



Full wwPDB X-ray Structure Validation Report ⓘ

Dec 16, 2024 – 03:00 AM EST

PDB ID : 6NNG
Title : Tubulin-RB3_SLD-TTL in complex with compound DJ95
Authors : Kumar, G.; Wang, Y.; Li, W.; White, S.W.
Deposited on : 2019-01-15
Resolution : 2.40 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
Mogul : 2022.3.0, CSD as543be (2022)
Xtrriage (Phenix) : 1.21
EDS : 3.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4 : 9.0.004 (Gargrove)
Density-Fitness : 1.0.11
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.40

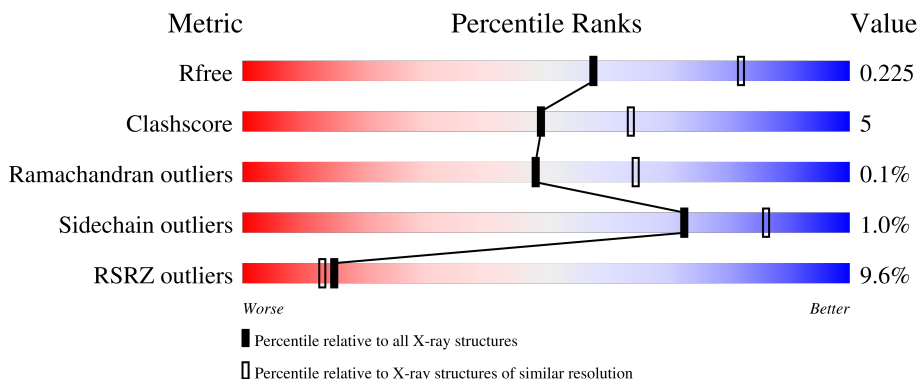
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

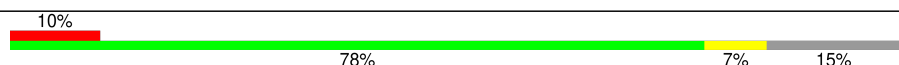
The reported resolution of this entry is 2.40 Å.

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}	164625	4642 (2.40-2.40)
Clashscore	180529	5218 (2.40-2.40)
Ramachandran outliers	177936	5158 (2.40-2.40)
Sidechain outliers	177891	5159 (2.40-2.40)
RSRZ outliers	164620	4642 (2.40-2.40)

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 $\leq 5\%$. 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	450	
1	C	450	
2	B	445	
2	D	445	
3	E	143	

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Mol	Chain	Length	Quality of chain
4	F	384	 <p>A horizontal bar chart representing the quality of chain. The bar is divided into four segments: a red segment on the left labeled '24%', a large green segment labeled '75%', a yellow segment labeled '13%', and a grey segment on the far right labeled '12%'.</p>

2 Entry composition i

There are 12 unique types of molecules in this entry. The entry contains 17861 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	439	Total	C	N	O	S	0	0	0
			3412	2157	581	652	22			
1	C	440	Total	C	N	O	S	0	0	0
			3430	2171	583	655	21			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	427	Total	C	N	O	S	0	0	0
			3343	2101	571	645	26			
2	D	421	Total	C	N	O	S	0	0	0
			3264	2052	552	635	25			

- Molecule 3 is a protein called Stathmin-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	E	121	Total	C	N	O	S	0	0	0
			984	607	179	193	5			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	3	MET	-	expression tag	UNP Q9H169
E	4	ALA	-	expression tag	UNP Q9H169

- Molecule 4 is a protein called Tubulin Tyrosine Ligase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	F	339	Total	C	N	O	S	0	0	0
			2643	1697	458	475	13			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	379	HIS	-	expression tag	UNP E1BQ43
F	380	HIS	-	expression tag	UNP E1BQ43
F	381	HIS	-	expression tag	UNP E1BQ43
F	382	HIS	-	expression tag	UNP E1BQ43
F	383	HIS	-	expression tag	UNP E1BQ43
F	384	HIS	-	expression tag	UNP E1BQ43

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



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

- Molecule 6 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

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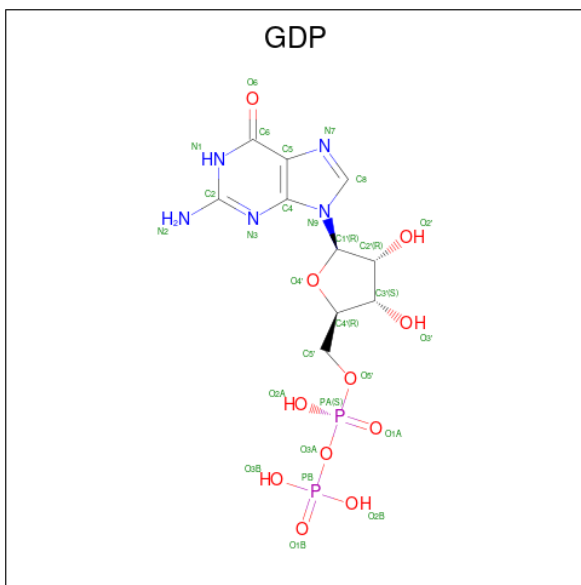
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	F	1	Total	Mg	0	0
			1	1		

- Molecule 7 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	1	Total	Ca	0	0
			1	1		
7	C	1	Total	Ca	0	0
			1	1		

- Molecule 8 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: C₁₀H₁₅N₅O₁₁P₂).



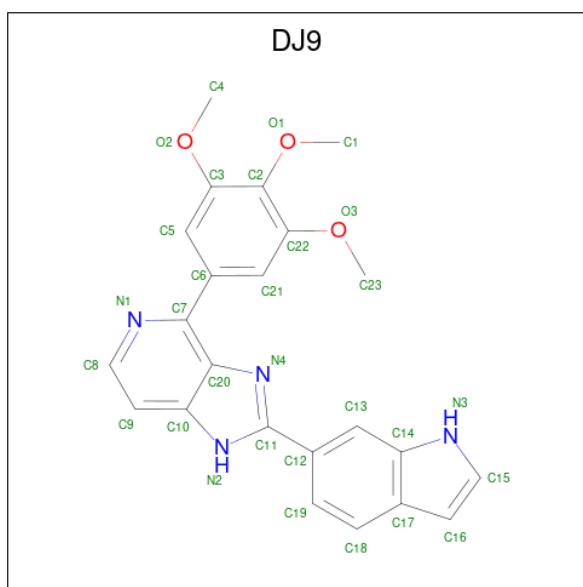
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
8	B	1	Total	C	N	O	P	0	0
			28	10	5	11	2		

- Molecule 9 is 2-(N-MORPHOLINO)-ETHANESULFONIC ACID (three-letter code: MES) (formula: C₆H₁₃NO₄S).



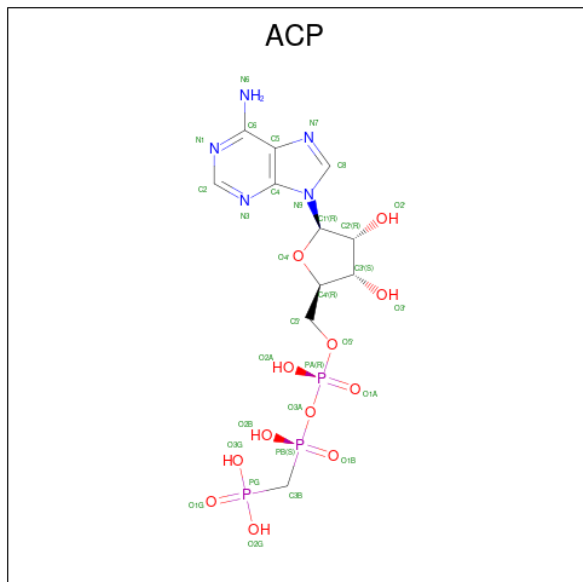
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	S		
9	B	1	12	6	1	4	1	0	0
9	B	1	12	6	1	4	1	0	0

- Molecule 10 is 2-(1H-indol-6-yl)-4-(3,4,5-trimethoxyphenyl)-1H-imidazo[4,5-c]pyridine (three-letter code: DJ9) (formula: C₂₃H₂₀N₄O₃) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
10	B	1	30	23	4	3	0	0

- Molecule 11 is PHOSPHOMETHYLPHOSPHONIC ACID ADENYLATE ESTER (three-letter code: ACP) (formula: $C_{11}H_{18}N_5O_{12}P_3$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
11	F	1	31	11	5	12	3	0	0

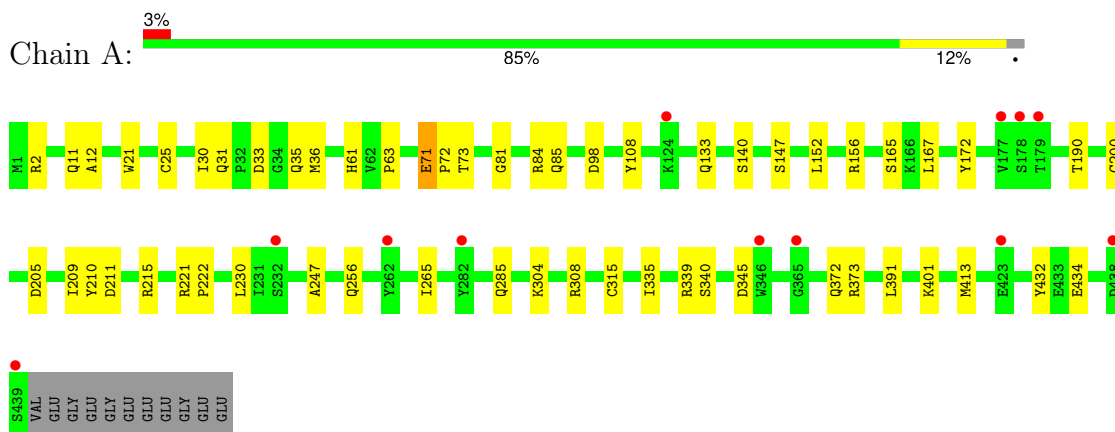
- Molecule 12 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
12	A	138	Total	O	0	0
			138	138		
12	B	119	Total	O	0	0
			119	119		
12	C	212	Total	O	0	0
			212	212		
12	D	41	Total	O	0	0
			41	41		
12	E	18	Total	O	0	0
			18	18		
12	F	42	Total	O	0	0
			42	42		

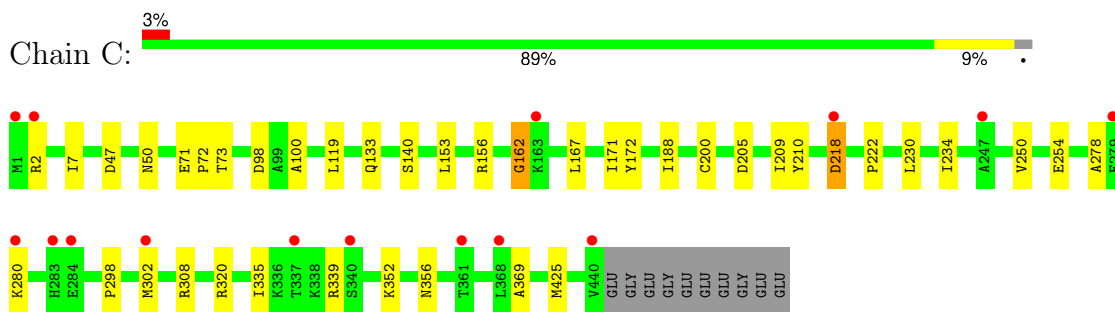
3 Residue-property plots [i](#)

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.

