wwPDB X-ray Structure Validation Summary Report (i)

Nov 22, 2023 – 10:36 PM JST

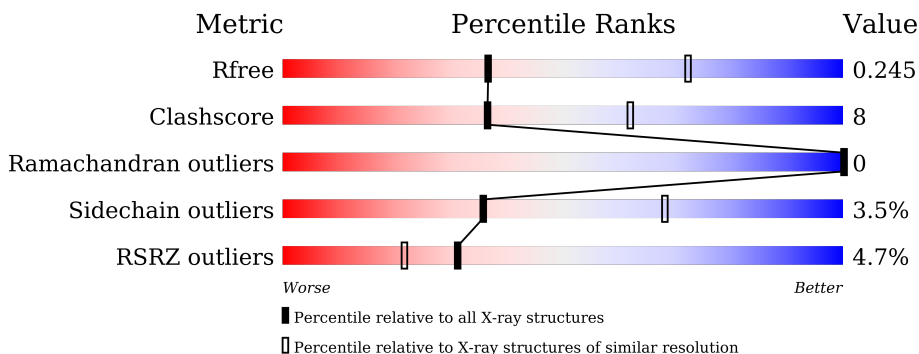|		
PDB ID	:	7XR1
Title	:	Crystal structure of T2R-TTL-3a complex
Authors	:	Lun, T.; Wu, C.Y.
Deposited on	:	2022-05-09
Resolution	:	2.81 Å(reported)

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.81 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	Percentile Ranks	Value
Rfree		0.245
Clashscore		8
Ramachandran outliers		0
Sidechain outliers		3.5%
RSRZ outliers		4.7%

Worse   Better

▌Percentile relative to all X-ray structures

▯Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	3617 (2.84-2.80)
Clashscore	141614	4060 (2.84-2.80)
Ramachandran outliers	138981	3978 (2.84-2.80)
Sidechain outliers	138945	3980 (2.84-2.80)
RSRZ outliers	127900	3552 (2.84-2.80)

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	450	·% / 81% / 15% · ·
1	C	450	83% / 14% · ·
2	B	445	·% / 73% / 22% / 5%
2	D	445	4% / 71% / 22% · 6%
3	E	143	3% / 62% / 22% · 14%
4	F	384	18% / 66% / 23% · 10%

2 Entry composition ⓘ

There are 11 unique types of molecules in this entry. The entry contains 17617 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	437	Total	C	N	O	S	0	4	0
			3427	2170	580	653	24			
1	C	440	Total	C	N	O	S	0	9	0
			3468	2195	585	663	25			

- Molecule 2 is a protein called Tubulin beta chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	424	Total	C	N	O	S	0	3	0
			3356	2111	572	647	26			
2	D	420	Total	C	N	O	S	0	0	0
			3295	2072	558	639	26			

- Molecule 3 is a protein called Stathmin-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	E	123	Total	C	N	O	S	0	2	0
			1026	633	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 P63042
E	4	ALA	-	expression tag	UNP P63042

- Molecule 4 is a protein called TTL.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	F	346	Total	C	N	O	S	0	4	0
			2851	1830	487	519	15			

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
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		

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

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

- Molecule 8 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	1	Total 1	Cl 1	0	0

- Molecule 9 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: $C_{10}H_{15}N_5O_{11}P_2$).
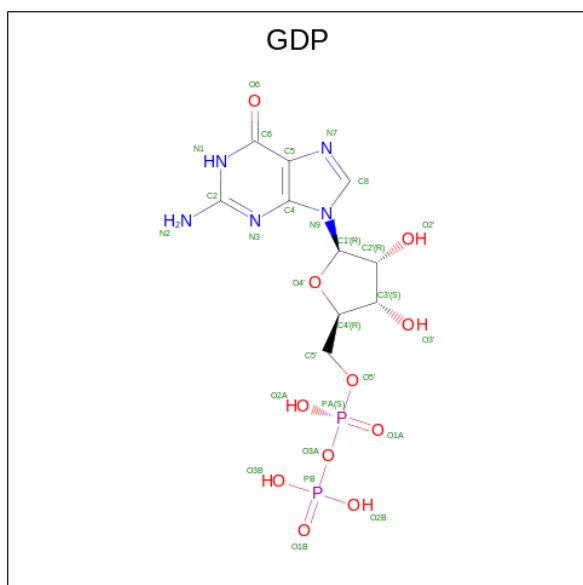
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
9	B	1	Total 28	C 10	N 5	O 11	P 2	0	0
9	D	1	Total 28	C 10	N 5	O 11	P 2	0	0

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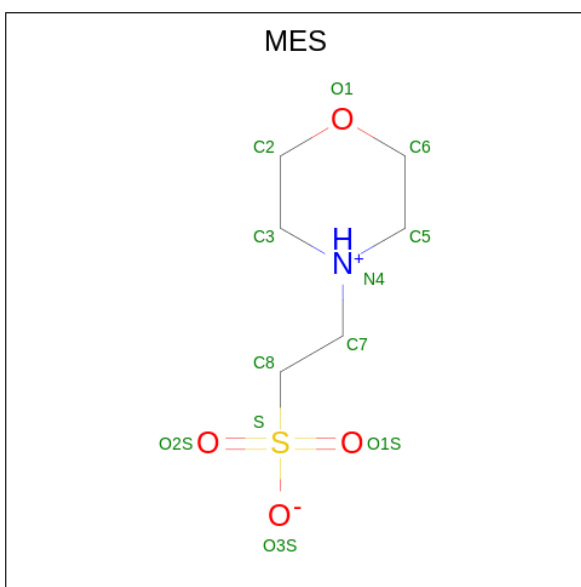
MES

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

- Molecule 11 is 2-chloranyl-6-fluoranyl-N-(4-methoxyphenyl)-N-methyl-quinazolin-4-amine (three-letter code: GY2) (formula: $C_{16}H_{13}ClFN_3O$) (labeled as "Ligand of Interest" by depositor).

