



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 04:52 AM GMT

PDB ID : 2OGO  
Title : The crystal structure of the large ribosomal subunit from *Deinococcus radiodurans* complexed with the pleuromutilin derivative retapamulin (SB-275833)  
Authors : Davidovich, C.; Bashan, A.; Auerbach-Nevo, T.; Yonath, A.  
Deposited on : 2007-01-07  
Resolution : 3.66 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.  
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/XrayValidationReportHelp>  
with specific help available everywhere you see the ⓘ symbol.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 1.7 (RC4), CSD as536be (2015)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026688  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : trunk26865

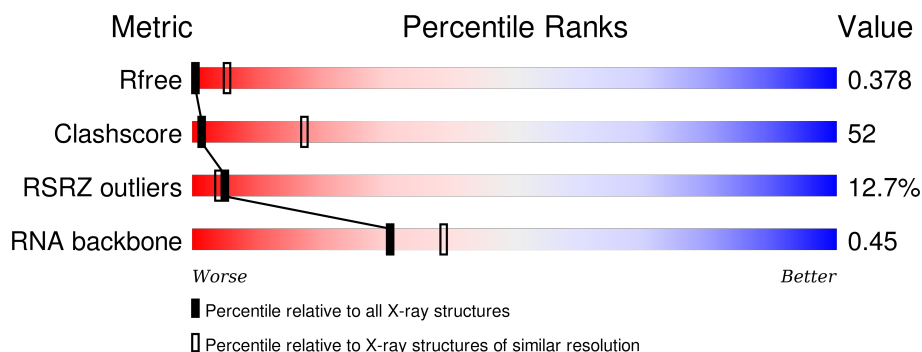
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 3.66 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) | Similar resolution<br>(#Entries, resolution range(Å)) |
|---------------|-----------------------------|---|
| $R_{free}$    | 91344                       | 1010 (3.82-3.50)                                      |
| Clashscore    | 102246                      | 1125 (3.82-3.50)                                      |
| RSRZ outliers | 91569                       | 1017 (3.82-3.50)                                      |
| RNA backbone  | 2183                        | 1066 (4.52-2.80)                                      |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower 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  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | 0     | 2880   |                  |
| 2   | B     | 211    |                  |

## 2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 59577 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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.

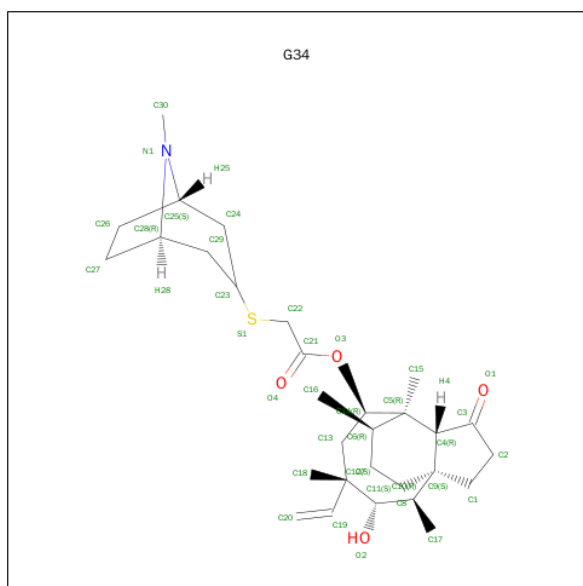
- Molecule 1 is a RNA chain called 23S ribosomal RNA.

| Mol | Chain | Residues | Atoms |       |       |       |      | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-------|-------|-------|------|---------|---------|-------|
| 1   | 0     | 2765     | Total | C     | N     | O     | P    | 0       | 0       | 0     |
|     |       |          | 59336 | 26469 | 10944 | 19159 | 2764 |         |         |       |

- Molecule 2 is a protein called 50S ribosomal protein L3.

| Mol | Chain | Residues | Atoms |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|---------|---------|-------|
| 2   | B     | 205      | Total | C   | 0       | 0       | 205   |
|     |       |          | 205   | 205 |         |         |       |

- Molecule 3 is (3AS,4R,5S,6S,8R,9R,9AR,10R)-5-HYDROXY-4,6,9,10-TETRAMETHYL-1-EXO-6-VINYLDECAHYDRO-3A,9-PROPANOCYCLOPENTA[8]ANNULEN-8-YL {[ (3-EXO)-8-METHYL-8-AZABICYCLO[3.2.1]OCT-3-YL]THIO}ACETATE (three-letter code: G34) (formula: C<sub>30</sub>H<sub>47</sub>NO<sub>4</sub>S).

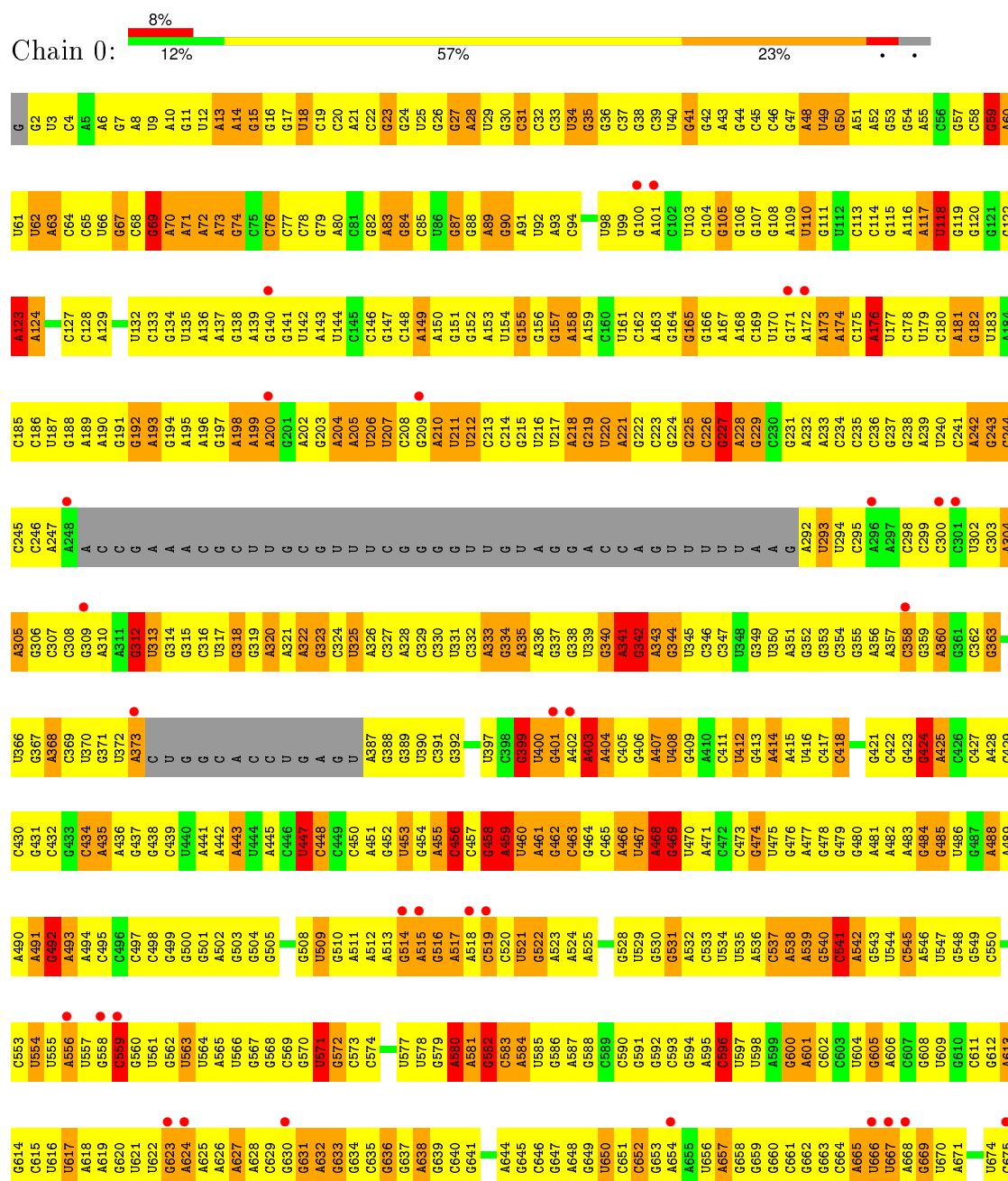


| Mol | Chain | Residues | Atoms |    |   |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---|---|---|---------|---------|
| 3   | 0     | 1        | Total | C  | N | O | S | 0       | 0       |
|     |       |          | 36    | 30 | 1 | 4 | 1 |         |         |

### 3 Residue-property plots

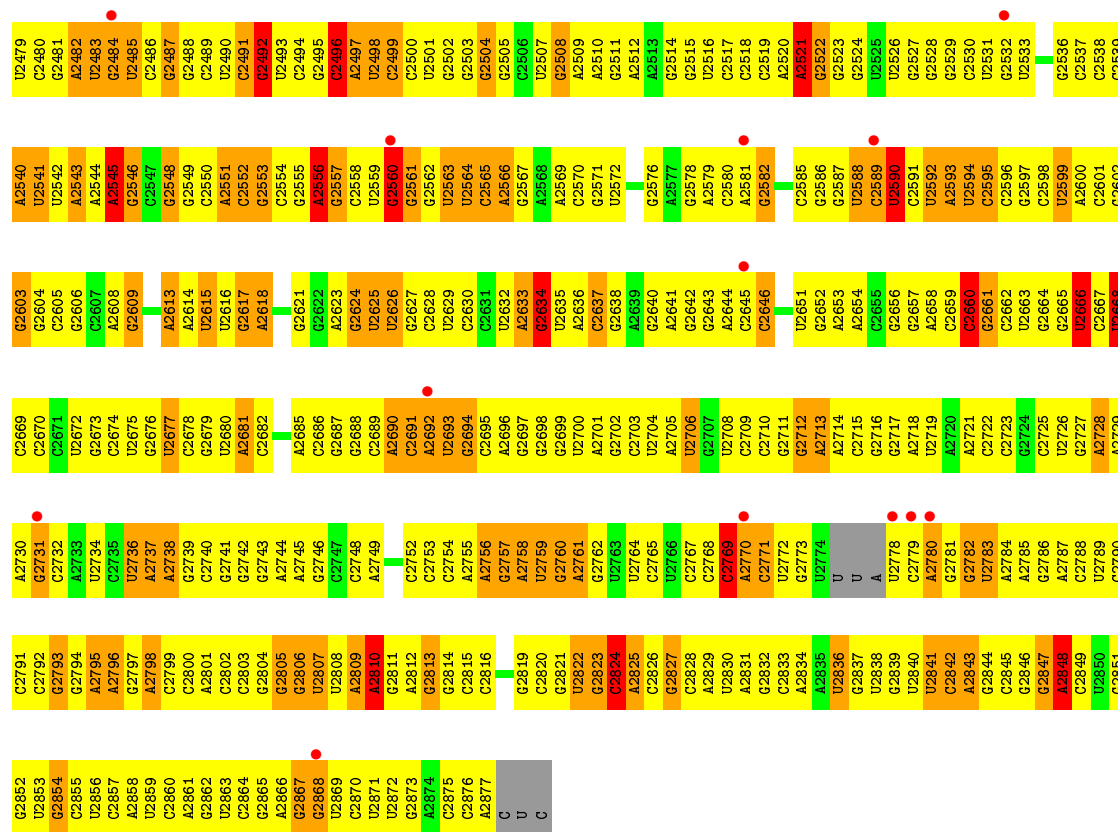
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according 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. A red dot above a residue indicates a poor fit to the electron density ( $\text{RSRZ} > 2$ ). 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: 23S ribosomal RNA

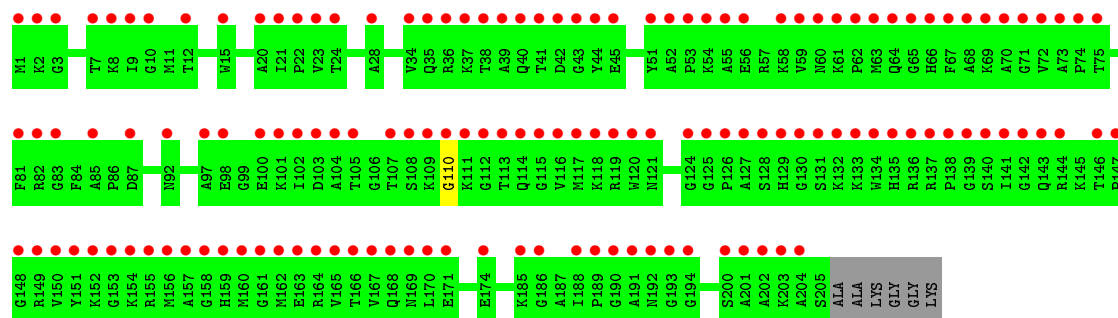
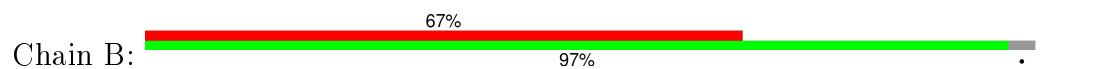


|       |       |       |       |       |       |       |       |       |      |      |      |      |      |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|
| A1544 | G1484 | C1422 | G1359 | G1299 | A1238 | U1177 | G1053 | G988  | C924 | G861 | A801 | G739 | G676 |
| G1546 | U1485 | A1423 | G1360 | A1300 | A1239 | C1178 | C1054 | A991  | U925 | A862 | A802 | A740 | G677 |
| U1547 | C1487 | G1425 | A1361 | U1301 | G1240 | A1179 | A1055 | A992  | C926 | C863 | C803 | A741 | G678 |
| G1548 | G1488 | U1426 | C1363 | U1303 | A1243 | C1181 | A1056 | C993  | G928 | C864 | G805 | G742 | C679 |
| C1549 | G1489 | G1427 | C1364 | U1304 | G1243 | G1117 | G1057 | A994  | A928 | A865 | A806 | A743 | U680 |
| C1550 | U1490 | G1428 | U1365 | C1305 | U244  | U1119 | G1058 | A995  | A930 | U866 | A807 | G744 | A681 |
| U1551 | A1491 | G1429 | A1366 | U1306 | G1245 | G1120 | A1059 | A996  | G931 | C867 | C808 | G745 | G682 |
| C1552 | C1492 | G1430 | A1367 | U1307 | U1246 | G1121 | A1061 | C997  | G932 | U868 | C809 | G746 | A683 |
| G1553 | A1493 | U1431 | C1368 | C1308 | U1247 | A1122 | G1062 | C998  | G933 | C869 | C810 |      | C684 |
| G1554 | G1494 | G1432 | G1369 | U1309 | A1248 | G1123 | C1063 | A999  | G934 | U871 | U810 |      | U685 |
| A1555 | G1495 | A1433 | C1310 | C1310 | A1188 | U1124 | G1064 | G1000 | C935 | G872 | G812 |      | G686 |
| A1556 | C1496 | U1434 | A1372 | G1312 | G1189 |       | A1065 | A1001 | A936 | U873 | A813 |      | G687 |
|       | C1497 | G1435 | G1373 | G1313 | C1190 |       | G1066 | C1002 | C937 | A874 | G814 |      | A688 |
| G1559 | G1498 | A1436 | G1374 | U1313 | A1191 | G1128 | G1067 | C1003 | G938 | G875 | A889 |      | A689 |
| A1560 | A1499 | A1437 | C1375 | A1314 | A1192 | U1130 | A1068 | A1004 | C939 | A876 | U816 |      | A690 |
| A1561 | U1500 | G1438 | A1315 | G1315 | G1193 | G1131 | G1069 | U1005 | G940 | G877 | A817 |      | C692 |
| G1562 | C1501 | G1439 | C1376 | G1316 | U1194 | C1132 | G1070 | C1006 | U941 | C878 | G818 |      | A693 |
| U1563 | G1502 | A1440 | A1378 | G1317 | G1256 | G1133 | U1071 | A1007 | U942 | A879 | C819 |      | G694 |
| U1564 | G1503 | A1441 | A1379 | A1318 | U1257 | C1134 | U1072 | G1008 | U943 | C880 | U820 |      | G695 |
| G1565 | C1504 | A1442 | C1380 | C1319 | U1258 | G1136 | G1073 | U1009 | A944 | U881 | G821 |      | U696 |
| G1566 | U1505 | G1443 | G1381 | A1320 | A1259 | A1137 | C1074 | A1011 | G945 | C882 | U822 |      | A698 |
|       | C1506 | C1444 | G1382 | A1321 | U1199 | A1137 | C1075 | A1011 | U946 | A883 | U823 |      | A763 |
| G1571 | A1507 | A1445 | C1383 | G1322 | G1200 | A1138 | U1077 | A1012 | C947 | C884 | U824 |      | A764 |
| G1572 | G1508 | U1446 | G1384 | G1323 | G1201 | A1139 | U1078 | G1013 | C948 | A885 | U825 |      | C700 |
| G1573 | A1509 | U1447 | C1385 | G1324 | U1202 | A1140 | A1078 | G1013 |      | A886 | U826 |      | U701 |
| A1574 | A1510 | A1448 | A1386 | U1325 | A1203 | G1142 | G1079 | U1015 | A952 | C889 | C827 |      | A702 |
| A1575 | C1449 | G1449 | G1387 | G1326 | G1204 | U1141 | A1080 | C1016 | G953 | U768 | C828 |      | A703 |
| G1576 | G1450 |       |       | U1326 | G1205 | G1143 | A1081 | C1017 | G704 | U890 | C829 |      | C694 |
| G1577 | C1451 | C1451 | G1390 | C1327 | G1206 | U1144 | G1082 | C1018 | G955 | U770 | C830 |      | C705 |
| U1578 | U1452 | U1452 | A1391 | U1328 | A1267 | C1145 | C1083 | U1019 | A956 | G831 | G831 |      | A706 |
| U1579 | A1453 | U1392 | U1392 | G1330 | G1269 | G1146 | A1084 | A1020 | G957 | A832 | U772 |      | U707 |
| C1580 | A1516 | G1393 | G1331 | G1331 | C1270 | G1147 | G1085 | A1021 | G958 | A833 | A833 |      | G708 |
| A1581 | C1517 | G1394 | G1332 | G1332 | G1271 | G1148 | C1086 | A1022 | C959 | A834 | U774 |      | A709 |
| A1582 | G1518 | A1395 | G1333 | G1333 | G1272 | G1149 | C1087 | U1023 |      | A835 | U775 |      |      |
| A1583 | G1519 | C1396 | A1334 | G1334 | G1273 | C1150 | A1088 | G1024 | C962 | C836 | U837 |      | A712 |
| G1584 | U1459 | A1397 | A1335 | A1335 | G1274 | U1151 | C1089 | A1025 | G963 | A837 | U777 |      | G713 |
| A1585 | U1521 | G1388 | G1336 | G1336 | A1275 | C1152 | C1090 | U1026 | A964 | A838 | U778 |      | G714 |
| A1586 | C1522 | C1399 | G1337 | G1337 |       | A1153 | C1091 | U1027 | G965 | U839 | U779 |      | U715 |
| A1587 | A1523 | A1400 | G1338 | G1338 | A1278 | A1154 | U1092 |       |      | U840 | U780 |      | U716 |
| A1588 | C1524 | G1401 | U1339 | U1339 | G1279 | G1155 | U1093 | A1032 | C968 | C841 | G841 |      | G717 |
| G1589 | A1525 | G1402 | C1340 | C1340 | U1280 | G1156 | C1094 | G1033 | U969 | A842 | U782 |      | A718 |
| C1590 | U1526 | U1403 | G1341 | G1341 | G1281 | U1157 | A1095 | U1034 | A970 | G843 | A719 |      | A720 |
| U1591 | G1527 | C1404 | U1342 | U1342 | A1282 |       | A1096 | G1035 | A971 | G844 | U784 |      | A721 |
| C1592 | C1528 | A1405 | C1343 | C1343 | C1283 | G1402 | A1097 | U1036 | C972 | U845 | U785 |      | C722 |
| U1594 | U1530 | A1506 | G1344 | G1344 | G1284 | U1161 | C1098 | U1037 | C973 | A846 | U786 |      | G726 |
| A1595 | G1407 | G1407 | G1345 | G1345 | A1285 | A1162 | A1099 | U1038 | U974 | C847 | U787 |      | G727 |
| A1596 | C1471 | A1408 | C1346 | C1346 | U1286 | C1163 | G1100 | A1039 | C975 | A848 | G788 |      | G728 |
| A1597 | U1409 | U1409 | C1347 | C1347 | A1287 | G1165 | U1101 | A1040 | C976 | G849 | G789 |      | U727 |
| G1598 | G1533 | U1473 | C1348 | C1348 | A1288 | A1166 | G1102 | G1041 | G977 | C850 | A790 |      | A729 |
| C1599 | A1534 | A1474 | A1411 | A1349 | A1289 | A1167 | C1103 | A911  | U978 | C851 | G791 |      | G730 |
| G1599 | U1535 | U1475 | G1350 | G1350 | A1290 | G1168 | G1104 | A912  | U979 | U852 | U792 |      | A731 |
| U1600 | G1536 | G1476 | G1351 | G1351 | A1291 | C1169 | U1105 | A913  | C980 | C853 | G793 |      | G732 |
| U1601 | U1537 | C1477 | G1352 | G1352 | A1292 | U1170 | A1106 | U1044 | C981 | G854 | A794 |      | A733 |
| G1602 | A1603 | U1478 | A1353 | A1353 | A1293 | A1171 | A1107 | U1046 | C982 | G855 | A795 |      | G734 |
| A1603 | U1639 | G1479 | A1354 | A1354 | G1294 | U1172 | U1108 | G1047 | C983 | A856 | A796 |      | G735 |
| A1604 | C1540 | G1480 | A1355 | A1355 | U1295 | G1173 | A1109 | U1048 | A984 | U857 | A797 |      | G736 |
| A1605 | U1481 | G1541 | G1356 | G1356 | G1296 | C1174 | A1109 |       | A986 | G858 | G798 |      | G737 |
| C1606 | G1542 | U1482 | U1357 | U1357 | A1297 | A1175 | C1111 | U1051 | A921 | U859 | C799 |      | U800 |
| A1607 | G1543 | G1483 | G1358 | C1358 | G1298 | U1176 | U1112 | C1052 | G987 | A923 | U860 |      | G738 |

|       |       |       |       |       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| U2417 | U2285 | U2223 | C2162 | A2042 | A1981 | G1916 | G1853 | C1792 | U1732 | G1668 | U1608 |
| A2418 | G2286 | U2224 | U2163 | A2043 | C1982 | C1917 | G1854 | A1793 | U1733 | A1669 | G1609 |
| C2419 | A2287 | G2225 | A2164 | G2044 | G1983 | A1918 | G1855 | A1794 | C1734 | G1670 | A1610 |
| C2420 | A2288 | A2226 | A2165 | A2045 | A1984 | A1919 | A1856 | C1795 | C1735 | A1671 | U1611 |
| C2421 | A2289 | C2227 | A2166 | C2046 | G1987 | A1920 | C1857 | A1796 | G1736 | A1672 | U1612 |
| C2422 | A2290 | U2228 | A2167 | C2047 | A1988 | A1921 | C1858 | C1797 | G1737 | A1673 | U1613 |
| C2423 | U2281 | G2229 | A2168 | C2048 | C1989 | A1922 | A1859 | A1798 | G1738 | C1674 | C1614 |
| G2424 | C2282 | G2230 | A2169 | C2049 | U1990 | U1923 | A1860 | A1799 | G1739 | C1675 | C1615 |
| G2425 | U2359 | G2231 | C2170 | G2050 | C1991 | U1924 | G1861 | A1800 | G1740 | U1676 | C1616 |
| G2426 | C2360 | G2232 | U2171 | U2051 | G1992 | C1925 | U1862 | C1801 | C1677 | C1677 | G1617 |
| A2427 | C2361 | C2233 | U2172 | G2052 | G1993 | U1926 | U1863 | A1802 | C1678 | U1618 | U1618 |
| U2428 | G2362 | G2234 | U2173 | G2053 | G1994 | U1927 | C1864 | G1803 | C1679 | U1619 | A1619 |
| A2429 | G2363 | G2235 | G2174 | A2054 | U1904 | U1928 | C1865 | U1804 | C1680 | U1620 | C1620 |
| A2430 | C2364 | U2236 | A2175 | G2055 | G1995 | G1931 | G1866 | G1805 | A1681 | C1621 | C1621 |
| C2431 | U2365 | C2237 | U2176 | C2056 | A1996 | G1932 | A1867 | G1806 | A1682 | G1622 | G1622 |
| A2432 | G2366 | G2238 | U2177 | U2057 | A1997 | G1933 | A1868 | A1807 | C1683 | C1623 | ●     |
| C2433 | A2367 | C2239 | U2178 | U2058 | A1998 | G1934 | A1869 | U1748 | G1684 | A1624 | A1624 |
| G2434 | C2368 | C2240 | C2179 | U2059 | U1999 | A1935 | U1870 | G1809 | G1749 | A1685 | A1625 |
| C2435 | C2369 | U2241 | A2180 | A2060 | U2000 | A1936 | G1871 | U1810 | A1686 | A1626 | A1626 |
| U2436 | C2370 | C2242 | A2181 | C2061 | G2001 | G1937 | A1872 | A1811 | A1750 | C1687 | C1627 |
| G2437 | A2371 | C2243 | A2182 | U2062 | A2002 | U1938 | A1873 | U1812 | U1752 | U1688 | C1628 |
| A2438 | C2372 | C2244 | C2183 | A2063 | A2003 | U1939 | U1876 | A1813 | G1753 | U1689 | G1629 |
| U2439 | G2373 | A2245 | C2184 | U2064 | U2004 | G1940 | G1877 | G1814 | A1754 | U1690 | A1630 |
| C2440 | A2246 | A2247 | U2185 | A2065 | U2005 | C1941 | C1877 | G1815 | G1755 | G1691 | C1631 |
| U2441 | C2303 | U2248 | G2186 | G2066 | G2006 | G1942 | C1878 | G1816 | G1756 | C1692 | A1632 |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 | A1693 | C1633 |
| C2442 | A2306 | U2251 | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 | A1694 | A1634 |
| C2443 | A2307 | A2252 | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 | U1695 | A1635 |
| C2444 | A2308 | A2253 | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 | C1696 | G1636 |
| C2445 | C2309 | C2254 | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 | U1697 | U1637 |
| C2446 | G2310 | A2247 | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 | C1698 | G1638 |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 | A1699 | U1639 |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 | C1700 | C1640 |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 | C1701 | C1641 |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 | C1702 | G1642 |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 | C1703 | A1643 |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 | G1704 | G1644 |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 | U1705 | U1645 |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 | A1706 | G1646 |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 | U1707 | U1647 |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 | C1708 | C1648 |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 | U1709 | A1649 |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 | U1710 | A1650 |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 | C1711 | U1651 |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 | G1712 | C1652 |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 | G1713 | C1653 |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 | A1714 | A1654 |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 | A1715 | C1655 |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 | A1716 | U1656 |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 | A1717 | A1657 |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 | A1718 | A1658 |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 | G1719 | G1659 |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 | C1784 | G1660 |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 | U1723 | C1661 |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 | C1724 | C1662 |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 | C1725 | C1663 |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 | U1726 | G1664 |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 | C1729 | G1665 |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 | G1730 | G1666 |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 | C1731 | A1667 |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 |       |       |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 |       |       |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 |       |       |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 |       |       |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 |       |       |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 |       |       |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 |       |       |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 |       |       |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 |       |       |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 |       |       |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 |       |       |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 |       |       |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 |       |       |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 |       |       |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 |       |       |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 |       |       |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 |       |       |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 |       |       |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 |       |       |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 |       |       |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 |       |       |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 |       |       |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 |       |       |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 |       |       |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 |       |       |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 |       |       |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 |       |       |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 |       |       |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 |       |       |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 |       |       |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 |       |       |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 |       |       |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 |       |       |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 |       |       |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 |       |       |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 |       |       |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 |       |       |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 |       |       |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 |       |       |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 |       |       |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 |       |       |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 |       |       |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 |       |       |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 |       |       |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 |       |       |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 |       |       |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 |       |       |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 |       |       |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 |       |       |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 |       |       |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 |       |       |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 |       |       |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 |       |       |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 |       |       |
| ●     | ●     | ●     | U2186 | C2066 | G2006 | G1942 | A1884 | A1822 | C1762 |       |       |
| ●     | ●     | ●     | A2187 | U2067 | G2007 | A1943 | G1879 | U1817 | C1757 |       |       |
| ●     | ●     | ●     | A2188 | C2068 | C2008 | C1944 | G1880 | G1818 | C1758 |       |       |
| ●     | ●     | ●     | A2189 | U2069 | U2009 | C1945 | U1881 | U1819 | C1759 |       |       |
| ●     | ●     | ●     | A2190 | G2070 | U1946 | G1946 | G1882 | U1820 | C1760 |       |       |
| ●     | ●     | ●     | A2191 | G2071 | U2011 | G1947 | A1883 | A1821 | G1761 | </    |       |



• Molecule 2: 50S ribosomal protein L3



## 4 Data and refinement statistics

| Property  | Value   | Source           |
|---|---|------------------|
| Space group   | I 2 2 2   | Depositor        |
| Cell constants<br>a, b, c, $\alpha$ , $\beta$ , $\gamma$                | 170.12Å 405.87Å 695.24Å<br>90.00° 90.00° 90.00°             | Depositor        |
| Resolution (Å)  | 29.96 – 3.66<br>29.96 – 3.66                                | Depositor<br>EDS |
| % Data completeness<br>(in resolution range)                            | 93.0 (29.96-3.66)<br>93.1 (29.96-3.66)                      | Depositor<br>EDS |
| $R_{merge}$   | 0.19  | Depositor        |
| $R_{sym}$   | (Not available)   | Depositor        |
| $\langle I/\sigma(I) \rangle$ <sup>1</sup>                              | 2.21 (at 3.65Å)   | Xtriage          |
| Refinement program  | CNS 1.1   | Depositor        |
| R, $R_{free}$   | 0.260 , 0.334<br>0.356 , 0.378                              | Depositor<br>DCC |
| $R_{free}$ test set   | 12167 reflections (5.26%)                                   | DCC              |
| Wilson B-factor (Å <sup>2</sup> )                                       | 135.2   | Xtriage          |
| Anisotropy  | 0.524   | Xtriage          |
| Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> ) | 0.18 , 80.8   | EDS              |
| Estimated twinning fraction   | No twinning to report.                                      | Xtriage          |
| L-test for twinning <sup>2</sup>  | $\langle  L  \rangle = 0.46$ , $\langle L^2 \rangle = 0.28$ | Xtriage          |
| Outliers  | 0 of 243559 reflections                                     | Xtriage          |
| $F_o, F_c$ correlation  | 0.84  | EDS              |
| Total number of atoms   | 59577   | wwPDB-VP         |
| Average B, all atoms (Å <sup>2</sup> )                                  | 122.0   | wwPDB-VP         |

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.92% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.



## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: G34

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         | $\# Z  > 5$     | RMSZ        | $\# Z  > 5$       |
| 1   | 0     | 0.63         | 13/66441 (0.0%) | 0.82        | 109/103632 (0.1%) |

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 1   | 0     | 0                   | 145                 |

All (13) bond length outliers are listed below:

| Mol | Chain | Res  | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|---------|-------|-------------|----------|
| 1   | 0     | 700  | C    | N1-C2   | 6.31  | 1.46        | 1.40     |
| 1   | 0     | 538  | A    | C5-C6   | -6.22 | 1.35        | 1.41     |
| 1   | 0     | 2485 | U    | C1'-N1  | -6.20 | 1.38        | 1.46     |
| 1   | 0     | 1711 | C    | N1-C2   | 6.13  | 1.46        | 1.40     |
| 1   | 0     | 2000 | U    | N1-C2   | -6.11 | 1.33        | 1.38     |
| 1   | 0     | 2485 | U    | N1-C2   | -5.98 | 1.33        | 1.38     |
| 1   | 0     | 774  | A    | C5-C6   | -5.86 | 1.35        | 1.41     |
| 1   | 0     | 2485 | U    | C2-N3   | -5.74 | 1.33        | 1.37     |
| 1   | 0     | 788  | G    | N9-C4   | 5.34  | 1.42        | 1.38     |
| 1   | 0     | 2485 | U    | C2'-C1' | -5.32 | 1.47        | 1.53     |
| 1   | 0     | 758  | G    | C5-C6   | 5.30  | 1.47        | 1.42     |
| 1   | 0     | 2560 | G    | C5-C6   | 5.22  | 1.47        | 1.42     |
| 1   | 0     | 462  | G    | C6-O6   | 5.11  | 1.28        | 1.24     |

All (109) bond angle outliers are listed below:

| Mol | Chain | Res  | Type | Atoms       | Z      | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|--------|-------------|----------|
| 1   | 0     | 2485 | U    | C5'-C4'-O4' | -10.78 | 96.16       | 109.10   |
| 1   | 0     | 2426 | G    | N9-C1'-C2'  | 9.36   | 126.16      | 114.00   |
| 1   | 0     | 1749 | G    | N9-C1'-C2'  | 8.80   | 125.44      | 114.00   |
| 1   | 0     | 843  | G    | N9-C1'-C2'  | 8.64   | 125.23      | 114.00   |
| 1   | 0     | 2426 | G    | O4'-C1'-N9  | 8.58   | 115.06      | 108.20   |
| 1   | 0     | 818  | G    | N9-C1'-C2'  | 8.32   | 124.82      | 114.00   |
| 1   | 0     | 699  | G    | N9-C1'-C2'  | 8.25   | 124.73      | 114.00   |
| 1   | 0     | 1264 | C    | N1-C1'-C2'  | 8.16   | 124.61      | 114.00   |
| 1   | 0     | 571  | U    | N1-C1'-C2'  | 8.12   | 124.56      | 114.00   |
| 1   | 0     | 1342 | U    | N1-C1'-C2'  | 7.90   | 124.27      | 114.00   |
| 1   | 0     | 2427 | A    | N9-C1'-C2'  | 7.84   | 124.19      | 114.00   |
| 1   | 0     | 788  | G    | N9-C1'-C2'  | 7.75   | 124.08      | 114.00   |
| 1   | 0     | 2237 | C    | N1-C1'-C2'  | 7.55   | 123.82      | 114.00   |
| 1   | 0     | 2426 | G    | C1'-O4'-C4' | -7.25  | 104.10      | 109.90   |
| 1   | 0     | 1777 | A    | N9-C1'-C2'  | 7.19   | 123.34      | 114.00   |
| 1   | 0     | 596  | C    | N1-C1'-C2'  | 7.07   | 123.19      | 114.00   |
| 1   | 0     | 2660 | C    | N1-C1'-C2'  | 7.05   | 123.17      | 114.00   |
| 1   | 0     | 804  | C    | O4'-C1'-N1  | 7.00   | 113.80      | 108.20   |
| 1   | 0     | 2848 | A    | N9-C1'-C2'  | 6.95   | 123.04      | 114.00   |
| 1   | 0     | 1410 | U    | N1-C1'-C2'  | 6.92   | 123.00      | 114.00   |
| 1   | 0     | 2485 | U    | C5-C6-N1    | -6.88  | 119.26      | 122.70   |
| 1   | 0     | 2810 | A    | N9-C1'-C2'  | 6.86   | 122.92      | 114.00   |
| 1   | 0     | 1975 | G    | N9-C1'-C2'  | 6.83   | 122.88      | 114.00   |
| 1   | 0     | 468  | A    | N9-C1'-C2'  | 6.71   | 122.73      | 114.00   |
| 1   | 0     | 2496 | C    | N1-C1'-C2'  | 6.70   | 122.70      | 114.00   |
| 1   | 0     | 2485 | U    | OP2-P-O3'   | 6.68   | 119.90      | 105.20   |
| 1   | 0     | 2560 | G    | N9-C1'-C2'  | 6.68   | 122.68      | 114.00   |
| 1   | 0     | 1410 | U    | O4'-C1'-N1  | 6.59   | 113.47      | 108.20   |
| 1   | 0     | 559  | C    | N1-C1'-C2'  | -6.48  | 104.87      | 112.00   |
| 1   | 0     | 2668 | U    | N1-C1'-C2'  | 6.48   | 122.42      | 114.00   |
| 1   | 0     | 1474 | A    | N9-C1'-C2'  | 6.42   | 122.34      | 114.00   |
| 1   | 0     | 176  | A    | N9-C1'-C2'  | 6.41   | 122.34      | 114.00   |
| 1   | 0     | 1278 | A    | N9-C1'-C2'  | 6.41   | 122.34      | 114.00   |
| 1   | 0     | 1357 | U    | N1-C1'-C2'  | 6.36   | 122.27      | 114.00   |
| 1   | 0     | 1033 | G    | O4'-C1'-N9  | 6.36   | 113.29      | 108.20   |
| 1   | 0     | 1684 | G    | N9-C1'-C2'  | 6.27   | 122.15      | 114.00   |
| 1   | 0     | 801  | A    | N9-C1'-C2'  | 6.26   | 122.14      | 114.00   |
| 1   | 0     | 1285 | A    | N9-C1'-C2'  | 6.26   | 122.14      | 114.00   |
| 1   | 0     | 458  | G    | C2'-C3'-O3' | 6.21   | 123.64      | 113.70   |
| 1   | 0     | 2545 | A    | N9-C1'-C2'  | 6.19   | 122.04      | 114.00   |
| 1   | 0     | 541  | C    | C1'-O4'-C4' | -6.17  | 104.97      | 109.90   |
| 1   | 0     | 1684 | G    | O4'-C1'-N9  | -6.16  | 103.27      | 108.20   |
| 1   | 0     | 2036 | G    | N9-C1'-C2'  | -6.16  | 105.22      | 112.00   |

Continued on next page...

*Continued from previous page...*

| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1   | 0     | 813  | A    | N9-C1'-C2'  | 6.11  | 121.94      | 114.00   |
| 1   | 0     | 804  | C    | C1'-O4'-C4' | -6.06 | 105.05      | 109.90   |
| 1   | 0     | 1398 | G    | N9-C1'-C2'  | 6.05  | 121.87      | 114.00   |
| 1   | 0     | 1723 | U    | N1-C1'-C2'  | 6.03  | 121.84      | 114.00   |
| 1   | 0     | 447  | U    | N1-C1'-C2'  | 6.03  | 121.83      | 114.00   |
| 1   | 0     | 69   | G    | N9-C1'-C2'  | 6.02  | 121.83      | 114.00   |
| 1   | 0     | 871  | U    | N1-C1'-C2'  | 6.02  | 121.83      | 114.00   |
| 1   | 0     | 2485 | U    | N1-C1'-C2'  | -6.01 | 105.39      | 112.00   |
| 1   | 0     | 796  | A    | N9-C1'-C2'  | -5.99 | 105.41      | 112.00   |
| 1   | 0     | 2034 | A    | N9-C1'-C2'  | 5.98  | 121.77      | 114.00   |
| 1   | 0     | 582  | G    | N9-C1'-C2'  | 5.95  | 121.73      | 114.00   |
| 1   | 0     | 2330 | G    | N9-C1'-C2'  | 5.92  | 121.70      | 114.00   |
| 1   | 0     | 804  | C    | N1-C1'-C2'  | 5.92  | 121.69      | 114.00   |
| 1   | 0     | 2485 | U    | OP1-P-O3'   | -5.91 | 92.20       | 105.20   |
| 1   | 0     | 580  | A    | N9-C1'-C2'  | 5.88  | 121.65      | 114.00   |
| 1   | 0     | 698  | A    | N9-C1'-C2'  | 5.84  | 121.59      | 114.00   |
| 1   | 0     | 399  | G    | N9-C1'-C2'  | 5.80  | 121.54      | 114.00   |
| 1   | 0     | 424  | G    | N9-C1'-C2'  | 5.80  | 121.54      | 114.00   |
| 1   | 0     | 1355 | A    | N9-C1'-C2'  | 5.74  | 121.46      | 114.00   |
| 1   | 0     | 2756 | A    | N9-C1'-C2'  | 5.70  | 121.41      | 114.00   |
| 1   | 0     | 2634 | G    | N9-C1'-C2'  | 5.69  | 121.39      | 114.00   |
| 1   | 0     | 31   | C    | N1-C1'-C2'  | -5.68 | 105.75      | 112.00   |
| 1   | 0     | 312  | G    | N9-C1'-C2'  | 5.67  | 121.36      | 114.00   |
| 1   | 0     | 1624 | A    | N9-C1'-C2'  | 5.63  | 121.32      | 114.00   |
| 1   | 0     | 1314 | A    | N9-C1'-C2'  | 5.62  | 121.30      | 114.00   |
| 1   | 0     | 777  | A    | N9-C1'-C2'  | 5.61  | 121.30      | 114.00   |
| 1   | 0     | 1261 | G    | N9-C1'-C2'  | 5.61  | 121.30      | 114.00   |
| 1   | 0     | 1664 | G    | N9-C1'-C2'  | 5.59  | 121.27      | 114.00   |
| 1   | 0     | 1250 | A    | N9-C1'-C2'  | 5.52  | 121.18      | 114.00   |
| 1   | 0     | 2016 | A    | N9-C1'-C2'  | 5.50  | 121.15      | 114.00   |
| 1   | 0     | 2521 | A    | N9-C1'-C2'  | 5.49  | 121.13      | 114.00   |
| 1   | 0     | 118  | U    | N1-C1'-C2'  | 5.47  | 121.11      | 114.00   |
| 1   | 0     | 765  | C    | O4'-C1'-N1  | 5.47  | 112.58      | 108.20   |
| 1   | 0     | 545  | C    | N1-C1'-C2'  | -5.46 | 106.00      | 112.00   |
| 1   | 0     | 1337 | G    | N9-C1'-C2'  | 5.45  | 121.08      | 114.00   |
| 1   | 0     | 59   | G    | N9-C1'-C2'  | 5.39  | 121.01      | 114.00   |
| 1   | 0     | 1664 | G    | O5'-P-OP1   | -5.38 | 100.86      | 105.70   |
| 1   | 0     | 1581 | C    | N1-C1'-C2'  | 5.37  | 120.98      | 114.00   |
| 1   | 0     | 1684 | G    | O5'-P-OP1   | -5.31 | 100.92      | 105.70   |
| 1   | 0     | 2485 | U    | C2-N3-C4    | -5.31 | 123.81      | 127.00   |
| 1   | 0     | 123  | A    | N9-C1'-C2'  | 5.30  | 120.89      | 114.00   |
| 1   | 0     | 459  | A    | O4'-C1'-N9  | 5.29  | 112.44      | 108.20   |

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| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1   | 0     | 469  | G    | N9-C1'-C2'  | 5.28  | 120.87      | 114.00   |
| 1   | 0     | 1033 | G    | N9-C1'-C2'  | 5.27  | 120.85      | 114.00   |
| 1   | 0     | 2044 | G    | N9-C1'-C2'  | 5.27  | 120.85      | 114.00   |
| 1   | 0     | 541  | C    | O4'-C1'-N1  | 5.26  | 112.41      | 108.20   |
| 1   | 0     | 759  | C    | N1-C1'-C2'  | 5.23  | 120.80      | 114.00   |
| 1   | 0     | 1926 | U    | N1-C1'-C2'  | 5.20  | 120.76      | 114.00   |
| 1   | 0     | 860  | U    | N1-C1'-C2'  | 5.20  | 120.76      | 114.00   |
| 1   | 0     | 1033 | G    | C1'-O4'-C4' | -5.19 | 105.75      | 109.90   |
| 1   | 0     | 2603 | G    | N9-C1'-C2'  | -5.18 | 106.30      | 112.00   |
| 1   | 0     | 1339 | U    | OP2-P-O3'   | 5.17  | 116.57      | 105.20   |
| 1   | 0     | 2485 | U    | C4'-C3'-O3' | 5.17  | 123.33      | 113.00   |
| 1   | 0     | 751  | G    | N9-C1'-C2'  | 5.17  | 120.72      | 114.00   |
| 1   | 0     | 2666 | U    | N1-C1'-C2'  | 5.16  | 120.71      | 114.00   |
| 1   | 0     | 699  | G    | O4'-C1'-N9  | 5.15  | 112.32      | 108.20   |
| 1   | 0     | 1812 | U    | N1-C1'-C2'  | 5.15  | 120.69      | 114.00   |
| 1   | 0     | 2557 | G    | O4'-C1'-N9  | 5.15  | 112.32      | 108.20   |
| 1   | 0     | 1398 | G    | O4'-C1'-N9  | 5.14  | 112.31      | 108.20   |
| 1   | 0     | 795  | A    | N9-C1'-C2'  | 5.13  | 120.67      | 114.00   |
| 1   | 0     | 1749 | G    | C2'-C3'-O3' | 5.13  | 121.90      | 113.70   |
| 1   | 0     | 1032 | A    | N9-C1'-C2'  | -5.09 | 106.40      | 112.00   |
| 1   | 0     | 1006 | C    | N1-C1'-C2'  | 5.05  | 120.56      | 114.00   |
| 1   | 0     | 2556 | A    | N9-C1'-C2'  | -5.05 | 106.45      | 112.00   |
| 1   | 0     | 1937 | G    | N9-C1'-C2'  | 5.04  | 120.55      | 114.00   |
| 1   | 0     | 538  | A    | N9-C1'-C2'  | -5.00 | 106.50      | 112.00   |

There are no chirality outliers.

All (145) planarity outliers are listed below:

| Mol | Chain | Res  | Type | Group     |
|-----|-------|------|------|-----------|
| 1   | 0     | 1033 | G    | Sidechain |
| 1   | 0     | 1036 | G    | Sidechain |
| 1   | 0     | 1138 | A    | Sidechain |
| 1   | 0     | 1142 | G    | Sidechain |
| 1   | 0     | 118  | U    | Sidechain |
| 1   | 0     | 1199 | U    | Sidechain |
| 1   | 0     | 1202 | U    | Sidechain |
| 1   | 0     | 1206 | G    | Sidechain |
| 1   | 0     | 1224 | A    | Sidechain |
| 1   | 0     | 123  | A    | Sidechain |
| 1   | 0     | 1250 | A    | Sidechain |
| 1   | 0     | 1251 | G    | Sidechain |
| 1   | 0     | 1256 | C    | Sidechain |

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| Mol | Chain | Res  | Type | Group     |
|-----|-------|------|------|-----------|
| 1   | 0     | 1261 | G    | Sidechain |
| 1   | 0     | 1262 | U    | Sidechain |
| 1   | 0     | 1270 | C    | Sidechain |
| 1   | 0     | 1280 | U    | Sidechain |
| 1   | 0     | 1281 | A    | Sidechain |
| 1   | 0     | 1288 | A    | Sidechain |
| 1   | 0     | 1295 | U    | Sidechain |
| 1   | 0     | 1314 | A    | Sidechain |
| 1   | 0     | 1324 | G    | Sidechain |
| 1   | 0     | 1342 | U    | Sidechain |
| 1   | 0     | 1353 | A    | Sidechain |
| 1   | 0     | 1357 | U    | Sidechain |
| 1   | 0     | 1358 | C    | Sidechain |
| 1   | 0     | 1373 | G    | Sidechain |
| 1   | 0     | 1410 | U    | Sidechain |
| 1   | 0     | 1458 | A    | Sidechain |
| 1   | 0     | 1474 | A    | Sidechain |
| 1   | 0     | 1478 | U    | Sidechain |
| 1   | 0     | 15   | G    | Sidechain |
| 1   | 0     | 1539 | U    | Sidechain |
| 1   | 0     | 1574 | A    | Sidechain |
| 1   | 0     | 1618 | U    | Sidechain |
| 1   | 0     | 1624 | A    | Sidechain |
| 1   | 0     | 1634 | A    | Sidechain |
| 1   | 0     | 1635 | G    | Sidechain |
| 1   | 0     | 1645 | U    | Sidechain |
| 1   | 0     | 165  | G    | Sidechain |
| 1   | 0     | 1669 | A    | Sidechain |
| 1   | 0     | 1670 | G    | Sidechain |
| 1   | 0     | 1683 | G    | Sidechain |
| 1   | 0     | 1694 | A    | Sidechain |
| 1   | 0     | 1695 | U    | Sidechain |
| 1   | 0     | 1710 | U    | Sidechain |
| 1   | 0     | 1723 | U    | Sidechain |
| 1   | 0     | 1746 | A    | Sidechain |
| 1   | 0     | 1749 | G    | Sidechain |
| 1   | 0     | 1771 | A    | Sidechain |
| 1   | 0     | 1783 | G    | Sidechain |
| 1   | 0     | 1787 | U    | Sidechain |
| 1   | 0     | 18   | U    | Sidechain |
| 1   | 0     | 1811 | A    | Sidechain |
| 1   | 0     | 1819 | U    | Sidechain |

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| Mol | Chain | Res  | Type | Group     |
|-----|-------|------|------|-----------|
| 1   | 0     | 1926 | U    | Sidechain |
| 1   | 0     | 1975 | G    | Sidechain |
| 1   | 0     | 1987 | G    | Sidechain |
| 1   | 0     | 1992 | G    | Sidechain |
| 1   | 0     | 1993 | G    | Sidechain |
| 1   | 0     | 2010 | G    | Sidechain |
| 1   | 0     | 2011 | U    | Sidechain |
| 1   | 0     | 2017 | U    | Sidechain |
| 1   | 0     | 2038 | C    | Sidechain |
| 1   | 0     | 211  | U    | Sidechain |
| 1   | 0     | 212  | U    | Sidechain |
| 1   | 0     | 221  | A    | Sidechain |
| 1   | 0     | 2217 | G    | Sidechain |
| 1   | 0     | 2237 | C    | Sidechain |
| 1   | 0     | 2252 | A    | Sidechain |
| 1   | 0     | 2253 | A    | Sidechain |
| 1   | 0     | 2254 | C    | Sidechain |
| 1   | 0     | 227  | G    | Sidechain |
| 1   | 0     | 2331 | A    | Sidechain |
| 1   | 0     | 2335 | U    | Sidechain |
| 1   | 0     | 2411 | A    | Sidechain |
| 1   | 0     | 2417 | U    | Sidechain |
| 1   | 0     | 2427 | A    | Sidechain |
| 1   | 0     | 2451 | G    | Sidechain |
| 1   | 0     | 2463 | G    | Sidechain |
| 1   | 0     | 2491 | C    | Sidechain |
| 1   | 0     | 2492 | G    | Sidechain |
| 1   | 0     | 2496 | C    | Sidechain |
| 1   | 0     | 2548 | G    | Sidechain |
| 1   | 0     | 2553 | G    | Sidechain |
| 1   | 0     | 2556 | A    | Sidechain |
| 1   | 0     | 2590 | U    | Sidechain |
| 1   | 0     | 2599 | U    | Sidechain |
| 1   | 0     | 2613 | A    | Sidechain |
| 1   | 0     | 2615 | U    | Sidechain |
| 1   | 0     | 2626 | U    | Sidechain |
| 1   | 0     | 2660 | C    | Sidechain |
| 1   | 0     | 2666 | U    | Sidechain |
| 1   | 0     | 2677 | U    | Sidechain |
| 1   | 0     | 2700 | U    | Sidechain |
| 1   | 0     | 2769 | C    | Sidechain |
| 1   | 0     | 2806 | G    | Sidechain |

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| Mol | Chain | Res  | Type | Group     |
|-----|-------|------|------|-----------|
| 1   | 0     | 2813 | G    | Sidechain |
| 1   | 0     | 2824 | C    | Sidechain |
| 1   | 0     | 2836 | U    | Sidechain |
| 1   | 0     | 341  | A    | Sidechain |
| 1   | 0     | 342  | G    | Sidechain |
| 1   | 0     | 399  | G    | Sidechain |
| 1   | 0     | 403  | A    | Sidechain |
| 1   | 0     | 407  | A    | Sidechain |
| 1   | 0     | 41   | G    | Sidechain |
| 1   | 0     | 443  | A    | Sidechain |
| 1   | 0     | 456  | C    | Sidechain |
| 1   | 0     | 469  | G    | Sidechain |
| 1   | 0     | 474  | G    | Sidechain |
| 1   | 0     | 492  | G    | Sidechain |
| 1   | 0     | 508  | G    | Sidechain |
| 1   | 0     | 509  | U    | Sidechain |
| 1   | 0     | 521  | U    | Sidechain |
| 1   | 0     | 522  | G    | Sidechain |
| 1   | 0     | 531  | G    | Sidechain |
| 1   | 0     | 541  | C    | Sidechain |
| 1   | 0     | 559  | C    | Sidechain |
| 1   | 0     | 563  | U    | Sidechain |
| 1   | 0     | 582  | G    | Sidechain |
| 1   | 0     | 596  | C    | Sidechain |
| 1   | 0     | 650  | U    | Sidechain |
| 1   | 0     | 67   | G    | Sidechain |
| 1   | 0     | 69   | G    | Sidechain |
| 1   | 0     | 693  | A    | Sidechain |
| 1   | 0     | 701  | U    | Sidechain |
| 1   | 0     | 742  | G    | Sidechain |
| 1   | 0     | 759  | C    | Sidechain |
| 1   | 0     | 765  | C    | Sidechain |
| 1   | 0     | 794  | A    | Sidechain |
| 1   | 0     | 801  | A    | Sidechain |
| 1   | 0     | 804  | C    | Sidechain |
| 1   | 0     | 805  | G    | Sidechain |
| 1   | 0     | 814  | G    | Sidechain |
| 1   | 0     | 816  | U    | Sidechain |
| 1   | 0     | 823  | U    | Sidechain |
| 1   | 0     | 843  | G    | Sidechain |
| 1   | 0     | 868  | U    | Sidechain |
| 1   | 0     | 873  | U    | Sidechain |

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| Mol | Chain | Res | Type | Group     |
|-----|-------|-----|------|-----------|
| 1   | 0     | 922 | A    | Sidechain |
| 1   | 0     | 940 | G    | Sidechain |
| 1   | 0     | 944 | A    | Sidechain |
| 1   | 0     | 953 | G    | Sidechain |
| 1   | 0     | 954 | U    | Sidechain |
| 1   | 0     | 956 | A    | Sidechain |

## 5.2 Too-close contacts [i](#)

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   | 0     | 59336 | 0        | 29905    | 4618    | 0            |
| 2   | B     | 205   | 0        | 0        | 1       | 0            |
| 3   | 0     | 36    | 0        | 47       | 12      | 0            |
| All | All   | 59577 | 0        | 29952    | 4621    | 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 52.

