



Full wwPDB NMR Structure Validation Report ⓘ

Apr 26, 2016 – 03:58 PM BST

PDB ID : 1NEE
Title : Structure of archaeal translation factor aIF2beta from Methanobacterium thermoautrophicum
Authors : Gutierrez, P.; Trempe, J.F.; Siddiqui, N.; Arrowsmith, C.; Gehring, K.
Deposited on : 2002-12-11

This is a Full wwPDB NMR Structure Validation Report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at
<http://wwpdb.org/validation/2016/NMRValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

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

Cyrange : Kirchner and Güntert (2011)
NmrClust : Kelley et al. (1996)
MolProbity : 4.02b-467
Mogul : unknown
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
RCI : v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV : Wang et al. (2010)
ShiftChecker : rb-20027457
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : rb-20027457

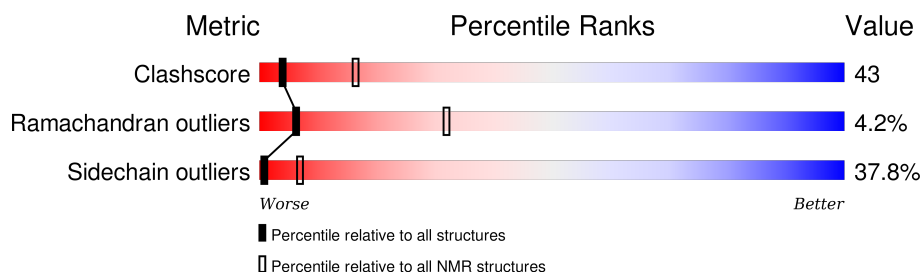
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

SOLUTION NMR

The overall completeness of chemical shifts assignment is 52%.

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 (#Entries)	NMR archive (#Entries)
Clashscore	114402	11133
Ramachandran outliers	111179	9975
Sidechain outliers	111093	9958

The table below summarises the geometric issues observed across the polymeric chains and their fit to the experimental data. The red, orange, yellow and green segments indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. A cyan segment indicates the fraction of residues that are not part of the well-defined cores, and a grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	A	138	

2 Ensemble composition and analysis

This entry contains 20 models. Model 13 is the overall representative, medoid model (most similar to other models). The authors have identified model 1 as representative.

The following residues are included in the computation of the global validation metrics.

Well-defined (core) protein residues			
Well-defined core	Residue range (total)	Backbone RMSD (Å)	Medoid model
1	A:31-A:131 (101)	0.51	13

Ill-defined regions of proteins are excluded from the global statistics.

Ligands and non-protein polymers are included in the analysis.

The models can be grouped into 4 clusters and 1 single-model cluster was found.

Cluster number	Models
1	4, 5, 11, 12, 13, 18
2	3, 7, 8, 9, 15, 19
3	2, 6, 10, 20
4	1, 16, 17
Single-model clusters	14

3 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 2204 atoms, of which 1106 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Probable translation initiation factor 2 beta subunit.

Mol	Chain	Residues	Atoms						Trace
1	A	135	Total	C	H	N	O	S	0
			2203	694	1106	199	199	5	

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	EXPRESSION TAG	UNP O27797
A	-1	SER	-	EXPRESSION TAG	UNP O27797
A	0	HIS	-	EXPRESSION TAG	UNP O27797

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

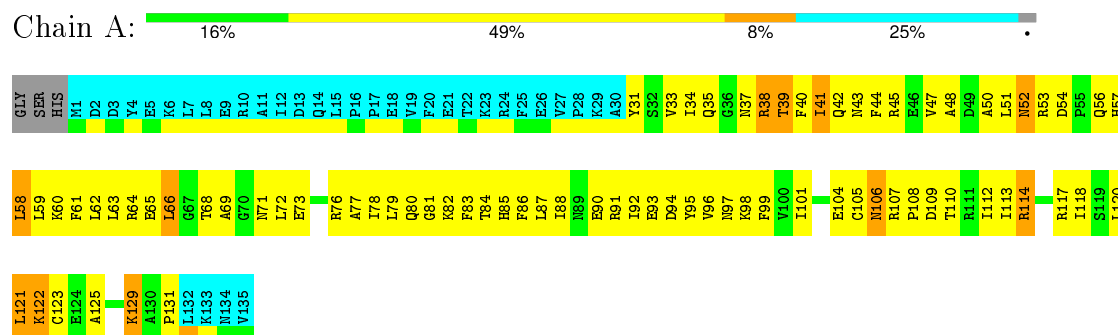
Mol	Chain	Residues	Atoms	
2	A	1	Total	Zn
			1	1

4 Residue-property plots

4.1 Average score per residue in the NMR ensemble

These plots are provided for all protein, RNA and DNA chains in the entry. The first graphic is the same as shown in the summary in section 1 of this report. The second graphic shows the sequence where residues are colour-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outliers are shown as green connectors. Residues which are classified as ill-defined in the NMR ensemble, are shown in cyan with an underline colour-coded according to the previous scheme. Residues which were present in the experimental sample, but not modelled in the final structure are shown in grey.

