Full wwPDB X-ray Structure Validation Report (i)

Nov 13, 2023 – 04:35 PM JST

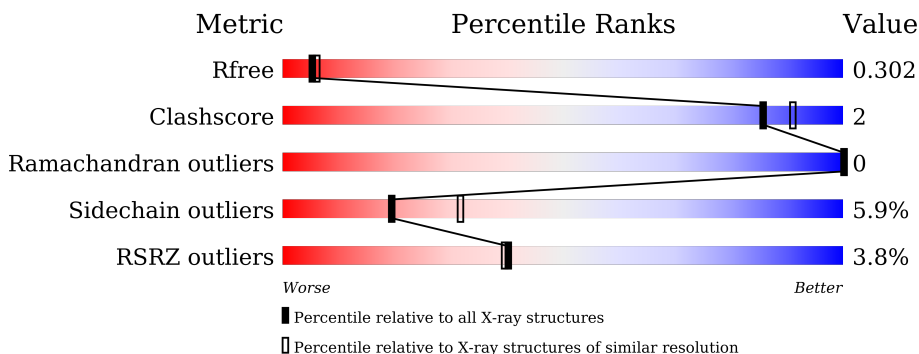|		
PDB ID	:	5XMP
Title	:	Plasmodium vivax SHMT(C346A) bound with PLP-glycine and MF057
Authors	:	Chitnumsub, P.; Jaruwat, A.; Leartsakulpanich, U.; Schwertz, G.; Diederich, F.
Deposited on	:	2017-05-16
Resolution	:	2.40 Å(reported)

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 2.40 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		0.302
Clashscore		2
Ramachandran outliers		0
Sidechain outliers		5.9%
RSRZ outliers		3.8%

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	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)
RSRZ outliers	127900	3811 (2.40-2.40)

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	442	3% · 90% · 10%
1	B	442	5% · 89% · 10% ·
1	C	442	4% · 88% · 11%

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 10894 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 Serine hydroxymethyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	442	Total	C	N	O	S	0	0	0
			3457	2186	600	655	16			
1	B	442	Total	C	N	O	S	0	0	0
			3457	2186	600	655	16			
1	C	442	Total	C	N	O	S	0	0	0
			3457	2186	600	655	16			

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	364	ALA	CYS	engineered mutation	UNP A0A1G4H5I1
B	364	ALA	CYS	engineered mutation	UNP A0A1G4H5I1
C	364	ALA	CYS	engineered mutation	UNP A0A1G4H5I1

- Molecule 2 is N-GLYCINE-[3-HYDROXY-2-METHYL-5-PHOSPHONOOXYMETHYL-P YRIDIN-4-YL-METHANE] (three-letter code: PLG) (formula: $C_{10}H_{15}N_2O_7P$).
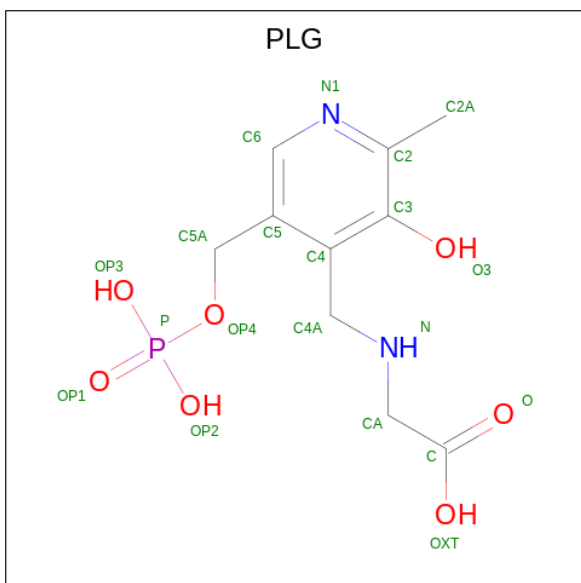
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
2	A	1	Total	C	N	O	P		0	0
			20	10	2	7	1			
2	B	1	Total	C	N	O	P		0	0
			20	10	2	7	1			
2	C	1	Total	C	N	O	P		0	0
			20	10	2	7	1			

