Full wwPDB X-ray Structure Validation Report ⓘ

Nov 22, 2023 – 01:26 PM JST

PDB ID	:	7WXZ
Title	:	Crystal structure of the recombinant protein HR121 from the S2 protein of SARS-CoV-2
Authors	:	Zheng, Y.T.; Ouyang, S.; Pang, W.; Lu, Y.; Zhao, Y.B.
Deposited on	:	2022-02-15
Resolution	:	2.41 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:

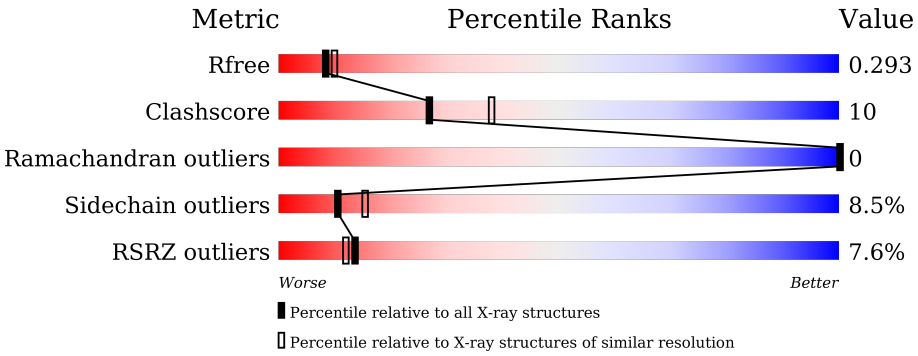
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation 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 2.41 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	4647 (2.44-2.40)
Clashscore	141614	5161 (2.44-2.40)
Ramachandran outliers	138981	5073 (2.44-2.40)
Sidechain outliers	138945	5074 (2.44-2.40)
RSRZ outliers	127900	4543 (2.44-2.40)

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	209	6% 71% 20% 9%
1	B	209	6% 66% 22% · 11%
1	C	209	4% 64% 18% · 16%
1	D	209	11% 74% 14% · 11%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 5563 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 S2'.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	A	190	Total	C	N	O	0	0	0
			1434	885	251	298			
1	B	185	Total	C	N	O	0	0	0
			1396	863	244	289			
1	C	176	Total	C	N	O	0	0	0
			1323	818	229	276			
1	D	187	Total	C	N	O	0	0	0
			1405	866	245	294			

There are 44 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	78	GLY	-	linker	UNP P0DTC2
A	79	GLY	-	linker	UNP P0DTC2
A	80	SER	-	linker	UNP P0DTC2
A	81	GLY	-	linker	UNP P0DTC2
A	82	GLY	-	linker	UNP P0DTC2
A	127	SER	-	linker	UNP P0DTC2
A	128	GLY	-	linker	UNP P0DTC2
A	129	GLY	-	linker	UNP P0DTC2
A	130	ARG	-	linker	UNP P0DTC2
A	131	GLY	-	linker	UNP P0DTC2
A	132	GLY	-	linker	UNP P0DTC2
B	78	GLY	-	linker	UNP P0DTC2
B	79	GLY	-	linker	UNP P0DTC2
B	80	SER	-	linker	UNP P0DTC2
B	81	GLY	-	linker	UNP P0DTC2
B	82	GLY	-	linker	UNP P0DTC2
B	127	SER	-	linker	UNP P0DTC2
B	128	GLY	-	linker	UNP P0DTC2
B	129	GLY	-	linker	UNP P0DTC2
B	130	ARG	-	linker	UNP P0DTC2
B	131	GLY	-	linker	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	132	GLY	-	linker	UNP P0DTC2
C	78	GLY	-	linker	UNP P0DTC2
C	79	GLY	-	linker	UNP P0DTC2
C	80	SER	-	linker	UNP P0DTC2
C	81	GLY	-	linker	UNP P0DTC2
C	82	GLY	-	linker	UNP P0DTC2
C	127	SER	-	linker	UNP P0DTC2
C	128	GLY	-	linker	UNP P0DTC2
C	129	GLY	-	linker	UNP P0DTC2
C	130	ARG	-	linker	UNP P0DTC2
C	131	GLY	-	linker	UNP P0DTC2
C	132	GLY	-	linker	UNP P0DTC2
D	78	GLY	-	linker	UNP P0DTC2
D	79	GLY	-	linker	UNP P0DTC2
D	80	SER	-	linker	UNP P0DTC2
D	81	GLY	-	linker	UNP P0DTC2
D	82	GLY	-	linker	UNP P0DTC2
D	127	SER	-	linker	UNP P0DTC2
D	128	GLY	-	linker	UNP P0DTC2
D	129	GLY	-	linker	UNP P0DTC2
D	130	ARG	-	linker	UNP P0DTC2
D	131	GLY	-	linker	UNP P0DTC2
D	132	GLY	-	linker	UNP P0DTC2

- Molecule 2 is water.

