



Full wwPDB NMR Structure Validation Report ⓘ

Apr 26, 2016 – 07:48 PM BST

PDB ID : 2DMD
Title : Solution structure of the N-terminal C2H2 type zinc-binding domain of the Zinc finger protein 64, isoforms 1 and 2
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Deposited on : 2006-04-21

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
Mogul : unknown
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
RCI : v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV : Wang et al. (2010)
ShiftChecker : rb-20027457
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : rb-20027457

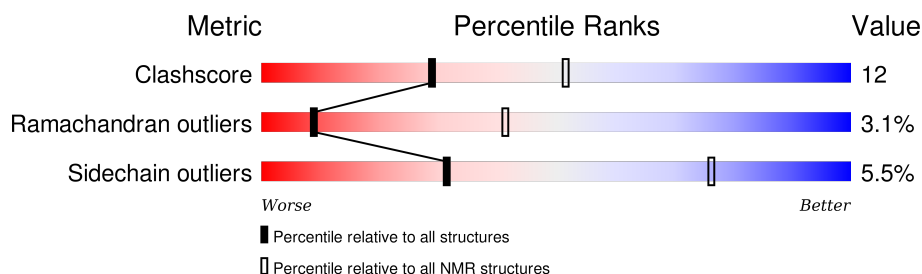
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

SOLUTION NMR

The overall completeness of chemical shifts assignment is 87%.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	NMR archive (#Entries)
Clashscore	114402	11133
Ramachandran outliers	111179	9975
Sidechain outliers	111093	9958

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	96	

2 Ensemble composition and analysis

This entry contains 20 models. Model 18 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:9-A:31 (23)	0.40	3
2	A:37-A:59 (23)	0.26	6
3	A:64-A:87 (24)	0.23	18

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 1 clusters and 18 single-model clusters were found.

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

3 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 1433 atoms, of which 703 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Zinc finger protein 64, isoforms 1 and 2.

Mol	Chain	Residues	Atoms						Trace
1	A	96	Total	C	H	N	O	S	0
			1430	438	703	142	138	9	

There are 13 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	GLY	-	CLONING ARTIFACT	UNP Q9NPA5
A	2	SER	-	CLONING ARTIFACT	UNP Q9NPA5
A	3	SER	-	CLONING ARTIFACT	UNP Q9NPA5
A	4	GLY	-	CLONING ARTIFACT	UNP Q9NPA5
A	5	SER	-	CLONING ARTIFACT	UNP Q9NPA5
A	6	SER	-	CLONING ARTIFACT	UNP Q9NPA5
A	7	GLY	-	CLONING ARTIFACT	UNP Q9NPA5
A	91	SER	-	CLONING ARTIFACT	UNP Q9NPA5
A	92	GLY	-	CLONING ARTIFACT	UNP Q9NPA5
A	93	PRO	-	CLONING ARTIFACT	UNP Q9NPA5
A	94	SER	-	CLONING ARTIFACT	UNP Q9NPA5
A	95	SER	-	CLONING ARTIFACT	UNP Q9NPA5
A	96	GLY	-	CLONING ARTIFACT	UNP Q9NPA5

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

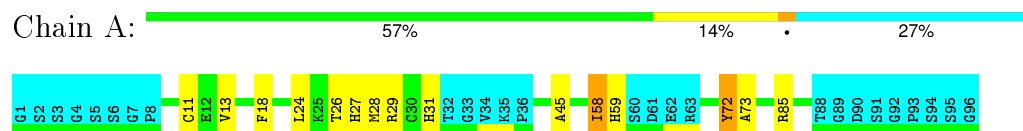
Mol	Chain	Residues	Atoms	
2	A	3	Total	Zn
			3	3

4 Residue-property plots

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: Zinc finger protein 64, isoforms 1 and 2

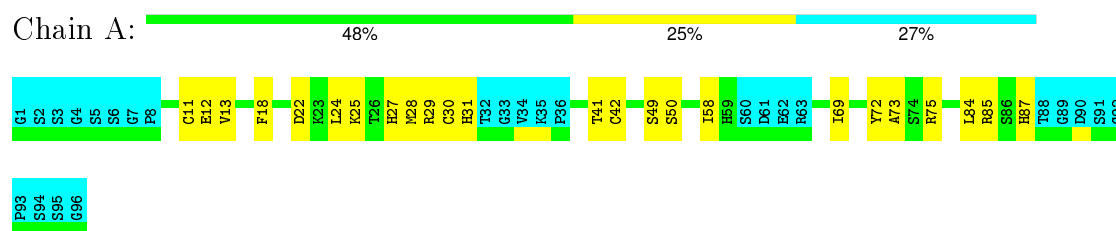


4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

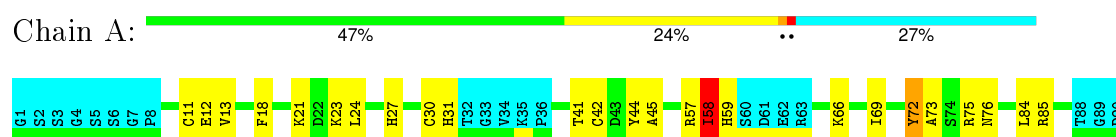
4.2.1 Score per residue for model 1

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2



4.2.2 Score per residue for model 2

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2



S91
G92
P93
S94
S95
G96

4.2.3 Score per residue for model 3

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

Chain A: 57% 14% 27%

G1 S2 S3 S4 S5 S6 S7 S8 C11 C12 E12 V13 K16 C17 F18 T26 R29 C30 H31 T32 G33 V34 K35 P36 Y44 A45 I58 H59 S60 D61 E62 R63 I69 Y72 A73 L84 R85 T88 G89 D90 S91 G92 P93 S94 S95 G96

4.2.4 Score per residue for model 4

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

Chain A: 54% 17% 27%

G1 S2 S3 S4 S5 S6 S7 S8 R9 C10 C11 C12 E12 V13 K16 C17 F18 T26 R29 C30 H31 T32 G33 V34 K35 P36 K40 K54 R57 I58 H59 S60 D61 E62 R63 Y72 A73 S74 R75 L84 R85 T88 G89 D90 S91 G92 P93 S94 S95 G96

4.2.5 Score per residue for model 5

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

Chain A: 53% 19% 27%

G1 S2 S3 S4 S5 S6 S7 S8 R9 C10 C11 C12 E12 V13 L24 K25 L24 T26 T27 N28 R29 T32 G33 V34 K35 P36 Y44 A45 K54 H55 L56 R57 I58 H59 S60 D61 E62 R63 P64 C70 A73 S74 Y72 R75 T88 G89 D90 S91 G92 P93 S94 S95 G96

4.2.6 Score per residue for model 6

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

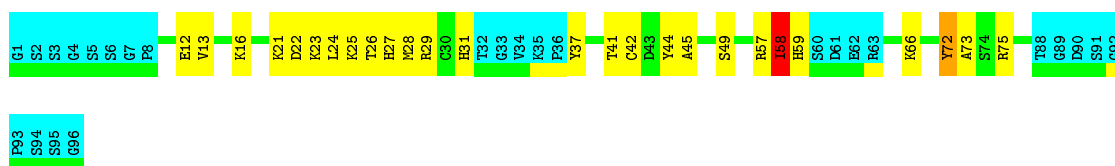
Chain A: 53% 17% 27%

G1 S2 S3 S4 S5 S6 S7 S8 C11 C12 E12 V13 F18 K23 L24 K25 T26 T27 N28 R29 C30 H31 T32 G33 V34 K35 P36 Y44 A45 R57 I58 H59 S60 D61 E62 R63 Y72 A73 R85 T88 G89 D90 S91 G92 P93 S94 S95 G96

4.2.7 Score per residue for model 7

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

Chain A: 46% 25% 27%



4.2.8 Score per residue for model 8

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

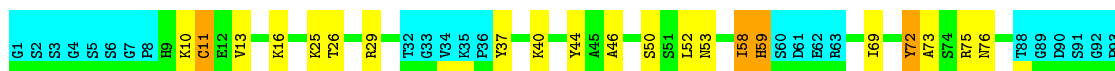
Chain A:



4.2.9 Score per residue for model 9

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

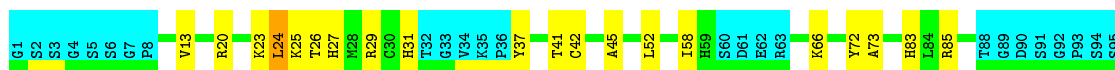
Chain A:



4.2.10 Score per residue for model 10

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

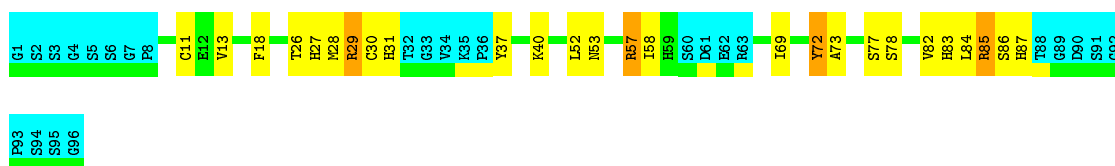
Chain A:



4.2.11 Score per residue for model 11

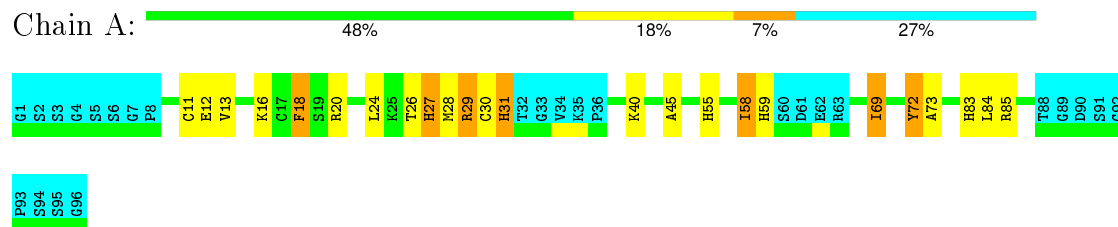
- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

Chain A:



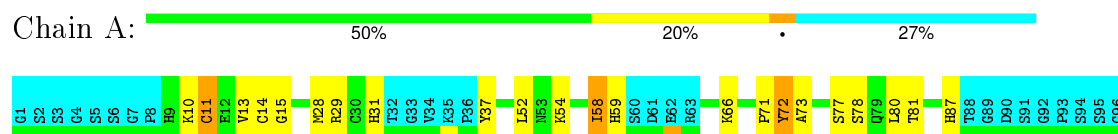
4.2.12 Score per residue for model 12

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2



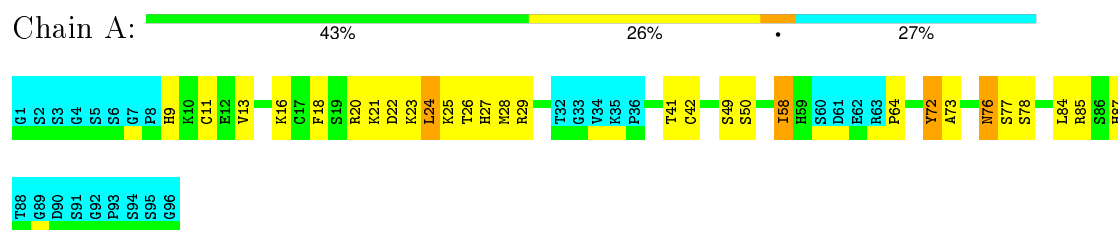
4.2.13 Score per residue for model 13

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2



4.2.14 Score per residue for model 14

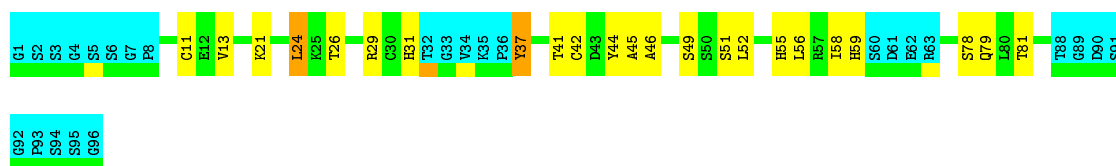
- Molecule 1: Zinc finger protein 64, isoforms 1 and 2



4.2.15 Score per residue for model 15

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

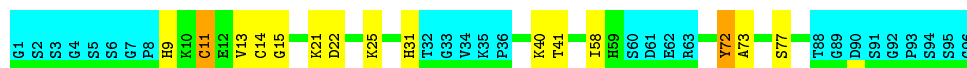




4.2.16 Score per residue for model 16

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

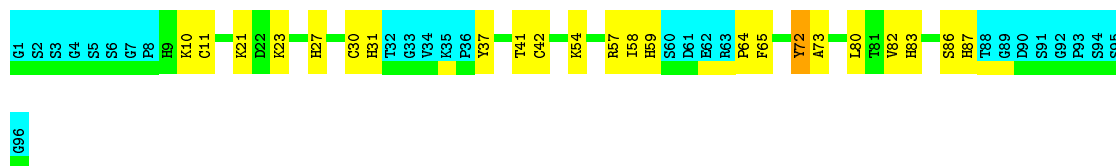
Chain A:



4.2.17 Score per residue for model 17

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

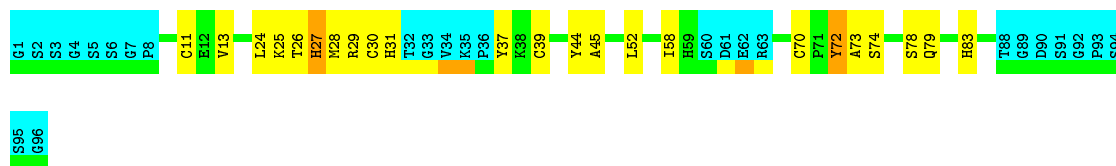
Chain A:



4.2.18 Score per residue for model 18 (medoid)

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

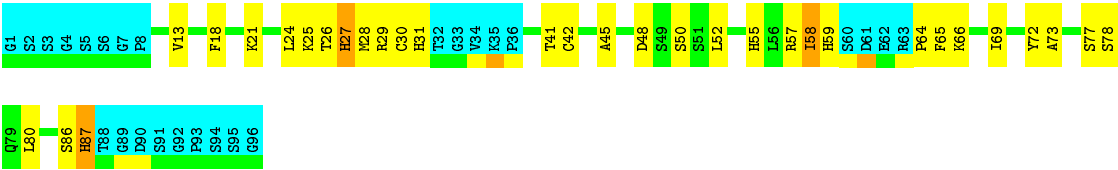
Chain A:



4.2.19 Score per residue for model 19

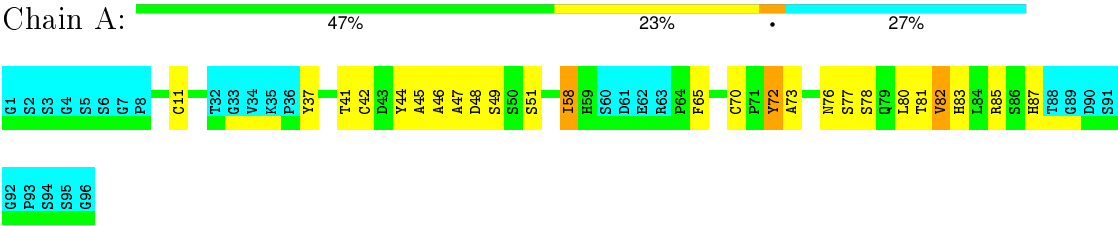
- Molecule 1: Zinc finger protein 64, isoforms 1 and 2

Chain A:



4.2.20 Score per residue for model 20

- Molecule 1: Zinc finger protein 64, isoforms 1 and 2



5 Refinement protocol and experimental data overview

The models were refined using the following method: *torsion angle dynamics*.

Of the 100 calculated structures, 20 were deposited, based on the following criterion: *target function, structures with the least restraint violations*.

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

Software name	Classification	Version
CYANA	structure solution	2.0.17
CYANA	refinement	2.0.17

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)	BMRB entry 11302
Number of chemical shift lists	1
Total number of shifts	1009
Number of shifts mapped to atoms	1009
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Assignment completeness (well-defined parts)	87%

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

6 Model quality

6.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section:
ZN

There are no covalent bond-length or bond-angle outliers.

There are no bond-length outliers.

There are no bond-angle outliers.

There are no chirality outliers.

There are no planarity outliers.

6.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes
1	A	564	558	558	14±4
All	All	11340	11160	11160	276

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 12.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:13:VAL:HG21	1:A:31:HIS:CG	0.78	2.13	15	2
1:A:13:VAL:HG21	1:A:31:HIS:CD2	0.76	2.15	13	13
1:A:65:PHE:HB3	1:A:80:LEU:HD22	0.74	1.60	20	3
1:A:37:TYR:HB3	1:A:52:LEU:HD22	0.66	1.67	18	5
1:A:44:TYR:CZ	1:A:46:ALA:HB2	0.66	2.24	9	1
1:A:55:HIS:O	1:A:58:ILE:HG23	0.64	1.92	12	1
1:A:18:PHE:CZ	1:A:24:LEU:HD13	0.62	2.29	12	1
1:A:24:LEU:C	1:A:24:LEU:HD13	0.62	2.15	1	2
1:A:13:VAL:CG2	1:A:31:HIS:CD2	0.62	2.83	13	5
1:A:55:HIS:O	1:A:58:ILE:HD12	0.61	1.96	12	1
1:A:55:HIS:CE1	1:A:58:ILE:HD13	0.60	2.31	5	1
1:A:55:HIS:CE1	1:A:58:ILE:CD1	0.58	2.86	5	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:24:LEU:O	1:A:24:LEU:HD13	0.57	1.99	14	2
1:A:72:TYR:CG	1:A:73:ALA:N	0.57	2.72	13	17
1:A:69:ILE:HD12	1:A:69:ILE:H	0.57	1.59	2	5
1:A:16:LYS:O	1:A:18:PHE:CE2	0.56	2.59	14	1
1:A:69:ILE:H	1:A:69:ILE:HD12	0.56	1.61	12	3
1:A:26:THR:HG22	1:A:29:ARG:HD3	0.56	1.76	9	1
1:A:46:ALA:HB1	1:A:51:SER:CB	0.56	2.30	15	1
1:A:11:CYS:SG	1:A:13:VAL:HG22	0.55	2.40	11	6
1:A:24:LEU:HD13	1:A:24:LEU:O	0.54	2.02	10	3
1:A:24:LEU:C	1:A:24:LEU:CD1	0.54	2.76	1	2
1:A:30:CYS:SG	1:A:31:HIS:CE1	0.54	3.01	17	2
1:A:44:TYR:CE1	1:A:45:ALA:O	0.54	2.61	6	5
1:A:58:ILE:HD11	1:A:59:HIS:CE1	0.54	2.38	7	1
1:A:41:THR:HG23	1:A:42:CYS:N	0.54	2.17	1	8
1:A:18:PHE:CE2	1:A:24:LEU:HD13	0.53	2.38	2	1
1:A:30:CYS:HG	1:A:31:HIS:CE1	0.53	2.21	17	1
1:A:11:CYS:SG	1:A:13:VAL:CG2	0.52	2.98	1	6
1:A:26:THR:O	1:A:29:ARG:N	0.52	2.43	11	10
1:A:58:ILE:HD13	1:A:59:HIS:N	0.52	2.20	12	1
1:A:76:ASN:HD22	1:A:77:SER:N	0.52	2.03	14	1
1:A:37:TYR:CB	1:A:52:LEU:HD22	0.51	2.36	18	1
1:A:26:THR:O	1:A:28:MET:N	0.51	2.44	12	5
1:A:10:LYS:CB	1:A:16:LYS:O	0.51	2.59	9	1
1:A:41:THR:CG2	1:A:42:CYS:N	0.50	2.75	2	7
1:A:18:PHE:CE2	1:A:27:HIS:CD2	0.50	2.99	11	2
1:A:44:TYR:CE2	1:A:46:ALA:HB2	0.50	2.41	8	2
1:A:58:ILE:CG1	1:A:59:HIS:N	0.50	2.75	19	6
1:A:44:TYR:CZ	1:A:45:ALA:O	0.50	2.64	15	1
1:A:28:MET:O	1:A:30:CYS:N	0.50	2.44	12	3
1:A:50:SER:O	1:A:53:ASN:N	0.49	2.45	9	1
1:A:46:ALA:HB1	1:A:51:SER:HB3	0.49	1.85	20	2
1:A:18:PHE:CE1	1:A:24:LEU:HD13	0.48	2.43	12	1
1:A:26:THR:O	1:A:27:HIS:C	0.48	2.52	19	8
1:A:24:LEU:CD1	1:A:24:LEU:C	0.48	2.82	14	2
1:A:48:ASP:OD1	1:A:50:SER:N	0.48	2.46	19	1
1:A:44:TYR:CD1	1:A:45:ALA:N	0.48	2.82	2	5
1:A:58:ILE:CG2	1:A:59:HIS:N	0.48	2.76	17	2
1:A:24:LEU:HD13	1:A:24:LEU:C	0.48	2.30	14	2
1:A:28:MET:O	1:A:29:ARG:C	0.47	2.53	8	6
1:A:18:PHE:CZ	1:A:27:HIS:ND1	0.47	2.83	19	1
1:A:14:CYS:O	1:A:15:GLY:C	0.47	2.53	13	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:23:LYS:O	1:A:27:HIS:CB	0.46	2.63	17	1
1:A:77:SER:O	1:A:78:SER:C	0.46	2.54	14	6
1:A:37:TYR:CE2	1:A:49:SER:N	0.46	2.84	15	2
1:A:9:HIS:CD2	1:A:21:LYS:CB	0.46	2.99	16	1
1:A:24:LEU:O	1:A:25:LYS:C	0.45	2.54	7	7
1:A:82:VAL:CG1	1:A:83:HIS:N	0.45	2.80	20	1
1:A:16:LYS:HG2	1:A:18:PHE:CZ	0.45	2.46	4	1
1:A:18:PHE:CE2	1:A:27:HIS:CE1	0.45	3.04	19	1
1:A:52:LEU:O	1:A:55:HIS:N	0.45	2.50	15	2
1:A:28:MET:C	1:A:30:CYS:N	0.45	2.70	12	1
1:A:16:LYS:HE3	1:A:18:PHE:CZ	0.45	2.47	3	1
1:A:16:LYS:HD3	1:A:27:HIS:CE1	0.45	2.46	12	1
1:A:84:LEU:O	1:A:86:SER:N	0.45	2.50	11	1
1:A:57:ARG:O	1:A:59:HIS:N	0.44	2.50	6	2
1:A:83:HIS:CD2	1:A:83:HIS:C	0.44	2.89	17	2
1:A:82:VAL:O	1:A:83:HIS:C	0.44	2.55	8	2
1:A:12:GLU:N	1:A:12:GLU:CD	0.44	2.71	2	1
1:A:9:HIS:HB3	1:A:24:LEU:HD22	0.44	1.89	5	1
1:A:82:VAL:O	1:A:85:ARG:N	0.44	2.51	8	1
1:A:29:ARG:O	1:A:30:CYS:C	0.44	2.56	19	1
1:A:30:CYS:O	1:A:31:HIS:C	0.44	2.55	19	3
1:A:70:CYS:SG	1:A:72:TYR:CB	0.44	3.06	5	3
1:A:24:LEU:O	1:A:27:HIS:N	0.44	2.51	7	3
1:A:84:LEU:O	1:A:85:ARG:C	0.43	2.57	14	8
1:A:18:PHE:CZ	1:A:27:HIS:CE1	0.43	3.06	19	1
1:A:78:SER:O	1:A:81:THR:N	0.43	2.51	13	3
1:A:11:CYS:O	1:A:12:GLU:C	0.43	2.57	12	2
1:A:57:ARG:O	1:A:58:ILE:C	0.43	2.54	7	5
1:A:85:ARG:CZ	1:A:85:ARG:HB3	0.43	2.44	6	1
1:A:58:ILE:HD12	1:A:58:ILE:C	0.43	2.35	2	2
1:A:49:SER:O	1:A:50:SER:C	0.42	2.57	14	2
1:A:10:LYS:O	1:A:11:CYS:O	0.42	2.38	13	1
1:A:28:MET:O	1:A:31:HIS:N	0.42	2.52	1	1
1:A:75:ARG:O	1:A:76:ASN:CG	0.42	2.58	2	1
1:A:18:PHE:CE2	1:A:27:HIS:ND1	0.42	2.87	1	1
1:A:47:ALA:O	1:A:48:ASP:CG	0.42	2.57	20	1
1:A:76:ASN:ND2	1:A:77:SER:N	0.42	2.67	14	1
1:A:12:GLU:O	1:A:13:VAL:C	0.42	2.57	12	1
1:A:83:HIS:C	1:A:83:HIS:CD2	0.42	2.92	10	2
1:A:58:ILE:C	1:A:58:ILE:HD12	0.42	2.34	20	2
1:A:26:THR:C	1:A:28:MET:N	0.42	2.73	18	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:41:THR:HG23	1:A:42:CYS:H	0.42	1.75	15	1
1:A:53:ASN:O	1:A:57:ARG:NH1	0.41	2.53	11	1
1:A:22:ASP:O	1:A:25:LYS:N	0.41	2.53	16	1
1:A:55:HIS:O	1:A:56:LEU:C	0.41	2.58	15	1
1:A:71:PRO:O	1:A:72:TYR:O	0.41	2.39	13	1
1:A:78:SER:O	1:A:79:GLN:C	0.41	2.59	15	2
1:A:86:SER:O	1:A:87:HIS:C	0.41	2.58	19	1
1:A:75:ARG:HG3	1:A:76:ASN:N	0.41	2.31	9	1
1:A:37:TYR:CD2	1:A:49:SER:HA	0.41	2.50	7	1
1:A:14:CYS:SG	1:A:15:GLY:N	0.41	2.94	16	1
1:A:40:LYS:HG3	1:A:41:THR:N	0.41	2.31	16	1
1:A:77:SER:O	1:A:80:LEU:N	0.41	2.53	13	1
1:A:22:ASP:OD1	1:A:23:LYS:N	0.41	2.54	14	1
1:A:75:ARG:CZ	1:A:75:ARG:HB2	0.41	2.46	5	1
1:A:9:HIS:CD2	1:A:21:LYS:HD2	0.40	2.52	14	1
1:A:57:ARG:HD2	1:A:57:ARG:N	0.40	2.30	11	1
1:A:57:ARG:C	1:A:59:HIS:N	0.40	2.73	6	1
1:A:55:HIS:O	1:A:58:ILE:N	0.40	2.54	15	1
1:A:24:LEU:HD23	1:A:25:LYS:N	0.40	2.31	8	1
1:A:18:PHE:CZ	1:A:27:HIS:CG	0.40	3.10	11	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	70/96 (73%)	57±3 (82±5%)	11±3 (15±4%)	2±1 (3±2%)	9	41
All	All	1400/1920 (73%)	1142 (82%)	215 (15%)	43 (3%)	9	41

All 11 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	72	TYR	14
1	A	11	CYS	9

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Mol	Chain	Res	Type	Models (Total)
1	A	87	HIS	5
1	A	27	HIS	4
1	A	58	ILE	3
1	A	29	ARG	2
1	A	37	TYR	2
1	A	31	HIS	1
1	A	59	HIS	1
1	A	85	ARG	1
1	A	69	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	65/84 (77%)	61±2 (95±2%)	4±2 (5±2%)	31 76
All	All	1300/1680 (77%)	1229 (95%)	71 (5%)	31 76

All 24 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	58	ILE	17
1	A	21	LYS	5
1	A	24	LEU	5
1	A	66	LYS	5
1	A	54	LYS	5
1	A	40	LYS	4
1	A	23	LYS	4
1	A	20	ARG	3
1	A	75	ARG	3
1	A	76	ASN	2
1	A	10	LYS	2
1	A	85	ARG	2
1	A	22	ASP	2
1	A	82	VAL	2
1	A	74	SER	1
1	A	18	PHE	1

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Mol	Chain	Res	Type	Models (Total)
1	A	12	GLU	1
1	A	16	LYS	1
1	A	13	VAL	1
1	A	39	CYS	1
1	A	57	ARG	1
1	A	25	LYS	1
1	A	77	SER	1
1	A	29	ARG	1

6.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

6.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.6 Ligand geometry [i](#)

Of 3 ligands modelled in this entry, 3 are monoatomic - leaving 0 for Mogul analysis.

6.7 Other polymers [i](#)

There are no such molecules in this entry.

6.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

7 Chemical shift validation

The completeness of assignment taking into account all chemical shift lists is 87% for the well-defined parts and 82% for the entire structure.

7.1 Chemical shift list 1

File name: BMRB entry 11302

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	1009
Number of shifts mapped to atoms	1009
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Number of shift outliers (ShiftChecker)	0

7.1.2 Chemical shift referencing

The following table shows the suggested chemical shift referencing corrections.

Nucleus	# values	Correction \pm precision, ppm	Suggested action
$^{13}\text{C}_\alpha$	88	-0.39 ± 0.14	None needed (< 0.5 ppm)
$^{13}\text{C}_\beta$	82	0.37 ± 0.11	None needed (< 0.5 ppm)
$^{13}\text{C}'$	78	0.00 ± 0.11	None needed (< 0.5 ppm)
^{15}N	73	-0.16 ± 0.44	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 87%, i.e. 789 atoms were assigned a chemical shift out of a possible 902. 0 out of 7 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^1H	^{13}C	^{15}N
Backbone	330/346 (95%)	132/138 (96%)	136/140 (97%)	62/68 (91%)
Sidechain	391/465 (84%)	249/281 (89%)	140/156 (90%)	2/28 (7%)

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	Total	¹ H	¹³ C	¹⁵ N
Aromatic	68/91 (75%)	35/50 (70%)	33/34 (97%)	0/7 (0%)
Overall	789/902 (87%)	416/469 (89%)	309/330 (94%)	64/103 (62%)

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 82%, i.e. 932 atoms were assigned a chemical shift out of a possible 1137. 0 out of 8 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	¹ H	¹³ C	¹⁵ N
Backbone	399/470 (85%)	160/187 (86%)	166/192 (86%)	73/91 (80%)
Sidechain	465/576 (81%)	296/349 (85%)	167/195 (86%)	2/32 (6%)
Aromatic	68/91 (75%)	35/50 (70%)	33/34 (97%)	0/7 (0%)
Overall	932/1137 (82%)	491/586 (84%)	366/421 (87%)	75/130 (58%)

7.1.4 Statistically unusual chemical shifts ⓘ

There are no statistically unusual chemical shifts.

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.

Random coil index (RCI) for chain A:

