



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 13, 2023 – 03:25 pm GMT

PDB ID : 8BDG
Title : Tubulin-taxane-2b complex
Authors : Prota, A.E.; Lucena-Agell, D.; Ma, Y.; Estevez-Gallego, J.; Li, S.; Bargsten, K.; Altmann, K.H.; Gaillard, N.; Kamimura, S.; Muehlethaler, T.; Gago, F.; Oliva, M.A.; Steinmetz, M.O.; Fang, W.S.; Diaz, J.F.
Deposited on : 2022-10-19
Resolution : 2.35 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 : 1.8.4, CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : 2.32.1
buster-report : 1.1.7 (2018)
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) : 2.32.1

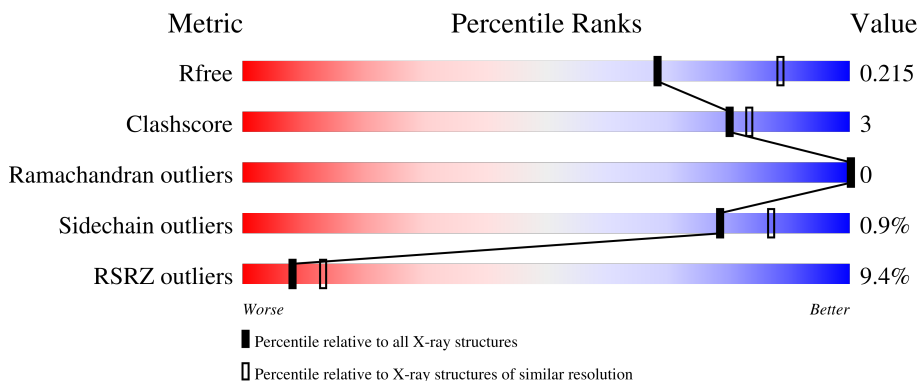
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.35 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.



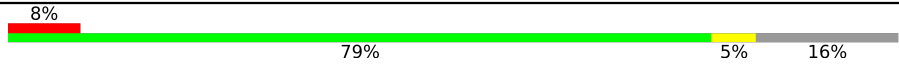

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1164 (2.36-2.36)
Clashscore	141614	1232 (2.36-2.36)
Ramachandran outliers	138981	1211 (2.36-2.36)
Sidechain outliers	138945	1212 (2.36-2.36)
RSRZ outliers	127900	1150 (2.36-2.36)

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	 6% 89% 9%
1	C	451	 2% 91% 6%
2	B	445	 5% 86% 10%
2	D	445	 7% 88% 7%

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Mol	Chain	Length	Quality of chain
3	E	143	 8% 79% 5% 16%
4	F	384	 28% 78% 5% 17%

2 Entry composition [i](#)

There are 11 unique types of molecules in this entry. The entry contains 17628 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	441	Total	C	N	O	S	0	0	0
			3446	2179	585	660	22			
1	C	440	Total	C	N	O	S	0	2	0
			3447	2181	585	659	22			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	426	Total	C	N	O	S	0	0	0
			3359	2110	575	647	27			
2	D	426	Total	C	N	O	S	0	1	0
			3354	2104	574	649	27			

- Molecule 3 is a protein called Stathmin-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	E	120	Total	C	N	O	S	0	0	0
			994	614	180	195	5			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	3	MET	-	initiating methionine	UNP P63043
E	4	ALA	-	expression tag	UNP P63043

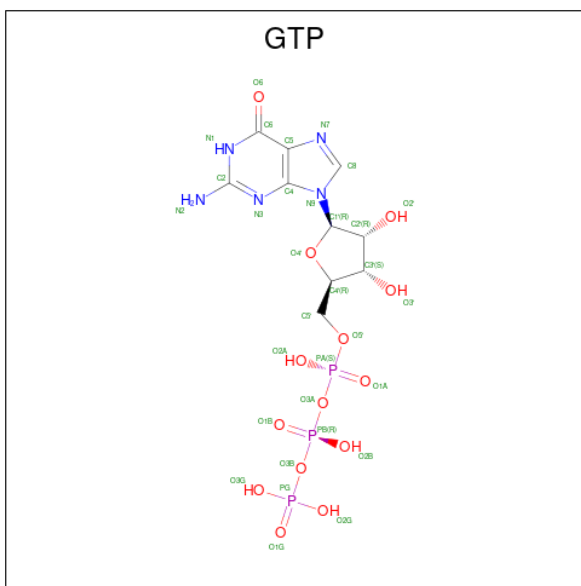
- Molecule 4 is a protein called Tubulin beta-2B chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	F	319	Total	C	N	O	S	0	0	0
			2614	1687	441	472	14			

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		

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

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

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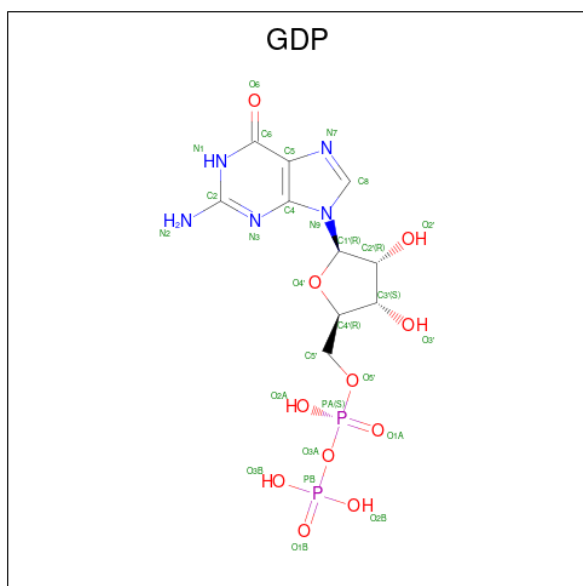
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	F	1	Total	Mg	0	0
			1	1		

- 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		

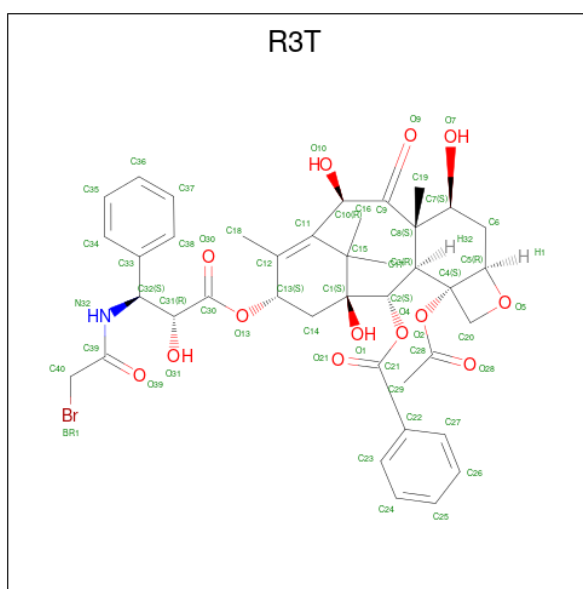
- Molecule 8 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: C₁₀H₁₅N₅O₁₁P₂).





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

- Molecule 10 is [(1 {S},2 {S},3 {R},4 {S},7 {R},9 {S},10 {S},12 {R},15 {S})-4-acetyloxy-15-[(2 {R},3 {S})-3-(2-bromanylethanoylamino)-2-oxidanyl-3-phenyl-propanoyl]oxy-10,14,16,16-tetramethyl-1,9,12-tris(oxidanyl)-11-oxidanylidene-6-oxatetracyclo[11.3.1.0^{3,10}.0^{4,7}]]heptadec-13-en-2-yl] benzoate (three-letter code: R3T) (formula: C₄₀H₄₆BrNO₁₃) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	Br	C	N	O		
10	B	1	55	1	40	1	13	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	Br	C	N	O		
10	D	1	55	1	40	1	13	0	0

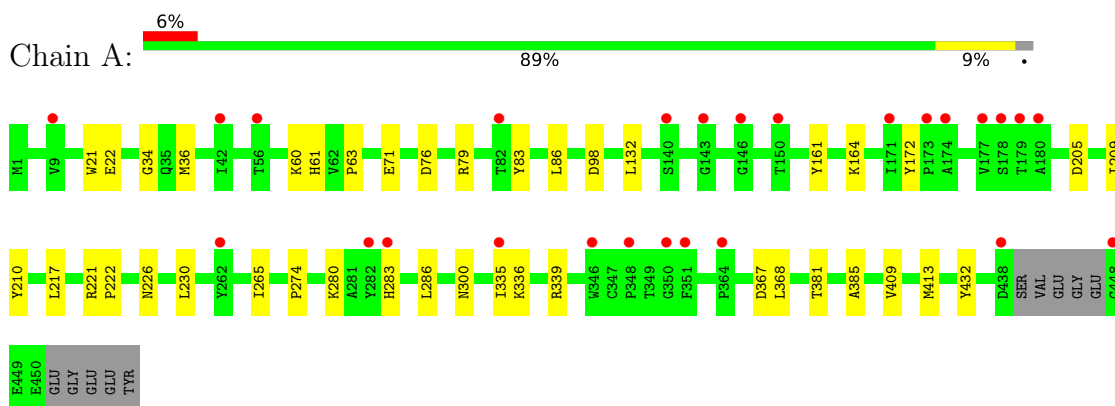
- Molecule 11 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
11	A	29	Total 29	O 29	0	0
11	B	35	Total 35	O 35	0	0
11	C	89	Total 89	O 89	0	0
11	D	8	Total 8	O 8	0	0
11	E	4	Total 4	O 4	0	0
11	F	1	Total 1	O 1	0	0

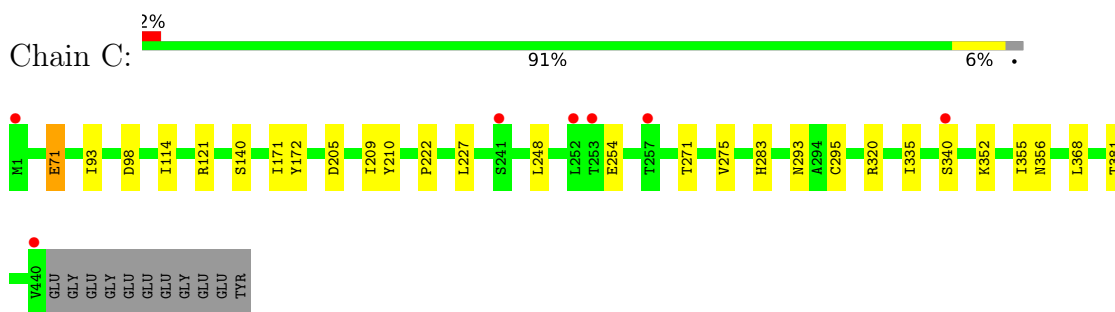
3 Residue-property plots [i](#)

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.

