Full wwPDB X-ray Structure Validation Report ⓘ

Sep 8, 2022 – 02:03 PM EDT

PDB ID	:	7T2U
Title	:	SARS-CoV2 3C-Like protease complexed with Nemo peptide
Authors	:	Wakatsuki, S.; Mathews, I.I.; Hameedi, M.A.
Deposited on	:	2021-12-06
Resolution	:	2.10 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ 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:

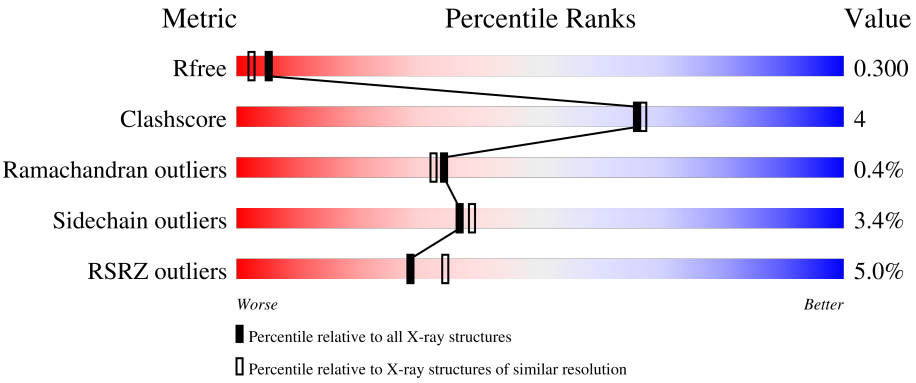
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.29
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.29

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 2.10 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	5197 (2.10-2.10)
Clashscore	141614	5710 (2.10-2.10)
Ramachandran outliers	138981	5647 (2.10-2.10)
Sidechain outliers	138945	5648 (2.10-2.10)
RSRZ outliers	127900	5083 (2.10-2.10)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	319	86% 9% ·
1	B	319	2% 87% 8% 5%
1	C	319	12% 76% 16% · 7%
1	D	319	4% 80% 15% · ·
2	E	10	50% 40% 10%

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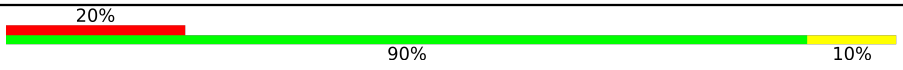
Mol	Chain	Length	Quality of chain
2	F	10	

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 9762 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 3C-Like Protease.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	306	Total	C	N	O	S	0	2	0
			2385	1508	407	449	21			
1	B	304	Total	C	N	O	S	0	0	0
			2347	1488	396	442	21			
1	C	298	Total	C	N	O	S	0	1	0
			2315	1465	395	435	20			
1	D	305	Total	C	N	O	S	0	0	0
			2357	1493	398	445	21			

There are 52 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-12	MET	-	initiating methionine	UNP P0DTD1
A	-11	HIS	-	expression tag	UNP P0DTD1
A	-10	HIS	-	expression tag	UNP P0DTD1
A	-9	HIS	-	expression tag	UNP P0DTD1
A	-8	HIS	-	expression tag	UNP P0DTD1
A	-7	HIS	-	expression tag	UNP P0DTD1
A	-6	HIS	-	expression tag	UNP P0DTD1
A	-5	GLU	-	expression tag	UNP P0DTD1
A	-4	ASN	-	expression tag	UNP P0DTD1
A	-3	LEU	-	expression tag	UNP P0DTD1
A	-2	TYR	-	expression tag	UNP P0DTD1
A	-1	PHE	-	expression tag	UNP P0DTD1
A	145	SER	CYS	engineered mutation	UNP P0DTD1
B	-12	MET	-	initiating methionine	UNP P0DTD1
B	-11	HIS	-	expression tag	UNP P0DTD1
B	-10	HIS	-	expression tag	UNP P0DTD1
B	-9	HIS	-	expression tag	UNP P0DTD1
B	-8	HIS	-	expression tag	UNP P0DTD1
B	-7	HIS	-	expression tag	UNP P0DTD1
B	-6	HIS	-	expression tag	UNP P0DTD1
B	-5	GLU	-	expression tag	UNP P0DTD1

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-4	ASN	-	expression tag	UNP P0DTD1
B	-3	LEU	-	expression tag	UNP P0DTD1
B	-2	TYR	-	expression tag	UNP P0DTD1
B	-1	PHE	-	expression tag	UNP P0DTD1
B	145	SER	CYS	engineered mutation	UNP P0DTD1
C	-12	MET	-	initiating methionine	UNP P0DTD1
C	-11	HIS	-	expression tag	UNP P0DTD1
C	-10	HIS	-	expression tag	UNP P0DTD1
C	-9	HIS	-	expression tag	UNP P0DTD1
C	-8	HIS	-	expression tag	UNP P0DTD1
C	-7	HIS	-	expression tag	UNP P0DTD1
C	-6	HIS	-	expression tag	UNP P0DTD1
C	-5	GLU	-	expression tag	UNP P0DTD1
C	-4	ASN	-	expression tag	UNP P0DTD1
C	-3	LEU	-	expression tag	UNP P0DTD1
C	-2	TYR	-	expression tag	UNP P0DTD1
C	-1	PHE	-	expression tag	UNP P0DTD1
C	145	SER	CYS	engineered mutation	UNP P0DTD1
D	-12	MET	-	initiating methionine	UNP P0DTD1
D	-11	HIS	-	expression tag	UNP P0DTD1
D	-10	HIS	-	expression tag	UNP P0DTD1
D	-9	HIS	-	expression tag	UNP P0DTD1
D	-8	HIS	-	expression tag	UNP P0DTD1
D	-7	HIS	-	expression tag	UNP P0DTD1
D	-6	HIS	-	expression tag	UNP P0DTD1
D	-5	GLU	-	expression tag	UNP P0DTD1
D	-4	ASN	-	expression tag	UNP P0DTD1
D	-3	LEU	-	expression tag	UNP P0DTD1
D	-2	TYR	-	expression tag	UNP P0DTD1
D	-1	PHE	-	expression tag	UNP P0DTD1
D	145	SER	CYS	engineered mutation	UNP P0DTD1

- Molecule 2 is a protein called NEMO peptide.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	E	9	Total	C	N	O	0	0	0
			72	48	12	12			
2	F	10	Total	C	N	O	0	0	0
			82	54	15	13			

- Molecule 3 is water.

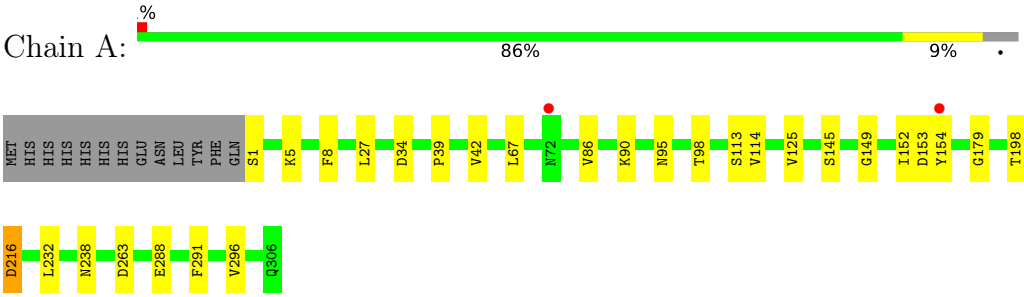
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	77	Total O 80 80	0	3
3	B	44	Total O 44 44	0	0
3	E	2	Total O 2 2	0	0
3	C	35	Total O 35 35	0	0
3	D	39	Total O 43 43	0	4

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.

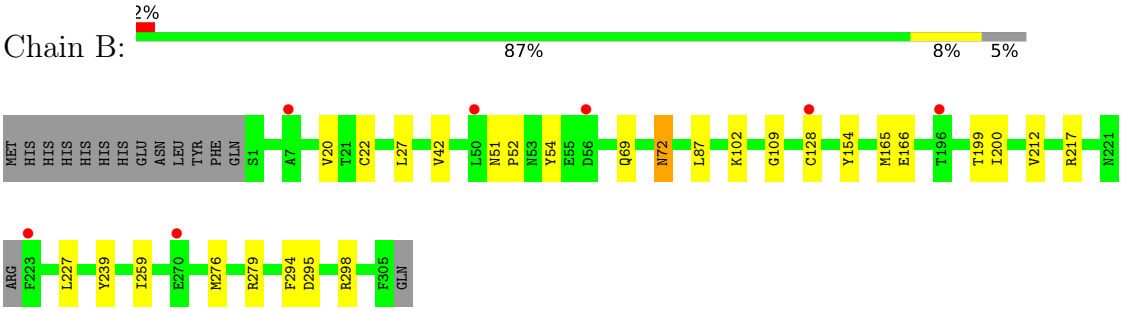
• Molecule 1: 3C-Like Protease

Chain A:



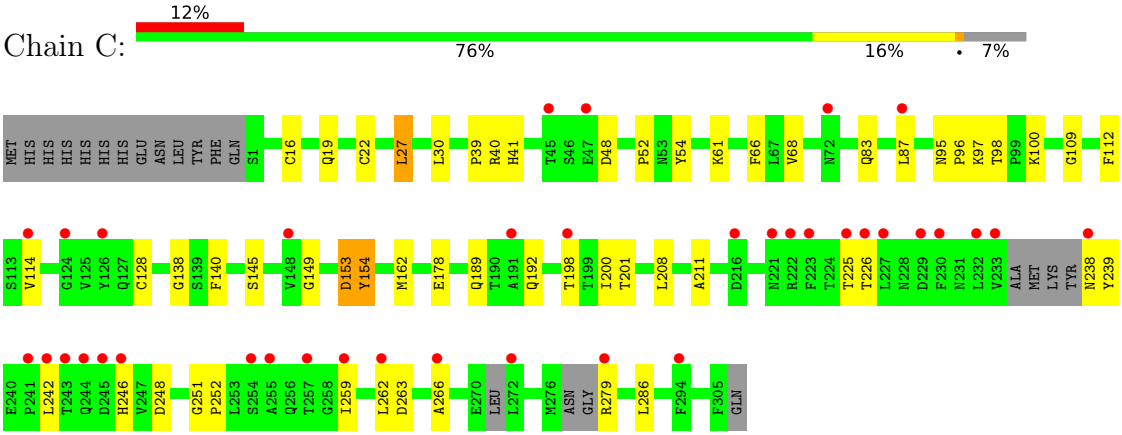
• Molecule 1: 3C-Like Protease

Chain B:



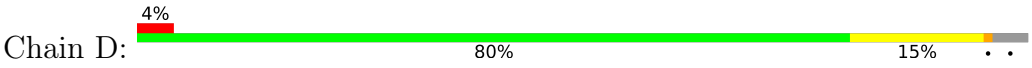
• Molecule 1: 3C-Like Protease

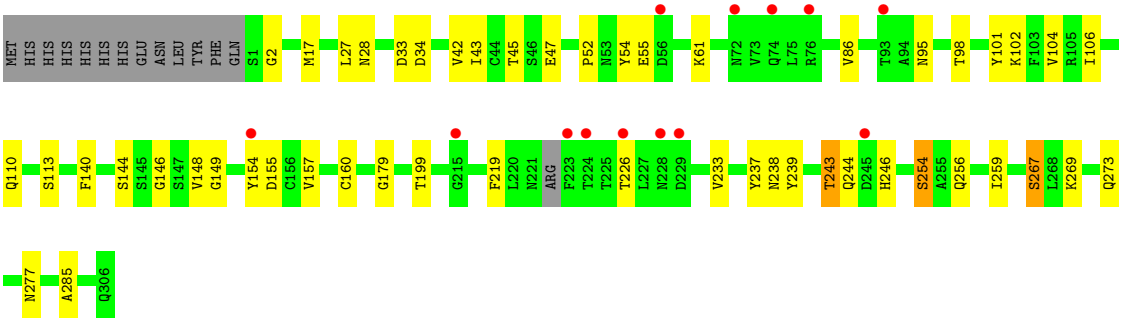
Chain C:



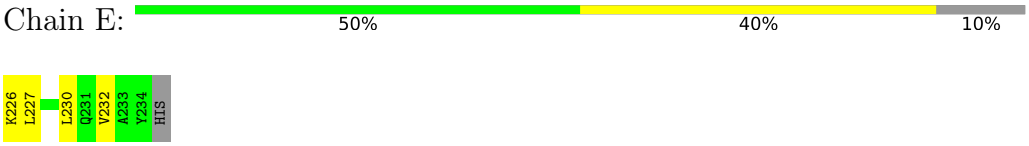
• Molecule 1: 3C-Like Protease

Chain D:

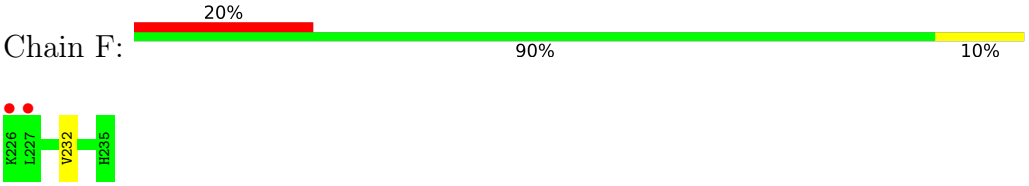




• Molecule 2: NEMO peptide



• Molecule 2: NEMO peptide



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	63.39Å 67.71Å 77.84Å 102.51° 89.91° 107.39°	Depositor
Resolution (Å)	38.12 – 2.10 38.12 – 2.10	Depositor EDS
% Data completeness (in resolution range)	96.4 (38.12-2.10) 96.4 (38.12-2.10)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.85 (at 2.10Å)	Xtriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.245 , 0.300 0.249 , 0.300	Depositor DCC
R_{free} test set	3386 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	33.8	Xtriage
Anisotropy	0.015	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 41.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	9762	wwPDB-VP
Average B, all atoms (Å^2)	40.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.91% 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	0.65	0/2438	0.81	0/3311
1	B	0.65	0/2399	0.80	0/3260
1	C	0.69	0/2364	0.79	0/3209
1	D	0.69	0/2409	0.81	0/3272
2	E	0.61	0/72	0.81	0/96
2	F	0.63	0/83	0.84	0/111
All	All	0.67	0/9765	0.80	0/13259

There are no bond length outliers.

There are no bond angle outliers.

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	2385	0	2330	14	0
1	B	2347	0	2292	15	0
1	C	2315	0	2258	25	0
1	D	2357	0	2300	24	0
2	E	72	0	78	2	0
2	F	82	0	85	1	0
3	A	80	0	0	1	0
3	B	44	0	0	2	0
3	C	35	0	0	0	0
3	D	43	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	E	2	0	0	0	0
All	All	9762	0	9343	75	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 4.

All (75) 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:D:33:ASP:OD2	3:D:401:HOH:O	2.03	0.75
1:C:153:ASP:OD1	1:C:154:TYR:N	2.23	0.72
1:C:286:LEU:HG	1:D:285:ALA:HB2	1.73	0.70
1:D:113:SER:O	1:D:149:GLY:HA2	2.01	0.61
1:D:199:THR:HG21	1:D:239:TYR:CZ	2.35	0.60
1:A:198:THR:HG22	1:A:238:ASN:OD1	2.01	0.59
1:C:114:VAL:HG11	1:C:140:PHE:CZ	2.38	0.58
1:D:219:PHE:O	1:D:267:SER:OG	2.16	0.56
1:D:243:THR:HG22	1:D:246:HIS:CE1	2.41	0.56
1:B:276:MET:O	1:B:279:ARG:HB2	2.06	0.55
1:B:27:LEU:HD23	2:E:232:VAL:HG12	1.88	0.55
1:C:198:THR:HG22	1:C:238:ASN:OD1	2.11	0.50
1:A:34:ASP:OD2	1:A:90:LYS:NZ	2.42	0.50
1:A:39:PRO:HG2	1:A:145[B]:SER:OG	2.11	0.50
1:D:45:THR:OG1	1:D:47:GLU:HG3	2.12	0.49
1:A:1:SER:OG	1:B:166:GLU:OE2	2.22	0.48
1:A:95:ASN:HB3	1:A:98:THR:OG1	2.13	0.48
1:C:19:GLN:O	1:C:68:VAL:HA	2.14	0.48
1:B:72:ASN:OD1	1:B:72:ASN:N	2.44	0.47
1:A:113:SER:O	1:A:149:GLY:HA2	2.14	0.47
1:D:28:ASN:O	1:D:146:GLY:HA3	2.14	0.47
1:B:20:VAL:HG12	1:B:42:VAL:HG21	1.95	0.47
1:C:40:ARG:HA	1:C:87:LEU:HG	1.97	0.47
1:C:41:HIS:CD2	2:F:232:VAL:HG13	2.49	0.47
1:D:254:SER:HB2	1:D:259:ILE:O	2.15	0.47
1:A:8:PHE:HB3	1:A:152:ILE:HD12	1.96	0.46
1:B:52:PRO:HG2	1:B:54:TYR:CE2	2.50	0.46
1:A:212:VAL:HA	1:A:216:ASP:O	2.15	0.46
1:B:27:LEU:HD21	1:B:42:VAL:HB	1.98	0.46
1:D:233:VAL:HG21	1:D:269:LYS:HG3	1.97	0.46
1:D:101:TYR:HA	1:D:157:VAL:O	2.16	0.46
1:B:109:GLY:HA2	1:B:200:ILE:HD13	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:27:LEU:HD21	1:D:42:VAL:HB	1.98	0.45
1:C:48:ASP:O	1:C:52:PRO:HB3	2.16	0.45
1:C:22:CYS:SG	1:C:66:PHE:CD1	3.10	0.45
1:B:102:LYS:NZ	3:B:412:HOH:O	2.49	0.45
1:B:165:MET:HB3	2:E:230:LEU:HD23	1.98	0.45
1:A:5:LYS:HD3	1:A:291:PHE:CZ	2.51	0.45
1:A:114:VAL:O	1:A:125:VAL:HA	2.17	0.45
1:C:112:PHE:CD2	1:C:149:GLY:HA3	2.52	0.45
1:C:96:PRO:HG2	1:C:97:LYS:HD2	1.98	0.45
1:A:86:VAL:HG13	1:A:179:GLY:HA2	1.99	0.44
1:C:83:GLN:HG2	1:C:178:GLU:O	2.18	0.44
1:D:104:VAL:O	1:D:160:CYS:HA	2.17	0.44
1:D:106:ILE:HG23	1:D:160:CYS:CB	2.47	0.44
1:B:295:ASP:OD1	1:B:298:ARG:NH1	2.51	0.43
1:C:225:THR:OG1	1:C:226:THR:N	2.51	0.43
1:B:51:ASN:HB2	3:B:419:HOH:O	2.19	0.43
1:D:243:THR:OG1	1:D:244:GLN:N	2.52	0.43
1:B:294:PHE:O	1:B:298:ARG:HG3	2.19	0.43
1:D:43:ILE:HB	1:D:61:LYS:HD2	2.00	0.42
1:A:27:LEU:HD21	1:A:42:VAL:HB	2.01	0.42
1:D:106:ILE:HG23	1:D:160:CYS:HB2	2.01	0.42
1:C:109:GLY:HA2	1:C:200:ILE:HD13	2.01	0.42
1:C:208:LEU:O	1:C:211:ALA:HB3	2.19	0.42
1:C:242:LEU:HD12	1:C:246:HIS:ND1	2.35	0.42
1:C:251:GLY:N	1:C:252:PRO:HD2	2.34	0.42
1:C:201:THR:HG1	1:C:239:TYR:HD2	1.66	0.42
1:D:140:PHE:HB3	1:D:144:SER:OG	2.20	0.41
1:A:288:GLU:HG3	3:A:464[B]:HOH:O	2.18	0.41
1:C:52:PRO:HG2	1:C:54:TYR:CE2	2.55	0.41
1:D:17:MET:HE1	1:D:148:VAL:HG22	2.02	0.41
1:C:138:GLY:O	1:D:2:GLY:HA3	2.21	0.41
1:A:206:ALA:O	1:A:296:VAL:HG21	2.20	0.41
1:B:199:THR:HG21	1:B:239:TYR:CZ	2.55	0.41
1:C:263:ASP:O	1:C:266:ALA:HB3	2.21	0.41
1:C:16:CYS:HB3	1:C:30:LEU:HD12	2.03	0.41
1:D:86:VAL:HG13	1:D:179:GLY:HA2	2.02	0.41
1:B:212:VAL:HG11	1:B:259:ILE:CD1	2.51	0.41
1:C:39:PRO:HD3	1:C:162:MET:SD	2.61	0.41
1:C:95:ASN:HB3	1:C:98:THR:OG1	2.21	0.41
1:D:237:TYR:OH	1:D:273:GLN:HA	2.22	0.41
1:D:52:PRO:HB2	1:D:54:TYR:CE2	2.56	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:95:ASN:HB3	1:D:98:THR:OG1	2.22	0.40
1:C:27:LEU:HB2	1:C:145:SER:O	2.22	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	306/319 (96%)	295 (96%)	10 (3%)	1 (0%)	41	41
1	B	300/319 (94%)	293 (98%)	6 (2%)	1 (0%)	41	41
1	C	290/319 (91%)	277 (96%)	11 (4%)	2 (1%)	22	18
1	D	301/319 (94%)	288 (96%)	12 (4%)	1 (0%)	41	41
2	E	7/10 (70%)	7 (100%)	0	0	100	100
2	F	8/10 (80%)	8 (100%)	0	0	100	100
All	All	1212/1296 (94%)	1168 (96%)	39 (3%)	5 (0%)	34	32

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	155	ASP
1	B	154	TYR
1	C	154	TYR
1	A	154	TYR
1	C	259	ILE

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	265/276 (96%)	260 (98%)	5 (2%)	57 63
1	B	261/276 (95%)	254 (97%)	7 (3%)	44 48
1	C	258/276 (94%)	247 (96%)	11 (4%)	29 29
1	D	262/276 (95%)	250 (95%)	12 (5%)	27 26
2	E	7/8 (88%)	5 (71%)	2 (29%)	0 0
2	F	8/8 (100%)	8 (100%)	0	100 100
All	All	1061/1120 (95%)	1024 (96%)	37 (4%)	37 38

All (37) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	67	LEU
1	A	153	ASP
1	A	216	ASP
1	A	232	LEU
1	A	263	ASP
1	B	22	CYS
1	B	69	GLN
1	B	72	ASN
1	B	87	LEU
1	B	128	CYS
1	B	217	ARG
1	B	227	LEU
2	E	226	LYS
2	E	227	LEU
1	C	27	LEU
1	C	61	LYS
1	C	100	LYS
1	C	128	CYS
1	C	153	ASP
1	C	189	GLN
1	C	192	GLN
1	C	248	ASP
1	C	262	LEU
1	C	279[A]	ARG
1	C	279[B]	ARG
1	D	34	ASP

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Mol	Chain	Res	Type
1	D	55	GLU
1	D	102	LYS
1	D	110	GLN
1	D	154	TYR
1	D	226	THR
1	D	238	ASN
1	D	243	THR
1	D	254	SER
1	D	256	GLN
1	D	267	SER
1	D	277	ASN

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

Mol	Chain	Res	Type
1	C	80	HIS
2	F	235	HIS
1	D	83	GLN
1	D	256	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

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	306/319 (95%)	0.10	2 (0%) 87 89	20, 31, 48, 69	0
1	B	304/319 (95%)	0.31	7 (2%) 60 65	21, 36, 58, 80	0
1	C	298/319 (93%)	0.84	37 (12%) 4 5	25, 44, 82, 104	0
1	D	305/319 (95%)	0.55	13 (4%) 35 41	26, 41, 60, 76	0
2	E	9/10 (90%)	-0.01	0 100 100	32, 35, 42, 46	0
2	F	10/10 (100%)	0.57	2 (20%) 1 1	38, 44, 58, 63	0
All	All	1232/1296 (95%)	0.45	61 (4%) 28 34	20, 38, 63, 104	0

All (61) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	241	PRO	5.0
1	C	233	VAL	4.9
1	C	216	ASP	4.7
1	C	245	ASP	4.3
1	C	223	PHE	4.2
1	C	232	LEU	4.0
1	C	221	ASN	4.0
1	C	191	ALA	3.5
1	C	225	THR	3.5
1	C	294	PHE	3.5
1	A	154	TYR	3.5
1	C	227	LEU	3.4
1	C	229	ASP	3.4
1	D	93	THR	3.2
1	C	230	PHE	3.1
1	C	198	THR	3.1
1	B	223	PHE	3.0
1	C	259	ILE	3.0
1	C	266	ALA	3.0

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Mol	Chain	Res	Type	RSRZ
1	C	222	ARG	2.9
1	C	243	THR	2.9
1	D	226	THR	2.9
1	D	229	ASP	2.8
1	C	45	THR	2.8
1	D	223	PHE	2.8
1	D	74	GLN	2.7
1	C	246	HIS	2.7
1	A	72	ASN	2.6
1	B	128	CYS	2.6
1	C	262	LEU	2.5
1	C	272	LEU	2.5
1	C	72	ASN	2.5
1	D	224	THR	2.4
1	B	56	ASP	2.4
1	C	124	GLY	2.4
1	C	254	SER	2.4
1	D	72	ASN	2.4
1	C	226	THR	2.3
1	B	7	ALA	2.3
1	C	279[A]	ARG	2.3
1	D	56	ASP	2.3
1	D	228	ASN	2.3
1	B	50	LEU	2.3
1	C	242	LEU	2.2
1	C	238	ASN	2.2
1	D	154	TYR	2.2
1	D	215	GLY	2.2
2	F	226	LYS	2.2
1	C	255	ALA	2.2
1	C	257	THR	2.2
1	C	87	LEU	2.1
1	D	245	ASP	2.1
1	C	244	GLN	2.1
1	C	47	GLU	2.1
1	C	126	TYR	2.1
1	D	76	ARG	2.0
1	C	114	VAL	2.0
1	B	270	GLU	2.0
1	B	196	THR	2.0
1	C	148	VAL	2.0
2	F	227	LEU	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.