



Full wwPDB NMR Structure Validation Report ⓘ

Mar 5, 2026 – 07:35 PM UTC

PDB ID : 5YJ5 / pdb_00005yj5
BMRB ID : 36123
Title : structure for wildtype Human prion protein (M129)
Authors : Zheng, Z.; Lin, D.
Deposited on : 2017-10-08

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

<https://www.wwpdb.org/validation/2017/NMRValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
wwPDB-RCI : v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV : Wang et al. (2010)
wwPDB-ShiftChecker : v1.2
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

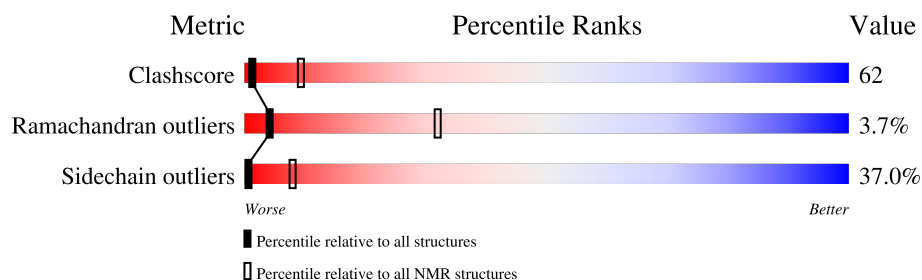
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

SOLUTION NMR

The overall completeness of chemical shifts assignment is 81%.

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	229148	14424
Ramachandran outliers	224038	12848
Sidechain outliers	223484	12823

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	142	11% 35% 18% 37%

2 Ensemble composition and analysis

This entry contains 20 models. Model 6 is the overall representative, medoid model (most similar to other models). The authors have identified model 1 as representative, based on the following criterion: *lowest energy*.

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:128-A:166, A:171-A:221 (90)	0.52	6

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 5 clusters and 4 single-model clusters were found.

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

3 Entry composition

There is only 1 type of molecule in this entry. The entry contains 2207 atoms, of which 1073 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Major prion protein.

Mol	Chain	Residues	Atoms						Trace
1	A	142	Total	C	H	N	O	S	0
			2207	698	1073	204	220	12	

There is a discrepancy between the modelled and reference sequences:

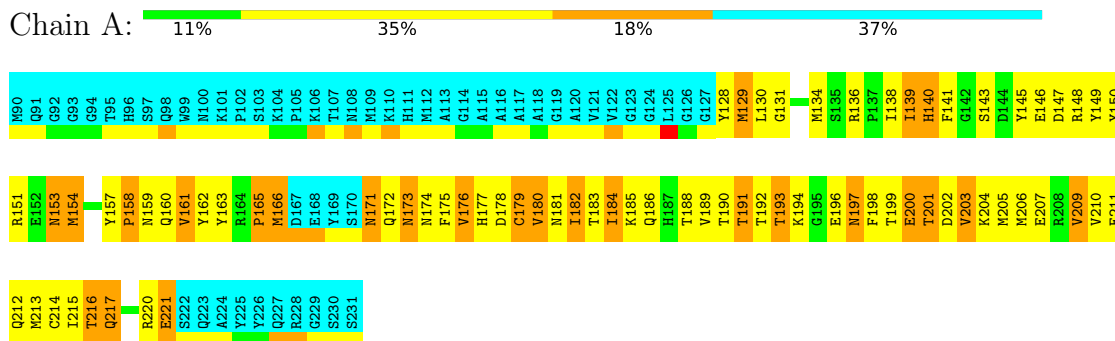
Chain	Residue	Modelled	Actual	Comment	Reference
A	90	MET	-	initiating methionine	UNP P04156

4 Residue-property plots

4.1 Average score per residue in the NMR ensemble

These plots are provided for all protein, RNA, DNA and oligosaccharide 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: Major prion protein

