



Full wwPDB X-ray Structure Validation Report ⓘ

Nov 9, 2021 – 10:09 am GMT

PDB ID : 7PJF
Title : Inhibiting parasite proliferation using a rationally designed anti-tubulin agent
Authors : Sharma, A.; Gaillard, N.; Ehrhard, V.A.; Steinmetz, M.O.
Deposited on : 2021-08-24
Resolution : 1.86 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.4 (270009), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.23.2
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0267
CCP4 : 7.1.010 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.23.2

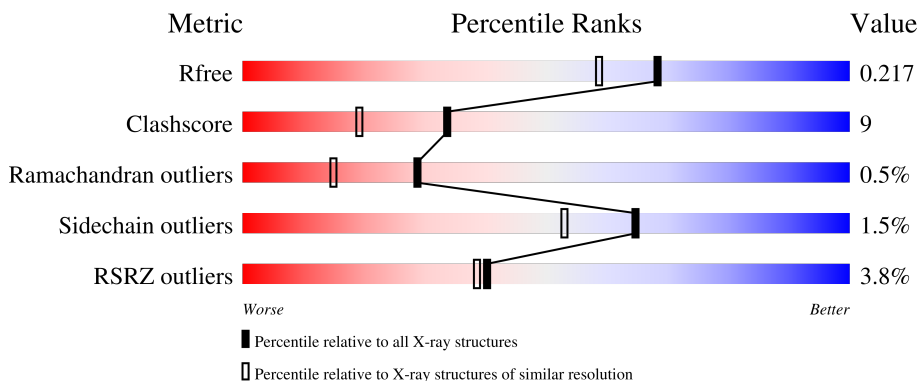
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.86 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	2469 (1.86-1.86)
Clashscore	141614	2625 (1.86-1.86)
Ramachandran outliers	138981	2592 (1.86-1.86)
Sidechain outliers	138945	2592 (1.86-1.86)
RSRZ outliers	127900	2436 (1.86-1.86)

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 $\leq 5\%$. 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	451	 4% 78% 13% • 7%
2	B	450	 3% 78% 16% • 5%
3	F	157	 3% 89% 9% ••

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 8262 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 Tubulin alpha-1B chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	419	Total 3268	C 2074	N 555	O 619	S 20	0	2	0

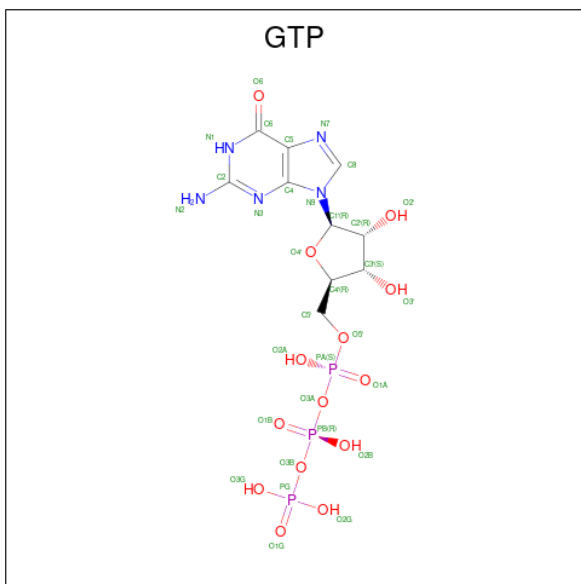
- Molecule 2 is a protein called Tubulin beta-3 chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	428	Total 3355	C 2110	N 572	O 647	S 26	0	2	0

- Molecule 3 is a protein called Designed ankyrin repeat protein (DARPIN) D1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	F	155	Total 1135	C 713	N 195	O 224	S 3	0	0	0

- Molecule 4 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	N	O	P	0	0
			32	10	5	14	3		
4	B	1	Total	C	N	O	P	0	0
			32	10	5	14	3		

- Molecule 5 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1	Total	Mg	0	0
			1	1		
5	B	1	Total	Mg	0	0
			1	1		

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	194	Total	O	0	0
			194	194		
6	B	150	Total	O	0	0
			150	150		
6	F	94	Total	O	0	0
			94	94		

