Full wwPDB X-ray Structure Validation Report ⓘ

Jun 11, 2026 – 12:19 PM JST

PDB ID	:	27RL / pdb_000027rl
Title	:	OspC from Borrelia Garinii
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Deposited on	:	2026-06-09
Resolution	:	2.55 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:

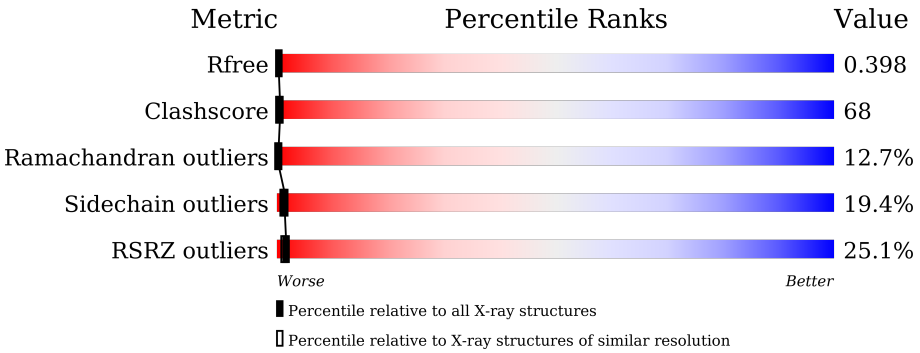
MolProbity	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

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 2.55 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}	180053	1091 (2.54-2.54)
Clashscore	190562	1120 (2.54-2.54)
Ramachandran outliers	187476	1106 (2.54-2.54)
Sidechain outliers	187428	1106 (2.54-2.54)
RSRZ outliers	180081	1091 (2.54-2.54)

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	167	25% 17% 55% 23% .

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 1230 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 Outer surface protein C.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	167	Total	C	N	O	S	0	0	0
			1208	747	210	250	1			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	SER	-	expression tag	UNP Q49580
A	2	GLY	-	expression tag	UNP Q49580

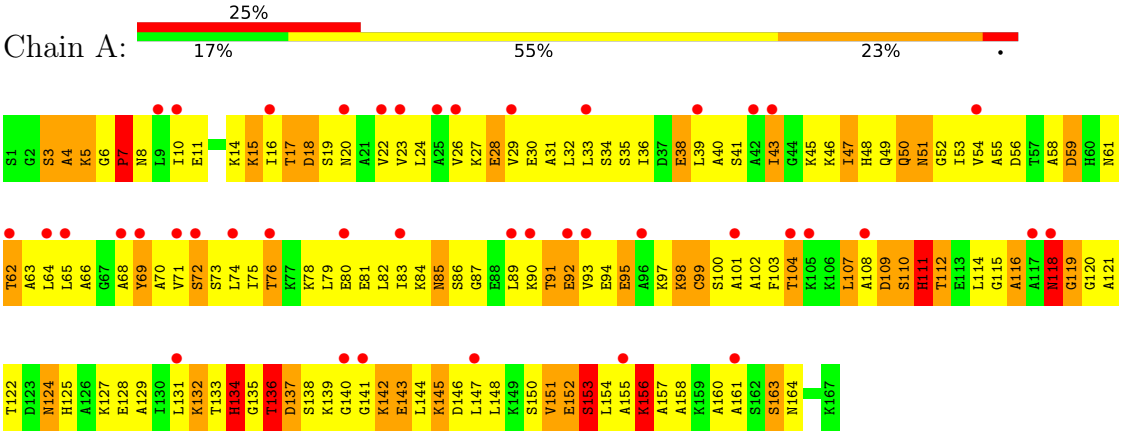
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	22	Total	O	0	0
			22	22		

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: Outer surface protein C



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	31.89Å 197.99Å 43.10Å 90.00° 106.13° 90.00°	Depositor
Resolution (Å)	29.27 – 2.55 29.27 – 2.55	Depositor EDS
% Data completeness (in resolution range)	76.6 (29.27-2.55) 76.6 (29.27-2.55)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.65 (at 2.54Å)	Xtriage
Refinement program	REFMAC 5.8.0430	Depositor
R, R_{free}	0.353 , 0.396 0.356 , 0.398	Depositor DCC
R_{free} test set	635 reflections (3.81%)	wwPDB-VP
Wilson B-factor (Å^2)	-5.0	Xtriage
Anisotropy	-13.465	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.46 , 55.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.26$, $< L^2 > = 0.11$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.51	EDS
Total number of atoms	1230	wwPDB-VP
Average B, all atoms (Å^2)	0.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.23% 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	A	0.54	0/1215	1.42	14/1631 (0.9%)

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	A	0	1

There are no bond length outliers.

