Full wwPDB X-ray Structure Validation Report ⓘ

Mar 18, 2024 – 04:27 pm GMT

PDB ID	:	8RIW
Title	:	T2R-TTL-1-L01 complex
Authors	:	Prota, A.E.P.; Boiarska, Z.; Homer, J.A.; Steinmetz, M.O.; Moses, J.E.
Deposited on	:	2023-12-19
Resolution	:	2.57 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:

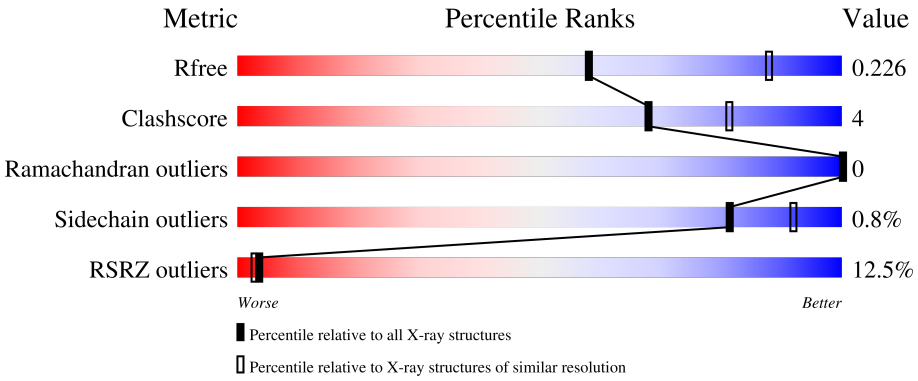
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.57 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	3676 (2.60-2.56)
Clashscore	141614	4049 (2.60-2.56)
Ramachandran outliers	138981	3979 (2.60-2.56)
Sidechain outliers	138945	3979 (2.60-2.56)
RSRZ outliers	127900	3614 (2.60-2.56)

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

Mol	Chain	Length	Quality of chain
1	A	451	7% 86% 11% ·
1	C	451	% 88% 10% ·
2	B	445	5% 84% 11% 5%
2	D	445	13% 83% 13% ·
3	E	142	13% 85% · 13%

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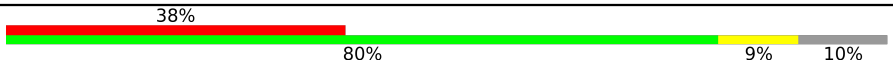
Mol	Chain	Length	Quality of chain
4	F	384	

2 Entry composition (i)

There are 14 unique types of molecules in this entry. The entry contains 17779 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
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
			3449	2181	586	658	24			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	423	Total	C	N	O	S	0	1	0
			3345	2102	572	644	27			
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
3	E	123	Total	C	N	O	S	0	0	0
			1014	625	183	201	5			

There are 3 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
E	?	-	GLY	deletion	UNP P63043

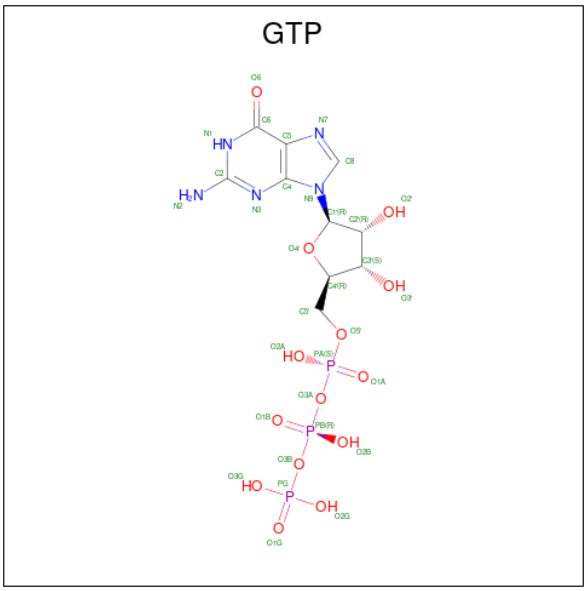
- Molecule 4 is a protein called Tubulin tyrosine ligase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	F	344	Total	C	N	O	S	0	0	0
			2812	1803	482	513	14			

There are 39 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	?	-	ALA	deletion	UNP A0A8V0Z8P0
F	?	-	GLU	deletion	UNP A0A8V0Z8P0
F	?	-	MET	deletion	UNP A0A8V0Z8P0
F	?	-	GLN	deletion	UNP A0A8V0Z8P0
F	?	-	GLN	deletion	UNP A0A8V0Z8P0
F	?	-	GLN	deletion	UNP A0A8V0Z8P0
F	?	-	LEU	deletion	UNP A0A8V0Z8P0
F	?	-	LEU	deletion	UNP A0A8V0Z8P0
F	?	-	GLU	deletion	UNP A0A8V0Z8P0
F	?	-	GLY	deletion	UNP A0A8V0Z8P0
F	?	-	ASP	deletion	UNP A0A8V0Z8P0
F	?	-	GLN	deletion	UNP A0A8V0Z8P0
F	?	-	THR	deletion	UNP A0A8V0Z8P0
F	?	-	LEU	deletion	UNP A0A8V0Z8P0
F	?	-	VAL	deletion	UNP A0A8V0Z8P0
F	?	-	LEU	deletion	UNP A0A8V0Z8P0
F	?	-	ALA	deletion	UNP A0A8V0Z8P0
F	?	-	SER	deletion	UNP A0A8V0Z8P0
F	?	-	SER	deletion	UNP A0A8V0Z8P0
F	?	-	THR	deletion	UNP A0A8V0Z8P0
F	?	-	HIS	deletion	UNP A0A8V0Z8P0
F	?	-	PRO	deletion	UNP A0A8V0Z8P0
F	?	-	GLU	deletion	UNP A0A8V0Z8P0
F	?	-	SER	deletion	UNP A0A8V0Z8P0
F	?	-	VAL	deletion	UNP A0A8V0Z8P0
F	?	-	ASP	deletion	UNP A0A8V0Z8P0
F	?	-	SER	deletion	UNP A0A8V0Z8P0
F	?	-	ASP	deletion	UNP A0A8V0Z8P0
F	?	-	LYS	deletion	UNP A0A8V0Z8P0
F	?	-	ASN	deletion	UNP A0A8V0Z8P0
F	?	-	HIS	deletion	UNP A0A8V0Z8P0
F	?	-	GLY	deletion	UNP A0A8V0Z8P0
F	?	-	PHE	deletion	UNP A0A8V0Z8P0
F	379	HIS	-	expression tag	UNP A0A8V0Z8P0
F	380	HIS	-	expression tag	UNP A0A8V0Z8P0
F	381	HIS	-	expression tag	UNP A0A8V0Z8P0
F	382	HIS	-	expression tag	UNP A0A8V0Z8P0
F	383	HIS	-	expression tag	UNP A0A8V0Z8P0
F	384	HIS	-	expression tag	UNP A0A8V0Z8P0

- 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
5	A	1	Total C N O P 32 10 5 14 3	0	0
5	C	1	Total C N O P 32 10 5 14 3	0	0

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

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

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

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	2	Total Ca 2 2	0	0
7	B	1	Total Ca 1 1	0	0

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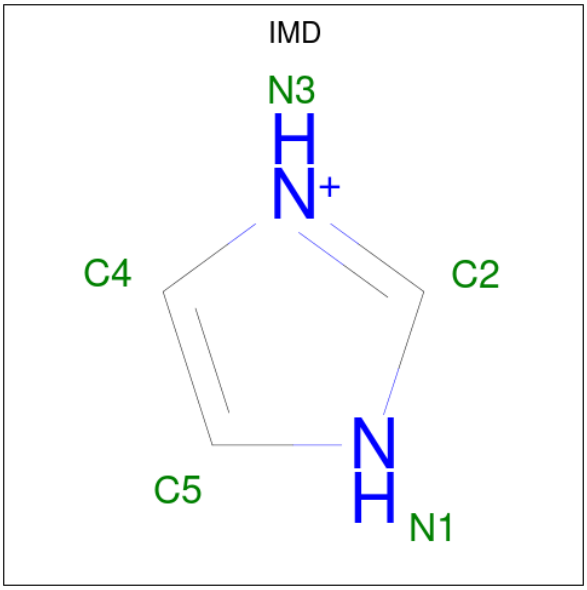
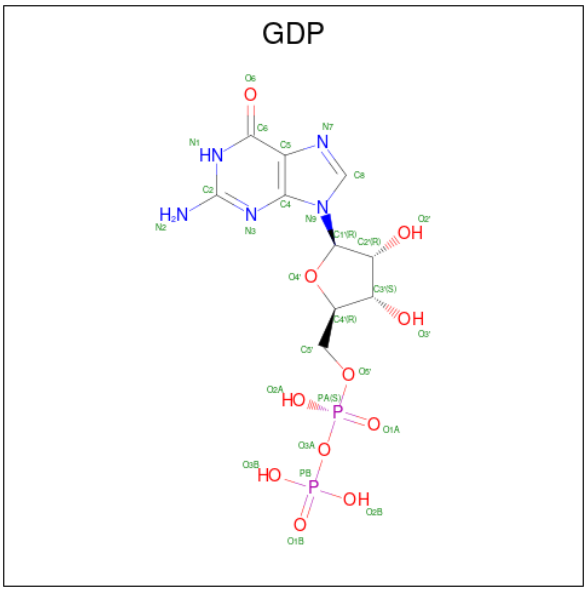
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	C	1	Total Ca 1 1	0	0

- Molecule 8 is IMIDAZOLE (three-letter code: IMD) (formula: $C_3H_5N_2$).



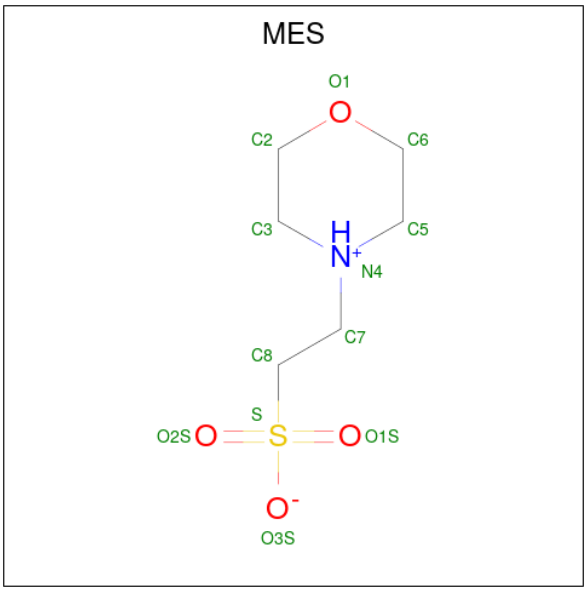
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	1	Total C N 5 3 2	0	0
8	B	1	Total C N 5 3 2	0	0
8	B	1	Total C N 5 3 2	0	0

- Molecule 9 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: $C_{10}H_{15}N_5O_{11}P_2$).



