



Full wwPDB NMR Structure Validation Report ⓘ

Jan 6, 2022 – 04:14 pm GMT

PDB ID : 7PRD
Title : Solution structure of the chimeric Nrd1-Nab3 heterodimerization domains
Authors : Chaves-Arquero, B.; Martinez-Lumbreras, S.; Perez-Canadillas, J.M.
Deposited on : 2021-09-21

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

MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
RCI : v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV : Wang et al. (2010)
ShiftChecker : 2.24
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.24

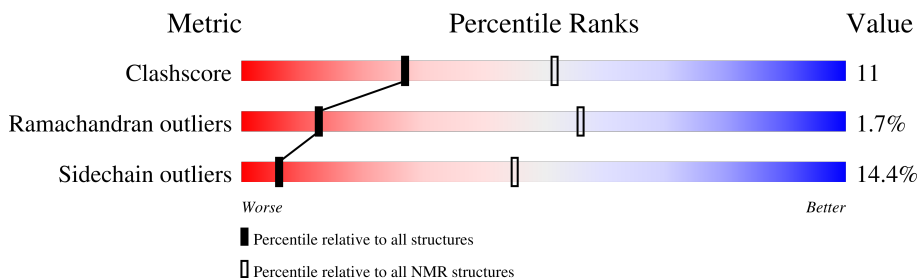
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

SOLUTION NMR

The overall completeness of chemical shifts assignment is 94%.

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	158937	12864
Ramachandran outliers	154571	11451
Sidechain outliers	154315	11428

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	125	 66% 21% 14%

2 Ensemble composition and analysis

This entry contains 20 models. Model 1 is the overall representative, medoid model (most similar to other models).

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:167-A:274 (108)	0.58	1

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 2 clusters. No single-model clusters were found.

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

3 Entry composition

There is only 1 type of molecule in this entry. The entry contains 1968 atoms, of which 993 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1.

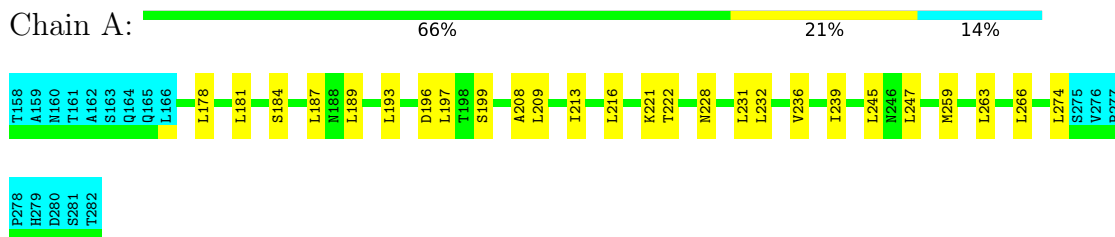
Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	125	1968	610	993	168	192	5	0

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: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1

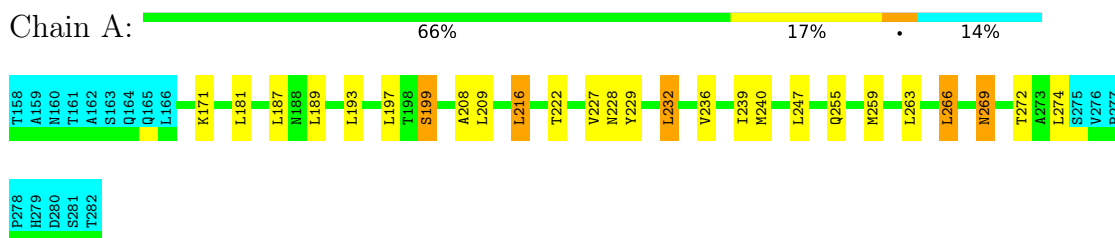


4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

4.2.1 Score per residue for model 1 (medoid)

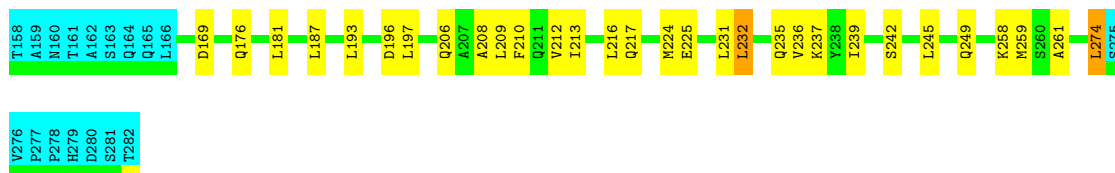
- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



4.2.2 Score per residue for model 2

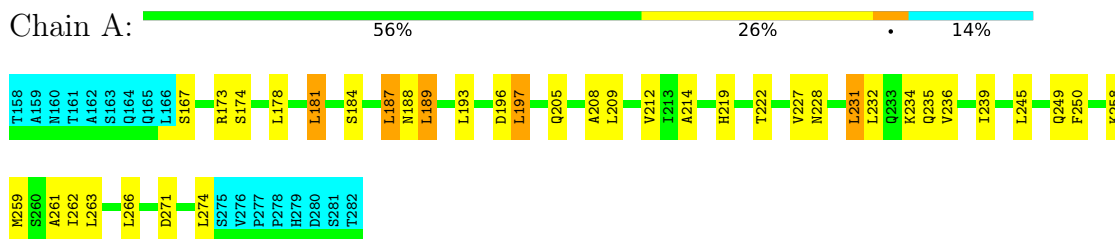
- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1