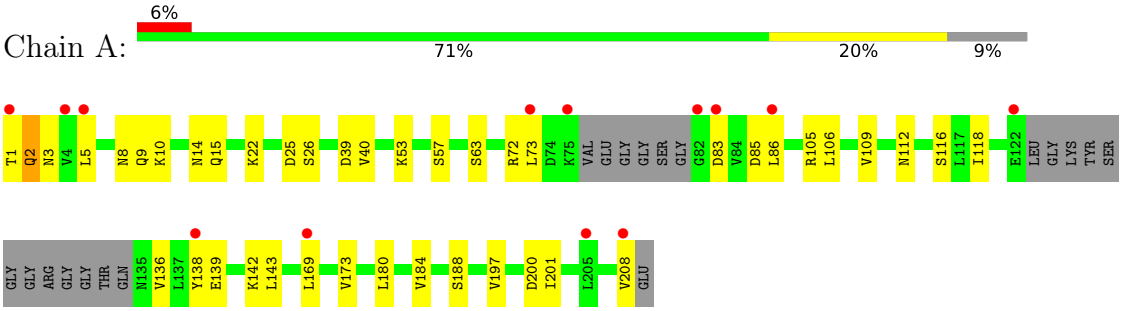
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total O 1 1	0	0
2	B	1	Total O 1 1	0	0
2	C	1	Total O 1 1	0	0
2	D	2	Total O 2 2	0	0

3 Residue-property plots (i)

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.

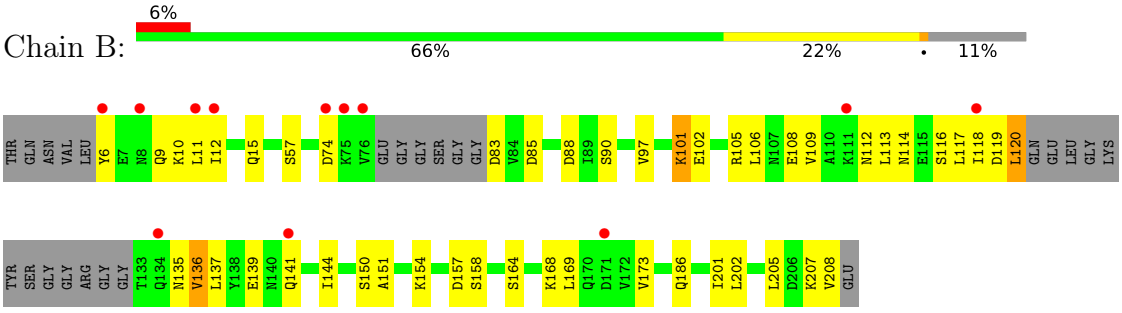
• Molecule 1: Spike protein S2'

Chain A:



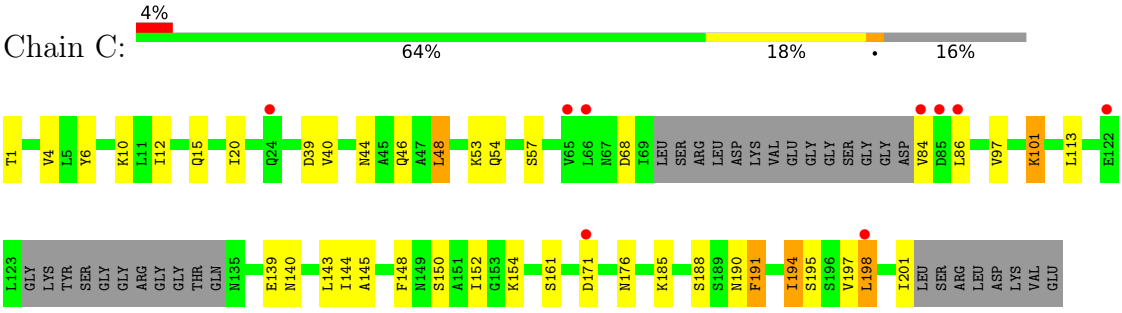
• Molecule 1: Spike protein S2'

Chain B:



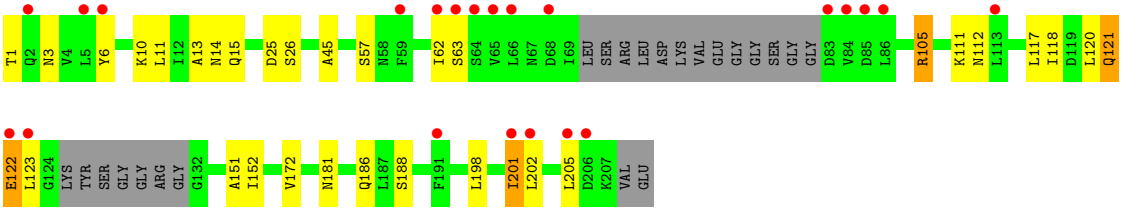
• Molecule 1: Spike protein S2'

Chain C:



• Molecule 1: Spike protein S2'

Chain D:


T1 Q2 N3 V4 L5 Y6 K10 L11 T12 A13 N14 Q15 D25 S26 A45 S57 N58 F59 I62 S63 S64 V65 L66 N67 D68 I69 LEU SER ARG LEU ASP LYS VAL GLU GLY GLY SER GLY GLY D83 V84 D85 L86 R105 K111 N112 L113 L117 I118 D119 L120 Q121
E122 L123 G124 LYS TYR SER GLY GLY ARG GLY G132 A151 I152 V172 N181 Q186 L187 S188 F191 L198 I201 L202 L205 D206 K207 VAL GLU

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	65.16Å 51.73Å 119.16Å 90.00° 95.33° 90.00°	Depositor
Resolution (Å)	32.46 – 2.41 32.55 – 2.41	Depositor EDS
% Data completeness (in resolution range)	99.5 (32.46-2.41) 99.8 (32.55-2.41)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.18 (at 2.42Å)	Xtriage
Refinement program	PHENIX 1.19.2_4158	Depositor
R, R_{free}	0.249 , 0.294 0.254 , 0.293	Depositor DCC
R_{free} test set	1507 reflections (4.88%)	wwPDB-VP
Wilson B-factor (Å^2)	73.0	Xtriage
Anisotropy	0.326	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 61.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.52$, $< L^2 > = 0.36$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	5563	wwPDB-VP
Average B, all atoms (Å^2)	89.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 12.45% 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	0.53	0/1437	0.69	0/1940
1	B	0.63	0/1399	0.71	0/1889
1	C	0.65	0/1326	0.72	1/1793 (0.1%)
1	D	0.71	0/1408	0.77	1/1902 (0.1%)
All	All	0.63	0/5570	0.72	2/7524 (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	A	0	1
1	D	0	1
All	All	0	2

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	191	PHE	CB-CA-C	6.48	123.36	110.40
1	D	112	ASN	CB-CA-C	5.96	122.32	110.40

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	72	ARG	Sidechain
1	D	105	ARG	Sidechain

5.2 Too-close contacts (i)

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	1434	0	1465	30	0
1	B	1396	0	1428	41	0
1	C	1323	0	1346	51	0
1	D	1405	0	1428	38	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	2	0	0	0	0
All	All	5563	0	5667	114	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 10.

All (114) 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:C:191:PHE:CE2	1:D:62:ILE:HD11	1.84	1.11
1:C:197:VAL:HG12	1:D:202:LEU:HD21	1.30	1.07
1:C:197:VAL:CG1	1:D:202:LEU:HD21	1.83	1.07
1:C:191:PHE:HE2	1:D:62:ILE:HD11	1.27	0.92
1:C:198:LEU:HD22	1:C:198:LEU:O	1.77	0.85
1:A:143:LEU:O	1:A:143:LEU:HD12	1.79	0.82
1:A:15:GLN:HG3	1:B:118:ILE:HG12	1.61	0.82
1:B:11:LEU:HD12	1:B:11:LEU:O	1.85	0.77
1:A:85:ASP:N	1:A:85:ASP:OD1	2.14	0.76
1:C:191:PHE:CE2	1:D:62:ILE:CD1	2.68	0.74
1:C:191:PHE:HE2	1:D:62:ILE:CD1	2.00	0.73
1:C:1:THR:HG22	1:C:4:VAL:HG23	1.69	0.73
1:A:40:VAL:HG21	1:B:97:VAL:HB	1.71	0.73
1:C:197:VAL:HG11	1:D:202:LEU:HD21	1.71	0.70
1:B:101:LYS:H	1:B:101:LYS:CD	2.05	0.68
1:A:15:GLN:NE2	1:B:117:LEU:O	2.28	0.67
1:A:139:GLU:HA	1:A:139:GLU:OE1	1.96	0.64
1:A:9:GLN:HE21	1:B:141:GLN:HG2	1.62	0.63
1:A:26:SER:HB3	1:B:109:VAL:HG11	1.80	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:122:GLU:HG3	1:D:123:LEU:N	2.15	0.62
1:B:164:SER:O	1:B:168:LYS:HG3	2.00	0.61
1:C:84:VAL:O	1:C:84:VAL:HG13	2.02	0.60
1:D:6:TYR:CE2	1:D:10:LYS:HD2	2.36	0.60
1:C:4:VAL:HG13	1:D:121:GLN:HG2	1.84	0.58
1:D:201:ILE:C	1:D:201:ILE:HD12	2.23	0.57
1:C:148:PHE:CD1	1:D:152:ILE:HG23	2.40	0.56
1:A:169:LEU:HD21	1:B:173:VAL:HG13	1.87	0.56
1:C:48:LEU:O	1:C:48:LEU:HD12	2.06	0.56
1:B:11:LEU:HD12	1:B:11:LEU:C	2.24	0.55
1:B:114:ASN:HA	1:B:117:LEU:HD12	1.89	0.54
1:D:122:GLU:CG	1:D:123:LEU:N	2.71	0.54
1:A:143:LEU:HD12	1:A:143:LEU:C	2.29	0.53
1:C:148:PHE:CD1	1:D:152:ILE:CG2	2.92	0.53
1:A:9:GLN:NE2	1:B:141:GLN:HG2	2.22	0.53
1:D:11:LEU:O	1:D:15:GLN:HG3	2.09	0.52
1:A:5:LEU:CD2	1:A:5:LEU:N	2.73	0.52
1:B:6:TYR:CE2	1:B:10:LYS:HE3	2.45	0.52
1:A:208:VAL:HG21	1:B:74:ASP:HB3	1.92	0.51
1:B:88:ASP:OD1	1:B:90:SER:OG	2.20	0.51
1:C:145:ALA:HB2	1:D:15:GLN:NE2	2.26	0.51
1:C:198:LEU:HD22	1:C:198:LEU:C	2.23	0.51
1:A:197:VAL:CG1	1:B:202:LEU:HD13	2.41	0.51
1:C:15:GLN:NE2	1:D:117:LEU:O	2.44	0.50
1:A:109:VAL:HA	1:A:112:ASN:HB2	1.94	0.49
1:B:101:LYS:HE2	1:B:102:GLU:OE1	2.12	0.49
1:B:101:LYS:N	1:B:101:LYS:HD3	2.28	0.49
1:C:20:ILE:HD11	1:D:151:ALA:HB1	1.95	0.49
1:B:150:SER:O	1:B:154:LYS:HG3	2.12	0.49
1:B:169:LEU:O	1:B:173:VAL:HG12	2.13	0.49
1:A:106:LEU:HD23	1:B:158:SER:HB2	1.93	0.49
1:A:169:LEU:O	1:A:173:VAL:HG13	2.13	0.49
1:C:97:VAL:HB	1:D:172:VAL:HG21	1.95	0.49
1:C:191:PHE:CE2	1:D:62:ILE:CG1	2.96	0.48
1:D:13:ALA:HB3	1:D:120:LEU:HD11	1.94	0.48
1:C:176:ASN:OD1	1:D:181:ASN:HB2	2.13	0.48
1:D:13:ALA:CB	1:D:120:LEU:HD11	2.43	0.48
1:A:197:VAL:O	1:A:201:ILE:HG12	2.14	0.47
1:B:101:LYS:H	1:B:101:LYS:HD3	1.76	0.47
1:A:10:LYS:HE3	1:A:14:ASN:ND2	2.29	0.47
1:B:136:VAL:HG12	1:B:137:LEU:HD23	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:86:LEU:HA	1:C:86:LEU:HD23	1.59	0.47
1:C:191:PHE:CD2	1:D:62:ILE:HG13	2.49	0.47
1:A:105:ARG:NE	1:B:157:ASP:OD2	2.41	0.47
1:C:195:SER:O	1:C:198:LEU:HB3	2.14	0.47
1:A:2:GLN:H	1:A:2:GLN:HG3	1.47	0.47
1:C:176:ASN:OD1	1:D:181:ASN:CG	2.54	0.46
1:C:198:LEU:HA	1:D:202:LEU:HD11	1.97	0.46
1:B:135:ASN:O	1:B:139:GLU:HB2	2.15	0.46
1:A:22:LYS:NZ	1:B:112:ASN:O	2.39	0.46
1:A:138:TYR:C	1:A:138:TYR:CD1	2.89	0.46
1:C:148:PHE:CE1	1:D:152:ILE:HG23	2.49	0.46
1:B:207:LYS:N	1:B:207:LYS:HD3	2.30	0.46
1:C:152:ILE:HA	1:C:152:ILE:HD12	1.73	0.45
1:C:101:LYS:HD2	1:C:101:LYS:HA	1.76	0.45
1:C:191:PHE:N	1:C:191:PHE:CD1	2.84	0.45
1:C:150:SER:O	1:C:154:LYS:HG3	2.16	0.45
1:C:191:PHE:HE2	1:D:62:ILE:CG1	2.28	0.45
1:D:198:LEU:HD23	1:D:198:LEU:HA	1.80	0.45
1:A:8:ASN:HB2	1:B:9:GLN:HE22	1.82	0.45
1:C:6:TYR:CE2	1:C:10:LYS:HD2	2.52	0.44
1:B:120:LEU:C	1:B:120:LEU:HD12	2.37	0.44
1:C:12:ILE:HA	1:D:118:ILE:HD13	1.99	0.44
1:C:194:ILE:CD1	1:C:194:ILE:N	2.81	0.44
1:B:118:ILE:HG22	1:B:119:ASP:N	2.32	0.44
1:A:116:SER:HB3	1:B:151:ALA:HB2	2.00	0.44
1:C:191:PHE:HD2	1:D:62:ILE:HG13	1.82	0.44
1:B:108:GLU:H	1:B:108:GLU:HG3	1.56	0.44
1:A:73:LEU:HD11	1:B:201:ILE:HG23	1.99	0.43
1:C:145:ALA:CB	1:D:15:GLN:NE2	2.80	0.43
1:C:190:ASN:O	1:C:194:ILE:HD13	2.19	0.43
1:C:197:VAL:HG11	1:D:202:LEU:CD2	2.46	0.43
1:C:53:LYS:HA	1:C:53:LYS:HD2	1.71	0.43
1:C:46:GLN:HA	1:C:46:GLN:OE1	2.18	0.43
1:C:1:THR:HG23	1:C:4:VAL:H	1.84	0.42
1:D:10:LYS:O	1:D:14:ASN:ND2	2.51	0.42
1:C:54:GLN:OE1	1:C:54:GLN:HA	2.18	0.42
1:C:140:ASN:O	1:C:144:ILE:HG13	2.19	0.42
1:A:197:VAL:HG12	1:B:202:LEU:HD13	2.01	0.42
1:C:20:ILE:HD12	1:C:113:LEU:HD22	2.01	0.42
1:B:113:LEU:HD23	1:B:113:LEU:HA	1.81	0.42
1:A:10:LYS:HE3	1:A:14:ASN:HD21	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:20:ILE:HD13	1:C:20:ILE:HA	1.80	0.42
1:A:180:LEU:O	1:A:184:VAL:HG23	2.20	0.42
1:C:44:ASN:HD21	1:D:45:ALA:HB2	1.84	0.42
1:C:145:ALA:HB2	1:D:15:GLN:CD	2.40	0.41
1:B:114:ASN:HA	1:B:117:LEU:CD1	2.50	0.41
1:C:4:VAL:CG1	1:D:121:GLN:HG2	2.49	0.41
1:A:118:ILE:HD12	1:B:144:ILE:HA	2.02	0.41
1:B:6:TYR:HE2	1:B:10:LYS:HE3	1.85	0.41
1:B:205:LEU:HD23	1:B:205:LEU:HA	1.82	0.40
1:B:11:LEU:HD12	1:B:15:GLN:HG3	2.03	0.40
1:C:176:ASN:OD1	1:D:181:ASN:CB	2.69	0.40
1:B:12:ILE:HD12	1:B:12:ILE:HA	1.95	0.40
1:C:113:LEU:HA	1:C:113:LEU:HD23	1.89	0.40

There are no symmetry-related clashes.

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	184/209 (88%)	183 (100%)	1 (0%)	0	100	100
1	B	179/209 (86%)	179 (100%)	0	0	100	100
1	C	170/209 (81%)	169 (99%)	1 (1%)	0	100	100
1	D	181/209 (87%)	178 (98%)	3 (2%)	0	100	100
All	All	714/836 (85%)	709 (99%)	5 (1%)	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	165/176 (94%)	151 (92%)	14 (8%)	10 15
1	B	161/176 (92%)	150 (93%)	11 (7%)	16 24
1	C	152/176 (86%)	137 (90%)	15 (10%)	8 11
1	D	161/176 (92%)	147 (91%)	14 (9%)	10 15
All	All	639/704 (91%)	585 (92%)	54 (8%)	10 15

All (54) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	THR
1	A	2	GLN
1	A	3	ASN
1	A	25	ASP
1	A	39	ASP
1	A	53	LYS
1	A	57	SER
1	A	63	SER
1	A	83	ASP
1	A	86	LEU
1	A	136	VAL
1	A	142	LYS
1	A	188	SER
1	A	200	ASP
1	B	57	SER
1	B	83	ASP
1	B	85	ASP
1	B	101	LYS
1	B	105	ARG
1	B	106	LEU
1	B	116	SER
1	B	120	LEU
1	B	136	VAL
1	B	186	GLN

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Mol	Chain	Res	Type
1	B	208	VAL
1	C	39	ASP
1	C	40	VAL
1	C	48	LEU
1	C	57	SER
1	C	68	ASP
1	C	101	LYS
1	C	139	GLU
1	C	143	LEU
1	C	161	SER
1	C	171	ASP
1	C	185	LYS
1	C	188	SER
1	C	194	ILE
1	C	198	LEU
1	C	201	ILE
1	D	1	THR
1	D	3	ASN
1	D	25	ASP
1	D	26	SER
1	D	57	SER
1	D	63	SER
1	D	105	ARG
1	D	111	LYS
1	D	121	GLN
1	D	122	GLU
1	D	186	GLN
1	D	188	SER
1	D	201	ILE
1	D	205	LEU

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

Mol	Chain	Res	Type
1	A	8	ASN
1	B	9	GLN
1	D	2	GLN

5.3.3 RNA (i)

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	190/209 (90%)	0.46	13 (6%) 17 15	63, 82, 128, 155	0
1	B	185/209 (88%)	0.44	12 (6%) 18 17	64, 79, 119, 138	0
1	C	176/209 (84%)	0.50	9 (5%) 28 26	63, 84, 149, 162	0
1	D	187/209 (89%)	0.64	22 (11%) 4 4	63, 82, 141, 153	0
All	All	738/836 (88%)	0.51	56 (7%) 13 12	63, 82, 135, 162	0

All (56) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	84	VAL	5.0
1	D	123	LEU	4.8
1	D	84	VAL	4.7
1	A	138	TYR	4.4
1	C	85	ASP	4.2
1	C	66	LEU	3.9
1	B	141	GLN	3.9
1	D	83	ASP	3.7
1	C	198	LEU	3.7
1	A	1	THR	3.6
1	B	111	LYS	3.6
1	A	82	GLY	3.6
1	D	202	LEU	3.4
1	D	2	GLN	3.4
1	A	122	GLU	3.4
1	C	86	LEU	3.4
1	D	66	LEU	3.4
1	B	74	ASP	3.4
1	B	118	ILE	3.3
1	B	75	LYS	3.2
1	D	205	LEU	3.1

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Mol	Chain	Res	Type	RSRZ
1	C	65	VAL	3.1
1	B	6	TYR	3.1
1	D	64	SER	3.0
1	A	4	VAL	2.9
1	A	205	LEU	2.9
1	A	83	ASP	2.6
1	A	73	LEU	2.6
1	B	76	VAL	2.6
1	A	86	LEU	2.6
1	A	5	LEU	2.5
1	D	191	PHE	2.5
1	D	206	ASP	2.5
1	A	75	LYS	2.5
1	D	85	ASP	2.5
1	B	134	GLN	2.5
1	D	6	TYR	2.4
1	C	122	GLU	2.4
1	C	171	ASP	2.4
1	B	11	LEU	2.3
1	B	8	ASN	2.3
1	D	5	LEU	2.3
1	D	68	ASP	2.3
1	C	24	GLN	2.2
1	D	65	VAL	2.2
1	D	59	PHE	2.2
1	D	113	LEU	2.2
1	D	122	GLU	2.2
1	D	201	ILE	2.1
1	D	62	ILE	2.1
1	D	86	LEU	2.1
1	A	169	LEU	2.1
1	B	12	ILE	2.0
1	A	208	VAL	2.0
1	D	63	SER	2.0
1	B	171	ASP	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.