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	118	ASN	CB-CA-C	6.35	120.75	111.73
1	A	111	HIS	CA-CB-CG	-6.31	107.49	113.80
1	A	41	SER	N-CA-C	-5.88	104.56	110.97
1	A	109	ASP	CA-CB-CG	5.81	118.41	112.60
1	A	38	GLU	N-CA-CB	5.74	118.66	110.06
1	A	94	GLU	N-CA-CB	5.62	118.31	109.94
1	A	18	ASP	CA-CB-CG	5.42	118.02	112.60
1	A	118	ASN	N-CA-C	-5.40	104.45	111.74
1	A	95	GLU	CB-CG-CD	5.30	121.61	112.60
1	A	76	THR	CA-CB-OG1	-5.21	101.79	109.60
1	A	156	LYS	CB-CA-C	-5.13	100.22	110.42
1	A	15	LYS	CB-CA-C	-5.11	102.36	110.84
1	A	18	ASP	CB-CA-C	-5.08	102.31	110.74
1	A	69	TYR	N-CA-CB	5.04	117.62	110.06

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	119	GLY	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	A	1208	0	1261	167	2
2	A	22	0	0	8	0
All	All	1230	0	1261	167	2

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 68.

All (167) 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:A:152:GLU:O	1:A:154:LEU:N	1.82	1.11
1:A:147:LEU:O	1:A:151:VAL:HB	1.63	0.97
1:A:29:VAL:HG11	1:A:151:VAL:HG21	1.46	0.95
1:A:140:GLY:HA3	2:A:201:HOH:O	1.67	0.93
1:A:92:GLU:HB3	1:A:154:LEU:HD13	1.49	0.92
1:A:33:LEU:HD11	1:A:147:LEU:HG	1.52	0.92
1:A:23:VAL:HG22	1:A:158:ALA:HB1	1.57	0.85
1:A:152:GLU:O	1:A:155:ALA:N	2.10	0.84
1:A:92:GLU:HB3	1:A:154:LEU:CD1	2.10	0.81
1:A:107:LEU:HD23	2:A:201:HOH:O	1.80	0.81
1:A:71:VAL:C	1:A:73:SER:H	1.90	0.78
1:A:26:VAL:O	1:A:29:VAL:HG23	1.84	0.78
1:A:110:SER:O	1:A:112:THR:N	2.17	0.78
1:A:74:LEU:O	1:A:78:LYS:HG2	1.88	0.74
1:A:22:VAL:O	1:A:26:VAL:N	2.18	0.73
1:A:128:GLU:HG2	1:A:136:THR:OG1	1.88	0.73
1:A:47:ILE:HA	1:A:53:ILE:HA	1.71	0.72
1:A:121:ALA:HB1	2:A:221:HOH:O	1.90	0.72
1:A:92:GLU:CB	1:A:154:LEU:HD13	2.19	0.71
1:A:110:SER:C	1:A:112:THR:H	1.97	0.71
1:A:65:LEU:HD12	2:A:221:HOH:O	1.93	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:33:LEU:O	1:A:36:ILE:HB	1.93	0.68
1:A:30:GLU:O	1:A:34:SER:HB2	1.94	0.68
1:A:69:TYR:O	1:A:73:SER:OG	2.11	0.67
1:A:65:LEU:O	1:A:68:ALA:HB3	1.94	0.67
1:A:39:LEU:HD22	1:A:64:LEU:CD1	2.24	0.67
1:A:49:GLN:HG2	1:A:50:GLN:HG3	1.76	0.67
1:A:111:HIS:CD2	2:A:216:HOH:O	2.48	0.66
1:A:62:THR:O	1:A:65:LEU:N	2.28	0.66
1:A:48:HIS:N	1:A:52:GLY:O	2.28	0.65
1:A:151:VAL:O	1:A:155:ALA:N	2.23	0.65
1:A:59:ASP:OD1	1:A:122:THR:HA	1.96	0.64
1:A:39:LEU:HD22	1:A:64:LEU:HD12	1.78	0.64
1:A:69:TYR:HA	1:A:107:LEU:HD13	1.80	0.64
1:A:3:SER:O	1:A:3:SER:OG	2.10	0.64
1:A:72:SER:O	1:A:76:THR:OG1	2.16	0.63
1:A:6:GLY:O	1:A:7:PRO:O	2.16	0.62
1:A:127:LYS:HB2	1:A:134:HIS:CE1	2.35	0.62
1:A:3:SER:O	1:A:5:LYS:N	2.32	0.62
1:A:4:ALA:O	1:A:5:LYS:C	2.43	0.62
1:A:20:ASN:O	1:A:24:LEU:HG	1.99	0.62
1:A:82:LEU:O	1:A:86:SER:N	2.24	0.62
