WORLDWIDE wwPDB PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report (i)

Nov 22, 2023 – 10:19 PM JST

PDB ID	:	7XQX
Title	:	Crystal structure of T2R-TTL-27a complex
Authors	:	Lun, T.; Wu, C.Y.
Deposited on	:	2022-05-09
Resolution	:	3.36 Å(reported)

The following versions of software and data (see references (i)) 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	:	2.36
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 ⓘ

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

The reported resolution of this entry is 3.36 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.
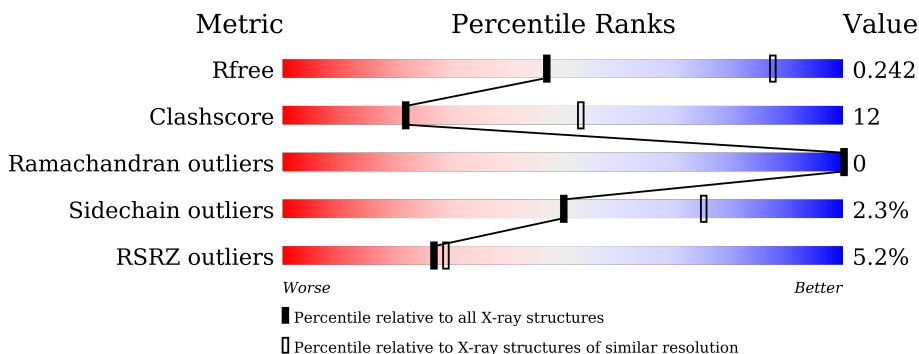
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1558 (3.42-3.30)
Clashscore	141614	1627 (3.42-3.30)
Ramachandran outliers	138981	1599 (3.42-3.30)
Sidechain outliers	138945	1598 (3.42-3.30)
RSRZ outliers	127900	1507 (3.42-3.30)

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	.% / 65% / 31% / · ·
1	C	450	76% / 20% / · ·
2	B	445	.% / 71% / 23% / · 5%
2	D	445	2% / 65% / 29% / · 6%
3	E	143	2% / 64% / 20% / · 14%
4	F	384	25% / 66% / 23% / · 10%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
8	CL	A	504	-	-	-	X

2 Entry composition ⓘ

There are 11 unique types of molecules in this entry. The entry contains 17610 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	3	0
			3423	2167	580	652	24			
1	C	440	Total	C	N	O	S	0	8	0
			3465	2193	585	663	24			

- 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: $C_{10}H_{16}N_5O_{14}P_3$).
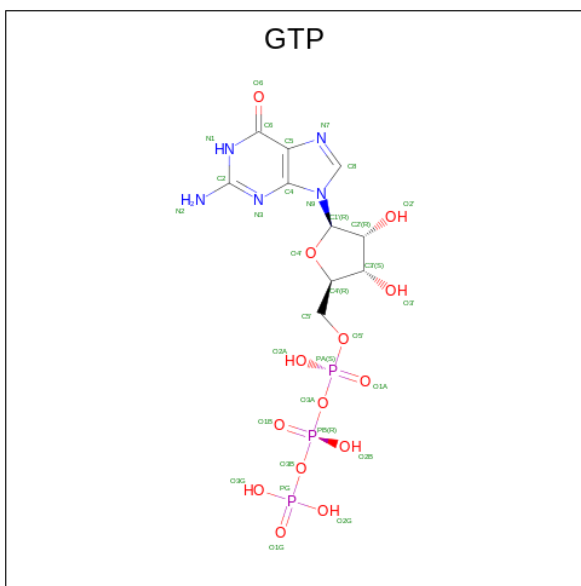
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total	C	N	O	P	0	0
			32	10	5	14	3		
5	C	1	Total	C	N	O	P	0	0
			32	10	5	14	3		

- 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: $C_{10}H_{15}N_5O_{11}P_2$).
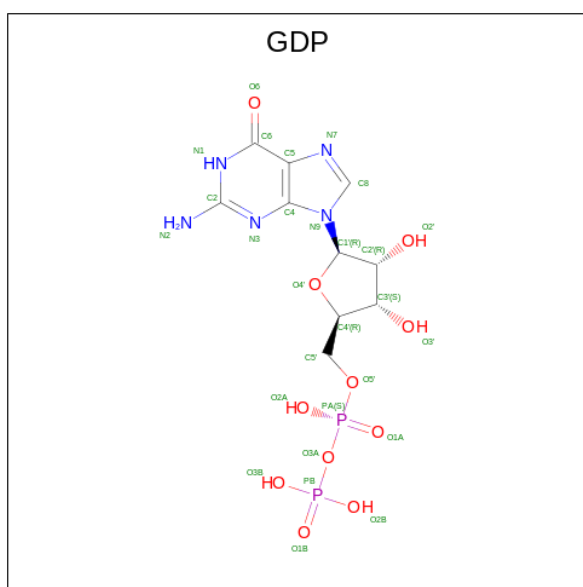
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
9	B	1	Total 28	C 10	N 5	O 11	P 2	0	0
9	D	1	Total 28	C 10	N 5	O 11	P 2	0	0

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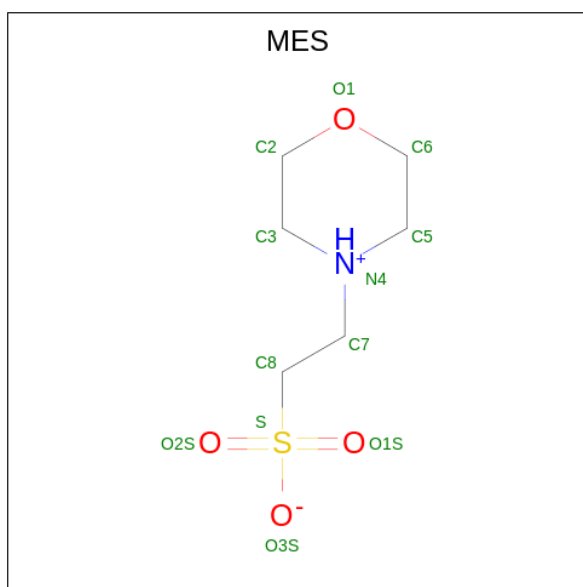
MES

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-7-fluoranyl-N-(4-methoxyphenyl)-N-methyl-quinazolin-4-amine (three-letter code: GXI) (formula: $C_{16}H_{13}ClFN_3O$) (labeled as "Ligand of Interest" by depositor).

GXI

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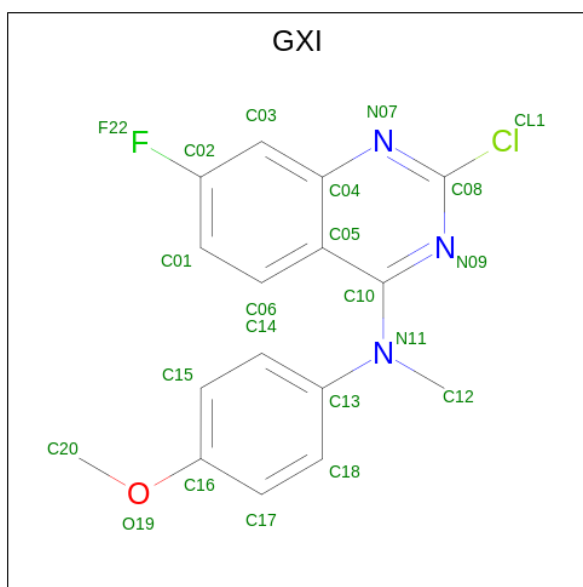
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
			Total	C	Cl	F	N	O		
11	D	1	22	16	1	1	3	1	0	0

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

• Molecule 1: Tubulin alpha-1B chain

• Molecule 2: Tubulin beta chain

• Molecule 2: Tubulin beta chain

Chain D:

• Molecule 3: Stathmin-4

Chain E:

• Molecule 4: TTL

Chain F:

4   Data and refinement statistics   ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	105.39Å 157.49Å 180.67Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	72.19 – 3.36 72.19 – 3.36	Depositor EDS
% Data completeness (in resolution range)	94.8 (72.19-3.36) 94.8 (72.19-3.36)	Depositor EDS
R_{merge}	0.40	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.29 (at 3.33Å)	Xtriage
Refinement program	PHENIX 1.19_4092	Depositor
R, R_{free}	0.197 , 0.245 0.193 , 0.242	Depositor DCC
R_{free} test set	1999 reflections (4.85%)	wwPDB-VP
Wilson B-factor (Å^2)	69.8	Xtriage
Anisotropy	0.345	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 54.2	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	0.92	EDS
Total number of atoms	17610	wwPDB-VP
Average B, all atoms (Å^2)	62.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.56% 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 $< |L| >$, $< L^2 >$ 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: CA, MG, GDP, GXI, CL, MES, GTP

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$|Z|$ >5	RMSZ	#$|Z|$ >5
1	A	0.67	3/3510 (0.1%)	0.95	8/4766 (0.2%)
1	C	0.66	1/3564 (0.0%)	0.88	10/4839 (0.2%)
2	B	0.59	0/3436	0.82	2/4653 (0.0%)
2	D	0.54	1/3368 (0.0%)	0.76	1/4564 (0.0%)
3	E	0.59	0/1041	0.74	1/1382 (0.1%)
4	F	0.52	1/2927 (0.0%)	0.72	0/3955
All	All	0.60	6/17846 (0.0%)	0.83	22/24159 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	C	0	2
2	B	0	1
2	D	0	1
4	F	0	1
All	All	0	5

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	359	PRO	CB-CG	-8.46	1.07	1.50
1	A	359	PRO	CG-CD	-8.18	1.23	1.50
1	A	359	PRO	N-CA	6.64	1.58	1.47
4	F	91	CYS	CB-SG	-5.99	1.72	1.81
2	D	201	CYS	CB-SG	-5.36	1.73	1.81

The worst 5 of 22 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	359	PRO	N-CD-CG	-21.64	70.73	103.20
1	A	359	PRO	CA-CB-CG	-19.95	66.10	104.00
1	C	314	ALA	C-N-CA	12.58	153.16	121.70
1	A	359	PRO	CB-CG-CD	10.12	145.98	106.50
1	A	423	GLU	CA-CB-CG	8.61	132.33	113.40

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	260	PHE	Peptide
1	C	215	ARG	Sidechain
1	C	284	GLU	Peptide
2	D	306	ARG	Sidechain
4	F	73	ARG	Peptide

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	3423	0	3333	107	1
1	C	3465	0	3382	56	2
2	B	3356	0	3237	83	0
2	D	3295	0	3166	96	0
3	E	1026	0	1042	22	1
4	F	2851	0	2826	56	0
5	A	32	0	12	2	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	3	0
10	B	24	0	24	2	0
11	B	22	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
11	D	22	0	0	2	0
All	All	17610	0	17057	409	2

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 12.

The worst 5 of 409 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:2:ARG:HH21	2:B:128:ASP:HB3	1.02	1.18
2:B:2:ARG:HH21	2:B:128:ASP:CB	1.64	1.10
2:B:2:ARG:NH2	2:B:128:ASP:OD2	1.88	1.07
2:D:47:ILE:CD1	2:D:59:TYR:CE1	2.42	1.03
2:B:2:ARG:NH2	2:B:128:ASP:HB3	1.85	0.91

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:322:ASP:OD1	1:C:338:LYS:NZ[3_555]	2.12	0.08
1:C:127:ASP:O	3:E:13:LYS:NZ[2_564]	2.15	0.05

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	438/450 (97%)	417 (95%)	21 (5%)	0	100	100
1	C	445/450 (99%)	430 (97%)	15 (3%)	0	100	100
2	B	423/445 (95%)	410 (97%)	13 (3%)	0	100	100
2	D	416/445 (94%)	394 (95%)	22 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	E	121/143 (85%)	119 (98%)	2 (2%)	0	100	100
4	F	342/384 (89%)	323 (94%)	19 (6%)	0	100	100
All	All	2185/2317 (94%)	2093 (96%)	92 (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	370/378 (98%)	362 (98%)	8 (2%)	52	76
1	C	378/378 (100%)	369 (98%)	9 (2%)	49	74
2	B	369/383 (96%)	362 (98%)	7 (2%)	57	79
2	D	362/383 (94%)	353 (98%)	9 (2%)	47	73
3	E	112/127 (88%)	107 (96%)	5 (4%)	27	59
4	F	314/342 (92%)	304 (97%)	10 (3%)	39	68
All	All	1905/1991 (96%)	1857 (98%)	48 (2%)	50	73

5 of 48 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	D	115	SER
3	E	103	GLN
2	D	137	HIS
2	D	293	MET
3	E	127	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:

Mol	Chain	Res	Type
2	B	165	ASN
1	C	380	ASN

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Mol	Chain	Res	Type
4	F	246	GLN
2	D	423	GLN
2	B	48	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	#$|Z| > 2$
9	GDP	B	501	6	24,30,30	1.12	2 (8%)	30,47,47	1.10	2 (6%)
10	MES	B	504	2	12,12,12	2.10	2 (16%)	14,16,16	2.10	5 (35%)
10	MES	B	503	-	12,12,12	2.27	2 (16%)	14,16,16	2.30	6 (42%)
5	GTP	A	501	6	26,34,34	1.15	2 (7%)	32,54,54	1.46	5 (15%)
11	GXI	D	502	-	24,24,24	1.57	4 (16%)	32,34,34	2.05	5 (15%)
11	GXI	B	505	-	24,24,24	1.46	4 (16%)	32,34,34	1.81	7 (21%)
9	GDP	D	501	-	24,30,30	0.88	1 (4%)	30,47,47	2.31	8 (26%)
5	GTP	C	501	6	26,34,34	1.11	2 (7%)	32,54,54	1.49	6 (18%)

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	-	4/12/32/32	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
5	GTP	A	501	6	-	6/18/38/38	0/3/3/3
11	GXI	D	502	-	-	0/10/10/10	0/3/3/3
11	GXI	B	505	-	-	1/10/10/10	0/3/3/3
9	GDP	D	501	-	-	3/12/32/32	0/3/3/3
5	GTP	C	501	6	-	6/18/38/38	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	-7.19	1.67	1.77
10	B	504	MES	C8-S	-5.94	1.69	1.77
11	D	502	GXI	C08-N07	4.30	1.33	1.30
5	A	501	GTP	C5-C6	-3.68	1.39	1.47
10	B	504	MES	O2S-S	3.28	1.54	1.45

The worst 5 of 44 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
11	D	502	GXI	N07-C08-N09	-8.36	122.20	130.62
9	D	501	GDP	C2-N1-C6	-6.39	113.33	125.10
11	B	505	GXI	N07-C08-N09	-6.10	124.48	130.62
9	D	501	GDP	O6-C6-C5	-5.67	113.29	124.37
9	D	501	GDP	C5-C6-N1	5.07	122.91	113.95

There are no chirality outliers.

5 of 27 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	501	GTP	C5'-O5'-PA-O1A
5	C	501	GTP	PB-O3B-PG-O3G
5	C	501	GTP	C5'-O5'-PA-O1A
9	B	501	GDP	C5'-O5'-PA-O1A
9	B	501	GDP	C5'-O5'-PA-O2A

There are no ring outliers.
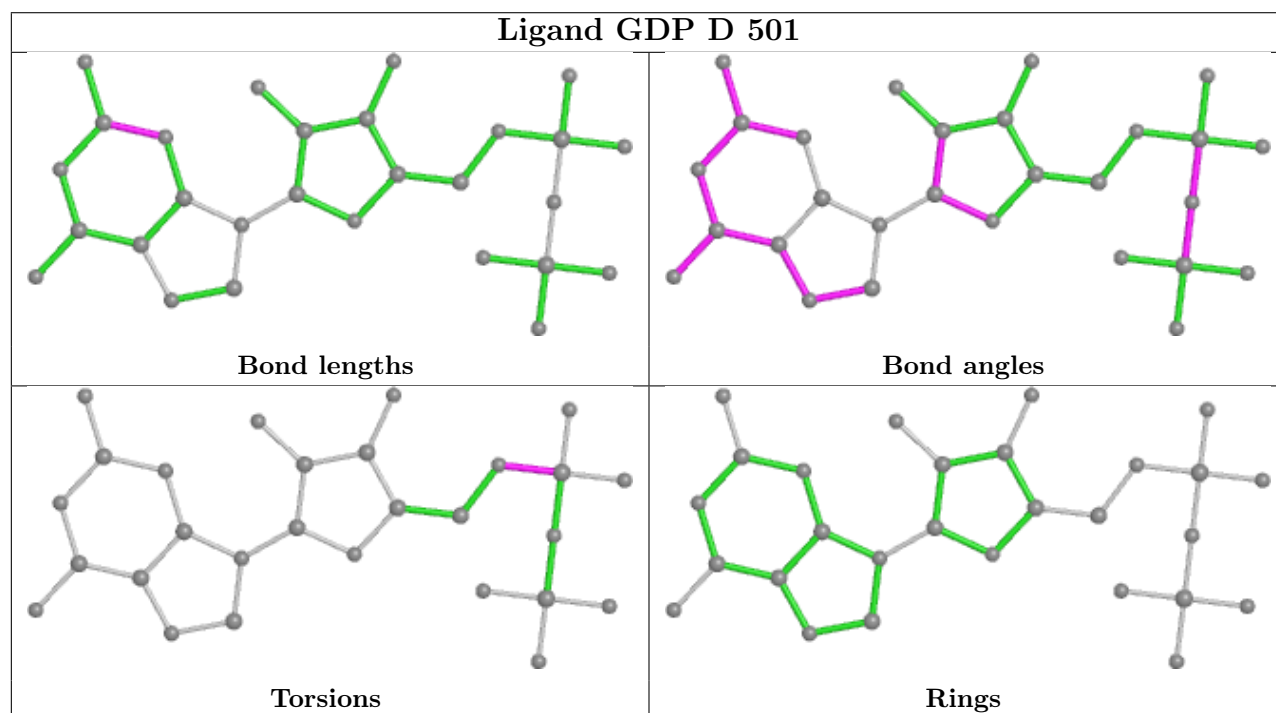
6 monomers are involved in 10 short contacts:

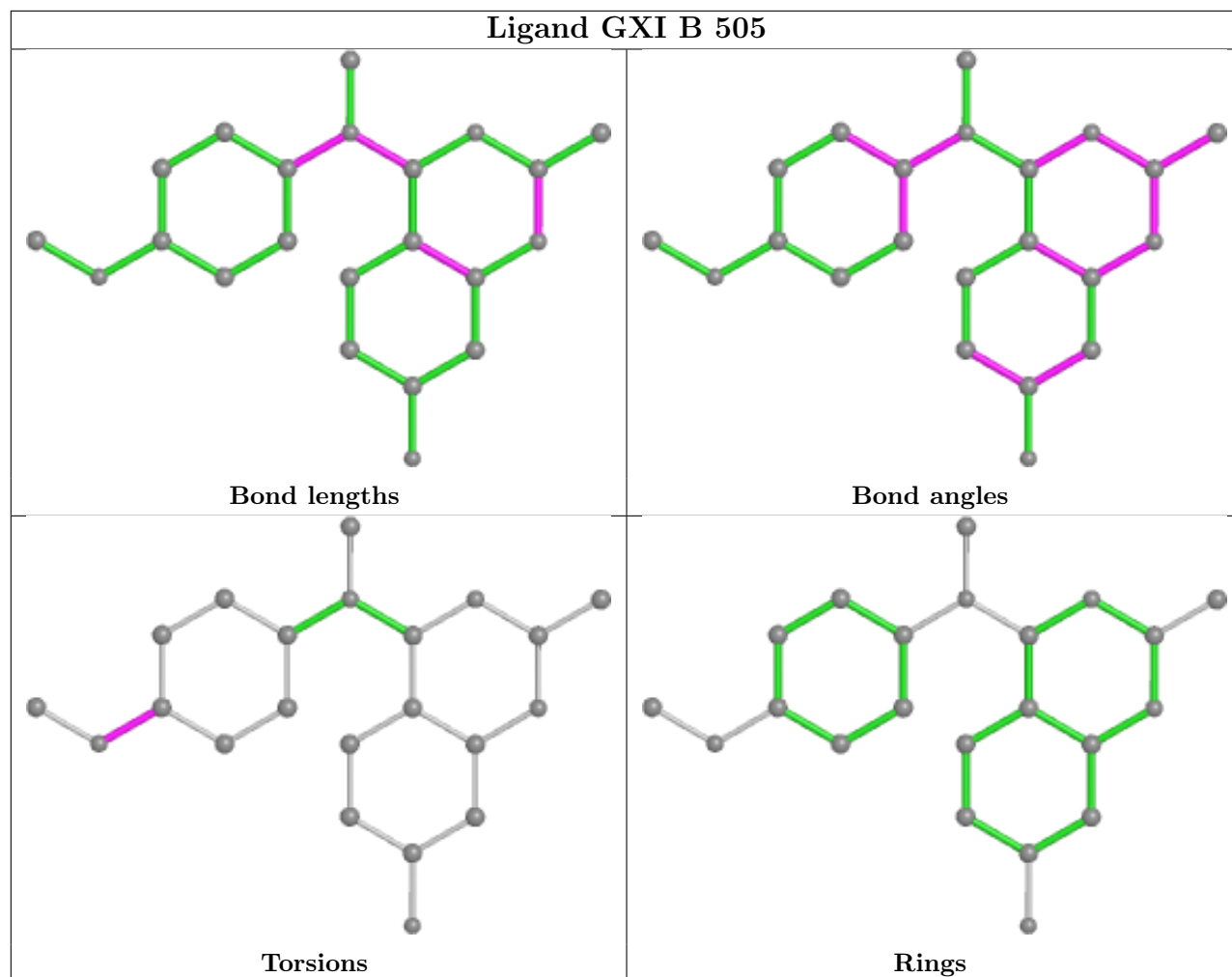| Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	B	504	MES	1	0
10	B	503	MES	1	0
5	A	501	GTP	2	0
11	D	502	GXI	2	0
11	B	505	GXI	1	0
9	D	501	GDP	3	0