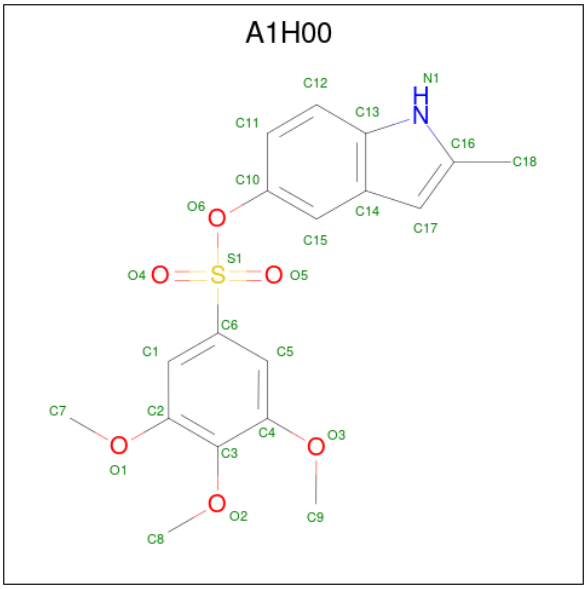
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
9	B	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
9	D	1	Total	C	N	O	P	0	0
			28	10	5	11	2		

- Molecule 10 is 2-(N-MORPHOLINO)-ETHANESULFONIC ACID (three-letter code: MES) (formula: $C_6H_{13}NO_4S$).



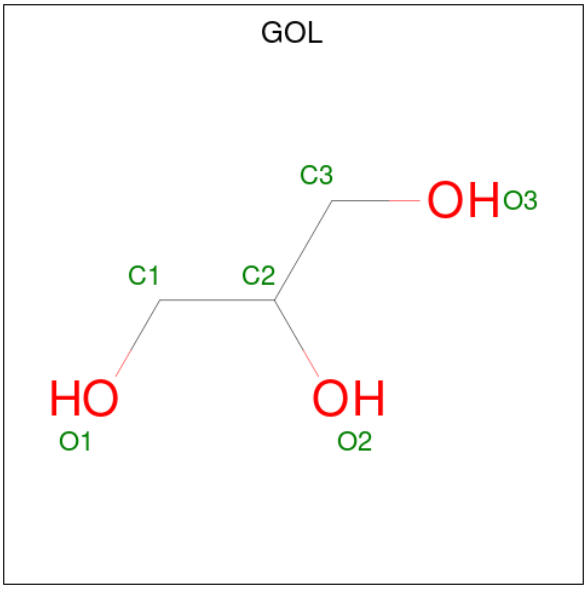
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
10	B	1	Total	C	N	O	S	0	0
			12	6	1	4	1		

- Molecule 11 is (2-methyl-1 {H}-indol-5-yl) 3,4,5-trimethoxybenzenesulfonate (three-letter code: A1H00) (formula: $C_{18}H_{19}NO_6S$) (labeled as "Ligand of Interest" by depositor).



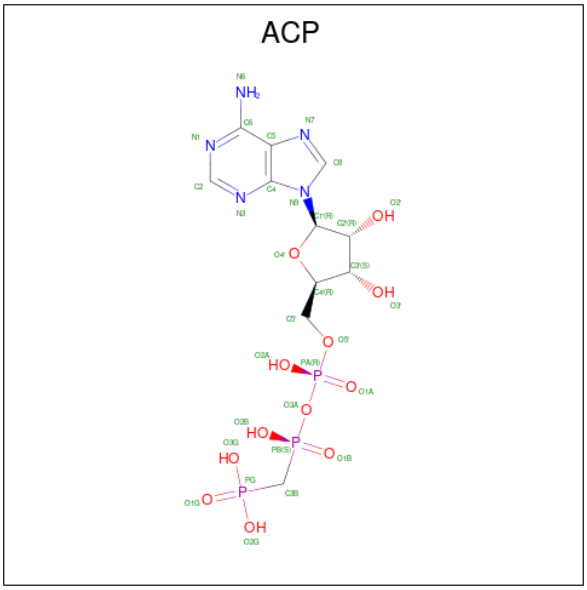
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
11	B	1	Total	C	N	O	S	0	0
			26	18	1	6	1		
11	D	1	Total	C	N	O	S	0	0
			26	18	1	6	1		

- Molecule 12 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
12	C	1	Total C O 6 3 3	0	0

- Molecule 13 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
13	F	1	Total C N O P 31 11 5 12 3	0	0

- Molecule 14 is water.

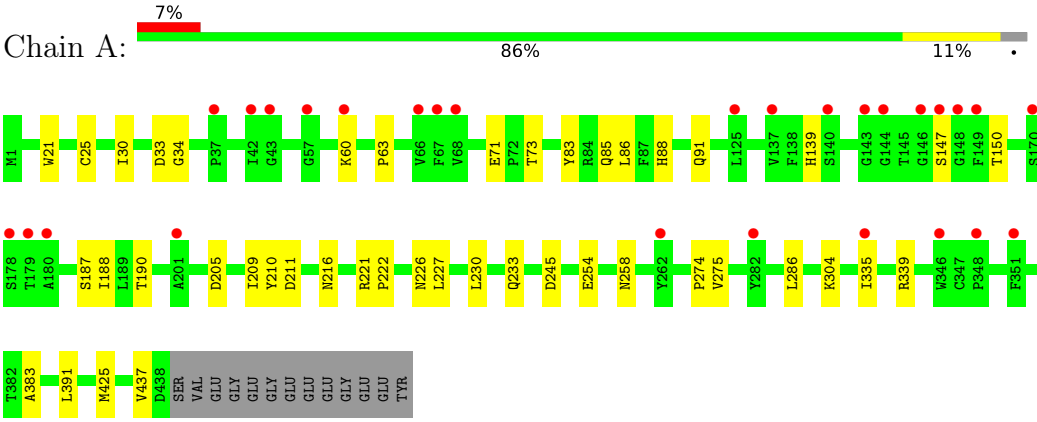
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
14	A	17	Total O 17 17	0	0
14	B	38	Total O 38 38	0	0
14	C	76	Total O 76 76	0	0
14	D	5	Total O 5 5	0	0
14	E	3	Total O 3 3	0	0
14	F	3	Total O 3 3	0	0

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.

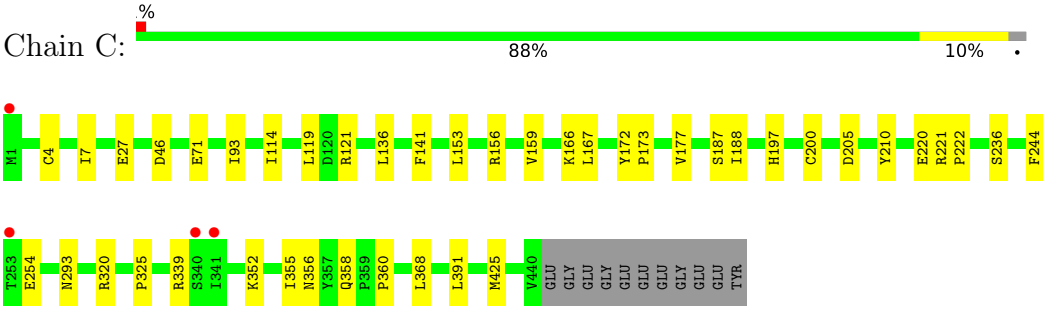
• Molecule 1: Tubulin alpha-1B chain

Chain A:



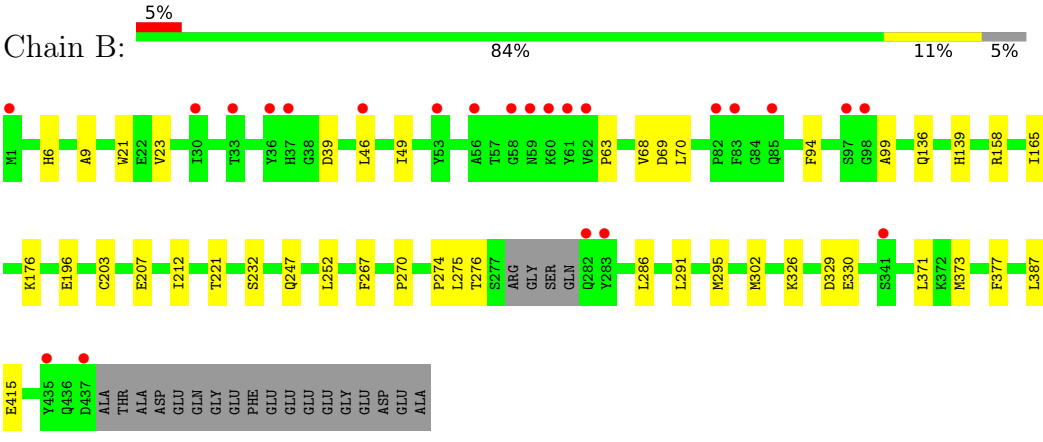
• Molecule 1: Tubulin alpha-1B chain

Chain C:



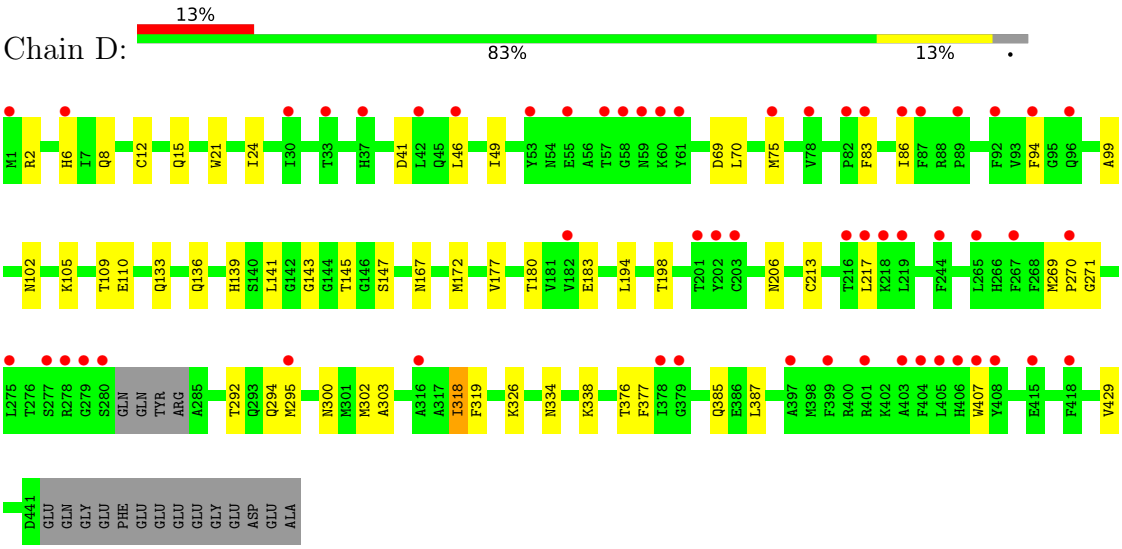
• Molecule 2: Tubulin beta-2B chain

Chain B:



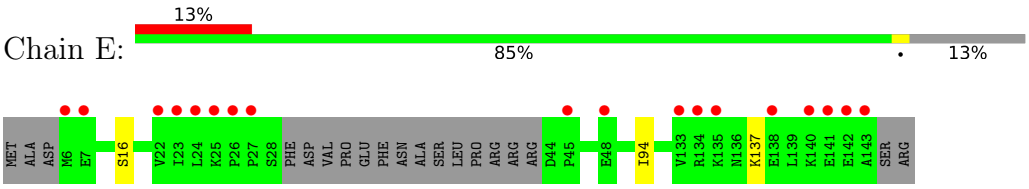
• Molecule 2: Tubulin beta-2B chain

Chain D:



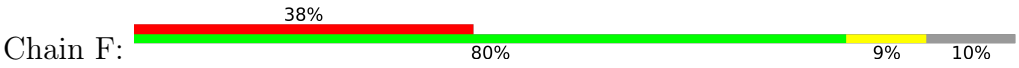
• Molecule 3: Stathmin-4

Chain E:



• Molecule 4: Tubulin tyrosine ligase

Chain F:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	104.69Å 156.10Å 182.53Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.99 – 2.57 49.63 – 2.57	Depositor EDS
% Data completeness (in resolution range)	99.2 (47.99-2.57) 99.3 (49.63-2.57)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.50 (at 2.58Å)	Xtriage
Refinement program	PHENIX 1.21rc1_5058	Depositor
R, R_{free}	0.189 , 0.228 0.186 , 0.226	Depositor DCC
R_{free} test set	4735 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	82.2	Xtriage
Anisotropy	0.136	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 62.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	17779	wwPDB-VP
Average B, all atoms (Å^2)	104.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.74% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: GTP, GOL, IMD, MES, GDP, MG, A1H00, CA, ACP

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	0/3527	0.47	0/4789
2	B	0.24	0/3419	0.46	0/4629
2	D	0.24	0/3421	0.45	0/4633
3	E	0.23	0/1022	0.41	0/1356
4	F	0.24	0/2874	0.45	0/3880
All	All	0.24	0/17765	0.46	0/24041

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	27	0
1	C	3449	0	3357	23	0
2	B	3345	0	3227	26	0
2	D	3348	0	3227	36	0
3	E	1014	0	1029	3	0
4	F	2812	0	2781	20	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	2	0	0	0	0
7	B	1	0	0	0	0
7	C	1	0	0	0	0
8	A	5	0	5	2	0
8	B	10	0	10	1	0
9	B	28	0	12	0	0
9	D	28	0	12	2	0
10	B	12	0	13	0	0
11	B	26	0	0	0	0
11	D	26	0	0	0	0
12	C	6	0	8	0	0
13	F	31	0	14	0	0
14	A	17	0	0	0	0
14	B	38	0	0	0	0
14	C	76	0	0	0	0
14	D	5	0	0	0	0
14	E	3	0	0	0	0
14	F	3	0	0	0	0
All	All	17779	0	17053	130	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 4.