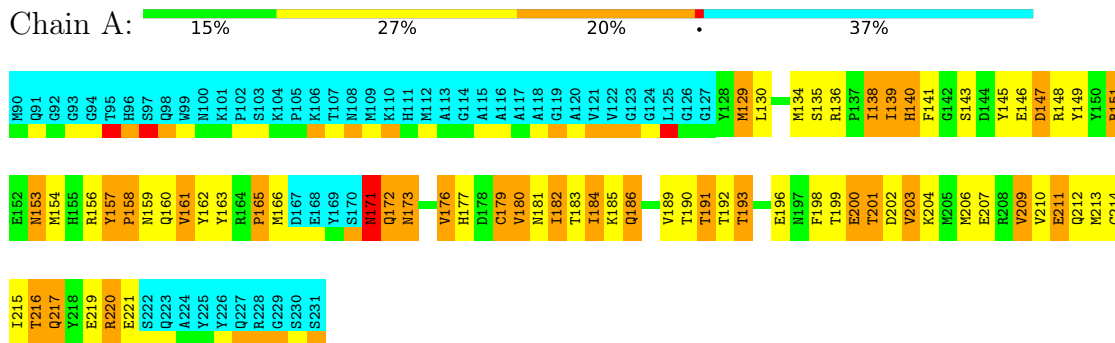


4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

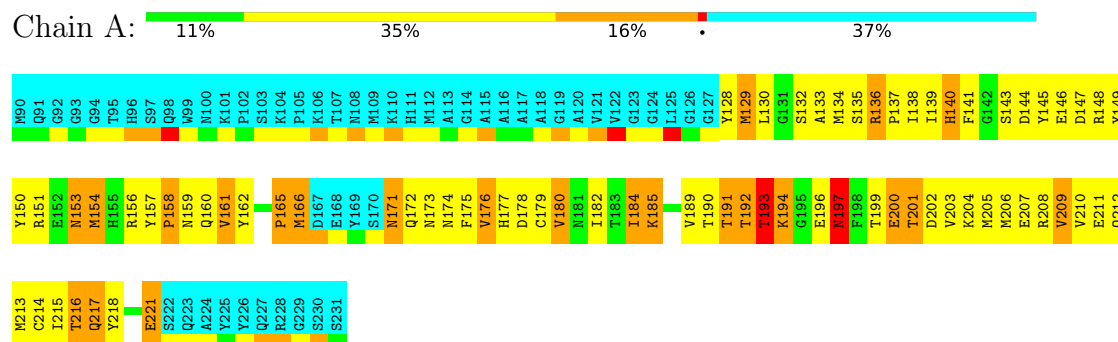
4.2.1 Score per residue for model 1

- Molecule 1: Major prion protein



4.2.2 Score per residue for model 2

- Molecule 1: Major prion protein



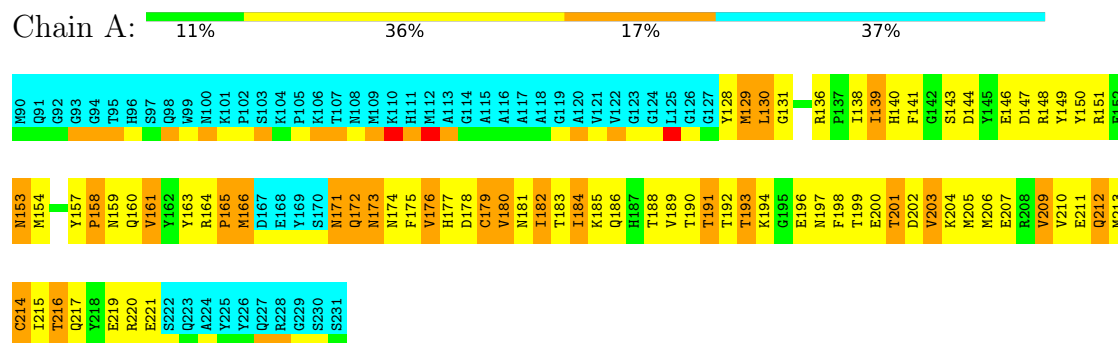
4.2.3 Score per residue for model 3

- Molecule 1: Major prion protein



4.2.4 Score per residue for model 4

- Molecule 1: Major prion protein



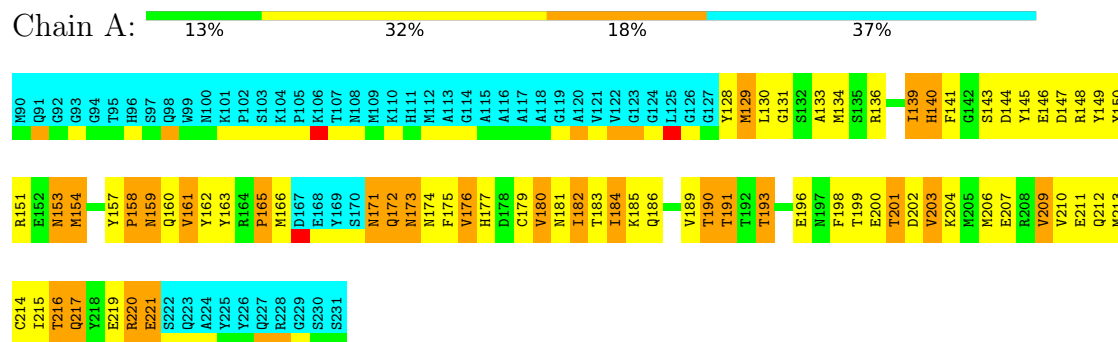
4.2.5 Score per residue for model 5

- Molecule 1: Major prion protein



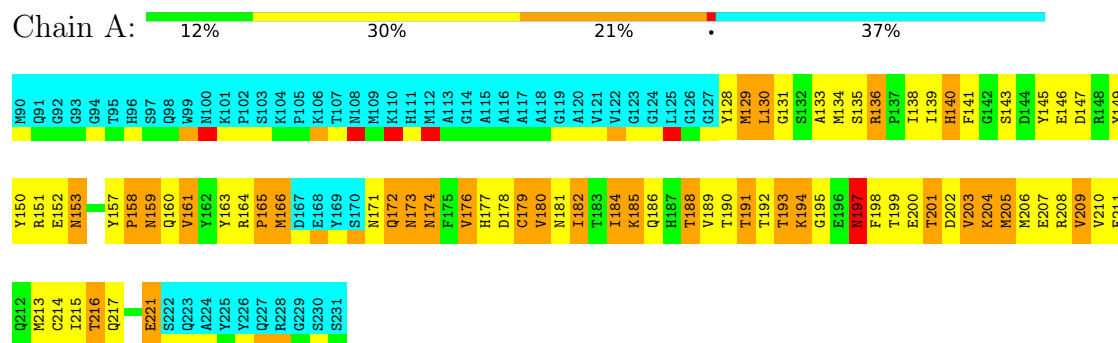
4.2.6 Score per residue for model 6 (medoid)

- Molecule 1: Major prion protein



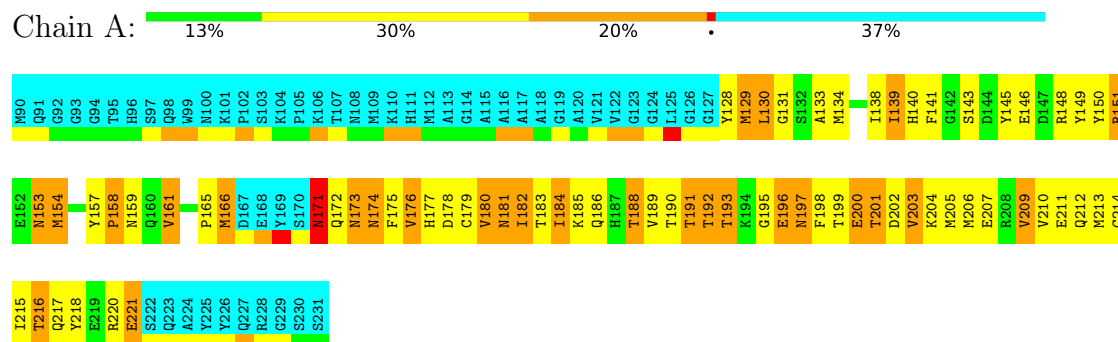
4.2.7 Score per residue for model 7

- Molecule 1: Major prion protein



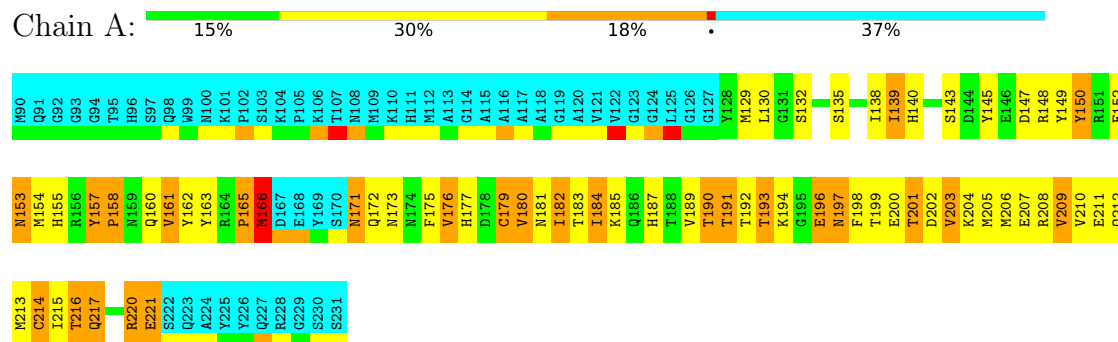
4.2.8 Score per residue for model 8

- Molecule 1: Major prion protein



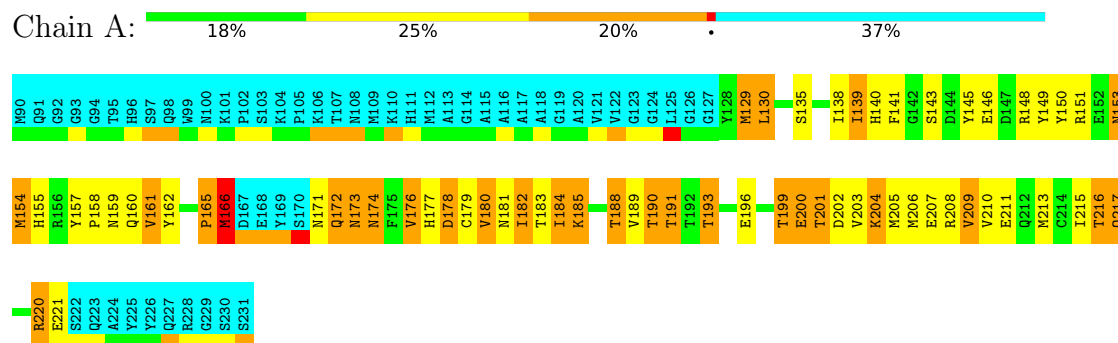
4.2.9 Score per residue for model 9

- Molecule 1: Major prion protein



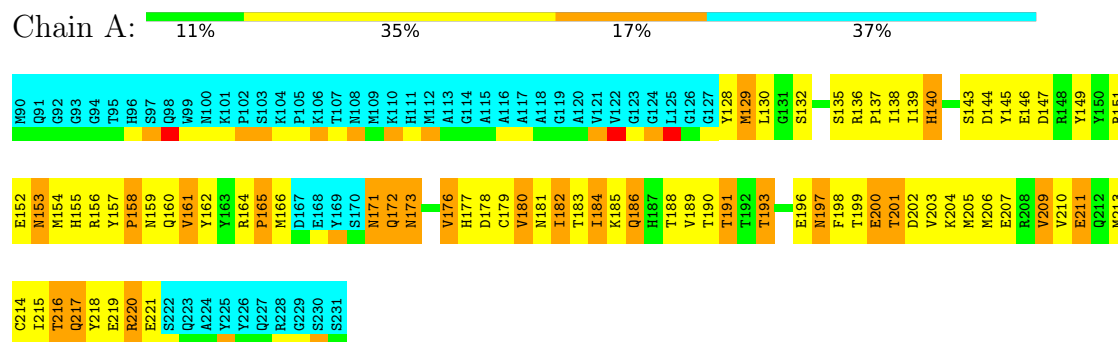
4.2.10 Score per residue for model 10

- Molecule 1: Major prion protein



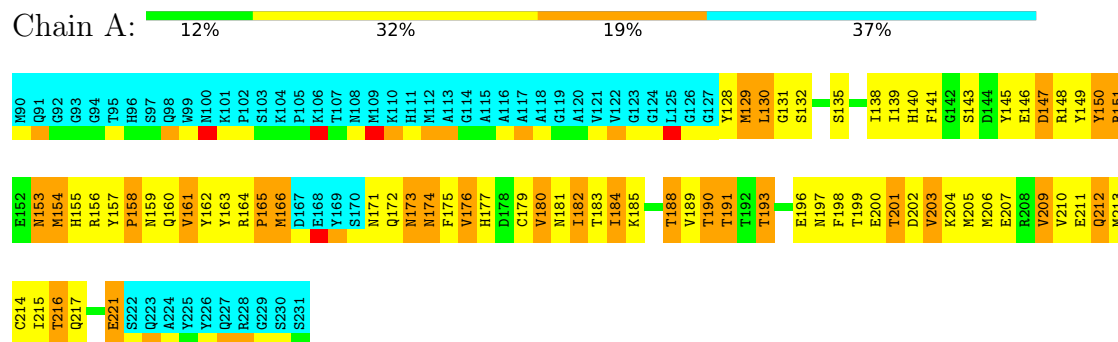
4.2.11 Score per residue for model 11

- Molecule 1: Major prion protein



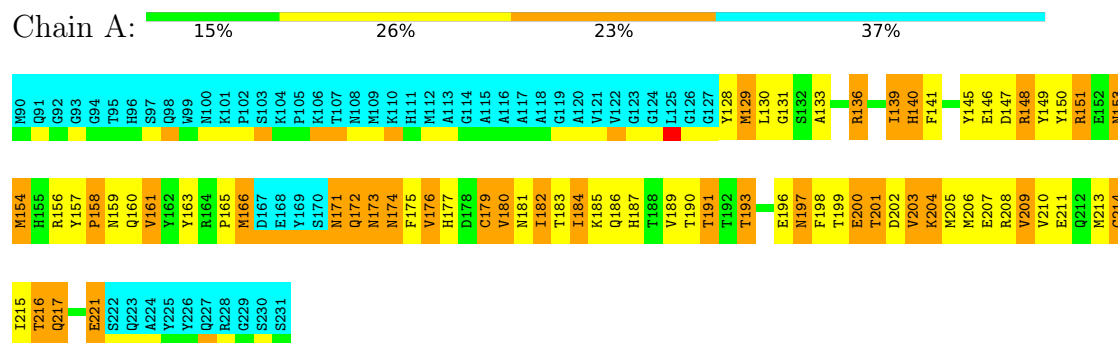
4.2.12 Score per residue for model 12

- Molecule 1: Major prion protein



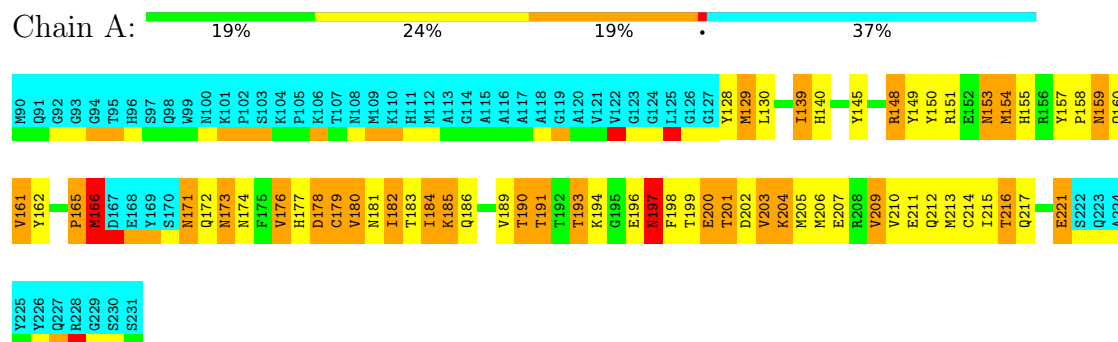
4.2.13 Score per residue for model 13

- Molecule 1: Major prion protein



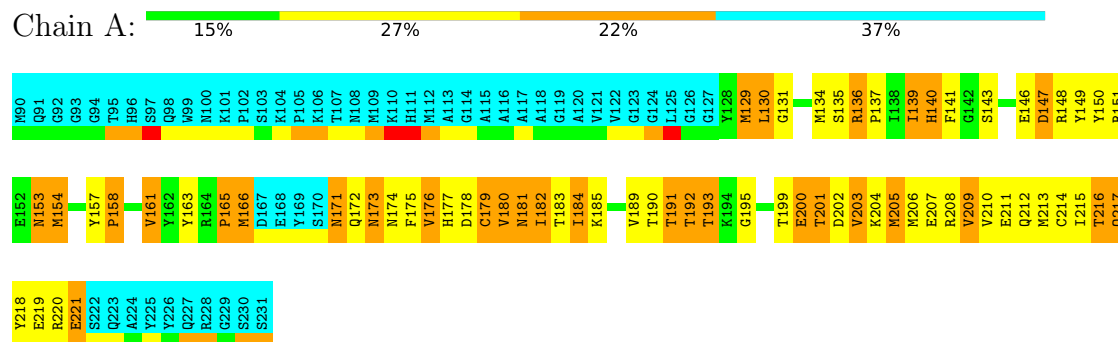
4.2.14 Score per residue for model 14

- Molecule 1: Major prion protein



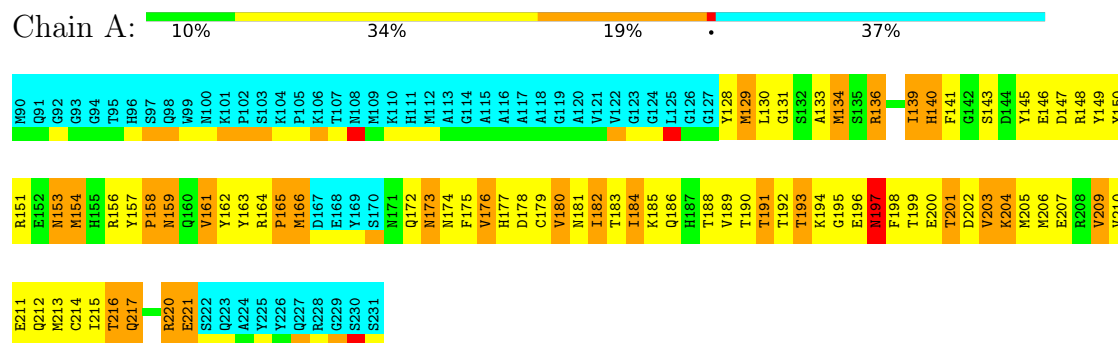
4.2.15 Score per residue for model 15

- Molecule 1: Major prion protein



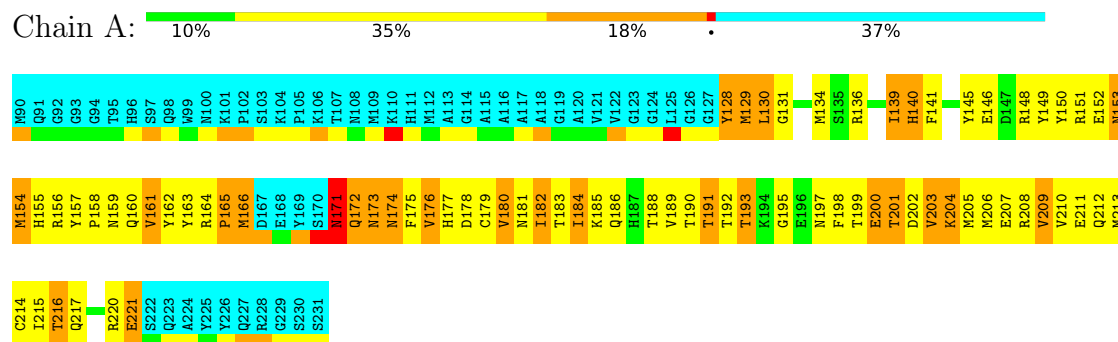
4.2.16 Score per residue for model 16

- Molecule 1: Major prion protein



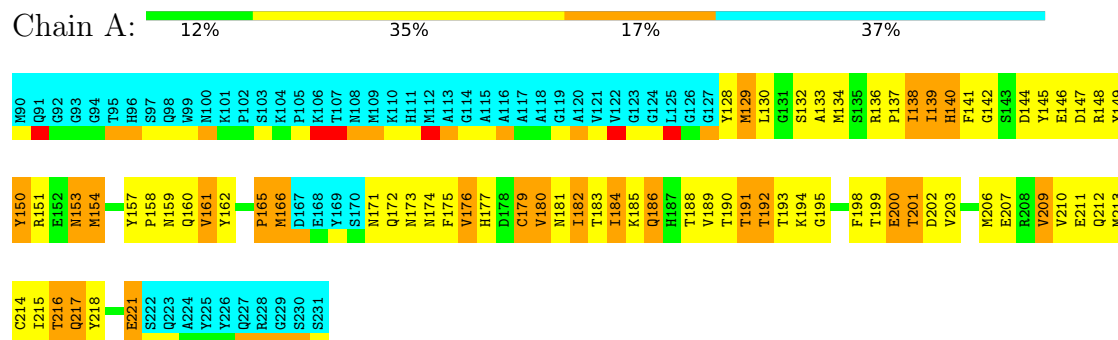
4.2.17 Score per residue for model 17

- Molecule 1: Major prion protein



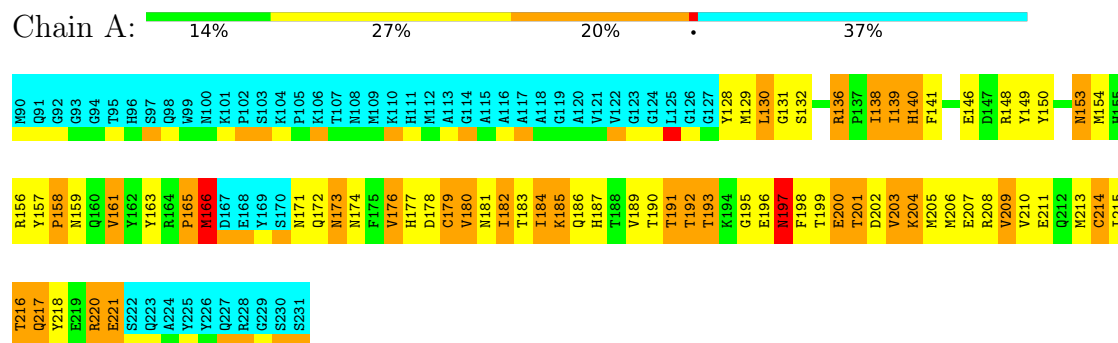
4.2.18 Score per residue for model 18

- Molecule 1: Major prion protein



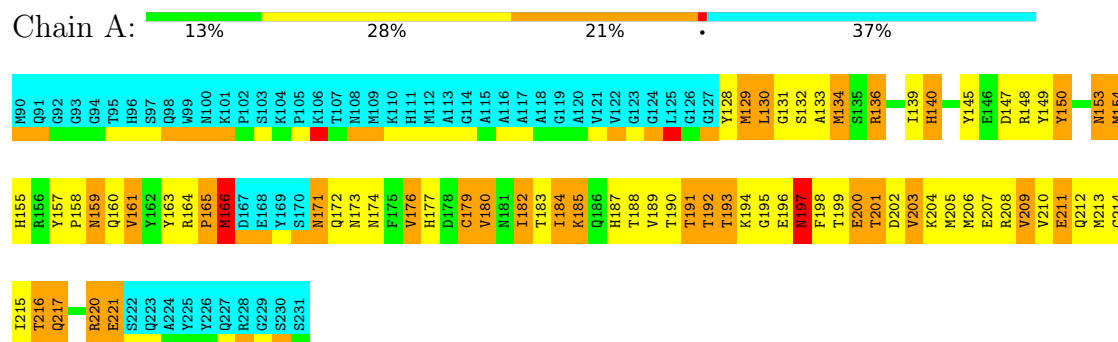
4.2.19 Score per residue for model 19

- Molecule 1: Major prion protein



4.2.20 Score per residue for model 20

- Molecule 1: Major prion protein



5 Refinement protocol and experimental data overview

The models were refined using the following method: *simulated annealing*.

Of the 500 calculated structures, 20 were deposited, based on the following criterion: *structures with the lowest energy*.

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

Software name	Classification	Version
X-PLOR NIH	structure calculation	
X-PLOR NIH	refinement	

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)	working_cs.cif
Number of chemical shift lists	1
Total number of shifts	1517
Number of shifts mapped to atoms	1517
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Assignment completeness (well-defined parts)	81%

6 Model quality [i](#)

6.1 Standard geometry [i](#)

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 [i](#)

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	762	720	716	91±6
All	All	15240	14400	14320	1824

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 62.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:160:GLN:N	1:A:213:MET:HE1	0.98	1.73	12	13
1:A:130:LEU:HD12	1:A:131:GLY:N	0.95	1.76	12	11
1:A:159:ASN:C	1:A:213:MET:HE1	0.94	1.87	2	9
1:A:133:ALA:HB1	1:A:159:ASN:OD1	0.91	1.65	7	3
1:A:199:THR:O	1:A:203:VAL:HG23	0.86	1.69	10	20
1:A:153:ASN:ND2	1:A:153:ASN:N	0.83	2.27	18	20
1:A:172:GLN:O	1:A:176:VAL:HG13	0.82	1.73	17	11
1:A:163:TYR:CE1	1:A:217:GLN:NE2	0.82	2.48	4	3
1:A:163:TYR:CZ	1:A:217:GLN:NE2	0.81	2.49	9	5
1:A:163:TYR:CE2	1:A:217:GLN:NE2	0.80	2.48	13	2
1:A:185:LYS:O	1:A:189:VAL:HG13	0.80	1.77	12	20
1:A:130:LEU:HD12	1:A:161:VAL:O	0.79	1.78	3	3
1:A:145:TYR:CE2	1:A:149:TYR:CE2	0.79	2.70	6	4
1:A:172:GLN:NE2	1:A:173:ASN:N	0.79	2.31	4	9

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:189:VAL:HG23	1:A:190:THR:N	0.78	1.91	15	20
1:A:129:MET:C	1:A:129:MET:SD	0.76	2.69	6	5
1:A:211:GLU:O	1:A:215:ILE:HD12	0.75	1.82	3	17
1:A:217:GLN:NE2	1:A:220:ARG:CZ	0.74	2.50	3	1
1:A:136:ARG:NE	1:A:136:ARG:H	0.73	1.80	19	1
1:A:138:ILE:CD1	1:A:151:ARG:NH2	0.73	2.51	1	1
1:A:139:ILE:HG22	1:A:140:HIS:N	0.73	1.97	12	19
1:A:179:CYS:SG	1:A:180:VAL:N	0.73	2.61	15	10
1:A:136:ARG:NH1	1:A:220:ARG:NH2	0.73	2.37	20	1
1:A:153:ASN:N	1:A:153:ASN:HD22	0.73	1.81	17	9
1:A:157:TYR:O	1:A:157:TYR:CD2	0.72	2.42	9	1
1:A:198:PHE:CD2	1:A:206:MET:HE1	0.71	2.20	5	4
1:A:136:ARG:NH1	1:A:220:ARG:HH22	0.71	1.83	20	1
1:A:139:ILE:HG22	1:A:140:HIS:H	0.70	1.45	12	11
1:A:141:PHE:CD1	1:A:146:GLU:OE1	0.70	2.45	6	4
1:A:130:LEU:HD12	1:A:161:VAL:C	0.70	2.12	18	6
1:A:202:ASP:O	1:A:206:MET:SD	0.70	2.50	6	6
1:A:141:PHE:CG	1:A:146:GLU:OE1	0.69	2.45	4	10
1:A:171:ASN:ND2	1:A:171:ASN:N	0.69	2.38	11	1
1:A:141:PHE:CG	1:A:146:GLU:OE2	0.69	2.45	13	6
1:A:191:THR:O	1:A:196:GLU:N	0.69	2.25	8	11
1:A:171:ASN:O	1:A:175:PHE:CD2	0.69	2.45	4	2
1:A:189:VAL:HG23	1:A:190:THR:H	0.69	1.47	15	6
1:A:157:TYR:CD1	1:A:157:TYR:C	0.69	2.69	1	1
1:A:209:VAL:CG1	1:A:210:VAL:N	0.69	2.55	10	20
1:A:129:MET:CE	1:A:130:LEU:C	0.69	2.66	18	15
1:A:192:THR:O	1:A:194:LYS:N	0.69	2.26	5	4
1:A:172:GLN:CD	1:A:173:ASN:N	0.69	2.51	7	7
1:A:136:ARG:NH1	1:A:137:PRO:O	0.69	2.25	2	2
1:A:140:HIS:ND1	1:A:140:HIS:N	0.69	2.40	7	4
1:A:189:VAL:O	1:A:193:THR:N	0.69	2.24	20	20
1:A:209:VAL:HG12	1:A:210:VAL:N	0.69	2.03	7	19
1:A:217:GLN:HE22	1:A:220:ARG:CZ	0.69	2.01	3	1
1:A:141:PHE:CD2	1:A:146:GLU:OE1	0.68	2.46	10	5
1:A:163:TYR:OH	1:A:217:GLN:NE2	0.68	2.27	5	6
1:A:141:PHE:CD2	1:A:146:GLU:OE2	0.68	2.47	19	5
1:A:210:VAL:O	1:A:213:MET:N	0.67	2.27	12	18
1:A:158:PRO:O	1:A:213:MET:SD	0.67	2.52	7	10
1:A:191:THR:OG1	1:A:198:PHE:CE2	0.67	2.47	14	9
1:A:154:MET:O	1:A:157:TYR:CD2	0.67	2.46	9	1
1:A:171:ASN:ND2	1:A:171:ASN:H	0.67	1.87	11	4

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:157:TYR:OH	1:A:205:MET:SD	0.67	2.53	14	10
1:A:189:VAL:O	1:A:192:THR:N	0.67	2.28	15	2
1:A:162:TYR:O	1:A:179:CYS:SG	0.67	2.52	10	5
1:A:197:ASN:N	1:A:197:ASN:OD1	0.67	2.27	2	3
1:A:199:THR:HG23	1:A:202:ASP:OD1	0.67	1.90	2	3
1:A:130:LEU:HD12	1:A:131:GLY:H	0.67	1.47	12	6
1:A:136:ARG:NE	1:A:137:PRO:O	0.67	2.27	15	1
1:A:191:THR:OG1	1:A:198:PHE:CE1	0.66	2.47	18	2
1:A:138:ILE:H	1:A:138:ILE:HD13	0.66	1.50	18	1
1:A:149:TYR:O	1:A:153:ASN:ND2	0.66	2.28	8	16
1:A:133:ALA:HB1	1:A:159:ASN:ND2	0.66	2.05	8	7
1:A:176:VAL:CG2	1:A:177:HIS:N	0.66	2.58	13	20
1:A:179:CYS:O	1:A:182:ILE:N	0.66	2.28	19	9
1:A:189:VAL:CG2	1:A:190:THR:N	0.66	2.59	15	20
1:A:138:ILE:H	1:A:138:ILE:CD1	0.66	2.03	18	1
1:A:138:ILE:HD13	1:A:151:ARG:CZ	0.65	2.20	12	1
1:A:138:ILE:HD13	1:A:138:ILE:N	0.65	2.05	18	1
1:A:198:PHE:CD1	1:A:206:MET:HE1	0.65	2.26	18	4
1:A:158:PRO:CG	1:A:206:MET:SD	0.65	2.85	1	5
1:A:150:TYR:CD2	1:A:205:MET:SD	0.65	2.90	20	1
1:A:145:TYR:OH	1:A:149:TYR:CZ	0.65	2.50	3	3
1:A:153:ASN:O	1:A:157:TYR:N	0.65	2.29	9	1
1:A:171:ASN:ND2	1:A:174:ASN:OD1	0.65	2.29	5	2
1:A:174:ASN:C	1:A:174:ASN:HD22	0.65	2.00	12	13
1:A:140:HIS:C	1:A:141:PHE:CD2	0.64	2.75	16	2
1:A:166:MET:N	1:A:166:MET:SD	0.64	2.69	12	2
1:A:163:TYR:HH	1:A:217:GLN:CD	0.64	1.99	6	1
1:A:185:LYS:O	1:A:189:VAL:HG22	0.64	1.93	15	20
1:A:129:MET:CE	1:A:130:LEU:O	0.64	2.46	9	17
1:A:172:GLN:CD	1:A:173:ASN:H	0.63	2.02	7	4
1:A:174:ASN:C	1:A:174:ASN:ND2	0.63	2.53	10	9
1:A:190:THR:CG2	1:A:191:THR:N	0.63	2.61	2	19
1:A:220:ARG:HH21	1:A:220:ARG:N	0.63	1.91	16	1
1:A:171:ASN:H	1:A:171:ASN:HD22	0.63	1.36	11	1
1:A:138:ILE:CD1	1:A:151:ARG:HH21	0.62	2.05	1	1
1:A:172:GLN:HE21	1:A:172:GLN:C	0.62	2.02	1	2
1:A:130:LEU:HD21	1:A:160:GLN:OE1	0.62	1.93	18	4
1:A:171:ASN:OD1	1:A:171:ASN:N	0.62	2.31	17	5
1:A:130:LEU:HD13	1:A:162:TYR:CE1	0.62	2.29	18	1
1:A:150:TYR:CE2	1:A:205:MET:HE2	0.62	2.30	4	2
1:A:210:VAL:O	1:A:211:GLU:C	0.62	2.41	11	20

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:133:ALA:N	1:A:160:GLN:HE21	0.62	1.92	18	1
1:A:150:TYR:O	1:A:154:MET:CB	0.61	2.48	13	16
1:A:161:VAL:CG1	1:A:214:CYS:SG	0.61	2.88	11	5
1:A:153:ASN:ND2	1:A:153:ASN:H	0.61	1.92	20	16
1:A:197:ASN:OD1	1:A:197:ASN:C	0.61	2.44	7	2
1:A:217:GLN:OE1	1:A:220:ARG:NH1	0.61	2.33	3	1
1:A:196:GLU:C	1:A:197:ASN:CG	0.61	2.69	13	3
1:A:172:GLN:HE21	1:A:173:ASN:N	0.61	1.93	1	7
1:A:171:ASN:O	1:A:175:PHE:N	0.61	2.34	6	3
1:A:129:MET:HE1	1:A:130:LEU:O	0.61	1.94	19	3
1:A:201:THR:HG22	1:A:202:ASP:N	0.61	2.11	8	20
1:A:189:VAL:CG2	1:A:190:THR:H	0.61	2.09	15	8
1:A:141:PHE:CG	1:A:146:GLU:CD	0.60	2.79	4	3
1:A:153:ASN:O	1:A:156:ARG:N	0.60	2.34	11	2
1:A:129:MET:HE3	1:A:130:LEU:N	0.60	2.11	2	14
1:A:136:ARG:H	1:A:136:ARG:CD	0.60	2.09	5	3
1:A:134:MET:SD	1:A:217:GLN:OE1	0.60	2.60	1	1
1:A:196:GLU:C	1:A:197:ASN:OD1	0.60	2.45	2	2
1:A:184:ILE:O	1:A:188:THR:OG1	0.60	2.19	8	11
1:A:201:THR:HG23	1:A:205:MET:HE3	0.60	1.74	20	2
1:A:179:CYS:O	1:A:180:VAL:C	0.59	2.44	18	9
1:A:197:ASN:C	1:A:197:ASN:HD22	0.59	2.04	12	1
1:A:163:TYR:OH	1:A:217:GLN:CD	0.59	2.45	6	3
1:A:180:VAL:O	1:A:184:ILE:CG1	0.59	2.50	19	20
1:A:174:ASN:O	1:A:174:ASN:ND2	0.59	2.34	20	2
1:A:130:LEU:HD13	1:A:162:TYR:CZ	0.59	2.33	6	3
1:A:172:GLN:CD	1:A:172:GLN:C	0.59	2.71	20	6
1:A:192:THR:O	1:A:195:GLY:N	0.59	2.35	20	9
1:A:171:ASN:O	1:A:175:PHE:CB	0.59	2.50	17	2
1:A:129:MET:SD	1:A:130:LEU:C	0.59	2.85	14	4
1:A:159:ASN:C	1:A:159:ASN:ND2	0.59	2.61	20	2
1:A:145:TYR:CE1	1:A:149:TYR:CE2	0.59	2.90	13	1
1:A:185:LYS:O	1:A:189:VAL:CG1	0.58	2.51	12	17
1:A:209:VAL:HG12	1:A:210:VAL:H	0.58	1.58	9	9
1:A:145:TYR:OH	1:A:149:TYR:OH	0.58	2.20	8	14
1:A:161:VAL:HG11	1:A:214:CYS:SG	0.58	2.38	8	4
1:A:136:ARG:CZ	1:A:216:THR:OG1	0.58	2.51	4	1
1:A:191:THR:OG1	1:A:198:PHE:CZ	0.58	2.52	18	2
1:A:214:CYS:O	1:A:217:GLN:OE1	0.58	2.21	13	2
1:A:130:LEU:HD21	1:A:160:GLN:CD	0.58	2.24	14	8
1:A:182:ILE:O	1:A:183:THR:C	0.58	2.46	6	17

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:192:THR:C	1:A:194:LYS:N	0.57	2.61	5	4
1:A:174:ASN:O	1:A:175:PHE:C	0.57	2.46	8	7
1:A:199:THR:O	1:A:200:GLU:C	0.57	2.47	6	20
1:A:176:VAL:O	1:A:180:VAL:HG12	0.57	1.99	7	18
1:A:139:ILE:CG2	1:A:140:HIS:N	0.57	2.68	1	9
1:A:190:THR:O	1:A:191:THR:C	0.57	2.47	1	13
1:A:159:ASN:OD1	1:A:159:ASN:C	0.57	2.47	19	2
1:A:166:MET:SD	1:A:166:MET:N	0.57	2.76	8	3
1:A:190:THR:OG1	1:A:194:LYS:NZ	0.57	2.38	4	1
1:A:200:GLU:CG	1:A:201:THR:N	0.56	2.68	6	20
1:A:129:MET:O	1:A:163:TYR:N	0.56	2.38	15	6
1:A:161:VAL:CG1	1:A:210:VAL:HG13	0.56	2.31	12	20
1:A:172:GLN:OE1	1:A:176:VAL:CG1	0.56	2.53	2	2
1:A:176:VAL:O	1:A:179:CYS:N	0.56	2.39	17	8
1:A:166:MET:HE2	1:A:221:GLU:HB2	0.56	1.76	2	1
1:A:182:ILE:O	1:A:185:LYS:N	0.56	2.38	6	2
1:A:130:LEU:HD13	1:A:162:TYR:CE2	0.56	2.36	6	3
1:A:153:ASN:OD1	1:A:157:TYR:CE2	0.55	2.58	20	3
1:A:176:VAL:HG22	1:A:177:HIS:N	0.55	2.16	8	15
1:A:180:VAL:O	1:A:181:ASN:C	0.55	2.49	6	18
1:A:154:MET:SD	1:A:155:HIS:N	0.55	2.79	12	2
1:A:199:THR:OG1	1:A:202:ASP:OD1	0.55	2.24	6	5
1:A:217:GLN:OE1	1:A:220:ARG:CZ	0.55	2.54	19	2
1:A:139:ILE:CG2	1:A:140:HIS:H	0.55	2.13	12	4
1:A:145:TYR:CZ	1:A:149:TYR:CE2	0.55	2.95	1	7
1:A:134:MET:HE1	1:A:213:MET:O	0.55	2.02	2	1
1:A:196:GLU:O	1:A:197:ASN:CB	0.55	2.54	20	5
1:A:172:GLN:O	1:A:173:ASN:C	0.55	2.50	4	9
1:A:136:ARG:CB	1:A:212:GLN:OE1	0.55	2.55	6	1
1:A:178:ASP:OD2	1:A:178:ASP:O	0.54	2.24	4	5
1:A:138:ILE:CD1	1:A:138:ILE:N	0.54	2.67	18	1
1:A:196:GLU:O	1:A:197:ASN:CG	0.54	2.49	11	1
1:A:129:MET:SD	1:A:130:LEU:O	0.54	2.65	14	1
1:A:192:THR:C	1:A:194:LYS:H	0.54	2.10	5	2
1:A:172:GLN:CG	1:A:173:ASN:H	0.54	2.16	4	5
1:A:218:TYR:C	1:A:218:TYR:CD2	0.54	2.85	18	1
1:A:159:ASN:O	1:A:159:ASN:OD1	0.54	2.25	10	1
1:A:149:TYR:O	1:A:152:GLU:N	0.54	2.39	9	1
1:A:202:ASP:N	1:A:202:ASP:OD1	0.54	2.41	10	2
1:A:162:TYR:CD1	1:A:162:TYR:N	0.53	2.76	11	4
1:A:153:ASN:OD1	1:A:157:TYR:OH	0.53	2.22	20	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:201:THR:O	1:A:202:ASP:C	0.53	2.52	5	20
1:A:213:MET:O	1:A:214:CYS:C	0.53	2.51	15	10
1:A:153:ASN:OD1	1:A:157:TYR:CZ	0.53	2.61	20	1
1:A:203:VAL:O	1:A:204:LYS:C	0.53	2.49	20	14
1:A:139:ILE:C	1:A:140:HIS:ND1	0.53	2.66	18	3
1:A:146:GLU:O	1:A:147:ASP:C	0.53	2.51	11	7
1:A:136:ARG:HH12	1:A:220:ARG:HH22	0.53	1.43	20	1
1:A:163:TYR:CD2	1:A:163:TYR:C	0.53	2.87	6	2
1:A:163:TYR:CD2	1:A:163:TYR:O	0.53	2.62	6	1
1:A:172:GLN:C	1:A:172:GLN:NE2	0.53	2.67	12	4
1:A:181:ASN:C	1:A:181:ASN:HD22	0.53	2.12	15	2
1:A:174:ASN:ND2	1:A:174:ASN:C	0.52	2.67	2	3
1:A:154:MET:C	1:A:156:ARG:N	0.52	2.66	12	5
1:A:199:THR:OG1	1:A:202:ASP:OD2	0.52	2.26	12	5
1:A:215:ILE:O	1:A:216:THR:C	0.52	2.52	2	20
1:A:154:MET:O	1:A:156:ARG:N	0.52	2.43	17	4
1:A:130:LEU:HD21	1:A:160:GLN:NE2	0.52	2.19	6	1
1:A:147:ASP:OD2	1:A:151:ARG:NE	0.52	2.42	11	1
1:A:147:ASP:OD2	1:A:151:ARG:NH1	0.52	2.40	11	1
1:A:192:THR:O	1:A:193:THR:C	0.52	2.51	15	10
1:A:130:LEU:CD1	1:A:131:GLY:N	0.52	2.64	12	4
1:A:171:ASN:N	1:A:171:ASN:HD22	0.52	2.00	11	1
1:A:176:VAL:O	1:A:177:HIS:C	0.52	2.52	11	14
1:A:130:LEU:HD12	1:A:130:LEU:C	0.52	2.29	12	4
1:A:138:ILE:HD13	1:A:151:ARG:NH2	0.52	2.19	12	1
1:A:145:TYR:CZ	1:A:149:TYR:CE1	0.51	2.97	5	1
1:A:190:THR:O	1:A:193:THR:HG22	0.51	2.05	19	4
1:A:218:TYR:CD1	1:A:218:TYR:C	0.51	2.88	15	2
1:A:145:TYR:CE1	1:A:149:TYR:CZ	0.51	2.98	13	1
1:A:153:ASN:O	1:A:154:MET:C	0.51	2.52	11	3
1:A:144:ASP:N	1:A:144:ASP:OD1	0.51	2.43	11	1
1:A:130:LEU:HD13	1:A:162:TYR:CD1	0.51	2.40	18	1
1:A:157:TYR:CG	1:A:157:TYR:O	0.51	2.60	1	1
1:A:148:ARG:NH1	1:A:152:GLU:OE2	0.51	2.43	17	1
1:A:145:TYR:CZ	1:A:149:TYR:CZ	0.51	2.99	8	2
1:A:204:LYS:O	1:A:205:MET:C	0.51	2.53	14	14
1:A:138:ILE:HD11	1:A:151:ARG:NH2	0.51	2.21	1	1
1:A:138:ILE:CD1	1:A:147:ASP:OD2	0.51	2.59	2	1
1:A:172:GLN:CG	1:A:173:ASN:N	0.50	2.74	7	5
1:A:193:THR:CG2	1:A:194:LYS:N	0.50	2.74	16	3
1:A:186:GLN:N	1:A:186:GLN:OE1	0.50	2.44	11	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:134:MET:O	1:A:157:TYR:OH	0.50	2.29	1	1
1:A:157:TYR:O	1:A:158:PRO:C	0.50	2.55	11	10
1:A:165:PRO:O	1:A:166:MET:C	0.50	2.54	18	18
1:A:147:ASP:CG	1:A:151:ARG:HH12	0.50	2.15	12	1
1:A:157:TYR:CD1	1:A:157:TYR:O	0.50	2.65	1	1
1:A:147:ASP:OD1	1:A:151:ARG:NH1	0.50	2.45	12	1
1:A:180:VAL:HG11	1:A:211:GLU:OE2	0.50	2.06	12	1
1:A:189:VAL:O	1:A:190:THR:C	0.50	2.53	15	2
1:A:159:ASN:C	1:A:159:ASN:OD1	0.50	2.55	18	1
1:A:140:HIS:N	1:A:140:HIS:ND1	0.50	2.59	15	4
1:A:187:HIS:CE1	1:A:198:PHE:CZ	0.50	3.00	13	2
1:A:184:ILE:O	1:A:188:THR:CB	0.49	2.60	18	4
1:A:136:ARG:CG	1:A:136:ARG:HH21	0.49	2.20	13	4
1:A:129:MET:CE	1:A:130:LEU:N	0.49	2.76	17	14
1:A:190:THR:HG23	1:A:191:THR:N	0.49	2.22	2	13
1:A:141:PHE:CD2	1:A:141:PHE:N	0.49	2.81	16	2
1:A:178:ASP:OD1	1:A:178:ASP:C	0.49	2.56	14	2
1:A:163:TYR:OH	1:A:217:GLN:OE1	0.49	2.28	6	1
1:A:217:GLN:O	1:A:221:GLU:CG	0.49	2.61	18	5
1:A:174:ASN:ND2	1:A:174:ASN:O	0.49	2.44	7	4
1:A:199:THR:CG2	1:A:202:ASP:OD1	0.49	2.59	18	1
1:A:211:GLU:O	1:A:215:ILE:CD1	0.49	2.60	4	3
1:A:136:ARG:CZ	1:A:137:PRO:O	0.49	2.61	15	1
1:A:185:LYS:O	1:A:189:VAL:CG2	0.49	2.61	17	15
1:A:136:ARG:CG	1:A:136:ARG:NH2	0.49	2.74	13	3
1:A:134:MET:CG	1:A:213:MET:SD	0.49	3.00	20	1
1:A:200:GLU:HG2	1:A:201:THR:N	0.49	2.23	2	20
1:A:198:PHE:CD1	1:A:206:MET:CE	0.49	2.95	3	2
1:A:172:GLN:HE21	1:A:176:VAL:CG1	0.48	2.20	8	1
1:A:157:TYR:O	1:A:159:ASN:N	0.48	2.46	4	3
1:A:198:PHE:CD2	1:A:206:MET:CE	0.48	2.96	5	1
1:A:190:THR:O	1:A:194:LYS:CD	0.48	2.61	2	1
1:A:166:MET:SD	1:A:221:GLU:OE1	0.48	2.72	6	1
1:A:219:GLU:O	1:A:220:ARG:C	0.48	2.56	1	3
1:A:190:THR:O	1:A:194:LYS:CE	0.48	2.62	5	1
1:A:150:TYR:CD1	1:A:157:TYR:CE2	0.48	3.01	16	1
1:A:180:VAL:HG11	1:A:211:GLU:OE1	0.48	2.08	13	1
1:A:206:MET:O	1:A:207:GLU:C	0.48	2.55	4	20
1:A:199:THR:OG1	1:A:202:ASP:CG	0.48	2.57	1	3
1:A:139:ILE:HD11	1:A:209:VAL:HA	0.48	1.85	3	18
1:A:136:ARG:CD	1:A:136:ARG:N	0.48	2.77	19	4

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:184:ILE:O	1:A:185:LYS:C	0.47	2.56	20	1
1:A:211:GLU:OE1	1:A:215:ILE:CD1	0.47	2.63	11	1
1:A:157:TYR:CD2	1:A:157:TYR:C	0.47	2.92	9	1
1:A:130:LEU:HD13	1:A:161:VAL:H	0.47	1.68	15	2
1:A:148:ARG:O	1:A:149:TYR:C	0.47	2.57	14	17
1:A:134:MET:SD	1:A:216:THR:HG21	0.47	2.49	17	1
1:A:136:ARG:NE	1:A:136:ARG:N	0.47	2.57	19	1
1:A:157:TYR:CE1	1:A:158:PRO:O	0.47	2.67	1	1
1:A:217:GLN:NE2	1:A:220:ARG:NH1	0.47	2.62	3	1
1:A:220:ARG:HD3	1:A:221:GLU:N	0.47	2.25	9	5
1:A:138:ILE:HG22	1:A:154:MET:SD	0.47	2.50	19	2
1:A:199:THR:HG1	1:A:202:ASP:CG	0.47	2.18	1	2
1:A:216:THR:O	1:A:217:GLN:C	0.47	2.57	8	5
1:A:218:TYR:CD2	1:A:221:GLU:OE2	0.47	2.67	3	1
1:A:164:ARG:O	1:A:165:PRO:O	0.47	2.33	20	7
1:A:171:ASN:ND2	1:A:174:ASN:CB	0.47	2.78	5	1
1:A:179:CYS:O	1:A:183:THR:OG1	0.47	2.33	16	1
1:A:128:TYR:OH	1:A:178:ASP:OD2	0.47	2.32	19	1
1:A:130:LEU:CD1	1:A:161:VAL:O	0.47	2.63	1	3
1:A:221:GLU:OE1	1:A:221:GLU:C	0.47	2.58	3	2
1:A:145:TYR:CE2	1:A:149:TYR:CZ	0.47	3.03	10	3
1:A:159:ASN:C	1:A:213:MET:CE	0.47	2.79	12	1
1:A:197:ASN:C	1:A:197:ASN:ND2	0.47	2.71	12	1
1:A:159:ASN:ND2	1:A:159:ASN:C	0.47	2.72	16	1
1:A:130:LEU:CB	1:A:162:TYR:CD2	0.47	2.98	17	1
1:A:134:MET:O	1:A:135:SER:C	0.46	2.58	5	2
1:A:154:MET:C	1:A:156:ARG:H	0.46	2.18	17	2
1:A:141:PHE:CD1	1:A:146:GLU:OE2	0.46	2.68	13	2
1:A:210:VAL:C	1:A:212:GLN:N	0.46	2.72	6	7
1:A:141:PHE:CB	1:A:146:GLU:CD	0.46	2.89	13	3
1:A:163:TYR:CD1	1:A:217:GLN:NE2	0.46	2.83	4	1
1:A:210:VAL:O	1:A:212:GLN:N	0.46	2.49	6	4
1:A:217:GLN:HE22	1:A:220:ARG:NH1	0.46	2.07	3	1
1:A:178:ASP:O	1:A:178:ASP:OD1	0.46	2.33	19	2
1:A:150:TYR:CE2	1:A:157:TYR:CE1	0.46	3.04	7	2
1:A:186:GLN:OE1	1:A:186:GLN:CA	0.46	2.63	1	3
1:A:217:GLN:O	1:A:218:TYR:C	0.46	2.57	2	2
1:A:155:HIS:O	1:A:155:HIS:ND1	0.46	2.49	10	2
1:A:129:MET:HE2	1:A:130:LEU:N	0.46	2.25	14	4
1:A:149:TYR:HB2	1:A:205:MET:HE1	0.46	1.87	19	1
1:A:220:ARG:O	1:A:221:GLU:C	0.45	2.59	8	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:202:ASP:C	1:A:206:MET:SD	0.45	3.00	3	3
1:A:159:ASN:C	1:A:213:MET:HE3	0.45	2.36	8	2
1:A:130:LEU:HD11	1:A:160:GLN:HB3	0.45	1.89	3	2
1:A:130:LEU:C	1:A:130:LEU:CD1	0.45	2.90	12	3
1:A:174:ASN:O	1:A:178:ASP:OD1	0.45	2.35	7	1
1:A:166:MET:CB	1:A:221:GLU:CD	0.45	2.90	10	1
1:A:130:LEU:CD1	1:A:161:VAL:C	0.45	2.88	18	2
1:A:198:PHE:CG	1:A:206:MET:HE1	0.45	2.46	4	3
1:A:192:THR:HG22	1:A:193:THR:N	0.45	2.27	5	1
1:A:158:PRO:HG3	1:A:206:MET:SD	0.45	2.51	1	2
1:A:206:MET:O	1:A:210:VAL:HG23	0.45	2.10	6	3
1:A:134:MET:HE1	1:A:217:GLN:HG2	0.45	1.88	16	1
1:A:208:ARG:O	1:A:209:VAL:C	0.44	2.59	7	10
1:A:215:ILE:O	1:A:218:TYR:N	0.44	2.49	19	1
1:A:129:MET:HE2	1:A:130:LEU:C	0.44	2.37	9	7
1:A:214:CYS:O	1:A:215:ILE:C	0.44	2.60	3	1
1:A:154:MET:C	1:A:154:MET:SD	0.44	2.99	18	1
1:A:159:ASN:ND2	1:A:160:GLN:HG3	0.44	2.28	7	4
1:A:180:VAL:O	1:A:184:ILE:HG13	0.44	2.13	9	13
1:A:136:ARG:H	1:A:136:ARG:NE	0.44	2.11	5	1
1:A:134:MET:SD	1:A:134:MET:N	0.44	2.91	8	1
1:A:133:ALA:CB	1:A:159:ASN:ND2	0.44	2.81	16	1
1:A:136:ARG:C	1:A:136:ARG:HE	0.44	2.20	2	1
1:A:163:TYR:C	1:A:163:TYR:CD1	0.44	2.96	1	1
1:A:216:THR:O	1:A:219:GLU:N	0.44	2.51	15	1
1:A:138:ILE:CD1	1:A:147:ASP:OD1	0.44	2.65	9	1
1:A:158:PRO:HG2	1:A:206:MET:SD	0.43	2.52	1	2
1:A:150:TYR:CE2	1:A:157:TYR:CD2	0.43	3.06	12	1
1:A:176:VAL:HG23	1:A:177:HIS:N	0.43	2.26	17	1
1:A:134:MET:HG2	1:A:213:MET:SD	0.43	2.53	20	1
1:A:217:GLN:NE2	1:A:220:ARG:NE	0.43	2.66	3	1
1:A:217:GLN:O	1:A:220:ARG:CD	0.43	2.67	3	1
1:A:197:ASN:OD1	1:A:197:ASN:O	0.43	2.37	5	1
1:A:182:ILE:HG22	1:A:183:THR:N	0.43	2.29	6	1
1:A:216:THR:HG22	1:A:217:GLN:N	0.43	2.27	9	2
1:A:138:ILE:O	1:A:140:HIS:CE1	0.43	2.71	3	1
1:A:201:THR:O	1:A:205:MET:HG3	0.43	2.13	14	1
1:A:201:THR:CG2	1:A:202:ASP:N	0.43	2.82	11	1
1:A:190:THR:C	1:A:192:THR:N	0.43	2.75	8	5
1:A:141:PHE:CB	1:A:146:GLU:OE1	0.43	2.67	12	1
1:A:172:GLN:NE2	1:A:176:VAL:CG1	0.43	2.81	8	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:141:PHE:CB	1:A:146:GLU:OE2	0.43	2.67	13	1
1:A:141:PHE:CE1	1:A:146:GLU:OE1	0.43	2.71	3	1
1:A:154:MET:O	1:A:155:HIS:C	0.43	2.62	17	3
1:A:213:MET:O	1:A:217:GLN:CG	0.43	2.67	13	1
1:A:128:TYR:CD2	1:A:128:TYR:N	0.43	2.86	14	1
1:A:172:GLN:HG3	1:A:173:ASN:N	0.43	2.28	1	1
1:A:159:ASN:O	1:A:159:ASN:CG	0.43	2.61	7	1
1:A:173:ASN:O	1:A:174:ASN:C	0.43	2.62	19	1
1:A:149:TYR:O	1:A:150:TYR:C	0.42	2.61	9	1
1:A:172:GLN:NE2	1:A:176:VAL:HG11	0.42	2.28	8	1
1:A:212:GLN:HA	1:A:215:ILE:HD12	0.42	1.91	15	1
1:A:172:GLN:HE21	1:A:173:ASN:CA	0.42	2.26	1	2
1:A:129:MET:SD	1:A:130:LEU:N	0.42	2.92	19	1
1:A:136:ARG:HH12	1:A:220:ARG:NH2	0.42	2.04	20	1
1:A:136:ARG:CB	1:A:137:PRO:CD	0.42	2.97	2	1
1:A:178:ASP:OD2	1:A:178:ASP:C	0.42	2.62	5	1
1:A:130:LEU:HB3	1:A:162:TYR:CE2	0.42	2.49	17	1
1:A:136:ARG:NH2	1:A:136:ARG:HG3	0.42	2.29	13	1
1:A:172:GLN:HE22	1:A:173:ASN:HD22	0.42	1.56	16	1
1:A:204:LYS:HZ2	1:A:204:LYS:HB3	0.42	1.73	17	1
1:A:147:ASP:CG	1:A:151:ARG:HH22	0.42	2.22	1	1
1:A:138:ILE:HD13	1:A:151:ARG:HE	0.42	1.75	10	1
1:A:166:MET:N	1:A:221:GLU:OE1	0.42	2.52	17	1
1:A:163:TYR:CZ	1:A:217:GLN:CD	0.42	2.98	6	1
1:A:197:ASN:O	1:A:197:ASN:CG	0.42	2.62	14	1
1:A:150:TYR:CD1	1:A:157:TYR:CE1	0.42	3.08	17	1
1:A:129:MET:HE2	1:A:129:MET:CA	0.41	2.45	6	2
1:A:162:TYR:CD2	1:A:162:TYR:N	0.41	2.88	6	1
1:A:179:CYS:C	1:A:181:ASN:N	0.41	2.77	18	1
1:A:190:THR:OG1	1:A:194:LYS:CE	0.41	2.69	4	1
1:A:151:ARG:HH21	1:A:151:ARG:N	0.41	2.12	12	1
1:A:172:GLN:NE2	1:A:173:ASN:HA	0.41	2.30	16	1
1:A:209:VAL:O	1:A:210:VAL:C	0.41	2.64	19	1
1:A:201:THR:CG2	1:A:205:MET:HE3	0.41	2.43	20	1
1:A:217:GLN:CD	1:A:220:ARG:NH1	0.41	2.79	3	1
1:A:172:GLN:NE2	1:A:172:GLN:C	0.41	2.78	7	1
1:A:128:TYR:OH	1:A:178:ASP:OD1	0.41	2.37	16	1
1:A:159:ASN:CA	1:A:213:MET:HE1	0.41	2.45	20	1
1:A:151:ARG:HA	1:A:154:MET:HE2	0.41	1.92	8	2
1:A:156:ARG:O	1:A:157:TYR:C	0.41	2.62	19	1
1:A:174:ASN:O	1:A:177:HIS:N	0.41	2.53	8	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:171:ASN:O	1:A:175:PHE:HB2	0.41	2.15	9	1
1:A:176:VAL:HG22	1:A:177:HIS:H	0.41	1.75	13	2
1:A:217:GLN:NE2	1:A:217:GLN:HA	0.41	2.31	8	1
1:A:138:ILE:HD13	1:A:151:ARG:NE	0.41	2.31	10	1
1:A:154:MET:O	1:A:157:TYR:N	0.41	2.51	11	1
1:A:172:GLN:HG3	1:A:218:TYR:CZ	0.41	2.51	2	1
1:A:158:PRO:O	1:A:213:MET:CE	0.41	2.69	11	1
1:A:130:LEU:HB2	1:A:162:TYR:CE2	0.41	2.51	14	1
1:A:172:GLN:HG2	1:A:218:TYR:CZ	0.41	2.51	18	1
1:A:144:ASP:O	1:A:145:TYR:C	0.41	2.62	2	1
1:A:177:HIS:C	1:A:177:HIS:ND1	0.41	2.79	10	1
1:A:200:GLU:O	1:A:201:THR:C	0.41	2.63	10	1
1:A:143:SER:O	1:A:144:ASP:C	0.41	2.63	11	1
1:A:164:ARG:O	1:A:165:PRO:C	0.41	2.64	11	1
1:A:177:HIS:ND1	1:A:177:HIS:C	0.41	2.79	18	1
1:A:172:GLN:HG3	1:A:218:TYR:CE1	0.41	2.51	19	1
1:A:134:MET:SD	1:A:217:GLN:CD	0.41	3.04	1	1
1:A:138:ILE:HB	1:A:150:TYR:CD2	0.41	2.51	12	1
1:A:166:MET:SD	1:A:221:GLU:OE2	0.40	2.79	13	1
1:A:191:THR:HG23	1:A:197:ASN:N	0.40	2.31	14	1
1:A:172:GLN:O	1:A:175:PHE:N	0.40	2.54	6	1
1:A:220:ARG:HD2	1:A:220:ARG:N	0.40	2.31	8	1
1:A:150:TYR:CD2	1:A:157:TYR:CE2	0.40	3.10	12	1
1:A:144:ASP:C	1:A:144:ASP:OD2	0.40	2.64	2	1
1:A:134:MET:SD	1:A:216:THR:HG22	0.40	2.57	15	1
1:A:193:THR:HG23	1:A:194:LYS:CD	0.40	2.45	18	1
1:A:199:THR:N	1:A:202:ASP:OD1	0.40	2.51	18	1
1:A:136:ARG:HE	1:A:136:ARG:CA	0.40	2.29	2	1
1:A:129:MET:SD	1:A:129:MET:O	0.40	2.80	14	1
1:A:130:LEU:CD1	1:A:161:VAL:H	0.40	2.30	20	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	90/142 (63%)	70±2 (78±2%)	17±3 (19±3%)	3±1 (4±1%)	4	32
All	All	1800/2840 (63%)	1395 (78%)	338 (19%)	67 (4%)	4	32

All 11 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	158	PRO	19
1	A	165	PRO	17
1	A	197	ASN	12
1	A	166	MET	6
1	A	171	ASN	4
1	A	193	THR	2
1	A	196	GLU	2
1	A	137	PRO	2
1	A	128	TYR	1
1	A	131	GLY	1
1	A	142	GLY	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	86/121 (71%)	54±3 (63±3%)	32±3 (37±3%)	1	8
All	All	1720/2420 (71%)	1083 (63%)	637 (37%)	1	8

All 63 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	153	ASN	20
1	A	161	VAL	20
1	A	173	ASN	20
1	A	176	VAL	20
1	A	180	VAL	20
1	A	182	ILE	20
1	A	184	ILE	20

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Mol	Chain	Res	Type	Models (Total)
1	A	191	THR	20
1	A	201	THR	20
1	A	209	VAL	20
1	A	216	THR	20
1	A	129	MET	18
1	A	193	THR	18
1	A	171	ASN	17
1	A	217	GLN	17
1	A	139	ILE	16
1	A	166	MET	16
1	A	203	VAL	15
1	A	154	MET	15
1	A	221	GLU	15
1	A	186	GLN	14
1	A	200	GLU	14
1	A	140	HIS	13
1	A	151	ARG	13
1	A	136	ARG	12
1	A	143	SER	12
1	A	179	CYS	12
1	A	197	ASN	11
1	A	147	ASP	10
1	A	220	ARG	10
1	A	172	GLN	9
1	A	214	CYS	9
1	A	130	LEU	9
1	A	135	SER	8
1	A	192	THR	8
1	A	212	GLN	8
1	A	132	SER	7
1	A	185	LYS	7
1	A	204	LYS	7
1	A	138	ILE	6
1	A	174	ASN	6
1	A	134	MET	5
1	A	150	TYR	5
1	A	159	ASN	5
1	A	190	THR	5
1	A	188	THR	5
1	A	211	GLU	4
1	A	175	PHE	4
1	A	148	ARG	4

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Mol	Chain	Res	Type	Models (Total)
1	A	194	LYS	3
1	A	152	GLU	3
1	A	144	ASP	3
1	A	178	ASP	3
1	A	157	TYR	2
1	A	219	GLU	2
1	A	205	MET	2
1	A	181	ASN	2
1	A	155	HIS	2
1	A	187	HIS	2
1	A	156	ARG	1
1	A	164	ARG	1
1	A	199	THR	1
1	A	128	TYR	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 oligosaccharides in this entry.

6.6 Ligand geometry [i](#)

There are no ligands in this entry.

6.7 Other polymers [i](#)

There are no such molecules in this entry.

6.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

7 Chemical shift validation

The completeness of assignment taking into account all chemical shift lists is 81% for the well-defined parts and 80% for the entire structure.

7.1 Chemical shift list 1

File name: working_cs.cif

Chemical shift list name: *assigned_chemical_shifts_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	1517
Number of shifts mapped to atoms	1517
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
$^{13}\text{C}_\alpha$	139	0.19 ± 0.08	None needed (< 0.5 ppm)
$^{13}\text{C}_\beta$	124	0.42 ± 0.09	None needed (< 0.5 ppm)
$^{13}\text{C}'$	137	0.15 ± 0.06	None needed (< 0.5 ppm)
^{15}N	129	-0.24 ± 0.18	None needed (< 0.5 ppm)

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 81%, i.e. 1031 atoms were assigned a chemical shift out of a possible 1280. 0 out of 8 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^1H	^{13}C	^{15}N
Backbone	434/447 (97%)	175/180 (97%)	176/180 (98%)	83/87 (95%)
Sidechain	553/699 (79%)	388/448 (87%)	164/215 (76%)	1/36 (3%)

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	Total	¹H	¹³C	¹⁵N
Aromatic	44/134 (33%)	44/63 (70%)	0/63 (0%)	0/8 (0%)
Overall	1031/1280 (81%)	607/691 (88%)	340/458 (74%)	84/131 (64%)

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 80%, i.e. 1516 atoms were assigned a chemical shift out of a possible 1893. 0 out of 11 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	¹H	¹³C	¹⁵N
Backbone	687/713 (96%)	282/292 (97%)	276/284 (97%)	129/137 (94%)
Sidechain	779/991 (79%)	549/638 (86%)	229/304 (75%)	1/49 (2%)
Aromatic	50/189 (26%)	50/89 (56%)	0/87 (0%)	0/13 (0%)
Overall	1516/1893 (80%)	881/1019 (86%)	505/675 (75%)	130/199 (65%)

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.

List Id	Chain	Res	Type	Atom	Shift, ppm	Expected range, ppm	Z-score
1	A	183	THR	HG1	6.26	0.08 – 2.19	24.3

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. If well-defined core and ill-defined regions are not identified then it is shown as gray bars.

Random coil index (RCI) for chain A:

