Full wwPDB NMR Structure Validation Report (i)

Dec 25, 2024 – 08:49 PM EST

PDB ID : 9GWD
BMRB ID : 34963
Title : ZT-KP6-1: AN EFFECTOR FROM ZYMOSEPTORIA TRITICI
Authors : Barthe, P.; de Guillen, K.
Deposited on : 2024-09-26

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

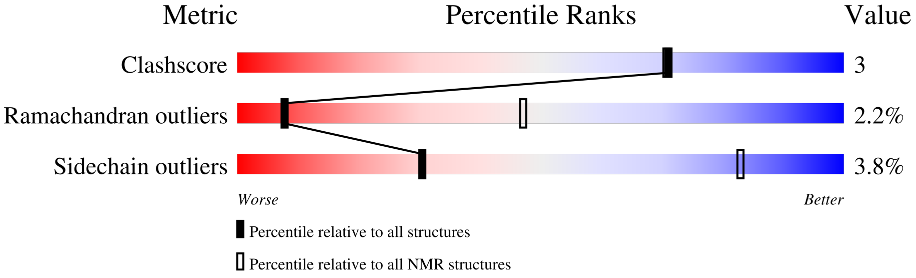
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
wwPDB-RCI	:	v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV	:	Wang et al. (2010)
wwPDB-ShiftChecker	:	v1.2
BMRB Restraints Analysis	:	v1.2
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

1 Overall quality at a glance

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

The overall completeness of chemical shifts assignment is 60%.

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	210492	14027
Ramachandran outliers	207382	12486
Sidechain outliers	206894	12463

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	80	

2 Ensemble composition and analysis ⓘ

This entry contains 20 models. Model 2 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:22-A:96 (75)	0.51	2

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. No single-model clusters were found.

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

3 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 1235 atoms, of which 597 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Zt-KP6-1.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	80	1235	401	597	113	119	5	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	17	GLY	-	expression tag	UNP A0A2H1G421
A	18	HIS	-	expression tag	UNP A0A2H1G421
A	19	MET	-	expression tag	UNP A0A2H1G421

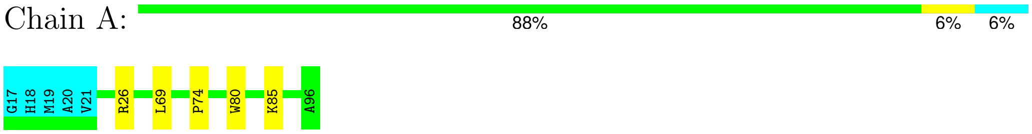
4 Residue-property plots ⓘ

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: Zt-KP6-1

Chain A:



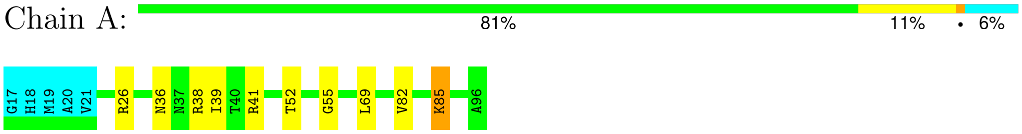
4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

4.2.1 Score per residue for model 1

- Molecule 1: Zt-KP6-1

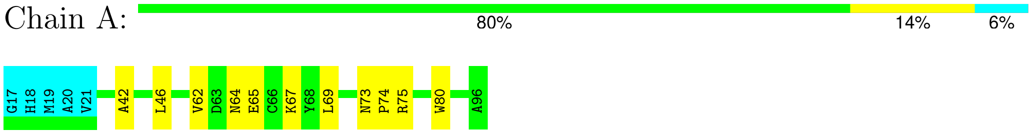
Chain A:



4.2.2 Score per residue for model 2 (medoid)

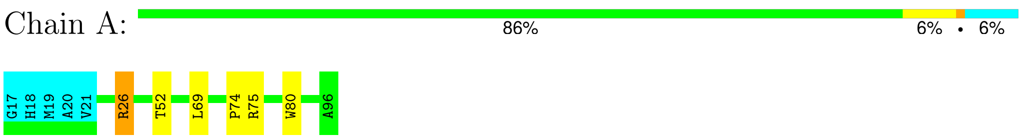
- Molecule 1: Zt-KP6-1

Chain A:



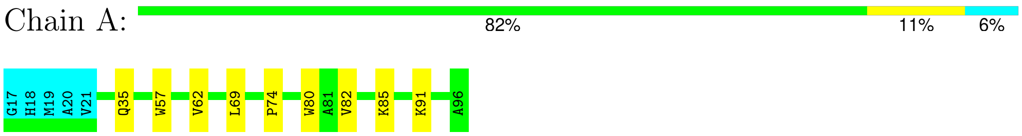
4.2.3 Score per residue for model 3

- Molecule 1: Zt-KP6-1



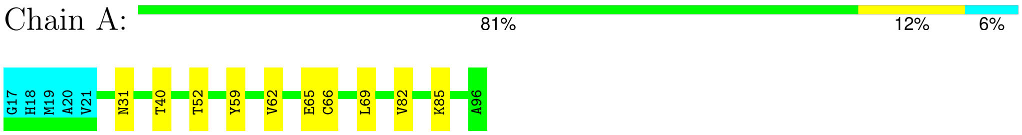
4.2.4 Score per residue for model 4

- Molecule 1: Zt-KP6-1



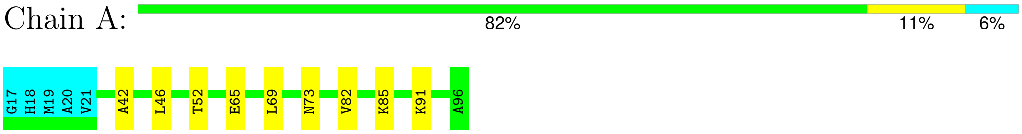
4.2.5 Score per residue for model 5

- Molecule 1: Zt-KP6-1



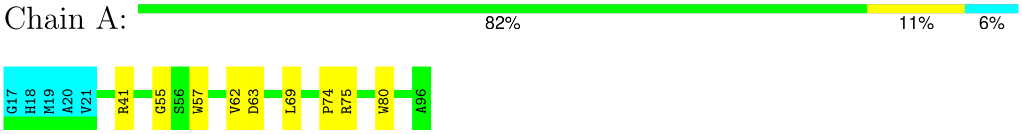
4.2.6 Score per residue for model 6

- Molecule 1: Zt-KP6-1



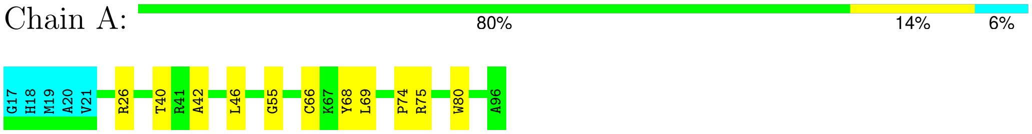
4.2.7 Score per residue for model 7

- Molecule 1: Zt-KP6-1



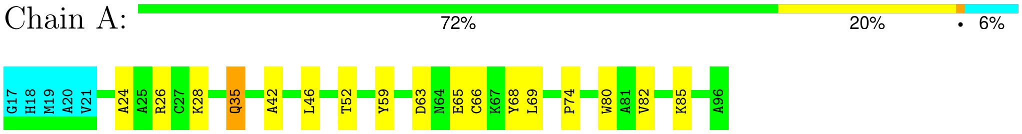
4.2.8 Score per residue for model 8

- Molecule 1: Zt-KP6-1



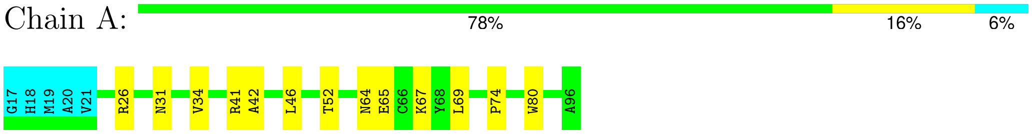
4.2.9 Score per residue for model 9

- Molecule 1: Zt-KP6-1



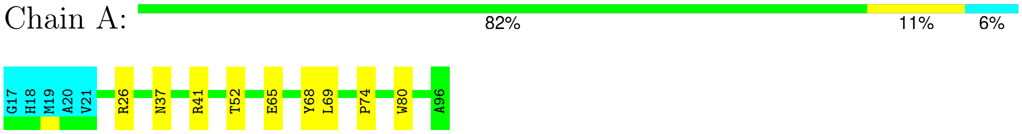
4.2.10 Score per residue for model 10

- Molecule 1: Zt-KP6-1



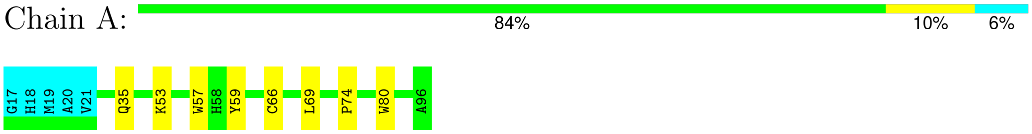
4.2.11 Score per residue for model 11

- Molecule 1: Zt-KP6-1



4.2.12 Score per residue for model 12

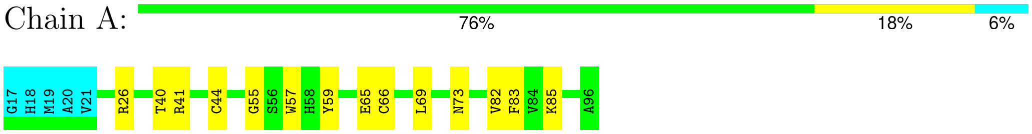
- Molecule 1: Zt-KP6-1



4.2.13 Score per residue for model 13

- Molecule 1: Zt-KP6-1

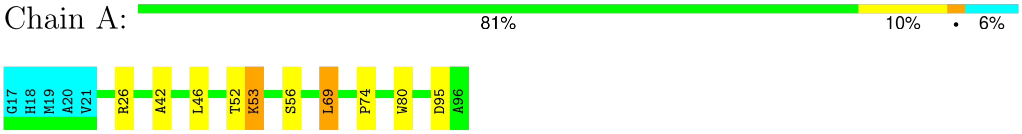
Chain A:



4.2.14 Score per residue for model 14

- Molecule 1: Zt-KP6-1

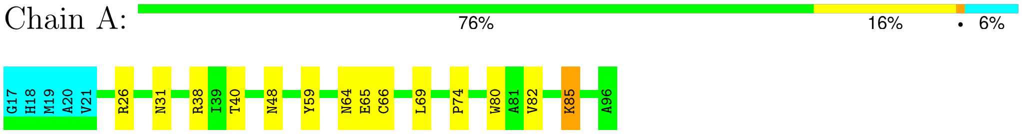
Chain A:



4.2.15 Score per residue for model 15

- Molecule 1: Zt-KP6-1

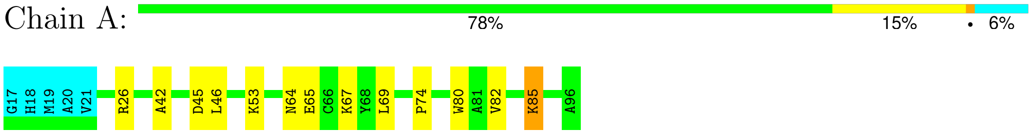
Chain A:



4.2.16 Score per residue for model 16

- Molecule 1: Zt-KP6-1

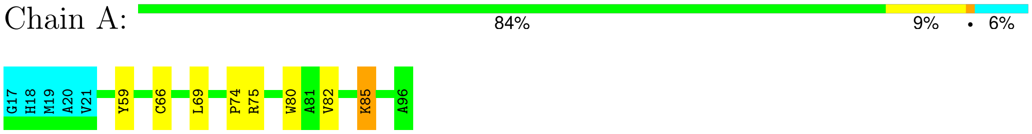
Chain A:



4.2.17 Score per residue for model 17

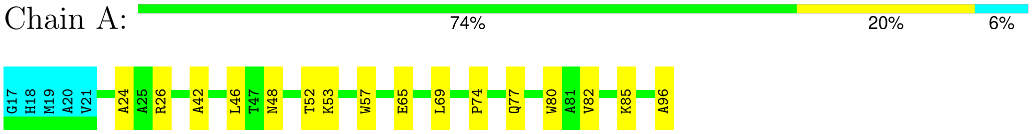
- Molecule 1: Zt-KP6-1

Chain A:



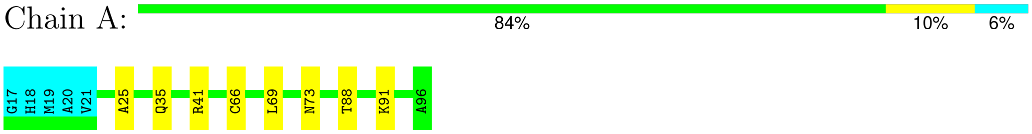
4.2.18 Score per residue for model 18

- Molecule 1: Zt-KP6-1



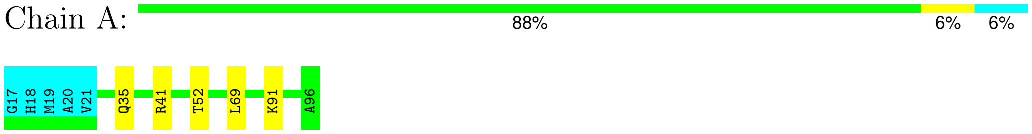
4.2.19 Score per residue for model 19

- Molecule 1: Zt-KP6-1



4.2.20 Score per residue for model 20

- Molecule 1: Zt-KP6-1



5 Refinement protocol and experimental data overview (i)

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

Of the 20 calculated structures, 20 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**
CYANA	structure calculation	3.98.15
CNS	refinement	1.2

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	627
Number of shifts mapped to atoms	627
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Assignment completeness (well-defined parts)	60%

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	0.75±0.02	0±0/621 (0.0± 0.0%)	0.65±0.02	0±0/845 (0.0± 0.0%)
All	All	0.75	2/12420 (0.0%)	0.65	0/16900 (0.0%)

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	0.1±0.2
All	All	0	1

All unique bond outliers are listed below.

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)	Models	
								Worst	Total
1	A	55	GLY	N-CA	-5.39	1.38	1.46	1	2

There are no bond-angle outliers.

There are no chirality outliers.

All unique planar outliers are listed below.

Mol	Chain	Res	Type	Group	Models (Total)
1	A	26	ARG	Sidechain	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	604	562	562	4±2
All	All	12080	11240	11240	77

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 3.

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

Atom-1	**Atom-2**	**Clash(Å)**	**Distance(Å)**	**Models**	
				Worst	Total
1:A:26:ARG:HD3	1:A:65:GLU:OE1	0.55	2.02	10	3
1:A:59:TYR:HD2	1:A:66:CYS:SG	0.54	2.25	5	2
1:A:82:VAL:O	1:A:85:LYS:HG2	0.52	2.04	18	10
1:A:74:PRO:O	1:A:80:TRP:HB2	0.52	2.03	3	14
1:A:59:TYR:HD1	1:A:66:CYS:SG	0.52	2.28	12	4
1:A:42:ALA:O	1:A:46:LEU:HG	0.51	2.06	16	8
1:A:53:LYS:HE2	1:A:53:LYS:HA	0.51	1.80	12	3
1:A:75:ARG:HA	1:A:80:TRP:CG	0.49	2.43	7	5
1:A:64:ASN:OD1	1:A:67:LYS:HE2	0.47	2.09	2	1
1:A:40:THR:HG22	1:A:66:CYS:SG	0.46	2.51	15	4
1:A:64:ASN:O	1:A:67:LYS:HE3	0.45	2.11	10	2
1:A:28:LYS:HA	1:A:35:GLN:HA	0.45	1.88	9	1
1:A:55:GLY:HA3	1:A:57:TRP:CH2	0.44	2.47	13	2
1:A:26:ARG:HD3	1:A:65:GLU:OE2	0.44	2.12	16	1
1:A:74:PRO:HA	1:A:77:GLN:OE1	0.43	2.13	18	1
1:A:53:LYS:HA	1:A:53:LYS:CE	0.43	2.43	18	2
1:A:26:ARG:CG	1:A:95:ASP:HB3	0.43	2.44	14	1
1:A:56:SER:HB2	1:A:69:LEU:HD23	0.43	1.89	14	1
1:A:68:TYR:CG	1:A:74:PRO:HB3	0.42	2.49	9	2
1:A:31:ASN:HB2	1:A:34:VAL:HB	0.41	1.92	10	1
1:A:37:ASN:O	1:A:41:ARG:HB2	0.41	2.15	11	1
1:A:68:TYR:CD1	1:A:74:PRO:HB3	0.41	2.50	11	1
1:A:88:THR:O	1:A:91:LYS:HD2	0.41	2.15	19	1
1:A:24:ALA:O	1:A:96:ALA:HA	0.41	2.14	18	1
1:A:36:ASN:OD1	1:A:39:ILE:HG12	0.41	2.16	1	1
1:A:25:ALA:HB3	1:A:66:CYS:HB3	0.41	1.92	19	1
1:A:44:CYS:SG	1:A:83:PHE:HE2	0.41	2.39	13	1
1:A:24:ALA:HB1	1:A:65:GLU:HB2	0.40	1.93	9	1
1:A:53:LYS:HA	1:A:53:LYS:HE3	0.40	1.93	14	1

6.3 Torsion angles ⓘ

6.3.1 Protein backbone ⓘ

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	74/80 (92%)	67±2 (90±2%)	6±2 (8±3%)	2±1 (2±1%)	8	47
All	All	1480/1600 (92%)	1333 (90%)	114 (8%)	33 (2%)	8	47

All 5 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	69	LEU	20
1	A	65	GLU	5
1	A	62	VAL	4
1	A	91	LYS	2
1	A	63	ASP	2

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	64/67 (96%)	62±1 (96±2%)	2±1 (4±2%)	30	83
All	All	1280/1340 (96%)	1232 (96%)	48 (4%)	30	83

All 14 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	52	THR	10
1	A	26	ARG	6
1	A	41	ARG	6
1	A	35	GLN	5
1	A	85	LYS	4

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Mol	Chain	Res	Type	Models (Total)
1	A	73	ASN	4
1	A	57	TRP	3
1	A	38	ARG	2
1	A	31	ASN	2
1	A	48	ASN	2
1	A	53	LYS	1
1	A	64	ASN	1
1	A	45	ASP	1
1	A	91	LYS	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 oligosaccharides in this entry.

6.6 Ligand geometry ⓘ

There are no ligands in this entry.

6.7 Other polymers ⓘ

There are no such molecules in this entry.

6.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

7 Chemical shift validation ⓘ

The completeness of assignment taking into account all chemical shift lists is 60% for the well-defined parts and 59% for the entire structure.

7.1 Chemical shift list 1

File name: working_cs.cif

Chemical shift list name: *starch_output*

7.1.1 Bookkeeping ⓘ

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

Total number of shifts	627
Number of shifts mapped to atoms	627
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Number of shift outliers (ShiftChecker)	7

7.1.2 Chemical shift referencing ⓘ

The following table shows the suggested chemical shift referencing corrections.

Nucleus	# values	Correction ± precision, *ppm*	Suggested action
$^{13}C_{\alpha}$	0	—	None (insufficient data)
$^{13}C_{\beta}$	0	—	None (insufficient data)
$^{13}C'$	0	—	None (insufficient data)
^{15}N	73	0.26 ± 0.46	None needed (< 0.5 ppm)

7.1.3 Completeness of resonance assignments ⓘ

The following table shows the completeness of the chemical shift assignments for the well-defined regions of the structure. The overall completeness is 60%, i.e. 598 atoms were assigned a chemical shift out of a possible 1001. 0 out of 11 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	220/372 (59%)	150/151 (99%)	0/150 (0%)	70/71 (99%)
Sidechain	328/517 (63%)	316/332 (95%)	0/160 (0%)	12/25 (48%)

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	Total	^{1}H	^{13}C	^{15}N
Aromatic	50/112 (45%)	48/54 (89%)	0/54 (0%)	2/4 (50%)
Overall	598/1001 (60%)	514/537 (96%)	0/364 (0%)	84/100 (84%)

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 59%, i.e. 626 atoms were assigned a chemical shift out of a possible 1061. 0 out of 12 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	230/398 (58%)	157/162 (97%)	0/160 (0%)	73/76 (96%)
Sidechain	344/544 (63%)	332/351 (95%)	0/168 (0%)	12/25 (48%)
Aromatic	52/119 (44%)	50/58 (86%)	0/56 (0%)	2/5 (40%)
Overall	626/1061 (59%)	539/571 (94%)	0/384 (0%)	87/106 (82%)

7.1.4 Statistically unusual chemical shifts ⓘ

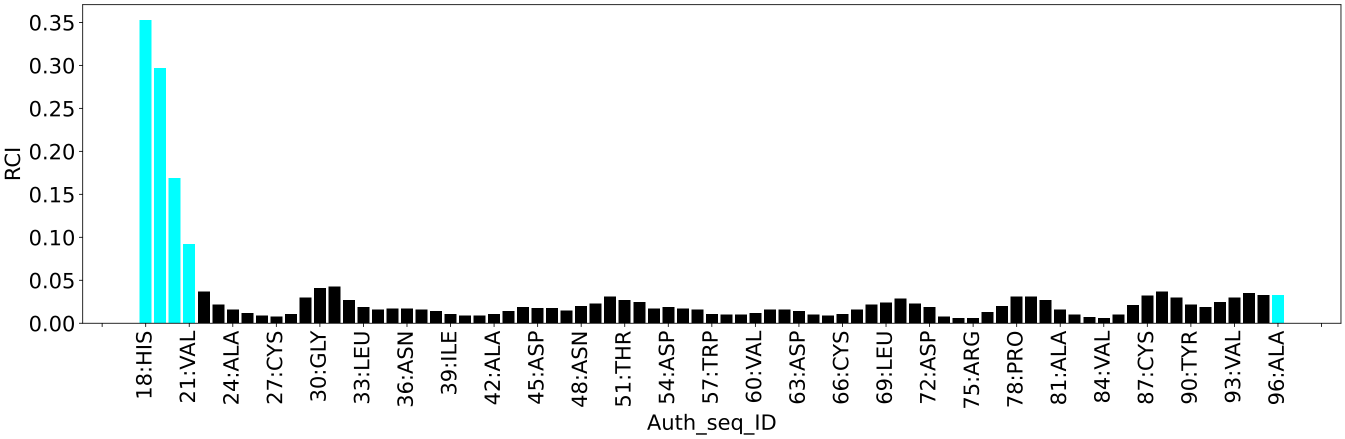
The following table lists the statistically unusual chemical shifts. These are statistical measures, and large deviations from the mean do not necessarily imply incorrect assignments. Molecules containing paramagnetic centres or hemes are expected to give rise to anomalous chemical shifts.

List Id	Chain	Res	Type	Atom	Shift, *ppm*	Expected range, *ppm*	Z-score
1	A	40	THR	HG1	5.13	0.08 – 2.19	18.9
1	A	47	THR	HG21	-0.17	0.08 – 2.19	-6.2
1	A	47	THR	HG22	-0.17	0.08 – 2.19	-6.2
1	A	47	THR	HG23	-0.17	0.08 – 2.19	-6.2
1	A	77	GLN	HG2	0.74	1.01 – 3.62	-6.0
1	A	75	ARG	HG2	-0.00	0.26 – 2.87	-6.0
1	A	41	ARG	HB2	0.39	0.52 – 3.08	-5.5

7.1.5 Random Coil Index (RCI) plots ⓘ

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:


0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
RCI
18:HIS
21:VAL
24:ALA
27:CYS
30:GLY
33:LEU
36:ASN
39:ILE
42:ALA
45:ASP
48:ASN
51:THR
54:ASP
57:TRP
60:VAL
63:ASP
66:CYS
69:LEU
72:ASP
75:ARG
78:PRO
81:ALA
84:VAL
87:CYS
90:TYR
93:VAL
96:ALA
Auth_seq_ID

8 NMR restraints analysis ⓘ

8.1 Conformationally restricting restraints ⓘ

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	1416
Intra-residue (|i-j|=0)	310
Sequential (|i-j|=1)	390
Medium range (|i-j|>1 and |i-j|<5)	236
Long range (|i-j|≥5)	412
Inter-chain	0
Hydrogen bond restraints	66
Disulfide bond restraints	2
Total dihedral-angle restraints	0
Number of unmapped restraints	0
Number of restraints per residue	17.7
Number of long range restraints per residue[1]	5.4

[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 ⓘ

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 ⓘ

Distance violations less than 0.1 Å
are not included in the calculation.

