



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 28, 2022 – 10:06 AM EST

PDB ID : 5SBE
Title : Tubulin-maytansinoid-5c-complex
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J.F.; Pieraccini, S.; Passarella, D.
Deposited on : 2021-07-20
Resolution : 2.75 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 : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.27
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) : 2.27

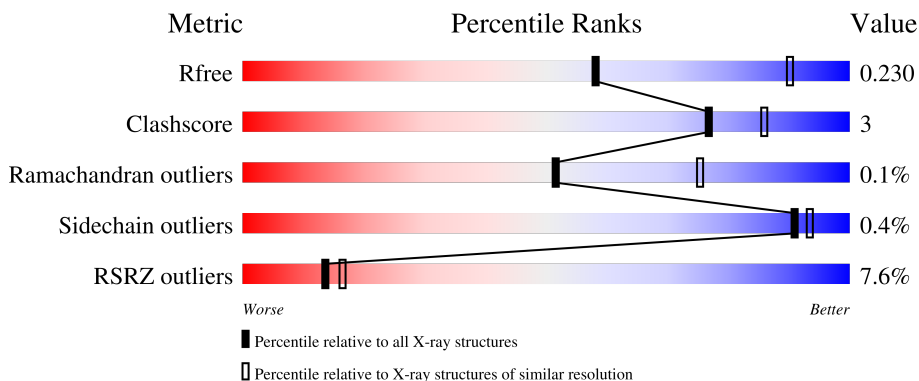
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.75 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.



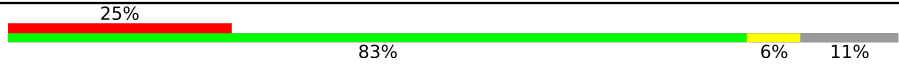
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1235 (2.78-2.74)
Clashscore	141614	1277 (2.78-2.74)
Ramachandran outliers	138981	1257 (2.78-2.74)
Sidechain outliers	138945	1257 (2.78-2.74)
RSRZ outliers	127900	1207 (2.78-2.74)

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	
1	C	451	
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 '25%', a large green segment labeled '83%', a small yellow segment labeled '6%', and a grey segment on the far right labeled '11%'. The segments are stacked horizontally, with the red segment starting from the left and the grey segment ending at the right.</p>

2 Entry composition i

There are 12 unique types of molecules in this entry. The entry contains 17938 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	438	Total	C	N	O	S	0	0	0
			3424	2167	582	653	22			
1	C	440	Total	C	N	O	S	0	2	0
			3451	2183	586	658	24			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	422	Total	C	N	O	S	0	1	0
			3337	2097	571	643	26			
2	D	427	Total	C	N	O	S	0	0	0
			3348	2101	571	649	27			

- Molecule 3 is a protein called Stathmin-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	E	123	Total	C	N	O	S	0	1	0
			1024	631	186	202	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-Tyrosine Ligase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	F	343	Total	C	N	O	S	0	0	0
			2813	1804	483	512	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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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	B	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).



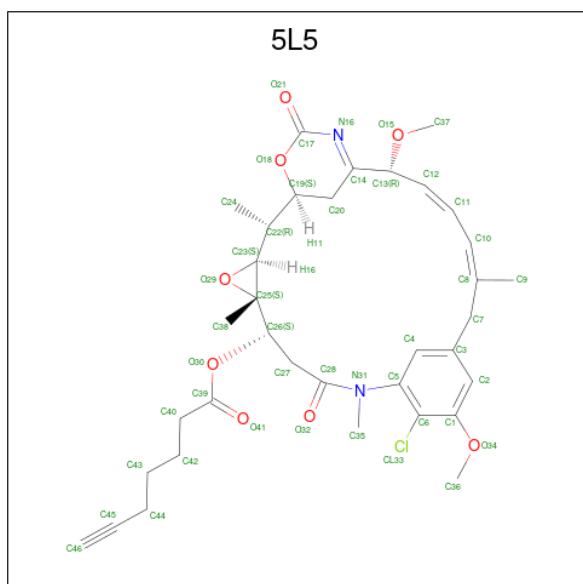
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
8	B	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
8	D	1	Total	C	N	O	P	0	0
			28	10	5	11	2		

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



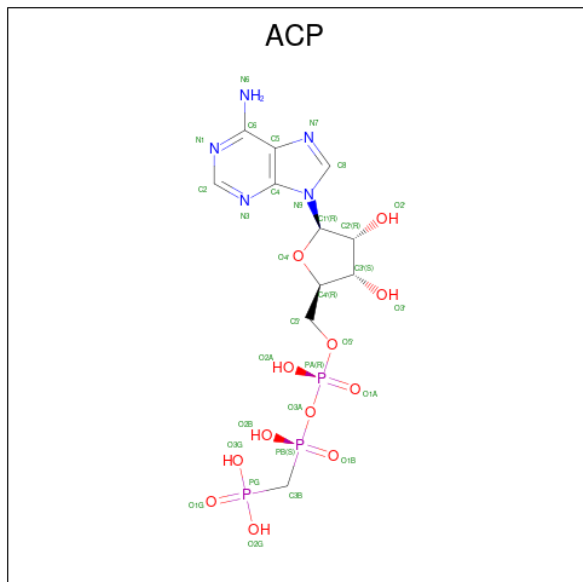
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	S		
9	B	1	12	6	1	4	1	0	0

- Molecule 10 is (1S,2R,3S,5S,6S,16E,18E,20R)-11-chloro-12,20-dimethoxy-2,5,9,16-tetramethyl-8,23-dioxo-4,24-dioxa-9,22-diazatetracyclo[19.3.1.1 10,14 .0 3,5]hexacosa-10(26),11,13,16,18,21-hexaen-6-yl hept-6-ynoate (three-letter code: 5L5) (formula: C₃₅H₄₃ClN₂O₈) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	Cl	N	O		
10	D	1	46	35	1	2	8	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

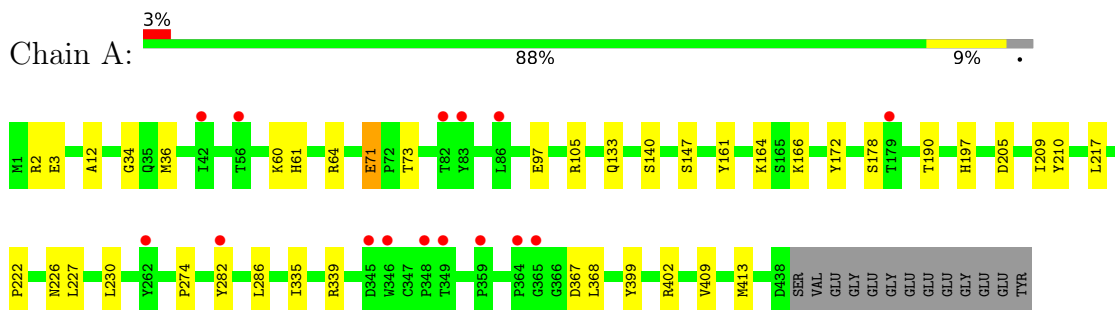
- Molecule 12 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
12	A	48	Total	O	0	0
			48	48		
12	B	76	Total	O	0	0
			76	76		
12	C	153	Total	O	0	0
			153	153		
12	D	30	Total	O	0	0
			30	30		
12	E	13	Total	O	0	0
			13	13		
12	F	4	Total	O	0	0
			4	4		

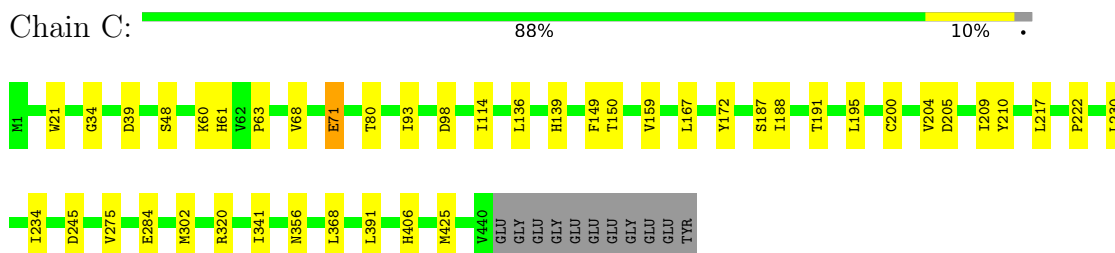
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