- Molecule 3 is 4-[3-[(4 {S})-6-azanyl-5-cyano-3-methyl-4-propan-2-yl-2 {H}-pyrano[2,3-c]pyrazol-4-yl]-5-(trifluoromethyl)phenyl]- {N}-methyl- {N}-[2,2,2-tris(fluoranyl)ethyl]benzenesulfonamide (three-letter code: 8A3) (formula: $C_{27}H_{25}F_6N_5O_3S$).
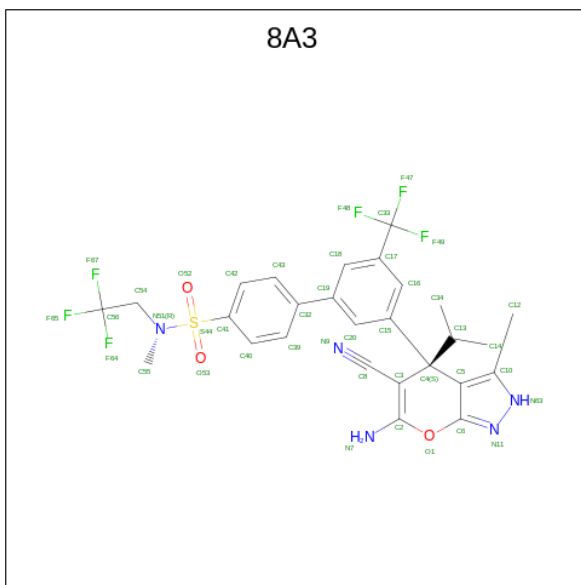
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
3	A	1	Total	C	F	N	O	S	0	0
			42	27	6	5	3	1		
3	B	1	Total	C	F	N	O	S	0	0
			42	27	6	5	3	1		
3	C	1	Total	C	F	N	O	S	0	0
			42	27	6	5	3	1		

- Molecule 4 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Cl	0	0
			1	1		
4	C	1	Total	Cl	0	0
			1	1		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	108	Total 108	O 108	0	0
5	B	106	Total 106	O 106	0	0
5	C	121	Total 121	O 121	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 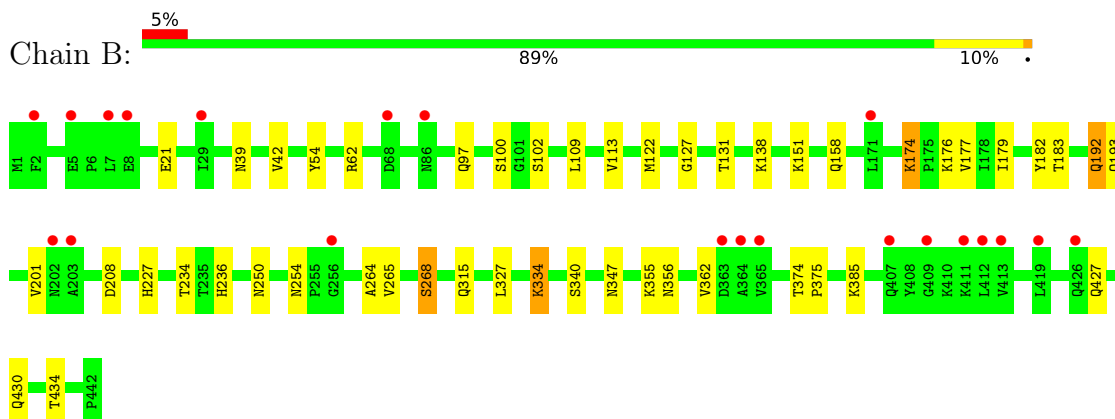quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.
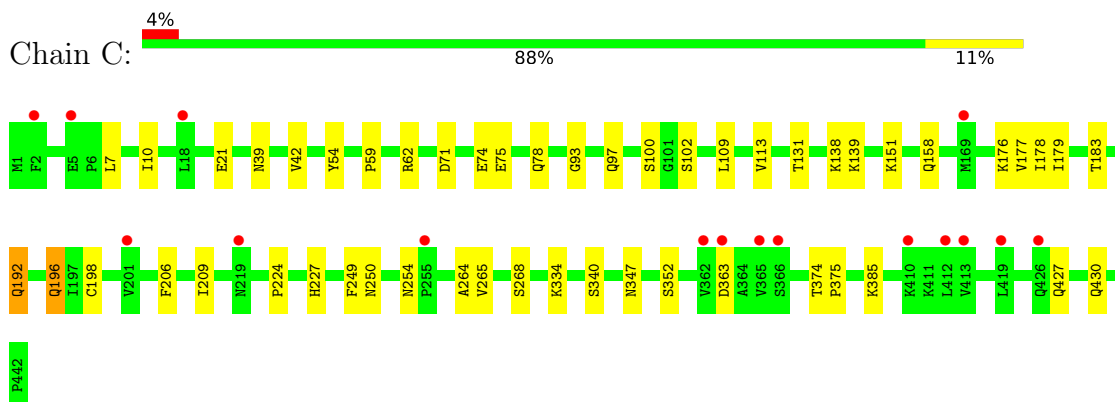
- Molecule 1: Serine hydroxymethyltransferase
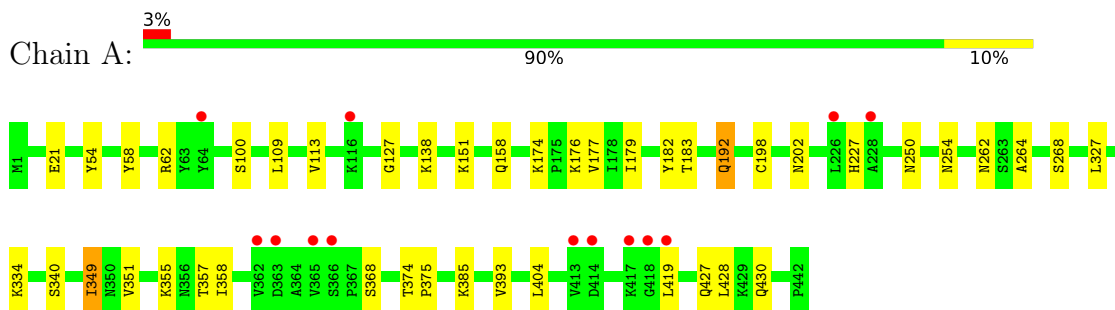
Chain A:

- Molecule 1: Serine hydroxymethyltransferase

Chain B:

- Molecule 1: Serine hydroxymethyltransferase

Chain C:

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	100.49Å 58.09Å 234.75Å 90.00° 90.05° 90.00°	Depositor
Resolution (Å)	30.00 – 2.40 28.82 – 2.40	Depositor EDS
% Data completeness (in resolution range)	94.4 (30.00-2.40) 94.1 (28.82-2.40)	Depositor EDS
R_{merge}	0.02	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	6.70 (at 2.39Å)	Xtriage
Refinement program	REFMAC 5.8.0103	Depositor
R, R_{free}	0.267 , 0.309 0.263 , 0.302	Depositor DCC
R_{free} test set	5104 reflections (10.11%)	wwPDB-VP
Wilson B-factor (Å^2)	32.2	Xtriage
Anisotropy	0.045	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 17.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.51, < L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.023 for -1/2*h+3/2*k,1/2*h+1/2*k,-l 0.023 for -1/2*h-3/2*k,-1/2*h+1/2*k,-l 0.467 for 1/2*h+3/2*k,1/2*h-1/2*k,-l 0.459 for 1/2*h-3/2*k,-1/2*h-1/2*k,-l 0.022 for -h,-k,l	Xtriage
F_o,F_c correlation	0.90	EDS
Total number of atoms	10894	wwPDB-VP
Average B, all atoms (Å^2)	32.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.46% 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: 8A3, CL, PLG

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	0.52	0/3520	0.69	0/4753
1	B	0.51	0/3520	0.69	1/4753 (0.0%)
1	C	0.50	0/3520	0.68	0/4753
All	All	0.51	0/10560	0.69	1/14259 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	208	ASP	CB-CG-OD1	5.03	122.83	118.30

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	3457	0	3477	15	0
1	B	3457	0	3477	14	0
1	C	3457	0	3477	18	0
2	A	20	0	11	0	0
2	B	20	0	11	0	0
2	C	20	0	11	0	0
3	A	42	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	42	0	0	0	0
3	C	42	0	0	0	0
4	A	1	0	0	0	0
4	C	1	0	0	0	0
5	A	108	0	0	0	0
5	B	106	0	0	1	0
5	C	121	0	0	3	0
All	All	10894	0	10464	47	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 2.

All (47) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:347:ASN:ND2	5:C:601:HOH:O	2.14	0.80
1:B:192:GLN:HG3	1:B:227:HIS:CE1	2.25	0.72
1:A:58:TYR:OH	1:A:262:ASN:O	2.12	0.66
1:C:192:GLN:HG3	1:C:227:HIS:CE1	2.31	0.65
1:B:347:ASN:ND2	5:B:601:HOH:O	2.15	0.64
1:A:192:GLN:HG3	1:A:227:HIS:CE1	2.41	0.55
1:A:109:LEU:HD21	1:A:179:ILE:HD11	1.89	0.55
1:A:404:LEU:HD13	1:A:419:LEU:HD12	1.90	0.52
1:C:97:GLN:HB2	1:C:265:VAL:HG11	1.93	0.50
1:B:109:LEU:HD21	1:B:179:ILE:HD11	1.94	0.49
1:B:39:ASN:OD1	1:B:42:VAL:HG23	2.12	0.49
1:C:113:VAL:CG1	1:C:177:VAL:HG23	2.43	0.49
1:C:178:ILE:HD12	1:C:198:CYS:SG	2.52	0.49
1:A:113:VAL:CG1	1:A:177:VAL:HG23	2.43	0.48
1:C:59:PRO:HA	1:C:71:ASP:OD1	2.14	0.48
1:B:113:VAL:CG1	1:B:177:VAL:HG23	2.44	0.47
1:A:113:VAL:HG12	1:A:176:LYS:HB3	1.97	0.47
1:B:174:LYS:HA	1:B:201:VAL:HG11	1.96	0.47
1:B:113:VAL:HG12	1:B:176:LYS:HB3	1.97	0.47
1:A:374:THR:N	1:A:375:PRO:CD	2.78	0.46
1:B:264:ALA:HA	1:B:268:SER:HB2	1.96	0.46
1:C:374:THR:N	1:C:375:PRO:CD	2.78	0.46
1:C:264:ALA:HA	1:C:268:SER:HB2	1.97	0.46
1:A:264:ALA:HA	1:A:268:SER:HB2	1.98	0.45
1:B:97:GLN:HB2	1:B:265:VAL:HG11	1.99	0.45
1:A:358:ILE:CD1	1:A:368:SER:HB2	2.46	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:75:GLU:HA	1:C:78:GLN:OE1	2.17	0.44
1:C:74:GLU:O	1:C:78:GLN:HG3	2.18	0.44
1:B:102:SER:HA	1:B:131:THR:HG21	1.99	0.44
1:B:374:THR:N	1:B:375:PRO:CD	2.80	0.44
1:A:393:VAL:HG13	1:A:428:LEU:HD11	2.00	0.44
1:C:209:ILE:HG21	1:C:224:PRO:HG3	1.99	0.43
1:B:234:THR:HB	1:B:236:HIS:CE1	2.53	0.43
1:A:192:GLN:CG	1:A:227:HIS:CE1	3.02	0.43
1:C:139:LYS:CE	5:C:677:HOH:O	2.66	0.43
1:B:315:GLN:O	1:B:334:LYS:HE2	2.18	0.43
1:A:349:ILE:HG13	1:A:351:VAL:HG23	2.01	0.42
1:B:127:GLY:O	1:B:182:TYR:HB3	2.20	0.42
1:A:109:LEU:O	1:A:113:VAL:HG22	2.19	0.42
1:C:7:LEU:HA	1:C:10:ILE:HG22	2.02	0.41
1:C:93:GLY:HA3	1:C:249:PHE:CE1	2.55	0.41
1:C:196:GLN:NE2	5:C:604:HOH:O	2.46	0.41
1:A:127:GLY:O	1:A:182:TYR:HB3	2.21	0.41
1:A:198:CYS:O	1:A:202:ASN:N	2.54	0.41
1:C:109:LEU:HD21	1:C:179:ILE:HD11	2.03	0.41
1:C:102:SER:HA	1:C:131:THR:HG21	2.02	0.40
1:C:39:ASN:OD1	1:C:42:VAL:HG23	2.21	0.40

