Full wwPDB X-ray Structure Validation Report (i)

Jun 16, 2024 – 10:40 PM EDT

PDB ID	:	5L6M
Title	:	Structure of Caulobacter crescentus VapBC1 (VapB1deltaC:VapC1 form)
Authors	:	Bendtsen, K.L.; Xu, K.; Luckmann, M.; Brodersen, D.E.
Deposited on	:	2016-05-30
Resolution	:	1.90 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 (i) symbol.

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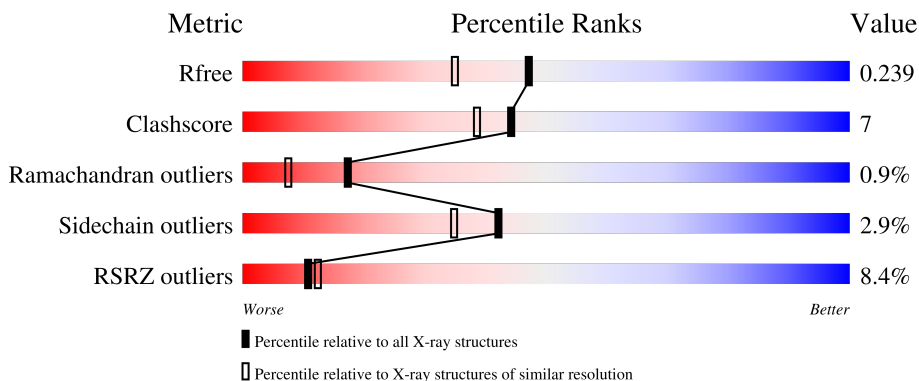http://www.wwpdb.org/validation/2017/FAQs#types.

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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 1.90 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		0.239
Clashscore		7
Ramachandran outliers		0.9%
Sidechain outliers		2.9%
RSRZ outliers		8.4%

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	6207 (1.90-1.90)
Clashscore	141614	6847 (1.90-1.90)
Ramachandran outliers	138981	6760 (1.90-1.90)
Sidechain outliers	138945	6760 (1.90-1.90)
RSRZ outliers	127900	6082 (1.90-1.90)

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	78	4% / 76% 8% · 15%
1	D	78	81% 10% 9%
1	E	78	18% / 63% 17% · · 15%
1	H	78	15% / 79% 9% · 10%
1	I	78	6% / 76% 10% · 13%

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Mol	Chain	Length	Quality of chain
1	L	78	26% ... 54% 31% 10%
2	B	128	2% ... 88% 11%
2	C	128	95%
2	F	128	5% ... 87% 12%
2	G	128	94% 5%
2	J	128	3% ... 86% 12%
2	K	128	25% ... 70% 27%

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 9654 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 VapB family protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	66	Total	C	N	O	S	0	0	0
			492	305	89	97	1			
1	D	71	Total	C	N	O	S	0	0	0
			539	333	97	108	1			
1	E	66	Total	C	N	O	S	0	0	0
			496	307	93	95	1			
1	H	70	Total	C	N	O	S	0	0	0
			533	329	98	105	1			
1	I	68	Total	C	N	O	S	0	0	0
			517	320	97	99	1			
1	L	70	Total	C	N	O	S	0	0	0
			528	326	96	105	1			

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-5	MET	-	initiating methionine	UNP Q9AC34
A	-4	HIS	-	expression tag	UNP Q9AC34
A	-3	HIS	-	expression tag	UNP Q9AC34
A	-2	HIS	-	expression tag	UNP Q9AC34
A	-1	HIS	-	expression tag	UNP Q9AC34
A	0	HIS	-	expression tag	UNP Q9AC34
A	1	HIS	-	expression tag	UNP Q9AC34
D	-5	MET	-	initiating methionine	UNP Q9AC34
D	-4	HIS	-	expression tag	UNP Q9AC34
D	-3	HIS	-	expression tag	UNP Q9AC34
D	-2	HIS	-	expression tag	UNP Q9AC34
D	-1	HIS	-	expression tag	UNP Q9AC34
D	0	HIS	-	expression tag	UNP Q9AC34
D	1	HIS	-	expression tag	UNP Q9AC34
E	-5	MET	-	initiating methionine	UNP Q9AC34
E	-4	HIS	-	expression tag	UNP Q9AC34
E	-3	HIS	-	expression tag	UNP Q9AC34

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Chain	Residue	Modelled	Actual	Comment	Reference
E	-2	HIS	-	expression tag	UNP Q9AC34
E	-1	HIS	-	expression tag	UNP Q9AC34
E	0	HIS	-	expression tag	UNP Q9AC34
E	1	HIS	-	expression tag	UNP Q9AC34
H	-5	MET	-	initiating methionine	UNP Q9AC34
H	-4	HIS	-	expression tag	UNP Q9AC34
H	-3	HIS	-	expression tag	UNP Q9AC34
H	-2	HIS	-	expression tag	UNP Q9AC34
H	-1	HIS	-	expression tag	UNP Q9AC34
H	0	HIS	-	expression tag	UNP Q9AC34
H	1	HIS	-	expression tag	UNP Q9AC34
I	-5	MET	-	initiating methionine	UNP Q9AC34
I	-4	HIS	-	expression tag	UNP Q9AC34
I	-3	HIS	-	expression tag	UNP Q9AC34
I	-2	HIS	-	expression tag	UNP Q9AC34
I	-1	HIS	-	expression tag	UNP Q9AC34
I	0	HIS	-	expression tag	UNP Q9AC34
I	1	HIS	-	expression tag	UNP Q9AC34
L	-5	MET	-	initiating methionine	UNP Q9AC34
L	-4	HIS	-	expression tag	UNP Q9AC34
L	-3	HIS	-	expression tag	UNP Q9AC34
L	-2	HIS	-	expression tag	UNP Q9AC34
L	-1	HIS	-	expression tag	UNP Q9AC34
L	0	HIS	-	expression tag	UNP Q9AC34
L	1	HIS	-	expression tag	UNP Q9AC34

- Molecule 2 is a protein called Ribonuclease VapC.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	127	Total	C	N	O	S	0	0	0
			986	621	181	182	2			
2	C	127	Total	C	N	O	S	0	0	0
			986	621	181	182	2			
2	F	127	Total	C	N	O	S	0	0	0
			986	621	181	182	2			
2	G	127	Total	C	N	O	S	0	0	0
			986	621	181	182	2			
2	J	127	Total	C	N	O	S	0	0	0
			986	621	181	182	2			
2	K	127	Total	C	N	O	S	0	0	0
			986	621	181	182	2			

- Molecule 3 is MALONATE ION (three-letter code: MLI) (formula: $C_3H_2O_4$).

MLI

O7

O$^-$

C1   C2

C3

O9 O$^-$

O6

O8

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 7	C 3	O 4	0	0
3	C	1	Total 7	C 3	O 4	0	0
3	G	1	Total 7	C 3	O 4	0	0

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).

GOL

C3

OH O3

C1   C2

HO

O1

OH

O2

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total 6	C 3	O 3	0	0

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W O R L D W I D E
wwPDB
PROTEIN DATA BANK

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	J	1	Total 6	C 3	O 3	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	54	Total 54	O 54	0	0
5	B	78	Total 78	O 78	0	0
5	C	66	Total 66	O 66	0	0
5	D	50	Total 50	O 50	0	0
5	E	26	Total 26	O 26	0	0
5	F	65	Total 65	O 65	0	0
5	G	75	Total 75	O 75	0	0
5	H	36	Total 36	O 36	0	0
5	I	42	Total 42	O 42	0	0
5	J	46	Total 46	O 46	0	0
5	K	43	Total 43	O 43	0	0
5	L	19	Total 19	O 19	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: VapB family protein
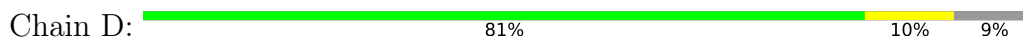
- Molecule 1: VapB family protein

- Molecule 1: VapB family protein

- Molecule 1: VapB family protein

- Molecule 1: VapB family protein

- Molecule 1: VapB family protein

Chain L:

• Molecule 2: Ribonuclease VapC

Chain B:
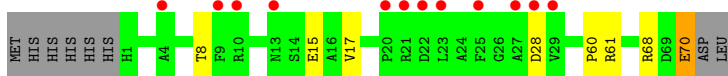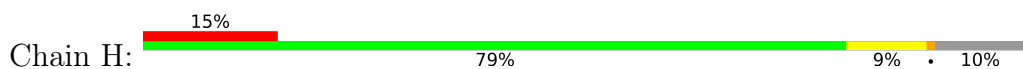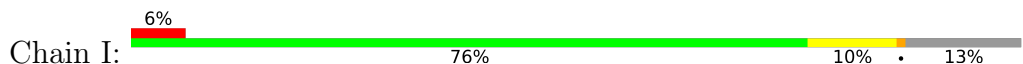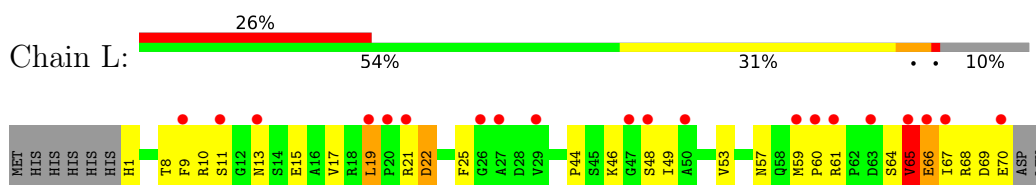
• Molecule 2: Ribonuclease VapC

Chain C:

• Molecule 2: Ribonuclease VapC

Chain F:

• Molecule 2: Ribonuclease VapC

Chain G:

• Molecule 2: Ribonuclease VapC

Chain J:

• Molecule 2: Ribonuclease VapC

Chain K:
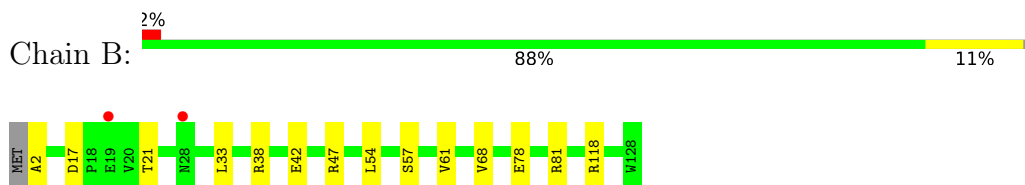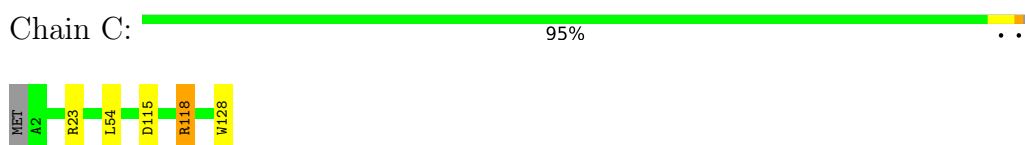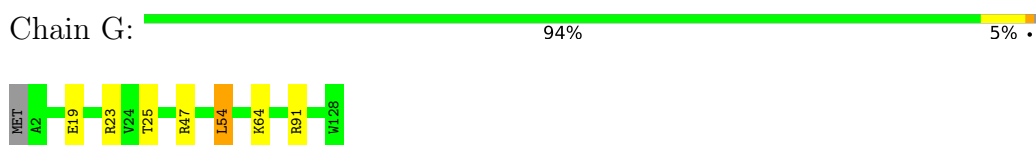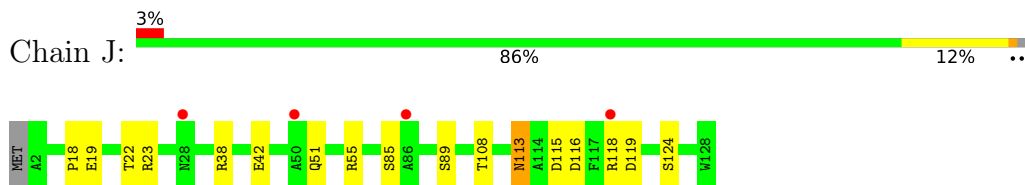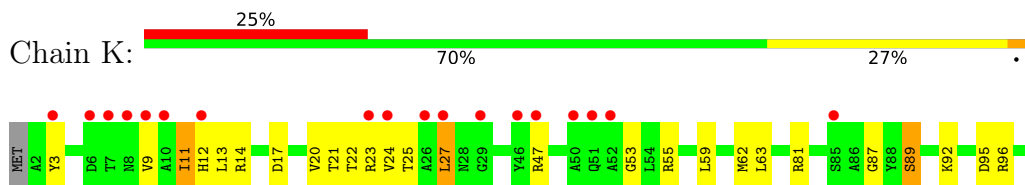
T108 F109 V110 T111 F112 N113 A114 D115 D116 F117 R118 D119 I120 P121 G122 L123 S124 L125 L126 L127 A127 W128

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	94.40Å　63.60Å　184.70Å 90.00°　94.10°　90.00°	Depositor
Resolution (Å)	46.60 – 1.90 47.08 – 1.90	Depositor EDS
% Data completeness (in resolution range)	98.8 (46.60-1.90) 98.8 (47.08-1.90)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.12	Depositor
$< I/\sigma(I) >$ [1]	1.57 (at 1.90Å)	Xtriage
Refinement program	PHENIX (1.10_2152: ???)	Depositor
R, R_{free}	0.196 , 0.240 0.196 , 0.239	Depositor DCC
R_{free} test set	4165 reflections (4.89%)	wwPDB-VP
Wilson B-factor (Å^2)	29.5	Xtriage
Anisotropy	0.117	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 58.4	EDS
L-test for twinning[2]	$< |L| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	9654	wwPDB-VP
Average B, all atoms (Å^2)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.33% 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 ⓘ

5.1   Standard geometry ⓘ

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

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	0.35	0/498	0.55	0/675
1	D	0.44	0/545	0.60	1/738 (0.1%)
1	E	0.40	0/504	0.68	1/683 (0.1%)
1	H	0.32	0/540	0.56	0/731
1	I	0.37	0/526	0.60	0/713
1	L	0.34	0/534	0.62	0/723
2	B	0.42	0/1000	0.60	0/1356
2	C	0.46	0/1000	0.60	0/1356
2	F	0.36	0/1000	0.53	0/1356
2	G	0.43	0/1000	0.57	0/1356
2	J	0.39	0/1000	0.56	0/1356
2	K	0.39	0/1000	0.63	0/1356
All	All	0.40	0/9147	0.59	2/12399 (0.0%)

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	L	0	1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	E	51	ASP	N-CA-C	8.28	133.37	111.00
1	D	60	PRO	C-N-CA	-5.03	109.13	121.70

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	L	65	VAL	Peptide

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in 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	492	0	497	8	0
1	D	539	0	544	6	0
1	E	496	0	499	14	0
1	H	533	0	539	7	0
1	I	517	0	519	9	0
1	L	528	0	534	16	0
2	B	986	0	1001	11	0
2	C	986	0	1001	3	0
2	F	986	0	1001	9	0
2	G	986	0	1001	8	0
2	J	986	0	1001	9	0
2	K	986	0	1001	33	0
3	A	7	0	2	1	0
3	C	7	0	2	0	0
3	G	7	0	2	1	0
4	B	6	0	8	0	0
4	J	6	0	8	0	0
5	A	54	0	0	5	1
5	B	78	0	0	3	2
5	C	66	0	0	0	1
5	D	50	0	0	3	0
5	E	26	0	0	4	2
5	F	65	0	0	0	1
5	G	75	0	0	4	0
5	H	36	0	0	4	1
5	I	42	0	0	4	1
5	J	46	0	0	0	0
5	K	43	0	0	8	0
5	L	19	0	0	3	0
All	All	9654	0	9160	120	5

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 7.

All (120) 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)
2:K:12:HIS:HB3	2:K:20:VAL:HG11	1.54	0.88
1:E:52:LEU:HD12	2:F:61:VAL:HG13	1.55	0.87
1:L:59:MET:O	5:L:101:HOH:O	1.97	0.80
1:H:61:ARG:NH2	5:H:103:HOH:O	2.18	0.77
1:H:70:GLU:OE2	5:H:101:HOH:O	2.03	0.77
1:L:68:ARG:HE	1:L:70:GLU:HG2	1.51	0.75
1:A:59:MET:O	5:A:201:HOH:O	2.04	0.75
1:D:13:ASN:OD1	5:D:101:HOH:O	2.03	0.75
1:L:48:SER:O	5:L:102:HOH:O	2.05	0.74
1:L:10:ARG:NH1	1:L:13:ASN:O	2.22	0.73
2:K:55:ARG:N	5:K:202:HOH:O	2.21	0.73
1:I:46:LYS:NZ	5:I:101:HOH:O	2.17	0.73
2:F:28:ASN:HB3	5:H:104:HOH:O	1.92	0.70
1:A:67:ILE:O	5:A:202:HOH:O	2.09	0.70
2:K:109:PHE:HB3	2:K:125:LEU:HD12	1.72	0.70
1:E:21:ARG:NH2	5:E:101:HOH:O	2.25	0.69
2:K:92:LYS:HB2	5:K:208:HOH:O	1.94	0.68
2:K:81:ARG:HH12	2:K:121:PRO:HB2	1.59	0.66
2:K:89:SER:HB3	5:K:208:HOH:O	1.94	0.66
1:A:61:ARG:NH2	5:A:204:HOH:O	2.28	0.66
2:G:91:ARG:NH1	5:G:303:HOH:O	2.26	0.66
1:A:67:ILE:HA	2:B:47:ARG:HH11	1.59	0.65
2:K:114:ALA:HB1	5:K:213:HOH:O	1.98	0.64
1:I:40:LEU:HD21	1:L:19:LEU:HD11	1.80	0.63
2:K:22:THR:O	2:K:25:THR:OG1	2.16	0.63
2:K:17:ASP:HB3	2:K:20:VAL:HG12	1.81	0.62
1:A:48:SER:HB2	5:A:237:HOH:O	2.00	0.61
1:E:51:ASP:CG	1:E:52:LEU:H	2.04	0.61
2:K:13:LEU:HD12	2:K:21:THR:HG22	1.83	0.60
1:I:35:ARG:NH1	1:L:22:ASP:O	2.34	0.60
1:A:67:ILE:HA	2:B:47:ARG:NH1	2.17	0.59
1:H:68:ARG:O	5:H:102:HOH:O	2.17	0.58
2:J:18:PRO:O	2:J:22:THR:HG23	2.02	0.58
2:B:118:ARG:HH11	2:B:118:ARG:HG3	1.69	0.56
2:B:78:GLU:OE2	5:B:301:HOH:O	2.18	0.55
1:L:21:ARG:O	5:L:103:HOH:O	2.18	0.55
2:B:2:ALA:N	5:B:304:HOH:O	2.40	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:K:114:ALA:C	2:K:116:ASP:H	2.10	0.55
2:J:115:ASP:HA	2:J:118:ARG:HG3	1.90	0.54
1:H:8:THR:HG22	1:H:17:VAL:HG23	1.89	0.54
2:K:96:ARG:CZ	5:K:208:HOH:O	2.56	0.54
1:E:35:ARG:NE	5:E:102:HOH:O	2.27	0.53
1:L:53:VAL:O	1:L:57:ASN:N	2.29	0.53
2:B:17:ASP:O	2:B:21:THR:HG23	2.09	0.52
2:G:47:ARG:NE	5:G:301:HOH:O	2.21	0.52
2:K:9:VAL:HG22	2:K:112:PHE:CE2	2.45	0.52
1:L:25:PHE:CE1	1:L:44:PRO:HD3	2.45	0.52
2:F:78:GLU:HB3	2:F:100:ALA:HB1	1.91	0.52
2:K:23:ARG:HH11	2:K:23:ARG:HG3	1.74	0.51
2:K:20:VAL:O	2:K:24:VAL:HG23	2.10	0.51
1:E:53:VAL:HG12	1:E:56:LEU:HD12	1.91	0.50
1:E:35:ARG:NH2	5:E:102:HOH:O	2.26	0.50
1:D:3:ARG:NH2	5:D:104:HOH:O	2.43	0.50
2:K:3:TYR:CZ	2:K:27:LEU:HD23	2.47	0.49
2:K:11:ILE:HD11	2:K:47:ARG:HH12	1.77	0.49
1:I:59:MET:O	5:I:103:HOH:O	2.20	0.49
2:K:114:ALA:O	2:K:116:ASP:N	2.46	0.49
1:I:-1:HIS:N	1:I:22:ASP:OD1	2.46	0.48
2:C:54:LEU:HD11	1:H:60:PRO:HB2	1.95	0.48
2:K:14:ARG:HB2	2:K:62:MET:HE1	1.95	0.48
2:G:64:LYS:HD3	5:G:366:HOH:O	2.14	0.48
1:I:28:ASP:OD2	5:I:102:HOH:O	2.20	0.48
2:C:115:ASP:O	2:C:118:ARG:HG2	2.14	0.48
1:D:53:VAL:HG21	2:G:25:THR:HG23	1.96	0.48
2:K:103:LEU:HD11	2:K:120:ILE:HG21	1.96	0.48
1:L:65:VAL:HG12	1:L:66:GLU:HG3	1.96	0.47
1:L:70:GLU:CD	1:L:70:GLU:H	2.17	0.47
1:A:65:VAL:HG12	1:A:66:GLU:N	2.29	0.47
2:K:3:TYR:CD1	2:K:108:THR:HB	2.49	0.47
1:A:48:SER:OG	1:A:51:ASP:OD2	2.27	0.47
1:E:58:GLN:N	5:E:104:HOH:O	2.44	0.47
1:E:62:PRO:HG2	2:F:55:ARG:NH2	2.30	0.46
2:J:38:ARG:O	2:J:42:GLU:HG2	2.14	0.46
2:G:47:ARG:NH1	3:G:201:MLI:O7	2.42	0.46
2:J:119:ASP:OD1	2:J:119:ASP:N	2.42	0.46
2:B:33:LEU:O	2:B:68:VAL:HA	2.16	0.46
2:K:3:TYR:CE2	2:K:27:LEU:HD23	2.51	0.45
2:K:14:ARG:CB	2:K:62:MET:HE1	2.46	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:K:23:ARG:HB3	2:K:128:TRP:CH2	2.51	0.45
2:F:18:PRO:O	2:F:22:THR:HG22	2.15	0.45
1:I:9:PHE:HA	5:I:115:HOH:O	2.17	0.45
2:J:51:GLN:HB2	2:J:55:ARG:NH1	2.31	0.45
2:F:95:ASP:HB3	2:F:117:PHE:CE1	2.51	0.45
1:I:25:PHE:O	1:L:15:GLU:OE2	2.34	0.45
1:D:8:THR:HG22	1:D:17:VAL:HG12	1.99	0.45
1:L:69:ASP:N	1:L:70:GLU:OE2	2.49	0.45
2:B:81:ARG:HD3	5:G:344:HOH:O	2.16	0.44
2:K:24:VAL:HA	2:K:27:LEU:HD12	1.99	0.44
1:E:34:ILE:HD12	2:F:30:ALA:HB2	2.00	0.44
2:J:19:GLU:OE2	2:J:23:ARG:NH1	2.42	0.44
2:K:87:GLY:HA2	5:K:229:HOH:O	2.17	0.44
2:G:19:GLU:O	2:G:23:ARG:HG3	2.18	0.44
2:J:108:THR:HA	2:J:124:SER:HB2	2.00	0.44
2:C:23:ARG:NH2	2:C:128:TRP:CD1	2.86	0.43
1:E:49:ILE:C	1:E:51:ASP:N	2.72	0.43
1:L:8:THR:HG22	1:L:17:VAL:HG22	2.00	0.43
1:E:24:ALA:HB1	1:H:15:GLU:CD	2.39	0.43
2:F:33:LEU:O	2:F:68:VAL:HA	2.18	0.43
2:K:126:LEU:HD12	2:K:126:LEU:HA	1.86	0.43
2:G:54:LEU:HD23	2:G:54:LEU:HA	1.89	0.43
2:B:38:ARG:O	2:B:42:GLU:HG2	2.18	0.42
3:A:101:MLI:O9	5:A:203:HOH:O	2.21	0.42
1:E:51:ASP:OD1	1:E:54:ALA:HA	2.19	0.42
1:E:24:ALA:HB1	1:H:15:GLU:OE1	2.19	0.42
2:B:54:LEU:HD12	5:B:346:HOH:O	2.19	0.42
1:D:46:LYS:HD2	5:D:134:HOH:O	2.20	0.42
2:K:112:PHE:HA	2:K:128:TRP:O	2.19	0.42
1:I:35:ARG:O	1:L:1:HIS:HA	2.19	0.41
2:K:59:LEU:HA	2:K:62:MET:HE3	2.03	0.41
2:K:53:GLY:N	5:K:202:HOH:O	2.54	0.41
2:K:96:ARG:NH1	5:K:208:HOH:O	2.54	0.41
2:G:64:LYS:HB3	2:G:64:LYS:HE2	1.68	0.41
2:K:59:LEU:O	2:K:63:LEU:HG	2.21	0.41
1:L:9:PHE:CE2	1:L:11:SER:HB2	2.56	0.41
1:D:57:ASN:HD22	2:J:22:THR:CG2	2.35	0.40
1:E:61:ARG:HE	1:E:61:ARG:HB2	1.26	0.40
2:B:57:SER:O	2:B:61:VAL:HG23	2.21	0.40
2:F:113:ASN:ND2	2:F:116:ASP:OD2	2.50	0.40
2:J:113:ASN:OD1	2:J:113:ASN:N	2.53	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:K:23:ARG:HG3	2:K:23:ARG:NH1	2.36	0.40

All (5) 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)
5:H:123:HOH:O	5:H:123:HOH:O[2_456]	1.94	0.26
5:B:332:HOH:O	5:I:117:HOH:O[1_565]	2.13	0.07
5:E:125:HOH:O	5:F:262:HOH:O[4_456]	2.13	0.07
5:C:341:HOH:O	5:E:108:HOH:O[4_456]	2.15	0.05
5:A:245:HOH:O	5:B:359:HOH:O[3_445]	2.18	0.02

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	64/78 (82%)	61 (95%)	2 (3%)	1 (2%)	9	2
1	D	69/78 (88%)	69 (100%)	0	0	100	100
1	E	64/78 (82%)	54 (84%)	8 (12%)	2 (3%)	4	0
1	H	68/78 (87%)	66 (97%)	2 (3%)	0	100	100
1	I	66/78 (85%)	63 (96%)	3 (4%)	0	100	100
1	L	68/78 (87%)	62 (91%)	2 (3%)	4 (6%)	1	0
2	B	125/128 (98%)	122 (98%)	3 (2%)	0	100	100
2	C	125/128 (98%)	125 (100%)	0	0	100	100
2	F	125/128 (98%)	122 (98%)	1 (1%)	2 (2%)	9	2
2	G	125/128 (98%)	124 (99%)	1 (1%)	0	100	100
2	J	125/128 (98%)	123 (98%)	2 (2%)	0	100	100
2	K	125/128 (98%)	118 (94%)	6 (5%)	1 (1%)	19	9

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	1149/1236 (93%)	1109 (96%)	30 (3%)	10 (1%)	17 7

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	58	GLN
1	E	63	ASP
2	F	14	ARG
1	L	61	ARG
2	K	115	ASP
1	L	65	VAL
1	L	46	LYS
1	A	66	GLU
1	L	60	PRO
2	F	16	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	53/66 (80%)	52 (98%)	1 (2%)	57	53
1	D	59/66 (89%)	59 (100%)	0	100	100
1	E	53/66 (80%)	47 (89%)	6 (11%)	6	2
1	H	58/66 (88%)	56 (97%)	2 (3%)	37	28
1	I	56/66 (85%)	55 (98%)	1 (2%)	59	55
1	L	57/66 (86%)	50 (88%)	7 (12%)	4	1
2	B	101/102 (99%)	101 (100%)	0	100	100
2	C	101/102 (99%)	100 (99%)	1 (1%)	76	76
2	F	101/102 (99%)	101 (100%)	0	100	100
2	G	101/102 (99%)	100 (99%)	1 (1%)	76	76
2	J	101/102 (99%)	97 (96%)	4 (4%)	31	22
2	K	101/102 (99%)	97 (96%)	4 (4%)	31	22

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	942/1008 (94%)	915 (97%)	27 (3%)	42 35

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	66	GLU
2	C	118	ARG
1	E	3	ARG
1	E	7	LYS
1	E	51	ASP
1	E	61	ARG
1	E	63	ASP
1	E	64	SER
2	G	54	LEU
1	H	28	ASP
1	H	70	GLU
1	I	-1	HIS
2	J	85	SER
2	J	89	SER
2	J	113	ASN
2	J	116	ASP
2	K	11	ILE
2	K	27	LEU
2	K	89	SER
2	K	95	ASP
1	L	19	LEU
1	L	22	ASP
1	L	49	ILE
1	L	64	SER
1	L	65	VAL
1	L	66	GLU
1	L	67	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3   RNA (i)

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 ⓘ

5 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
3	MLI	A	101	-	6,6,6	1.27	0	7,7,7	1.28	0
4	GOL	B	201	-	5,5,5	0.44	0	5,5,5	0.57	0
3	MLI	C	201	-	6,6,6	1.43	0	7,7,7	1.52	1 (14%)
3	MLI	G	201	-	6,6,6	1.67	2 (33%)	7,7,7	1.44	1 (14%)
4	GOL	J	201	-	5,5,5	0.40	0	5,5,5	0.57	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	MLI	A	101	-	-	0/4/4/4	-
4	GOL	B	201	-	-	4/4/4/4	-
3	MLI	C	201	-	-	0/4/4/4	-
3	MLI	G	201	-	-	0/4/4/4	-
4	GOL	J	201	-	-	4/4/4/4	-

All (2) bond length outliers are listed below:

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	G	201	MLI	C1-C3	2.37	1.54	1.51
3	G	201	MLI	C1-C2	2.24	1.54	1.51

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	201	MLI	O9-C3-C1	2.49	122.48	114.54
3	G	201	MLI	O9-C3-C1	2.23	121.66	114.54

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	201	GOL	O1-C1-C2-C3
4	B	201	GOL	C1-C2-C3-O3
4	J	201	GOL	O1-C1-C2-C3
4	B	201	GOL	O1-C1-C2-O2
4	B	201	GOL	O2-C2-C3-O3
4	J	201	GOL	O1-C1-C2-O2
4	J	201	GOL	O2-C2-C3-O3
4	J	201	GOL	C1-C2-C3-O3

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	101	MLI	1	0
3	G	201	MLI	1	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

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(Å^2)	Q<0.9
1	A	66/78 (84%)	0.06	3 (4%)	33	36	27, 40, 70, 88	0
1	D	71/78 (91%)	-0.10	0	100	100	22, 39, 58, 67	0
1	E	66/78 (84%)	1.03	14 (21%)	0	0	34, 65, 95, 114	0
1	H	70/78 (89%)	0.80	12 (17%)	1	1	28, 61, 91, 108	0
1	I	68/78 (87%)	0.40	5 (7%)	14	16	29, 49, 82, 84	0
1	L	70/78 (89%)	1.47	20 (28%)	0	0	22, 69, 105, 120	0
2	B	127/128 (99%)	-0.19	2 (1%)	72	74	18, 33, 62, 89	0
2	C	127/128 (99%)	-0.24	0	100	100	19, 31, 56, 70	0
2	F	127/128 (99%)	0.21	6 (4%)	31	34	23, 46, 82, 98	0
2	G	127/128 (99%)	-0.12	0	100	100	18, 36, 59, 73	0
2	J	127/128 (99%)	0.15	4 (3%)	49	51	21, 44, 72, 92	0
2	K	127/128 (99%)	1.24	32 (25%)	0	0	29, 69, 93, 112	0
All	All	1173/1236 (94%)	0.33	98 (8%)	11	12	18, 45, 88, 120	0

All (98) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	L	65	VAL	8.3
1	E	53	VAL	7.4
1	E	52	LEU	6.4
1	L	61	ARG	6.0
1	H	13	ASN	5.8
1	E	63	ASP	5.8
1	A	67	ILE	5.5
1	L	27	ALA	4.9
2	K	10	ALA	4.8
2	K	52	ALA	4.8
2	K	50	ALA	4.7

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Mol	Chain	Res	Type	RSRZ
1	H	21	ARG	4.6
2	K	12	HIS	4.3
2	K	126	LEU	4.3
2	F	49	ALA	4.1
1	H	4	ALA	4.1
2	K	46	TYR	3.9
2	F	50	ALA	3.9
2	K	24	VAL	3.9
2	F	48	GLU	3.9
1	E	64	SER	3.9
1	L	66	GLU	3.9
1	L	48	SER	3.8
2	K	9	VAL	3.8
1	H	23	LEU	3.6
2	K	118	ARG	3.5
2	K	27	LEU	3.5
1	L	67	ILE	3.4
1	L	50	ALA	3.4
2	K	26	ALA	3.4
2	K	127	ALA	3.4
1	L	70	GLU	3.3
1	L	19	LEU	3.3
1	L	26	GLY	3.2
2	J	118	ARG	3.2
1	L	13	ASN	3.1
2	K	51	GLN	3.1
2	B	19	GLU	3.1
1	I	17	VAL	3.1
1	H	22	ASP	3.1
1	E	62	PRO	3.0
2	F	20	VAL	3.0
1	H	25	PHE	2.9
1	L	11	SER	2.9
2	J	28	ASN	2.9
2	K	3	TYR	2.9
1	L	47	GLY	2.9
2	K	121	PRO	2.9
1	E	56	LEU	2.8
1	H	28	ASP	2.8
1	H	27	ALA	2.7
1	E	13	ASN	2.7
2	K	105	HIS	2.7

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Mol	Chain	Res	Type	RSRZ
1	E	61	ARG	2.6
1	L	60	PRO	2.6
1	E	55	THR	2.6
2	J	50	ALA	2.6
1	A	21	ARG	2.6
2	K	47	ARG	2.6
2	K	117	PHE	2.5
2	K	112	PHE	2.5
2	F	54	LEU	2.5
2	K	111	THR	2.5
2	K	123	LEU	2.5
2	K	85	SER	2.5
1	L	29	VAL	2.4
2	J	86	ALA	2.4
1	H	29	VAL	2.4
1	E	50	ALA	2.4
2	K	113	ASN	2.4
2	K	106	ARG	2.3
2	B	28	ASN	2.3
2	F	13	LEU	2.3
1	E	58	GLN	2.3
1	I	65	VAL	2.3
2	K	29	GLY	2.3
2	K	115	ASP	2.3
1	A	66	GLU	2.3
1	L	59	MET	2.2
1	L	20	PRO	2.2
1	L	21	ARG	2.2
1	E	-1	HIS	2.2
1	H	10	ARG	2.2
1	H	20	PRO	2.2
1	L	9	PHE	2.2
2	K	6	ASP	2.2
2	K	110	VAL	2.2
1	H	9	PHE	2.1
1	I	16	ALA	2.1
1	E	59	MET	2.1
1	E	54	ALA	2.1
2	K	8	ASN	2.1
2	K	7	THR	2.1
1	I	9	PHE	2.1
2	K	23	ARG	2.0

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Mol	Chain	Res	Type	RSRZ
1	L	63	ASP	2.0
2	K	119	ASP	2.0
1	I	14	SER	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 ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	GOL	B	201	6/6	0.94	0.15	35,45,54,59	0
4	GOL	J	201	6/6	0.95	0.10	30,32,41,54	0
3	MLI	G	201	7/7	0.96	0.10	27,28,31,32	0
3	MLI	C	201	7/7	0.97	0.17	34,38,42,52	0
3	MLI	A	101	7/7	0.97	0.10	29,34,36,37	0

6.5 Other polymers ⓘ

There are no such residues in this entry.