Full wwPDB X-ray Structure Validation Report (i)

Jun 25, 2024 – 07:03 AM EDT

PDB ID	:	6PXG
Title	:	Crystal Structure of MERS-CoV neutralizing antibody G2 Fab
Authors	:	Wang, N.; McLellan, J.S.
Deposited on	:	2019-07-26
Resolution	:	2.10 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:

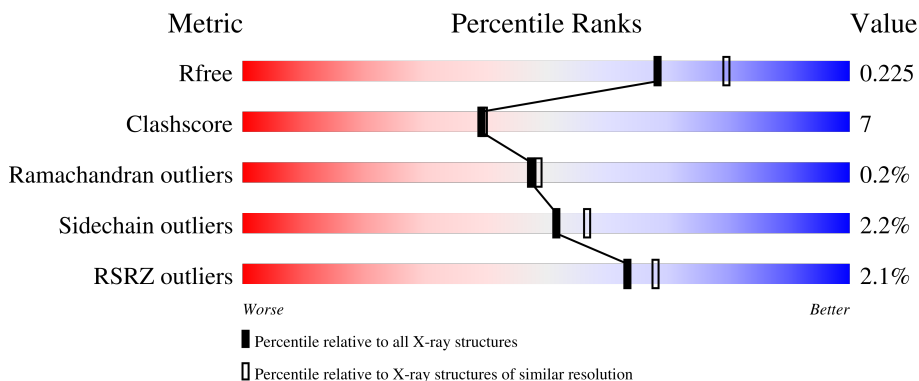|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.37.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation 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 2.10 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.
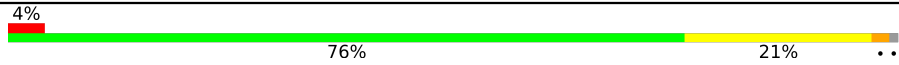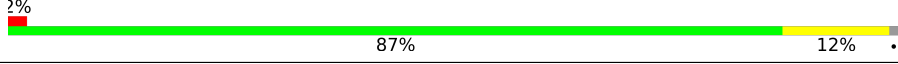
Metric	Percentile Ranks	Value
Rfree		0.225
Clashscore		7
Ramachandran outliers		0.2%
Sidechain outliers		2.2%
RSRZ outliers		2.1%

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	5197 (2.10-2.10)
Clashscore	141614	5710 (2.10-2.10)
Ramachandran outliers	138981	5647 (2.10-2.10)
Sidechain outliers	138945	5648 (2.10-2.10)
RSRZ outliers	127900	5083 (2.10-2.10)

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	229	79% 12% 8%
1	C	229	82% 10% 8%
1	E	229	2% 74% 17% • 8%
1	H	229	79% 12% 8%
2	B	218	3% 86% 12% •

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WORLDWIDE
wwPDB
PROTEIN DATA BANK

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Mol	Chain	Length	Quality of chain
2	D	218	4% · · · · · · · 76% · · · · · · · 21% · ·
2	F	218	4% · · · · · · · 81% · · · · · · · 17% · ·
2	L	218	2% · · · · · · · 87% · · · · · · · 12% ·

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 13415 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 G2 Fab Heavy Chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	210	Total	C	N	O	S	0	0	0
			1570	998	250	315	7			
1	C	211	Total	C	N	O	S	0	0	0
			1579	1003	252	317	7			
1	E	210	Total	C	N	O	S	0	0	0
			1570	998	250	315	7			
1	H	210	Total	C	N	O	S	0	0	0
			1570	998	250	315	7			

- Molecule 2 is a protein called G2 Fab Light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	216	Total	C	N	O	S	0	0	0
			1659	1030	283	339	7			
2	D	216	Total	C	N	O	S	0	0	0
			1659	1030	283	339	7			
2	F	216	Total	C	N	O	S	0	0	0
			1659	1030	283	339	7			
2	L	216	Total	C	N	O	S	0	0	0
			1659	1030	283	339	7			