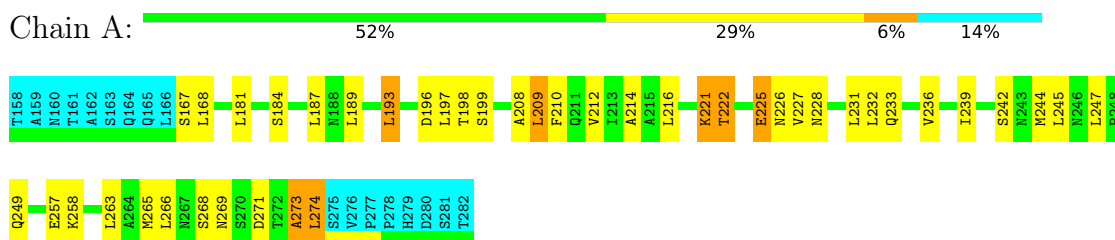
4.2.3 Score per residue for model 3

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



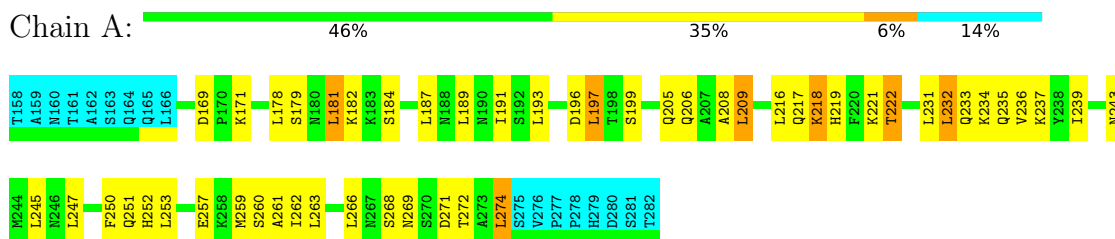
4.2.4 Score per residue for model 4

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



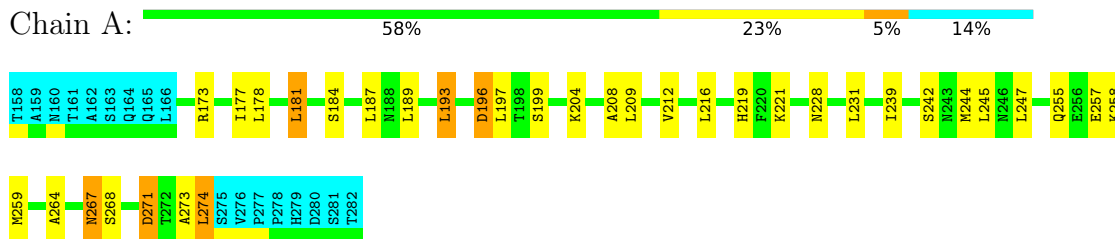
4.2.5 Score per residue for model 5

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



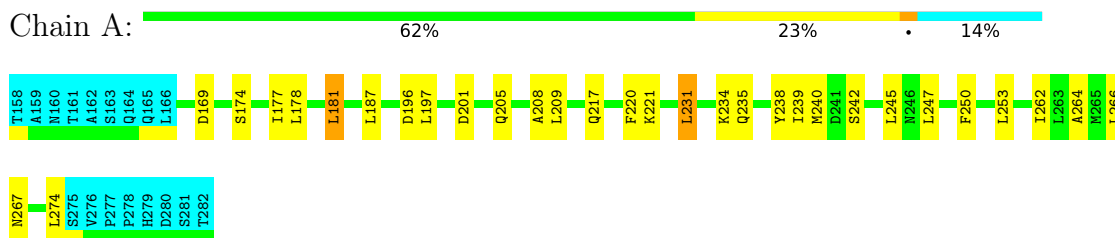
4.2.6 Score per residue for model 6

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



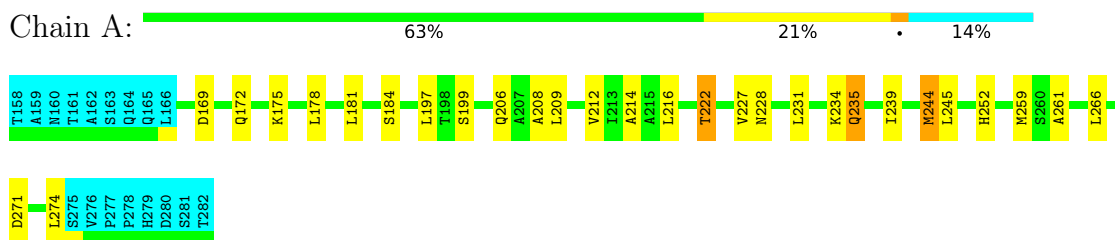
4.2.7 Score per residue for model 7

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



4.2.8 Score per residue for model 8

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



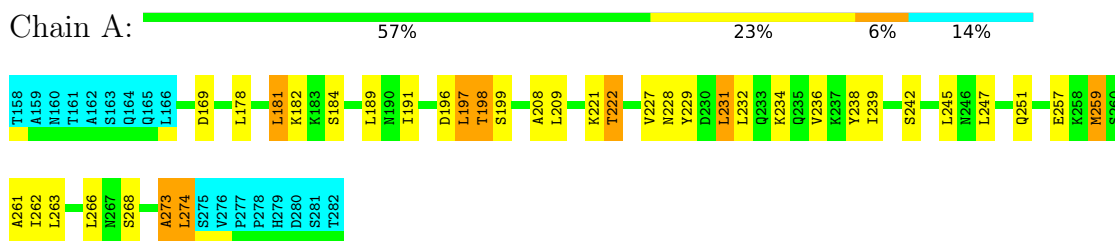
4.2.9 Score per residue for model 9

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



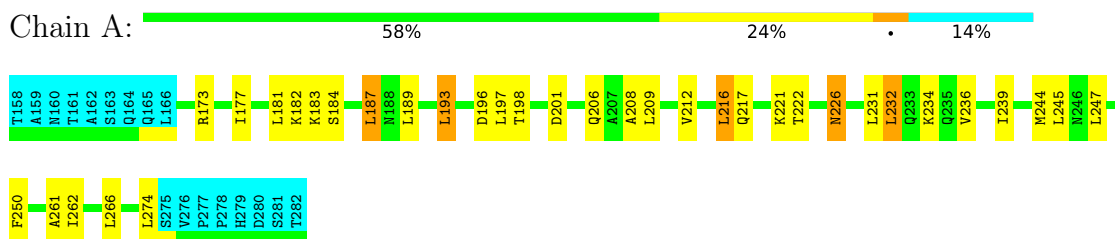
4.2.10 Score per residue for model 10

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



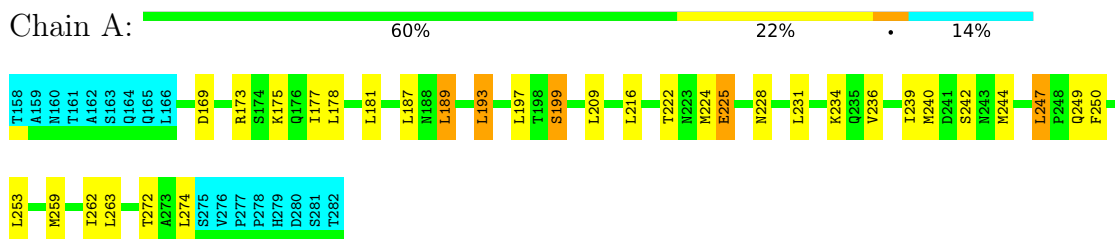
4.2.11 Score per residue for model 11

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



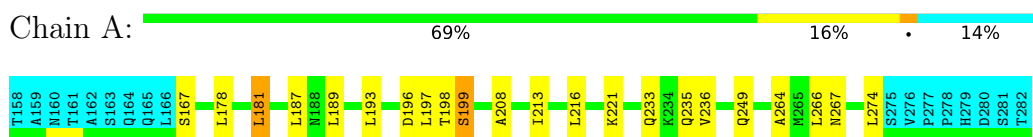
4.2.12 Score per residue for model 12

