Full wwPDB X-ray Structure Validation Report ⓘ

Nov 13, 2023 – 03:19 PM JST

PDB ID	:	5XJU
Title	:	Crystal Structure of the Gemin2-binding domain of SMN, Gemin2dN39 in Complex with SmD1(1-82)/D2.R61A/F/E/G from Human
Authors	:	Yi, H.; Zhang, R.
Deposited on	:	2017-05-04
Resolution	:	2.58 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

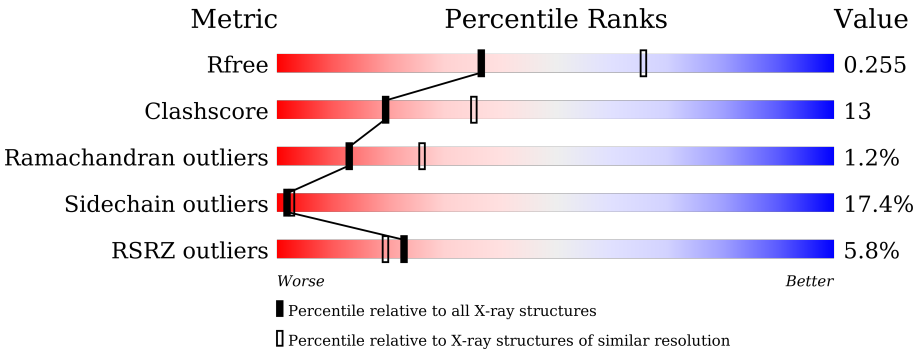
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.58 Å.

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)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3676 (2.60-2.56)
Clashscore	141614	4049 (2.60-2.56)
Ramachandran outliers	138981	3979 (2.60-2.56)
Sidechain outliers	138945	3979 (2.60-2.56)
RSRZ outliers	127900	3614 (2.60-2.56)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. 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% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	2	241	3% 59% 24% 6% 11%
2	A	82	70% 23%
3	B	118	3% 52% 21% 8% 19%
4	E	92	3% 53% 27% 16%
5	F	86	% 59% 27% 14%
6	G	76	29% 33% 32% 16% 20%

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Mol	Chain	Length	Quality of chain
7	M	37	

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 4959 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Gem-associated protein 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	2	215	Total	C	N	O	S	0	0	0
			1731	1089	309	325	8			

- Molecule 2 is a protein called Small nuclear ribonucleoprotein Sm D1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	A	81	Total	C	N	O	S	0	0	0
			641	409	112	116	4			

- Molecule 3 is a protein called Small nuclear ribonucleoprotein Sm D2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	B	95	Total	C	N	O	S	0	0	0
			764	480	138	141	5			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	61	ALA	ARG	engineered mutation	UNP P62316

- Molecule 4 is a protein called Small nuclear ribonucleoprotein E.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	E	77	Total	C	N	O	S	0	0	0
			638	405	113	115	5			

- Molecule 5 is a protein called Small nuclear ribonucleoprotein F.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	F	74	Total	C	N	O	S	0	0	0
			576	372	95	104	5			

- Molecule 6 is a protein called Small nuclear ribonucleoprotein G.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	G	61	Total	C	N	O	S	0	0	0
			469	297	85	81	6			

- Molecule 7 is a protein called Survival motor neuron protein.

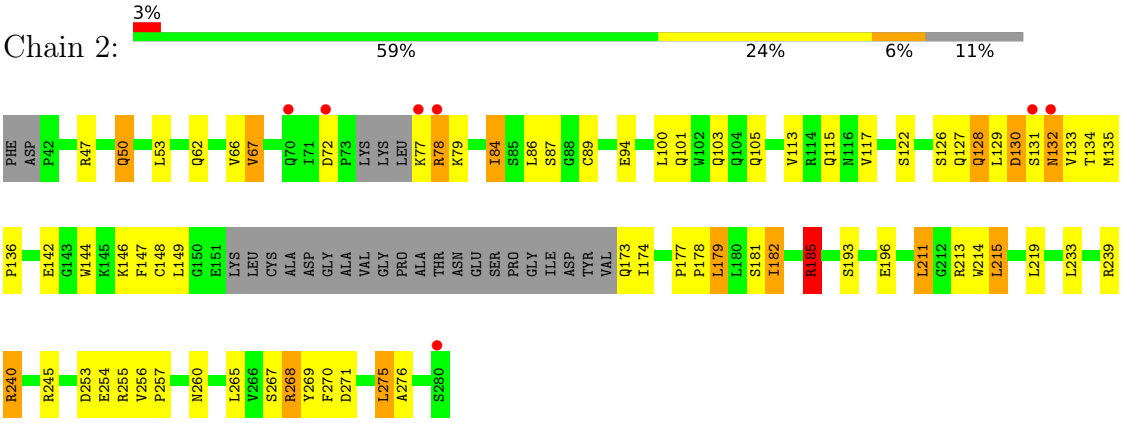
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
7	M	18	Total	C	N	O	0	0	0
			140	90	23	27			

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-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. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

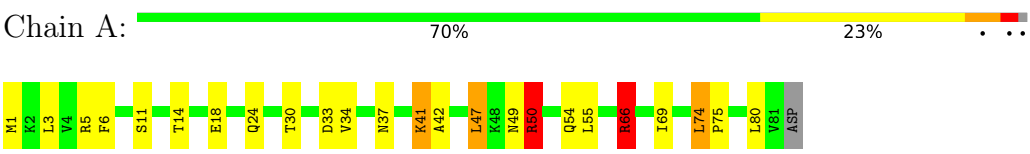
• Molecule 1: Gem-associated protein 2

Chain 2:



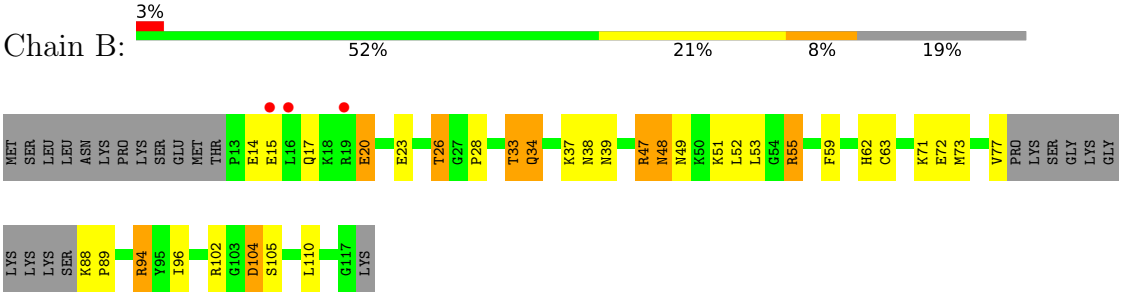
• Molecule 2: Small nuclear ribonucleoprotein Sm D1

Chain A:



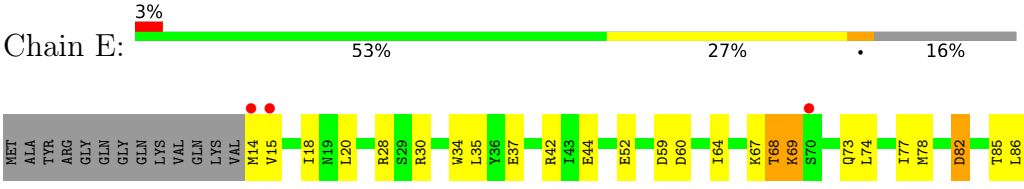
• Molecule 3: Small nuclear ribonucleoprotein Sm D2

Chain B:

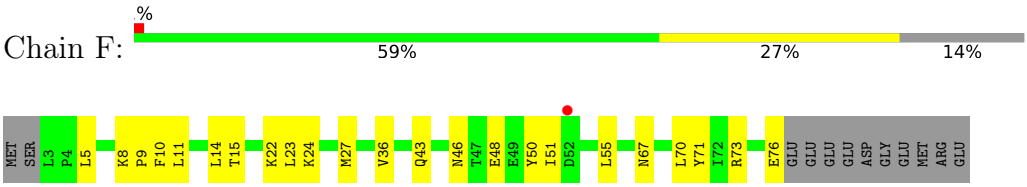


• Molecule 4: Small nuclear ribonucleoprotein E

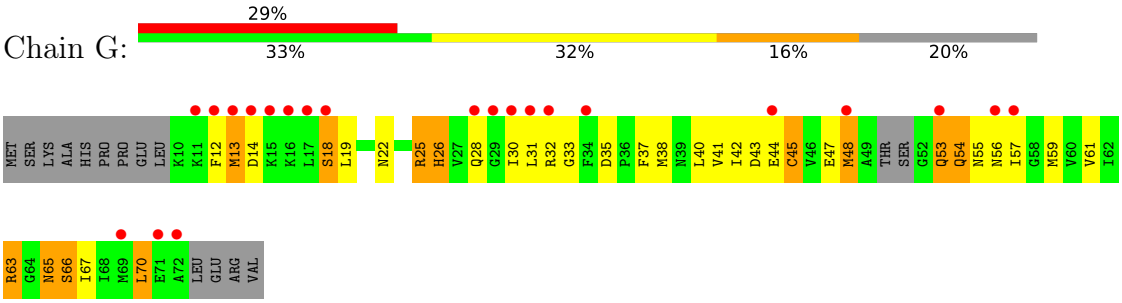
Chain E:



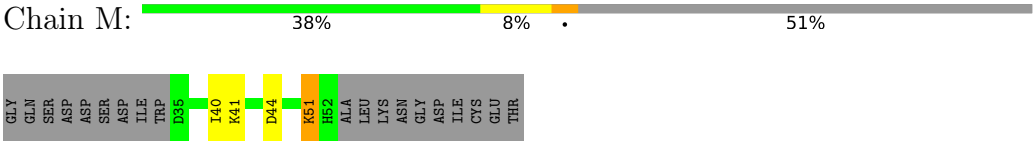
• Molecule 5: Small nuclear ribonucleoprotein F



• Molecule 6: Small nuclear ribonucleoprotein G



• Molecule 7: Survival motor neuron protein



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	82.78Å 112.96Å 130.75Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	66.77 – 2.58 42.74 – 2.58	Depositor EDS
% Data completeness (in resolution range)	70.0 (66.77-2.58) 70.0 (42.74-2.58)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.09 (at 2.58Å)	Xtriage
Refinement program	REFMAC 5.8.0049	Depositor
R, R_{free}	0.205 , 0.258 0.211 , 0.255	Depositor DCC
R_{free} test set	1395 reflections (5.10%)	wwPDB-VP
Wilson B-factor (Å^2)	46.8	Xtriage
Anisotropy	0.034	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 46.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	4959	wwPDB-VP
Average B, all atoms (Å^2)	54.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.56% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 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 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	2	0.80	0/1769	0.94	3/2400 (0.1%)
2	A	0.81	0/649	1.08	3/877 (0.3%)
3	B	0.80	0/773	1.06	2/1038 (0.2%)
4	E	0.63	0/646	0.87	0/867
5	F	0.73	0/588	0.93	0/795
6	G	0.55	0/472	0.91	1/626 (0.2%)
7	M	0.72	0/142	0.87	0/190
All	All	0.75	0/5039	0.96	9/6793 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	2	0	1

There are no bond length outliers.

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	102	ARG	NE-CZ-NH2	-7.96	116.32	120.30
1	2	185	ARG	NE-CZ-NH2	-6.50	117.05	120.30
2	A	50	ARG	NE-CZ-NH1	6.39	123.50	120.30
3	B	94	ARG	NE-CZ-NH1	5.60	123.10	120.30
2	A	66	ARG	NE-CZ-NH2	-5.34	117.63	120.30
2	A	66	ARG	CG-CD-NE	5.25	122.82	111.80
6	G	70	LEU	CA-CB-CG	5.24	127.35	115.30
1	2	240	ARG	NE-CZ-NH2	-5.14	117.73	120.30
1	2	240	ARG	NE-CZ-NH1	5.06	122.83	120.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	2	131	SER	Peptide

5.2 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 the 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 within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	2	1731	0	1718	52	0
2	A	641	0	689	17	0
3	B	764	0	790	20	0
4	E	638	0	657	16	0
5	F	576	0	581	14	0
6	G	469	0	491	21	0
7	M	140	0	138	8	0
All	All	4959	0	5064	128	0

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 13.

All (128) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:129:LEU:HD13	1:2:130:ASP:HB2	1.37	1.05
3:B:23:GLU:O	3:B:26:THR:O	1.87	0.93
1:2:127:GLN:O	1:2:128:GLN:HG3	1.73	0.89
2:A:66:ARG:HH11	2:A:66:ARG:HG3	1.41	0.85
1:2:142:GLU:O	1:2:146:LYS:HG3	1.81	0.81
3:B:33:THR:HG22	3:B:59:PHE:HZ	1.44	0.80
1:2:77:LYS:O	1:2:78:ARG:HG3	1.81	0.79
1:2:77:LYS:O	1:2:78:ARG:CG	2.31	0.79
1:2:113:VAL:O	1:2:117:VAL:HG23	1.82	0.79
4:E:30:ARG:NH2	4:E:60:ASP:O	2.13	0.77
4:E:82:ASP:O	6:G:63:ARG:NH2	2.18	0.76
2:A:66:ARG:HD3	3:B:48:ASN:HB3	1.70	0.74
6:G:65:ASN:O	6:G:67:ILE:N	2.20	0.74
1:2:67:VAL:CG2	5:F:15:THR:HG21	2.18	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:68:THR:O	4:E:69:LYS:HG3	1.89	0.72
1:2:127:GLN:C	1:2:128:GLN:HG3	2.06	0.69
1:2:129:LEU:CD1	1:2:130:ASP:HB2	2.18	0.69
6:G:43:ASP:OD1	6:G:44:GLU:N	2.26	0.69
3:B:33:THR:HG22	3:B:59:PHE:CZ	2.27	0.68
1:2:129:LEU:HD13	1:2:130:ASP:CB	2.22	0.67
1:2:127:GLN:O	1:2:128:GLN:CG	2.43	0.66
1:2:129:LEU:HD12	1:2:132:ASN:HB3	1.77	0.66
1:2:213:ARG:NH1	7:M:44:ASP:OD1	2.30	0.64
6:G:18:SER:OG	6:G:28:GLN:HB3	1.97	0.64
1:2:126:SER:O	1:2:127:GLN:HG2	1.98	0.63
7:M:51:LYS:HG2	7:M:51:LYS:O	1.99	0.63
4:E:77:ILE:HG22	5:F:73:ARG:HB3	1.81	0.63
5:F:48:GLU:OE1	5:F:50:TYR:OH	2.14	0.63
1:2:129:LEU:HD13	1:2:129:LEU:C	2.21	0.60
1:2:253:ASP:OD1	1:2:255:ARG:HD3	2.01	0.60
1:2:177:PRO:HB2	7:M:40:ILE:HD11	1.82	0.60
1:2:130:ASP:HB3	1:2:132:ASN:HB2	1.83	0.59
6:G:41:VAL:O	6:G:42:ILE:HD12	2.02	0.58
5:F:22:LYS:HG2	5:F:70:LEU:HD23	1.85	0.57
4:E:14:MET:HG3	6:G:33:GLY:HA2	1.87	0.57
4:E:68:THR:C	4:E:69:LYS:HG3	2.26	0.56
1:2:179:LEU:HB2	1:2:182:ILE:HG22	1.87	0.56
3:B:55:ARG:C	3:B:55:ARG:HD3	2.27	0.55
1:2:135:MET:SD	1:2:182:ILE:CD1	2.94	0.55
1:2:181:SER:O	1:2:185:ARG:CD	2.55	0.55
3:B:110:LEU:HD12	3:B:110:LEU:N	2.22	0.55
6:G:47:GLU:O	6:G:54:GLN:HB3	2.07	0.55
1:2:129:LEU:CD1	1:2:132:ASN:HD22	2.19	0.54
6:G:28:GLN:HG2	6:G:48:MET:SD	2.48	0.54
3:B:104:ASP:C	3:B:104:ASP:OD1	2.46	0.53
1:2:103:GLN:OE1	1:2:268:ARG:NH1	2.42	0.53
1:2:87:SER:O	1:2:239:ARG:NE	2.37	0.52
6:G:53:GLN:HG3	6:G:54:GLN:H	1.75	0.52
2:A:18:GLU:HG3	2:A:24:GLN:NE2	2.24	0.52
1:2:67:VAL:HG21	5:F:15:THR:HG21	1.90	0.51
1:2:129:LEU:HD13	1:2:130:ASP:N	2.26	0.51
4:E:35:LEU:O	6:G:25:ARG:NH2	2.43	0.51
4:E:44:GLU:HB2	4:E:64:ILE:HD13	1.93	0.51
5:F:22:LYS:O	5:F:70:LEU:HB3	2.11	0.51
6:G:19:LEU:O	6:G:26:HIS:HA	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:182:ILE:HD12	1:2:182:ILE:O	2.10	0.51
5:F:71:TYR:CD1	5:F:71:TYR:C	2.84	0.51
6:G:37:PHE:O	6:G:38:MET:HB2	2.12	0.51
3:B:53:LEU:HB2	3:B:73:MET:HE1	1.93	0.50
2:A:66:ARG:HG3	2:A:66:ARG:NH1	2.18	0.50
1:2:50:GLN:H	1:2:50:GLN:CD	2.15	0.49
2:A:74:LEU:HD22	2:A:75:PRO:HD2	1.95	0.49
3:B:53:LEU:HB2	3:B:73:MET:CE	2.41	0.49
1:2:270:PHE:O	1:2:271:ASP:HB2	2.13	0.49
1:2:245:ARG:NH1	1:2:260:ASN:OD1	2.40	0.48
2:A:1:MET:CE	2:A:34:VAL:HG22	2.43	0.48
1:2:178:PRO:HD2	7:M:40:ILE:HD11	1.94	0.48
1:2:148:CYS:HB3	1:2:214:TRP:NE1	2.29	0.48
4:E:34:TRP:HB2	4:E:86:LEU:HB3	1.95	0.48
3:B:88:LYS:N	3:B:89:PRO:CD	2.78	0.47
4:E:78:MET:HB2	5:F:10:PHE:CE2	2.49	0.47
6:G:48:MET:HA	6:G:54:GLN:HB3	1.98	0.46
1:2:135:MET:SD	1:2:182:ILE:HD12	2.56	0.46
3:B:39:ASN:OD1	3:B:55:ARG:HG3	2.16	0.46
3:B:110:LEU:N	3:B:110:LEU:CD1	2.78	0.46
4:E:85:THR:HG23	6:G:66:SER:OG	2.14	0.46
1:2:256:VAL:N	1:2:257:PRO:CD	2.78	0.46
7:M:51:LYS:O	7:M:51:LYS:CG	2.63	0.46
1:2:193:SER:O	1:2:196:GLU:HB3	2.16	0.46
1:2:148:CYS:HB3	1:2:214:TRP:CE2	2.51	0.46
6:G:45:CYS:SG	6:G:57:ILE:CG2	3.04	0.46
6:G:28:GLN:HG2	6:G:48:MET:CE	2.47	0.45
1:2:211:LEU:HD22	1:2:215:LEU:HD22	1.98	0.45
2:A:18:GLU:HG3	2:A:24:GLN:HE22	1.82	0.45
1:2:267:SER:HB2	1:2:276:ALA:HB2	1.98	0.45
1:2:185:ARG:HH11	1:2:185:ARG:HG2	1.80	0.45
1:2:213:ARG:HD3	7:M:40:ILE:HG23	1.98	0.45
7:M:41:LYS:HE3	7:M:41:LYS:HB2	1.85	0.45
3:B:28:PRO:HB3	5:F:43:GLN:HB2	1.99	0.44
2:A:33:ASP:OD2	2:A:37:ASN:HB2	2.18	0.44
3:B:52:LEU:HD23	3:B:72:GLU:HA	1.99	0.44
1:2:256:VAL:HB	1:2:257:PRO:HD3	2.00	0.44
2:A:54:GLN:O	2:A:55:LEU:HD23	2.18	0.44
4:E:37:GLU:HG3	5:F:24:LYS:HD3	1.98	0.44
3:B:62:HIS:O	3:B:63:CYS:HB2	2.17	0.44
1:2:129:LEU:HD12	1:2:132:ASN:HD22	1.83	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:265:LEU:O	1:2:269:TYR:HB3	2.17	0.44
2:A:33:ASP:OD1	2:A:33:ASP:C	2.56	0.44
4:E:87:LEU:HB2	6:G:61:VAL:HB	1.99	0.44
6:G:13:MET:HA	6:G:31:LEU:HD22	2.00	0.44
5:F:8:LYS:HB3	5:F:9:PRO:HD3	1.99	0.43
4:E:77:ILE:O	4:E:77:ILE:HG13	2.17	0.43
1:2:53:LEU:HD11	4:E:18:ILE:HD11	2.00	0.43
1:2:77:LYS:O	1:2:78:ARG:HG2	2.15	0.42
6:G:42:ILE:O	6:G:59:MET:HA	2.18	0.42
1:2:136:PRO:HD3	1:2:147:PHE:CD2	2.53	0.42
1:2:78:ARG:HG3	5:F:46:ASN:HD21	1.85	0.42
2:A:66:ARG:HH11	2:A:66:ARG:CG	2.23	0.42
2:A:30:THR:CG2	2:A:41:LYS:HG2	2.50	0.42
6:G:65:ASN:ND2	6:G:65:ASN:N	2.67	0.42
1:2:84:ILE:H	1:2:84:ILE:HD12	1.84	0.41
1:2:270:PHE:O	1:2:271:ASP:CB	2.68	0.41
2:A:3:LEU:O	2:A:6:PHE:HB3	2.19	0.41
4:E:64:ILE:O	4:E:64:ILE:HG22	2.19	0.41
5:F:67:ASN:HD22	5:F:67:ASN:H	1.68	0.41
1:2:177:PRO:HB2	7:M:40:ILE:CD1	2.49	0.41
3:B:34:GLN:OE1	3:B:38:ASN:ND2	2.53	0.41
3:B:17:GLN:C	3:B:17:GLN:OE1	2.59	0.41
2:A:41:LYS:O	2:A:42:ALA:HB3	2.20	0.41
3:B:47:ARG:HG3	3:B:105:SER:HA	2.03	0.41
1:2:144:TRP:O	1:2:148:CYS:SG	2.68	0.41
2:A:47:LEU:HG	2:A:50:ARG:HD2	2.03	0.41
6:G:55:ASN:OD1	6:G:55:ASN:N	2.52	0.40
1:2:89:CYS:SG	1:2:275:LEU:HG	2.62	0.40
3:B:17:GLN:O	3:B:20:GLU:HB2	2.21	0.40
5:F:10:PHE:CE2	5:F:14:LEU:HD11	2.57	0.40
2:A:1:MET:HE1	2:A:34:VAL:HG22	2.03	0.40
2:A:69:ILE:HG23	3:B:96:ILE:HG23	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 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 X-ray entries followed by that with respect to entries

of similar resolution.

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	2	209/241 (87%)	196 (94%)	11 (5%)	2 (1%)	15 31
2	A	79/82 (96%)	73 (92%)	6 (8%)	0	100 100
3	B	91/118 (77%)	82 (90%)	9 (10%)	0	100 100
4	E	75/92 (82%)	71 (95%)	1 (1%)	3 (4%)	3 3
5	F	72/86 (84%)	66 (92%)	6 (8%)	0	100 100
6	G	57/76 (75%)	52 (91%)	3 (5%)	2 (4%)	3 5
7	M	16/37 (43%)	13 (81%)	3 (19%)	0	100 100
All	All	599/732 (82%)	553 (92%)	39 (6%)	7 (1%)	13 26

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	2	132	ASN
4	E	68	THR
6	G	65	ASN
4	E	67	LYS
4	E	82	ASP
6	G	66	SER
1	2	78	ARG

5.3.2 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 X-ray entries followed by that with respect to entries of similar resolution.

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	2	196/216 (91%)	163 (83%)	33 (17%)	2 3
2	A	76/77 (99%)	66 (87%)	10 (13%)	4 6
3	B	88/109 (81%)	72 (82%)	16 (18%)	1 2
4	E	72/84 (86%)	61 (85%)	11 (15%)	2 4

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
5	F	62/74 (84%)	54 (87%)	8 (13%)	4 7
6	G	51/66 (77%)	33 (65%)	18 (35%)	0 0
7	M	14/30 (47%)	13 (93%)	1 (7%)	14 28
All	All	559/656 (85%)	462 (83%)	97 (17%)	2 2

All (97) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	2	47	ARG
1	2	50	GLN
1	2	62	GLN
1	2	66	VAL
1	2	67	VAL
1	2	72	ASP
1	2	79	LYS
1	2	84	ILE
1	2	86	LEU
1	2	94	GLU
1	2	100	LEU
1	2	101	GLN
1	2	105	GLN
1	2	115	GLN
1	2	122	SER
1	2	128	GLN
1	2	130	ASP
1	2	133	VAL
1	2	134	THR
1	2	149	LEU
1	2	173	GLN
1	2	174	ILE
1	2	179	LEU
1	2	182	ILE
1	2	185	ARG
1	2	211	LEU
1	2	215	LEU
1	2	219	LEU
1	2	233	LEU
1	2	240	ARG
1	2	254	GLU
1	2	268	ARG
1	2	275	LEU

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Mol	Chain	Res	Type
2	A	5	ARG
2	A	11	SER
2	A	14	THR
2	A	41	LYS
2	A	47	LEU
2	A	49	ASN
2	A	50	ARG
2	A	66	ARG
2	A	74	LEU
2	A	80	LEU
3	B	14	GLU
3	B	15	GLU
3	B	20	GLU
3	B	26	THR
3	B	33	THR
3	B	34	GLN
3	B	37	LYS
3	B	47	ARG
3	B	48	ASN
3	B	49	ASN
3	B	51	LYS
3	B	55	ARG
3	B	71	LYS
3	B	77	VAL
3	B	94	ARG
3	B	104	ASP
4	E	15	VAL
4	E	20	LEU
4	E	28	ARG
4	E	42	ARG
4	E	52	GLU
4	E	59	ASP
4	E	69	LYS
4	E	73	GLN
4	E	74	LEU
4	E	88	GLN
4	E	89	SER
5	F	5	LEU
5	F	11	LEU
5	F	23	LEU
5	F	27	MET
5	F	36	VAL

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Mol	Chain	Res	Type
5	F	51	ILE
5	F	55	LEU
5	F	76	GLU
6	G	12	PHE
6	G	13	MET
6	G	14	ASP
6	G	18	SER
6	G	22	ASN
6	G	25	ARG
6	G	26	HIS
6	G	30	ILE
6	G	32	ARG
6	G	35	ASP
6	G	40	LEU
6	G	45	CYS
6	G	48	MET
6	G	53	GLN
6	G	54	GLN
6	G	56	ASN
6	G	63	ARG
6	G	70	LEU
7	M	51	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	2	105	GLN
1	2	106	GLN
1	2	123	HIS
1	2	127	GLN
1	2	132	ASN
1	2	173	GLN
2	A	24	GLN
2	A	39	HIS
3	B	25	ASN
3	B	48	ASN
3	B	62	HIS
4	E	32	GLN
4	E	40	ASN
5	F	46	ASN
5	F	67	ASN
6	G	54	GLN

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Mol	Chain	Res	Type
6	G	65	ASN
7	M	52	HIS

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	2	215/241 (89%)	-0.10	7 (3%) 46 42	13, 47, 96, 121	0
2	A	81/82 (98%)	-0.49	0 100 100	15, 32, 62, 93	0
3	B	95/118 (80%)	-0.17	3 (3%) 47 43	13, 32, 111, 126	0
4	E	77/92 (83%)	0.01	3 (3%) 39 34	30, 59, 112, 132	0
5	F	74/86 (86%)	-0.21	1 (1%) 75 73	27, 41, 85, 103	0
6	G	61/76 (80%)	1.78	22 (36%) 0 0	63, 108, 134, 173	0
7	M	18/37 (48%)	-0.24	0 100 100	37, 47, 108, 120	0
All	All	621/732 (84%)	0.02	36 (5%) 23 19	13, 46, 116, 173	0

All (36) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
6	G	12	PHE	9.5
6	G	30	ILE	6.2
6	G	53	GLN	5.9
1	2	131	SER	5.8
4	E	14	MET	5.6
6	G	13	MET	5.0
6	G	31	LEU	4.7
6	G	57	ILE	4.4
3	B	16	LEU	4.2
6	G	69	MET	4.0
6	G	34	PHE	3.8
1	2	72	ASP	3.7
6	G	72	ALA	3.6
6	G	16	LYS	3.3
4	E	70	SER	3.2
6	G	17	LEU	3.1
6	G	44	GLU	3.1

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Mol	Chain	Res	Type	RSRZ
6	G	11	LYS	3.0
1	2	280	SER	3.0
6	G	14	ASP	3.0
6	G	48	MET	2.9
6	G	18	SER	2.7
1	2	70	GLN	2.6
6	G	32	ARG	2.6
6	G	56	ASN	2.6
4	E	15	VAL	2.6
1	2	132	ASN	2.6
6	G	28	GLN	2.5
6	G	29	GLY	2.4
1	2	77	LYS	2.3
1	2	78	ARG	2.3
6	G	71	GLU	2.2
3	B	15	GLU	2.2
6	G	15	LYS	2.1
5	F	52	ASP	2.1
3	B	19	ARG	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.