- Molecule 1: Probable translation initiation factor 2 beta subunit

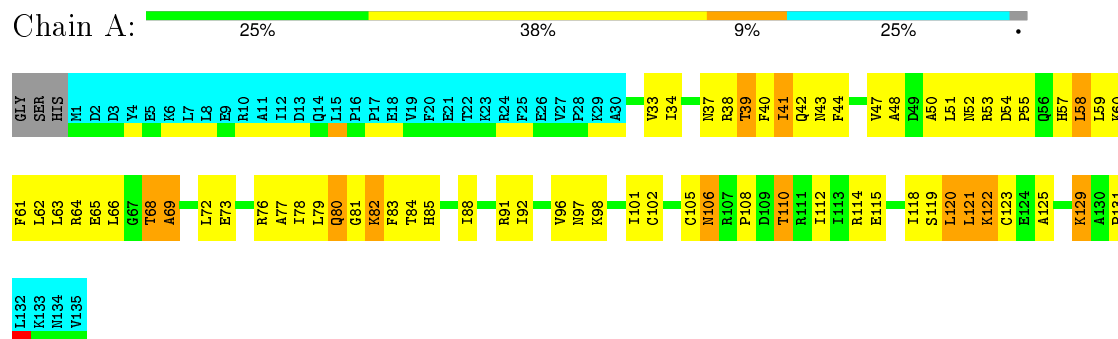


4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

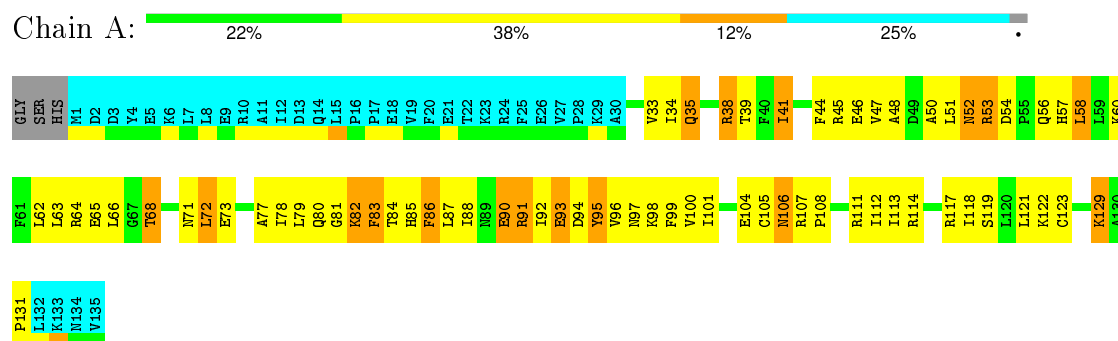
4.2.1 Score per residue for model 1

- Molecule 1: Probable translation initiation factor 2 beta subunit



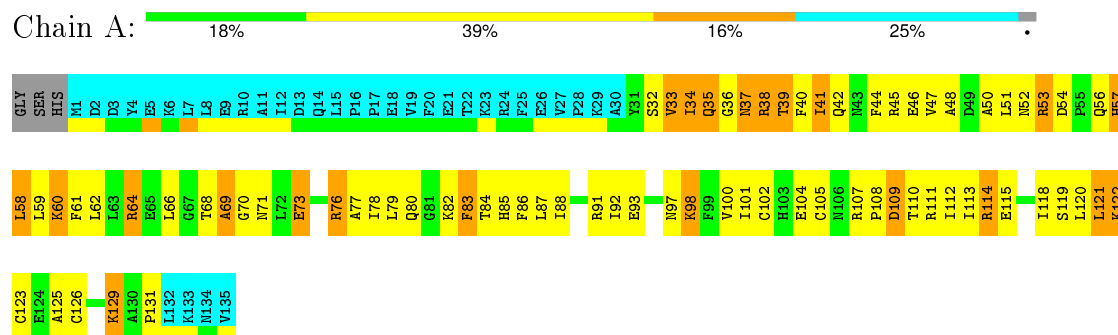
4.2.2 Score per residue for model 2

- Molecule 1: Probable translation initiation factor 2 beta subunit



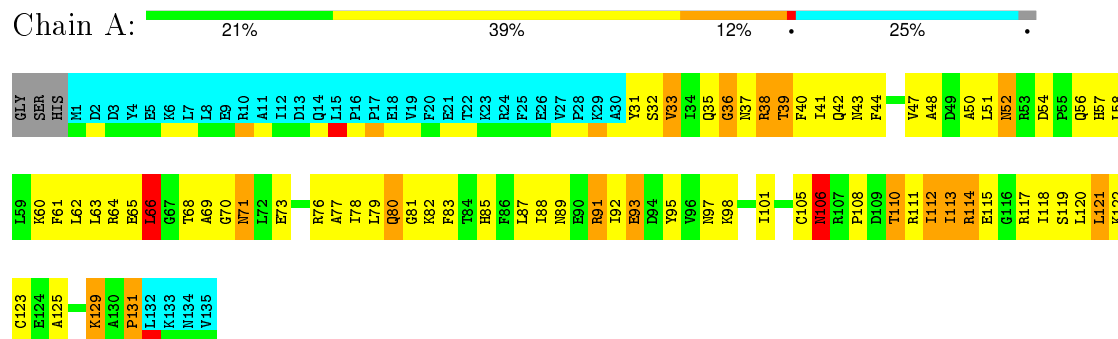
4.2.3 Score per residue for model 3

- Molecule 1: Probable translation initiation factor 2 beta subunit



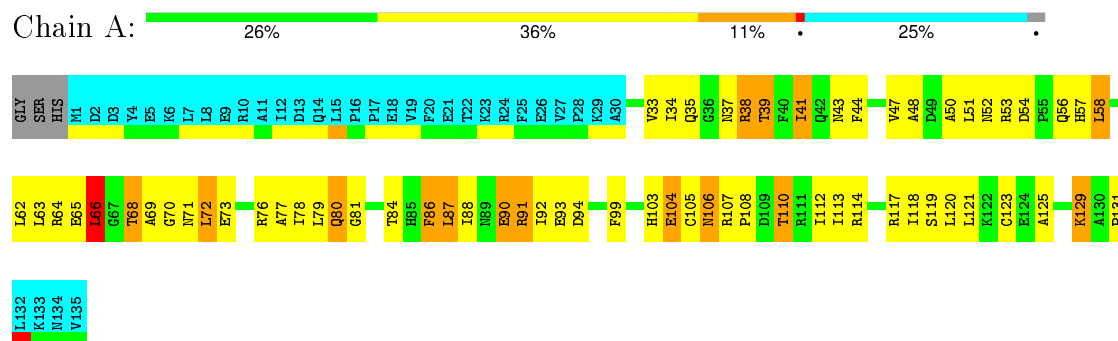
4.2.4 Score per residue for model 4

- Molecule 1: Probable translation initiation factor 2 beta subunit



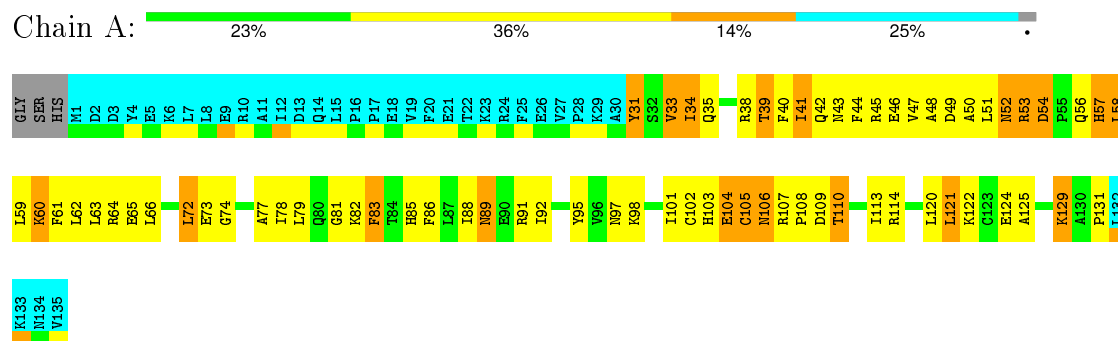
4.2.5 Score per residue for model 5

- Molecule 1: Probable translation initiation factor 2 beta subunit



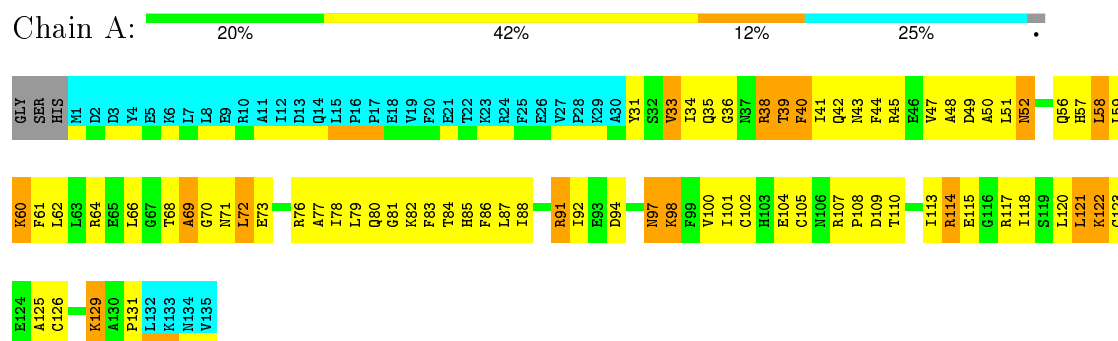
4.2.6 Score per residue for model 6

- Molecule 1: Probable translation initiation factor 2 beta subunit



4.2.7 Score per residue for model 7

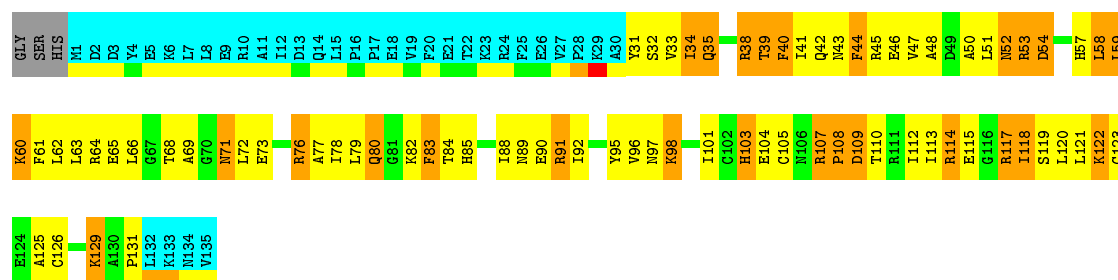
- Molecule 1: Probable translation initiation factor 2 beta subunit



4.2.8 Score per residue for model 8

- Molecule 1: Probable translation initiation factor 2 beta subunit

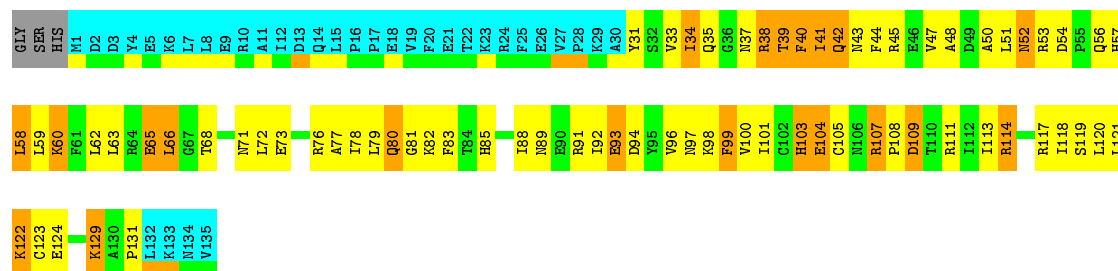




4.2.9 Score per residue for model 9

- Molecule 1: Probable translation initiation factor 2 beta subunit

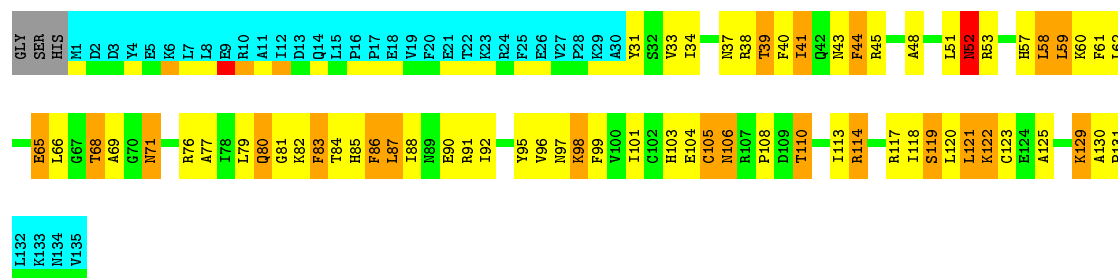
Chain A: 20% 38% 15% 25%



4.2.10 Score per residue for model 10

- Molecule 1: Probable translation initiation factor 2 beta subunit

Chain A: 25% 32% 15% 25%

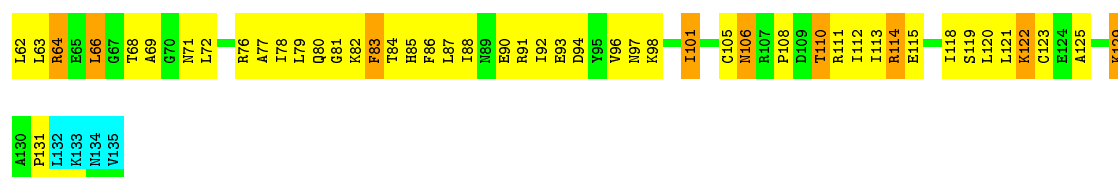


4.2.11 Score per residue for model 11

- Molecule 1: Probable translation initiation factor 2 beta subunit

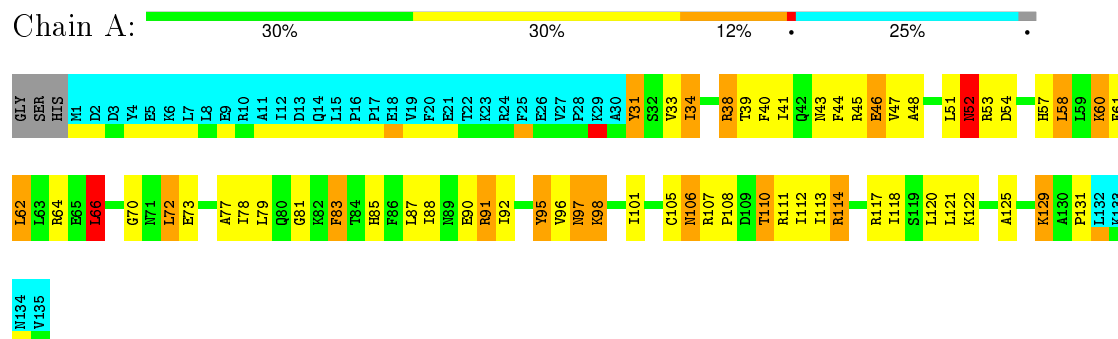
Chain A: 23% 38% 12% 25%





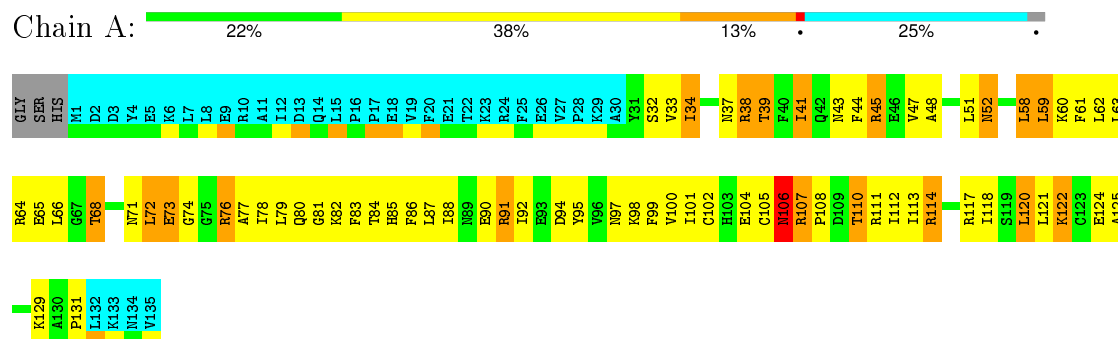
4.2.12 Score per residue for model 12

- Molecule 1: Probable translation initiation factor 2 beta subunit



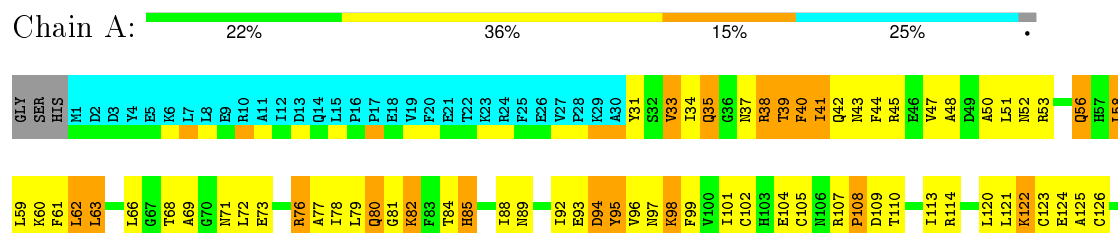
4.2.13 Score per residue for model 13 (medoid)