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



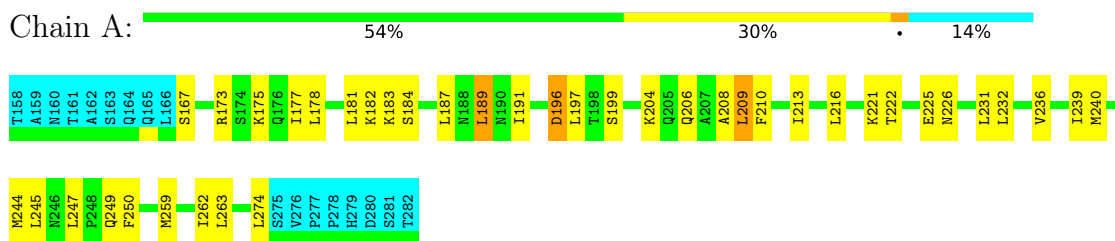
4.2.13 Score per residue for model 13

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



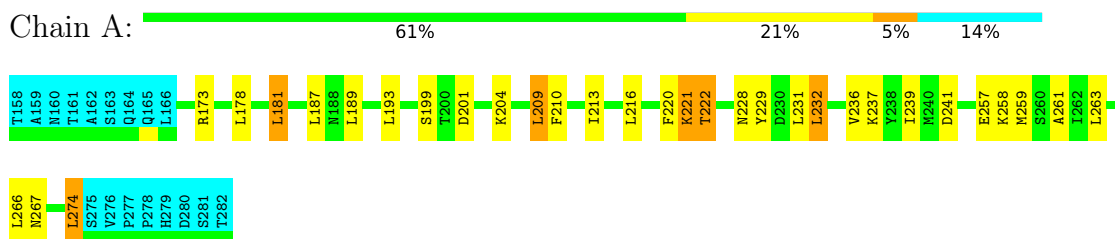
4.2.14 Score per residue for model 14

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



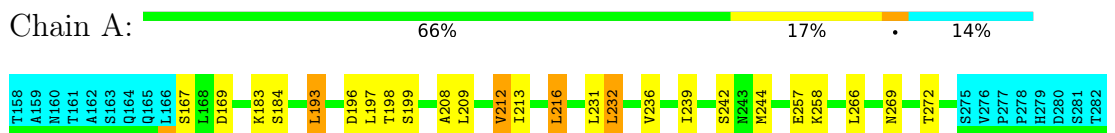
4.2.15 Score per residue for model 15

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



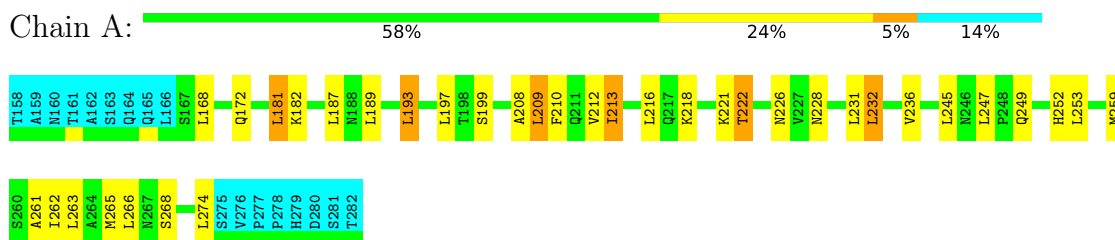
4.2.16 Score per residue for model 16

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



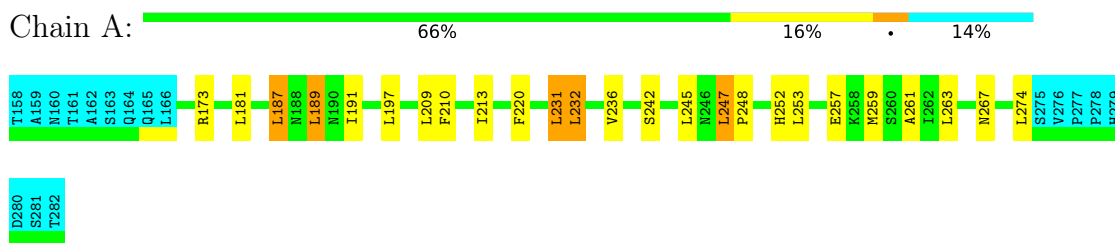
4.2.17 Score per residue for model 17

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



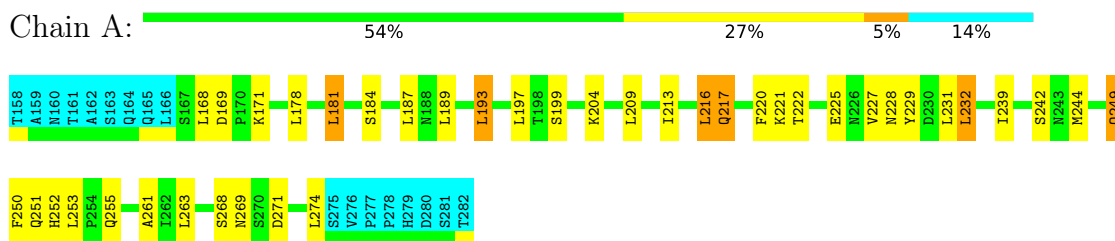
4.2.18 Score per residue for model 18

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



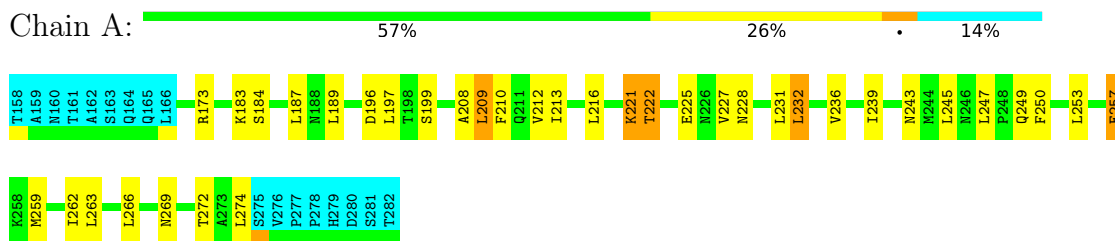
4.2.19 Score per residue for model 19

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



4.2.20 Score per residue for model 20

- Molecule 1: Protein NRD1,HLJ1_G0022400.mRNA.1.CDS.1



5 Refinement protocol and experimental data overview

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

Of the 50 calculated structures, 20 were deposited, based on the following criterion: *target function*.

