Full wwPDB NMR Structure Validation Report (i)

Feb 19, 2018 – 06:02 am GMT

PDB ID	:	2KKM
Title	:	Solution NMR structure of yeast protein YOR252W [residues 38-178]: Northeast Structural Genomics Consortium target YT654
Authors	:	Cort, J.R.; Yee, A.; Liu, C.; Arrowsmith, C.H.; Montelione, G.T.; Kennedy, M.A.; Northeast Structural Genomics Consortium (NESG)
Deposited on	:	2009-06-26

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

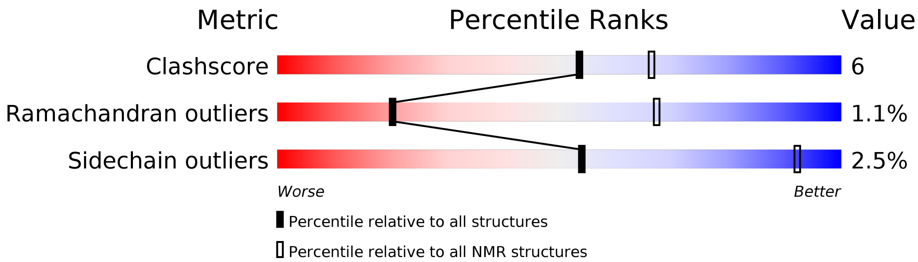
Cyrange	:	Kirchner and Güntert (2011)
NmrClust	:	Kelley et al. (1996)
MolProbity	:	4.02b-467
Percentile statistics	:	20171227.v01 (using entries in the PDB archive December 27th 2017)
RCI	:	v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV	:	Wang et al. (2010)
ShiftChecker	:	trunk30686
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	trunk30686

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 77%.

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	136279	12091
Ramachandran outliers	132675	10835
Sidechain outliers	132484	10811

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	144	

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: *no criteria*.

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:18-A:65, A:75-A:137 (111)	0.61	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 4 clusters. No single-model clusters were found.

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

3 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 2353 atoms, of which 1181 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Translation machinery-associated protein 16.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	141	2353	728	1181	224	216	4	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	EXPRESSION TAG	UNP Q08687
A	-1	SER	-	EXPRESSION TAG	UNP Q08687
A	0	HIS	-	EXPRESSION TAG	UNP Q08687

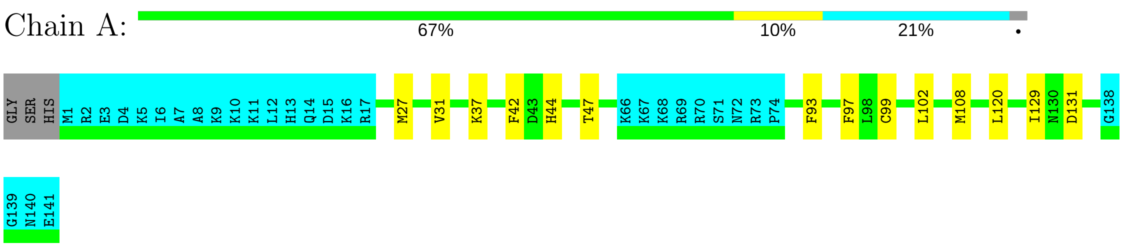
4 Residue-property plots (i)

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: Translation machinery-associated protein 16

Chain A:



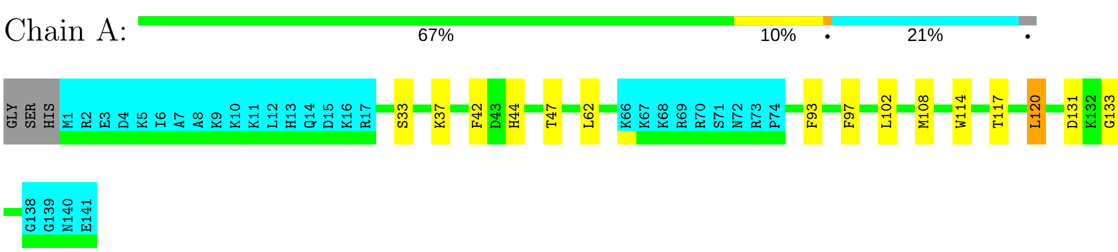
4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

4.2.1 Score per residue for model 1

- Molecule 1: Translation machinery-associated protein 16

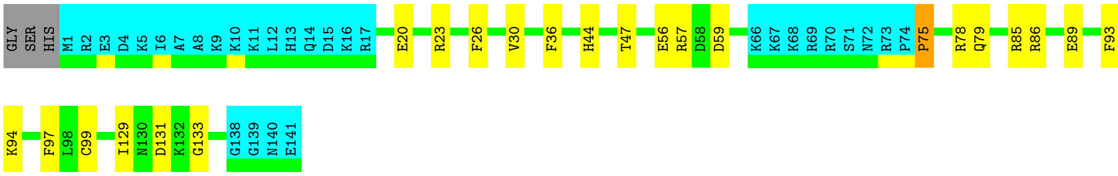
Chain A:



4.2.2 Score per residue for model 2

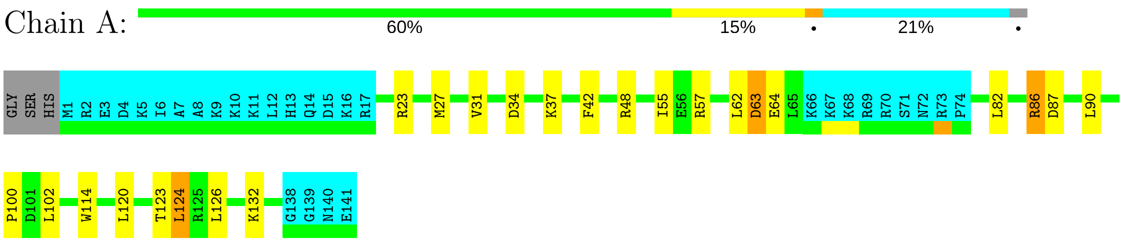
- Molecule 1: Translation machinery-associated protein 16

Chain A:



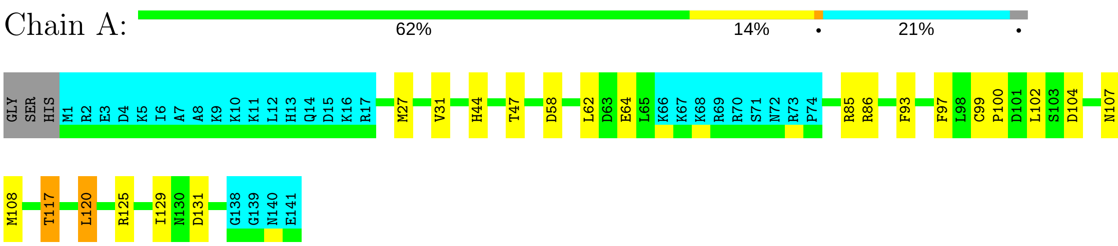
4.2.3 Score per residue for model 3

- Molecule 1: Translation machinery-associated protein 16



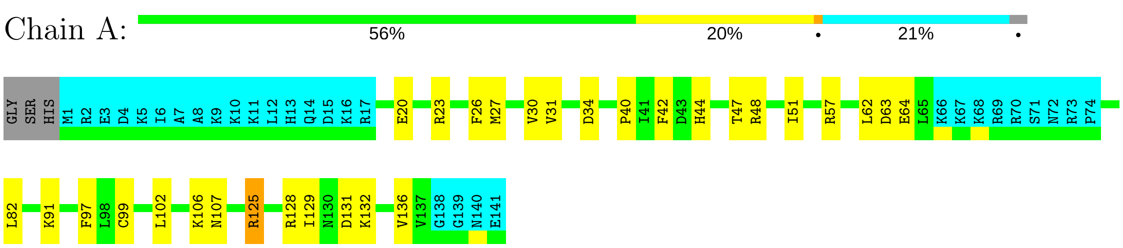
4.2.4 Score per residue for model 4

- Molecule 1: Translation machinery-associated protein 16



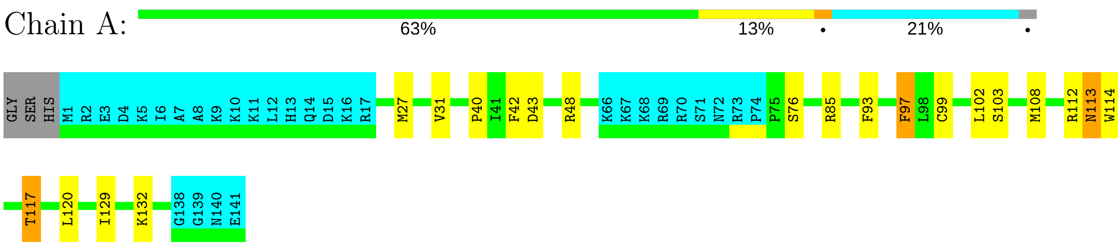
4.2.5 Score per residue for model 5

- Molecule 1: Translation machinery-associated protein 16



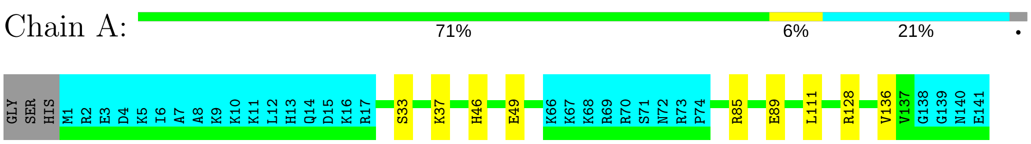
4.2.6 Score per residue for model 6

- Molecule 1: Translation machinery-associated protein 16



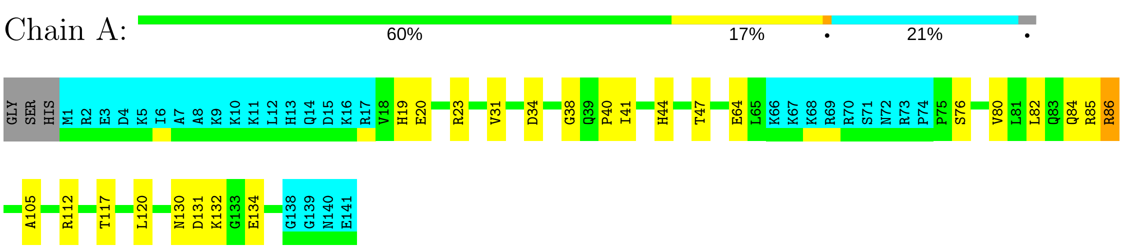
