Full wwPDB X-ray Structure Validation Report ⓘ

Nov 22, 2023 – 09:58 PM JST

PDB ID	:	7XEG
Title	:	SARS-CoV-2-Beta-RBD and CB6-092-Fab complex
Authors	:	Wang, Y.; Feng, Y.
Deposited on	:	2022-03-31
Resolution	:	2.69 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 ⓘ 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 ⓘ) were used in the production of this report:

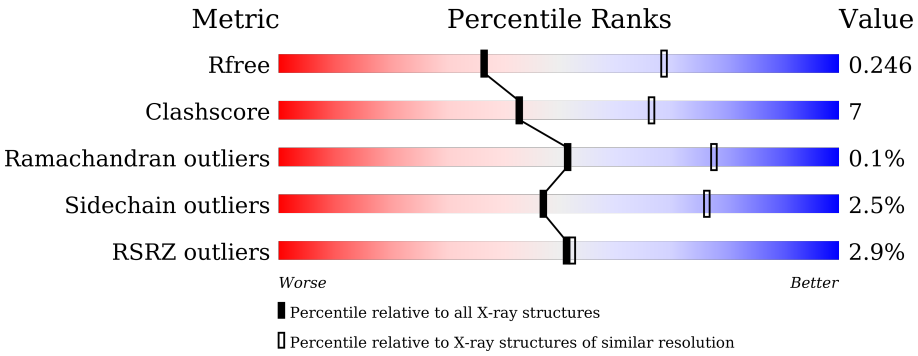
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation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

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.69 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

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	3% 72% 14% 14%
1	B	227	8% 67% 18% 14%
2	C	233	2% 80% 13% 6%
2	E	233	% 82% 12% 6%
3	D	216	81% 18%
3	F	216	% 77% 20%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 9667 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 Spike protein S1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	196	Total	C	N	O	S	0	0	0
			1555	999	259	289	8			
1	B	195	Total	C	N	O	S	0	0	0
			1546	993	257	288	8			

There are 22 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	417	ASN	LYS	variant	UNP P0DTC2
A	484	LYS	GLU	variant	UNP P0DTC2
A	501	TYR	ASN	variant	UNP P0DTC2
A	538	HIS	-	expression tag	UNP P0DTC2
A	539	HIS	-	expression tag	UNP P0DTC2
A	540	HIS	-	expression tag	UNP P0DTC2
A	541	HIS	-	expression tag	UNP P0DTC2
A	542	HIS	-	expression tag	UNP P0DTC2
A	543	HIS	-	expression tag	UNP P0DTC2
A	544	HIS	-	expression tag	UNP P0DTC2
A	545	HIS	-	expression tag	UNP P0DTC2
B	417	ASN	LYS	variant	UNP P0DTC2
B	484	LYS	GLU	variant	UNP P0DTC2
B	501	TYR	ASN	variant	UNP P0DTC2
B	538	HIS	-	expression tag	UNP P0DTC2
B	539	HIS	-	expression tag	UNP P0DTC2
B	540	HIS	-	expression tag	UNP P0DTC2
B	541	HIS	-	expression tag	UNP P0DTC2
B	542	HIS	-	expression tag	UNP P0DTC2
B	543	HIS	-	expression tag	UNP P0DTC2
B	544	HIS	-	expression tag	UNP P0DTC2
B	545	HIS	-	expression tag	UNP P0DTC2

- Molecule 2 is a protein called CB6-092-Fab heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	C	218	Total	C	N	O	S	0	0	0
			1632	1035	271	318	8			
2	E	218	Total	C	N	O	S	0	0	0
			1632	1035	271	318	8			

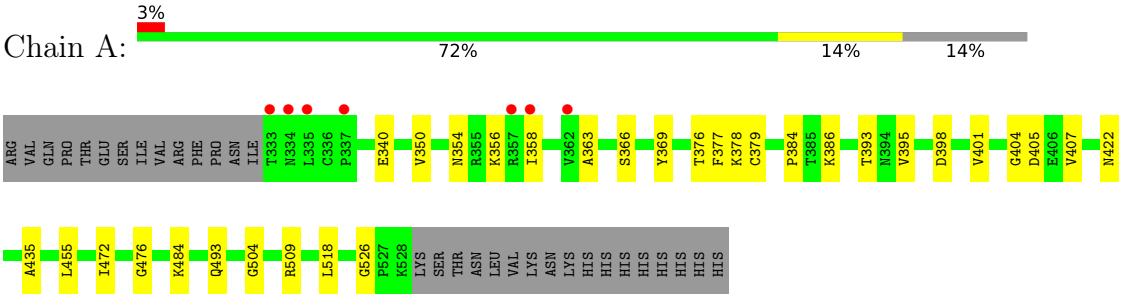
- Molecule 3 is a protein called CB6-092-Fab light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	D	215	Total	C	N	O	S	0	0	0
			1651	1030	277	339	5			
3	F	215	Total	C	N	O	S	0	0	0
			1651	1030	277	339	5			

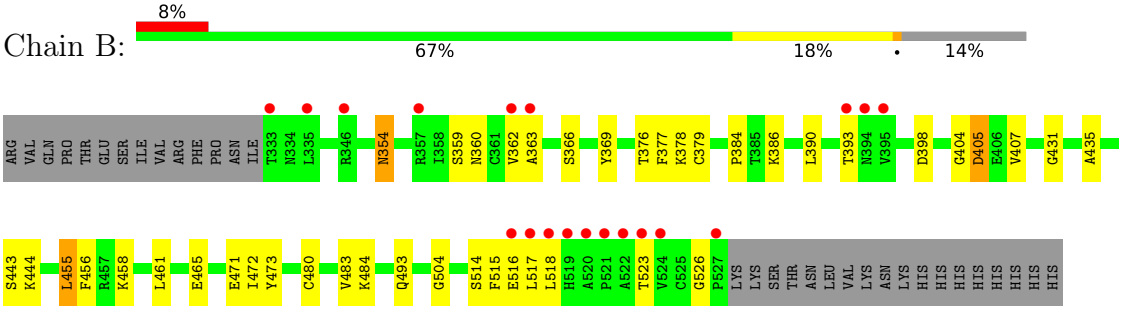
3 Residue-property plots

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.

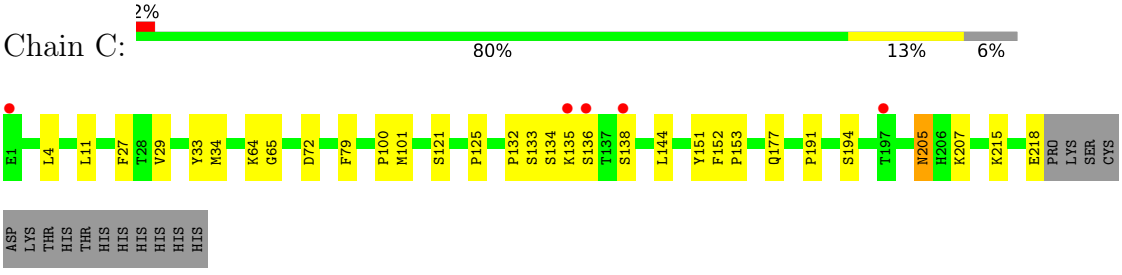
• Molecule 1: Spike protein S1



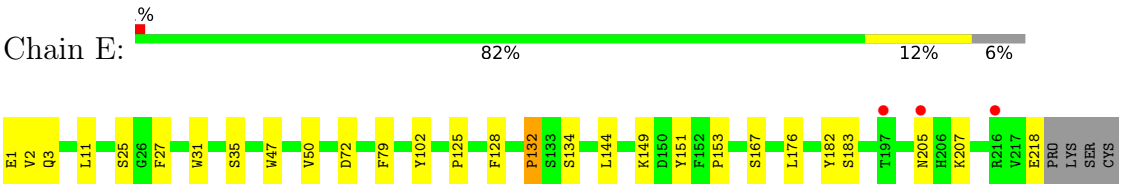
• Molecule 1: Spike protein S1



• Molecule 2: CB6-092-Fab heavy chain

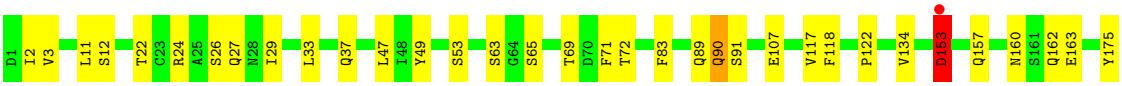


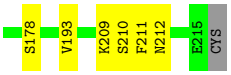
• Molecule 2: CB6-092-Fab heavy chain



• Molecule 3: CB6-092-Fab light chain

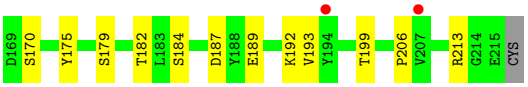
Chain D:





• Molecule 3: CB6-092-Fab light chain

Chain F:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	80.25Å 113.24Å 102.10Å 90.00° 100.58° 90.00°	Depositor
Resolution (Å)	39.24 – 2.69 49.31 – 2.69	Depositor EDS
% Data completeness (in resolution range)	95.8 (39.24-2.69) 95.9 (49.31-2.69)	Depositor EDS
R_{merge}	0.19	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.79 (at 2.69Å)	Xtriage
Refinement program	PHENIX 1.17.1_3660	Depositor
R, R_{free}	0.195 , 0.248 0.196 , 0.246	Depositor DCC
R_{free} test set	2385 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	42.8	Xtriage
Anisotropy	0.100	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 39.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	9667	wwPDB-VP
Average B, all atoms (Å^2)	44.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.59% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	A	0.32	0/1600	0.53	0/2178
1	B	0.33	0/1591	0.58	1/2167 (0.0%)
2	C	0.30	0/1673	0.53	0/2283
2	E	0.29	0/1673	0.54	0/2283
3	D	0.30	0/1685	0.55	1/2287 (0.0%)
3	F	0.36	0/1685	0.59	2/2287 (0.1%)
All	All	0.32	0/9907	0.56	4/13485 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	455	LEU	CA-CB-CG	8.19	134.12	115.30
3	D	153	ASP	CB-CG-OD1	7.45	125.00	118.30
3	F	157	GLN	CA-CB-CG	-6.31	99.52	113.40
3	F	193	VAL	CG1-CB-CG2	6.00	120.49	110.90

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	1555	0	1476	23	0
1	B	1546	0	1463	27	0
2	C	1632	0	1595	22	1

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	E	1632	0	1595	20	1
3	D	1651	0	1605	22	0
3	F	1651	0	1605	31	0
All	All	9667	0	9339	129	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 7.

All (129) 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:E:47:TRP:HE1	2:E:50:VAL:HG23	1.48	0.79
1:A:455:LEU:HD12	2:C:100:PRO:HG2	1.64	0.79
2:C:132:PRO:HG3	2:C:144:LEU:HB3	1.68	0.76
3:D:193:VAL:HG22	3:D:212:ASN:OD1	1.84	0.76
1:B:362:VAL:HG13	1:B:526:GLY:HA2	1.68	0.75
1:B:455:LEU:HD21	1:B:493:GLN:HB2	1.68	0.74
3:F:153:ASP:OD1	3:F:192:LYS:HB2	1.88	0.73
3:F:184:SER:HG	3:F:187:ASP:H	1.35	0.72
2:E:205:ASN:HD21	2:E:207:LYS:HE2	1.56	0.71
1:A:493:GLN:NE2	2:C:101:MET:O	2.18	0.70
1:B:393:THR:N	1:B:516:GLU:O	2.26	0.69
3:F:122:PRO:HD3	3:F:134:VAL:HG22	1.75	0.69
1:A:358:ILE:HB	1:A:395:VAL:HB	1.75	0.68
1:A:377:PHE:HB3	1:B:384:PRO:HD2	1.77	0.66
2:E:125:PRO:HB3	2:E:151:TYR:HB3	1.78	0.64
2:E:35:SER:HB2	2:E:50:VAL:HG22	1.80	0.64
3:D:157:GLN:OE1	3:D:160:ASN:ND2	2.26	0.63
3:F:156:LEU:C	3:F:157:GLN:HG2	2.18	0.63
2:E:132:PRO:HD2	2:E:218:GLU:HB2	1.80	0.62
2:E:2:VAL:HA	2:E:25:SER:O	2.00	0.62
2:C:191:PRO:O	2:C:194:SER:OG	2.15	0.61
3:F:144:ARG:HD2	3:F:165:VAL:HG11	1.83	0.61
1:B:360:ASN:H	1:B:523:THR:HB	1.67	0.60
1:B:376:THR:HB	1:B:435:ALA:HB3	1.85	0.59
3:F:152:VAL:HB	3:F:157:GLN:HE21	1.67	0.58
2:E:47:TRP:NE1	2:E:50:VAL:HG23	2.16	0.58
2:E:1:GLU:HG2	2:E:2:VAL:N	2.19	0.56
2:C:11:LEU:HB2	2:C:153:PRO:HG3	1.86	0.56
1:A:384:PRO:HD2	1:B:377:PHE:HB3	1.87	0.56
3:F:189:GLU:HA	3:F:213:ARG:NE	2.21	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:133:SER:OG	2:C:135:LYS:N	2.35	0.56
2:C:177:GLN:HA	3:D:162:GLN:HE22	1.70	0.55
2:E:132:PRO:HG3	2:E:144:LEU:HB3	1.86	0.55
1:B:393:THR:HB	1:B:516:GLU:HG2	1.87	0.55
3:F:184:SER:OG	3:F:187:ASP:N	2.28	0.55
2:C:133:SER:OG	2:C:134:SER:N	2.40	0.55
2:C:125:PRO:HB3	2:C:151:TYR:HB3	1.89	0.55
2:C:133:SER:OG	2:C:135:LYS:HE3	2.07	0.54
1:B:443:SER:C	1:B:444:LYS:HD3	2.28	0.54
2:E:1:GLU:HG2	2:E:2:VAL:H	1.73	0.54
3:D:122:PRO:HD3	3:D:134:VAL:HG22	1.90	0.53
1:A:405:ASP:HB2	1:A:504:GLY:O	2.09	0.53
3:F:12:SER:HB2	3:F:107:GLU:OE1	2.08	0.53
2:C:135:LYS:HD3	3:D:211:PHE:HB3	1.91	0.53
3:D:153:ASP:CG	3:D:193:VAL:HB	2.30	0.52
1:B:458:LYS:HB3	2:E:31:TRP:CZ3	2.45	0.52
1:A:384:PRO:HG2	1:B:369:TYR:HE1	1.75	0.52
2:C:64:LYS:NZ	2:C:65:GLY:H	2.07	0.52
3:F:142:TYR:CG	3:F:143:PRO:HA	2.44	0.51
3:D:2:ILE:HG12	3:D:27:GLN:HE21	1.76	0.51
3:D:89:GLN:NE2	3:D:91:SER:OG	2.42	0.51
2:C:72:ASP:HB2	2:C:79:PHE:HE2	1.76	0.51
3:D:33:LEU:HD22	3:D:71:PHE:CG	2.46	0.51
3:F:37:GLN:HB2	3:F:47:LEU:HD11	1.93	0.51
2:E:128:PHE:HD1	3:F:125:GLU:HG3	1.76	0.51
1:A:404:GLY:HA2	1:A:407:VAL:HG23	1.92	0.50
1:A:476:GLY:HA2	2:C:27:PHE:HA	1.94	0.50
1:A:378:LYS:HG2	1:B:379:CYS:O	2.12	0.49
1:B:404:GLY:HA2	1:B:407:VAL:HG23	1.94	0.49
3:F:199:THR:HG23	3:F:206:PRO:HG3	1.93	0.49
2:E:128:PHE:HB3	3:F:123:SER:OG	2.13	0.49
1:A:376:THR:HB	1:A:435:ALA:HB3	1.95	0.49
1:A:401:VAL:HG22	1:A:509:ARG:HG2	1.95	0.49
1:A:350:VAL:HG22	1:A:422:ASN:HB3	1.95	0.48
2:C:132:PRO:HD2	2:C:218:GLU:HB2	1.94	0.48
3:D:3:VAL:H	3:D:26:SER:HB3	1.79	0.48
3:D:117:VAL:HG12	3:D:209:LYS:HG3	1.96	0.48
3:F:144:ARG:NH2	3:F:165:VAL:HG21	2.29	0.47
1:A:363:ALA:O	1:A:526:GLY:HA2	2.14	0.47
2:C:4:LEU:HD21	2:C:27:PHE:CE2	2.50	0.47
3:F:109:LYS:HA	3:F:142:TYR:OH	2.14	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:354:ASN:O	1:A:398:ASP:HA	2.14	0.47
1:A:455:LEU:HD23	1:A:455:LEU:H	1.79	0.47
1:A:472:ILE:HD12	1:A:484:LYS:HG3	1.95	0.47
1:B:471:GLU:HG3	1:B:472:ILE:N	2.30	0.47
3:F:147:LYS:HD3	3:F:147:LYS:HA	1.67	0.47
2:E:11:LEU:HB2	2:E:153:PRO:HG3	1.96	0.46
2:C:4:LEU:HD21	2:C:27:PHE:HE2	1.80	0.46
2:E:205:ASN:ND2	2:E:207:LYS:HE2	2.27	0.46
2:C:29:VAL:HG13	2:C:34:MET:HG3	1.98	0.46
3:F:6:GLN:NE2	3:F:104:THR:HG23	2.31	0.46
1:B:354:ASN:O	1:B:398:ASP:HA	2.15	0.45
3:D:163:GLU:HA	3:D:178:SER:O	2.16	0.45
2:E:149:LYS:HZ3	3:F:182:THR:HG21	1.80	0.45
3:F:90:GLN:OE1	3:F:92:ALA:N	2.41	0.45
2:C:136:SER:HA	3:D:118:PHE:HD2	1.81	0.45
1:B:456:PHE:HB3	1:B:473:TYR:CD1	2.52	0.45
3:D:37:GLN:HB2	3:D:47:LEU:HD11	1.98	0.45
1:B:393:THR:OG1	1:B:518:LEU:N	2.50	0.44
3:D:107:GLU:OE1	3:D:175:TYR:OH	2.31	0.44
2:E:72:ASP:HB2	2:E:79:PHE:HE2	1.83	0.44
3:F:150:TRP:NE1	3:F:179:SER:OG	2.49	0.44
3:D:11:LEU:HD12	3:D:12:SER:H	1.83	0.44
1:B:386:LYS:O	1:B:390:LEU:HD12	2.18	0.44
3:D:22:THR:HG22	3:D:72:THR:HG22	1.99	0.44
1:A:340:GLU:OE1	1:A:356:LYS:NZ	2.50	0.43
2:C:33:TYR:CE2	2:C:100:PRO:HG3	2.52	0.43
3:F:142:TYR:CD2	3:F:143:PRO:HA	2.54	0.43
1:A:393:THR:HG21	1:A:518:LEU:HB2	1.99	0.43
1:B:363:ALA:O	1:B:526:GLY:HA3	2.19	0.43
1:B:443:SER:O	1:B:444:LYS:HD3	2.19	0.43
1:A:379:CYS:O	1:B:378:LYS:HG2	2.19	0.43
2:C:205:ASN:ND2	2:C:207:LYS:HG2	2.34	0.43
3:F:11:LEU:HD21	3:F:19:VAL:CG1	2.49	0.43
3:F:148:VAL:HG11	3:F:179:SER:HB2	2.01	0.43
1:B:480:CYS:O	1:B:483:VAL:HG12	2.19	0.42
3:D:29:ILE:HG21	3:D:90:GLN:HG3	2.01	0.42
1:B:405:ASP:HB2	1:B:504:GLY:O	2.19	0.42
1:A:366:SER:HA	1:A:369:TYR:CZ	2.54	0.42
2:C:152:PHE:HA	2:C:153:PRO:HA	1.84	0.42
2:E:2:VAL:HB	2:E:27:PHE:CE2	2.54	0.42
3:F:11:LEU:HD21	3:F:19:VAL:HG13	2.00	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:11:LEU:HD12	3:D:12:SER:N	2.33	0.42
2:E:176:LEU:HD13	2:E:182:TYR:CE1	2.54	0.42
3:F:89:GLN:HE22	3:F:91:SER:HB3	1.85	0.42
1:B:393:THR:O	1:B:523:THR:OG1	2.25	0.41
3:F:143:PRO:HB2	3:F:145:GLU:OE2	2.20	0.41
2:E:3:GLN:CG	2:E:25:SER:HB2	2.50	0.41
3:F:108:ILE:O	3:F:168:GLN:NE2	2.50	0.41
1:B:431:GLY:HA2	1:B:515:PHE:CD2	2.55	0.41
3:F:6:GLN:HE21	3:F:104:THR:HG23	1.85	0.41
1:A:369:TYR:HB2	1:B:369:TYR:OH	2.21	0.41
3:D:49:TYR:O	3:D:53:SER:HB2	2.20	0.41
1:B:461:LEU:HD22	1:B:465:GLU:HB3	2.03	0.41
1:A:366:SER:HA	1:A:369:TYR:CE1	2.56	0.40
3:D:90:GLN:HE21	3:D:90:GLN:HB3	1.77	0.40
3:F:144:ARG:HB2	3:F:175:TYR:CE1	2.57	0.40
3:F:66:GLY:HA3	3:F:71:PHE:HA	2.04	0.40
3:D:24:ARG:HA	3:D:69:THR:O	2.20	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)
2:C:121:SER:OG	2:E:134:SER:O[2_455]	2.05	0.15

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	194/227 (86%)	185 (95%)	8 (4%)	1 (0%)	29 54
1	B	193/227 (85%)	180 (93%)	13 (7%)	0	100 100
2	C	216/233 (93%)	207 (96%)	9 (4%)	0	100 100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	E	216/233 (93%)	209 (97%)	7 (3%)	0	100	100
3	D	213/216 (99%)	203 (95%)	10 (5%)	0	100	100
3	F	213/216 (99%)	202 (95%)	11 (5%)	0	100	100
All	All	1245/1352 (92%)	1186 (95%)	58 (5%)	1 (0%)	51	78

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	386	LYS

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	169/200 (84%)	169 (100%)	0	100	100
1	B	168/200 (84%)	161 (96%)	7 (4%)	30	58
2	C	182/197 (92%)	179 (98%)	3 (2%)	62	85
2	E	182/197 (92%)	178 (98%)	4 (2%)	52	79
3	D	189/190 (100%)	183 (97%)	6 (3%)	39	68
3	F	189/190 (100%)	182 (96%)	7 (4%)	34	63
All	All	1079/1174 (92%)	1052 (98%)	27 (2%)	47	76

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	354	ASN
1	B	359	SER
1	B	366	SER
1	B	405	ASP
1	B	484	LYS
1	B	514	SER
1	B	517	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	C	138	SER
2	C	205	ASN
2	C	215	LYS
3	D	63	SER
3	D	65	SER
3	D	83	PHE
3	D	90	GLN
3	D	153	ASP
3	D	210	SER
2	E	102	TYR
2	E	132	PRO
2	E	167	SER
2	E	183	SER
3	F	12	SER
3	F	56	SER
3	F	83	PHE
3	F	90	GLN
3	F	129	SER
3	F	144	ARG
3	F	170	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
3	D	27	GLN
2	E	111	GLN
2	E	205	ASN
3	F	157	GLN

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, 95^{th} 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	196/227 (86%)	0.13	7 (3%) 42 42	21, 37, 74, 105	0
1	B	195/227 (85%)	0.52	19 (9%) 7 6	27, 46, 87, 125	0
2	C	218/233 (93%)	-0.14	5 (2%) 60 62	23, 37, 65, 129	0
2	E	218/233 (93%)	-0.12	3 (1%) 75 77	20, 41, 63, 82	0
3	D	215/216 (99%)	-0.22	1 (0%) 91 92	24, 37, 57, 99	0
3	F	215/216 (99%)	0.03	2 (0%) 84 85	30, 46, 84, 97	0
All	All	1257/1352 (92%)	0.02	37 (2%) 51 52	20, 40, 74, 129	0

All (37) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	333	THR	7.2
1	B	521	PRO	7.1
1	B	518	LEU	7.0
1	B	519	HIS	6.9
1	B	523	THR	5.7
1	B	522	ALA	5.4
1	B	524	VAL	5.2
1	B	520	ALA	4.8
1	B	333	THR	4.0
1	B	517	LEU	4.0
3	D	153	ASP	3.9
1	B	395	VAL	3.5
1	B	527	PRO	3.5
1	B	335	LEU	3.4
1	A	334	ASN	3.3
2	C	1	GLU	3.3
1	B	363	ALA	3.2
1	B	516	GLU	3.1
1	B	362	VAL	3.0

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	335	LEU	3.0
2	C	136	SER	2.9
1	B	393	THR	2.9
1	B	394	ASN	2.7
2	E	205	ASN	2.5
2	E	216	ARG	2.5
1	B	357	ARG	2.5
3	F	207	VAL	2.4
1	A	337	PRO	2.3
1	A	358	ILE	2.3
2	C	135	LYS	2.3
1	B	346	ARG	2.3
3	F	194	TYR	2.2
2	C	138	SER	2.1
2	E	197	THR	2.1
2	C	197	THR	2.1
1	A	357	ARG	2.0
1	A	362	VAL	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.