4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	73.78Å 91.31Å 82.66Å 90.00° 97.55° 90.00°	Depositor
Resolution (Å)	45.66 – 1.86 49.27 – 1.86	Depositor EDS
% Data completeness (in resolution range)	99.6 (45.66-1.86) 99.9 (49.27-1.86)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.03 (at 1.87Å)	Xtriage
Refinement program	PHENIX 1.14_3260	Depositor
R, R_{free}	0.184 , 0.218 0.181 , 0.217	Depositor DCC
R_{free} test set	4538 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	29.2	Xtriage
Anisotropy	0.342	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	(Not available) , (Not available)	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	8262	wwPDB-VP
Average B, all atoms (Å ²)	39.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.52% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: GTP, MG

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	0.80	3/3343 (0.1%)	0.79	3/4541 (0.1%)
2	B	0.75	3/3431 (0.1%)	0.81	7/4648 (0.2%)
3	F	0.74	0/1150	0.79	1/1565 (0.1%)
All	All	0.77	6/7924 (0.1%)	0.80	11/10754 (0.1%)

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	2

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	270	PRO	N-CA	12.22	1.68	1.47
1	A	9	VAL	CB-CG1	6.75	1.67	1.52
2	B	422	GLU	CG-CD	6.44	1.61	1.51
1	A	138	PHE	CD1-CE1	6.29	1.51	1.39
1	A	429	GLU	CB-CG	5.32	1.62	1.52
2	B	269	MET	C-N	5.27	1.44	1.34

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	400	ARG	NE-CZ-NH1	9.49	125.04	120.30
2	B	270	PRO	CA-N-CD	-7.56	100.92	111.50
2	B	400	ARG	NE-CZ-NH2	-7.55	116.53	120.30
2	B	253	ARG	NE-CZ-NH2	-7.40	116.60	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	F	44	ASP	CB-CG-OD1	6.97	124.57	118.30
1	A	262	TYR	CB-CG-CD1	-6.88	116.87	121.00
1	A	262	TYR	CA-CB-CG	-6.02	101.97	113.40
2	B	153	LEU	CB-CG-CD2	-5.64	101.41	111.00
2	B	48	ARG	NE-CZ-NH1	5.54	123.07	120.30
1	A	262	TYR	CB-CG-CD2	5.35	124.21	121.00
2	B	48	ARG	NE-CZ-NH2	-5.17	117.72	120.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	55	GLU	Peptide
1	A	57	GLY	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.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3268	0	3159	65	1
2	B	3355	0	3229	52	0
3	F	1135	0	1125	18	0
4	A	32	0	12	2	0
4	B	32	0	12	0	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
6	A	194	0	0	20	0
6	B	150	0	0	15	0
6	F	94	0	0	7	0
All	All	8262	0	7537	131	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 9.

All (131) 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:B:270:PRO:N	2:B:270:PRO:CA	1.68	1.47
2:B:233:ALA:O	6:B:601:HOH:O	1.67	1.11
3:F:127:GLU:OE1	6:F:201:HOH:O	1.68	1.09
1:A:105:ARG:O	6:A:601:HOH:O	1.72	1.05
1:A:105:ARG:NH1	6:A:603:HOH:O	1.94	0.99
1:A:228:ASN:HD21	4:A:501:GTP:HN1	1.03	0.93
3:F:167:LYS:HE3	6:F:235:HOH:O	1.67	0.93
2:B:160:GLU:OE2	6:B:602:HOH:O	1.90	0.89
1:A:211:ASP:OD2	6:A:604:HOH:O	1.96	0.81
3:F:134:LYS:HE3	3:F:167:LYS:NZ	1.95	0.81
1:A:110:ILE:N	6:A:601:HOH:O	2.20	0.72
1:A:246:GLY:O	6:A:605:HOH:O	2.06	0.72
2:B:38:GLY:HA3	2:B:45:GLN:HE22	1.55	0.71
1:A:270:ALA:HB3	1:A:302:MET:HE2	1.72	0.70
2:B:220:ALA:HA	6:B:615:HOH:O	1.92	0.69
1:A:251:ASP:OD2	6:A:607:HOH:O	2.11	0.69
1:A:420:GLU:OE2	6:A:606:HOH:O	2.11	0.68
3:F:26:GLN:NE2	6:F:202:HOH:O	2.19	0.68
2:B:294:GLN:HG2	2:B:300:ASN:ND2	2.10	0.66
2:B:356:CYS:O	6:B:603:HOH:O	2.14	0.66
1:A:228:ASN:ND2	4:A:501:GTP:HN1	1.86	0.65
3:F:134:LYS:HE3	3:F:167:LYS:HZ3	1.61	0.65
2:B:85:HIS:HD2	6:B:619:HOH:O	1.80	0.64
2:B:72:PRO:O	2:B:75:MET:HG2	1.98	0.63
1:A:326:LYS:CE	6:A:602:HOH:O	2.41	0.63
3:F:134:LYS:HE3	3:F:167:LYS:HZ2	1.62	0.63
1:A:326:LYS:NZ	6:A:602:HOH:O	1.93	0.62
2:B:287:THR:HB	2:B:289:PRO:HD2	1.81	0.62
1:A:71:GLU:HG2	1:A:72:PRO:N	2.14	0.62
1:A:234:ILE:HD13	1:A:302:MET:SD	2.39	0.62
1:A:237:SER:HB2	6:A:743:HOH:O	1.99	0.62
1:A:339:ARG:NH2	6:A:611:HOH:O	2.31	0.62
1:A:56:THR:HG22	1:A:58:ALA:H	1.64	0.61
1:A:343:PHE:HB2	1:A:349:THR:HG23	1.82	0.61
2:B:278:ARG:NH2	6:B:612:HOH:O	2.33	0.61
2:B:396:THR:O	2:B:400:ARG:HG3	2.01	0.61
2:B:270:PRO:N	2:B:270:PRO:C	2.51	0.60
1:A:349:THR:N	6:A:612:HOH:O	2.35	0.59
2:B:278:ARG:NH1	6:B:614:HOH:O	2.35	0.59
2:B:215:ARG:NH2	3:F:160:ASP:OD1	2.25	0.58
1:A:311:LYS:HD2	1:A:436:GLY:HA3	1.86	0.58
2:B:308:ARG:NH1	2:B:342:TYR:OH	2.37	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:178:SER:HB3	6:B:630:HOH:O	2.03	0.58
2:B:400:ARG:HD2	3:F:112:TRP:NE1	2.18	0.57
1:A:55:GLU:HG2	1:A:56:THR:O	2.04	0.57
1:A:56:THR:HG22	1:A:57:GLY:N	2.19	0.57
1:A:11:GLN:HE22	2:B:247:GLN:HE22	1.53	0.56
2:B:236:SER:N	6:B:601:HOH:O	2.38	0.56
2:B:294:GLN:HG2	2:B:300:ASN:HD21	1.70	0.56
2:B:387:LEU:HD23	2:B:387:LEU:C	2.28	0.55
1:A:204:VAL:HG22	1:A:302:MET:CE	2.37	0.54
1:A:265:ILE:HG23	1:A:432:TYR:CE1	2.43	0.54
1:A:209:ILE:HG23	1:A:230:LEU:HD23	1.90	0.54
2:B:123:ARG:O	2:B:127:GLU:HG2	2.08	0.54
1:A:173:PRO:HG3	6:A:608:HOH:O	2.08	0.53
1:A:261:PRO:HB2	1:A:346:TRP:HZ3	1.74	0.53
1:A:246:GLY:C	6:A:605:HOH:O	2.48	0.52
1:A:108:TYR:O	1:A:112:LYS:HE3	2.10	0.52
1:A:210:TYR:CE2	1:A:214:ARG:HD2	2.44	0.52
1:A:210:TYR:O	1:A:214:ARG:HG3	2.10	0.51
1:A:326:LYS:HE2	6:A:602:HOH:O	2.07	0.51
2:B:400:ARG:HD2	3:F:112:TRP:CE2	2.45	0.51
1:A:187:SER:OG	6:A:608:HOH:O	2.19	0.51
1:A:340:SER:OG	1:A:340:SER:O	2.28	0.51
1:A:266:HIS:HE1	6:A:634:HOH:O	1.94	0.50
1:A:339:ARG:CZ	6:A:611:HOH:O	2.60	0.50
1:A:204:VAL:HG22	1:A:302:MET:HE3	1.93	0.50
3:F:23:ARG:NH2	6:F:203:HOH:O	2.32	0.50
2:B:248:LEU:HD23	2:B:354:ALA:HB2	1.95	0.49
2:B:334:ALA:O	2:B:338:LYS:HG2	2.13	0.49
1:A:330:ALA:O	1:A:334:THR:HG23	2.13	0.49
2:B:224:TYR:OH	6:B:604:HOH:O	2.20	0.48
1:A:262:TYR:HD1	1:A:262:TYR:HA	1.40	0.48
2:B:165:ILE:HG21	2:B:252:LEU:HB3	1.96	0.48
1:A:275:VAL:HG13	1:A:368:LEU:HD21	1.96	0.47
2:B:414:ASP:OD1	2:B:415:GLU:N	2.47	0.47
1:A:57:GLY:C	1:A:59:GLY:H	2.18	0.47
2:B:123:ARG:NH2	6:B:602:HOH:O	2.12	0.47
2:B:213:CYS:HB3	2:B:219:LEU:HD12	1.96	0.47
2:B:75:MET:HB3	2:B:94:PHE:CE2	2.49	0.47
1:A:343:PHE:CG	1:A:349:THR:HA	2.50	0.47
3:F:133:LEU:HD12	6:F:235:HOH:O	2.14	0.47
1:A:71:GLU:HB2	1:A:98:ASP:HB3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:291:LEU:HD11	2:B:373:MET:HB3	1.97	0.47
2:B:6:HIS:CD2	2:B:21:TRP:HE1	2.33	0.46
2:B:108:TYR:CE2	2:B:413:MET:HG2	2.50	0.46
1:A:311:LYS:CD	1:A:436:GLY:HA3	2.45	0.46
2:B:237:GLY:N	6:B:601:HOH:O	1.95	0.46
1:A:55:GLU:C	1:A:56:THR:O	2.54	0.46
2:B:416:MET:O	2:B:420:GLU:HG3	2.16	0.46
1:A:184:PRO:HA	6:A:608:HOH:O	2.16	0.46
2:B:38:GLY:HA3	2:B:45:GLN:NE2	2.28	0.45
2:B:335:ILE:HA	2:B:338:LYS:HD3	1.97	0.45
2:B:16:ILE:HD11	2:B:138:THR:HB	1.98	0.45
2:B:287:THR:OG1	2:B:290:GLU:HB2	2.17	0.45
3:F:125:HIS:HB3	6:F:201:HOH:O	2.16	0.45
1:A:349:THR:O	1:A:349:THR:HG22	2.16	0.45
1:A:262:TYR:HA	1:A:263:PRO:HD3	1.86	0.45
2:B:322:ARG:HD3	2:B:357:ASP:OD1	2.16	0.45
1:A:250:VAL:HG12	1:A:254:GLU:OE1	2.17	0.44
1:A:336:LYS:HA	1:A:341:ILE:HD11	1.99	0.44
1:A:339:ARG:CZ	1:A:339:ARG:HA	2.47	0.44
1:A:341:ILE:HG13	1:A:341:ILE:O	2.18	0.44
2:B:287:THR:CB	2:B:289:PRO:HD2	2.47	0.44
1:A:56:THR:HG22	1:A:57:GLY:H	1.81	0.44
2:B:395:PHE:CE1	2:B:422:GLU:HB2	2.53	0.44
1:A:57:GLY:C	1:A:59:GLY:N	2.70	0.43
6:B:708:HOH:O	3:F:79:MET:HG3	2.18	0.43
3:F:20:GLU:OE1	3:F:23:ARG:NH1	2.52	0.43
1:A:339:ARG:HA	1:A:339:ARG:NE	2.34	0.43
2:B:56:ALA:O	2:B:59:HIS:HD2	2.01	0.43
1:A:332:ILE:O	1:A:336:LYS:HG3	2.19	0.43
2:B:438:ALA:HA	6:B:740:HOH:O	2.18	0.43
1:A:28:HIS:CE1	1:A:49:PHE:HB3	2.53	0.42
2:B:39:ASP:N	2:B:39:ASP:OD1	2.52	0.42
2:B:333:LEU:O	2:B:337:SER:OG	2.32	0.42
3:F:93:LEU:HD22	3:F:127:GLU:HG3	1.99	0.42
1:A:56:THR:CG2	1:A:57:GLY:N	2.82	0.42
3:F:134:LYS:NZ	6:F:207:HOH:O	2.52	0.42
1:A:234:ILE:HG21	1:A:302:MET:SD	2.60	0.42
2:B:106:GLY:O	2:B:111:GLY:HA3	2.20	0.42
2:B:75:MET:HB3	2:B:94:PHE:CD2	2.54	0.42
3:F:46:SER:O	3:F:78:ILE:HG22	2.20	0.41
1:A:224:TYR:O	1:A:225:THR:CB	2.67	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:7:ILE:HG21	1:A:153:LEU:HD21	2.03	0.41
1:A:256:GLN:H	1:A:256:GLN:HG3	1.60	0.41
1:A:368:LEU:HD22	6:A:727:HOH:O	2.19	0.41
1:A:56:THR:HG22	1:A:58:ALA:N	2.31	0.41
2:B:179[C]:ASP:OD1	6:B:605:HOH:O	2.22	0.41
3:F:16:LYS:HD3	3:F:16:LYS:HA	1.85	0.40
2:B:155:SER:OG	2:B:197:ASN:ND2	2.53	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:262:TYR:OH	1:A:365:GLY:N[2_1055]	2.15	0.05

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	413/451 (92%)	398 (96%)	12 (3%)	3 (1%)	22	9
2	B	426/450 (95%)	415 (97%)	9 (2%)	2 (0%)	29	15
3	F	153/157 (98%)	152 (99%)	1 (1%)	0	100	100
All	All	992/1058 (94%)	965 (97%)	22 (2%)	5 (0%)	29	15

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	56	THR
1	A	225	THR
1	A	278	ALA
2	B	282	GLN
2	B	60	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	348/379 (92%)	343 (99%)	5 (1%)	67	55
2	B	365/386 (95%)	360 (99%)	5 (1%)	67	55
3	F	116/122 (95%)	114 (98%)	2 (2%)	60	47
All	All	829/887 (94%)	817 (99%)	12 (1%)	65	55

All (12) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	216	ASN
1	A	262	TYR
1	A	326	LYS
1	A	339	ARG
1	A	340	SER
2	B	128	ASN
2	B	139	HIS
2	B	158	ARG
2	B	322	ARG
2	B	326	LYS
3	F	127	GLU
3	F	167	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	11	GLN
1	A	35	GLN
1	A	216	ASN
1	A	228	ASN
1	A	233	GLN
1	A	266	HIS
1	A	301	GLN
2	B	45	GLN
2	B	59	HIS

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Mol	Chain	Res	Type
2	B	197	ASN
2	B	300	ASN
3	F	26	GLN
3	F	59	HIS
3	F	140	ASN

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](#)

Of 4 ligands modelled in this entry, 2 are monoatomic - leaving 2 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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, 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	A	419/451 (92%)	-0.04	19 (4%) 33 32	22, 35, 70, 131	1 (0%)
2	B	428/450 (95%)	-0.03	15 (3%) 44 41	23, 37, 71, 138	0
3	F	155/157 (98%)	-0.33	4 (2%) 56 54	21, 30, 51, 91	0
All	All	1002/1058 (94%)	-0.08	38 (3%) 40 38	21, 35, 67, 138	1 (0%)

All (38) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	57	GLY	6.5
2	B	283	TYR	6.4
2	B	282	GLN	6.4
2	B	440	ALA	6.0
1	A	262	TYR	5.2
1	A	342	GLN	4.4
1	A	58	ALA	4.2
1	A	341	ILE	3.8
2	B	179[A]	ASP	3.8
1	A	345	ASP	3.5
1	A	59	GLY	3.5
2	B	412	GLY	3.4
1	A	339	ARG	3.4
2	B	284	ARG	3.4
3	F	167	LYS	3.3
1	A	346	TRP	3.3
1	A	365	GLY	3.2
2	B	75	MET	3.2
1	A	349	THR	3.0
1	A	309	HIS	2.9
1	A	56	THR	2.9
3	F	32	ILE	2.9
1	A	344	VAL	2.8

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Mol	Chain	Res	Type	RSRZ
2	B	333	LEU	2.7
2	B	281	GLN	2.4
2	B	338	LYS	2.3
2	B	293	GLN	2.3
3	F	29	GLU	2.3
2	B	337	SER	2.3
2	B	358	ILE	2.2
1	A	343	PHE	2.2
1	A	308	ARG	2.2
2	B	220	ALA	2.1
1	A	337	THR	2.1
1	A	335	ILE	2.1
1	A	338	LYS	2.1
2	B	279	GLY	2.0
3	F	30	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](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
5	MG	A	502	1/1	0.91	0.14	26,26,26,26	0
4	GTP	B	501	32/32	0.97	0.08	25,28,34,36	0
4	GTP	A	501	32/32	0.97	0.11	17,25,27,35	0
5	MG	B	502	1/1	0.97	0.04	32,32,32,32	0

6.5 Other polymers [i](#)

There are no such residues in this entry.