4.2.7 Score per residue for model 7

- Molecule 1: Translation machinery-associated protein 16



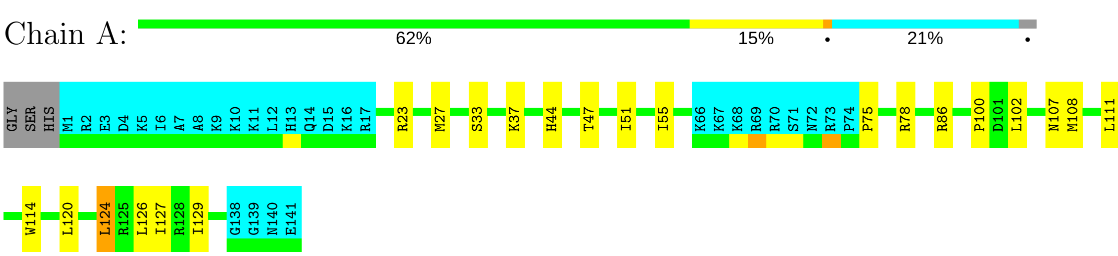
4.2.8 Score per residue for model 8

- Molecule 1: Translation machinery-associated protein 16



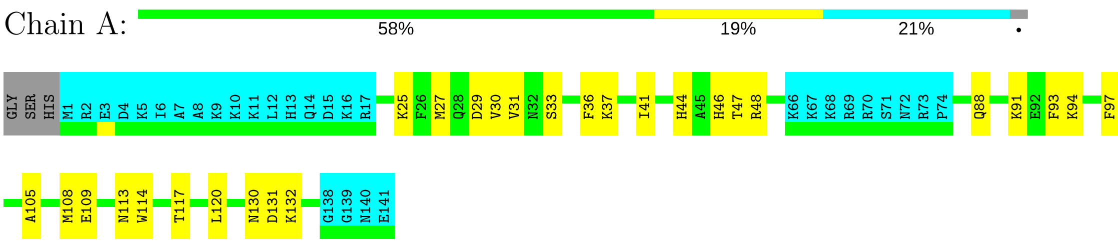
4.2.9 Score per residue for model 9

- Molecule 1: Translation machinery-associated protein 16



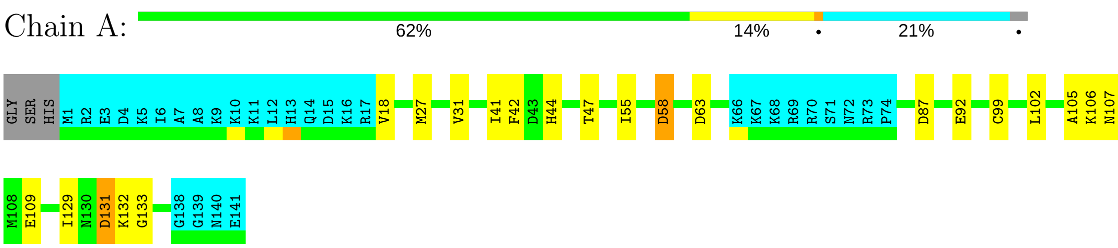
4.2.10 Score per residue for model 10

- Molecule 1: Translation machinery-associated protein 16



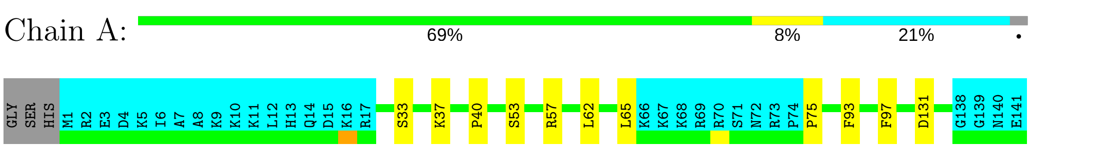
4.2.11 Score per residue for model 11

- Molecule 1: Translation machinery-associated protein 16



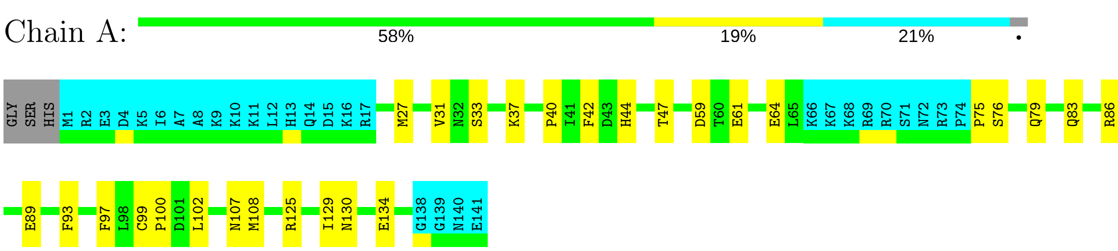
4.2.12 Score per residue for model 12

- Molecule 1: Translation machinery-associated protein 16



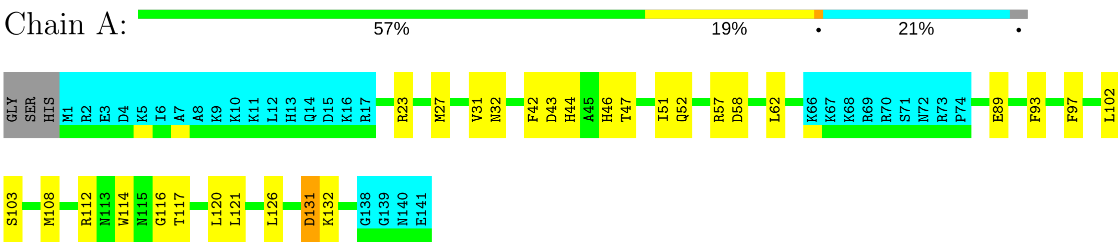
4.2.13 Score per residue for model 13

- Molecule 1: Translation machinery-associated protein 16



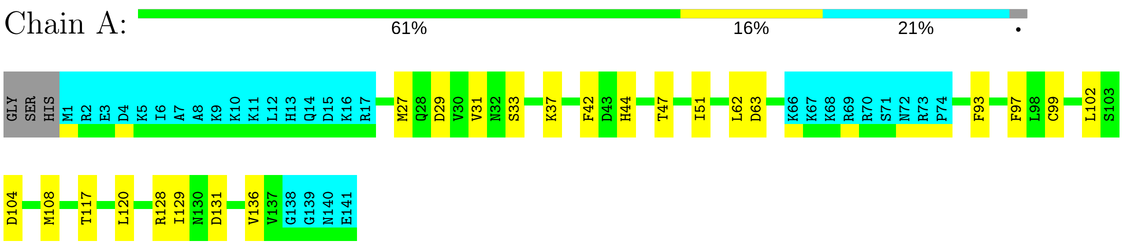
4.2.14 Score per residue for model 14

- Molecule 1: Translation machinery-associated protein 16



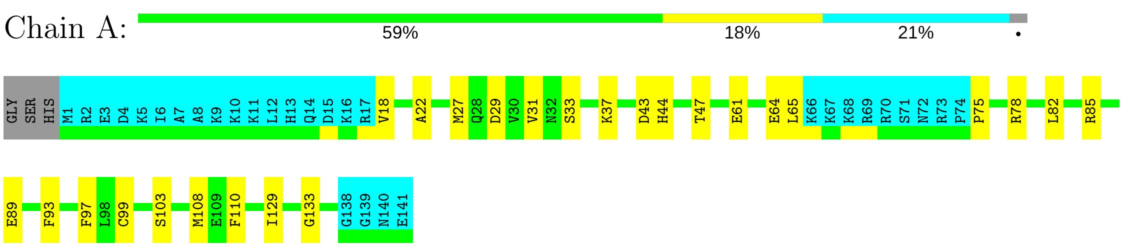
4.2.15 Score per residue for model 15

- Molecule 1: Translation machinery-associated protein 16



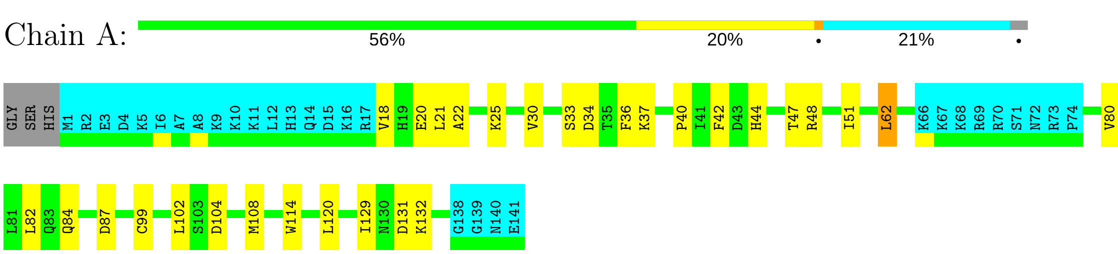
4.2.16 Score per residue for model 16

- Molecule 1: Translation machinery-associated protein 16



4.2.17 Score per residue for model 17

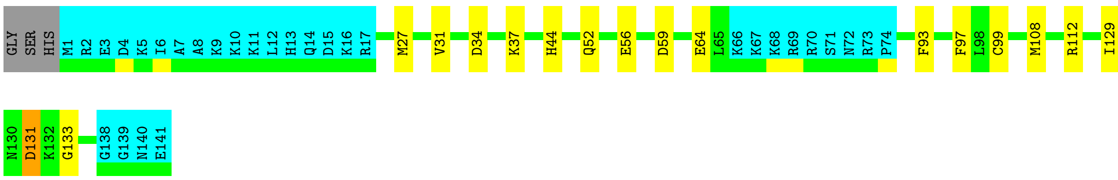
- Molecule 1: Translation machinery-associated protein 16



4.2.18 Score per residue for model 18 (medoid)

- Molecule 1: Translation machinery-associated protein 16

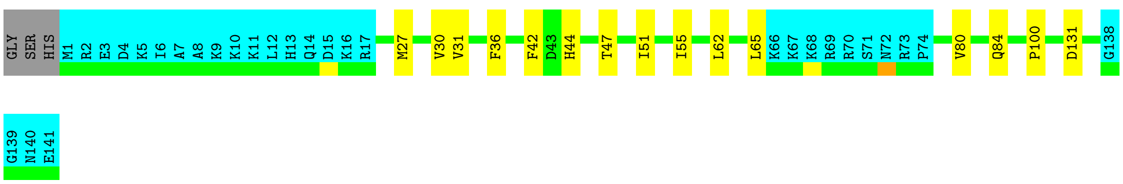
Chain A:



4.2.19 Score per residue for model 19

- Molecule 1: Translation machinery-associated protein 16

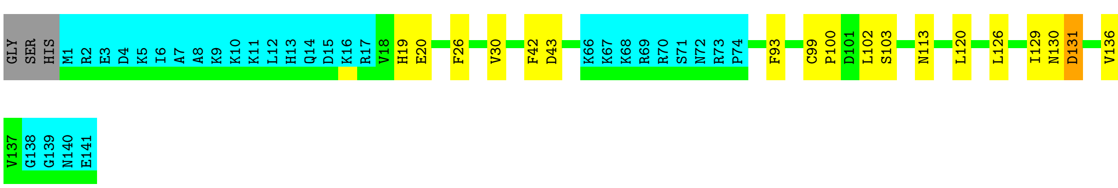
Chain A:



4.2.20 Score per residue for model 20

- Molecule 1: Translation machinery-associated protein 16

Chain A:



5 Refinement protocol and experimental data overview (i)

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

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

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

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

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

Chemical shift file(s)	BMRB entry 16365
Number of chemical shift lists	1
Total number of shifts	1422
Number of shifts mapped to atoms	1422
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Assignment completeness (well-defined parts)	77%

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

6 Model quality (i)

6.1 Standard geometry (i)

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

There are no bond-length outliers.

There are no bond-angle outliers.

There are no chirality outliers.

There are no planarity outliers.

6.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes
1	A	920	905	902	11±3
All	All	18400	18100	18040	217

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 6.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:48:ARG:HG3	1:A:132:LYS:HB3	0.94	1.35	3	2
1:A:130:ASN:HB3	1:A:134:GLU:HB2	0.83	1.50	8	2
1:A:93:PHE:HA	1:A:97:PHE:HB2	0.81	1.52	4	9
1:A:34:ASP:HA	1:A:37:LYS:HB2	0.80	1.51	3	2
1:A:117:THR:HB	1:A:120:LEU:HB2	0.73	1.60	4	4
1:A:31:VAL:HG23	1:A:112:ARG:HG3	0.71	1.62	8	1
1:A:75:PRO:HB2	1:A:78:ARG:HB2	0.68	1.65	9	2
1:A:42:PHE:HB2	1:A:102:LEU:HG	0.67	1.66	5	7
1:A:56:GLU:HA	1:A:86:ARG:HH21	0.66	1.51	2	1
1:A:43:ASP:HA	1:A:103:SER:HB3	0.66	1.68	14	3
1:A:94:LYS:HA	1:A:130:ASN:OD1	0.64	1.93	10	1
1:A:44:HIS:HB3	1:A:133:GLY:HA3	0.64	1.69	11	5
1:A:93:PHE:CE2	1:A:131:ASP:HA	0.63	2.28	20	2
1:A:99:CYS:HB2	1:A:129:ILE:HD12	0.63	1.70	15	10

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:20:GLU:HA	1:A:23:ARG:NH1	0.62	2.10	5	1
1:A:102:LEU:HA	1:A:108:MET:SD	0.62	2.34	4	1
1:A:30:VAL:HG12	1:A:36:PHE:HB2	0.61	1.70	2	4
1:A:100:PRO:HA	1:A:126:LEU:HA	0.61	1.73	3	3
1:A:65:LEU:HD22	1:A:75:PRO:HG2	0.60	1.71	12	1
1:A:44:HIS:O	1:A:47:THR:HB	0.58	1.99	1	14
1:A:117:THR:OG1	1:A:120:LEU:HB2	0.58	1.99	14	1
1:A:53:SER:O	1:A:57:ARG:HG3	0.57	1.99	12	1
1:A:27:MET:O	1:A:31:VAL:HG23	0.57	1.99	10	11
1:A:62:LEU:HB2	1:A:82:LEU:HD12	0.55	1.77	3	1
1:A:62:LEU:HD12	1:A:65:LEU:HD12	0.55	1.77	12	2
1:A:33:SER:O	1:A:37:LYS:HB2	0.55	2.02	9	9
1:A:48:ARG:HD3	1:A:132:LYS:HB3	0.55	1.77	17	3
1:A:104:ASP:O	1:A:108:MET:HG2	0.55	2.02	15	2
1:A:86:ARG:HH11	1:A:86:ARG:HB3	0.53	1.63	8	1
1:A:27:MET:SD	1:A:102:LEU:HD21	0.51	2.45	9	2
1:A:48:ARG:HH11	1:A:132:LYS:HB3	0.51	1.65	10	1
1:A:114:TRP:HA	1:A:120:LEU:HD13	0.51	1.82	9	5
1:A:86:ARG:O	1:A:90:LEU:HG	0.51	2.06	3	1
1:A:32:ASN:HD21	1:A:112:ARG:HG3	0.51	1.65	14	1
1:A:107:ASN:ND2	1:A:125:ARG:HB2	0.51	2.21	4	1
1:A:58:ASP:OD1	1:A:86:ARG:HD2	0.50	2.06	4	1
1:A:31:VAL:HG23	1:A:112:ARG:HG2	0.50	1.82	18	1
1:A:31:VAL:HG22	1:A:42:PHE:CE1	0.50	2.42	19	2
1:A:99:CYS:SG	1:A:100:PRO:HD2	0.50	2.47	13	1
1:A:88:GLN:HA	1:A:91:LYS:HD2	0.50	1.83	10	1
1:A:93:PHE:HD1	1:A:97:PHE:HB2	0.50	1.67	1	1
1:A:57:ARG:HD3	1:A:57:ARG:O	0.50	2.06	2	1
1:A:20:GLU:HA	1:A:23:ARG:NH2	0.49	2.23	2	1
1:A:128:ARG:CB	1:A:136:VAL:HB	0.49	2.38	7	1
1:A:85:ARG:O	1:A:89:GLU:HG2	0.49	2.08	2	3
1:A:131:ASP:OD2	1:A:132:LYS:HG3	0.48	2.09	14	3
1:A:23:ARG:NH2	1:A:51:ILE:HG12	0.48	2.24	14	1
1:A:23:ARG:HD3	1:A:51:ILE:HD12	0.48	1.85	9	1
1:A:86:ARG:NH1	1:A:86:ARG:HB3	0.48	2.23	8	1
1:A:47:THR:O	1:A:51:ILE:HG13	0.48	2.09	14	2
1:A:42:PHE:HB2	1:A:102:LEU:HB3	0.48	1.84	17	2
1:A:120:LEU:O	1:A:120:LEU:HD23	0.47	2.09	17	3
1:A:117:THR:HG23	1:A:120:LEU:HB2	0.47	1.86	6	1
1:A:55:ILE:HG23	1:A:86:ARG:HB2	0.47	1.85	3	1
1:A:83:GLN:O	1:A:86:ARG:HG2	0.47	2.09	13	1

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:106:LYS:O	1:A:109:GLU:HB3	0.47	2.08	11	1
1:A:75:PRO:HG2	1:A:79:GLN:HB2	0.47	1.87	13	1
1:A:25:LYS:HB2	1:A:114:TRP:HZ3	0.47	1.70	10	2
1:A:34:ASP:HA	1:A:37:LYS:HB3	0.46	1.85	17	1
1:A:121:LEU:HD12	1:A:126:LEU:HD11	0.46	1.86	14	1
1:A:27:MET:O	1:A:31:VAL:HG22	0.46	2.10	18	1
1:A:41:ILE:HD11	1:A:105:ALA:HA	0.45	1.88	10	1
1:A:18:VAL:O	1:A:22:ALA:HB3	0.45	2.12	16	2
1:A:94:LYS:O	1:A:94:LYS:HD3	0.45	2.11	2	1
1:A:120:LEU:HD23	1:A:120:LEU:O	0.45	2.11	8	3
1:A:26:PHE:O	1:A:30:VAL:HG23	0.45	2.12	5	3
1:A:31:VAL:CG2	1:A:112:ARG:HG2	0.45	2.41	18	1
1:A:127:ILE:HG13	1:A:129:ILE:HG13	0.44	1.88	9	1
1:A:36:PHE:HB3	1:A:42:PHE:CZ	0.44	2.47	19	1
1:A:89:GLU:HA	1:A:89:GLU:OE1	0.44	2.12	13	1
1:A:61:GLU:O	1:A:64:GLU:HB2	0.44	2.12	13	1
1:A:47:THR:O	1:A:51:ILE:HG12	0.44	2.12	17	2
1:A:93:PHE:CD1	1:A:97:PHE:HB2	0.43	2.49	6	1
1:A:65:LEU:HB3	1:A:75:PRO:HG2	0.43	1.90	16	1
1:A:20:GLU:HB3	1:A:21:LEU:HD22	0.43	1.89	17	1
1:A:41:ILE:CD1	1:A:105:ALA:HA	0.43	2.43	8	1
1:A:20:GLU:O	1:A:23:ARG:HG2	0.43	2.13	8	1
1:A:52:GLN:O	1:A:56:GLU:HG3	0.43	2.13	18	1
1:A:108:MET:SD	1:A:111:LEU:HD12	0.43	2.54	9	1
1:A:57:ARG:HB3	1:A:57:ARG:HH11	0.43	1.74	5	1
1:A:31:VAL:HG21	1:A:108:MET:SD	0.43	2.53	16	1
1:A:89:GLU:O	1:A:93:PHE:HD1	0.43	1.96	14	1
1:A:105:ALA:O	1:A:109:GLU:HG2	0.43	2.14	10	1
1:A:108:MET:O	1:A:112:ARG:HG3	0.42	2.13	6	2
1:A:44:HIS:HA	1:A:47:THR:OG1	0.42	2.13	2	1
1:A:40:PRO:O	1:A:108:MET:HG2	0.42	2.15	13	1
1:A:58:ASP:HB2	1:A:85:ARG:HH22	0.42	1.74	4	1
1:A:102:LEU:HD12	1:A:108:MET:SD	0.42	2.54	1	1
1:A:91:LYS:C	1:A:91:LYS:HD3	0.42	2.33	5	1
1:A:27:MET:SD	1:A:100:PRO:HG2	0.42	2.54	19	2
1:A:113:ASN:HD22	1:A:113:ASN:N	0.42	2.13	6	1
1:A:107:ASN:HB2	1:A:125:ARG:HB2	0.42	1.91	13	1
1:A:129:ILE:HG22	1:A:130:ASN:O	0.42	2.15	13	1
1:A:128:ARG:HB2	1:A:136:VAL:HB	0.42	1.90	15	2
1:A:82:LEU:HD12	1:A:85:ARG:HD2	0.42	1.92	8	1
1:A:106:LYS:HB3	1:A:125:ARG:NH2	0.41	2.30	5	1

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:130:ASN:HB2	1:A:136:VAL:CG2	0.41	2.44	20	1
1:A:41:ILE:HD12	1:A:105:ALA:HA	0.41	1.90	11	1
1:A:23:ARG:HH12	1:A:93:PHE:HE2	0.41	1.57	14	1
1:A:57:ARG:NH1	1:A:57:ARG:HB3	0.41	2.30	5	1
1:A:107:ASN:OD1	1:A:124:LEU:HD23	0.41	2.16	9	1
1:A:46:HIS:HA	1:A:49:GLU:HB2	0.41	1.92	7	1
1:A:80:VAL:O	1:A:84:GLN:HG3	0.41	2.15	8	3
1:A:97:PHE:HD2	1:A:99:CYS:SG	0.41	2.38	5	1
1:A:128:ARG:HB3	1:A:136:VAL:HB	0.41	1.92	7	1
1:A:107:ASN:ND2	1:A:125:ARG:HE	0.41	2.14	5	1
1:A:120:LEU:HD23	1:A:123:THR:OG1	0.41	2.15	3	1
1:A:55:ILE:O	1:A:58:ASP:HB3	0.41	2.15	11	1
1:A:55:ILE:HG22	1:A:86:ARG:HE	0.41	1.75	9	1
1:A:61:GLU:O	1:A:65:LEU:HG	0.41	2.16	16	1
1:A:31:VAL:HB	1:A:112:ARG:NH1	0.40	2.31	8	1
1:A:117:THR:HB	1:A:120:LEU:HG	0.40	1.93	15	1
1:A:51:ILE:O	1:A:55:ILE:HG13	0.40	2.15	19	1
1:A:120:LEU:O	1:A:124:LEU:HB2	0.40	2.15	3	1

6.3 Torsion angles (i)

6.3.1 Protein backbone (i)

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	111/144 (77%)	103±2 (93±2%)	7±2 (6±2%)	1±1 (1±1%)	20	67
All	All	2220/2880 (77%)	2056 (93%)	139 (6%)	25 (1%)	20	67

All 7 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	131	ASP	13
1	A	40	PRO	5
1	A	76	SER	3
1	A	38	GLY	1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Models (Total)
1	A	75	PRO	1
1	A	103	SER	1
1	A	116	GLY	1

6.3.2 Protein sidechains (i)

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	102/130 (78%)	100±2 (98±2%)	3±2 (2±2%)	54	92
All	All	2040/2600 (78%)	1990 (98%)	50 (2%)	54	92

All 30 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	113	ASN	3
1	A	29	ASP	3
1	A	87	ASP	3
1	A	59	ASP	3
1	A	82	LEU	3
1	A	34	ASP	2
1	A	86	ARG	2
1	A	58	ASP	2
1	A	124	LEU	2
1	A	57	ARG	2
1	A	46	HIS	2
1	A	120	LEU	2
1	A	19	HIS	2
1	A	108	MET	2
1	A	117	THR	2
1	A	62	LEU	1
1	A	92	GLU	1
1	A	85	ARG	1
1	A	52	GLN	1
1	A	43	ASP	1
1	A	104	ASP	1
1	A	23	ARG	1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Models (Total)
1	A	97	PHE	1
1	A	63	ASP	1
1	A	111	LEU	1
1	A	78	ARG	1
1	A	125	ARG	1
1	A	107	ASN	1
1	A	110	PHE	1
1	A	18	VAL	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)

There are no ligands in this entry.

6.7 Other polymers (i)

There are no such molecules in this entry.

6.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

7 Chemical shift validation (i)

The completeness of assignment taking into account all chemical shift lists is 77% for the well-defined parts and 68% for the entire structure.

7.1 Chemical shift list 1

File name: BMRB entry 16365

Chemical shift list name: *assigned_chem_shift_list_1*

7.1.1 Bookkeeping (i)

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

Total number of shifts	1422
Number of shifts mapped to atoms	1422
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Number of shift outliers (ShiftChecker)	9

7.1.2 Chemical shift referencing (i)

The following table shows the suggested chemical shift referencing corrections.

Nucleus	# values	Correction ± precision, *ppm*	Suggested action
$^{13}C_{\alpha}$	127	-0.44 ± 0.12	None needed (< 0.5 ppm)
$^{13}C_{\beta}$	122	0.40 ± 0.19	None needed (< 0.5 ppm)
$^{13}C'$	113	-0.32 ± 0.12	None needed (< 0.5 ppm)
^{15}N	116	0.10 ± 0.23	None needed (< 0.5 ppm)

7.1.3 Completeness of resonance assignments (i)

The following table shows the completeness of the chemical shift assignments for the well-defined regions of the structure. The overall completeness is 77%, i.e. 1131 atoms were assigned a chemical shift out of a possible 1467. 20 out of 20 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	517/549 (94%)	208/219 (95%)	208/222 (94%)	101/108 (94%)
Sidechain	553/801 (69%)	328/468 (70%)	212/285 (74%)	13/48 (27%)

Continued on next page...

Continued from previous page...

	Total	^{1}H	^{13}C	^{15}N
Aromatic	61/117 (52%)	35/63 (56%)	25/47 (53%)	1/7 (14%)
Overall	1131/1467 (77%)	571/750 (76%)	445/554 (80%)	115/163 (71%)

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 68%, i.e. 1292 atoms were assigned a chemical shift out of a possible 1908. 21 out of 21 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	590/697 (85%)	234/278 (84%)	240/282 (85%)	116/137 (85%)
Sidechain	641/1086 (59%)	374/640 (58%)	251/372 (67%)	16/74 (22%)
Aromatic	61/125 (49%)	35/67 (52%)	25/49 (51%)	1/9 (11%)
Overall	1292/1908 (68%)	643/985 (65%)	516/703 (73%)	133/220 (60%)

7.1.4 Statistically unusual chemical shifts (i)

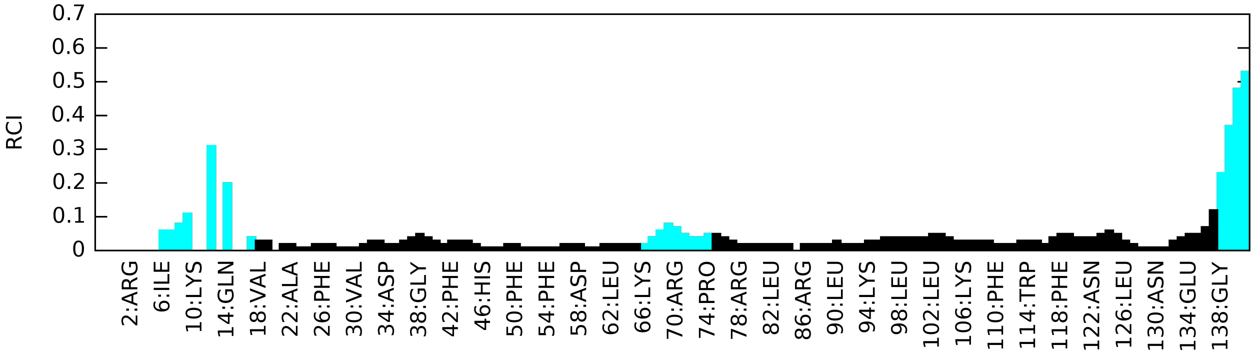
The following table lists the statistically unusual chemical shifts. These are statistical measures, and large deviations from the mean do not necessarily imply incorrect assignments. Molecules containing paramagnetic centres or hemes are expected to give rise to anomalous chemical shifts.

Mol	Chain	Res	Type	Atom	Shift, *ppm*	Expected range, *ppm*	Z-score
1	A	131	ASP	HB2	0.73	4.07 – 1.37	-7.4
1	A	116	GLY	HA2	1.26	5.87 – 2.07	-7.1
1	A	51	ILE	HD11	-1.31	2.13 – -0.77	-6.9
1	A	51	ILE	HD13	-1.31	2.13 – -0.77	-6.9
1	A	51	ILE	HD12	-1.31	2.13 – -0.77	-6.9
1	A	30	VAL	HG12	-0.57	2.13 – -0.47	-5.4
1	A	30	VAL	HG13	-0.57	2.13 – -0.47	-5.4
1	A	30	VAL	HG11	-0.57	2.13 – -0.47	-5.4
1	A	131	ASP	HA	3.02	6.15 – 3.05	-5.1

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:


0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
RCI
2:ARG
6:ILE
10:LYS
14:GLN
18:VAL
22:ALA
26:PHE
30:VAL
34:ASP
38:GLY
42:PHE
46:HIS
50:PHE
54:PHE
58:ASP
62:LEU
66:LYS
70:ARG
74:PRO
78:ARG
82:LEU
86:ARG
90:LEU
94:LYS
98:LEU
102:LEU
106:LYS
110:PHE
114:TRP
118:PHE
122:ASN
126:LEU
130:ASN
134:GLU
138:GLY