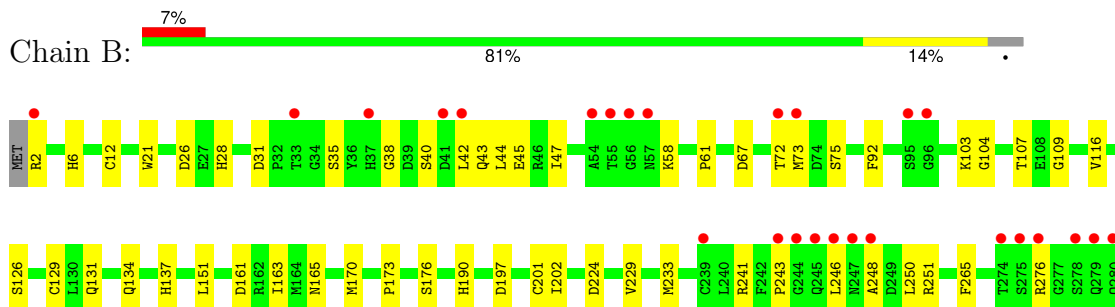
- Molecule 1: Tubulin alpha-1B chain

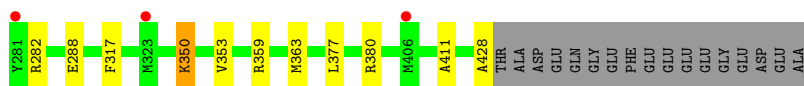


- Molecule 1: Tubulin alpha-1B chain

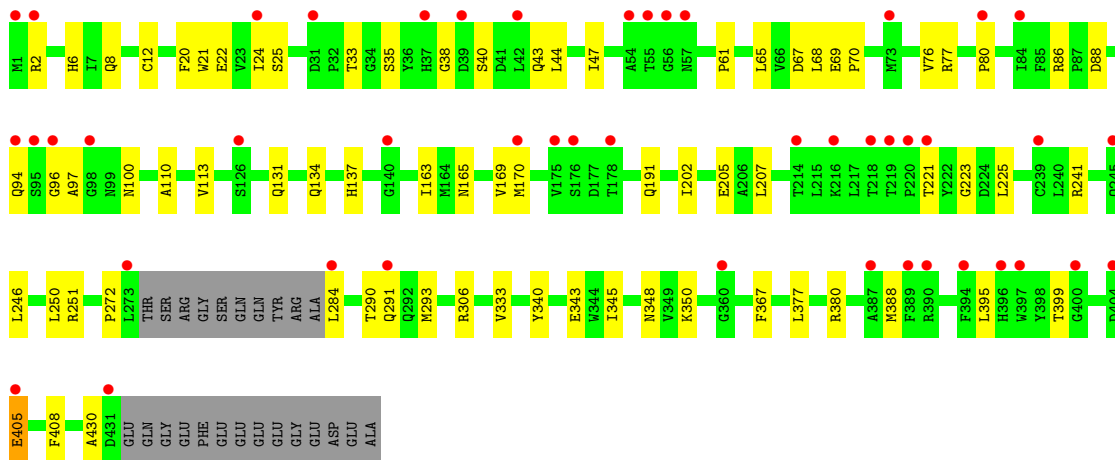
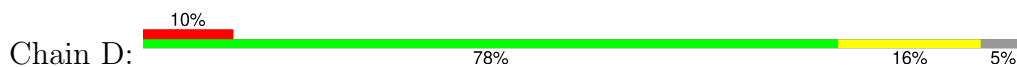


- Molecule 2: Tubulin beta-2B chain

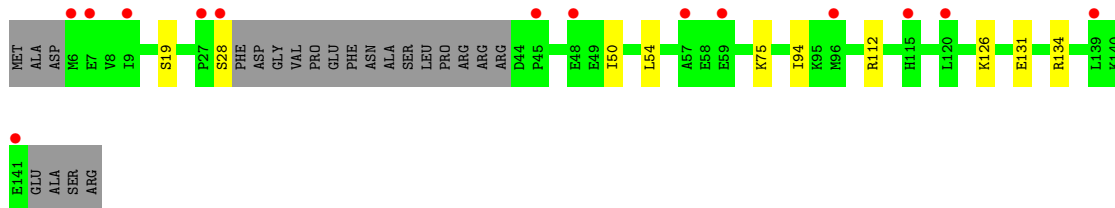
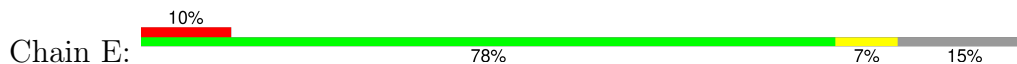




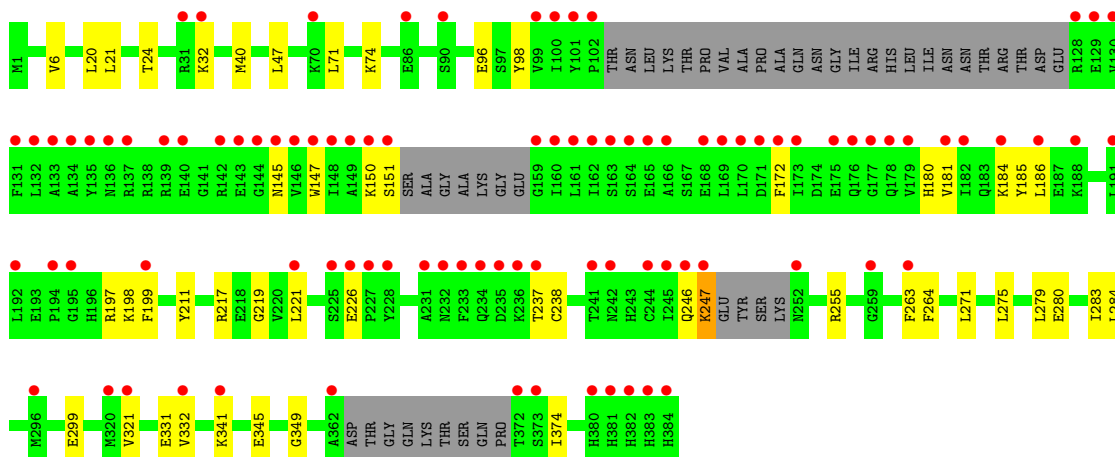
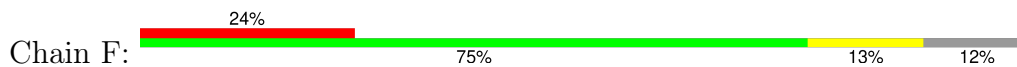
- Molecule 2: Tubulin beta-2B chain



- Molecule 3: Stathmin-4



- Molecule 4: Tubulin Tyrosine Ligase



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	105.42Å 157.98Å 182.84Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.25 – 2.40 48.25 – 2.40	Depositor EDS
% Data completeness (in resolution range)	98.1 (48.25-2.40) 98.2 (48.25-2.40)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.15 (at 2.39Å)	Xtrriage
Refinement program	PHENIX 1.13_2998: ???	Depositor
R, R_{free}	0.192 , 0.227 0.193 , 0.225	Depositor DCC
R_{free} test set	5966 reflections (4.96%)	wwPDB-VP
Wilson B-factor (Å ²)	35.6	Xtrriage
Anisotropy	0.069	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 50.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	17861	wwPDB-VP
Average B, all atoms (Å ²)	50.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.40% 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, DJ9, GDP, CA, MG, ACP, MES

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	0.27	0/3489	0.46	1/4739 (0.0%)
1	C	0.28	0/3508	0.48	2/4764 (0.0%)
2	B	0.25	0/3417	0.42	0/4629
2	D	0.30	1/3336 (0.0%)	0.46	0/4527
3	E	0.23	0/992	0.34	0/1319
4	F	0.27	0/2707	0.43	0/3671
All	All	0.27	1/17449 (0.0%)	0.45	3/23649 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	405	GLU	CB-CG	5.05	1.61	1.52

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	280	LYS	CB-CG-CD	-7.96	90.91	111.60
1	A	434	GLU	CA-CB-CG	5.49	125.47	113.40
1	C	218	ASP	CB-CG-OD1	-5.28	113.55	118.30

There are no chirality outliers.

There are no planarity outliers.

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	3412	0	3309	37	0
1	C	3430	0	3335	24	0
2	B	3343	0	3212	39	0
2	D	3264	0	3099	45	0
3	E	984	0	988	9	0
4	F	2643	0	2490	32	0
5	A	32	0	12	2	0
5	C	32	0	12	1	0
5	D	32	0	12	1	0
6	A	1	0	0	0	0
6	B	1	0	0	0	0
6	C	1	0	0	0	0
6	F	1	0	0	0	0
7	A	1	0	0	0	0
7	C	1	0	0	0	0
8	B	28	0	12	1	0
9	B	24	0	24	2	0
10	B	30	0	0	1	0
11	F	31	0	13	1	0
12	A	138	0	0	2	0
12	B	119	0	0	1	0
12	C	212	0	0	0	0
12	D	41	0	0	0	0
12	E	18	0	0	1	0
12	F	42	0	0	0	0
All	All	17861	0	16518	180	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 5.

All (180) 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)
4:F:199:PHE:HB2	4:F:221:LEU:HD21	1.41	0.98
4:F:199:PHE:HB2	4:F:221:LEU:CD2	2.07	0.84
4:F:199:PHE:CB	4:F:221:LEU:HD21	2.20	0.72
1:A:372:GLN:HE21	1:A:373:ARG:HH12	1.38	0.70
4:F:271:LEU:HD23	4:F:275:LEU:HD12	1.79	0.64
2:B:173:PRO:HA	2:B:176:SER:HB2	1.82	0.61
1:C:71:GLU:HB2	1:C:98:ASP:HB3	1.81	0.61
3:E:75:LYS:NZ	12:E:201:HOH:O	2.25	0.61
1:C:278:ALA:HA	1:C:369:ALA:HB2	1.83	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:221:THR:HG22	2:D:223:GLY:H	1.65	0.61
1:C:209:ILE:HG23	1:C:230:LEU:HD23	1.82	0.60
1:A:71:GLU:OE1	1:A:73:THR:N	2.32	0.60
2:B:38:GLY:HA3	2:B:43:GLN:HE22	1.65	0.60
2:B:170:MET:HG2	2:B:377:LEU:HD21	1.85	0.58
1:C:71:GLU:OE2	1:C:73:THR:OG1	2.17	0.58
2:D:20:PHE:O	2:D:24:ILE:HG13	2.02	0.58
4:F:226:GLU:HB2	4:F:238:CYS:HB3	1.86	0.58
1:C:47:ASP:H	1:C:50:ASN:HD22	1.52	0.57
2:D:70:PRO:HG3	2:D:94:GLN:HA	1.86	0.57
2:D:65:LEU:HD22	2:D:76:VAL:HG11	1.86	0.57
2:B:246:LEU:HD22	2:B:350:LYS:HE2	1.86	0.56
2:B:26:ASP:CG	2:B:359:ARG:HE	2.08	0.56
4:F:199:PHE:CD2	4:F:221:LEU:HD21	2.41	0.56
2:B:161:ASP:O	2:B:251:ARG:NH2	2.39	0.56
2:D:21:TRP:CE3	2:D:24:ILE:HD11	2.41	0.56
2:D:246:LEU:HD21	2:D:350:LYS:HB3	1.88	0.56
2:B:163:ILE:HG21	2:B:250:LEU:HB3	1.87	0.55
4:F:263:PHE:CE1	4:F:341:LYS:HD3	2.42	0.54
1:A:335:ILE:HG23	1:A:339:ARG:HG3	1.89	0.54
2:D:38:GLY:HA3	2:D:43:GLN:HE22	1.72	0.54
4:F:280:GLU:HA	4:F:284:LEU:HB2	1.90	0.54
2:B:42:LEU:HD13	2:B:243:PRO:HG2	1.89	0.53
2:D:97:ALA:HB3	5:D:501:GTP:O3G	2.09	0.53
1:A:71:GLU:HG2	1:A:72:PRO:HD2	1.90	0.52
1:A:308:ARG:HG2	1:A:340:SER:HB2	1.90	0.52
1:C:250:VAL:HG11	1:C:352:LYS:HE3	1.89	0.52
2:B:282:ARG:NH2	2:B:288:GLU:OE2	2.37	0.52
2:B:44:LEU:HA	2:B:47:ILE:HB	1.92	0.52
2:D:395:LEU:CD1	2:D:399:THR:HG23	2.40	0.52
1:A:209:ILE:HG23	1:A:230:LEU:HD23	1.92	0.51
4:F:32:LYS:N	4:F:32:LYS:HD3	2.26	0.51
2:D:272:PRO:HB3	2:D:284:LEU:HD22	1.92	0.51
2:D:205:GLU:HB3	2:D:380:ARG:HH12	1.75	0.51
1:A:71:GLU:HB2	1:A:98:ASP:HB3	1.92	0.51
2:D:6:HIS:HE2	2:D:8:GLN:HE21	1.56	0.51
2:B:6:HIS:CD2	2:B:21:TRP:HE1	2.30	0.50
4:F:71:LEU:HG	4:F:332:VAL:HG11	1.94	0.50
2:B:134:GLN:HA	2:B:165:ASN:O	2.11	0.50
1:A:211:ASP:OD1	1:A:304:LYS:NZ	2.30	0.50
4:F:96:GLU:OE1	4:F:98:TYR:OH	2.28	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:26:ASP:OD1	2:B:359:ARG:NE	2.44	0.49
1:A:33:ASP:HA	1:A:85:GLN:HG3	1.94	0.49
2:D:6:HIS:HE2	2:D:8:GLN:HG3	1.77	0.49
4:F:184:LYS:O	11:F:402:ACP:N6	2.45	0.49
2:B:116:VAL:HG11	2:B:151:LEU:HD11	1.94	0.49
2:B:224:ASP:OD2	2:B:276:ARG:NH2	2.42	0.49
1:C:71:GLU:HG2	1:C:72:PRO:HD2	1.94	0.49
2:D:6:HIS:CD2	2:D:21:TRP:HE1	2.31	0.49
2:D:163:ILE:HG21	2:D:250:LEU:HB3	1.94	0.49
1:C:320:ARG:HA	1:C:356:ASN:O	2.13	0.48
4:F:199:PHE:CG	4:F:221:LEU:HD21	2.48	0.48
2:B:21:TRP:CZ3	2:B:61:PRO:HB3	2.48	0.48
4:F:21:LEU:O	4:F:24:THR:OG1	2.27	0.48
1:C:162:GLY:HA2	3:E:94:ILE:HD11	1.96	0.48
4:F:6:VAL:O	4:F:32:LYS:HG3	2.14	0.47
2:D:343:GLU:HG3	2:D:430:ALA:HB2	1.97	0.47
1:A:172:TYR:HB3	1:A:205:ASP:HA	1.96	0.47
1:C:335:ILE:HG23	1:C:339:ARG:HG3	1.97	0.47
2:D:24:ILE:HG22	2:D:241:ARG:CZ	2.44	0.47
2:B:12:CYS:HB2	8:B:501:GDP:C8	2.49	0.47
1:C:167:LEU:HG	1:C:200:CYS:HB3	1.97	0.47
1:C:188:ILE:HD12	1:C:425:MET:HG3	1.96	0.47
2:D:191:GLN:HE22	3:E:126:LYS:NZ	2.14	0.47
1:A:210:TYR:CZ	1:A:222:PRO:HD2	2.50	0.46
3:E:131:GLU:HG2	3:E:134:ARG:HH21	1.79	0.46
1:A:165:SER:OG	1:A:256:GLN:NE2	2.48	0.46
2:D:33:THR:HG23	2:D:35:SER:H	1.80	0.46
2:D:21:TRP:CZ3	2:D:61:PRO:HB3	2.50	0.46
4:F:145:ASN:CG	4:F:147:TRP:HE1	2.19	0.46
1:C:47:ASP:N	1:C:50:ASN:HD22	2.12	0.46
2:D:134:GLN:HA	2:D:165:ASN:O	2.15	0.46
2:B:72:THR:O	2:B:75:SER:OG	2.31	0.46
2:D:40:SER:H	2:D:43:GLN:NE2	2.13	0.46
1:A:98:ASP:HB2	5:A:501:GTP:O3G	2.16	0.46
2:D:44:LEU:HA	2:D:47:ILE:HB	1.98	0.46
1:A:31:GLN:HG2	1:A:35:GLN:O	2.16	0.46
1:A:31:GLN:NE2	1:A:35:GLN:HB2	2.30	0.46
2:B:246:LEU:HG	2:B:248:ALA:HB2	1.98	0.46
2:B:317:PHE:HB2	2:B:353:VAL:HG22	1.98	0.46
4:F:279:LEU:HD12	4:F:283:ILE:HB	1.97	0.46
1:C:210:TYR:CZ	1:C:222:PRO:HD2	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:285:GLN:NE2	12:A:611:HOH:O	2.47	0.45
2:B:202:ILE:HD13	2:B:229:VAL:HG13	1.98	0.45
1:A:152:LEU:HD11	3:E:54:LEU:HD11	1.98	0.45
1:A:247:ALA:HB3	3:E:19:SER:OG	2.16	0.45
1:A:108:TYR:CE2	1:A:413:MET:HG3	2.51	0.45
2:B:201:CYS:SG	2:B:265:PHE:HB3	2.57	0.45
1:C:2:ARG:HB3	1:C:133:GLN:HB2	1.99	0.45
2:D:24:ILE:HD12	2:D:25:SER:N	2.31	0.45
1:A:12:ALA:HB3	1:A:140:SER:HB3	1.99	0.45
1:A:167:LEU:HG	1:A:200:CYS:HB3	1.99	0.45
4:F:217:ARG:NH2	4:F:345:GLU:OE1	2.50	0.45
2:B:2:ARG:HA	2:B:129:CYS:O	2.17	0.45
4:F:247:LYS:HD3	4:F:247:LYS:H	1.82	0.45
2:B:190:HIS:HD2	2:B:411:ALA:HA	1.81	0.44
1:C:119:LEU:HD11	1:C:156:ARG:HB3	1.99	0.44
1:A:210:TYR:CE1	1:A:222:PRO:HD2	2.51	0.44
2:B:73:MET:SD	2:B:92:PHE:HB3	2.58	0.44
2:D:2:ARG:CZ	2:D:131:GLN:HB3	2.47	0.44
2:B:40:SER:OG	2:B:42:LEU:HB2	2.18	0.44
4:F:40:MET:HE1	4:F:47:LEU:HG	1.99	0.44
4:F:151:SER:HA	4:F:180:HIS:CD2	2.53	0.44
2:B:380:ARG:NH1	12:B:612:HOH:O	2.44	0.44
3:E:50:ILE:O	3:E:54:LEU:HG	2.18	0.44
4:F:211:TYR:CD2	4:F:299:GLU:HG3	2.53	0.44
2:D:69:GLU:HG2	2:D:96:GLY:HA2	1.99	0.44
2:D:86:ARG:HE	2:D:88:ASP:HB2	1.82	0.43
1:A:372:GLN:HE21	1:A:373:ARG:NH1	2.13	0.43
2:B:2:ARG:CZ	2:B:131:GLN:HB3	2.49	0.43
1:A:85:GLN:H	1:A:85:GLN:HG2	1.66	0.43
4:F:211:TYR:CE2	4:F:299:GLU:HG3	2.53	0.43
1:A:11:GLN:HB3	5:A:501:GTP:O2A	2.18	0.43
2:B:31:ASP:OD2	2:B:35:SER:N	2.45	0.43
9:B:504:MES:H51	9:B:504:MES:H81	1.56	0.43
1:C:230:LEU:O	1:C:234:ILE:HD12	2.18	0.43
2:D:170:MET:HG3	2:D:377:LEU:HD11	2.00	0.43
2:D:293:MET:CG	2:D:367:PHE:HB2	2.48	0.43
2:D:6:HIS:NE2	2:D:8:GLN:HG3	2.34	0.43
2:B:197:ASP:OD2	9:B:503:MES:H31	2.19	0.42
1:C:254:GLU:HG2	1:C:352:LYS:HE2	2.01	0.42
1:A:81:GLY:O	1:A:84:ARG:HG2	2.19	0.42
1:A:265:ILE:HG23	1:A:432:TYR:CZ	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:350:LYS:HB2	10:B:505:DJ9:C17	2.50	0.42
2:B:28:HIS:NE2	2:B:241:ARG:HB3	2.34	0.42
2:B:45:GLU:HB3	2:B:243:PRO:HG3	2.02	0.42
1:C:140:SER:HA	1:C:171:ILE:HB	2.01	0.42
2:D:110:ALA:O	2:D:113:VAL:HG12	2.20	0.42
2:B:67:ASP:O	2:B:92:PHE:HA	2.20	0.42
2:D:345:ILE:HG22	2:D:348:ASN:HB3	2.02	0.42
1:A:2:ARG:O	1:A:133:GLN:NE2	2.50	0.42
1:A:156:ARG:HA	1:A:156:ARG:HD2	1.89	0.42
2:D:12:CYS:SG	2:D:169:VAL:HG21	2.59	0.42
4:F:20:LEU:O	4:F:24:THR:HG23	2.20	0.42
4:F:150:LYS:CB	4:F:181:VAL:H	2.33	0.42
2:D:293:MET:HG3	2:D:367:PHE:HB2	2.01	0.41
2:D:306:ARG:HG2	2:D:340:TYR:CZ	2.55	0.41
4:F:237:THR:O	4:F:246:GLN:NE2	2.53	0.41
2:B:233:MET:HB3	2:B:233:MET:HE2	1.89	0.41
2:B:276:ARG:HE	2:B:276:ARG:HB3	1.57	0.41
2:D:405:GLU:O	2:D:408:PHE:HB2	2.20	0.41
3:E:131:GLU:HG2	3:E:134:ARG:NH2	2.34	0.41
4:F:74:LYS:NZ	4:F:331:GLU:OE2	2.45	0.41
2:D:207:LEU:HB3	2:D:225:LEU:HD22	2.02	0.41
2:D:290:THR:HG22	2:D:333:VAL:HG21	2.02	0.41
4:F:185:TYR:OH	4:F:198:LYS:NZ	2.44	0.41
1:A:36:MET:HB3	1:A:61:HIS:CE1	2.56	0.41
2:D:291:GLN:O	2:D:291:GLN:HG2	2.20	0.41
1:A:25:CYS:HB3	1:A:30:ILE:O	2.21	0.41
1:A:215:ARG:NH2	12:A:619:HOH:O	2.53	0.41
1:A:401:LYS:HE3	2:B:428:ALA:HB1	2.02	0.41
2:D:67:ASP:OD2	2:D:68:LEU:N	2.54	0.41
2:D:169:VAL:HA	2:D:202:ILE:O	2.21	0.41
1:C:98:ASP:HB2	5:C:501:GTP:O2G	2.20	0.41
1:C:172:TYR:HB3	1:C:205:ASP:HA	2.03	0.41
4:F:184:LYS:HD2	4:F:185:TYR:N	2.36	0.41
4:F:219:GLY:HA3	4:F:264:PHE:CZ	2.55	0.41
1:A:147:SER:HB2	1:A:190:THR:HB	2.03	0.41
1:A:345:ASP:HB3	3:E:28:SER:HB2	2.02	0.40
1:C:7:ILE:HG21	1:C:153:LEU:HD21	2.03	0.40
2:D:395:LEU:HD13	2:D:399:THR:HG23	2.04	0.40
2:B:103:LYS:HA	2:B:107:THR:OG1	2.22	0.40
1:C:298:PRO:HG2	1:C:308:ARG:NH2	2.36	0.40
2:D:22:GLU:OE1	2:D:80:PRO:HG2	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:21:TRP:CZ3	1:A:63:PRO:HB3	2.56	0.40
4:F:349:GLY:HA3	4:F:374:ILE:HD11	2.03	0.40
1:A:172:TYR:CE2	1:A:391:LEU:HD22	2.56	0.40
2:B:104:GLY:O	2:B:109:GLY:HA3	2.21	0.40
1:C:100:ALA:HB1	2:D:251:ARG:HG2	2.03	0.40
2:D:388:MET:HB3	2:D:388:MET:HE2	1.80	0.40
4:F:199:PHE:CZ	4:F:321:VAL:HG22	2.57	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	437/450 (97%)	429 (98%)	8 (2%)	0	100	100
1	C	438/450 (97%)	431 (98%)	6 (1%)	1 (0%)	44	59
2	B	425/445 (96%)	418 (98%)	7 (2%)	0	100	100
2	D	417/445 (94%)	411 (99%)	6 (1%)	0	100	100
3	E	117/143 (82%)	116 (99%)	1 (1%)	0	100	100
4	F	329/384 (86%)	314 (95%)	14 (4%)	1 (0%)	37	51
All	All	2163/2317 (93%)	2119 (98%)	42 (2%)	2 (0%)	48	65

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	162	GLY
4	F	186	LEU

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	366/378 (97%)	363 (99%)	3 (1%)	79	90
1	C	369/378 (98%)	367 (100%)	2 (0%)	86	94
2	B	364/383 (95%)	359 (99%)	5 (1%)	62	79
2	D	352/383 (92%)	349 (99%)	3 (1%)	75	88
3	E	105/127 (83%)	104 (99%)	1 (1%)	73	86
4	F	269/342 (79%)	265 (98%)	4 (2%)	60	77
All	All	1825/1991 (92%)	1807 (99%)	18 (1%)	73	86

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	71	GLU
1	A	221	ARG
1	A	315	CYS
2	B	58	LYS
2	B	126	SER
2	B	137	HIS
2	B	350	LYS
2	B	363	MET
1	C	218	ASP
1	C	302	MET
2	D	77	ARG
2	D	100	ASN
2	D	137	HIS
3	E	112	ARG
4	F	172	PHE
4	F	197	ARG
4	F	247	LYS
4	F	255	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (27) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	101	ASN
1	A	256	GLN
1	A	283	HIS
1	A	285	GLN
1	A	301	GLN
1	A	329	ASN
1	A	356	ASN
1	A	372	GLN
2	B	11	GLN
2	B	15	GLN
2	B	43	GLN
2	B	52	ASN
2	B	247	ASN
2	B	426	GLN
1	C	50	ASN
1	C	309	HIS
2	D	8	GLN
2	D	43	GLN
2	D	100	ASN
3	E	90	ASN
3	E	92	ASN
3	E	136	ASN
4	F	180	HIS
4	F	260	ASN
4	F	310	GLN
4	F	340	GLN
4	F	382	HIS

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 oligosaccharides in this entry.

5.6 Ligand geometry i

Of 14 ligands modelled in this entry, 6 are monoatomic - leaving 8 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
11	ACP	F	402	6	27,33,33	4.02	9 (33%)	33,52,52	2.34	5 (15%)
9	MES	B	504	-	12,12,12	2.32	1 (8%)	15,16,16	1.94	5 (33%)
9	MES	B	503	-	12,12,12	2.30	1 (8%)	15,16,16	2.18	6 (40%)
5	GTP	C	501	6	29,34,34	3.77	18 (62%)	35,54,54	1.37	5 (14%)
10	DJ9	B	505	-	31,34,34	1.71	6 (19%)	38,49,49	1.64	9 (23%)
8	GDP	B	501	6	25,30,30	0.98	1 (4%)	30,47,47	1.11	3 (10%)
5	GTP	A	501	6	29,34,34	3.87	19 (65%)	35,54,54	1.48	5 (14%)
5	GTP	D	501	-	29,34,34	3.80	18 (62%)	35,54,54	1.35	5 (14%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
11	ACP	F	402	6	-	8/15/38/38	0/3/3/3
9	MES	B	504	-	-	3/6/14/14	0/1/1/1
9	MES	B	503	-	-	2/6/14/14	0/1/1/1
5	GTP	C	501	6	-	5/18/38/38	0/3/3/3
10	DJ9	B	505	-	-	0/14/14/14	0/5/5/5
8	GDP	B	501	6	-	3/12/32/32	0/3/3/3
5	GTP	A	501	6	-	3/18/38/38	0/3/3/3
5	GTP	D	501	-	-	6/18/38/38	0/3/3/3

All (73) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	F	402	ACP	O4'-C1'	16.40	1.62	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	D	501	GTP	C2'-C3'	-10.80	1.24	1.53
5	C	501	GTP	C2'-C3'	-10.69	1.24	1.53
5	A	501	GTP	C2'-C3'	-10.55	1.24	1.53
5	A	501	GTP	O4'-C1'	-7.76	1.30	1.40
9	B	504	MES	C8-S	-7.76	1.66	1.77
9	B	503	MES	C8-S	-7.66	1.66	1.77
5	D	501	GTP	O4'-C1'	-7.34	1.31	1.40
5	C	501	GTP	O4'-C1'	-7.20	1.31	1.40
10	B	505	DJ9	C6-C7	-6.41	1.39	1.49
11	F	402	ACP	O4'-C4'	-6.32	1.30	1.45
11	F	402	ACP	PB-O3A	6.27	1.65	1.58
11	F	402	ACP	PA-O3A	5.56	1.65	1.59
5	D	501	GTP	C2-N3	5.55	1.46	1.33
5	A	501	GTP	C2-N3	5.48	1.46	1.33
5	C	501	GTP	C2-N3	5.47	1.46	1.33
5	A	501	GTP	PB-O3A	5.22	1.65	1.59
5	D	501	GTP	C4-N3	5.13	1.49	1.37
5	A	501	GTP	C4-N3	5.06	1.49	1.37
5	C	501	GTP	PB-O3B	5.01	1.64	1.59
5	C	501	GTP	C4-N3	5.00	1.49	1.37
5	A	501	GTP	PA-O3A	4.98	1.64	1.59
5	D	501	GTP	C2-N2	4.91	1.45	1.34
5	A	501	GTP	PB-O3B	4.86	1.64	1.59
5	A	501	GTP	C2-N2	4.81	1.45	1.34
5	C	501	GTP	C2-N2	4.78	1.45	1.34
5	D	501	GTP	PB-O3B	4.52	1.64	1.59
5	D	501	GTP	PA-O3A	4.47	1.64	1.59
5	D	501	GTP	PB-O3A	4.37	1.64	1.59
5	C	501	GTP	PA-O3A	4.35	1.64	1.59
5	C	501	GTP	C5'-C4'	-4.28	1.38	1.51
5	D	501	GTP	C5'-C4'	-4.20	1.38	1.51
5	C	501	GTP	PB-O3A	4.11	1.63	1.59
5	A	501	GTP	C5'-C4'	-3.99	1.39	1.51
5	C	501	GTP	C6-N1	3.77	1.43	1.37
5	A	501	GTP	C6-N1	3.76	1.43	1.37
5	D	501	GTP	C6-N1	3.72	1.43	1.37
10	B	505	DJ9	C12-C11	-3.49	1.38	1.48
5	A	501	GTP	C3'-C4'	3.34	1.61	1.53
5	D	501	GTP	C5-C6	3.23	1.53	1.47
5	A	501	GTP	C1'-N9	-3.22	1.41	1.50
5	C	501	GTP	C5-C6	3.21	1.53	1.47
11	F	402	ACP	C6-N6	3.21	1.45	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	D	501	GTP	C3'-C4'	3.14	1.61	1.53
5	A	501	GTP	O3'-C3'	3.11	1.50	1.43
5	A	501	GTP	C5-C6	3.11	1.53	1.47
5	D	501	GTP	C1'-N9	-3.09	1.41	1.50
5	C	501	GTP	O3'-C3'	3.03	1.50	1.43
5	D	501	GTP	O3'-C3'	3.01	1.50	1.43
5	C	501	GTP	C1'-N9	-2.98	1.42	1.50
5	C	501	GTP	C3'-C4'	2.98	1.60	1.53
11	F	402	ACP	O3'-C3'	-2.79	1.36	1.43
5	A	501	GTP	C2-N1	2.79	1.44	1.37
5	C	501	GTP	C2-N1	2.78	1.44	1.37
5	D	501	GTP	C2-N1	2.78	1.44	1.37
5	C	501	GTP	O4'-C4'	2.76	1.51	1.45
5	D	501	GTP	O4'-C4'	2.71	1.51	1.45
11	F	402	ACP	O2'-C2'	2.71	1.49	1.43
5	A	501	GTP	C5-C4	-2.64	1.36	1.43
5	D	501	GTP	C5-C4	-2.61	1.36	1.43
5	C	501	GTP	C5-C4	-2.61	1.36	1.43
5	A	501	GTP	O4'-C4'	2.58	1.50	1.45
10	B	505	DJ9	C11-N4	-2.45	1.32	1.35
10	B	505	DJ9	C11-N2	-2.33	1.32	1.35
11	F	402	ACP	C2-N3	2.24	1.35	1.32
8	B	501	GDP	C6-N1	-2.21	1.34	1.37
10	B	505	DJ9	O2-C3	2.19	1.40	1.37
11	F	402	ACP	C1'-N9	-2.15	1.44	1.49
10	B	505	DJ9	O3-C22	2.11	1.40	1.37
5	A	501	GTP	O2'-C2'	2.09	1.48	1.43
5	D	501	GTP	O2'-C2'	2.06	1.48	1.43
5	C	501	GTP	O2'-C2'	2.03	1.48	1.43
5	A	501	GTP	O6-C6	-2.01	1.18	1.23

All (43) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
11	F	402	ACP	C5-C6-N6	8.60	133.41	120.31
11	F	402	ACP	N3-C2-N1	-6.50	119.85	128.67
11	F	402	ACP	N6-C6-N1	-5.44	106.70	118.33
9	B	503	MES	C5-N4-C3	5.14	119.91	108.84
5	A	501	GTP	C4'-O4'-C1'	-4.17	106.11	109.92
9	B	504	MES	C5-N4-C3	4.11	117.69	108.84
5	C	501	GTP	C4'-O4'-C1'	-3.74	106.50	109.92
10	B	505	DJ9	C8-N1-C7	3.61	120.67	118.01

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	D	501	GTP	C4'-O4'-C1'	-3.41	106.80	109.92
10	B	505	DJ9	C6-C7-N1	3.38	120.36	115.38
5	D	501	GTP	C8-N7-C5	3.35	108.25	102.55
5	A	501	GTP	C8-N7-C5	3.30	108.18	102.55
9	B	504	MES	C6-C5-N4	-3.28	105.13	110.12
5	C	501	GTP	C8-N7-C5	3.24	108.06	102.55
5	D	501	GTP	C5-C6-N1	3.10	119.98	114.07
10	B	505	DJ9	C6-C7-C20	-3.09	118.88	123.59
10	B	505	DJ9	O3-C22-C2	3.06	120.38	115.14
5	A	501	GTP	C5-C6-N1	3.04	119.86	114.07
5	C	501	GTP	C5-C6-N1	3.03	119.86	114.07
5	D	501	GTP	C2-N1-C6	-2.96	119.69	125.11
5	C	501	GTP	C2-N1-C6	-2.94	119.73	125.11
5	A	501	GTP	C2-N1-C6	-2.93	119.74	125.11
11	F	402	ACP	C4'-O4'-C1'	-2.92	107.25	109.92
8	B	501	GDP	C8-N7-C5	2.87	107.43	102.55
9	B	503	MES	C7-N4-C5	2.79	118.68	111.24
10	B	505	DJ9	O2-C3-C2	2.77	119.88	115.14
9	B	503	MES	C7-N4-C3	2.58	118.12	111.24
9	B	503	MES	C2-C3-N4	-2.44	106.41	110.12
11	F	402	ACP	PB-O3A-PA	-2.35	124.71	132.37
10	B	505	DJ9	O3-C22-C21	-2.31	120.09	124.08
5	D	501	GTP	O6-C6-C5	-2.15	120.05	124.32
5	A	501	GTP	O6-C6-C5	-2.15	120.06	124.32
9	B	503	MES	C6-C5-N4	-2.13	106.88	110.12
9	B	504	MES	C7-N4-C5	2.12	116.88	111.24
8	B	501	GDP	C5-C6-N1	2.12	118.11	114.07
10	B	505	DJ9	C11-N2-C10	2.11	107.97	103.78
8	B	501	GDP	O2A-PA-O3A	2.07	112.88	107.27
9	B	504	MES	C7-N4-C3	2.07	116.74	111.24
5	C	501	GTP	O6-C6-C5	-2.06	120.24	124.32
10	B	505	DJ9	C23-O3-C22	-2.05	114.50	117.51
9	B	503	MES	O1S-S-C8	2.01	109.77	106.73
10	B	505	DJ9	C12-C11-N2	2.01	126.20	123.55
9	B	504	MES	O3S-S-C8	2.00	109.93	106.00

There are no chirality outliers.

All (30) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	501	GTP	PB-O3B-PG-O2G
5	C	501	GTP	PB-O3B-PG-O3G

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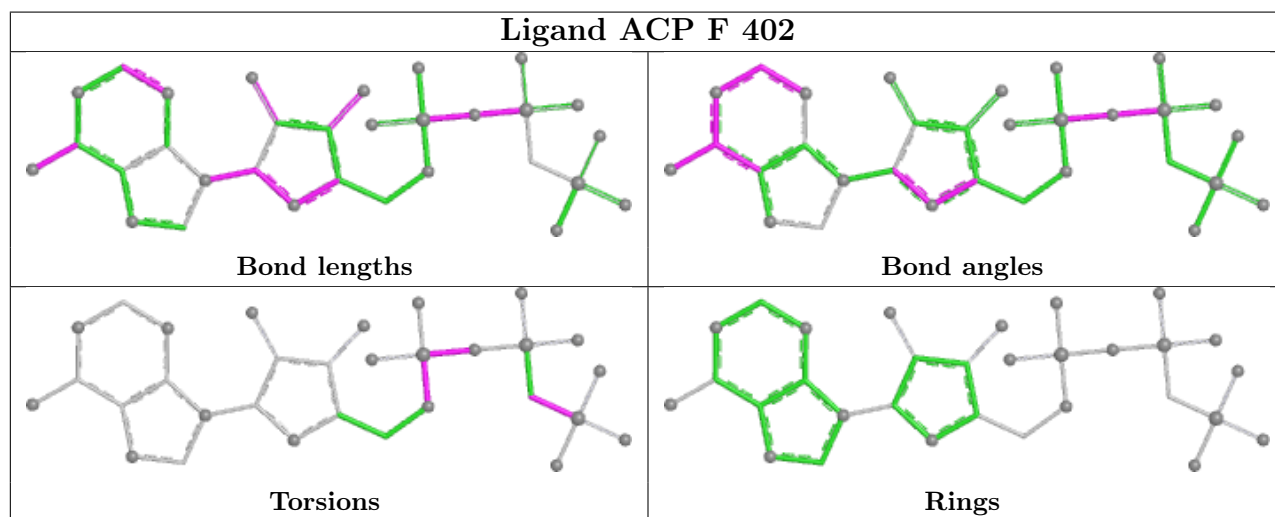
Mol	Chain	Res	Type	Atoms
5	C	501	GTP	C5'-O5'-PA-O3A
5	C	501	GTP	C5'-O5'-PA-O1A
5	C	501	GTP	C5'-O5'-PA-O2A
5	D	501	GTP	PB-O3B-PG-O2G
5	D	501	GTP	C5'-O5'-PA-O3A
5	D	501	GTP	C5'-O5'-PA-O1A
5	D	501	GTP	C5'-O5'-PA-O2A
8	B	501	GDP	C5'-O5'-PA-O3A
8	B	501	GDP	C5'-O5'-PA-O1A
8	B	501	GDP	C5'-O5'-PA-O2A
9	B	503	MES	N4-C7-C8-S
9	B	504	MES	C7-C8-S-O1S
11	F	402	ACP	PB-C3B-PG-O1G
11	F	402	ACP	PB-C3B-PG-O2G
11	F	402	ACP	PB-C3B-PG-O3G
11	F	402	ACP	C5'-O5'-PA-O1A
11	F	402	ACP	C5'-O5'-PA-O2A
9	B	504	MES	C7-C8-S-O3S
9	B	503	MES	C8-C7-N4-C5
9	B	504	MES	C7-C8-S-O2S
11	F	402	ACP	C5'-O5'-PA-O3A
5	A	501	GTP	C4'-C5'-O5'-PA
11	F	402	ACP	PB-O3A-PA-O1A
5	A	501	GTP	PB-O3B-PG-O3G
5	C	501	GTP	PB-O3B-PG-O2G
5	D	501	GTP	PB-O3B-PG-O3G
11	F	402	ACP	PB-O3A-PA-O2A
5	D	501	GTP	PB-O3B-PG-O1G

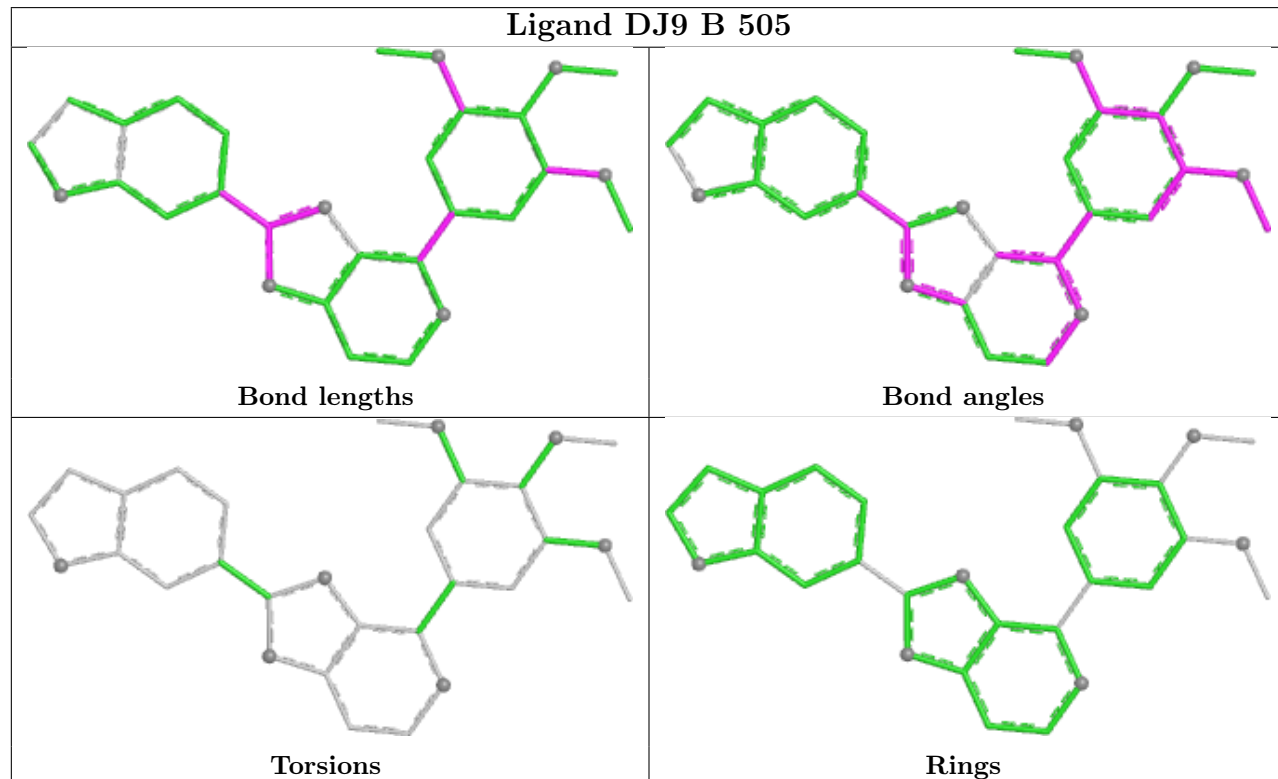
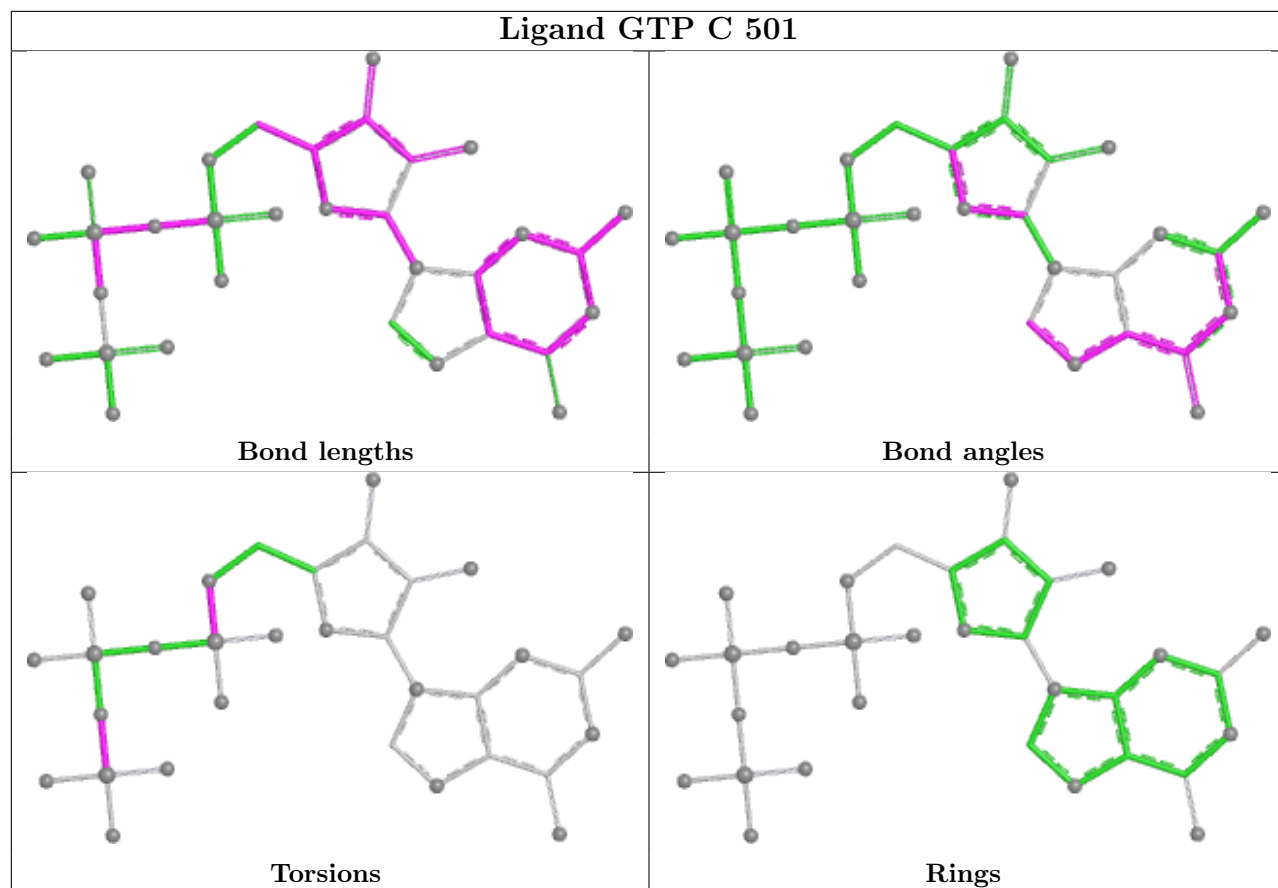
There are no ring outliers.

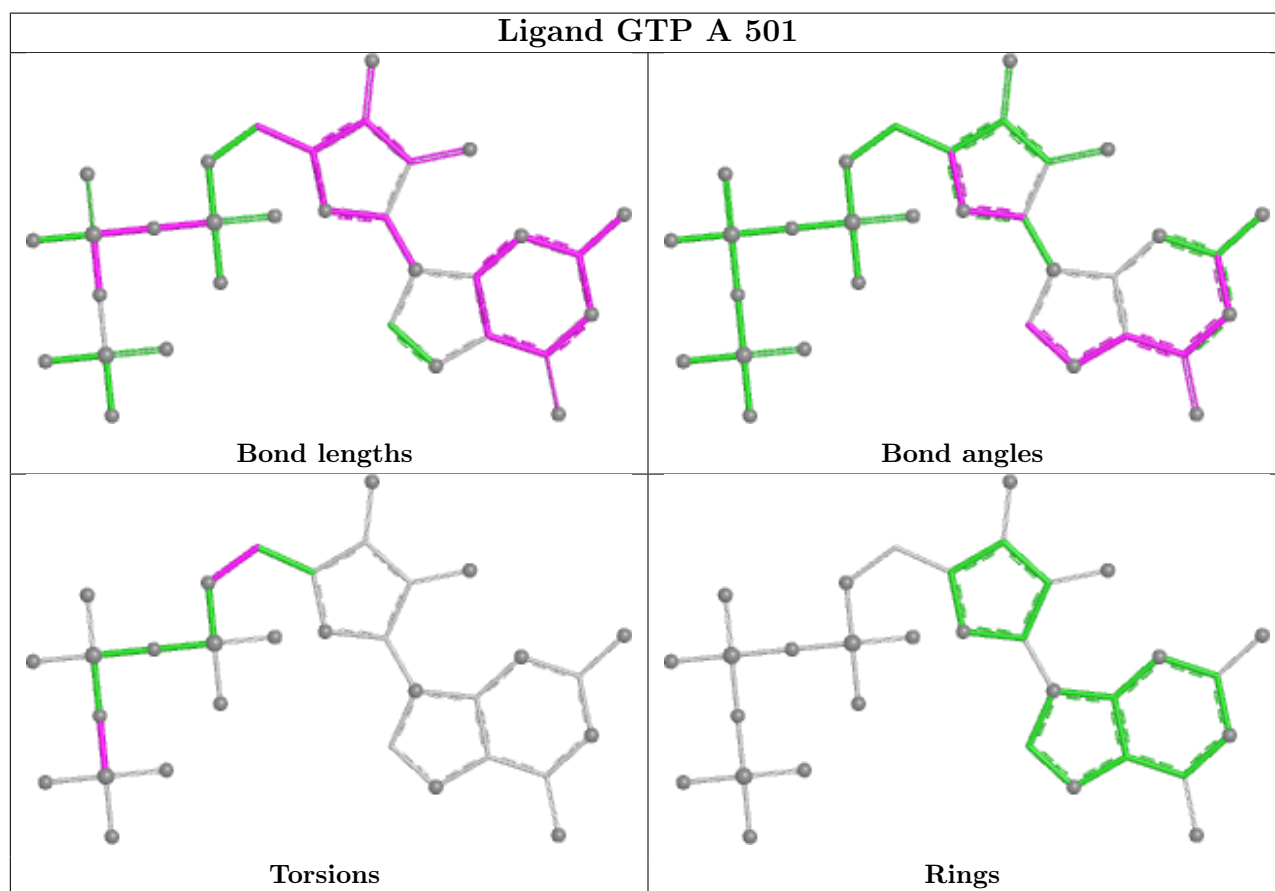
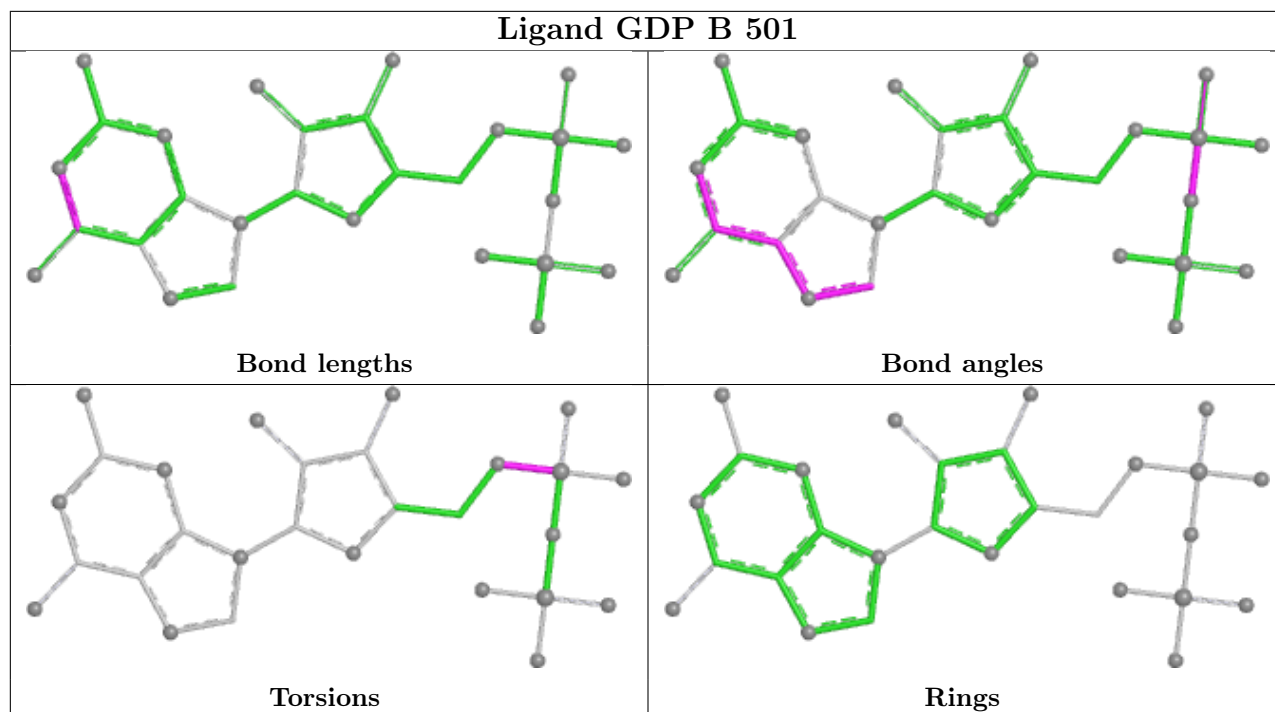
8 monomers are involved in 9 short contacts:

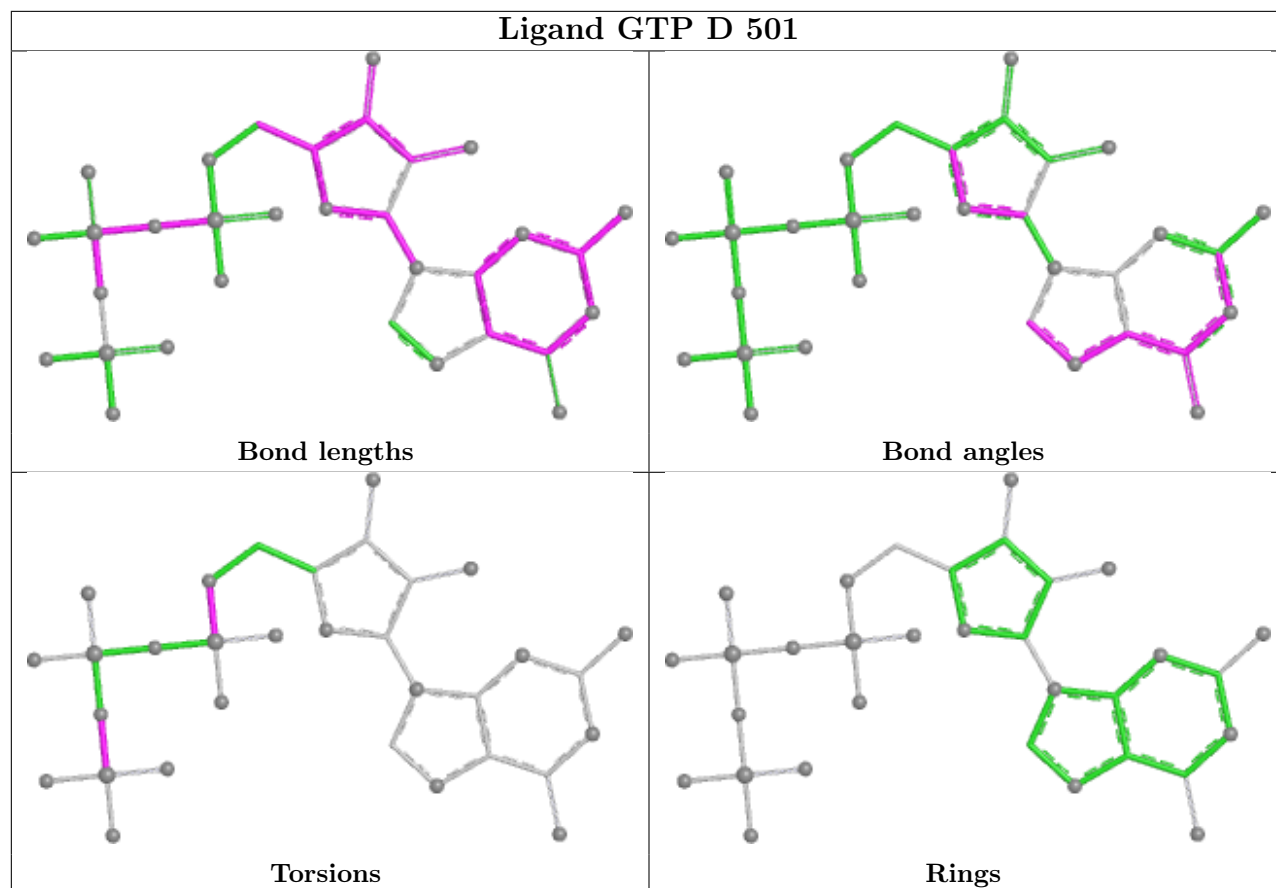
Mol	Chain	Res	Type	Clashes	Symm-Clashes
11	F	402	ACP	1	0
9	B	504	MES	1	0
9	B	503	MES	1	0
5	C	501	GTP	1	0
10	B	505	DJ9	1	0
8	B	501	GDP	1	0
5	A	501	GTP	2	0
5	D	501	GTP	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.









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	439/450 (97%)	0.11	12 (2%) 56 53	25, 43, 71, 95	0
1	C	440/450 (97%)	-0.13	15 (3%) 48 45	20, 33, 57, 79	0
2	B	427/445 (95%)	0.25	29 (6%) 25 22	20, 41, 78, 118	0
2	D	421/445 (94%)	0.77	46 (10%) 12 10	31, 58, 89, 112	0
3	E	121/143 (84%)	0.75	14 (11%) 11 9	30, 57, 88, 109	0
4	F	339/384 (88%)	1.29	94 (27%) 2 2	29, 66, 112, 133	0
All	All	2187/2317 (94%)	0.44	210 (9%) 15 13	20, 47, 91, 133	0

All (210) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	D	95	SER	6.0
2	D	397	TRP	5.8
4	F	199	PHE	5.6
4	F	132	LEU	5.3
1	A	179	THR	5.3
2	B	57	ASN	5.3
4	F	151	SER	5.2
4	F	100	ILE	5.1
2	B	245	GLN	5.1
4	F	235	ASP	5.1
2	D	1	MET	4.9
4	F	101	TYR	4.9
4	F	177	GLY	4.9
4	F	159	GLY	4.9
3	E	141	GLU	4.7
2	D	394	PHE	4.7
2	D	55	THR	4.5
4	F	362	ALA	4.5
3	E	48	GLU	4.4

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Mol	Chain	Res	Type	RSRZ
4	F	252	ASN	4.4
4	F	171	ASP	4.3
4	F	169	LEU	4.3
4	F	245	ILE	4.1
4	F	149	ALA	4.0
4	F	244	CYS	4.0
4	F	173	ILE	3.9
2	D	219	THR	3.9
4	F	172	PHE	3.8
4	F	128	ARG	3.8
4	F	160	ILE	3.8
4	F	135	TYR	3.8
4	F	161	LEU	3.7
2	D	405	GLU	3.7
4	F	131	PHE	3.7
4	F	144	GLY	3.7
2	D	178	THR	3.6
3	E	139	LEU	3.6
4	F	247	LYS	3.6
2	D	54	ALA	3.6
2	B	274	THR	3.6
2	D	284	LEU	3.6
4	F	170	LEU	3.6
4	F	231	ALA	3.5
2	D	96	GLY	3.5
1	A	346	TRP	3.5
1	A	262	TYR	3.5
1	C	1	MET	3.5
1	A	438	ASP	3.5
4	F	232	ASN	3.4
3	E	6	MET	3.4
4	F	130	VAL	3.4
2	D	80	PRO	3.4
4	F	181	VAL	3.4
4	F	237	THR	3.4
2	B	246	LEU	3.3
2	D	273	LEU	3.3
2	D	218	THR	3.3
4	F	383	HIS	3.3
2	D	239	CYS	3.3
4	F	221	LEU	3.3
2	D	390	ARG	3.2

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Mol	Chain	Res	Type	RSRZ
1	C	280	LYS	3.2
1	A	439	SER	3.2
4	F	99	VAL	3.2
2	B	275	SER	3.2
2	D	37	HIS	3.2
4	F	382	HIS	3.2
2	B	72	THR	3.2
2	D	221	THR	3.2
2	D	73	MET	3.1
2	B	55	THR	3.1
4	F	373	SER	3.1
4	F	168	GLU	3.1
4	F	178	GLN	3.1
1	A	178	SER	3.1
2	B	278	SER	3.1
4	F	142	ARG	3.1
4	F	146	VAL	3.1
3	E	28	SER	3.0
4	F	143	GLU	3.0
2	B	248	ALA	3.0
1	C	340	SER	3.0
1	C	247	ALA	3.0
4	F	381	HIS	2.9
4	F	175	GLU	2.9
1	C	163	LYS	2.9
4	F	236	LYS	2.9
2	D	389	PHE	2.9
3	E	9	ILE	2.9
4	F	182	ILE	2.9
4	F	136	ASN	2.9
2	B	280	GLN	2.9
1	A	124	LYS	2.9
4	F	166	ALA	2.9
1	C	283	HIS	2.9
2	D	31	ASP	2.8
4	F	102	PRO	2.8
4	F	162	ILE	2.8
2	D	140	GLY	2.8
2	D	360	GLY	2.8
4	F	129	GLU	2.8
4	F	296	MET	2.8
2	B	244	GLY	2.8

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Mol	Chain	Res	Type	RSRZ
4	F	165	GLU	2.8
2	D	175	VAL	2.8
4	F	259	GLY	2.8
1	C	368	LEU	2.8
4	F	148	ILE	2.7
4	F	150	LYS	2.7
4	F	137	ARG	2.7
2	B	54	ALA	2.7
2	B	96	GLY	2.7
2	D	42	LEU	2.7
4	F	332	VAL	2.7
4	F	133	ALA	2.7
2	B	56	GLY	2.7
4	F	372	THR	2.7
4	F	188	LYS	2.7
1	A	282	TYR	2.7
4	F	380	HIS	2.7
4	F	139	ARG	2.7
4	F	227	PRO	2.7
4	F	176	GLN	2.6
2	D	98	GLY	2.6
2	B	279	GLN	2.6
2	D	216	LYS	2.6
2	D	170	MET	2.6
2	B	239	CYS	2.6
2	D	24	ILE	2.6
1	C	302	MET	2.6
2	D	84	ILE	2.6
2	D	57	ASN	2.5
4	F	234	GLN	2.5
2	B	42	LEU	2.5
4	F	191	LEU	2.5
4	F	145	ASN	2.5
2	B	37	HIS	2.5
4	F	246	GLN	2.5
2	B	95	SER	2.4
2	B	323	MET	2.4
4	F	263	PHE	2.4
2	D	176	SER	2.4
2	B	406	MET	2.4
3	E	96	MET	2.4
4	F	321	VAL	2.4

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Mol	Chain	Res	Type	RSRZ
4	F	86	GLU	2.4
1	A	232	SER	2.4
2	D	2	ARG	2.4
2	D	56	GLY	2.4
2	D	291	GLN	2.4
4	F	147	TRP	2.3
1	C	218	ASP	2.3
4	F	134	ALA	2.3
4	F	242	ASN	2.3
2	D	214	THR	2.3
3	E	57	ALA	2.3
4	F	70	LYS	2.3
1	C	440	VAL	2.3
4	F	384	HIS	2.3
2	D	387	ALA	2.3
1	A	177	VAL	2.3
2	B	243	PRO	2.3
2	D	245	GLN	2.3
4	F	228	TYR	2.2
4	F	32	LYS	2.2
3	E	7	GLU	2.2
4	F	164	SER	2.2
1	C	279	GLU	2.2
2	B	281	TYR	2.2
4	F	194	PRO	2.2
1	C	337	THR	2.2
3	E	115	HIS	2.2
4	F	241	THR	2.2
4	F	225	SER	2.2
1	A	423	GLU	2.2
4	F	186	LEU	2.2
3	E	27	PRO	2.2
4	F	320	MET	2.2
4	F	226	GLU	2.1
2	B	276	ARG	2.1
3	E	120	LEU	2.1
1	A	365	GLY	2.1
4	F	163	SER	2.1
4	F	31	ARG	2.1
2	D	396	HIS	2.1
2	D	220	PRO	2.1
3	E	45	PRO	2.1

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Mol	Chain	Res	Type	RSRZ
2	D	94	GLN	2.1
4	F	140	GLU	2.1
1	C	2	ARG	2.1
2	D	431	ASP	2.1
2	D	126	SER	2.1
2	D	400	GLY	2.1
2	B	247	ASN	2.1
1	C	361	THR	2.1
2	B	33	THR	2.1
1	C	284	GLU	2.0
3	E	59	GLU	2.0
2	B	41	ASP	2.0
2	D	39	ASP	2.0
4	F	90	SER	2.0
4	F	341	LYS	2.0
4	F	192	LEU	2.0
2	B	2	ARG	2.0
4	F	179	VAL	2.0
2	D	404	ASP	2.0
4	F	195	GLY	2.0
4	F	233	PHE	2.0
4	F	184	LYS	2.0
2	B	73	MET	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](#)

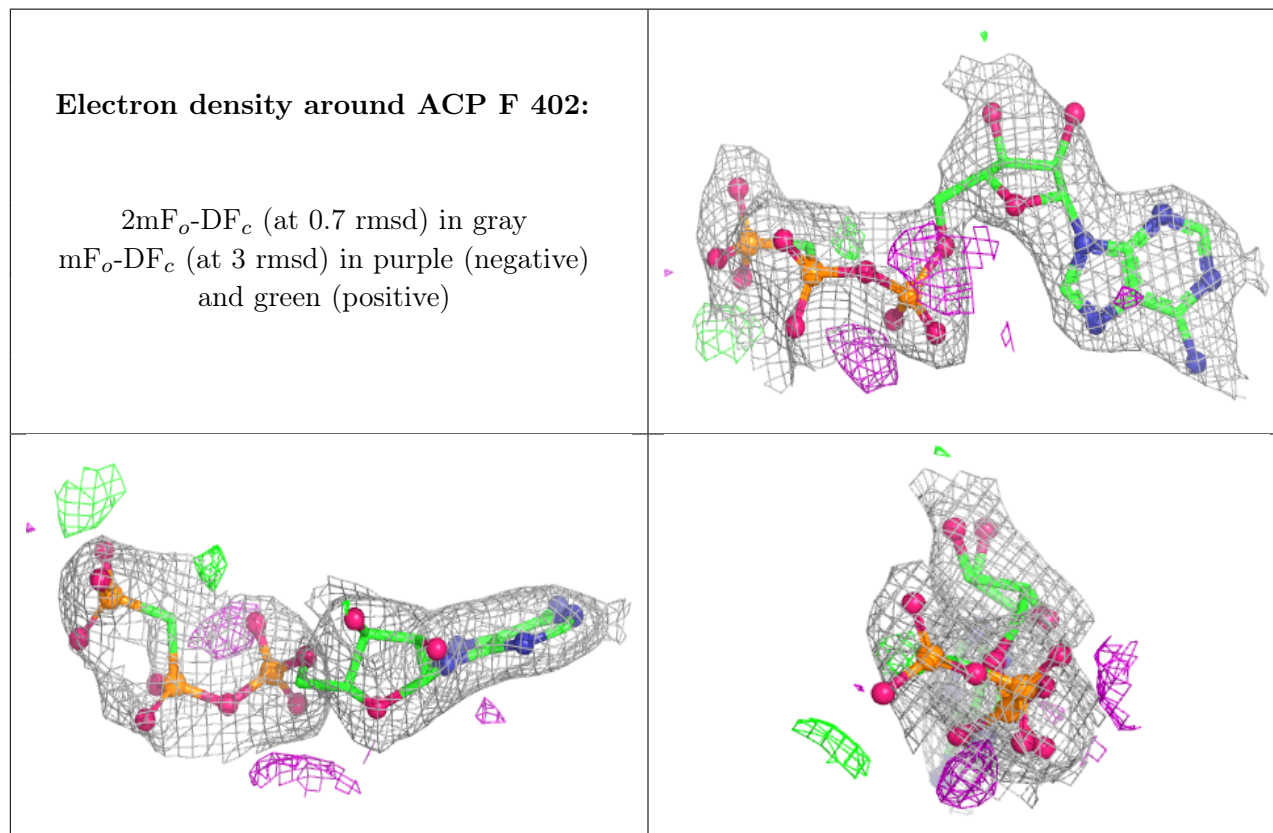
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

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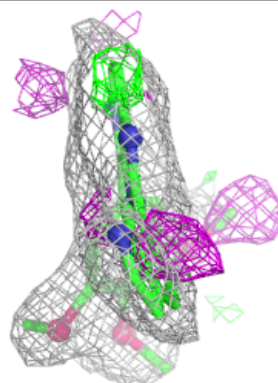
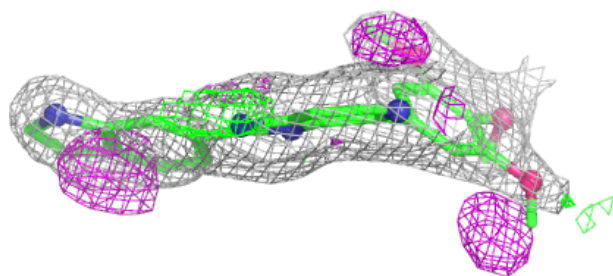
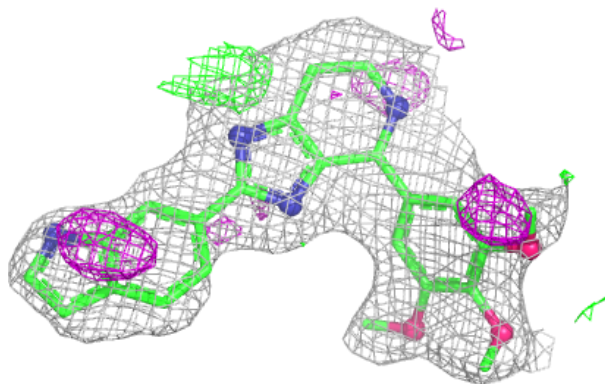
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
9	MES	B	503	12/12	0.83	0.22	64,85,106,110	0
11	ACP	F	402	31/31	0.83	0.14	63,86,116,117	0
9	MES	B	504	12/12	0.87	0.14	61,67,89,92	0
10	DJ9	B	505	30/30	0.88	0.16	51,61,68,74	0
6	MG	F	401	1/1	0.91	0.10	68,68,68,68	0
5	GTP	D	501	32/32	0.94	0.10	49,58,64,68	0
5	GTP	A	501	32/32	0.97	0.08	25,32,37,41	0
7	CA	A	503	1/1	0.98	0.04	61,61,61,61	0
8	GDP	B	501	28/28	0.98	0.07	21,30,35,41	0
5	GTP	C	501	32/32	0.98	0.05	25,27,31,32	0
6	MG	A	502	1/1	0.99	0.04	26,26,26,26	0
6	MG	B	502	1/1	0.99	0.04	33,33,33,33	0
7	CA	C	503	1/1	0.99	0.03	46,46,46,46	0
6	MG	C	502	1/1	0.99	0.02	26,26,26,26	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

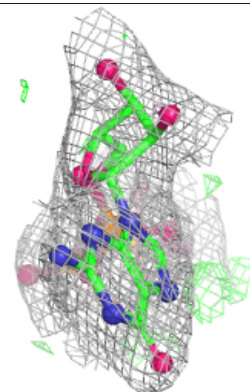
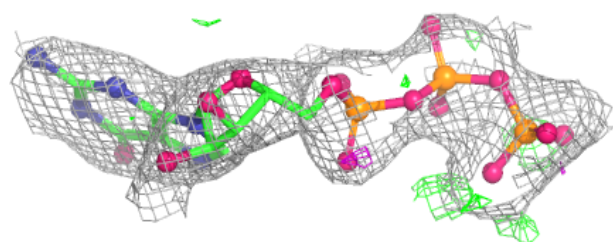
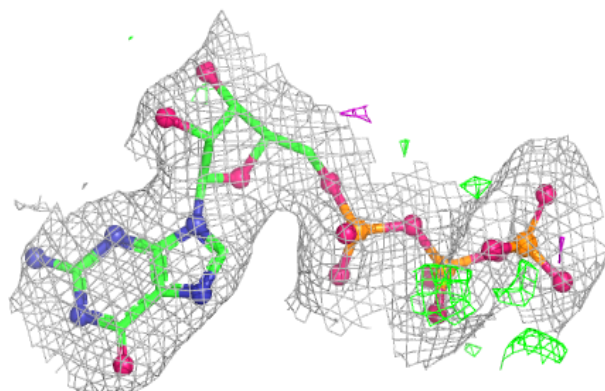


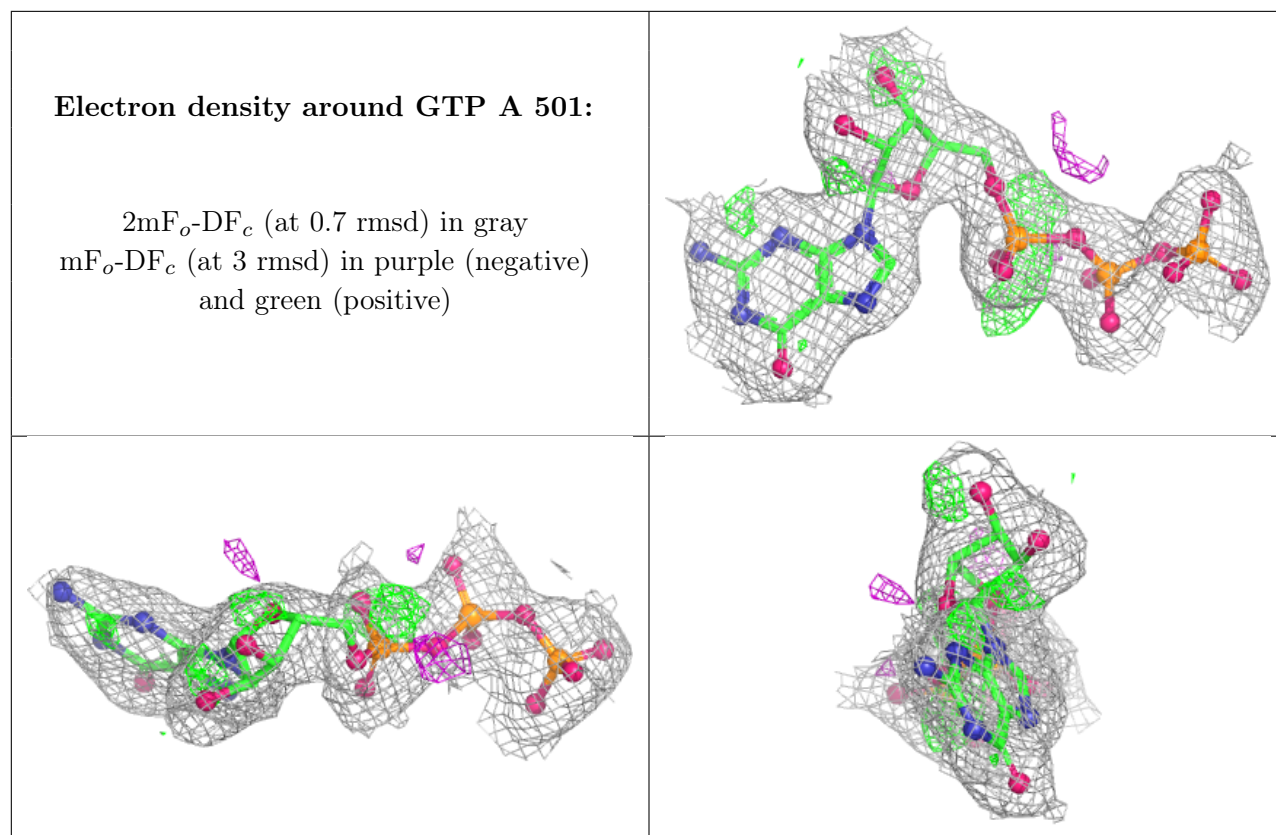
Electron density around DJ9 B 505:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

**Electron density around GTP D 501:**

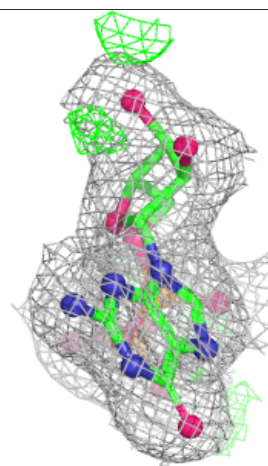
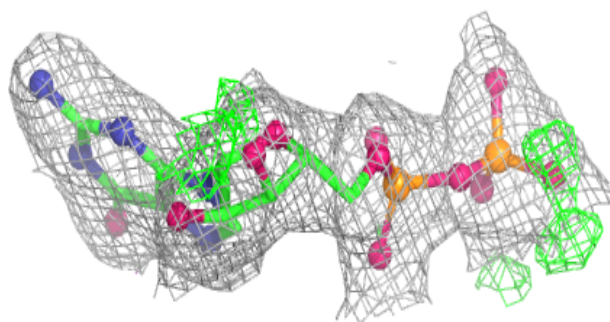
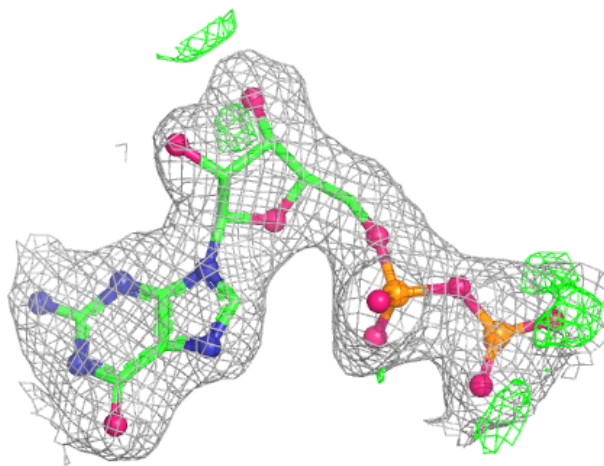
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

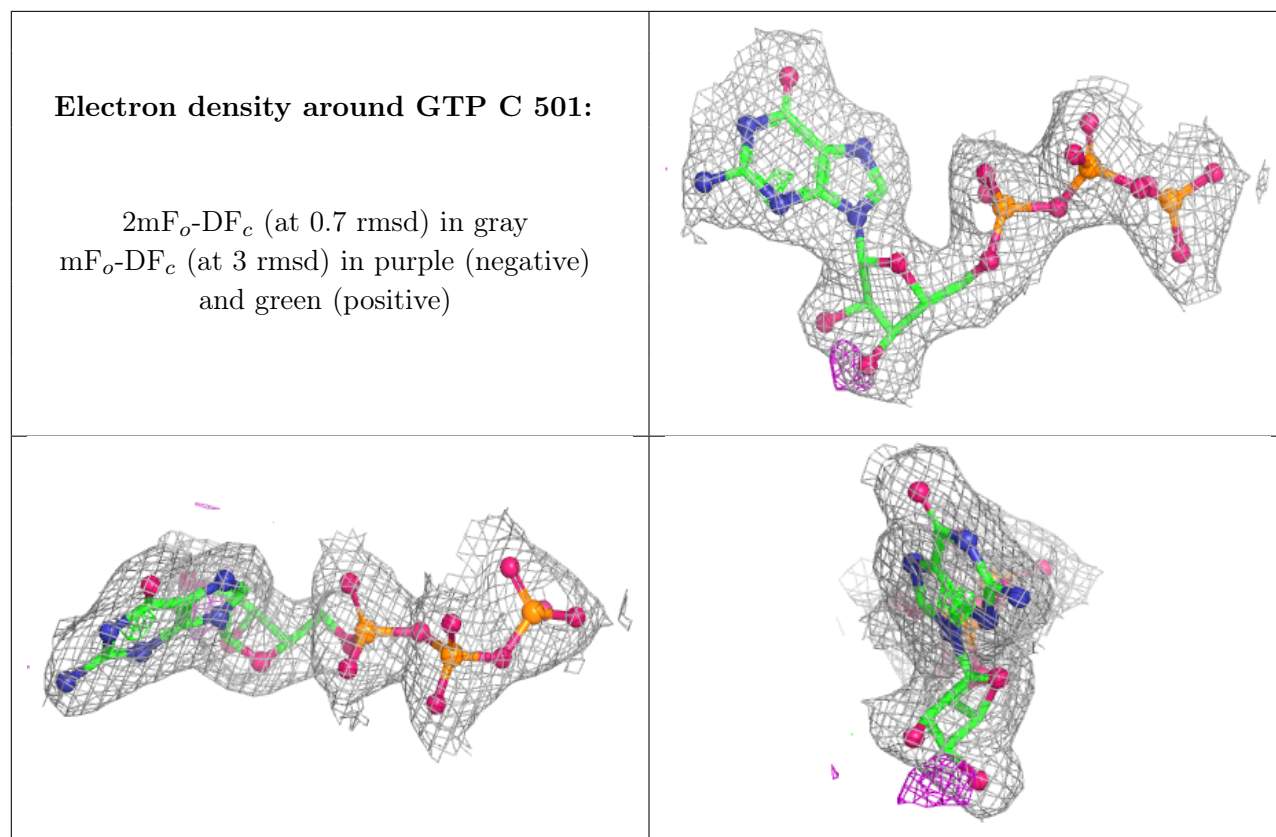




Electron density around GDP B 501:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





6.5 Other polymers [i](#)

There are no such residues in this entry.