Full wwPDB X-ray Structure Validation Report ⓘ

Nov 13, 2023 – 03:42 PM JST

|		
PDB ID	:	5XKS
Title	:	Crystal structure of monoacylglycerol lipase from thermophilic Geobacillus sp. 12AMOR
Authors	:	Wang, Y.H.; Lan, D.M.
Deposited on	:	2017-05-09
Resolution	:	2.19 Å(reported)

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 2.19 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		0.254
Clashscore		6
Ramachandran outliers		0.2%
Sidechain outliers		1.8%
RSRZ outliers		2.3%

Worse   *Better*

▌ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
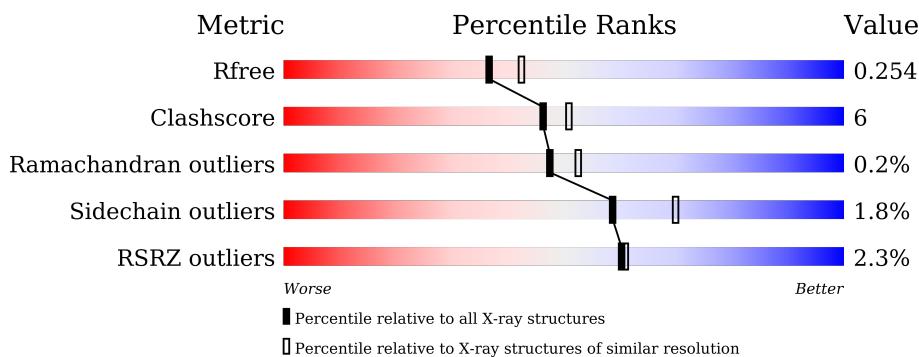
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	6864 (2.20-2.16)
Clashscore	141614	7689 (2.20-2.16)
Ramachandran outliers	138981	7564 (2.20-2.16)
Sidechain outliers	138945	7564 (2.20-2.16)
RSRZ outliers	127900	6738 (2.20-2.16)

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	256	.% 86% 12% •
1	B	256	4% 85% 12% • •
1	C	256	2% 83% 15% •
1	D	256	2% 85% 12% • •
1	E	256	2% 82% 16% •
1	F	256	3% 82% 16% •

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 12313 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 Thermostable monoacylglycerol lipase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	252	Total	C	N	O	S	0	0	0
			1948	1240	331	364	13			
1	B	251	Total	C	N	O	S	0	0	0
			1938	1234	328	363	13			
1	C	252	Total	C	N	O	S	0	0	0
			1948	1240	331	364	13			
1	D	251	Total	C	N	O	S	0	0	0
			1938	1234	328	363	13			
1	E	251	Total	C	N	O	S	0	0	0
			1938	1234	328	363	13			
1	F	253	Total	C	N	O	S	0	0	0
			1958	1246	334	365	13			

There are 30 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	252	HIS	-	expression tag	UNP A0A0G3XXB4
A	253	HIS	-	expression tag	UNP A0A0G3XXB4
A	254	HIS	-	expression tag	UNP A0A0G3XXB4
A	255	HIS	-	expression tag	UNP A0A0G3XXB4
A	256	HIS	-	expression tag	UNP A0A0G3XXB4
B	252	HIS	-	expression tag	UNP A0A0G3XXB4
B	253	HIS	-	expression tag	UNP A0A0G3XXB4
B	254	HIS	-	expression tag	UNP A0A0G3XXB4
B	255	HIS	-	expression tag	UNP A0A0G3XXB4
B	256	HIS	-	expression tag	UNP A0A0G3XXB4
C	252	HIS	-	expression tag	UNP A0A0G3XXB4
C	253	HIS	-	expression tag	UNP A0A0G3XXB4
C	254	HIS	-	expression tag	UNP A0A0G3XXB4
C	255	HIS	-	expression tag	UNP A0A0G3XXB4
C	256	HIS	-	expression tag	UNP A0A0G3XXB4
D	252	HIS	-	expression tag	UNP A0A0G3XXB4
D	253	HIS	-	expression tag	UNP A0A0G3XXB4

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Chain	Residue	Modelled	Actual	Comment	Reference
D	254	HIS	-	expression tag	UNP A0A0G3XXB4
D	255	HIS	-	expression tag	UNP A0A0G3XXB4
D	256	HIS	-	expression tag	UNP A0A0G3XXB4
E	252	HIS	-	expression tag	UNP A0A0G3XXB4
E	253	HIS	-	expression tag	UNP A0A0G3XXB4
E	254	HIS	-	expression tag	UNP A0A0G3XXB4
E	255	HIS	-	expression tag	UNP A0A0G3XXB4
E	256	HIS	-	expression tag	UNP A0A0G3XXB4
F	252	HIS	-	expression tag	UNP A0A0G3XXB4
F	253	HIS	-	expression tag	UNP A0A0G3XXB4
F	254	HIS	-	expression tag	UNP A0A0G3XXB4
F	255	HIS	-	expression tag	UNP A0A0G3XXB4
F	256	HIS	-	expression tag	UNP A0A0G3XXB4

- Molecule 2 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	125	Total 125	O 125	0	0
2	B	112	Total 112	O 112	0	0
2	C	100	Total 100	O 100	0	0
2	D	117	Total 117	O 117	0	0
2	E	73	Total 73	O 73	0	0
2	F	118	Total 118	O 118	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: Thermostable monoacylglycerol lipase
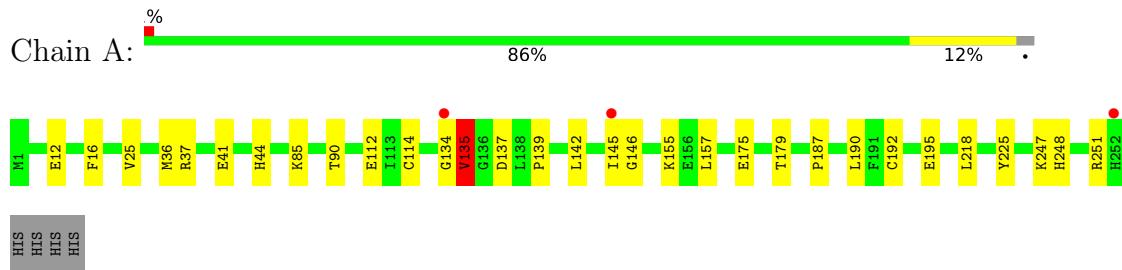
- Molecule 1: Thermostable monoacylglycerol lipase

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D239 L242 D250 R251 HIS HIS HIS HIS HIS

• Molecule 1: Thermostable monoacylglycerol lipase

Chain E:

2%

82% 16%

M1 T2 E3 T4 Y5 I23 F29 T30 Y43 K56 D64 K67 K85 I91 L96 G99 E112 I119 I123 N124 M125 A133 G134 V135 L138 D143 A144 I145 D148 K151 P152 G153 V154 K161 A164 E175 T179

F191 C192 S193 V199 A204 P205 L221 Y225 T229 R234 R251 HIS HIS HIS HIS HIS

• Molecule 1: Thermostable monoacylglycerol lipase

Chain F:

3%

82% 16%

M1 T2 E3 E17 I21 G22 I23 L24 V25 M36 R37 E41 A42 Y43 H44 Y48 R54 L55 H58 A107 I116 A117 P118 A122 A131 L132 A133 G134 V135 G136 D137 L138 I145 G146 K151 R168 Q169 I170 M174 L190 F191 C192 S193 D194

E195 A204 P205 L221 P222 D223 S224 Y225 T229 L230 D231 R234 D250 R251 H252 H253 HIS HIS HIS
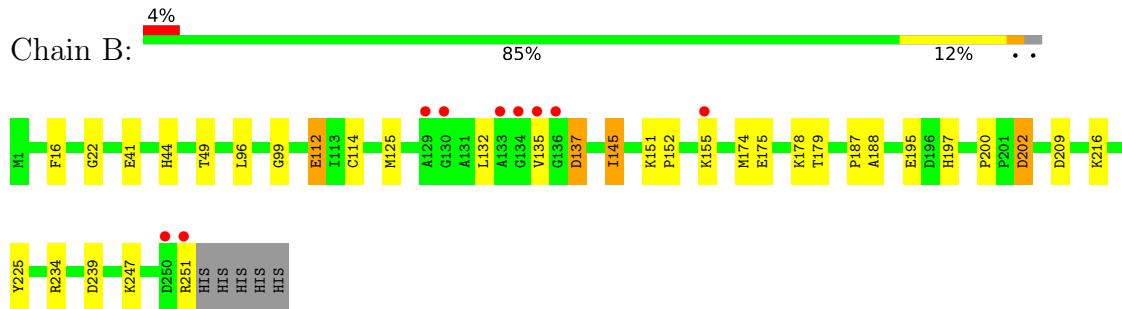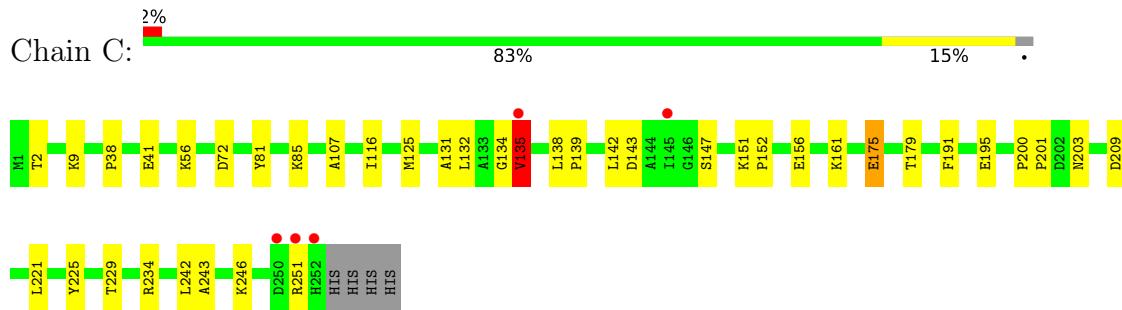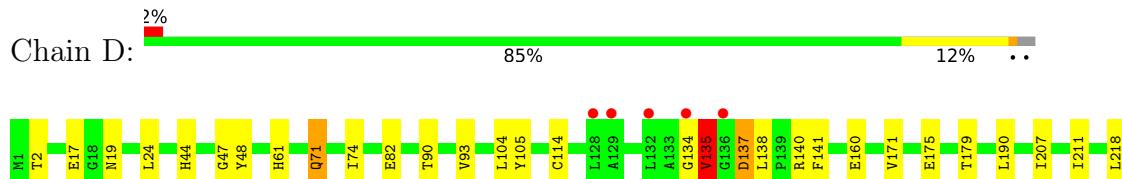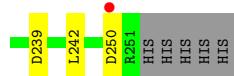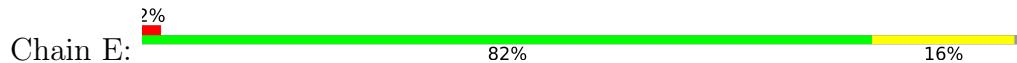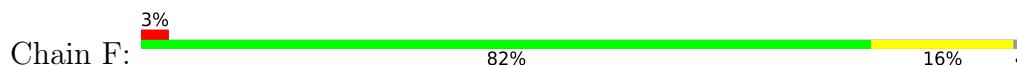
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	43.09Å 136.21Å 126.53Å 90.00° 92.06° 90.00°	Depositor
Resolution (Å)	43.06 – 2.19 46.33 – 2.19	Depositor EDS
% Data completeness (in resolution range)	98.8 (43.06-2.19) 98.8 (46.33-2.19)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.02 (at 2.18Å)	Xtriage
Refinement program	PHENIX phenix.refine: 1.9_1692	Depositor
R, R_{free}	0.196 , 0.252 0.200 , 0.254	Depositor DCC
R_{free} test set	3555 reflections (4.80%)	wwPDB-VP
Wilson B-factor (Å^2)	28.4	Xtriage
Anisotropy	0.143	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 32.7	EDS
L-test for twinning[2]	$< |L| > = 0.46, < L^2 > = 0.29$	Xtriage
Estimated twinning fraction	0.079 for h,-k,-l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	12313	wwPDB-VP
Average B, all atoms (Å^2)	32.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 9.13% 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	0.47	0/1998	0.61	0/2712
1	B	0.47	0/1987	0.62	0/2697
1	C	0.42	0/1998	0.59	0/2712
1	D	0.43	0/1987	0.59	0/2697
1	E	0.38	0/1987	0.56	0/2697
1	F	0.42	0/2009	0.59	1/2727 (0.0%)
All	All	0.43	0/11966	0.59	1/16242 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	F	252	HIS	N-CA-C	5.36	125.48	111.00

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	1948	0	1912	21	0
1	B	1938	0	1905	25	0
1	C	1948	0	1912	26	0
1	D	1938	0	1905	22	0
1	E	1938	0	1905	24	0
1	F	1958	0	1919	28	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	125	0	0	7	1
2	B	112	0	0	7	1
2	C	100	0	0	6	1
2	D	117	0	0	9	0
2	E	73	0	0	5	1
2	F	118	0	0	9	0
All	All	12313	0	11458	145	3

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 (145) 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:247:LYS:NZ	2:A:302:HOH:O	1.94	0.92
1:B:239:ASP:OD2	2:B:301:HOH:O	1.88	0.90
1:A:112:GLU:O	2:A:301:HOH:O	1.90	0.90
1:B:209:ASP:OD1	2:B:302:HOH:O	1.91	0.87
1:D:48:TYR:O	2:D:301:HOH:O	1.94	0.84
1:A:137:ASP:OD1	2:A:303:HOH:O	1.96	0.83
1:A:155:LYS:HG2	2:A:355:HOH:O	1.79	0.82
1:E:3:GLU:O	2:E:301:HOH:O	2.01	0.79
1:F:194:ASP:O	2:F:301:HOH:O	2.04	0.75
1:F:118:PRO:HG2	1:F:190:LEU:HD23	1.68	0.74
1:E:175:GLU:OE1	2:E:302:HOH:O	2.05	0.73
1:B:234:ARG:NH2	2:B:304:HOH:O	2.21	0.73
1:D:82:GLU:OE2	2:D:302:HOH:O	2.09	0.70
1:B:41:GLU:OE2	2:B:303:HOH:O	2.10	0.70
1:F:17:GLU:OE2	2:F:302:HOH:O	2.08	0.69
1:B:178:LYS:NZ	2:B:306:HOH:O	2.25	0.69
1:B:247:LYS:HG3	1:B:251:ARG:NH2	2.08	0.69
1:F:132:LEU:HD11	1:F:168:ARG:HA	1.75	0.69
1:D:71:GLN:OE1	2:D:303:HOH:O	2.10	0.68
1:E:23:ILE:HD12	1:E:43:TYR:HB3	1.77	0.67
1:C:209:ASP:OD1	2:C:301:HOH:O	2.12	0.67
1:C:72:ASP:OD1	2:C:302:HOH:O	2.13	0.67
1:E:143:ASP:OD1	1:E:161:LYS:NZ	2.26	0.66
1:B:125:MET:HG3	1:B:174:MET:HE1	1.77	0.66
1:D:175:GLU:O	1:D:179:THR:HG23	1.96	0.65
1:D:242:LEU:O	2:D:305:HOH:O	2.14	0.65
1:C:243:ALA:HA	1:C:246:LYS:HD3	1.78	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:239:ASP:OD2	2:D:304:HOH:O	2.13	0.65
1:F:174:MET:SD	2:F:399:HOH:O	2.55	0.64
1:A:146:GLY:O	2:A:304:HOH:O	2.14	0.64
1:F:151:LYS:NZ	2:F:310:HOH:O	2.31	0.63
1:A:85:LYS:NZ	2:A:309:HOH:O	2.31	0.63
1:C:135:VAL:HG23	1:C:138:LEU:HD12	1.79	0.63
1:E:125:MET:HE2	1:E:199:VAL:HG22	1.81	0.62
1:C:56:LYS:NZ	2:C:307:HOH:O	2.31	0.62
1:C:242:LEU:O	1:C:246:LYS:HG2	1.99	0.61
1:B:247:LYS:HG3	1:B:251:ARG:HH22	1.64	0.61
1:F:195:GLU:OE2	2:F:303:HOH:O	2.16	0.61
1:E:229:THR:O	1:E:234:ARG:HG3	2.01	0.60
1:E:112:GLU:OE2	2:E:304:HOH:O	2.16	0.60
1:B:175:GLU:O	1:B:179:THR:HG23	2.02	0.59
1:D:211:ILE:O	2:D:307:HOH:O	2.17	0.59
1:F:191:PHE:HB3	1:F:221:LEU:HD11	1.86	0.58
1:D:17:GLU:O	2:D:308:HOH:O	2.17	0.58
1:C:143:ASP:OD1	1:C:161:LYS:NZ	2.30	0.57
1:D:190:LEU:HB2	1:D:218:LEU:HD23	1.86	0.57
1:E:67:LYS:NZ	2:E:306:HOH:O	2.28	0.57
1:B:200:PRO:HB2	1:B:202:ASP:OD1	2.04	0.56
1:F:44:HIS:ND1	2:F:307:HOH:O	2.24	0.56
1:F:193:SER:HA	1:F:221:LEU:HB2	1.87	0.56
1:A:134:GLY:O	1:A:135:VAL:HG12	2.05	0.56
1:E:133:ALA:N	1:E:134:GLY:HA2	2.21	0.56
1:D:137:ASP:N	1:D:137:ASP:OD1	2.39	0.55
1:C:132:LEU:HB2	2:C:323:HOH:O	2.06	0.55
1:F:195:GLU:O	1:F:225:TYR:HA	2.07	0.55
1:E:135:VAL:N	2:E:310:HOH:O	2.40	0.55
1:C:134:GLY:O	1:C:135:VAL:HG12	2.06	0.55
1:C:175:GLU:O	1:C:179:THR:HG23	2.07	0.54
1:B:137:ASP:N	1:B:137:ASP:OD1	2.41	0.54
1:C:81:TYR:CE2	1:C:85:LYS:HD2	2.43	0.54
1:F:23:ILE:HD12	1:F:43:TYR:HB3	1.90	0.54
1:C:229:THR:O	1:C:234:ARG:HD2	2.09	0.53
1:F:250:ASP:OD1	2:F:304:HOH:O	2.17	0.53
1:B:132:LEU:HA	1:B:135:VAL:HG23	1.90	0.53
1:C:191:PHE:HB3	1:C:221:LEU:HD11	1.91	0.53
1:A:190:LEU:HB2	1:A:218:LEU:HD23	1.91	0.52
1:C:107:ALA:HB2	1:C:116:ILE:HG21	1.92	0.52
1:B:145:ILE:HG23	2:B:316:HOH:O	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:134:GLY:O	1:D:135:VAL:HG12	2.10	0.51
1:A:12:GLU:OE2	2:A:305:HOH:O	2.18	0.51
1:B:197:HIS:HE1	1:B:225:TYR:CE2	2.29	0.50
1:C:195:GLU:O	1:C:225:TYR:HA	2.11	0.50
1:C:131:ALA:HB1	1:C:138:LEU:HD11	1.92	0.50
1:B:234:ARG:NH1	2:B:313:HOH:O	2.45	0.50
1:D:135:VAL:HA	1:D:138:LEU:HB2	1.93	0.49
1:E:123:ILE:HD12	1:E:124:ASN:HD22	1.77	0.49
1:E:85:LYS:HG3	1:E:91:ILE:HD12	1.93	0.49
1:A:175:GLU:O	1:A:179:THR:HG23	2.13	0.49
1:A:248:HIS:CD2	1:A:251:ARG:HH22	2.31	0.49
1:F:131:ALA:HB1	1:F:138:LEU:HD21	1.94	0.49
1:B:195:GLU:O	1:B:225:TYR:HA	2.13	0.48
1:E:193:SER:HA	1:E:221:LEU:HB2	1.96	0.48
1:A:25:VAL:HG12	1:A:36:MET:HB3	1.96	0.48
1:A:90:THR:HG23	1:A:114:CYS:SG	2.54	0.47
1:C:139:PRO:HD2	1:C:142:LEU:CD2	2.45	0.47
1:F:37:ARG:NE	2:F:306:HOH:O	2.23	0.47
1:C:41:GLU:OE2	2:C:303:HOH:O	2.20	0.47
1:A:248:HIS:HD2	1:A:251:ARG:HH22	1.62	0.47
1:D:104:LEU:HD11	1:D:207:ILE:HD13	1.97	0.47
1:D:171:VAL:O	1:D:175:GLU:HG2	2.15	0.47
1:B:151:LYS:HA	1:B:152:PRO:HD3	1.80	0.46
1:C:38:PRO:HB3	1:C:234:ARG:CZ	2.44	0.46
1:D:140:ARG:HD3	1:D:141:PHE:CE2	2.50	0.46
1:A:179:THR:HG22	1:B:132:LEU:HD21	1.97	0.45
1:E:1:MET:SD	1:E:56:LYS:HE2	2.57	0.45
1:E:96:LEU:O	1:E:99:GLY:N	2.49	0.45
1:E:119:ILE:HG23	1:E:191:PHE:HB2	1.97	0.45
1:A:37:ARG:O	1:A:41:GLU:HG3	2.16	0.45
1:A:195:GLU:O	1:A:225:TYR:HA	2.17	0.45
1:C:125:MET:HG2	1:C:200:PRO:HD3	1.99	0.45
1:F:3:GLU:OE1	1:F:54:ARG:NH2	2.43	0.45
1:F:107:ALA:HB2	1:F:116:ILE:HG21	1.98	0.45
1:E:151:LYS:HA	1:E:152:PRO:HD3	1.72	0.45
1:D:19:ASN:ND2	1:D:47:GLY:O	2.50	0.44
1:F:122:ALA:CB	1:F:174:MET:HE1	2.47	0.44
1:E:175:GLU:O	1:E:179:THR:HG23	2.17	0.44
1:B:132:LEU:O	1:B:135:VAL:HG23	2.17	0.44
1:E:204:ALA:HB3	1:E:205:PRO:HD3	1.98	0.44
1:C:9:LYS:HD3	1:C:9:LYS:HA	1.64	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:188:ALA:O	1:B:216:LYS:HA	2.18	0.43
1:E:138:LEU:HD12	1:E:164:ALA:HB1	2.00	0.43
1:E:148:ASP:CG	1:E:225:TYR:HB3	2.38	0.43
1:B:96:LEU:O	1:B:99:GLY:N	2.51	0.43
1:D:24:LEU:HB3	1:D:93:VAL:HG22	2.00	0.43
1:F:204:ALA:HB3	1:F:205:PRO:HD3	1.99	0.43
1:C:147:SER:OG	1:C:156:GLU:HB3	2.18	0.43
1:C:151:LYS:HA	1:C:152:PRO:HD3	1.80	0.43
1:E:29:PHE:CD2	1:E:30:THR:HG23	2.54	0.43
1:C:251:ARG:NE	2:C:319:HOH:O	2.52	0.43
1:A:139:PRO:HD2	1:A:142:LEU:HD21	2.01	0.42
1:F:41:GLU:OE2	2:F:305:HOH:O	2.20	0.42
1:C:200:PRO:HA	1:C:201:PRO:HD3	1.82	0.42
1:F:170:ILE:O	1:F:174:MET:HG3	2.19	0.42
1:D:90:THR:HG23	1:D:114:CYS:SG	2.60	0.42
1:D:61:HIS:HA	2:D:397:HOH:O	2.19	0.42
1:F:55:LEU:O	1:F:58:HIS:HB2	2.19	0.42
1:F:122:ALA:HB3	1:F:174:MET:HE1	2.01	0.42
1:E:5:TYR:HB2	1:E:64:ASP:OD2	2.19	0.42
1:F:194:ASP:OD2	1:F:222:PRO:HA	2.20	0.42
1:C:135:VAL:HA	1:C:138:LEU:HB2	2.02	0.41
1:B:16:PHE:HB3	1:B:44:HIS:ND1	2.35	0.41
1:A:16:PHE:HB3	1:A:44:HIS:ND1	2.36	0.41
1:B:112:GLU:H	1:B:112:GLU:HG3	1.30	0.41
1:B:114:CYS:O	1:B:187:PRO:HD2	2.21	0.41
1:D:242:LEU:HD23	1:D:242:LEU:HA	1.75	0.41
1:B:22:GLY:HA2	1:B:49:THR:O	2.20	0.41
1:D:44:HIS:HE1	2:D:308:HOH:O	2.04	0.41
1:F:21:ILE:HB	1:F:48:TYR:HD1	1.86	0.41
1:F:224:SER:OG	1:F:231:ASP:HB3	2.21	0.41
1:F:25:VAL:HG12	1:F:36:MET:HB3	2.02	0.40
1:D:74:ILE:HD13	1:D:105:TYR:CZ	2.56	0.40
1:A:114:CYS:O	1:A:187:PRO:HD2	2.22	0.40
1:A:145:ILE:HA	1:A:146:GLY:HA2	1.88	0.40
1:E:148:ASP:OD2	1:E:225:TYR:HB3	2.21	0.40
1:F:229:THR:O	1:F:234:ARG:HD2	2.20	0.40

All (3) 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)
2:C:359:HOH:O	2:C:373:HOH:O[1_455]	1.90	0.30
2:E:371:HOH:O	2:E:373:HOH:O[1_455]	1.92	0.28
2:A:390:HOH:O	2:B:396:HOH:O[2_7410]	1.97	0.23

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	250/256 (98%)	243 (97%)	6 (2%)	1 (0%)	34	35
1	B	249/256 (97%)	242 (97%)	7 (3%)	0	100	100
1	C	250/256 (98%)	245 (98%)	4 (2%)	1 (0%)	34	35
1	D	249/256 (97%)	244 (98%)	4 (2%)	1 (0%)	34	35
1	E	249/256 (97%)	241 (97%)	8 (3%)	0	100	100
1	F	251/256 (98%)	245 (98%)	6 (2%)	0	100	100
All	All	1498/1536 (98%)	1460 (98%)	35 (2%)	3 (0%)	47	52

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	135	VAL
1	C	135	VAL
1	D	135	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	208/212 (98%)	205 (99%)	3 (1%)	67	78
1	B	207/212 (98%)	202 (98%)	5 (2%)	49	59
1	C	208/212 (98%)	204 (98%)	4 (2%)	57	68
1	D	207/212 (98%)	201 (97%)	6 (3%)	42	51
1	E	207/212 (98%)	206 (100%)	1 (0%)	88	94
1	F	209/212 (99%)	206 (99%)	3 (1%)	67	78
All	All	1246/1272 (98%)	1224 (98%)	22 (2%)	59	70

All (22) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	135	VAL
1	A	157	LEU
1	A	192	CYS
1	B	112	GLU
1	B	137	ASP
1	B	145	ILE
1	B	155	LYS
1	B	202	ASP
1	C	2	THR
1	C	135	VAL
1	C	175	GLU
1	C	203	ASN
1	D	2	THR
1	D	71	GLN
1	D	135	VAL
1	D	137	ASP
1	D	160	GLU
1	D	250	ASP
1	E	2	THR
1	F	41	GLU
1	F	137	ASP
1	F	223	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	248	HIS
1	C	235	GLN
1	D	71	GLN

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	252/256 (98%)	-0.28	3 (1%)	79	79	16, 26, 42, 57	0
1	B	251/256 (98%)	-0.10	9 (3%)	42	43	17, 27, 53, 69	0
1	C	252/256 (98%)	-0.18	5 (1%)	65	66	19, 31, 49, 61	0
1	D	251/256 (98%)	-0.13	6 (2%)	59	59	17, 31, 49, 66	0
1	E	251/256 (98%)	0.11	4 (1%)	72	72	27, 39, 56, 67	0
1	F	253/256 (98%)	-0.06	7 (2%)	53	54	18, 32, 52, 64	0
All	All	1510/1536 (98%)	-0.11	34 (2%)	60	61	16, 31, 52, 69	0

All (34) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	136	GLY	7.2
1	B	133	ALA	6.5
1	B	129	ALA	5.9
1	B	250	ASP	5.3
1	A	145	ILE	5.2
1	D	136	GLY	4.6
1	B	251	ARG	4.3
1	F	136	GLY	3.8
1	C	251	ARG	3.7
1	C	135	VAL	3.6
1	A	252	HIS	3.5
1	C	250	ASP	3.5
1	B	130	GLY	3.4
1	B	135	VAL	3.3
1	F	135	VAL	3.3
1	F	252	HIS	3.3
1	F	145	ILE	3.3
1	D	129	ALA	3.3
1	D	250	ASP	3.1

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Mol	Chain	Res	Type	RSRZ
1	F	146	GLY	3.0
1	F	134	GLY	2.9
1	E	152	PRO	2.8
1	E	153	GLY	2.7
1	B	155	LYS	2.6
1	D	128	LEU	2.6
1	B	134	GLY	2.5
1	F	253	HIS	2.4
1	E	154	VAL	2.4
1	A	134	GLY	2.4
1	D	132	LEU	2.2
1	C	145	ILE	2.2
1	E	145	ILE	2.1
1	D	134	GLY	2.1
1	C	252	HIS	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.