Full wwPDB NMR Structure Validation Report (i)

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PDB ID	:	2RON
Title	:	The external thioesterase of the Surfactin-Synthetase
Authors	:	Koglin, A.; Lohr, F.; Bernhard, F.; Rogov, V.V.; Frueh, D.P.; Strieter, E.R.; Mofid, M.R.; Guentert, P.; Wagner, G.; Walsh, C.T.; Marahiel, M.A.; Doetsch, V.
Deposited on	:	2008-04-04

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 types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

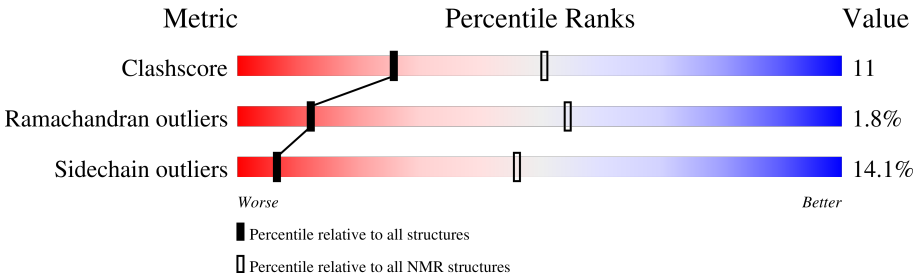
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
wwPDB-RCI	:	v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV	:	Wang et al. (2010)
wwPDB-ShiftChecker	:	v1.2
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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 was not calculated.

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	242	71% 22% • 6%

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: *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:2-A:46, A:56-A:238 (228)	0.95	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 3 clusters and 5 single-model clusters were found.

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

3 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 3850 atoms, of which 1902 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Surfactin synthetase thioesterase subunit.

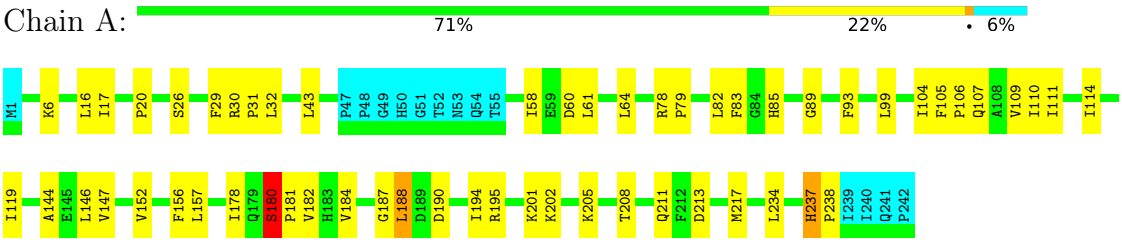
Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	242	3850	1253	1902	329	356	10	0

4 Residue-property plots (i)

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: Surfactin synthetase thioesterase subunit

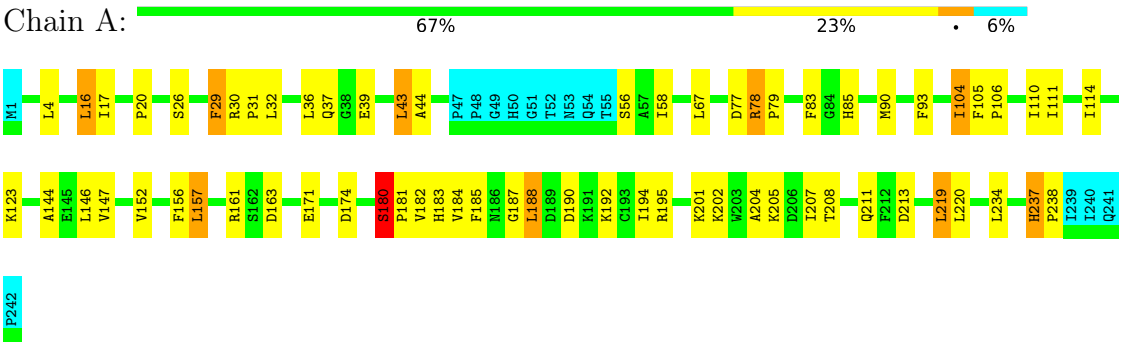


4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

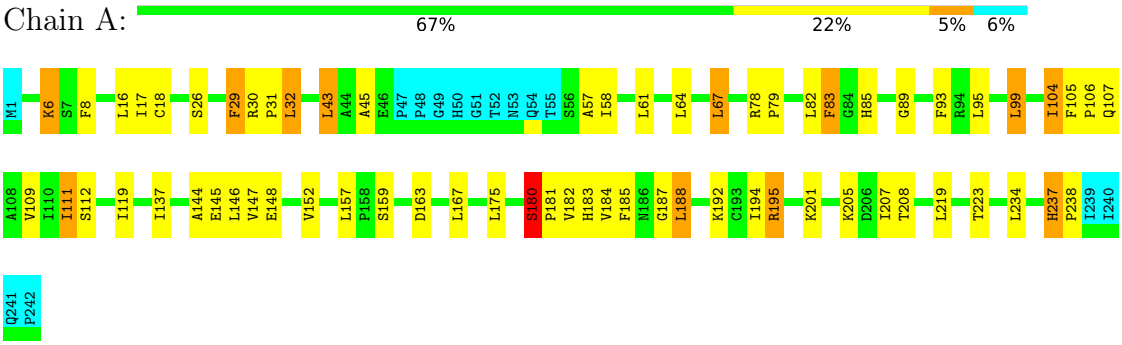
4.2.1 Score per residue for model 1

• Molecule 1: Surfactin synthetase thioesterase subunit



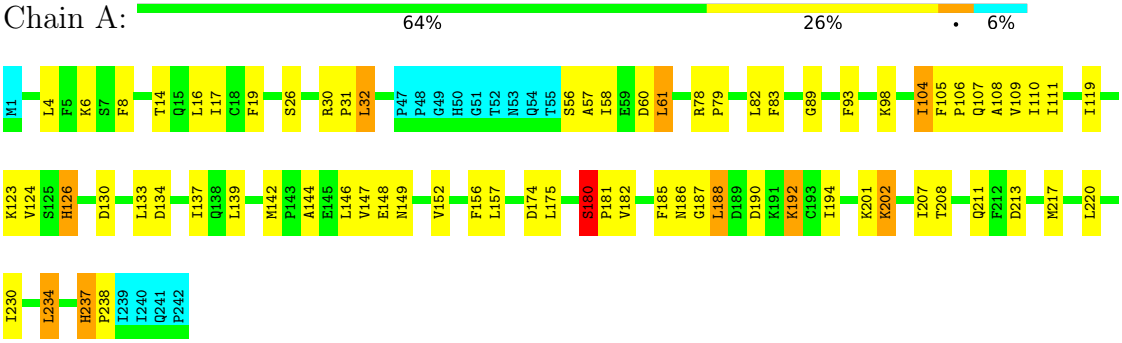
4.2.2 Score per residue for model 2

• Molecule 1: Surfactin synthetase thioesterase subunit



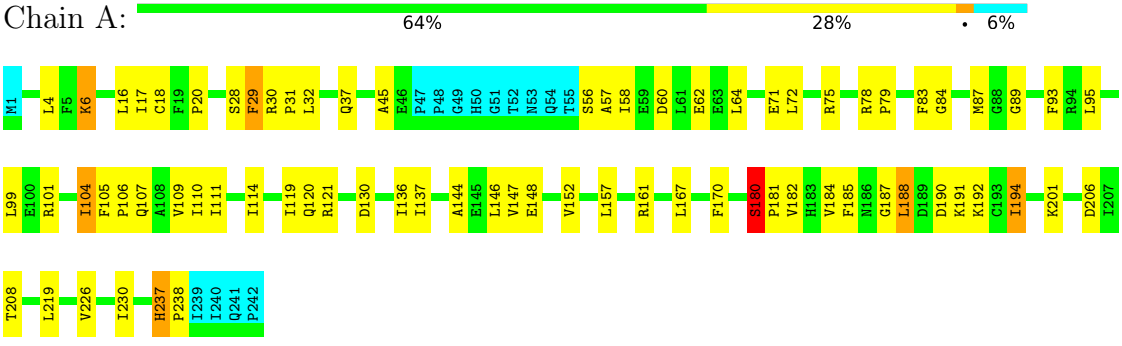
4.2.3 Score per residue for model 3

• Molecule 1: Surfactin synthetase thioesterase subunit



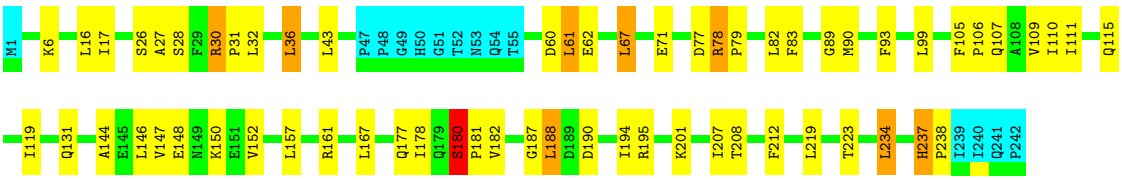
4.2.4 Score per residue for model 4

• Molecule 1: Surfactin synthetase thioesterase subunit



4.2.5 Score per residue for model 5

• Molecule 1: Surfactin synthetase thioesterase subunit



4.2.6 Score per residue for model 6

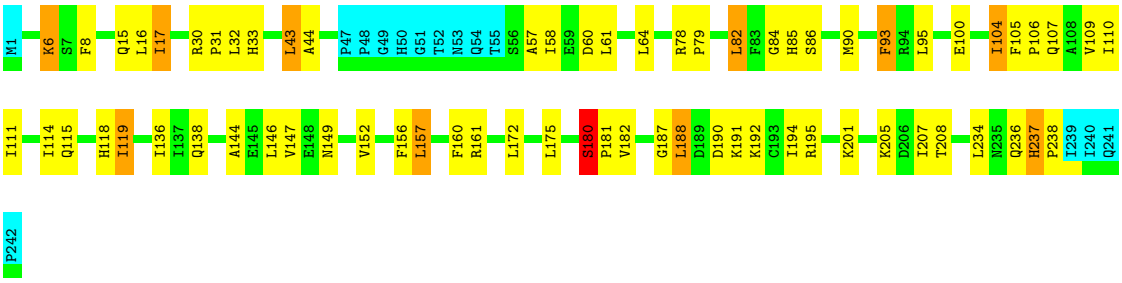
• Molecule 1: Surfactin synthetase thioesterase subunit

Chain A: 65% 26% • 6%

4.2.7 Score per residue for model 7 (medoid)

• Molecule 1: Surfactin synthetase thioesterase subunit

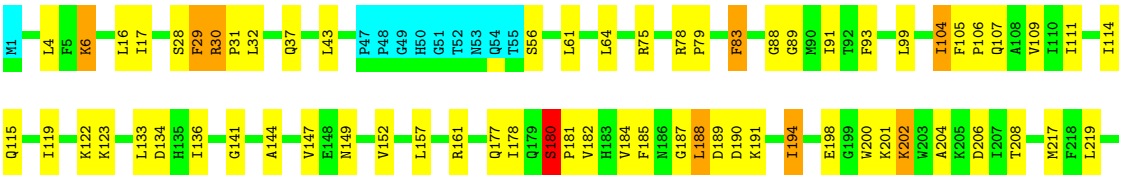
Chain A: 66% 24% • 6%

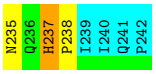


4.2.8 Score per residue for model 8

• Molecule 1: Surfactin synthetase thioesterase subunit

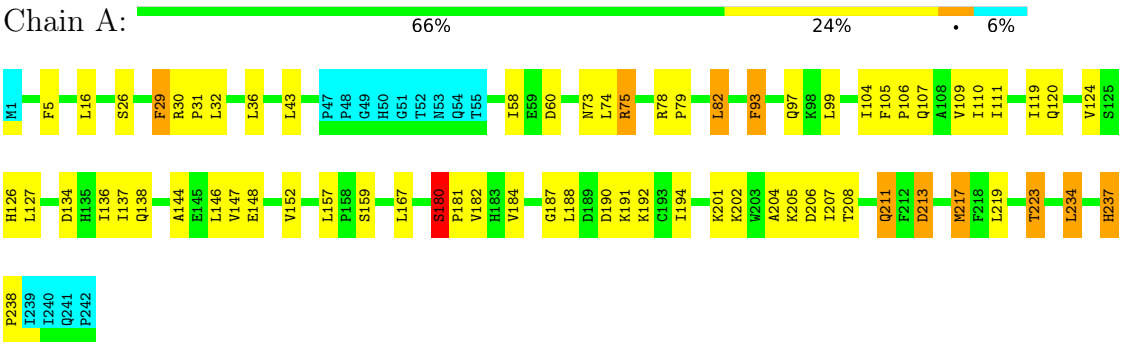
Chain A: 66% 24% • 6%





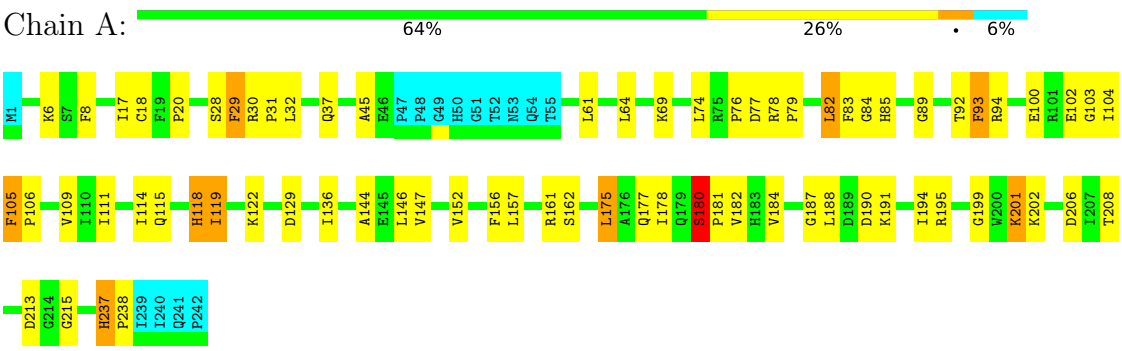
4.2.9 Score per residue for model 9

• Molecule 1: Surfactin synthetase thioesterase subunit



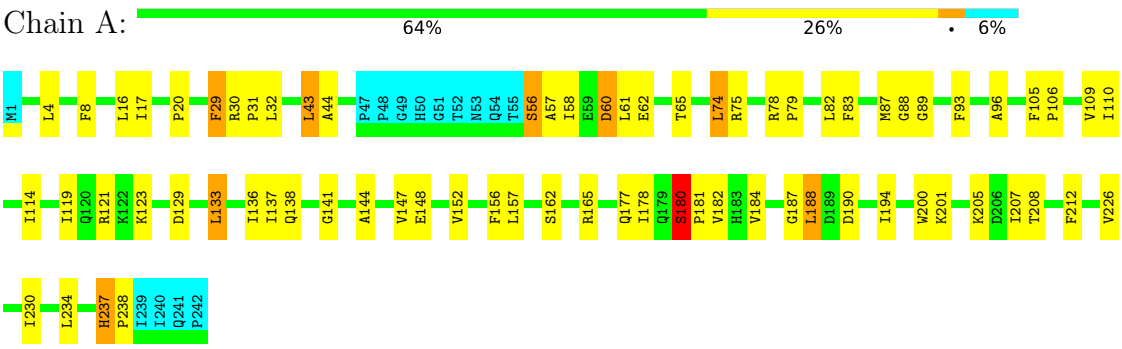
4.2.10 Score per residue for model 10

• Molecule 1: Surfactin synthetase thioesterase subunit



4.2.11 Score per residue for model 11

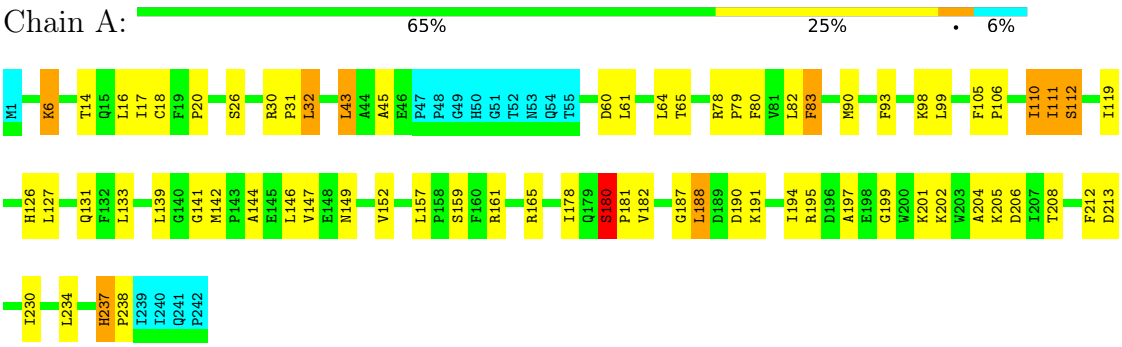
• Molecule 1: Surfactin synthetase thioesterase subunit



4.2.12 Score per residue for model 12

• Molecule 1: Surfactin synthetase thioesterase subunit

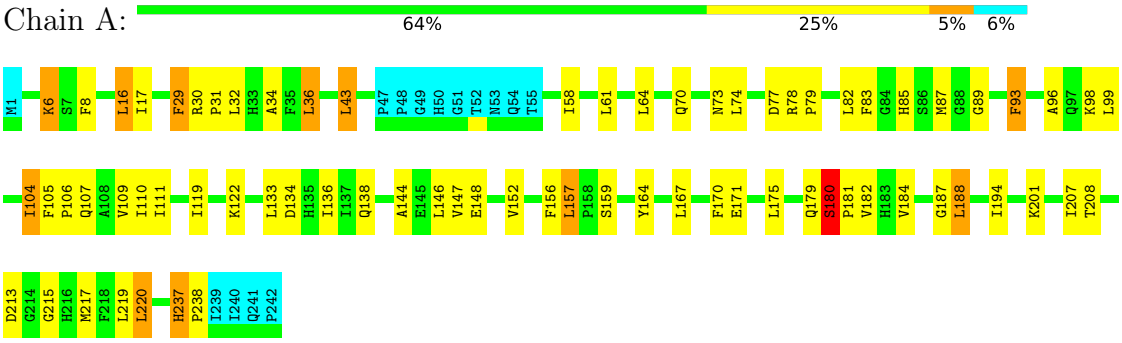
Chain A:



4.2.13 Score per residue for model 13

• Molecule 1: Surfactin synthetase thioesterase subunit

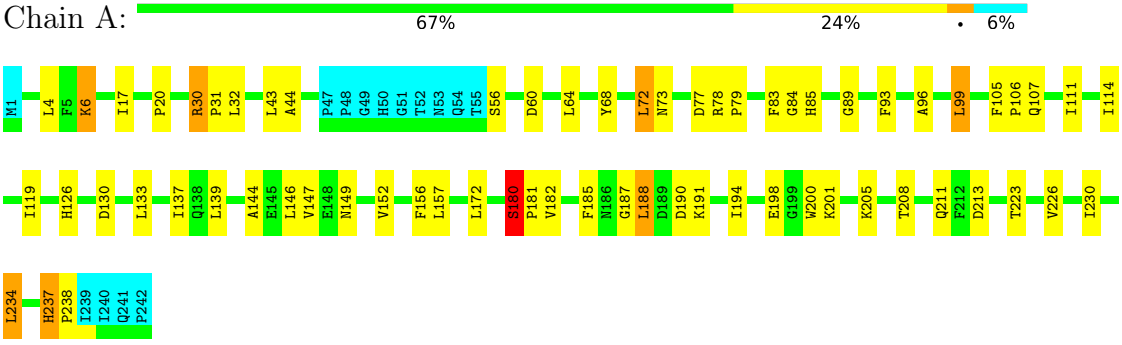
Chain A:



4.2.14 Score per residue for model 14

• Molecule 1: Surfactin synthetase thioesterase subunit

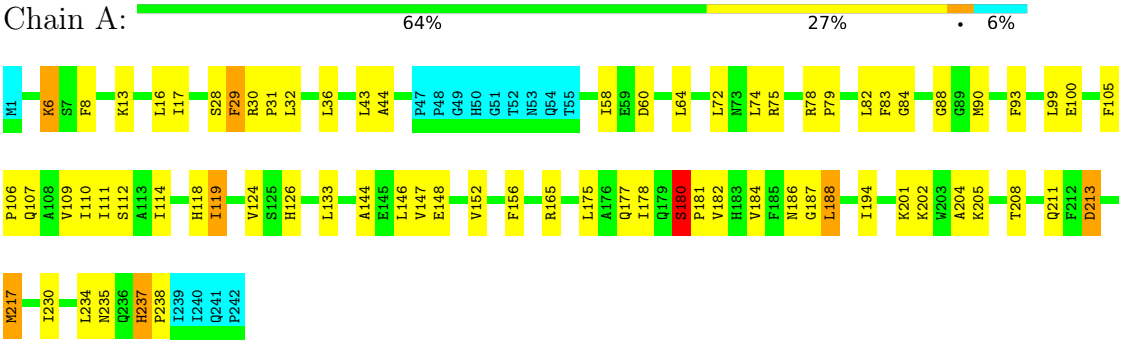
Chain A:



4.2.15 Score per residue for model 15

• Molecule 1: Surfactin synthetase thioesterase subunit

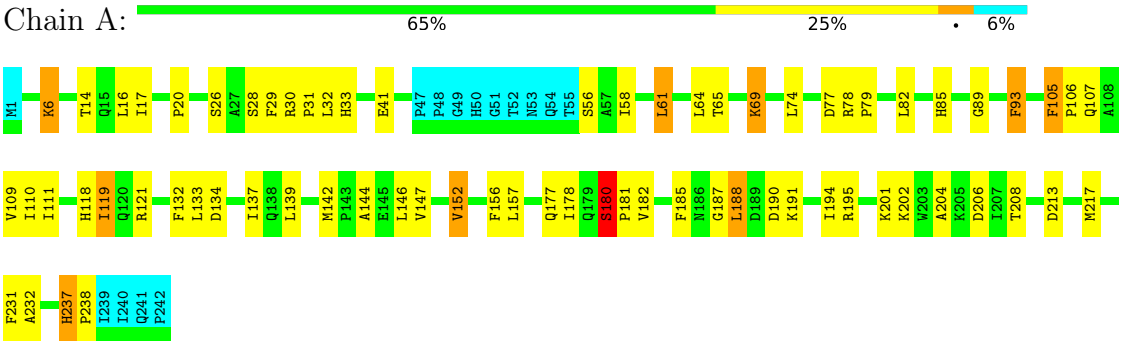
Chain A:



4.2.16 Score per residue for model 16

• Molecule 1: Surfactin synthetase thioesterase subunit

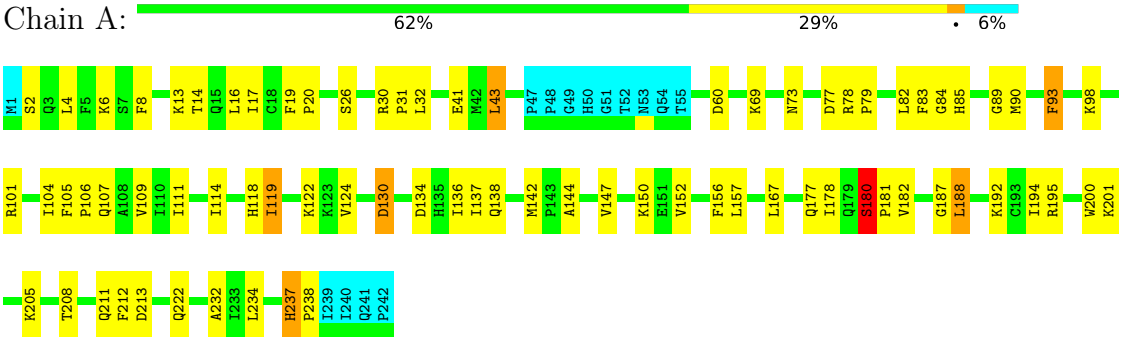
Chain A:



4.2.17 Score per residue for model 17

• Molecule 1: Surfactin synthetase thioesterase subunit

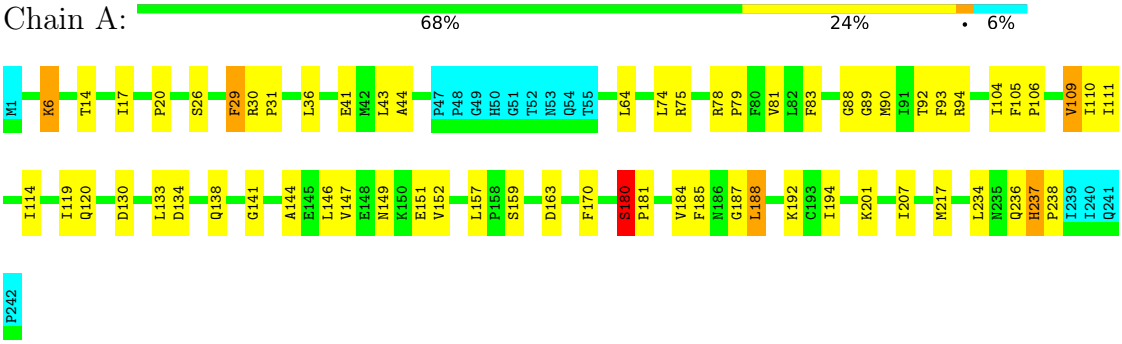
Chain A:



4.2.18 Score per residue for model 18

• Molecule 1: Surfactin synthetase thioesterase subunit

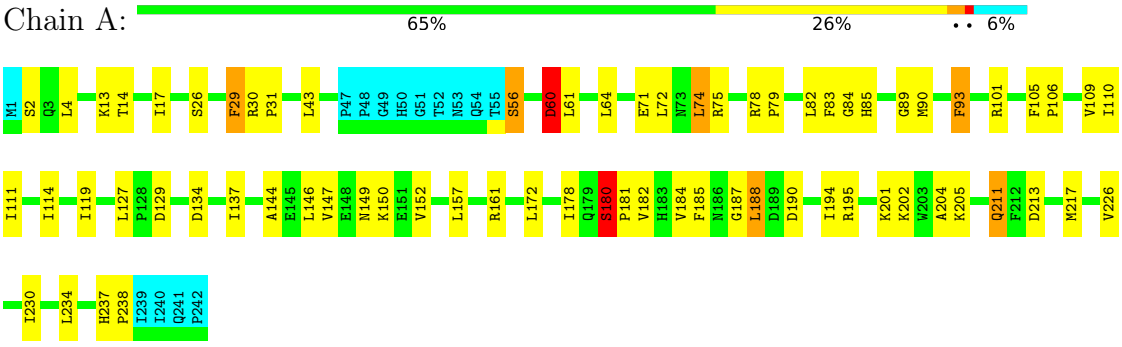
Chain A:



4.2.19 Score per residue for model 19

• Molecule 1: Surfactin synthetase thioesterase subunit

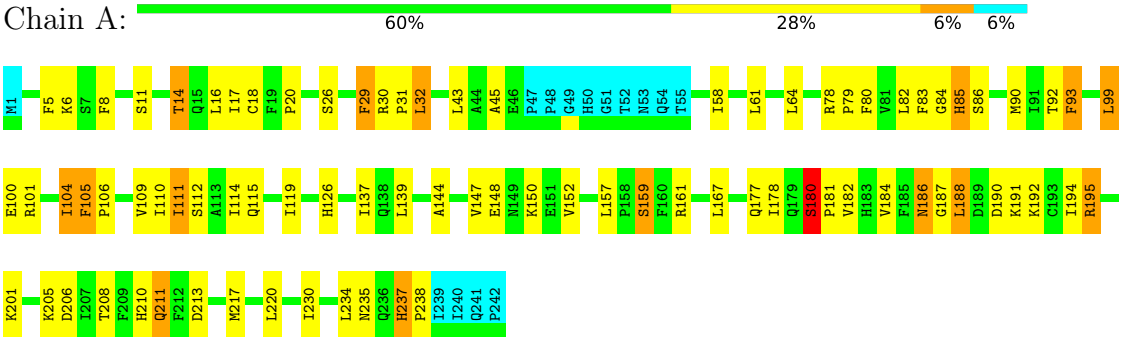
Chain A:



4.2.20 Score per residue for model 20

• Molecule 1: Surfactin synthetase thioesterase subunit

Chain A:



5 Refinement protocol and experimental data overview

The models were refined using the following method: *simulated annealing, torsion angle dynamics.*

Of the 150 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 solution	2.1
CYANA	refinement	2.1

No chemical shift data was provided.

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	1845	1801	1801	41±5
All	All	36900	36020	36020	822

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:152:VAL:HG23	1:A:157:LEU:HD22	0.94	1.36	12	5
1:A:16:LEU:HD11	1:A:58:ILE:HD12	0.90	1.39	20	4
1:A:152:VAL:HG22	1:A:157:LEU:HD13	0.82	1.52	13	6
1:A:152:VAL:HG12	1:A:157:LEU:HD22	0.81	1.52	8	1
1:A:144:ALA:HB1	1:A:147:VAL:HG22	0.78	1.53	17	20
1:A:14:THR:HG21	1:A:61:LEU:HD21	0.77	1.56	16	2
1:A:32:LEU:HD12	1:A:208:THR:HG23	0.76	1.57	15	4
1:A:36:LEU:HD11	1:A:182:VAL:HG21	0.73	1.59	13	1
1:A:29:PHE:CE2	1:A:184:VAL:HG21	0.69	2.22	9	12
1:A:16:LEU:HD11	1:A:58:ILE:HG23	0.69	1.64	1	3
1:A:152:VAL:HG13	1:A:157:LEU:HD22	0.67	1.65	20	8
1:A:82:LEU:HD22	1:A:93:PHE:CZ	0.66	2.26	13	5
1:A:217:MET:HB2	1:A:220:LEU:HD23	0.66	1.66	13	1
1:A:133:LEU:HD13	1:A:139:LEU:HD21	0.65	1.67	12	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:61:LEU:HD12	1:A:99:LEU:HD12	0.65	1.69	12	1
1:A:16:LEU:HD12	1:A:43:LEU:HD21	0.65	1.68	17	3
1:A:29:PHE:CZ	1:A:184:VAL:HG21	0.65	2.26	4	7
1:A:69:LYS:HB3	1:A:74:LEU:HD12	0.64	1.68	16	1
1:A:4:LEU:HD22	1:A:56:SER:OG	0.64	1.93	19	2
1:A:107:GLN:HB2	1:A:110:ILE:HD11	0.63	1.68	4	8
1:A:148:GLU:O	1:A:152:VAL:HG23	0.63	1.94	2	9
1:A:107:GLN:CB	1:A:110:ILE:HD11	0.63	2.23	15	4
1:A:57:ALA:O	1:A:95:LEU:HD23	0.63	1.93	2	1
1:A:107:GLN:HB3	1:A:110:ILE:HD11	0.62	1.71	3	2
1:A:144:ALA:HB1	1:A:147:VAL:CG2	0.62	2.24	12	12
1:A:17:ILE:HG22	1:A:83:PHE:HB2	0.62	1.71	13	16
1:A:213:ASP:OD1	1:A:230:ILE:HG21	0.62	1.94	14	4
1:A:82:LEU:HD22	1:A:93:PHE:CE2	0.62	2.29	16	8
1:A:17:ILE:HD12	1:A:20:PRO:HG3	0.62	1.72	10	11
1:A:58:ILE:HD13	1:A:95:LEU:CB	0.61	2.24	7	2
1:A:6:LYS:HB3	1:A:43:LEU:HD13	0.61	1.72	18	3
1:A:111:ILE:HD11	1:A:186:ASN:OD1	0.61	1.95	20	1
1:A:69:LYS:CD	1:A:74:LEU:HD12	0.61	2.25	10	1
1:A:109:VAL:O	1:A:110:ILE:HD13	0.61	1.96	18	2
1:A:119:ILE:HA	1:A:157:LEU:HD12	0.61	1.71	17	5
1:A:4:LEU:HD21	1:A:60:ASP:HB3	0.61	1.72	19	1
1:A:152:VAL:HG12	1:A:157:LEU:HD13	0.60	1.74	3	1
1:A:202:LYS:HD2	1:A:204:ALA:HB3	0.60	1.72	8	5
1:A:84:GLY:HA3	1:A:114:ILE:HD11	0.60	1.73	4	8
1:A:71:GLU:O	1:A:72:LEU:HD22	0.60	1.96	19	1
1:A:78:ARG:HA	1:A:104:ILE:HG21	0.60	1.72	20	8
1:A:14:THR:HG23	1:A:41:GLU:OE2	0.60	1.96	18	1
1:A:152:VAL:HG23	1:A:157:LEU:CD2	0.60	2.27	14	6
1:A:58:ILE:HD13	1:A:95:LEU:HB2	0.60	1.72	7	2
1:A:88:GLY:O	1:A:114:ILE:HD13	0.59	1.97	15	3
1:A:16:LEU:HD13	1:A:82:LEU:CD1	0.59	2.28	11	1
1:A:14:THR:HG21	1:A:61:LEU:HD11	0.59	1.75	19	3
1:A:78:ARG:N	1:A:79:PRO:HD2	0.59	2.13	19	20
1:A:109:VAL:HG12	1:A:182:VAL:HB	0.59	1.74	4	13
1:A:6:LYS:CG	1:A:64:LEU:HD11	0.59	2.28	15	5
1:A:215:GLY:CA	1:A:220:LEU:HD11	0.59	2.28	13	1
1:A:4:LEU:HD11	1:A:43:LEU:HD13	0.58	1.75	1	1
1:A:126:HIS:CD2	1:A:197:ALA:HB2	0.58	2.33	12	1
1:A:188:LEU:HD12	1:A:191:LYS:O	0.58	1.99	10	7
1:A:202:LYS:CE	1:A:204:ALA:HB3	0.58	2.29	15	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:192:LYS:HE2	1:A:220:LEU:HD13	0.58	1.75	20	1
1:A:182:VAL:HG13	1:A:208:THR:HB	0.57	1.75	5	17
1:A:16:LEU:CD1	1:A:58:ILE:HG23	0.57	2.29	4	8
1:A:137:ILE:HD11	1:A:144:ALA:O	0.57	1.99	17	5
1:A:13:LYS:CE	1:A:109:VAL:HG21	0.57	2.29	15	1
1:A:14:THR:CG2	1:A:61:LEU:HD21	0.57	2.30	20	1
1:A:202:LYS:HE3	1:A:204:ALA:HB3	0.57	1.75	15	2
1:A:188:LEU:HD13	1:A:195:ARG:HB2	0.57	1.75	2	4
1:A:188:LEU:HD11	1:A:213:ASP:OD1	0.57	2.00	9	3
1:A:129:ASP:O	1:A:133:LEU:HD23	0.56	1.99	11	1
1:A:133:LEU:HB2	1:A:139:LEU:HD21	0.56	1.76	14	2
1:A:61:LEU:HD12	1:A:99:LEU:CD1	0.56	2.29	12	1
1:A:4:LEU:HD13	1:A:56:SER:CB	0.56	2.31	4	2
1:A:226:VAL:O	1:A:230:ILE:HD12	0.56	1.99	4	3
1:A:211:GLN:O	1:A:234:LEU:HD11	0.56	2.01	17	6
1:A:16:LEU:HG	1:A:43:LEU:HD11	0.55	1.77	2	6
1:A:105:PHE:N	1:A:106:PRO:HD2	0.55	2.16	18	20
1:A:188:LEU:HD11	1:A:213:ASP:CG	0.55	2.21	20	1
1:A:78:ARG:HG2	1:A:104:ILE:HG21	0.55	1.77	17	2
1:A:181:PRO:O	1:A:207:ILE:HG22	0.55	2.02	7	5
1:A:32:LEU:HD12	1:A:208:THR:OG1	0.55	2.01	5	2
1:A:14:THR:HG23	1:A:61:LEU:HD21	0.55	1.78	20	1
1:A:187:GLY:C	1:A:188:LEU:HD23	0.54	2.23	10	16
1:A:78:ARG:CG	1:A:104:ILE:HG21	0.54	2.32	18	2
1:A:220:LEU:HD12	1:A:220:LEU:O	0.54	2.01	13	1
1:A:101:ARG:HD2	1:A:167:LEU:HD12	0.54	1.78	20	1
1:A:6:LYS:HB2	1:A:64:LEU:HD11	0.54	1.78	7	4
1:A:16:LEU:HB3	1:A:82:LEU:HD12	0.54	1.79	11	2
1:A:6:LYS:CB	1:A:64:LEU:HD11	0.54	2.32	2	2
1:A:149:ASN:O	1:A:152:VAL:HG12	0.54	2.02	18	4
1:A:99:LEU:HD13	1:A:99:LEU:O	0.54	2.02	12	4
1:A:101:ARG:CD	1:A:167:LEU:HD11	0.54	2.32	4	1
1:A:136:ILE:C	1:A:137:ILE:HG13	0.54	2.23	9	1
1:A:230:ILE:HG22	1:A:234:LEU:CD1	0.54	2.33	12	2
1:A:180:SER:CB	1:A:181:PRO:CD	0.54	2.86	19	20
1:A:137:ILE:HD11	1:A:144:ALA:HB3	0.53	1.79	20	1
1:A:188:LEU:HD12	1:A:192:LYS:HA	0.53	1.80	1	8
1:A:28:SER:O	1:A:32:LEU:HD23	0.53	2.03	5	4
1:A:37:GLN:OE1	1:A:109:VAL:HG11	0.53	2.03	10	1
1:A:117:PRO:CB	1:A:139:LEU:HD12	0.53	2.33	6	1
1:A:175:LEU:HD21	1:A:201:LYS:NZ	0.53	2.18	10	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:212:PHE:HA	1:A:234:LEU:HD21	0.53	1.79	17	1
1:A:109:VAL:HG12	1:A:182:VAL:CG2	0.53	2.33	19	1
1:A:62:GLU:HG3	1:A:99:LEU:HD11	0.53	1.80	5	1
1:A:133:LEU:CD1	1:A:139:LEU:HD21	0.53	2.34	12	1
1:A:4:LEU:HD12	1:A:44:ALA:O	0.52	2.03	1	1
1:A:152:VAL:HG13	1:A:157:LEU:CD2	0.52	2.34	4	2
1:A:43:LEU:HD12	1:A:44:ALA:N	0.52	2.19	15	5
1:A:111:ILE:HD13	1:A:112:SER:N	0.52	2.19	20	3
1:A:134:ASP:O	1:A:137:ILE:HG23	0.52	2.04	9	3
1:A:152:VAL:CG1	1:A:157:LEU:HD22	0.52	2.30	8	1
1:A:6:LYS:HD3	1:A:64:LEU:HD21	0.52	1.81	13	1
1:A:211:GLN:O	1:A:234:LEU:HD21	0.52	2.05	14	5
1:A:32:LEU:HD12	1:A:208:THR:CG2	0.52	2.34	10	2
1:A:43:LEU:HD22	1:A:60:ASP:CG	0.52	2.25	17	1
1:A:213:ASP:OD2	1:A:230:ILE:HG21	0.52	2.04	19	1
1:A:188:LEU:HD11	1:A:213:ASP:HB3	0.51	1.82	16	2
1:A:67:LEU:O	1:A:67:LEU:HD13	0.51	2.06	5	2
1:A:237:HIS:N	1:A:238:PRO:HD2	0.51	2.21	6	20
1:A:4:LEU:HD12	1:A:43:LEU:CD1	0.51	2.36	17	1
1:A:17:ILE:CD1	1:A:44:ALA:HB2	0.51	2.36	7	1
1:A:192:LYS:NZ	1:A:220:LEU:HD13	0.51	2.21	3	1
1:A:82:LEU:O	1:A:82:LEU:HD23	0.50	2.06	17	7
1:A:142:MET:CE	1:A:144:ALA:HB3	0.50	2.36	12	1
1:A:188:LEU:HD21	1:A:213:ASP:OD1	0.50	2.06	20	1
1:A:69:LYS:CB	1:A:74:LEU:HD12	0.50	2.36	16	1
1:A:109:VAL:O	1:A:109:VAL:HG23	0.50	2.06	19	1
1:A:101:ARG:HD2	1:A:167:LEU:HD11	0.50	1.84	4	1
1:A:16:LEU:HD12	1:A:43:LEU:CD2	0.50	2.36	8	1
1:A:30:ARG:CB	1:A:31:PRO:CD	0.49	2.90	18	20
1:A:74:LEU:HD13	1:A:75:ARG:N	0.49	2.23	19	2
1:A:36:LEU:HD23	1:A:37:GLN:OE1	0.49	2.06	1	1
1:A:215:GLY:HA2	1:A:220:LEU:HD21	0.49	1.83	13	1
1:A:124:VAL:HG21	1:A:130:ASP:OD2	0.49	2.06	17	1
1:A:234:LEU:HD13	1:A:234:LEU:O	0.49	2.08	7	4
1:A:61:LEU:HD21	1:A:76:PRO:HB3	0.49	1.84	6	2
1:A:114:ILE:HG22	1:A:155:PHE:CD2	0.49	2.43	6	1
1:A:30:ARG:N	1:A:31:PRO:HD2	0.49	2.23	20	18
1:A:213:ASP:OD2	1:A:234:LEU:HD11	0.49	2.07	1	1
1:A:119:ILE:HD13	1:A:194:ILE:HG13	0.49	1.82	8	1
1:A:4:LEU:HD12	1:A:43:LEU:HD13	0.49	1.84	17	1
1:A:79:PRO:HB2	1:A:109:VAL:HG22	0.48	1.84	8	7

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:74:LEU:HD23	1:A:75:ARG:N	0.48	2.23	9	3
1:A:14:THR:HG23	1:A:41:GLU:OE1	0.48	2.08	17	2
1:A:17:ILE:HD11	1:A:44:ALA:HB2	0.48	1.84	7	1
1:A:105:PHE:CB	1:A:106:PRO:CD	0.48	2.91	16	5
1:A:97:GLN:NE2	1:A:167:LEU:HD21	0.48	2.23	9	1
1:A:178:ILE:O	1:A:204:ALA:HB1	0.48	2.08	12	3
1:A:133:LEU:HD12	1:A:134:ASP:N	0.48	2.23	8	4
1:A:175:LEU:HD11	1:A:202:LYS:NZ	0.48	2.23	3	1
1:A:78:ARG:N	1:A:79:PRO:CD	0.48	2.77	19	6
1:A:57:ALA:C	1:A:58:ILE:HD12	0.48	2.29	7	4
1:A:8:PHE:CE1	1:A:64:LEU:HD12	0.48	2.44	10	1
1:A:177:GLN:O	1:A:178:ILE:HD13	0.48	2.09	16	9
1:A:146:LEU:HD12	1:A:146:LEU:O	0.47	2.09	7	7
1:A:188:LEU:HD13	1:A:195:ARG:CB	0.47	2.39	2	1
1:A:62:GLU:OE2	1:A:99:LEU:HD21	0.47	2.09	4	1
1:A:32:LEU:CD1	1:A:208:THR:HG23	0.47	2.38	10	5
1:A:109:VAL:C	1:A:110:ILE:HD12	0.47	2.30	13	1
1:A:4:LEU:HD22	1:A:56:SER:HB3	0.47	1.86	14	1
1:A:192:LYS:HE2	1:A:220:LEU:HD11	0.47	1.86	1	1
1:A:61:LEU:HD21	1:A:76:PRO:CB	0.47	2.40	10	1
1:A:119:ILE:HD11	1:A:133:LEU:CD1	0.47	2.40	15	1
1:A:124:VAL:HG12	1:A:126:HIS:H	0.47	1.70	15	1
1:A:18:CYS:SG	1:A:45:ALA:HB3	0.47	2.50	12	1
1:A:78:ARG:CB	1:A:79:PRO:CD	0.47	2.92	5	14
1:A:148:GLU:O	1:A:152:VAL:HG13	0.47	2.09	3	1
1:A:187:GLY:O	1:A:188:LEU:C	0.47	2.53	15	6
1:A:118:HIS:O	1:A:119:ILE:HG23	0.47	2.10	16	2
1:A:32:LEU:CD2	1:A:208:THR:HG23	0.47	2.40	8	1
1:A:126:HIS:CE1	1:A:127:LEU:HD12	0.47	2.45	9	1
1:A:36:LEU:HD11	1:A:182:VAL:CG2	0.47	2.37	13	1
1:A:139:LEU:HD11	1:A:191:LYS:HD2	0.47	1.86	20	1
1:A:67:LEU:HD23	1:A:67:LEU:O	0.47	2.09	1	1
1:A:69:LYS:HD3	1:A:74:LEU:HD12	0.46	1.86	10	1
1:A:180:SER:O	1:A:207:ILE:HD12	0.46	2.09	9	1
1:A:32:LEU:HG	1:A:208:THR:HG23	0.46	1.87	11	1
1:A:82:LEU:HD13	1:A:96:ALA:CB	0.46	2.39	11	1
1:A:79:PRO:CB	1:A:109:VAL:HG22	0.46	2.41	5	6
1:A:71:GLU:C	1:A:72:LEU:HD22	0.46	2.31	19	1
1:A:14:THR:HG23	1:A:41:GLU:CD	0.46	2.31	18	1
1:A:6:LYS:HG3	1:A:64:LEU:HD11	0.46	1.87	15	3
1:A:18:CYS:HB3	1:A:45:ALA:HB3	0.46	1.88	2	5

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:109:VAL:HG13	1:A:182:VAL:CG1	0.46	2.41	3	1
1:A:195:ARG:O	1:A:199:GLY:N	0.46	2.49	12	2
1:A:149:ASN:O	1:A:152:VAL:HG22	0.46	2.11	8	2
1:A:99:LEU:O	1:A:99:LEU:HD23	0.46	2.11	9	2
1:A:78:ARG:CB	1:A:104:ILE:HD13	0.45	2.41	20	1
1:A:212:PHE:HA	1:A:234:LEU:HD11	0.45	1.87	11	1
1:A:8:PHE:CD1	1:A:64:LEU:HD12	0.45	2.46	20	1
1:A:58:ILE:HG21	1:A:96:ALA:HA	0.45	1.88	13	1
1:A:152:VAL:CG2	1:A:157:LEU:HD22	0.45	2.34	18	2
1:A:17:ILE:HD12	1:A:20:PRO:CG	0.45	2.40	17	1
1:A:88:GLY:C	1:A:114:ILE:HD13	0.45	2.32	18	1
1:A:85:HIS:O	1:A:114:ILE:HG23	0.45	2.10	20	1
1:A:105:PHE:N	1:A:106:PRO:CD	0.45	2.80	4	5
1:A:36:LEU:HD13	1:A:36:LEU:O	0.45	2.12	5	1
1:A:61:LEU:O	1:A:65:THR:HG23	0.45	2.12	11	2
1:A:215:GLY:HA3	1:A:220:LEU:HD11	0.45	1.87	13	1
1:A:157:LEU:O	1:A:157:LEU:HD23	0.45	2.12	1	1
1:A:43:LEU:HD22	1:A:60:ASP:OD1	0.44	2.12	11	1
1:A:188:LEU:HD13	1:A:195:ARG:HD3	0.44	1.87	1	1
1:A:126:HIS:O	1:A:127:LEU:HD12	0.44	2.13	12	1
1:A:212:PHE:HA	1:A:234:LEU:HD22	0.44	1.88	12	1
1:A:30:ARG:O	1:A:34:ALA:HB2	0.44	2.12	13	1
1:A:14:THR:HG21	1:A:61:LEU:CD2	0.44	2.37	16	1
1:A:119:ILE:HD11	1:A:134:ASP:HA	0.44	1.89	17	1
1:A:43:LEU:HD12	1:A:44:ALA:H	0.44	1.73	14	2
1:A:13:LYS:HE2	1:A:109:VAL:HG21	0.44	1.89	15	1
1:A:5:PHE:O	1:A:43:LEU:HD12	0.44	2.12	9	2
1:A:219:LEU:HD13	1:A:219:LEU:O	0.43	2.13	1	1
1:A:136:ILE:HG22	1:A:138:GLN:CB	0.43	2.43	7	4
1:A:180:SER:N	1:A:181:PRO:HD2	0.43	2.28	10	17
1:A:104:ILE:HG23	1:A:104:ILE:O	0.43	2.13	4	3
1:A:4:LEU:HD13	1:A:56:SER:HB3	0.43	1.90	4	2
1:A:6:LYS:HD2	1:A:64:LEU:HD23	0.43	1.90	10	1
1:A:69:LYS:HD2	1:A:74:LEU:HD12	0.43	1.90	10	1
1:A:188:LEU:HD13	1:A:195:ARG:HG3	0.43	1.91	19	1
1:A:159:SER:O	1:A:159:SER:OG	0.43	2.33	20	1
1:A:124:VAL:HG22	1:A:126:HIS:H	0.43	1.73	9	2
1:A:160:PHE:O	1:A:161:ARG:C	0.43	2.57	7	1
1:A:136:ILE:O	1:A:137:ILE:C	0.43	2.56	9	2
1:A:119:ILE:HD13	1:A:119:ILE:H	0.43	1.74	17	1
1:A:237:HIS:CB	1:A:238:PRO:CD	0.43	2.96	5	18

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:118:HIS:CE1	1:A:157:LEU:HD13	0.43	2.48	10	1
1:A:61:LEU:HD23	1:A:62:GLU:N	0.43	2.28	11	1
1:A:152:VAL:HB	1:A:157:LEU:HD22	0.42	1.90	19	1
1:A:81:VAL:HG13	1:A:109:VAL:HG22	0.42	1.90	18	1
1:A:180:SER:CB	1:A:181:PRO:HD3	0.42	2.44	19	1
1:A:230:ILE:HG22	1:A:234:LEU:HD12	0.42	1.89	20	1
1:A:136:ILE:HG22	1:A:138:GLN:HB2	0.42	1.91	11	2
1:A:103:GLY:C	1:A:104:ILE:HD12	0.42	2.35	10	1
1:A:142:MET:HE3	1:A:144:ALA:HB3	0.42	1.91	12	1
1:A:80:PHE:O	1:A:110:ILE:HD13	0.42	2.15	20	1
1:A:4:LEU:HD11	1:A:43:LEU:CD1	0.42	2.44	1	1
1:A:211:GLN:O	1:A:234:LEU:HD22	0.42	2.14	20	1
1:A:4:LEU:HD11	1:A:60:ASP:HB3	0.42	1.92	3	1
1:A:108:ALA:C	1:A:110:ILE:HD12	0.41	2.35	3	1
1:A:234:LEU:HD13	1:A:234:LEU:C	0.41	2.35	7	1
1:A:133:LEU:HD21	1:A:191:LYS:NZ	0.41	2.30	12	1
1:A:36:LEU:HD21	1:A:207:ILE:CG2	0.41	2.45	9	1
1:A:61:LEU:HB2	1:A:99:LEU:HD21	0.41	1.92	8	1
1:A:219:LEU:O	1:A:223:THR:HG22	0.41	2.16	9	1
1:A:80:PHE:O	1:A:110:ILE:HG22	0.41	2.14	12	1
1:A:72:LEU:HD13	1:A:73:ASN:N	0.41	2.31	14	1
1:A:58:ILE:O	1:A:99:LEU:HD12	0.41	2.14	15	1
1:A:119:ILE:HD13	1:A:119:ILE:N	0.41	2.30	17	1
1:A:184:VAL:HG13	1:A:210:HIS:HB3	0.41	1.91	20	1
1:A:16:LEU:CD1	1:A:58:ILE:HD12	0.41	2.39	6	1
1:A:119:ILE:HG21	1:A:194:ILE:HD11	0.41	1.93	4	1
1:A:182:VAL:HG22	1:A:208:THR:HB	0.41	1.92	15	1
1:A:18:CYS:CB	1:A:45:ALA:HB3	0.41	2.46	20	1
1:A:105:PHE:HB3	1:A:106:PRO:HD3	0.41	1.92	2	1
1:A:14:THR:HG1	1:A:77:ASP:CG	0.41	2.18	6	1
1:A:237:HIS:N	1:A:238:PRO:CD	0.41	2.84	6	1
1:A:4:LEU:HD13	1:A:56:SER:HB2	0.41	1.93	4	1
1:A:97:GLN:HE21	1:A:167:LEU:HD21	0.41	1.76	9	1
1:A:16:LEU:HD12	1:A:43:LEU:HD23	0.41	1.93	15	1
1:A:101:ARG:HE	1:A:167:LEU:HD22	0.41	1.76	17	1
1:A:163:ASP:O	1:A:167:LEU:N	0.41	2.54	2	1
1:A:213:ASP:OD1	1:A:230:ILE:HD12	0.41	2.16	15	1
1:A:234:LEU:C	1:A:234:LEU:HD13	0.41	2.36	18	1
1:A:104:ILE:HD11	1:A:106:PRO:HG2	0.41	1.93	4	2
1:A:111:ILE:HD13	1:A:112:SER:O	0.41	2.16	12	1
1:A:175:LEU:H	1:A:175:LEU:HD23	0.41	1.76	15	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:217:MET:HB2	1:A:220:LEU:HD12	0.41	1.93	20	1
1:A:157:LEU:HD23	1:A:157:LEU:O	0.40	2.15	7	1
1:A:119:ILE:O	1:A:119:ILE:HD12	0.40	2.15	14	1
1:A:202:LYS:CD	1:A:204:ALA:HB3	0.40	2.42	8	1
1:A:223:THR:CG2	1:A:226:VAL:HG23	0.40	2.46	14	1
1:A:82:LEU:HD13	1:A:93:PHE:CD1	0.40	2.52	19	1
1:A:175:LEU:HD23	1:A:175:LEU:H	0.40	1.76	7	1
1:A:82:LEU:HD13	1:A:96:ALA:HB1	0.40	1.93	11	1
1:A:73:ASN:O	1:A:74:LEU:HD12	0.40	2.16	13	1
1:A:182:VAL:HG22	1:A:207:ILE:CG2	0.40	2.47	2	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	228/242 (94%)	178±4 (78±2%)	46±5 (20±2%)	4±1 (2±1%)	12	54
All	All	4560/4840 (94%)	3553 (78%)	926 (20%)	81 (2%)	12	54

All 23 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	180	SER	20
1	A	89	GLY	14
1	A	104	ILE	9
1	A	159	SER	5
1	A	141	GLY	5
1	A	61	LEU	3
1	A	190	ASP	3
1	A	217	MET	3
1	A	56	SER	2
1	A	71	GLU	2
1	A	121	ARG	2
1	A	232	ALA	2

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Mol	Chain	Res	Type	Models (Total)
1	A	114	ILE	1
1	A	72	LEU	1
1	A	94	ARG	1
1	A	215	GLY	1
1	A	96	ALA	1
1	A	65	THR	1
1	A	132	PHE	1
1	A	90	MET	1
1	A	92	THR	1
1	A	60	ASP	1
1	A	149	ASN	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	198/210 (94%)	170±4 (86±2%)	28±4 (14±2%)	6 46
All	All	3960/4200 (94%)	3403 (86%)	557 (14%)	6 46

All 122 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	180	SER	20
1	A	194	ILE	20
1	A	201	LYS	20
1	A	93	PHE	19
1	A	111	ILE	19
1	A	188	LEU	18
1	A	237	HIS	18
1	A	119	ILE	16
1	A	6	LYS	15
1	A	29	PHE	14
1	A	190	ASP	13
1	A	205	LYS	12
1	A	26	SER	11
1	A	32	LEU	11

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Mol	Chain	Res	Type	Models (Total)
1	A	85	HIS	11
1	A	156	PHE	11
1	A	185	PHE	10
1	A	161	ARG	9
1	A	146	LEU	9
1	A	60	ASP	9
1	A	43	LEU	8
1	A	90	MET	8
1	A	77	ASP	7
1	A	219	LEU	7
1	A	8	PHE	7
1	A	206	ASP	7
1	A	234	LEU	6
1	A	217	MET	6
1	A	123	LYS	5
1	A	130	ASP	5
1	A	115	GLN	5
1	A	211	GLN	4
1	A	99	LEU	4
1	A	107	GLN	4
1	A	195	ARG	4
1	A	61	LEU	4
1	A	98	LYS	4
1	A	142	MET	4
1	A	36	LEU	4
1	A	150	LYS	4
1	A	100	GLU	4
1	A	122	LYS	4
1	A	200	TRP	4
1	A	213	ASP	4
1	A	110	ILE	3
1	A	157	LEU	3
1	A	83	PHE	3
1	A	223	THR	3
1	A	56	SER	3
1	A	126	HIS	3
1	A	186	ASN	3
1	A	202	LYS	3
1	A	207	ILE	3
1	A	28	SER	3
1	A	75	ARG	3
1	A	87	MET	3

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Mol	Chain	Res	Type	Models (Total)
1	A	120	GLN	3
1	A	136	ILE	3
1	A	170	PHE	3
1	A	30	ARG	3
1	A	13	LYS	3
1	A	162	SER	3
1	A	82	LEU	3
1	A	172	LEU	3
1	A	235	ASN	3
1	A	105	PHE	3
1	A	118	HIS	3
1	A	165	ARG	3
1	A	16	LEU	2
1	A	78	ARG	2
1	A	163	ASP	2
1	A	171	GLU	2
1	A	174	ASP	2
1	A	183	HIS	2
1	A	67	LEU	2
1	A	175	LEU	2
1	A	19	PHE	2
1	A	192	LYS	2
1	A	37	GLN	2
1	A	131	GLN	2
1	A	167	LEU	2
1	A	33	HIS	2
1	A	86	SER	2
1	A	198	GLU	2
1	A	73	ASN	2
1	A	92	THR	2
1	A	129	ASP	2
1	A	74	LEU	2
1	A	112	SER	2
1	A	72	LEU	2
1	A	69	LYS	2
1	A	39	GLU	1
1	A	145	GLU	1
1	A	212	PHE	1
1	A	15	GLN	1
1	A	17	ILE	1
1	A	91	ILE	1
1	A	189	ASP	1

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Mol	Chain	Res	Type	Models (Total)
1	A	191	LYS	1
1	A	102	GLU	1
1	A	121	ARG	1
1	A	133	LEU	1
1	A	70	GLN	1
1	A	164	TYR	1
1	A	179	GLN	1
1	A	220	LEU	1
1	A	68	TYR	1
1	A	152	VAL	1
1	A	231	PHE	1
1	A	2	SER	1
1	A	222	GLN	1
1	A	94	ARG	1
1	A	109	VAL	1
1	A	138	GLN	1
1	A	151	GLU	1
1	A	236	GLN	1
1	A	64	LEU	1
1	A	101	ARG	1
1	A	127	LEU	1
1	A	11	SER	1
1	A	14	THR	1
1	A	159	SER	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 monosaccharides in this entry.

6.6 Ligand geometry

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

No chemical shift data were provided