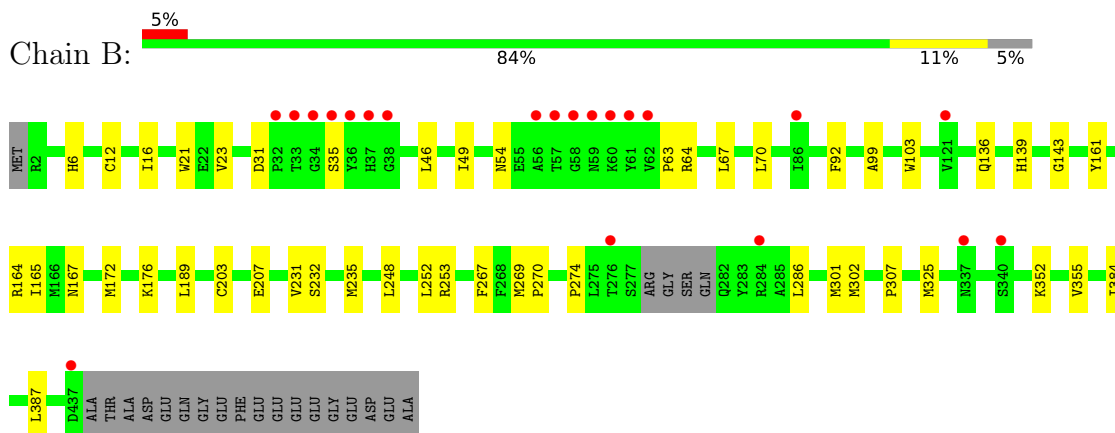
- Molecule 1: Tubulin alpha-1B chain



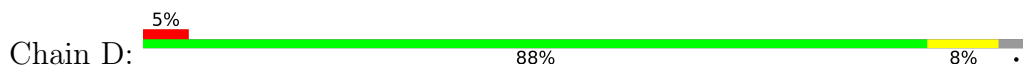
- Molecule 1: Tubulin alpha-1B chain

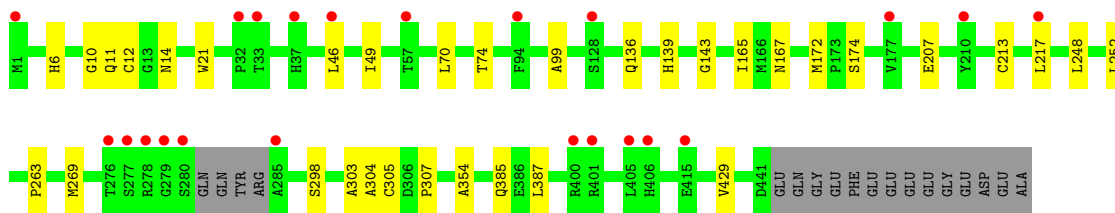


- Molecule 2: Tubulin beta-2B chain

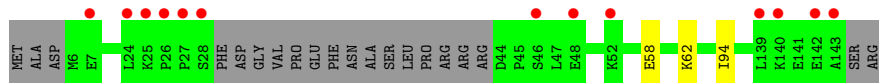
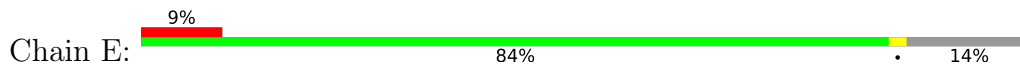


- Molecule 2: Tubulin beta-2B chain

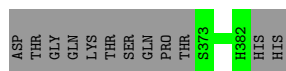
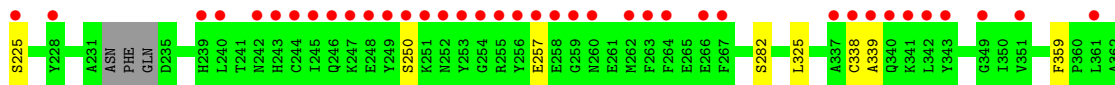
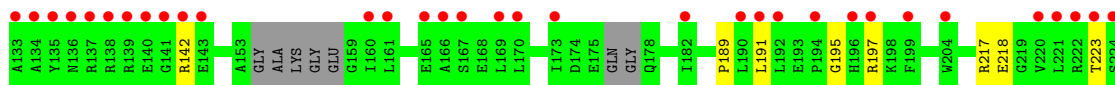
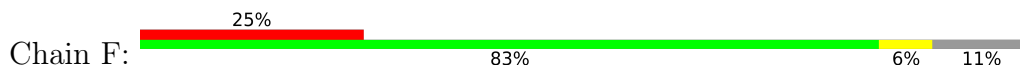




● Molecule 3: Stathmin-4



● 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	105.12Å 158.40Å 181.38Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.06 – 2.75 48.10 – 2.75	Depositor EDS
% Data completeness (in resolution range)	100.0 (48.06-2.75) 100.0 (48.10-2.75)	Depositor EDS
R_{merge}	0.35	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.56 (at 2.77Å)	Xtrriage
Refinement program	PHENIX 1.19.1_4122	Depositor
R, R_{free}	0.192 , 0.230 0.192 , 0.230	Depositor DCC
R_{free} test set	3966 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	62.9	Xtrriage
Anisotropy	0.112	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 36.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	17938	wwPDB-VP
Average B, all atoms (Å ²)	73.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.53% 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: 5L5, GTP, ACP, MES, MG, CA, GDP

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	0.24	0/3502	0.46	0/4754
1	C	0.25	0/3529	0.47	0/4790
2	B	0.24	0/3411	0.46	0/4619
2	D	0.24	0/3421	0.45	0/4633
3	E	0.23	0/1033	0.41	0/1371
4	F	0.23	0/2876	0.45	0/3883
All	All	0.24	0/17772	0.46	0/24050

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	3424	0	3334	21	0
1	C	3451	0	3360	24	0
2	B	3337	0	3215	29	0
2	D	3348	0	3227	18	0
3	E	1024	0	1035	2	0
4	F	2813	0	2780	12	0
5	A	32	0	12	0	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
7	B	1	0	0	0	0
7	C	1	0	0	0	0
8	B	28	0	12	2	0
8	D	28	0	12	2	0
9	B	12	0	12	1	0
10	D	46	0	0	0	0
11	F	31	0	14	0	0
12	A	48	0	0	0	0
12	B	76	0	0	1	0
12	C	153	0	0	0	0
12	D	30	0	0	0	0
12	E	13	0	0	0	0
12	F	4	0	0	0	0
All	All	17938	0	17025	103	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 3.

All (103) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2:ARG:HB2	1:A:133:GLN:HE21	1.58	0.68
1:A:172:TYR:HB3	1:A:205:ASP:HA	1.75	0.68
4:F:16:GLU:OE2	4:F:19:ARG:NH2	2.31	0.64
2:D:385:GLN:HB2	2:D:429:VAL:HG13	1.80	0.64
1:C:172:TYR:HB3	1:C:205:ASP:HA	1.80	0.62
2:B:172:MET:HG3	2:B:387:LEU:HD11	1.82	0.61
1:A:335:ILE:HG23	1:A:339:ARG:HG3	1.84	0.60
2:D:172:MET:HG3	2:D:387:LEU:HD11	1.84	0.60
1:C:217:LEU:HD21	1:C:368:LEU:HD23	1.83	0.60
2:B:253[A]:ARG:NH1	9:B:504:MES:O3S	2.35	0.60
1:A:226:ASN:ND2	1:A:367:ASP:OD2	2.37	0.57
4:F:102:PRO:HG2	4:F:105:LEU:HD13	1.84	0.57
2:B:23:VAL:HG21	2:B:232:SER:HB3	1.86	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:34:GLY:HA3	1:A:60:LYS:HG3	1.87	0.56
2:B:70:LEU:HD12	2:B:99:ALA:HB2	1.88	0.56
2:B:6:HIS:CD2	2:B:21:TRP:HE1	2.23	0.55
2:B:176:LYS:HD2	2:B:207:GLU:HG3	1.88	0.55
1:C:209:ILE:HG23	1:C:230:LEU:HD23	1.90	0.54
1:A:71:GLU:OE2	1:A:73:THR:OG1	2.26	0.54
1:C:234:ILE:HG21	1:C:302[B]:MET:SD	2.48	0.53
2:D:70:LEU:HD12	2:D:99:ALA:HB2	1.89	0.53
4:F:217:ARG:HG3	4:F:218:GLU:HG2	1.91	0.52
2:D:248:LEU:HD23	2:D:354:ALA:HB2	1.91	0.52
2:D:10:GLY:O	2:D:14:ASN:ND2	2.34	0.52
2:B:31:ASP:OD1	2:B:35:SER:N	2.43	0.52
1:C:93:ILE:HG22	1:C:114:ILE:HD11	1.93	0.51
1:C:159:VAL:HA	3:E:94:ILE:HG23	1.92	0.51
1:A:161:TYR:HB3	1:A:164:LYS:HD3	1.93	0.51
1:A:399:TYR:O	1:A:402:ARG:NH1	2.41	0.50
4:F:14:TYR:HB3	4:F:41:LEU:HD13	1.92	0.50
1:A:209:ILE:HG23	1:A:230:LEU:HD23	1.94	0.50
2:B:325:MET:HG3	2:B:355:VAL:HG21	1.93	0.50
3:E:58:GLU:HG2	3:E:62:LYS:HE3	1.95	0.49
1:A:274:PRO:HB3	1:A:286:LEU:HD12	1.95	0.49
4:F:189:PRO:HG2	4:F:191:LEU:HD21	1.94	0.49
1:A:97:GLU:OE2	1:A:105:ARG:NH2	2.45	0.48
2:D:46:LEU:HA	2:D:49:ILE:HB	1.94	0.48
2:D:298:SER:HB3	2:D:307:PRO:HD2	1.95	0.48
1:A:178:SER:OG	2:B:352:LYS:NZ	2.47	0.48
2:B:203:CYS:SG	2:B:267:PHE:HB3	2.54	0.48
1:C:187:SER:HB3	1:C:391:LEU:HD21	1.95	0.48
1:C:275:VAL:HG13	1:C:368:LEU:HD21	1.95	0.48
2:D:165:ILE:HG21	2:D:252:LEU:HB3	1.96	0.48
1:A:12:ALA:HB3	1:A:140:SER:HB3	1.96	0.47
1:C:167:LEU:HG	1:C:200:CYS:HB3	1.96	0.47
1:C:172:TYR:CE1	1:C:391:LEU:HD22	2.49	0.47
2:D:174:SER:OG	2:D:207:GLU:OE1	2.31	0.47
4:F:195:GLY:HA3	4:F:197:ARG:HD3	1.97	0.47
1:A:209:ILE:HG22	1:A:227:LEU:HD22	1.97	0.47
1:C:136:LEU:HD23	1:C:167:LEU:HB2	1.97	0.47
2:B:16:ILE:HD13	2:B:231:VAL:HG11	1.97	0.46
1:C:48:SER:OG	1:C:245:ASP:HB2	2.16	0.46
2:D:213:CYS:HA	2:D:217:LEU:HB2	1.98	0.46
2:B:12:CYS:HB2	8:B:501:GDP:C8	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:270:PRO:HG2	2:B:302:MET:HB2	1.97	0.46
2:B:274:PRO:HB3	2:B:286:LEU:HD22	1.97	0.46
2:D:269:MET:HG3	2:D:303:ALA:HB3	1.97	0.45
2:D:303:ALA:O	2:D:305:CYS:N	2.49	0.45
2:B:235:MET:HB3	2:B:235:MET:HE2	1.85	0.45
2:B:136:GLN:HA	2:B:167:ASN:O	2.16	0.45
1:A:147:SER:HB2	1:A:190:THR:HB	1.98	0.44
4:F:225:SER:OG	4:F:250:SER:OG	2.34	0.44
1:C:71:GLU:HG2	1:C:98:ASP:HB3	2.00	0.44
1:C:204:VAL:HG13	1:C:302[B]:MET:HE2	2.00	0.44
1:A:210:TYR:CZ	1:A:222:PRO:HD2	2.52	0.44
2:B:269:MET:HG2	2:B:384:ILE:HD13	1.99	0.44
1:C:21:TRP:CZ3	1:C:63:PRO:HB3	2.52	0.44
2:D:143:GLY:HA3	8:D:501:GDP:O3A	2.18	0.43
4:F:223:THR:OG1	4:F:257:GLU:OE2	2.26	0.43
2:B:54:ASN:OD1	2:B:64:ARG:NH2	2.47	0.43
2:B:165:ILE:HG21	2:B:252:LEU:HB3	1.99	0.43
1:A:217:LEU:HD21	1:A:368:LEU:HD23	2.00	0.43
2:B:21:TRP:CZ3	2:B:63:PRO:HB3	2.52	0.43
2:D:11:GLN:HA	2:D:74:THR:HG21	2.01	0.43
1:A:36:MET:HB3	1:A:61:HIS:CE1	2.54	0.43
1:C:210:TYR:CZ	1:C:222:PRO:HD2	2.54	0.42
2:D:12:CYS:HB2	8:D:501:GDP:C8	2.54	0.42
2:B:301:MET:HE1	2:B:307:PRO:HG3	2.01	0.42
1:C:34:GLY:HA3	1:C:60:LYS:HG3	2.01	0.42
1:A:166:LYS:HE2	1:A:197:HIS:O	2.19	0.42
1:C:320:ARG:HA	1:C:356:ASN:O	2.20	0.42
1:C:188:ILE:HG13	1:C:425:MET:HG3	2.02	0.42
1:A:409:VAL:HA	1:A:413:MET:O	2.20	0.42
2:B:164:ARG:NH1	12:B:606:HOH:O	2.52	0.42
2:D:6:HIS:CD2	2:D:21:TRP:HE1	2.38	0.42
2:B:46:LEU:HA	2:B:49:ILE:HB	2.00	0.42
1:A:3:GLU:HG2	1:A:64:ARG:CZ	2.50	0.41
4:F:2:TYR:CE1	4:F:359:PHE:HB3	2.55	0.41
2:B:248:LEU:HD21	2:B:352:LYS:HB3	2.02	0.41
1:C:68:VAL:HG11	1:C:149:PHE:CE2	2.55	0.41
2:B:143:GLY:HA3	8:B:501:GDP:O3A	2.20	0.41
2:B:161:TYR:HB3	2:B:164:ARG:HG3	2.02	0.41
2:B:301:MET:HE1	2:B:307:PRO:CG	2.50	0.41
4:F:2:TYR:CZ	4:F:359:PHE:HB3	2.56	0.41
4:F:338:CYS:SG	4:F:339:ALA:N	2.93	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:39:ASP:OD2	1:C:61:HIS:NE2	2.53	0.41
1:C:406:HIS:CG	2:D:263:PRO:HD3	2.56	0.41
2:B:67:LEU:HD22	2:B:92:PHE:CE2	2.56	0.40
2:B:103:TRP:CE3	2:B:189:LEU:HD13	2.56	0.40
1:C:191:THR:O	1:C:195:LEU:HB2	2.22	0.40
1:C:139:HIS:CD2	1:C:150:THR:HG21	2.56	0.40
2:D:136:GLN:HA	2:D:167:ASN:O	2.21	0.40
4:F:282:SER:HB2	4:F:325:LEU:HD13	2.02	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	436/451 (97%)	423 (97%)	13 (3%)	0	100	100
1	C	440/451 (98%)	429 (98%)	10 (2%)	1 (0%)	47	69
2	B	419/445 (94%)	411 (98%)	8 (2%)	0	100	100
2	D	423/445 (95%)	411 (97%)	11 (3%)	1 (0%)	47	69
3	E	120/143 (84%)	120 (100%)	0	0	100	100
4	F	331/384 (86%)	318 (96%)	12 (4%)	1 (0%)	41	60
All	All	2169/2319 (94%)	2112 (97%)	54 (2%)	3 (0%)	51	75

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	D	304	ALA
4	F	142	ARG
1	C	341	ILE

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	369/379 (97%)	367 (100%)	2 (0%)	88	92
1	C	373/379 (98%)	370 (99%)	3 (1%)	81	88
2	B	367/383 (96%)	366 (100%)	1 (0%)	92	95
2	D	368/383 (96%)	367 (100%)	1 (0%)	92	95
3	E	111/127 (87%)	111 (100%)	0	100	100
4	F	309/342 (90%)	309 (100%)	0	100	100
All	All	1897/1993 (95%)	1890 (100%)	7 (0%)	91	93

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	71	GLU
1	A	282	TYR
2	B	139	HIS
1	C	71	GLU
1	C	80	THR
1	C	284	GLU
2	D	139	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	11	GLN
1	A	15	GLN
2	B	293	GLN
1	C	11	GLN
1	C	15	GLN
1	C	285	GLN
1	C	293	ASN
1	C	356	ASN
2	D	247	GLN
3	E	18	GLN

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Mol	Chain	Res	Type
4	F	180	HIS
4	F	183	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 15 ligands modelled in this entry, 8 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	5L5	D	503	-	48,49,49	3.20	12 (25%)	51,70,70	2.86	21 (41%)
8	GDP	D	501	6	24,30,30	1.18	2 (8%)	31,47,47	1.97	8 (25%)
5	GTP	A	501	6	26,34,34	0.97	1 (3%)	33,54,54	1.77	8 (24%)
9	MES	B	504	-	12,12,12	2.25	1 (8%)	14,16,16	2.00	5 (35%)
5	GTP	C	501	6	26,34,34	0.96	1 (3%)	33,54,54	1.76	7 (21%)
11	ACP	F	401	6	27,33,33	1.98	7 (25%)	32,52,52	1.34	4 (12%)
8	GDP	B	501	6	24,30,30	1.17	2 (8%)	31,47,47	1.94	8 (25%)

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	5L5	D	503	-	-	11/49/74/74	0/2/4/4
8	GDP	D	501	6	-	2/12/32/32	0/3/3/3
5	GTP	A	501	6	-	7/18/38/38	0/3/3/3
9	MES	B	504	-	-	4/6/14/14	0/1/1/1
5	GTP	C	501	6	-	9/18/38/38	0/3/3/3
11	ACP	F	401	6	-	8/15/38/38	0/3/3/3
8	GDP	B	501	6	-	3/12/32/32	0/3/3/3

All (26) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	D	503	5L5	C20-C14	-13.12	1.34	1.50
10	D	503	5L5	C14-N16	9.62	1.44	1.28
9	B	504	MES	C8-S	-7.52	1.66	1.77
10	D	503	5L5	O34-C1	7.31	1.48	1.37
10	D	503	5L5	C6-CL33	7.06	1.88	1.72
11	F	401	ACP	PG-O1G	5.48	1.61	1.50
10	D	503	5L5	C35-N31	5.26	1.55	1.46
10	D	503	5L5	C38-C25	4.66	1.63	1.52
8	D	501	GDP	C5-C6	4.16	1.48	1.41
11	F	401	ACP	PB-O1B	4.11	1.61	1.51
8	B	501	GDP	C5-C6	4.09	1.48	1.41
10	D	503	5L5	C25-C23	3.83	1.52	1.47
10	D	503	5L5	O29-C23	-3.70	1.40	1.45
11	F	401	ACP	PB-O2B	-3.43	1.48	1.56
11	F	401	ACP	PB-O3A	3.37	1.62	1.58
5	A	501	GTP	C6-N1	3.07	1.38	1.33
5	C	501	GTP	C6-N1	2.96	1.38	1.33
11	F	401	ACP	PG-O2G	-2.80	1.48	1.54
10	D	503	5L5	C17-N16	2.74	1.41	1.34
11	F	401	ACP	PG-O3G	2.64	1.61	1.54
11	F	401	ACP	C5-C4	2.48	1.47	1.40
8	D	501	GDP	C5-C4	2.41	1.47	1.40
8	B	501	GDP	C5-C4	2.38	1.47	1.40
10	D	503	5L5	C5-N31	-2.26	1.41	1.44
10	D	503	5L5	O15-C37	2.14	1.49	1.42
10	D	503	5L5	O34-C36	2.05	1.48	1.42

All (61) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	D	503	5L5	C35-N31-C28	8.38	132.96	119.15
10	D	503	5L5	C6-C5-N31	-8.32	112.18	120.71
10	D	503	5L5	C25-O29-C23	6.30	64.58	60.79
10	D	503	5L5	C5-N31-C28	-6.21	109.68	123.55
5	A	501	GTP	N3-C2-N1	-5.36	120.07	127.22
5	C	501	GTP	N3-C2-N1	-5.19	120.30	127.22
10	D	503	5L5	C38-C25-C23	-5.04	109.64	121.05
8	B	501	GDP	C2-N3-C4	4.94	121.00	115.36
8	D	501	GDP	C2-N3-C4	4.87	120.92	115.36
10	D	503	5L5	C27-C28-N31	4.78	124.29	118.89
10	D	503	5L5	O29-C25-C23	-4.50	56.35	59.38
8	D	501	GDP	C2-N1-C6	4.16	122.54	115.93
5	A	501	GTP	C2-N3-C4	4.10	120.04	115.36
8	B	501	GDP	C2-N1-C6	4.05	122.36	115.93
8	D	501	GDP	C5-C6-N1	-4.04	117.91	123.43
8	B	501	GDP	C5-C6-N1	-3.99	117.97	123.43
10	D	503	5L5	C20-C14-C13	3.98	127.51	116.61
5	C	501	GTP	C2-N3-C4	3.97	119.89	115.36
10	D	503	5L5	C38-C25-C26	3.95	125.46	114.51
8	D	501	GDP	C4-C5-C6	-3.85	117.12	120.80
8	B	501	GDP	C4-C5-C6	-3.79	117.18	120.80
9	B	504	MES	C5-N4-C3	3.70	117.15	108.83
10	D	503	5L5	C19-C20-C14	3.61	122.35	112.00
11	F	401	ACP	C3'-C2'-C1'	3.57	106.36	100.98
8	D	501	GDP	N3-C2-N1	-3.40	122.69	127.22
8	B	501	GDP	N3-C2-N1	-3.34	122.77	127.22
9	B	504	MES	C6-C5-N4	-3.25	105.17	110.10
5	C	501	GTP	PA-O3A-PB	-3.25	121.68	132.83
5	A	501	GTP	PA-O3A-PB	-3.20	121.86	132.83
8	D	501	GDP	PA-O3A-PB	-3.12	122.13	132.83
11	F	401	ACP	N3-C2-N1	-3.11	123.81	128.68
5	C	501	GTP	PB-O3B-PG	-2.99	122.56	132.83
5	C	501	GTP	C5-C6-N1	-2.99	119.35	123.43
5	A	501	GTP	C5-C6-N1	-2.91	119.45	123.43
9	B	504	MES	O1S-S-C8	2.89	110.40	106.92
8	B	501	GDP	PA-O3A-PB	-2.81	123.18	132.83
8	B	501	GDP	C4-C5-N7	-2.69	106.59	109.40
8	D	501	GDP	C3'-C2'-C1'	2.67	105.00	100.98
11	F	401	ACP	PB-O3A-PA	-2.64	124.18	132.56
5	A	501	GTP	C2-N1-C6	2.63	120.11	115.93
5	C	501	GTP	C2-N1-C6	2.60	120.06	115.93
8	D	501	GDP	C4-C5-N7	-2.58	106.71	109.40
9	B	504	MES	C7-N4-C5	2.54	117.73	111.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	B	501	GDP	C3'-C2'-C1'	2.53	104.79	100.98
5	A	501	GTP	PB-O3B-PG	-2.53	124.15	132.83
10	D	503	5L5	O32-C28-C27	-2.48	117.73	122.20
10	D	503	5L5	O34-C1-C2	-2.46	119.88	124.12
10	D	503	5L5	C36-O34-C1	-2.45	113.84	117.53
10	D	503	5L5	O30-C26-C25	2.43	110.97	105.48
11	F	401	ACP	C4-C5-N7	-2.39	106.90	109.40
10	D	503	5L5	O34-C1-C6	2.38	118.36	115.53
9	B	504	MES	O3S-S-C8	2.36	109.58	105.77
10	D	503	5L5	O32-C28-N31	-2.26	117.97	121.90
5	C	501	GTP	C3'-C2'-C1'	2.26	104.37	100.98
10	D	503	5L5	O18-C19-C22	2.22	110.38	105.76
10	D	503	5L5	C4-C5-C6	-2.22	119.70	122.53
10	D	503	5L5	C5-C6-CL33	2.21	122.44	120.09
5	A	501	GTP	N2-C2-N1	2.18	120.65	117.25
10	D	503	5L5	O30-C39-C40	2.16	116.15	111.50
10	D	503	5L5	C24-C22-C23	-2.12	107.96	112.55
5	A	501	GTP	C3'-C2'-C1'	2.05	104.07	100.98

There are no chirality outliers.

All (44) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	501	GTP	C5'-O5'-PA-O1A
5	C	501	GTP	C5'-O5'-PA-O1A
8	B	501	GDP	C5'-O5'-PA-O3A
8	B	501	GDP	C5'-O5'-PA-O2A
8	D	501	GDP	C5'-O5'-PA-O3A
8	D	501	GDP	C5'-O5'-PA-O2A
9	B	504	MES	C8-C7-N4-C5
9	B	504	MES	C7-C8-S-O1S
9	B	504	MES	C7-C8-S-O2S
9	B	504	MES	C7-C8-S-O3S
10	D	503	5L5	C6-C1-O34-C36
10	D	503	5L5	O18-C19-C22-C24
11	F	401	ACP	PG-C3B-PB-O1B
11	F	401	ACP	PG-C3B-PB-O2B
11	F	401	ACP	PG-C3B-PB-O3A
11	F	401	ACP	C5'-O5'-PA-O3A
10	D	503	5L5	C2-C1-O34-C36
10	D	503	5L5	C39-C40-C42-C43
11	F	401	ACP	O4'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
5	A	501	GTP	C3'-C4'-C5'-O5'
11	F	401	ACP	C3'-C4'-C5'-O5'
5	A	501	GTP	O4'-C4'-C5'-O5'
5	A	501	GTP	PB-O3B-PG-O2G
5	A	501	GTP	C5'-O5'-PA-O3A
5	C	501	GTP	C5'-O5'-PA-O3A
5	C	501	GTP	PB-O3A-PA-O2A
10	D	503	5L5	C11-C12-C13-C14
5	A	501	GTP	C5'-O5'-PA-O2A
5	C	501	GTP	C5'-O5'-PA-O2A
11	F	401	ACP	C5'-O5'-PA-O1A
11	F	401	ACP	C5'-O5'-PA-O2A
5	C	501	GTP	C3'-C4'-C5'-O5'
10	D	503	5L5	C20-C19-C22-C24
5	A	501	GTP	PB-O3A-PA-O2A
10	D	503	5L5	C26-C27-C28-O32
5	C	501	GTP	O4'-C4'-C5'-O5'
10	D	503	5L5	O30-C39-C40-C42
5	C	501	GTP	PB-O3B-PG-O2G
8	B	501	GDP	PA-O3A-PB-O2B
5	C	501	GTP	PB-O3A-PA-O1A
10	D	503	5L5	C26-C27-C28-N31
5	C	501	GTP	PB-O3B-PG-O1G
10	D	503	5L5	O41-C39-C40-C42
10	D	503	5L5	C14-C13-O15-C37

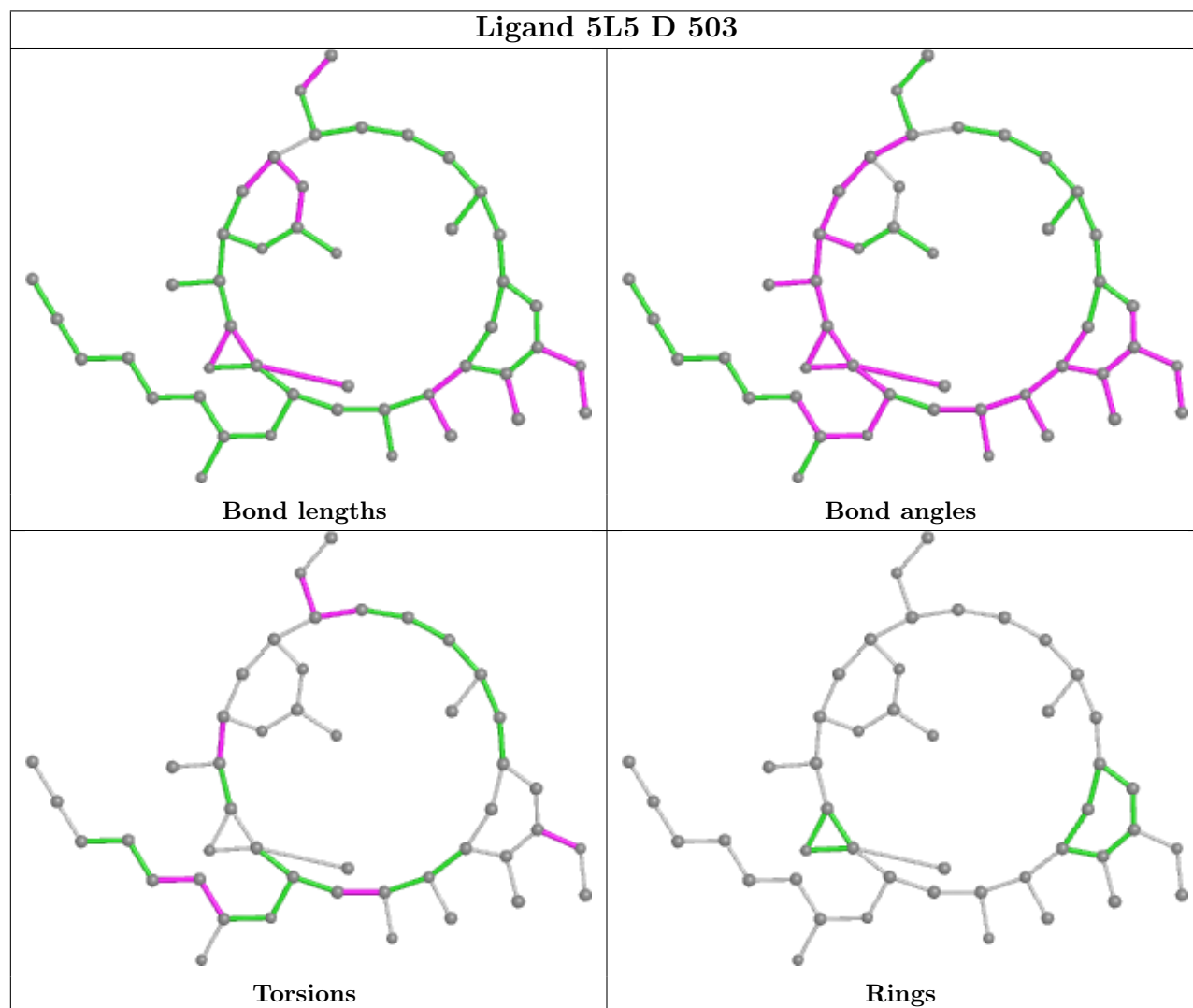
There are no ring outliers.

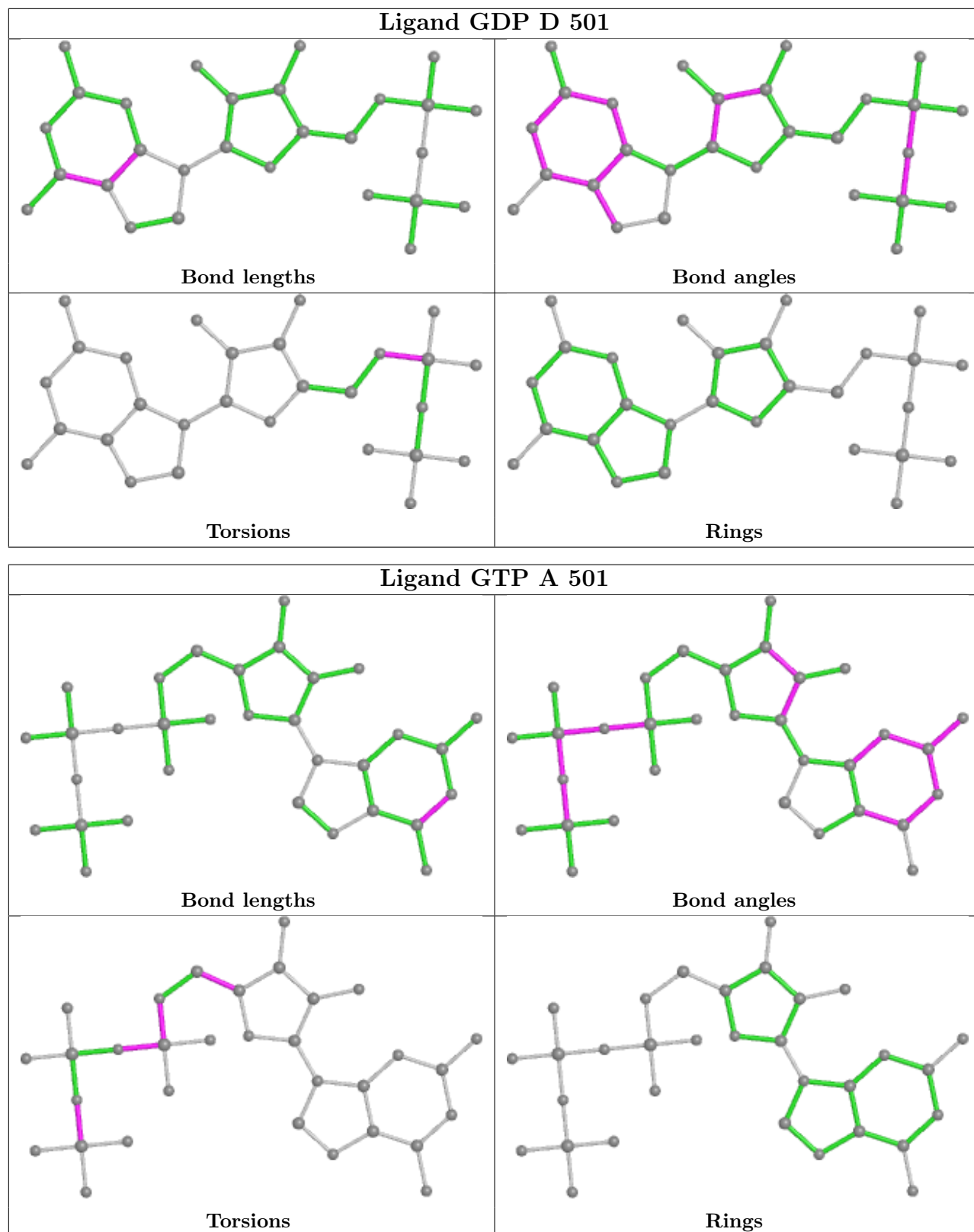
3 monomers are involved in 5 short contacts:

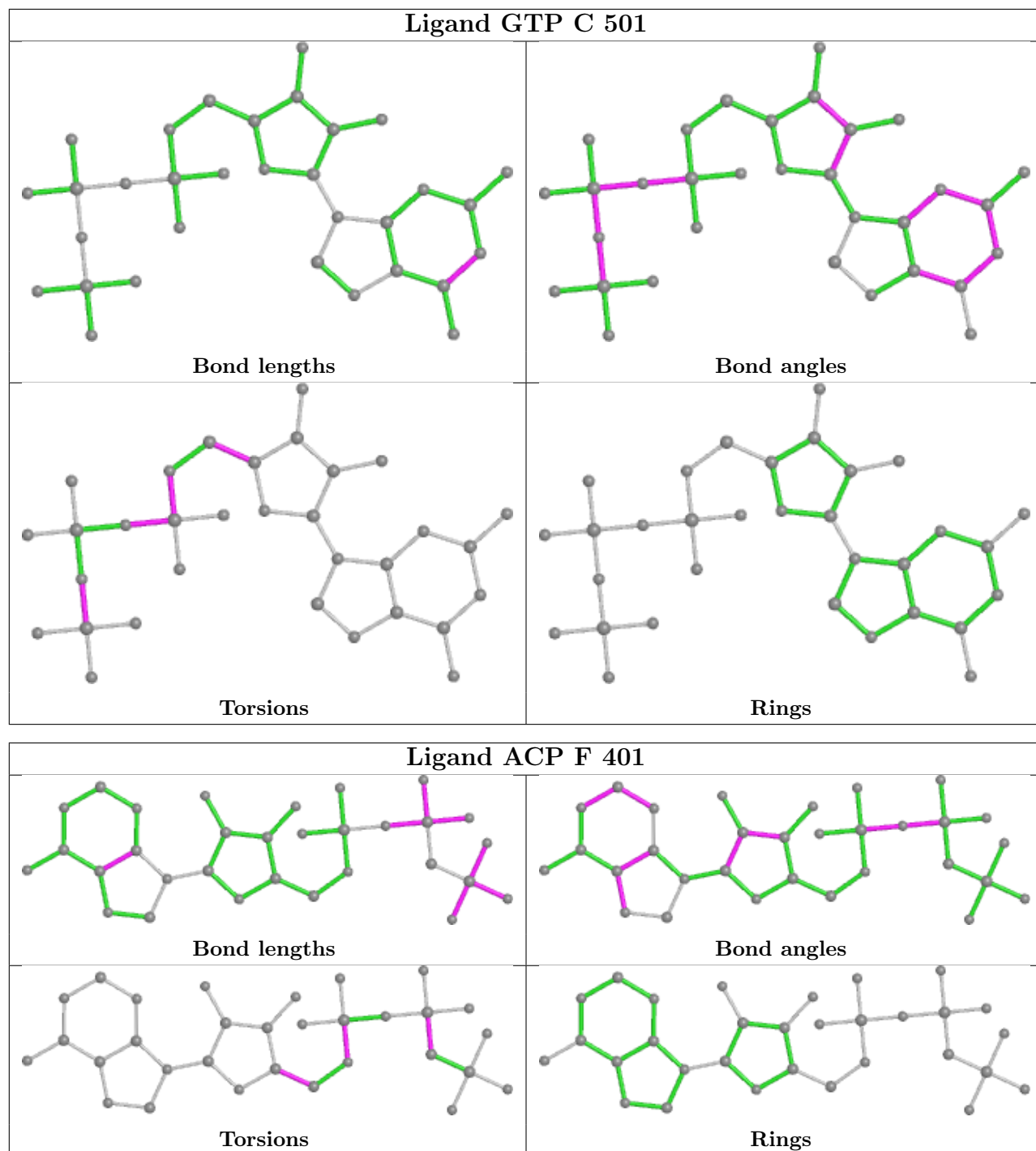
Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	D	501	GDP	2	0
9	B	504	MES	1	0
8	B	501	GDP	2	0

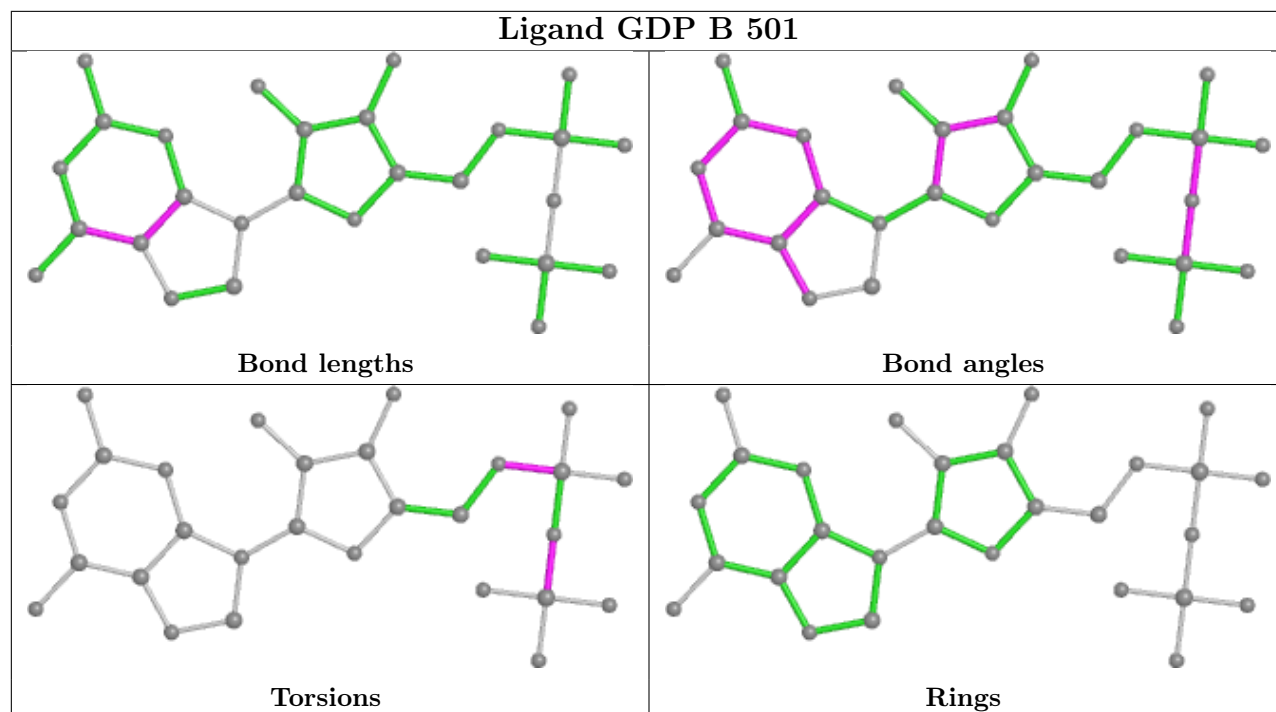
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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 [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	438/451 (97%)	0.20	15 (3%) 45 53	44, 64, 99, 155	0
1	C	440/451 (97%)	-0.09	0 100 100	34, 51, 84, 121	0
2	B	422/445 (94%)	0.19	21 (4%) 28 35	39, 61, 98, 160	0
2	D	427/445 (95%)	0.27	22 (5%) 27 33	50, 78, 115, 154	0
3	E	123/143 (86%)	0.57	13 (10%) 6 6	55, 82, 124, 159	0
4	F	343/384 (89%)	1.17	95 (27%) 0 0	59, 91, 150, 179	0
All	All	2193/2319 (94%)	0.33	166 (7%) 13 16	34, 68, 123, 179	0

All (166) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	59	ASN	6.7
4	F	250	SER	6.1
3	E	27	PRO	5.7
2	B	57	THR	5.7
2	D	277	SER	5.3
4	F	251	LYS	4.9
2	B	60	LYS	4.9
2	D	285	ALA	4.9
4	F	135	TYR	4.6
4	F	253	TYR	4.6
4	F	142	ARG	4.5
4	F	249	TYR	4.5
1	A	346	TRP	4.5
2	B	276	THR	4.4
3	E	139	LEU	4.4
4	F	244	CYS	4.4
3	E	26	PRO	4.4
4	F	252	ASN	4.2
4	F	103	THR	4.2

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Mol	Chain	Res	Type	RSRZ
4	F	240	LEU	4.2
4	F	263	PHE	4.1
4	F	223	THR	4.1
4	F	17	VAL	4.0
2	D	37	HIS	4.0
4	F	239	HIS	4.0
4	F	21	LEU	4.0
1	A	282	TYR	3.9
4	F	192	LEU	3.9
4	F	132	LEU	3.8
4	F	170	LEU	3.8
2	D	276	THR	3.7
4	F	225	SER	3.7
3	E	143	ALA	3.7
4	F	137	ARG	3.7
2	B	284	ARG	3.6
2	D	401	ARG	3.6
4	F	19	ARG	3.6
4	F	259	GLY	3.6
4	F	20	LEU	3.6
2	B	62	VAL	3.6
4	F	248	GLU	3.6
4	F	340	GLN	3.6
4	F	339	ALA	3.6
4	F	361	LEU	3.6
1	A	86	LEU	3.5
4	F	161	LEU	3.5
4	F	105	LEU	3.5
2	B	56	ALA	3.5
4	F	166	ALA	3.5
4	F	246	GLN	3.5
4	F	100	ILE	3.5
4	F	254	GLY	3.4
3	E	24	LEU	3.4
2	B	37	HIS	3.4
4	F	138	ARG	3.4
4	F	256	TYR	3.4
4	F	220	VAL	3.3
4	F	190	LEU	3.3
1	A	348	PRO	3.2
4	F	13	VAL	3.2
4	F	143	GLU	3.2

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Mol	Chain	Res	Type	RSRZ
4	F	169	LEU	3.2
4	F	27	TRP	3.1
1	A	262	TYR	3.1
4	F	221	LEU	3.1
4	F	262	MET	3.1
4	F	255	ARG	3.0
4	F	224	SER	3.0
4	F	197	ARG	3.0
4	F	243	HIS	3.0
1	A	345	ASP	3.0
4	F	258	GLU	3.0
4	F	191	LEU	3.0
2	D	406	HIS	3.0
2	B	36	TYR	3.0
3	E	142	GLU	3.0
4	F	194	PRO	3.0
4	F	342	LEU	2.9
4	F	167	SER	2.9
3	E	140	LYS	2.9
3	E	25	LYS	2.9
4	F	257	GLU	2.9
4	F	242	ASN	2.9
3	E	7	GLU	2.8
4	F	139	ARG	2.8
4	F	267	PHE	2.8
4	F	165	GLU	2.8
4	F	131	PHE	2.8
2	B	337	ASN	2.8
4	F	140	GLU	2.8
4	F	14	TYR	2.8
3	E	28	SER	2.8
1	A	359	PRO	2.8
2	B	86	ILE	2.8
4	F	260	ASN	2.8
4	F	199	PHE	2.7
4	F	125	THR	2.7
2	D	177	VAL	2.7
2	D	400	ARG	2.7
4	F	343	TYR	2.7
2	B	34	GLY	2.7
4	F	247	LYS	2.7
4	F	337	ALA	2.7

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Mol	Chain	Res	Type	RSRZ
2	D	128	SER	2.7
3	E	46	SER	2.7
4	F	141	GLY	2.6
2	B	437	ASP	2.6
4	F	204	TRP	2.6
4	F	24	THR	2.6
4	F	130	VAL	2.6
4	F	222	ARG	2.6
2	B	58	GLY	2.6
2	B	61	TYR	2.6
3	E	52	LYS	2.6
4	F	10	ASN	2.6
2	B	32	PRO	2.6
2	D	1	MET	2.6
2	D	415	GLU	2.6
2	D	33	THR	2.5
2	D	57	THR	2.5
4	F	245	ILE	2.5
2	D	217	LEU	2.5
1	A	365	GLY	2.5
2	B	35	SER	2.5
4	F	173	ILE	2.5
4	F	129	GLU	2.5
4	F	264	PHE	2.5
4	F	182	ILE	2.5
4	F	32	LYS	2.5
4	F	349	GLY	2.4
1	A	83	TYR	2.4
4	F	22	LEU	2.4
4	F	133	ALA	2.4
1	A	179	THR	2.4
4	F	136	ASN	2.4
2	D	405	LEU	2.3
3	E	48	GLU	2.3
4	F	134	ALA	2.3
4	F	196	HIS	2.3
1	A	349	THR	2.3
2	D	94	PHE	2.3
1	A	82	THR	2.2
4	F	351	VAL	2.2
2	D	279	GLY	2.2
1	A	42	ILE	2.2

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Mol	Chain	Res	Type	RSRZ
2	B	121	VAL	2.2
4	F	23	ALA	2.2
2	B	33	THR	2.2
4	F	28	LYS	2.1
4	F	11	SER	2.1
1	A	364	PRO	2.1
4	F	341	LYS	2.1
1	A	56	THR	2.1
4	F	338	CYS	2.1
4	F	228	TYR	2.1
4	F	5	VAL	2.1
2	D	210	TYR	2.1
2	D	278	ARG	2.1
2	B	38	GLY	2.1
4	F	26	GLN	2.1
4	F	160	ILE	2.1
2	B	340	SER	2.1
4	F	266	GLU	2.1
2	D	32	PRO	2.0
2	D	280	SER	2.0
2	D	46	LEU	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

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.

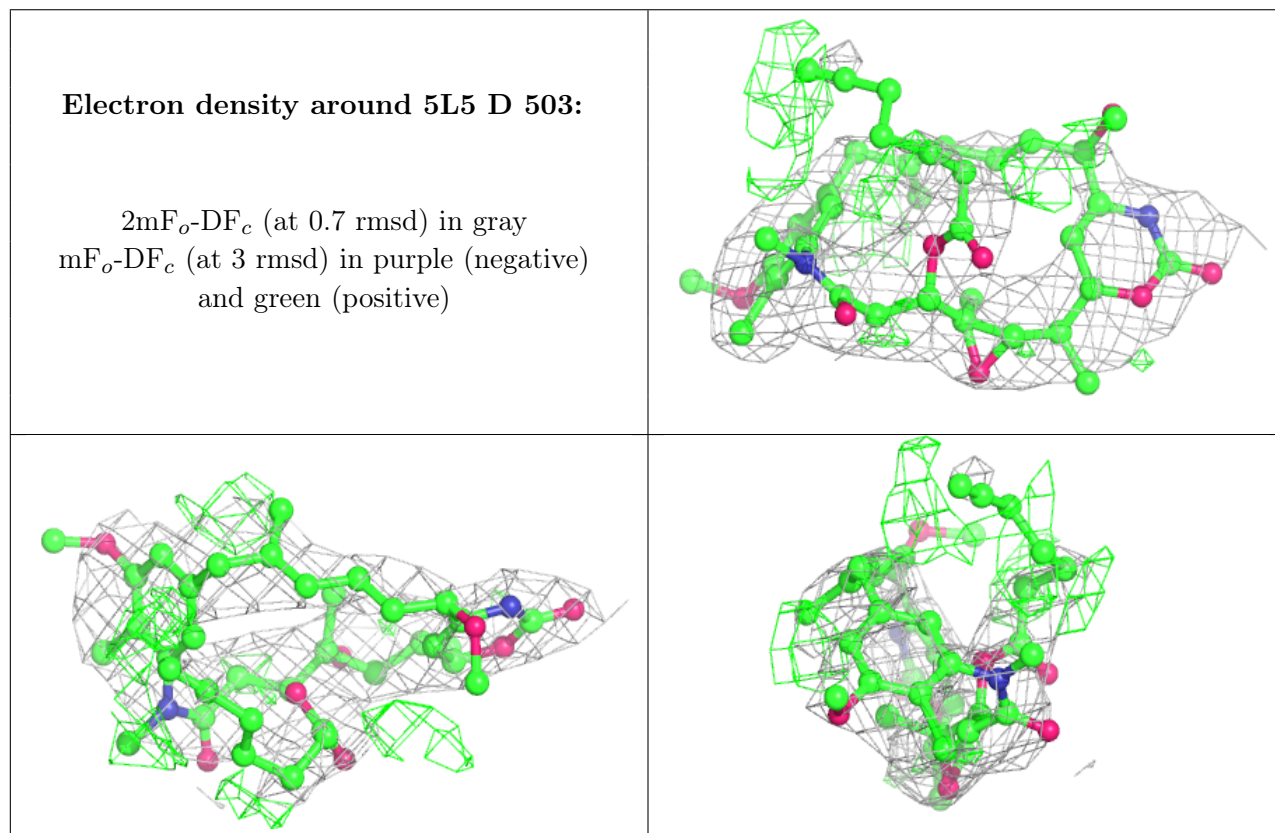
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
10	5L5	D	503	46/46	0.85	0.35	75,92,101,106	46
11	ACP	F	401	31/31	0.91	0.18	83,103,112,117	0

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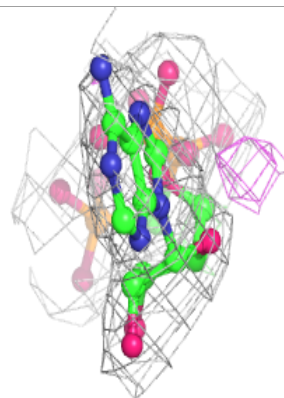
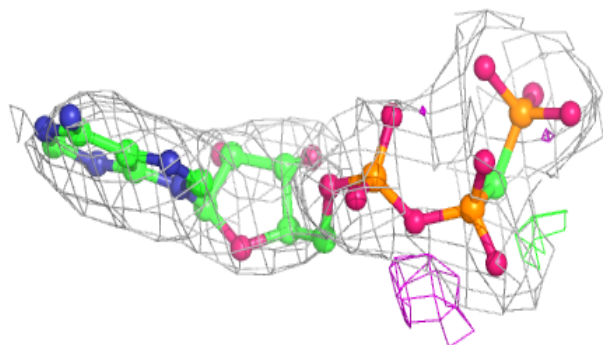
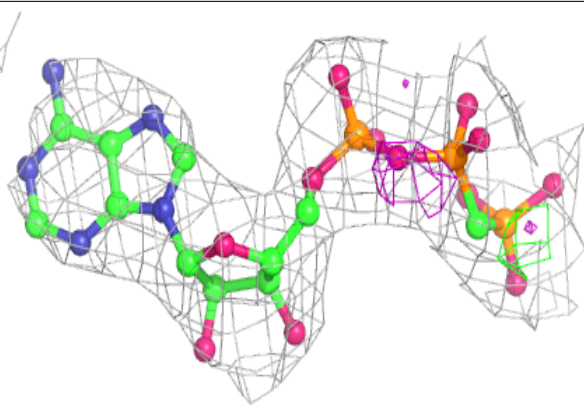
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
7	CA	A	503	1/1	0.94	0.04	81,81,81,81	0
6	MG	D	502	1/1	0.94	0.06	77,77,77,77	0
6	MG	F	402	1/1	0.94	0.17	78,78,78,78	0
8	GDP	D	501	28/28	0.95	0.16	64,74,87,97	0
9	MES	B	504	12/12	0.95	0.16	49,62,71,81	0
7	CA	B	503	1/1	0.98	0.21	91,91,91,91	0
7	CA	C	503	1/1	0.98	0.07	69,69,69,69	0
8	GDP	B	501	28/28	0.98	0.21	34,44,51,56	0
6	MG	B	502	1/1	0.98	0.25	49,49,49,49	0
5	GTP	A	501	32/32	0.98	0.21	42,50,56,60	0
5	GTP	C	501	32/32	0.98	0.18	33,41,48,51	0
6	MG	A	502	1/1	0.98	0.21	52,52,52,52	0
6	MG	C	502	1/1	0.99	0.13	39,39,39,39	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.

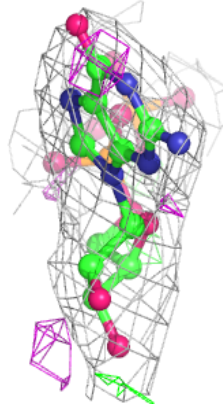
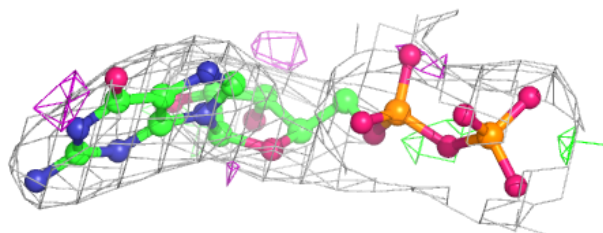
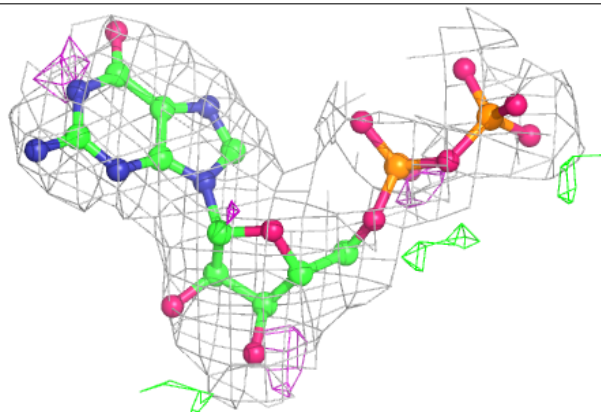


Electron density around ACP F 401:

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

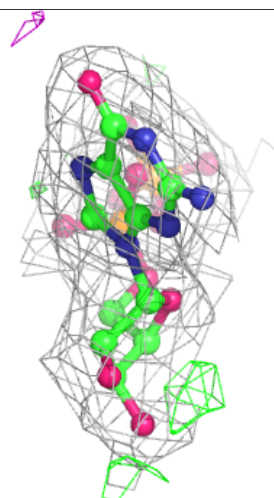
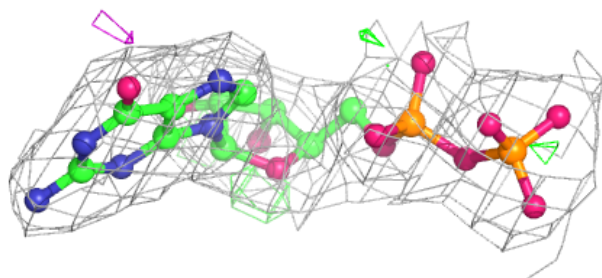
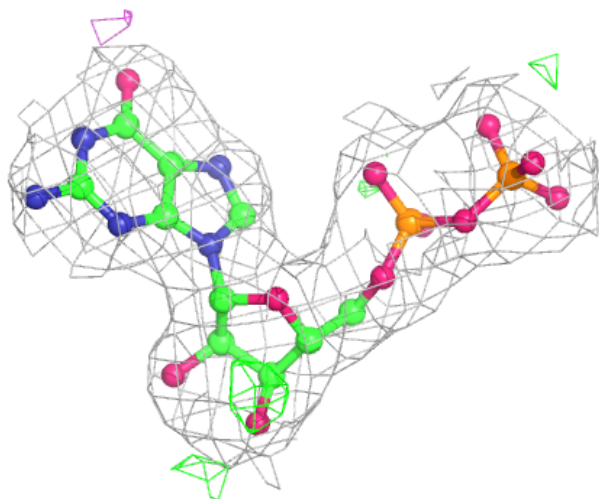
**Electron density around GDP D 501:**

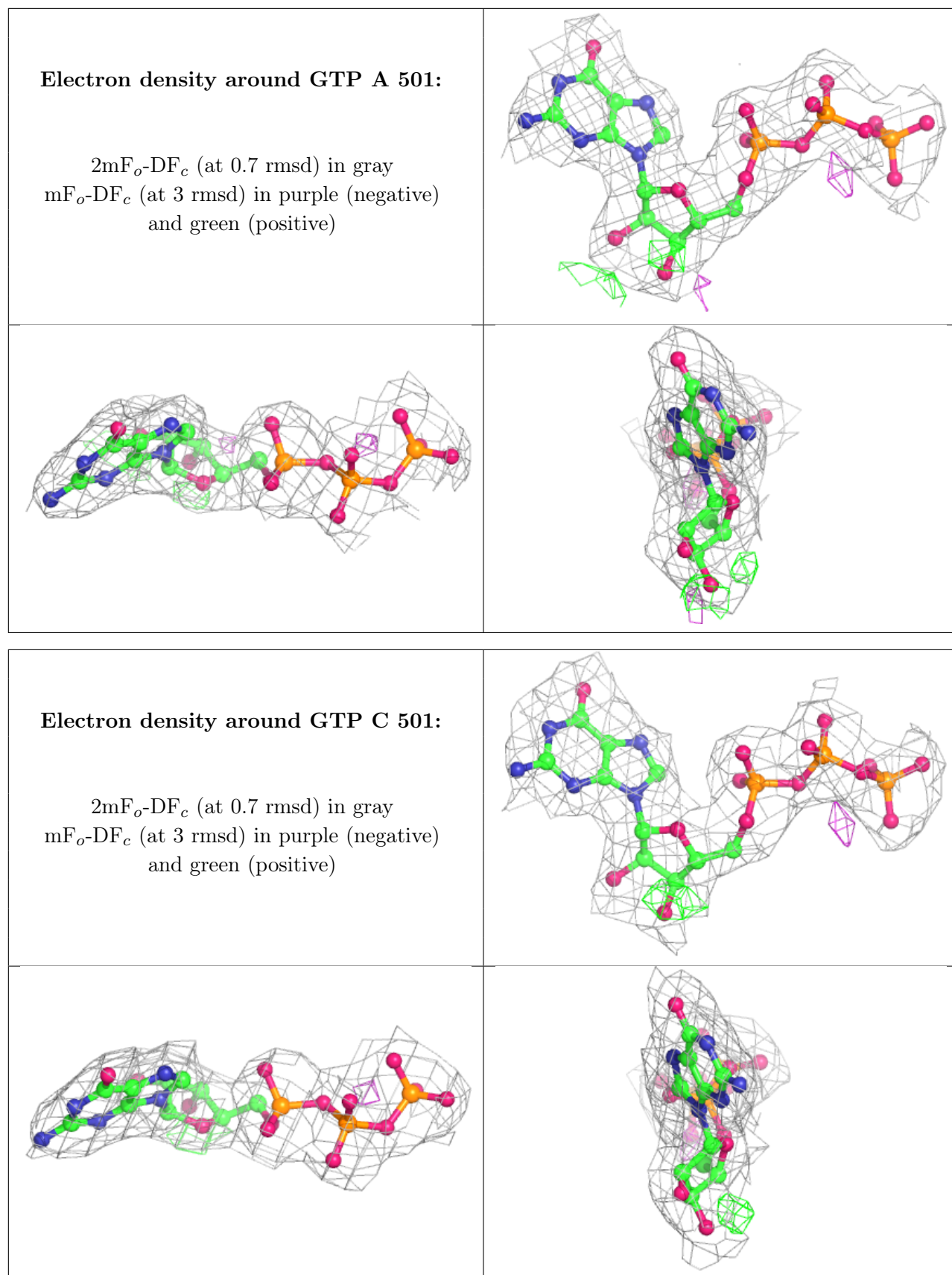
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



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.