WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Nov 21, 2023 – 03:17 PM JST

PDB ID	:	7VG4
Title	:	10,5-methenyltetrahydrofolate cyclohydrolase from Methylobacterium extorquens AM1 strain
Authors	:	Kim, S.; Lee, S.; Kim, I.-K.; Seo, H.; Kim, K.-J.
Deposited on	:	2021-09-14
Resolution	:	2.77 Å(reported)

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

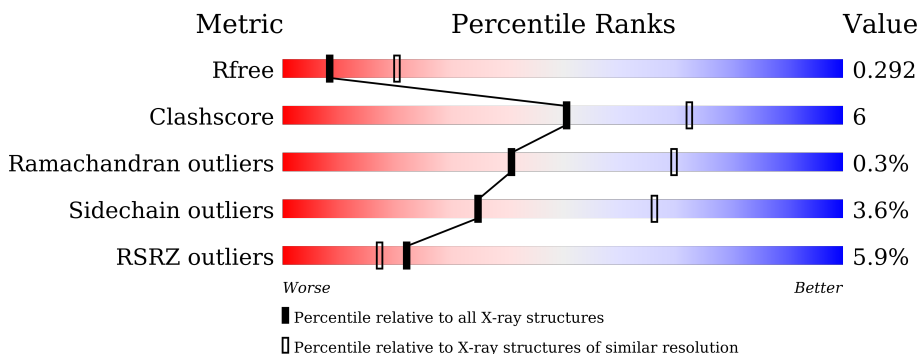|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation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

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 2.77 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		0.292
Clashscore		6
Ramachandran outliers		0.3%
Sidechain outliers		3.6%
RSRZ outliers		5.9%

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	4107 (2.80-2.76)
Clashscore	141614	4575 (2.80-2.76)
Ramachandran outliers	138981	4487 (2.80-2.76)
Sidechain outliers	138945	4489 (2.80-2.76)
RSRZ outliers	127900	4027 (2.80-2.76)

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	216	.% 79% 15% 6%
1	B	216	4% 86% 9% 5%
1	C	216	6% 81% 13% 5%
1	D	216	4% 76% 18% 6%
1	E	216	4% 75% 16% 9%
1	F	216	13% 70% 15% 14%

2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 8805 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 Methenyltetrahydrofolate cyclohydrolase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	204	Total	C	N	O	S	0	0	0
			1485	924	254	299	8			
1	B	206	Total	C	N	O	S	0	0	0
			1504	935	258	303	8			
1	C	205	Total	C	N	O	S	0	0	0
			1500	933	257	302	8			
1	D	204	Total	C	N	O	S	0	0	0
			1492	929	255	300	8			
1	E	196	Total	C	N	O	S	0	0	0
			1420	883	244	285	8			
1	F	186	Total	C	N	O	S	0	0	0
			1343	832	232	271	8			

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	209	LEU	-	expression tag	UNP Q49135
A	210	GLU	-	expression tag	UNP Q49135
A	211	HIS	-	expression tag	UNP Q49135
A	212	HIS	-	expression tag	UNP Q49135
A	213	HIS	-	expression tag	UNP Q49135
A	214	HIS	-	expression tag	UNP Q49135
A	215	HIS	-	expression tag	UNP Q49135
A	216	HIS	-	expression tag	UNP Q49135
B	209	LEU	-	expression tag	UNP Q49135
B	210	GLU	-	expression tag	UNP Q49135
B	211	HIS	-	expression tag	UNP Q49135
B	212	HIS	-	expression tag	UNP Q49135
B	213	HIS	-	expression tag	UNP Q49135
B	214	HIS	-	expression tag	UNP Q49135
B	215	HIS	-	expression tag	UNP Q49135
B	216	HIS	-	expression tag	UNP Q49135
C	209	LEU	-	expression tag	UNP Q49135

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Chain	Residue	Modelled	Actual	Comment	Reference
C	210	GLU	-	expression tag	UNP Q49135
C	211	HIS	-	expression tag	UNP Q49135
C	212	HIS	-	expression tag	UNP Q49135
C	213	HIS	-	expression tag	UNP Q49135
C	214	HIS	-	expression tag	UNP Q49135
C	215	HIS	-	expression tag	UNP Q49135
C	216	HIS	-	expression tag	UNP Q49135
D	209	LEU	-	expression tag	UNP Q49135
D	210	GLU	-	expression tag	UNP Q49135
D	211	HIS	-	expression tag	UNP Q49135
D	212	HIS	-	expression tag	UNP Q49135
D	213	HIS	-	expression tag	UNP Q49135
D	214	HIS	-	expression tag	UNP Q49135
D	215	HIS	-	expression tag	UNP Q49135
D	216	HIS	-	expression tag	UNP Q49135
E	209	LEU	-	expression tag	UNP Q49135
E	210	GLU	-	expression tag	UNP Q49135
E	211	HIS	-	expression tag	UNP Q49135
E	212	HIS	-	expression tag	UNP Q49135
E	213	HIS	-	expression tag	UNP Q49135
E	214	HIS	-	expression tag	UNP Q49135
E	215	HIS	-	expression tag	UNP Q49135
E	216	HIS	-	expression tag	UNP Q49135
F	209	LEU	-	expression tag	UNP Q49135
F	210	GLU	-	expression tag	UNP Q49135
F	211	HIS	-	expression tag	UNP Q49135
F	212	HIS	-	expression tag	UNP Q49135
F	213	HIS	-	expression tag	UNP Q49135
F	214	HIS	-	expression tag	UNP Q49135
F	215	HIS	-	expression tag	UNP Q49135
F	216	HIS	-	expression tag	UNP Q49135

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	18	Total 18	O 18	0	0
2	B	13	Total 13	O 13	0	0
2	C	15	Total 15	O 15	0	0
2	D	7	Total 7	O 7	0	0

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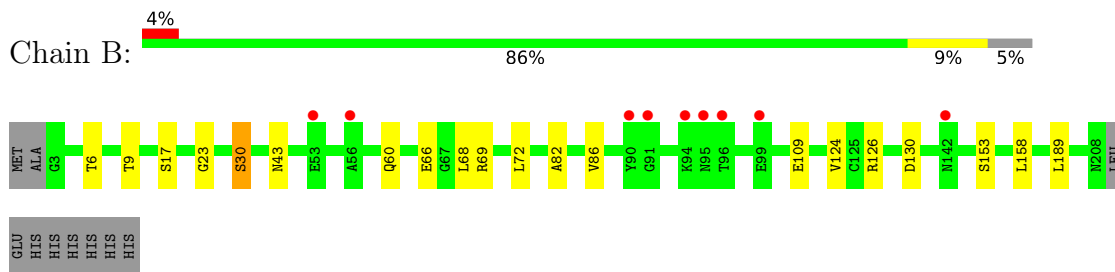| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	E	7	Total 7	O 7	0	0
2	F	1	Total 1	O 1	0	0

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.
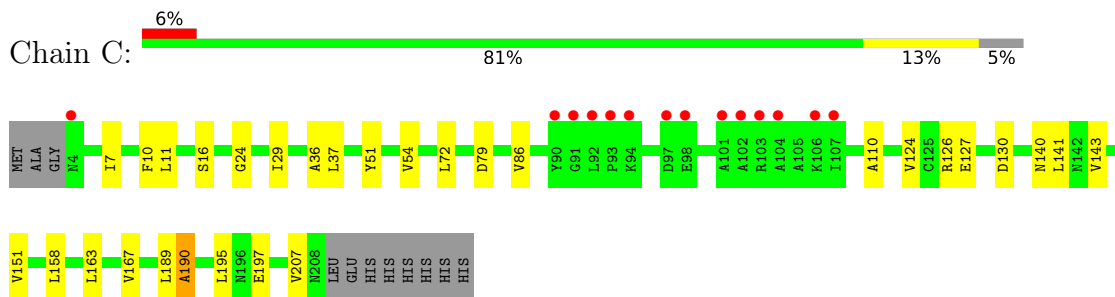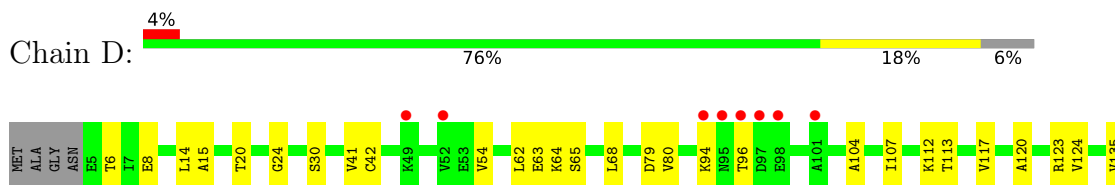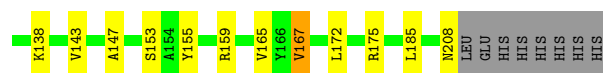
- Molecule 1: Methenyltetrahydrofolate cyclohydrolase

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- Molecule 1: Methenyltetrahydrofolate cyclohydrolase

K138 V143 A147 S153 A154 Y155 R159 V165 Y166 V167 L172 R175 L185 N208 LEU GLU HIS HIS HIS HIS HIS HIS

• Molecule 1: Methenyltetrahydrofolate cyclohydrolase

Chain E:

4%

75% 16% 9%

MET ALA G3 T6 T9 P19 I29 S30 S39 N43 L44 T45 I46 G47 K48 K49 LYS TYR VAL E53 V54 E55 A56 D57 Q60 E63 K64 S65 E66 L72 M75 D78 E81 A82 F83 L92 PRO LYS ASN THR ASP GLU E99 K100 A101 V124

C125 R126 D130 V135 A136 E137 K138 G139 N140 L141 N142 V143 G148 V151 L189 A192 L195 I199 T202 K206 V207 ASN LEU GLU HIS HIS HIS HIS HIS HIS

• Molecule 1: Methenyltetrahydrofolate cyclohydrolase

Chain F:

13%

70% 15% 14%

MET A2 G3 E8 L14 A15 A18 P19 T20 P21 S30 L37 V41 T45 I46 GLY LYS LYS LYS TYR VAL GLU VAL E55 A56 D57 L58 K59 Q60 K64 L68 V86 M87 G88 A89 TYR GLY LEU PRO LYS ASN THR ASP GLU GLU LYS ALA ALA R103 A104

A105 K106 I107 Q108 E109 A110 L111 K112 T113 D116 E133 I134 V135 A136 E137 K138 G139 N140 L141 S145 V149 V167 N168 A169 L172 D173 D174 R175 A176 F177 A178 E179 E184 E191 E197 E201 T202 V203 V207 N208 LEU GLU HIS HIS HIS HIS HIS HIS

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	53.74Å 67.73Å 88.59Å 80.14° 79.31° 79.42°	Depositor
Resolution (Å)	30.59 – 2.77 36.22 – 2.77	Depositor EDS
% Data completeness (in resolution range)	94.5 (30.59-2.77) 94.6 (36.22-2.77)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.63 (at 2.77Å)	Xtriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.196 , 0.286 0.206 , 0.292	Depositor DCC
R_{free} test set	1405 reflections (4.91%)	wwPDB-VP
Wilson B-factor (Å^2)	47.7	Xtriage
Anisotropy	0.184	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 49.6	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	8805	wwPDB-VP
Average B, all atoms (Å^2)	56.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.75% 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 ⓘ

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	0.72	0/1495	0.82	0/2017
1	B	0.74	0/1515	0.81	0/2045
1	C	0.73	0/1511	0.83	0/2040
1	D	0.74	0/1503	0.87	0/2029
1	E	0.73	0/1427	0.82	0/1922
1	F	0.73	0/1349	0.83	0/1820
All	All	0.73	0/8800	0.83	0/11873

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

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	1485	0	1511	23	0
1	B	1504	0	1533	13	0
1	C	1500	0	1530	16	0
1	D	1492	0	1524	23	0
1	E	1420	0	1451	20	0
1	F	1343	0	1366	17	0
2	A	18	0	0	0	0
2	B	13	0	0	0	0
2	C	15	0	0	0	0
2	D	7	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	E	7	0	0	0	0
2	F	1	0	0	0	0
All	All	8805	0	8915	100	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 6.

All (100) 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:41:VAL:HG11	1:D:135:VAL:HG13	1.54	0.90
1:F:64:LYS:O	1:F:68:LEU:HG	1.77	0.85
1:A:41:VAL:HG11	1:A:135:VAL:HG13	1.73	0.70
1:D:155:TYR:CZ	1:D:159:ARG:HD2	2.28	0.68
1:E:6:THR:HG22	1:E:9:THR:H	1.62	0.64
1:C:197:GLU:OE1	1:D:159:ARG:NH2	2.31	0.64
1:E:6:THR:HG23	1:F:3:GLY:O	1.99	0.62
1:A:155:TYR:CZ	1:A:159:ARG:HD2	2.36	0.61
1:B:68:LEU:HD22	1:B:124:VAL:HG13	1.83	0.59
1:A:72:LEU:HG	1:A:124:VAL:HG11	1.83	0.59
1:A:72:LEU:HD11	1:A:124:VAL:HG12	1.85	0.59
1:F:133:GLU:O	1:F:137:GLU:HG2	2.04	0.56
1:C:163:LEU:O	1:C:167:VAL:HG23	2.07	0.55
1:D:20:THR:HG21	1:D:80:VAL:HG22	1.89	0.54
1:E:75:MET:HA	1:E:78:ASP:HB2	1.90	0.53
1:E:6:THR:CG2	1:F:3:GLY:O	2.57	0.53
1:C:51:TYR:CZ	1:C:140:ASN:HA	2.45	0.52
1:D:68:LEU:HD22	1:D:124:VAL:HG13	1.90	0.52
1:E:202:THR:HG22	1:E:206:LYS:HD2	1.91	0.52
1:C:86:VAL:HG22	1:C:110:ALA:HB1	1.92	0.51
1:F:203:VAL:O	1:F:207:VAL:HG23	2.10	0.51
1:E:66:GLU:HA	1:E:66:GLU:OE2	2.11	0.50
1:A:44:LEU:HD21	1:B:17:SER:O	2.11	0.50
1:A:148:GLY:O	1:A:151:VAL:HG12	2.11	0.50
1:C:207:VAL:HG13	1:D:167:VAL:HG12	1.94	0.49
1:D:113:THR:O	1:D:117:VAL:HG23	2.12	0.49
1:B:6:THR:HG22	1:B:9:THR:H	1.77	0.49
1:D:24:GLY:HA3	1:D:79:ASP:OD1	2.13	0.49
1:D:41:VAL:CG1	1:D:135:VAL:HG13	2.34	0.49
1:A:33:MET:O	1:A:37:LEU:HG	2.13	0.49
1:F:14:LEU:HD12	1:F:21:PRO:O	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:72:LEU:HG	1:E:124:VAL:HG11	1.96	0.48
1:A:30:SER:O	1:A:153:SER:HB3	2.14	0.48
1:B:72:LEU:HG	1:B:124:VAL:HG11	1.94	0.48
1:E:148:GLY:O	1:E:151:VAL:HG12	2.14	0.48
1:D:104:ALA:O	1:D:107:ILE:HB	2.14	0.48
1:B:6:THR:HB	1:B:9:THR:OG1	2.13	0.47
1:F:37:LEU:O	1:F:41:VAL:HG23	2.14	0.47
1:D:42:CYS:HB2	1:D:62:LEU:HD13	1.97	0.47
1:A:41:VAL:CG1	1:A:135:VAL:HG13	2.42	0.47
1:C:72:LEU:HG	1:C:124:VAL:HG11	1.97	0.47
1:E:3:GLY:O	1:F:8:GLU:HB2	2.15	0.47
1:B:126:ARG:NH2	1:B:130:ASP:OD1	2.44	0.47
1:F:197:GLU:O	1:F:201:GLU:HG2	2.15	0.47
1:F:18:ALA:HB1	1:F:19:PRO:HD2	1.96	0.46
1:A:133:GLU:OE1	1:A:137:GLU:OE1	2.33	0.46
1:A:155:TYR:CE1	1:A:159:ARG:HD2	2.50	0.46
1:D:120:ALA:HA	1:D:123:ARG:NH1	2.31	0.46
1:B:66:GLU:HA	1:B:66:GLU:OE1	2.15	0.45
1:A:202:THR:O	1:A:206:LYS:HG3	2.17	0.45
1:B:82:ALA:O	1:B:86:VAL:HG23	2.17	0.45
1:C:126:ARG:NH2	1:C:130:ASP:OD1	2.50	0.45
1:F:20:THR:HB	1:F:21:PRO:HA	1.98	0.45
1:D:54:VAL:CG1	1:D:138:LYS:HB3	2.47	0.45
1:D:165:VAL:HG11	1:D:185:LEU:HD22	1.97	0.45
1:C:24:GLY:HA3	1:C:79:ASP:OD1	2.17	0.44
1:B:30:SER:O	1:B:153:SER:HB3	2.17	0.44
1:E:43:ASN:ND2	1:F:15:ALA:O	2.50	0.44
1:A:37:LEU:HD13	1:A:149:VAL:HB	1.99	0.44
1:E:54:VAL:HG21	1:E:138:LYS:HD3	2.00	0.44
1:E:29:ILE:O	1:E:30:SER:C	2.55	0.44
1:A:158:LEU:CD2	1:A:189:LEU:HD23	2.48	0.44
1:E:135:VAL:O	1:E:139:GLY:HA3	2.18	0.44
1:E:189:LEU:O	1:E:192:ALA:N	2.51	0.43
1:B:158:LEU:HD21	1:B:189:LEU:HD23	2.00	0.43
1:A:44:LEU:HD13	1:A:143:VAL:HG11	2.01	0.43
1:B:66:GLU:CD	1:B:69:ARG:HH11	2.20	0.43
1:D:20:THR:CG2	1:D:80:VAL:HG22	2.49	0.43
1:A:149:VAL:HG21	1:B:23:GLY:HA3	2.01	0.43
1:E:39:SER:HG	1:E:65:SER:HG	1.65	0.43
1:A:2:ALA:N	1:E:81:GLU:OE2	2.53	0.42
1:E:126:ARG:NH2	1:E:130:ASP:OD1	2.36	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:111:LEU:HD23	1:F:111:LEU:HA	1.94	0.42
1:D:64:LYS:O	1:D:68:LEU:HG	2.19	0.42
1:A:10:PHE:CE2	1:A:29:ILE:CD1	3.02	0.42
1:A:10:PHE:CE2	1:A:29:ILE:HD12	2.54	0.42
1:A:17:SER:HB3	1:B:43:ASN:HB3	2.02	0.42
1:C:10:PHE:CZ	1:C:29:ILE:HD12	2.55	0.42
1:C:7:ILE:O	1:C:11:LEU:HG	2.20	0.42
1:C:124:VAL:O	1:C:127:GLU:HB2	2.20	0.42
1:F:41:VAL:HG11	1:F:135:VAL:HB	2.01	0.42
1:E:19:PRO:HB2	1:E:83:PHE:CZ	2.55	0.42
1:E:141:LEU:C	1:E:143:VAL:H	2.23	0.41
1:D:54:VAL:HG11	1:D:138:LYS:HB3	2.02	0.41
1:F:37:LEU:CD1	1:F:149:VAL:HG12	2.50	0.41
1:A:151:VAL:HG21	1:A:199:ILE:HB	2.03	0.41
1:D:6:THR:HG22	1:D:8:GLU:N	2.35	0.41
1:E:195:LEU:O	1:E:199:ILE:HG13	2.21	0.41
1:D:112:LYS:N	1:D:172:LEU:HD21	2.36	0.41
1:A:165:VAL:HG11	1:A:185:LEU:HD22	2.03	0.41
1:D:175:ARG:NE	1:D:175:ARG:HA	2.36	0.41
1:C:189:LEU:O	1:C:190:ALA:C	2.59	0.41
1:D:135:VAL:HG12	1:D:147:ALA:HB2	2.02	0.41
1:F:173:ASP:O	1:F:175:ARG:HG2	2.20	0.41
1:C:141:LEU:HD12	1:C:141:LEU:HA	1.94	0.40
1:F:167:VAL:HG12	1:F:168:ASN:OD1	2.21	0.40
1:C:36:ALA:O	1:D:15:ALA:HA	2.22	0.40
1:C:37:LEU:HD21	1:D:14:LEU:HD11	2.03	0.40
1:C:140:ASN:O	1:C:143:VAL:HG12	2.21	0.40
1:A:92:LEU:HD11	1:A:106:LYS:HD2	2.03	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	200/216 (93%)	191 (96%)	9 (4%)	0	100	100
1	B	204/216 (94%)	191 (94%)	13 (6%)	0	100	100
1	C	203/216 (94%)	195 (96%)	7 (3%)	1 (0%)	29	58
1	D	202/216 (94%)	193 (96%)	9 (4%)	0	100	100
1	E	190/216 (88%)	176 (93%)	14 (7%)	0	100	100
1	F	180/216 (83%)	163 (91%)	15 (8%)	2 (1%)	14	38
All	All	1179/1296 (91%)	1109 (94%)	67 (6%)	3 (0%)	41	70

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	F	138	LYS
1	C	190	ALA
1	F	207	VAL

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	150/162 (93%)	145 (97%)	5 (3%)	38	69
1	B	153/162 (94%)	150 (98%)	3 (2%)	55	82
1	C	153/162 (94%)	148 (97%)	5 (3%)	38	69
1	D	152/162 (94%)	143 (94%)	9 (6%)	19	46
1	E	143/162 (88%)	141 (99%)	2 (1%)	67	87
1	F	136/162 (84%)	128 (94%)	8 (6%)	19	46
All	All	887/972 (91%)	855 (96%)	32 (4%)	35	66

All (32) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	30	SER
1	A	52	VAL

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Mol	Chain	Res	Type
1	A	138	LYS
1	A	145	SER
1	A	175	ARG
1	B	30	SER
1	B	60	GLN
1	B	109	GLU
1	C	16	SER
1	C	54	VAL
1	C	151	VAL
1	C	158	LEU
1	C	195	LEU
1	D	30	SER
1	D	63	GLU
1	D	65	SER
1	D	94	LYS
1	D	96	THR
1	D	143	VAL
1	D	153	SER
1	D	167	VAL
1	D	208	ASN
1	E	57	ASP
1	E	137	GLU
1	F	30	SER
1	F	57	ASP
1	F	107	ILE
1	F	113	THR
1	F	116	ASP
1	F	141	LEU
1	F	145	SER
1	F	184	GLU

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

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	204/216 (94%)	-0.18	3 (1%)	73	71	24, 45, 68, 103	0
1	B	206/216 (95%)	-0.03	9 (4%)	34	28	31, 49, 73, 106	0
1	C	205/216 (94%)	0.05	14 (6%)	17	12	30, 48, 72, 106	0
1	D	204/216 (94%)	0.03	8 (3%)	39	34	33, 48, 77, 89	0
1	E	196/216 (90%)	0.28	9 (4%)	32	26	39, 66, 95, 107	0
1	F	186/216 (86%)	0.74	28 (15%)	2	1	42, 70, 98, 108	0
All	All	1201/1296 (92%)	0.14	71 (5%)	22	17	24, 52, 90, 108	0

All (71) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	177	PHE	4.8
1	F	56	ALA	4.6
1	F	169	ALA	4.2
1	F	176	ALA	4.2
1	F	60	GLN	4.1
1	F	112	LYS	4.1
1	F	58	LEU	4.1
1	C	94	LYS	3.9
1	A	97	ASP	3.8
1	F	191	GLU	3.7
1	B	94	LYS	3.7
1	F	134	ILE	3.6
1	E	46	ILE	3.5
1	B	56	ALA	3.4
1	C	104	ALA	3.4
1	F	105	ALA	3.4
1	F	104	ALA	3.3
1	C	4	ASN	3.3
1	B	90	TYR	3.3

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Mol	Chain	Res	Type	RSRZ
1	C	103	ARG	3.3
1	F	175	ARG	3.3
1	C	101	ALA	3.2
1	B	95	ASN	3.2
1	A	98	GLU	3.2
1	B	96	THR	3.1
1	C	93	PRO	3.1
1	E	48	LYS	3.0
1	E	63	GLU	3.0
1	F	138	LYS	3.0
1	F	172	LEU	3.0
1	F	86	VAL	2.9
1	E	101	ALA	2.9
1	F	46	ILE	2.9
1	E	142	ASN	2.9
1	F	141	LEU	2.8
1	D	97	ASP	2.8
1	E	44	LEU	2.7
1	C	98	GLU	2.7
1	F	55	GLU	2.7
1	D	101	ALA	2.7
1	F	178	ALA	2.7
1	F	109	GLU	2.7
1	D	98	GLU	2.6
1	D	49	LYS	2.6
1	C	107	ILE	2.6
1	F	107	ILE	2.5
1	C	102	ALA	2.5
1	E	60	GLN	2.5
1	F	59	LYS	2.4
1	D	52	VAL	2.4
1	C	91	GLY	2.4
1	D	96	THR	2.4
1	E	47	GLY	2.4
1	D	95	ASN	2.4
1	D	94	LYS	2.4
1	C	92	LEU	2.3
1	F	179	GLU	2.3
1	F	45	THR	2.3
1	C	90	TYR	2.2
1	C	97	ASP	2.1
1	B	142	ASN	2.1

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Mol	Chain	Res	Type	RSRZ
1	B	53	GLU	2.1
1	F	135	VAL	2.1
1	B	99	GLU	2.1
1	F	139	GLY	2.1
1	F	173	ASP	2.1
1	E	56	ALA	2.1
1	A	100	LYS	2.1
1	B	91	GLY	2.1
1	C	106	LYS	2.0
1	F	87	MET	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.