- Molecule 1: Probable translation initiation factor 2 beta subunit



4.2.14 Score per residue for model 14

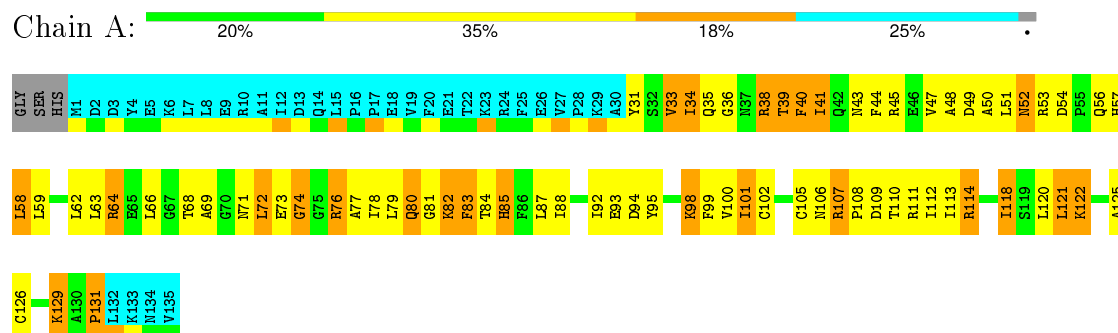
- Molecule 1: Probable translation initiation factor 2 beta subunit





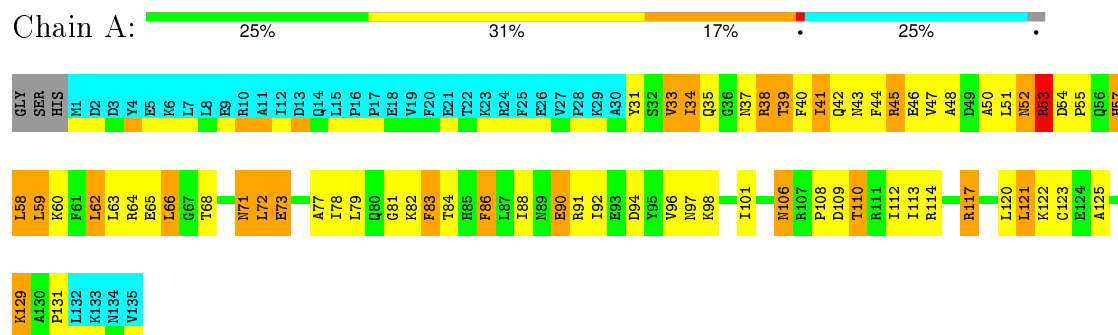
4.2.15 Score per residue for model 15

- Molecule 1: Probable translation initiation factor 2 beta subunit



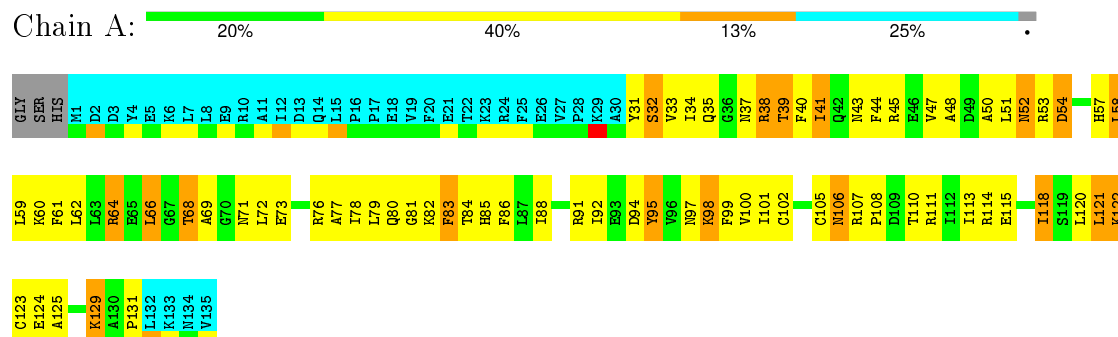
4.2.16 Score per residue for model 16

- Molecule 1: Probable translation initiation factor 2 beta subunit



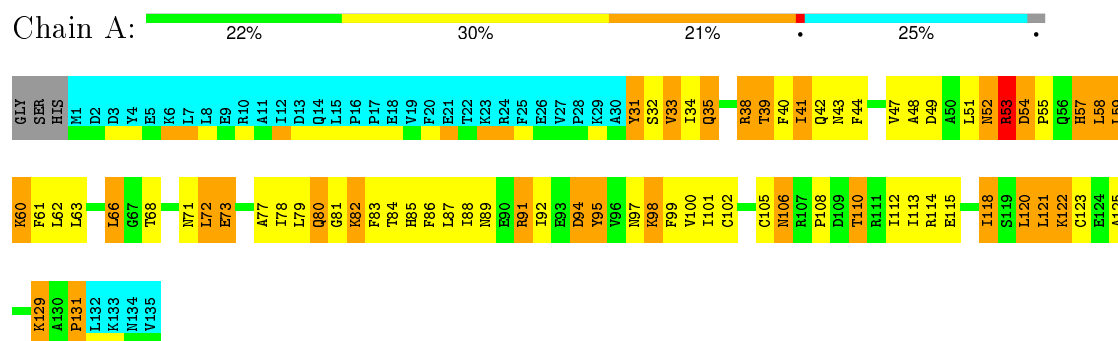
4.2.17 Score per residue for model 17

- Molecule 1: Probable translation initiation factor 2 beta subunit



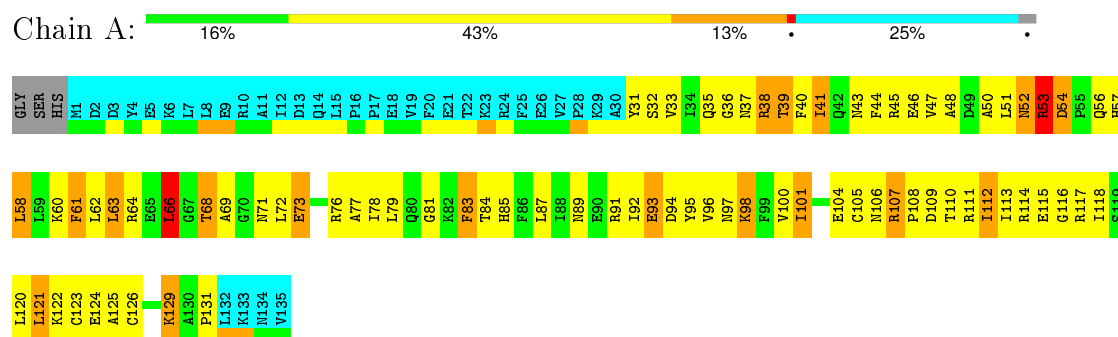
4.2.18 Score per residue for model 18

- Molecule 1: Probable translation initiation factor 2 beta subunit



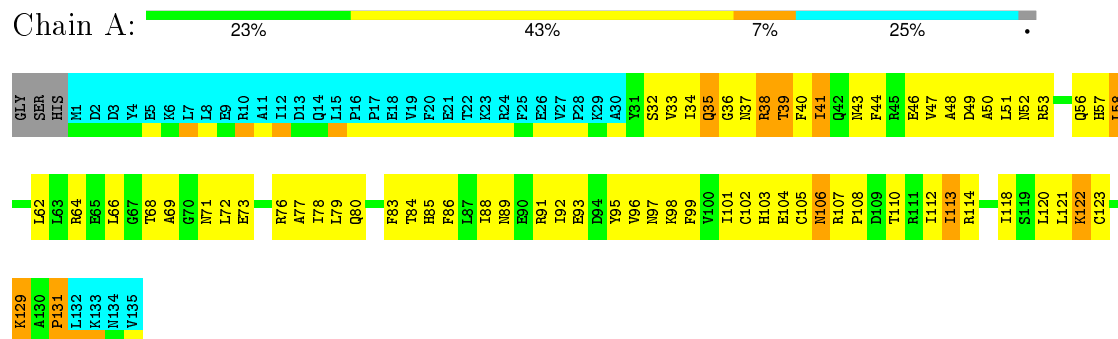
4.2.19 Score per residue for model 19

- Molecule 1: Probable translation initiation factor 2 beta subunit



4.2.20 Score per residue for model 20

- Molecule 1: Probable translation initiation factor 2 beta subunit



5 Refinement protocol and experimental data overview

The models were refined using the following method: *The structures are based on 1142 NOE-derived constraints, 118 dihedral angle restraints, 39 hydrogen bonds and 58 NH residual dipolar couplings.*

Of the 100 calculated structures, 20 were deposited, based on the following criterion: *structures with acceptable covalent geometry.*

The following table shows the software used for structure solution, optimisation and refinement.

Software name	Classification	Version
CNS	refinement	0.9
ARIA	structure solution	1.1

The following table shows chemical shift validation statistics as aggregates over all chemical shift files. Detailed validation can be found in section 7 of this report.

Chemical shift file(s)	BMRB entry 5312
Number of chemical shift lists	1
Total number of shifts	936
Number of shifts mapped to atoms	936
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Assignment completeness (well-defined parts)	52%

No validations of the models with respect to experimental NMR restraints is performed at this time.

6 Model quality

6.1 Standard geometry

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

There are no covalent bond-length or bond-angle outliers.

There are no bond-length outliers.

There are no bond-angle outliers.

There are no chirality outliers.

There are no planarity outliers.

6.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in each 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 averaged over the ensemble.

Mol	Chain	Non-H	H(model)	H(added)	Clashes
1	A	811	816	816	70±12
All	All	16240	16320	16320	1394

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 43.