GY2

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
11	B	1	Total	C	Cl	F	N	O	0	0
			22	16	1	1	3	1		

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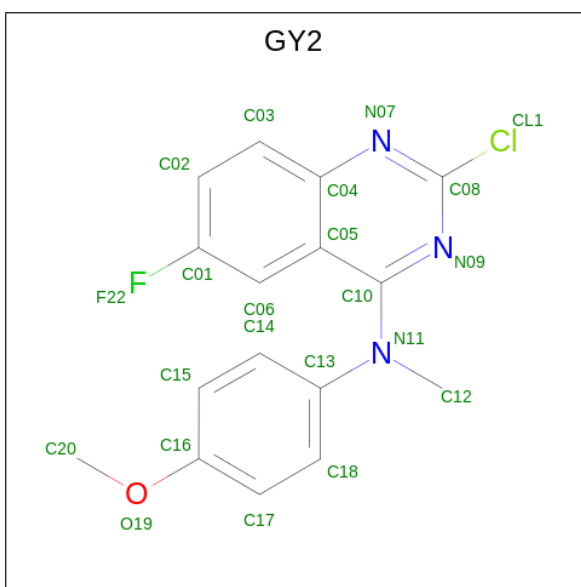
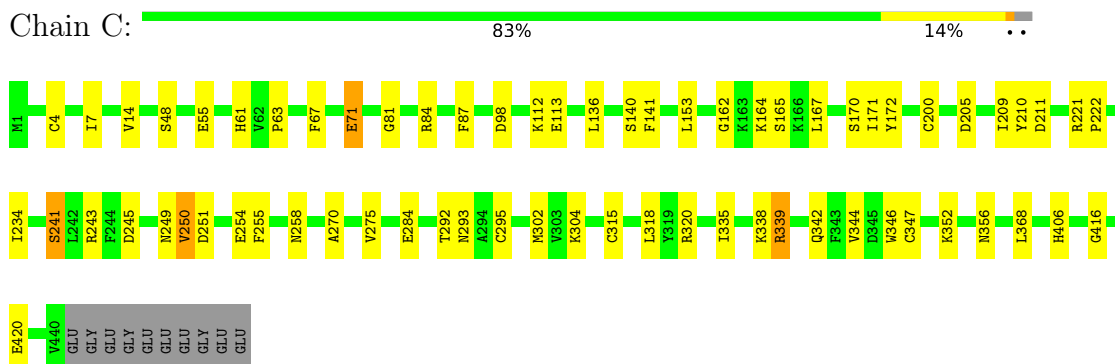| Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
			Total	C	Cl	F	N	O		
11	D	1	22	16	1	1	3	1	0	0

3 Residue-property plots ⓘ

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.
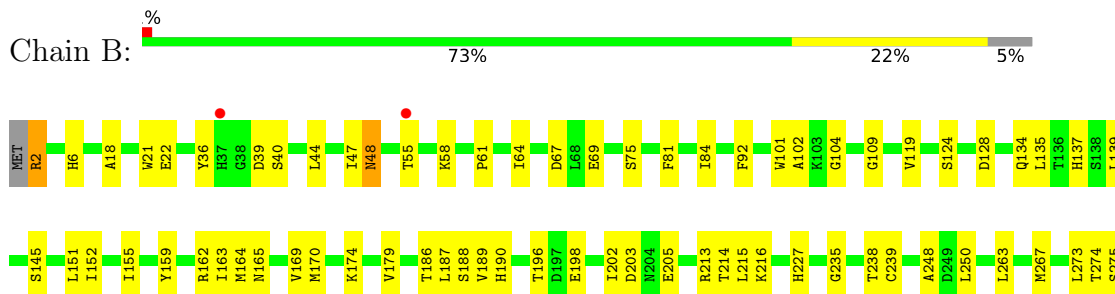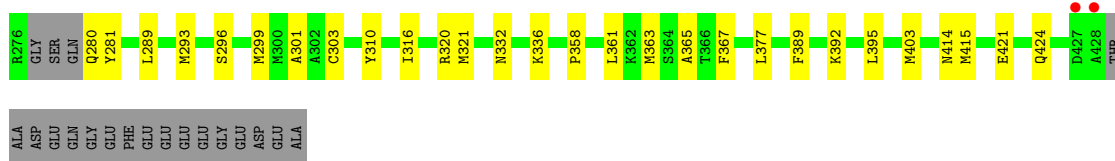
• Molecule 1: Tubulin alpha-1B chain

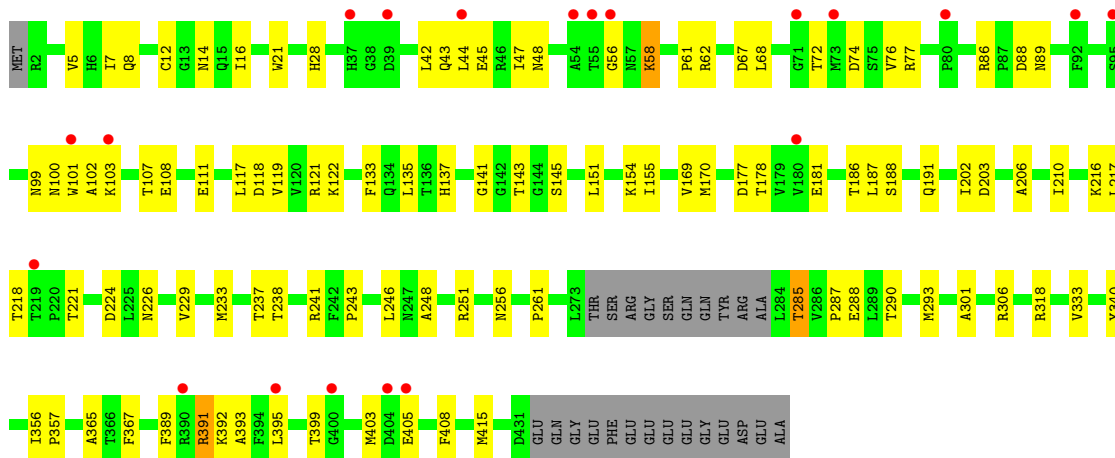Chain A:

• Molecule 1: Tubulin alpha-1B chain

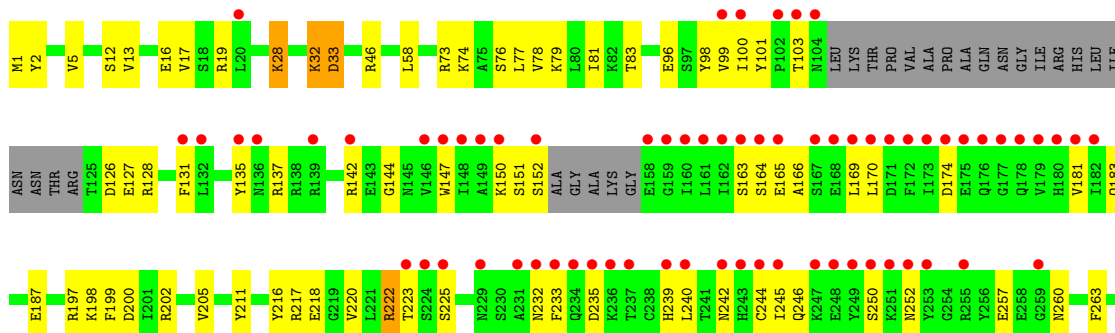Chain C:

• Molecule 2: Tubulin beta chain

Chain B:

WORLDWIDE PROTEIN DATA BANK

R276 GLY SER GLN Q280 Y281 L289 M293 S296 M299 M300 A301 A302 C303 Y310 I316 R320 M321 N332 K336 P358 L361 K362 M363 S364 A365 T366 F367 L377 F389 K392 L395 M403 N414 M415 E421 Q424 D427 A428 THR

ALA ASP GLU GLN GLY PHE GLU GLU GLU GLY GLU ASP GLU ALA

• Molecule 2: Tubulin beta chain

Chain D:

4%

71%						22%		6%

MET R2 V5 H6 I7 Q8 C12 G13 N14 Q15 I16 W21 H28 H37 G38 D39 L42 Q43 L44 E45 R46 I47 N48 A54 T55 G56 N57 K58 P61 R62 D67 L68 G71 T72 M73 D74 S75 V76 R77 P80 R86 P87 D88 N89 F92 S95

N99 N100 W101 A102 K103 T107 E108 E111 L117 D118 V119 V120 R121 K122 F133 Q134 L135 T136 H137 G141 G142 T143 G144 S145 L151 K154 I155 V169 M170 D177 T178 V179 V180 E181 T186 L187 S188 Q191 I202 D203 A206 I210 K216 L217

T218 T219 P220 T221 D224 L225 N226 V229 M233 T237 T238 R241 F242 P243 L246 N247 A248 R251 N256 P261 L273 THR SER ARG GLY SER GLN GLN TYR ARG ALA L284 T285 V286 P287 E288 L289 T290 M293 A301 R306 R318 V333 Y340

I356 P357 A365 T366 F367 F389 R390 R391 K392 A393 F394 L395 T399 G400 M403 D404 E405 F408 M415 D431 GLU GLN GLY GLU PHE GLU GLU GLU GLU GLY GLU ASP GLU ALA

• Molecule 3: Stathmin-4

Chain E:

3%

62%						22%		•		14%

MET ALA ASP M6 E7 V8 I9 K13 G17 Q18 E21 L24 K25 P26 P27 S28 PHE ASP GLY VAL PRO GLU PHE ASN ALA SER LEU PRO ARG ARG ARG D44 L47 E48 Q51 L54 E55 A56 A57 E58 E59 R60 R61 K75 E79 I94 K95 L101 A102

Q103 S107 L116 E121 Q124 E125 K126 D127 K128 E132 E138 L139 K140 A143 SER ARG

• Molecule 4: TTL

Chain F:

18%

66%						23%		•		10%

M1 Y2 V5 S12 V13 E16 V17 S18 R19 L20 K28 K32 D33 R46 L58 R73 K74 A75 S76 L77 V78 K79 L80 I81 K82 T83 E96 S97 V98 V99 I100 Y101 P102 T103 N104 LEU LYS THR PRO VAL ALA PRO ALA GLN ASN GLY ILE ARG HIS LEU ILE

ASN ASN THR ARG T125 D126 E127 R128 F131 L132 Y135 N136 R137 R138 R139 R142 E143 G144 N145 V146 W147 I148 A149 K150 S151 S152 ALA GLY ALA LYS GLY E158 G159 I160 L161 I162 S163 S164 E165 A166 S167 E168 L169 L170 D171 F172 I173 D174 E175 Q176 G177 Q178 V179 H180 V181 I182 Q183

E187 R197 K198 F199 D200 I201 R202 V205 Y211 Y216 R217 E218 G219 V220 L221 R222 T223 S224 S225 N229 S230 A231 N232 D234 D235 K236 T237 C238 H239 L240 T241 N242 H243 C244 I245 Q246 K247 E248 Y249 S250 K251 N252 Y253 G254 R255 Y256 E257 E258 G259 N260 F263

4   Data and refinement statistics   ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	105.10Å 157.53Å 181.02Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	56.35 – 2.81 56.35 – 2.81	Depositor EDS
% Data completeness (in resolution range)	99.8 (56.35-2.81) 99.8 (56.35-2.81)	Depositor EDS
R_{merge}	0.31	Depositor
R_{sym}	(Not available)	Depositor
$<I/\sigma(I)>$ [1]	2.19 (at 2.81Å)	Xtriage
Refinement program	PHENIX 1.19_4092	Depositor
R, R_{free}	0.203 , 0.246 0.201 , 0.245	Depositor DCC
R_{free} test set	2000 reflections (2.72%)	wwPDB-VP
Wilson B-factor (Å^2)	54.3	Xtriage
Anisotropy	0.156	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 55.3	EDS
L-test for twinning[2]	$<\lvert L \rvert> = 0.50$, $<L^2> = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	17617	wwPDB-VP
Average B, all atoms (Å^2)	50.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.65% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $<\lvert L \rvert>$, $<L^2>$ 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: GY2, MG, GTP, MES, CA, CL, 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	0.50	0/3517	0.66	0/4776
1	C	0.59	1/3570 (0.0%)	0.71	1/4847 (0.0%)
2	B	0.54	0/3436	0.71	2/4653 (0.0%)
2	D	0.48	0/3368	0.65	0/4564
3	E	0.55	0/1041	0.71	0/1382
4	F	0.45	0/2927	0.67	0/3955
All	All	0.52	1/17859 (0.0%)	0.68	3/24177 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	295	CYS	CB-SG	-5.09	1.73	1.81

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	299	MET	CA-CB-CG	-5.67	103.66	113.30
2	B	69	GLU	C-N-CD	5.21	139.33	128.40
1	C	318	LEU	CA-CB-CG	5.15	127.14	115.30

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	3427	0	3341	46	0
1	C	3468	0	3388	36	0
2	B	3356	0	3237	60	0
2	D	3295	0	3166	64	0
3	E	1026	0	1042	22	0
4	F	2851	0	2826	53	0
5	A	32	0	12	0	0
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
7	A	1	0	0	0	0
7	C	1	0	0	0	0
8	A	1	0	0	0	0
9	B	28	0	12	0	0
9	D	28	0	11	2	0
10	B	24	0	24	1	0
11	B	22	0	0	0	0
11	D	22	0	0	1	0
All	All	17617	0	17071	274	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 8.