All (130) 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:D:318:ILE:HD12	2:D:376:THR:HB	1.70	0.74
2:B:270:PRO:HG2	2:B:302:MET:HB2	1.74	0.69
4:F:194:PRO:O	4:F:197:ARG:NH1	2.27	0.68
1:A:226:ASN:ND2	1:A:367:ASP:OD2	2.28	0.67
2:B:23:VAL:HG21	2:B:232:SER:HB3	1.77	0.67
2:D:385:GLN:HB2	2:D:429:VAL:HG13	1.77	0.66
2:B:326:LYS:NZ	2:B:330:GLU:OE2	2.28	0.65
4:F:225:SER:HB3	4:F:252:ASN:HB2	1.79	0.64
2:D:269:MET:HG3	2:D:303:ALA:HB3	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:209:ILE:HG23	1:A:230:LEU:HD23	1.83	0.61
2:D:75:MET:HG3	2:D:94:PHE:HB3	1.83	0.60
2:D:213:CYS:HA	2:D:217:LEU:HB2	1.84	0.59
2:B:6:HIS:CD2	2:B:21:TRP:HE1	2.20	0.59
2:D:172:MET:HG3	2:D:387:LEU:HD11	1.84	0.58
1:A:71:GLU:OE2	1:A:73:THR:OG1	2.21	0.58
2:B:172:MET:HG3	2:B:387:LEU:HD11	1.85	0.58
1:A:381:THR:HG22	1:A:383:ALA:H	1.70	0.57
2:D:46:LEU:HA	2:D:49:ILE:HB	1.86	0.57
2:B:70:LEU:HD12	2:B:99:ALA:HB2	1.86	0.56
1:A:172:TYR:HB3	1:A:205:ASP:HA	1.88	0.56
2:D:294:GLN:HG2	2:D:300:ASN:HD21	1.71	0.55
2:D:70:LEU:HD12	2:D:99:ALA:HB2	1.89	0.55
2:D:2:ARG:HH21	2:D:133:GLN:HA	1.72	0.55
1:A:177:VAL:HG12	8:A:505:IMD:H5	1.90	0.54
1:C:172:TYR:HB3	1:C:205:ASP:HA	1.88	0.54
1:C:293:ASN:OD1	1:C:339:ARG:NH1	2.40	0.54
2:D:143:GLY:O	2:D:147:SER:OG	2.25	0.54
2:B:176:LYS:HD2	2:B:207:GLU:HG3	1.91	0.53
2:D:177:VAL:HG21	2:D:206:ASN:HB3	1.90	0.53
8:A:505:IMD:H2	2:B:247:GLN:OE1	2.10	0.52
4:F:199:PHE:HA	4:F:223:THR:HA	1.90	0.52
4:F:81:ILE:HG12	4:F:87:LEU:HD13	1.92	0.51
4:F:226:GLU:HB2	4:F:238:CYS:HB3	1.93	0.51
2:D:334:ASN:HD21	2:D:338:LYS:HE2	1.76	0.50
1:A:83:TYR:HB3	1:A:86:LEU:HD22	1.93	0.50
1:A:188:ILE:HG23	1:A:425:MET:HG3	1.94	0.50
4:F:186:LEU:HD12	4:F:320:MET:HE2	1.94	0.50
2:B:274:PRO:HB3	2:B:286:LEU:HD22	1.94	0.49
4:F:280:GLU:HA	4:F:284:LEU:HB2	1.94	0.49
1:A:34:GLY:HA3	1:A:60:LYS:HG3	1.95	0.49
1:C:93:ILE:HG22	1:C:114:ILE:HD11	1.96	0.48
4:F:185:TYR:OH	4:F:198:LYS:NZ	2.44	0.48
2:D:6:HIS:CD2	2:D:21:TRP:HE1	2.31	0.48
2:B:158:ARG:NH1	2:B:196:GLU:O	2.47	0.48
1:A:274:PRO:HB3	1:A:286:LEU:HD12	1.95	0.48
2:B:295:MET:HG2	2:B:377:PHE:HB2	1.96	0.48
1:C:4[A]:CYS:SG	1:C:136:LEU:HG	2.54	0.47
2:B:46:LEU:HA	2:B:49:ILE:HB	1.96	0.47
1:A:25:CYS:SG	1:A:86:LEU:HD21	2.55	0.47
1:A:221:ARG:NH1	2:B:329:ASP:OD2	2.48	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:126:ASP:OD1	4:F:127:GLU:N	2.48	0.47
4:F:204:TRP:HB3	4:F:314:LEU:HD11	1.97	0.47
4:F:217:ARG:HG3	4:F:218:GLU:HG2	1.97	0.47
2:B:212:ILE:HG23	2:B:275:LEU:HD13	1.96	0.47
1:C:188:ILE:HG13	1:C:425:MET:HG3	1.96	0.47
1:C:7:ILE:HG21	1:C:153:LEU:HD21	1.97	0.47
2:D:194:LEU:O	2:D:198:THR:OG1	2.32	0.47
2:D:180:THR:HB	2:D:183:GLU:HG3	1.97	0.47
1:C:254:GLU:HG2	1:C:352:LYS:HE2	1.98	0.46
4:F:243:HIS:HE2	4:F:253:TYR:HH	1.59	0.46
1:A:211:ASP:OD2	1:A:304:LYS:NZ	2.48	0.46
1:C:141:PHE:HB2	1:C:173:PRO:HD3	1.97	0.46
1:A:210:TYR:CE1	1:A:222:PRO:HD2	2.50	0.46
8:B:506:IMD:HN1	8:B:507:IMD:H5	1.81	0.46
1:A:33:ASP:HA	1:A:85:GLN:HB2	1.98	0.45
1:A:216:ASN:HD22	1:A:275:VAL:HB	1.81	0.45
1:C:210:TYR:CE1	1:C:222:PRO:HD2	2.51	0.45
1:C:320:ARG:HA	1:C:356:ASN:O	2.17	0.45
2:D:21:TRP:CE3	2:D:24:ILE:HD11	2.51	0.45
1:A:88:HIS:CE1	1:A:91:GLN:HG3	2.51	0.45
2:B:136:GLN:HA	2:B:167:ASN:O	2.16	0.45
2:B:221:THR:HG21	1:C:325:PRO:HB2	1.98	0.45
2:D:12:CYS:HB2	9:D:501:GDP:C8	2.52	0.45
1:A:187:SER:HB3	1:A:391:LEU:HD21	1.98	0.45
2:D:294:GLN:HG2	2:D:300:ASN:ND2	2.31	0.45
2:B:203:CYS:SG	2:B:267:PHE:HB3	2.57	0.45
2:B:295:MET:CG	2:B:377:PHE:HB2	2.48	0.44
1:C:187:SER:HB3	1:C:391:LEU:HD21	1.98	0.44
2:D:292:THR:HG22	2:D:319:PHE:CZ	2.52	0.44
1:A:21:TRP:CZ3	1:A:63:PRO:HB3	2.52	0.44
1:A:245:ASP:O	3:E:16:SER:OG	2.36	0.44
2:D:334:ASN:ND2	2:D:338:LYS:HE2	2.33	0.44
2:D:136:GLN:HA	2:D:167:ASN:O	2.18	0.43
4:F:279:LEU:HD12	4:F:283:ILE:HB	2.00	0.43
1:A:147:SER:HB2	1:A:190:THR:HB	1.99	0.43
2:D:69:ASP:HA	2:D:145:THR:HG21	2.01	0.43
4:F:338:CYS:SG	4:F:339:ALA:N	2.92	0.43
1:A:254:GLU:HG2	1:A:258:ASN:ND2	2.33	0.43
1:A:335:ILE:HG23	1:A:339:ARG:HG3	2.01	0.43
4:F:168:GLU:N	4:F:168:GLU:OE1	2.52	0.43
2:B:402:LYS:N	2:B:402:LYS:HD2	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:27:GLU:OE2	1:C:236:SER:OG	2.24	0.43
1:C:248:LEU:HD13	1:C:355:ILE:HD12	2.00	0.43
2:B:276:THR:HG21	2:B:371:LEU:HD21	2.00	0.42
2:D:141:LEU:HA	2:D:147:SER:HB3	2.01	0.42
1:C:159:VAL:HA	3:E:94:ILE:HG23	2.01	0.42
2:D:271:GLY:O	2:D:377:PHE:N	2.41	0.42
1:C:119:LEU:HD11	1:C:156:ARG:HB3	2.01	0.42
2:B:21:TRP:CZ3	2:B:63:PRO:HB3	2.54	0.42
2:B:291:LEU:HD11	2:B:373:MET:HB3	2.00	0.42
4:F:69:ASP:OD1	4:F:69:ASP:N	2.52	0.42
4:F:348:GLN:NE2	4:F:352:ASP:OD1	2.53	0.42
1:C:244:PHE:CE1	1:C:358:GLN:HG3	2.55	0.42
2:D:105:LYS:O	2:D:110:GLU:N	2.46	0.42
2:B:165:ILE:HG21	2:B:252:LEU:HB3	2.02	0.42
1:C:320:ARG:HG3	1:C:360:PRO:HG3	2.02	0.41
2:D:206:ASN:ND2	9:D:501:GDP:O2'	2.53	0.41
1:A:209:ILE:HG22	1:A:227:LEU:HD22	2.02	0.41
1:C:220:GLU:HB3	2:D:326:LYS:HD3	2.01	0.41
2:D:109:THR:HG21	3:E:137:LYS:NZ	2.35	0.41
1:C:167:LEU:HG	1:C:200:CYS:HB3	2.01	0.41
2:D:102:ASN:ND2	2:D:407:TRP:HB3	2.35	0.41
2:D:2:ARG:HB3	2:D:133:GLN:CG	2.51	0.41
1:A:233:GLN:HG3	1:A:368:LEU:HD13	2.03	0.41
2:B:9:ALA:HA	2:B:68:VAL:O	2.21	0.41
2:D:295:MET:HE2	2:D:377:PHE:HB2	2.02	0.41
4:F:225:SER:OG	4:F:260:ASN:ND2	2.50	0.41
1:A:25:CYS:HB3	1:A:30:ILE:O	2.21	0.41
2:B:69:ASP:O	2:B:94:PHE:HA	2.21	0.41
1:C:93:ILE:HD11	1:C:121:ARG:HG3	2.01	0.41
2:D:270:PRO:HB2	2:D:302:MET:HB2	2.03	0.41
4:F:223:THR:OG1	4:F:257:GLU:OE2	2.34	0.41
4:F:224:SER:HB2	4:F:241:THR:HG22	2.02	0.41
1:C:46:ASP:OD1	1:C:46:ASP:N	2.54	0.40
1:C:166:LYS:HE2	1:C:197:HIS:O	2.21	0.40
1:A:139:HIS:CD2	1:A:150:THR:HG21	2.56	0.40
2:D:2:ARG:HB3	2:D:133:GLN:HG3	2.02	0.40
2:B:414:ASP:OD1	2:B:415:GLU:N	2.54	0.40
2:D:75:MET:HB3	2:D:75:MET:HE3	1.95	0.40
2:D:83:PHE:O	2:D:86:ILE:HG22	2.21	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%)	429 (98%)	7 (2%)	0	100	100
1	C	440/451 (98%)	434 (99%)	6 (1%)	0	100	100
2	B	420/445 (94%)	412 (98%)	8 (2%)	0	100	100
2	D	423/445 (95%)	419 (99%)	4 (1%)	0	100	100
3	E	119/142 (84%)	119 (100%)	0	0	100	100
4	F	332/384 (86%)	324 (98%)	8 (2%)	0	100	100
All	All	2170/2318 (94%)	2137 (98%)	33 (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	369/379 (97%)	368 (100%)	1 (0%)	92	97
1	C	373/379 (98%)	368 (99%)	5 (1%)	69	85
2	B	368/383 (96%)	366 (100%)	2 (0%)	88	96
2	D	368/383 (96%)	363 (99%)	5 (1%)	67	84
3	E	110/127 (87%)	110 (100%)	0	100	100
4	F	308/342 (90%)	306 (99%)	2 (1%)	86	94
All	All	1896/1993 (95%)	1881 (99%)	15 (1%)	81	92

All (15) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	437	VAL
2	B	39	ASP
2	B	139	HIS
1	C	71	GLU
1	C	177	VAL
1	C	221	ARG
1	C	245	ASP
1	C	368	LEU
2	D	8	GLN
2	D	15	GLN
2	D	41	ASP
2	D	139	HIS
2	D	318	ILE
4	F	197	ARG
4	F	251	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
2	D	300	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 21 ligands modelled in this entry, 9 are monoatomic - leaving 12 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	$\#\|Z\| > 2$
8	IMD	A	505	-	3,5,5	0.15	0	4,5,5	0.97	0
9	GDP	B	501	6	24,30,30	0.95	1 (4%)	30,47,47	1.09	3 (10%)
5	GTP	C	501	6	26,34,34	1.15	2 (7%)	32,54,54	1.45	6 (18%)
12	GOL	C	504	-	5,5,5	0.33	0	5,5,5	0.29	0
9	GDP	D	501	6	24,30,30	0.94	1 (4%)	30,47,47	1.27	4 (13%)
13	ACP	F	401	6	27,33,33	2.31	3 (11%)	32,52,52	1.09	3 (9%)
10	MES	B	504	-	12,12,12	1.10	1 (8%)	14,16,16	0.89	1 (7%)
8	IMD	B	506	-	3,5,5	0.16	0	4,5,5	1.00	0
11	A1H00	D	503	-	26,28,28	1.02	2 (7%)	36,41,41	1.33	6 (16%)
8	IMD	B	507	-	3,5,5	0.17	0	4,5,5	0.99	0
5	GTP	A	501	6	26,34,34	1.15	2 (7%)	32,54,54	1.46	7 (21%)
11	A1H00	B	505	-	26,28,28	1.05	2 (7%)	36,41,41	1.39	6 (16%)

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
9	GDP	B	501	6	-	3/12/32/32	0/3/3/3
8	IMD	A	505	-	-	-	0/1/1/1
5	GTP	C	501	6	-	8/18/38/38	0/3/3/3
12	GOL	C	504	-	-	2/4/4/4	-
9	GDP	D	501	6	-	2/12/32/32	0/3/3/3
13	ACP	F	401	6	-	3/15/38/38	0/3/3/3
10	MES	B	504	-	-	0/6/14/14	0/1/1/1
11	A1H00	D	503	-	-	4/17/17/17	0/3/3/3
8	IMD	B	506	-	-	-	0/1/1/1
8	IMD	B	507	-	-	-	0/1/1/1
5	GTP	A	501	6	-	8/18/38/38	0/3/3/3
11	A1H00	B	505	-	-	4/17/17/17	0/3/3/3

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	F	401	ACP	PB-O3A	10.87	1.70	1.58
5	A	501	GTP	C5-C6	-4.07	1.39	1.47
5	C	501	GTP	C5-C6	-4.06	1.39	1.47
10	B	504	MES	C8-S	2.94	1.81	1.77
9	B	501	GDP	C6-N1	-2.38	1.34	1.37
9	D	501	GDP	C6-N1	-2.33	1.34	1.37
5	A	501	GTP	C2-N3	2.23	1.38	1.33
13	F	401	ACP	PB-O2B	-2.22	1.51	1.56
11	B	505	A1H00	C17-C16	-2.20	1.36	1.39
13	F	401	ACP	C8-N7	-2.17	1.30	1.34
11	B	505	A1H00	C11-C10	2.14	1.42	1.38
11	D	503	A1H00	C17-C16	-2.14	1.36	1.39
5	C	501	GTP	C2-N3	2.11	1.38	1.33
11	D	503	A1H00	C11-C10	2.09	1.42	1.38

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	D	501	GDP	PA-O3A-PB	-3.26	121.63	132.83
5	A	501	GTP	C5-C6-N1	3.22	119.63	113.95
5	C	501	GTP	PB-O3B-PG	-3.10	122.19	132.83
5	C	501	GTP	C5-C6-N1	3.08	119.38	113.95
5	A	501	GTP	C8-N7-C5	3.00	108.70	102.99
5	C	501	GTP	C8-N7-C5	2.98	108.67	102.99
11	D	503	A1H00	C11-C12-C13	-2.96	117.11	120.84
11	B	505	A1H00	C11-C12-C13	-2.96	117.11	120.84
11	D	503	A1H00	C10-O6-S1	2.95	123.77	118.95
9	D	501	GDP	C3'-C2'-C1'	2.94	105.40	100.98
5	C	501	GTP	PA-O3A-PB	-2.87	122.98	132.83
5	A	501	GTP	C2-N1-C6	-2.87	119.82	125.10
5	A	501	GTP	PA-O3A-PB	-2.83	123.12	132.83
13	F	401	ACP	O2B-PB-O1B	2.72	119.14	110.07
13	F	401	ACP	O1G-PG-C3B	-2.72	105.39	111.24
5	A	501	GTP	PB-O3B-PG	-2.67	123.65	132.83
5	C	501	GTP	C2-N1-C6	-2.67	120.19	125.10
11	B	505	A1H00	C10-O6-S1	2.66	123.29	118.95
11	B	505	A1H00	O1-C2-C3	2.65	119.82	115.16
11	D	503	A1H00	O2-C3-C4	-2.54	116.46	120.12
11	B	505	A1H00	C17-C14-C13	2.44	108.40	106.27
9	B	501	GDP	PA-O3A-PB	-2.39	124.61	132.83
11	D	503	A1H00	C17-C14-C13	2.38	108.35	106.27
9	B	501	GDP	C8-N7-C5	2.37	107.50	102.99
9	D	501	GDP	C8-N7-C5	2.33	107.44	102.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
11	D	503	A1H00	O1-C2-C3	2.32	119.24	115.16
9	B	501	GDP	C5-C6-N1	2.31	118.03	113.95
11	D	503	A1H00	O2-C3-C2	2.29	123.42	120.12
5	A	501	GTP	C3'-C2'-C1'	2.28	104.42	100.98
9	D	501	GDP	C5-C6-N1	2.25	117.92	113.95
10	B	504	MES	O2S-S-C8	-2.21	104.25	106.92
5	A	501	GTP	O6-C6-C5	-2.21	120.06	124.37
11	B	505	A1H00	O1-C2-C1	-2.19	120.36	124.12
11	B	505	A1H00	O2-C3-C2	2.17	123.25	120.12
5	C	501	GTP	O6-C6-C5	-2.12	120.23	124.37
13	F	401	ACP	PB-O3A-PA	-2.00	126.21	132.56

There are no chirality outliers.

All (34) 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
5	C	501	GTP	C5'-O5'-PA-O2A
9	B	501	GDP	C5'-O5'-PA-O1A
9	B	501	GDP	C5'-O5'-PA-O2A
9	D	501	GDP	C5'-O5'-PA-O3A
12	C	504	GOL	O1-C1-C2-C3
13	F	401	ACP	C5'-O5'-PA-O1A
13	F	401	ACP	C5'-O5'-PA-O3A
11	D	503	A1H00	C3-C2-O1-C7
11	D	503	A1H00	C3-C4-O3-C9
11	D	503	A1H00	C5-C4-O3-C9
11	D	503	A1H00	C1-C2-O1-C7
12	C	504	GOL	O1-C1-C2-O2
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	A	501	GTP	PB-O3A-PA-O2A
11	B	505	A1H00	C3-C4-O3-C9
5	A	501	GTP	C5'-O5'-PA-O2A
9	D	501	GDP	C5'-O5'-PA-O2A
5	A	501	GTP	C3'-C4'-C5'-O5'
11	B	505	A1H00	C3-C2-O1-C7
5	C	501	GTP	PB-O3A-PA-O2A
5	C	501	GTP	C4'-C5'-O5'-PA
5	A	501	GTP	O4'-C4'-C5'-O5'

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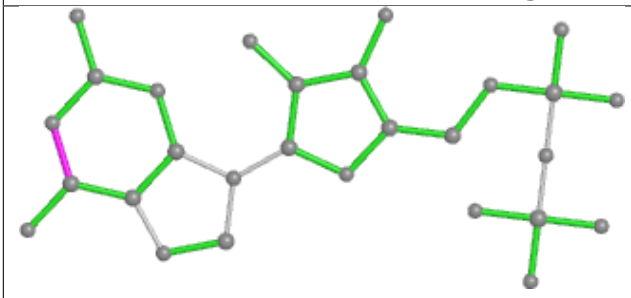
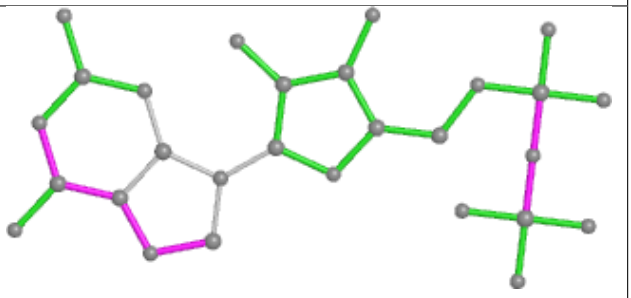
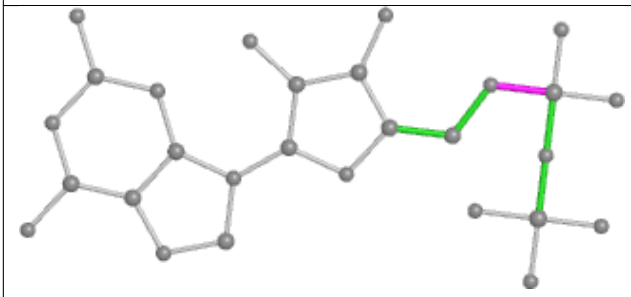
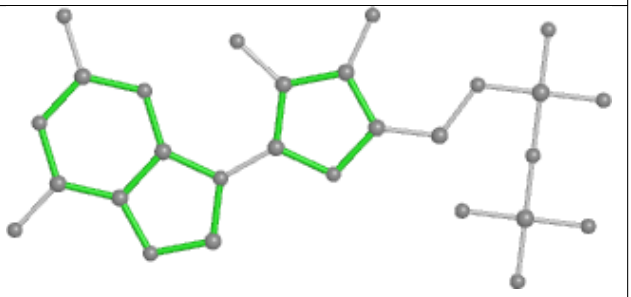
Mol	Chain	Res	Type	Atoms
11	B	505	A1H00	C5-C4-O3-C9
5	C	501	GTP	PB-O3B-PG-O1G
5	C	501	GTP	PB-O3B-PG-O2G
5	C	501	GTP	PB-O3B-PG-O3G
9	B	501	GDP	C5'-O5'-PA-O3A
5	A	501	GTP	C4'-C5'-O5'-PA
13	F	401	ACP	C5'-O5'-PA-O2A
11	B	505	A1H00	C1-C2-O1-C7

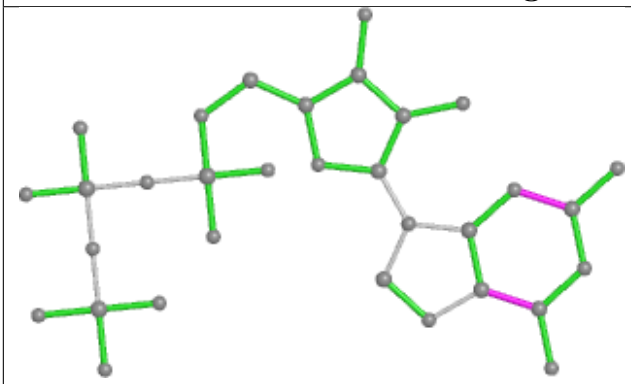
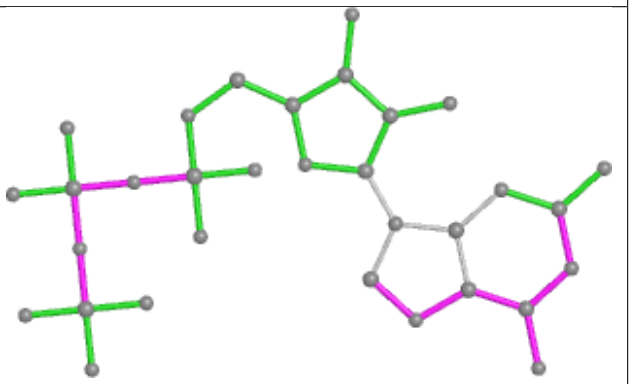
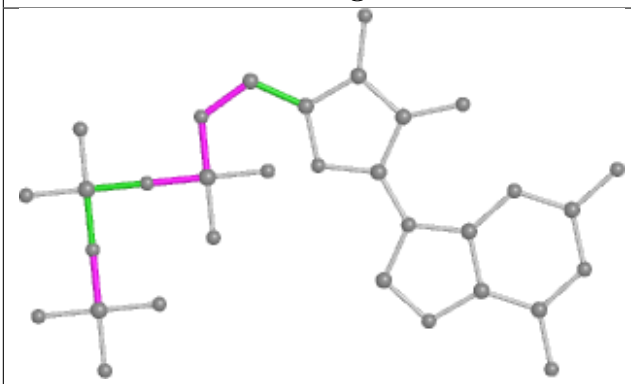
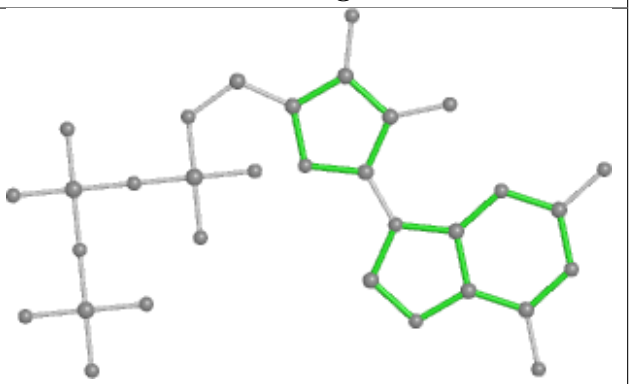
There are no ring outliers.

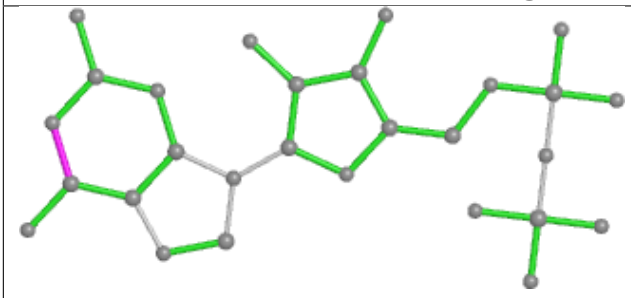
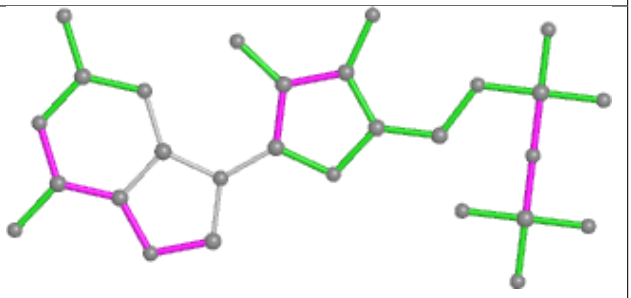
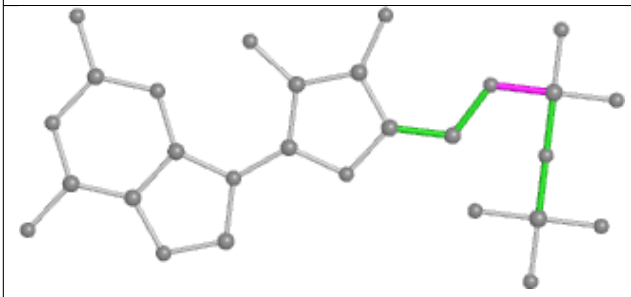
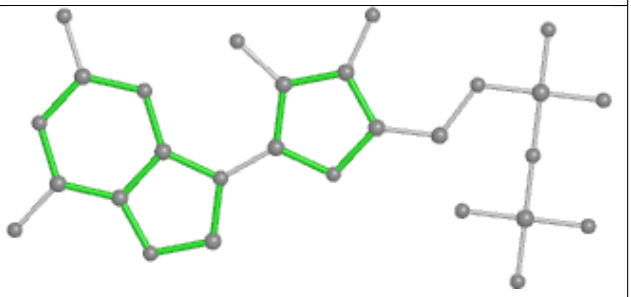
4 monomers are involved in 5 short contacts:

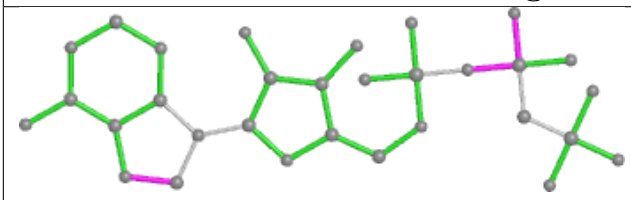
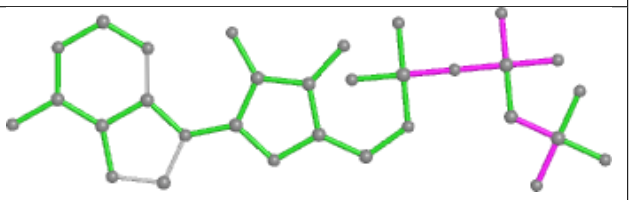
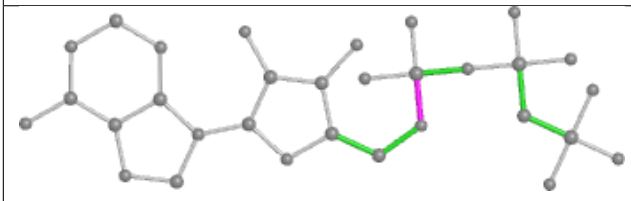
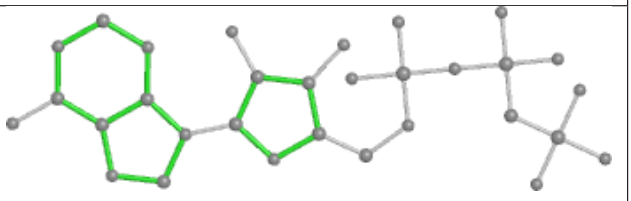
Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	A	505	IMD	2	0
9	D	501	GDP	2	0
8	B	506	IMD	1	0
8	B	507	IMD	1	0

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 then 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.

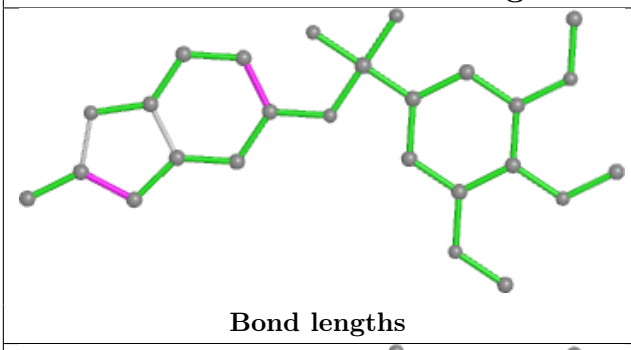
Ligand GDP B 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand GTP C 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

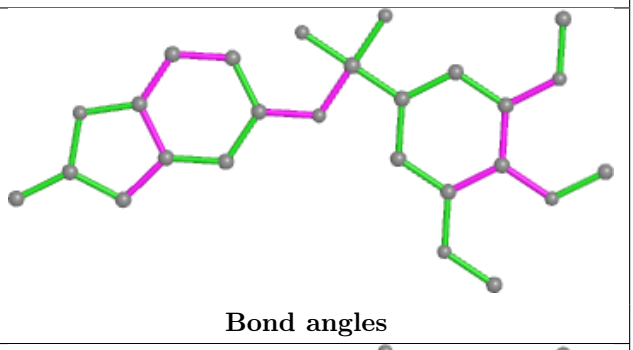
Ligand GDP D 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand ACP F 401	
 Bond lengths	 Bond angles
 Torsions	 Rings

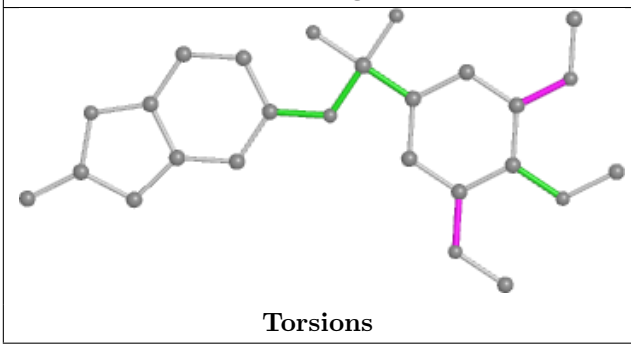
Ligand A1H00 D 503



Bond lengths



Bond angles



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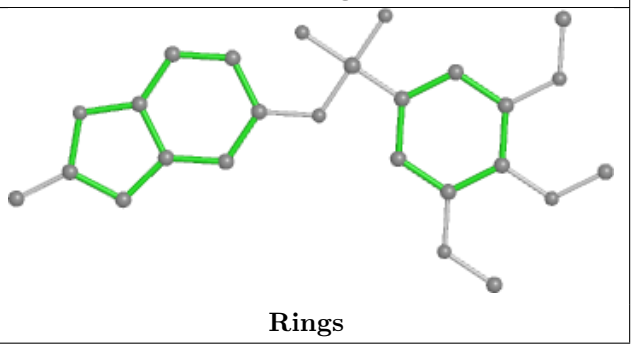
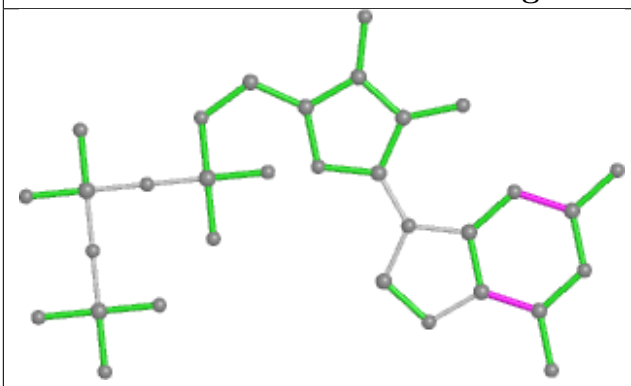


Rings

Ligand GTP A 501



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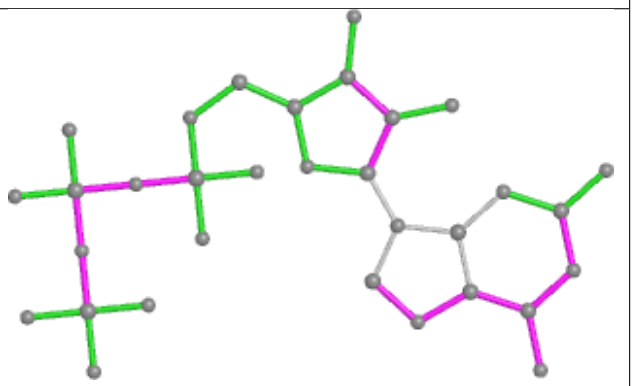

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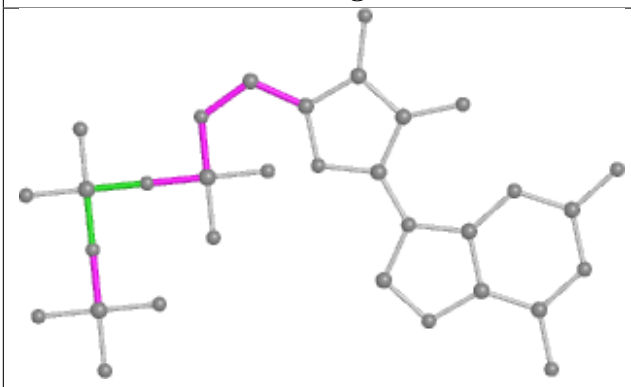
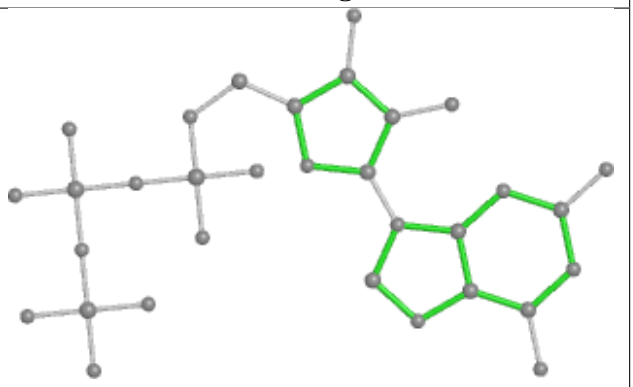
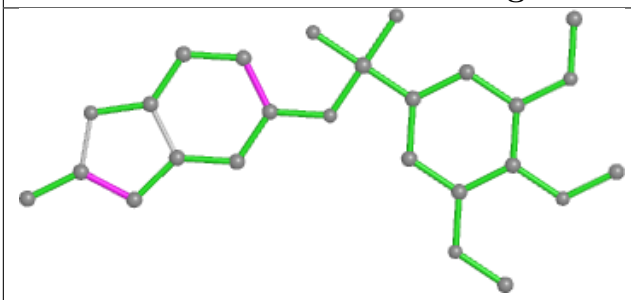


Torsions

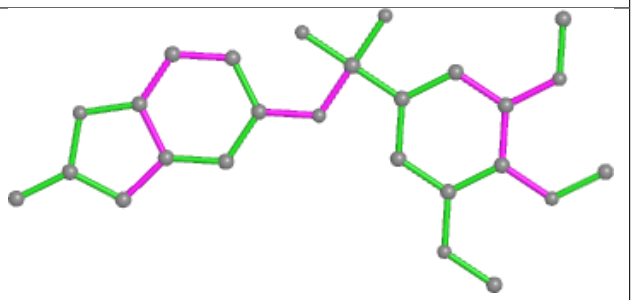


Rings

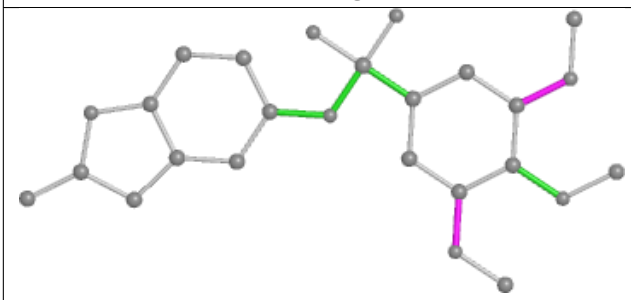
Ligand A1H00 B 505



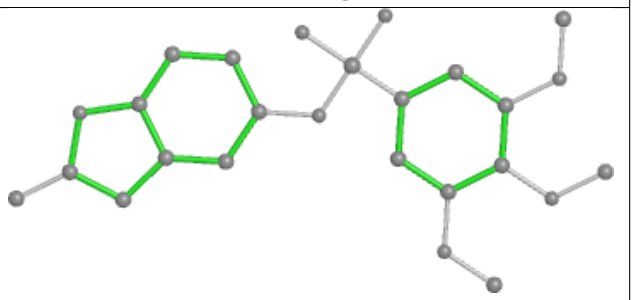
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	438/451 (97%)	0.57	30 (6%) 17 14	68, 95, 139, 210	0
1	C	440/451 (97%)	0.18	4 (0%) 84 83	55, 74, 110, 137	0
2	B	423/445 (95%)	0.51	23 (5%) 25 22	59, 82, 128, 178	0
2	D	427/445 (95%)	0.78	56 (13%) 3 2	72, 115, 158, 193	0
3	E	123/142 (86%)	0.68	18 (14%) 2 1	74, 108, 161, 210	0
4	F	344/384 (89%)	2.06	144 (41%) 0 0	85, 140, 200, 254	0
All	All	2195/2318 (94%)	0.76	275 (12%) 3 3	55, 98, 170, 254	0

All (275) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	1	MET	11.2
4	F	173	ILE	10.7
4	F	169	LEU	8.3
4	F	236	LYS	8.1
4	F	6	VAL	7.7
2	D	83	PHE	7.7
4	F	131	PHE	7.6
4	F	249	TYR	7.5
4	F	239	HIS	7.4
4	F	147	TRP	7.3
4	F	244	CYS	7.1
4	F	132	LEU	7.0
4	F	240	LEU	7.0
4	F	100	ILE	7.0
4	F	149	ALA	7.0
4	F	135	TYR	6.6
4	F	134	ALA	6.6
2	D	217	LEU	6.6
4	F	162	ILE	6.6

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Mol	Chain	Res	Type	RSRZ
4	F	142	ARG	6.5
4	F	164	SER	6.5
4	F	166	ALA	6.4
3	E	26	PRO	6.4
4	F	148	ILE	6.2
2	D	1	MET	6.2
4	F	228	TYR	6.2
4	F	20	LEU	6.1
4	F	99	VAL	5.9
4	F	245	ILE	5.8
1	A	282	TYR	5.8
4	F	128	ARG	5.8
4	F	137	ARG	5.8
4	F	161	LEU	5.7
4	F	101	TYR	5.7
4	F	199	PHE	5.7
2	D	404	PHE	5.6
2	D	405	LEU	5.6
4	F	330	ILE	5.5
2	B	61	TYR	5.5
2	B	59	ASN	5.5
4	F	150	LYS	5.5
4	F	103	THR	5.4
4	F	242	ASN	5.4
4	F	105	LEU	5.4
4	F	253	TYR	5.4
4	F	170	LEU	5.4
4	F	138	ARG	5.3
2	D	82	PRO	5.2
4	F	181	VAL	5.2
2	B	83	PHE	5.2
2	D	401	ARG	5.2
4	F	13	VAL	5.1
4	F	130	VAL	5.1
1	A	262	TYR	5.0
4	F	133	ALA	5.0
4	F	190	LEU	5.0
4	F	182	ILE	5.0
4	F	201	ILE	5.0
3	E	27	PRO	4.9
2	B	37	HIS	4.9
1	A	178	SER	4.9

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Mol	Chain	Res	Type	RSRZ
4	F	238	CYS	4.8
4	F	17	VAL	4.8
4	F	140	GLU	4.7
4	F	361	LEU	4.6
4	F	224	SER	4.6
4	F	250	SER	4.6
4	F	129	GLU	4.6
2	D	399	PHE	4.5
4	F	98	TYR	4.4
4	F	337	ALA	4.4
4	F	21	LEU	4.4
4	F	191	LEU	4.4
3	E	23	ILE	4.3
4	F	254	GLY	4.3
2	D	37	HIS	4.3
4	F	198	LYS	4.3
3	E	142	GLU	4.2
4	F	225	SER	4.2
4	F	160	ILE	4.2
4	F	5	VAL	4.2
4	F	39	LEU	4.2
4	F	125	THR	4.2
4	F	230	SER	4.0
4	F	338	CYS	4.0
4	F	251	LYS	4.0
4	F	27	TRP	4.0
2	D	279	GLY	4.0
4	F	256	TYR	4.0
4	F	14	TYR	4.0
4	F	180	HIS	3.9
3	E	143	ALA	3.9
4	F	183	GLN	3.8
4	F	319	PHE	3.8
4	F	139	ARG	3.8
4	F	197	ARG	3.8
3	E	25	LYS	3.8
4	F	246	GLN	3.8
3	E	135	LYS	3.8
3	E	140	LYS	3.8
4	F	145	ASN	3.8
1	A	42	ILE	3.8
2	B	62	VAL	3.7

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Mol	Chain	Res	Type	RSRZ
4	F	362	ALA	3.7
2	D	94	PHE	3.7
4	F	136	ASN	3.7
4	F	151	SER	3.7
4	F	32	LYS	3.7
4	F	167	SER	3.7
1	A	179	THR	3.7
2	D	277	SER	3.7
4	F	346	LEU	3.7
4	F	248	GLU	3.6
2	B	36	TYR	3.6
4	F	231	ALA	3.5
4	F	185	TYR	3.5
4	F	259	GLY	3.5
4	F	315	PHE	3.5
4	F	223	THR	3.5
1	A	57	GLY	3.5
2	D	57	THR	3.4
4	F	102	PRO	3.4
3	E	138	GLU	3.4
4	F	31	ARG	3.4
4	F	243	HIS	3.4
2	D	408	TYR	3.4
2	D	61	TYR	3.4
4	F	320	MET	3.4
2	D	182	VAL	3.3
4	F	9	GLU	3.3
4	F	229	ASN	3.3
4	F	314	LEU	3.3
1	C	253	THR	3.3
2	D	407	TRP	3.3
4	F	178	GLN	3.3
4	F	204	TRP	3.3
2	D	406	HIS	3.2
2	D	218	LYS	3.2
2	D	86	ILE	3.2
1	A	170	SER	3.2
2	B	60	LYS	3.2
4	F	255	ARG	3.2
4	F	375	PHE	3.2
1	A	346	TRP	3.2
4	F	252	ASN	3.2

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Mol	Chain	Res	Type	RSRZ
1	A	60	LYS	3.1
4	F	28	LYS	3.1
4	F	206	LEU	3.1
2	D	415	GLU	3.1
3	E	48	GLU	3.1
4	F	143	GLU	3.1
4	F	241	THR	3.1
2	D	216	THR	3.1
2	D	418	PHE	3.0
1	A	143	GLY	3.0
2	B	58	GLY	3.0
4	F	264	PHE	3.0
3	E	6	MET	2.9
4	F	200	ASP	2.9
2	D	87	PHE	2.9
4	F	127	GLU	2.9
4	F	152	SER	2.9
4	F	163	SER	2.9
4	F	336	PRO	2.9
4	F	30	LEU	2.9
4	F	317	PHE	2.9
4	F	214	TYR	2.8
2	D	397	ALA	2.8
2	B	341	SER	2.8
4	F	8	ASP	2.8
2	D	59	ASN	2.7
3	E	7	GLU	2.7
4	F	172	PHE	2.7
2	B	85	GLN	2.7
2	D	58	GLY	2.7
4	F	104	ASN	2.7
4	F	342	LEU	2.7
1	A	43	GLY	2.7
3	E	45	PRO	2.7
2	D	278	ARG	2.6
2	D	6	HIS	2.6
2	D	60	LYS	2.6
2	D	78	VAL	2.6
2	D	55	GLU	2.6
4	F	4	PHE	2.6
2	B	435	TYR	2.6
2	B	33	THR	2.6

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Mol	Chain	Res	Type	RSRZ
2	D	53	TYR	2.6
2	D	42	LEU	2.6
1	A	149	PHE	2.6
3	E	134	ARG	2.6
3	E	141	GLU	2.6
2	D	265	LEU	2.5
4	F	74	LYS	2.5
2	B	30	ILE	2.5
2	D	280	SER	2.5
4	F	41	LEU	2.5
1	A	177	VAL	2.5
2	D	244	PHE	2.5
1	A	348	PRO	2.5
4	F	184	LYS	2.5
1	A	146	GLY	2.5
2	D	219	LEU	2.5
4	F	96	GLU	2.4
2	D	89	PRO	2.4
1	A	180	ALA	2.4
3	E	24	LEU	2.4
1	A	171	ILE	2.4
4	F	189	PRO	2.4
2	B	97	SER	2.4
1	A	67	PHE	2.4
4	F	37	PHE	2.4
2	D	46	LEU	2.4
4	F	202	ARG	2.4
2	B	282	GLN	2.4
2	D	275	LEU	2.4
1	A	37	PRO	2.3
2	D	295	MET	2.3
2	B	283	TYR	2.3
2	D	202	TYR	2.3
4	F	22	LEU	2.3
4	F	165	GLU	2.3
4	F	329	LEU	2.3
2	D	92	PHE	2.3
2	D	403	ALA	2.3
2	D	96	GLN	2.3
1	A	66	VAL	2.3
1	A	68	VAL	2.3
1	A	140	SER	2.2

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Mol	Chain	Res	Type	RSRZ
1	C	340	SER	2.2
1	A	125	LEU	2.2
1	A	201	ALA	2.2
4	F	237	THR	2.2
4	F	328	TRP	2.2
2	B	82	PRO	2.2
4	F	335	ALA	2.2
2	B	46	LEU	2.2
2	D	33	THR	2.2
1	A	137	VAL	2.2
1	A	351	PHE	2.2
2	D	75	MET	2.2
4	F	26	GLN	2.2
4	F	196	HIS	2.2
2	B	56	ALA	2.2
2	D	316	ALA	2.2
1	A	335	ILE	2.2
2	B	98	GLY	2.2
1	C	341	ILE	2.1
2	D	378	ILE	2.1
2	D	270	PRO	2.1
4	F	227	PRO	2.1
2	D	203	CYS	2.1
3	E	133	VAL	2.1
2	D	30	ILE	2.1
1	A	147	SER	2.1
4	F	126	ASP	2.1
2	D	201	THR	2.1
4	F	44	ARG	2.1
4	F	226	GLU	2.1
1	A	148	GLY	2.1
4	F	25	GLY	2.1
1	C	1	MET	2.1
4	F	332	VAL	2.1
2	B	53	TYR	2.1
4	F	343	TYR	2.1
1	A	144	GLY	2.1
4	F	221	LEU	2.1
4	F	10	ASN	2.1
3	E	22	VAL	2.0
4	F	350	ILE	2.0
2	D	379	GLY	2.0

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Mol	Chain	Res	Type	RSRZ
4	F	220	VAL	2.0
4	F	146	VAL	2.0
2	D	267	PHE	2.0
2	B	437	ASP	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, 95^{th} 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
7	CA	A	504	1/1	0.70	0.28	137,137,137,137	0
6	MG	F	402	1/1	0.77	0.26	174,174,174,174	0
12	GOL	C	504	6/6	0.82	0.33	71,84,90,99	0
8	IMD	A	505	5/5	0.83	0.28	106,108,119,122	0
13	ACP	F	401	31/31	0.84	0.20	138,158,174,182	0
8	IMD	B	506	5/5	0.86	0.18	123,123,125,127	0
11	A1H00	D	503	26/26	0.90	0.31	65,94,104,112	26
9	GDP	D	501	28/28	0.93	0.16	91,110,125,145	0
11	A1H00	B	505	26/26	0.94	0.22	70,88,101,120	0
6	MG	D	502	1/1	0.95	0.05	125,125,125,125	0
7	CA	B	503	1/1	0.95	0.27	117,117,117,117	0
6	MG	C	502	1/1	0.95	0.18	63,63,63,63	0
6	MG	B	502	1/1	0.96	0.29	80,80,80,80	0
10	MES	B	504	12/12	0.96	0.18	71,79,94,95	0
8	IMD	B	507	5/5	0.96	0.12	98,108,111,114	0
7	CA	A	503	1/1	0.97	0.06	133,133,133,133	0
5	GTP	C	501	32/32	0.97	0.18	47,62,74,85	0
9	GDP	B	501	28/28	0.97	0.22	45,65,71,77	0
5	GTP	A	501	32/32	0.98	0.28	64,72,87,93	0

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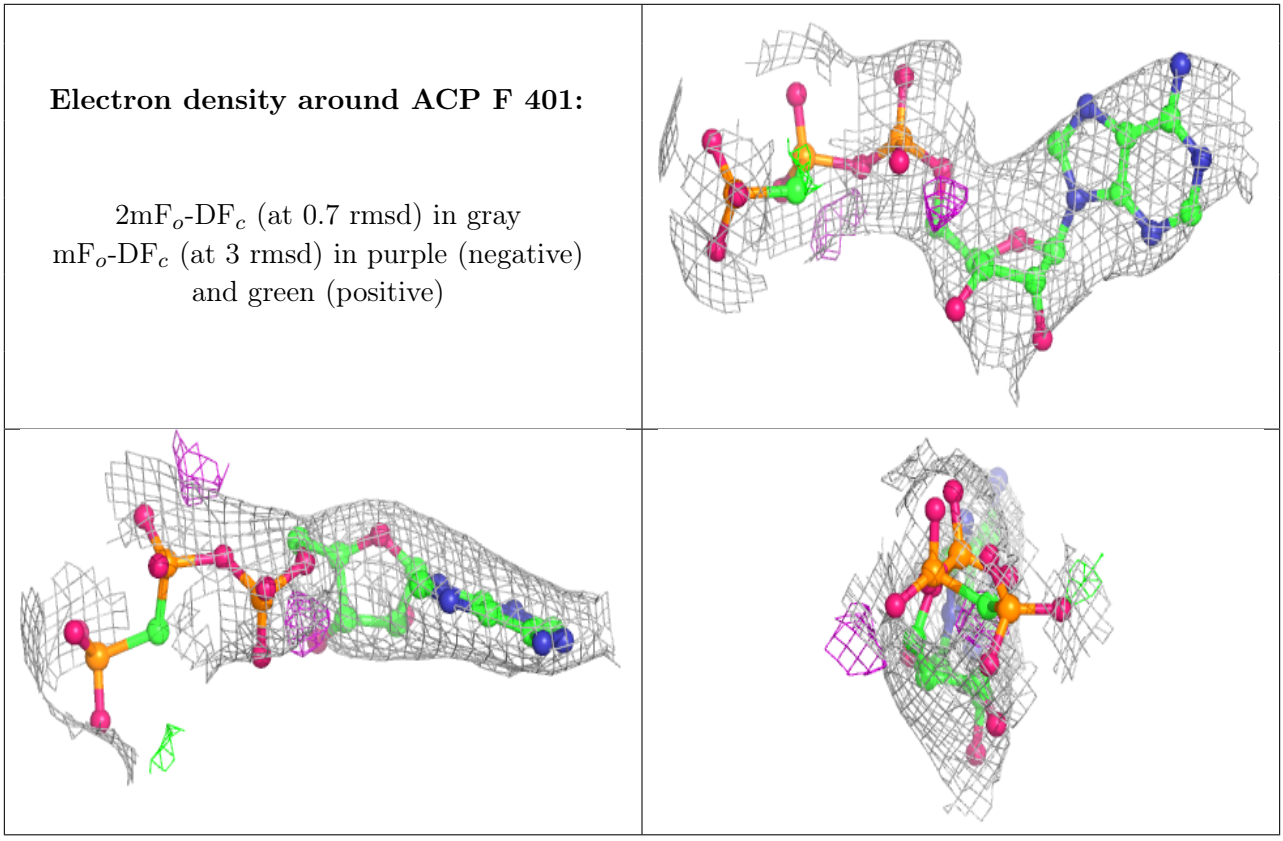
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
7	CA	C	503	1/1	0.98	0.10	103,103,103,103	0
6	MG	A	502	1/1	0.99	0.24	74,74,74,74	0

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.