All (4621) 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) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:984:A:H1'  | 1:0:1202:U:C6   | 1.63                     | 1.33              |
| 1:0:2691:C:H2' | 1:0:2692:A:C5'  | 1.60                     | 1.29              |
| 1:0:2691:C:C2' | 1:0:2692:A:H5'' | 1.64                     | 1.25              |
| 1:0:983:G:OP2  | 1:0:985:G:H5''  | 1.34                     | 1.25              |
| 1:0:1279:G:O2' | 1:0:1280:U:OP2  | 1.53                     | 1.23              |
| 1:0:1279:G:H1' | 1:0:1280:U:C5   | 1.73                     | 1.22              |
| 1:0:788:G:H22  | 1:0:801:A:P     | 1.62                     | 1.22              |
| 1:0:13:A:O2'   | 1:0:14:A:O5'    | 1.58                     | 1.21              |
| 1:0:984:A:H1'  | 1:0:1202:U:C5   | 1.78                     | 1.19              |
| 1:0:539:A:N6   | 1:0:2024:U:H3   | 1.43                     | 1.17              |
| 1:0:2483:U:H2' | 1:0:2484:G:H5'  | 1.27                     | 1.16              |
| 1:0:976:C:H5'  | 1:0:2252:A:H1'  | 1.28                     | 1.16              |
| 1:0:2198:U:C3' | 1:0:2199:C:H4'  | 1.77                     | 1.14              |
| 1:0:631:G:H4'  | 1:0:632:A:H5''  | 1.21                     | 1.13              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1440:G:H3' | 1:0:1441:A:C5'  | 1.77                     | 1.13              |
| 1:0:1715:A:O2' | 1:0:1716:G:H3'  | 1.49                     | 1.13              |
| 1:0:1440:G:C3' | 1:0:1441:A:H5'' | 1.79                     | 1.13              |
| 1:0:219:G:N2   | 1:0:232:A:OP2   | 1.82                     | 1.12              |
| 1:0:88:G:H3'   | 1:0:89:A:H5''   | 1.14                     | 1.12              |
| 1:0:1279:G:H1' | 1:0:1280:U:H5   | 0.95                     | 1.11              |
| 1:0:940:G:H3'  | 1:0:941:U:H5''  | 1.33                     | 1.10              |
| 1:0:13:A:H1'   | 1:0:14:A:C2     | 1.83                     | 1.10              |
| 1:0:69:G:H4'   | 1:0:70:A:OP1    | 1.47                     | 1.10              |
| 1:0:751:G:H21  | 1:0:752:G:H1'   | 0.99                     | 1.09              |
| 1:0:577:U:H5'  | 1:0:956:A:H62   | 1.18                     | 1.08              |
| 1:0:985:G:H8   | 1:0:1001:A:N6   | 1.51                     | 1.07              |
| 1:0:2498:U:H4' | 1:0:2499:C:OP1  | 1.53                     | 1.07              |
| 1:0:751:G:N2   | 1:0:752:G:H1'   | 1.67                     | 1.07              |
| 1:0:1278:A:O2' | 1:0:1279:G:O5'  | 1.71                     | 1.07              |
| 1:0:58:C:H3'   | 1:0:59:G:H5''   | 1.28                     | 1.07              |
| 1:0:168:A:H2'  | 1:0:169:C:C6    | 1.91                     | 1.06              |
| 1:0:2516:U:H2' | 1:0:2517:C:H6   | 1.18                     | 1.06              |
| 1:0:918:A:H2'  | 1:0:919:U:H5''  | 1.35                     | 1.06              |
| 1:0:1938:U:O2' | 1:0:1939:U:H5'  | 1.57                     | 1.05              |
| 1:0:2672:U:H2' | 1:0:2673:G:H8   | 1.22                     | 1.05              |
| 1:0:2693:U:C6  | 1:0:2695:C:OP2  | 2.10                     | 1.04              |
| 1:0:2693:U:C5  | 1:0:2695:C:OP2  | 2.11                     | 1.04              |
| 1:0:2198:U:H3' | 1:0:2199:C:C4'  | 1.87                     | 1.04              |
| 1:0:2782:G:H3' | 1:0:2783:U:C5'  | 1.87                     | 1.04              |
| 1:0:983:G:OP2  | 1:0:985:G:C5'   | 2.06                     | 1.03              |
| 1:0:1624:A:O2' | 1:0:1625:A:H5'  | 1.58                     | 1.03              |
| 1:0:614:G:H22  | 1:0:634:G:N2    | 1.56                     | 1.02              |
| 1:0:1682:A:C2' | 1:0:1683:G:H5'' | 1.89                     | 1.02              |
| 1:0:841:G:H2'  | 1:0:842:A:C8    | 1.95                     | 1.02              |
| 1:0:590:C:H2'  | 1:0:591:G:H8    | 1.21                     | 1.02              |
| 1:0:1674:C:H2' | 1:0:1675:C:H6   | 1.24                     | 1.02              |
| 1:0:1572:C:H2' | 1:0:1573:G:H5'' | 1.41                     | 1.01              |
| 1:0:2782:G:H3' | 1:0:2783:U:H5'' | 1.39                     | 1.01              |
| 1:0:813:A:O2'  | 1:0:814:G:H5''  | 1.60                     | 1.01              |
| 1:0:2042:A:N3  | 1:0:2482:A:N6   | 2.08                     | 1.00              |
| 1:0:66:U:H2'   | 1:0:67:G:C8     | 1.96                     | 1.00              |
| 1:0:2047:C:N4  | 1:0:2425:G:N1   | 2.08                     | 1.00              |
| 1:0:788:G:H5'  | 1:0:790:A:H1'   | 1.41                     | 1.00              |
| 1:0:788:G:N2   | 1:0:801:A:P     | 2.35                     | 0.99              |
| 1:0:1682:A:H2' | 1:0:1683:G:H5'' | 1.43                     | 0.99              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:219:G:H1'  | 1:0:220:U:H5    | 1.23                     | 0.99              |
| 1:0:788:G:N2   | 1:0:800:U:H2'   | 1.78                     | 0.99              |
| 1:0:68:C:O2    | 1:0:72:A:H1'    | 1.61                     | 0.99              |
| 1:0:1586:A:H2' | 1:0:1587:A:H8   | 1.28                     | 0.99              |
| 1:0:1625:A:H1' | 1:0:1632:A:O2'  | 1.61                     | 0.99              |
| 1:0:2483:U:C2' | 1:0:2484:G:H5'  | 1.93                     | 0.98              |
| 1:0:173:A:H61  | 1:0:844:G:H21   | 1.04                     | 0.98              |
| 1:0:1690:U:H2' | 1:0:1691:G:H5'  | 1.44                     | 0.97              |
| 1:0:2047:C:N4  | 1:0:2425:G:H1   | 1.61                     | 0.97              |
| 1:0:2689:C:O2' | 1:0:2690:A:H5'  | 1.63                     | 0.97              |
| 1:0:1947:G:H4' | 1:0:1948:C:OP2  | 1.64                     | 0.97              |
| 1:0:1279:G:O2' | 1:0:1280:U:P    | 2.22                     | 0.96              |
| 1:0:2505:G:H22 | 1:0:2517:C:H1'  | 1.26                     | 0.96              |
| 1:0:71:A:H4'   | 1:0:72:A:OP1    | 1.65                     | 0.96              |
| 1:0:2636:A:H2' | 1:0:2637:C:H5'  | 1.48                     | 0.96              |
| 1:0:2876:C:H2' | 1:0:2877:A:H8   | 1.29                     | 0.96              |
| 1:0:13:A:N6    | 1:0:535:U:C5    | 2.33                     | 0.95              |
| 1:0:13:A:H1'   | 1:0:14:A:H2     | 1.24                     | 0.95              |
| 1:0:751:G:H21  | 1:0:752:G:C1'   | 1.79                     | 0.95              |
| 1:0:2505:G:N2  | 1:0:2517:C:H1'  | 1.82                     | 0.95              |
| 1:0:1679:U:H2' | 1:0:1680:U:H5'' | 1.47                     | 0.95              |
| 1:0:218:A:O2'  | 1:0:219:G:O5'   | 1.84                     | 0.95              |
| 1:0:2408:G:H5' | 1:0:2409:A:OP2  | 1.66                     | 0.95              |
| 1:0:1299:A:H2' | 1:0:1301:U:OP2  | 1.67                     | 0.94              |
| 1:0:2781:G:H2' | 1:0:2782:G:H1'  | 1.46                     | 0.94              |
| 1:0:1871:G:H3' | 1:0:1871:G:N3   | 1.81                     | 0.94              |
| 1:0:922:A:H2'  | 1:0:923:A:C8    | 2.01                     | 0.94              |
| 1:0:1383:C:H2' | 1:0:1384:G:H8   | 1.33                     | 0.94              |
| 1:0:1775:A:H4' | 1:0:1776:A:O5'  | 1.67                     | 0.94              |
| 1:0:539:A:N6   | 1:0:2024:U:N3   | 2.16                     | 0.94              |
| 1:0:2047:C:H42 | 1:0:2425:G:H1   | 0.94                     | 0.94              |
| 1:0:1279:G:N2  | 1:0:1995:G:H2'  | 1.83                     | 0.94              |
| 1:0:631:G:H4'  | 1:0:632:A:C5'   | 1.97                     | 0.94              |
| 1:0:590:C:H2'  | 1:0:591:G:C8    | 2.03                     | 0.94              |
| 1:0:8:A:H2'    | 1:0:9:U:O4'     | 1.68                     | 0.94              |
| 1:0:619:A:H61  | 1:0:629:C:H42   | 1.16                     | 0.93              |
| 1:0:941:U:H2'  | 1:0:942:U:O4'   | 1.68                     | 0.93              |
| 1:0:873:U:H1'  | 1:0:2246:A:H5'' | 1.47                     | 0.93              |
| 1:0:1496:G:H22 | 1:0:1527:G:H22  | 0.97                     | 0.93              |
| 1:0:1468:A:H8  | 1:0:1468:A:O5'  | 1.50                     | 0.93              |
| 1:0:788:G:N2   | 1:0:800:U:C2'   | 2.32                     | 0.93              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:700:C:H2'   | 1:0:701:U:C2    | 2.04                     | 0.93              |
| 1:0:698:A:H4'   | 1:0:700:C:H5    | 1.33                     | 0.93              |
| 1:0:1386:A:H5'' | 1:0:2191:A:H62  | 1.34                     | 0.93              |
| 1:0:1242:A:H2'  | 1:0:1243:G:H8   | 1.34                     | 0.93              |
| 1:0:1166:A:H2'  | 1:0:1167:A:H5'' | 1.49                     | 0.93              |
| 1:0:168:A:H2'   | 1:0:169:C:H6    | 1.35                     | 0.92              |
| 1:0:2565:C:H2'  | 1:0:2566:A:H5'  | 1.51                     | 0.92              |
| 1:0:1496:G:N2   | 1:0:1527:G:H22  | 1.67                     | 0.92              |
| 1:0:1528:C:H3'  | 1:0:1529:C:H5'' | 1.51                     | 0.92              |
| 1:0:1496:G:H1   | 1:0:1527:G:H1   | 1.18                     | 0.92              |
| 1:0:343:A:H2'   | 1:0:345:U:OP2   | 1.70                     | 0.92              |
| 1:0:699:G:H21   | 1:0:801:A:H61   | 1.07                     | 0.92              |
| 1:0:459:A:C2    | 1:0:466:A:N7    | 2.38                     | 0.92              |
| 1:0:2780:A:H2'  | 1:0:2781:G:C8   | 2.05                     | 0.92              |
| 1:0:1541:G:N2   | 1:0:1562:G:H1   | 1.68                     | 0.92              |
| 1:0:2780:A:H2'  | 1:0:2781:G:H8   | 1.35                     | 0.91              |
| 1:0:219:G:H1'   | 1:0:220:U:C5    | 2.04                     | 0.91              |
| 1:0:940:G:H3'   | 1:0:941:U:C5'   | 2.00                     | 0.91              |
| 1:0:1774:A:H2   | 1:0:2567:G:C8   | 1.88                     | 0.91              |
| 1:0:2482:A:H4'  | 1:0:2483:U:OP1  | 1.68                     | 0.91              |
| 1:0:699:G:H21   | 1:0:801:A:N6    | 1.67                     | 0.91              |
| 1:0:2352:A:H2'  | 1:0:2353:G:C8   | 2.06                     | 0.91              |
| 1:0:1079:G:H2'  | 1:0:1080:A:H5'  | 1.51                     | 0.91              |
| 1:0:1978:U:H3   | 1:0:1979:C:N4   | 1.69                     | 0.91              |
| 1:0:808:C:O2'   | 1:0:809:C:H5'   | 1.71                     | 0.91              |
| 1:0:612:G:O3'   | 1:0:613:A:H4'   | 1.70                     | 0.91              |
| 1:0:1787:U:H2'  | 1:0:1788:C:C6   | 2.06                     | 0.91              |
| 1:0:67:G:H2'    | 1:0:68:C:H6     | 1.35                     | 0.91              |
| 1:0:1938:U:O3'  | 1:0:1939:U:H6   | 1.53                     | 0.91              |
| 1:0:1166:A:C2'  | 1:0:1167:A:H5'' | 2.01                     | 0.91              |
| 1:0:202:A:C2    | 1:0:203:G:H1'   | 2.07                     | 0.90              |
| 1:0:1380:C:H2'  | 1:0:1381:G:H5'  | 1.54                     | 0.90              |
| 1:0:2198:U:H3'  | 1:0:2199:C:H4'  | 0.93                     | 0.90              |
| 1:0:1896:A:H61  | 1:0:1899:A:H3'  | 1.33                     | 0.90              |
| 1:0:225:G:O5'   | 1:0:226:C:H5'   | 1.71                     | 0.90              |
| 1:0:536:A:N6    | 1:0:2605:C:H4'  | 1.86                     | 0.90              |
| 1:0:2781:G:H2'  | 1:0:2782:G:C1'  | 2.02                     | 0.90              |
| 1:0:651:C:H2'   | 1:0:652:C:H5''  | 1.53                     | 0.90              |
| 1:0:2046:C:H1'  | 3:0:0:G34:S1    | 2.12                     | 0.90              |
| 1:0:788:G:C2    | 1:0:800:U:H2'   | 2.06                     | 0.90              |
| 1:0:788:G:N2    | 1:0:800:U:C3'   | 2.35                     | 0.90              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2770:A:H5'  | 1:0:2867:G:N2   | 1.87                     | 0.90              |
| 1:0:2516:U:H2'  | 1:0:2517:C:C6   | 2.07                     | 0.89              |
| 1:0:2212:U:H2'  | 1:0:2213:G:C8   | 2.06                     | 0.89              |
| 1:0:482:A:H2'   | 1:0:483:A:O4'   | 1.72                     | 0.89              |
| 1:0:922:A:H2'   | 1:0:923:A:H8    | 1.36                     | 0.89              |
| 1:0:173:A:N6    | 1:0:844:G:H21   | 1.69                     | 0.89              |
| 1:0:619:A:H2'   | 1:0:620:G:H8    | 1.33                     | 0.89              |
| 1:0:1354:A:H3'  | 1:0:1410:U:C2   | 2.08                     | 0.89              |
| 1:0:2431:C:O2   | 1:0:2432:A:C8   | 2.26                     | 0.89              |
| 1:0:1572:C:C2'  | 1:0:1573:G:H5'' | 2.02                     | 0.89              |
| 1:0:536:A:C6    | 1:0:2605:C:H4'  | 2.08                     | 0.89              |
| 1:0:788:G:H2'   | 1:0:807:A:N7    | 1.88                     | 0.89              |
| 3:0:0:G34:H14   | 3:0:0:G34:H10   | 1.51                     | 0.89              |
| 1:0:2222:U:H2'  | 1:0:2223:U:H6   | 1.38                     | 0.89              |
| 1:0:1187:A:H2'  | 1:0:1188:A:H8   | 1.38                     | 0.88              |
| 1:0:2661:G:O6   | 1:0:2708:U:H1'  | 1.73                     | 0.88              |
| 1:0:1337:G:H1'  | 1:0:1632:A:N6   | 1.89                     | 0.88              |
| 1:0:2628:C:H2'  | 1:0:2629:U:C6   | 2.09                     | 0.88              |
| 1:0:836:G:H2'   | 1:0:837:U:C6    | 2.09                     | 0.88              |
| 1:0:877:G:O2'   | 1:0:878:C:H5'   | 1.73                     | 0.88              |
| 1:0:1830:C:N4   | 1:0:1881:U:H3'  | 1.88                     | 0.88              |
| 1:0:1313:U:H4'  | 1:0:1314:A:O5'  | 1.72                     | 0.88              |
| 1:0:547:U:H2'   | 1:0:548:G:H8    | 1.39                     | 0.88              |
| 1:0:1474:A:O2'  | 1:0:1475:U:H5'  | 1.73                     | 0.88              |
| 1:0:614:G:N2    | 1:0:634:G:N2    | 2.20                     | 0.88              |
| 1:0:2206:C:H2'  | 1:0:2207:G:O4'  | 1.73                     | 0.88              |
| 1:0:2014:A:H62  | 1:0:2477:C:C1'  | 1.87                     | 0.87              |
| 1:0:2759:U:H4'  | 1:0:2760:G:OP2  | 1.74                     | 0.87              |
| 1:0:1373:G:H1   | 1:0:2192:U:H3   | 1.22                     | 0.87              |
| 1:0:2564:U:H2'  | 1:0:2564:U:O2   | 1.74                     | 0.87              |
| 1:0:2469:G:H5'' | 1:0:2470:U:OP1  | 1.73                     | 0.87              |
| 1:0:2672:U:H2'  | 1:0:2673:G:C8   | 2.09                     | 0.87              |
| 1:0:357:A:H2'   | 1:0:358:C:H5'   | 1.56                     | 0.87              |
| 1:0:1225:G:H2'  | 1:0:1249:G:N2   | 1.89                     | 0.87              |
| 1:0:1787:U:H2'  | 1:0:1788:C:H6   | 1.36                     | 0.87              |
| 1:0:1288:A:N6   | 1:0:1309:G:H5'  | 1.89                     | 0.87              |
| 1:0:1181:C:H3'  | 1:0:1182:U:H5'' | 1.55                     | 0.87              |
| 1:0:953:G:H2'   | 1:0:954:U:H5'   | 1.56                     | 0.87              |
| 1:0:2172:U:H2'  | 1:0:2173:G:H8   | 1.38                     | 0.87              |
| 1:0:2356:A:H2'  | 1:0:2357:A:C8   | 2.10                     | 0.87              |
| 1:0:1495:G:H2'  | 1:0:1496:G:H8   | 1.40                     | 0.87              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1055:A:H61  | 1:0:1123:G:H1'  | 1.40                     | 0.87              |
| 1:0:1198:C:H5'' | 1:0:1199:U:H5'' | 1.56                     | 0.86              |
| 1:0:460:U:H4'   | 1:0:461:A:OP2   | 1.74                     | 0.86              |
| 1:0:83:A:N6     | 1:0:98:U:H1'    | 1.90                     | 0.86              |
| 1:0:1586:A:H2'  | 1:0:1587:A:C8   | 2.09                     | 0.86              |
| 1:0:2042:A:C2   | 1:0:2482:A:N6   | 2.43                     | 0.86              |
| 1:0:537:C:C6    | 1:0:2759:U:C6   | 2.63                     | 0.86              |
| 1:0:885:A:H2'   | 1:0:886:A:H8    | 1.40                     | 0.86              |
| 1:0:322:A:H1'   | 1:0:343:A:C1'   | 2.06                     | 0.86              |
| 1:0:539:A:H62   | 1:0:2024:U:H3   | 0.87                     | 0.86              |
| 1:0:699:G:N2    | 1:0:801:A:H61   | 1.73                     | 0.86              |
| 1:0:2042:A:C4   | 1:0:2482:A:N6   | 2.42                     | 0.86              |
| 1:0:972:C:C2    | 1:0:2014:A:H2   | 1.93                     | 0.86              |
| 1:0:88:G:H3'    | 1:0:89:A:C5'    | 2.03                     | 0.86              |
| 1:0:1454:U:H2'  | 1:0:1455:C:H6   | 1.40                     | 0.86              |
| 1:0:2138:U:H2'  | 1:0:2139:G:O4'  | 1.75                     | 0.86              |
| 1:0:1977:C:C2   | 1:0:1978:U:H5   | 1.93                     | 0.85              |
| 1:0:1137:A:H5'' | 1:0:1138:A:OP1  | 1.76                     | 0.85              |
| 1:0:1496:G:H22  | 1:0:1527:G:N2   | 1.73                     | 0.85              |
| 1:0:1625:A:H3'  | 1:0:1625:A:N3   | 1.91                     | 0.85              |
| 1:0:782:U:O2    | 1:0:1392:U:H1'  | 1.76                     | 0.85              |
| 1:0:984:A:N3    | 1:0:1201:G:N2   | 2.24                     | 0.85              |
| 1:0:2839:G:H2'  | 1:0:2840:U:C6   | 2.10                     | 0.85              |
| 1:0:1499:A:H2'  | 1:0:1500:U:C6   | 2.12                     | 0.85              |
| 1:0:2265:A:H1'  | 1:0:2325:A:H61  | 1.41                     | 0.85              |
| 1:0:2093:G:H2'  | 1:0:2094:C:C5   | 2.11                     | 0.85              |
| 1:0:984:A:C2    | 1:0:1201:G:N2   | 2.45                     | 0.85              |
| 1:0:1386:A:H5'' | 1:0:2191:A:N6   | 1.90                     | 0.85              |
| 1:0:1679:U:C2'  | 1:0:1680:U:H5'' | 2.04                     | 0.85              |
| 1:0:50:G:H22    | 1:0:118:U:H3    | 1.24                     | 0.85              |
| 1:0:77:C:H2'    | 1:0:78:C:H6     | 1.42                     | 0.85              |
| 1:0:1301:U:O2'  | 1:0:1664:G:N2   | 2.09                     | 0.85              |
| 1:0:219:G:O2'   | 1:0:220:U:C6    | 2.30                     | 0.85              |
| 1:0:2811:G:H2'  | 1:0:2812:A:H8   | 1.41                     | 0.85              |
| 1:0:1073:G:H2'  | 1:0:1074:G:H4'  | 1.59                     | 0.85              |
| 1:0:2014:A:N7   | 1:0:2477:C:O2   | 2.10                     | 0.84              |
| 1:0:2484:G:H4'  | 3:0:0:G34:H22   | 1.58                     | 0.84              |
| 1:0:2628:C:H2'  | 1:0:2629:U:H6   | 1.42                     | 0.84              |
| 1:0:139:A:H2'   | 1:0:140:G:H8    | 1.41                     | 0.84              |
| 1:0:13:A:C8     | 1:0:13:A:OP2    | 2.30                     | 0.84              |
| 1:0:58:C:H42    | 1:0:73:A:N6     | 1.75                     | 0.84              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1469:U:H5'  | 1:0:1470:G:OP2  | 1.77                     | 0.84              |
| 1:0:2736:U:O2'  | 1:0:2737:A:H5'  | 1.76                     | 0.84              |
| 1:0:1770:U:O4   | 1:0:1774:A:H2'  | 1.77                     | 0.84              |
| 1:0:1345:G:C4   | 1:0:1625:A:N1   | 2.46                     | 0.84              |
| 1:0:1468:A:H5'' | 1:0:1472:C:N4   | 1.91                     | 0.84              |
| 1:0:585:U:H2'   | 1:0:586:G:C8    | 2.13                     | 0.84              |
| 1:0:1682:A:H2'  | 1:0:1683:G:C5'  | 2.07                     | 0.84              |
| 1:0:1563:U:H2'  | 1:0:1564:U:C6   | 2.13                     | 0.84              |
| 1:0:619:A:H2'   | 1:0:620:G:C8    | 2.12                     | 0.84              |
| 1:0:564:U:H2'   | 1:0:565:A:C8    | 2.13                     | 0.84              |
| 1:0:1978:U:N3   | 1:0:1979:C:N4   | 2.26                     | 0.84              |
| 1:0:359:G:H2'   | 1:0:360:A:H8    | 1.43                     | 0.84              |
| 1:0:190:A:H2'   | 1:0:191:G:C8    | 2.12                     | 0.84              |
| 1:0:1384:G:H21  | 1:0:1385:C:H41  | 1.22                     | 0.83              |
| 1:0:2532:G:C2   | 1:0:2533:U:H1'  | 2.13                     | 0.83              |
| 1:0:2783:U:H4'  | 1:0:2783:U:OP1  | 1.78                     | 0.83              |
| 1:0:987:G:H5'   | 1:0:1167:A:H62  | 1.43                     | 0.83              |
| 1:0:2175:A:H2'  | 1:0:2176:U:C6   | 2.13                     | 0.83              |
| 1:0:616:U:H2'   | 1:0:617:U:H5''  | 1.56                     | 0.83              |
| 1:0:1938:U:O3'  | 1:0:1939:U:C6   | 2.30                     | 0.83              |
| 1:0:1680:U:H6   | 1:0:1680:U:H5'  | 1.42                     | 0.83              |
| 1:0:719:A:H2'   | 1:0:720:A:O4'   | 1.78                     | 0.83              |
| 1:0:577:U:H5'   | 1:0:956:A:N6    | 1.94                     | 0.83              |
| 1:0:1534:A:H2'  | 1:0:1535:C:H5'  | 1.59                     | 0.83              |
| 1:0:219:G:O2'   | 1:0:220:U:H6    | 1.60                     | 0.83              |
| 1:0:1466:C:H2'  | 1:0:1467:U:O4'  | 1.78                     | 0.83              |
| 1:0:1830:C:H41  | 1:0:1881:U:H3'  | 1.41                     | 0.83              |
| 1:0:2688:G:O2'  | 1:0:2689:C:H5'  | 1.78                     | 0.83              |
| 1:0:1438:G:H2'  | 1:0:1439:G:O4'  | 1.79                     | 0.83              |
| 1:0:1288:A:H62  | 1:0:1309:G:C4'  | 1.91                     | 0.83              |
| 1:0:1804:U:H2'  | 1:0:1805:G:H8   | 1.43                     | 0.83              |
| 1:0:2038:C:H4'  | 1:0:2039:G:H5'' | 1.60                     | 0.83              |
| 1:0:644:A:H2'   | 1:0:645:G:H5'   | 1.60                     | 0.83              |
| 1:0:2737:A:H2'  | 1:0:2738:A:C5'  | 2.09                     | 0.83              |
| 1:0:2764:U:H2'  | 1:0:2765:C:H6   | 1.44                     | 0.82              |
| 1:0:968:C:N4    | 1:0:970:A:N3    | 2.27                     | 0.82              |
| 1:0:983:G:O6    | 1:0:984:A:N6    | 2.12                     | 0.82              |
| 1:0:411:C:H3'   | 1:0:412:U:H5''  | 1.61                     | 0.82              |
| 1:0:1486:A:H2'  | 1:0:1487:C:C6   | 2.14                     | 0.82              |
| 1:0:509:U:H3'   | 1:0:510:G:H8    | 1.44                     | 0.82              |
| 1:0:455:A:H2    | 1:0:1258:G:N3   | 1.76                     | 0.82              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1097:A:H1' | 1:0:1114:A:H2   | 1.43                     | 0.82              |
| 1:0:984:A:C1'  | 1:0:1202:U:C6   | 2.57                     | 0.82              |
| 1:0:1446:U:H2' | 1:0:1447:U:H6   | 1.43                     | 0.82              |
| 1:0:805:G:H4'  | 1:0:806:A:OP2   | 1.77                     | 0.82              |
| 1:0:220:U:H2'  | 1:0:221:A:H8    | 1.45                     | 0.82              |
| 1:0:2387:U:H2' | 1:0:2388:G:C8   | 2.14                     | 0.82              |
| 1:0:170:U:H2'  | 1:0:171:G:H8    | 1.44                     | 0.82              |
| 1:0:991:A:C6   | 1:0:992:A:N1    | 2.48                     | 0.82              |
| 1:0:1587:A:H2' | 1:0:1588:A:C8   | 2.13                     | 0.82              |
| 1:0:2562:G:C4  | 1:0:2563:U:C5   | 2.68                     | 0.82              |
| 1:0:50:G:N2    | 1:0:118:U:H3    | 1.76                     | 0.82              |
| 1:0:1690:U:C2' | 1:0:1691:G:H5'  | 2.08                     | 0.82              |
| 1:0:1354:A:C8  | 1:0:1354:A:OP1  | 2.33                     | 0.82              |
| 1:0:1468:A:C8  | 1:0:1468:A:O5'  | 2.33                     | 0.81              |
| 1:0:2024:U:H2' | 1:0:2025:A:C8   | 2.15                     | 0.81              |
| 1:0:459:A:H1'  | 1:0:461:A:N6    | 1.95                     | 0.81              |
| 1:0:2811:G:H2' | 1:0:2812:A:C8   | 2.15                     | 0.81              |
| 1:0:10:A:H2'   | 1:0:11:G:H8     | 1.45                     | 0.81              |
| 1:0:2123:G:H2' | 1:0:2124:C:H5'  | 1.62                     | 0.81              |
| 1:0:965:G:N3   | 1:0:2253:A:H2   | 1.77                     | 0.81              |
| 1:0:33:C:O2    | 1:0:34:U:C4     | 2.34                     | 0.81              |
| 1:0:651:C:C2'  | 1:0:652:C:H5''  | 2.09                     | 0.81              |
| 1:0:1057:A:H3' | 1:0:1058:G:H5'' | 1.61                     | 0.81              |
| 1:0:1174:G:H2' | 1:0:1175:A:H8   | 1.45                     | 0.81              |
| 1:0:942:U:O2'  | 1:0:943:U:H5'   | 1.80                     | 0.81              |
| 1:0:403:A:H5'' | 1:0:404:A:OP1   | 1.79                     | 0.81              |
| 1:0:1997:A:H2' | 1:0:1998:A:C8   | 2.14                     | 0.81              |
| 1:0:57:G:N2    | 1:0:72:A:C8     | 2.49                     | 0.81              |
| 1:0:1087:C:H2' | 1:0:1088:A:O4'  | 1.80                     | 0.81              |
| 1:0:1984:A:H4' | 1:0:2668:U:H2'  | 1.62                     | 0.81              |
| 1:0:1918:G:H1' | 1:0:1947:G:N2   | 1.96                     | 0.81              |
| 1:0:877:G:H2'  | 1:0:878:C:H6    | 1.45                     | 0.80              |
| 1:0:2725:C:H2' | 1:0:2726:U:O4'  | 1.81                     | 0.80              |
| 1:0:830:C:O2'  | 1:0:852:U:H5''  | 1.79                     | 0.80              |
| 1:0:190:A:H2'  | 1:0:191:G:H8    | 1.44                     | 0.80              |
| 1:0:1785:A:H4' | 1:0:1883:A:N1   | 1.97                     | 0.80              |
| 1:0:1785:A:H4' | 1:0:1883:A:C6   | 2.16                     | 0.80              |
| 1:0:1233:A:O2' | 1:0:1234:C:OP1  | 2.00                     | 0.80              |
| 1:0:663:G:H2'  | 1:0:664:C:H5'   | 1.63                     | 0.80              |
| 1:0:2693:U:H6  | 1:0:2695:C:OP2  | 1.61                     | 0.80              |
| 1:0:941:U:O2   | 1:0:942:U:H1'   | 1.82                     | 0.80              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2271:C:H4'  | 1:0:2354:G:O4'  | 1.82                     | 0.80              |
| 1:0:2689:C:O2'  | 1:0:2690:A:C5'  | 2.30                     | 0.80              |
| 1:0:2875:C:O2'  | 1:0:2876:C:H5'  | 1.82                     | 0.80              |
| 1:0:2540:A:H2'  | 1:0:2541:U:O5'  | 1.80                     | 0.80              |
| 1:0:619:A:N6    | 1:0:629:C:H42   | 1.79                     | 0.80              |
| 1:0:1252:C:C2'  | 1:0:1253:C:H5'' | 2.12                     | 0.80              |
| 1:0:1882:G:O2'  | 1:0:1883:A:H5'' | 1.80                     | 0.80              |
| 1:0:2222:U:H2'  | 1:0:2223:U:C6   | 2.15                     | 0.80              |
| 1:0:929:A:H3'   | 1:0:930:A:H5''  | 1.63                     | 0.80              |
| 1:0:1333:G:N7   | 1:0:1342:U:H5'  | 1.97                     | 0.79              |
| 1:0:173:A:H61   | 1:0:844:G:N2    | 1.77                     | 0.79              |
| 1:0:1900:U:H2'  | 1:0:1901:A:H5'  | 1.63                     | 0.79              |
| 1:0:541:C:N4    | 1:0:572:G:C8    | 2.50                     | 0.79              |
| 1:0:117:A:H4'   | 1:0:118:U:O5'   | 1.80                     | 0.79              |
| 1:0:408:U:H2'   | 1:0:409:G:H8    | 1.45                     | 0.79              |
| 1:0:790:A:H2'   | 1:0:791:G:H8    | 1.47                     | 0.79              |
| 1:0:1409:U:H5'' | 1:0:1410:U:OP2  | 1.83                     | 0.79              |
| 1:0:788:G:C5'   | 1:0:790:A:H1'   | 2.11                     | 0.79              |
| 1:0:1618:U:C2   | 1:0:1618:U:OP2  | 2.36                     | 0.79              |
| 1:0:2077:G:H22  | 1:0:2179:C:H1'  | 1.47                     | 0.79              |
| 1:0:1534:A:C2'  | 1:0:1535:C:H5'  | 2.11                     | 0.79              |
| 1:0:1032:A:O2'  | 1:0:1134:C:H5'' | 1.83                     | 0.79              |
| 1:0:77:C:H2'    | 1:0:78:C:C6     | 2.17                     | 0.79              |
| 1:0:2758:A:O2'  | 1:0:2759:U:P    | 2.41                     | 0.79              |
| 1:0:1086:C:H2'  | 1:0:1087:C:H5'' | 1.64                     | 0.79              |
| 1:0:417:C:H5''  | 1:0:418:C:OP1   | 1.82                     | 0.79              |
| 1:0:1255:A:H2'  | 1:0:1256:C:C6   | 2.18                     | 0.79              |
| 1:0:2693:U:H5   | 1:0:2695:C:OP2  | 1.66                     | 0.79              |
| 1:0:1666:G:H2'  | 1:0:1667:A:H8   | 1.47                     | 0.79              |
| 1:0:1288:A:H62  | 1:0:1309:G:H5'  | 1.45                     | 0.79              |
| 1:0:1002:C:N4   | 1:0:1003:C:H41  | 1.81                     | 0.79              |
| 1:0:1003:C:O2'  | 1:0:1004:A:H5'  | 1.81                     | 0.79              |
| 1:0:831:G:N7    | 1:0:1199:U:O4   | 2.16                     | 0.79              |
| 1:0:2626:U:H3   | 1:0:2653:A:N6   | 1.80                     | 0.79              |
| 1:0:2435:C:O2'  | 1:0:2436:U:H5'  | 1.83                     | 0.79              |
| 1:0:1345:G:H5'' | 1:0:1346:C:OP2  | 1.83                     | 0.79              |
| 1:0:1623:C:H5'  | 1:0:1624:A:H5'' | 1.63                     | 0.79              |
| 1:0:1791:C:O2'  | 1:0:1792:C:H3'  | 1.83                     | 0.79              |
| 1:0:1596:A:H2'  | 1:0:1597:A:H5'  | 1.64                     | 0.79              |
| 1:0:181:A:H4'   | 1:0:182:G:OP1   | 1.81                     | 0.79              |
| 1:0:538:A:H3'   | 1:0:538:A:H8    | 1.46                     | 0.78              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2691:C:H2' | 1:0:2692:A:H5'' | 0.82                     | 0.78              |
| 1:0:940:G:H2'  | 1:0:941:U:H4'   | 1.65                     | 0.78              |
| 1:0:2262:C:H2' | 1:0:2263:C:O4'  | 1.83                     | 0.78              |
| 1:0:1921:A:H2' | 1:0:1922:U:H5'' | 1.63                     | 0.78              |
| 1:0:428:A:H2'  | 1:0:429:C:C6    | 2.18                     | 0.78              |
| 1:0:2454:C:H2' | 1:0:2455:A:H5'  | 1.63                     | 0.78              |
| 1:0:1073:G:H2' | 1:0:1074:G:C4'  | 2.14                     | 0.78              |
| 1:0:1057:A:O5' | 1:0:1058:G:H5'  | 1.84                     | 0.78              |
| 1:0:664:C:H5   | 1:0:666:U:H4'   | 1.46                     | 0.78              |
| 1:0:819:C:O3'  | 1:0:843:G:N2    | 2.16                     | 0.78              |
| 1:0:1359:G:H8  | 1:0:1359:G:H5'  | 1.49                     | 0.78              |
| 1:0:2208:U:H2' | 1:0:2209:G:H8   | 1.49                     | 0.78              |
| 1:0:1252:C:O2' | 1:0:1253:C:H5'' | 1.83                     | 0.78              |
| 1:0:1632:A:O2' | 1:0:1633:C:P    | 2.42                     | 0.78              |
| 1:0:202:A:H2'  | 1:0:203:G:O4'   | 1.84                     | 0.78              |
| 1:0:66:U:N3    | 1:0:67:G:O6     | 2.15                     | 0.78              |
| 1:0:2282:G:H2' | 1:0:2283:G:H8   | 1.49                     | 0.78              |
| 1:0:831:G:H2'  | 1:0:832:A:H5''  | 1.65                     | 0.77              |
| 1:0:400:U:H5'' | 1:0:401:G:OP1   | 1.84                     | 0.77              |
| 1:0:631:G:H5'' | 1:0:632:A:OP1   | 1.83                     | 0.77              |
| 1:0:73:A:N3    | 1:0:73:A:H5''   | 1.99                     | 0.77              |
| 1:0:456:C:O2'  | 1:0:457:C:H5'   | 1.84                     | 0.77              |
| 1:0:2565:C:C2' | 1:0:2566:A:H5'  | 2.14                     | 0.77              |
| 1:0:1793:A:O2' | 1:0:1794:A:H5'  | 1.83                     | 0.77              |
| 1:0:1288:A:H62 | 1:0:1309:G:C5'  | 1.96                     | 0.77              |
| 1:0:983:G:C6   | 1:0:984:A:N6    | 2.52                     | 0.77              |
| 1:0:2539:C:H42 | 1:0:2540:A:N6   | 1.81                     | 0.77              |
| 1:0:678:G:O2'  | 1:0:679:C:H5'   | 1.85                     | 0.77              |
| 1:0:1279:G:H21 | 1:0:1995:G:H2'  | 1.48                     | 0.77              |
| 1:0:2324:G:N2  | 1:0:2326:C:H41  | 1.81                     | 0.77              |
| 1:0:2560:G:O6  | 1:0:2589:C:H2'  | 1.82                     | 0.77              |
| 1:0:2402:U:O2  | 1:0:2402:U:H2'  | 1.84                     | 0.77              |
| 1:0:985:G:C8   | 1:0:1001:A:N6   | 2.37                     | 0.77              |
| 1:0:619:A:H61  | 1:0:629:C:N4    | 1.81                     | 0.77              |
| 1:0:1151:U:OP1 | 1:0:1153:A:OP1  | 2.02                     | 0.77              |
| 1:0:538:A:N1   | 1:0:2025:A:H2'  | 1.99                     | 0.77              |
| 1:0:813:A:C2'  | 1:0:814:G:H5''  | 2.14                     | 0.77              |
| 1:0:1715:A:O2' | 1:0:1716:G:C3'  | 2.30                     | 0.77              |
| 1:0:139:A:H2'  | 1:0:140:G:C8    | 2.19                     | 0.77              |
| 1:0:1217:U:H2' | 1:0:1218:C:H6   | 1.48                     | 0.77              |
| 1:0:940:G:C8   | 1:0:941:U:O4'   | 2.38                     | 0.77              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1674:C:H2'  | 1:0:1675:C:C6   | 2.15                     | 0.77              |
| 1:0:67:G:H2'    | 1:0:68:C:C6     | 2.20                     | 0.77              |
| 1:0:2515:G:H2'  | 1:0:2516:U:O4'  | 1.85                     | 0.77              |
| 1:0:2876:C:H2'  | 1:0:2877:A:C8   | 2.17                     | 0.77              |
| 1:0:1482:U:H2'  | 1:0:1483:G:C8   | 2.19                     | 0.77              |
| 1:0:566:U:H2'   | 1:0:567:G:H8    | 1.49                     | 0.77              |
| 1:0:2185:U:H2'  | 1:0:2186:G:C8   | 2.20                     | 0.77              |
| 1:0:530:G:H2'   | 1:0:531:G:H8    | 1.49                     | 0.77              |
| 1:0:698:A:H5'   | 1:0:700:C:H41   | 1.50                     | 0.77              |
| 1:0:554:U:OP2   | 1:0:554:U:H4'   | 1.85                     | 0.77              |
| 1:0:2507:U:O2'  | 1:0:2508:G:H3'  | 1.85                     | 0.77              |
| 1:0:984:A:C1'   | 1:0:1202:U:C5   | 2.67                     | 0.76              |
| 1:0:2693:U:O2'  | 1:0:2694:G:OP1  | 2.02                     | 0.76              |
| 1:0:840:U:H4'   | 1:0:841:G:C2    | 2.20                     | 0.76              |
| 1:0:1079:G:C2'  | 1:0:1080:A:H5'  | 2.15                     | 0.76              |
| 1:0:1459:U:H3   | 1:0:1476:G:H5'  | 1.50                     | 0.76              |
| 1:0:1753:A:O5'  | 1:0:1753:A:H8   | 1.67                     | 0.76              |
| 1:0:359:G:H2'   | 1:0:360:A:C8    | 2.20                     | 0.76              |
| 1:0:1386:A:C5'  | 1:0:2191:A:H62  | 1.98                     | 0.76              |
| 1:0:2556:A:H5'' | 1:0:2557:G:H5'  | 1.67                     | 0.76              |
| 1:0:2409:A:O2'  | 1:0:2410:U:H5'  | 1.84                     | 0.76              |
| 1:0:490:A:O2'   | 1:0:491:A:H5'   | 1.85                     | 0.76              |
| 1:0:1898:U:H3'  | 1:0:1899:A:C8   | 2.21                     | 0.76              |
| 1:0:698:A:H4'   | 1:0:700:C:C5    | 2.18                     | 0.76              |
| 1:0:408:U:H2'   | 1:0:409:G:C8    | 2.21                     | 0.76              |
| 1:0:2565:C:O2   | 1:0:2565:C:H2'  | 1.84                     | 0.76              |
| 1:0:1198:C:H5'' | 1:0:1199:U:C5'  | 2.15                     | 0.76              |
| 1:0:2419:C:N3   | 1:0:2420:C:H1'  | 2.00                     | 0.76              |
| 1:0:2055:G:O2'  | 1:0:2056:C:H5'  | 1.85                     | 0.76              |
| 1:0:1354:A:H4'  | 1:0:1355:A:OP1  | 1.83                     | 0.76              |
| 1:0:825:C:H1'   | 1:0:1263:G:N2   | 2.00                     | 0.76              |
| 1:0:2217:G:H5'' | 1:0:2218:G:OP1  | 1.86                     | 0.76              |
| 1:0:1094:C:H2'  | 1:0:1096:A:OP2  | 1.86                     | 0.76              |
| 1:0:947:C:H2'   | 1:0:948:C:C6    | 2.21                     | 0.76              |
| 1:0:2624:G:H4'  | 1:0:2712:G:O2'  | 1.86                     | 0.75              |
| 1:0:797:A:H5'   | 1:0:798:G:OP1   | 1.85                     | 0.75              |
| 1:0:2198:U:OP2  | 1:0:2199:C:H5'' | 1.85                     | 0.75              |
| 1:0:718:A:H62   | 1:0:739:G:H1'   | 1.51                     | 0.75              |
| 1:0:1958:G:H2'  | 1:0:1959:U:C6   | 2.21                     | 0.75              |
| 1:0:2845:C:C4   | 1:0:2846:G:N7   | 2.55                     | 0.75              |
| 1:0:538:A:H3'   | 1:0:538:A:C8    | 2.20                     | 0.75              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2311:U:H4'  | 1:0:2315:A:H61 | 1.52                     | 0.75              |
| 1:0:242:A:O2'   | 1:0:243:G:O4'  | 2.04                     | 0.75              |
| 1:0:1110:G:H2'  | 1:0:1111:C:C6  | 2.21                     | 0.75              |
| 1:0:700:C:O2    | 1:0:800:U:O3'  | 2.05                     | 0.75              |
| 1:0:759:C:H1'   | 1:0:761:G:H21  | 1.52                     | 0.75              |
| 1:0:2571:G:H2'  | 1:0:2572:U:O4' | 1.86                     | 0.75              |
| 1:0:1467:U:H3'  | 1:0:1468:A:H5' | 1.68                     | 0.75              |
| 1:0:321:A:C2    | 1:0:323:G:H1'  | 2.21                     | 0.75              |
| 1:0:329:C:O2'   | 1:0:330:C:H5'  | 1.87                     | 0.75              |
| 1:0:173:A:O2'   | 1:0:174:A:OP1  | 2.03                     | 0.75              |
| 1:0:308:C:O2'   | 1:0:309:G:H5'  | 1.86                     | 0.75              |
| 1:0:76:C:C6     | 1:0:76:C:H5'   | 2.21                     | 0.75              |
| 1:0:2225:G:H2'  | 1:0:2226:A:H8  | 1.50                     | 0.75              |
| 1:0:2492:G:H2'  | 1:0:2493:U:H6  | 1.50                     | 0.75              |
| 1:0:2198:U:C4   | 1:0:2199:C:H1' | 2.22                     | 0.75              |
| 1:0:1923:U:H5'  | 1:0:1924:C:OP1 | 1.87                     | 0.75              |
| 1:0:321:A:H2'   | 1:0:323:G:N7   | 2.02                     | 0.75              |
| 1:0:2387:U:H2'  | 1:0:2388:G:H8  | 1.52                     | 0.75              |
| 1:0:2426:G:H5'' | 1:0:2427:A:O5' | 1.87                     | 0.74              |
| 1:0:1618:U:H3'  | 1:0:1618:U:H6  | 1.51                     | 0.74              |
| 1:0:862:A:H2'   | 1:0:863:C:C6   | 2.21                     | 0.74              |
| 1:0:2404:A:H5'  | 1:0:2406:C:O4' | 1.86                     | 0.74              |
| 1:0:2046:C:O2   | 1:0:2430:A:C2  | 2.40                     | 0.74              |
| 1:0:2484:G:O2'  | 1:0:2485:U:C5' | 2.35                     | 0.74              |
| 1:0:1980:A:O2'  | 1:0:1981:A:H5' | 1.87                     | 0.74              |
| 1:0:1355:A:H1'  | 1:0:1410:U:H4' | 1.67                     | 0.74              |
| 1:0:1314:A:H4'  | 1:0:1314:A:OP1 | 1.86                     | 0.74              |
| 1:0:585:U:H2'   | 1:0:586:G:H8   | 1.51                     | 0.74              |
| 1:0:858:G:H2'   | 1:0:858:G:N3   | 2.02                     | 0.74              |
| 1:0:2431:C:H2'  | 1:0:2431:C:O2  | 1.86                     | 0.74              |
| 1:0:728:G:N2    | 1:0:729:A:H1'  | 2.02                     | 0.74              |
| 1:0:814:G:H3'   | 1:0:815:A:C5'  | 2.16                     | 0.74              |
| 1:0:57:G:C2     | 1:0:72:A:N7    | 2.55                     | 0.74              |
| 1:0:2691:C:C2'  | 1:0:2692:A:C5' | 2.40                     | 0.74              |
| 1:0:1625:A:C8   | 1:0:1632:A:H1' | 2.22                     | 0.74              |
| 1:0:1977:C:C2   | 1:0:1978:U:C5  | 2.75                     | 0.74              |
| 1:0:537:C:O2    | 1:0:538:A:N6   | 2.20                     | 0.74              |
| 1:0:57:G:N2     | 1:0:69:G:C4    | 2.56                     | 0.74              |
| 1:0:1846:A:H2'  | 1:0:1847:G:H8  | 1.53                     | 0.74              |
| 1:0:2787:A:H2'  | 1:0:2788:C:H6  | 1.53                     | 0.74              |
| 1:0:68:C:H2'    | 1:0:68:C:O2    | 1.87                     | 0.74              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1921:A:C2'  | 1:0:1922:U:H5'' | 2.17                     | 0.74              |
| 1:0:2708:U:H2'  | 1:0:2709:C:C6   | 2.22                     | 0.74              |
| 1:0:836:G:H2'   | 1:0:837:U:H6    | 1.53                     | 0.74              |
| 1:0:317:U:H2'   | 1:0:318:G:H5'   | 1.69                     | 0.74              |
| 1:0:2320:G:H2'  | 1:0:2321:C:H6   | 1.51                     | 0.74              |
| 1:0:2594:U:H5'  | 1:0:2594:U:H6   | 1.53                     | 0.74              |
| 1:0:717:G:H2'   | 1:0:739:G:H22   | 1.53                     | 0.74              |
| 1:0:57:G:C2     | 1:0:72:A:C5     | 2.76                     | 0.74              |
| 1:0:651:C:C3'   | 1:0:652:C:H5''  | 2.17                     | 0.74              |
| 1:0:243:G:H2'   | 1:0:244:C:O4'   | 1.87                     | 0.74              |
| 1:0:2503:G:H2'  | 1:0:2504:G:H5'' | 1.70                     | 0.74              |
| 1:0:1789:U:O2'  | 1:0:1793:A:H1'  | 1.87                     | 0.74              |
| 1:0:1198:C:H5'' | 1:0:1199:U:C4'  | 2.17                     | 0.73              |
| 1:0:2755:A:O2'  | 1:0:2756:A:H5'  | 1.88                     | 0.73              |
| 1:0:759:C:H5'   | 1:0:761:G:H1'   | 1.69                     | 0.73              |
| 1:0:1383:C:H2'  | 1:0:1384:G:C8   | 2.20                     | 0.73              |
| 1:0:2059:U:H5'  | 1:0:2059:U:H6   | 1.52                     | 0.73              |
| 1:0:2014:A:N7   | 1:0:2477:C:H1'  | 2.03                     | 0.73              |
| 1:0:2567:G:O6   | 1:0:2586:G:C6   | 2.41                     | 0.73              |
| 1:0:356:A:O2'   | 1:0:357:A:H5'   | 1.88                     | 0.73              |
| 1:0:1154:A:O2'  | 1:0:1155:G:OP1  | 2.06                     | 0.73              |
| 1:0:218:A:H1'   | 1:0:219:G:O4'   | 1.88                     | 0.73              |
| 1:0:1353:A:O2'  | 1:0:1410:U:O4   | 2.05                     | 0.73              |
| 1:0:1595:A:H2'  | 1:0:1596:A:C8   | 2.23                     | 0.73              |
| 1:0:2447:G:O2'  | 1:0:2448:A:H5'  | 1.88                     | 0.73              |
| 1:0:787:A:O2'   | 1:0:788:G:H5'   | 1.88                     | 0.73              |
| 1:0:1325:U:O2'  | 1:0:1326:U:OP2  | 2.06                     | 0.73              |
| 1:0:987:G:H4'   | 1:0:1167:A:N7   | 2.03                     | 0.73              |
| 1:0:2692:A:C2'  | 1:0:2693:U:OP1  | 2.37                     | 0.73              |
| 1:0:1463:A:H1'  | 1:0:1543:G:H22  | 1.53                     | 0.73              |
| 1:0:1194:U:H2'  | 1:0:1195:U:C6   | 2.22                     | 0.73              |
| 1:0:1055:A:N6   | 1:0:1123:G:H1'  | 2.02                     | 0.73              |
| 1:0:668:A:H2'   | 1:0:669:G:O4'   | 1.88                     | 0.73              |
| 1:0:992:A:N3    | 1:0:2020:G:H1'  | 2.04                     | 0.73              |
| 1:0:788:G:H5''  | 1:0:789:G:OP1   | 1.88                     | 0.73              |
| 1:0:171:G:C2'   | 1:0:172:A:H5'   | 2.18                     | 0.73              |
| 1:0:2093:G:H2'  | 1:0:2094:C:H5   | 1.51                     | 0.73              |
| 1:0:1736:C:H2'  | 1:0:1737:G:H8   | 1.52                     | 0.73              |
| 1:0:958:G:H2'   | 1:0:959:C:C6    | 2.23                     | 0.73              |
| 1:0:941:U:OP1   | 1:0:941:U:H4'   | 1.88                     | 0.73              |
| 1:0:2245:A:O2'  | 1:0:2246:A:OP2  | 2.05                     | 0.73              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:322:A:N7   | 1:0:339:U:N3    | 2.35                     | 0.73              |
| 1:0:2320:G:H2' | 1:0:2321:C:C6   | 2.24                     | 0.73              |
| 1:0:1884:A:O2' | 1:0:1885:C:H5'  | 1.88                     | 0.73              |
| 1:0:2136:G:H2' | 1:0:2137:G:C8   | 2.24                     | 0.73              |
| 1:0:2860:C:H2' | 1:0:2861:A:O4'  | 1.88                     | 0.73              |
| 1:0:368:A:H2'  | 1:0:369:C:O4'   | 1.89                     | 0.73              |
| 1:0:1198:C:C5' | 1:0:1199:U:H4'  | 2.18                     | 0.73              |
| 1:0:2674:C:C2  | 1:0:2675:U:H5   | 2.07                     | 0.73              |
| 1:0:219:G:C2'  | 1:0:220:U:OP2   | 2.35                     | 0.73              |
| 1:0:840:U:H4'  | 1:0:841:G:N2    | 2.04                     | 0.73              |
| 1:0:2176:U:H2' | 1:0:2177:U:O4'  | 1.89                     | 0.73              |
| 1:0:2311:U:C4' | 1:0:2315:A:H61  | 2.01                     | 0.73              |
| 1:0:2109:A:H2' | 1:0:2110:G:O4'  | 1.87                     | 0.73              |
| 1:0:2617:G:H21 | 1:0:2758:A:H62  | 1.37                     | 0.73              |
| 1:0:2692:A:H2' | 1:0:2693:U:OP1  | 1.89                     | 0.73              |
| 1:0:1714:A:C5' | 1:0:1715:A:H5'' | 2.19                     | 0.73              |
| 1:0:1774:A:C2  | 1:0:2567:G:C8   | 2.75                     | 0.73              |
| 1:0:1495:G:H2' | 1:0:1496:G:C8   | 2.23                     | 0.73              |
| 1:0:1391:A:O2' | 1:0:1392:U:C6   | 2.42                     | 0.73              |
| 1:0:167:A:H2'  | 1:0:168:A:C8    | 2.24                     | 0.72              |
| 1:0:1682:A:C3' | 1:0:1683:G:H5'' | 2.18                     | 0.72              |
| 1:0:684:C:H2'  | 1:0:685:U:H6    | 1.53                     | 0.72              |
| 1:0:76:C:H6    | 1:0:76:C:H5'    | 1.54                     | 0.72              |
| 1:0:228:A:H2'  | 1:0:229:G:O4'   | 1.89                     | 0.72              |
| 1:0:1927:U:H2' | 1:0:1927:U:O2   | 1.86                     | 0.72              |
| 1:0:2824:C:H1' | 1:0:2843:A:C4   | 2.24                     | 0.72              |
| 1:0:1174:G:H2' | 1:0:1175:A:C8   | 2.24                     | 0.72              |
| 1:0:942:U:C2'  | 1:0:943:U:H5'   | 2.19                     | 0.72              |
| 1:0:2483:U:H2' | 1:0:2484:G:C5'  | 2.13                     | 0.72              |
| 1:0:1073:G:H3' | 1:0:1074:G:H5'' | 1.70                     | 0.72              |
| 1:0:2864:C:H2' | 1:0:2864:C:O2   | 1.89                     | 0.72              |
| 1:0:588:G:O2'  | 1:0:2002:A:OP1  | 2.06                     | 0.72              |
| 1:0:843:G:N3   | 1:0:2427:A:N6   | 2.38                     | 0.72              |
| 1:0:2826:C:H2' | 1:0:2827:G:H5'  | 1.70                     | 0.72              |
| 1:0:1354:A:C8  | 1:0:1410:U:O2   | 2.42                     | 0.72              |
| 1:0:2629:U:H2' | 1:0:2630:C:H6   | 1.54                     | 0.72              |
| 1:0:48:A:N1    | 1:0:154:U:O4    | 2.22                     | 0.72              |
| 1:0:1408:A:O5' | 1:0:1408:A:H8   | 1.72                     | 0.72              |
| 1:0:2669:C:H2' | 1:0:2669:C:O2   | 1.90                     | 0.72              |
| 1:0:2872:U:H2' | 1:0:2873:G:H8   | 1.55                     | 0.72              |
| 1:0:1582:A:O2' | 1:0:1583:A:OP1  | 2.06                     | 0.72              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2484:G:C2'  | 1:0:2485:U:H5' | 2.19                     | 0.72              |
| 1:0:788:G:H2'   | 1:0:807:A:C8   | 2.25                     | 0.72              |
| 1:0:1631:C:C5   | 1:0:1633:C:C2  | 2.78                     | 0.72              |
| 1:0:2770:A:H5'  | 1:0:2867:G:H22 | 1.54                     | 0.72              |
| 1:0:1213:U:H3   | 1:0:1260:A:H2  | 1.37                     | 0.72              |
| 1:0:1533:G:H2'  | 1:0:1534:A:H8  | 1.54                     | 0.71              |
| 1:0:772:G:H2'   | 1:0:773:G:H8   | 1.55                     | 0.71              |
| 1:0:1690:U:H2'  | 1:0:1691:G:C5' | 2.20                     | 0.71              |
| 1:0:2563:U:O2   | 1:0:2563:U:H2' | 1.88                     | 0.71              |
| 1:0:563:U:H2'   | 1:0:564:U:O4'  | 1.89                     | 0.71              |
| 1:0:1194:U:H2'  | 1:0:1195:U:H6  | 1.55                     | 0.71              |
| 1:0:958:G:H2'   | 1:0:959:C:H6   | 1.54                     | 0.71              |
| 1:0:1685:A:N6   | 1:0:1693:A:H61 | 1.89                     | 0.71              |
| 1:0:1673:C:H2'  | 1:0:1674:C:H6  | 1.55                     | 0.71              |
| 1:0:2230:G:C8   | 1:0:2429:A:H4' | 2.25                     | 0.71              |
| 1:0:807:A:C2    | 1:0:808:C:C2   | 2.78                     | 0.71              |
| 1:0:577:U:C5'   | 1:0:956:A:H62  | 1.99                     | 0.71              |
| 1:0:2569:A:H2'  | 1:0:2570:C:H6  | 1.55                     | 0.71              |
| 1:0:2323:U:H5'' | 1:0:2324:G:OP1 | 1.91                     | 0.71              |
| 1:0:1794:A:H2   | 1:0:1814:G:N3  | 1.87                     | 0.71              |
| 1:0:1187:A:H2'  | 1:0:1188:A:C8  | 2.25                     | 0.71              |
| 1:0:1198:C:O5'  | 1:0:1199:U:H4' | 1.89                     | 0.71              |
| 1:0:571:U:O2'   | 1:0:581:A:O4'  | 2.07                     | 0.71              |
| 1:0:792:U:O2'   | 1:0:793:G:H5'  | 1.90                     | 0.71              |
| 1:0:1807:A:N3   | 1:0:1809:G:N7  | 2.38                     | 0.71              |
| 1:0:243:G:H2'   | 1:0:244:C:C4'  | 2.20                     | 0.71              |
| 1:0:322:A:H8    | 1:0:343:A:C5   | 2.08                     | 0.71              |
| 1:0:540:G:O6    | 1:0:2006:G:OP1 | 2.07                     | 0.71              |
| 1:0:2770:A:O5'  | 1:0:2770:A:H8  | 1.73                     | 0.71              |
| 1:0:1458:A:H3'  | 1:0:1459:U:C5' | 2.21                     | 0.71              |
| 1:0:693:A:H2'   | 1:0:694:G:C8   | 2.25                     | 0.71              |
| 1:0:1673:C:H2'  | 1:0:1674:C:C6  | 2.26                     | 0.71              |
| 1:0:659:G:H2'   | 1:0:660:G:C8   | 2.24                     | 0.71              |
| 1:0:1901:A:N3   | 1:0:1901:A:H2' | 2.05                     | 0.71              |
| 1:0:2185:U:H2'  | 1:0:2186:G:H8  | 1.53                     | 0.71              |
| 1:0:2484:G:O2'  | 1:0:2485:U:H5' | 1.90                     | 0.71              |
| 1:0:1436:G:H2'  | 1:0:1437:A:O4' | 1.91                     | 0.71              |
| 1:0:2644:A:H2'  | 1:0:2645:C:C6  | 2.25                     | 0.71              |
| 1:0:1900:U:H2'  | 1:0:1901:A:C5' | 2.21                     | 0.71              |
| 1:0:460:U:O4    | 1:0:592:G:H1'  | 1.91                     | 0.71              |
| 1:0:2076:G:H21  | 1:0:2181:A:H61 | 1.38                     | 0.71              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2204:A:O2'  | 1:0:2205:C:OP2  | 2.08                     | 0.71              |
| 1:0:1002:C:OP2  | 1:0:1200:G:OP2  | 2.08                     | 0.71              |
| 1:0:1286:U:H4'  | 1:0:1288:A:OP2  | 1.91                     | 0.71              |
| 1:0:1491:C:H42  | 1:0:1532:A:H61  | 1.39                     | 0.70              |
| 1:0:2431:C:N3   | 1:0:2432:A:C5   | 2.59                     | 0.70              |
| 1:0:789:G:O2'   | 1:0:790:A:OP2   | 2.09                     | 0.70              |
| 1:0:2689:C:C2'  | 1:0:2690:A:O5'  | 2.39                     | 0.70              |
| 1:0:127:C:O2'   | 1:0:128:C:H5'   | 1.91                     | 0.70              |
| 1:0:926:C:H2'   | 1:0:927:C:H5'   | 1.73                     | 0.70              |
| 1:0:2698:G:H2'  | 1:0:2699:G:C8   | 2.26                     | 0.70              |
| 1:0:68:C:HO2'   | 1:0:72:A:HO2'   | 1.33                     | 0.70              |
| 1:0:1252:C:H2'  | 1:0:1253:C:H5'' | 1.71                     | 0.70              |
| 1:0:790:A:H2'   | 1:0:791:G:C8    | 2.26                     | 0.70              |
| 1:0:939:C:N3    | 1:0:940:G:C6    | 2.59                     | 0.70              |
| 1:0:2309:G:H2'  | 1:0:2310:G:O4'  | 1.91                     | 0.70              |
| 1:0:2484:G:H1'  | 3:0:0:G34:H182  | 1.72                     | 0.70              |
| 1:0:2223:U:O2'  | 1:0:2224:U:H5'  | 1.91                     | 0.70              |
| 1:0:1153:A:O2'  | 1:0:1154:A:H5'' | 1.91                     | 0.70              |
| 1:0:2210:C:H2'  | 1:0:2211:U:O4'  | 1.91                     | 0.70              |
| 1:0:2560:G:H22  | 1:0:2589:C:H5   | 1.40                     | 0.70              |
| 1:0:1427:G:OP2  | 1:0:1428:G:N1   | 2.25                     | 0.70              |
| 1:0:1978:U:H3'  | 1:0:1979:C:H5'' | 1.73                     | 0.70              |
| 1:0:2261:G:H4'  | 1:0:2262:C:OP2  | 1.92                     | 0.70              |
| 1:0:2861:A:H2'  | 1:0:2862:G:C8   | 2.26                     | 0.70              |
| 1:0:1582:A:HO2' | 1:0:1583:A:P    | 2.13                     | 0.70              |
| 1:0:1177:U:N3   | 1:0:1197:U:O2   | 2.24                     | 0.70              |
| 1:0:539:A:N6    | 1:0:2024:U:C2   | 2.59                     | 0.70              |
| 1:0:2691:C:O2'  | 1:0:2692:A:C2   | 2.42                     | 0.70              |
| 1:0:170:U:H2'   | 1:0:171:G:C8    | 2.26                     | 0.70              |
| 1:0:942:U:H2'   | 1:0:943:U:O4'   | 1.89                     | 0.70              |
| 1:0:929:A:H5''  | 1:0:2247:A:N1   | 2.05                     | 0.70              |
| 1:0:1464:A:H61  | 1:0:1477:C:H42  | 1.38                     | 0.70              |
| 1:0:2069:U:H2'  | 1:0:2070:G:C8   | 2.27                     | 0.70              |
| 1:0:972:C:C2    | 1:0:2014:A:C2   | 2.79                     | 0.70              |
| 1:0:2015:G:N2   | 1:0:2038:C:N3   | 2.39                     | 0.70              |
| 1:0:698:A:C5'   | 1:0:700:C:H41   | 2.05                     | 0.70              |
| 1:0:2198:U:H2'  | 1:0:2199:C:O2'  | 1.92                     | 0.70              |
| 1:0:873:U:H2'   | 1:0:874:A:H5'   | 1.73                     | 0.70              |
| 1:0:1315:A:H5'' | 1:0:1316:G:OP2  | 1.90                     | 0.70              |
| 1:0:825:C:H1'   | 1:0:1263:G:C2   | 2.27                     | 0.70              |
| 1:0:697:G:C6    | 1:0:788:G:N7    | 2.60                     | 0.70              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:224:G:C6    | 1:0:229:G:O6    | 2.45                     | 0.70              |
| 1:0:1437:A:O2'  | 1:0:1515:U:H4'  | 1.90                     | 0.70              |
| 1:0:885:A:H2'   | 1:0:886:A:C8    | 2.24                     | 0.70              |
| 1:0:2861:A:H2'  | 1:0:2862:G:H8   | 1.55                     | 0.70              |
| 1:0:387:A:C4    | 1:0:388:G:C8    | 2.79                     | 0.70              |
| 1:0:2727:G:H2'  | 1:0:2728:A:H5'' | 1.73                     | 0.70              |
| 1:0:698:A:C4'   | 1:0:700:C:H41   | 2.04                     | 0.70              |
| 1:0:1749:G:O2'  | 1:0:1750:A:OP1  | 2.09                     | 0.70              |
| 1:0:1250:A:O2'  | 1:0:1251:G:O4'  | 2.09                     | 0.70              |
| 1:0:216:U:H2'   | 1:0:217:U:O4'   | 1.92                     | 0.70              |
| 1:0:1908:C:H2'  | 1:0:1909:U:C4'  | 2.21                     | 0.70              |
| 1:0:2826:C:H2'  | 1:0:2827:G:C5'  | 2.22                     | 0.69              |
| 1:0:66:U:H1'    | 1:0:87:G:N2     | 2.07                     | 0.69              |
| 1:0:1541:G:N2   | 1:0:1562:G:N1   | 2.40                     | 0.69              |
| 1:0:1043:A:H2   | 1:0:1133:G:H22  | 1.39                     | 0.69              |
| 1:0:1151:U:H5'' | 1:0:1153:A:OP1  | 1.92                     | 0.69              |
| 1:0:1893:G:H2'  | 1:0:1894:U:C5   | 2.27                     | 0.69              |
| 1:0:2044:G:C2   | 1:0:2046:C:C4   | 2.80                     | 0.69              |
| 1:0:2668:U:O2   | 1:0:2693:U:H5'' | 1.92                     | 0.69              |
| 1:0:2769:C:H2'  | 1:0:2867:G:N2   | 2.05                     | 0.69              |
| 1:0:48:A:N3     | 1:0:48:A:H2'    | 2.06                     | 0.69              |
| 1:0:1088:A:H2'  | 1:0:1089:C:O4'  | 1.92                     | 0.69              |
| 1:0:1216:G:O2'  | 1:0:1217:U:H5'  | 1.91                     | 0.69              |
| 1:0:242:A:H62   | 1:0:441:A:H8    | 1.38                     | 0.69              |
| 1:0:2790:C:H2'  | 1:0:2791:C:H6   | 1.57                     | 0.69              |
| 1:0:149:A:O2'   | 1:0:150:A:H5'   | 1.92                     | 0.69              |
| 1:0:520:C:O2    | 1:0:520:C:H2'   | 1.92                     | 0.69              |
| 1:0:171:G:H2'   | 1:0:172:A:H5'   | 1.74                     | 0.69              |
| 1:0:1151:U:H5'  | 1:0:1153:A:O4'  | 1.92                     | 0.69              |
| 1:0:133:C:H2'   | 1:0:134:G:O4'   | 1.93                     | 0.69              |
| 1:0:1336:G:O6   | 1:0:1337:G:C6   | 2.46                     | 0.69              |
| 1:0:1066:G:H3'  | 1:0:1067:G:H4'  | 1.73                     | 0.69              |
| 1:0:2761:A:H5'' | 1:0:2762:G:H5'  | 1.75                     | 0.69              |
| 1:0:2641:A:H2'  | 1:0:2642:G:O4'  | 1.92                     | 0.69              |
| 1:0:1564:U:O2'  | 1:0:1565:G:H5'  | 1.93                     | 0.69              |
| 1:0:1658:A:N6   | 1:0:1659:G:C2   | 2.61                     | 0.69              |
| 1:0:2500:C:O2'  | 1:0:2543:A:H1'  | 1.93                     | 0.69              |
| 1:0:13:A:O2'    | 1:0:14:A:C5'    | 2.39                     | 0.69              |
| 1:0:847:C:H41   | 1:0:955:G:N2    | 1.90                     | 0.69              |
| 1:0:67:G:C6     | 1:0:72:A:H2     | 2.09                     | 0.69              |
| 1:0:2564:U:C2'  | 1:0:2564:U:O2   | 2.39                     | 0.69              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:987:G:H2'   | 1:0:988:G:H8   | 1.58                     | 0.69              |
| 1:0:1054:C:H2'  | 1:0:1055:A:H5' | 1.75                     | 0.69              |
| 1:0:340:G:OP2   | 1:0:340:G:H8   | 1.74                     | 0.69              |
| 1:0:104:C:H2'   | 1:0:105:G:H5'' | 1.73                     | 0.69              |
| 1:0:1199:U:H5'  | 1:0:1199:U:C6  | 2.28                     | 0.69              |
| 1:0:2496:C:O2'  | 1:0:2497:A:H3' | 1.93                     | 0.69              |
| 1:0:2563:U:H5'' | 1:0:2564:U:OP2 | 1.92                     | 0.69              |
| 1:0:640:C:H5''  | 1:0:660:G:O2'  | 1.92                     | 0.69              |
| 1:0:2708:U:H2'  | 1:0:2709:C:H6  | 1.57                     | 0.69              |
| 1:0:308:C:C2'   | 1:0:309:G:H5'  | 2.23                     | 0.69              |
| 1:0:141:G:O2'   | 1:0:142:U:H5'  | 1.92                     | 0.69              |
| 1:0:859:U:H1'   | 1:0:860:U:N3   | 2.08                     | 0.69              |
| 1:0:2306:A:H2'  | 1:0:2307:A:C8  | 2.28                     | 0.69              |
| 1:0:132:U:H2'   | 1:0:133:C:C6   | 2.27                     | 0.69              |
| 1:0:1779:C:H2'  | 1:0:1780:A:C8  | 2.27                     | 0.69              |
| 1:0:1483:G:N2   | 1:0:1540:C:H1' | 2.08                     | 0.69              |
| 1:0:644:A:C2'   | 1:0:645:G:H5'  | 2.23                     | 0.69              |
| 1:0:1359:G:C8   | 1:0:1359:G:H5' | 2.27                     | 0.69              |
| 1:0:822:G:O2'   | 1:0:823:U:H5'  | 1.93                     | 0.69              |
| 1:0:1783:G:H2'  | 1:0:1784:C:O4' | 1.92                     | 0.69              |
| 1:0:2020:G:H2'  | 1:0:2021:G:C8  | 2.28                     | 0.69              |
| 1:0:583:C:O2'   | 1:0:584:A:OP2  | 2.10                     | 0.69              |
| 1:0:693:A:H2'   | 1:0:694:G:H8   | 1.58                     | 0.69              |
| 1:0:1618:U:OP1  | 1:0:1618:U:C5  | 2.46                     | 0.69              |
| 1:0:172:A:N3    | 1:0:227:G:N2   | 2.41                     | 0.69              |
| 1:0:918:A:C2'   | 1:0:919:U:H5'' | 2.18                     | 0.69              |
| 1:0:1150:C:O3'  | 1:0:1153:A:H5' | 1.93                     | 0.69              |
| 1:0:2040:A:O2'  | 1:0:2041:A:H5' | 1.92                     | 0.68              |
| 1:0:2044:G:N2   | 1:0:2046:C:C2  | 2.62                     | 0.68              |
| 1:0:1187:A:H3'  | 1:0:1189:G:O6  | 1.93                     | 0.68              |
| 1:0:109:A:H3'   | 1:0:110:U:H5'' | 1.74                     | 0.68              |
| 1:0:2696:A:O2'  | 1:0:2697:G:H5' | 1.94                     | 0.68              |
| 1:0:1278:A:HO2' | 1:0:1279:G:C5' | 2.01                     | 0.68              |
| 1:0:65:C:H2'    | 1:0:66:U:O4'   | 1.93                     | 0.68              |
| 1:0:1251:G:O2'  | 1:0:1252:C:H5' | 1.94                     | 0.68              |
| 1:0:513:A:O2'   | 1:0:514:G:H5'' | 1.92                     | 0.68              |
| 1:0:1854:G:H2'  | 1:0:1855:G:H8  | 1.58                     | 0.68              |
| 1:0:600:G:H2'   | 1:0:601:A:H5'  | 1.73                     | 0.68              |
| 1:0:804:C:O2    | 1:0:804:C:H2'  | 1.92                     | 0.68              |
| 1:0:1326:U:O3'  | 1:0:1345:G:H5' | 1.93                     | 0.68              |
| 1:0:976:C:O4'   | 1:0:2252:A:N3  | 2.27                     | 0.68              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:48:A:H4'    | 1:0:49:U:H5''   | 1.75                     | 0.68              |
| 1:0:2291:U:H2'  | 1:0:2292:C:C6   | 2.28                     | 0.68              |
| 1:0:13:A:O2'    | 1:0:14:A:P      | 2.52                     | 0.68              |
| 1:0:177:U:O2    | 1:0:178:C:C6    | 2.46                     | 0.68              |
| 1:0:66:U:C2     | 1:0:67:G:N7     | 2.61                     | 0.68              |
| 1:0:1466:C:H2'  | 1:0:1467:U:C1'  | 2.24                     | 0.68              |
| 1:0:1067:G:O6   | 1:0:1112:U:H3'  | 1.93                     | 0.68              |
| 1:0:2424:G:O2'  | 1:0:2425:G:H5'  | 1.93                     | 0.68              |
| 1:0:219:G:H2'   | 1:0:220:U:OP2   | 1.93                     | 0.68              |
| 1:0:1692:C:O2'  | 1:0:1693:A:H5'  | 1.94                     | 0.68              |
| 1:0:2081:U:H2'  | 1:0:2082:C:H5'' | 1.75                     | 0.68              |
| 1:0:2085:G:H2'  | 1:0:2086:U:O4'  | 1.94                     | 0.68              |
| 1:0:1772:C:HO2' | 1:0:1773:C:P    | 2.17                     | 0.68              |
| 1:0:500:G:C5    | 1:0:1297:A:C2   | 2.81                     | 0.68              |
| 1:0:987:G:H2'   | 1:0:988:G:C8    | 2.29                     | 0.68              |
| 1:0:1804:U:H2'  | 1:0:1805:G:C8   | 2.29                     | 0.68              |
| 1:0:665:A:H3'   | 1:0:666:U:H5''  | 1.76                     | 0.68              |
| 1:0:2594:U:C6   | 1:0:2594:U:H5'  | 2.28                     | 0.68              |
| 1:0:2526:U:O2'  | 1:0:2527:G:H5'  | 1.94                     | 0.68              |
| 1:0:1502:G:O2'  | 1:0:1503:G:H5'  | 1.94                     | 0.68              |
| 1:0:787:A:C4    | 1:0:788:G:N7    | 2.61                     | 0.68              |
| 1:0:831:G:C2'   | 1:0:832:A:H5''  | 2.23                     | 0.68              |
| 1:0:1685:A:H4'  | 1:0:1686:A:O5'  | 1.94                     | 0.68              |
| 1:0:2172:U:O2'  | 1:0:2173:G:H5'  | 1.94                     | 0.68              |
| 1:0:13:A:HO2'   | 1:0:14:A:P      | 2.16                     | 0.68              |
| 1:0:687:G:O2'   | 1:0:688:A:H5'   | 1.94                     | 0.68              |
| 1:0:953:G:C2'   | 1:0:954:U:H5'   | 2.23                     | 0.68              |
| 1:0:2778:U:H2'  | 1:0:2779:C:H5'  | 1.76                     | 0.68              |
| 1:0:411:C:C3'   | 1:0:412:U:H5''  | 2.23                     | 0.68              |
| 1:0:2417:U:O2'  | 1:0:2419:C:OP1  | 2.12                     | 0.68              |
| 1:0:751:G:C2    | 1:0:752:G:H1'   | 2.29                     | 0.68              |
| 1:0:777:A:O2'   | 1:0:778:G:OP1   | 2.12                     | 0.68              |
| 1:0:2197:U:H2'  | 1:0:2198:U:H5   | 1.58                     | 0.68              |
| 1:0:2779:C:H2'  | 1:0:2780:A:O4'  | 1.93                     | 0.68              |
| 1:0:1807:A:H1'  | 1:0:1809:G:C8   | 2.29                     | 0.68              |
| 1:0:2080:U:H2'  | 1:0:2081:U:C6   | 2.29                     | 0.68              |
| 1:0:2172:U:H2'  | 1:0:2173:G:C8   | 2.25                     | 0.68              |
| 1:0:1032:A:H3'  | 1:0:1032:A:C8   | 2.29                     | 0.68              |
| 1:0:1363:C:H2'  | 1:0:1364:C:H6   | 1.57                     | 0.68              |
| 1:0:2484:G:H2'  | 1:0:2485:U:H5'  | 1.76                     | 0.67              |
| 1:0:1939:U:H1'  | 1:0:2531:U:OP1  | 1.93                     | 0.67              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2352:A:H2'  | 1:0:2353:G:H8  | 1.58                     | 0.67              |
| 1:0:12:U:O2'    | 1:0:13:A:H5'   | 1.94                     | 0.67              |
| 1:0:2007:G:O2'  | 1:0:2008:C:H5' | 1.95                     | 0.67              |
| 1:0:2780:A:O2'  | 1:0:2781:G:H5' | 1.95                     | 0.67              |
| 1:0:1242:A:H2'  | 1:0:1243:G:C8  | 2.24                     | 0.67              |
| 1:0:1391:A:O2'  | 1:0:1392:U:O5' | 2.12                     | 0.67              |
| 1:0:193:A:C2    | 1:0:194:G:H1'  | 2.29                     | 0.67              |
| 1:0:2839:G:H2'  | 1:0:2840:U:H6  | 1.57                     | 0.67              |
| 1:0:65:C:C2'    | 1:0:66:U:H5'   | 2.24                     | 0.67              |
| 1:0:2386:G:H2'  | 1:0:2387:U:C6  | 2.30                     | 0.67              |
| 1:0:1069:G:H2'  | 1:0:1070:G:O4' | 1.94                     | 0.67              |
| 1:0:2045:A:H4'  | 1:0:2046:C:OP1 | 1.91                     | 0.67              |
| 1:0:1272:G:H2'  | 1:0:1273:G:H8  | 1.57                     | 0.67              |