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

Software name	Classification	Version
CYANA	structure calculation	

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	1603
Number of shifts mapped to atoms	1603
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Assignment completeness (well-defined parts)	94%

6 Model quality

6.1 Standard geometry

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	853	880	880	19±5
All	All	17060	17600	17600	379

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 11.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:209:LEU:HD23	1:A:236:VAL:HG13	0.98	1.30	1	6
1:A:189:LEU:HD11	1:A:263:LEU:HD22	0.90	1.42	4	3
1:A:187:LEU:HD21	1:A:189:LEU:HD12	0.84	1.49	6	3
1:A:214:ALA:HB1	1:A:227:VAL:HG21	0.82	1.50	9	4
1:A:187:LEU:HD21	1:A:263:LEU:HD23	0.82	1.49	18	2
1:A:209:LEU:HD12	1:A:245:LEU:HD11	0.79	1.53	14	1
1:A:189:LEU:HD23	1:A:191:ILE:HD12	0.79	1.55	14	1
1:A:197:LEU:HD12	1:A:212:VAL:HG21	0.78	1.53	20	5
1:A:187:LEU:HD12	1:A:189:LEU:HD11	0.72	1.61	3	1
1:A:197:LEU:HD21	1:A:245:LEU:HD22	0.71	1.61	20	3
1:A:187:LEU:HD11	1:A:263:LEU:HD23	0.71	1.60	14	4
1:A:193:LEU:HD11	1:A:197:LEU:HD13	0.68	1.64	6	1
1:A:193:LEU:HD21	1:A:197:LEU:HD13	0.68	1.66	11	1
1:A:210:PHE:CE2	1:A:236:VAL:HG11	0.67	2.24	17	5

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:197:LEU:HD13	1:A:245:LEU:HD22	0.67	1.67	10	2
1:A:209:LEU:HD21	1:A:245:LEU:HD11	0.67	1.67	11	1
1:A:196:ASP:CB	1:A:208:ALA:HB2	0.64	2.22	13	8
1:A:197:LEU:CD2	1:A:245:LEU:HD22	0.64	2.22	11	4
1:A:209:LEU:HD11	1:A:245:LEU:HD11	0.64	1.69	18	4
1:A:239:ILE:HD11	1:A:266:LEU:CD2	0.64	2.22	11	1
1:A:197:LEU:HD22	1:A:212:VAL:HG21	0.63	1.70	8	1
1:A:231:LEU:HD13	1:A:274:LEU:HD22	0.63	1.69	8	1
1:A:249:GLN:O	1:A:253:LEU:HD13	0.63	1.94	19	3
1:A:178:LEU:HD13	1:A:249:GLN:CB	0.62	2.24	3	2
1:A:187:LEU:HD22	1:A:263:LEU:HD23	0.62	1.71	17	1
1:A:193:LEU:HD13	1:A:193:LEU:N	0.62	2.10	12	1
1:A:187:LEU:HG	1:A:263:LEU:HD23	0.62	1.72	3	1
1:A:197:LEU:CD1	1:A:212:VAL:HG21	0.61	2.25	20	4
1:A:187:LEU:HD12	1:A:189:LEU:CD1	0.61	2.26	3	1
1:A:181:LEU:HD21	1:A:264:ALA:HB3	0.61	1.73	13	3
1:A:231:LEU:HD23	1:A:271:ASP:O	0.60	1.95	8	1
1:A:274:LEU:O	1:A:274:LEU:HD13	0.60	1.97	12	3
1:A:209:LEU:HD12	1:A:245:LEU:CD2	0.60	2.26	4	1
1:A:205:GLN:HG2	1:A:245:LEU:HD23	0.60	1.74	3	2
1:A:274:LEU:HD13	1:A:274:LEU:O	0.60	1.96	14	2
1:A:235:GLN:NE2	1:A:266:LEU:HD23	0.60	2.12	5	2
1:A:187:LEU:HD13	1:A:263:LEU:HD22	0.60	1.73	19	1
1:A:239:ILE:HD12	1:A:244:MET:HE3	0.59	1.74	9	2
1:A:193:LEU:CD2	1:A:197:LEU:HD13	0.59	2.28	11	1
1:A:239:ILE:HD11	1:A:266:LEU:HG	0.59	1.73	15	1
1:A:208:ALA:O	1:A:212:VAL:HG23	0.59	1.97	17	1
1:A:187:LEU:HD11	1:A:263:LEU:CD2	0.59	2.26	9	2
1:A:239:ILE:HD11	1:A:266:LEU:HB2	0.59	1.73	10	1
1:A:174:SER:O	1:A:178:LEU:HD12	0.59	1.98	3	1
1:A:193:LEU:HB2	1:A:197:LEU:HD23	0.59	1.74	16	2
1:A:181:LEU:HD13	1:A:261:ALA:CB	0.58	2.27	5	1
1:A:173:ARG:O	1:A:177:ILE:HG23	0.58	1.97	6	4
1:A:189:LEU:HD23	1:A:219:HIS:CD2	0.58	2.33	3	2
1:A:198:THR:HG21	1:A:258:LYS:NZ	0.58	2.14	4	2
1:A:239:ILE:HG23	1:A:244:MET:CG	0.58	2.28	8	3
1:A:178:LEU:HD13	1:A:249:GLN:HB2	0.58	1.76	3	1
1:A:209:LEU:CD1	1:A:245:LEU:HD11	0.57	2.29	14	4
1:A:181:LEU:HD11	1:A:261:ALA:HA	0.57	1.74	8	6
1:A:213:ILE:HD13	1:A:236:VAL:HG22	0.57	1.76	18	1
1:A:196:ASP:HB2	1:A:208:ALA:HB2	0.57	1.76	9	6

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:239:ILE:HD11	1:A:266:LEU:HD12	0.57	1.76	1	2
1:A:250:PHE:CZ	1:A:262:ILE:HD11	0.57	2.34	3	7
1:A:189:LEU:HD23	1:A:191:ILE:CD1	0.56	2.29	14	2
1:A:231:LEU:HD23	1:A:274:LEU:HB2	0.56	1.75	20	4
1:A:209:LEU:HD21	1:A:239:ILE:HB	0.56	1.74	3	5
1:A:196:ASP:HB3	1:A:208:ALA:HB2	0.56	1.77	14	6
1:A:197:LEU:HD12	1:A:197:LEU:O	0.56	2.01	1	4
1:A:209:LEU:HD23	1:A:236:VAL:CG1	0.56	2.30	3	1
1:A:178:LEU:HD21	1:A:250:PHE:HB2	0.56	1.76	19	1
1:A:214:ALA:CB	1:A:227:VAL:HG21	0.55	2.30	9	2
1:A:187:LEU:CD2	1:A:189:LEU:HD12	0.55	2.27	6	2
1:A:197:LEU:HD13	1:A:245:LEU:HG	0.55	1.78	7	2
1:A:210:PHE:CE1	1:A:236:VAL:HG21	0.55	2.37	4	2
1:A:216:LEU:O	1:A:216:LEU:HD12	0.55	2.02	16	3
1:A:213:ILE:HD13	1:A:266:LEU:HD21	0.55	1.79	17	1
1:A:239:ILE:HG23	1:A:244:MET:HG3	0.54	1.79	8	1
1:A:193:LEU:CD1	1:A:197:LEU:HD13	0.54	2.31	6	1
1:A:181:LEU:HD21	1:A:261:ALA:HA	0.54	1.80	19	2
1:A:197:LEU:O	1:A:197:LEU:HD13	0.53	2.04	12	1
1:A:209:LEU:HD11	1:A:239:ILE:CG2	0.53	2.33	5	2
1:A:232:LEU:O	1:A:236:VAL:HG23	0.53	2.03	3	7
1:A:231:LEU:O	1:A:231:LEU:HD13	0.53	2.03	15	2
1:A:193:LEU:HD11	1:A:258:LYS:HD3	0.53	1.81	16	1
1:A:269:ASN:HB3	1:A:272:THR:HG22	0.52	1.80	16	4
1:A:266:LEU:O	1:A:272:THR:HG23	0.52	2.04	5	3
1:A:197:LEU:HA	1:A:208:ALA:HB3	0.52	1.81	8	4
1:A:209:LEU:HD12	1:A:245:LEU:HD21	0.52	1.81	4	1
1:A:181:LEU:HD13	1:A:261:ALA:HB1	0.52	1.81	5	1
1:A:217:GLN:NE2	1:A:231:LEU:HD11	0.52	2.20	7	1
1:A:197:LEU:HD12	1:A:250:PHE:CE2	0.52	2.40	5	1
1:A:213:ILE:HB	1:A:232:LEU:HD21	0.51	1.81	20	3
1:A:197:LEU:HD23	1:A:197:LEU:O	0.51	2.04	6	4
1:A:193:LEU:HD11	1:A:258:LYS:HG2	0.51	1.81	9	1
1:A:227:VAL:HG12	1:A:232:LEU:HD11	0.51	1.82	10	1
1:A:187:LEU:CD1	1:A:263:LEU:HD22	0.51	2.35	19	1
1:A:193:LEU:HD23	1:A:197:LEU:HG	0.51	1.82	5	1
1:A:231:LEU:HD12	1:A:235:GLN:HG3	0.51	1.82	7	1
1:A:231:LEU:CD2	1:A:274:LEU:HD13	0.51	2.35	11	1
1:A:217:GLN:NE2	1:A:274:LEU:HD13	0.51	2.20	19	3
1:A:273:ALA:O	1:A:274:LEU:HD22	0.50	2.06	6	3
1:A:229:TYR:HA	1:A:232:LEU:HD12	0.50	1.82	10	1

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:239:ILE:HD12	1:A:244:MET:CE	0.50	2.36	6	2
1:A:193:LEU:CD2	1:A:197:LEU:HD23	0.50	2.36	17	1
1:A:197:LEU:HD23	1:A:245:LEU:HG	0.50	1.83	4	2
1:A:227:VAL:CG1	1:A:232:LEU:HD11	0.50	2.37	10	1
1:A:193:LEU:HD22	1:A:258:LYS:HB3	0.50	1.83	15	1
1:A:220:PHE:CD1	1:A:274:LEU:HD11	0.50	2.42	7	2
1:A:209:LEU:HD11	1:A:245:LEU:CD1	0.50	2.36	8	2
1:A:231:LEU:HD22	1:A:274:LEU:HB2	0.50	1.84	8	1
1:A:178:LEU:CD1	1:A:247:LEU:HD23	0.50	2.36	10	1
1:A:209:LEU:HD22	1:A:236:VAL:HG13	0.50	1.82	14	2
1:A:239:ILE:CG2	1:A:245:LEU:HD21	0.49	2.37	20	1
1:A:205:GLN:HG3	1:A:245:LEU:HD23	0.49	1.84	5	1
1:A:274:LEU:HD12	1:A:274:LEU:O	0.49	2.08	3	1
1:A:187:LEU:HD12	1:A:189:LEU:HG	0.49	1.83	11	2
1:A:193:LEU:CG	1:A:197:LEU:HD13	0.49	2.37	4	1
1:A:181:LEU:HD21	1:A:264:ALA:CB	0.49	2.37	7	2
1:A:178:LEU:HD11	1:A:253:LEU:HD22	0.49	1.85	7	1
1:A:235:GLN:HG3	1:A:266:LEU:HD12	0.49	1.85	8	1
1:A:178:LEU:HA	1:A:181:LEU:HD13	0.48	1.85	8	1
1:A:259:MET:HA	1:A:262:ILE:HD12	0.48	1.85	10	1
1:A:198:THR:HG22	1:A:251:GLN:NE2	0.48	2.24	10	1
1:A:189:LEU:HD12	1:A:259:MET:HG3	0.48	1.84	20	1
1:A:216:LEU:CB	1:A:274:LEU:HD21	0.48	2.38	6	2
1:A:232:LEU:HD23	1:A:236:VAL:HG23	0.48	1.85	11	4
1:A:178:LEU:HD23	1:A:181:LEU:HD13	0.48	1.85	15	1
1:A:252:HIS:O	1:A:253:LEU:HD12	0.48	2.09	17	1
1:A:216:LEU:HB3	1:A:274:LEU:HD21	0.47	1.84	6	1
1:A:189:LEU:HD13	1:A:259:MET:HE2	0.47	1.86	6	1
1:A:253:LEU:HD22	1:A:257:GLU:HG2	0.47	1.86	18	2
1:A:231:LEU:HD23	1:A:274:LEU:HD13	0.47	1.84	11	1
1:A:189:LEU:CD2	1:A:263:LEU:HD22	0.47	2.39	17	1
1:A:239:ILE:HD11	1:A:266:LEU:HD22	0.47	1.85	11	1
1:A:221:LYS:O	1:A:222:THR:HG23	0.47	2.10	4	6
1:A:189:LEU:HD12	1:A:191:ILE:H	0.46	1.71	18	1
1:A:214:ALA:HB1	1:A:227:VAL:CG2	0.46	2.40	3	1
1:A:175:LYS:HG2	1:A:247:LEU:HD21	0.46	1.85	12	1
1:A:187:LEU:O	1:A:187:LEU:HD12	0.46	2.10	1	1
1:A:178:LEU:HA	1:A:181:LEU:HD23	0.46	1.87	19	1
1:A:191:ILE:HD12	1:A:259:MET:HE3	0.46	1.88	10	1
1:A:209:LEU:CD2	1:A:245:LEU:HD11	0.46	2.41	17	1
1:A:209:LEU:HD11	1:A:239:ILE:HG21	0.46	1.85	3	2

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:198:THR:HG21	1:A:258:LYS:CE	0.46	2.41	16	1
1:A:182:LYS:HE3	1:A:253:LEU:HD21	0.46	1.88	5	1
1:A:178:LEU:HA	1:A:181:LEU:HD12	0.45	1.88	5	1
1:A:231:LEU:HD11	1:A:271:ASP:O	0.45	2.10	6	1
1:A:239:ILE:HD12	1:A:244:MET:SD	0.45	2.51	19	5
1:A:239:ILE:HD11	1:A:266:LEU:HB3	0.45	1.88	7	1
1:A:239:ILE:CG2	1:A:245:LEU:HD13	0.45	2.41	5	1
1:A:232:LEU:HD23	1:A:236:VAL:CG2	0.45	2.41	11	1
1:A:267:ASN:HA	1:A:273:ALA:HB2	0.45	1.86	6	1
1:A:197:LEU:HD21	1:A:209:LEU:HD12	0.45	1.87	12	1
1:A:247:LEU:HD23	1:A:248:PRO:HD2	0.45	1.88	18	1
1:A:189:LEU:CD1	1:A:263:LEU:HD22	0.45	2.29	4	1
1:A:216:LEU:HD23	1:A:216:LEU:N	0.45	2.26	9	9
1:A:209:LEU:HD23	1:A:213:ILE:HG13	0.45	1.87	14	1
1:A:209:LEU:HD23	1:A:245:LEU:HD11	0.45	1.87	17	1
1:A:197:LEU:HD12	1:A:245:LEU:HD13	0.45	1.88	18	1
1:A:274:LEU:O	1:A:274:LEU:HD12	0.45	2.12	8	2
1:A:227:VAL:HG12	1:A:232:LEU:CD1	0.45	2.42	1	1
1:A:193:LEU:HG	1:A:197:LEU:HD13	0.45	1.89	4	1
1:A:216:LEU:C	1:A:274:LEU:HD11	0.44	2.33	6	1
1:A:262:ILE:O	1:A:266:LEU:HD23	0.44	2.11	11	1
1:A:239:ILE:HD11	1:A:266:LEU:CD1	0.44	2.41	16	1
1:A:213:ILE:CD1	1:A:266:LEU:HD11	0.44	2.42	20	1
1:A:197:LEU:HD12	1:A:250:PHE:HE2	0.44	1.72	5	1
1:A:231:LEU:HD23	1:A:231:LEU:O	0.44	2.12	14	1
1:A:250:PHE:HZ	1:A:262:ILE:HD11	0.44	1.73	12	4
1:A:181:LEU:CD1	1:A:261:ALA:HB2	0.44	2.43	11	1
1:A:209:LEU:HD13	1:A:213:ILE:HG13	0.44	1.90	17	1
1:A:231:LEU:HD23	1:A:235:GLN:CG	0.44	2.43	3	1
1:A:210:PHE:CD2	1:A:236:VAL:HG11	0.44	2.48	18	1
1:A:213:ILE:HG13	1:A:236:VAL:HG22	0.43	1.90	9	2
1:A:193:LEU:HD13	1:A:193:LEU:H	0.43	1.72	12	1
1:A:187:LEU:HD13	1:A:263:LEU:HD23	0.43	1.90	17	1
1:A:197:LEU:CD2	1:A:212:VAL:HG21	0.43	2.42	3	1
1:A:220:PHE:HB3	1:A:274:LEU:HD11	0.43	1.89	15	1
1:A:212:VAL:CG1	1:A:213:ILE:N	0.43	2.81	16	1
1:A:193:LEU:HD22	1:A:258:LYS:HD2	0.43	1.90	2	1
1:A:209:LEU:HD11	1:A:239:ILE:HG22	0.43	1.91	5	1
1:A:174:SER:HA	1:A:177:ILE:CG1	0.43	2.44	7	1
1:A:181:LEU:CD1	1:A:253:LEU:HD21	0.43	2.44	9	1
1:A:209:LEU:HD21	1:A:239:ILE:CG2	0.42	2.44	15	1

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:274:LEU:HD13	1:A:274:LEU:C	0.42	2.34	13	2
1:A:224:MET:O	1:A:225:GLU:CB	0.42	2.67	2	1
1:A:205:GLN:CG	1:A:245:LEU:HD23	0.42	2.42	3	1
1:A:218:LYS:O	1:A:222:THR:HG23	0.42	2.14	5	1
1:A:239:ILE:HD11	1:A:266:LEU:CG	0.42	2.45	15	1
1:A:227:VAL:HG12	1:A:232:LEU:HD12	0.42	1.91	20	1
1:A:187:LEU:CG	1:A:263:LEU:HD23	0.42	2.44	3	1
1:A:253:LEU:HD13	1:A:257:GLU:OE1	0.42	2.14	5	1
1:A:272:THR:O	1:A:272:THR:OG1	0.42	2.37	5	1
1:A:232:LEU:HD13	1:A:236:VAL:HG23	0.42	1.92	17	1
1:A:217:GLN:HG2	1:A:274:LEU:HD12	0.42	1.92	9	1
1:A:193:LEU:HG	1:A:197:LEU:HD23	0.41	1.91	1	1
1:A:239:ILE:HG21	1:A:245:LEU:HD21	0.41	1.91	11	1
1:A:187:LEU:HG	1:A:189:LEU:HD13	0.41	1.91	14	1
1:A:209:LEU:HD12	1:A:245:LEU:CD1	0.41	2.34	14	1
1:A:231:LEU:HD13	1:A:231:LEU:C	0.41	2.36	15	1
1:A:206:GLN:HA	1:A:209:LEU:HD12	0.41	1.90	11	1
1:A:193:LEU:HD21	1:A:258:LYS:HB2	0.41	1.92	16	1
1:A:189:LEU:HD21	1:A:263:LEU:CD2	0.41	2.46	1	1
1:A:189:LEU:HD21	1:A:263:LEU:HD22	0.41	1.93	1	1
1:A:193:LEU:HD22	1:A:193:LEU:O	0.41	2.15	12	1
1:A:216:LEU:N	1:A:216:LEU:HD23	0.41	2.31	13	1
1:A:209:LEU:HD23	1:A:245:LEU:CD1	0.41	2.46	17	1
1:A:227:VAL:HG11	1:A:229:TYR:CZ	0.41	2.51	19	1
1:A:217:GLN:HG2	1:A:274:LEU:HD23	0.41	1.92	11	1
1:A:187:LEU:CD1	1:A:263:LEU:HD23	0.41	2.39	14	1
1:A:262:ILE:O	1:A:266:LEU:HD13	0.40	2.16	17	1
1:A:235:GLN:OE1	1:A:274:LEU:HD22	0.40	2.16	2	1
1:A:187:LEU:HD23	1:A:189:LEU:HB2	0.40	1.93	5	1
1:A:178:LEU:HD22	1:A:249:GLN:HB3	0.40	1.93	13	1
1:A:213:ILE:HG13	1:A:236:VAL:HG12	0.40	1.91	13	1
1:A:189:LEU:HD23	1:A:216:LEU:HD22	0.40	1.92	17	1
1:A:187:LEU:HD13	1:A:263:LEU:CD2	0.40	2.45	19	1
1:A:221:LYS:O	1:A:222:THR:C	0.40	2.59	19	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	108/125 (86%)	99±2 (92±2%)	7±2 (6±2%)	2±1 (2±1%)	13	56
All	All	2160/2500 (86%)	1986 (92%)	137 (6%)	37 (2%)	13	56

All 10 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	199	SER	12
1	A	228	ASN	9
1	A	225	GLU	5
1	A	268	SER	3
1	A	273	ALA	2
1	A	226	ASN	2
1	A	222	THR	1
1	A	189	LEU	1
1	A	182	LYS	1
1	A	183	LYS	1

6.3.2 Protein sidechains [i](#)

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	100/115 (87%)	86±4 (86±4%)	14±4 (14±4%)	6	45
All	All	2000/2300 (87%)	1711 (86%)	289 (14%)	6	45

All 69 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	181	LEU	13
1	A	222	THR	13
1	A	259	MET	12
1	A	247	LEU	11
1	A	184	SER	11
1	A	232	LEU	10

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Models (Total)
1	A	193	LEU	10
1	A	169	ASP	9
1	A	242	SER	9
1	A	221	LYS	9
1	A	187	LEU	7
1	A	231	LEU	7
1	A	234	LYS	7
1	A	209	LEU	7
1	A	274	LEU	6
1	A	189	LEU	6
1	A	257	GLU	6
1	A	199	SER	5
1	A	197	LEU	5
1	A	271	ASP	5
1	A	267	ASN	5
1	A	171	LYS	4
1	A	216	LEU	4
1	A	240	MET	4
1	A	206	GLN	4
1	A	249	GLN	4
1	A	167	SER	4
1	A	173	ARG	4
1	A	252	HIS	4
1	A	204	LYS	4
1	A	201	ASP	4
1	A	255	GLN	3
1	A	266	LEU	3
1	A	269	ASN	3
1	A	237	LYS	3
1	A	258	LYS	3
1	A	168	LEU	3
1	A	226	ASN	3
1	A	233	GLN	3
1	A	268	SER	3
1	A	196	ASP	3
1	A	238	TYR	3
1	A	182	LYS	3
1	A	198	THR	3
1	A	183	LYS	3
1	A	229	TYR	2
1	A	225	GLU	2
1	A	228	ASN	2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Models (Total)
1	A	265	MET	2
1	A	218	LYS	2
1	A	243	ASN	2
1	A	251	GLN	2
1	A	178	LEU	2
1	A	172	GLN	2
1	A	175	LYS	2
1	A	176	GLN	1
1	A	188	ASN	1
1	A	179	SER	1
1	A	219	HIS	1
1	A	260	SER	1
1	A	235	GLN	1
1	A	244	MET	1
1	A	224	MET	1
1	A	272	THR	1
1	A	241	ASP	1
1	A	212	VAL	1
1	A	213	ILE	1
1	A	217	GLN	1
1	A	220	PHE	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 monosaccharides 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 [i](#)

The completeness of assignment taking into account all chemical shift lists is 94% for the well-defined parts and 94% for the entire structure.

7.1 Chemical shift list 1

File name: working_cs.cif

Chemical shift list name: SS5_CS_final.str

7.1.1 Bookkeeping [i](#)

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	1603
Number of shifts mapped to atoms	1603
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 [i](#)

The following table shows the suggested chemical shift referencing corrections.

Nucleus	# values	Correction \pm precision, ppm	Suggested action
$^{13}\text{C}_\alpha$	125	-0.35 ± 0.09	None needed (< 0.5 ppm)
$^{13}\text{C}_\beta$	122	0.19 ± 0.07	None needed (< 0.5 ppm)
$^{13}\text{C}'$	115	-0.29 ± 0.12	None needed (< 0.5 ppm)
^{15}N	116	-0.13 ± 0.27	None needed (< 0.5 ppm)

7.1.3 Completeness of resonance assignments [i](#)

The following table shows the completeness of the chemical shift assignments for the well-defined regions of the structure. The overall completeness is 94%, i.e. 1285 atoms were assigned a chemical shift out of a possible 1362. 20 out of 20 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^1H	^{13}C	^{15}N
Backbone	519/526 (99%)	209/209 (100%)	209/216 (97%)	101/101 (100%)
Sidechain	735/779 (94%)	449/459 (98%)	265/286 (93%)	21/34 (62%)

Continued on next page...

Continued from previous page...

	Total	¹ H	¹³ C	¹⁵ N
Aromatic	31/57 (54%)	26/31 (84%)	5/24 (21%)	0/2 (0%)
Overall	1285/1362 (94%)	684/699 (98%)	479/526 (91%)	122/137 (89%)

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 94%, i.e. 1446 atoms were assigned a chemical shift out of a possible 1542. 22 out of 22 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	¹ H	¹³ C	¹⁵ N
Backbone	596/607 (98%)	240/241 (100%)	240/250 (96%)	116/116 (100%)
Sidechain	817/871 (94%)	500/513 (97%)	293/321 (91%)	24/37 (65%)
Aromatic	33/64 (52%)	27/35 (77%)	6/26 (23%)	0/3 (0%)
Overall	1446/1542 (94%)	767/789 (97%)	539/597 (90%)	140/156 (90%)

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	258	LYS	HG2	-0.10	2.67 – 0.07	-5.7

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:

