



Full wwPDB NMR Structure Validation Report ⓘ

Feb 13, 2017 – 12:56 am GMT

PDB ID : 2MDW
Title : NMR structure of a strand-swapped dimer of the WW domain
Authors : Kier, B.L.; Sheffler, W.; Baker, D.
Deposited on : 2013-09-18

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

<http://wwpdb.org/validation/2016/NMRValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

Cyrange : Kirchner and Güntert (2011)
NmrClust : Kelley et al. (1996)
MolProbity : 4.02b-467
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
RCI : v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV : Wang et al. (2010)
ShiftChecker : trunk28760
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : recalc28949

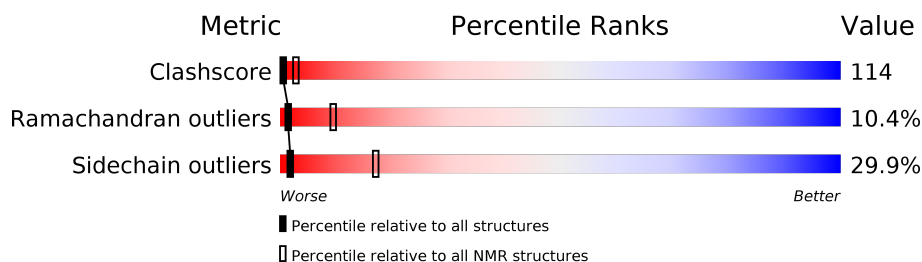
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

SOLUTION NMR

The overall completeness of chemical shifts assignment is 22%.

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	125131	11601
Ramachandran outliers	121729	10391
Sidechain outliers	121581	10367

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 $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	A	27	
1	B	27	

2 Ensemble composition and analysis

This entry contains 33 models. Model 15 is the overall representative, medoid model (most similar to other models). The authors have identified model 1 as representative, based on the following criterion: *lowest energy*.

The following residues are included in the computation of the global validation metrics.

Well-defined (core) protein residues			
Well-defined core	Residue range (total)	Backbone RMSD (Å)	Medoid model
1	A:2-A:27, B:1-B:27 (53)	0.47	15

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 5 single-model clusters were found.

Cluster number	Models
1	4, 10, 15, 17, 21, 24, 26, 33
2	3, 5, 6, 9, 13, 19
3	2, 23, 27, 30
4	12, 16, 29, 31
5	7, 25, 28, 32
6	8, 14
Single-model clusters	1; 11; 18; 20; 22

3 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 944 atoms, of which 468 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Designed protein.

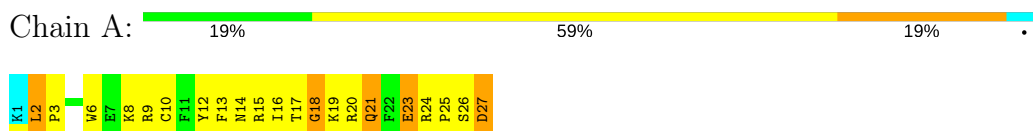
Mol	Chain	Residues	Atoms							Trace
1	A	27	Total	C	H	N	O	S		0
			472	153	234	45	39	1		
1	B	27	Total	C	H	N	O	S		0
			472	153	234	45	39	1		

4 Residue-property plots [i](#)

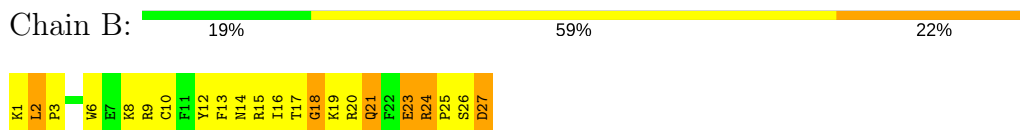
4.1 Average score per residue in the NMR ensemble

These plots are provided for all protein, RNA and DNA 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: Designed protein



- Molecule 1: Designed protein

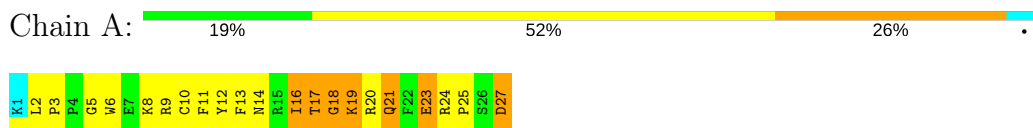


4.2 Scores per residue for each member of the ensemble

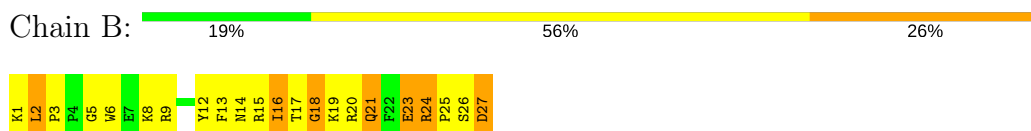
Colouring as in section 4.1 above.

4.2.1 Score per residue for model 1

- Molecule 1: Designed protein

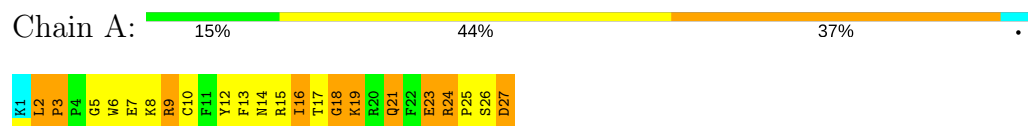


- Molecule 1: Designed protein

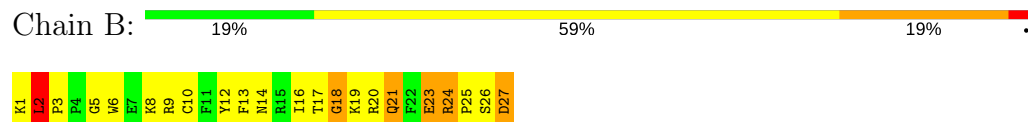


4.2.2 Score per residue for model 2

- Molecule 1: Designed protein

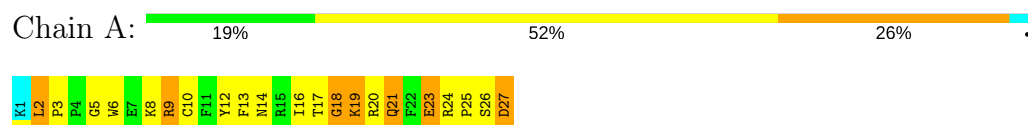


- Molecule 1: Designed protein

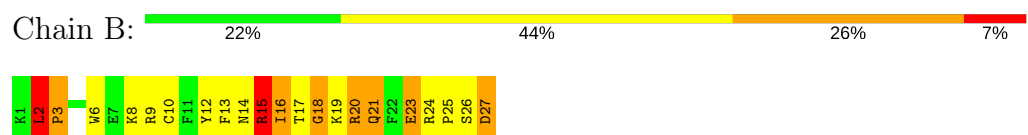


4.2.3 Score per residue for model 3

- Molecule 1: Designed protein

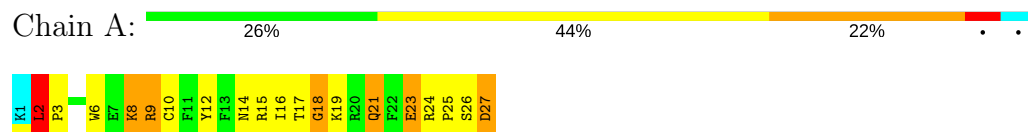


- Molecule 1: Designed protein



4.2.4 Score per residue for model 4

- Molecule 1: Designed protein

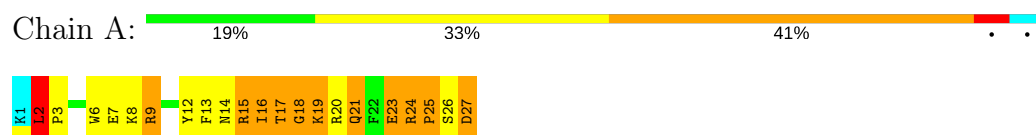


- Molecule 1: Designed protein

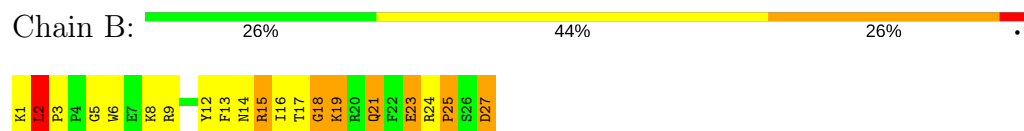


4.2.5 Score per residue for model 5

- Molecule 1: Designed protein

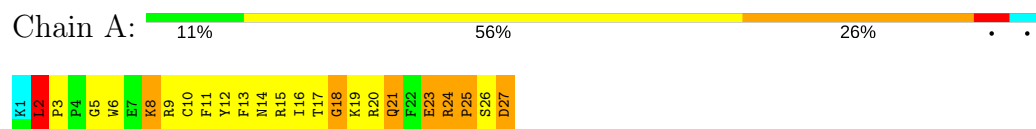


- Molecule 1: Designed protein

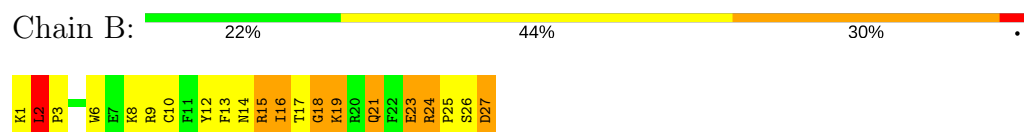


4.2.6 Score per residue for model 6

- Molecule 1: Designed protein

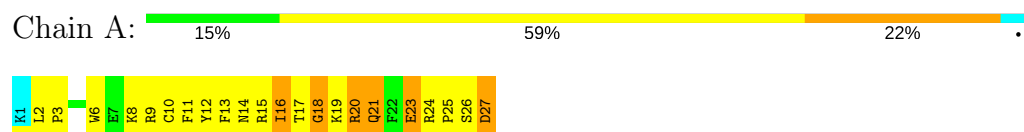


- Molecule 1: Designed protein

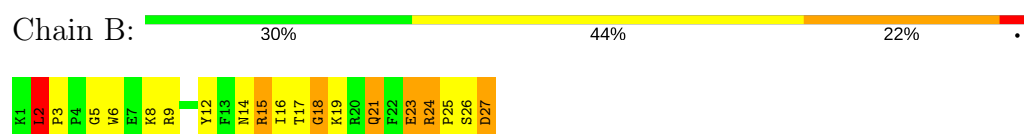


4.2.7 Score per residue for model 7

- Molecule 1: Designed protein

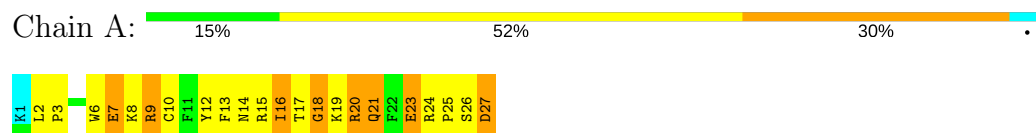


- Molecule 1: Designed protein

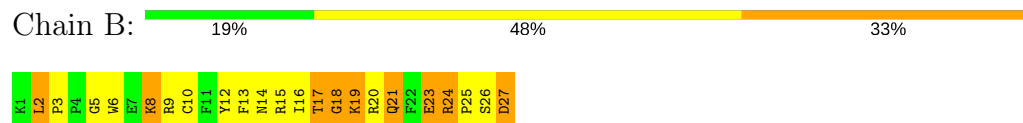


4.2.8 Score per residue for model 8

- Molecule 1: Designed protein

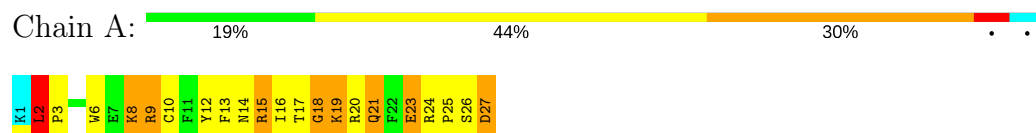


- Molecule 1: Designed protein

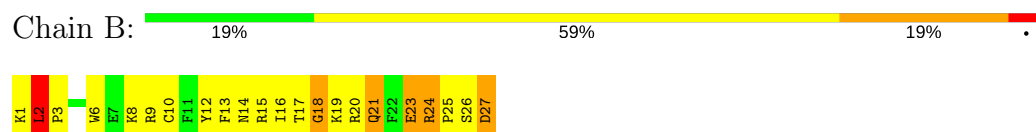


4.2.9 Score per residue for model 9

- Molecule 1: Designed protein

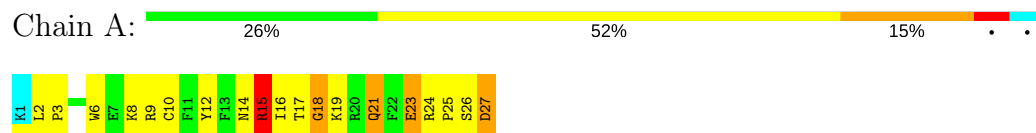


- Molecule 1: Designed protein

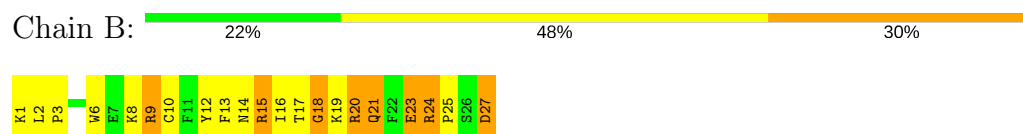


4.2.10 Score per residue for model 10

- Molecule 1: Designed protein

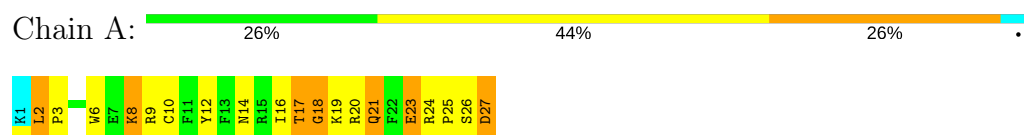


- Molecule 1: Designed protein

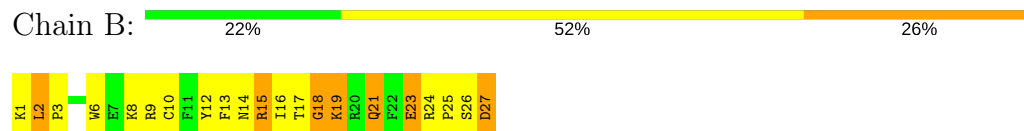


4.2.11 Score per residue for model 11

- Molecule 1: Designed protein

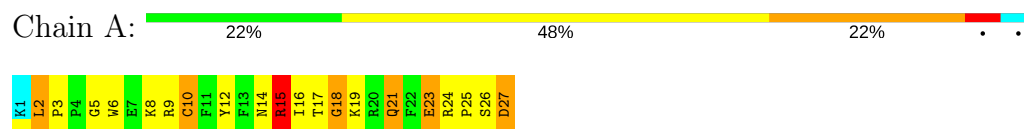


- Molecule 1: Designed protein

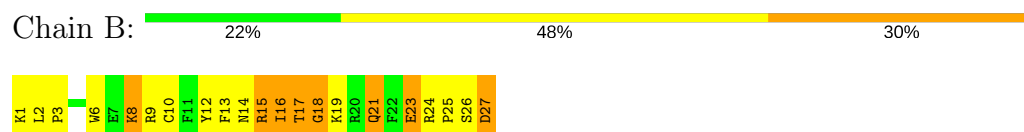


4.2.12 Score per residue for model 12

- Molecule 1: Designed protein

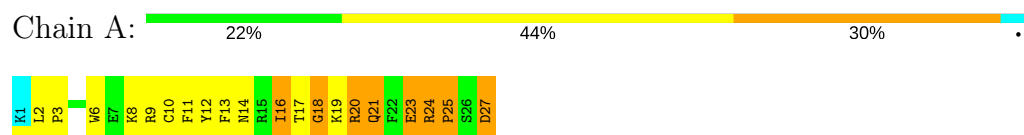


- Molecule 1: Designed protein

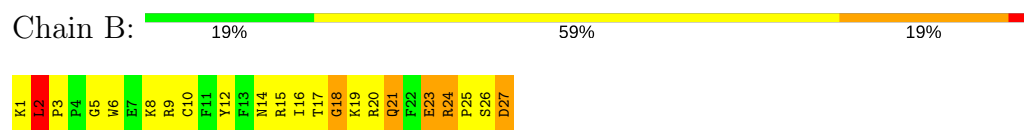


4.2.13 Score per residue for model 13

- Molecule 1: Designed protein

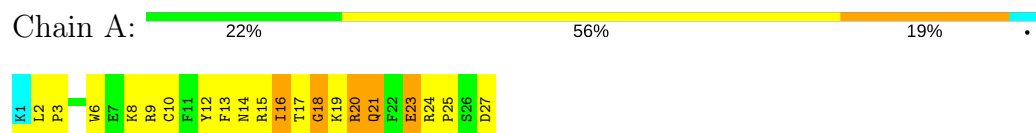


- Molecule 1: Designed protein

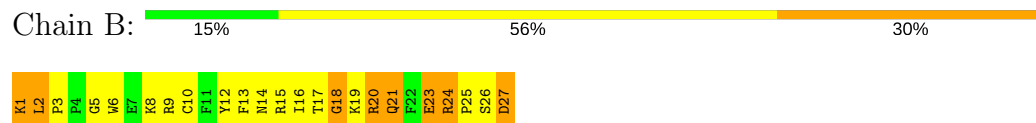


4.2.14 Score per residue for model 14

- Molecule 1: Designed protein

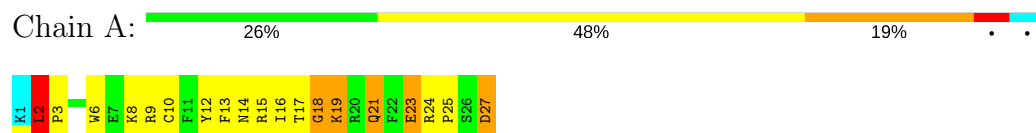


- Molecule 1: Designed protein

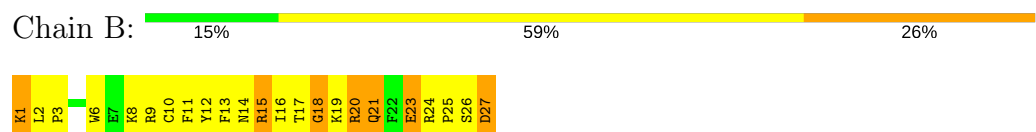


4.2.15 Score per residue for model 15 (medoid)

- Molecule 1: Designed protein

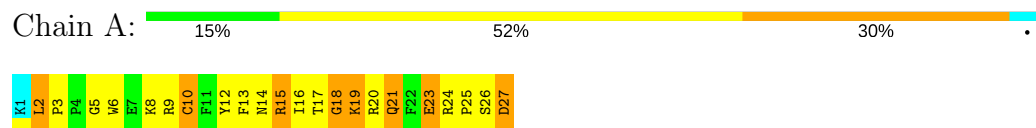


- Molecule 1: Designed protein

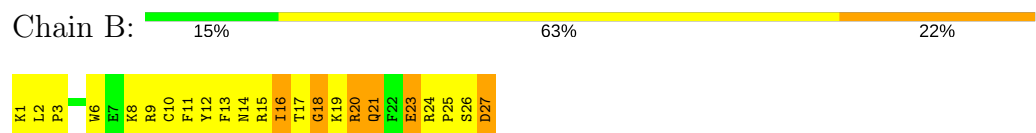


4.2.16 Score per residue for model 16

- Molecule 1: Designed protein

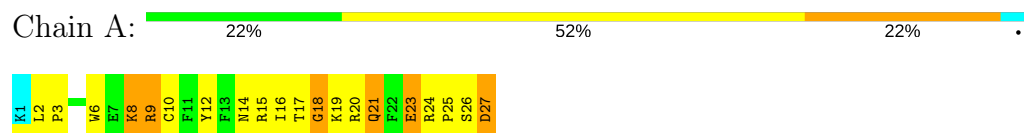


- Molecule 1: Designed protein

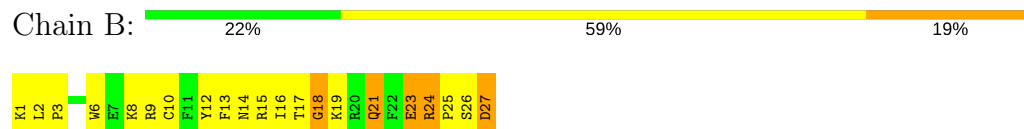


4.2.17 Score per residue for model 17

- Molecule 1: Designed protein

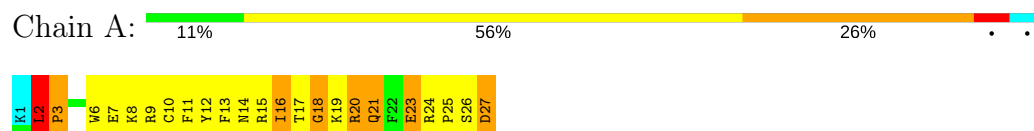


- Molecule 1: Designed protein

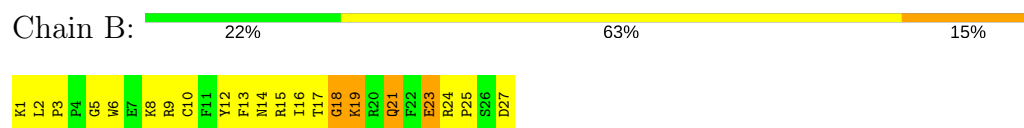


4.2.18 Score per residue for model 18

- Molecule 1: Designed protein

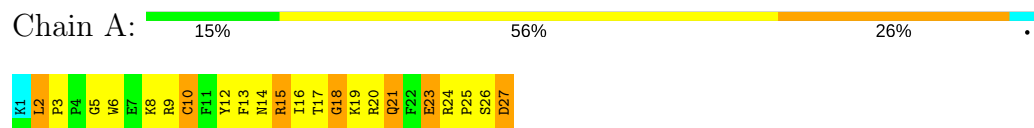


- Molecule 1: Designed protein

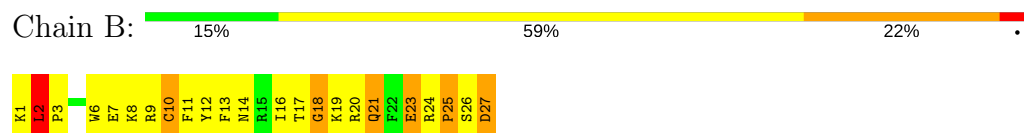


4.2.19 Score per residue for model 19

- Molecule 1: Designed protein

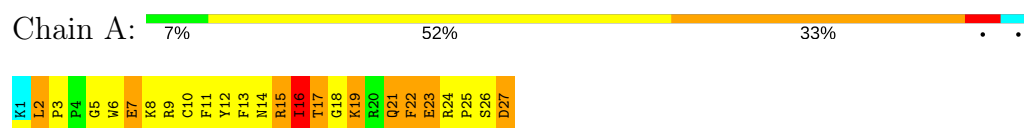


- Molecule 1: Designed protein

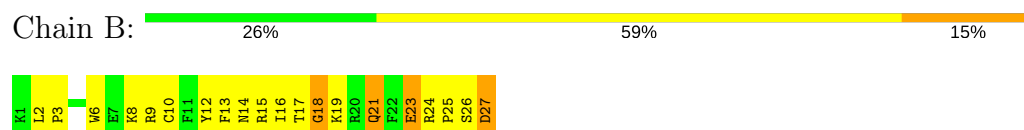


4.2.20 Score per residue for model 20

- Molecule 1: Designed protein

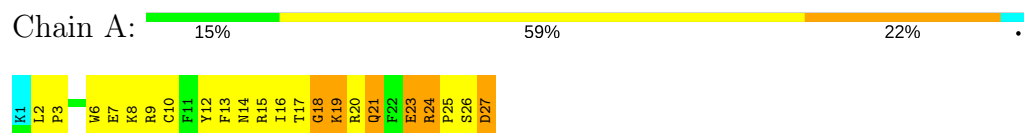


- Molecule 1: Designed protein

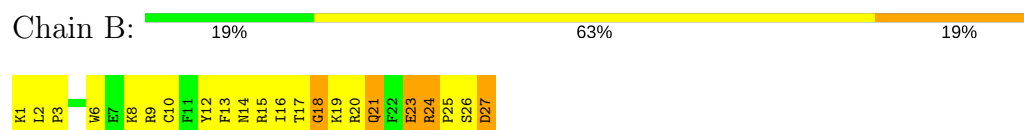


4.2.21 Score per residue for model 21

- Molecule 1: Designed protein

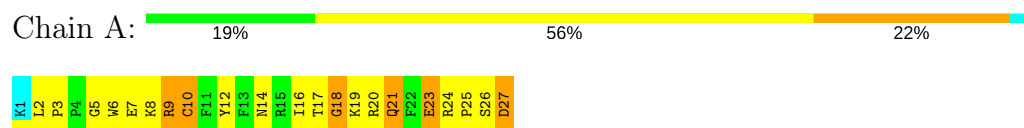


- Molecule 1: Designed protein

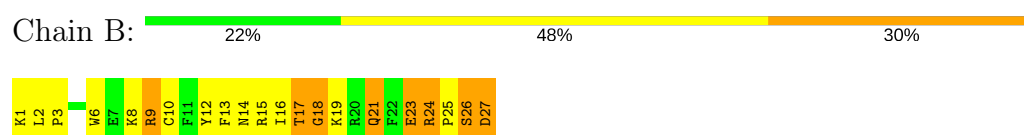


4.2.22 Score per residue for model 22

- Molecule 1: Designed protein

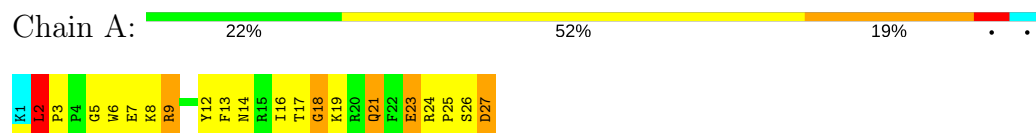


- Molecule 1: Designed protein

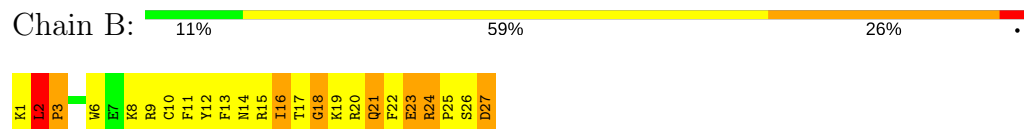


4.2.23 Score per residue for model 23

- Molecule 1: Designed protein

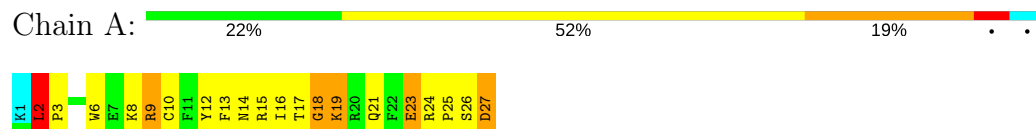


- Molecule 1: Designed protein

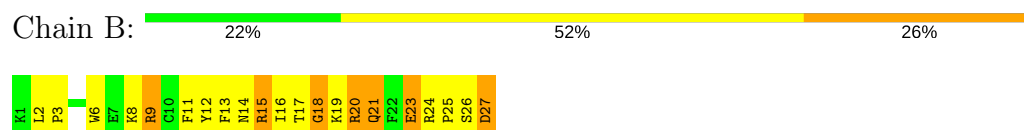


4.2.24 Score per residue for model 24

- Molecule 1: Designed protein

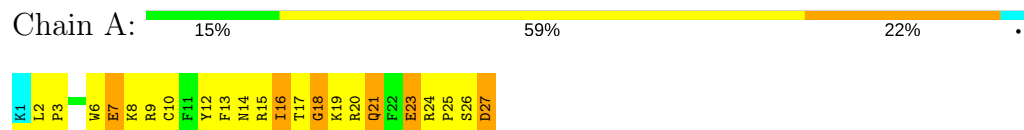


- Molecule 1: Designed protein

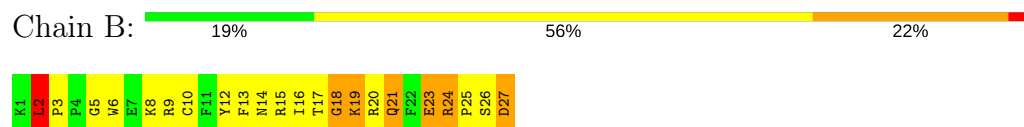


4.2.25 Score per residue for model 25

- Molecule 1: Designed protein

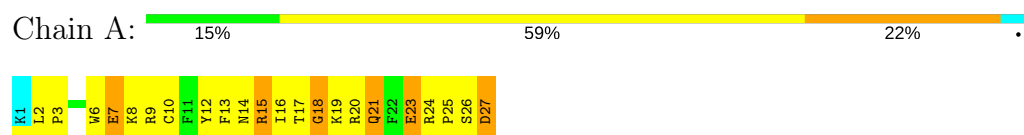


- Molecule 1: Designed protein

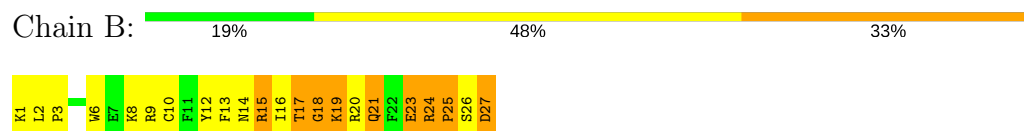


4.2.26 Score per residue for model 26

- Molecule 1: Designed protein

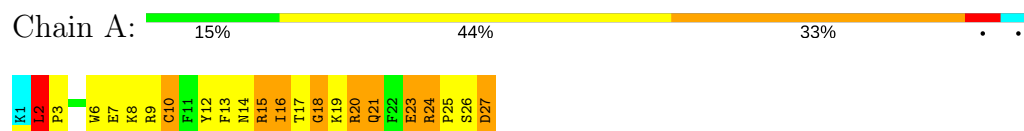


- Molecule 1: Designed protein

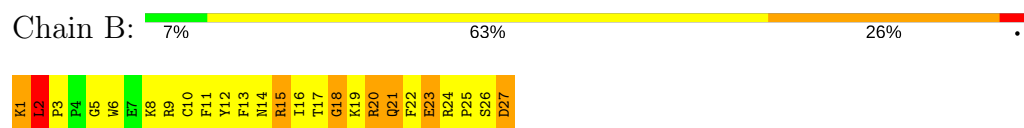


4.2.27 Score per residue for model 27

- Molecule 1: Designed protein

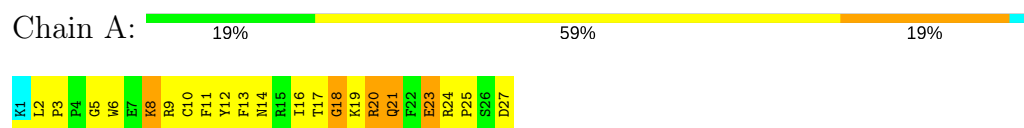


- Molecule 1: Designed protein

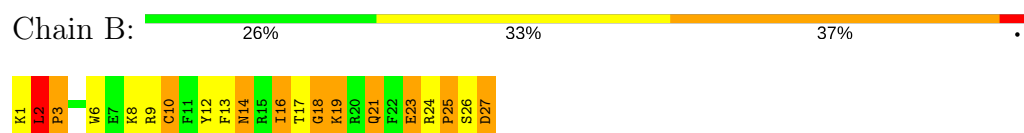


4.2.28 Score per residue for model 28

- Molecule 1: Designed protein

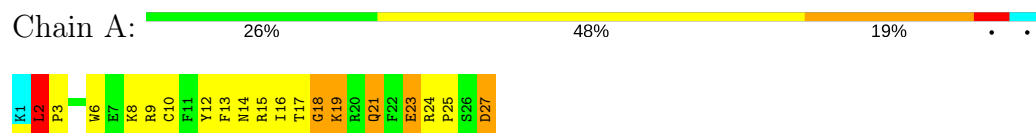


- Molecule 1: Designed protein

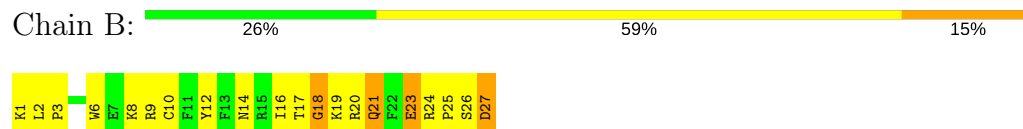


4.2.29 Score per residue for model 29

- Molecule 1: Designed protein

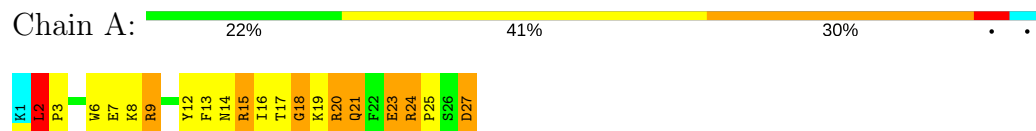


- Molecule 1: Designed protein

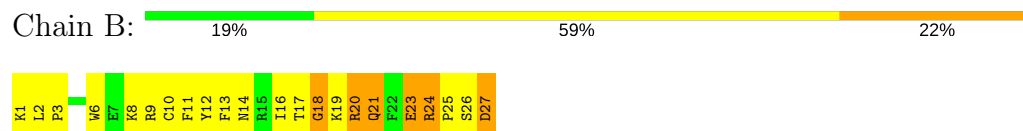


4.2.30 Score per residue for model 30

- Molecule 1: Designed protein

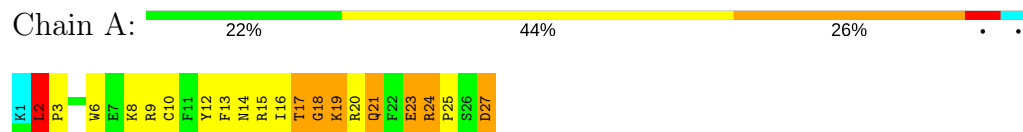


- Molecule 1: Designed protein

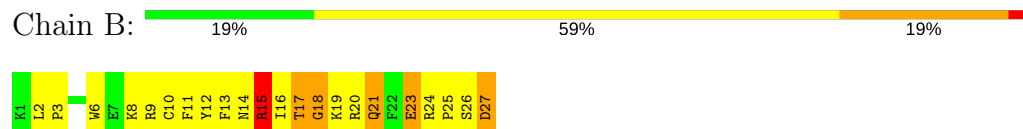


4.2.31 Score per residue for model 31

- Molecule 1: Designed protein

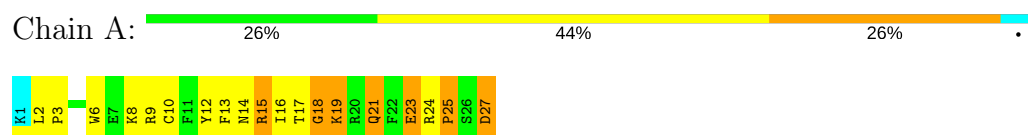


- Molecule 1: Designed protein

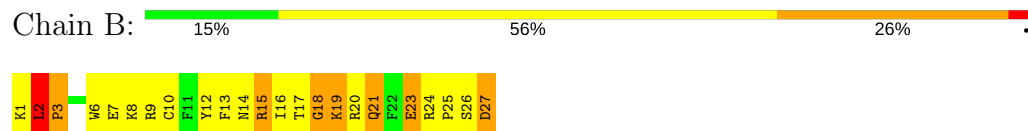


4.2.32 Score per residue for model 32

- Molecule 1: Designed protein

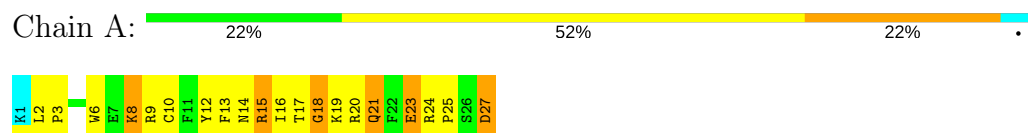


- Molecule 1: Designed protein

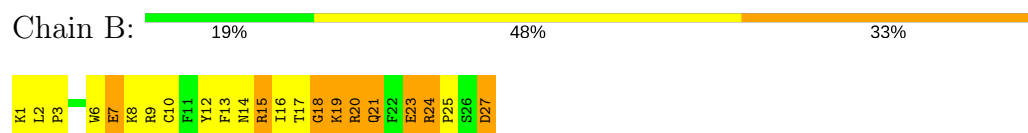


4.2.33 Score per residue for model 33

- Molecule 1: Designed protein



- Molecule 1: Designed protein



5 Refinement protocol and experimental data overview

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

Of the 40 calculated structures, 33 were deposited, based on the following criterion: *structures with the lowest energy*.

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

Software name	Classification	Version
CNS	structure solution	1.2
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)	2mdw_cs.str
Number of chemical shift lists	1
Total number of shifts	192
Number of shifts mapped to atoms	192
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Assignment completeness (well-defined parts)	22%

No validations of the models with respect to experimental NMR restraints is performed at this time.

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	0.83±0.04	0±0/237 (0.0±0.1%)	0.92±0.03	1±0/316 (0.3±0.0%)
1	B	0.79±0.03	0±0/246 (0.0±0.0%)	0.90±0.02	1±0/327 (0.3±0.0%)
All	All	0.81	1/15939 (0.0%)	0.91	66/21219 (0.3%)

All unique bond outliers are listed below.

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)	Models	
								Worst	Total
1	A	3	PRO	N-CD	-5.66	1.40	1.47	2	1

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(°)	Ideal(°)	Models	
								Worst	Total
1	A	9	ARG	NE-CZ-NH2	-7.34	116.63	120.30	12	33
1	B	9	ARG	NE-CZ-NH2	-7.18	116.71	120.30	29	33

There are no chirality outliers.

There are no planarity outliers.

6.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in each chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes averaged over the ensemble.

Mol	Chain	Non-H	H(model)	H(added)	Clashes
1	A	229	219	220	84±14
1	B	238	234	235	83±15
All	All	15411	14949	15015	3458

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 114.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:2:LEU:C	1:A:2:LEU:HD23	1.12	1.60	2	3
1:B:12:TYR:CG	1:B:25:PRO:HD2	1.01	1.90	22	3
1:A:12:TYR:CE1	1:B:2:LEU:HD21	1.00	1.91	20	6
1:A:21:GLN:HG3	1:B:6:TRP:CH2	0.99	1.92	20	33
1:A:2:LEU:HD12	1:B:25:PRO:HD2	0.98	1.35	3	17
1:A:6:TRP:CE2	1:B:25:PRO:HB2	0.98	1.94	22	1
1:A:12:TYR:CD2	1:B:2:LEU:CD1	0.96	2.49	8	4
1:A:6:TRP:CE2	1:B:25:PRO:HG2	0.96	1.96	16	30
1:A:2:LEU:CD1	1:B:12:TYR:CD2	0.96	2.48	20	3
1:A:25:PRO:HG2	1:B:6:TRP:CE2	0.96	1.95	14	33
1:A:2:LEU:HD21	1:B:12:TYR:CE1	0.95	1.97	1	8
1:A:12:TYR:CD1	1:B:2:LEU:CD1	0.95	2.50	25	13
1:A:6:TRP:HB3	1:B:26:SER:CA	0.94	1.91	22	1
1:A:2:LEU:CD1	1:B:12:TYR:CD1	0.94	2.50	6	15
1:A:6:TRP:CH2	1:B:21:GLN:HG3	0.94	1.98	11	33
1:A:2:LEU:HD21	1:B:12:TYR:CE2	0.93	1.98	28	5
1:A:6:TRP:HB3	1:B:26:SER:HA	0.92	1.41	22	1
1:A:12:TYR:CE2	1:B:2:LEU:HD21	0.92	1.98	29	10
1:A:25:PRO:HD2	1:B:2:LEU:HD12	0.91	1.41	14	16
1:A:2:LEU:HD22	1:B:26:SER:N	0.90	1.80	22	1
1:A:13:PHE:CE1	1:A:19:LYS:N	0.88	2.41	20	1
1:A:2:LEU:HD22	1:B:25:PRO:C	0.88	1.89	22	1
1:A:2:LEU:HD12	1:B:12:TYR:CD2	0.87	2.05	2	1
1:A:12:TYR:CE1	1:B:2:LEU:HD13	0.86	2.05	25	13
1:A:2:LEU:HD11	1:B:12:TYR:CD2	0.86	2.06	19	3
1:A:2:LEU:HD13	1:B:26:SER:CB	0.85	2.00	22	1
1:A:12:TYR:CD1	1:B:2:LEU:HD11	0.85	2.06	28	13
1:A:6:TRP:CD1	1:B:25:PRO:HB2	0.85	2.07	22	1
1:A:2:LEU:CD1	1:B:12:TYR:CE1	0.84	2.61	3	15
1:A:2:LEU:C	1:A:2:LEU:CD2	0.84	2.46	2	2
1:A:2:LEU:HD13	1:B:12:TYR:CE1	0.84	2.07	6	15
1:A:2:LEU:HD11	1:B:12:TYR:CD1	0.83	2.08	31	15
1:A:5:GLY:HA3	1:B:16:ILE:CG1	0.82	2.03	22	4
1:A:2:LEU:CD1	1:B:26:SER:CB	0.82	2.57	22	1
1:A:2:LEU:HD12	1:B:12:TYR:CE2	0.81	2.09	2	1
1:A:6:TRP:NE1	1:B:25:PRO:HB2	0.81	1.90	22	1
1:A:25:PRO:HG2	1:B:6:TRP:CD2	0.80	2.11	30	24
1:A:12:TYR:CE2	1:B:2:LEU:HD13	0.80	2.11	11	4

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:2:LEU:HD13	1:B:12:TYR:CE2	0.80	2.12	16	3
1:A:6:TRP:CD2	1:B:25:PRO:HG2	0.80	2.11	17	22
1:A:2:LEU:CD1	1:B:26:SER:HB3	0.79	2.07	22	1
1:A:3:PRO:HD2	1:A:6:TRP:CD1	0.79	2.12	2	12
1:A:2:LEU:HB3	1:B:27:ASP:N	0.79	1.91	22	1
1:A:8:LYS:HB2	1:B:12:TYR:CZ	0.79	2.12	19	21
1:A:12:TYR:CD2	1:B:2:LEU:HD11	0.78	2.14	14	4
1:A:6:TRP:CE2	1:B:14:ASN:HB2	0.78	2.13	3	14
1:B:12:TYR:CD2	1:B:26:SER:CB	0.77	2.68	22	1
1:A:2:LEU:HB3	1:B:24:ARG:HG3	0.77	1.56	2	5
1:A:6:TRP:CD2	1:B:25:PRO:HB2	0.77	2.14	22	1
1:A:12:TYR:CE2	1:B:2:LEU:CD1	0.76	2.68	11	4
1:A:14:ASN:HB2	1:B:6:TRP:CE2	0.76	2.14	14	14
1:A:6:TRP:CE2	1:B:25:PRO:CB	0.76	2.68	22	1
1:A:12:TYR:CE1	1:B:2:LEU:CD1	0.75	2.69	25	13
1:A:2:LEU:CD1	1:B:12:TYR:CE2	0.75	2.70	16	4
1:A:12:TYR:HE1	1:B:2:LEU:HD11	0.75	1.41	4	6
1:B:2:LEU:HB2	1:B:3:PRO:HD2	0.75	1.58	28	14
1:B:12:TYR:CD2	1:B:26:SER:HB2	0.75	2.16	22	1
1:A:2:LEU:HB2	1:A:3:PRO:HD2	0.74	1.57	18	13
1:A:14:ASN:HB2	1:B:6:TRP:CH2	0.74	2.17	32	15
1:A:2:LEU:CD1	1:B:25:PRO:HD2	0.73	2.14	9	17
1:A:25:PRO:HD2	1:B:2:LEU:CD1	0.73	2.12	1	15
1:A:25:PRO:CG	1:B:6:TRP:CE2	0.73	2.72	32	33
1:B:12:TYR:CD2	1:B:25:PRO:HD2	0.73	2.18	22	1
1:A:6:TRP:CH2	1:B:14:ASN:HB2	0.73	2.18	18	15
1:A:6:TRP:CE2	1:B:25:PRO:CG	0.72	2.72	4	32
1:A:6:TRP:CD2	1:B:14:ASN:HB3	0.72	2.19	19	14
1:A:8:LYS:HB2	1:B:12:TYR:CE1	0.72	2.19	4	24
1:A:15:ARG:HB2	1:A:19:LYS:N	0.72	2.00	20	1
1:A:6:TRP:CH2	1:B:21:GLN:CG	0.71	2.73	22	33
1:A:12:TYR:CE1	1:B:8:LYS:HB2	0.71	2.19	25	19
1:A:23:GLU:O	1:A:25:PRO:HD3	0.71	1.86	5	33
1:A:6:TRP:CE2	1:B:25:PRO:HG3	0.71	2.20	26	4
1:A:6:TRP:NE1	1:B:25:PRO:HG2	0.71	2.01	27	20
1:A:2:LEU:HD13	1:B:12:TYR:CD1	0.71	2.20	11	12
1:B:3:PRO:HD2	1:B:6:TRP:CD1	0.71	2.20	8	9
1:A:14:ASN:HB3	1:B:6:TRP:CD2	0.70	2.21	11	13
1:A:3:PRO:HD2	1:B:25:PRO:O	0.70	1.84	22	1
1:A:8:LYS:HB2	1:B:12:TYR:CE2	0.70	2.22	20	7
1:A:2:LEU:HD13	1:B:26:SER:C	0.70	2.07	22	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:8:LYS:N	1:B:26:SER:HB2	0.69	2.02	22	1
1:B:23:GLU:O	1:B:25:PRO:HD3	0.69	1.87	20	33
1:A:3:PRO:HG3	1:B:27:ASP:HA	0.69	1.64	10	29
1:A:21:GLN:CG	1:B:6:TRP:CH2	0.69	2.76	1	33
1:A:2:LEU:HD11	1:B:12:TYR:HE2	0.69	1.47	28	5
1:A:2:LEU:HD11	1:B:26:SER:HB3	0.69	1.64	22	1
1:B:12:TYR:HD2	1:B:26:SER:CB	0.69	1.99	22	1
1:A:2:LEU:HB3	1:B:27:ASP:CA	0.68	2.17	22	1
1:A:12:TYR:CE2	1:B:8:LYS:HB2	0.68	2.23	1	14
1:A:25:PRO:HG2	1:B:6:TRP:NE1	0.68	2.02	3	17
1:A:12:TYR:CD1	1:B:2:LEU:HD13	0.68	2.23	7	11
1:A:2:LEU:HG	1:A:6:TRP:CB	0.68	2.19	2	19
1:A:27:ASP:HA	1:B:3:PRO:HG3	0.67	1.65	15	29
1:A:2:LEU:CB	1:B:24:ARG:HG3	0.67	2.19	2	1
1:A:3:PRO:HD2	1:B:25:PRO:C	0.67	2.09	22	1
1:A:5:GLY:HA3	1:B:16:ILE:HG12	0.67	1.65	19	11
1:A:12:TYR:CD2	1:B:2:LEU:HD13	0.67	2.25	1	3
1:A:2:LEU:HD23	1:A:2:LEU:C	0.67	2.09	19	3
1:A:14:ASN:HB2	1:B:6:TRP:CZ2	0.66	2.25	20	18
1:A:13:PHE:HE1	1:A:18:GLY:N	0.66	1.89	20	1
1:A:12:TYR:HE2	1:B:2:LEU:HD11	0.66	1.51	15	10
1:A:6:TRP:CG	1:B:25:PRO:HB2	0.66	2.26	22	1
1:B:12:TYR:CG	1:B:23:GLU:O	0.65	2.49	2	1
1:A:6:TRP:CD2	1:B:14:ASN:HB2	0.65	2.26	30	10
1:B:25:PRO:O	1:B:27:ASP:N	0.65	2.30	22	6
1:A:12:TYR:CZ	1:B:8:LYS:HB2	0.65	2.26	14	19
1:A:13:PHE:CE1	1:A:18:GLY:C	0.65	2.69	20	1
1:A:2:LEU:HB2	1:B:25:PRO:HD2	0.65	1.67	2	1
1:A:2:LEU:HD11	1:B:12:TYR:HE1	0.64	1.52	17	8
1:B:2:LEU:HG	1:B:6:TRP:CB	0.64	2.23	25	17
1:A:6:TRP:CZ2	1:B:14:ASN:HB2	0.64	2.28	20	17
1:A:25:PRO:HG3	1:B:6:TRP:CZ2	0.64	2.28	28	7
1:A:12:TYR:CE1	1:B:2:LEU:CD2	0.64	2.77	20	6
1:A:2:LEU:HG	1:A:6:TRP:HB3	0.64	1.68	2	1
1:A:8:LYS:HG2	1:B:10:CYS:SG	0.63	2.34	10	13
1:B:12:TYR:CD2	1:B:23:GLU:O	0.63	2.52	18	23
1:A:26:SER:O	1:A:27:ASP:HB3	0.63	1.94	18	14
1:A:2:LEU:HD23	1:A:3:PRO:N	0.63	2.08	2	1
1:A:12:TYR:CE1	1:B:2:LEU:HD11	0.63	2.26	4	6
1:A:6:TRP:CZ2	1:B:25:PRO:HG3	0.63	2.28	18	8
1:A:14:ASN:HB2	1:B:6:TRP:CZ3	0.63	2.28	20	8

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:12:TYR:CD2	1:A:23:GLU:O	0.62	2.51	28	19
1:A:14:ASN:HB2	1:B:6:TRP:CD2	0.62	2.29	8	13
1:A:3:PRO:HD2	1:B:25:PRO:HA	0.62	1.71	22	1
1:A:13:PHE:HE1	1:A:18:GLY:CA	0.62	2.08	20	1
1:B:12:TYR:CZ	1:B:24:ARG:HB2	0.62	2.29	20	11
1:B:12:TYR:CD1	1:B:23:GLU:O	0.62	2.52	26	10
1:A:12:TYR:CD1	1:A:23:GLU:O	0.62	2.53	12	14
1:A:13:PHE:CE1	1:A:17:THR:C	0.62	2.73	20	1
1:A:3:PRO:CD	1:A:6:TRP:CD1	0.62	2.83	2	1
1:A:10:CYS:SG	1:B:8:LYS:HG2	0.61	2.35	7	8
1:A:21:GLN:NE2	1:A:25:PRO:HG3	0.61	2.11	14	15
1:A:2:LEU:HD11	1:B:12:TYR:CE2	0.61	2.30	28	6
1:A:2:LEU:HD12	1:B:25:PRO:CD	0.61	2.24	27	15
1:A:8:LYS:HD3	1:B:12:TYR:CD2	0.61	2.31	9	2
1:A:3:PRO:HG3	1:B:27:ASP:HB2	0.61	1.73	2	16
1:A:8:LYS:HG3	1:B:12:TYR:CZ	0.61	2.31	22	14
1:A:13:PHE:CD1	1:A:19:LYS:O	0.61	2.54	20	1
1:A:2:LEU:O	1:A:2:LEU:HD23	0.61	1.95	2	5
1:A:23:GLU:O	1:A:25:PRO:CD	0.61	2.49	13	2
1:A:2:LEU:HD13	1:B:12:TYR:CD2	0.60	2.22	20	2
1:B:26:SER:O	1:B:27:ASP:HB3	0.60	1.96	1	16
1:A:6:TRP:CE2	1:B:14:ASN:HB3	0.60	2.31	22	14
1:A:27:ASP:HB2	1:B:3:PRO:HG3	0.60	1.72	21	13
1:A:12:TYR:CE1	1:B:8:LYS:HG3	0.60	2.32	14	12
1:A:2:LEU:N	1:B:24:ARG:HG3	0.60	2.12	2	1
1:B:12:TYR:CE2	1:B:24:ARG:HA	0.60	2.32	2	7
1:A:6:TRP:CZ2	1:B:21:GLN:CD	0.60	2.75	22	1
1:A:12:TYR:CE1	1:A:24:ARG:HA	0.60	2.32	29	10
1:B:12:TYR:CE2	1:B:24:ARG:HB2	0.60	2.31	18	20
1:A:24:ARG:NH1	1:B:2:LEU:HD22	0.60	2.12	14	1
1:A:27:ASP:HB2	1:B:3:PRO:HB3	0.59	1.73	10	2
1:A:3:PRO:HG3	1:B:27:ASP:CB	0.59	2.26	21	7
1:A:25:PRO:CD	1:B:2:LEU:HD12	0.59	2.25	23	14
1:A:14:ASN:HB3	1:A:19:LYS:CD	0.59	2.28	20	1
1:A:2:LEU:HD22	1:B:24:ARG:NH1	0.59	2.11	16	1
1:A:6:TRP:HA	1:B:14:ASN:HA	0.59	1.73	9	15
1:A:15:ARG:HB3	1:A:18:GLY:CA	0.59	2.27	20	1
1:A:2:LEU:HD11	1:B:12:TYR:CE1	0.59	2.32	14	10
1:A:12:TYR:CE2	1:A:24:ARG:HB2	0.59	2.32	28	17
1:A:2:LEU:HD13	1:B:26:SER:CA	0.59	2.28	22	1
1:A:8:LYS:N	1:B:26:SER:CB	0.59	2.66	22	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:B:21:GLN:NE2	1:B:25:PRO:HB3	0.59	2.13	22	1
1:A:12:TYR:CZ	1:A:24:ARG:HB2	0.59	2.32	1	9
1:A:3:PRO:HD2	1:B:25:PRO:CA	0.59	2.28	22	1
1:A:14:ASN:HA	1:B:6:TRP:HA	0.58	1.74	23	18
1:A:6:TRP:CE3	1:B:12:TYR:HB3	0.58	2.33	2	20
1:A:2:LEU:CD2	1:B:12:TYR:CE1	0.58	2.84	8	8
1:A:24:ARG:HG2	1:B:2:LEU:HB3	0.58	1.73	13	10
1:B:23:GLU:O	1:B:25:PRO:CD	0.58	2.51	18	5
1:A:3:PRO:CD	1:B:25:PRO:HA	0.58	2.28	22	1
1:A:3:PRO:CG	1:B:27:ASP:HB2	0.58	2.28	1	13
1:A:6:TRP:CZ3	1:B:14:ASN:HB2	0.58	2.34	1	9
1:A:2:LEU:CD1	1:B:26:SER:OG	0.58	2.52	22	1
1:A:16:ILE:CG2	1:A:16:ILE:O	0.57	2.52	20	1
1:B:21:GLN:NE2	1:B:25:PRO:HG3	0.57	2.14	3	15
1:A:21:GLN:CG	1:B:6:TRP:HH2	0.57	2.09	20	24
1:A:6:TRP:CD2	1:B:25:PRO:CB	0.57	2.86	22	1
1:A:27:ASP:HB2	1:B:3:PRO:HD3	0.57	1.75	2	14
1:A:12:TYR:CE2	1:A:24:ARG:HA	0.57	2.35	20	5
1:B:14:ASN:O	1:B:18:GLY:N	0.57	2.38	12	33
1:B:14:ASN:OD1	1:B:19:LYS:HB2	0.57	2.00	9	9
1:B:14:ASN:HB3	1:B:19:LYS:HB2	0.57	1.75	16	10
1:A:8:LYS:HG3	1:B:12:TYR:CE2	0.57	2.35	18	16
1:A:25:PRO:HG3	1:B:6:TRP:CE2	0.57	2.35	28	3
1:A:6:TRP:CD1	1:B:25:PRO:O	0.57	2.58	22	1
1:A:14:ASN:O	1:A:18:GLY:N	0.56	2.38	5	33
1:A:27:ASP:CB	1:B:3:PRO:HG3	0.56	2.29	18	5
1:A:2:LEU:CD2	1:B:12:TYR:CE2	0.56	2.85	28	5
1:A:6:TRP:CD2	1:B:25:PRO:HG3	0.56	2.35	26	2
1:A:3:PRO:HD3	1:B:27:ASP:HB2	0.56	1.77	23	16
1:A:10:CYS:CB	1:B:10:CYS:HG	0.56	2.12	9	4
1:A:3:PRO:CG	1:B:27:ASP:HA	0.56	2.31	4	19
1:A:14:ASN:OD1	1:A:19:LYS:HB2	0.56	2.00	28	10
1:B:2:LEU:HD23	1:B:2:LEU:C	0.56	2.20	8	3
1:B:12:TYR:CE2	1:B:26:SER:HB3	0.56	2.35	22	1
1:A:6:TRP:CD2	1:B:25:PRO:CG	0.56	2.89	22	1
1:A:2:LEU:HB3	1:B:24:ARG:CG	0.56	2.30	3	16
1:A:27:ASP:CA	1:B:3:PRO:HG3	0.56	2.31	15	9
1:A:12:TYR:CZ	1:B:8:LYS:HG3	0.56	2.36	33	14
1:A:12:TYR:CE2	1:B:8:LYS:HG3	0.56	2.35	13	15
1:B:12:TYR:CE1	1:B:24:ARG:HA	0.56	2.35	32	4
1:B:23:GLU:HG2	1:B:25:PRO:HD3	0.56	1.77	26	5

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:2:LEU:N	1:B:24:ARG:CG	0.56	2.69	2	1
1:A:7:GLU:N	1:B:26:SER:HA	0.56	2.16	22	1
1:A:13:PHE:HD1	1:A:17:THR:HA	0.55	1.61	20	1
1:B:12:TYR:CE1	1:B:24:ARG:HB2	0.55	2.36	20	6
1:B:3:PRO:O	1:B:6:TRP:HB2	0.55	2.02	14	17
1:B:12:TYR:CB	1:B:25:PRO:HD2	0.55	2.31	22	1
1:A:14:ASN:HB3	1:A:19:LYS:HG2	0.55	1.78	20	1
1:A:3:PRO:HG3	1:B:27:ASP:CA	0.55	2.30	10	14
1:A:13:PHE:HE1	1:A:18:GLY:C	0.55	2.03	20	1
1:A:3:PRO:O	1:A:6:TRP:HB2	0.55	2.01	19	20
1:A:27:ASP:HA	1:B:3:PRO:CG	0.55	2.32	27	19
1:A:6:TRP:HH2	1:B:21:GLN:CG	0.55	2.13	28	29
1:A:12:TYR:CD2	1:A:24:ARG:HA	0.55	2.37	20	4
1:A:3:PRO:O	1:B:27:ASP:CA	0.55	2.55	22	1
1:B:2:LEU:CD1	1:B:6:TRP:HB3	0.55	2.32	19	17
1:A:6:TRP:CH2	1:B:21:GLN:CD	0.55	2.80	22	5
1:A:2:LEU:CD1	1:B:12:TYR:HE2	0.55	2.12	2	1
1:B:24:ARG:CG	1:B:24:ARG:O	0.55	2.54	22	1
1:A:12:TYR:HB2	1:A:23:GLU:O	0.55	2.02	20	1
1:B:17:THR:O	1:B:19:LYS:N	0.55	2.40	31	33
1:A:17:THR:O	1:A:19:LYS:N	0.55	2.40	17	32
1:A:6:TRP:CZ3	1:B:14:ASN:N	0.55	2.75	22	20
1:A:12:TYR:CE2	1:B:2:LEU:CD2	0.54	2.87	15	10
1:A:12:TYR:CE2	1:B:2:LEU:HD11	0.54	2.34	15	10
1:A:8:LYS:CG	1:B:10:CYS:SG	0.54	2.95	2	3
1:B:2:LEU:HB2	1:B:3:PRO:CD	0.54	2.33	19	16
1:A:14:ASN:HB3	1:A:19:LYS:HB2	0.54	1.80	9	12
1:A:3:PRO:CD	1:B:27:ASP:HB2	0.54	2.33	19	12
1:B:17:THR:OG1	1:B:19:LYS:HG2	0.54	2.03	22	14
1:A:3:PRO:HD2	1:A:6:TRP:HD1	0.54	1.61	19	6
1:A:2:LEU:HB2	1:A:3:PRO:CD	0.54	2.32	23	14
1:A:2:LEU:HD21	1:B:24:ARG:HG3	0.54	1.79	22	1
1:A:13:PHE:CE1	1:A:18:GLY:N	0.54	2.75	20	1
1:A:6:TRP:CB	1:B:26:SER:C	0.54	2.76	22	1
1:A:15:ARG:C	1:A:17:THR:H	0.54	2.05	20	1
1:B:12:TYR:CD2	1:B:23:GLU:C	0.54	2.82	3	23
1:A:14:ASN:ND2	1:B:6:TRP:CG	0.53	2.76	20	1
1:A:12:TYR:CD1	1:A:23:GLU:C	0.53	2.82	11	14
1:B:2:LEU:HD11	1:B:6:TRP:HB3	0.53	1.80	25	17
1:B:12:TYR:N	1:B:21:GLN:O	0.53	2.39	2	15
1:A:27:ASP:HB2	1:B:3:PRO:CD	0.53	2.33	11	11

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:24:ARG:HG3	1:B:2:LEU:HB3	0.53	1.80	14	2
1:A:14:ASN:N	1:B:6:TRP:CE3	0.53	2.76	1	33
1:A:25:PRO:HG2	1:B:2:LEU:HD12	0.53	1.81	13	1
1:A:12:TYR:CD2	1:A:23:GLU:C	0.53	2.82	25	19
1:A:27:ASP:HB2	1:B:3:PRO:CG	0.53	2.34	18	10
1:A:2:LEU:HB3	1:B:24:ARG:HG2	0.53	1.80	30	6
1:A:23:GLU:HG2	1:A:25:PRO:HD3	0.53	1.79	28	2
1:A:6:TRP:CG	1:B:14:ASN:HB3	0.53	2.38	12	6
1:A:2:LEU:CD1	1:A:6:TRP:HB3	0.53	2.34	16	16
1:B:12:TYR:CD1	1:B:23:GLU:C	0.53	2.83	33	6
1:A:2:LEU:HD22	1:B:24:ARG:CZ	0.52	2.34	19	2
1:A:15:ARG:C	1:A:17:THR:N	0.52	2.63	20	1
1:B:3:PRO:HD2	1:B:6:TRP:HD1	0.52	1.62	8	3
1:A:2:LEU:CB	1:A:3:PRO:HD2	0.52	2.34	18	10
1:A:16:ILE:HG12	1:B:5:GLY:HA3	0.52	1.82	14	10
1:A:2:LEU:HD11	1:A:6:TRP:HB3	0.52	1.81	11	18
1:A:14:ASN:HB3	1:B:6:TRP:CE2	0.52	2.40	1	13
1:A:12:TYR:CE1	1:A:24:ARG:HB2	0.52	2.39	1	11
1:A:14:ASN:N	1:B:6:TRP:CZ3	0.52	2.78	32	20
1:A:12:TYR:CE1	1:A:24:ARG:CA	0.52	2.92	29	10
1:B:14:ASN:OD1	1:B:19:LYS:CB	0.52	2.58	2	9
1:A:2:LEU:HD13	1:B:24:ARG:HG3	0.52	1.82	19	3
1:A:2:LEU:HD13	1:B:26:SER:OG	0.52	2.04	22	1
1:A:13:PHE:CD1	1:A:17:THR:HA	0.52	2.40	20	1
1:B:12:TYR:CD1	1:B:24:ARG:HA	0.52	2.40	28	4
1:B:12:TYR:CB	1:B:25:PRO:CG	0.52	2.88	22	1
1:A:6:TRP:CZ2	1:B:14:ASN:ND2	0.51	2.78	21	12
1:B:2:LEU:C	1:B:2:LEU:HD23	0.51	2.25	14	1
1:A:6:TRP:CE3	1:B:14:ASN:N	0.51	2.78	20	32
1:A:17:THR:OG1	1:A:19:LYS:HG2	0.51	2.05	1	10
1:A:12:TYR:CG	1:A:25:PRO:HD3	0.51	2.40	29	8
1:A:10:CYS:HG	1:B:10:CYS:CB	0.51	2.16	6	5
1:A:10:CYS:SG	1:B:10:CYS:CB	0.51	2.99	6	8
1:B:12:TYR:CE1	1:B:24:ARG:CA	0.51	2.93	32	3
1:A:3:PRO:HD3	1:B:27:ASP:HA	0.51	1.82	5	6
1:A:2:LEU:CB	1:A:3:PRO:CD	0.51	2.89	19	17
1:A:6:TRP:HB3	1:B:26:SER:C	0.51	2.25	22	1
1:B:12:TYR:CE2	1:B:26:SER:CB	0.51	2.93	22	1
1:A:12:TYR:HD2	1:B:2:LEU:HD11	0.51	1.62	1	4
1:A:3:PRO:HB3	1:B:27:ASP:HB2	0.51	1.82	1	2
1:A:26:SER:O	1:A:27:ASP:CB	0.51	2.58	10	10

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:2:LEU:HD11	1:B:12:TYR:HD2	0.50	1.64	20	1
1:A:14:ASN:OD1	1:A:19:LYS:CB	0.50	2.59	11	10
1:A:14:ASN:HB3	1:A:19:LYS:HD3	0.50	1.82	20	1
1:A:14:ASN:HB3	1:B:6:TRP:CG	0.50	2.42	11	4
1:B:2:LEU:HD23	1:B:2:LEU:O	0.50	2.06	8	3
1:A:2:LEU:HA	1:B:27:ASP:HB2	0.50	1.82	9	4
1:A:2:LEU:HB3	1:B:27:ASP:H	0.50	1.64	22	1
1:B:2:LEU:CB	1:B:3:PRO:CD	0.50	2.90	7	17
1:B:26:SER:O	1:B:27:ASP:CB	0.50	2.59	1	11
1:A:8:LYS:HG3	1:B:12:TYR:CE1	0.50	2.42	16	3
1:A:12:TYR:CE2	1:A:24:ARG:CA	0.50	2.95	31	6
1:A:27:ASP:HB2	1:B:3:PRO:CB	0.50	2.36	10	2
1:A:8:LYS:CB	1:B:12:TYR:CE1	0.50	2.95	31	13
1:A:6:TRP:CB	1:B:25:PRO:O	0.49	2.60	22	1
1:A:6:TRP:HB3	1:B:26:SER:N	0.49	2.21	22	1
1:A:6:TRP:CE3	1:B:13:PHE:C	0.49	2.86	6	19
1:A:24:ARG:CG	1:B:2:LEU:HB3	0.49	2.37	7	13
1:A:11:PHE:HA	1:A:22:PHE:HA	0.49	1.84	20	1
1:A:25:PRO:HD2	1:B:2:LEU:CB	0.49	2.38	11	3
1:A:5:GLY:HA3	1:B:16:ILE:HG13	0.49	1.82	22	1
1:A:6:TRP:CB	1:B:26:SER:CA	0.49	2.80	22	1
1:A:2:LEU:HD12	1:B:25:PRO:HG2	0.49	1.83	18	1
1:A:12:TYR:N	1:A:21:GLN:O	0.49	2.42	11	14
1:B:23:GLU:C	1:B:25:PRO:HD3	0.49	2.28	22	1
1:B:17:THR:C	1:B:19:LYS:N	0.49	2.66	27	32
1:A:10:CYS:HB3	1:B:10:CYS:HB2	0.49	1.85	16	5
1:A:14:ASN:ND2	1:B:6:TRP:CZ2	0.49	2.80	13	13
1:A:13:PHE:C	1:B:6:TRP:CE3	0.49	2.86	15	17
1:A:13:PHE:CE2	1:A:18:GLY:HA2	0.49	2.42	9	15
1:A:13:PHE:O	1:A:17:THR:HG22	0.49	2.08	20	1
1:A:13:PHE:HA	1:A:19:LYS:O	0.48	2.08	9	17
1:B:13:PHE:CE2	1:B:18:GLY:HA2	0.48	2.43	27	22
1:A:12:TYR:CE1	1:B:8:LYS:CB	0.48	2.96	5	13
1:B:12:TYR:CG	1:B:25:PRO:HD3	0.48	2.42	32	2
1:A:17:THR:C	1:A:19:LYS:N	0.48	2.67	7	32
1:A:12:TYR:HB3	1:B:6:TRP:CE3	0.48	2.44	4	17
1:B:12:TYR:CE2	1:B:24:ARG:CA	0.48	2.97	1	6
1:B:13:PHE:HA	1:B:19:LYS:O	0.48	2.09	30	13
1:A:14:ASN:HB3	1:A:19:LYS:CG	0.48	2.37	20	1
1:A:12:TYR:OH	1:A:24:ARG:NE	0.48	2.43	14	2
1:B:2:LEU:O	1:B:2:LEU:HD23	0.48	2.09	14	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:27:ASP:HA	1:B:3:PRO:HD3	0.48	1.85	32	3
1:A:3:PRO:CB	1:B:27:ASP:HB2	0.48	2.39	1	2
1:A:6:TRP:CG	1:B:25:PRO:O	0.48	2.67	22	1
1:A:8:LYS:CB	1:B:12:TYR:CZ	0.48	2.97	16	4
1:A:10:CYS:CB	1:B:10:CYS:SG	0.47	3.02	6	9
1:B:21:GLN:NE2	1:B:25:PRO:CG	0.47	2.77	22	1
1:A:14:ASN:HB2	1:B:6:TRP:CE3	0.47	2.43	20	4
1:B:2:LEU:CB	1:B:3:PRO:HD2	0.47	2.37	13	7
1:B:12:TYR:OH	1:B:24:ARG:HD3	0.47	2.09	2	1
1:A:15:ARG:CB	1:A:19:LYS:N	0.47	2.77	20	1
1:A:12:TYR:CD1	1:A:24:ARG:HA	0.47	2.44	29	5
1:B:12:TYR:CB	1:B:25:PRO:CD	0.47	2.92	22	1
1:A:8:LYS:HD3	1:B:10:CYS:SG	0.47	2.49	19	1
1:A:6:TRP:CE3	1:B:25:PRO:HG2	0.47	2.44	22	1
1:A:10:CYS:CB	1:B:10:CYS:HB2	0.47	2.39	25	7
1:B:23:GLU:CG	1:B:24:ARG:N	0.47	2.77	19	10
1:A:3:PRO:HD3	1:B:27:ASP:CA	0.47	2.39	29	5
1:A:25:PRO:O	1:A:27:ASP:N	0.47	2.48	26	4
1:A:2:LEU:N	1:A:2:LEU:CD2	0.47	2.77	31	6
1:A:15:ARG:O	1:A:15:ARG:HG3	0.47	2.10	5	1
1:B:11:PHE:HA	1:B:21:GLN:O	0.47	2.10	19	1
1:B:21:GLN:HE21	1:B:25:PRO:CG	0.47	2.22	22	1
1:A:6:TRP:C	1:A:7:GLU:HG3	0.47	2.30	8	5
1:A:27:ASP:HB2	1:B:2:LEU:HA	0.47	1.86	25	2
1:B:2:LEU:CD2	1:B:2:LEU:N	0.47	2.78	23	6
1:A:14:ASN:O	1:A:17:THR:HA	0.46	2.11	20	1
1:A:14:ASN:CB	1:A:19:LYS:HG2	0.46	2.40	20	1
1:B:12:TYR:OH	1:B:24:ARG:CD	0.46	2.64	2	1
1:A:3:PRO:CD	1:B:25:PRO:O	0.46	2.61	22	1
1:A:8:LYS:CB	1:B:12:TYR:CE2	0.46	2.98	20	2
1:A:23:GLU:HG3	1:A:24:ARG:N	0.46	2.26	13	12
1:A:3:PRO:O	1:B:27:ASP:HA	0.46	2.09	22	1
1:A:13:PHE:HE1	1:A:19:LYS:N	0.46	1.98	20	1
1:A:2:LEU:CD2	1:A:2:LEU:N	0.46	2.79	24	7
1:A:3:PRO:CD	1:B:27:ASP:HA	0.46	2.41	28	7
1:B:12:TYR:O	1:B:20:ARG:HA	0.46	2.11	23	10
1:B:2:LEU:N	1:B:2:LEU:CD2	0.46	2.79	9	7
1:B:1:LYS:HA	1:B:1:LYS:HE3	0.46	1.87	15	1
1:B:15:ARG:O	1:B:15:ARG:HG3	0.46	2.10	12	3
1:A:14:ASN:O	1:A:15:ARG:HB2	0.45	2.11	20	1
1:A:12:TYR:CE2	1:B:8:LYS:CB	0.45	2.99	8	3

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:7:GLU:O	1:A:9:ARG:HG2	0.45	2.10	23	1
1:B:15:ARG:HG3	1:B:15:ARG:O	0.45	2.11	9	4
1:A:2:LEU:CD2	1:B:25:PRO:C	0.45	2.76	22	1
1:A:15:ARG:HG3	1:A:15:ARG:O	0.45	2.10	12	2
1:A:2:LEU:HD11	1:B:12:TYR:HD1	0.45	1.66	5	11
1:A:6:TRP:CD1	1:B:25:PRO:HG2	0.45	2.46	2	9
1:B:23:GLU:HG3	1:B:24:ARG:N	0.45	2.26	3	9
1:A:6:TRP:CE3	1:B:14:ASN:HB2	0.45	2.46	23	1
1:A:2:LEU:HD23	1:A:2:LEU:O	0.45	2.11	12	1
1:A:2:LEU:HD11	1:B:26:SER:CB	0.45	2.33	22	1
1:A:12:TYR:HD1	1:B:2:LEU:HD11	0.45	1.66	6	7
1:A:23:GLU:CG	1:A:24:ARG:N	0.45	2.79	32	6
1:A:2:LEU:CD2	1:B:26:SER:N	0.45	2.68	22	1
1:B:13:PHE:CZ	1:B:18:GLY:O	0.45	2.69	22	2
1:A:14:ASN:HB3	1:A:17:THR:OG1	0.45	2.12	16	7
1:B:12:TYR:OH	1:B:24:ARG:NE	0.45	2.47	16	1
1:B:12:TYR:HB3	1:B:25:PRO:HG2	0.45	1.88	22	1
1:B:6:TRP:C	1:B:7:GLU:HG3	0.45	2.32	33	1
1:A:3:PRO:O	1:B:27:ASP:CB	0.45	2.64	22	1
1:B:12:TYR:HB2	1:B:23:GLU:O	0.45	2.11	3	4
1:B:11:PHE:CD1	1:B:11:PHE:O	0.45	2.70	23	3
1:A:6:TRP:CZ3	1:B:12:TYR:HB3	0.45	2.47	28	2
1:B:21:GLN:HE21	1:B:25:PRO:HG3	0.45	1.71	22	1
1:A:12:TYR:CZ	1:B:8:LYS:CB	0.44	3.00	14	8
1:A:2:LEU:N	1:A:2:LEU:HD23	0.44	2.27	18	3
1:A:6:TRP:CG	1:B:25:PRO:C	0.44	2.90	22	1
1:B:14:ASN:HB3	1:B:17:THR:OG1	0.44	2.13	4	8
1:A:15:ARG:CG	1:A:19:LYS:HB3	0.44	2.42	20	1
1:A:27:ASP:HA	1:B:3:PRO:CD	0.44	2.42	32	2
1:A:6:TRP:CE3	1:B:25:PRO:CG	0.44	3.00	22	1
1:A:6:TRP:HB2	1:B:27:ASP:N	0.44	2.28	22	1
1:B:21:GLN:NE2	1:B:25:PRO:CB	0.44	2.79	22	1
1:A:6:TRP:HA	1:B:13:PHE:O	0.44	2.13	20	3
1:A:2:LEU:CB	1:B:25:PRO:HD2	0.44	2.43	16	2
1:A:6:TRP:CZ2	1:B:14:ASN:CG	0.44	2.91	2	4
1:B:11:PHE:HB3	1:B:22:PHE:CE1	0.44	2.48	27	2
1:A:11:PHE:O	1:A:11:PHE:CD1	0.44	2.71	7	2
1:A:25:PRO:HG2	1:B:6:TRP:CD1	0.43	2.48	9	7
1:B:12:TYR:HD2	1:B:26:SER:H	0.43	1.54	22	1
1:A:12:TYR:O	1:A:20:ARG:HA	0.43	2.12	9	13
1:B:14:ASN:ND2	1:B:17:THR:OG1	0.43	2.51	31	6

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:8:LYS:CG	1:B:12:TYR:CE1	0.43	3.01	2	1
1:A:14:ASN:O	1:A:17:THR:N	0.43	2.52	16	9
1:A:10:CYS:HB2	1:B:10:CYS:CB	0.43	2.43	11	3
1:B:2:LEU:CG	1:B:6:TRP:HB3	0.43	2.44	25	4
1:B:11:PHE:O	1:B:11:PHE:CD1	0.43	2.70	30	4
1:B:2:LEU:HD23	1:B:2:LEU:N	0.43	2.28	3	2
1:A:2:LEU:HD23	1:B:24:ARG:O	0.43	2.13	22	1
1:B:17:THR:HG1	1:B:19:LYS:HG2	0.43	1.73	21	1
1:A:6:TRP:CZ2	1:B:25:PRO:CG	0.43	3.02	4	4
1:A:14:ASN:ND2	1:A:17:THR:OG1	0.43	2.51	3	8
1:A:14:ASN:CB	1:B:6:TRP:CD2	0.43	3.01	8	3
1:B:1:LYS:HD3	1:B:2:LEU:CD2	0.43	2.44	27	1
1:B:14:ASN:O	1:B:17:THR:N	0.43	2.52	4	11
1:B:21:GLN:NE2	1:B:23:GLU:HG2	0.43	2.29	22	1
1:B:20:ARG:C	1:B:21:GLN:HG2	0.43	2.34	30	4
1:A:3:PRO:O	1:B:27:ASP:HB2	0.43	2.13	22	1
1:B:12:TYR:HB2	1:B:25:PRO:CG	0.43	2.44	22	1
1:A:3:PRO:CG	1:B:27:ASP:CB	0.43	2.97	1	2
1:A:2:LEU:CB	1:B:27:ASP:C	0.43	2.87	22	1
1:B:12:TYR:OH	1:B:24:ARG:HB2	0.43	2.14	2	1
1:A:9:ARG:O	1:B:10:CYS:HA	0.43	2.13	9	2
1:A:14:ASN:N	1:A:14:ASN:OD1	0.43	2.52	17	1
1:B:12:TYR:CD2	1:B:24:ARG:HA	0.42	2.49	1	3
1:A:13:PHE:CE1	1:A:18:GLY:CA	0.42	2.96	20	1
1:A:15:ARG:HB3	1:A:18:GLY:N	0.42	2.28	20	1
1:A:21:GLN:CD	1:B:6:TRP:CH2	0.42	2.93	16	2
1:A:27:ASP:CB	1:B:3:PRO:CG	0.42	2.97	18	2
1:A:13:PHE:CZ	1:A:18:GLY:O	0.42	2.73	1	2
1:A:20:ARG:C	1:A:21:GLN:HG2	0.42	2.34	9	3
1:B:11:PHE:CA	1:B:21:GLN:O	0.42	2.67	19	1
1:A:14:ASN:OD1	1:A:14:ASN:N	0.42	2.53	10	1
1:B:2:LEU:N	1:B:2:LEU:HD23	0.42	2.29	32	2
1:A:3:PRO:CG	1:B:26:SER:O	0.42	2.67	17	2
1:A:14:ASN:CG	1:B:6:TRP:CZ2	0.42	2.93	28	2
1:A:14:ASN:O	1:A:15:ARG:CB	0.42	2.68	20	1
1:A:16:ILE:O	1:A:16:ILE:HG23	0.42	2.15	20	1
1:A:2:LEU:CD2	1:B:24:ARG:NH1	0.42	2.83	16	1
1:B:14:ASN:OD1	1:B:19:LYS:CG	0.42	2.67	28	2
1:A:11:PHE:HA	1:A:21:GLN:O	0.42	2.15	6	3
1:A:12:TYR:CD1	1:B:8:LYS:HA	0.41	2.50	28	1
1:A:2:LEU:HD23	1:A:2:LEU:N	0.41	2.30	4	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:6:TRP:CD2	1:B:14:ASN:CB	0.41	2.99	12	1
1:A:11:PHE:CD1	1:A:11:PHE:O	0.41	2.73	6	2
1:A:10:CYS:SG	1:B:8:LYS:CG	0.41	3.09	28	1
1:A:10:CYS:HB2	1:B:10:CYS:HB3	0.41	1.90	28	1
1:A:13:PHE:O	1:B:6:TRP:HA	0.41	2.16	15	2
1:A:7:GLU:O	1:A:9:ARG:HG3	0.41	2.16	30	1
1:A:25:PRO:CG	1:B:6:TRP:CZ2	0.41	3.02	2	1
1:A:16:ILE:HD13	1:A:16:ILE:HA	0.41	1.71	20	1
1:A:26:SER:O	1:B:3:PRO:CG	0.41	2.69	16	3
1:B:12:TYR:HD2	1:B:26:SER:HB2	0.41	1.57	22	1
1:A:24:ARG:NH1	1:B:1:LYS:HB2	0.41	2.30	14	1
1:A:10:CYS:SG	1:B:8:LYS:HE2	0.41	2.55	7	1
1:B:14:ASN:OD1	1:B:19:LYS:O	0.41	2.38	28	1
1:B:2:LEU:CG	1:B:6:TRP:CB	0.41	2.99	25	2
1:A:3:PRO:HD3	1:B:27:ASP:CB	0.41	2.45	5	2
1:A:24:ARG:CZ	1:B:2:LEU:HD22	0.41	2.46	8	1
1:A:8:LYS:CA	1:B:26:SER:HB2	0.41	2.45	22	1
1:B:14:ASN:N	1:B:14:ASN:OD1	0.41	2.53	17	1
1:A:27:ASP:CA	1:B:3:PRO:HD3	0.41	2.45	32	1
1:A:2:LEU:CG	1:A:6:TRP:HB3	0.41	2.46	31	1
1:A:8:LYS:N	1:B:26:SER:OG	0.41	2.53	22	1
1:A:8:LYS:N	1:B:12:TYR:CD2	0.40	2.89	19	1
1:B:14:ASN:OD1	1:B:14:ASN:N	0.40	2.54	12	1
1:A:6:TRP:O	1:B:26:SER:O	0.40	2.39	22	1
1:B:21:GLN:NE2	1:B:23:GLU:CD	0.40	2.74	22	1
1:A:10:CYS:SG	1:B:8:LYS:HE3	0.40	2.56	28	1
1:A:15:ARG:HB3	1:A:18:GLY:H	0.40	1.75	20	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	25/27 (93%)	20±2 (78±6%)	3±1 (12±6%)	2±1 (10±4%)	1	10
1	B	25/27 (93%)	19±2 (78±7%)	3±1 (11±4%)	3±1 (11±4%)	1	9

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	1650/1782 (93%)	1287 (78%)	192 (12%)	171 (10%)	1 9

All 14 unique Ramachandran outliers are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Models (Total)
1	B	18	GLY	33
1	A	18	GLY	32
1	B	15	ARG	25
1	A	15	ARG	24
1	B	2	LEU	13
1	A	2	LEU	12
1	B	26	SER	10
1	A	26	SER	6
1	B	25	PRO	5
1	B	3	PRO	4
1	A	25	PRO	4
1	A	17	THR	1
1	A	3	PRO	1
1	A	16	ILE	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	24/25 (96%)	17±2 (70±7%)	7±2 (30±7%)	2 17
1	B	25/25 (100%)	17±1 (70±6%)	8±1 (30±6%)	2 16
All	All	1617/1650 (98%)	1134 (70%)	483 (30%)	2 17

All 31 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	B	21	GLN	33
1	A	16	ILE	33
1	A	23	GLU	33

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Mol	Chain	Res	Type	Models (Total)
1	A	27	ASP	33
1	B	23	GLU	33
1	B	27	ASP	33
1	A	21	GLN	32
1	B	16	ILE	29
1	B	1	LYS	26
1	B	20	ARG	21
1	A	2	LEU	19
1	A	20	ARG	18
1	B	24	ARG	17
1	B	2	LEU	17
1	A	19	LYS	13
1	B	15	ARG	13
1	A	15	ARG	12
1	B	19	LYS	11
1	A	24	ARG	8
1	A	7	GLU	8
1	A	9	ARG	7
1	A	8	LYS	7
1	A	10	CYS	6
1	B	17	THR	5
1	A	17	THR	4
1	B	7	GLU	3
1	B	9	ARG	3
1	B	10	CYS	2
1	B	8	LYS	2
1	B	14	ASN	1
1	A	22	PHE	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 carbohydrates 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 22% for the well-defined parts and 23% for the entire structure.

7.1 Chemical shift list 1

File name: 2mdw_cs.str

Chemical shift list name: *assigned_chem_shift_list_1*

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	192
Number of shifts mapped to atoms	192
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Number of shift outliers (ShiftChecker)	3

7.1.2 Chemical shift referencing

No chemical shift referencing corrections were calculated (not enough data).

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 22%, i.e. 171 atoms were assigned a chemical shift out of a possible 766. 0 out of 2 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	¹ H	¹³ C	¹⁵ N
Backbone	49/253 (19%)	49/100 (49%)	0/106 (0%)	0/47 (0%)
Sidechain	97/419 (23%)	97/256 (38%)	0/130 (0%)	0/33 (0%)
Aromatic	25/94 (27%)	25/50 (50%)	0/42 (0%)	0/2 (0%)
Overall	171/766 (22%)	171/406 (42%)	0/278 (0%)	0/82 (0%)

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 23%, i.e. 178 atoms were assigned a chemical shift out of a possible 784. 0 out of 2 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	¹ H	¹³ C	¹⁵ N
Backbone	50/258 (19%)	50/102 (49%)	0/108 (0%)	0/48 (0%)
Sidechain	103/432 (24%)	103/264 (39%)	0/134 (0%)	0/34 (0%)
Aromatic	25/94 (27%)	25/50 (50%)	0/42 (0%)	0/2 (0%)
Overall	178/784 (23%)	178/416 (43%)	0/284 (0%)	0/84 (0%)

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.

Mol	Chain	Res	Type	Atom	Shift, ppm	Expected range, ppm	Z-score
1	A	14	ASN	HB3	-0.52	4.41 – 1.11	-9.9
1	A	14	ASN	HD21	4.29	9.74 – 4.94	-6.4
1	A	25	PRO	HG3	0.04	3.56 – 0.26	-5.7

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.

Random coil index (RCI) for chain A:

