WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Oct 31, 2023 – 07:43 PM JST

PDB ID	:	5GZO
Title	:	Structure of neutralizing antibody bound to Zika envelope protein
Authors	:	Wang, Q.; Yang, H.; Liu, X.; Dai, L.; Ma, T.; Qi, J.; Wong, G.; Peng, R.; Liu, S.; Li, J.; Li, S.; Song, J.; Liu, J.; He, J.; Yuan, H.; Xiong, Y.; Liao, Y.; Li, J.; Yang, J.; Tong, Z.; Griffin, B.; Bi, Y.; Liang, M.; Xu, X.; Cheng, G.; Wang, P.; Qiu, X.; Kobinger, G.; Shi, Y.; Yan, J.; Gao, G.F.
Deposited on	:	2016-09-29
Resolution	:	2.75 Å(reported)

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

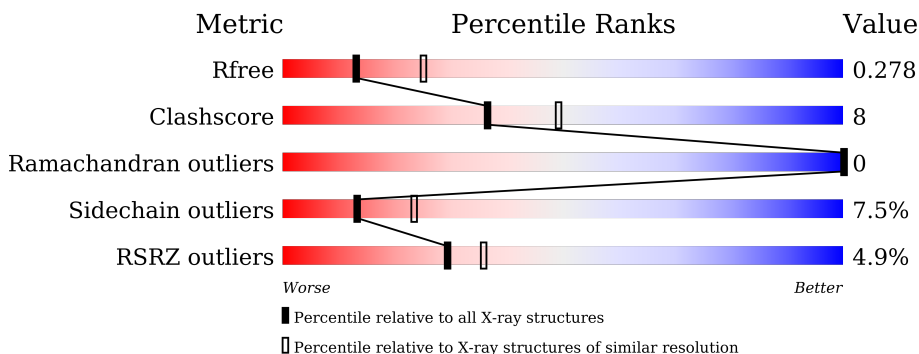|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation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

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 2.75 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		0.278
Clashscore		8
Ramachandran outliers		0
Sidechain outliers		7.5%
RSRZ outliers		4.9%

Worse *Better*

▌Percentile relative to all X-ray structures

▯Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1235 (2.78-2.74)
Clashscore	141614	1277 (2.78-2.74)
Ramachandran outliers	138981	1257 (2.78-2.74)
Sidechain outliers	138945	1257 (2.78-2.74)
RSRZ outliers	127900	1207 (2.78-2.74)

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	409	4% · 81% · 12% · 5%
1	B	409	12% · 77% · 17% · 5%
2	C	220	2% · 79% · 17% · ·
2	H	220	79% · 17% · ·
3	D	215	4% · 80% · 17% · ·
3	L	215	78% · 18% · ·

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 12422 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 Genome polyprotein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	390	Total	C	N	O	S	0	0	0
			2976	1861	519	571	25			
1	B	390	Total	C	N	O	S	0	0	0
			2976	1861	519	571	25			

- Molecule 2 is a protein called Antibody heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	H	214	Total	C	N	O	S	0	0	0
			1599	1009	268	318	4			
2	C	214	Total	C	N	O	S	0	0	0
			1599	1009	268	318	4			

- Molecule 3 is a protein called Antibody light chain.

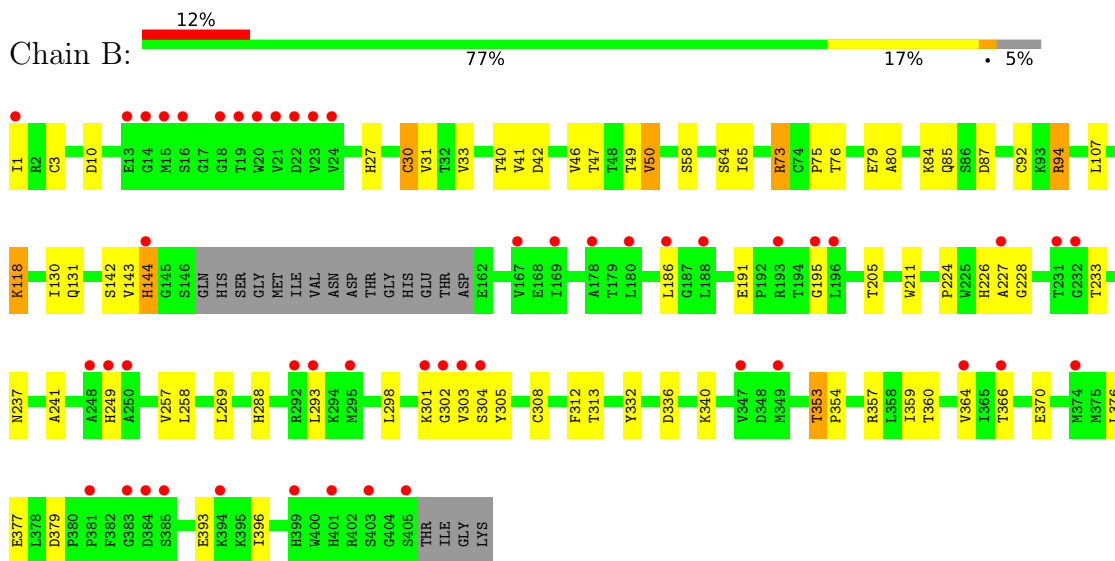| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	L	213	Total	C	N	O	S	0	0	0
			1636	1019	282	330	5			
3	D	213	Total	C	N	O	S	0	0	0
			1636	1019	282	330	5			

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.
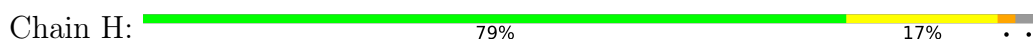
- Molecule 1: Genome polyprotein

Chain A:

- Molecule 1: Genome polyprotein

Chain B:

- Molecule 2: Antibody heavy chain

Chain H:

Q1 V2 G8 L20 T21 C22 R39 W48 I49 G50 E51 I52 Y53 T58 N59 Y60 L64 K65 V68 T69 Q78 R100 D101 D102 L103 S104 P105 T122 P125 S134 LYS SER THR SER GLY G140 T141 Y151 F152 P153 T157 V158 S178 S186

V187 L195 T199 Y200 I201 N205 H206 S209 N210 T211 K215 R216 P219 LYS

• Molecule 2: Antibody heavy chain

Chain C:

2%

79%   17%

Q1 L4 L11 L18 N33 W34 W48 E51 I52 T58 N59 Y60 K65 V68 S71 F79 C96 A97 R98 D99 R100 D101 D102 L103 S104 P105 Y108 V115 S118 S121 P125 S134 LYS SER THR SER GLY G140 T141 A142 A143

Y151 F152 P153 L165 T166 S167 S178 T199 H206 K207 P208 S209 N210 T211 K215 P219 LYS

• Molecule 3: Antibody light chain

Chain L:

78%   18%

D1 Q6 L11 R18 V19 R30 N31 D32 Y36 Q37 P40 G41 K42 R46 L47 I48 Y49 A50 A51 S52 Q55 S56 R61 S67 G68 T69 E70 I75 L78 Q79 P80 E81 D82 F83 A84 T85 H91 N92 R96 Q100 V104 E105 I106 K107

R108 T109 V110 K145 V146 Q147 E165 S168 K169 D170 E187 T197 H198 Q199 E213 CYS SER

• Molecule 3: Antibody light chain

Chain D:

4%

80%   17%

D1 S9 S14 V19 C23 D32 L33 G34 W35 Y36 Q37 P40 G41 K42 R46 L47 I48 Y49 A50 A51 L54 Q55 S56 G57 V58 P59 S60 R61 I75 L78 Q79 F83 A84 T85 N92 I106 T109 V110 P113 L135 Y140 P141 R142

E143 A144 K145 L154 E165 Y173 S174 S177 Y192 T197 H198 Q199 G200 L201 S202 N210 E213 CYS SER

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	128.67Å　　97.50Å　　165.75Å 90.00°　　91.52°　　90.00°	Depositor
Resolution (Å)	44.68　–　2.75 44.68　–　2.76	Depositor EDS
% Data completeness (in resolution range)	99.8 (44.68-2.75) 99.8 (44.68-2.76)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.56 (at 2.77Å)	Xtriage
Refinement program	PHENIX 1.9_1692	Depositor
R, R_{free}	0.231　,　0.277 0.234　,　0.278	Depositor DCC
R_{free} test set	2593 reflections (4.89%)	wwPDB-VP
Wilson B-factor (Å^2)	54.3	Xtriage
Anisotropy	0.209	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 46.1	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.016 for -h,-k,l	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	12422	wwPDB-VP
Average B, all atoms (Å^2)	69.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 9.27% 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	0.29	0/3038	0.52	1/4114 (0.0%)
1	B	0.25	0/3038	0.51	2/4114 (0.0%)
2	C	0.34	1/1640 (0.1%)	0.53	0/2242
2	H	0.36	0/1640	0.57	1/2242 (0.0%)
3	D	0.31	0/1670	0.53	2/2264 (0.1%)
3	L	0.38	0/1670	0.69	5/2264 (0.2%)
All	All	0.31	1/12696 (0.0%)	0.55	11/17240 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	105	PRO	N-CD	5.16	1.55	1.47

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L	49	TYR	N-CA-C	14.50	150.14	111.00
3	L	51	ALA	CB-CA-C	-10.02	95.07	110.10
2	H	65	LYS	N-CA-CB	-9.15	94.14	110.60
3	L	49	TYR	CB-CA-C	-8.64	93.13	110.40
1	B	143	VAL	CB-CA-C	6.81	124.35	111.40
3	D	49	TYR	N-CA-C	6.49	128.52	111.00
3	L	110	VAL	N-CA-CB	-6.32	97.59	111.50
3	D	110	VAL	N-CA-CB	-6.04	98.22	111.50
1	A	228	GLY	N-CA-C	5.47	126.78	113.10
3	L	11	LEU	CA-CB-CG	5.23	127.32	115.30
1	B	143	VAL	N-CA-C	-5.05	97.36	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	2976	0	2919	31	1
1	B	2976	0	2919	75	0
2	C	1599	0	1566	27	0
2	H	1599	0	1566	25	0
3	D	1636	0	1597	21	0
3	L	1636	0	1597	31	1
All	All	12422	0	12164	194	1

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 8.

All (194) 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:301:LYS:NZ	1:B:366:THR:CG2	2.12	1.12
1:B:301:LYS:NZ	1:B:366:THR:HG21	1.67	1.08
1:B:301:LYS:HZ1	1:B:366:THR:HG21	1.06	1.07
1:B:301:LYS:HZ2	1:B:366:THR:HG22	1.24	1.02
2:C:60:TYR:CD1	2:C:65:LYS:HD3	1.98	0.98
1:B:301:LYS:HE3	1:B:364:VAL:CG1	1.97	0.95
1:B:144:HIS:HD2	1:B:360:THR:HA	1.33	0.94
1:B:144:HIS:HD2	1:B:360:THR:CA	1.84	0.91
3:L:6:GLN:HB2	3:L:100:GLN:OE1	1.74	0.87
1:B:301:LYS:HZ2	1:B:366:THR:CG2	1.79	0.86
1:B:144:HIS:CD2	1:B:360:THR:HA	2.12	0.85
1:B:302:GLY:O	1:B:303:VAL:HG23	1.79	0.83
1:B:301:LYS:NZ	1:B:366:THR:HG22	1.89	0.81
1:A:145:GLY:O	1:A:146:SER:OG	1.98	0.81
1:B:58:SER:HB2	1:B:226:HIS:CE1	2.17	0.79
1:A:118:LYS:NZ	2:H:51:GLU:OE2	2.16	0.77
1:B:301:LYS:HZ1	1:B:366:THR:CG2	1.80	0.77
1:B:308:CYS:SG	1:B:340:LYS:O	2.42	0.77
1:B:144:HIS:CD2	1:B:360:THR:CA	2.69	0.74
1:B:144:HIS:CD2	1:B:360:THR:CG2	2.70	0.74
1:B:46:VAL:HG12	1:B:47:THR:HG23	1.70	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1:ILE:CD1	1:B:144:HIS:O	2.37	0.71
2:H:105:PRO:CB	3:L:36:TYR:OH	2.39	0.70
1:B:301:LYS:HE3	1:B:364:VAL:HB	1.72	0.70
1:B:301:LYS:CD	1:B:364:VAL:HG11	2.21	0.70
2:H:105:PRO:HB2	3:L:36:TYR:OH	1.92	0.69
1:B:144:HIS:NE2	1:B:359:ILE:HG22	2.08	0.69
1:B:301:LYS:HE3	1:B:364:VAL:CB	2.21	0.69
3:L:108:ARG:NH2	3:L:170:ASP:O	2.26	0.67
1:B:144:HIS:CD2	1:B:360:THR:HG23	2.29	0.67
1:A:145:GLY:O	1:A:146:SER:CB	2.42	0.66
1:B:144:HIS:HD2	1:B:360:THR:N	1.93	0.66
2:C:100:ARG:HB3	2:C:104:SER:OG	1.96	0.65
3:L:6:GLN:CB	3:L:100:GLN:OE1	2.44	0.65
1:B:302:GLY:O	1:B:303:VAL:CG2	2.44	0.65
3:D:40:PRO:HG2	3:D:165:GLU:HG2	1.78	0.64
3:D:19:VAL:HB	3:D:75:ILE:HG23	1.79	0.63
1:A:37:ASP:C	1:A:300:LEU:HD21	2.18	0.63
2:H:206:HIS:ND1	2:H:209:SER:HB3	2.13	0.63
2:C:48:TRP:HZ2	2:C:51:GLU:HB2	1.62	0.63
3:D:37:GLN:HB2	3:D:47:LEU:HD11	1.82	0.62
3:D:50:ALA:O	3:D:51:ALA:HB3	1.98	0.62
2:H:201:ILE:HG12	2:H:216:ARG:HG3	1.81	0.62
1:B:301:LYS:HE3	1:B:364:VAL:HG11	1.80	0.62
3:L:40:PRO:HG2	3:L:165:GLU:HG2	1.82	0.61
3:L:19:VAL:HB	3:L:75:ILE:HG23	1.82	0.61
3:D:145:LYS:HB2	3:D:197:THR:HB	1.82	0.61
3:L:6:GLN:N	3:L:100:GLN:OE1	2.32	0.61
2:C:125:PRO:HB3	2:C:151:TYR:HB3	1.82	0.61
1:B:301:LYS:CE	1:B:364:VAL:HB	2.30	0.60
1:B:144:HIS:CD2	1:B:360:THR:N	2.70	0.60
2:C:18:LEU:HD12	2:C:115:VAL:HG11	1.84	0.60
1:A:300:LEU:H	1:A:300:LEU:CD2	2.16	0.59
3:L:6:GLN:CA	3:L:100:GLN:OE1	2.51	0.59
1:A:57:ARG:NH1	1:A:59:TYR:OH	2.35	0.59
1:B:85:GLN:OE1	1:B:94:ARG:NH2	2.32	0.59
3:L:83:PHE:HZ	3:L:165:GLU:HG3	1.67	0.59
1:A:186:LEU:HD21	1:A:298:LEU:HD22	1.84	0.59
1:A:194:THR:HG21	1:A:290:LYS:HE2	1.85	0.59
2:H:105:PRO:HB3	3:L:36:TYR:OH	2.04	0.58
3:L:37:GLN:HB2	3:L:47:LEU:HD11	1.85	0.58
3:D:49:TYR:HB2	3:D:55:GLN:NE2	2.18	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:48:TRP:HZ2	2:H:51:GLU:HB2	1.67	0.58
1:B:301:LYS:HD3	1:B:305:TYR:CE2	2.39	0.58
2:C:60:TYR:HD1	2:C:65:LYS:HD3	1.65	0.58
1:B:65:ILE:HA	2:C:103:LEU:HD12	1.87	0.57
1:B:301:LYS:HD2	1:B:364:VAL:HG21	1.86	0.57
1:B:186:LEU:HD21	1:B:298:LEU:HD22	1.87	0.56
3:L:80:PRO:HA	3:L:106:ILE:HD13	1.88	0.55
1:B:301:LYS:CE	1:B:364:VAL:HG11	2.35	0.55
3:L:83:PHE:CZ	3:L:165:GLU:HG3	2.41	0.55
1:B:50:VAL:HG11	1:B:130:ILE:HG23	1.88	0.55
2:C:166:THR:HG23	2:C:167:SER:N	2.20	0.55
3:D:46:ARG:NH2	3:D:56:SER:O	2.39	0.55
1:A:85:GLN:OE1	1:A:94:ARG:NH2	2.41	0.54
1:B:118:LYS:NZ	2:C:51:GLU:OE2	2.37	0.54
1:B:144:HIS:CG	1:B:360:THR:HG22	2.43	0.54
1:A:300:LEU:H	1:A:300:LEU:HD23	1.72	0.54
1:A:308:CYS:HB3	1:A:332:TYR:CZ	2.42	0.54
1:B:301:LYS:HE3	1:B:364:VAL:HG12	1.85	0.53
1:A:145:GLY:C	1:A:146:SER:OG	2.47	0.53
1:B:144:HIS:CD2	1:B:360:THR:HG22	2.44	0.53
1:B:40:THR:HB	1:B:144:HIS:HB2	1.90	0.53
3:L:61:ARG:NH2	3:L:82:ASP:OD1	2.33	0.52
1:B:1:ILE:HD12	1:B:144:HIS:O	2.07	0.52
2:C:4:LEU:HD11	2:C:108:TYR:HB3	1.92	0.52
2:H:8:GLY:HA3	2:H:20:LEU:HD23	1.92	0.51
1:B:30:CYS:SG	1:B:31:VAL:N	2.83	0.51
1:B:227:ALA:O	1:B:228:GLY:C	2.49	0.51
1:A:27:HIS:HB2	1:A:287:GLY:H	1.75	0.51
1:A:300:LEU:CD2	1:A:300:LEU:N	2.73	0.51
1:B:301:LYS:CE	1:B:364:VAL:CG1	2.79	0.50
2:C:11:LEU:HD11	2:C:118:SER:HB3	1.91	0.50
3:L:40:PRO:CG	3:L:165:GLU:HG2	2.40	0.50
1:B:118:LYS:HB3	2:C:103:LEU:HD13	1.94	0.50
3:L:6:GLN:O	3:L:100:GLN:OE1	2.29	0.50
3:L:32:ASP:HB2	3:L:92:ASN:HB2	1.93	0.50
2:C:52:ILE:HD12	2:C:58:THR:HG22	1.94	0.50
2:C:206:HIS:CD2	2:C:208:PRO:HD2	2.45	0.50
2:C:165:LEU:C	2:C:165:LEU:HD12	2.32	0.49
3:D:59:PRO:HB2	3:D:61:ARG:HG2	1.94	0.49
3:D:40:PRO:CG	3:D:165:GLU:HG2	2.43	0.49
1:A:67:ASP:OD2	3:L:96:ARG:NH2	2.42	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:84:LYS:NZ	2:H:58:THR:O	2.45	0.49
1:A:228:GLY:O	1:A:229:ALA:HB3	2.13	0.49
3:D:50:ALA:O	3:D:51:ALA:CB	2.61	0.49
3:L:145:LYS:HB2	3:L:197:THR:HB	1.93	0.48
2:C:79:PHE:CZ	2:C:96:CYS:HB2	2.48	0.48
2:C:33:ASN:HD22	2:C:98:ARG:HD2	1.79	0.48
2:H:39:ARG:HB3	2:H:49:ILE:HD11	1.96	0.48
1:B:1:ILE:HD11	1:B:144:HIS:O	2.13	0.48
1:B:73:ARG:HD3	1:B:80:ALA:HA	1.94	0.48
1:B:308:CYS:HB3	1:B:332:TYR:CZ	2.48	0.48
3:L:11:LEU:HD11	3:L:19:VAL:HG13	1.96	0.47
1:B:336:ASP:OD1	1:B:336:ASP:N	2.43	0.47
1:A:82:LEU:O	1:A:85:GLN:HB2	2.14	0.47
2:H:100:ARG:HB3	2:H:104:SER:OG	2.14	0.47
1:A:67:ASP:OD2	1:A:118:LYS:NZ	2.40	0.47
1:A:312:PHE:C	1:A:396:ILE:HD11	2.35	0.47
1:B:65:ILE:CA	2:C:103:LEU:HD12	2.44	0.47
1:B:305:TYR:HB2	1:B:340:LYS:HG3	1.98	0.46
1:B:144:HIS:NE2	1:B:359:ILE:CG2	2.78	0.46
1:B:312:PHE:C	1:B:396:ILE:HD11	2.35	0.46
1:B:79:GLU:HB3	1:B:94:ARG:NH1	2.31	0.46
1:B:85:GLN:HA	1:B:92:CYS:SG	2.56	0.46
1:B:301:LYS:CE	1:B:366:THR:CG2	2.90	0.46
3:D:83:PHE:CZ	3:D:165:GLU:HG3	2.51	0.46
1:B:118:LYS:HE3	2:C:34:TRP:CD1	2.51	0.45
3:D:198:HIS:CD2	3:D:200:GLY:H	2.34	0.45
2:H:60:TYR:HB2	2:H:65:LYS:HD2	1.99	0.45
1:B:359:ILE:HD11	1:B:379:ASP:HB2	1.99	0.45
1:A:73:ARG:HD3	1:A:80:ALA:HA	1.99	0.45
1:B:302:GLY:C	1:B:303:VAL:HG23	2.35	0.45
3:L:108:ARG:HG3	3:L:109:THR:O	2.17	0.44
1:A:169:ILE:HG23	1:A:174:PRO:HA	1.99	0.44
3:L:50:ALA:O	3:L:51:ALA:CB	2.65	0.44
1:B:195:GLY:O	1:B:288:HIS:HB3	2.18	0.44
1:B:353:THR:HA	1:B:354:PRO:HD3	1.84	0.44
2:H:157:THR:OG1	2:H:205:ASN:HB3	2.19	0.43
1:B:84:LYS:HA	1:B:87:ASP:HB2	1.99	0.43
3:D:49:TYR:HB2	3:D:55:GLN:HE21	1.83	0.43
1:B:224:PRO:HD3	1:B:241:ALA:HB3	2.00	0.43
1:B:186:LEU:HG	1:B:298:LEU:HD13	1.99	0.43
1:B:211:TRP:CD2	1:B:269:LEU:HD13	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:224:PRO:HA	1:B:237:ASN:O	2.18	0.43
2:C:166:THR:CG2	2:C:167:SER:N	2.81	0.43
3:D:23:CYS:HB2	3:D:35:TRP:CH2	2.54	0.43
3:D:140:TYR:CG	3:D:141:PRO:HA	2.54	0.43
1:B:359:ILE:HB	1:B:377:GLU:HB3	2.01	0.43
1:A:39:PRO:HD3	1:A:300:LEU:HD22	2.00	0.42
2:H:102:ASP:OD2	2:H:102:ASP:N	2.49	0.42
2:H:64:LEU:O	2:H:68:VAL:HG22	2.18	0.42
1:A:38:LYS:NZ	1:A:298:LEU:O	2.41	0.42
2:C:79:PHE:HZ	2:C:96:CYS:HB2	1.84	0.42
1:B:301:LYS:HD3	1:B:364:VAL:HG11	1.98	0.42
1:B:33:VAL:HB	1:B:41:VAL:HG23	2.01	0.42
2:C:102:ASP:OD2	2:C:102:ASP:N	2.38	0.42
3:L:11:LEU:HD22	3:L:104:VAL:HG22	2.01	0.42
3:D:32:ASP:HB2	3:D:92:ASN:HB2	2.02	0.42
1:A:118:LYS:HB3	2:H:103:LEU:HD13	2.02	0.42
1:A:329:GLU:HG3	1:A:375:MET:HG2	2.01	0.42
3:D:54:LEU:HD11	3:D:58:VAL:O	2.20	0.42
1:A:217:TRP:CZ3	1:A:221:ILE:HD11	2.55	0.41
1:A:217:TRP:CH2	1:A:269:LEU:HD21	2.55	0.41
3:L:61:ARG:HH21	3:L:82:ASP:CG	2.17	0.41
3:L:46:ARG:NH2	3:L:56:SER:O	2.53	0.41
3:L:50:ALA:O	3:L:51:ALA:HB3	2.20	0.41
2:C:105:PRO:O	2:C:105:PRO:HG2	2.20	0.41
3:D:113:PRO:HD3	3:D:198:HIS:CD2	2.55	0.41
2:H:100:ARG:NH2	3:L:55:GLN:OE1	2.53	0.41
3:D:61:ARG:CZ	3:D:79:GLN:HG3	2.50	0.41
3:L:100:GLN:H	3:L:100:GLN:HG3	1.50	0.41
1:B:3:CYS:SG	1:B:42:ASP:HB3	2.61	0.41
1:B:75:PRO:O	1:B:76:THR:OG1	2.30	0.41
2:C:65:LYS:HA	2:C:68:VAL:HG22	2.02	0.41
1:B:64:SER:HA	1:B:257:VAL:HG11	2.02	0.41
1:B:94:ARG:HE	1:B:94:ARG:HB3	1.63	0.41
1:A:66:SER:HB2	3:L:91:HIS:HD2	1.86	0.41
3:L:78:LEU:HD23	3:L:78:LEU:HA	1.76	0.41
1:B:65:ILE:HA	2:C:103:LEU:CD1	2.49	0.41
2:H:102:ASP:C	2:H:104:SER:H	2.23	0.41
1:A:233:THR:HG21	2:H:53:TYR:HE2	1.86	0.41
1:B:42:ASP:HB2	1:B:142:SER:OG	2.20	0.41
3:D:78:LEU:HD23	3:D:78:LEU:HA	1.85	0.41
2:H:48:TRP:CZ2	2:H:51:GLU:HB2	2.51	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:158:VAL:HG11	2:H:186:SER:HB2	2.02	0.40
2:H:195:LEU:HD12	2:H:195:LEU:HA	1.89	0.40
2:C:100:ARG:HD2	2:C:102:ASP:OD2	2.21	0.40
2:C:152:PHE:HA	2:C:153:PRO:HA	1.90	0.40
1:A:14:GLY:HA2	1:A:21:VAL:HG11	2.03	0.40
2:H:22:CYS:O	2:H:78:GLN:HB2	2.22	0.40
2:H:125:PRO:HB3	2:H:151:TYR:HB3	2.03	0.40
2:H:122:THR:HG22	2:H:153:PRO:HD3	2.03	0.40
3:D:83:PHE:HZ	3:D:165:GLU:HG3	1.85	0.40

All (1) 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)
1:A:278:ASP:OD1	3:L:69:THR:OG1[2_758]	2.00	0.20

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	386/409 (94%)	375 (97%)	11 (3%)	0	100	100
1	B	386/409 (94%)	359 (93%)	27 (7%)	0	100	100
2	C	210/220 (96%)	201 (96%)	9 (4%)	0	100	100
2	H	210/220 (96%)	203 (97%)	7 (3%)	0	100	100
3	D	211/215 (98%)	202 (96%)	9 (4%)	0	100	100
3	L	211/215 (98%)	203 (96%)	8 (4%)	0	100	100
All	All	1614/1688 (96%)	1543 (96%)	71 (4%)	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	325/341 (95%)	298 (92%)	27 (8%)	11	20
1	B	325/341 (95%)	301 (93%)	24 (7%)	13	24
2	C	185/190 (97%)	172 (93%)	13 (7%)	15	26
2	H	185/190 (97%)	173 (94%)	12 (6%)	17	30
3	D	186/188 (99%)	174 (94%)	12 (6%)	17	30
3	L	186/188 (99%)	170 (91%)	16 (9%)	10	18
All	All	1392/1438 (97%)	1288 (92%)	104 (8%)	13	23

All (104) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	27	HIS
1	A	30	CYS
1	A	37	ASP
1	A	49	THR
1	A	50	VAL
1	A	73	ARG
1	A	85	GLN
1	A	94	ARG
1	A	107	LEU
1	A	122	SER
1	A	131	GLN
1	A	146	SER
1	A	205	THR
1	A	233	THR
1	A	249	HIS
1	A	252	ARG
1	A	255	VAL
1	A	256	VAL
1	A	258	LEU
1	A	283	ARG
1	A	289	LEU
1	A	293	LEU

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Mol	Chain	Res	Type
1	A	300	LEU
1	A	317	ILE
1	A	351	THR
1	A	353	THR
1	A	403	SER
2	H	2	VAL
2	H	64	LEU
2	H	69	THR
2	H	78	GLN
2	H	141	THR
2	H	178	SER
2	H	187	VAL
2	H	199	THR
2	H	209	SER
2	H	210	ASN
2	H	211	THR
2	H	215	LYS
3	L	18	ARG
3	L	30	ARG
3	L	42	LYS
3	L	46	ARG
3	L	52	SER
3	L	67	SER
3	L	69	THR
3	L	70	GLU
3	L	75	ILE
3	L	78	LEU
3	L	85	THR
3	L	100	GLN
3	L	147	GLN
3	L	168	SER
3	L	187	GLU
3	L	199	GLN
1	B	10	ASP
1	B	27	HIS
1	B	30	CYS
1	B	49	THR
1	B	50	VAL
1	B	73	ARG
1	B	94	ARG
1	B	107	LEU
1	B	118	LYS

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Mol	Chain	Res	Type
1	B	131	GLN
1	B	144	HIS
1	B	191	GLU
1	B	205	THR
1	B	233	THR
1	B	249	HIS
1	B	258	LEU
1	B	293	LEU
1	B	304	SER
1	B	313	THR
1	B	353	THR
1	B	357	ARG
1	B	370	GLU
1	B	376	LEU
1	B	393	GLU
2	C	4	LEU
2	C	71	SER
2	C	100	ARG
2	C	105	PRO
2	C	121	SER
2	C	141	THR
2	C	165	LEU
2	C	178	SER
2	C	199	THR
2	C	209	SER
2	C	210	ASN
2	C	211	THR
2	C	215	LYS
3	D	9	SER
3	D	14	SER
3	D	33	LEU
3	D	42	LYS
3	D	46	ARG
3	D	49	TYR
3	D	75	ILE
3	D	85	THR
3	D	109	THR
3	D	174	SER
3	D	199	GLN
3	D	202	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
2	H	59	ASN
2	H	78	GLN
2	H	111	GLN
3	L	91	HIS
1	B	144	HIS
1	B	226	HIS
2	C	5	GLN
2	C	33	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(Å²)	Q<0.9
1	A	390/409 (95%)	0.18	16 (4%)	37	44	24, 59, 119, 189	0
1	B	390/409 (95%)	0.71	49 (12%)	3	4	49, 82, 159, 199	0
2	C	214/220 (97%)	0.23	4 (1%)	66	75	41, 74, 118, 151	0
2	H	214/220 (97%)	-0.21	1 (0%)	91	94	18, 37, 68, 95	0
3	D	213/215 (99%)	0.27	9 (4%)	36	43	38, 76, 128, 160	0
3	L	213/215 (99%)	-0.19	1 (0%)	91	94	23, 48, 84, 118	0
All	All	1634/1688 (96%)	0.23	80 (4%)	29	36	18, 65, 132, 199	0

All (80) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	20	TRP	8.8
1	B	178	ALA	5.8
1	A	302	GLY	5.7
1	A	405	SER	5.6
1	B	180	LEU	5.4
1	B	295	MET	5.4
2	H	105	PRO	5.2
1	B	293	LEU	5.1
1	B	18	GLY	4.9
1	B	169	ILE	4.8
1	B	403	SER	4.8
1	B	401	HIS	4.6
2	C	143	ALA	4.6
1	B	248	ALA	4.5
1	B	349	MET	4.2
1	A	229	ALA	4.2
3	D	145	LYS	4.1
1	B	347	VAL	4.1
1	B	399	HIS	4.0

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Mol	Chain	Res	Type	RSRZ
1	A	303	VAL	3.9
1	B	22	ASP	3.8
1	B	301	LYS	3.8
1	B	186	LEU	3.7
1	A	404	GLY	3.6
1	B	144	HIS	3.5
1	B	15	MET	3.5
1	B	193	ARG	3.4
1	B	21	VAL	3.3
3	D	173	TYR	3.2
1	B	19	THR	3.2
1	B	303	VAL	3.2
1	A	247	ASP	3.2
1	B	227	ALA	3.2
1	B	196	LEU	3.1
1	A	164	ARG	3.0
1	B	188	LEU	3.0
1	B	167	VAL	2.9
1	B	250	ALA	2.9
1	B	24	VAL	2.9
2	C	104	SER	2.9
1	B	292	ARG	2.8
1	A	180	LEU	2.8
1	B	384	ASP	2.8
1	B	195	GLY	2.7
2	C	142	ALA	2.7
3	D	154	LEU	2.6
1	B	232	GLY	2.6
1	A	304	SER	2.6
1	A	1	ILE	2.6
1	B	405	SER	2.6
2	C	105	PRO	2.6
1	B	304	SER	2.6
1	B	302	GLY	2.6
1	A	20	TRP	2.5
1	B	381	PRO	2.5
1	B	366	THR	2.5
1	A	230	ASP	2.5
1	B	14	GLY	2.5
1	A	15	MET	2.4
3	D	177	SER	2.4
1	B	16	SER	2.4

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Mol	Chain	Res	Type	RSRZ
1	B	374	MET	2.3
1	B	383	GLY	2.3
3	D	192	TYR	2.3
1	B	249	HIS	2.3
1	A	186	LEU	2.2
1	B	231	THR	2.2
1	A	162	GLU	2.2
1	B	385	SER	2.2
1	B	364	VAL	2.1
3	D	210	ASN	2.1
3	D	135	LEU	2.1
1	B	1	ILE	2.1
3	L	49	TYR	2.1
1	A	248	ALA	2.1
1	B	13	GLU	2.1
3	D	106	ILE	2.1
1	B	394	LYS	2.0
3	D	143	GLU	2.0
1	B	23	VAL	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.