Full wwPDB X-ray Structure Validation Report (i)

Nov 17, 2026 – 04:10 PM JST

PDB ID	:	24ZY / pdb_000024zy
Title	:	Crystal structure of Acetyl Transferase(AT65) from Bacillus sp.
Authors	:	Park, S.E.; Park, H.H.
Deposited on	:	2026-03-26
Resolution	:	2.40 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.

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

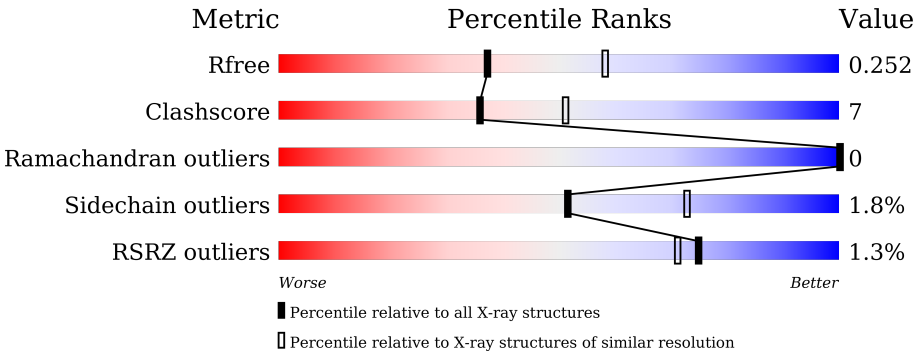
MolProbity	:	4-5-2 with Phenix2.2
Xtriage (Phenix)	:	2.2
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.015 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

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 2.40 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	4912 (2.40-2.40)
Clashscore	190562	5391 (2.40-2.40)
Ramachandran outliers	187476	5320 (2.40-2.40)
Sidechain outliers	187428	5321 (2.40-2.40)
RSRZ outliers	180081	4916 (2.40-2.40)

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	254	72% 13% 15%
1	B	254	69% 14% 17%
1	C	254	69% 16% 14%
1	D	254	73% 9% 18%
1	E	254	68% 15% 17%
1	F	254	66% 16% 17%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 21205 atoms, of which 10374 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 AT65.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	215	Total	C	H	N	O	S	0	0	0
			3567	1178	1767	290	323	9			
1	B	210	Total	C	H	N	O	S	0	0	0
			3443	1145	1698	281	310	9			
1	C	218	Total	C	H	N	O	S	0	0	0
			3596	1184	1786	296	320	10			
1	D	208	Total	C	H	N	O	S	0	0	0
			3435	1139	1700	280	307	9			
1	E	210	Total	C	H	N	O	S	0	0	0
			3464	1149	1717	280	309	9			
1	F	210	Total	C	H	N	O	S	0	0	0
			3460	1151	1706	283	311	9			

- Molecule 2 is water.

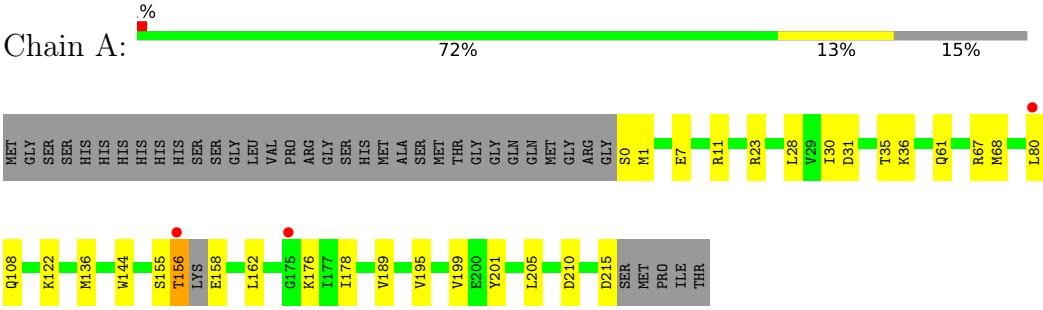
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	47	Total	O	0	0
			47	47		
2	B	45	Total	O	0	0
			45	45		
2	C	34	Total	O	0	0
			34	34		
2	D	54	Total	O	0	0
			54	54		
2	E	29	Total	O	0	0
			29	29		
2	F	31	Total	O	0	0
			31	31		

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.

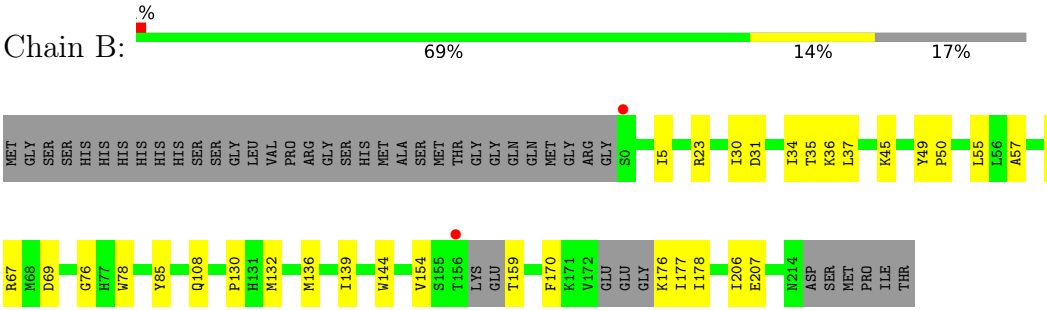
- Molecule 1: AT65

Chain A:



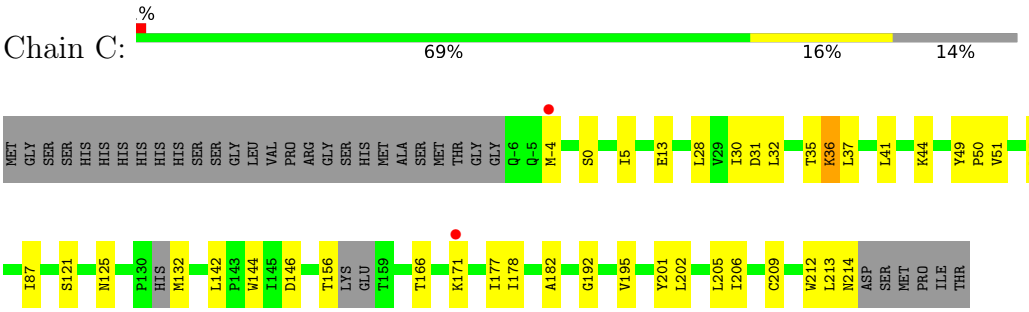
- Molecule 1: AT65

Chain B:



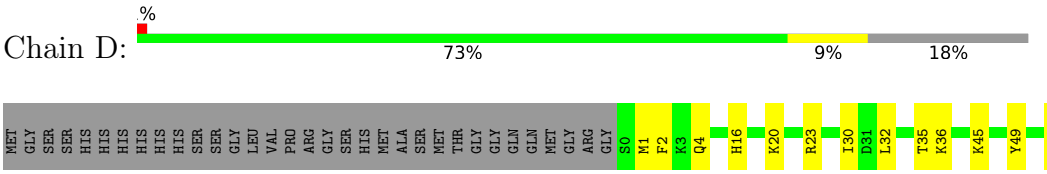
- Molecule 1: AT65

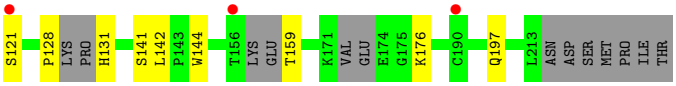
Chain C:



- Molecule 1: AT65

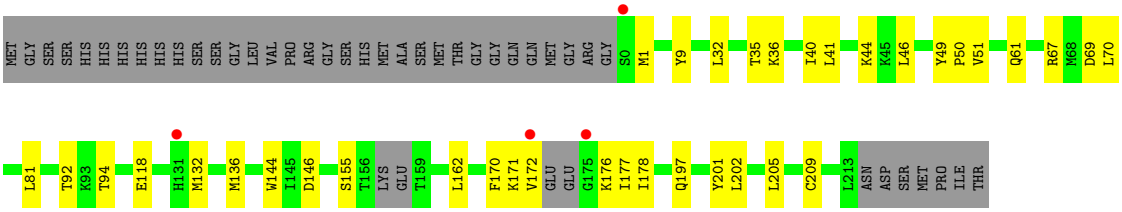
Chain D:





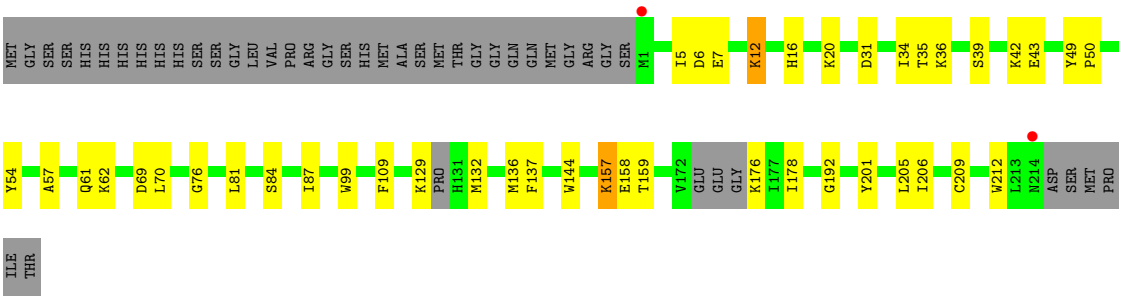
• Molecule 1: AT65





• Molecule 1: AT65





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	73.11Å 94.80Å 102.30Å 90.00° 97.69° 90.00°	Depositor
Resolution (Å)	29.17 – 2.40 29.17 – 2.40	Depositor EDS
% Data completeness (in resolution range)	98.7 (29.17-2.40) 98.6 (29.17-2.40)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.52 (at 2.39Å)	Xtriage
Refinement program	PHENIX 1.19.2_4158, PHENIX 1.19.2_4158	Depositor
R, R_{free}	0.210 , 0.253 0.210 , 0.252	Depositor DCC
R_{free} test set	2675 reflections (4.93%)	wwPDB-VP
Wilson B-factor (Å^2)	38.9	Xtriage
Anisotropy	0.123	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 38.4	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	0.94	EDS
Total number of atoms	21205	wwPDB-VP
Average B, all atoms (Å^2)	50.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.87% 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	0.24	0/1855	0.45	0/2518
1	B	0.22	0/1799	0.43	0/2447
1	C	0.23	0/1863	0.42	0/2525
1	D	0.25	0/1787	0.41	0/2424
1	E	0.20	0/1801	0.40	0/2446
1	F	0.22	0/1807	0.41	0/2454
All	All	0.23	0/10912	0.42	0/14814

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	1800	1767	1768	25	0
1	B	1745	1698	1698	26	0
1	C	1810	1786	1786	32	0
1	D	1735	1700	1700	20	0
1	E	1747	1717	1717	27	0
1	F	1754	1706	1716	28	0
2	A	47	0	0	6	1
2	B	45	0	0	8	1
2	C	34	0	0	9	0
2	D	54	0	0	10	1

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	E	29	0	0	9	1
2	F	31	0	0	4	0
All	All	10831	10374	10385	153	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 7.

All (153) 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:B:176:LYS:N	2:B:301:HOH:O	1.85	1.08
1:D:176:LYS:NZ	2:D:302:HOH:O	1.87	1.06
1:D:107:ALA:O	2:D:301:HOH:O	1.81	0.98
1:C:214:ASN:O	2:C:302:HOH:O	1.89	0.89
1:B:69:ASP:OD1	2:B:302:HOH:O	1.93	0.86
1:C:65:GLU:OE2	2:C:303:HOH:O	1.95	0.84
1:D:197:GLN:OE1	2:D:303:HOH:O	1.95	0.84
1:C:132:MET:N	2:C:305:HOH:O	2.12	0.82
1:A:156:THR:HG1	1:A:158:GLU:N	1.78	0.81
1:B:159:THR:N	2:B:306:HOH:O	2.14	0.81
1:D:4:GLN:OE1	2:D:304:HOH:O	1.98	0.80
1:B:159:THR:N	2:B:307:HOH:O	2.14	0.80
1:E:94:THR:OG1	2:E:301:HOH:O	2.00	0.79
1:E:172:VAL:O	2:E:302:HOH:O	2.02	0.77
1:A:136:MET:O	2:A:301:HOH:O	2.01	0.77
1:E:35:THR:OG1	2:E:303:HOH:O	2.04	0.76
1:F:6:ASP:OD1	1:F:7:GLU:N	2.19	0.75
1:D:131:HIS:ND1	2:D:305:HOH:O	2.19	0.75
1:E:197:GLN:NE2	2:E:305:HOH:O	2.20	0.74
1:A:61:GLN:O	1:A:67:ARG:NH1	2.22	0.73
1:B:65:GLU:OE2	2:B:303:HOH:O	2.07	0.73
1:F:35:THR:OG1	2:F:301:HOH:O	2.04	0.73
1:D:4:GLN:CD	2:D:304:HOH:O	2.32	0.70
1:B:55:LEU:HD13	1:B:206:ILE:HD11	1.73	0.69
1:C:13:GLU:OE2	2:C:304:HOH:O	2.10	0.68
1:B:207:GLU:OE2	2:B:305:HOH:O	2.12	0.67
1:E:146:ASP:OD2	1:E:171:LYS:NZ	2.26	0.67
1:E:32:LEU:HD11	1:E:202:LEU:HD23	1.79	0.65
1:D:159:THR:HA	2:D:312:HOH:O	1.98	0.64
1:A:23:ARG:HD3	2:A:343:HOH:O	1.97	0.64
1:F:62:LYS:NZ	2:F:302:HOH:O	2.19	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:132:MET:HE2	1:E:136:MET:HE1	1.81	0.62
1:B:130:PRO:HG2	1:C:5:ILE:HD11	1.80	0.62
1:D:36:LYS:N	2:D:308:HOH:O	2.31	0.61
1:A:210:ASP:OD2	2:A:302:HOH:O	2.16	0.61
1:F:132:MET:HE3	1:F:136:MET:HE1	1.82	0.61
1:C:125:ASN:OD1	2:C:306:HOH:O	2.15	0.60
1:F:176:LYS:N	2:F:301:HOH:O	2.34	0.60
1:E:81:LEU:HD21	1:E:162:LEU:HD22	1.85	0.58
1:B:132:MET:HB3	1:B:136:MET:HE1	1.86	0.58
1:C:37:LEU:HD13	1:C:209:CYS:CB	2.33	0.58
1:C:35:THR:HG23	1:C:36:LYS:N	2.20	0.57
1:A:176:LYS:HA	1:A:176:LYS:HE2	1.87	0.57
1:E:40:ILE:HD12	1:E:209:CYS:SG	2.45	0.57
1:A:61:GLN:CD	1:A:80:LEU:HD12	2.29	0.57
1:C:87:ILE:HD12	1:C:87:ILE:O	2.04	0.57
1:B:55:LEU:HD13	1:B:206:ILE:CD1	2.35	0.56
1:F:16:HIS:ND1	1:F:20:LYS:HD2	2.21	0.55
1:E:146:ASP:CB	1:E:171:LYS:HE3	2.37	0.55
1:B:130:PRO:CG	1:C:5:ILE:HD11	2.37	0.54
1:C:41:LEU:HD22	1:C:51:VAL:HG21	1.89	0.54
1:C:31:ASP:N	2:C:301:HOH:O	1.85	0.54
1:A:35:THR:HG23	1:A:36:LYS:N	2.23	0.53
1:D:159:THR:N	2:D:312:HOH:O	2.42	0.53
1:F:159:THR:HA	2:F:307:HOH:O	2.08	0.53
1:A:122:LYS:HG3	1:A:122:LYS:O	2.08	0.52
1:C:35:THR:HA	1:C:177:ILE:HD12	1.92	0.52
1:A:68:MET:HE3	1:A:189:VAL:HB	1.92	0.51
1:B:45:LYS:N	1:B:45:LYS:HD2	2.26	0.51
1:B:49:TYR:HB3	1:B:50:PRO:HD3	1.93	0.51
1:D:35:THR:HG23	1:D:36:LYS:N	2.27	0.50
1:F:34:ILE:HG22	1:F:206:ILE:HD13	1.93	0.50
1:B:35:THR:HA	1:B:177:ILE:HD12	1.92	0.50
1:D:98:ILE:HG22	1:D:128:PRO:HG2	1.94	0.50
1:A:61:GLN:HA	1:A:61:GLN:OE1	2.12	0.49
1:C:32:LEU:HD11	1:C:202:LEU:HD23	1.95	0.49
1:E:67:ARG:HG2	1:E:81:LEU:HD13	1.95	0.48
1:F:35:THR:HG23	1:F:36:LYS:N	2.29	0.48
1:E:9:TYR:OH	2:E:304:HOH:O	2.18	0.48
1:C:30:ILE:CA	2:C:301:HOH:O	2.61	0.47
1:A:68:MET:HE1	2:A:307:HOH:O	2.13	0.47
1:F:49:TYR:HB3	1:F:50:PRO:HD3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:157:LYS:HG3	1:F:158:GLU:N	2.29	0.47
1:C:87:ILE:HD12	1:C:87:ILE:C	2.39	0.47
1:B:57:ALA:O	1:B:61:GLN:HG2	2.14	0.47
1:C:77:HIS:HE1	2:C:329:HOH:O	1.97	0.47
1:E:69:ASP:OD1	1:E:70:LEU:N	2.46	0.47
1:E:32:LEU:HD11	1:E:202:LEU:CD2	2.43	0.46
1:A:155:SER:O	1:A:156:THR:HB	2.14	0.46
1:E:201:TYR:CE2	1:E:205:LEU:HD11	2.51	0.46
1:C:28:LEU:HD21	1:C:195:VAL:HG11	1.96	0.46
1:C:44:LYS:NZ	1:C:213:LEU:O	2.49	0.46
1:A:0:SER:OG	1:A:1:MET:N	2.49	0.46
1:B:35:THR:HG23	1:B:36:LYS:N	2.31	0.46
1:F:87:ILE:C	1:F:87:ILE:HD12	2.41	0.46
1:E:176:LYS:HE2	2:E:303:HOH:O	2.15	0.45
1:E:61:GLN:O	1:E:67:ARG:NH1	2.50	0.45
1:F:99:TRP:CE2	1:F:129:LYS:HE2	2.52	0.45
1:F:87:ILE:HD12	1:F:87:ILE:O	2.16	0.45
1:A:136:MET:O	1:A:162:LEU:HD13	2.17	0.45
1:E:92:THR:CB	2:E:301:HOH:O	2.65	0.45
1:A:31:ASP:HB3	1:A:178:ILE:HG23	1.99	0.45
1:C:31:ASP:HB3	1:C:178:ILE:HG23	1.99	0.45
1:C:30:ILE:HA	2:C:301:HOH:O	2.16	0.44
1:D:16:HIS:CE1	1:D:20:LYS:HD2	2.51	0.44
1:E:170:PHE:HA	1:E:178:ILE:O	2.18	0.44
1:A:108:GLN:NE2	1:E:118:GLU:HG2	2.32	0.44
1:A:201:TYR:CE2	1:A:205:LEU:HD11	2.52	0.44
1:B:30:ILE:HD12	1:B:30:ILE:C	2.43	0.44
1:E:35:THR:HG23	1:E:36:LYS:N	2.32	0.44
1:A:28:LEU:HD21	1:A:195:VAL:HG11	1.99	0.44
1:C:166:THR:HB	1:C:182:ALA:HB3	1.99	0.44
1:E:44:LYS:O	1:E:46:LEU:HD13	2.17	0.44
1:B:66:PHE:HA	2:B:328:HOH:O	2.18	0.44
1:E:41:LEU:CD2	1:E:51:VAL:HG21	2.48	0.43
1:F:16:HIS:CE1	1:F:20:LYS:HD2	2.52	0.43
1:C:146:ASP:HB2	1:C:171:LYS:HE2	2.00	0.43
1:C:209:CYS:HA	1:C:212:TRP:NE1	2.33	0.43
1:E:146:ASP:HB2	1:E:171:LYS:HE3	2.00	0.43
1:E:171:LYS:O	1:E:177:ILE:HA	2.18	0.43
1:B:5:ILE:HG23	1:B:76:GLY:HA2	2.00	0.43
1:C:142:LEU:HD22	1:F:192:GLY:HA3	2.00	0.43
1:D:30:ILE:C	1:D:30:ILE:HD12	2.43	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:61:GLN:NE2	1:A:81:LEU:O	2.44	0.43
1:A:30:ILE:HD13	1:A:199:VAL:CG2	2.49	0.43
1:F:5:ILE:HG23	1:F:76:GLY:HA2	2.01	0.43
1:F:57:ALA:O	1:F:61:GLN:HG2	2.20	0.42
1:C:35:THR:CG2	1:C:36:LYS:N	2.82	0.42
1:A:11:ARG:HD3	2:A:307:HOH:O	2.19	0.42
1:D:1:MET:HG3	1:D:2:PHE:H	1.84	0.42
1:C:55:LEU:HD21	1:C:206:ILE:HG13	2.01	0.42
1:D:159:THR:CA	2:D:312:HOH:O	2.60	0.42
1:D:30:ILE:CD1	1:D:32:LEU:HG	2.49	0.42
1:F:62:LYS:HE3	1:F:201:TYR:CE1	2.55	0.42
1:C:132:MET:HB2	2:E:323:HOH:O	2.19	0.42
1:B:31:ASP:HB3	1:B:178:ILE:HG23	2.01	0.42
1:F:209:CYS:HA	1:F:212:TRP:NE1	2.35	0.42
1:A:215:ASP:CG	2:A:303:HOH:O	2.63	0.41
1:C:-4:MET:O	1:C:0:SER:O	2.38	0.41
1:F:12:LYS:HE2	1:F:12:LYS:HB3	1.93	0.41
1:F:81:LEU:HD23	1:F:137:PHE:HB3	2.00	0.41
1:A:35:THR:CG2	1:A:36:LYS:N	2.82	0.41
1:F:132:MET:CE	1:F:136:MET:HE1	2.50	0.41
1:F:201:TYR:CE2	1:F:205:LEU:HD11	2.55	0.41
1:D:45:LYS:HD2	1:D:45:LYS:N	2.36	0.41
1:A:80:LEU:HD11	1:A:102:TYR:CD2	2.56	0.41
1:E:49:TYR:HB3	1:E:50:PRO:HD3	2.01	0.41
1:B:67:ARG:NH1	1:B:78:TRP:O	2.50	0.41
1:F:31:ASP:HB3	1:F:178:ILE:HG23	2.02	0.41
1:F:69:ASP:OD1	1:F:70:LEU:N	2.51	0.41
1:B:23:ARG:CZ	1:B:23:ARG:HB2	2.51	0.41
1:D:49:TYR:CE1	1:D:141:SER:HB2	2.55	0.41
1:F:54:TYR:HB2	1:F:109:PHE:CD2	2.55	0.41
1:B:34:ILE:HD11	1:B:170:PHE:CE1	2.56	0.41
1:B:37:LEU:HD22	1:B:206:ILE:HD12	2.03	0.41
1:B:85:TYR:HA	1:B:139:ILE:O	2.21	0.41
1:D:1:MET:HG3	1:D:2:PHE:N	2.36	0.41
1:E:176:LYS:HA	2:E:303:HOH:O	2.20	0.41
1:B:108:GLN:HB2	2:B:314:HOH:O	2.21	0.40
1:C:49:TYR:N	1:C:50:PRO:HD2	2.36	0.40
1:C:192:GLY:HA3	1:D:142:LEU:HD22	2.04	0.40
1:C:201:TYR:CE2	1:C:205:LEU:HD11	2.57	0.40
1:F:84:SER:HB2	1:F:136:MET:SD	2.62	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the sym-

metry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:311:HOH:O	2:D:320:HOH:O[2_556]	1.72	0.48
2:B:321:HOH:O	2:E:325:HOH:O[2_646]	2.19	0.01

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	211/254 (83%)	205 (97%)	6 (3%)	0	100	100
1	B	204/254 (80%)	199 (98%)	5 (2%)	0	100	100
1	C	212/254 (84%)	205 (97%)	7 (3%)	0	100	100
1	D	200/254 (79%)	197 (98%)	3 (2%)	0	100	100
1	E	204/254 (80%)	199 (98%)	5 (2%)	0	100	100
1	F	204/254 (80%)	196 (96%)	8 (4%)	0	100	100
All	All	1235/1524 (81%)	1201 (97%)	34 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	204/235 (87%)	201 (98%)	3 (2%)	57	77
1	B	196/235 (83%)	194 (99%)	2 (1%)	68	84

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	C	203/235 (86%)	199 (98%)	4 (2%)	48 70
1	D	195/235 (83%)	192 (98%)	3 (2%)	57 77
1	E	197/235 (84%)	194 (98%)	3 (2%)	57 77
1	F	197/235 (84%)	191 (97%)	6 (3%)	36 58
All	All	1192/1410 (84%)	1171 (98%)	21 (2%)	51 73

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	7	GLU
1	A	144	TRP
1	A	156	THR
1	B	144	TRP
1	B	154	VAL
1	C	36	LYS
1	C	121	SER
1	C	144	TRP
1	C	156	THR
1	D	23	ARG
1	D	121	SER
1	D	144	TRP
1	E	1	MET
1	E	144	TRP
1	E	155	SER
1	F	12	LYS
1	F	39	SER
1	F	42	LYS
1	F	43	GLU
1	F	144	TRP
1	F	157	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	153	ASN
1	B	17	HIS
1	B	38	HIS
1	B	72	ASN
1	B	131	HIS
1	B	151	ASN

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Mol	Chain	Res	Type
1	C	138	ASN
1	C	151	ASN
1	C	153	ASN
1	D	72	ASN
1	D	151	ASN
1	D	153	ASN
1	E	38	HIS
1	F	38	HIS
1	F	151	ASN
1	F	153	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

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	215/254 (84%)	0.12	3 (1%)	73	69	24, 44, 79, 113	0
1	B	210/254 (82%)	0.03	2 (0%)	79	76	24, 42, 79, 97	0
1	C	218/254 (85%)	0.08	2 (0%)	81	78	22, 45, 74, 100	0
1	D	208/254 (81%)	0.04	3 (1%)	73	69	21, 43, 73, 104	0
1	E	210/254 (82%)	0.24	4 (1%)	66	62	25, 53, 82, 102	0
1	F	210/254 (82%)	0.37	2 (0%)	79	76	25, 60, 87, 101	0
All	All	1271/1524 (83%)	0.15	16 (1%)	75	71	21, 48, 81, 113	0

All (16) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	156	THR	3.6
1	E	175	GLY	3.6
1	D	190	CYS	3.6
1	A	175	GLY	3.5
1	D	156	THR	3.3
1	E	131	HIS	3.1
1	C	-4	MET	2.7
1	E	0	SER	2.7
1	E	172	VAL	2.7
1	C	171	LYS	2.6
1	B	0	SER	2.5
1	A	156	THR	2.4
1	A	80	LEU	2.2
1	F	1	MET	2.1
1	F	214	ASN	2.1
1	D	121	SER	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.