WORLDWIDE PDB

PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Apr 29, 2024 – 12:38 am BST

PDB ID	:	2V9U
Title	:	Rim domain of main porin from Mycobacteria smegmatis
Authors	:	Grueninger, D.; Ziegler, M.O.P.; Koetter, J.W.A.; Treiber, N.; Schulze, M.-S.; Schulz, G.E.
Deposited on	:	2007-08-27
Resolution	:	2.59 Å(reported)

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

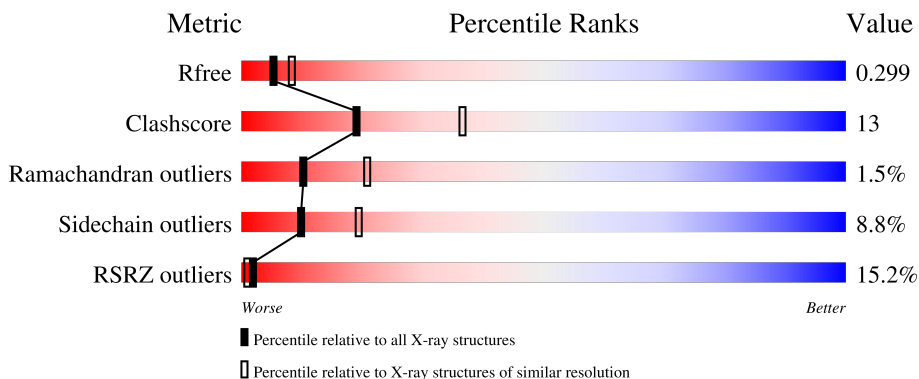|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36.2
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 2.59 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.
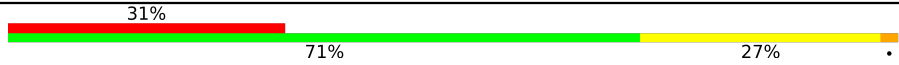
Metric	Percentile Ranks	Value
Rfree		0.299
Clashscore		13
Ramachandran outliers		1.5%
Sidechain outliers		8.8%
RSRZ outliers		15.2%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	3163 (2.60-2.60)
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)
RSRZ outliers	127900	3104 (2.60-2.60)

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	A	132	8% · 67% · 32% ·
1	B	132	2% · 70% · 26% · 5%
1	C	132	12% · 68% · 28% ·
1	D	132	13% · 73% · 23% · 5%
1	E	132	21% · 61% · 32% · 8%

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Mol	Chain	Length	Quality of chain
1	F	132	31% 71% 27% ·
1	G	132	20% 65% 33% ·
1	H	132	14% 63% 32% 5%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 7942 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 MSPA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	132	Total	C	N	O	S	0	0	0
			989	619	172	197	1			
1	B	132	Total	C	N	O	S	0	0	0
			989	619	172	197	1			
1	C	132	Total	C	N	O	S	0	0	0
			989	619	172	197	1			
1	D	132	Total	C	N	O	S	0	0	0
			989	619	172	197	1			
1	E	132	Total	C	N	O	S	0	0	0
			989	619	172	197	1			
1	F	132	Total	C	N	O	S	0	0	0
			989	619	172	197	1			
1	G	132	Total	C	N	O	S	0	0	0
			989	619	172	197	1			
1	H	132	Total	C	N	O	S	0	0	0
			989	619	172	197	1			

- Molecule 2 is water.

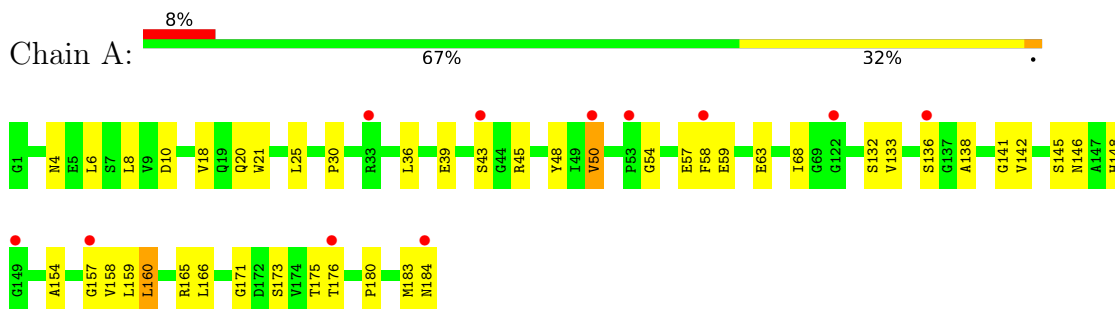| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	6	Total	O	0	0
			6	6		
2	B	2	Total	O	0	0
			2	2		
2	C	3	Total	O	0	0
			3	3		
2	D	4	Total	O	0	0
			4	4		
2	E	3	Total	O	0	0
			3	3		
2	F	6	Total	O	0	0
			6	6		

