Full wwPDB NMR Structure Validation Report ⓘ

Jun 12, 2024 – 12:11 AM EDT

PDB ID	:	1FMF
Title	:	REFINED SOLUTION STRUCTURE OF THE (13C,15N-LABELED) B12-BINDING SUBUNIT OF GLUTAMATE MUTASE FROM CLOSTRIDIUM TETANOMORPHUM
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Deposited on	:	2000-08-17

This is a Full wwPDB NMR Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/NMRValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

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

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

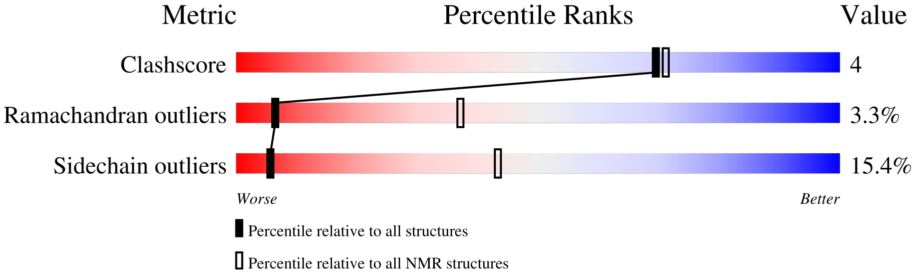
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
wwPDB-RCI	:	v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV	:	Wang et al. (2010)
wwPDB-ShiftChecker	:	v1.2
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson 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	137	

2 Ensemble composition and analysis ⓘ

This entry contains 30 models. Model 25 is the overall representative, medoid model (most similar to other models). The authors have identified model 16 as representative, based on the following criterion: *fewest 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:3-A:12, A:25-A:63, A:67-A:95, A:101-A:137 (115)	0.91	25

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 6 clusters and 4 single-model clusters were found.

Cluster number	**Models**
1	2, 3, 4, 5, 7, 9, 14, 15, 25, 30
2	1, 6, 11, 13, 23
3	10, 12, 18, 24, 27
4	20, 21
5	17, 19
6	26, 29
Single-model clusters	8; 16; 22; 28

3 Entry composition ⓘ

There is only 1 type of molecule in this entry. The entry contains 2058 atoms, of which 1025 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called METHYLASPARTATE MUTASE S CHAIN.

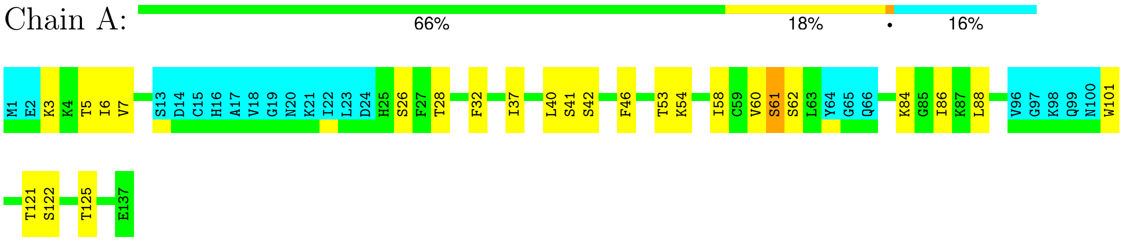
Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	137	2058	651	1025	173	202	7	0

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: METHYLASPARTATE MUTASE S CHAIN

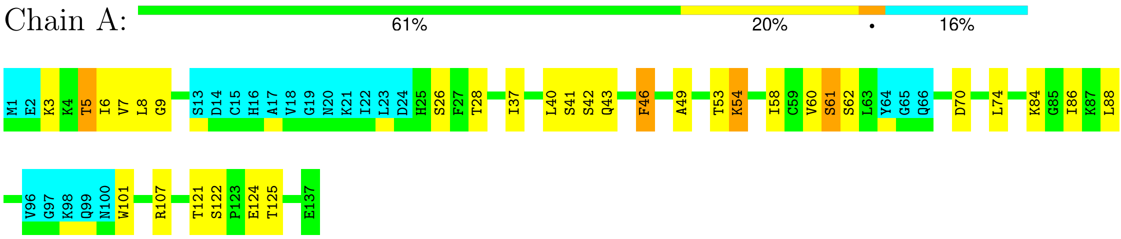


4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

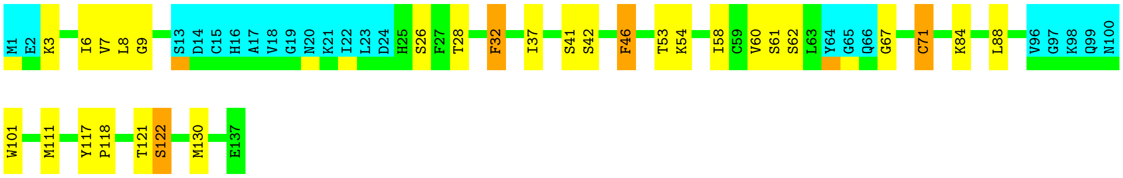
4.2.1 Score per residue for model 1

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



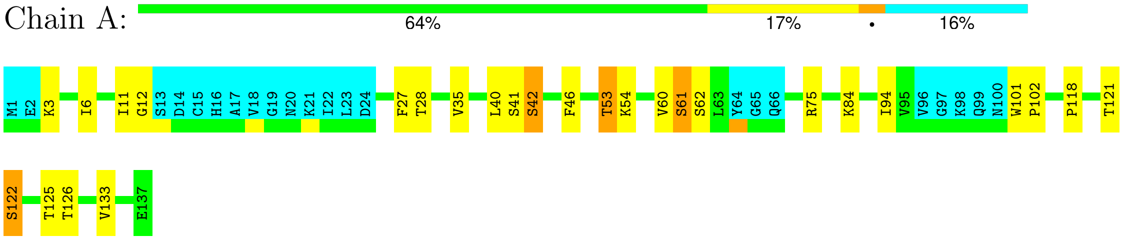
4.2.2 Score per residue for model 2

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



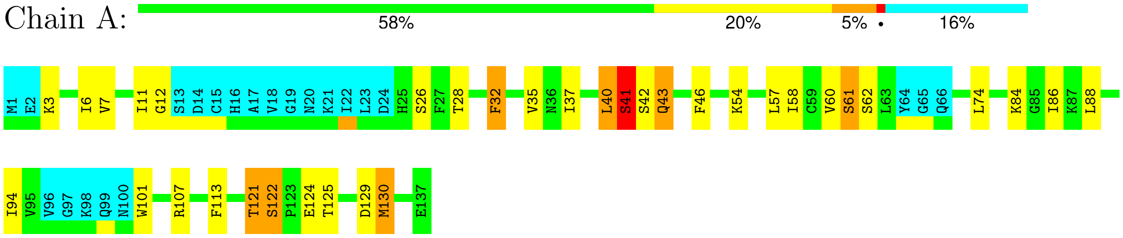
4.2.3 Score per residue for model 3

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



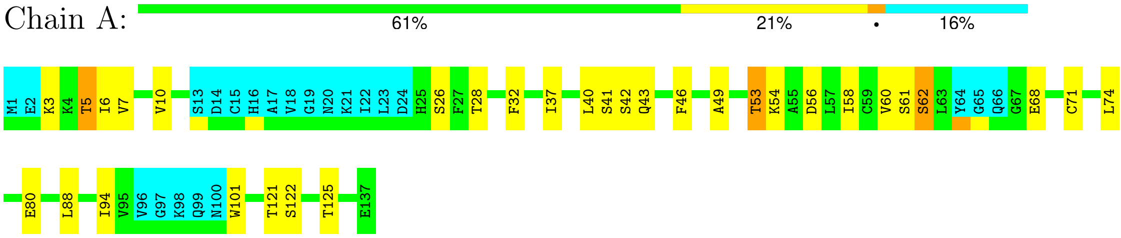
4.2.4 Score per residue for model 4

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



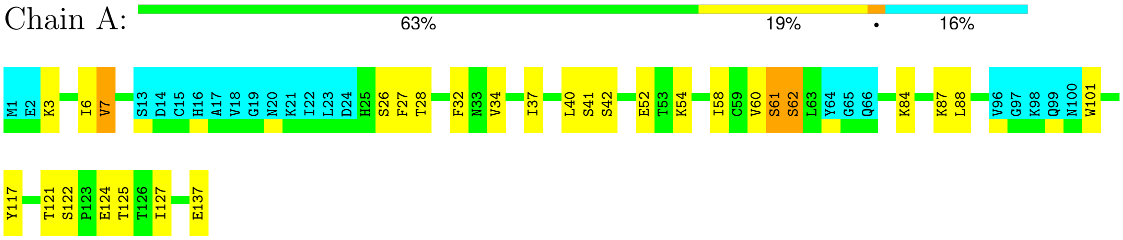
4.2.5 Score per residue for model 5

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



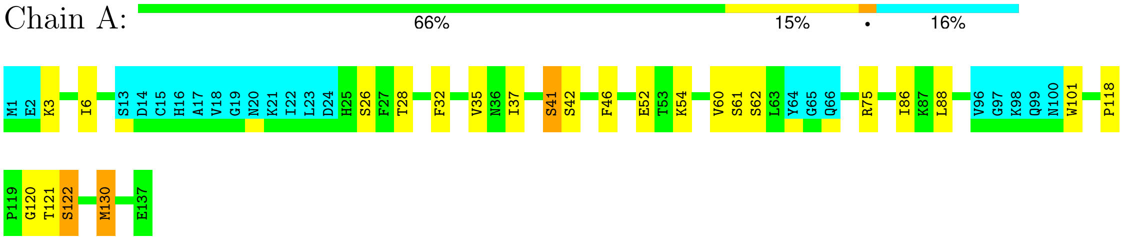
4.2.6 Score per residue for model 6

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



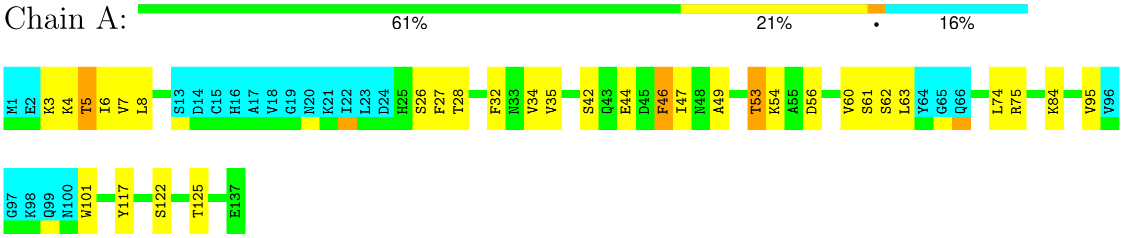
4.2.7 Score per residue for model 7

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



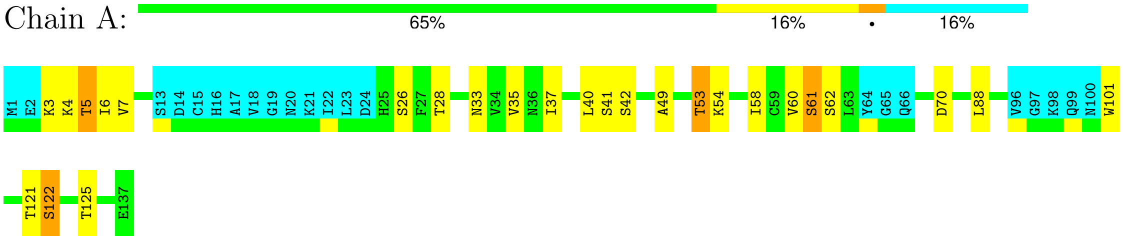
4.2.8 Score per residue for model 8

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



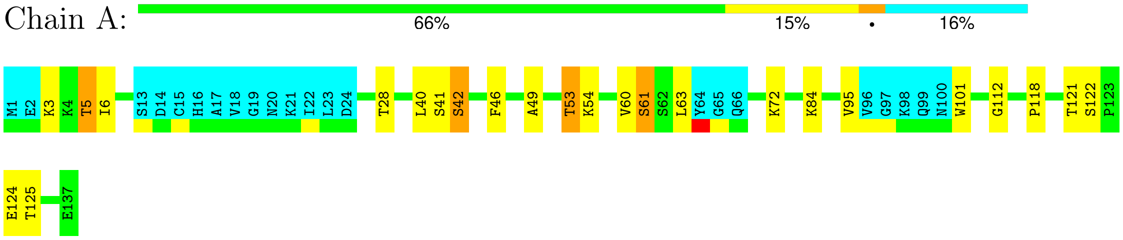
4.2.9 Score per residue for model 9

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



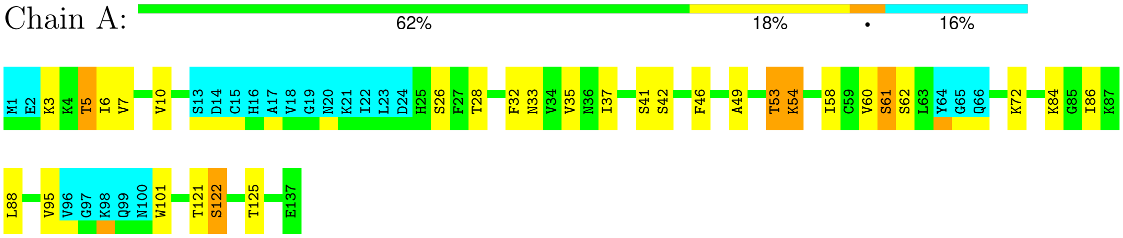
4.2.10 Score per residue for model 10

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



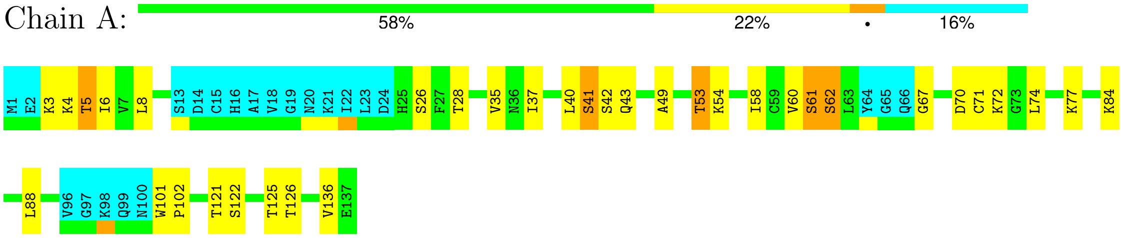
4.2.11 Score per residue for model 11

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



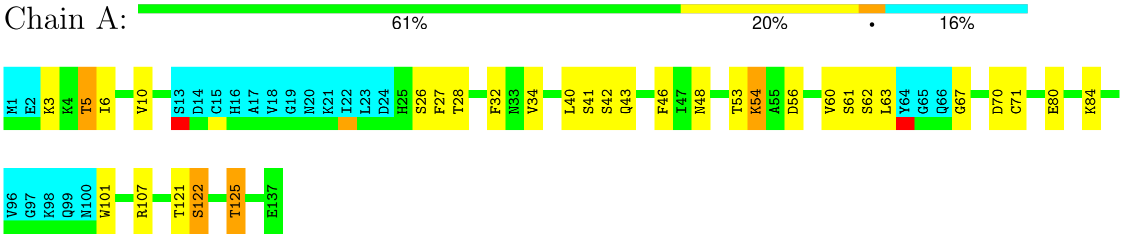
4.2.12 Score per residue for model 12

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



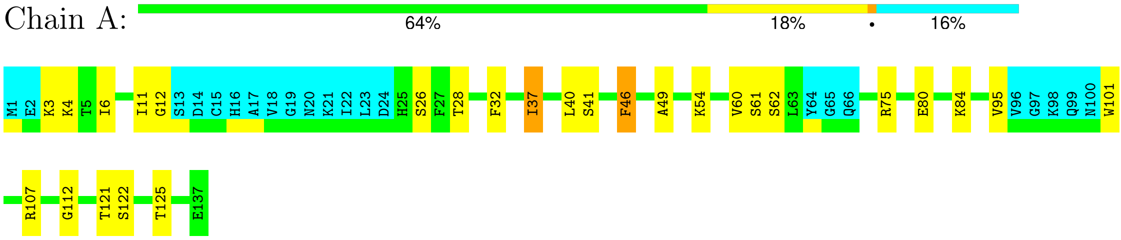
4.2.13 Score per residue for model 13

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



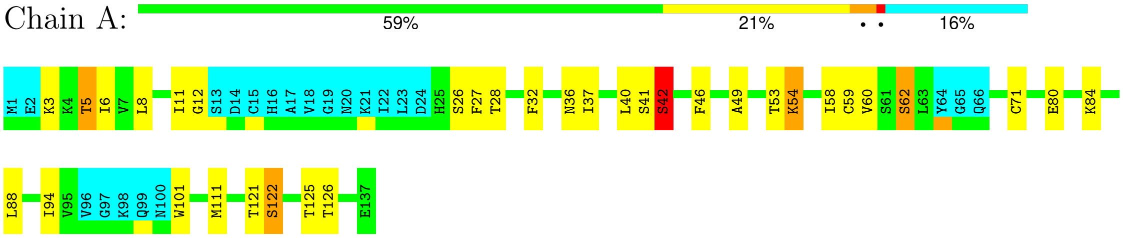
4.2.14 Score per residue for model 14

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



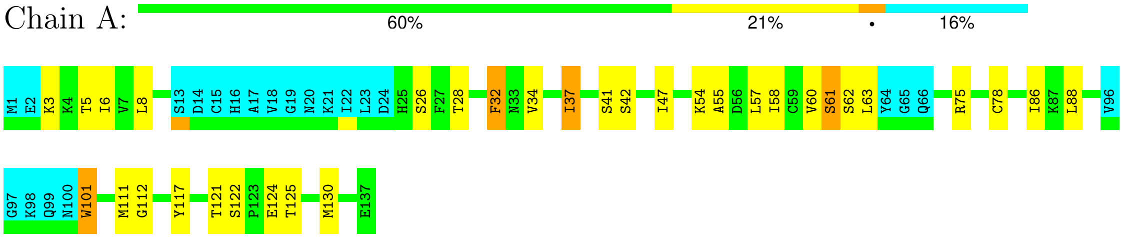
4.2.15 Score per residue for model 15

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



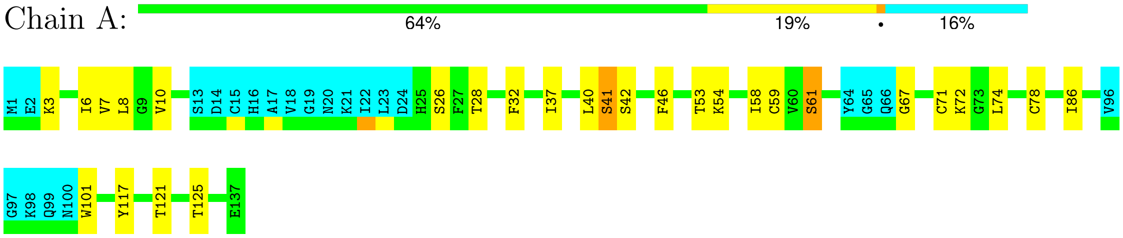
4.2.16 Score per residue for model 16

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



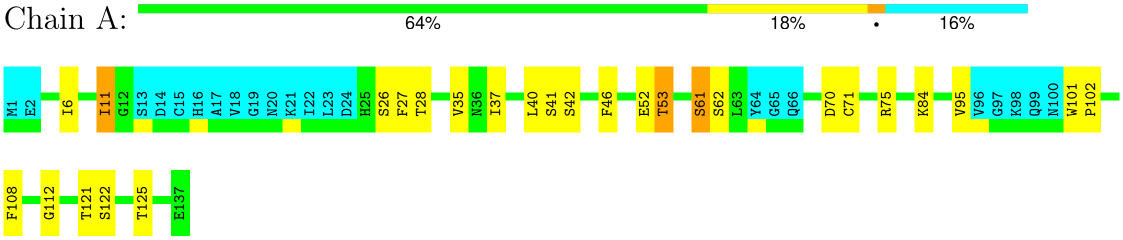
4.2.17 Score per residue for model 17

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



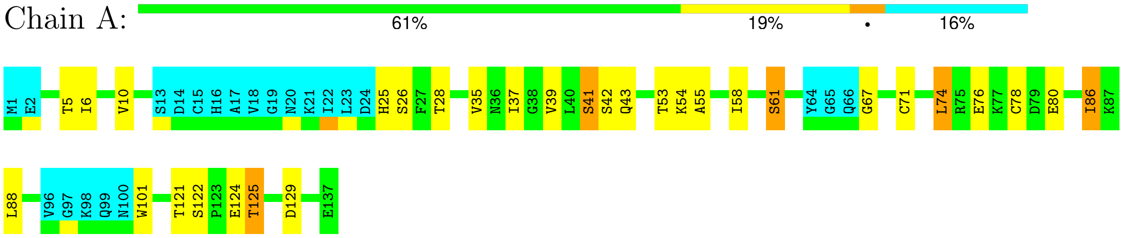
4.2.18 Score per residue for model 18

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



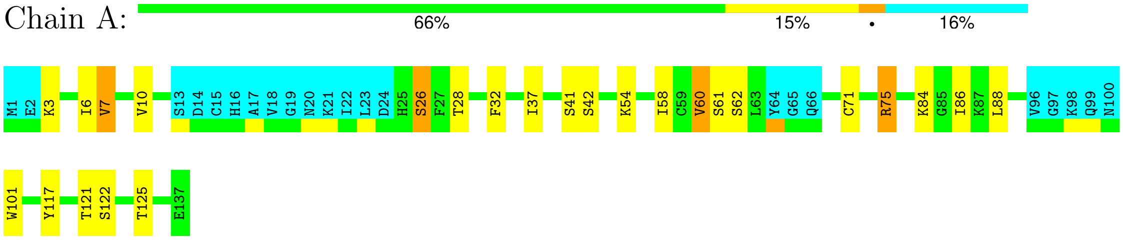
4.2.19 Score per residue for model 19

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



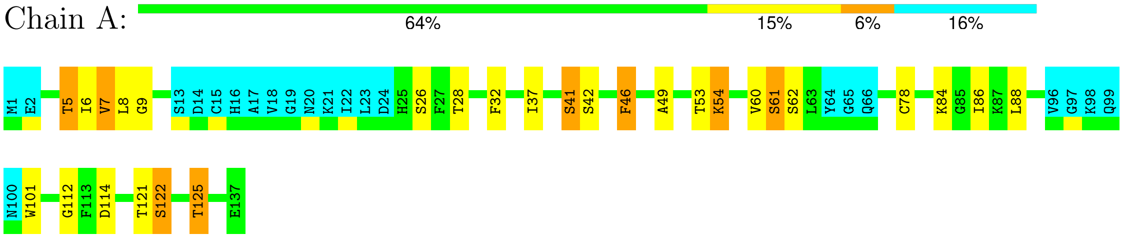
4.2.20 Score per residue for model 20

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



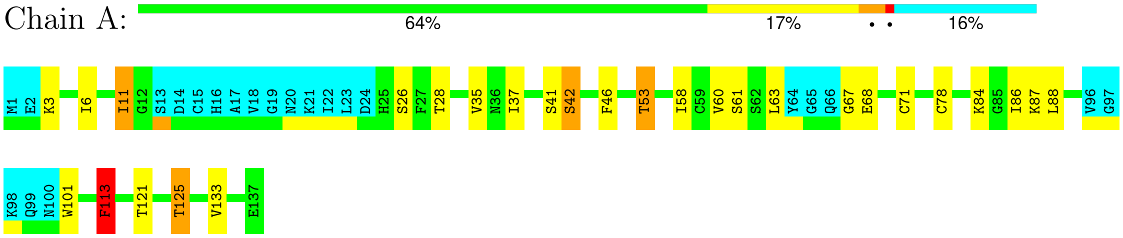
4.2.21 Score per residue for model 21

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



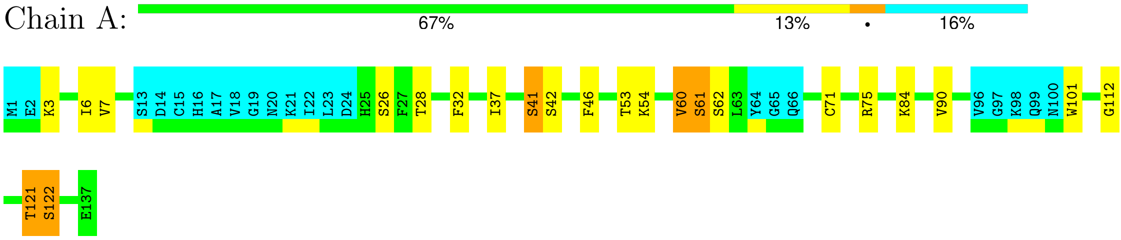
4.2.22 Score per residue for model 22

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



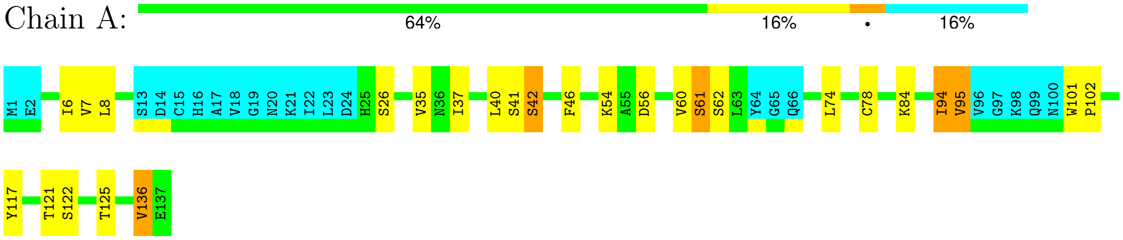
4.2.23 Score per residue for model 23

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



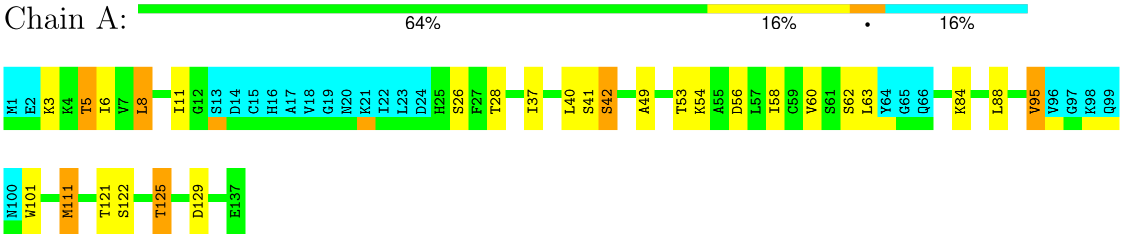
4.2.24 Score per residue for model 24

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



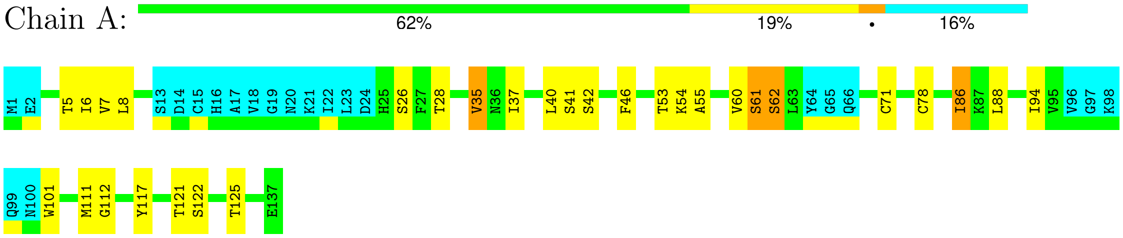
4.2.25 Score per residue for model 25 (medoid)

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



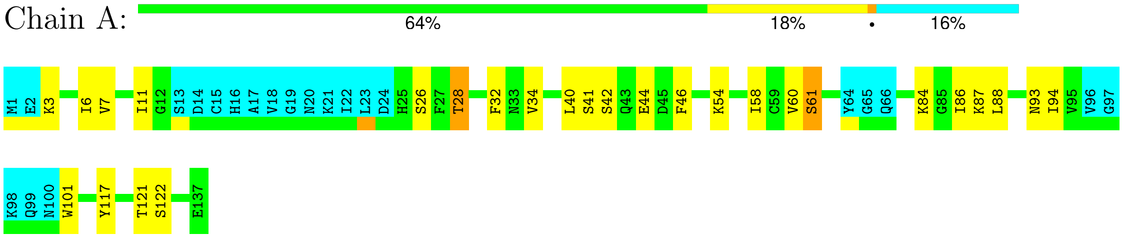
4.2.26 Score per residue for model 26

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



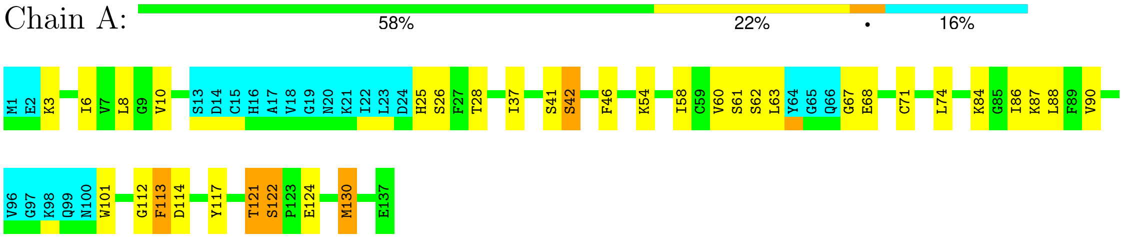
4.2.27 Score per residue for model 27

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



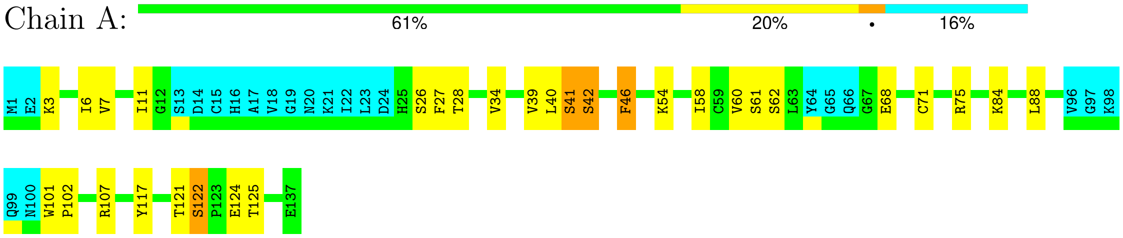
4.2.28 Score per residue for model 28

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



4.2.29 Score per residue for model 29

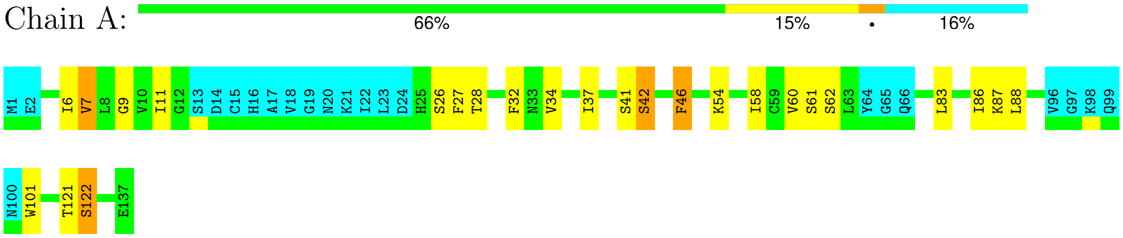
- Molecule 1: METHYLASPARTATE MUTASE S CHAIN



4.2.30 Score per residue for model 30

- Molecule 1: METHYLASPARTATE MUTASE S CHAIN

Chain A:



5 Refinement protocol and experimental data overview

The models were refined using the following method: *distance geometry, simulated annealing, simulated annealing refinement, energy minimization.*

Of the 200 calculated structures, 30 were deposited, based on the following criterion: *structures with acceptable covalent geometry,structures with favorable non-bond energy,structures with the least restraint violations,structures with the lowest energy.*

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

Software name	Classification	Version
X-PLOR	structure solution	3.8.5.1
X-PLOR	refinement	3.8.5.1

No chemical shift data was provided.

6 Model quality

6.1 Standard geometry

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the (average) root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#Z>5	RMSZ	#Z>5
1	A	0.87±0.01	6±1/880 (0.6± 0.1%)	1.26±0.02	1±1/1186 (0.1± 0.1%)
All	All	0.87	165/26400 (0.6%)	1.26	42/35580 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	Chirality	Planarity
1	A	0.0±0.0	0.5±0.6
All	All	0	14

All unique bond outliers are listed below. They are sorted according to the Z-score of the worst occurrence in the ensemble.

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)	Models	
								Worst	Total
1	A	41	SER	CB-OG	6.72	1.50	1.42	22	29
1	A	62	SER	CB-OG	5.54	1.49	1.42	30	25
1	A	42	SER	CB-OG	5.53	1.49	1.42	11	29
1	A	61	SER	CB-OG	5.48	1.49	1.42	29	27
1	A	26	SER	CB-OG	5.43	1.49	1.42	21	27
1	A	122	SER	CB-OG	5.39	1.49	1.42	11	28

All unique angle outliers are listed below. They are sorted according to the Z-score of the worst occurrence in the ensemble.

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})	Models	
								Worst	Total
1	A	53	THR	CA-CB-CG2	-7.93	101.29	112.40	3	3
1	A	113	PHE	CB-CG-CD1	-5.95	116.64	120.80	22	1
1	A	5	THR	OG1-CB-CG2	5.80	123.34	110.00	1	11
1	A	121	THR	CA-CB-OG1	5.56	120.67	109.00	24	13

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)	Models	
								Worst	Total
1	A	53	THR	CA-CB-OG1	5.32	120.16	109.00	18	5
1	A	46	PHE	CB-CG-CD1	5.30	124.51	120.80	8	2
1	A	125	THR	CA-CB-OG1	5.19	119.91	109.00	22	3
1	A	7	VAL	N-CA-CB	-5.13	100.20	111.50	30	1
1	A	101	TRP	CA-CB-CG	-5.11	103.99	113.70	16	1
1	A	28	THR	CA-CB-OG1	5.04	119.58	109.00	27	1
1	A	42	SER	CA-C-N	-5.02	106.15	117.20	8	1

There are no chirality outliers.

All unique planar outliers are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Group	Models (Total)
1	A	117	TYR	Sidechain	11
1	A	70	ASP	Peptide	1
1	A	101	TRP	Peptide	1
1	A	62	SER	Peptide	1

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	867	868	877	6±3
All	All	26010	26040	26310	192

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 4.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:5:THR:HG21	1:A:53:THR:HG21	0.99	1.32	8	11
1:A:49:ALA:O	1:A:53:THR:HG22	0.83	1.72	1	10
1:A:46:PHE:CE2	1:A:60:VAL:HG12	0.75	2.17	11	3
1:A:78:CYS:SG	1:A:86:ILE:HG22	0.73	2.23	26	1
1:A:5:THR:CG2	1:A:53:THR:HG21	0.72	2.15	12	10

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Atom-1	**Atom-2**	**Clash(Å)**	**Distance(Å)**	**Models**	
				Worst	Total
1:A:11:ILE:HD13	1:A:71:CYS:SG	0.70	2.25	22	1
1:A:7:VAL:HG12	1:A:37:ILE:HD11	0.68	1.63	2	3
1:A:5:THR:HG21	1:A:53:THR:CG2	0.68	2.16	8	11
1:A:7:VAL:CG1	1:A:37:ILE:HD11	0.65	2.21	1	4
1:A:86:ILE:HG22	1:A:88:LEU:HD21	0.65	1.69	22	4
1:A:27:PHE:CB	1:A:34:VAL:HG21	0.59	2.28	13	3
1:A:7:VAL:HG13	1:A:37:ILE:HD11	0.58	1.76	23	4
1:A:9:GLY:N	1:A:37:ILE:HD12	0.58	2.13	21	4
1:A:43:GLN:HB2	1:A:74:LEU:HD13	0.56	1.77	12	3
1:A:43:GLN:CB	1:A:74:LEU:HD13	0.56	2.31	4	1
1:A:86:ILE:CG2	1:A:88:LEU:CD2	0.56	2.84	7	3
1:A:27:PHE:HB2	1:A:34:VAL:HG21	0.55	1.77	13	1
1:A:86:ILE:HG23	1:A:88:LEU:HD21	0.54	1.80	19	1
1:A:86:ILE:CG2	1:A:88:LEU:HD21	0.53	2.34	7	4
1:A:7:VAL:HG13	1:A:37:ILE:HG21	0.52	1.82	6	3
1:A:6:ILE:HG23	1:A:57:LEU:CB	0.52	2.35	16	1
1:A:37:ILE:HD13	1:A:46:PHE:CG	0.51	2.41	21	3
1:A:86:ILE:HG22	1:A:88:LEU:CD2	0.51	2.35	28	4
1:A:58:ILE:HD12	1:A:78:CYS:SG	0.51	2.46	17	3
1:A:58:ILE:HB	1:A:88:LEU:HD22	0.50	1.83	16	8
1:A:11:ILE:HG21	1:A:71:CYS:SG	0.50	2.45	29	2
1:A:6:ILE:HG23	1:A:57:LEU:HB3	0.50	1.82	16	1
1:A:67:GLY:O	1:A:71:CYS:SG	0.50	2.69	28	7
1:A:5:THR:HG21	1:A:53:THR:HB	0.50	1.83	26	2
1:A:86:ILE:HG22	1:A:88:LEU:HD23	0.50	1.84	11	1
1:A:74:LEU:HD23	1:A:78:CYS:HG	0.50	1.65	19	1
1:A:71:CYS:SG	1:A:108:PHE:CZ	0.50	3.05	18	1
1:A:53:THR:HG23	1:A:54:LYS:N	0.49	2.22	13	5
1:A:32:PHE:CZ	1:A:130:MET:SD	0.49	3.06	4	2
1:A:27:PHE:HB3	1:A:34:VAL:HG21	0.49	1.85	30	2
1:A:5:THR:HG22	1:A:55:ALA:HB2	0.49	1.85	16	3
1:A:37:ILE:HD13	1:A:46:PHE:CD1	0.48	2.43	2	1
1:A:71:CYS:SG	1:A:108:PHE:CE2	0.48	3.00	18	1
1:A:87:LYS:C	1:A:88:LEU:HD23	0.48	2.29	22	2
1:A:90:VAL:HG12	1:A:113:PHE:CZ	0.48	2.43	28	1
1:A:37:ILE:C	1:A:37:ILE:HD13	0.48	2.30	16	1
1:A:74:LEU:O	1:A:78:CYS:SG	0.47	2.72	24	2
1:A:10:VAL:CG1	1:A:63:LEU:HD11	0.47	2.40	13	1
1:A:113:PHE:C	1:A:113:PHE:CD1	0.47	2.89	22	1
1:A:130:MET:SD	1:A:130:MET:C	0.46	2.93	7	3
1:A:27:PHE:CZ	1:A:126:THR:HG21	0.46	2.45	15	2

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Atom-1	**Atom-2**	**Clash(Å)**	**Distance(Å)**	**Models**	
				Worst	Total
1:A:32:PHE:HB3	1:A:34:VAL:HG23	0.46	1.87	16	1
1:A:78:CYS:SG	1:A:86:ILE:CG2	0.46	3.01	26	1
1:A:6:ILE:HG13	1:A:34:VAL:HG22	0.46	1.87	13	1
1:A:78:CYS:CB	1:A:86:ILE:HG21	0.46	2.41	16	1
1:A:75:ARG:CD	1:A:75:ARG:H	0.45	2.23	20	1
1:A:7:VAL:HG22	1:A:35:VAL:HG23	0.45	1.87	26	1
1:A:58:ILE:HB	1:A:88:LEU:CD2	0.45	2.42	25	9
1:A:8:LEU:HB3	1:A:59:CYS:SG	0.45	2.52	15	1
1:A:55:ALA:O	1:A:86:ILE:HD11	0.45	2.12	26	2
1:A:60:VAL:HG21	1:A:71:CYS:SG	0.44	2.53	23	2
1:A:86:ILE:CG2	1:A:88:LEU:HD23	0.44	2.43	11	1
1:A:95:VAL:O	1:A:95:VAL:HG12	0.44	2.13	10	1
1:A:74:LEU:HD22	1:A:88:LEU:HD13	0.44	1.90	19	1
1:A:6:ILE:CD1	1:A:130:MET:SD	0.43	3.07	16	1
1:A:113:PHE:CD1	1:A:113:PHE:C	0.43	2.92	28	1
1:A:8:LEU:HD23	1:A:8:LEU:H	0.42	1.74	25	1
1:A:47:ILE:HG13	1:A:78:CYS:SG	0.42	2.54	16	1
1:A:58:ILE:CD1	1:A:78:CYS:SG	0.42	3.07	19	1
1:A:11:ILE:HD13	1:A:70:ASP:HB2	0.42	1.91	18	1
1:A:125:THR:O	1:A:129:ASP:HB2	0.42	2.15	25	2
1:A:53:THR:CG2	1:A:54:LYS:N	0.42	2.83	11	1
1:A:55:ALA:O	1:A:86:ILE:CD1	0.42	2.68	19	2
1:A:37:ILE:HD11	1:A:49:ALA:HB2	0.41	1.90	14	1
1:A:74:LEU:HG	1:A:88:LEU:CD1	0.41	2.45	28	1
1:A:43:GLN:HB3	1:A:74:LEU:HD13	0.41	1.92	1	1
1:A:78:CYS:SG	1:A:86:ILE:HG21	0.41	2.55	21	1
1:A:57:LEU:HD23	1:A:57:LEU:N	0.41	2.31	4	1
1:A:74:LEU:HD23	1:A:78:CYS:SG	0.41	2.55	19	1
1:A:111:MET:SD	1:A:111:MET:C	0.41	2.99	25	1
1:A:83:LEU:HB3	1:A:86:ILE:HD13	0.40	1.93	30	1
1:A:94:ILE:HD13	1:A:94:ILE:H	0.40	1.76	24	1
1:A:125:THR:O	1:A:129:ASP:CB	0.40	2.69	4	1
1:A:8:LEU:HA	1:A:59:CYS:O	0.40	2.17	17	1
1:A:10:VAL:HG12	1:A:63:LEU:HD11	0.40	1.94	28	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	114/137 (83%)	102±2 (89±2%)	9±2 (8±2%)	4±1 (3±1%)	6 37
All	All	3420/4110 (83%)	3048 (89%)	260 (8%)	112 (3%)	6 37

All 19 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	54	LYS	28
1	A	101	TRP	28
1	A	40	LEU	10
1	A	112	GLY	8
1	A	42	SER	5
1	A	102	PRO	5
1	A	41	SER	5
1	A	12	GLY	4
1	A	95	VAL	4
1	A	118	PRO	3
1	A	94	ILE	2
1	A	27	PHE	2
1	A	26	SER	2
1	A	120	GLY	1
1	A	63	LEU	1
1	A	136	VAL	1
1	A	93	ASN	1
1	A	25	HIS	1
1	A	114	ASP	1

6.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all NMR entries. The Analysed column shows the number of residues for which the sidechain conformation was analysed and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	95/113 (84%)	80±3 (85±3%)	15±3 (15±3%)	6 43
All	All	2850/3390 (84%)	2412 (85%)	438 (15%)	6 43

All 63 unique residues with a non-rotameric sidechain are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Models (Total)
1	A	28	THR	29
1	A	6	ILE	28
1	A	3	LYS	24
1	A	60	VAL	24
1	A	125	THR	23
1	A	46	PHE	22
1	A	84	LYS	22
1	A	121	THR	19
1	A	61	SER	18
1	A	32	PHE	17
1	A	37	ILE	15
1	A	122	SER	13
1	A	35	VAL	12
1	A	8	LEU	10
1	A	7	VAL	10
1	A	40	LEU	9
1	A	75	ARG	9
1	A	124	GLU	8
1	A	11	ILE	8
1	A	53	THR	8
1	A	107	ARG	5
1	A	111	MET	5
1	A	94	ILE	5
1	A	56	ASP	5
1	A	80	GLU	5
1	A	42	SER	5
1	A	41	SER	4
1	A	86	ILE	4
1	A	62	SER	4
1	A	68	GLU	4
1	A	4	LYS	4
1	A	63	LEU	4
1	A	72	LYS	4
1	A	71	CYS	3
1	A	43	GLN	3
1	A	113	PHE	3
1	A	130	MET	3
1	A	52	GLU	3
1	A	87	LYS	3
1	A	74	LEU	3
1	A	70	ASP	3
1	A	133	VAL	2

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Mol	Chain	Res	Type	Models (Total)
1	A	44	GLU	2
1	A	33	ASN	2
1	A	136	VAL	2
1	A	39	VAL	2
1	A	34	VAL	2
1	A	118	PRO	1
1	A	127	ILE	1
1	A	137	GLU	1
1	A	47	ILE	1
1	A	77	LYS	1
1	A	126	THR	1
1	A	48	ASN	1
1	A	36	ASN	1
1	A	10	VAL	1
1	A	25	HIS	1
1	A	76	GLU	1
1	A	88	LEU	1
1	A	114	ASP	1
1	A	90	VAL	1
1	A	95	VAL	1
1	A	101	TRP	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 ⓘ

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

No chemical shift data were provided