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 A 501

Bond lengths

Bond angles

Torsions

Rings

Ligand GXI D 502

Bond lengths

Bond angles

Torsions

Rings

Ligand GXI B 505

Bond lengths

Bond angles

Torsions

Rings

Ligand GDP D 501

Bond lengths

Bond angles

Torsions

Rings

Ligand GTP C 501

Bond lengths

Bond angles

Torsions

Rings
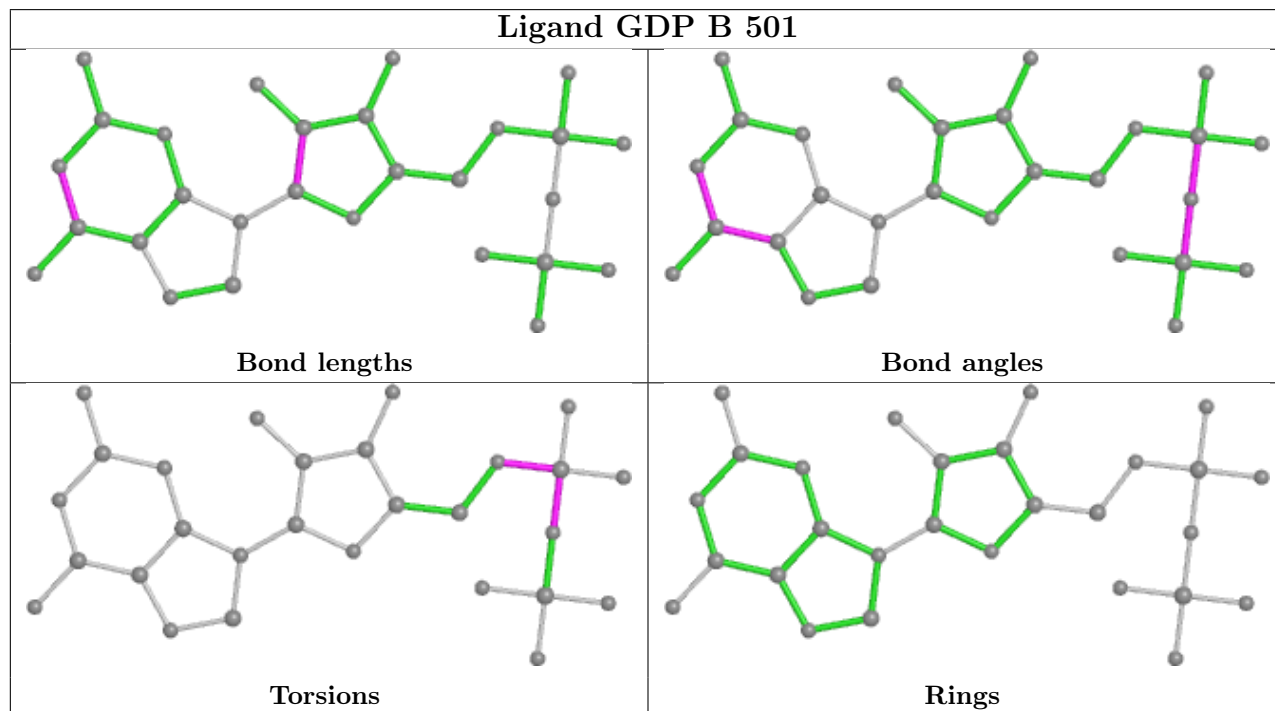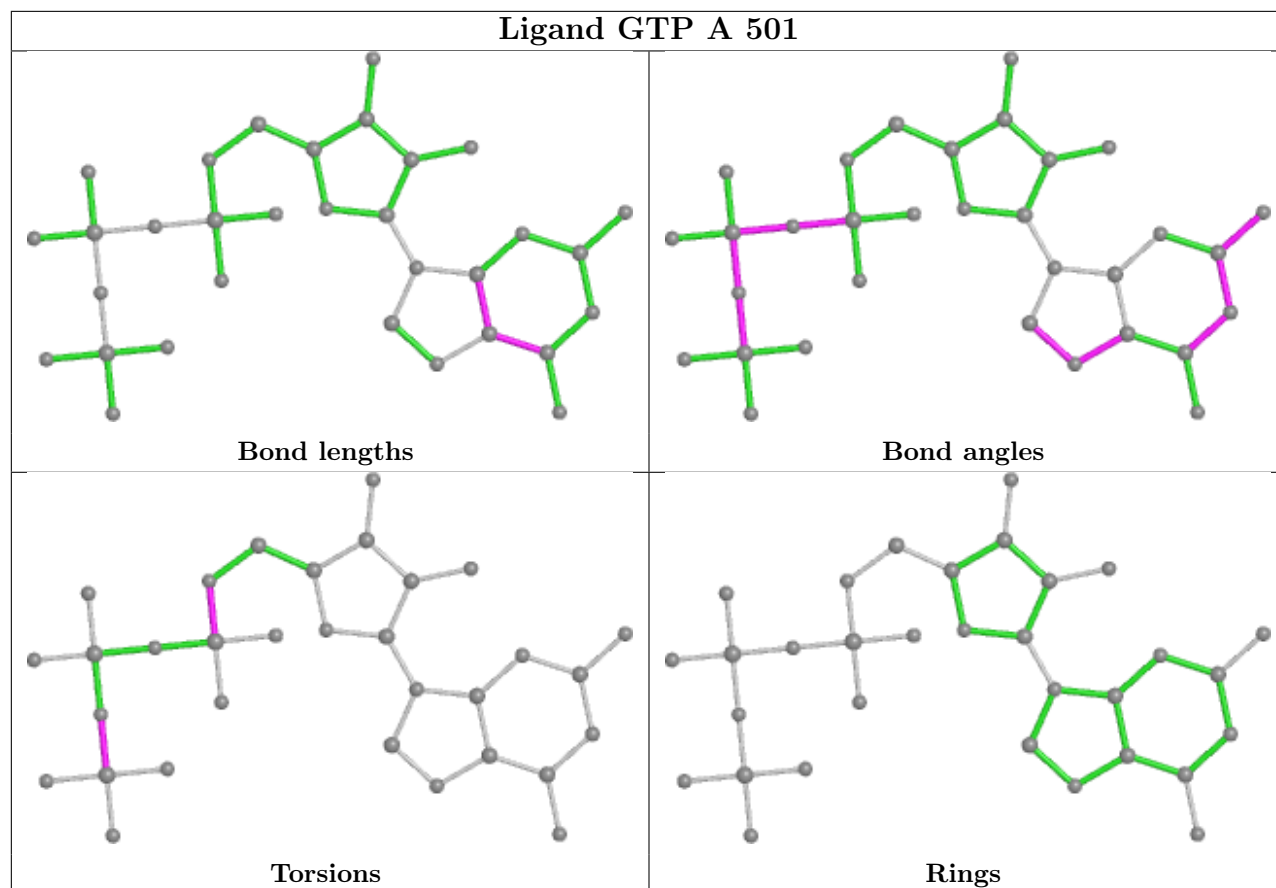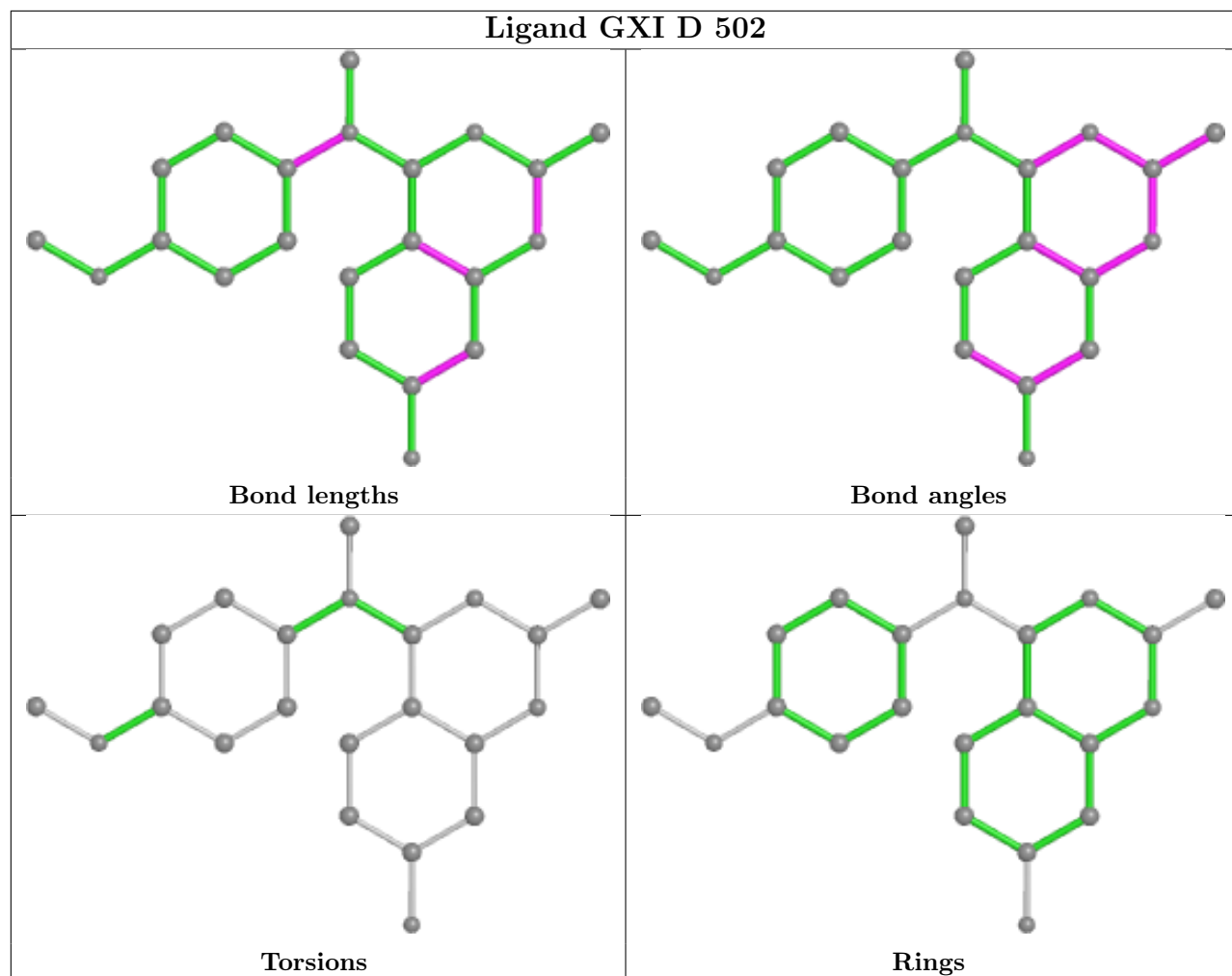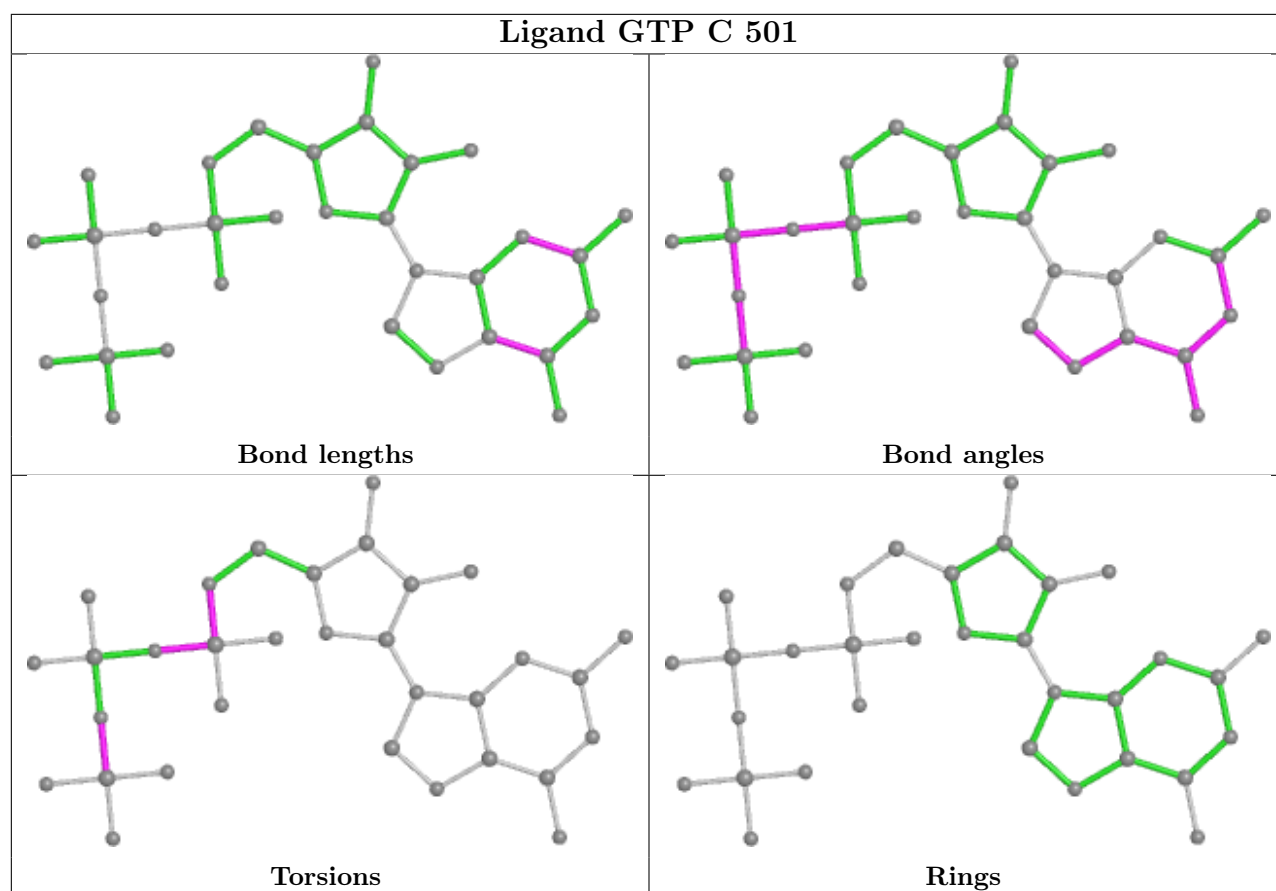
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å²)	Q<0.9
1	A	437/450 (97%)	0.13	4 (0%)	84	87	36, 55, 79, 95	0
1	C	440/450 (97%)	-0.16	0	100	100	24, 42, 65, 82	0
2	B	424/445 (95%)	-0.05	3 (0%)	87	91	28, 50, 83, 112	1 (0%)
2	D	420/445 (94%)	0.33	9 (2%)	63	67	27, 70, 98, 118	1 (0%)
3	E	123/143 (86%)	0.16	3 (2%)	59	61	37, 67, 101, 126	0
4	F	346/384 (90%)	1.42	95 (27%)	0	0	44, 78, 140, 155	0
All	All	2190/2317 (94%)	0.28	114 (5%)	27	29	24, 58, 106, 155	2 (0%)