The worst 5 of 274 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)
3:E:13:LYS:HB2	3:E:18:GLN:HB3	1.59	0.84
1:A:71:GLU:HG2	1:A:98:ASP:HB3	1.60	0.81
2:D:99:ASN:HD22	2:D:178:THR:HG21	1.46	0.81
2:D:391:ARG:HD2	2:D:393:ALA:HB2	1.65	0.78
4:F:32:LYS:HG3	4:F:33:ASP:OD2	1.84	0.77

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	439/450 (98%)	416 (95%)	23 (5%)	0	100	100
1	C	446/450 (99%)	436 (98%)	10 (2%)	0	100	100
2	B	423/445 (95%)	408 (96%)	15 (4%)	0	100	100
2	D	416/445 (94%)	401 (96%)	15 (4%)	0	100	100
3	E	121/143 (85%)	118 (98%)	3 (2%)	0	100	100
4	F	342/384 (89%)	325 (95%)	17 (5%)	0	100	100
All	All	2187/2317 (94%)	2104 (96%)	83 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	371/378 (98%)	361 (97%)	10 (3%)	44	77
1	C	379/378 (100%)	363 (96%)	16 (4%)	30	62
2	B	369/383 (96%)	358 (97%)	11 (3%)	41	73
2	D	362/383 (94%)	352 (97%)	10 (3%)	43	76
3	E	112/127 (88%)	105 (94%)	7 (6%)	18	44
4	F	314/342 (92%)	296 (94%)	18 (6%)	20	49
All	All	1907/1991 (96%)	1835 (96%)	72 (4%)	36	65

5 of 72 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	F	33	ASP
4	F	373	SER
4	F	76	SER
4	F	222	ARG
1	C	165[B]	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 8 such sidechains are listed below:

Mol	Chain	Res	Type
2	D	384	GLN
2	D	100	ASN
2	D	48	ASN
2	D	11	GLN
2	D	99	ASN

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

5.4   Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5   Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6   Ligand geometry ⓘ

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
11	GY2	D	502	-	24,24,24	1.64	4 (16%)	32,34,34	2.89	11 (34%)
9	GDP	B	501	6	24,30,30	1.13	2 (8%)	30,47,47	1.14	5 (16%)
5	GTP	A	501	6	26,34,34	1.19	2 (7%)	32,54,54	1.57	7 (21%)
5	GTP	C	501	6	26,34,34	1.22	2 (7%)	32,54,54	1.42	3 (9%)
10	MES	B	504	2	12,12,12	2.16	2 (16%)	14,16,16	1.95	4 (28%)
10	MES	B	503	-	12,12,12	2.38	1 (8%)	14,16,16	2.08	4 (28%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
11	GY2	B	505	-	24,24,24	1.61	5 (20%)	32,34,34	2.47	10 (31%)
9	GDP	D	501	-	24,30,30	0.91	1 (4%)	30,47,47	2.26	8 (26%)

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
11	GY2	D	502	-	-	0/10/10/10	0/3/3/3
9	GDP	B	501	6	-	5/12/32/32	0/3/3/3
5	GTP	A	501	6	-	8/18/38/38	0/3/3/3
5	GTP	C	501	6	-	9/18/38/38	0/3/3/3
10	MES	B	504	2	-	2/6/14/14	0/1/1/1
10	MES	B	503	-	-	5/6/14/14	0/1/1/1
11	GY2	B	505	-	-	0/10/10/10	0/3/3/3
9	GDP	D	501	-	-	4/12/32/32	0/3/3/3

The worst 5 of 19 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	B	503	MES	C8-S	-7.92	1.66	1.77
10	B	504	MES	C8-S	-6.39	1.68	1.77
11	D	502	GY2	C08-N07	4.60	1.33	1.30
11	B	505	GY2	C08-N07	4.60	1.33	1.30
5	A	501	GTP	C5-C6	-3.80	1.39	1.47

The worst 5 of 52 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
11	D	502	GY2	N07-C08-N09	-10.76	119.78	130.62
11	B	505	GY2	N07-C08-N09	-9.92	120.63	130.62
11	D	502	GY2	CL1-C08-N07	6.58	121.32	115.70
9	D	501	GDP	C2-N1-C6	-6.20	113.69	125.10
9	D	501	GDP	O6-C6-C5	-5.20	114.22	124.37

There are no chirality outliers.

5 of 33 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	501	GTP	C5'-O5'-PA-O1A
9	B	501	GDP	C5'-O5'-PA-O1A
9	B	501	GDP	C5'-O5'-PA-O2A
9	D	501	GDP	C5'-O5'-PA-O1A
9	D	501	GDP	C5'-O5'-PA-O2A

There are no ring outliers.

3 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
11	D	502	GY2	1	0
10	B	503	MES	1	0
9	D	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 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 GY2 D 502