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	440/442 (100%)	417 (95%)	23 (5%)	0	100	100
1	B	440/442 (100%)	424 (96%)	16 (4%)	0	100	100
1	C	440/442 (100%)	419 (95%)	21 (5%)	0	100	100
All	All	1320/1326 (100%)	1260 (96%)	60 (4%)	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	380/380 (100%)	359 (94%)	21 (6%)	21	35
1	B	380/380 (100%)	355 (93%)	25 (7%)	16	26
1	C	380/380 (100%)	359 (94%)	21 (6%)	21	35
All	All	1140/1140 (100%)	1073 (94%)	67 (6%)	19	32

All (67) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	21	GLU
1	A	54	TYR
1	A	62	ARG
1	A	100	SER
1	A	138	LYS
1	A	151	LYS
1	A	158	GLN
1	A	174	LYS
1	A	183	THR
1	A	192	GLN
1	A	250	ASN
1	A	254	ASN
1	A	327	LEU
1	A	334	LYS
1	A	340	SER
1	A	349	ILE
1	A	355	LYS
1	A	357	THR
1	A	385	LYS
1	A	427	GLN
1	A	430	GLN
1	B	21	GLU
1	B	54	TYR

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Mol	Chain	Res	Type
1	B	62	ARG
1	B	100	SER
1	B	122	MET
1	B	138	LYS
1	B	151	LYS
1	B	158	GLN
1	B	174	LYS
1	B	183	THR
1	B	192	GLN
1	B	193	GLN
1	B	250	ASN
1	B	254	ASN
1	B	268	SER
1	B	327	LEU
1	B	334	LYS
1	B	340	SER
1	B	355	LYS
1	B	356	ASN
1	B	362	VAL
1	B	385	LYS
1	B	427	GLN
1	B	430	GLN
1	B	434	THR
1	C	21	GLU
1	C	54	TYR
1	C	62	ARG
1	C	100	SER
1	C	138	LYS
1	C	151	LYS
1	C	158	GLN
1	C	176	LYS
1	C	183	THR
1	C	192	GLN
1	C	196	GLN
1	C	206	PHE
1	C	250	ASN
1	C	254	ASN
1	C	334	LYS
1	C	340	SER
1	C	352	SER
1	C	363	ASP
1	C	385	LYS

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Mol	Chain	Res	Type
1	C	427	GLN
1	C	430	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	192	GLN
1	A	227	HIS
1	B	192	GLN
1	B	227	HIS
1	B	424	GLN
1	C	192	GLN
1	C	227	HIS
1	C	321	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 8 ligands modelled in this entry, 2 are monoatomic - leaving 6 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
3	8A3	B	502	-	40,45,45	2.92	6 (15%)	56,72,72	2.15	19 (33%)
2	PLG	C	501	-	20,20,20	2.88	4 (20%)	25,28,28	3.49	8 (32%)
3	8A3	A	502	-	40,45,45	3.04	6 (15%)	56,72,72	2.16	16 (28%)
3	8A3	C	502	-	40,45,45	2.94	6 (15%)	56,72,72	2.09	13 (23%)
2	PLG	A	501	-	20,20,20	2.80	4 (20%)	25,28,28	3.08	7 (28%)
2	PLG	B	501	-	20,20,20	2.77	3 (15%)	25,28,28	2.43	6 (24%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	8A3	B	502	-	-	9/37/61/61	0/4/4/4
2	PLG	C	501	-	-	4/12/12/12	0/1/1/1
3	8A3	A	502	-	-	4/37/61/61	0/4/4/4
3	8A3	C	502	-	-	9/37/61/61	0/4/4/4
2	PLG	A	501	-	-	3/12/12/12	0/1/1/1
2	PLG	B	501	-	-	5/12/12/12	0/1/1/1