The worst 5 of 114 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	F	250	SER	9.8
4	F	239	HIS	9.2
4	F	240	LEU	8.2
4	F	251	LYS	8.0
4	F	244	CYS	7.9

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.

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
8	CL	A	504	1/1	0.80	0.47	87,87,87,87	0
10	MES	B	504	12/12	0.91	0.29	72,75,87,110	0
9	GDP	D	501	28/28	0.93	0.23	54,67,76,87	0
10	MES	B	503	12/12	0.94	0.21	50,55,69,90	0
6	MG	C	502	1/1	0.94	0.33	33,33,33,33	0
11	GXI	D	502	22/22	0.95	0.35	51,70,88,99	0
6	MG	B	502	1/1	0.96	0.37	29,29,29,29	0
5	GTP	A	501	32/32	0.97	0.19	31,44,54,61	0
5	GTP	C	501	32/32	0.97	0.20	29,37,45,48	0
6	MG	A	502	1/1	0.97	0.31	32,32,32,32	0
11	GXI	B	505	22/22	0.97	0.28	36,46,55,59	0
9	GDP	B	501	28/28	0.97	0.18	27,37,43,44	0
7	CA	C	503	1/1	0.98	0.07	47,47,47,47	0
7	CA	A	503	1/1	0.98	0.06	100,100,100,100	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.
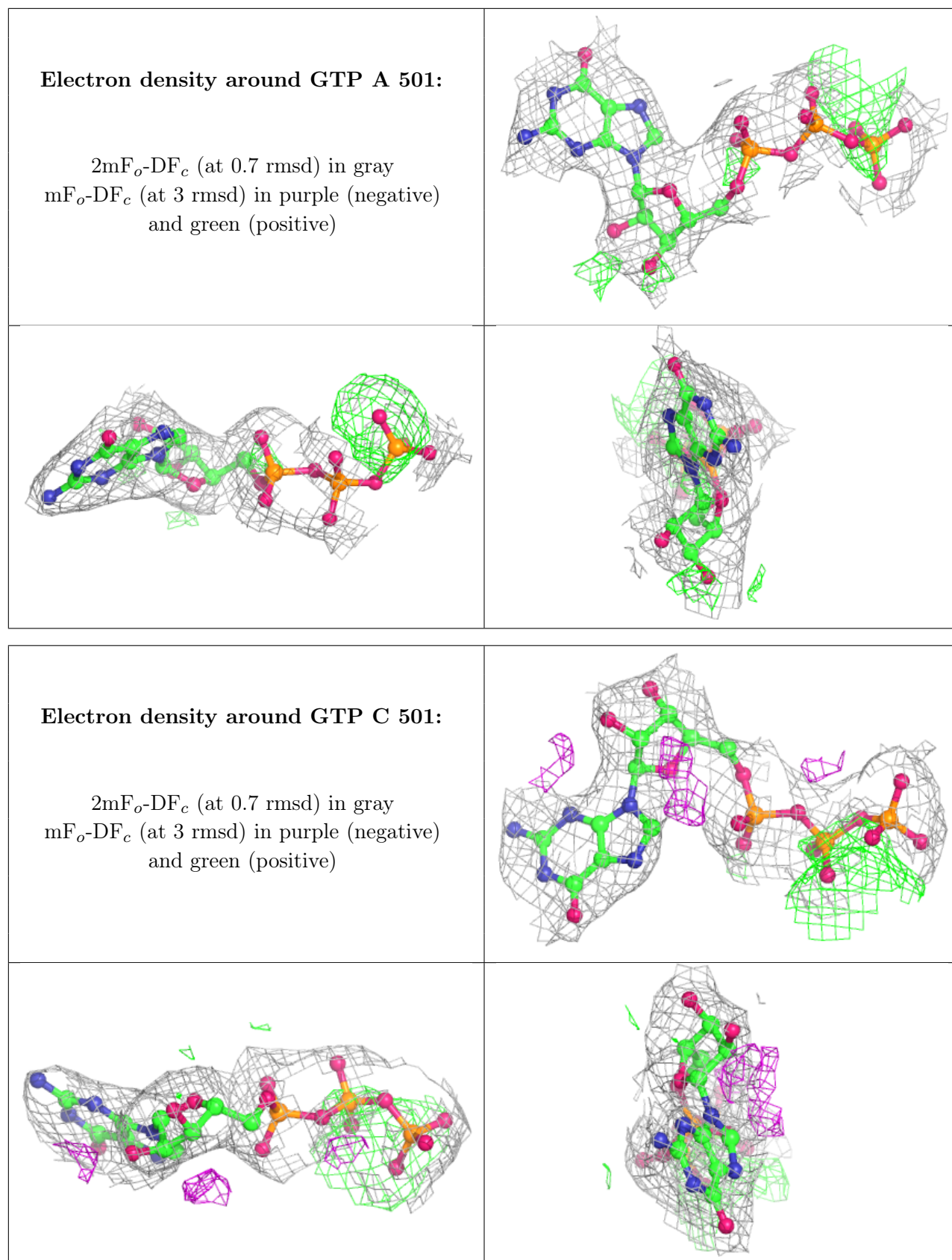
Electron density around GDP D 501:

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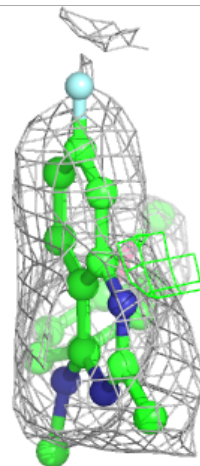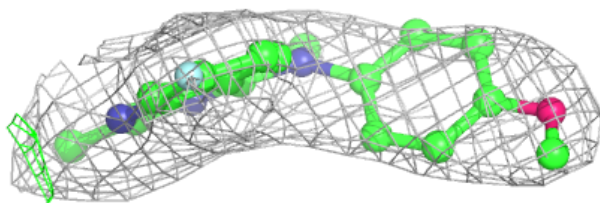and green (positive)
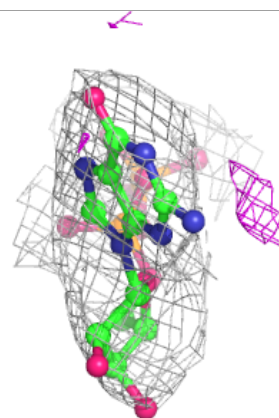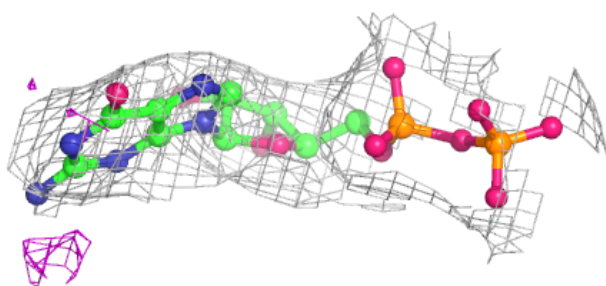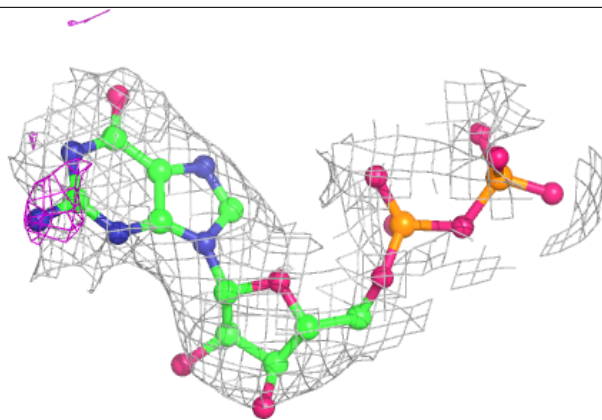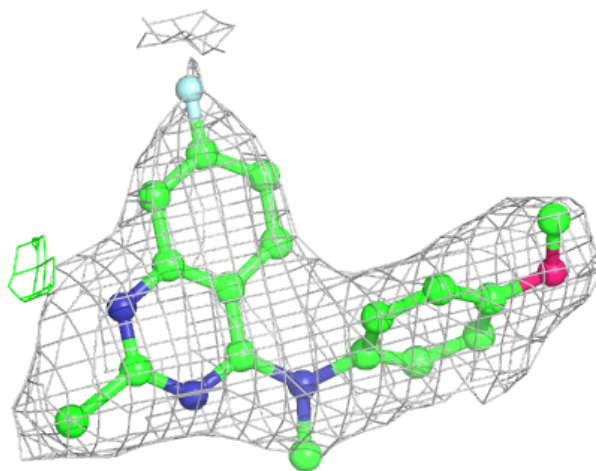

Electron density around GXI D 502:

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

Electron density around 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 GTP C 501:

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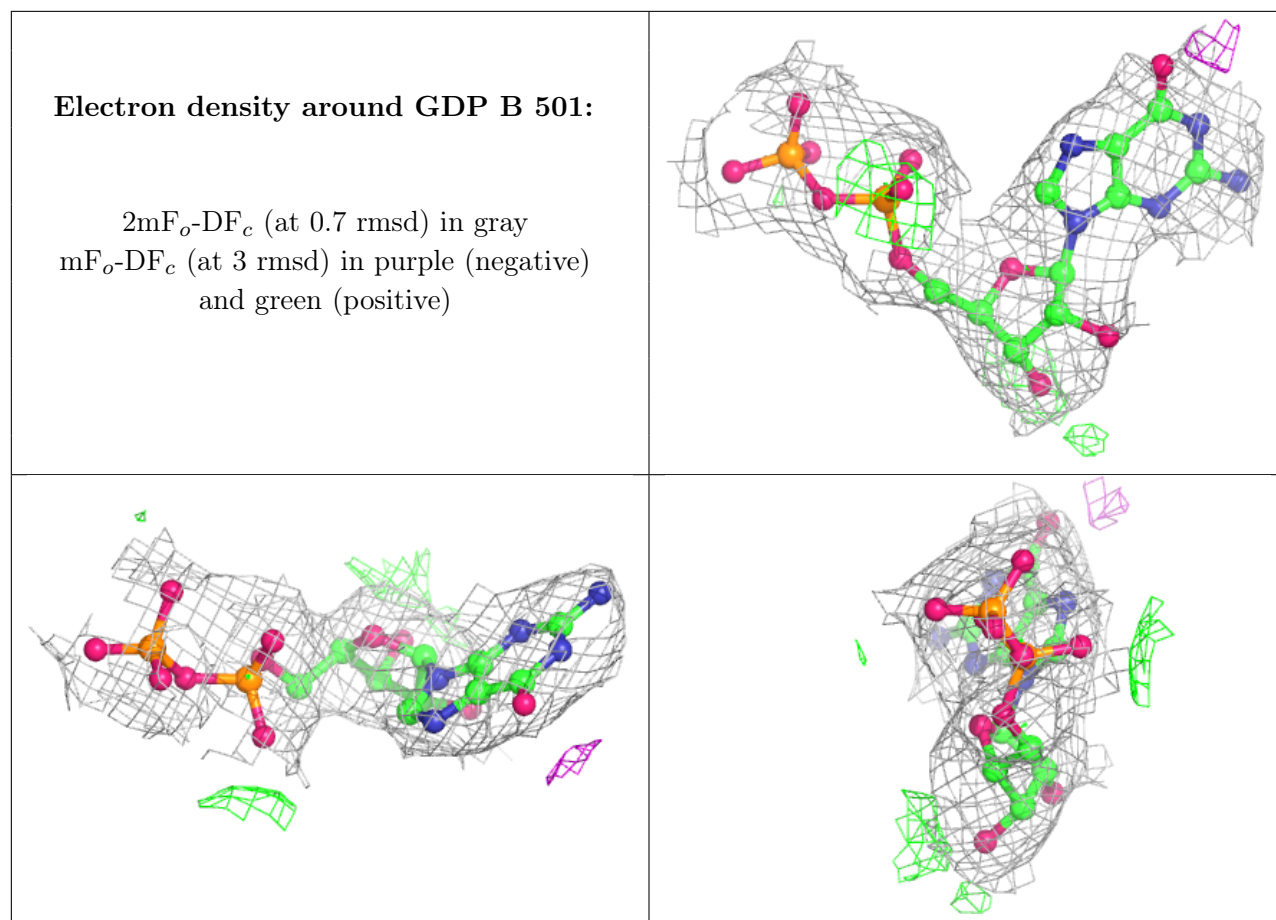mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
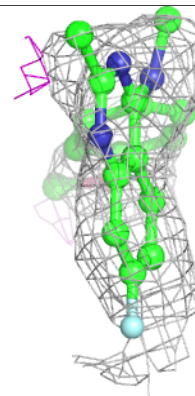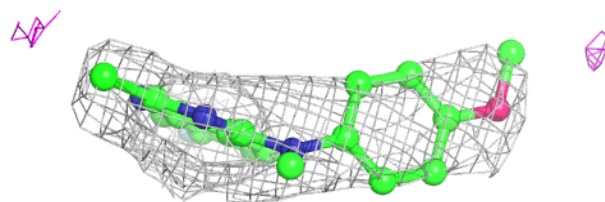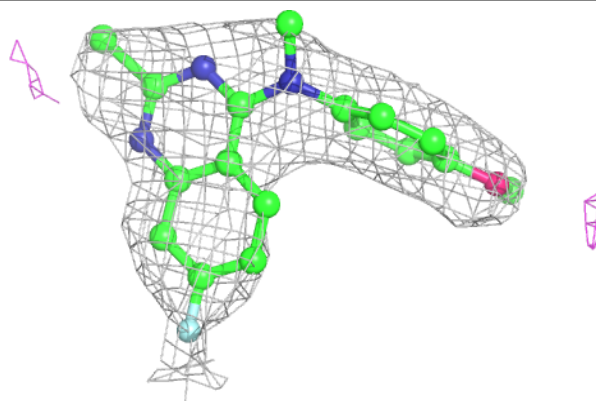
Electron density around GXI B 505:

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

Electron density around 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)

6.5 Other polymers ⓘ

There are no such residues in this entry.