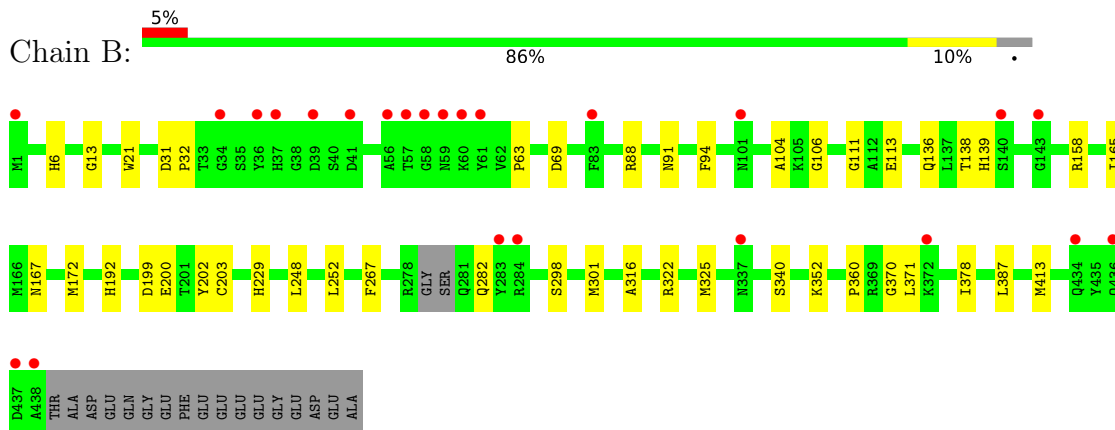
- Molecule 1: Tubulin alpha-1B chain



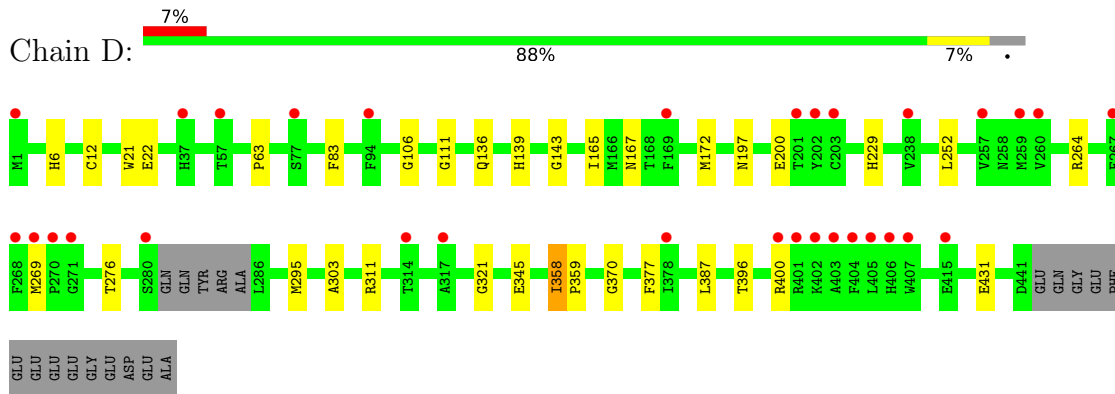
- Molecule 1: Tubulin alpha-1B chain



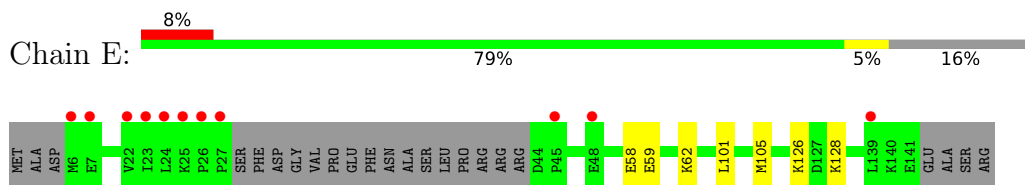
- Molecule 2: Tubulin beta-2B chain



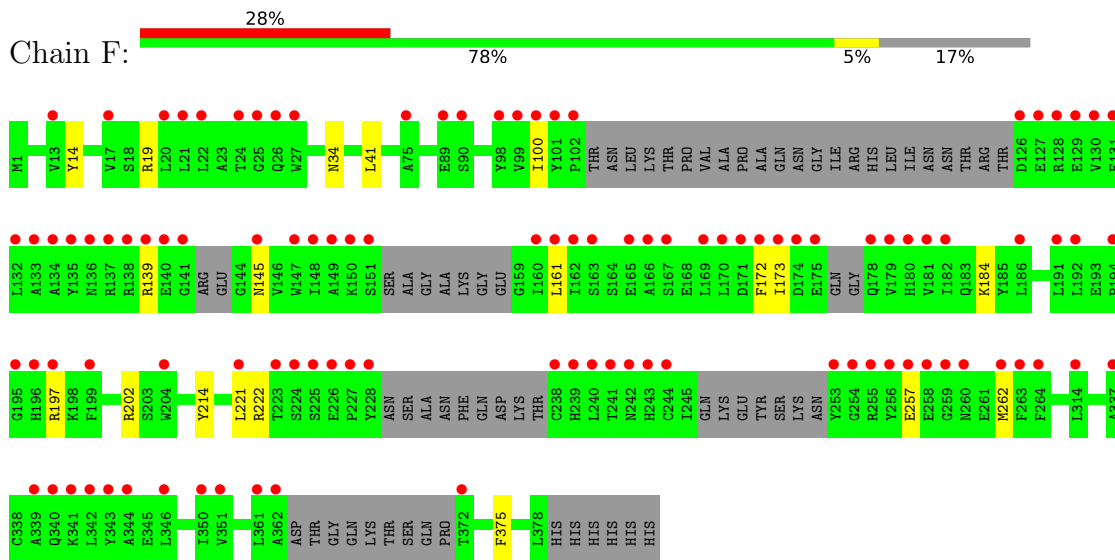
• Molecule 2: Tubulin beta-2B chain



• Molecule 3: Stathmin-4



• Molecule 4: Tubulin beta-2B chain



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	105.25Å 158.64Å 179.19Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.37 – 2.35 49.37 – 2.35	Depositor EDS
% Data completeness (in resolution range)	100.0 (49.37-2.35) 100.0 (49.37-2.35)	Depositor EDS
R_{merge}	0.18	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.74 (at 2.34Å)	Xtrriage
Refinement program	PHENIX 1.13_2998	Depositor
R, R_{free}	0.183 , 0.214 0.185 , 0.215	Depositor DCC
R_{free} test set	6173 reflections (4.93%)	wwPDB-VP
Wilson B-factor (Å ²)	56.9	Xtrriage
Anisotropy	0.354	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 48.1	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	0.96	EDS
Total number of atoms	17628	wwPDB-VP
Average B, all atoms (Å ²)	76.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.32% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MES, CA, GDP, MG, R3T, GTP

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	0.25	0/3523	0.42	0/4780
1	C	0.26	0/3528	0.44	0/4790
2	B	0.26	0/3433	0.43	0/4648
2	D	0.25	0/3427	0.42	0/4640
3	E	0.24	0/1002	0.35	0/1329
4	F	0.24	0/2670	0.40	0/3603
All	All	0.25	0/17583	0.42	0/23790

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	3446	0	3348	22	0
1	C	3447	0	3360	13	1
2	B	3359	0	3241	25	1
2	D	3354	0	3234	22	0
3	E	994	0	1013	3	0
4	F	2614	0	2597	10	0
5	A	32	0	12	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	C	32	0	12	0	0
6	A	1	0	0	0	0
6	B	1	0	0	0	0
6	C	1	0	0	0	0
6	D	1	0	0	0	0
6	F	1	0	0	0	0
7	A	1	0	0	0	0
8	B	28	0	12	0	0
8	D	28	0	12	2	0
9	B	12	0	12	2	0
10	B	55	0	0	2	0
10	D	55	0	0	3	0
11	A	29	0	0	1	0
11	B	35	0	0	1	0
11	C	89	0	0	0	0
11	D	8	0	0	0	0
11	E	4	0	0	0	0
11	F	1	0	0	0	0
All	All	17628	0	16853	93	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 3.

