Full wwPDB NMR Structure Validation Report

Feb 24, 2022 – 09:33 AM EST

PDB ID	:	1Z87
Title	:	solution structure of the split PH-PDZ Supramodule of alpha-Syntrophin
Authors	:	Yan, J.; Xu, W.; Wen, W.; Long, J.F.; Adams, M.E.; Froehner, S.C.; Zhang, M.
Deposited on	:	2005-03-30

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 (i)) were used in the production of this report:

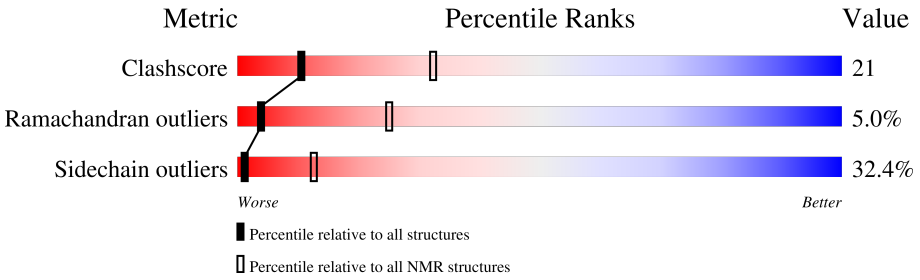
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
RCI	:	v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV	:	Wang et al. (2010)
ShiftChecker	:	2.26
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.26

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	263	30% 30% · 37%

2 Ensemble composition and analysis

This entry contains 15 models. Model 3 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:8-A:17, A:27-A:45, A:206-A:221, A:228-A:264 (82)	0.45	1
2	A:79-A:163 (85)	0.46	3

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 1 single-model cluster was found.

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

3 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 3906 atoms, of which 1960 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Alpha-1-syntrophin.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	263	3906	1207	1960	355	378	6	0

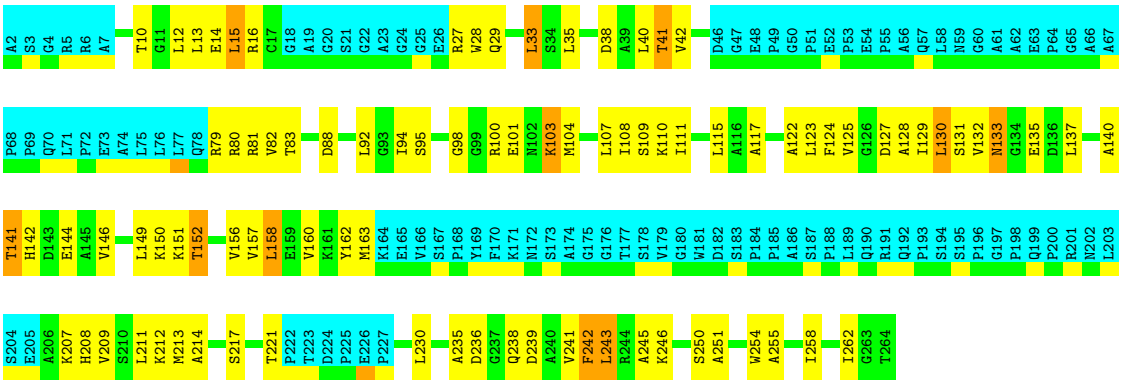
4 Residue-property plots

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: Alpha-1-syntrophin

Chain A: 30% 30% 37%



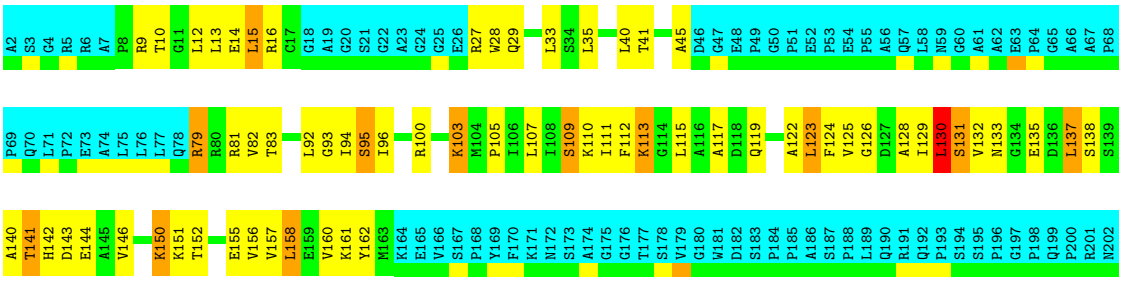
4.2 Scores per residue for each member of the ensemble

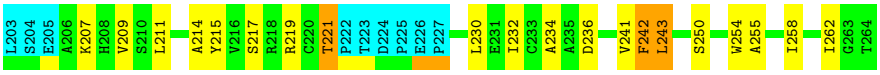
Colouring as in section 4.1 above.

4.2.1 Score per residue for model 1

• Molecule 1: Alpha-1-syntrophin

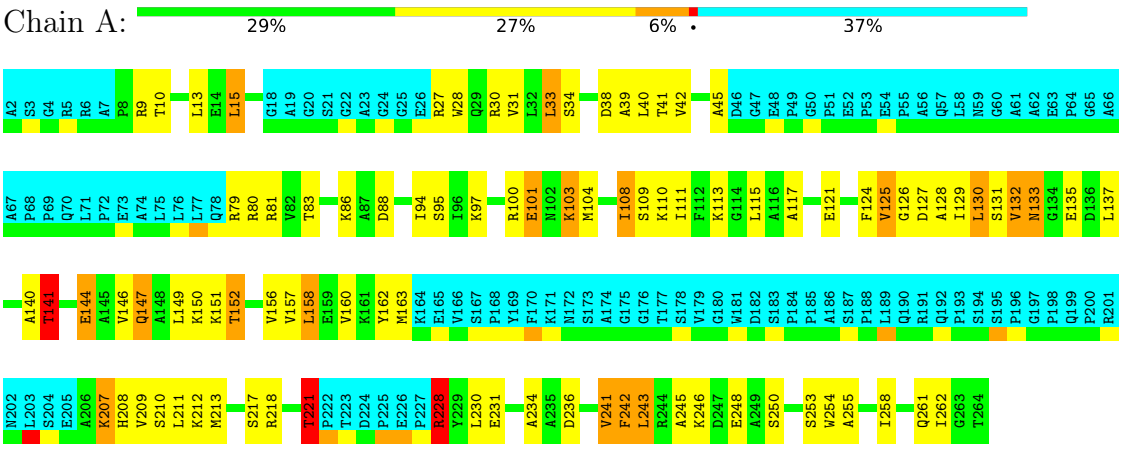
Chain A: 31% 27% 6% 37%





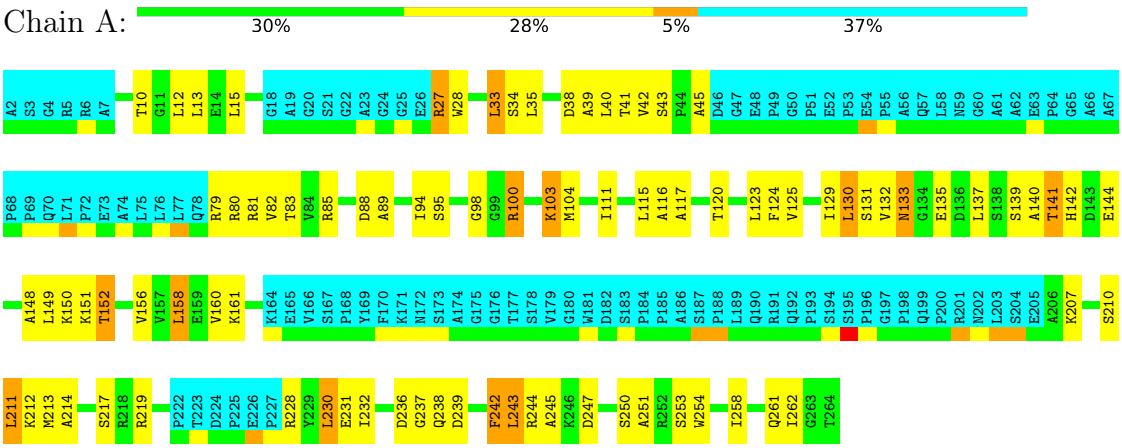
4.2.2 Score per residue for model 2

• Molecule 1: Alpha-1-syntrophin



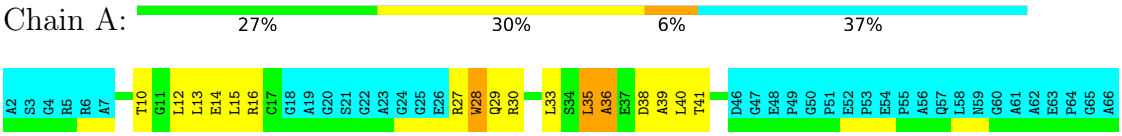
4.2.3 Score per residue for model 3 (medoid)

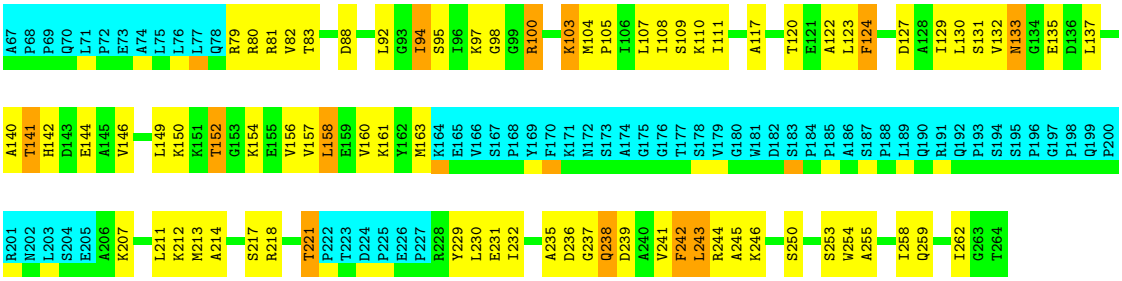
• Molecule 1: Alpha-1-syntrophin



4.2.4 Score per residue for model 4

• Molecule 1: Alpha-1-syntrophin

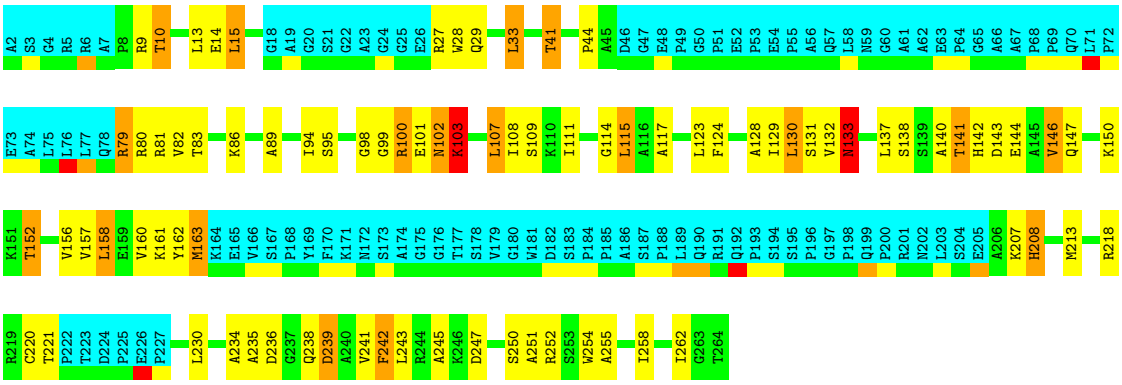




4.2.5 Score per residue for model 5

• Molecule 1: Alpha-1-syntrophin

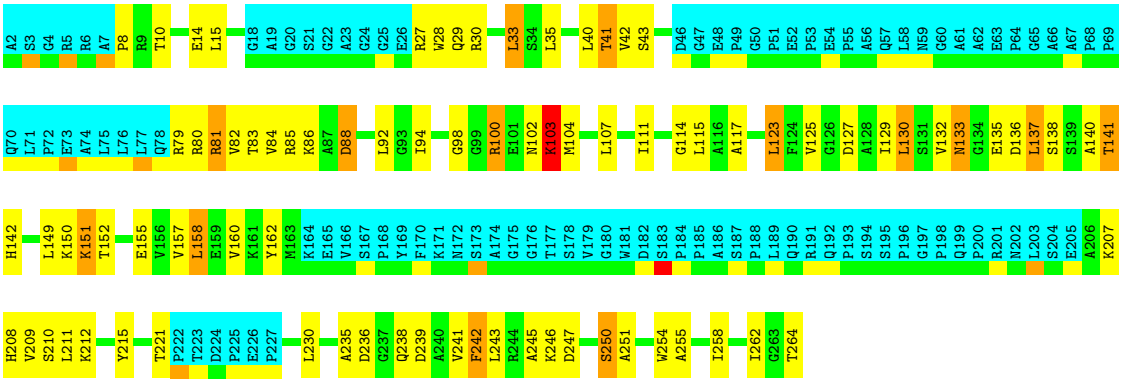
Chain A: 32% 24% 7% 37%



4.2.6 Score per residue for model 6

• Molecule 1: Alpha-1-syntrophin

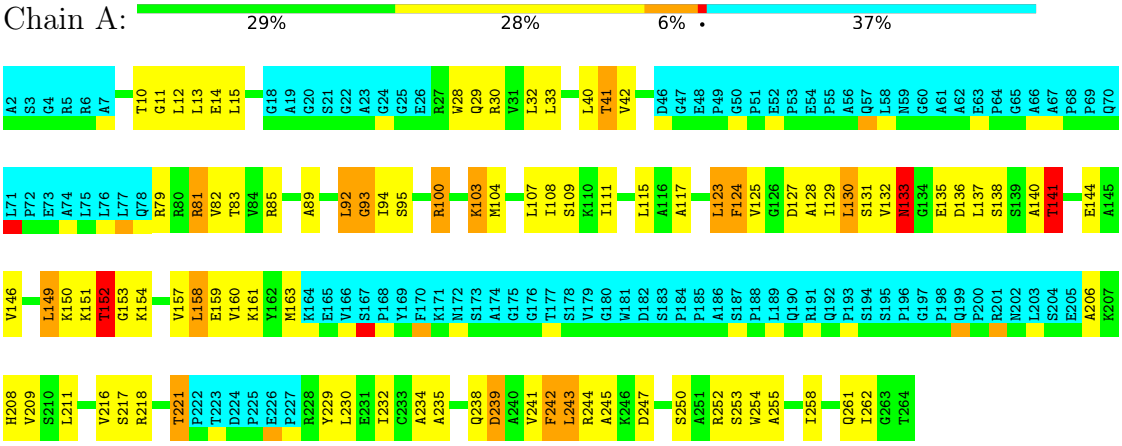
Chain A: 32% 26% 5% 37%



4.2.7 Score per residue for model 7

• Molecule 1: Alpha-1-syntrophin

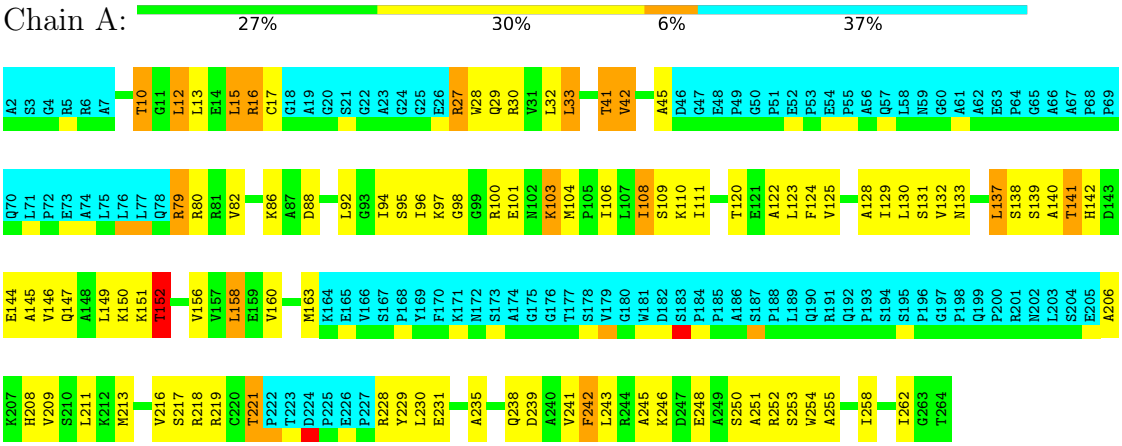
Chain A:



4.2.8 Score per residue for model 8

• Molecule 1: Alpha-1-syntrophin

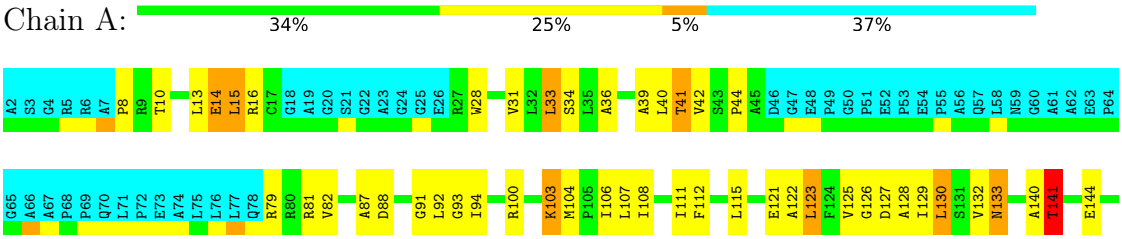
Chain A:

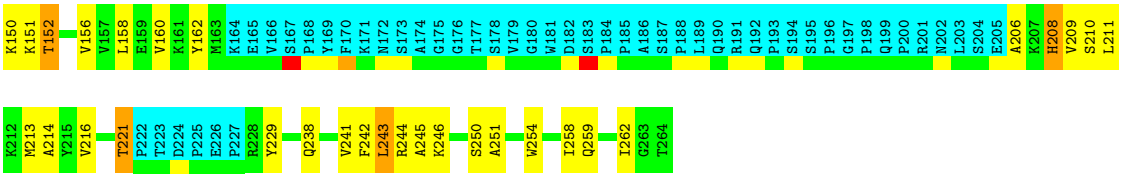


4.2.9 Score per residue for model 9

• Molecule 1: Alpha-1-syntrophin

Chain A:

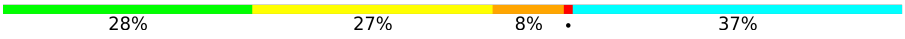


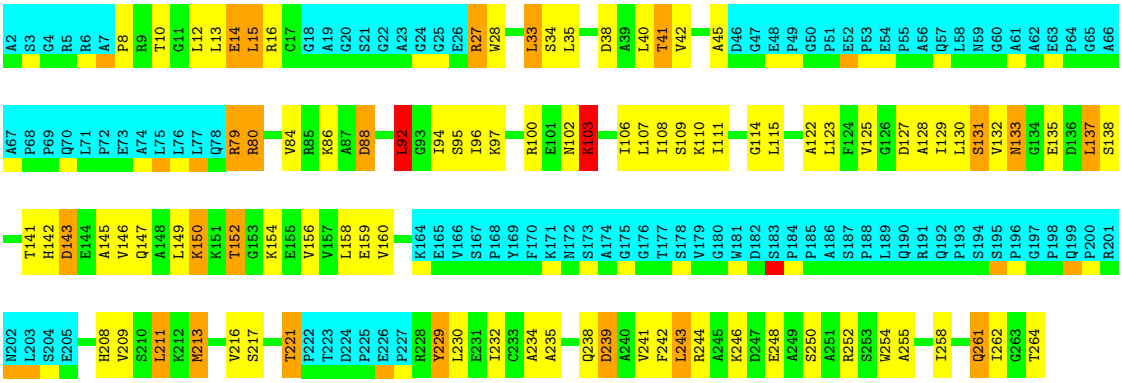


4.2.10 Score per residue for model 10

• Molecule 1: Alpha-1-syntrophin

Chain A:

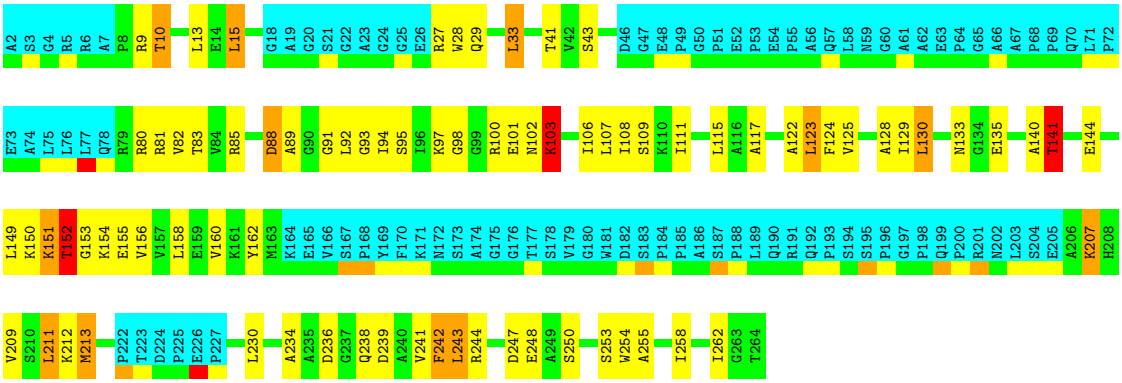




4.2.11 Score per residue for model 11

• Molecule 1: Alpha-1-syntrophin

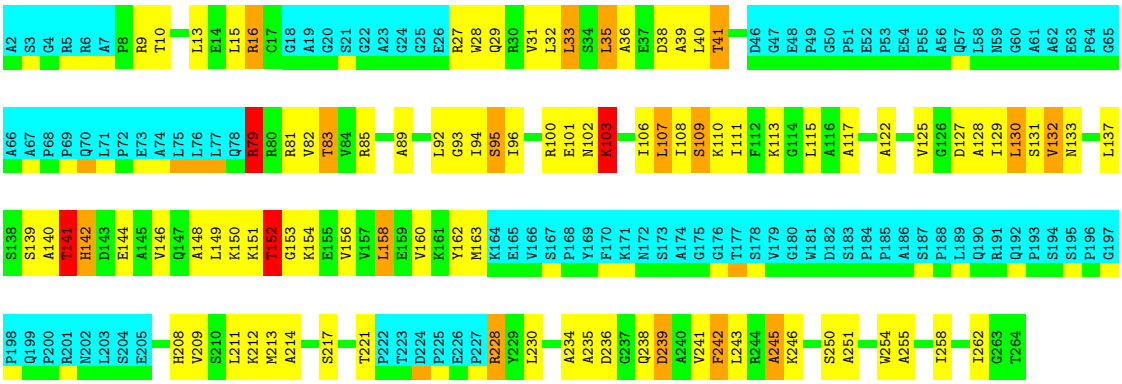
Chain A:



4.2.12 Score per residue for model 12

• Molecule 1: Alpha-1-syntrophin

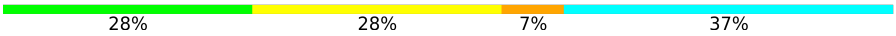
Chain A:

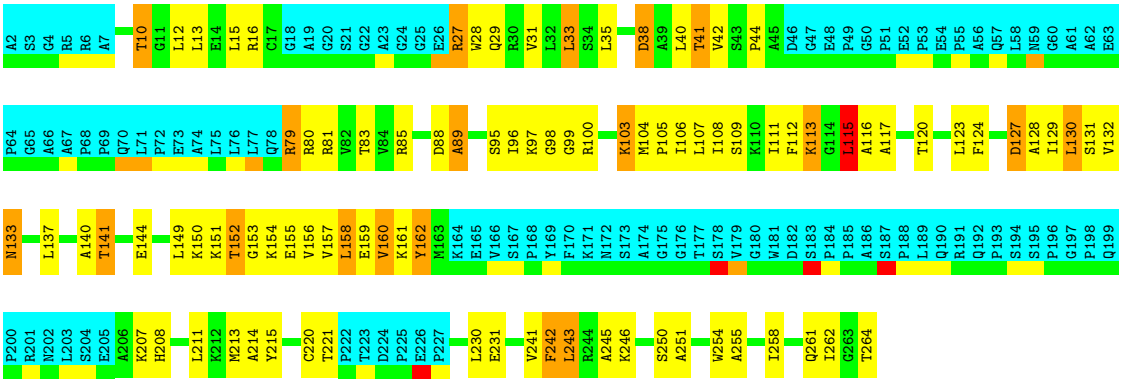


4.2.13 Score per residue for model 13

• Molecule 1: Alpha-1-syntrophin

Chain A:

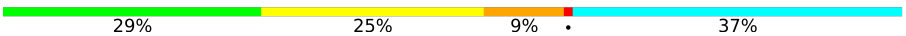


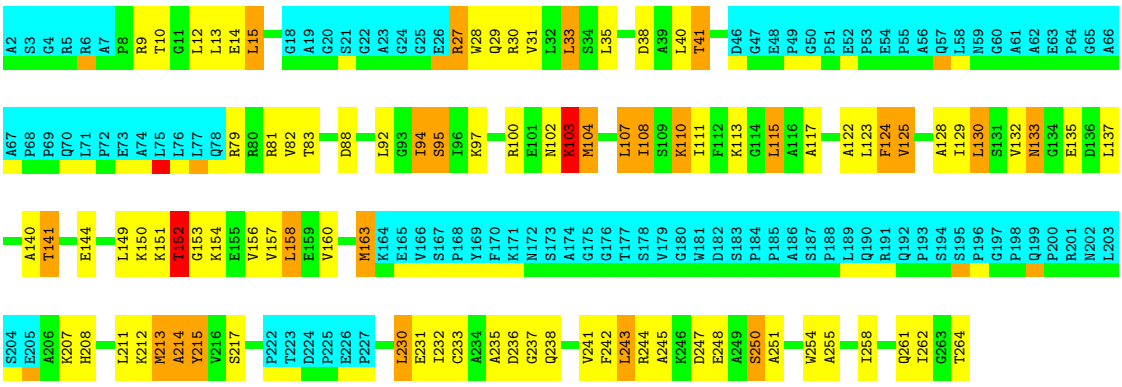


4.2.14 Score per residue for model 14

• Molecule 1: Alpha-1-syntrophin

Chain A:

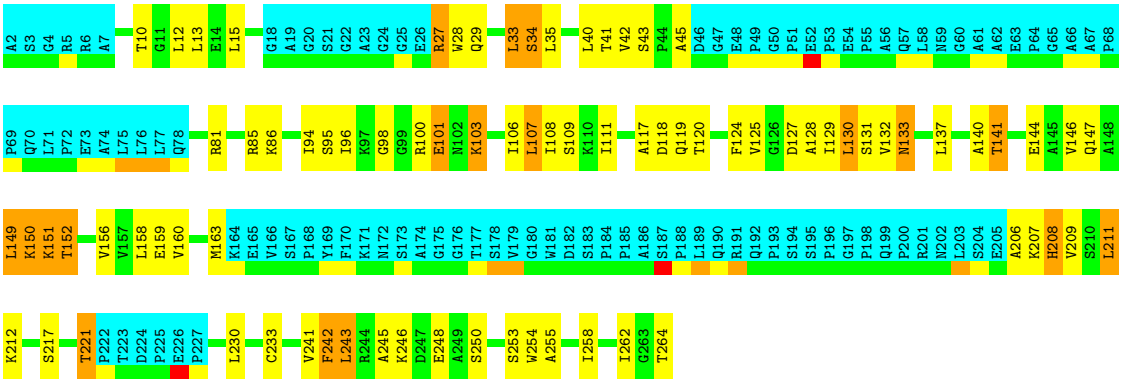




4.2.15 Score per residue for model 15

• Molecule 1: Alpha-1-syntrophin

Chain A: 33% 24% 7% 37%



5 Refinement protocol and experimental data overview

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

Of the 200 calculated structures, 15 were deposited, based on the following criterion: *structures with the lowest energy.*

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

Software name	Classification	Version
CNS	refinement	1.1

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	1271	1326	1324	54±7
All	All	19065	19890	19860	816

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 21.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:230:LEU:HD21	1:A:255:ALA:HB2	1.04	1.27	15	7
1:A:96:ILE:HD11	1:A:146:VAL:HG22	0.98	1.26	8	1
1:A:258:ILE:HG22	1:A:262:ILE:HD11	0.98	1.34	6	4
1:A:83:THR:HG23	1:A:157:VAL:HG22	0.93	1.37	5	7
1:A:245:ALA:HB2	1:A:251:ALA:HB2	0.92	1.39	14	1
1:A:13:LEU:HD13	1:A:243:LEU:HD13	0.90	1.41	14	2
1:A:132:VAL:HG13	1:A:158:LEU:HD12	0.87	1.45	3	5
1:A:108:ILE:HG21	1:A:111:ILE:HD11	0.86	1.47	13	5
1:A:152:THR:HG21	1:A:156:VAL:HG13	0.85	1.46	9	8
1:A:230:LEU:HD22	1:A:255:ALA:HB2	0.84	1.49	1	4
1:A:140:ALA:HB1	1:A:144:GLU:CB	0.82	2.04	1	13
1:A:258:ILE:HG22	1:A:262:ILE:CD1	0.81	2.06	2	11
1:A:13:LEU:CD1	1:A:243:LEU:HD13	0.80	2.07	14	1
1:A:245:ALA:HB3	1:A:251:ALA:HB2	0.80	1.52	6	6

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:230:LEU:CD2	1:A:255:ALA:HB2	0.80	2.06	5	8
1:A:111:ILE:HG23	1:A:117:ALA:HB1	0.79	1.53	14	10
1:A:230:LEU:HD21	1:A:255:ALA:CB	0.79	2.06	15	1
1:A:40:LEU:HD23	1:A:211:LEU:HD12	0.78	1.56	7	2
1:A:40:LEU:HD23	1:A:211:LEU:HD21	0.77	1.53	10	3
1:A:82:VAL:HG13	1:A:122:ALA:HB3	0.77	1.56	14	7
1:A:149:LEU:HD12	1:A:150:LYS:N	0.77	1.93	2	9
1:A:140:ALA:HB1	1:A:144:GLU:HB3	0.77	1.55	13	13
1:A:130:LEU:HD12	1:A:131:SER:OG	0.76	1.81	1	1
1:A:232:ILE:CD1	1:A:243:LEU:HD21	0.75	2.11	14	1
1:A:258:ILE:CG2	1:A:262:ILE:HD11	0.74	2.12	6	7
1:A:129:ILE:HA	1:A:160:VAL:HG12	0.73	1.60	6	14
1:A:12:LEU:O	1:A:13:LEU:HD23	0.72	1.84	1	5
1:A:242:PHE:O	1:A:243:LEU:HD22	0.72	1.84	5	4
1:A:12:LEU:HD21	1:A:45:ALA:CB	0.72	2.15	1	2
1:A:137:LEU:HD23	1:A:140:ALA:HB3	0.72	1.62	8	2
1:A:132:VAL:HG23	1:A:158:LEU:HD12	0.72	1.60	9	3
1:A:235:ALA:HB3	1:A:238:GLN:HG3	0.71	1.61	14	2
1:A:211:LEU:HD12	1:A:262:ILE:HG12	0.70	1.61	15	2
1:A:100:ARG:CB	1:A:141:THR:HG22	0.70	2.16	3	4
1:A:152:THR:OG1	1:A:156:VAL:HG22	0.69	1.87	11	2
1:A:33:LEU:HD12	1:A:42:VAL:HG13	0.69	1.62	7	6
1:A:242:PHE:C	1:A:243:LEU:HD13	0.69	2.07	13	9
1:A:242:PHE:C	1:A:243:LEU:HD22	0.69	2.07	8	4
1:A:36:ALA:HB3	1:A:39:ALA:O	0.68	1.88	9	3
1:A:213:MET:HB3	1:A:235:ALA:HB2	0.68	1.63	8	1
1:A:245:ALA:CB	1:A:251:ALA:HB2	0.68	2.17	14	5
1:A:108:ILE:HG21	1:A:111:ILE:CD1	0.68	2.17	13	3
1:A:13:LEU:HD21	1:A:254:TRP:NE1	0.68	2.03	10	8
1:A:146:VAL:HG12	1:A:150:LYS:CE	0.67	2.19	15	1
1:A:209:VAL:CG1	1:A:234:ALA:HB2	0.67	2.20	11	4
1:A:82:VAL:HG21	1:A:123:LEU:HG	0.66	1.65	1	1
1:A:232:ILE:HD12	1:A:243:LEU:HD11	0.66	1.67	3	4
1:A:235:ALA:HB3	1:A:238:GLN:OE1	0.66	1.90	12	1
1:A:94:ILE:HG23	1:A:117:ALA:HB2	0.66	1.66	11	7
1:A:28:TRP:CD1	1:A:28:TRP:N	0.66	2.61	4	15
1:A:13:LEU:HD13	1:A:243:LEU:CD1	0.65	2.21	14	1
1:A:209:VAL:HG13	1:A:239:ASP:HB2	0.65	1.66	11	1
1:A:214:ALA:HB3	1:A:262:ILE:HD13	0.65	1.67	1	5
1:A:14:GLU:C	1:A:15:LEU:HD23	0.65	2.12	10	2
1:A:94:ILE:HG22	1:A:111:ILE:HA	0.65	1.69	2	12

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:15:LEU:HD23	1:A:16:ARG:O	0.65	1.91	8	2
1:A:98:GLY:HA3	1:A:106:ILE:HD13	0.65	1.66	11	3
1:A:146:VAL:HG12	1:A:150:LYS:HE3	0.65	1.69	15	1
1:A:115:LEU:HD22	1:A:115:LEU:N	0.65	2.07	13	1
1:A:107:LEU:CD2	1:A:128:ALA:HB2	0.65	2.22	10	7
1:A:40:LEU:CD2	1:A:211:LEU:HD21	0.65	2.21	10	1
1:A:123:LEU:HD13	1:A:123:LEU:N	0.64	2.07	6	2
1:A:96:ILE:HD12	1:A:142:HIS:CE1	0.64	2.26	8	1
1:A:38:ASP:C	1:A:211:LEU:HD13	0.64	2.12	14	2
1:A:207:LYS:HE2	1:A:241:VAL:HG13	0.64	1.68	2	1
1:A:221:THR:HG21	1:A:229:TYR:CE2	0.64	2.27	7	1
1:A:15:LEU:HD22	1:A:242:PHE:O	0.64	1.93	14	4
1:A:93:GLY:HA3	1:A:115:LEU:HD13	0.62	1.71	1	3
1:A:156:VAL:HG12	1:A:158:LEU:HD12	0.62	1.71	4	4
1:A:107:LEU:HD23	1:A:128:ALA:HB2	0.62	1.72	5	4
1:A:243:LEU:HD13	1:A:243:LEU:N	0.62	2.10	4	8
1:A:221:THR:HG21	1:A:229:TYR:CZ	0.62	2.29	7	1
1:A:137:LEU:HD22	1:A:140:ALA:CB	0.61	2.25	7	2
1:A:85:ARG:O	1:A:89:ALA:HB3	0.61	1.96	3	3
1:A:12:LEU:HD21	1:A:45:ALA:HB2	0.61	1.72	3	2
1:A:140:ALA:HB1	1:A:144:GLU:HB2	0.61	1.72	4	10
1:A:258:ILE:HG22	1:A:262:ILE:HD12	0.61	1.73	14	10
1:A:35:LEU:HD21	1:A:261:GLN:HG3	0.61	1.70	3	3
1:A:245:ALA:HB1	1:A:250:SER:CB	0.60	2.26	4	3
1:A:152:THR:OG1	1:A:153:GLY:N	0.60	2.31	11	4
1:A:211:LEU:HD12	1:A:262:ILE:CG1	0.60	2.26	15	2
1:A:101:GLU:N	1:A:141:THR:HG22	0.60	2.11	8	2
1:A:137:LEU:HB3	1:A:140:ALA:HB3	0.60	1.73	13	3
1:A:13:LEU:HD12	1:A:33:LEU:HB2	0.60	1.74	3	1
1:A:214:ALA:O	1:A:262:ILE:HD13	0.60	1.96	4	1
1:A:235:ALA:HB3	1:A:238:GLN:HG2	0.60	1.73	7	4
1:A:13:LEU:HD22	1:A:244:ARG:O	0.59	1.97	4	1
1:A:92:LEU:HD12	1:A:92:LEU:O	0.59	1.97	6	1
1:A:211:LEU:HD22	1:A:262:ILE:HG12	0.59	1.75	10	2
1:A:107:LEU:HD23	1:A:128:ALA:HA	0.59	1.73	11	1
1:A:82:VAL:HG11	1:A:123:LEU:HG	0.59	1.73	14	1
1:A:94:ILE:HD13	1:A:94:ILE:N	0.59	2.13	4	1
1:A:30:ARG:HD2	1:A:45:ALA:HB3	0.59	1.73	8	1
1:A:137:LEU:HD12	1:A:140:ALA:HB3	0.58	1.74	1	1
1:A:211:LEU:HD23	1:A:262:ILE:HG13	0.58	1.72	1	1
1:A:114:GLY:O	1:A:115:LEU:HD12	0.58	1.97	6	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:234:ALA:HB3	1:A:239:ASP:CB	0.58	2.28	7	3
1:A:42:VAL:O	1:A:206:ALA:HB1	0.58	1.99	7	4
1:A:40:LEU:HD23	1:A:211:LEU:HD11	0.58	1.75	12	2
1:A:94:ILE:HD12	1:A:96:ILE:CG2	0.58	2.28	8	2
1:A:94:ILE:HD12	1:A:96:ILE:HG23	0.57	1.75	8	3
1:A:116:ALA:O	1:A:120:THR:HG23	0.57	1.99	13	2
1:A:40:LEU:HD23	1:A:211:LEU:CD1	0.57	2.28	1	2
1:A:111:ILE:HG23	1:A:117:ALA:CB	0.57	2.26	14	3
1:A:108:ILE:O	1:A:125:VAL:HG23	0.57	2.00	7	1
1:A:245:ALA:HB2	1:A:251:ALA:CB	0.56	2.25	14	1
1:A:243:LEU:HD22	1:A:243:LEU:N	0.56	2.16	13	2
1:A:211:LEU:HD21	1:A:262:ILE:HA	0.56	1.76	7	1
1:A:82:VAL:HG13	1:A:122:ALA:CB	0.56	2.30	11	2
1:A:41:THR:HG23	1:A:208:HIS:CG	0.56	2.35	10	6
1:A:129:ILE:CA	1:A:160:VAL:HG12	0.56	2.30	1	12
1:A:83:THR:CG2	1:A:157:VAL:HG22	0.56	2.27	6	3
1:A:132:VAL:HG22	1:A:158:LEU:HG	0.56	1.78	14	4
1:A:39:ALA:N	1:A:211:LEU:HD13	0.56	2.16	3	1
1:A:123:LEU:HD12	1:A:123:LEU:O	0.56	2.01	5	1
1:A:39:ALA:N	1:A:211:LEU:HD12	0.56	2.16	2	1
1:A:35:LEU:HD12	1:A:40:LEU:HB3	0.56	1.78	3	2
1:A:245:ALA:HB1	1:A:250:SER:HB2	0.56	1.76	4	2
1:A:82:VAL:HG21	1:A:123:LEU:HD12	0.56	1.77	6	1
1:A:11:GLY:O	1:A:32:LEU:HD12	0.56	2.01	7	1
1:A:38:ASP:O	1:A:211:LEU:HD13	0.56	2.01	14	1
1:A:100:ARG:HB3	1:A:141:THR:HG22	0.56	1.78	3	2
1:A:13:LEU:HD13	1:A:243:LEU:CD2	0.55	2.31	11	3
1:A:108:ILE:HG13	1:A:123:LEU:HD21	0.55	1.78	10	1
1:A:143:ASP:O	1:A:146:VAL:HG12	0.55	2.01	10	2
1:A:10:THR:HG22	1:A:33:LEU:O	0.55	2.01	13	3
1:A:15:LEU:HD12	1:A:243:LEU:HD12	0.54	1.79	1	1
1:A:132:VAL:HG12	1:A:158:LEU:HD12	0.54	1.78	2	1
1:A:108:ILE:O	1:A:125:VAL:HG13	0.54	2.02	11	1
1:A:132:VAL:HG21	1:A:137:LEU:HD11	0.54	1.79	12	1
1:A:243:LEU:N	1:A:243:LEU:HD22	0.54	2.17	7	1
1:A:15:LEU:N	1:A:15:LEU:HD23	0.54	2.16	9	1
1:A:209:VAL:HG22	1:A:239:ASP:OD2	0.54	2.03	12	1
1:A:13:LEU:HD12	1:A:33:LEU:HD13	0.54	1.80	8	3
1:A:91:GLY:O	1:A:115:LEU:HD22	0.54	2.02	9	1
1:A:243:LEU:HD22	1:A:243:LEU:H	0.54	1.61	7	3
1:A:125:VAL:O	1:A:125:VAL:HG13	0.54	2.02	2	3

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:40:LEU:O	1:A:40:LEU:HD12	0.54	2.03	9	5
1:A:106:ILE:HG23	1:A:142:HIS:CE1	0.54	2.38	8	1
1:A:232:ILE:CD1	1:A:243:LEU:HD11	0.54	2.33	4	2
1:A:96:ILE:HD11	1:A:146:VAL:CG2	0.54	2.19	8	1
1:A:114:GLY:O	1:A:115:LEU:HD22	0.53	2.02	10	1
1:A:152:THR:CG2	1:A:156:VAL:HG22	0.53	2.33	13	1
1:A:230:LEU:HD11	1:A:251:ALA:HB1	0.53	1.79	14	1
1:A:152:THR:HG21	1:A:156:VAL:HA	0.53	1.79	5	1
1:A:132:VAL:HG13	1:A:158:LEU:CD1	0.53	2.34	7	2
1:A:38:ASP:HA	1:A:211:LEU:HD22	0.53	1.78	13	1
1:A:229:TYR:CZ	1:A:242:PHE:CD1	0.53	2.97	8	1
1:A:214:ALA:HB3	1:A:262:ILE:CD1	0.53	2.33	1	1
1:A:13:LEU:HD13	1:A:243:LEU:HD23	0.53	1.81	1	2
1:A:152:THR:HG21	1:A:156:VAL:CG1	0.53	2.33	15	3
1:A:125:VAL:O	1:A:125:VAL:HG22	0.53	2.04	3	2
1:A:96:ILE:HD12	1:A:106:ILE:CG2	0.53	2.34	15	3
1:A:137:LEU:HD23	1:A:140:ALA:CB	0.52	2.32	8	2
1:A:127:ASP:HB3	1:A:160:VAL:HG11	0.52	1.79	13	1
1:A:100:ARG:HB2	1:A:141:THR:HG22	0.52	1.79	5	3
1:A:41:THR:HG1	1:A:208:HIS:CD2	0.52	2.22	14	4
1:A:209:VAL:HG12	1:A:211:LEU:H	0.52	1.63	15	5
1:A:156:VAL:HG12	1:A:158:LEU:CD1	0.52	2.34	14	2
1:A:82:VAL:HG11	1:A:123:LEU:CD1	0.52	2.34	11	1
1:A:137:LEU:HD13	1:A:140:ALA:HB3	0.52	1.81	14	2
1:A:113:LYS:HB3	1:A:115:LEU:HD13	0.52	1.81	13	1
1:A:82:VAL:CG1	1:A:122:ALA:HB3	0.52	2.35	11	1
1:A:108:ILE:CD1	1:A:108:ILE:N	0.51	2.74	2	3
1:A:33:LEU:HD13	1:A:243:LEU:HG	0.51	1.82	5	2
1:A:11:GLY:C	1:A:32:LEU:HD12	0.51	2.26	7	1
1:A:96:ILE:CD1	1:A:142:HIS:CE1	0.51	2.94	8	1
1:A:94:ILE:CG2	1:A:117:ALA:HB2	0.51	2.36	3	3
1:A:215:TYR:CE1	1:A:264:THR:HG21	0.51	2.40	6	1
1:A:94:ILE:HD13	1:A:94:ILE:H	0.50	1.65	4	1
1:A:215:TYR:CD1	1:A:264:THR:HG21	0.50	2.41	14	1
1:A:112:PHE:O	1:A:115:LEU:HD12	0.50	2.05	1	1
1:A:210:SER:O	1:A:211:LEU:HD23	0.50	2.06	2	1
1:A:82:VAL:HG11	1:A:123:LEU:HD23	0.50	1.82	7	1
1:A:132:VAL:HG13	1:A:158:LEU:HG	0.50	1.82	4	1
1:A:15:LEU:HD23	1:A:15:LEU:N	0.50	2.22	10	1
1:A:114:GLY:C	1:A:115:LEU:HD22	0.50	2.27	10	1
1:A:96:ILE:HD12	1:A:142:HIS:CD2	0.50	2.42	10	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:81:ARG:O	1:A:81:ARG:HG2	0.50	2.06	7	1
1:A:137:LEU:HD11	1:A:148:ALA:CB	0.50	2.37	3	1
1:A:229:TYR:CZ	1:A:242:PHE:CE1	0.50	3.00	8	1
1:A:132:VAL:CG1	1:A:158:LEU:HD12	0.50	2.27	3	2
1:A:209:VAL:HG22	1:A:239:ASP:CB	0.50	2.37	11	1
1:A:207:LYS:CE	1:A:241:VAL:HG13	0.49	2.37	2	1
1:A:81:ARG:O	1:A:81:ARG:CG	0.49	2.60	7	1
1:A:146:VAL:HA	1:A:149:LEU:HD23	0.49	1.83	15	2
1:A:15:LEU:HD12	1:A:31:VAL:HG21	0.49	1.85	2	1
1:A:92:LEU:HD21	1:A:149:LEU:HD13	0.49	1.83	8	1
1:A:96:ILE:HD12	1:A:106:ILE:HG21	0.49	1.84	12	1
1:A:149:LEU:HD12	1:A:149:LEU:C	0.49	2.28	11	5
1:A:16:ARG:CG	1:A:28:TRP:CD1	0.49	2.95	4	1
1:A:115:LEU:HD23	1:A:117:ALA:HB3	0.49	1.83	13	1
1:A:132:VAL:CG2	1:A:137:LEU:HD12	0.49	2.38	7	1
1:A:129:ILE:HG21	1:A:132:VAL:CG2	0.49	2.38	4	1
1:A:30:ARG:O	1:A:31:VAL:HG13	0.49	2.07	14	1
1:A:88:ASP:O	1:A:89:ALA:HB2	0.49	2.08	13	1
1:A:245:ALA:HB2	1:A:254:TRP:HD1	0.49	1.67	2	1
1:A:82:VAL:HG22	1:A:122:ALA:HB1	0.49	1.84	12	1
1:A:102:ASN:C	1:A:103:LYS:HG3	0.48	2.26	10	1
1:A:213:MET:HA	1:A:264:THR:HG21	0.48	1.85	10	1
1:A:94:ILE:HG23	1:A:117:ALA:CB	0.48	2.39	7	3
1:A:229:TYR:CE1	1:A:242:PHE:CD1	0.48	3.01	8	1
1:A:229:TYR:CE2	1:A:242:PHE:CE1	0.48	3.02	8	1
1:A:229:TYR:CZ	1:A:242:PHE:CZ	0.48	3.01	10	1
1:A:209:VAL:HG22	1:A:239:ASP:HB3	0.48	1.85	11	1
1:A:97:LYS:N	1:A:142:HIS:CE1	0.48	2.81	8	1
1:A:38:ASP:C	1:A:211:LEU:HD12	0.48	2.28	2	1
1:A:132:VAL:HG12	1:A:158:LEU:CD1	0.48	2.37	2	1
1:A:92:LEU:HD22	1:A:149:LEU:HD13	0.48	1.84	7	1
1:A:128:ALA:HB3	1:A:163:MET:SD	0.48	2.49	5	1
1:A:242:PHE:CD1	1:A:243:LEU:N	0.48	2.82	14	2
1:A:130:LEU:HD23	1:A:130:LEU:N	0.48	2.23	13	1
1:A:150:LYS:HG2	1:A:151:LYS:N	0.48	2.24	14	1
1:A:100:ARG:HG3	1:A:141:THR:HG23	0.48	1.86	7	1
1:A:209:VAL:HG13	1:A:234:ALA:HB2	0.48	1.86	11	1
1:A:82:VAL:HG11	1:A:123:LEU:HD13	0.48	1.86	11	1
1:A:133:ASN:HD21	1:A:156:VAL:HG13	0.48	1.67	14	1
1:A:82:VAL:HG11	1:A:123:LEU:HD12	0.47	1.87	1	1
1:A:83:THR:O	1:A:120:THR:HG21	0.47	2.09	4	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:105:PRO:O	1:A:107:LEU:HD12	0.47	2.08	1	3
1:A:98:GLY:N	1:A:142:HIS:CD2	0.47	2.83	3	4
1:A:108:ILE:HD11	1:A:123:LEU:HD21	0.47	1.85	9	1
1:A:35:LEU:HD11	1:A:258:ILE:HG12	0.47	1.87	12	1
1:A:31:VAL:HG12	1:A:44:PRO:HA	0.47	1.87	13	2
1:A:150:LYS:CG	1:A:151:LYS:N	0.47	2.77	3	5
1:A:216:VAL:CG2	1:A:217:SER:N	0.47	2.77	8	1
1:A:137:LEU:HD21	1:A:145:ALA:HA	0.46	1.86	10	1
1:A:147:GLN:HA	1:A:150:LYS:HD2	0.46	1.87	15	1
1:A:80:ARG:HH11	1:A:122:ALA:HB1	0.46	1.70	10	1
1:A:211:LEU:HD22	1:A:262:ILE:HA	0.46	1.87	2	1
1:A:245:ALA:HB1	1:A:250:SER:OG	0.46	2.11	15	1
1:A:79:ARG:HD3	1:A:130:LEU:HD11	0.46	1.86	13	2
1:A:108:ILE:HD11	1:A:123:LEU:HD11	0.46	1.88	10	1
1:A:41:THR:HB	1:A:208:HIS:CD2	0.46	2.46	15	1
1:A:41:THR:HG1	1:A:208:HIS:CE1	0.46	2.28	12	2
1:A:132:VAL:HG23	1:A:158:LEU:CD1	0.46	2.39	15	1
1:A:98:GLY:N	1:A:142:HIS:CE1	0.46	2.84	8	1
1:A:35:LEU:HD23	1:A:261:GLN:HB2	0.46	1.86	10	1
1:A:155:GLU:O	1:A:155:GLU:CG	0.46	2.64	13	3
1:A:40:LEU:HD23	1:A:211:LEU:HD22	0.45	1.87	15	1
1:A:137:LEU:CD2	1:A:140:ALA:HB3	0.45	2.37	8	1
1:A:212:LYS:O	1:A:213:MET:CB	0.45	2.64	14	1
1:A:111:ILE:HG22	1:A:111:ILE:O	0.45	2.12	14	2
1:A:245:ALA:HB1	1:A:250:SER:HB3	0.45	1.88	2	2
1:A:83:THR:HG23	1:A:157:VAL:CG2	0.45	2.26	5	1
1:A:250:SER:O	1:A:254:TRP:CD1	0.45	2.70	2	15
1:A:137:LEU:HD11	1:A:148:ALA:HB1	0.45	1.88	3	1
1:A:13:LEU:HB2	1:A:243:LEU:HD12	0.45	1.88	5	1
1:A:216:VAL:HG21	1:A:259:GLN:CG	0.45	2.42	9	1
1:A:15:LEU:CD1	1:A:243:LEU:HD12	0.45	2.41	11	1
1:A:140:ALA:O	1:A:141:THR:O	0.45	2.35	1	7
1:A:147:GLN:HA	1:A:150:LYS:HG2	0.45	1.88	2	1
1:A:211:LEU:O	1:A:262:ILE:HG23	0.45	2.12	4	1
1:A:123:LEU:HD22	1:A:123:LEU:H	0.45	1.72	11	1
1:A:33:LEU:HD12	1:A:42:VAL:CG1	0.45	2.42	13	1
1:A:115:LEU:N	1:A:115:LEU:CD2	0.45	2.78	13	1
1:A:13:LEU:HD12	1:A:33:LEU:HD22	0.45	1.89	11	1
1:A:137:LEU:HD13	1:A:140:ALA:CB	0.45	2.42	14	1
1:A:149:LEU:C	1:A:149:LEU:HD12	0.44	2.32	4	2
1:A:148:ALA:O	1:A:152:THR:HG22	0.44	2.12	12	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:12:LEU:CD2	1:A:45:ALA:HB2	0.44	2.40	3	1
1:A:96:ILE:CG1	1:A:142:HIS:CE1	0.44	3.00	8	1
1:A:15:LEU:HD22	1:A:243:LEU:HB3	0.44	1.90	9	1
1:A:129:ILE:HG22	1:A:130:LEU:N	0.44	2.28	1	12
1:A:108:ILE:HG22	1:A:125:VAL:HA	0.44	1.90	2	1
1:A:132:VAL:O	1:A:133:ASN:C	0.44	2.56	4	10
1:A:235:ALA:HB3	1:A:238:GLN:CG	0.44	2.43	7	1
1:A:97:LYS:CA	1:A:142:HIS:CE1	0.44	3.00	8	1
1:A:34:SER:HB2	1:A:41:THR:HG23	0.44	1.90	15	1
1:A:92:LEU:HD21	1:A:94:ILE:HG12	0.44	1.87	1	1
1:A:106:ILE:HG22	1:A:129:ILE:HD12	0.44	1.90	11	1
1:A:35:LEU:HD11	1:A:211:LEU:HD21	0.43	1.90	1	1
1:A:146:VAL:O	1:A:149:LEU:HG	0.43	2.13	12	1
1:A:230:LEU:HD11	1:A:251:ALA:CB	0.43	2.42	14	1
1:A:221:THR:CG2	1:A:229:TYR:CE2	0.43	2.99	7	1
1:A:243:LEU:N	1:A:243:LEU:CD1	0.43	2.82	10	1
1:A:103:LYS:N	1:A:103:LYS:CD	0.43	2.82	5	5
1:A:216:VAL:HG11	1:A:258:ILE:HB	0.43	1.89	7	2
1:A:79:ARG:CD	1:A:130:LEU:HD11	0.43	2.44	13	1
1:A:152:THR:CG2	1:A:156:VAL:HG13	0.43	2.41	4	1
1:A:129:ILE:HG12	1:A:158:LEU:HD23	0.43	1.90	7	1
1:A:97:LYS:C	1:A:142:HIS:CE1	0.43	2.92	8	1
1:A:209:VAL:HG12	1:A:210:SER:N	0.43	2.29	9	1
1:A:145:ALA:O	1:A:149:LEU:HD23	0.43	2.14	8	1
1:A:216:VAL:CG1	1:A:258:ILE:HG21	0.43	2.44	7	1
1:A:13:LEU:HD12	1:A:243:LEU:HG	0.42	1.89	2	1
1:A:242:PHE:CD1	1:A:242:PHE:O	0.42	2.72	2	1
1:A:123:LEU:HD12	1:A:123:LEU:C	0.42	2.35	5	1
1:A:229:TYR:CD1	1:A:229:TYR:O	0.42	2.72	4	1
1:A:232:ILE:HD12	1:A:243:LEU:HD21	0.42	1.87	14	1
1:A:13:LEU:CD1	1:A:33:LEU:HD22	0.42	2.44	11	1
1:A:94:ILE:CG2	1:A:117:ALA:CB	0.42	2.98	4	6
1:A:95:SER:O	1:A:109:SER:CB	0.42	2.67	1	2
1:A:214:ALA:HB3	1:A:262:ILE:HG21	0.42	1.90	14	1
1:A:82:VAL:HG12	1:A:83:THR:N	0.42	2.29	1	5
1:A:96:ILE:HG13	1:A:142:HIS:NE2	0.42	2.29	8	1
1:A:115:LEU:CD2	1:A:117:ALA:HB3	0.42	2.45	13	1
1:A:93:GLY:CA	1:A:115:LEU:HD13	0.42	2.44	1	1
1:A:232:ILE:HB	1:A:241:VAL:HG23	0.42	1.92	1	1
1:A:82:VAL:O	1:A:157:VAL:HA	0.42	2.14	7	1
1:A:10:THR:CG2	1:A:32:LEU:HD21	0.42	2.44	8	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:221:THR:CG2	1:A:229:TYR:CE1	0.42	3.03	10	1
1:A:213:MET:O	1:A:213:MET:CE	0.42	2.68	11	1
1:A:82:VAL:HG21	1:A:123:LEU:HD23	0.42	1.91	5	1
1:A:108:ILE:HG21	1:A:111:ILE:CG1	0.42	2.45	5	2
1:A:142:HIS:O	1:A:146:VAL:HG23	0.42	2.14	8	2
1:A:84:VAL:HG11	1:A:92:LEU:CD1	0.42	2.44	10	1
1:A:42:VAL:HG12	1:A:43:SER:N	0.42	2.30	6	1
1:A:211:LEU:HD11	1:A:262:ILE:HG12	0.42	1.91	7	1
1:A:102:ASN:O	1:A:103:LYS:HG2	0.41	2.15	11	4
1:A:133:ASN:OD1	1:A:152:THR:HG23	0.41	2.14	5	1
1:A:42:VAL:HG23	1:A:207:LYS:O	0.41	2.15	15	1
1:A:216:VAL:CG1	1:A:258:ILE:CG2	0.41	2.98	7	2
1:A:107:LEU:HD21	1:A:128:ALA:HB2	0.41	1.92	9	1
1:A:211:LEU:HD23	1:A:262:ILE:CG1	0.41	2.45	3	3
1:A:101:GLU:N	1:A:141:THR:HG23	0.41	2.30	2	1
1:A:31:VAL:HG12	1:A:32:LEU:N	0.41	2.30	12	1
1:A:95:SER:O	1:A:110:LYS:N	0.41	2.54	14	1
1:A:16:ARG:HG3	1:A:28:TRP:CD1	0.41	2.49	4	1
1:A:262:ILE:HG22	1:A:264:THR:H	0.41	1.76	15	1
1:A:123:LEU:O	1:A:124:PHE:CG	0.41	2.73	1	1
1:A:40:LEU:HB3	1:A:211:LEU:HD11	0.41	1.92	4	1
1:A:100:ARG:HB2	1:A:141:THR:HG23	0.41	1.91	6	1
1:A:242:PHE:C	1:A:242:PHE:CD1	0.41	2.94	5	1
1:A:84:VAL:HG12	1:A:85:ARG:N	0.41	2.31	6	1
1:A:123:LEU:HD13	1:A:123:LEU:H	0.41	1.73	6	1
1:A:132:VAL:HG12	1:A:158:LEU:HG	0.41	1.92	12	1
1:A:111:ILE:O	1:A:111:ILE:HG22	0.41	2.15	15	1
1:A:128:ALA:O	1:A:130:LEU:HD23	0.41	2.16	2	1
1:A:102:ASN:C	1:A:103:LYS:CD	0.41	2.89	6	3
1:A:82:VAL:O	1:A:158:LEU:N	0.41	2.53	1	1
1:A:128:ALA:HB2	1:A:163:MET:HG3	0.41	1.93	2	1
1:A:81:ARG:N	1:A:81:ARG:HD2	0.41	2.30	7	1
1:A:234:ALA:HB3	1:A:239:ASP:HB3	0.41	1.93	7	1
1:A:106:ILE:HG23	1:A:142:HIS:ND1	0.41	2.31	8	1
1:A:93:GLY:O	1:A:112:PHE:CD1	0.41	2.74	9	1
1:A:106:ILE:H	1:A:106:ILE:HD12	0.41	1.76	9	1
1:A:131:SER:O	1:A:159:GLU:CB	0.41	2.69	10	2
1:A:112:PHE:CD1	1:A:112:PHE:N	0.41	2.88	13	1
1:A:147:GLN:O	1:A:151:LYS:HG3	0.41	2.15	15	1
1:A:211:LEU:HD21	1:A:262:ILE:HG12	0.41	1.93	7	1
1:A:15:LEU:HD12	1:A:243:LEU:HD11	0.40	1.91	5	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:128:ALA:HB3	1:A:163:MET:CE	0.40	2.45	8	1
1:A:258:ILE:CG2	1:A:262:ILE:CD1	0.40	2.99	14	2
1:A:207:LYS:HD2	1:A:241:VAL:HG22	0.40	1.92	11	1
1:A:102:ASN:O	1:A:104:MET:N	0.40	2.55	14	1
1:A:230:LEU:HD21	1:A:251:ALA:HB1	0.40	1.93	3	1
1:A:213:MET:O	1:A:213:MET:HE3	0.40	2.17	11	1
1:A:146:VAL:O	1:A:150:LYS:CB	0.40	2.69	1	1
1:A:16:ARG:HG2	1:A:28:TRP:CD1	0.40	2.51	4	1
1:A:12:LEU:HD21	1:A:30:ARG:HD3	0.40	1.93	8	1
1:A:115:LEU:N	1:A:115:LEU:HD12	0.40	2.32	2	1
1:A:150:LYS:HG3	1:A:151:LYS:N	0.40	2.32	2	1
1:A:35:LEU:HD13	1:A:254:TRP:CZ3	0.40	2.51	4	1
1:A:106:ILE:HD12	1:A:106:ILE:H	0.40	1.77	10	1
1:A:13:LEU:HD22	1:A:245:ALA:HA	0.40	1.92	13	1
1:A:133:ASN:ND2	1:A:156:VAL:HG13	0.40	2.32	14	1
1:A:132:VAL:CG1	1:A:158:LEU:CD1	0.40	2.99	2	1
1:A:39:ALA:CA	1:A:211:LEU:HD12	0.40	2.47	4	1
1:A:15:LEU:HD23	1:A:16:ARG:N	0.40	2.31	12	1
1:A:128:ALA:CB	1:A:163:MET:CE	0.40	2.99	14	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	166/263 (63%)	127±3 (77±2%)	31±3 (18±2%)	8±2 (5±1%)	4	25
All	All	2490/3945 (63%)	1905 (77%)	460 (18%)	125 (5%)	4	25

All 32 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	103	LYS	15
1	A	133	ASN	15
1	A	141	THR	15

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Mol	Chain	Res	Type	Models (Total)
1	A	27	ARG	10
1	A	79	ARG	9
1	A	125	VAL	7
1	A	124	PHE	5
1	A	152	THR	5
1	A	221	THR	4
1	A	88	ASP	4
1	A	126	GLY	3
1	A	45	ALA	3
1	A	237	GLY	3
1	A	89	ALA	3
1	A	113	LYS	2
1	A	228	ARG	2
1	A	99	GLY	2
1	A	93	GLY	2
1	A	151	LYS	2
1	A	115	LEU	2
1	A	130	LEU	1
1	A	36	ALA	1
1	A	44	PRO	1
1	A	87	ALA	1
1	A	92	LEU	1
1	A	91	GLY	1
1	A	211	LEU	1
1	A	245	ALA	1
1	A	153	GLY	1
1	A	213	MET	1
1	A	214	ALA	1
1	A	248	GLU	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	131/201 (65%)	89±6 (68±4%)	42±6 (32±4%)	1 12
All	All	1965/3015 (65%)	1328 (68%)	637 (32%)	1 12

All 107 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	10	THR	15
1	A	103	LYS	15
1	A	130	LEU	15
1	A	152	THR	15
1	A	33	LEU	14
1	A	41	THR	14
1	A	15	LEU	13
1	A	81	ARG	13
1	A	95	SER	13
1	A	158	LEU	13
1	A	100	ARG	13
1	A	242	PHE	12
1	A	241	VAL	12
1	A	29	GLN	11
1	A	109	SER	11
1	A	243	LEU	11
1	A	131	SER	10
1	A	79	ARG	9
1	A	123	LEU	9
1	A	135	GLU	9
1	A	217	SER	9
1	A	236	ASP	9
1	A	27	ARG	9
1	A	80	ARG	9
1	A	104	MET	9
1	A	127	ASP	9
1	A	213	MET	9
1	A	221	THR	9
1	A	246	LYS	9
1	A	14	GLU	8
1	A	162	TYR	8
1	A	207	LYS	8
1	A	88	ASP	8
1	A	124	PHE	8
1	A	239	ASP	8
1	A	110	LYS	7
1	A	150	LYS	7
1	A	212	LYS	7
1	A	253	SER	7
1	A	92	LEU	7
1	A	154	LYS	7
1	A	9	ARG	6

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Mol	Chain	Res	Type	Models (Total)
1	A	16	ARG	6
1	A	138	SER	6
1	A	161	LYS	6
1	A	86	LYS	6
1	A	97	LYS	6
1	A	231	GLU	6
1	A	244	ARG	6
1	A	247	ASP	6
1	A	137	LEU	5
1	A	151	LYS	5
1	A	34	SER	5
1	A	101	GLU	5
1	A	141	THR	5
1	A	218	ARG	5
1	A	248	GLU	5
1	A	38	ASP	5
1	A	115	LEU	5
1	A	238	GLN	5
1	A	163	MET	5
1	A	107	LEU	5
1	A	113	LYS	4
1	A	30	ARG	4
1	A	147	GLN	4
1	A	208	HIS	4
1	A	228	ARG	4
1	A	35	LEU	4
1	A	252	ARG	4
1	A	215	TYR	3
1	A	219	ARG	3
1	A	108	ILE	3
1	A	146	VAL	3
1	A	261	GLN	3
1	A	43	SER	3
1	A	139	SER	3
1	A	211	LEU	3
1	A	133	ASN	3
1	A	12	LEU	3
1	A	85	ARG	3
1	A	119	GLN	2
1	A	143	ASP	2
1	A	121	GLU	2
1	A	132	VAL	2

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Mol	Chain	Res	Type	Models (Total)
1	A	42	VAL	2
1	A	210	SER	2
1	A	230	LEU	2
1	A	94	ILE	2
1	A	220	CYS	2
1	A	136	ASP	2
1	A	250	SER	2
1	A	83	THR	2
1	A	149	LEU	2
1	A	159	GLU	2
1	A	120	THR	2
1	A	229	TYR	2
1	A	233	CYS	2
1	A	144	GLU	1
1	A	28	TRP	1
1	A	259	GLN	1
1	A	102	ASN	1
1	A	155	GLU	1
1	A	17	CYS	1
1	A	142	HIS	1
1	A	160	VAL	1
1	A	264	THR	1
1	A	118	ASP	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