1:A:71:VAL:C	1:A:73:SER:N	2.54	0.61
1:A:74:LEU:O	1:A:78:LYS:CG	2.48	0.61
1:A:141:GLY:O	1:A:144:LEU:CB	2.48	0.61
1:A:108:ALA:C	1:A:110:SER:H	2.08	0.61
1:A:124:ASN:C	1:A:124:ASN:HD22	2.08	0.61
1:A:136:THR:OG1	1:A:137:ASP:N	2.33	0.61
1:A:161:ALA:HA	1:A:164:ASN:HD22	1.65	0.60
1:A:62:THR:CG2	1:A:115:GLY:HA2	2.31	0.60
1:A:115:GLY:O	1:A:116:ALA:O	2.20	0.60
1:A:152:GLU:C	1:A:154:LEU:N	2.60	0.59
1:A:45:LYS:HA	1:A:55:ALA:HA	1.86	0.58
1:A:151:VAL:O	1:A:152:GLU:O	2.22	0.58
1:A:150:SER:O	1:A:154:LEU:HB3	2.03	0.58
1:A:72:SER:HB2	1:A:103:PHE:CD2	2.39	0.58
1:A:157:ALA:O	1:A:161:ALA:N	2.37	0.57
1:A:16:ILE:O	1:A:17:THR:C	2.47	0.57
1:A:138:SER:HB2	1:A:139:LYS:HG3	1.86	0.57
1:A:108:ALA:O	1:A:110:SER:N	2.37	0.56
1:A:97:LYS:O	1:A:101:ALA:N	2.26	0.56
1:A:82:LEU:HG	1:A:93:VAL:HG21	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:33:LEU:HA	1:A:36:ILE:HD12	1.88	0.55
1:A:89:LEU:HA	1:A:92:GLU:OE2	2.07	0.54
1:A:114:LEU:HD11	1:A:139:LYS:O	2.07	0.54
1:A:66:ALA:O	1:A:70:ALA:N	2.32	0.54
1:A:35:SER:HA	1:A:38:GLU:HB2	1.89	0.54
1:A:127:LYS:HB2	1:A:134:HIS:HE1	1.71	0.53
1:A:6:GLY:O	1:A:7:PRO:C	2.51	0.53
1:A:33:LEU:O	1:A:36:ILE:N	2.42	0.53
1:A:124:ASN:O	1:A:125:HIS:C	2.51	0.53
1:A:23:VAL:O	1:A:27:LYS:N	2.20	0.53
1:A:103:PHE:CE1	1:A:107:LEU:HD21	2.43	0.53
1:A:151:VAL:C	1:A:152:GLU:O	2.52	0.53
1:A:104:THR:HA	1:A:107:LEU:HD12	1.91	0.52
1:A:46:LYS:HG2	1:A:56:ASP:HB2	1.92	0.52
1:A:144:LEU:C	1:A:146:ASP:H	2.16	0.52
1:A:103:PHE:CE1	1:A:140:GLY:O	2.64	0.51
1:A:99:CYS:O	1:A:102:ALA:HB3	2.11	0.51
1:A:141:GLY:O	1:A:144:LEU:HB2	2.10	0.51
1:A:147:LEU:HD12	1:A:151:VAL:HG23	1.92	0.51
1:A:22:VAL:HG13	1:A:82:LEU:HD11	1.94	0.50
1:A:83:ILE:HD12	1:A:97:LYS:HD2	1.92	0.50
1:A:129:ALA:O	1:A:141:GLY:N	2.45	0.49
1:A:133:THR:O	1:A:134:HIS:O	2.30	0.49
1:A:152:GLU:C	1:A:154:LEU:H	2.20	0.49
1:A:72:SER:OG	1:A:104:THR:HG23	2.13	0.49
1:A:87:GLY:O	1:A:90:LYS:HB2	2.11	0.49
1:A:160:ALA:HA	1:A:163:SER:OG	2.12	0.49
1:A:81:GLU:HA	1:A:84:LYS:HD2	1.93	0.49
1:A:91:THR:HB	1:A:92:GLU:OE1	2.12	0.49
1:A:141:GLY:O	1:A:144:LEU:HB3	2.13	0.49
1:A:73:SER:O	1:A:76:THR:HB	2.12	0.49
1:A:110:SER:C	1:A:112:THR:N	2.60	0.48
1:A:58:ALA:O	1:A:59:ASP:CB	2.60	0.48
1:A:62:THR:HG21	1:A:115:GLY:HA2	1.95	0.48
1:A:142:LYS:NZ	1:A:143:GLU:HA	2.29	0.48
1:A:80:GLU:O	1:A:84:LYS:HG3	2.12	0.48
1:A:153:SER:HA	1:A:156:LYS:HB2	1.95	0.48
1:A:127:LYS:HB3	1:A:131:LEU:CB	2.43	0.48
1:A:146:ASP:O	1:A:150:SER:N	2.45	0.48
1:A:14:LYS:O	1:A:15:LYS:C	2.57	0.47
1:A:145:LYS:HA	1:A:148:LEU:HD12	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:46:LYS:CE	1:A:56:ASP:HA	2.44	0.47
1:A:155:ALA:C	1:A:157:ALA:H	2.21	0.47
1:A:27:LYS:O	1:A:30:GLU:N	2.43	0.47
1:A:125:HIS:O	1:A:128:GLU:N	2.47	0.47
1:A:47:ILE:HG22	1:A:48:HIS:H	1.79	0.47
1:A:111:HIS:HD2	2:A:216:HOH:O	1.92	0.47
1:A:98:LYS:O	1:A:102:ALA:N	2.45	0.46
1:A:152:GLU:O	1:A:153:SER:C	2.49	0.46
1:A:100:SER:HA	1:A:147:LEU:HD22	1.97	0.46
1:A:86:SER:HB2	1:A:89:LEU:C	2.41	0.46
1:A:79:LEU:HD22	1:A:93:VAL:HG13	1.98	0.46
1:A:32:LEU:O	1:A:33:LEU:C	2.58	0.46
1:A:82:LEU:HD12	1:A:85:ASN:OD1	2.16	0.45
1:A:46:LYS:HE2	1:A:56:ASP:HA	1.99	0.45
1:A:135:GLY:C	1:A:136:THR:O	2.59	0.45
1:A:80:GLU:O	1:A:84:LYS:HE3	2.17	0.45
1:A:118:ASN:OD1	1:A:118:ASN:N	2.47	0.45
1:A:48:HIS:O	1:A:49:GLN:C	2.60	0.44
1:A:124:ASN:C	1:A:124:ASN:ND2	2.75	0.44
1:A:29:VAL:HG12	1:A:33:LEU:HD12	1.99	0.44
1:A:30:GLU:O	1:A:34:SER:CB	2.64	0.44
1:A:128:GLU:CG	1:A:136:THR:OG1	2.63	0.44
1:A:46:LYS:O	1:A:54:VAL:O	2.35	0.44
1:A:74:LEU:HD11	1:A:78:LYS:HE2	2.00	0.44
1:A:127:LYS:HB3	1:A:131:LEU:HB3	2.00	0.44
1:A:144:LEU:O	1:A:146:ASP:N	2.37	0.44
1:A:29:VAL:O	1:A:33:LEU:N	2.47	0.43
1:A:48:HIS:HB3	1:A:51:ASN:HB2	2.00	0.43
1:A:17:THR:O	1:A:18:ASP:C	2.60	0.43
1:A:71:VAL:O	1:A:75:ILE:HD12	2.17	0.43
1:A:107:LEU:HA	1:A:114:LEU:HD12	2.01	0.43
1:A:40:ALA:HA	1:A:43:ILE:HG13	2.01	0.42
1:A:48:HIS:ND1	1:A:54:VAL:HG21	2.34	0.42
1:A:58:ALA:O	1:A:59:ASP:HB2	2.18	0.42
1:A:86:SER:OG	1:A:90:LYS:HA	2.19	0.42
1:A:107:LEU:CD2	2:A:201:HOH:O	2.51	0.42
1:A:121:ALA:CB	2:A:221:HOH:O	2.59	0.42
1:A:132:LYS:HA	1:A:145:LYS:HD3	2.01	0.42
1:A:8:ASN:OD1	1:A:11:GLU:HB2	2.19	0.42
1:A:27:LYS:O	1:A:28:GLU:C	2.62	0.42
1:A:103:PHE:CZ	1:A:144:LEU:HD22	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:114:LEU:HD21	1:A:139:LYS:HB2	2.02	0.42
1:A:127:LYS:C	1:A:129:ALA:N	2.78	0.42
1:A:62:THR:O	1:A:63:ALA:C	2.63	0.41
1:A:151:VAL:O	1:A:155:ALA:CB	2.68	0.41
1:A:152:GLU:O	1:A:154:LEU:CA	2.64	0.41
1:A:46:LYS:HE2	1:A:55:ALA:C	2.46	0.41
1:A:127:LYS:C	1:A:129:ALA:H	2.28	0.41
1:A:103:PHE:CE2	1:A:144:LEU:HD13	2.56	0.41
1:A:71:VAL:O	1:A:73:SER:N	2.52	0.41
1:A:83:ILE:CD1	1:A:97:LYS:HD2	2.49	0.41
1:A:87:GLY:O	1:A:90:LYS:CB	2.69	0.41
1:A:102:ALA:O	1:A:103:PHE:C	2.64	0.41
1:A:107:LEU:H	1:A:107:LEU:HG	1.72	0.41
1:A:142:LYS:O	1:A:143:GLU:C	2.64	0.41
1:A:27:LYS:C	1:A:29:VAL:N	2.79	0.41
1:A:78:LYS:HA	1:A:81:GLU:OE1	2.20	0.40
1:A:136:THR:HG1	1:A:137:ASP:N	2.16	0.40
1:A:68:ALA:O	1:A:69:TYR:C	2.64	0.40
1:A:61:ASN:C	1:A:121:ALA:HB3	2.47	0.40
1:A:118:ASN:C	1:A:120:GLY:H	2.29	0.40
1:A:119:GLY:O	1:A:121:ALA:N	2.40	0.40
1:A:46:LYS:NZ	1:A:56:ASP:HA	2.36	0.40
1:A:62:THR:HG23	1:A:115:GLY:HA2	2.03	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:95:GLU:OE1	1:A:95:GLU:OE1[2_656]	1.71	0.49
1:A:143:GLU:OE1	1:A:143:GLU:OE1[2_656]	1.80	0.40

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	A	165/167 (99%)	101 (61%)	43 (26%)	21 (13%)	0 0

All (21) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	3	SER
1	A	4	ALA
1	A	7	PRO
1	A	31	ALA
1	A	59	ASP
1	A	72	SER
1	A	111	HIS
1	A	116	ALA
1	A	134	HIS
1	A	136	THR
1	A	137	ASP
1	A	152	GLU
1	A	153	SER
1	A	5	LYS
1	A	17	THR
1	A	109	ASP
1	A	132	LYS
1	A	145	LYS
1	A	156	LYS
1	A	163	SER
1	A	28	GLU

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	A	129/129 (100%)	104 (81%)	25 (19%)	1 1

All (25) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	7	PRO
1	A	10	ILE
1	A	19	SER
1	A	43	ILE
1	A	47	ILE
1	A	50	GLN
1	A	51	ASN
1	A	62	THR
1	A	85	ASN
1	A	91	THR
1	A	92	GLU
1	A	98	LYS
1	A	99	CYS
1	A	104	THR
1	A	107	LEU
1	A	110	SER
1	A	112	THR
1	A	118	ASN
1	A	124	ASN
1	A	134	HIS
1	A	136	THR
1	A	142	LYS
1	A	143	GLU
1	A	151	VAL
1	A	153	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	20	ASN
1	A	49	GLN
1	A	111	HIS
1	A	124	ASN
1	A	134	HIS
1	A	164	ASN

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 oligosaccharides 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	A	167/167 (100%)	1.43	42 (25%) 1 1	0, 0, 0, 0	0

All (42) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	155	ALA	6.6
1	A	76	THR	5.5
1	A	96	ALA	4.3
1	A	108	ALA	4.2
1	A	23	VAL	3.7
1	A	140	GLY	3.5
1	A	90	LYS	3.2
1	A	101	ALA	3.1
1	A	20	ASN	3.1
1	A	141	GLY	3.1
1	A	33	LEU	3.0
1	A	43	ILE	3.0
1	A	74	LEU	3.0
1	A	71	VAL	2.9
1	A	161	ALA	2.9
1	A	89	LEU	2.9
1	A	93	VAL	2.9
1	A	22	VAL	2.8
1	A	64	LEU	2.8
1	A	39	LEU	2.7
1	A	54	VAL	2.7
1	A	147	LEU	2.6
1	A	72	SER	2.6
1	A	25	ALA	2.5
1	A	118	ASN	2.5
1	A	105	LYS	2.5
1	A	131	LEU	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	117	ALA	2.4
1	A	62	THR	2.3
1	A	16	ILE	2.3
1	A	29	VAL	2.3
1	A	92	GLU	2.2
1	A	42	ALA	2.1
1	A	68	ALA	2.1
1	A	10	ILE	2.1
1	A	104	THR	2.1
1	A	80	GLU	2.1
1	A	9	LEU	2.0
1	A	83	ILE	2.0
1	A	26	VAL	2.0
1	A	65	LEU	2.0
1	A	69	TYR	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 oligosaccharides 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.