| 1:0:322:A:H1'   | 1:0:343:A:H1'  | 1.75                     | 0.67              |
| 1:0:152:G:O2'   | 1:0:153:A:H5'  | 1.93                     | 0.67              |
| 1:0:509:U:H3'   | 1:0:510:G:C8   | 2.27                     | 0.67              |
| 1:0:2653:A:H2'  | 1:0:2654:A:C8  | 2.28                     | 0.67              |
| 1:0:1595:A:H2'  | 1:0:1596:A:H8  | 1.59                     | 0.67              |
| 1:0:2013:A:O2'  | 1:0:2014:A:O5' | 2.12                     | 0.67              |
| 1:0:2026:C:O5'  | 1:0:2759:U:O4  | 2.12                     | 0.67              |
| 1:0:58:C:C3'    | 1:0:59:G:H5''  | 2.15                     | 0.67              |
| 1:0:33:C:H41    | 1:0:458:G:H1'  | 1.58                     | 0.67              |
| 1:0:871:U:H2'   | 1:0:871:U:O2   | 1.93                     | 0.67              |
| 1:0:1223:G:N1   | 1:0:1250:A:N7  | 2.43                     | 0.67              |
| 1:0:941:U:H3'   | 1:0:942:U:H6   | 1.60                     | 0.67              |
| 1:0:67:G:H2'    | 1:0:68:C:O4'   | 1.94                     | 0.67              |
| 1:0:2661:G:O6   | 1:0:2708:U:C1' | 2.42                     | 0.67              |
| 1:0:746:G:N7    | 1:0:774:A:C6   | 2.63                     | 0.67              |
| 1:0:1344:C:HO2' | 1:0:1345:G:H8  | 1.41                     | 0.67              |
| 1:0:1436:G:H4'  | 1:0:1508:G:O2' | 1.95                     | 0.67              |
| 1:0:1645:U:H2'  | 1:0:1646:G:C8  | 2.30                     | 0.67              |
| 1:0:2276:C:C2'  | 1:0:2277:A:H5' | 2.24                     | 0.67              |
| 1:0:717:G:H2'   | 1:0:739:G:N2   | 2.10                     | 0.67              |
| 1:0:2698:G:H2'  | 1:0:2699:G:H8  | 1.59                     | 0.67              |
| 1:0:2197:U:H2'  | 1:0:2198:U:C5  | 2.30                     | 0.67              |
| 1:0:1515:U:H2'  | 1:0:1516:A:O4' | 1.94                     | 0.67              |
| 1:0:466:A:O2'   | 1:0:467:U:OP2  | 2.11                     | 0.67              |
| 1:0:490:A:O2'   | 1:0:491:A:C5'  | 2.43                     | 0.67              |
| 1:0:2710:C:O2'  | 1:0:2711:G:H5' | 1.95                     | 0.67              |
| 1:0:2540:A:C2'  | 1:0:2541:U:O5' | 2.42                     | 0.67              |
| 1:0:211:U:O2    | 1:0:211:U:H2'  | 1.93                     | 0.67              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2872:U:H2'  | 1:0:2873:G:C8   | 2.29                     | 0.67              |
| 1:0:538:A:C3'   | 1:0:538:A:C8    | 2.78                     | 0.67              |
| 1:0:579:G:H4'   | 1:0:994:A:C2    | 2.30                     | 0.67              |
| 1:0:2841:U:O2   | 1:0:2843:A:H1'  | 1.95                     | 0.67              |
| 1:0:1971:C:O2'  | 1:0:1972:G:H5'  | 1.95                     | 0.67              |
| 1:0:1055:A:N1   | 1:0:1122:A:H5'  | 2.09                     | 0.67              |
| 1:0:862:A:H2'   | 1:0:863:C:H6    | 1.60                     | 0.67              |
| 1:0:1695:U:O2'  | 1:0:1696:C:H5'  | 1.94                     | 0.67              |
| 1:0:1670:G:OP1  | 1:0:2797:G:N2   | 2.28                     | 0.67              |
| 1:0:1198:C:H5'' | 1:0:1199:U:H4'  | 1.73                     | 0.67              |
| 1:0:831:G:H5'   | 1:0:852:U:OP1   | 1.94                     | 0.67              |
| 1:0:1323:G:N7   | 1:0:1324:G:N2   | 2.42                     | 0.67              |
| 1:0:1898:U:H3'  | 1:0:1899:A:H8   | 1.59                     | 0.67              |
| 1:0:638:A:OP2   | 1:0:638:A:H4'   | 1.95                     | 0.67              |
| 1:0:306:G:H2'   | 1:0:307:C:H6    | 1.60                     | 0.67              |
| 1:0:2812:A:H2'  | 1:0:2813:G:H8   | 1.60                     | 0.67              |
| 1:0:1281:A:H1'  | 1:0:1996:A:N6   | 2.09                     | 0.66              |
| 1:0:1458:A:H3'  | 1:0:1459:U:H5'  | 1.75                     | 0.66              |
| 1:0:2713:A:O2'  | 1:0:2714:A:H5'  | 1.96                     | 0.66              |
| 1:0:1851:A:H2'  | 1:0:1852:G:O4'  | 1.95                     | 0.66              |
| 1:0:2562:G:C5   | 1:0:2563:U:C5   | 2.83                     | 0.66              |
| 1:0:1862:C:H2'  | 1:0:1863:U:O4'  | 1.94                     | 0.66              |
| 1:0:451:A:H2'   | 1:0:452:G:C8    | 2.30                     | 0.66              |
| 1:0:2553:G:N1   | 1:0:2554:C:C2   | 2.63                     | 0.66              |
| 1:0:541:C:N4    | 1:0:572:G:O4'   | 2.29                     | 0.66              |
| 1:0:813:A:HO2'  | 1:0:814:G:H8    | 1.42                     | 0.66              |
| 1:0:843:G:H1'   | 1:0:2427:A:C6   | 2.30                     | 0.66              |
| 1:0:1993:G:O2'  | 1:0:1994:U:H5'  | 1.93                     | 0.66              |
| 1:0:1303:U:H2'  | 1:0:1304:U:C6   | 2.30                     | 0.66              |
| 1:0:2796:A:OP2  | 2:B:110:GLY:CA  | 2.43                     | 0.66              |
| 1:0:1538:A:H2'  | 1:0:1539:U:C6   | 2.31                     | 0.66              |
| 1:0:2240:C:H2'  | 1:0:2241:U:H5'  | 1.78                     | 0.66              |
| 1:0:1253:C:H6   | 1:0:1253:C:H5'  | 1.60                     | 0.66              |
| 1:0:677:G:O2'   | 1:0:678:G:H5'   | 1.95                     | 0.66              |
| 1:0:699:G:H5'   | 1:0:700:C:OP2   | 1.93                     | 0.66              |
| 1:0:233:A:H2'   | 1:0:234:C:C6    | 2.30                     | 0.66              |
| 1:0:1440:G:H3'  | 1:0:1441:A:H5'' | 0.84                     | 0.66              |
| 1:0:1683:G:H8   | 1:0:1683:G:H5'  | 1.60                     | 0.66              |
| 1:0:2083:G:H2'  | 1:0:2084:G:H8   | 1.59                     | 0.66              |
| 1:0:114:C:H2'   | 1:0:115:G:O4'   | 1.95                     | 0.66              |
| 1:0:51:A:C2     | 1:0:155:G:H1'   | 2.30                     | 0.66              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1109:A:H2' | 1:0:1110:G:O4'  | 1.96                     | 0.66              |
| 1:0:104:C:C2'  | 1:0:105:G:H5''  | 2.25                     | 0.66              |
| 1:0:2492:G:H2' | 1:0:2493:U:C6   | 2.28                     | 0.66              |
| 1:0:787:A:O2'  | 1:0:790:A:N3    | 2.27                     | 0.66              |
| 1:0:457:C:O2'  | 1:0:458:G:H5'   | 1.96                     | 0.66              |
| 1:0:1947:G:H2' | 1:0:1950:C:OP1  | 1.95                     | 0.66              |
| 1:0:503:G:H2'  | 1:0:504:G:O4'   | 1.95                     | 0.66              |
| 1:0:2047:C:N3  | 1:0:2425:G:N2   | 2.42                     | 0.66              |
| 1:0:787:A:C5   | 1:0:788:G:N7    | 2.64                     | 0.66              |
| 1:0:701:U:O2   | 1:0:800:U:H4'   | 1.95                     | 0.66              |
| 1:0:2074:U:H3' | 1:0:2075:U:C5'  | 2.25                     | 0.66              |
| 1:0:2437:G:H2' | 1:0:2469:G:H1   | 1.59                     | 0.66              |
| 1:0:600:G:C2'  | 1:0:601:A:H5'   | 2.25                     | 0.66              |
| 1:0:788:G:H22  | 1:0:800:U:C3'   | 2.03                     | 0.66              |
| 1:0:815:A:H3'  | 1:0:816:U:C5    | 2.31                     | 0.66              |
| 1:0:2194:A:C3' | 1:0:2195:C:H5'' | 2.26                     | 0.66              |
| 1:0:1585:A:H2' | 1:0:1586:A:C8   | 2.31                     | 0.66              |
| 1:0:1062:G:N2  | 1:0:2731:G:N1   | 2.42                     | 0.66              |
| 1:0:891:A:H1'  | 1:0:911:A:N1    | 2.11                     | 0.66              |
| 1:0:2474:G:H2' | 1:0:2475:C:O4'  | 1.96                     | 0.66              |
| 1:0:813:A:O2'  | 1:0:814:G:H8    | 1.79                     | 0.66              |
| 1:0:1655:C:OP1 | 1:0:2690:A:H5'  | 1.96                     | 0.66              |
| 1:0:1045:G:H2' | 1:0:1046:U:C6   | 2.31                     | 0.66              |
| 1:0:330:C:H2'  | 1:0:331:U:O4'   | 1.95                     | 0.66              |
| 1:0:2054:A:H2' | 1:0:2055:G:H8   | 1.59                     | 0.66              |
| 1:0:995:A:O2'  | 1:0:996:C:OP1   | 2.13                     | 0.66              |
| 1:0:1384:G:N2  | 1:0:1385:C:H41  | 1.94                     | 0.66              |
| 1:0:222:G:O2'  | 1:0:223:C:H5'   | 1.96                     | 0.66              |
| 1:0:224:G:N2   | 1:0:227:G:H3'   | 2.11                     | 0.66              |
| 1:0:460:U:C4   | 1:0:592:G:H1'   | 2.31                     | 0.66              |
| 1:0:2355:A:C2  | 1:0:2356:A:H1'  | 2.31                     | 0.66              |
| 1:0:1608:U:H2' | 1:0:1609:G:H8   | 1.59                     | 0.66              |
| 1:0:1629:G:C2  | 1:0:1633:C:C2   | 2.84                     | 0.65              |
| 1:0:1801:C:H3' | 1:0:1802:A:C5'  | 2.27                     | 0.65              |
| 1:0:2551:A:OP1 | 1:0:2553:G:H4'  | 1.96                     | 0.65              |
| 1:0:1666:G:H2' | 1:0:1667:A:C8   | 2.30                     | 0.65              |
| 1:0:1514:C:H5' | 1:0:1593:C:H5'  | 1.79                     | 0.65              |
| 1:0:1436:G:H22 | 1:0:1593:C:H1'  | 1.60                     | 0.65              |
| 1:0:2514:G:N2  | 1:0:2515:G:C1'  | 2.59                     | 0.65              |
| 1:0:1255:A:H2' | 1:0:1256:C:H6   | 1.59                     | 0.65              |
| 1:0:2454:C:C2' | 1:0:2455:A:H5'  | 2.26                     | 0.65              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2455:A:N3   | 1:0:2460:G:N2   | 2.43                     | 0.65              |
| 1:0:1669:A:N6   | 1:0:1670:G:N2   | 2.44                     | 0.65              |
| 1:0:1422:C:H2'  | 1:0:1423:A:H8   | 1.61                     | 0.65              |
| 1:0:2282:G:H2'  | 1:0:2283:G:C8   | 2.31                     | 0.65              |
| 1:0:1261:G:O2'  | 1:0:1262:U:OP1  | 2.14                     | 0.65              |
| 1:0:1653:C:O2   | 1:0:1751:A:H2   | 1.78                     | 0.65              |
| 1:0:12:U:C2'    | 1:0:13:A:H5'    | 2.26                     | 0.65              |
| 1:0:541:C:O2    | 1:0:2018:G:N3   | 2.29                     | 0.65              |
| 1:0:1279:G:C2'  | 1:0:1280:U:OP2  | 2.45                     | 0.65              |
| 1:0:1629:G:H1   | 1:0:1633:C:H2'  | 1.62                     | 0.65              |
| 1:0:2608:A:N6   | 1:0:2869:U:C2   | 2.65                     | 0.65              |
| 1:0:844:G:N2    | 1:0:845:U:H1'   | 2.11                     | 0.65              |
| 1:0:1563:U:H2'  | 1:0:1564:U:C5   | 2.31                     | 0.65              |
| 1:0:546:A:H2'   | 1:0:547:U:C6    | 2.31                     | 0.65              |
| 1:0:2074:U:H3'  | 1:0:2075:U:H5'' | 1.78                     | 0.65              |
| 1:0:2588:U:H5'  | 1:0:2589:C:OP2  | 1.97                     | 0.65              |
| 1:0:13:A:C2     | 1:0:15:G:C6     | 2.85                     | 0.65              |
| 1:0:1773:C:O2   | 1:0:2587:G:O2'  | 2.10                     | 0.65              |
| 1:0:2027:C:C2   | 1:0:2604:G:N2   | 2.63                     | 0.65              |
| 1:0:1624:A:N6   | 1:0:1627:C:C2   | 2.64                     | 0.65              |
| 1:0:57:G:C6     | 1:0:72:A:C6     | 2.85                     | 0.65              |
| 1:0:516:G:HO2'  | 1:0:517:A:H8    | 1.45                     | 0.65              |
| 1:0:1404:C:C4   | 1:0:1407:G:N7   | 2.65                     | 0.65              |
| 1:0:1819:U:H4'  | 1:0:1953:A:O2'  | 1.97                     | 0.65              |
| 1:0:1068:A:H2'  | 1:0:1069:G:O4'  | 1.97                     | 0.65              |
| 1:0:1082:G:H1   | 1:0:1103:C:H41  | 1.44                     | 0.65              |
| 1:0:2049:C:C4   | 1:0:2050:G:N7   | 2.64                     | 0.65              |
| 1:0:2229:G:N2   | 1:0:2475:C:H4'  | 2.12                     | 0.65              |
| 1:0:971:A:H2'   | 1:0:973:U:H5'   | 1.76                     | 0.65              |
| 1:0:1514:C:OP2  | 1:0:1593:C:H5'' | 1.97                     | 0.65              |
| 1:0:1303:U:H2'  | 1:0:1304:U:H6   | 1.60                     | 0.65              |
| 1:0:2293:G:H2'  | 1:0:2294:U:C6   | 2.31                     | 0.65              |
| 1:0:1662:G:H5'' | 1:0:1663:C:H5'  | 1.79                     | 0.65              |
| 1:0:2553:G:O2'  | 1:0:2554:C:H5'  | 1.97                     | 0.65              |
| 1:0:835:U:O4    | 1:0:955:G:H1'   | 1.97                     | 0.65              |
| 1:0:2498:U:C4'  | 1:0:2499:C:OP1  | 2.39                     | 0.65              |
| 1:0:1871:G:N3   | 1:0:1871:G:C3'  | 2.58                     | 0.65              |
| 1:0:876:A:H2'   | 1:0:877:G:C8    | 2.32                     | 0.65              |
| 1:0:1016:C:C2   | 1:0:1154:A:C5   | 2.85                     | 0.65              |
| 1:0:2047:C:H1'  | 1:0:2429:A:C2   | 2.31                     | 0.65              |
| 1:0:71:A:O5'    | 1:0:71:A:H8     | 1.79                     | 0.65              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1404:C:H41 | 1:0:1408:A:H62  | 1.42                     | 0.65              |
| 1:0:962:C:H2'  | 1:0:963:G:H8    | 1.61                     | 0.65              |
| 1:0:788:G:H4'  | 1:0:790:A:C4    | 2.31                     | 0.65              |
| 1:0:1271:C:H2' | 1:0:1272:G:H8   | 1.61                     | 0.65              |
| 1:0:930:A:H5'  | 1:0:931:G:C8    | 2.31                     | 0.65              |
| 1:0:322:A:N3   | 1:0:322:A:H2'   | 2.12                     | 0.65              |
| 1:0:600:G:O2'  | 1:0:601:A:OP1   | 2.14                     | 0.65              |
| 1:0:1710:U:H4' | 1:0:1711:C:OP2  | 1.96                     | 0.65              |
| 1:0:1002:C:H5' | 1:0:1199:U:OP1  | 1.96                     | 0.65              |
| 1:0:805:G:N7   | 1:0:2419:C:C1'  | 2.60                     | 0.65              |
| 1:0:2432:A:H4' | 1:0:2551:A:O2'  | 1.96                     | 0.65              |
| 1:0:2484:G:O2' | 1:0:2485:U:H5'' | 1.97                     | 0.65              |
| 1:0:2691:C:C3' | 1:0:2692:A:C5'  | 2.75                     | 0.65              |
| 1:0:2824:C:O2  | 1:0:2843:A:C8   | 2.50                     | 0.65              |
| 1:0:684:C:H2'  | 1:0:685:U:C6    | 2.32                     | 0.65              |
| 1:0:1082:G:H1  | 1:0:1103:C:N4   | 1.95                     | 0.65              |
| 1:0:2066:G:O5' | 1:0:2066:G:H8   | 1.79                     | 0.65              |
| 1:0:1772:C:O2' | 1:0:1773:C:O5'  | 2.15                     | 0.64              |
| 1:0:1337:G:O3' | 1:0:1632:A:N7   | 2.30                     | 0.64              |
| 1:0:839:U:OP1  | 1:0:2408:G:OP2  | 2.14                     | 0.64              |
| 1:0:566:U:O2'  | 1:0:567:G:H5'   | 1.97                     | 0.64              |
| 1:0:1611:U:O2' | 1:0:1612:U:H5'  | 1.96                     | 0.64              |
| 1:0:773:G:C2'  | 1:0:774:A:H5'   | 2.26                     | 0.64              |
| 1:0:833:A:O2'  | 1:0:834:A:H5'   | 1.97                     | 0.64              |
| 1:0:976:C:H1'  | 1:0:2252:A:C2   | 2.32                     | 0.64              |
| 1:0:1440:G:O5' | 1:0:1440:G:H8   | 1.79                     | 0.64              |
| 1:0:1685:A:N7  | 1:0:1691:G:C6   | 2.66                     | 0.64              |
| 1:0:1272:G:H2' | 1:0:1273:G:C8   | 2.32                     | 0.64              |
| 1:0:2501:U:H5' | 1:0:2502:G:OP2  | 1.97                     | 0.64              |
| 1:0:879:A:H2'  | 1:0:879:A:N3    | 2.12                     | 0.64              |
| 1:0:2404:A:O2' | 1:0:2405:A:OP2  | 2.14                     | 0.64              |
| 1:0:805:G:N7   | 1:0:2419:C:H1'  | 2.13                     | 0.64              |
| 1:0:941:U:H2'  | 1:0:942:U:C1'   | 2.28                     | 0.64              |
| 1:0:468:A:O2'  | 1:0:469:G:H4'   | 1.98                     | 0.64              |
| 1:0:2642:G:O2' | 1:0:2643:G:H5'  | 1.98                     | 0.64              |
| 1:0:1477:C:H5' | 1:0:1478:U:OP2  | 1.97                     | 0.64              |
| 1:0:1191:G:H2' | 1:0:1192:A:H8   | 1.62                     | 0.64              |
| 1:0:1548:U:H2' | 1:0:1549:C:C5   | 2.32                     | 0.64              |
| 1:0:697:G:C6   | 1:0:788:G:C5    | 2.85                     | 0.64              |
| 1:0:697:G:N2   | 1:0:807:A:N3    | 2.46                     | 0.64              |
| 1:0:66:U:H2'   | 1:0:67:G:N7     | 2.12                     | 0.64              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:636:G:H2'  | 1:0:637:G:H5'  | 1.79                     | 0.64              |
| 1:0:339:U:O2   | 1:0:339:U:H2'  | 1.98                     | 0.64              |
| 1:0:343:A:N6   | 1:0:346:C:C2   | 2.65                     | 0.64              |
| 1:0:1791:C:C4  | 1:0:1810:U:O2  | 2.50                     | 0.64              |
| 1:0:2483:U:C5  | 3:0:0:G34:H12  | 2.33                     | 0.64              |
| 1:0:1279:G:C1' | 1:0:1280:U:C5  | 2.67                     | 0.64              |
| 1:0:2195:C:H2' | 1:0:2196:U:H5' | 1.78                     | 0.64              |
| 1:0:1770:U:O2  | 1:0:1774:A:C5  | 2.50                     | 0.64              |
| 1:0:873:U:H1'  | 1:0:2246:A:C5' | 2.23                     | 0.64              |
| 1:0:877:G:H2'  | 1:0:878:C:C6   | 2.32                     | 0.64              |
| 1:0:1645:U:H2' | 1:0:1646:G:H8  | 1.62                     | 0.64              |
| 1:0:2523:G:O2' | 1:0:2524:G:H5' | 1.98                     | 0.64              |
| 1:0:822:G:C2'  | 1:0:823:U:H5'  | 2.28                     | 0.64              |
| 1:0:2092:U:H6  | 1:0:2092:U:O5' | 1.81                     | 0.64              |
| 1:0:1572:C:H2' | 1:0:1573:G:C5' | 2.21                     | 0.64              |
| 1:0:1279:G:N2  | 1:0:1995:G:C2' | 2.60                     | 0.64              |
| 1:0:622:U:H2'  | 1:0:623:G:H5'  | 1.80                     | 0.64              |
| 1:0:594:G:H2'  | 1:0:1264:C:N4  | 2.13                     | 0.64              |
| 1:0:2200:G:H2' | 1:0:2201:G:C8  | 2.32                     | 0.64              |
| 1:0:2288:A:H2' | 1:0:2289:A:H8  | 1.62                     | 0.64              |
| 1:0:2015:G:N3  | 1:0:2015:G:H2' | 2.10                     | 0.64              |
| 1:0:219:G:N2   | 1:0:232:A:P    | 2.69                     | 0.64              |
| 1:0:2061:C:O2' | 1:0:2062:U:H5' | 1.98                     | 0.64              |
| 1:0:1770:U:C4  | 1:0:1774:A:H2' | 2.32                     | 0.64              |
| 1:0:1468:A:P   | 1:0:1468:A:H8  | 2.20                     | 0.64              |
| 1:0:1153:A:O2' | 1:0:1154:A:H3' | 1.98                     | 0.64              |
| 1:0:2431:C:H42 | 1:0:2432:A:N6  | 1.96                     | 0.64              |
| 1:0:1506:C:O2' | 1:0:1507:A:C5  | 2.51                     | 0.64              |
| 1:0:1509:A:H2' | 1:0:1510:A:H8  | 1.63                     | 0.64              |
| 1:0:573:C:H2'  | 1:0:574:C:C6   | 2.33                     | 0.64              |
| 1:0:2827:G:H2' | 1:0:2828:C:O4' | 1.98                     | 0.64              |
| 1:0:172:A:H1'  | 1:0:227:G:N2   | 2.13                     | 0.64              |
| 1:0:1166:A:H2' | 1:0:1167:A:C5' | 2.25                     | 0.64              |
| 1:0:1223:G:O2' | 1:0:1224:A:OP2 | 2.16                     | 0.64              |
| 1:0:1154:A:O2' | 1:0:1155:G:P   | 2.57                     | 0.64              |
| 1:0:2059:U:O5' | 1:0:2217:G:N2  | 2.31                     | 0.64              |
| 1:0:1062:G:N2  | 1:0:2731:G:H1  | 1.97                     | 0.64              |
| 1:0:573:C:H2'  | 1:0:574:C:H6   | 1.62                     | 0.64              |
| 1:0:362:C:H2'  | 1:0:363:G:H4'  | 1.80                     | 0.64              |
| 1:0:1912:G:H2' | 1:0:1912:G:N3  | 2.13                     | 0.64              |
| 1:0:88:G:C3'   | 1:0:89:A:H5''  | 2.09                     | 0.63              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2264:C:H2'  | 1:0:2265:A:H5' | 1.78                     | 0.63              |
| 1:0:2368:G:H5'' | 1:0:2369:U:H5' | 1.78                     | 0.63              |
| 1:0:2526:U:C4   | 1:0:2545:A:N7  | 2.65                     | 0.63              |
| 1:0:137:A:H2'   | 1:0:138:G:H5'  | 1.79                     | 0.63              |
| 1:0:2753:C:H2'  | 1:0:2754:C:H6  | 1.62                     | 0.63              |
| 1:0:698:A:H5'   | 1:0:700:C:N4   | 2.12                     | 0.63              |
| 1:0:790:A:N3    | 1:0:791:G:C8   | 2.67                     | 0.63              |
| 1:0:2693:U:H5   | 1:0:2695:C:P   | 2.20                     | 0.63              |
| 1:0:1629:G:C5   | 1:0:1633:C:C4  | 2.86                     | 0.63              |
| 1:0:1715:A:HO2' | 1:0:1716:G:P   | 2.21                     | 0.63              |
| 1:0:1356:G:H1'  | 1:0:1613:G:C2  | 2.33                     | 0.63              |
| 1:0:1459:U:N3   | 1:0:1476:G:H5' | 2.13                     | 0.63              |
| 1:0:594:G:C4    | 1:0:1264:C:N4  | 2.67                     | 0.63              |
| 1:0:1577:G:H2'  | 1:0:1578:U:H6  | 1.64                     | 0.63              |
| 1:0:2047:C:N4   | 1:0:2425:G:C6  | 2.62                     | 0.63              |
| 1:0:2487:G:C2   | 1:0:2561:G:O6  | 2.51                     | 0.63              |
| 1:0:952:A:H2'   | 1:0:953:G:O4'  | 1.98                     | 0.63              |
| 1:0:2821:G:H2'  | 1:0:2822:U:O4' | 1.99                     | 0.63              |
| 1:0:1300:A:C6   | 1:0:1301:U:N3  | 2.67                     | 0.63              |
| 1:0:219:G:O2'   | 1:0:220:U:P    | 2.57                     | 0.63              |
| 1:0:2083:G:H2'  | 1:0:2084:G:C8  | 2.33                     | 0.63              |
| 1:0:198:A:O4'   | 1:0:210:A:H1'  | 1.98                     | 0.63              |
| 1:0:520:C:N3    | 1:0:521:U:C2   | 2.66                     | 0.63              |
| 1:0:1625:A:H4'  | 1:0:1625:A:OP2 | 1.97                     | 0.63              |
| 1:0:1437:A:O2'  | 1:0:1438:G:H5' | 1.97                     | 0.63              |
| 1:0:941:U:C2'   | 1:0:942:U:O4'  | 2.44                     | 0.63              |
| 1:0:620:G:H2'   | 1:0:621:U:H6   | 1.62                     | 0.63              |
| 1:0:647:G:HO2'  | 1:0:649:G:HO2' | 1.44                     | 0.63              |
| 1:0:2163:U:H2'  | 1:0:2164:G:C8  | 2.32                     | 0.63              |
| 1:0:2288:A:H2'  | 1:0:2289:A:C8  | 2.33                     | 0.63              |
| 1:0:122:G:N2    | 1:0:124:A:H4'  | 2.14                     | 0.63              |
| 1:0:867:G:H2'   | 1:0:868:U:C6   | 2.33                     | 0.63              |
| 1:0:2274:C:O2   | 1:0:2274:C:H2' | 1.98                     | 0.63              |
| 1:0:2031:A:C2   | 1:0:2032:G:H1' | 2.34                     | 0.63              |
| 1:0:60:A:H8     | 1:0:60:A:OP1   | 1.81                     | 0.63              |
| 1:0:1766:U:O2'  | 1:0:1767:G:H5' | 1.99                     | 0.63              |
| 1:0:2335:U:O2'  | 1:0:2336:G:H5' | 1.99                     | 0.63              |
| 1:0:224:G:H22   | 1:0:227:G:H3'  | 1.62                     | 0.63              |
| 1:0:1223:G:H5'  | 1:0:1225:G:O4' | 1.97                     | 0.63              |
| 1:0:1354:A:H3'  | 1:0:1410:U:O2  | 1.99                     | 0.63              |
| 1:0:2447:G:H22  | 1:0:2460:G:H2' | 1.63                     | 0.63              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2858:A:H5'' | 1:0:2859:U:H5'  | 1.80                     | 0.63              |
| 1:0:2132:G:H2'  | 1:0:2133:G:C8   | 2.33                     | 0.63              |
| 1:0:2054:A:H2'  | 1:0:2055:G:C8   | 2.33                     | 0.63              |
| 1:0:2427:A:O2'  | 1:0:2428:U:P    | 2.56                     | 0.63              |
| 1:0:682:G:C8    | 1:0:814:G:O6    | 2.51                     | 0.63              |
| 1:0:2531:U:H2'  | 1:0:2533:U:OP2  | 1.98                     | 0.63              |
| 1:0:482:A:O2'   | 1:0:483:A:H5'   | 1.98                     | 0.63              |
| 1:0:2633:A:C2   | 1:0:2644:A:H5'' | 2.34                     | 0.63              |
| 1:0:1657:A:H5'  | 1:0:1657:A:H8   | 1.64                     | 0.63              |
| 1:0:2200:G:H2'  | 1:0:2201:G:H8   | 1.60                     | 0.63              |
| 1:0:2422:C:O2'  | 1:0:2423:G:H5'  | 1.98                     | 0.63              |
| 1:0:2827:G:O2'  | 1:0:2828:C:H5'  | 1.98                     | 0.63              |
| 1:0:2841:U:H1'  | 1:0:2843:A:O4'  | 1.99                     | 0.63              |
| 1:0:1332:G:N1   | 1:0:1333:G:N2   | 2.47                     | 0.63              |
| 1:0:1715:A:H1'  | 1:0:1717:A:O5'  | 1.98                     | 0.63              |
| 1:0:2867:G:H8   | 1:0:2867:G:OP2  | 1.81                     | 0.63              |
| 1:0:1671:A:O2'  | 1:0:1672:A:H5'  | 1.99                     | 0.63              |
| 1:0:1882:G:N2   | 1:0:1885:C:H41  | 1.96                     | 0.63              |
| 1:0:659:G:H8    | 1:0:659:G:O5'   | 1.82                     | 0.63              |
| 1:0:153:A:H2'   | 1:0:154:U:C6    | 2.34                     | 0.63              |
| 1:0:1213:U:N3   | 1:0:1260:A:H2   | 1.96                     | 0.63              |
| 1:0:1554:G:H2'  | 1:0:1555:A:O4'  | 1.98                     | 0.63              |
| 1:0:2036:G:H3'  | 1:0:2036:G:C8   | 2.33                     | 0.63              |
| 1:0:2038:C:H2'  | 1:0:2483:U:H5'  | 1.80                     | 0.63              |
| 1:0:2759:U:O4'  | 1:0:2761:A:C6   | 2.51                     | 0.63              |
| 1:0:2840:U:C4   | 1:0:2841:U:C5   | 2.87                     | 0.63              |
| 1:0:942:U:H2'   | 1:0:943:U:C4'   | 2.27                     | 0.63              |
| 1:0:67:G:C6     | 1:0:72:A:C2     | 2.87                     | 0.63              |
| 1:0:1528:C:C3'  | 1:0:1529:C:H5'' | 2.27                     | 0.63              |
| 1:0:2678:C:O2'  | 1:0:2679:G:H5'  | 1.98                     | 0.63              |
| 1:0:2484:G:C2'  | 1:0:2485:U:C5'  | 2.77                     | 0.62              |
| 1:0:2552:C:OP1  | 1:0:2553:G:OP1  | 2.17                     | 0.62              |
| 1:0:577:U:C5'   | 1:0:956:A:N6    | 2.59                     | 0.62              |
| 1:0:1949:A:O2'  | 1:0:2572:U:H5'  | 1.98                     | 0.62              |
| 1:0:492:G:O2'   | 1:0:493:A:P     | 2.57                     | 0.62              |
| 1:0:1482:U:H2'  | 1:0:1483:G:H8   | 1.64                     | 0.62              |
| 1:0:1354:A:H2'  | 1:0:1410:U:O2'  | 1.98                     | 0.62              |
| 1:0:1900:U:C2'  | 1:0:1901:A:H5'  | 2.29                     | 0.62              |
| 1:0:2806:G:H1'  | 1:0:2858:A:C2   | 2.33                     | 0.62              |
| 1:0:555:U:O2    | 1:0:555:U:H2'   | 1.98                     | 0.62              |
| 1:0:2483:U:C6   | 3:0:0:G34:H12   | 2.34                     | 0.62              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2019:C:O2'  | 1:0:2020:G:H5' | 1.99                     | 0.62              |
| 1:0:1439:G:H2'  | 1:0:1440:G:C8  | 2.34                     | 0.62              |
| 1:0:2770:A:C8   | 1:0:2770:A:O5' | 2.51                     | 0.62              |
| 1:0:2764:U:H2'  | 1:0:2765:C:C6  | 2.32                     | 0.62              |
| 1:0:2059:U:C6   | 1:0:2059:U:H5' | 2.34                     | 0.62              |
| 1:0:2274:C:H2'  | 1:0:2275:U:H5' | 1.81                     | 0.62              |
| 1:0:755:C:O2'   | 1:0:756:C:H5'  | 1.99                     | 0.62              |
| 1:0:1715:A:O2'  | 1:0:1716:G:P   | 2.57                     | 0.62              |
| 1:0:1686:A:H5'' | 1:0:1687:C:OP2 | 1.99                     | 0.62              |
| 1:0:34:U:O4     | 1:0:459:A:N6   | 2.33                     | 0.62              |
| 1:0:1039:A:N6   | 1:0:1136:G:H2' | 2.15                     | 0.62              |
| 1:0:40:U:H2'    | 1:0:41:G:H8    | 1.64                     | 0.62              |
| 1:0:712:A:H2'   | 1:0:713:G:O4'  | 1.99                     | 0.62              |
| 1:0:1141:U:O2'  | 1:0:1142:G:P   | 2.58                     | 0.62              |
| 1:0:1491:C:H2'  | 1:0:1492:A:C8  | 2.35                     | 0.62              |
| 1:0:2492:G:C4   | 1:0:2493:U:C5  | 2.87                     | 0.62              |
| 1:0:1845:A:O2'  | 1:0:1846:A:H5' | 1.99                     | 0.62              |
| 1:0:1474:A:O2'  | 1:0:1475:U:OP2 | 2.15                     | 0.62              |
| 1:0:1445:A:H2'  | 1:0:1446:U:O4' | 1.98                     | 0.62              |
| 1:0:753:U:H2'   | 1:0:754:G:H8   | 1.64                     | 0.62              |
| 1:0:1755:G:N2   | 1:0:1756:C:C2  | 2.68                     | 0.62              |
| 1:0:1271:C:H2'  | 1:0:1272:G:C8  | 2.34                     | 0.62              |
| 1:0:1846:A:H2'  | 1:0:1847:G:C8  | 2.34                     | 0.62              |
| 1:0:2254:C:O2'  | 1:0:2255:G:OP2 | 2.15                     | 0.62              |
| 1:0:859:U:O2'   | 1:0:860:U:O5'  | 2.17                     | 0.62              |
| 1:0:1427:G:N7   | 1:0:1428:G:N2  | 2.48                     | 0.62              |
| 1:0:2679:G:N2   | 1:0:2680:U:C2  | 2.67                     | 0.62              |
| 1:0:2026:C:N4   | 1:0:2757:G:C6  | 2.68                     | 0.62              |
| 1:0:577:U:H4'   | 1:0:956:A:N6   | 2.15                     | 0.62              |
| 1:0:7:G:N2      | 1:0:8:A:C4     | 2.67                     | 0.62              |
| 1:0:2712:G:H3'  | 1:0:2713:A:H5' | 1.82                     | 0.62              |
| 1:0:367:G:C3'   | 1:0:368:A:H5'' | 2.29                     | 0.62              |
| 1:0:459:A:N1    | 1:0:466:A:N7   | 2.47                     | 0.62              |
| 1:0:2071:G:O2'  | 1:0:2072:C:H5' | 1.99                     | 0.62              |
| 1:0:1234:C:H2'  | 1:0:1235:C:H6  | 1.65                     | 0.62              |
| 1:0:2717:G:H2'  | 1:0:2718:A:H8  | 1.64                     | 0.62              |
| 1:0:542:A:H2'   | 1:0:543:G:O4'  | 2.00                     | 0.62              |
| 1:0:777:A:HO2'  | 1:0:778:G:P    | 2.22                     | 0.62              |
| 1:0:202:A:O2'   | 1:0:234:C:H4'  | 1.99                     | 0.62              |
| 1:0:68:C:C2     | 1:0:72:A:N3    | 2.68                     | 0.62              |
| 1:0:2517:C:O2   | 1:0:2517:C:H2' | 1.99                     | 0.62              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1670:G:P   | 1:0:2797:G:H22  | 2.21                     | 0.62              |
| 1:0:1911:A:H2' | 1:0:1912:G:H5'  | 1.81                     | 0.62              |
| 1:0:157:G:H5'  | 1:0:158:A:OP1   | 2.00                     | 0.62              |
| 1:0:1840:A:C2' | 1:0:1841:G:H5'  | 2.30                     | 0.62              |
| 1:0:1631:C:H5  | 1:0:1633:C:C2   | 2.18                     | 0.62              |
| 1:0:2324:G:N7  | 1:0:2360:C:C2   | 2.68                     | 0.62              |
| 1:0:2468:G:H2' | 1:0:2469:G:O4'  | 1.99                     | 0.62              |
| 1:0:153:A:H2'  | 1:0:154:U:H6    | 1.65                     | 0.62              |
| 1:0:1599:G:N2  | 1:0:1600:U:H1'  | 2.14                     | 0.62              |
| 1:0:1202:U:O2' | 1:0:1203:A:H5'  | 2.00                     | 0.62              |
| 1:0:746:G:N7   | 1:0:774:A:C5    | 2.68                     | 0.62              |
| 1:0:1618:U:H3' | 1:0:1618:U:C6   | 2.34                     | 0.62              |
| 1:0:1627:C:N4  | 1:0:1628:C:H41  | 1.97                     | 0.62              |
| 1:0:2562:G:C6  | 1:0:2563:U:C4   | 2.88                     | 0.62              |
| 1:0:1886:G:C2  | 1:0:1887:G:C8   | 2.88                     | 0.62              |
| 1:0:548:G:N2   | 1:0:549:G:C4    | 2.68                     | 0.62              |
| 1:0:355:G:O5'  | 1:0:355:G:H8    | 1.83                     | 0.62              |
| 1:0:1151:U:OP1 | 1:0:1153:A:P    | 2.58                     | 0.62              |
| 1:0:424:G:H4'  | 1:0:424:G:OP1   | 1.99                     | 0.62              |
| 1:0:826:U:O2'  | 1:0:1238:A:H1'  | 2.00                     | 0.62              |
| 1:0:198:A:H5'  | 1:0:210:A:O2'   | 2.00                     | 0.62              |
| 1:0:212:U:H3   | 1:0:443:A:H2    | 1.47                     | 0.62              |
| 1:0:2309:G:N2  | 1:0:2365:U:C2   | 2.68                     | 0.62              |
| 1:0:2484:G:H4' | 3:0:0:G34:C2    | 2.28                     | 0.61              |
| 1:0:2039:G:C4  | 1:0:2556:A:C2   | 2.88                     | 0.61              |
| 1:0:2604:G:H2' | 1:0:2605:C:O4'  | 2.00                     | 0.61              |
| 1:0:2689:C:H2' | 1:0:2690:A:O5'  | 1.98                     | 0.61              |
| 1:0:1625:A:C1' | 1:0:1632:A:O2'  | 2.44                     | 0.61              |
| 1:0:1500:U:O2' | 1:0:1501:C:H5'  | 1.98                     | 0.61              |
| 1:0:1644:G:H2' | 1:0:1645:U:C6   | 2.35                     | 0.61              |
| 1:0:1179:A:H2' | 1:0:1180:A:C8   | 2.35                     | 0.61              |
| 1:0:1908:C:H2' | 1:0:1909:U:H4'  | 1.81                     | 0.61              |
| 1:0:2797:G:H2' | 1:0:2798:A:H5'' | 1.82                     | 0.61              |
| 1:0:1840:A:H2' | 1:0:1841:G:H5'  | 1.81                     | 0.61              |
| 1:0:726:G:H2'  | 1:0:727:U:O4'   | 1.99                     | 0.61              |
| 1:0:2034:A:N6  | 1:0:2593:A:H2'  | 2.15                     | 0.61              |
| 1:0:541:C:H3'  | 1:0:542:A:O4'   | 2.00                     | 0.61              |
| 1:0:708:G:P    | 1:0:1442:C:H42  | 2.23                     | 0.61              |
| 1:0:83:A:O2'   | 1:0:84:G:P      | 2.58                     | 0.61              |
| 1:0:2093:G:H2' | 1:0:2094:C:C6   | 2.34                     | 0.61              |
| 1:0:2104:G:H2' | 1:0:2105:U:H6   | 1.65                     | 0.61              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1141:U:O2' | 1:0:1142:G:OP1 | 2.17                     | 0.61              |
| 1:0:2225:G:N3  | 1:0:2226:A:C8  | 2.68                     | 0.61              |
| 1:0:957:G:H2'  | 1:0:958:G:H8   | 1.65                     | 0.61              |
| 1:0:991:A:C5   | 1:0:992:A:N1   | 2.69                     | 0.61              |
| 1:0:1344:C:O2' | 1:0:1345:G:H8  | 1.84                     | 0.61              |
| 1:0:1624:A:N7  | 1:0:1627:C:C4  | 2.68                     | 0.61              |
| 1:0:1680:U:C5' | 1:0:1680:U:H6  | 2.12                     | 0.61              |
| 1:0:50:G:N2    | 1:0:118:U:N3   | 2.44                     | 0.61              |
| 1:0:1955:G:C2' | 1:0:1956:G:H5' | 2.29                     | 0.61              |
| 1:0:2188:A:H2' | 1:0:2189:A:N7  | 2.15                     | 0.61              |
| 1:0:2106:G:H2' | 1:0:2107:G:C8  | 2.35                     | 0.61              |
| 1:0:828:C:H2'  | 1:0:829:C:H6   | 1.66                     | 0.61              |
| 1:0:70:A:O2'   | 1:0:71:A:H5''  | 2.00                     | 0.61              |
| 1:0:2636:A:H2' | 1:0:2637:C:C5' | 2.28                     | 0.61              |
| 1:0:1314:A:C2' | 1:0:1315:A:O5' | 2.48                     | 0.61              |
| 1:0:83:A:H62   | 1:0:98:U:H1'   | 1.61                     | 0.61              |
| 1:0:665:A:N3   | 1:0:665:A:H2'  | 2.16                     | 0.61              |
| 1:0:1573:G:H5' | 1:0:1573:G:H8  | 1.64                     | 0.61              |
| 1:0:2476:A:H1' | 1:0:2477:C:H5  | 1.65                     | 0.61              |
| 1:0:2483:U:C2' | 1:0:2484:G:C5' | 2.75                     | 0.61              |
| 1:0:994:A:N7   | 1:0:995:A:C6   | 2.68                     | 0.61              |
| 1:0:940:G:N7   | 1:0:941:U:H6   | 1.98                     | 0.61              |
| 1:0:2264:C:O4' | 1:0:2267:A:N6  | 2.32                     | 0.61              |
| 1:0:1380:C:C2' | 1:0:1381:G:H5' | 2.27                     | 0.61              |
| 1:0:2469:G:C5' | 1:0:2470:U:OP1 | 2.46                     | 0.61              |
| 1:0:351:A:N6   | 1:0:352:G:C2   | 2.68                     | 0.61              |
| 1:0:859:U:O2   | 1:0:860:U:N3   | 2.33                     | 0.61              |
| 1:0:1404:C:N4  | 1:0:1407:G:C8  | 2.67                     | 0.61              |
| 1:0:1577:G:H2' | 1:0:1578:U:C6  | 2.35                     | 0.61              |
| 1:0:982:C:H5'  | 1:0:995:A:H5'  | 1.81                     | 0.61              |
| 1:0:995:A:HO2' | 1:0:996:C:P    | 2.23                     | 0.61              |
| 1:0:1790:G:O2' | 1:0:1791:C:O5' | 2.16                     | 0.61              |
| 1:0:1139:A:O2' | 1:0:1140:A:O5' | 2.18                     | 0.61              |
| 1:0:1105:U:O2  | 1:0:1107:A:N7  | 2.33                     | 0.61              |
| 1:0:1199:U:H5' | 1:0:1199:U:H6  | 1.64                     | 0.61              |
| 1:0:2418:A:H4' | 1:0:2419:C:O5' | 2.01                     | 0.61              |
| 1:0:468:A:H61  | 1:0:481:A:H5'' | 1.66                     | 0.61              |
| 1:0:2634:G:O2' | 1:0:2635:U:H5  | 1.82                     | 0.61              |
| 1:0:2104:G:H2' | 1:0:2105:U:C6  | 2.34                     | 0.61              |
| 1:0:104:C:H2'  | 1:0:105:G:C5'  | 2.29                     | 0.61              |
| 1:0:2238:G:H1' | 1:0:2406:C:C2  | 2.35                     | 0.61              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1497:C:O2'  | 1:0:1498:G:H5'  | 2.00                     | 0.61              |
| 1:0:944:A:O2'   | 1:0:945:G:H5'   | 2.01                     | 0.61              |
| 1:0:2231:G:H2'  | 1:0:2232:G:H8   | 1.66                     | 0.61              |
| 1:0:2014:A:H62  | 1:0:2477:C:H1'  | 1.63                     | 0.61              |
| 1:0:815:A:C2    | 1:0:816:U:C2    | 2.88                     | 0.61              |
| 1:0:1625:A:N7   | 1:0:1632:A:N3   | 2.49                     | 0.61              |
| 1:0:1010:U:H3'  | 1:0:1165:G:O6   | 2.00                     | 0.61              |
| 1:0:516:G:O2'   | 1:0:517:A:H8    | 1.83                     | 0.61              |
| 1:0:1354:A:P    | 1:0:1354:A:C8   | 2.93                     | 0.61              |
| 1:0:1147:G:H2'  | 1:0:1148:G:O4'  | 2.00                     | 0.61              |
| 1:0:1075:C:H2'  | 1:0:1076:U:C6   | 2.35                     | 0.61              |
| 1:0:2557:G:N3   | 1:0:2557:G:H2'  | 2.14                     | 0.61              |
| 1:0:1591:U:H2'  | 1:0:1592:U:O4'  | 2.01                     | 0.61              |
| 1:0:591:G:H2'   | 1:0:592:G:O4'   | 2.01                     | 0.61              |
| 1:0:1465:G:OP1  | 1:0:1465:G:H4'  | 2.01                     | 0.61              |
| 1:0:2117:A:C8   | 1:0:2118:A:H4'  | 2.36                     | 0.61              |
| 1:0:2027:C:N1   | 1:0:2604:G:N2   | 2.48                     | 0.60              |
| 1:0:2044:G:C2   | 1:0:2046:C:N3   | 2.69                     | 0.60              |
| 1:0:582:G:N2    | 1:0:2012:A:C2   | 2.69                     | 0.60              |
| 1:0:796:A:N7    | 1:0:798:G:C8    | 2.69                     | 0.60              |
| 1:0:2838:U:H2'  | 1:0:2839:G:C8   | 2.35                     | 0.60              |
| 1:0:2503:G:C2'  | 1:0:2504:G:H5'' | 2.30                     | 0.60              |
| 1:0:2322:U:O2'  | 1:0:2323:U:H5'  | 1.99                     | 0.60              |
| 1:0:1894:U:O5'  | 1:0:1894:U:H6   | 1.84                     | 0.60              |
| 1:0:1337:G:H1'  | 1:0:1632:A:H62  | 1.62                     | 0.60              |
| 1:0:1776:A:C8   | 1:0:1778:U:C5   | 2.89                     | 0.60              |
| 1:0:1908:C:H2'  | 1:0:1909:U:O4'  | 2.00                     | 0.60              |
| 1:0:132:U:H2'   | 1:0:133:C:H6    | 1.65                     | 0.60              |
| 1:0:2338:C:H2'  | 1:0:2339:A:C8   | 2.35                     | 0.60              |
| 1:0:571:U:O2    | 1:0:581:A:N9    | 2.34                     | 0.60              |
| 1:0:759:C:C5'   | 1:0:761:G:H1'   | 2.31                     | 0.60              |
| 1:0:778:G:H5'   | 1:0:778:G:H8    | 1.66                     | 0.60              |
| 1:0:177:U:O2    | 1:0:178:C:O4'   | 2.19                     | 0.60              |
| 1:0:2496:C:C4   | 1:0:2521:A:C6   | 2.90                     | 0.60              |
| 1:0:2528:G:H2'  | 1:0:2529:G:H8   | 1.65                     | 0.60              |
| 1:0:460:U:C4'   | 1:0:461:A:OP2   | 2.47                     | 0.60              |
| 1:0:2083:G:H2'  | 1:0:2084:G:O4'  | 2.01                     | 0.60              |
| 1:0:1151:U:H5'' | 1:0:1153:A:P    | 2.42                     | 0.60              |
| 1:0:196:A:O2'   | 1:0:197:G:H5'   | 2.01                     | 0.60              |
| 1:0:1228:G:C6   | 1:0:1229:C:N3   | 2.69                     | 0.60              |
| 1:0:765:C:O2    | 1:0:766:A:N7    | 2.34                     | 0.60              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2838:U:H2' | 1:0:2839:G:H8  | 1.67                     | 0.60              |
| 1:0:1706:A:N7  | 1:0:1715:A:C2  | 2.70                     | 0.60              |
| 1:0:62:U:O2    | 1:0:63:A:N7    | 2.35                     | 0.60              |
| 1:0:2517:C:O2  | 1:0:2518:C:C6  | 2.54                     | 0.60              |
| 1:0:1975:G:N2  | 1:0:1979:C:C5  | 2.69                     | 0.60              |
| 1:0:545:C:N4   | 1:0:546:A:N6   | 2.49                     | 0.60              |
| 1:0:1525:A:H3' | 1:0:1526:U:O4' | 2.00                     | 0.60              |
| 1:0:1922:U:O4  | 1:0:1950:C:H1' | 2.02                     | 0.60              |
| 1:0:873:U:O2   | 1:0:2247:A:P   | 2.59                     | 0.60              |
| 1:0:1458:A:C3' | 1:0:1459:U:C5' | 2.78                     | 0.60              |
| 1:0:1180:A:H2' | 1:0:1181:C:C6  | 2.36                     | 0.60              |
| 1:0:1469:U:OP2 | 1:0:1471:G:OP2 | 2.20                     | 0.60              |
| 1:0:2433:G:O2' | 1:0:2434:G:H5' | 2.00                     | 0.60              |
| 1:0:1407:G:C2  | 1:0:1408:A:C4  | 2.89                     | 0.60              |
| 1:0:1955:G:O2' | 1:0:1956:G:H5' | 2.00                     | 0.60              |
| 1:0:1294:G:C5  | 1:0:1295:U:C5  | 2.90                     | 0.60              |
| 1:0:2431:C:C2  | 1:0:2432:A:C8  | 2.89                     | 0.60              |
| 1:0:2640:G:H2' | 1:0:2641:A:O4' | 2.01                     | 0.60              |
| 1:0:1777:A:N6  | 1:0:2585:C:O4' | 2.31                     | 0.60              |
| 1:0:1015:U:O4' | 1:0:1021:A:C5  | 2.55                     | 0.60              |
| 1:0:1791:C:O2  | 1:0:1793:A:O4' | 2.18                     | 0.60              |
| 1:0:162:C:H2'  | 1:0:163:A:H8   | 1.67                     | 0.60              |
| 1:0:2786:G:O2' | 1:0:2787:A:H5' | 2.01                     | 0.60              |
| 1:0:2308:A:H2' | 1:0:2309:G:C8  | 2.36                     | 0.60              |
| 1:0:813:A:H1'  | 1:0:815:A:H4'  | 1.83                     | 0.60              |
| 1:0:219:G:C1'  | 1:0:220:U:C5   | 2.80                     | 0.60              |
| 1:0:2608:A:O2' | 1:0:2609:G:O5' | 2.18                     | 0.60              |
| 1:0:2370:G:N2  | 1:0:2408:G:H1' | 2.17                     | 0.60              |
| 1:0:2737:A:H2' | 1:0:2738:A:H5' | 1.84                     | 0.60              |
| 1:0:242:A:N6   | 1:0:441:A:C8   | 2.69                     | 0.60              |
| 1:0:2019:C:H6  | 1:0:2019:C:H5' | 1.67                     | 0.60              |
| 1:0:2424:G:H2' | 1:0:2425:G:H8  | 1.67                     | 0.60              |
| 1:0:541:C:C6   | 1:0:542:A:H2   | 2.20                     | 0.60              |
| 1:0:2824:C:H4' | 1:0:2825:A:H5' | 1.82                     | 0.60              |
| 1:0:221:A:C2   | 1:0:222:G:H1'  | 2.36                     | 0.60              |
| 1:0:1978:U:N3  | 1:0:1979:C:C4  | 2.69                     | 0.60              |
| 1:0:1149:G:H21 | 1:0:1154:A:H2  | 1.49                     | 0.60              |
| 1:0:109:A:C3'  | 1:0:110:U:H5'' | 2.31                     | 0.60              |
| 1:0:1611:U:H2' | 1:0:1612:U:O4' | 2.01                     | 0.60              |
| 1:0:804:C:C2'  | 1:0:804:C:O2   | 2.47                     | 0.60              |
| 1:0:815:A:H3'  | 1:0:816:U:H5   | 1.67                     | 0.60              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:219:G:H22   | 1:0:232:A:P     | 2.22                     | 0.60              |
| 1:0:1682:A:C3'  | 1:0:1683:G:C5'  | 2.80                     | 0.60              |
| 1:0:1973:C:H2'  | 1:0:1974:U:O4'  | 2.01                     | 0.60              |
| 1:0:929:A:C3'   | 1:0:930:A:H5''  | 2.30                     | 0.60              |
| 1:0:1467:U:H3'  | 1:0:1468:A:C5'  | 2.30                     | 0.60              |
| 1:0:1811:A:O2'  | 1:0:1812:U:H5'' | 2.01                     | 0.60              |
| 1:0:1288:A:H62  | 1:0:1309:G:H4'  | 1.64                     | 0.60              |
| 1:0:1313:U:H1'  | 1:0:1642:G:N2   | 2.17                     | 0.60              |
| 1:0:48:A:H5'    | 1:0:49:U:O5'    | 2.02                     | 0.60              |
| 1:0:391:C:O2'   | 1:0:392:G:H5'   | 2.02                     | 0.60              |
| 1:0:40:U:H2'    | 1:0:41:G:C8     | 2.36                     | 0.60              |
| 1:0:2289:A:C2'  | 1:0:2290:A:H5'  | 2.32                     | 0.60              |
| 1:0:324:C:H2'   | 1:0:325:U:O4'   | 2.01                     | 0.60              |
| 1:0:1117:G:H2'  | 1:0:1118:G:H8   | 1.67                     | 0.60              |
| 1:0:13:A:OP2    | 1:0:13:A:H8     | 1.85                     | 0.60              |
| 1:0:538:A:C2    | 1:0:2025:A:H2'  | 2.37                     | 0.60              |
| 1:0:571:U:O2'   | 1:0:572:G:OP2   | 2.20                     | 0.60              |
| 1:0:754:G:C2    | 1:0:755:C:C4    | 2.90                     | 0.60              |
| 1:0:751:G:C8    | 1:0:772:G:N2    | 2.70                     | 0.60              |
| 1:0:1332:G:C2   | 1:0:1333:G:N2   | 2.70                     | 0.60              |
| 1:0:635:C:H2'   | 1:0:636:G:H5''  | 1.82                     | 0.60              |
| 1:0:1675:C:O2   | 1:0:1675:C:H2'  | 2.01                     | 0.60              |
| 1:0:173:A:N3    | 1:0:173:A:H2'   | 2.15                     | 0.60              |
| 1:0:357:A:C2'   | 1:0:358:C:H5'   | 2.30                     | 0.60              |
| 1:0:1714:A:H5'' | 1:0:1715:A:H5'' | 1.83                     | 0.59              |
| 1:0:636:G:H2'   | 1:0:637:G:C5'   | 2.32                     | 0.59              |
| 1:0:1443:G:H2'  | 1:0:1444:C:C6   | 2.37                     | 0.59              |
| 1:0:649:G:C5    | 1:0:650:U:C5    | 2.90                     | 0.59              |
| 1:0:1036:G:H1'  | 1:0:1145:C:O4'  | 2.02                     | 0.59              |
| 1:0:2845:C:N4   | 1:0:2846:G:N7   | 2.50                     | 0.59              |
| 1:0:29:U:O5'    | 1:0:29:U:H6     | 1.85                     | 0.59              |
| 1:0:2362:G:H2'  | 1:0:2363:G:O4'  | 2.02                     | 0.59              |
| 1:0:2752:C:H6   | 1:0:2752:C:O5'  | 1.84                     | 0.59              |
| 1:0:2228:U:H4'  | 1:0:2229:G:OP1  | 2.02                     | 0.59              |
| 1:0:2756:A:C2   | 1:0:2758:A:C6   | 2.90                     | 0.59              |
| 1:0:2668:U:O2   | 1:0:2693:U:C5'  | 2.50                     | 0.59              |
| 1:0:1332:G:O2'  | 1:0:1333:G:H5'  | 2.02                     | 0.59              |
| 1:0:1716:G:C6   | 1:0:1754:G:N3   | 2.71                     | 0.59              |
| 1:0:2270:U:H2'  | 1:0:2271:C:C6   | 2.37                     | 0.59              |
| 1:0:2324:G:C2   | 1:0:2326:C:H5   | 2.20                     | 0.59              |
| 1:0:1790:G:C2   | 1:0:1811:A:N7   | 2.69                     | 0.59              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1463:A:H1' | 1:0:1543:G:N2  | 2.17                     | 0.59              |
| 1:0:2205:C:O2' | 1:0:2206:C:H5' | 2.03                     | 0.59              |
| 1:0:1265:G:O2' | 1:0:1266:G:O4' | 2.19                     | 0.59              |
| 1:0:1446:U:H2' | 1:0:1447:U:C6  | 2.31                     | 0.59              |
| 1:0:537:C:N1   | 1:0:2759:U:C5  | 2.70                     | 0.59              |
| 1:0:1345:G:N3  | 1:0:1625:A:N1  | 2.50                     | 0.59              |
| 1:0:872:G:O2'  | 1:0:873:U:H5'' | 2.02                     | 0.59              |
| 1:0:1836:C:C2  | 1:0:1880:G:N2  | 2.70                     | 0.59              |
| 1:0:1380:C:H2' | 1:0:1381:G:C5' | 2.28                     | 0.59              |
| 1:0:1360:G:N2  | 1:0:1616:C:C2  | 2.70                     | 0.59              |
| 1:0:199:A:N6   | 1:0:209:G:H1'  | 2.17                     | 0.59              |
| 1:0:240:U:O2'  | 1:0:442:A:N3   | 2.34                     | 0.59              |
| 1:0:1404:C:N3  | 1:0:1407:G:N7  | 2.50                     | 0.59              |
| 1:0:1824:C:N4  | 1:0:1825:C:C4  | 2.70                     | 0.59              |
| 1:0:2291:U:H2' | 1:0:2292:C:H6  | 1.65                     | 0.59              |
| 1:0:2276:C:O2' | 1:0:2277:A:H5' | 2.02                     | 0.59              |
| 1:0:1549:C:H2' | 1:0:1550:C:O4' | 2.02                     | 0.59              |
| 1:0:727:U:H6   | 1:0:727:U:O5'  | 1.85                     | 0.59              |
| 1:0:2426:G:H4' | 1:0:2427:A:C5' | 2.31                     | 0.59              |
| 1:0:2687:G:O2' | 1:0:2688:G:H5' | 2.02                     | 0.59              |
| 1:0:940:G:N7   | 1:0:941:U:C6   | 2.70                     | 0.59              |
| 1:0:58:C:N4    | 1:0:73:A:N6    | 2.48                     | 0.59              |
| 1:0:2784:A:C6  | 1:0:2866:A:C4  | 2.91                     | 0.59              |
| 1:0:2407:G:H5' | 1:0:2408:G:C2  | 2.38                     | 0.59              |
| 1:0:1073:G:C2' | 1:0:1074:G:H4' | 2.29                     | 0.59              |
| 1:0:1900:U:H1' | 1:0:1946:U:O4' | 2.02                     | 0.59              |
| 1:0:859:U:O2   | 1:0:944:A:N1   | 2.35                     | 0.59              |
| 1:0:2870:C:C2  | 1:0:2871:U:C5  | 2.91                     | 0.59              |
| 1:0:926:C:C2'  | 1:0:927:C:H5'  | 2.32                     | 0.59              |
| 1:0:1823:G:H2' | 1:0:1824:C:C6  | 2.37                     | 0.59              |
| 1:0:1287:A:C2  | 1:0:1662:G:O4' | 2.56                     | 0.59              |
| 1:0:833:A:H1'  | 1:0:954:U:O2'  | 2.03                     | 0.59              |
| 1:0:2829:A:H2' | 1:0:2830:U:O4' | 2.03                     | 0.59              |
| 1:0:235:C:H2'  | 1:0:236:C:H5'  | 1.83                     | 0.59              |
| 1:0:1356:G:H1' | 1:0:1613:G:N3  | 2.17                     | 0.59              |
| 1:0:163:A:H2'  | 1:0:164:G:H8   | 1.68                     | 0.59              |
| 1:0:427:C:H2'  | 1:0:428:A:C8   | 2.38                     | 0.59              |
| 1:0:1510:A:H2' | 1:0:1511:A:H5' | 1.85                     | 0.59              |
| 1:0:2227:C:H3' | 1:0:2228:U:H6  | 1.66                     | 0.59              |
| 1:0:995:A:OP2  | 1:0:996:C:H5   | 1.85                     | 0.59              |
| 1:0:1625:A:N3  | 1:0:1625:A:C3' | 2.65                     | 0.59              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:976:C:C1'   | 1:0:2252:A:C2   | 2.86                     | 0.59              |
| 1:0:2769:C:H2'  | 1:0:2867:G:H22  | 1.66                     | 0.59              |
| 1:0:459:A:H4'   | 1:0:461:A:N7    | 2.18                     | 0.59              |
| 1:0:465:C:O2'   | 1:0:483:A:N6    | 2.36                     | 0.59              |
| 1:0:2636:A:C2'  | 1:0:2637:C:H5'  | 2.29                     | 0.59              |
| 1:0:2354:G:N3   | 1:0:2356:A:N7   | 2.51                     | 0.59              |
| 1:0:2629:U:H2'  | 1:0:2630:C:C6   | 2.36                     | 0.59              |
| 1:0:1316:G:N2   | 1:0:1317:G:H1'  | 2.18                     | 0.59              |
| 1:0:48:A:N6     | 1:0:154:U:C5    | 2.66                     | 0.59              |
| 1:0:2434:G:C6   | 1:0:2435:C:N4   | 2.70                     | 0.59              |
| 1:0:1069:G:O2'  | 1:0:1070:G:H5'  | 2.02                     | 0.59              |
| 1:0:107:G:N2    | 1:0:108:G:H1'   | 2.17                     | 0.59              |
| 1:0:494:A:H2'   | 1:0:495:C:H5'   | 1.84                     | 0.59              |
| 1:0:2685:A:N1   | 1:0:2686:C:C2   | 2.70                     | 0.59              |
| 1:0:1268:U:C5'  | 1:0:1269:G:H5'' | 2.32                     | 0.59              |
| 1:0:2473:G:O2'  | 1:0:2474:G:H5'  | 2.03                     | 0.59              |
| 1:0:2556:A:H5'' | 1:0:2557:G:C5'  | 2.31                     | 0.59              |
| 1:0:812:G:C6    | 1:0:813:A:N6    | 2.71                     | 0.59              |
| 1:0:2824:C:O2'  | 1:0:2825:A:P    | 2.59                     | 0.59              |
| 1:0:1938:U:H4'  | 1:0:1939:U:OP1  | 2.03                     | 0.59              |
| 1:0:2608:A:HO2' | 1:0:2609:G:P    | 2.25                     | 0.59              |
| 1:0:1055:A:N6   | 1:0:1123:G:C4   | 2.71                     | 0.59              |
| 1:0:2652:G:H2'  | 1:0:2653:A:H8   | 1.68                     | 0.59              |
| 1:0:1861:G:O2'  | 1:0:1862:C:H5'  | 2.02                     | 0.59              |
| 1:0:795:A:H4'   | 1:0:796:A:OP1   | 2.03                     | 0.59              |
| 1:0:1724:C:O2   | 1:0:1747:G:C2   | 2.55                     | 0.59              |
| 1:0:177:U:H2'   | 1:0:178:C:H5'   | 1.83                     | 0.59              |
| 1:0:1515:U:H2'  | 1:0:1516:A:C8   | 2.38                     | 0.59              |
| 1:0:1920:A:N1   | 1:0:1922:U:C4   | 2.71                     | 0.59              |
| 1:0:1886:G:H2'  | 1:0:1887:G:H8   | 1.67                     | 0.59              |
| 1:0:308:C:H2'   | 1:0:309:G:H5'   | 1.85                     | 0.59              |
| 1:0:783:G:H1'   | 1:0:1392:U:C4   | 2.38                     | 0.59              |
| 1:0:412:U:N3    | 1:0:413:G:H1'   | 2.18                     | 0.59              |
| 1:0:666:U:OP1   | 1:0:666:U:H3'   | 2.02                     | 0.59              |
| 1:0:2790:C:H2'  | 1:0:2791:C:C6   | 2.36                     | 0.59              |
| 1:0:1066:G:C3'  | 1:0:1067:G:H4'  | 2.32                     | 0.59              |
| 1:0:2496:C:N4   | 1:0:2521:A:C2   | 2.70                     | 0.59              |
| 1:0:318:G:H22   | 1:0:321:A:C5'   | 2.16                     | 0.59              |
| 1:0:1788:C:N3   | 1:0:1789:U:C5   | 2.71                     | 0.59              |
| 1:0:658:G:H5'   | 1:0:2331:A:H5'  | 1.84                     | 0.59              |
| 1:0:2236:U:H2'  | 1:0:2237:C:O4'  | 2.03                     | 0.59              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2033:C:C5   | 1:0:2034:A:N7  | 2.70                     | 0.59              |
| 1:0:697:G:O6    | 1:0:788:G:C8   | 2.56                     | 0.59              |
| 1:0:788:G:C5'   | 1:0:789:G:OP1  | 2.51                     | 0.59              |
| 1:0:2196:U:H2'  | 1:0:2197:U:O4' | 2.03                     | 0.59              |
| 1:0:1514:C:H6   | 1:0:1514:C:OP1 | 1.86                     | 0.59              |
| 1:0:1686:A:C5'  | 1:0:1687:C:OP2 | 2.51                     | 0.59              |
| 1:0:2354:G:H1'  | 1:0:2356:A:H62 | 1.67                     | 0.59              |
| 1:0:1491:C:H2'  | 1:0:1492:A:H8  | 1.68                     | 0.58              |
| 1:0:233:A:H2'   | 1:0:234:C:H6   | 1.67                     | 0.58              |
| 1:0:631:G:O5'   | 1:0:631:G:H8   | 1.85                     | 0.58              |
| 1:0:1544:A:H2'  | 1:0:1545:G:O4' | 2.02                     | 0.58              |
| 1:0:782:U:O2    | 1:0:1392:U:C1' | 2.50                     | 0.58              |
| 1:0:118:U:H5''  | 1:0:120:G:OP2  | 2.02                     | 0.58              |
| 1:0:2191:A:H2'  | 1:0:2192:U:OP1 | 2.03                     | 0.58              |
| 1:0:591:G:H2'   | 1:0:592:G:C8   | 2.38                     | 0.58              |
| 1:0:492:G:C2'   | 1:0:493:A:OP2  | 2.50                     | 0.58              |
| 1:0:2311:U:H4'  | 1:0:2315:A:N6  | 2.18                     | 0.58              |
| 1:0:1604:A:H2'  | 1:0:1605:A:O4' | 2.03                     | 0.58              |
| 1:0:2299:A:H5'  | 1:0:2300:G:OP1 | 2.03                     | 0.58              |
| 1:0:540:G:C6    | 1:0:2006:G:OP1 | 2.56                     | 0.58              |
| 1:0:2549:G:O2'  | 1:0:2550:C:H5' | 2.04                     | 0.58              |
| 1:0:985:G:O2'   | 1:0:986:A:OP2  | 2.16                     | 0.58              |
| 1:0:1655:C:H4'  | 1:0:2689:C:O2  | 2.03                     | 0.58              |
| 1:0:1386:A:H5'  | 1:0:2191:A:N7  | 2.18                     | 0.58              |
| 1:0:1715:A:O2'  | 1:0:1716:G:C5' | 2.51                     | 0.58              |
| 1:0:73:A:O2'    | 1:0:74:G:OP2   | 2.21                     | 0.58              |
| 1:0:516:G:H1'   | 1:0:517:A:H8   | 1.68                     | 0.58              |
| 1:0:1790:G:O2'  | 1:0:1791:C:P   | 2.62                     | 0.58              |
| 1:0:1812:U:O2   | 1:0:1812:U:H2' | 2.03                     | 0.58              |
| 1:0:534:U:H4'   | 1:0:564:U:H4'  | 1.85                     | 0.58              |
| 1:0:1459:U:H5'' | 1:0:1460:G:OP1 | 2.04                     | 0.58              |
| 1:0:333:A:C2    | 1:0:351:A:C6   | 2.91                     | 0.58              |
| 1:0:155:G:O2'   | 1:0:156:G:H5'  | 2.02                     | 0.58              |
| 1:0:1911:A:C2'  | 1:0:1912:G:H5' | 2.33                     | 0.58              |
| 1:0:43:A:C2'    | 1:0:44:G:H5'   | 2.33                     | 0.58              |
| 1:0:537:C:C6    | 1:0:2759:U:C5  | 2.91                     | 0.58              |
| 1:0:1039:A:H61  | 1:0:1136:G:H2' | 1.67                     | 0.58              |
| 1:0:579:G:C4'   | 1:0:994:A:C2   | 2.87                     | 0.58              |
| 1:0:89:A:H4'    | 1:0:90:G:O5'   | 2.04                     | 0.58              |
| 1:0:1682:A:C2'  | 1:0:1683:G:C5' | 2.70                     | 0.58              |
| 1:0:1849:G:H8   | 1:0:1849:G:O5' | 1.86                     | 0.58              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1313:U:O2'  | 1:0:1314:A:P    | 2.62                     | 0.58              |
| 1:0:2137:G:H2'  | 1:0:2138:U:C6   | 2.39                     | 0.58              |
| 1:0:1016:C:C2   | 1:0:1017:C:C5   | 2.92                     | 0.58              |
| 1:0:2592:U:O2'  | 1:0:2593:A:H5'  | 2.04                     | 0.58              |
| 1:0:2760:G:H4'  | 1:0:2761:A:OP2  | 2.02                     | 0.58              |
| 1:0:2198:U:C5   | 1:0:2199:C:H1'  | 2.37                     | 0.58              |
| 1:0:2782:G:H3'  | 1:0:2783:U:C4'  | 2.34                     | 0.58              |
| 1:0:2727:G:C2'  | 1:0:2728:A:H5'' | 2.33                     | 0.58              |
| 1:0:831:G:N2    | 1:0:1204:G:C6   | 2.72                     | 0.58              |
| 1:0:2431:C:N3   | 1:0:2432:A:N7   | 2.51                     | 0.58              |
| 1:0:1767:G:N2   | 1:0:1768:U:H1'  | 2.18                     | 0.58              |
| 1:0:2:G:H2'     | 1:0:3:U:C6      | 2.39                     | 0.58              |
| 1:0:1301:U:C4   | 1:0:1340:C:H1'  | 2.39                     | 0.58              |
| 1:0:220:U:H2'   | 1:0:221:A:C8    | 2.33                     | 0.58              |
| 1:0:1715:A:N3   | 1:0:1717:A:O4'  | 2.36                     | 0.58              |
| 1:0:58:C:H5'    | 1:0:59:G:OP2    | 2.03                     | 0.58              |
| 1:0:65:C:H2'    | 1:0:66:U:H5'    | 1.86                     | 0.58              |
| 1:0:1223:G:H4'  | 1:0:1224:A:O5'  | 2.02                     | 0.58              |
| 1:0:133:C:H3'   | 1:0:134:G:H8    | 1.69                     | 0.58              |
| 1:0:1287:A:H2   | 1:0:1662:G:O4'  | 1.86                     | 0.58              |
| 1:0:60:A:H2'    | 1:0:61:U:H5'    | 1.85                     | 0.58              |
| 1:0:1349:A:C2   | 1:0:1350:G:C4   | 2.91                     | 0.58              |
| 1:0:498:C:C5    | 1:0:499:G:N7    | 2.72                     | 0.58              |
| 1:0:2475:C:N4   | 1:0:2476:A:C2   | 2.72                     | 0.58              |
| 1:0:541:C:H6    | 1:0:542:A:C2    | 2.22                     | 0.58              |
| 1:0:750:C:C4    | 1:0:751:G:N7    | 2.72                     | 0.58              |
| 1:0:1281:A:H2'  | 1:0:1282:A:H8   | 1.69                     | 0.58              |
| 1:0:65:C:O2'    | 1:0:66:U:H5'    | 2.04                     | 0.58              |
| 1:0:2497:A:H5'' | 1:0:2498:U:OP2  | 2.03                     | 0.58              |
| 1:0:1869:A:H2'  | 1:0:1870:U:C6   | 2.37                     | 0.58              |
| 1:0:1882:G:H21  | 1:0:1885:C:H41  | 1.50                     | 0.58              |
| 1:0:1091:C:H2'  | 1:0:1092:U:C6   | 2.39                     | 0.58              |
| 1:0:2500:C:H2'  | 1:0:2501:U:O4'  | 2.03                     | 0.58              |
| 1:0:1958:G:H2'  | 1:0:1959:U:H6   | 1.69                     | 0.58              |
| 1:0:2288:A:N6   | 1:0:2289:A:N6   | 2.50                     | 0.58              |
| 1:0:992:A:H2    | 1:0:2020:G:N3   | 2.01                     | 0.58              |
| 1:0:2483:U:H6   | 1:0:2483:U:H3'  | 1.68                     | 0.58              |
| 1:0:2557:G:OP1  | 1:0:2593:A:N6   | 2.36                     | 0.58              |
| 1:0:688:A:O2'   | 1:0:689:A:H5'   | 2.04                     | 0.58              |
| 1:0:67:G:C2'    | 1:0:68:C:H6     | 2.11                     | 0.58              |
| 1:0:1770:U:O2   | 1:0:1774:A:C6   | 2.57                     | 0.58              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1468:A:H5'' | 1:0:1472:C:H42  | 1.67                     | 0.58              |
| 1:0:1789:U:C4   | 1:0:1811:A:H2   | 2.21                     | 0.58              |
| 1:0:706:A:H2'   | 1:0:707:U:O4'   | 2.04                     | 0.58              |
| 1:0:1088:A:H8   | 1:0:1088:A:O5'  | 1.87                     | 0.58              |
| 1:0:594:G:C5    | 1:0:1264:C:C4   | 2.91                     | 0.58              |
| 1:0:1404:C:N4   | 1:0:1407:G:N7   | 2.52                     | 0.58              |
| 1:0:1065:A:H2'  | 1:0:1066:G:H8   | 1.69                     | 0.58              |
| 1:0:1507:A:H4'  | 1:0:1510:A:OP1  | 2.04                     | 0.58              |
| 1:0:2759:U:O4'  | 1:0:2761:A:N1   | 2.37                     | 0.57              |
| 1:0:813:A:H1'   | 1:0:815:A:C4'   | 2.34                     | 0.57              |
| 1:0:616:U:H2'   | 1:0:617:U:C5'   | 2.31                     | 0.57              |
| 1:0:459:A:N6    | 1:0:484:G:C4    | 2.72                     | 0.57              |
| 1:0:1226:A:C1'  | 1:0:1250:A:C2   | 2.87                     | 0.57              |
| 1:0:1313:U:C4'  | 1:0:1314:A:O5'  | 2.46                     | 0.57              |
| 1:0:2074:U:O4   | 1:0:2075:U:H5   | 1.87                     | 0.57              |
| 1:0:455:A:C2    | 1:0:1258:G:N3   | 2.66                     | 0.57              |
| 1:0:936:A:O2'   | 1:0:937:C:H5'   | 2.04                     | 0.57              |
| 1:0:2301:A:H2'  | 1:0:2302:G:O4'  | 2.04                     | 0.57              |
| 1:0:583:C:H4'   | 1:0:584:A:O5'   | 2.04                     | 0.57              |
| 1:0:682:G:H1'   | 1:0:814:G:C6    | 2.38                     | 0.57              |
| 1:0:774:A:H3'   | 1:0:774:A:H8    | 1.69                     | 0.57              |
| 1:0:689:A:C2    | 1:0:815:A:N6    | 2.71                     | 0.57              |
| 1:0:65:C:H2'    | 1:0:66:U:C5'    | 2.33                     | 0.57              |
| 1:0:343:A:N7    | 1:0:346:C:C4    | 2.72                     | 0.57              |
| 1:0:545:C:H42   | 1:0:546:A:N6    | 2.02                     | 0.57              |
| 1:0:789:G:O6    | 1:0:2055:G:OP1  | 2.23                     | 0.57              |
| 1:0:541:C:C6    | 1:0:542:A:C2    | 2.92                     | 0.57              |
| 1:0:700:C:H2'   | 1:0:701:U:N1    | 2.19                     | 0.57              |
| 1:0:2564:U:H2'  | 1:0:2565:C:OP2  | 2.05                     | 0.57              |
| 1:0:541:C:O2    | 1:0:2018:G:C2   | 2.58                     | 0.57              |
| 1:0:939:C:C2    | 1:0:940:G:C6    | 2.91                     | 0.57              |
| 1:0:459:A:C2    | 1:0:466:A:C8    | 2.93                     | 0.57              |
| 1:0:512:A:H2'   | 1:0:513:A:H5'   | 1.87                     | 0.57              |
| 1:0:1564:U:H2'  | 1:0:1565:G:O4'  | 2.04                     | 0.57              |
| 1:0:1788:C:C2   | 1:0:1789:U:C5   | 2.93                     | 0.57              |
| 1:0:1036:G:H1'  | 1:0:1145:C:C4'  | 2.34                     | 0.57              |
| 1:0:2096:U:H3'  | 1:0:2097:A:H5'' | 1.86                     | 0.57              |
| 1:0:2433:G:H2'  | 1:0:2434:G:H8   | 1.68                     | 0.57              |
| 1:0:825:C:C1'   | 1:0:1263:G:C2   | 2.87                     | 0.57              |
| 1:0:43:A:H2'    | 1:0:44:G:H5'    | 1.87                     | 0.57              |
| 1:0:1573:G:O6   | 1:0:1574:A:N6   | 2.38                     | 0.57              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:571:U:C5    | 1:0:2019:C:O4' | 2.58                     | 0.57              |
| 1:0:741:G:C4    | 1:0:743:A:C8   | 2.93                     | 0.57              |
| 1:0:813:A:O2'   | 1:0:815:A:C5'  | 2.53                     | 0.57              |
| 1:0:1323:G:N2   | 1:0:1326:U:N3  | 2.53                     | 0.57              |
| 1:0:1299:A:C4   | 1:0:1342:U:C4  | 2.92                     | 0.57              |
| 1:0:1468:A:H5'' | 1:0:1472:C:H41 | 1.65                     | 0.57              |
| 1:0:1054:C:C2'  | 1:0:1055:A:H5' | 2.33                     | 0.57              |
| 1:0:428:A:H2'   | 1:0:429:C:O4'  | 2.04                     | 0.57              |
| 1:0:1632:A:HO2' | 1:0:1633:C:P   | 2.26                     | 0.57              |
| 1:0:58:C:H3'    | 1:0:59:G:C5'   | 2.19                     | 0.57              |
| 1:0:459:A:H1'   | 1:0:461:A:H62  | 1.68                     | 0.57              |
| 1:0:1223:G:C2   | 1:0:1250:A:N7  | 2.73                     | 0.57              |
| 1:0:1847:G:O2'  | 1:0:1848:U:H5' | 2.04                     | 0.57              |
| 1:0:1355:A:H5'' | 1:0:1356:G:OP2 | 2.05                     | 0.57              |
| 1:0:1211:G:H2'  | 1:0:1212:U:C6  | 2.39                     | 0.57              |
| 1:0:210:A:H61   | 1:0:442:A:N6   | 2.02                     | 0.57              |
| 1:0:27:G:O2'    | 1:0:28:A:O5'   | 2.23                     | 0.57              |
| 1:0:1198:C:P    | 1:0:1199:U:H4' | 2.44                     | 0.57              |
| 1:0:538:A:C2    | 1:0:2026:C:H4' | 2.39                     | 0.57              |
| 1:0:796:A:H8    | 1:0:797:A:H4'  | 1.69                     | 0.57              |
| 1:0:1618:U:P    | 1:0:1618:U:C6  | 2.98                     | 0.57              |
| 1:0:192:G:C4'   | 1:0:193:A:H4'  | 2.34                     | 0.57              |
| 1:0:530:G:H2'   | 1:0:531:G:C8   | 2.37                     | 0.57              |
| 1:0:2526:U:H2'  | 1:0:2527:G:H8  | 1.69                     | 0.57              |
| 1:0:2799:C:H2'  | 1:0:2800:C:O4' | 2.04                     | 0.57              |
| 1:0:2484:G:HO2' | 1:0:2485:U:H6  | 1.53                     | 0.57              |
| 1:0:541:C:H41   | 1:0:572:G:C1'  | 2.17                     | 0.57              |
| 1:0:751:G:H21   | 1:0:752:G:C2'  | 2.17                     | 0.57              |
| 1:0:809:C:H2'   | 1:0:810:U:C6   | 2.40                     | 0.57              |
| 1:0:2837:G:H2'  | 1:0:2838:U:H6  | 1.70                     | 0.57              |
| 1:0:1337:G:H1'  | 1:0:1632:A:H61 | 1.67                     | 0.57              |
| 1:0:611:C:N4    | 1:0:612:G:C5   | 2.73                     | 0.57              |
| 1:0:1690:U:O2'  | 1:0:1691:G:H5' | 2.05                     | 0.57              |
| 1:0:2562:G:H2'  | 1:0:2563:U:C6  | 2.40                     | 0.57              |
| 1:0:931:G:N2    | 1:0:932:G:H1'  | 2.20                     | 0.57              |
| 1:0:346:C:N3    | 1:0:347:C:C5   | 2.72                     | 0.57              |
| 1:0:54:G:H2'    | 1:0:55:A:H8    | 1.70                     | 0.57              |
| 1:0:30:G:C6     | 1:0:521:U:O2   | 2.58                     | 0.57              |
| 1:0:1420:A:H2'  | 1:0:1421:U:C6  | 2.40                     | 0.57              |
| 1:0:1349:A:H2'  | 1:0:1350:G:H8  | 1.68                     | 0.57              |
| 1:0:2799:C:C4   | 1:0:2800:C:N3  | 2.73                     | 0.57              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1488:G:H1' | 1:0:1536:G:N2  | 2.20                     | 0.57              |
| 1:0:2829:A:N1  | 1:0:2839:G:C6  | 2.72                     | 0.57              |
| 1:0:1712:G:N2  | 1:0:1713:G:C8  | 2.73                     | 0.57              |
| 1:0:57:G:C5    | 1:0:72:A:N6    | 2.73                     | 0.57              |
| 1:0:2496:C:C5  | 1:0:2521:A:C5  | 2.93                     | 0.57              |
| 1:0:2768:C:H1' | 1:0:2784:A:C8  | 2.39                     | 0.57              |
| 1:0:1313:U:O2' | 1:0:1314:A:O5' | 2.21                     | 0.57              |
| 1:0:2178:U:O2' | 1:0:2179:C:H5' | 2.04                     | 0.57              |
| 1:0:164:G:H2'  | 1:0:165:G:H5'  | 1.87                     | 0.57              |
| 1:0:666:U:OP1  | 1:0:667:U:OP2  | 2.22                     | 0.57              |
| 1:0:1360:G:C2  | 1:0:1616:C:C2  | 2.92                     | 0.57              |
| 1:0:2107:G:H2' | 1:0:2108:G:O4' | 2.04                     | 0.57              |
| 1:0:2617:G:O2' | 1:0:2618:A:H8  | 1.88                     | 0.57              |
| 1:0:465:C:H2'  | 1:0:467:U:O2   | 2.05                     | 0.57              |
| 1:0:1079:G:N2  | 1:0:1106:A:O2' | 2.37                     | 0.57              |
| 1:0:192:G:O2'  | 1:0:193:A:H5'' | 2.05                     | 0.57              |
| 1:0:2036:G:C8  | 1:0:2036:G:C3' | 2.88                     | 0.56              |
| 1:0:539:A:H1'  | 1:0:540:G:C6   | 2.40                     | 0.56              |
| 1:0:795:A:C4'  | 1:0:796:A:OP1  | 2.53                     | 0.56              |
| 1:0:1374:G:O2' | 1:0:2193:C:H1' | 2.04                     | 0.56              |
| 1:0:1693:A:H2  | 1:0:1976:U:O4' | 1.87                     | 0.56              |
| 1:0:2265:A:H1' | 1:0:2325:A:N6  | 2.15                     | 0.56              |
| 1:0:1059:A:N1  | 1:0:1123:G:N2  | 2.48                     | 0.56              |
| 1:0:1017:C:C6  | 1:0:1148:G:N2  | 2.72                     | 0.56              |
| 1:0:2539:C:N4  | 1:0:2540:A:N6  | 2.52                     | 0.56              |
| 1:0:728:G:C2   | 1:0:729:A:H1'  | 2.40                     | 0.56              |
| 1:0:521:U:H5   | 1:0:522:G:C4   | 2.23                     | 0.56              |
| 1:0:1293:A:O2' | 1:0:1294:G:H5' | 2.05                     | 0.56              |
| 1:0:1047:G:C2' | 1:0:1048:U:H5' | 2.35                     | 0.56              |
| 1:0:539:A:O2'  | 1:0:540:G:O5'  | 2.23                     | 0.56              |
| 1:0:957:G:O2'  | 1:0:958:G:H5'  | 2.05                     | 0.56              |
| 1:0:2371:A:H2' | 1:0:2372:A:O4' | 2.05                     | 0.56              |
| 1:0:1467:U:O4  | 1:0:1473:U:C2  | 2.58                     | 0.56              |
| 1:0:2354:G:O5' | 1:0:2354:G:H8  | 1.88                     | 0.56              |
| 1:0:2206:C:H3' | 1:0:2207:G:H8  | 1.70                     | 0.56              |
| 1:0:1110:G:H2' | 1:0:1111:C:H6  | 1.67                     | 0.56              |
| 1:0:149:A:H2'  | 1:0:150:A:O4'  | 2.04                     | 0.56              |
| 1:0:1826:U:O4' | 1:0:1952:A:C2  | 2.58                     | 0.56              |
| 1:0:559:C:C6   | 1:0:559:C:H3'  | 2.40                     | 0.56              |
| 1:0:834:A:C8   | 1:0:957:G:C8   | 2.93                     | 0.56              |
| 1:0:764:A:O2'  | 1:0:765:C:O5'  | 2.22                     | 0.56              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1345:G:C8   | 1:0:1625:A:N6   | 2.66                     | 0.56              |
| 1:0:73:A:O2'    | 1:0:74:G:P      | 2.63                     | 0.56              |
| 1:0:1775:A:H4'  | 1:0:1776:A:C5'  | 2.35                     | 0.56              |
| 1:0:2562:G:H2'  | 1:0:2563:U:H6   | 1.69                     | 0.56              |
| 1:0:391:C:C2'   | 1:0:392:G:H5'   | 2.36                     | 0.56              |
| 1:0:1360:G:C2   | 1:0:1616:C:N3   | 2.74                     | 0.56              |
| 1:0:1731:C:H2'  | 1:0:1732:U:O5'  | 2.04                     | 0.56              |
| 1:0:1421:U:H2'  | 1:0:1422:C:C6   | 2.39                     | 0.56              |
| 1:0:2289:A:H2'  | 1:0:2290:A:H5'  | 1.86                     | 0.56              |
| 1:0:1199:U:O4   | 1:0:1201:G:N7   | 2.38                     | 0.56              |
| 1:0:2404:A:HO2' | 1:0:2405:A:P    | 2.28                     | 0.56              |
| 1:0:2425:G:N2   | 1:0:2480:C:C4   | 2.74                     | 0.56              |
| 1:0:688:A:C2    | 1:0:689:A:N7    | 2.74                     | 0.56              |
| 1:0:788:G:N2    | 1:0:800:U:O3'   | 2.30                     | 0.56              |
| 1:0:992:A:H3'   | 1:0:993:C:C6    | 2.41                     | 0.56              |
| 1:0:1749:G:HO2' | 1:0:1750:A:P    | 2.29                     | 0.56              |
| 1:0:1618:U:C3'  | 1:0:1618:U:C6   | 2.88                     | 0.56              |
| 1:0:51:A:H2     | 1:0:155:G:N3    | 2.03                     | 0.56              |
| 1:0:1263:G:H4'  | 1:0:1264:C:OP1  | 2.05                     | 0.56              |
| 1:0:1094:C:C2   | 1:0:1096:A:OP2  | 2.58                     | 0.56              |
| 1:0:198:A:N7    | 1:0:243:G:C5    | 2.74                     | 0.56              |
| 1:0:2806:G:C1'  | 1:0:2858:A:C2   | 2.89                     | 0.56              |
| 1:0:1022:A:C6   | 1:0:1024:G:C5   | 2.94                     | 0.56              |
| 1:0:2003:A:C2   | 1:0:2018:G:N2   | 2.74                     | 0.56              |
| 1:0:2827:G:H2'  | 1:0:2828:C:C6   | 2.41                     | 0.56              |
| 1:0:32:C:H2'    | 1:0:33:C:O4'    | 2.05                     | 0.56              |
| 1:0:1656:U:C2'  | 1:0:1657:A:H5'' | 2.36                     | 0.56              |
| 1:0:1151:U:H5'' | 1:0:1153:A:O5'  | 2.05                     | 0.56              |
| 1:0:1582:A:O2'  | 1:0:1583:A:P    | 2.62                     | 0.56              |
| 1:0:1128:G:O2'  | 1:0:1129:A:H5'  | 2.04                     | 0.56              |
| 1:0:682:G:C4    | 1:0:814:G:N1    | 2.73                     | 0.56              |
| 1:0:1301:U:C6   | 1:0:1340:C:O2   | 2.59                     | 0.56              |
| 1:0:976:C:O2'   | 1:0:977:G:H5'   | 2.06                     | 0.56              |
| 1:0:66:U:C2     | 1:0:67:G:O6     | 2.57                     | 0.56              |
| 1:0:2778:U:C2'  | 1:0:2779:C:H5'  | 2.34                     | 0.56              |
| 1:0:2324:G:N2   | 1:0:2326:C:C5   | 2.74                     | 0.56              |
| 1:0:357:A:N6    | 1:0:359:G:H5'   | 2.20                     | 0.56              |
| 1:0:2159:A:H2'  | 1:0:2160:C:C6   | 2.40                     | 0.56              |
| 1:0:390:U:H2'   | 1:0:391:C:C6    | 2.40                     | 0.56              |
| 1:0:212:U:C2'   | 1:0:213:C:H5'   | 2.36                     | 0.56              |
| 1:0:298:C:H2'   | 1:0:299:C:H6    | 1.70                     | 0.56              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2157:C:H2'  | 1:0:2158:C:O4'  | 2.05                     | 0.56              |
| 1:0:146:C:H2'   | 1:0:147:G:C8    | 2.41                     | 0.56              |
| 1:0:736:G:H2'   | 1:0:737:C:O4'   | 2.05                     | 0.56              |
| 1:0:2614:A:N6   | 1:0:2615:U:C4   | 2.74                     | 0.56              |
| 1:0:2026:C:N4   | 1:0:2757:G:C5   | 2.74                     | 0.56              |
| 1:0:537:C:C5    | 1:0:2759:U:C6   | 2.93                     | 0.56              |
| 1:0:1625:A:O2'  | 1:0:1633:C:OP2  | 2.22                     | 0.56              |
| 1:0:2191:A:C2'  | 1:0:2192:U:OP1  | 2.52                     | 0.56              |
| 1:0:218:A:HO2'  | 1:0:219:G:C5'   | 2.12                     | 0.56              |
| 1:0:1688:U:O2   | 1:0:1690:U:H3'  | 2.05                     | 0.56              |
| 1:0:516:G:O2'   | 1:0:517:A:C8    | 2.59                     | 0.56              |
| 1:0:1329:U:H5'  | 1:0:1405:A:H1'  | 1.88                     | 0.56              |
| 1:0:665:A:H3'   | 1:0:666:U:C5'   | 2.34                     | 0.56              |
| 1:0:2669:C:C2'  | 1:0:2669:C:O2   | 2.54                     | 0.56              |
| 1:0:2701:A:H2'  | 1:0:2702:G:O4'  | 2.05                     | 0.56              |
| 1:0:2044:G:N3   | 1:0:2046:C:C4   | 2.74                     | 0.56              |
| 1:0:814:G:H8    | 1:0:814:G:H3'   | 1.70                     | 0.56              |
| 1:0:971:A:N7    | 1:0:973:U:C6    | 2.74                     | 0.56              |
| 1:0:2841:U:H4'  | 1:0:2843:A:H5'  | 1.87                     | 0.56              |
| 1:0:1644:G:H2'  | 1:0:1645:U:H6   | 1.68                     | 0.56              |
| 1:0:2812:A:H2'  | 1:0:2813:G:C8   | 2.39                     | 0.56              |
| 1:0:663:G:C2'   | 1:0:664:C:H5'   | 2.35                     | 0.56              |
| 1:0:1260:A:N6   | 1:0:1262:U:C2   | 2.71                     | 0.56              |
| 1:0:1798:G:H21  | 1:0:1800:A:H8   | 1.53                     | 0.56              |
| 1:0:537:C:C5    | 1:0:2759:U:H2'  | 2.41                     | 0.56              |
| 1:0:539:A:H1'   | 1:0:540:G:C5    | 2.41                     | 0.56              |
| 1:0:800:U:H5''  | 1:0:801:A:H5'   | 1.87                     | 0.56              |
| 1:0:814:G:H3'   | 1:0:814:G:C8    | 2.41                     | 0.56              |
| 1:0:1385:C:H2'  | 1:0:1386:A:O4'  | 2.06                     | 0.56              |
| 1:0:2510:A:H61  | 1:0:2641:A:H61  | 1.54                     | 0.56              |
| 1:0:1896:A:H5'' | 1:0:1897:C:H5'' | 1.86                     | 0.56              |
| 1:0:1213:U:N3   | 1:0:1260:A:C2   | 2.73                     | 0.56              |
| 1:0:859:U:H2'   | 1:0:860:U:OP2   | 2.06                     | 0.56              |
| 1:0:2860:C:H2'  | 1:0:2861:A:C4'  | 2.36                     | 0.56              |
| 1:0:367:G:H2'   | 1:0:368:A:H5''  | 1.88                     | 0.56              |
| 1:0:1850:G:O6   | 1:0:1867:A:N3   | 2.39                     | 0.56              |
| 1:0:246:C:H2'   | 1:0:246:C:O2    | 2.06                     | 0.56              |
| 1:0:788:G:N2    | 1:0:801:A:OP1   | 2.38                     | 0.56              |
| 1:0:846:A:H2'   | 1:0:847:C:C6    | 2.40                     | 0.56              |
| 1:0:1628:C:N4   | 1:0:1629:G:N7   | 2.54                     | 0.56              |
| 1:0:2503:G:C3'  | 1:0:2504:G:H5'' | 2.35                     | 0.56              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2528:G:C2   | 1:0:2529:G:N7   | 2.74                     | 0.56              |
| 1:0:1685:A:O2'  | 1:0:1686:A:OP 2 | 2.22                     | 0.56              |
| 1:0:2370:G:C2'  | 1:0:2371:A:OP 2 | 2.54                     | 0.56              |
| 1:0:322:A:HO2'  | 1:0:323:G:P     | 2.28                     | 0.56              |
| 1:0:451:A:H2'   | 1:0:452:G:H8    | 1.71                     | 0.56              |
| 1:0:122:G:O2'   | 1:0:123:A:H5''  | 2.05                     | 0.56              |
| 1:0:1434:U:H2'  | 1:0:1435:G:H8   | 1.70                     | 0.56              |
| 1:0:1904:G:H2'  | 1:0:1905:G:O4'  | 2.06                     | 0.56              |
| 1:0:657:A:N3    | 1:0:2329:C:O2'  | 2.38                     | 0.56              |
| 1:0:1200:G:H3'  | 1:0:1201:G:H8   | 1.72                     | 0.55              |
| 1:0:2758:A:HO2' | 1:0:2759:U:P    | 2.28                     | 0.55              |
| 1:0:1514:C:H5'  | 1:0:1593:C:C5'  | 2.36                     | 0.55              |
| 1:0:59:G:H1'    | 1:0:73:A:N1     | 2.21                     | 0.55              |
| 1:0:2769:C:C2'  | 1:0:2867:G:H22  | 2.19                     | 0.55              |
| 1:0:987:G:N3    | 1:0:988:G:C8    | 2.74                     | 0.55              |
| 1:0:1482:U:C2   | 1:0:1541:G:N2   | 2.74                     | 0.55              |
| 1:0:2267:A:H2'  | 1:0:2268:G:OP1  | 2.06                     | 0.55              |
| 1:0:978:U:H2'   | 1:0:979:A:H8    | 1.71                     | 0.55              |
| 1:0:1488:G:H1'  | 1:0:1536:G:H21  | 1.70                     | 0.55              |
| 1:0:2043:A:O2'  | 1:0:2044:G:OP2  | 2.23                     | 0.55              |
| 1:0:2756:A:H4'  | 1:0:2758:A:OP1  | 2.05                     | 0.55              |
| 1:0:788:G:C2    | 1:0:800:U:C2'   | 2.80                     | 0.55              |
| 1:0:2841:U:O2   | 1:0:2843:A:O2'  | 2.23                     | 0.55              |
| 1:0:224:G:C8    | 1:0:226:C:O2    | 2.59                     | 0.55              |
| 1:0:317:U:C2'   | 1:0:318:G:H5'   | 2.36                     | 0.55              |
| 1:0:322:A:N7    | 1:0:339:U:C2    | 2.74                     | 0.55              |
| 1:0:544:U:H2'   | 1:0:545:C:C6    | 2.42                     | 0.55              |
| 1:0:1032:A:C3'  | 1:0:1032:A:C8   | 2.89                     | 0.55              |
| 1:0:1653:C:O2   | 1:0:1751:A:C2   | 2.59                     | 0.55              |
| 1:0:1710:U:C4'  | 1:0:1711:C:OP2  | 2.54                     | 0.55              |
| 1:0:689:A:H8    | 1:0:2052:G:H21  | 1.53                     | 0.55              |
| 1:0:1371:G:H2'  | 1:0:1384:G:H22  | 1.72                     | 0.55              |
| 1:0:1923:U:C5'  | 1:0:1924:C:OP1  | 2.54                     | 0.55              |
| 1:0:1016:C:H2'  | 1:0:1017:C:H6   | 1.71                     | 0.55              |
| 1:0:210:A:N6    | 1:0:442:A:H61   | 2.04                     | 0.55              |
| 1:0:1990:U:H2'  | 1:0:1991:C:C6   | 2.41                     | 0.55              |
| 1:0:2014:A:N6   | 1:0:2477:C:O4'  | 2.40                     | 0.55              |
| 1:0:2758:A:C2'  | 1:0:2759:U:OP1  | 2.53                     | 0.55              |
| 1:0:789:G:O2'   | 1:0:790:A:P     | 2.64                     | 0.55              |
| 1:0:790:A:C2    | 1:0:791:G:C5    | 2.94                     | 0.55              |
| 1:0:981:C:O2'   | 1:0:995:A:H4'   | 2.06                     | 0.55              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1341:G:H2'  | 1:0:1343:C:C5  | 2.42                     | 0.55              |
| 1:0:2514:G:N2   | 1:0:2515:G:H1' | 2.20                     | 0.55              |
| 1:0:708:G:OP2   | 1:0:1442:C:N4  | 2.40                     | 0.55              |
| 1:0:1161:U:H2'  | 1:0:1162:A:H8  | 1.71                     | 0.55              |
| 1:0:2324:G:N2   | 1:0:2326:C:H5  | 2.04                     | 0.55              |
| 1:0:2325:A:HO2' | 1:0:2326:C:P   | 2.29                     | 0.55              |
| 1:0:304:A:C2    | 1:0:356:A:N6   | 2.74                     | 0.55              |
| 1:0:83:A:O2'    | 1:0:84:G:O5'   | 2.25                     | 0.55              |
| 1:0:187:U:H2'   | 1:0:188:G:H8   | 1.71                     | 0.55              |
| 1:0:1596:A:C2'  | 1:0:1597:A:H5' | 2.35                     | 0.55              |
| 1:0:826:U:C6    | 1:0:1209:G:N2  | 2.75                     | 0.55              |
| 1:0:2523:G:C4   | 1:0:2524:G:C8  | 2.94                     | 0.55              |
| 1:0:1431:U:H4'  | 1:0:1604:A:H4' | 1.88                     | 0.55              |
| 1:0:26:G:C2     | 1:0:27:G:N2    | 2.74                     | 0.55              |
| 1:0:1608:U:H2'  | 1:0:1609:G:C8  | 2.41                     | 0.55              |
| 1:0:1052:C:H2'  | 1:0:1053:G:C8  | 2.41                     | 0.55              |
| 1:0:697:G:N1    | 1:0:788:G:C5   | 2.75                     | 0.55              |
| 1:0:697:G:C6    | 1:0:788:G:C8   | 2.95                     | 0.55              |
| 1:0:616:U:H5    | 1:0:630:G:C5   | 2.25                     | 0.55              |
| 1:0:2769:C:O2'  | 1:0:2770:A:OP1 | 2.24                     | 0.55              |
| 1:0:2782:G:H8   | 1:0:2782:G:OP2 | 1.90                     | 0.55              |
| 1:0:1585:A:H2'  | 1:0:1586:A:H8  | 1.72                     | 0.55              |
| 1:0:627:A:O2'   | 1:0:628:A:O4'  | 2.21                     | 0.55              |
| 1:0:987:G:C4'   | 1:0:1167:A:N7  | 2.70                     | 0.55              |
| 1:0:649:G:C5    | 1:0:650:U:H5   | 2.25                     | 0.55              |
| 1:0:1187:A:H3'  | 1:0:1189:G:C6  | 2.40                     | 0.55              |
| 1:0:47:G:HO2'   | 1:0:48:A:H8    | 1.54                     | 0.55              |
| 1:0:2806:G:H1'  | 1:0:2858:A:N3  | 2.22                     | 0.55              |
| 1:0:1431:U:H4'  | 1:0:1604:A:C4' | 2.36                     | 0.55              |
| 1:0:1850:G:H2'  | 1:0:1851:A:C8  | 2.42                     | 0.55              |
| 1:0:1911:A:N7   | 1:0:1912:G:H8  | 2.03                     | 0.55              |
| 1:0:2216:G:O5'  | 1:0:2216:G:H8  | 1.90                     | 0.55              |
| 1:0:1796:A:C6   | 1:0:1797:C:N4  | 2.75                     | 0.55              |
| 1:0:2183:C:O2'  | 1:0:2184:C:H5' | 2.06                     | 0.55              |
| 1:0:2476:A:O2'  | 1:0:2477:C:OP2 | 2.24                     | 0.55              |
| 1:0:790:A:C2    | 1:0:791:G:C4   | 2.95                     | 0.55              |
| 1:0:1344:C:O2'  | 1:0:1345:G:C8  | 2.58                     | 0.55              |
| 1:0:1845:A:N3   | 1:0:2212:U:O2' | 2.40                     | 0.55              |
| 1:0:753:U:O2    | 1:0:771:C:H1'  | 2.07                     | 0.55              |
| 1:0:471:A:C2    | 1:0:481:A:C4   | 2.95                     | 0.55              |
| 1:0:2371:A:C8   | 1:0:2372:A:C8  | 2.95                     | 0.55              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:193:A:C8   | 1:0:445:A:C6   | 2.95                     | 0.55              |
| 1:0:1064:C:H6  | 1:0:1064:C:O5' | 1.90                     | 0.55              |
| 1:0:2026:C:P   | 1:0:2759:U:O4  | 2.65                     | 0.55              |
| 1:0:757:U:C2'  | 1:0:758:G:H5'  | 2.37                     | 0.55              |
| 1:0:1436:G:N2  | 1:0:1593:C:H1' | 2.22                     | 0.55              |
| 1:0:939:C:N3   | 1:0:940:G:O6   | 2.40                     | 0.55              |
| 1:0:57:G:N2    | 1:0:69:G:C5    | 2.75                     | 0.55              |
| 1:0:59:G:C6    | 1:0:62:U:C5    | 2.94                     | 0.55              |
| 1:0:477:A:N3   | 1:0:696:U:H1'  | 2.22                     | 0.55              |
| 1:0:2053:G:H2' | 1:0:2054:A:C8  | 2.42                     | 0.55              |
| 1:0:2431:C:C2  | 1:0:2432:A:N7  | 2.75                     | 0.55              |
| 1:0:572:G:OP2  | 1:0:581:A:H5'  | 2.07                     | 0.55              |
| 1:0:754:G:N2   | 1:0:755:C:C2   | 2.75                     | 0.55              |
| 1:0:2676:G:O2' | 1:0:2677:U:H5' | 2.06                     | 0.55              |
| 1:0:2696:A:H2' | 1:0:2697:G:H8  | 1.72                     | 0.55              |
| 1:0:2699:G:H5' | 1:0:2822:U:OP1 | 2.06                     | 0.55              |
| 1:0:1690:U:C2' | 1:0:1691:G:C5' | 2.81                     | 0.55              |
| 1:0:1926:U:O2' | 1:0:1927:U:P   | 2.65                     | 0.55              |
| 1:0:490:A:HO2' | 1:0:491:A:C5'  | 2.20                     | 0.55              |
| 1:0:16:G:O2'   | 1:0:17:G:H5'   | 2.07                     | 0.55              |
| 1:0:944:A:C2'  | 1:0:945:G:H5'  | 2.37                     | 0.55              |
| 1:0:1429:A:N6  | 1:0:1602:G:H5' | 2.22                     | 0.55              |
| 1:0:1002:C:O5' | 1:0:1002:C:H6  | 1.90                     | 0.55              |
| 1:0:778:G:H2'  | 1:0:779:U:H6   | 1.72                     | 0.55              |
| 1:0:71:A:C8    | 1:0:71:A:OP1   | 2.60                     | 0.55              |
| 1:0:1920:A:N6  | 1:0:1923:U:C5  | 2.75                     | 0.55              |
| 1:0:1949:A:H1' | 1:0:2572:U:H4' | 1.88                     | 0.55              |
| 1:0:2564:U:C2' | 1:0:2565:C:OP2 | 2.54                     | 0.55              |
| 1:0:2247:A:H3' | 1:0:2247:A:C8  | 2.42                     | 0.55              |
| 1:0:322:A:H8   | 1:0:343:A:C4   | 2.25                     | 0.55              |
| 1:0:1847:G:C2' | 1:0:1848:U:H5' | 2.37                     | 0.55              |
| 1:0:2222:U:O2' | 1:0:2223:U:H5' | 2.07                     | 0.55              |
| 1:0:1658:A:N6  | 1:0:1659:G:N3  | 2.55                     | 0.55              |
| 1:0:566:U:H2'  | 1:0:567:G:C8   | 2.38                     | 0.55              |
| 1:0:2082:C:H2' | 1:0:2083:G:O4' | 2.07                     | 0.55              |
| 1:0:1820:G:O2' | 1:0:1821:A:P   | 2.65                     | 0.55              |
| 1:0:881:U:C4   | 1:0:882:C:N4   | 2.75                     | 0.55              |
| 1:0:1002:C:N4  | 1:0:1003:C:N4  | 2.53                     | 0.54              |
| 1:0:2225:G:C2  | 1:0:2405:A:H1' | 2.42                     | 0.54              |
| 1:0:541:C:N4   | 1:0:572:G:H8   | 2.01                     | 0.54              |
| 1:0:691:C:H2'  | 1:0:692:C:H6   | 1.73                     | 0.54              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:834:A:N7   | 1:0:957:G:C5   | 2.75                     | 0.54              |
| 1:0:1516:A:C6  | 1:0:1517:C:N4  | 2.75                     | 0.54              |
| 1:0:844:G:C2   | 1:0:845:U:H1'  | 2.41                     | 0.54              |
| 1:0:1849:G:N2  | 1:0:1869:A:N6  | 2.55                     | 0.54              |
| 1:0:308:C:H2'  | 1:0:309:G:C5'  | 2.37                     | 0.54              |
| 1:0:192:G:O2'  | 1:0:193:A:C5'  | 2.56                     | 0.54              |
| 1:0:428:A:H2'  | 1:0:429:C:H6   | 1.70                     | 0.54              |
| 1:0:891:A:O5'  | 1:0:891:A:H8   | 1.90                     | 0.54              |
| 1:0:2274:C:H2' | 1:0:2275:U:C5' | 2.37                     | 0.54              |
| 1:0:2015:G:H22 | 1:0:2038:C:N4  | 2.05                     | 0.54              |
| 1:0:751:G:N7   | 1:0:772:G:N1   | 2.55                     | 0.54              |
| 1:0:232:A:N6   | 1:0:233:A:C2   | 2.75                     | 0.54              |
| 1:0:1937:G:O2' | 1:0:1939:U:C5  | 2.56                     | 0.54              |
| 1:0:1683:G:O6  | 1:0:1684:G:C2  | 2.60                     | 0.54              |
| 1:0:1774:A:H4' | 1:0:1775:A:OP1 | 2.06                     | 0.54              |
| 1:0:2660:C:O2' | 1:0:2661:G:OP2 | 2.21                     | 0.54              |
| 1:0:21:A:C6    | 1:0:530:G:C6   | 2.95                     | 0.54              |
| 1:0:946:U:H2'  | 1:0:947:C:C6   | 2.41                     | 0.54              |
| 1:0:1363:C:H2' | 1:0:1364:C:C6  | 2.39                     | 0.54              |
| 1:0:1266:G:O2' | 1:0:1267:A:OP1 | 2.22                     | 0.54              |
| 1:0:2312:A:O2' | 1:0:2313:G:OP2 | 2.23                     | 0.54              |
| 1:0:2466:G:O2' | 1:0:2467:A:H5' | 2.07                     | 0.54              |
| 1:0:1745:C:H2' | 1:0:1745:C:O2  | 2.07                     | 0.54              |
| 1:0:2018:G:O2' | 1:0:2019:C:OP1 | 2.22                     | 0.54              |
| 1:0:2226:A:N3  | 1:0:2227:C:C6  | 2.76                     | 0.54              |
| 1:0:774:A:C8   | 1:0:774:A:H3'  | 2.41                     | 0.54              |
| 1:0:985:G:H8   | 1:0:1001:A:H62 | 0.71                     | 0.54              |
| 1:0:670:U:H2'  | 1:0:671:A:C8   | 2.42                     | 0.54              |
| 1:0:622:U:O2'  | 1:0:626:A:N6   | 2.40                     | 0.54              |
| 1:0:1253:C:C2  | 1:0:1254:G:C8  | 2.95                     | 0.54              |
| 1:0:649:G:C2   | 1:0:660:G:N2   | 2.75                     | 0.54              |
| 1:0:2222:U:C2  | 1:0:2223:U:C5  | 2.95                     | 0.54              |
| 1:0:48:A:C5'   | 1:0:49:U:H5''  | 2.37                     | 0.54              |
| 1:0:1729:C:H2' | 1:0:1730:G:H8  | 1.73                     | 0.54              |
| 1:0:794:A:H2   | 1:0:1767:G:N3  | 2.05                     | 0.54              |
| 1:0:2395:C:H2' | 1:0:2396:C:C6  | 2.42                     | 0.54              |
| 1:0:1177:U:H2' | 1:0:1178:C:H6  | 1.72                     | 0.54              |
| 1:0:1530:U:O2' | 1:0:1531:C:H6  | 1.90                     | 0.54              |
| 1:0:582:G:N1   | 1:0:2014:A:OP2 | 2.34                     | 0.54              |
| 1:0:577:U:O2   | 1:0:579:G:H8   | 1.90                     | 0.54              |
| 1:0:788:G:H5'  | 1:0:790:A:C1'  | 2.26                     | 0.54              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2840:U:C4  | 1:0:2841:U:H5   | 2.25                     | 0.54              |
| 1:0:1337:G:C1' | 1:0:1632:A:H62  | 2.21                     | 0.54              |
| 1:0:611:C:O2   | 1:0:614:G:H4'   | 2.06                     | 0.54              |
| 1:0:2451:G:C2  | 1:0:2454:C:N3   | 2.76                     | 0.54              |
| 1:0:310:A:N3   | 1:0:330:C:O2'   | 2.36                     | 0.54              |
| 1:0:1825:C:O2' | 1:0:1952:A:N1   | 2.35                     | 0.54              |
| 1:0:1349:A:O2' | 1:0:1350:G:H5'  | 2.07                     | 0.54              |
| 1:0:1349:A:H2' | 1:0:1350:G:C8   | 2.41                     | 0.54              |
| 1:0:630:G:H3'  | 1:0:631:G:C8    | 2.43                     | 0.54              |
| 1:0:2514:G:N3  | 1:0:2514:G:H2'  | 2.22                     | 0.54              |
| 1:0:987:G:N3   | 1:0:987:G:H2'   | 2.23                     | 0.54              |
| 1:0:1217:U:H2' | 1:0:1218:C:C6   | 2.36                     | 0.54              |
| 1:0:242:A:O2'  | 1:0:243:G:P     | 2.66                     | 0.54              |
| 1:0:1987:G:C5  | 1:0:1988:A:C8   | 2.95                     | 0.54              |
| 1:0:2578:G:O2' | 1:0:2579:A:H5'  | 2.08                     | 0.54              |
| 1:0:1268:U:H5' | 1:0:1269:G:H5'' | 1.88                     | 0.54              |
| 1:0:2018:G:O2' | 1:0:2019:C:P    | 2.65                     | 0.54              |
| 1:0:973:U:H4'  | 1:0:2475:C:O2'  | 2.07                     | 0.54              |
| 1:0:577:U:C4'  | 1:0:956:A:N6    | 2.71                     | 0.54              |
| 1:0:1618:U:OP2 | 1:0:1618:U:N1   | 2.40                     | 0.54              |
| 1:0:202:A:N3   | 1:0:203:G:H1'   | 2.21                     | 0.54              |
| 1:0:1685:A:O4' | 1:0:1686:A:C2   | 2.60                     | 0.54              |
| 1:0:1466:C:C2' | 1:0:1467:U:O4'  | 2.53                     | 0.54              |
| 1:0:2324:G:N7  | 1:0:2351:G:N2   | 2.55                     | 0.54              |
| 1:0:1365:U:O2' | 1:0:1366:A:H5'  | 2.07                     | 0.54              |
| 1:0:2791:C:O2' | 1:0:2792:C:H5'  | 2.06                     | 0.54              |
| 1:0:1434:U:H2' | 1:0:1435:G:C8   | 2.43                     | 0.54              |
| 1:0:93:A:O2'   | 1:0:94:C:H5'    | 2.06                     | 0.54              |
| 1:0:816:U:O2'  | 1:0:817:A:H5'   | 2.08                     | 0.54              |
| 1:0:956:A:O2'  | 1:0:957:G:O5'   | 2.26                     | 0.54              |
| 1:0:70:A:O2'   | 1:0:71:A:OP2    | 2.24                     | 0.54              |
| 1:0:469:G:O2'  | 1:0:470:U:OP2   | 2.26                     | 0.54              |
| 1:0:1021:A:N3  | 1:0:1164:C:H1'  | 2.22                     | 0.54              |
| 1:0:641:G:N2   | 1:0:644:A:OP2   | 2.37                     | 0.54              |
| 1:0:545:C:O2'  | 1:0:546:A:H5'   | 2.08                     | 0.54              |
| 1:0:1544:A:N6  | 1:0:1559:G:H21  | 2.05                     | 0.54              |
| 1:0:1946:U:H2' | 1:0:1946:U:O2   | 2.07                     | 0.54              |
| 1:0:678:G:H2'  | 1:0:679:C:O4'   | 2.07                     | 0.54              |
| 1:0:528:G:C6   | 1:0:529:U:O4    | 2.61                     | 0.54              |
| 1:0:2523:G:H2' | 1:0:2524:G:H8   | 1.72                     | 0.54              |
| 1:0:330:C:C4   | 1:0:331:U:C5    | 2.95                     | 0.54              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:367:G:H3'  | 1:0:368:A:H5'' | 1.90                     | 0.54              |
| 1:0:137:A:C2'  | 1:0:138:G:H5'  | 2.38                     | 0.54              |
| 1:0:2742:G:O6  | 1:0:2743:G:C2  | 2.61                     | 0.54              |
| 1:0:572:G:O6   | 1:0:587:A:N1   | 2.41                     | 0.54              |
| 1:0:476:G:N2   | 1:0:697:G:H1'  | 2.22                     | 0.54              |
| 1:0:1715:A:N3  | 1:0:1717:A:C1' | 2.71                     | 0.54              |
| 1:0:1015:U:H4' | 1:0:1021:A:N7  | 2.23                     | 0.54              |
| 1:0:1836:C:H2' | 1:0:1837:G:O4' | 2.07                     | 0.54              |
| 1:0:2709:C:N4  | 1:0:2710:C:N4  | 2.55                     | 0.54              |
| 1:0:1543:G:O6  | 1:0:1560:A:C8  | 2.61                     | 0.54              |
| 1:0:2253:A:N6  | 1:0:2255:G:N3  | 2.56                     | 0.54              |
| 1:0:2860:C:C2' | 1:0:2861:A:H5' | 2.38                     | 0.54              |
| 1:0:681:A:C4   | 1:0:683:A:N7   | 2.76                     | 0.54              |
| 1:0:2542:U:O2  | 1:0:2545:A:C5  | 2.60                     | 0.54              |
| 1:0:1578:U:H2' | 1:0:1579:G:O4' | 2.08                     | 0.54              |
| 1:0:972:C:C5'  | 1:0:973:U:OP2  | 2.56                     | 0.54              |
| 1:0:1436:G:H1' | 1:0:1508:G:H21 | 1.73                     | 0.54              |
| 1:0:516:G:H1'  | 1:0:517:A:C8   | 2.43                     | 0.54              |
| 1:0:1452:U:O2' | 1:0:1453:A:H5' | 2.08                     | 0.54              |
| 1:0:1032:A:N1  | 1:0:1034:U:C2  | 2.76                     | 0.54              |
| 1:0:3:U:O2'    | 1:0:4:C:H5'    | 2.08                     | 0.54              |
| 1:0:2463:G:O2' | 1:0:2464:G:H5' | 2.08                     | 0.54              |
| 1:0:1760:G:O2' | 1:0:1761:G:H5' | 2.08                     | 0.54              |
| 1:0:808:C:C2'  | 1:0:809:C:H5'  | 2.38                     | 0.54              |
| 1:0:1750:A:C8  | 1:0:2675:U:H1' | 2.42                     | 0.54              |
| 1:0:1340:C:H2' | 1:0:1341:G:O4' | 2.07                     | 0.54              |
| 1:0:941:U:H3'  | 1:0:942:U:C6   | 2.40                     | 0.54              |
| 1:0:841:G:H2'  | 1:0:842:A:N9   | 2.22                     | 0.54              |
| 1:0:2636:A:H62 | 1:0:2643:G:H21 | 1.55                     | 0.54              |
| 1:0:2470:U:O2  | 1:0:2470:U:H2' | 2.07                     | 0.54              |
| 1:0:1901:A:N3  | 1:0:1901:A:C2' | 2.70                     | 0.54              |
| 1:0:1217:U:O2' | 1:0:1218:C:H5' | 2.08                     | 0.54              |
| 1:0:859:U:H1'  | 1:0:860:U:C2   | 2.42                     | 0.54              |
| 1:0:891:A:H1'  | 1:0:911:A:C2   | 2.43                     | 0.54              |
| 1:0:299:C:H2'  | 1:0:300:C:C5   | 2.44                     | 0.54              |
| 1:0:1197:U:C2' | 1:0:1198:C:H5' | 2.38                     | 0.53              |
| 1:0:2556:A:C8  | 1:0:2556:A:H3' | 2.43                     | 0.53              |
| 1:0:847:C:N4   | 1:0:955:G:H21  | 2.05                     | 0.53              |
| 1:0:2634:G:O2' | 1:0:2635:U:C5  | 2.60                     | 0.53              |
| 1:0:2247:A:H3' | 1:0:2247:A:H8  | 1.73                     | 0.53              |
| 1:0:2355:A:O2' | 1:0:2356:A:H5' | 2.09                     | 0.53              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2338:C:N4   | 1:0:2339:A:N6   | 2.57                     | 0.53              |
| 1:0:819:C:O2'   | 1:0:820:U:H5'   | 2.07                     | 0.53              |
| 1:0:820:U:P     | 1:0:843:G:N2    | 2.82                     | 0.53              |
| 1:0:1960:A:O2'  | 1:0:1961:A:H5'  | 2.08                     | 0.53              |
| 1:0:548:G:C2    | 1:0:549:G:C8    | 2.96                     | 0.53              |
| 1:0:568:G:H2'   | 1:0:569:C:O4'   | 2.07                     | 0.53              |
| 1:0:2262:C:C2   | 1:0:2368:G:N2   | 2.76                     | 0.53              |
| 1:0:211:U:O2    | 1:0:211:U:C2'   | 2.55                     | 0.53              |
| 1:0:336:A:H2'   | 1:0:337:G:O4'   | 2.09                     | 0.53              |
| 1:0:540:G:H1'   | 1:0:2004:U:O2'  | 2.08                     | 0.53              |
| 1:0:820:U:O2    | 1:0:820:U:H2'   | 2.08                     | 0.53              |
| 1:0:981:C:C4    | 1:0:982:C:H5    | 2.27                     | 0.53              |
| 1:0:2832:G:C5   | 1:0:2834:A:OP2  | 2.61                     | 0.53              |
| 1:0:1280:U:H2'  | 1:0:1281:A:H8   | 1.72                     | 0.53              |
| 1:0:1629:G:C6   | 1:0:1635:G:O6   | 2.62                     | 0.53              |
| 1:0:1713:G:C5   | 1:0:1714:A:C8   | 2.96                     | 0.53              |
| 1:0:1918:G:H1'  | 1:0:1947:G:C2   | 2.43                     | 0.53              |
| 1:0:1896:A:N6   | 1:0:1899:A:H3'  | 2.15                     | 0.53              |
| 1:0:155:G:H2'   | 1:0:156:G:O4'   | 2.07                     | 0.53              |
| 1:0:25:U:O2'    | 1:0:26:G:H5'    | 2.08                     | 0.53              |
| 1:0:1047:G:H2'  | 1:0:1048:U:H5'  | 1.90                     | 0.53              |
| 1:0:978:U:H2'   | 1:0:979:A:C8    | 2.43                     | 0.53              |
| 1:0:1231:A:C6   | 1:0:1232:U:C4   | 2.96                     | 0.53              |
| 1:0:2851:G:H5'' | 1:0:2851:G:H8   | 1.73                     | 0.53              |
| 1:0:2431:C:C6   | 3:0:0:G34:H161  | 2.43                     | 0.53              |
| 1:0:1199:U:H3'  | 1:0:1200:G:H5'' | 1.90                     | 0.53              |
| 1:0:1538:A:H2'  | 1:0:1539:U:H6   | 1.71                     | 0.53              |
| 1:0:2005:U:H5'' | 1:0:2006:G:OP1  | 2.07                     | 0.53              |
| 1:0:1623:C:H5'  | 1:0:1624:A:C5'  | 2.38                     | 0.53              |
| 1:0:708:G:OP1   | 1:0:1393:G:O2'  | 2.26                     | 0.53              |
| 1:0:988:G:C2    | 1:0:998:C:O2    | 2.61                     | 0.53              |
| 1:0:2386:G:H2'  | 1:0:2387:U:H6   | 1.71                     | 0.53              |
| 1:0:2262:C:C2   | 1:0:2368:G:C2   | 2.96                     | 0.53              |
| 1:0:1953:A:H1'  | 1:0:1955:G:C8   | 2.43                     | 0.53              |
| 1:0:421:G:O2'   | 1:0:422:C:H5'   | 2.07                     | 0.53              |
| 1:0:437:G:H2'   | 1:0:438:G:H8    | 1.74                     | 0.53              |
| 1:0:1748:U:O2   | 1:0:1748:U:H2'  | 2.08                     | 0.53              |
| 1:0:1197:U:H2'  | 1:0:1198:C:H5'  | 1.89                     | 0.53              |
| 1:0:2023:C:O2'  | 1:0:2024:U:H5'  | 2.08                     | 0.53              |
| 1:0:2036:G:C2   | 1:0:2596:C:C2   | 2.96                     | 0.53              |
| 1:0:2046:C:H5'' | 1:0:2047:C:OP2  | 2.09                     | 0.53              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2841:U:O2'  | 1:0:2842:C:O5' | 2.26                     | 0.53              |
| 1:0:1622:G:H4'  | 1:0:1624:A:N3  | 2.23                     | 0.53              |
| 1:0:1281:A:C1'  | 1:0:1996:A:N6  | 2.72                     | 0.53              |
| 1:0:218:A:C2'   | 1:0:219:G:O5'  | 2.56                     | 0.53              |
| 1:0:1697:U:O2   | 1:0:1755:G:H4' | 2.09                     | 0.53              |
| 1:0:63:A:O2'    | 1:0:64:C:H5'   | 2.09                     | 0.53              |
| 1:0:2781:G:H3'  | 1:0:2782:G:C8  | 2.43                     | 0.53              |
| 1:0:1221:C:H2'  | 1:0:1222:G:H8  | 1.73                     | 0.53              |
| 1:0:566:U:C2    | 1:0:567:G:C8   | 2.97                     | 0.53              |
| 1:0:1391:A:O2'  | 1:0:1392:U:P   | 2.66                     | 0.53              |
| 1:0:1262:U:H2'  | 1:0:1263:G:C8  | 2.43                     | 0.53              |
| 1:0:685:U:O2'   | 1:0:686:C:H5'  | 2.09                     | 0.53              |
| 1:0:2526:U:C5   | 1:0:2545:A:C8  | 2.97                     | 0.53              |
| 1:0:2276:C:N4   | 1:0:2297:G:H21 | 2.06                     | 0.53              |
| 1:0:2091:C:H3'  | 1:0:2092:U:C6  | 2.43                     | 0.53              |
| 1:0:1507:A:O2'  | 1:0:1509:A:O3' | 2.27                     | 0.53              |
| 1:0:1424:U:O5'  | 1:0:1424:U:H6  | 1.91                     | 0.53              |
| 1:0:764:A:C2    | 1:0:802:A:C4   | 2.96                     | 0.53              |
| 1:0:1300:A:H2   | 1:0:1666:G:H5' | 1.72                     | 0.53              |
| 1:0:2505:G:H22  | 1:0:2517:C:C1' | 2.11                     | 0.53              |
| 1:0:2355:A:H2'  | 1:0:2356:A:O4' | 2.09                     | 0.53              |
| 1:0:1428:G:O3'  | 1:0:1429:A:H8  | 1.91                     | 0.53              |
| 1:0:674:U:H2'   | 1:0:675:C:O4'  | 2.08                     | 0.53              |
| 1:0:984:A:N9    | 1:0:1202:U:C4  | 2.77                     | 0.53              |
| 1:0:616:U:C2'   | 1:0:617:U:H5'' | 2.34                     | 0.53              |
| 1:0:841:G:C5    | 1:0:842:A:N6   | 2.76                     | 0.53              |
| 1:0:1919:A:H5'' | 1:0:1920:A:O5' | 2.09                     | 0.53              |
| 1:0:2569:A:H2'  | 1:0:2570:C:C6  | 2.41                     | 0.53              |
| 1:0:2324:G:N3   | 1:0:2326:C:H5  | 2.07                     | 0.53              |
| 1:0:1658:A:C8   | 1:0:1659:G:C8  | 2.97                     | 0.53              |
| 1:0:1459:U:O5'  | 1:0:1459:U:C6  | 2.62                     | 0.53              |
| 1:0:1180:A:H2'  | 1:0:1181:C:H6  | 1.72                     | 0.53              |
| 1:0:2560:G:N1   | 1:0:2589:C:C6  | 2.72                     | 0.53              |
| 1:0:1067:G:H21  | 1:0:1115:C:H42 | 1.57                     | 0.53              |
| 1:0:450:C:H2'   | 1:0:451:A:H8   | 1.74                     | 0.53              |
| 1:0:2809:A:N7   | 1:0:2854:G:N7  | 2.57                     | 0.53              |
| 1:0:556:A:N3    | 1:0:556:A:H2'  | 2.23                     | 0.53              |
| 1:0:2041:A:N6   | 1:0:2042:A:H61 | 2.07                     | 0.53              |
| 1:0:752:G:H5'   | 1:0:753:U:OP1  | 2.08                     | 0.53              |
| 1:0:1371:G:H1'  | 1:0:1387:G:N1  | 2.24                     | 0.53              |
| 1:0:6:A:H2'     | 1:0:7:G:H8     | 1.73                     | 0.53              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1895:A:H8   | 1:0:1895:A:O5' | 1.91                     | 0.53              |
| 1:0:333:A:H5'   | 1:0:351:A:O4'  | 2.08                     | 0.53              |
| 1:0:164:G:C2'   | 1:0:165:G:H5'  | 2.38                     | 0.53              |
| 1:0:192:G:C1'   | 1:0:193:A:H4'  | 2.38                     | 0.53              |
| 1:0:2368:G:H5'' | 1:0:2369:U:C5' | 2.39                     | 0.53              |
| 1:0:579:G:H5'   | 1:0:994:A:H2   | 1.73                     | 0.53              |
| 1:0:941:U:O3'   | 1:0:941:U:OP1  | 2.26                     | 0.53              |
| 1:0:67:G:C2     | 1:0:73:A:C4    | 2.97                     | 0.53              |
| 1:0:708:G:H2'   | 1:0:709:A:O4'  | 2.08                     | 0.53              |
| 1:0:1242:A:O2'  | 1:0:1243:G:H5' | 2.09                     | 0.53              |
| 1:0:83:A:C2     | 1:0:101:A:C5   | 2.97                     | 0.53              |
| 1:0:2382:C:O2   | 1:0:2382:C:H2' | 2.06                     | 0.53              |
| 1:0:2202:G:H2'  | 1:0:2203:G:C8  | 2.44                     | 0.53              |
| 1:0:1105:U:C2   | 1:0:1107:A:OP2 | 2.62                     | 0.53              |
| 1:0:2272:A:H5'  | 1:0:2273:C:OP2 | 2.09                     | 0.53              |
| 1:0:1117:G:H2'  | 1:0:1118:G:C8  | 2.44                     | 0.53              |
| 1:0:1813:A:O5'  | 1:0:1813:A:H8  | 1.92                     | 0.53              |
| 1:0:2487:G:H1   | 1:0:2559:U:H3  | 1.57                     | 0.53              |
| 1:0:813:A:O2'   | 1:0:815:A:H5'  | 2.09                     | 0.53              |
| 1:0:1284:G:N2   | 1:0:1633:C:C4' | 2.71                     | 0.53              |
| 1:0:219:G:C1'   | 1:0:220:U:H5   | 2.06                     | 0.53              |
| 1:0:2324:G:C2   | 1:0:2326:C:C5  | 2.97                     | 0.53              |
| 1:0:1398:G:C2   | 1:0:1416:A:C4  | 2.97                     | 0.53              |
| 1:0:600:G:C6    | 1:0:602:C:C4   | 2.97                     | 0.53              |
| 1:0:1509:A:H2'  | 1:0:1510:A:C8  | 2.42                     | 0.53              |
| 1:0:1598:C:H2'  | 1:0:1599:G:O4' | 2.09                     | 0.53              |
| 1:0:1535:C:N4   | 1:0:1536:G:C6  | 2.77                     | 0.52              |
| 1:0:1531:C:H1'  | 1:0:1573:G:O4' | 2.09                     | 0.52              |
| 1:0:2551:A:O2'  | 1:0:2552:C:OP2 | 2.26                     | 0.52              |
| 1:0:2756:A:C6   | 1:0:2762:G:H1' | 2.44                     | 0.52              |
| 1:0:793:G:H2'   | 1:0:795:A:N7   | 2.23                     | 0.52              |
| 1:0:1628:C:C4   | 1:0:1629:G:N7  | 2.77                     | 0.52              |
| 1:0:1715:A:HO2' | 1:0:1716:G:H3' | 1.64                     | 0.52              |
| 1:0:940:G:N7    | 1:0:941:U:O4'  | 2.42                     | 0.52              |
| 1:0:635:C:O2'   | 1:0:670:U:H5'' | 2.09                     | 0.52              |
| 1:0:2245:A:C4   | 1:0:2251:U:H5  | 2.27                     | 0.52              |
| 1:0:1785:A:H4'  | 1:0:1883:A:C2  | 2.44                     | 0.52              |
| 1:0:1785:A:H2'  | 1:0:1786:C:H6  | 1.73                     | 0.52              |
| 1:0:650:U:O2    | 1:0:651:C:C6   | 2.62                     | 0.52              |
| 1:0:1314:A:H2'  | 1:0:1315:A:O5' | 2.08                     | 0.52              |
| 1:0:1559:G:O5'  | 1:0:1559:G:H8  | 1.91                     | 0.52              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1236:G:C2   | 1:0:1240:G:C2  | 2.97                     | 0.52              |
| 1:0:947:C:C4    | 1:0:948:C:N4   | 2.77                     | 0.52              |
| 1:0:132:U:C4    | 1:0:133:C:N4   | 2.72                     | 0.52              |
| 1:0:2599:U:H2'  | 1:0:2600:A:O4' | 2.09                     | 0.52              |
| 1:0:538:A:H2    | 1:0:2026:C:H4' | 1.73                     | 0.52              |
| 1:0:701:U:O2'   | 1:0:702:A:H5'  | 2.09                     | 0.52              |
| 1:0:1344:C:C4   | 1:0:1346:C:C2  | 2.97                     | 0.52              |
| 1:0:67:G:N2     | 1:0:73:A:O4'   | 2.42                     | 0.52              |
| 1:0:71:A:C8     | 1:0:71:A:O5'   | 2.61                     | 0.52              |
| 1:0:613:A:H2'   | 1:0:614:G:H8   | 1.73                     | 0.52              |
| 1:0:492:G:H1    | 1:0:519:C:H42  | 1.56                     | 0.52              |
| 1:0:1641:C:H2'  | 1:0:1642:G:H5' | 1.91                     | 0.52              |
| 1:0:2653:A:C2   | 1:0:2654:A:C4  | 2.97                     | 0.52              |
| 1:0:215:G:C2    | 1:0:216:U:H1'  | 2.45                     | 0.52              |
| 1:0:1653:C:H2'  | 1:0:1654:A:C8  | 2.43                     | 0.52              |
| 1:0:695:G:O2'   | 1:0:696:U:H5'  | 2.09                     | 0.52              |
| 1:0:604:U:H2'   | 1:0:605:G:H8   | 1.75                     | 0.52              |
| 1:0:1834:G:N2   | 1:0:1835:C:H1' | 2.25                     | 0.52              |
| 1:0:1937:G:H2'  | 1:0:1939:U:O4  | 2.09                     | 0.52              |
| 1:0:1270:C:C2   | 1:0:1271:C:C5  | 2.96                     | 0.52              |
| 1:0:923:A:H5''  | 1:0:924:C:H5'' | 1.89                     | 0.52              |
| 1:0:1221:C:H2'  | 1:0:1222:G:C8  | 2.44                     | 0.52              |
| 1:0:54:G:N2     | 1:0:114:C:C2   | 2.77                     | 0.52              |
| 1:0:1469:U:H5'  | 1:0:1470:G:P   | 2.50                     | 0.52              |
| 1:0:2280:A:H2'  | 1:0:2281:C:H6  | 1.73                     | 0.52              |
| 1:0:2311:U:C4'  | 1:0:2315:A:N6  | 2.69                     | 0.52              |
| 1:0:210:A:N6    | 1:0:442:A:N6   | 2.57                     | 0.52              |
| 1:0:521:U:C5    | 1:0:522:G:C4   | 2.97                     | 0.52              |
| 1:0:123:A:O2'   | 1:0:124:A:OP1  | 2.26                     | 0.52              |
| 1:0:559:C:O5'   | 1:0:559:C:H6   | 1.93                     | 0.52              |
| 1:0:438:G:O2'   | 1:0:439:C:H5'  | 2.09                     | 0.52              |
| 1:0:1186:G:N3   | 1:0:1186:G:H2' | 2.22                     | 0.52              |
| 1:0:1000:G:O2'  | 1:0:1001:A:OP2 | 2.26                     | 0.52              |
| 1:0:1141:U:HO2' | 1:0:1142:G:P   | 2.33                     | 0.52              |
| 1:0:2483:U:O2'  | 1:0:2484:G:H5' | 2.09                     | 0.52              |
| 1:0:2617:G:O2'  | 1:0:2618:A:O5' | 2.27                     | 0.52              |
| 1:0:177:U:O2    | 1:0:178:C:H6   | 1.90                     | 0.52              |
| 1:0:1527:G:OP2  | 1:0:1527:G:H8  | 1.92                     | 0.52              |
| 1:0:1329:U:C2   | 1:0:1330:G:C8  | 2.97                     | 0.52              |
| 1:0:534:U:OP1   | 1:0:549:G:N2   | 2.36                     | 0.52              |
| 1:0:1036:G:N3   | 1:0:1145:C:O4' | 2.43                     | 0.52              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1086:C:C2' | 1:0:1087:C:H5'' | 2.36                     | 0.52              |
| 1:0:328:A:O2'  | 1:0:329:C:H5'   | 2.10                     | 0.52              |
| 1:0:2038:C:H2' | 1:0:2483:U:C4'  | 2.40                     | 0.52              |
| 1:0:2487:G:C2  | 1:0:2561:G:C6   | 2.98                     | 0.52              |
| 1:0:2553:G:C6  | 1:0:2554:C:N3   | 2.77                     | 0.52              |
| 1:0:801:A:C2'  | 1:0:802:A:OP2   | 2.57                     | 0.52              |
| 1:0:809:C:H2'  | 1:0:810:U:H6    | 1.73                     | 0.52              |
| 1:0:831:G:H8   | 1:0:831:G:O5'   | 1.93                     | 0.52              |
| 1:0:852:U:H2'  | 1:0:853:C:C6    | 2.45                     | 0.52              |
| 1:0:577:U:H4'  | 1:0:956:A:H61   | 1.73                     | 0.52              |
| 1:0:2837:G:C4  | 1:0:2838:U:C5   | 2.98                     | 0.52              |
| 1:0:1629:G:N1  | 1:0:1633:C:H2'  | 2.23                     | 0.52              |
| 1:0:1373:G:H2' | 1:0:1374:G:H5'  | 1.92                     | 0.52              |
| 1:0:940:G:C2'  | 1:0:941:U:H4'   | 2.36                     | 0.52              |
| 1:0:635:C:C2'  | 1:0:636:G:H5''  | 2.39                     | 0.52              |
| 1:0:1869:A:H2' | 1:0:1870:U:O4'  | 2.09                     | 0.52              |
| 1:0:488:A:C2   | 1:0:489:A:C4    | 2.98                     | 0.52              |
| 1:0:1329:U:O2' | 1:0:1330:G:H5'  | 2.08                     | 0.52              |
| 1:0:51:A:C2    | 1:0:155:G:N3    | 2.77                     | 0.52              |
| 1:0:2383:C:C4  | 1:0:2384:G:N7   | 2.78                     | 0.52              |
| 1:0:427:C:N4   | 1:0:428:A:N6    | 2.58                     | 0.52              |
| 1:0:1234:C:H2' | 1:0:1235:C:O4'  | 2.09                     | 0.52              |
| 1:0:1113:C:O5' | 1:0:1113:C:H6   | 1.93                     | 0.52              |
| 1:0:1821:A:H3' | 1:0:1822:C:H6   | 1.74                     | 0.52              |
| 1:0:1510:A:C2' | 1:0:1511:A:H5'  | 2.40                     | 0.52              |
| 1:0:555:U:C2'  | 1:0:555:U:O2    | 2.57                     | 0.52              |
| 1:0:1433:A:C6  | 1:0:1434:U:C2   | 2.98                     | 0.52              |
| 1:0:2579:A:H2' | 1:0:2580:C:C6   | 2.43                     | 0.52              |
| 1:0:1764:A:H2' | 1:0:1765:C:H5'  | 1.92                     | 0.52              |
| 1:0:2438:A:N6  | 1:0:2473:G:C6   | 2.77                     | 0.52              |
| 1:0:697:G:C2   | 1:0:807:A:C2    | 2.98                     | 0.52              |
| 1:0:744:C:N3   | 1:0:745:C:C5    | 2.78                     | 0.52              |
| 1:0:744:C:N4   | 1:0:745:C:H41   | 2.08                     | 0.52              |
| 1:0:995:A:OP2  | 1:0:996:C:C5    | 2.63                     | 0.52              |
| 1:0:1284:G:H21 | 1:0:1633:C:H4'  | 1.73                     | 0.52              |
| 1:0:2194:A:C2' | 1:0:2195:C:H5'' | 2.40                     | 0.52              |
| 1:0:1466:C:O2  | 1:0:1467:U:H1'  | 2.08                     | 0.52              |
| 1:0:1792:C:H2' | 1:0:1793:A:OP1  | 2.09                     | 0.52              |
| 1:0:1886:G:N3  | 1:0:1887:G:C8   | 2.77                     | 0.52              |
| 1:0:357:A:C4   | 1:0:358:C:H4'   | 2.44                     | 0.52              |
| 1:0:46:C:N3    | 1:0:156:G:C2    | 2.77                     | 0.52              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:206:U:O2    | 1:0:431:G:H5'' | 2.10                     | 0.52              |
| 1:0:594:G:H2'   | 1:0:1264:C:H41 | 1.74                     | 0.52              |
| 1:0:2526:U:C6   | 1:0:2545:A:C5  | 2.97                     | 0.52              |
| 1:0:2276:C:N4   | 1:0:2297:G:N2  | 2.57                     | 0.52              |
| 1:0:299:C:H2'   | 1:0:300:C:C4   | 2.45                     | 0.52              |
| 1:0:2851:G:H2'  | 1:0:2852:G:O4' | 2.08                     | 0.52              |
| 1:0:2721:A:H2'  | 1:0:2722:C:H5' | 1.91                     | 0.52              |
| 1:0:828:C:H2'   | 1:0:829:C:C6   | 2.44                     | 0.52              |
| 1:0:956:A:O2'   | 1:0:957:G:P    | 2.68                     | 0.52              |
| 1:0:981:C:C4    | 1:0:982:C:C5   | 2.98                     | 0.52              |
| 1:0:1279:G:H1'  | 1:0:1280:U:C6  | 2.38                     | 0.52              |
| 1:0:1621:C:O4'  | 1:0:1626:A:C2  | 2.63                     | 0.52              |
| 1:0:88:G:C8     | 1:0:89:A:H3'   | 2.45                     | 0.52              |
| 1:0:57:G:N1     | 1:0:72:A:C5    | 2.77                     | 0.52              |
| 1:0:1226:A:C8   | 1:0:1250:A:C2  | 2.98                     | 0.52              |
| 1:0:1793:A:O2'  | 1:0:1794:A:C5' | 2.55                     | 0.52              |
| 1:0:1312:G:O6   | 1:0:1657:A:OP2 | 2.28                     | 0.52              |
| 1:0:1475:U:C2'  | 1:0:1476:G:OP2 | 2.58                     | 0.52              |
| 1:0:1451:C:H2'  | 1:0:1452:U:H6  | 1.73                     | 0.52              |
| 1:0:204:A:O2'   | 1:0:205:A:O5'  | 2.25                     | 0.52              |
| 1:0:2454:C:O2   | 1:0:2454:C:H2' | 2.09                     | 0.52              |
| 1:0:20:C:C4     | 1:0:21:A:N7    | 2.77                     | 0.52              |
| 1:0:2860:C:H2'  | 1:0:2861:A:C5' | 2.40                     | 0.52              |
| 1:0:340:G:H4'   | 1:0:341:A:OP2  | 2.10                     | 0.52              |
| 1:0:2680:U:H5'' | 1:0:2681:A:H5' | 1.91                     | 0.52              |
| 1:0:82:G:N2     | 1:0:100:G:O2'  | 2.43                     | 0.52              |
| 1:0:1493:A:H2'  | 1:0:1494:G:O4' | 2.10                     | 0.52              |
| 1:0:765:C:H6    | 1:0:1772:C:O2  | 1.92                     | 0.52              |
| 1:0:2040:A:H2'  | 1:0:2041:A:O4' | 2.10                     | 0.52              |
| 1:0:2053:G:C2   | 1:0:2054:A:C4  | 2.97                     | 0.52              |
| 1:0:2225:G:H2'  | 1:0:2226:A:C8  | 2.37                     | 0.52              |
| 1:0:843:G:C5    | 1:0:2427:A:N7  | 2.78                     | 0.52              |
| 1:0:2491:C:H2'  | 1:0:2492:G:O4' | 2.08                     | 0.52              |
| 1:0:764:A:HO2'  | 1:0:765:C:P    | 2.32                     | 0.52              |
| 1:0:699:G:N2    | 1:0:801:A:N6   | 2.42                     | 0.52              |
| 1:0:1325:U:O2'  | 1:0:1326:U:P   | 2.67                     | 0.52              |
| 1:0:58:C:N3     | 1:0:73:A:N1    | 2.58                     | 0.52              |
| 1:0:1271:C:O2'  | 1:0:1272:G:H5' | 2.09                     | 0.52              |
| 1:0:1222:G:O2'  | 1:0:1225:G:H4' | 2.10                     | 0.52              |
| 1:0:1882:G:N2   | 1:0:1885:C:N4  | 2.58                     | 0.52              |
| 1:0:1354:A:C2'  | 1:0:1410:U:O2  | 2.58                     | 0.52              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1090:C:O2'  | 1:0:1091:C:H5' | 2.10                     | 0.52              |
| 1:0:2800:C:H2'  | 1:0:2801:A:O4' | 2.08                     | 0.52              |
| 1:0:754:G:C6    | 1:0:770:U:O2   | 2.63                     | 0.52              |
| 1:0:830:C:H2'   | 1:0:830:C:O2   | 2.09                     | 0.52              |
| 1:0:2824:C:O2'  | 1:0:2825:A:OP2 | 2.28                     | 0.52              |
| 1:0:1629:G:C4   | 1:0:1633:C:N3  | 2.77                     | 0.52              |
| 1:0:235:C:C2'   | 1:0:236:C:H5'  | 2.39                     | 0.52              |
| 1:0:2520:A:H4'  | 1:0:2744:A:N1  | 2.25                     | 0.52              |
| 1:0:1680:U:C6   | 1:0:1680:U:H5' | 2.33                     | 0.52              |
| 1:0:342:G:O2'   | 1:0:343:A:P    | 2.68                     | 0.52              |
| 1:0:2266:A:N6   | 1:0:2323:U:O2' | 2.42                     | 0.52              |
| 1:0:1788:C:O2   | 1:0:1788:C:H2' | 2.09                     | 0.52              |
| 1:0:2434:G:C5   | 1:0:2435:C:N4  | 2.78                     | 0.52              |
| 1:0:2209:G:C2   | 1:0:2210:C:C6  | 2.98                     | 0.52              |
| 1:0:684:C:C2'   | 1:0:685:U:O5'  | 2.57                     | 0.52              |
| 1:0:1872:A:N3   | 1:0:2069:U:O2' | 2.39                     | 0.52              |
| 1:0:2300:G:N3   | 1:0:2300:G:H3' | 2.24                     | 0.52              |
| 1:0:1519:G:O2'  | 1:0:1520:G:H5' | 2.10                     | 0.52              |
| 1:0:1175:A:C2   | 1:0:1176:U:C5  | 2.98                     | 0.52              |
| 1:0:588:G:N3    | 1:0:1275:A:C2  | 2.78                     | 0.52              |
| 1:0:745:C:H2'   | 1:0:746:G:O4'  | 2.10                     | 0.52              |
| 1:0:1983:G:HO2' | 1:0:2668:U:H6  | 1.58                     | 0.52              |
| 1:0:1384:G:H21  | 1:0:1385:C:N4  | 2.00                     | 0.52              |
| 1:0:91:A:H2'    | 1:0:92:U:C6    | 2.45                     | 0.52              |
| 1:0:633:G:O2'   | 1:0:634:G:H5'  | 2.10                     | 0.52              |
| 1:0:636:G:H5'   | 1:0:636:G:H8   | 1.74                     | 0.52              |
| 1:0:2061:C:H1'  | 1:0:2413:A:N3  | 2.25                     | 0.52              |
| 1:0:334:G:O2'   | 1:0:335:A:OP2  | 2.23                     | 0.52              |
| 1:0:1895:A:C2'  | 1:0:1896:A:H5' | 2.40                     | 0.52              |
| 1:0:333:A:H5'   | 1:0:351:A:C4'  | 2.39                     | 0.52              |
| 1:0:1016:C:O2   | 1:0:1154:A:C6  | 2.62                     | 0.52              |
| 1:0:48:A:O2'    | 1:0:50:G:C2    | 2.57                     | 0.52              |
| 1:0:404:A:C5    | 1:0:405:C:C4   | 2.98                     | 0.52              |
| 1:0:198:A:N7    | 1:0:243:G:C6   | 2.78                     | 0.52              |
| 1:0:2658:A:C5   | 1:0:2659:C:C5  | 2.98                     | 0.52              |
| 1:0:2039:G:N3   | 1:0:2039:G:H2' | 2.24                     | 0.51              |
| 1:0:2402:U:O2   | 1:0:2402:U:C2' | 2.56                     | 0.51              |
| 1:0:571:U:O2    | 1:0:581:A:C4   | 2.63                     | 0.51              |
| 1:0:235:C:H2'   | 1:0:236:C:C5'  | 2.40                     | 0.51              |
| 1:0:1693:A:H2'  | 1:0:1694:A:O4' | 2.10                     | 0.51              |
| 1:0:459:A:N1    | 1:0:466:A:C8   | 2.78                     | 0.51              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:638:A:OP2  | 1:0:638:A:C4'   | 2.57                     | 0.51              |
| 1:0:604:U:H2'  | 1:0:605:G:C8    | 2.44                     | 0.51              |
| 1:0:2035:G:N2  | 1:0:2036:G:C4   | 2.78                     | 0.51              |
| 1:0:2550:C:C6  | 1:0:2553:G:O4'  | 2.63                     | 0.51              |
| 1:0:542:A:C8   | 1:0:543:G:C1'   | 2.93                     | 0.51              |
| 1:0:759:C:C1'  | 1:0:761:G:H21   | 2.22                     | 0.51              |
| 1:0:773:G:H2'  | 1:0:774:A:H5'   | 1.92                     | 0.51              |
| 1:0:69:G:H2'   | 1:0:111:G:O2'   | 2.10                     | 0.51              |
| 1:0:1979:C:OP1 | 1:0:1979:C:O4'  | 2.27                     | 0.51              |
| 1:0:1792:C:C2' | 1:0:1793:A:OP1  | 2.57                     | 0.51              |
| 1:0:1789:U:C4  | 1:0:1811:A:C2   | 2.98                     | 0.51              |
| 1:0:2811:G:C6  | 1:0:2812:A:N6   | 2.79                     | 0.51              |
| 1:0:2122:G:H2' | 1:0:2123:G:C8   | 2.46                     | 0.51              |
| 1:0:1216:G:H2' | 1:0:1217:U:O4'  | 2.10                     | 0.51              |
| 1:0:214:C:C2   | 1:0:215:G:C8    | 2.99                     | 0.51              |
| 1:0:2729:A:OP1 | 1:0:2731:G:H5'  | 2.10                     | 0.51              |
| 1:0:1177:U:H2' | 1:0:1178:C:C6   | 2.46                     | 0.51              |
| 1:0:2491:C:H3' | 1:0:2492:G:H5'' | 1.93                     | 0.51              |
| 1:0:788:G:C2'  | 1:0:807:A:C8    | 2.94                     | 0.51              |
| 1:0:984:A:C2   | 1:0:1201:G:C2   | 2.98                     | 0.51              |
| 1:0:2769:C:C2' | 1:0:2867:G:N2   | 2.74                     | 0.51              |
| 1:0:999:A:H4'  | 1:0:1166:A:H2   | 1.75                     | 0.51              |
| 1:0:492:G:HO2' | 1:0:493:A:P     | 2.30                     | 0.51              |
| 1:0:2270:U:OP1 | 1:0:2359:U:O2'  | 2.23                     | 0.51              |
| 1:0:2204:A:H4' | 1:0:2205:C:O5'  | 2.11                     | 0.51              |
| 1:0:154:U:H2'  | 1:0:155:G:OP1   | 2.09                     | 0.51              |
| 1:0:1066:G:H2' | 1:0:1067:G:H4'  | 1.92                     | 0.51              |
| 1:0:1509:A:C8  | 1:0:1510:A:N7   | 2.79                     | 0.51              |
| 1:0:60:A:OP1   | 1:0:60:A:C8     | 2.63                     | 0.51              |
| 1:0:1399:C:H2' | 1:0:1400:A:H8   | 1.74                     | 0.51              |
| 1:0:1577:G:O2' | 1:0:1578:U:H5'  | 2.10                     | 0.51              |
| 1:0:789:G:N2   | 1:0:2220:A:OP1  | 2.44                     | 0.51              |
| 1:0:1706:A:N7  | 1:0:1715:A:H2   | 2.07                     | 0.51              |
| 1:0:2866:A:N7  | 1:0:2867:G:C6   | 2.78                     | 0.51              |
| 1:0:1922:U:H1' | 1:0:2570:C:O2'  | 2.10                     | 0.51              |
| 1:0:930:A:H4'  | 1:0:930:A:OP1   | 2.09                     | 0.51              |
| 1:0:999:A:H4'  | 1:0:1166:A:C2   | 2.46                     | 0.51              |
| 1:0:1225:G:H1' | 1:0:1250:A:N6   | 2.26                     | 0.51              |
| 1:0:1330:G:C4  | 1:0:1331:G:C8   | 2.98                     | 0.51              |
| 1:0:1155:G:N3  | 1:0:1155:G:H2'  | 2.23                     | 0.51              |
| 1:0:825:C:C2   | 1:0:1263:G:N1   | 2.78                     | 0.51              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1427:G:H2'  | 1:0:1428:G:O4' | 2.09                     | 0.51              |
| 1:0:600:G:O2'   | 1:0:601:A:P    | 2.68                     | 0.51              |
| 1:0:1767:G:H2'  | 1:0:1768:U:H5' | 1.92                     | 0.51              |
| 1:0:2716:G:H2'  | 1:0:2717:G:H8  | 1.74                     | 0.51              |
| 1:0:1762:C:N3   | 1:0:1763:G:C5  | 2.79                     | 0.51              |
| 1:0:538:A:N6    | 1:0:2025:A:C5  | 2.78                     | 0.51              |
| 1:0:2550:C:C5   | 1:0:2553:G:O4' | 2.64                     | 0.51              |
| 1:0:701:U:H6    | 1:0:701:U:H3'  | 1.76                     | 0.51              |
| 1:0:801:A:O5'   | 1:0:801:A:H8   | 1.94                     | 0.51              |
| 1:0:801:A:O2'   | 1:0:802:A:P    | 2.68                     | 0.51              |
| 1:0:2692:A:O2'  | 1:0:2693:U:P   | 2.67                     | 0.51              |
| 1:0:2695:C:C4   | 1:0:2696:A:N7  | 2.78                     | 0.51              |
| 1:0:2843:A:O2'  | 1:0:2844:G:H5' | 2.11                     | 0.51              |
| 1:0:1626:A:H4'  | 1:0:1627:C:OP2 | 2.08                     | 0.51              |
| 1:0:400:U:C5'   | 1:0:401:G:OP1  | 2.56                     | 0.51              |
| 1:0:1975:G:O2'  | 1:0:1976:U:P   | 2.69                     | 0.51              |
| 1:0:2407:G:H5'' | 1:0:2408:G:OP1 | 2.11                     | 0.51              |
| 1:0:316:C:H2'   | 1:0:317:U:H6   | 1.76                     | 0.51              |
| 1:0:2361:G:O5'  | 1:0:2361:G:H8  | 1.93                     | 0.51              |
| 1:0:17:G:C6     | 1:0:534:U:O2   | 2.63                     | 0.51              |
| 1:0:1090:C:H2'  | 1:0:1091:C:C6  | 2.45                     | 0.51              |
| 1:0:1238:A:O2'  | 1:0:1239:A:H5' | 2.09                     | 0.51              |
| 1:0:1766:U:H2'  | 1:0:1767:G:C5' | 2.41                     | 0.51              |
| 1:0:1228:G:C6   | 1:0:1229:C:C4  | 2.98                     | 0.51              |
| 1:0:2748:C:H2'  | 1:0:2749:A:H8  | 1.76                     | 0.51              |
| 1:0:697:G:N1    | 1:0:788:G:C4   | 2.79                     | 0.51              |
| 1:0:2837:G:H2'  | 1:0:2838:U:C6  | 2.45                     | 0.51              |
| 1:0:1284:G:N2   | 1:0:1633:C:H4' | 2.25                     | 0.51              |
| 1:0:1681:A:H2'  | 1:0:1682:A:O4' | 2.11                     | 0.51              |
| 1:0:1692:C:C2'  | 1:0:1693:A:H5' | 2.40                     | 0.51              |
| 1:0:459:A:C6    | 1:0:466:A:N7   | 2.78                     | 0.51              |
| 1:0:1331:G:H2'  | 1:0:1331:G:N3  | 2.26                     | 0.51              |
| 1:0:1463:A:C1'  | 1:0:1543:G:H22 | 2.22                     | 0.51              |
| 1:0:1154:A:HO2' | 1:0:1155:G:P   | 2.29                     | 0.51              |
| 1:0:2188:A:H2'  | 1:0:2189:A:C8  | 2.46                     | 0.51              |
| 1:0:854:G:C2    | 1:0:855:G:C4   | 2.98                     | 0.51              |
| 1:0:2242:C:H42  | 1:0:2257:A:N6  | 2.09                     | 0.51              |