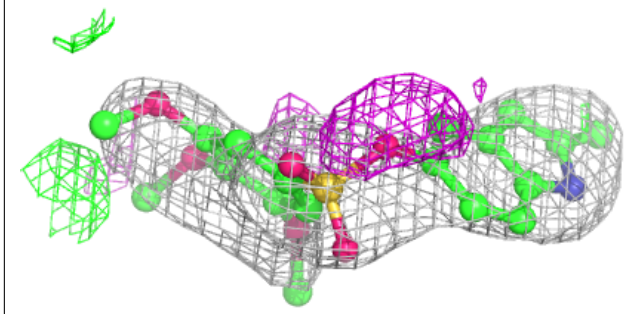
Electron density around ACP F 401:

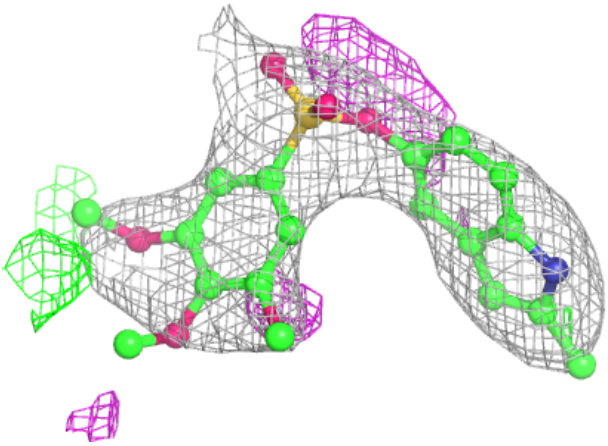
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

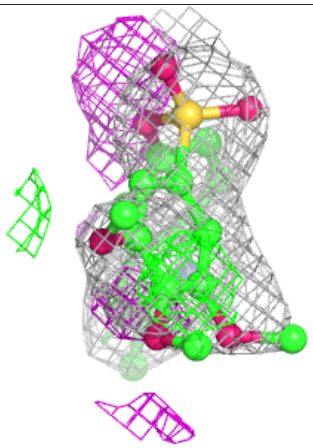


Electron density around A1H00 D 503:

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

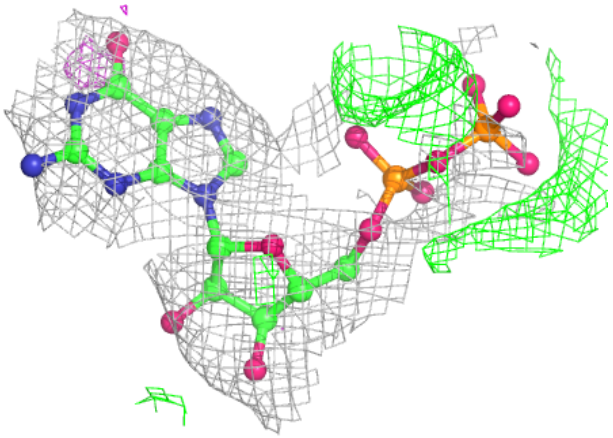


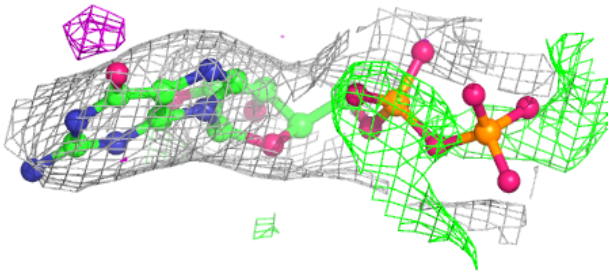


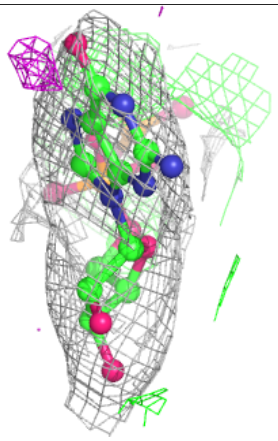


Electron density around GDP D 501:

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

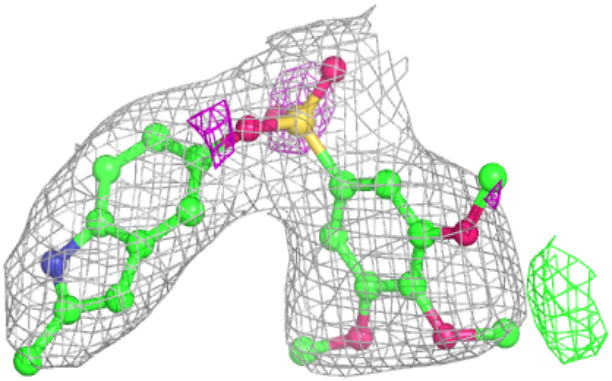


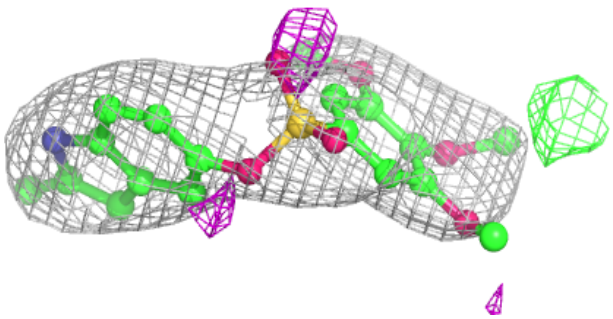


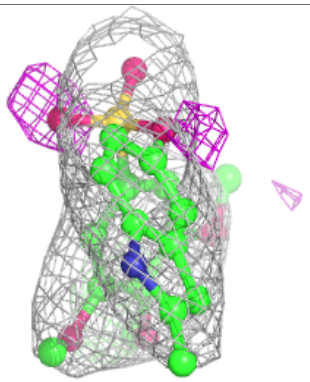


Electron density around A1H00 B 505:

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

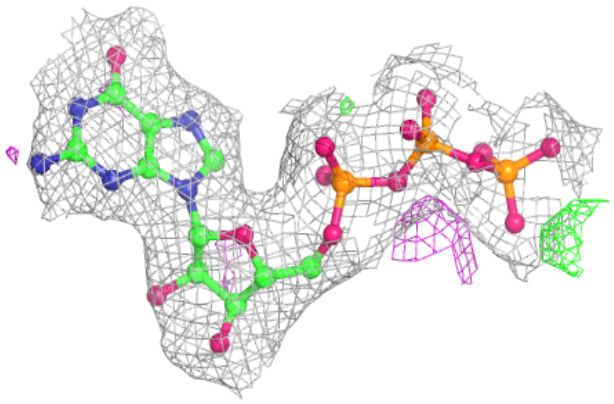


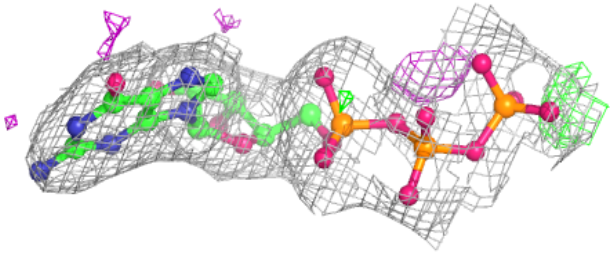


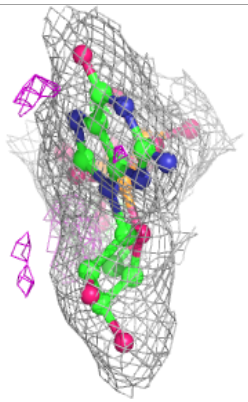


Electron density around GTP C 501:

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

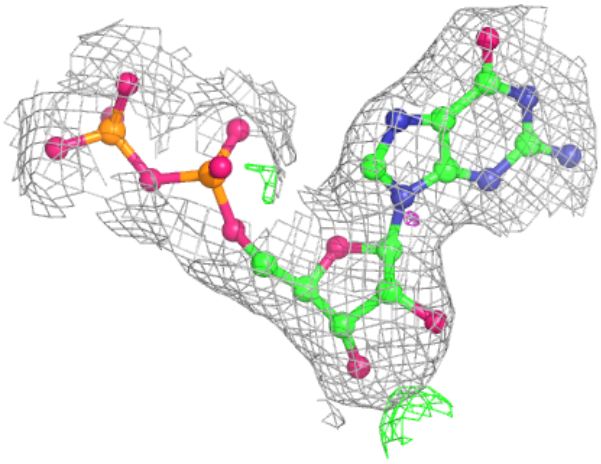


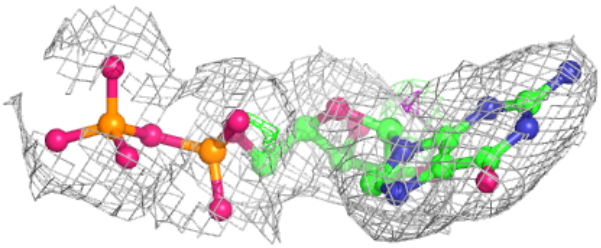


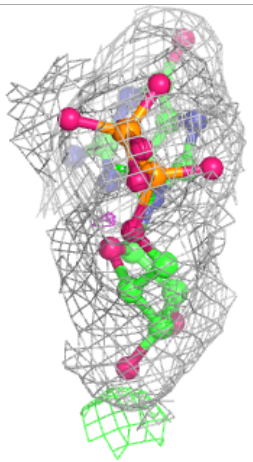


Electron density around GDP B 501:

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

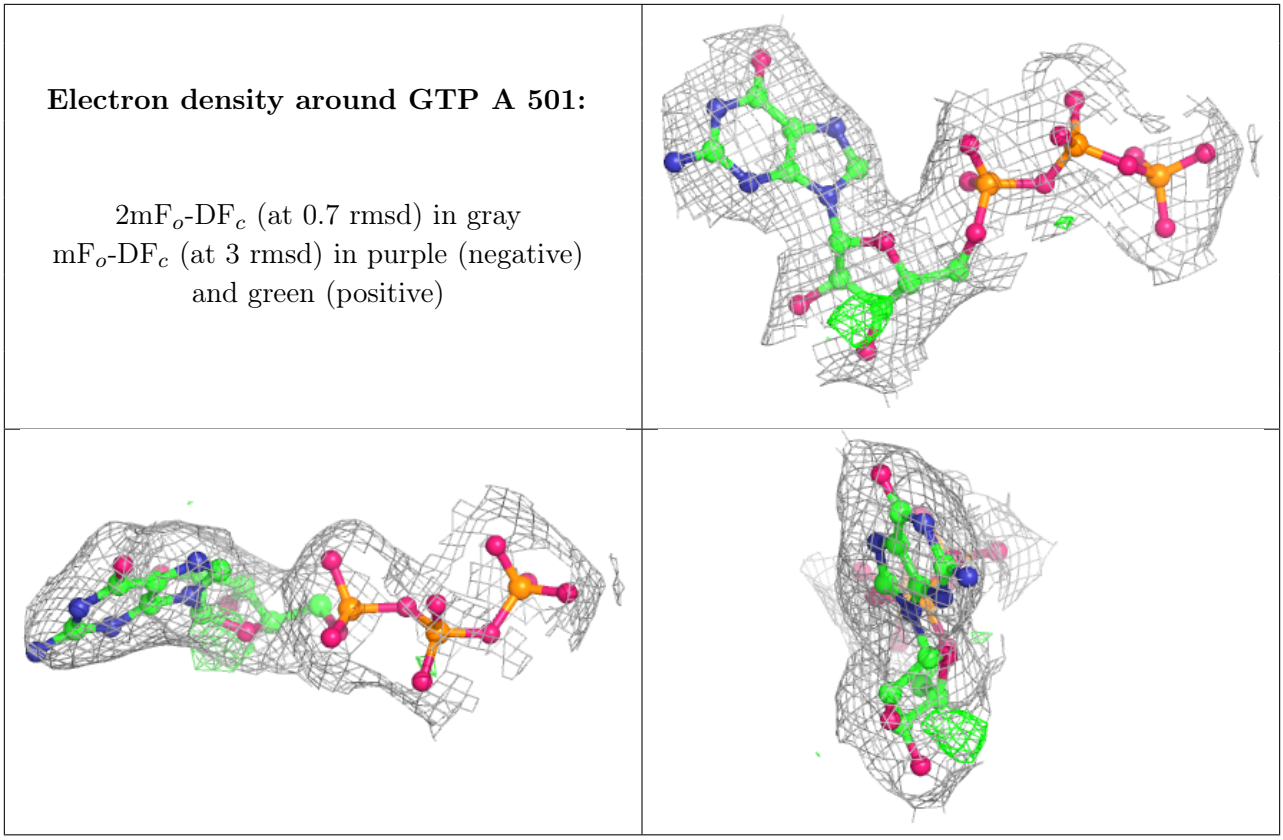






Electron density around GTP A 501:

$2mF_o$-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.