All (93) 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:167:ASN:HD22	2:B:200:GLU:HB2	1.53	0.73
4:F:139:ARG:HB2	4:F:145:ASN:HD21	1.63	0.64
1:A:335:ILE:HG23	1:A:339:ARG:HG3	1.81	0.63
2:B:370:GLY:N	10:B:504:R3T:O31	2.31	0.62
2:D:269:MET:HG3	2:D:303:ALA:HB3	1.81	0.62
2:D:229:HIS:NE2	10:D:503:R3T:O39	2.28	0.61
2:D:167:ASN:HD22	2:D:200:GLU:HG3	1.66	0.61
1:C:275:VAL:HG13	1:C:368:LEU:HD21	1.85	0.59
2:D:6:HIS:CD2	2:D:21:TRP:HE1	2.21	0.58
1:A:172:TYR:HB3	1:A:205:ASP:HA	1.86	0.58
4:F:145:ASN:HA	4:F:184:LYS:HE2	1.87	0.57
2:B:158:ARG:CZ	9:B:503:MES:H21	2.34	0.57
3:E:58:GLU:HG2	3:E:62:LYS:HE3	1.87	0.56
2:D:264:ARG:NE	2:D:431:GLU:OE2	2.39	0.56
1:A:76:ASP:OD1	1:A:79:ARG:NH1	2.37	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:370:GLY:N	10:D:503:R3T:O31	2.22	0.56
2:B:199:ASP:OD2	9:B:503:MES:H52	2.07	0.55
1:A:280:LYS:HB2	1:A:283:HIS:NE2	2.21	0.54
1:A:217:LEU:HD21	1:A:368:LEU:HD23	1.89	0.54
2:D:321:GLY:HA2	2:D:359:PRO:HG3	1.89	0.54
2:B:316:ALA:HB3	2:B:378:ILE:HB	1.92	0.51
2:D:311[B]:ARG:NH2	2:D:345:GLU:OE2	2.41	0.51
2:B:165:ILE:HG21	2:B:252:LEU:HB3	1.93	0.51
2:B:136:GLN:HA	2:B:167:ASN:O	2.12	0.50
1:A:36:MET:HB3	1:A:61:HIS:CE1	2.47	0.49
2:B:6:HIS:CD2	2:B:21:TRP:HE1	2.30	0.49
2:B:298:SER:HA	2:B:301:MET:HE2	1.94	0.49
1:C:93:ILE:HD11	1:C:121:ARG:HG3	1.94	0.49
1:C:210:TYR:CZ	1:C:222:PRO:HD2	2.47	0.49
4:F:221:LEU:HD22	4:F:262:MET:HE3	1.93	0.49
1:C:254:GLU:HG2	1:C:352:LYS:HE2	1.94	0.49
4:F:202:ARG:HB2	4:F:222:ARG:HH21	1.78	0.49
1:A:98:ASP:HB2	5:A:501:GTP:O1G	2.13	0.49
2:B:229:HIS:HB3	10:B:504:R3T:C25	2.42	0.49
4:F:100:ILE:HD11	4:F:173:ILE:HD13	1.95	0.48
2:D:197:ASN:HD21	3:E:126:LYS:HE2	1.79	0.48
2:D:136:GLN:HA	2:D:167:ASN:O	2.14	0.48
2:D:172:MET:HE2	2:D:387:LEU:HD21	1.96	0.48
1:C:140:SER:HA	1:C:171:ILE:HB	1.96	0.48
2:D:396:THR:O	2:D:400:ARG:HB2	2.14	0.48
2:B:31:ASP:HB2	2:B:32:PRO:HD2	1.95	0.47
2:B:167:ASN:HD21	2:B:202:TYR:HE2	1.62	0.47
2:B:13:GLY:HA2	2:B:138:THR:HG22	1.95	0.47
1:C:172:TYR:HB3	1:C:205:ASP:HA	1.97	0.47
1:C:320:ARG:HA	1:C:356:ASN:O	2.15	0.47
2:D:143:GLY:HA3	8:D:501:GDP:O3A	2.14	0.47
1:A:210:TYR:CZ	1:A:222:PRO:HD2	2.50	0.47
1:A:265:ILE:HG23	1:A:432:TYR:CZ	2.50	0.47
2:D:12:CYS:HB2	8:D:501:GDP:C8	2.50	0.46
1:C:209:ILE:HG22	1:C:227:LEU:HD22	1.97	0.46
1:A:21:TRP:CZ3	1:A:63:PRO:HB3	2.51	0.46
2:D:106:GLY:O	2:D:111:GLY:HA3	2.15	0.46
2:B:340:SER:HB3	4:F:34:ASN:HD21	1.81	0.46
2:B:172:MET:HG3	2:B:387:LEU:HD11	1.97	0.46
1:A:409:VAL:HA	1:A:413:MET:O	2.16	0.46
2:D:229:HIS:HB3	10:D:503:R3T:C25	2.46	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:209:ILE:HG23	1:A:230:LEU:HD23	1.98	0.45
1:A:226:ASN:ND2	1:A:367:ASP:OD2	2.50	0.45
4:F:214:TYR:HB3	4:F:375:PHE:HB3	1.97	0.45
1:C:248:LEU:HD13	1:C:355:ILE:HD12	1.97	0.45
1:A:22:GLU:HG3	1:A:83:TYR:CE1	2.51	0.45
4:F:161:LEU:HD12	4:F:172:PHE:CG	2.51	0.45
2:D:165:ILE:HG21	2:D:252:LEU:HB3	1.98	0.45
2:B:322:ARG:HD3	2:B:322:ARG:HA	1.73	0.45
1:A:274:PRO:HB3	1:A:286:LEU:HD12	1.99	0.45
1:A:300:ASN:ND2	11:A:602:HOH:O	2.47	0.45
2:B:360:PRO:HG2	2:B:371:LEU:HB2	1.99	0.45
1:C:71:GLU:HB3	1:C:98:ASP:HB3	1.99	0.44
2:B:203:CYS:SG	2:B:267:PHE:HB3	2.58	0.44
2:D:22:GLU:HG2	2:D:83:PHE:CD1	2.52	0.44
2:D:295:MET:HE2	2:D:377:PHE:HB2	1.99	0.44
3:E:101:LEU:O	3:E:105:MET:HG2	2.17	0.44
2:B:248:LEU:HD21	2:B:352:LYS:HB3	1.98	0.44
2:B:69:ASP:O	2:B:94:PHE:HA	2.18	0.44
2:B:106:GLY:O	2:B:111:GLY:HA3	2.19	0.43
1:C:293:ASN:HA	1:C:335:ILE:HD11	1.99	0.43
2:D:21:TRP:CZ3	2:D:63:PRO:HB3	2.54	0.43
1:A:132:LEU:O	1:A:164:LYS:NZ	2.51	0.43
1:A:161:TYR:HB3	1:A:164:LYS:HD3	2.01	0.43
2:B:104:ALA:HB2	2:B:413:MET:SD	2.59	0.43
1:A:63:PRO:HD3	1:A:86:LEU:HG	2.01	0.42
1:C:271:THR:HG21	1:C:295:CYS:O	2.19	0.42
1:C:93:ILE:HG22	1:C:114:ILE:HD11	2.02	0.42
2:B:21:TRP:CZ3	2:B:63:PRO:HB3	2.55	0.42
1:A:280:LYS:HB2	1:A:283:HIS:CE1	2.54	0.42
2:B:192:HIS:ND1	11:B:602:HOH:O	2.37	0.42
2:D:172:MET:HG3	2:D:387:LEU:HD11	2.01	0.42
2:B:88:ARG:HD2	2:B:91:ASN:OD1	2.20	0.41
4:F:14:TYR:HB3	4:F:41:LEU:HD13	2.01	0.41
1:A:385:ALA:HB2	1:A:432:TYR:CG	2.56	0.41
2:D:358:ILE:H	2:D:358:ILE:HG12	1.64	0.41
1:A:34:GLY:HA3	1:A:60:LYS:HG3	2.03	0.41
4:F:197:ARG:NH1	4:F:257:GLU:OE2	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)
2:B:113:GLU:OE2	1:C:283:HIS:NE2[4_555]	2.14	0.06

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	437/451 (97%)	427 (98%)	10 (2%)	0	100	100
1	C	440/451 (98%)	433 (98%)	7 (2%)	0	100	100
2	B	422/445 (95%)	414 (98%)	8 (2%)	0	100	100
2	D	423/445 (95%)	414 (98%)	9 (2%)	0	100	100
3	E	116/143 (81%)	114 (98%)	2 (2%)	0	100	100
4	F	303/384 (79%)	295 (97%)	8 (3%)	0	100	100
All	All	2141/2319 (92%)	2097 (98%)	44 (2%)	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	371/379 (98%)	367 (99%)	4 (1%)	73	84
1	C	373/379 (98%)	370 (99%)	3 (1%)	81	89
2	B	369/383 (96%)	366 (99%)	3 (1%)	81	89
2	D	369/383 (96%)	366 (99%)	3 (1%)	81	89

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	E	108/127 (85%)	106 (98%)	2 (2%)	57	68
4	F	287/342 (84%)	286 (100%)	1 (0%)	92	96
All	All	1877/1993 (94%)	1861 (99%)	16 (1%)	78	87

All (16) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	71	GLU
1	A	221	ARG
1	A	336	LYS
1	A	381	THR
2	B	139	HIS
2	B	282	GLN
2	B	325	MET
1	C	71	GLU
1	C	340	SER
1	C	381	THR
2	D	139	HIS
2	D	276	THR
2	D	358	ILE
3	E	59	GLU
3	E	128	LYS
4	F	19	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	167	ASN
2	B	281	GLN
2	B	294	GLN
2	B	336	GLN
2	B	434	GLN
2	D	59	ASN
2	D	167	ASN
3	E	84	GLN
4	F	333	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 13 ligands modelled in this entry, 6 are monoatomic - leaving 7 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
10	R3T	D	503	-	60,60,60	0.93	3 (5%)	93,94,94	1.94	27 (29%)
8	GDP	D	501	6	24,30,30	0.96	1 (4%)	30,47,47	1.06	3 (10%)
8	GDP	B	501	6	24,30,30	0.94	1 (4%)	30,47,47	1.09	3 (10%)
9	MES	B	503	-	12,12,12	2.27	1 (8%)	14,16,16	1.92	4 (28%)
5	GTP	A	501	6	26,34,34	1.12	2 (7%)	32,54,54	1.45	7 (21%)
5	GTP	C	501	6	26,34,34	1.13	2 (7%)	32,54,54	1.37	6 (18%)
10	R3T	B	504	-	60,60,60	0.94	4 (6%)	93,94,94	1.87	23 (24%)

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. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
10	R3T	D	503	-	-	2/35/121/121	0/6/6/6
8	GDP	D	501	6	-	4/12/32/32	0/3/3/3
8	GDP	B	501	6	-	3/12/32/32	0/3/3/3
9	MES	B	503	-	-	4/6/14/14	0/1/1/1
5	GTP	A	501	6	-	8/18/38/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GTP	C	501	6	-	9/18/38/38	0/3/3/3
10	R3T	B	504	-	-	1/35/121/121	0/6/6/6