| 1:0:2486:C:N4   | 1:0:2487:G:O6  | 2.43                     | 0.51              |
| 1:0:765:C:C2'   | 1:0:766:A:OP2  | 2.59                     | 0.51              |
| 1:0:698:A:C5    | 1:0:787:A:C2   | 2.99                     | 0.51              |
| 1:0:814:G:C3'   | 1:0:814:G:C8   | 2.94                     | 0.51              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:830:C:HO2' | 1:0:831:G:H5'  | 1.76                     | 0.51              |
| 1:0:2697:G:O2' | 1:0:2698:G:H5' | 2.10                     | 0.51              |
| 1:0:1514:C:OP1 | 1:0:1593:C:H4' | 2.10                     | 0.51              |
| 1:0:89:A:H5'   | 1:0:90:G:OP1   | 2.10                     | 0.51              |
| 1:0:1920:A:N1  | 1:0:1922:U:C5  | 2.79                     | 0.51              |
| 1:0:873:U:O2   | 1:0:2247:A:O5' | 2.28                     | 0.51              |
| 1:0:1327:C:N4  | 1:0:1328:C:N4  | 2.59                     | 0.51              |
| 1:0:1410:U:O2  | 1:0:1410:U:H2' | 2.09                     | 0.51              |
| 1:0:2094:C:N4  | 1:0:2103:G:C4  | 2.79                     | 0.51              |
| 1:0:2161:C:O2' | 1:0:2162:C:OP1 | 2.28                     | 0.51              |
| 1:0:1073:G:H3' | 1:0:1074:G:C5' | 2.40                     | 0.51              |
| 1:0:2507:U:O3' | 1:0:2508:G:H8  | 1.93                     | 0.51              |
| 1:0:2787:A:O2' | 1:0:2788:C:H5' | 2.11                     | 0.51              |
| 1:0:24:G:C5    | 1:0:25:U:C4    | 2.99                     | 0.51              |
| 1:0:889:C:H2'  | 1:0:890:U:C6   | 2.45                     | 0.51              |
| 1:0:2030:U:O2' | 1:0:2031:A:H5' | 2.10                     | 0.51              |
| 1:0:1858:C:H2' | 1:0:1858:C:O2  | 2.10                     | 0.51              |
| 1:0:1486:A:N6  | 1:0:1536:G:O6  | 2.44                     | 0.51              |
| 1:0:763:A:C2   | 1:0:766:A:H1'  | 2.46                     | 0.51              |
| 1:0:222:G:H1'  | 1:0:397:U:O2   | 2.10                     | 0.51              |
| 1:0:616:U:H3   | 1:0:632:A:H2   | 1.53                     | 0.51              |
| 1:0:2245:A:H1' | 1:0:2251:U:O4  | 2.10                     | 0.51              |
| 1:0:2331:A:N7  | 1:0:2345:A:C6  | 2.78                     | 0.51              |
| 1:0:1459:U:O2  | 1:0:1476:G:OP2 | 2.29                     | 0.51              |
| 1:0:1017:C:N3  | 1:0:1018:C:C4  | 2.79                     | 0.51              |
| 1:0:48:A:N1    | 1:0:154:U:C4   | 2.79                     | 0.51              |
| 1:0:728:G:H3'  | 1:0:729:A:H8   | 1.76                     | 0.51              |
| 1:0:2862:G:O2' | 1:0:2863:U:H5' | 2.11                     | 0.51              |
| 1:0:1736:C:H2' | 1:0:1737:G:C8  | 2.41                     | 0.51              |
| 1:0:1429:A:O2' | 1:0:1430:G:H4' | 2.10                     | 0.51              |
| 1:0:2064:U:C4  | 1:0:2216:G:C2  | 2.99                     | 0.51              |
| 1:0:1574:A:O2' | 1:0:1575:C:H3' | 2.10                     | 0.51              |
| 1:0:2240:C:H2' | 1:0:2241:U:C5' | 2.41                     | 0.51              |
| 1:0:757:U:H2'  | 1:0:758:G:O4'  | 2.11                     | 0.51              |
| 1:0:956:A:C4   | 1:0:2427:A:H2  | 2.29                     | 0.51              |
| 1:0:983:G:OP2  | 1:0:985:G:H5'  | 2.07                     | 0.51              |
| 1:0:1344:C:N4  | 1:0:1346:C:O2  | 2.43                     | 0.51              |
| 1:0:1688:U:H2' | 1:0:1690:U:OP2 | 2.10                     | 0.51              |
| 1:0:1920:A:C2  | 1:0:1922:U:C4  | 2.98                     | 0.51              |
| 1:0:1949:A:H1' | 1:0:2572:U:H5' | 1.93                     | 0.51              |
| 1:0:2511:G:H2' | 1:0:2512:A:O4' | 2.11                     | 0.51              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2072:C:H2'  | 1:0:2073:A:O4'  | 2.10                     | 0.51              |
| 1:0:83:A:N6     | 1:0:98:U:C1'    | 2.70                     | 0.51              |
| 1:0:1032:A:C2   | 1:0:1034:U:C2   | 2.98                     | 0.51              |
| 1:0:2737:A:H2'  | 1:0:2738:A:H5'' | 1.90                     | 0.51              |
| 1:0:664:C:C5    | 1:0:666:U:H4'   | 2.37                     | 0.51              |
| 1:0:890:U:H2'   | 1:0:891:A:C8    | 2.46                     | 0.51              |
| 1:0:1801:C:H3'  | 1:0:1802:A:H5'  | 1.91                     | 0.51              |
| 1:0:2048:C:H2'  | 1:0:2049:C:C6   | 2.45                     | 0.51              |
| 1:0:698:A:O4'   | 1:0:700:C:N4    | 2.43                     | 0.51              |
| 1:0:814:G:H3'   | 1:0:815:A:H5'   | 1.91                     | 0.51              |
| 1:0:985:G:N3    | 1:0:985:G:H2'   | 2.26                     | 0.51              |
| 1:0:2839:G:C4   | 1:0:2840:U:C5   | 2.99                     | 0.51              |
| 1:0:1442:C:C2'  | 1:0:1443:G:OP1  | 2.59                     | 0.51              |
| 1:0:931:G:C2    | 1:0:932:G:H1'   | 2.47                     | 0.51              |
| 1:0:1250:A:HO2' | 1:0:1251:G:C4'  | 2.24                     | 0.51              |
| 1:0:1309:G:C2'  | 1:0:1310:C:O5'  | 2.59                     | 0.51              |
| 1:0:562:G:C6    | 1:0:563:U:C4    | 2.99                     | 0.51              |
| 1:0:2235:G:N2   | 1:0:2254:C:C5   | 2.79                     | 0.51              |
| 1:0:19:C:O2'    | 1:0:20:C:H5'    | 2.09                     | 0.51              |
| 1:0:1213:U:H2'  | 1:0:1214:C:C6   | 2.46                     | 0.51              |
| 1:0:593:C:N4    | 1:0:594:G:C6    | 2.79                     | 0.51              |
| 1:0:242:A:O2'   | 1:0:243:G:C4'   | 2.59                     | 0.51              |
| 1:0:2182:A:H62  | 1:0:2203:G:H21  | 1.59                     | 0.51              |
| 1:0:26:G:C5     | 1:0:27:G:N1     | 2.79                     | 0.51              |
| 1:0:1782:A:O2'  | 1:0:1783:G:H5'  | 2.11                     | 0.51              |
| 1:0:1420:A:C2   | 1:0:1612:U:O2   | 2.64                     | 0.51              |
| 1:0:498:C:C4    | 1:0:499:G:N7    | 2.79                     | 0.51              |
| 1:0:2579:A:C6   | 1:0:2580:C:N4   | 2.79                     | 0.51              |
| 1:0:422:C:O2'   | 1:0:423:G:H5'   | 2.10                     | 0.51              |
| 1:0:200:A:N7    | 1:0:435:A:H1'   | 2.25                     | 0.51              |
| 1:0:1367:A:H2'  | 1:0:1368:G:O4'  | 2.10                     | 0.51              |
| 1:0:557:U:H6    | 1:0:557:U:O5'   | 1.94                     | 0.51              |
| 1:0:1772:C:O2'  | 1:0:1773:C:P    | 2.68                     | 0.50              |
| 1:0:2036:G:N2   | 1:0:2596:C:H1'  | 2.27                     | 0.50              |
| 1:0:2479:U:O2   | 1:0:2483:U:C4   | 2.63                     | 0.50              |
| 1:0:2486:C:H2'  | 1:0:2487:G:C8   | 2.46                     | 0.50              |
| 1:0:796:A:H2'   | 1:0:797:A:H5'   | 1.92                     | 0.50              |
| 1:0:831:G:O2'   | 1:0:832:A:O4'   | 2.23                     | 0.50              |
| 1:0:1322:G:C6   | 1:0:1323:G:N7   | 2.79                     | 0.50              |
| 1:0:1624:A:O2'  | 1:0:1625:A:C5'  | 2.45                     | 0.50              |
| 1:0:1631:C:H3'  | 1:0:1632:A:H5'' | 1.92                     | 0.50              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:513:A:N1    | 1:0:516:G:C2    | 2.80                     | 0.50              |
| 1:0:1354:A:H2'  | 1:0:1410:U:O2   | 2.11                     | 0.50              |
| 1:0:1458:A:H2'  | 1:0:1459:U:H5'' | 1.92                     | 0.50              |
| 1:0:357:A:H3'   | 1:0:358:C:O4'   | 2.10                     | 0.50              |
| 1:0:139:A:N3    | 1:0:140:G:N7    | 2.58                     | 0.50              |
| 1:0:2455:A:C2   | 1:0:2460:G:N2   | 2.78                     | 0.50              |
| 1:0:327:C:N3    | 1:0:328:A:C8    | 2.79                     | 0.50              |
| 1:0:857:U:H2'   | 1:0:858:G:H5'   | 1.93                     | 0.50              |
| 1:0:683:A:H5''  | 1:0:684:C:OP1   | 2.11                     | 0.50              |
| 1:0:2799:C:C5   | 1:0:2800:C:C4   | 2.99                     | 0.50              |
| 1:0:1120:C:H2'  | 1:0:1121:G:O5'  | 2.11                     | 0.50              |
| 1:0:1084:A:N3   | 1:0:1084:A:H2'  | 2.27                     | 0.50              |
| 1:0:2005:U:H2'  | 1:0:2595:C:O2'  | 2.12                     | 0.50              |
| 1:0:2419:C:C2   | 1:0:2420:C:H1'  | 2.46                     | 0.50              |
| 1:0:699:G:C5'   | 1:0:700:C:OP2   | 2.58                     | 0.50              |
| 1:0:849:G:O6    | 1:0:953:G:O6    | 2.29                     | 0.50              |
| 1:0:847:C:N4    | 1:0:955:G:N2    | 2.59                     | 0.50              |
| 1:0:456:C:HO2'  | 1:0:457:C:H5'   | 1.76                     | 0.50              |
| 1:0:2564:U:O2'  | 1:0:2565:C:O5'  | 2.29                     | 0.50              |
| 1:0:1226:A:C1'  | 1:0:1250:A:H2   | 2.25                     | 0.50              |
| 1:0:342:G:O2'   | 1:0:343:A:OP1   | 2.27                     | 0.50              |
| 1:0:2359:U:O4   | 1:0:2360:C:N4   | 2.45                     | 0.50              |
| 1:0:1658:A:N7   | 1:0:1659:G:C8   | 2.78                     | 0.50              |
| 1:0:154:U:C2'   | 1:0:155:G:OP1   | 2.59                     | 0.50              |
| 1:0:155:G:C4    | 1:0:156:G:C8    | 2.99                     | 0.50              |
| 1:0:204:A:N7    | 1:0:2386:G:O4'  | 2.44                     | 0.50              |
| 1:0:1090:C:H5'' | 1:0:1099:A:N7   | 2.26                     | 0.50              |
| 1:0:2059:U:O2'  | 1:0:2060:A:OP1  | 2.29                     | 0.50              |
| 1:0:2217:G:H5'  | 1:0:2218:G:N7   | 2.26                     | 0.50              |
| 1:0:1729:C:H2'  | 1:0:1730:G:C8   | 2.47                     | 0.50              |
| 1:0:1601:U:O2'  | 1:0:1602:G:C5   | 2.61                     | 0.50              |
| 1:0:523:A:N6    | 1:0:524:A:N6    | 2.59                     | 0.50              |
| 1:0:866:U:O2'   | 1:0:867:G:H5'   | 2.11                     | 0.50              |
| 1:0:2313:G:O2'  | 1:0:2314:A:OP1  | 2.17                     | 0.50              |
| 1:0:735:G:O2'   | 1:0:736:G:H5'   | 2.11                     | 0.50              |
| 1:0:437:G:O2'   | 1:0:438:G:H5'   | 2.12                     | 0.50              |
| 1:0:1399:C:H2'  | 1:0:1400:A:C8   | 2.46                     | 0.50              |
| 1:0:1537:U:N3   | 1:0:1538:A:C5   | 2.79                     | 0.50              |
| 1:0:790:A:C2    | 1:0:791:G:C8    | 3.00                     | 0.50              |
| 1:0:1747:G:H4'  | 1:0:1749:G:O4'  | 2.10                     | 0.50              |
| 1:0:1627:C:N4   | 1:0:1628:C:N4   | 2.60                     | 0.50              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:172:A:H1'   | 1:0:227:G:H22  | 1.76                     | 0.50              |
| 1:0:941:U:N3    | 1:0:942:U:C2   | 2.79                     | 0.50              |
| 1:0:1920:A:N6   | 1:0:1923:U:C6  | 2.79                     | 0.50              |
| 1:0:2646:C:H6   | 1:0:2646:C:O5' | 1.94                     | 0.50              |
| 1:0:1080:A:H5'' | 1:0:1081:A:N7  | 2.27                     | 0.50              |
| 1:0:1314:A:C5   | 1:0:1316:G:C8  | 2.99                     | 0.50              |
| 1:0:1043:A:H2   | 1:0:1133:G:N2  | 2.09                     | 0.50              |
| 1:0:48:A:H4'    | 1:0:49:U:C5'   | 2.40                     | 0.50              |
| 1:0:2384:G:C2'  | 1:0:2385:U:OP2 | 2.59                     | 0.50              |
| 1:0:1783:G:O2'  | 1:0:1784:C:H5' | 2.10                     | 0.50              |
| 1:0:1104:G:N2   | 1:0:1108:U:C5  | 2.80                     | 0.50              |
| 1:0:1152:C:H2'  | 1:0:1152:C:O2  | 2.11                     | 0.50              |
| 1:0:2548:G:O2'  | 1:0:2549:G:H5' | 2.11                     | 0.50              |
| 1:0:2675:U:O2'  | 1:0:2676:G:H5' | 2.11                     | 0.50              |
| 1:0:2841:U:O2   | 1:0:2843:A:C1' | 2.57                     | 0.50              |
| 1:0:1300:A:C5   | 1:0:1301:U:N3  | 2.79                     | 0.50              |
| 1:0:1714:A:N6   | 1:0:1715:A:N6  | 2.60                     | 0.50              |
| 1:0:89:A:H8     | 1:0:89:A:OP1   | 1.93                     | 0.50              |
| 1:0:1683:G:C8   | 1:0:1683:G:H5' | 2.43                     | 0.50              |
| 1:0:874:A:H3'   | 1:0:875:G:H8   | 1.77                     | 0.50              |
| 1:0:488:A:OP1   | 1:0:488:A:H8   | 1.94                     | 0.50              |
| 1:0:2661:G:C2'  | 1:0:2662:C:H5' | 2.41                     | 0.50              |
| 1:0:2080:U:H2'  | 1:0:2081:U:C5  | 2.46                     | 0.50              |
| 1:0:1139:A:O2'  | 1:0:1140:A:O4' | 2.27                     | 0.50              |
| 1:0:212:U:H2'   | 1:0:213:C:H5'  | 1.92                     | 0.50              |
| 1:0:1779:C:H2'  | 1:0:1780:A:O4' | 2.11                     | 0.50              |
| 1:0:1422:C:H2'  | 1:0:1423:A:C8  | 2.44                     | 0.50              |
| 1:0:1348:C:O2'  | 1:0:1349:A:H5' | 2.10                     | 0.50              |
| 1:0:2395:C:N4   | 1:0:2396:C:H41 | 2.09                     | 0.50              |
| 1:0:768:U:H2'   | 1:0:769:C:C6   | 2.47                     | 0.50              |
| 1:0:1177:U:O4   | 1:0:1196:G:O6  | 2.29                     | 0.50              |
| 1:0:1199:U:O4   | 1:0:1201:G:C5  | 2.65                     | 0.50              |
| 1:0:2001:G:C6   | 1:0:2002:A:N6  | 2.80                     | 0.50              |
| 1:0:835:U:C5    | 1:0:955:G:O2'  | 2.63                     | 0.50              |
| 1:0:1345:G:C5   | 1:0:1625:A:N6  | 2.79                     | 0.50              |
| 1:0:1628:C:C4   | 1:0:1629:G:C8  | 3.00                     | 0.50              |
| 1:0:976:C:C2'   | 1:0:977:G:O5'  | 2.59                     | 0.50              |
| 1:0:221:A:C2    | 1:0:222:G:C1'  | 2.95                     | 0.50              |
| 1:0:219:G:H21   | 1:0:231:G:H2'  | 1.74                     | 0.50              |
| 1:0:224:G:H4'   | 1:0:399:G:C6   | 2.46                     | 0.50              |
| 1:0:1975:G:N2   | 1:0:1979:C:H5  | 2.09                     | 0.50              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:466:A:O2'   | 1:0:467:U:P     | 2.69                     | 0.50              |
| 1:0:1914:U:C5   | 1:0:1951:G:N2   | 2.80                     | 0.50              |
| 1:0:1496:G:N2   | 1:0:1497:C:H1'  | 2.27                     | 0.50              |
| 1:0:2522:G:C6   | 1:0:2523:G:C6   | 2.99                     | 0.50              |
| 1:0:1583:A:O2'  | 1:0:1584:G:OP2  | 2.21                     | 0.50              |
| 1:0:2717:G:H2'  | 1:0:2718:A:C8   | 2.45                     | 0.50              |
| 1:0:805:G:C8    | 1:0:2419:C:C2   | 3.00                     | 0.50              |
| 1:0:636:G:C2'   | 1:0:637:G:H5'   | 2.42                     | 0.50              |
| 1:0:1977:C:H2'  | 1:0:1978:U:C6   | 2.46                     | 0.50              |
| 1:0:1253:C:C4   | 1:0:1254:G:N7   | 2.79                     | 0.50              |
| 1:0:1354:A:C2   | 1:0:1411:C:H4'  | 2.47                     | 0.50              |
| 1:0:1469:U:C5'  | 1:0:1470:G:OP2  | 2.56                     | 0.50              |
| 1:0:2713:A:H2'  | 1:0:2714:A:H8   | 1.76                     | 0.50              |
| 1:0:1131:G:C6   | 1:0:1132:C:C4   | 3.00                     | 0.50              |
| 1:0:2810:A:H62  | 1:0:2853:U:H3'  | 1.76                     | 0.50              |
| 1:0:1307:U:H2'  | 1:0:1308:C:O4'  | 2.12                     | 0.50              |
| 1:0:2690:A:OP1  | 1:0:2692:A:OP2  | 2.30                     | 0.50              |
| 1:0:1714:A:H5'  | 1:0:1715:A:H5'' | 1.93                     | 0.50              |
| 1:0:1788:C:N3   | 1:0:1789:U:C4   | 2.80                     | 0.50              |
| 1:0:1474:A:O2'  | 1:0:1475:U:C5'  | 2.52                     | 0.50              |
| 1:0:822:G:H2'   | 1:0:823:U:H5'   | 1.93                     | 0.50              |
| 1:0:1823:G:H2'  | 1:0:1824:C:H6   | 1.76                     | 0.50              |
| 1:0:2444:C:O2'  | 1:0:2445:C:H5'  | 2.12                     | 0.50              |
| 1:0:940:G:C3'   | 1:0:941:U:C5'   | 2.84                     | 0.50              |
| 1:0:1979:C:HO2' | 1:0:1980:A:C4'  | 2.24                     | 0.50              |
| 1:0:844:G:N1    | 1:0:845:U:C2    | 2.80                     | 0.50              |
| 1:0:1495:G:HO2' | 1:0:1496:G:P    | 2.35                     | 0.50              |
| 1:0:338:G:C5    | 1:0:339:U:C5    | 3.00                     | 0.50              |
| 1:0:1285:A:O2'  | 1:0:1286:U:OP1  | 2.23                     | 0.50              |
| 1:0:51:A:C8     | 1:0:115:G:N2    | 2.80                     | 0.50              |
| 1:0:719:A:H2'   | 1:0:720:A:C8    | 2.47                     | 0.50              |
| 1:0:594:G:C5    | 1:0:1264:C:C5   | 3.00                     | 0.50              |
| 1:0:198:A:O2'   | 1:0:199:A:P     | 2.69                     | 0.50              |
| 1:0:212:U:O2'   | 1:0:213:C:H5'   | 2.12                     | 0.50              |
| 1:0:1819:U:H2'  | 1:0:1820:G:O4'  | 2.12                     | 0.50              |
| 1:0:2294:U:H2'  | 1:0:2295:C:O4'  | 2.12                     | 0.50              |
| 1:0:1840:A:H2'  | 1:0:1841:G:C5'  | 2.42                     | 0.50              |
| 1:0:2658:A:H2'  | 1:0:2659:C:H6   | 1.76                     | 0.50              |
| 1:0:2121:U:O5'  | 1:0:2121:U:H6   | 1.94                     | 0.50              |
| 1:0:2426:G:C5'  | 1:0:2427:A:O5'  | 2.59                     | 0.50              |
| 1:0:2756:A:N6   | 1:0:2762:G:N3   | 2.60                     | 0.50              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2759:U:C4'  | 1:0:2760:G:OP2  | 2.49                     | 0.50              |
| 1:0:2831:A:H2'  | 1:0:2832:G:O4'  | 2.12                     | 0.50              |
| 1:0:1300:A:N7   | 1:0:1301:U:C4   | 2.79                     | 0.50              |
| 1:0:1665:C:O2'  | 1:0:1666:G:H5'  | 2.12                     | 0.50              |
| 1:0:70:A:O2'    | 1:0:71:A:P      | 2.69                     | 0.50              |
| 1:0:2504:G:H8   | 1:0:2504:G:H5'  | 1.77                     | 0.50              |
| 1:0:2781:G:C6   | 1:0:2782:G:C6   | 3.00                     | 0.50              |
| 1:0:1685:A:N7   | 1:0:1691:G:C5   | 2.80                     | 0.50              |
| 1:0:459:A:N7    | 1:0:484:G:C6    | 2.80                     | 0.50              |
| 1:0:513:A:C6    | 1:0:515:A:N6    | 2.80                     | 0.50              |
| 1:0:1151:U:C5'  | 1:0:1153:A:OP1  | 2.58                     | 0.50              |
| 1:0:161:U:H2'   | 1:0:162:C:C6    | 2.46                     | 0.50              |
| 1:0:2389:G:H2'  | 1:0:2390:A:O4'  | 2.12                     | 0.50              |
| 1:0:402:A:N3    | 1:0:402:A:H2'   | 2.27                     | 0.50              |
| 1:0:367:G:C2'   | 1:0:368:A:H5''  | 2.42                     | 0.50              |
| 1:0:1955:G:H2'  | 1:0:1956:G:H8   | 1.77                     | 0.50              |
| 1:0:1861:G:O5'  | 1:0:1861:G:H8   | 1.95                     | 0.50              |
| 1:0:2299:A:N3   | 1:0:2299:A:H2'  | 2.27                     | 0.50              |
| 1:0:1390:G:O5'  | 1:0:1390:G:H8   | 1.95                     | 0.50              |
| 1:0:2058:U:H1'  | 1:0:2576:G:H21  | 1.77                     | 0.50              |
| 3:0:0:G34:H14   | 3:0:0:G34:C10   | 2.34                     | 0.49              |
| 1:0:1002:C:O4'  | 1:0:1198:C:H2'  | 2.12                     | 0.49              |
| 1:0:2219:U:O2'  | 1:0:2220:A:H5'  | 2.12                     | 0.49              |
| 1:0:2038:C:H2'  | 1:0:2483:U:C5'  | 2.41                     | 0.49              |
| 1:0:1724:C:N3   | 1:0:1747:G:C6   | 2.80                     | 0.49              |
| 1:0:2676:G:H2'  | 1:0:2677:U:O4'  | 2.12                     | 0.49              |
| 1:0:221:A:H2    | 1:0:222:G:H1'   | 1.77                     | 0.49              |
| 1:0:1707:A:C8   | 1:0:1708:C:C6   | 2.99                     | 0.49              |
| 1:0:1715:A:HO2' | 1:0:1716:G:C3'  | 2.22                     | 0.49              |
| 1:0:708:G:P     | 1:0:1442:C:N4   | 2.84                     | 0.49              |
| 1:0:1467:U:C3'  | 1:0:1468:A:H5'  | 2.39                     | 0.49              |
| 1:0:1164:C:N3   | 1:0:1165:G:C4   | 2.80                     | 0.49              |
| 1:0:514:G:O5'   | 1:0:514:G:C8    | 2.64                     | 0.49              |
| 1:0:2096:U:C3'  | 1:0:2097:A:H5'' | 2.41                     | 0.49              |
| 1:0:2434:G:H2'  | 1:0:2435:C:C6   | 2.47                     | 0.49              |
| 1:0:2435:C:H2'  | 1:0:2436:U:O4'  | 2.12                     | 0.49              |
| 1:0:2806:G:O4'  | 1:0:2858:A:C2   | 2.65                     | 0.49              |
| 1:0:926:C:O5'   | 1:0:926:C:C6    | 2.65                     | 0.49              |
| 1:0:2601:C:C2'  | 1:0:2602:G:O5'  | 2.60                     | 0.49              |
| 1:0:1004:A:C5   | 1:0:1005:U:C5   | 2.99                     | 0.49              |
| 1:0:2027:C:C6   | 1:0:2604:G:N2   | 2.80                     | 0.49              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2425:G:C2'  | 1:0:2426:G:H5' | 2.42                     | 0.49              |
| 1:0:583:C:H4'   | 1:0:584:A:C5'  | 2.42                     | 0.49              |
| 1:0:751:G:C8    | 1:0:772:G:N1   | 2.79                     | 0.49              |
| 1:0:751:G:N2    | 1:0:752:G:O2'  | 2.45                     | 0.49              |
| 1:0:812:G:C6    | 1:0:813:A:C6   | 3.01                     | 0.49              |
| 1:0:1629:G:C5   | 1:0:1633:C:N3  | 2.80                     | 0.49              |
| 1:0:1685:A:HO2' | 1:0:1686:A:P   | 2.35                     | 0.49              |
| 1:0:1927:U:C2'  | 1:0:1927:U:O2  | 2.55                     | 0.49              |
| 1:0:549:G:H2'   | 1:0:550:C:O4'  | 2.12                     | 0.49              |
| 1:0:2082:C:N4   | 1:0:2174:G:C2  | 2.80                     | 0.49              |
| 1:0:1016:C:C2   | 1:0:1154:A:C6  | 3.00                     | 0.49              |
| 1:0:1018:C:C5   | 1:0:1019:U:H5  | 2.30                     | 0.49              |
| 1:0:1407:G:N1   | 1:0:1408:A:C2  | 2.81                     | 0.49              |
| 1:0:1779:C:H2'  | 1:0:1780:A:H8  | 1.72                     | 0.49              |
| 1:0:313:U:C2    | 1:0:314:G:C8   | 3.00                     | 0.49              |
| 1:0:2404:A:O4'  | 1:0:2406:C:C6  | 2.65                     | 0.49              |
| 1:0:742:G:O2'   | 1:0:776:G:H4'  | 2.12                     | 0.49              |
| 1:0:758:G:C2    | 1:0:766:A:C6   | 3.00                     | 0.49              |
| 1:0:849:G:C8    | 1:0:850:C:H5   | 2.31                     | 0.49              |
| 1:0:1619:A:H2'  | 1:0:1620:C:H5' | 1.94                     | 0.49              |
| 1:0:1697:U:O2   | 1:0:1754:G:C8  | 2.65                     | 0.49              |
| 1:0:1980:A:C2'  | 1:0:1981:A:H5' | 2.42                     | 0.49              |
| 1:0:621:U:O2'   | 1:0:622:U:H5'  | 2.11                     | 0.49              |
| 1:0:2264:C:C2'  | 1:0:2265:A:H5' | 2.42                     | 0.49              |
| 1:0:2270:U:O5'  | 1:0:2270:U:H6  | 1.95                     | 0.49              |
| 1:0:661:C:H2'   | 1:0:662:G:H8   | 1.77                     | 0.49              |
| 1:0:351:A:H2'   | 1:0:352:G:O4'  | 2.13                     | 0.49              |
| 1:0:1057:A:H3'  | 1:0:1058:G:C5' | 2.36                     | 0.49              |
| 1:0:429:C:H2'   | 1:0:430:C:H6   | 1.76                     | 0.49              |
| 1:0:2714:A:H2'  | 1:0:2715:C:C6  | 2.47                     | 0.49              |
| 1:0:26:G:C6     | 1:0:27:G:N1    | 2.80                     | 0.49              |
| 1:0:520:C:O2    | 1:0:520:C:C2'  | 2.59                     | 0.49              |
| 1:0:521:U:H5''  | 1:0:522:G:OP2  | 2.11                     | 0.49              |
| 1:0:2748:C:N4   | 1:0:2749:A:N6  | 2.60                     | 0.49              |
| 1:0:1142:G:O2'  | 1:0:1143:A:O4' | 2.20                     | 0.49              |
| 1:0:1175:A:N1   | 1:0:1176:U:C4  | 2.80                     | 0.49              |
| 1:0:2036:G:H2'  | 1:0:2037:A:O4' | 2.13                     | 0.49              |
| 1:0:2052:G:C6   | 1:0:2053:G:N7  | 2.81                     | 0.49              |
| 1:0:2027:C:C2   | 1:0:2604:G:C2  | 3.00                     | 0.49              |
| 1:0:1345:G:C4   | 1:0:1625:A:C6  | 3.00                     | 0.49              |
| 1:0:399:G:H5''  | 1:0:401:G:H22  | 1.76                     | 0.49              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:34:U:H5    | 1:0:466:A:N3   | 2.10                     | 0.49              |
| 1:0:2244:C:H2' | 1:0:2245:A:N7  | 2.27                     | 0.49              |
| 1:0:1495:G:N2  | 1:0:1529:C:H1' | 2.27                     | 0.49              |
| 1:0:1190:C:H2' | 1:0:1191:G:C8  | 2.48                     | 0.49              |
| 1:0:1151:U:H5' | 1:0:1153:A:C5' | 2.42                     | 0.49              |
| 1:0:27:G:O2'   | 1:0:28:A:P     | 2.71                     | 0.49              |
| 1:0:2526:U:C4  | 1:0:2545:A:C8  | 2.99                     | 0.49              |
| 1:0:38:G:H2'   | 1:0:39:C:C6    | 2.48                     | 0.49              |
| 1:0:1964:A:C5' | 1:0:1965:U:OP2 | 2.60                     | 0.49              |
| 1:0:2286:G:N7  | 1:0:2287:G:H1' | 2.27                     | 0.49              |
| 1:0:1026:U:O2' | 1:0:1027:C:H5' | 2.12                     | 0.49              |
| 1:0:1178:C:C2  | 1:0:1196:G:N2  | 2.81                     | 0.49              |
| 1:0:2756:A:N6  | 1:0:2762:G:H1' | 2.27                     | 0.49              |
| 1:0:787:A:O2'  | 1:0:788:G:C5'  | 2.58                     | 0.49              |
| 1:0:849:G:C8   | 1:0:850:C:C5   | 3.00                     | 0.49              |
| 1:0:973:U:O2'  | 1:0:974:U:H5'  | 2.11                     | 0.49              |
| 1:0:2781:G:O3' | 1:0:2782:G:O4' | 2.30                     | 0.49              |
| 1:0:1443:G:O2' | 1:0:1444:C:H5' | 2.12                     | 0.49              |
| 1:0:1163:C:O2' | 1:0:1164:C:H5' | 2.13                     | 0.49              |
| 1:0:52:A:N6    | 1:0:115:G:O2'  | 2.45                     | 0.49              |
| 1:0:1255:A:C6  | 1:0:1256:C:N4  | 2.81                     | 0.49              |
| 1:0:1209:G:O2' | 1:0:1210:C:H5' | 2.12                     | 0.49              |
| 1:0:2870:C:H2' | 1:0:2871:U:C6  | 2.47                     | 0.49              |
| 1:0:1067:G:O6  | 1:0:1112:U:O5' | 2.31                     | 0.49              |
| 1:0:2795:A:C2' | 1:0:2796:A:OP1 | 2.60                     | 0.49              |
| 1:0:608:G:O2'  | 1:0:609:U:H5'  | 2.12                     | 0.49              |
| 1:0:2489:C:C4  | 1:0:2490:U:C5  | 3.01                     | 0.49              |
| 1:0:1173:G:C4  | 1:0:1174:G:C8  | 3.01                     | 0.49              |
| 1:0:537:C:C5   | 1:0:2759:U:H6  | 2.29                     | 0.49              |
| 1:0:2767:C:N4  | 1:0:2768:C:N4  | 2.61                     | 0.49              |
| 1:0:1164:C:N4  | 1:0:1165:G:C6  | 2.80                     | 0.49              |
| 1:0:1354:A:H8  | 1:0:1354:A:P   | 2.35                     | 0.49              |
| 1:0:1140:A:N6  | 1:0:2470:U:OP1 | 2.45                     | 0.49              |
| 1:0:305:A:H2'  | 1:0:306:G:O4'  | 2.12                     | 0.49              |
| 1:0:781:G:H2'  | 1:0:782:U:C6   | 2.48                     | 0.49              |
| 1:0:2523:G:H2' | 1:0:2524:G:O4' | 2.12                     | 0.49              |
| 1:0:1549:C:H6  | 1:0:1549:C:O5' | 1.96                     | 0.49              |
| 1:0:2092:U:C6  | 1:0:2092:U:O5' | 2.63                     | 0.49              |
| 1:0:1876:C:H2' | 1:0:1877:C:H5' | 1.95                     | 0.49              |
| 1:0:1142:G:O2' | 1:0:1143:A:C5' | 2.60                     | 0.49              |
| 1:0:1198:C:OP1 | 1:0:1199:U:H4' | 2.12                     | 0.49              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1532:A:H2' | 1:0:1533:G:C8   | 2.48                     | 0.49              |
| 1:0:2493:U:H2' | 1:0:2494:C:C6   | 2.47                     | 0.49              |
| 1:0:765:C:O2'  | 1:0:766:A:C8    | 2.64                     | 0.49              |
| 1:0:1982:C:H4' | 1:0:2703:C:O2   | 2.12                     | 0.49              |
| 1:0:169:C:H2'  | 1:0:170:U:H5'   | 1.95                     | 0.49              |
| 1:0:615:C:C2   | 1:0:634:G:N2    | 2.80                     | 0.49              |
| 1:0:1682:A:N6  | 1:0:1683:G:C6   | 2.81                     | 0.49              |
| 1:0:1757:C:O2  | 1:0:1970:G:C2   | 2.65                     | 0.49              |
| 1:0:2409:A:C2' | 1:0:2410:U:H5'  | 2.43                     | 0.49              |
| 1:0:2351:G:C2  | 1:0:2352:A:C8   | 3.01                     | 0.49              |
| 1:0:1036:G:C4  | 1:0:1145:C:O4'  | 2.66                     | 0.49              |
| 1:0:1151:U:C5' | 1:0:1153:A:O4'  | 2.61                     | 0.49              |
| 1:0:2097:A:H1' | 1:0:2105:U:OP1  | 2.13                     | 0.49              |
| 1:0:425:A:N7   | 1:0:2390:A:H2   | 2.11                     | 0.49              |
| 1:0:1404:C:N4  | 1:0:1408:A:H62  | 2.09                     | 0.49              |
| 1:0:2542:U:O2  | 1:0:2545:A:C8   | 2.66                     | 0.49              |
| 1:0:1866:G:H2' | 1:0:1867:A:O4'  | 2.13                     | 0.49              |
| 1:0:39:C:C4    | 1:0:40:U:O4     | 2.66                     | 0.49              |
| 1:0:2169:A:H8  | 1:0:2169:A:O5'  | 1.95                     | 0.49              |
| 1:0:2015:G:N2  | 1:0:2038:C:C4   | 2.81                     | 0.49              |
| 1:0:2492:G:O6  | 1:0:2553:G:C5   | 2.66                     | 0.49              |
| 1:0:2604:G:C6  | 1:0:2605:C:N3   | 2.80                     | 0.49              |
| 1:0:1337:G:C1' | 1:0:1632:A:N6   | 2.70                     | 0.49              |
| 1:0:1665:C:N4  | 1:0:1993:G:C6   | 2.81                     | 0.49              |
| 1:0:1508:G:C2  | 1:0:1512:A:N6   | 2.81                     | 0.49              |
| 1:0:69:G:C4'   | 1:0:70:A:OP1    | 2.38                     | 0.49              |
| 1:0:2498:U:C5  | 1:0:2520:A:C6   | 3.01                     | 0.49              |
| 1:0:1970:G:O2' | 1:0:1971:C:H5'  | 2.12                     | 0.49              |
| 1:0:7:G:N2     | 1:0:8:A:N3      | 2.61                     | 0.49              |
| 1:0:344:G:C2   | 1:0:345:U:C5    | 3.00                     | 0.49              |
| 1:0:1806:G:O6  | 1:0:1807:A:N6   | 2.46                     | 0.49              |
| 1:0:547:U:H2'  | 1:0:548:G:C8    | 2.32                     | 0.49              |
| 1:0:1181:C:C3' | 1:0:1182:U:H5'' | 2.33                     | 0.49              |
| 1:0:1040:A:C8  | 1:0:1041:G:C8   | 3.00                     | 0.49              |
| 1:0:1145:C:C6  | 1:0:1147:G:OP2  | 2.66                     | 0.49              |
| 1:0:2161:C:O2' | 1:0:2162:C:P    | 2.70                     | 0.49              |
| 1:0:531:G:H2'  | 1:0:532:A:H8    | 1.78                     | 0.49              |
| 1:0:369:C:O2'  | 1:0:370:U:H5'   | 2.13                     | 0.49              |
| 1:0:2795:A:O2' | 1:0:2796:A:OP1  | 2.28                     | 0.49              |
| 1:0:1663:C:H3' | 1:0:1663:C:H6   | 1.77                     | 0.49              |
| 1:0:2419:C:C4  | 1:0:2420:C:H1'  | 2.48                     | 0.49              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:536:A:N1   | 1:0:2605:C:H4'  | 2.27                     | 0.49              |
| 1:0:698:A:O2'  | 1:0:699:G:OP2   | 2.28                     | 0.49              |
| 1:0:815:A:C2'  | 1:0:816:U:O5'   | 2.61                     | 0.49              |
| 1:0:1325:U:H4' | 1:0:1326:U:O5'  | 2.12                     | 0.49              |
| 1:0:501:G:H2'  | 1:0:502:A:H8    | 1.78                     | 0.49              |
| 1:0:2498:U:C4  | 1:0:2521:A:N7   | 2.81                     | 0.49              |
| 1:0:1684:G:O5' | 1:0:1684:G:H8   | 1.96                     | 0.49              |
| 1:0:871:U:C2   | 1:0:2247:A:C8   | 3.01                     | 0.49              |
| 1:0:646:C:H2'  | 1:0:647:G:O4'   | 2.12                     | 0.49              |
| 1:0:1040:A:O5' | 1:0:1040:A:H8   | 1.95                     | 0.49              |
| 1:0:192:G:H4'  | 1:0:193:A:H4'   | 1.95                     | 0.49              |
| 1:0:2652:G:N3  | 1:0:2653:A:C8   | 2.80                     | 0.49              |
| 1:0:2447:G:O2' | 1:0:2448:A:C5'  | 2.58                     | 0.49              |
| 1:0:105:G:O2'  | 1:0:106:G:H5'   | 2.12                     | 0.49              |
| 1:0:2526:U:C5  | 1:0:2545:A:N7   | 2.81                     | 0.49              |
| 1:0:1800:A:H2' | 1:0:1802:A:C8   | 2.48                     | 0.49              |
| 1:0:1448:A:H61 | 1:0:1574:A:H61  | 1.61                     | 0.49              |
| 1:0:538:A:H2   | 1:0:2026:C:C5'  | 2.26                     | 0.49              |
| 1:0:2240:C:O2' | 1:0:2241:U:H5'' | 2.12                     | 0.49              |
| 1:0:68:C:C2'   | 1:0:68:C:O2     | 2.59                     | 0.49              |
| 1:0:2504:G:C2  | 1:0:2518:C:C2   | 3.01                     | 0.49              |
| 1:0:10:A:N1    | 1:0:2608:A:C2   | 2.80                     | 0.49              |
| 1:0:2609:G:C8  | 1:0:2868:G:N3   | 2.81                     | 0.49              |
| 1:0:1692:C:H2' | 1:0:1693:A:C5'  | 2.43                     | 0.49              |
| 1:0:1443:G:H2' | 1:0:1444:C:H6   | 1.78                     | 0.49              |
| 1:0:929:A:C2   | 1:0:930:A:H1'   | 2.48                     | 0.49              |
| 1:0:1015:U:C4' | 1:0:1021:A:N7   | 2.76                     | 0.49              |
| 1:0:651:C:H42  | 1:0:658:G:H1    | 1.61                     | 0.49              |
| 1:0:2044:G:O2' | 1:0:2045:A:P    | 2.71                     | 0.48              |
| 1:0:2404:A:H5' | 1:0:2406:C:H5'  | 1.95                     | 0.48              |
| 1:0:701:U:HO2' | 1:0:1771:A:H2   | 1.57                     | 0.48              |
| 1:0:793:G:O5'  | 1:0:793:G:H8    | 1.95                     | 0.48              |
| 1:0:1621:C:H4' | 1:0:1626:A:C6   | 2.48                     | 0.48              |
| 1:0:1636:G:H2' | 1:0:1637:U:H6   | 1.77                     | 0.48              |
| 1:0:219:G:O2'  | 1:0:220:U:OP2   | 2.30                     | 0.48              |
| 1:0:2867:G:OP2 | 1:0:2867:G:C8   | 2.64                     | 0.48              |
| 1:0:1685:A:H61 | 1:0:1693:A:H61  | 1.61                     | 0.48              |
| 1:0:1920:A:C6  | 1:0:1922:U:C5   | 3.01                     | 0.48              |
| 1:0:343:A:C5   | 1:0:346:C:C4    | 3.01                     | 0.48              |
| 1:0:307:C:N3   | 1:0:308:C:C5    | 2.81                     | 0.48              |
| 1:0:1866:G:O5' | 1:0:1866:G:H8   | 1.95                     | 0.48              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2556:A:C2   | 1:0:2593:A:C2  | 3.01                     | 0.48              |
| 1:0:541:C:H5''  | 1:0:542:A:C4   | 2.48                     | 0.48              |
| 1:0:697:G:C2    | 1:0:788:G:C6   | 3.01                     | 0.48              |
| 1:0:995:A:O2'   | 1:0:996:C:P    | 2.70                     | 0.48              |
| 1:0:2674:C:C2   | 1:0:2675:U:C5  | 2.97                     | 0.48              |
| 1:0:225:G:C5'   | 1:0:226:C:H5'  | 2.43                     | 0.48              |
| 1:0:616:U:C2    | 1:0:632:A:N1   | 2.81                     | 0.48              |
| 1:0:1715:A:O2'  | 1:0:1716:G:O5' | 2.30                     | 0.48              |
| 1:0:939:C:C4    | 1:0:940:G:O6   | 2.65                     | 0.48              |
| 1:0:1351:G:C2   | 1:0:1352:G:C4  | 3.01                     | 0.48              |
| 1:0:2075:U:C2'  | 1:0:2076:G:OP2 | 2.61                     | 0.48              |
| 1:0:1045:G:N2   | 1:0:1133:G:H1' | 2.28                     | 0.48              |
| 1:0:105:G:C2'   | 1:0:106:G:H5'  | 2.43                     | 0.48              |
| 1:0:1266:G:O3'  | 1:0:1267:A:O4' | 2.31                     | 0.48              |
| 1:0:1964:A:H5'' | 1:0:1965:U:OP2 | 2.12                     | 0.48              |
| 1:0:561:U:H6    | 1:0:561:U:H5'' | 1.78                     | 0.48              |
| 1:0:1175:A:C2   | 1:0:1176:U:C4  | 3.02                     | 0.48              |
| 1:0:741:G:C5    | 1:0:743:A:N7   | 2.82                     | 0.48              |
| 1:0:754:G:H2'   | 1:0:755:C:H6   | 1.78                     | 0.48              |
| 1:0:2841:U:O2'  | 1:0:2842:C:P   | 2.71                     | 0.48              |
| 1:0:2825:A:C8   | 1:0:2844:G:O4' | 2.66                     | 0.48              |
| 1:0:68:C:O2'    | 1:0:72:A:O2'   | 2.08                     | 0.48              |
| 1:0:1672:A:C6   | 1:0:1673:C:C2  | 3.01                     | 0.48              |
| 1:0:2632:U:C2   | 1:0:2633:A:N7  | 2.81                     | 0.48              |
| 1:0:649:G:H2'   | 1:0:650:U:H6   | 1.78                     | 0.48              |
| 1:0:1179:A:H2'  | 1:0:1180:A:H8  | 1.78                     | 0.48              |
| 1:0:705:C:H2'   | 1:0:706:A:C8   | 2.48                     | 0.48              |
| 1:0:509:U:H2'   | 1:0:510:G:H5'  | 1.95                     | 0.48              |
| 1:0:1753:A:C8   | 1:0:1753:A:O5' | 2.58                     | 0.48              |
| 1:0:210:A:N7    | 1:0:211:U:H5   | 2.12                     | 0.48              |
| 1:0:239:A:C2    | 1:0:443:A:N3   | 2.82                     | 0.48              |
| 1:0:1602:G:HO2' | 1:0:1603:A:H8  | 1.54                     | 0.48              |
| 1:0:38:G:H1     | 1:0:453:U:H3   | 1.61                     | 0.48              |
| 1:0:580:A:C4    | 1:0:2013:A:N6  | 2.81                     | 0.48              |
| 1:0:809:C:O2'   | 1:0:810:U:H5'  | 2.13                     | 0.48              |
| 1:0:1298:G:O6   | 1:0:1342:U:C2  | 2.66                     | 0.48              |
| 1:0:1684:G:C5'  | 1:0:1684:G:H8  | 2.26                     | 0.48              |
| 1:0:470:U:C5    | 1:0:480:G:C2   | 3.01                     | 0.48              |
| 1:0:1393:G:N2   | 1:0:1394:G:H1' | 2.28                     | 0.48              |
| 1:0:1316:G:H21  | 1:0:1317:G:H1' | 1.78                     | 0.48              |
| 1:0:1459:U:O2   | 1:0:1459:U:H2' | 2.13                     | 0.48              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2205:C:C2'  | 1:0:2206:C:H5'  | 2.44                     | 0.48              |
| 1:0:215:G:N2    | 1:0:216:U:H1'   | 2.28                     | 0.48              |
| 1:0:109:A:H2'   | 1:0:110:U:O4'   | 2.14                     | 0.48              |
| 1:0:39:C:N3     | 1:0:40:U:C4     | 2.80                     | 0.48              |
| 1:0:1104:G:N2   | 1:0:1108:U:H5   | 2.11                     | 0.48              |
| 1:0:2117:A:H8   | 1:0:2118:A:H4'  | 1.76                     | 0.48              |
| 1:0:2227:C:H3'  | 1:0:2228:U:C6   | 2.48                     | 0.48              |
| 1:0:2229:G:N2   | 1:0:2475:C:H5'' | 2.28                     | 0.48              |
| 1:0:796:A:C8    | 1:0:797:A:H4'   | 2.47                     | 0.48              |
| 1:0:991:A:C6    | 1:0:992:A:C2    | 3.02                     | 0.48              |
| 1:0:1715:A:C2'  | 1:0:1716:G:OP2  | 2.61                     | 0.48              |
| 1:0:90:G:H5'    | 1:0:91:A:OP2    | 2.14                     | 0.48              |
| 1:0:2061:C:C2   | 1:0:2062:U:C6   | 3.00                     | 0.48              |
| 1:0:2564:U:HO2' | 1:0:2565:C:P    | 2.36                     | 0.48              |
| 1:0:620:G:H1    | 1:0:628:A:N6    | 2.11                     | 0.48              |
| 1:0:492:G:O2'   | 1:0:493:A:OP2   | 2.26                     | 0.48              |
| 1:0:1562:G:H5'' | 1:0:1563:U:H5'  | 1.95                     | 0.48              |
| 1:0:649:G:N1    | 1:0:660:G:N1    | 2.62                     | 0.48              |
| 1:0:1458:A:H2'  | 1:0:1459:U:C5'  | 2.42                     | 0.48              |
| 1:0:2621:G:C2   | 1:0:2753:C:O2   | 2.66                     | 0.48              |
| 1:0:336:A:N6    | 1:0:349:G:N2    | 2.62                     | 0.48              |
| 1:0:1931:G:O2'  | 1:0:1932:G:H5'  | 2.12                     | 0.48              |
| 1:0:2826:C:C2'  | 1:0:2827:G:H5'  | 2.40                     | 0.48              |
| 1:0:1685:A:C2   | 1:0:1976:U:C2   | 3.01                     | 0.48              |
| 1:0:1250:A:O2'  | 1:0:1251:G:C4'  | 2.62                     | 0.48              |
| 1:0:322:A:C8    | 1:0:343:A:C4    | 3.02                     | 0.48              |
| 1:0:344:G:C2    | 1:0:345:U:C6    | 3.00                     | 0.48              |
| 1:0:516:G:C2'   | 1:0:517:A:OP2   | 2.61                     | 0.48              |
| 1:0:2660:C:O2'  | 1:0:2661:G:H5'  | 2.13                     | 0.48              |
| 1:0:1474:A:C2   | 1:0:1476:G:C6   | 3.00                     | 0.48              |
| 1:0:1453:A:H2'  | 1:0:1454:U:O4'  | 2.13                     | 0.48              |
| 1:0:1035:G:N1   | 1:0:1036:G:O6   | 2.47                     | 0.48              |
| 1:0:2096:U:H2'  | 1:0:2097:A:H5'' | 1.95                     | 0.48              |
| 1:0:2103:G:H2'  | 1:0:2104:G:O4'  | 2.13                     | 0.48              |
| 1:0:1997:A:H2'  | 1:0:1998:A:N7   | 2.28                     | 0.48              |
| 1:0:1234:C:C2   | 1:0:1235:C:C6   | 3.02                     | 0.48              |
| 1:0:528:G:H2'   | 1:0:529:U:C6    | 2.49                     | 0.48              |
| 1:0:406:G:C5    | 1:0:407:A:N7    | 2.82                     | 0.48              |
| 1:0:1546:C:H2'  | 1:0:1547:U:C5   | 2.49                     | 0.48              |
| 1:0:2273:C:H2'  | 1:0:2274:C:H6   | 1.78                     | 0.48              |
| 1:0:2004:U:O2'  | 1:0:2005:U:OP1  | 2.30                     | 0.48              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2404:A:H4' | 1:0:2405:A:O5'  | 2.13                     | 0.48              |
| 1:0:2047:C:O2  | 1:0:2429:A:C5   | 2.67                     | 0.48              |
| 1:0:985:G:C5   | 1:0:1200:G:C2   | 3.01                     | 0.48              |
| 1:0:616:U:O2   | 1:0:632:A:N1    | 2.46                     | 0.48              |
| 1:0:918:A:H2'  | 1:0:919:U:C5'   | 2.25                     | 0.48              |
| 1:0:2510:A:H61 | 1:0:2641:A:N6   | 2.12                     | 0.48              |
| 1:0:2637:C:N4  | 1:0:2643:G:N2   | 2.62                     | 0.48              |
| 1:0:1162:A:H2' | 1:0:1163:C:O4'  | 2.13                     | 0.48              |
| 1:0:987:G:O6   | 1:0:999:A:C2    | 2.66                     | 0.48              |
| 1:0:318:G:N2   | 1:0:321:A:O4'   | 2.47                     | 0.48              |
| 1:0:1415:C:O2' | 1:0:1416:A:H5'  | 2.14                     | 0.48              |
| 1:0:1476:G:C5  | 1:0:1477:C:C5   | 3.02                     | 0.48              |
| 1:0:1391:A:H1' | 1:0:1392:U:C4   | 2.49                     | 0.48              |
| 1:0:240:U:H2'  | 1:0:241:C:O4'   | 2.14                     | 0.48              |
| 1:0:27:G:N2    | 1:0:522:G:O2'   | 2.46                     | 0.48              |
| 1:0:1866:G:O5' | 1:0:1866:G:C8   | 2.66                     | 0.48              |
| 1:0:1348:C:H2' | 1:0:1349:A:H8   | 1.79                     | 0.48              |
| 1:0:1831:G:C5  | 1:0:1832:G:C8   | 3.02                     | 0.48              |
| 1:0:2484:G:C1' | 3:0:0:G34:H182  | 2.41                     | 0.48              |
| 1:0:583:C:H1'  | 1:0:2038:C:C6   | 2.48                     | 0.48              |
| 1:0:2238:G:C6  | 1:0:2239:C:C4   | 3.02                     | 0.48              |
| 1:0:968:C:O2'  | 1:0:969:U:P     | 2.72                     | 0.48              |
| 1:0:987:G:C2   | 1:0:988:G:N7    | 2.81                     | 0.48              |
| 1:0:1016:C:C2  | 1:0:1017:C:H5   | 2.32                     | 0.48              |
| 1:0:1136:G:C6  | 1:0:1137:A:N6   | 2.82                     | 0.48              |
| 1:0:529:U:H2'  | 1:0:530:G:H8    | 1.79                     | 0.48              |
| 1:0:2788:C:C2  | 1:0:2789:U:C6   | 3.02                     | 0.48              |
| 1:0:2870:C:H2' | 1:0:2871:U:H6   | 1.79                     | 0.48              |
| 1:0:24:G:H2'   | 1:0:25:U:C6     | 2.49                     | 0.48              |
| 1:0:1767:G:C2' | 1:0:1768:U:H5'  | 2.44                     | 0.48              |
| 1:0:2278:A:H2' | 1:0:2279:G:O4'  | 2.14                     | 0.48              |
| 1:0:2041:A:C6  | 1:0:2042:A:N6   | 2.82                     | 0.48              |
| 1:0:2046:C:H3' | 1:0:2047:C:H5'' | 1.95                     | 0.48              |
| 1:0:2431:C:O2  | 1:0:2432:A:N9   | 2.46                     | 0.48              |
| 1:0:847:C:O2'  | 1:0:848:A:H5'   | 2.14                     | 0.48              |
| 1:0:973:U:H2'  | 1:0:974:U:O4'   | 2.14                     | 0.48              |
| 1:0:1982:C:H2' | 1:0:1983:G:O4'  | 2.13                     | 0.48              |
| 1:0:2837:G:C6  | 1:0:2838:U:C4   | 3.01                     | 0.48              |
| 1:0:219:G:N2   | 1:0:231:G:H2'   | 2.29                     | 0.48              |
| 1:0:1441:A:H3' | 1:0:1441:A:N3   | 2.28                     | 0.48              |
| 1:0:1681:A:OP1 | 1:0:1682:A:OP2  | 2.31                     | 0.48              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1672:A:H3'  | 1:0:1673:C:C6  | 2.49                     | 0.48              |
| 1:0:2634:G:H2'  | 1:0:2643:G:O6  | 2.14                     | 0.48              |
| 1:0:1458:A:C3'  | 1:0:1459:U:H5' | 2.41                     | 0.48              |
| 1:0:2174:G:H2'  | 1:0:2175:A:C8  | 2.49                     | 0.48              |
| 1:0:2469:G:C4'  | 1:0:2470:U:OP1 | 2.62                     | 0.48              |
| 1:0:239:A:H2    | 1:0:443:A:N3   | 2.11                     | 0.48              |
| 1:0:1821:A:H3'  | 1:0:1822:C:C6  | 2.49                     | 0.48              |
| 1:0:1916:G:H2'  | 1:0:1917:C:O4' | 2.12                     | 0.48              |
| 1:0:2342:U:O2'  | 1:0:2343:C:H5' | 2.13                     | 0.48              |
| 1:0:2014:A:N6   | 1:0:2477:C:C1' | 2.67                     | 0.48              |
| 1:0:2758:A:O2'  | 1:0:2759:U:OP2 | 2.30                     | 0.48              |
| 1:0:744:C:C2    | 1:0:745:C:C5   | 3.02                     | 0.48              |
| 1:0:833:A:C2    | 1:0:834:A:C4   | 3.01                     | 0.48              |
| 1:0:2822:U:O4   | 1:0:2823:G:N1  | 2.47                     | 0.48              |
| 1:0:1385:C:C2   | 1:0:1386:A:C8  | 3.01                     | 0.48              |
| 1:0:57:G:C2     | 1:0:72:A:C8    | 2.99                     | 0.48              |
| 1:0:1693:A:N6   | 1:0:1694:A:C6  | 2.82                     | 0.48              |
| 1:0:174:A:C2    | 1:0:175:C:H1'  | 2.49                     | 0.48              |
| 1:0:1920:A:H8   | 1:0:1922:U:OP2 | 1.97                     | 0.48              |
| 1:0:874:A:H2'   | 1:0:875:G:O4'  | 2.14                     | 0.48              |
| 1:0:1011:A:N1   | 1:0:1166:A:C5  | 2.82                     | 0.48              |
| 1:0:322:A:H1'   | 1:0:343:A:N9   | 2.29                     | 0.48              |
| 1:0:345:U:OP1   | 1:0:346:C:N4   | 2.47                     | 0.48              |
| 1:0:2269:G:N2   | 1:0:2322:U:H1' | 2.29                     | 0.48              |
| 1:0:2322:U:H2'  | 1:0:2323:U:O4' | 2.14                     | 0.48              |
| 1:0:1658:A:N7   | 1:0:1659:G:C5  | 2.82                     | 0.48              |
| 1:0:351:A:N6    | 1:0:352:G:N2   | 2.61                     | 0.48              |
| 1:0:1035:G:OP1  | 1:0:1037:U:OP1 | 2.31                     | 0.48              |
| 1:0:1153:A:O2'  | 1:0:1154:A:C3' | 2.60                     | 0.48              |
| 1:0:2860:C:H3'  | 1:0:2860:C:H6  | 1.79                     | 0.48              |
| 1:0:521:U:OP2   | 1:0:522:G:C6   | 2.67                     | 0.48              |
| 1:0:2719:U:H5'' | 1:0:2743:G:O6  | 2.14                     | 0.48              |
| 1:0:1525:A:C8   | 1:0:1526:U:H1' | 2.49                     | 0.48              |
| 1:0:3:U:H2'     | 1:0:4:C:H6     | 1.79                     | 0.48              |
| 1:0:2183:C:C2'  | 1:0:2184:C:H5' | 2.44                     | 0.48              |
| 1:0:1399:C:N4   | 1:0:1400:A:H62 | 2.12                     | 0.48              |
| 1:0:2536:G:O2'  | 1:0:2537:C:H5' | 2.14                     | 0.48              |
| 1:0:1199:U:O5'  | 1:0:1200:G:O5' | 2.32                     | 0.47              |
| 1:0:2756:A:O4'  | 1:0:2758:A:N7  | 2.47                     | 0.47              |
| 1:0:536:A:N1    | 1:0:2605:C:C4' | 2.77                     | 0.47              |
| 1:0:700:C:C2    | 1:0:800:U:O3'  | 2.67                     | 0.47              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1278:A:H1'  | 1:0:1279:G:O4'  | 2.14                     | 0.47              |
| 1:0:1707:A:H2'  | 1:0:1708:C:O4'  | 2.13                     | 0.47              |
| 1:0:2504:G:N2   | 1:0:2518:C:C2   | 2.82                     | 0.47              |
| 1:0:883:A:H3'   | 1:0:884:C:C6    | 2.48                     | 0.47              |
| 1:0:1922:U:O2'  | 1:0:2571:G:O4'  | 2.25                     | 0.47              |
| 1:0:490:A:O2'   | 1:0:491:A:H3'   | 2.14                     | 0.47              |
| 1:0:514:G:OP1   | 1:0:514:G:N7    | 2.47                     | 0.47              |
| 1:0:2324:G:N2   | 1:0:2326:C:N4   | 2.56                     | 0.47              |
| 1:0:139:A:C2    | 1:0:140:G:N7    | 2.81                     | 0.47              |
| 1:0:163:A:C6    | 1:0:188:G:C6    | 3.02                     | 0.47              |
| 1:0:2261:G:H5'' | 1:0:2262:C:O5'  | 2.13                     | 0.47              |
| 1:0:208:C:H2'   | 1:0:209:G:O4'   | 2.14                     | 0.47              |
| 1:0:1131:G:O5'  | 1:0:1131:G:H8   | 1.96                     | 0.47              |
| 1:0:2740:C:O2'  | 1:0:2741:G:H5'  | 2.14                     | 0.47              |
| 3:0:0:G34:H10   | 3:0:0:G34:C14   | 2.33                     | 0.47              |
| 1:0:832:A:C2    | 1:0:1203:A:C2   | 3.02                     | 0.47              |
| 1:0:2492:G:N3   | 1:0:2493:U:C6   | 2.82                     | 0.47              |
| 1:0:475:U:C6    | 1:0:801:A:C2    | 3.02                     | 0.47              |
| 1:0:805:G:H2'   | 1:0:2419:C:N3   | 2.29                     | 0.47              |
| 1:0:976:C:O4'   | 1:0:2252:A:C2   | 2.67                     | 0.47              |
| 1:0:2324:G:N2   | 1:0:2361:G:C4   | 2.82                     | 0.47              |
| 1:0:1478:U:H2'  | 1:0:1479:G:H8   | 1.79                     | 0.47              |
| 1:0:1017:C:O2   | 1:0:1017:C:H2'  | 2.13                     | 0.47              |
| 1:0:1133:G:O2'  | 1:0:1134:C:H5'  | 2.14                     | 0.47              |
| 1:0:47:G:O2'    | 1:0:48:A:H8     | 1.97                     | 0.47              |
| 1:0:76:C:H6     | 1:0:76:C:C5'    | 2.23                     | 0.47              |
| 1:0:2234:G:H2'  | 1:0:2235:G:O4'  | 2.15                     | 0.47              |
| 1:0:2501:U:H2'  | 1:0:2501:U:O2   | 2.14                     | 0.47              |
| 1:0:1596:A:N1   | 1:0:1597:A:H1'  | 2.29                     | 0.47              |
| 1:0:1907:C:H2'  | 1:0:1908:C:O4'  | 2.14                     | 0.47              |
| 1:0:1067:G:H21  | 1:0:1115:C:N4   | 2.12                     | 0.47              |
| 1:0:2663:U:C4   | 1:0:2664:G:N7   | 2.83                     | 0.47              |
| 1:0:1173:G:C5   | 1:0:1174:G:N7   | 2.82                     | 0.47              |
| 1:0:1448:A:C6   | 1:0:1449:C:N4   | 2.82                     | 0.47              |
| 1:0:1772:C:H4'  | 1:0:1773:C:H5'' | 1.95                     | 0.47              |
| 1:0:2038:C:C4'  | 1:0:2039:G:H5'' | 2.40                     | 0.47              |
| 1:0:2055:G:C2   | 1:0:2417:U:O2   | 2.67                     | 0.47              |
| 1:0:537:C:O2'   | 1:0:538:A:C4    | 2.67                     | 0.47              |
| 1:0:1714:A:H3'  | 1:0:1715:A:H5'' | 1.96                     | 0.47              |
| 1:0:1971:C:C2'  | 1:0:1972:G:H5'  | 2.44                     | 0.47              |
| 1:0:1226:A:H1'  | 1:0:1250:A:C2   | 2.49                     | 0.47              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:322:A:O4'   | 1:0:343:A:N3   | 2.47                     | 0.47              |
| 1:0:1190:C:O5'  | 1:0:1190:C:H6  | 1.96                     | 0.47              |
| 1:0:946:U:H2'   | 1:0:947:C:H6   | 1.79                     | 0.47              |
| 1:0:2625:U:H6   | 1:0:2625:U:O5' | 1.97                     | 0.47              |
| 1:0:327:C:H2'   | 1:0:328:A:H5'  | 1.96                     | 0.47              |
| 1:0:1820:G:HO2' | 1:0:1821:A:P   | 2.37                     | 0.47              |
| 1:0:1852:G:H2'  | 1:0:1852:G:N3  | 2.27                     | 0.47              |
| 1:0:1082:G:C6   | 1:0:1083:C:N4  | 2.82                     | 0.47              |
| 1:0:312:G:C2'   | 1:0:313:U:O5'  | 2.63                     | 0.47              |
| 1:0:2815:C:O2'  | 1:0:2816:C:H5' | 2.15                     | 0.47              |
| 1:0:1842:G:H2'  | 1:0:1843:U:H6  | 1.78                     | 0.47              |
| 1:0:13:A:N6     | 1:0:535:U:C4   | 2.81                     | 0.47              |
| 1:0:2045:A:O3'  | 1:0:2046:C:C6  | 2.67                     | 0.47              |
| 1:0:2597:G:O2'  | 1:0:2598:C:H5' | 2.15                     | 0.47              |
| 1:0:13:A:C6     | 1:0:535:U:C4   | 3.02                     | 0.47              |
| 1:0:538:A:H2'   | 1:0:539:A:H5'' | 1.96                     | 0.47              |
| 1:0:698:A:C4    | 1:0:787:A:C2   | 3.02                     | 0.47              |
| 1:0:805:G:H5''  | 1:0:806:A:O5'  | 2.15                     | 0.47              |
| 1:0:1678:G:C6   | 1:0:1983:G:C2  | 3.03                     | 0.47              |
| 1:0:2699:G:H8   | 1:0:2699:G:O5' | 1.96                     | 0.47              |
| 1:0:2516:U:C2   | 1:0:2517:C:C5  | 3.02                     | 0.47              |
| 1:0:1680:U:HO2' | 1:0:1681:A:C5' | 2.27                     | 0.47              |
| 1:0:35:G:C4     | 1:0:466:A:H2   | 2.31                     | 0.47              |
| 1:0:2510:A:N6   | 1:0:2641:A:H61 | 2.10                     | 0.47              |
| 1:0:1355:A:C2   | 1:0:1358:C:C6  | 3.02                     | 0.47              |
| 1:0:567:G:O2'   | 1:0:568:G:H5'  | 2.15                     | 0.47              |
| 1:0:357:A:C6    | 1:0:359:G:H5'  | 2.49                     | 0.47              |
| 1:0:704:G:N2    | 1:0:705:C:H1'  | 2.29                     | 0.47              |
| 1:0:48:A:H5'    | 1:0:49:U:C5'   | 2.44                     | 0.47              |
| 1:0:2386:G:C4   | 1:0:2387:U:C5  | 3.03                     | 0.47              |
| 1:0:1089:C:H2'  | 1:0:1099:A:O4' | 2.14                     | 0.47              |
| 1:0:2651:U:O2'  | 1:0:2652:G:H5' | 2.15                     | 0.47              |
| 1:0:1596:A:H2'  | 1:0:1597:A:C5' | 2.38                     | 0.47              |
| 1:0:2262:C:O2'  | 1:0:2263:C:H5' | 2.13                     | 0.47              |
| 1:0:2281:C:C2   | 1:0:2282:G:N7  | 2.82                     | 0.47              |
| 1:0:212:U:N3    | 1:0:443:A:C2   | 2.82                     | 0.47              |
| 1:0:1826:U:H1'  | 1:0:1955:G:N2  | 2.29                     | 0.47              |
| 1:0:123:A:C2'   | 1:0:124:A:OP1  | 2.62                     | 0.47              |
| 1:0:1131:G:C2   | 1:0:1132:C:C2  | 3.03                     | 0.47              |
| 1:0:2665:G:O2'  | 1:0:2666:U:H5' | 2.14                     | 0.47              |
| 1:0:2705:A:O2'  | 1:0:2706:U:O5' | 2.32                     | 0.47              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2392:G:O2' | 1:0:2393:G:H5'  | 2.14                     | 0.47              |
| 1:0:1219:C:H6  | 1:0:1219:C:O5'  | 1.97                     | 0.47              |
| 1:0:14:A:C2    | 1:0:536:A:N1    | 2.81                     | 0.47              |
| 1:0:2019:C:H2' | 1:0:2020:G:O5'  | 2.14                     | 0.47              |
| 1:0:2225:G:C4  | 1:0:2226:A:N7   | 2.83                     | 0.47              |
| 1:0:955:G:H8   | 1:0:955:G:H5''  | 1.79                     | 0.47              |
| 1:0:984:A:H1'  | 1:0:1202:U:N1   | 2.21                     | 0.47              |
| 1:0:1297:A:C6  | 1:0:1298:G:N2   | 2.83                     | 0.47              |
| 1:0:941:U:C4'  | 1:0:941:U:OP1   | 2.61                     | 0.47              |
| 1:0:633:G:H2'  | 1:0:634:G:C8    | 2.50                     | 0.47              |
| 1:0:460:U:N3   | 1:0:592:G:H1'   | 2.29                     | 0.47              |
| 1:0:318:G:N2   | 1:0:321:A:O5'   | 2.48                     | 0.47              |
| 1:0:1895:A:H2' | 1:0:1896:A:O4'  | 2.15                     | 0.47              |
| 1:0:1644:G:O2' | 1:0:1645:U:H5'  | 2.14                     | 0.47              |
| 1:0:1656:U:H2' | 1:0:1657:A:H5'' | 1.96                     | 0.47              |
| 1:0:1191:G:H2' | 1:0:1192:A:C8   | 2.46                     | 0.47              |
| 1:0:886:A:C2   | 1:0:917:U:O2    | 2.67                     | 0.47              |
| 1:0:162:C:H2'  | 1:0:163:A:C8    | 2.47                     | 0.47              |
| 1:0:2507:U:O3' | 1:0:2508:G:C8   | 2.67                     | 0.47              |
| 1:0:2544:A:N7  | 1:0:2545:A:C2   | 2.82                     | 0.47              |
| 1:0:1120:C:C2' | 1:0:1121:G:O5'  | 2.63                     | 0.47              |
| 1:0:1008:G:O2' | 1:0:1009:C:H5'  | 2.15                     | 0.47              |
| 1:0:1704:G:H1' | 1:0:1719:G:N2   | 2.30                     | 0.47              |
| 1:0:732:G:O5'  | 1:0:732:G:H8    | 1.97                     | 0.47              |
| 1:0:765:C:O2'  | 1:0:766:A:P     | 2.73                     | 0.47              |
| 1:0:772:G:C4   | 1:0:773:G:C8    | 3.02                     | 0.47              |
| 1:0:1682:A:C6  | 1:0:1683:G:C5   | 3.03                     | 0.47              |
| 1:0:1979:C:C2' | 1:0:1980:A:O4'  | 2.63                     | 0.47              |
| 1:0:1585:A:C6  | 1:0:1586:A:C6   | 3.02                     | 0.47              |
| 1:0:1950:C:C4  | 1:0:1951:G:N7   | 2.83                     | 0.47              |
| 1:0:1015:U:H1' | 1:0:1021:A:C8   | 2.49                     | 0.47              |
| 1:0:1015:U:H5' | 1:0:1021:A:N6   | 2.29                     | 0.47              |
| 1:0:987:G:C2   | 1:0:988:G:C5    | 3.02                     | 0.47              |
| 1:0:2324:G:O2' | 1:0:2325:A:OP2  | 2.28                     | 0.47              |
| 1:0:947:C:H2'  | 1:0:948:C:H6    | 1.76                     | 0.47              |
| 1:0:2845:C:C4  | 1:0:2846:G:C8   | 3.02                     | 0.47              |
| 1:0:2792:C:H2' | 1:0:2793:G:O5'  | 2.13                     | 0.47              |
| 1:0:2306:A:C5  | 1:0:2367:A:N1   | 2.82                     | 0.47              |
| 1:0:2526:U:C5  | 1:0:2545:A:C5   | 3.03                     | 0.47              |
| 1:0:1861:G:C2' | 1:0:1862:C:H5'  | 2.44                     | 0.47              |
| 1:0:1105:U:N3  | 1:0:1107:A:OP2  | 2.47                     | 0.47              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1550:C:H3'  | 1:0:1551:U:O4' | 2.15                     | 0.47              |
| 1:0:559:C:C6    | 1:0:559:C:C3'  | 2.98                     | 0.47              |
| 1:0:246:C:N3    | 1:0:247:A:N7   | 2.63                     | 0.47              |
| 1:0:349:G:N1    | 1:0:350:U:O2   | 2.48                     | 0.47              |
| 1:0:2165:A:C6   | 1:0:2166:G:N7  | 2.83                     | 0.47              |
| 1:0:2592:U:O2'  | 1:0:2593:A:OP1 | 2.21                     | 0.47              |
| 1:0:834:A:C8    | 1:0:957:G:N7   | 2.82                     | 0.47              |
| 1:0:2241:U:H2'  | 1:0:2242:C:O4' | 2.14                     | 0.47              |
| 1:0:2756:A:N3   | 1:0:2758:A:C5  | 2.82                     | 0.47              |
| 1:0:474:G:N2    | 1:0:476:G:H3'  | 2.30                     | 0.47              |
| 1:0:578:U:H1'   | 1:0:958:G:O4'  | 2.15                     | 0.47              |
| 1:0:2844:G:O5'  | 1:0:2844:G:H8  | 1.98                     | 0.47              |
| 1:0:227:G:C2    | 1:0:228:A:C4   | 3.02                     | 0.47              |
| 1:0:1706:A:N3   | 1:0:1706:A:H2' | 2.29                     | 0.47              |
| 1:0:940:G:C8    | 1:0:941:U:H5'' | 2.49                     | 0.47              |
| 1:0:942:U:C2'   | 1:0:943:U:C5'  | 2.89                     | 0.47              |
| 1:0:1683:G:H2'  | 1:0:1684:G:O4' | 2.15                     | 0.47              |
| 1:0:1979:C:H2'  | 1:0:1980:A:O4' | 2.14                     | 0.47              |
| 1:0:174:A:C2    | 1:0:175:C:C1'  | 2.98                     | 0.47              |
| 1:0:929:A:C2    | 1:0:930:A:C1'  | 2.97                     | 0.47              |
| 1:0:322:A:H1'   | 1:0:343:A:O4'  | 2.13                     | 0.47              |
| 1:0:1249:G:O2'  | 1:0:1250:A:P   | 2.73                     | 0.47              |
| 1:0:1226:A:N9   | 1:0:1250:A:C2  | 2.82                     | 0.47              |
| 1:0:339:U:C2'   | 1:0:339:U:O2   | 2.61                     | 0.47              |
| 1:0:1880:G:H2'  | 1:0:1881:U:C6  | 2.49                     | 0.47              |
| 1:0:1329:U:N3   | 1:0:1330:G:N7  | 2.63                     | 0.47              |
| 1:0:1644:G:C4   | 1:0:1645:U:C5  | 3.03                     | 0.47              |
| 1:0:2205:C:H2'  | 1:0:2206:C:C5' | 2.44                     | 0.47              |
| 1:0:1055:A:H61  | 1:0:1123:G:C1' | 2.19                     | 0.47              |
| 1:0:1134:C:C2'  | 1:0:1135:C:H5' | 2.45                     | 0.47              |
| 1:0:51:A:N1     | 1:0:155:G:H1'  | 2.29                     | 0.47              |
| 1:0:2253:A:N7   | 1:0:2255:G:C8  | 2.82                     | 0.47              |
| 1:0:416:U:H5''  | 1:0:417:C:H5'  | 1.97                     | 0.47              |
| 1:0:2523:G:H1'  | 1:0:2625:U:H5' | 1.95                     | 0.47              |
| 1:0:2871:U:N3   | 1:0:2872:U:C4  | 2.82                     | 0.47              |
| 1:0:2201:G:O2'  | 1:0:2202:G:H5' | 2.14                     | 0.47              |
| 1:0:1953:A:H5'' | 1:0:1954:A:OP1 | 2.15                     | 0.47              |
| 1:0:1699:A:H2'  | 1:0:1700:C:C6  | 2.49                     | 0.47              |
| 1:0:1318:A:C2   | 1:0:1319:C:C2  | 3.02                     | 0.47              |
| 1:0:1007:A:N6   | 1:0:1171:A:C6  | 2.83                     | 0.47              |
| 1:0:754:G:N1    | 1:0:755:C:C4   | 2.83                     | 0.47              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:833:A:N3   | 1:0:954:U:O2'   | 2.48                     | 0.47              |
| 1:0:1345:G:N7  | 1:0:1625:A:N6   | 2.63                     | 0.47              |
| 1:0:1621:C:O4' | 1:0:1626:A:N1   | 2.48                     | 0.47              |
| 1:0:2198:U:P   | 1:0:2199:C:H5'' | 2.55                     | 0.47              |
| 1:0:175:C:O2   | 1:0:176:A:H8    | 1.98                     | 0.47              |
| 1:0:2637:C:C4  | 1:0:2643:G:N2   | 2.83                     | 0.47              |
| 1:0:2875:C:C2' | 1:0:2876:C:H5'  | 2.45                     | 0.47              |
| 1:0:2247:A:C8  | 1:0:2247:A:C3'  | 2.97                     | 0.47              |
| 1:0:638:A:C5   | 1:0:647:G:N2    | 2.83                     | 0.47              |
| 1:0:1355:A:C3' | 1:0:1357:U:OP2  | 2.63                     | 0.47              |
| 1:0:545:C:N4   | 1:0:546:A:H62   | 2.11                     | 0.47              |
| 1:0:1479:G:H2' | 1:0:1480:G:C8   | 2.50                     | 0.47              |
| 1:0:357:A:N3   | 1:0:358:C:H4'   | 2.30                     | 0.47              |
| 1:0:1190:C:H2' | 1:0:1191:G:O4'  | 2.15                     | 0.47              |
| 1:0:1151:U:C5' | 1:0:1153:A:C5'  | 2.93                     | 0.47              |
| 1:0:116:A:N7   | 1:0:117:A:C5    | 2.83                     | 0.47              |
| 1:0:2235:G:N2  | 1:0:2254:C:C4   | 2.83                     | 0.47              |
| 1:0:2555:G:OP1 | 1:0:2555:G:H3'  | 2.15                     | 0.47              |
| 1:0:2053:G:C2  | 1:0:2421:C:C2   | 3.02                     | 0.47              |
| 1:0:577:U:O2   | 1:0:579:G:C8    | 2.68                     | 0.47              |
| 1:0:772:G:N3   | 1:0:773:G:C8    | 2.83                     | 0.47              |
| 1:0:1386:A:H2' | 1:0:1387:G:O4'  | 2.15                     | 0.47              |
| 1:0:2517:C:O2  | 1:0:2517:C:C2'  | 2.61                     | 0.47              |
| 1:0:1011:A:C6  | 1:0:1166:A:C5   | 3.02                     | 0.47              |
| 1:0:1253:C:C5' | 1:0:1253:C:H6   | 2.26                     | 0.47              |
| 1:0:1828:C:N4  | 1:0:1829:C:N4   | 2.63                     | 0.47              |
| 1:0:1641:C:C2' | 1:0:1642:G:H5'  | 2.45                     | 0.47              |
| 1:0:1123:G:O2' | 1:0:1124:U:H5'  | 2.14                     | 0.47              |
| 1:0:185:C:H2'  | 1:0:186:C:C6    | 2.50                     | 0.47              |
| 1:0:1085:G:O2' | 1:0:1086:C:H5'  | 2.14                     | 0.47              |
| 1:0:2691:C:H2' | 1:0:2692:A:H5'  | 1.78                     | 0.47              |
| 1:0:70:A:O2'   | 1:0:71:A:C5'    | 2.62                     | 0.47              |
| 1:0:1685:A:H61 | 1:0:1693:A:N6   | 2.12                     | 0.47              |
| 1:0:1913:G:C2' | 1:0:1914:U:OP2  | 2.62                     | 0.47              |
| 1:0:2564:U:O2' | 1:0:2565:C:P    | 2.72                     | 0.47              |
| 1:0:1311:C:N4  | 1:0:1312:G:C6   | 2.83                     | 0.47              |
| 1:0:2179:C:H2' | 1:0:2180:U:O4'  | 2.15                     | 0.47              |
| 1:0:1804:U:O2' | 1:0:1805:G:O4'  | 2.32                     | 0.47              |
| 1:0:427:C:H1'  | 1:0:1856:U:H1'  | 1.96                     | 0.47              |
| 1:0:2315:A:O2' | 1:0:2364:C:H5'' | 2.14                     | 0.47              |
| 1:0:387:A:C5   | 1:0:388:G:C8    | 3.03                     | 0.47              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:387:A:C5   | 1:0:388:G:N7   | 2.82                     | 0.47              |
| 1:0:890:U:H6   | 1:0:890:U:O5'  | 1.99                     | 0.47              |
| 1:0:2108:G:N2  | 1:0:2157:C:C4  | 2.83                     | 0.47              |
| 1:0:2299:A:H2' | 1:0:2312:A:N6  | 2.30                     | 0.47              |
| 1:0:1368:G:C6  | 1:0:1390:G:N2  | 2.83                     | 0.47              |
| 1:0:2663:U:N3  | 1:0:2664:G:C5  | 2.83                     | 0.47              |
| 1:0:2440:C:H2' | 1:0:2441:U:H6  | 1.79                     | 0.47              |
| 1:0:753:U:N3   | 1:0:771:C:O2   | 2.48                     | 0.46              |
| 1:0:847:C:H1'  | 1:0:2337:A:N3  | 2.29                     | 0.46              |
| 1:0:218:A:N1   | 1:0:232:A:H5'' | 2.31                     | 0.46              |
| 1:0:616:U:H3'  | 1:0:616:U:C6   | 2.50                     | 0.46              |
| 1:0:1692:C:N4  | 1:0:1693:A:C2  | 2.83                     | 0.46              |
| 1:0:1949:A:H1' | 1:0:2572:U:C5' | 2.45                     | 0.46              |
| 1:0:338:G:C2   | 1:0:339:U:C6   | 3.03                     | 0.46              |
| 1:0:243:G:C2   | 1:0:244:C:H1'  | 2.50                     | 0.46              |
| 1:0:2748:C:C4  | 1:0:2749:A:N7  | 2.84                     | 0.46              |
| 1:0:22:C:H2'   | 1:0:23:G:O4'   | 2.15                     | 0.46              |
| 1:0:1196:G:H2' | 1:0:1197:U:O4' | 2.15                     | 0.46              |
| 1:0:2001:G:H2' | 1:0:2002:A:C8  | 2.51                     | 0.46              |
| 1:0:2226:A:H2' | 1:0:2227:C:H6  | 1.81                     | 0.46              |
| 1:0:758:G:C8   | 1:0:759:C:C5   | 3.02                     | 0.46              |
| 1:0:787:A:N1   | 1:0:788:G:O6   | 2.48                     | 0.46              |
| 1:0:791:G:C5   | 1:0:792:U:C5   | 3.04                     | 0.46              |
| 1:0:814:G:H3'  | 1:0:815:A:H5'' | 1.96                     | 0.46              |
| 1:0:837:U:H2'  | 1:0:838:A:C8   | 2.50                     | 0.46              |
| 1:0:1299:A:C2  | 1:0:1302:C:C6  | 3.03                     | 0.46              |
| 1:0:168:A:O2'  | 1:0:169:C:O4'  | 2.20                     | 0.46              |
| 1:0:71:A:C4'   | 1:0:72:A:OP1   | 2.48                     | 0.46              |
| 1:0:1587:A:H2' | 1:0:1588:A:H8  | 1.75                     | 0.46              |
| 1:0:2633:A:H4' | 1:0:2634:G:O5' | 2.16                     | 0.46              |
| 1:0:7:G:C2     | 1:0:8:A:C5     | 3.03                     | 0.46              |
| 1:0:2266:A:H62 | 1:0:2323:U:H1' | 1.79                     | 0.46              |
| 1:0:2319:G:H2' | 1:0:2320:G:H8  | 1.79                     | 0.46              |
| 1:0:1411:C:O2' | 1:0:1412:C:H5' | 2.16                     | 0.46              |
| 1:0:1309:G:H2' | 1:0:1310:C:O5' | 2.15                     | 0.46              |
| 1:0:783:G:C6   | 1:0:784:U:C4   | 3.03                     | 0.46              |
| 1:0:139:A:C2   | 1:0:140:G:C5   | 3.03                     | 0.46              |
| 1:0:2065:A:C2  | 1:0:2218:G:N3  | 2.83                     | 0.46              |
| 1:0:2625:U:O4  | 1:0:2712:G:C6  | 2.68                     | 0.46              |
| 1:0:1894:U:C6  | 1:0:1894:U:O5' | 2.66                     | 0.46              |
| 1:0:38:G:C2    | 1:0:39:C:C2    | 3.03                     | 0.46              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1651:U:H4'  | 1:0:1652:G:OP2 | 2.15                     | 0.46              |
| 1:0:597:U:H2'   | 1:0:598:U:C6   | 2.50                     | 0.46              |
| 1:0:2024:U:H2'  | 1:0:2025:A:H8  | 1.73                     | 0.46              |
| 1:0:2482:A:H5'  | 1:0:2483:U:OP2 | 2.15                     | 0.46              |
| 1:0:1278:A:C2'  | 1:0:1279:G:O5' | 2.58                     | 0.46              |
| 1:0:1301:U:H4'  | 1:0:1302:C:OP2 | 2.15                     | 0.46              |
| 1:0:2198:U:H5'' | 1:0:2199:C:OP2 | 2.15                     | 0.46              |
| 1:0:68:C:O2     | 1:0:72:A:C1'   | 2.47                     | 0.46              |
| 1:0:1672:A:H3'  | 1:0:1673:C:C5  | 2.51                     | 0.46              |
| 1:0:1394:G:C2   | 1:0:1395:A:H1' | 2.50                     | 0.46              |
| 1:0:2792:C:C2   | 1:0:2805:G:N2  | 2.82                     | 0.46              |
| 1:0:2792:C:C2'  | 1:0:2793:G:O5' | 2.63                     | 0.46              |
| 1:0:2133:G:O2'  | 1:0:2134:U:H5' | 2.16                     | 0.46              |
| 1:0:1598:C:H6   | 1:0:1598:C:O5' | 1.99                     | 0.46              |
| 1:0:605:G:H2'   | 1:0:606:A:H8   | 1.80                     | 0.46              |
| 1:0:1834:G:H2'  | 1:0:1835:C:H6  | 1.80                     | 0.46              |
| 1:0:2856:U:O4   | 1:0:2857:C:N4  | 2.48                     | 0.46              |
| 1:0:718:A:N6    | 1:0:739:G:H1'  | 2.25                     | 0.46              |
| 1:0:778:G:O2'   | 1:0:779:U:H5'  | 2.15                     | 0.46              |
| 1:0:1592:U:H6   | 1:0:1592:U:O5' | 1.99                     | 0.46              |
| 1:0:2245:A:C4   | 1:0:2251:U:C5  | 3.04                     | 0.46              |
| 1:0:1248:G:C6   | 1:0:1249:G:N2  | 2.84                     | 0.46              |
| 1:0:659:G:O5'   | 1:0:659:G:C8   | 2.65                     | 0.46              |
| 1:0:314:G:H2'   | 1:0:315:G:C8   | 2.51                     | 0.46              |
| 1:0:2379:G:O2'  | 1:0:2380:U:H5' | 2.15                     | 0.46              |
| 1:0:1648:C:H5'  | 1:0:1648:C:H6  | 1.81                     | 0.46              |
| 1:0:1000:G:C2'  | 1:0:1001:A:OP2 | 2.63                     | 0.46              |
| 1:0:831:G:OP2   | 1:0:1199:U:C2  | 2.69                     | 0.46              |
| 1:0:2225:G:C2   | 1:0:2226:A:C5  | 3.04                     | 0.46              |
| 1:0:764:A:O2'   | 1:0:765:C:P    | 2.73                     | 0.46              |
| 1:0:846:A:H2'   | 1:0:847:C:H6   | 1.80                     | 0.46              |
| 1:0:1632:A:C2'  | 1:0:1633:C:OP1 | 2.62                     | 0.46              |
| 1:0:69:G:H3'    | 1:0:69:G:P     | 2.56                     | 0.46              |
| 1:0:922:A:C2    | 1:0:923:A:C5   | 3.03                     | 0.46              |
| 1:0:2320:G:N2   | 1:0:2353:G:H4' | 2.31                     | 0.46              |
| 1:0:1791:C:O2'  | 1:0:1792:C:C3' | 2.59                     | 0.46              |
| 1:0:1355:A:C8   | 1:0:1410:U:H1' | 2.51                     | 0.46              |
| 1:0:191:G:O2'   | 1:0:192:G:H5'  | 2.14                     | 0.46              |
| 1:0:2382:C:O2   | 1:0:2383:C:C6  | 2.68                     | 0.46              |
| 1:0:2815:C:H2'  | 1:0:2816:C:O5' | 2.15                     | 0.46              |
| 1:0:2258:G:C2'  | 1:0:2259:G:O5' | 2.64                     | 0.46              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:687:G:HO2' | 1:0:688:A:H5'  | 1.81                     | 0.46              |
| 1:0:789:G:C5   | 1:0:806:A:C8   | 3.04                     | 0.46              |
| 1:0:953:G:H2'  | 1:0:954:U:C5'  | 2.37                     | 0.46              |
| 1:0:1724:C:H2' | 1:0:1725:C:C6  | 2.51                     | 0.46              |
| 1:0:219:G:O2'  | 1:0:220:U:O5'  | 2.33                     | 0.46              |
| 1:0:1672:A:C2  | 1:0:1673:C:H1' | 2.50                     | 0.46              |
| 1:0:317:U:O2   | 1:0:317:U:H2'  | 2.15                     | 0.46              |
| 1:0:1565:G:C6  | 1:0:1566:G:N7  | 2.84                     | 0.46              |
| 1:0:2359:U:H6  | 1:0:2359:U:O5' | 1.99                     | 0.46              |
| 1:0:1830:C:N4  | 1:0:1881:U:C3' | 2.69                     | 0.46              |
| 1:0:652:C:H6   | 1:0:652:C:H5'  | 1.81                     | 0.46              |
| 1:0:352:G:H2'  | 1:0:353:G:H8   | 1.81                     | 0.46              |
| 1:0:21:A:N6    | 1:0:530:G:O6   | 2.48                     | 0.46              |
| 1:0:532:A:H2'  | 1:0:533:C:C6   | 2.50                     | 0.46              |
| 1:0:685:U:C2   | 1:0:822:G:N2   | 2.84                     | 0.46              |
| 1:0:133:C:C4   | 1:0:134:G:C5   | 3.03                     | 0.46              |
| 1:0:1066:G:C2' | 1:0:1067:G:H4' | 2.45                     | 0.46              |
| 1:0:933:G:O2'  | 1:0:934:G:H5'  | 2.16                     | 0.46              |
| 1:0:1492:A:O2' | 1:0:1493:A:O4' | 2.33                     | 0.46              |
| 1:0:1537:U:O4  | 1:0:1538:A:N6  | 2.49                     | 0.46              |
| 1:0:2024:U:C4  | 1:0:2025:A:C6  | 3.04                     | 0.46              |
| 1:0:2613:A:H2' | 1:0:2614:A:H8  | 1.81                     | 0.46              |
| 1:0:537:C:H2'  | 1:0:538:A:OP2  | 2.15                     | 0.46              |
| 1:0:717:G:C2'  | 1:0:718:A:OP2  | 2.64                     | 0.46              |
| 1:0:789:G:C5   | 1:0:806:A:N7   | 2.84                     | 0.46              |
| 1:0:682:G:C1'  | 1:0:814:G:C6   | 2.99                     | 0.46              |
| 1:0:955:G:H8   | 1:0:955:G:C5'  | 2.28                     | 0.46              |
| 1:0:1678:G:C6  | 1:0:1983:G:N1  | 2.84                     | 0.46              |
| 1:0:223:C:C4   | 1:0:224:G:N7   | 2.83                     | 0.46              |
| 1:0:400:U:C4'  | 1:0:401:G:OP1  | 2.63                     | 0.46              |
| 1:0:1714:A:O2' | 1:0:1961:A:OP1 | 2.31                     | 0.46              |
| 1:0:1011:A:N1  | 1:0:1166:A:C4  | 2.84                     | 0.46              |
| 1:0:514:G:H2'  | 1:0:514:G:N3   | 2.30                     | 0.46              |
| 1:0:2268:G:O2' | 1:0:2269:G:H5' | 2.16                     | 0.46              |
| 1:0:2269:G:C2  | 1:0:2322:U:O2  | 2.69                     | 0.46              |
| 1:0:2543:A:OP1 | 1:0:2627:G:O2' | 2.34                     | 0.46              |
| 1:0:441:A:O2'  | 1:0:442:A:H5'  | 2.15                     | 0.46              |
| 1:0:2365:U:O2' | 1:0:2366:U:H5' | 2.16                     | 0.46              |
| 1:0:29:U:H2'   | 1:0:30:G:H8    | 1.80                     | 0.46              |
| 1:0:157:G:H5'  | 1:0:158:A:P    | 2.56                     | 0.46              |
| 1:0:2814:G:H2' | 1:0:2815:C:C6  | 2.51                     | 0.46              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2019:C:C2'  | 1:0:2020:G:O5'  | 2.64                     | 0.46              |
| 1:0:2242:C:N4   | 1:0:2257:A:N6   | 2.64                     | 0.46              |
| 1:0:540:G:N3    | 1:0:2004:U:O2'  | 2.49                     | 0.46              |
| 1:0:581:A:N6    | 1:0:582:G:C6    | 2.83                     | 0.46              |
| 1:0:758:G:N7    | 1:0:759:C:C5    | 2.84                     | 0.46              |
| 1:0:790:A:C4    | 1:0:791:G:C8    | 3.04                     | 0.46              |
| 1:0:2689:C:O2'  | 1:0:2690:A:O5'  | 2.33                     | 0.46              |
| 1:0:1371:G:H1'  | 1:0:1386:A:N6   | 2.31                     | 0.46              |
| 1:0:1514:C:O4'  | 1:0:1593:C:H4'  | 2.15                     | 0.46              |
| 1:0:71:A:P      | 1:0:71:A:H8     | 2.38                     | 0.46              |
| 1:0:883:A:N3    | 1:0:883:A:H2'   | 2.30                     | 0.46              |
| 1:0:466:A:C2'   | 1:0:467:U:OP2   | 2.63                     | 0.46              |
| 1:0:1443:G:C2   | 1:0:1444:C:C2   | 3.04                     | 0.46              |
| 1:0:1354:A:H8   | 1:0:1410:U:H3   | 1.64                     | 0.46              |
| 1:0:1543:G:O6   | 1:0:1544:A:C2   | 2.68                     | 0.46              |
| 1:0:351:A:N7    | 1:0:352:G:C5    | 2.84                     | 0.46              |
| 1:0:1023:U:O2   | 1:0:1154:A:N7   | 2.49                     | 0.46              |
| 1:0:48:A:C4'    | 1:0:49:U:H5''   | 2.43                     | 0.46              |
| 1:0:1097:A:H1'  | 1:0:1114:A:C2   | 2.35                     | 0.46              |
| 1:0:1261:G:HO2' | 1:0:1262:U:P    | 2.36                     | 0.46              |
| 1:0:2217:G:C5'  | 1:0:2218:G:OP1  | 2.62                     | 0.46              |
| 1:0:209:G:HO2'  | 1:0:210:A:C5'   | 2.29                     | 0.46              |
| 1:0:1737:G:H2'  | 1:0:1738:U:C6   | 2.51                     | 0.46              |
| 1:0:741:G:C6    | 1:0:743:A:C5    | 3.03                     | 0.46              |
| 1:0:831:G:H3'   | 1:0:831:G:C8    | 2.51                     | 0.46              |
| 1:0:168:A:C2    | 1:0:169:C:N3    | 2.84                     | 0.46              |
| 1:0:2769:C:H2'  | 1:0:2770:A:O4'  | 2.15                     | 0.46              |
| 1:0:1757:C:N3   | 1:0:1970:G:C6   | 2.84                     | 0.46              |
| 1:0:461:A:C4    | 1:0:462:G:C8    | 3.04                     | 0.46              |
| 1:0:2633:A:N1   | 1:0:2644:A:H5'' | 2.30                     | 0.46              |
| 1:0:2642:G:C2'  | 1:0:2643:G:O5'  | 2.64                     | 0.46              |
| 1:0:2245:A:C2   | 1:0:2251:U:C5   | 3.03                     | 0.46              |
| 1:0:1483:G:N2   | 1:0:1540:C:C2   | 2.84                     | 0.46              |
| 1:0:1791:C:H1'  | 1:0:1793:A:H5'  | 1.96                     | 0.46              |
| 1:0:1895:A:H2'  | 1:0:1896:A:C4'  | 2.46                     | 0.46              |
| 1:0:1544:A:O2'  | 1:0:1545:G:H5'  | 2.16                     | 0.46              |
| 1:0:187:U:H1'   | 1:0:1379:A:C2   | 2.51                     | 0.46              |
| 1:0:193:A:H2'   | 1:0:194:G:O4'   | 2.15                     | 0.46              |
| 1:0:404:A:H1'   | 1:0:424:G:O2'   | 2.16                     | 0.46              |
| 1:0:29:U:H2'    | 1:0:30:G:C8     | 2.51                     | 0.46              |
| 1:0:312:G:HO2'  | 1:0:313:U:H6    | 1.60                     | 0.46              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:349:G:C2    | 1:0:350:U:O2    | 2.69                     | 0.46              |
| 1:0:1831:G:C6   | 1:0:1910:A:N1   | 2.84                     | 0.46              |
| 1:0:1004:A:N6   | 1:0:1005:U:O4   | 2.49                     | 0.46              |
| 1:0:1200:G:C6   | 1:0:1201:G:C5   | 3.04                     | 0.46              |
| 1:0:1488:G:N9   | 1:0:1536:G:N2   | 2.64                     | 0.46              |
| 1:0:542:A:C8    | 1:0:543:G:H1'   | 2.51                     | 0.46              |
| 1:0:765:C:O2'   | 1:0:766:A:H8    | 1.99                     | 0.46              |
| 1:0:830:C:O2'   | 1:0:852:U:C5'   | 2.58                     | 0.46              |
| 1:0:820:U:OP1   | 1:0:843:G:N2    | 2.49                     | 0.46              |
| 1:0:1283:C:H5'' | 1:0:1284:G:O5'  | 2.16                     | 0.46              |
| 1:0:1333:G:C8   | 1:0:1342:U:H5'  | 2.50                     | 0.46              |
| 1:0:88:G:OP2    | 1:0:90:G:OP1    | 2.34                     | 0.46              |
| 1:0:468:A:H1'   | 1:0:470:U:C2    | 2.51                     | 0.46              |
| 1:0:1528:C:H3'  | 1:0:1529:C:C5'  | 2.35                     | 0.46              |
| 1:0:1830:C:H41  | 1:0:1882:G:P    | 2.38                     | 0.46              |
| 1:0:1327:C:C2   | 1:0:1352:G:N2   | 2.84                     | 0.46              |
| 1:0:1459:U:C2   | 1:0:1476:G:OP2  | 2.68                     | 0.46              |
| 1:0:1475:U:O2'  | 1:0:1476:G:OP2  | 2.30                     | 0.46              |
| 1:0:1480:G:C2   | 1:0:1481:U:O2   | 2.69                     | 0.46              |
| 1:0:2103:G:N1   | 1:0:2162:C:N4   | 2.63                     | 0.46              |
| 1:0:1900:U:H1'  | 1:0:1946:U:C4'  | 2.46                     | 0.46              |
| 1:0:1361:G:C6   | 1:0:1615:C:N3   | 2.84                     | 0.46              |
| 1:0:1616:C:H2'  | 1:0:1617:G:O4'  | 2.16                     | 0.46              |
| 1:0:2713:A:C4   | 1:0:2714:A:C8   | 3.04                     | 0.46              |
| 1:0:681:A:C5    | 1:0:683:A:C8    | 3.03                     | 0.46              |
| 1:0:1427:G:OP2  | 1:0:1428:G:C6   | 2.69                     | 0.46              |
| 1:0:1602:G:O3'  | 1:0:1603:A:H8   | 1.99                     | 0.46              |
| 1:0:1782:A:C2'  | 1:0:1783:G:H5'  | 2.45                     | 0.46              |
| 1:0:298:C:H2'   | 1:0:299:C:C6    | 2.51                     | 0.46              |
| 1:0:1522:C:H2'  | 1:0:1523:A:H5'  | 1.98                     | 0.46              |
| 1:0:1447:U:HO2' | 1:0:1448:A:H8   | 1.59                     | 0.45              |
| 1:0:2026:C:H2'  | 1:0:2027:C:H6   | 1.82                     | 0.45              |
| 1:0:2556:A:C8   | 1:0:2556:A:C3'  | 2.99                     | 0.45              |
| 1:0:755:C:H2'   | 1:0:756:C:C6    | 2.51                     | 0.45              |
| 1:0:791:G:C4    | 1:0:792:U:C5    | 3.04                     | 0.45              |
| 1:0:2837:G:C2   | 1:0:2838:U:C2   | 3.04                     | 0.45              |
| 1:0:1714:A:C3'  | 1:0:1715:A:H5'' | 2.45                     | 0.45              |
| 1:0:1587:A:C2   | 1:0:1588:A:C5   | 3.04                     | 0.45              |
| 1:0:1923:U:C4'  | 1:0:1924:C:OP1  | 2.63                     | 0.45              |
| 1:0:2510:A:N3   | 1:0:2637:C:O2'  | 2.48                     | 0.45              |
| 1:0:2637:C:N4   | 1:0:2643:G:C2   | 2.84                     | 0.45              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1466:C:C2  | 1:0:1467:U:O2  | 2.69                     | 0.45              |
| 1:0:2319:G:O2' | 1:0:2320:G:H5' | 2.17                     | 0.45              |
| 1:0:1410:U:C2' | 1:0:1410:U:O2  | 2.63                     | 0.45              |
| 1:0:2661:G:O2' | 1:0:2662:C:H5' | 2.15                     | 0.45              |
| 1:0:1644:G:C6  | 1:0:1656:U:N3  | 2.84                     | 0.45              |
| 1:0:2138:U:H3' | 1:0:2139:G:H8  | 1.80                     | 0.45              |
| 1:0:1042:G:O6  | 1:0:1043:A:N6  | 2.49                     | 0.45              |
| 1:0:2383:C:C2  | 1:0:2384:G:C8  | 3.04                     | 0.45              |
| 1:0:760:U:O2   | 1:0:1997:A:H1' | 2.16                     | 0.45              |
| 1:0:760:U:H6   | 1:0:760:U:O5'  | 1.98                     | 0.45              |
| 1:0:2433:G:H2' | 1:0:2434:G:C8  | 2.50                     | 0.45              |
| 1:0:822:G:H2'  | 1:0:823:U:C5'  | 2.45                     | 0.45              |
| 1:0:1431:U:C2' | 1:0:1432:G:H5' | 2.46                     | 0.45              |
| 1:0:521:U:OP2  | 1:0:522:G:C5   | 2.69                     | 0.45              |
| 1:0:1912:G:N3  | 1:0:1912:G:C2' | 2.79                     | 0.45              |
| 1:0:313:U:H2'  | 1:0:314:G:O4'  | 2.15                     | 0.45              |
| 1:0:1748:U:O2  | 1:0:1748:U:C2' | 2.64                     | 0.45              |
| 1:0:1290:A:H2' | 1:0:1291:G:C8  | 2.51                     | 0.45              |
| 1:0:1742:G:O2' | 1:0:1743:C:H5' | 2.16                     | 0.45              |
| 1:0:1534:A:O2' | 1:0:1535:C:H5' | 2.15                     | 0.45              |
| 1:0:2762:G:O5' | 1:0:2762:G:H8  | 2.00                     | 0.45              |
| 1:0:692:C:O2'  | 1:0:693:A:H5'  | 2.16                     | 0.45              |
| 1:0:751:G:O2'  | 1:0:752:G:O5'  | 2.24                     | 0.45              |
| 1:0:2673:G:C6  | 1:0:2696:A:C6  | 3.05                     | 0.45              |
| 1:0:976:C:O2'  | 1:0:977:G:C5'  | 2.64                     | 0.45              |
| 1:0:1373:G:H22 | 1:0:2192:U:H3  | 1.63                     | 0.45              |
| 1:0:57:G:C6    | 1:0:72:A:N6    | 2.84                     | 0.45              |
| 1:0:883:A:C6   | 1:0:920:G:C6   | 3.04                     | 0.45              |
| 1:0:457:C:C2'  | 1:0:458:G:H5'  | 2.46                     | 0.45              |
| 1:0:1671:A:C2' | 1:0:1672:A:H5' | 2.46                     | 0.45              |
| 1:0:323:G:H2'  | 1:0:323:G:N3   | 2.31                     | 0.45              |
| 1:0:488:A:C6   | 1:0:489:A:C6   | 3.04                     | 0.45              |
| 1:0:1540:C:H2' | 1:0:1541:G:O4' | 2.15                     | 0.45              |
| 1:0:1895:A:H2' | 1:0:1896:A:H5' | 1.97                     | 0.45              |
| 1:0:1188:A:OP2 | 1:0:1189:G:O6  | 2.34                     | 0.45              |
| 1:0:1475:U:H4' | 1:0:1475:U:OP2 | 2.15                     | 0.45              |
| 1:0:351:A:N7   | 1:0:352:G:C4   | 2.85                     | 0.45              |
| 1:0:1453:A:H2' | 1:0:1454:U:H5' | 1.97                     | 0.45              |
| 1:0:1039:A:H61 | 1:0:1136:G:C2' | 2.29                     | 0.45              |
| 1:0:1151:U:P   | 1:0:1153:A:OP1 | 2.74                     | 0.45              |
| 1:0:1151:U:H5' | 1:0:1153:A:H5' | 1.98                     | 0.45              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:116:A:H8   | 1:0:117:A:C8    | 2.34                     | 0.45              |
| 1:0:404:A:N7   | 1:0:405:C:C4    | 2.85                     | 0.45              |
| 1:0:105:G:C4   | 1:0:106:G:C8    | 3.04                     | 0.45              |
| 1:0:93:A:H2'   | 1:0:94:C:H6     | 1.80                     | 0.45              |
| 1:0:1963:G:O2' | 1:0:1964:A:P    | 2.74                     | 0.45              |
| 1:0:2666:U:H2' | 1:0:2667:C:O4'  | 2.16                     | 0.45              |
| 1:0:414:A:H2'  | 1:0:415:A:O4'   | 2.15                     | 0.45              |
| 1:0:2009:U:C6  | 1:0:2009:U:H3'  | 2.51                     | 0.45              |
| 1:0:2024:U:C4  | 1:0:2025:A:N6   | 2.85                     | 0.45              |
| 1:0:2759:U:O2  | 1:0:2761:A:N1   | 2.49                     | 0.45              |
| 1:0:580:A:N7   | 1:0:584:A:C6    | 2.84                     | 0.45              |
| 1:0:1635:G:C6  | 1:0:1636:G:N7   | 2.84                     | 0.45              |
| 1:0:1712:G:C2' | 1:0:1713:G:O5'  | 2.63                     | 0.45              |
| 1:0:1974:U:H2' | 1:0:1975:G:H5'  | 1.97                     | 0.45              |
| 1:0:2562:G:C4  | 1:0:2563:U:C6   | 3.05                     | 0.45              |
| 1:0:873:U:O2   | 1:0:2246:A:H5'' | 2.15                     | 0.45              |
| 1:0:1454:U:H2' | 1:0:1455:C:C6   | 2.32                     | 0.45              |
| 1:0:185:C:H2'  | 1:0:186:C:H6    | 1.80                     | 0.45              |
| 1:0:510:G:O5'  | 1:0:510:G:C8    | 2.69                     | 0.45              |
| 1:0:1431:U:H2' | 1:0:1432:G:H5'  | 1.99                     | 0.45              |
| 1:0:1818:G:H2' | 1:0:1819:U:H6   | 1.81                     | 0.45              |
| 1:0:1548:U:N3  | 1:0:1549:C:N4   | 2.60                     | 0.45              |
| 1:0:794:A:C2   | 1:0:1767:G:N3   | 2.84                     | 0.45              |
| 1:0:82:G:H22   | 1:0:100:G:C2'   | 2.30                     | 0.45              |
| 1:0:2856:U:H2' | 1:0:2857:C:O4'  | 2.16                     | 0.45              |
| 1:0:843:G:C4   | 1:0:2427:A:N6   | 2.85                     | 0.45              |
| 1:0:2047:C:O2  | 1:0:2429:A:C6   | 2.68                     | 0.45              |
| 1:0:2430:A:N7  | 1:0:2431:C:H5   | 2.14                     | 0.45              |
| 1:0:473:C:H2'  | 1:0:474:G:H8    | 1.80                     | 0.45              |
| 1:0:535:U:O2'  | 1:0:536:A:H5'   | 2.16                     | 0.45              |
| 1:0:697:G:N2   | 1:0:788:G:C2    | 2.84                     | 0.45              |
| 1:0:795:A:H5'  | 1:0:796:A:OP1   | 2.16                     | 0.45              |
| 1:0:1625:A:N9  | 1:0:1632:A:H1'  | 2.30                     | 0.45              |
| 1:0:1438:G:P   | 1:0:1439:G:OP2  | 2.74                     | 0.45              |
| 1:0:88:G:N7    | 1:0:89:A:H3'    | 2.31                     | 0.45              |
| 1:0:2767:C:N4  | 1:0:2768:C:H41  | 2.13                     | 0.45              |
| 1:0:1979:C:O2' | 1:0:1980:A:O4'  | 2.34                     | 0.45              |
| 1:0:620:G:H2'  | 1:0:621:U:C6    | 2.47                     | 0.45              |
| 1:0:2243:C:C4  | 1:0:2244:C:C4   | 3.04                     | 0.45              |
| 1:0:322:A:O2'  | 1:0:323:G:P     | 2.75                     | 0.45              |
| 1:0:1314:A:C4' | 1:0:1314:A:OP1  | 2.62                     | 0.45              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:549:G:C2'  | 1:0:550:C:H5'  | 2.47                     | 0.45              |
| 1:0:859:U:O2   | 1:0:944:A:C6   | 2.69                     | 0.45              |
| 1:0:2669:C:C2' | 1:0:2670:C:OP2 | 2.62                     | 0.45              |
| 1:0:1608:U:C2  | 1:0:1609:G:C8  | 3.05                     | 0.45              |
| 1:0:3:U:H2'    | 1:0:4:C:C6     | 2.51                     | 0.45              |
| 1:0:1940:C:H2' | 1:0:1941:C:C6  | 2.51                     | 0.45              |
| 1:0:1842:G:H2' | 1:0:1843:U:C6  | 2.51                     | 0.45              |
| 1:0:1933:G:C8  | 1:0:1934:U:C5  | 3.04                     | 0.45              |
| 1:0:1772:C:O2' | 1:0:1773:C:C5' | 2.64                     | 0.45              |
| 1:0:2557:G:C2  | 1:0:2558:C:C6  | 3.05                     | 0.45              |
| 1:0:689:A:C8   | 1:0:2422:C:H1' | 2.52                     | 0.45              |
| 1:0:1279:G:H22 | 1:0:1995:G:H2' | 1.75                     | 0.45              |
| 1:0:500:G:C6   | 1:0:501:G:C4   | 3.05                     | 0.45              |
| 1:0:91:A:H8    | 1:0:91:A:O5'   | 1.99                     | 0.45              |
| 1:0:613:A:C4   | 1:0:636:G:N2   | 2.85                     | 0.45              |
| 1:0:844:G:N1   | 1:0:845:U:O2   | 2.49                     | 0.45              |
| 1:0:2633:A:N6  | 1:0:2646:C:N4  | 2.64                     | 0.45              |
| 1:0:644:A:C8   | 1:0:645:G:O4'  | 2.70                     | 0.45              |
| 1:0:1188:A:OP2 | 1:0:1189:G:N7  | 2.50                     | 0.45              |
| 1:0:2073:A:C6  | 1:0:2074:U:O4  | 2.69                     | 0.45              |
| 1:0:1391:A:C2' | 1:0:1392:U:O5' | 2.63                     | 0.45              |
| 1:0:1057:A:C5' | 1:0:1058:G:H5' | 2.46                     | 0.45              |
| 1:0:521:U:C5   | 1:0:522:G:N3   | 2.84                     | 0.45              |
| 1:0:2807:U:O2' | 1:0:2809:A:C8  | 2.69                     | 0.45              |
| 1:0:2423:G:C6  | 1:0:2424:G:C5  | 3.04                     | 0.45              |
| 1:0:2427:A:C2' | 1:0:2428:U:OP1 | 2.64                     | 0.45              |
| 1:0:2759:U:O4' | 1:0:2761:A:C2  | 2.70                     | 0.45              |
| 1:0:752:G:C4'  | 1:0:753:U:OP1  | 2.64                     | 0.45              |
| 1:0:1498:G:C2' | 1:0:1499:A:H5' | 2.46                     | 0.45              |
| 1:0:649:G:C4   | 1:0:650:U:C5   | 3.03                     | 0.45              |
| 1:0:1543:G:C6  | 1:0:1560:A:C5  | 3.04                     | 0.45              |
| 1:0:2075:U:H2' | 1:0:2076:G:OP2 | 2.16                     | 0.45              |
| 1:0:1193:G:H2' | 1:0:1194:U:H6  | 1.81                     | 0.45              |
| 1:0:706:A:C4   | 1:0:783:G:N2   | 2.85                     | 0.45              |
| 1:0:205:A:H2'  | 1:0:206:U:O5'  | 2.17                     | 0.45              |
| 1:0:1856:U:H2' | 1:0:1857:G:O4' | 2.16                     | 0.45              |
| 1:0:2276:C:H2' | 1:0:2277:A:H5' | 1.99                     | 0.45              |
| 1:0:1911:A:H8  | 1:0:1911:A:H3' | 1.81                     | 0.45              |
| 1:0:2718:A:C2  | 1:0:2719:U:C6  | 3.04                     | 0.45              |
| 1:0:246:C:C5   | 1:0:373:A:C4   | 3.05                     | 0.45              |
| 1:0:1944:C:H2' | 1:0:1945:C:O4' | 2.16                     | 0.45              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2617:G:H21  | 1:0:2758:A:N6  | 2.10                     | 0.45              |
| 1:0:2758:A:H2'  | 1:0:2759:U:OP1 | 2.17                     | 0.45              |
| 1:0:476:G:H21   | 1:0:697:G:C1'  | 2.29                     | 0.45              |
| 1:0:717:G:H2'   | 1:0:718:A:OP2  | 2.16                     | 0.45              |
| 1:0:954:U:N3    | 1:0:955:G:C4   | 2.85                     | 0.45              |
| 1:0:983:G:P     | 1:0:985:G:C5'  | 3.04                     | 0.45              |
| 1:0:1282:A:C2   | 1:0:1283:C:C2  | 3.05                     | 0.45              |
| 1:0:459:A:C8    | 1:0:466:A:N6   | 2.84                     | 0.45              |
| 1:0:1913:G:H2'  | 1:0:1914:U:OP2 | 2.17                     | 0.45              |
| 1:0:1479:G:C2   | 1:0:1480:G:C4  | 3.04                     | 0.45              |
| 1:0:1017:C:O2   | 1:0:1018:C:C6  | 2.69                     | 0.45              |
| 1:0:1856:U:H5'' | 1:0:2389:G:O2' | 2.17                     | 0.45              |
| 1:0:2589:C:H4'  | 1:0:2590:U:O5' | 2.16                     | 0.45              |
| 1:0:105:G:H5'   | 1:0:105:G:H8   | 1.81                     | 0.45              |
| 1:0:1548:U:H2'  | 1:0:1549:C:H5  | 1.80                     | 0.45              |
| 1:0:2045:A:O3'  | 1:0:2046:C:C5  | 2.70                     | 0.45              |
| 1:0:2426:G:H4'  | 1:0:2427:A:O5' | 2.15                     | 0.45              |
| 1:0:2034:A:H61  | 1:0:2593:A:H2' | 1.79                     | 0.45              |
| 1:0:541:C:C5    | 1:0:572:G:O4'  | 2.69                     | 0.45              |
| 1:0:587:A:OP1   | 1:0:1268:U:O2' | 2.15                     | 0.45              |
| 1:0:792:U:C2'   | 1:0:793:G:H5'  | 2.47                     | 0.45              |
| 1:0:837:U:H2'   | 1:0:838:A:H8   | 1.81                     | 0.45              |
| 1:0:1620:C:H6   | 1:0:1620:C:H3' | 1.81                     | 0.45              |
| 1:0:1373:G:H2'  | 1:0:1374:G:C5' | 2.47                     | 0.45              |
| 1:0:1386:A:N6   | 1:0:1387:G:C2  | 2.85                     | 0.45              |
| 1:0:1870:U:C4   | 1:0:1871:G:N7  | 2.84                     | 0.45              |
| 1:0:1483:G:N2   | 1:0:1540:C:C1' | 2.79                     | 0.45              |
| 1:0:1829:C:N4   | 1:0:1882:G:N7  | 2.65                     | 0.45              |
| 1:0:1474:A:C2'  | 1:0:1475:U:OP2 | 2.65                     | 0.45              |
| 1:0:181:A:C4'   | 1:0:182:G:OP1  | 2.58                     | 0.45              |
| 1:0:524:A:H2'   | 1:0:525:A:C8   | 2.52                     | 0.45              |
| 1:0:340:G:C4'   | 1:0:341:A:OP2  | 2.65                     | 0.45              |
| 1:0:1859:A:H2'  | 1:0:1860:A:C8  | 2.51                     | 0.45              |
| 1:0:302:U:H2'   | 1:0:302:U:O2   | 2.16                     | 0.45              |
| 1:0:2033:C:C4   | 1:0:2034:A:N7  | 2.85                     | 0.45              |
| 1:0:2034:A:H61  | 1:0:2593:A:C2' | 2.30                     | 0.45              |
| 1:0:2039:G:N2   | 1:0:2040:A:N9  | 2.65                     | 0.45              |
| 1:0:2240:C:C2'  | 1:0:2241:U:C5' | 2.95                     | 0.45              |
| 1:0:2419:C:C2'  | 1:0:2420:C:OP1 | 2.65                     | 0.45              |
| 1:0:2615:U:H3   | 1:0:2762:G:H1  | 1.65                     | 0.45              |
| 1:0:2616:U:C2   | 1:0:2762:G:N2  | 2.85                     | 0.45              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:757:U:O2'   | 1:0:758:G:H5'  | 2.17                     | 0.45              |
| 1:0:801:A:HO2'  | 1:0:802:A:P    | 2.39                     | 0.45              |
| 1:0:982:C:OP2   | 1:0:985:G:N2   | 2.50                     | 0.45              |
| 1:0:1279:G:O2'  | 1:0:1280:U:O5' | 2.35                     | 0.45              |
| 1:0:168:A:C2    | 1:0:169:C:C2   | 3.05                     | 0.45              |
| 1:0:942:U:H2'   | 1:0:943:U:C5'  | 2.47                     | 0.45              |
| 1:0:471:A:C6    | 1:0:481:A:C8   | 3.05                     | 0.45              |
| 1:0:1774:A:C6   | 1:0:2566:A:C4  | 3.05                     | 0.45              |
| 1:0:1774:A:H5'' | 1:0:1775:A:OP2 | 2.17                     | 0.45              |
| 1:0:1774:A:N6   | 1:0:2566:A:N3  | 2.65                     | 0.45              |
| 1:0:1011:A:C2   | 1:0:1166:A:C6  | 3.05                     | 0.45              |
| 1:0:514:G:C8    | 1:0:514:G:OP1  | 2.70                     | 0.45              |
| 1:0:1352:G:C6   | 1:0:1353:A:N6  | 2.85                     | 0.45              |
| 1:0:2205:C:H2'  | 1:0:2206:C:O4' | 2.17                     | 0.45              |
| 1:0:47:G:N2     | 1:0:48:A:H62   | 2.14                     | 0.45              |
| 1:0:667:U:H2'   | 1:0:668:A:C8   | 2.52                     | 0.45              |
| 1:0:1261:G:O2'  | 1:0:1262:U:P   | 2.75                     | 0.45              |
| 1:0:2791:C:C2   | 1:0:2806:G:N2  | 2.85                     | 0.45              |
| 1:0:1601:U:OP1  | 1:0:1601:U:H3' | 2.17                     | 0.45              |
| 1:0:2753:C:H2'  | 1:0:2754:C:C6  | 2.49                     | 0.45              |
| 1:0:2299:A:O2'  | 1:0:2312:A:N6  | 2.46                     | 0.45              |
| 1:0:2748:C:C2   | 1:0:2749:A:C8  | 3.05                     | 0.45              |
| 1:0:1831:G:C5   | 1:0:1832:G:N7  | 2.85                     | 0.45              |
| 1:0:972:C:N1    | 1:0:2014:A:H2  | 2.15                     | 0.45              |
| 1:0:2020:G:H2'  | 1:0:2021:G:H8  | 1.77                     | 0.45              |
| 1:0:771:C:H6    | 1:0:771:C:O5'  | 2.00                     | 0.45              |
| 1:0:799:C:H2'   | 1:0:800:U:C6   | 2.52                     | 0.45              |
| 1:0:994:A:C2'   | 1:0:995:A:O5'  | 2.64                     | 0.45              |
| 1:0:2772:U:O2'  | 1:0:2773:G:H5' | 2.17                     | 0.45              |
| 1:0:2511:G:N2   | 1:0:2642:G:H1' | 2.31                     | 0.45              |
| 1:0:1249:G:O2'  | 1:0:1250:A:O5' | 2.32                     | 0.45              |
| 1:0:343:A:C8    | 1:0:346:C:N4   | 2.85                     | 0.45              |
| 1:0:306:G:H22   | 1:0:355:G:H1'  | 1.81                     | 0.45              |
| 1:0:308:C:C2'   | 1:0:309:G:C5'  | 2.93                     | 0.45              |
| 1:0:1033:G:C6   | 1:0:1151:U:C5  | 3.05                     | 0.45              |
| 1:0:52:A:C2'    | 1:0:53:G:H5'   | 2.47                     | 0.45              |
| 1:0:2788:C:C4   | 1:0:2789:U:C5  | 3.04                     | 0.45              |
| 1:0:2864:C:O2   | 1:0:2864:C:C2' | 2.58                     | 0.45              |
| 1:0:1955:G:O2'  | 1:0:1956:G:C5' | 2.65                     | 0.45              |
| 1:0:373:A:N3    | 1:0:373:A:H2'  | 2.31                     | 0.45              |
| 1:0:2394:G:N2   | 1:0:2395:C:H1' | 2.31                     | 0.45              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1941:C:C2' | 1:0:1942:G:H5' | 2.47                     | 0.45              |
| 1:0:2856:U:C4  | 1:0:2857:C:C5  | 3.05                     | 0.45              |
| 1:0:2089:C:C2  | 1:0:2167:A:C2  | 3.04                     | 0.45              |
| 1:0:371:G:H2'  | 1:0:372:U:O5'  | 2.17                     | 0.45              |
| 1:0:2009:U:C3' | 1:0:2009:U:C6  | 2.99                     | 0.44              |
| 1:0:2476:A:O2' | 1:0:2477:C:C5  | 2.71                     | 0.44              |
| 1:0:813:A:O2'  | 1:0:815:A:H5'' | 2.16                     | 0.44              |
| 1:0:829:C:O2'  | 1:0:830:C:H5'  | 2.16                     | 0.44              |
| 1:0:829:C:H2'  | 1:0:830:C:H6   | 1.81                     | 0.44              |
| 1:0:1371:G:H1' | 1:0:1387:G:H1  | 1.82                     | 0.44              |
| 1:0:1754:G:H4' | 1:0:1754:G:OP1 | 2.17                     | 0.44              |
| 1:0:1671:A:H2' | 1:0:1672:A:C5' | 2.47                     | 0.44              |
| 1:0:639:G:H22  | 1:0:650:U:H4'  | 1.82                     | 0.44              |
| 1:0:2629:U:C2  | 1:0:2630:C:C6  | 3.05                     | 0.44              |
| 1:0:565:A:C6   | 1:0:566:U:C4   | 3.05                     | 0.44              |
| 1:0:304:A:H2'  | 1:0:305:A:H5'' | 1.99                     | 0.44              |
| 1:0:1193:G:C2' | 1:0:1194:U:O5' | 2.64                     | 0.44              |
| 1:0:2652:G:O2' | 1:0:2653:A:H5' | 2.17                     | 0.44              |
| 1:0:1432:G:H2' | 1:0:1594:U:O4  | 2.16                     | 0.44              |
| 1:0:1761:G:C5  | 1:0:1762:C:C5  | 3.05                     | 0.44              |
| 1:0:2426:G:C4' | 1:0:2427:A:O5' | 2.66                     | 0.44              |
| 1:0:740:A:OP1  | 1:0:1445:A:O2' | 2.28                     | 0.44              |
| 1:0:815:A:H2'  | 1:0:816:U:C6   | 2.52                     | 0.44              |
| 1:0:2840:U:C5  | 1:0:2841:U:H5  | 2.35                     | 0.44              |
| 1:0:1281:A:N6  | 1:0:1995:G:H1' | 2.32                     | 0.44              |
| 1:0:1618:U:C5  | 1:0:1619:A:H2  | 2.35                     | 0.44              |
| 1:0:640:C:H5'' | 1:0:660:G:HO2' | 1.81                     | 0.44              |
| 1:0:1844:C:O2' | 1:0:1845:A:H5' | 2.17                     | 0.44              |
| 1:0:1354:A:O2' | 1:0:1355:A:H5' | 2.17                     | 0.44              |
| 1:0:1455:C:O2  | 1:0:1455:C:H2' | 2.15                     | 0.44              |
| 1:0:1090:C:H2' | 1:0:1091:C:H6  | 1.82                     | 0.44              |
| 1:0:668:A:O2'  | 1:0:669:G:H4'  | 2.17                     | 0.44              |
| 1:0:1614:C:H2' | 1:0:1615:C:H6  | 1.81                     | 0.44              |
| 1:0:300:C:H42  | 1:0:363:G:N2   | 2.15                     | 0.44              |
| 1:0:2064:U:O5' | 1:0:2064:U:H6  | 1.99                     | 0.44              |
| 1:0:1834:G:O2' | 1:0:1835:C:H5' | 2.16                     | 0.44              |
| 1:0:2402:U:H4' | 1:0:2404:A:C8  | 2.52                     | 0.44              |
| 1:0:764:A:H8   | 1:0:764:A:O5'  | 2.00                     | 0.44              |
| 1:0:787:A:H2'  | 1:0:788:G:H8   | 1.81                     | 0.44              |
| 1:0:807:A:C6   | 1:0:808:C:C4   | 3.06                     | 0.44              |
| 1:0:1323:G:H21 | 1:0:1326:U:H3  | 1.63                     | 0.44              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1371:G:H2' | 1:0:1384:G:N2  | 2.32                     | 0.44              |
| 1:0:2198:U:H3' | 1:0:2199:C:C5' | 2.45                     | 0.44              |
| 1:0:940:G:H2'  | 1:0:941:U:C4'  | 2.43                     | 0.44              |
| 1:0:2780:A:C6  | 1:0:2781:G:C6  | 3.05                     | 0.44              |
| 1:0:1586:A:C4  | 1:0:1587:A:C8  | 3.05                     | 0.44              |
| 1:0:1769:U:O4  | 1:0:1775:A:H1' | 2.17                     | 0.44              |
| 1:0:6:A:C4     | 1:0:7:G:C8     | 3.06                     | 0.44              |
| 1:0:1011:A:C6  | 1:0:1166:A:N7  | 2.85                     | 0.44              |
| 1:0:1807:A:N3  | 1:0:1809:G:C5  | 2.85                     | 0.44              |
| 1:0:164:G:H2'  | 1:0:165:G:C5'  | 2.47                     | 0.44              |
| 1:0:2540:A:N6  | 1:0:2541:U:C4  | 2.86                     | 0.44              |
| 1:0:328:A:H2'  | 1:0:329:C:H6   | 1.82                     | 0.44              |
| 1:0:1732:U:H2' | 1:0:1733:U:O5' | 2.18                     | 0.44              |
| 1:0:2182:A:H62 | 1:0:2203:G:N2  | 2.15                     | 0.44              |
| 1:0:27:G:C2    | 1:0:522:G:O2'  | 2.71                     | 0.44              |
| 1:0:453:U:O5'  | 1:0:453:U:H6   | 2.01                     | 0.44              |
| 1:0:2721:A:C2' | 1:0:2722:C:H5' | 2.47                     | 0.44              |
| 1:0:1535:C:C4  | 1:0:1536:G:C6  | 3.05                     | 0.44              |
| 1:0:2055:G:C2' | 1:0:2056:C:H5' | 2.47                     | 0.44              |
| 1:0:2241:U:O4  | 1:0:2258:G:C6  | 2.71                     | 0.44              |
| 1:0:2420:C:O2' | 1:0:2421:C:H5' | 2.16                     | 0.44              |
| 1:0:956:A:C2   | 1:0:2427:A:C2  | 3.05                     | 0.44              |
| 1:0:755:C:H2'  | 1:0:756:C:O4'  | 2.17                     | 0.44              |
| 1:0:968:C:O2'  | 1:0:969:U:OP1  | 2.34                     | 0.44              |
| 1:0:1301:U:H2' | 1:0:1340:C:O2  | 2.17                     | 0.44              |
| 1:0:227:G:C6   | 1:0:228:A:C6   | 3.05                     | 0.44              |
| 1:0:33:C:O2    | 1:0:34:U:O4    | 2.36                     | 0.44              |
| 1:0:2638:G:N2  | 1:0:2642:G:C5  | 2.85                     | 0.44              |
| 1:0:2644:A:H2' | 1:0:2645:C:H6  | 1.76                     | 0.44              |
| 1:0:871:U:C4   | 1:0:2247:A:N7  | 2.86                     | 0.44              |
| 1:0:317:U:O2'  | 1:0:1224:A:N6  | 2.43                     | 0.44              |
| 1:0:2352:A:C6  | 1:0:2360:C:N3  | 2.86                     | 0.44              |
| 1:0:1465:G:OP1 | 1:0:1465:G:C4' | 2.65                     | 0.44              |
| 1:0:143:A:H2'  | 1:0:144:U:O4'  | 2.18                     | 0.44              |
| 1:0:151:G:H2'  | 1:0:152:G:H8   | 1.82                     | 0.44              |
| 1:0:403:A:H2'  | 1:0:403:A:N3   | 2.33                     | 0.44              |
| 1:0:1304:U:O2' | 1:0:1305:C:H5' | 2.17                     | 0.44              |
| 1:0:2312:A:H4' | 1:0:2313:G:O5' | 2.18                     | 0.44              |
| 1:0:437:G:H2'  | 1:0:438:G:C8   | 2.52                     | 0.44              |
| 1:0:2601:C:H2' | 1:0:2602:G:O5' | 2.16                     | 0.44              |
| 1:0:2241:U:H5' | 1:0:2241:U:H6  | 1.82                     | 0.44              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:754:G:H2'   | 1:0:755:C:C6   | 2.53                     | 0.44              |
| 1:0:955:G:C3'   | 1:0:955:G:C8   | 3.00                     | 0.44              |
| 1:0:992:A:H3'   | 1:0:993:C:H6   | 1.83                     | 0.44              |
| 1:0:1636:G:H2'  | 1:0:1637:U:C6  | 2.52                     | 0.44              |
| 1:0:1995:G:O5'  | 1:0:1995:G:H8  | 2.00                     | 0.44              |
| 1:0:224:G:H4'   | 1:0:399:G:C5   | 2.52                     | 0.44              |
| 1:0:67:G:C8     | 1:0:68:C:C5    | 3.05                     | 0.44              |
| 1:0:2634:G:H2'  | 1:0:2634:G:N3  | 2.32                     | 0.44              |
| 1:0:873:U:H2'   | 1:0:874:A:C5'  | 2.44                     | 0.44              |
| 1:0:647:G:O2'   | 1:0:649:G:O2'  | 2.17                     | 0.44              |
| 1:0:1474:A:O2'  | 1:0:1475:U:P   | 2.75                     | 0.44              |
| 1:0:1193:G:HO2' | 1:0:1194:U:P   | 2.40                     | 0.44              |
| 1:0:84:G:H2'    | 1:0:85:C:O4'   | 2.17                     | 0.44              |
| 1:0:2539:C:N3   | 1:0:2540:A:C5  | 2.86                     | 0.44              |
| 1:0:600:G:HO2'  | 1:0:601:A:P    | 2.33                     | 0.44              |
| 1:0:2705:A:O2'  | 1:0:2706:U:C6  | 2.70                     | 0.44              |
| 1:0:991:A:C4    | 1:0:1146:G:O4' | 2.70                     | 0.44              |
| 1:0:12:U:H2'    | 1:0:13:A:H5'   | 1.96                     | 0.44              |
| 1:0:541:C:O2    | 1:0:2018:G:N2  | 2.51                     | 0.44              |
| 1:0:2020:G:C6   | 1:0:2021:G:C6  | 3.05                     | 0.44              |
| 1:0:2756:A:N7   | 1:0:2762:G:C5  | 2.86                     | 0.44              |
| 1:0:177:U:O2    | 1:0:177:U:C2'  | 2.65                     | 0.44              |
| 1:0:635:C:C3'   | 1:0:636:G:H5'' | 2.48                     | 0.44              |
| 1:0:460:U:N3    | 1:0:591:G:N2   | 2.65                     | 0.44              |
| 1:0:459:A:C6    | 1:0:484:G:C4   | 3.05                     | 0.44              |
| 1:0:1020:A:C6   | 1:0:1021:A:N1  | 2.86                     | 0.44              |
| 1:0:517:A:H2'   | 1:0:517:A:N3   | 2.32                     | 0.44              |
| 1:0:2160:C:H2'  | 1:0:2161:C:C6  | 2.53                     | 0.44              |
| 1:0:431:G:H2'   | 1:0:432:C:H6   | 1.82                     | 0.44              |
| 1:0:1256:C:H2'  | 1:0:1257:U:O4' | 2.18                     | 0.44              |
| 1:0:2626:U:N3   | 1:0:2653:A:N6  | 2.58                     | 0.44              |
| 1:0:1359:G:C5   | 1:0:1617:G:C2  | 3.04                     | 0.44              |
| 1:0:1211:G:H2'  | 1:0:1212:U:H6  | 1.80                     | 0.44              |
| 1:0:442:A:C6    | 1:0:443:A:N6   | 2.85                     | 0.44              |
| 1:0:388:G:O2'   | 1:0:389:G:H5'  | 2.18                     | 0.44              |
| 1:0:215:G:H2'   | 1:0:216:U:O4'  | 2.17                     | 0.44              |
| 1:0:1293:A:H2'  | 1:0:1294:G:O4' | 2.18                     | 0.44              |
| 1:0:2288:A:C6   | 1:0:2289:A:N6  | 2.86                     | 0.44              |
| 1:0:2678:C:H2'  | 1:0:2679:G:H8  | 1.83                     | 0.44              |
| 1:0:2785:A:H61  | 1:0:2865:G:H1' | 1.81                     | 0.44              |
| 1:0:1003:C:N3   | 1:0:1174:G:C2  | 2.86                     | 0.44              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:740:A:N6    | 1:0:741:G:C6   | 2.86                     | 0.44              |
| 1:0:776:G:O2'   | 1:0:778:G:H5'' | 2.17                     | 0.44              |
| 1:0:835:U:C2    | 1:0:849:G:N2   | 2.85                     | 0.44              |
| 1:0:952:A:N1    | 1:0:953:G:C2   | 2.85                     | 0.44              |
| 1:0:1671:A:H2'  | 1:0:1672:A:O5' | 2.18                     | 0.44              |
| 1:0:1393:G:C2   | 1:0:1394:G:C8  | 3.06                     | 0.44              |
| 1:0:1949:A:H1'  | 1:0:2572:U:C4' | 2.47                     | 0.44              |
| 1:0:929:A:H4'   | 1:0:929:A:OP1  | 2.17                     | 0.44              |
| 1:0:1253:C:C4   | 1:0:1254:G:C5  | 3.05                     | 0.44              |
| 1:0:516:G:H2'   | 1:0:517:A:OP2  | 2.17                     | 0.44              |
| 1:0:1310:C:N3   | 1:0:1311:C:C5  | 2.86                     | 0.44              |
| 1:0:1145:C:C5   | 1:0:1147:G:OP2 | 2.71                     | 0.44              |
| 1:0:1149:G:C6   | 1:0:1150:C:C4  | 3.06                     | 0.44              |
| 1:0:593:C:C4    | 1:0:594:G:C5   | 3.06                     | 0.44              |
| 1:0:1094:C:H2'  | 1:0:1095:A:H3' | 2.00                     | 0.44              |
| 1:0:1095:A:O2'  | 1:0:1096:A:H5' | 2.18                     | 0.44              |
| 1:0:2713:A:C6   | 1:0:2714:A:N7  | 2.85                     | 0.44              |
| 1:0:212:U:H2'   | 1:0:213:C:C5'  | 2.48                     | 0.44              |
| 1:0:494:A:H2'   | 1:0:495:C:C5'  | 2.47                     | 0.44              |
| 1:0:246:C:H5    | 1:0:373:A:C4   | 2.35                     | 0.44              |
| 1:0:1131:G:H2'  | 1:0:1132:C:O4' | 2.18                     | 0.44              |
| 1:0:778:G:C5    | 1:0:779:U:C5   | 3.06                     | 0.44              |
| 1:0:976:C:H2'   | 1:0:977:G:O5'  | 2.18                     | 0.44              |
| 1:0:70:A:H4'    | 1:0:71:A:O5'   | 2.18                     | 0.44              |
| 1:0:2370:G:H2'  | 1:0:2371:A:OP2 | 2.18                     | 0.44              |
| 1:0:1328:C:H2'  | 1:0:1329:U:H6  | 1.82                     | 0.44              |
| 1:0:1035:G:C6   | 1:0:1036:G:C6  | 3.06                     | 0.44              |
| 1:0:1213:U:C4   | 1:0:1260:A:H2  | 2.36                     | 0.44              |
| 1:0:2623:A:H2'  | 1:0:2624:G:O4' | 2.17                     | 0.44              |
| 1:0:1907:C:O5'  | 1:0:1907:C:H6  | 2.01                     | 0.44              |
| 1:0:320:A:N3    | 1:0:340:G:O2'  | 2.35                     | 0.44              |
| 1:0:1820:G:H4'  | 1:0:1821:A:OP1 | 2.18                     | 0.44              |
| 1:0:2091:C:H3'  | 1:0:2092:U:H6  | 1.83                     | 0.44              |
| 1:0:1911:A:C3'  | 1:0:1912:G:H5' | 2.48                     | 0.44              |
| 1:0:2031:A:N1   | 1:0:2032:G:C4  | 2.85                     | 0.44              |
| 1:0:624:A:H2'   | 1:0:625:A:C8   | 2.52                     | 0.44              |
| 1:0:1003:C:C2'  | 1:0:1004:A:H5' | 2.47                     | 0.44              |
| 1:0:536:A:H61   | 1:0:2605:C:H4' | 1.73                     | 0.44              |
| 1:0:788:G:C5'   | 1:0:790:A:C1'  | 2.90                     | 0.44              |
| 1:0:1278:A:HO2' | 1:0:1279:G:P   | 2.24                     | 0.44              |
| 1:0:1686:A:C6   | 1:0:1977:C:O2  | 2.71                     | 0.44              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1774:A:H8  | 1:0:1774:A:O5'  | 2.01                     | 0.44              |
| 1:0:2562:G:N3  | 1:0:2563:U:C6   | 2.86                     | 0.44              |
| 1:0:1416:A:O2' | 1:0:1417:C:H5'  | 2.18                     | 0.44              |
| 1:0:1560:A:H2' | 1:0:1561:A:C8   | 2.52                     | 0.44              |
| 1:0:308:C:H2'  | 1:0:308:C:O2    | 2.17                     | 0.44              |
| 1:0:1192:A:N1  | 1:0:1193:G:O6   | 2.50                     | 0.44              |
| 1:0:2123:G:P   | 1:0:2123:G:H8   | 2.41                     | 0.44              |
| 1:0:242:A:O2'  | 1:0:243:G:O5'   | 2.36                     | 0.44              |
| 1:0:136:A:N7   | 1:0:137:A:C4    | 2.86                     | 0.44              |
| 1:0:1265:G:C2  | 1:0:1266:G:N2   | 2.86                     | 0.44              |
| 1:0:1668:G:C2  | 1:0:1990:U:C2   | 3.06                     | 0.44              |
| 1:0:1815:G:C5  | 1:0:1816:G:C8   | 3.06                     | 0.44              |
| 1:0:1198:C:C5' | 1:0:1199:U:H5'' | 2.38                     | 0.43              |
| 1:0:2043:A:O2' | 1:0:2044:G:P    | 2.76                     | 0.43              |
| 1:0:2759:U:O2' | 1:0:2760:G:OP2  | 2.32                     | 0.43              |
| 1:0:761:G:N7   | 1:0:763:A:C8    | 2.86                     | 0.43              |
| 1:0:991:A:N6   | 1:0:992:A:N1    | 2.64                     | 0.43              |
| 1:0:2694:G:C2  | 1:0:2695:C:C2   | 3.06                     | 0.43              |
| 1:0:1301:U:C4' | 1:0:1302:C:OP2  | 2.64                     | 0.43              |
| 1:0:1621:C:N4  | 1:0:1622:G:C2   | 2.85                     | 0.43              |
| 1:0:67:G:N1    | 1:0:72:A:C2     | 2.85                     | 0.43              |
| 1:0:2519:C:C5  | 1:0:2520:A:N7   | 2.86                     | 0.43              |
| 1:0:1693:A:N6  | 1:0:1694:A:N1   | 2.66                     | 0.43              |
| 1:0:1978:U:C2  | 1:0:1979:C:C4   | 3.06                     | 0.43              |
| 1:0:34:U:H5    | 1:0:466:A:C2    | 2.35                     | 0.43              |
| 1:0:469:G:O2'  | 1:0:480:G:N1    | 2.50                     | 0.43              |
| 1:0:7:G:C2     | 1:0:8:A:C4      | 3.05                     | 0.43              |
| 1:0:1895:A:H2' | 1:0:1896:A:C5'  | 2.48                     | 0.43              |
| 1:0:2331:A:C8  | 1:0:2345:A:N1   | 2.86                     | 0.43              |
| 1:0:645:G:H2'  | 1:0:646:C:C6    | 2.53                     | 0.43              |
| 1:0:649:G:C2   | 1:0:661:C:C2    | 3.06                     | 0.43              |
| 1:0:1313:U:H1' | 1:0:1642:G:C2   | 2.53                     | 0.43              |
| 1:0:192:G:H4'  | 1:0:193:A:O5'   | 2.18                     | 0.43              |
| 1:0:1856:U:C2' | 1:0:1857:G:H5'  | 2.48                     | 0.43              |
| 1:0:2446:C:H2' | 1:0:2447:G:O4'  | 2.17                     | 0.43              |
| 1:0:196:A:C2'  | 1:0:197:G:H5'   | 2.47                     | 0.43              |
| 1:0:2466:G:H2' | 1:0:2467:A:C8   | 2.53                     | 0.43              |
| 1:0:1289:A:C2  | 1:0:1290:A:C5   | 3.05                     | 0.43              |
| 1:0:1537:U:H2' | 1:0:1538:A:C8   | 2.53                     | 0.43              |
| 1:0:2001:G:C6  | 1:0:2002:A:C6   | 3.05                     | 0.43              |
| 1:0:2557:G:C2  | 1:0:2558:C:C5   | 3.06                     | 0.43              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:787:A:H2'   | 1:0:788:G:C8   | 2.53                     | 0.43              |
| 1:0:612:G:H4'   | 1:0:613:A:H4'  | 2.00                     | 0.43              |
| 1:0:1328:C:H2'  | 1:0:1329:U:C6  | 2.53                     | 0.43              |
| 1:0:1354:A:C3'  | 1:0:1410:U:O2  | 2.65                     | 0.43              |
| 1:0:1402:G:N2   | 1:0:1412:C:C2  | 2.86                     | 0.43              |
| 1:0:1464:A:H2'  | 1:0:1465:G:O4' | 2.18                     | 0.43              |
| 1:0:358:C:H6    | 1:0:358:C:O5'  | 2.00                     | 0.43              |
| 1:0:1055:A:N6   | 1:0:1123:G:C1' | 2.77                     | 0.43              |
| 1:0:113:C:O2'   | 1:0:114:C:H5'  | 2.18                     | 0.43              |
| 1:0:118:U:C5    | 1:0:143:A:N1   | 2.86                     | 0.43              |
| 1:0:404:A:C6    | 1:0:405:C:N3   | 2.86                     | 0.43              |
| 1:0:2069:U:H2'  | 1:0:2070:G:H8  | 1.80                     | 0.43              |
| 1:0:1399:C:N4   | 1:0:1400:A:N6  | 2.66                     | 0.43              |
| 1:0:1169:C:C2'  | 1:0:1170:U:H5' | 2.48                     | 0.43              |
| 1:0:37:C:H4'    | 1:0:463:C:OP1  | 2.17                     | 0.43              |
| 1:0:1484:G:C4   | 1:0:1485:U:C5  | 3.07                     | 0.43              |
| 1:0:1530:U:HO2' | 1:0:1531:C:H6  | 1.66                     | 0.43              |
| 1:0:2483:U:C6   | 1:0:2483:U:C3' | 3.00                     | 0.43              |
| 1:0:578:U:C4    | 1:0:579:G:C6   | 3.06                     | 0.43              |
| 1:0:765:C:H2'   | 1:0:766:A:OP2  | 2.19                     | 0.43              |
| 1:0:984:A:N3    | 1:0:1201:G:C2  | 2.86                     | 0.43              |
| 1:0:983:G:P     | 1:0:985:G:H5'  | 2.58                     | 0.43              |
| 1:0:2688:G:C2'  | 1:0:2689:C:H5' | 2.48                     | 0.43              |
| 1:0:1383:C:C2   | 1:0:1384:G:N7  | 2.85                     | 0.43              |
| 1:0:1755:G:C2   | 1:0:1756:C:C2  | 3.06                     | 0.43              |
| 1:0:2781:G:H3'  | 1:0:2782:G:H8  | 1.81                     | 0.43              |
| 1:0:2632:U:N3   | 1:0:2633:A:N7  | 2.66                     | 0.43              |
| 1:0:2245:A:HO2' | 1:0:2246:A:P   | 2.37                     | 0.43              |
| 1:0:1791:C:H41  | 1:0:1810:U:H1' | 1.84                     | 0.43              |
| 1:0:545:C:C2'   | 1:0:546:A:O5'  | 2.67                     | 0.43              |
| 1:0:304:A:H2    | 1:0:356:A:N6   | 2.16                     | 0.43              |
| 1:0:1451:C:H2'  | 1:0:1452:U:C6  | 2.52                     | 0.43              |
| 1:0:109:A:N1    | 1:0:110:U:C2   | 2.86                     | 0.43              |
| 1:0:2302:G:N1   | 1:0:2303:C:C2  | 2.87                     | 0.43              |
| 1:0:624:A:C4    | 1:0:625:A:C8   | 3.06                     | 0.43              |
| 1:0:1744:G:N2   | 1:0:1746:A:H3' | 2.33                     | 0.43              |
| 1:0:2068:C:H6   | 1:0:2068:C:O5' | 2.01                     | 0.43              |
| 1:0:1486:A:H2'  | 1:0:1487:C:H6  | 1.78                     | 0.43              |
| 1:0:2556:A:C2   | 1:0:2593:A:H2  | 2.36                     | 0.43              |
| 1:0:572:G:H1    | 1:0:587:A:H2   | 1.65                     | 0.43              |
| 1:0:773:G:N3    | 1:0:773:G:H2'  | 2.33                     | 0.43              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:778:G:C4   | 1:0:779:U:C5   | 3.07                     | 0.43              |
| 1:0:1629:G:H22 | 1:0:1633:C:H2' | 1.82                     | 0.43              |
| 1:0:236:C:H2'  | 1:0:237:G:H8   | 1.84                     | 0.43              |
| 1:0:1437:A:C6  | 1:0:1438:G:N7  | 2.86                     | 0.43              |
| 1:0:1692:C:H2' | 1:0:1693:A:H5' | 2.00                     | 0.43              |
| 1:0:175:C:O2   | 1:0:176:A:C8   | 2.72                     | 0.43              |
| 1:0:1925:C:N3  | 1:0:1926:U:C4  | 2.86                     | 0.43              |
| 1:0:316:C:H2'  | 1:0:317:U:C6   | 2.52                     | 0.43              |
| 1:0:322:A:N3   | 1:0:322:A:C2'  | 2.82                     | 0.43              |
| 1:0:646:C:O2   | 1:0:650:U:H4'  | 2.18                     | 0.43              |
| 1:0:1474:A:C2  | 1:0:1476:G:C5  | 3.06                     | 0.43              |
| 1:0:2206:C:H3' | 1:0:2207:G:C8  | 2.49                     | 0.43              |
| 1:0:2437:G:O6  | 1:0:2469:G:H2' | 2.17                     | 0.43              |
| 1:0:76:C:C6    | 1:0:76:C:C5'   | 2.97                     | 0.43              |
| 1:0:1429:A:H61 | 1:0:1602:G:H5' | 1.81                     | 0.43              |
| 1:0:865:A:H2'  | 1:0:866:U:C6   | 2.53                     | 0.43              |
| 1:0:1098:G:C2  | 1:0:1100:G:H1' | 2.54                     | 0.43              |
| 1:0:1376:C:H2' | 1:0:1377:G:H8  | 1.84                     | 0.43              |
| 1:0:715:U:H2'  | 1:0:715:U:O2   | 2.18                     | 0.43              |
| 1:0:984:A:H4'  | 1:0:1202:U:O4' | 2.18                     | 0.43              |
| 1:0:2553:G:C6  | 1:0:2554:C:C4  | 3.06                     | 0.43              |
| 1:0:754:G:C2   | 1:0:755:C:C5   | 3.06                     | 0.43              |
| 1:0:797:A:HO2' | 1:0:798:G:H8   | 1.66                     | 0.43              |
| 1:0:991:A:C5   | 1:0:992:A:C2   | 3.06                     | 0.43              |
| 1:0:481:A:N6   | 1:0:482:A:N6   | 2.66                     | 0.43              |
| 1:0:1926:U:O2' | 1:0:1927:U:OP2 | 2.36                     | 0.43              |
| 1:0:319:G:N2   | 1:0:488:A:C8   | 2.87                     | 0.43              |
| 1:0:492:G:O2'  | 1:0:493:A:O5'  | 2.37                     | 0.43              |
| 1:0:516:G:O2'  | 1:0:517:A:P    | 2.76                     | 0.43              |
| 1:0:1791:C:C5  | 1:0:1810:U:O2  | 2.71                     | 0.43              |
| 1:0:1885:C:H2' | 1:0:1886:G:H5' | 2.00                     | 0.43              |
| 1:0:639:G:N2   | 1:0:650:U:H4'  | 2.33                     | 0.43              |
| 1:0:1351:G:C2  | 1:0:1352:G:N3  | 2.86                     | 0.43              |
| 1:0:1479:G:N2  | 1:0:1543:G:N2  | 2.67                     | 0.43              |
| 1:0:1139:A:H2' | 1:0:1140:A:OP2 | 2.18                     | 0.43              |
| 1:0:1144:U:H2' | 1:0:1147:G:OP1 | 2.18                     | 0.43              |
| 1:0:189:A:O2'  | 1:0:190:A:H5'  | 2.18                     | 0.43              |
| 1:0:2208:U:C6  | 1:0:2208:U:H3' | 2.54                     | 0.43              |
| 1:0:2186:G:C2  | 1:0:2187:A:N7  | 2.86                     | 0.43              |
| 1:0:2713:A:C5  | 1:0:2714:A:N7  | 2.86                     | 0.43              |
| 1:0:1062:G:H22 | 1:0:2731:G:H1  | 1.62                     | 0.43              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:147:G:O5'  | 1:0:147:G:H8    | 2.00                     | 0.43              |
| 1:0:2378:G:O2' | 1:0:2379:G:H5'  | 2.18                     | 0.43              |
| 1:0:1101:U:O5' | 1:0:1101:U:H6   | 2.01                     | 0.43              |
| 1:0:14:A:C8    | 1:0:15:G:H1'    | 2.53                     | 0.43              |
| 1:0:2036:G:C2' | 1:0:2037:A:H5'  | 2.49                     | 0.43              |
| 1:0:2429:A:OP1 | 1:0:2476:A:C8   | 2.72                     | 0.43              |
| 1:0:2483:U:H1' | 1:0:2551:A:N1   | 2.34                     | 0.43              |
| 1:0:2035:G:O6  | 1:0:2597:G:C2   | 2.71                     | 0.43              |
| 1:0:636:G:H2'  | 1:0:637:G:O4'   | 2.18                     | 0.43              |
| 1:0:1588:A:H2' | 1:0:1589:G:H8   | 1.83                     | 0.43              |
| 1:0:628:A:C8   | 1:0:629:C:C5    | 3.07                     | 0.43              |
| 1:0:338:G:C6   | 1:0:339:U:C5    | 3.06                     | 0.43              |
| 1:0:2180:U:O2' | 1:0:2181:A:C6   | 2.71                     | 0.43              |
| 1:0:429:C:H2'  | 1:0:430:C:C6    | 2.53                     | 0.43              |
| 1:0:182:G:C2'  | 1:0:183:U:OP2   | 2.66                     | 0.43              |
| 1:0:2272:A:C6  | 1:0:2273:C:N4   | 2.86                     | 0.43              |
| 1:0:435:A:C6   | 1:0:436:A:C6    | 3.06                     | 0.43              |
| 1:0:1877:C:H2' | 1:0:1878:C:C6   | 2.54                     | 0.43              |
| 1:0:2664:G:O2' | 1:0:2665:G:H5'  | 2.19                     | 0.43              |
| 1:0:956:A:C5   | 1:0:2427:A:H2   | 2.37                     | 0.43              |
| 1:0:577:U:H2'  | 1:0:579:G:OP2   | 2.19                     | 0.43              |
| 1:0:795:A:C5'  | 1:0:796:A:OP1   | 2.66                     | 0.43              |
| 1:0:2826:C:C4  | 1:0:2827:G:C5   | 3.06                     | 0.43              |
| 1:0:2836:U:O2' | 1:0:2837:G:H5'  | 2.18                     | 0.43              |
| 1:0:976:C:C1'  | 1:0:2252:A:H2   | 2.30                     | 0.43              |
| 1:0:2194:A:H2' | 1:0:2195:C:H5'' | 1.99                     | 0.43              |
| 1:0:616:U:C6   | 1:0:616:U:C3'   | 3.01                     | 0.43              |
| 1:0:1972:G:C6  | 1:0:1973:C:N3   | 2.87                     | 0.43              |
| 1:0:1394:G:C2' | 1:0:1395:A:H5'  | 2.49                     | 0.43              |
| 1:0:1015:U:H6  | 1:0:1015:U:O5'  | 2.02                     | 0.43              |
| 1:0:322:A:C8   | 1:0:343:A:C5    | 2.99                     | 0.43              |
| 1:0:1135:C:O2' | 1:0:1136:G:H5'  | 2.17                     | 0.43              |
| 1:0:783:G:O4'  | 1:0:1392:U:C5   | 2.71                     | 0.43              |
| 1:0:214:C:N3   | 1:0:215:G:N7    | 2.67                     | 0.43              |
| 1:0:1002:C:C4  | 1:0:1003:C:N4   | 2.86                     | 0.43              |
| 1:0:1492:A:N1  | 1:0:1530:U:N3   | 2.66                     | 0.43              |
| 1:0:2052:G:C2  | 1:0:2053:G:C8   | 3.07                     | 0.43              |
| 1:0:2229:G:N2  | 1:0:2475:C:C5'  | 2.81                     | 0.43              |
| 1:0:2239:C:H2' | 1:0:2240:C:H6   | 1.84                     | 0.43              |
| 1:0:2491:C:C4  | 1:0:2492:G:C8   | 3.06                     | 0.43              |
| 1:0:2558:C:H2' | 1:0:2559:U:O4'  | 2.18                     | 0.43              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:759:C:H1'  | 1:0:761:G:N2   | 2.26                     | 0.43              |
| 1:0:785:U:H2'  | 1:0:786:U:H6   | 1.82                     | 0.43              |
| 1:0:955:G:H3'  | 1:0:955:G:C8   | 2.54                     | 0.43              |
| 1:0:955:G:C5'  | 1:0:956:A:H5'  | 2.48                     | 0.43              |
| 1:0:981:C:C5   | 1:0:982:C:H5   | 2.36                     | 0.43              |
| 1:0:1629:G:C6  | 1:0:1633:C:C5  | 3.07                     | 0.43              |
| 1:0:614:G:N2   | 1:0:634:G:H22  | 2.13                     | 0.43              |
| 1:0:35:G:C4    | 1:0:466:A:C2   | 3.06                     | 0.43              |
| 1:0:456:C:C6   | 1:0:456:C:H3'  | 2.54                     | 0.43              |
| 1:0:1163:C:C2' | 1:0:1164:C:H5' | 2.49                     | 0.43              |
| 1:0:548:G:N2   | 1:0:549:G:N9   | 2.66                     | 0.43              |
| 1:0:118:U:H1'  | 1:0:143:A:C5   | 2.52                     | 0.43              |
| 1:0:728:G:H21  | 1:0:729:A:H1'  | 1.81                     | 0.43              |
| 1:0:1605:A:O2' | 1:0:1606:C:H5' | 2.18                     | 0.43              |
| 1:0:1955:G:H2' | 1:0:1956:G:H5' | 1.99                     | 0.43              |
| 1:0:867:G:H2'  | 1:0:868:U:O4'  | 2.19                     | 0.43              |
| 1:0:2678:C:C4  | 1:0:2679:G:N7  | 2.87                     | 0.43              |
| 1:0:2064:U:O4  | 1:0:2216:G:C6  | 2.72                     | 0.43              |
| 1:0:1171:A:H2' | 1:0:1172:U:H6  | 1.84                     | 0.43              |
| 1:0:1141:U:N3  | 1:0:2008:C:OP1 | 2.35                     | 0.43              |
| 1:0:2014:A:N6  | 1:0:2477:C:H1' | 2.31                     | 0.43              |
| 1:0:693:A:C2   | 1:0:811:G:N3   | 2.87                     | 0.43              |
| 1:0:2825:A:N3  | 1:0:2826:C:C6  | 2.87                     | 0.43              |
| 1:0:1624:A:N7  | 1:0:1627:C:N3  | 2.67                     | 0.43              |
| 1:0:59:G:H1'   | 1:0:73:A:C2    | 2.54                     | 0.43              |
| 1:0:1683:G:N1  | 1:0:1978:U:O4  | 2.51                     | 0.43              |
| 1:0:1675:C:O2  | 1:0:1675:C:C2' | 2.62                     | 0.43              |
| 1:0:649:G:N1   | 1:0:660:G:C2   | 2.87                     | 0.43              |
| 1:0:1351:G:N1  | 1:0:1352:G:C2  | 2.87                     | 0.43              |
| 1:0:1353:A:H2' | 1:0:1354:A:OP2 | 2.19                     | 0.43              |
| 1:0:1317:G:N2  | 1:0:1641:C:N1  | 2.67                     | 0.43              |
| 1:0:2811:G:O6  | 1:0:2812:A:N6  | 2.52                     | 0.43              |
| 1:0:139:A:N3   | 1:0:140:G:C8   | 2.87                     | 0.43              |
| 1:0:205:A:N7   | 1:0:207:U:O2   | 2.51                     | 0.43              |
| 1:0:424:G:C4'  | 1:0:424:G:OP1  | 2.64                     | 0.43              |
| 1:0:1233:A:O2' | 1:0:1234:C:P   | 2.76                     | 0.43              |
| 1:0:2669:C:O2' | 1:0:2670:C:P   | 2.77                     | 0.43              |
| 1:0:2306:A:C2  | 1:0:2307:A:C2  | 3.06                     | 0.43              |
| 1:0:105:G:H2'  | 1:0:106:G:C5'  | 2.49                     | 0.43              |
| 1:0:1293:A:C2' | 1:0:1294:G:H5' | 2.48                     | 0.43              |
| 1:0:761:G:C8   | 1:0:763:A:N7   | 2.86                     | 0.43              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:953:G:N7   | 1:0:954:U:C5   | 2.87                     | 0.43              |
| 1:0:1724:C:C2  | 1:0:1747:G:C2  | 3.07                     | 0.43              |
| 1:0:1750:A:H1' | 1:0:2690:A:C2  | 2.54                     | 0.43              |
| 1:0:1300:A:C5  | 1:0:1301:U:C4  | 3.06                     | 0.43              |
| 1:0:1345:G:N3  | 1:0:1626:A:N7  | 2.66                     | 0.43              |
| 1:0:1624:A:C6  | 1:0:1627:C:C2  | 3.05                     | 0.43              |
| 1:0:1625:A:C5  | 1:0:1632:A:N3  | 2.87                     | 0.43              |
| 1:0:1938:U:O2' | 1:0:1939:U:P   | 2.77                     | 0.43              |
| 1:0:1498:G:O2' | 1:0:1499:A:H5' | 2.18                     | 0.43              |
| 1:0:1356:G:N2  | 1:0:1418:C:C2  | 2.87                     | 0.43              |
| 1:0:2223:U:C2' | 1:0:2224:U:H5' | 2.48                     | 0.43              |
| 1:0:306:G:C5   | 1:0:307:C:C5   | 3.07                     | 0.43              |
| 1:0:141:G:H2'  | 1:0:142:U:C6   | 2.54                     | 0.43              |
| 1:0:1234:C:H2' | 1:0:1235:C:C6  | 2.48                     | 0.43              |
| 1:0:392:G:C2   | 1:0:409:G:C4   | 3.07                     | 0.43              |
| 1:0:1256:C:O2' | 1:0:1257:U:H5' | 2.19                     | 0.43              |
| 1:0:180:C:N4   | 1:0:181:A:C6   | 2.87                     | 0.43              |
| 1:0:1211:G:N2  | 1:0:1263:G:C5  | 2.86                     | 0.43              |
| 1:0:243:G:H3'  | 1:0:244:C:H5'' | 2.01                     | 0.43              |
| 1:0:2860:C:C6  | 1:0:2860:C:H3' | 2.54                     | 0.43              |
| 1:0:1908:C:H6  | 1:0:1908:C:O5' | 2.02                     | 0.43              |
| 1:0:148:C:C2'  | 1:0:149:A:OP2  | 2.67                     | 0.43              |
| 1:0:28:A:C2    | 1:0:523:A:N9   | 2.87                     | 0.43              |
| 1:0:1052:C:H2' | 1:0:1053:G:H8  | 1.82                     | 0.43              |
| 1:0:447:U:O2'  | 1:0:448:C:C5   | 2.72                     | 0.43              |
| 1:0:1573:G:O6  | 1:0:1574:A:C6  | 2.71                     | 0.42              |
| 1:0:2008:C:C4  | 1:0:2009:U:C4  | 3.07                     | 0.42              |
| 1:0:2553:G:C2  | 1:0:2554:C:C2  | 3.07                     | 0.42              |
| 1:0:2618:A:H1' | 1:0:2758:A:C2  | 2.54                     | 0.42              |
| 1:0:539:A:O2'  | 1:0:540:G:P    | 2.76                     | 0.42              |
| 1:0:1332:G:C5  | 1:0:1333:G:N1  | 2.87                     | 0.42              |
| 1:0:221:A:H2'  | 1:0:221:A:N3   | 2.34                     | 0.42              |
| 1:0:1938:U:O2' | 1:0:1939:U:C5' | 2.46                     | 0.42              |
| 1:0:481:A:N1   | 1:0:482:A:C6   | 2.87                     | 0.42              |
| 1:0:174:A:C4   | 1:0:175:C:C6   | 3.07                     | 0.42              |
| 1:0:334:G:N3   | 1:0:344:G:H1'  | 2.33                     | 0.42              |
| 1:0:1806:G:N7  | 1:0:1807:A:N6  | 2.67                     | 0.42              |
| 1:0:1311:C:N1  | 1:0:1660:G:N2  | 2.67                     | 0.42              |
| 1:0:2181:A:H3' | 1:0:2181:A:N3  | 2.33                     | 0.42              |
| 1:0:424:G:H3'  | 1:0:2385:U:C4  | 2.54                     | 0.42              |
| 1:0:1066:G:H3' | 1:0:1067:G:C4' | 2.44                     | 0.42              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1820:G:O2' | 1:0:1821:A:O5'  | 2.37                     | 0.42              |
| 1:0:2802:C:H2' | 1:0:2803:C:H6   | 1.84                     | 0.42              |
| 1:0:1156:U:H2' | 1:0:1157:G:C8   | 2.53                     | 0.42              |
| 1:0:1071:U:OP2 | 1:0:1072:U:C5   | 2.71                     | 0.42              |
| 1:0:172:A:H2   | 1:0:227:G:H1    | 1.67                     | 0.42              |
| 1:0:481:A:C6   | 1:0:482:A:C6    | 3.07                     | 0.42              |
| 1:0:2562:G:C5  | 1:0:2563:U:C4   | 3.07                     | 0.42              |
| 1:0:514:G:N2   | 1:0:1248:G:OP1  | 2.52                     | 0.42              |
| 1:0:2265:A:O3' | 1:0:2266:A:O4'  | 2.36                     | 0.42              |
| 1:0:1830:C:N3  | 1:0:1881:U:C4   | 2.87                     | 0.42              |
| 1:0:2079:A:H2' | 1:0:2080:U:C6   | 2.53                     | 0.42              |
| 1:0:2652:G:C2  | 1:0:2653:A:N7   | 2.86                     | 0.42              |
| 1:0:594:G:C4   | 1:0:1264:C:C4   | 3.07                     | 0.42              |
| 1:0:945:G:C5   | 1:0:946:U:C5    | 3.07                     | 0.42              |
| 1:0:1605:A:H2' | 1:0:1606:C:H6   | 1.84                     | 0.42              |
| 1:0:2182:A:N6  | 1:0:2203:G:H21  | 2.17                     | 0.42              |
| 1:0:2727:G:C6  | 1:0:2734:U:C5   | 3.07                     | 0.42              |
| 1:0:2312:A:O2' | 1:0:2313:G:P    | 2.77                     | 0.42              |
| 1:0:1762:C:N4  | 1:0:1763:G:O6   | 2.52                     | 0.42              |
| 1:0:1008:G:C2  | 1:0:1009:C:C5   | 3.07                     | 0.42              |
| 1:0:2002:A:H2' | 1:0:2003:A:C5'  | 2.50                     | 0.42              |
| 1:0:2002:A:C2' | 1:0:2003:A:O5'  | 2.68                     | 0.42              |
| 1:0:2432:A:H4' | 1:0:2551:A:HO2' | 1.82                     | 0.42              |
| 1:0:2034:A:C6  | 1:0:2593:A:C4   | 3.08                     | 0.42              |
| 1:0:697:G:C4   | 1:0:788:G:C6    | 3.06                     | 0.42              |
| 1:0:751:G:H2'  | 1:0:752:G:O4'   | 2.19                     | 0.42              |
| 1:0:698:A:N7   | 1:0:786:U:C4    | 2.87                     | 0.42              |
| 1:0:1697:U:O2  | 1:0:1754:G:H8   | 2.02                     | 0.42              |
| 1:0:482:A:C2'  | 1:0:483:A:H5'   | 2.48                     | 0.42              |
| 1:0:176:A:C6   | 1:0:2413:A:C6   | 3.07                     | 0.42              |
| 1:0:921:A:C6   | 1:0:924:C:C2    | 3.08                     | 0.42              |
| 1:0:2585:C:H2' | 1:0:2586:G:H5'  | 2.00                     | 0.42              |
| 1:0:2245:A:C1' | 1:0:2251:U:O4   | 2.67                     | 0.42              |
| 1:0:490:A:N6   | 1:0:492:G:C2    | 2.86                     | 0.42              |
| 1:0:2352:A:N6  | 1:0:2360:C:H42  | 2.17                     | 0.42              |
| 1:0:2180:U:O2' | 1:0:2181:A:N1   | 2.52                     | 0.42              |
| 1:0:83:A:O2'   | 1:0:84:G:O4'    | 2.31                     | 0.42              |
| 1:0:1016:C:N3  | 1:0:1154:A:C2   | 2.88                     | 0.42              |
| 1:0:188:G:O2'  | 1:0:189:A:H5'   | 2.20                     | 0.42              |
| 1:0:2254:C:C2' | 1:0:2255:G:OP2  | 2.67                     | 0.42              |
| 1:0:18:U:C5    | 1:0:19:C:H5     | 2.37                     | 0.42              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2545:A:O2' | 1:0:2546:G:OP2  | 2.35                     | 0.42              |
| 1:0:1104:G:C2  | 1:0:1105:U:O4   | 2.72                     | 0.42              |
| 1:0:1911:A:C8  | 1:0:1911:A:H3'  | 2.54                     | 0.42              |
| 1:0:494:A:C2'  | 1:0:495:C:H5'   | 2.49                     | 0.42              |
| 1:0:1834:G:H2' | 1:0:1835:C:C6   | 2.53                     | 0.42              |
| 1:0:2028:C:C2  | 1:0:2603:G:N2   | 2.88                     | 0.42              |
| 1:0:2015:G:C2  | 1:0:2038:C:N3   | 2.87                     | 0.42              |
| 1:0:2762:G:O5' | 1:0:2762:G:C8   | 2.72                     | 0.42              |
| 1:0:478:G:H21  | 1:0:479:G:H1'   | 1.84                     | 0.42              |
| 1:0:540:G:O3'  | 1:0:541:C:H4'   | 2.20                     | 0.42              |
| 1:0:475:U:C4   | 1:0:801:A:C5    | 3.08                     | 0.42              |
| 1:0:810:U:H2'  | 1:0:811:G:O4'   | 2.19                     | 0.42              |
| 1:0:2833:C:N4  | 1:0:2834:A:C6   | 2.87                     | 0.42              |
| 1:0:1346:C:N4  | 1:0:1347:C:N4   | 2.67                     | 0.42              |
| 1:0:1978:U:C3' | 1:0:1979:C:H5'' | 2.46                     | 0.42              |
| 1:0:33:C:C2'   | 1:0:34:U:O5'    | 2.67                     | 0.42              |
| 1:0:1444:C:O5' | 1:0:1444:C:H6   | 2.01                     | 0.42              |
| 1:0:2243:C:N4  | 1:0:2244:C:N4   | 2.66                     | 0.42              |
| 1:0:2268:G:H2' | 1:0:2269:G:O4'  | 2.19                     | 0.42              |
| 1:0:638:A:O2'  | 1:0:639:G:H5'   | 2.19                     | 0.42              |
| 1:0:1187:A:H8  | 1:0:1187:A:OP2  | 2.02                     | 0.42              |
| 1:0:2071:G:C2  | 1:0:2072:C:C6   | 3.07                     | 0.42              |
| 1:0:705:C:H2'  | 1:0:706:A:H8    | 1.85                     | 0.42              |
| 1:0:668:A:C2'  | 1:0:669:G:O4'   | 2.64                     | 0.42              |
| 1:0:2501:U:O2' | 1:0:2626:U:H5'' | 2.19                     | 0.42              |
| 1:0:1236:G:C4  | 1:0:1238:A:OP2  | 2.72                     | 0.42              |
| 1:0:2859:U:C5  | 1:0:2860:C:C2   | 3.07                     | 0.42              |
| 1:0:1404:C:N4  | 1:0:1408:A:N6   | 2.68                     | 0.42              |
| 1:0:1893:G:H2' | 1:0:1894:U:C6   | 2.53                     | 0.42              |
| 1:0:1916:G:O2' | 1:0:1957:C:H4'  | 2.19                     | 0.42              |
| 1:0:2542:U:O2  | 1:0:2545:A:N7   | 2.53                     | 0.42              |
| 1:0:2395:C:C4  | 1:0:2396:C:N4   | 2.87                     | 0.42              |
| 1:0:1699:A:C5  | 1:0:1748:U:C6   | 3.07                     | 0.42              |
| 1:0:1699:A:H3' | 1:0:1700:C:C6   | 2.54                     | 0.42              |
| 1:0:2537:C:H2' | 1:0:2538:C:O4'  | 2.19                     | 0.42              |
| 1:0:1156:U:H2' | 1:0:1157:G:H8   | 1.83                     | 0.42              |
| 1:0:541:C:N4   | 1:0:2001:G:H1   | 2.18                     | 0.42              |
| 1:0:2036:G:O2' | 1:0:2037:A:H5'  | 2.20                     | 0.42              |
| 1:0:2225:G:C2  | 1:0:2226:A:N7   | 2.88                     | 0.42              |
| 1:0:2229:G:N2  | 1:0:2475:C:C4'  | 2.81                     | 0.42              |
| 1:0:474:G:C6   | 1:0:478:G:O6    | 2.72                     | 0.42              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:757:U:H2'  | 1:0:758:G:H5'  | 2.01                     | 0.42              |
| 1:0:2668:U:O2  | 1:0:2693:U:O5' | 2.37                     | 0.42              |
| 1:0:1374:G:C2  | 1:0:1375:C:C6  | 3.07                     | 0.42              |
| 1:0:167:A:C6   | 1:0:168:A:C6   | 3.08                     | 0.42              |
| 1:0:1438:G:C2  | 1:0:1591:U:C2  | 3.07                     | 0.42              |
| 1:0:2519:C:C2' | 1:0:2520:A:H5' | 2.50                     | 0.42              |
| 1:0:611:C:N4   | 1:0:612:G:C6   | 2.87                     | 0.42              |
| 1:0:633:G:O2'  | 1:0:634:G:C5'  | 2.67                     | 0.42              |
| 1:0:591:G:C4   | 1:0:592:G:C8   | 3.07                     | 0.42              |
| 1:0:591:G:H2'  | 1:0:592:G:H8   | 1.83                     | 0.42              |
| 1:0:1225:G:H2' | 1:0:1249:G:H21 | 1.76                     | 0.42              |
| 1:0:402:A:H5'' | 1:0:403:A:OP2  | 2.19                     | 0.42              |
| 1:0:677:G:C2   | 1:0:678:G:C8   | 3.07                     | 0.42              |
| 1:0:2789:U:H2' | 1:0:2790:C:O4' | 2.20                     | 0.42              |
| 1:0:2200:G:C4  | 1:0:2201:G:C8  | 3.08                     | 0.42              |
| 1:0:600:G:O6   | 1:0:602:C:C4   | 2.72                     | 0.42              |
| 1:0:1068:A:C2' | 1:0:1069:G:O4' | 2.66                     | 0.42              |
| 1:0:2731:G:H8  | 1:0:2731:G:O5' | 2.01                     | 0.42              |
| 1:0:865:A:N6   | 1:0:937:C:N3   | 2.52                     | 0.42              |
| 1:0:553:C:O2'  | 1:0:555:U:OP1  | 2.32                     | 0.42              |
| 1:0:42:G:C6    | 1:0:43:A:C2    | 3.08                     | 0.42              |
| 1:0:2810:A:N6  | 1:0:2853:U:C6  | 2.88                     | 0.42              |
| 1:0:1196:G:O2' | 1:0:1197:U:H5' | 2.20                     | 0.42              |
| 1:0:2023:C:H6  | 1:0:2023:C:O5' | 2.03                     | 0.42              |
| 1:0:2225:G:C4  | 1:0:2226:A:C8  | 3.08                     | 0.42              |
| 1:0:1724:C:C2  | 1:0:1747:G:C4  | 3.07                     | 0.42              |
| 1:0:1982:C:OP1 | 1:0:2703:C:O2' | 2.36                     | 0.42              |
| 1:0:1299:A:N6  | 1:0:1302:C:C2  | 2.86                     | 0.42              |
| 1:0:1337:G:N2  | 1:0:1344:C:C2  | 2.87                     | 0.42              |
| 1:0:177:U:O2   | 1:0:177:U:H3'  | 2.18                     | 0.42              |
| 1:0:401:G:O4'  | 1:0:401:G:OP1  | 2.38                     | 0.42              |
| 1:0:1437:A:C5  | 1:0:1438:G:N7  | 2.88                     | 0.42              |
| 1:0:1713:G:C6  | 1:0:1714:A:C4  | 3.07                     | 0.42              |
| 1:0:68:C:C2'   | 1:0:72:A:HO2'  | 2.32                     | 0.42              |
| 1:0:1690:U:O2' | 1:0:1691:G:C5' | 2.66                     | 0.42              |
| 1:0:459:A:N7   | 1:0:484:G:C5   | 2.88                     | 0.42              |
| 1:0:621:U:N3   | 1:0:622:U:C5   | 2.88                     | 0.42              |
| 1:0:622:U:H2'  | 1:0:623:G:C5'  | 2.49                     | 0.42              |
| 1:0:998:C:O2'  | 1:0:1011:A:N3  | 2.45                     | 0.42              |
| 1:0:1791:C:O2  | 1:0:1793:A:C8  | 2.73                     | 0.42              |
| 1:0:305:A:H2'  | 1:0:306:G:C5'  | 2.49                     | 0.42              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1144:U:H6   | 1:0:1144:U:H3'  | 1.84                     | 0.42              |
| 1:0:163:A:N3    | 1:0:164:G:C8    | 2.88                     | 0.42              |
| 1:0:1215:A:C2   | 1:0:1258:G:C4   | 3.08                     | 0.42              |
| 1:0:1057:A:C3'  | 1:0:1058:G:C5'  | 2.97                     | 0.42              |
| 1:0:330:C:C2    | 1:0:331:U:C6    | 3.08                     | 0.42              |
| 1:0:387:A:H2'   | 1:0:387:A:N3    | 2.35                     | 0.42              |
| 1:0:1819:U:C4'  | 1:0:1953:A:O2'  | 2.65                     | 0.42              |
| 1:0:2717:G:N3   | 1:0:2718:A:C8   | 2.88                     | 0.42              |
| 1:0:325:U:O2'   | 1:0:326:A:H5'   | 2.19                     | 0.42              |
| 1:0:1120:C:H3'  | 1:0:1121:G:N7   | 2.34                     | 0.42              |
| 1:0:1718:A:C8   | 1:0:1719:G:C8   | 3.07                     | 0.42              |
| 1:0:1198:C:OP1  | 1:0:1199:U:C4'  | 2.68                     | 0.42              |
| 1:0:698:A:C8    | 1:0:786:U:C4    | 3.08                     | 0.42              |
| 1:0:743:A:C2    | 1:0:744:C:C2    | 3.08                     | 0.42              |
| 1:0:752:G:H4'   | 1:0:753:U:OP1   | 2.20                     | 0.42              |
| 1:0:772:G:C4    | 1:0:773:G:N7    | 2.88                     | 0.42              |
| 1:0:984:A:H1'   | 1:0:1202:U:C4   | 2.45                     | 0.42              |
| 1:0:1440:G:H8   | 1:0:1440:G:P    | 2.42                     | 0.42              |
| 1:0:1681:A:H61  | 1:0:1979:C:N4   | 2.18                     | 0.42              |
| 1:0:2633:A:H2   | 1:0:2644:A:H5'' | 1.83                     | 0.42              |
| 1:0:1466:C:H2'  | 1:0:1467:U:H1'  | 2.02                     | 0.42              |
| 1:0:2352:A:N1   | 1:0:2360:C:N3   | 2.68                     | 0.42              |
| 1:0:1899:A:H8   | 1:0:1899:A:O5'  | 2.03                     | 0.42              |
| 1:0:658:G:H2'   | 1:0:659:G:C8    | 2.55                     | 0.42              |
| 1:0:1355:A:C8   | 1:0:1410:U:C1'  | 3.02                     | 0.42              |
| 1:0:1285:A:O2'  | 1:0:1286:U:P    | 2.78                     | 0.42              |
| 1:0:1474:A:C6   | 1:0:1476:G:C2   | 3.08                     | 0.42              |
| 1:0:115:G:C2    | 1:0:117:A:N6    | 2.88                     | 0.42              |
| 1:0:531:G:O2'   | 1:0:532:A:H5'   | 2.20                     | 0.42              |
| 1:0:2860:C:H2'  | 1:0:2861:A:H5'  | 2.00                     | 0.42              |
| 1:0:366:U:H2'   | 1:0:367:G:O4'   | 2.20                     | 0.42              |
| 1:0:1952:A:H1'  | 1:0:1956:G:O4'  | 2.20                     | 0.42              |
| 1:0:1060:C:N4   | 1:0:1061:A:N6   | 2.68                     | 0.42              |
| 1:0:1320:A:C6   | 1:0:1638:G:C6   | 3.08                     | 0.42              |
| 1:0:2431:C:C2'  | 1:0:2431:C:O2   | 2.57                     | 0.42              |
| 1:0:804:C:C2'   | 1:0:805:G:OP2   | 2.67                     | 0.42              |
| 1:0:970:A:N7    | 1:0:971:A:C6    | 2.87                     | 0.42              |
| 1:0:2826:C:H2'  | 1:0:2827:G:O5'  | 2.20                     | 0.42              |
| 1:0:500:G:C4    | 1:0:1297:A:C2   | 3.08                     | 0.42              |
| 1:0:1715:A:HO2' | 1:0:1716:G:C5'  | 2.32                     | 0.42              |
| 1:0:57:G:N1     | 1:0:72:A:C6     | 2.88                     | 0.42              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2778:U:H2' | 1:0:2779:C:C5'  | 2.47                     | 0.42              |
| 1:0:1977:C:H2' | 1:0:1978:U:H6   | 1.82                     | 0.42              |
| 1:0:484:G:O5'  | 1:0:484:G:H8    | 2.03                     | 0.42              |
| 1:0:1161:U:H2' | 1:0:1162:A:C8   | 2.53                     | 0.42              |
| 1:0:2350:G:N1  | 1:0:2351:G:C5   | 2.87                     | 0.42              |
| 1:0:1789:U:N3  | 1:0:1811:A:C2   | 2.88                     | 0.42              |
| 1:0:1316:G:N2  | 1:0:1317:G:C1'  | 2.82                     | 0.42              |
| 1:0:2181:A:N1  | 1:0:2204:A:N6   | 2.68                     | 0.42              |
| 1:0:83:A:O2'   | 1:0:84:G:OP2    | 2.38                     | 0.42              |
| 1:0:2096:U:C2' | 1:0:2097:A:H5'' | 2.50                     | 0.42              |
| 1:0:2543:A:C2  | 1:0:2626:U:H4'  | 2.55                     | 0.42              |
| 1:0:1360:G:C6  | 1:0:1361:G:N7   | 2.88                     | 0.42              |
| 1:0:681:A:N6   | 1:0:683:A:H2'   | 2.35                     | 0.42              |
| 1:0:1908:C:C2' | 1:0:1909:U:H4'  | 2.49                     | 0.42              |
| 1:0:340:G:H5'  | 1:0:341:A:OP2   | 2.20                     | 0.42              |
| 1:0:105:G:H2'  | 1:0:106:G:H5'   | 2.02                     | 0.42              |
| 1:0:1825:C:O2' | 1:0:1826:U:H5'  | 2.20                     | 0.42              |
| 1:0:1850:G:N2  | 1:0:1868:A:C8   | 2.87                     | 0.42              |
| 1:0:1852:G:N2  | 1:0:1853:C:C2   | 2.88                     | 0.42              |
| 1:0:43:A:H2'   | 1:0:44:G:C5'    | 2.48                     | 0.42              |
| 1:0:43:A:O2'   | 1:0:44:G:H5'    | 2.20                     | 0.42              |
| 1:0:2392:G:H2' | 1:0:2393:G:H8   | 1.84                     | 0.42              |
| 1:0:1744:G:H2' | 1:0:1746:A:OP2  | 2.19                     | 0.42              |
| 1:0:2046:C:C6  | 1:0:2046:C:O5'  | 2.72                     | 0.42              |
| 1:0:2419:C:O2' | 1:0:2420:C:OP1  | 2.35                     | 0.42              |
| 1:0:2483:U:C6  | 1:0:2483:U:H3'  | 2.53                     | 0.42              |
| 1:0:2595:C:C2  | 1:0:2596:C:C6   | 3.08                     | 0.42              |
| 1:0:1655:C:OP1 | 1:0:2690:A:C5'  | 2.66                     | 0.42              |
| 1:0:2831:A:C6  | 1:0:2837:G:C6   | 3.07                     | 0.42              |
| 1:0:178:C:H2'  | 1:0:179:U:O4'   | 2.19                     | 0.42              |
| 1:0:2515:G:H8  | 1:0:2515:G:O5'  | 2.03                     | 0.42              |
| 1:0:1975:G:H22 | 1:0:1979:C:H6   | 1.61                     | 0.42              |
| 1:0:1270:C:C4  | 1:0:1271:C:N4   | 2.88                     | 0.42              |
| 1:0:459:A:H4'  | 1:0:461:A:C5    | 2.55                     | 0.42              |
| 1:0:1586:A:C4  | 1:0:1587:A:N7   | 2.87                     | 0.42              |
| 1:0:173:A:O2'  | 1:0:174:A:P     | 2.77                     | 0.42              |
| 1:0:1926:U:H4' | 1:0:1927:U:H5'  | 2.02                     | 0.42              |
| 1:0:1225:G:O2' | 1:0:1250:A:C6   | 2.72                     | 0.42              |
| 1:0:1225:G:O2' | 1:0:1250:A:N1   | 2.52                     | 0.42              |
| 1:0:321:A:C5   | 1:0:323:G:C4    | 3.07                     | 0.42              |
| 1:0:1151:U:C5' | 1:0:1153:A:H5'  | 2.50                     | 0.42              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1256:C:H2' | 1:0:1257:U:C6  | 2.55                     | 0.42              |
| 1:0:2500:C:H2' | 1:0:2501:U:C6  | 2.54                     | 0.42              |
| 1:0:529:U:H2'  | 1:0:530:G:C8   | 2.54                     | 0.42              |
| 1:0:369:C:H2'  | 1:0:370:U:O4'  | 2.19                     | 0.42              |
| 1:0:1547:U:H2' | 1:0:1548:U:O4' | 2.20                     | 0.42              |
| 1:0:2031:A:C2  | 1:0:2032:G:C1' | 3.03                     | 0.42              |
| 1:0:200:A:C8   | 1:0:435:A:H1'  | 2.55                     | 0.42              |
| 1:0:2028:C:C2' | 1:0:2029:G:O5' | 2.68                     | 0.42              |
| 1:0:2819:G:C5  | 1:0:2820:C:C4  | 3.08                     | 0.42              |
| 1:0:2771:C:O2  | 1:0:2771:C:H2' | 2.18                     | 0.42              |
| 1:0:1227:A:O5' | 1:0:1227:A:H8  | 2.03                     | 0.42              |
| 1:0:159:A:H8   | 1:0:159:A:O5'  | 2.03                     | 0.42              |
| 1:0:1176:U:C2' | 1:0:1177:U:O5' | 2.68                     | 0.42              |
| 1:0:2042:A:C2  | 1:0:2482:A:C6  | 3.08                     | 0.42              |
| 1:0:2557:G:N2  | 1:0:2558:C:C2  | 2.88                     | 0.42              |
| 1:0:698:A:C4'  | 1:0:700:C:C5   | 2.98                     | 0.42              |
| 1:0:718:A:N6   | 1:0:739:G:O2'  | 2.52                     | 0.42              |
| 1:0:2823:G:O2' | 1:0:2824:C:OP2 | 2.36                     | 0.42              |
| 1:0:2198:U:N3  | 1:0:2199:C:H1' | 2.35                     | 0.42              |
| 1:0:1713:G:C6  | 1:0:1714:A:C5  | 3.07                     | 0.42              |
| 1:0:33:C:N4    | 1:0:458:G:H1'  | 2.31                     | 0.42              |
| 1:0:2511:G:N7  | 1:0:2512:A:N7  | 2.68                     | 0.42              |
| 1:0:1468:A:C5' | 1:0:1472:C:N4  | 2.73                     | 0.42              |
| 1:0:2176:U:H3' | 1:0:2177:U:C6  | 2.55                     | 0.42              |
| 1:0:2437:G:C6  | 1:0:2469:G:H2' | 2.55                     | 0.42              |
| 1:0:1194:U:O2' | 1:0:1195:U:P   | 2.78                     | 0.42              |
| 1:0:52:A:C8    | 1:0:53:G:C8    | 3.08                     | 0.42              |
| 1:0:1730:G:N1  | 1:0:1731:C:C4  | 2.88                     | 0.42              |
| 1:0:103:U:O4   | 1:0:104:C:N4   | 2.53                     | 0.42              |
| 1:0:1710:U:C5' | 1:0:1711:C:OP2 | 2.68                     | 0.42              |
| 1:0:2681:A:C5  | 1:0:2682:C:C5  | 3.08                     | 0.42              |
| 1:0:2471:U:O2  | 1:0:2471:U:H2' | 2.20                     | 0.42              |
| 1:0:831:G:C8   | 1:0:831:G:C3'  | 3.03                     | 0.41              |
| 1:0:968:C:C4   | 1:0:970:A:N3   | 2.87                     | 0.41              |
| 1:0:2824:C:H4' | 1:0:2825:A:C5' | 2.49                     | 0.41              |
| 1:0:1996:A:N3  | 1:0:1996:A:H2' | 2.35                     | 0.41              |
| 1:0:1938:U:O3' | 1:0:1939:U:C5  | 2.72                     | 0.41              |
| 1:0:2772:U:H1' | 1:0:2781:G:N2  | 2.34                     | 0.41              |
| 1:0:2781:G:C3' | 1:0:2782:G:O4' | 2.68                     | 0.41              |
| 1:0:2781:G:C5  | 1:0:2782:G:C5  | 3.08                     | 0.41              |
| 1:0:2781:G:C2' | 1:0:2782:G:C1' | 2.88                     | 0.41              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1675:C:C2   | 1:0:1676:U:C5  | 3.08                     | 0.41              |
| 1:0:2062:U:H2'  | 1:0:2063:A:C8  | 2.55                     | 0.41              |
| 1:0:2875:C:HO2' | 1:0:2876:C:H5' | 1.81                     | 0.41              |
| 1:0:2267:A:C2'  | 1:0:2268:G:OP1 | 2.66                     | 0.41              |
| 1:0:2345:A:C6   | 1:0:2346:G:C4  | 3.08                     | 0.41              |
| 1:0:1317:G:N2   | 1:0:1641:C:C2  | 2.88                     | 0.41              |
| 1:0:1135:C:H2'  | 1:0:1136:G:C8  | 2.55                     | 0.41              |
| 1:0:2233:C:C2'  | 1:0:2234:G:H5' | 2.50                     | 0.41              |
| 1:0:560:G:N3    | 1:0:1233:A:H2  | 2.17                     | 0.41              |
| 1:0:1360:G:C2   | 1:0:1616:C:O2  | 2.73                     | 0.41              |
| 1:0:1236:G:C4   | 1:0:1240:G:N2  | 2.88                     | 0.41              |
| 1:0:1549:C:H2'  | 1:0:1550:C:C6  | 2.55                     | 0.41              |
| 1:0:2579:A:H2'  | 1:0:2580:C:C5  | 2.54                     | 0.41              |
| 1:0:422:C:H2'   | 1:0:423:G:H8   | 1.85                     | 0.41              |
| 1:0:756:C:H2'   | 1:0:757:U:H6   | 1.85                     | 0.41              |
| 1:0:796:A:H8    | 1:0:796:A:H2'  | 1.69                     | 0.41              |
| 1:0:837:U:H3    | 1:0:846:A:H61  | 1.68                     | 0.41              |
| 1:0:1629:G:C2   | 1:0:1633:C:O2  | 2.73                     | 0.41              |
| 1:0:1513:U:C2'  | 1:0:1514:C:OP2 | 2.68                     | 0.41              |
| 1:0:871:U:N3    | 1:0:2247:A:C8  | 2.87                     | 0.41              |
| 1:0:1886:G:N2   | 1:0:1887:G:C4  | 2.88                     | 0.41              |
| 1:0:354:C:H2'   | 1:0:355:G:O4'  | 2.20                     | 0.41              |
| 1:0:1040:A:N3   | 1:0:2465:G:H1' | 2.36                     | 0.41              |
| 1:0:165:G:C6    | 1:0:186:C:N4   | 2.89                     | 0.41              |
| 1:0:425:A:N7    | 1:0:2390:A:C2  | 2.88                     | 0.41              |
| 1:0:2500:C:H2'  | 1:0:2501:U:H6  | 1.85                     | 0.41              |
| 1:0:2060:A:OP2  | 1:0:2060:A:C8  | 2.74                     | 0.41              |
| 1:0:29:U:O5'    | 1:0:29:U:C6    | 2.71                     | 0.41              |
| 1:0:1653:C:H2'  | 1:0:1654:A:H8  | 1.85                     | 0.41              |
| 1:0:2723:C:C2   | 1:0:2742:G:N2  | 2.88                     | 0.41              |
| 1:0:734:G:O2'   | 1:0:735:G:H5'  | 2.19                     | 0.41              |
| 1:0:1758:C:C4   | 1:0:1759:A:N7  | 2.88                     | 0.41              |
| 1:0:1198:C:OP1  | 1:0:1199:U:O2' | 2.20                     | 0.41              |
| 1:0:1533:G:H2'  | 1:0:1534:A:C8  | 2.44                     | 0.41              |
| 1:0:2044:G:H2'  | 1:0:2046:C:H41 | 1.85                     | 0.41              |
| 1:0:541:C:O2'   | 1:0:542:A:P    | 2.77                     | 0.41              |
| 1:0:751:G:N3    | 1:0:751:G:H2'  | 2.35                     | 0.41              |
| 1:0:788:G:N2    | 1:0:800:U:H3'  | 2.30                     | 0.41              |
| 1:0:849:G:H2'   | 1:0:850:C:C6   | 2.56                     | 0.41              |
| 1:0:2696:A:H2'  | 1:0:2697:G:C8  | 2.54                     | 0.41              |
| 1:0:2825:A:C2   | 1:0:2826:C:C4  | 3.08                     | 0.41              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2840:U:C5  | 1:0:2841:U:C5  | 3.08                     | 0.41              |
| 1:0:1345:G:N3  | 1:0:1625:A:C2  | 2.88                     | 0.41              |
| 1:0:941:U:C2   | 1:0:942:U:N1   | 2.88                     | 0.41              |
| 1:0:2783:U:C4  | 1:0:2784:A:H2  | 2.38                     | 0.41              |
| 1:0:1981:A:H4' | 1:0:2704:U:O2' | 2.20                     | 0.41              |
| 1:0:1442:C:H2' | 1:0:1443:G:OP1 | 2.20                     | 0.41              |
| 1:0:870:C:O2'  | 1:0:871:U:H5'  | 2.19                     | 0.41              |
| 1:0:2661:G:H2' | 1:0:2662:C:H5' | 2.02                     | 0.41              |
| 1:0:1310:C:C2  | 1:0:1311:C:C5  | 3.08                     | 0.41              |
| 1:0:118:U:C6   | 1:0:143:A:C2   | 3.09                     | 0.41              |
| 1:0:76:C:H2'   | 1:0:77:C:O4'   | 2.20                     | 0.41              |
| 1:0:2235:G:H2' | 1:0:2236:U:O5' | 2.20                     | 0.41              |
| 1:0:1854:G:O2' | 1:0:1855:G:H5' | 2.20                     | 0.41              |
| 1:0:1236:G:C2  | 1:0:1240:G:N3  | 2.88                     | 0.41              |
| 1:0:2307:A:C6  | 1:0:2308:A:N6  | 2.87                     | 0.41              |
| 1:0:24:G:C6    | 1:0:25:U:C4    | 3.09                     | 0.41              |
| 1:0:485:G:C5   | 1:0:520:C:C5   | 3.09                     | 0.41              |
| 1:0:1800:A:C6  | 1:0:1802:A:C6  | 3.08                     | 0.41              |
| 1:0:2462:C:C5  | 1:0:2463:G:C8  | 3.08                     | 0.41              |
| 1:0:1004:A:C6  | 1:0:1173:G:C6  | 3.08                     | 0.41              |
| 1:0:13:A:N3    | 1:0:14:A:N1    | 2.67                     | 0.41              |
| 1:0:2225:G:C2  | 1:0:2226:A:C8  | 3.08                     | 0.41              |
| 1:0:2755:A:O2' | 1:0:2756:A:C5' | 2.65                     | 0.41              |
| 1:0:478:G:C2   | 1:0:479:G:C8   | 3.09                     | 0.41              |
| 1:0:690:A:C6   | 1:0:815:A:N6   | 2.89                     | 0.41              |
| 1:0:984:A:N3   | 1:0:984:A:H2'  | 2.35                     | 0.41              |
| 1:0:578:U:O2'  | 1:0:994:A:N1   | 2.40                     | 0.41              |
| 1:0:2198:U:C2' | 1:0:2199:C:H4' | 2.45                     | 0.41              |
| 1:0:2528:G:N3  | 1:0:2529:G:C8  | 2.88                     | 0.41              |
| 1:0:841:G:N7   | 1:0:842:A:N6   | 2.68                     | 0.41              |
| 1:0:2642:G:H2' | 1:0:2643:G:O5' | 2.19                     | 0.41              |
| 1:0:2562:G:C6  | 1:0:2563:U:O4  | 2.74                     | 0.41              |
| 1:0:511:A:H2'  | 1:0:512:A:C8   | 2.56                     | 0.41              |
| 1:0:1330:G:H2' | 1:0:1331:G:O4' | 2.19                     | 0.41              |
| 1:0:1478:U:H2' | 1:0:1479:G:C8  | 2.55                     | 0.41              |
| 1:0:308:C:O2   | 1:0:309:G:O4'  | 2.38                     | 0.41              |
| 1:0:52:A:H2'   | 1:0:53:G:H5'   | 2.02                     | 0.41              |
| 1:0:1073:G:H2' | 1:0:1074:G:O4' | 2.19                     | 0.41              |
| 1:0:2726:U:O4  | 1:0:2736:U:H5  | 2.04                     | 0.41              |
| 1:0:1916:G:H2' | 1:0:1917:C:H6  | 1.84                     | 0.41              |
| 1:0:2274:C:O2  | 1:0:2274:C:C2' | 2.65                     | 0.41              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1766:U:C2'  | 1:0:1767:G:H5' | 2.50                     | 0.41              |
| 1:0:1768:U:H2'  | 1:0:1768:U:O2  | 2.20                     | 0.41              |
| 1:0:2299:A:C5'  | 1:0:2300:G:OP1 | 2.68                     | 0.41              |
| 1:0:1741:G:C2   | 1:0:1742:G:C8  | 3.08                     | 0.41              |
| 1:0:1051:U:H2'  | 1:0:1051:U:O2  | 2.21                     | 0.41              |
| 1:0:1174:G:C2   | 1:0:1175:A:C5  | 3.09                     | 0.41              |
| 1:0:1446:U:C6   | 1:0:1447:U:H5  | 2.38                     | 0.41              |
| 1:0:2050:G:C6   | 1:0:2423:G:C6  | 3.09                     | 0.41              |
| 1:0:542:A:C2'   | 1:0:543:G:O5'  | 2.68                     | 0.41              |
| 1:0:579:G:C6    | 1:0:2013:A:C2  | 3.08                     | 0.41              |
| 1:0:1282:A:H2'  | 1:0:1283:C:C6  | 2.55                     | 0.41              |
| 1:0:1332:G:C6   | 1:0:1333:G:N1  | 2.89                     | 0.41              |
| 1:0:1627:C:H42  | 1:0:1628:C:N4  | 2.17                     | 0.41              |
| 1:0:172:A:C2    | 1:0:178:C:C2   | 3.08                     | 0.41              |
| 1:0:65:C:C2'    | 1:0:66:U:C5'   | 2.94                     | 0.41              |
| 1:0:67:G:N2     | 1:0:73:A:C4    | 2.89                     | 0.41              |
| 1:0:2782:G:P    | 1:0:2782:G:O4' | 2.78                     | 0.41              |
| 1:0:2783:U:O4   | 1:0:2866:A:C8  | 2.73                     | 0.41              |
| 1:0:1690:U:HO2' | 1:0:1691:G:P   | 2.42                     | 0.41              |
| 1:0:456:C:C3'   | 1:0:456:C:C6   | 3.04                     | 0.41              |
| 1:0:35:G:C1'    | 1:0:466:A:N3   | 2.84                     | 0.41              |
| 1:0:464:G:C2    | 1:0:469:G:C4   | 3.09                     | 0.41              |
| 1:0:2565:C:O2   | 1:0:2565:C:C2' | 2.55                     | 0.41              |
| 1:0:874:A:C4    | 1:0:875:G:C8   | 3.08                     | 0.41              |
| 1:0:1249:G:HO2' | 1:0:1250:A:P   | 2.42                     | 0.41              |
| 1:0:1886:G:H2'  | 1:0:1887:G:C8  | 2.52                     | 0.41              |
| 1:0:1561:A:O5'  | 1:0:1561:A:H8  | 2.04                     | 0.41              |
| 1:0:303:C:C2    | 1:0:360:A:N1   | 2.88                     | 0.41              |
| 1:0:2094:C:H2'  | 1:0:2094:C:O2  | 2.20                     | 0.41              |
| 1:0:48:A:H1'    | 1:0:50:G:N3    | 2.35                     | 0.41              |
| 1:0:1469:U:H3'  | 1:0:1470:G:C8  | 2.55                     | 0.41              |
| 1:0:2448:A:N6   | 1:0:2460:G:O2' | 2.53                     | 0.41              |
| 1:0:944:A:C2    | 1:0:945:G:C1'  | 3.03                     | 0.41              |
| 1:0:945:G:O2'   | 1:0:946:U:H5'  | 2.20                     | 0.41              |
| 1:0:197:G:H1'   | 1:0:210:A:C2   | 2.55                     | 0.41              |
| 1:0:28:A:C2     | 1:0:523:A:C8   | 3.09                     | 0.41              |
| 1:0:314:G:C2    | 1:0:326:A:C2   | 3.08                     | 0.41              |
| 1:0:107:G:H21   | 1:0:108:G:H1'  | 1.83                     | 0.41              |
| 1:0:1047:G:O2'  | 1:0:1048:U:H5' | 2.20                     | 0.41              |
| 1:0:2664:G:C2'  | 1:0:2665:G:H5' | 2.51                     | 0.41              |
| 1:0:653:G:H8    | 1:0:653:G:H3'  | 1.86                     | 0.41              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1530:U:H3'  | 1:0:1530:U:H6   | 1.85                     | 0.41              |
| 1:0:2424:G:H2'  | 1:0:2425:G:C8   | 2.51                     | 0.41              |
| 1:0:2486:C:H2'  | 1:0:2487:G:H8   | 1.84                     | 0.41              |
| 1:0:2824:C:C2'  | 1:0:2825:A:OP2  | 2.68                     | 0.41              |
| 1:0:1373:G:C8   | 1:0:1374:G:C8   | 3.08                     | 0.41              |
| 1:0:1593:C:H6   | 1:0:1593:C:O5'  | 2.03                     | 0.41              |
| 1:0:1938:U:O2'  | 1:0:1939:U:OP1  | 2.30                     | 0.41              |
| 1:0:456:C:C2'   | 1:0:457:C:H5'   | 2.50                     | 0.41              |
| 1:0:459:A:N6    | 1:0:484:G:N3    | 2.68                     | 0.41              |
| 1:0:591:G:C6    | 1:0:1272:G:N1   | 2.88                     | 0.41              |
| 1:0:460:U:H3    | 1:0:592:G:H1'   | 1.85                     | 0.41              |
| 1:0:871:U:C2'   | 1:0:871:U:O2    | 2.63                     | 0.41              |
| 1:0:1247:U:O2'  | 1:0:1248:G:H5'  | 2.20                     | 0.41              |
| 1:0:2324:G:N3   | 1:0:2326:C:C5   | 2.87                     | 0.41              |
| 1:0:1790:G:N1   | 1:0:1811:A:N7   | 2.69                     | 0.41              |
| 1:0:1355:A:O3'  | 1:0:1357:U:OP2  | 2.39                     | 0.41              |
| 1:0:1194:U:O2'  | 1:0:1195:U:O5'  | 2.38                     | 0.41              |
| 1:0:1036:G:H1'  | 1:0:1145:C:H4'  | 2.01                     | 0.41              |
| 1:0:1073:G:C2   | 1:0:1074:G:H1'  | 2.56                     | 0.41              |
| 1:0:2208:U:C6   | 1:0:2208:U:C3'  | 3.04                     | 0.41              |
| 1:0:2186:G:N2   | 1:0:2187:A:C5   | 2.89                     | 0.41              |
| 1:0:2315:A:H1'  | 1:0:2364:C:H5'' | 2.03                     | 0.41              |
| 1:0:822:G:C2'   | 1:0:823:U:C5'   | 2.98                     | 0.41              |
| 1:0:1953:A:H4'  | 1:0:1955:G:O4'  | 2.21                     | 0.41              |
| 1:0:1956:G:C6   | 1:0:1957:C:C4   | 3.09                     | 0.41              |
| 1:0:2526:U:C2   | 1:0:2527:G:C8   | 3.08                     | 0.41              |
| 1:0:1294:G:N2   | 1:0:1303:U:C2   | 2.89                     | 0.41              |
| 1:0:1767:G:N2   | 1:0:1768:U:C1'  | 2.82                     | 0.41              |
| 1:0:1245:G:O2'  | 1:0:1246:G:H5'  | 2.20                     | 0.41              |
| 1:0:1701:C:H2'  | 1:0:1702:C:H6   | 1.84                     | 0.41              |
| 1:0:1639:U:H2'  | 1:0:1640:C:C6   | 2.56                     | 0.41              |
| 1:0:1445:A:H2'  | 1:0:1446:U:C6   | 2.55                     | 0.41              |
| 1:0:539:A:C5    | 1:0:2006:G:C5   | 3.08                     | 0.41              |
| 1:0:2044:G:C2'  | 1:0:2045:A:OP2  | 2.69                     | 0.41              |
| 1:0:2226:A:O2'  | 1:0:2227:C:H5'  | 2.20                     | 0.41              |
| 1:0:2557:G:N2   | 1:0:2558:C:N1   | 2.69                     | 0.41              |
| 1:0:772:G:C5    | 1:0:773:G:N7    | 2.89                     | 0.41              |
| 1:0:813:A:C2    | 1:0:815:A:H8    | 2.39                     | 0.41              |
| 1:0:1301:U:H5'' | 1:0:1302:C:OP2  | 2.20                     | 0.41              |
| 1:0:1344:C:C5   | 1:0:1346:C:N3   | 2.89                     | 0.41              |
| 1:0:226:C:O2'   | 1:0:227:G:OP2   | 2.31                     | 0.41              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2529:G:C6   | 1:0:2530:C:C4   | 3.09                     | 0.41              |
| 1:0:2410:U:H6   | 1:0:2410:U:O5'  | 2.03                     | 0.41              |
| 1:0:338:G:C5    | 1:0:339:U:H5    | 2.38                     | 0.41              |
| 1:0:1882:G:H21  | 1:0:1885:C:N4   | 2.15                     | 0.41              |
| 1:0:644:A:C3'   | 1:0:645:G:H5'   | 2.51                     | 0.41              |
| 1:0:651:C:C3'   | 1:0:652:C:C5'   | 2.94                     | 0.41              |
| 1:0:1312:G:H5'' | 1:0:1313:U:H5'' | 2.02                     | 0.41              |
| 1:0:115:G:C6    | 1:0:117:A:C6    | 3.09                     | 0.41              |
| 1:0:1855:G:H2'  | 1:0:1856:U:C6   | 2.56                     | 0.41              |
| 1:0:2788:C:N3   | 1:0:2789:U:C5   | 2.88                     | 0.41              |
| 1:0:369:C:H6    | 1:0:369:C:O5'   | 2.03                     | 0.41              |
| 1:0:684:C:H2'   | 1:0:685:U:O5'   | 2.21                     | 0.41              |
| 1:0:1783:G:N2   | 1:0:1820:G:HO2' | 2.18                     | 0.41              |
| 1:0:452:G:C2    | 1:0:453:U:C2    | 3.08                     | 0.41              |
| 1:0:2799:C:C4   | 1:0:2800:C:C2   | 3.08                     | 0.41              |
| 1:0:2663:U:N3   | 1:0:2664:G:C8   | 2.89                     | 0.41              |
| 1:0:2803:C:H2'  | 1:0:2804:G:O4'  | 2.20                     | 0.41              |
| 1:0:1758:C:H2'  | 1:0:1759:A:O4'  | 2.21                     | 0.41              |
| 1:0:294:U:C4    | 1:0:295:C:N4    | 2.88                     | 0.41              |
| 1:0:497:C:C2    | 1:0:505:G:C2    | 3.09                     | 0.41              |
| 1:0:2227:C:H2'  | 1:0:2228:U:O4'  | 2.20                     | 0.41              |
| 1:0:2549:G:C2'  | 1:0:2550:C:H5'  | 2.51                     | 0.41              |
| 1:0:690:A:O2'   | 1:0:691:C:H5'   | 2.21                     | 0.41              |
| 1:0:693:A:C2    | 1:0:811:G:C4    | 3.09                     | 0.41              |
| 1:0:1281:A:H2'  | 1:0:1282:A:C8   | 2.53                     | 0.41              |
| 1:0:1629:G:C6   | 1:0:1635:G:C6   | 3.09                     | 0.41              |
| 1:0:1283:C:N4   | 1:0:1665:C:H41  | 2.18                     | 0.41              |
| 1:0:168:A:C2    | 1:0:169:C:C4    | 3.09                     | 0.41              |
| 1:0:237:G:H1'   | 1:0:632:A:H1'   | 2.03                     | 0.41              |
| 1:0:66:U:O2     | 1:0:67:G:C6     | 2.73                     | 0.41              |
| 1:0:2519:C:C4   | 1:0:2520:A:N7   | 2.88                     | 0.41              |
| 1:0:1680:U:O2'  | 1:0:1681:A:H5'  | 2.21                     | 0.41              |
| 1:0:456:C:H6    | 1:0:456:C:H3'   | 1.85                     | 0.41              |
| 1:0:2637:C:H2'  | 1:0:2638:G:C8   | 2.56                     | 0.41              |
| 1:0:493:A:C4    | 1:0:516:G:C6    | 3.08                     | 0.41              |
| 1:0:1381:G:O5'  | 1:0:1381:G:H8   | 2.04                     | 0.41              |
| 1:0:2346:G:O2'  | 1:0:2347:C:H5'  | 2.20                     | 0.41              |
| 1:0:1288:A:N7   | 1:0:1309:G:C1'  | 2.84                     | 0.41              |
| 1:0:562:G:C2    | 1:0:563:U:C2    | 3.09                     | 0.41              |
| 1:0:2096:U:H3'  | 1:0:2097:A:C5'  | 2.49                     | 0.41              |
| 1:0:2714:A:C2   | 1:0:2715:C:C2   | 3.09                     | 0.41              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2311:U:O4'  | 1:0:2315:A:N6  | 2.54                     | 0.41              |
| 1:0:242:A:N6    | 1:0:441:A:H8   | 2.10                     | 0.41              |
| 1:0:1730:G:C6   | 1:0:1737:G:C6  | 3.09                     | 0.41              |
| 1:0:2669:C:H2'  | 1:0:2670:C:OP2 | 2.20                     | 0.41              |
| 1:0:105:G:C6    | 1:0:106:G:N7   | 2.88                     | 0.41              |
| 1:0:2291:U:H2'  | 1:0:2292:C:C5  | 2.54                     | 0.41              |
| 1:0:79:G:H2'    | 1:0:80:A:H8    | 1.85                     | 0.41              |
| 1:0:588:G:C4    | 1:0:1275:A:N1  | 2.88                     | 0.41              |
| 1:0:2483:U:C3'  | 1:0:2483:U:H6  | 2.33                     | 0.41              |
| 1:0:2556:A:N1   | 1:0:2593:A:H2  | 2.17                     | 0.41              |
| 1:0:2557:G:N3   | 1:0:2557:G:C2' | 2.81                     | 0.41              |
| 1:0:2037:A:N1   | 1:0:2595:C:C4  | 2.89                     | 0.41              |
| 1:0:797:A:C5'   | 1:0:798:G:OP1  | 2.64                     | 0.41              |
| 1:0:1003:C:HO2' | 1:0:1004:A:H5' | 1.84                     | 0.41              |
| 1:0:2015:G:C2'  | 1:0:2015:G:N3  | 2.82                     | 0.41              |
| 1:0:2427:A:O2'  | 1:0:2428:U:OP1 | 2.33                     | 0.41              |
| 1:0:2431:C:C6   | 3:0:0:G34:C16  | 3.04                     | 0.41              |
| 1:0:691:C:H2'   | 1:0:692:C:C6   | 2.53                     | 0.41              |
| 1:0:953:G:N7    | 1:0:954:U:C6   | 2.89                     | 0.41              |
| 1:0:2837:G:C5   | 1:0:2838:U:C5  | 3.08                     | 0.41              |
| 1:0:938:G:N2    | 1:0:939:C:O2   | 2.54                     | 0.41              |
| 1:0:2529:G:N1   | 1:0:2530:C:C4  | 2.88                     | 0.41              |
| 1:0:2867:G:H2'  | 1:0:2868:G:OP2 | 2.21                     | 0.41              |
| 1:0:470:U:C5    | 1:0:480:G:N2   | 2.89                     | 0.41              |
| 1:0:1674:C:C2   | 1:0:1675:C:C6  | 3.08                     | 0.41              |
| 1:0:2571:G:N1   | 1:0:2582:G:C6  | 2.89                     | 0.41              |
| 1:0:2642:G:O2'  | 1:0:2643:G:C5' | 2.69                     | 0.41              |
| 1:0:620:G:N1    | 1:0:628:A:C6   | 2.86                     | 0.41              |
| 1:0:1253:C:C5   | 1:0:1254:G:N7  | 2.89                     | 0.41              |
| 1:0:346:C:O2    | 1:0:346:C:H2'  | 2.21                     | 0.41              |
| 1:0:1541:G:H3'  | 1:0:1541:G:C8  | 2.56                     | 0.41              |
| 1:0:2320:G:H22  | 1:0:2353:G:H4' | 1.84                     | 0.41              |
| 1:0:1886:G:C2   | 1:0:1887:G:N7  | 2.89                     | 0.41              |
| 1:0:651:C:N4    | 1:0:652:C:N4   | 2.69                     | 0.41              |
| 1:0:1416:A:C2   | 1:0:1417:C:C2  | 3.09                     | 0.41              |
| 1:0:1458:A:C2'  | 1:0:1459:U:C5' | 2.99                     | 0.41              |
| 1:0:1479:G:N2   | 1:0:1480:G:C4  | 2.89                     | 0.41              |
| 1:0:2437:G:H2'  | 1:0:2469:G:N1  | 2.29                     | 0.41              |
| 1:0:306:G:H2'   | 1:0:307:C:C6   | 2.46                     | 0.41              |
| 1:0:2137:G:O5'  | 1:0:2137:G:H8  | 2.04                     | 0.41              |
| 1:0:1453:A:C2'  | 1:0:1454:U:H5' | 2.50                     | 0.41              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1036:G:C4   | 1:0:1145:C:C1' | 3.04                     | 0.41              |
| 1:0:2161:C:HO2' | 1:0:2162:C:P   | 2.42                     | 0.41              |
| 1:0:142:U:H5''  | 1:0:143:A:OP1  | 2.21                     | 0.41              |
| 1:0:154:U:O2    | 1:0:154:U:H2'  | 2.19                     | 0.41              |
| 1:0:48:A:C2'    | 1:0:48:A:N3    | 2.82                     | 0.41              |
| 1:0:188:G:C2    | 1:0:189:A:C4   | 3.09                     | 0.41              |
| 1:0:1057:A:N3   | 1:0:1057:A:H2' | 2.35                     | 0.41              |
| 1:0:2540:A:HO2' | 1:0:2541:U:P   | 2.44                     | 0.41              |
| 1:0:678:G:C2'   | 1:0:679:C:H5'  | 2.51                     | 0.41              |
| 1:0:824:U:O2'   | 1:0:1264:C:O4' | 2.38                     | 0.41              |
| 1:0:198:A:C2    | 1:0:210:A:C5   | 3.09                     | 0.41              |
| 1:0:212:U:C2    | 1:0:443:A:C2   | 3.09                     | 0.41              |
| 1:0:728:G:H3'   | 1:0:729:A:C8   | 2.54                     | 0.41              |
| 1:0:1893:G:C5   | 1:0:1894:U:O4  | 2.74                     | 0.41              |
| 1:0:30:G:N1     | 1:0:521:U:O2   | 2.53                     | 0.41              |
| 1:0:1067:G:N2   | 1:0:1115:C:N4  | 2.69                     | 0.41              |
| 1:0:1860:A:H2'  | 1:0:1861:G:O4' | 2.21                     | 0.41              |
| 1:0:1294:G:C2   | 1:0:1303:U:C2  | 3.09                     | 0.41              |
| 1:0:2066:G:O5'  | 1:0:2066:G:C8  | 2.68                     | 0.41              |
| 1:0:2338:C:H2'  | 1:0:2339:A:H8  | 1.82                     | 0.41              |
| 1:0:2336:G:N2   | 1:0:2339:A:OP2 | 2.45                     | 0.41              |
| 1:0:2718:A:C2   | 1:0:2719:U:N1  | 2.89                     | 0.41              |
| 1:0:246:C:C2'   | 1:0:246:C:O2   | 2.66                     | 0.41              |
| 1:0:605:G:H2'   | 1:0:606:A:C8   | 2.55                     | 0.41              |
| 1:0:434:C:H2'   | 1:0:435:A:OP2  | 2.20                     | 0.41              |
| 1:0:434:C:C2'   | 1:0:435:A:OP2  | 2.68                     | 0.41              |
| 1:0:1831:G:C4   | 1:0:1832:G:C8  | 3.09                     | 0.41              |
| 1:0:2739:G:O2'  | 1:0:2740:C:H5' | 2.21                     | 0.41              |
| 1:0:1651:U:O5'  | 1:0:1651:U:H6  | 2.02                     | 0.41              |
| 1:0:2440:C:H2'  | 1:0:2441:U:C6  | 2.56                     | 0.41              |
| 1:0:1739:G:H2'  | 1:0:1740:G:H8  | 1.85                     | 0.41              |
| 1:0:478:G:N2    | 1:0:479:G:C4   | 2.89                     | 0.41              |
| 1:0:687:G:C2'   | 1:0:688:A:H5'  | 2.51                     | 0.41              |
| 1:0:827:C:H2'   | 1:0:828:C:O5'  | 2.21                     | 0.41              |
| 1:0:1750:A:H5'  | 1:0:2695:C:H1' | 2.02                     | 0.41              |
| 1:0:1279:G:H22  | 1:0:1995:G:C3' | 2.34                     | 0.41              |
| 1:0:1281:A:C4   | 1:0:1282:A:C8  | 3.09                     | 0.41              |
| 1:0:1323:G:N2   | 1:0:1326:U:H3  | 2.15                     | 0.41              |
| 1:0:172:A:N1    | 1:0:178:C:C2   | 2.89                     | 0.41              |
| 1:0:630:G:H5''  | 1:0:631:G:OP2  | 2.20                     | 0.41              |
| 1:0:940:G:H8    | 1:0:941:U:H5'' | 1.86                     | 0.41              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1973:C:H6  | 1:0:1973:C:O5' | 2.04                     | 0.41              |
| 1:0:1674:C:C2  | 1:0:1675:C:C5  | 3.09                     | 0.41              |
| 1:0:175:C:O2'  | 1:0:176:A:C8   | 2.70                     | 0.41              |
| 1:0:2370:G:H21 | 1:0:2408:G:H1' | 1.86                     | 0.41              |
| 1:0:2243:C:O2' | 1:0:2244:C:H5' | 2.20                     | 0.41              |
| 1:0:1885:C:C5  | 1:0:1886:G:C8  | 3.08                     | 0.41              |
| 1:0:2660:C:C2' | 1:0:2661:G:OP2 | 2.69                     | 0.41              |
| 1:0:1477:C:H3' | 1:0:1478:U:H6  | 1.86                     | 0.41              |
| 1:0:165:G:C6   | 1:0:166:G:C4   | 3.09                     | 0.41              |
| 1:0:1235:C:H1' | 1:0:1241:G:N2  | 2.36                     | 0.41              |
| 1:0:2539:C:N4  | 1:0:2540:A:H62 | 2.18                     | 0.41              |
| 1:0:1094:C:O2  | 1:0:1096:A:H8  | 2.04                     | 0.41              |
| 1:0:195:A:O2'  | 1:0:196:A:H5'  | 2.21                     | 0.41              |
| 1:0:239:A:O2'  | 1:0:240:U:H5'  | 2.20                     | 0.41              |
| 1:0:244:C:C5'  | 1:0:244:C:H6   | 2.34                     | 0.41              |
| 1:0:684:C:C6   | 1:0:685:U:H5   | 2.38                     | 0.41              |
| 1:0:1292:A:N6  | 1:0:1293:A:C6  | 2.89                     | 0.41              |
| 1:0:1294:G:C2  | 1:0:1303:U:O2  | 2.74                     | 0.41              |
| 1:0:2066:G:C6  | 1:0:2067:U:C4  | 3.09                     | 0.41              |
| 1:0:1549:C:N4  | 1:0:1555:A:C2  | 2.89                     | 0.41              |
| 1:0:123:A:O2'  | 1:0:124:A:P    | 2.80                     | 0.41              |
| 1:0:1038:U:N3  | 1:0:2466:G:O2' | 2.44                     | 0.41              |
| 1:0:336:A:H2'  | 1:0:337:G:C8   | 2.56                     | 0.41              |
| 1:0:1699:A:C2  | 1:0:1748:U:H1' | 2.56                     | 0.41              |
| 1:0:2807:U:O2  | 1:0:2809:A:C6  | 2.74                     | 0.41              |
| 1:0:1703:C:H2' | 1:0:1704:G:O4' | 2.21                     | 0.41              |
| 1:0:1815:G:C5  | 1:0:1816:G:N7  | 2.88                     | 0.41              |
| 1:0:1012:A:H2' | 1:0:1013:G:H5' | 2.03                     | 0.41              |
| 1:0:1488:G:C1' | 1:0:1536:G:N2  | 2.84                     | 0.40              |
| 1:0:2757:G:C2' | 1:0:2758:A:OP2 | 2.68                     | 0.40              |
| 1:0:815:A:N3   | 1:0:815:A:H2'  | 2.36                     | 0.40              |
| 1:0:1278:A:O2' | 1:0:1279:G:P   | 2.75                     | 0.40              |
| 1:0:1299:A:N1  | 1:0:1302:C:C6  | 2.90                     | 0.40              |
| 1:0:1374:G:O2' | 1:0:1375:C:H5' | 2.21                     | 0.40              |
| 1:0:35:G:C2'   | 1:0:36:G:O5'   | 2.69                     | 0.40              |
| 1:0:469:G:O2'  | 1:0:470:U:P    | 2.78                     | 0.40              |
| 1:0:1923:U:H4' | 1:0:1924:C:OP1 | 2.20                     | 0.40              |
| 1:0:2243:C:H2' | 1:0:2244:C:O4' | 2.21                     | 0.40              |
| 1:0:1011:A:N6  | 1:0:1166:A:C8  | 2.89                     | 0.40              |
| 1:0:1226:A:H1' | 1:0:1250:A:H2  | 1.85                     | 0.40              |
| 1:0:513:A:C2   | 1:0:516:G:C4   | 3.09                     | 0.40              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1351:G:N2  | 1:0:1352:G:N3  | 2.69                     | 0.40              |
| 1:0:1354:A:C8  | 1:0:1410:U:C2  | 3.09                     | 0.40              |
| 1:0:1193:G:O2' | 1:0:1194:U:P   | 2.78                     | 0.40              |
| 1:0:2725:C:C4  | 1:0:2726:U:C4  | 3.10                     | 0.40              |
| 1:0:2764:U:C2  | 1:0:2765:C:C5  | 3.09                     | 0.40              |
| 1:0:1218:C:C2  | 1:0:1255:A:C2  | 3.09                     | 0.40              |
| 1:0:528:G:H2'  | 1:0:529:U:H6   | 1.86                     | 0.40              |
| 1:0:2306:A:O2' | 1:0:2307:A:O4' | 2.32                     | 0.40              |
| 1:0:1066:G:H3' | 1:0:1067:G:C5' | 2.51                     | 0.40              |
| 1:0:39:C:N4    | 1:0:40:U:O4    | 2.54                     | 0.40              |
| 1:0:2293:G:H2' | 1:0:2294:U:C5  | 2.55                     | 0.40              |
| 1:0:2656:G:H2' | 1:0:2657:G:C8  | 2.56                     | 0.40              |
| 1:0:2119:A:H2' | 1:0:2120:C:H6  | 1.86                     | 0.40              |
| 1:0:1173:G:O2' | 1:0:1174:G:H5' | 2.22                     | 0.40              |
| 1:0:2006:G:H2' | 1:0:2007:G:H8  | 1.85                     | 0.40              |
| 1:0:956:A:C2   | 1:0:2427:A:N3  | 2.89                     | 0.40              |
| 1:0:2438:A:N6  | 1:0:2473:G:C5  | 2.89                     | 0.40              |
| 1:0:537:C:C2   | 1:0:2759:U:C5  | 3.08                     | 0.40              |
| 1:0:475:U:O2   | 1:0:699:G:N2   | 2.54                     | 0.40              |
| 1:0:830:C:HO2' | 1:0:852:U:C5'  | 2.34                     | 0.40              |
| 1:0:953:G:C5   | 1:0:954:U:C6   | 3.09                     | 0.40              |
| 1:0:1322:G:C5  | 1:0:1323:G:N7  | 2.89                     | 0.40              |
| 1:0:1621:C:C4' | 1:0:1626:A:C6  | 3.04                     | 0.40              |
| 1:0:1633:C:H6  | 1:0:1633:C:O5' | 2.05                     | 0.40              |
| 1:0:631:G:C5'  | 1:0:632:A:OP1  | 2.62                     | 0.40              |
| 1:0:66:U:O2    | 1:0:67:G:O6    | 2.39                     | 0.40              |
| 1:0:34:U:H5    | 1:0:466:A:C4   | 2.39                     | 0.40              |
| 1:0:468:A:N3   | 1:0:470:U:C4   | 2.89                     | 0.40              |
| 1:0:871:U:N3   | 1:0:2247:A:N7  | 2.69                     | 0.40              |
| 1:0:987:G:C2   | 1:0:988:G:C8   | 3.09                     | 0.40              |
| 1:0:1224:A:C8  | 1:0:1224:A:O5' | 2.74                     | 0.40              |
| 1:0:1252:C:H2' | 1:0:1253:C:C5' | 2.46                     | 0.40              |
| 1:0:318:G:O2'  | 1:0:319:G:C8   | 2.73                     | 0.40              |
| 1:0:2324:G:O6  | 1:0:2360:C:C4  | 2.75                     | 0.40              |
| 1:0:1786:C:H2' | 1:0:1787:U:O4' | 2.21                     | 0.40              |
| 1:0:1788:C:O2  | 1:0:1788:C:C2' | 2.68                     | 0.40              |
| 1:0:1811:A:O2' | 1:0:1812:U:C5' | 2.68                     | 0.40              |
| 1:0:1316:G:N2  | 1:0:1317:G:C4  | 2.90                     | 0.40              |
| 1:0:2071:G:H2' | 1:0:2072:C:H6  | 1.85                     | 0.40              |
| 1:0:1451:C:O2' | 1:0:1452:U:H5' | 2.21                     | 0.40              |
| 1:0:1023:U:O2  | 1:0:1154:A:C8  | 2.73                     | 0.40              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1366:A:C2   | 1:0:1391:A:C2  | 3.09                     | 0.40              |
| 1:0:143:A:H2'   | 1:0:144:U:C6   | 2.56                     | 0.40              |
| 1:0:1378:A:C2   | 1:0:1379:A:C4  | 3.09                     | 0.40              |
| 1:0:825:C:C2    | 1:0:826:U:C5   | 3.09                     | 0.40              |
| 1:0:1112:U:H2'  | 1:0:1113:C:C6  | 2.55                     | 0.40              |
| 1:0:2847:G:C2   | 1:0:2848:A:N6  | 2.89                     | 0.40              |
| 1:0:1574:A:HO2' | 1:0:1575:C:P   | 2.44                     | 0.40              |
| 1:0:584:A:OP2   | 1:0:2038:C:N4  | 2.54                     | 0.40              |
| 1:0:2404:A:H5'  | 1:0:2406:C:C5' | 2.51                     | 0.40              |
| 1:0:2425:G:H2'  | 1:0:2426:G:H5' | 2.03                     | 0.40              |
| 1:0:2038:C:C2'  | 1:0:2483:U:H5' | 2.50                     | 0.40              |
| 1:0:741:G:H5''  | 1:0:742:G:OP2  | 2.21                     | 0.40              |
| 1:0:1280:U:O2'  | 1:0:1281:A:H5' | 2.21                     | 0.40              |
| 1:0:1629:G:N2   | 1:0:1633:C:O2' | 2.54                     | 0.40              |
| 1:0:1992:G:O2'  | 1:0:1993:G:H5' | 2.21                     | 0.40              |
| 1:0:238:G:O4'   | 1:0:618:A:C2   | 2.74                     | 0.40              |
| 1:0:89:A:H4'    | 1:0:90:G:C5'   | 2.52                     | 0.40              |
| 1:0:10:A:H2'    | 1:0:11:G:C8    | 2.36                     | 0.40              |
| 1:0:875:G:C2'   | 1:0:876:A:H5'  | 2.51                     | 0.40              |
| 1:0:322:A:O2'   | 1:0:323:G:OP2  | 2.38                     | 0.40              |
| 1:0:2322:U:H2'  | 1:0:2323:U:H6  | 1.87                     | 0.40              |
| 1:0:1807:A:H2   | 1:0:1809:G:O6  | 2.04                     | 0.40              |
| 1:0:1417:C:O2'  | 1:0:1418:C:H5' | 2.21                     | 0.40              |
| 1:0:1658:A:N7   | 1:0:1659:G:N7  | 2.69                     | 0.40              |
| 1:0:2177:U:C2   | 1:0:2178:U:H5  | 2.39                     | 0.40              |
| 1:0:139:A:C4    | 1:0:140:G:N7   | 2.89                     | 0.40              |
| 1:0:390:U:C4    | 1:0:391:C:N4   | 2.89                     | 0.40              |
| 1:0:2280:A:H2'  | 1:0:2281:C:C6  | 2.54                     | 0.40              |
| 1:0:2186:G:N2   | 1:0:2187:A:N7  | 2.70                     | 0.40              |
| 1:0:2712:G:H5'  | 1:0:2713:A:C8  | 2.56                     | 0.40              |
| 1:0:244:C:C4    | 1:0:245:C:C5   | 3.09                     | 0.40              |
| 1:0:388:G:OP1   | 1:0:406:G:OP1  | 2.39                     | 0.40              |
| 1:0:30:G:O2'    | 1:0:31:C:H5'   | 2.22                     | 0.40              |
| 1:0:137:A:H2'   | 1:0:138:G:C5'  | 2.48                     | 0.40              |
| 1:0:2312:A:HO2' | 1:0:2313:G:P   | 2.42                     | 0.40              |
| 1:0:1772:C:H4'  | 1:0:1773:C:C5' | 2.52                     | 0.40              |
| 1:0:2002:A:O2'  | 1:0:2003:A:P   | 2.80                     | 0.40              |
| 1:0:2041:A:N6   | 1:0:2042:A:N6  | 2.69                     | 0.40              |
| 1:0:2219:U:H2'  | 1:0:2220:A:H8  | 1.87                     | 0.40              |
| 1:0:2405:A:C2'  | 1:0:2406:C:OP1 | 2.69                     | 0.40              |
| 1:0:2494:C:H2'  | 1:0:2495:G:H8  | 1.86                     | 0.40              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2605:C:O2'  | 1:0:2606:G:H5' | 2.21                     | 0.40              |
| 1:0:718:A:C4    | 1:0:740:A:H1'  | 2.56                     | 0.40              |
| 1:0:752:G:C8    | 1:0:752:G:OP2  | 2.74                     | 0.40              |
| 1:0:815:A:H3'   | 1:0:816:U:C6   | 2.55                     | 0.40              |
| 1:0:832:A:H2'   | 1:0:833:A:H8   | 1.85                     | 0.40              |
| 1:0:2823:G:C2'  | 1:0:2824:C:OP2 | 2.69                     | 0.40              |
| 1:0:1618:U:C5   | 1:0:1619:A:C2  | 3.09                     | 0.40              |
| 1:0:1919:A:H2   | 1:0:1926:U:H3  | 1.70                     | 0.40              |
| 1:0:2370:G:H1'  | 1:0:2408:G:N2  | 2.35                     | 0.40              |
| 1:0:874:A:H3'   | 1:0:875:G:C8   | 2.55                     | 0.40              |
| 1:0:1351:G:H2'  | 1:0:1352:G:O4' | 2.21                     | 0.40              |
| 1:0:1192:A:C2   | 1:0:1193:G:N7  | 2.89                     | 0.40              |
| 1:0:2097:A:C1'  | 1:0:2105:U:OP1 | 2.70                     | 0.40              |
| 1:0:425:A:N6    | 1:0:2390:A:O2' | 2.54                     | 0.40              |
| 1:0:2507:U:O2   | 1:0:2509:A:O5' | 2.39                     | 0.40              |
| 1:0:944:A:H2'   | 1:0:945:G:H5'  | 2.03                     | 0.40              |
| 1:0:2522:G:H2'  | 1:0:2523:G:C8  | 2.56                     | 0.40              |
| 1:0:1730:G:N2   | 1:0:1731:C:C2  | 2.90                     | 0.40              |
| 1:0:320:A:C6    | 1:0:341:A:C6   | 3.09                     | 0.40              |
| 1:0:1800:A:H2'  | 1:0:1802:A:H8  | 1.86                     | 0.40              |
| 1:0:2188:A:C6   | 1:0:2189:A:N6  | 2.89                     | 0.40              |
| 1:0:43:A:O5'    | 1:0:43:A:H8    | 2.04                     | 0.40              |
| 1:0:2579:A:H2'  | 1:0:2580:C:H6  | 1.86                     | 0.40              |
| 1:0:2807:U:O2'  | 1:0:2809:A:N9  | 2.55                     | 0.40              |
| 1:0:854:G:H2'   | 1:0:855:G:C8   | 2.56                     | 0.40              |
| 1:0:2488:G:C6   | 1:0:2489:C:C4  | 3.09                     | 0.40              |
| 1:0:1741:G:O2'  | 1:0:1742:G:H5' | 2.21                     | 0.40              |
| 1:0:292:A:N1    | 1:0:293:U:C4   | 2.89                     | 0.40              |
| 1:0:2045:A:O2'  | 1:0:2046:C:OP1 | 2.32                     | 0.40              |
| 1:0:2427:A:HO2' | 1:0:2428:U:P   | 2.38                     | 0.40              |
| 1:0:478:G:C2    | 1:0:479:G:C4   | 3.09                     | 0.40              |
| 1:0:774:A:C8    | 1:0:774:A:C3'  | 3.02                     | 0.40              |
| 1:0:836:G:C4    | 1:0:837:U:C5   | 3.10                     | 0.40              |
| 1:0:1666:G:C6   | 1:0:1992:G:O6  | 2.73                     | 0.40              |
| 1:0:1385:C:C4   | 1:0:1386:A:C5  | 3.09                     | 0.40              |
| 1:0:2193:C:H2'  | 1:0:2194:A:O4' | 2.22                     | 0.40              |
| 1:0:234:C:O2'   | 1:0:235:C:H5'  | 2.22                     | 0.40              |
| 1:0:1938:U:H3'  | 1:0:2530:C:O2' | 2.21                     | 0.40              |
| 1:0:1919:A:N3   | 1:0:1923:U:O2  | 2.54                     | 0.40              |
| 1:0:492:G:H2'   | 1:0:493:A:OP2  | 2.21                     | 0.40              |
| 1:0:2221:G:C6   | 1:0:2222:U:C4  | 3.10                     | 0.40              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1187:A:C8  | 1:0:1187:A:OP2 | 2.75                     | 0.40              |
| 1:0:16:G:C2'   | 1:0:17:G:H5'   | 2.52                     | 0.40              |
| 1:0:2074:U:H3  | 1:0:2207:G:H1  | 1.69                     | 0.40              |
| 1:0:1454:U:C2  | 1:0:1455:C:C5  | 3.10                     | 0.40              |
| 1:0:1469:U:OP1 | 1:0:1470:G:OP2 | 2.40                     | 0.40              |
| 1:0:1906:U:H2' | 1:0:1907:C:C5  | 2.56                     | 0.40              |
| 1:0:521:U:O4   | 1:0:522:G:N2   | 2.54                     | 0.40              |
| 1:0:132:U:C6   | 1:0:133:C:H5   | 2.39                     | 0.40              |
| 1:0:450:C:C2   | 1:0:451:A:C8   | 3.09                     | 0.40              |
| 1:0:2299:A:C2' | 1:0:2299:A:N3  | 2.85                     | 0.40              |
| 1:0:1931:G:C2  | 1:0:1942:G:C2  | 3.10                     | 0.40              |
| 1:0:1941:C:O2' | 1:0:1942:G:H5' | 2.22                     | 0.40              |
| 1:0:2814:G:H2' | 1:0:2815:C:H6  | 1.87                     | 0.40              |
| 1:0:1650:A:N6  | 1:0:1652:G:C2  | 2.89                     | 0.40              |
| 1:0:1590:C:O5' | 1:0:1590:C:H6  | 2.04                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

