Full wwPDB X-ray Structure Validation Report (i)

Jun 26, 2024 – 08:17 AM EDT

PDB ID	:	6RLM
Title	:	Crystal structure of AT1412dm Fab fragment
Authors	:	Neviani, V.; Pearce, N.M.; Pos, W.; Schotte, R.; Spits, H.; Gros, P.
Deposited on	:	2019-05-02
Resolution	:	2.50 Å(reported)

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

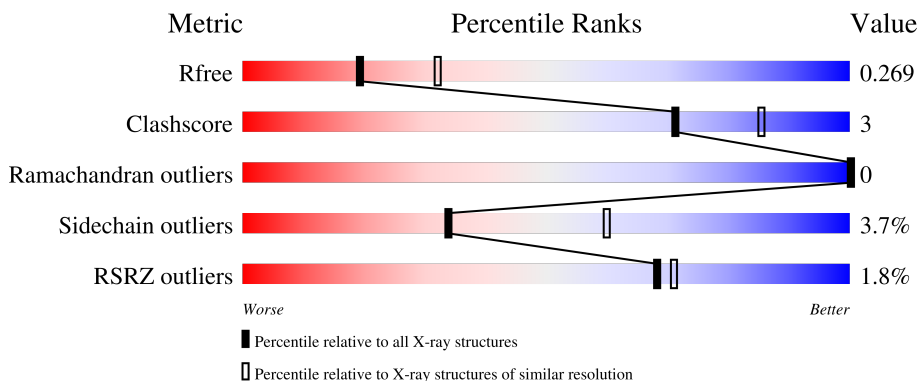|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.37.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

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 2.50 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		0.269
Clashscore		3
Ramachandran outliers		0
Sidechain outliers		3.7%
RSRZ outliers		1.8%

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	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

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	227	86% 9% 5%
1	C	227	87% 7% 6%
1	E	227	% 89% 7% ··
1	G	227	88% 6% 6%
1	I	227	4% 90% 7% ·

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	K	227	% 86% 7% 7%
1	M	227	% 89% 6% 5%
1	O	227	5% 82% 8% 9%
2	B	220	88% 11% •
2	D	220	% 88% 10% ••
2	F	220	90% 9% •
2	H	220	% 89% 10% ••
2	J	220	% 89% 10% •
2	L	220	2% 89% 10% •
2	N	220	% 86% 13%
2	P	220	7% 85% 14% •

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 26544 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 AT1412dm Fab (Heavy Chain).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	216	Total	C	N	O	S	0	0	0
			1630	1041	271	313	5			
1	C	214	Total	C	N	O	S	0	0	0
			1622	1037	269	311	5			
1	E	221	Total	C	N	O	S	0	0	0
			1664	1060	277	322	5			
1	G	213	Total	C	N	O	S	0	0	0
			1613	1031	267	310	5			
1	I	220	Total	C	N	O	S	0	0	0
			1658	1057	276	320	5			
1	K	211	Total	C	N	O	S	0	0	0
			1601	1025	265	306	5			
1	M	215	Total	C	N	O	S	0	0	0
			1626	1039	270	312	5			
1	O	206	Total	C	N	O	S	0	0	0
			1566	1004	259	298	5			

- Molecule 2 is a protein called AT1412dm Fab (Light Chain).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	219	Total	C	N	O	S	0	0	0
			1697	1060	284	348	5			
2	D	218	Total	C	N	O	S	0	0	0
			1689	1056	283	345	5			
2	F	219	Total	C	N	O	S	0	0	0
			1697	1060	284	348	5			
2	H	218	Total	C	N	O	S	0	0	0
			1689	1056	283	345	5			
2	J	219	Total	C	N	O	S	0	0	0
			1697	1060	284	348	5			
2	L	219	Total	C	N	O	S	0	0	0
			1697	1060	284	348	5			

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	N	219	Total 1697	C 1060	N 284	O 348	S 5	0	0	0
2	P	219	Total 1697	C 1060	N 284	O 348	S 5	0	0	0

- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	C	1	Total 1	Cl 1	0	0
3	G	1	Total 1	Cl 1	0	0
3	J	1	Total 1	Cl 1	0	0
3	K	1	Total 1	Cl 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: AT1412dm Fab (Heavy Chain)

Chain A:
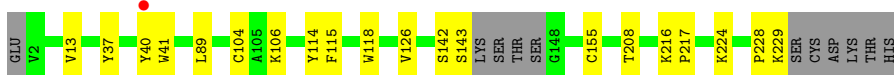
- Molecule 1: AT1412dm Fab (Heavy Chain)

Chain C:

- Molecule 1: AT1412dm Fab (Heavy Chain)

Chain E:

- Molecule 1: AT1412dm Fab (Heavy Chain)
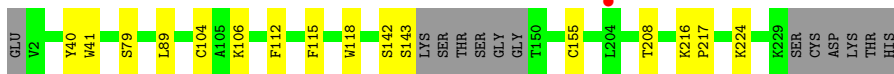
Chain G:
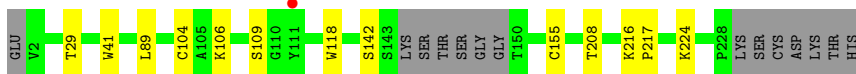

- Molecule 1: AT1412dm Fab (Heavy Chain)

Chain I:

- Molecule 1: AT1412dm Fab (Heavy Chain)

Chain K:

Chain K residue bar: %, 86%, 7%, 7%

GLU V2 V13 T29 Y37 W41 W58 V66 L89 C104 A105 K106 W118 V126 P141 SER SER LYS SER THR SER GLY G149 C155 L204 GLY T206 Q207 T208 K216 P217 K221 K224 P228 LYS SER CYS ASP LYS THR HIS
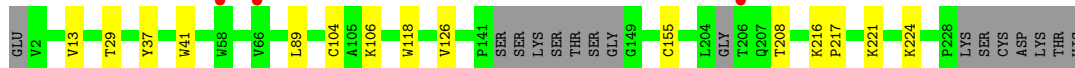
• Molecule 1: AT1412dm Fab (Heavy Chain)

Chain M:

Chain M residue bar: %, 89%, 6%, 5%

GLU V2 Y40 W41 L89 K106 F112 F115 W118 S142 S143 LYS SER THR SER GLY G149 C155 G205 T208 K216 P217 K224 R225 K229 SER CYS ASP LYS THR HIS

• Molecule 1: AT1412dm Fab (Heavy Chain)

Chain O:

Chain O residue bar: 5%, 82%, 8%, 9%

GLU V2 T29 Y40 W41 V53 S54 I65 L89 E97 K106 P113 Y114 F115 W118 S130 L139 A140 P141 SER SER LYS SER THR SER GLY GLY THR A151 C155 L156 Y160 V165 V197 T198 V199 P200 S201 S202 S203 LEU GLY THR GLN T208

Y209 K216 P217 K224 R225 V226 E227 P228 LYS SER CYS ASP LYS THR HIS

• Molecule 2: AT1412dm Fab (Light Chain)

Chain B:

Chain B residue bar: 88%, 11%, •

D1 T5 E17 K24 S33 N37 Q43 L53 I54 Y55 W56 E68 T85 L94 V101 Y102 Y103 Q106 T109 T110 P111 L120 K142 L152 Y156 P157 L197 T213 E229 CYS

• Molecule 2: AT1412dm Fab (Light Chain)

Chain D:

Chain D residue bar: %, 88%, 10%, ••

ASP I2 T5 E17 K24 S33 N37 Q43 L53 W56 E68 T85 S92 S93 L94 Q95 V101 Y102 Y103 Q106 T109 T110 P111 L152 Y156 P157 L170 Q171 N174 L197 C210 T213 E229 CYS

• Molecule 2: AT1412dm Fab (Light Chain)

Chain F:

Chain F residue bar: 90%, 9%, •

D1 T5 E17 K24 S33 N37 W56 E68 T85 V101 Y102 Y103 Q106 T109 T110 P111 E139 L152 Y156 P157 L197 C210 T213 E229 CYS

• Molecule 2: AT1412dm Fab (Light Chain)

Chain H:

Chain H residue bar: %, 89%, 10%, ••

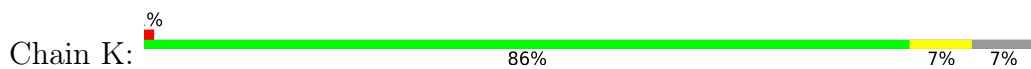ASP I2 T5 E17 K24 S33 N37 Q43 L53 W56 E68 T85 E97 Q106 T109 T110 P111 L152 Y156 P157 Q163 L170 Q171 N174 L197 T213 E229 CYS

• Molecule 2: AT1412dm Fab (Light Chain)

Chain J:

89% 10%

D1 T5 L15 G16 E17 K24 S33 N37 Y38 L39 Q43 L53 W56 E68 T85 V101 Y102 Y103 Q106 T109 T110 P111 S112 T113 L152 Y156 P157 L197 C210 T213 E229 CYS

• Molecule 2: AT1412dm Fab (Light Chain)

Chain L:

89% 10%

D1 T5 E17 K24 S33 N37 Q43 L53 W56 E68 T85 V101 Y102 Y103 Q106 Y107 Y108 T109 T110 P111 L152 Y156 P157 V162 V166 E177 L197 V212 T213 E229 CYS

• Molecule 2: AT1412dm Fab (Light Chain)

Chain N:

86% 13%

D1 T5 E17 K24 S33 N37 Q43 L53 I54 Y55 W56 E68 T85 L94 V101 Y102 Y103 Q106 T109 T110 P111 L120 L152 Y156 P157 R158 L170 Q171 N174 V179 C210 T213 E229 CYS
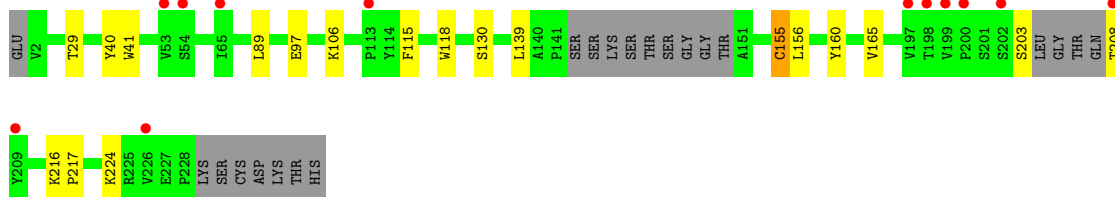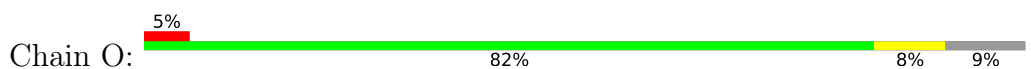
• Molecule 2: AT1412dm Fab (Light Chain)

Chain P:

85% 14%

D1 T5 L15 G16 E17 K24 V29 S32 S33 N37 Y38 L39 G40 W41 Y42 Q43 L53 W56 A57 E68 S69 G70 D74 R75 F76 T85 L89 S92 S93 L94 V101 Y102 Y103 Q106 T109 T110 P111 L120 F132 L152

Y156 P157 V162 Q163 L170 Q171 N174 E177 L197 C210 T213 E229 CYS

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	224.91Å 238.59Å 209.81Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	163.66 – 2.50 163.66 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.4 (163.66-2.50) 99.4 (163.66-2.50)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.27 (at 2.52Å)	Xtriage
Refinement program	REFMAC 5.8.0238	Depositor
R, R_{free}	0.242 , 0.267 0.246 , 0.269	Depositor DCC
R_{free} test set	9440 reflections (4.91%)	wwPDB-VP
Wilson B-factor (Å^2)	64.6	Xtriage
Anisotropy	0.607	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 39.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	26544	wwPDB-VP
Average B, all atoms (Å^2)	80.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.61% 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 (i)

5.1 Standard geometry (i)

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

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	0.68	0/1673	0.84	0/2280
1	C	0.70	0/1665	0.84	0/2270
1	E	0.70	0/1708	0.86	0/2328
1	G	0.67	0/1656	0.84	0/2259
1	I	0.69	0/1702	0.83	0/2320
1	K	0.66	0/1643	0.82	0/2240
1	M	0.67	0/1669	0.83	0/2275
1	O	0.69	0/1608	0.85	0/2192
2	B	0.68	0/1734	0.84	0/2356
2	D	0.70	0/1726	0.84	0/2345
2	F	0.72	0/1734	0.84	0/2356
2	H	0.70	1/1726 (0.1%)	0.85	0/2345
2	J	0.70	0/1734	0.84	0/2356
2	L	0.70	0/1734	0.83	0/2356
2	N	0.71	0/1734	0.84	0/2356
2	P	0.69	0/1734	0.83	0/2356
All	All	0.69	1/27180 (0.0%)	0.84	0/36990

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	H	97	GLU	CD-OE1	5.07	1.31	1.25

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	1630	0	1585	12	0
1	C	1622	0	1579	9	0
1	E	1664	0	1621	11	0
1	G	1613	0	1566	6	0
1	I	1658	0	1616	8	0
1	K	1601	0	1555	7	0
1	M	1626	0	1582	6	0
1	O	1566	0	1519	10	0
2	B	1697	0	1637	15	0
2	D	1689	0	1630	14	0
2	F	1697	0	1637	12	0
2	H	1689	0	1630	13	0
2	J	1697	0	1637	13	0
2	L	1697	0	1637	13	0
2	N	1697	0	1637	17	0
2	P	1697	0	1637	24	0
3	C	1	0	0	0	0
3	G	1	0	0	0	0
3	J	1	0	0	1	0
3	K	1	0	0	0	0
All	All	26544	0	25705	182	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 3.

All (182) 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:P:41:TRP:CG	2:P:89:LEU:HD23	1.61	1.36
2:P:41:TRP:CD2	2:P:89:LEU:HD23	2.02	0.95
2:P:41:TRP:CG	2:P:89:LEU:CD2	2.50	0.94
2:P:41:TRP:CD1	2:P:89:LEU:HD23	2.09	0.88
2:P:162:VAL:HG22	2:P:177:GLU:OE2	1.80	0.81
1:E:139:LEU:HD11	1:E:156:LEU:HB2	1.68	0.75
2:P:162:VAL:CG2	2:P:177:GLU:OE2	2.38	0.71

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:106:GLN:HE22	2:D:109:THR:CG2	2.09	0.66
2:H:106:GLN:HE22	2:H:109:THR:CG2	2.08	0.66
2:B:106:GLN:HE22	2:B:109:THR:CG2	2.08	0.66
1:I:142:SER:H	1:I:145:SER:HB3	1.60	0.66
2:P:106:GLN:HE22	2:P:109:THR:CG2	2.10	0.65
2:N:106:GLN:HE22	2:N:109:THR:CG2	2.09	0.65
2:L:106:GLN:HE22	2:L:109:THR:CG2	2.10	0.65
2:F:106:GLN:HE22	2:F:109:THR:CG2	2.09	0.64
2:J:106:GLN:HE22	2:J:109:THR:CG2	2.09	0.64
1:E:206:THR:HG22	1:G:109:SER:HB3	1.80	0.64
2:P:41:TRP:CD1	2:P:89:LEU:CD2	2.79	0.63
2:P:163:GLN:OE1	2:P:170:LEU:HD12	1.98	0.63
1:E:146:THR:HG22	1:E:151:ALA:HB2	1.83	0.60
2:P:41:TRP:CB	2:P:89:LEU:HD23	2.29	0.60
2:D:197:LEU:N	2:D:197:LEU:HD23	2.18	0.59
1:C:79:SER:HB3	1:I:205:GLY:HA3	1.85	0.58
2:B:106:GLN:HE22	2:B:109:THR:HG22	1.69	0.57
2:F:197:LEU:HD23	2:F:197:LEU:N	2.19	0.57
2:J:197:LEU:HD23	2:J:197:LEU:N	2.19	0.57
2:B:197:LEU:HD23	2:B:197:LEU:N	2.19	0.57
2:P:197:LEU:N	2:P:197:LEU:HD23	2.20	0.57
2:F:106:GLN:HE22	2:F:109:THR:HG22	1.71	0.56
2:F:110:THR:HA	2:F:111:PRO:C	2.26	0.56
2:L:197:LEU:N	2:L:197:LEU:HD23	2.21	0.56
2:P:110:THR:HA	2:P:111:PRO:C	2.26	0.56
2:J:110:THR:HA	2:J:111:PRO:C	2.26	0.56
2:D:106:GLN:HE22	2:D:109:THR:HG22	1.71	0.56
2:H:197:LEU:N	2:H:197:LEU:HD23	2.20	0.56
2:L:110:THR:HA	2:L:111:PRO:C	2.25	0.56
2:H:110:THR:HA	2:H:111:PRO:C	2.27	0.55
2:N:106:GLN:HE22	2:N:109:THR:HG22	1.71	0.55
2:B:110:THR:HA	2:B:111:PRO:C	2.26	0.55
1:E:206:THR:HG22	1:G:109:SER:CB	2.37	0.55
2:P:41:TRP:CB	2:P:89:LEU:CD2	2.84	0.55
2:N:110:THR:HA	2:N:111:PRO:C	2.26	0.55
2:H:106:GLN:HE22	2:H:109:THR:HG22	1.71	0.54
2:J:106:GLN:HE22	2:J:109:THR:HG22	1.72	0.54
2:D:110:THR:HA	2:D:111:PRO:C	2.27	0.54
2:L:106:GLN:HE22	2:L:109:THR:HG22	1.72	0.54
1:O:139:LEU:CD2	1:O:156:LEU:N	2.71	0.53
2:P:106:GLN:HE22	2:P:109:THR:HG22	1.73	0.53

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:139:LEU:HD21	1:O:156:LEU:HB2	1.90	0.52
1:E:224:LYS:HE2	2:F:139:GLU:OE1	2.10	0.52
2:N:158:ARG:HH12	2:N:179:VAL:HG21	1.76	0.51
2:H:152:LEU:HD12	2:H:152:LEU:N	2.26	0.51
2:N:152:LEU:N	2:N:152:LEU:HD12	2.26	0.51
2:P:152:LEU:HD12	2:P:152:LEU:N	2.26	0.51
2:J:152:LEU:N	2:J:152:LEU:HD12	2.26	0.50
1:O:139:LEU:HD23	1:O:155:CYS:C	2.31	0.50
2:B:152:LEU:N	2:B:152:LEU:HD12	2.27	0.50
1:C:40:TYR:CD2	1:C:115:PHE:CE1	3.00	0.49
1:E:40:TYR:CD2	1:E:115:PHE:CE1	3.01	0.49
2:L:152:LEU:HD12	2:L:152:LEU:N	2.27	0.49
2:F:152:LEU:N	2:F:152:LEU:HD12	2.28	0.49
2:D:152:LEU:HD12	2:D:152:LEU:N	2.28	0.49
1:O:40:TYR:CD2	1:O:115:PHE:CE1	3.00	0.49
1:M:40:TYR:CD2	1:M:115:PHE:CE1	3.01	0.49
1:A:37:TYR:CE2	1:A:106:LYS:HD3	2.47	0.49
1:K:37:TYR:CD2	1:K:106:LYS:HG2	2.48	0.48
2:P:37:ASN:O	2:P:56:TRP:HA	2.14	0.48
1:I:40:TYR:CD2	1:I:115:PHE:CE1	3.02	0.47
2:N:37:ASN:O	2:N:56:TRP:HA	2.14	0.47
1:A:40:TYR:CD2	1:A:115:PHE:CE1	3.02	0.47
2:L:37:ASN:O	2:L:56:TRP:HA	2.15	0.47
2:B:37:ASN:O	2:B:56:TRP:HA	2.15	0.47
2:D:37:ASN:O	2:D:56:TRP:HA	2.15	0.47
2:D:156:TYR:CD1	2:D:157:PRO:HA	2.50	0.47
1:E:142:SER:O	1:E:146:THR:HG23	2.15	0.47
2:F:37:ASN:O	2:F:56:TRP:HA	2.15	0.47
2:J:37:ASN:O	2:J:56:TRP:HA	2.14	0.47
2:B:156:TYR:CG	2:B:157:PRO:HA	2.50	0.47
2:N:156:TYR:CD1	2:N:157:PRO:HA	2.50	0.46
2:P:24:LYS:HA	2:P:85:THR:O	2.15	0.46
2:B:156:TYR:CD1	2:B:157:PRO:HA	2.50	0.46
2:D:24:LYS:HA	2:D:85:THR:O	2.16	0.46
2:J:24:LYS:HA	2:J:85:THR:O	2.15	0.46
2:N:24:LYS:HA	2:N:85:THR:O	2.16	0.46
2:B:101:VAL:HG12	2:B:103:TYR:CE1	2.51	0.46
2:P:156:TYR:CD1	2:P:157:PRO:HA	2.50	0.46
2:H:156:TYR:CG	2:H:157:PRO:HA	2.50	0.46
2:L:156:TYR:CG	2:L:157:PRO:HA	2.50	0.46
1:A:228:PRO:O	1:A:229:LYS:HB2	2.16	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:37:ASN:O	2:H:56:TRP:HA	2.15	0.46
2:F:156:TYR:CG	2:F:157:PRO:HA	2.51	0.46
2:F:156:TYR:CD1	2:F:157:PRO:HA	2.51	0.46
2:J:156:TYR:CD1	2:J:157:PRO:HA	2.51	0.46
2:P:156:TYR:CG	2:P:157:PRO:HA	2.50	0.46
2:D:171:GLN:HE21	2:D:174:ASN:HD21	1.64	0.46
2:H:156:TYR:CD1	2:H:157:PRO:HA	2.50	0.46
2:H:24:LYS:HA	2:H:85:THR:O	2.16	0.45
1:E:106:LYS:HB2	1:E:118:TRP:CD1	2.52	0.45
2:N:158:ARG:NH1	2:N:179:VAL:HG21	2.31	0.45
2:L:156:TYR:CD1	2:L:157:PRO:HA	2.50	0.45
2:N:156:TYR:CG	2:N:157:PRO:HA	2.51	0.45
2:N:171:GLN:HE21	2:N:174:ASN:HD21	1.64	0.45
1:A:216:LYS:N	1:A:217:PRO:CD	2.79	0.45
1:M:41:TRP:NE1	1:M:89:LEU:HB2	2.32	0.45
2:F:101:VAL:HG12	2:F:103:TYR:CE1	2.52	0.45
2:H:106:GLN:HE22	2:H:109:THR:HG23	1.81	0.45
2:B:24:LYS:HA	2:B:85:THR:O	2.15	0.45
2:D:106:GLN:HE22	2:D:109:THR:HG23	1.82	0.45
1:O:139:LEU:HD21	1:O:156:LEU:N	2.32	0.45
2:J:106:GLN:HE22	2:J:109:THR:HG23	1.81	0.45
2:D:156:TYR:CG	2:D:157:PRO:HA	2.52	0.45
2:J:156:TYR:CG	2:J:157:PRO:HA	2.52	0.45
1:O:160:TYR:CE2	1:O:165:VAL:HG13	2.52	0.45
1:E:41:TRP:NE1	1:E:89:LEU:HB2	2.33	0.44
1:I:142:SER:N	1:I:145:SER:HB3	2.30	0.44
1:A:41:TRP:NE1	1:A:89:LEU:HB2	2.32	0.44
1:I:41:TRP:NE1	1:I:89:LEU:HB2	2.32	0.44
1:C:41:TRP:NE1	1:C:89:LEU:HB2	2.32	0.44
1:C:79:SER:CB	1:I:205:GLY:HA3	2.48	0.44
2:L:24:LYS:HA	2:L:85:THR:O	2.16	0.44
2:P:171:GLN:HE21	2:P:174:ASN:HD21	1.65	0.44
1:A:37:TYR:CD2	1:A:106:LYS:HG2	2.53	0.44
2:B:106:GLN:NE2	2:B:109:THR:HG22	2.31	0.44
2:F:24:LYS:HA	2:F:85:THR:O	2.16	0.44
1:K:106:LYS:HB2	1:K:118:TRP:CD1	2.53	0.44
1:O:41:TRP:NE1	1:O:89:LEU:HB2	2.32	0.44
2:J:43:GLN:HB2	2:J:53:LEU:HD11	2.00	0.44
1:G:41:TRP:NE1	1:G:89:LEU:HB2	2.33	0.44
1:M:216:LYS:N	1:M:217:PRO:CD	2.81	0.44
2:B:142:LYS:HE3	1:C:112:PHE:CE2	2.53	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:101:VAL:HG12	2:J:103:TYR:CE1	2.53	0.44
2:N:101:VAL:HG12	2:N:103:TYR:CE1	2.53	0.44
1:O:216:LYS:N	1:O:217:PRO:CD	2.81	0.44
1:K:41:TRP:NE1	1:K:89:LEU:HB2	2.33	0.43
2:D:43:GLN:HB2	2:D:53:LEU:HD11	2.00	0.43
2:P:101:VAL:HG12	2:P:103:TYR:CE1	2.53	0.43
1:C:104:CYS:HB2	1:C:118:TRP:O	2.17	0.43
1:G:216:LYS:N	1:G:217:PRO:CD	2.81	0.43
2:P:106:GLN:HE22	2:P:109:THR:HG23	1.81	0.43
2:H:171:GLN:HE21	2:H:174:ASN:HD21	1.65	0.43
1:I:216:LYS:N	1:I:217:PRO:CD	2.81	0.43
1:A:106:LYS:HB2	1:A:118:TRP:CD1	2.54	0.43
2:L:101:VAL:HG12	2:L:103:TYR:CE1	2.54	0.43
1:G:106:LYS:HB2	1:G:118:TRP:CD1	2.54	0.43
2:L:162:VAL:HG12	2:L:177:GLU:OE2	2.18	0.43
2:N:43:GLN:HB2	2:N:53:LEU:HD11	2.01	0.43
2:N:106:GLN:HE22	2:N:109:THR:HG23	1.82	0.43
1:E:216:LYS:N	1:E:217:PRO:CD	2.82	0.43
1:K:216:LYS:N	1:K:217:PRO:CD	2.81	0.43
1:C:216:LYS:N	1:C:217:PRO:CD	2.82	0.42
1:K:104:CYS:HB2	1:K:118:TRP:O	2.19	0.42
2:N:106:GLN:NE2	2:N:109:THR:HG22	2.33	0.42
1:C:106:LYS:HB2	1:C:118:TRP:CD1	2.54	0.42
2:H:43:GLN:HB2	2:H:53:LEU:HD11	2.01	0.42
2:B:94:LEU:HD11	2:B:120:LEU:HD21	2.01	0.42
2:D:106:GLN:NE2	2:D:109:THR:HG22	2.33	0.42
1:A:142:SER:O	1:A:143:SER:C	2.58	0.42
2:P:43:GLN:HB2	2:P:53:LEU:HD11	2.01	0.42
1:E:104:CYS:HB2	1:E:118:TRP:O	2.19	0.42
1:M:142:SER:O	1:M:143:SER:C	2.58	0.42
2:D:101:VAL:HG12	2:D:103:TYR:CE1	2.55	0.42
1:K:37:TYR:CD2	1:K:106:LYS:CD	3.03	0.42
2:H:106:GLN:NE2	2:H:109:THR:HG22	2.33	0.41
1:O:139:LEU:CD2	1:O:155:CYS:C	2.88	0.41
2:J:113:THR:HA	3:J:301:CL:CL	2.57	0.41
2:L:106:GLN:HE22	2:L:109:THR:HG23	1.83	0.41
1:O:106:LYS:HB2	1:O:118:TRP:CD1	2.55	0.41
1:A:114:TYR:CE2	2:B:55:TYR:HB2	2.56	0.41
1:G:104:CYS:HB2	1:G:118:TRP:O	2.19	0.41
2:L:43:GLN:HB2	2:L:53:LEU:HD11	2.03	0.41
2:B:43:GLN:HB2	2:B:53:LEU:HD11	2.02	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:13:VAL:O	1:K:126:VAL:HA	2.21	0.41
1:A:37:TYR:CD2	1:A:106:LYS:HD3	2.56	0.41
2:F:106:GLN:NE2	2:F:109:THR:HG22	2.33	0.41
1:M:106:LYS:HB2	1:M:118:TRP:CD1	2.55	0.41
1:A:104:CYS:HB2	1:A:118:TRP:O	2.20	0.41
1:A:13:VAL:O	1:A:126:VAL:HA	2.21	0.41
1:C:142:SER:O	1:C:143:SER:C	2.59	0.40
2:N:94:LEU:HD11	2:N:120:LEU:HD21	2.04	0.40
2:P:94:LEU:HD11	2:P:120:LEU:HD21	2.04	0.40
1:I:39:MET:HB3	1:I:87:LEU:HD22	2.04	0.40
1:M:112:PHE:HE2	2:N:55:TYR:CE2	2.39	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	212/227 (93%)	210 (99%)	2 (1%)	0	100	100
1	C	210/227 (92%)	207 (99%)	3 (1%)	0	100	100
1	E	219/227 (96%)	215 (98%)	4 (2%)	0	100	100
1	G	209/227 (92%)	207 (99%)	2 (1%)	0	100	100
1	I	218/227 (96%)	215 (99%)	3 (1%)	0	100	100
1	K	205/227 (90%)	201 (98%)	4 (2%)	0	100	100
1	M	211/227 (93%)	209 (99%)	2 (1%)	0	100	100
1	O	200/227 (88%)	197 (98%)	3 (2%)	0	100	100
2	B	217/220 (99%)	208 (96%)	9 (4%)	0	100	100
2	D	216/220 (98%)	206 (95%)	10 (5%)	0	100	100
2	F	217/220 (99%)	208 (96%)	9 (4%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	H	216/220 (98%)	208 (96%)	8 (4%)	0	100	100
2	J	217/220 (99%)	208 (96%)	9 (4%)	0	100	100
2	L	217/220 (99%)	209 (96%)	8 (4%)	0	100	100
2	N	217/220 (99%)	207 (95%)	10 (5%)	0	100	100
2	P	217/220 (99%)	207 (95%)	10 (5%)	0	100	100
All	All	3418/3576 (96%)	3322 (97%)	96 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	179/190 (94%)	176 (98%)	3 (2%)	60	82
1	C	179/190 (94%)	176 (98%)	3 (2%)	60	82
1	E	184/190 (97%)	177 (96%)	7 (4%)	33	58
1	G	178/190 (94%)	173 (97%)	5 (3%)	43	70
1	I	183/190 (96%)	177 (97%)	6 (3%)	38	64
1	K	176/190 (93%)	171 (97%)	5 (3%)	43	70
1	M	179/190 (94%)	176 (98%)	3 (2%)	60	82
1	O	172/190 (90%)	165 (96%)	7 (4%)	30	55
2	B	194/195 (100%)	186 (96%)	8 (4%)	30	55
2	D	193/195 (99%)	184 (95%)	9 (5%)	26	49
2	F	194/195 (100%)	185 (95%)	9 (5%)	27	50
2	H	193/195 (99%)	185 (96%)	8 (4%)	30	55
2	J	194/195 (100%)	185 (95%)	9 (5%)	27	50
2	L	194/195 (100%)	185 (95%)	9 (5%)	27	50
2	N	194/195 (100%)	186 (96%)	8 (4%)	30	55
2	P	194/195 (100%)	184 (95%)	10 (5%)	23	44

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	2980/3080 (97%)	2871 (96%)	109 (4%)	34 60

All (109) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	155	CYS
1	A	208	THR
1	A	224	LYS
2	B	5	THR
2	B	17	GLU
2	B	33	SER
2	B	68	GLU
2	B	110	THR
2	B	197	LEU
2	B	213	THR
2	B	229	GLU
1	C	155	CYS
1	C	208	THR
1	C	224	LYS
2	D	5	THR
2	D	17	GLU
2	D	33	SER
2	D	68	GLU
2	D	95	GLN
2	D	110	THR
2	D	197	LEU
2	D	210	CYS
2	D	213	THR
1	E	29	THR
1	E	139	LEU
1	E	142	SER
1	E	145	SER
1	E	155	CYS
1	E	208	THR
1	E	224	LYS
2	F	5	THR
2	F	17	GLU
2	F	33	SER
2	F	68	GLU
2	F	110	THR
2	F	197	LEU
2	F	210	CYS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	F	213	THR
2	F	229	GLU
1	G	29	THR
1	G	142	SER
1	G	155	CYS
1	G	208	THR
1	G	224	LYS
2	H	5	THR
2	H	17	GLU
2	H	33	SER
2	H	68	GLU
2	H	110	THR
2	H	197	LEU
2	H	213	THR
2	H	229	GLU
1	I	106	LYS
1	I	142	SER
1	I	155	CYS
1	I	208	THR
1	I	224	LYS
1	I	229	LYS
2	J	5	THR
2	J	15	LEU
2	J	17	GLU
2	J	33	SER
2	J	68	GLU
2	J	110	THR
2	J	197	LEU
2	J	210	CYS
2	J	213	THR
1	K	29	THR
1	K	155	CYS
1	K	208	THR
1	K	221	LYS
1	K	224	LYS
2	L	5	THR
2	L	17	GLU
2	L	33	SER
2	L	68	GLU
2	L	110	THR
2	L	162	VAL
2	L	197	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	L	213	THR
2	L	229	GLU
1	M	155	CYS
1	M	208	THR
1	M	224	LYS
2	N	5	THR
2	N	17	GLU
2	N	33	SER
2	N	68	GLU
2	N	110	THR
2	N	210	CYS
2	N	213	THR
2	N	229	GLU
1	O	29	THR
1	O	97	GLU
1	O	130	SER
1	O	155	CYS
1	O	203	SER
1	O	208	THR
1	O	224	LYS
2	P	5	THR
2	P	17	GLU
2	P	33	SER
2	P	68	GLU
2	P	89	LEU
2	P	110	THR
2	P	197	LEU
2	P	210	CYS
2	P	213	THR
2	P	229	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	207	GLN
2	B	226	ASN
1	C	207	GLN
2	D	171	GLN
2	D	226	ASN
1	E	207	GLN
2	F	163	GLN
2	F	226	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	G	3	GLN
2	H	27	GLN
2	H	171	GLN
2	H	226	ASN
1	I	3	GLN
1	I	207	GLN
2	J	226	ASN
1	K	207	GLN
2	L	226	ASN
1	M	207	GLN
2	N	163	GLN
2	N	171	GLN
2	N	226	ASN
2	P	171	GLN
2	P	226	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 4 ligands modelled in this entry, 4 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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	216/227 (95%)	0.27	1 (0%)	91	91	42, 68, 96, 114	0
1	C	214/227 (94%)	0.42	1 (0%)	91	91	40, 62, 119, 136	0
1	E	221/227 (97%)	0.36	3 (1%)	75	77	48, 75, 105, 132	0
1	G	213/227 (93%)	0.29	1 (0%)	91	91	46, 66, 110, 128	0
1	I	220/227 (96%)	0.48	9 (4%)	37	40	51, 82, 116, 132	0
1	K	211/227 (92%)	0.42	3 (1%)	75	77	61, 86, 118, 137	0
1	M	215/227 (94%)	0.30	2 (0%)	84	86	51, 73, 108, 123	0
1	O	206/227 (90%)	0.61	12 (5%)	23	24	57, 82, 123, 157	0
2	B	219/220 (99%)	0.16	0	100	100	42, 66, 94, 124	0
2	D	218/220 (99%)	0.28	3 (1%)	75	77	49, 84, 116, 128	0
2	F	219/220 (99%)	0.18	0	100	100	48, 75, 104, 121	0
2	H	218/220 (99%)	0.17	2 (0%)	84	86	45, 72, 113, 132	0
2	J	219/220 (99%)	0.32	2 (0%)	84	86	56, 78, 106, 137	0
2	L	219/220 (99%)	0.33	5 (2%)	60	63	60, 89, 132, 147	0
2	N	219/220 (99%)	0.18	2 (0%)	84	86	53, 77, 104, 130	0
2	P	219/220 (99%)	0.43	15 (6%)	17	17	70, 105, 138, 148	0
All	All	3466/3576 (96%)	0.32	61 (1%)	68	71	40, 78, 118, 157	0

All (61) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	O	209	TYR	6.3
2	P	1	ASP	4.6
2	L	1	ASP	4.2
2	D	92	SER	4.0
2	L	197	LEU	3.8

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	O	202	SER	3.5
1	C	204	LEU	3.4
1	I	146	THR	3.4
1	O	65	ILE	3.3
2	P	94	LEU	3.0
2	P	39	LEU	3.0
1	I	55	GLY	3.0
2	P	74	ASP	3.0
2	H	163	GLN	2.9
1	E	205	GLY	2.9
1	E	111	TYR	2.9
1	K	66	VAL	2.8
2	H	170	LEU	2.8
2	P	170	LEU	2.8
1	M	225	ARG	2.8
2	P	57	ALA	2.8
1	O	200	PRO	2.8
1	O	199	VAL	2.7
1	A	40	TYR	2.7
2	L	212	VAL	2.6
2	J	39	LEU	2.6
2	P	32	SER	2.5
1	I	202	SER	2.5
2	P	15	LEU	2.4
1	I	145	SER	2.4
1	I	144	LYS	2.4
1	K	58	TRP	2.4
1	K	206	THR	2.4
2	J	1	ASP	2.4
1	O	226	VAL	2.4
1	O	198	THR	2.4
2	N	170	LEU	2.4
1	G	111	TYR	2.3
1	I	66	VAL	2.3
2	P	89	LEU	2.3
1	O	53	VAL	2.3
2	P	92	SER	2.3
2	D	94	LEU	2.3
1	O	113	PRO	2.2
2	P	132	PHE	2.2
2	L	108	TYR	2.2
2	P	24	LYS	2.2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	N	1	ASP	2.1
2	P	70	GLY	2.1
1	O	54	SER	2.1
1	O	197	VAL	2.1
1	I	204	LEU	2.1
1	M	205	GLY	2.1
2	D	170	LEU	2.1
1	I	201	SER	2.1
1	I	67	TYR	2.1
1	O	208	THR	2.1
2	L	166	VAL	2.1
2	P	76	PHE	2.0
2	P	29	VAL	2.0
1	E	114	TYR	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
3	CL	J	301	1/1	0.83	0.09	89,89,89,89	0
3	CL	G	301	1/1	0.86	0.08	76,76,76,76	0
3	CL	K	301	1/1	0.86	0.21	82,82,82,82	0
3	CL	C	301	1/1	0.95	0.16	67,67,67,67	0

6.5 Other polymers ⓘ

There are no such residues in this entry.