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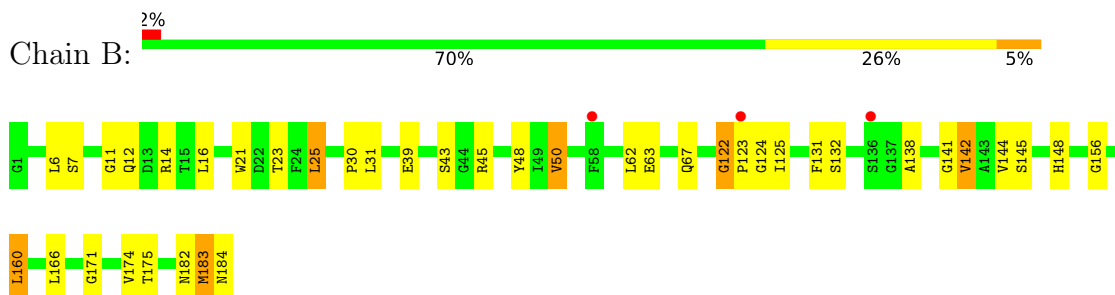| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	G	3	Total 3	O 3	0	0
2	H	3	Total 3	O 3	0	0

3 Residue-property plots ⓘ

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.
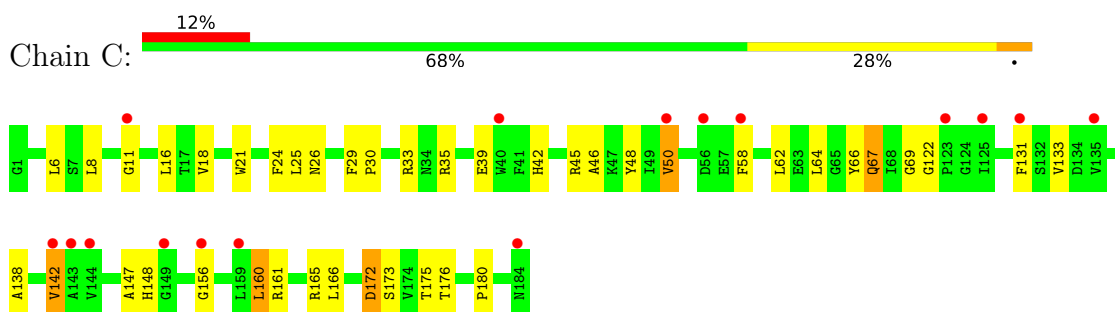
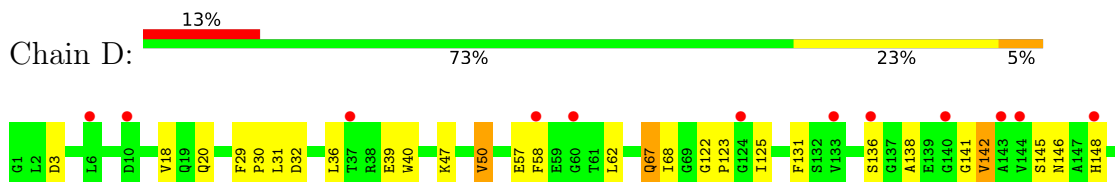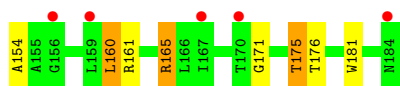- Molecule 1: MSPA

Chain A:

- Molecule 1: MSPA

Chain B:

- Molecule 1: MSPA

Chain C:

- Molecule 1: MSPA

Chain D:

• Molecule 1: MSPA

Chain E:

• Molecule 1: MSPA

Chain F:

• Molecule 1: MSPA

Chain G:

• Molecule 1: MSPA

Chain H:
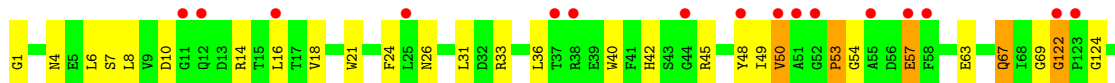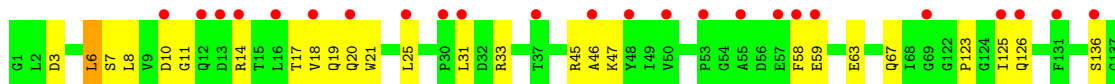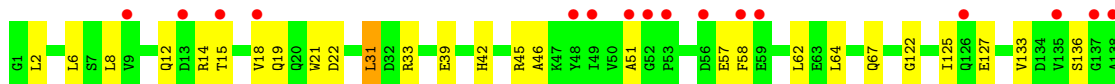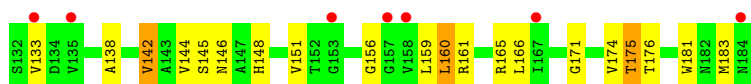
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	139.38Å 105.65Å 102.96Å 90.00° 109.26° 90.00°	Depositor
Resolution (Å)	65.79 – 2.59 65.79 – 2.59	Depositor EDS
% Data completeness (in resolution range)	100.0 (65.79-2.59) 82.7 (65.79-2.59)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.48 (at 2.58Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.273 , 0.299 0.275 , 0.299	Depositor DCC
R_{free} test set	1089 reflections (3.00%)	wwPDB-VP
Wilson B-factor (Å^2)	37.2	Xtriage
Anisotropy	0.386	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 43.7	EDS
L-test for twinning[2]	$< |L| > = 0.42$, $< L^2 > = 0.25$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.86	EDS
Total number of atoms	7942	wwPDB-VP
Average B, all atoms (Å^2)	50.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.39% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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 (i)

5.1 Standard geometry (i)

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	A	0.77	2/1010 (0.2%)	0.85	2/1374 (0.1%)
1	B	0.70	0/1010	0.77	0/1374
1	C	0.67	0/1010	0.79	0/1374
1	D	0.64	0/1010	0.76	2/1374 (0.1%)
1	E	0.69	0/1010	0.79	1/1374 (0.1%)
1	F	0.66	0/1010	0.74	0/1374
1	G	0.65	0/1010	0.75	0/1374
1	H	0.68	0/1010	0.77	0/1374
All	All	0.68	2/8080 (0.0%)	0.78	5/10992 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	30	PRO	C-N	-5.75	1.20	1.34
1	A	184	ASN	C-OXT	5.41	1.33	1.23

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	184	ASN	N-CA-CB	-8.52	95.27	110.60
1	E	165	ARG	NE-CZ-NH2	-6.31	117.14	120.30
1	D	165	ARG	NE-CZ-NH2	-5.54	117.53	120.30
1	A	165	ARG	NE-CZ-NH1	5.49	123.05	120.30
1	D	165	ARG	NE-CZ-NH1	5.08	122.84	120.30

There are no chirality outliers.

There are no planarity outliers.

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	A	989	0	941	31	0
1	B	989	0	942	25	0
1	C	989	0	942	28	0
1	D	989	0	942	25	0
1	E	989	0	942	38	0
1	F	989	0	942	27	0
1	G	989	0	942	28	0
1	H	989	0	942	33	0
2	A	6	0	0	0	0
2	B	2	0	0	0	0
2	C	3	0	0	0	0
2	D	4	0	0	0	0
2	E	3	0	0	0	0
2	F	6	0	0	1	0
2	G	3	0	0	0	0
2	H	3	0	0	0	0
All	All	7942	0	7535	200	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 (200) 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:D:145:SER:HB2	1:E:8:LEU:HD13	1.54	0.90
1:E:16:LEU:HD23	1:E:50:VAL:HB	1.62	0.82
1:C:21:TRP:HB2	1:C:45:ARG:HB3	1.64	0.79
1:H:16:LEU:HD23	1:H:50:VAL:HB	1.67	0.77
1:H:46:ALA:HB2	1:H:64:LEU:HD13	1.68	0.76
1:E:42:HIS:HB3	1:E:147:ALA:HB3	1.65	0.76
1:F:145:SER:HB2	1:G:8:LEU:HD13	1.68	0.76
1:C:24:PHE:CE2	1:C:26:ASN:HB2	2.22	0.74
1:B:31:LEU:HG	1:C:69:GLY:HA3	1.70	0.73
1:B:21:TRP:HB2	1:B:45:ARG:HB2	1.71	0.71
1:A:8:LEU:HD13	1:H:145:SER:HB2	1.73	0.71
1:C:16:LEU:HD23	1:C:50:VAL:HB	1.72	0.70
1:G:58:PHE:O	1:G:136:SER:HA	1.92	0.69
1:G:133:VAL:HG11	1:H:171:GLY:HA3	1.75	0.69
1:E:54:GLY:O	1:E:57:GLU:HG2	1.92	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:48:TYR:HB2	1:C:166:LEU:HD22	1.74	0.68
1:A:141:GLY:O	1:B:11:GLY:HA3	1.94	0.68
1:B:50:VAL:HG13	1:B:138:ALA:HA	1.77	0.67
1:B:131:PHE:CZ	1:B:142:VAL:HG22	2.28	0.67
1:E:16:LEU:CD2	1:E:50:VAL:HB	2.23	0.67
1:D:31:LEU:HG	1:E:69:GLY:HA3	1.76	0.67
1:F:19:GLN:NE2	2:F:2002:HOH:O	2.28	0.66
1:G:18:VAL:HG13	1:G:176:THR:HG22	1.78	0.66
1:C:46:ALA:HB2	1:C:64:LEU:HD13	1.77	0.65
1:E:31:LEU:HB2	1:F:161:ARG:NH1	2.12	0.65
1:G:15:THR:HB	1:G:51:ALA:HB3	1.78	0.65
1:H:39:GLU:OE2	1:H:148:HIS:HE1	1.80	0.65
1:G:163:PHE:HB3	1:G:177:TYR:CD2	2.32	0.65
1:G:31:LEU:HD22	1:H:159:LEU:HB3	1.81	0.63
1:D:36:LEU:O	1:D:154:ALA:HB3	1.98	0.63
1:E:36:LEU:O	1:E:154:ALA:HB3	1.98	0.63
1:C:18:VAL:HG13	1:C:176:THR:HG22	1.80	0.62
1:C:50:VAL:HG13	1:C:138:ALA:HA	1.81	0.62
1:E:165:ARG:HD3	1:E:175:THR:HB	1.80	0.62
1:A:50:VAL:HG13	1:A:138:ALA:HA	1.81	0.62
1:G:21:TRP:HB2	1:G:45:ARG:HB2	1.81	0.62
1:G:127:GLU:CD	1:G:165:ARG:HH22	2.02	0.62
1:D:18:VAL:HG13	1:D:176:THR:HG22	1.82	0.62
1:F:21:TRP:HB2	1:F:45:ARG:HB2	1.82	0.61
1:A:48:TYR:HB2	1:A:166:LEU:HD22	1.82	0.61
1:E:18:VAL:HG13	1:E:176:THR:HG22	1.83	0.61
1:H:24:PHE:CE2	1:H:26:ASN:HB2	2.36	0.60
1:H:67:GLN:NE2	1:H:161:ARG:HH21	2.00	0.60
1:E:26:ASN:O	1:E:40:TRP:HA	2.02	0.60
1:A:160:LEU:HD22	1:A:183:MET:HG2	1.84	0.59
1:E:183:MET:O	1:E:184:ASN:HB2	2.02	0.59
1:H:67:GLN:HE21	1:H:161:ARG:HH21	1.50	0.58
1:A:133:VAL:HG11	1:B:171:GLY:HA3	1.84	0.58
1:D:146:ASN:O	1:E:175:THR:CG2	2.52	0.57
1:C:39:GLU:OE2	1:C:148:HIS:HE1	1.87	0.57
1:B:160:LEU:HD22	1:B:183:MET:HG2	1.87	0.57
1:G:2:LEU:HD11	1:G:19:GLN:HG2	1.87	0.56
1:E:145:SER:HB2	1:F:8:LEU:HD13	1.88	0.56
1:D:146:ASN:O	1:E:175:THR:HG21	2.05	0.56
1:H:18:VAL:HG13	1:H:176:THR:HG22	1.87	0.55
1:B:12:GLN:HE21	1:B:14:ARG:CZ	2.19	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:62:LEU:HD23	1:D:142:VAL:HG12	1.89	0.55
1:B:39:GLU:OE2	1:B:148:HIS:HE1	1.90	0.54
1:B:48:TYR:HB2	1:B:166:LEU:HD22	1.89	0.54
1:G:19:GLN:HB3	1:G:21:TRP:HE1	1.72	0.54
1:C:67:GLN:NE2	1:C:161:ARG:HH21	2.06	0.54
1:A:10:ASP:OD1	1:A:10:ASP:C	2.46	0.54
1:H:50:VAL:HG13	1:H:138:ALA:HA	1.88	0.54
1:A:21:TRP:HB2	1:A:45:ARG:HB2	1.89	0.54
1:B:7:SER:HA	1:B:16:LEU:O	2.07	0.53
1:D:47:LYS:HG2	1:D:141:GLY:HA3	1.90	0.53
1:F:3:ASP:HB2	1:F:20:GLN:O	2.08	0.53
1:D:39:GLU:OE2	1:D:148:HIS:HE1	1.92	0.53
1:C:160:LEU:O	1:C:180:PRO:HA	2.08	0.53
1:G:153:GLY:O	1:G:155:ALA:N	2.41	0.53
1:G:14:ARG:NH2	1:G:170:THR:OG1	2.43	0.52
1:H:16:LEU:CD2	1:H:50:VAL:HB	2.38	0.52
1:F:20:GLN:HE22	1:F:162:PRO:HB2	1.75	0.52
1:C:165:ARG:HD3	1:C:175:THR:HB	1.90	0.52
1:H:68:ILE:O	1:H:125:ILE:HA	2.10	0.52
1:E:131:PHE:CE1	1:E:142:VAL:HG22	2.45	0.52
1:A:59:GLU:OE1	1:A:136:SER:HB3	2.09	0.51
1:A:39:GLU:OE2	1:A:148:HIS:HE1	1.93	0.51
1:E:160:LEU:O	1:E:180:PRO:HA	2.11	0.51
1:C:67:GLN:NE2	1:C:161:ARG:HD2	2.26	0.51
1:B:145:SER:HB2	1:C:8:LEU:HD13	1.91	0.51
1:F:146:ASN:O	1:G:175:THR:CG2	2.59	0.51
1:H:48:TYR:HB2	1:H:166:LEU:HD22	1.93	0.50
1:A:171:GLY:CA	1:H:133:VAL:HG11	2.41	0.50
1:A:58:PHE:O	1:A:136:SER:HA	2.11	0.50
1:C:50:VAL:CG1	1:C:138:ALA:HA	2.42	0.49
1:F:10:ASP:OD1	1:F:14:ARG:HB2	2.10	0.49
1:A:145:SER:HB3	1:B:174:VAL:HG23	1.94	0.49
1:E:24:PHE:CE2	1:E:26:ASN:HB2	2.47	0.49
1:B:63:GLU:HG2	1:B:132:SER:HA	1.95	0.49
1:A:160:LEU:O	1:A:180:PRO:HA	2.12	0.49
1:A:18:VAL:HG13	1:A:176:THR:HG22	1.94	0.49
1:B:144:VAL:HG23	1:C:173:SER:OG	2.13	0.49
1:E:63:GLU:HG2	1:E:132:SER:HA	1.95	0.49
1:C:66:TYR:CD2	1:C:66:TYR:N	2.81	0.48
1:H:50:VAL:HG22	1:H:50:VAL:O	2.12	0.48
1:D:67:GLN:NE2	1:D:161:ARG:HH21	2.12	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:48:TYR:HB2	1:E:166:LEU:HD22	1.95	0.48
1:E:122:GLY:C	1:E:124:GLY:H	2.17	0.48
1:G:12:GLN:NE2	1:G:170:THR:HG21	2.29	0.48
1:D:50:VAL:HG13	1:D:138:ALA:HA	1.96	0.47
1:E:133:VAL:HG11	1:F:171:GLY:CA	2.44	0.47
1:E:141:GLY:O	1:F:11:GLY:HA3	2.13	0.47
1:G:42:HIS:HB3	1:G:147:ALA:HB3	1.97	0.47
1:E:7:SER:HA	1:E:16:LEU:O	2.14	0.47
1:E:50:VAL:O	1:E:50:VAL:HG22	2.13	0.47
1:D:58:PHE:O	1:D:136:SER:HA	2.15	0.47
1:F:58:PHE:O	1:F:136:SER:HA	2.15	0.47
1:F:6:LEU:HD22	1:F:7:SER:H	1.79	0.47
1:G:145:SER:HB3	1:H:174:VAL:HG23	1.97	0.46
1:D:165:ARG:HD3	1:D:175:THR:HB	1.97	0.46
1:F:146:ASN:O	1:G:175:THR:HG21	2.16	0.46
1:G:31:LEU:CD2	1:H:159:LEU:HB3	2.44	0.46
1:A:39:GLU:OE2	1:B:125:ILE:HD13	2.16	0.46
1:A:54:GLY:HA2	1:A:57:GLU:OE1	2.16	0.46
1:G:127:GLU:OE2	1:G:165:ARG:NH2	2.44	0.46
1:C:62:LEU:HD23	1:C:142:VAL:HG13	1.97	0.46
1:F:17:THR:HG22	1:F:18:VAL:N	2.30	0.46
1:F:59:GLU:OE1	1:F:136:SER:HB3	2.16	0.46
1:H:122:GLY:C	1:H:124:GLY:H	2.19	0.46
1:F:160:LEU:O	1:F:180:PRO:HA	2.15	0.46
1:G:2:LEU:CD1	1:G:19:GLN:HG2	2.45	0.46
1:A:160:LEU:HD22	1:A:183:MET:CG	2.46	0.45
1:E:67:GLN:HE21	1:E:67:GLN:HB2	1.60	0.45
1:C:67:GLN:HE22	1:C:161:ARG:HD2	1.80	0.45
1:D:68:ILE:O	1:D:125:ILE:HA	2.16	0.45
1:A:146:ASN:HB3	1:B:175:THR:HG23	1.98	0.45
1:H:160:LEU:HD22	1:H:183:MET:CG	2.47	0.45
1:C:33:ARG:HD2	1:C:33:ARG:HA	1.72	0.45
1:F:6:LEU:CD2	1:F:7:SER:H	2.30	0.45
1:F:25:LEU:HG	1:F:160:LEU:HD23	1.99	0.45
1:C:172:ASP:OD1	1:C:172:ASP:N	2.51	0.44
1:G:22:ASP:HB2	1:G:45:ARG:HG3	2.00	0.44
1:A:173:SER:OG	1:H:144:VAL:HG23	2.17	0.44
1:C:24:PHE:CD2	1:C:26:ASN:HB2	2.52	0.44
1:H:37:THR:O	1:H:38:ARG:NH1	2.49	0.44
1:B:122:GLY:C	1:B:124:GLY:H	2.21	0.44
1:E:133:VAL:HG11	1:F:171:GLY:HA3	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:32:ASP:OD1	1:H:33:ARG:N	2.51	0.44
1:H:50:VAL:O	1:H:55:ALA:HB1	2.18	0.44
1:G:39:GLU:OE2	1:G:148:HIS:HE1	2.01	0.43
1:G:46:ALA:HB2	1:G:64:LEU:HD13	2.00	0.43
1:G:160:LEU:O	1:G:180:PRO:HA	2.17	0.43
1:B:62:LEU:CD2	1:B:141:GLY:HA2	2.48	0.43
1:E:1:GLY:O	1:E:21:TRP:HA	2.17	0.43
1:E:49:ILE:HG22	1:E:50:VAL:N	2.33	0.43
1:A:39:GLU:CD	1:B:125:ILE:HD13	2.39	0.43
1:B:182:ASN:C	1:B:184:ASN:H	2.20	0.43
1:A:36:LEU:O	1:A:154:ALA:HB3	2.17	0.43
1:A:157:GLY:O	1:A:158:VAL:HG23	2.17	0.43
1:E:10:ASP:C	1:E:10:ASP:OD2	2.57	0.43
1:A:171:GLY:HA3	1:H:133:VAL:HG11	2.00	0.43
1:D:40:TRP:CD1	1:D:40:TRP:C	2.92	0.43
1:A:63:GLU:HG2	1:A:132:SER:CB	2.49	0.43
1:E:36:LEU:O	1:E:154:ALA:CB	2.66	0.43
1:A:159:LEU:HB3	1:H:31:LEU:HD11	2.01	0.43
1:E:40:TRP:NE1	1:E:149:GLY:HA3	2.33	0.43
1:A:175:THR:CG2	1:H:146:ASN:O	2.66	0.43
1:B:25:LEU:HG	1:B:160:LEU:HD23	2.00	0.42
1:F:150:THR:O	1:F:150:THR:CG2	2.67	0.42
1:E:131:PHE:CZ	1:E:142:VAL:HG22	2.54	0.42
1:A:68:ILE:HA	1:A:160:LEU:HD12	2.01	0.42
1:E:181:TRP:CD1	1:E:181:TRP:N	2.88	0.42
1:F:63:GLU:N	1:F:165:ARG:O	2.47	0.42
1:C:131:PHE:CZ	1:C:142:VAL:HG22	2.55	0.42
1:D:68:ILE:HA	1:D:160:LEU:HD12	2.02	0.42
1:F:14:ARG:NH1	1:F:58:PHE:HD1	2.17	0.42
1:A:59:GLU:OE1	1:A:136:SER:CB	2.68	0.42
1:C:29:PHE:HA	1:C:30:PRO:HD3	1.82	0.42
1:D:3:ASP:HB2	1:D:20:GLN:O	2.19	0.42
1:D:181:TRP:CD1	1:D:181:TRP:N	2.88	0.42
1:B:131:PHE:CE1	1:B:142:VAL:HG22	2.53	0.42
1:D:146:ASN:HB3	1:E:175:THR:HG23	2.01	0.42
1:F:10:ASP:OD2	1:F:10:ASP:C	2.58	0.42
1:G:181:TRP:CD1	1:G:181:TRP:N	2.86	0.42
1:F:20:GLN:NE2	1:F:162:PRO:HB2	2.34	0.42
1:H:131:PHE:CZ	1:H:142:VAL:HG22	2.55	0.42
1:H:48:TYR:C	1:H:49:ILE:HG13	2.39	0.41
1:E:67:GLN:NE2	1:E:161:ARG:HH21	2.18	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:21:TRP:HB2	1:H:45:ARG:HB2	2.02	0.41
1:C:42:HIS:N	1:C:147:ALA:O	2.38	0.41
1:C:133:VAL:HG11	1:D:171:GLY:HA3	2.02	0.41
1:A:4:ASN:OD1	1:A:20:GLN:HB3	2.19	0.41
1:A:6:LEU:HD12	1:A:6:LEU:HA	1.67	0.41
1:E:151:VAL:HG22	1:E:152:THR:N	2.35	0.41
1:B:141:GLY:O	1:C:11:GLY:HA3	2.21	0.41
1:F:31:LEU:HB3	1:G:125:ILE:HD12	2.02	0.41
1:D:131:PHE:CZ	1:D:142:VAL:HG13	2.56	0.41
1:H:165:ARG:HG3	1:H:175:THR:HB	2.01	0.41
1:D:67:GLN:HE21	1:D:161:ARG:HH21	1.68	0.41
1:D:131:PHE:CD2	1:D:131:PHE:C	2.94	0.41
1:E:10:ASP:OD1	1:E:14:ARG:HB2	2.21	0.41
1:F:46:ALA:O	1:F:47:LYS:HG3	2.21	0.41
1:G:160:LEU:O	1:G:162:PRO:HD3	2.20	0.41
1:H:181:TRP:CD1	1:H:181:TRP:N	2.89	0.41
1:H:12:GLN:HE21	1:H:14:ARG:CZ	2.33	0.41
1:B:183:MET:CE	1:B:183:MET:HA	2.51	0.40
1:D:29:PHE:HA	1:D:30:PRO:HD3	1.95	0.40
1:C:58:PHE:CZ	1:C:166:LEU:HD11	2.56	0.40
1:D:32:ASP:C	1:D:32:ASP:OD1	2.60	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 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 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	A	130/132 (98%)	122 (94%)	8 (6%)	0	100	100
1	B	130/132 (98%)	124 (95%)	3 (2%)	3 (2%)	6	11
1	C	130/132 (98%)	123 (95%)	5 (4%)	2 (2%)	10	21
1	D	130/132 (98%)	122 (94%)	6 (5%)	2 (2%)	10	21

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	E	130/132 (98%)	116 (89%)	11 (8%)	3 (2%)	6	11
1	F	130/132 (98%)	124 (95%)	5 (4%)	1 (1%)	19	39
1	G	130/132 (98%)	123 (95%)	4 (3%)	3 (2%)	6	11
1	H	130/132 (98%)	124 (95%)	4 (3%)	2 (2%)	10	21
All	All	1040/1056 (98%)	978 (94%)	46 (4%)	16 (2%)	10	21

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	156	GLY
1	C	156	GLY
1	E	156	GLY
1	H	156	GLY
1	B	123	PRO
1	D	122	GLY
1	G	122	GLY
1	G	154	ALA
1	E	53	PRO
1	B	122	GLY
1	C	122	GLY
1	E	122	GLY
1	F	123	PRO
1	H	122	GLY
1	D	123	PRO
1	G	156	GLY

5.3.2 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 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	A	101/101 (100%)	96 (95%)	5 (5%)	24	47
1	B	101/101 (100%)	91 (90%)	10 (10%)	8	15
1	C	101/101 (100%)	93 (92%)	8 (8%)	12	24

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	D	101/101 (100%)	95 (94%)	6 (6%)	19	39
1	E	101/101 (100%)	88 (87%)	13 (13%)	4	7
1	F	101/101 (100%)	92 (91%)	9 (9%)	9	19
1	G	101/101 (100%)	91 (90%)	10 (10%)	8	15
1	H	101/101 (100%)	91 (90%)	10 (10%)	8	15
All	All	808/808 (100%)	737 (91%)	71 (9%)	10	19

All (71) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	25	LEU
1	A	43	SER
1	A	50	VAL
1	A	142	VAL
1	A	160	LEU
1	B	6	LEU
1	B	23	THR
1	B	25	LEU
1	B	30	PRO
1	B	43	SER
1	B	50	VAL
1	B	67	GLN
1	B	142	VAL
1	B	160	LEU
1	B	183	MET
1	C	6	LEU
1	C	25	LEU
1	C	35	ARG
1	C	50	VAL
1	C	67	GLN
1	C	142	VAL
1	C	160	LEU
1	C	172	ASP
1	D	50	VAL
1	D	57	GLU
1	D	67	GLN
1	D	142	VAL
1	D	160	LEU
1	D	175	THR
1	E	4	ASN

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Mol	Chain	Res	Type
1	E	6	LEU
1	E	33	ARG
1	E	45	ARG
1	E	50	VAL
1	E	53	PRO
1	E	57	GLU
1	E	67	GLN
1	E	142	VAL
1	E	160	LEU
1	E	172	ASP
1	E	175	THR
1	E	176	THR
1	F	6	LEU
1	F	33	ARG
1	F	67	GLN
1	F	125	ILE
1	F	126	GLN
1	F	142	VAL
1	F	160	LEU
1	F	172	ASP
1	F	175	THR
1	G	6	LEU
1	G	31	LEU
1	G	33	ARG
1	G	57	GLU
1	G	62	LEU
1	G	67	GLN
1	G	142	VAL
1	G	151	VAL
1	G	170	THR
1	G	176	THR
1	H	8	LEU
1	H	33	ARG
1	H	35	ARG
1	H	50	VAL
1	H	57	GLU
1	H	67	GLN
1	H	142	VAL
1	H	151	VAL
1	H	160	LEU
1	H	175	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20)

such sidechains are listed below:

Mol	Chain	Res	Type
1	A	148	HIS
1	B	12	GLN
1	B	148	HIS
1	C	67	GLN
1	C	148	HIS
1	D	12	GLN
1	D	67	GLN
1	D	148	HIS
1	E	67	GLN
1	F	20	GLN
1	F	67	GLN
1	F	126	GLN
1	F	148	HIS
1	G	67	GLN
1	G	148	HIS
1	H	4	ASN
1	H	12	GLN
1	H	20	GLN
1	H	67	GLN
1	H	148	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, 95th 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(Å²)	Q<0.9
1	A	132/132 (100%)	1.06	11 (8%)	11	8	31, 42, 55, 58	0
1	B	132/132 (100%)	0.88	3 (2%)	60	54	35, 43, 53, 59	0
1	C	132/132 (100%)	1.14	16 (12%)	4	2	37, 48, 60, 65	0
1	D	132/132 (100%)	1.25	17 (12%)	3	2	45, 54, 63, 67	0
1	E	132/132 (100%)	1.44	28 (21%)	0	0	38, 53, 68, 71	0
1	F	132/132 (100%)	1.70	41 (31%)	0	0	45, 55, 69, 73	0
1	G	132/132 (100%)	1.42	26 (19%)	1	0	39, 54, 69, 71	0
1	H	132/132 (100%)	1.23	18 (13%)	3	1	37, 50, 62, 65	0
All	All	1056/1056 (100%)	1.27	160 (15%)	2	1	31, 50, 65, 73	0

All (160) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	55	ALA	7.0
1	F	50	VAL	5.8
1	G	58	PHE	5.1
1	E	52	GLY	5.0
1	G	15	THR	4.9
1	G	51	ALA	4.6
1	G	48	TYR	4.6
1	G	137	GLY	4.4
1	G	18	VAL	4.3
1	E	55	ALA	4.3
1	F	184	ASN	4.1
1	B	136	SER	4.0
1	F	18	VAL	3.9
1	F	12	GLN	3.9
1	F	57	GLU	3.9
1	F	58	PHE	3.7

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Mol	Chain	Res	Type	RSRZ
1	C	184	ASN	3.6
1	D	156	GLY	3.6
1	A	58	PHE	3.6
1	E	50	VAL	3.6
1	G	49	ILE	3.5
1	A	122	GLY	3.5
1	E	181	TRP	3.5
1	G	164	ALA	3.5
1	E	142	VAL	3.4
1	F	125	ILE	3.4
1	H	51	ALA	3.4
1	F	138	ALA	3.4
1	F	10	ASP	3.4
1	E	58	PHE	3.3
1	G	126	GLN	3.3
1	E	122	GLY	3.3
1	A	184	ASN	3.3
1	H	153	GLY	3.2
1	E	176	THR	3.2
1	F	170	THR	3.2
1	E	25	LEU	3.1
1	C	143	ALA	3.1
1	C	58	PHE	3.1
1	F	147	ALA	3.1
1	F	163	PHE	3.0
1	H	135	VAL	3.0
1	F	48	TYR	3.0
1	G	141	GLY	3.0
1	E	11	GLY	2.9
1	G	142	VAL	2.9
1	G	52	GLY	2.9
1	G	138	ALA	2.8
1	F	59	GLU	2.8
1	D	167	ILE	2.8
1	E	12	GLN	2.8
1	E	44	GLY	2.8
1	E	51	ALA	2.7
1	C	142	VAL	2.7
1	A	53	PRO	2.7
1	F	136	SER	2.6
1	F	168	ALA	2.6
1	G	157	GLY	2.6

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Mol	Chain	Res	Type	RSRZ
1	D	136	SER	2.6
1	D	144	VAL	2.6
1	D	124	GLY	2.6
1	F	140	GLY	2.6
1	F	37	THR	2.6
1	H	56	ASP	2.6
1	E	167	ILE	2.6
1	E	48	TYR	2.6
1	D	37	THR	2.6
1	D	143	ALA	2.6
1	B	58	PHE	2.6
1	E	131	PHE	2.6
1	D	60	GLY	2.6
1	E	16	LEU	2.6
1	E	123	PRO	2.5
1	G	184	ASN	2.5
1	F	177	TYR	2.5
1	H	133	VAL	2.5
1	E	171	GLY	2.5
1	F	14	ARG	2.5
1	H	131	PHE	2.5
1	E	37	THR	2.5
1	E	57	GLU	2.5
1	C	56	ASP	2.4
1	G	56	ASP	2.4
1	F	46	ALA	2.4
1	G	155	ALA	2.4
1	H	64	LEU	2.4
1	F	142	VAL	2.4
1	H	167	ILE	2.4
1	E	175	THR	2.4
1	C	50	VAL	2.4
1	H	29	PHE	2.4
1	F	171	GLY	2.4
1	G	13	ASP	2.4
1	A	149	GLY	2.3
1	G	135	VAL	2.3
1	H	58	PHE	2.3
1	F	16	LEU	2.3
1	F	164	ALA	2.3
1	A	157	GLY	2.3
1	H	184	ASN	2.3

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Mol	Chain	Res	Type	RSRZ
1	F	31	LEU	2.3
1	G	59	GLU	2.3
1	G	167	ILE	2.3
1	F	13	ASP	2.3
1	D	58	PHE	2.3
1	A	176	THR	2.3
1	C	149	GLY	2.3
1	H	61	THR	2.3
1	C	131	PHE	2.3
1	G	176	THR	2.3
1	D	184	ASN	2.3
1	C	123	PRO	2.2
1	H	53	PRO	2.2
1	C	135	VAL	2.2
1	F	158	VAL	2.2
1	F	131	PHE	2.2
1	F	155	ALA	2.2
1	A	33	ARG	2.2
1	B	123	PRO	2.2
1	E	140	GLY	2.2
1	G	9	VAL	2.2
1	F	176	THR	2.2
1	D	148	HIS	2.2
1	C	125	ILE	2.2
1	F	20	GLN	2.2
1	F	69	GLY	2.2
1	A	136	SER	2.2
1	A	43	SER	2.2
1	E	135	VAL	2.2
1	E	147	ALA	2.2
1	H	33	ARG	2.2
1	C	144	VAL	2.1
1	F	139	GLU	2.1
1	C	156	GLY	2.1
1	F	30	PRO	2.1
1	H	157	GLY	2.1
1	D	6	LEU	2.1
1	H	10	ASP	2.1
1	E	137	GLY	2.1
1	F	126	GLN	2.1
1	F	53	PRO	2.1
1	G	163	PHE	2.1

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Mol	Chain	Res	Type	RSRZ
1	C	11	GLY	2.1
1	A	50	VAL	2.1
1	C	40	TRP	2.1
1	D	140	GLY	2.1
1	F	154	ALA	2.1
1	D	133	VAL	2.1
1	D	170	THR	2.1
1	F	151	VAL	2.1
1	C	159	LEU	2.1
1	D	159	LEU	2.1
1	F	25	LEU	2.1
1	H	1	GLY	2.1
1	G	53	PRO	2.0
1	H	158	VAL	2.0
1	G	143	ALA	2.0
1	E	136	SER	2.0
1	E	38	ARG	2.0
1	D	10	ASP	2.0

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.