                     | 0.64              |
| 22:BA:2292:C:H2'   | 36:BO:83:MET:HE2   | 1.80                     | 0.64              |
| 1:AA:1424:G:P      | 22:BA:1736:A:H61   | 2.20                     | 0.64              |
| 1:AA:1432:A:H2     | 22:BA:1973:G:C2'   | 2.08                     | 0.64              |
| 22:BA:2738:U:H3    | 24:BC:74:A:N6      | 1.89                     | 0.64              |
| 22:BA:709:C:H5''   | 22:BA:1670:A:H61   | 1.63                     | 0.64              |
| 1:AA:92:G:H5'      | 1:AA:93:A:C2       | 2.33                     | 0.64              |
| 1:AA:1188:U:H2'    | 7:AG:32:LYS:NZ     | 2.13                     | 0.64              |
| 1:AA:394:G:N3      | 1:AA:394:G:H3'     | 2.12                     | 0.64              |
| 22:BA:180:A:H61    | 22:BA:183:C:H3'    | 1.61                     | 0.64              |
| 22:BA:1916:C:H5''  | 26:BE:237:ILE:HG13 | 1.80                     | 0.64              |
| 22:BA:2783:A:H2'   | 22:BA:2783:A:N3    | 2.12                     | 0.64              |
| 38:BQ:68:LEU:HG    | 38:BQ:70:VAL:HG13  | 1.79                     | 0.64              |
| 22:BA:2706:U:H5''  | 22:BA:2707:A:OP2   | 1.97                     | 0.64              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:714:U:H2'    | 22:BA:715:G:O4'    | 1.97                     | 0.64              |
| 1:AA:1130:G:H4'    | 1:AA:1131:U:C5'    | 2.28                     | 0.64              |
| 1:AA:1087:G:H5'    | 1:AA:1088:U:OP1    | 1.98                     | 0.64              |
| 50:B3:52:CYS:HA    | 50:B3:58:HIS:H     | 1.61                     | 0.64              |
| 1:AA:917:A:H5''    | 1:AA:918:A:OP2     | 1.98                     | 0.64              |
| 35:BN:95:SER:HA    | 35:BN:101:ARG:HH21 | 1.63                     | 0.64              |
| 22:BA:2768:A:H1'   | 30:BI:43:GLU:CD    | 2.18                     | 0.64              |
| 26:BE:178:ARG:HA   | 26:BE:263:ASP:HA   | 1.78                     | 0.64              |
| 22:BA:577:G:H22    | 22:BA:2044:A:N6    | 1.86                     | 0.64              |
| 27:BF:105:LYS:N    | 27:BF:106:PRO:HD2  | 2.13                     | 0.64              |
| 42:BU:51:ASP:HA    | 42:BU:54:ARG:NH1   | 2.10                     | 0.64              |
| 27:BF:189:ILE:HD12 | 27:BF:189:ILE:N    | 2.13                     | 0.64              |
| 43:BV:119:ILE:HD12 | 43:BV:135:LEU:HG   | 1.80                     | 0.64              |
| 31:BJ:129:VAL:HB   | 31:BJ:151:ILE:HD13 | 1.79                     | 0.64              |
| 29:BH:51:VAL:HG12  | 29:BH:169:VAL:HG13 | 1.79                     | 0.64              |
| 22:BA:1381:G:H22   | 22:BA:2231:C:H42   | 1.46                     | 0.64              |
| 1:AA:721:G:O2'     | 26:BE:194:VAL:CG2  | 2.45                     | 0.63              |
| 22:BA:1840:C:H42   | 22:BA:1989:G:H1    | 1.47                     | 0.63              |
| 22:BA:829:G:N2     | 22:BA:1210:A:H62   | 1.95                     | 0.63              |
| 35:BN:119:GLN:HB3  | 35:BN:121:PRO:HD2  | 1.79                     | 0.63              |
| 43:BV:167:ARG:HH21 | 43:BV:173:LYS:HZ1  | 1.46                     | 0.63              |
| 22:BA:95:G:H2'     | 22:BA:96:C:C6      | 2.33                     | 0.63              |
| 53:B6:16:THR:HG22  | 53:B6:25:VAL:HG22  | 1.81                     | 0.63              |
| 22:BA:1436:U:H2'   | 22:BA:1437:G:H4'   | 1.80                     | 0.63              |
| 22:BA:747:C:H42    | 22:BA:771:G:H1     | 1.46                     | 0.63              |
| 25:BD:142:SER:HA   | 25:BD:145:LYS:HE2  | 1.78                     | 0.63              |
| 22:BA:2595:G:H1'   | 27:BF:188:SER:HB3  | 1.79                     | 0.63              |
| 30:BI:113:THR:HA   | 30:BI:116:ASP:OD2  | 1.98                     | 0.63              |
| 1:AA:176:C:H2'     | 1:AA:177:A:C8      | 2.32                     | 0.63              |
| 22:BA:1362:G:H3'   | 22:BA:1418:U:O2    | 1.98                     | 0.63              |
| 22:BA:2140:A:OP2   | 25:BD:248:ARG:HA   | 1.98                     | 0.63              |
| 17:AQ:122:ILE:HD13 | 17:AQ:122:ILE:H    | 1.61                     | 0.63              |
| 22:BA:1197:A:H2'   | 22:BA:1198:A:O4'   | 1.98                     | 0.63              |
| 22:BA:1600:A:H62   | 26:BE:23:ASN:HA    | 1.63                     | 0.63              |
| 51:B4:104:SER:HA   | 51:B4:105:ARG:NH2  | 2.10                     | 0.63              |
| 45:BX:93:ILE:H     | 45:BX:125:LYS:HD2  | 1.61                     | 0.63              |
| 1:AA:923:A:C4'     | 1:AA:924:A:H5'     | 2.28                     | 0.63              |
| 22:BA:715:G:H2'    | 22:BA:737:G:N2     | 2.14                     | 0.63              |
| 1:AA:180:A:H4'     | 1:AA:181:G:O5'     | 1.97                     | 0.63              |
| 1:AA:222:G:H1      | 1:AA:242:C:H41     | 1.46                     | 0.63              |
| 1:AA:1451:A:H62    | 1:AA:1454:G:H1     | 1.46                     | 0.63              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 45:BX:102:PHE:HE2  | 45:BX:133:ARG:H    | 1.45                     | 0.63              |
| 33:BL:214:GLY:HA2  | 33:BL:217:LEU:HD13 | 1.79                     | 0.63              |
| 31:BJ:176:TYR:HB2  | 31:BJ:192:ILE:HB   | 1.79                     | 0.63              |
| 35:BN:130:ARG:HD3  | 52:B5:113:ARG:H    | 1.63                     | 0.63              |
| 1:AA:862:A:H5''    | 1:AA:863:A:OP1     | 1.97                     | 0.63              |
| 1:AA:981:G:C2'     | 1:AA:982:G:H5'     | 2.29                     | 0.63              |
| 22:BA:83:A:N6      | 22:BA:98:G:H5''    | 2.13                     | 0.63              |
| 41:BT:123:ILE:HG13 | 41:BT:165:GLY:H    | 1.63                     | 0.63              |
| 1:AA:420:A:H2'     | 1:AA:421:G:C8      | 2.33                     | 0.63              |
| 30:BI:166:VAL:HG13 | 30:BI:176:VAL:HG22 | 1.80                     | 0.63              |
| 39:BR:185:ARG:NH2  | 39:BR:223:ARG:HH22 | 1.96                     | 0.63              |
| 22:BA:1602:G:N3    | 26:BE:55:LYS:HE3   | 2.13                     | 0.63              |
| 45:BX:89:LYS:HE2   | 45:BX:123:LEU:HD23 | 1.79                     | 0.63              |
| 40:BS:46:ALA:HA    | 40:BS:49:ASP:OD2   | 1.98                     | 0.63              |
| 29:BH:48:LYS:HB3   | 29:BH:107:ARG:NH1  | 2.14                     | 0.63              |
| 1:AA:361:C:H2'     | 1:AA:362:G:H8      | 1.63                     | 0.63              |
| 22:BA:1916:C:H4'   | 26:BE:237:ILE:O    | 1.99                     | 0.63              |
| 1:AA:649:U:H4'     | 1:AA:651:G:O4'     | 1.99                     | 0.63              |
| 22:BA:1182:A:H5''  | 40:BS:55:ARG:HE    | 1.63                     | 0.63              |
| 38:BQ:138:ARG:HH11 | 38:BQ:147:VAL:HG23 | 1.64                     | 0.63              |
| 22:BA:216:C:H2'    | 22:BA:217:G:O4'    | 1.98                     | 0.63              |
| 36:BO:16:ARG:NH1   | 36:BO:18:LYS:HG2   | 2.14                     | 0.63              |
| 13:AM:48:ARG:HH22  | 29:BH:160:ILE:HB   | 1.60                     | 0.63              |
| 22:BA:174:G:N2     | 22:BA:192:A:H62    | 1.92                     | 0.63              |
| 32:BK:194:SER:O    | 32:BK:198:ILE:HG13 | 1.98                     | 0.63              |
| 22:BA:1913:G:H21   | 22:BA:1916:C:N4    | 1.97                     | 0.63              |
| 22:BA:2519:G:H5'   | 22:BA:2520:A:H5''  | 1.81                     | 0.63              |
| 38:BQ:111:THR:HG22 | 38:BQ:113:GLU:H    | 1.62                     | 0.63              |
| 1:AA:1030:G:H5''   | 5:AE:173:ARG:HH21  | 1.64                     | 0.63              |
| 6:AF:104:ARG:HH22  | 18:AR:33:MET:HB2   | 1.63                     | 0.63              |
| 22:BA:729:A:H2'    | 22:BA:730:C:H5'    | 1.81                     | 0.63              |
| 22:BA:2070:A:N6    | 22:BA:2594:A:H1'   | 2.14                     | 0.63              |
| 22:BA:1271:G:H4'   | 40:BS:6:ARG:HG2    | 1.81                     | 0.63              |
| 40:BS:108:ILE:HG13 | 40:BS:111:ILE:HD11 | 1.79                     | 0.63              |
| 40:BS:94:ARG:HB3   | 40:BS:94:ARG:NH1   | 2.14                     | 0.63              |
| 1:AA:788:U:H3'     | 1:AA:789:A:H5''    | 1.81                     | 0.63              |
| 26:BE:242:PRO:HB2  | 26:BE:246:TRP:HB3  | 1.81                     | 0.63              |
| 1:AA:1133:A:H2'    | 1:AA:1134:G:O4'    | 1.99                     | 0.63              |
| 22:BA:1375:A:H5'   | 26:BE:37:LYS:HZ2   | 1.64                     | 0.63              |
| 39:BR:122:ILE:HD13 | 39:BR:123:MET:N    | 2.14                     | 0.63              |
| 26:BE:87:ILE:HG12  | 26:BE:99:TYR:HB3   | 1.80                     | 0.62              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:1149:A:O2'    | 1:AA:1150:U:H5'    | 1.99                     | 0.62              |
| 26:BE:176:GLU:HG3  | 26:BE:266:ILE:HA   | 1.80                     | 0.62              |
| 22:BA:2412:C:H42   | 22:BA:2438:G:H1    | 1.47                     | 0.62              |
| 34:BM:17:ARG:HA    | 34:BM:17:ARG:HE    | 1.61                     | 0.62              |
| 22:BA:2076:A:N3    | 22:BA:2076:A:H2'   | 2.14                     | 0.62              |
| 1:AA:755:U:O2      | 26:BE:5:LEU:CD1    | 2.44                     | 0.62              |
| 22:BA:1820:A:H2'   | 22:BA:1821:G:O4'   | 1.99                     | 0.62              |
| 31:BJ:70:VAL:HG22  | 31:BJ:71:LYS:H     | 1.64                     | 0.62              |
| 32:BK:125:ILE:HD11 | 32:BK:141:LEU:HB2  | 1.82                     | 0.62              |
| 22:BA:2139:A:H5''  | 22:BA:2140:A:H5'   | 1.81                     | 0.62              |
| 33:BL:179:ARG:HB3  | 33:BL:180:PRO:HD2  | 1.80                     | 0.62              |
| 22:BA:2135:G:H4'   | 25:BD:278:ARG:HH22 | 1.64                     | 0.62              |
| 28:BG:239:VAL:HG13 | 28:BG:240:LEU:HD13 | 1.81                     | 0.62              |
| 1:AA:648:G:C2'     | 1:AA:649:U:H5''    | 2.30                     | 0.62              |
| 22:BA:642:G:H5''   | 52:B5:134:LYS:NZ   | 2.14                     | 0.62              |
| 22:BA:596:A:H1'    | 22:BA:683:C:H1'    | 1.81                     | 0.62              |
| 1:AA:768:U:H5''    | 1:AA:769:G:OP2     | 1.99                     | 0.62              |
| 22:BA:2185:A:H2'   | 22:BA:2186:U:H5'   | 1.81                     | 0.62              |
| 22:BA:116:A:N3     | 22:BA:162:A:H1'    | 2.14                     | 0.62              |
| 22:BA:829:G:H21    | 22:BA:1210:A:N6    | 1.96                     | 0.62              |
| 22:BA:1702:G:H22   | 22:BA:2008:C:N4    | 1.97                     | 0.62              |
| 30:BI:53:VAL:HA    | 30:BI:54:PRO:O     | 1.99                     | 0.62              |
| 1:AA:605:U:H2'     | 1:AA:606:A:C8      | 2.33                     | 0.62              |
| 1:AA:931:U:H1'     | 1:AA:932:A:N7      | 2.14                     | 0.62              |
| 22:BA:2798:G:H5'   | 33:BL:219:ASN:ND2  | 2.14                     | 0.62              |
| 1:AA:825:A:H4'     | 8:AH:14:ARG:HH22   | 1.63                     | 0.62              |
| 44:BW:107:LYS:HD3  | 44:BW:107:LYS:H    | 1.63                     | 0.62              |
| 22:BA:2134:G:H1'   | 25:BD:281:LYS:HD2  | 1.81                     | 0.62              |
| 29:BH:81:VAL:HG12  | 29:BH:82:LYS:H     | 1.63                     | 0.62              |
| 1:AA:765:C:H5'     | 1:AA:766:G:OP1     | 1.99                     | 0.62              |
| 22:BA:1599:C:O2'   | 26:BE:24:PRO:HG3   | 1.99                     | 0.62              |
| 40:BS:13:ARG:HA    | 40:BS:16:LYS:HE2   | 1.81                     | 0.62              |
| 40:BS:94:ARG:HG3   | 40:BS:96:ILE:H     | 1.64                     | 0.62              |
| 22:BA:865:A:H2'    | 45:BX:81:LYS:NZ    | 2.14                     | 0.62              |
| 22:BA:1787:U:H3    | 22:BA:1797:A:N6    | 1.97                     | 0.62              |
| 25:BD:189:ILE:HD13 | 25:BD:190:ALA:N    | 2.14                     | 0.62              |
| 22:BA:811:A:H5''   | 22:BA:812:G:OP1    | 1.98                     | 0.62              |
| 1:AA:1064:U:H3     | 1:AA:1133:A:H61    | 1.47                     | 0.62              |
| 32:BK:98:ALA:O     | 32:BK:99:LEU:HD22  | 1.98                     | 0.62              |
| 12:AL:4:ILE:HD13   | 12:AL:4:ILE:H      | 1.65                     | 0.62              |
| 1:AA:756:A:C1'     | 26:BE:5:LEU:O      | 2.46                     | 0.62              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:968:C:H2'    | 22:BA:969:A:H5''   | 1.81                     | 0.62              |
| 45:BX:68:LYS:HG3   | 45:BX:69:ASN:N     | 2.14                     | 0.62              |
| 22:BA:1231:G:H5''  | 22:BA:1232:A:O5'   | 1.99                     | 0.62              |
| 22:BA:2157:U:H3'   | 22:BA:2158:U:H5''  | 1.81                     | 0.62              |
| 22:BA:1957:U:H4'   | 22:BA:1959:G:H5'   | 1.80                     | 0.62              |
| 22:BA:556:C:H2'    | 22:BA:557:C:H5'    | 1.82                     | 0.62              |
| 34:BM:97:ARG:HA    | 34:BM:116:LEU:HD11 | 1.82                     | 0.62              |
| 1:AA:755:U:H3      | 26:BE:5:LEU:CG     | 2.02                     | 0.62              |
| 38:BQ:63:PRO:HB3   | 45:BX:134:LYS:HG3  | 1.81                     | 0.62              |
| 37:BP:103:PRO:HA   | 37:BP:106:ARG:HE   | 1.65                     | 0.62              |
| 22:BA:1224:U:H4'   | 35:BN:78:ARG:HH21  | 1.64                     | 0.62              |
| 36:BO:33:ALA:HB3   | 36:BO:132:ILE:HD11 | 1.82                     | 0.62              |
| 2:AB:196:ASN:N     | 2:AB:196:ASN:HD22  | 1.95                     | 0.62              |
| 22:BA:1703:G:N2    | 22:BA:2006:G:H5'   | 2.15                     | 0.62              |
| 30:BI:201:LYS:HB2  | 30:BI:201:LYS:NZ   | 2.14                     | 0.62              |
| 42:BU:39:ILE:HG22  | 42:BU:41:MET:H     | 1.65                     | 0.62              |
| 39:BR:151:ILE:HG13 | 39:BR:153:LEU:HD22 | 1.81                     | 0.62              |
| 35:BN:126:LEU:HB2  | 52:B5:112:ARG:HD2  | 1.80                     | 0.62              |
| 46:BY:78:CYS:H     | 46:BY:86:ASN:ND2   | 1.98                     | 0.62              |
| 1:AA:1077:C:H2'    | 1:AA:1078:C:O4'    | 1.99                     | 0.62              |
| 35:BN:92:GLN:HA    | 35:BN:101:ARG:HH22 | 1.65                     | 0.62              |
| 22:BA:762:G:H1'    | 42:BU:119:ARG:HE   | 1.64                     | 0.62              |
| 22:BA:240:A:H2'    | 22:BA:241:A:O4'    | 2.00                     | 0.62              |
| 1:AA:894:G:H21     | 1:AA:1282:G:H4'    | 1.64                     | 0.62              |
| 29:BH:75:ILE:HG13  | 29:BH:76:THR:HG23  | 1.82                     | 0.62              |
| 22:BA:395:C:H5''   | 22:BA:397:C:OP2    | 2.00                     | 0.62              |
| 25:BD:181:LYS:HG2  | 25:BD:301:ILE:HD11 | 1.82                     | 0.62              |
| 22:BA:2707:A:H5'   | 22:BA:2708:C:OP2   | 2.00                     | 0.62              |
| 22:BA:1218:G:H1'   | 22:BA:1271:G:H22   | 1.64                     | 0.62              |
| 40:BS:43:LEU:HG    | 41:BT:200:TYR:HB2  | 1.82                     | 0.62              |
| 22:BA:70:A:N6      | 22:BA:112:C:H1'    | 2.14                     | 0.62              |
| 10:AJ:157:ARG:HD2  | 10:AJ:157:ARG:H    | 1.64                     | 0.62              |
| 1:AA:1361:U:H2'    | 1:AA:1362:A:C8     | 2.35                     | 0.62              |
| 16:AP:5:ARG:H      | 16:AP:20:VAL:HG21  | 1.65                     | 0.62              |
| 22:BA:1182:A:H5''  | 40:BS:55:ARG:HH21  | 1.64                     | 0.62              |
| 22:BA:1702:G:H2'   | 22:BA:1703:G:O4'   | 2.00                     | 0.62              |
| 24:BC:34:C:H4'     | 24:BC:35:G:C8      | 2.35                     | 0.62              |
| 34:BM:13:ASN:ND2   | 34:BM:97:ARG:HG2   | 2.15                     | 0.62              |
| 52:B5:114:ARG:NH1  | 52:B5:135:LEU:HD22 | 2.15                     | 0.62              |
| 27:BF:229:ILE:HB   | 39:BR:121:ASP:HB2  | 1.82                     | 0.62              |
| 22:BA:456:C:H2'    | 22:BA:457:C:C6     | 2.35                     | 0.61              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:1197:C:H2'    | 1:AA:1198:A:H5'    | 1.82                     | 0.61              |
| 22:BA:319:G:O2'    | 22:BA:320:U:H5''   | 1.98                     | 0.61              |
| 30:BI:213:ARG:HH12 | 53:B6:29:SER:HA    | 1.65                     | 0.61              |
| 22:BA:2182:G:H21   | 22:BA:2183:A:H62   | 1.48                     | 0.61              |
| 47:BZ:85:LEU:HD12  | 47:BZ:117:MET:SD   | 2.39                     | 0.61              |
| 1:AA:883:C:H5'     | 1:AA:884:A:OP1     | 2.00                     | 0.61              |
| 28:BG:76:PRO:N     | 28:BG:77:PRO:HD2   | 2.14                     | 0.61              |
| 31:BJ:90:PRO:HA    | 31:BJ:93:LEU:HD12  | 1.82                     | 0.61              |
| 22:BA:1158:U:N3    | 22:BA:2039:C:H5''  | 2.15                     | 0.61              |
| 1:AA:209:G:C2'     | 1:AA:210:U:H5''    | 2.31                     | 0.61              |
| 43:BV:142:ALA:O    | 43:BV:146:MET:HB2  | 2.00                     | 0.61              |
| 1:AA:1202:G:H5'    | 1:AA:1304:G:H4'    | 1.81                     | 0.61              |
| 22:BA:2513:C:H2'   | 22:BA:2514:A:H5'   | 1.82                     | 0.61              |
| 39:BR:219:LEU:O    | 39:BR:220:TYR:HB3  | 2.01                     | 0.61              |
| 22:BA:200:G:H4'    | 22:BA:201:A:O5'    | 1.98                     | 0.61              |
| 35:BN:168:LYS:HB2  | 35:BN:172:VAL:HB   | 1.82                     | 0.61              |
| 28:BG:216:VAL:HG13 | 28:BG:228:LEU:HD12 | 1.82                     | 0.61              |
| 36:BO:51:ARG:NH1   | 36:BO:51:ARG:HB3   | 2.14                     | 0.61              |
| 49:B2:13:LYS:NZ    | 49:B2:13:LYS:HB3   | 2.15                     | 0.61              |
| 1:AA:1318:C:H2'    | 1:AA:1319:G:C8     | 2.35                     | 0.61              |
| 1:AA:678:A:H2'     | 1:AA:679:G:H5'     | 1.81                     | 0.61              |
| 29:BH:69:ILE:HG23  | 29:BH:70:ASN:ND2   | 2.14                     | 0.61              |
| 20:AT:118:VAL:HG21 | 20:AT:146:ALA:HB2  | 1.82                     | 0.61              |
| 26:BE:137:ILE:HG13 | 26:BE:138:HIS:N    | 2.15                     | 0.61              |
| 26:BE:65:ARG:HH22  | 26:BE:187:THR:N    | 1.98                     | 0.61              |
| 46:BY:84:LYS:HD2   | 46:BY:122:LEU:HD12 | 1.81                     | 0.61              |
| 35:BN:205:THR:O    | 35:BN:209:GLU:HG2  | 2.01                     | 0.61              |
| 22:BA:1137:C:H2'   | 22:BA:1138:G:O4'   | 2.01                     | 0.61              |
| 22:BA:2076:A:H4'   | 22:BA:2459:C:OP2   | 1.99                     | 0.61              |
| 27:BF:101:ARG:N    | 27:BF:101:ARG:HD2  | 2.16                     | 0.61              |
| 1:AA:1014:U:H1'    | 1:AA:1015:C:H5     | 1.65                     | 0.61              |
| 22:BA:1943:G:O2'   | 22:BA:1944:G:H5''  | 2.00                     | 0.61              |
| 1:AA:1401:A:H4'    | 1:AA:1402:A:C2     | 2.35                     | 0.61              |
| 22:BA:1946:A:H62   | 22:BA:1982:G:N2    | 1.93                     | 0.61              |
| 22:BA:1218:G:H1'   | 22:BA:1271:G:N2    | 2.15                     | 0.61              |
| 22:BA:414:A:H2'    | 22:BA:415:U:H5'    | 1.82                     | 0.61              |
| 52:B5:128:ARG:CZ   | 52:B5:132:LEU:HD21 | 2.30                     | 0.61              |
| 32:BK:184:LEU:N    | 32:BK:185:PRO:HD2  | 2.14                     | 0.61              |
| 1:AA:281:G:H5''    | 16:AP:31:ARG:HB2   | 1.82                     | 0.61              |
| 10:AJ:146:VAL:HG12 | 14:AN:84:ARG:HH21  | 1.65                     | 0.61              |
| 22:BA:7:C:H42      | 24:BC:96:A:H61     | 1.47                     | 0.61              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:557:A:C5'     | 16:AP:18:ARG:HH22  | 2.13                     | 0.61              |
| 1:AA:51:A:N6       | 1:AA:332:G:H4'     | 2.15                     | 0.61              |
| 22:BA:2582:A:H2'   | 22:BA:2583:A:H4'   | 1.82                     | 0.61              |
| 28:BG:80:ALA:HB3   | 28:BG:83:VAL:HG22  | 1.82                     | 0.61              |
| 22:BA:1810:C:H1'   | 22:BA:1812:A:O4'   | 2.01                     | 0.61              |
| 26:BE:213:ARG:HB3  | 26:BE:213:ARG:NH1  | 2.08                     | 0.61              |
| 22:BA:407:C:H4'    | 46:BY:76:ARG:HB2   | 1.83                     | 0.61              |
| 38:BQ:104:LEU:HD13 | 38:BQ:105:ASP:N    | 2.16                     | 0.61              |
| 2:AB:30:ARG:HH21   | 8:AH:20:ARG:HH12   | 1.48                     | 0.61              |
| 1:AA:380:G:H22     | 1:AA:404:C:H42     | 1.48                     | 0.61              |
| 36:BO:11:LYS:HB2   | 36:BO:11:LYS:NZ    | 2.16                     | 0.61              |
| 28:BG:218:LYS:HZ2  | 28:BG:218:LYS:HB2  | 1.65                     | 0.61              |
| 40:BS:65:ILE:O     | 40:BS:69:ILE:HG12  | 2.00                     | 0.61              |
| 22:BA:164:A:H62    | 51:B4:127:LEU:HG   | 1.65                     | 0.61              |
| 29:BH:48:LYS:HD3   | 29:BH:107:ARG:NH2  | 2.16                     | 0.61              |
| 22:BA:98:G:H5''    | 22:BA:99:A:OP2     | 1.99                     | 0.61              |
| 38:BQ:146:ARG:HE   | 38:BQ:146:ARG:HA   | 1.66                     | 0.61              |
| 1:AA:740:A:H4'     | 1:AA:741:U:H5''    | 1.82                     | 0.61              |
| 28:BG:206:LEU:HA   | 28:BG:242:ALA:HB1  | 1.82                     | 0.61              |
| 34:BM:13:ASN:HD22  | 34:BM:97:ARG:HG2   | 1.63                     | 0.61              |
| 40:BS:114:GLU:HA   | 40:BS:117:LYS:HE2  | 1.82                     | 0.61              |
| 37:BP:164:ILE:HD12 | 37:BP:165:VAL:N    | 2.16                     | 0.61              |
| 22:BA:2299:G:O2'   | 22:BA:2300:U:OP2   | 2.15                     | 0.61              |
| 22:BA:34:G:H1'     | 22:BA:466:A:H1'    | 1.81                     | 0.61              |
| 1:AA:377:G:H4'     | 4:AD:5:ARG:NH2     | 2.14                     | 0.61              |
| 38:BQ:155:ARG:HH12 | 38:BQ:161:PHE:H    | 1.49                     | 0.61              |
| 22:BA:1362:G:H4'   | 43:BV:163:ASN:OD1  | 2.00                     | 0.61              |
| 30:BI:46:ILE:HG22  | 30:BI:112:ARG:HH12 | 1.66                     | 0.61              |
| 30:BI:45:ARG:HG2   | 30:BI:46:ILE:N     | 2.16                     | 0.61              |
| 28:BG:218:LYS:NZ   | 28:BG:218:LYS:HB2  | 2.16                     | 0.61              |
| 1:AA:1433:C:H4'    | 22:BA:1974:A:O2'   | 2.01                     | 0.61              |
| 6:AF:118:LYS:HE3   | 26:BE:162:ALA:CA   | 2.31                     | 0.61              |
| 35:BN:127:PRO:HB3  | 52:B5:118:GLN:HE21 | 1.64                     | 0.61              |
| 44:BW:123:ILE:H    | 44:BW:123:ILE:CD1  | 2.13                     | 0.61              |
| 22:BA:1231:G:H4'   | 22:BA:1232:A:OP2   | 2.01                     | 0.61              |
| 27:BF:111:LEU:O    | 27:BF:111:LEU:HD23 | 2.00                     | 0.61              |
| 42:BU:41:MET:HE2   | 42:BU:75:PRO:HD2   | 1.83                     | 0.60              |
| 24:BC:48:U:H2'     | 24:BC:49:G:O4'     | 2.00                     | 0.60              |
| 36:BO:133:ILE:HG23 | 36:BO:134:SER:N    | 2.12                     | 0.60              |
| 33:BL:172:LEU:HD23 | 33:BL:174:ARG:HG3  | 1.81                     | 0.60              |
| 22:BA:2229:U:C2'   | 22:BA:2230:A:H5'   | 2.31                     | 0.60              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:930:U:H2'     | 1:AA:931:U:C5      | 2.36                     | 0.60              |
| 22:BA:1375:A:H5'   | 26:BE:37:LYS:NZ    | 2.15                     | 0.60              |
| 52:B5:95:HIS:HE1   | 52:B5:97:ALA:HB3   | 1.64                     | 0.60              |
| 22:BA:727:A:C2'    | 22:BA:728:A:H5''   | 2.31                     | 0.60              |
| 34:BM:69:LEU:HB3   | 34:BM:77:ILE:HG23  | 1.82                     | 0.60              |
| 35:BN:146:VAL:HG23 | 35:BN:147:ASN:N    | 2.17                     | 0.60              |
| 22:BA:2698:C:N4    | 22:BA:2742:C:H5''  | 2.14                     | 0.60              |
| 35:BN:122:LEU:HD13 | 35:BN:123:TYR:CD2  | 2.36                     | 0.60              |
| 1:AA:543:A:H2'     | 1:AA:589:A:N1      | 2.17                     | 0.60              |
| 22:BA:210:C:H2'    | 22:BA:211:A:O4'    | 2.01                     | 0.60              |
| 45:BX:106:LYS:HG2  | 45:BX:107:ASN:N    | 2.15                     | 0.60              |
| 29:BH:81:VAL:HG12  | 29:BH:82:LYS:N     | 2.17                     | 0.60              |
| 48:B1:83:ASP:OD2   | 48:B1:84:VAL:HG22  | 2.01                     | 0.60              |
| 15:AO:71:ASN:HD21  | 15:AO:74:ARG:HH21  | 1.48                     | 0.60              |
| 22:BA:1187:G:H21   | 41:BT:131:SER:HB3  | 1.66                     | 0.60              |
| 1:AA:884:A:H1'     | 1:AA:1333:C:O2     | 2.00                     | 0.60              |
| 1:AA:343:C:O2'     | 1:AA:344:A:OP2     | 2.15                     | 0.60              |
| 1:AA:519:U:H4'     | 1:AA:767:A:N6      | 2.16                     | 0.60              |
| 40:BS:6:ARG:HE     | 40:BS:10:ALA:HB2   | 1.67                     | 0.60              |
| 1:AA:375:G:H1      | 1:AA:447:A:H62     | 1.50                     | 0.60              |
| 38:BQ:138:ARG:HD2  | 38:BQ:147:VAL:HG21 | 1.82                     | 0.60              |
| 22:BA:1039:A:C5'   | 40:BS:77:ASN:HD21  | 2.15                     | 0.60              |
| 1:AA:518:G:H5'     | 1:AA:768:U:O4'     | 2.02                     | 0.60              |
| 25:BD:131:ILE:HD13 | 25:BD:131:ILE:O    | 2.01                     | 0.60              |
| 31:BJ:143:VAL:HG13 | 31:BJ:147:ASP:HB2  | 1.83                     | 0.60              |
| 41:BT:208:ARG:HB2  | 41:BT:208:ARG:NH1  | 2.16                     | 0.60              |
| 39:BR:182:ARG:HH21 | 39:BR:197:PRO:HG3  | 1.66                     | 0.60              |
| 25:BD:148:SER:HB3  | 25:BD:292:LEU:HG   | 1.83                     | 0.60              |
| 1:AA:114:A:H1'     | 1:AA:235:U:C4'     | 2.31                     | 0.60              |
| 22:BA:2514:A:H4'   | 22:BA:2515:C:C5    | 2.36                     | 0.60              |
| 49:B2:48:VAL:HG22  | 49:B2:49:ARG:N     | 2.10                     | 0.60              |
| 46:BY:132:ILE:HA   | 46:BY:137:LEU:HG   | 1.84                     | 0.60              |
| 1:AA:1001:U:H2'    | 1:AA:1148:C:H41    | 1.66                     | 0.60              |
| 39:BR:225:LYS:HB2  | 39:BR:225:LYS:NZ   | 2.17                     | 0.60              |
| 45:BX:61:LYS:HD2   | 45:BX:61:LYS:O     | 2.00                     | 0.60              |
| 1:AA:1329:U:H4'    | 1:AA:1330:U:C5     | 2.36                     | 0.60              |
| 35:BN:216:CYS:SG   | 35:BN:236:LEU:HD11 | 2.40                     | 0.60              |
| 23:BB:72:G:N2      | 23:BB:105:A:H62    | 1.93                     | 0.60              |
| 40:BS:63:THR:HG22  | 40:BS:64:ARG:HH21  | 1.66                     | 0.60              |
| 31:BJ:70:VAL:HG22  | 31:BJ:71:LYS:N     | 2.16                     | 0.60              |
| 34:BM:35:ILE:HD11  | 34:BM:106:LEU:HG   | 1.84                     | 0.60              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 25:BD:137:LEU:HG   | 25:BD:300:LEU:HD22 | 1.82                     | 0.60              |
| 22:BA:605:C:H42    | 22:BA:673:G:H1     | 1.49                     | 0.60              |
| 22:BA:857:G:H1'    | 22:BA:962:G:N2     | 2.16                     | 0.60              |
| 22:BA:2089:U:H4'   | 22:BA:2613:U:O2    | 2.01                     | 0.60              |
| 32:BK:92:ALA:HB3   | 32:BK:93:PRO:HD3   | 1.82                     | 0.60              |
| 1:AA:264:G:N2      | 1:AA:276:G:H1'     | 2.16                     | 0.60              |
| 22:BA:1199:A:H2'   | 22:BA:1200:A:H5'   | 1.84                     | 0.60              |
| 1:AA:939:C:H2'     | 1:AA:940:U:O4'     | 2.01                     | 0.60              |
| 1:AA:862:A:H4'     | 1:AA:863:A:O5'     | 2.01                     | 0.60              |
| 25:BD:189:ILE:HD11 | 25:BD:229:ILE:HG12 | 1.84                     | 0.60              |
| 32:BK:93:PRO:HB2   | 32:BK:94:PRO:HD3   | 1.84                     | 0.60              |
| 1:AA:156:A:H2'     | 1:AA:158:A:OP2     | 2.01                     | 0.60              |
| 1:AA:48:C:H4'      | 1:AA:49:U:O5'      | 2.01                     | 0.60              |
| 22:BA:1450:G:H2'   | 22:BA:1450:G:N3    | 2.16                     | 0.60              |
| 22:BA:1599:C:H4'   | 26:BE:22:SER:OG    | 2.02                     | 0.60              |
| 45:BX:108:VAL:HG22 | 45:BX:109:GLY:N    | 2.10                     | 0.60              |
| 45:BX:125:LYS:HB2  | 45:BX:128:LYS:O    | 2.02                     | 0.60              |
| 1:AA:605:U:H2'     | 1:AA:606:A:H8      | 1.67                     | 0.60              |
| 1:AA:855:G:C2'     | 1:AA:856:A:H5''    | 2.32                     | 0.60              |
| 22:BA:1116:A:H61   | 32:BK:205:ASN:HD22 | 1.49                     | 0.60              |
| 42:BU:74:TYR:CD1   | 42:BU:75:PRO:HA    | 2.36                     | 0.60              |
| 36:BO:72:LYS:HD3   | 36:BO:96:VAL:HG13  | 1.83                     | 0.60              |
| 53:B6:7:VAL:HG13   | 53:B6:8:LYS:N      | 2.09                     | 0.60              |
| 35:BN:128:LYS:HG3  | 52:B5:101:ARG:HA   | 1.83                     | 0.60              |
| 48:B1:59:GLU:HA    | 48:B1:62:LYS:HD3   | 1.84                     | 0.60              |
| 22:BA:2229:U:H2'   | 22:BA:2230:A:H5'   | 1.83                     | 0.60              |
| 38:BQ:95:THR:HG22  | 38:BQ:118:VAL:HG21 | 1.84                     | 0.60              |
| 22:BA:2284:A:N3    | 22:BA:2284:A:H2'   | 2.16                     | 0.60              |
| 34:BM:2:ILE:HB     | 34:BM:33:ALA:HB3   | 1.82                     | 0.60              |
| 1:AA:756:A:C1'     | 26:BE:5:LEU:C      | 2.70                     | 0.60              |
| 35:BN:192:LEU:HD13 | 35:BN:210:LYS:NZ   | 2.16                     | 0.60              |
| 22:BA:2533:G:H2'   | 22:BA:2534:C:C6    | 2.37                     | 0.60              |
| 22:BA:2140:A:H62   | 25:BD:247:PRO:HA   | 1.67                     | 0.60              |
| 33:BL:195:ILE:N    | 33:BL:196:PRO:HD3  | 2.16                     | 0.60              |
| 1:AA:1296:U:H4'    | 9:AI:189:ARG:HG3   | 1.83                     | 0.60              |
| 1:AA:755:U:N3      | 26:BE:5:LEU:CG     | 2.61                     | 0.60              |
| 22:BA:164:A:N7     | 51:B4:127:LEU:HB2  | 2.16                     | 0.60              |
| 28:BG:209:LEU:HD23 | 28:BG:211:ASP:H    | 1.67                     | 0.60              |
| 22:BA:1049:A:H3'   | 22:BA:1050:G:H5''  | 1.84                     | 0.60              |
| 22:BA:95:G:OP1     | 47:BZ:103:LYS:HG2  | 2.01                     | 0.60              |
| 22:BA:1458:C:H2'   | 22:BA:1459:U:C6    | 2.36                     | 0.60              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 24:BC:87:G:N3      | 24:BC:87:G:H3'     | 2.16                     | 0.60              |
| 27:BF:101:ARG:H    | 27:BF:101:ARG:HD2  | 1.67                     | 0.60              |
| 31:BJ:106:GLU:HG3  | 31:BJ:110:VAL:HG21 | 1.84                     | 0.60              |
| 37:BP:172:VAL:CG1  | 37:BP:173:PRO:HD3  | 2.32                     | 0.60              |
| 33:BL:201:GLU:O    | 33:BL:205:ARG:HG3  | 2.02                     | 0.60              |
| 26:BE:92:TYR:HD2   | 26:BE:96:GLU:HB3   | 1.66                     | 0.59              |
| 22:BA:84:G:N2      | 22:BA:97:A:H1'     | 2.17                     | 0.59              |
| 22:BA:176:A:H2'    | 22:BA:177:C:C6     | 2.37                     | 0.59              |
| 22:BA:1334:U:H2'   | 22:BA:1335:C:H5'   | 1.84                     | 0.59              |
| 29:BH:69:ILE:O     | 29:BH:69:ILE:HD13  | 2.02                     | 0.59              |
| 49:B2:44:LYS:HG2   | 49:B2:45:SER:H     | 1.65                     | 0.59              |
| 30:BI:164:LEU:HD11 | 30:BI:183:GLU:HB3  | 1.83                     | 0.59              |
| 37:BP:135:LYS:HB2  | 37:BP:139:LYS:HE3  | 1.84                     | 0.59              |
| 42:BU:112:LYS:NZ   | 42:BU:112:LYS:HB2  | 2.17                     | 0.59              |
| 47:BZ:86:LYS:HB2   | 47:BZ:86:LYS:NZ    | 2.17                     | 0.59              |
| 35:BN:147:ASN:ND2  | 35:BN:171:ARG:HB3  | 2.17                     | 0.59              |
| 32:BK:167:LYS:NZ   | 32:BK:167:LYS:HB3  | 2.16                     | 0.59              |
| 22:BA:1823:C:H2'   | 22:BA:1824:C:O4'   | 2.01                     | 0.59              |
| 50:B3:50:LYS:HD2   | 50:B3:50:LYS:N     | 2.17                     | 0.59              |
| 37:BP:152:ARG:HG2  | 37:BP:169:PHE:CZ   | 2.38                     | 0.59              |
| 1:AA:93:A:H1'      | 1:AA:298:A:C1'     | 2.31                     | 0.59              |
| 22:BA:543:A:N3     | 22:BA:543:A:H3'    | 2.17                     | 0.59              |
| 1:AA:1167:U:H2'    | 1:AA:1168:G:C8     | 2.38                     | 0.59              |
| 6:AF:114:LYS:HE2   | 26:BE:163:LYS:HE3  | 1.81                     | 0.59              |
| 22:BA:1349:G:H2'   | 22:BA:1351:C:C5    | 2.37                     | 0.59              |
| 40:BS:54:LYS:O     | 40:BS:58:ARG:HG3   | 2.02                     | 0.59              |
| 1:AA:13:U:H4'      | 1:AA:474:C:H4'     | 1.85                     | 0.59              |
| 1:AA:943:A:H2'     | 14:AN:8:GLN:NE2    | 2.17                     | 0.59              |
| 29:BH:157:LYS:N    | 29:BH:157:LYS:HD3  | 2.17                     | 0.59              |
| 22:BA:130:U:O2'    | 22:BA:131:C:H5'    | 2.02                     | 0.59              |
| 25:BD:284:ILE:HD13 | 25:BD:285:VAL:N    | 2.17                     | 0.59              |
| 1:AA:1290:C:H2'    | 1:AA:1291:G:C8     | 2.38                     | 0.59              |
| 1:AA:889:C:H2'     | 1:AA:890:G:C8      | 2.38                     | 0.59              |
| 49:B2:19:ILE:HD12  | 49:B2:20:TRP:N     | 2.17                     | 0.59              |
| 1:AA:685:U:H5'     | 6:AF:160:SER:O     | 2.02                     | 0.59              |
| 22:BA:206:A:H5''   | 22:BA:207:A:O4'    | 2.03                     | 0.59              |
| 1:AA:347:G:H2'     | 1:AA:348:G:H8      | 1.67                     | 0.59              |
| 22:BA:639:A:H4'    | 22:BA:640:G:OP1    | 2.02                     | 0.59              |
| 26:BE:83:ARG:HA    | 26:BE:152:ARG:HH12 | 1.67                     | 0.59              |
| 40:BS:88:ARG:CD    | 40:BS:89:GLN:HG2   | 2.31                     | 0.59              |
| 22:BA:2436:U:H1'   | 50:B3:30:VAL:HG23  | 1.84                     | 0.59              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:1456:G:H22   | 22:BA:1592:A:N6    | 2.00                     | 0.59              |
| 22:BA:2794:A:H4'   | 22:BA:2795:G:H5''  | 1.83                     | 0.59              |
| 30:BI:214:ARG:NH1  | 30:BI:214:ARG:HB3  | 2.17                     | 0.59              |
| 22:BA:811:A:H4'    | 22:BA:813:C:OP2    | 2.01                     | 0.59              |
| 22:BA:1786:G:N2    | 22:BA:1799:A:H1'   | 2.17                     | 0.59              |
| 25:BD:314:LYS:NZ   | 25:BD:314:LYS:HB2  | 2.18                     | 0.59              |
| 24:BC:23:G:O2'     | 24:BC:24:U:H5'     | 2.03                     | 0.59              |
| 22:BA:1809:G:H22   | 26:BE:150:LEU:HB3  | 1.66                     | 0.59              |
| 22:BA:2214:C:N4    | 22:BA:2240:G:H1    | 1.94                     | 0.59              |
| 22:BA:590:C:O3'    | 40:BS:31:LEU:HD21  | 2.02                     | 0.59              |
| 35:BN:124:ARG:HG3  | 52:B5:140:ARG:HH21 | 1.66                     | 0.59              |
| 22:BA:1693:U:OP1   | 27:BF:182:SER:HB3  | 2.02                     | 0.59              |
| 38:BQ:77:LEU:HD23  | 38:BQ:78:TYR:N     | 2.18                     | 0.59              |
| 22:BA:2442:A:H5''  | 22:BA:2443:A:C8    | 2.38                     | 0.59              |
| 22:BA:621:G:H1     | 22:BA:629:C:N4     | 2.01                     | 0.59              |
| 34:BM:23:ARG:HD2   | 34:BM:24:ILE:N     | 2.17                     | 0.59              |
| 1:AA:961:U:H3      | 1:AA:966:G:H1      | 1.49                     | 0.59              |
| 39:BR:154:GLU:HG3  | 39:BR:165:TYR:HB2  | 1.85                     | 0.59              |
| 39:BR:147:ASP:OD2  | 39:BR:149:VAL:HG13 | 2.02                     | 0.59              |
| 22:BA:233:G:O5'    | 22:BA:234:C:H5''   | 2.01                     | 0.59              |
| 51:B4:136:LYS:HB2  | 51:B4:136:LYS:NZ   | 2.17                     | 0.59              |
| 29:BH:41:LEU:O     | 29:BH:43:VAL:HG13  | 2.02                     | 0.59              |
| 22:BA:2396:G:H4'   | 38:BQ:58:LYS:HG2   | 1.84                     | 0.59              |
| 22:BA:200:G:C4'    | 22:BA:201:A:H4'    | 2.33                     | 0.59              |
| 35:BN:186:ILE:HD13 | 35:BN:186:ILE:N    | 2.18                     | 0.59              |
| 40:BS:96:ILE:N     | 40:BS:96:ILE:HD12  | 2.16                     | 0.59              |
| 22:BA:793:A:H4'    | 22:BA:794:A:C8     | 2.38                     | 0.59              |
| 1:AA:514:G:H5''    | 1:AA:515:G:OP1     | 2.03                     | 0.59              |
| 22:BA:822:U:O4     | 35:BN:94:ALA:HB1   | 2.03                     | 0.59              |
| 22:BA:764:A:H2'    | 22:BA:765:U:C6     | 2.37                     | 0.59              |
| 1:AA:1315:C:H2'    | 1:AA:1316:G:H8     | 1.68                     | 0.59              |
| 22:BA:2489:G:H2'   | 22:BA:2546:G:N2    | 2.17                     | 0.59              |
| 24:BC:80:C:H4'     | 24:BC:81:C:C5      | 2.38                     | 0.59              |
| 22:BA:1844:U:O2'   | 22:BA:1983:A:H2'   | 2.03                     | 0.59              |
| 1:AA:660:A:P       | 26:BE:161:ILE:C    | 2.81                     | 0.59              |
| 37:BP:98:LYS:HA    | 37:BP:106:ARG:HH11 | 1.67                     | 0.59              |
| 28:BG:224:ARG:HG3  | 28:BG:225:THR:H    | 1.66                     | 0.59              |
| 1:AA:93:A:H5'      | 1:AA:94:C:OP2      | 2.03                     | 0.59              |
| 30:BI:48:LYS:NZ    | 30:BI:48:LYS:HB2   | 2.18                     | 0.59              |
| 1:AA:1040:U:H3'    | 7:AG:4:ARG:NH2     | 2.17                     | 0.59              |
| 33:BL:124:LEU:HD22 | 33:BL:125:GLY:H    | 1.68                     | 0.59              |

