Full wwPDB NMR Structure Validation Report (i)

Jun 4, 2023 – 12:19 AM EDT

PDB ID	:	2KPQ
BMRB ID	:	16564
Title	:	NMR Structure of Agrobacterium tumefaciens protein Atu1219: Northeast Structural Genomics Consortium target AtT14
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Deposited on	:	2009-10-18

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:

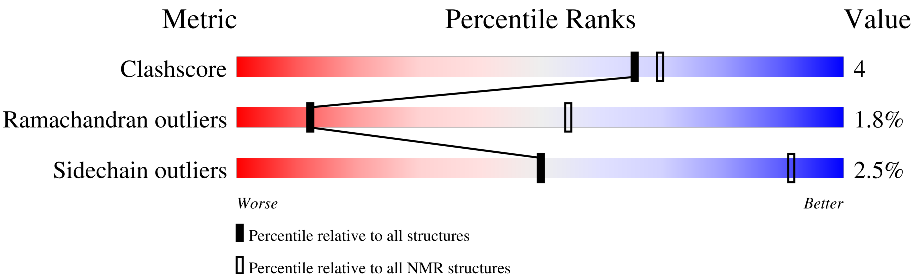
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
wwPDB-RCI	:	v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV	:	Wang et al. (2010)
wwPDB-ShiftChecker	:	v1.2
BMRB Restraints Analysis	:	v1.2
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.33

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
SOLUTION NMR

The overall completeness of chemical shifts assignment is 87%.

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	100	

2 Ensemble composition and analysis (i)

This entry contains 20 models. Model 5 is the overall representative, medoid model (most similar to other models). The authors have identified model 1 as representative, based on the following criterion: *no criteria used*.

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:10-A:86 (77)	1.01	5

Ill-defined regions of proteins are excluded from the global statistics.

Ligands and non-protein polymers are included in the analysis.

The models can be grouped into 2 clusters and 1 single-model cluster was found.

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

3 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 1531 atoms, of which 757 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	100	1531	481	757	141	146	6	0

There are 2 discrepancies between the modelled and reference sequences:

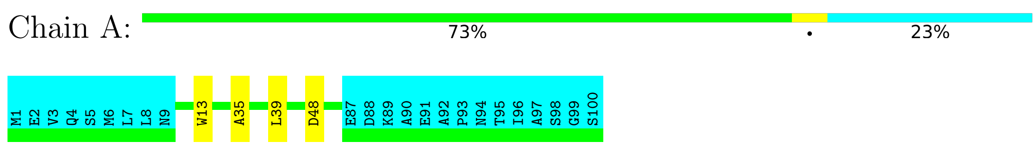
Chain	Residue	Modelled	Actual	Comment	Reference
A	99	GLY	-	expression tag	UNP A9CJC8
A	100	SER	-	expression tag	UNP A9CJC8

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: Uncharacterized protein

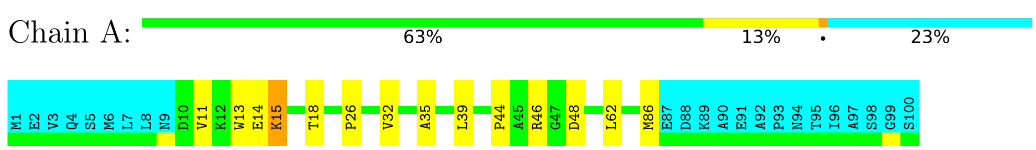


4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

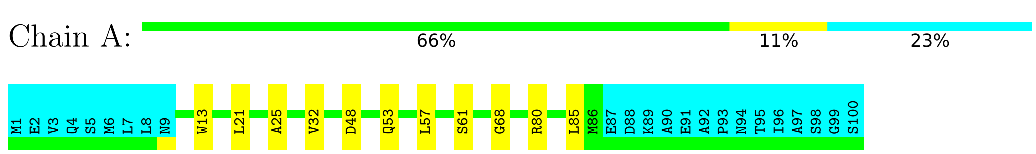
4.2.1 Score per residue for model 1

- Molecule 1: Uncharacterized protein



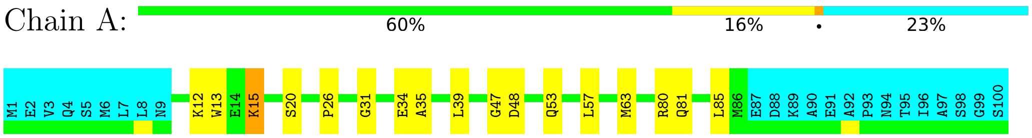
4.2.2 Score per residue for model 2

- Molecule 1: Uncharacterized protein



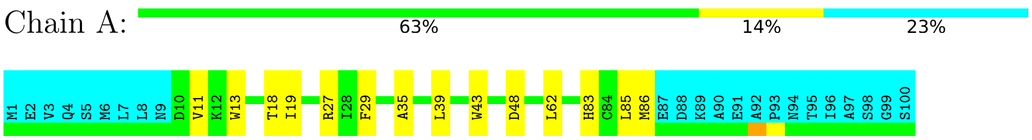
4.2.3 Score per residue for model 3

• Molecule 1: Uncharacterized protein



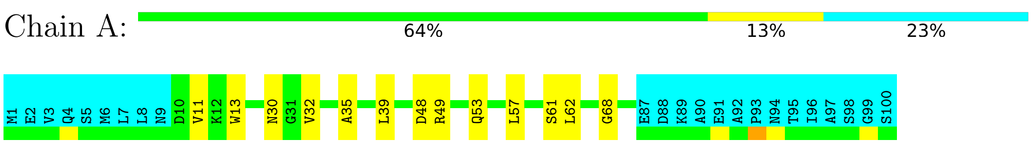
4.2.4 Score per residue for model 4

• Molecule 1: Uncharacterized protein



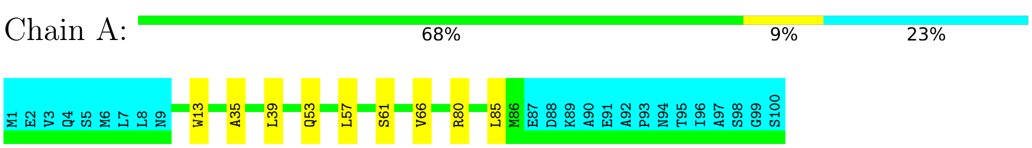
4.2.5 Score per residue for model 5 (medoid)

• Molecule 1: Uncharacterized protein



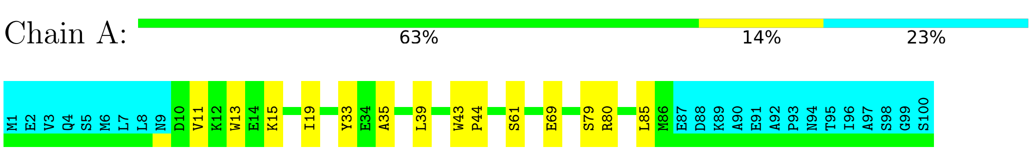
4.2.6 Score per residue for model 6

• Molecule 1: Uncharacterized protein



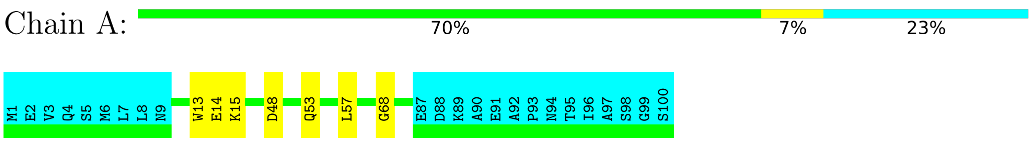
4.2.7 Score per residue for model 7

• Molecule 1: Uncharacterized protein



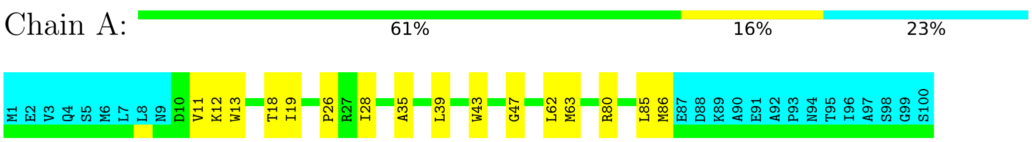
4.2.8 Score per residue for model 8

- Molecule 1: Uncharacterized protein



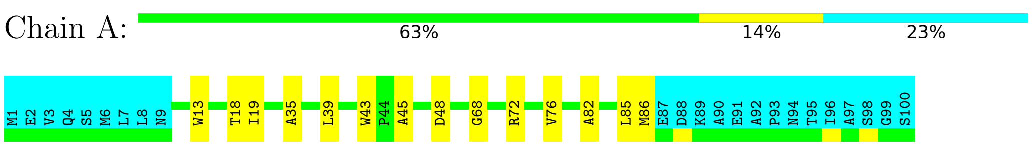
4.2.9 Score per residue for model 9

- Molecule 1: Uncharacterized protein



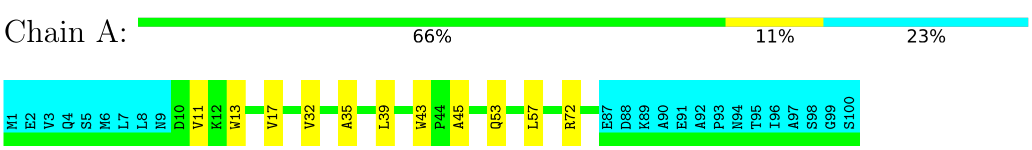
4.2.10 Score per residue for model 10

- Molecule 1: Uncharacterized protein



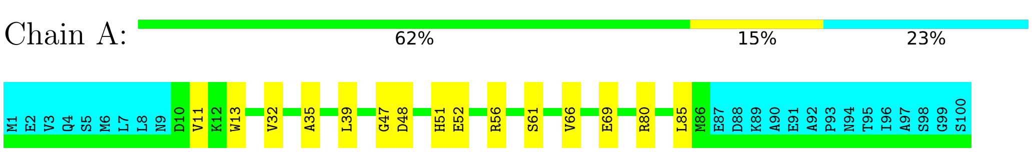
4.2.11 Score per residue for model 11

- Molecule 1: Uncharacterized protein



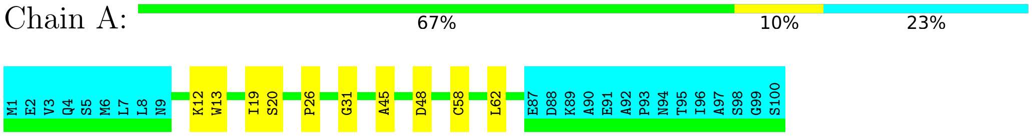
4.2.12 Score per residue for model 12

- Molecule 1: Uncharacterized protein



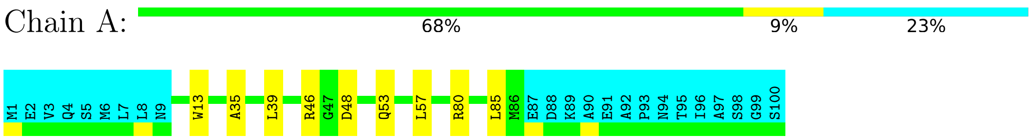
4.2.13 Score per residue for model 13

• Molecule 1: Uncharacterized protein



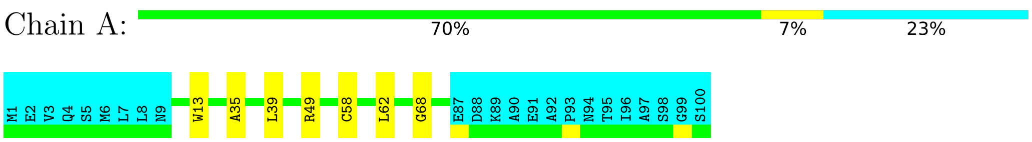
4.2.14 Score per residue for model 14

• Molecule 1: Uncharacterized protein



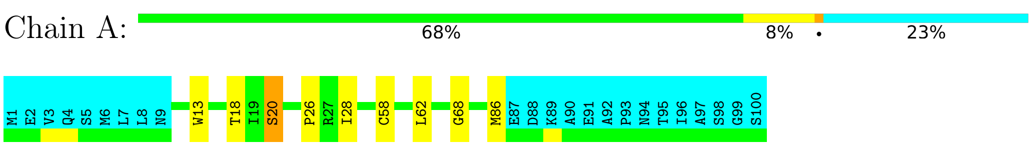
4.2.15 Score per residue for model 15

• Molecule 1: Uncharacterized protein



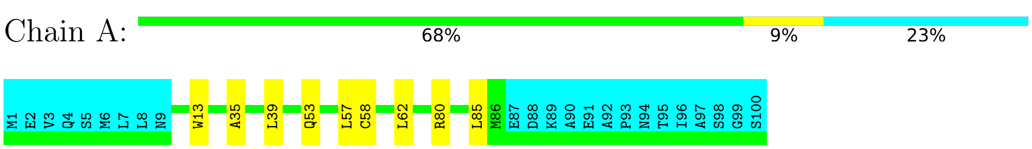
4.2.16 Score per residue for model 16

• Molecule 1: Uncharacterized protein



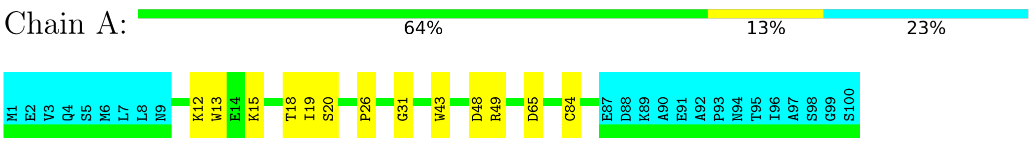
4.2.17 Score per residue for model 17

• Molecule 1: Uncharacterized protein



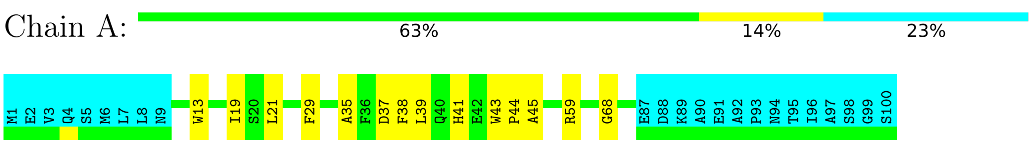
4.2.18 Score per residue for model 18

- Molecule 1: Uncharacterized protein



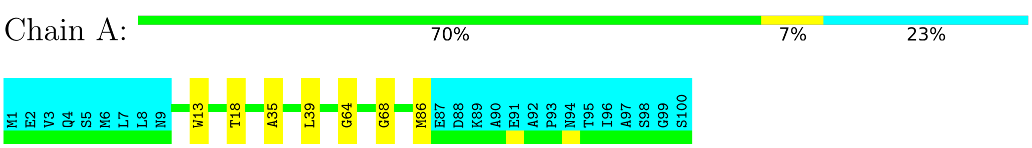
4.2.19 Score per residue for model 19

- Molecule 1: Uncharacterized protein



4.2.20 Score per residue for model 20

- Molecule 1: Uncharacterized protein



5 Refinement protocol and experimental data overview (i)

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

Of the 40 calculated structures, 20 were deposited, based on the following criterion: *lowest energy, fewest restraint violations, reasonable geometry*.

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

Software name	Classification	Version
CNS	refinement	
X-PLOR NIH	structure solution	
AutoStructure	structure solution	
PSVS	refinement	

The following table shows chemical shift validation statistics as aggregates over all chemical shift files. Detailed validation can be found in section 7 of this report.

Chemical shift file(s)	working_cs.cif
Number of chemical shift lists	1
Total number of shifts	1164
Number of shifts mapped to atoms	1164
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Assignment completeness (well-defined parts)	87%

6 Model quality (i)

6.1 Standard geometry (i)

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 (i)

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	606	593	590	5±2
All	All	12120	11860	11800	98

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:61:SER:HA	1:A:66:VAL:HB	0.74	1.58	6	1
1:A:47:GLY:HA3	1:A:51:HIS:HB2	0.71	1.60	12	1
1:A:19:ILE:HD11	1:A:43:TRP:HZ3	0.71	1.45	9	3
1:A:80:ARG:HG2	1:A:85:LEU:HD11	0.67	1.65	12	5
1:A:19:ILE:HD11	1:A:43:TRP:CZ3	0.67	2.25	7	4
1:A:18:THR:HB	1:A:86:MET:SD	0.65	2.31	20	2
1:A:18:THR:HG22	1:A:28:ILE:HG12	0.60	1.73	9	1
1:A:80:ARG:HG3	1:A:85:LEU:HD21	0.59	1.72	9	1
1:A:11:VAL:HG13	1:A:32:VAL:HB	0.58	1.75	1	3
1:A:19:ILE:O	1:A:26:PRO:HA	0.57	1.99	9	3
1:A:43:TRP:CZ2	1:A:79:SER:HA	0.55	2.36	7	1
1:A:21:LEU:HB2	1:A:25:ALA:HB3	0.55	1.78	2	1
1:A:43:TRP:CE3	1:A:44:PRO:HD2	0.55	2.37	7	2
1:A:58:CYS:O	1:A:62:LEU:HG	0.53	2.04	16	4