Bond lengths

Bond angles

Torsions

Rings

Ligand GDP B 501

Bond lengths

Bond angles

Torsions

Rings

Ligand GTP A 501

Bond lengths

Bond angles

Torsions

Rings

Ligand GTP C 501

Bond lengths

Bond angles

Torsions

Rings

Ligand GY2 B 505

Bond lengths	Bond angles
Torsions	Rings

Ligand GDP D 501

Bond lengths	Bond angles
Torsions	Rings
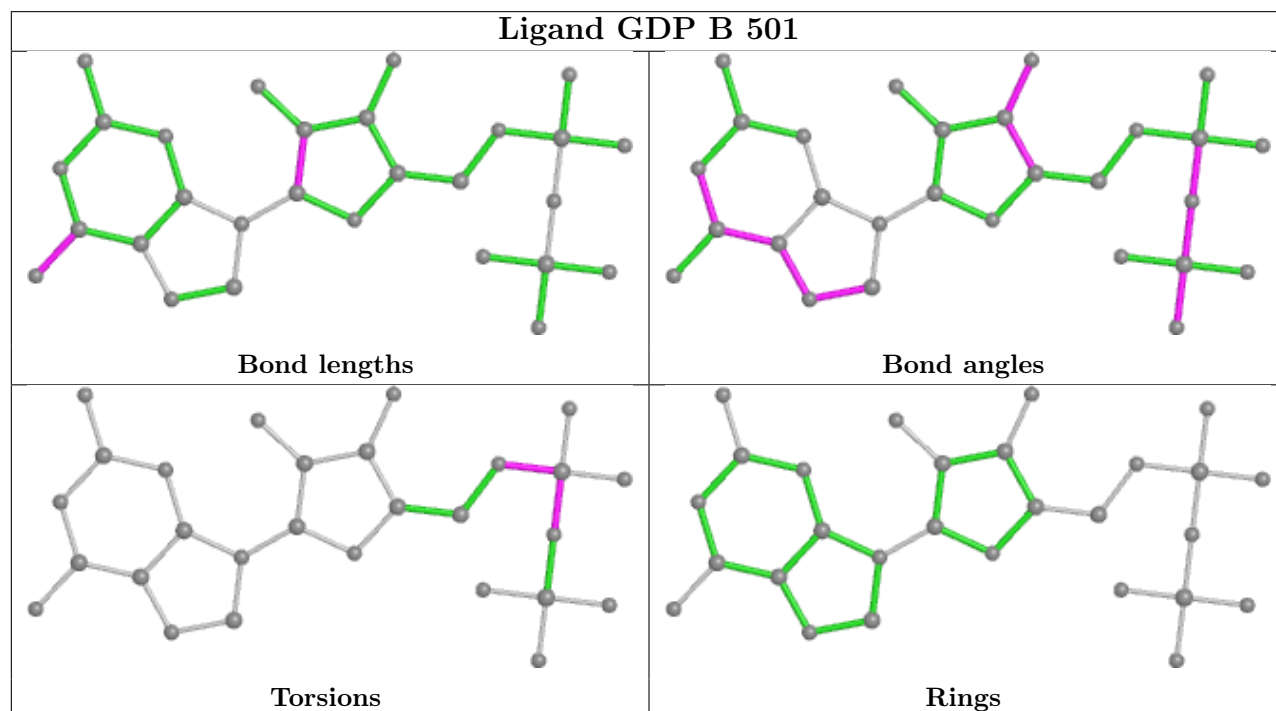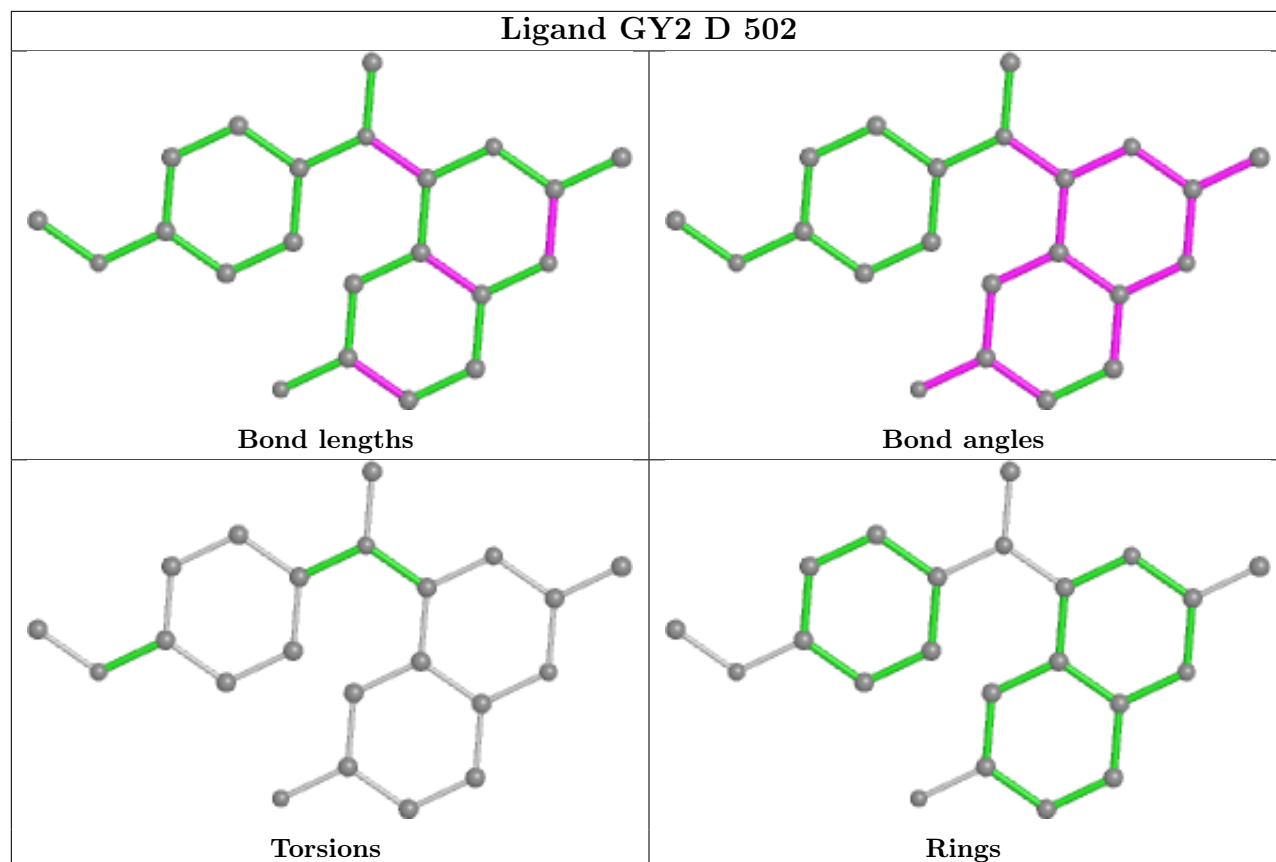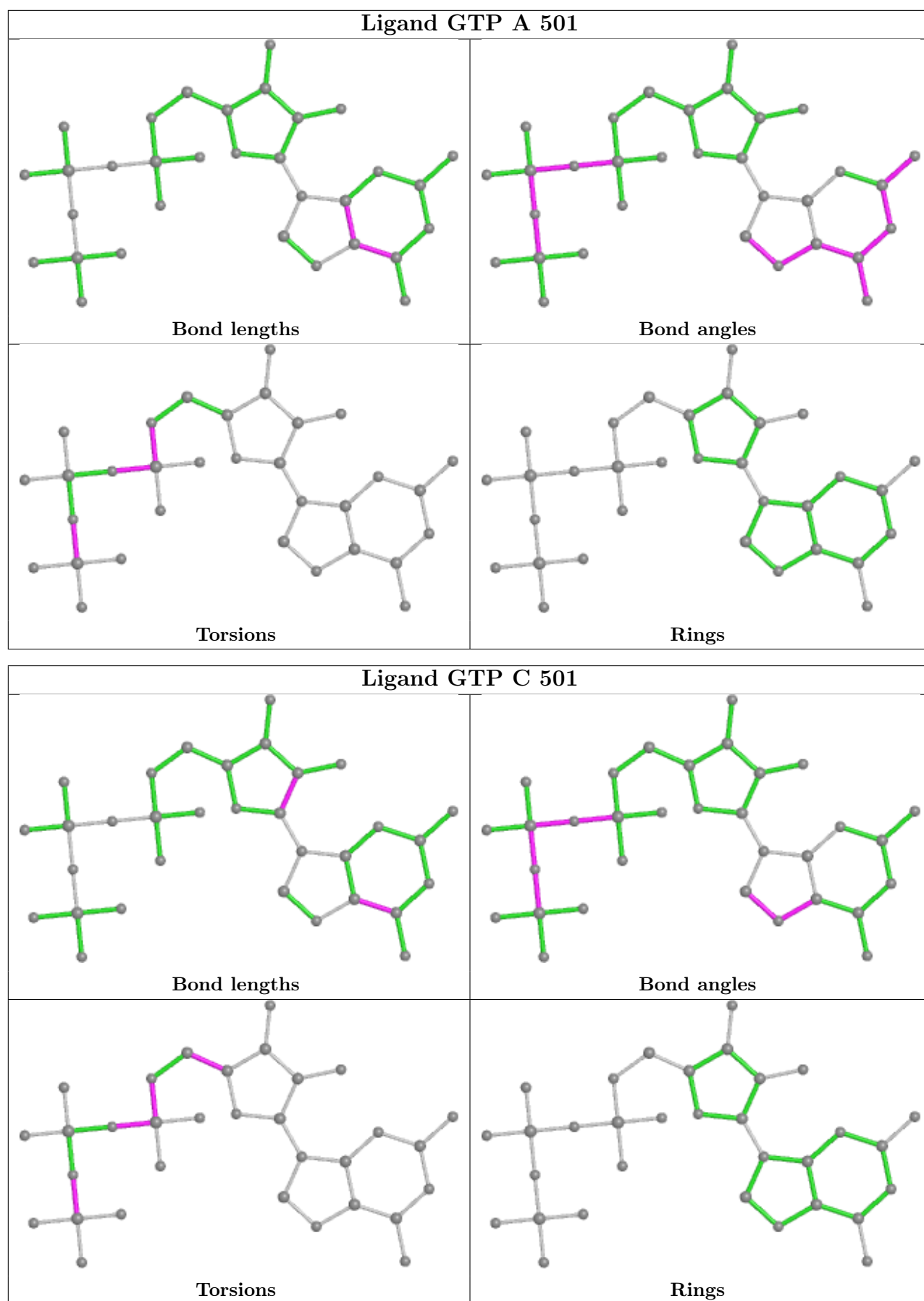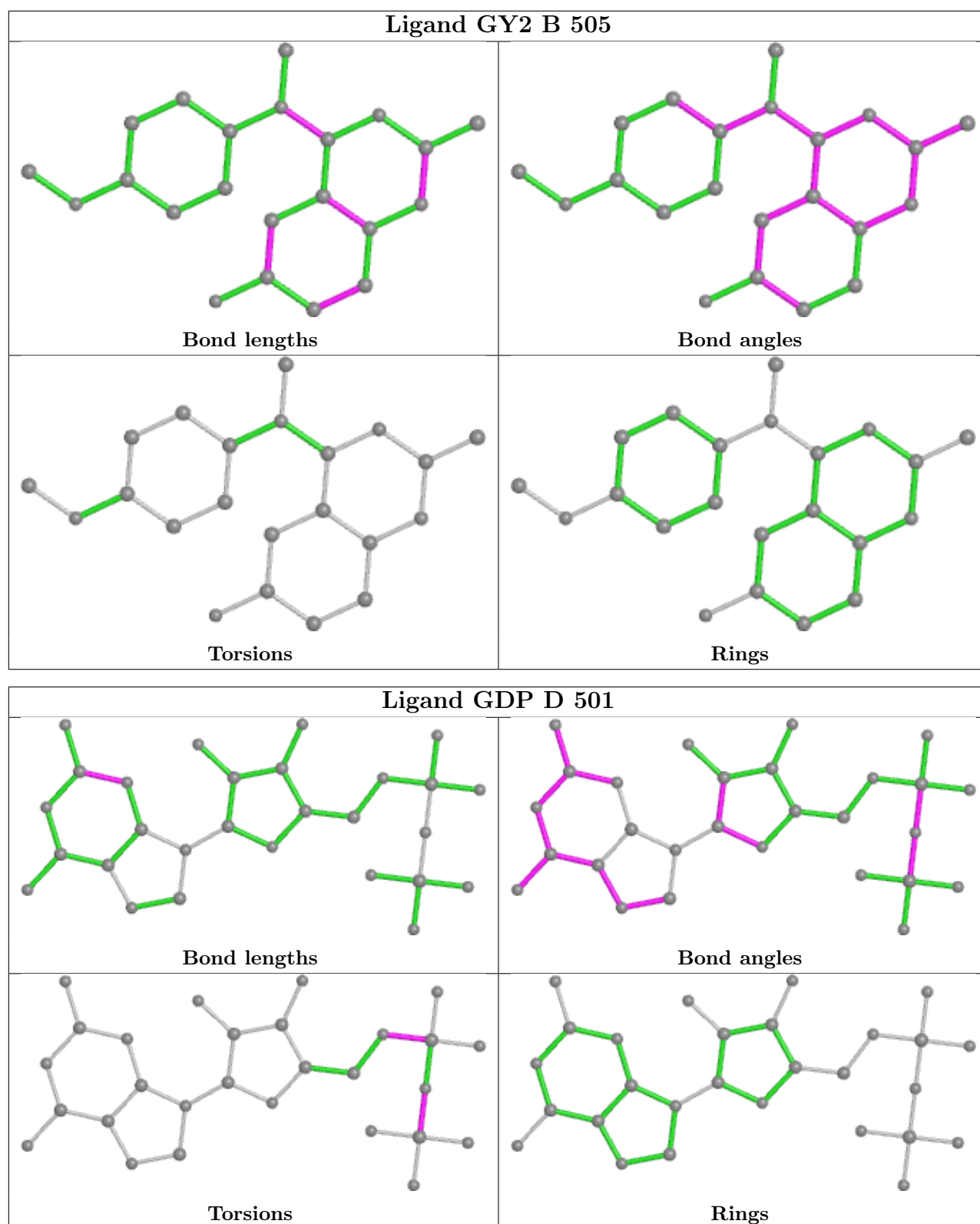
5.7 Other polymers ⓘ