Bins (Å)	Average number of violations per model	Max (Å)
0.1-0.2 (Small)	5.7	0.2
0.2-0.5 (Medium)	0.2	0.29
>0.5 (Large)	None	None

8.2.2 Average number of dihedral-angle violations per model ⓘ

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

9 Distance violation analysis ⓘ

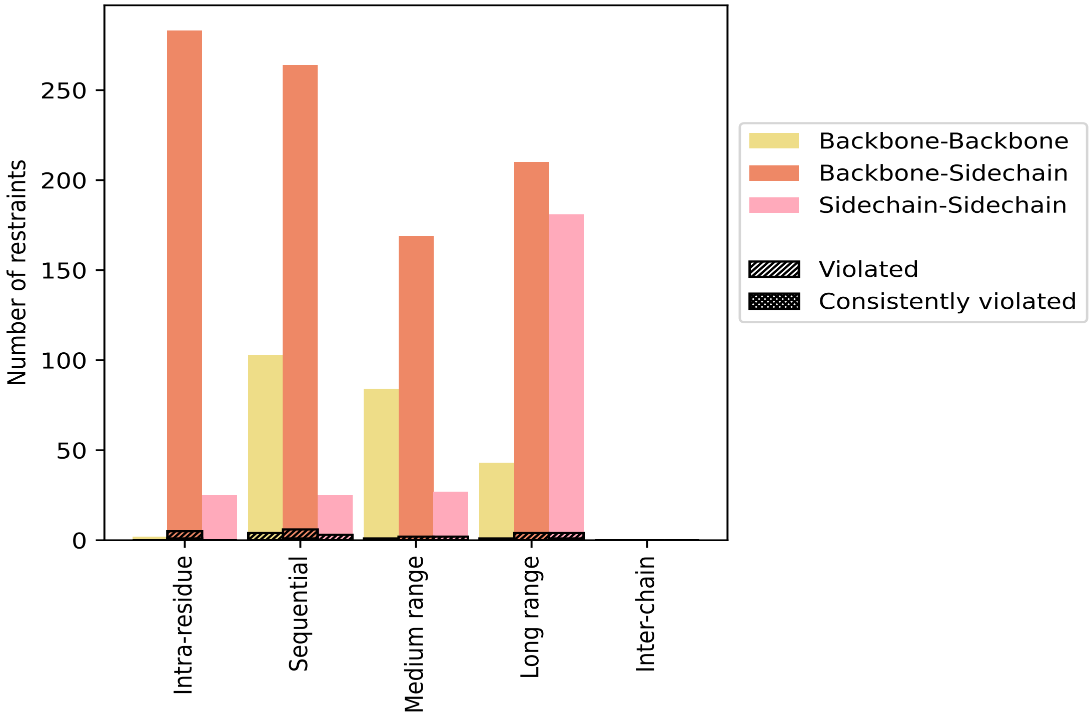
9.1 Summary of distance violations ⓘ

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)	310	21.9	5	1.6	0.4	1	0.3	0.1
Backbone-Backbone	2	0.1	0	0.0	0.0	0	0.0	0.0
Backbone-Sidechain	283	20.0	5	1.8	0.4	1	0.4	0.1
Sidechain-Sidechain	25	1.8	0	0.0	0.0	0	0.0	0.0
Sequential (|i-j|=1)	390	27.5	12	3.1	0.8	0	0.0	0.0
Backbone-Backbone	103	7.3	4	3.9	0.3	0	0.0	0.0
Backbone-Sidechain	262	18.5	5	1.9	0.4	0	0.0	0.0
Sidechain-Sidechain	25	1.8	3	12.0	0.2	0	0.0	0.0
Medium range (|i-j|>1 & |i-j|<5)	236	16.7	4	1.7	0.3	0	0.0	0.0
Backbone-Backbone	84	5.9	1	1.2	0.1	0	0.0	0.0
Backbone-Sidechain	125	8.8	1	0.8	0.1	0	0.0	0.0
Sidechain-Sidechain	27	1.9	2	7.4	0.1	0	0.0	0.0
Long range (|i-j|≥5)	412	29.1	9	2.2	0.6	1	0.2	0.1
Backbone-Backbone	43	3.0	1	2.3	0.1	0	0.0	0.0
Backbone-Sidechain	190	13.4	4	2.1	0.3	0	0.0	0.0
Sidechain-Sidechain	179	12.6	4	2.2	0.3	1	0.6	0.1
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	66	4.7	2	3.0	0.1	1	1.5	0.1
Disulfide bond	2	0.1	0	0.0	0.0	0	0.0	0.0
Total	1416	100.0	32	2.3	2.3	3	0.2	0.2
Backbone-Backbone	232	16.4	6	2.6	0.4	0	0.0	0.0
Backbone-Sidechain	926	65.4	17	1.8	1.2	2	0.2	0.1
Sidechain-Sidechain	258	18.2	9	3.5	0.6	1	0.4	0.1

[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 ⓘ



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 ⓘ

The following table provides the distance violation statistics for each model in the ensemble. Violations less than 0.1 Å
are not included in the statistics.

Model ID	Number of violations						Mean (Å)	Max (Å)	SD[6] (Å)	Median (Å)
	IR[1]	SQ[2]	MR[3]	LR[4]	IC[5]	Total				
1	2	2	0	1	0	5	0.15	0.24	0.05	0.12
2	1	2	0	3	0	6	0.17	0.29	0.06	0.16
3	2	3	0	2	0	7	0.13	0.16	0.02	0.14
4	2	2	1	3	0	8	0.14	0.21	0.03	0.13
5	2	4	1	1	0	8	0.15	0.2	0.03	0.16
6	1	3	0	1	0	5	0.14	0.16	0.02	0.15
7	2	2	2	2	0	8	0.12	0.16	0.02	0.12
8	1	2	0	1	0	4	0.15	0.17	0.02	0.15
9	1	3	0	3	0	7	0.13	0.15	0.01	0.13
10	2	2	0	2	0	6	0.15	0.2	0.03	0.15

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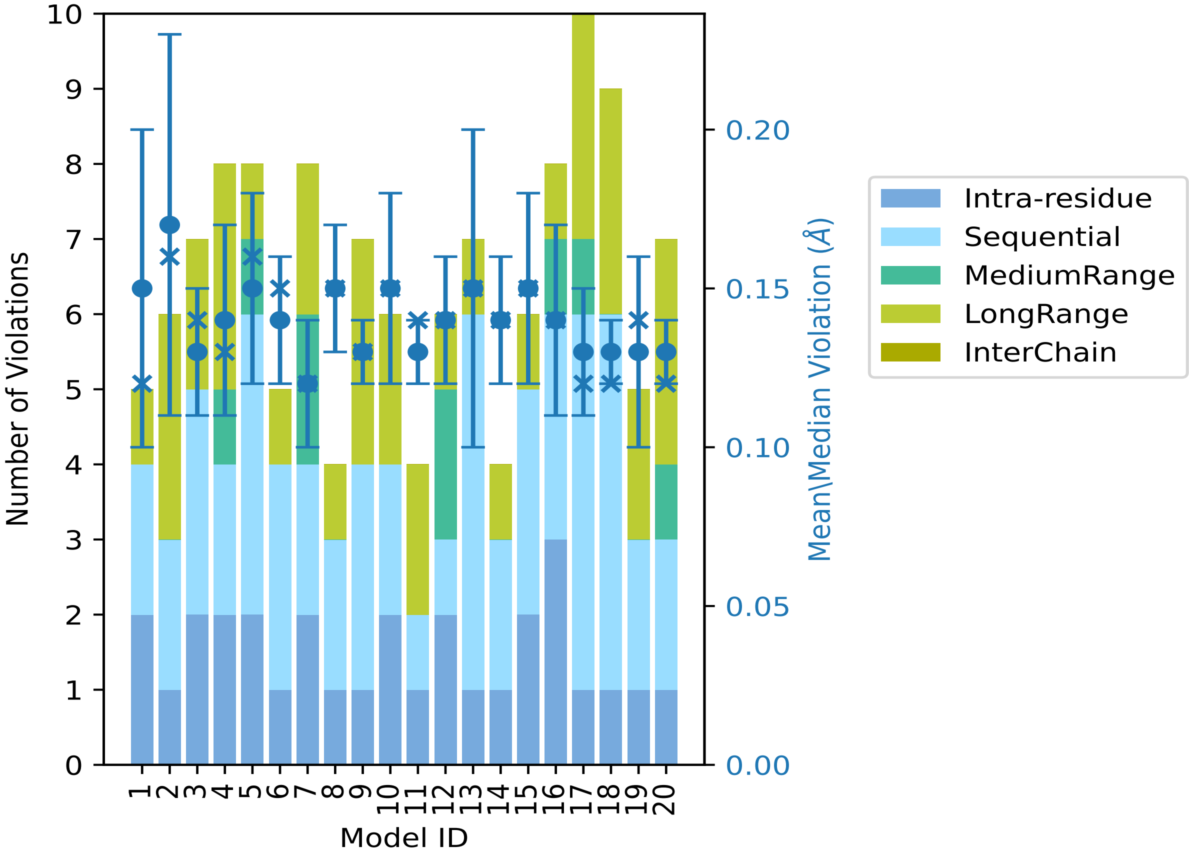
Model ID	Number of violations						Mean (Å)	Max (Å)	SD[6] (Å)	Median (Å)
	IR[1]	SQ[2]	MR[3]	LR[4]	IC[5]	Total				
11	1	1	0	2	0	4	0.13	0.15	0.01	0.14
12	2	1	2	1	0	6	0.14	0.16	0.02	0.14
13	1	5	0	1	0	7	0.15	0.27	0.05	0.15
14	1	2	0	1	0	4	0.14	0.16	0.02	0.14
15	2	3	0	1	0	6	0.15	0.19	0.03	0.15
16	3	3	1	1	0	8	0.14	0.19	0.03	0.14
17	1	5	1	3	0	10	0.13	0.16	0.02	0.12
18	1	5	0	3	0	9	0.13	0.15	0.01	0.12
19	1	2	0	2	0	5	0.13	0.17	0.03	0.14
20	1	2	1	3	0	7	0.13	0.15	0.01	0.12