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:20:SER:HA	1:A:26:PRO:HA	0.53	1.79	16	3
1:A:80:ARG:HG3	1:A:85:LEU:HD11	0.53	1.80	17	1
1:A:21:LEU:HG	1:A:38:PHE:CE1	0.53	2.38	19	1
1:A:11:VAL:HG22	1:A:62:LEU:HD23	0.53	1.81	9	1
1:A:43:TRP:HZ2	1:A:79:SER:HA	0.52	1.65	7	1
1:A:18:THR:O	1:A:86:MET:HG2	0.52	2.05	9	1
1:A:35:ALA:O	1:A:39:LEU:HG	0.51	2.05	19	15
1:A:52:GLU:O	1:A:56:ARG:HG3	0.51	2.05	12	1
1:A:53:GLN:O	1:A:57:LEU:HG	0.50	2.07	2	8
1:A:27:ARG:HH11	1:A:29:PHE:HE1	0.50	1.48	4	1
1:A:15:LYS:HD2	1:A:69:GLU:HG2	0.48	1.85	7	1
1:A:14:GLU:HB2	1:A:15:LYS:HD2	0.48	1.85	8	1
1:A:11:VAL:HG12	1:A:62:LEU:HD23	0.48	1.84	1	3
1:A:85:LEU:H	1:A:85:LEU:HD23	0.48	1.68	4	1
1:A:11:VAL:HG23	1:A:32:VAL:HB	0.48	1.85	12	1
1:A:45:ALA:HB3	1:A:82:ALA:HB1	0.46	1.85	10	1
1:A:72:ARG:O	1:A:76:VAL:HG23	0.46	2.10	10	1
1:A:43:TRP:NE1	1:A:45:ALA:HB3	0.45	2.27	19	1
1:A:49:ARG:O	1:A:53:GLN:HG3	0.45	2.12	5	1
1:A:47:GLY:HA2	1:A:81:GLN:OE1	0.45	2.12	3	1
1:A:18:THR:O	1:A:86:MET:HB2	0.45	2.12	4	2
1:A:12:LYS:HA	1:A:31:GLY:HA2	0.44	1.89	13	2
1:A:11:VAL:HG21	1:A:61:SER:O	0.44	2.12	7	1
1:A:48:ASP:O	1:A:52:GLU:HG2	0.44	2.13	12	1
1:A:19:ILE:HB	1:A:29:PHE:CE2	0.43	2.47	19	1
1:A:32:VAL:HG11	1:A:61:SER:HB2	0.43	1.91	2	1
1:A:18:THR:HB	1:A:86:MET:HG2	0.43	1.90	16	1
1:A:15:LYS:CD	1:A:69:GLU:HG2	0.42	2.43	7	1
1:A:18:THR:CG2	1:A:28:ILE:HG12	0.42	2.43	9	1
1:A:48:ASP:OD2	1:A:49:ARG:HG3	0.42	2.14	18	1
1:A:12:LYS:HD3	1:A:31:GLY:HA3	0.42	1.92	3	1
1:A:20:SER:HB3	1:A:84:CYS:O	0.42	2.13	18	1
1:A:37:ASP:O	1:A:41:HIS:HD2	0.41	1.98	19	1
1:A:80:ARG:HA	1:A:85:LEU:HD11	0.41	1.92	6	1
1:A:76:VAL:HG13	1:A:85:LEU:HD22	0.41	1.92	10	1
1:A:17:VAL:HG22	1:A:72:ARG:HG3	0.41	1.93	11	1
1:A:61:SER:HA	1:A:66:VAL:O	0.41	2.16	12	1
1:A:14:GLU:O	1:A:15:LYS:CB	0.40	2.69	1	1
1:A:43:TRP:CE2	1:A:45:ALA:HB3	0.40	2.52	11	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	77/100 (77%)	69±2 (90±3%)	6±2 (8±2%)	1±1 (2±2%)	12	54
All	All	1540/2000 (77%)	1382 (90%)	130 (8%)	28 (2%)	12	54

All 10 unique Ramachandran outliers are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Models (Total)
1	A	48	ASP	9
1	A	68	GLY	8
1	A	15	LYS	3
1	A	46	ARG	2
1	A	26	PRO	1
1	A	44	PRO	1
1	A	83	HIS	1
1	A	47	GLY	1
1	A	45	ALA	1
1	A	64	GLY	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	60/79 (76%)	58±1 (98±1%)	2±1 (2±1%)	50	91
All	All	1200/1580 (76%)	1170 (98%)	30 (2%)	50	91

All 11 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	13	TRP	20
1	A	15	LYS	1
1	A	34	GLU	1
1	A	30	ASN	1
1	A	61	SER	1
1	A	12	LYS	1
1	A	69	GLU	1
1	A	49	ARG	1
1	A	20	SER	1
1	A	18	THR	1
1	A	65	ASP	1

6.3.3 RNA (i)

There are no RNA molecules in this entry.

6.4 Non-standard residues in protein, DNA, RNA chains (i)

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

6.5 Carbohydrates (i)

There are no monosaccharides in this entry.

6.6 Ligand geometry (i)

There are no ligands in this entry.

6.7 Other polymers (i)

There are no such molecules in this entry.

6.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

7 Chemical shift validation (i)

The completeness of assignment taking into account all chemical shift lists is 87% for the well-defined parts and 87% for the entire structure.

7.1 Chemical shift list 1

File name: working_cs.cif

Chemical shift list name: *assigned_chem_shift_list_1*

7.1.1 Bookkeeping (i)

The following table shows the results of parsing the chemical shift list and reports the number of nuclei with statistically unusual chemical shifts.

Total number of shifts	1164
Number of shifts mapped to atoms	1164
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Number of shift outliers (ShiftChecker)	2

7.1.2 Chemical shift referencing (i)

The following table shows the suggested chemical shift referencing corrections.

Nucleus	# values	Correction ± precision, *ppm*	Suggested action
$^{13}C_{\alpha}$	100	-0.23 ± 0.12	None needed (< 0.5 ppm)
$^{13}C_{\beta}$	94	-0.01 ± 0.11	None needed (< 0.5 ppm)
$^{13}C'$	94	-0.07 ± 0.10	None needed (< 0.5 ppm)
^{15}N	94	-0.55 ± 0.27	Should be applied

7.1.3 Completeness of resonance assignments (i)

The following table shows the completeness of the chemical shift assignments for the well-defined regions of the structure. The overall completeness is 87%, i.e. 924 atoms were assigned a chemical shift out of a possible 1057. 0 out of 11 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	378/384 (98%)	155/156 (99%)	150/154 (97%)	73/74 (99%)
Sidechain	488/576 (85%)	325/375 (87%)	155/172 (90%)	8/29 (28%)

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	Total	^{1}H	^{13}C	^{15}N
Aromatic	58/97 (60%)	29/48 (60%)	27/41 (66%)	2/8 (25%)
Overall	924/1057 (87%)	509/579 (88%)	332/367 (90%)	83/111 (75%)

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 87%, i.e. 1164 atoms were assigned a chemical shift out of a possible 1338. 0 out of 14 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	488/498 (98%)	200/202 (99%)	194/200 (97%)	94/96 (98%)
Sidechain	618/743 (83%)	407/484 (84%)	200/226 (88%)	11/33 (33%)
Aromatic	58/97 (60%)	29/48 (60%)	27/41 (66%)	2/8 (25%)
Overall	1164/1338 (87%)	636/734 (87%)	421/467 (90%)	107/137 (78%)

7.1.4 Statistically unusual chemical shifts (i)

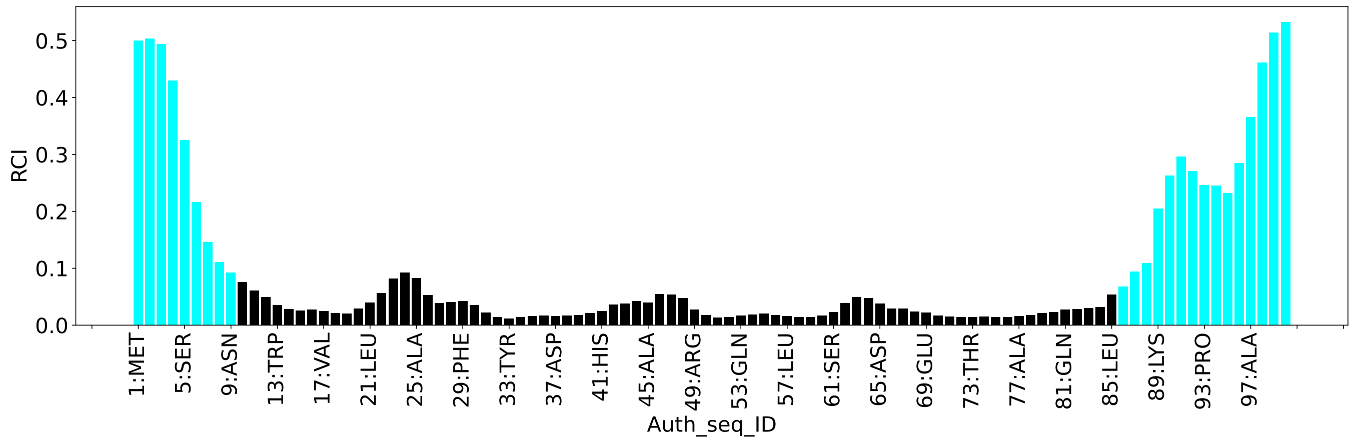
The following table lists the statistically unusual chemical shifts. These are statistical measures, and large deviations from the mean do not necessarily imply incorrect assignments. Molecules containing paramagnetic centres or hemes are expected to give rise to anomalous chemical shifts.

List Id	Chain	Res	Type	Atom	Shift, *ppm*	Expected range, *ppm*	Z-score
1	A	72	ARG	HG2	-0.74	0.26 – 2.87	-8.8
1	A	72	ARG	HB2	-0.21	0.52 – 3.08	-7.8

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.If well-defined core and ill-defined regions are not identified then it is shown as gray bars.

Random coil index (RCI) for chain A:



RCI
0.5
0.4
0.3
0.2
0.1
0.0
1:MET
5:SER
9:ASN
13:TRP
17:VAL
21:LEU
25:ALA
29:PHE
33:TYR
37:ASP
41:HIS
45:ALA
49:ARG
53:GLN
57:LEU
61:SER
65:ASP
69:GLU
73:THR
77:ALA
81:GLN
85:LEU
89:LYS
93:PRO
97:ALA
Auth_seq_ID

8 NMR restraints analysis (i)

8.1 Conformationally restricting restraints (i)

The following table provides the summary of experimentally observed NMR restraints in different categories. Restraints are classified into different categories based on the sequence separation of the atoms involved.

Description	Value
Total distance restraints	674
Intra-residue (|i-j|=0)	118
Sequential (|i-j|=1)	144
Medium range (|i-j|>1 and |i-j|<5)	145
Long range (|i-j|≥5)	221
Inter-chain	0
Hydrogen bond restraints	46
Disulfide bond restraints	0
Total dihedral-angle restraints	94
Number of unmapped restraints	0
Number of restraints per residue	7.7
Number of long range restraints per residue[1]	2.3

[1]Long range hydrogen bonds and disulfide bonds are counted as long range restraints while calculating the number of long range restraints per residue

8.2 Residual restraint violations (i)

This section provides the overview of the restraint violations analysis. The violations are binned as small, medium and large violations based on its absolute value. Average number of violations per model is calculated by dividing the total number of violations in each bin by the size of the ensemble.

8.2.1 Average number of distance violations per model (i)

Distance violations less than 0.1 Å are not included in the calculation.There are no distance violations

8.2.2 Average number of dihedral-angle violations per model (i)

Dihedral-angle violations less than 1° are not included in the calculation.There are no dihedral-angle violations

9 Distance violation analysis (i)

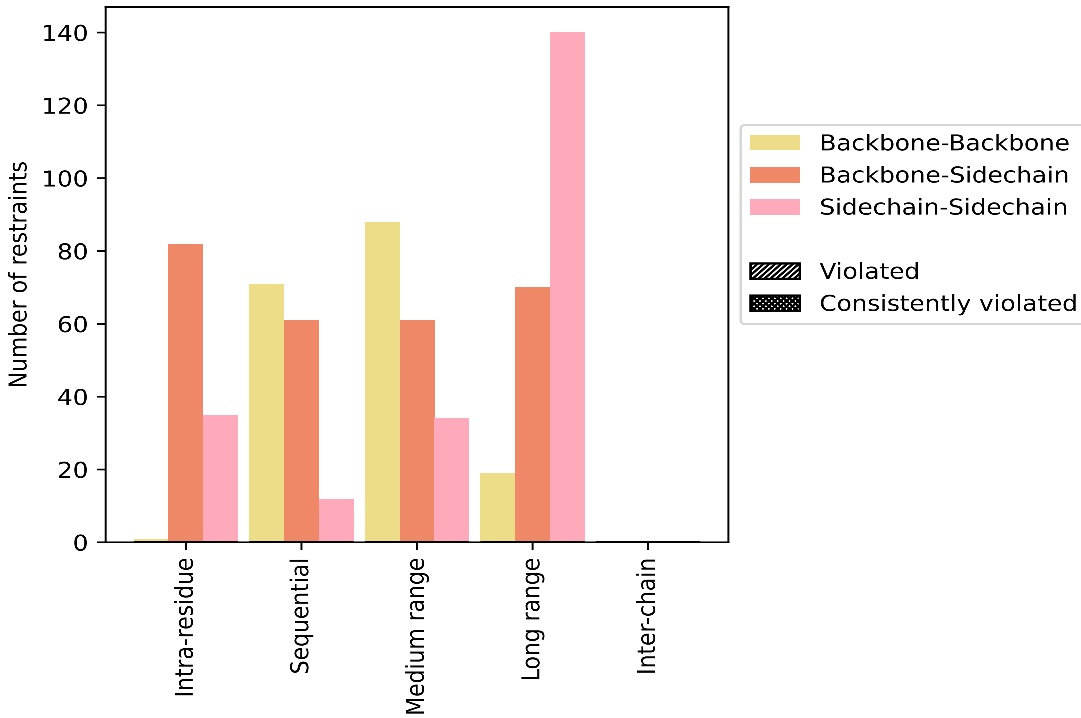
9.1 Summary of distance violations (i)

The following table shows the summary of distance violations in different restraint categories based on the sequence separation of the atoms involved. Each category is further sub-divided into three sub-categories based on the atoms involved. Violations less than 0.1 Å are not included in the statistics.

Restraints type	Count	%[1]	Violated[3]			Consistently Violated[4]		
			Count	%[2]	%[1]	Count	%[2]	%[1]
Intra-residue (|i-j|=0)	118	17.5	0	0.0	0.0	0	0.0	0.0
Backbone-Backbone	1	0.1	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	82	12.2	0	0.0	0.0	0	0.0	0.0
Sidechain-Sidechain	35	5.2	0	0.0	0.0	0	0.0	0.0
Sequential (|i-j|=1)	144	21.4	0	0.0	0.0	0	0.0	0.0
Backbone-Backbone	71	10.5	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	61	9.1	0	0.0	0.0	0	0.0	0.0
Sidechain-Sidechain	12	1.8	0	0.0	0.0	0	0.0	0.0
Medium range (|i-j|>1 & |i-j|<5)	145	21.5	0	0.0	0.0	0	0.0	0.0
Backbone-Backbone	50	7.4	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	61	9.1	0	0.0	0.0	0	0.0	0.0
Sidechain-Sidechain	34	5.0	0	0.0	0.0	0	0.0	0.0
Long range (|i-j|≥5)	221	32.8	0	0.0	0.0	0	0.0	0.0
Backbone-Backbone	13	1.9	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	68	10.1	0	0.0	0.0	0	0.0	0.0
Sidechain-Sidechain	140	20.8	0	0.0	0.0	0	0.0	0.0
Inter-chain	0	0.0	0	0.0	0.0	0	0.0	0.0
Backbone-Backbone	0	0.0	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	0	0.0	0	0.0	0.0	0	0.0	0.0
Sidechain-Sidechain	0	0.0	0	0.0	0.0	0	0.0	0.0
Hydrogen bond	46	6.8	0	0.0	0.0	0	0.0	0.0
Disulfide bond	0	0.0	0	0.0	0.0	0	0.0	0.0
Total	674	100.0	0	0.0	0.0	0	0.0	0.0
Backbone-Backbone	179	26.6	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	274	40.7	0	0.0	0.0	0	0.0	0.0
Sidechain-Sidechain	221	32.8	0	0.0	0.0	0	0.0	0.0

[1] percentage calculated with respect to the total number of distance restraints, [2] percentage calculated with respect to the number of restraints in a particular restraint category, [3] violated in at least one model, [4] violated in all the models

9.1.1 Bar chart : Distribution of distance restraints and violations (i)



Violated and consistently violated restraints are shown using different hatch patterns in their respective categories. The hydrogen bonds and disulfied bonds are counted in their appropriate category on the x-axis

9.2 Distance violation statistics for each model (i)

No violations found

9.3 Distance violation statistics for the ensemble (i)

No violations found

9.4 Most violated distance restraints in the ensemble (i)

No violations found

9.5 All violated distance restraints (i)

No violations found

10 Dihedral-angle violation analysis

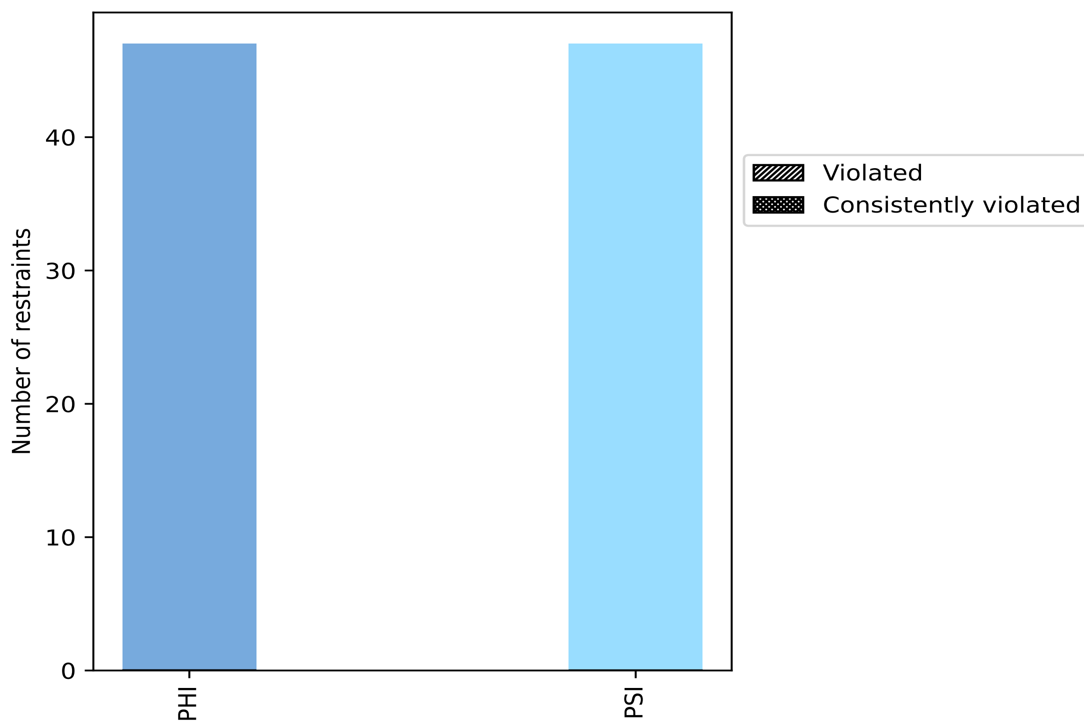
10.1 Summary of dihedral-angle violations

The following table provides the summary of dihedral-angle violations in different dihedral-angle types. Violations less than 1° are not included in the calculation.

Angle type	Count	%[1]	Violated[3]			Consistently Violated[4]		
			Count	%[2]	%[1]	Count	%[2]	%[1]
PHI	47	50.0	0	0.0	0.0	0	0.0	0.0
PSI	47	50.0	0	0.0	0.0	0	0.0	0.0
Total	94	100.0	0	0.0	0.0	0	0.0	0.0

[1] percentage calculated with respect to total number of dihedral-angle restraints, [2] percentage calculated with respect to number of restraints in a particular dihedral-angle type, [3] violated in at least one model, [4] violated in all the models

10.1.1 Bar chart : Distribution of dihedral-angles and violations



Violated and consistently violated restraints are shown using different hatch patterns in their respective categories

10.2 Dihedral-angle violation statistics for each model (i)

No violations found

10.3 Dihedral-angle violation statistics for the ensemble (i)

No violations found

10.4 Most violated dihedral-angle restraints in the ensemble (i)

No violations found

10.5 All violated dihedral-angle restraints (i)

No violations found