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| Atom-1             | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|-------------------|--------------------------|-------------------|
| 33:BL:123:ILE:HD11 | 33:BL:126:ARG:HE  | 1.67                     | 0.59              |
| 22:BA:12:A:H61     | 22:BA:536:C:H2'   | 1.68                     | 0.59              |
| 22:BA:1637:G:H2'   | 22:BA:1638:U:O4'  | 2.03                     | 0.59              |
| 1:AA:271:A:H2'     | 1:AA:272:G:O4'    | 2.02                     | 0.59              |
| 44:BW:150:LYS:HE3  | 44:BW:150:LYS:N   | 2.18                     | 0.59              |
| 37:BP:91:ARG:HB2   | 37:BP:94:ARG:HB2  | 1.84                     | 0.59              |
| 22:BA:330:U:O2'    | 28:BG:218:LYS:HB3 | 2.02                     | 0.59              |
| 1:AA:66:G:H2'      | 1:AA:66:G:N3      | 2.18                     | 0.59              |
| 44:BW:82:GLU:HB3   | 44:BW:103:ASP:HB3 | 1.84                     | 0.59              |
| 22:BA:1571:G:H2'   | 22:BA:1572:G:H5'  | 1.84                     | 0.59              |
| 22:BA:1571:G:C2'   | 22:BA:1572:G:H5'  | 2.33                     | 0.59              |
| 34:BM:70:LYS:N     | 34:BM:70:LYS:HD3  | 2.15                     | 0.59              |
| 26:BE:60:LYS:NZ    | 26:BE:87:ILE:HD13 | 2.18                     | 0.59              |
| 22:BA:2216:U:H2'   | 22:BA:2217:U:C6   | 2.37                     | 0.59              |
| 43:BV:139:ASP:O    | 43:BV:172:LYS:HD3 | 2.02                     | 0.59              |
| 22:BA:617:U:O4     | 22:BA:631:G:H2'   | 2.03                     | 0.59              |
| 44:BW:85:LYS:HB2   | 44:BW:85:LYS:NZ   | 2.17                     | 0.59              |
| 1:AA:1107:U:O5'    | 1:AA:1108:G:OP1   | 2.20                     | 0.59              |
| 6:AF:118:LYS:HZ2   | 26:BE:162:ALA:N   | 2.01                     | 0.58              |
| 26:BE:64:ARG:HD3   | 26:BE:146:ARG:H   | 1.68                     | 0.58              |
| 46:BY:131:THR:HA   | 46:BY:135:ASN:ND2 | 2.18                     | 0.58              |
| 46:BY:80:PHE:HB2   | 46:BY:88:ALA:HA   | 1.85                     | 0.58              |
| 22:BA:1830:U:H5''  | 22:BA:1831:G:OP2  | 2.03                     | 0.58              |
| 24:BC:88:A:N3      | 49:B2:29:LEU:HB3  | 2.19                     | 0.58              |
| 1:AA:1016:A:H5''   | 1:AA:1017:G:OP1   | 2.03                     | 0.58              |
| 1:AA:1199:A:O2'    | 1:AA:1319:G:H5'   | 2.02                     | 0.58              |
| 1:AA:557:A:H5'     | 16:AP:18:ARG:HH22 | 1.68                     | 0.58              |
| 1:AA:1427:U:H2'    | 1:AA:1428:A:C8    | 2.38                     | 0.58              |
| 22:BA:2059:U:H4'   | 49:B2:15:ILE:HG21 | 1.83                     | 0.58              |
| 1:AA:721:G:O3'     | 26:BE:194:VAL:CG2 | 2.51                     | 0.58              |
| 26:BE:124:ASN:ND2  | 26:BE:125:ALA:H   | 2.00                     | 0.58              |
| 22:BA:458:G:H4'    | 22:BA:461:A:C4    | 2.38                     | 0.58              |
| 1:AA:14:U:O2'      | 1:AA:863:A:H5'    | 2.03                     | 0.58              |
| 22:BA:1168:U:H4'   | 22:BA:1169:A:C4   | 2.38                     | 0.58              |
| 38:BQ:98:LYS:O     | 38:BQ:98:LYS:HD3  | 2.02                     | 0.58              |
| 1:AA:420:A:H2'     | 1:AA:421:G:H8     | 1.66                     | 0.58              |
| 22:BA:330:U:H1'    | 28:BG:218:LYS:HZ2 | 1.68                     | 0.58              |
| 26:BE:267:ILE:HG13 | 26:BE:269:ARG:H   | 1.68                     | 0.58              |
| 38:BQ:47:ASP:OD2   | 38:BQ:49:THR:HG22 | 2.03                     | 0.58              |
| 22:BA:2791:C:H5''  | 27:BF:212:LYS:HB2 | 1.85                     | 0.58              |
| 22:BA:1800:C:OP2   | 26:BE:216:VAL:HB  | 2.03                     | 0.58              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:2774:U:H4'   | 22:BA:2775:A:C5'   | 2.33                     | 0.58              |
| 29:BH:52:ASN:ND2   | 29:BH:103:ALA:HB2  | 2.15                     | 0.58              |
| 22:BA:225:U:H3'    | 22:BA:226:A:H5''   | 1.86                     | 0.58              |
| 22:BA:26:G:N2      | 22:BA:523:G:H2'    | 2.17                     | 0.58              |
| 22:BA:1346:U:H1'   | 42:BU:115:LYS:NZ   | 2.18                     | 0.58              |
| 52:B5:114:ARG:NE   | 52:B5:114:ARG:HA   | 2.19                     | 0.58              |
| 36:BO:68:ILE:N     | 36:BO:68:ILE:HD13  | 2.17                     | 0.58              |
| 36:BO:1:MET:SD     | 36:BO:97:VAL:HG22  | 2.44                     | 0.58              |
| 39:BR:148:ILE:O    | 39:BR:148:ILE:HD13 | 2.03                     | 0.58              |
| 22:BA:1320:G:H22   | 22:BA:1676:U:H5'   | 1.69                     | 0.58              |
| 35:BN:107:SER:OG   | 35:BN:109:PRO:HD3  | 2.04                     | 0.58              |
| 22:BA:1243:C:OP1   | 41:BT:191:LEU:HD21 | 2.04                     | 0.58              |
| 40:BS:44:VAL:HG22  | 41:BT:200:TYR:HB3  | 1.84                     | 0.58              |
| 41:BT:219:ILE:HG22 | 41:BT:220:LYS:N    | 2.16                     | 0.58              |
| 1:AA:1148:C:H5'    | 1:AA:1149:A:H5''   | 1.84                     | 0.58              |
| 29:BH:45:LYS:HB3   | 29:BH:45:LYS:NZ    | 2.18                     | 0.58              |
| 30:BI:129:LYS:HB2  | 30:BI:208:SER:HB3  | 1.84                     | 0.58              |
| 1:AA:1113:U:H3     | 1:AA:1119:G:H1     | 1.51                     | 0.58              |
| 1:AA:1118:A:H2'    | 1:AA:1119:G:O4'    | 2.02                     | 0.58              |
| 22:BA:530:U:H5'    | 42:BU:47:ARG:NH2   | 2.16                     | 0.58              |
| 40:BS:81:PHE:HZ    | 40:BS:111:ILE:HD12 | 1.68                     | 0.58              |
| 35:BN:196:LEU:HD21 | 35:BN:211:LEU:HB3  | 1.83                     | 0.58              |
| 34:BM:35:ILE:HD13  | 34:BM:36:GLY:N     | 2.17                     | 0.58              |
| 34:BM:107:ARG:HE   | 34:BM:114:VAL:HG11 | 1.67                     | 0.58              |
| 22:BA:1378:U:H2'   | 22:BA:1379:C:O4'   | 2.03                     | 0.58              |
| 22:BA:1879:U:O2'   | 22:BA:1880:G:H5'   | 2.02                     | 0.58              |
| 22:BA:893:C:N4     | 22:BA:901:C:H42    | 2.02                     | 0.58              |
| 49:B2:29:LEU:HG    | 49:B2:30:LYS:N     | 2.18                     | 0.58              |
| 22:BA:2193:C:O4'   | 25:BD:282:THR:HG22 | 2.03                     | 0.58              |
| 44:BW:76:LYS:HD2   | 44:BW:137:ILE:HG21 | 1.83                     | 0.58              |
| 22:BA:1296:A:N3    | 22:BA:1296:A:H3'   | 2.17                     | 0.58              |
| 37:BP:102:PRO:HD2  | 37:BP:105:GLN:HG3  | 1.84                     | 0.58              |
| 1:AA:1197:C:C2'    | 1:AA:1198:A:H5'    | 2.34                     | 0.58              |
| 1:AA:233:A:H5''    | 20:AT:163:THR:OG1  | 2.04                     | 0.58              |
| 25:BD:127:LYS:NZ   | 25:BD:127:LYS:HB3  | 2.18                     | 0.58              |
| 28:BG:182:PHE:HZ   | 28:BG:215:ASN:HD22 | 1.51                     | 0.58              |
| 1:AA:755:U:C2      | 26:BE:5:LEU:CG     | 2.87                     | 0.58              |
| 1:AA:1423:G:H5'    | 22:BA:1737:A:C2    | 2.30                     | 0.58              |
| 39:BR:148:ILE:HG21 | 39:BR:212:ARG:NH2  | 2.18                     | 0.58              |
| 1:AA:422:A:H4'     | 1:AA:423:A:C8      | 2.39                     | 0.58              |
| 1:AA:381:G:H2'     | 1:AA:400:U:O4      | 2.03                     | 0.58              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 35:BN:192:LEU:HD13 | 35:BN:210:LYS:HZ3  | 1.67                     | 0.58              |
| 1:AA:1198:A:H4'    | 9:AI:137:GLY:N     | 2.19                     | 0.58              |
| 3:AC:201:ARG:HG3   | 3:AC:202:THR:H     | 1.68                     | 0.58              |
| 22:BA:38:C:H1'     | 28:BG:97:ARG:HH22  | 1.69                     | 0.58              |
| 22:BA:1471:A:H61   | 22:BA:1480:A:H2    | 1.52                     | 0.58              |
| 42:BU:50:ILE:HA    | 42:BU:53:ILE:HG12  | 1.85                     | 0.58              |
| 46:BY:117:LYS:HD3  | 46:BY:138:ASP:OD1  | 2.04                     | 0.58              |
| 40:BS:52:ARG:HD3   | 40:BS:55:ARG:NH1   | 2.17                     | 0.58              |
| 1:AA:1134:G:H4'    | 9:AI:189:ARG:HH22  | 1.69                     | 0.58              |
| 44:BW:109:LYS:HD2  | 44:BW:109:LYS:N    | 2.18                     | 0.58              |
| 1:AA:184:G:C2      | 1:AA:185:G:H1'     | 2.38                     | 0.58              |
| 36:BO:77:ARG:NH1   | 36:BO:77:ARG:HB2   | 2.19                     | 0.58              |
| 31:BJ:84:LYS:N     | 31:BJ:84:LYS:HD2   | 2.18                     | 0.58              |
| 1:AA:1424:G:C5'    | 22:BA:1725:A:O4'   | 2.47                     | 0.58              |
| 1:AA:1330:U:O2'    | 1:AA:1331:C:H5'    | 2.03                     | 0.58              |
| 35:BN:146:VAL:HG23 | 35:BN:147:ASN:H    | 1.68                     | 0.58              |
| 1:AA:1182:C:H4'    | 1:AA:1313:U:O2'    | 2.03                     | 0.58              |
| 1:AA:911:C:H2'     | 1:AA:912:G:C8      | 2.38                     | 0.58              |
| 44:BW:94:LYS:HG2   | 44:BW:95:HIS:N     | 2.17                     | 0.58              |
| 22:BA:2492:C:H42   | 22:BA:2546:G:H22   | 1.52                     | 0.58              |
| 53:B6:26:ILE:HD12  | 53:B6:26:ILE:N     | 2.18                     | 0.58              |
| 38:BQ:116:LYS:NZ   | 38:BQ:116:LYS:HB2  | 2.18                     | 0.58              |
| 39:BR:200:SER:HB3  | 39:BR:201:PRO:HD3  | 1.84                     | 0.58              |
| 46:BY:132:ILE:HD13 | 46:BY:137:LEU:HG   | 1.86                     | 0.58              |
| 22:BA:650:G:H2'    | 22:BA:651:U:C6     | 2.39                     | 0.58              |
| 35:BN:208:LYS:HE2  | 35:BN:218:LEU:HA   | 1.85                     | 0.58              |
| 1:AA:806:U:C3'     | 1:AA:807:G:H5''    | 2.34                     | 0.58              |
| 28:BG:72:LEU:HD22  | 28:BG:73:LYS:HG2   | 1.84                     | 0.58              |
| 31:BJ:53:ILE:H     | 31:BJ:86:GLN:HB3   | 1.68                     | 0.58              |
| 31:BJ:73:GLY:HA2   | 31:BJ:76:ARG:NH1   | 2.19                     | 0.58              |
| 50:B3:14:GLU:HG2   | 50:B3:31:SER:HA    | 1.84                     | 0.58              |
| 25:BD:173:LEU:HD23 | 25:BD:174:ARG:N    | 2.19                     | 0.58              |
| 22:BA:458:G:H4'    | 22:BA:461:A:N3     | 2.18                     | 0.58              |
| 40:BS:31:LEU:CD1   | 40:BS:33:ARG:H     | 2.16                     | 0.58              |
| 1:AA:862:A:H4'     | 1:AA:863:A:C5'     | 2.33                     | 0.58              |
| 22:BA:10:G:H2'     | 22:BA:11:G:H5'     | 1.86                     | 0.58              |
| 47:BZ:103:LYS:N    | 47:BZ:103:LYS:HD2  | 2.19                     | 0.58              |
| 1:AA:872:A:H4'     | 5:AE:167:LYS:HG3   | 1.85                     | 0.58              |
| 25:BD:191:VAL:HB   | 25:BD:209:VAL:HG22 | 1.85                     | 0.58              |
| 23:BB:34:A:H2'     | 23:BB:44:G:O6      | 2.04                     | 0.58              |
| 22:BA:330:U:OP2    | 28:BG:187:THR:HG22 | 2.03                     | 0.58              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 39:BR:226:LEU:HB3  | 39:BR:227:PRO:HD3  | 1.83                     | 0.58              |
| 30:BI:161:PRO:HG2  | 30:BI:164:LEU:HD12 | 1.86                     | 0.58              |
| 22:BA:2470:A:H2'   | 22:BA:2471:G:H8    | 1.69                     | 0.58              |
| 1:AA:103:A:H4'     | 1:AA:104:A:C4      | 2.39                     | 0.58              |
| 22:BA:1006:G:H1    | 22:BA:1013:C:N4    | 2.02                     | 0.58              |
| 1:AA:443:A:H4'     | 1:AA:444:A:O5'     | 2.04                     | 0.57              |
| 40:BS:43:LEU:HD12  | 41:BT:198:PHE:CD1  | 2.39                     | 0.57              |
| 45:BX:138:VAL:HG12 | 45:BX:139:TYR:CD1  | 2.33                     | 0.57              |
| 1:AA:981:G:H2'     | 1:AA:982:G:H5'     | 1.86                     | 0.57              |
| 22:BA:1075:G:H2'   | 22:BA:1138:G:H1    | 1.68                     | 0.57              |
| 22:BA:236:A:H2'    | 22:BA:237:G:O4'    | 2.03                     | 0.57              |
| 22:BA:2182:G:H21   | 22:BA:2183:A:N6    | 2.01                     | 0.57              |
| 22:BA:329:C:H2'    | 28:BG:187:THR:HG21 | 1.86                     | 0.57              |
| 37:BP:165:VAL:HG23 | 37:BP:166:HIS:N    | 2.19                     | 0.57              |
| 22:BA:2067:G:OP1   | 27:BF:193:THR:HA   | 2.04                     | 0.57              |
| 22:BA:568:C:H5''   | 33:BL:210:LYS:HG2  | 1.85                     | 0.57              |
| 22:BA:1178:G:H4'   | 40:BS:83:HIS:HD2   | 1.68                     | 0.57              |
| 26:BE:140:ILE:HG13 | 26:BE:141:GLU:N    | 2.18                     | 0.57              |
| 26:BE:178:ARG:C    | 26:BE:179:LEU:HD12 | 2.23                     | 0.57              |
| 36:BO:1:MET:C      | 36:BO:2:LEU:HD12   | 2.24                     | 0.57              |
| 39:BR:138:ARG:HH12 | 39:BR:141:PRO:HD3  | 1.69                     | 0.57              |
| 46:BY:110:ARG:HH21 | 46:BY:123:ARG:CZ   | 2.17                     | 0.57              |
| 1:AA:250:A:H5'     | 1:AA:252:G:O4'     | 2.03                     | 0.57              |
| 22:BA:2674:A:H62   | 22:BA:2681:G:N2    | 1.99                     | 0.57              |
| 28:BG:209:LEU:HD22 | 28:BG:228:LEU:HD22 | 1.86                     | 0.57              |
| 38:BQ:138:ARG:NH1  | 38:BQ:147:VAL:HG23 | 2.19                     | 0.57              |
| 22:BA:2804:U:H4'   | 27:BF:109:GLY:HA2  | 1.85                     | 0.57              |
| 22:BA:2158:U:O2'   | 22:BA:2160:C:H5''  | 2.04                     | 0.57              |
| 6:AF:115:ARG:H     | 6:AF:115:ARG:HD3   | 1.69                     | 0.57              |
| 1:AA:762:A:H5'     | 1:AA:1460:G:H4'    | 1.85                     | 0.57              |
| 28:BG:90:THR:HG23  | 28:BG:91:HIS:ND1   | 2.19                     | 0.57              |
| 22:BA:1286:A:H4'   | 22:BA:1287:G:O5'   | 2.05                     | 0.57              |
| 46:BY:83:LYS:HG2   | 46:BY:84:LYS:N     | 2.18                     | 0.57              |
| 37:BP:159:ILE:CD1  | 37:BP:159:ILE:H    | 2.15                     | 0.57              |
| 35:BN:108:GLY:H    | 35:BN:109:PRO:HD3  | 1.68                     | 0.57              |
| 1:AA:447:A:H4'     | 1:AA:448:G:OP1     | 2.04                     | 0.57              |
| 40:BS:50:ARG:NH2   | 41:BT:198:PHE:H    | 2.00                     | 0.57              |
| 41:BT:197:VAL:HG23 | 41:BT:210:ILE:HG13 | 1.86                     | 0.57              |
| 1:AA:209:G:H3'     | 1:AA:210:U:C5'     | 2.34                     | 0.57              |
| 49:B2:22:LYS:HD3   | 49:B2:22:LYS:H     | 1.69                     | 0.57              |
| 22:BA:2154:C:H2'   | 22:BA:2155:C:C6    | 2.39                     | 0.57              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 31:BJ:122:GLN:HG3  | 31:BJ:123:THR:HG23 | 1.86                     | 0.57              |
| 3:AC:20:SER:HB2    | 3:AC:40:ARG:HH12   | 1.69                     | 0.57              |
| 6:AF:114:LYS:HE3   | 26:BE:163:LYS:HE2  | 1.86                     | 0.57              |
| 44:BW:70:LYS:CD    | 44:BW:70:LYS:H     | 2.06                     | 0.57              |
| 52:B5:105:THR:HG23 | 52:B5:106:GLY:N    | 2.16                     | 0.57              |
| 45:BX:89:LYS:HB3   | 45:BX:123:LEU:HD23 | 1.86                     | 0.57              |
| 28:BG:217:GLU:HG3  | 28:BG:220:GLY:N    | 2.19                     | 0.57              |
| 22:BA:1207:G:H2'   | 22:BA:1208:G:O4'   | 2.04                     | 0.57              |
| 22:BA:455:A:H2'    | 28:BG:96:ARG:NH1   | 2.18                     | 0.57              |
| 41:BT:172:ILE:N    | 41:BT:172:ILE:HD13 | 2.19                     | 0.57              |
| 22:BA:1039:A:H4'   | 40:BS:77:ASN:ND2   | 2.20                     | 0.57              |
| 22:BA:2760:C:H2'   | 22:BA:2761:U:C6    | 2.40                     | 0.57              |
| 34:BM:86:ILE:HD12  | 34:BM:86:ILE:N     | 2.19                     | 0.57              |
| 22:BA:2255:G:H3'   | 22:BA:2255:G:N3    | 2.18                     | 0.57              |
| 37:BP:135:LYS:HA   | 37:BP:138:ASP:OD2  | 2.03                     | 0.57              |
| 1:AA:1237:A:H3'    | 1:AA:1238:C:H6     | 1.69                     | 0.57              |
| 1:AA:669:A:H4'     | 1:AA:670:A:H5''    | 1.84                     | 0.57              |
| 22:BA:1287:G:N7    | 42:BU:45:LYS:HG3   | 2.18                     | 0.57              |
| 22:BA:2221:U:H3    | 22:BA:2234:G:H22   | 1.51                     | 0.57              |
| 22:BA:212:A:O2'    | 22:BA:213:A:H5'    | 2.03                     | 0.57              |
| 33:BL:199:ILE:HG23 | 33:BL:200:ILE:HG12 | 1.86                     | 0.57              |
| 1:AA:1148:C:H5'    | 1:AA:1149:A:H5'    | 1.85                     | 0.57              |
| 44:BW:90:SER:O     | 44:BW:100:ILE:HG22 | 2.04                     | 0.57              |
| 22:BA:2589:A:H62   | 27:BF:193:THR:HB   | 1.69                     | 0.57              |
| 1:AA:1256:U:H2'    | 1:AA:1257:G:C8     | 2.40                     | 0.57              |
| 44:BW:114:LYS:HD2  | 44:BW:116:GLU:OE1  | 2.04                     | 0.57              |
| 22:BA:47:G:H22     | 22:BA:161:G:H22    | 1.51                     | 0.57              |
| 22:BA:1558:U:H2'   | 22:BA:1559:A:C8    | 2.40                     | 0.57              |
| 36:BO:17:MET:SD    | 36:BO:39:PRO:HB2   | 2.45                     | 0.57              |
| 39:BR:223:ARG:HA   | 39:BR:223:ARG:CZ   | 2.35                     | 0.57              |
| 22:BA:457:C:H2'    | 22:BA:458:G:O4'    | 2.04                     | 0.57              |
| 1:AA:376:U:H5''    | 1:AA:443:A:H2      | 1.68                     | 0.57              |
| 22:BA:414:A:C2'    | 22:BA:415:U:H5'    | 2.35                     | 0.57              |
| 29:BH:47:VAL:HG13  | 29:BH:48:LYS:HG2   | 1.87                     | 0.57              |
| 52:B5:128:ARG:HD3  | 52:B5:128:ARG:C    | 2.24                     | 0.57              |
| 27:BF:100:ASP:HB3  | 27:BF:101:ARG:HH11 | 1.69                     | 0.57              |
| 26:BE:256:ARG:HB2  | 26:BE:260:LYS:HA   | 1.87                     | 0.57              |
| 32:BK:105:ASN:HD22 | 32:BK:106:ILE:N    | 2.02                     | 0.57              |
| 28:BG:168:ALA:HB1  | 28:BG:245:LEU:HD21 | 1.86                     | 0.57              |
| 45:BX:73:SER:HB3   | 45:BX:74:PRO:C     | 2.25                     | 0.57              |
| 26:BE:137:ILE:HG13 | 26:BE:138:HIS:H    | 1.68                     | 0.57              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:1600:A:H5'   | 26:BE:207:LYS:NZ   | 2.19                     | 0.57              |
| 26:BE:64:ARG:NE    | 26:BE:145:GLY:HA2  | 2.14                     | 0.57              |
| 35:BN:168:LYS:HE3  | 35:BN:172:VAL:HG23 | 1.85                     | 0.57              |
| 26:BE:83:ARG:HB2   | 26:BE:152:ARG:HH22 | 1.69                     | 0.57              |
| 22:BA:85:U:P       | 44:BW:94:LYS:HG3   | 2.45                     | 0.57              |
| 1:AA:701:A:H5''    | 1:AA:702:C:OP1     | 2.05                     | 0.57              |
| 1:AA:9:A:H1'       | 5:AE:249:ALA:O     | 2.03                     | 0.57              |
| 39:BR:122:ILE:HG23 | 39:BR:126:LEU:HD11 | 1.87                     | 0.57              |
| 1:AA:48:C:O5'      | 1:AA:49:U:OP1      | 2.23                     | 0.57              |
| 22:BA:1259:C:H2'   | 22:BA:1260:G:C8    | 2.40                     | 0.57              |
| 31:BJ:180:LEU:HB3  | 31:BJ:188:ALA:HB3  | 1.86                     | 0.57              |
| 46:BY:146:ILE:HG13 | 46:BY:147:ASP:N    | 2.19                     | 0.57              |
| 22:BA:2473:C:H42   | 22:BA:2512:G:H1    | 1.53                     | 0.57              |
| 22:BA:201:A:H2'    | 22:BA:202:A:C8     | 2.40                     | 0.57              |
| 40:BS:88:ARG:HG2   | 40:BS:118:LYS:HE2  | 1.86                     | 0.57              |
| 45:BX:120:ILE:O    | 45:BX:120:ILE:HG23 | 2.05                     | 0.57              |
| 1:AA:240:U:H2'     | 1:AA:241:A:C8      | 2.39                     | 0.57              |
| 1:AA:61:A:H4'      | 1:AA:62:G:O5'      | 2.04                     | 0.57              |
| 1:AA:1150:U:H2'    | 1:AA:1151:C:O4'    | 2.05                     | 0.57              |
| 25:BD:137:LEU:HD13 | 25:BD:303:LEU:HD12 | 1.87                     | 0.57              |
| 1:AA:1250:U:H5''   | 1:AA:1251:C:OP1    | 2.04                     | 0.57              |
| 28:BG:113:ARG:HD2  | 28:BG:115:PRO:HG3  | 1.85                     | 0.57              |
| 23:BB:56:U:H4'     | 23:BB:57:A:C8      | 2.40                     | 0.57              |
| 26:BE:221:MET:HA   | 26:BE:230:GLY:H    | 1.69                     | 0.57              |
| 1:AA:1390:A:H62    | 1:AA:1410:G:H21    | 1.53                     | 0.57              |
| 24:BC:77:C:H4'     | 39:BR:125:ILE:HD13 | 1.87                     | 0.57              |
| 22:BA:1801:A:N6    | 22:BA:1838:G:H2'   | 2.19                     | 0.57              |
| 22:BA:2403:U:O3'   | 45:BX:96:ARG:HG3   | 2.05                     | 0.57              |
| 1:AA:400:U:H3'     | 4:AD:9:PHE:CZ      | 2.40                     | 0.57              |
| 50:B3:32:ARG:HG3   | 50:B3:35:THR:H     | 1.69                     | 0.57              |
| 22:BA:1410:G:H1    | 22:BA:1419:C:N4    | 2.02                     | 0.57              |
| 22:BA:1645:A:H1'   | 22:BA:1652:A:C4'   | 2.35                     | 0.57              |
| 39:BR:129:LYS:NZ   | 39:BR:129:LYS:HB2  | 2.19                     | 0.57              |
| 41:BT:132:ARG:HD2  | 41:BT:132:ARG:N    | 2.19                     | 0.57              |
| 22:BA:2483:C:H5'   | 53:B6:5:SER:HB2    | 1.87                     | 0.57              |
| 22:BA:1001:A:H2'   | 22:BA:1207:G:H22   | 1.70                     | 0.57              |
| 31:BJ:54:LEU:HD13  | 31:BJ:86:GLN:NE2   | 2.19                     | 0.57              |
| 28:BG:131:SER:N    | 28:BG:132:PRO:HA   | 2.20                     | 0.57              |
| 22:BA:71:A:O2'     | 47:BZ:115:ALA:HB1  | 2.05                     | 0.57              |
| 41:BT:138:PRO:HB2  | 41:BT:224:ILE:HG22 | 1.87                     | 0.57              |
| 22:BA:2761:U:H3'   | 22:BA:2762:G:H5''  | 1.87                     | 0.57              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 50:B3:23:VAL:HG21  | 50:B3:51:PHE:HE2   | 1.70                     | 0.57              |
| 45:BX:110:ILE:N    | 45:BX:110:ILE:HD13 | 2.19                     | 0.57              |
| 31:BJ:145:ALA:HA   | 31:BJ:148:LEU:HD12 | 1.86                     | 0.57              |
| 1:AA:1066:G:H4'    | 9:AI:173:ARG:NH2   | 2.20                     | 0.57              |
| 50:B3:45:ARG:HG3   | 50:B3:46:LEU:HG    | 1.87                     | 0.57              |
| 35:BN:144:VAL:HG22 | 35:BN:145:ASN:N    | 2.20                     | 0.57              |
| 41:BT:127:VAL:HG11 | 41:BT:182:VAL:HG11 | 1.87                     | 0.57              |
| 42:BU:30:ASP:HA    | 42:BU:135:VAL:HG21 | 1.86                     | 0.56              |
| 36:BO:39:PRO:HG3   | 36:BO:98:LYS:HG2   | 1.86                     | 0.56              |
| 22:BA:2377:C:H2'   | 22:BA:2378:C:O4'   | 2.05                     | 0.56              |
| 46:BY:76:ARG:C     | 46:BY:77:ILE:HD12  | 2.24                     | 0.56              |
| 35:BN:198:ILE:HD12 | 35:BN:216:CYS:SG   | 2.45                     | 0.56              |
| 1:AA:217:A:N6      | 1:AA:252:G:H1'     | 2.16                     | 0.56              |
| 22:BA:1829:A:H2'   | 26:BE:174:SER:OG   | 2.05                     | 0.56              |
| 35:BN:103:GLN:O    | 35:BN:106:ARG:HD3  | 2.05                     | 0.56              |
| 22:BA:1167:C:H2'   | 22:BA:1168:U:H5'   | 1.87                     | 0.56              |
| 22:BA:1073:G:H4'   | 22:BA:1075:G:O4'   | 2.04                     | 0.56              |
| 22:BA:82:G:N2      | 22:BA:101:A:H62    | 2.03                     | 0.56              |
| 42:BU:140:THR:HG23 | 42:BU:141:HIS:N    | 2.20                     | 0.56              |
| 1:AA:1315:C:H2'    | 1:AA:1316:G:C8     | 2.40                     | 0.56              |
| 22:BA:1327:U:H2'   | 22:BA:1328:A:H8    | 1.70                     | 0.56              |
| 28:BG:52:LEU:HD12  | 28:BG:71:ASN:HA    | 1.85                     | 0.56              |
| 1:AA:1424:G:OP1    | 22:BA:1725:A:N9    | 2.37                     | 0.56              |
| 42:BU:49:VAL:HG21  | 42:BU:72:ALA:HB3   | 1.87                     | 0.56              |
| 45:BX:135:LYS:NZ   | 45:BX:135:LYS:HB2  | 2.20                     | 0.56              |
| 49:B2:32:PHE:HB3   | 49:B2:36:LYS:HD2   | 1.86                     | 0.56              |
| 35:BN:187:LEU:H    | 35:BN:187:LEU:HD23 | 1.70                     | 0.56              |
| 1:AA:76:G:H2'      | 1:AA:77:G:O4'      | 2.05                     | 0.56              |
| 24:BC:87:G:C5      | 49:B2:29:LEU:HD11  | 2.40                     | 0.56              |
| 22:BA:2399:G:H2'   | 52:B5:127:LYS:HD3  | 1.86                     | 0.56              |
| 22:BA:2362:G:O2'   | 22:BA:2399:G:H5'   | 2.05                     | 0.56              |
| 39:BR:126:LEU:H    | 39:BR:126:LEU:HD13 | 1.69                     | 0.56              |
| 22:BA:238:C:H2'    | 22:BA:239:G:O4'    | 2.06                     | 0.56              |
| 48:B1:78:LYS:N     | 48:B1:78:LYS:HD2   | 2.21                     | 0.56              |
| 43:BV:180:LYS:HD2  | 43:BV:180:LYS:N    | 2.20                     | 0.56              |
| 39:BR:178:HIS:CD2  | 39:BR:179:THR:HG23 | 2.40                     | 0.56              |
| 1:AA:953:A:H2'     | 1:AA:954:A:O4'     | 2.06                     | 0.56              |
| 22:BA:2116:C:N4    | 22:BA:2201:G:H1    | 1.96                     | 0.56              |
| 49:B2:36:LYS:HB2   | 49:B2:39:SER:HB2   | 1.87                     | 0.56              |
| 50:B3:50:LYS:CD    | 50:B3:50:LYS:H     | 2.16                     | 0.56              |
| 1:AA:39:G:H4'      | 1:AA:495:A:C6      | 2.40                     | 0.56              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 31:BJ:53:ILE:O     | 31:BJ:86:GLN:HG2   | 2.05                     | 0.56              |
| 22:BA:541:G:H2'    | 22:BA:2049:G:H4'   | 1.88                     | 0.56              |
| 29:BH:123:LEU:HA   | 29:BH:125:ARG:H    | 1.71                     | 0.56              |
| 1:AA:605:U:O2'     | 15:AO:19:LYS:HD2   | 2.05                     | 0.56              |
| 22:BA:82:G:H21     | 22:BA:101:A:N6     | 2.04                     | 0.56              |
| 22:BA:792:A:H5''   | 22:BA:793:A:N7     | 2.20                     | 0.56              |
| 22:BA:2653:U:H2'   | 22:BA:2654:U:C6    | 2.40                     | 0.56              |
| 22:BA:2107:G:H21   | 22:BA:2212:A:H62   | 1.52                     | 0.56              |
| 52:B5:96:LYS:HD2   | 52:B5:100:LYS:HE3  | 1.86                     | 0.56              |
| 35:BN:84:LYS:NZ    | 35:BN:84:LYS:HB3   | 2.20                     | 0.56              |
| 29:BH:148:ARG:N    | 29:BH:148:ARG:HD2  | 2.20                     | 0.56              |
| 18:AR:43:GLN:HE21  | 21:AU:97:VAL:HG12  | 1.70                     | 0.56              |
| 22:BA:445:C:H2'    | 22:BA:446:U:C6     | 2.40                     | 0.56              |
| 28:BG:79:LYS:N     | 28:BG:79:LYS:HD3   | 2.20                     | 0.56              |
| 23:BB:35:A:H3'     | 23:BB:35:A:N3      | 2.20                     | 0.56              |
| 25:BD:219:LYS:NZ   | 25:BD:219:LYS:HB3  | 2.20                     | 0.56              |
| 23:BB:108:U:O2'    | 23:BB:109:C:H5'    | 2.06                     | 0.56              |
| 47:BZ:109:ARG:HA   | 47:BZ:112:LYS:HE2  | 1.87                     | 0.56              |
| 22:BA:1209:U:H5'   | 41:BT:204:LYS:HG3  | 1.87                     | 0.56              |
| 26:BE:59:ARG:O     | 26:BE:60:LYS:HB2   | 2.05                     | 0.56              |
| 29:BH:24:ILE:CD1   | 29:BH:24:ILE:H     | 2.13                     | 0.56              |
| 40:BS:56:ASP:O     | 40:BS:60:LEU:HG    | 2.06                     | 0.56              |
| 45:BX:128:LYS:HB3  | 45:BX:128:LYS:NZ   | 2.20                     | 0.56              |
| 28:BG:226:LEU:HD23 | 28:BG:227:LYS:N    | 2.20                     | 0.56              |
| 44:BW:94:LYS:N     | 44:BW:94:LYS:HD2   | 2.20                     | 0.56              |
| 44:BW:102:LYS:HD2  | 44:BW:105:ASN:HD21 | 1.69                     | 0.56              |
| 22:BA:463:C:OP2    | 28:BG:103:LEU:HD21 | 2.06                     | 0.56              |
| 22:BA:2396:G:O3'   | 38:BQ:58:LYS:HG2   | 2.05                     | 0.56              |
| 22:BA:1304:G:N2    | 22:BA:1306:G:H3'   | 2.20                     | 0.56              |
| 18:AR:56:LEU:H     | 18:AR:56:LEU:HD23  | 1.71                     | 0.56              |
| 1:AA:561:C:H2'     | 1:AA:562:A:C8      | 2.40                     | 0.56              |
| 22:BA:2209:U:H2'   | 22:BA:2210:C:C6    | 2.40                     | 0.56              |
| 36:BO:41:TRP:HB3   | 36:BO:94:VAL:HG21  | 1.87                     | 0.56              |
| 22:BA:1731:G:H3'   | 22:BA:1731:G:N3    | 2.21                     | 0.56              |
| 37:BP:151:LYS:HD2  | 37:BP:151:LYS:N    | 2.21                     | 0.56              |
| 1:AA:660:A:C4'     | 26:BE:161:ILE:HG23 | 2.36                     | 0.56              |
| 22:BA:575:C:H42    | 22:BA:585:A:N6     | 1.90                     | 0.56              |
| 22:BA:1320:G:N2    | 22:BA:1676:U:H5'   | 2.20                     | 0.56              |
| 52:B5:117:LYS:O    | 52:B5:117:LYS:HD3  | 2.05                     | 0.56              |
| 22:BA:457:C:O2'    | 22:BA:458:G:H5'    | 2.06                     | 0.56              |
| 1:AA:78:U:O2       | 1:AA:78:U:H2'      | 2.06                     | 0.56              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:97:A:C2'     | 22:BA:98:G:H5'     | 2.34                     | 0.56              |
| 22:BA:1088:U:H4'   | 22:BA:1090:U:OP2   | 2.05                     | 0.56              |
| 41:BT:123:ILE:N    | 41:BT:224:ILE:HA   | 2.20                     | 0.56              |
| 44:BW:100:ILE:HG13 | 44:BW:126:GLU:HB2  | 1.86                     | 0.56              |
| 44:BW:102:LYS:HA   | 44:BW:126:GLU:HG2  | 1.88                     | 0.56              |
| 22:BA:1975:C:H2'   | 22:BA:1976:C:O4'   | 2.06                     | 0.56              |
| 1:AA:889:C:H2'     | 1:AA:890:G:H8      | 1.71                     | 0.56              |
| 1:AA:456:U:H4'     | 1:AA:457:A:O5'     | 2.05                     | 0.56              |
| 27:BF:208:MET:CE   | 27:BF:209:GLY:H    | 2.19                     | 0.56              |
| 15:AO:53:LEU:HD13  | 22:BA:726:G:C2     | 2.39                     | 0.56              |
| 39:BR:146:GLY:HA3  | 39:BR:219:LEU:HD12 | 1.86                     | 0.56              |
| 22:BA:2223:A:H3'   | 22:BA:2224:G:C5'   | 2.31                     | 0.56              |
| 28:BG:75:ALA:H     | 28:BG:76:PRO:HD2   | 1.69                     | 0.56              |
| 22:BA:1277:G:H21   | 28:BG:133:LEU:HD22 | 1.69                     | 0.56              |
| 22:BA:85:U:OP2     | 44:BW:94:LYS:HG3   | 2.05                     | 0.56              |
| 22:BA:2118:U:H2'   | 22:BA:2119:U:C5    | 2.41                     | 0.56              |
| 44:BW:107:LYS:N    | 44:BW:107:LYS:HD3  | 2.20                     | 0.56              |
| 31:BJ:162:LYS:HD2  | 31:BJ:163:ARG:N    | 2.20                     | 0.56              |
| 43:BV:191:ILE:HD12 | 43:BV:191:ILE:N    | 2.21                     | 0.56              |
| 1:AA:22:G:H2'      | 1:AA:23:G:C8       | 2.40                     | 0.56              |
| 25:BD:307:ILE:O    | 25:BD:311:GLU:HG3  | 2.06                     | 0.56              |
| 28:BG:102:THR:HG21 | 28:BG:142:GLY:HA3  | 1.88                     | 0.56              |
| 22:BA:1734:A:H5'   | 22:BA:1736:A:H4'   | 1.87                     | 0.56              |
| 22:BA:727:A:C3'    | 22:BA:728:A:H5''   | 2.36                     | 0.56              |
| 26:BE:65:ARG:HD2   | 26:BE:124:ASN:HD21 | 1.71                     | 0.56              |
| 40:BS:13:ARG:HB3   | 40:BS:13:ARG:NH1   | 2.20                     | 0.56              |
| 26:BE:83:ARG:CA    | 26:BE:152:ARG:HH12 | 2.19                     | 0.56              |
| 22:BA:798:C:C5'    | 22:BA:799:A:H5'    | 2.36                     | 0.56              |
| 25:BD:226:ASP:OD1  | 25:BD:227:LYS:HG3  | 2.05                     | 0.56              |
| 32:BK:98:ALA:C     | 32:BK:99:LEU:HD13  | 2.26                     | 0.56              |
| 1:AA:1202:G:O4'    | 1:AA:1304:G:H5''   | 2.06                     | 0.56              |
| 1:AA:740:A:H5''    | 1:AA:741:U:OP1     | 2.06                     | 0.56              |
| 1:AA:132:A:H61     | 1:AA:158:A:H61     | 1.53                     | 0.56              |
| 27:BF:220:ILE:HG21 | 27:BF:223:ILE:HD11 | 1.87                     | 0.56              |
| 2:AB:233:ILE:HG22  | 2:AB:234:ARG:H     | 1.70                     | 0.56              |
| 22:BA:51:A:H62     | 22:BA:117:A:H62    | 1.53                     | 0.56              |
| 22:BA:1272:A:N6    | 40:BS:3:ARG:HH21   | 1.98                     | 0.56              |
| 46:BY:87:ARG:HH21  | 46:BY:90:LYS:HD3   | 1.71                     | 0.56              |
| 22:BA:639:A:H4'    | 22:BA:640:G:C5'    | 2.36                     | 0.56              |
| 26:BE:84:ASN:HD21  | 26:BE:196:VAL:HB   | 1.70                     | 0.56              |
| 38:BQ:131:ILE:O    | 38:BQ:133:LYS:HG3  | 2.05                     | 0.56              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:1140:G:H2'   | 22:BA:1141:C:C6    | 2.41                     | 0.56              |
| 1:AA:1294:A:H4'    | 1:AA:1295:G:H4'    | 1.88                     | 0.56              |
| 25:BD:119:SER:HB2  | 25:BD:124:GLU:OE2  | 2.05                     | 0.56              |
| 22:BA:807:C:H2'    | 22:BA:808:C:C6     | 2.41                     | 0.56              |
| 41:BT:163:LEU:HD11 | 41:BT:169:SER:HB2  | 1.87                     | 0.56              |
| 25:BD:238:VAL:HA   | 25:BD:241:LEU:HD23 | 1.88                     | 0.56              |
| 22:BA:2370:G:H1'   | 45:BX:87:VAL:HG13  | 1.88                     | 0.56              |
| 42:BU:32:ILE:HD12  | 42:BU:32:ILE:N     | 2.21                     | 0.56              |
| 22:BA:2514:A:H4'   | 22:BA:2515:C:H5    | 1.71                     | 0.56              |
| 1:AA:1270:C:C4'    | 1:AA:1271:G:H5'    | 2.32                     | 0.56              |
| 1:AA:447:A:H4'     | 1:AA:448:G:H5'     | 1.87                     | 0.56              |
| 45:BX:71:ARG:HH11  | 45:BX:71:ARG:CB    | 2.18                     | 0.56              |
| 22:BA:554:G:C2'    | 22:BA:555:A:H5''   | 2.35                     | 0.56              |
| 38:BQ:112:ILE:HD13 | 38:BQ:146:ARG:NH2  | 2.21                     | 0.56              |
| 24:BC:35:G:H2'     | 24:BC:35:G:N3      | 2.20                     | 0.56              |
| 22:BA:2303:A:H3'   | 22:BA:2303:A:N3    | 2.21                     | 0.56              |
| 47:BZ:125:GLU:O    | 47:BZ:126:ILE:HG22 | 2.05                     | 0.56              |
| 22:BA:874:G:H2'    | 22:BA:875:C:O4'    | 2.06                     | 0.56              |
| 22:BA:2353:A:O2'   | 22:BA:2402:C:H5''  | 2.06                     | 0.56              |
| 50:B3:21:LYS:HD2   | 50:B3:21:LYS:N     | 2.21                     | 0.56              |
| 22:BA:2295:A:H62   | 45:BX:67:THR:HG21  | 1.70                     | 0.56              |
| 34:BM:121:LEU:HD11 | 39:BR:194:ILE:HD13 | 1.87                     | 0.56              |
| 23:BB:49:U:H2'     | 23:BB:50:G:C8      | 2.41                     | 0.56              |
| 26:BE:140:ILE:HG12 | 26:BE:170:LEU:HD11 | 1.87                     | 0.56              |
| 36:BO:2:LEU:HD11   | 36:BO:42:ILE:O     | 2.06                     | 0.56              |
| 1:AA:347:G:H5''    | 16:AP:5:ARG:HH11   | 1.69                     | 0.56              |
| 22:BA:1330:G:H2'   | 22:BA:1331:G:O4'   | 2.05                     | 0.56              |
| 22:BA:1348:C:H2'   | 22:BA:1349:G:O4'   | 2.04                     | 0.56              |
| 1:AA:817:C:H2'     | 1:AA:818:G:O4'     | 2.06                     | 0.56              |
| 22:BA:2570:G:H1'   | 22:BA:2599:G:N2    | 2.21                     | 0.56              |
| 45:BX:71:ARG:HG3   | 45:BX:72:ASP:H     | 1.71                     | 0.56              |
| 22:BA:1701:A:H1'   | 34:BM:1:MET:HB2    | 1.88                     | 0.56              |
| 37:BP:133:VAL:O    | 37:BP:137:VAL:HG23 | 2.05                     | 0.56              |
| 22:BA:1299:U:H4'   | 37:BP:123:ILE:HG23 | 1.88                     | 0.56              |
| 1:AA:48:C:H4'      | 1:AA:49:U:C5'      | 2.35                     | 0.56              |
| 22:BA:1687:G:H2'   | 22:BA:1688:A:O4'   | 2.06                     | 0.56              |
| 1:AA:881:C:O5'     | 1:AA:881:C:H6      | 1.88                     | 0.56              |
| 22:BA:1885:C:H2'   | 22:BA:1886:A:H8    | 1.71                     | 0.56              |
| 12:AL:6:GLN:HE21   | 12:AL:12:ARG:HH22  | 1.53                     | 0.56              |
| 1:AA:53:C:H2'      | 1:AA:54:A:H8       | 1.70                     | 0.56              |
| 22:BA:919:A:H1'    | 22:BA:2281:C:O2'   | 2.06                     | 0.56              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 26:BE:158:ALA:H    | 26:BE:190:GLN:NE2  | 2.04                     | 0.55              |
| 44:BW:70:LYS:HE3   | 44:BW:136:LEU:HD12 | 1.86                     | 0.55              |
| 22:BA:1271:G:H5'   | 40:BS:3:ARG:NH1    | 2.20                     | 0.55              |
| 46:BY:83:LYS:N     | 46:BY:83:LYS:HD3   | 2.21                     | 0.55              |
| 46:BY:90:LYS:NZ    | 46:BY:90:LYS:HB3   | 2.21                     | 0.55              |
| 22:BA:188:U:H3     | 22:BA:189:A:N6     | 2.04                     | 0.55              |
| 42:BU:91:LYS:HG3   | 42:BU:92:GLN:N     | 2.20                     | 0.55              |
| 22:BA:818:U:H4'    | 22:BA:2462:G:O3'   | 2.06                     | 0.55              |
| 38:BQ:45:ARG:N     | 38:BQ:45:ARG:HD3   | 2.20                     | 0.55              |
| 42:BU:67:LEU:HD11  | 49:B2:42:ASN:H     | 1.71                     | 0.55              |
| 1:AA:1139:A:H5'    | 3:AC:4:LYS:HD3     | 1.88                     | 0.55              |
| 1:AA:714:A:H2'     | 1:AA:715:A:O4'     | 2.06                     | 0.55              |
| 29:BH:80:PRO:HA    | 29:BH:104:VAL:HG12 | 1.88                     | 0.55              |
| 1:AA:235:U:H5''    | 17:AQ:120:ARG:HH21 | 1.70                     | 0.55              |
| 1:AA:1237:A:H3'    | 1:AA:1238:C:C6     | 2.41                     | 0.55              |
| 22:BA:1228:A:H2'   | 22:BA:1229:G:H8    | 1.71                     | 0.55              |
| 47:BZ:113:GLN:HA   | 47:BZ:116:ARG:HH12 | 1.71                     | 0.55              |
| 22:BA:1885:C:H2'   | 22:BA:1886:A:C8    | 2.41                     | 0.55              |
| 25:BD:319:LYS:HD2  | 25:BD:320:GLY:N    | 2.21                     | 0.55              |
| 1:AA:1424:G:H4'    | 22:BA:1725:A:H5''  | 1.75                     | 0.55              |
| 35:BN:148:LEU:HB3  | 35:BN:188:ALA:HB3  | 1.87                     | 0.55              |
| 22:BA:829:G:C2'    | 22:BA:830:A:H5''   | 2.35                     | 0.55              |
| 1:AA:245:A:H5''    | 1:AA:246:G:OP1     | 2.06                     | 0.55              |
| 22:BA:239:G:O2'    | 22:BA:240:A:H5''   | 2.06                     | 0.55              |
| 41:BT:126:VAL:H    | 41:BT:161:VAL:HG23 | 1.71                     | 0.55              |
| 22:BA:2281:C:H2'   | 22:BA:2282:C:C6    | 2.41                     | 0.55              |
| 22:BA:2338:G:N3    | 22:BA:2338:G:H3'   | 2.22                     | 0.55              |
| 44:BW:138:LEU:HD23 | 44:BW:138:LEU:N    | 2.21                     | 0.55              |
| 15:AO:26:VAL:HG21  | 15:AO:78:LEU:HD21  | 1.86                     | 0.55              |
| 22:BA:525:A:H4'    | 40:BS:18:ARG:HH12  | 1.71                     | 0.55              |
| 22:BA:1829:A:H5''  | 22:BA:1830:U:OP1   | 2.07                     | 0.55              |
| 22:BA:996:C:H2'    | 22:BA:997:G:C8     | 2.41                     | 0.55              |
| 50:B3:15:CYS:HA    | 50:B3:63:GLU:H     | 1.71                     | 0.55              |
| 1:AA:705:U:H2'     | 1:AA:706:G:O4'     | 2.06                     | 0.55              |
| 29:BH:138:ASP:OD1  | 29:BH:142:ASN:HB2  | 2.05                     | 0.55              |
| 22:BA:1412:G:N2    | 22:BA:1414:A:H3'   | 2.21                     | 0.55              |
| 29:BH:63:LYS:NZ    | 29:BH:63:LYS:HB3   | 2.21                     | 0.55              |
| 1:AA:927:A:N3      | 1:AA:1267:A:H1'    | 2.21                     | 0.55              |
| 26:BE:118:VAL:HB   | 26:BE:119:PRO:HD2  | 1.89                     | 0.55              |
| 1:AA:466:C:H1'     | 1:AA:477:G:C2      | 2.42                     | 0.55              |
| 1:AA:660:A:C4'     | 26:BE:171:LYS:HZ1  | 2.09                     | 0.55              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 6:AF:117:ASN:CB    | 26:BE:163:LYS:CE   | 2.65                     | 0.55              |
| 38:BQ:65:ARG:NE    | 38:BQ:65:ARG:N     | 2.54                     | 0.55              |
| 22:BA:2650:G:H4'   | 27:BF:105:LYS:NZ   | 2.21                     | 0.55              |
| 1:AA:1477:U:H4'    | 1:AA:1478:G:N2     | 2.21                     | 0.55              |
| 22:BA:1837:U:H5'   | 22:BA:1985:A:H4'   | 1.88                     | 0.55              |
| 52:B5:113:ARG:NH1  | 52:B5:117:LYS:HB3  | 2.21                     | 0.55              |
| 33:BL:145:PRO:HD3  | 40:BS:64:ARG:NH1   | 2.19                     | 0.55              |
| 22:BA:591:C:H5''   | 40:BS:14:ARG:NH2   | 2.21                     | 0.55              |
| 34:BM:102:ILE:HG22 | 34:BM:119:GLU:O    | 2.07                     | 0.55              |
| 1:AA:701:A:H4'     | 1:AA:702:C:C5'     | 2.34                     | 0.55              |
| 22:BA:1784:C:N4    | 26:BE:203:ARG:HH21 | 2.05                     | 0.55              |
| 22:BA:2107:G:H21   | 22:BA:2212:A:N6    | 2.05                     | 0.55              |
| 37:BP:161:GLU:HB2  | 37:BP:164:ILE:HG13 | 1.88                     | 0.55              |
| 22:BA:2100:U:H3    | 22:BA:2250:A:H2    | 1.54                     | 0.55              |
| 26:BE:65:ARG:HD3   | 26:BE:100:ILE:HD12 | 1.89                     | 0.55              |
| 44:BW:70:LYS:HD2   | 44:BW:70:LYS:N     | 2.09                     | 0.55              |
| 33:BL:143:TYR:HA   | 40:BS:64:ARG:NH1   | 2.22                     | 0.55              |
| 35:BN:207:ALA:HB1  | 35:BN:211:LEU:HD12 | 1.89                     | 0.55              |
| 22:BA:2559:A:H4'   | 22:BA:2560:G:H8    | 1.72                     | 0.55              |
| 22:BA:1703:G:H22   | 22:BA:2006:G:H5'   | 1.71                     | 0.55              |
| 1:AA:728:G:O2'     | 1:AA:729:A:H5''    | 2.06                     | 0.55              |
| 22:BA:616:U:H5''   | 28:BG:153:ASN:HD21 | 1.71                     | 0.55              |
| 52:B5:95:HIS:CE1   | 52:B5:97:ALA:HB3   | 2.41                     | 0.55              |
| 31:BJ:79:LEU:HD11  | 31:BJ:84:LYS:HB2   | 1.87                     | 0.55              |
| 22:BA:1222:C:H2'   | 22:BA:1223:G:H8    | 1.72                     | 0.55              |
| 22:BA:2484:C:H2'   | 22:BA:2485:A:O4'   | 2.07                     | 0.55              |
| 36:BO:2:LEU:HD22   | 36:BO:44:SER:CA    | 2.37                     | 0.55              |
| 38:BQ:56:ARG:NE    | 38:BQ:56:ARG:N     | 2.44                     | 0.55              |
| 1:AA:71:G:N2       | 1:AA:82:U:H3       | 1.95                     | 0.55              |
| 22:BA:2243:C:C2    | 26:BE:258:ARG:HG2  | 2.42                     | 0.55              |
| 23:BB:105:A:H2'    | 23:BB:106:G:O4'    | 2.07                     | 0.55              |
| 27:BF:202:LYS:HD3  | 27:BF:204:MET:HG3  | 1.88                     | 0.55              |
| 22:BA:1277:G:N2    | 28:BG:133:LEU:HD22 | 2.21                     | 0.55              |
| 1:AA:8:G:H4'       | 1:AA:9:A:OP1       | 2.06                     | 0.55              |
| 33:BL:158:ALA:HB1  | 33:BL:200:ILE:HG13 | 1.88                     | 0.55              |
| 22:BA:1731:G:H1'   | 26:BE:16:GLY:HA2   | 1.88                     | 0.55              |
| 29:BH:176:LYS:N    | 29:BH:176:LYS:HD2  | 2.21                     | 0.55              |
| 42:BU:107:LYS:HD3  | 42:BU:108:GLY:N    | 2.21                     | 0.55              |
| 22:BA:1365:U:O2'   | 22:BA:1405:A:H2'   | 2.06                     | 0.55              |
| 38:BQ:83:ASP:CG    | 38:BQ:84:ASP:H     | 2.09                     | 0.55              |
| 1:AA:347:G:H2'     | 1:AA:348:G:C8      | 2.42                     | 0.55              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 35:BN:125:ARG:CA   | 35:BN:125:ARG:HH11 | 2.20                     | 0.55              |
| 22:BA:2435:G:H21   | 50:B3:25:LYS:HG3   | 1.71                     | 0.55              |
| 52:B5:124:LYS:CD   | 52:B5:124:LYS:H    | 2.20                     | 0.55              |
| 22:BA:2675:C:H4'   | 30:BI:201:LYS:HE2  | 1.89                     | 0.55              |
| 44:BW:128:ALA:O    | 44:BW:129:ILE:HG22 | 2.06                     | 0.55              |
| 50:B3:53:PRO:HD3   | 50:B3:61:HIS:HE1   | 1.71                     | 0.55              |
| 47:BZ:118:LEU:HD12 | 47:BZ:118:LEU:H    | 1.71                     | 0.55              |
| 1:AA:1399:G:H4'    | 1:AA:1400:C:H5     | 1.72                     | 0.55              |
| 1:AA:888:G:H2'     | 1:AA:889:C:C6      | 2.42                     | 0.55              |
| 30:BI:66:LEU:HD23  | 30:BI:67:LYS:N     | 2.22                     | 0.55              |
| 1:AA:1095:C:H1'    | 9:AI:84:ARG:NH1    | 2.22                     | 0.55              |
| 3:AC:3:GLN:HE21    | 3:AC:163:GLN:HE22  | 1.53                     | 0.55              |
| 1:AA:721:G:O4'     | 26:BE:198:GLN:NE2  | 2.39                     | 0.55              |
| 42:BU:50:ILE:HD13  | 42:BU:105:VAL:HG23 | 1.88                     | 0.55              |
| 26:BE:55:LYS:HB2   | 26:BE:55:LYS:NZ    | 2.22                     | 0.55              |
| 22:BA:2215:C:H5'   | 22:BA:2244:A:H61   | 1.70                     | 0.55              |
| 35:BN:172:VAL:HG22 | 35:BN:174:ASN:H    | 1.72                     | 0.55              |
| 22:BA:591:C:OP1    | 40:BS:32:THR:HG22  | 2.07                     | 0.55              |
| 41:BT:191:LEU:CD2  | 41:BT:191:LEU:H    | 2.18                     | 0.55              |
| 1:AA:1253:G:H22    | 1:AA:1279:G:H2'    | 1.71                     | 0.55              |
| 22:BA:2336:U:O4'   | 38:BQ:43:THR:HG23  | 2.07                     | 0.55              |
| 34:BM:36:GLY:HA2   | 34:BM:106:LEU:HD23 | 1.89                     | 0.55              |
| 22:BA:1116:A:N3    | 22:BA:1116:A:H3'   | 2.22                     | 0.55              |
| 27:BF:113:LYS:HD2  | 27:BF:113:LYS:N    | 2.22                     | 0.55              |
| 29:BH:19:LEU:HB2   | 29:BH:116:ASP:HB2  | 1.88                     | 0.55              |
| 22:BA:1809:G:C5    | 26:BE:172:LEU:HD13 | 2.42                     | 0.55              |
| 22:BA:461:A:H2'    | 22:BA:462:G:O4'    | 2.07                     | 0.55              |
| 1:AA:178:A:H1'     | 1:AA:193:C:O2'     | 2.06                     | 0.55              |
| 22:BA:997:G:H2'    | 22:BA:998:U:C6     | 2.41                     | 0.55              |
| 22:BA:2435:G:N2    | 50:B3:25:LYS:HE3   | 2.22                     | 0.55              |
| 1:AA:1309:G:C2'    | 1:AA:1310:C:H5''   | 2.36                     | 0.55              |
| 41:BT:172:ILE:CD1  | 41:BT:172:ILE:H    | 2.19                     | 0.55              |
| 22:BA:773:U:O2     | 22:BA:1452:A:H5''  | 2.06                     | 0.55              |
| 22:BA:2364:C:H2'   | 22:BA:2365:U:C6    | 2.41                     | 0.55              |
| 22:BA:2798:G:H5'   | 33:BL:219:ASN:HD22 | 1.71                     | 0.55              |
| 49:B2:44:LYS:HG2   | 49:B2:45:SER:N     | 2.22                     | 0.55              |
| 34:BM:53:GLU:CD    | 34:BM:53:GLU:H     | 2.09                     | 0.55              |
| 1:AA:1162:U:H5'    | 1:AA:1163:G:OP2    | 2.07                     | 0.55              |
| 1:AA:1071:U:H3     | 1:AA:1099:G:H22    | 1.55                     | 0.55              |
| 29:BH:46:VAL:HG22  | 29:BH:173:THR:HG22 | 1.88                     | 0.55              |
| 51:B4:130:ARG:HA   | 51:B4:130:ARG:HE   | 1.71                     | 0.55              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:306:C:H2'     | 1:AA:307:A:H8      | 1.72                     | 0.55              |
| 1:AA:676:A:N6      | 15:AO:51:ARG:HE    | 2.05                     | 0.55              |
| 22:BA:2473:C:H2'   | 22:BA:2474:U:O4'   | 2.07                     | 0.55              |
| 23:BB:114:C:O2'    | 38:BQ:88:HIS:HA    | 2.06                     | 0.55              |
| 22:BA:1218:G:H22   | 22:BA:1270:C:H1'   | 1.71                     | 0.55              |
| 35:BN:130:ARG:HH22 | 52:B5:101:ARG:HG2  | 1.71                     | 0.55              |
| 49:B2:30:LYS:HD2   | 49:B2:43:SER:HB3   | 1.89                     | 0.55              |
| 42:BU:59:ALA:HA    | 42:BU:62:LEU:HG    | 1.89                     | 0.55              |
| 28:BG:103:LEU:N    | 28:BG:103:LEU:HD22 | 2.22                     | 0.55              |
| 1:AA:380:G:H22     | 1:AA:404:C:N4      | 2.05                     | 0.55              |
| 37:BP:165:VAL:HG23 | 37:BP:166:HIS:H    | 1.72                     | 0.55              |
| 28:BG:214:GLU:CD   | 28:BG:214:GLU:H    | 2.10                     | 0.55              |
| 33:BL:127:MET:O    | 33:BL:127:MET:HE3  | 2.07                     | 0.55              |
| 50:B3:60:ILE:HD12  | 50:B3:60:ILE:N     | 2.22                     | 0.55              |
| 1:AA:538:U:H2'     | 1:AA:539:U:C6      | 2.43                     | 0.55              |
| 1:AA:1173:A:N3     | 1:AA:1173:A:H2'    | 2.22                     | 0.55              |
| 34:BM:9:ASN:HD21   | 34:BM:64:ARG:NH2   | 2.05                     | 0.54              |
| 28:BG:88:LEU:O     | 28:BG:88:LEU:HD23  | 2.06                     | 0.54              |
| 22:BA:1801:A:OP1   | 26:BE:208:ARG:HG2  | 2.07                     | 0.54              |
| 1:AA:166:G:H5''    | 1:AA:166:G:N3      | 2.22                     | 0.54              |
| 26:BE:83:ARG:HB2   | 26:BE:152:ARG:NH2  | 2.22                     | 0.54              |
| 1:AA:13:U:C2'      | 1:AA:14:U:H5''     | 2.34                     | 0.54              |
| 1:AA:898:A:H4'     | 1:AA:1313:U:O4     | 2.07                     | 0.54              |
| 22:BA:1047:U:C2'   | 22:BA:1048:C:H5'   | 2.35                     | 0.54              |
| 22:BA:1050:G:H4'   | 22:BA:1051:U:C6    | 2.42                     | 0.54              |
| 1:AA:1249:U:O2'    | 1:AA:1250:U:OP1    | 2.25                     | 0.54              |
| 1:AA:610:U:H3      | 1:AA:691:G:H1      | 1.55                     | 0.54              |
| 28:BG:113:ARG:HB2  | 28:BG:113:ARG:NH1  | 2.22                     | 0.54              |
| 24:BC:80:C:H4'     | 24:BC:81:C:H5      | 1.72                     | 0.54              |
| 22:BA:2658:A:H61   | 22:BA:2791:C:H42   | 1.53                     | 0.54              |
| 22:BA:1122:U:H1'   | 22:BA:1125:U:H5    | 1.71                     | 0.54              |
| 1:AA:17:A:O2'      | 1:AA:18:U:H5'      | 2.07                     | 0.54              |
| 22:BA:2025:U:H2'   | 22:BA:2026:G:O4'   | 2.08                     | 0.54              |
| 34:BM:78:ARG:HG3   | 39:BR:195:VAL:CG2  | 2.34                     | 0.54              |
| 25:BD:336:ILE:C    | 25:BD:336:ILE:HD13 | 2.27                     | 0.54              |
| 44:BW:150:LYS:H    | 44:BW:150:LYS:HE3  | 1.71                     | 0.54              |
| 44:BW:123:ILE:N    | 44:BW:123:ILE:HD13 | 2.19                     | 0.54              |
| 35:BN:103:GLN:CD   | 35:BN:104:LYS:H    | 2.09                     | 0.54              |
| 1:AA:606:A:N6      | 1:AA:696:C:H42     | 2.03                     | 0.54              |
| 22:BA:1168:U:O4    | 33:BL:165:GLY:HA2  | 2.08                     | 0.54              |
| 22:BA:1394:A:H5''  | 22:BA:2228:C:N3    | 2.21                     | 0.54              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 36:BO:48:GLU:HA    | 36:BO:51:ARG:NH1   | 2.22                     | 0.54              |
| 27:BF:215:ILE:HG12 | 27:BF:218:LEU:HD11 | 1.88                     | 0.54              |
| 22:BA:2387:G:H21   | 50:B3:57:LYS:NZ    | 2.05                     | 0.54              |
| 34:BM:116:LEU:HD13 | 34:BM:116:LEU:O    | 2.07                     | 0.54              |
| 22:BA:1246:G:H5'   | 41:BT:209:ASN:O    | 2.08                     | 0.54              |
| 22:BA:1481:U:H2'   | 22:BA:1482:C:C6    | 2.42                     | 0.54              |
| 28:BG:245:LEU:N    | 28:BG:245:LEU:HD23 | 2.22                     | 0.54              |
| 22:BA:1228:A:H2    | 22:BA:1260:G:H22   | 1.55                     | 0.54              |
| 22:BA:1617:C:H2'   | 22:BA:1618:C:H5'   | 1.89                     | 0.54              |
| 22:BA:1089:U:O4    | 32:BK:126:PRO:HG3  | 2.07                     | 0.54              |
| 22:BA:1289:A:H62   | 22:BA:2026:G:N2    | 2.04                     | 0.54              |
| 39:BR:144:ARG:HE   | 39:BR:146:GLY:H    | 1.53                     | 0.54              |
| 39:BR:185:ARG:CZ   | 39:BR:223:ARG:HH22 | 2.20                     | 0.54              |
| 35:BN:130:ARG:NH2  | 52:B5:101:ARG:HG2  | 2.21                     | 0.54              |
| 52:B5:109:LYS:HD3  | 52:B5:136:ILE:HD12 | 1.89                     | 0.54              |
| 50:B3:14:GLU:HB2   | 50:B3:63:GLU:CD    | 2.28                     | 0.54              |
| 50:B3:32:ARG:NH2   | 50:B3:36:GLN:HB2   | 2.21                     | 0.54              |
| 22:BA:1048:C:H4'   | 22:BA:1049:A:C5    | 2.43                     | 0.54              |
| 37:BP:129:ARG:NE   | 37:BP:129:ARG:HA   | 2.21                     | 0.54              |
| 1:AA:600:U:O4      | 1:AA:700:G:H2'     | 2.08                     | 0.54              |
| 49:B2:22:LYS:HD3   | 49:B2:22:LYS:N     | 2.22                     | 0.54              |
| 26:BE:248:TYR:N    | 26:BE:249:PRO:CD   | 2.71                     | 0.54              |
| 22:BA:1786:G:H22   | 22:BA:1799:A:H1'   | 1.71                     | 0.54              |
| 52:B5:114:ARG:HA   | 52:B5:114:ARG:HE   | 1.71                     | 0.54              |
| 25:BD:118:ARG:N    | 25:BD:118:ARG:HD2  | 2.22                     | 0.54              |
| 1:AA:35:C:H2'      | 1:AA:36:G:C8       | 2.42                     | 0.54              |
| 44:BW:74:THR:HG22  | 44:BW:88:GLU:HA    | 1.88                     | 0.54              |
| 36:BO:23:ARG:HD3   | 36:BO:98:LYS:HB2   | 1.89                     | 0.54              |
| 39:BR:144:ARG:NE   | 39:BR:146:GLY:H    | 2.06                     | 0.54              |
| 22:BA:200:G:H4'    | 22:BA:201:A:C5'    | 2.38                     | 0.54              |
| 46:BY:79:PRO:HG2   | 46:BY:105:ASN:O    | 2.08                     | 0.54              |
| 22:BA:2774:U:H4'   | 22:BA:2775:A:H5''  | 1.89                     | 0.54              |
| 40:BS:84:ASP:O     | 40:BS:88:ARG:HB2   | 2.06                     | 0.54              |
| 1:AA:377:G:C4'     | 4:AD:5:ARG:HH21    | 2.18                     | 0.54              |
| 39:BR:203:ILE:HG13 | 39:BR:204:LYS:HG2  | 1.89                     | 0.54              |
| 22:BA:81:G:H2'     | 22:BA:82:G:C8      | 2.43                     | 0.54              |
| 22:BA:1087:G:H2'   | 22:BA:1088:U:C5    | 2.43                     | 0.54              |
| 22:BA:794:A:H1'    | 22:BA:1789:U:O4'   | 2.07                     | 0.54              |
| 22:BA:2192:U:C2'   | 25:BD:282:THR:HG21 | 2.37                     | 0.54              |
| 38:BQ:146:ARG:NE   | 38:BQ:146:ARG:HA   | 2.21                     | 0.54              |
| 22:BA:1039:A:C4'   | 40:BS:77:ASN:HD21  | 2.20                     | 0.54              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 50:B3:17:GLY:HA2   | 50:B3:61:HIS:HA    | 1.89                     | 0.54              |
| 30:BI:166:VAL:HG22 | 30:BI:176:VAL:HG13 | 1.89                     | 0.54              |
| 34:BM:17:ARG:HA    | 34:BM:17:ARG:NE    | 2.22                     | 0.54              |
| 22:BA:2061:C:H42   | 22:BA:2638:G:H1    | 1.56                     | 0.54              |
| 32:BK:135:LYS:HD2  | 32:BK:135:LYS:N    | 2.22                     | 0.54              |
| 36:BO:120:ILE:H    | 36:BO:120:ILE:HD12 | 1.72                     | 0.54              |
| 1:AA:31:U:H5''     | 1:AA:32:G:OP2      | 2.08                     | 0.54              |
| 22:BA:739:G:H4'    | 26:BE:20:VAL:HA    | 1.88                     | 0.54              |
| 30:BI:146:LEU:HD23 | 30:BI:147:VAL:N    | 2.23                     | 0.54              |
| 46:BY:93:HIS:NE2   | 46:BY:101:LEU:HG   | 2.23                     | 0.54              |
| 39:BR:216:LYS:N    | 39:BR:216:LYS:HD3  | 2.22                     | 0.54              |
| 22:BA:2706:U:O2'   | 22:BA:2731:C:H1'   | 2.08                     | 0.54              |
| 22:BA:1449:C:H41   | 22:BA:1603:A:H5''  | 1.72                     | 0.54              |
| 1:AA:1447:U:H4'    | 1:AA:1448:A:O5'    | 2.06                     | 0.54              |
| 1:AA:1105:A:H4'    | 1:AA:1106:C:O5'    | 2.07                     | 0.54              |
| 22:BA:625:C:H2'    | 28:BG:229:LEU:HA   | 1.89                     | 0.54              |
| 1:AA:1096:C:H2'    | 1:AA:1097:C:O4'    | 2.06                     | 0.54              |
| 22:BA:2749:G:OP1   | 27:BF:217:LYS:HG3  | 2.07                     | 0.54              |
| 26:BE:249:PRO:HG2  | 26:BE:251:LEU:HD11 | 1.90                     | 0.54              |
| 1:AA:678:A:C2'     | 1:AA:679:G:H5'     | 2.38                     | 0.54              |
| 7:AG:10:LYS:H      | 7:AG:10:LYS:HD3    | 1.71                     | 0.54              |
| 1:AA:530:U:H3      | 1:AA:707:A:H62     | 1.55                     | 0.54              |
| 5:AE:300:GLY:H     | 8:AH:75:ASN:ND2    | 2.05                     | 0.54              |
| 26:BE:140:ILE:HG12 | 26:BE:170:LEU:CD1  | 2.38                     | 0.54              |
| 1:AA:763:A:H2'     | 1:AA:1476:C:H1'    | 1.90                     | 0.54              |
| 22:BA:1602:G:C6    | 26:BE:24:PRO:HB2   | 2.43                     | 0.54              |
| 22:BA:510:U:H4'    | 44:BW:106:PHE:HZ   | 1.73                     | 0.54              |
| 34:BM:109:LYS:HA   | 34:BM:109:LYS:HZ3  | 1.70                     | 0.54              |
| 1:AA:1245:U:O2'    | 1:AA:1246:C:H5     | 1.91                     | 0.54              |
| 23:BB:55:U:O2'     | 23:BB:56:U:H5'     | 2.07                     | 0.54              |
| 29:BH:148:ARG:HD2  | 29:BH:148:ARG:H    | 1.71                     | 0.54              |
| 1:AA:456:U:H5''    | 1:AA:457:A:OP1     | 2.07                     | 0.54              |
| 22:BA:1407:C:H2'   | 22:BA:1408:A:C8    | 2.43                     | 0.54              |
| 22:BA:1216:G:H21   | 22:BA:1247:A:H2    | 1.54                     | 0.54              |
| 26:BE:51:GLY:HA2   | 26:BE:212:LYS:HG3  | 1.89                     | 0.54              |
| 1:AA:386:A:H3'     | 1:AA:387:G:H8      | 1.73                     | 0.54              |
| 1:AA:721:G:O2'     | 26:BE:194:VAL:HG11 | 2.07                     | 0.54              |
| 1:AA:721:G:N3      | 26:BE:5:LEU:HD12   | 2.23                     | 0.54              |
| 13:AM:109:VAL:HG21 | 29:BH:127:ARG:CD   | 2.36                     | 0.54              |
| 42:BU:45:LYS:NZ    | 42:BU:45:LYS:HB3   | 2.23                     | 0.54              |
| 1:AA:806:U:H3'     | 1:AA:807:G:C5'     | 2.37                     | 0.54              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:77:G:N3       | 1:AA:78:U:H1'      | 2.21                     | 0.54              |
| 22:BA:634:G:OP2    | 35:BN:175:PRO:HB2  | 2.08                     | 0.54              |
| 1:AA:906:U:H1'     | 1:AA:909:U:C5      | 2.39                     | 0.54              |
| 1:AA:354:A:H2'     | 1:AA:355:G:O4'     | 2.08                     | 0.54              |
| 44:BW:76:LYS:HG3   | 44:BW:137:ILE:HG12 | 1.89                     | 0.54              |
| 29:BH:81:VAL:O     | 29:BH:102:ILE:HG22 | 2.08                     | 0.54              |
| 47:BZ:117:MET:O    | 47:BZ:121:LYS:HG3  | 2.07                     | 0.54              |
| 22:BA:2299:G:H4'   | 22:BA:2300:U:O5'   | 2.08                     | 0.54              |
| 22:BA:2492:C:H2'   | 22:BA:2493:A:H5'   | 1.90                     | 0.54              |
| 22:BA:496:C:H42    | 22:BA:507:G:H1     | 1.56                     | 0.54              |
| 50:B3:59:THR:C     | 50:B3:60:ILE:HD12  | 2.28                     | 0.54              |
| 36:BO:120:ILE:N    | 36:BO:120:ILE:HD12 | 2.21                     | 0.54              |
| 32:BK:176:LEU:HD21 | 32:BK:200:ALA:HB2  | 1.88                     | 0.54              |
| 25:BD:197:LYS:HD2  | 25:BD:197:LYS:N    | 2.22                     | 0.54              |
| 1:AA:1176:C:H5     | 13:AM:137:LYS:HB2  | 1.73                     | 0.54              |
| 22:BA:2502:G:H5''  | 36:BO:46:GLN:NE2   | 2.20                     | 0.54              |
| 36:BO:23:ARG:HB2   | 36:BO:98:LYS:HB2   | 1.90                     | 0.54              |
| 1:AA:344:A:OP2     | 1:AA:344:A:H3'     | 2.08                     | 0.54              |
| 34:BM:6:THR:O      | 34:BM:20:MET:HA    | 2.07                     | 0.54              |
| 26:BE:52:GLY:N     | 26:BE:213:ARG:HG2  | 2.22                     | 0.54              |
| 35:BN:208:LYS:HB3  | 35:BN:218:LEU:HA   | 1.89                     | 0.54              |
| 45:BX:86:GLN:OE1   | 45:BX:119:LEU:HG   | 2.08                     | 0.54              |
| 22:BA:425:C:N4     | 22:BA:2427:G:H1    | 2.04                     | 0.54              |
| 37:BP:94:ARG:HH22  | 37:BP:97:PRO:HA    | 1.73                     | 0.54              |
| 38:BQ:109:SER:HB3  | 38:BQ:110:PRO:HD3  | 1.89                     | 0.54              |
| 22:BA:2442:A:O2'   | 22:BA:2443:A:OP2   | 2.24                     | 0.54              |
| 22:BA:873:A:H2'    | 22:BA:874:G:O4'    | 2.07                     | 0.54              |
| 22:BA:779:G:N2     | 22:BA:1400:U:H1'   | 2.23                     | 0.54              |
| 50:B3:11:VAL:HG11  | 50:B3:40:HIS:HB2   | 1.90                     | 0.54              |
| 33:BL:222:LYS:HD2  | 33:BL:222:LYS:N    | 2.22                     | 0.54              |
| 22:BA:720:U:H3     | 22:BA:733:A:H61    | 1.54                     | 0.54              |
| 33:BL:112:LYS:NZ   | 33:BL:149:MET:HA   | 2.23                     | 0.54              |
| 1:AA:720:A:H1'     | 26:BE:4:HIS:N      | 2.23                     | 0.54              |
| 13:AM:48:ARG:NH2   | 29:BH:160:ILE:CA   | 2.69                     | 0.54              |
| 38:BQ:55:ILE:HD13  | 38:BQ:55:ILE:C     | 2.28                     | 0.54              |
| 26:BE:213:ARG:NH1  | 26:BE:214:PRO:HD2  | 2.23                     | 0.54              |
| 1:AA:1170:G:P      | 1:AA:1270:C:H41    | 2.31                     | 0.54              |
| 35:BN:146:VAL:HG22 | 35:BN:185:LYS:HB2  | 1.89                     | 0.54              |
| 1:AA:443:A:H4'     | 1:AA:444:A:O4'     | 2.08                     | 0.54              |
| 22:BA:2584:G:H2'   | 22:BA:2585:C:C6    | 2.42                     | 0.54              |
| 22:BA:1693:U:OP1   | 27:BF:185:GLN:HB2  | 2.08                     | 0.54              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:715:A:H4'     | 1:AA:1474:G:C4'    | 2.38                     | 0.54              |
| 13:AM:48:ARG:CZ    | 29:BH:159:GLU:O    | 2.43                     | 0.54              |
| 22:BA:1836:C:H2'   | 22:BA:1837:U:O4'   | 2.08                     | 0.54              |
| 46:BY:109:LYS:HB3  | 46:BY:109:LYS:NZ   | 2.23                     | 0.54              |
| 22:BA:649:A:H4'    | 22:BA:650:G:O4'    | 2.07                     | 0.54              |
| 22:BA:2700:C:N4    | 22:BA:2745:G:H21   | 2.05                     | 0.54              |
| 31:BJ:89:THR:O     | 31:BJ:93:LEU:HG    | 2.08                     | 0.54              |
| 40:BS:17:ILE:HG22  | 40:BS:35:ILE:HD12  | 1.90                     | 0.54              |
| 38:BQ:79:VAL:HG23  | 38:BQ:122:ILE:HD12 | 1.90                     | 0.54              |
| 39:BR:182:ARG:NH2  | 39:BR:197:PRO:HG3  | 2.22                     | 0.54              |
| 39:BR:225:LYS:HB2  | 39:BR:225:LYS:HZ2  | 1.73                     | 0.54              |
| 1:AA:1166:C:H2'    | 1:AA:1167:U:C6     | 2.43                     | 0.54              |
| 49:B2:20:TRP:HA    | 49:B2:20:TRP:CE3   | 2.42                     | 0.54              |
| 49:B2:20:TRP:HA    | 49:B2:20:TRP:HE3   | 1.73                     | 0.54              |
| 39:BR:162:LEU:N    | 39:BR:162:LEU:HD12 | 2.23                     | 0.54              |
| 16:AP:19:ILE:HD13  | 16:AP:19:ILE:H     | 1.71                     | 0.54              |
| 25:BD:328:ILE:HD11 | 25:BD:338:LEU:HG   | 1.89                     | 0.54              |
| 22:BA:2502:G:C5'   | 36:BO:46:GLN:HE21  | 2.20                     | 0.53              |
| 37:BP:126:THR:HG22 | 37:BP:192:ARG:HH21 | 1.72                     | 0.53              |
| 28:BG:131:SER:CB   | 28:BG:134:ARG:H    | 2.17                     | 0.53              |
| 38:BQ:42:LYS:C     | 38:BQ:42:LYS:HD3   | 2.29                     | 0.53              |
| 22:BA:763:A:H3'    | 22:BA:763:A:N3     | 2.23                     | 0.53              |
| 1:AA:507:A:H4'     | 1:AA:508:A:H5''    | 1.88                     | 0.53              |
| 22:BA:2212:A:H1'   | 31:BJ:78:PHE:HB2   | 1.89                     | 0.53              |
| 1:AA:1293:U:H5''   | 1:AA:1294:A:OP1    | 2.08                     | 0.53              |
| 1:AA:825:A:H5'     | 8:AH:80:LYS:NZ     | 2.23                     | 0.53              |
| 1:AA:1020:C:H5''   | 5:AE:195:LYS:NZ    | 2.22                     | 0.53              |
| 26:BE:160:LEU:HD23 | 26:BE:170:LEU:HA   | 1.90                     | 0.53              |
| 39:BR:147:ASP:N    | 39:BR:172:ARG:HE   | 2.05                     | 0.53              |
| 39:BR:183:ILE:HG22 | 39:BR:198:LEU:O    | 2.08                     | 0.53              |
| 39:BR:223:ARG:NE   | 39:BR:223:ARG:HA   | 2.23                     | 0.53              |
| 22:BA:2241:G:H4'   | 22:BA:2243:C:N4    | 2.22                     | 0.53              |
| 22:BA:144:A:H1'    | 22:BA:2223:A:H5'   | 1.90                     | 0.53              |
| 35:BN:208:LYS:O    | 35:BN:212:GLU:HB3  | 2.09                     | 0.53              |
| 22:BA:2774:U:O2'   | 22:BA:2775:A:H5''  | 2.08                     | 0.53              |
| 44:BW:152:LEU:H    | 44:BW:152:LEU:CD2  | 2.20                     | 0.53              |
| 27:BF:160:LYS:HD3  | 27:BF:163:GLN:NE2  | 2.23                     | 0.53              |
| 40:BS:31:LEU:HD12  | 40:BS:33:ARG:H     | 1.73                     | 0.53              |
| 41:BT:191:LEU:HA   | 41:BT:214:GLN:O    | 2.08                     | 0.53              |
| 22:BA:2532:C:H2'   | 22:BA:2533:G:C8    | 2.43                     | 0.53              |
| 34:BM:35:ILE:C     | 34:BM:35:ILE:HD13  | 2.29                     | 0.53              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 24:BC:33:A:H3'     | 24:BC:34:C:H5'     | 1.89                     | 0.53              |
| 22:BA:775:A:N6     | 22:BA:1786:G:H1'   | 2.23                     | 0.53              |
| 29:BH:75:ILE:HA    | 29:BH:155:GLU:HG2  | 1.90                     | 0.53              |
| 20:AT:114:ARG:O    | 20:AT:118:VAL:HG23 | 2.08                     | 0.53              |
| 1:AA:1291:G:H2'    | 1:AA:1292:C:C6     | 2.44                     | 0.53              |
| 1:AA:144:A:H2'     | 1:AA:145:A:O4'     | 2.08                     | 0.53              |
| 40:BS:95:LYS:HD2   | 40:BS:95:LYS:N     | 2.22                     | 0.53              |
| 48:B1:73:THR:HB    | 48:B1:76:THR:HG22  | 1.90                     | 0.53              |
| 1:AA:368:A:H3'     | 1:AA:368:A:N3      | 2.23                     | 0.53              |
| 22:BA:2631:A:N3    | 49:B2:2:ALA:HB3    | 2.23                     | 0.53              |
| 51:B4:108:LEU:HD12 | 51:B4:108:LEU:N    | 2.24                     | 0.53              |
| 22:BA:1601:G:N7    | 26:BE:79:TYR:HB3   | 2.22                     | 0.53              |
| 28:BG:209:LEU:HD22 | 28:BG:228:LEU:CD2  | 2.37                     | 0.53              |
| 40:BS:94:ARG:HB3   | 40:BS:94:ARG:HH11  | 1.73                     | 0.53              |
| 22:BA:971:U:OP1    | 35:BN:107:SER:HB3  | 2.09                     | 0.53              |
| 26:BE:121:LYS:HG3  | 26:BE:122:MET:N    | 2.22                     | 0.53              |
| 38:BQ:100:ILE:N    | 38:BQ:100:ILE:HD12 | 2.23                     | 0.53              |
| 38:BQ:93:ALA:HA    | 38:BQ:97:GLN:NE2   | 2.23                     | 0.53              |
| 22:BA:215:G:H2'    | 22:BA:216:C:C6     | 2.42                     | 0.53              |
| 25:BD:284:ILE:HD13 | 25:BD:284:ILE:C    | 2.28                     | 0.53              |
| 33:BL:210:LYS:N    | 33:BL:210:LYS:HD2  | 2.24                     | 0.53              |
| 28:BG:79:LYS:HG3   | 28:BG:163:THR:HG22 | 1.90                     | 0.53              |
| 30:BI:85:LEU:HD23  | 30:BI:86:THR:N     | 2.23                     | 0.53              |
| 41:BT:167:LYS:N    | 41:BT:167:LYS:HD2  | 2.24                     | 0.53              |
| 22:BA:516:A:H2'    | 22:BA:517:G:H5'    | 1.90                     | 0.53              |
| 22:BA:1781:C:H2'   | 22:BA:1782:G:C8    | 2.44                     | 0.53              |
| 22:BA:2556:C:H5'   | 53:B6:3:VAL:HG21   | 1.89                     | 0.53              |
| 31:BJ:167:LEU:HD23 | 31:BJ:168:PRO:N    | 2.24                     | 0.53              |
| 42:BU:71:ARG:CB    | 42:BU:71:ARG:HH11  | 2.21                     | 0.53              |
| 22:BA:645:A:H2'    | 22:BA:646:G:O4'    | 2.08                     | 0.53              |
| 22:BA:68:C:H2'     | 22:BA:69:G:O4'     | 2.09                     | 0.53              |
| 44:BW:93:HIS:HB3   | 44:BW:98:THR:H     | 1.72                     | 0.53              |
| 47:BZ:62:LYS:HG3   | 47:BZ:63:ARG:HG3   | 1.91                     | 0.53              |
| 22:BA:740:G:N1     | 26:BE:18:VAL:HG11  | 2.24                     | 0.53              |
| 1:AA:1149:A:O2'    | 1:AA:1150:U:C5'    | 2.56                     | 0.53              |
| 27:BF:227:LEU:HD12 | 27:BF:227:LEU:H    | 1.74                     | 0.53              |
| 27:BF:101:ARG:CD   | 27:BF:101:ARG:H    | 2.22                     | 0.53              |
| 24:BC:24:U:H4'     | 24:BC:84:A:C6      | 2.43                     | 0.53              |
| 1:AA:1427:U:H2'    | 1:AA:1428:A:H8     | 1.74                     | 0.53              |
| 1:AA:103:A:H4'     | 1:AA:104:A:N9      | 2.23                     | 0.53              |
| 1:AA:35:C:H2'      | 1:AA:36:G:H8       | 1.73                     | 0.53              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:2272:G:H2'   | 22:BA:2273:U:O4'   | 2.08                     | 0.53              |
| 46:BY:102:GLN:HE21 | 46:BY:104:VAL:HG12 | 1.73                     | 0.53              |
| 26:BE:142:ILE:HG13 | 26:BE:143:THR:HG23 | 1.89                     | 0.53              |
| 27:BF:134:GLU:HG3  | 27:BF:135:VAL:HG12 | 1.90                     | 0.53              |
| 36:BO:69:PHE:CD1   | 36:BO:70:PRO:HD2   | 2.44                     | 0.53              |
| 26:BE:104:ARG:HD3  | 26:BE:191:VAL:HG11 | 1.89                     | 0.53              |
| 22:BA:1600:A:N3    | 26:BE:210:LEU:HD13 | 2.23                     | 0.53              |
| 22:BA:187:U:H2'    | 22:BA:188:U:O4'    | 2.09                     | 0.53              |
| 22:BA:233:G:C2     | 22:BA:2448:U:H4'   | 2.44                     | 0.53              |
| 24:BC:83:A:H2'     | 24:BC:84:A:H5''    | 1.91                     | 0.53              |
| 22:BA:161:G:N3     | 22:BA:161:G:H3'    | 2.24                     | 0.53              |
| 36:BO:8:ARG:HB3    | 36:BO:8:ARG:NH1    | 2.22                     | 0.53              |
| 15:AO:59:LYS:HG2   | 15:AO:62:ARG:HH21  | 1.74                     | 0.53              |
| 22:BA:607:G:O2'    | 35:BN:86:ARG:HG2   | 2.08                     | 0.53              |
| 33:BL:156:VAL:O    | 33:BL:226:GLY:HA2  | 2.09                     | 0.53              |
| 42:BU:64:ILE:O     | 42:BU:68:MET:HG2   | 2.09                     | 0.53              |
| 22:BA:1453:G:H2'   | 22:BA:1454:G:C8    | 2.43                     | 0.53              |
| 1:AA:983:G:H2'     | 1:AA:984:A:C8      | 2.43                     | 0.53              |
| 30:BI:188:ALA:HB1  | 30:BI:207:TYR:HE1  | 1.73                     | 0.53              |
| 26:BE:141:GLU:HB2  | 26:BE:184:CYS:SG   | 2.47                     | 0.53              |
| 26:BE:58:TYR:CZ    | 26:BE:60:LYS:HD2   | 2.44                     | 0.53              |
| 37:BP:197:ALA:HB1  | 37:BP:198:PRO:CA   | 2.32                     | 0.53              |
| 22:BA:2217:U:H2'   | 22:BA:2218:G:O4'   | 2.09                     | 0.53              |
| 22:BA:2240:G:H2'   | 22:BA:2241:G:O4'   | 2.09                     | 0.53              |
| 22:BA:868:G:N2     | 22:BA:2286:A:H5'   | 2.16                     | 0.53              |
| 1:AA:400:U:H1'     | 1:AA:401:G:C8      | 2.44                     | 0.53              |
| 22:BA:2529:C:H1'   | 27:BF:189:ILE:HG23 | 1.91                     | 0.53              |
| 29:BH:32:LYS:HE2   | 29:BH:37:TYR:HA    | 1.90                     | 0.53              |
| 22:BA:492:A:H1'    | 44:BW:106:PHE:HE2  | 1.72                     | 0.53              |
| 45:BX:68:LYS:NZ    | 45:BX:69:ASN:H     | 2.06                     | 0.53              |
| 22:BA:789:G:H5''   | 26:BE:45:ILE:HD12  | 1.90                     | 0.53              |
| 22:BA:1051:U:H2'   | 22:BA:1052:G:O4'   | 2.09                     | 0.53              |
| 1:AA:920:G:C6      | 1:AA:1314:A:H5'    | 2.44                     | 0.53              |
| 1:AA:1090:U:H2'    | 1:AA:1091:G:O4'    | 2.08                     | 0.53              |
| 22:BA:1340:G:H1    | 22:BA:1354:C:N4    | 2.05                     | 0.53              |
| 25:BD:189:ILE:C    | 25:BD:189:ILE:HD13 | 2.29                     | 0.53              |
| 27:BF:227:LEU:HD12 | 27:BF:227:LEU:N    | 2.23                     | 0.53              |
| 1:AA:1014:U:H1'    | 1:AA:1015:C:C5     | 2.44                     | 0.53              |
| 34:BM:23:ARG:HH11  | 34:BM:23:ARG:HG3   | 1.73                     | 0.53              |
| 25:BD:338:LEU:HD13 | 25:BD:339:ASN:N    | 2.24                     | 0.53              |
| 37:BP:190:LEU:HD12 | 37:BP:191:PRO:HD2  | 1.90                     | 0.53              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 28:BG:130:GLY:HA2  | 28:BG:138:GLY:H    | 1.73                     | 0.53              |
| 39:BR:185:ARG:HG2  | 39:BR:187:ILE:CG2  | 2.38                     | 0.53              |
| 1:AA:344:A:C1'     | 1:AA:429:G:H1'     | 2.32                     | 0.53              |
| 46:BY:82:GLY:HA3   | 46:BY:108:TYR:OH   | 2.09                     | 0.53              |
| 40:BS:84:ASP:OD2   | 40:BS:115:ILE:HB   | 2.08                     | 0.53              |
| 28:BG:204:LYS:HG2  | 28:BG:205:SER:N    | 2.19                     | 0.53              |
| 40:BS:47:HIS:HA    | 40:BS:50:ARG:NE    | 2.23                     | 0.53              |
| 1:AA:191:G:O2'     | 1:AA:192:C:H5'     | 2.09                     | 0.53              |
| 1:AA:957:C:C3'     | 1:AA:958:U:H5''    | 2.39                     | 0.53              |
| 1:AA:1017:G:N2     | 1:AA:1057:G:H1'    | 2.24                     | 0.53              |
| 41:BT:162:LEU:HD23 | 41:BT:176:ILE:HA   | 1.90                     | 0.53              |
| 1:AA:508:A:C4      | 1:AA:514:G:H1'     | 2.43                     | 0.53              |
| 1:AA:382:C:N4      | 1:AA:384:G:H1'     | 2.23                     | 0.53              |
| 1:AA:1247:A:H2'    | 1:AA:1248:G:H5'    | 1.91                     | 0.53              |
| 25:BD:225:PHE:HE1  | 25:BD:250:LEU:HD13 | 1.71                     | 0.53              |
| 22:BA:1296:A:H8    | 37:BP:105:GLN:HB3  | 1.73                     | 0.53              |
| 45:BX:141:ARG:HE   | 45:BX:141:ARG:HA   | 1.74                     | 0.53              |
| 45:BX:141:ARG:NE   | 45:BX:141:ARG:HA   | 2.24                     | 0.53              |
| 23:BB:96:C:H2'     | 23:BB:97:G:C8      | 2.44                     | 0.53              |