[1] Intra-residue restraints, [2] Sequential restraints, [3] Medium range restraints, [4] Long range restraints, [5] Inter-chain restraints, [6] Standard deviation

9.2.1 Bar graph : Distance Violation statistics for each model ⓘ



The mean(dot),median(x) and the standard deviation are shown in blue with respect to the y axis on the right

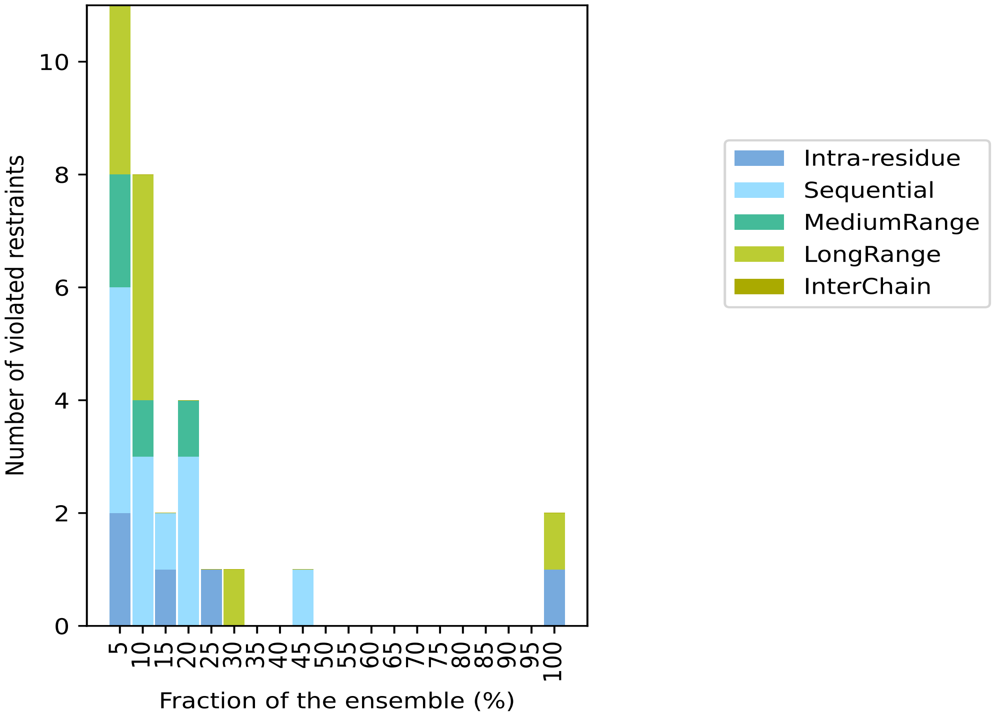
9.3 Distance violation statistics for the ensemble ⓘ

Violation analysis may find that some restraints are violated in few models and some are violated in most of models. The following table provides this information as number of violated restraints for a given fraction of the ensemble. In total, 1318(IR:305, SQ:378, MR:232, LR:403, IC:0) restraints are not violated in the ensemble.

Number of violated restraints						Fraction of the ensemble	
IR[1]	SQ[2]	MR[3]	LR[4]	IC[5]	Total	Count[6]	%
2	4	2	3	0	11	1	5.0
0	3	1	4	0	8	2	10.0
1	1	0	0	0	2	3	15.0
0	3	1	0	0	4	4	20.0
1	0	0	0	0	1	5	25.0
0	0	0	1	0	1	6	30.0
0	0	0	0	0	0	7	35.0
0	0	0	0	0	0	8	40.0
0	1	0	0	0	1	9	45.0
0	0	0	0	0	0	10	50.0
0	0	0	0	0	0	11	55.0
0	0	0	0	0	0	12	60.0
0	0	0	0	0	0	13	65.0
0	0	0	0	0	0	14	70.0
0	0	0	0	0	0	15	75.0
0	0	0	0	0	0	16	80.0
0	0	0	0	0	0	17	85.0
0	0	0	0	0	0	18	90.0
0	0	0	0	0	0	19	95.0
1	0	0	1	0	2	20	100.0

[1] Intra-residue restraints, [2] Sequential restraints, [3] Medium range restraints, [4] Long range restraints, [5] Inter-chain restraints, [6] Number of models with violations

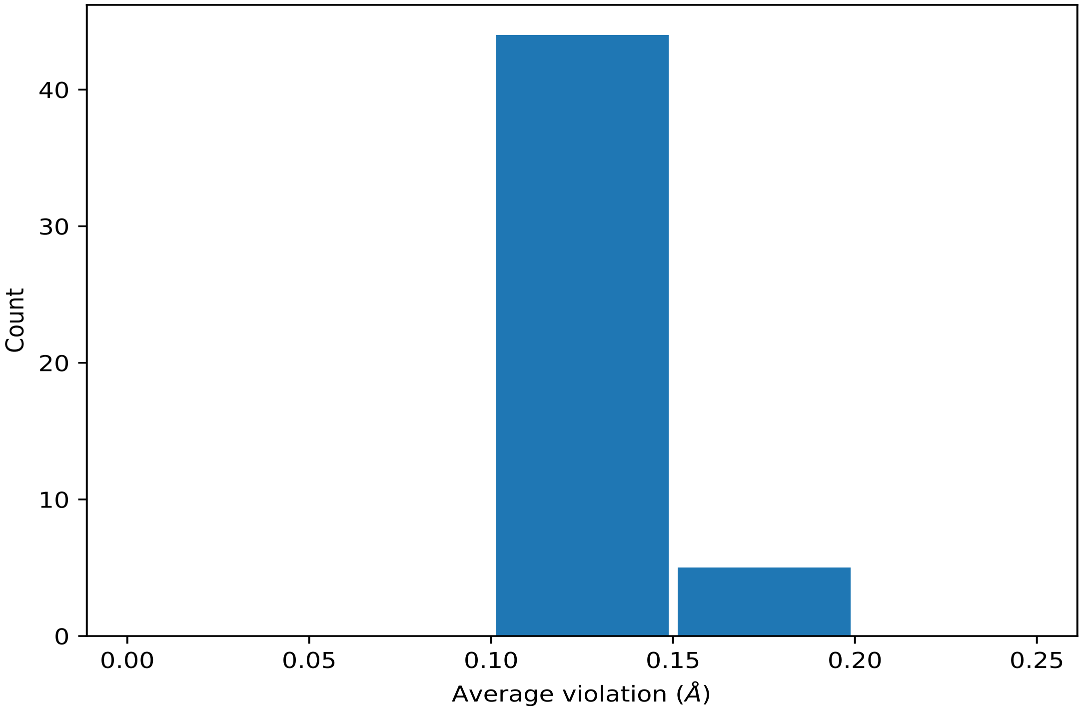
9.3.1 Bar graph : Distance violation statistics for the ensemble (i)



9.4 Most violated distance restraints in the ensemble (i)

9.4.1 Histogram : Distribution of mean distance violations (i)

The following histogram shows the distribution of the average value of the violation. The average is calculated for each restraint that is violated in more than one model over all the violated models in the ensemble



9.4.2 Table: Most violated distance restraints ⓘ

The following table provides the mean and the standard deviation of theviolation for each restraint sorted by number of violated models and the mean value. The Key (restraint list ID, restraint ID) is the unique identifier for a given restraint. Rows with same key represent combinatorial or ambiguous restraints and are counted as a single restraint.

Key	Atom-1	Atom-2	Models[1]	Mean (Å)	SD[1] (Å)	Median (Å)
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	20	0.15	0.01	0.15
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	20	0.15	0.02	0.15
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	20	0.14	0.02	0.14
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	20	0.14	0.02	0.14
(1,681)	1:55:A:GLY:H	1:56:A:SER:H	9	0.15	0.04	0.14
(1,815)	1:60:A:VAL:H	1:65:A:GLU:H	6	0.12	0.01	0.12
(1,953)	1:73:A:ASN:H	1:73:A:ASN:HD21	5	0.19	0.01	0.19
(1,953)	1:73:A:ASN:H	1:73:A:ASN:HD22	5	0.19	0.01	0.19
(1,10)	1:21:A:VAL:HA	1:22:A:VAL:H	4	0.18	0.07	0.15
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG21	4	0.13	0.01	0.14
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG22	4	0.13	0.01	0.14
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG23	4	0.13	0.01	0.14
(1,15)	1:21:A:VAL:H	1:22:A:VAL:HB	4	0.11	0.01	0.11
(1,1213)	1:85:A:LYS:HB2	1:86:A:TYR:HD1	4	0.1	0.0	0.1
(1,1213)	1:85:A:LYS:HB2	1:86:A:TYR:HD2	4	0.1	0.0	0.1
(1,1213)	1:85:A:LYS:HB3	1:86:A:TYR:HD1	4	0.1	0.0	0.1

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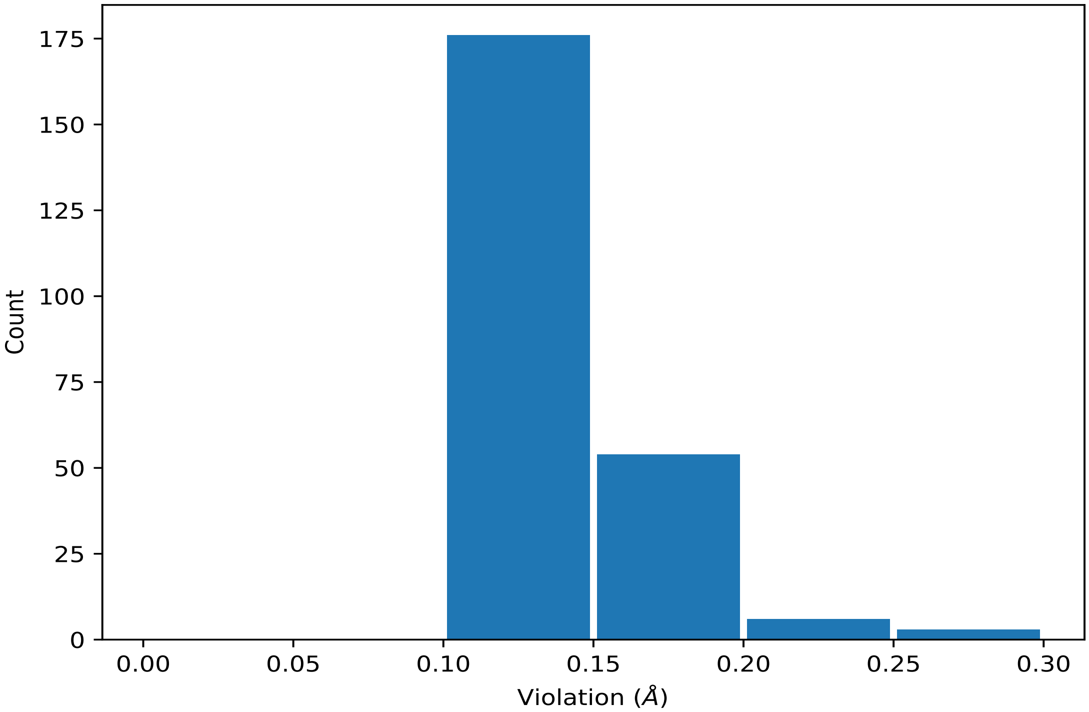
Key	Atom-1	Atom-2	Models[1]	Mean (Å)	SD[1] (Å)	Median (Å)
(1,1213)	1:85:A:LYS:HB3	1:86:A:TYR:HD2	4	0.1	0.0	0.1
(1,486)	1:45:A:ASP:HB2	1:46:A:LEU:H	3	0.13	0.01	0.13
(1,650)	1:53:A:LYS:HA	1:53:A:LYS:HG3	3	0.12	0.01	0.13
(1,1219)	1:85:A:LYS:HE3	1:86:A:TYR:HE1	2	0.19	0.08	0.19
(1,1219)	1:85:A:LYS:HE3	1:86:A:TYR:HE2	2	0.19	0.08	0.19
(1,317)	1:38:A:ARG:HD2	1:39:A:ILE:HG12	2	0.14	0.01	0.14
(1,317)	1:38:A:ARG:HD2	1:39:A:ILE:HG13	2	0.14	0.01	0.14
(1,317)	1:38:A:ARG:HD3	1:39:A:ILE:HG12	2	0.14	0.01	0.14
(1,317)	1:38:A:ARG:HD3	1:39:A:ILE:HG13	2	0.14	0.01	0.14
(1,266)	1:33:A:LEU:HA	1:34:A:VAL:H	2	0.12	0.0	0.12
(1,194)	1:28:A:LYS:HE2	1:35:A:GLN:H	2	0.12	0.02	0.12
(1,194)	1:28:A:LYS:HE3	1:35:A:GLN:H	2	0.12	0.02	0.12
(1,76)	1:24:A:ALA:HB1	1:65:A:GLU:HG2	2	0.12	0.0	0.12
(1,76)	1:24:A:ALA:HB2	1:65:A:GLU:HG2	2	0.12	0.0	0.12
(1,76)	1:24:A:ALA:HB3	1:65:A:GLU:HG2	2	0.12	0.0	0.12
(1,800)	1:60:A:VAL:HG11	1:63:A:ASP:HB2	2	0.12	0.0	0.12
(1,800)	1:60:A:VAL:HG11	1:63:A:ASP:HB3	2	0.12	0.0	0.12
(1,800)	1:60:A:VAL:HG12	1:63:A:ASP:HB2	2	0.12	0.0	0.12
(1,800)	1:60:A:VAL:HG12	1:63:A:ASP:HB3	2	0.12	0.0	0.12
(1,800)	1:60:A:VAL:HG13	1:63:A:ASP:HB2	2	0.12	0.0	0.12
(1,800)	1:60:A:VAL:HG13	1:63:A:ASP:HB3	2	0.12	0.0	0.12
(1,800)	1:60:A:VAL:HG21	1:63:A:ASP:HB2	2	0.12	0.0	0.12
(1,800)	1:60:A:VAL:HG21	1:63:A:ASP:HB3	2	0.12	0.0	0.12
(1,800)	1:60:A:VAL:HG22	1:63:A:ASP:HB2	2	0.12	0.0	0.12
(1,800)	1:60:A:VAL:HG22	1:63:A:ASP:HB3	2	0.12	0.0	0.12
(1,800)	1:60:A:VAL:HG23	1:63:A:ASP:HB2	2	0.12	0.0	0.12
(1,800)	1:60:A:VAL:HG23	1:63:A:ASP:HB3	2	0.12	0.0	0.12
(1,543)	1:47:A:THR:HG21	1:57:A:TRP:H	2	0.11	0.01	0.11
(1,543)	1:47:A:THR:HG22	1:57:A:TRP:H	2	0.11	0.01	0.11
(1,543)	1:47:A:THR:HG23	1:57:A:TRP:H	2	0.11	0.01	0.11
(1,365)	1:40:A:THR:HG21	1:66:A:CYS:HB3	2	0.11	0.0	0.11
(1,365)	1:40:A:THR:HG22	1:66:A:CYS:HB3	2	0.11	0.0	0.11
(1,365)	1:40:A:THR:HG23	1:66:A:CYS:HB3	2	0.11	0.0	0.11

[1]Number of violated models, [2]Standard deviation

9.5 All violated distance restraints

9.5.1 Histogram : Distribution of distance violations

The following histogram shows the distribution of the absolute value of the violation for all violated restraints in the ensemble.



9.5.2 Table : All distance violations ⓘ

The following table lists the absolute value of the violation for each restraint in the ensemble sorted by its value. The Key (restraint list ID, restraint ID) is the unique identifier for a given restraint. Rows with same key represent combinatorial or ambiguous restraints and are counted as a single restraint.

Key	Atom-1	Atom-2	Model ID	Violation (Å)
(1,10)	1:21:A:VAL:HA	1:22:A:VAL:H	2	0.29
(1,1219)	1:85:A:LYS:HE3	1:86:A:TYR:HE1	13	0.27
(1,1219)	1:85:A:LYS:HE3	1:86:A:TYR:HE2	13	0.27
(1,681)	1:55:A:GLY:H	1:56:A:SER:H	1	0.24
(1,953)	1:73:A:ASN:H	1:73:A:ASN:HD21	4	0.21
(1,953)	1:73:A:ASN:H	1:73:A:ASN:HD22	4	0.21
(1,953)	1:73:A:ASN:H	1:73:A:ASN:HD21	10	0.2
(1,953)	1:73:A:ASN:H	1:73:A:ASN:HD22	10	0.2
(1,681)	1:55:A:GLY:H	1:56:A:SER:H	5	0.2
(1,953)	1:73:A:ASN:H	1:73:A:ASN:HD21	15	0.19
(1,953)	1:73:A:ASN:H	1:73:A:ASN:HD22	15	0.19
(1,953)	1:73:A:ASN:H	1:73:A:ASN:HD21	16	0.19
(1,953)	1:73:A:ASN:H	1:73:A:ASN:HD22	16	0.19
(1,10)	1:21:A:VAL:HA	1:22:A:VAL:H	16	0.19
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	5	0.17
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	19	0.17

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(1,953)	1:73:A:ASN:H	1:73:A:ASN:HD21	5	0.17
(1,953)	1:73:A:ASN:H	1:73:A:ASN:HD22	5	0.17
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	2	0.17
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	2	0.17
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	5	0.17
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	5	0.17
(1,681)	1:55:A:GLY:H	1:56:A:SER:H	8	0.17
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	2	0.16
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	6	0.16
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	10	0.16
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	14	0.16
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	15	0.16
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	12	0.16
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	15	0.16
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	17	0.16
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	3	0.16
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	3	0.16
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	6	0.16
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	6	0.16
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	7	0.16
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	7	0.16
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	4	0.15
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	9	0.15
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	13	0.15
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	17	0.15
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	2	0.15
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	4	0.15
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	6	0.15
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	8	0.15
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	9	0.15
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	13	0.15
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	14	0.15
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	16	0.15
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	18	0.15
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	19	0.15
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	20	0.15
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	10	0.15
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	10	0.15
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	11	0.15
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	11	0.15
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	13	0.15
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	13	0.15

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	16	0.15
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	16	0.15
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG21	12	0.15
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG22	12	0.15
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG23	12	0.15
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	8	0.14
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	12	0.14
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	18	0.14
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	20	0.14
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	1	0.14
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	3	0.14
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	5	0.14
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	7	0.14
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	10	0.14
(1,1258)	1:87:A:CYS:H	1:87:A:CYS:HB3	11	0.14
(1,1021)	1:76:A:ASP:H	1:76:A:ASP:HB3	3	0.14
(1,815)	1:60:A:VAL:H	1:65:A:GLU:H	10	0.14
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	19	0.14
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	19	0.14
(1,681)	1:55:A:GLY:H	1:56:A:SER:H	3	0.14
(1,681)	1:55:A:GLY:H	1:56:A:SER:H	6	0.14
(1,681)	1:55:A:GLY:H	1:56:A:SER:H	20	0.14
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG21	17	0.14
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG22	17	0.14
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG23	17	0.14
(1,486)	1:45:A:ASP:HB2	1:46:A:LEU:H	17	0.14
(1,317)	1:38:A:ARG:HD2	1:39:A:ILE:HG12	13	0.14
(1,317)	1:38:A:ARG:HD2	1:39:A:ILE:HG13	13	0.14
(1,317)	1:38:A:ARG:HD3	1:39:A:ILE:HG12	13	0.14
(1,317)	1:38:A:ARG:HD3	1:39:A:ILE:HG13	13	0.14
(1,203)	1:28:A:LYS:H	1:35:A:GLN:HG2	9	0.14
(1,203)	1:28:A:LYS:H	1:35:A:GLN:HG3	9	0.14
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	11	0.13
(1,815)	1:60:A:VAL:H	1:65:A:GLU:H	2	0.13
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	4	0.13
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	4	0.13
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	9	0.13
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	9	0.13
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	12	0.13
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	12	0.13
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	14	0.13
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	14	0.13

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	17	0.13
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	17	0.13
(1,681)	1:55:A:GLY:H	1:56:A:SER:H	15	0.13
(1,650)	1:53:A:LYS:HA	1:53:A:LYS:HG3	12	0.13
(1,650)	1:53:A:LYS:HA	1:53:A:LYS:HG3	16	0.13
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG21	4	0.13
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG22	4	0.13
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG23	4	0.13
(1,486)	1:45:A:ASP:HB2	1:46:A:LEU:H	18	0.13
(1,317)	1:38:A:ARG:HD2	1:39:A:ILE:HG12	5	0.13
(1,317)	1:38:A:ARG:HD2	1:39:A:ILE:HG13	5	0.13
(1,317)	1:38:A:ARG:HD3	1:39:A:ILE:HG12	5	0.13
(1,317)	1:38:A:ARG:HD3	1:39:A:ILE:HG13	5	0.13
(1,194)	1:28:A:LYS:HE2	1:35:A:GLN:H	18	0.13
(1,194)	1:28:A:LYS:HE3	1:35:A:GLN:H	18	0.13
(1,15)	1:21:A:VAL:H	1:22:A:VAL:HB	9	0.13
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	1	0.12
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	3	0.12
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	7	0.12
(2,57)	1:89:A:TYR:H	1:88:A:THR:OG1	16	0.12
(1,821)	1:61:A:GLU:HA	1:61:A:GLU:HG3	1	0.12
(1,815)	1:60:A:VAL:H	1:65:A:GLU:H	20	0.12
(1,800)	1:60:A:VAL:HG11	1:63:A:ASP:HB2	7	0.12
(1,800)	1:60:A:VAL:HG11	1:63:A:ASP:HB3	7	0.12
(1,800)	1:60:A:VAL:HG12	1:63:A:ASP:HB2	7	0.12
(1,800)	1:60:A:VAL:HG12	1:63:A:ASP:HB3	7	0.12
(1,800)	1:60:A:VAL:HG13	1:63:A:ASP:HB2	7	0.12
(1,800)	1:60:A:VAL:HG13	1:63:A:ASP:HB3	7	0.12
(1,800)	1:60:A:VAL:HG21	1:63:A:ASP:HB2	7	0.12
(1,800)	1:60:A:VAL:HG21	1:63:A:ASP:HB3	7	0.12
(1,800)	1:60:A:VAL:HG22	1:63:A:ASP:HB2	7	0.12
(1,800)	1:60:A:VAL:HG22	1:63:A:ASP:HB3	7	0.12
(1,800)	1:60:A:VAL:HG23	1:63:A:ASP:HB2	7	0.12
(1,800)	1:60:A:VAL:HG23	1:63:A:ASP:HB3	7	0.12
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	1	0.12
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	1	0.12
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	8	0.12
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	8	0.12
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	15	0.12
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	15	0.12
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	18	0.12
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	18	0.12

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD1	20	0.12
(1,706)	1:57:A:TRP:HE1	1:68:A:TYR:HD2	20	0.12
(1,543)	1:47:A:THR:HG21	1:57:A:TRP:H	17	0.12
(1,543)	1:47:A:THR:HG22	1:57:A:TRP:H	17	0.12
(1,543)	1:47:A:THR:HG23	1:57:A:TRP:H	17	0.12
(1,486)	1:45:A:ASP:HB2	1:46:A:LEU:H	15	0.12
(1,282)	1:35:A:GLN:HE21	1:36:A:ASN:H	9	0.12
(1,282)	1:35:A:GLN:HE22	1:36:A:ASN:H	9	0.12
(1,266)	1:33:A:LEU:HA	1:34:A:VAL:H	17	0.12
(1,266)	1:33:A:LEU:HA	1:34:A:VAL:H	18	0.12
(1,76)	1:24:A:ALA:HB1	1:65:A:GLU:HG2	2	0.12
(1,76)	1:24:A:ALA:HB2	1:65:A:GLU:HG2	2	0.12
(1,76)	1:24:A:ALA:HB3	1:65:A:GLU:HG2	2	0.12
(1,1)	1:19:A:MET:HA	1:20:A:ALA:H	18	0.12
(2,61)	1:91:A:LYS:H	1:87:A:CYS:O	20	0.11
(1,1219)	1:85:A:LYS:HE3	1:86:A:TYR:HE1	5	0.11
(1,1219)	1:85:A:LYS:HE3	1:86:A:TYR:HE2	5	0.11
(1,1213)	1:85:A:LYS:HB2	1:86:A:TYR:HD1	4	0.11
(1,1213)	1:85:A:LYS:HB2	1:86:A:TYR:HD2	4	0.11
(1,1213)	1:85:A:LYS:HB3	1:86:A:TYR:HD1	4	0.11
(1,1213)	1:85:A:LYS:HB3	1:86:A:TYR:HD2	4	0.11
(1,876)	1:67:A:LYS:HD2	1:68:A:TYR:H	13	0.11
(1,876)	1:67:A:LYS:HD3	1:68:A:TYR:H	13	0.11
(1,815)	1:60:A:VAL:H	1:65:A:GLU:H	3	0.11
(1,815)	1:60:A:VAL:H	1:65:A:GLU:H	7	0.11
(1,800)	1:60:A:VAL:HG11	1:63:A:ASP:HB2	16	0.11
(1,800)	1:60:A:VAL:HG11	1:63:A:ASP:HB3	16	0.11
(1,800)	1:60:A:VAL:HG12	1:63:A:ASP:HB2	16	0.11
(1,800)	1:60:A:VAL:HG12	1:63:A:ASP:HB3	16	0.11
(1,800)	1:60:A:VAL:HG13	1:63:A:ASP:HB2	16	0.11
(1,800)	1:60:A:VAL:HG13	1:63:A:ASP:HB3	16	0.11
(1,800)	1:60:A:VAL:HG21	1:63:A:ASP:HB2	16	0.11
(1,800)	1:60:A:VAL:HG21	1:63:A:ASP:HB3	16	0.11
(1,800)	1:60:A:VAL:HG22	1:63:A:ASP:HB2	16	0.11
(1,800)	1:60:A:VAL:HG22	1:63:A:ASP:HB3	16	0.11
(1,800)	1:60:A:VAL:HG23	1:63:A:ASP:HB2	16	0.11
(1,800)	1:60:A:VAL:HG23	1:63:A:ASP:HB3	16	0.11
(1,755)	1:58:A:HIS:HD2	1:69:A:LEU:HD11	18	0.11
(1,755)	1:58:A:HIS:HD2	1:69:A:LEU:HD12	18	0.11
(1,755)	1:58:A:HIS:HD2	1:69:A:LEU:HD13	18	0.11
(1,755)	1:58:A:HIS:HD2	1:69:A:LEU:HD21	18	0.11
(1,755)	1:58:A:HIS:HD2	1:69:A:LEU:HD22	18	0.11

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(1,755)	1:58:A:HIS:HD2	1:69:A:LEU:HD23	18	0.11
(1,681)	1:55:A:GLY:H	1:56:A:SER:H	13	0.11
(1,582)	1:49:A:GLU:HA	1:51:A:THR:H	12	0.11
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG21	7	0.11
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG22	7	0.11
(1,578)	1:48:A:ASN:H	1:52:A:THR:HG23	7	0.11
(1,365)	1:40:A:THR:HG21	1:66:A:CYS:HB3	9	0.11
(1,365)	1:40:A:THR:HG22	1:66:A:CYS:HB3	9	0.11
(1,365)	1:40:A:THR:HG23	1:66:A:CYS:HB3	9	0.11
(1,76)	1:24:A:ALA:HB1	1:65:A:GLU:HG2	11	0.11
(1,76)	1:24:A:ALA:HB2	1:65:A:GLU:HG2	11	0.11
(1,76)	1:24:A:ALA:HB3	1:65:A:GLU:HG2	11	0.11
(1,70)	1:24:A:ALA:HB1	1:65:A:GLU:HA	20	0.11
(1,70)	1:24:A:ALA:HB2	1:65:A:GLU:HA	20	0.11
(1,70)	1:24:A:ALA:HB3	1:65:A:GLU:HA	20	0.11
(1,15)	1:21:A:VAL:H	1:22:A:VAL:HB	6	0.11
(1,15)	1:21:A:VAL:H	1:22:A:VAL:HB	18	0.11
(1,10)	1:21:A:VAL:HA	1:22:A:VAL:H	3	0.11
(1,10)	1:21:A:VAL:HA	1:22:A:VAL:H	19	0.11
(1,1316)	1:92:A:GLY:H	1:93:A:VAL:HG11	17	0.1
(1,1316)	1:92:A:GLY:H	1:93:A:VAL:HG12	17	0.1
(1,1316)	1:92:A:GLY:H	1:93:A:VAL:HG13	17	0.1
(1,1316)	1:92:A:GLY:H	1:93:A:VAL:HG21	17	0.1
(1,1316)	1:92:A:GLY:H	1:93:A:VAL:HG22	17	0.1
(1,1316)	1:92:A:GLY:H	1:93:A:VAL:HG23	17	0.1
(1,1213)	1:85:A:LYS:HB2	1:86:A:TYR:HD1	7	0.1
(1,1213)	1:85:A:LYS:HB2	1:86:A:TYR:HD2	7	0.1
(1,1213)	1:85:A:LYS:HB3	1:86:A:TYR:HD1	7	0.1
(1,1213)	1:85:A:LYS:HB3	1:86:A:TYR:HD2	7	0.1
(1,1213)	1:85:A:LYS:HB2	1:86:A:TYR:HD1	14	0.1
(1,1213)	1:85:A:LYS:HB2	1:86:A:TYR:HD2	14	0.1
(1,1213)	1:85:A:LYS:HB3	1:86:A:TYR:HD1	14	0.1
(1,1213)	1:85:A:LYS:HB3	1:86:A:TYR:HD2	14	0.1
(1,1213)	1:85:A:LYS:HB2	1:86:A:TYR:HD1	17	0.1
(1,1213)	1:85:A:LYS:HB2	1:86:A:TYR:HD2	17	0.1
(1,1213)	1:85:A:LYS:HB3	1:86:A:TYR:HD1	17	0.1
(1,1213)	1:85:A:LYS:HB3	1:86:A:TYR:HD2	17	0.1
(1,815)	1:60:A:VAL:H	1:65:A:GLU:H	4	0.1
(1,681)	1:55:A:GLY:H	1:56:A:SER:H	16	0.1
(1,650)	1:53:A:LYS:HA	1:53:A:LYS:HG3	7	0.1
(1,543)	1:47:A:THR:HG21	1:57:A:TRP:H	4	0.1
(1,543)	1:47:A:THR:HG22	1:57:A:TRP:H	4	0.1

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Key	Atom-1	Atom-2	Model ID	Violation (Å)
(1,543)	1:47:A:THR:HG23	1:57:A:TRP:H	4	0.1
(1,365)	1:40:A:THR:HG21	1:66:A:CYS:HB3	17	0.1
(1,365)	1:40:A:THR:HG22	1:66:A:CYS:HB3	17	0.1
(1,365)	1:40:A:THR:HG23	1:66:A:CYS:HB3	17	0.1
(1,290)	1:36:A:ASN:HB2	1:39:A:ILE:HD11	5	0.1
(1,290)	1:36:A:ASN:HB2	1:39:A:ILE:HD12	5	0.1
(1,290)	1:36:A:ASN:HB2	1:39:A:ILE:HD13	5	0.1
(1,290)	1:36:A:ASN:HB3	1:39:A:ILE:HD11	5	0.1
(1,290)	1:36:A:ASN:HB3	1:39:A:ILE:HD12	5	0.1
(1,290)	1:36:A:ASN:HB3	1:39:A:ILE:HD13	5	0.1
(1,194)	1:28:A:LYS:HE2	1:35:A:GLN:H	19	0.1
(1,194)	1:28:A:LYS:HE3	1:35:A:GLN:H	19	0.1
(1,15)	1:21:A:VAL:H	1:22:A:VAL:HB	10	0.1

10 Dihedral-angle violation analysis (i)

No dihedral-angle restraints found