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	92	Total	O	0	0
			92	92		
3	B	80	Total	O	0	0
			80	80		
3	C	89	Total	O	0	0
			89	89		
3	D	48	Total	O	0	0
			48	48		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	E	25	Total 25	O 25	0	0
3	F	42	Total 42	O 42	0	0
3	H	65	Total 65	O 65	0	0
3	L	49	Total 49	O 49	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: G2 Fab Heavy Chain

Chain A:

• Molecule 1: G2 Fab Heavy Chain

Chain C:

• Molecule 1: G2 Fab Heavy Chain

Chain E:

• Molecule 1: G2 Fab Heavy Chain

Chain H:

R213 ASP CYS GLY LYS GLY LEU GLU VAL LEU PHE GLN

• Molecule 2: G2 Fab Light chain

3%

Chain B:

86% 12%

Q1 L2 R18 E27 S27A V27B D27C N27D Y28 G29 I30 S31 F32 M33 K39 P44 S56 S67 G68 F71 S72 E105 I106 K107 A112 E123 K142 N145 V146 R155 L160 N161 T180 T197 T200 N212 GLU CYS

• Molecule 2: G2 Fab Light chain

4%

Chain D:

76% 21%

Q1 L2 V3 L11 A12 V13 S14 L15 G16 Q17 R18 I21 S22 C23 R24 A25 S26 D27C S31 W35 K45 R61 G68 T69 D70 F71 S72 I75 H76 P77 V78 E79 D80 D81 D82 M85 Y86 F87 C88 E93 T102 K103 L104 E105 I106 K107 P113

Y140 D143 Q156 W163 Y173 S174 M175 K183 D184 E187 R188 T193 C194 E195 H198 K199 T200 P204 I205 V206 K207 S208 N212 GLU CYS

• Molecule 2: G2 Fab Light chain

4%

Chain F:

81% 17%

Q1 A12 T20 I21 N27D Y28 Q37 Q42 P43 P44 K45 L46 L47 V58 S67 G68 V78 E79 D80 M85 K103 I106 K107 R108 T109 D110 V115 P120 V132 L136 Y140 P141 K142 D143 I144 N145 V146 K147 R155 Q156 N157 L160

W163 T164 D165 E185 R188 E195 K199 V206 K207 N212 GLU CYS

• Molecule 2: G2 Fab Light chain

2%

Chain L:

87% 12%

Q1 L2 V13 G16 A19 V27B Y28 G29 M33 P44 G68 T69 D70 H76 P77 Q89 E93 K103 L104 E105 D110 P120 E123 T126 A130 L160 W163 M175 K183 E187 C194 N212 GLU CYS

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	40.64Å 207.14Å 103.36Å 90.00° 97.70° 90.00°	Depositor
Resolution (Å)	38.41 – 2.10 39.53 – 2.10	Depositor EDS
% Data completeness (in resolution range)	97.2 (38.41-2.10) 97.3 (39.53-2.10)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.05 (at 2.10Å)	Xtriage
Refinement program	PHENIX 1.14_3260	Depositor
R, R_{free}	0.181 , 0.225 0.184 , 0.225	Depositor DCC
R_{free} test set	4759 reflections (4.98%)	wwPDB-VP
Wilson B-factor (Å^2)	35.7	Xtriage
Anisotropy	0.197	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 49.4	EDS
L-test for twinning[2]	$< \lvert L \rvert > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	13415	wwPDB-VP
Average B, all atoms (Å^2)	56.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 70.53 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 3.0748e-06. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< \lvert L \rvert >$, $< L^2 >$ 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	0.53	1/1612 (0.1%)	0.64	1/2203 (0.0%)
1	C	0.48	0/1621	0.63	0/2215
1	E	0.45	0/1612	0.62	1/2203 (0.0%)
1	H	0.51	2/1612 (0.1%)	0.62	0/2203
2	B	0.55	1/1696 (0.1%)	0.65	0/2304
2	D	0.41	0/1696	0.59	0/2304
2	F	0.44	0/1696	0.59	0/2304
2	L	0.47	1/1696 (0.1%)	0.60	0/2304
All	All	0.48	5/13241 (0.0%)	0.62	2/18040 (0.0%)

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	27	GLU	CD-OE2	-7.60	1.17	1.25
1	H	195	CYS	CB-SG	-7.58	1.69	1.82
2	L	194	CYS	CB-SG	-6.89	1.70	1.82
1	H	140	CYS	CB-SG	-5.59	1.72	1.81
1	A	195	CYS	CB-SG	-5.15	1.73	1.81

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	E	37	LEU	CA-CB-CG	5.80	128.65	115.30
1	A	177	LEU	CA-CB-CG	5.42	127.77	115.30

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	1570	0	1524	20	0
1	C	1579	0	1535	16	0
1	E	1570	0	1524	24	1
1	H	1570	0	1524	23	0
2	B	1659	0	1587	22	2
2	D	1659	0	1589	35	1
2	F	1659	0	1587	32	2
2	L	1659	0	1587	28	0
3	A	92	0	0	6	0
3	B	80	0	0	5	0
3	C	89	0	0	5	0
3	D	48	0	0	2	0
3	E	25	0	0	1	0
3	F	42	0	0	11	0
3	H	65	0	0	6	0
3	L	49	0	0	3	1
All	All	13415	0	12457	188	4

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 (188) 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:L:163:TRP:HE1	2:L:175:MET:CE	1.43	1.30
2:L:163:TRP:HE1	2:L:175:MET:HE2	1.13	1.10
2:L:163:TRP:NE1	2:L:175:MET:HE2	1.66	1.10
2:L:163:TRP:NE1	2:L:175:MET:CE	2.15	1.09
2:D:61:ARG:NH1	2:D:82:ASP:OD2	1.95	0.98
2:L:163:TRP:HE1	2:L:175:MET:HE3	1.26	0.97
1:C:41:PRO:O	3:C:301:HOH:O	1.87	0.92
2:F:45:LYS:NZ	3:F:304:HOH:O	2.10	0.84
1:H:2:VAL:N	3:H:303:HOH:O	2.09	0.84
1:A:37:LEU:HD11	1:A:100(A):MET:HE3	1.58	0.83
2:B:112:ALA:HB2	2:B:200:THR:HG21	1.57	0.83
2:L:163:TRP:NE1	2:L:175:MET:HE3	1.90	0.80
1:A:184:PRO:O	1:A:187:THR:HG22	1.82	0.79
2:L:2:LEU:HD11	2:L:93:GLU:CD	2.04	0.79
2:F:155:ARG:NH2	2:F:185:GLU:OE2	2.15	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2:VAL:N	3:A:303:HOH:O	2.18	0.76
2:F:212:ASN:O	3:F:301:HOH:O	2.02	0.76
2:B:146:VAL:O	3:B:301:HOH:O	2.04	0.74
2:F:108:ARG:O	3:F:302:HOH:O	2.05	0.74
1:E:202:SER:O	1:H:208:LYS:NZ	2.22	0.72
2:F:110:ASP:OD2	2:F:199:LYS:NZ	2.23	0.72
1:H:171:GLN:OE1	3:H:301:HOH:O	2.08	0.71
1:H:167:PRO:O	3:H:302:HOH:O	2.09	0.71
2:F:185:GLU:OE1	3:F:303:HOH:O	2.08	0.70
1:C:79:TYR:OH	3:C:302:HOH:O	2.09	0.69
2:L:110:ASP:OD1	3:L:301:HOH:O	2.10	0.69
1:C:19:LYS:NZ	3:C:305:HOH:O	2.26	0.68
1:A:126:PRO:HA	1:A:213:ARG:HH21	1.59	0.67
2:B:112:ALA:CB	2:B:200:THR:HG21	2.24	0.67
1:A:112:SER:O	3:A:301:HOH:O	2.13	0.66
2:L:2:LEU:CD1	2:L:93:GLU:CD	2.63	0.66
1:E:39:GLN:HB2	1:E:45:LEU:HD13	1.77	0.66
1:E:37:LEU:HD13	1:E:47:TRP:HA	1.79	0.65
2:F:43:PRO:HD3	3:F:314:HOH:O	1.96	0.65
2:B:212:ASN:O	3:B:302:HOH:O	2.14	0.65
1:C:72:ASP:OD1	1:C:74:SER:OG	2.08	0.65
2:D:18:ARG:NH2	2:D:76:HIS:CE1	2.65	0.64
1:E:51:ILE:HD13	1:E:71:VAL:HG13	1.79	0.64
1:E:204:THR:HG22	1:H:208:LYS:HD2	1.80	0.64
2:F:107:LYS:HD2	2:F:140:TYR:OH	1.97	0.64
1:C:51:ILE:HD13	1:C:71:VAL:HG23	1.78	0.64
2:L:2:LEU:HD11	2:L:93:GLU:OE1	1.97	0.64
2:F:42:GLN:HG2	2:F:43:PRO:HD2	1.79	0.63
2:F:195:GLU:HG3	2:F:206:VAL:HG12	1.80	0.63
1:A:82:PHE:HD2	1:A:82(C):LEU:HD21	1.63	0.63
2:L:1:GLN:OE1	2:L:1:GLN:N	2.26	0.63
1:E:187:THR:O	1:E:187:THR:HG22	1.99	0.63
1:H:11:LEU:HD22	1:H:147:PRO:HG3	1.82	0.62
1:A:7:SER:OG	3:A:302:HOH:O	2.16	0.62
2:F:165:ASP:HB3	3:F:311:HOH:O	1.99	0.62
1:H:51:ILE:HD13	1:H:71:VAL:HG13	1.82	0.62
2:L:103:LYS:NZ	3:L:302:HOH:O	2.28	0.62
1:E:37:LEU:CD1	1:E:47:TRP:HA	2.30	0.61
2:D:193:THR:HG23	2:D:208:SER:HB3	1.84	0.60
1:A:209:LYS:HB3	1:C:203:SER:HB3	1.84	0.60
1:H:208:LYS:HE2	2:L:123:GLU:OE2	2.02	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:4:LEU:HD22	1:H:24:THR:HG22	1.82	0.59
2:B:180:THR:HG23	3:B:308:HOH:O	2.03	0.59
2:B:155:ARG:HD2	3:B:306:HOH:O	2.02	0.59
2:F:107:LYS:O	3:F:305:HOH:O	2.17	0.58
2:B:123:GLU:HG2	1:C:118:PRO:HD3	1.86	0.58
1:E:66:LYS:NZ	1:E:82(A):SER:O	2.36	0.58
1:E:2:VAL:N	3:E:304:HOH:O	2.36	0.57
1:E:87:SER:OG	1:E:110:THR:HA	2.05	0.57
2:F:12:ALA:HB1	2:F:107:LYS:HD3	1.86	0.56
1:C:19:LYS:HD3	1:C:81:GLN:HG2	1.86	0.56
2:L:163:TRP:CE2	2:L:175:MET:HE2	2.39	0.56
2:F:12:ALA:CB	2:F:107:LYS:HD3	2.36	0.56
2:L:126:THR:HG22	3:L:321:HOH:O	2.05	0.55
2:F:85:MET:HE3	2:F:103:LYS:HB2	1.89	0.55
2:D:18:ARG:HH21	2:D:76:HIS:CE1	2.24	0.55
1:E:12:VAL:O	1:E:111:VAL:HA	2.07	0.55
1:A:169:VAL:HG21	2:B:160:LEU:HD11	1.87	0.55
1:A:169:VAL:HG11	2:B:160:LEU:HD21	1.88	0.54
2:L:163:TRP:CD1	2:L:175:MET:HE3	2.42	0.54
1:A:171:GLN:HG3	3:A:319:HOH:O	2.06	0.54
2:L:13:VAL:HG21	2:L:19:ALA:HB2	1.89	0.54
1:C:175:TYR:OH	3:C:303:HOH:O	2.17	0.54
2:D:61:ARG:HH12	2:D:82:ASP:CG	2.11	0.54
2:D:18:ARG:NH2	2:D:76:HIS:CG	2.76	0.53
2:D:27(C):ASP:OD1	2:D:31:SER:OG	2.17	0.53
1:H:126:PRO:HA	1:H:213:ARG:HH21	1.73	0.53
1:H:205:LYS:NZ	3:H:308:HOH:O	2.31	0.53
2:L:163:TRP:CD1	2:L:175:MET:HG3	2.44	0.53
2:F:1:GLN:OE1	2:F:1:GLN:N	2.37	0.53
2:D:11:LEU:HD11	2:D:13:VAL:HG23	1.91	0.52
1:H:13:LYS:H	1:H:13:LYS:HD2	1.74	0.52
2:D:69:THR:OG1	2:D:70:ASP:OD1	2.24	0.51
2:L:183:LYS:O	2:L:187:GLU:HG3	2.09	0.51
1:E:183:VAL:HG22	1:E:184:PRO:HD2	1.92	0.51
1:A:61:GLN:NE2	3:A:309:HOH:O	2.34	0.51
2:D:45:LYS:HD2	3:D:313:HOH:O	2.11	0.50
2:B:2:LEU:HD21	2:B:27:GLU:HB3	1.94	0.50
2:B:145:ASN:HB2	2:B:197:THR:CG2	2.41	0.50
2:D:18:ARG:NH2	2:D:76:HIS:ND1	2.59	0.50
2:B:160:LEU:C	2:B:160:LEU:HD13	2.31	0.50
2:D:195:GLU:HG3	2:D:206:VAL:HG22	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:93:GLU:OE2	2:D:93:GLU:HA	2.12	0.49
2:F:43:PRO:CD	3:F:314:HOH:O	2.58	0.49
1:E:46:GLU:OE2	1:E:62:LYS:HE2	2.12	0.49
2:B:145:ASN:HB2	2:B:197:THR:HG23	1.94	0.49
1:E:117:THR:OG1	2:L:126:THR:HG21	2.13	0.49
2:F:47:LEU:HA	2:F:58:VAL:HG21	1.93	0.48
2:B:39:LYS:HE3	3:B:351:HOH:O	2.13	0.48
1:E:12:VAL:CG2	1:E:111:VAL:HG12	2.44	0.48
1:E:83:THR:HG22	1:E:85:GLU:H	1.78	0.48
2:F:136:LEU:HD21	2:F:146:VAL:HG12	1.95	0.48
1:H:19:LYS:HE2	1:H:79:TYR:CD1	2.49	0.48
1:C:57:THR:O	3:C:304:HOH:O	2.20	0.48
1:A:98:SER:HB3	2:B:32:PHE:CE1	2.49	0.48
1:C:11:LEU:HD23	1:C:110:THR:HB	1.96	0.48
2:D:18:ARG:HA	2:D:75:ILE:O	2.13	0.48
2:D:3:VAL:H	2:D:26:SER:HB3	1.78	0.47
2:D:163:TRP:CD1	2:D:175:MET:HG3	2.49	0.47
2:D:195:GLU:HG2	2:D:204:PRO:HB2	1.96	0.47
1:H:103:TRP:CE3	2:L:44:PRO:HD2	2.50	0.47
2:D:85:MET:HG2	2:D:87:PHE:CZ	2.49	0.47
2:F:115:VAL:O	2:F:207:LYS:HE2	2.15	0.47
2:F:120:PRO:HD3	2:F:132:VAL:HG22	1.97	0.47
1:A:4:LEU:O	3:A:304:HOH:O	2.21	0.46
2:F:185:GLU:HG3	2:F:188:ARG:NH1	2.30	0.46
2:F:37:GLN:OE1	2:F:45:LYS:HE2	2.15	0.46
2:F:147:LYS:HB3	2:F:147:LYS:HE2	1.31	0.46
1:A:66:LYS:NZ	1:A:86:ASP:OD2	2.41	0.46
2:L:33:MET:HE2	2:L:89:GLN:H	1.81	0.46
2:B:27(D):ASN:HB3	2:B:32:PHE:HE2	1.81	0.45
1:E:12:VAL:HG23	1:E:111:VAL:HG12	1.96	0.45
1:C:29:PHE:CD2	1:C:76:SER:HA	2.52	0.45
2:F:103:LYS:NZ	3:F:311:HOH:O	2.44	0.45
2:D:35:TRP:CZ3	2:D:88:CYS:HB3	2.52	0.45
2:F:142:LYS:HE3	2:F:143:ASP:OD1	2.17	0.45
2:F:160:LEU:HD23	2:F:160:LEU:HA	1.85	0.45
1:H:20:LEU:HD22	1:H:107:THR:HG21	1.99	0.45
2:D:61:ARG:NH1	2:D:82:ASP:CG	2.68	0.44
2:D:107:LYS:HA	2:D:140:TYR:OH	2.17	0.44
1:A:18:VAL:HG22	1:A:82(C):LEU:HD11	1.99	0.44
2:B:160:LEU:HD13	2:B:161:ASN:N	2.33	0.44
1:A:98:SER:HB3	2:B:32:PHE:HE1	1.83	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:103:TRP:CE3	2:B:44:PRO:HD2	2.52	0.44
1:A:192:THR:HG23	1:A:209:LYS:HE2	2.00	0.44
2:F:43:PRO:N	3:F:314:HOH:O	2.51	0.44
3:H:301:HOH:O	2:L:160:LEU:HD23	2.17	0.44
2:D:183:LYS:O	2:D:187:GLU:HG3	2.17	0.44
1:E:38:LYS:HB2	1:E:48:ILE:HD11	1.99	0.44
1:H:159:LEU:HD13	1:H:181:VAL:HG21	1.99	0.44
2:D:23:CYS:HB2	2:D:88:CYS:HG	1.82	0.44
1:E:146:PHE:HB2	1:E:174:LEU:HD23	2.00	0.44
2:D:21:ILE:HG12	2:D:102:THR:HG21	1.99	0.43
1:H:7:SER:OG	3:H:304:HOH:O	2.21	0.43
1:H:4:LEU:HD22	1:H:24:THR:CG2	2.47	0.43
1:C:187:THR:O	1:C:191:GLU:HB2	2.18	0.43
1:C:154:TRP:CZ3	1:C:195:CYS:HB3	2.53	0.43
2:D:23:CYS:CB	2:D:88:CYS:HG	2.32	0.43
2:B:33:MET:HG2	2:B:71:PHE:CG	2.54	0.43
1:E:119:PRO:HB3	1:E:145:TYR:HB3	2.00	0.43
2:D:198:HIS:HB3	2:D:200:THR:HG22	2.01	0.42
1:H:50:TRP:CD1	1:H:50:TRP:C	2.93	0.42
2:L:33:MET:HE2	2:L:89:GLN:N	2.33	0.42
1:E:67:ALA:HA	1:E:81:GLN:O	2.19	0.42
1:C:19:LYS:HB2	1:C:81:GLN:HE21	1.85	0.42
2:F:144:ILE:HG22	2:F:163:TRP:CZ3	2.54	0.42
1:H:171:GLN:O	1:H:171:GLN:HG3	2.20	0.42
2:L:120:PRO:HG3	2:L:130:ALA:HB1	2.00	0.42
1:H:83:THR:OG1	1:H:84:THR:N	2.53	0.42
2:D:24:ARG:NH2	2:D:70:ASP:OD2	2.53	0.42
2:L:16:GLY:HA2	2:L:77:PRO:HB2	2.00	0.42
2:L:76:HIS:HA	2:L:77:PRO:HA	1.93	0.42
2:F:80:ASP:OD1	2:F:106:ILE:HG13	2.20	0.41
1:E:148:GLU:HG3	1:E:175:TYR:CE2	2.54	0.41
2:D:70:ASP:OD1	2:D:70:ASP:N	2.52	0.41
1:E:50:TRP:C	1:E:50:TRP:CD1	2.93	0.41
1:C:82:PHE:HD2	1:C:82(C):LEU:HD21	1.85	0.41
1:H:50:TRP:CH2	1:H:97:SER:HA	2.56	0.41
1:E:24:THR:HB	1:E:27:PHE:CE1	2.56	0.41
1:H:13:LYS:HD2	1:H:13:LYS:N	2.36	0.41
2:D:13:VAL:HG13	2:D:17:GLN:HG2	2.03	0.41
2:D:184:ASP:O	2:D:188:ARG:HG3	2.21	0.41
2:B:105:GLU:OE2	2:B:142:LYS:HE3	2.21	0.41
2:D:18:ARG:HH21	2:D:76:HIS:CG	2.39	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:113:PRO:HG2	2:D:205:ILE:HD12	2.02	0.41
2:F:85:MET:CE	2:F:103:LYS:HB2	2.51	0.41
2:L:2:LEU:HD13	2:L:93:GLU:CD	2.42	0.40
2:F:43:PRO:HG2	3:F:319:HOH:O	2.21	0.40
1:A:46:GLU:OE2	1:A:62:LYS:HE3	2.22	0.40
2:B:1:GLN:OE1	2:B:1:GLN:N	2.45	0.40
2:D:24:ARG:CZ	2:D:70:ASP:OD2	2.69	0.40
2:D:18:ARG:NH2	2:D:76:HIS:CD2	2.90	0.40
2:D:103:LYS:NZ	3:D:307:HOH:O	2.54	0.40

All (4) 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:B:107:LYS:NZ	2:F:67:SER:OG[2_354]	1.99	0.21
2:D:156:GLN:NE2	1:E:75:SER:OG[1_556]	2.04	0.16
3:L:324:HOH:O	3:L:335:HOH:O[1_455]	2.09	0.11
2:B:18:ARG:NH1	2:F:27(D):ASN:OD1[2_354]	2.10	0.10

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	206/229 (90%)	201 (98%)	5 (2%)	0	100	100
1	C	207/229 (90%)	201 (97%)	6 (3%)	0	100	100
1	E	206/229 (90%)	195 (95%)	11 (5%)	0	100	100
1	H	206/229 (90%)	200 (97%)	6 (3%)	0	100	100
2	B	214/218 (98%)	209 (98%)	4 (2%)	1 (0%)	29	26
2	D	214/218 (98%)	209 (98%)	4 (2%)	1 (0%)	29	26
2	F	214/218 (98%)	208 (97%)	5 (2%)	1 (0%)	29	26

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	L	214/218 (98%)	209 (98%)	4 (2%)	1 (0%)	29	26
All	All	1681/1788 (94%)	1632 (97%)	45 (3%)	4 (0%)	47	49

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	68	GLY
2	L	68	GLY
2	D	68	GLY
2	F	68	GLY

5.3.2　Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	180/194 (93%)	178 (99%)	2 (1%)	73	79
1	C	181/194 (93%)	178 (98%)	3 (2%)	60	67
1	E	180/194 (93%)	174 (97%)	6 (3%)	38	40
1	H	180/194 (93%)	179 (99%)	1 (1%)	86	90
2	B	190/192 (99%)	187 (98%)	3 (2%)	62	69
2	D	190/192 (99%)	179 (94%)	11 (6%)	20	17
2	F	190/192 (99%)	186 (98%)	4 (2%)	53	59
2	L	190/192 (99%)	188 (99%)	2 (1%)	73	79
All	All	1481/1544 (96%)	1449 (98%)	32 (2%)	52	57

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

Mol	Chain	Res	Type
1	A	50	TRP
1	A	140	CYS
2	B	28	TYR
2	B	56	SER

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Mol	Chain	Res	Type
2	B	72	SER
1	C	50	TRP
1	C	161	SER
1	C	195	CYS
2	D	1	GLN
2	D	17	GLN
2	D	18	ARG
2	D	70	ASP
2	D	72	SER
2	D	80	ASP
2	D	82	ASP
2	D	105	GLU
2	D	143	ASP
2	D	163	TRP
2	D	199	LYS
1	E	50	TRP
1	E	87	SER
1	E	134	SER
1	E	140	CYS
1	E	160	SER
1	E	192	THR
2	F	27(D)	ASN
2	F	80	ASP
2	F	142	LYS
2	F	157	ASN
1	H	50	TRP
2	L	70	ASP
2	L	105	GLU

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

Mol	Chain	Res	Type
1	C	81	GLN
2	D	17	GLN
2	L	190	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 ⓘ

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(Å^2)	Q<0.9
1	A	210/229 (91%)	0.04	1 (0%)	91	92	25, 47, 72, 83	0
1	C	211/229 (92%)	-0.03	1 (0%)	91	92	27, 50, 80, 101	0
1	E	210/229 (91%)	0.29	5 (2%)	59	64	35, 67, 95, 108	0
1	H	210/229 (91%)	0.02	0	100	100	31, 47, 70, 91	0
2	B	216/218 (99%)	0.18	6 (2%)	53	59	27, 48, 82, 109	0
2	D	216/218 (99%)	0.32	9 (4%)	36	42	30, 61, 98, 120	0
2	F	216/218 (99%)	0.36	9 (4%)	36	42	39, 61, 91, 112	0
2	L	216/218 (99%)	0.14	5 (2%)	60	65	33, 56, 80, 109	0
All	All	1705/1788 (95%)	0.17	36 (2%)	63	68	25, 54, 88, 120	0

All (36) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	F	165	ASP	4.5
2	F	78	VAL	4.1
2	B	28	TYR	4.0
2	L	28	TYR	3.2
2	D	76	HIS	3.1
2	B	27	GLU	2.9
1	C	1	GLN	2.8
2	B	30	ILE	2.8
2	F	21	ILE	2.8
2	F	28	TYR	2.7
2	F	1	GLN	2.7
1	E	172	SER	2.6
2	F	80	ASP	2.6
1	E	171	GLN	2.6
2	D	106	ILE	2.6
2	D	13	VAL	2.6

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Mol	Chain	Res	Type	RSRZ
2	L	2	LEU	2.5
2	D	173	TYR	2.4
2	D	78	VAL	2.3
1	E	185	SER	2.3
2	D	21	ILE	2.3
2	F	107	LYS	2.3
2	L	29	GLY	2.3
2	L	160	LEU	2.3
2	D	17	GLN	2.3
2	D	15	LEU	2.2
2	B	67	SER	2.2
2	D	104	LEU	2.2
1	E	187	THR	2.2
2	L	27(B)	VAL	2.2
1	A	64	THR	2.1
1	E	85	GLU	2.1
2	F	20	THR	2.1
2	B	27(B)	VAL	2.1
2	B	32	PHE	2.1
2	F	163	TRP	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.