| 1:AA:163:G:H1      | 1:AA:179:A:H62     | 1.57                     | 0.53              |
| 3:AC:25:GLN:NE2    | 10:AJ:106:ARG:HH22 | 2.07                     | 0.53              |
| 22:BA:6:A:H4'      | 33:BL:114:TRP:CH2  | 2.44                     | 0.53              |
| 42:BU:76:ILE:O     | 42:BU:79:LEU:HB3   | 2.09                     | 0.53              |
| 26:BE:112:ILE:N    | 26:BE:112:ILE:HD12 | 2.24                     | 0.53              |
| 22:BA:2737:G:N2    | 24:BC:73:G:H1      | 2.07                     | 0.53              |
| 22:BA:2244:A:H4'   | 26:BE:257:LYS:HE2  | 1.89                     | 0.53              |
| 46:BY:124:LEU:HD12 | 46:BY:124:LEU:N    | 2.24                     | 0.53              |
| 22:BA:642:G:H5''   | 52:B5:134:LYS:HZ1  | 1.73                     | 0.53              |
| 1:AA:663:A:H2'     | 1:AA:664:A:C8      | 2.43                     | 0.53              |
| 1:AA:214:A:O2'     | 1:AA:215:U:OP2     | 2.21                     | 0.53              |
| 1:AA:399:G:H5''    | 1:AA:400:U:OP1     | 2.09                     | 0.53              |
| 1:AA:77:G:C2'      | 1:AA:78:U:H4'      | 2.36                     | 0.53              |
| 22:BA:84:G:H2'     | 22:BA:85:U:C6      | 2.43                     | 0.53              |
| 22:BA:839:G:H1     | 22:BA:2264:U:C4'   | 2.20                     | 0.53              |
| 28:BG:113:ARG:HG3  | 28:BG:115:PRO:HD3  | 1.91                     | 0.53              |
| 1:AA:1188:U:H2'    | 7:AG:32:LYS:HZ2    | 1.73                     | 0.53              |
| 22:BA:2395:A:H2'   | 22:BA:2396:G:H5'   | 1.90                     | 0.53              |
| 1:AA:18:U:H2'      | 1:AA:19:C:C6       | 2.44                     | 0.53              |
| 50:B3:5:LYS:N      | 50:B3:5:LYS:HD2    | 2.22                     | 0.53              |
| 22:BA:1809:G:N2    | 26:BE:150:LEU:HB3  | 2.22                     | 0.53              |
| 1:AA:1467:A:H2'    | 1:AA:1468:A:C8     | 2.43                     | 0.53              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 22:BA:1272:A:H62  | 40:BS:3:ARG:NH2    | 1.99                     | 0.53              |
| 22:BA:1272:A:OP2  | 40:BS:13:ARG:HD3   | 2.09                     | 0.53              |
| 1:AA:664:A:H2'    | 1:AA:665:C:O4'     | 2.08                     | 0.53              |
| 28:BG:210:MET:HG3 | 28:BG:229:LEU:O    | 2.09                     | 0.53              |
| 29:BH:48:LYS:HB2  | 29:BH:105:THR:OG1  | 2.09                     | 0.53              |
| 22:BA:84:G:H3'    | 44:BW:94:LYS:NZ    | 2.24                     | 0.53              |
| 1:AA:931:U:H4'    | 1:AA:932:A:O4'     | 2.08                     | 0.53              |
| 30:BI:45:ARG:HG2  | 30:BI:46:ILE:H     | 1.73                     | 0.53              |
| 41:BT:164:VAL:HB  | 41:BT:170:THR:OG1  | 2.09                     | 0.53              |
| 38:BQ:81:VAL:HG22 | 38:BQ:91:ALA:O     | 2.08                     | 0.53              |
| 1:AA:825:A:H4'    | 8:AH:14:ARG:NH2    | 2.24                     | 0.53              |
| 48:B1:71:MET:HG2  | 48:B1:72:THR:HG23  | 1.90                     | 0.53              |
| 22:BA:1882:U:H2'  | 22:BA:1883:G:H5'   | 1.91                     | 0.53              |
| 22:BA:976:C:H2'   | 22:BA:977:G:C8     | 2.44                     | 0.53              |
| 22:BA:984:G:C6    | 22:BA:986:U:H5'    | 2.43                     | 0.53              |
| 30:BI:49:GLN:N    | 30:BI:49:GLN:NE2   | 2.57                     | 0.53              |
| 27:BF:174:GLY:HA3 | 27:BF:183:HIS:HA   | 1.91                     | 0.53              |
| 22:BA:602:A:HO2'  | 52:B5:91:LYS:N     | 2.06                     | 0.53              |
| 22:BA:1535:A:N6   | 26:BE:91:HIS:HA    | 2.20                     | 0.53              |
| 28:BG:164:ALA:HB1 | 28:BG:239:VAL:HG11 | 1.91                     | 0.53              |
| 1:AA:1106:C:O2    | 1:AA:1106:C:C2'    | 2.53                     | 0.53              |
| 41:BT:143:TYR:H   | 41:BT:143:TYR:HD1  | 1.57                     | 0.53              |
| 35:BN:120:MET:O   | 35:BN:124:ARG:HB2  | 2.09                     | 0.53              |
| 22:BA:795:U:H5''  | 26:BE:222:ASN:ND2  | 2.24                     | 0.53              |
| 22:BA:1315:G:H2'  | 22:BA:1316:C:C6    | 2.44                     | 0.53              |
| 1:AA:1295:G:HO2'  | 1:AA:1296:U:H5     | 1.52                     | 0.53              |
| 39:BR:226:LEU:H   | 39:BR:227:PRO:HD2  | 1.74                     | 0.53              |
| 1:AA:1167:U:H2'   | 1:AA:1168:G:H8     | 1.71                     | 0.53              |
| 33:BL:136:ARG:CZ  | 33:BL:209:PRO:HG3  | 2.39                     | 0.53              |
| 42:BU:107:LYS:HE3 | 42:BU:128:PRO:HA   | 1.90                     | 0.53              |
| 1:AA:32:G:H5'     | 1:AA:33:A:OP2      | 2.08                     | 0.53              |
| 1:AA:1225:C:O2'   | 1:AA:1227:A:H1'    | 2.09                     | 0.53              |
| 1:AA:1233:A:O2'   | 1:AA:1234:A:H3'    | 2.09                     | 0.53              |
| 36:BO:34:LEU:HD11 | 36:BO:129:THR:HB   | 1.91                     | 0.53              |
| 22:BA:862:U:H3    | 22:BA:934:A:H61    | 1.56                     | 0.53              |
| 46:BY:143:LYS:N   | 46:BY:143:LYS:HD2  | 2.24                     | 0.53              |
| 1:AA:765:C:H1'    | 1:AA:767:A:C5'     | 2.30                     | 0.52              |
| 22:BA:1838:G:N2   | 26:BE:216:VAL:HG21 | 2.24                     | 0.52              |
| 46:BY:76:ARG:HG2  | 46:BY:77:ILE:N     | 2.25                     | 0.52              |
| 22:BA:640:G:N2    | 22:BA:648:G:H1'    | 2.23                     | 0.52              |
| 22:BA:626:C:OP1   | 28:BG:230:THR:HB   | 2.09                     | 0.52              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:7:G:O2'       | 1:AA:8:G:H8        | 1.92                     | 0.52              |
| 41:BT:172:ILE:HG13 | 41:BT:176:ILE:O    | 2.09                     | 0.52              |
| 29:BH:173:THR:HG21 | 29:BH:184:LEU:HD23 | 1.92                     | 0.52              |
| 1:AA:549:G:H1      | 1:AA:585:U:H3      | 1.57                     | 0.52              |
| 27:BF:177:THR:HG23 | 27:BF:178:HIS:ND1  | 2.25                     | 0.52              |
| 36:BO:110:ALA:HB3  | 36:BO:113:ILE:HG22 | 1.90                     | 0.52              |
| 1:AA:926:A:H2'     | 1:AA:1172:G:O6     | 2.09                     | 0.52              |
| 22:BA:118:U:H4'    | 22:BA:119:A:H5''   | 1.90                     | 0.52              |
| 38:BQ:55:ILE:HG12  | 38:BQ:56:ARG:HH21  | 1.75                     | 0.52              |
| 46:BY:118:ARG:O    | 46:BY:120:VAL:HG23 | 2.09                     | 0.52              |
| 1:AA:1105:A:H5''   | 1:AA:1106:C:OP1    | 2.08                     | 0.52              |
| 22:BA:1000:G:H3'   | 22:BA:1001:A:H5''  | 1.92                     | 0.52              |
| 1:AA:299:C:O2'     | 1:AA:300:A:P       | 2.68                     | 0.52              |
| 44:BW:93:HIS:CG    | 44:BW:94:LYS:H     | 2.27                     | 0.52              |
| 1:AA:1244:C:H4'    | 1:AA:1250:U:O4     | 2.08                     | 0.52              |
| 22:BA:2747:G:H2'   | 22:BA:2748:C:C6    | 2.44                     | 0.52              |
| 22:BA:2463:G:O6    | 22:BA:2518:C:H2'   | 2.09                     | 0.52              |
| 28:BG:103:LEU:HB2  | 28:BG:139:VAL:HB   | 1.91                     | 0.52              |
| 22:BA:319:G:H4'    | 22:BA:320:U:H5     | 1.73                     | 0.52              |
| 40:BS:95:LYS:H     | 40:BS:95:LYS:HD2   | 1.74                     | 0.52              |
| 22:BA:349:A:H2'    | 22:BA:350:G:O4'    | 2.09                     | 0.52              |
| 32:BK:90:THR:OG1   | 32:BK:91:PRO:HD3   | 2.09                     | 0.52              |
| 22:BA:1426:U:H2'   | 22:BA:1427:A:C8    | 2.44                     | 0.52              |
| 24:BC:12:C:H3'     | 24:BC:14:A:H62     | 1.73                     | 0.52              |
| 22:BA:475:G:N2     | 22:BA:477:G:H3'    | 2.25                     | 0.52              |
| 22:BA:199:G:O2'    | 22:BA:200:G:H5'    | 2.09                     | 0.52              |
| 22:BA:652:C:N4     | 22:BA:660:G:H1     | 2.05                     | 0.52              |
| 28:BG:223:ILE:HG21 | 28:BG:226:LEU:HD13 | 1.91                     | 0.52              |
| 28:BG:225:THR:O    | 28:BG:226:LEU:HB2  | 2.09                     | 0.52              |
| 22:BA:69:G:H4'     | 22:BA:72:A:O4'     | 2.10                     | 0.52              |
| 1:AA:180:A:H5''    | 1:AA:181:G:OP1     | 2.08                     | 0.52              |
| 52:B5:124:LYS:HD3  | 52:B5:124:LYS:N    | 2.21                     | 0.52              |
| 22:BA:837:U:H5''   | 22:BA:2446:G:P     | 2.49                     | 0.52              |
| 1:AA:327:A:HO2'    | 1:AA:339:U:H4'     | 1.74                     | 0.52              |
| 22:BA:478:A:H4'    | 51:B4:126:LEU:HD11 | 1.91                     | 0.52              |
| 1:AA:1340:U:H2'    | 1:AA:1341:G:C8     | 2.45                     | 0.52              |
| 22:BA:740:G:O6     | 26:BE:203:ARG:HB2  | 2.09                     | 0.52              |
| 22:BA:608:U:H3     | 22:BA:670:A:H61    | 1.57                     | 0.52              |
| 14:AN:92:LEU:HD22  | 14:AN:93:PRO:HD2   | 1.91                     | 0.52              |
| 24:BC:16:A:OP1     | 27:BF:162:PHE:HB2  | 2.08                     | 0.52              |
| 22:BA:1812:A:H2'   | 22:BA:1813:A:H8    | 1.74                     | 0.52              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 26:BE:150:LEU:HD23 | 26:BE:150:LEU:N    | 2.23                     | 0.52              |
| 22:BA:1835:G:H2'   | 22:BA:1836:C:C6    | 2.45                     | 0.52              |
| 35:BN:149:THR:H    | 35:BN:185:LYS:HD2  | 1.74                     | 0.52              |
| 1:AA:443:A:H1'     | 1:AA:444:A:C5      | 2.45                     | 0.52              |
| 22:BA:318:A:H4'    | 22:BA:338:G:O6     | 2.10                     | 0.52              |
| 50:B3:15:CYS:HB2   | 50:B3:32:ARG:HH11  | 1.74                     | 0.52              |
| 22:BA:865:A:H2'    | 45:BX:81:LYS:HZ1   | 1.74                     | 0.52              |
| 1:AA:599:C:H2'     | 1:AA:600:U:C6      | 2.44                     | 0.52              |
| 23:BB:7:G:H21      | 38:BQ:80:GLN:HE22  | 1.57                     | 0.52              |
| 22:BA:212:A:H2     | 22:BA:430:U:H1'    | 1.73                     | 0.52              |
| 22:BA:1610:C:H2'   | 22:BA:1611:G:C8    | 2.44                     | 0.52              |
| 28:BG:186:LYS:HZ2  | 28:BG:188:LYS:HB2  | 1.73                     | 0.52              |
| 22:BA:2088:U:H2'   | 22:BA:2089:U:C6    | 2.45                     | 0.52              |
| 1:AA:855:G:O2'     | 1:AA:856:A:H5''    | 2.09                     | 0.52              |
| 22:BA:2546:G:OP2   | 22:BA:2547:U:H5''  | 2.09                     | 0.52              |
| 1:AA:952:G:N2      | 1:AA:954:A:H5'     | 2.24                     | 0.52              |
| 22:BA:1411:U:H3    | 22:BA:1416:A:N6    | 2.07                     | 0.52              |
| 1:AA:1430:U:H2'    | 1:AA:1431:G:C8     | 2.44                     | 0.52              |
| 1:AA:1179:G:H4'    | 9:AI:195:SER:HB3   | 1.90                     | 0.52              |
| 24:BC:36:A:H4'     | 24:BC:37:U:H5      | 1.74                     | 0.52              |
| 29:BH:85:ALA:O     | 29:BH:96:GLU:HG2   | 2.09                     | 0.52              |
| 27:BF:105:LYS:HG2  | 27:BF:106:PRO:HD3  | 1.92                     | 0.52              |
| 30:BI:81:ARG:HG2   | 30:BI:82:GLU:N     | 2.15                     | 0.52              |
| 35:BN:168:LYS:N    | 35:BN:168:LYS:HD3  | 2.25                     | 0.52              |
| 45:BX:97:GLN:H     | 45:BX:97:GLN:CD    | 2.12                     | 0.52              |
| 22:BA:624:A:N3     | 22:BA:624:A:H2'    | 2.23                     | 0.52              |
| 27:BF:160:LYS:HZ3  | 27:BF:167:LYS:HD2  | 1.75                     | 0.52              |
| 41:BT:135:ILE:HG12 | 41:BT:135:ILE:O    | 2.09                     | 0.52              |
| 1:AA:495:A:H5'     | 1:AA:496:G:OP1     | 2.10                     | 0.52              |
| 44:BW:93:HIS:CB    | 44:BW:98:THR:H     | 2.22                     | 0.52              |
| 1:AA:1093:A:O2'    | 1:AA:1094:A:H5''   | 2.09                     | 0.52              |
| 31:BJ:106:GLU:O    | 31:BJ:111:LYS:HG2  | 2.09                     | 0.52              |
| 37:BP:96:VAL:HG22  | 37:BP:135:LYS:HD2  | 1.91                     | 0.52              |
| 22:BA:974:G:H2'    | 22:BA:975:A:H8     | 1.75                     | 0.52              |
| 22:BA:2053:A:H2'   | 22:BA:2054:C:C6    | 2.43                     | 0.52              |
| 42:BU:50:ILE:HD13  | 42:BU:132:ILE:HD12 | 1.91                     | 0.52              |
| 46:BY:76:ARG:HG2   | 46:BY:77:ILE:H     | 1.74                     | 0.52              |
| 1:AA:650:A:H1'     | 22:BA:1857:A:OP1   | 2.10                     | 0.52              |
| 35:BN:208:LYS:HE2  | 35:BN:218:LEU:HD12 | 1.92                     | 0.52              |
| 40:BS:78:TYR:O     | 40:BS:81:PHE:HB3   | 2.10                     | 0.52              |
| 27:BF:186:LEU:HD11 | 27:BF:205:PRO:HD3  | 1.91                     | 0.52              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 32:BK:141:LEU:CD2  | 32:BK:141:LEU:H    | 2.19                     | 0.52              |
| 34:BM:43:ILE:HG22  | 34:BM:56:GLU:HG2   | 1.90                     | 0.52              |
| 50:B3:10:LYS:N     | 50:B3:10:LYS:HD3   | 2.23                     | 0.52              |
| 22:BA:1296:A:O2'   | 22:BA:1297:C:H5'   | 2.10                     | 0.52              |
| 51:B4:136:LYS:HZ2  | 51:B4:136:LYS:HB2  | 1.75                     | 0.52              |
| 22:BA:2470:A:H2'   | 22:BA:2471:G:C8    | 2.44                     | 0.52              |
| 22:BA:1022:C:H1'   | 41:BT:132:ARG:NH2  | 2.24                     | 0.52              |
| 27:BF:207:ARG:HG2  | 27:BF:208:MET:N    | 2.23                     | 0.52              |
| 22:BA:1114:A:N3    | 22:BA:1114:A:H2'   | 2.24                     | 0.52              |
| 23:BB:13:U:H5''    | 23:BB:15:G:N7      | 2.25                     | 0.52              |
| 1:AA:1299:U:H2'    | 1:AA:1300:C:C6     | 2.45                     | 0.52              |
| 6:AF:118:LYS:HZ1   | 26:BE:161:ILE:N    | 2.08                     | 0.52              |
| 1:AA:712:C:C2'     | 1:AA:713:G:H5'     | 2.39                     | 0.52              |
| 22:BA:164:A:N6     | 51:B4:127:LEU:HG   | 2.25                     | 0.52              |
| 1:AA:177:A:O2'     | 1:AA:178:A:H5'     | 2.09                     | 0.52              |
| 22:BA:2679:A:H2'   | 22:BA:2680:G:O4'   | 2.09                     | 0.52              |
| 22:BA:2593:G:H2'   | 22:BA:2593:G:N3    | 2.25                     | 0.52              |
| 22:BA:543:A:H61    | 22:BA:2034:C:H1'   | 1.74                     | 0.52              |
| 36:BO:77:ARG:HA    | 36:BO:77:ARG:HH11  | 1.73                     | 0.52              |
| 31:BJ:56:GLU:HB2   | 31:BJ:84:LYS:HG2   | 1.91                     | 0.52              |
| 1:AA:1195:G:H22    | 1:AA:1238:C:N4     | 2.07                     | 0.52              |
| 39:BR:177:ILE:HG13 | 39:BR:178:HIS:HD2  | 1.74                     | 0.52              |
| 41:BT:204:LYS:N    | 41:BT:204:LYS:HD2  | 2.23                     | 0.52              |
| 43:BV:191:ILE:HD12 | 43:BV:191:ILE:H    | 1.75                     | 0.52              |
| 44:BW:138:LEU:HD12 | 44:BW:139:LYS:HZ1  | 1.75                     | 0.52              |
| 14:AN:63:CYS:HB3   | 14:AN:67:GLY:H     | 1.75                     | 0.52              |
| 1:AA:483:A:H5''    | 1:AA:484:C:OP2     | 2.10                     | 0.52              |
| 39:BR:172:ARG:HB3  | 39:BR:172:ARG:HH11 | 1.75                     | 0.52              |
| 28:BG:158:ARG:HG2  | 28:BG:259:TYR:HA   | 1.92                     | 0.52              |
| 37:BP:127:LYS:H    | 37:BP:198:PRO:HG2  | 1.75                     | 0.52              |
| 35:BN:126:LEU:HD22 | 35:BN:126:LEU:H    | 1.73                     | 0.52              |
| 28:BG:73:LYS:NZ    | 28:BG:77:PRO:HB3   | 2.25                     | 0.52              |
| 41:BT:164:VAL:HG12 | 41:BT:166:THR:HG22 | 1.92                     | 0.52              |
| 1:AA:1174:C:H5''   | 13:AM:136:THR:HG23 | 1.91                     | 0.52              |
| 22:BA:2543:G:O2'   | 53:B6:1:MET:HG3    | 2.10                     | 0.52              |
| 1:AA:679:G:H5''    | 1:AA:714:A:H4'     | 1.91                     | 0.52              |
| 33:BL:112:LYS:HZ3  | 33:BL:149:MET:HA   | 1.74                     | 0.52              |
| 36:BO:113:ILE:HA   | 36:BO:116:ARG:HH11 | 1.75                     | 0.52              |
| 22:BA:703:C:H5'    | 26:BE:39:ARG:HB2   | 1.92                     | 0.52              |
| 8:AH:107:ILE:HD13  | 8:AH:107:ILE:H     | 1.74                     | 0.52              |
| 22:BA:1804:U:H2'   | 22:BA:1805:C:C6    | 2.45                     | 0.52              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:585:A:H2'    | 22:BA:586:U:C6     | 2.45                     | 0.52              |
| 39:BR:172:ARG:HH12 | 39:BR:219:LEU:HA   | 1.75                     | 0.52              |
| 28:BG:88:LEU:HD12  | 28:BG:236:LEU:HD12 | 1.92                     | 0.52              |
| 1:AA:637:C:H1'     | 1:AA:652:A:H2      | 1.74                     | 0.52              |
| 45:BX:127:GLU:HG3  | 45:BX:128:LYS:N    | 2.23                     | 0.52              |
| 1:AA:923:A:C5'     | 1:AA:924:A:H5'     | 2.40                     | 0.52              |
| 22:BA:2570:G:C3'   | 22:BA:2571:U:H5''  | 2.40                     | 0.52              |
| 22:BA:225:U:H5'    | 22:BA:634:G:O2'    | 2.10                     | 0.52              |
| 22:BA:2436:U:H1'   | 50:B3:30:VAL:CG2   | 2.39                     | 0.52              |
| 43:BV:164:THR:HG23 | 43:BV:172:LYS:CE   | 2.39                     | 0.52              |
| 22:BA:1878:C:O2'   | 22:BA:1879:U:P     | 2.68                     | 0.52              |
| 42:BU:67:LEU:HD21  | 49:B2:41:GLY:H     | 1.73                     | 0.52              |
| 22:BA:1705:A:C2'   | 22:BA:1706:C:H5'   | 2.37                     | 0.52              |
| 22:BA:314:G:H1     | 22:BA:322:C:N4     | 2.05                     | 0.52              |
| 47:BZ:124:ARG:CA   | 47:BZ:124:ARG:HH11 | 2.22                     | 0.52              |
| 51:B4:130:ARG:HA   | 51:B4:130:ARG:NE   | 2.25                     | 0.52              |
| 1:AA:306:C:H2'     | 1:AA:307:A:C8      | 2.44                     | 0.52              |
| 27:BF:246:ILE:HG13 | 27:BF:246:ILE:O    | 2.10                     | 0.52              |
| 1:AA:129:G:H22     | 1:AA:161:C:N4      | 2.07                     | 0.52              |
| 26:BE:160:LEU:HD21 | 26:BE:170:LEU:HD23 | 1.91                     | 0.52              |
| 38:BQ:56:ARG:HH12  | 38:BQ:67:ARG:HD3   | 1.74                     | 0.52              |
| 28:BG:239:VAL:HG13 | 28:BG:240:LEU:CD1  | 2.39                     | 0.52              |
| 46:BY:124:LEU:HD21 | 46:BY:132:ILE:HG13 | 1.92                     | 0.52              |
| 28:BG:213:VAL:HG22 | 28:BG:231:PRO:HG3  | 1.92                     | 0.52              |
| 40:BS:49:ASP:HA    | 40:BS:52:ARG:HB2   | 1.92                     | 0.52              |
| 22:BA:1165:G:H2'   | 22:BA:1166:G:O4'   | 2.09                     | 0.52              |
| 37:BP:149:LEU:HG   | 37:BP:153:ARG:NH1  | 2.22                     | 0.52              |
| 45:BX:71:ARG:HG3   | 45:BX:72:ASP:N     | 2.24                     | 0.52              |
| 45:BX:80:VAL:HG22  | 45:BX:81:LYS:N     | 2.22                     | 0.52              |
| 22:BA:1052:G:H3'   | 22:BA:1053:A:H5''  | 1.91                     | 0.52              |
| 22:BA:755:U:H4'    | 22:BA:1694:C:O3'   | 2.10                     | 0.52              |
| 1:AA:705:U:H4'     | 1:AA:770:G:H21     | 1.74                     | 0.52              |
| 1:AA:715:A:H4'     | 1:AA:1474:G:H4'    | 1.90                     | 0.52              |
| 22:BA:1559:A:H2'   | 22:BA:1560:C:O4'   | 2.10                     | 0.52              |
| 26:BE:150:LEU:CD2  | 26:BE:150:LEU:H    | 2.22                     | 0.51              |
| 15:AO:53:LEU:CD2   | 22:BA:726:G:C2     | 2.89                     | 0.51              |
| 44:BW:136:LEU:C    | 44:BW:136:LEU:HD22 | 2.30                     | 0.51              |
| 22:BA:1189:G:H2'   | 22:BA:1190:G:C8    | 2.44                     | 0.51              |
| 22:BA:969:A:H2'    | 22:BA:970:G:O4'    | 2.11                     | 0.51              |
| 1:AA:229:A:C5'     | 20:AT:174:ARG:HH12 | 2.23                     | 0.51              |
| 48:B1:56:GLU:HB3   | 48:B1:58:HIS:NE2   | 2.26                     | 0.51              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 38:BQ:69:CYS:HB2   | 38:BQ:80:GLN:HB3   | 1.91                     | 0.51              |
| 38:BQ:114:VAL:O    | 38:BQ:118:VAL:HG23 | 2.10                     | 0.51              |
| 22:BA:1006:G:H1    | 22:BA:1013:C:H42   | 1.56                     | 0.51              |
| 40:BS:4:VAL:HG22   | 40:BS:4:VAL:O      | 2.10                     | 0.51              |
| 22:BA:2754:G:N2    | 22:BA:2787:C:H1'   | 2.25                     | 0.51              |
| 11:AK:98:PRO:HA    | 11:AK:102:ARG:HE   | 1.74                     | 0.51              |
| 6:AF:118:LYS:NZ    | 26:BE:162:ALA:CA   | 2.68                     | 0.51              |
| 22:BA:2735:G:H2'   | 22:BA:2736:G:C8    | 2.46                     | 0.51              |
| 40:BS:12:ARG:HB3   | 40:BS:15:LYS:NZ    | 2.25                     | 0.51              |
| 22:BA:660:G:H2'    | 22:BA:661:G:H8     | 1.75                     | 0.51              |
| 38:BQ:134:VAL:HB   | 38:BQ:159:LEU:HD22 | 1.92                     | 0.51              |
| 22:BA:643:A:H1'    | 22:BA:2432:G:O2'   | 2.10                     | 0.51              |
| 31:BJ:54:LEU:HG    | 31:BJ:66:GLN:HE21  | 1.75                     | 0.51              |
| 22:BA:1395:G:H2'   | 22:BA:1396:U:O4'   | 2.10                     | 0.51              |
| 42:BU:67:LEU:CD1   | 49:B2:42:ASN:H     | 2.22                     | 0.51              |
| 1:AA:355:G:H2'     | 1:AA:356:C:C6      | 2.45                     | 0.51              |
| 30:BI:99:VAL:HG23  | 30:BI:101:THR:HG22 | 1.92                     | 0.51              |
| 1:AA:420:A:H61     | 1:AA:432:G:H1      | 1.58                     | 0.51              |
| 24:BC:83:A:C3'     | 24:BC:84:A:H5''    | 2.41                     | 0.51              |
| 26:BE:219:VAL:HG11 | 26:BE:235:ALA:HB2  | 1.92                     | 0.51              |
| 1:AA:369:U:H2'     | 1:AA:370:G:C8      | 2.46                     | 0.51              |
| 22:BA:1427:A:H2'   | 22:BA:1428:C:C6    | 2.45                     | 0.51              |
| 40:BS:11:ARG:O     | 40:BS:11:ARG:HD2   | 2.10                     | 0.51              |
| 22:BA:2031:A:N3    | 49:B2:7:ARG:HD2    | 2.25                     | 0.51              |
| 22:BA:804:A:H62    | 22:BA:2086:G:H5'   | 1.74                     | 0.51              |
| 28:BG:56:PRO:HA    | 28:BG:64:LYS:HE3   | 1.93                     | 0.51              |
| 52:B5:129:LYS:HD3  | 52:B5:130:ASN:N    | 2.24                     | 0.51              |
| 22:BA:1329:A:H4'   | 51:B4:105:ARG:NH1  | 2.25                     | 0.51              |
| 22:BA:1839:A:H2'   | 22:BA:1840:C:O4'   | 2.10                     | 0.51              |
| 26:BE:152:ARG:HE   | 26:BE:154:ALA:H    | 1.58                     | 0.51              |
| 22:BA:839:G:N2     | 22:BA:2264:U:H4'   | 2.26                     | 0.51              |
| 1:AA:514:G:H4'     | 1:AA:515:G:OP1     | 2.09                     | 0.51              |
| 27:BF:150:LEU:N    | 27:BF:150:LEU:HD12 | 2.25                     | 0.51              |
| 1:AA:132:A:H1'     | 1:AA:1396:A:H1'    | 1.92                     | 0.51              |
| 22:BA:1227:U:H2'   | 22:BA:1228:A:O4'   | 2.11                     | 0.51              |
| 22:BA:1260:G:H2'   | 22:BA:1261:A:O4'   | 2.10                     | 0.51              |
| 28:BG:52:LEU:HD22  | 28:BG:52:LEU:N     | 2.25                     | 0.51              |
| 21:AU:120:ARG:HG3  | 21:AU:122:GLY:H    | 1.76                     | 0.51              |
| 35:BN:228:VAL:HG12 | 35:BN:229:LYS:N    | 2.25                     | 0.51              |
| 26:BE:169:THR:HG22 | 26:BE:170:LEU:N    | 2.25                     | 0.51              |
| 26:BE:74:ILE:HD12  | 26:BE:106:ALA:HB1  | 1.92                     | 0.51              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 40:BS:3:ARG:HH11   | 40:BS:3:ARG:HB2    | 1.74                     | 0.51              |
| 22:BA:717:A:H62    | 22:BA:736:G:H21    | 1.59                     | 0.51              |
| 22:BA:786:G:C4'    | 22:BA:787:G:H5'    | 2.38                     | 0.51              |
| 1:AA:397:U:H2'     | 1:AA:398:C:C6      | 2.45                     | 0.51              |
| 40:BS:102:ILE:HG13 | 40:BS:103:LEU:N    | 2.22                     | 0.51              |
| 49:B2:42:ASN:ND2   | 49:B2:43:SER:N     | 2.56                     | 0.51              |
| 1:AA:914:U:H1'     | 1:AA:918:A:C4      | 2.45                     | 0.51              |
| 22:BA:2695:C:H2'   | 22:BA:2696:A:C8    | 2.46                     | 0.51              |
| 35:BN:144:VAL:HG22 | 35:BN:145:ASN:H    | 1.75                     | 0.51              |
| 49:B2:50:LYS:HE2   | 49:B2:57:GLU:HB2   | 1.93                     | 0.51              |
| 1:AA:1136:A:H2'    | 1:AA:1137:U:O4'    | 2.10                     | 0.51              |
| 1:AA:469:G:O2'     | 1:AA:470:C:H5'     | 2.10                     | 0.51              |
| 44:BW:141:GLN:O    | 44:BW:143:VAL:HG23 | 2.10                     | 0.51              |
| 36:BO:23:ARG:HB3   | 36:BO:101:ARG:HB2  | 1.93                     | 0.51              |
| 22:BA:2707:A:H1'   | 37:BP:106:ARG:HH22 | 1.74                     | 0.51              |
| 26:BE:31:GLY:HA3   | 26:BE:99:TYR:OH    | 2.10                     | 0.51              |
| 22:BA:1802:G:H5''  | 26:BE:200:ARG:HH11 | 1.75                     | 0.51              |
| 35:BN:183:PRO:HG2  | 35:BN:184:LEU:H    | 1.75                     | 0.51              |
| 1:AA:215:U:H1'     | 1:AA:843:G:N2      | 2.25                     | 0.51              |
| 22:BA:625:C:O2'    | 22:BA:626:C:H5     | 1.94                     | 0.51              |
| 28:BG:71:ASN:HB3   | 28:BG:261:VAL:HG23 | 1.92                     | 0.51              |
| 28:BG:191:ILE:N    | 28:BG:191:ILE:HD12 | 2.26                     | 0.51              |
| 31:BJ:61:LEU:N     | 31:BJ:61:LEU:HD12  | 2.26                     | 0.51              |
| 22:BA:1924:G:H1    | 22:BA:1934:C:N4    | 2.09                     | 0.51              |
| 34:BM:76:ILE:O     | 39:BR:196:PHE:HB2  | 2.11                     | 0.51              |
| 1:AA:1478:G:O5'    | 1:AA:1479:G:OP2    | 2.29                     | 0.51              |
| 22:BA:1188:U:H2'   | 22:BA:1189:G:C8    | 2.45                     | 0.51              |
| 45:BX:124:VAL:HG22 | 45:BX:125:LYS:N    | 2.26                     | 0.51              |
| 22:BA:1969:U:O4    | 22:BA:2569:U:H1'   | 2.11                     | 0.51              |
| 22:BA:1048:C:H4'   | 22:BA:1049:A:N7    | 2.26                     | 0.51              |
| 22:BA:1104:C:O2'   | 32:BK:163:PRO:HD2  | 2.10                     | 0.51              |
| 33:BL:122:LEU:HD13 | 33:BL:127:MET:HG2  | 1.93                     | 0.51              |
| 22:BA:218:A:H61    | 22:BA:440:A:H61    | 1.59                     | 0.51              |
| 1:AA:792:G:H21     | 1:AA:793:A:H62     | 1.59                     | 0.51              |
| 37:BP:193:ARG:HD3  | 37:BP:193:ARG:N    | 2.26                     | 0.51              |
| 27:BF:103:LEU:HD12 | 27:BF:103:LEU:N    | 2.26                     | 0.51              |
| 22:BA:2173:G:H2'   | 22:BA:2174:C:H4'   | 1.92                     | 0.51              |
| 22:BA:988:A:H2'    | 22:BA:990:C:C6     | 2.46                     | 0.51              |
| 42:BU:47:ARG:O     | 42:BU:50:ILE:HG12  | 2.10                     | 0.51              |
| 26:BE:73:LYS:HD2   | 26:BE:109:GLY:HA3  | 1.92                     | 0.51              |
| 1:AA:804:G:O2'     | 1:AA:805:U:H5'     | 2.11                     | 0.51              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:1321:A:H2'   | 22:BA:1670:A:O2'   | 2.10                     | 0.51              |
| 22:BA:1830:U:H5    | 26:BE:155:GLY:HA3  | 1.74                     | 0.51              |
| 45:BX:120:ILE:HD13 | 45:BX:120:ILE:C    | 2.30                     | 0.51              |
| 1:AA:447:A:O2'     | 1:AA:448:G:C8      | 2.63                     | 0.51              |
| 22:BA:588:A:H2'    | 22:BA:589:G:H5''   | 1.91                     | 0.51              |
| 40:BS:37:GLN:O     | 40:BS:41:ARG:HG3   | 2.10                     | 0.51              |
| 35:BN:120:MET:N    | 35:BN:121:PRO:CD   | 2.73                     | 0.51              |
| 1:AA:1087:G:H4'    | 1:AA:1088:U:O5'    | 2.09                     | 0.51              |
| 49:B2:29:LEU:H     | 49:B2:29:LEU:CD2   | 2.23                     | 0.51              |
| 49:B2:29:LEU:N     | 49:B2:29:LEU:HD23  | 2.24                     | 0.51              |
| 22:BA:2536:A:H5'   | 22:BA:2584:G:H21   | 1.76                     | 0.51              |
| 1:AA:828:C:H2'     | 1:AA:829:C:C6      | 2.46                     | 0.51              |
| 39:BR:229:LEU:HD23 | 39:BR:229:LEU:N    | 2.26                     | 0.51              |
| 22:BA:38:C:H1'     | 28:BG:97:ARG:NH2   | 2.25                     | 0.51              |
| 1:AA:18:U:C5'      | 5:AE:162:VAL:HG12  | 2.40                     | 0.51              |
| 22:BA:2638:G:H2'   | 22:BA:2639:U:C6    | 2.46                     | 0.51              |
| 1:AA:1430:U:H2'    | 1:AA:1431:G:H8     | 1.75                     | 0.51              |
| 22:BA:2421:C:H2'   | 22:BA:2422:G:O4'   | 2.10                     | 0.51              |
| 29:BH:110:LEU:H    | 29:BH:110:LEU:HD12 | 1.76                     | 0.51              |
| 42:BU:56:ARG:HE    | 42:BU:56:ARG:HA    | 1.76                     | 0.51              |
| 22:BA:1641:C:H2'   | 22:BA:1642:C:O4'   | 2.11                     | 0.51              |
| 22:BA:1101:A:H4'   | 22:BA:2491:U:O3'   | 2.11                     | 0.51              |
| 50:B3:18:CYS:O     | 50:B3:20:ARG:HG3   | 2.11                     | 0.51              |
| 36:BO:36:ALA:C     | 36:BO:37:LEU:HD22  | 2.31                     | 0.51              |
| 1:AA:422:A:H2'     | 1:AA:422:A:N3      | 2.25                     | 0.51              |
| 22:BA:2775:A:H2'   | 22:BA:2775:A:N3    | 2.25                     | 0.51              |
| 22:BA:1828:U:H4'   | 22:BA:1831:G:C1'   | 2.36                     | 0.51              |
| 22:BA:816:G:H4'    | 35:BN:109:PRO:O    | 2.11                     | 0.51              |
| 40:BS:17:ILE:HG23  | 40:BS:39:LYS:NZ    | 2.25                     | 0.51              |
| 1:AA:27:A:H61      | 1:AA:506:G:H1'     | 1.76                     | 0.51              |
| 1:AA:1245:U:O2'    | 1:AA:1246:C:C5     | 2.64                     | 0.51              |
| 25:BD:228:LEU:HD22 | 25:BD:228:LEU:N    | 2.26                     | 0.51              |
| 34:BM:86:ILE:CD1   | 34:BM:86:ILE:H     | 2.24                     | 0.51              |
| 39:BR:126:LEU:C    | 39:BR:126:LEU:HD22 | 2.32                     | 0.51              |
| 22:BA:229:A:OP2    | 52:B5:96:LYS:HE2   | 2.11                     | 0.51              |
| 33:BL:119:ALA:HA   | 33:BL:122:LEU:HD12 | 1.92                     | 0.51              |
| 22:BA:1980:A:O2'   | 22:BA:2610:U:H5'   | 2.11                     | 0.51              |
| 31:BJ:91:LEU:N     | 31:BJ:91:LEU:HD12  | 2.26                     | 0.51              |
| 26:BE:94:ASP:OD1   | 26:BE:95:GLY:N     | 2.44                     | 0.51              |
| 1:AA:1027:U:H2'    | 1:AA:1028:A:O4'    | 2.11                     | 0.51              |
| 26:BE:65:ARG:HH22  | 26:BE:186:ALA:C    | 2.14                     | 0.51              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:167:A:H61    | 22:BA:200:G:H1     | 1.56                     | 0.51              |
| 46:BY:111:ILE:HG21 | 46:BY:133:GLU:OE1  | 2.11                     | 0.51              |
| 1:AA:806:U:C3'     | 1:AA:807:G:C5'     | 2.89                     | 0.51              |
| 1:AA:979:U:H5''    | 1:AA:980:C:H5      | 1.76                     | 0.51              |
| 22:BA:67:A:H2'     | 22:BA:68:C:O4'     | 2.11                     | 0.51              |
| 22:BA:1379:C:H2'   | 22:BA:1393:U:O4    | 2.11                     | 0.51              |
| 43:BV:161:LYS:HD3  | 43:BV:161:LYS:C    | 2.31                     | 0.51              |
| 37:BP:94:ARG:NH2   | 37:BP:97:PRO:HA    | 2.25                     | 0.51              |
| 22:BA:2654:U:H3    | 22:BA:2794:A:H62   | 1.58                     | 0.51              |
| 38:BQ:112:ILE:HB   | 38:BQ:146:ARG:HH12 | 1.75                     | 0.51              |
| 1:AA:206:C:H2'     | 1:AA:207:G:C8      | 2.46                     | 0.51              |
| 33:BL:217:LEU:N    | 33:BL:217:LEU:HD12 | 2.26                     | 0.51              |
| 22:BA:319:G:H4'    | 22:BA:320:U:C5     | 2.46                     | 0.51              |
| 1:AA:131:G:H2'     | 1:AA:132:A:C8      | 2.46                     | 0.51              |
| 22:BA:12:A:N6      | 22:BA:536:C:H2'    | 2.25                     | 0.51              |
| 44:BW:140:GLU:OE1  | 44:BW:143:VAL:HG21 | 2.11                     | 0.51              |
| 22:BA:760:A:H5'    | 22:BA:1292:G:H1'   | 1.93                     | 0.51              |
| 22:BA:1746:C:H4'   | 24:BC:59:U:O2      | 2.11                     | 0.51              |
| 29:BH:185:LEU:HD13 | 29:BH:190:MET:SD   | 2.51                     | 0.51              |
| 22:BA:1809:G:H4'   | 22:BA:1810:C:H5''  | 1.93                     | 0.51              |
| 22:BA:345:C:H2'    | 22:BA:346:A:C8     | 2.46                     | 0.51              |
| 38:BQ:63:PRO:O     | 38:BQ:64:GLU:HG3   | 2.10                     | 0.51              |
| 37:BP:103:PRO:HA   | 37:BP:106:ARG:NE   | 2.25                     | 0.51              |
| 35:BN:203:PHE:HA   | 35:BN:236:LEU:HD22 | 1.93                     | 0.51              |
| 23:BB:104:U:H2'    | 23:BB:105:A:H8     | 1.76                     | 0.51              |
| 44:BW:148:GLY:N    | 44:BW:157:LYS:HE3  | 2.26                     | 0.51              |
| 40:BS:97:LEU:CD2   | 41:BT:135:ILE:HB   | 2.41                     | 0.51              |
| 40:BS:54:LYS:CE    | 40:BS:58:ARG:HH21  | 2.23                     | 0.51              |
| 48:B1:58:HIS:O     | 48:B1:62:LYS:HG3   | 2.11                     | 0.51              |
| 43:BV:164:THR:HG23 | 43:BV:172:LYS:NZ   | 2.27                     | 0.51              |
| 22:BA:1046:C:H2'   | 22:BA:1047:U:C6    | 2.46                     | 0.51              |
| 22:BA:1878:C:H4'   | 22:BA:1879:U:OP1   | 2.11                     | 0.51              |
| 26:BE:217:ARG:NE   | 26:BE:217:ARG:HA   | 2.26                     | 0.51              |
| 34:BM:42:VAL:HG23  | 34:BM:56:GLU:H     | 1.75                     | 0.51              |
| 50:B3:37:LYS:HG2   | 50:B3:39:ARG:HH21  | 1.76                     | 0.51              |
| 1:AA:1247:A:H3'    | 1:AA:1247:A:N3     | 2.25                     | 0.51              |
| 22:BA:2303:A:C1'   | 50:B3:49:ARG:HH22  | 2.24                     | 0.51              |
| 22:BA:597:C:H5     | 35:BN:95:SER:HB3   | 1.76                     | 0.51              |
| 23:BB:14:A:H2'     | 23:BB:108:U:O2'    | 2.11                     | 0.51              |
| 41:BT:126:VAL:HG23 | 41:BT:163:LEU:HB3  | 1.92                     | 0.51              |
| 50:B3:21:LYS:HD2   | 50:B3:21:LYS:H     | 1.76                     | 0.51              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 51:B4:130:ARG:CZ   | 51:B4:135:ARG:HG3  | 2.41                     | 0.51              |
| 33:BL:154:ILE:HG22 | 33:BL:222:LYS:H    | 1.76                     | 0.51              |
| 1:AA:317:G:H3'     | 1:AA:317:G:N3      | 2.26                     | 0.51              |
| 1:AA:323:C:H4'     | 1:AA:325:G:OP1     | 2.10                     | 0.51              |
| 1:AA:1351:C:H2'    | 1:AA:1352:C:O4'    | 2.11                     | 0.51              |
| 1:AA:337:U:H1'     | 1:AA:366:C:O2      | 2.11                     | 0.51              |
| 27:BF:141:PHE:C    | 27:BF:143:GLU:H    | 2.15                     | 0.51              |
| 1:AA:1374:C:H2'    | 1:AA:1375:A:C8     | 2.46                     | 0.50              |
| 6:AF:118:LYS:CE    | 26:BE:162:ALA:CA   | 2.88                     | 0.50              |
| 22:BA:51:A:H2      | 22:BA:163:G:HO2'   | 1.59                     | 0.50              |
| 27:BF:105:LYS:N    | 27:BF:105:LYS:HD3  | 2.07                     | 0.50              |
| 22:BA:2736:G:H2'   | 22:BA:2737:G:C8    | 2.46                     | 0.50              |
| 1:AA:1446:G:H1'    | 1:AA:1467:A:H2     | 1.76                     | 0.50              |
| 41:BT:214:GLN:HG3  | 41:BT:216:ILE:HG23 | 1.93                     | 0.50              |
| 1:AA:1278:U:H2'    | 1:AA:1279:G:O4'    | 2.12                     | 0.50              |
| 22:BA:2039:C:H2'   | 22:BA:2040:U:C6    | 2.46                     | 0.50              |
| 1:AA:702:C:C2'     | 1:AA:702:C:O2      | 2.59                     | 0.50              |
| 38:BQ:98:LYS:HD2   | 38:BQ:103:GLU:OE1  | 2.10                     | 0.50              |
| 23:BB:21:G:H1      | 23:BB:62:C:N4      | 2.08                     | 0.50              |
| 27:BF:197:ARG:O    | 27:BF:198:VAL:HG12 | 2.11                     | 0.50              |
| 22:BA:960:A:H2'    | 22:BA:962:G:O6     | 2.11                     | 0.50              |
| 1:AA:684:C:H2'     | 1:AA:685:U:C6      | 2.45                     | 0.50              |
| 22:BA:2470:A:O2'   | 22:BA:2589:A:H1'   | 2.11                     | 0.50              |
| 42:BU:126:LEU:O    | 42:BU:128:PRO:HD3  | 2.10                     | 0.50              |
| 33:BL:156:VAL:HG13 | 33:BL:157:ASN:N    | 2.26                     | 0.50              |
| 42:BU:56:ARG:NE    | 42:BU:56:ARG:HA    | 2.26                     | 0.50              |
| 53:B6:18:LYS:HD2   | 53:B6:19:ARG:N     | 2.27                     | 0.50              |
| 44:BW:64:LEU:HD12  | 44:BW:64:LEU:N     | 2.27                     | 0.50              |
| 22:BA:1224:U:H5''  | 28:BG:241:ASN:ND2  | 2.26                     | 0.50              |
| 22:BA:1598:C:O2'   | 22:BA:1599:C:H5'   | 2.11                     | 0.50              |
| 22:BA:1597:C:N4    | 26:BE:25:ARG:HD2   | 2.27                     | 0.50              |
| 22:BA:2715:U:H2'   | 22:BA:2716:C:C6    | 2.46                     | 0.50              |
| 37:BP:127:LYS:H    | 37:BP:198:PRO:CG   | 2.23                     | 0.50              |
| 35:BN:126:LEU:HD22 | 35:BN:126:LEU:N    | 2.25                     | 0.50              |
| 35:BN:129:LEU:HD23 | 35:BN:129:LEU:C    | 2.32                     | 0.50              |
| 46:BY:124:LEU:HD23 | 46:BY:128:ALA:HB3  | 1.92                     | 0.50              |
| 35:BN:150:ASP:CB   | 35:BN:171:ARG:HG3  | 2.41                     | 0.50              |
| 48:B1:69:LEU:HD22  | 48:B1:69:LEU:N     | 2.26                     | 0.50              |
| 22:BA:2698:C:H4'   | 22:BA:2699:U:H5    | 1.75                     | 0.50              |
| 1:AA:494:A:H2'     | 4:AD:1:MET:N       | 2.26                     | 0.50              |
| 22:BA:2570:G:H1'   | 22:BA:2599:G:N3    | 2.26                     | 0.50              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:2228:C:HO2'  | 22:BA:2229:U:H5    | 1.59                     | 0.50              |
| 22:BA:1231:G:OP1   | 22:BA:1232:A:H3'   | 2.11                     | 0.50              |
| 27:BF:197:ARG:HH22 | 27:BF:200:LYS:HG3  | 1.75                     | 0.50              |
| 22:BA:2302:C:H4'   | 22:BA:2305:A:N6    | 2.26                     | 0.50              |
| 22:BA:1482:C:H2'   | 22:BA:1483:G:C8    | 2.46                     | 0.50              |
| 45:BX:110:ILE:HD13 | 45:BX:110:ILE:H    | 1.76                     | 0.50              |
| 36:BO:34:LEU:HD21  | 36:BO:129:THR:HB   | 1.93                     | 0.50              |
| 29:BH:20:LYS:HD2   | 29:BH:20:LYS:O     | 2.12                     | 0.50              |
| 31:BJ:138:LEU:HD12 | 31:BJ:138:LEU:N    | 2.26                     | 0.50              |
| 1:AA:711:A:H2'     | 1:AA:712:C:C6      | 2.45                     | 0.50              |
| 27:BF:105:LYS:N    | 27:BF:106:PRO:CD   | 2.74                     | 0.50              |
| 22:BA:647:C:O2     | 22:BA:651:U:H4'    | 2.11                     | 0.50              |
| 35:BN:204:SER:O    | 35:BN:208:LYS:HG3  | 2.11                     | 0.50              |
| 32:BK:167:LYS:HD2  | 32:BK:167:LYS:N    | 2.18                     | 0.50              |
| 22:BA:868:G:C2     | 22:BA:2285:A:H2'   | 2.46                     | 0.50              |
| 34:BM:19:LEU:CD1   | 34:BM:19:LEU:H     | 2.19                     | 0.50              |
| 22:BA:1155:A:H62   | 22:BA:2505:A:H1'   | 1.76                     | 0.50              |
| 22:BA:867:G:H1     | 22:BA:929:A:H61    | 1.59                     | 0.50              |
| 37:BP:129:ARG:O    | 37:BP:133:VAL:HG22 | 2.12                     | 0.50              |
| 22:BA:2767:A:OP1   | 30:BI:46:ILE:HG23  | 2.11                     | 0.50              |
| 22:BA:2506:G:H2'   | 22:BA:2507:G:O4'   | 2.11                     | 0.50              |
| 22:BA:27:A:H61     | 22:BA:523:G:H1'    | 1.76                     | 0.50              |
| 52:B5:150:LEU:HD12 | 52:B5:150:LEU:N    | 2.26                     | 0.50              |
| 47:BZ:121:LYS:O    | 47:BZ:125:GLU:HB2  | 2.11                     | 0.50              |
| 24:BC:40:G:H4'     | 37:BP:138:ASP:CG   | 2.31                     | 0.50              |
| 1:AA:502:U:H2'     | 1:AA:503:C:C6      | 2.46                     | 0.50              |
| 22:BA:2022:C:H2'   | 22:BA:2023:G:C8    | 2.46                     | 0.50              |
| 5:AE:276:LEU:HG    | 5:AE:280:ARG:HH21  | 1.76                     | 0.50              |
| 22:BA:2680:G:H2'   | 22:BA:2681:G:O4'   | 2.12                     | 0.50              |
| 28:BG:213:VAL:HG22 | 28:BG:251:THR:HG22 | 1.93                     | 0.50              |
| 28:BG:199:LEU:HD21 | 28:BG:244:LYS:HE3  | 1.94                     | 0.50              |
| 28:BG:131:SER:HB3  | 28:BG:133:LEU:N    | 2.26                     | 0.50              |
| 29:BH:117:ARG:HH21 | 48:B1:62:LYS:N     | 2.09                     | 0.50              |
| 22:BA:545:U:H2'    | 22:BA:546:G:C8     | 2.47                     | 0.50              |
| 22:BA:839:G:N1     | 22:BA:2264:U:H4'   | 2.24                     | 0.50              |
| 43:BV:161:LYS:O    | 43:BV:176:ILE:HD12 | 2.12                     | 0.50              |
| 1:AA:1341:G:N2     | 1:AA:1451:A:H1'    | 2.25                     | 0.50              |
| 27:BF:197:ARG:HH12 | 27:BF:200:LYS:CG   | 2.24                     | 0.50              |
| 22:BA:2193:C:H1'   | 25:BD:282:THR:HA   | 1.93                     | 0.50              |
| 41:BT:138:PRO:HB2  | 41:BT:224:ILE:CG2  | 2.42                     | 0.50              |
| 22:BA:2303:A:H1'   | 50:B3:49:ARG:HH22  | 1.76                     | 0.50              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 39:BR:226:LEU:HB3  | 39:BR:227:PRO:CD   | 2.40                     | 0.50              |
| 1:AA:36:G:H21      | 12:AL:115:SER:HB2  | 1.77                     | 0.50              |
| 22:BA:2260:U:H2'   | 22:BA:2261:U:C6    | 2.46                     | 0.50              |
| 49:B2:56:LEU:HD12  | 49:B2:56:LEU:N     | 2.26                     | 0.50              |
| 43:BV:145:LYS:HD3  | 43:BV:145:LYS:C    | 2.31                     | 0.50              |
| 43:BV:124:ALA:O    | 43:BV:128:ILE:HG12 | 2.11                     | 0.50              |
| 1:AA:656:C:H2'     | 1:AA:657:G:C8      | 2.45                     | 0.50              |
| 25:BD:150:THR:HG22 | 25:BD:151:LYS:N    | 2.27                     | 0.50              |
| 22:BA:1937:U:H2'   | 22:BA:1938:C:C6    | 2.46                     | 0.50              |
| 27:BF:239:LYS:HZ3  | 27:BF:240:PRO:HD2  | 1.76                     | 0.50              |
| 26:BE:178:ARG:HD3  | 26:BE:180:ILE:HD11 | 1.93                     | 0.50              |
| 15:AO:53:LEU:HD13  | 22:BA:726:G:H22    | 1.70                     | 0.50              |
| 39:BR:141:PRO:HG2  | 39:BR:142:GLY:H    | 1.76                     | 0.50              |
| 38:BQ:63:PRO:HA    | 45:BX:134:LYS:HA   | 1.93                     | 0.50              |
| 22:BA:1450:G:N1    | 26:BE:25:ARG:HA    | 2.24                     | 0.50              |
| 26:BE:35:CYS:HB3   | 26:BE:57:LEU:HA    | 1.93                     | 0.50              |
| 46:BY:110:ARG:HB3  | 46:BY:123:ARG:HG2  | 1.94                     | 0.50              |
| 46:BY:78:CYS:SG    | 46:BY:79:PRO:HD2   | 2.52                     | 0.50              |
| 1:AA:682:C:H4'     | 18:AR:67:LYS:HZ2   | 1.76                     | 0.50              |
| 22:BA:1189:G:H2'   | 22:BA:1190:G:H8    | 1.77                     | 0.50              |
| 40:BS:111:ILE:O    | 40:BS:115:ILE:HG23 | 2.12                     | 0.50              |
| 22:BA:2559:A:H4'   | 22:BA:2560:G:C8    | 2.46                     | 0.50              |
| 22:BA:2332:G:H2'   | 22:BA:2333:C:C6    | 2.47                     | 0.50              |
| 43:BV:135:LEU:HD11 | 43:BV:173:LYS:HB3  | 1.92                     | 0.50              |
| 37:BP:99:LEU:N     | 37:BP:99:LEU:HD22  | 2.26                     | 0.50              |
| 27:BF:200:LYS:HZ3  | 33:BL:180:PRO:HD3  | 1.76                     | 0.50              |
| 22:BA:668:U:H2'    | 22:BA:669:C:C6     | 2.47                     | 0.50              |
| 22:BA:2761:U:C3'   | 22:BA:2762:G:H5''  | 2.42                     | 0.50              |
| 1:AA:1204:U:O5'    | 1:AA:1206:G:H1'    | 2.11                     | 0.50              |
| 32:BK:98:ALA:HB1   | 32:BK:99:LEU:HD13  | 1.91                     | 0.50              |
| 27:BF:224:ASP:HB2  | 27:BF:229:ILE:CG2  | 2.41                     | 0.50              |
| 22:BA:1470:A:H2'   | 22:BA:1471:A:C8    | 2.46                     | 0.50              |
| 27:BF:103:LEU:HD12 | 27:BF:103:LEU:H    | 1.77                     | 0.50              |
| 38:BQ:46:GLU:H     | 38:BQ:46:GLU:CD    | 2.15                     | 0.50              |
| 17:AQ:140:LYS:H    | 17:AQ:140:LYS:HD2  | 1.77                     | 0.50              |
| 1:AA:363:G:H2'     | 1:AA:364:A:C8      | 2.46                     | 0.50              |
| 20:AT:161:LYS:HD2  | 20:AT:161:LYS:H    | 1.75                     | 0.50              |
| 30:BI:131:ILE:HA   | 30:BI:172:THR:O    | 2.12                     | 0.50              |
| 1:AA:1370:U:H2'    | 1:AA:1371:G:H8     | 1.77                     | 0.50              |
| 1:AA:568:C:H1'     | 4:AD:125:ILE:HG21  | 1.92                     | 0.50              |
| 22:BA:52:A:H62     | 22:BA:115:G:H21    | 1.59                     | 0.50              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:506:G:O4'    | 42:BU:34:THR:HG22  | 2.12                     | 0.50              |
| 1:AA:1381:G:H5'    | 39:BR:231:THR:CG2  | 2.41                     | 0.50              |
| 39:BR:151:ILE:HD13 | 39:BR:209:VAL:H    | 1.77                     | 0.50              |
| 39:BR:170:ILE:HG22 | 39:BR:171:SER:N    | 2.21                     | 0.50              |
| 24:BC:48:U:H5'     | 39:BR:220:TYR:CD2  | 2.47                     | 0.50              |
| 39:BR:221:TYR:CE1  | 39:BR:223:ARG:HG2  | 2.46                     | 0.50              |
| 22:BA:410:G:H5''   | 22:BA:2104:A:H1'   | 1.94                     | 0.50              |
| 51:B4:121:THR:HA   | 51:B4:124:ARG:HG3  | 1.93                     | 0.50              |
| 1:AA:1465:G:H2'    | 1:AA:1467:A:OP2    | 2.12                     | 0.50              |
| 22:BA:459:A:H4'    | 22:BA:461:A:N7     | 2.27                     | 0.50              |
| 46:BY:113:TRP:CZ3  | 46:BY:133:GLU:HB2  | 2.47                     | 0.50              |
| 34:BM:1:MET:HE3    | 34:BM:67:LYS:HG2   | 1.94                     | 0.50              |
| 22:BA:1492:A:H2'   | 22:BA:1493:C:O4'   | 2.11                     | 0.50              |
| 22:BA:2137:G:H3'   | 22:BA:2138:G:H5''  | 1.93                     | 0.50              |
| 1:AA:9:A:O2'       | 5:AE:250:GLY:HA2   | 2.11                     | 0.50              |
| 32:BK:203:ALA:HB1  | 32:BK:208:ILE:HB   | 1.94                     | 0.50              |
| 45:BX:106:LYS:HZ3  | 45:BX:133:ARG:HD2  | 1.76                     | 0.50              |
| 29:BH:27:MET:O     | 29:BH:31:LEU:HG    | 2.12                     | 0.50              |
| 22:BA:2157:U:H3'   | 22:BA:2158:U:C5'   | 2.42                     | 0.50              |
| 22:BA:1571:G:N3    | 22:BA:1571:G:H3'   | 2.26                     | 0.50              |
| 22:BA:1083:G:HO2'  | 22:BA:1113:A:H2    | 1.60                     | 0.50              |
| 36:BO:9:PHE:HD1    | 36:BO:9:PHE:H      | 1.58                     | 0.50              |
| 26:BE:144:LEU:N    | 26:BE:144:LEU:HD12 | 2.26                     | 0.50              |
| 26:BE:188:VAL:O    | 26:BE:188:VAL:HG12 | 2.12                     | 0.50              |
| 36:BO:26:ARG:HB2   | 36:BO:26:ARG:NH1   | 2.27                     | 0.50              |
| 22:BA:139:U:H2'    | 22:BA:140:G:C8     | 2.47                     | 0.50              |
| 10:AJ:113:ILE:HD12 | 10:AJ:167:ARG:HE   | 1.76                     | 0.50              |
| 22:BA:208:A:OP1    | 22:BA:434:A:H5'    | 2.12                     | 0.50              |
| 22:BA:1812:A:H2'   | 22:BA:1813:A:C8    | 2.46                     | 0.50              |
| 22:BA:1602:G:N1    | 26:BE:24:PRO:HB2   | 2.26                     | 0.50              |
| 46:BY:109:LYS:HB3  | 46:BY:109:LYS:HZ2  | 1.77                     | 0.50              |
| 22:BA:995:U:H2'    | 22:BA:996:C:C6     | 2.47                     | 0.50              |
| 28:BG:116:TYR:O    | 28:BG:118:GLN:HG3  | 2.11                     | 0.50              |
| 22:BA:2436:U:H2'   | 22:BA:2437:C:C6    | 2.46                     | 0.50              |
| 22:BA:2041:G:H1    | 22:BA:2050:C:N4    | 2.03                     | 0.50              |
| 34:BM:102:ILE:HD11 | 34:BM:106:LEU:HD12 | 1.93                     | 0.50              |
| 22:BA:1294:A:H5''  | 22:BA:1682:C:H42   | 1.75                     | 0.50              |
| 22:BA:1333:U:H3    | 43:BV:168:PRO:HG2  | 1.76                     | 0.50              |
| 22:BA:2387:G:H21   | 50:B3:57:LYS:HZ3   | 1.58                     | 0.50              |
| 39:BR:122:ILE:C    | 39:BR:122:ILE:HD13 | 2.32                     | 0.50              |
| 1:AA:1066:G:H21    | 1:AA:1128:A:H1'    | 1.77                     | 0.50              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 27:BF:207:ARG:HG2  | 27:BF:208:MET:H    | 1.76                     | 0.50              |
| 44:BW:139:LYS:N    | 44:BW:139:LYS:HD3  | 2.26                     | 0.50              |
| 22:BA:2261:U:H2'   | 22:BA:2262:U:O4'   | 2.12                     | 0.50              |
| 37:BP:204:LEU:HD12 | 37:BP:204:LEU:N    | 2.26                     | 0.50              |
| 22:BA:2203:U:H2'   | 22:BA:2204:A:C8    | 2.46                     | 0.50              |
| 1:AA:487:A:H2'     | 1:AA:488:G:C8      | 2.46                     | 0.50              |
| 33:BL:138:LYS:O    | 40:BS:67:ALA:HA    | 2.11                     | 0.50              |
| 44:BW:70:LYS:CE    | 44:BW:136:LEU:HD12 | 2.42                     | 0.50              |
| 28:BG:236:LEU:HD22 | 28:BG:240:LEU:HD13 | 1.93                     | 0.50              |
| 22:BA:2766:A:H1'   | 22:BA:2775:A:N6    | 2.26                     | 0.50              |
| 45:BX:78:LEU:HD23  | 45:BX:79:GLY:N     | 2.27                     | 0.50              |
| 28:BG:210:MET:O    | 28:BG:251:THR:HG21 | 2.11                     | 0.50              |
| 1:AA:239:U:H2'     | 1:AA:240:U:C6      | 2.47                     | 0.50              |
| 23:BB:43:C:H1'     | 29:BH:105:THR:O    | 2.11                     | 0.50              |
| 22:BA:55:G:H1      | 22:BA:112:C:N4     | 2.06                     | 0.50              |
| 22:BA:794:A:H1'    | 22:BA:1789:U:C1'   | 2.42                     | 0.50              |
| 22:BA:1202:A:H2'   | 22:BA:1203:C:C6    | 2.46                     | 0.50              |
| 41:BT:222:THR:O    | 41:BT:224:ILE:HG23 | 2.12                     | 0.50              |
| 22:BA:229:A:H62    | 22:BA:239:G:H21    | 1.59                     | 0.50              |
| 10:AJ:158:PHE:HB2  | 14:AN:84:ARG:HH22  | 1.75                     | 0.50              |
| 37:BP:161:GLU:O    | 37:BP:165:VAL:HG13 | 2.12                     | 0.50              |
| 49:B2:15:ILE:N     | 49:B2:15:ILE:HD12  | 2.27                     | 0.50              |
| 28:BG:245:LEU:H    | 28:BG:245:LEU:HD23 | 1.77                     | 0.50              |
| 22:BA:703:C:H5'    | 26:BE:39:ARG:CB    | 2.42                     | 0.50              |
| 29:BH:110:LEU:HD12 | 29:BH:110:LEU:N    | 2.26                     | 0.50              |
| 26:BE:101:LEU:N    | 26:BE:101:LEU:HD22 | 2.27                     | 0.50              |
| 11:AK:137:ARG:H    | 11:AK:137:ARG:HD2  | 1.77                     | 0.50              |
| 26:BE:40:ASN:O     | 26:BE:46:THR:HG23  | 2.12                     | 0.50              |
| 42:BU:35:ARG:HH11  | 42:BU:39:ILE:HD11  | 1.77                     | 0.50              |
| 24:BC:49:G:C2'     | 24:BC:69:A:H61     | 2.24                     | 0.50              |
| 34:BM:76:ILE:HD13  | 34:BM:76:ILE:C     | 2.32                     | 0.50              |
| 49:B2:36:LYS:C     | 49:B2:38:LEU:H     | 2.15                     | 0.50              |
| 45:BX:97:GLN:HB2   | 45:BX:124:VAL:O    | 2.12                     | 0.50              |
| 44:BW:160:TYR:O    | 44:BW:162:ILE:HG13 | 2.12                     | 0.50              |
| 35:BN:196:LEU:HB3  | 35:BN:214:ALA:HB3  | 1.94                     | 0.50              |
| 35:BN:124:ARG:HG3  | 52:B5:140:ARG:NH2  | 2.26                     | 0.50              |
| 29:BH:47:VAL:HG22  | 29:BH:107:ARG:HH12 | 1.77                     | 0.50              |
| 34:BM:10:VAL:HG21  | 34:BM:16:ALA:O     | 2.11                     | 0.50              |
| 22:BA:740:G:OP2    | 26:BE:21:LYS:HE3   | 2.12                     | 0.50              |
| 28:BG:254:TYR:HA   | 28:BG:257:GLN:NE2  | 2.26                     | 0.50              |
| 1:AA:825:A:H5'     | 8:AH:80:LYS:HZ3    | 1.77                     | 0.50              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 23:BB:42:C:C1'     | 29:BH:81:VAL:HG22  | 2.42                     | 0.50              |
| 1:AA:1304:G:H2'    | 1:AA:1305:G:C8     | 2.47                     | 0.50              |
| 34:BM:7:HIS:C      | 34:BM:8:LEU:HD22   | 2.31                     | 0.50              |
| 22:BA:15:G:OP1     | 49:B2:14:ARG:HB3   | 2.11                     | 0.50              |
| 22:BA:1731:G:O2'   | 26:BE:16:GLY:HA2   | 2.12                     | 0.50              |
| 1:AA:53:C:H2'      | 1:AA:54:A:C8       | 2.47                     | 0.50              |
| 22:BA:990:C:H3'    | 22:BA:990:C:OP1    | 2.12                     | 0.50              |
| 11:AK:110:ARG:HH12 | 21:AU:110:LEU:HD13 | 1.77                     | 0.50              |
| 43:BV:115:LEU:N    | 43:BV:115:LEU:HD12 | 2.27                     | 0.50              |
| 48:B1:88:ASN:HD22  | 48:B1:89:HIS:N     | 2.09                     | 0.50              |
| 4:AD:13:ARG:HB3    | 4:AD:29:GLY:HA2    | 1.94                     | 0.50              |
| 32:BK:149:LEU:HD13 | 32:BK:179:ILE:HG23 | 1.94                     | 0.50              |
| 1:AA:721:G:O3'     | 26:BE:194:VAL:HG21 | 2.12                     | 0.49              |
| 22:BA:2736:G:H2'   | 22:BA:2737:G:H8    | 1.75                     | 0.49              |
| 26:BE:213:ARG:HH11 | 26:BE:214:PRO:HD2  | 1.77                     | 0.49              |
| 23:BB:72:G:H21     | 23:BB:105:A:N6     | 1.96                     | 0.49              |
| 22:BA:1821:G:H2'   | 22:BA:1822:A:O4'   | 2.12                     | 0.49              |
| 40:BS:92:LEU:HD21  | 41:BT:171:TYR:HD1  | 1.77                     | 0.49              |
| 28:BG:224:ARG:HG3  | 28:BG:225:THR:N    | 2.27                     | 0.49              |
| 1:AA:14:U:O2'      | 1:AA:863:A:H3'     | 2.11                     | 0.49              |
| 1:AA:299:C:O2      | 1:AA:299:C:H2'     | 2.12                     | 0.49              |
| 50:B3:32:ARG:NE    | 50:B3:34:ILE:HB    | 2.26                     | 0.49              |
| 29:BH:123:LEU:HA   | 29:BH:125:ARG:N    | 2.27                     | 0.49              |
| 22:BA:68:C:O2'     | 22:BA:69:G:H5'     | 2.11                     | 0.49              |
| 40:BS:21:ALA:HB2   | 40:BS:35:ILE:HG13  | 1.93                     | 0.49              |
| 34:BM:10:VAL:HG11  | 34:BM:16:ALA:HB3   | 1.94                     | 0.49              |
| 22:BA:1794:A:H4'   | 22:BA:1795:A:C8    | 2.46                     | 0.49              |
| 26:BE:241:SER:N    | 26:BE:242:PRO:CD   | 2.75                     | 0.49              |
| 1:AA:915:G:H2'     | 1:AA:916:C:C6      | 2.47                     | 0.49              |
| 1:AA:965:A:H4'     | 1:AA:1166:C:H4'    | 1.94                     | 0.49              |
| 1:AA:814:A:H5'     | 1:AA:1027:U:O4     | 2.12                     | 0.49              |
| 22:BA:1029:A:H2'   | 22:BA:1030:G:O4'   | 2.12                     | 0.49              |
| 1:AA:877:G:H2'     | 1:AA:878:G:H8      | 1.77                     | 0.49              |
| 22:BA:2607:A:H2'   | 22:BA:2608:C:C6    | 2.46                     | 0.49              |
| 1:AA:1239:C:H2'    | 1:AA:1240:C:C6     | 2.46                     | 0.49              |
| 28:BG:109:ARG:NE   | 28:BG:109:ARG:HA   | 2.27                     | 0.49              |
| 41:BT:128:VAL:HG12 | 41:BT:133:GLN:HE21 | 1.76                     | 0.49              |
| 22:BA:1372:C:H2'   | 22:BA:1373:U:C6    | 2.47                     | 0.49              |
| 1:AA:721:G:N1      | 26:BE:5:LEU:CD1    | 2.76                     | 0.49              |
| 42:BU:102:LYS:HB3  | 42:BU:135:VAL:HG12 | 1.94                     | 0.49              |
| 39:BR:218:ARG:HD2  | 39:BR:220:TYR:CE1  | 2.47                     | 0.49              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 28:BG:158:ARG:C    | 28:BG:158:ARG:HD2  | 2.32                     | 0.49              |
| 28:BG:236:LEU:HD11 | 28:BG:240:LEU:HD22 | 1.93                     | 0.49              |
| 22:BA:1946:A:N6    | 22:BA:1982:G:H21   | 2.00                     | 0.49              |
| 40:BS:15:LYS:HA    | 40:BS:18:ARG:NE    | 2.26                     | 0.49              |
| 22:BA:869:G:H1'    | 22:BA:2285:A:N3    | 2.27                     | 0.49              |
| 22:BA:1347:U:H2'   | 22:BA:1348:C:C6    | 2.46                     | 0.49              |
| 35:BN:104:LYS:HE2  | 35:BN:111:ILE:HG22 | 1.94                     | 0.49              |
| 22:BA:713:A:H2'    | 22:BA:714:U:C6     | 2.46                     | 0.49              |
| 22:BA:786:G:O5'    | 22:BA:788:G:H1'    | 2.12                     | 0.49              |
| 22:BA:1393:U:H2'   | 22:BA:1394:A:H8    | 1.76                     | 0.49              |
| 22:BA:1087:G:N2    | 32:BK:198:ILE:HG23 | 2.27                     | 0.49              |
| 22:BA:894:G:N2     | 22:BA:901:C:H41    | 2.06                     | 0.49              |
| 22:BA:2464:G:H5'   | 22:BA:2518:C:OP2   | 2.12                     | 0.49              |
| 45:BX:106:LYS:HB3  | 45:BX:130:GLY:O    | 2.11                     | 0.49              |
| 22:BA:1039:A:H4'   | 40:BS:77:ASN:OD1   | 2.12                     | 0.49              |
| 30:BI:71:PRO:HG2   | 30:BI:72:LEU:CD1   | 2.41                     | 0.49              |
| 29:BH:66:ASP:HA    | 29:BH:69:ILE:HG22  | 1.94                     | 0.49              |
| 22:BA:1943:G:C2'   | 22:BA:1944:G:H5''  | 2.43                     | 0.49              |
| 22:BA:1923:C:H2'   | 22:BA:1924:G:C8    | 2.47                     | 0.49              |
| 22:BA:1933:A:H2'   | 22:BA:1934:C:H5'   | 1.93                     | 0.49              |
| 22:BA:1533:A:H2'   | 22:BA:1534:A:O4'   | 2.12                     | 0.49              |
| 22:BA:2268:G:H4'   | 22:BA:2466:U:H4'   | 1.94                     | 0.49              |
| 47:BZ:67:LEU:HD23  | 47:BZ:67:LEU:O     | 2.11                     | 0.49              |
| 22:BA:902:G:H2'    | 22:BA:903:G:H5'    | 1.94                     | 0.49              |
| 22:BA:2640:G:OP1   | 24:BC:19:A:H1'     | 2.12                     | 0.49              |
| 22:BA:1855:G:H5''  | 26:BE:268:ARG:NH2  | 2.26                     | 0.49              |
| 39:BR:148:ILE:C    | 39:BR:148:ILE:HD13 | 2.33                     | 0.49              |
| 39:BR:187:ILE:H    | 39:BR:195:VAL:HA   | 1.78                     | 0.49              |
| 38:BQ:55:ILE:HD13  | 38:BQ:56:ARG:N     | 2.27                     | 0.49              |
| 46:BY:84:LYS:HE3   | 46:BY:123:ARG:H    | 1.77                     | 0.49              |
| 35:BN:167:LEU:N    | 35:BN:167:LEU:HD12 | 2.28                     | 0.49              |
| 44:BW:157:LYS:CD   | 44:BW:157:LYS:H    | 2.19                     | 0.49              |
| 38:BQ:157:LYS:HD2  | 38:BQ:158:GLY:N    | 2.27                     | 0.49              |
| 22:BA:717:A:H62    | 22:BA:736:G:N2     | 2.09                     | 0.49              |
| 22:BA:1003:A:H2'   | 22:BA:1004:G:O4'   | 2.12                     | 0.49              |
| 52:B5:148:GLY:C    | 52:B5:151:PRO:HD2  | 2.33                     | 0.49              |
| 41:BT:123:ILE:HG22 | 41:BT:138:PRO:HG2  | 1.94                     | 0.49              |
| 1:AA:1204:U:H4'    | 1:AA:1206:G:H1'    | 1.94                     | 0.49              |
| 28:BG:113:ARG:HH11 | 28:BG:113:ARG:CA   | 2.23                     | 0.49              |
| 47:BZ:124:ARG:NH1  | 47:BZ:124:ARG:HB2  | 2.26                     | 0.49              |
| 22:BA:1294:A:H5''  | 22:BA:1682:C:N4    | 2.26                     | 0.49              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:585:U:H2'     | 1:AA:586:G:C8      | 2.46                     | 0.49              |
| 22:BA:1605:A:H2'   | 22:BA:1606:A:C8    | 2.48                     | 0.49              |
| 1:AA:408:U:H2'     | 1:AA:409:U:O4'     | 2.12                     | 0.49              |
| 7:AG:22:LEU:HD23   | 7:AG:22:LEU:H      | 1.77                     | 0.49              |
| 22:BA:142:U:H3     | 22:BA:152:G:H1     | 1.60                     | 0.49              |
| 1:AA:800:C:H2'     | 1:AA:801:A:C8      | 2.47                     | 0.49              |
| 1:AA:171:A:H2'     | 1:AA:172:G:O4'     | 2.13                     | 0.49              |
| 22:BA:2671:A:H1'   | 22:BA:2673:U:C2    | 2.48                     | 0.49              |
| 22:BA:1927:A:O2'   | 22:BA:1928:C:P     | 2.70                     | 0.49              |
| 29:BH:83:THR:HG22  | 29:BH:101:GLY:O    | 2.11                     | 0.49              |
| 13:AM:109:VAL:HG23 | 29:BH:127:ARG:HH21 | 1.77                     | 0.49              |
| 42:BU:47:ARG:NH1   | 42:BU:105:VAL:H    | 2.10                     | 0.49              |
| 26:BE:62:ASP:OD1   | 26:BE:100:ILE:HD13 | 2.12                     | 0.49              |
| 39:BR:183:ILE:HG22 | 39:BR:198:LEU:H    | 1.77                     | 0.49              |
| 1:AA:647:C:C3'     | 1:AA:648:G:H5''    | 2.42                     | 0.49              |
| 37:BP:198:PRO:O    | 37:BP:199:MET:HG2  | 2.12                     | 0.49              |
| 22:BA:2218:G:N2    | 22:BA:2219:U:H5    | 2.10                     | 0.49              |
| 35:BN:130:ARG:CZ   | 52:B5:112:ARG:HA   | 2.42                     | 0.49              |
| 28:BG:210:MET:HE1  | 28:BG:255:LEU:HD11 | 1.94                     | 0.49              |
| 22:BA:1702:G:O2'   | 22:BA:1703:G:H5'   | 2.13                     | 0.49              |
| 22:BA:2527:C:H4'   | 27:BF:173:ARG:NH2  | 2.28                     | 0.49              |
| 49:B2:22:LYS:CD    | 49:B2:22:LYS:H     | 2.26                     | 0.49              |
| 24:BC:54:U:H2'     | 24:BC:55:G:C8      | 2.46                     | 0.49              |
| 38:BQ:72:ARG:HE    | 38:BQ:146:ARG:CB   | 2.26                     | 0.49              |
| 1:AA:1014:U:HO2'   | 1:AA:1015:C:H6     | 1.56                     | 0.49              |
| 28:BG:84:VAL:HA    | 28:BG:160:ALA:HB1  | 1.95                     | 0.49              |
| 27:BF:216:ARG:NH2  | 27:BF:251:ILE:HA   | 2.27                     | 0.49              |
| 22:BA:2153:C:H2'   | 22:BA:2154:C:C6    | 2.47                     | 0.49              |
| 1:AA:669:A:N6      | 18:AR:60:ARG:HH22  | 2.10                     | 0.49              |
| 22:BA:2279:U:H1'   | 22:BA:2345:A:H1'   | 1.94                     | 0.49              |
| 30:BI:150:LEU:HD12 | 30:BI:150:LEU:N    | 2.27                     | 0.49              |
| 30:BI:63:GLY:C     | 30:BI:64:GLN:HE21  | 2.15                     | 0.49              |
| 22:BA:1930:A:H2'   | 22:BA:1931:U:O4'   | 2.13                     | 0.49              |
| 42:BU:47:ARG:HH12  | 42:BU:104:GLU:HA   | 1.76                     | 0.49              |
| 38:BQ:62:THR:HA    | 45:BX:135:LYS:HE3  | 1.94                     | 0.49              |
| 1:AA:465:G:H4'     | 1:AA:467:C:C4      | 2.46                     | 0.49              |
| 22:BA:9:A:H2'      | 22:BA:10:G:O4'     | 2.13                     | 0.49              |
| 43:BV:135:LEU:HD11 | 43:BV:173:LYS:HD2  | 1.95                     | 0.49              |
| 34:BM:104:ARG:HH21 | 39:BR:157:GLU:CD   | 2.16                     | 0.49              |
| 1:AA:909:U:C2'     | 1:AA:909:U:O2      | 2.60                     | 0.49              |
| 38:BQ:113:GLU:O    | 38:BQ:117:LYS:HG2  | 2.12                     | 0.49              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:956:C:H2'     | 1:AA:957:C:C6      | 2.47                     | 0.49              |
| 1:AA:1249:U:O2'    | 1:AA:1250:U:P      | 2.70                     | 0.49              |
| 22:BA:2595:G:H1'   | 27:BF:188:SER:CB   | 2.43                     | 0.49              |
| 29:BH:69:ILE:C     | 29:BH:69:ILE:HD13  | 2.33                     | 0.49              |
| 41:BT:208:ARG:C    | 41:BT:209:ASN:HD22 | 2.15                     | 0.49              |
| 25:BD:241:LEU:N    | 25:BD:241:LEU:HD22 | 2.28                     | 0.49              |
| 42:BU:31:GLU:HB3   | 42:BU:32:ILE:HD12  | 1.94                     | 0.49              |
| 22:BA:6:A:H61      | 24:BC:97:C:H42     | 1.60                     | 0.49              |
| 22:BA:1302:G:H1    | 22:BA:1310:C:H42   | 1.58                     | 0.49              |
| 1:AA:1353:C:H2'    | 1:AA:1354:G:C8     | 2.47                     | 0.49              |
| 38:BQ:48:ARG:C     | 38:BQ:50:ALA:H     | 2.16                     | 0.49              |
| 1:AA:1218:G:H2'    | 1:AA:1219:G:H8     | 1.76                     | 0.49              |
| 22:BA:2628:C:H2'   | 22:BA:2629:A:C8    | 2.47                     | 0.49              |
| 40:BS:9:ILE:HA     | 40:BS:12:ARG:NH1   | 2.28                     | 0.49              |
| 46:BY:106:LEU:O    | 46:BY:106:LEU:HD12 | 2.12                     | 0.49              |
| 46:BY:117:LYS:HD3  | 46:BY:138:ASP:CG   | 2.33                     | 0.49              |
| 22:BA:2571:U:H2'   | 22:BA:2572:U:C6    | 2.47                     | 0.49              |
| 1:AA:980:C:H5'     | 1:AA:981:G:C4      | 2.48                     | 0.49              |
| 22:BA:2320:G:O3'   | 29:BH:136:SER:HA   | 2.11                     | 0.49              |
| 37:BP:137:VAL:O    | 37:BP:141:ILE:HG12 | 2.13                     | 0.49              |
| 1:AA:909:U:O2'     | 1:AA:910:U:OP2     | 2.27                     | 0.49              |
| 22:BA:1204:A:H2'   | 22:BA:1205:U:C6    | 2.48                     | 0.49              |
| 26:BE:247:GLY:HA3  | 26:BE:251:LEU:HD21 | 1.93                     | 0.49              |
| 22:BA:1300:U:OP2   | 37:BP:124:LYS:HE2  | 2.12                     | 0.49              |
| 22:BA:237:G:H2'    | 22:BA:238:C:C6     | 2.48                     | 0.49              |
| 22:BA:602:A:H4'    | 52:B5:91:LYS:N     | 2.28                     | 0.49              |
| 1:AA:363:G:H2'     | 1:AA:364:A:H8      | 1.77                     | 0.49              |
| 22:BA:1491:G:H22   | 22:BA:1553:U:H3    | 1.59                     | 0.49              |
| 24:BC:61:A:H2'     | 24:BC:62:U:O4'     | 2.11                     | 0.49              |
| 25:BD:295:GLU:HB2  | 25:BD:298:ASP:OD1  | 2.12                     | 0.49              |
| 28:BG:105:ARG:CB   | 28:BG:108:VAL:HB   | 2.42                     | 0.49              |
| 1:AA:1331:C:C3'    | 1:AA:1332:C:C5'    | 2.85                     | 0.49              |
| 36:BO:2:LEU:O      | 36:BO:47:ILE:HG12  | 2.12                     | 0.49              |
| 22:BA:2707:A:N6    | 24:BC:74:A:H2      | 2.11                     | 0.49              |
| 35:BN:79:LYS:HZ2   | 35:BN:79:LYS:HA    | 1.70                     | 0.49              |
| 22:BA:595:G:H2'    | 22:BA:1272:A:N1    | 2.28                     | 0.49              |
| 22:BA:648:G:OP2    | 35:BN:204:SER:HB2  | 2.13                     | 0.49              |
| 1:AA:217:A:H4'     | 1:AA:218:G:H4'     | 1.93                     | 0.49              |
| 27:BF:160:LYS:NZ   | 27:BF:167:LYS:HD2  | 2.28                     | 0.49              |
| 22:BA:830:A:H5'    | 22:BA:1001:A:C2    | 2.47                     | 0.49              |
| 41:BT:191:LEU:HD23 | 41:BT:191:LEU:N    | 2.22                     | 0.49              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:376:U:H5''    | 1:AA:443:A:C2      | 2.47                     | 0.49              |
| 22:BA:492:A:N3     | 22:BA:492:A:H2'    | 2.27                     | 0.49              |
| 42:BU:117:ARG:HD2  | 42:BU:123:TYR:OH   | 2.12                     | 0.49              |
| 22:BA:2029:A:H2'   | 22:BA:2030:U:H5'   | 1.94                     | 0.49              |
| 22:BA:1443:G:N2    | 22:BA:1611:G:H1'   | 2.27                     | 0.49              |
| 22:BA:1299:U:H2'   | 22:BA:1300:U:C6    | 2.48                     | 0.49              |
| 32:BK:163:PRO:HG3  | 32:BK:205:ASN:O    | 2.12                     | 0.49              |
| 1:AA:880:C:H2'     | 1:AA:881:C:C6      | 2.48                     | 0.49              |
| 22:BA:974:G:H2'    | 22:BA:975:A:C8     | 2.47                     | 0.49              |
| 1:AA:656:C:H2'     | 1:AA:657:G:H8      | 1.78                     | 0.49              |
| 1:AA:568:C:H2'     | 1:AA:569:A:O4'     | 2.13                     | 0.49              |
| 35:BN:238:ARG:NE   | 35:BN:238:ARG:HA   | 2.27                     | 0.49              |
| 25:BD:129:ARG:HD3  | 25:BD:129:ARG:O    | 2.13                     | 0.49              |
| 28:BG:194:MET:HA   | 28:BG:197:TRP:CE3  | 2.48                     | 0.49              |
| 1:AA:68:C:H2'      | 1:AA:69:G:H8       | 1.78                     | 0.49              |
| 43:BV:133:SER:OG   | 43:BV:177:MET:HG2  | 2.13                     | 0.49              |
| 1:AA:756:A:H2'     | 1:AA:757:G:C8      | 2.48                     | 0.49              |
| 36:BO:37:LEU:HA    | 36:BO:99:PRO:HB3   | 1.94                     | 0.49              |
| 38:BQ:63:PRO:HB2   | 38:BQ:64:GLU:OE1   | 2.12                     | 0.49              |
| 46:BY:77:ILE:HD12  | 46:BY:77:ILE:N     | 2.27                     | 0.49              |
| 35:BN:166:THR:HB   | 35:BN:178:ARG:HB2  | 1.95                     | 0.49              |
| 28:BG:72:LEU:O     | 28:BG:73:LYS:HB2   | 2.12                     | 0.49              |
| 45:BX:116:ILE:HG13 | 45:BX:138:VAL:HB   | 1.93                     | 0.49              |
| 22:BA:2118:U:H2'   | 22:BA:2119:U:H5    | 1.78                     | 0.49              |
| 22:BA:560:A:H62    | 41:BT:140:ARG:HH21 | 1.61                     | 0.49              |
| 28:BG:84:VAL:HG23  | 28:BG:85:HIS:CD2   | 2.47                     | 0.49              |
| 25:BD:292:LEU:HD22 | 25:BD:292:LEU:N    | 2.28                     | 0.49              |
| 22:BA:540:A:P      | 33:BL:212:ARG:HD3  | 2.53                     | 0.49              |
| 26:BE:220:VAL:HG22 | 26:BE:220:VAL:O    | 2.12                     | 0.49              |
| 22:BA:2210:C:H2'   | 22:BA:2211:U:C6    | 2.47                     | 0.49              |
| 23:BB:36:U:O4      | 23:BB:49:U:H1'     | 2.13                     | 0.49              |
| 22:BA:1089:U:O4    | 32:BK:145:PRO:HG3  | 2.12                     | 0.49              |
| 1:AA:1051:A:H2'    | 1:AA:1052:C:C6     | 2.48                     | 0.49              |
| 1:AA:1051:A:O2'    | 1:AA:1052:C:H5'    | 2.13                     | 0.49              |
| 1:AA:146:A:H2'     | 1:AA:147:C:O4'     | 2.13                     | 0.49              |
| 22:BA:888:C:H2'    | 22:BA:889:G:O4'    | 2.13                     | 0.49              |
| 22:BA:917:C:H1'    | 36:BO:71:ASP:OD2   | 2.13                     | 0.49              |
| 26:BE:127:PRO:HA   | 26:BE:184:CYS:O    | 2.13                     | 0.49              |
| 13:AM:109:VAL:HG23 | 29:BH:127:ARG:HE   | 1.72                     | 0.49              |
| 36:BO:23:ARG:HG3   | 36:BO:101:ARG:HD2  | 1.95                     | 0.49              |
| 36:BO:2:LEU:HD22   | 36:BO:44:SER:HA    | 1.93                     | 0.49              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 36:BO:1:MET:CG     | 36:BO:68:ILE:HB    | 2.37                     | 0.49              |
| 39:BR:151:ILE:HG23 | 39:BR:153:LEU:CD2  | 2.43                     | 0.49              |
| 22:BA:2013:A:H5''  | 22:BA:2741:C:O2'   | 2.13                     | 0.49              |
| 49:B2:36:LYS:HE2   | 49:B2:37:SER:N     | 2.27                     | 0.49              |
| 22:BA:2247:C:H2'   | 22:BA:2248:U:C6    | 2.48                     | 0.49              |
| 22:BA:646:G:H2'    | 22:BA:647:C:C6     | 2.48                     | 0.49              |
| 22:BA:1019:U:H3    | 22:BA:1190:G:H22   | 1.61                     | 0.49              |
| 22:BA:1601:G:H21   | 26:BE:26:ASN:HB3   | 1.78                     | 0.49              |
| 28:BG:209:LEU:HD12 | 28:BG:226:LEU:HD11 | 1.94                     | 0.49              |
| 22:BA:2744:A:N3    | 22:BA:2744:A:H2'   | 2.28                     | 0.49              |
| 40:BS:31:LEU:HD13  | 40:BS:32:THR:N     | 2.27                     | 0.49              |
| 2:AB:196:ASN:H     | 2:AB:196:ASN:ND2   | 2.03                     | 0.49              |
| 45:BX:82:ILE:HA    | 45:BX:116:ILE:HG22 | 1.95                     | 0.49              |
| 22:BA:224:G:H2'    | 22:BA:225:U:O4'    | 2.13                     | 0.49              |
| 22:BA:224:G:N2     | 22:BA:243:U:H3     | 2.05                     | 0.49              |
| 1:AA:1076:G:N2     | 1:AA:1096:C:H42    | 2.07                     | 0.49              |
| 27:BF:150:LEU:HD23 | 27:BF:218:LEU:N    | 2.27                     | 0.49              |
| 32:BK:82:LEU:N     | 32:BK:82:LEU:HD12  | 2.28                     | 0.49              |
| 28:BG:186:LYS:HG2  | 28:BG:187:THR:H    | 1.78                     | 0.49              |
| 25:BD:131:ILE:C    | 25:BD:131:ILE:HD13 | 2.32                     | 0.49              |
| 31:BJ:131:ARG:CZ   | 31:BJ:143:VAL:HG21 | 2.43                     | 0.49              |
| 22:BA:1199:A:C2'   | 22:BA:1200:A:H5'   | 2.43                     | 0.49              |
| 1:AA:184:G:H2'     | 1:AA:185:G:O4'     | 2.13                     | 0.49              |
| 22:BA:873:A:H4'    | 23:BB:101:A:C2     | 2.48                     | 0.49              |
| 22:BA:2345:A:H2'   | 22:BA:2346:A:C8    | 2.48                     | 0.49              |
| 22:BA:1089:U:H4'   | 22:BA:1098:A:O2'   | 2.13                     | 0.49              |
| 22:BA:1343:A:H5''  | 42:BU:127:ARG:HH12 | 1.77                     | 0.49              |
| 26:BE:168:ALA:HB1  | 26:BE:179:LEU:HB3  | 1.94                     | 0.49              |
| 1:AA:884:A:H2'     | 1:AA:885:C:C6      | 2.47                     | 0.49              |
| 22:BA:1056:A:N6    | 22:BA:1153:G:H2'   | 2.27                     | 0.49              |
| 36:BO:42:ILE:HG13  | 36:BO:97:VAL:HG21  | 1.93                     | 0.49              |
| 26:BE:64:ARG:HD3   | 26:BE:146:ARG:N    | 2.28                     | 0.49              |
| 35:BN:130:ARG:HH11 | 35:BN:130:ARG:HG2  | 1.78                     | 0.49              |
| 46:BY:80:PHE:HB2   | 46:BY:88:ALA:CA    | 2.43                     | 0.49              |
| 35:BN:187:LEU:O    | 35:BN:188:ALA:HB2  | 2.13                     | 0.49              |
| 22:BA:1418:U:O2    | 22:BA:1418:U:H2'   | 2.13                     | 0.49              |
| 22:BA:1050:G:N2    | 22:BA:1167:C:H2'   | 2.27                     | 0.49              |
| 22:BA:2645:U:H5'   | 22:BA:2646:U:C6    | 2.48                     | 0.49              |
| 22:BA:1584:C:H2'   | 22:BA:1585:C:C6    | 2.48                     | 0.49              |
| 44:BW:76:LYS:CD    | 44:BW:137:ILE:HG21 | 2.43                     | 0.49              |
| 44:BW:85:LYS:HZ1   | 44:BW:103:ASP:HB3  | 1.78                     | 0.49              |

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| Atom-1             | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|-------------------|--------------------------|-------------------|
| 1:AA:761:U:O2'     | 1:AA:762:A:H5'    | 2.13                     | 0.49              |
| 22:BA:1032:C:O2'   | 22:BA:1038:A:H2'  | 2.12                     | 0.49              |
| 22:BA:1866:G:H2'   | 22:BA:1867:A:O4'  | 2.13                     | 0.49              |
| 44:BW:78:ILE:O     | 44:BW:78:ILE:HG23 | 2.13                     | 0.49              |
| 34:BM:112:LYS:HD2  | 34:BM:112:LYS:O   | 2.13                     | 0.49              |
| 22:BA:333:A:H2'    | 22:BA:334:U:O4'   | 2.13                     | 0.49              |
| 22:BA:1984:A:H1'   | 22:BA:1986:G:C4   | 2.47                     | 0.49              |
| 22:BA:450:G:H2'    | 22:BA:451:G:C8    | 2.48                     | 0.49              |
| 1:AA:292:A:O2'     | 1:AA:293:C:H5'    | 2.12                     | 0.49              |
| 22:BA:91:A:H2'     | 22:BA:92:U:O4'    | 2.13                     | 0.49              |
| 22:BA:2141:G:H2'   | 22:BA:2142:G:C8   | 2.48                     | 0.49              |
| 1:AA:1381:G:OP1    | 39:BR:230:SER:CB  | 2.61                     | 0.48              |
| 42:BU:47:ARG:HH11  | 42:BU:105:VAL:H   | 1.61                     | 0.48              |
| 22:BA:1330:G:OP1   | 51:B4:105:ARG:HB3 | 2.13                     | 0.48              |
| 22:BA:2217:U:O2'   | 22:BA:2218:G:H5'  | 2.13                     | 0.48              |
| 35:BN:148:LEU:HB3  | 35:BN:188:ALA:CB  | 2.43                     | 0.48              |
| 22:BA:1825:A:H1'   | 22:BA:1827:G:N9   | 2.27                     | 0.48              |
| 22:BA:1875:G:H21   | 22:BA:1891:A:N6   | 2.00                     | 0.48              |
| 28:BG:199:LEU:HD12 | 28:BG:199:LEU:N   | 2.28                     | 0.48              |
| 31:BJ:96:LEU:C     | 31:BJ:96:LEU:HD23 | 2.34                     | 0.48              |
| 28:BG:89:ILE:O     | 28:BG:93:GLN:HG2  | 2.12                     | 0.48              |
| 22:BA:2531:U:H2'   | 22:BA:2532:C:C6   | 2.48                     | 0.48              |
| 22:BA:1087:G:H2'   | 22:BA:1088:U:C6   | 2.48                     | 0.48              |
| 22:BA:2265:A:H2'   | 22:BA:2266:U:H5'  | 1.93                     | 0.48              |
| 22:BA:854:A:N6     | 22:BA:963:U:H3    | 2.08                     | 0.48              |
| 22:BA:578:U:H5'    | 22:BA:973:A:N6    | 2.27                     | 0.48              |
| 22:BA:810:G:H2'    | 22:BA:811:A:C8    | 2.48                     | 0.48              |
| 28:BG:214:GLU:HG2  | 28:BG:215:ASN:N   | 2.27                     | 0.48              |
| 22:BA:1745:C:H2'   | 22:BA:1746:C:C6   | 2.48                     | 0.48              |
| 22:BA:1865:G:H2'   | 22:BA:1866:G:H8   | 1.77                     | 0.48              |
| 40:BS:25:ARG:NE    | 40:BS:25:ARG:HA   | 2.28                     | 0.48              |
| 28:BG:65:VAL:HG13  | 28:BG:65:VAL:O    | 2.13                     | 0.48              |
| 22:BA:418:G:H2'    | 22:BA:419:C:C6    | 2.48                     | 0.48              |
| 13:AM:123:ILE:HD13 | 13:AM:124:ARG:H   | 1.78                     | 0.48              |
| 36:BO:54:MET:HE1   | 36:BO:118:VAL:HA  | 1.95                     | 0.48              |
| 1:AA:838:A:H4'     | 1:AA:839:G:OP1    | 2.13                     | 0.48              |
| 40:BS:57:PHE:HA    | 40:BS:60:LEU:HD12 | 1.95                     | 0.48              |
| 22:BA:2674:A:N6    | 22:BA:2681:G:H21  | 2.02                     | 0.48              |
| 22:BA:1814:G:H2'   | 22:BA:1815:U:C6   | 2.48                     | 0.48              |
| 29:BH:113:SER:HB3  | 48:B1:62:LYS:HB3  | 1.93                     | 0.48              |
| 29:BH:157:LYS:O    | 29:BH:157:LYS:HG2 | 2.13                     | 0.48              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 38:BQ:145:GLY:C    | 38:BQ:147:VAL:H    | 2.16                     | 0.48              |
| 22:BA:1381:G:H22   | 22:BA:2231:C:N4    | 2.10                     | 0.48              |
| 22:BA:2481:C:H2'   | 22:BA:2482:C:C6    | 2.48                     | 0.48              |
| 46:BY:101:LEU:N    | 46:BY:101:LEU:HD12 | 2.27                     | 0.48              |
| 22:BA:2554:U:H2'   | 22:BA:2555:U:C6    | 2.47                     | 0.48              |
| 42:BU:64:ILE:HD11  | 49:B2:24:GLY:HA2   | 1.95                     | 0.48              |
| 48:B1:89:HIS:ND1   | 48:B1:93:LEU:HD22  | 2.28                     | 0.48              |
| 1:AA:1052:C:H5''   | 2:AB:101:LEU:HD22  | 1.95                     | 0.48              |
| 31:BJ:97:LYS:O     | 31:BJ:101:GLU:HG2  | 2.12                     | 0.48              |
| 16:AP:48:LEU:HD21  | 16:AP:71:LEU:HD12  | 1.96                     | 0.48              |
| 36:BO:50:GLY:HA2   | 36:BO:124:LYS:HG3  | 1.95                     | 0.48              |
| 26:BE:190:GLN:HG2  | 26:BE:190:GLN:O    | 2.14                     | 0.48              |
| 22:BA:198:A:H2'    | 22:BA:199:G:C8     | 2.48                     | 0.48              |
| 22:BA:1451:G:O6    | 26:BE:25:ARG:HG3   | 2.13                     | 0.48              |
| 45:BX:108:VAL:CG2  | 45:BX:109:GLY:H    | 2.17                     | 0.48              |
| 35:BN:130:ARG:NE   | 52:B5:112:ARG:HA   | 2.27                     | 0.48              |
| 22:BA:788:G:H2'    | 22:BA:789:G:C8     | 2.49                     | 0.48              |
| 22:BA:11:G:N2      | 22:BA:2643:C:H4'   | 2.24                     | 0.48              |
| 43:BV:167:ARG:HE   | 43:BV:173:LYS:HE2  | 1.79                     | 0.48              |
| 1:AA:899:U:H2'     | 1:AA:900:G:H8      | 1.77                     | 0.48              |
| 31:BJ:121:PHE:HE2  | 31:BJ:152:ILE:HD12 | 1.78                     | 0.48              |
| 31:BJ:133:GLY:HA2  | 31:BJ:139:ILE:HG22 | 1.94                     | 0.48              |
| 27:BF:200:LYS:O    | 27:BF:200:LYS:HD2  | 2.13                     | 0.48              |
| 25:BD:198:ILE:HG13 | 25:BD:209:VAL:HG12 | 1.95                     | 0.48              |
| 28:BG:186:LYS:HZ2  | 28:BG:188:LYS:CB   | 2.25                     | 0.48              |
| 41:BT:132:ARG:HB3  | 41:BT:134:TYR:HE1  | 1.76                     | 0.48              |
| 1:AA:927:A:C2      | 1:AA:1267:A:H1'    | 2.48                     | 0.48              |
| 29:BH:19:LEU:HD12  | 29:BH:112:TYR:HB3  | 1.95                     | 0.48              |
| 28:BG:191:ILE:H    | 28:BG:191:ILE:HD12 | 1.79                     | 0.48              |
| 1:AA:317:G:C2'     | 1:AA:318:G:H5'     | 2.43                     | 0.48              |
| 29:BH:20:LYS:C     | 29:BH:20:LYS:HD2   | 2.34                     | 0.48              |
| 48:B1:93:LEU:HD23  | 48:B1:94:GLY:N     | 2.29                     | 0.48              |
| 1:AA:629:C:H2'     | 1:AA:630:G:C8      | 2.48                     | 0.48              |
| 33:BL:128:ALA:HA   | 33:BL:131:ILE:HG22 | 1.96                     | 0.48              |
| 22:BA:2121:C:H42   | 22:BA:2196:G:H1    | 1.61                     | 0.48              |
| 22:BA:1991:A:H2'   | 22:BA:1992:A:O4'   | 2.12                     | 0.48              |
| 33:BL:182:GLY:C    | 33:BL:184:LYS:H    | 2.16                     | 0.48              |
| 37:BP:167:ALA:HB1  | 37:BP:171:GLU:OE1  | 2.14                     | 0.48              |
| 23:BB:90:G:OP2     | 36:BO:38:GLU:HB3   | 2.13                     | 0.48              |
| 22:BA:1448:A:H4'   | 22:BA:1449:C:O4'   | 2.13                     | 0.48              |
| 37:BP:126:THR:HG22 | 37:BP:192:ARG:NH2  | 2.28                     | 0.48              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:639:A:C4'    | 22:BA:640:G:OP1    | 2.61                     | 0.48              |
| 28:BG:220:GLY:O    | 28:BG:226:LEU:HD22 | 2.14                     | 0.48              |
| 35:BN:121:PRO:HA   | 35:BN:125:ARG:NH2  | 2.28                     | 0.48              |
| 27:BF:173:ARG:HB3  | 27:BF:173:ARG:NH1  | 2.27                     | 0.48              |
| 22:BA:763:A:C6     | 22:BA:1791:C:H1'   | 2.48                     | 0.48              |
| 28:BG:146:ARG:NH1  | 28:BG:147:ASP:H    | 2.11                     | 0.48              |
| 22:BA:2762:G:H1    | 22:BA:2778:U:H3    | 1.61                     | 0.48              |
| 22:BA:1681:G:H5''  | 22:BA:1682:C:O4'   | 2.13                     | 0.48              |
| 37:BP:123:ILE:O    | 37:BP:202:ILE:HG22 | 2.13                     | 0.48              |
| 34:BM:8:LEU:HD13   | 34:BM:82:ASN:OD1   | 2.14                     | 0.48              |
| 49:B2:10:ILE:HG13  | 49:B2:11:TYR:N     | 2.28                     | 0.48              |
| 33:BL:156:VAL:HG13 | 33:BL:157:ASN:OD1  | 2.14                     | 0.48              |
| 25:BD:123:LEU:O    | 25:BD:123:LEU:HD23 | 2.13                     | 0.48              |
| 13:AM:109:VAL:CG2  | 29:BH:127:ARG:CZ   | 2.91                     | 0.48              |
| 1:AA:1329:U:H4'    | 1:AA:1330:U:C6     | 2.49                     | 0.48              |
| 39:BR:148:ILE:CD1  | 39:BR:150:GLN:HG3  | 2.44                     | 0.48              |
| 22:BA:2706:U:H4'   | 22:BA:2731:C:O2    | 2.14                     | 0.48              |
| 1:AA:1477:U:O2'    | 1:AA:1478:G:H3'    | 2.14                     | 0.48              |
| 22:BA:820:G:O6     | 35:BN:104:LYS:HE3  | 2.14                     | 0.48              |
| 22:BA:835:C:H1'    | 22:BA:2375:A:N7    | 2.28                     | 0.48              |
| 40:BS:17:ILE:CG2   | 40:BS:35:ILE:HD12  | 2.44                     | 0.48              |
| 30:BI:214:ARG:HA   | 30:BI:214:ARG:HH11 | 1.78                     | 0.48              |
| 44:BW:129:ILE:HD13 | 44:BW:130:HIS:N    | 2.25                     | 0.48              |
| 47:BZ:118:LEU:HD12 | 47:BZ:118:LEU:N    | 2.28                     | 0.48              |
| 22:BA:1688:A:H2'   | 22:BA:1689:C:O4'   | 2.14                     | 0.48              |
| 29:BH:46:VAL:O     | 29:BH:111:MET:HE1  | 2.13                     | 0.48              |
| 32:BK:90:THR:N     | 32:BK:91:PRO:CD    | 2.76                     | 0.48              |
| 22:BA:218:A:H2'    | 22:BA:219:U:C6     | 2.48                     | 0.48              |
| 1:AA:1217:A:H2'    | 1:AA:1218:G:H5'    | 1.96                     | 0.48              |
| 9:AI:111:TRP:HE1   | 9:AI:144:GLN:HG3   | 1.78                     | 0.48              |
| 39:BR:137:LEU:O    | 39:BR:139:PRO:HD3  | 2.14                     | 0.48              |
| 52:B5:110:ILE:HG23 | 52:B5:110:ILE:O    | 2.13                     | 0.48              |
| 36:BO:80:GLU:N     | 36:BO:80:GLU:OE1   | 2.47                     | 0.48              |
| 22:BA:979:U:H2'    | 22:BA:980:G:H8     | 1.79                     | 0.48              |
| 22:BA:2647:A:H2'   | 22:BA:2648:G:C8    | 2.49                     | 0.48              |
| 22:BA:2750:G:H3'   | 22:BA:2751:A:H5'   | 1.96                     | 0.48              |
| 15:AO:44:LYS:CD    | 26:BE:7:LYS:HZ2    | 2.21                     | 0.48              |
| 42:BU:104:GLU:O    | 42:BU:132:ILE:HG13 | 2.14                     | 0.48              |
| 22:BA:456:C:H4'    | 28:BG:100:ALA:HB2  | 1.95                     | 0.48              |
| 22:BA:144:A:H2'    | 22:BA:145:A:C8     | 2.48                     | 0.48              |
| 46:BY:131:THR:HA   | 46:BY:135:ASN:HD21 | 1.79                     | 0.48              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:682:C:H6      | 1:AA:682:C:O5'     | 1.97                     | 0.48              |
| 28:BG:206:LEU:O    | 28:BG:244:LYS:HB2  | 2.14                     | 0.48              |
| 37:BP:186:ILE:H    | 37:BP:186:ILE:CD1  | 2.22                     | 0.48              |
| 22:BA:1024:A:H4'   | 40:BS:94:ARG:HE    | 1.79                     | 0.48              |
| 22:BA:2111:U:H3    | 22:BA:2206:A:N6    | 2.01                     | 0.48              |
| 22:BA:1001:A:H2'   | 22:BA:1207:G:N2    | 2.29                     | 0.48              |
| 40:BS:48:ARG:O     | 40:BS:52:ARG:HG2   | 2.13                     | 0.48              |
| 22:BA:2032:G:H21   | 40:BS:37:GLN:NE2   | 2.12                     | 0.48              |
| 45:BX:115:THR:HG22 | 45:BX:117:PHE:H    | 1.78                     | 0.48              |
| 38:BQ:42:LYS:HD3   | 38:BQ:43:THR:N     | 2.28                     | 0.48              |
| 1:AA:61:A:N6       | 1:AA:92:G:H4'      | 2.29                     | 0.48              |
| 30:BI:108:HIS:CE1  | 30:BI:112:ARG:HH21 | 2.32                     | 0.48              |
| 22:BA:2464:G:O2'   | 22:BA:2465:A:H5''  | 2.14                     | 0.48              |
| 22:BA:176:A:H2'    | 22:BA:177:C:H6     | 1.79                     | 0.48              |
| 22:BA:1361:U:H1'   | 22:BA:1639:A:H5'   | 1.96                     | 0.48              |
| 37:BP:95:LYS:HE3   | 37:BP:96:VAL:HG23  | 1.96                     | 0.48              |
| 24:BC:22:C:H2'     | 24:BC:23:G:C8      | 2.49                     | 0.48              |
| 22:BA:2279:U:H2'   | 22:BA:2280:C:C6    | 2.48                     | 0.48              |
| 22:BA:1089:U:H4'   | 22:BA:1098:A:H1'   | 1.94                     | 0.48              |
| 1:AA:585:U:H2'     | 1:AA:586:G:H8      | 1.78                     | 0.48              |
| 22:BA:1744:C:H2'   | 22:BA:1745:C:C6    | 2.48                     | 0.48              |
| 43:BV:121:THR:H    | 43:BV:124:ALA:HB3  | 1.79                     | 0.48              |
| 22:BA:1673:A:H2'   | 22:BA:1674:C:C6    | 2.49                     | 0.48              |
| 21:AU:113:ARG:HE   | 21:AU:116:ARG:HB3  | 1.78                     | 0.48              |
| 37:BP:118:LEU:N    | 37:BP:118:LEU:HD22 | 2.29                     | 0.48              |
| 22:BA:1653:C:OP1   | 22:BA:1653:C:H3'   | 2.13                     | 0.48              |
| 1:AA:782:U:O5'     | 1:AA:782:U:H6      | 1.96                     | 0.48              |
| 1:AA:622:G:H2'     | 1:AA:623:A:C8      | 2.49                     | 0.48              |
| 1:AA:1265:C:H2'    | 1:AA:1266:A:O4'    | 2.14                     | 0.48              |
| 1:AA:824:U:H1'     | 8:AH:15:ASN:OD1    | 2.14                     | 0.48              |
| 22:BA:824:U:H2'    | 22:BA:825:C:C6     | 2.48                     | 0.48              |
| 22:BA:1809:G:H4'   | 22:BA:1810:C:H6    | 1.78                     | 0.48              |
| 26:BE:179:LEU:HD13 | 26:BE:262:SER:O    | 2.12                     | 0.48              |
| 34:BM:77:ILE:HA    | 39:BR:196:PHE:CG   | 2.49                     | 0.48              |
| 22:BA:1597:C:H42   | 26:BE:25:ARG:HD2   | 1.78                     | 0.48              |
| 46:BY:120:VAL:O    | 46:BY:122:LEU:HD22 | 2.14                     | 0.48              |
| 22:BA:641:C:H2'    | 22:BA:642:G:H8     | 1.78                     | 0.48              |
| 22:BA:1824:C:N3    | 22:BA:1825:A:N6    | 2.61                     | 0.48              |
| 22:BA:818:U:H2'    | 22:BA:819:G:C8     | 2.49                     | 0.48              |
| 1:AA:465:G:H4'     | 1:AA:467:C:C2      | 2.49                     | 0.48              |
| 50:B3:14:GLU:HG2   | 50:B3:32:ARG:N     | 2.28                     | 0.48              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 48:B1:59:GLU:O     | 48:B1:63:VAL:HG12  | 2.14                     | 0.48              |
| 22:BA:1700:A:H62   | 22:BA:2006:G:N2    | 2.12                     | 0.48              |
| 50:B3:13:LEU:HD22  | 50:B3:13:LEU:N     | 2.28                     | 0.48              |
| 1:AA:769:G:H2'     | 1:AA:770:G:C8      | 2.49                     | 0.48              |
| 37:BP:110:LEU:HD11 | 37:BP:136:TYR:HB3  | 1.94                     | 0.48              |
| 1:AA:1136:A:H4'    | 10:AJ:159:HIS:NE2  | 2.29                     | 0.48              |
| 30:BI:138:ARG:HB2  | 30:BI:171:ASN:HB2  | 1.95                     | 0.48              |
| 22:BA:1855:G:H5''  | 26:BE:268:ARG:CZ   | 2.43                     | 0.48              |
| 30:BI:64:GLN:N     | 30:BI:64:GLN:NE2   | 2.62                     | 0.48              |
| 41:BT:136:VAL:O    | 41:BT:136:VAL:HG13 | 2.14                     | 0.48              |
| 36:BO:57:ASN:N     | 36:BO:57:ASN:HD22  | 2.11                     | 0.48              |
| 1:AA:1063:C:H4'    | 10:AJ:163:ARG:HH22 | 1.79                     | 0.48              |
| 22:BA:1806:U:H2'   | 22:BA:1807:C:C6    | 2.49                     | 0.48              |
| 22:BA:1800:C:OP1   | 26:BE:214:PRO:HB3  | 2.13                     | 0.48              |
| 46:BY:118:ARG:HG2  | 46:BY:118:ARG:HH11 | 1.79                     | 0.48              |
| 46:BY:137:LEU:HD13 | 46:BY:137:LEU:O    | 2.13                     | 0.48              |
| 46:BY:118:ARG:HB3  | 46:BY:148:LEU:HG   | 1.95                     | 0.48              |
| 45:BX:125:LYS:HZ3  | 45:BX:128:LYS:HD3  | 1.78                     | 0.48              |
| 22:BA:2742:C:H2'   | 22:BA:2743:A:H8    | 1.78                     | 0.48              |
| 22:BA:788:G:H2'    | 22:BA:789:G:H8     | 1.79                     | 0.48              |
| 43:BV:138:VAL:O    | 43:BV:172:LYS:HB3  | 2.14                     | 0.48              |
| 31:BJ:116:GLN:O    | 31:BJ:120:VAL:HG12 | 2.14                     | 0.48              |
| 22:BA:1088:U:C4'   | 22:BA:1090:U:H5'   | 2.42                     | 0.48              |
| 22:BA:2140:A:N6    | 25:BD:247:PRO:HA   | 2.29                     | 0.48              |
| 41:BT:174:THR:OG1  | 41:BT:175:PRO:HD2  | 2.14                     | 0.48              |
| 27:BF:200:LYS:C    | 27:BF:200:LYS:HD2  | 2.34                     | 0.48              |
| 41:BT:138:PRO:HB3  | 41:BT:221:ILE:HG22 | 1.94                     | 0.48              |
| 1:AA:48:C:H4'      | 1:AA:49:U:H5''     | 1.94                     | 0.48              |
| 22:BA:874:G:O2'    | 22:BA:875:C:H5'    | 2.14                     | 0.48              |
| 23:BB:49:U:H2'     | 23:BB:50:G:H8      | 1.78                     | 0.48              |
| 29:BH:138:ASP:CG   | 29:BH:142:ASN:HB2  | 2.34                     | 0.48              |
| 22:BA:1365:U:H4'   | 22:BA:1405:A:C6    | 2.48                     | 0.48              |
| 1:AA:370:G:H2'     | 1:AA:371:C:C6      | 2.49                     | 0.48              |
| 53:B6:18:LYS:C     | 53:B6:18:LYS:HD2   | 2.34                     | 0.48              |
| 27:BF:110:HIS:CD2  | 27:BF:117:ILE:HG22 | 2.48                     | 0.48              |
| 22:BA:2352:A:OP2   | 38:BQ:53:VAL:HG22  | 2.13                     | 0.48              |
| 33:BL:213:LEU:C    | 33:BL:213:LEU:HD23 | 2.34                     | 0.48              |
| 26:BE:160:LEU:CD2  | 26:BE:170:LEU:HD23 | 2.44                     | 0.48              |
| 42:BU:50:ILE:CD1   | 42:BU:105:VAL:HG23 | 2.44                     | 0.48              |
| 36:BO:1:MET:HG2    | 36:BO:1:MET:O      | 2.14                     | 0.48              |
| 30:BI:110:LEU:HD13 | 30:BI:110:LEU:C    | 2.34                     | 0.48              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 40:BS:97:LEU:HD22  | 41:BT:135:ILE:HB   | 1.96                     | 0.48              |
| 25:BD:176:THR:HG22 | 25:BD:276:GLU:HG2  | 1.95                     | 0.48              |
| 22:BA:1016:G:C2    | 22:BA:1017:G:H1'   | 2.49                     | 0.48              |
| 39:BR:157:GLU:O    | 39:BR:161:ARG:HD3  | 2.13                     | 0.48              |
| 22:BA:305:G:H2'    | 22:BA:306:G:H8     | 1.79                     | 0.48              |
| 22:BA:84:G:H2'     | 22:BA:85:U:H6      | 1.79                     | 0.48              |
| 22:BA:783:U:P      | 51:B4:110:ARG:HE   | 2.37                     | 0.48              |
| 1:AA:190:C:H2'     | 1:AA:191:G:C8      | 2.49                     | 0.48              |
| 1:AA:957:C:H2'     | 1:AA:958:U:H4'     | 1.96                     | 0.48              |
| 27:BF:200:LYS:CE   | 33:BL:179:ARG:HA   | 2.44                     | 0.48              |
| 22:BA:1452:A:H61   | 22:BA:1595:C:H42   | 1.60                     | 0.48              |
| 22:BA:296:G:H2'    | 22:BA:297:U:C6     | 2.49                     | 0.48              |
| 29:BH:69:ILE:HA    | 29:BH:80:PRO:HG2   | 1.95                     | 0.48              |
| 37:BP:168:LEU:H    | 37:BP:168:LEU:HD12 | 1.79                     | 0.48              |
| 27:BF:214:LYS:HD2  | 27:BF:216:ARG:HD3  | 1.95                     | 0.48              |
| 39:BR:177:ILE:HG13 | 39:BR:178:HIS:CD2  | 2.49                     | 0.48              |
| 22:BA:873:A:P      | 36:BO:21:SER:HB2   | 2.54                     | 0.48              |
| 1:AA:47:G:O2'      | 1:AA:336:U:H1'     | 2.14                     | 0.48              |
| 33:BL:154:ILE:HG22 | 33:BL:221:LEU:HA   | 1.96                     | 0.48              |
| 1:AA:792:G:N2      | 1:AA:793:A:H62     | 2.12                     | 0.48              |
| 22:BA:1604:A:H2'   | 22:BA:1605:A:C8    | 2.49                     | 0.48              |
| 1:AA:1050:A:H4'    | 1:AA:1051:A:O4'    | 2.13                     | 0.48              |
| 50:B3:64:ILE:HG23  | 50:B3:64:ILE:O     | 2.14                     | 0.48              |
| 1:AA:541:U:H2'     | 1:AA:542:U:C6      | 2.49                     | 0.48              |
| 22:BA:2367:C:H2'   | 22:BA:2368:A:O4'   | 2.14                     | 0.48              |
| 22:BA:2024:G:H2'   | 22:BA:2025:U:C6    | 2.49                     | 0.48              |
| 39:BR:144:ARG:HE   | 39:BR:146:GLY:N    | 2.12                     | 0.48              |
| 22:BA:2115:G:H2'   | 22:BA:2116:C:C6    | 2.49                     | 0.48              |
| 22:BA:1675:C:O2'   | 22:BA:2716:C:H4'   | 2.14                     | 0.48              |
| 35:BN:187:LEU:H    | 35:BN:206:SER:HB2  | 1.79                     | 0.48              |
| 45:BX:93:ILE:HB    | 45:BX:125:LYS:HZ1  | 1.77                     | 0.48              |
| 22:BA:829:G:O2'    | 22:BA:830:A:H5''   | 2.14                     | 0.48              |
| 1:AA:448:G:N2      | 1:AA:494:A:H1'     | 2.28                     | 0.48              |
| 35:BN:192:LEU:HG   | 35:BN:193:SER:N    | 2.21                     | 0.48              |
| 1:AA:1348:C:H5''   | 1:AA:1349:C:OP1    | 2.13                     | 0.48              |
| 1:AA:90:C:H2'      | 1:AA:91:G:C8       | 2.49                     | 0.48              |
| 22:BA:231:C:H5''   | 22:BA:402:A:N1     | 2.29                     | 0.48              |
| 22:BA:1075:G:H2'   | 22:BA:1138:G:N1    | 2.28                     | 0.48              |
| 44:BW:126:GLU:OE1  | 44:BW:126:GLU:N    | 2.47                     | 0.48              |
| 22:BA:2362:G:H2'   | 22:BA:2398:C:O2    | 2.14                     | 0.48              |
| 22:BA:234:C:H5     | 22:BA:2412:C:H5''  | 1.79                     | 0.48              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 28:BG:186:LYS:NZ   | 28:BG:188:LYS:HB2  | 2.29                     | 0.48              |
| 33:BL:204:VAL:O    | 33:BL:208:LEU:HG   | 2.14                     | 0.48              |
| 24:BC:22:C:H2'     | 24:BC:23:G:H8      | 1.79                     | 0.48              |
| 44:BW:111:VAL:HG12 | 44:BW:111:VAL:O    | 2.14                     | 0.48              |
| 1:AA:669:A:H4'     | 1:AA:670:A:C5'     | 2.44                     | 0.48              |
| 22:BA:873:A:H4'    | 23:BB:101:A:N3     | 2.29                     | 0.48              |
| 22:BA:1618:C:H4'   | 22:BA:1620:U:C4    | 2.48                     | 0.48              |
| 44:BW:140:GLU:OE2  | 44:BW:161:LEU:HD12 | 2.14                     | 0.48              |
| 1:AA:225:G:O2'     | 1:AA:226:G:H5'     | 2.14                     | 0.48              |
| 42:BU:61:THR:O     | 42:BU:65:LEU:HG    | 2.13                     | 0.48              |
| 24:BC:15:G:O6      | 37:BP:90:MET:HB2   | 2.14                     | 0.48              |
| 22:BA:2406:G:H5''  | 22:BA:2407:U:O4'   | 2.14                     | 0.48              |
| 22:BA:44:G:H2'     | 22:BA:200:G:C5     | 2.49                     | 0.47              |
| 22:BA:2220:G:H2'   | 22:BA:2221:U:C6    | 2.49                     | 0.47              |
| 26:BE:152:ARG:O    | 26:BE:156:ALA:HB2  | 2.13                     | 0.47              |
| 26:BE:42:ARG:HH11  | 26:BE:42:ARG:HG3   | 1.78                     | 0.47              |
| 22:BA:2742:C:H2'   | 22:BA:2743:A:C8    | 2.49                     | 0.47              |
| 28:BG:75:ALA:N     | 28:BG:76:PRO:CD    | 2.75                     | 0.47              |
| 20:AT:170:ARG:HB2  | 20:AT:174:ARG:HH21 | 1.79                     | 0.47              |
| 35:BN:120:MET:CG   | 35:BN:121:PRO:HD3  | 2.44                     | 0.47              |
| 30:BI:52:ALA:O     | 30:BI:53:VAL:O     | 2.31                     | 0.47              |
| 22:BA:95:G:H4'     | 47:BZ:105:SER:HB2  | 1.96                     | 0.47              |
| 42:BU:62:LEU:HD12  | 42:BU:63:MET:HG3   | 1.96                     | 0.47              |
| 22:BA:1646:A:H5''  | 22:BA:1647:C:OP2   | 2.14                     | 0.47              |
| 41:BT:123:ILE:N    | 41:BT:138:PRO:HG2  | 2.29                     | 0.47              |
| 32:BK:206:MET:SD   | 32:BK:208:ILE:HD12 | 2.54                     | 0.47              |
| 25:BD:180:PRO:HB2  | 25:BD:301:ILE:HD12 | 1.96                     | 0.47              |
| 22:BA:1617:C:C2'   | 22:BA:1618:C:H5'   | 2.43                     | 0.47              |
| 22:BA:2556:C:H2'   | 22:BA:2557:C:C6    | 2.48                     | 0.47              |
| 22:BA:976:C:H5''   | 22:BA:989:G:O2'    | 2.13                     | 0.47              |
| 22:BA:1712:A:O2'   | 27:BF:178:HIS:HB3  | 2.14                     | 0.47              |
| 22:BA:1113:A:N6    | 22:BA:1114:A:H62   | 2.11                     | 0.47              |
| 25:BD:206:ALA:HB2  | 25:BD:267:VAL:HG21 | 1.95                     | 0.47              |
| 22:BA:533:G:H4'    | 22:BA:552:G:O2'    | 2.15                     | 0.47              |
| 1:AA:1192:C:H2'    | 1:AA:1193:G:C8     | 2.48                     | 0.47              |
| 22:BA:684:C:H1'    | 22:BA:1275:A:H2    | 1.79                     | 0.47              |
| 29:BH:67:ALA:O     | 29:BH:71:GLU:HB2   | 2.14                     | 0.47              |
| 22:BA:2322:A:H5''  | 29:BH:146:GLY:HA3  | 1.96                     | 0.47              |
| 25:BD:183:THR:OG1  | 25:BD:273:GLY:HA3  | 2.14                     | 0.47              |
| 1:AA:1331:C:H4'    | 7:AG:79:ARG:NE     | 2.29                     | 0.47              |
| 39:BR:144:ARG:CD   | 39:BR:146:GLY:H    | 2.28                     | 0.47              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 26:BE:57:LEU:HD23  | 26:BE:58:TYR:H     | 1.77                     | 0.47              |
| 25:BD:336:ILE:HD13 | 25:BD:337:ARG:N    | 2.29                     | 0.47              |
| 22:BA:427:A:H2'    | 22:BA:428:C:C6     | 2.50                     | 0.47              |
| 40:BS:88:ARG:HA    | 40:BS:118:LYS:HE2  | 1.95                     | 0.47              |
| 34:BM:19:LEU:N     | 34:BM:19:LEU:HD13  | 2.20                     | 0.47              |
| 22:BA:786:G:H5'    | 22:BA:787:G:OP1    | 2.14                     | 0.47              |
| 29:BH:121:LEU:C    | 29:BH:123:LEU:H    | 2.18                     | 0.47              |
| 22:BA:866:G:H1'    | 45:BX:81:LYS:HD2   | 1.95                     | 0.47              |
| 1:AA:27:A:N6       | 1:AA:506:G:H1'     | 2.29                     | 0.47              |
| 1:AA:514:G:C4'     | 1:AA:515:G:OP1     | 2.61                     | 0.47              |
| 22:BA:135:C:H42    | 22:BA:159:A:H61    | 1.62                     | 0.47              |
| 22:BA:34:G:C1'     | 22:BA:466:A:H1'    | 2.44                     | 0.47              |
| 27:BF:213:ARG:HG2  | 27:BF:237:PRO:HB3  | 1.97                     | 0.47              |
| 22:BA:1176:C:H2'   | 22:BA:1177:U:C6    | 2.49                     | 0.47              |
| 22:BA:1178:G:H2'   | 22:BA:1179:C:C6    | 2.49                     | 0.47              |
| 1:AA:456:U:H4'     | 1:AA:457:A:H8      | 1.78                     | 0.47              |
| 34:BM:121:LEU:HD22 | 34:BM:121:LEU:N    | 2.28                     | 0.47              |
| 25:BD:319:LYS:HD2  | 25:BD:319:LYS:C    | 2.35                     | 0.47              |
| 39:BR:216:LYS:H    | 39:BR:216:LYS:HD3  | 1.79                     | 0.47              |
| 48:B1:73:THR:HG21  | 48:B1:77:LYS:HZ2   | 1.78                     | 0.47              |
| 35:BN:71:LEU:HD22  | 35:BN:71:LEU:N     | 2.28                     | 0.47              |
| 1:AA:537:C:H5''    | 8:AH:29:THR:HB     | 1.94                     | 0.47              |
| 22:BA:1280:G:H2'   | 22:BA:1281:G:C8    | 2.49                     | 0.47              |
| 1:AA:1384:G:H2'    | 1:AA:1385:U:C6     | 2.49                     | 0.47              |
| 34:BM:12:ASP:OD2   | 34:BM:85:VAL:HG13  | 2.13                     | 0.47              |
| 22:BA:59:A:H2'     | 22:BA:62:A:H61     | 1.79                     | 0.47              |
| 26:BE:169:THR:HG22 | 26:BE:170:LEU:H    | 1.79                     | 0.47              |
| 39:BR:144:ARG:HD3  | 39:BR:146:GLY:H    | 1.78                     | 0.47              |
| 38:BQ:84:ASP:O     | 38:BQ:86:LYS:N     | 2.46                     | 0.47              |
| 30:BI:57:VAL:HG23  | 30:BI:69:LYS:O     | 2.14                     | 0.47              |
| 28:BG:239:VAL:HG13 | 28:BG:240:LEU:N    | 2.30                     | 0.47              |
| 27:BF:186:LEU:O    | 27:BF:189:ILE:HD11 | 2.14                     | 0.47              |
| 22:BA:1018:A:H62   | 22:BA:1207:G:H1'   | 1.78                     | 0.47              |
| 44:BW:147:VAL:HB   | 44:BW:156:ARG:HG2  | 1.97                     | 0.47              |
| 22:BA:71:A:H5''    | 22:BA:72:A:OP2     | 2.13                     | 0.47              |
| 44:BW:93:HIS:CD2   | 44:BW:94:LYS:H     | 2.32                     | 0.47              |
| 22:BA:1142:G:H2'   | 22:BA:1143:C:C6    | 2.49                     | 0.47              |
| 34:BM:43:ILE:HD11  | 34:BM:45:GLU:O     | 2.14                     | 0.47              |
| 22:BA:430:U:H2'    | 22:BA:431:U:C6     | 2.49                     | 0.47              |
| 22:BA:1766:G:H1'   | 22:BA:1768:G:H21   | 1.79                     | 0.47              |
| 22:BA:2303:A:H8    | 50:B3:49:ARG:HH12  | 1.62                     | 0.47              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 27:BF:227:LEU:HB3  | 39:BR:121:ASP:O    | 2.13                     | 0.47              |
| 1:AA:1168:G:H2'    | 1:AA:1169:G:H8     | 1.79                     | 0.47              |
| 22:BA:1481:U:H5'   | 22:BA:2719:G:H21   | 1.79                     | 0.47              |
| 45:BX:87:VAL:HG22  | 45:BX:87:VAL:O     | 2.13                     | 0.47              |
| 1:AA:1350:G:H2'    | 1:AA:1351:C:O4'    | 2.13                     | 0.47              |
| 1:AA:749:U:H2'     | 1:AA:750:A:H8      | 1.79                     | 0.47              |
| 1:AA:660:A:C5'     | 26:BE:161:ILE:C    | 2.79                     | 0.47              |
| 6:AF:118:LYS:HD3   | 26:BE:163:LYS:HA   | 1.96                     | 0.47              |
| 1:AA:1422:A:C4'    | 22:BA:1738:G:O2'   | 2.62                     | 0.47              |
| 38:BQ:56:ARG:HG2   | 38:BQ:59:VAL:HG22  | 1.95                     | 0.47              |
| 22:BA:1448:A:H4'   | 22:BA:1449:C:C6    | 2.49                     | 0.47              |
| 37:BP:199:MET:HA   | 37:BP:199:MET:HE2  | 1.96                     | 0.47              |
| 46:BY:122:LEU:HD12 | 46:BY:150:LYS:HE3  | 1.96                     | 0.47              |
| 22:BA:426:C:H2'    | 22:BA:427:A:C8     | 2.49                     | 0.47              |
| 22:BA:2063:C:H2'   | 22:BA:2064:C:C6    | 2.49                     | 0.47              |
| 22:BA:304:A:H2'    | 22:BA:305:G:H5'    | 1.97                     | 0.47              |
| 1:AA:871:G:H2'     | 1:AA:872:A:C8      | 2.50                     | 0.47              |
| 1:AA:25:U:H2'      | 1:AA:26:C:C6       | 2.49                     | 0.47              |
| 26:BE:222:ASN:N    | 26:BE:222:ASN:HD22 | 2.13                     | 0.47              |
| 29:BH:23:TYR:O     | 29:BH:28:VAL:HG23  | 2.15                     | 0.47              |
| 31:BJ:129:VAL:O    | 31:BJ:129:VAL:HG13 | 2.15                     | 0.47              |
| 49:B2:10:ILE:CD1   | 49:B2:14:ARG:HE    | 2.28                     | 0.47              |
| 22:BA:2694:G:H2'   | 22:BA:2695:C:C6    | 2.49                     | 0.47              |
| 22:BA:1903:A:H1'   | 22:BA:2101:G:H5'   | 1.96                     | 0.47              |
| 42:BU:42:SER:HA    | 42:BU:128:PRO:O    | 2.15                     | 0.47              |
| 1:AA:30:A:O2'      | 1:AA:31:U:H5'      | 2.14                     | 0.47              |
| 22:BA:2022:C:H2'   | 22:BA:2023:G:H8    | 1.78                     | 0.47              |
| 25:BD:279:VAL:HG13 | 25:BD:283:GLY:HA2  | 1.97                     | 0.47              |
| 22:BA:675:U:H2'    | 22:BA:676:U:C6     | 2.48                     | 0.47              |
| 27:BF:250:LYS:NZ   | 27:BF:252:VAL:HG13 | 2.29                     | 0.47              |
| 38:BQ:127:LEU:HD23 | 38:BQ:127:LEU:O    | 2.13                     | 0.47              |
| 36:BO:102:ILE:HD11 | 36:BO:105:GLU:HG2  | 1.96                     | 0.47              |
| 1:AA:745:C:H2'     | 1:AA:746:C:C6      | 2.50                     | 0.47              |
| 36:BO:91:GLU:CD    | 36:BO:92:TYR:N     | 2.68                     | 0.47              |
| 1:AA:1116:U:O5'    | 1:AA:1117:A:OP2    | 2.32                     | 0.47              |
| 39:BR:218:ARG:HD2  | 39:BR:220:TYR:HE1  | 1.79                     | 0.47              |
| 1:AA:1469:G:H2'    | 1:AA:1470:G:C8     | 2.50                     | 0.47              |
| 22:BA:2377:C:H5'   | 52:B5:137:GLN:HE22 | 1.78                     | 0.47              |
| 48:B1:101:VAL:O    | 48:B1:101:VAL:HG23 | 2.14                     | 0.47              |
| 22:BA:641:C:H2'    | 22:BA:642:G:C8     | 2.50                     | 0.47              |
| 22:BA:968:C:C2'    | 22:BA:969:A:H5''   | 2.44                     | 0.47              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:448:G:H2'     | 1:AA:449:C:C6      | 2.50                     | 0.47              |
| 45:BX:84:GLY:HA2   | 45:BX:117:PHE:HD2  | 1.80                     | 0.47              |
| 22:BA:492:A:H1'    | 44:BW:106:PHE:CE2  | 2.49                     | 0.47              |
| 35:BN:122:LEU:HD13 | 35:BN:123:TYR:HD2  | 1.78                     | 0.47              |
| 50:B3:14:GLU:OE2   | 50:B3:30:VAL:HG13  | 2.14                     | 0.47              |
| 22:BA:1459:U:O2'   | 22:BA:1460:A:H5'   | 2.14                     | 0.47              |
| 22:BA:522:U:H5'    | 22:BA:1257:G:H5'   | 1.97                     | 0.47              |
| 1:AA:26:C:H5'      | 1:AA:472:G:H1'     | 1.96                     | 0.47              |
| 22:BA:1346:U:H1'   | 42:BU:115:LYS:HZ2  | 1.79                     | 0.47              |
| 22:BA:1768:G:C6    | 22:BA:2713:U:H5'   | 2.49                     | 0.47              |
| 1:AA:1150:U:H5'    | 14:AN:68:ARG:NH2   | 2.29                     | 0.47              |
| 22:BA:973:A:C2     | 22:BA:2465:A:H1'   | 2.50                     | 0.47              |
| 26:BE:34:ARG:HD2   | 26:BE:37:LYS:HD3   | 1.96                     | 0.47              |
| 29:BH:73:ALA:HB2   | 29:BH:80:PRO:HD3   | 1.97                     | 0.47              |
| 22:BA:673:G:C5'    | 35:BN:89:ALA:H     | 2.26                     | 0.47              |
| 37:BP:172:VAL:HG13 | 37:BP:173:PRO:HD3  | 1.95                     | 0.47              |
| 33:BL:202:HIS:HA   | 33:BL:205:ARG:HD3  | 1.96                     | 0.47              |
| 22:BA:1175:U:H2'   | 22:BA:1176:C:C6    | 2.49                     | 0.47              |
| 22:BA:393:G:H5'    | 46:BY:93:HIS:HB2   | 1.97                     | 0.47              |
| 28:BG:174:VAL:HG11 | 28:BG:246:VAL:HB   | 1.95                     | 0.47              |
| 22:BA:1947:G:H2'   | 22:BA:1948:C:O4'   | 2.14                     | 0.47              |
| 51:B4:112:HIS:HA   | 51:B4:117:ARG:NH2  | 2.19                     | 0.47              |
| 22:BA:1329:A:H4'   | 51:B4:105:ARG:HH12 | 1.79                     | 0.47              |
| 34:BM:21:CYS:HA    | 34:BM:41:ALA:HB2   | 1.96                     | 0.47              |
| 40:BS:9:ILE:HA     | 40:BS:12:ARG:HH12  | 1.79                     | 0.47              |
| 40:BS:9:ILE:CD1    | 40:BS:12:ARG:HH22  | 2.28                     | 0.47              |
| 1:AA:400:U:H5''    | 4:AD:9:PHE:CE2     | 2.50                     | 0.47              |
| 28:BG:231:PRO:HG3  | 28:BG:251:THR:HG22 | 1.97                     | 0.47              |
| 38:BQ:155:ARG:HA   | 38:BQ:159:LEU:O    | 2.15                     | 0.47              |
| 41:BT:129:ILE:HG23 | 41:BT:144:THR:HB   | 1.96                     | 0.47              |
| 22:BA:2593:G:OP1   | 27:BF:192:GLY:HA3  | 2.14                     | 0.47              |
| 45:BX:80:VAL:HG22  | 45:BX:81:LYS:HD2   | 1.96                     | 0.47              |
| 22:BA:84:G:H1      | 22:BA:96:C:N4      | 2.13                     | 0.47              |
| 22:BA:1394:A:H2'   | 22:BA:1395:G:O4'   | 2.14                     | 0.47              |
| 1:AA:190:C:H2'     | 1:AA:191:G:H8      | 1.79                     | 0.47              |
| 1:AA:1057:G:H5''   | 3:AC:4:LYS:HZ2     | 1.80                     | 0.47              |
| 22:BA:616:U:H4'    | 22:BA:669:C:O2'    | 2.14                     | 0.47              |
| 29:BH:26:LYS:C     | 29:BH:29:PRO:HD2   | 2.35                     | 0.47              |
| 24:BC:35:G:N3      | 24:BC:35:G:C2'     | 2.77                     | 0.47              |
| 24:BC:34:C:H4'     | 24:BC:35:G:N7      | 2.30                     | 0.47              |
| 31:BJ:78:PHE:H     | 31:BJ:81:PRO:HD2   | 1.79                     | 0.47              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:432:G:O2'     | 1:AA:433:G:P       | 2.73                     | 0.47              |
| 50:B3:23:VAL:HG22  | 50:B3:23:VAL:O     | 2.15                     | 0.47              |
| 22:BA:771:G:H4'    | 22:BA:1786:G:OP1   | 2.14                     | 0.47              |
| 22:BA:1957:U:H4'   | 22:BA:1959:G:OP2   | 2.14                     | 0.47              |
| 1:AA:114:A:H1'     | 1:AA:235:U:O4'     | 2.14                     | 0.47              |
| 22:BA:1470:A:H2'   | 22:BA:1471:A:H8    | 1.79                     | 0.47              |
| 36:BO:77:ARG:CA    | 36:BO:77:ARG:HH11  | 2.28                     | 0.47              |
| 22:BA:2480:U:H2'   | 22:BA:2481:C:C6    | 2.50                     | 0.47              |
| 1:AA:1267:A:H5'    | 19:AS:3:ARG:HH21   | 1.80                     | 0.47              |
| 35:BN:86:ARG:NH1   | 35:BN:86:ARG:HB3   | 2.30                     | 0.47              |
| 22:BA:1980:A:H1'   | 22:BA:2610:U:C5'   | 2.45                     | 0.47              |
| 36:BO:66:VAL:HG23  | 36:BO:66:VAL:O     | 2.15                     | 0.47              |
| 30:BI:216:GLU:N    | 30:BI:216:GLU:OE1  | 2.48                     | 0.47              |
| 29:BH:179:LYS:HA   | 29:BH:182:TYR:CE2  | 2.50                     | 0.47              |
| 42:BU:86:ASN:HB3   | 42:BU:90:ASN:ND2   | 2.30                     | 0.47              |
| 22:BA:1444:A:H2'   | 22:BA:1445:G:C8    | 2.50                     | 0.47              |
| 22:BA:178:U:H2'    | 22:BA:179:G:H8     | 1.79                     | 0.47              |
| 22:BA:2324:G:H4'   | 22:BA:2328:A:H61   | 1.79                     | 0.47              |
| 1:AA:755:U:O2      | 26:BE:5:LEU:CG     | 2.54                     | 0.47              |
| 26:BE:140:ILE:HG13 | 26:BE:141:GLU:H    | 1.80                     | 0.47              |
| 1:AA:884:A:H2      | 1:AA:1332:C:N4     | 2.12                     | 0.47              |
| 26:BE:65:ARG:HD2   | 26:BE:124:ASN:ND2  | 2.29                     | 0.47              |
| 26:BE:65:ARG:HH12  | 26:BE:187:THR:HA   | 1.78                     | 0.47              |
| 39:BR:172:ARG:O    | 39:BR:184:ARG:HD2  | 2.14                     | 0.47              |
| 28:BG:157:ARG:O    | 28:BG:161:LEU:HG   | 2.15                     | 0.47              |
| 34:BM:5:GLN:HA     | 34:BM:21:CYS:O     | 2.15                     | 0.47              |
| 46:BY:108:TYR:HE2  | 46:BY:123:ARG:NE   | 2.12                     | 0.47              |
| 35:BN:167:LEU:C    | 35:BN:168:LYS:HD3  | 2.34                     | 0.47              |
| 35:BN:148:LEU:N    | 35:BN:148:LEU:HD12 | 2.29                     | 0.47              |
| 1:AA:178:A:H5''    | 20:AT:155:LYS:HG2  | 1.96                     | 0.47              |
| 45:BX:93:ILE:HB    | 45:BX:125:LYS:NZ   | 2.30                     | 0.47              |
| 40:BS:88:ARG:O     | 40:BS:89:GLN:HB3   | 2.13                     | 0.47              |
| 31:BJ:182:LEU:HG   | 31:BJ:183:HIS:CD2  | 2.50                     | 0.47              |
| 22:BA:643:A:H5''   | 52:B5:103:ARG:NH1  | 2.29                     | 0.47              |
| 51:B4:107:SER:O    | 51:B4:111:THR:HG22 | 2.15                     | 0.47              |
| 1:AA:1254:A:H61    | 1:AA:1279:G:H1'    | 1.77                     | 0.47              |
| 22:BA:2643:C:H2'   | 22:BA:2644:G:C8    | 2.50                     | 0.47              |
| 22:BA:226:A:H1'    | 22:BA:228:U:N1     | 2.29                     | 0.47              |
| 22:BA:2048:U:O2'   | 22:BA:2049:G:H5'   | 2.14                     | 0.47              |
| 51:B4:128:LYS:CA   | 51:B4:128:LYS:HE3  | 2.42                     | 0.47              |
| 45:BX:80:VAL:HG22  | 45:BX:81:LYS:CD    | 2.45                     | 0.47              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 34:BM:102:ILE:HG13 | 34:BM:103:ALA:N    | 2.29                     | 0.47              |
| 22:BA:80:G:H2'     | 22:BA:81:G:O4'     | 2.15                     | 0.47              |
| 44:BW:93:HIS:HB2   | 44:BW:98:THR:O     | 2.14                     | 0.47              |
| 24:BC:88:A:N9      | 49:B2:29:LEU:HD13  | 2.29                     | 0.47              |
| 26:BE:67:GLU:HG2   | 26:BE:70:ILE:HD13  | 1.96                     | 0.47              |
| 33:BL:196:PRO:O    | 33:BL:199:ILE:HG22 | 2.15                     | 0.47              |
| 22:BA:2275:G:C5    | 22:BA:2443:A:H5'   | 2.50                     | 0.47              |
| 28:BG:107:GLU:HG3  | 28:BG:113:ARG:NH2  | 2.29                     | 0.47              |
| 22:BA:319:G:C2'    | 22:BA:320:U:H5''   | 2.44                     | 0.47              |
| 22:BA:2092:C:H2'   | 22:BA:2093:U:C6    | 2.50                     | 0.47              |
| 22:BA:15:G:H5''    | 49:B2:14:ARG:CB    | 2.45                     | 0.47              |
| 49:B2:15:ILE:H     | 49:B2:15:ILE:HD12  | 1.80                     | 0.47              |
| 31:BJ:79:LEU:CD1   | 31:BJ:84:LYS:HB2   | 2.45                     | 0.47              |
| 22:BA:2155:C:H2'   | 22:BA:2156:C:C6    | 2.50                     | 0.47              |
| 1:AA:670:A:H3'     | 1:AA:670:A:N3      | 2.30                     | 0.47              |
| 47:BZ:109:ARG:O    | 47:BZ:113:GLN:HG3  | 2.15                     | 0.47              |
| 1:AA:1218:G:H2'    | 1:AA:1219:G:C8     | 2.50                     | 0.47              |
| 1:AA:1046:C:H2'    | 1:AA:1047:C:C6     | 2.50                     | 0.47              |
| 26:BE:209:TRP:C    | 26:BE:211:GLY:H    | 2.18                     | 0.47              |
| 17:AQ:110:VAL:HG13 | 17:AQ:139:ARG:HH11 | 1.80                     | 0.47              |
| 35:BN:197:THR:O    | 35:BN:199:LYS:HG3  | 2.15                     | 0.47              |
| 1:AA:115:C:H2'     | 1:AA:116:C:C6      | 2.49                     | 0.47              |
| 1:AA:1412:U:H2'    | 1:AA:1413:G:C8     | 2.49                     | 0.47              |
| 22:BA:1740:G:H2'   | 22:BA:1741:G:C8    | 2.50                     | 0.47              |
| 1:AA:1423:G:HO2'   | 22:BA:1724:U:H4'   | 1.74                     | 0.47              |
| 42:BU:35:ARG:HG2   | 42:BU:79:LEU:CD1   | 2.39                     | 0.47              |
| 22:BA:586:U:H2'    | 22:BA:587:G:C8     | 2.50                     | 0.47              |
| 52:B5:117:LYS:C    | 52:B5:117:LYS:HD3  | 2.35                     | 0.47              |
| 22:BA:644:A:H2'    | 22:BA:645:A:C8     | 2.50                     | 0.47              |
| 22:BA:1830:U:C5    | 26:BE:155:GLY:HA3  | 2.50                     | 0.47              |
| 40:BS:31:LEU:HB3   | 40:BS:34:THR:OG1   | 2.15                     | 0.47              |
| 31:BJ:54:LEU:N     | 31:BJ:54:LEU:HD22  | 2.30                     | 0.47              |
| 1:AA:900:G:O2'     | 1:AA:901:U:H5'     | 2.15                     | 0.47              |
| 1:AA:930:U:H2'     | 1:AA:931:U:H5      | 1.77                     | 0.47              |
| 50:B3:10:LYS:HB3   | 50:B3:37:LYS:NZ    | 2.30                     | 0.47              |
| 25:BD:303:LEU:HD13 | 25:BD:303:LEU:C    | 2.35                     | 0.47              |
| 22:BA:1333:U:H3    | 43:BV:168:PRO:CG   | 2.26                     | 0.47              |
| 22:BA:2540:G:H1'   | 22:BA:2783:A:N7    | 2.30                     | 0.47              |
| 22:BA:871:A:H5''   | 36:BO:18:LYS:NZ    | 2.30                     | 0.47              |
| 1:AA:1013:G:H5''   | 1:AA:1014:U:OP1    | 2.15                     | 0.47              |
| 1:AA:1426:C:H2'    | 1:AA:1427:U:C6     | 2.50                     | 0.47              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:15:G:H4'     | 49:B2:15:ILE:HD11  | 1.97                     | 0.47              |
| 22:BA:1258:A:O2'   | 22:BA:1259:C:H4'   | 2.15                     | 0.47              |
| 1:AA:18:U:H5''     | 5:AE:162:VAL:HG12  | 1.97                     | 0.47              |
| 22:BA:392:G:H5'    | 46:BY:94:SER:C     | 2.35                     | 0.47              |
| 22:BA:2555:U:H2'   | 22:BA:2556:C:C6    | 2.50                     | 0.47              |
| 33:BL:226:GLY:O    | 33:BL:228:GLU:HG3  | 2.15                     | 0.47              |
| 1:AA:68:C:H2'      | 1:AA:69:G:C8       | 2.50                     | 0.47              |
| 24:BC:8:A:H2'      | 24:BC:9:C:C6       | 2.50                     | 0.47              |
| 22:BA:2669:C:H2'   | 22:BA:2670:U:O4'   | 2.14                     | 0.47              |
| 22:BA:1367:A:H2'   | 22:BA:1368:G:H8    | 1.80                     | 0.47              |
| 48:B1:91:PHE:HA    | 48:B1:95:ASN:HD22  | 1.79                     | 0.47              |
| 39:BR:212:ARG:HB2  | 39:BR:212:ARG:HH11 | 1.80                     | 0.47              |
| 35:BN:126:LEU:HG   | 52:B5:112:ARG:CZ   | 2.44                     | 0.47              |
| 25:BD:327:HIS:HA   | 25:BD:336:ILE:O    | 2.15                     | 0.47              |
| 22:BA:460:U:H3     | 22:BA:593:G:C1'    | 2.18                     | 0.47              |
| 22:BA:151:G:H5'    | 46:BY:148:LEU:HB2  | 1.96                     | 0.47              |
| 36:BO:27:ILE:O     | 36:BO:27:ILE:HG23  | 2.15                     | 0.47              |
| 1:AA:495:A:H4'     | 1:AA:496:G:O4'     | 2.15                     | 0.47              |
| 40:BS:41:ARG:HG2   | 40:BS:41:ARG:HH11  | 1.79                     | 0.47              |
| 1:AA:901:U:H5'     | 1:AA:921:C:N4      | 2.30                     | 0.47              |
| 1:AA:1076:G:H8     | 1:AA:1076:G:O5'    | 1.98                     | 0.47              |
| 22:BA:1141:C:H2'   | 22:BA:1142:G:C8    | 2.50                     | 0.47              |
| 22:BA:761:A:C2     | 22:BA:763:A:H4'    | 2.50                     | 0.47              |
| 22:BA:473:C:N4     | 22:BA:480:G:H1     | 2.10                     | 0.47              |
| 27:BF:198:VAL:HG22 | 27:BF:198:VAL:O    | 2.15                     | 0.47              |
| 22:BA:27:A:N6      | 22:BA:523:G:H1'    | 2.30                     | 0.47              |
| 44:BW:105:ASN:ND2  | 44:BW:126:GLU:HG3  | 2.30                     | 0.47              |
| 32:BK:99:LEU:N     | 32:BK:99:LEU:HD13  | 2.29                     | 0.47              |
| 37:BP:95:LYS:HD3   | 37:BP:95:LYS:O     | 2.15                     | 0.47              |
| 1:AA:963:A:C2      | 1:AA:1167:U:H1'    | 2.50                     | 0.47              |
| 29:BH:46:VAL:HA    | 29:BH:173:THR:HG22 | 1.97                     | 0.47              |
| 22:BA:603:G:H2'    | 22:BA:604:G:C8     | 2.49                     | 0.47              |
| 22:BA:1923:C:H2'   | 22:BA:1924:G:H8    | 1.80                     | 0.47              |
| 44:BW:64:LEU:H     | 44:BW:64:LEU:HD12  | 1.78                     | 0.47              |
| 1:AA:781:C:H42     | 1:AA:800:C:N4      | 2.13                     | 0.47              |
| 1:AA:1343:A:H5''   | 1:AA:1344:C:OP2    | 2.15                     | 0.47              |
| 34:BM:47:ILE:HB    | 34:BM:50:THR:HG21  | 1.96                     | 0.47              |
| 22:BA:2497:C:H2'   | 22:BA:2498:G:O4'   | 2.14                     | 0.47              |
| 6:AF:72:ARG:HH21   | 6:AF:156:ILE:HA    | 1.78                     | 0.47              |
| 1:AA:124:G:H2'     | 1:AA:125:G:C8      | 2.49                     | 0.47              |
| 1:AA:422:A:H1'     | 1:AA:423:A:N7      | 2.29                     | 0.47              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:2015:A:H1'   | 22:BA:2706:U:H3    | 1.79                     | 0.47              |
| 1:AA:1446:G:H21    | 1:AA:1468:A:H1'    | 1.80                     | 0.47              |
| 1:AA:1447:U:H1'    | 1:AA:1448:A:N7     | 2.30                     | 0.47              |
| 34:BM:6:THR:H      | 34:BM:21:CYS:H     | 1.63                     | 0.47              |
| 26:BE:84:ASN:H     | 26:BE:152:ARG:NH1  | 2.13                     | 0.47              |
| 37:BP:186:ILE:N    | 37:BP:186:ILE:HD13 | 2.20                     | 0.47              |
| 1:AA:375:G:H2'     | 1:AA:376:U:C6      | 2.50                     | 0.47              |
| 22:BA:698:C:H2'    | 22:BA:699:U:O4'    | 2.15                     | 0.47              |
| 1:AA:229:A:H4'     | 20:AT:174:ARG:HH12 | 1.80                     | 0.47              |
| 31:BJ:92:LEU:N     | 31:BJ:92:LEU:HD12  | 2.29                     | 0.47              |
| 22:BA:845:C:H5'    | 52:B5:140:ARG:NH1  | 2.23                     | 0.47              |
| 39:BR:155:VAL:HG12 | 39:BR:166:LYS:O    | 2.14                     | 0.47              |
| 1:AA:1080:A:H61    | 1:AA:1091:G:N2     | 2.11                     | 0.47              |
| 22:BA:578:U:H5'    | 22:BA:973:A:H61    | 1.78                     | 0.47              |
| 22:BA:871:A:H62    | 22:BA:925:G:H21    | 1.63                     | 0.47              |
| 39:BR:154:GLU:HB2  | 39:BR:206:ILE:HG22 | 1.97                     | 0.47              |
| 22:BA:2697:C:H5'   | 27:BF:237:PRO:HA   | 1.97                     | 0.47              |
| 36:BO:43:THR:HA    | 36:BO:94:VAL:HG12  | 1.96                     | 0.47              |
| 1:AA:503:C:H2'     | 1:AA:504:C:C6      | 2.50                     | 0.47              |
| 22:BA:2339:A:H2'   | 22:BA:2340:G:O4'   | 2.15                     | 0.47              |
| 51:B4:116:LEU:C    | 51:B4:116:LEU:HD13 | 2.36                     | 0.47              |
| 38:BQ:106:TYR:HD1  | 38:BQ:106:TYR:H    | 1.62                     | 0.47              |
| 43:BV:187:LEU:C    | 43:BV:187:LEU:HD13 | 2.35                     | 0.47              |
| 47:BZ:99:ARG:C     | 47:BZ:99:ARG:HD3   | 2.35                     | 0.47              |
| 24:BC:99:U:H2'     | 24:BC:100:G:C8     | 2.50                     | 0.47              |
| 22:BA:2383:A:H2'   | 22:BA:2384:G:O4'   | 2.14                     | 0.47              |
| 12:AL:24:LEU:HD12  | 12:AL:30:ARG:HH11  | 1.79                     | 0.47              |
| 24:BC:26:U:O4      | 24:BC:28:U:H4'     | 2.15                     | 0.47              |
| 22:BA:1562:A:H2'   | 22:BA:1563:G:O4'   | 2.15                     | 0.47              |
| 1:AA:758:C:O2'     | 1:AA:759:C:H5'     | 2.14                     | 0.46              |
| 26:BE:138:HIS:HB2  | 26:BE:189:GLY:N    | 2.25                     | 0.46              |
| 22:BA:197:G:H2'    | 22:BA:198:A:C8     | 2.51                     | 0.46              |
| 22:BA:1686:A:H4'   | 37:BP:192:ARG:NH2  | 2.28                     | 0.46              |
| 22:BA:1802:G:C6    | 22:BA:1838:G:H1'   | 2.50                     | 0.46              |
| 22:BA:2774:U:H4'   | 22:BA:2775:A:O5'   | 2.14                     | 0.46              |
| 22:BA:2033:A:H62   | 49:B2:6:LYS:NZ     | 2.13                     | 0.46              |
| 28:BG:96:ARG:HH11  | 28:BG:96:ARG:HG3   | 1.80                     | 0.46              |
| 22:BA:1167:C:C2'   | 22:BA:1168:U:H5'   | 2.45                     | 0.46              |
| 1:AA:1096:C:O3'    | 9:AI:82:ILE:HG21   | 2.15                     | 0.46              |
| 27:BF:197:ARG:HH22 | 27:BF:200:LYS:NZ   | 2.13                     | 0.46              |
| 27:BF:200:LYS:HZ3  | 33:BL:180:PRO:CD   | 2.28                     | 0.46              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:2543:G:H5'   | 22:BA:2760:C:O2'   | 2.16                     | 0.46              |
| 22:BA:328:C:H2'    | 22:BA:329:C:O4'    | 2.14                     | 0.46              |
| 37:BP:172:VAL:HG12 | 37:BP:173:PRO:HD3  | 1.97                     | 0.46              |
| 22:BA:1222:C:H2'   | 22:BA:1223:G:C8    | 2.49                     | 0.46              |
| 22:BA:150:U:OP1    | 46:BY:143:LYS:HB3  | 2.14                     | 0.46              |
| 28:BG:105:ARG:HB3  | 28:BG:108:VAL:HB   | 1.97                     | 0.46              |
| 22:BA:2439:C:H2'   | 22:BA:2441:C:C6    | 2.50                     | 0.46              |
| 30:BI:75:LEU:HD12  | 30:BI:75:LEU:N     | 2.29                     | 0.46              |
| 1:AA:378:G:H1      | 1:AA:406:U:H3      | 1.62                     | 0.46              |
| 35:BN:136:MET:HE3  | 35:BN:138:ALA:HB3  | 1.95                     | 0.46              |
| 1:AA:1009:U:H5'    | 10:AJ:148:LYS:HG2  | 1.97                     | 0.46              |
| 41:BT:177:VAL:HG22 | 41:BT:179:ASN:H    | 1.80                     | 0.46              |
| 22:BA:1115:G:N3    | 22:BA:1117:G:H1'   | 2.29                     | 0.46              |
| 29:BH:149:GLU:OE2  | 29:BH:150:GLN:HG2  | 2.16                     | 0.46              |
| 29:BH:160:ILE:HG23 | 29:BH:160:ILE:O    | 2.14                     | 0.46              |
| 42:BU:45:LYS:HZ1   | 42:BU:71:ARG:HH12  | 1.61                     | 0.46              |
| 36:BO:39:PRO:CG    | 36:BO:98:LYS:HG2   | 2.45                     | 0.46              |
| 36:BO:20:ILE:HG13  | 36:BO:99:PRO:HG2   | 1.97                     | 0.46              |
| 22:BA:116:A:H5'    | 22:BA:117:A:C8     | 2.50                     | 0.46              |
| 22:BA:1801:A:N1    | 22:BA:1839:A:H5'   | 2.30                     | 0.46              |
| 46:BY:110:ARG:HG2  | 46:BY:110:ARG:HH11 | 1.80                     | 0.46              |
| 40:BS:105:PRO:HA   | 40:BS:108:ILE:HG22 | 1.97                     | 0.46              |
| 44:BW:150:LYS:HB3  | 44:BW:152:LEU:HD23 | 1.98                     | 0.46              |
| 22:BA:2012:G:H4'   | 22:BA:2742:C:O2'   | 2.15                     | 0.46              |
| 28:BG:72:LEU:CD2   | 28:BG:73:LYS:HG2   | 2.44                     | 0.46              |
| 22:BA:786:G:H1'    | 22:BA:788:G:C2     | 2.50                     | 0.46              |
| 22:BA:2008:C:H4'   | 27:BF:173:ARG:HD2  | 1.97                     | 0.46              |
| 27:BF:197:ARG:HG2  | 27:BF:197:ARG:HH11 | 1.80                     | 0.46              |
| 22:BA:130:U:H2'    | 22:BA:131:C:H5'    | 1.96                     | 0.46              |
| 22:BA:1610:C:H2'   | 22:BA:1611:G:H8    | 1.80                     | 0.46              |
| 1:AA:1204:U:H5''   | 3:AC:27:LYS:NZ     | 2.29                     | 0.46              |
| 27:BF:224:ASP:HB2  | 27:BF:229:ILE:HG23 | 1.97                     | 0.46              |
| 1:AA:1014:U:O2'    | 1:AA:1015:C:H6     | 1.97                     | 0.46              |
| 22:BA:673:G:H4'    | 35:BN:89:ALA:H     | 1.79                     | 0.46              |
| 22:BA:2255:G:H4'   | 22:BA:2257:C:H5    | 1.79                     | 0.46              |
| 24:BC:83:A:H3'     | 24:BC:84:A:H5''    | 1.98                     | 0.46              |
| 22:BA:1484:G:H2'   | 22:BA:1485:U:O4'   | 2.16                     | 0.46              |
| 22:BA:1177:U:H2'   | 22:BA:1178:G:C8    | 2.51                     | 0.46              |
| 1:AA:539:U:H2'     | 1:AA:540:U:C6      | 2.50                     | 0.46              |
| 1:AA:639:G:H2'     | 1:AA:640:U:C6      | 2.50                     | 0.46              |
| 22:BA:73:U:H5'     | 22:BA:74:G:O4'     | 2.15                     | 0.46              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:1388:A:H2'   | 22:BA:1389:G:H5'   | 1.97                     | 0.46              |
| 6:AF:118:LYS:CD    | 26:BE:163:LYS:HA   | 2.34                     | 0.46              |
| 36:BO:2:LEU:HD12   | 36:BO:2:LEU:N      | 2.30                     | 0.46              |
| 22:BA:1600:A:N7    | 26:BE:24:PRO:HD3   | 2.31                     | 0.46              |
| 40:BS:8:TYR:CE2    | 40:BS:12:ARG:HD3   | 2.49                     | 0.46              |
| 22:BA:2244:A:O4'   | 26:BE:258:ARG:HG3  | 2.15                     | 0.46              |
| 1:AA:1270:C:C5'    | 1:AA:1271:G:OP1    | 2.62                     | 0.46              |
| 46:BY:148:LEU:O    | 46:BY:148:LEU:HD13 | 2.15                     | 0.46              |
| 1:AA:372:C:H2'     | 1:AA:373:G:C8      | 2.51                     | 0.46              |
| 22:BA:492:A:OP2    | 22:BA:493:G:H5'    | 2.15                     | 0.46              |
| 39:BR:161:ARG:HG3  | 39:BR:163:SER:H    | 1.80                     | 0.46              |
| 30:BI:46:ILE:CD1   | 30:BI:105:ASN:HD22 | 2.29                     | 0.46              |
| 22:BA:1705:A:C2'   | 22:BA:1705:A:N3    | 2.78                     | 0.46              |
| 25:BD:225:PHE:CD1  | 25:BD:228:LEU:HD21 | 2.50                     | 0.46              |
| 26:BE:250:ALA:O    | 26:BE:251:LEU:HB2  | 2.15                     | 0.46              |
| 22:BA:822:U:H5     | 35:BN:95:SER:HG    | 1.62                     | 0.46              |
| 52:B5:135:LEU:HD12 | 52:B5:135:LEU:N    | 2.31                     | 0.46              |
| 47:BZ:83:VAL:HA    | 47:BZ:86:LYS:HG2   | 1.98                     | 0.46              |
| 36:BO:77:ARG:HD3   | 36:BO:78:PRO:HD2   | 1.98                     | 0.46              |
| 43:BV:180:LYS:H    | 43:BV:180:LYS:HD2  | 1.79                     | 0.46              |
| 1:AA:52:A:O2'      | 1:AA:53:C:OP2      | 2.23                     | 0.46              |
| 22:BA:1221:C:H2'   | 22:BA:1222:C:C6    | 2.50                     | 0.46              |
| 22:BA:1407:C:O2'   | 22:BA:1488:A:H1'   | 2.15                     | 0.46              |
| 33:BL:221:LEU:HD23 | 33:BL:221:LEU:C    | 2.36                     | 0.46              |
| 3:AC:25:GLN:HE22   | 10:AJ:106:ARG:HH22 | 1.61                     | 0.46              |
| 24:BC:36:A:H4'     | 24:BC:37:U:C5      | 2.50                     | 0.46              |
| 25:BD:123:LEU:HD23 | 25:BD:123:LEU:C    | 2.36                     | 0.46              |
| 22:BA:1807:C:H2'   | 22:BA:1808:C:C6    | 2.50                     | 0.46              |
| 22:BA:777:U:H2'    | 22:BA:778:U:C6     | 2.50                     | 0.46              |
| 1:AA:523:G:H4'     | 1:AA:524:C:O5'     | 2.15                     | 0.46              |
| 22:BA:1421:U:H2'   | 22:BA:1422:G:C8    | 2.51                     | 0.46              |
| 1:AA:712:C:H2'     | 1:AA:713:G:H5'     | 1.96                     | 0.46              |
| 22:BA:639:A:H5'    | 22:BA:640:G:OP1    | 2.16                     | 0.46              |
| 22:BA:1225:G:O2'   | 22:BA:1226:U:H5''  | 2.16                     | 0.46              |
| 22:BA:835:C:N4     | 22:BA:972:G:H22    | 2.13                     | 0.46              |
| 22:BA:54:G:H2'     | 22:BA:55:G:H8      | 1.80                     | 0.46              |
| 22:BA:1362:G:O4'   | 43:BV:165:LEU:HD23 | 2.16                     | 0.46              |
| 22:BA:544:G:H5'    | 40:BS:24:PHE:HD1   | 1.81                     | 0.46              |
| 38:BQ:72:ARG:HE    | 38:BQ:146:ARG:HB3  | 1.80                     | 0.46              |
| 31:BJ:80:LEU:C     | 31:BJ:80:LEU:HD23  | 2.34                     | 0.46              |
| 22:BA:747:C:N4     | 22:BA:771:G:H1     | 2.13                     | 0.46              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 29:BH:80:PRO:HA    | 29:BH:104:VAL:CG1  | 2.45                     | 0.46              |
| 42:BU:111:LEU:HD23 | 42:BU:111:LEU:C    | 2.36                     | 0.46              |
| 23:BB:55:U:O2'     | 29:BH:41:LEU:HD21  | 2.16                     | 0.46              |
| 27:BF:154:SER:HA   | 27:BF:214:LYS:HA   | 1.97                     | 0.46              |
| 25:BD:124:GLU:CD   | 25:BD:124:GLU:H    | 2.19                     | 0.46              |
| 22:BA:1782:G:O4'   | 22:BA:1796:A:H4'   | 2.16                     | 0.46              |
| 22:BA:140:G:H2'    | 22:BA:141:C:C6     | 2.50                     | 0.46              |
| 1:AA:1240:C:H2'    | 1:AA:1241:G:C8     | 2.49                     | 0.46              |
| 25:BD:125:ILE:O    | 25:BD:129:ARG:HG3  | 2.16                     | 0.46              |
| 9:AI:146:ILE:O     | 9:AI:150:VAL:HG23  | 2.16                     | 0.46              |
| 38:BQ:75:LYS:O     | 38:BQ:75:LYS:HD3   | 2.15                     | 0.46              |
| 1:AA:658:G:O2'     | 1:AA:659:A:H5'     | 2.15                     | 0.46              |
| 34:BM:5:GLN:HG3    | 34:BM:5:GLN:O      | 2.15                     | 0.46              |
| 1:AA:636:G:O2'     | 1:AA:637:C:H5'     | 2.15                     | 0.46              |
| 22:BA:1822:A:H2'   | 22:BA:1823:C:C6    | 2.50                     | 0.46              |
| 22:BA:696:A:OP1    | 51:B4:111:THR:HG21 | 2.15                     | 0.46              |
| 22:BA:2598:G:N3    | 22:BA:2598:G:H3'   | 2.30                     | 0.46              |
| 22:BA:541:G:H2'    | 22:BA:2049:G:O2'   | 2.16                     | 0.46              |
| 29:BH:123:LEU:CA   | 29:BH:125:ARG:H    | 2.28                     | 0.46              |
| 22:BA:1702:G:HO2'  | 22:BA:1703:G:H5'   | 1.80                     | 0.46              |
| 31:BJ:127:PHE:HE2  | 31:BJ:152:ILE:HD13 | 1.80                     | 0.46              |
| 22:BA:793:A:H4'    | 22:BA:794:A:N7     | 2.30                     | 0.46              |
| 1:AA:99:G:H1'      | 1:AA:100:A:N7      | 2.30                     | 0.46              |
| 41:BT:175:PRO:O    | 41:BT:176:ILE:HG12 | 2.15                     | 0.46              |
| 1:AA:514:G:H4'     | 1:AA:515:G:H5'     | 1.96                     | 0.46              |
| 33:BL:223:VAL:HG23 | 33:BL:224:TYR:N    | 2.31                     | 0.46              |
| 38:BQ:112:ILE:HB   | 38:BQ:146:ARG:NH1  | 2.29                     | 0.46              |
| 37:BP:164:ILE:C    | 37:BP:164:ILE:HD12 | 2.36                     | 0.46              |
| 1:AA:1390:A:H62    | 1:AA:1410:G:N2     | 2.13                     | 0.46              |
| 27:BF:151:VAL:HG12 | 27:BF:220:ILE:HD11 | 1.98                     | 0.46              |
| 1:AA:16:G:H2'      | 1:AA:17:A:O4'      | 2.15                     | 0.46              |
| 33:BL:157:ASN:HA   | 33:BL:226:GLY:HA2  | 1.98                     | 0.46              |
| 24:BC:11:G:H2'     | 24:BC:12:C:C6      | 2.51                     | 0.46              |
| 31:BJ:177:ILE:HG13 | 31:BJ:177:ILE:O    | 2.15                     | 0.46              |
| 16:AP:54:LEU:H     | 16:AP:57:LEU:HD23  | 1.80                     | 0.46              |
| 1:AA:262:U:H2'     | 1:AA:263:G:H8      | 1.80                     | 0.46              |
| 12:AL:80:VAL:HG12  | 12:AL:81:LEU:H     | 1.80                     | 0.46              |
| 22:BA:731:U:H2'    | 22:BA:732:A:C8     | 2.51                     | 0.46              |
| 22:BA:1341:C:H41   | 22:BA:1350:U:H5''  | 1.80                     | 0.46              |
| 28:BG:75:ALA:C     | 28:BG:77:PRO:HD2   | 2.36                     | 0.46              |
| 22:BA:2032:G:H21   | 40:BS:37:GLN:HE22  | 1.62                     | 0.46              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:2560:G:H2'   | 22:BA:2561:G:O4'   | 2.15                     | 0.46              |
| 22:BA:1833:G:C5'   | 26:BE:48:ARG:HH21  | 2.25                     | 0.46              |
| 22:BA:554:G:C3'    | 22:BA:555:A:H5''   | 2.46                     | 0.46              |
| 22:BA:1376:G:H2'   | 22:BA:1377:A:H8    | 1.81                     | 0.46              |
| 38:BQ:117:LYS:O    | 38:BQ:121:VAL:HG13 | 2.16                     | 0.46              |
| 22:BA:212:A:N6     | 22:BA:422:G:H21    | 2.11                     | 0.46              |
| 22:BA:2303:A:N1    | 50:B3:44:SER:HA    | 2.31                     | 0.46              |
| 24:BC:24:U:O2'     | 24:BC:84:A:H2'     | 2.15                     | 0.46              |
| 22:BA:1428:C:H2'   | 22:BA:1429:C:C6    | 2.50                     | 0.46              |
| 22:BA:608:U:H2'    | 22:BA:609:G:C8     | 2.50                     | 0.46              |
| 1:AA:655:U:H2'     | 1:AA:656:C:C6      | 2.51                     | 0.46              |
| 24:BC:8:A:O4'      | 49:B2:28:ALA:HB2   | 2.16                     | 0.46              |
| 34:BM:26:GLY:HA3   | 34:BM:30:ARG:HD3   | 1.96                     | 0.46              |
| 27:BF:116:ILE:HG23 | 27:BF:116:ILE:O    | 2.15                     | 0.46              |
| 35:BN:132:ILE:O    | 35:BN:132:ILE:HG13 | 2.16                     | 0.46              |
| 30:BI:132:LEU:O    | 30:BI:132:LEU:HD12 | 2.15                     | 0.46              |
| 1:AA:528:U:H2'     | 1:AA:529:G:O4'     | 2.16                     | 0.46              |
| 6:AF:96:ALA:HB1    | 6:AF:136:PHE:O     | 2.15                     | 0.46              |
| 22:BA:223:C:H4'    | 22:BA:618:A:O2'    | 2.16                     | 0.46              |
| 22:BA:2623:C:H2'   | 22:BA:2624:G:C8    | 2.51                     | 0.46              |
| 30:BI:128:LYS:O    | 30:BI:175:THR:HA   | 2.15                     | 0.46              |
| 26:BE:73:LYS:O     | 26:BE:91:HIS:HB3   | 2.16                     | 0.46              |
| 24:BC:69:A:H2'     | 24:BC:70:G:C8      | 2.51                     | 0.46              |
| 22:BA:2716:C:H2'   | 22:BA:2717:G:C8    | 2.51                     | 0.46              |
| 22:BA:2241:G:H4'   | 22:BA:2243:C:C4    | 2.51                     | 0.46              |
| 22:BA:2247:C:H5''  | 46:BY:105:ASN:CB   | 2.39                     | 0.46              |
| 35:BN:180:ARG:HH22 | 35:BN:183:PRO:HB3  | 1.80                     | 0.46              |
| 45:BX:125:LYS:NZ   | 45:BX:128:LYS:HD3  | 2.30                     | 0.46              |
| 27:BF:164:GLY:C    | 27:BF:205:PRO:HA   | 2.35                     | 0.46              |
| 25:BD:277:PHE:HB3  | 25:BD:287:ILE:HG21 | 1.97                     | 0.46              |
| 22:BA:698:C:H42    | 22:BA:798:C:C4'    | 2.19                     | 0.46              |
| 22:BA:2002:C:H2'   | 22:BA:2003:A:H8    | 1.81                     | 0.46              |
| 22:BA:1050:G:H4'   | 22:BA:1051:U:C5    | 2.51                     | 0.46              |
| 1:AA:910:U:H3      | 1:AA:932:A:H62     | 1.63                     | 0.46              |
| 22:BA:2140:A:H62   | 25:BD:247:PRO:CA   | 2.28                     | 0.46              |
| 1:AA:1139:A:C5'    | 3:AC:4:LYS:HD3     | 2.45                     | 0.46              |
| 22:BA:2655:G:N2    | 22:BA:2796:A:H62   | 2.12                     | 0.46              |
| 22:BA:2135:G:H1    | 22:BA:2191:C:N4    | 2.12                     | 0.46              |
| 45:BX:106:LYS:HD2  | 45:BX:130:GLY:O    | 2.16                     | 0.46              |
| 22:BA:1269:G:OP1   | 28:BG:143:PRO:HG3  | 2.15                     | 0.46              |
| 37:BP:110:LEU:C    | 37:BP:110:LEU:HD13 | 2.35                     | 0.46              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 33:BL:209:PRO:HB2  | 33:BL:210:LYS:HD2  | 1.98                     | 0.46              |
| 22:BA:540:A:OP2    | 33:BL:212:ARG:HD3  | 2.16                     | 0.46              |
| 22:BA:609:G:H4'    | 28:BG:82:ALA:CB    | 2.45                     | 0.46              |
| 27:BF:239:LYS:NZ   | 27:BF:240:PRO:HD2  | 2.31                     | 0.46              |
| 1:AA:293:C:H2'     | 1:AA:294:U:H6      | 1.81                     | 0.46              |
| 36:BO:57:ASN:ND2   | 36:BO:57:ASN:H     | 2.14                     | 0.46              |
| 22:BA:1762:C:H2'   | 22:BA:1763:G:C8    | 2.51                     | 0.46              |
| 5:AE:253:VAL:HG13  | 5:AE:282:THR:HG21  | 1.96                     | 0.46              |
| 22:BA:2456:A:O2'   | 22:BA:2604:A:H5''  | 2.16                     | 0.46              |
| 22:BA:403:A:H2'    | 22:BA:404:U:O4'    | 2.16                     | 0.46              |
| 22:BA:1438:G:H2'   | 22:BA:1439:U:O4'   | 2.15                     | 0.46              |
| 22:BA:851:U:H3     | 22:BA:966:G:H1     | 1.63                     | 0.46              |
| 22:BA:2024:G:H5''  | 42:BU:71:ARG:HB2   | 1.97                     | 0.46              |
| 36:BO:1:MET:HG3    | 36:BO:68:ILE:CB    | 2.38                     | 0.46              |
| 26:BE:74:ILE:N     | 26:BE:109:GLY:HA2  | 2.31                     | 0.46              |
| 22:BA:50:G:H21     | 22:BA:117:A:H1'    | 1.80                     | 0.46              |
| 1:AA:1448:A:H1'    | 1:AA:1469:G:H5'    | 1.97                     | 0.46              |
| 34:BM:4:PRO:HA     | 34:BM:21:CYS:SG    | 2.55                     | 0.46              |
| 22:BA:145:A:H2     | 22:BA:2234:G:HO2'  | 1.62                     | 0.46              |
| 1:AA:668:C:H4'     | 18:AR:47:LEU:O     | 2.16                     | 0.46              |
| 22:BA:1828:U:O4    | 26:BE:148:GLY:HA2  | 2.16                     | 0.46              |
| 22:BA:2702:G:H1'   | 22:BA:2744:A:N1    | 2.31                     | 0.46              |
| 40:BS:32:THR:O     | 40:BS:36:ALA:HB2   | 2.16                     | 0.46              |
| 38:BQ:157:LYS:HE2  | 38:BQ:159:LEU:HB2  | 1.97                     | 0.46              |
| 22:BA:827:C:H2'    | 22:BA:828:C:C6     | 2.51                     | 0.46              |
| 22:BA:2597:U:H2'   | 22:BA:2598:G:H5'   | 1.98                     | 0.46              |
| 37:BP:149:LEU:HD12 | 37:BP:152:ARG:HB2  | 1.97                     | 0.46              |
| 22:BA:94:A:H1'     | 47:BZ:104:SER:OG   | 2.16                     | 0.46              |
| 26:BE:49:HIS:NE2   | 26:BE:50:ARG:NH1   | 2.63                     | 0.46              |
| 42:BU:113:LYS:HG2  | 42:BU:114:VAL:N    | 2.31                     | 0.46              |
| 50:B3:38:ASN:C     | 50:B3:39:ARG:HE    | 2.18                     | 0.46              |
| 32:BK:147:SER:O    | 32:BK:151:LEU:HG   | 2.15                     | 0.46              |
| 32:BK:202:THR:HG22 | 32:BK:206:MET:HE3  | 1.98                     | 0.46              |
| 22:BA:841:G:H1'    | 22:BA:2465:A:N1    | 2.31                     | 0.46              |
| 25:BD:227:LYS:C    | 25:BD:228:LEU:HD22 | 2.37                     | 0.46              |
| 31:BJ:80:LEU:HB3   | 31:BJ:81:PRO:HD3   | 1.97                     | 0.46              |
| 22:BA:2783:A:N3    | 22:BA:2784:G:H5'   | 2.31                     | 0.46              |
| 22:BA:1433:U:H2'   | 22:BA:1434:G:C8    | 2.51                     | 0.46              |
| 22:BA:2065:U:OP1   | 27:BF:188:SER:HA   | 2.16                     | 0.46              |
| 31:BJ:119:MET:HA   | 31:BJ:122:GLN:OE1  | 2.16                     | 0.46              |
| 45:BX:87:VAL:O     | 45:BX:87:VAL:HG13  | 2.16                     | 0.46              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:1161:A:O2'    | 1:AA:1162:U:H5''   | 2.15                     | 0.46              |
| 29:BH:184:LEU:O    | 29:BH:188:MET:HB2  | 2.16                     | 0.46              |
| 22:BA:6:A:H4'      | 33:BL:114:TRP:HH2  | 1.80                     | 0.46              |
| 22:BA:602:A:H2'    | 22:BA:603:G:C8     | 2.51                     | 0.46              |
| 22:BA:802:C:O2'    | 22:BA:804:A:H5'    | 2.16                     | 0.46              |
| 1:AA:1045:C:H2'    | 1:AA:1046:C:C6     | 2.51                     | 0.46              |
| 1:AA:524:C:H5'     | 1:AA:525:G:OP2     | 2.16                     | 0.46              |
| 22:BA:17:C:H1'     | 22:BA:565:G:OP1    | 2.16                     | 0.46              |
| 22:BA:19:U:H2'     | 22:BA:20:A:C8      | 2.51                     | 0.46              |
| 22:BA:1713:A:H2    | 22:BA:2005:U:H1'   | 1.81                     | 0.46              |
| 48:B1:110:ARG:HD2  | 48:B1:112:ARG:HD2  | 1.97                     | 0.46              |
| 22:BA:721:U:H2'    | 22:BA:722:G:C8     | 2.51                     | 0.46              |
| 26:BE:10:THR:HB    | 26:BE:199:LYS:HG2  | 1.98                     | 0.46              |
| 28:BG:235:ASN:OD1  | 28:BG:237:PHE:HB3  | 2.15                     | 0.46              |
| 6:AF:117:ASN:CG    | 26:BE:162:ALA:HB1  | 2.37                     | 0.46              |
| 22:BA:50:G:N2      | 22:BA:117:A:H1'    | 2.31                     | 0.46              |
| 22:BA:45:A:O2'     | 22:BA:46:C:H5'     | 2.15                     | 0.46              |
| 40:BS:3:ARG:HB2    | 40:BS:3:ARG:NH1    | 2.30                     | 0.46              |
| 22:BA:2248:U:H2'   | 22:BA:2249:C:C6    | 2.51                     | 0.46              |
| 1:AA:166:G:H3'     | 1:AA:167:G:H8      | 1.80                     | 0.46              |
| 22:BA:1347:U:H2'   | 22:BA:1348:C:H6    | 1.81                     | 0.46              |
| 40:BS:94:ARG:H     | 40:BS:97:LEU:HD12  | 1.81                     | 0.46              |
| 22:BA:1018:A:N6    | 22:BA:1207:G:H1'   | 2.31                     | 0.46              |
| 31:BJ:87:LEU:O     | 31:BJ:92:LEU:HD22  | 2.16                     | 0.46              |
| 22:BA:1701:A:H2'   | 22:BA:1702:G:O4'   | 2.16                     | 0.46              |
| 1:AA:589:A:O2'     | 1:AA:590:A:C8      | 2.65                     | 0.46              |
| 22:BA:211:A:O2'    | 22:BA:212:A:H5'    | 2.15                     | 0.46              |
| 44:BW:90:SER:HB2   | 44:BW:101:ILE:H    | 1.80                     | 0.46              |
| 37:BP:109:LEU:O    | 37:BP:109:LEU:HD13 | 2.16                     | 0.46              |
| 50:B3:52:CYS:HB2   | 50:B3:57:LYS:HE3   | 1.97                     | 0.46              |
| 37:BP:138:ASP:HB2  | 37:BP:183:TYR:HD2  | 1.81                     | 0.46              |
| 25:BD:338:LEU:HD13 | 25:BD:338:LEU:C    | 2.36                     | 0.46              |
| 22:BA:976:C:H2'    | 22:BA:977:G:H8     | 1.81                     | 0.46              |
| 36:BO:34:LEU:HD13  | 36:BO:34:LEU:C     | 2.36                     | 0.46              |
| 35:BN:238:ARG:HE   | 35:BN:238:ARG:HA   | 1.81                     | 0.46              |
| 22:BA:979:U:H2'    | 22:BA:980:G:C8     | 2.51                     | 0.46              |
| 22:BA:1673:A:H4'   | 22:BA:2728:A:O2'   | 2.15                     | 0.46              |
| 1:AA:1221:U:H2'    | 1:AA:1222:G:O4'    | 2.16                     | 0.46              |
| 25:BD:253:THR:HG23 | 25:BD:256:ALA:H    | 1.81                     | 0.46              |
| 1:AA:1213:C:H2'    | 1:AA:1214:G:H8     | 1.81                     | 0.46              |
| 26:BE:170:LEU:HD12 | 26:BE:180:ILE:HB   | 1.98                     | 0.46              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 39:BR:183:ILE:CG2  | 39:BR:184:ARG:H    | 2.08                     | 0.46              |
| 41:BT:146:ARG:C    | 41:BT:147:LEU:HD22 | 2.36                     | 0.46              |
| 41:BT:147:LEU:HD22 | 41:BT:147:LEU:N    | 2.31                     | 0.46              |
| 45:BX:77:ARG:HB3   | 45:BX:77:ARG:NH1   | 2.30                     | 0.46              |
| 22:BA:591:C:H2'    | 22:BA:592:G:C8     | 2.51                     | 0.46              |
| 22:BA:968:C:C3'    | 22:BA:969:A:H5''   | 2.46                     | 0.46              |
| 22:BA:588:A:OP1    | 22:BA:1276:U:H4'   | 2.16                     | 0.46              |
| 1:AA:1182:C:H2'    | 1:AA:1183:U:C6     | 2.50                     | 0.46              |
| 32:BK:184:LEU:N    | 32:BK:185:PRO:CD   | 2.79                     | 0.46              |
| 1:AA:1309:G:C3'    | 1:AA:1310:C:H5''   | 2.45                     | 0.46              |
| 22:BA:1096:G:N2    | 22:BA:1124:A:H5'   | 2.28                     | 0.46              |
| 1:AA:1452:A:H5''   | 1:AA:1453:G:OP2    | 2.17                     | 0.46              |
| 41:BT:123:ILE:CG1  | 41:BT:165:GLY:H    | 2.27                     | 0.46              |
| 53:B6:2:LYS:HD3    | 53:B6:4:ARG:HD2    | 1.98                     | 0.46              |
| 29:BH:28:VAL:HB    | 29:BH:29:PRO:HD3   | 1.98                     | 0.46              |
| 22:BA:2765:G:H4'   | 30:BI:113:THR:HG21 | 1.97                     | 0.46              |
| 22:BA:2134:G:H21   | 25:BD:280:ASP:HB2  | 1.80                     | 0.46              |
| 32:BK:81:LYS:C     | 32:BK:82:LEU:HD12  | 2.37                     | 0.46              |
| 22:BA:1469:G:H2'   | 22:BA:1470:A:C8    | 2.51                     | 0.46              |
| 27:BF:208:MET:HE3  | 27:BF:209:GLY:H    | 1.80                     | 0.46              |
| 22:BA:77:U:H2'     | 22:BA:78:C:C6      | 2.51                     | 0.46              |
| 25:BD:213:GLU:OE1  | 25:BD:213:GLU:N    | 2.49                     | 0.46              |
| 47:BZ:89:LEU:HD23  | 47:BZ:89:LEU:O     | 2.16                     | 0.46              |
| 22:BA:1236:A:H61   | 22:BA:1254:U:H3    | 1.63                     | 0.46              |
| 1:AA:1435:G:H2'    | 1:AA:1436:G:C8     | 2.51                     | 0.46              |
| 1:AA:895:A:H2'     | 1:AA:896:G:C8      | 2.51                     | 0.46              |
| 39:BR:147:ASP:HB3  | 39:BR:214:VAL:HG13 | 1.98                     | 0.45              |
| 22:BA:174:G:P      | 46:BY:91:VAL:HG21  | 2.57                     | 0.45              |
| 1:AA:635:A:H61     | 1:AA:651:G:C1'     | 2.22                     | 0.45              |
| 22:BA:1822:A:H2'   | 22:BA:1823:C:H6    | 1.81                     | 0.45              |
| 1:AA:400:U:H4'     | 1:AA:401:G:O5'     | 2.16                     | 0.45              |
| 22:BA:573:G:H22    | 40:BS:33:ARG:HH21  | 1.61                     | 0.45              |
| 22:BA:2569:U:O2    | 22:BA:2571:U:H5'   | 2.15                     | 0.45              |
| 35:BN:125:ARG:NH1  | 35:BN:125:ARG:HB2  | 2.31                     | 0.45              |
| 29:BH:121:LEU:HD23 | 48:B1:65:CYS:O     | 2.15                     | 0.45              |
| 22:BA:424:A:H2'    | 22:BA:425:C:O4'    | 2.17                     | 0.45              |
| 1:AA:181:G:O2'     | 1:AA:182:G:H5'     | 2.17                     | 0.45              |
| 1:AA:775:U:O4      | 1:AA:819:U:H1'     | 2.15                     | 0.45              |
| 22:BA:321:G:H2'    | 22:BA:322:C:C6     | 2.51                     | 0.45              |
| 41:BT:166:THR:HG23 | 41:BT:166:THR:O    | 2.16                     | 0.45              |
| 44:BW:90:SER:HB2   | 44:BW:99:VAL:HB    | 1.98                     | 0.45              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 30:BI:72:LEU:HD13  | 30:BI:122:VAL:O    | 2.16                     | 0.45              |
| 22:BA:1681:G:H5''  | 22:BA:1682:C:H5'   | 1.97                     | 0.45              |
| 1:AA:1198:A:H2'    | 1:AA:1199:A:C8     | 2.50                     | 0.45              |
| 1:AA:740:A:H4'     | 1:AA:741:U:C5'     | 2.46                     | 0.45              |
| 22:BA:2089:U:H3'   | 22:BA:2255:G:H22   | 1.81                     | 0.45              |
| 25:BD:314:LYS:HB2  | 25:BD:314:LYS:HZ2  | 1.79                     | 0.45              |
| 22:BA:24:U:H4'     | 42:BU:108:GLY:O    | 2.16                     | 0.45              |
| 30:BI:49:GLN:H     | 30:BI:49:GLN:NE2   | 2.15                     | 0.45              |
| 22:BA:2306:G:H22   | 22:BA:2361:U:H4'   | 1.81                     | 0.45              |
| 23:BB:94:U:H2'     | 23:BB:95:G:H8      | 1.81                     | 0.45              |
| 41:BT:141:TRP:HB2  | 41:BT:218:ARG:HB3  | 1.98                     | 0.45              |
| 22:BA:2309:U:H2'   | 22:BA:2310:U:C6    | 2.51                     | 0.45              |
| 22:BA:569:G:C1'    | 40:BS:59:ARG:HH22  | 2.30                     | 0.45              |
| 22:BA:1847:C:H4'   | 22:BA:1942:A:C4'   | 2.47                     | 0.45              |
| 31:BJ:55:LYS:H     | 31:BJ:65:GLY:N     | 2.14                     | 0.45              |
| 1:AA:658:G:H4'     | 6:AF:116:LYS:HD3   | 1.98                     | 0.45              |
| 42:BU:46:ALA:O     | 42:BU:47:ARG:HB3   | 2.17                     | 0.45              |
| 36:BO:23:ARG:HD2   | 36:BO:23:ARG:N     | 2.31                     | 0.45              |
| 39:BR:183:ILE:HG21 | 39:BR:198:LEU:HG   | 1.97                     | 0.45              |
| 22:BA:2377:C:C5'   | 52:B5:137:GLN:HE22 | 2.29                     | 0.45              |
| 46:BY:79:PRO:C     | 46:BY:106:LEU:HD23 | 2.37                     | 0.45              |
| 22:BA:830:A:H5'    | 22:BA:1001:A:H2    | 1.81                     | 0.45              |
| 41:BT:144:THR:O    | 41:BT:216:ILE:HA   | 2.16                     | 0.45              |
| 1:AA:981:G:H2'     | 1:AA:982:G:C4'     | 2.46                     | 0.45              |
| 28:BG:131:SER:HB3  | 28:BG:132:PRO:C    | 2.36                     | 0.45              |
| 22:BA:1045:G:H2'   | 22:BA:1046:C:C6    | 2.51                     | 0.45              |
| 32:BK:195:ALA:HA   | 32:BK:198:ILE:HD12 | 1.97                     | 0.45              |
| 1:AA:876:G:H4'     | 1:AA:1452:A:H62    | 1.80                     | 0.45              |
| 37:BP:109:LEU:C    | 37:BP:109:LEU:HD13 | 2.36                     | 0.45              |
| 34:BM:116:LEU:C    | 34:BM:116:LEU:HD13 | 2.37                     | 0.45              |
| 37:BP:135:LYS:HG3  | 37:BP:136:TYR:CD1  | 2.51                     | 0.45              |
| 27:BF:154:SER:O    | 27:BF:244:LEU:HA   | 2.15                     | 0.45              |
| 27:BF:213:ARG:O    | 27:BF:214:LYS:HB3  | 2.17                     | 0.45              |
| 22:BA:1179:C:H2'   | 22:BA:1180:C:H6    | 1.81                     | 0.45              |
| 31:BJ:145:ALA:O    | 31:BJ:149:VAL:HG12 | 2.16                     | 0.45              |
| 30:BI:66:LEU:C     | 30:BI:66:LEU:HD23  | 2.37                     | 0.45              |
| 22:BA:1642:C:H4'   | 22:BA:1644:A:C4    | 2.51                     | 0.45              |
| 48:B1:88:ASN:ND2   | 48:B1:90:PRO:HD3   | 2.32                     | 0.45              |
| 36:BO:29:PHE:HB2   | 36:BO:105:GLU:OE1  | 2.16                     | 0.45              |
| 22:BA:2357:A:H2'   | 22:BA:2358:G:C8    | 2.51                     | 0.45              |
| 22:BA:915:G:H4'    | 36:BO:67:ARG:NH2   | 2.31                     | 0.45              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 26:BE:180:ILE:HG22 | 26:BE:181:SER:N    | 2.31                     | 0.45              |
| 1:AA:1331:C:H4'    | 7:AG:79:ARG:CZ     | 2.47                     | 0.45              |
| 36:BO:37:LEU:HD22  | 36:BO:37:LEU:N     | 2.31                     | 0.45              |
| 39:BR:146:GLY:CA   | 39:BR:172:ARG:HH21 | 2.25                     | 0.45              |
| 1:AA:250:A:H5'     | 1:AA:252:G:O5'     | 2.15                     | 0.45              |
| 25:BD:287:ILE:O    | 25:BD:287:ILE:HG13 | 2.17                     | 0.45              |
| 40:BS:58:ARG:HA    | 40:BS:61:TRP:CE3   | 2.51                     | 0.45              |
| 40:BS:40:ILE:O     | 40:BS:44:VAL:HG23  | 2.17                     | 0.45              |
| 1:AA:62:G:O2'      | 1:AA:63:U:H5'      | 2.17                     | 0.45              |
| 22:BA:71:A:H61     | 22:BA:109:A:C2'    | 2.29                     | 0.45              |
| 1:AA:606:A:H61     | 1:AA:696:C:N4      | 2.08                     | 0.45              |
| 22:BA:81:G:H4'     | 22:BA:306:G:H5'    | 1.97                     | 0.45              |
| 22:BA:1877:C:O2'   | 22:BA:1878:C:H5'   | 2.16                     | 0.45              |
| 22:BA:1645:A:O2'   | 22:BA:1652:A:H5'   | 2.16                     | 0.45              |
| 28:BG:141:PHE:O    | 40:BS:1:MET:HB3    | 2.16                     | 0.45              |
| 26:BE:249:PRO:O    | 26:BE:251:LEU:HD12 | 2.16                     | 0.45              |
| 1:AA:419:A:H2'     | 1:AA:420:A:O4'     | 2.17                     | 0.45              |
| 22:BA:1916:C:H2'   | 22:BA:1917:G:O4'   | 2.16                     | 0.45              |
| 22:BA:316:G:H21    | 22:BA:339:A:H61    | 1.63                     | 0.45              |
| 47:BZ:82:VAL:HG22  | 47:BZ:117:MET:SD   | 2.56                     | 0.45              |
| 22:BA:605:C:N4     | 22:BA:673:G:H1     | 2.13                     | 0.45              |
| 22:BA:2392:G:N2    | 22:BA:2394:A:H3'   | 2.31                     | 0.45              |
| 22:BA:2470:A:H4'   | 22:BA:2589:A:O2'   | 2.16                     | 0.45              |
| 31:BJ:162:LYS:HD2  | 31:BJ:162:LYS:C    | 2.37                     | 0.45              |
| 32:BK:175:GLN:O    | 32:BK:179:ILE:HG13 | 2.16                     | 0.45              |
| 1:AA:629:C:H2'     | 1:AA:630:G:H8      | 1.79                     | 0.45              |
| 1:AA:640:U:H5'     | 1:AA:745:C:C5'     | 2.46                     | 0.45              |
| 22:BA:1388:A:C2'   | 22:BA:1389:G:H5'   | 2.46                     | 0.45              |
| 22:BA:1213:G:H2'   | 22:BA:1214:G:H8    | 1.81                     | 0.45              |
| 1:AA:329:U:H2'     | 1:AA:330:G:C8      | 2.52                     | 0.45              |
| 22:BA:1239:C:H2'   | 22:BA:1240:G:C8    | 2.52                     | 0.45              |
| 1:AA:102:U:O4      | 1:AA:259:A:H2'     | 2.16                     | 0.45              |
| 22:BA:2066:G:O6    | 22:BA:2635:G:H1'   | 2.16                     | 0.45              |
| 2:AB:168:VAL:HG23  | 2:AB:169:ASP:H     | 1.81                     | 0.45              |
| 33:BL:233:ALA:HB3  | 33:BL:234:GLN:HE22 | 1.81                     | 0.45              |
| 1:AA:1154:G:H4'    | 3:AC:203:ILE:O     | 2.16                     | 0.45              |
| 1:AA:1424:G:OP1    | 22:BA:1736:A:N6    | 2.49                     | 0.45              |
| 26:BE:263:ASP:C    | 26:BE:264:ASN:HD22 | 2.19                     | 0.45              |
| 34:BM:3:GLN:HB2    | 34:BM:4:PRO:CD     | 2.35                     | 0.45              |
| 35:BN:185:LYS:HG2  | 35:BN:186:ILE:N    | 2.32                     | 0.45              |
| 22:BA:2698:C:H1'   | 22:BA:2745:G:N2    | 2.31                     | 0.45              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:2033:A:H62   | 49:B2:6:LYS:HG3    | 1.81                     | 0.45              |
| 25:BD:177:VAL:O    | 25:BD:274:LYS:HA   | 2.15                     | 0.45              |
| 22:BA:828:C:H2'    | 22:BA:829:G:O4'    | 2.16                     | 0.45              |
| 22:BA:2692:A:H4'   | 34:BM:29:ASN:ND2   | 2.24                     | 0.45              |
| 50:B3:30:VAL:HG22  | 50:B3:31:SER:N     | 2.31                     | 0.45              |
| 1:AA:729:A:C2'     | 1:AA:730:A:H5'     | 2.41                     | 0.45              |
| 22:BA:837:U:H2'    | 22:BA:839:G:O4'    | 2.17                     | 0.45              |
| 22:BA:321:G:H4'    | 22:BA:340:A:C6     | 2.52                     | 0.45              |
| 22:BA:1298:A:O2'   | 22:BA:1299:U:H5'   | 2.17                     | 0.45              |
| 38:BQ:97:GLN:HA    | 38:BQ:100:ILE:HD13 | 1.98                     | 0.45              |
| 47:BZ:118:LEU:H    | 47:BZ:118:LEU:CD1  | 2.29                     | 0.45              |
| 1:AA:1303:C:O2'    | 1:AA:1304:G:H5'    | 2.17                     | 0.45              |
| 27:BF:244:LEU:HD12 | 27:BF:244:LEU:N    | 2.31                     | 0.45              |
| 46:BY:146:ILE:HG13 | 46:BY:147:ASP:H    | 1.79                     | 0.45              |
| 30:BI:85:LEU:HD23  | 30:BI:85:LEU:C     | 2.37                     | 0.45              |
| 36:BO:34:LEU:HD12  | 36:BO:103:LEU:HD12 | 1.99                     | 0.45              |
| 22:BA:2142:G:O2'   | 22:BA:2143:C:H5'   | 2.17                     | 0.45              |
| 22:BA:1279:C:H2'   | 22:BA:1280:G:C8    | 2.51                     | 0.45              |
| 22:BA:17:C:H2'     | 22:BA:18:U:C6      | 2.51                     | 0.45              |
| 41:BT:207:ARG:HB2  | 41:BT:207:ARG:NH1  | 2.32                     | 0.45              |
| 1:AA:436:U:H2'     | 1:AA:437:C:C6      | 2.51                     | 0.45              |
| 44:BW:110:HIS:O    | 44:BW:120:GLY:HA3  | 2.16                     | 0.45              |
| 32:BK:148:VAL:O    | 32:BK:152:LYS:HG3  | 2.16                     | 0.45              |
| 1:AA:1331:C:H2'    | 1:AA:1332:C:H4'    | 1.99                     | 0.45              |
| 39:BR:148:ILE:O    | 39:BR:149:VAL:C    | 2.55                     | 0.45              |
| 22:BA:169:C:H4'    | 22:BA:202:A:C2     | 2.51                     | 0.45              |
| 46:BY:117:LYS:HD2  | 46:BY:148:LEU:HD11 | 1.99                     | 0.45              |
| 28:BG:206:LEU:CD2  | 28:BG:243:GLU:HB2  | 2.47                     | 0.45              |
| 28:BG:226:LEU:C    | 28:BG:226:LEU:HD23 | 2.37                     | 0.45              |
| 1:AA:14:U:H1'      | 1:AA:863:A:H8      | 1.81                     | 0.45              |
| 1:AA:1348:C:H4'    | 1:AA:1349:C:C5'    | 2.40                     | 0.45              |
| 22:BA:69:G:O2'     | 22:BA:70:A:H5'     | 2.17                     | 0.45              |
| 38:BQ:93:ALA:HA    | 38:BQ:97:GLN:HE22  | 1.80                     | 0.45              |
| 22:BA:2157:U:C3'   | 22:BA:2158:U:H5''  | 2.45                     | 0.45              |
| 1:AA:679:G:O2'     | 1:AA:680:C:H5'     | 2.17                     | 0.45              |
| 22:BA:2093:U:H4'   | 22:BA:2450:A:C2    | 2.51                     | 0.45              |
| 23:BB:29:A:H61     | 23:BB:55:U:H3      | 1.63                     | 0.45              |
| 26:BE:219:VAL:HG13 | 26:BE:220:VAL:N    | 2.31                     | 0.45              |
| 1:AA:32:G:O2'      | 1:AA:47:G:H5'      | 2.17                     | 0.45              |
| 22:BA:802:C:H2'    | 22:BA:803:G:H5''   | 1.99                     | 0.45              |
| 43:BV:121:THR:O    | 43:BV:125:ILE:HG13 | 2.17                     | 0.45              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:1373:U:H5'   | 22:BA:1605:A:H1'   | 1.97                     | 0.45              |
| 38:BQ:48:ARG:NH1   | 38:BQ:48:ARG:HB2   | 2.32                     | 0.45              |
| 22:BA:1713:A:C2    | 22:BA:2005:U:H1'   | 2.51                     | 0.45              |
| 23:BB:110:G:H2'    | 23:BB:111:A:C8     | 2.52                     | 0.45              |
| 22:BA:411:U:H2'    | 22:BA:412:G:O4'    | 2.16                     | 0.45              |
| 22:BA:691:G:H2'    | 22:BA:692:G:C8     | 2.52                     | 0.45              |
| 1:AA:840:U:H2'     | 1:AA:841:A:H8      | 1.80                     | 0.45              |
| 26:BE:189:GLY:O    | 26:BE:191:VAL:HG23 | 2.17                     | 0.45              |
| 22:BA:2513:C:H5'   | 36:BO:82:ARG:HH22  | 1.81                     | 0.45              |
| 22:BA:345:C:H2'    | 22:BA:346:A:H8     | 1.81                     | 0.45              |
| 23:BB:115:C:H2'    | 23:BB:116:A:C8     | 2.52                     | 0.45              |
| 34:BM:80:ASP:HB2   | 39:BR:193:GLU:HB2  | 1.98                     | 0.45              |
| 26:BE:25:ARG:C     | 26:BE:25:ARG:HD3   | 2.36                     | 0.45              |
| 53:B6:7:VAL:CG1    | 53:B6:8:LYS:H      | 2.15                     | 0.45              |
| 22:BA:2218:G:H5'   | 26:BE:146:ARG:HH21 | 1.82                     | 0.45              |
| 46:BY:137:LEU:HD13 | 46:BY:137:LEU:C    | 2.37                     | 0.45              |
| 35:BN:187:LEU:H    | 35:BN:187:LEU:CD2  | 2.30                     | 0.45              |
| 27:BF:204:MET:HB3  | 27:BF:205:PRO:CD   | 2.41                     | 0.45              |
| 25:BD:176:THR:HB   | 25:BD:274:LYS:HB3  | 1.99                     | 0.45              |
| 46:BY:142:LYS:CD   | 46:BY:142:LYS:H    | 2.23                     | 0.45              |
| 22:BA:1958:U:C4'   | 22:BA:1969:U:H1'   | 2.40                     | 0.45              |
| 1:AA:61:A:O2'      | 1:AA:62:G:P        | 2.75                     | 0.45              |
| 22:BA:2593:G:N3    | 22:BA:2593:G:C2'   | 2.78                     | 0.45              |
| 22:BA:69:G:H4'     | 22:BA:72:A:C4'     | 2.47                     | 0.45              |
| 22:BA:479:G:O2'    | 22:BA:480:G:H5'    | 2.15                     | 0.45              |
| 22:BA:1645:A:H1'   | 22:BA:1652:A:H4'   | 1.98                     | 0.45              |
| 24:BC:56:C:H2'     | 24:BC:57:A:C8      | 2.52                     | 0.45              |
| 22:BA:597:C:C5     | 35:BN:95:SER:HB3   | 2.51                     | 0.45              |
| 22:BA:325:A:H2'    | 22:BA:326:A:C8     | 2.52                     | 0.45              |
| 39:BR:229:LEU:HD23 | 39:BR:229:LEU:H    | 1.81                     | 0.45              |
| 33:BL:135:ILE:HD11 | 33:BL:208:LEU:HD21 | 1.98                     | 0.45              |
| 22:BA:1412:G:H22   | 22:BA:1414:A:H3'   | 1.82                     | 0.45              |
| 25:BD:279:VAL:CG1  | 25:BD:283:GLY:HA2  | 2.46                     | 0.45              |
| 1:AA:645:U:O2      | 1:AA:746:C:H1'     | 2.16                     | 0.45              |
| 22:BA:690:U:H2'    | 22:BA:691:G:C8     | 2.51                     | 0.45              |
| 22:BA:1978:G:H2'   | 22:BA:1981:C:OP1   | 2.17                     | 0.45              |
| 22:BA:2069:C:H2'   | 22:BA:2521:U:O4'   | 2.16                     | 0.45              |
| 1:AA:1324:A:H2'    | 1:AA:1325:U:C6     | 2.51                     | 0.45              |
| 1:AA:638:G:O5'     | 1:AA:638:G:H8      | 2.00                     | 0.45              |
| 33:BL:197:GLU:N    | 33:BL:197:GLU:OE1  | 2.50                     | 0.45              |
| 43:BV:143:ASP:O    | 43:BV:147:ILE:HG13 | 2.17                     | 0.45              |

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| Atom-1             | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|-------------------|--------------------------|-------------------|
| 2:AB:140:VAL:HG12  | 2:AB:144:GLN:HE21 | 1.82                     | 0.45              |
| 1:AA:885:C:H2'     | 1:AA:886:A:C8     | 2.52                     | 0.45              |
| 42:BU:33:THR:HG23  | 42:BU:134:ILE:O   | 2.17                     | 0.45              |
| 36:BO:81:THR:HG23  | 36:BO:82:ARG:N    | 2.32                     | 0.45              |
| 31:BJ:50:ARG:HD2   | 31:BJ:69:ASP:OD2  | 2.16                     | 0.45              |
| 22:BA:2526:G:N2    | 22:BA:2597:U:H1'  | 2.32                     | 0.45              |
| 39:BR:155:VAL:O    | 39:BR:157:GLU:HG2 | 2.16                     | 0.45              |
| 1:AA:912:G:H2'     | 1:AA:913:A:H8     | 1.81                     | 0.45              |
| 1:AA:602:G:C2      | 1:AA:701:A:H1'    | 2.51                     | 0.45              |
| 22:BA:2136:U:H2'   | 22:BA:2137:G:C8   | 2.51                     | 0.45              |
| 22:BA:431:U:H2'    | 22:BA:432:G:C8    | 2.52                     | 0.45              |
| 44:BW:125:ILE:HG12 | 44:BW:126:GLU:N   | 2.32                     | 0.45              |
| 22:BA:2213:A:N6    | 22:BA:2242:A:H1'  | 2.32                     | 0.45              |
| 22:BA:1299:U:H5''  | 37:BP:124:LYS:O   | 2.16                     | 0.45              |
| 29:BH:72:LEU:HD22  | 29:BH:75:ILE:HD11 | 1.99                     | 0.45              |
| 24:BC:85:C:H2'     | 24:BC:86:A:C8     | 2.52                     | 0.45              |
| 30:BI:64:GLN:HB3   | 30:BI:79:TYR:O    | 2.17                     | 0.45              |
| 22:BA:1948:C:H4'   | 22:BA:1988:C:O3'  | 2.17                     | 0.45              |
| 22:BA:1444:A:H2'   | 22:BA:1445:G:H8   | 1.81                     | 0.45              |
| 1:AA:523:G:O5'     | 1:AA:524:C:OP1    | 2.35                     | 0.45              |
| 1:AA:1223:A:H2'    | 1:AA:1224:G:O4'   | 2.17                     | 0.45              |
| 22:BA:127:C:H2'    | 22:BA:128:U:C6    | 2.52                     | 0.45              |
| 5:AE:291:GLN:O     | 5:AE:295:VAL:HG23 | 2.17                     | 0.45              |
| 22:BA:805:A:H2'    | 22:BA:806:C:C6    | 2.51                     | 0.45              |
| 1:AA:243:C:H2'     | 1:AA:244:A:H8     | 1.81                     | 0.45              |
| 22:BA:65:C:H2'     | 22:BA:66:G:H8     | 1.82                     | 0.45              |
| 1:AA:1331:C:H3'    | 1:AA:1332:C:C4'   | 2.45                     | 0.45              |
| 22:BA:650:G:O2'    | 22:BA:651:U:H5'   | 2.17                     | 0.45              |
| 22:BA:660:G:H2'    | 22:BA:661:G:C8    | 2.52                     | 0.45              |
| 27:BF:163:GLN:OE1  | 27:BF:168:ARG:HG2 | 2.17                     | 0.45              |
| 22:BA:1025:G:H2'   | 22:BA:1026:C:C6   | 2.52                     | 0.45              |
| 38:BQ:157:LYS:C    | 38:BQ:157:LYS:HD2 | 2.37                     | 0.45              |
| 22:BA:735:U:H2'    | 22:BA:736:G:O4'   | 2.17                     | 0.45              |
| 33:BL:174:ARG:NH1  | 33:BL:185:GLU:HB3 | 2.32                     | 0.45              |
| 22:BA:1277:G:H21   | 28:BG:133:LEU:HB3 | 1.82                     | 0.45              |
| 22:BA:2527:C:N4    | 22:BA:2592:U:N3   | 2.65                     | 0.45              |
| 22:BA:1493:C:C2'   | 22:BA:1494:G:H5'  | 2.44                     | 0.45              |
| 36:BO:31:ARG:H     | 36:BO:107:SER:HB2 | 1.81                     | 0.45              |
| 1:AA:931:U:H1'     | 1:AA:932:A:C8     | 2.52                     | 0.45              |
| 1:AA:1006:G:H5''   | 3:AC:165:ALA:CB   | 2.46                     | 0.45              |
| 22:BA:1339:C:H2'   | 22:BA:1340:G:C8   | 2.52                     | 0.45              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:1583:A:H2'   | 22:BA:1584:C:C6    | 2.52                     | 0.45              |
| 22:BA:298:G:H2'    | 22:BA:299:C:C6     | 2.52                     | 0.45              |
| 26:BE:176:GLU:CG   | 26:BE:266:ILE:HA   | 2.45                     | 0.45              |
| 26:BE:266:ILE:HG13 | 26:BE:266:ILE:O    | 2.17                     | 0.45              |
| 29:BH:53:CYS:HB3   | 29:BH:72:LEU:HD11  | 1.98                     | 0.45              |
| 38:BQ:57:LYS:HE3   | 45:BX:132:ASP:HB3  | 1.98                     | 0.45              |
| 1:AA:561:C:H2'     | 1:AA:562:A:H8      | 1.80                     | 0.45              |
| 33:BL:156:VAL:HG13 | 33:BL:157:ASN:H    | 1.82                     | 0.45              |
| 22:BA:2306:G:OP1   | 22:BA:2306:G:H3'   | 2.17                     | 0.45              |
| 22:BA:1847:C:H4'   | 22:BA:1942:A:O4'   | 2.16                     | 0.45              |
| 12:AL:8:ILE:HD12   | 17:AQ:91:ARG:HH11  | 1.81                     | 0.45              |
| 3:AC:19:TYR:H      | 14:AN:90:CYS:HB3   | 1.82                     | 0.45              |
| 1:AA:107:C:OP1     | 1:AA:283:C:H5'     | 2.17                     | 0.45              |
| 22:BA:368:U:H2'    | 22:BA:369:U:C6     | 2.52                     | 0.45              |
| 1:AA:755:U:H2'     | 26:BE:5:LEU:O      | 2.16                     | 0.45              |
| 29:BH:149:GLU:CD   | 29:BH:150:GLN:HG2  | 2.37                     | 0.45              |
| 22:BA:388:C:H2'    | 22:BA:389:A:C8     | 2.52                     | 0.45              |
| 38:BQ:56:ARG:CZ    | 38:BQ:65:ARG:HD2   | 2.46                     | 0.45              |
| 22:BA:145:A:H61    | 46:BY:118:ARG:CZ   | 2.30                     | 0.45              |
| 46:BY:132:ILE:HD12 | 46:BY:150:LYS:HZ3  | 1.81                     | 0.45              |
| 46:BY:84:LYS:HA    | 46:BY:150:LYS:HD2  | 1.97                     | 0.45              |
| 44:BW:148:GLY:HA3  | 44:BW:150:LYS:NZ   | 2.32                     | 0.45              |
| 28:BG:229:LEU:HD23 | 28:BG:229:LEU:C    | 2.37                     | 0.45              |
| 22:BA:829:G:H2'    | 22:BA:830:A:H5''   | 1.97                     | 0.45              |
| 1:AA:443:A:H1'     | 1:AA:444:A:C4      | 2.52                     | 0.45              |
| 22:BA:1276:U:O4    | 28:BG:125:ARG:HB2  | 2.17                     | 0.45              |
| 40:BS:47:HIS:HA    | 40:BS:50:ARG:CD    | 2.47                     | 0.45              |
| 31:BJ:96:LEU:O     | 31:BJ:96:LEU:HD23  | 2.17                     | 0.45              |
| 1:AA:1277:A:O2'    | 1:AA:1278:U:H5'    | 2.17                     | 0.45              |
| 22:BA:1053:A:H1'   | 22:BA:1162:C:C4'   | 2.47                     | 0.45              |
| 22:BA:2636:G:H4'   | 27:BF:200:LYS:CB   | 2.43                     | 0.45              |
| 22:BA:617:U:OP1    | 28:BG:153:ASN:HA   | 2.17                     | 0.45              |
| 22:BA:1854:C:H5''  | 26:BE:251:LEU:O    | 2.17                     | 0.45              |
| 22:BA:1434:G:H2'   | 22:BA:1435:U:C6    | 2.51                     | 0.45              |
| 1:AA:855:G:H2'     | 1:AA:856:A:H5''    | 1.97                     | 0.45              |
| 27:BF:220:ILE:HG21 | 27:BF:223:ILE:CD1  | 2.46                     | 0.45              |
| 22:BA:476:U:H2'    | 22:BA:477:G:O4'    | 2.17                     | 0.45              |
| 22:BA:1980:A:H1'   | 22:BA:2610:U:H5'   | 1.98                     | 0.45              |
| 1:AA:1050:A:H4'    | 1:AA:1051:A:C4'    | 2.47                     | 0.45              |
| 21:AU:112:ASN:ND2  | 21:AU:116:ARG:HH21 | 2.15                     | 0.45              |
| 22:BA:1948:C:O2'   | 22:BA:1949:G:H5'   | 2.17                     | 0.45              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:1239:C:H2'   | 22:BA:1240:G:H8    | 1.81                     | 0.45              |
| 22:BA:500:C:H1'    | 42:BU:78:LYS:NZ    | 2.32                     | 0.45              |
| 43:BV:122:GLU:H    | 43:BV:122:GLU:CD   | 2.20                     | 0.45              |
| 42:BU:147:LYS:HD2  | 42:BU:147:LYS:C    | 2.37                     | 0.45              |
| 22:BA:2325:G:H2'   | 22:BA:2325:G:N3    | 2.31                     | 0.45              |
| 40:BS:75:TYR:H     | 40:BS:75:TYR:HD1   | 1.65                     | 0.45              |
| 22:BA:558:A:H2'    | 22:BA:559:G:H5'    | 1.99                     | 0.45              |
| 1:AA:574:U:H2'     | 1:AA:575:G:C8      | 2.51                     | 0.45              |
| 36:BO:81:THR:OG1   | 36:BO:82:ARG:N     | 2.50                     | 0.45              |
| 22:BA:1600:A:H5'   | 26:BE:207:LYS:HZ3  | 1.81                     | 0.45              |
| 26:BE:213:ARG:HH11 | 26:BE:213:ARG:CB   | 2.15                     | 0.45              |
| 52:B5:113:ARG:NH2  | 52:B5:118:GLN:HG3  | 2.32                     | 0.45              |
| 35:BN:127:PRO:HG2  | 52:B5:115:ALA:HA   | 1.98                     | 0.45              |
| 1:AA:1170:G:OP2    | 1:AA:1270:C:N4     | 2.50                     | 0.45              |
| 35:BN:166:THR:HG23 | 35:BN:167:LEU:HD12 | 1.99                     | 0.45              |
| 22:BA:2033:A:H62   | 49:B2:6:LYS:HZ3    | 1.65                     | 0.45              |
| 1:AA:924:A:HO2'    | 1:AA:925:G:P       | 2.40                     | 0.45              |
| 22:BA:969:A:O2'    | 22:BA:1211:G:H4'   | 2.17                     | 0.45              |
| 22:BA:455:A:N6     | 28:BG:96:ARG:HB2   | 2.31                     | 0.45              |
| 22:BA:784:U:H4'    | 26:BE:44:ILE:O     | 2.17                     | 0.45              |
| 50:B3:32:ARG:HG3   | 50:B3:35:THR:N     | 2.31                     | 0.45              |
| 22:BA:2049:G:H5''  | 22:BA:2050:C:OP2   | 2.17                     | 0.45              |
| 22:BA:928:U:H2'    | 22:BA:929:A:H8     | 1.82                     | 0.45              |
| 1:AA:507:A:H5'     | 1:AA:509:U:OP1     | 2.16                     | 0.45              |
| 27:BF:185:GLN:HG2  | 27:BF:187:GLY:H    | 1.82                     | 0.45              |
| 22:BA:2442:A:O2'   | 22:BA:2443:A:P     | 2.74                     | 0.45              |
| 22:BA:2442:A:H5'   | 22:BA:2444:C:H5'   | 1.99                     | 0.45              |
| 1:AA:1461:U:H2'    | 1:AA:1462:A:C8     | 2.52                     | 0.45              |
| 26:BE:227:PRO:HG2  | 26:BE:244:THR:H    | 1.81                     | 0.45              |
| 22:BA:1333:U:O4    | 43:BV:168:PRO:HB3  | 2.17                     | 0.45              |
| 22:BA:2783:A:C2'   | 22:BA:2783:A:N3    | 2.80                     | 0.45              |
| 22:BA:762:G:C1'    | 42:BU:119:ARG:HE   | 2.29                     | 0.45              |
| 35:BN:142:LYS:HG3  | 35:BN:144:VAL:HG12 | 1.99                     | 0.45              |
| 44:BW:138:LEU:HD12 | 44:BW:139:LYS:NZ   | 2.30                     | 0.45              |
| 48:B1:73:THR:HG21  | 48:B1:77:LYS:NZ    | 2.32                     | 0.45              |
| 10:AJ:161:GLU:HB2  | 14:AN:98:SER:HB2   | 1.99                     | 0.45              |
| 22:BA:1927:A:O2'   | 22:BA:1928:C:OP1   | 2.28                     | 0.45              |
| 22:BA:449:U:H2'    | 22:BA:450:G:C8     | 2.51                     | 0.45              |
| 22:BA:965:G:H2'    | 22:BA:966:G:C8     | 2.52                     | 0.45              |
| 2:AB:91:ALA:HB2    | 2:AB:222:VAL:HG13  | 1.98                     | 0.45              |
| 43:BV:116:GLN:HB3  | 43:BV:137:THR:OG1  | 2.17                     | 0.45              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:2460:U:H2'   | 22:BA:2461:A:C8    | 2.52                     | 0.45              |
| 22:BA:2467:A:O2'   | 22:BA:2468:A:H5'   | 2.17                     | 0.45              |
| 1:AA:286:A:H5''    | 1:AA:288:U:OP2     | 2.17                     | 0.45              |
| 22:BA:195:C:H2'    | 22:BA:196:A:H8     | 1.82                     | 0.45              |
| 1:AA:1067:U:H2'    | 1:AA:1068:G:C8     | 2.52                     | 0.45              |
| 1:AA:721:G:C6      | 26:BE:5:LEU:HD11   | 2.51                     | 0.44              |
| 1:AA:1375:A:H61    | 1:AA:1423:G:H1     | 1.65                     | 0.44              |
| 13:AM:108:ARG:NH2  | 29:BH:150:GLN:CD   | 2.55                     | 0.44              |
| 22:BA:1599:C:H4'   | 26:BE:22:SER:CB    | 2.47                     | 0.44              |
| 40:BS:12:ARG:HB3   | 40:BS:15:LYS:HZ1   | 1.83                     | 0.44              |
| 22:BA:639:A:N6     | 35:BN:187:LEU:O    | 2.50                     | 0.44              |
| 28:BG:211:ASP:HA   | 28:BG:248:THR:HG23 | 1.99                     | 0.44              |
| 44:BW:71:VAL:HA    | 44:BW:92:ILE:CD1   | 2.38                     | 0.44              |
| 22:BA:1033:C:N4    | 22:BA:1165:G:H1    | 2.14                     | 0.44              |
| 22:BA:71:A:N6      | 22:BA:110:U:O4'    | 2.50                     | 0.44              |
| 22:BA:1053:A:H1'   | 22:BA:1162:C:H4'   | 1.98                     | 0.44              |
| 1:AA:931:U:H5''    | 1:AA:932:A:OP1     | 2.18                     | 0.44              |
| 1:AA:958:U:H1'     | 1:AA:970:G:N1      | 2.32                     | 0.44              |
| 1:AA:958:U:H2'     | 1:AA:959:C:C6      | 2.52                     | 0.44              |
| 50:B3:37:LYS:HG2   | 50:B3:39:ARG:NH2   | 2.32                     | 0.44              |
| 1:AA:610:U:H2'     | 1:AA:611:A:C8      | 2.52                     | 0.44              |
| 1:AA:132:A:H61     | 1:AA:158:A:N6      | 2.15                     | 0.44              |
| 22:BA:2284:A:N3    | 22:BA:2284:A:C2'   | 2.79                     | 0.44              |
| 22:BA:2396:G:C4'   | 38:BQ:58:LYS:HG2   | 2.46                     | 0.44              |
| 31:BJ:144:THR:O    | 31:BJ:168:PRO:HG3  | 2.17                     | 0.44              |
| 28:BG:194:MET:HA   | 28:BG:197:TRP:HE3  | 1.82                     | 0.44              |
| 1:AA:291:G:H2'     | 1:AA:292:A:C8      | 2.52                     | 0.44              |
| 22:BA:2751:A:H2'   | 22:BA:2752:G:C8    | 2.52                     | 0.44              |
| 22:BA:1367:A:H2'   | 22:BA:1368:G:C8    | 2.52                     | 0.44              |
| 22:BA:2360:U:O2'   | 22:BA:2361:U:H5'   | 2.18                     | 0.44              |
| 22:BA:886:U:H2'    | 22:BA:887:G:O4'    | 2.17                     | 0.44              |
| 22:BA:1092:C:OP1   | 32:BK:158:LYS:HB2  | 2.17                     | 0.44              |
| 7:AG:16:PRO:HB3    | 9:AI:110:LEU:HD11  | 1.99                     | 0.44              |
| 22:BA:293:G:O2'    | 22:BA:294:U:P      | 2.75                     | 0.44              |
| 22:BA:753:G:H2'    | 22:BA:754:A:C8     | 2.52                     | 0.44              |
| 1:AA:660:A:H4'     | 26:BE:161:ILE:HG12 | 1.98                     | 0.44              |
| 6:AF:118:LYS:HE2   | 26:BE:169:THR:HG21 | 2.00                     | 0.44              |
| 1:AA:1422:A:C4'    | 22:BA:1738:G:HO2'  | 2.29                     | 0.44              |
| 1:AA:1331:C:H2'    | 1:AA:1332:C:C4'    | 2.48                     | 0.44              |
| 28:BG:161:LEU:HD13 | 28:BG:234:LEU:O    | 2.16                     | 0.44              |
| 22:BA:1600:A:N6    | 26:BE:23:ASN:HA    | 2.30                     | 0.44              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:1469:G:H2'    | 1:AA:1470:G:H8     | 1.81                     | 0.44              |
| 44:BW:157:LYS:HG3  | 44:BW:162:ILE:HG12 | 1.99                     | 0.44              |
| 28:BG:217:GLU:H    | 28:BG:228:LEU:HG   | 1.82                     | 0.44              |
| 22:BA:2002:C:H2'   | 22:BA:2003:A:C8    | 2.52                     | 0.44              |
| 22:BA:1048:C:H4'   | 22:BA:1049:A:C8    | 2.52                     | 0.44              |
| 1:AA:919:A:H5''    | 1:AA:921:C:O4'     | 2.17                     | 0.44              |
| 1:AA:1092:G:N2     | 1:AA:1094:A:H62    | 2.15                     | 0.44              |
| 22:BA:894:G:H21    | 22:BA:901:C:N4     | 2.11                     | 0.44              |
| 49:B2:42:ASN:HD22  | 49:B2:43:SER:N     | 2.09                     | 0.44              |
| 34:BM:22:ILE:HD11  | 34:BM:42:VAL:HB    | 1.99                     | 0.44              |
| 33:BL:201:GLU:HB3  | 33:BL:218:PHE:CZ   | 2.52                     | 0.44              |
| 28:BG:214:GLU:HG2  | 28:BG:215:ASN:H    | 1.83                     | 0.44              |
| 24:BC:43:U:H3      | 24:BC:76:G:H1      | 1.64                     | 0.44              |
| 22:BA:138:C:H2'    | 22:BA:139:U:C6     | 2.52                     | 0.44              |
| 22:BA:59:A:H2'     | 22:BA:62:A:N6      | 2.32                     | 0.44              |
| 22:BA:2359:C:O2'   | 22:BA:2391:C:H5''  | 2.17                     | 0.44              |
| 22:BA:2390:A:H2'   | 22:BA:2391:C:C6    | 2.52                     | 0.44              |
| 32:BK:114:ASN:O    | 32:BK:118:ALA:HB2  | 2.18                     | 0.44              |
| 43:BV:166:ILE:C    | 43:BV:166:ILE:HD12 | 2.37                     | 0.44              |
| 35:BN:156:PHE:H    | 35:BN:156:PHE:HD1  | 1.62                     | 0.44              |
| 22:BA:1148:G:H2'   | 22:BA:1149:C:C6    | 2.52                     | 0.44              |
| 37:BP:122:ARG:HG2  | 37:BP:203:GLU:HB2  | 1.99                     | 0.44              |
| 1:AA:858:A:H2'     | 1:AA:859:C:O4'     | 2.16                     | 0.44              |
| 26:BE:124:ASN:CG   | 26:BE:125:ALA:H    | 2.18                     | 0.44              |
| 28:BG:88:LEU:HD23  | 28:BG:88:LEU:C     | 2.37                     | 0.44              |
| 46:BY:110:ARG:HH21 | 46:BY:123:ARG:NH2  | 2.14                     | 0.44              |
| 22:BA:639:A:H61    | 35:BN:187:LEU:CD2  | 2.28                     | 0.44              |
| 22:BA:1831:G:H2'   | 22:BA:1832:G:O4'   | 2.18                     | 0.44              |
| 22:BA:998:U:H2'    | 22:BA:999:C:C6     | 2.52                     | 0.44              |
| 22:BA:2527:C:N4    | 22:BA:2592:U:H3    | 2.15                     | 0.44              |
| 43:BV:140:VAL:HA   | 43:BV:172:LYS:HD2  | 1.99                     | 0.44              |
| 23:BB:7:G:H2'      | 23:BB:8:U:C6       | 2.53                     | 0.44              |
| 52:B5:128:ARG:NH2  | 52:B5:132:LEU:HD21 | 2.31                     | 0.44              |
| 22:BA:2119:U:H3    | 22:BA:2198:A:N6    | 2.11                     | 0.44              |
| 1:AA:820:U:H5''    | 1:AA:821:A:OP2     | 2.16                     | 0.44              |
| 1:AA:873:C:HO2'    | 1:AA:1451:A:H2     | 1.63                     | 0.44              |
| 22:BA:1645:A:O2'   | 22:BA:1646:A:H5'   | 2.17                     | 0.44              |
| 1:AA:1002:G:H5'    | 1:AA:1003:C:H5'    | 1.99                     | 0.44              |
| 25:BD:229:ILE:HG22 | 25:BD:258:THR:HB   | 1.98                     | 0.44              |
| 1:AA:611:A:H2'     | 1:AA:612:G:C8      | 2.53                     | 0.44              |
| 52:B5:114:ARG:HD2  | 52:B5:135:LEU:HD13 | 2.00                     | 0.44              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 47:BZ:118:LEU:HA   | 47:BZ:121:LYS:HB2  | 1.98                     | 0.44              |
| 39:BR:206:ILE:HG13 | 39:BR:207:LYS:N    | 2.32                     | 0.44              |
| 22:BA:1035:C:H5''  | 33:BL:136:ARG:HH12 | 1.83                     | 0.44              |
| 37:BP:143:MET:HB3  | 37:BP:151:LYS:HB3  | 1.98                     | 0.44              |
| 1:AA:35:C:H1'      | 12:AL:29:GLN:HE22  | 1.81                     | 0.44              |
| 1:AA:1019:U:O2'    | 1:AA:1020:C:H5'    | 2.17                     | 0.44              |
| 5:AE:175:ARG:NH1   | 5:AE:276:LEU:HD13  | 2.32                     | 0.44              |
| 48:B1:93:LEU:HD23  | 48:B1:93:LEU:C     | 2.38                     | 0.44              |
| 1:AA:877:G:H2'     | 1:AA:878:G:C8      | 2.52                     | 0.44              |
| 22:BA:964:C:H2'    | 22:BA:965:G:C8     | 2.52                     | 0.44              |
| 22:BA:2310:U:H2'   | 22:BA:2311:C:C6    | 2.52                     | 0.44              |
| 22:BA:1954:U:C4    | 22:BA:1978:G:H4'   | 2.52                     | 0.44              |
| 25:BD:128:LEU:HD12 | 25:BD:128:LEU:N    | 2.33                     | 0.44              |
| 22:BA:2187:A:H2'   | 22:BA:2188:C:H5'   | 1.99                     | 0.44              |
| 22:BA:2486:A:O4'   | 36:BO:56:ARG:HD2   | 2.18                     | 0.44              |
| 22:BA:1528:U:H2'   | 22:BA:1529:A:C8    | 2.53                     | 0.44              |
| 22:BA:1554:C:H2'   | 22:BA:1555:G:O4'   | 2.17                     | 0.44              |
| 30:BI:83:VAL:HG11  | 30:BI:111:PHE:HE2  | 1.81                     | 0.44              |
| 1:AA:756:A:H2'     | 1:AA:757:G:H8      | 1.83                     | 0.44              |
| 1:AA:660:A:C5'     | 26:BE:161:ILE:CB   | 2.59                     | 0.44              |
| 15:AO:53:LEU:HD22  | 22:BA:726:G:C4     | 2.50                     | 0.44              |
| 29:BH:160:ILE:HG13 | 29:BH:160:ILE:O    | 2.18                     | 0.44              |
| 40:BS:15:LYS:O     | 40:BS:19:PHE:HD1   | 2.00                     | 0.44              |
| 45:BX:78:LEU:C     | 45:BX:78:LEU:HD23  | 2.38                     | 0.44              |
| 1:AA:250:A:H5'     | 1:AA:252:G:H5'     | 2.00                     | 0.44              |
| 27:BF:189:ILE:HG21 | 27:BF:202:LYS:HE3  | 1.99                     | 0.44              |
| 22:BA:830:A:H2'    | 22:BA:831:A:O4'    | 2.18                     | 0.44              |
| 41:BT:129:ILE:O    | 41:BT:129:ILE:HG22 | 2.18                     | 0.44              |
| 22:BA:1182:A:H5''  | 40:BS:55:ARG:NH2   | 2.30                     | 0.44              |
| 2:AB:196:ASN:N     | 2:AB:196:ASN:ND2   | 2.65                     | 0.44              |
| 22:BA:643:A:H5''   | 52:B5:103:ARG:HH12 | 1.82                     | 0.44              |
| 44:BW:104:LEU:C    | 44:BW:104:LEU:HD13 | 2.38                     | 0.44              |
| 1:AA:981:G:H2'     | 1:AA:982:G:C5'     | 2.46                     | 0.44              |
| 22:BA:2000:G:H2'   | 22:BA:2001:G:C8    | 2.52                     | 0.44              |
| 22:BA:2527:C:H4'   | 27:BF:173:ARG:HH22 | 1.81                     | 0.44              |
| 22:BA:2592:U:H4'   | 27:BF:192:GLY:N    | 2.32                     | 0.44              |
| 22:BA:1376:G:H2'   | 22:BA:1377:A:C8    | 2.52                     | 0.44              |
| 30:BI:72:LEU:HD12  | 30:BI:72:LEU:N     | 2.33                     | 0.44              |
| 26:BE:247:GLY:HA3  | 26:BE:251:LEU:CD2  | 2.47                     | 0.44              |
| 36:BO:16:ARG:HH12  | 36:BO:18:LYS:HG2   | 1.82                     | 0.44              |
| 49:B2:15:ILE:C     | 49:B2:17:LYS:H     | 2.21                     | 0.44              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:1255:U:H2'    | 1:AA:1256:U:C6     | 2.53                     | 0.44              |
| 22:BA:2280:C:H2'   | 22:BA:2281:C:C6    | 2.52                     | 0.44              |
| 22:BA:392:G:H2'    | 22:BA:393:G:C8     | 2.53                     | 0.44              |
| 22:BA:1747:C:H2'   | 22:BA:1748:C:C6    | 2.52                     | 0.44              |
| 31:BJ:135:LYS:HB2  | 31:BJ:138:LEU:HB2  | 1.98                     | 0.44              |
| 22:BA:2647:A:H2'   | 22:BA:2648:G:H8    | 1.83                     | 0.44              |
| 22:BA:1387:A:H2'   | 22:BA:1388:A:O4'   | 2.17                     | 0.44              |
| 1:AA:628:C:H4'     | 26:BE:265:PHE:CD2  | 2.52                     | 0.44              |
| 42:BU:121:ARG:HH11 | 42:BU:121:ARG:HG2  | 1.81                     | 0.44              |
| 27:BF:119:LEU:O    | 27:BF:119:LEU:HD23 | 2.18                     | 0.44              |
| 29:BH:65:LEU:C     | 29:BH:65:LEU:HD23  | 2.37                     | 0.44              |
| 26:BE:261:TYR:H    | 26:BE:261:TYR:HD1  | 1.61                     | 0.44              |
| 2:AB:98:LYS:HB3    | 2:AB:99:LYS:H      | 1.58                     | 0.44              |
| 1:AA:661:A:H2'     | 1:AA:662:G:C8      | 2.52                     | 0.44              |
| 1:AA:676:A:N6      | 15:AO:51:ARG:NE    | 2.65                     | 0.44              |
| 1:AA:422:A:H4'     | 1:AA:423:A:N9      | 2.32                     | 0.44              |
| 1:AA:1476:C:H2'    | 1:AA:1477:U:O4'    | 2.18                     | 0.44              |
| 1:AA:217:A:H4'     | 1:AA:218:G:OP1     | 2.18                     | 0.44              |
| 28:BG:216:VAL:HG13 | 28:BG:228:LEU:CD1  | 2.47                     | 0.44              |
| 22:BA:386:A:H1'    | 22:BA:414:A:N6     | 2.26                     | 0.44              |
| 35:BN:120:MET:HG2  | 35:BN:121:PRO:HD3  | 2.00                     | 0.44              |
| 22:BA:54:G:H2'     | 22:BA:55:G:C8      | 2.52                     | 0.44              |
| 38:BQ:131:ILE:HD13 | 38:BQ:131:ILE:C    | 2.37                     | 0.44              |
| 45:BX:81:LYS:HD3   | 45:BX:81:LYS:N     | 2.32                     | 0.44              |
| 34:BM:118:PRO:HG2  | 34:BM:119:GLU:H    | 1.82                     | 0.44              |
| 30:BI:54:PRO:C     | 30:BI:56:ASN:H     | 2.20                     | 0.44              |
| 42:BU:59:ALA:C     | 42:BU:63:MET:HE2   | 2.38                     | 0.44              |
| 22:BA:2264:U:O2'   | 22:BA:2265:A:H5'   | 2.17                     | 0.44              |
| 30:BI:214:ARG:HH11 | 30:BI:214:ARG:CA   | 2.30                     | 0.44              |
| 38:BQ:109:SER:H    | 38:BQ:110:PRO:CD   | 2.30                     | 0.44              |
| 30:BI:118:MET:O    | 30:BI:122:VAL:HG22 | 2.17                     | 0.44              |
| 22:BA:1294:A:H4'   | 22:BA:1296:A:OP1   | 2.16                     | 0.44              |
| 22:BA:1315:G:H2'   | 22:BA:1316:C:H6    | 1.83                     | 0.44              |
| 22:BA:682:C:H2'    | 22:BA:683:C:C6     | 2.53                     | 0.44              |
| 1:AA:740:A:H2'     | 1:AA:742:A:N7      | 2.31                     | 0.44              |
| 22:BA:38:C:H2'     | 22:BA:39:C:C6      | 2.53                     | 0.44              |
| 53:B6:18:LYS:HA    | 53:B6:23:VAL:HA    | 1.99                     | 0.44              |
| 36:BO:92:TYR:HB3   | 36:BO:93:TRP:H     | 1.63                     | 0.44              |
| 22:BA:2325:G:C2'   | 22:BA:2325:G:N3    | 2.81                     | 0.44              |
| 22:BA:752:U:H2'    | 22:BA:753:G:C8     | 2.53                     | 0.44              |
| 22:BA:863:C:H2'    | 22:BA:864:U:C6     | 2.53                     | 0.44              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 32:BK:130:THR:O    | 32:BK:130:THR:HG23 | 2.17                     | 0.44              |
| 22:BA:1066:G:H2'   | 22:BA:1067:G:C8    | 2.52                     | 0.44              |
| 22:BA:2037:G:H2'   | 22:BA:2038:U:C6    | 2.52                     | 0.44              |
| 22:BA:1754:A:H2'   | 22:BA:1755:A:O4'   | 2.18                     | 0.44              |
| 1:AA:659:A:O3'     | 26:BE:161:ILE:O    | 2.35                     | 0.44              |
| 26:BE:109:GLY:O    | 26:BE:112:ILE:HD13 | 2.18                     | 0.44              |
| 44:BW:136:LEU:HD11 | 44:BW:145:ASP:HB3  | 1.99                     | 0.44              |
| 38:BQ:63:PRO:CB    | 45:BX:134:LYS:HG3  | 2.47                     | 0.44              |
| 34:BM:64:ARG:HD3   | 34:BM:100:GLY:O    | 2.17                     | 0.44              |
| 22:BA:1449:C:N4    | 22:BA:1603:A:H5''  | 2.32                     | 0.44              |
| 51:B4:108:LEU:HA   | 51:B4:112:HIS:HD2  | 1.82                     | 0.44              |
| 22:BA:2243:C:O2    | 26:BE:258:ARG:HA   | 2.18                     | 0.44              |
| 22:BA:647:C:H2'    | 22:BA:648:G:H8     | 1.82                     | 0.44              |
| 22:BA:819:G:H2'    | 22:BA:820:G:C8     | 2.52                     | 0.44              |
| 1:AA:374:C:H2'     | 1:AA:375:G:H8      | 1.82                     | 0.44              |
| 28:BG:195:GLN:HA   | 28:BG:200:ASP:OD2  | 2.18                     | 0.44              |
| 22:BA:2435:G:H2'   | 22:BA:2436:U:C6    | 2.53                     | 0.44              |
| 22:BA:82:G:H2'     | 22:BA:83:A:O4'     | 2.18                     | 0.44              |
| 22:BA:1393:U:H2'   | 22:BA:1394:A:C8    | 2.53                     | 0.44              |
| 41:BT:140:ARG:HG2  | 41:BT:140:ARG:HH11 | 1.81                     | 0.44              |
| 22:BA:619:A:H2'    | 22:BA:620:G:O4'    | 2.18                     | 0.44              |
| 1:AA:1006:G:OP1    | 3:AC:165:ALA:HB1   | 2.17                     | 0.44              |
| 50:B3:13:LEU:CD2   | 50:B3:38:ASN:HD22  | 2.26                     | 0.44              |
| 22:BA:1264:C:H2'   | 22:BA:1265:G:C8    | 2.52                     | 0.44              |
| 22:BA:1297:C:O2    | 37:BP:109:LEU:HD23 | 2.18                     | 0.44              |
| 27:BF:101:ARG:N    | 27:BF:101:ARG:CD   | 2.80                     | 0.44              |
| 48:B1:84:VAL:O     | 48:B1:84:VAL:HG23  | 2.18                     | 0.44              |
| 22:BA:961:G:H5''   | 22:BA:962:G:N7     | 2.32                     | 0.44              |
| 24:BC:85:C:H2'     | 24:BC:86:A:H8      | 1.82                     | 0.44              |
| 29:BH:39:ASN:OD1   | 29:BH:41:LEU:HD12  | 2.18                     | 0.44              |
| 22:BA:1843:C:O2'   | 22:BA:1844:U:H5'   | 2.17                     | 0.44              |
| 22:BA:2790:C:H4'   | 27:BF:214:LYS:HZ3  | 1.82                     | 0.44              |
| 25:BD:127:LYS:HZ3  | 25:BD:127:LYS:HB3  | 1.83                     | 0.44              |
| 36:BO:74:VAL:CG2   | 36:BO:94:VAL:HG22  | 2.47                     | 0.44              |
| 22:BA:872:A:H2'    | 22:BA:873:A:O4'    | 2.16                     | 0.44              |
| 1:AA:1267:A:H5''   | 19:AS:4:SER:OG     | 2.17                     | 0.44              |
| 42:BU:107:LYS:C    | 42:BU:107:LYS:HD3  | 2.38                     | 0.44              |
| 1:AA:1370:U:H2'    | 1:AA:1371:G:C8     | 2.52                     | 0.44              |
| 22:BA:884:G:H2'    | 22:BA:885:G:C8     | 2.52                     | 0.44              |
| 27:BF:119:LEU:HD23 | 27:BF:119:LEU:C    | 2.38                     | 0.44              |
| 43:BV:183:ASN:OD1  | 43:BV:185:SER:HB3  | 2.18                     | 0.44              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:1678:G:H2'   | 22:BA:1679:G:C8    | 2.52                     | 0.44              |
| 22:BA:2770:C:H3'   | 22:BA:2771:A:H8    | 1.82                     | 0.44              |
| 11:AK:69:PRO:HD3   | 11:AK:100:LEU:HB3  | 2.00                     | 0.44              |
| 22:BA:1651:C:C6    | 42:BU:116:PRO:HG2  | 2.53                     | 0.44              |
| 22:BA:576:U:H2'    | 22:BA:577:G:C8     | 2.53                     | 0.44              |
| 34:BM:64:ARG:HH21  | 34:BM:83:ALA:HB2   | 1.83                     | 0.44              |
| 22:BA:640:G:H2'    | 22:BA:641:C:C6     | 2.52                     | 0.44              |
| 22:BA:642:G:N2     | 22:BA:644:A:H3'    | 2.33                     | 0.44              |
| 22:BA:625:C:H4'    | 22:BA:626:C:O5'    | 2.16                     | 0.44              |
| 28:BG:212:LEU:HD12 | 28:BG:217:GLU:N    | 2.33                     | 0.44              |
| 22:BA:736:G:H2'    | 22:BA:737:G:O4'    | 2.18                     | 0.44              |
| 24:BC:52:A:H1'     | 37:BP:153:ARG:CZ   | 2.48                     | 0.44              |
| 43:BV:165:LEU:HD12 | 43:BV:165:LEU:C    | 2.38                     | 0.44              |
| 1:AA:899:U:H2'     | 1:AA:900:G:C8      | 2.53                     | 0.44              |
| 22:BA:781:G:H2'    | 22:BA:782:G:C8     | 2.52                     | 0.44              |
| 22:BA:212:A:H61    | 22:BA:422:G:N2     | 2.12                     | 0.44              |
| 44:BW:102:LYS:O    | 44:BW:102:LYS:HG3  | 2.18                     | 0.44              |
| 22:BA:2107:G:H1'   | 22:BA:2242:A:N6    | 2.32                     | 0.44              |
| 26:BE:243:THR:O    | 26:BE:244:THR:HB   | 2.18                     | 0.44              |
| 22:BA:1853:C:H2'   | 22:BA:1854:C:C6    | 2.53                     | 0.44              |
| 1:AA:556:A:H2'     | 1:AA:557:A:O4'     | 2.18                     | 0.44              |
| 33:BL:126:ARG:HG3  | 33:BL:126:ARG:HH11 | 1.82                     | 0.44              |
| 25:BD:173:LEU:HD23 | 25:BD:173:LEU:C    | 2.37                     | 0.44              |
| 22:BA:1179:C:H2'   | 22:BA:1180:C:C6    | 2.53                     | 0.44              |
| 31:BJ:149:VAL:HG11 | 31:BJ:162:LYS:HA   | 1.98                     | 0.44              |
| 22:BA:1082:A:H2'   | 22:BA:1083:G:C8    | 2.53                     | 0.44              |
| 47:BZ:67:LEU:HD23  | 47:BZ:67:LEU:C     | 2.37                     | 0.44              |
| 1:AA:292:A:H61     | 1:AA:303:G:H1      | 1.64                     | 0.44              |
| 32:BK:109:PHE:CE1  | 32:BK:129:ILE:HD11 | 2.52                     | 0.44              |
| 11:AK:94:MET:HG3   | 11:AK:120:ARG:HG3  | 1.98                     | 0.44              |
| 42:BU:73:CYS:O     | 42:BU:77:PHE:HB2   | 2.18                     | 0.44              |
| 1:AA:998:U:O2'     | 1:AA:999:G:OP2     | 2.33                     | 0.44              |
| 22:BA:1337:U:H2'   | 22:BA:1338:C:C6    | 2.53                     | 0.44              |
| 1:AA:1363:U:H2'    | 1:AA:1364:G:H8     | 1.81                     | 0.44              |
| 25:BD:322:TYR:HD2  | 25:BD:323:TRP:NE1  | 2.15                     | 0.44              |
| 1:AA:851:G:H2'     | 1:AA:852:A:H8      | 1.82                     | 0.44              |
| 22:BA:2131:U:H4'   | 22:BA:2162:G:H22   | 1.83                     | 0.44              |
| 1:AA:1424:G:OP1    | 22:BA:1725:A:C8    | 2.70                     | 0.44              |
| 1:AA:1424:G:OP1    | 22:BA:1725:A:H1'   | 2.07                     | 0.44              |
| 26:BE:170:LEU:O    | 26:BE:177:VAL:HG13 | 2.18                     | 0.44              |
| 22:BA:1322:A:N7    | 22:BA:1324:A:N7    | 2.65                     | 0.44              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 37:BP:192:ARG:HD2  | 37:BP:195:ASP:OD1  | 2.18                     | 0.44              |
| 26:BE:200:ARG:HH11 | 26:BE:200:ARG:HG3  | 1.82                     | 0.44              |
| 46:BY:78:CYS:HB2   | 46:BY:127:LYS:HD2  | 1.99                     | 0.44              |
| 35:BN:205:THR:HG22 | 35:BN:218:LEU:HD11 | 2.00                     | 0.44              |
| 1:AA:1105:A:H1'    | 1:AA:1129:G:N2     | 2.33                     | 0.44              |
| 22:BA:624:A:C2'    | 22:BA:624:A:N3     | 2.80                     | 0.44              |
| 35:BN:192:LEU:HD11 | 35:BN:211:LEU:HD23 | 1.99                     | 0.44              |
| 22:BA:1165:G:H21   | 33:BL:207:MET:HE1  | 1.83                     | 0.44              |
| 26:BE:44:ILE:O     | 26:BE:45:ILE:HD13  | 2.18                     | 0.44              |
| 45:BX:80:VAL:HG13  | 45:BX:81:LYS:HD3   | 1.99                     | 0.44              |
| 40:BS:21:ALA:HA    | 40:BS:24:PHE:CE2   | 2.53                     | 0.44              |
| 26:BE:49:HIS:O     | 26:BE:50:ARG:HB2   | 2.17                     | 0.44              |
| 43:BV:148:ARG:HG3  | 43:BV:159:VAL:HG21 | 1.99                     | 0.44              |
| 22:BA:429:C:H2'    | 22:BA:430:U:C6     | 2.52                     | 0.44              |
| 25:BD:289:PHE:CE2  | 25:BD:303:LEU:HD23 | 2.53                     | 0.44              |
| 22:BA:1039:A:H5''  | 40:BS:77:ASN:HD21  | 1.82                     | 0.44              |
| 50:B3:49:ARG:HG3   | 50:B3:49:ARG:HH11  | 1.83                     | 0.44              |
| 22:BA:1375:A:H62   | 22:BA:1398:G:H21   | 1.66                     | 0.44              |
| 43:BV:111:VAL:HG11 | 43:BV:146:MET:HE3  | 2.00                     | 0.44              |
| 22:BA:2564:U:H2'   | 22:BA:2565:G:C8    | 2.52                     | 0.44              |
| 1:AA:130:G:O2'     | 1:AA:131:G:H5'     | 2.18                     | 0.44              |
| 1:AA:272:G:H5''    | 17:AQ:88:LYS:HE3   | 1.99                     | 0.44              |
| 41:BT:132:ARG:HB3  | 41:BT:134:TYR:CE1  | 2.52                     | 0.44              |
| 30:BI:65:ASP:OD2   | 30:BI:67:LYS:HE2   | 2.18                     | 0.44              |
| 33:BL:221:LEU:C    | 33:BL:222:LYS:HD2  | 2.38                     | 0.44              |
| 49:B2:24:GLY:O     | 49:B2:25:TYR:C     | 2.56                     | 0.44              |
| 1:AA:317:G:H2'     | 1:AA:318:G:H5'     | 1.99                     | 0.44              |
| 25:BD:129:ARG:HD3  | 25:BD:129:ARG:C    | 2.39                     | 0.44              |
| 34:BM:112:LYS:C    | 34:BM:112:LYS:HD2  | 2.38                     | 0.44              |
| 22:BA:2356:G:H2'   | 22:BA:2357:A:C8    | 2.53                     | 0.44              |
| 1:AA:998:U:O2'     | 1:AA:999:G:P       | 2.76                     | 0.44              |
| 1:AA:760:G:H2'     | 1:AA:760:G:N3      | 2.33                     | 0.44              |
| 1:AA:987:G:H2'     | 1:AA:988:C:C6      | 2.53                     | 0.44              |
| 22:BA:2416:G:H2'   | 22:BA:2417:G:C8    | 2.52                     | 0.44              |
| 26:BE:184:CYS:SG   | 26:BE:185:SER:N    | 2.91                     | 0.44              |
| 39:BR:153:LEU:HD22 | 39:BR:153:LEU:N    | 2.33                     | 0.44              |
| 22:BA:46:C:N4      | 22:BA:162:A:H61    | 2.15                     | 0.44              |
| 22:BA:2244:A:H5'   | 26:BE:257:LYS:HE2  | 2.00                     | 0.44              |
| 22:BA:391:G:H4'    | 22:BA:2249:C:H5''  | 1.99                     | 0.44              |
| 22:BA:338:G:O4'    | 22:BA:489:A:H1'    | 2.18                     | 0.44              |
| 1:AA:1276:C:H2'    | 1:AA:1277:A:C8     | 2.53                     | 0.44              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:91:G:C2'      | 1:AA:92:G:H5''     | 2.44                     | 0.44              |
| 50:B3:12:ILE:HG23  | 50:B3:12:ILE:O     | 2.18                     | 0.44              |
| 38:BQ:72:ARG:NH2   | 38:BQ:77:LEU:HD12  | 2.32                     | 0.44              |
| 1:AA:1244:C:H2'    | 1:AA:1245:U:O4'    | 2.17                     | 0.44              |
| 28:BG:113:ARG:HH11 | 28:BG:113:ARG:CB   | 2.30                     | 0.44              |
| 22:BA:1316:C:H4'   | 37:BP:111:ARG:NH2  | 2.32                     | 0.44              |
| 1:AA:894:G:N2      | 1:AA:1282:G:H4'    | 2.31                     | 0.44              |
| 22:BA:2696:A:H2'   | 22:BA:2697:C:C6    | 2.52                     | 0.44              |
| 22:BA:2210:C:H2'   | 22:BA:2211:U:O4'   | 2.17                     | 0.44              |
| 33:BL:127:MET:HE3  | 33:BL:130:THR:HB   | 2.00                     | 0.44              |
| 22:BA:1980:A:H1'   | 22:BA:2610:U:H4'   | 2.00                     | 0.44              |
| 1:AA:322:G:H5''    | 1:AA:323:C:OP1     | 2.17                     | 0.44              |
| 1:AA:328:G:OP1     | 1:AA:338:U:H5''    | 2.18                     | 0.44              |
| 1:AA:639:G:O2'     | 1:AA:745:C:H4'     | 2.18                     | 0.44              |
| 1:AA:1436:G:O2'    | 1:AA:1437:A:H5'    | 2.18                     | 0.44              |
| 22:BA:2360:U:O3'   | 22:BA:2390:A:H4'   | 2.18                     | 0.44              |
| 22:BA:1067:G:H2'   | 22:BA:1068:G:C8    | 2.53                     | 0.44              |
| 22:BA:2313:U:H1'   | 22:BA:2354:G:N2    | 2.33                     | 0.44              |
| 22:BA:688:C:H2'    | 22:BA:689:C:C6     | 2.53                     | 0.44              |
| 47:BZ:78:LEU:HD23  | 47:BZ:78:LEU:C     | 2.38                     | 0.44              |
| 1:AA:1311:A:N3     | 1:AA:1311:A:H3'    | 2.33                     | 0.44              |
| 22:BA:2283:A:H1'   | 22:BA:2289:U:C4    | 2.52                     | 0.44              |
| 28:BG:233:SER:HA   | 28:BG:258:ARG:NH1  | 2.33                     | 0.44              |
| 1:AA:756:A:H1'     | 26:BE:5:LEU:C      | 2.38                     | 0.43              |
| 6:AF:118:LYS:NZ    | 26:BE:162:ALA:C    | 2.70                     | 0.43              |
| 1:AA:886:A:H1'     | 1:AA:1328:G:N2     | 2.32                     | 0.43              |
| 36:BO:20:ILE:CG1   | 36:BO:99:PRO:HG2   | 2.46                     | 0.43              |
| 39:BR:173:GLN:NE2  | 39:BR:173:GLN:N    | 2.66                     | 0.43              |
| 39:BR:195:VAL:O    | 39:BR:196:PHE:O    | 2.36                     | 0.43              |
| 39:BR:198:LEU:C    | 39:BR:198:LEU:HD12 | 2.39                     | 0.43              |
| 26:BE:87:ILE:O     | 26:BE:87:ILE:HG12  | 2.17                     | 0.43              |
| 1:AA:166:G:H3'     | 1:AA:167:G:C8      | 2.53                     | 0.43              |
| 28:BG:204:LYS:HB3  | 28:BG:206:LEU:CD1  | 2.43                     | 0.43              |
| 1:AA:396:G:H2'     | 1:AA:397:U:C6      | 2.53                     | 0.43              |
| 1:AA:700:G:H4'     | 1:AA:702:C:H5      | 1.83                     | 0.43              |
| 22:BA:780:U:H2'    | 22:BA:781:G:C8     | 2.52                     | 0.43              |
| 36:BO:51:ARG:CB    | 36:BO:51:ARG:HH11  | 2.31                     | 0.43              |
| 41:BT:160:LYS:HD2  | 41:BT:176:ILE:HG21 | 2.00                     | 0.43              |
| 1:AA:514:G:C5'     | 1:AA:515:G:OP1     | 2.66                     | 0.43              |
| 25:BD:141:LEU:HG   | 25:BD:296:GLU:OE1  | 2.17                     | 0.43              |
| 22:BA:2802:G:H2'   | 22:BA:2803:C:C6    | 2.53                     | 0.43              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:2747:G:O2'   | 27:BF:218:LEU:HD21 | 2.18                     | 0.43              |
| 1:AA:1462:A:H2'    | 1:AA:1463:C:C6     | 2.53                     | 0.43              |
| 1:AA:1294:A:H5''   | 1:AA:1295:G:OP1    | 2.18                     | 0.43              |
| 1:AA:1319:G:O2'    | 1:AA:1320:G:H5'    | 2.18                     | 0.43              |
| 34:BM:2:ILE:HD12   | 34:BM:8:LEU:HD11   | 1.99                     | 0.43              |
| 22:BA:1228:A:H2'   | 22:BA:1229:G:C8    | 2.52                     | 0.43              |
| 44:BW:141:GLN:N    | 44:BW:141:GLN:OE1  | 2.51                     | 0.43              |
| 1:AA:124:G:H2'     | 1:AA:125:G:H8      | 1.81                     | 0.43              |
| 24:BC:98:U:H2'     | 24:BC:99:U:C6      | 2.53                     | 0.43              |
| 22:BA:569:G:H1'    | 40:BS:59:ARG:HH22  | 1.83                     | 0.43              |
| 32:BK:108:ALA:O    | 32:BK:109:PHE:HB3  | 2.17                     | 0.43              |
| 29:BH:171:ILE:O    | 29:BH:171:ILE:HG23 | 2.18                     | 0.43              |
| 1:AA:1284:C:H1'    | 1:AA:1285:G:C6     | 2.53                     | 0.43              |
| 11:AK:29:VAL:HG23  | 11:AK:44:THR:HG23  | 1.99                     | 0.43              |
| 22:BA:1463:U:H2'   | 22:BA:1464:U:C6    | 2.53                     | 0.43              |
| 1:AA:497:C:H2'     | 1:AA:498:G:C8      | 2.52                     | 0.43              |
| 6:AF:118:LYS:NZ    | 26:BE:162:ALA:O    | 2.35                     | 0.43              |
| 42:BU:45:LYS:NZ    | 42:BU:71:ARG:HH12  | 2.16                     | 0.43              |
| 26:BE:114:SER:HB3  | 26:BE:124:ASN:HB3  | 1.99                     | 0.43              |
| 22:BA:2512:G:H2'   | 22:BA:2513:C:O4'   | 2.17                     | 0.43              |
| 44:BW:136:LEU:HD21 | 44:BW:158:VAL:HG12 | 1.99                     | 0.43              |
| 22:BA:2070:A:O2'   | 49:B2:5:LYS:HD3    | 2.18                     | 0.43              |
| 22:BA:2070:A:H61   | 22:BA:2629:A:H61   | 1.66                     | 0.43              |
| 46:BY:83:LYS:CG    | 46:BY:84:LYS:H     | 2.16                     | 0.43              |
| 22:BA:649:A:C2     | 22:BA:664:A:H4'    | 2.53                     | 0.43              |
| 35:BN:180:ARG:HH11 | 35:BN:180:ARG:HG3  | 1.83                     | 0.43              |
| 40:BS:55:ARG:HB3   | 40:BS:55:ARG:HH11  | 1.83                     | 0.43              |
| 33:BL:133:ILE:CG1  | 33:BL:139:ASN:HD21 | 2.24                     | 0.43              |
| 22:BA:1073:G:H4'   | 22:BA:1075:G:C1'   | 2.48                     | 0.43              |
| 1:AA:1002:G:H4'    | 1:AA:1003:C:H5'    | 2.01                     | 0.43              |
| 44:BW:101:ILE:N    | 44:BW:101:ILE:HD13 | 2.32                     | 0.43              |
| 24:BC:31:U:H2'     | 24:BC:33:A:OP1     | 2.18                     | 0.43              |
| 26:BE:34:ARG:HH11  | 26:BE:37:LYS:HD3   | 1.82                     | 0.43              |
| 22:BA:2411:C:H2'   | 22:BA:2412:C:C6    | 2.52                     | 0.43              |
| 1:AA:1013:G:H4'    | 1:AA:1014:U:O5'    | 2.17                     | 0.43              |
| 22:BA:1468:C:H2'   | 22:BA:1469:G:C8    | 2.53                     | 0.43              |
| 22:BA:1483:G:H2'   | 22:BA:1484:G:C8    | 2.53                     | 0.43              |
| 29:BH:19:LEU:HD13  | 29:BH:19:LEU:O     | 2.18                     | 0.43              |
| 1:AA:336:U:C2'     | 1:AA:336:U:O2      | 2.65                     | 0.43              |
| 33:BL:142:SER:HA   | 33:BL:149:MET:SD   | 2.57                     | 0.43              |
| 22:BA:1534:A:H4'   | 26:BE:95:GLY:O     | 2.19                     | 0.43              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:1746:C:H2'   | 22:BA:1747:C:C6    | 2.53                     | 0.43              |
| 22:BA:115:G:H4'    | 51:B4:114:PHE:HE2  | 1.84                     | 0.43              |
| 22:BA:2671:A:O2'   | 22:BA:2672:G:H4'   | 2.19                     | 0.43              |
| 1:AA:1049:C:O2     | 1:AA:1051:A:H5'    | 2.18                     | 0.43              |
| 52:B5:131:ARG:HH11 | 52:B5:131:ARG:HG3  | 1.83                     | 0.43              |
| 22:BA:534:C:H4'    | 22:BA:551:G:N3     | 2.33                     | 0.43              |
| 22:BA:674:C:H2'    | 22:BA:675:U:C6     | 2.53                     | 0.43              |
| 22:BA:2327:G:H2'   | 22:BA:2328:A:H5'   | 1.99                     | 0.43              |
| 30:BI:173:ARG:NH1  | 30:BI:173:ARG:HB2  | 2.33                     | 0.43              |
| 33:BL:235:GLN:HA   | 33:BL:235:GLN:HE21 | 1.83                     | 0.43              |
| 22:BA:2176:A:H2'   | 22:BA:2177:U:C6    | 2.53                     | 0.43              |
| 22:BA:156:G:H2'    | 22:BA:157:G:C8     | 2.53                     | 0.43              |
| 1:AA:471:A:N6      | 12:AL:50:ARG:HH12  | 2.16                     | 0.43              |
| 32:BK:173:ILE:HD13 | 32:BK:210:ILE:HD11 | 2.00                     | 0.43              |
| 2:AB:191:ILE:HG23  | 2:AB:195:CYS:HB3   | 2.00                     | 0.43              |
| 22:BA:912:C:H2'    | 22:BA:913:G:C8     | 2.54                     | 0.43              |
| 34:BM:11:ALA:HB1   | 34:BM:99:PHE:O     | 2.18                     | 0.43              |
| 4:AD:72:ALA:HB1    | 4:AD:82:VAL:HG23   | 2.00                     | 0.43              |
| 1:AA:596:A:H2'     | 1:AA:597:A:C8      | 2.53                     | 0.43              |
| 22:BA:1810:C:H1'   | 22:BA:1812:A:C1'   | 2.48                     | 0.43              |
| 26:BE:137:ILE:O    | 26:BE:190:GLN:HB2  | 2.19                     | 0.43              |
| 39:BR:174:ASN:HB2  | 39:BR:219:LEU:HD21 | 2.00                     | 0.43              |
| 24:BC:4:G:H2'      | 24:BC:5:G:H8       | 1.84                     | 0.43              |
| 22:BA:2630:U:OP2   | 49:B2:1:MET:HB2    | 2.19                     | 0.43              |
| 49:B2:34:LEU:N     | 49:B2:36:LYS:HD3   | 2.33                     | 0.43              |
| 26:BE:213:ARG:HB3  | 26:BE:214:PRO:HD2  | 1.99                     | 0.43              |
| 23:BB:104:U:H2'    | 23:BB:105:A:C8     | 2.53                     | 0.43              |
| 22:BA:999:C:H2'    | 22:BA:1000:G:O4'   | 2.17                     | 0.43              |
| 22:BA:542:C:H2'    | 40:BS:41:ARG:NH2   | 2.34                     | 0.43              |
| 29:BH:117:ARG:NH2  | 48:B1:61:ALA:HB3   | 2.33                     | 0.43              |
| 29:BH:121:LEU:C    | 29:BH:121:LEU:HD12 | 2.38                     | 0.43              |
| 43:BV:164:THR:HG23 | 43:BV:172:LYS:HE3  | 1.98                     | 0.43              |
| 43:BV:167:ARG:HB2  | 43:BV:167:ARG:HH11 | 1.82                     | 0.43              |
| 22:BA:101:A:H5''   | 47:BZ:62:LYS:HD3   | 2.00                     | 0.43              |
| 22:BA:2119:U:H2'   | 22:BA:2120:U:C6    | 2.53                     | 0.43              |
| 43:BV:162:VAL:HG22 | 43:BV:176:ILE:HD13 | 2.00                     | 0.43              |
| 22:BA:2794:A:H5''  | 22:BA:2795:G:OP1   | 2.17                     | 0.43              |
| 22:BA:2443:A:H5''  | 22:BA:2444:C:OP2   | 2.18                     | 0.43              |
| 22:BA:2077:C:N4    | 22:BA:2518:C:H1'   | 2.30                     | 0.43              |
| 28:BG:139:VAL:HG13 | 40:BS:1:MET:N      | 2.32                     | 0.43              |
| 26:BE:237:ILE:C    | 26:BE:239:ARG:H    | 2.22                     | 0.43              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:916:C:OP1     | 1:AA:918:A:H5'     | 2.18                     | 0.43              |
| 1:AA:1199:A:O2'    | 1:AA:1200:A:H5'    | 2.19                     | 0.43              |
| 39:BR:222:LEU:HD23 | 39:BR:224:ASP:N    | 2.34                     | 0.43              |
| 33:BL:201:GLU:O    | 33:BL:204:VAL:HG22 | 2.18                     | 0.43              |
| 28:BG:91:HIS:O     | 28:BG:95:LYS:HG3   | 2.18                     | 0.43              |
| 22:BA:1412:G:H21   | 22:BA:1414:A:H8    | 1.66                     | 0.43              |
| 1:AA:36:G:H1'      | 12:AL:115:SER:O    | 2.18                     | 0.43              |
| 22:BA:705:U:H1'    | 22:BA:1400:U:O2    | 2.18                     | 0.43              |
| 22:BA:1114:A:C2'   | 22:BA:1114:A:N3    | 2.81                     | 0.43              |
| 22:BA:1133:U:H2'   | 22:BA:1134:G:C8    | 2.54                     | 0.43              |
| 22:BA:2031:A:C2    | 49:B2:7:ARG:HD2    | 2.53                     | 0.43              |
| 22:BA:1746:C:H5'   | 24:BC:60:G:H1'     | 2.01                     | 0.43              |
| 22:BA:2460:U:H2'   | 22:BA:2461:A:H8    | 1.83                     | 0.43              |
| 22:BA:926:A:H2'    | 22:BA:927:A:O4'    | 2.18                     | 0.43              |
| 22:BA:852:U:H2'    | 22:BA:853:G:C8     | 2.53                     | 0.43              |
| 26:BE:61:ILE:O     | 26:BE:62:ASP:HB3   | 2.18                     | 0.43              |
| 22:BA:2044:A:H4'   | 22:BA:2045:A:N7    | 2.34                     | 0.43              |
| 39:BR:148:ILE:HG21 | 39:BR:212:ARG:CZ   | 2.49                     | 0.43              |
| 39:BR:185:ARG:HH22 | 39:BR:223:ARG:NH1  | 2.04                     | 0.43              |
| 22:BA:48:A:O5'     | 22:BA:50:G:H5'     | 2.18                     | 0.43              |
| 22:BA:2737:G:O2'   | 24:BC:47:G:H4'     | 2.19                     | 0.43              |
| 22:BA:2016:G:OP2   | 37:BP:98:LYS:HD2   | 2.18                     | 0.43              |
| 46:BY:81:THR:HB    | 46:BY:108:TYR:CD1  | 2.52                     | 0.43              |
| 45:BX:90:PRO:HD2   | 45:BX:123:LEU:O    | 2.18                     | 0.43              |
| 22:BA:1024:A:H2'   | 22:BA:1025:G:C8    | 2.54                     | 0.43              |
| 22:BA:698:C:H42    | 22:BA:798:C:C5'    | 2.31                     | 0.43              |
| 22:BA:2375:A:H2    | 35:BN:124:ARG:NH2  | 2.17                     | 0.43              |
| 32:BK:184:LEU:C    | 32:BK:186:ASP:H    | 2.22                     | 0.43              |
| 22:BA:839:G:N3     | 22:BA:839:G:H3'    | 2.32                     | 0.43              |
| 33:BL:155:VAL:HB   | 33:BL:223:VAL:HG12 | 2.01                     | 0.43              |
| 38:BQ:109:SER:HA   | 38:BQ:114:VAL:HG21 | 2.00                     | 0.43              |
| 49:B2:13:LYS:HZ2   | 49:B2:13:LYS:HB3   | 1.82                     | 0.43              |
| 39:BR:224:ASP:O    | 39:BR:225:LYS:HG2  | 2.19                     | 0.43              |
| 29:BH:41:LEU:O     | 29:BH:42:GLU:HG2   | 2.18                     | 0.43              |
| 1:AA:1119:G:H2'    | 1:AA:1120:C:C6     | 2.53                     | 0.43              |
| 26:BE:219:VAL:HG22 | 26:BE:221:MET:H    | 1.82                     | 0.43              |
| 36:BO:120:ILE:H    | 36:BO:120:ILE:CD1  | 2.31                     | 0.43              |
| 1:AA:542:U:H3      | 1:AA:593:A:H61     | 1.66                     | 0.43              |
| 38:BQ:127:LEU:C    | 38:BQ:127:LEU:HD23 | 2.38                     | 0.43              |
| 24:BC:99:U:H2'     | 24:BC:100:G:H8     | 1.82                     | 0.43              |
| 22:BA:2079:C:H2'   | 22:BA:2080:U:C6    | 2.53                     | 0.43              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 33:BL:176:HIS:CD2 | 33:BL:178:GLY:H    | 2.37                     | 0.43              |
| 36:BO:2:LEU:HD22  | 36:BO:44:SER:N     | 2.33                     | 0.43              |
| 24:BC:4:G:H2'     | 24:BC:5:G:C8       | 2.53                     | 0.43              |
| 34:BM:64:ARG:HE   | 34:BM:83:ALA:HB3   | 1.82                     | 0.43              |
| 22:BA:2070:A:H61  | 22:BA:2629:A:N6    | 2.16                     | 0.43              |
| 22:BA:1870:U:H2'  | 22:BA:1871:U:C6    | 2.53                     | 0.43              |
| 22:BA:2380:U:H2'  | 22:BA:2381:C:C6    | 2.53                     | 0.43              |
| 1:AA:449:C:H2'    | 1:AA:450:A:C8      | 2.54                     | 0.43              |
| 1:AA:240:U:H2'    | 1:AA:241:A:H8      | 1.83                     | 0.43              |
| 22:BA:490:A:N6    | 22:BA:492:A:N6     | 2.66                     | 0.43              |
| 35:BN:83:ARG:HG3  | 35:BN:83:ARG:HH11  | 1.83                     | 0.43              |
| 31:BJ:71:LYS:CA   | 31:BJ:71:LYS:HE3   | 2.45                     | 0.43              |
| 31:BJ:88:MET:HG2  | 31:BJ:93:LEU:HD21  | 2.00                     | 0.43              |
| 1:AA:1276:C:H2'   | 1:AA:1277:A:H8     | 1.84                     | 0.43              |
| 22:BA:225:U:H5''  | 22:BA:635:C:H5'    | 2.01                     | 0.43              |
| 35:BN:122:LEU:C   | 35:BN:124:ARG:H    | 2.21                     | 0.43              |
| 1:AA:911:C:H2'    | 1:AA:912:G:H8      | 1.82                     | 0.43              |
| 22:BA:84:G:N2     | 22:BA:96:C:N3      | 2.67                     | 0.43              |
| 52:B5:128:ARG:NH1 | 52:B5:132:LEU:HD21 | 2.34                     | 0.43              |
| 1:AA:910:U:O2     | 1:AA:932:A:N7      | 2.52                     | 0.43              |
| 22:BA:740:G:C2'   | 22:BA:740:G:N3     | 2.78                     | 0.43              |
| 45:BX:106:LYS:HZ2 | 45:BX:131:PRO:HD2  | 1.83                     | 0.43              |
| 22:BA:1296:A:H61  | 22:BA:1316:C:H2'   | 1.83                     | 0.43              |
| 50:B3:49:ARG:O    | 50:B3:61:HIS:HB2   | 2.18                     | 0.43              |
| 22:BA:2400:G:OP2  | 52:B5:127:LYS:HE2  | 2.19                     | 0.43              |
| 22:BA:762:G:H1'   | 42:BU:119:ARG:NE   | 2.32                     | 0.43              |
| 22:BA:327:C:H2'   | 22:BA:328:C:C6     | 2.54                     | 0.43              |
| 32:BK:92:ALA:O    | 32:BK:96:GLY:HA3   | 2.18                     | 0.43              |
| 38:BQ:116:LYS:HZ2 | 38:BQ:116:LYS:HB2  | 1.82                     | 0.43              |
| 22:BA:1642:C:H4'  | 22:BA:1644:A:N3    | 2.33                     | 0.43              |
| 1:AA:1383:A:H2'   | 1:AA:1384:G:O4'    | 2.19                     | 0.43              |
| 36:BO:91:GLU:CD   | 36:BO:92:TYR:H     | 2.22                     | 0.43              |
| 1:AA:1009:U:H2'   | 1:AA:1010:G:C8     | 2.54                     | 0.43              |
| 41:BT:142:ILE:O   | 41:BT:218:ARG:HA   | 2.18                     | 0.43              |
| 22:BA:369:U:H2'   | 22:BA:370:A:O4'    | 2.19                     | 0.43              |
| 53:B6:11:CYS:SG   | 53:B6:12:GLU:N     | 2.92                     | 0.43              |
| 22:BA:336:G:O2'   | 22:BA:337:U:H5'    | 2.18                     | 0.43              |
| 42:BU:35:ARG:HG3  | 42:BU:132:ILE:O    | 2.19                     | 0.43              |
| 26:BE:89:LEU:HD12 | 26:BE:98:ARG:O     | 2.18                     | 0.43              |
| 24:BC:66:U:H2'    | 24:BC:67:G:N7      | 2.33                     | 0.43              |
| 45:BX:135:LYS:HZ2 | 45:BX:135:LYS:HB2  | 1.83                     | 0.43              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 40:BS:3:ARG:HG3    | 40:BS:5:LYS:H      | 1.82                     | 0.43              |
| 52:B5:113:ARG:HH11 | 52:B5:113:ARG:HG2  | 1.84                     | 0.43              |
| 35:BN:126:LEU:CD2  | 35:BN:126:LEU:H    | 2.31                     | 0.43              |
| 22:BA:459:A:N6     | 22:BA:485:G:N3     | 2.66                     | 0.43              |
| 28:BG:209:LEU:CD2  | 28:BG:211:ASP:H    | 2.29                     | 0.43              |
| 22:BA:816:G:OP2    | 22:BA:817:C:H5     | 2.02                     | 0.43              |
| 22:BA:589:G:H4'    | 22:BA:2032:G:H5''  | 1.99                     | 0.43              |
| 40:BS:44:VAL:CG2   | 41:BT:200:TYR:HB3  | 2.48                     | 0.43              |
| 1:AA:465:G:O6      | 1:AA:479:U:H1'     | 2.19                     | 0.43              |
| 33:BL:139:ASN:HA   | 40:BS:70:ARG:HB2   | 2.00                     | 0.43              |
| 26:BE:48:ARG:O     | 26:BE:48:ARG:HG3   | 2.18                     | 0.43              |
| 38:BQ:98:LYS:HG2   | 38:BQ:121:VAL:HG11 | 1.99                     | 0.43              |
| 22:BA:2138:G:C2'   | 22:BA:2139:A:H5'   | 2.45                     | 0.43              |
| 24:BC:30:A:H2'     | 24:BC:31:U:C6      | 2.54                     | 0.43              |
| 22:BA:2362:G:H5'   | 22:BA:2364:C:H5''  | 2.01                     | 0.43              |
| 1:AA:1199:A:H1'    | 1:AA:1318:C:O2'    | 2.18                     | 0.43              |
| 22:BA:2089:U:H2'   | 22:BA:2091:A:OP1   | 2.19                     | 0.43              |
| 1:AA:155:A:H2'     | 1:AA:156:A:C8      | 2.53                     | 0.43              |
| 1:AA:685:U:H2'     | 1:AA:686:G:C8      | 2.53                     | 0.43              |
| 22:BA:2658:A:H2'   | 22:BA:2659:G:C8    | 2.53                     | 0.43              |
| 34:BM:93:PRO:HD2   | 34:BM:112:LYS:NZ   | 2.34                     | 0.43              |
| 1:AA:293:C:H2'     | 1:AA:294:U:C6      | 2.53                     | 0.43              |
| 22:BA:2142:G:H2'   | 22:BA:2143:C:C6    | 2.54                     | 0.43              |
| 34:BM:47:ILE:HB    | 34:BM:50:THR:CG2   | 2.49                     | 0.43              |
| 22:BA:2311:C:O2'   | 22:BA:2312:C:H5'   | 2.18                     | 0.43              |
| 42:BU:58:TYR:CE1   | 42:BU:96:ALA:HA    | 2.53                     | 0.43              |
| 22:BA:2722:C:H2'   | 22:BA:2723:A:O4'   | 2.18                     | 0.43              |
| 4:AD:33:ARG:HB3    | 4:AD:34:ASN:H      | 1.64                     | 0.43              |
| 26:BE:92:TYR:HE2   | 26:BE:98:ARG:HG3   | 1.84                     | 0.43              |
| 39:BR:150:GLN:HB3  | 39:BR:169:VAL:HB   | 2.00                     | 0.43              |
| 24:BC:4:G:H5''     | 27:BF:105:LYS:HD2  | 2.01                     | 0.43              |
| 53:B6:7:VAL:HA     | 53:B6:35:GLN:NE2   | 2.34                     | 0.43              |
| 1:AA:633:G:H2'     | 1:AA:634:G:H8      | 1.79                     | 0.43              |
| 40:BS:64:ARG:N     | 40:BS:64:ARG:HE    | 2.17                     | 0.43              |
| 22:BA:2598:G:H2'   | 22:BA:2627:C:H41   | 1.84                     | 0.43              |
| 1:AA:180:A:C5      | 1:AA:192:C:H4'     | 2.54                     | 0.43              |
| 1:AA:909:U:H4'     | 1:AA:910:U:H5'     | 2.00                     | 0.43              |
| 22:BA:1878:C:O2'   | 22:BA:1879:U:O5'   | 2.37                     | 0.43              |
| 1:AA:1453:G:H5''   | 1:AA:1454:G:OP1    | 2.18                     | 0.43              |
| 22:BA:1442:C:H2'   | 22:BA:1443:G:C8    | 2.54                     | 0.43              |
| 28:BG:107:GLU:HG3  | 28:BG:113:ARG:HH22 | 1.83                     | 0.43              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 26:BE:239:ARG:HG2  | 26:BE:239:ARG:HH11 | 1.84                     | 0.43              |
| 22:BA:2394:A:H2'   | 22:BA:2395:A:C8    | 2.54                     | 0.43              |
| 1:AA:1066:G:N2     | 1:AA:1128:A:H1'    | 2.33                     | 0.43              |
| 22:BA:1453:G:H2'   | 22:BA:1454:G:H8    | 1.82                     | 0.43              |
| 24:BC:8:A:C1'      | 49:B2:28:ALA:HB2   | 2.49                     | 0.43              |
| 22:BA:2308:U:H2'   | 22:BA:2309:U:C6    | 2.54                     | 0.43              |
| 22:BA:914:A:H2'    | 22:BA:915:G:H8     | 1.83                     | 0.43              |
| 1:AA:1325:U:H2'    | 1:AA:1326:U:C6     | 2.54                     | 0.43              |
| 11:AK:128:ASN:HB3  | 21:AU:131:ARG:HH22 | 1.84                     | 0.43              |
| 29:BH:141:GLY:HA3  | 29:BH:175:ALA:HB3  | 2.01                     | 0.43              |
| 25:BD:297:GLU:CD   | 25:BD:297:GLU:H    | 2.22                     | 0.43              |
| 36:BO:109:VAL:HG23 | 36:BO:114:ALA:HB2  | 1.99                     | 0.43              |
| 22:BA:221:C:H4'    | 22:BA:443:U:O2'    | 2.18                     | 0.43              |
| 23:BB:23:G:H2'     | 23:BB:24:G:C8      | 2.54                     | 0.43              |
| 1:AA:126:G:O2'     | 1:AA:127:A:H5'     | 2.19                     | 0.43              |
| 1:AA:591:C:C5'     | 8:AH:31:ILE:HG13   | 2.49                     | 0.43              |
| 39:BR:151:ILE:O    | 39:BR:170:ILE:HG12 | 2.18                     | 0.43              |
| 39:BR:195:VAL:HG23 | 39:BR:196:PHE:N    | 2.34                     | 0.43              |
| 37:BP:127:LYS:O    | 37:BP:131:ARG:HG3  | 2.19                     | 0.43              |
| 22:BA:1601:G:N2    | 26:BE:26:ASN:HB3   | 2.33                     | 0.43              |
| 28:BG:206:LEU:HD12 | 28:BG:206:LEU:N    | 2.33                     | 0.43              |
| 39:BR:155:VAL:O    | 39:BR:155:VAL:HG13 | 2.18                     | 0.43              |
| 1:AA:1078:C:H41    | 1:AA:1087:G:H2'    | 1.83                     | 0.43              |
| 40:BS:35:ILE:HA    | 40:BS:38:GLN:HB3   | 2.01                     | 0.43              |
| 22:BA:1878:C:HO2'  | 22:BA:1879:U:H6    | 1.58                     | 0.43              |
| 38:BQ:141:TYR:O    | 38:BQ:143:TYR:N    | 2.50                     | 0.43              |
| 1:AA:1247:A:C5     | 1:AA:1249:U:H1'    | 2.53                     | 0.43              |
| 22:BA:326:A:H2'    | 22:BA:327:C:C6     | 2.53                     | 0.43              |
| 22:BA:330:U:H1'    | 28:BG:218:LYS:NZ   | 2.31                     | 0.43              |
| 22:BA:2693:C:H2'   | 22:BA:2694:G:C8    | 2.53                     | 0.43              |
| 22:BA:2791:C:H2'   | 22:BA:2792:C:C6    | 2.54                     | 0.43              |
| 22:BA:308:G:H1'    | 22:BA:349:A:N6     | 2.33                     | 0.43              |
| 49:B2:50:LYS:CE    | 49:B2:57:GLU:HB2   | 2.48                     | 0.43              |
| 22:BA:532:A:H2'    | 22:BA:533:G:C8     | 2.54                     | 0.43              |
| 31:BJ:55:LYS:H     | 31:BJ:65:GLY:HA2   | 1.84                     | 0.43              |
| 22:BA:136:U:OP1    | 46:BY:151:LYS:HE2  | 2.19                     | 0.43              |
| 4:AD:145:ILE:HG22  | 4:AD:147:LEU:H     | 1.83                     | 0.43              |
| 28:BG:54:PRO:C     | 28:BG:55:LEU:HD12  | 2.39                     | 0.43              |
| 22:BA:471:U:H2'    | 22:BA:472:A:O4'    | 2.19                     | 0.43              |
| 26:BE:62:ASP:OD2   | 26:BE:98:ARG:HD2   | 2.18                     | 0.43              |
| 39:BR:196:PHE:O    | 39:BR:196:PHE:CD1  | 2.72                     | 0.43              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 39:BR:183:ILE:CG2  | 39:BR:198:LEU:H    | 2.31                     | 0.43              |
| 22:BA:1447:G:N1    | 22:BA:1448:A:N6    | 2.67                     | 0.43              |
| 34:BM:3:GLN:CB     | 34:BM:4:PRO:HD2    | 2.37                     | 0.43              |
| 22:BA:2244:A:H4'   | 26:BE:257:LYS:HB2  | 2.01                     | 0.43              |
| 35:BN:205:THR:HG23 | 35:BN:234:LYS:NZ   | 2.33                     | 0.43              |
| 1:AA:494:A:H4'     | 1:AA:496:G:H4'     | 2.01                     | 0.43              |
| 22:BA:2073:A:C2'   | 22:BA:2520:A:H61   | 2.32                     | 0.43              |
| 38:BQ:43:THR:HG22  | 38:BQ:45:ARG:HD2   | 2.01                     | 0.43              |
| 41:BT:219:ILE:CG2  | 41:BT:220:LYS:H    | 2.18                     | 0.43              |
| 1:AA:94:C:H2'      | 1:AA:95:G:O4'      | 2.19                     | 0.43              |
| 27:BF:200:LYS:HZ3  | 33:BL:180:PRO:N    | 2.17                     | 0.43              |
| 42:BU:140:THR:CG2  | 42:BU:141:HIS:H    | 2.22                     | 0.43              |
| 1:AA:611:A:H5''    | 18:AR:57:LYS:HZ2   | 1.84                     | 0.43              |
| 1:AA:1294:A:H4'    | 1:AA:1295:G:O5'    | 2.19                     | 0.43              |
| 1:AA:1400:C:H5''   | 1:AA:1401:A:OP2    | 2.19                     | 0.43              |
| 1:AA:1402:A:C2'    | 1:AA:1403:G:H5'    | 2.49                     | 0.43              |
| 37:BP:168:LEU:CA   | 37:BP:173:PRO:HG2  | 2.49                     | 0.43              |
| 22:BA:495:A:O2'    | 44:BW:111:VAL:HG21 | 2.19                     | 0.43              |
| 22:BA:874:G:C2'    | 22:BA:875:C:H5'    | 2.48                     | 0.43              |
| 22:BA:517:G:H5''   | 22:BA:520:C:O2'    | 2.19                     | 0.43              |
| 1:AA:1050:A:H61    | 2:AB:179:GLU:HB3   | 1.84                     | 0.43              |
| 1:AA:838:A:H4'     | 1:AA:839:G:H4'     | 1.99                     | 0.43              |
| 40:BS:74:VAL:HG23  | 40:BS:112:TYR:HE1  | 1.84                     | 0.43              |
| 1:AA:133:A:H2'     | 1:AA:134:C:O4'     | 2.18                     | 0.43              |
| 4:AD:90:ARG:HH12   | 4:AD:108:ARG:HH22  | 1.66                     | 0.43              |
| 22:BA:123:C:OP2    | 51:B4:115:ARG:HD3  | 2.19                     | 0.43              |
| 43:BV:118:PRO:HD2  | 47:BZ:97:SER:OG    | 2.18                     | 0.43              |
| 1:AA:1180:U:H5''   | 9:AI:193:GLN:O     | 2.19                     | 0.43              |
| 1:AA:757:G:O2'     | 1:AA:758:C:H5'     | 2.19                     | 0.43              |
| 22:BA:529:G:H2'    | 22:BA:530:U:C6     | 2.54                     | 0.43              |
| 22:BA:388:C:H2'    | 22:BA:389:A:H8     | 1.84                     | 0.43              |
| 39:BR:192:VAL:CG1  | 39:BR:193:GLU:H    | 2.11                     | 0.43              |
| 22:BA:2378:C:C5'   | 52:B5:115:ALA:HB3  | 2.49                     | 0.43              |
| 22:BA:1226:U:H2'   | 28:BG:224:ARG:HH22 | 1.84                     | 0.43              |
| 28:BG:206:LEU:HD21 | 28:BG:243:GLU:OE1  | 2.19                     | 0.43              |
| 22:BA:1165:G:H21   | 33:BL:207:MET:CE   | 2.32                     | 0.43              |
| 1:AA:1078:C:C1'    | 1:AA:1094:A:H61    | 2.31                     | 0.43              |
| 52:B5:126:THR:HG23 | 52:B5:126:THR:O    | 2.18                     | 0.43              |
| 30:BI:201:LYS:HA   | 30:BI:214:ARG:NH2  | 2.34                     | 0.43              |
| 38:BQ:77:LEU:HD23  | 38:BQ:77:LEU:C     | 2.38                     | 0.43              |
| 1:AA:1246:C:H4'    | 1:AA:1247:A:C6     | 2.54                     | 0.43              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:297:U:H2'    | 22:BA:298:G:C8     | 2.54                     | 0.43              |
| 22:BA:2185:A:C2'   | 22:BA:2186:U:H5'   | 2.48                     | 0.43              |
| 37:BP:110:LEU:O    | 37:BP:110:LEU:HD13 | 2.19                     | 0.43              |
| 1:AA:685:U:H2'     | 1:AA:686:G:H8      | 1.84                     | 0.43              |
| 24:BC:83:A:C2'     | 24:BC:84:A:H5''    | 2.48                     | 0.43              |
| 1:AA:456:U:H1'     | 1:AA:457:A:N7      | 2.34                     | 0.43              |
| 43:BV:191:ILE:H    | 43:BV:191:ILE:CD1  | 2.32                     | 0.43              |
| 1:AA:336:U:O2      | 1:AA:336:U:H2'     | 2.18                     | 0.43              |
| 22:BA:1704:A:N1    | 22:BA:1712:A:N6    | 2.67                     | 0.43              |
| 1:AA:1371:G:O2'    | 1:AA:1372:G:H5'    | 2.19                     | 0.43              |
| 22:BA:2606:A:H2'   | 22:BA:2607:A:C8    | 2.54                     | 0.43              |
| 1:AA:1213:C:H2'    | 1:AA:1214:G:C8     | 2.54                     | 0.43              |
| 22:BA:2358:G:H2'   | 22:BA:2359:C:C6    | 2.53                     | 0.43              |
| 1:AA:285:C:O2'     | 1:AA:286:A:H5'     | 2.19                     | 0.43              |
| 1:AA:98:U:H1'      | 1:AA:324:A:H1'     | 2.01                     | 0.43              |
| 1:AA:1321:U:H2'    | 1:AA:1322:G:O4'    | 2.19                     | 0.43              |
| 43:BV:113:GLN:HG3  | 43:BV:113:GLN:O    | 2.18                     | 0.43              |
| 26:BE:128:LEU:N    | 26:BE:128:LEU:HD12 | 2.33                     | 0.43              |
| 25:BD:265:GLN:O    | 25:BD:269:GLU:HB2  | 2.18                     | 0.43              |
| 42:BU:41:MET:SD    | 42:BU:72:ALA:HA    | 2.59                     | 0.42              |
| 26:BE:137:ILE:CG2  | 26:BE:138:HIS:H    | 2.20                     | 0.42              |
| 22:BA:2044:A:N3    | 22:BA:2516:C:H5''  | 2.34                     | 0.42              |
| 22:BA:595:G:H3'    | 22:BA:1272:A:H61   | 1.83                     | 0.42              |
| 46:BY:76:ARG:CG    | 46:BY:77:ILE:H     | 2.29                     | 0.42              |
| 23:BB:106:G:O2'    | 23:BB:107:C:H5'    | 2.19                     | 0.42              |
| 1:AA:250:A:H5''    | 1:AA:251:U:O5'     | 2.19                     | 0.42              |
| 22:BA:1875:G:O6    | 22:BA:1889:G:H2'   | 2.19                     | 0.42              |
| 22:BA:2475:G:OP2   | 22:BA:2475:G:N2    | 2.51                     | 0.42              |
| 22:BA:110:U:H2'    | 22:BA:111:U:O4'    | 2.19                     | 0.42              |
| 37:BP:117:LEU:HD23 | 37:BP:137:VAL:HG11 | 2.01                     | 0.42              |
| 22:BA:693:G:H5'    | 51:B4:122:SER:CB   | 2.46                     | 0.42              |
| 22:BA:2767:A:H5''  | 30:BI:46:ILE:CD1   | 2.49                     | 0.42              |
| 1:AA:611:A:H5''    | 18:AR:57:LYS:NZ    | 2.33                     | 0.42              |
| 38:BQ:81:VAL:HG13  | 38:BQ:122:ILE:HD11 | 2.00                     | 0.42              |
| 22:BA:1435:U:H2'   | 22:BA:1436:U:C6    | 2.53                     | 0.42              |
| 22:BA:1196:A:H2'   | 22:BA:1197:A:O4'   | 2.18                     | 0.42              |
| 29:BH:75:ILE:HG22  | 29:BH:155:GLU:HB2  | 2.00                     | 0.42              |
| 1:AA:1236:A:N1     | 1:AA:1320:G:H1'    | 2.34                     | 0.42              |
| 1:AA:1198:A:H2     | 1:AA:1301:G:H21    | 1.67                     | 0.42              |
| 45:BX:73:SER:HB3   | 45:BX:74:PRO:CA    | 2.49                     | 0.42              |
| 24:BC:44:C:H2'     | 24:BC:45:A:C8      | 2.53                     | 0.42              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 12:AL:6:GLN:NE2    | 12:AL:12:ARG:HH22  | 2.16                     | 0.42              |
| 22:BA:392:G:H4'    | 46:BY:93:HIS:O     | 2.18                     | 0.42              |
| 24:BC:12:C:H3'     | 24:BC:14:A:N6      | 2.33                     | 0.42              |
| 44:BW:142:GLU:O    | 44:BW:143:VAL:HB   | 2.19                     | 0.42              |
| 1:AA:1412:U:H2'    | 1:AA:1413:G:H8     | 1.84                     | 0.42              |
| 24:BC:9:C:H2'      | 24:BC:10:G:C8      | 2.54                     | 0.42              |
| 1:AA:262:U:H2'     | 1:AA:263:G:C8      | 2.54                     | 0.42              |
| 49:B2:51:ILE:O     | 49:B2:52:SER:HB2   | 2.18                     | 0.42              |
| 22:BA:2721:C:H2'   | 22:BA:2722:C:O4'   | 2.18                     | 0.42              |
| 22:BA:182:A:OP1    | 22:BA:182:A:H3'    | 2.19                     | 0.42              |
| 22:BA:1968:G:N3    | 22:BA:2568:C:H5'   | 2.34                     | 0.42              |
| 6:AF:118:LYS:HB2   | 26:BE:163:LYS:HG2  | 1.42                     | 0.42              |
| 36:BO:38:GLU:HA    | 36:BO:39:PRO:HD3   | 1.94                     | 0.42              |
| 26:BE:137:ILE:CG2  | 26:BE:138:HIS:N    | 2.75                     | 0.42              |
| 34:BM:69:LEU:HB3   | 34:BM:77:ILE:CG2   | 2.49                     | 0.42              |
| 39:BR:147:ASP:CB   | 39:BR:214:VAL:HA   | 2.48                     | 0.42              |
| 38:BQ:84:ASP:C     | 38:BQ:85:SER:HG    | 2.21                     | 0.42              |
| 28:BG:161:LEU:HB2  | 28:BG:259:TYR:CE1  | 2.54                     | 0.42              |
| 46:BY:108:TYR:CE2  | 46:BY:123:ARG:HB3  | 2.54                     | 0.42              |
| 35:BN:146:VAL:HB   | 35:BN:164:LEU:HD11 | 2.01                     | 0.42              |
| 22:BA:1825:A:H1'   | 22:BA:1827:G:C4    | 2.54                     | 0.42              |
| 22:BA:2678:G:H2'   | 22:BA:2679:A:O4'   | 2.19                     | 0.42              |
| 22:BA:622:G:H2'    | 22:BA:624:A:C8     | 2.54                     | 0.42              |
| 27:BF:164:GLY:H    | 27:BF:167:LYS:CE   | 2.31                     | 0.42              |
| 22:BA:1210:A:O3'   | 35:BN:106:ARG:HG2  | 2.19                     | 0.42              |
| 22:BA:1211:G:H5''  | 35:BN:106:ARG:NH2  | 2.34                     | 0.42              |
| 1:AA:465:G:C6      | 1:AA:479:U:H1'     | 2.55                     | 0.42              |
| 29:BH:113:SER:HB3  | 48:B1:62:LYS:C     | 2.39                     | 0.42              |
| 22:BA:2331:G:H2'   | 22:BA:2332:G:C8    | 2.54                     | 0.42              |
| 1:AA:931:U:H4'     | 1:AA:932:A:C5'     | 2.49                     | 0.42              |
| 22:BA:1364:G:H1'   | 22:BA:1633:A:C2    | 2.54                     | 0.42              |
| 25:BD:190:ALA:HB3  | 25:BD:228:LEU:HD13 | 2.01                     | 0.42              |
| 31:BJ:80:LEU:HB3   | 31:BJ:81:PRO:CD    | 2.49                     | 0.42              |
| 22:BA:1298:A:O2'   | 37:BP:113:LEU:HD21 | 2.19                     | 0.42              |
| 22:BA:1333:U:H4'   | 22:BA:1334:U:C6    | 2.53                     | 0.42              |
| 22:BA:2790:C:H5'   | 27:BF:214:LYS:HZ2  | 1.84                     | 0.42              |
| 24:BC:44:C:H2'     | 24:BC:45:A:H8      | 1.84                     | 0.42              |
| 24:BC:76:G:H2'     | 24:BC:77:C:C6      | 2.54                     | 0.42              |
| 31:BJ:149:VAL:HG21 | 31:BJ:161:ASP:O    | 2.18                     | 0.42              |
| 1:AA:569:A:H2'     | 1:AA:570:A:C8      | 2.54                     | 0.42              |
| 22:BA:1927:A:HO2'  | 22:BA:1928:C:P     | 2.40                     | 0.42              |

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| Atom-1             | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|-------------------|--------------------------|-------------------|
| 22:BA:534:C:H2'    | 22:BA:535:U:C6    | 2.54                     | 0.42              |
| 1:AA:749:U:H2'     | 1:AA:750:A:C8     | 2.54                     | 0.42              |
| 47:BZ:89:LEU:HD23  | 47:BZ:89:LEU:C    | 2.39                     | 0.42              |
| 22:BA:1068:G:H2'   | 22:BA:1069:U:C6   | 2.54                     | 0.42              |
| 22:BA:628:A:H1'    | 28:BG:233:SER:OG  | 2.18                     | 0.42              |
| 1:AA:497:C:H2'     | 1:AA:498:G:H8     | 1.84                     | 0.42              |
| 37:BP:189:THR:HG21 | 37:BP:201:TYR:CE2 | 2.54                     | 0.42              |
| 22:BA:2665:U:H2'   | 22:BA:2666:U:C6   | 2.54                     | 0.42              |
| 29:BH:61:ASN:ND2   | 29:BH:64:GLY:H    | 2.17                     | 0.42              |
| 22:BA:1972:C:H2'   | 22:BA:1973:G:H8   | 1.84                     | 0.42              |
| 22:BA:2501:G:O2'   | 22:BA:2502:G:H5'  | 2.19                     | 0.42              |
| 36:BO:39:PRO:HA    | 36:BO:97:VAL:O    | 2.20                     | 0.42              |
| 1:AA:1457:G:H2'    | 1:AA:1458:C:C6    | 2.55                     | 0.42              |
| 49:B2:32:PHE:CA    | 49:B2:36:LYS:HD2  | 2.49                     | 0.42              |
| 22:BA:1836:C:H2'   | 22:BA:1837:U:C6   | 2.55                     | 0.42              |
| 22:BA:407:C:H2'    | 22:BA:408:G:C8    | 2.54                     | 0.42              |
| 1:AA:667:C:N4      | 18:AR:67:LYS:HZ3  | 2.18                     | 0.42              |
| 22:BA:2381:C:H5''  | 45:BX:96:ARG:HD2  | 2.01                     | 0.42              |
| 26:BE:152:ARG:HG2  | 26:BE:152:ARG:NH1 | 2.35                     | 0.42              |
| 29:BH:52:ASN:HA    | 29:BH:103:ALA:HA  | 2.02                     | 0.42              |
| 22:BA:1225:G:C2'   | 22:BA:1226:U:H5'' | 2.49                     | 0.42              |
| 31:BJ:183:HIS:C    | 31:BJ:185:ASP:H   | 2.22                     | 0.42              |
| 22:BA:181:A:H62    | 22:BA:842:G:N2    | 2.17                     | 0.42              |
| 22:BA:967:C:H2'    | 22:BA:968:C:C6    | 2.54                     | 0.42              |
| 1:AA:443:A:H4'     | 1:AA:444:A:C5'    | 2.50                     | 0.42              |
| 35:BN:152:GLU:CD   | 35:BN:195:LYS:HB2 | 2.40                     | 0.42              |
| 22:BA:489:A:H2'    | 22:BA:490:A:C8    | 2.54                     | 0.42              |
| 1:AA:222:G:H22     | 1:AA:242:C:N4     | 2.17                     | 0.42              |
| 50:B3:39:ARG:NE    | 50:B3:39:ARG:HA   | 2.34                     | 0.42              |
| 22:BA:812:G:O4'    | 28:BG:107:GLU:HB2 | 2.19                     | 0.42              |
| 22:BA:2106:U:H4'   | 22:BA:2107:G:C8   | 2.55                     | 0.42              |
| 22:BA:325:A:H2'    | 22:BA:326:A:H8    | 1.83                     | 0.42              |
| 34:BM:7:HIS:O      | 34:BM:7:HIS:ND1   | 2.52                     | 0.42              |
| 42:BU:111:LEU:HD23 | 42:BU:112:LYS:N   | 2.34                     | 0.42              |
| 22:BA:15:G:H2'     | 22:BA:16:G:C8     | 2.54                     | 0.42              |
| 22:BA:568:C:P      | 33:BL:212:ARG:HE  | 2.41                     | 0.42              |
| 1:AA:1173:A:H1'    | 19:AS:78:LEU:HD13 | 2.00                     | 0.42              |
| 30:BI:146:LEU:O    | 30:BI:158:MET:HG2 | 2.19                     | 0.42              |
| 1:AA:364:A:H5'     | 1:AA:431:C:O2'    | 2.18                     | 0.42              |
| 1:AA:623:A:H2'     | 1:AA:624:A:O4'    | 2.19                     | 0.42              |
| 22:BA:533:G:H2'    | 22:BA:534:C:C6    | 2.53                     | 0.42              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:116:C:H2'     | 1:AA:117:U:O4'     | 2.19                     | 0.42              |
| 31:BJ:55:LYS:H     | 31:BJ:65:GLY:CA    | 2.33                     | 0.42              |
| 37:BP:203:GLU:OE1  | 49:B2:51:ILE:HD11  | 2.20                     | 0.42              |
| 22:BA:1462:G:H2'   | 22:BA:1463:U:C6    | 2.54                     | 0.42              |
| 36:BO:10:ARG:HG3   | 36:BO:10:ARG:HH11  | 1.85                     | 0.42              |
| 30:BI:93:LEU:HD13  | 30:BI:93:LEU:C     | 2.39                     | 0.42              |
| 1:AA:934:C:H2'     | 1:AA:935:A:C8      | 2.54                     | 0.42              |
| 22:BA:2740:G:O2'   | 37:BP:92:HIS:HB2   | 2.20                     | 0.42              |
| 1:AA:660:A:H5''    | 26:BE:161:ILE:C    | 2.33                     | 0.42              |
| 42:BU:41:MET:HA    | 42:BU:71:ARG:HH21  | 1.85                     | 0.42              |
| 22:BA:2502:G:H2'   | 22:BA:2503:G:H8    | 1.84                     | 0.42              |
| 22:BA:409:U:H2'    | 22:BA:410:G:C8     | 2.55                     | 0.42              |
| 22:BA:1597:C:N4    | 26:BE:25:ARG:HH11  | 2.17                     | 0.42              |
| 1:AA:634:G:H21     | 1:AA:652:A:N6      | 2.17                     | 0.42              |
| 46:BY:81:THR:OG1   | 46:BY:106:LEU:HD11 | 2.19                     | 0.42              |
| 46:BY:86:ASN:OD1   | 46:BY:87:ARG:N     | 2.48                     | 0.42              |
| 1:AA:665:C:N4      | 1:AA:682:C:N4      | 2.67                     | 0.42              |
| 1:AA:178:A:H5''    | 20:AT:155:LYS:HE3  | 2.01                     | 0.42              |
| 22:BA:1182:A:H5''  | 40:BS:55:ARG:NE    | 2.31                     | 0.42              |
| 22:BA:1182:A:C5'   | 40:BS:55:ARG:HH21  | 2.30                     | 0.42              |
| 40:BS:50:ARG:HH12  | 41:BT:198:PHE:N    | 2.17                     | 0.42              |
| 31:BJ:51:LYS:HB3   | 31:BJ:88:MET:HE2   | 2.01                     | 0.42              |
| 22:BA:1159:G:H5'   | 33:BL:183:LEU:HD12 | 2.00                     | 0.42              |
| 52:B5:125:ASN:O    | 52:B5:126:THR:O    | 2.37                     | 0.42              |
| 22:BA:2263:C:H2'   | 22:BA:2264:U:O4'   | 2.19                     | 0.42              |
| 1:AA:970:G:H2'     | 1:AA:971:G:C8      | 2.55                     | 0.42              |
| 22:BA:2748:C:H5'   | 27:BF:218:LEU:HD23 | 2.02                     | 0.42              |
| 25:BD:228:LEU:HB2  | 25:BD:250:LEU:O    | 2.18                     | 0.42              |
| 28:BG:107:GLU:N    | 28:BG:107:GLU:OE1  | 2.52                     | 0.42              |
| 22:BA:1916:C:C4'   | 26:BE:238:GLY:HA3  | 2.48                     | 0.42              |
| 38:BQ:93:ALA:HB3   | 38:BQ:122:ILE:HB   | 2.01                     | 0.42              |
| 22:BA:2768:A:H1'   | 30:BI:43:GLU:OE1   | 2.19                     | 0.42              |
| 22:BA:2564:U:H1'   | 22:BA:2583:A:N6    | 2.35                     | 0.42              |
| 39:BR:224:ASP:O    | 39:BR:226:LEU:N    | 2.52                     | 0.42              |
| 22:BA:2091:A:H2'   | 22:BA:2092:C:C6    | 2.54                     | 0.42              |
| 37:BP:168:LEU:N    | 37:BP:168:LEU:HD12 | 2.33                     | 0.42              |
| 22:BA:1260:G:O2'   | 22:BA:1261:A:H5'   | 2.19                     | 0.42              |
| 24:BC:43:U:H2'     | 24:BC:44:C:C6      | 2.54                     | 0.42              |
| 1:AA:369:U:H2'     | 1:AA:370:G:H8      | 1.84                     | 0.42              |
| 30:BI:146:LEU:HD23 | 30:BI:146:LEU:C    | 2.39                     | 0.42              |
| 40:BS:95:LYS:CD    | 40:BS:95:LYS:H     | 2.32                     | 0.42              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 27:BF:246:ILE:HG23 | 27:BF:246:ILE:O    | 2.19                     | 0.42              |
| 1:AA:436:U:H2'     | 1:AA:437:C:H6      | 1.84                     | 0.42              |
| 1:AA:107:C:H5''    | 1:AA:282:C:O2'     | 2.19                     | 0.42              |
| 22:BA:2454:U:H2'   | 22:BA:2455:U:O4'   | 2.18                     | 0.42              |
| 1:AA:534:U:O2'     | 1:AA:535:G:H5'     | 2.18                     | 0.42              |
| 22:BA:1318:C:H2'   | 22:BA:1319:C:C6    | 2.54                     | 0.42              |
| 22:BA:1661:U:H2'   | 22:BA:1662:A:O4'   | 2.19                     | 0.42              |
| 26:BE:133:LEU:O    | 26:BE:160:LEU:HB2  | 2.19                     | 0.42              |
| 1:AA:1332:C:C5     | 1:AA:1333:C:C4     | 3.08                     | 0.42              |
| 36:BO:23:ARG:CG    | 36:BO:98:LYS:HB2   | 2.49                     | 0.42              |
| 44:BW:136:LEU:CD1  | 44:BW:145:ASP:HB3  | 2.49                     | 0.42              |
| 35:BN:78:ARG:HG3   | 35:BN:79:LYS:N     | 2.34                     | 0.42              |
| 26:BE:85:ALA:CB    | 26:BE:153:ALA:HB3  | 2.49                     | 0.42              |
| 22:BA:490:A:N6     | 22:BA:492:A:H62    | 2.17                     | 0.42              |
| 22:BA:2598:G:H4'   | 22:BA:2599:G:N7    | 2.33                     | 0.42              |
| 22:BA:2436:U:H2'   | 22:BA:2437:C:H6    | 1.84                     | 0.42              |
| 38:BQ:131:ILE:HG22 | 38:BQ:133:LYS:HE3  | 2.02                     | 0.42              |
| 52:B5:128:ARG:HG2  | 52:B5:128:ARG:HH11 | 1.83                     | 0.42              |
| 1:AA:353:A:H2'     | 1:AA:354:A:O4'     | 2.19                     | 0.42              |
| 22:BA:1452:A:N6    | 22:BA:1595:C:N4    | 2.65                     | 0.42              |
| 22:BA:1264:C:O2    | 35:BN:80:ARG:HB3   | 2.18                     | 0.42              |
| 24:BC:31:U:O5'     | 24:BC:31:U:H6      | 2.02                     | 0.42              |
| 26:BE:244:THR:O    | 26:BE:246:TRP:N    | 2.53                     | 0.42              |
| 22:BA:2232:G:H2'   | 22:BA:2233:G:H8    | 1.84                     | 0.42              |
| 1:AA:706:G:H4'     | 1:AA:829:C:O4'     | 2.20                     | 0.42              |
| 32:BK:82:LEU:HD11  | 32:BK:99:LEU:HD12  | 2.00                     | 0.42              |
| 1:AA:678:A:H2'     | 1:AA:679:G:C5'     | 2.47                     | 0.42              |
| 22:BA:2395:A:C2'   | 22:BA:2396:G:H5'   | 2.50                     | 0.42              |
| 22:BA:15:G:H5''    | 49:B2:14:ARG:HB2   | 2.02                     | 0.42              |
| 39:BR:129:LYS:HZ2  | 39:BR:129:LYS:HB2  | 1.84                     | 0.42              |
| 22:BA:392:G:H2'    | 22:BA:393:G:H8     | 1.85                     | 0.42              |
| 23:BB:97:G:H2'     | 23:BB:98:G:C8      | 2.55                     | 0.42              |
| 29:BH:110:LEU:CD1  | 29:BH:110:LEU:H    | 2.32                     | 0.42              |
| 4:AD:125:ILE:HA    | 4:AD:126:PRO:HD3   | 1.87                     | 0.42              |
| 19:AS:64:ASP:CG    | 48:B1:89:HIS:HB3   | 2.30                     | 0.42              |
| 32:BK:144:PRO:HG2  | 32:BK:149:LEU:HD21 | 2.02                     | 0.42              |
| 22:BA:1968:G:H5'   | 22:BA:2567:G:H21   | 1.85                     | 0.42              |
| 1:AA:1054:A:H2'    | 1:AA:1055:G:H8     | 1.85                     | 0.42              |
| 22:BA:309:A:N3     | 22:BA:331:A:N6     | 2.68                     | 0.42              |
| 22:BA:170:U:H4'    | 22:BA:203:A:H4'    | 2.00                     | 0.42              |
| 1:AA:546:U:H4'     | 8:AH:90:TYR:CG     | 2.54                     | 0.42              |

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| Atom-1             | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|-------------------|--------------------------|-------------------|
| 19:AS:63:THR:HG23  | 19:AS:65:ARG:H    | 1.85                     | 0.42              |
| 23:BB:90:G:OP2     | 36:BO:39:PRO:HD2  | 2.19                     | 0.42              |
| 23:BB:116:A:H2'    | 23:BB:117:G:C8    | 2.53                     | 0.42              |
| 1:AA:765:C:O2'     | 1:AA:766:G:H5''   | 2.20                     | 0.42              |
| 1:AA:649:U:P       | 1:AA:651:G:H5'    | 2.59                     | 0.42              |
| 22:BA:2244:A:H3'   | 22:BA:2245:U:C6   | 2.55                     | 0.42              |
| 46:BY:81:THR:O     | 46:BY:81:THR:HG22 | 2.19                     | 0.42              |
| 1:AA:214:A:N6      | 1:AA:252:G:H2'    | 2.33                     | 0.42              |
| 28:BG:173:PHE:CE1  | 28:BG:243:GLU:HB3 | 2.54                     | 0.42              |
| 40:BS:40:ILE:HG13  | 40:BS:41:ARG:N    | 2.34                     | 0.42              |
| 24:BC:52:A:O2'     | 37:BP:153:ARG:HD3 | 2.20                     | 0.42              |
| 1:AA:209:G:C3'     | 1:AA:210:U:C5'    | 2.95                     | 0.42              |
| 31:BJ:120:VAL:HG13 | 31:BJ:121:PHE:CD1 | 2.40                     | 0.42              |
| 1:AA:910:U:H3      | 1:AA:932:A:N6     | 2.17                     | 0.42              |
| 22:BA:321:G:H4'    | 22:BA:340:A:C5    | 2.54                     | 0.42              |
| 22:BA:175:A:H2'    | 22:BA:176:A:C8    | 2.54                     | 0.42              |
| 22:BA:2764:U:H2'   | 22:BA:2765:G:O4'  | 2.18                     | 0.42              |
| 43:BV:111:VAL:HG11 | 43:BV:146:MET:CE  | 2.49                     | 0.42              |
| 22:BA:14:A:O2'     | 22:BA:15:G:H5'    | 2.20                     | 0.42              |
| 31:BJ:79:LEU:O     | 31:BJ:79:LEU:HD13 | 2.19                     | 0.42              |
| 22:BA:2482:C:H4'   | 53:B6:5:SER:OG    | 2.20                     | 0.42              |
| 1:AA:23:G:H4'      | 1:AA:834:G:C8     | 2.53                     | 0.42              |
| 22:BA:1932:A:H4'   | 22:BA:1933:A:C8   | 2.55                     | 0.42              |
| 53:B6:19:ARG:HB2   | 53:B6:24:TYR:CD2  | 2.55                     | 0.42              |
| 22:BA:52:A:H62     | 22:BA:115:G:N2    | 2.16                     | 0.42              |
| 22:BA:2751:A:H2'   | 22:BA:2752:G:H8   | 1.84                     | 0.42              |
| 23:BB:112:C:H2'    | 23:BB:113:G:H8    | 1.85                     | 0.42              |
| 1:AA:255:C:H2'     | 1:AA:256:A:H8     | 1.85                     | 0.42              |
| 22:BA:2590:C:OP1   | 22:BA:2591:G:H5'' | 2.19                     | 0.42              |
| 22:BA:2124:G:H22   | 25:BD:167:LYS:HA  | 1.84                     | 0.42              |
| 26:BE:114:SER:HB2  | 26:BE:125:ALA:HB3 | 2.01                     | 0.42              |
| 22:BA:575:C:H2'    | 22:BA:576:U:C6    | 2.54                     | 0.42              |
| 39:BR:150:GLN:HA   | 39:BR:170:ILE:H   | 1.85                     | 0.42              |
| 38:BQ:65:ARG:H     | 38:BQ:65:ARG:CD   | 2.33                     | 0.42              |
| 38:BQ:86:LYS:HB2   | 38:BQ:87:MET:HE2  | 2.01                     | 0.42              |
| 22:BA:1871:U:H2'   | 22:BA:1872:G:H8   | 1.83                     | 0.42              |
| 1:AA:81:U:H3'      | 1:AA:82:U:C6      | 2.55                     | 0.42              |
| 25:BD:326:ALA:O    | 25:BD:337:ARG:HA  | 2.19                     | 0.42              |
| 22:BA:1822:A:N3    | 26:BE:42:ARG:NH1  | 2.67                     | 0.42              |
| 26:BE:152:ARG:CD   | 26:BE:154:ALA:HB3 | 2.50                     | 0.42              |
| 40:BS:88:ARG:NH1   | 40:BS:90:LEU:HD11 | 2.35                     | 0.42              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 28:BG:206:LEU:HD23 | 28:BG:243:GLU:HB2  | 2.01                     | 0.42              |
| 22:BA:625:C:N4     | 28:BG:216:VAL:HG11 | 2.30                     | 0.42              |
| 28:BG:223:ILE:HG23 | 28:BG:226:LEU:HB3  | 2.02                     | 0.42              |
| 27:BF:205:PRO:HG2  | 27:BF:206:GLY:H    | 1.84                     | 0.42              |
| 22:BA:695:G:C2'    | 22:BA:696:A:H5''   | 2.48                     | 0.42              |
| 22:BA:2642:G:H2'   | 22:BA:2643:C:O4'   | 2.19                     | 0.42              |
| 22:BA:2001:G:H2'   | 22:BA:2002:C:C6    | 2.54                     | 0.42              |
| 29:BH:125:ARG:HH11 | 29:BH:125:ARG:HG2  | 1.84                     | 0.42              |
| 30:BI:214:ARG:CB   | 30:BI:214:ARG:HH11 | 2.32                     | 0.42              |
| 22:BA:811:A:C5'    | 22:BA:812:G:OP1    | 2.67                     | 0.42              |
| 24:BC:33:A:C3'     | 24:BC:34:C:H5'     | 2.49                     | 0.42              |
| 38:BQ:81:VAL:HG21  | 38:BQ:126:CYS:SG   | 2.60                     | 0.42              |
| 22:BA:135:C:OP1    | 22:BA:1381:G:H5'   | 2.19                     | 0.42              |
| 1:AA:403:A:H2'     | 1:AA:404:C:O4'     | 2.19                     | 0.42              |
| 34:BM:24:ILE:HD13  | 34:BM:33:ALA:HB2   | 2.01                     | 0.42              |
| 24:BC:84:A:H3'     | 24:BC:85:C:H5'     | 2.02                     | 0.42              |
| 22:BA:1482:C:H2'   | 22:BA:1483:G:H8    | 1.85                     | 0.42              |
| 29:BH:19:LEU:HD13  | 29:BH:19:LEU:C     | 2.39                     | 0.42              |
| 1:AA:18:U:H5'      | 5:AE:162:VAL:HG12  | 2.01                     | 0.42              |
| 25:BD:197:LYS:H    | 25:BD:197:LYS:HD2  | 1.83                     | 0.42              |
| 22:BA:1952:A:C2    | 22:BA:2607:A:H1'   | 2.54                     | 0.42              |
| 22:BA:2439:C:H2'   | 22:BA:2441:C:C5    | 2.54                     | 0.42              |
| 22:BA:1555:G:N1    | 22:BA:1556:A:N6    | 2.68                     | 0.42              |
| 23:BB:60:C:H2'     | 23:BB:61:U:C6      | 2.54                     | 0.42              |
| 22:BA:2709:C:H2'   | 22:BA:2710:A:H8    | 1.84                     | 0.42              |
| 22:BA:1313:A:H2'   | 22:BA:1314:U:C6    | 2.54                     | 0.42              |
| 22:BA:2087:C:H5''  | 26:BE:224:VAL:HG22 | 2.02                     | 0.42              |
| 32:BK:177:ARG:HA   | 32:BK:196:MET:HG2  | 2.00                     | 0.42              |
| 1:AA:453:G:H5'     | 1:AA:482:G:H2'     | 2.01                     | 0.42              |
| 19:AS:63:THR:OG1   | 48:B1:91:PHE:HB2   | 2.20                     | 0.42              |
| 34:BM:64:ARG:HH11  | 39:BR:192:VAL:HG11 | 1.83                     | 0.42              |
| 22:BA:1263:G:H22   | 35:BN:79:LYS:HZ1   | 1.68                     | 0.42              |
| 36:BO:133:ILE:HG12 | 36:BO:134:SER:N    | 2.35                     | 0.42              |
| 22:BA:641:C:H5''   | 22:BA:662:C:O2'    | 2.19                     | 0.42              |
| 35:BN:178:ARG:HH11 | 35:BN:178:ARG:HG3  | 1.84                     | 0.42              |
| 26:BE:85:ALA:HB1   | 26:BE:153:ALA:HB3  | 2.01                     | 0.42              |
| 27:BF:189:ILE:HG21 | 27:BF:202:LYS:CE   | 2.50                     | 0.42              |
| 2:AB:207:ASN:HD21  | 2:AB:210:ALA:N     | 2.06                     | 0.42              |
| 22:BA:2427:G:H2'   | 22:BA:2428:A:O4'   | 2.20                     | 0.42              |
| 22:BA:1043:C:H2'   | 22:BA:1044:C:C6    | 2.55                     | 0.42              |
| 22:BA:1050:G:O5'   | 22:BA:1051:U:OP1   | 2.38                     | 0.42              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:543:A:H2'    | 22:BA:2035:A:N6    | 2.35                     | 0.42              |
| 25:BD:248:ARG:HG3  | 25:BD:248:ARG:HH11 | 1.84                     | 0.42              |
| 22:BA:1139:A:H4'   | 30:BI:45:ARG:NH2   | 2.35                     | 0.42              |
| 22:BA:1194:G:H2'   | 22:BA:1195:U:C6    | 2.55                     | 0.42              |
| 22:BA:1203:C:H2'   | 22:BA:1204:A:O4'   | 2.20                     | 0.42              |
| 22:BA:2805:C:H2'   | 22:BA:2806:U:C6    | 2.55                     | 0.42              |
| 22:BA:810:G:H2'    | 22:BA:811:A:H8     | 1.83                     | 0.42              |
| 26:BE:241:SER:N    | 26:BE:242:PRO:HD3  | 2.35                     | 0.42              |
| 27:BF:227:LEU:CD1  | 27:BF:227:LEU:H    | 2.33                     | 0.42              |
| 53:B6:27:CYS:SG    | 53:B6:29:SER:HB3   | 2.60                     | 0.42              |
| 1:AA:890:G:O2'     | 1:AA:891:G:H5'     | 2.20                     | 0.42              |
| 22:BA:47:G:N2      | 22:BA:161:G:H22    | 2.17                     | 0.42              |
| 26:BE:221:MET:CA   | 26:BE:230:GLY:H    | 2.32                     | 0.42              |
| 42:BU:110:THR:HG21 | 42:BU:126:LEU:HD22 | 2.02                     | 0.42              |
| 1:AA:243:C:H2'     | 1:AA:244:A:C8      | 2.55                     | 0.42              |
| 1:AA:809:A:H2'     | 1:AA:810:G:O4'     | 2.20                     | 0.42              |
| 22:BA:1366:C:H1'   | 22:BA:1417:U:H3    | 1.85                     | 0.42              |
| 1:AA:711:A:H2'     | 1:AA:712:C:H6      | 1.85                     | 0.42              |
| 36:BO:37:LEU:HB2   | 36:BO:38:GLU:OE2   | 2.20                     | 0.42              |
| 39:BR:147:ASP:HB3  | 39:BR:214:VAL:HA   | 2.02                     | 0.42              |
| 24:BC:4:G:H5''     | 27:BF:105:LYS:HZ2  | 1.85                     | 0.42              |
| 51:B4:117:ARG:HH11 | 51:B4:117:ARG:HG2  | 1.84                     | 0.42              |
| 22:BA:1324:A:H2'   | 22:BA:1325:C:O4'   | 2.20                     | 0.42              |
| 22:BA:2064:C:H4'   | 27:BF:186:LEU:CD1  | 2.49                     | 0.42              |
| 38:BQ:123:ALA:O    | 38:BQ:125:ALA:N    | 2.53                     | 0.42              |
| 1:AA:1254:A:H62    | 1:AA:1279:G:HI'    | 1.78                     | 0.42              |
| 50:B3:12:ILE:HG13  | 50:B3:36:GLN:O     | 2.20                     | 0.42              |
| 22:BA:1044:C:H2'   | 22:BA:1045:G:C8    | 2.54                     | 0.42              |
| 22:BA:1050:G:H4'   | 22:BA:1051:U:H6    | 1.82                     | 0.42              |
| 22:BA:94:A:O2'     | 47:BZ:103:LYS:HB3  | 2.20                     | 0.42              |
| 22:BA:478:A:H2'    | 22:BA:479:G:H5'    | 2.01                     | 0.42              |
| 22:BA:1297:C:H2'   | 22:BA:1298:A:C8    | 2.55                     | 0.42              |
| 37:BP:168:LEU:HA   | 37:BP:173:PRO:HG2  | 2.00                     | 0.42              |
| 49:B2:19:ILE:HD12  | 49:B2:20:TRP:H     | 1.82                     | 0.42              |
| 31:BJ:146:GLN:C    | 31:BJ:148:LEU:H    | 2.22                     | 0.42              |
| 23:BB:48:U:H2'     | 23:BB:49:U:C6      | 2.55                     | 0.42              |
| 7:AG:10:LYS:HD3    | 7:AG:10:LYS:N      | 2.34                     | 0.42              |
| 22:BA:1429:C:H2'   | 22:BA:1430:C:C6    | 2.55                     | 0.42              |
| 10:AJ:159:HIS:HB2  | 14:AN:98:SER:HB3   | 2.01                     | 0.42              |
| 22:BA:1653:C:O5'   | 22:BA:1653:C:H6    | 2.02                     | 0.42              |
| 22:BA:1422:G:H2'   | 22:BA:1423:U:C6    | 2.55                     | 0.42              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:195:C:H2'    | 22:BA:196:A:C8     | 2.55                     | 0.42              |
| 33:BL:144:THR:HG23 | 33:BL:144:THR:O    | 2.19                     | 0.42              |
| 34:BM:18:GLU:HG3   | 34:BM:18:GLU:O     | 2.20                     | 0.42              |
| 24:BC:71:C:H2'     | 24:BC:72:U:O4'     | 2.19                     | 0.42              |
| 35:BN:201:GLY:O    | 35:BN:239:ALA:HB1  | 2.20                     | 0.42              |
| 22:BA:614:G:H2'    | 22:BA:615:G:C8     | 2.55                     | 0.42              |
| 44:BW:77:VAL:HG22  | 44:BW:134:VAL:HG12 | 2.01                     | 0.42              |
| 22:BA:2167:G:H2'   | 22:BA:2168:C:C6    | 2.54                     | 0.42              |
| 29:BH:49:ILE:CD1   | 29:BH:115:LEU:HB2  | 2.49                     | 0.42              |
| 26:BE:133:LEU:HG   | 26:BE:162:ALA:HA   | 2.01                     | 0.42              |
| 26:BE:149:GLN:HB3  | 26:BE:150:LEU:HD23 | 2.01                     | 0.42              |
| 42:BU:132:ILE:HG12 | 42:BU:133:THR:N    | 2.33                     | 0.42              |
| 22:BA:2501:G:H5'   | 36:BO:45:ARG:HD3   | 2.02                     | 0.42              |
| 26:BE:112:ILE:HA   | 26:BE:123:GLY:CA   | 2.45                     | 0.42              |
| 22:BA:2201:G:H2'   | 22:BA:2202:C:C6    | 2.54                     | 0.42              |
| 30:BI:58:THR:HG22  | 30:BI:69:LYS:HB2   | 2.02                     | 0.42              |
| 26:BE:55:LYS:HB2   | 26:BE:55:LYS:HZ3   | 1.84                     | 0.42              |
| 26:BE:59:ARG:HD3   | 26:BE:60:LYS:O     | 2.20                     | 0.42              |
| 1:AA:1468:A:C3'    | 1:AA:1469:G:H5'    | 2.50                     | 0.42              |
| 49:B2:38:LEU:HD13  | 49:B2:39:SER:O     | 2.20                     | 0.42              |
| 40:BS:13:ARG:CB    | 40:BS:13:ARG:NH1   | 2.83                     | 0.42              |
| 52:B5:113:ARG:HG3  | 52:B5:133:SER:O    | 2.20                     | 0.42              |
| 22:BA:642:G:H5''   | 52:B5:134:LYS:HZ3  | 1.84                     | 0.42              |
| 48:B1:69:LEU:HD22  | 48:B1:69:LEU:H     | 1.85                     | 0.42              |
| 35:BN:104:LYS:O    | 35:BN:109:PRO:HD2  | 2.20                     | 0.42              |
| 30:BI:114:LEU:HD12 | 30:BI:114:LEU:N    | 2.34                     | 0.42              |
| 1:AA:298:A:H2'     | 1:AA:300:A:O4'     | 2.20                     | 0.42              |
| 22:BA:2794:A:O2'   | 22:BA:2799:A:H4'   | 2.20                     | 0.42              |
| 22:BA:1783:A:N7    | 26:BE:203:ARG:NH2  | 2.68                     | 0.42              |
| 22:BA:1403:A:H4'   | 22:BA:1607:G:N2    | 2.34                     | 0.42              |
| 47:BZ:86:LYS:HB2   | 47:BZ:86:LYS:HZ2   | 1.83                     | 0.42              |
| 22:BA:39:C:H2'     | 22:BA:40:C:C6      | 2.55                     | 0.42              |
| 22:BA:1480:A:H2'   | 22:BA:1481:U:C5    | 2.55                     | 0.42              |
| 45:BX:110:ILE:CD1  | 45:BX:110:ILE:H    | 2.33                     | 0.42              |
| 22:BA:2101:G:H2'   | 22:BA:2102:G:C8    | 2.55                     | 0.42              |
| 22:BA:1122:U:H1'   | 22:BA:1125:U:C5    | 2.53                     | 0.42              |
| 1:AA:548:C:H2'     | 1:AA:549:G:C8      | 2.55                     | 0.42              |
| 22:BA:1803:G:H2'   | 22:BA:1804:U:C6    | 2.55                     | 0.42              |
| 32:BK:144:PRO:CG   | 32:BK:149:LEU:HD21 | 2.50                     | 0.42              |
| 22:BA:2691:G:H4'   | 34:BM:30:ARG:NH1   | 2.35                     | 0.42              |
| 22:BA:2306:G:N2    | 22:BA:2361:U:H4'   | 2.34                     | 0.42              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:533:G:H4'     | 17:AQ:91:ARG:NH2   | 2.35                     | 0.42              |
| 30:BI:83:VAL:HG11  | 30:BI:111:PHE:CE2  | 2.55                     | 0.42              |
| 22:BA:2591:G:O2'   | 27:BF:194:THR:HG21 | 2.20                     | 0.42              |
| 1:AA:1345:A:H1'    | 1:AA:1347:A:N3     | 2.35                     | 0.42              |
| 8:AH:92:ASN:HD22   | 8:AH:94:GLN:H      | 1.67                     | 0.42              |
| 36:BO:82:ARG:HH11  | 36:BO:82:ARG:HG3   | 1.85                     | 0.41              |
| 38:BQ:83:ASP:CG    | 38:BQ:84:ASP:N     | 2.73                     | 0.41              |
| 22:BA:640:G:H2'    | 22:BA:641:C:O4'    | 2.21                     | 0.41              |
| 35:BN:205:THR:HA   | 35:BN:208:LYS:HB2  | 2.02                     | 0.41              |
| 45:BX:120:ILE:O    | 45:BX:120:ILE:HD13 | 2.20                     | 0.41              |
| 28:BG:177:GLU:HG2  | 28:BG:178:PHE:N    | 2.34                     | 0.41              |
| 22:BA:84:G:O2'     | 22:BA:85:U:H5'     | 2.20                     | 0.41              |
| 22:BA:1194:G:H1    | 22:BA:1203:C:H42   | 1.68                     | 0.41              |
| 27:BF:197:ARG:O    | 27:BF:199:TYR:N    | 2.53                     | 0.41              |
| 30:BI:201:LYS:HB2  | 30:BI:201:LYS:HZ2  | 1.84                     | 0.41              |
| 33:BL:188:PHE:CZ   | 33:BL:199:ILE:HD11 | 2.54                     | 0.41              |
| 1:AA:1189:G:H2'    | 1:AA:1190:G:H8     | 1.85                     | 0.41              |
| 1:AA:1174:C:H4'    | 1:AA:1175:A:OP1    | 2.20                     | 0.41              |
| 47:BZ:114:VAL:HG13 | 47:BZ:117:MET:HE3  | 2.02                     | 0.41              |
| 36:BO:11:LYS:HB2   | 36:BO:11:LYS:HZ2   | 1.84                     | 0.41              |
| 27:BF:216:ARG:HG3  | 27:BF:216:ARG:HH11 | 1.84                     | 0.41              |
| 26:BE:221:MET:N    | 26:BE:221:MET:SD   | 2.93                     | 0.41              |
| 29:BH:148:ARG:CD   | 29:BH:148:ARG:H    | 2.32                     | 0.41              |
| 18:AR:43:GLN:HB2   | 21:AU:115:ARG:HH12 | 1.85                     | 0.41              |
| 22:BA:2337:C:H5'   | 22:BA:2338:G:H5'   | 2.01                     | 0.41              |
| 22:BA:1619:U:H3'   | 22:BA:1620:U:H5'   | 2.02                     | 0.41              |
| 22:BA:705:U:O2'    | 22:BA:1401:G:H5'   | 2.20                     | 0.41              |
| 22:BA:1924:G:N1    | 22:BA:1934:C:N4    | 2.68                     | 0.41              |
| 22:BA:1938:C:H2'   | 22:BA:1939:C:C6    | 2.55                     | 0.41              |
| 32:BK:172:THR:OG1  | 32:BK:175:GLN:HG2  | 2.20                     | 0.41              |
| 22:BA:889:G:H2'    | 22:BA:890:G:O4'    | 2.20                     | 0.41              |
| 1:AA:838:A:H5''    | 1:AA:839:G:OP1     | 2.20                     | 0.41              |
| 36:BO:57:ASN:H     | 36:BO:57:ASN:HD22  | 1.68                     | 0.41              |
| 1:AA:1062:C:O2'    | 1:AA:1063:C:H5'    | 2.20                     | 0.41              |
| 22:BA:567:C:O2'    | 33:BL:213:LEU:HD12 | 2.20                     | 0.41              |
| 22:BA:19:U:H2'     | 22:BA:20:A:H8      | 1.84                     | 0.41              |
| 22:BA:690:U:H2'    | 22:BA:691:G:H8     | 1.84                     | 0.41              |
| 22:BA:1902:G:H3'   | 22:BA:1902:G:N3    | 2.35                     | 0.41              |
| 1:AA:236:A:H5'     | 17:AQ:121:PRO:O    | 2.20                     | 0.41              |
| 31:BJ:179:GLU:O    | 31:BJ:179:GLU:HG3  | 2.20                     | 0.41              |
| 41:BT:154:ASP:H    | 41:BT:186:VAL:HG22 | 1.85                     | 0.41              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:1480:A:H2'    | 1:AA:1481:U:O4'    | 2.21                     | 0.41              |
| 1:AA:867:A:H2'     | 1:AA:868:A:O4'     | 2.20                     | 0.41              |
| 36:BO:1:MET:H3     | 36:BO:42:ILE:HG21  | 1.84                     | 0.41              |
| 39:BR:212:ARG:HB2  | 39:BR:212:ARG:NH1  | 2.34                     | 0.41              |
| 26:BE:60:LYS:HD3   | 26:BE:80:ASP:OD2   | 2.21                     | 0.41              |
| 37:BP:126:THR:HB   | 37:BP:198:PRO:HG2  | 2.02                     | 0.41              |
| 52:B5:105:THR:HG22 | 52:B5:109:LYS:O    | 2.20                     | 0.41              |
| 46:BY:122:LEU:H    | 46:BY:122:LEU:HD22 | 1.86                     | 0.41              |
| 22:BA:639:A:O2'    | 22:BA:640:G:C8     | 2.73                     | 0.41              |
| 28:BG:227:LYS:NZ   | 28:BG:238:ASP:HB3  | 2.35                     | 0.41              |
| 22:BA:928:U:H2'    | 22:BA:929:A:C8     | 2.55                     | 0.41              |
| 22:BA:1460:A:H2'   | 22:BA:1461:G:O4'   | 2.20                     | 0.41              |
| 1:AA:70:G:H21      | 1:AA:84:C:N4       | 2.08                     | 0.41              |
| 22:BA:2140:A:H62   | 25:BD:247:PRO:CB   | 2.33                     | 0.41              |
| 1:AA:8:G:H5'       | 1:AA:269:A:OP1     | 2.20                     | 0.41              |
| 1:AA:872:A:H2'     | 1:AA:873:C:C6      | 2.55                     | 0.41              |
| 1:AA:510:G:H5''    | 1:AA:511:A:O5'     | 2.20                     | 0.41              |
| 24:BC:55:G:H2'     | 24:BC:56:C:C6      | 2.54                     | 0.41              |
| 38:BQ:77:LEU:O     | 38:BQ:95:THR:HG23  | 2.20                     | 0.41              |
| 1:AA:768:U:OP1     | 1:AA:769:G:OP2     | 2.38                     | 0.41              |
| 37:BP:110:LEU:HG   | 37:BP:136:TYR:CD2  | 2.56                     | 0.41              |
| 25:BD:215:ILE:O    | 25:BD:219:LYS:HG2  | 2.20                     | 0.41              |
| 25:BD:307:ILE:HD13 | 25:BD:340:ILE:HG22 | 2.02                     | 0.41              |
| 1:AA:1163:G:O2'    | 1:AA:1164:C:H5'    | 2.20                     | 0.41              |
| 30:BI:49:GLN:O     | 30:BI:51:ILE:HG12  | 2.20                     | 0.41              |
| 30:BI:171:ASN:OD1  | 30:BI:172:THR:HG23 | 2.20                     | 0.41              |
| 24:BC:26:U:C4      | 24:BC:28:U:H4'     | 2.55                     | 0.41              |
| 30:BI:107:MET:HB3  | 30:BI:111:PHE:CE2  | 2.55                     | 0.41              |
| 33:BL:235:GLN:NE2  | 33:BL:235:GLN:HA   | 2.34                     | 0.41              |
| 11:AK:131:ARG:HA   | 11:AK:132:PRO:HD3  | 1.89                     | 0.41              |
| 1:AA:59:C:O2'      | 1:AA:60:A:H5'      | 2.19                     | 0.41              |
| 19:AS:6:LYS:HG2    | 19:AS:7:LYS:H      | 1.85                     | 0.41              |
| 1:AA:756:A:C2      | 26:BE:4:HIS:O      | 2.73                     | 0.41              |
| 22:BA:2014:G:H2'   | 22:BA:2015:A:H8    | 1.84                     | 0.41              |
| 1:AA:804:G:C2'     | 1:AA:805:U:H5'     | 2.50                     | 0.41              |
| 28:BG:234:LEU:HD23 | 28:BG:234:LEU:C    | 2.41                     | 0.41              |
| 53:B6:7:VAL:HG23   | 53:B6:35:GLN:HE21  | 1.85                     | 0.41              |
| 22:BA:2244:A:C8    | 26:BE:258:ARG:HD2  | 2.56                     | 0.41              |
| 22:BA:460:U:H5''   | 22:BA:461:A:OP2    | 2.20                     | 0.41              |
| 46:BY:76:ARG:HD3   | 46:BY:90:LYS:HE3   | 2.02                     | 0.41              |
| 35:BN:147:ASN:HD21 | 35:BN:171:ARG:C    | 2.24                     | 0.41              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 44:BW:157:LYS:HD2  | 44:BW:157:LYS:N    | 2.22                     | 0.41              |
| 22:BA:696:A:O2'    | 22:BA:698:C:H5     | 2.03                     | 0.41              |
| 31:BJ:50:ARG:O     | 31:BJ:51:LYS:HD2   | 2.20                     | 0.41              |
| 31:BJ:89:THR:OG1   | 31:BJ:92:LEU:HD13  | 2.20                     | 0.41              |
| 1:AA:981:G:N3      | 1:AA:981:G:H3'     | 2.36                     | 0.41              |
| 22:BA:1155:A:O2'   | 22:BA:2534:C:H4'   | 2.19                     | 0.41              |
| 1:AA:882:G:C6      | 1:AA:1334:G:N3     | 2.88                     | 0.41              |
| 34:BM:36:GLY:HA2   | 34:BM:106:LEU:CD2  | 2.50                     | 0.41              |
| 1:AA:1091:G:H2'    | 1:AA:1092:G:H8     | 1.85                     | 0.41              |
| 1:AA:1091:G:H2'    | 1:AA:1092:G:C8     | 2.55                     | 0.41              |
| 22:BA:893:C:H2'    | 22:BA:894:G:H5'    | 2.01                     | 0.41              |
| 22:BA:584:A:N1     | 22:BA:2047:A:H4'   | 2.34                     | 0.41              |
| 1:AA:1057:G:H5''   | 3:AC:4:LYS:NZ      | 2.36                     | 0.41              |
| 1:AA:775:U:C4      | 1:AA:819:U:H1'     | 2.55                     | 0.41              |
| 22:BA:619:A:H61    | 22:BA:631:G:H1'    | 1.85                     | 0.41              |
| 22:BA:1364:G:H5'   | 22:BA:1634:C:OP1   | 2.20                     | 0.41              |
| 1:AA:690:G:O2'     | 1:AA:691:G:H5'     | 2.20                     | 0.41              |
| 1:AA:1204:U:H5''   | 3:AC:27:LYS:HZ1    | 1.84                     | 0.41              |
| 22:BA:2540:G:H2'   | 22:BA:2541:G:H8    | 1.86                     | 0.41              |
| 22:BA:237:G:H2'    | 22:BA:238:C:H6     | 1.85                     | 0.41              |
| 1:AA:1361:U:H2'    | 1:AA:1362:A:H8     | 1.82                     | 0.41              |
| 22:BA:1481:U:C4'   | 22:BA:2719:G:H21   | 2.33                     | 0.41              |
| 31:BJ:148:LEU:HD13 | 31:BJ:165:VAL:HG21 | 2.03                     | 0.41              |
| 27:BF:103:LEU:H    | 27:BF:103:LEU:CD1  | 2.33                     | 0.41              |
| 22:BA:1674:C:H5''  | 22:BA:2727:U:O2'   | 2.21                     | 0.41              |
| 22:BA:2668:C:H2'   | 22:BA:2669:C:C6    | 2.55                     | 0.41              |
| 22:BA:2360:U:C2'   | 22:BA:2361:U:H5'   | 2.50                     | 0.41              |
| 1:AA:329:U:H2'     | 1:AA:330:G:H8      | 1.86                     | 0.41              |
| 1:AA:255:C:H2'     | 1:AA:256:A:C8      | 2.56                     | 0.41              |
| 22:BA:498:C:H2'    | 22:BA:499:C:C6     | 2.55                     | 0.41              |
| 1:AA:644:A:H1'     | 1:AA:734:G:O2'     | 2.21                     | 0.41              |
| 1:AA:1297:A:H2'    | 1:AA:1298:A:O4'    | 2.20                     | 0.41              |
| 1:AA:716:A:OP1     | 1:AA:752:U:H4'     | 2.21                     | 0.41              |
| 22:BA:748:C:H2'    | 22:BA:749:G:C8     | 2.56                     | 0.41              |
| 42:BU:102:LYS:HG3  | 42:BU:104:GLU:OE1  | 2.21                     | 0.41              |
| 36:BO:42:ILE:HA    | 36:BO:46:GLN:OE1   | 2.19                     | 0.41              |
| 24:BC:66:U:H2'     | 24:BC:67:G:C8      | 2.56                     | 0.41              |
| 1:AA:804:G:H4'     | 21:AU:149:LYS:HE3  | 2.03                     | 0.41              |
| 49:B2:32:PHE:CB    | 49:B2:36:LYS:HD2   | 2.49                     | 0.41              |
| 22:BA:2215:C:H2'   | 22:BA:2216:U:C6    | 2.55                     | 0.41              |
| 52:B5:113:ARG:HH12 | 52:B5:117:LYS:HB3  | 1.85                     | 0.41              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 46:BY:108:TYR:O   | 46:BY:109:LYS:HB2  | 2.20                     | 0.41              |
| 22:BA:649:A:OP2   | 35:BN:206:SER:HB3  | 2.21                     | 0.41              |
| 26:BE:152:ARG:HG2 | 26:BE:152:ARG:HH11 | 1.85                     | 0.41              |
| 27:BF:172:LYS:HD3 | 27:BF:186:LEU:O    | 2.20                     | 0.41              |
| 38:BQ:104:LEU:C   | 38:BQ:104:LEU:HD13 | 2.41                     | 0.41              |
| 22:BA:816:G:N3    | 22:BA:842:G:H1'    | 2.35                     | 0.41              |
| 1:AA:449:C:H2'    | 1:AA:450:A:H8      | 1.85                     | 0.41              |
| 22:BA:2000:G:H2'  | 22:BA:2001:G:H8    | 1.85                     | 0.41              |
| 22:BA:1702:G:N2   | 22:BA:2008:C:H42   | 2.08                     | 0.41              |
| 22:BA:866:G:H2'   | 22:BA:867:G:C8     | 2.55                     | 0.41              |
| 34:BM:25:ILE:HG22 | 34:BM:38:VAL:O     | 2.21                     | 0.41              |
| 1:AA:727:C:H2'    | 1:AA:728:G:O4'     | 2.20                     | 0.41              |
| 1:AA:157:U:H5     | 1:AA:181:G:HO2'    | 1.68                     | 0.41              |
| 1:AA:1341:G:H21   | 1:AA:1451:A:C1'    | 2.27                     | 0.41              |
| 42:BU:115:LYS:HB2 | 42:BU:123:TYR:CE2  | 2.55                     | 0.41              |
| 50:B3:10:LYS:H    | 50:B3:10:LYS:HD3   | 1.83                     | 0.41              |
| 22:BA:1693:U:H2'  | 22:BA:1694:C:C6    | 2.56                     | 0.41              |
| 22:BA:209:G:H2'   | 22:BA:210:C:C6     | 2.55                     | 0.41              |
| 22:BA:1594:A:H2'  | 22:BA:1595:C:C6    | 2.55                     | 0.41              |
| 1:AA:1247:A:C6    | 1:AA:1249:U:H1'    | 2.56                     | 0.41              |
| 27:BF:218:LEU:HB3 | 27:BF:232:ILE:HD11 | 2.03                     | 0.41              |
| 1:AA:1083:U:H2'   | 1:AA:1085:G:H21    | 1.85                     | 0.41              |
| 25:BD:227:LYS:HD3 | 25:BD:270:PHE:HD2  | 1.85                     | 0.41              |
| 44:BW:137:ILE:C   | 44:BW:137:ILE:HD12 | 2.41                     | 0.41              |
| 30:BI:113:THR:C   | 30:BI:115:THR:H    | 2.22                     | 0.41              |
| 45:BX:61:LYS:HD2  | 45:BX:61:LYS:C     | 2.41                     | 0.41              |
| 31:BJ:110:VAL:HA  | 31:BJ:113:GLU:HG2  | 2.01                     | 0.41              |
| 23:BB:57:A:H1'    | 29:BH:42:GLU:CB    | 2.50                     | 0.41              |
| 22:BA:2790:C:C4'  | 27:BF:214:LYS:HZ3  | 2.32                     | 0.41              |
| 22:BA:609:G:H2'   | 22:BA:610:G:C8     | 2.55                     | 0.41              |
| 22:BA:1672:U:H2'  | 22:BA:1673:A:C8    | 2.55                     | 0.41              |
| 1:AA:1343:A:N6    | 1:AA:1450:C:H4'    | 2.34                     | 0.41              |
| 22:BA:1462:G:H4'  | 22:BA:1664:G:H5'   | 2.01                     | 0.41              |
| 22:BA:2709:C:H2'  | 22:BA:2710:A:C8    | 2.55                     | 0.41              |
| 1:AA:1230:C:H2'   | 1:AA:1231:C:C6     | 2.56                     | 0.41              |
| 40:BS:85:LEU:N    | 40:BS:85:LEU:HD12  | 2.34                     | 0.41              |
| 1:AA:997:G:P      | 14:AN:3:ARG:HH11   | 2.43                     | 0.41              |
| 1:AA:1262:C:H2'   | 1:AA:1263:U:C6     | 2.56                     | 0.41              |
| 43:BV:127:ASN:HA  | 43:BV:131:GLU:HB2  | 2.02                     | 0.41              |
| 22:BA:452:G:H2'   | 22:BA:453:U:C6     | 2.55                     | 0.41              |
| 13:AM:108:ARG:NH2 | 29:BH:127:ARG:NH2  | 2.68                     | 0.41              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:2024:G:H5''  | 42:BU:71:ARG:NH1   | 2.27                     | 0.41              |
| 22:BA:2502:G:H2'   | 22:BA:2503:G:C8    | 2.55                     | 0.41              |
| 22:BA:1597:C:H2'   | 22:BA:1598:C:O4'   | 2.20                     | 0.41              |
| 22:BA:1800:C:O2'   | 26:BE:204:ALA:HB3  | 2.21                     | 0.41              |
| 35:BN:126:LEU:HB3  | 35:BN:127:PRO:HD2  | 2.02                     | 0.41              |
| 46:BY:122:LEU:N    | 46:BY:122:LEU:HD22 | 2.36                     | 0.41              |
| 22:BA:2011:G:H2'   | 22:BA:2012:G:C8    | 2.55                     | 0.41              |
| 40:BS:96:ILE:H     | 40:BS:96:ILE:HD12  | 1.84                     | 0.41              |
| 22:BA:2560:G:H21   | 22:BA:2663:C:H5''  | 1.83                     | 0.41              |
| 23:BB:40:U:O2      | 23:BB:43:C:H5''    | 2.20                     | 0.41              |
| 29:BH:122:ALA:O    | 29:BH:125:ARG:HB3  | 2.20                     | 0.41              |
| 39:BR:160:ARG:HG2  | 39:BR:160:ARG:HH11 | 1.86                     | 0.41              |
| 33:BL:195:ILE:HG22 | 33:BL:195:ILE:O    | 2.21                     | 0.41              |
| 22:BA:1284:U:H5''  | 49:B2:13:LYS:CD    | 2.46                     | 0.41              |
| 1:AA:1244:C:H4'    | 1:AA:1250:U:N3     | 2.35                     | 0.41              |
| 53:B6:25:VAL:O     | 53:B6:34:LYS:HA    | 2.21                     | 0.41              |
| 29:BH:51:VAL:HG12  | 29:BH:169:VAL:HG22 | 2.02                     | 0.41              |
| 1:AA:1295:G:HO2'   | 1:AA:1296:U:H6     | 1.65                     | 0.41              |
| 28:BG:84:VAL:HG23  | 28:BG:85:HIS:N     | 2.36                     | 0.41              |
| 49:B2:8:THR:O      | 49:B2:10:ILE:N     | 2.53                     | 0.41              |
| 27:BF:152:ASP:HB3  | 27:BF:216:ARG:HA   | 2.02                     | 0.41              |
| 1:AA:185:G:H2'     | 1:AA:185:G:N3      | 2.35                     | 0.41              |
| 22:BA:1113:A:H4'   | 22:BA:1133:U:H4'   | 2.01                     | 0.41              |
| 1:AA:337:U:O2'     | 1:AA:338:U:P       | 2.79                     | 0.41              |
| 1:AA:1266:A:H4'    | 19:AS:10:PHE:CD2   | 2.55                     | 0.41              |
| 51:B4:116:LEU:O    | 51:B4:116:LEU:HD13 | 2.21                     | 0.41              |
| 48:B1:50:LYS:HB2   | 48:B1:53:LEU:HB2   | 2.02                     | 0.41              |
| 14:AN:49:SER:N     | 14:AN:50:PRO:HD2   | 2.35                     | 0.41              |
| 26:BE:56:ARG:HH11  | 26:BE:56:ARG:HG2   | 1.85                     | 0.41              |
| 34:BM:72:ASP:C     | 34:BM:74:GLY:H     | 2.24                     | 0.41              |
| 1:AA:174:A:H2'     | 1:AA:175:G:C8      | 2.56                     | 0.41              |
| 37:BP:100:ASN:O    | 37:BP:101:ARG:HD2  | 2.20                     | 0.41              |
| 31:BJ:57:ASP:CG    | 31:BJ:63:LYS:HG2   | 2.39                     | 0.41              |
| 22:BA:1734:A:H5'   | 22:BA:1736:A:C5'   | 2.50                     | 0.41              |
| 1:AA:1331:C:H1'    | 7:AG:79:ARG:HB3    | 2.03                     | 0.41              |
| 42:BU:50:ILE:HG21  | 42:BU:132:ILE:HD12 | 2.03                     | 0.41              |
| 36:BO:23:ARG:HG3   | 36:BO:23:ARG:HH11  | 1.85                     | 0.41              |
| 22:BA:2014:G:H2'   | 22:BA:2015:A:C8    | 2.56                     | 0.41              |
| 26:BE:35:CYS:SG    | 26:BE:36:GLY:N     | 2.94                     | 0.41              |
| 22:BA:2243:C:H2'   | 26:BE:258:ARG:HG2  | 2.03                     | 0.41              |
| 22:BA:593:G:H2'    | 22:BA:594:C:O4'    | 2.20                     | 0.41              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:144:A:N6     | 46:BY:118:ARG:NH1  | 2.69                     | 0.41              |
| 35:BN:147:ASN:C    | 35:BN:148:LEU:HD12 | 2.40                     | 0.41              |
| 40:BS:108:ILE:HG12 | 40:BS:108:ILE:O    | 2.21                     | 0.41              |
| 27:BF:164:GLY:O    | 27:BF:168:ARG:HG3  | 2.21                     | 0.41              |
| 22:BA:2744:A:H2'   | 22:BA:2745:G:H5'   | 2.03                     | 0.41              |
| 44:BW:71:VAL:O     | 44:BW:92:ILE:HB    | 2.20                     | 0.41              |
| 40:BS:55:ARG:HA    | 40:BS:58:ARG:HD2   | 2.02                     | 0.41              |
| 22:BA:2570:G:H1'   | 22:BA:2599:G:C2    | 2.55                     | 0.41              |
| 22:BA:402:A:H4'    | 22:BA:424:A:H5'    | 2.01                     | 0.41              |
| 1:AA:913:A:H1'     | 10:AJ:152:VAL:HG21 | 2.03                     | 0.41              |
| 42:BU:62:LEU:HD12  | 42:BU:62:LEU:C     | 2.40                     | 0.41              |
| 1:AA:1149:A:O2'    | 1:AA:1150:U:OP2    | 2.31                     | 0.41              |
| 22:BA:1585:C:C2'   | 22:BA:1586:G:H5''  | 2.48                     | 0.41              |
| 26:BE:34:ARG:HG2   | 26:BE:34:ARG:HH11  | 1.86                     | 0.41              |
| 1:AA:557:A:C5      | 1:AA:558:U:O2      | 2.74                     | 0.41              |
| 27:BF:111:LEU:C    | 27:BF:111:LEU:HD23 | 2.40                     | 0.41              |
| 24:BC:24:U:H4'     | 24:BC:84:A:C5      | 2.56                     | 0.41              |
| 49:B2:10:ILE:O     | 49:B2:11:TYR:HB3   | 2.20                     | 0.41              |
| 25:BD:338:LEU:HD13 | 25:BD:339:ASN:C    | 2.41                     | 0.41              |
| 30:BI:61:LEU:HD23  | 30:BI:85:LEU:O     | 2.21                     | 0.41              |
| 22:BA:222:C:H2'    | 22:BA:223:C:C6     | 2.56                     | 0.41              |
| 22:BA:387:G:C6     | 22:BA:412:G:H1'    | 2.56                     | 0.41              |
| 37:BP:122:ARG:HG3  | 37:BP:122:ARG:HH11 | 1.86                     | 0.41              |
| 22:BA:2416:G:H2'   | 22:BA:2417:G:H8    | 1.86                     | 0.41              |
| 22:BA:748:C:H2'    | 22:BA:749:G:H8     | 1.86                     | 0.41              |
| 43:BV:131:GLU:N    | 43:BV:131:GLU:OE1  | 2.54                     | 0.41              |
| 48:B1:99:LEU:HD13  | 48:B1:99:LEU:C     | 2.41                     | 0.41              |
| 32:BK:69:LYS:HD3   | 32:BK:188:ASN:HA   | 2.02                     | 0.41              |
| 22:BA:295:C:N3     | 22:BA:365:A:N1     | 2.68                     | 0.41              |
| 22:BA:1751:A:H2'   | 22:BA:1753:A:OP1   | 2.21                     | 0.41              |
| 24:BC:69:A:O2'     | 24:BC:70:G:H5'     | 2.21                     | 0.41              |
| 39:BR:183:ILE:HG12 | 39:BR:184:ARG:N    | 2.36                     | 0.41              |
| 39:BR:186:ILE:HG12 | 39:BR:196:PHE:O    | 2.20                     | 0.41              |
| 23:BB:114:C:H2'    | 23:BB:115:C:C6     | 2.56                     | 0.41              |
| 23:BB:26:A:H1'     | 23:BB:118:G:O2'    | 2.21                     | 0.41              |
| 1:AA:344:A:OP2     | 1:AA:345:A:OP2     | 2.38                     | 0.41              |
| 22:BA:1896:G:H2'   | 22:BA:1897:C:C6    | 2.55                     | 0.41              |
| 22:BA:646:G:H21    | 22:BA:652:C:P      | 2.44                     | 0.41              |
| 40:BS:90:LEU:CD2   | 41:BT:171:TYR:HB3  | 2.51                     | 0.41              |
| 28:BG:173:PHE:HD1  | 28:BG:244:LYS:HD3  | 1.85                     | 0.41              |
| 50:B3:50:LYS:HG2   | 50:B3:50:LYS:O     | 2.20                     | 0.41              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:14:U:H1'      | 1:AA:863:A:C8      | 2.56                     | 0.41              |
| 22:BA:783:U:H5''   | 22:BA:1377:A:H5'   | 2.02                     | 0.41              |
| 22:BA:543:A:H4'    | 22:BA:544:G:C8     | 2.56                     | 0.41              |
| 22:BA:1878:C:O2'   | 22:BA:1879:U:C6    | 2.69                     | 0.41              |
| 1:AA:6:U:O2'       | 1:AA:7:G:C4        | 2.72                     | 0.41              |
| 22:BA:1156:G:N7    | 22:BA:2535:C:N4    | 2.68                     | 0.41              |
| 42:BU:113:LYS:HD3  | 42:BU:115:LYS:HE3  | 2.03                     | 0.41              |
| 22:BA:2302:C:H4'   | 22:BA:2305:A:H62   | 1.85                     | 0.41              |
| 38:BQ:60:GLU:OE1   | 45:BX:133:ARG:HA   | 2.20                     | 0.41              |
| 1:AA:679:G:C5'     | 1:AA:714:A:H4'     | 2.51                     | 0.41              |
| 32:BK:94:PRO:HB2   | 32:BK:95:VAL:H     | 1.72                     | 0.41              |
| 1:AA:964:A:O2'     | 1:AA:965:A:H5'     | 2.20                     | 0.41              |
| 33:BL:123:ILE:HD11 | 33:BL:126:ARG:NE   | 2.33                     | 0.41              |
| 27:BF:216:ARG:HH21 | 27:BF:251:ILE:HA   | 1.85                     | 0.41              |
| 44:BW:64:LEU:H     | 44:BW:64:LEU:CD1   | 2.34                     | 0.41              |
| 22:BA:534:C:H4'    | 22:BA:551:G:H21    | 1.86                     | 0.41              |
| 41:BT:218:ARG:HG3  | 41:BT:218:ARG:HH11 | 1.85                     | 0.41              |
| 1:AA:107:C:H2'     | 1:AA:108:G:C8      | 2.55                     | 0.41              |
| 22:BA:885:G:H2'    | 22:BA:886:U:C6     | 2.55                     | 0.41              |
| 22:BA:2424:G:H2'   | 22:BA:2425:U:C6    | 2.55                     | 0.41              |
| 36:BO:115:ARG:HH11 | 36:BO:115:ARG:HG2  | 1.85                     | 0.41              |
| 22:BA:687:A:H2     | 22:BA:2083:G:HO2'  | 1.66                     | 0.41              |
| 22:BA:2651:C:H2'   | 22:BA:2652:A:C8    | 2.56                     | 0.41              |
| 23:BB:16:G:H2'     | 23:BB:17:C:C6      | 2.56                     | 0.41              |
| 27:BF:132:GLY:HA2  | 27:BF:136:THR:OG1  | 2.20                     | 0.41              |
| 5:AE:181:GLY:HA3   | 5:AE:259:MET:HB3   | 2.02                     | 0.41              |
| 1:AA:1111:G:H2'    | 1:AA:1112:G:C8     | 2.56                     | 0.41              |
| 6:AF:118:LYS:HE3   | 26:BE:163:LYS:N    | 2.32                     | 0.41              |
| 26:BE:133:LEU:HD23 | 26:BE:133:LEU:C    | 2.40                     | 0.41              |
| 1:AA:1331:C:C5     | 1:AA:1332:C:C6     | 3.09                     | 0.41              |
| 42:BU:39:ILE:HG21  | 42:BU:41:MET:CE    | 2.44                     | 0.41              |
| 36:BO:20:ILE:HG12  | 36:BO:20:ILE:O     | 2.19                     | 0.41              |
| 36:BO:38:GLU:O     | 36:BO:127:ILE:HG21 | 2.21                     | 0.41              |
| 22:BA:2043:G:H2'   | 22:BA:2045:A:OP1   | 2.20                     | 0.41              |
| 24:BC:67:G:H4'     | 24:BC:68:C:O3'     | 2.20                     | 0.41              |
| 22:BA:133:A:H2'    | 22:BA:134:A:O4'    | 2.20                     | 0.41              |
| 22:BA:164:A:C6     | 51:B4:124:ARG:HA   | 2.56                     | 0.41              |
| 22:BA:1329:A:H2'   | 22:BA:1330:G:O4'   | 2.20                     | 0.41              |
| 34:BM:5:GLN:N      | 34:BM:21:CYS:HB3   | 2.35                     | 0.41              |
| 49:B2:36:LYS:H     | 49:B2:36:LYS:CD    | 2.34                     | 0.41              |
| 40:BS:9:ILE:HD13   | 40:BS:12:ARG:HH12  | 1.85                     | 0.41              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 52:B5:98:SER:HB2   | 52:B5:102:PHE:CE2  | 2.56                     | 0.41              |
| 46:BY:135:ASN:OD1  | 46:BY:137:LEU:HB2  | 2.21                     | 0.41              |
| 22:BA:1857:A:C2'   | 22:BA:1857:A:N3    | 2.81                     | 0.41              |
| 1:AA:177:A:C2'     | 1:AA:178:A:H5'     | 2.51                     | 0.41              |
| 1:AA:373:G:H2'     | 1:AA:374:C:C6      | 2.56                     | 0.41              |
| 33:BL:174:ARG:HH11 | 33:BL:174:ARG:HG2  | 1.86                     | 0.41              |
| 22:BA:633:A:H2'    | 22:BA:634:G:H5'    | 2.03                     | 0.41              |
| 22:BA:1377:A:H2'   | 22:BA:1378:U:C6    | 2.56                     | 0.41              |
| 1:AA:931:U:H4'     | 1:AA:932:A:O5'     | 2.21                     | 0.41              |
| 22:BA:1645:A:H1'   | 22:BA:1652:A:H5'   | 2.03                     | 0.41              |
| 22:BA:1694:C:H2'   | 22:BA:1695:U:C6    | 2.55                     | 0.41              |
| 38:BQ:146:ARG:HH21 | 38:BQ:148:LYS:HE3  | 1.86                     | 0.41              |
| 22:BA:1609:U:H2'   | 22:BA:1610:C:C6    | 2.55                     | 0.41              |
| 22:BA:2759:A:H2'   | 22:BA:2760:C:O4'   | 2.21                     | 0.41              |
| 22:BA:811:A:H4'    | 22:BA:813:C:H5'    | 2.02                     | 0.41              |
| 22:BA:1361:U:O4    | 43:BV:168:PRO:HD3  | 2.19                     | 0.41              |
| 22:BA:1361:U:O2'   | 22:BA:1639:A:H5'   | 2.21                     | 0.41              |
| 38:BQ:68:LEU:HD13  | 38:BQ:81:VAL:HG12  | 2.03                     | 0.41              |
| 22:BA:2411:C:O2'   | 22:BA:2412:C:H5'   | 2.21                     | 0.41              |
| 22:BA:319:G:O4'    | 22:BA:339:A:N1     | 2.53                     | 0.41              |
| 39:BR:226:LEU:O    | 39:BR:229:LEU:HD22 | 2.21                     | 0.41              |
| 30:BI:161:PRO:CG   | 30:BI:164:LEU:HD12 | 2.51                     | 0.41              |
| 38:BQ:57:LYS:O     | 38:BQ:58:LYS:C     | 2.59                     | 0.41              |
| 22:BA:2492:C:C2'   | 22:BA:2493:A:H5'   | 2.51                     | 0.41              |
| 22:BA:2790:C:H2'   | 22:BA:2791:C:C6    | 2.55                     | 0.41              |
| 27:BF:152:ASP:CB   | 27:BF:216:ARG:HA   | 2.51                     | 0.41              |
| 31:BJ:83:GLY:C     | 31:BJ:84:LYS:HD2   | 2.41                     | 0.41              |
| 25:BD:219:LYS:HB3  | 25:BD:219:LYS:HZ2  | 1.85                     | 0.41              |
| 22:BA:2752:G:H2'   | 22:BA:2753:C:O4'   | 2.20                     | 0.41              |
| 42:BU:147:LYS:HD2  | 42:BU:147:LYS:O    | 2.21                     | 0.41              |
| 22:BA:399:U:H5'    | 22:BA:400:G:C4     | 2.55                     | 0.41              |
| 25:BD:243:ARG:HG3  | 25:BD:243:ARG:HH11 | 1.86                     | 0.41              |
| 33:BL:198:ARG:HH11 | 33:BL:198:ARG:HG2  | 1.85                     | 0.41              |
| 22:BA:1998:U:H2'   | 22:BA:1999:G:H8    | 1.85                     | 0.41              |
| 22:BA:1696:C:O2'   | 22:BA:1697:U:H5'   | 2.21                     | 0.41              |
| 30:BI:198:GLU:HA   | 30:BI:199:PRO:HD3  | 1.87                     | 0.41              |
| 1:AA:1201:G:H3'    | 10:AJ:140:LYS:NZ   | 2.36                     | 0.41              |
| 1:AA:756:A:N3      | 26:BE:5:LEU:HA     | 2.33                     | 0.41              |
| 22:BA:1734:A:H5'   | 22:BA:1736:A:C4'   | 2.49                     | 0.41              |
| 22:BA:1810:C:O2'   | 22:BA:1812:A:H5'   | 2.21                     | 0.41              |
| 22:BA:727:A:H3'    | 22:BA:728:A:H5''   | 2.03                     | 0.41              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 42:BU:47:ARG:HG3   | 42:BU:47:ARG:HH11  | 1.86                     | 0.41              |
| 42:BU:41:MET:CE    | 42:BU:75:PRO:HD2   | 2.50                     | 0.41              |
| 22:BA:2501:G:OP1   | 36:BO:45:ARG:HB2   | 2.20                     | 0.41              |
| 26:BE:104:ARG:CB   | 26:BE:191:VAL:HG11 | 2.43                     | 0.41              |
| 34:BM:78:ARG:H     | 39:BR:196:PHE:HD2  | 1.67                     | 0.41              |
| 39:BR:144:ARG:HG2  | 39:BR:144:ARG:HH11 | 1.85                     | 0.41              |
| 39:BR:174:ASN:HB2  | 39:BR:219:LEU:HG   | 2.03                     | 0.41              |
| 23:BB:26:A:H2      | 23:BB:117:G:H21    | 1.68                     | 0.41              |
| 22:BA:2013:A:H2'   | 22:BA:2014:G:C8    | 2.56                     | 0.41              |
| 1:AA:1476:C:O2'    | 1:AA:1477:U:H5'    | 2.21                     | 0.41              |
| 26:BE:58:TYR:HD2   | 26:BE:81:PRO:HD2   | 1.86                     | 0.41              |
| 22:BA:2215:C:H4'   | 22:BA:2244:A:N1    | 2.36                     | 0.41              |
| 35:BN:127:PRO:CB   | 52:B5:118:GLN:HE21 | 2.32                     | 0.41              |
| 46:BY:110:ARG:O    | 46:BY:111:ILE:HD13 | 2.21                     | 0.41              |
| 45:BX:89:LYS:O     | 45:BX:89:LYS:HG3   | 2.21                     | 0.41              |
| 45:BX:97:GLN:HG2   | 45:BX:123:LEU:HD11 | 2.03                     | 0.41              |
| 22:BA:1341:C:N4    | 22:BA:1351:C:OP2   | 2.54                     | 0.41              |
| 22:BA:1830:U:O2    | 26:BE:197:ASN:HB2  | 2.21                     | 0.41              |
| 48:B1:66:ASN:OD1   | 48:B1:69:LEU:HD21  | 2.20                     | 0.41              |
| 27:BF:189:ILE:HG22 | 27:BF:190:GLY:N    | 2.36                     | 0.41              |
| 1:AA:372:C:H2'     | 1:AA:373:G:H8      | 1.84                     | 0.41              |
| 22:BA:2571:U:H2'   | 22:BA:2572:U:C5    | 2.56                     | 0.41              |
| 38:BQ:45:ARG:HB2   | 38:BQ:45:ARG:HH11  | 1.84                     | 0.41              |
| 38:BQ:45:ARG:NH1   | 38:BQ:45:ARG:H     | 2.09                     | 0.41              |
| 38:BQ:45:ARG:CB    | 38:BQ:45:ARG:HH11  | 2.34                     | 0.41              |
| 26:BE:48:ARG:HH11  | 26:BE:48:ARG:HG3   | 1.85                     | 0.41              |
| 22:BA:2226:A:H1'   | 22:BA:2228:C:H41   | 1.86                     | 0.41              |
| 1:AA:819:U:H4'     | 1:AA:821:A:OP2     | 2.21                     | 0.41              |
| 30:BI:201:LYS:HB2  | 30:BI:201:LYS:HZ3  | 1.86                     | 0.41              |
| 33:BL:124:LEU:HD13 | 33:BL:124:LEU:C    | 2.41                     | 0.41              |
| 22:BA:1726:A:H62   | 22:BA:1733:G:N2    | 2.13                     | 0.41              |
| 30:BI:101:THR:HG23 | 30:BI:104:ALA:N    | 2.31                     | 0.41              |
| 22:BA:2363:A:O4'   | 22:BA:2400:G:H1'   | 2.21                     | 0.41              |
| 50:B3:52:CYS:HA    | 50:B3:58:HIS:N     | 2.33                     | 0.41              |
| 22:BA:2765:G:H5''  | 30:BI:113:THR:HG21 | 2.02                     | 0.41              |
| 28:BG:80:ALA:O     | 28:BG:84:VAL:HG22  | 2.21                     | 0.41              |
| 37:BP:168:LEU:CD1  | 37:BP:168:LEU:H    | 2.34                     | 0.41              |
| 37:BP:172:VAL:N    | 37:BP:173:PRO:CD   | 2.84                     | 0.41              |
| 44:BW:85:LYS:NZ    | 44:BW:103:ASP:HB3  | 2.35                     | 0.41              |
| 22:BA:1479:U:H4'   | 22:BA:1480:A:O4'   | 2.21                     | 0.41              |
| 22:BA:568:C:H5''   | 33:BL:210:LYS:CG   | 2.50                     | 0.41              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:808:C:H2'    | 22:BA:809:A:C8     | 2.56                     | 0.41              |
| 29:BH:63:LYS:HB3   | 29:BH:63:LYS:HZ2   | 1.85                     | 0.41              |
| 1:AA:47:G:OP1      | 1:AA:278:U:H4'     | 2.21                     | 0.41              |
| 39:BR:215:ARG:HH21 | 39:BR:216:LYS:NZ   | 2.19                     | 0.41              |
| 22:BA:518:A:H5'    | 22:BA:520:C:C1'    | 2.50                     | 0.41              |
| 36:BO:8:ARG:CB     | 36:BO:8:ARG:NH1    | 2.84                     | 0.41              |
| 14:AN:92:LEU:HD12  | 14:AN:95:ALA:HB2   | 2.02                     | 0.41              |
| 37:BP:193:ARG:CD   | 37:BP:193:ARG:N    | 2.84                     | 0.41              |
| 25:BD:151:LYS:HG3  | 25:BD:152:PHE:N    | 2.36                     | 0.41              |
| 22:BA:142:U:H2'    | 22:BA:143:G:O4'    | 2.21                     | 0.41              |
| 1:AA:147:C:H2'     | 1:AA:148:G:O4'     | 2.21                     | 0.41              |
| 1:AA:640:U:H5'     | 1:AA:745:C:H5''    | 2.01                     | 0.41              |
| 22:BA:2691:G:H4'   | 34:BM:30:ARG:HH11  | 1.86                     | 0.41              |
| 22:BA:20:A:H2'     | 22:BA:21:C:C6      | 2.56                     | 0.41              |
| 1:AA:1067:U:O2'    | 1:AA:1068:G:H5'    | 2.21                     | 0.41              |
| 25:BD:165:ASP:OD1  | 25:BD:167:LYS:HB2  | 2.21                     | 0.41              |
| 22:BA:671:C:H2'    | 22:BA:672:U:C6     | 2.56                     | 0.41              |
| 39:BR:133:ALA:HA   | 39:BR:136:GLU:HG2  | 2.01                     | 0.41              |
| 34:BM:98:ILE:HD13  | 34:BM:113:ILE:HG23 | 2.03                     | 0.41              |
| 1:AA:37:C:H2'      | 1:AA:38:U:O4'      | 2.21                     | 0.41              |
| 22:BA:1962:G:H2'   | 22:BA:1963:G:C8    | 2.56                     | 0.41              |
| 22:BA:1569:A:H3'   | 22:BA:1570:C:H5'   | 2.02                     | 0.41              |
| 1:AA:945:A:H2'     | 1:AA:946:U:C6      | 2.56                     | 0.41              |
| 33:BL:187:THR:CG2  | 33:BL:190:GLN:HG3  | 2.51                     | 0.41              |
| 23:BB:82:U:H2'     | 23:BB:83:A:C8      | 2.56                     | 0.41              |
| 4:AD:114:ARG:HB3   | 4:AD:122:ILE:HD11  | 2.03                     | 0.41              |
| 22:BA:1714:A:H2'   | 22:BA:1715:A:O4'   | 2.21                     | 0.41              |
| 22:BA:1564:G:N2    | 22:BA:1576:U:H1'   | 2.36                     | 0.41              |
| 1:AA:1123:G:O2'    | 1:AA:1124:A:H5'    | 2.21                     | 0.41              |
| 42:BU:105:VAL:HG13 | 42:BU:130:CYS:HB2  | 2.02                     | 0.41              |
| 26:BE:106:ALA:HA   | 26:BE:110:ASP:OD1  | 2.20                     | 0.41              |
| 39:BR:185:ARG:NH2  | 39:BR:223:ARG:HH12 | 2.06                     | 0.41              |
| 38:BQ:65:ARG:HG2   | 38:BQ:67:ARG:HG3   | 2.03                     | 0.41              |
| 22:BA:2717:G:H1    | 22:BA:2724:C:H42   | 1.68                     | 0.41              |
| 1:AA:218:G:O2'     | 1:AA:219:C:H5'     | 2.21                     | 0.41              |
| 28:BG:171:ASN:HD22 | 28:BG:173:PHE:HE2  | 1.69                     | 0.41              |
| 22:BA:2063:C:H2'   | 22:BA:2064:C:H6    | 1.86                     | 0.41              |
| 46:BY:142:LYS:N    | 46:BY:142:LYS:HD3  | 2.23                     | 0.41              |
| 44:BW:147:VAL:HG23 | 44:BW:155:VAL:O    | 2.20                     | 0.41              |
| 35:BN:83:ARG:CD    | 35:BN:83:ARG:H     | 2.24                     | 0.41              |
| 31:BJ:53:ILE:HG13  | 31:BJ:88:MET:HB2   | 2.03                     | 0.41              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:227:G:N1     | 52:B5:93:LYS:HE3   | 2.36                     | 0.41              |
| 22:BA:2436:U:O4    | 52:B5:119:HIS:ND1  | 2.54                     | 0.41              |
| 43:BV:165:LEU:HD21 | 43:BV:175:TYR:CE1  | 2.56                     | 0.41              |
| 39:BR:161:ARG:HH11 | 39:BR:161:ARG:HG2  | 1.85                     | 0.41              |
| 39:BR:166:LYS:HG3  | 39:BR:167:GLY:N    | 2.36                     | 0.41              |
| 47:BZ:102:PHE:C    | 47:BZ:103:LYS:HD2  | 2.41                     | 0.41              |
| 22:BA:2137:G:C3'   | 22:BA:2138:G:H5''  | 2.50                     | 0.41              |
| 1:AA:99:G:H4'      | 1:AA:100:A:O5'     | 2.21                     | 0.41              |
| 1:AA:383:A:O2'     | 1:AA:384:G:O4'     | 2.38                     | 0.41              |
| 1:AA:1250:U:H5'    | 13:AM:62:TYR:CE1   | 2.55                     | 0.41              |
| 35:BN:80:ARG:HG3   | 35:BN:80:ARG:HH11  | 1.86                     | 0.41              |
| 44:BW:76:LYS:HE3   | 44:BW:137:ILE:HG12 | 2.03                     | 0.41              |
| 22:BA:1297:C:O2'   | 22:BA:1298:A:H5'   | 2.21                     | 0.41              |
| 1:AA:1294:A:H4'    | 1:AA:1295:G:C5'    | 2.52                     | 0.41              |
| 22:BA:232:G:C5     | 22:BA:234:C:H1'    | 2.55                     | 0.41              |
| 1:AA:1402:A:H3'    | 1:AA:1402:A:N3     | 2.36                     | 0.41              |
| 39:BR:224:ASP:C    | 39:BR:226:LEU:H    | 2.24                     | 0.41              |
| 26:BE:269:ARG:HH11 | 26:BE:269:ARG:HG3  | 1.86                     | 0.41              |
| 28:BG:97:ARG:HG3   | 28:BG:97:ARG:O     | 2.21                     | 0.41              |
| 22:BA:495:A:H1'    | 44:BW:109:LYS:HB3  | 2.02                     | 0.41              |
| 22:BA:1620:U:H2'   | 22:BA:1621:C:O4'   | 2.20                     | 0.41              |
| 1:AA:1008:C:O2'    | 1:AA:1009:U:H5'    | 2.21                     | 0.41              |
| 1:AA:284:A:H2'     | 1:AA:285:C:C6      | 2.56                     | 0.41              |
| 22:BA:293:G:H4'    | 22:BA:294:U:OP1    | 2.21                     | 0.41              |
| 22:BA:2651:C:H2'   | 22:BA:2652:A:H8    | 1.86                     | 0.41              |
| 1:AA:1111:G:H2'    | 1:AA:1112:G:H8     | 1.85                     | 0.41              |
| 33:BL:171:LYS:C    | 33:BL:171:LYS:HD3  | 2.41                     | 0.41              |
| 31:BJ:103:ILE:HG22 | 31:BJ:103:ILE:O    | 2.20                     | 0.41              |
| 19:AS:12:ALA:HB3   | 19:AS:15:LEU:HD23  | 2.03                     | 0.41              |
| 22:BA:42:G:H2'     | 22:BA:43:A:O4'     | 2.20                     | 0.41              |
| 1:AA:489:G:H2'     | 1:AA:490:A:H8      | 1.86                     | 0.41              |
| 22:BA:757:U:OP1    | 22:BA:759:G:H5'    | 2.21                     | 0.41              |
| 2:AB:115:LEU:HD11  | 2:AB:155:ILE:O     | 2.20                     | 0.41              |
| 15:AO:57:LEU:HD13  | 22:BA:726:G:C1'    | 2.30                     | 0.40              |
| 22:BA:1286:A:N6    | 22:BA:2028:A:OP2   | 2.53                     | 0.40              |
| 22:BA:1056:A:H2    | 22:BA:2503:G:N3    | 2.19                     | 0.40              |
| 34:BM:69:LEU:HD13  | 34:BM:69:LEU:C     | 2.41                     | 0.40              |
| 30:BI:57:VAL:O     | 30:BI:57:VAL:HG13  | 2.21                     | 0.40              |
| 53:B6:37:GLN:NE2   | 53:B6:38:GLY:H     | 2.19                     | 0.40              |
| 40:BS:9:ILE:HD13   | 40:BS:12:ARG:HH22  | 1.85                     | 0.40              |
| 40:BS:13:ARG:CB    | 40:BS:13:ARG:HH11  | 2.34                     | 0.40              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 22:BA:2244:A:H3'   | 22:BA:2245:U:H6    | 1.86                     | 0.40              |
| 35:BN:146:VAL:CG2  | 35:BN:147:ASN:N    | 2.84                     | 0.40              |
| 40:BS:88:ARG:HH11  | 40:BS:88:ARG:HG3   | 1.85                     | 0.40              |
| 22:BA:1691:A:C2    | 22:BA:2063:C:H5''  | 2.56                     | 0.40              |
| 40:BS:55:ARG:NH1   | 40:BS:55:ARG:CB    | 2.84                     | 0.40              |
| 45:BX:115:THR:HG22 | 45:BX:116:ILE:N    | 2.36                     | 0.40              |
| 31:BJ:50:ARG:HG2   | 31:BJ:50:ARG:HH11  | 1.87                     | 0.40              |
| 28:BG:93:GLN:O     | 28:BG:96:ARG:HB3   | 2.20                     | 0.40              |
| 33:BL:133:ILE:HD12 | 33:BL:139:ASN:OD1  | 2.20                     | 0.40              |
| 26:BE:44:ILE:HG23  | 26:BE:45:ILE:N     | 2.35                     | 0.40              |
| 1:AA:1312:A:O5'    | 1:AA:1313:U:OP1    | 2.39                     | 0.40              |
| 22:BA:2330:U:H2'   | 22:BA:2331:G:C8    | 2.56                     | 0.40              |
| 22:BA:102:U:H2'    | 22:BA:103:C:O4'    | 2.21                     | 0.40              |
| 22:BA:781:G:H2'    | 22:BA:782:G:H8     | 1.86                     | 0.40              |
| 22:BA:544:G:H2'    | 22:BA:545:U:O4'    | 2.21                     | 0.40              |
| 23:BB:20:A:H2'     | 23:BB:21:G:C8      | 2.56                     | 0.40              |
| 31:BJ:139:ILE:HG13 | 31:BJ:171:ARG:NH2  | 2.27                     | 0.40              |
| 22:BA:1141:C:H2'   | 22:BA:1142:G:H8    | 1.86                     | 0.40              |
| 22:BA:1369:G:H22   | 22:BA:1634:C:N4    | 2.19                     | 0.40              |
| 26:BE:121:LYS:CG   | 26:BE:122:MET:H    | 2.32                     | 0.40              |
| 28:BG:146:ARG:HH11 | 28:BG:146:ARG:HB3  | 1.86                     | 0.40              |
| 28:BG:103:LEU:HD23 | 28:BG:139:VAL:CG2  | 2.51                     | 0.40              |
| 22:BA:2363:A:N6    | 50:B3:49:ARG:NH2   | 2.69                     | 0.40              |
| 22:BA:2764:U:H4'   | 30:BI:181:LYS:HB3  | 2.03                     | 0.40              |
| 1:AA:1473:C:H2'    | 1:AA:1474:G:C8     | 2.56                     | 0.40              |
| 1:AA:1401:A:C8     | 1:AA:1401:A:OP2    | 2.74                     | 0.40              |
| 22:BA:2582:A:H2'   | 22:BA:2583:A:C4'   | 2.49                     | 0.40              |
| 41:BT:208:ARG:HH11 | 41:BT:208:ARG:CB   | 2.34                     | 0.40              |
| 36:BO:41:TRP:CB    | 36:BO:94:VAL:HG21  | 2.50                     | 0.40              |
| 1:AA:880:C:H2'     | 1:AA:881:C:C5      | 2.56                     | 0.40              |
| 44:BW:138:LEU:HG   | 44:BW:139:LYS:N    | 2.37                     | 0.40              |
| 20:AT:160:HIS:HB3  | 20:AT:161:LYS:H    | 1.70                     | 0.40              |
| 22:BA:887:G:N1     | 22:BA:908:A:N6     | 2.69                     | 0.40              |
| 22:BA:1902:G:C2'   | 22:BA:1902:G:N3    | 2.84                     | 0.40              |
| 22:BA:1474:A:N1    | 37:BP:163:GLN:HA   | 2.36                     | 0.40              |
| 35:BN:191:GLU:HG2  | 35:BN:191:GLU:O    | 2.21                     | 0.40              |
| 53:B6:20:ARG:HH11  | 53:B6:20:ARG:HG2   | 1.87                     | 0.40              |
| 1:AA:879:C:O5'     | 1:AA:879:C:H6      | 2.03                     | 0.40              |
| 22:BA:547:G:H2'    | 22:BA:548:G:O4'    | 2.20                     | 0.40              |
| 22:BA:2317:G:H2'   | 22:BA:2318:C:C6    | 2.56                     | 0.40              |
| 42:BU:79:LEU:HD11  | 42:BU:134:ILE:HG12 | 2.03                     | 0.40              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 26:BE:138:HIS:CD2  | 26:BE:187:THR:HB   | 2.56                     | 0.40              |
| 1:AA:682:C:H4'     | 18:AR:67:LYS:NZ    | 2.35                     | 0.40              |
| 22:BA:2381:C:H4'   | 45:BX:97:GLN:NE2   | 2.36                     | 0.40              |
| 22:BA:2698:C:H4'   | 22:BA:2699:U:C5    | 2.55                     | 0.40              |
| 40:BS:94:ARG:HG2   | 40:BS:97:LEU:H     | 1.86                     | 0.40              |
| 41:BT:190:LEU:HD12 | 41:BT:191:LEU:HD23 | 2.03                     | 0.40              |
| 1:AA:943:A:H2'     | 1:AA:943:A:N3      | 2.36                     | 0.40              |
| 1:AA:901:U:C5'     | 1:AA:921:C:N4      | 2.85                     | 0.40              |
| 22:BA:553:G:H2'    | 22:BA:554:G:H8     | 1.86                     | 0.40              |
| 42:BU:63:MET:O     | 42:BU:67:LEU:HD23  | 2.20                     | 0.40              |
| 22:BA:2464:G:C1'   | 22:BA:2518:C:H5    | 2.35                     | 0.40              |
| 22:BA:2463:G:H2'   | 22:BA:2464:G:H5''  | 2.02                     | 0.40              |
| 29:BH:23:TYR:HA    | 29:BH:27:MET:HB3   | 2.03                     | 0.40              |
| 24:BC:25:U:C5'     | 24:BC:27:A:H4'     | 2.51                     | 0.40              |
| 22:BA:316:G:N1     | 22:BA:319:G:OP2    | 2.48                     | 0.40              |
| 1:AA:235:U:C5'     | 17:AQ:120:ARG:HH21 | 2.34                     | 0.40              |
| 32:BK:163:PRO:O    | 32:BK:164:GLN:HB2  | 2.22                     | 0.40              |
| 24:BC:41:U:H2'     | 24:BC:42:G:C8      | 2.56                     | 0.40              |
| 24:BC:42:G:H2'     | 24:BC:43:U:C6      | 2.55                     | 0.40              |
| 39:BR:124:GLY:O    | 39:BR:125:ILE:HD12 | 2.21                     | 0.40              |
| 22:BA:444:A:H2'    | 22:BA:445:C:C6     | 2.56                     | 0.40              |
| 25:BD:119:SER:HB2  | 25:BD:124:GLU:CD   | 2.41                     | 0.40              |
| 22:BA:873:A:H2'    | 22:BA:874:G:C8     | 2.55                     | 0.40              |
| 44:BW:140:GLU:CD   | 44:BW:143:VAL:HG21 | 2.40                     | 0.40              |
| 50:B3:20:ARG:HH11  | 50:B3:20:ARG:HG2   | 1.86                     | 0.40              |
| 22:BA:2496:U:H2'   | 22:BA:2497:C:O4'   | 2.22                     | 0.40              |
| 23:BB:94:U:H2'     | 23:BB:95:G:C8      | 2.56                     | 0.40              |
| 1:AA:1363:U:H2'    | 1:AA:1364:G:C8     | 2.56                     | 0.40              |
| 22:BA:1862:C:N4    | 22:BA:1902:G:N2    | 2.69                     | 0.40              |
| 26:BE:126:LEU:HD23 | 26:BE:126:LEU:C    | 2.42                     | 0.40              |
| 42:BU:70:TYR:OH    | 49:B2:23:LYS:HD2   | 2.21                     | 0.40              |
| 22:BA:105:G:H2'    | 22:BA:106:G:C8     | 2.56                     | 0.40              |
| 3:AC:1:MET:HB3     | 3:AC:2:GLY:H       | 1.71                     | 0.40              |
| 22:BA:2237:A:H2'   | 22:BA:2238:A:C8    | 2.55                     | 0.40              |
| 26:BE:179:LEU:N    | 26:BE:179:LEU:HD12 | 2.36                     | 0.40              |
| 29:BH:127:ARG:HH11 | 29:BH:127:ARG:HG2  | 1.86                     | 0.40              |
| 26:BE:106:ALA:C    | 26:BE:108:ILE:H    | 2.25                     | 0.40              |
| 22:BA:2513:C:C2'   | 22:BA:2514:A:H5'   | 2.48                     | 0.40              |
| 38:BQ:87:MET:HB2   | 38:BQ:88:HIS:H     | 1.72                     | 0.40              |
| 22:BA:2244:A:C5'   | 26:BE:257:LYS:HE2  | 2.52                     | 0.40              |
| 46:BY:87:ARG:HG2   | 46:BY:88:ALA:N     | 2.37                     | 0.40              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:667:C:O2'     | 18:AR:45:LYS:HB3   | 2.21                     | 0.40              |
| 28:BG:207:PHE:H    | 28:BG:242:ALA:HB1  | 1.86                     | 0.40              |
| 35:BN:108:GLY:N    | 35:BN:109:PRO:CD   | 2.75                     | 0.40              |
| 22:BA:782:G:O2'    | 22:BA:783:U:H5'    | 2.22                     | 0.40              |
| 33:BL:191:LEU:HD12 | 33:BL:191:LEU:N    | 2.36                     | 0.40              |
| 38:BQ:72:ARG:CZ    | 38:BQ:77:LEU:HD12  | 2.51                     | 0.40              |
| 1:AA:359:G:H4'     | 1:AA:361:C:N4      | 2.35                     | 0.40              |
| 22:BA:1333:U:H5'   | 22:BA:1334:U:OP1   | 2.21                     | 0.40              |
| 22:BA:40:C:H2'     | 22:BA:41:A:C8      | 2.57                     | 0.40              |
| 22:BA:1326:C:H2'   | 22:BA:1327:U:C6    | 2.56                     | 0.40              |
| 25:BD:234:MET:O    | 25:BD:238:VAL:HG23 | 2.21                     | 0.40              |
| 1:AA:33:A:OP1      | 1:AA:369:U:H1'     | 2.21                     | 0.40              |
| 30:BI:147:VAL:CG2  | 30:BI:155:PRO:HB2  | 2.51                     | 0.40              |
| 22:BA:1113:A:H4'   | 22:BA:1133:U:C4'   | 2.51                     | 0.40              |
| 22:BA:703:C:H4'    | 26:BE:38:GLY:HA2   | 2.02                     | 0.40              |
| 1:AA:129:G:H1      | 1:AA:161:C:H41     | 1.69                     | 0.40              |
| 22:BA:2368:A:H62   | 52:B5:131:ARG:HD3  | 1.86                     | 0.40              |
| 22:BA:721:U:H2'    | 22:BA:722:G:H8     | 1.86                     | 0.40              |
| 1:AA:471:A:H61     | 12:AL:50:ARG:HH12  | 1.69                     | 0.40              |
| 46:BY:151:LYS:OXT  | 46:BY:151:LYS:HG3  | 2.22                     | 0.40              |
| 22:BA:1496:A:H3'   | 22:BA:1497:A:H5'   | 2.04                     | 0.40              |
| 22:BA:2253:U:H2'   | 22:BA:2254:A:O4'   | 2.21                     | 0.40              |
| 27:BF:126:ARG:HG2  | 27:BF:126:ARG:HH11 | 1.86                     | 0.40              |
| 8:AH:66:ARG:HG2    | 8:AH:67:ARG:H      | 1.86                     | 0.40              |
| 28:BG:59:ASN:OD1   | 28:BG:60:PHE:N     | 2.55                     | 0.40              |
| 51:B4:123:GLY:C    | 51:B4:125:ALA:H    | 2.24                     | 0.40              |
| 19:AS:61:TYR:OH    | 48:B1:91:PHE:CE1   | 2.60                     | 0.40              |
| 22:BA:2024:G:H5''  | 42:BU:71:ARG:CB    | 2.51                     | 0.40              |
| 39:BR:219:LEU:C    | 39:BR:219:LEU:HD23 | 2.42                     | 0.40              |
| 22:BA:2650:G:H4'   | 27:BF:105:LYS:HZ1  | 1.85                     | 0.40              |
| 1:AA:422:A:N6      | 1:AA:429:G:C8      | 2.90                     | 0.40              |
| 1:AA:347:G:C5'     | 16:AP:5:ARG:HH11   | 2.32                     | 0.40              |
| 28:BG:152:MET:HB3  | 28:BG:157:ARG:NH2  | 2.37                     | 0.40              |
| 26:BE:146:ARG:HH11 | 26:BE:146:ARG:HG2  | 1.87                     | 0.40              |
| 35:BN:130:ARG:HH22 | 52:B5:112:ARG:HG3  | 1.84                     | 0.40              |
| 46:BY:122:LEU:CD1  | 46:BY:150:LYS:HE3  | 2.50                     | 0.40              |
| 22:BA:650:G:H2'    | 22:BA:651:U:H6     | 1.83                     | 0.40              |
| 22:BA:188:U:N3     | 22:BA:189:A:N6     | 2.68                     | 0.40              |
| 22:BA:1831:G:OP1   | 22:BA:1831:G:H3'   | 2.21                     | 0.40              |
| 4:AD:9:PHE:HB3     | 4:AD:12:ILE:HD12   | 2.02                     | 0.40              |
| 44:BW:147:VAL:HA   | 44:BW:156:ARG:HA   | 2.02                     | 0.40              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:AA:1348:C:H5''   | 1:AA:1349:C:H5''   | 2.04                     | 0.40              |
| 22:BA:2663:C:O2'   | 22:BA:2664:U:H5'   | 2.22                     | 0.40              |
| 1:AA:1253:G:N2     | 1:AA:1279:G:H2'    | 2.35                     | 0.40              |
| 29:BH:47:VAL:HG22  | 29:BH:107:ARG:NH1  | 2.36                     | 0.40              |
| 22:BA:1874:U:OP1   | 22:BA:2428:A:H5'   | 2.22                     | 0.40              |
| 1:AA:442:G:H8      | 1:AA:442:G:O5'     | 2.04                     | 0.40              |
| 22:BA:1108:C:O2'   | 22:BA:1109:U:H5'   | 2.21                     | 0.40              |
| 42:BU:113:LYS:NZ   | 42:BU:115:LYS:HE2  | 2.36                     | 0.40              |
| 38:BQ:143:TYR:C    | 38:BQ:145:GLY:H    | 2.25                     | 0.40              |
| 26:BE:222:ASN:ND2  | 26:BE:222:ASN:N    | 2.69                     | 0.40              |
| 22:BA:2747:G:H2'   | 22:BA:2748:C:H6    | 1.87                     | 0.40              |
| 29:BH:28:VAL:N     | 29:BH:29:PRO:CD    | 2.84                     | 0.40              |
| 22:BA:2760:C:H2'   | 22:BA:2761:U:H6    | 1.85                     | 0.40              |
| 1:AA:1204:U:P      | 3:AC:27:LYS:HZ1    | 2.45                     | 0.40              |
| 22:BA:811:A:C4'    | 22:BA:813:C:H5'    | 2.51                     | 0.40              |
| 1:AA:706:G:H4'     | 1:AA:829:C:C4'     | 2.51                     | 0.40              |
| 22:BA:1974:A:H2'   | 22:BA:1975:C:C6    | 2.56                     | 0.40              |
| 1:AA:49:U:C4       | 1:AA:335:A:H2      | 2.39                     | 0.40              |
| 1:AA:891:G:O2'     | 1:AA:892:U:H5'     | 2.21                     | 0.40              |
| 29:BH:148:ARG:HH11 | 29:BH:148:ARG:HG3  | 1.86                     | 0.40              |
| 22:BA:601:U:H2'    | 22:BA:602:A:C8     | 2.57                     | 0.40              |
| 22:BA:2667:C:H2'   | 22:BA:2668:C:C6    | 2.57                     | 0.40              |
| 22:BA:2668:C:H2'   | 22:BA:2669:C:H6    | 1.86                     | 0.40              |
| 4:AD:90:ARG:HH22   | 4:AD:108:ARG:HH12  | 1.70                     | 0.40              |
| 51:B4:115:ARG:HG2  | 51:B4:115:ARG:HH11 | 1.86                     | 0.40              |
| 43:BV:117:SER:HA   | 43:BV:118:PRO:HD3  | 1.99                     | 0.40              |
| 22:BA:1968:G:H2'   | 22:BA:1970:U:C4    | 2.56                     | 0.40              |
| 1:AA:867:A:H2'     | 1:AA:868:A:C8      | 2.56                     | 0.40              |
| 22:BA:121:G:H1     | 22:BA:126:C:H42    | 1.70                     | 0.40              |
| 25:BD:116:ARG:HG2  | 25:BD:116:ARG:HH11 | 1.86                     | 0.40              |
| 28:BG:86:ARG:HG3   | 28:BG:86:ARG:HH11  | 1.87                     | 0.40              |
| 47:BZ:122:ARG:HH11 | 47:BZ:122:ARG:HG2  | 1.86                     | 0.40              |
| 31:BJ:153:LYS:HD3  | 31:BJ:159:ASP:OD1  | 2.22                     | 0.40              |
| 6:AF:70:VAL:HG13   | 6:AF:130:TYR:HE2   | 1.87                     | 0.40              |
| 6:AF:117:ASN:ND2   | 26:BE:162:ALA:HB1  | 2.37                     | 0.40              |
| 22:BA:118:U:H1'    | 22:BA:133:A:N7     | 2.37                     | 0.40              |
| 38:BQ:64:GLU:HB3   | 38:BQ:65:ARG:NH2   | 2.36                     | 0.40              |
| 22:BA:2220:G:H2'   | 22:BA:2221:U:H6    | 1.85                     | 0.40              |
| 46:BY:79:PRO:CD    | 46:BY:106:LEU:HB3  | 2.49                     | 0.40              |
| 46:BY:84:LYS:HE3   | 46:BY:122:LEU:HA   | 2.03                     | 0.40              |
| 1:AA:667:C:H3'     | 1:AA:668:C:C6      | 2.56                     | 0.40              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 26:BE:83:ARG:HH11 | 26:BE:83:ARG:HG2   | 1.86                     | 0.40              |
| 34:BM:19:LEU:HD22 | 34:BM:19:LEU:O     | 2.21                     | 0.40              |
| 40:BS:43:LEU:CG   | 41:BT:200:TYR:HB2  | 2.48                     | 0.40              |
| 22:BA:2278:C:H3'  | 45:BX:71:ARG:HE    | 1.87                     | 0.40              |
| 27:BF:173:ARG:CB  | 27:BF:173:ARG:HH11 | 2.34                     | 0.40              |
| 34:BM:38:VAL:HG11 | 34:BM:59:ARG:HH21  | 1.86                     | 0.40              |
| 22:BA:83:A:H62    | 22:BA:98:G:H5''    | 1.84                     | 0.40              |
| 1:AA:208:C:H2'    | 1:AA:209:G:C8      | 2.57                     | 0.40              |
| 22:BA:1877:C:H2'  | 22:BA:1878:C:C4'   | 2.51                     | 0.40              |
| 22:BA:1156:G:H2'  | 22:BA:2507:G:OP1   | 2.21                     | 0.40              |
| 1:AA:511:A:H2'    | 1:AA:511:A:N3      | 2.36                     | 0.40              |
| 22:BA:2645:U:O2'  | 22:BA:2799:A:H2'   | 2.20                     | 0.40              |
| 22:BA:2302:C:OP2  | 50:B3:39:ARG:HD3   | 2.21                     | 0.40              |
| 22:BA:210:C:H2'   | 22:BA:211:A:C8     | 2.56                     | 0.40              |
| 22:BA:1284:U:H2'  | 22:BA:1285:G:C8    | 2.57                     | 0.40              |
| 22:BA:2803:C:H2'  | 22:BA:2804:U:C6    | 2.57                     | 0.40              |
| 22:BA:2804:U:H2'  | 22:BA:2805:C:C6    | 2.57                     | 0.40              |
| 1:AA:206:C:H2'    | 1:AA:207:G:H8      | 1.87                     | 0.40              |
| 1:AA:207:G:P      | 17:AQ:97:LYS:HZ3   | 2.45                     | 0.40              |
| 22:BA:1680:G:O2'  | 22:BA:1681:G:H5'   | 2.22                     | 0.40              |
| 22:BA:495:A:H2'   | 22:BA:496:C:O4'    | 2.21                     | 0.40              |
| 44:BW:108:THR:OG1 | 44:BW:109:LYS:N    | 2.54                     | 0.40              |
| 36:BO:77:ARG:HH11 | 36:BO:77:ARG:CB    | 2.34                     | 0.40              |
| 39:BR:190:VAL:HB  | 39:BR:194:ILE:HD12 | 2.03                     | 0.40              |
| 22:BA:2100:U:H2'  | 22:BA:2101:G:C8    | 2.57                     | 0.40              |
| 22:BA:704:A:H2'   | 22:BA:705:U:C6     | 2.56                     | 0.40              |
| 22:BA:520:C:H2'   | 22:BA:521:A:H5'    | 2.03                     | 0.40              |
| 22:BA:2304:A:H61  | 22:BA:2361:U:H1'   | 1.86                     | 0.40              |
| 1:AA:244:A:H1'    | 17:AQ:73:ASP:OD2   | 2.22                     | 0.40              |
| 1:AA:256:A:H2'    | 1:AA:257:G:C8      | 2.56                     | 0.40              |
| 16:AP:33:LEU:H    | 16:AP:33:LEU:HD13  | 1.86                     | 0.40              |
| 40:BS:72:ARG:HH11 | 40:BS:72:ARG:HG2   | 1.86                     | 0.40              |
| 5:AE:217:MET:SD   | 5:AE:218:THR:N     | 2.94                     | 0.40              |
| 1:AA:1274:U:H2'   | 1:AA:1275:G:H8     | 1.85                     | 0.40              |
| 5:AE:226:ARG:HG3  | 5:AE:239:ARG:HG2   | 2.03                     | 0.40              |
| 30:BI:192:ARG:NH2 | 30:BI:197:PRO:HD2  | 2.36                     | 0.40              |
| 21:AU:105:GLU:HA  | 21:AU:106:PRO:HD3  | 1.93                     | 0.40              |