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(Å²)	Q<0.9
1	A	437/450 (97%)	-0.23	5 (1%)	80	75	25, 40, 65, 81	0
1	C	440/450 (97%)	-0.37	0	100	100	16, 32, 53, 69	0
2	B	424/445 (95%)	-0.19	4 (0%)	84	80	20, 40, 71, 104	1 (0%)
2	D	420/445 (94%)	0.16	20 (4%)	30	21	26, 58, 88, 107	1 (0%)
3	E	123/143 (86%)	0.09	4 (3%)	46	36	29, 54, 90, 116	0
4	F	346/384 (90%)	0.78	70 (20%)	1	0	31, 63, 127, 145	0
All	All	2190/2317 (94%)	0.00	103 (4%)	31	22	16, 45, 92, 145	2 (0%)

The worst 5 of 103 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	F	169	LEU	7.0
2	D	55	THR	5.6
4	F	172	PHE	5.3
4	F	161	LEU	5.2
4	F	149	ALA	5.2

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

WORLDWIDE
wwPDB
PROTEIN DATA BANK

6.4 Ligands ⓘ

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	MG	B	502	1/1	0.89	0.33	33,33,33,33	0
8	CL	A	504	1/1	0.90	0.13	77,77,77,77	0
6	MG	C	502	1/1	0.93	0.42	36,36,36,36	0
9	GDP	D	501	28/28	0.93	0.16	46,57,67,71	0
10	MES	B	504	12/12	0.93	0.20	52,61,76,79	0
11	GY2	D	502	22/22	0.93	0.23	28,42,55,188	0
11	GY2	B	505	22/22	0.95	0.21	28,35,45,138	0
7	CA	C	503	1/1	0.95	0.08	43,43,43,43	0
6	MG	A	502	1/1	0.97	0.56	34,34,34,34	0
5	GTP	A	501	32/32	0.97	0.18	24,31,39,43	0
10	MES	B	503	12/12	0.97	0.21	31,48,66,72	0
9	GDP	B	501	28/28	0.98	0.14	21,28,32,41	0
5	GTP	C	501	32/32	0.98	0.16	23,27,31,34	0