There are no protein backbone outliers to report in this entry.

### 5.3.2 Protein sidechains [i](#)

There are no protein residues with a non-rotameric sidechain to report in this entry.

### 5.3.3 RNA [i](#)

| Mol | Chain | Analysed        | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 1   | 0     | 2756/2880 (95%) | 667 (24%)         | 192 (6%)        |

All (667) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 13  | A    |
| 1   | 0     | 14  | A    |
| 1   | 0     | 23  | G    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 28  | A    |
| 1   | 0     | 34  | U    |
| 1   | 0     | 35  | G    |
| 1   | 0     | 45  | C    |
| 1   | 0     | 48  | A    |
| 1   | 0     | 49  | U    |
| 1   | 0     | 50  | G    |
| 1   | 0     | 59  | G    |
| 1   | 0     | 60  | A    |
| 1   | 0     | 62  | U    |
| 1   | 0     | 63  | A    |
| 1   | 0     | 69  | G    |
| 1   | 0     | 70  | A    |
| 1   | 0     | 71  | A    |
| 1   | 0     | 72  | A    |
| 1   | 0     | 74  | G    |
| 1   | 0     | 76  | C    |
| 1   | 0     | 84  | G    |
| 1   | 0     | 87  | G    |
| 1   | 0     | 89  | A    |
| 1   | 0     | 90  | G    |
| 1   | 0     | 99  | U    |
| 1   | 0     | 105 | G    |
| 1   | 0     | 110 | U    |
| 1   | 0     | 117 | A    |
| 1   | 0     | 118 | U    |
| 1   | 0     | 119 | G    |
| 1   | 0     | 123 | A    |
| 1   | 0     | 124 | A    |
| 1   | 0     | 129 | A    |
| 1   | 0     | 135 | U    |
| 1   | 0     | 149 | A    |
| 1   | 0     | 155 | G    |
| 1   | 0     | 157 | G    |
| 1   | 0     | 158 | A    |
| 1   | 0     | 173 | A    |
| 1   | 0     | 174 | A    |
| 1   | 0     | 176 | A    |
| 1   | 0     | 181 | A    |
| 1   | 0     | 182 | G    |
| 1   | 0     | 193 | A    |
| 1   | 0     | 199 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 200 | A    |
| 1   | 0     | 205 | A    |
| 1   | 0     | 206 | U    |
| 1   | 0     | 207 | U    |
| 1   | 0     | 210 | A    |
| 1   | 0     | 218 | A    |
| 1   | 0     | 219 | G    |
| 1   | 0     | 220 | U    |
| 1   | 0     | 225 | G    |
| 1   | 0     | 226 | C    |
| 1   | 0     | 227 | G    |
| 1   | 0     | 228 | A    |
| 1   | 0     | 229 | G    |
| 1   | 0     | 242 | A    |
| 1   | 0     | 243 | G    |
| 1   | 0     | 244 | C    |
| 1   | 0     | 293 | U    |
| 1   | 0     | 304 | A    |
| 1   | 0     | 305 | A    |
| 1   | 0     | 313 | U    |
| 1   | 0     | 318 | G    |
| 1   | 0     | 320 | A    |
| 1   | 0     | 323 | G    |
| 1   | 0     | 325 | U    |
| 1   | 0     | 332 | C    |
| 1   | 0     | 333 | A    |
| 1   | 0     | 334 | G    |
| 1   | 0     | 335 | A    |
| 1   | 0     | 340 | G    |
| 1   | 0     | 341 | A    |
| 1   | 0     | 342 | G    |
| 1   | 0     | 343 | A    |
| 1   | 0     | 344 | G    |
| 1   | 0     | 358 | C    |
| 1   | 0     | 360 | A    |
| 1   | 0     | 363 | G    |
| 1   | 0     | 368 | A    |
| 1   | 0     | 373 | A    |
| 1   | 0     | 399 | G    |
| 1   | 0     | 400 | U    |
| 1   | 0     | 401 | G    |
| 1   | 0     | 404 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 408 | U    |
| 1   | 0     | 412 | U    |
| 1   | 0     | 414 | A    |
| 1   | 0     | 418 | C    |
| 1   | 0     | 424 | G    |
| 1   | 0     | 425 | A    |
| 1   | 0     | 435 | A    |
| 1   | 0     | 447 | U    |
| 1   | 0     | 448 | C    |
| 1   | 0     | 453 | U    |
| 1   | 0     | 455 | A    |
| 1   | 0     | 456 | C    |
| 1   | 0     | 459 | A    |
| 1   | 0     | 460 | U    |
| 1   | 0     | 461 | A    |
| 1   | 0     | 463 | C    |
| 1   | 0     | 467 | U    |
| 1   | 0     | 484 | G    |
| 1   | 0     | 485 | G    |
| 1   | 0     | 486 | U    |
| 1   | 0     | 488 | A    |
| 1   | 0     | 491 | A    |
| 1   | 0     | 492 | G    |
| 1   | 0     | 493 | A    |
| 1   | 0     | 514 | G    |
| 1   | 0     | 515 | A    |
| 1   | 0     | 517 | A    |
| 1   | 0     | 518 | A    |
| 1   | 0     | 519 | C    |
| 1   | 0     | 537 | C    |
| 1   | 0     | 539 | A    |
| 1   | 0     | 540 | G    |
| 1   | 0     | 541 | C    |
| 1   | 0     | 542 | A    |
| 1   | 0     | 554 | U    |
| 1   | 0     | 556 | A    |
| 1   | 0     | 558 | G    |
| 1   | 0     | 570 | G    |
| 1   | 0     | 572 | G    |
| 1   | 0     | 580 | A    |
| 1   | 0     | 581 | A    |
| 1   | 0     | 582 | G    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 583 | C    |
| 1   | 0     | 584 | A    |
| 1   | 0     | 595 | A    |
| 1   | 0     | 601 | A    |
| 1   | 0     | 605 | G    |
| 1   | 0     | 613 | A    |
| 1   | 0     | 617 | U    |
| 1   | 0     | 623 | G    |
| 1   | 0     | 624 | A    |
| 1   | 0     | 627 | A    |
| 1   | 0     | 631 | G    |
| 1   | 0     | 632 | A    |
| 1   | 0     | 633 | G    |
| 1   | 0     | 636 | G    |
| 1   | 0     | 638 | A    |
| 1   | 0     | 648 | A    |
| 1   | 0     | 652 | C    |
| 1   | 0     | 654 | A    |
| 1   | 0     | 656 | U    |
| 1   | 0     | 657 | A    |
| 1   | 0     | 665 | A    |
| 1   | 0     | 666 | U    |
| 1   | 0     | 667 | U    |
| 1   | 0     | 669 | G    |
| 1   | 0     | 684 | C    |
| 1   | 0     | 685 | U    |
| 1   | 0     | 699 | G    |
| 1   | 0     | 700 | C    |
| 1   | 0     | 712 | A    |
| 1   | 0     | 726 | G    |
| 1   | 0     | 728 | G    |
| 1   | 0     | 732 | G    |
| 1   | 0     | 739 | G    |
| 1   | 0     | 741 | G    |
| 1   | 0     | 742 | G    |
| 1   | 0     | 743 | A    |
| 1   | 0     | 752 | G    |
| 1   | 0     | 753 | U    |
| 1   | 0     | 761 | G    |
| 1   | 0     | 765 | C    |
| 1   | 0     | 766 | A    |
| 1   | 0     | 774 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 777 | A    |
| 1   | 0     | 778 | G    |
| 1   | 0     | 789 | G    |
| 1   | 0     | 790 | A    |
| 1   | 0     | 794 | A    |
| 1   | 0     | 795 | A    |
| 1   | 0     | 796 | A    |
| 1   | 0     | 797 | A    |
| 1   | 0     | 798 | G    |
| 1   | 0     | 802 | A    |
| 1   | 0     | 805 | G    |
| 1   | 0     | 806 | A    |
| 1   | 0     | 807 | A    |
| 1   | 0     | 813 | A    |
| 1   | 0     | 814 | G    |
| 1   | 0     | 816 | U    |
| 1   | 0     | 818 | G    |
| 1   | 0     | 819 | C    |
| 1   | 0     | 825 | C    |
| 1   | 0     | 832 | A    |
| 1   | 0     | 840 | U    |
| 1   | 0     | 841 | G    |
| 1   | 0     | 843 | G    |
| 1   | 0     | 844 | G    |
| 1   | 0     | 857 | U    |
| 1   | 0     | 858 | G    |
| 1   | 0     | 859 | U    |
| 1   | 0     | 860 | U    |
| 1   | 0     | 872 | G    |
| 1   | 0     | 873 | U    |
| 1   | 0     | 874 | A    |
| 1   | 0     | 880 | C    |
| 1   | 0     | 912 | A    |
| 1   | 0     | 919 | U    |
| 1   | 0     | 922 | A    |
| 1   | 0     | 926 | C    |
| 1   | 0     | 930 | A    |
| 1   | 0     | 931 | G    |
| 1   | 0     | 938 | G    |
| 1   | 0     | 941 | U    |
| 1   | 0     | 943 | U    |
| 1   | 0     | 944 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 952  | A    |
| 1   | 0     | 955  | G    |
| 1   | 0     | 956  | A    |
| 1   | 0     | 957  | G    |
| 1   | 0     | 968  | C    |
| 1   | 0     | 969  | U    |
| 1   | 0     | 970  | A    |
| 1   | 0     | 972  | C    |
| 1   | 0     | 973  | U    |
| 1   | 0     | 984  | A    |
| 1   | 0     | 985  | G    |
| 1   | 0     | 986  | A    |
| 1   | 0     | 994  | A    |
| 1   | 0     | 995  | A    |
| 1   | 0     | 996  | C    |
| 1   | 0     | 1000 | G    |
| 1   | 0     | 1001 | A    |
| 1   | 0     | 1006 | C    |
| 1   | 0     | 1007 | A    |
| 1   | 0     | 1019 | U    |
| 1   | 0     | 1023 | U    |
| 1   | 0     | 1024 | G    |
| 1   | 0     | 1032 | A    |
| 1   | 0     | 1033 | G    |
| 1   | 0     | 1036 | G    |
| 1   | 0     | 1037 | U    |
| 1   | 0     | 1044 | U    |
| 1   | 0     | 1045 | G    |
| 1   | 0     | 1055 | A    |
| 1   | 0     | 1056 | U    |
| 1   | 0     | 1057 | A    |
| 1   | 0     | 1058 | G    |
| 1   | 0     | 1067 | G    |
| 1   | 0     | 1071 | U    |
| 1   | 0     | 1072 | U    |
| 1   | 0     | 1074 | G    |
| 1   | 0     | 1081 | A    |
| 1   | 0     | 1082 | G    |
| 1   | 0     | 1087 | C    |
| 1   | 0     | 1090 | C    |
| 1   | 0     | 1094 | C    |
| 1   | 0     | 1111 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1121 | G    |
| 1   | 0     | 1123 | G    |
| 1   | 0     | 1130 | U    |
| 1   | 0     | 1137 | A    |
| 1   | 0     | 1138 | A    |
| 1   | 0     | 1139 | A    |
| 1   | 0     | 1140 | A    |
| 1   | 0     | 1142 | G    |
| 1   | 0     | 1145 | C    |
| 1   | 0     | 1146 | G    |
| 1   | 0     | 1149 | G    |
| 1   | 0     | 1152 | C    |
| 1   | 0     | 1154 | A    |
| 1   | 0     | 1155 | G    |
| 1   | 0     | 1166 | A    |
| 1   | 0     | 1167 | A    |
| 1   | 0     | 1168 | G    |
| 1   | 0     | 1182 | U    |
| 1   | 0     | 1183 | C    |
| 1   | 0     | 1185 | C    |
| 1   | 0     | 1187 | A    |
| 1   | 0     | 1194 | U    |
| 1   | 0     | 1195 | U    |
| 1   | 0     | 1199 | U    |
| 1   | 0     | 1200 | G    |
| 1   | 0     | 1213 | U    |
| 1   | 0     | 1220 | G    |
| 1   | 0     | 1224 | A    |
| 1   | 0     | 1225 | G    |
| 1   | 0     | 1233 | A    |
| 1   | 0     | 1234 | C    |
| 1   | 0     | 1250 | A    |
| 1   | 0     | 1253 | C    |
| 1   | 0     | 1260 | A    |
| 1   | 0     | 1261 | G    |
| 1   | 0     | 1262 | U    |
| 1   | 0     | 1264 | C    |
| 1   | 0     | 1265 | G    |
| 1   | 0     | 1266 | G    |
| 1   | 0     | 1267 | A    |
| 1   | 0     | 1268 | U    |
| 1   | 0     | 1269 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1278 | A    |
| 1   | 0     | 1279 | G    |
| 1   | 0     | 1280 | U    |
| 1   | 0     | 1284 | G    |
| 1   | 0     | 1285 | A    |
| 1   | 0     | 1286 | U    |
| 1   | 0     | 1288 | A    |
| 1   | 0     | 1289 | A    |
| 1   | 0     | 1302 | C    |
| 1   | 0     | 1314 | A    |
| 1   | 0     | 1315 | A    |
| 1   | 0     | 1316 | G    |
| 1   | 0     | 1324 | G    |
| 1   | 0     | 1326 | U    |
| 1   | 0     | 1333 | G    |
| 1   | 0     | 1334 | A    |
| 1   | 0     | 1335 | A    |
| 1   | 0     | 1337 | G    |
| 1   | 0     | 1338 | G    |
| 1   | 0     | 1339 | U    |
| 1   | 0     | 1342 | U    |
| 1   | 0     | 1343 | C    |
| 1   | 0     | 1346 | C    |
| 1   | 0     | 1354 | A    |
| 1   | 0     | 1355 | A    |
| 1   | 0     | 1356 | G    |
| 1   | 0     | 1357 | U    |
| 1   | 0     | 1358 | C    |
| 1   | 0     | 1359 | G    |
| 1   | 0     | 1392 | U    |
| 1   | 0     | 1397 | A    |
| 1   | 0     | 1398 | G    |
| 1   | 0     | 1402 | G    |
| 1   | 0     | 1409 | U    |
| 1   | 0     | 1410 | U    |
| 1   | 0     | 1411 | C    |
| 1   | 0     | 1428 | G    |
| 1   | 0     | 1429 | A    |
| 1   | 0     | 1430 | G    |
| 1   | 0     | 1433 | A    |
| 1   | 0     | 1435 | G    |
| 1   | 0     | 1441 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1442 | C    |
| 1   | 0     | 1443 | G    |
| 1   | 0     | 1459 | U    |
| 1   | 0     | 1460 | G    |
| 1   | 0     | 1465 | G    |
| 1   | 0     | 1467 | U    |
| 1   | 0     | 1468 | A    |
| 1   | 0     | 1469 | U    |
| 1   | 0     | 1470 | G    |
| 1   | 0     | 1473 | U    |
| 1   | 0     | 1475 | U    |
| 1   | 0     | 1476 | G    |
| 1   | 0     | 1477 | C    |
| 1   | 0     | 1482 | U    |
| 1   | 0     | 1489 | C    |
| 1   | 0     | 1490 | U    |
| 1   | 0     | 1496 | G    |
| 1   | 0     | 1498 | G    |
| 1   | 0     | 1505 | U    |
| 1   | 0     | 1506 | C    |
| 1   | 0     | 1508 | G    |
| 1   | 0     | 1509 | A    |
| 1   | 0     | 1513 | U    |
| 1   | 0     | 1514 | C    |
| 1   | 0     | 1524 | C    |
| 1   | 0     | 1525 | A    |
| 1   | 0     | 1526 | U    |
| 1   | 0     | 1529 | C    |
| 1   | 0     | 1552 | C    |
| 1   | 0     | 1554 | G    |
| 1   | 0     | 1571 | G    |
| 1   | 0     | 1573 | G    |
| 1   | 0     | 1574 | A    |
| 1   | 0     | 1575 | C    |
| 1   | 0     | 1583 | A    |
| 1   | 0     | 1584 | G    |
| 1   | 0     | 1585 | A    |
| 1   | 0     | 1594 | U    |
| 1   | 0     | 1601 | U    |
| 1   | 0     | 1618 | U    |
| 1   | 0     | 1623 | C    |
| 1   | 0     | 1624 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1625 | A    |
| 1   | 0     | 1626 | A    |
| 1   | 0     | 1627 | C    |
| 1   | 0     | 1631 | C    |
| 1   | 0     | 1633 | C    |
| 1   | 0     | 1634 | A    |
| 1   | 0     | 1635 | G    |
| 1   | 0     | 1648 | C    |
| 1   | 0     | 1652 | G    |
| 1   | 0     | 1657 | A    |
| 1   | 0     | 1664 | G    |
| 1   | 0     | 1665 | C    |
| 1   | 0     | 1670 | G    |
| 1   | 0     | 1671 | A    |
| 1   | 0     | 1680 | U    |
| 1   | 0     | 1683 | G    |
| 1   | 0     | 1684 | G    |
| 1   | 0     | 1686 | A    |
| 1   | 0     | 1691 | G    |
| 1   | 0     | 1692 | C    |
| 1   | 0     | 1699 | A    |
| 1   | 0     | 1711 | C    |
| 1   | 0     | 1712 | G    |
| 1   | 0     | 1715 | A    |
| 1   | 0     | 1716 | G    |
| 1   | 0     | 1717 | A    |
| 1   | 0     | 1723 | U    |
| 1   | 0     | 1724 | C    |
| 1   | 0     | 1746 | A    |
| 1   | 0     | 1748 | U    |
| 1   | 0     | 1749 | G    |
| 1   | 0     | 1750 | A    |
| 1   | 0     | 1754 | G    |
| 1   | 0     | 1755 | G    |
| 1   | 0     | 1764 | A    |
| 1   | 0     | 1771 | A    |
| 1   | 0     | 1772 | C    |
| 1   | 0     | 1773 | C    |
| 1   | 0     | 1775 | A    |
| 1   | 0     | 1776 | A    |
| 1   | 0     | 1778 | U    |
| 1   | 0     | 1780 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1791 | C    |
| 1   | 0     | 1792 | C    |
| 1   | 0     | 1793 | A    |
| 1   | 0     | 1801 | C    |
| 1   | 0     | 1802 | A    |
| 1   | 0     | 1807 | A    |
| 1   | 0     | 1808 | C    |
| 1   | 0     | 1810 | U    |
| 1   | 0     | 1811 | A    |
| 1   | 0     | 1812 | U    |
| 1   | 0     | 1821 | A    |
| 1   | 0     | 1831 | G    |
| 1   | 0     | 1840 | A    |
| 1   | 0     | 1883 | A    |
| 1   | 0     | 1884 | A    |
| 1   | 0     | 1889 | G    |
| 1   | 0     | 1901 | A    |
| 1   | 0     | 1909 | U    |
| 1   | 0     | 1912 | G    |
| 1   | 0     | 1914 | U    |
| 1   | 0     | 1919 | A    |
| 1   | 0     | 1920 | A    |
| 1   | 0     | 1922 | U    |
| 1   | 0     | 1923 | U    |
| 1   | 0     | 1924 | C    |
| 1   | 0     | 1926 | U    |
| 1   | 0     | 1927 | U    |
| 1   | 0     | 1938 | U    |
| 1   | 0     | 1939 | U    |
| 1   | 0     | 1948 | C    |
| 1   | 0     | 1949 | A    |
| 1   | 0     | 1950 | C    |
| 1   | 0     | 1953 | A    |
| 1   | 0     | 1954 | A    |
| 1   | 0     | 1955 | G    |
| 1   | 0     | 1956 | G    |
| 1   | 0     | 1957 | C    |
| 1   | 0     | 1964 | A    |
| 1   | 0     | 1976 | U    |
| 1   | 0     | 1979 | C    |
| 1   | 0     | 1980 | A    |
| 1   | 0     | 2003 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2004 | U    |
| 1   | 0     | 2005 | U    |
| 1   | 0     | 2006 | G    |
| 1   | 0     | 2013 | A    |
| 1   | 0     | 2014 | A    |
| 1   | 0     | 2015 | G    |
| 1   | 0     | 2016 | A    |
| 1   | 0     | 2017 | U    |
| 1   | 0     | 2019 | C    |
| 1   | 0     | 2026 | C    |
| 1   | 0     | 2034 | A    |
| 1   | 0     | 2035 | G    |
| 1   | 0     | 2038 | C    |
| 1   | 0     | 2039 | G    |
| 1   | 0     | 2044 | G    |
| 1   | 0     | 2045 | A    |
| 1   | 0     | 2046 | C    |
| 1   | 0     | 2047 | C    |
| 1   | 0     | 2050 | G    |
| 1   | 0     | 2051 | U    |
| 1   | 0     | 2052 | G    |
| 1   | 0     | 2059 | U    |
| 1   | 0     | 2060 | A    |
| 1   | 0     | 2063 | A    |
| 1   | 0     | 2075 | U    |
| 1   | 0     | 2076 | G    |
| 1   | 0     | 2082 | C    |
| 1   | 0     | 2094 | C    |
| 1   | 0     | 2096 | U    |
| 1   | 0     | 2097 | A    |
| 1   | 0     | 2109 | A    |
| 1   | 0     | 2118 | A    |
| 1   | 0     | 2119 | A    |
| 1   | 0     | 2124 | C    |
| 1   | 0     | 2140 | G    |
| 1   | 0     | 2162 | C    |
| 1   | 0     | 2168 | A    |
| 1   | 0     | 2172 | U    |
| 1   | 0     | 2189 | A    |
| 1   | 0     | 2190 | A    |
| 1   | 0     | 2191 | A    |
| 1   | 0     | 2192 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2195 | C    |
| 1   | 0     | 2196 | U    |
| 1   | 0     | 2199 | C    |
| 1   | 0     | 2205 | C    |
| 1   | 0     | 2217 | G    |
| 1   | 0     | 2218 | G    |
| 1   | 0     | 2229 | G    |
| 1   | 0     | 2230 | G    |
| 1   | 0     | 2241 | U    |
| 1   | 0     | 2245 | A    |
| 1   | 0     | 2246 | A    |
| 1   | 0     | 2247 | A    |
| 1   | 0     | 2255 | G    |
| 1   | 0     | 2262 | C    |
| 1   | 0     | 2265 | A    |
| 1   | 0     | 2266 | A    |
| 1   | 0     | 2267 | A    |
| 1   | 0     | 2268 | G    |
| 1   | 0     | 2272 | A    |
| 1   | 0     | 2277 | A    |
| 1   | 0     | 2284 | U    |
| 1   | 0     | 2285 | U    |
| 1   | 0     | 2286 | G    |
| 1   | 0     | 2288 | A    |
| 1   | 0     | 2291 | U    |
| 1   | 0     | 2298 | U    |
| 1   | 0     | 2299 | A    |
| 1   | 0     | 2300 | G    |
| 1   | 0     | 2306 | A    |
| 1   | 0     | 2313 | G    |
| 1   | 0     | 2314 | A    |
| 1   | 0     | 2316 | G    |
| 1   | 0     | 2324 | G    |
| 1   | 0     | 2325 | A    |
| 1   | 0     | 2326 | C    |
| 1   | 0     | 2329 | C    |
| 1   | 0     | 2340 | C    |
| 1   | 0     | 2351 | G    |
| 1   | 0     | 2358 | C    |
| 1   | 0     | 2362 | G    |
| 1   | 0     | 2364 | C    |
| 1   | 0     | 2371 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2375 | G    |
| 1   | 0     | 2381 | A    |
| 1   | 0     | 2382 | C    |
| 1   | 0     | 2385 | U    |
| 1   | 0     | 2396 | C    |
| 1   | 0     | 2398 | U    |
| 1   | 0     | 2402 | U    |
| 1   | 0     | 2404 | A    |
| 1   | 0     | 2405 | A    |
| 1   | 0     | 2406 | C    |
| 1   | 0     | 2407 | G    |
| 1   | 0     | 2408 | G    |
| 1   | 0     | 2409 | A    |
| 1   | 0     | 2418 | A    |
| 1   | 0     | 2419 | C    |
| 1   | 0     | 2420 | C    |
| 1   | 0     | 2426 | G    |
| 1   | 0     | 2427 | A    |
| 1   | 0     | 2428 | U    |
| 1   | 0     | 2448 | A    |
| 1   | 0     | 2453 | C    |
| 1   | 0     | 2455 | A    |
| 1   | 0     | 2457 | A    |
| 1   | 0     | 2470 | U    |
| 1   | 0     | 2476 | A    |
| 1   | 0     | 2477 | C    |
| 1   | 0     | 2481 | G    |
| 1   | 0     | 2482 | A    |
| 1   | 0     | 2483 | U    |
| 1   | 0     | 2484 | G    |
| 1   | 0     | 2487 | G    |
| 1   | 0     | 2492 | G    |
| 1   | 0     | 2498 | U    |
| 1   | 0     | 2499 | C    |
| 1   | 0     | 2504 | G    |
| 1   | 0     | 2508 | G    |
| 1   | 0     | 2521 | A    |
| 1   | 0     | 2522 | G    |
| 1   | 0     | 2541 | U    |
| 1   | 0     | 2543 | A    |
| 1   | 0     | 2546 | G    |
| 1   | 0     | 2551 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2552 | C    |
| 1   | 0     | 2561 | G    |
| 1   | 0     | 2563 | U    |
| 1   | 0     | 2564 | U    |
| 1   | 0     | 2565 | C    |
| 1   | 0     | 2566 | A    |
| 1   | 0     | 2581 | A    |
| 1   | 0     | 2582 | G    |
| 1   | 0     | 2588 | U    |
| 1   | 0     | 2589 | C    |
| 1   | 0     | 2590 | U    |
| 1   | 0     | 2591 | C    |
| 1   | 0     | 2593 | A    |
| 1   | 0     | 2594 | U    |
| 1   | 0     | 2595 | C    |
| 1   | 0     | 2609 | G    |
| 1   | 0     | 2618 | A    |
| 1   | 0     | 2624 | G    |
| 1   | 0     | 2625 | U    |
| 1   | 0     | 2633 | A    |
| 1   | 0     | 2634 | G    |
| 1   | 0     | 2637 | C    |
| 1   | 0     | 2646 | C    |
| 1   | 0     | 2660 | C    |
| 1   | 0     | 2661 | G    |
| 1   | 0     | 2668 | U    |
| 1   | 0     | 2681 | A    |
| 1   | 0     | 2690 | A    |
| 1   | 0     | 2691 | C    |
| 1   | 0     | 2692 | A    |
| 1   | 0     | 2693 | U    |
| 1   | 0     | 2694 | G    |
| 1   | 0     | 2706 | U    |
| 1   | 0     | 2712 | G    |
| 1   | 0     | 2713 | A    |
| 1   | 0     | 2728 | A    |
| 1   | 0     | 2730 | A    |
| 1   | 0     | 2731 | G    |
| 1   | 0     | 2732 | C    |
| 1   | 0     | 2736 | U    |
| 1   | 0     | 2737 | A    |
| 1   | 0     | 2738 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2745 | A    |
| 1   | 0     | 2746 | G    |
| 1   | 0     | 2757 | G    |
| 1   | 0     | 2758 | A    |
| 1   | 0     | 2759 | U    |
| 1   | 0     | 2760 | G    |
| 1   | 0     | 2761 | A    |
| 1   | 0     | 2770 | A    |
| 1   | 0     | 2771 | C    |
| 1   | 0     | 2780 | A    |
| 1   | 0     | 2782 | G    |
| 1   | 0     | 2783 | U    |
| 1   | 0     | 2793 | G    |
| 1   | 0     | 2794 | G    |
| 1   | 0     | 2795 | A    |
| 1   | 0     | 2796 | A    |
| 1   | 0     | 2798 | A    |
| 1   | 0     | 2805 | G    |
| 1   | 0     | 2807 | U    |
| 1   | 0     | 2808 | U    |
| 1   | 0     | 2809 | A    |
| 1   | 0     | 2810 | A    |
| 1   | 0     | 2822 | U    |
| 1   | 0     | 2825 | A    |
| 1   | 0     | 2827 | G    |
| 1   | 0     | 2841 | U    |
| 1   | 0     | 2842 | C    |
| 1   | 0     | 2843 | A    |
| 1   | 0     | 2847 | G    |
| 1   | 0     | 2849 | C    |
| 1   | 0     | 2854 | G    |
| 1   | 0     | 2855 | C    |
| 1   | 0     | 2867 | G    |
| 1   | 0     | 2868 | G    |

All (192) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 13  | A    |
| 1   | 0     | 27  | G    |
| 1   | 0     | 69  | G    |
| 1   | 0     | 70  | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 71  | A    |
| 1   | 0     | 73  | A    |
| 1   | 0     | 83  | A    |
| 1   | 0     | 89  | A    |
| 1   | 0     | 117 | A    |
| 1   | 0     | 123 | A    |
| 1   | 0     | 173 | A    |
| 1   | 0     | 176 | A    |
| 1   | 0     | 181 | A    |
| 1   | 0     | 192 | G    |
| 1   | 0     | 198 | A    |
| 1   | 0     | 199 | A    |
| 1   | 0     | 204 | A    |
| 1   | 0     | 218 | A    |
| 1   | 0     | 219 | G    |
| 1   | 0     | 242 | A    |
| 1   | 0     | 312 | G    |
| 1   | 0     | 322 | A    |
| 1   | 0     | 340 | G    |
| 1   | 0     | 342 | G    |
| 1   | 0     | 399 | G    |
| 1   | 0     | 403 | A    |
| 1   | 0     | 434 | C    |
| 1   | 0     | 447 | U    |
| 1   | 0     | 454 | G    |
| 1   | 0     | 458 | G    |
| 1   | 0     | 460 | U    |
| 1   | 0     | 466 | A    |
| 1   | 0     | 468 | A    |
| 1   | 0     | 469 | G    |
| 1   | 0     | 485 | G    |
| 1   | 0     | 492 | G    |
| 1   | 0     | 516 | G    |
| 1   | 0     | 539 | A    |
| 1   | 0     | 571 | U    |
| 1   | 0     | 580 | A    |
| 1   | 0     | 582 | G    |
| 1   | 0     | 583 | C    |
| 1   | 0     | 596 | C    |
| 1   | 0     | 600 | G    |
| 1   | 0     | 631 | G    |
| 1   | 0     | 682 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 683  | A    |
| 1   | 0     | 698  | A    |
| 1   | 0     | 699  | G    |
| 1   | 0     | 741  | G    |
| 1   | 0     | 764  | A    |
| 1   | 0     | 765  | C    |
| 1   | 0     | 777  | A    |
| 1   | 0     | 789  | G    |
| 1   | 0     | 795  | A    |
| 1   | 0     | 801  | A    |
| 1   | 0     | 805  | G    |
| 1   | 0     | 818  | G    |
| 1   | 0     | 840  | U    |
| 1   | 0     | 859  | U    |
| 1   | 0     | 956  | A    |
| 1   | 0     | 968  | C    |
| 1   | 0     | 972  | C    |
| 1   | 0     | 995  | A    |
| 1   | 0     | 1000 | G    |
| 1   | 0     | 1006 | C    |
| 1   | 0     | 1139 | A    |
| 1   | 0     | 1141 | U    |
| 1   | 0     | 1154 | A    |
| 1   | 0     | 1193 | G    |
| 1   | 0     | 1194 | U    |
| 1   | 0     | 1223 | G    |
| 1   | 0     | 1233 | A    |
| 1   | 0     | 1249 | G    |
| 1   | 0     | 1261 | G    |
| 1   | 0     | 1263 | G    |
| 1   | 0     | 1265 | G    |
| 1   | 0     | 1266 | G    |
| 1   | 0     | 1278 | A    |
| 1   | 0     | 1279 | G    |
| 1   | 0     | 1285 | A    |
| 1   | 0     | 1301 | U    |
| 1   | 0     | 1313 | U    |
| 1   | 0     | 1315 | A    |
| 1   | 0     | 1325 | U    |
| 1   | 0     | 1333 | G    |
| 1   | 0     | 1337 | G    |
| 1   | 0     | 1338 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1342 | U    |
| 1   | 0     | 1345 | G    |
| 1   | 0     | 1354 | A    |
| 1   | 0     | 1355 | A    |
| 1   | 0     | 1391 | A    |
| 1   | 0     | 1398 | G    |
| 1   | 0     | 1408 | A    |
| 1   | 0     | 1474 | A    |
| 1   | 0     | 1495 | G    |
| 1   | 0     | 1582 | A    |
| 1   | 0     | 1626 | A    |
| 1   | 0     | 1631 | C    |
| 1   | 0     | 1632 | A    |
| 1   | 0     | 1633 | C    |
| 1   | 0     | 1634 | A    |
| 1   | 0     | 1651 | U    |
| 1   | 0     | 1664 | G    |
| 1   | 0     | 1684 | G    |
| 1   | 0     | 1685 | A    |
| 1   | 0     | 1690 | U    |
| 1   | 0     | 1691 | G    |
| 1   | 0     | 1698 | C    |
| 1   | 0     | 1710 | U    |
| 1   | 0     | 1749 | G    |
| 1   | 0     | 1772 | C    |
| 1   | 0     | 1774 | A    |
| 1   | 0     | 1775 | A    |
| 1   | 0     | 1777 | A    |
| 1   | 0     | 1790 | G    |
| 1   | 0     | 1809 | G    |
| 1   | 0     | 1820 | G    |
| 1   | 0     | 1913 | G    |
| 1   | 0     | 1919 | A    |
| 1   | 0     | 1921 | A    |
| 1   | 0     | 1923 | U    |
| 1   | 0     | 1926 | U    |
| 1   | 0     | 1938 | U    |
| 1   | 0     | 1947 | G    |
| 1   | 0     | 1963 | G    |
| 1   | 0     | 1975 | G    |
| 1   | 0     | 2002 | A    |
| 1   | 0     | 2004 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2005 | U    |
| 1   | 0     | 2013 | A    |
| 1   | 0     | 2015 | G    |
| 1   | 0     | 2016 | A    |
| 1   | 0     | 2018 | G    |
| 1   | 0     | 2034 | A    |
| 1   | 0     | 2044 | G    |
| 1   | 0     | 2045 | A    |
| 1   | 0     | 2050 | G    |
| 1   | 0     | 2059 | U    |
| 1   | 0     | 2093 | G    |
| 1   | 0     | 2161 | C    |
| 1   | 0     | 2191 | A    |
| 1   | 0     | 2204 | A    |
| 1   | 0     | 2217 | G    |
| 1   | 0     | 2228 | U    |
| 1   | 0     | 2245 | A    |
| 1   | 0     | 2254 | C    |
| 1   | 0     | 2261 | G    |
| 1   | 0     | 2266 | A    |
| 1   | 0     | 2299 | A    |
| 1   | 0     | 2312 | A    |
| 1   | 0     | 2325 | A    |
| 1   | 0     | 2370 | G    |
| 1   | 0     | 2404 | A    |
| 1   | 0     | 2418 | A    |
| 1   | 0     | 2426 | G    |
| 1   | 0     | 2427 | A    |
| 1   | 0     | 2428 | U    |
| 1   | 0     | 2469 | G    |
| 1   | 0     | 2476 | A    |
| 1   | 0     | 2482 | A    |
| 1   | 0     | 2497 | A    |
| 1   | 0     | 2498 | U    |
| 1   | 0     | 2521 | A    |
| 1   | 0     | 2540 | A    |
| 1   | 0     | 2545 | A    |
| 1   | 0     | 2560 | G    |
| 1   | 0     | 2564 | U    |
| 1   | 0     | 2589 | C    |
| 1   | 0     | 2592 | U    |
| 1   | 0     | 2593 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2594 | U    |
| 1   | 0     | 2617 | G    |
| 1   | 0     | 2624 | G    |
| 1   | 0     | 2633 | A    |
| 1   | 0     | 2660 | C    |
| 1   | 0     | 2668 | U    |
| 1   | 0     | 2692 | A    |
| 1   | 0     | 2693 | U    |
| 1   | 0     | 2706 | U    |
| 1   | 0     | 2758 | A    |
| 1   | 0     | 2759 | U    |
| 1   | 0     | 2760 | G    |
| 1   | 0     | 2769 | C    |
| 1   | 0     | 2795 | A    |
| 1   | 0     | 2810 | A    |
| 1   | 0     | 2823 | G    |
| 1   | 0     | 2824 | C    |
| 1   | 0     | 2841 | U    |
| 1   | 0     | 2848 | A    |
| 1   | 0     | 2867 | G    |

## 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](#)

1 ligand is modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. 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  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 3   | G34  | 0     | 0   | -    | 34,40,40     | 1.85 | 9 (26%)  | 35,64,64    | 2.02 | 10 (28%) |

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the chemical component dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

| Mol | Type | Chain | Res | Link | Chirals | Torsions   | Rings   |
|-----|------|-------|-----|------|---------|------------|---------|
| 3   | G34  | 0     | 0   | -    | -       | 0/10/94/94 | 0/1/5/5 |

All (9) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms   | Z    | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|------|-------------|----------|
| 3   | 0     | 0   | G34  | C8-C9   | 2.01 | 1.60        | 1.54     |
| 3   | 0     | 0   | G34  | C25-N1  | 2.14 | 1.50        | 1.48     |
| 3   | 0     | 0   | G34  | C8-C7   | 2.86 | 1.59        | 1.53     |
| 3   | 0     | 0   | G34  | C28-N1  | 2.96 | 1.51        | 1.48     |
| 3   | 0     | 0   | G34  | C17-C10 | 3.09 | 1.60        | 1.53     |
| 3   | 0     | 0   | G34  | O3-C14  | 3.12 | 1.52        | 1.46     |
| 3   | 0     | 0   | G34  | C5-C4   | 3.25 | 1.61        | 1.56     |
| 3   | 0     | 0   | G34  | C22-S1  | 3.48 | 1.84        | 1.81     |
| 3   | 0     | 0   | G34  | C5-C6   | 4.09 | 1.64        | 1.56     |

All (10) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|-------|-------------|----------|
| 3   | 0     | 0   | G34  | C24-C25-C26 | -5.34 | 107.64      | 112.61   |
| 3   | 0     | 0   | G34  | C29-C28-C27 | -4.94 | 108.01      | 112.61   |
| 3   | 0     | 0   | G34  | C16-C6-C7   | -3.61 | 104.63      | 110.44   |
| 3   | 0     | 0   | G34  | C30-N1-C25  | -2.61 | 108.14      | 113.24   |
| 3   | 0     | 0   | G34  | C30-N1-C28  | -2.48 | 108.40      | 113.24   |
| 3   | 0     | 0   | G34  | C25-N1-C28  | -2.20 | 98.94       | 100.86   |
| 3   | 0     | 0   | G34  | C29-C28-N1  | 2.57  | 111.23      | 107.64   |
| 3   | 0     | 0   | G34  | C7-C6-C5    | 2.65  | 114.58      | 111.09   |
| 3   | 0     | 0   | G34  | C24-C25-N1  | 2.67  | 111.36      | 107.64   |
| 3   | 0     | 0   | G34  | O3-C21-C22  | 3.49  | 120.23      | 111.10   |

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 12 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 3   | 0     | 0   | G34  | 12      | 0            |

## 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.



## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

| Mol | Chain | Analysed        | <RSRZ> | #RSRZ>2   |      | OWAB(Å <sup>2</sup> ) | Q<0.9 |
|-----|-------|-----------------|--------|-----------|------|-----------------------|-------|
| 1   | 0     | 2765/2880 (96%) | 0.43   | 235 (8%)  | 13 8 | 49, 113, 200, 200     | 0     |
| 2   | B     | 205/211 (97%)   | 3.69   | 142 (69%) | 0 1  | 33, 87, 155, 200      | 0     |
| All | All   | 2970/3091 (96%) | 0.66   | 377 (12%) | 5 4  | 33, 111, 200, 200     | 0     |

All (377) RSRZ outliers are listed below:

| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 2   | B     | 129  | HIS  | 23.6 |
| 2   | B     | 147  | PRO  | 17.3 |
| 2   | B     | 144  | ARG  | 16.7 |
| 2   | B     | 131  | SER  | 14.9 |
| 2   | B     | 169  | ASN  | 11.9 |
| 2   | B     | 127  | ALA  | 11.8 |
| 1   | 0     | 558  | G    | 11.7 |
| 2   | B     | 128  | SER  | 10.9 |
| 2   | B     | 60   | ASN  | 10.6 |
| 2   | B     | 148  | GLY  | 10.4 |
| 2   | B     | 159  | HIS  | 10.2 |
| 2   | B     | 132  | LYS  | 9.5  |
| 1   | 0     | 2140 | G    | 9.4  |
| 2   | B     | 130  | GLY  | 8.8  |
| 1   | 0     | 1100 | G    | 8.8  |
| 1   | 0     | 1085 | G    | 8.7  |
| 1   | 0     | 1086 | C    | 8.6  |
| 2   | B     | 134  | TRP  | 8.4  |
| 2   | B     | 133  | LYS  | 8.4  |
| 2   | B     | 126  | PRO  | 8.3  |
| 1   | 0     | 2094 | C    | 8.3  |
| 2   | B     | 143  | GLN  | 8.3  |
| 2   | B     | 113  | THR  | 7.8  |
| 2   | B     | 62   | PRO  | 7.7  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 2   | B     | 204  | ALA  | 7.7  |
| 1   | 0     | 248  | A    | 7.7  |
| 1   | 0     | 514  | G    | 7.6  |
| 1   | 0     | 729  | A    | 7.4  |
| 1   | 0     | 891  | A    | 7.4  |
| 1   | 0     | 1084 | A    | 7.3  |
| 1   | 0     | 728  | G    | 7.1  |
| 1   | 0     | 624  | A    | 7.1  |
| 1   | 0     | 1188 | A    | 7.1  |
| 2   | B     | 146  | THR  | 6.9  |
| 2   | B     | 141  | ILE  | 6.8  |
| 2   | B     | 151  | TYR  | 6.8  |
| 1   | 0     | 1099 | A    | 6.8  |
| 2   | B     | 166  | THR  | 6.8  |
| 1   | 0     | 2170 | C    | 6.8  |
| 2   | B     | 121  | ASN  | 6.7  |
| 2   | B     | 111  | LYS  | 6.7  |
| 1   | 0     | 2095 | G    | 6.7  |
| 1   | 0     | 623  | G    | 6.7  |
| 1   | 0     | 1734 | C    | 6.6  |
| 1   | 0     | 2779 | C    | 6.5  |
| 1   | 0     | 518  | A    | 6.5  |
| 2   | B     | 114  | GLN  | 6.5  |
| 1   | 0     | 1089 | C    | 6.5  |
| 1   | 0     | 2093 | G    | 6.4  |
| 1   | 0     | 1897 | C    | 6.4  |
| 1   | 0     | 1090 | C    | 6.4  |
| 1   | 0     | 1189 | G    | 6.4  |
| 2   | B     | 112  | GLY  | 6.4  |
| 2   | B     | 138  | PRO  | 6.3  |
| 2   | B     | 42   | ASP  | 6.3  |
| 1   | 0     | 1506 | C    | 6.2  |
| 1   | 0     | 1083 | C    | 6.2  |
| 2   | B     | 142  | GLY  | 6.1  |
| 1   | 0     | 2133 | G    | 6.1  |
| 2   | B     | 40   | GLN  | 6.0  |
| 2   | B     | 190  | GLY  | 5.9  |
| 2   | B     | 162  | MET  | 5.9  |
| 2   | B     | 140  | SER  | 5.9  |
| 1   | 0     | 666  | U    | 5.8  |
| 2   | B     | 44   | TYR  | 5.8  |
| 2   | B     | 201  | ALA  | 5.8  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 2   | B     | 103  | ASP  | 5.8  |
| 1   | 0     | 1095 | A    | 5.8  |
| 1   | 0     | 1955 | G    | 5.7  |
| 2   | B     | 158  | GLY  | 5.7  |
| 2   | B     | 161  | GLY  | 5.7  |
| 1   | 0     | 2117 | A    | 5.7  |
| 1   | 0     | 1847 | G    | 5.6  |
| 2   | B     | 10   | GLY  | 5.6  |
| 2   | B     | 168  | GLN  | 5.6  |
| 2   | B     | 170  | LEU  | 5.6  |
| 1   | 0     | 2096 | U    | 5.6  |
| 1   | 0     | 1123 | G    | 5.6  |
| 1   | 0     | 1191 | G    | 5.5  |
| 2   | B     | 164  | ARG  | 5.5  |
| 1   | 0     | 730  | C    | 5.5  |
| 1   | 0     | 1078 | A    | 5.5  |
| 1   | 0     | 2135 | C    | 5.4  |
| 2   | B     | 41   | THR  | 5.3  |
| 2   | B     | 163  | GLU  | 5.3  |
| 1   | 0     | 1522 | C    | 5.3  |
| 1   | 0     | 100  | G    | 5.3  |
| 2   | B     | 108  | SER  | 5.2  |
| 2   | B     | 117  | MET  | 5.2  |
| 2   | B     | 192  | ASN  | 5.2  |
| 2   | B     | 167  | VAL  | 5.2  |
| 1   | 0     | 1098 | G    | 5.2  |
| 1   | 0     | 1909 | U    | 5.2  |
| 2   | B     | 109  | LYS  | 5.1  |
| 1   | 0     | 1812 | U    | 5.1  |
| 1   | 0     | 2134 | U    | 5.1  |
| 1   | 0     | 2165 | A    | 5.0  |
| 1   | 0     | 1057 | A    | 5.0  |
| 1   | 0     | 1906 | U    | 5.0  |
| 1   | 0     | 1908 | C    | 5.0  |
| 2   | B     | 107  | THR  | 5.0  |
| 2   | B     | 202  | ALA  | 4.9  |
| 2   | B     | 149  | ARG  | 4.9  |
| 2   | B     | 118  | LYS  | 4.9  |
| 2   | B     | 61   | LYS  | 4.9  |
| 1   | 0     | 2169 | A    | 4.9  |
| 2   | B     | 43   | GLY  | 4.9  |
| 1   | 0     | 2103 | G    | 4.9  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 1   | 0     | 1044 | U    | 4.9  |
| 1   | 0     | 2105 | U    | 4.8  |
| 2   | B     | 63   | MET  | 4.8  |
| 2   | B     | 165  | VAL  | 4.7  |
| 1   | 0     | 1088 | A    | 4.7  |
| 1   | 0     | 1903 | C    | 4.7  |
| 1   | 0     | 1061 | A    | 4.7  |
| 2   | B     | 56   | GLU  | 4.6  |
| 1   | 0     | 296  | A    | 4.6  |
| 2   | B     | 85   | ALA  | 4.6  |
| 1   | 0     | 1858 | C    | 4.6  |
| 1   | 0     | 1523 | A    | 4.5  |
| 2   | B     | 9    | ILE  | 4.5  |
| 1   | 0     | 1913 | G    | 4.5  |
| 1   | 0     | 1187 | A    | 4.5  |
| 1   | 0     | 401  | G    | 4.4  |
| 1   | 0     | 1905 | G    | 4.4  |
| 1   | 0     | 1498 | G    | 4.4  |
| 2   | B     | 38   | THR  | 4.4  |
| 1   | 0     | 1525 | A    | 4.4  |
| 2   | B     | 160  | MET  | 4.4  |
| 2   | B     | 81   | PHE  | 4.4  |
| 2   | B     | 137  | ARG  | 4.3  |
| 2   | B     | 153  | GLY  | 4.3  |
| 1   | 0     | 1107 | A    | 4.3  |
| 1   | 0     | 301  | C    | 4.3  |
| 2   | B     | 139  | GLY  | 4.3  |
| 2   | B     | 156  | MET  | 4.3  |
| 2   | B     | 125  | GLY  | 4.2  |
| 1   | 0     | 2731 | G    | 4.1  |
| 1   | 0     | 2868 | G    | 4.1  |
| 2   | B     | 67   | PHE  | 4.1  |
| 2   | B     | 22   | PRO  | 4.1  |
| 1   | 0     | 2104 | G    | 4.0  |
| 2   | B     | 171  | GLU  | 4.0  |
| 1   | 0     | 2110 | G    | 3.9  |
| 2   | B     | 58   | LYS  | 3.9  |
| 1   | 0     | 1120 | C    | 3.9  |
| 1   | 0     | 1902 | A    | 3.9  |
| 2   | B     | 39   | ALA  | 3.9  |
| 1   | 0     | 2284 | U    | 3.8  |
| 1   | 0     | 200  | A    | 3.8  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 1   | 0     | 2290 | A    | 3.8  |
| 1   | 0     | 1521 | U    | 3.8  |
| 1   | 0     | 1904 | G    | 3.8  |
| 2   | B     | 2    | LYS  | 3.8  |
| 1   | 0     | 402  | A    | 3.8  |
| 1   | 0     | 722  | C    | 3.7  |
| 1   | 0     | 2645 | C    | 3.7  |
| 1   | 0     | 1003 | C    | 3.7  |
| 1   | 0     | 2160 | C    | 3.7  |
| 2   | B     | 37   | LYS  | 3.7  |
| 1   | 0     | 1082 | G    | 3.7  |
| 1   | 0     | 1069 | G    | 3.7  |
| 2   | B     | 65   | GLY  | 3.7  |
| 1   | 0     | 1841 | G    | 3.7  |
| 1   | 0     | 2164 | G    | 3.7  |
| 1   | 0     | 2323 | U    | 3.7  |
| 1   | 0     | 1556 | A    | 3.7  |
| 1   | 0     | 1953 | A    | 3.7  |
| 1   | 0     | 2097 | A    | 3.7  |
| 1   | 0     | 1893 | G    | 3.6  |
| 1   | 0     | 358  | C    | 3.6  |
| 1   | 0     | 1091 | C    | 3.6  |
| 1   | 0     | 2172 | U    | 3.6  |
| 1   | 0     | 1190 | C    | 3.5  |
| 1   | 0     | 1907 | C    | 3.5  |
| 1   | 0     | 2124 | C    | 3.5  |
| 2   | B     | 200  | SER  | 3.5  |
| 1   | 0     | 1121 | G    | 3.5  |
| 2   | B     | 55   | ALA  | 3.5  |
| 1   | 0     | 515  | A    | 3.5  |
| 2   | B     | 188  | ILE  | 3.5  |
| 2   | B     | 104  | ALA  | 3.5  |
| 2   | B     | 191  | ALA  | 3.5  |
| 1   | 0     | 1898 | U    | 3.5  |
| 1   | 0     | 2166 | G    | 3.5  |
| 2   | B     | 59   | VAL  | 3.4  |
| 1   | 0     | 630  | G    | 3.4  |
| 1   | 0     | 1840 | A    | 3.4  |
| 1   | 0     | 1901 | A    | 3.4  |
| 1   | 0     | 2778 | U    | 3.4  |
| 1   | 0     | 1432 | G    | 3.4  |
| 1   | 0     | 2475 | C    | 3.4  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 2   | B     | 150  | VAL  | 3.4  |
| 1   | 0     | 1106 | A    | 3.4  |
| 1   | 0     | 1087 | C    | 3.3  |
| 1   | 0     | 2780 | A    | 3.3  |
| 2   | B     | 7    | THR  | 3.3  |
| 1   | 0     | 1104 | G    | 3.3  |
| 2   | B     | 189  | PRO  | 3.3  |
| 1   | 0     | 1546 | C    | 3.3  |
| 1   | 0     | 667  | U    | 3.3  |
| 1   | 0     | 1900 | U    | 3.3  |
| 2   | B     | 54   | LYS  | 3.3  |
| 1   | 0     | 1058 | G    | 3.2  |
| 2   | B     | 185  | LYS  | 3.2  |
| 1   | 0     | 1848 | U    | 3.2  |
| 2   | B     | 21   | ILE  | 3.2  |
| 1   | 0     | 1124 | U    | 3.2  |
| 2   | B     | 51   | TYR  | 3.2  |
| 2   | B     | 66   | HIS  | 3.2  |
| 1   | 0     | 1899 | A    | 3.2  |
| 1   | 0     | 1431 | U    | 3.1  |
| 1   | 0     | 926  | C    | 3.1  |
| 2   | B     | 152  | LYS  | 3.1  |
| 2   | B     | 115  | GLY  | 3.1  |
| 2   | B     | 24   | THR  | 3.0  |
| 1   | 0     | 1553 | G    | 3.0  |
| 2   | B     | 45   | GLU  | 3.0  |
| 1   | 0     | 373  | A    | 3.0  |
| 2   | B     | 98   | GLU  | 3.0  |
| 1   | 0     | 209  | G    | 3.0  |
| 1   | 0     | 1936 | A    | 3.0  |
| 2   | B     | 53   | PRO  | 3.0  |
| 2   | B     | 110  | GLY  | 3.0  |
| 1   | 0     | 1101 | U    | 3.0  |
| 2   | B     | 100  | GLU  | 3.0  |
| 1   | 0     | 309  | G    | 2.9  |
| 2   | B     | 68   | ALA  | 2.9  |
| 1   | 0     | 912  | A    | 2.9  |
| 2   | B     | 193  | GLY  | 2.9  |
| 1   | 0     | 1037 | U    | 2.9  |
| 1   | 0     | 654  | A    | 2.9  |
| 1   | 0     | 2770 | A    | 2.9  |
| 1   | 0     | 2167 | A    | 2.9  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 1   | 0     | 1072 | U    | 2.9  |
| 1   | 0     | 668  | A    | 2.9  |
| 1   | 0     | 1073 | G    | 2.9  |
| 1   | 0     | 1921 | A    | 2.9  |
| 1   | 0     | 1935 | A    | 2.9  |
| 1   | 0     | 2168 | A    | 2.8  |
| 2   | B     | 101  | LYS  | 2.8  |
| 1   | 0     | 2173 | G    | 2.8  |
| 1   | 0     | 140  | G    | 2.8  |
| 1   | 0     | 1186 | G    | 2.8  |
| 1   | 0     | 2256 | G    | 2.8  |
| 1   | 0     | 2449 | G    | 2.8  |
| 2   | B     | 35   | GLN  | 2.8  |
| 1   | 0     | 2086 | U    | 2.8  |
| 2   | B     | 186  | GLY  | 2.8  |
| 1   | 0     | 2109 | A    | 2.8  |
| 1   | 0     | 1871 | G    | 2.8  |
| 1   | 0     | 1064 | C    | 2.8  |
| 1   | 0     | 1122 | A    | 2.8  |
| 2   | B     | 15   | TRP  | 2.8  |
| 2   | B     | 116  | VAL  | 2.8  |
| 1   | 0     | 519  | C    | 2.8  |
| 1   | 0     | 1896 | A    | 2.7  |
| 1   | 0     | 1842 | G    | 2.7  |
| 1   | 0     | 1954 | A    | 2.7  |
| 2   | B     | 69   | LYS  | 2.7  |
| 1   | 0     | 1114 | A    | 2.7  |
| 1   | 0     | 1520 | G    | 2.7  |
| 1   | 0     | 1863 | U    | 2.7  |
| 2   | B     | 3    | GLY  | 2.7  |
| 1   | 0     | 1070 | G    | 2.7  |
| 1   | 0     | 2692 | A    | 2.6  |
| 2   | B     | 70   | ALA  | 2.6  |
| 1   | 0     | 2125 | C    | 2.6  |
| 2   | B     | 105  | THR  | 2.6  |
| 1   | 0     | 992  | A    | 2.6  |
| 1   | 0     | 1153 | A    | 2.6  |
| 1   | 0     | 1920 | A    | 2.6  |
| 2   | B     | 12   | THR  | 2.6  |
| 1   | 0     | 873  | U    | 2.6  |
| 1   | 0     | 1051 | U    | 2.6  |
| 1   | 0     | 1951 | G    | 2.6  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 1   | 0     | 2287 | G    | 2.6  |
| 1   | 0     | 559  | C    | 2.6  |
| 2   | B     | 64   | GLN  | 2.6  |
| 2   | B     | 34   | VAL  | 2.6  |
| 1   | 0     | 1251 | G    | 2.5  |
| 2   | B     | 194  | GLY  | 2.5  |
| 1   | 0     | 1733 | U    | 2.5  |
| 2   | B     | 36   | ARG  | 2.5  |
| 1   | 0     | 2136 | G    | 2.5  |
| 2   | B     | 174  | GLU  | 2.5  |
| 1   | 0     | 1859 | A    | 2.5  |
| 1   | 0     | 1093 | U    | 2.5  |
| 1   | 0     | 2560 | G    | 2.5  |
| 1   | 0     | 1060 | C    | 2.5  |
| 1   | 0     | 2589 | C    | 2.5  |
| 2   | B     | 102  | ILE  | 2.5  |
| 1   | 0     | 2091 | C    | 2.5  |
| 2   | B     | 52   | ALA  | 2.5  |
| 1   | 0     | 1922 | U    | 2.5  |
| 1   | 0     | 2190 | A    | 2.5  |
| 1   | 0     | 2289 | A    | 2.5  |
| 1   | 0     | 1623 | C    | 2.4  |
| 1   | 0     | 101  | A    | 2.4  |
| 1   | 0     | 556  | A    | 2.4  |
| 1   | 0     | 300  | C    | 2.4  |
| 1   | 0     | 1118 | G    | 2.4  |
| 1   | 0     | 1799 | A    | 2.4  |
| 2   | B     | 87   | ASP  | 2.4  |
| 1   | 0     | 1864 | G    | 2.4  |
| 1   | 0     | 1048 | U    | 2.4  |
| 2   | B     | 157  | ALA  | 2.4  |
| 1   | 0     | 1094 | C    | 2.4  |
| 2   | B     | 124  | GLY  | 2.4  |
| 1   | 0     | 731  | A    | 2.4  |
| 1   | 0     | 1932 | G    | 2.4  |
| 1   | 0     | 2581 | A    | 2.4  |
| 2   | B     | 119  | ARG  | 2.4  |
| 2   | B     | 155  | ARG  | 2.4  |
| 2   | B     | 72   | VAL  | 2.4  |
| 2   | B     | 20   | ALA  | 2.3  |
| 2   | B     | 75   | THR  | 2.3  |
| 2   | B     | 28   | ALA  | 2.3  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 2   | B     | 120  | TRP  | 2.3  |
| 1   | 0     | 1604 | A    | 2.3  |
| 1   | 0     | 1869 | A    | 2.3  |
| 1   | 0     | 841  | G    | 2.3  |
| 1   | 0     | 1075 | C    | 2.3  |
| 1   | 0     | 2532 | G    | 2.3  |
| 1   | 0     | 1117 | G    | 2.3  |
| 1   | 0     | 1844 | C    | 2.3  |
| 2   | B     | 82   | ARG  | 2.3  |
| 1   | 0     | 1040 | A    | 2.3  |
| 1   | 0     | 765  | C    | 2.3  |
| 1   | 0     | 1111 | C    | 2.3  |
| 1   | 0     | 1074 | G    | 2.3  |
| 1   | 0     | 1552 | C    | 2.3  |
| 2   | B     | 23   | VAL  | 2.3  |
| 1   | 0     | 2106 | G    | 2.3  |
| 2   | B     | 1    | MET  | 2.3  |
| 2   | B     | 97   | ALA  | 2.2  |
| 1   | 0     | 172  | A    | 2.2  |
| 1   | 0     | 2118 | A    | 2.2  |
| 2   | B     | 83   | GLY  | 2.2  |
| 2   | B     | 71   | GLY  | 2.2  |
| 2   | B     | 136  | ARG  | 2.2  |
| 1   | 0     | 1065 | A    | 2.2  |
| 1   | 0     | 2450 | A    | 2.2  |
| 1   | 0     | 1184 | G    | 2.2  |
| 1   | 0     | 1489 | C    | 2.2  |
| 1   | 0     | 2451 | G    | 2.2  |
| 1   | 0     | 171  | G    | 2.2  |
| 1   | 0     | 726  | G    | 2.2  |
| 2   | B     | 73   | ALA  | 2.2  |
| 1   | 0     | 2484 | G    | 2.2  |
| 1   | 0     | 913  | A    | 2.2  |
| 1   | 0     | 1096 | A    | 2.2  |
| 1   | 0     | 1097 | A    | 2.2  |
| 1   | 0     | 1866 | G    | 2.1  |
| 1   | 0     | 2081 | U    | 2.1  |
| 1   | 0     | 1138 | A    | 2.1  |
| 1   | 0     | 1923 | U    | 2.1  |
| 1   | 0     | 675  | C    | 2.1  |
| 2   | B     | 74   | PRO  | 2.1  |
| 1   | 0     | 1019 | U    | 2.1  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 2   | B     | 8    | LYS  | 2.1  |
| 1   | 0     | 943  | U    | 2.1  |
| 1   | 0     | 1515 | U    | 2.1  |
| 1   | 0     | 1873 | A    | 2.1  |
| 1   | 0     | 842  | A    | 2.1  |
| 1   | 0     | 1286 | U    | 2.1  |
| 1   | 0     | 2381 | A    | 2.1  |
| 1   | 0     | 1427 | G    | 2.1  |
| 1   | 0     | 927  | C    | 2.1  |
| 2   | B     | 135  | HIS  | 2.1  |
| 1   | 0     | 803  | C    | 2.0  |
| 1   | 0     | 1425 | G    | 2.0  |
| 1   | 0     | 1076 | U    | 2.0  |
| 2   | B     | 203  | LYS  | 2.0  |
| 2   | B     | 154  | LYS  | 2.0  |
| 1   | 0     | 2087 | U    | 2.0  |
| 2   | B     | 92   | ASN  | 2.0  |

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

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

## 6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

| Mol | Type | Chain | Res | Atoms | RSCC | RSR  | LLDF | B-factors( $\text{\AA}^2$ ) | Q<0.9 |
|-----|------|-------|-----|-------|------|------|------|-----------------------------|-------|
| 3   | G34  | 0     | 0   | 36/36 | 0.91 | 0.30 | 1.79 | 102,102,102,102             | 0     |

## 6.5 Other polymers [i](#)

There are no such residues in this entry.