There are no symmetry-related clashes.



## 5.3 Torsion angles ⓘ

### 5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

| Mol | Chain | Analysed      | Favoured  | Allowed  | Outliers | Percentiles |     |
|-----|-------|---------------|-----------|----------|----------|-------------|-----|
| 2   | AB    | 229/231 (99%) | 201 (88%) | 25 (11%) | 3 (1%)   | 15          | 60  |
| 3   | AC    | 215/218 (99%) | 179 (83%) | 29 (14%) | 7 (3%)   | 5           | 40  |
| 4   | AD    | 197/201 (98%) | 179 (91%) | 17 (9%)  | 1 (0%)   | 34          | 77  |
| 5   | AE    | 156/308 (51%) | 138 (88%) | 16 (10%) | 2 (1%)   | 15          | 60  |
| 6   | AF    | 105/168 (62%) | 92 (88%)  | 10 (10%) | 3 (3%)   | 6           | 43  |
| 7   | AG    | 152/155 (98%) | 136 (90%) | 14 (9%)  | 2 (1%)   | 15          | 60  |
| 8   | AH    | 132/134 (98%) | 118 (89%) | 13 (10%) | 1 (1%)   | 24          | 69  |
| 9   | AI    | 125/197 (64%) | 110 (88%) | 13 (10%) | 2 (2%)   | 12          | 56  |
| 10  | AJ    | 97/197 (49%)  | 85 (88%)  | 10 (10%) | 2 (2%)   | 9           | 50  |
| 11  | AK    | 116/140 (83%) | 95 (82%)  | 16 (14%) | 5 (4%)   | 3           | 34  |
| 12  | AL    | 121/123 (98%) | 99 (82%)  | 17 (14%) | 5 (4%)   | 3           | 35  |
| 13  | AM    | 97/145 (67%)  | 75 (77%)  | 15 (16%) | 7 (7%)   | 1           | 22  |
| 14  | AN    | 97/100 (97%)  | 83 (86%)  | 13 (13%) | 1 (1%)   | 19          | 65  |
| 15  | AO    | 83/90 (92%)   | 77 (93%)  | 6 (7%)   | 0        | 100         | 100 |
| 16  | AP    | 78/88 (89%)   | 59 (76%)  | 12 (15%) | 7 (9%)   | 1           | 17  |
| 17  | AQ    | 81/142 (57%)  | 69 (85%)  | 11 (14%) | 1 (1%)   | 16          | 61  |
| 18  | AR    | 56/103 (54%)  | 51 (91%)  | 4 (7%)   | 1 (2%)   | 11          | 53  |
| 19  | AS    | 90/92 (98%)   | 75 (83%)  | 12 (13%) | 3 (3%)   | 5           | 40  |
| 20  | AT    | 100/202 (50%) | 93 (93%)  | 7 (7%)   | 0        | 100         | 100 |
| 21  | AU    | 51/190 (27%)  | 37 (72%)  | 10 (20%) | 4 (8%)   | 1           | 20  |
| 25  | BD    | 225/352 (64%) | 189 (84%) | 33 (15%) | 3 (1%)   | 15          | 60  |
| 26  | BE    | 264/269 (98%) | 126 (48%) | 94 (36%) | 44 (17%) | 0           | 5   |
| 27  | BF    | 152/259 (59%) | 91 (60%)  | 32 (21%) | 29 (19%) | 0           | 3   |
| 28  | BG    | 209/293 (71%) | 159 (76%) | 39 (19%) | 11 (5%)  | 2           | 29  |
| 29  | BH    | 173/220 (79%) | 130 (75%) | 32 (18%) | 11 (6%)  | 2           | 25  |

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| Mol | Chain | Analysed        | Favoured   | Allowed   | Outliers | Percentiles |     |
|-----|-------|-----------------|------------|-----------|----------|-------------|-----|
| 30  | BI    | 180/223 (81%)   | 143 (79%)  | 30 (17%)  | 7 (4%)   | 4           | 36  |
| 31  | BJ    | 146/197 (74%)   | 105 (72%)  | 33 (23%)  | 8 (6%)   | 2           | 29  |
| 32  | BK    | 143/224 (64%)   | 115 (80%)  | 22 (15%)  | 6 (4%)   | 3           | 34  |
| 33  | BL    | 123/250 (49%)   | 92 (75%)   | 24 (20%)  | 7 (6%)   | 2           | 28  |
| 34  | BM    | 119/121 (98%)   | 96 (81%)   | 20 (17%)  | 3 (2%)   | 7           | 46  |
| 35  | BN    | 174/257 (68%)   | 98 (56%)   | 48 (28%)  | 28 (16%) | 0           | 5   |
| 36  | BO    | 133/135 (98%)   | 93 (70%)   | 30 (23%)  | 10 (8%)  | 1           | 21  |
| 37  | BP    | 114/205 (56%)   | 94 (82%)   | 16 (14%)  | 4 (4%)   | 4           | 39  |
| 38  | BQ    | 120/161 (74%)   | 81 (68%)   | 23 (19%)  | 16 (13%) | 0           | 7   |
| 39  | BR    | 111/233 (48%)   | 66 (60%)   | 25 (22%)  | 20 (18%) | 0           | 4   |
| 40  | BS    | 117/119 (98%)   | 96 (82%)   | 12 (10%)  | 9 (8%)   | 1           | 20  |
| 41  | BT    | 102/257 (40%)   | 62 (61%)   | 23 (22%)  | 17 (17%) | 0           | 5   |
| 42  | BU    | 120/199 (60%)   | 92 (77%)   | 20 (17%)  | 8 (7%)   | 1           | 24  |
| 43  | BV    | 83/198 (42%)    | 63 (76%)   | 15 (18%)  | 5 (6%)   | 2           | 26  |
| 44  | BW    | 108/191 (56%)   | 59 (55%)   | 34 (32%)  | 15 (14%) | 0           | 6   |
| 45  | BX    | 84/198 (42%)    | 52 (62%)   | 21 (25%)  | 11 (13%) | 0           | 7   |
| 46  | BY    | 74/151 (49%)    | 43 (58%)   | 20 (27%)  | 11 (15%) | 0           | 5   |
| 47  | BZ    | 63/173 (36%)    | 58 (92%)   | 5 (8%)    | 0        | 100         | 100 |
| 48  | B1    | 70/144 (49%)    | 52 (74%)   | 14 (20%)  | 4 (6%)   | 2           | 28  |
| 49  | B2    | 55/57 (96%)     | 32 (58%)   | 11 (20%)  | 12 (22%) | 0           | 2   |
| 50  | B3    | 63/66 (96%)     | 33 (52%)   | 23 (36%)  | 7 (11%)  | 0           | 11  |
| 51  | B4    | 35/152 (23%)    | 28 (80%)   | 7 (20%)   | 0        | 100         | 100 |
| 52  | B5    | 60/159 (38%)    | 39 (65%)   | 15 (25%)  | 6 (10%)  | 1           | 14  |
| 53  | B6    | 36/104 (35%)    | 26 (72%)   | 6 (17%)   | 4 (11%)  | 0           | 11  |
| All | All   | 5834/8791 (66%) | 4464 (76%) | 997 (17%) | 373 (6%) | 3           | 25  |

All (373) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | AC    | 88  | ARG  |
| 3   | AC    | 89  | PRO  |
| 3   | AC    | 202 | THR  |
| 5   | AE    | 218 | THR  |
| 6   | AF    | 155 | VAL  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 11  | AK    | 26  | PRO  |
| 11  | AK    | 135 | LYS  |
| 13  | AM    | 131 | VAL  |
| 16  | AP    | 21  | ALA  |
| 16  | AP    | 65  | GLU  |
| 25  | BD    | 152 | PHE  |
| 26  | BE    | 85  | ALA  |
| 26  | BE    | 87  | ILE  |
| 26  | BE    | 90  | ILE  |
| 26  | BE    | 100 | ILE  |
| 26  | BE    | 103 | PRO  |
| 26  | BE    | 122 | MET  |
| 26  | BE    | 138 | HIS  |
| 26  | BE    | 173 | PRO  |
| 27  | BF    | 116 | ILE  |
| 27  | BF    | 248 | PRO  |
| 30  | BI    | 54  | PRO  |
| 31  | BJ    | 78  | PHE  |
| 32  | BK    | 94  | PRO  |
| 35  | BN    | 94  | ALA  |
| 35  | BN    | 183 | PRO  |
| 37  | BP    | 196 | ASN  |
| 38  | BQ    | 58  | LYS  |
| 39  | BR    | 149 | VAL  |
| 39  | BR    | 172 | ARG  |
| 39  | BR    | 183 | ILE  |
| 39  | BR    | 196 | PHE  |
| 39  | BR    | 217 | ALA  |
| 39  | BR    | 220 | TYR  |
| 40  | BS    | 72  | ARG  |
| 40  | BS    | 76  | TYR  |
| 40  | BS    | 89  | GLN  |
| 41  | BT    | 136 | VAL  |
| 41  | BT    | 176 | ILE  |
| 41  | BT    | 221 | ILE  |
| 42  | BU    | 35  | ARG  |
| 42  | BU    | 140 | THR  |
| 44  | BW    | 69  | VAL  |
| 44  | BW    | 129 | ILE  |
| 45  | BX    | 103 | HIS  |
| 45  | BX    | 108 | VAL  |
| 45  | BX    | 120 | ILE  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 45  | BX    | 131 | PRO  |
| 46  | BY    | 79  | PRO  |
| 46  | BY    | 108 | TYR  |
| 49  | B2    | 48  | VAL  |
| 50  | B3    | 64  | ILE  |
| 52  | B5    | 126 | THR  |
| 53  | B6    | 3   | VAL  |
| 2   | AB    | 98  | LYS  |
| 2   | AB    | 168 | VAL  |
| 2   | AB    | 231 | SER  |
| 3   | AC    | 15  | THR  |
| 7   | AG    | 16  | PRO  |
| 8   | AH    | 20  | ARG  |
| 13  | AM    | 116 | GLU  |
| 13  | AM    | 117 | ILE  |
| 14  | AN    | 90  | CYS  |
| 19  | AS    | 28  | LYS  |
| 26  | BE    | 42  | ARG  |
| 26  | BE    | 48  | ARG  |
| 26  | BE    | 49  | HIS  |
| 26  | BE    | 75  | VAL  |
| 26  | BE    | 123 | GLY  |
| 26  | BE    | 132 | PRO  |
| 26  | BE    | 137 | ILE  |
| 26  | BE    | 146 | ARG  |
| 26  | BE    | 150 | LEU  |
| 26  | BE    | 245 | PRO  |
| 26  | BE    | 266 | ILE  |
| 27  | BF    | 112 | GLU  |
| 27  | BF    | 143 | GLU  |
| 27  | BF    | 144 | LEU  |
| 27  | BF    | 195 | PRO  |
| 27  | BF    | 205 | PRO  |
| 28  | BG    | 106 | ALA  |
| 28  | BG    | 140 | ILE  |
| 28  | BG    | 153 | ASN  |
| 29  | BH    | 41  | LEU  |
| 30  | BI    | 53  | VAL  |
| 32  | BK    | 99  | LEU  |
| 33  | BL    | 172 | LEU  |
| 33  | BL    | 173 | TYR  |
| 35  | BN    | 75  | PRO  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 35  | BN    | 92  | GLN  |
| 35  | BN    | 95  | SER  |
| 35  | BN    | 109 | PRO  |
| 35  | BN    | 121 | PRO  |
| 35  | BN    | 145 | ASN  |
| 35  | BN    | 166 | THR  |
| 35  | BN    | 179 | GLU  |
| 35  | BN    | 188 | ALA  |
| 35  | BN    | 232 | VAL  |
| 35  | BN    | 239 | ALA  |
| 35  | BN    | 240 | GLU  |
| 36  | BO    | 11  | LYS  |
| 36  | BO    | 22  | TYR  |
| 36  | BO    | 78  | PRO  |
| 36  | BO    | 81  | THR  |
| 37  | BP    | 170 | ALA  |
| 37  | BP    | 171 | GLU  |
| 38  | BQ    | 57  | LYS  |
| 38  | BQ    | 83  | ASP  |
| 38  | BQ    | 85  | SER  |
| 38  | BQ    | 105 | ASP  |
| 39  | BR    | 195 | VAL  |
| 39  | BR    | 225 | LYS  |
| 40  | BS    | 88  | ARG  |
| 41  | BT    | 166 | THR  |
| 41  | BT    | 220 | LYS  |
| 42  | BU    | 31  | GLU  |
| 42  | BU    | 120 | GLY  |
| 42  | BU    | 125 | ILE  |
| 43  | BV    | 169 | ASP  |
| 44  | BW    | 88  | GLU  |
| 44  | BW    | 101 | ILE  |
| 44  | BW    | 143 | VAL  |
| 44  | BW    | 162 | ILE  |
| 45  | BX    | 80  | VAL  |
| 46  | BY    | 83  | LYS  |
| 46  | BY    | 91  | VAL  |
| 48  | B1    | 77  | LYS  |
| 48  | B1    | 83  | ASP  |
| 48  | B1    | 86  | SER  |
| 49  | B2    | 31  | ALA  |
| 52  | B5    | 106 | GLY  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 3          | AC           | 105        | CYS         |
| 3          | AC           | 169        | ASP         |
| 9          | AI           | 79         | LYS         |
| 11         | AK           | 129        | GLY         |
| 12         | AL           | 11         | THR         |
| 12         | AL           | 17         | ASN         |
| 13         | AM           | 118        | ARG         |
| 13         | AM           | 121        | ARG         |
| 16         | AP           | 17         | TYR         |
| 19         | AS           | 42         | PRO         |
| 21         | AU           | 120        | ARG         |
| 26         | BE           | 21         | LYS         |
| 26         | BE           | 34         | ARG         |
| 26         | BE           | 40         | ASN         |
| 26         | BE           | 54         | HIS         |
| 26         | BE           | 69         | ASP         |
| 26         | BE           | 88         | CYS         |
| 26         | BE           | 91         | HIS         |
| 26         | BE           | 121        | LYS         |
| 26         | BE           | 170        | LEU         |
| 26         | BE           | 193        | ASN         |
| 26         | BE           | 233        | GLY         |
| 26         | BE           | 265        | PHE         |
| 27         | BF           | 118        | PRO         |
| 27         | BF           | 127        | LEU         |
| 27         | BF           | 133        | PHE         |
| 27         | BF           | 135        | VAL         |
| 27         | BF           | 146        | LYS         |
| 27         | BF           | 171        | PHE         |
| 27         | BF           | 228        | ASN         |
| 28         | BG           | 129        | GLN         |
| 29         | BH           | 26         | LYS         |
| 29         | BH           | 134        | PRO         |
| 30         | BI           | 55         | SER         |
| 31         | BJ           | 157        | GLN         |
| 31         | BJ           | 158        | LYS         |
| 32         | BK           | 89         | ALA         |
| 33         | BL           | 184        | LYS         |
| 34         | BM           | 5          | GLN         |
| 35         | BN           | 100        | MET         |
| 35         | BN           | 164        | LEU         |
| 36         | BO           | 59         | ARG         |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 36  | BO    | 92  | TYR  |
| 38  | BQ    | 143 | TYR  |
| 39  | BR    | 159 | LYS  |
| 40  | BS    | 2   | THR  |
| 40  | BS    | 71  | GLU  |
| 40  | BS    | 73  | GLY  |
| 41  | BT    | 188 | GLU  |
| 42  | BU    | 117 | ARG  |
| 43  | BV    | 181 | GLU  |
| 44  | BW    | 70  | LYS  |
| 44  | BW    | 94  | LYS  |
| 44  | BW    | 99  | VAL  |
| 44  | BW    | 138 | LEU  |
| 45  | BX    | 85  | ASP  |
| 45  | BX    | 105 | GLY  |
| 46  | BY    | 96  | HIS  |
| 46  | BY    | 126 | THR  |
| 48  | B1    | 56  | GLU  |
| 49  | B2    | 9   | SER  |
| 49  | B2    | 25  | TYR  |
| 49  | B2    | 26  | TRP  |
| 49  | B2    | 34  | LEU  |
| 49  | B2    | 38  | LEU  |
| 49  | B2    | 50  | LYS  |
| 50  | B3    | 6   | ASP  |
| 50  | B3    | 45  | ARG  |
| 50  | B3    | 58  | HIS  |
| 52  | B5    | 105 | THR  |
| 52  | B5    | 118 | GLN  |
| 53  | B6    | 8   | LYS  |
| 5   | AE    | 303 | MET  |
| 7   | AG    | 19  | ARG  |
| 13  | AM    | 57  | HIS  |
| 16  | AP    | 5   | ARG  |
| 18  | AR    | 41  | SER  |
| 19  | AS    | 26  | ALA  |
| 21  | AU    | 104 | ASN  |
| 21  | AU    | 128 | LYS  |
| 26  | BE    | 25  | ARG  |
| 26  | BE    | 47  | ALA  |
| 26  | BE    | 61  | ILE  |
| 26  | BE    | 82  | ASN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 26  | BE    | 169 | THR  |
| 26  | BE    | 207 | LYS  |
| 26  | BE    | 250 | ALA  |
| 27  | BF    | 102 | LYS  |
| 27  | BF    | 113 | LYS  |
| 27  | BF    | 198 | VAL  |
| 27  | BF    | 199 | TYR  |
| 27  | BF    | 214 | LYS  |
| 27  | BF    | 218 | LEU  |
| 27  | BF    | 226 | GLN  |
| 27  | BF    | 244 | LEU  |
| 28  | BG    | 75  | ALA  |
| 28  | BG    | 204 | LYS  |
| 28  | BG    | 226 | LEU  |
| 29  | BH    | 39  | ASN  |
| 29  | BH    | 130 | GLN  |
| 29  | BH    | 137 | PHE  |
| 30  | BI    | 194 | TRP  |
| 31  | BJ    | 122 | GLN  |
| 31  | BJ    | 137 | LYS  |
| 33  | BL    | 170 | GLN  |
| 33  | BL    | 171 | LYS  |
| 35  | BN    | 72  | GLY  |
| 35  | BN    | 152 | GLU  |
| 35  | BN    | 203 | PHE  |
| 35  | BN    | 204 | SER  |
| 36  | BO    | 24  | GLY  |
| 37  | BP    | 96  | VAL  |
| 38  | BQ    | 49  | THR  |
| 38  | BQ    | 75  | LYS  |
| 38  | BQ    | 124 | SER  |
| 38  | BQ    | 144 | HIS  |
| 39  | BR    | 141 | PRO  |
| 39  | BR    | 145 | THR  |
| 39  | BR    | 161 | ARG  |
| 39  | BR    | 224 | ASP  |
| 40  | BS    | 3   | ARG  |
| 40  | BS    | 5   | LYS  |
| 41  | BT    | 165 | GLY  |
| 41  | BT    | 213 | ARG  |
| 41  | BT    | 214 | GLN  |
| 42  | BU    | 141 | HIS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 43  | BV    | 143 | ASP  |
| 44  | BW    | 120 | GLY  |
| 45  | BX    | 69  | ASN  |
| 45  | BX    | 82  | ILE  |
| 46  | BY    | 124 | LEU  |
| 46  | BY    | 143 | LYS  |
| 49  | B2    | 5   | LYS  |
| 49  | B2    | 11  | TYR  |
| 49  | B2    | 39  | SER  |
| 50  | B3    | 43  | PRO  |
| 52  | B5    | 93  | LYS  |
| 52  | B5    | 139 | ASP  |
| 3   | AC    | 26  | PRO  |
| 4   | AD    | 3   | ARG  |
| 6   | AF    | 73  | PRO  |
| 10  | AJ    | 128 | ASN  |
| 11  | AK    | 48  | GLY  |
| 12  | AL    | 42  | PRO  |
| 12  | AL    | 112 | GLN  |
| 13  | AM    | 83  | ASN  |
| 16  | AP    | 36  | VAL  |
| 16  | AP    | 48  | LEU  |
| 17  | AQ    | 132 | PRO  |
| 21  | AU    | 105 | GLU  |
| 25  | BD    | 132 | LYS  |
| 26  | BE    | 106 | ALA  |
| 26  | BE    | 112 | ILE  |
| 27  | BF    | 128 | GLN  |
| 27  | BF    | 188 | SER  |
| 27  | BF    | 240 | PRO  |
| 29  | BH    | 38  | SER  |
| 29  | BH    | 80  | PRO  |
| 30  | BI    | 161 | PRO  |
| 31  | BJ    | 55  | LYS  |
| 31  | BJ    | 145 | ALA  |
| 32  | BK    | 96  | GLY  |
| 33  | BL    | 163 | VAL  |
| 34  | BM    | 48  | PRO  |
| 35  | BN    | 89  | ALA  |
| 35  | BN    | 135 | GLY  |
| 35  | BN    | 184 | LEU  |
| 35  | BN    | 202 | ALA  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 36  | BO    | 21  | SER  |
| 36  | BO    | 89  | SER  |
| 38  | BQ    | 73  | SER  |
| 38  | BQ    | 87  | MET  |
| 38  | BQ    | 142 | PRO  |
| 39  | BR    | 147 | ASP  |
| 39  | BR    | 180 | THR  |
| 39  | BR    | 185 | ARG  |
| 39  | BR    | 222 | LEU  |
| 39  | BR    | 226 | LEU  |
| 41  | BT    | 145 | GLN  |
| 41  | BT    | 169 | SER  |
| 41  | BT    | 219 | ILE  |
| 42  | BU    | 128 | PRO  |
| 43  | BV    | 168 | PRO  |
| 43  | BV    | 183 | ASN  |
| 44  | BW    | 93  | HIS  |
| 44  | BW    | 116 | GLU  |
| 44  | BW    | 126 | GLU  |
| 45  | BX    | 121 | ASP  |
| 46  | BY    | 81  | THR  |
| 46  | BY    | 138 | ASP  |
| 46  | BY    | 141 | ALA  |
| 50  | B3    | 35  | THR  |
| 50  | B3    | 40  | HIS  |
| 53  | B6    | 7   | VAL  |
| 53  | B6    | 16  | THR  |
| 6   | AF    | 94  | GLY  |
| 11  | AK    | 101 | GLY  |
| 12  | AL    | 89  | ASP  |
| 27  | BF    | 158 | ILE  |
| 27  | BF    | 229 | ILE  |
| 28  | BG    | 202 | ALA  |
| 29  | BH    | 25  | GLU  |
| 30  | BI    | 50  | PRO  |
| 31  | BJ    | 168 | PRO  |
| 32  | BK    | 76  | VAL  |
| 35  | BN    | 118 | GLY  |
| 36  | BO    | 133 | ILE  |
| 39  | BR    | 192 | VAL  |
| 41  | BT    | 131 | SER  |
| 41  | BT    | 223 | GLY  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 44  | BW    | 158 | VAL  |
| 49  | B2    | 16  | ARG  |
| 26  | BE    | 18  | VAL  |
| 26  | BE    | 107 | ILE  |
| 26  | BE    | 244 | THR  |
| 27  | BF    | 241 | GLY  |
| 28  | BG    | 117 | PRO  |
| 28  | BG    | 145 | PRO  |
| 35  | BN    | 76  | GLY  |
| 35  | BN    | 162 | VAL  |
| 38  | BQ    | 59  | VAL  |
| 38  | BQ    | 109 | SER  |
| 41  | BT    | 196 | ILE  |
| 25  | BD    | 273 | GLY  |
| 30  | BI    | 202 | GLY  |
| 33  | BL    | 211 | GLY  |
| 35  | BN    | 108 | GLY  |
| 39  | BR    | 124 | GLY  |
| 45  | BX    | 95  | VAL  |
| 9   | AI    | 76  | GLY  |
| 27  | BF    | 192 | GLY  |
| 28  | BG    | 231 | PRO  |
| 29  | BH    | 162 | GLY  |
| 32  | BK    | 122 | GLY  |
| 34  | BM    | 26  | GLY  |
| 38  | BQ    | 130 | GLY  |
| 10  | AJ    | 134 | PRO  |
| 16  | AP    | 42  | ILE  |
| 41  | BT    | 135 | ILE  |
| 26  | BE    | 95  | GLY  |
| 29  | BH    | 24  | ILE  |
| 41  | BT    | 175 | PRO  |

### 5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.



| Mol | Chain | Analysed       | Rotameric | Outliers | Percentiles |    |
|-----|-------|----------------|-----------|----------|-------------|----|
| 2   | AB    | 196/196 (100%) | 177 (90%) | 19 (10%) | 10          | 40 |
| 3   | AC    | 187/188 (100%) | 177 (95%) | 10 (5%)  | 28          | 64 |
| 4   | AD    | 178/180 (99%)  | 167 (94%) | 11 (6%)  | 23          | 60 |
| 5   | AE    | 121/255 (48%)  | 118 (98%) | 3 (2%)   | 55          | 81 |
| 6   | AF    | 95/144 (66%)   | 84 (88%)  | 11 (12%) | 7           | 32 |
| 7   | AG    | 125/126 (99%)  | 113 (90%) | 12 (10%) | 10          | 40 |
| 8   | AH    | 117/117 (100%) | 105 (90%) | 12 (10%) | 9           | 37 |
| 9   | AI    | 101/159 (64%)  | 93 (92%)  | 8 (8%)   | 15          | 51 |
| 10  | AJ    | 91/178 (51%)   | 79 (87%)  | 12 (13%) | 5           | 28 |
| 11  | AK    | 92/110 (84%)   | 86 (94%)  | 6 (6%)   | 21          | 58 |
| 12  | AL    | 106/106 (100%) | 98 (92%)  | 8 (8%)   | 17          | 53 |
| 13  | AM    | 90/126 (71%)   | 80 (89%)  | 10 (11%) | 8           | 34 |
| 14  | AN    | 89/90 (99%)    | 77 (86%)  | 12 (14%) | 5           | 27 |
| 15  | AO    | 80/85 (94%)    | 75 (94%)  | 5 (6%)   | 22          | 59 |
| 16  | AP    | 71/79 (90%)    | 58 (82%)  | 13 (18%) | 2           | 14 |
| 17  | AQ    | 72/125 (58%)   | 67 (93%)  | 5 (7%)   | 19          | 56 |
| 18  | AR    | 54/98 (55%)    | 49 (91%)  | 5 (9%)   | 11          | 42 |
| 19  | AS    | 81/81 (100%)   | 74 (91%)  | 7 (9%)   | 13          | 47 |
| 20  | AT    | 80/163 (49%)   | 72 (90%)  | 8 (10%)  | 9           | 38 |
| 21  | AU    | 49/170 (29%)   | 46 (94%)  | 3 (6%)   | 23          | 60 |
| 25  | BD    | 190/297 (64%)  | 181 (95%) | 9 (5%)   | 32          | 68 |
| 26  | BE    | 212/214 (99%)  | 205 (97%) | 7 (3%)   | 45          | 76 |
| 27  | BF    | 127/217 (58%)  | 123 (97%) | 4 (3%)   | 47          | 77 |
| 28  | BG    | 177/254 (70%)  | 172 (97%) | 5 (3%)   | 51          | 78 |
| 29  | BH    | 148/183 (81%)  | 139 (94%) | 9 (6%)   | 23          | 60 |
| 30  | BI    | 156/192 (81%)  | 152 (97%) | 4 (3%)   | 54          | 80 |
| 31  | BJ    | 128/171 (75%)  | 125 (98%) | 3 (2%)   | 58          | 83 |
| 32  | BK    | 114/189 (60%)  | 109 (96%) | 5 (4%)   | 35          | 69 |
| 33  | BL    | 104/213 (49%)  | 101 (97%) | 3 (3%)   | 50          | 78 |
| 34  | BM    | 101/101 (100%) | 94 (93%)  | 7 (7%)   | 19          | 56 |
| 35  | BN    | 136/203 (67%)  | 126 (93%) | 10 (7%)  | 17          | 54 |
| 36  | BO    | 108/108 (100%) | 100 (93%) | 8 (7%)   | 17          | 54 |

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| Mol | Chain | Analysed        | Rotameric  | Outliers | Percentiles |     |
|-----|-------|-----------------|------------|----------|-------------|-----|
| 37  | BP    | 97/177 (55%)    | 92 (95%)   | 5 (5%)   | 29          | 65  |
| 38  | BQ    | 103/135 (76%)   | 94 (91%)   | 9 (9%)   | 13          | 45  |
| 39  | BR    | 100/207 (48%)   | 89 (89%)   | 11 (11%) | 8           | 34  |
| 40  | BS    | 106/106 (100%)  | 101 (95%)  | 5 (5%)   | 32          | 68  |
| 41  | BT    | 90/224 (40%)    | 86 (96%)   | 4 (4%)   | 35          | 69  |
| 42  | BU    | 108/176 (61%)   | 104 (96%)  | 4 (4%)   | 41          | 73  |
| 43  | BV    | 74/171 (43%)    | 72 (97%)   | 2 (3%)   | 52          | 79  |
| 44  | BW    | 98/171 (57%)    | 88 (90%)   | 10 (10%) | 9           | 37  |
| 45  | BX    | 68/167 (41%)    | 62 (91%)   | 6 (9%)   | 12          | 45  |
| 46  | BY    | 66/133 (50%)    | 63 (96%)   | 3 (4%)   | 34          | 69  |
| 47  | BZ    | 61/149 (41%)    | 55 (90%)   | 6 (10%)  | 10          | 39  |
| 48  | B1    | 62/126 (49%)    | 61 (98%)   | 1 (2%)   | 70          | 88  |
| 49  | B2    | 50/50 (100%)    | 46 (92%)   | 4 (8%)   | 15          | 50  |
| 50  | B3    | 59/60 (98%)     | 55 (93%)   | 4 (7%)   | 20          | 57  |
| 51  | B4    | 31/125 (25%)    | 29 (94%)   | 2 (6%)   | 21          | 58  |
| 52  | B5    | 53/140 (38%)    | 50 (94%)   | 3 (6%)   | 25          | 62  |
| 53  | B6    | 36/87 (41%)     | 36 (100%)  | 0        | 100         | 100 |
| All | All   | 5038/7522 (67%) | 4705 (93%) | 333 (7%) | 25          | 57  |

All (333) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2   | AB    | 10  | LEU  |
| 2   | AB    | 30  | ARG  |
| 2   | AB    | 45  | ILE  |
| 2   | AB    | 46  | ASN  |
| 2   | AB    | 54  | LEU  |
| 2   | AB    | 97  | ASN  |
| 2   | AB    | 100 | TRP  |
| 2   | AB    | 106 | THR  |
| 2   | AB    | 115 | LEU  |
| 2   | AB    | 136 | ARG  |
| 2   | AB    | 161 | LEU  |
| 2   | AB    | 173 | GLU  |
| 2   | AB    | 177 | LEU  |
| 2   | AB    | 190 | LEU  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2   | AB    | 196 | ASN  |
| 2   | AB    | 199 | LEU  |
| 2   | AB    | 209 | ASP  |
| 2   | AB    | 216 | LEU  |
| 2   | AB    | 221 | LEU  |
| 3   | AC    | 11  | ARG  |
| 3   | AC    | 33  | LEU  |
| 3   | AC    | 86  | GLU  |
| 3   | AC    | 110 | LEU  |
| 3   | AC    | 131 | ILE  |
| 3   | AC    | 160 | ILE  |
| 3   | AC    | 163 | GLN  |
| 3   | AC    | 167 | ARG  |
| 3   | AC    | 187 | GLN  |
| 3   | AC    | 194 | ASP  |
| 4   | AD    | 47  | ARG  |
| 4   | AD    | 51  | LYS  |
| 4   | AD    | 56  | PHE  |
| 4   | AD    | 63  | ARG  |
| 4   | AD    | 94  | ILE  |
| 4   | AD    | 95  | LEU  |
| 4   | AD    | 110 | LEU  |
| 4   | AD    | 147 | LEU  |
| 4   | AD    | 157 | ARG  |
| 4   | AD    | 188 | ILE  |
| 4   | AD    | 199 | ARG  |
| 5   | AE    | 193 | LYS  |
| 5   | AE    | 286 | VAL  |
| 5   | AE    | 290 | ARG  |
| 6   | AF    | 71  | LEU  |
| 6   | AF    | 75  | MET  |
| 6   | AF    | 87  | TYR  |
| 6   | AF    | 90  | LEU  |
| 6   | AF    | 91  | LEU  |
| 6   | AF    | 97  | MET  |
| 6   | AF    | 115 | ARG  |
| 6   | AF    | 129 | ILE  |
| 6   | AF    | 131 | LEU  |
| 6   | AF    | 132 | LEU  |
| 6   | AF    | 164 | ARG  |
| 7   | AG    | 10  | LYS  |
| 7   | AG    | 18  | TYR  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 7   | AG    | 20  | ASN  |
| 7   | AG    | 30  | ILE  |
| 7   | AG    | 38  | LEU  |
| 7   | AG    | 59  | LEU  |
| 7   | AG    | 79  | ARG  |
| 7   | AG    | 104 | LEU  |
| 7   | AG    | 138 | LYS  |
| 7   | AG    | 140 | GLU  |
| 7   | AG    | 144 | MET  |
| 7   | AG    | 155 | ARG  |
| 8   | AH    | 29  | THR  |
| 8   | AH    | 31  | ILE  |
| 8   | AH    | 61  | LEU  |
| 8   | AH    | 63  | LEU  |
| 8   | AH    | 64  | ARG  |
| 8   | AH    | 79  | LEU  |
| 8   | AH    | 81  | ARG  |
| 8   | AH    | 89  | ILE  |
| 8   | AH    | 98  | ARG  |
| 8   | AH    | 107 | ILE  |
| 8   | AH    | 108 | LEU  |
| 8   | AH    | 114 | ILE  |
| 9   | AI    | 113 | GLN  |
| 9   | AI    | 125 | GLU  |
| 9   | AI    | 139 | LEU  |
| 9   | AI    | 148 | LEU  |
| 9   | AI    | 179 | GLU  |
| 9   | AI    | 180 | ARG  |
| 9   | AI    | 185 | LEU  |
| 9   | AI    | 196 | LYS  |
| 10  | AJ    | 109 | TRP  |
| 10  | AJ    | 110 | VAL  |
| 10  | AJ    | 115 | ASP  |
| 10  | AJ    | 137 | LEU  |
| 10  | AJ    | 140 | LYS  |
| 10  | AJ    | 146 | VAL  |
| 10  | AJ    | 147 | LEU  |
| 10  | AJ    | 157 | ARG  |
| 10  | AJ    | 175 | THR  |
| 10  | AJ    | 177 | GLN  |
| 10  | AJ    | 188 | PRO  |
| 10  | AJ    | 196 | LYS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 11  | AK    | 25  | ILE  |
| 11  | AK    | 66  | ARG  |
| 11  | AK    | 93  | VAL  |
| 11  | AK    | 118 | PHE  |
| 11  | AK    | 127 | HIS  |
| 11  | AK    | 137 | ARG  |
| 12  | AL    | 4   | ILE  |
| 12  | AL    | 5   | LYS  |
| 12  | AL    | 7   | LEU  |
| 12  | AL    | 12  | ARG  |
| 12  | AL    | 16  | ARG  |
| 12  | AL    | 72  | HIS  |
| 12  | AL    | 80  | VAL  |
| 12  | AL    | 121 | LYS  |
| 13  | AM    | 61  | GLU  |
| 13  | AM    | 94  | GLU  |
| 13  | AM    | 105 | ARG  |
| 13  | AM    | 108 | ARG  |
| 13  | AM    | 121 | ARG  |
| 13  | AM    | 123 | ILE  |
| 13  | AM    | 129 | LEU  |
| 13  | AM    | 136 | THR  |
| 13  | AM    | 137 | LYS  |
| 13  | AM    | 143 | LEU  |
| 14  | AN    | 8   | GLN  |
| 14  | AN    | 16  | LEU  |
| 14  | AN    | 23  | ILE  |
| 14  | AN    | 31  | ILE  |
| 14  | AN    | 32  | ARG  |
| 14  | AN    | 43  | ILE  |
| 14  | AN    | 47  | LEU  |
| 14  | AN    | 68  | ARG  |
| 14  | AN    | 70  | ARG  |
| 14  | AN    | 85  | GLU  |
| 14  | AN    | 88  | HIS  |
| 14  | AN    | 97  | ARG  |
| 15  | AO    | 7   | ILE  |
| 15  | AO    | 16  | GLU  |
| 15  | AO    | 42  | LEU  |
| 15  | AO    | 57  | LEU  |
| 15  | AO    | 67  | LEU  |
| 16  | AP    | 3   | LYS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 16  | AP    | 6   | LEU  |
| 16  | AP    | 19  | ILE  |
| 16  | AP    | 24  | VAL  |
| 16  | AP    | 25  | ARG  |
| 16  | AP    | 27  | ARG  |
| 16  | AP    | 28  | ARG  |
| 16  | AP    | 29  | GLU  |
| 16  | AP    | 33  | LEU  |
| 16  | AP    | 42  | ILE  |
| 16  | AP    | 43  | LYS  |
| 16  | AP    | 59  | LYS  |
| 16  | AP    | 68  | TYR  |
| 17  | AQ    | 64  | GLN  |
| 17  | AQ    | 90  | LYS  |
| 17  | AQ    | 109 | LYS  |
| 17  | AQ    | 122 | ILE  |
| 17  | AQ    | 140 | LYS  |
| 18  | AR    | 32  | ASN  |
| 18  | AR    | 47  | LEU  |
| 18  | AR    | 56  | LEU  |
| 18  | AR    | 63  | THR  |
| 18  | AR    | 68  | GLN  |
| 19  | AS    | 3   | ARG  |
| 19  | AS    | 5   | LEU  |
| 19  | AS    | 6   | LYS  |
| 19  | AS    | 27  | GLU  |
| 19  | AS    | 42  | PRO  |
| 19  | AS    | 55  | ARG  |
| 19  | AS    | 78  | LEU  |
| 20  | AT    | 85  | LYS  |
| 20  | AT    | 86  | LYS  |
| 20  | AT    | 93  | ARG  |
| 20  | AT    | 125 | LEU  |
| 20  | AT    | 143 | ILE  |
| 20  | AT    | 156 | VAL  |
| 20  | AT    | 161 | LYS  |
| 20  | AT    | 176 | LYS  |
| 21  | AU    | 100 | VAL  |
| 21  | AU    | 134 | GLU  |
| 21  | AU    | 149 | LYS  |
| 25  | BD    | 118 | ARG  |
| 25  | BD    | 129 | ARG  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 25  | BD    | 131 | ILE  |
| 25  | BD    | 189 | ILE  |
| 25  | BD    | 213 | GLU  |
| 25  | BD    | 284 | ILE  |
| 25  | BD    | 314 | LYS  |
| 25  | BD    | 319 | LYS  |
| 25  | BD    | 336 | ILE  |
| 26  | BE    | 25  | ARG  |
| 26  | BE    | 55  | LYS  |
| 26  | BE    | 59  | ARG  |
| 26  | BE    | 152 | ARG  |
| 26  | BE    | 213 | ARG  |
| 26  | BE    | 221 | MET  |
| 26  | BE    | 234 | ARG  |
| 27  | BF    | 105 | LYS  |
| 27  | BF    | 143 | GLU  |
| 27  | BF    | 202 | LYS  |
| 27  | BF    | 203 | LYS  |
| 28  | BG    | 67  | GLU  |
| 28  | BG    | 107 | GLU  |
| 28  | BG    | 113 | ARG  |
| 28  | BG    | 146 | ARG  |
| 28  | BG    | 214 | GLU  |
| 29  | BH    | 24  | ILE  |
| 29  | BH    | 32  | LYS  |
| 29  | BH    | 34  | GLU  |
| 29  | BH    | 69  | ILE  |
| 29  | BH    | 100 | LEU  |
| 29  | BH    | 148 | ARG  |
| 29  | BH    | 149 | GLU  |
| 29  | BH    | 157 | LYS  |
| 29  | BH    | 176 | LYS  |
| 30  | BI    | 49  | GLN  |
| 30  | BI    | 54  | PRO  |
| 30  | BI    | 64  | GLN  |
| 30  | BI    | 216 | GLU  |
| 31  | BJ    | 71  | LYS  |
| 31  | BJ    | 84  | LYS  |
| 31  | BJ    | 162 | LYS  |
| 32  | BK    | 72  | LYS  |
| 32  | BK    | 99  | LEU  |
| 32  | BK    | 105 | ASN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 32  | BK    | 111 | LYS  |
| 32  | BK    | 167 | LYS  |
| 33  | BL    | 194 | ARG  |
| 33  | BL    | 197 | GLU  |
| 33  | BL    | 228 | GLU  |
| 34  | BM    | 19  | LEU  |
| 34  | BM    | 23  | ARG  |
| 34  | BM    | 35  | ILE  |
| 34  | BM    | 53  | GLU  |
| 34  | BM    | 70  | LYS  |
| 34  | BM    | 76  | ILE  |
| 34  | BM    | 109 | LYS  |
| 35  | BN    | 79  | LYS  |
| 35  | BN    | 80  | ARG  |
| 35  | BN    | 83  | ARG  |
| 35  | BN    | 103 | GLN  |
| 35  | BN    | 106 | ARG  |
| 35  | BN    | 120 | MET  |
| 35  | BN    | 122 | LEU  |
| 35  | BN    | 125 | ARG  |
| 35  | BN    | 168 | LYS  |
| 35  | BN    | 186 | ILE  |
| 36  | BO    | 23  | ARG  |
| 36  | BO    | 57  | ASN  |
| 36  | BO    | 63  | LYS  |
| 36  | BO    | 68  | ILE  |
| 36  | BO    | 77  | ARG  |
| 36  | BO    | 80  | GLU  |
| 36  | BO    | 91  | GLU  |
| 36  | BO    | 92  | TYR  |
| 37  | BP    | 91  | ARG  |
| 37  | BP    | 95  | LYS  |
| 37  | BP    | 159 | ILE  |
| 37  | BP    | 186 | ILE  |
| 37  | BP    | 193 | ARG  |
| 38  | BQ    | 45  | ARG  |
| 38  | BQ    | 46  | GLU  |
| 38  | BQ    | 55  | ILE  |
| 38  | BQ    | 56  | ARG  |
| 38  | BQ    | 65  | ARG  |
| 38  | BQ    | 87  | MET  |
| 38  | BQ    | 116 | LYS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 38  | BQ    | 131 | ILE  |
| 38  | BQ    | 157 | LYS  |
| 39  | BR    | 122 | ILE  |
| 39  | BR    | 126 | LEU  |
| 39  | BR    | 129 | LYS  |
| 39  | BR    | 144 | ARG  |
| 39  | BR    | 148 | ILE  |
| 39  | BR    | 160 | ARG  |
| 39  | BR    | 172 | ARG  |
| 39  | BR    | 173 | GLN  |
| 39  | BR    | 178 | HIS  |
| 39  | BR    | 216 | LYS  |
| 39  | BR    | 225 | LYS  |
| 40  | BS    | 15  | LYS  |
| 40  | BS    | 31  | LEU  |
| 40  | BS    | 35  | ILE  |
| 40  | BS    | 66  | ASN  |
| 40  | BS    | 88  | ARG  |
| 41  | BT    | 132 | ARG  |
| 41  | BT    | 172 | ILE  |
| 41  | BT    | 198 | PHE  |
| 41  | BT    | 204 | LYS  |
| 42  | BU    | 35  | ARG  |
| 42  | BU    | 91  | LYS  |
| 42  | BU    | 104 | GLU  |
| 42  | BU    | 147 | LYS  |
| 43  | BV    | 131 | GLU  |
| 43  | BV    | 161 | LYS  |
| 44  | BW    | 94  | LYS  |
| 44  | BW    | 101 | ILE  |
| 44  | BW    | 107 | LYS  |
| 44  | BW    | 109 | LYS  |
| 44  | BW    | 123 | ILE  |
| 44  | BW    | 126 | GLU  |
| 44  | BW    | 129 | ILE  |
| 44  | BW    | 136 | LEU  |
| 44  | BW    | 150 | LYS  |
| 44  | BW    | 157 | LYS  |
| 45  | BX    | 61  | LYS  |
| 45  | BX    | 68  | LYS  |
| 45  | BX    | 71  | ARG  |
| 45  | BX    | 81  | LYS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 45  | BX    | 110 | ILE  |
| 45  | BX    | 120 | ILE  |
| 46  | BY    | 83  | LYS  |
| 46  | BY    | 106 | LEU  |
| 46  | BY    | 142 | LYS  |
| 47  | BZ    | 69  | GLU  |
| 47  | BZ    | 73  | LYS  |
| 47  | BZ    | 86  | LYS  |
| 47  | BZ    | 99  | ARG  |
| 47  | BZ    | 124 | ARG  |
| 47  | BZ    | 126 | ILE  |
| 48  | B1    | 88  | ASN  |
| 49  | B2    | 20  | TRP  |
| 49  | B2    | 22  | LYS  |
| 49  | B2    | 36  | LYS  |
| 49  | B2    | 42  | ASN  |
| 50  | B3    | 10  | LYS  |
| 50  | B3    | 21  | LYS  |
| 50  | B3    | 50  | LYS  |
| 50  | B3    | 65  | LYS  |
| 51  | B4    | 105 | ARG  |
| 51  | B4    | 128 | LYS  |
| 52  | B5    | 124 | LYS  |
| 52  | B5    | 128 | ARG  |
| 52  | B5    | 129 | LYS  |

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (115) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2   | AB    | 9   | ASN  |
| 2   | AB    | 46  | ASN  |
| 2   | AB    | 125 | GLN  |
| 2   | AB    | 144 | GLN  |
| 2   | AB    | 196 | ASN  |
| 2   | AB    | 207 | ASN  |
| 3   | AC    | 6   | ASN  |
| 3   | AC    | 16  | GLN  |
| 3   | AC    | 66  | GLN  |
| 3   | AC    | 125 | ASN  |
| 3   | AC    | 134 | GLN  |
| 3   | AC    | 163 | GLN  |
| 3   | AC    | 187 | GLN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4   | AD    | 109 | GLN  |
| 4   | AD    | 113 | HIS  |
| 4   | AD    | 119 | ASN  |
| 4   | AD    | 142 | GLN  |
| 5   | AE    | 225 | HIS  |
| 5   | AE    | 264 | ASN  |
| 6   | AF    | 117 | ASN  |
| 7   | AG    | 20  | ASN  |
| 8   | AH    | 92  | ASN  |
| 11  | AK    | 86  | GLN  |
| 11  | AK    | 127 | HIS  |
| 12  | AL    | 6   | GLN  |
| 12  | AL    | 111 | GLN  |
| 13  | AM    | 134 | GLN  |
| 14  | AN    | 8   | GLN  |
| 15  | AO    | 39  | HIS  |
| 15  | AO    | 50  | GLN  |
| 15  | AO    | 71  | ASN  |
| 16  | AP    | 13  | GLN  |
| 18  | AR    | 43  | GLN  |
| 19  | AS    | 86  | ASN  |
| 21  | AU    | 104 | ASN  |
| 21  | AU    | 112 | ASN  |
| 25  | BD    | 146 | GLN  |
| 25  | BD    | 163 | ASN  |
| 25  | BD    | 265 | GLN  |
| 25  | BD    | 313 | ASN  |
| 26  | BE    | 26  | ASN  |
| 26  | BE    | 84  | ASN  |
| 26  | BE    | 190 | GLN  |
| 26  | BE    | 264 | ASN  |
| 27  | BF    | 121 | HIS  |
| 27  | BF    | 163 | GLN  |
| 28  | BG    | 215 | ASN  |
| 28  | BG    | 257 | GLN  |
| 29  | BH    | 52  | ASN  |
| 29  | BH    | 60  | GLN  |
| 29  | BH    | 61  | ASN  |
| 29  | BH    | 70  | ASN  |
| 29  | BH    | 130 | GLN  |
| 29  | BH    | 140 | HIS  |
| 30  | BI    | 49  | GLN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 30  | BI    | 56  | ASN  |
| 30  | BI    | 64  | GLN  |
| 30  | BI    | 117 | ASN  |
| 30  | BI    | 159 | GLN  |
| 30  | BI    | 186 | GLN  |
| 31  | BJ    | 66  | GLN  |
| 31  | BJ    | 86  | GLN  |
| 31  | BJ    | 183 | HIS  |
| 31  | BJ    | 197 | ASN  |
| 32  | BK    | 105 | ASN  |
| 32  | BK    | 205 | ASN  |
| 33  | BL    | 219 | ASN  |
| 33  | BL    | 231 | HIS  |
| 33  | BL    | 234 | GLN  |
| 33  | BL    | 235 | GLN  |
| 34  | BM    | 5   | GLN  |
| 34  | BM    | 29  | ASN  |
| 34  | BM    | 89  | GLN  |
| 35  | BN    | 70  | ASN  |
| 35  | BN    | 147 | ASN  |
| 35  | BN    | 157 | GLN  |
| 36  | BO    | 35  | GLN  |
| 36  | BO    | 57  | ASN  |
| 37  | BP    | 100 | ASN  |
| 37  | BP    | 116 | GLN  |
| 37  | BP    | 166 | HIS  |
| 38  | BQ    | 80  | GLN  |
| 38  | BQ    | 97  | GLN  |
| 39  | BR    | 178 | HIS  |
| 40  | BS    | 66  | ASN  |
| 40  | BS    | 77  | ASN  |
| 40  | BS    | 83  | HIS  |
| 40  | BS    | 89  | GLN  |
| 40  | BS    | 93  | ASN  |
| 40  | BS    | 104 | ASN  |
| 41  | BT    | 153 | ASN  |
| 41  | BT    | 209 | ASN  |
| 42  | BU    | 90  | ASN  |
| 43  | BV    | 179 | ASN  |
| 44  | BW    | 93  | HIS  |
| 44  | BW    | 96  | ASN  |
| 44  | BW    | 105 | ASN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 44  | BW    | 121 | GLN  |
| 44  | BW    | 133 | ASN  |
| 45  | BX    | 107 | ASN  |
| 46  | BY    | 89  | ASN  |
| 46  | BY    | 102 | GLN  |
| 47  | BZ    | 79  | GLN  |
| 48  | B1    | 88  | ASN  |
| 48  | B1    | 89  | HIS  |
| 49  | B2    | 42  | ASN  |
| 49  | B2    | 53  | ASN  |
| 49  | B2    | 54  | GLN  |
| 50  | B3    | 38  | ASN  |
| 50  | B3    | 40  | HIS  |
| 51  | B4    | 112 | HIS  |
| 52  | B5    | 118 | GLN  |
| 52  | B5    | 137 | GLN  |
| 53  | B6    | 35  | GLN  |
| 53  | B6    | 37  | GLN  |

### 5.3.3 RNA ⓘ

| Mol | Chain | Analysed        | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 1   | AA    | 1477/1491 (99%) | 245 (16%)         | 51 (3%)         |
| 22  | BA    | 2726/2810 (97%) | 387 (14%)         | 12 (0%)         |
| 23  | BB    | 116/117 (99%)   | 12 (10%)          | 0               |
| 24  | BC    | 102/103 (99%)   | 14 (13%)          | 0               |
| All | All   | 4421/4521 (97%) | 658 (14%)         | 63 (1%)         |

All (658) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | AA    | 9   | A    |
| 1   | AA    | 10  | G    |
| 1   | AA    | 14  | U    |
| 1   | AA    | 15  | C    |
| 1   | AA    | 32  | G    |
| 1   | AA    | 33  | A    |
| 1   | AA    | 40  | G    |
| 1   | AA    | 48  | C    |
| 1   | AA    | 49  | U    |
| 1   | AA    | 52  | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | AA    | 53  | C    |
| 1   | AA    | 56  | A    |
| 1   | AA    | 62  | G    |
| 1   | AA    | 66  | G    |
| 1   | AA    | 67  | A    |
| 1   | AA    | 72  | A    |
| 1   | AA    | 79  | G    |
| 1   | AA    | 92  | G    |
| 1   | AA    | 94  | C    |
| 1   | AA    | 100 | A    |
| 1   | AA    | 104 | A    |
| 1   | AA    | 105 | C    |
| 1   | AA    | 114 | A    |
| 1   | AA    | 135 | A    |
| 1   | AA    | 158 | A    |
| 1   | AA    | 166 | G    |
| 1   | AA    | 167 | G    |
| 1   | AA    | 180 | A    |
| 1   | AA    | 181 | G    |
| 1   | AA    | 186 | A    |
| 1   | AA    | 210 | U    |
| 1   | AA    | 211 | C    |
| 1   | AA    | 214 | A    |
| 1   | AA    | 215 | U    |
| 1   | AA    | 216 | U    |
| 1   | AA    | 218 | G    |
| 1   | AA    | 221 | A    |
| 1   | AA    | 223 | U    |
| 1   | AA    | 229 | A    |
| 1   | AA    | 237 | G    |
| 1   | AA    | 246 | G    |
| 1   | AA    | 251 | U    |
| 1   | AA    | 252 | G    |
| 1   | AA    | 260 | G    |
| 1   | AA    | 277 | A    |
| 1   | AA    | 287 | C    |
| 1   | AA    | 299 | C    |
| 1   | AA    | 300 | A    |
| 1   | AA    | 301 | C    |
| 1   | AA    | 303 | G    |
| 1   | AA    | 316 | C    |
| 1   | AA    | 317 | G    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | AA    | 323 | C    |
| 1   | AA    | 325 | G    |
| 1   | AA    | 338 | U    |
| 1   | AA    | 339 | U    |
| 1   | AA    | 344 | A    |
| 1   | AA    | 360 | A    |
| 1   | AA    | 368 | A    |
| 1   | AA    | 369 | U    |
| 1   | AA    | 377 | G    |
| 1   | AA    | 379 | A    |
| 1   | AA    | 382 | C    |
| 1   | AA    | 383 | A    |
| 1   | AA    | 384 | G    |
| 1   | AA    | 385 | A    |
| 1   | AA    | 392 | A    |
| 1   | AA    | 393 | C    |
| 1   | AA    | 394 | G    |
| 1   | AA    | 399 | G    |
| 1   | AA    | 400 | U    |
| 1   | AA    | 401 | G    |
| 1   | AA    | 406 | U    |
| 1   | AA    | 422 | A    |
| 1   | AA    | 423 | A    |
| 1   | AA    | 426 | A    |
| 1   | AA    | 427 | A    |
| 1   | AA    | 433 | G    |
| 1   | AA    | 441 | G    |
| 1   | AA    | 444 | A    |
| 1   | AA    | 445 | U    |
| 1   | AA    | 448 | G    |
| 1   | AA    | 456 | U    |
| 1   | AA    | 457 | A    |
| 1   | AA    | 466 | C    |
| 1   | AA    | 475 | G    |
| 1   | AA    | 479 | U    |
| 1   | AA    | 480 | A    |
| 1   | AA    | 481 | A    |
| 1   | AA    | 484 | C    |
| 1   | AA    | 496 | G    |
| 1   | AA    | 508 | A    |
| 1   | AA    | 509 | U    |
| 1   | AA    | 511 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | AA    | 512 | U    |
| 1   | AA    | 514 | G    |
| 1   | AA    | 515 | G    |
| 1   | AA    | 520 | A    |
| 1   | AA    | 521 | A    |
| 1   | AA    | 523 | G    |
| 1   | AA    | 524 | C    |
| 1   | AA    | 525 | G    |
| 1   | AA    | 544 | A    |
| 1   | AA    | 581 | G    |
| 1   | AA    | 613 | G    |
| 1   | AA    | 636 | G    |
| 1   | AA    | 648 | G    |
| 1   | AA    | 649 | U    |
| 1   | AA    | 651 | G    |
| 1   | AA    | 672 | G    |
| 1   | AA    | 696 | C    |
| 1   | AA    | 702 | C    |
| 1   | AA    | 703 | A    |
| 1   | AA    | 725 | A    |
| 1   | AA    | 729 | A    |
| 1   | AA    | 741 | U    |
| 1   | AA    | 760 | G    |
| 1   | AA    | 763 | A    |
| 1   | AA    | 764 | A    |
| 1   | AA    | 765 | C    |
| 1   | AA    | 766 | G    |
| 1   | AA    | 768 | U    |
| 1   | AA    | 769 | G    |
| 1   | AA    | 776 | A    |
| 1   | AA    | 788 | U    |
| 1   | AA    | 789 | A    |
| 1   | AA    | 790 | U    |
| 1   | AA    | 791 | C    |
| 1   | AA    | 792 | G    |
| 1   | AA    | 793 | A    |
| 1   | AA    | 806 | U    |
| 1   | AA    | 820 | U    |
| 1   | AA    | 834 | G    |
| 1   | AA    | 838 | A    |
| 1   | AA    | 839 | G    |
| 1   | AA    | 856 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | AA    | 863  | A    |
| 1   | AA    | 875  | G    |
| 1   | AA    | 876  | G    |
| 1   | AA    | 883  | C    |
| 1   | AA    | 884  | A    |
| 1   | AA    | 894  | G    |
| 1   | AA    | 910  | U    |
| 1   | AA    | 917  | A    |
| 1   | AA    | 918  | A    |
| 1   | AA    | 921  | C    |
| 1   | AA    | 923  | A    |
| 1   | AA    | 924  | A    |
| 1   | AA    | 925  | G    |
| 1   | AA    | 926  | A    |
| 1   | AA    | 927  | A    |
| 1   | AA    | 931  | U    |
| 1   | AA    | 932  | A    |
| 1   | AA    | 941  | U    |
| 1   | AA    | 953  | A    |
| 1   | AA    | 958  | U    |
| 1   | AA    | 971  | G    |
| 1   | AA    | 981  | G    |
| 1   | AA    | 998  | U    |
| 1   | AA    | 999  | G    |
| 1   | AA    | 1003 | C    |
| 1   | AA    | 1013 | G    |
| 1   | AA    | 1014 | U    |
| 1   | AA    | 1015 | C    |
| 1   | AA    | 1017 | G    |
| 1   | AA    | 1034 | U    |
| 1   | AA    | 1035 | U    |
| 1   | AA    | 1043 | G    |
| 1   | AA    | 1050 | A    |
| 1   | AA    | 1051 | A    |
| 1   | AA    | 1067 | U    |
| 1   | AA    | 1083 | U    |
| 1   | AA    | 1085 | G    |
| 1   | AA    | 1086 | A    |
| 1   | AA    | 1087 | G    |
| 1   | AA    | 1088 | U    |
| 1   | AA    | 1094 | A    |
| 1   | AA    | 1106 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | AA    | 1107 | U    |
| 1   | AA    | 1108 | G    |
| 1   | AA    | 1116 | U    |
| 1   | AA    | 1117 | A    |
| 1   | AA    | 1129 | G    |
| 1   | AA    | 1130 | G    |
| 1   | AA    | 1131 | U    |
| 1   | AA    | 1132 | G    |
| 1   | AA    | 1144 | A    |
| 1   | AA    | 1145 | A    |
| 1   | AA    | 1149 | A    |
| 1   | AA    | 1150 | U    |
| 1   | AA    | 1160 | U    |
| 1   | AA    | 1162 | U    |
| 1   | AA    | 1163 | G    |
| 1   | AA    | 1172 | G    |
| 1   | AA    | 1173 | A    |
| 1   | AA    | 1174 | C    |
| 1   | AA    | 1175 | A    |
| 1   | AA    | 1188 | U    |
| 1   | AA    | 1189 | G    |
| 1   | AA    | 1204 | U    |
| 1   | AA    | 1205 | C    |
| 1   | AA    | 1206 | G    |
| 1   | AA    | 1226 | U    |
| 1   | AA    | 1229 | C    |
| 1   | AA    | 1230 | C    |
| 1   | AA    | 1233 | A    |
| 1   | AA    | 1234 | A    |
| 1   | AA    | 1247 | A    |
| 1   | AA    | 1248 | G    |
| 1   | AA    | 1250 | U    |
| 1   | AA    | 1253 | G    |
| 1   | AA    | 1265 | C    |
| 1   | AA    | 1270 | C    |
| 1   | AA    | 1271 | G    |
| 1   | AA    | 1283 | C    |
| 1   | AA    | 1285 | G    |
| 1   | AA    | 1294 | A    |
| 1   | AA    | 1295 | G    |
| 1   | AA    | 1310 | C    |
| 1   | AA    | 1311 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | AA    | 1312 | A    |
| 1   | AA    | 1313 | U    |
| 1   | AA    | 1314 | A    |
| 1   | AA    | 1327 | C    |
| 1   | AA    | 1330 | U    |
| 1   | AA    | 1332 | C    |
| 1   | AA    | 1347 | A    |
| 1   | AA    | 1349 | C    |
| 1   | AA    | 1350 | G    |
| 1   | AA    | 1381 | G    |
| 1   | AA    | 1395 | A    |
| 1   | AA    | 1400 | C    |
| 1   | AA    | 1401 | A    |
| 1   | AA    | 1402 | A    |
| 1   | AA    | 1442 | A    |
| 1   | AA    | 1448 | A    |
| 1   | AA    | 1451 | A    |
| 1   | AA    | 1454 | G    |
| 1   | AA    | 1455 | U    |
| 1   | AA    | 1456 | A    |
| 1   | AA    | 1466 | G    |
| 1   | AA    | 1469 | G    |
| 1   | AA    | 1478 | G    |
| 1   | AA    | 1479 | G    |
| 1   | AA    | 1483 | A    |
| 22  | BA    | 33   | A    |
| 22  | BA    | 34   | G    |
| 22  | BA    | 48   | A    |
| 22  | BA    | 49   | G    |
| 22  | BA    | 50   | G    |
| 22  | BA    | 71   | A    |
| 22  | BA    | 73   | U    |
| 22  | BA    | 90   | A    |
| 22  | BA    | 91   | A    |
| 22  | BA    | 99   | A    |
| 22  | BA    | 116  | A    |
| 22  | BA    | 117  | A    |
| 22  | BA    | 118  | U    |
| 22  | BA    | 119  | A    |
| 22  | BA    | 123  | C    |
| 22  | BA    | 131  | C    |
| 22  | BA    | 132  | G    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 22  | BA    | 144 | A    |
| 22  | BA    | 146 | U    |
| 22  | BA    | 147 | C    |
| 22  | BA    | 164 | A    |
| 22  | BA    | 166 | A    |
| 22  | BA    | 181 | A    |
| 22  | BA    | 189 | A    |
| 22  | BA    | 190 | G    |
| 22  | BA    | 201 | A    |
| 22  | BA    | 208 | A    |
| 22  | BA    | 226 | A    |
| 22  | BA    | 227 | G    |
| 22  | BA    | 233 | G    |
| 22  | BA    | 234 | C    |
| 22  | BA    | 235 | G    |
| 22  | BA    | 240 | A    |
| 22  | BA    | 250 | A    |
| 22  | BA    | 294 | U    |
| 22  | BA    | 311 | U    |
| 22  | BA    | 320 | U    |
| 22  | BA    | 331 | A    |
| 22  | BA    | 332 | G    |
| 22  | BA    | 333 | A    |
| 22  | BA    | 338 | G    |
| 22  | BA    | 339 | A    |
| 22  | BA    | 355 | A    |
| 22  | BA    | 386 | A    |
| 22  | BA    | 398 | G    |
| 22  | BA    | 417 | A    |
| 22  | BA    | 418 | G    |
| 22  | BA    | 423 | G    |
| 22  | BA    | 424 | A    |
| 22  | BA    | 436 | G    |
| 22  | BA    | 455 | A    |
| 22  | BA    | 456 | C    |
| 22  | BA    | 460 | U    |
| 22  | BA    | 463 | C    |
| 22  | BA    | 467 | G    |
| 22  | BA    | 468 | U    |
| 22  | BA    | 469 | A    |
| 22  | BA    | 470 | G    |
| 22  | BA    | 491 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 22  | BA    | 492 | A    |
| 22  | BA    | 493 | G    |
| 22  | BA    | 503 | C    |
| 22  | BA    | 504 | G    |
| 22  | BA    | 515 | U    |
| 22  | BA    | 516 | A    |
| 22  | BA    | 519 | A    |
| 22  | BA    | 520 | C    |
| 22  | BA    | 523 | G    |
| 22  | BA    | 538 | C    |
| 22  | BA    | 541 | G    |
| 22  | BA    | 542 | C    |
| 22  | BA    | 543 | A    |
| 22  | BA    | 544 | G    |
| 22  | BA    | 555 | A    |
| 22  | BA    | 557 | C    |
| 22  | BA    | 558 | A    |
| 22  | BA    | 573 | G    |
| 22  | BA    | 585 | A    |
| 22  | BA    | 624 | A    |
| 22  | BA    | 625 | C    |
| 22  | BA    | 626 | C    |
| 22  | BA    | 633 | A    |
| 22  | BA    | 639 | A    |
| 22  | BA    | 640 | G    |
| 22  | BA    | 649 | A    |
| 22  | BA    | 657 | U    |
| 22  | BA    | 658 | A    |
| 22  | BA    | 665 | U    |
| 22  | BA    | 667 | G    |
| 22  | BA    | 682 | C    |
| 22  | BA    | 696 | A    |
| 22  | BA    | 697 | U    |
| 22  | BA    | 728 | A    |
| 22  | BA    | 730 | C    |
| 22  | BA    | 741 | U    |
| 22  | BA    | 758 | U    |
| 22  | BA    | 776 | G    |
| 22  | BA    | 786 | G    |
| 22  | BA    | 787 | G    |
| 22  | BA    | 792 | A    |
| 22  | BA    | 794 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 22  | BA    | 795  | U    |
| 22  | BA    | 796  | G    |
| 22  | BA    | 811  | A    |
| 22  | BA    | 812  | G    |
| 22  | BA    | 816  | G    |
| 22  | BA    | 817  | C    |
| 22  | BA    | 823  | C    |
| 22  | BA    | 830  | A    |
| 22  | BA    | 838  | U    |
| 22  | BA    | 839  | G    |
| 22  | BA    | 841  | G    |
| 22  | BA    | 856  | U    |
| 22  | BA    | 857  | G    |
| 22  | BA    | 882  | U    |
| 22  | BA    | 888  | C    |
| 22  | BA    | 906  | C    |
| 22  | BA    | 907  | C    |
| 22  | BA    | 919  | A    |
| 22  | BA    | 921  | C    |
| 22  | BA    | 960  | A    |
| 22  | BA    | 961  | G    |
| 22  | BA    | 962  | G    |
| 22  | BA    | 969  | A    |
| 22  | BA    | 973  | A    |
| 22  | BA    | 974  | G    |
| 22  | BA    | 987  | A    |
| 22  | BA    | 989  | G    |
| 22  | BA    | 1001 | A    |
| 22  | BA    | 1010 | C    |
| 22  | BA    | 1011 | A    |
| 22  | BA    | 1019 | U    |
| 22  | BA    | 1023 | C    |
| 22  | BA    | 1036 | U    |
| 22  | BA    | 1039 | A    |
| 22  | BA    | 1040 | U    |
| 22  | BA    | 1041 | G    |
| 22  | BA    | 1049 | A    |
| 22  | BA    | 1050 | G    |
| 22  | BA    | 1051 | U    |
| 22  | BA    | 1053 | A    |
| 22  | BA    | 1054 | U    |
| 22  | BA    | 1061 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 22  | BA    | 1073 | G    |
| 22  | BA    | 1074 | A    |
| 22  | BA    | 1075 | G    |
| 22  | BA    | 1088 | U    |
| 22  | BA    | 1089 | U    |
| 22  | BA    | 1098 | A    |
| 22  | BA    | 1099 | G    |
| 22  | BA    | 1116 | A    |
| 22  | BA    | 1154 | A    |
| 22  | BA    | 1155 | A    |
| 22  | BA    | 1156 | G    |
| 22  | BA    | 1157 | A    |
| 22  | BA    | 1159 | G    |
| 22  | BA    | 1162 | C    |
| 22  | BA    | 1163 | G    |
| 22  | BA    | 1183 | A    |
| 22  | BA    | 1196 | A    |
| 22  | BA    | 1202 | A    |
| 22  | BA    | 1232 | A    |
| 22  | BA    | 1234 | A    |
| 22  | BA    | 1235 | A    |
| 22  | BA    | 1241 | U    |
| 22  | BA    | 1242 | G    |
| 22  | BA    | 1273 | G    |
| 22  | BA    | 1274 | A    |
| 22  | BA    | 1277 | G    |
| 22  | BA    | 1286 | A    |
| 22  | BA    | 1287 | G    |
| 22  | BA    | 1292 | G    |
| 22  | BA    | 1293 | C    |
| 22  | BA    | 1296 | A    |
| 22  | BA    | 1308 | A    |
| 22  | BA    | 1333 | U    |
| 22  | BA    | 1334 | U    |
| 22  | BA    | 1342 | A    |
| 22  | BA    | 1346 | U    |
| 22  | BA    | 1350 | U    |
| 22  | BA    | 1363 | A    |
| 22  | BA    | 1364 | G    |
| 22  | BA    | 1386 | A    |
| 22  | BA    | 1404 | C    |
| 22  | BA    | 1406 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 22  | BA    | 1417 | U    |
| 22  | BA    | 1419 | C    |
| 22  | BA    | 1437 | G    |
| 22  | BA    | 1440 | C    |
| 22  | BA    | 1441 | C    |
| 22  | BA    | 1442 | C    |
| 22  | BA    | 1448 | A    |
| 22  | BA    | 1474 | A    |
| 22  | BA    | 1475 | U    |
| 22  | BA    | 1495 | C    |
| 22  | BA    | 1497 | A    |
| 22  | BA    | 1498 | G    |
| 22  | BA    | 1531 | A    |
| 22  | BA    | 1536 | A    |
| 22  | BA    | 1543 | G    |
| 22  | BA    | 1545 | G    |
| 22  | BA    | 1556 | A    |
| 22  | BA    | 1558 | U    |
| 22  | BA    | 1569 | A    |
| 22  | BA    | 1570 | C    |
| 22  | BA    | 1571 | G    |
| 22  | BA    | 1586 | G    |
| 22  | BA    | 1592 | A    |
| 22  | BA    | 1593 | U    |
| 22  | BA    | 1594 | A    |
| 22  | BA    | 1601 | G    |
| 22  | BA    | 1603 | A    |
| 22  | BA    | 1615 | G    |
| 22  | BA    | 1620 | U    |
| 22  | BA    | 1628 | A    |
| 22  | BA    | 1629 | G    |
| 22  | BA    | 1639 | A    |
| 22  | BA    | 1653 | C    |
| 22  | BA    | 1654 | A    |
| 22  | BA    | 1670 | A    |
| 22  | BA    | 1671 | A    |
| 22  | BA    | 1676 | U    |
| 22  | BA    | 1684 | C    |
| 22  | BA    | 1690 | A    |
| 22  | BA    | 1705 | A    |
| 22  | BA    | 1710 | G    |
| 22  | BA    | 1730 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 22  | BA    | 1731 | G    |
| 22  | BA    | 1734 | A    |
| 22  | BA    | 1735 | G    |
| 22  | BA    | 1736 | A    |
| 22  | BA    | 1743 | G    |
| 22  | BA    | 1749 | U    |
| 22  | BA    | 1751 | A    |
| 22  | BA    | 1753 | A    |
| 22  | BA    | 1767 | U    |
| 22  | BA    | 1768 | G    |
| 22  | BA    | 1773 | G    |
| 22  | BA    | 1774 | G    |
| 22  | BA    | 1783 | A    |
| 22  | BA    | 1790 | A    |
| 22  | BA    | 1791 | C    |
| 22  | BA    | 1795 | A    |
| 22  | BA    | 1825 | A    |
| 22  | BA    | 1826 | U    |
| 22  | BA    | 1830 | U    |
| 22  | BA    | 1831 | G    |
| 22  | BA    | 1849 | A    |
| 22  | BA    | 1876 | A    |
| 22  | BA    | 1879 | U    |
| 22  | BA    | 1882 | U    |
| 22  | BA    | 1885 | C    |
| 22  | BA    | 1915 | A    |
| 22  | BA    | 1920 | G    |
| 22  | BA    | 1927 | A    |
| 22  | BA    | 1928 | C    |
| 22  | BA    | 1933 | A    |
| 22  | BA    | 1944 | G    |
| 22  | BA    | 1951 | A    |
| 22  | BA    | 1952 | A    |
| 22  | BA    | 1954 | U    |
| 22  | BA    | 1957 | U    |
| 22  | BA    | 1958 | U    |
| 22  | BA    | 1969 | U    |
| 22  | BA    | 1970 | U    |
| 22  | BA    | 1977 | C    |
| 22  | BA    | 1978 | G    |
| 22  | BA    | 1979 | C    |
| 22  | BA    | 1980 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 22  | BA    | 1981 | C    |
| 22  | BA    | 1985 | A    |
| 22  | BA    | 1986 | G    |
| 22  | BA    | 1995 | A    |
| 22  | BA    | 2007 | U    |
| 22  | BA    | 2010 | C    |
| 22  | BA    | 2037 | G    |
| 22  | BA    | 2044 | A    |
| 22  | BA    | 2046 | G    |
| 22  | BA    | 2047 | A    |
| 22  | BA    | 2057 | C    |
| 22  | BA    | 2066 | G    |
| 22  | BA    | 2069 | C    |
| 22  | BA    | 2070 | A    |
| 22  | BA    | 2074 | A    |
| 22  | BA    | 2075 | G    |
| 22  | BA    | 2076 | A    |
| 22  | BA    | 2082 | U    |
| 22  | BA    | 2083 | G    |
| 22  | BA    | 2106 | U    |
| 22  | BA    | 2118 | U    |
| 22  | BA    | 2125 | C    |
| 22  | BA    | 2130 | C    |
| 22  | BA    | 2138 | G    |
| 22  | BA    | 2139 | A    |
| 22  | BA    | 2141 | G    |
| 22  | BA    | 2146 | A    |
| 22  | BA    | 2147 | G    |
| 22  | BA    | 2148 | A    |
| 22  | BA    | 2149 | A    |
| 22  | BA    | 2157 | U    |
| 22  | BA    | 2158 | U    |
| 22  | BA    | 2159 | C    |
| 22  | BA    | 2160 | C    |
| 22  | BA    | 2161 | G    |
| 22  | BA    | 2172 | A    |
| 22  | BA    | 2174 | C    |
| 22  | BA    | 2193 | C    |
| 22  | BA    | 2212 | A    |
| 22  | BA    | 2213 | A    |
| 22  | BA    | 2225 | G    |
| 22  | BA    | 2226 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 22  | BA    | 2227 | C    |
| 22  | BA    | 2228 | C    |
| 22  | BA    | 2229 | U    |
| 22  | BA    | 2243 | C    |
| 22  | BA    | 2255 | G    |
| 22  | BA    | 2256 | A    |
| 22  | BA    | 2267 | G    |
| 22  | BA    | 2268 | G    |
| 22  | BA    | 2276 | G    |
| 22  | BA    | 2283 | A    |
| 22  | BA    | 2284 | A    |
| 22  | BA    | 2293 | G    |
| 22  | BA    | 2300 | U    |
| 22  | BA    | 2303 | A    |
| 22  | BA    | 2304 | A    |
| 22  | BA    | 2314 | C    |
| 22  | BA    | 2322 | A    |
| 22  | BA    | 2324 | G    |
| 22  | BA    | 2336 | U    |
| 22  | BA    | 2337 | C    |
| 22  | BA    | 2338 | G    |
| 22  | BA    | 2351 | G    |
| 22  | BA    | 2352 | A    |
| 22  | BA    | 2354 | G    |
| 22  | BA    | 2363 | A    |
| 22  | BA    | 2364 | C    |
| 22  | BA    | 2400 | G    |
| 22  | BA    | 2402 | C    |
| 22  | BA    | 2419 | G    |
| 22  | BA    | 2420 | C    |
| 22  | BA    | 2440 | U    |
| 22  | BA    | 2441 | C    |
| 22  | BA    | 2443 | A    |
| 22  | BA    | 2446 | G    |
| 22  | BA    | 2447 | A    |
| 22  | BA    | 2452 | A    |
| 22  | BA    | 2457 | C    |
| 22  | BA    | 2458 | U    |
| 22  | BA    | 2464 | G    |
| 22  | BA    | 2465 | A    |
| 22  | BA    | 2466 | U    |
| 22  | BA    | 2493 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 22  | BA    | 2508 | U    |
| 22  | BA    | 2515 | C    |
| 22  | BA    | 2519 | G    |
| 22  | BA    | 2520 | A    |
| 22  | BA    | 2522 | G    |
| 22  | BA    | 2523 | U    |
| 22  | BA    | 2546 | G    |
| 22  | BA    | 2560 | G    |
| 22  | BA    | 2571 | U    |
| 22  | BA    | 2584 | G    |
| 22  | BA    | 2589 | A    |
| 22  | BA    | 2599 | G    |
| 22  | BA    | 2602 | U    |
| 22  | BA    | 2620 | G    |
| 22  | BA    | 2626 | U    |
| 22  | BA    | 2630 | U    |
| 22  | BA    | 2646 | U    |
| 22  | BA    | 2663 | C    |
| 22  | BA    | 2672 | G    |
| 22  | BA    | 2699 | U    |
| 22  | BA    | 2707 | A    |
| 22  | BA    | 2729 | A    |
| 22  | BA    | 2730 | A    |
| 22  | BA    | 2731 | C    |
| 22  | BA    | 2744 | A    |
| 22  | BA    | 2762 | G    |
| 22  | BA    | 2768 | A    |
| 22  | BA    | 2769 | G    |
| 22  | BA    | 2770 | C    |
| 22  | BA    | 2775 | A    |
| 22  | BA    | 2783 | A    |
| 22  | BA    | 2795 | G    |
| 22  | BA    | 2799 | A    |
| 22  | BA    | 2809 | U    |
| 23  | BB    | 13   | U    |
| 23  | BB    | 14   | A    |
| 23  | BB    | 15   | G    |
| 23  | BB    | 16   | G    |
| 23  | BB    | 25   | A    |
| 23  | BB    | 35   | A    |
| 23  | BB    | 41   | C    |
| 23  | BB    | 42   | C    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 23  | BB    | 57  | A    |
| 23  | BB    | 66  | U    |
| 23  | BB    | 100 | A    |
| 23  | BB    | 110 | G    |
| 24  | BC    | 13  | G    |
| 24  | BC    | 27  | A    |
| 24  | BC    | 28  | U    |
| 24  | BC    | 32  | U    |
| 24  | BC    | 33  | A    |
| 24  | BC    | 35  | G    |
| 24  | BC    | 36  | A    |
| 24  | BC    | 37  | U    |
| 24  | BC    | 68  | C    |
| 24  | BC    | 73  | G    |
| 24  | BC    | 81  | C    |
| 24  | BC    | 84  | A    |
| 24  | BC    | 94  | A    |
| 24  | BC    | 95  | G    |

All (63) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | AA    | 8   | G    |
| 1   | AA    | 48  | C    |
| 1   | AA    | 52  | A    |
| 1   | AA    | 61  | A    |
| 1   | AA    | 99  | G    |
| 1   | AA    | 180 | A    |
| 1   | AA    | 214 | A    |
| 1   | AA    | 217 | A    |
| 1   | AA    | 245 | A    |
| 1   | AA    | 250 | A    |
| 1   | AA    | 299 | C    |
| 1   | AA    | 337 | U    |
| 1   | AA    | 343 | C    |
| 1   | AA    | 383 | A    |
| 1   | AA    | 399 | G    |
| 1   | AA    | 400 | U    |
| 1   | AA    | 432 | G    |
| 1   | AA    | 443 | A    |
| 1   | AA    | 447 | A    |
| 1   | AA    | 456 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | AA    | 479  | U    |
| 1   | AA    | 514  | G    |
| 1   | AA    | 523  | G    |
| 1   | AA    | 543  | A    |
| 1   | AA    | 635  | A    |
| 1   | AA    | 765  | C    |
| 1   | AA    | 768  | U    |
| 1   | AA    | 838  | A    |
| 1   | AA    | 862  | A    |
| 1   | AA    | 883  | C    |
| 1   | AA    | 909  | U    |
| 1   | AA    | 924  | A    |
| 1   | AA    | 931  | U    |
| 1   | AA    | 998  | U    |
| 1   | AA    | 1013 | G    |
| 1   | AA    | 1014 | U    |
| 1   | AA    | 1016 | A    |
| 1   | AA    | 1034 | U    |
| 1   | AA    | 1087 | G    |
| 1   | AA    | 1093 | A    |
| 1   | AA    | 1105 | A    |
| 1   | AA    | 1107 | U    |
| 1   | AA    | 1116 | U    |
| 1   | AA    | 1130 | G    |
| 1   | AA    | 1149 | A    |
| 1   | AA    | 1174 | C    |
| 1   | AA    | 1249 | U    |
| 1   | AA    | 1270 | C    |
| 1   | AA    | 1294 | A    |
| 1   | AA    | 1312 | A    |
| 1   | AA    | 1447 | U    |
| 22  | BA    | 117  | A    |
| 22  | BA    | 200  | G    |
| 22  | BA    | 293  | G    |
| 22  | BA    | 625  | C    |
| 22  | BA    | 639  | A    |
| 22  | BA    | 1231 | G    |
| 22  | BA    | 1286 | A    |
| 22  | BA    | 1878 | C    |
| 22  | BA    | 1927 | A    |
| 22  | BA    | 2299 | G    |
| 22  | BA    | 2442 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 22  | BA    | 2774 | U    |

## 5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

## 5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.