Full wwPDB X-ray Structure Validation Report ⓘ

Nov 1, 2023 – 11:18 PM EDT

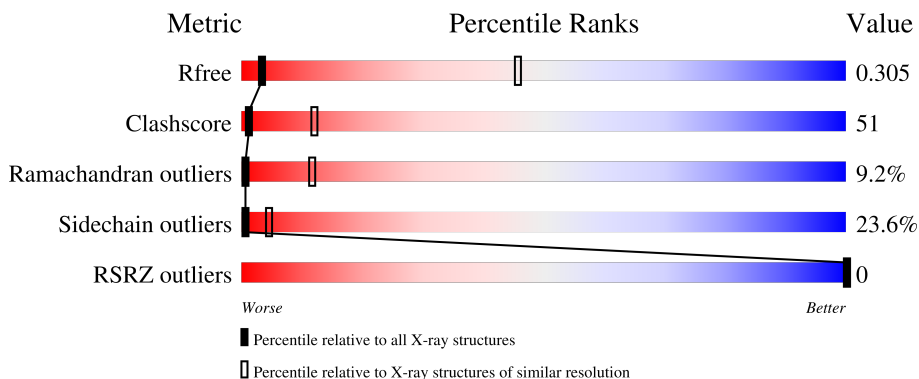|		
PDB ID	:	3S62
Title	:	Structure of Fab fragment of malaria transmission blocking antibody 2A8 against P. vivax P25 protein
Authors	:	Saxena, A.K.
Deposited on	:	2011-05-24
Resolution	:	4.01 Å(reported)

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 4.01 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		0.305
Clashscore		51
Ramachandran outliers		9.2%
Sidechain outliers		23.6%
RSRZ outliers		0

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	1098 (4.34-3.70)
Clashscore	141614	1159 (4.34-3.70)
Ramachandran outliers	138981	1118 (4.34-3.70)
Sidechain outliers	138945	1108 (4.34-3.70)
RSRZ outliers	127900	1034 (4.38-3.66)

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	L	213	33% / 45% / 18% / ..
2	H	216	28% / 54% / 18%

2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 3231 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 Fab fragment of antibody 2A8, Light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	L	211	Total	C	N	O	S	0	0	0
			1616	1003	271	333	9			

- Molecule 2 is a protein called Fab fragment of antibody 2A8, Heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	H	215	Total	C	N	O	S	0	0	0
			1615	1024	267	316	8			

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: Fab fragment of antibody 2A8, Light chain
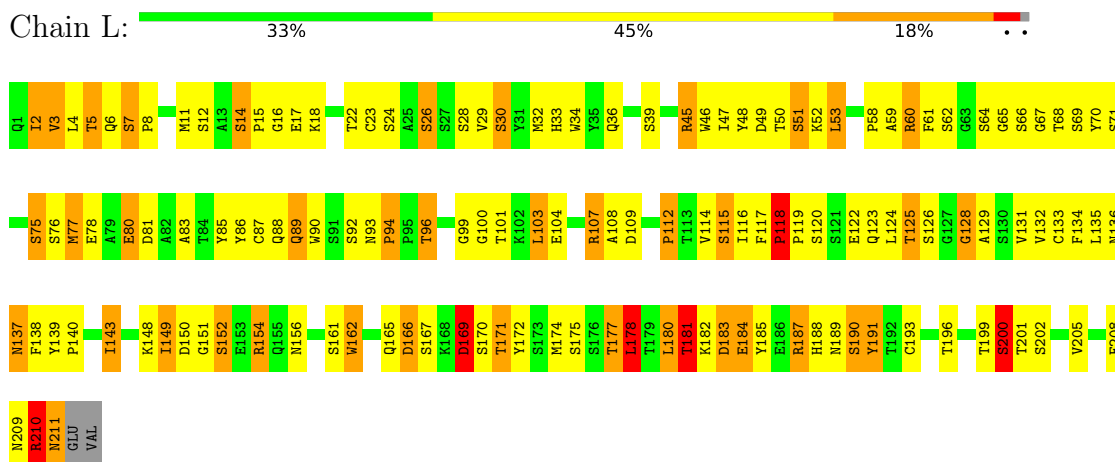
Chain L:

• Molecule 2: Fab fragment of antibody 2A8, Heavy chain

Chain H:
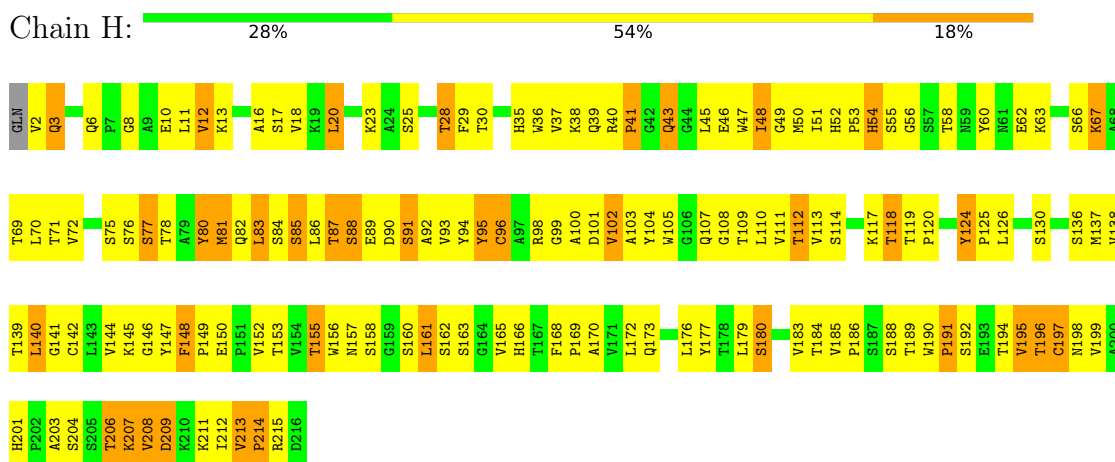
4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 2	Depositor
Cell constants a, b, c, α, β, γ	134.07Å 177.82Å 74.62Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 4.01 43.34 – 4.01	Depositor EDS
% Data completeness (in resolution range)	99.7 (50.00-4.01) 99.9 (43.34-4.01)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.15	Depositor
$< I/\sigma(I) >$ [1]	2.84 (at 4.00Å)	Xtriage
Refinement program	REFMAC 5.5.0072	Depositor
R, R_{free}	0.264 , 0.310 0.262 , 0.305	Depositor DCC
R_{free} test set	360 reflections (4.61%)	wwPDB-VP
Wilson B-factor (Å^2)	113.2	Xtriage
Anisotropy	0.879	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 80.5	EDS
L-test for twinning[2]	$< |L| > = 0.46, < L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.88	EDS
Total number of atoms	3231	wwPDB-VP
Average B, all atoms (Å^2)	100.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.04% 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	L	0.61	0/1655	0.80	1/2248 (0.0%)
2	H	0.62	0/1660	0.80	1/2272 (0.0%)
All	All	0.61	0/3315	0.80	2/4520 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	L	0	1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	H	161	LEU	CA-CB-CG	-6.52	100.31	115.30
1	L	169	ASP	CB-CG-OD1	5.74	123.47	118.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	L	181	THR	Peptide

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.

WORLD WIDE
wwPDB
PROTEIN DATA BANK

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	L	1616	0	1542	187	1
2	H	1615	0	1582	155	1
All	All	3231	0	3124	321	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 51.

All (321) 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:L:90:TRP:CH2	2:H:101:ASP:OD1	1.67	1.47
1:L:90:TRP:CZ2	2:H:101:ASP:HA	1.83	1.12
1:L:90:TRP:HH2	2:H:101:ASP:OD1	0.78	1.12
1:L:7:SER:HB3	1:L:8:PRO:HD3	1.36	1.05
2:H:118:THR:HA	2:H:149:PRO:HG3	1.38	1.04
1:L:6:GLN:HG3	1:L:100:GLY:H	1.18	1.03
1:L:184:GLU:HA	1:L:187:ARG:HB2	1.41	1.01
1:L:6:GLN:CG	1:L:100:GLY:H	1.73	0.99
1:L:33:HIS:HB2	1:L:88:GLN:HB3	1.44	0.97
1:L:90:TRP:HZ2	2:H:101:ASP:HA	1.28	0.97
2:H:30:THR:HA	2:H:53:PRO:HB2	1.49	0.94
1:L:7:SER:HB2	1:L:22:THR:OG1	1.71	0.91
1:L:107:ARG:NH2	1:L:170:SER:HB3	1.86	0.90
1:L:189:ASN:CG	1:L:190:SER:H	1.74	0.90
1:L:128:GLY:HA2	1:L:180:LEU:O	1.73	0.89
2:H:148:PHE:HB2	2:H:176:LEU:HD23	1.53	0.88
1:L:18:LYS:HA	1:L:75:SER:O	1.74	0.87
1:L:78:GLU:OE1	1:L:80:GLU:OE2	1.91	0.87
2:H:3:GLN:HE22	2:H:104:TYR:HB3	1.40	0.86
1:L:90:TRP:HH2	2:H:101:ASP:CG	1.77	0.86
1:L:139:TYR:CD2	1:L:140:PRO:HA	2.12	0.85
1:L:187:ARG:HH11	1:L:188:HIS:CD2	1.94	0.85
1:L:88:GLN:HG2	1:L:89:GLN:H	1.41	0.84
1:L:66:SER:O	1:L:68:THR:N	2.11	0.84
1:L:89:GLN:O	1:L:89:GLN:HG2	1.80	0.82
1:L:6:GLN:HG3	1:L:100:GLY:N	1.94	0.82
2:H:213:VAL:HG22	2:H:214:PRO:HD2	1.62	0.81
2:H:51:ILE:HD12	2:H:70:LEU:HB3	1.63	0.80
1:L:210:ARG:HG2	1:L:211:ASN:ND2	1.97	0.80
1:L:88:GLN:HG2	1:L:89:GLN:N	1.96	0.80
1:L:149:ILE:HG22	1:L:188:HIS:HB3	1.63	0.79
2:H:201:HIS:CE1	2:H:203:ALA:HB3	2.16	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:169:ASP:OD2	2:H:166:HIS:NE2	2.15	0.79
2:H:87:THR:OG1	2:H:89:GLU:HB3	1.82	0.78
1:L:7:SER:HB3	1:L:8:PRO:CD	2.13	0.78
1:L:2:ILE:HB	1:L:89:GLN:NE2	1.98	0.78
1:L:115:SER:HB2	1:L:117:PHE:HE1	1.48	0.77
1:L:6:GLN:HB3	1:L:101:THR:HG23	1.65	0.77
2:H:40:ARG:HB3	2:H:43:GLN:HG2	1.64	0.77
1:L:77:MET:CE	1:L:81:ASP:HB2	2.15	0.76
2:H:197:CYS:SG	2:H:199:VAL:HG23	2.25	0.76
2:H:29:PHE:CE2	2:H:77:SER:HA	2.22	0.75
2:H:87:THR:C	2:H:89:GLU:H	1.91	0.74
2:H:211:LYS:HG2	2:H:212:ILE:H	1.54	0.73
1:L:149:ILE:O	1:L:152:SER:OG	2.05	0.73
2:H:195:VAL:O	2:H:212:ILE:HD12	1.89	0.73
2:H:17:SER:HA	2:H:84:SER:HA	1.70	0.73
1:L:189:ASN:CG	1:L:190:SER:N	2.43	0.72
1:L:149:ILE:CG2	1:L:188:HIS:HB3	2.19	0.72
2:H:140:LEU:HD11	2:H:212:ILE:HG21	1.73	0.71
1:L:77:MET:HE2	1:L:81:ASP:HB2	1.73	0.71
1:L:165:GLN:O	1:L:166:ASP:C	2.30	0.70
2:H:148:PHE:HB2	2:H:176:LEU:CD2	2.20	0.70
2:H:155:THR:O	2:H:198:ASN:N	2.25	0.70
1:L:177:THR:O	1:L:178:LEU:HB2	1.92	0.70
1:L:139:TYR:CG	1:L:140:PRO:HA	2.28	0.69
1:L:12:SER:HB3	1:L:104:GLU:OE2	1.93	0.69
2:H:117:LYS:HG3	2:H:118:THR:N	2.06	0.68
1:L:107:ARG:HH22	1:L:170:SER:HB3	1.57	0.68
1:L:90:TRP:CH2	2:H:101:ASP:HA	2.28	0.68
1:L:166:ASP:OD2	2:H:166:HIS:CD2	2.47	0.68
2:H:196:THR:HA	2:H:211:LYS:HA	1.75	0.68
1:L:143:ILE:HG23	1:L:143:ILE:O	1.94	0.67
2:H:40:ARG:O	2:H:41:PRO:C	2.32	0.67
2:H:211:LYS:HG2	2:H:212:ILE:N	2.09	0.67
2:H:25:SER:OG	2:H:28:THR:HG22	1.95	0.67
1:L:2:ILE:HD12	1:L:92:SER:HB2	1.76	0.66
1:L:166:ASP:OD2	2:H:166:HIS:NE2	2.28	0.66
1:L:184:GLU:HA	1:L:187:ARG:CB	2.24	0.66
1:L:34:TRP:HB2	1:L:47:ILE:HB	1.78	0.66
2:H:147:TYR:C	2:H:176:LEU:HD22	2.17	0.65
1:L:166:ASP:O	1:L:170:SER:N	2.26	0.65
2:H:87:THR:C	2:H:89:GLU:N	2.49	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:52:HIS:O	2:H:56:GLY:HA2	1.98	0.64
1:L:149:ILE:CG2	1:L:188:HIS:CB	2.76	0.64
1:L:7:SER:CB	1:L:8:PRO:HD3	2.21	0.64
1:L:45:ARG:NH1	2:H:102:VAL:HG12	2.13	0.64
1:L:154:ARG:HH22	1:L:187:ARG:HH12	1.45	0.64
2:H:190:TRP:N	2:H:191:PRO:HD2	2.14	0.63
2:H:145:LYS:HG2	2:H:146:GLY:H	1.62	0.63
1:L:154:ARG:HH22	1:L:187:ARG:HH22	1.45	0.63
1:L:6:GLN:HG2	1:L:100:GLY:H	1.62	0.63
1:L:171:THR:OG1	1:L:172:TYR:N	2.32	0.63
2:H:23:LYS:HG3	2:H:78:THR:HG23	1.80	0.63
2:H:29:PHE:CD2	2:H:77:SER:HA	2.33	0.63
1:L:169:ASP:O	1:L:171:THR:HG22	1.98	0.63
2:H:12:VAL:HG23	2:H:113:VAL:HA	1.81	0.62
2:H:36:TRP:CE2	2:H:81:MET:HB3	2.34	0.62
1:L:184:GLU:CA	1:L:187:ARG:HB2	2.24	0.62
2:H:10:GLU:O	2:H:111:VAL:HA	1.99	0.62
1:L:107:ARG:HH11	1:L:107:ARG:HG2	1.65	0.62
2:H:150:GLU:HB3	2:H:177:TYR:CE2	2.35	0.62
1:L:12:SER:HA	1:L:104:GLU:HG3	1.82	0.62
2:H:190:TRP:O	2:H:191:PRO:C	2.36	0.62
2:H:147:TYR:O	2:H:177:TYR:N	2.33	0.61
2:H:80:TYR:N	2:H:80:TYR:CD2	2.67	0.61
2:H:80:TYR:N	2:H:80:TYR:HD2	1.99	0.61
1:L:154:ARG:NH2	1:L:187:ARG:HH22	1.99	0.60
2:H:157:ASN:HA	2:H:196:THR:HG23	1.84	0.60
1:L:6:GLN:CG	1:L:100:GLY:N	2.57	0.60
1:L:16:GLY:O	1:L:76:SER:HA	2.00	0.60
1:L:211:ASN:N	1:L:211:ASN:HD22	1.98	0.60
2:H:25:SER:HG	2:H:28:THR:HG22	1.66	0.60
1:L:118:PRO:HA	1:L:131:VAL:HG22	1.84	0.60
1:L:77:MET:HE1	1:L:81:ASP:HB2	1.84	0.59
1:L:208:PHE:HE1	1:L:210:ARG:HB2	1.67	0.59
1:L:33:HIS:CE1	1:L:90:TRP:CE2	2.90	0.59
2:H:16:ALA:O	2:H:85:SER:N	2.34	0.59
1:L:33:HIS:CE1	1:L:90:TRP:CZ2	2.90	0.59
2:H:66:SER:OG	2:H:67:LYS:N	2.35	0.59
2:H:211:LYS:C	2:H:212:ILE:HG13	2.23	0.59
1:L:187:ARG:NH1	1:L:188:HIS:CD2	2.69	0.59
1:L:149:ILE:HG22	1:L:188:HIS:CB	2.32	0.59
1:L:107:ARG:HH12	1:L:171:THR:HB	1.68	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:137:ASN:OD1	2:H:166:HIS:CE1	2.56	0.59
2:H:206:THR:CG2	2:H:208:VAL:HG22	2.33	0.59
1:L:90:TRP:HZ2	2:H:101:ASP:CA	2.09	0.58
2:H:163:SER:O	2:H:165:VAL:HG23	2.04	0.58
2:H:147:TYR:CZ	2:H:177:TYR:HB3	2.39	0.58
2:H:38:LYS:HB3	2:H:46:GLU:HB2	1.86	0.58
2:H:92:ALA:O	2:H:111:VAL:HG12	2.03	0.58
2:H:2:VAL:O	2:H:98:ARG:NH2	2.36	0.58
2:H:118:THR:HG23	2:H:203:ALA:HB1	1.86	0.57
1:L:123:GLN:HG2	1:L:129:ALA:HA	1.86	0.57
1:L:208:PHE:CE1	1:L:210:ARG:HB2	2.39	0.57
2:H:47:TRP:CD2	2:H:48:ILE:O	2.57	0.57
1:L:33:HIS:O	1:L:87:CYS:HA	2.04	0.57
1:L:175:SER:O	1:L:175:SER:OG	2.21	0.57
2:H:40:ARG:O	2:H:41:PRO:O	2.23	0.57
2:H:170:ALA:HA	2:H:179:LEU:HB3	1.86	0.57
1:L:189:ASN:ND2	1:L:190:SER:H	2.03	0.57
1:L:90:TRP:CZ3	2:H:101:ASP:OD1	2.48	0.56
1:L:58:PRO:HG2	1:L:61:PHE:HE2	1.70	0.56
1:L:77:MET:CE	1:L:81:ASP:CB	2.83	0.56
1:L:3:VAL:N	1:L:26:SER:OG	2.39	0.56
1:L:191:TYR:CD2	1:L:191:TYR:N	2.74	0.55
1:L:6:GLN:NE2	1:L:87:CYS:SG	2.79	0.55
1:L:200:SER:C	1:L:202:SER:H	2.07	0.55
1:L:133:CYS:HB3	1:L:135:LEU:HD11	1.88	0.55
1:L:49:ASP:O	1:L:51:SER:N	2.39	0.55
2:H:114:SER:HB3	2:H:148:PHE:HE1	1.72	0.55
2:H:201:HIS:NE2	2:H:203:ALA:HB3	2.21	0.55
2:H:190:TRP:CZ2	2:H:214:PRO:HD3	2.41	0.55
1:L:49:ASP:OD1	1:L:90:TRP:CZ3	2.60	0.55
1:L:115:SER:HB2	1:L:117:PHE:CE1	2.35	0.55
1:L:122:GLU:O	1:L:125:THR:HG22	2.07	0.55
1:L:92:SER:OG	1:L:94:PRO:HD2	2.07	0.54
1:L:162:TRP:HB3	1:L:174:MET:HG3	1.88	0.54
2:H:126:LEU:HD12	2:H:141:GLY:C	2.28	0.54
1:L:166:ASP:HB2	1:L:171:THR:O	2.08	0.54
2:H:80:TYR:HD2	2:H:80:TYR:H	1.54	0.54
2:H:155:THR:HB	2:H:158:SER:C	2.28	0.54
1:L:33:HIS:HE1	1:L:90:TRP:CZ2	2.26	0.54
1:L:199:THR:O	1:L:200:SER:HB2	2.08	0.54
2:H:120:PRO:HG3	2:H:204:SER:HB2	1.88	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:87:THR:H	2:H:90:ASP:HB2	1.73	0.54
2:H:87:THR:O	2:H:89:GLU:N	2.41	0.54
2:H:99:GLY:HA3	2:H:102:VAL:HG23	1.89	0.54
2:H:95:TYR:CD1	2:H:95:TYR:N	2.76	0.53
2:H:91:SER:OG	2:H:112:THR:HA	2.08	0.53
1:L:4:LEU:HD23	1:L:23:CYS:SG	2.48	0.53
1:L:59:ALA:C	1:L:61:PHE:H	2.12	0.53
1:L:47:ILE:CD1	1:L:53:LEU:HA	2.38	0.53
1:L:161:SER:OG	2:H:169:PRO:HG2	2.08	0.53
1:L:18:LYS:CA	1:L:75:SER:O	2.54	0.53
1:L:189:ASN:OD1	1:L:191:TYR:CE2	2.62	0.53
2:H:35:HIS:O	2:H:96:CYS:HA	2.09	0.53
2:H:148:PHE:H	2:H:149:PRO:CD	2.22	0.53
2:H:75:SER:OG	2:H:76:SER:N	2.42	0.52
1:L:93:ASN:HB2	1:L:94:PRO:HD3	1.90	0.52
1:L:107:ARG:NH1	1:L:171:THR:HB	2.24	0.52
1:L:137:ASN:HD22	1:L:171:THR:HG23	1.73	0.52
1:L:185:TYR:HE1	1:L:191:TYR:CD1	2.28	0.52
2:H:145:LYS:HG2	2:H:146:GLY:N	2.24	0.52
1:L:48:TYR:CD2	2:H:101:ASP:HB3	2.44	0.52
1:L:135:LEU:N	1:L:135:LEU:HD12	2.25	0.52
1:L:48:TYR:CZ	1:L:52:LYS:HB3	2.45	0.52
1:L:150:ASP:HA	1:L:190:SER:OG	2.10	0.51
1:L:34:TRP:HA	1:L:86:TYR:O	2.11	0.51
2:H:17:SER:HB3	2:H:84:SER:OG	2.11	0.51
1:L:154:ARG:HH22	1:L:187:ARG:NH1	2.09	0.51
2:H:55:SER:OG	2:H:56:GLY:N	2.43	0.51
2:H:126:LEU:HD12	2:H:141:GLY:HA3	1.93	0.51
1:L:107:ARG:NH2	1:L:169:ASP:O	2.44	0.51
1:L:149:ILE:HG21	1:L:188:HIS:HB2	1.93	0.51
2:H:163:SER:C	2:H:165:VAL:HG23	2.31	0.51
1:L:200:SER:C	1:L:202:SER:N	2.64	0.51
1:L:183:ASP:C	1:L:185:TYR:H	2.15	0.50
2:H:62:GLU:HB3	2:H:63:LYS:HD2	1.93	0.50
1:L:181:THR:HB	1:L:183:ASP:N	2.25	0.50
2:H:39:GLN:O	2:H:93:VAL:HG12	2.11	0.50
2:H:114:SER:HB3	2:H:148:PHE:CE1	2.46	0.50
2:H:124:TYR:N	2:H:124:TYR:CD1	2.79	0.50
2:H:186:PRO:C	2:H:188:SER:H	2.13	0.50
1:L:2:ILE:HB	1:L:89:GLN:HE22	1.76	0.50
1:L:175:SER:N	2:H:168:PHE:CE2	2.78	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:143:ILE:O	1:L:143:ILE:CG2	2.59	0.50
1:L:49:ASP:OD1	2:H:101:ASP:OD1	2.30	0.50
1:L:89:GLN:OE1	1:L:96:THR:N	2.45	0.50
1:L:23:CYS:HB3	1:L:32:MET:HE3	1.94	0.49
1:L:46:TRP:O	1:L:47:ILE:HD13	2.13	0.49
1:L:90:TRP:CH2	2:H:101:ASP:CG	2.65	0.49
1:L:154:ARG:HH22	1:L:187:ARG:NH2	2.09	0.49
2:H:49:GLY:HA3	2:H:60:TYR:HA	1.94	0.49
1:L:189:ASN:HA	1:L:191:TYR:CZ	2.48	0.49
2:H:78:THR:HB	2:H:80:TYR:CE2	2.47	0.49
2:H:207:LYS:HG3	2:H:209:ASP:OD2	2.13	0.49
1:L:116:ILE:HA	1:L:132:VAL:O	2.13	0.49
1:L:2:ILE:HA	1:L:26:SER:HB2	1.95	0.49
2:H:95:TYR:CD2	2:H:108:GLY:HA3	2.48	0.49
1:L:180:LEU:HD22	1:L:183:ASP:O	2.12	0.49
1:L:184:GLU:C	1:L:187:ARG:HB3	2.33	0.49
1:L:184:GLU:HB3	1:L:187:ARG:HH21	1.76	0.49
1:L:8:PRO:O	1:L:101:THR:HG22	2.13	0.48
2:H:12:VAL:N	2:H:112:THR:O	2.39	0.48
1:L:77:MET:HE2	1:L:81:ASP:CB	2.43	0.48
1:L:169:ASP:OD2	2:H:166:HIS:CE1	2.65	0.48
2:H:206:THR:HG21	2:H:208:VAL:HG22	1.95	0.48
2:H:40:ARG:H	2:H:43:GLN:HB2	1.79	0.48
1:L:137:ASN:OD1	2:H:166:HIS:HE1	1.96	0.48
1:L:11:MET:O	1:L:103:LEU:HD23	2.14	0.47
1:L:114:VAL:HG12	1:L:135:LEU:HG	1.94	0.47
2:H:78:THR:HB	2:H:80:TYR:HE2	1.79	0.47
2:H:147:TYR:O	2:H:176:LEU:HD22	2.14	0.47
1:L:15:PRO:HA	1:L:77:MET:HG2	1.96	0.47
1:L:184:GLU:O	1:L:187:ARG:NE	2.47	0.47
1:L:148:LYS:HE2	1:L:151:GLY:HA2	1.96	0.47
1:L:65:GLY:HA3	1:L:70:TYR:CD2	2.49	0.47
2:H:88:SER:HA	2:H:113:VAL:O	2.15	0.47
2:H:190:TRP:O	2:H:192:SER:N	2.48	0.47
2:H:211:LYS:CG	2:H:212:ILE:H	2.25	0.47
1:L:28:SER:HA	1:L:68:THR:HG22	1.96	0.47
1:L:88:GLN:CG	1:L:89:GLN:H	2.21	0.47
2:H:157:ASN:N	2:H:196:THR:O	2.48	0.47
1:L:184:GLU:OE1	1:L:187:ARG:HG3	2.15	0.47
1:L:33:HIS:NE2	1:L:90:TRP:CD2	2.83	0.46
1:L:36:GLN:HG3	1:L:85:TYR:CE1	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:69:SER:C	1:L:70:TYR:HD1	2.19	0.46
2:H:30:THR:CA	2:H:53:PRO:HB2	2.34	0.46
1:L:120:SER:OG	2:H:125:PRO:O	2.32	0.46
1:L:2:ILE:CD1	1:L:92:SER:HB2	2.46	0.46
1:L:123:GLN:CG	1:L:129:ALA:HA	2.46	0.46
2:H:172:LEU:HD12	2:H:177:TYR:CE1	2.51	0.46
2:H:39:GLN:HB3	2:H:93:VAL:HG13	1.98	0.46
2:H:51:ILE:HB	2:H:70:LEU:HD13	1.98	0.45
2:H:179:LEU:C	2:H:179:LEU:HD12	2.36	0.45
1:L:65:GLY:CA	1:L:70:TYR:CD2	3.00	0.45
1:L:180:LEU:CD2	1:L:181:THR:H	2.28	0.45
2:H:140:LEU:HB3	2:H:183:VAL:HG23	1.98	0.45
1:L:6:GLN:HG2	1:L:99:GLY:N	2.31	0.45
1:L:184:GLU:HB3	1:L:187:ARG:HE	1.81	0.45
2:H:40:ARG:O	2:H:43:GLN:N	2.50	0.45
1:L:4:LEU:HB3	1:L:23:CYS:SG	2.57	0.45
1:L:208:PHE:CE1	1:L:210:ARG:CB	2.99	0.45
1:L:211:ASN:ND2	1:L:211:ASN:N	2.64	0.45
1:L:64:SER:HB3	1:L:71:SER:OG	2.16	0.45
1:L:65:GLY:HA2	1:L:70:TYR:CG	2.51	0.45
1:L:58:PRO:O	1:L:61:PHE:HD2	1.99	0.45
2:H:168:PHE:HB2	2:H:180:SER:O	2.16	0.45
2:H:141:GLY:CA	2:H:156:TRP:HH2	2.30	0.45
1:L:112:PRO:HB3	1:L:138:PHE:HB3	1.98	0.45
1:L:165:GLN:O	1:L:167:SER:N	2.50	0.44
1:L:58:PRO:HB2	1:L:60:ARG:HG3	1.98	0.44
2:H:137:MET:HG2	2:H:186:PRO:HA	1.99	0.44
1:L:210:ARG:NH1	1:L:211:ASN:OD1	2.50	0.44
1:L:5:THR:O	1:L:23:CYS:HA	2.17	0.44
1:L:124:LEU:C	1:L:126:SER:H	2.20	0.44
2:H:186:PRO:C	2:H:188:SER:N	2.71	0.44
2:H:201:HIS:ND1	2:H:204:SER:HB3	2.32	0.44
2:H:146:GLY:HA2	2:H:176:LEU:HD13	2.00	0.44
2:H:36:TRP:CE3	2:H:81:MET:HG2	2.52	0.44
2:H:52:HIS:O	2:H:56:GLY:CA	2.65	0.44
2:H:52:HIS:HA	2:H:53:PRO:HD3	1.75	0.43
2:H:119:THR:HG22	2:H:120:PRO:O	2.18	0.43
1:L:59:ALA:C	1:L:61:PHE:N	2.72	0.43
1:L:149:ILE:HG21	1:L:188:HIS:CB	2.48	0.43
1:L:162:TRP:HE3	1:L:174:MET:HG3	1.83	0.43
1:L:117:PHE:O	1:L:118:PRO:O	2.35	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:185:TYR:C	1:L:187:ARG:N	2.68	0.43
2:H:40:ARG:O	2:H:43:GLN:HB2	2.19	0.43
1:L:136:ASN:O	1:L:137:ASN:C	2.57	0.43
2:H:95:TYR:CD2	2:H:108:GLY:CA	3.01	0.43
2:H:17:SER:CB	2:H:84:SER:OG	2.66	0.43
2:H:168:PHE:HD1	2:H:180:SER:O	2.02	0.43
1:L:108:ALA:O	1:L:109:ASP:C	2.56	0.43
2:H:120:PRO:CG	2:H:204:SER:HB2	2.49	0.43
1:L:115:SER:CB	1:L:117:PHE:CE1	3.01	0.42
1:L:132:VAL:HG11	1:L:134:PHE:CE2	2.54	0.42
2:H:18:VAL:HG13	2:H:20:LEU:HD21	2.01	0.42
2:H:37:VAL:O	2:H:94:TYR:HA	2.19	0.42
2:H:120:PRO:HG3	2:H:204:SER:CB	2.49	0.42
1:L:80:GLU:H	1:L:80:GLU:HG3	1.50	0.42
1:L:190:SER:OG	1:L:190:SER:O	2.33	0.42
2:H:168:PHE:CD1	2:H:180:SER:O	2.73	0.42
1:L:47:ILE:HD13	1:L:47:ILE:HA	1.65	0.42
2:H:83:LEU:HD23	2:H:84:SER:N	2.34	0.42
2:H:103:ALA:HB1	2:H:105:TRP:HE1	1.84	0.42
2:H:190:TRP:HE1	2:H:213:VAL:HA	1.84	0.42
1:L:184:GLU:C	1:L:187:ARG:CB	2.88	0.42
2:H:137:MET:HA	2:H:186:PRO:HA	2.02	0.42
2:H:158:SER:C	2:H:160:SER:H	2.23	0.42
2:H:158:SER:N	2:H:198:ASN:OD1	2.52	0.42
2:H:172:LEU:HD23	2:H:173:GLN:N	2.35	0.41
1:L:34:TRP:HD1	1:L:47:ILE:CG2	2.34	0.41
1:L:169:ASP:OD1	1:L:169:ASP:N	2.54	0.41
1:L:189:ASN:ND2	1:L:190:SER:N	2.67	0.41
2:H:35:HIS:ND1	2:H:50:MET:HB3	2.35	0.41
2:H:51:ILE:CD1	2:H:58:THR:HG22	2.51	0.41
1:L:58:PRO:HG2	1:L:61:PHE:CE2	2.52	0.41
1:L:209:ASN:O	1:L:210:ARG:C	2.58	0.41
1:L:138:PHE:N	1:L:171:THR:OG1	2.54	0.41
2:H:126:LEU:HD12	2:H:141:GLY:CA	2.50	0.41
2:H:172:LEU:HB2	2:H:177:TYR:CD1	2.55	0.41
1:L:14:SER:O	1:L:17:GLU:HG2	2.21	0.41
2:H:45:LEU:HD23	2:H:45:LEU:HA	1.96	0.40
2:H:39:GLN:O	2:H:92:ALA:HB1	2.21	0.40
2:H:88:SER:HA	2:H:113:VAL:HB	2.02	0.40
2:H:147:TYR:CE1	2:H:152:VAL:HG23	2.56	0.40
1:L:118:PRO:HB3	1:L:119:PRO:HD2	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:36:TRP:O	2:H:48:ILE:HG12	2.21	0.40
2:H:139:THR:HG22	2:H:140:LEU:H	1.87	0.40

All (2) 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:L:78:GLU:OE1	1:L:78:GLU:OE1[3_756]	2.06	0.14
2:H:54:HIS:NE2	2:H:101:ASP:OD1[6_655]	2.14	0.06

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	L	209/213 (98%)	152 (73%)	34 (16%)	23 (11%)	0	7
2	H	213/216 (99%)	155 (73%)	42 (20%)	16 (8%)	1	15
All	All	422/429 (98%)	307 (73%)	76 (18%)	39 (9%)	1	12

All (39) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	L	30	SER
1	L	67	GLY
1	L	118	PRO
1	L	187	ARG
1	L	200	SER
2	H	8	GLY
1	L	2	ILE
1	L	7	SER
1	L	39	SER
1	L	128	GLY

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Mol	Chain	Res	Type
1	L	137	ASN
1	L	166	ASP
1	L	178	LEU
1	L	184	GLU
2	H	28	THR
2	H	88	SER
2	H	102	VAL
2	H	118	THR
2	H	130	SER
2	H	148	PHE
2	H	208	VAL
1	L	45	ARG
1	L	51	SER
1	L	75	SER
1	L	83	ALA
1	L	143	ILE
2	H	41	PRO
2	H	54	HIS
2	H	100	ALA
2	H	189	THR
2	H	214	PRO
1	L	50	THR
1	L	112	PRO
2	H	85	SER
2	H	209	ASP
1	L	94	PRO
1	L	210	ARG
1	L	182	LYS
2	H	191	PRO

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	L	185/187 (99%)	145 (78%)	40 (22%)	1	6
2	H	183/184 (100%)	136 (74%)	47 (26%)	0	4

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	368/371 (99%)	281 (76%)	87 (24%)	1 4

All (87) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	L	3	VAL
1	L	5	THR
1	L	14	SER
1	L	24	SER
1	L	26	SER
1	L	29	VAL
1	L	30	SER
1	L	53	LEU
1	L	60	ARG
1	L	62	SER
1	L	77	MET
1	L	80	GLU
1	L	89	GLN
1	L	96	THR
1	L	103	LEU
1	L	107	ARG
1	L	115	SER
1	L	118	PRO
1	L	125	THR
1	L	149	ILE
1	L	152	SER
1	L	154	ARG
1	L	156	ASN
1	L	162	TRP
1	L	169	ASP
1	L	171	THR
1	L	177	THR
1	L	178	LEU
1	L	180	LEU
1	L	181	THR
1	L	183	ASP
1	L	190	SER
1	L	191	TYR
1	L	193	CYS
1	L	196	THR
1	L	200	SER
1	L	201	THR

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Mol	Chain	Res	Type
1	L	205	VAL
1	L	210	ARG
1	L	211	ASN
2	H	3	GLN
2	H	6	GLN
2	H	11	LEU
2	H	12	VAL
2	H	13	LYS
2	H	20	LEU
2	H	43	GLN
2	H	48	ILE
2	H	67	LYS
2	H	69	THR
2	H	71	THR
2	H	72	VAL
2	H	77	SER
2	H	80	TYR
2	H	81	MET
2	H	82	GLN
2	H	83	LEU
2	H	86	LEU
2	H	87	THR
2	H	91	SER
2	H	95	TYR
2	H	96	CYS
2	H	107	GLN
2	H	109	THR
2	H	110	LEU
2	H	112	THR
2	H	124	TYR
2	H	136	SER
2	H	138	VAL
2	H	140	LEU
2	H	142	CYS
2	H	144	VAL
2	H	153	THR
2	H	155	THR
2	H	161	LEU
2	H	162	SER
2	H	180	SER
2	H	184	THR
2	H	185	VAL

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Mol	Chain	Res	Type
2	H	194	THR
2	H	195	VAL
2	H	196	THR
2	H	197	CYS
2	H	206	THR
2	H	207	LYS
2	H	213	VAL
2	H	215	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	L	6	GLN
1	L	137	ASN
1	L	188	HIS
1	L	189	ASN
1	L	211	ASN
2	H	3	GLN
2	H	5	GLN
2	H	6	GLN
2	H	43	GLN
2	H	52	HIS
2	H	166	HIS

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	L	211/213 (99%)	-0.34	0	100	100	72, 93, 122, 126	0
2	H	215/216 (99%)	-0.25	0	100	100	86, 104, 136, 145	0
All	All	426/429 (99%)	-0.30	0	100	100	72, 97, 127, 145	0

There are no RSRZ outliers to report.

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.