All unique clashes are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:41:ILE:HD11	1:A:47:VAL:HG11	1.00	1.28	8	2
1:A:83:PHE:CD2	1:A:88:ILE:HD11	0.96	1.94	2	4
1:A:66:LEU:HD21	1:A:79:LEU:HD13	0.94	1.37	7	16
1:A:66:LEU:HD22	1:A:79:LEU:HD11	0.94	1.36	4	2
1:A:62:LEU:HD12	1:A:66:LEU:HD22	0.93	1.40	13	3
1:A:48:ALA:HA	1:A:58:LEU:HD13	0.92	1.41	5	10
1:A:41:ILE:HG22	1:A:77:ALA:HB3	0.91	1.41	10	12
1:A:73:GLU:HB2	1:A:78:ILE:HB	0.90	1.44	8	5
1:A:113:ILE:HG22	1:A:122:LYS:HG2	0.89	1.44	20	1
1:A:72:LEU:O	1:A:72:LEU:HD13	0.87	1.69	7	1
1:A:62:LEU:O	1:A:66:LEU:HD13	0.85	1.72	14	15
1:A:34:ILE:HG12	1:A:84:THR:HA	0.84	1.50	5	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:113:ILE:O	1:A:121:LEU:HD22	0.83	1.74	8	1
1:A:39:THR:HG22	1:A:79:LEU:HG	0.83	1.47	20	17
1:A:41:ILE:HG22	1:A:77:ALA:O	0.83	1.73	3	6
1:A:62:LEU:HD21	1:A:79:LEU:HD22	0.82	1.50	17	2
1:A:98:LYS:HA	1:A:101:ILE:HG22	0.82	1.52	20	8
1:A:110:THR:HG21	1:A:125:ALA:HB2	0.81	1.50	16	10
1:A:52:ASN:HB2	1:A:58:LEU:HD12	0.81	1.52	7	7
1:A:112:ILE:CG2	1:A:121:LEU:HD11	0.80	2.06	13	4
1:A:41:ILE:CG2	1:A:77:ALA:HB3	0.80	2.07	20	14
1:A:92:ILE:O	1:A:96:VAL:HG12	0.79	1.76	14	5
1:A:51:LEU:HD22	1:A:88:ILE:HA	0.79	1.55	5	14
1:A:50:ALA:CB	1:A:92:ILE:HG23	0.79	2.07	3	6
1:A:99:PHE:CD2	1:A:100:VAL:HG23	0.78	2.13	17	2
1:A:51:LEU:HD12	1:A:51:LEU:O	0.78	1.79	2	7
1:A:112:ILE:HG23	1:A:121:LEU:HD11	0.78	1.54	8	1
1:A:112:ILE:HG22	1:A:121:LEU:HD11	0.77	1.56	4	4
1:A:73:GLU:HB3	1:A:78:ILE:HB	0.77	1.52	15	7
1:A:51:LEU:O	1:A:91:ARG:HG2	0.76	1.80	10	3
1:A:41:ILE:HG23	1:A:77:ALA:HB3	0.76	1.56	8	5
1:A:51:LEU:O	1:A:51:LEU:HD12	0.76	1.79	20	12
1:A:44:PHE:O	1:A:48:ALA:HB2	0.76	1.80	3	15
1:A:33:VAL:HG23	1:A:40:PHE:HB2	0.76	1.57	3	5
1:A:43:ASN:O	1:A:47:VAL:HG23	0.76	1.80	19	8
1:A:73:GLU:O	1:A:78:ILE:HD12	0.76	1.81	16	4
1:A:66:LEU:HD22	1:A:79:LEU:CD1	0.75	2.11	4	1
1:A:72:LEU:HD22	1:A:72:LEU:C	0.75	2.01	7	1
1:A:84:THR:HG22	1:A:85:HIS:CE1	0.74	2.17	18	1
1:A:34:ILE:HD12	1:A:84:THR:HA	0.74	1.59	16	1
1:A:43:ASN:HB3	1:A:47:VAL:HG23	0.74	1.57	4	1
1:A:50:ALA:HB1	1:A:92:ILE:HG23	0.73	1.60	9	12
1:A:38:ARG:HB2	1:A:79:LEU:O	0.73	1.84	7	10
1:A:73:GLU:CB	1:A:78:ILE:HB	0.73	2.14	18	7
1:A:114:ARG:HB3	1:A:121:LEU:HD12	0.73	1.60	15	2
1:A:114:ARG:HG3	1:A:121:LEU:HB3	0.72	1.60	16	6
1:A:41:ILE:HD11	1:A:44:PHE:HB3	0.72	1.61	19	1
1:A:51:LEU:HA	1:A:91:ARG:HB3	0.72	1.60	5	4
1:A:88:ILE:HG22	1:A:92:ILE:HD11	0.72	1.61	8	5
1:A:68:THR:HG23	1:A:81:GLY:HA2	0.72	1.60	10	12
1:A:88:ILE:O	1:A:92:ILE:HG12	0.71	1.85	12	1
1:A:59:LEU:HA	1:A:62:LEU:HD23	0.71	1.61	13	1
1:A:118:ILE:HG23	1:A:118:ILE:O	0.71	1.84	15	3

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:121:LEU:HD13	1:A:122:LYS:N	0.71	2.01	8	1
1:A:68:THR:OG1	1:A:80:GLN:HB3	0.71	1.84	13	7
1:A:72:LEU:HD22	1:A:72:LEU:O	0.71	1.84	6	1
1:A:71:ASN:O	1:A:79:LEU:HA	0.70	1.85	10	15
1:A:110:THR:HG21	1:A:126:CYS:HB3	0.70	1.61	8	6
1:A:113:ILE:HD12	1:A:122:LYS:HE3	0.70	1.63	10	1
1:A:121:LEU:O	1:A:129:LYS:HB3	0.70	1.86	4	13
1:A:51:LEU:HD23	1:A:58:LEU:HD21	0.70	1.64	13	3
1:A:38:ARG:HB3	1:A:79:LEU:O	0.69	1.87	15	5
1:A:113:ILE:HD13	1:A:114:ARG:N	0.69	2.01	20	2
1:A:122:LYS:HA	1:A:129:LYS:HB3	0.69	1.64	8	8
1:A:62:LEU:HD13	1:A:66:LEU:HD22	0.69	1.63	6	1
1:A:59:LEU:HA	1:A:62:LEU:HD12	0.69	1.64	14	2
1:A:66:LEU:HD11	1:A:79:LEU:HD13	0.69	1.63	17	5
1:A:110:THR:HB	1:A:125:ALA:HB3	0.69	1.63	19	6
1:A:92:ILE:O	1:A:96:VAL:HG22	0.68	1.89	1	4
1:A:40:PHE:CD1	1:A:78:ILE:HG23	0.68	2.24	11	4
1:A:46:GLU:HG2	1:A:47:VAL:N	0.68	2.02	12	1
1:A:52:ASN:CB	1:A:58:LEU:HD12	0.68	2.18	9	7
1:A:41:ILE:HG21	1:A:44:PHE:CD2	0.68	2.24	6	1
1:A:62:LEU:HB3	1:A:66:LEU:HD11	0.68	1.66	4	2
1:A:62:LEU:HD11	1:A:79:LEU:HD22	0.68	1.65	6	2
1:A:114:ARG:HG3	1:A:121:LEU:HB2	0.68	1.66	4	2
1:A:51:LEU:HD22	1:A:88:ILE:HG23	0.67	1.63	2	8
1:A:114:ARG:HD2	1:A:118:ILE:HA	0.67	1.65	17	1
1:A:47:VAL:HG13	1:A:92:ILE:HD11	0.67	1.65	16	4
1:A:113:ILE:O	1:A:121:LEU:HA	0.67	1.88	9	18
1:A:35:GLN:O	1:A:38:ARG:HG2	0.67	1.88	8	2
1:A:48:ALA:HA	1:A:58:LEU:CD1	0.67	2.19	16	14
1:A:110:THR:HG21	1:A:125:ALA:CB	0.67	2.18	5	4
1:A:62:LEU:HD12	1:A:83:PHE:CE2	0.67	2.25	3	2
1:A:44:PHE:O	1:A:48:ALA:CB	0.67	2.43	19	18
1:A:43:ASN:HB2	1:A:47:VAL:HG23	0.67	1.66	1	5
1:A:59:LEU:HD23	1:A:63:LEU:HD11	0.67	1.66	18	1
1:A:40:PHE:CD2	1:A:78:ILE:HG12	0.66	2.26	16	5
1:A:51:LEU:HD13	1:A:88:ILE:HA	0.66	1.65	9	8
1:A:41:ILE:O	1:A:77:ALA:HB3	0.66	1.91	12	2
1:A:43:ASN:O	1:A:47:VAL:HG12	0.66	1.91	8	2
1:A:34:ILE:HD11	1:A:85:HIS:HB2	0.66	1.65	14	1
1:A:48:ALA:CA	1:A:58:LEU:HD13	0.66	2.20	6	14
1:A:72:LEU:HD13	1:A:72:LEU:O	0.66	1.91	6	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:83:PHE:CE1	1:A:87:LEU:HD13	0.66	2.27	12	1
1:A:51:LEU:HD22	1:A:88:ILE:HG12	0.65	1.67	10	8
1:A:34:ILE:HD11	1:A:85:HIS:ND1	0.65	2.07	2	2
1:A:97:ASN:O	1:A:101:ILE:HD13	0.65	1.91	17	1
1:A:112:ILE:HG22	1:A:121:LEU:HD21	0.65	1.69	19	2
1:A:33:VAL:HG23	1:A:40:PHE:HB3	0.64	1.68	7	1
1:A:41:ILE:HG23	1:A:77:ALA:O	0.64	1.93	19	2
1:A:113:ILE:O	1:A:121:LEU:HD12	0.64	1.92	14	2
1:A:51:LEU:HD23	1:A:58:LEU:HD11	0.64	1.67	5	5
1:A:39:THR:HG22	1:A:79:LEU:CG	0.64	2.22	10	11
1:A:97:ASN:O	1:A:101:ILE:HG22	0.64	1.93	14	8
1:A:72:LEU:HD12	1:A:77:ALA:HB1	0.64	1.69	8	3
1:A:84:THR:O	1:A:84:THR:HG23	0.64	1.93	5	1
1:A:98:LYS:HA	1:A:101:ILE:CG2	0.64	2.23	20	10
1:A:88:ILE:O	1:A:92:ILE:HG22	0.64	1.93	4	1
1:A:106:ASN:C	1:A:108:PRO:HD3	0.63	2.14	18	13
1:A:62:LEU:O	1:A:66:LEU:HG	0.63	1.94	12	2
1:A:43:ASN:CB	1:A:47:VAL:HG23	0.63	2.24	4	3
1:A:72:LEU:HD12	1:A:77:ALA:CB	0.63	2.24	8	1
1:A:113:ILE:HD12	1:A:122:LYS:HD3	0.62	1.70	8	1
1:A:95:TYR:O	1:A:98:LYS:HD3	0.62	1.95	8	3
1:A:53:ARG:HD3	1:A:118:ILE:HB	0.62	1.71	8	2
1:A:66:LEU:HG	1:A:81:GLY:HA3	0.62	1.71	6	9
1:A:62:LEU:CD1	1:A:66:LEU:HD22	0.62	2.24	6	3
1:A:41:ILE:O	1:A:76:ARG:HB3	0.61	1.94	15	1
1:A:62:LEU:HD23	1:A:83:PHE:CG	0.61	2.30	11	1
1:A:66:LEU:HG	1:A:80:GLN:O	0.61	1.94	11	5
1:A:48:ALA:O	1:A:58:LEU:HD13	0.61	1.96	7	8
1:A:57:HIS:O	1:A:60:LYS:HG3	0.61	1.95	11	2
1:A:88:ILE:HG22	1:A:92:ILE:CD1	0.61	2.25	8	7
1:A:34:ILE:HB	1:A:84:THR:HG23	0.61	1.72	18	2
1:A:38:ARG:HB3	1:A:80:GLN:HG3	0.60	1.71	3	3
1:A:60:LYS:O	1:A:64:ARG:HB2	0.60	1.95	6	6
1:A:47:VAL:CG1	1:A:92:ILE:HD11	0.60	2.27	13	2
1:A:119:SER:C	1:A:120:LEU:HD22	0.60	2.16	4	1
1:A:65:GLU:OE1	1:A:87:LEU:HD23	0.60	1.97	10	1
1:A:51:LEU:HD23	1:A:58:LEU:CD1	0.60	2.26	5	1
1:A:34:ILE:CB	1:A:84:THR:HG23	0.60	2.26	18	1
1:A:62:LEU:HD22	1:A:79:LEU:HD21	0.59	1.74	5	2
1:A:51:LEU:HB3	1:A:58:LEU:HD11	0.59	1.73	14	4
1:A:38:ARG:HB3	1:A:80:GLN:CG	0.59	2.27	8	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:62:LEU:HD13	1:A:83:PHE:CD2	0.59	2.32	19	1
1:A:39:THR:CG2	1:A:41:ILE:HD13	0.59	2.28	17	3
1:A:72:LEU:HD22	1:A:72:LEU:H	0.59	1.58	13	2
1:A:122:LYS:HE2	1:A:131:PRO:HD3	0.59	1.73	18	1
1:A:122:LYS:HE3	1:A:124:GLU:HB2	0.59	1.73	6	1
1:A:120:LEU:HB3	1:A:131:PRO:O	0.59	1.98	20	9
1:A:97:ASN:O	1:A:101:ILE:HG12	0.58	1.98	10	4
1:A:123:CYS:N	1:A:129:LYS:HB2	0.58	2.13	14	11
1:A:129:LYS:O	1:A:131:PRO:HD3	0.58	1.98	16	15
1:A:57:HIS:HA	1:A:60:LYS:HD3	0.58	1.75	6	1
1:A:41:ILE:HG12	1:A:77:ALA:HB3	0.58	1.74	13	1
1:A:94:ASP:O	1:A:98:LYS:HB3	0.58	1.98	18	7
1:A:66:LEU:CD2	1:A:79:LEU:HD13	0.58	2.20	7	2
1:A:121:LEU:HG	1:A:122:LYS:N	0.58	2.14	4	2
1:A:76:ARG:HE	1:A:78:ILE:HD11	0.58	1.59	3	1
1:A:40:PHE:CE1	1:A:78:ILE:HG23	0.58	2.33	11	2
1:A:62:LEU:HD13	1:A:83:PHE:CG	0.58	2.33	19	1
1:A:41:ILE:HG21	1:A:44:PHE:HD2	0.58	1.57	6	1
1:A:76:ARG:CZ	1:A:76:ARG:HA	0.58	2.29	7	1
1:A:83:PHE:HD2	1:A:88:ILE:HD11	0.57	1.57	16	3
1:A:110:THR:HG21	1:A:125:ALA:HB3	0.57	1.76	17	1
1:A:114:ARG:HD3	1:A:121:LEU:HD23	0.57	1.76	8	1
1:A:51:LEU:HD22	1:A:88:ILE:CA	0.57	2.29	11	4
1:A:114:ARG:HD3	1:A:118:ILE:HA	0.57	1.74	12	3
1:A:66:LEU:HD13	1:A:79:LEU:HD13	0.57	1.76	4	1
1:A:68:THR:HG23	1:A:81:GLY:CA	0.57	2.29	10	1
1:A:51:LEU:HD12	1:A:91:ARG:HB3	0.57	1.76	4	1
1:A:50:ALA:CB	1:A:92:ILE:HG13	0.57	2.29	14	1
1:A:66:LEU:HB3	1:A:81:GLY:HA3	0.57	1.76	4	1
1:A:51:LEU:CG	1:A:58:LEU:HD11	0.57	2.29	13	6
1:A:120:LEU:C	1:A:121:LEU:HD23	0.57	2.20	1	1
1:A:62:LEU:O	1:A:66:LEU:HB2	0.57	2.00	18	7
1:A:38:ARG:HG2	1:A:80:GLN:HG3	0.57	1.77	4	2
1:A:47:VAL:O	1:A:51:LEU:HB3	0.56	1.99	2	5
1:A:110:THR:HG23	1:A:112:ILE:CD1	0.56	2.30	20	1
1:A:115:GLU:O	1:A:120:LEU:HD12	0.56	2.00	18	1
1:A:73:GLU:HG3	1:A:78:ILE:O	0.56	2.01	5	1
1:A:51:LEU:HG	1:A:58:LEU:CD1	0.56	2.30	13	11
1:A:112:ILE:HG23	1:A:121:LEU:HD21	0.56	1.76	12	2
1:A:47:VAL:CG1	1:A:88:ILE:HG21	0.56	2.30	17	3
1:A:47:VAL:HG13	1:A:92:ILE:CD1	0.56	2.30	13	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:35:GLN:HB3	1:A:40:PHE:CE2	0.56	2.35	18	1
1:A:42:GLN:HG3	1:A:76:ARG:HD2	0.56	1.77	4	1
1:A:121:LEU:HG	1:A:129:LYS:HG2	0.56	1.77	16	1
1:A:90:GLU:O	1:A:93:GLU:HG3	0.56	2.00	11	1
1:A:48:ALA:CB	1:A:58:LEU:HD22	0.56	2.30	18	1
1:A:40:PHE:HD1	1:A:78:ILE:HG23	0.56	1.61	18	1
1:A:41:ILE:HG23	1:A:77:ALA:CB	0.55	2.30	12	2
1:A:51:LEU:CD2	1:A:88:ILE:HG12	0.55	2.30	10	5
1:A:65:GLU:HG3	1:A:82:LYS:HB2	0.55	1.77	13	1
1:A:34:ILE:HD13	1:A:35:GLN:N	0.55	2.17	11	1
1:A:104:GLU:O	1:A:104:GLU:HG3	0.55	2.01	2	1
1:A:51:LEU:HG	1:A:58:LEU:HD12	0.55	1.77	17	4
1:A:86:PHE:O	1:A:90:GLU:HB2	0.55	2.01	2	4
1:A:62:LEU:HA	1:A:83:PHE:CZ	0.55	2.37	18	5
1:A:39:THR:HG23	1:A:41:ILE:HD13	0.55	1.78	17	1
1:A:41:ILE:HD11	1:A:47:VAL:HB	0.55	1.78	12	1
1:A:114:ARG:HG3	1:A:120:LEU:O	0.55	2.01	14	5
1:A:66:LEU:CB	1:A:81:GLY:HA3	0.55	2.32	12	2
1:A:32:SER:OG	1:A:88:ILE:HD12	0.55	2.01	17	3
1:A:38:ARG:HB3	1:A:80:GLN:HG2	0.54	1.80	8	2
1:A:99:PHE:CE2	1:A:100:VAL:HG23	0.54	2.37	17	2
1:A:34:ILE:HB	1:A:84:THR:HB	0.54	1.79	8	1
1:A:122:LYS:CA	1:A:129:LYS:HB3	0.54	2.33	8	3
1:A:35:GLN:HB3	1:A:38:ARG:O	0.54	2.01	4	1
1:A:114:ARG:HA	1:A:120:LEU:O	0.54	2.02	17	9
1:A:48:ALA:HB2	1:A:58:LEU:HD22	0.54	1.78	18	1
1:A:51:LEU:HD12	1:A:91:ARG:CB	0.54	2.32	4	5
1:A:35:GLN:O	1:A:38:ARG:HD3	0.54	2.03	2	1
1:A:62:LEU:HD12	1:A:83:PHE:CD2	0.54	2.37	17	1
1:A:110:THR:CG2	1:A:125:ALA:HB2	0.54	2.29	13	4
1:A:121:LEU:N	1:A:121:LEU:HD23	0.54	2.18	20	1
1:A:113:ILE:C	1:A:121:LEU:HD12	0.54	2.23	4	1
1:A:99:PHE:HD1	1:A:100:VAL:HG23	0.54	1.62	9	1
1:A:41:ILE:HG21	1:A:77:ALA:HB3	0.54	1.80	20	1
1:A:73:GLU:HB2	1:A:78:ILE:O	0.54	2.02	4	3
1:A:42:GLN:HA	1:A:76:ARG:CG	0.54	2.33	8	1
1:A:62:LEU:HD22	1:A:79:LEU:CD2	0.54	2.33	5	3
1:A:107:ARG:O	1:A:109:ASP:N	0.54	2.40	8	7
1:A:95:TYR:O	1:A:98:LYS:HG2	0.53	2.02	18	2
1:A:59:LEU:O	1:A:62:LEU:HG	0.53	2.04	18	4
1:A:51:LEU:N	1:A:92:ILE:HG12	0.53	2.18	1	3

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:72:LEU:HD12	1:A:72:LEU:N	0.53	2.19	14	1
1:A:72:LEU:H	1:A:72:LEU:HD22	0.53	1.62	5	4
1:A:68:THR:CG2	1:A:81:GLY:HA2	0.53	2.34	18	1
1:A:92:ILE:HG23	1:A:93:GLU:N	0.53	2.19	4	1
1:A:51:LEU:HG	1:A:58:LEU:HD11	0.53	1.81	13	1
1:A:66:LEU:HD12	1:A:82:LYS:H	0.53	1.63	1	2
1:A:98:LYS:HA	1:A:101:ILE:HG13	0.53	1.81	4	1
1:A:60:LYS:HA	1:A:63:LEU:HD12	0.53	1.81	18	1
1:A:121:LEU:HD23	1:A:129:LYS:HG3	0.53	1.81	4	1
1:A:48:ALA:O	1:A:52:ASN:O	0.53	2.26	6	4
1:A:112:ILE:HD12	1:A:123:CYS:SG	0.53	2.44	3	1
1:A:66:LEU:HD11	1:A:79:LEU:CD1	0.53	2.33	15	6
1:A:112:ILE:CG2	1:A:121:LEU:HD21	0.53	2.34	12	2
1:A:40:PHE:CZ	1:A:78:ILE:HD11	0.53	2.39	12	3
1:A:44:PHE:O	1:A:48:ALA:HB3	0.52	2.04	18	3
1:A:98:LYS:HE3	1:A:121:LEU:HD11	0.52	1.81	16	1
1:A:31:TYR:CE2	1:A:85:HIS:HB3	0.52	2.40	18	1
1:A:123:CYS:HB2	1:A:129:LYS:HD2	0.52	1.81	9	1
1:A:122:LYS:CG	1:A:131:PRO:HB3	0.52	2.35	12	1
1:A:114:ARG:HG2	1:A:120:LEU:O	0.52	2.04	13	2
1:A:62:LEU:HD23	1:A:63:LEU:N	0.52	2.20	2	1
1:A:43:ASN:HB2	1:A:47:VAL:CG2	0.52	2.35	13	2
1:A:72:LEU:HD23	1:A:76:ARG:O	0.52	2.05	7	1
1:A:62:LEU:HD23	1:A:83:PHE:CD2	0.52	2.40	4	1
1:A:34:ILE:HG12	1:A:84:THR:HG23	0.52	1.80	10	1
1:A:121:LEU:HD23	1:A:122:LYS:N	0.52	2.20	12	1
1:A:113:ILE:HD11	1:A:122:LYS:HE2	0.52	1.82	17	1
1:A:62:LEU:HB2	1:A:66:LEU:HD22	0.52	1.79	18	1
1:A:47:VAL:HA	1:A:92:ILE:CD1	0.52	2.34	4	1
1:A:39:THR:CG2	1:A:41:ILE:HD12	0.51	2.35	11	2
1:A:72:LEU:HD12	1:A:72:LEU:O	0.51	2.05	18	1
1:A:50:ALA:HB1	1:A:96:VAL:CG2	0.51	2.35	16	1
1:A:123:CYS:HB2	1:A:129:LYS:HB2	0.51	1.82	17	5
1:A:51:LEU:HD13	1:A:91:ARG:HB2	0.51	1.81	16	2
1:A:51:LEU:O	1:A:91:ARG:HD3	0.51	2.05	2	1
1:A:114:ARG:HD3	1:A:114:ARG:N	0.51	2.20	11	1
1:A:99:PHE:CD1	1:A:100:VAL:HG23	0.51	2.40	9	1
1:A:108:PRO:HB2	1:A:112:ILE:HD11	0.51	1.82	13	2
1:A:98:LYS:CA	1:A:101:ILE:HG22	0.51	2.30	20	1
1:A:85:HIS:O	1:A:85:HIS:CD2	0.51	2.64	13	1
1:A:38:ARG:HG3	1:A:40:PHE:HE1	0.51	1.65	11	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:31:TYR:CE2	1:A:32:SER:O	0.51	2.63	18	1
1:A:51:LEU:HB2	1:A:92:ILE:HD12	0.51	1.82	14	1
1:A:51:LEU:HD13	1:A:87:LEU:O	0.51	2.06	13	2
1:A:34:ILE:CG2	1:A:84:THR:HG22	0.51	2.36	14	1
1:A:34:ILE:HG12	1:A:84:THR:HB	0.51	1.82	17	1
1:A:113:ILE:C	1:A:121:LEU:HD22	0.51	2.26	8	1
1:A:33:VAL:C	1:A:34:ILE:HD13	0.51	2.26	16	1
1:A:121:LEU:HB3	1:A:129:LYS:HD3	0.50	1.84	19	1
1:A:36:GLY:O	1:A:38:ARG:HG3	0.50	2.06	4	1
1:A:60:LYS:O	1:A:63:LEU:HG	0.50	2.06	9	1
1:A:37:ASN:O	1:A:80:GLN:HG3	0.50	2.05	10	1
1:A:72:LEU:HD22	1:A:72:LEU:N	0.50	2.21	16	2
1:A:66:LEU:CD1	1:A:83:PHE:HB2	0.50	2.36	6	1
1:A:62:LEU:HD23	1:A:83:PHE:CB	0.50	2.36	11	1
1:A:93:GLU:O	1:A:101:ILE:HD12	0.50	2.06	2	1
1:A:89:ASN:HA	1:A:92:ILE:CG2	0.50	2.36	4	1
1:A:114:ARG:HG3	1:A:121:LEU:CB	0.50	2.36	10	1
1:A:62:LEU:CD2	1:A:79:LEU:HD22	0.50	2.32	17	1
1:A:51:LEU:CB	1:A:58:LEU:HD11	0.50	2.36	14	2
1:A:98:LYS:O	1:A:102:CYS:HB3	0.50	2.07	7	4
1:A:59:LEU:O	1:A:63:LEU:HG	0.50	2.05	18	1
1:A:52:ASN:ND2	1:A:57:HIS:HB2	0.50	2.21	16	2
1:A:119:SER:HB3	1:A:120:LEU:HD22	0.50	1.83	10	1
1:A:122:LYS:HG3	1:A:131:PRO:HB3	0.50	1.83	17	4
1:A:85:HIS:O	1:A:85:HIS:ND1	0.50	2.43	1	3
1:A:108:PRO:HG2	1:A:112:ILE:HD11	0.50	1.84	5	1
1:A:34:ILE:HG23	1:A:84:THR:HG22	0.50	1.83	14	1
1:A:40:PHE:CD1	1:A:78:ILE:CG2	0.50	2.94	1	1
1:A:118:ILE:O	1:A:118:ILE:HG22	0.50	2.06	5	2
1:A:35:GLN:O	1:A:37:ASN:N	0.50	2.45	4	4
1:A:50:ALA:HA	1:A:95:TYR:CD2	0.50	2.42	6	1
1:A:85:HIS:CD2	1:A:89:ASN:HB2	0.50	2.42	8	2
1:A:47:VAL:O	1:A:92:ILE:HD11	0.50	2.07	18	2
1:A:118:ILE:HG22	1:A:118:ILE:O	0.49	2.07	1	3
1:A:85:HIS:ND1	1:A:85:HIS:O	0.49	2.44	17	1
1:A:34:ILE:HG13	1:A:84:THR:HG23	0.49	1.84	16	1
1:A:103:HIS:O	1:A:104:GLU:HG2	0.49	2.07	20	4
1:A:66:LEU:HD21	1:A:79:LEU:CD1	0.49	2.26	3	2
1:A:34:ILE:HG23	1:A:34:ILE:O	0.49	2.06	9	2
1:A:68:THR:OG1	1:A:80:GLN:O	0.49	2.30	9	4
1:A:118:ILE:CG2	1:A:118:ILE:O	0.49	2.55	15	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:87:LEU:HD23	1:A:87:LEU:C	0.49	2.28	15	1
1:A:62:LEU:HA	1:A:83:PHE:CD2	0.49	2.42	3	1
1:A:114:ARG:HB3	1:A:121:LEU:HD23	0.49	1.84	7	1
1:A:93:GLU:O	1:A:97:ASN:HB3	0.49	2.08	19	1
1:A:62:LEU:HD23	1:A:79:LEU:HD22	0.49	1.84	20	1
1:A:101:ILE:HG23	1:A:102:CYS:N	0.49	2.22	3	7
1:A:62:LEU:HA	1:A:83:PHE:CE2	0.49	2.42	3	2
1:A:88:ILE:O	1:A:92:ILE:HG13	0.49	2.07	10	5
1:A:48:ALA:O	1:A:58:LEU:CD1	0.49	2.60	16	9
1:A:87:LEU:HD12	1:A:87:LEU:H	0.49	1.68	12	1
1:A:113:ILE:HD12	1:A:122:LYS:NZ	0.49	2.23	15	1
1:A:34:ILE:HD11	1:A:85:HIS:CB	0.49	2.36	14	1
1:A:100:VAL:HG22	1:A:100:VAL:O	0.49	2.08	18	3
1:A:95:TYR:OH	1:A:118:ILE:HG12	0.49	2.07	17	1
1:A:114:ARG:CD	1:A:121:LEU:HD23	0.49	2.38	8	1
1:A:34:ILE:HD13	1:A:34:ILE:N	0.49	2.23	16	1
1:A:41:ILE:HG23	1:A:41:ILE:O	0.48	2.08	12	2
1:A:47:VAL:HG13	1:A:88:ILE:CG2	0.48	2.38	3	2
1:A:34:ILE:CG2	1:A:84:THR:HG23	0.48	2.38	18	1
1:A:96:VAL:HG13	1:A:97:ASN:N	0.48	2.23	14	3
1:A:62:LEU:HD11	1:A:79:LEU:CD2	0.48	2.38	9	2
1:A:120:LEU:C	1:A:121:LEU:HG	0.48	2.27	7	1
1:A:62:LEU:HD12	1:A:83:PHE:HE2	0.48	1.65	3	1
1:A:104:GLU:HG3	1:A:104:GLU:O	0.48	2.08	3	1
1:A:47:VAL:HG12	1:A:88:ILE:CG2	0.48	2.38	13	1
1:A:52:ASN:HB3	1:A:58:LEU:HD12	0.48	1.85	15	2
1:A:38:ARG:HG2	1:A:80:GLN:CG	0.48	2.38	14	3
1:A:85:HIS:NE2	1:A:89:ASN:OD1	0.48	2.47	6	1
1:A:72:LEU:HD22	1:A:73:GLU:N	0.48	2.23	7	1
1:A:98:LYS:HA	1:A:101:ILE:CG1	0.48	2.38	4	1
1:A:47:VAL:CG1	1:A:88:ILE:CG2	0.48	2.92	17	6
1:A:99:PHE:CG	1:A:100:VAL:N	0.48	2.82	13	1
1:A:34:ILE:CG2	1:A:84:THR:HB	0.48	2.38	1	1
1:A:51:LEU:CD2	1:A:58:LEU:HD11	0.48	2.39	18	3
1:A:41:ILE:HG21	1:A:44:PHE:HB3	0.48	1.83	14	3
1:A:112:ILE:HG22	1:A:121:LEU:CD1	0.48	2.34	4	2
1:A:113:ILE:HD12	1:A:122:LYS:HD2	0.48	1.86	14	1
1:A:55:PRO:O	1:A:59:LEU:HB2	0.48	2.09	18	2
1:A:55:PRO:O	1:A:59:LEU:HG	0.48	2.09	1	1
1:A:48:ALA:HA	1:A:58:LEU:HD11	0.48	1.83	16	1
1:A:65:GLU:CD	1:A:87:LEU:HD23	0.48	2.29	10	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:51:LEU:O	1:A:51:LEU:CD1	0.48	2.62	5	2
1:A:62:LEU:HA	1:A:83:PHE:CE1	0.48	2.44	20	2
1:A:110:THR:HG23	1:A:112:ILE:HD11	0.48	1.85	20	1
1:A:51:LEU:HB2	1:A:92:ILE:CD1	0.48	2.39	14	1
1:A:84:THR:O	1:A:85:HIS:ND1	0.47	2.47	15	1
1:A:59:LEU:HA	1:A:62:LEU:CD2	0.47	2.38	13	1
1:A:85:HIS:CD2	1:A:85:HIS:N	0.47	2.82	4	1
1:A:68:THR:O	1:A:69:ALA:C	0.47	2.52	3	13
1:A:50:ALA:O	1:A:95:TYR:CD2	0.47	2.68	20	1
1:A:47:VAL:CG2	1:A:88:ILE:CG2	0.47	2.93	8	2
1:A:85:HIS:CE1	1:A:89:ASN:HB2	0.47	2.44	19	2
1:A:63:LEU:HA	1:A:66:LEU:HB2	0.47	1.85	5	4
1:A:113:ILE:HD13	1:A:113:ILE:C	0.47	2.30	20	1
1:A:33:VAL:CG2	1:A:40:PHE:HB2	0.47	2.40	14	3
1:A:79:LEU:C	1:A:79:LEU:HD12	0.47	2.29	7	1
1:A:101:ILE:CG2	1:A:102:CYS:N	0.47	2.77	3	2
1:A:41:ILE:O	1:A:76:ARG:HG2	0.47	2.10	14	2
1:A:120:LEU:HD22	1:A:120:LEU:N	0.47	2.24	7	1
1:A:65:GLU:HG3	1:A:87:LEU:HD23	0.47	1.86	4	1
1:A:31:TYR:CD2	1:A:32:SER:O	0.47	2.68	18	2
1:A:66:LEU:HD23	1:A:79:LEU:HD13	0.47	1.87	18	1
1:A:50:ALA:HB3	1:A:92:ILE:HG12	0.46	1.87	6	3
1:A:72:LEU:N	1:A:72:LEU:HD22	0.46	2.26	13	3
1:A:72:LEU:CD2	1:A:76:ARG:O	0.46	2.63	7	1
1:A:41:ILE:O	1:A:41:ILE:HG22	0.46	2.10	15	3
1:A:123:CYS:CB	1:A:129:LYS:HB2	0.46	2.39	17	1
1:A:117:ARG:NE	1:A:117:ARG:HA	0.46	2.26	16	1
1:A:73:GLU:O	1:A:74:GLY:O	0.46	2.33	15	1
1:A:103:HIS:O	1:A:104:GLU:HG3	0.46	2.09	5	1
1:A:83:PHE:CE2	1:A:88:ILE:HD11	0.46	2.43	2	1
1:A:110:THR:OG1	1:A:112:ILE:HD11	0.46	2.11	3	1
1:A:41:ILE:HG22	1:A:77:ALA:CB	0.46	2.33	6	1
1:A:72:LEU:CD2	1:A:72:LEU:O	0.46	2.61	6	1
1:A:52:ASN:ND2	1:A:57:HIS:CB	0.46	2.79	18	1
1:A:41:ILE:CG2	1:A:44:PHE:HB2	0.46	2.41	17	1
1:A:95:TYR:CD1	1:A:95:TYR:N	0.46	2.84	14	1
1:A:103:HIS:C	1:A:104:GLU:HG3	0.45	2.31	5	1
1:A:51:LEU:CD1	1:A:51:LEU:O	0.45	2.59	20	2
1:A:87:LEU:N	1:A:87:LEU:HD12	0.45	2.26	12	1
1:A:50:ALA:HB3	1:A:92:ILE:HG13	0.45	1.86	14	1
1:A:42:GLN:HG3	1:A:76:ARG:CD	0.45	2.41	4	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:59:LEU:O	1:A:63:LEU:HD12	0.45	2.11	14	1
1:A:119:SER:O	1:A:120:LEU:HD13	0.45	2.12	9	1
1:A:40:PHE:CE1	1:A:78:ILE:CG2	0.45	2.99	11	1
1:A:65:GLU:O	1:A:82:LYS:HB2	0.45	2.11	9	1
1:A:51:LEU:CG	1:A:58:LEU:CD1	0.45	2.94	3	3
1:A:52:ASN:O	1:A:53:ARG:C	0.45	2.54	16	3
1:A:76:ARG:CG	1:A:78:ILE:HG13	0.45	2.42	20	1
1:A:52:ASN:CG	1:A:57:HIS:HB3	0.45	2.31	3	1
1:A:114:ARG:CD	1:A:118:ILE:HA	0.45	2.39	17	2
1:A:62:LEU:HD12	1:A:66:LEU:CD2	0.45	2.28	13	1
1:A:40:PHE:CE2	1:A:78:ILE:CD1	0.45	2.99	8	2
1:A:40:PHE:CG	1:A:78:ILE:HG12	0.45	2.47	8	1
1:A:62:LEU:HD23	1:A:79:LEU:CD2	0.45	2.42	20	1
1:A:34:ILE:HG22	1:A:35:GLN:N	0.45	2.27	2	1
1:A:121:LEU:HD11	1:A:123:CYS:SG	0.45	2.52	10	1
1:A:129:LYS:HD2	1:A:130:ALA:N	0.45	2.27	10	1
1:A:51:LEU:CD2	1:A:88:ILE:HA	0.45	2.36	5	1
1:A:72:LEU:N	1:A:72:LEU:HD13	0.45	2.26	15	1
1:A:51:LEU:HD23	1:A:58:LEU:CD2	0.45	2.39	13	1
1:A:40:PHE:CE2	1:A:78:ILE:HD11	0.44	2.47	4	2
1:A:34:ILE:N	1:A:34:ILE:HD13	0.44	2.27	15	1
1:A:34:ILE:C	1:A:34:ILE:HD13	0.44	2.32	12	2
1:A:54:ASP:OD1	1:A:57:HIS:HB2	0.44	2.12	17	1
1:A:44:PHE:CD1	1:A:45:ARG:N	0.44	2.85	13	1
1:A:50:ALA:HB3	1:A:92:ILE:CD1	0.44	2.42	4	1
1:A:110:THR:OG1	1:A:125:ALA:HB2	0.44	2.12	10	1
1:A:84:THR:O	1:A:85:HIS:CG	0.44	2.70	2	6
1:A:73:GLU:C	1:A:78:ILE:HD12	0.44	2.33	9	3
1:A:40:PHE:HE1	1:A:76:ARG:HB2	0.44	1.73	7	1
1:A:40:PHE:CD1	1:A:40:PHE:N	0.44	2.86	14	1
1:A:35:GLN:O	1:A:38:ARG:HG3	0.44	2.13	19	1
1:A:42:GLN:HA	1:A:76:ARG:HG2	0.44	1.89	8	1
1:A:100:VAL:O	1:A:100:VAL:HG12	0.44	2.12	15	1
1:A:51:LEU:CD2	1:A:88:ILE:HG23	0.44	2.42	16	2
1:A:98:LYS:O	1:A:102:CYS:CB	0.44	2.66	1	2
1:A:62:LEU:CA	1:A:83:PHE:CZ	0.44	3.01	18	1
1:A:52:ASN:ND2	1:A:54:ASP:H	0.44	2.11	18	1
1:A:40:PHE:O	1:A:42:GLN:NE2	0.44	2.50	9	1
1:A:38:ARG:CB	1:A:79:LEU:O	0.44	2.66	19	2
1:A:51:LEU:HD22	1:A:88:ILE:CG2	0.44	2.38	2	1
1:A:40:PHE:CE2	1:A:78:ILE:HG12	0.44	2.48	6	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:35:GLN:CB	1:A:38:ARG:O	0.44	2.66	4	1
1:A:104:GLU:O	1:A:106:ASN:N	0.43	2.51	10	2
1:A:62:LEU:CD2	1:A:79:LEU:CD2	0.43	2.97	20	1
1:A:84:THR:O	1:A:85:HIS:CD2	0.43	2.70	3	2
1:A:93:GLU:OE1	1:A:101:ILE:HD11	0.43	2.12	2	1
1:A:79:LEU:HD12	1:A:80:GLN:N	0.43	2.28	7	3
1:A:50:ALA:HB3	1:A:92:ILE:HD12	0.43	1.91	4	1
1:A:41:ILE:HG22	1:A:41:ILE:O	0.43	2.13	14	1
1:A:39:THR:HG22	1:A:79:LEU:CD2	0.43	2.43	10	1
1:A:39:THR:CG2	1:A:41:ILE:HG22	0.43	2.43	13	1
1:A:97:ASN:O	1:A:101:ILE:CG1	0.43	2.67	13	1
1:A:34:ILE:O	1:A:35:GLN:HB2	0.43	2.13	18	1
1:A:51:LEU:CD2	1:A:58:LEU:CD1	0.43	2.96	5	1
1:A:33:VAL:HG23	1:A:40:PHE:O	0.43	2.14	4	2
1:A:72:LEU:C	1:A:72:LEU:HD22	0.43	2.33	6	1
1:A:40:PHE:CE1	1:A:76:ARG:HB3	0.43	2.48	8	1
1:A:41:ILE:CG2	1:A:77:ALA:CB	0.43	2.96	8	1
1:A:113:ILE:HD12	1:A:122:LYS:CD	0.43	2.41	8	1
1:A:117:ARG:C	1:A:118:ILE:HG13	0.43	2.33	8	1
1:A:88:ILE:HG22	1:A:92:ILE:HD13	0.43	1.90	14	1
1:A:31:TYR:N	1:A:31:TYR:CD1	0.43	2.83	12	2
1:A:58:LEU:O	1:A:62:LEU:HD13	0.43	2.14	20	1
1:A:114:ARG:HH11	1:A:118:ILE:HA	0.43	1.74	8	1
1:A:38:ARG:CG	1:A:80:GLN:HG2	0.43	2.44	14	1
1:A:41:ILE:CG2	1:A:44:PHE:HB3	0.43	2.44	1	3
1:A:43:ASN:O	1:A:47:VAL:N	0.43	2.48	5	1
1:A:43:ASN:HB2	1:A:46:GLU:CD	0.43	2.34	12	1
1:A:35:GLN:HB2	1:A:40:PHE:CE1	0.43	2.48	20	2
1:A:61:PHE:O	1:A:83:PHE:CE1	0.43	2.72	19	1
1:A:73:GLU:HG3	1:A:74:GLY:N	0.43	2.28	13	1
1:A:112:ILE:HG21	1:A:114:ARG:NH2	0.43	2.29	18	1
1:A:122:LYS:HB2	1:A:131:PRO:HB3	0.43	1.90	9	1
1:A:95:TYR:O	1:A:98:LYS:HD2	0.43	2.14	13	1
1:A:51:LEU:CD1	1:A:91:ARG:HB2	0.43	2.44	7	3
1:A:66:LEU:CG	1:A:81:GLY:HA3	0.42	2.43	13	2
1:A:96:VAL:HG23	1:A:97:ASN:N	0.42	2.29	20	1
1:A:97:ASN:O	1:A:101:ILE:CG2	0.42	2.67	3	1
1:A:57:HIS:O	1:A:60:LYS:HG2	0.42	2.12	6	1
1:A:51:LEU:HD12	1:A:91:ARG:HB2	0.42	1.91	18	1
1:A:93:GLU:O	1:A:97:ASN:HB2	0.42	2.13	9	1
1:A:37:ASN:O	1:A:80:GLN:HG2	0.42	2.14	5	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:85:HIS:CG	1:A:89:ASN:HB2	0.42	2.49	14	1
1:A:104:GLU:OE1	1:A:104:GLU:HA	0.42	2.14	13	1
1:A:33:VAL:HG22	1:A:42:GLN:OE1	0.42	2.14	16	1
1:A:63:LEU:HD12	1:A:64:ARG:N	0.42	2.30	15	1
1:A:40:PHE:O	1:A:40:PHE:CG	0.42	2.73	10	1
1:A:53:ARG:NH2	1:A:117:ARG:HB3	0.42	2.29	19	1
1:A:62:LEU:O	1:A:66:LEU:CD1	0.42	2.61	15	1
1:A:121:LEU:HD23	1:A:129:LYS:HE2	0.42	1.91	2	1
1:A:99:PHE:HD1	1:A:100:VAL:HG13	0.42	1.73	2	1
1:A:62:LEU:CD2	1:A:83:PHE:CG	0.42	3.01	11	1
1:A:34:ILE:HD13	1:A:34:ILE:C	0.42	2.34	3	2
1:A:51:LEU:CD1	1:A:91:ARG:HB3	0.42	2.44	4	2
1:A:52:ASN:HD21	1:A:57:HIS:HB2	0.42	1.75	18	1
1:A:89:ASN:O	1:A:93:GLU:HB2	0.42	2.14	4	1
1:A:41:ILE:HD11	1:A:47:VAL:CB	0.42	2.44	12	1
1:A:98:LYS:HG2	1:A:102:CYS:HB2	0.42	1.91	6	1
1:A:113:ILE:O	1:A:121:LEU:HG	0.42	2.15	13	2
1:A:84:THR:O	1:A:84:THR:HG22	0.42	2.13	16	1
1:A:52:ASN:O	1:A:54:ASP:N	0.42	2.52	6	2
1:A:65:GLU:HB3	1:A:83:PHE:CD1	0.42	2.49	8	1
1:A:119:SER:O	1:A:120:LEU:HD22	0.42	2.14	4	1
1:A:59:LEU:HD23	1:A:62:LEU:HD23	0.42	1.92	10	1
1:A:110:THR:OG1	1:A:125:ALA:CB	0.42	2.67	10	1
1:A:73:GLU:O	1:A:74:GLY:C	0.42	2.59	15	1
1:A:76:ARG:HG3	1:A:77:ALA:H	0.42	1.74	8	1
1:A:88:ILE:O	1:A:92:ILE:CD1	0.42	2.67	14	1
1:A:66:LEU:HD12	1:A:81:GLY:HA3	0.42	1.92	5	1
1:A:40:PHE:CG	1:A:78:ILE:HD12	0.42	2.50	14	1
1:A:108:PRO:CG	1:A:112:ILE:HD11	0.42	2.45	16	1
1:A:78:ILE:O	1:A:78:ILE:HG22	0.41	2.14	2	1
1:A:48:ALA:CA	1:A:58:LEU:CD1	0.41	2.97	18	1
1:A:122:LYS:HB3	1:A:131:PRO:HB3	0.41	1.90	8	1
1:A:66:LEU:CD2	1:A:79:LEU:HD11	0.41	2.26	4	1
1:A:72:LEU:HG	1:A:77:ALA:CB	0.41	2.46	12	1
1:A:60:LYS:O	1:A:64:ARG:HG2	0.41	2.15	12	2
1:A:104:GLU:HG2	1:A:104:GLU:O	0.41	2.14	19	1
1:A:39:THR:HG23	1:A:41:ILE:HG22	0.41	1.92	13	1
1:A:114:ARG:NE	1:A:118:ILE:HA	0.41	2.31	13	1
1:A:83:PHE:CD2	1:A:88:ILE:HG13	0.41	2.50	8	1
1:A:89:ASN:HA	1:A:92:ILE:HG22	0.41	1.92	4	1
1:A:52:ASN:HB3	1:A:58:LEU:HB2	0.41	1.92	12	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:51:LEU:CD1	1:A:91:ARG:CB	0.41	2.98	16	4
1:A:115:GLU:HB3	1:A:120:LEU:HD11	0.41	1.91	19	1
1:A:68:THR:HG21	1:A:80:GLN:OE1	0.41	2.15	15	1
1:A:65:GLU:HB2	1:A:83:PHE:CD1	0.41	2.50	6	1
1:A:104:GLU:O	1:A:104:GLU:HG2	0.41	2.15	6	1
1:A:112:ILE:C	1:A:113:ILE:HG13	0.41	2.36	8	1
1:A:107:ARG:HG3	1:A:108:PRO:HD2	0.41	1.92	8	1
1:A:51:LEU:O	1:A:52:ASN:CB	0.41	2.67	10	1
1:A:44:PHE:CD1	1:A:44:PHE:N	0.41	2.89	10	1
1:A:72:LEU:HD23	1:A:77:ALA:HA	0.41	1.91	20	1
1:A:43:ASN:OD1	1:A:47:VAL:HB	0.41	2.15	14	1
1:A:99:PHE:O	1:A:104:GLU:N	0.41	2.54	14	1
1:A:41:ILE:HB	1:A:77:ALA:O	0.41	2.15	1	1
1:A:115:GLU:HG3	1:A:116:GLY:N	0.41	2.31	19	1
1:A:31:TYR:HB2	1:A:85:HIS:NE2	0.41	2.31	8	1
1:A:113:ILE:CG1	1:A:122:LYS:HE2	0.41	2.45	2	1
1:A:114:ARG:HD2	1:A:118:ILE:CA	0.41	2.43	17	1
1:A:66:LEU:HA	1:A:81:GLY:HA3	0.41	1.92	13	2
1:A:88:ILE:CG2	1:A:92:ILE:HD11	0.41	2.41	8	1
1:A:58:LEU:O	1:A:62:LEU:HD12	0.41	2.16	7	1
1:A:110:THR:HG21	1:A:126:CYS:CB	0.41	2.43	14	1
1:A:35:GLN:O	1:A:38:ARG:HD2	0.41	2.15	14	1
1:A:84:THR:C	1:A:85:HIS:CG	0.41	2.94	18	1
1:A:99:PHE:O	1:A:103:HIS:HA	0.41	2.16	10	1
1:A:31:TYR:O	1:A:31:TYR:CD1	0.41	2.74	19	1
1:A:53:ARG:CD	1:A:119:SER:HA	0.41	2.46	3	1
1:A:40:PHE:N	1:A:40:PHE:CD1	0.41	2.89	11	1
1:A:93:GLU:HA	1:A:96:VAL:CG1	0.41	2.46	14	1
1:A:107:ARG:HG2	1:A:108:PRO:HD2	0.41	1.91	14	1
1:A:56:GLN:O	1:A:60:LYS:HG2	0.41	2.16	14	1
1:A:40:PHE:CG	1:A:78:ILE:HG23	0.41	2.51	1	1
1:A:90:GLU:O	1:A:94:ASP:HB2	0.41	2.16	16	1
1:A:62:LEU:HD23	1:A:66:LEU:HD21	0.41	1.92	4	1
1:A:72:LEU:CD1	1:A:72:LEU:O	0.41	2.66	6	1
1:A:123:CYS:H	1:A:129:LYS:HB2	0.41	1.76	7	1
1:A:98:LYS:HE2	1:A:99:PHE:CE1	0.41	2.51	18	1
1:A:97:ASN:HD22	1:A:101:ILE:HG12	0.41	1.76	16	1
1:A:39:THR:CG2	1:A:79:LEU:HD21	0.40	2.46	10	1
1:A:85:HIS:CD2	1:A:85:HIS:O	0.40	2.74	20	1
1:A:62:LEU:HG	1:A:63:LEU:N	0.40	2.31	13	1
1:A:114:ARG:HB2	1:A:121:LEU:HD23	0.40	1.93	8	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:54:ASP:HB3	1:A:57:HIS:HB2	0.40	1.93	8	1
1:A:52:ASN:O	1:A:53:ARG:HB3	0.40	2.16	18	1
1:A:83:PHE:CE1	1:A:87:LEU:HB2	0.40	2.51	3	1
1:A:51:LEU:HD22	1:A:88:ILE:CG1	0.40	2.43	18	1
1:A:104:GLU:O	1:A:104:GLU:CG	0.40	2.70	9	1
1:A:121:LEU:CD2	1:A:129:LYS:HE2	0.40	2.47	10	1
1:A:110:THR:HG22	1:A:111:ARG:H	0.40	1.76	12	1
1:A:31:TYR:HB2	1:A:85:HIS:CE1	0.40	2.51	19	1
1:A:114:ARG:CG	1:A:121:LEU:HB2	0.40	2.46	13	1
1:A:42:GLN:HG2	1:A:76:ARG:HG2	0.40	1.93	8	1
1:A:34:ILE:HB	1:A:85:HIS:CD2	0.40	2.52	11	1
1:A:114:ARG:CG	1:A:120:LEU:O	0.40	2.70	16	1
1:A:62:LEU:HD11	1:A:79:LEU:HD13	0.40	1.94	10	1
1:A:40:PHE:CD1	1:A:78:ILE:HG12	0.40	2.51	15	1
1:A:31:TYR:CD1	1:A:31:TYR:N	0.40	2.89	7	1
1:A:92:ILE:CG2	1:A:93:GLU:N	0.40	2.85	4	1

6.3 Torsion angles

6.3.1 Protein backbone

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all NMR entries. The Analysed column shows the number of residues for which the backbone conformation was analysed and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	101/138 (73%)	70±3 (70±3%)	26±3 (26±3%)	4±2 (4±2%)	6	32
All	All	2020/2760 (73%)	1406 (70%)	529 (26%)	85 (4%)	6	32

All 17 unique Ramachandran outliers are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Models (Total)
1	A	106	ASN	13
1	A	52	ASN	12
1	A	66	LEU	7
1	A	108	PRO	7
1	A	118	ILE	7
1	A	36	GLY	6

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Mol	Chain	Res	Type	Models (Total)
1	A	131	PRO	6
1	A	70	GLY	5
1	A	82	LYS	5
1	A	53	ARG	5
1	A	69	ALA	3
1	A	105	CYS	2
1	A	31	TYR	2
1	A	74	GLY	2
1	A	35	GLN	1
1	A	81	GLY	1
1	A	37	ASN	1

6.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all NMR entries. The Analysed column shows the number of residues for which the sidechain conformation was analysed and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	86/120 (72%)	54±4 (62±4%)	33±4 (38±4%)	1	7
All	All	1720/2400 (72%)	1070 (62%)	650 (38%)	1	7

All 73 unique residues with a non-rotameric sidechain are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Models (Total)
1	A	58	LEU	20
1	A	39	THR	20
1	A	33	VAL	20
1	A	105	CYS	19
1	A	129	LYS	19
1	A	38	ARG	18
1	A	57	HIS	16
1	A	41	ILE	16
1	A	91	ARG	15
1	A	45	ARG	15
1	A	53	ARG	15
1	A	83	PHE	15
1	A	122	LYS	14
1	A	54	ASP	14

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Mol	Chain	Res	Type	Models (Total)
1	A	72	LEU	14
1	A	61	PHE	14
1	A	60	LYS	14
1	A	82	LYS	13
1	A	35	GLN	13
1	A	76	ARG	12
1	A	56	GLN	12
1	A	86	PHE	12
1	A	114	ARG	12
1	A	107	ARG	11
1	A	121	LEU	11
1	A	64	ARG	11
1	A	98	LYS	11
1	A	80	GLN	11
1	A	34	ILE	10
1	A	117	ARG	10
1	A	59	LEU	10
1	A	52	ASN	10
1	A	110	THR	10
1	A	111	ARG	9
1	A	93	GLU	8
1	A	31	TYR	8
1	A	95	TYR	8
1	A	87	LEU	7
1	A	32	SER	7
1	A	63	LEU	7
1	A	42	GLN	7
1	A	68	THR	7
1	A	37	ASN	6
1	A	65	GLU	6
1	A	66	LEU	6
1	A	119	SER	6
1	A	73	GLU	6
1	A	94	ASP	6
1	A	46	GLU	6
1	A	40	PHE	6
1	A	90	GLU	6
1	A	71	ASN	6
1	A	49	ASP	5
1	A	124	GLU	5
1	A	109	ASP	5
1	A	115	GLU	5

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Mol	Chain	Res	Type	Models (Total)
1	A	104	GLU	4
1	A	101	ILE	4
1	A	112	ILE	4
1	A	120	LEU	3
1	A	85	HIS	3
1	A	113	ILE	3
1	A	89	ASN	3
1	A	106	ASN	3
1	A	62	LEU	3
1	A	97	ASN	3
1	A	99	PHE	3
1	A	103	HIS	2
1	A	44	PHE	2
1	A	43	ASN	2
1	A	100	VAL	1
1	A	84	THR	1
1	A	118	ILE	1

6.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

6.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.6 Ligand geometry [i](#)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

6.7 Other polymers [i](#)

There are no such molecules in this entry.

6.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

7 Chemical shift validation

The completeness of assignment taking into account all chemical shift lists is 52% for the well-defined parts and 50% for the entire structure.

7.1 Chemical shift list 1

File name: BMRB entry 5312

Chemical shift list name: *assigned_chem_shift_list_1*

7.1.1 Bookkeeping

The following table shows the results of parsing the chemical shift list and reports the number of nuclei with statistically unusual chemical shifts.

Total number of shifts	936
Number of shifts mapped to atoms	936
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Number of shift outliers (ShiftChecker)	1

7.1.2 Chemical shift referencing

The following table shows the suggested chemical shift referencing corrections.

Nucleus	# values	Correction \pm precision, ppm	Suggested action
$^{13}\text{C}_\alpha$	132	-0.47 ± 0.21	None needed (< 0.5 ppm)
$^{13}\text{C}_\beta$	124	0.19 ± 0.16	None needed (< 0.5 ppm)
$^{13}\text{C}'$	0	—	—
^{15}N	122	-0.90 ± 0.50	None needed (imprecise)

7.1.3 Completeness of resonance assignments

The following table shows the completeness of the chemical shift assignments for the well-defined regions of the structure. The overall completeness is 52%, i.e. 682 atoms were assigned a chemical shift out of a possible 1308. 2 out of 15 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^1H	^{13}C	^{15}N
Backbone	383/499 (77%)	186/199 (93%)	100/202 (50%)	97/98 (99%)
Sidechain	295/718 (41%)	167/421 (40%)	128/251 (51%)	0/46 (0%)

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	Total	¹ H	¹³ C	¹⁵ N
Aromatic	4/91 (4%)	4/50 (8%)	0/38 (0%)	0/3 (0%)
Overall	682/1308 (52%)	357/670 (53%)	228/491 (46%)	97/147 (66%)

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 50%, i.e. 880 atoms were assigned a chemical shift out of a possible 1765. 3 out of 22 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	¹ H	¹³ C	¹⁵ N
Backbone	492/663 (74%)	238/264 (90%)	132/270 (49%)	122/129 (95%)
Sidechain	382/985 (39%)	216/578 (37%)	166/349 (48%)	0/58 (0%)
Aromatic	6/117 (5%)	6/64 (9%)	0/50 (0%)	0/3 (0%)
Overall	880/1765 (50%)	460/906 (51%)	298/669 (45%)	122/190 (64%)

7.1.4 Statistically unusual chemical shifts [i](#)

The following table lists the statistically unusual chemical shifts. These are statistical measures, and large deviations from the mean do not necessarily imply incorrect assignments. Molecules containing paramagnetic centres or hemes are expected to give rise to anomalous chemical shifts.

Mol	Chain	Res	Type	Atom	Shift, ppm	Expected range, ppm	Z-score
1	A	16	PRO	CG	21.70	32.66 – 21.76	-5.1

7.1.5 Random Coil Index (RCI) plots [i](#)

The image below reports *random coil index* values for the protein chains in the structure. The height of each bar gives a probability of a given residue to be disordered, as predicted from the available chemical shifts and the amino acid sequence. A value above 0.2 is an indication of significant predicted disorder. The colour of the bar shows whether the residue is in the well-defined core (black) or in the ill-defined residue ranges (cyan), as described in section 2 on ensemble composition.

Random coil index (RCI) for chain A:

