Full wwPDB NMR Structure Validation Report (i)

May 28, 2020 – 08:01 pm BST

PDB ID	:	1KRI
Title	:	NMR Solution Structures of the Rhesus Rotavirus VP4 Sialic Acid Binding Domain without Ligand
Authors	:	Dormitzer, P.R.; Sun, Z.-Y.J.; Wagner, G.; Harrison, S.C.
Deposited on	:	2002-01-09

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 (i) symbol.

The following versions of software and data (see references (1)) were used in the production of this report:

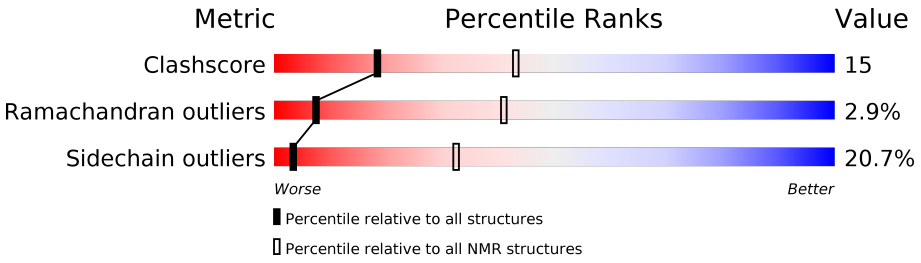
Cyrange	:	Kirchner and Güntert (2011)
NmrClust	:	Kelley et al. (1996)
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
RCI	:	v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV	:	Wang et al. (2010)
ShiftChecker	:	2.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

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	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 <=5%

Mol	Chain	Length	Quality of chain
1	A	186	49% 34% 14%

2 Ensemble composition and analysis

This entry contains 20 models. Model 7 is the overall representative, medoid model (most similar to other models). The authors have identified model 1 as representative, based on the following criterion: *least restraint violations*.

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:65-A:148, A:152-A:224 (157)	0.54	7

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 3 single-model clusters were found.

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

3 Entry composition

There is only 1 type of molecule in this entry. The entry contains 2482 atoms, of which 1210 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called VP4.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	160	2482	809	1210	201	257	5	0

4 Residue-property plots (i)

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: VP4

Chain A:

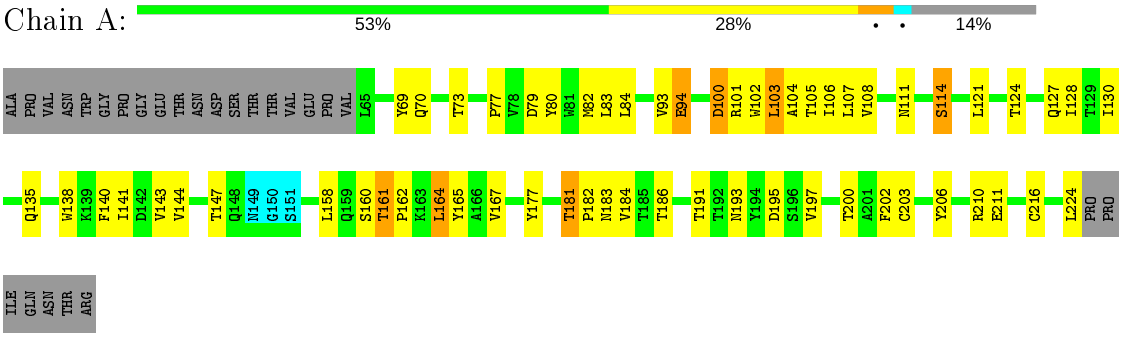
4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

4.2.1 Score per residue for model 1

- Molecule 1: VP4

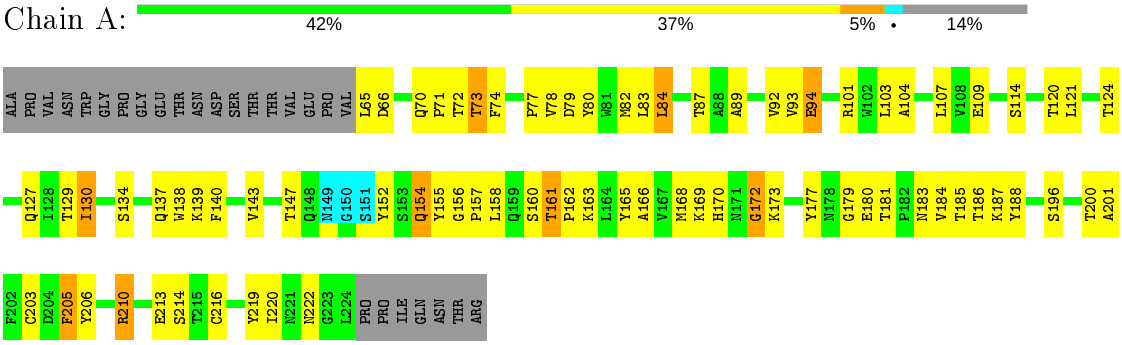
Chain A:



4.2.2 Score per residue for model 2

- Molecule 1: VP4

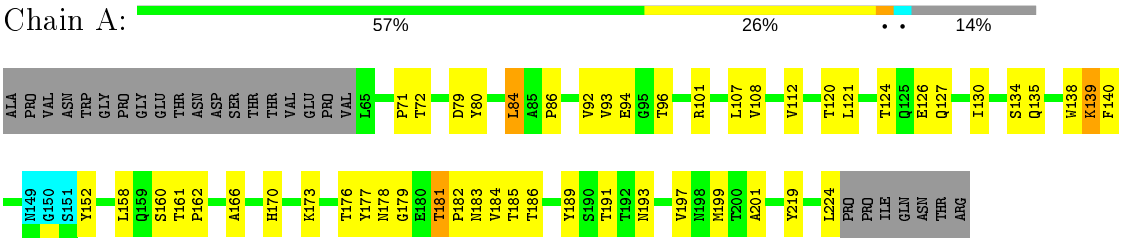
Chain A:



4.2.3 Score per residue for model 3

- Molecule 1: VP4

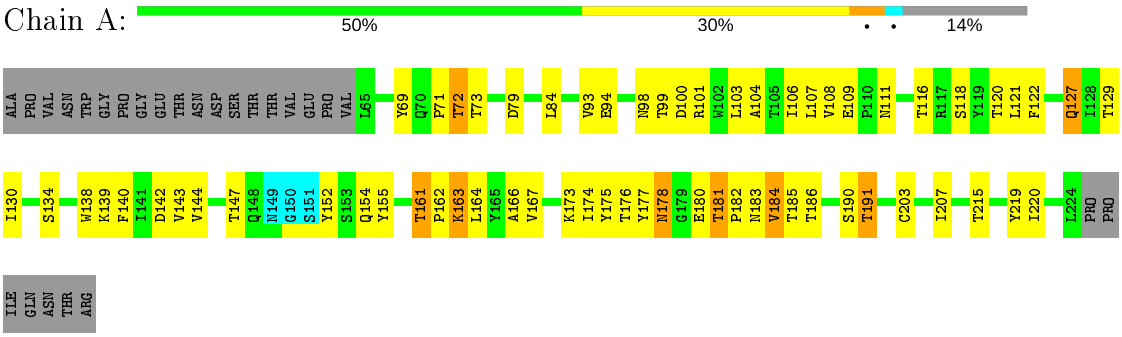
Chain A:



4.2.4 Score per residue for model 4

- Molecule 1: VP4

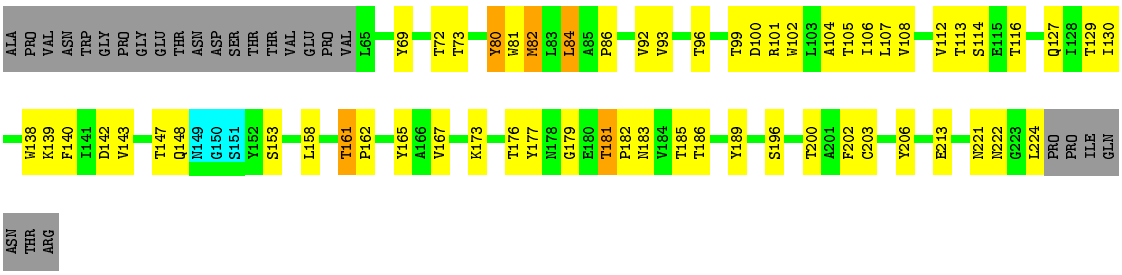
Chain A:



4.2.5 Score per residue for model 5

- Molecule 1: VP4

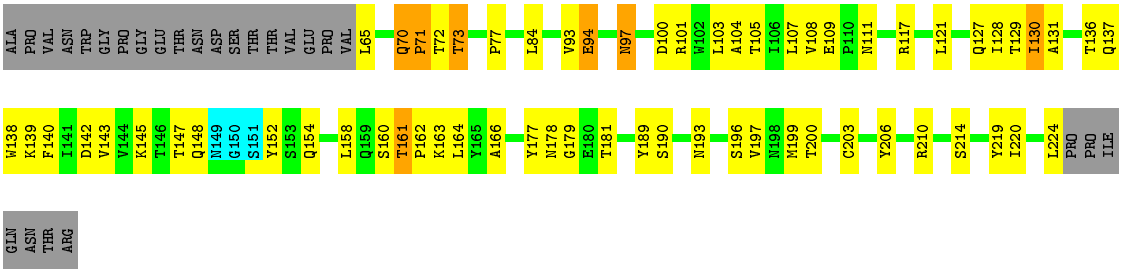
Chain A:



4.2.6 Score per residue for model 6

- Molecule 1: VP4

Chain A:



4.2.7 Score per residue for model 7 (medoid)

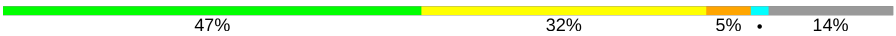
- Molecule 1: VP4

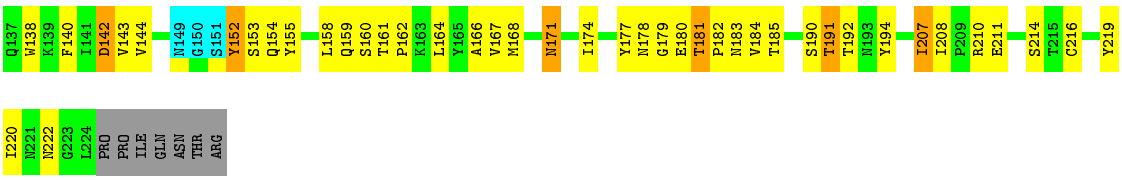
Chain A:

4.2.8 Score per residue for model 8

- Molecule 1: VP4

Chain A:

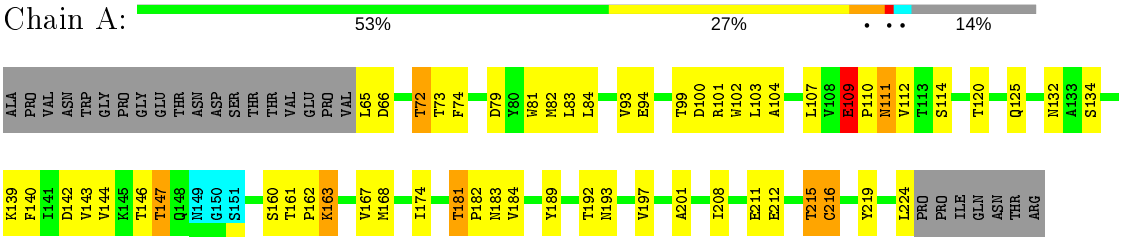




4.2.9 Score per residue for model 9

- Molecule 1: VP4

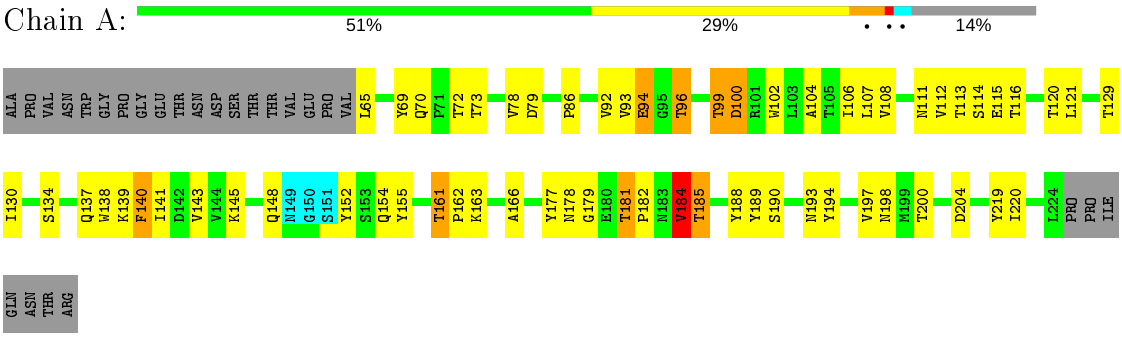
Chain A:



4.2.10 Score per residue for model 10

- Molecule 1: VP4

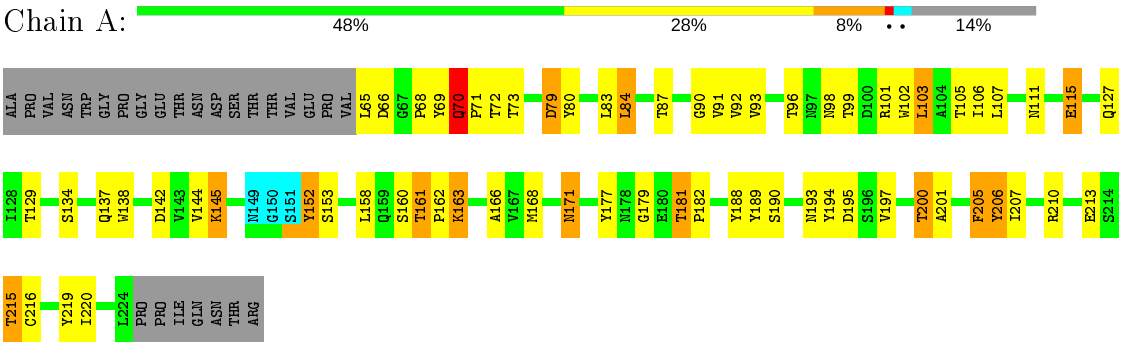
Chain A:



4.2.11 Score per residue for model 11

- Molecule 1: VP4

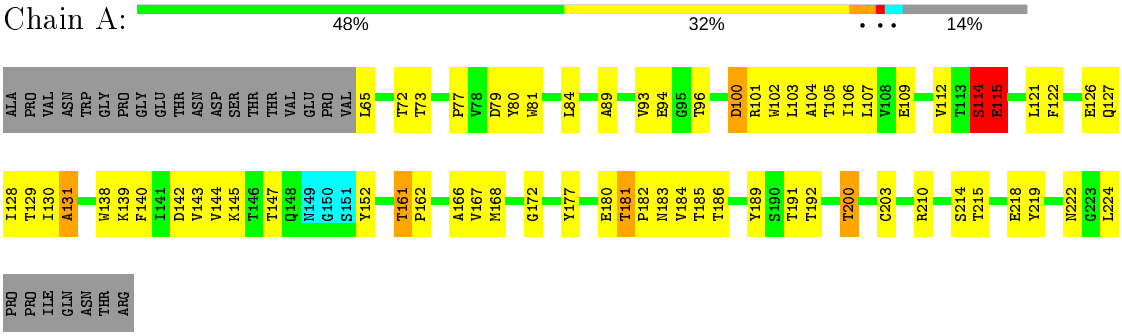
Chain A:



4.2.12 Score per residue for model 12

- Molecule 1: VP4

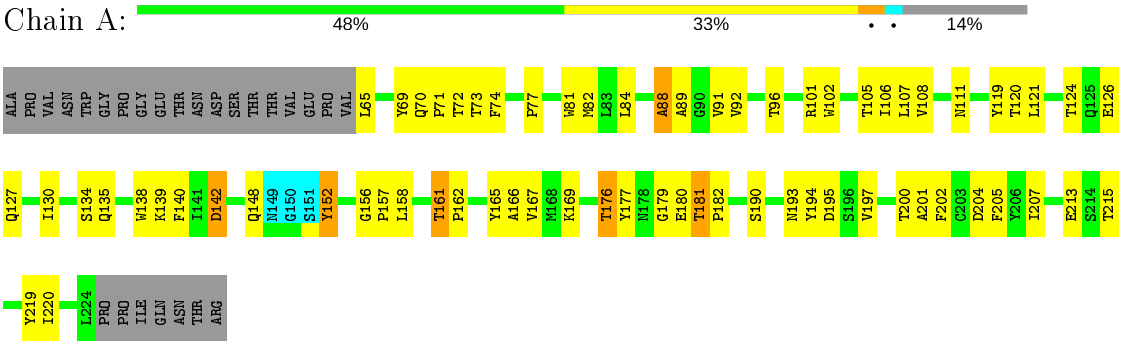
Chain A:



4.2.13 Score per residue for model 13

- Molecule 1: VP4

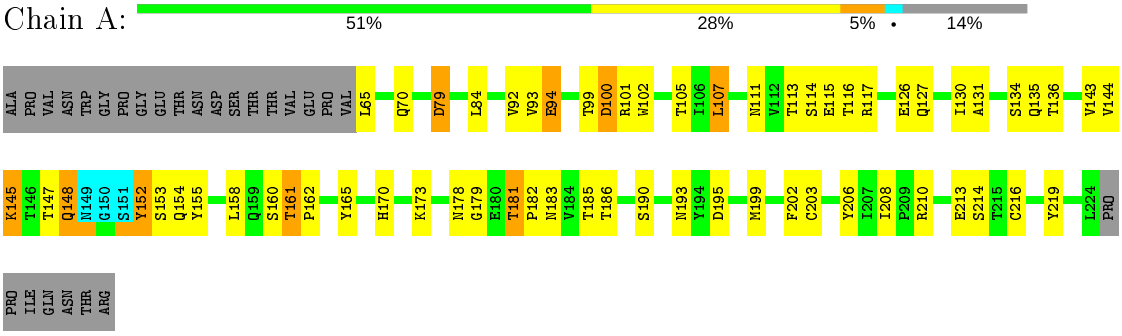
Chain A:



4.2.14 Score per residue for model 14

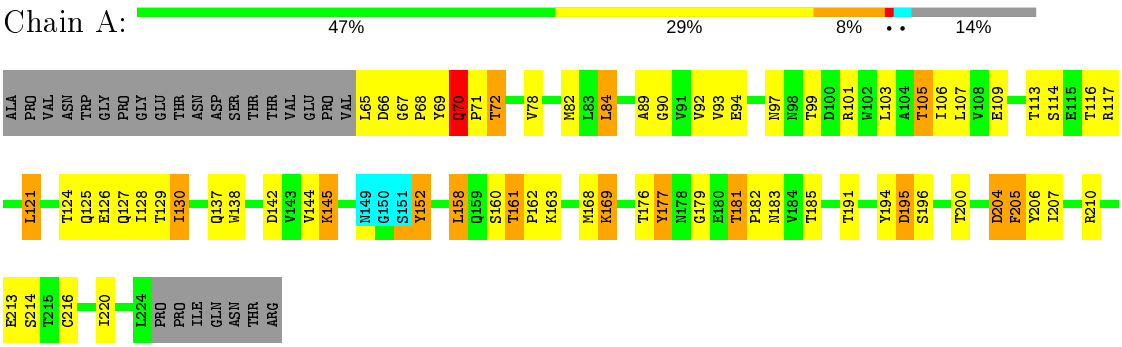
- Molecule 1: VP4

Chain A:



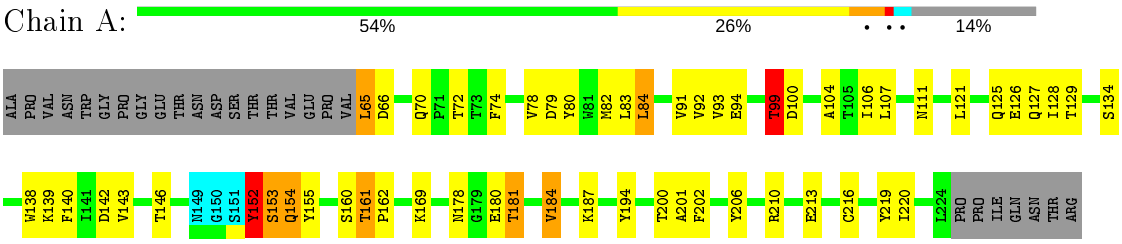
4.2.15 Score per residue for model 15

- Molecule 1: VP4



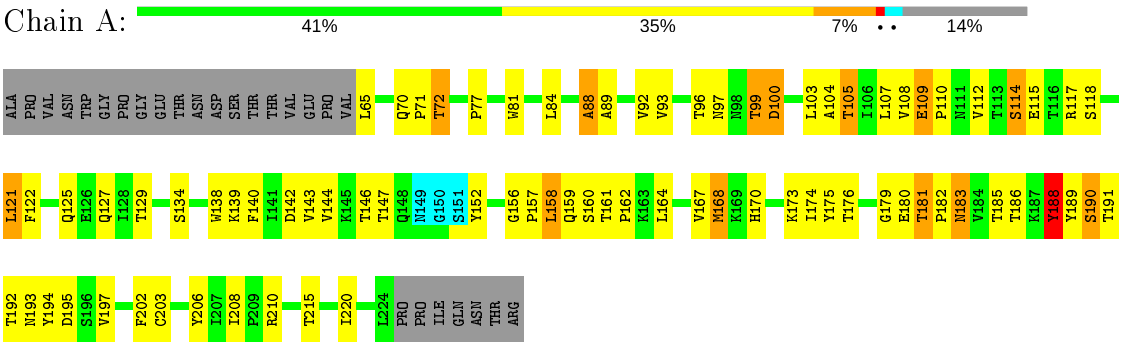
4.2.16 Score per residue for model 16

- Molecule 1: VP4



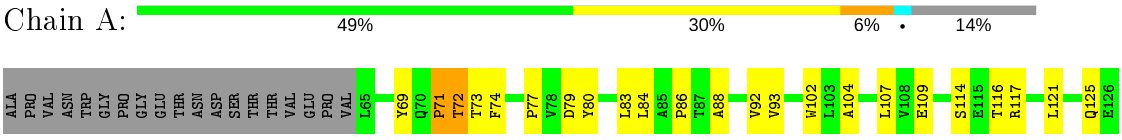
4.2.17 Score per residue for model 17

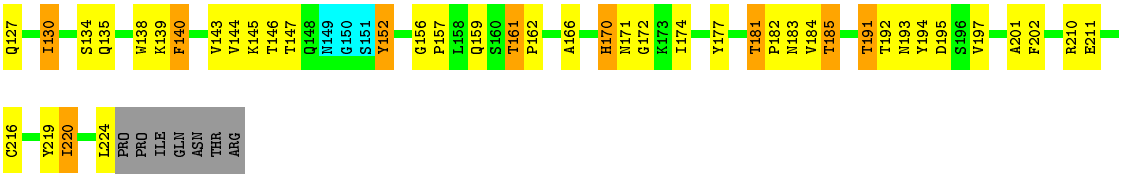
- Molecule 1: VP4



4.2.18 Score per residue for model 18

- Molecule 1: VP4

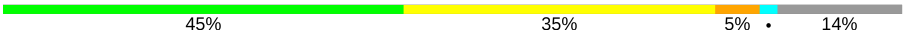


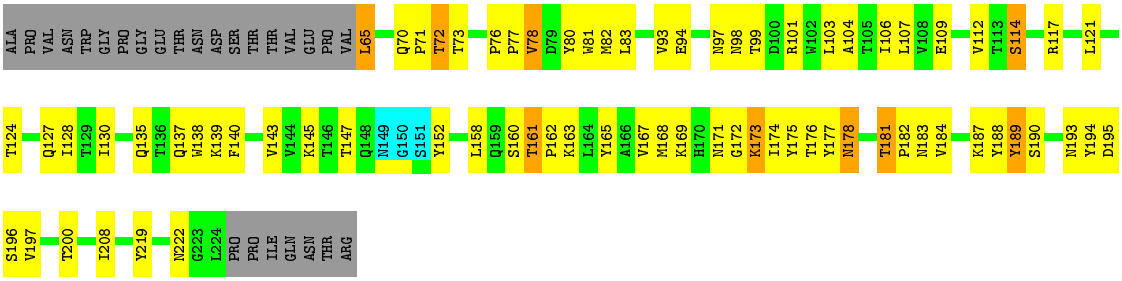


4.2.19 Score per residue for model 19

- Molecule 1: VP4

Chain A:

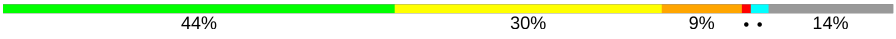


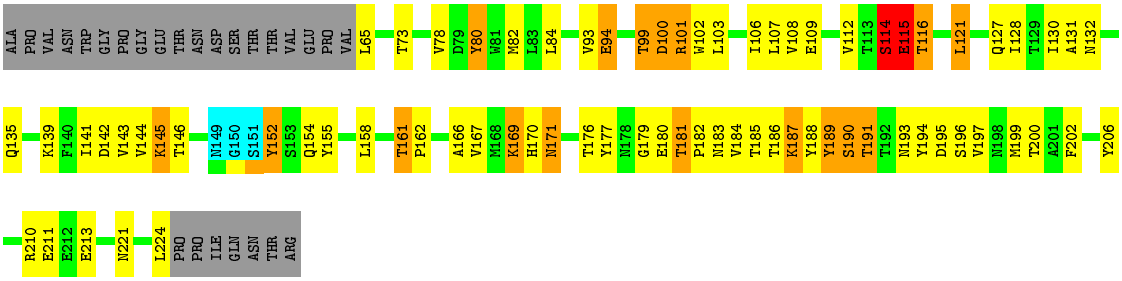


4.2.20 Score per residue for model 20

- Molecule 1: VP4

Chain A:





5 Refinement protocol and experimental data overview

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

Of the 25 calculated structures, 20 were deposited, based on the following criterion: *structures with the least restraint violations*.

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

Software name	Classification	Version
CNS	structure solution	1.0
CNS	refinement	1.0

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)	input_cs.cif
Number of chemical shift lists	1
Total number of shifts	1771
Number of shifts mapped to atoms	1771
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%

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

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	1254	1196	1194	36±7
All	All	25080	23920	23880	717

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 15.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:174:ILE:O	1:A:188:TYR:HB3	0.91	1.65	17	1
1:A:184:VAL:HG22	1:A:220:ILE:HD11	0.90	1.43	18	1
1:A:103:LEU:HD12	1:A:144:VAL:HG22	0.88	1.43	9	8
1:A:167:VAL:HG23	1:A:176:THR:HG22	0.87	1.44	4	2
1:A:173:LYS:HB3	1:A:189:TYR:O	0.86	1.70	19	1
1:A:107:LEU:HD13	1:A:140:PHE:CD1	0.83	2.07	18	5
1:A:104:ALA:HB3	1:A:143:VAL:CG2	0.83	2.03	17	11
1:A:205:PHE:CE2	1:A:207:ILE:HD11	0.83	2.09	11	1
1:A:104:ALA:HB3	1:A:143:VAL:HG23	0.82	1.49	18	4
1:A:140:PHE:CD1	1:A:158:LEU:HD23	0.79	2.13	3	1
1:A:66:ASP:HB3	1:A:207:ILE:HG23	0.79	1.54	8	1
1:A:78:VAL:HG11	1:A:194:TYR:CE2	0.79	2.12	7	3
1:A:180:GLU:O	1:A:184:VAL:HG13	0.79	1.77	16	4
1:A:107:LEU:HD13	1:A:140:PHE:CD2	0.77	2.14	16	9

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:166:ALA:HB3	1:A:177:TYR:CG	0.77	2.14	18	1
1:A:105:THR:HG23	1:A:142:ASP:OD1	0.77	1.79	11	7
1:A:193:ASN:O	1:A:197:VAL:HG23	0.77	1.79	17	11
1:A:201:ALA:HB1	1:A:205:PHE:CZ	0.77	2.14	2	1
1:A:107:LEU:HD22	1:A:140:PHE:CE2	0.76	2.15	8	1
1:A:84:LEU:HD21	1:A:93:VAL:HG21	0.76	1.57	3	1
1:A:110:PRO:O	1:A:112:VAL:HG23	0.76	1.79	17	2
1:A:84:LEU:HD11	1:A:93:VAL:HG13	0.76	1.58	11	1
1:A:77:PRO:O	1:A:78:VAL:HG22	0.75	1.81	19	1
1:A:103:LEU:CD1	1:A:144:VAL:HG22	0.75	2.11	11	3
1:A:121:LEU:O	1:A:124:THR:HG22	0.75	1.82	3	1
1:A:143:VAL:HG12	1:A:154:GLN:HG3	0.75	1.59	14	2
1:A:73:THR:HG23	1:A:200:THR:OG1	0.75	1.81	10	4
1:A:178:ASN:O	1:A:185:THR:HG22	0.74	1.82	4	1
1:A:158:LEU:HD12	1:A:179:GLY:O	0.74	1.82	11	10
1:A:112:VAL:HG11	1:A:130:ILE:HD12	0.73	1.60	3	3
1:A:121:LEU:HD21	1:A:128:ILE:HD11	0.72	1.61	1	1
1:A:107:LEU:HD12	1:A:139:LYS:O	0.72	1.84	3	6
1:A:103:LEU:HD12	1:A:144:VAL:CG2	0.71	2.16	4	1
1:A:166:ALA:HB3	1:A:177:TYR:CD1	0.71	2.20	10	8
1:A:205:PHE:CZ	1:A:207:ILE:HD11	0.71	2.21	11	1
1:A:177:TYR:CE2	1:A:220:ILE:HD12	0.71	2.20	2	1
1:A:73:THR:OG1	1:A:200:THR:HG23	0.71	1.86	13	3
1:A:166:ALA:HB3	1:A:177:TYR:CD2	0.70	2.20	12	3
1:A:66:ASP:CB	1:A:207:ILE:HG23	0.70	2.17	8	1
1:A:103:LEU:HD11	1:A:144:VAL:HG22	0.69	1.64	11	1
1:A:161:THR:HG23	1:A:181:THR:OG1	0.69	1.87	11	2
1:A:107:LEU:HD11	1:A:138:TRP:HB3	0.69	1.64	3	13
1:A:107:LEU:HD11	1:A:138:TRP:CB	0.69	2.18	2	6
1:A:181:THR:HG22	1:A:221:ASN:HA	0.69	1.65	20	2
1:A:167:VAL:HA	1:A:176:THR:HG22	0.68	1.65	19	1
1:A:121:LEU:HD11	1:A:128:ILE:HD11	0.67	1.64	20	4
1:A:107:LEU:HD13	1:A:140:PHE:CE1	0.67	2.23	9	6
1:A:84:LEU:HD11	1:A:93:VAL:HG11	0.67	1.65	5	1
1:A:88:ALA:HB1	1:A:138:TRP:CZ3	0.67	2.24	13	2
1:A:114:SER:HA	1:A:131:ALA:HB2	0.67	1.66	8	2
1:A:121:LEU:HD13	1:A:152:TYR:OH	0.67	1.90	8	1
1:A:146:THR:HG23	1:A:147:THR:HG23	0.67	1.65	7	1
1:A:102:TRP:O	1:A:144:VAL:HG13	0.67	1.89	12	6
1:A:107:LEU:HD13	1:A:140:PHE:CE2	0.67	2.24	5	7
1:A:108:VAL:HG12	1:A:139:LYS:O	0.66	1.90	20	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:90:GLY:C	1:A:106:ILE:HG23	0.66	2.11	11	2
1:A:107:LEU:HD13	1:A:140:PHE:CZ	0.66	2.24	9	3
1:A:166:ALA:HB3	1:A:177:TYR:CE1	0.66	2.26	2	2
1:A:84:LEU:HD22	1:A:92:VAL:HG12	0.66	1.66	15	2
1:A:72:THR:N	1:A:201:ALA:HB3	0.66	2.06	11	1
1:A:140:PHE:CD2	1:A:158:LEU:HD23	0.65	2.26	17	1
1:A:137:GLN:HG3	1:A:161:THR:HG23	0.65	1.66	15	1
1:A:162:PRO:CD	1:A:181:THR:HG21	0.65	2.22	4	10
1:A:73:THR:HG23	1:A:74:PHE:CD2	0.65	2.27	9	1
1:A:161:THR:N	1:A:162:PRO:CD	0.64	2.60	3	20
1:A:143:VAL:HG12	1:A:154:GLN:CG	0.64	2.22	14	2
1:A:104:ALA:HB3	1:A:143:VAL:HG22	0.64	1.69	16	5
1:A:146:THR:O	1:A:147:THR:HG23	0.64	1.93	9	1
1:A:112:VAL:CG1	1:A:130:ILE:HD12	0.64	2.23	19	4
1:A:88:ALA:HB1	1:A:138:TRP:CE3	0.64	2.27	17	2
1:A:137:GLN:HG2	1:A:161:THR:HG23	0.63	1.69	19	3
1:A:90:GLY:O	1:A:106:ILE:HG23	0.63	1.94	15	1
1:A:184:VAL:HG13	1:A:185:THR:N	0.62	2.07	10	1
1:A:167:VAL:CG2	1:A:176:THR:HG22	0.62	2.23	17	1
1:A:73:THR:HG23	1:A:200:THR:HG23	0.62	1.70	7	3
1:A:144:VAL:HG21	1:A:189:TYR:CZ	0.62	2.30	20	1
1:A:108:VAL:HG13	1:A:130:ILE:HD12	0.62	1.71	1	1
1:A:84:LEU:HD21	1:A:93:VAL:CG2	0.62	2.25	3	1
1:A:71:PRO:O	1:A:72:THR:HG23	0.62	1.93	15	3
1:A:162:PRO:HD2	1:A:181:THR:HG21	0.61	1.72	4	5
1:A:92:VAL:HG13	1:A:203:CYS:SG	0.61	2.35	2	1
1:A:66:ASP:HB2	1:A:207:ILE:CG1	0.61	2.26	8	1
1:A:84:LEU:HD11	1:A:93:VAL:CG1	0.60	2.25	11	2
1:A:65:LEU:HD23	1:A:206:TYR:CD2	0.60	2.32	20	3
1:A:65:LEU:HD13	1:A:65:LEU:N	0.60	2.11	16	1
1:A:104:ALA:HB3	1:A:143:VAL:CG1	0.60	2.26	10	2
1:A:130:ILE:HD13	1:A:130:ILE:N	0.60	2.12	6	2
1:A:164:LEU:HB2	1:A:220:ILE:HD12	0.60	1.74	6	1
1:A:106:ILE:HD13	1:A:128:ILE:HD13	0.60	1.73	7	2
1:A:158:LEU:HD22	1:A:177:TYR:O	0.60	1.96	13	3
1:A:137:GLN:CG	1:A:161:THR:HG23	0.60	2.26	15	3
1:A:83:LEU:HD23	1:A:206:TYR:CD1	0.59	2.33	16	1
1:A:121:LEU:HD13	1:A:152:TYR:CE2	0.59	2.32	18	1
1:A:78:VAL:HG12	1:A:169:LYS:HG3	0.59	1.74	20	1
1:A:107:LEU:HD13	1:A:140:PHE:CG	0.59	2.31	4	8
1:A:137:GLN:HG2	1:A:161:THR:HG22	0.59	1.73	10	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:201:ALA:HB1	1:A:205:PHE:CE1	0.58	2.33	2	1
1:A:89:ALA:HB2	1:A:109:GLU:HG3	0.58	1.74	2	3
1:A:158:LEU:HD13	1:A:177:TYR:O	0.58	1.97	13	3
1:A:162:PRO:HD3	1:A:181:THR:HG21	0.58	1.75	8	2
1:A:129:THR:C	1:A:130:ILE:HD13	0.58	2.19	4	1
1:A:92:VAL:HG21	1:A:140:PHE:CE2	0.58	2.34	18	1
1:A:130:ILE:N	1:A:130:ILE:HD13	0.57	2.14	15	3
1:A:105:THR:HG23	1:A:142:ASP:CG	0.57	2.20	8	4
1:A:120:THR:HG23	1:A:124:THR:O	0.57	2.00	13	1
1:A:184:VAL:HG22	1:A:220:ILE:CD1	0.57	2.26	18	1
1:A:167:VAL:HG23	1:A:176:THR:CG2	0.56	2.27	4	2
1:A:158:LEU:HD13	1:A:178:ASN:HA	0.56	1.78	14	2
1:A:68:PRO:HD2	1:A:206:TYR:HA	0.56	1.76	15	1
1:A:121:LEU:HD13	1:A:152:TYR:CE1	0.56	2.36	2	1
1:A:130:ILE:HD12	1:A:130:ILE:O	0.55	2.00	13	1
1:A:78:VAL:HG12	1:A:169:LYS:HD2	0.55	1.78	19	1
1:A:107:LEU:HD11	1:A:138:TRP:HB2	0.55	1.78	2	1
1:A:105:THR:HG23	1:A:142:ASP:OD2	0.55	2.01	5	2
1:A:174:ILE:HD11	1:A:191:THR:HG21	0.55	1.77	18	3
1:A:181:THR:HG22	1:A:220:ILE:O	0.55	2.01	13	8
1:A:115:GLU:N	1:A:130:ILE:O	0.55	2.39	20	2
1:A:152:TYR:N	1:A:152:TYR:CD1	0.55	2.75	16	3
1:A:92:VAL:CG2	1:A:107:LEU:HD22	0.55	2.32	14	1
1:A:86:PRO:HB3	1:A:92:VAL:HG12	0.55	1.78	5	2
1:A:172:GLY:O	1:A:191:THR:HG22	0.55	2.01	12	1
1:A:107:LEU:HD12	1:A:139:LYS:C	0.55	2.22	13	3
1:A:181:THR:HA	1:A:184:VAL:HG13	0.55	1.77	19	1
1:A:121:LEU:HD22	1:A:152:TYR:CZ	0.55	2.37	4	1
1:A:179:GLY:HA3	1:A:185:THR:HG22	0.54	1.78	15	1
1:A:108:VAL:HG11	1:A:131:ALA:O	0.54	2.02	6	2
1:A:161:THR:HG22	1:A:162:PRO:HD3	0.54	1.79	9	3
1:A:102:TRP:CZ2	1:A:148:GLN:HA	0.54	2.37	14	1
1:A:69:TYR:O	1:A:204:ASP:HA	0.54	2.03	13	1
1:A:106:ILE:CD1	1:A:128:ILE:HD13	0.54	2.33	7	1
1:A:121:LEU:HD12	1:A:122:PHE:CE2	0.54	2.38	17	1
1:A:164:LEU:CB	1:A:220:ILE:HD12	0.54	2.32	6	1
1:A:114:SER:CB	1:A:131:ALA:HA	0.54	2.33	20	2
1:A:82:MET:HB3	1:A:167:VAL:HG12	0.54	1.80	9	1
1:A:108:VAL:HG21	1:A:130:ILE:HB	0.53	1.80	8	1
1:A:180:GLU:C	1:A:184:VAL:HG13	0.53	2.24	16	1
1:A:77:PRO:O	1:A:78:VAL:CG2	0.53	2.56	19	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:88:ALA:HB1	1:A:138:TRP:CH2	0.53	2.38	13	1
1:A:73:THR:HG23	1:A:200:THR:CG2	0.53	2.34	7	1
1:A:176:THR:HG23	1:A:178:ASN:HD21	0.52	1.64	3	1
1:A:166:ALA:HB3	1:A:177:TYR:HD1	0.52	1.64	13	1
1:A:181:THR:O	1:A:184:VAL:HG13	0.52	2.04	9	3
1:A:113:THR:HG23	1:A:115:GLU:CG	0.52	2.35	14	2
1:A:93:VAL:HG23	1:A:201:ALA:HA	0.52	1.80	18	3
1:A:130:ILE:O	1:A:131:ALA:HB2	0.52	2.04	12	1
1:A:158:LEU:HD21	1:A:165:TYR:CE2	0.52	2.39	19	1
1:A:83:LEU:HD13	1:A:216:CYS:SG	0.52	2.45	9	2
1:A:130:ILE:H	1:A:130:ILE:HD13	0.52	1.64	15	3
1:A:66:ASP:OD2	1:A:207:ILE:HG21	0.52	2.05	15	1
1:A:108:VAL:HG22	1:A:130:ILE:HG22	0.52	1.81	3	2
1:A:107:LEU:HD22	1:A:140:PHE:CE1	0.52	2.40	4	1
1:A:173:LYS:HE3	1:A:197:VAL:HG21	0.51	1.81	19	1
1:A:118:SER:HA	1:A:127:GLN:HB3	0.51	1.83	4	1
1:A:107:LEU:HD22	1:A:140:PHE:CZ	0.51	2.41	4	1
1:A:207:ILE:N	1:A:207:ILE:HD12	0.51	2.20	4	1
1:A:130:ILE:HD13	1:A:130:ILE:H	0.51	1.65	18	2
1:A:73:THR:HG23	1:A:74:PHE:CE2	0.51	2.40	9	1
1:A:90:GLY:O	1:A:107:LEU:HD23	0.51	2.06	11	1
1:A:167:VAL:HG22	1:A:176:THR:HG22	0.51	1.82	13	1
1:A:173:LYS:HA	1:A:190:SER:HA	0.51	1.81	17	1
1:A:190:SER:O	1:A:191:THR:HG23	0.51	2.05	20	1
1:A:139:LYS:HE3	1:A:141:ILE:HD11	0.51	1.81	7	1
1:A:109:GLU:HB3	1:A:110:PRO:HD3	0.51	1.81	17	1
1:A:96:THR:HG21	1:A:122:PHE:CD1	0.51	2.41	17	1
1:A:205:PHE:CD1	1:A:205:PHE:N	0.51	2.79	2	1
1:A:73:THR:O	1:A:73:THR:HG22	0.50	2.05	11	1
1:A:164:LEU:HD13	1:A:220:ILE:HA	0.50	1.82	4	1
1:A:184:VAL:HG11	1:A:220:ILE:HG21	0.50	1.84	8	1
1:A:70:GLN:O	1:A:205:PHE:CD1	0.50	2.64	11	1
1:A:106:ILE:N	1:A:106:ILE:HD12	0.50	2.22	13	1
1:A:115:GLU:O	1:A:129:THR:HG23	0.50	2.06	17	2
1:A:72:THR:H	1:A:201:ALA:HB3	0.50	1.66	11	2
1:A:72:THR:HG23	1:A:74:PHE:CD1	0.50	2.42	2	1
1:A:73:THR:HB	1:A:200:THR:HG23	0.49	1.83	12	1
1:A:121:LEU:HD13	1:A:152:TYR:CZ	0.49	2.42	2	1
1:A:85:ALA:HB2	1:A:164:LEU:HD23	0.49	1.84	8	1
1:A:67:GLY:O	1:A:69:TYR:CG	0.49	2.66	15	1
1:A:65:LEU:HD12	1:A:208:ILE:HD11	0.49	1.83	14	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:78:VAL:HG11	1:A:194:TYR:HE2	0.49	1.67	16	1
1:A:184:VAL:CG2	1:A:220:ILE:HD11	0.49	2.30	18	1
1:A:97:ASN:OD1	1:A:197:VAL:HG22	0.49	2.08	6	1
1:A:93:VAL:HG12	1:A:201:ALA:HA	0.49	1.85	11	1
1:A:174:ILE:HD11	1:A:191:THR:OG1	0.49	2.07	17	1
1:A:84:LEU:HD21	1:A:93:VAL:HG11	0.49	1.83	20	1
1:A:112:VAL:HG11	1:A:130:ILE:CD1	0.49	2.38	5	1
1:A:69:TYR:CE1	1:A:207:ILE:HD11	0.49	2.42	13	1
1:A:69:TYR:O	1:A:70:GLN:C	0.49	2.51	15	1
1:A:103:LEU:HD12	1:A:144:VAL:HG13	0.49	1.84	11	1
1:A:172:GLY:O	1:A:173:LYS:HB2	0.49	2.06	19	1
1:A:71:PRO:CA	1:A:201:ALA:HB3	0.48	2.39	18	1
1:A:84:LEU:CD1	1:A:93:VAL:HG11	0.48	2.39	5	2
1:A:140:PHE:CD2	1:A:165:TYR:CD1	0.48	3.01	5	1
1:A:73:THR:HA	1:A:200:THR:HG23	0.48	1.84	11	1
1:A:174:ILE:HD12	1:A:189:TYR:HB3	0.48	1.86	7	1
1:A:109:GLU:O	1:A:112:VAL:HG23	0.48	2.07	12	1
1:A:205:PHE:N	1:A:205:PHE:CD1	0.47	2.82	15	1
1:A:158:LEU:HD21	1:A:165:TYR:HE2	0.47	1.67	19	1
1:A:138:TRP:N	1:A:138:TRP:CD1	0.47	2.82	2	2
1:A:169:LYS:HG3	1:A:174:ILE:HG23	0.47	1.86	7	1
1:A:206:TYR:N	1:A:206:TYR:CD1	0.47	2.83	2	3
1:A:78:VAL:HG12	1:A:169:LYS:HB3	0.47	1.86	16	2
1:A:207:ILE:HD12	1:A:208:ILE:N	0.47	2.25	8	1
1:A:179:GLY:O	1:A:184:VAL:HG23	0.47	2.10	10	1
1:A:137:GLN:CG	1:A:161:THR:HG22	0.47	2.40	10	2
1:A:111:ASN:HA	1:A:132:ASN:HB3	0.47	1.87	9	1
1:A:69:TYR:N	1:A:69:TYR:CD1	0.46	2.83	15	1
1:A:103:LEU:HD23	1:A:104:ALA:N	0.46	2.24	6	3
1:A:166:ALA:HB3	1:A:177:TYR:HD2	0.46	1.70	8	2
1:A:102:TRP:HB2	1:A:145:LYS:HB2	0.46	1.85	10	1
1:A:175:TYR:HA	1:A:188:TYR:CB	0.46	2.40	17	1
1:A:173:LYS:HB2	1:A:190:SER:HA	0.46	1.86	19	1
1:A:108:VAL:CG2	1:A:130:ILE:HG22	0.46	2.39	3	1
1:A:158:LEU:HD23	1:A:165:TYR:CD1	0.46	2.46	5	1
1:A:144:VAL:O	1:A:153:SER:CB	0.46	2.63	14	1
1:A:78:VAL:HG12	1:A:169:LYS:CG	0.46	2.40	20	1
1:A:86:PRO:HG3	1:A:107:LEU:HD23	0.46	1.88	8	1
1:A:82:MET:CG	1:A:205:PHE:CD2	0.46	2.99	13	1
1:A:194:TYR:CG	1:A:195:ASP:N	0.46	2.84	19	5
1:A:81:TRP:CZ3	1:A:177:TYR:CE2	0.46	3.04	5	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:68:PRO:HB3	1:A:206:TYR:CE2	0.46	2.46	11	1
1:A:92:VAL:HG13	1:A:107:LEU:HD22	0.46	1.88	11	1
1:A:96:THR:CB	1:A:102:TRP:CD1	0.46	2.98	11	2
1:A:145:LYS:HD2	1:A:152:TYR:CD1	0.46	2.46	14	1
1:A:102:TRP:CZ3	1:A:147:THR:C	0.45	2.90	14	1
1:A:73:THR:CG2	1:A:74:PHE:CE2	0.45	2.99	9	1
1:A:216:CYS:O	1:A:220:ILE:HG23	0.45	2.11	18	1
1:A:165:TYR:CE2	1:A:167:VAL:CG2	0.45	2.99	13	2
1:A:66:ASP:HB2	1:A:207:ILE:HG13	0.45	1.88	8	1
1:A:67:GLY:N	1:A:68:PRO:CD	0.45	2.78	15	1
1:A:81:TRP:CD1	1:A:168:MET:CE	0.45	2.99	7	2
1:A:173:LYS:HA	1:A:190:SER:CA	0.45	2.41	17	1
1:A:80:TYR:CE2	1:A:82:MET:CG	0.45	3.00	5	1
1:A:96:THR:HG21	1:A:102:TRP:CD1	0.45	2.47	11	2
1:A:138:TRP:CD1	1:A:138:TRP:N	0.45	2.83	3	5
1:A:206:TYR:CD1	1:A:206:TYR:N	0.45	2.84	14	3
1:A:67:GLY:CA	1:A:69:TYR:CE1	0.45	2.99	15	1
1:A:143:VAL:HG21	1:A:152:TYR:HE2	0.45	1.72	19	1
1:A:107:LEU:HD12	1:A:108:VAL:H	0.45	1.71	8	1
1:A:83:LEU:HD11	1:A:164:LEU:HD22	0.45	1.89	1	1
1:A:105:THR:HG21	1:A:165:TYR:CE2	0.45	2.46	1	2
1:A:106:ILE:HD12	1:A:106:ILE:N	0.45	2.27	10	1
1:A:184:VAL:O	1:A:185:THR:HG23	0.45	2.11	10	2
1:A:173:LYS:CB	1:A:190:SER:HA	0.45	2.42	19	1
1:A:188:TYR:CD1	1:A:188:TYR:N	0.44	2.85	10	1
1:A:175:TYR:CE1	1:A:188:TYR:HB3	0.44	2.47	19	1
1:A:102:TRP:O	1:A:144:VAL:HA	0.44	2.12	14	1
1:A:168:MET:O	1:A:174:ILE:HG23	0.44	2.12	17	2
1:A:115:GLU:HB2	1:A:130:ILE:HD11	0.44	1.88	10	1
1:A:161:THR:HB	1:A:162:PRO:HD3	0.44	1.89	17	2
1:A:184:VAL:HG22	1:A:185:THR:H	0.44	1.73	10	1
1:A:143:VAL:HG21	1:A:152:TYR:CE2	0.44	2.47	19	1
1:A:205:PHE:CD1	1:A:205:PHE:C	0.44	2.89	11	1
1:A:144:VAL:HG12	1:A:145:LYS:N	0.44	2.27	14	3
1:A:102:TRP:CE3	1:A:147:THR:O	0.44	2.71	14	1
1:A:175:TYR:CZ	1:A:188:TYR:HB3	0.44	2.48	19	1
1:A:72:THR:O	1:A:201:ALA:HB3	0.44	2.13	9	1
1:A:181:THR:CB	1:A:182:PRO:CD	0.44	2.95	8	14
1:A:194:TYR:CD1	1:A:195:ASP:N	0.44	2.86	13	1
1:A:106:ILE:HG22	1:A:107:LEU:N	0.44	2.28	19	7
1:A:140:PHE:N	1:A:140:PHE:CD1	0.44	2.86	3	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:108:VAL:HG13	1:A:130:ILE:HB	0.44	1.90	5	1
1:A:174:ILE:CD1	1:A:191:THR:HG21	0.44	2.42	18	1
1:A:212:GLU:OE1	1:A:215:THR:HG21	0.44	2.13	9	1
1:A:93:VAL:HG22	1:A:94:GLU:N	0.43	2.28	12	13
1:A:68:PRO:HB3	1:A:205:PHE:CE2	0.43	2.48	15	1
1:A:92:VAL:HG23	1:A:93:VAL:N	0.43	2.28	17	1
1:A:172:GLY:C	1:A:190:SER:HA	0.43	2.33	19	1
1:A:166:ALA:HB2	1:A:220:ILE:HD11	0.43	1.89	2	1
1:A:156:GLY:N	1:A:157:PRO:CD	0.43	2.81	17	4
1:A:83:LEU:HD12	1:A:165:TYR:O	0.43	2.13	2	1
1:A:178:ASN:OD1	1:A:187:LYS:N	0.43	2.52	19	1
1:A:93:VAL:HG22	1:A:201:ALA:CB	0.43	2.42	3	1
1:A:154:GLN:O	1:A:155:TYR:CG	0.43	2.71	8	4
1:A:107:LEU:CD1	1:A:140:PHE:CZ	0.43	2.98	9	1
1:A:78:VAL:HG11	1:A:194:TYR:CD2	0.43	2.47	7	1
1:A:167:VAL:HG13	1:A:176:THR:HG23	0.43	1.91	13	1
1:A:69:TYR:OH	1:A:205:PHE:CE2	0.43	2.70	13	1
1:A:70:GLN:HB3	1:A:71:PRO:HD2	0.43	1.90	13	1
1:A:140:PHE:CD1	1:A:140:PHE:N	0.43	2.87	16	1
1:A:93:VAL:HG12	1:A:94:GLU:N	0.43	2.28	19	2
1:A:181:THR:N	1:A:182:PRO:HD2	0.43	2.29	20	3
1:A:130:ILE:CD1	1:A:130:ILE:N	0.43	2.82	8	2
1:A:205:PHE:O	1:A:206:TYR:CD1	0.43	2.72	15	1
1:A:96:THR:CG2	1:A:122:PHE:CD1	0.43	3.02	17	1
1:A:121:LEU:HD12	1:A:126:GLU:HG3	0.43	1.90	12	1
1:A:91:VAL:N	1:A:106:ILE:HG23	0.43	2.29	11	1
1:A:143:VAL:CG1	1:A:152:TYR:CD1	0.43	3.02	20	1
1:A:79:ASP:O	1:A:80:TYR:CD1	0.43	2.72	3	6
1:A:215:THR:HG22	1:A:219:TYR:CE2	0.43	2.49	11	1
1:A:99:THR:HG23	1:A:100:ASP:N	0.43	2.29	17	1
1:A:175:TYR:CE1	1:A:188:TYR:CB	0.43	3.02	19	1
1:A:167:VAL:HG12	1:A:176:THR:HA	0.42	1.89	5	1
1:A:69:TYR:N	1:A:205:PHE:O	0.42	2.50	15	1
1:A:161:THR:N	1:A:162:PRO:HD2	0.42	2.28	3	4
1:A:67:GLY:O	1:A:69:TYR:CD1	0.42	2.72	15	1
1:A:86:PRO:HB3	1:A:92:VAL:HG13	0.42	1.91	10	2
1:A:106:ILE:HG21	1:A:119:TYR:CE2	0.42	2.49	13	1
1:A:91:VAL:HG12	1:A:92:VAL:N	0.42	2.29	13	1
1:A:152:TYR:O	1:A:154:GLN:N	0.42	2.52	14	1
1:A:204:ASP:OD1	1:A:204:ASP:N	0.42	2.52	15	1
1:A:99:THR:HG23	1:A:100:ASP:H	0.42	1.74	16	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:143:VAL:HG23	1:A:143:VAL:O	0.42	2.13	16	1
1:A:78:VAL:HG23	1:A:79:ASP:OD2	0.42	2.15	16	1
1:A:112:VAL:HG12	1:A:130:ILE:HD12	0.42	1.91	7	2
1:A:167:VAL:HG12	1:A:168:MET:N	0.42	2.30	8	2
1:A:184:VAL:HG11	1:A:220:ILE:CG2	0.42	2.45	8	1
1:A:66:ASP:CB	1:A:207:ILE:CG2	0.42	2.95	8	1
1:A:108:VAL:HG21	1:A:130:ILE:CG2	0.42	2.44	4	1
1:A:103:LEU:HD23	1:A:103:LEU:C	0.42	2.35	6	1
1:A:209:PRO:O	1:A:211:GLU:N	0.42	2.53	7	1
1:A:128:ILE:HG22	1:A:129:THR:N	0.42	2.29	12	1
1:A:92:VAL:HG11	1:A:140:PHE:CZ	0.42	2.50	18	1
1:A:112:VAL:O	1:A:132:ASN:N	0.42	2.53	20	1
1:A:141:ILE:HD12	1:A:141:ILE:N	0.42	2.29	20	1
1:A:174:ILE:HD11	1:A:191:THR:CG2	0.42	2.45	4	1
1:A:138:TRP:CD1	1:A:163:LYS:HG2	0.42	2.50	11	1
1:A:174:ILE:N	1:A:189:TYR:O	0.42	2.52	17	1
1:A:203:CYS:O	1:A:205:PHE:CE1	0.42	2.72	2	1
1:A:93:VAL:HG22	1:A:201:ALA:HB1	0.42	1.90	3	1
1:A:224:LEU:H	1:A:224:LEU:HD23	0.42	1.75	3	1
1:A:72:THR:HG23	1:A:74:PHE:CE1	0.42	2.50	16	1
1:A:121:LEU:HD13	1:A:152:TYR:CD2	0.42	2.50	18	1
1:A:96:THR:OG1	1:A:102:TRP:CD1	0.41	2.70	10	1
1:A:180:GLU:CG	1:A:183:ASN:OD1	0.41	2.68	17	1
1:A:103:LEU:HD13	1:A:174:ILE:HD12	0.41	1.92	19	1
1:A:103:LEU:HD13	1:A:174:ILE:CD1	0.41	2.45	19	1
1:A:181:THR:CB	1:A:182:PRO:HD3	0.41	2.44	15	1
1:A:78:VAL:O	1:A:80:TYR:CD2	0.41	2.73	16	4
1:A:93:VAL:CG1	1:A:94:GLU:N	0.41	2.83	3	2
1:A:167:VAL:HG22	1:A:168:MET:N	0.41	2.30	7	1
1:A:84:LEU:HD13	1:A:93:VAL:HG11	0.41	1.93	17	2
1:A:77:PRO:O	1:A:80:TYR:CE1	0.41	2.73	18	1
1:A:121:LEU:HD12	1:A:152:TYR:CZ	0.41	2.50	3	1
1:A:81:TRP:N	1:A:208:ILE:O	0.41	2.54	8	3
1:A:130:ILE:N	1:A:130:ILE:CD1	0.41	2.83	15	2
1:A:100:ASP:O	1:A:101:ARG:CB	0.41	2.68	20	1
1:A:166:ALA:CB	1:A:177:TYR:CE1	0.41	3.00	2	1
1:A:80:TYR:O	1:A:80:TYR:CD1	0.41	2.73	20	1
1:A:65:LEU:CD1	1:A:65:LEU:N	0.41	2.82	16	1
1:A:79:ASP:OD1	1:A:80:TYR:CE1	0.41	2.74	7	1
1:A:154:GLN:O	1:A:155:TYR:CD2	0.41	2.74	2	3
1:A:73:THR:O	1:A:74:PHE:CD1	0.41	2.74	18	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:84:LEU:CD2	1:A:93:VAL:HG11	0.41	2.46	20	1
1:A:84:LEU:HD21	1:A:93:VAL:HB	0.41	1.92	1	1
1:A:224:LEU:N	1:A:224:LEU:HD23	0.41	2.30	3	1
1:A:194:TYR:HA	1:A:197:VAL:HG23	0.41	1.91	7	1
1:A:66:ASP:OD2	1:A:69:TYR:CZ	0.41	2.74	8	1
1:A:154:GLN:O	1:A:155:TYR:CD1	0.41	2.74	10	1
1:A:197:VAL:HG12	1:A:198:ASN:N	0.41	2.31	10	1
1:A:215:THR:O	1:A:219:TYR:CD2	0.41	2.74	11	1
1:A:192:THR:HG23	1:A:193:ASN:N	0.41	2.31	17	1
1:A:187:LYS:CD	1:A:188:TYR:N	0.41	2.84	20	1
1:A:162:PRO:O	1:A:163:LYS:HG3	0.41	2.16	9	1
1:A:73:THR:CG2	1:A:200:THR:HG23	0.41	2.45	5	1
1:A:215:THR:CG2	1:A:219:TYR:CE1	0.41	3.04	7	1
1:A:112:VAL:HG12	1:A:114:SER:OG	0.41	2.15	12	1
1:A:79:ASP:OD1	1:A:170:HIS:CG	0.41	2.74	14	1
1:A:109:GLU:CB	1:A:110:PRO:HD3	0.41	2.46	9	1
1:A:171:ASN:O	1:A:194:TYR:CE1	0.40	2.74	8	3
1:A:73:THR:O	1:A:74:PHE:CG	0.40	2.73	13	1
1:A:161:THR:CG2	1:A:162:PRO:HD3	0.40	2.44	9	1
1:A:210:ARG:O	1:A:213:GLU:CG	0.40	2.69	20	2
1:A:70:GLN:CB	1:A:71:PRO:CD	0.40	2.99	6	2
1:A:102:TRP:CZ2	1:A:148:GLN:HG2	0.40	2.51	5	1
1:A:130:ILE:O	1:A:131:ALA:CB	0.40	2.69	12	1
1:A:88:ALA:CB	1:A:138:TRP:CH2	0.40	3.04	13	1
1:A:92:VAL:HG22	1:A:107:LEU:HD22	0.40	1.94	15	1
1:A:170:HIS:CD2	1:A:210:ARG:NH1	0.40	2.89	20	1
1:A:180:GLU:O	1:A:184:VAL:N	0.40	2.54	12	1
1:A:110:PRO:O	1:A:111:ASN:C	0.40	2.59	9	1
1:A:170:HIS:O	1:A:172:GLY:N	0.40	2.54	2	2
1:A:108:VAL:CG2	1:A:141:ILE:HD11	0.40	2.47	10	1
1:A:205:PHE:CD1	1:A:205:PHE:O	0.40	2.74	11	1
1:A:215:THR:O	1:A:219:TYR:CD1	0.40	2.74	12	1
1:A:81:TRP:CH2	1:A:177:TYR:CE1	0.40	3.10	13	1
1:A:91:VAL:CG1	1:A:202:PHE:CD2	0.40	3.05	16	1
1:A:103:LEU:HD11	1:A:189:TYR:CD2	0.40	2.52	20	1

6.3 Torsion angles (i)

6.3.1 Protein backbone (i)

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	155/186 (83%)	131±3 (85±2%)	19±3 (12±2%)	5±2 (3±1%)	7	41
All	All	3100/3720 (83%)	2628 (85%)	381 (12%)	91 (3%)	7	41

All 30 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	114	SER	9
1	A	111	ASN	9
1	A	99	THR	8
1	A	100	ASP	7
1	A	77	PRO	7
1	A	152	TYR	6
1	A	71	PRO	5
1	A	171	ASN	5
1	A	72	THR	4
1	A	89	ALA	3
1	A	88	ALA	3
1	A	109	GLU	2
1	A	122	PHE	2
1	A	70	GLN	2
1	A	115	GLU	2
1	A	163	LYS	2
1	A	101	ARG	2
1	A	153	SER	1
1	A	76	PRO	1
1	A	116	THR	1
1	A	173	LYS	1
1	A	210	ARG	1
1	A	148	GLN	1
1	A	78	VAL	1
1	A	211	GLU	1
1	A	184	VAL	1
1	A	131	ALA	1

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Mol	Chain	Res	Type	Models (Total)
1	A	188	TYR	1
1	A	172	GLY	1
1	A	136	THR	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	141/166 (85%)	112±5 (79±3%)	29±5 (21±3%)	3 32
All	All	2820/3320 (85%)	2235 (79%)	585 (21%)	3 32

All 103 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	THR	20
1	A	127	GLN	17
1	A	161	THR	15
1	A	183	ASN	15
1	A	101	ARG	14
1	A	84	LEU	12
1	A	160	SER	12
1	A	134	SER	12
1	A	210	ARG	12
1	A	219	TYR	12
1	A	185	THR	11
1	A	186	THR	10
1	A	72	THR	10
1	A	147	THR	10
1	A	189	TYR	10
1	A	139	LYS	10
1	A	145	LYS	9
1	A	190	SER	9
1	A	114	SER	9
1	A	65	LEU	9
1	A	70	GLN	9
1	A	216	CYS	9

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Mol	Chain	Res	Type	Models (Total)
1	A	99	THR	8
1	A	135	GLN	8
1	A	116	THR	8
1	A	152	TYR	8
1	A	163	LYS	7
1	A	191	THR	7
1	A	203	CYS	7
1	A	224	LEU	7
1	A	79	ASP	7
1	A	69	TYR	7
1	A	121	LEU	7
1	A	100	ASP	7
1	A	213	GLU	7
1	A	82	MET	7
1	A	202	PHE	7
1	A	196	SER	7
1	A	129	THR	6
1	A	117	ARG	6
1	A	109	GLU	6
1	A	222	ASN	6
1	A	142	ASP	6
1	A	125	GLN	6
1	A	214	SER	6
1	A	173	LYS	6
1	A	94	GLU	6
1	A	130	ILE	6
1	A	215	THR	5
1	A	97	ASN	5
1	A	120	THR	5
1	A	153	SER	5
1	A	195	ASP	5
1	A	211	GLU	5
1	A	178	ASN	5
1	A	126	GLU	5
1	A	96	THR	4
1	A	200	THR	4
1	A	199	MET	4
1	A	66	ASP	4
1	A	168	MET	4
1	A	115	GLU	4
1	A	98	ASN	4
1	A	73	THR	4

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Mol	Chain	Res	Type	Models (Total)
1	A	146	THR	4
1	A	192	THR	4
1	A	169	LYS	4
1	A	148	GLN	3
1	A	103	LEU	3
1	A	124	THR	3
1	A	184	VAL	3
1	A	170	HIS	3
1	A	205	PHE	3
1	A	187	LYS	3
1	A	80	TYR	3
1	A	105	THR	3
1	A	159	GLN	3
1	A	188	TYR	3
1	A	83	LEU	2
1	A	87	THR	2
1	A	176	THR	2
1	A	136	THR	2
1	A	140	PHE	2
1	A	164	LEU	2
1	A	180	GLU	2
1	A	113	THR	2
1	A	158	LEU	2
1	A	154	GLN	2
1	A	204	ASP	2
1	A	193	ASN	1
1	A	177	TYR	1
1	A	218	GLU	1
1	A	111	ASN	1
1	A	207	ILE	1
1	A	194	TYR	1
1	A	108	VAL	1
1	A	141	ILE	1
1	A	206	TYR	1
1	A	107	LEU	1
1	A	118	SER	1
1	A	175	TYR	1
1	A	155	TYR	1
1	A	220	ILE	1

6.3.3 RNA

There are no RNA molecules in this entry.

6.4 Non-standard residues in protein, DNA, RNA chains

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

6.5 Carbohydrates

There are no carbohydrates in this entry.

6.6 Ligand geometry

There are no ligands in this entry.

6.7 Other polymers

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 81% for the well-defined parts and 81% for the entire structure.

7.1 Chemical shift list 1

File name: input_cs.cif

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	1771
Number of shifts mapped to atoms	1771
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Number of shift outliers (ShiftChecker)	7

7.1.2 Chemical shift referencing

The following table shows the suggested chemical shift referencing corrections.

Nucleus	# values	Correction ± precision, *ppm*	Suggested action
$^{13}C_{\alpha}$	159	0.04 ± 0.09	None needed (< 0.5 ppm)
$^{13}C_{\beta}$	149	0.27 ± 0.16	None needed (< 0.5 ppm)
$^{13}C'$	156	0.33 ± 0.13	None needed (< 0.5 ppm)
^{15}N	148	-0.09 ± 0.29	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. 1528 atoms were assigned a chemical shift out of a possible 1882. 17 out of 20 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	753/765 (98%)	299/304 (98%)	309/314 (98%)	145/147 (99%)
Sidechain	674/924 (73%)	427/538 (79%)	233/351 (66%)	14/35 (40%)

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	Total	^{1}H	^{13}C	^{15}N
Aromatic	101/193 (52%)	96/99 (97%)	0/89 (0%)	5/5 (100%)
Overall	1528/1882 (81%)	822/941 (87%)	542/754 (72%)	164/187 (88%)

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 81%, i.e. 1552 atoms were assigned a chemical shift out of a possible 1907. 17 out of 20 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	768/780 (98%)	305/310 (98%)	315/320 (98%)	148/150 (99%)
Sidechain	683/934 (73%)	433/544 (80%)	235/354 (66%)	15/36 (42%)
Aromatic	101/193 (52%)	96/99 (97%)	0/89 (0%)	5/5 (100%)
Overall	1552/1907 (81%)	834/953 (88%)	550/763 (72%)	168/191 (88%)

7.1.4 Statistically unusual chemical shifts (i)

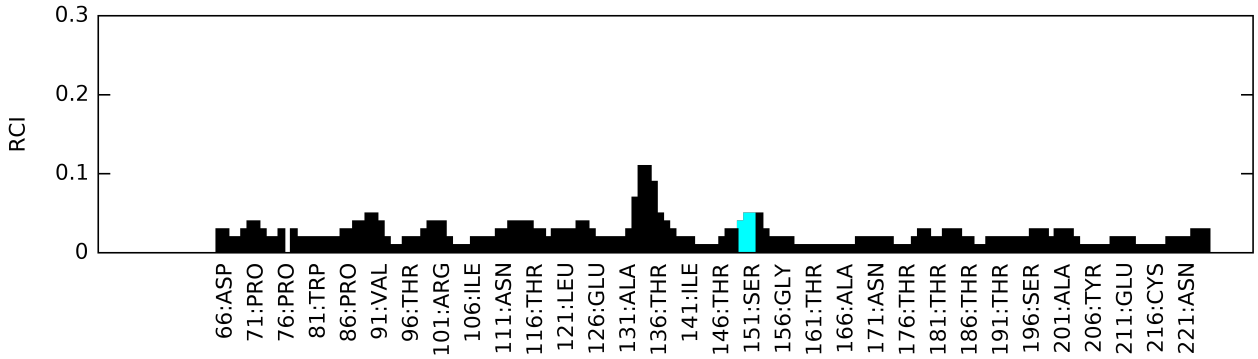
The following table lists the statistically unusual chemical shifts. These are statistical measures, and large deviations from the mean do not necessarily imply incorrect assignments. Molecules containing paramagnetic centres or hemes are expected to give rise to anomalous chemical shifts.

Mol	Chain	Res	Type	Atom	Shift, *ppm*	Expected range, *ppm*	Z-score
1	A	101	ARG	NE	117.44	92.63 – 76.73	20.6
1	A	213	GLU	CG	26.60	42.24 – 29.94	-7.7
1	A	69	TYR	HB3	0.47	4.75 – 0.95	-6.3
1	A	144	VAL	CG2	31.10	29.20 – 13.40	6.2
1	A	177	TYR	HE2	5.41	7.86 – 5.56	-5.7
1	A	177	TYR	HE1	5.41	7.86 – 5.56	-5.7
1	A	171	ASN	HB3	1.06	4.41 – 1.11	-5.2

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:


RCI
0.3
0.2
0.1
0
66:ASP
71:PRO
76:PRO
81:TRP
86:PRO
91:VAL
96:THR
101:ARG
106:ILE
111:ASN
116:THR
121:LEU
126:GLU
131:ALA
136:THR
141:ILE
146:THR
151:SER
156:GLY
161:THR
166:ALA
171:ASN
176:THR
181:THR
186:THR
191:THR
196:SER
201:ALA
206:TYR
211:GLU
216:CYS
221:ASN