7	CA	A	503	1/1	0.98	0.05	68,68,68,68	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 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)
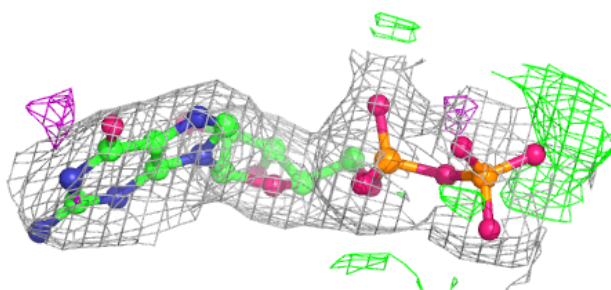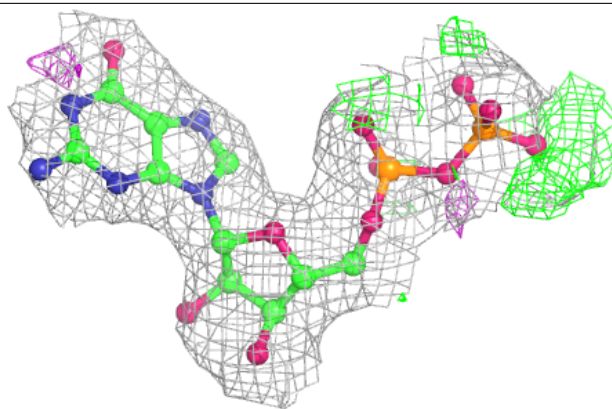
Electron density around GY2 D 502:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
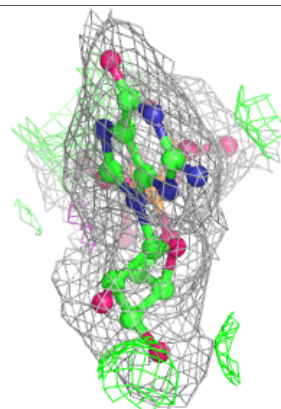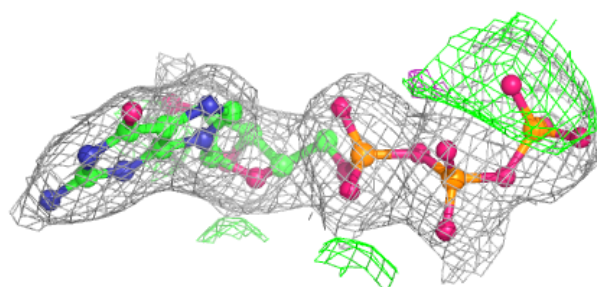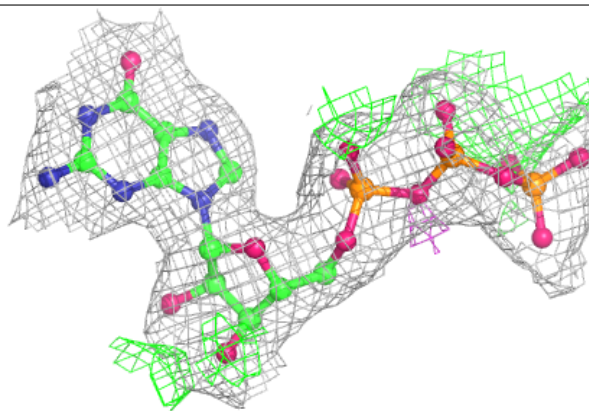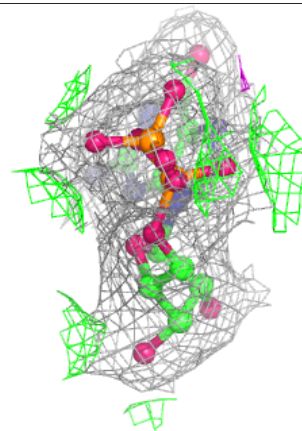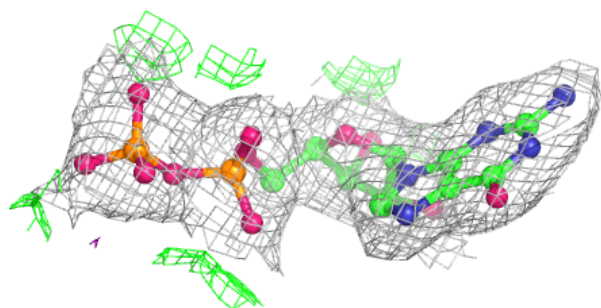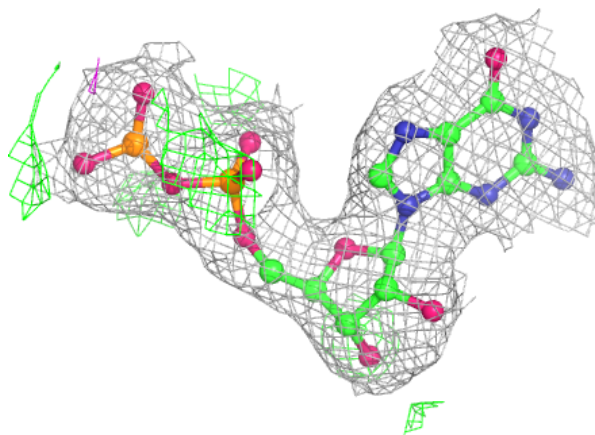and green (positive)
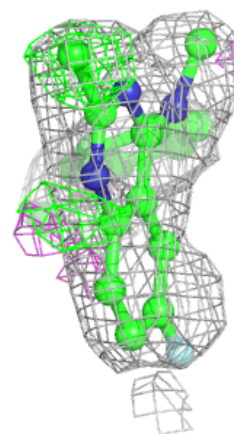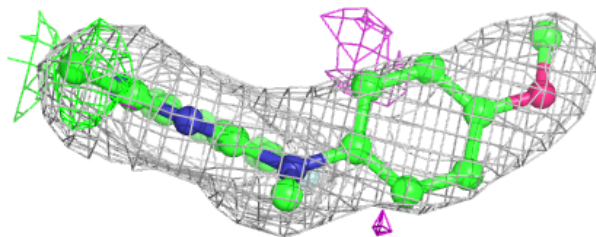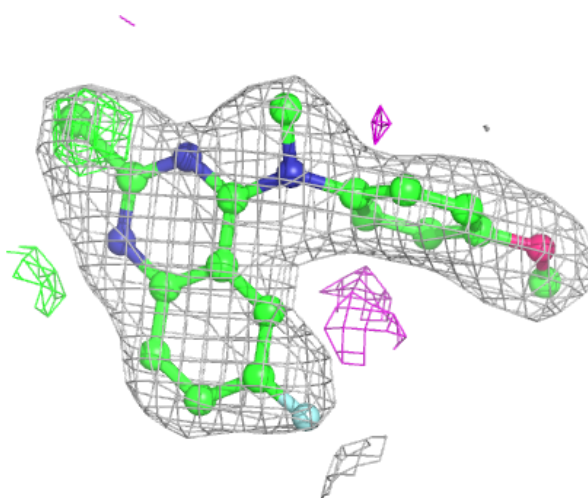
Electron density around GY2 B 505:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
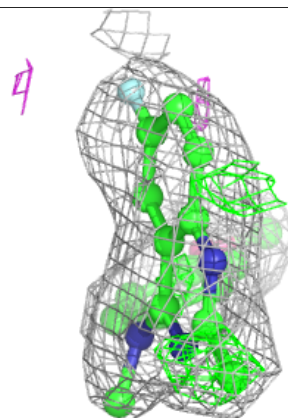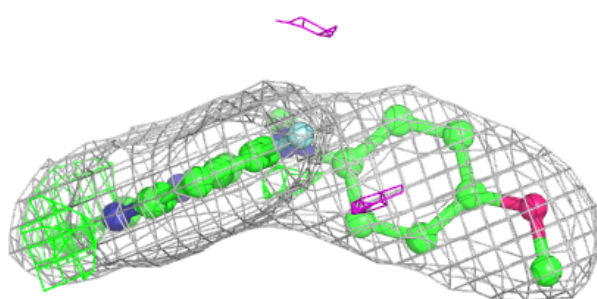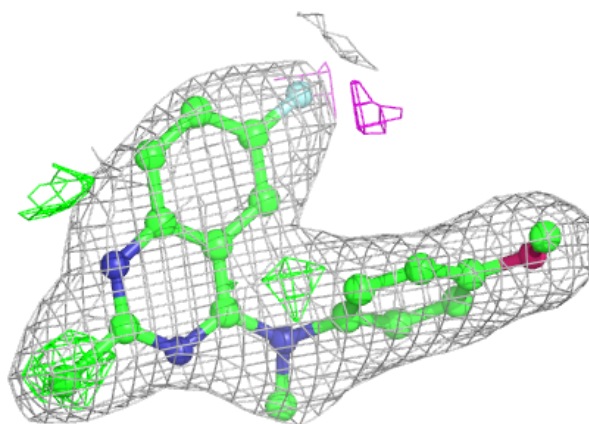
Electron density around GTP A 501:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
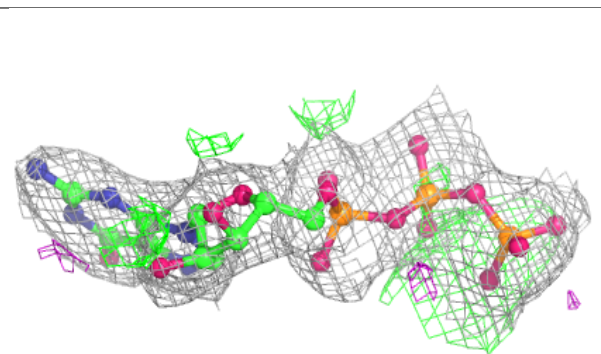mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
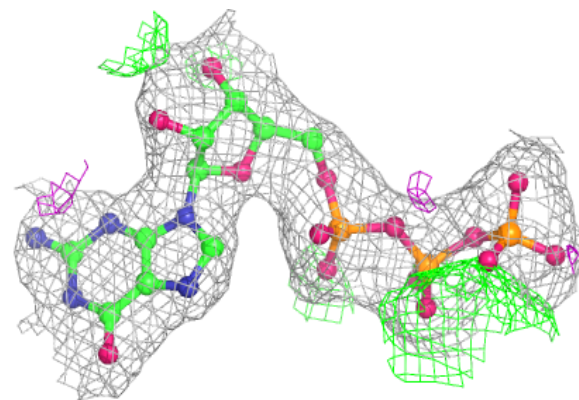
Electron density around GDP B 501:

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

Electron density around GTP C 501:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
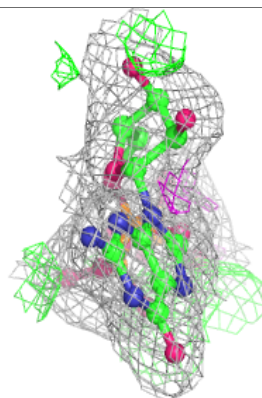
6.5 Other polymers (i)

There are no such residues in this entry.