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	B	503	MES	C8-S	-7.63	1.66	1.77
5	C	501	GTP	C5-C6	-4.05	1.39	1.47
5	A	501	GTP	C5-C6	-3.90	1.39	1.47
10	B	504	R3T	O39-C39	3.07	1.29	1.23
10	D	503	R3T	O39-C39	3.00	1.29	1.23
10	D	503	R3T	C4-C3	2.49	1.60	1.54
10	B	504	R3T	O13-C13	-2.44	1.41	1.45
8	D	501	GDP	C6-N1	-2.42	1.34	1.37
8	B	501	GDP	C6-N1	-2.35	1.34	1.37
10	B	504	R3T	C4-C3	2.32	1.60	1.54
5	C	501	GTP	C2-N3	2.15	1.38	1.33
10	D	503	R3T	C22-C21	-2.10	1.45	1.50
5	A	501	GTP	C2-N3	2.10	1.38	1.33
10	B	504	R3T	C22-C21	-2.03	1.45	1.50

All (73) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	D	503	R3T	O4-C28-C29	6.27	122.10	110.68
10	B	504	R3T	O4-C28-C29	6.20	121.97	110.68
10	B	504	R3T	C31-C32-N32	5.01	121.99	109.31
10	B	504	R3T	C2-O2-C21	4.88	127.02	117.79
9	B	503	MES	C5-N4-C3	4.74	119.51	108.83
10	D	503	R3T	C2-O2-C21	4.74	126.75	117.79
10	D	503	R3T	C31-C32-N32	4.55	120.83	109.31
10	B	504	R3T	O10-C10-C9	4.33	116.73	109.51
10	D	503	R3T	O10-C10-C9	4.32	116.72	109.51
10	B	504	R3T	C11-C10-C9	-4.28	109.12	114.05
10	D	503	R3T	C8-C9-C10	4.25	129.01	122.69
10	D	503	R3T	C20-C4-C5	-3.97	81.18	85.40
10	B	504	R3T	C17-C15-C16	-3.90	94.79	106.26
10	D	503	R3T	C11-C10-C9	-3.89	109.57	114.05
10	B	504	R3T	C20-C4-C5	-3.87	81.29	85.40
10	B	504	R3T	C8-C9-C10	3.86	128.44	122.69
10	D	503	R3T	C4-O4-C28	3.80	128.89	119.06
10	D	503	R3T	C17-C15-C16	-3.75	95.23	106.26

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	B	504	R3T	C4-O4-C28	3.59	128.35	119.06
10	B	504	R3T	O4-C28-O28	-3.46	117.25	123.61
10	D	503	R3T	O5-C5-C4	3.43	94.43	90.58
10	D	503	R3T	O4-C28-O28	-3.29	117.56	123.61
10	B	504	R3T	O5-C5-C4	3.22	94.20	90.58
5	C	501	GTP	C5-C6-N1	3.10	119.43	113.95
10	D	503	R3T	C18-C12-C11	-3.08	121.57	125.30
10	D	503	R3T	O1-C1-C2	3.03	112.15	105.49
5	A	501	GTP	C8-N7-C5	3.03	108.77	102.99
10	D	503	R3T	C4-C3-C2	3.03	117.58	111.66
5	A	501	GTP	C5-C6-N1	3.01	119.27	113.95
5	C	501	GTP	C8-N7-C5	3.00	108.70	102.99
10	D	503	R3T	C3-C8-C9	2.90	121.31	116.31
8	B	501	GDP	PA-O3A-PB	-2.77	123.33	132.83
5	A	501	GTP	PA-O3A-PB	-2.75	123.38	132.83
5	C	501	GTP	C2-N1-C6	-2.74	120.06	125.10
5	A	501	GTP	C2-N1-C6	-2.72	120.09	125.10
5	C	501	GTP	PA-O3A-PB	-2.68	123.62	132.83
10	B	504	R3T	C4-C3-C2	2.66	116.87	111.66
5	A	501	GTP	PB-O3B-PG	-2.65	123.75	132.83
10	D	503	R3T	O10-C10-C11	-2.58	107.31	111.48
10	D	503	R3T	O1-C1-C15	-2.57	103.19	109.02
8	D	501	GDP	PA-O3A-PB	-2.55	124.07	132.83
10	B	504	R3T	O1-C1-C2	2.52	111.03	105.49
10	D	503	R3T	O13-C13-C12	2.50	115.83	109.78
10	B	504	R3T	C17-C15-C1	2.48	116.64	111.11
10	B	504	R3T	O10-C10-C11	-2.44	107.54	111.48
5	C	501	GTP	PB-O3B-PG	-2.42	124.52	132.83
8	D	501	GDP	C8-N7-C5	2.42	107.60	102.99
5	A	501	GTP	O3G-PG-O3B	2.40	112.67	104.64
8	B	501	GDP	C8-N7-C5	2.36	107.48	102.99
10	D	503	R3T	C10-C11-C12	-2.35	117.10	120.65
9	B	503	MES	O3S-S-C8	2.34	109.55	105.77
10	D	503	R3T	C33-C32-C31	2.34	117.37	111.36
10	D	503	R3T	C17-C15-C1	2.33	116.32	111.11
9	B	503	MES	C7-N4-C5	2.32	117.17	111.23
10	B	504	R3T	C3-C8-C9	2.32	120.30	116.31
10	B	504	R3T	C18-C12-C11	-2.30	122.51	125.30
10	B	504	R3T	O13-C13-C12	2.26	115.27	109.78
5	C	501	GTP	O6-C6-C5	-2.26	119.95	124.37
10	D	503	R3T	O9-C9-C10	-2.25	114.81	117.37
8	B	501	GDP	C5-C6-N1	2.20	117.83	113.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	B	504	R3T	O1-C1-C15	-2.18	104.09	109.02
9	B	503	MES	C6-C5-N4	-2.17	106.81	110.10
10	D	503	R3T	C16-C15-C11	2.17	121.63	112.83
10	B	504	R3T	C16-C15-C11	2.16	121.59	112.83
10	D	503	R3T	O5-C20-C4	2.15	94.37	91.95
10	D	503	R3T	O13-C30-O30	-2.09	120.04	123.94
8	D	501	GDP	C5-C6-N1	2.08	117.62	113.95
10	D	503	R3T	C4-C3-C8	2.06	113.76	110.73
10	B	504	R3T	C33-C32-C31	2.04	116.61	111.36
10	D	503	R3T	O13-C30-C31	2.02	114.47	111.15
10	B	504	R3T	O9-C9-C10	-2.01	115.07	117.37
5	A	501	GTP	O6-C6-C5	-2.01	120.44	124.37
10	B	504	R3T	O5-C20-C4	2.00	94.20	91.95

There are no chirality outliers.

All (31) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	501	GTP	PB-O3B-PG-O2G
5	A	501	GTP	PB-O3B-PG-O3G
5	A	501	GTP	C5'-O5'-PA-O1A
5	A	501	GTP	C5'-O5'-PA-O2A
5	C	501	GTP	C5'-O5'-PA-O1A
5	C	501	GTP	C5'-O5'-PA-O2A
8	B	501	GDP	C5'-O5'-PA-O1A
8	B	501	GDP	C5'-O5'-PA-O2A
8	D	501	GDP	C5'-O5'-PA-O1A
8	D	501	GDP	C5'-O5'-PA-O2A
9	B	503	MES	C8-C7-N4-C5
9	B	503	MES	C7-C8-S-O3S
5	C	501	GTP	PB-O3B-PG-O1G
8	D	501	GDP	PA-O3A-PB-O3B
8	D	501	GDP	C5'-O5'-PA-O3A
5	A	501	GTP	PB-O3A-PA-O2A
5	C	501	GTP	C4'-C5'-O5'-PA
10	B	504	R3T	O31-C31-C32-N32
5	C	501	GTP	PB-O3B-PG-O2G
5	C	501	GTP	PB-O3B-PG-O3G
5	A	501	GTP	C5'-O5'-PA-O3A
5	C	501	GTP	C5'-O5'-PA-O3A
8	B	501	GDP	C5'-O5'-PA-O3A
5	A	501	GTP	PB-O3A-PA-O1A

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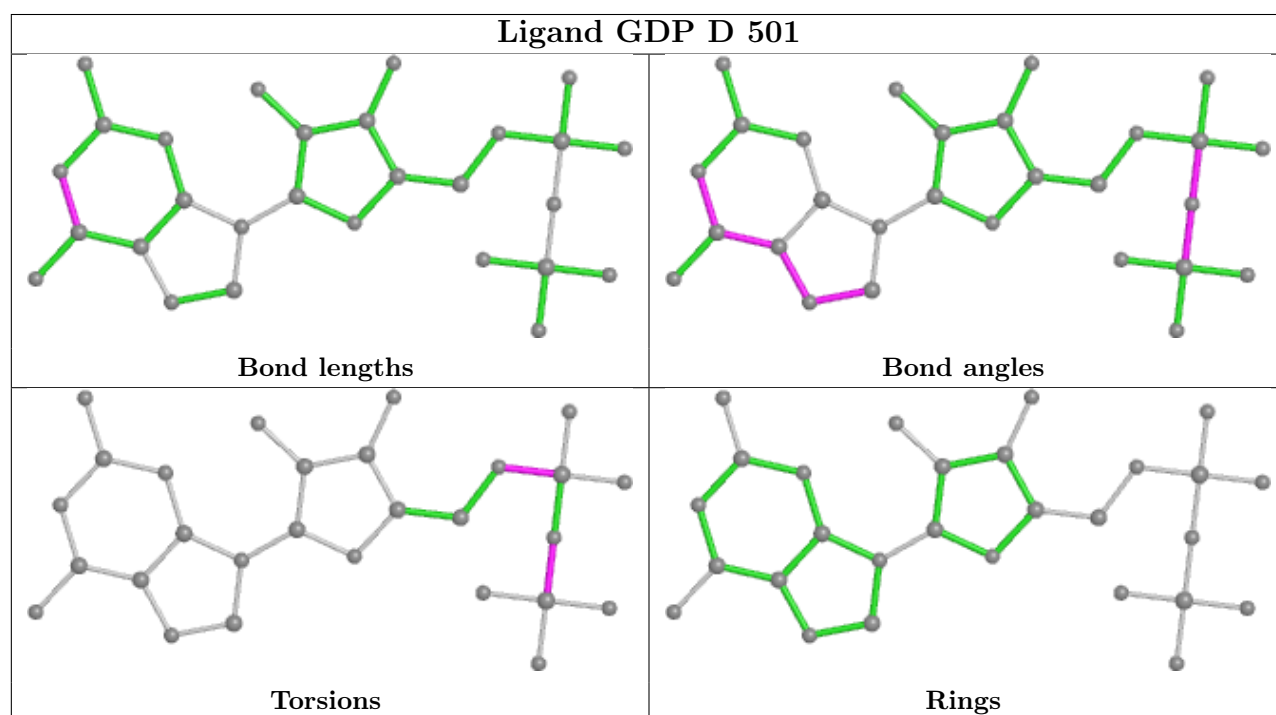
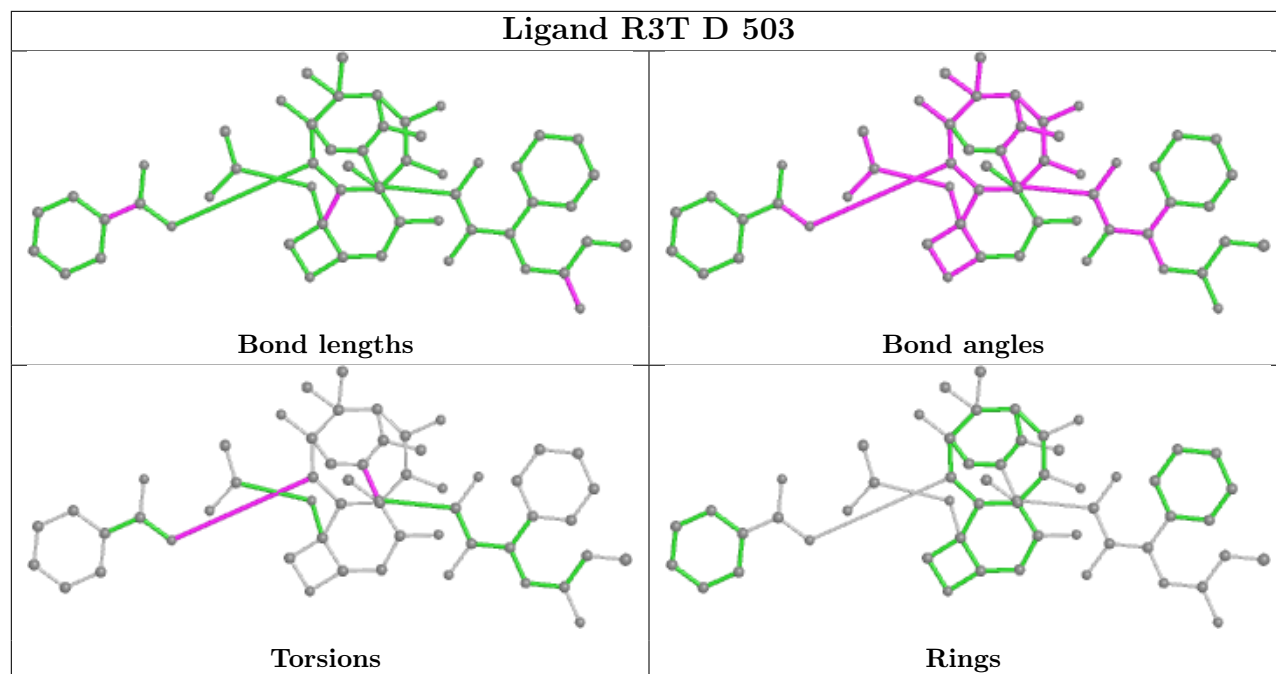
Mol	Chain	Res	Type	Atoms
5	C	501	GTP	PB-O3A-PA-O1A
5	C	501	GTP	PB-O3A-PA-O2A
5	A	501	GTP	C4'-C5'-O5'-PA
10	D	503	R3T	C1-C2-O2-C21
9	B	503	MES	C7-C8-S-O1S
9	B	503	MES	C7-C8-S-O2S
10	D	503	R3T	C12-C13-O13-C30

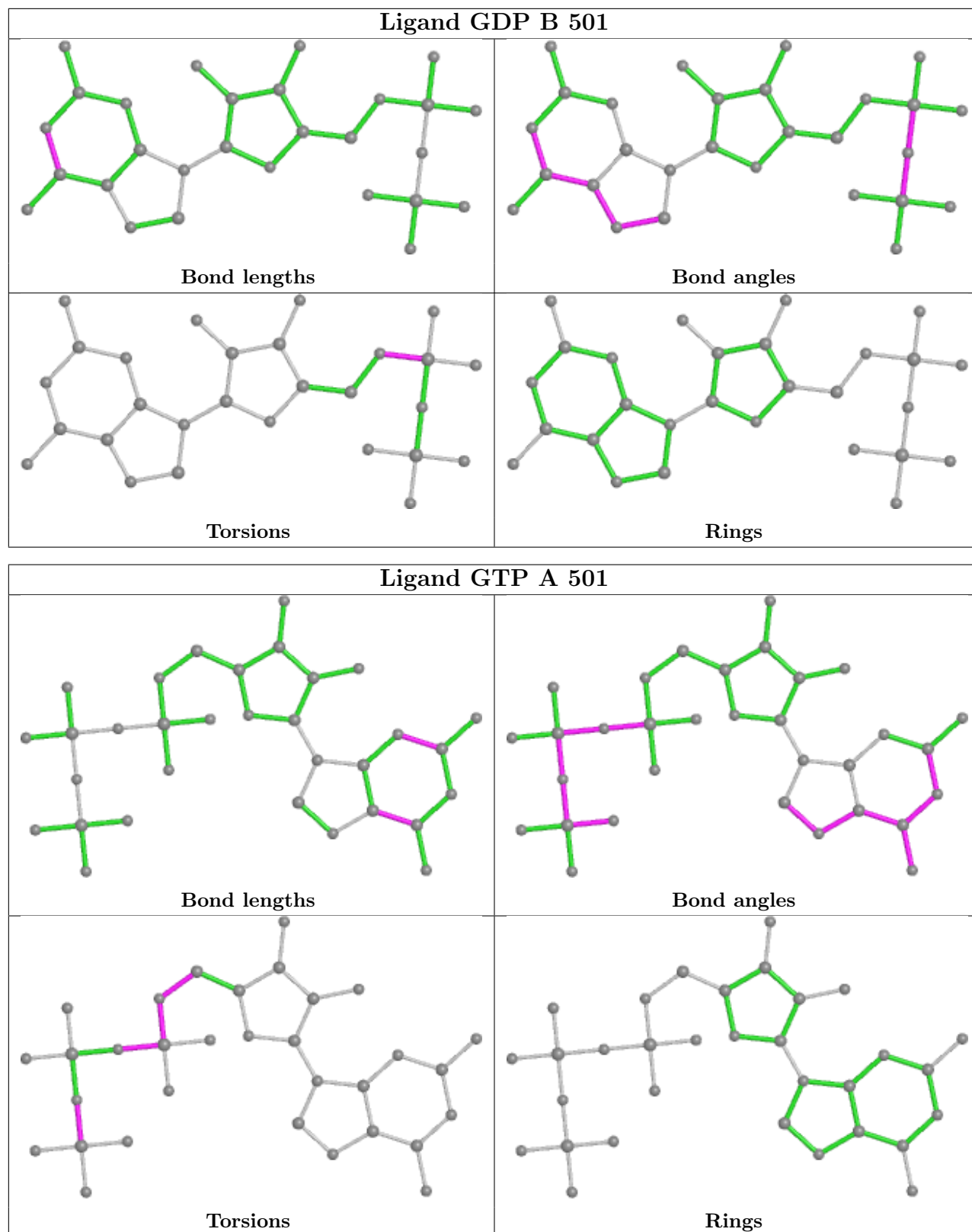
There are no ring outliers.

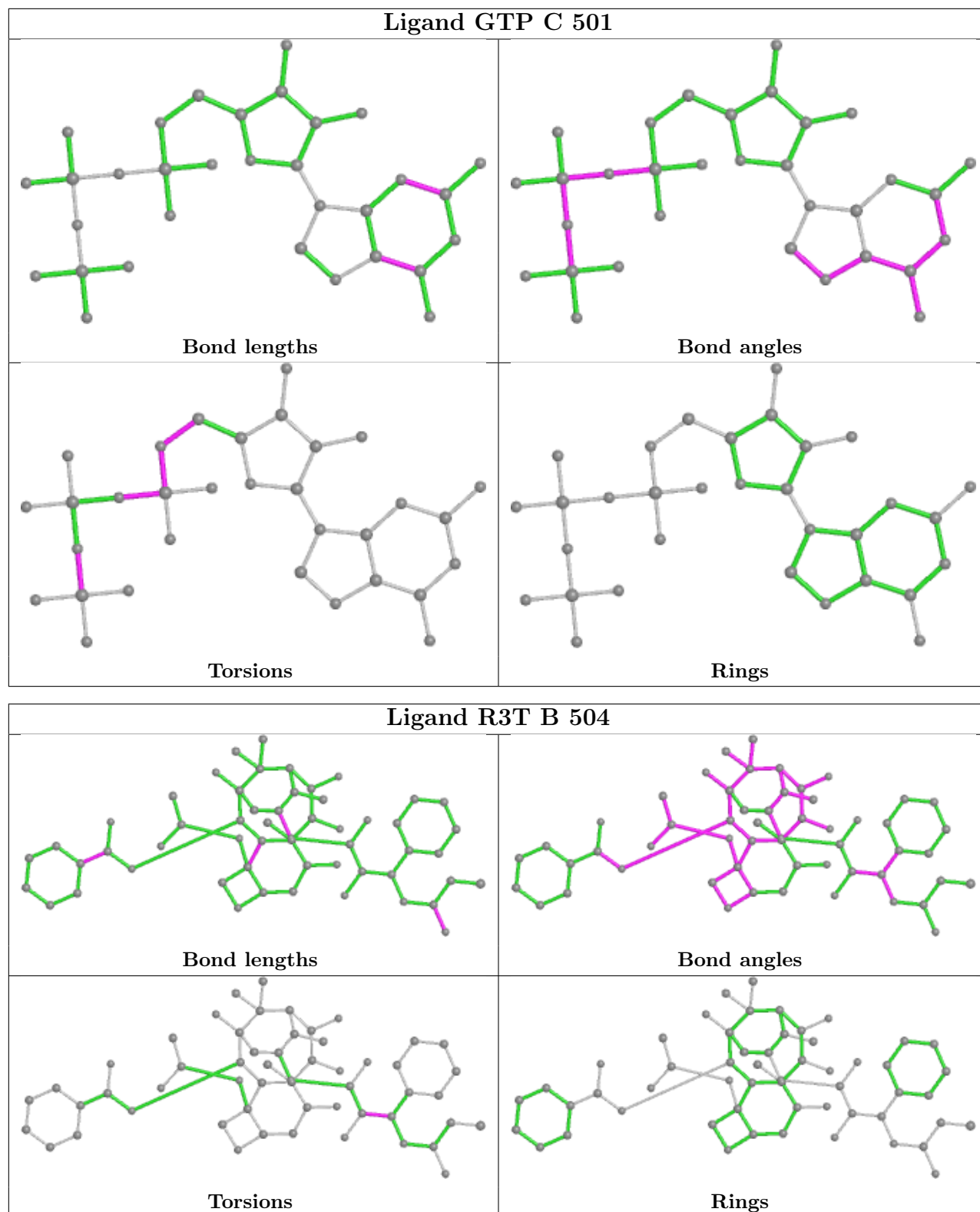
5 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	D	503	R3T	3	0
8	D	501	GDP	2	0
9	B	503	MES	2	0
5	A	501	GTP	1	0
10	B	504	R3T	2	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

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	441/451 (97%)	0.39	26 (5%) 22 33	47, 67, 101, 154	0
1	C	440/451 (97%)	0.12	7 (1%) 72 80	38, 54, 83, 129	0
2	B	426/445 (95%)	0.45	24 (5%) 24 35	41, 65, 109, 139	0
2	D	426/445 (95%)	0.49	31 (7%) 15 22	47, 77, 114, 152	0
3	E	120/143 (83%)	0.50	11 (9%) 9 14	53, 81, 120, 143	0
4	F	319/384 (83%)	1.69	106 (33%) 0 0	62, 95, 162, 198	0
All	All	2172/2319 (93%)	0.56	205 (9%) 8 13	38, 70, 123, 198	0

All (205) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	F	173	ILE	12.2
4	F	240	LEU	11.4
4	F	169	LEU	9.3
4	F	161	LEU	9.2
4	F	253	TYR	9.1
2	B	438	ALA	8.9
4	F	259	GLY	8.8
4	F	99	VAL	8.4
4	F	132	LEU	8.0
4	F	182	ILE	8.0
4	F	135	TYR	7.8
4	F	131	PHE	7.0
4	F	243	HIS	7.0
4	F	241	THR	6.8
4	F	256	TYR	6.6
4	F	227	PRO	6.3
4	F	130	VAL	6.3
4	F	244	CYS	6.3
4	F	179	VAL	6.1

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Mol	Chain	Res	Type	RSRZ
4	F	166	ALA	5.9
4	F	254	GLY	5.8
2	D	401	ARG	5.8
4	F	362	ALA	5.7
4	F	101	TYR	5.6
4	F	255	ARG	5.5
4	F	225	SER	5.5
4	F	172	PHE	5.5
4	F	258	GLU	5.5
4	F	242	ASN	5.4
4	F	167	SER	5.4
4	F	100	ILE	5.2
3	E	6	MET	5.2
4	F	20	LEU	5.2
4	F	149	ALA	5.1
4	F	134	ALA	5.0
4	F	239	HIS	5.0
2	D	57	THR	4.9
4	F	22	LEU	4.8
4	F	342	LEU	4.8
4	F	361	LEU	4.8
4	F	160	ILE	4.7
2	B	437	ASP	4.7
1	A	282	TYR	4.7
4	F	17	VAL	4.7
1	A	448	GLY	4.6
4	F	140	GLU	4.5
4	F	98	TYR	4.5
1	A	283	HIS	4.5
2	D	400	ARG	4.4
4	F	372	THR	4.3
2	D	404	PHE	4.3
4	F	170	LEU	4.3
4	F	162	ILE	4.2
2	B	59	ASN	4.1
2	B	57	THR	4.1
4	F	175	GLU	4.1
4	F	129	GLU	4.1
4	F	228	TYR	4.1
3	E	26	PRO	4.0
4	F	133	ALA	4.0
4	F	163	SER	4.0

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Mol	Chain	Res	Type	RSRZ
4	F	145	ASN	3.9
1	C	340	SER	3.9
4	F	102	PRO	3.7
3	E	139	LEU	3.7
4	F	89	GLU	3.7
2	B	284	ARG	3.7
4	F	21	LEU	3.6
4	F	340	GLN	3.6
3	E	7	GLU	3.6
4	F	344	ALA	3.6
4	F	260	ASN	3.6
4	F	257	GLU	3.6
2	B	61	TYR	3.5
4	F	90	SER	3.5
2	D	202	TYR	3.5
4	F	136	ASN	3.4
4	F	238	CYS	3.4
4	F	263	PHE	3.4
1	A	178	SER	3.4
2	D	77	SER	3.4
4	F	128	ARG	3.4
4	F	139	ARG	3.4
4	F	197	ARG	3.4
4	F	127	GLU	3.4
1	A	171	ILE	3.3
4	F	223	THR	3.3
3	E	23	ILE	3.3
3	E	24	LEU	3.3
4	F	181	VAL	3.3
4	F	138	ARG	3.3
4	F	147	TRP	3.3
2	B	1	MET	3.3
2	D	1	MET	3.3
2	B	337	ASN	3.2
2	D	269	MET	3.2
4	F	180	HIS	3.1
4	F	137	ARG	3.1
4	F	165	GLU	3.1
4	F	178	GLN	3.1
4	F	346	LEU	3.1
1	C	440	VAL	3.1
2	D	415	GLU	3.1

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Mol	Chain	Res	Type	RSRZ
2	B	58	GLY	3.1
4	F	343	TYR	3.1
3	E	25	LYS	3.0
4	F	186	LEU	3.0
3	E	27	PRO	3.0
4	F	350	ILE	3.0
2	D	203	CYS	3.0
4	F	25	GLY	3.0
1	A	262	TYR	3.0
1	A	179	THR	3.0
2	D	405	LEU	3.0
1	A	346	TRP	3.0
4	F	126	ASP	2.9
4	F	26	GLN	2.9
4	F	24	THR	2.9
4	F	339	ALA	2.9
1	A	42	ILE	2.9
2	D	94	PHE	2.9
4	F	174	ASP	2.9
4	F	192	LEU	2.9
2	D	268	PHE	2.8
4	F	150	LYS	2.8
2	D	37	HIS	2.8
3	E	48	GLU	2.8
2	D	260	VAL	2.7
2	D	201	THR	2.7
2	B	283	TYR	2.7
4	F	199	PHE	2.7
3	E	45	PRO	2.7
4	F	75	ALA	2.7
4	F	141	GLY	2.7
4	F	27	TRP	2.7
2	D	378	ILE	2.7
2	D	407	TRP	2.6
2	B	434	GLN	2.6
2	D	403	ALA	2.6
4	F	13	VAL	2.6
2	D	270	PRO	2.6
2	B	41	ASP	2.6
2	B	36	TYR	2.6
4	F	337	ALA	2.6
2	D	402	LYS	2.6

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Mol	Chain	Res	Type	RSRZ
4	F	204	TRP	2.5
4	F	224	SER	2.5
1	A	438	ASP	2.5
2	D	271	GLY	2.5
4	F	351	VAL	2.5
1	A	180	ALA	2.5
4	F	226	GLU	2.5
3	E	22	VAL	2.4
1	A	56	THR	2.4
4	F	341	LYS	2.4
4	F	151	SER	2.4
1	C	252	LEU	2.4
4	F	262	MET	2.4
1	C	1	MET	2.4
4	F	194	PRO	2.4
4	F	196	HIS	2.4
1	C	253	THR	2.4
4	F	148	ILE	2.4
4	F	191	LEU	2.4
2	B	56	ALA	2.4
2	D	406	HIS	2.3
2	B	60	LYS	2.3
4	F	314	LEU	2.3
4	F	195	GLY	2.3
2	B	34	GLY	2.3
2	D	267	PHE	2.3
1	A	146	GLY	2.3
2	B	37	HIS	2.3
2	B	372	LYS	2.2
2	B	39	ASP	2.2
1	A	140	SER	2.2
1	A	335	ILE	2.2
2	B	436	GLN	2.2
2	D	259	MET	2.2
1	A	173	PRO	2.2
1	A	177	VAL	2.2
2	D	169	PHE	2.2
1	A	364	PRO	2.2
2	B	140	SER	2.2
4	F	221	LEU	2.2
1	C	241	SER	2.2
4	F	171	ASP	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	351	PHE	2.2
2	D	280	SER	2.2
2	D	238	VAL	2.1
1	A	143	GLY	2.1
1	A	174	ALA	2.1
1	A	348	PRO	2.1
1	A	82	THR	2.1
1	A	150	THR	2.1
1	A	9	VAL	2.1
1	A	350	GLY	2.1
2	D	317	ALA	2.1
2	B	83	PHE	2.1
2	B	101	ASN	2.0
1	C	257	THR	2.0
2	B	143	GLY	2.0
2	D	257	VAL	2.0
4	F	264	PHE	2.0
2	D	314	THR	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.

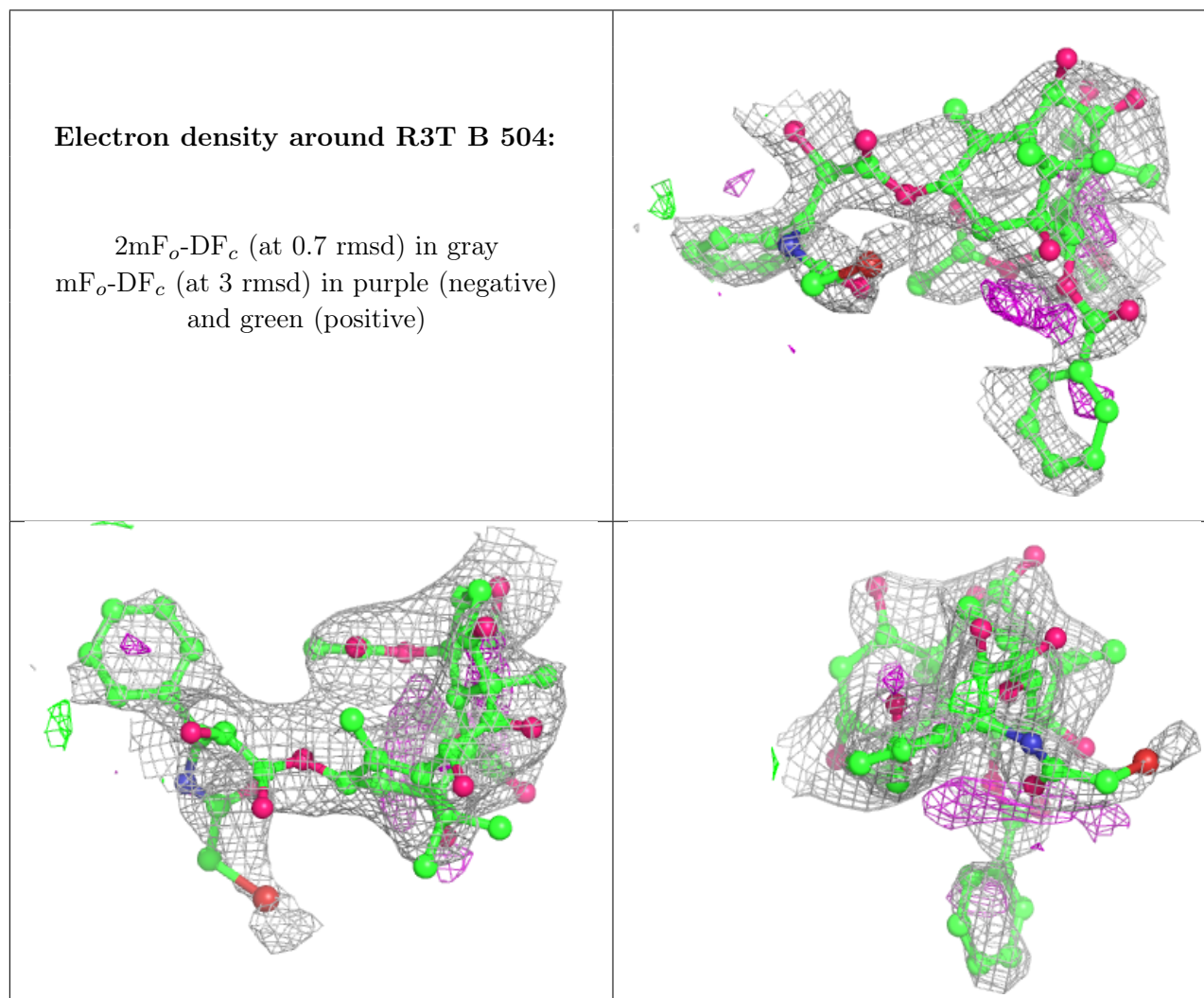
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
6	MG	F	401	1/1	0.67	0.13	86,86,86,86	0
10	R3T	B	504	55/55	0.79	0.29	102,134,238,328	0
10	R3T	D	503	55/55	0.88	0.23	113,136,250,374	0
6	MG	C	502	1/1	0.90	0.13	42,42,42,42	0
6	MG	D	502	1/1	0.92	0.07	93,93,93,93	0

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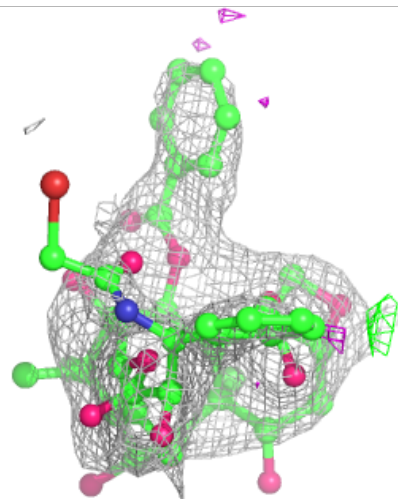
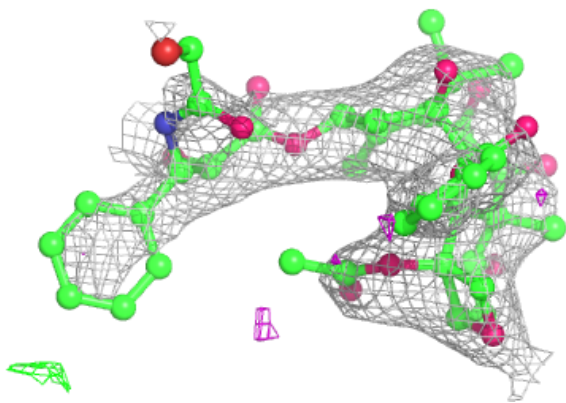
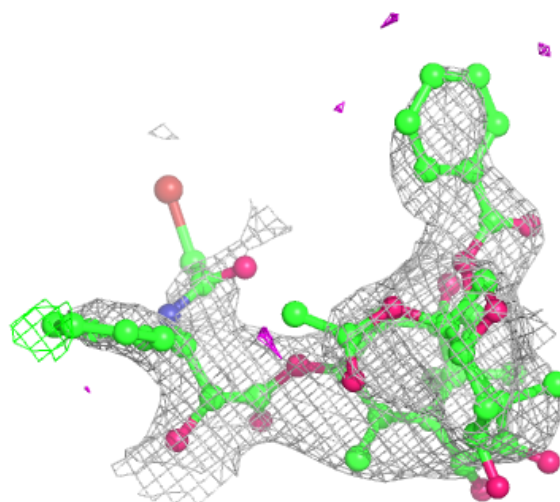
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
6	MG	B	502	1/1	0.95	0.38	41,41,41,41	0
8	GDP	D	501	28/28	0.95	0.12	57,67,88,103	0
7	CA	A	503	1/1	0.96	0.08	102,102,102,102	0
6	MG	A	502	1/1	0.96	0.17	44,44,44,44	0
5	GTP	A	501	32/32	0.97	0.23	40,51,59,66	0
9	MES	B	503	12/12	0.97	0.11	61,67,81,81	0
5	GTP	C	501	32/32	0.98	0.16	37,44,54,58	0
8	GDP	B	501	28/28	0.99	0.21	41,49,56,60	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.



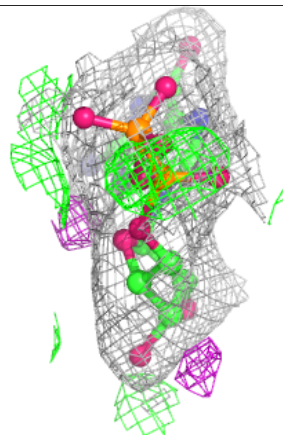
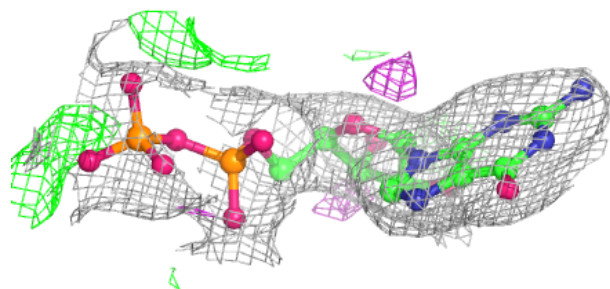
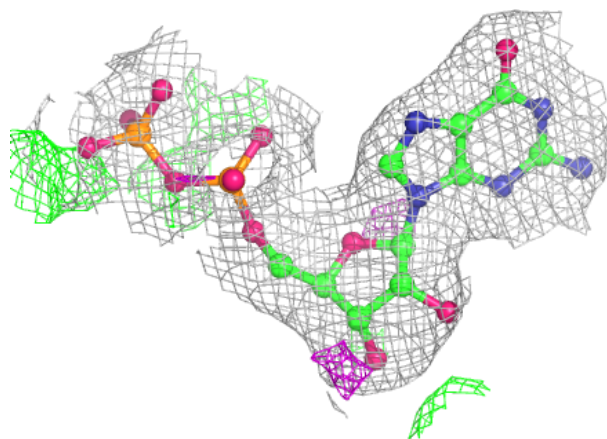
Electron density around R3T D 503:

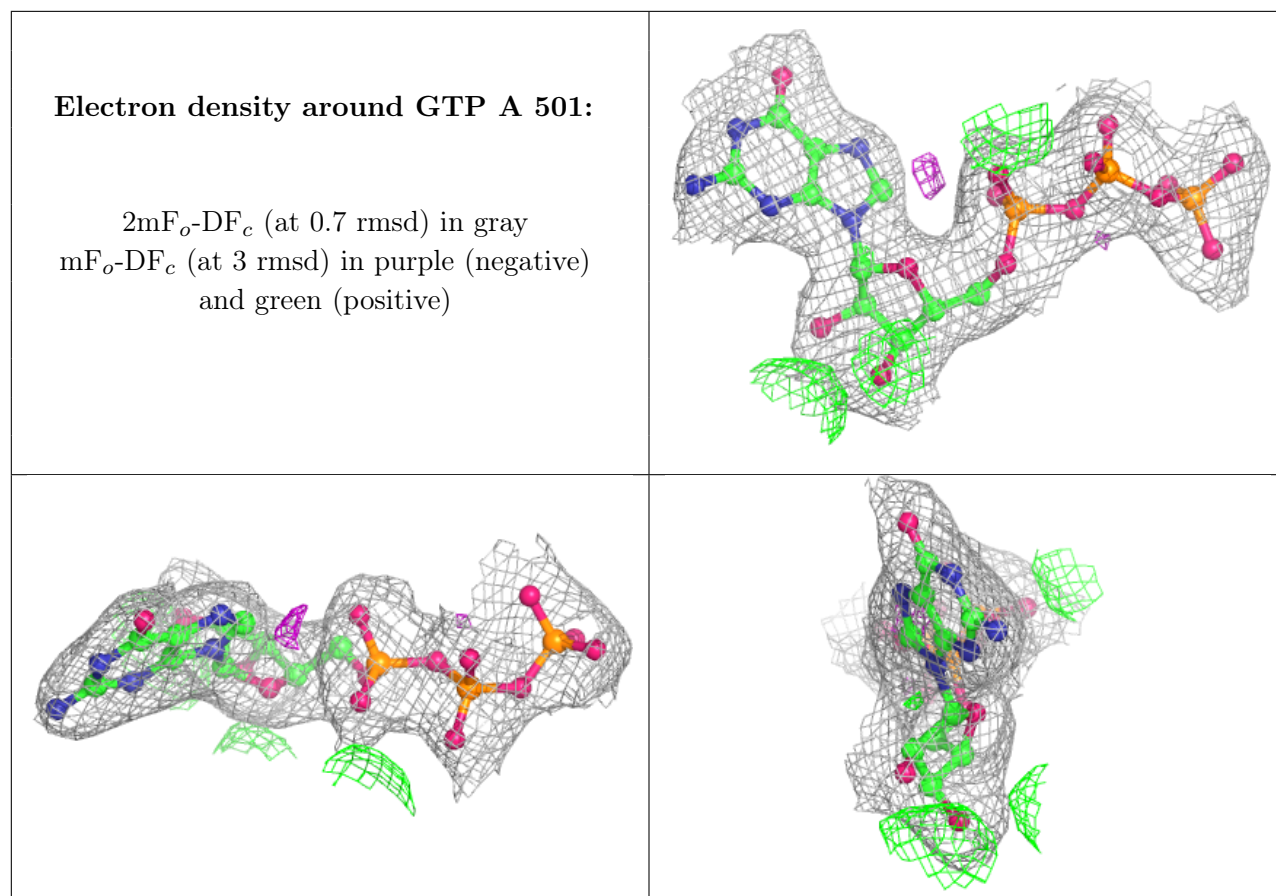
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

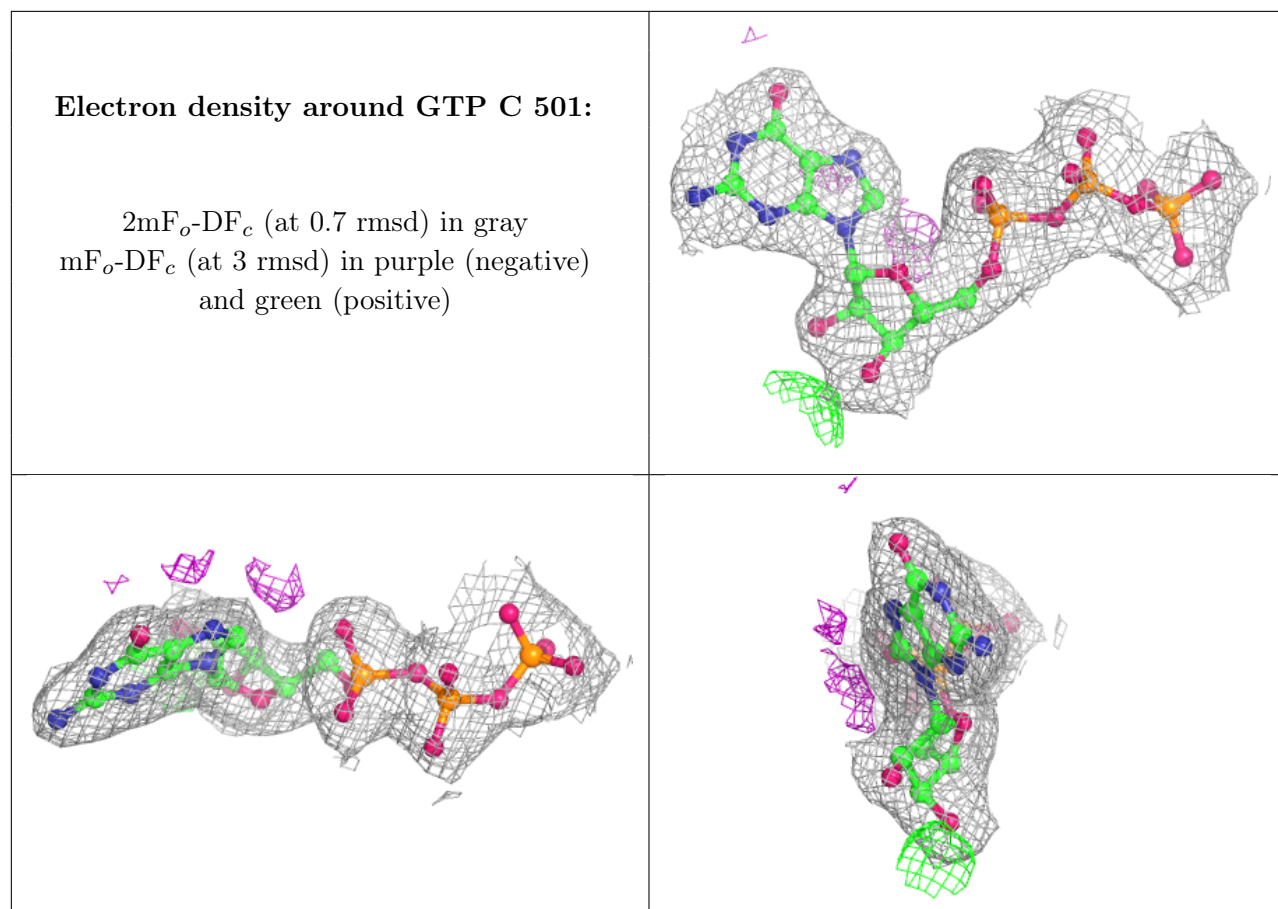


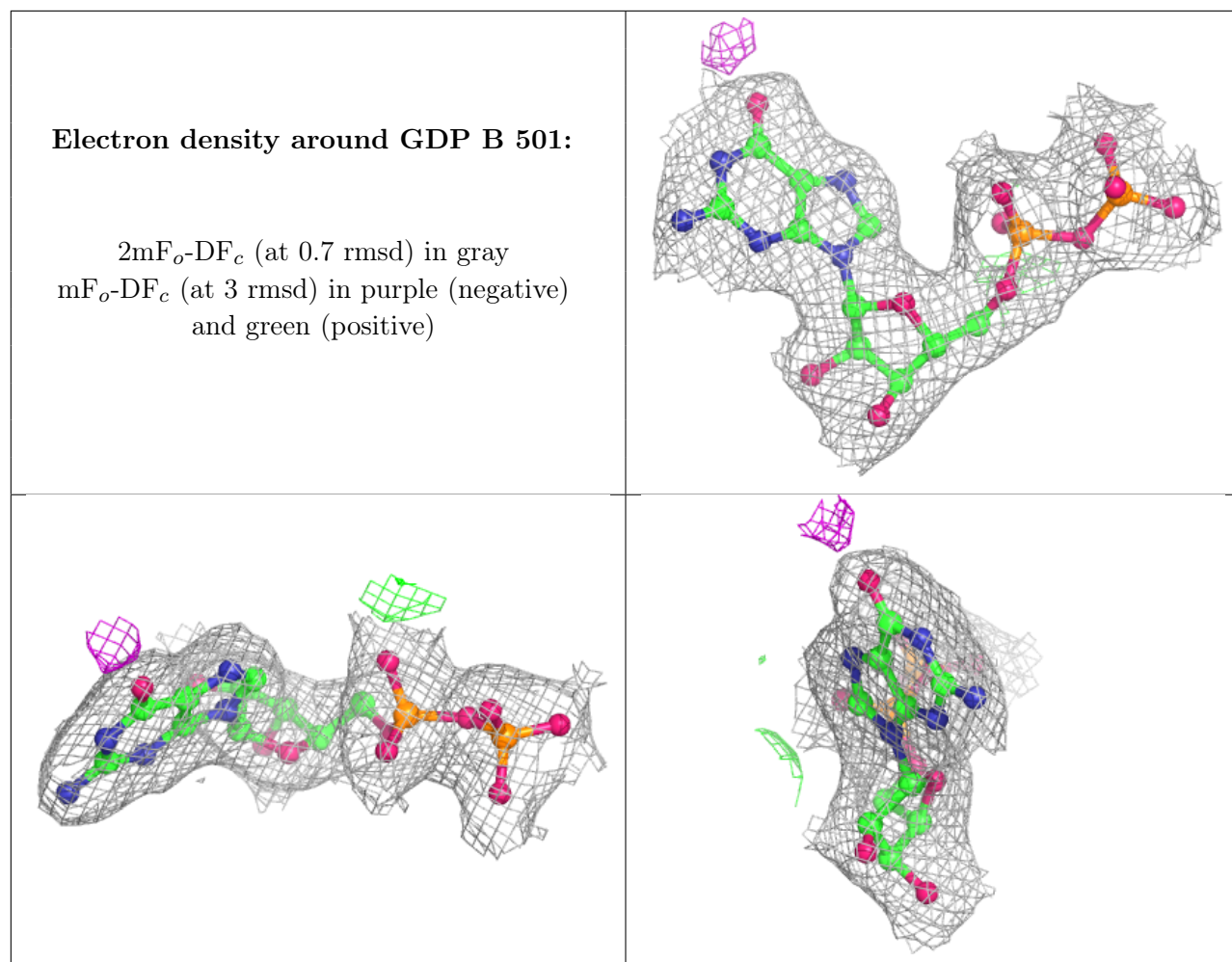
Electron density around GDP D 501:

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









6.5 Other polymers [i](#)

There are no such residues in this entry.