All (29) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	502	8A3	C41-S44	-11.76	1.60	1.76
3	B	502	8A3	C41-S44	-11.65	1.60	1.76
3	A	502	8A3	C41-S44	-11.34	1.60	1.76
3	A	502	8A3	C8-C3	-10.94	1.27	1.42
3	B	502	8A3	C8-C3	-9.96	1.28	1.42
3	C	502	8A3	C8-C3	-9.22	1.29	1.42
3	C	502	8A3	O1-C2	9.09	1.47	1.36
2	C	501	PLG	C3-C2	8.72	1.49	1.40
3	A	502	8A3	O1-C2	8.65	1.46	1.36
2	A	501	PLG	C3-C2	8.33	1.49	1.40
3	B	502	8A3	O1-C2	8.26	1.46	1.36
2	B	501	PLG	C3-C2	7.96	1.48	1.40
2	C	501	PLG	C5-C4	6.79	1.50	1.40
2	A	501	PLG	C5-C4	6.60	1.49	1.40
2	B	501	PLG	C3-C4	6.30	1.49	1.40
2	B	501	PLG	C5-C4	6.22	1.49	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	PLG	C3-C4	5.19	1.48	1.40
2	C	501	PLG	C3-C4	5.16	1.48	1.40
3	C	502	8A3	C54-C56	3.37	1.54	1.50
3	B	502	8A3	C54-C56	3.28	1.54	1.50
3	A	502	8A3	C54-C56	3.26	1.54	1.50
2	C	501	PLG	C4A-C4	2.47	1.55	1.51
3	A	502	8A3	C16-C15	2.39	1.43	1.39
3	C	502	8A3	C20-C15	2.37	1.43	1.39
3	A	502	8A3	C20-C15	2.34	1.43	1.39
3	B	502	8A3	C20-C15	2.22	1.43	1.39
3	B	502	8A3	C16-C15	2.14	1.42	1.39
3	C	502	8A3	C16-C15	2.03	1.42	1.39
2	A	501	PLG	C4A-C4	2.02	1.54	1.51

All (69) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	501	PLG	C4A-N-CA	12.76	125.89	112.58
2	A	501	PLG	C4A-N-CA	10.69	123.74	112.58
2	B	501	PLG	C4A-N-CA	8.81	121.77	112.58
2	C	501	PLG	C4A-C4-C5	6.40	126.82	119.71
2	A	501	PLG	C4A-C4-C5	6.08	126.47	119.71
3	C	502	8A3	O53-S44-O52	-5.93	109.91	119.52
3	B	502	8A3	O53-S44-O52	-5.87	110.00	119.52
3	C	502	8A3	O1-C2-N7	5.56	114.21	110.22
3	A	502	8A3	C41-S44-N51	5.49	114.52	107.02
3	B	502	8A3	C41-S44-N51	5.45	114.46	107.02
3	B	502	8A3	O1-C2-N7	5.42	114.11	110.22
3	A	502	8A3	O1-C2-N7	5.39	114.09	110.22
2	C	501	PLG	C3-C4-C5	-5.37	113.57	118.72
3	A	502	8A3	O53-S44-O52	-5.15	111.18	119.52
2	A	501	PLG	C3-C4-C5	-5.04	113.88	118.72
3	C	502	8A3	C41-S44-N51	5.03	113.90	107.02
2	C	501	PLG	OP4-C5A-C5	4.17	117.30	109.35
3	C	502	8A3	C3-C2-N7	-4.14	123.32	127.47
2	C	501	PLG	C4-C4A-N	4.09	119.22	111.58
3	A	502	8A3	C3-C2-N7	-4.00	123.46	127.47
3	A	502	8A3	C16-C17-C33	3.72	124.61	119.58
3	A	502	8A3	C10-C5-C6	-3.72	100.09	104.01
3	A	502	8A3	C42-C41-S44	3.71	123.66	119.76
3	B	502	8A3	C3-C2-N7	-3.70	123.77	127.47
3	B	502	8A3	C16-C17-C33	3.66	124.53	119.58

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	501	PLG	C4-C4A-N	3.65	118.39	111.58
3	B	502	8A3	O52-S44-N51	-3.56	102.61	107.05
2	B	501	PLG	C3-C4-C5	-3.54	115.32	118.72
3	C	502	8A3	F48-C33-C17	-3.44	105.37	112.93
2	C	501	PLG	C6-C5-C4	3.42	120.54	118.12
3	C	502	8A3	C18-C19-C32	-3.35	115.33	120.86
3	A	502	8A3	O52-S44-N51	-3.33	102.89	107.05
3	C	502	8A3	C5-C4-C3	3.33	111.11	104.34
3	A	502	8A3	F48-C33-C17	-3.31	105.67	112.93
3	B	502	8A3	C5-C4-C3	3.28	111.01	104.34
2	A	501	PLG	OP4-C5A-C5	3.26	115.56	109.35
3	C	502	8A3	C16-C17-C33	3.24	123.96	119.58
2	B	501	PLG	C4A-C4-C3	3.19	123.46	120.04
3	A	502	8A3	C18-C19-C32	-3.19	115.59	120.86
3	B	502	8A3	O53-S44-N51	3.18	111.01	107.05
3	A	502	8A3	C5-C4-C3	3.15	110.76	104.34
3	B	502	8A3	C10-C5-C6	-3.13	100.71	104.01
3	B	502	8A3	C18-C19-C32	-3.05	115.81	120.86
3	C	502	8A3	O52-S44-N51	-2.99	103.31	107.05
3	C	502	8A3	O53-S44-N51	2.99	110.78	107.05
3	B	502	8A3	F48-C33-C17	-2.98	106.38	112.93
2	B	501	PLG	OP3-P-OP2	2.97	119.00	107.64
2	A	501	PLG	C6-C5-C4	2.92	120.19	118.12
3	A	502	8A3	O52-S44-C41	2.92	111.74	108.05
3	A	502	8A3	C40-C41-S44	-2.82	116.79	119.76
3	C	502	8A3	C10-C5-C6	-2.76	101.09	104.01
3	B	502	8A3	C42-C41-S44	2.64	122.53	119.76
2	B	501	PLG	C6-N1-C2	2.58	123.95	119.17
3	A	502	8A3	C34-C13-C4	2.53	115.11	112.40
3	A	502	8A3	C20-C19-C32	2.43	124.88	120.86
2	A	501	PLG	OXT-C-CA	2.39	121.05	112.74
3	C	502	8A3	C18-C17-C33	-2.36	116.39	119.58
3	B	502	8A3	C34-C13-C4	2.33	114.90	112.40
3	C	502	8A3	C20-C19-C32	2.31	124.69	120.86
3	B	502	8A3	C13-C4-C3	-2.22	106.76	110.32
2	C	501	PLG	OP3-P-OP1	2.22	119.36	110.68
3	B	502	8A3	C18-C17-C33	-2.20	116.61	119.58
3	B	502	8A3	C20-C19-C32	2.17	124.45	120.86
3	A	502	8A3	C18-C17-C33	-2.16	116.66	119.58
3	B	502	8A3	C40-C41-S44	-2.15	117.49	119.76
3	B	502	8A3	F49-C33-C17	-2.11	108.30	112.93
2	B	501	PLG	OP4-C5A-C5	2.07	113.30	109.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	501	PLG	OXT-C-CA	2.06	119.91	112.74
3	B	502	8A3	C39-C32-C19	-2.01	117.87	121.36

There are no chirality outliers.
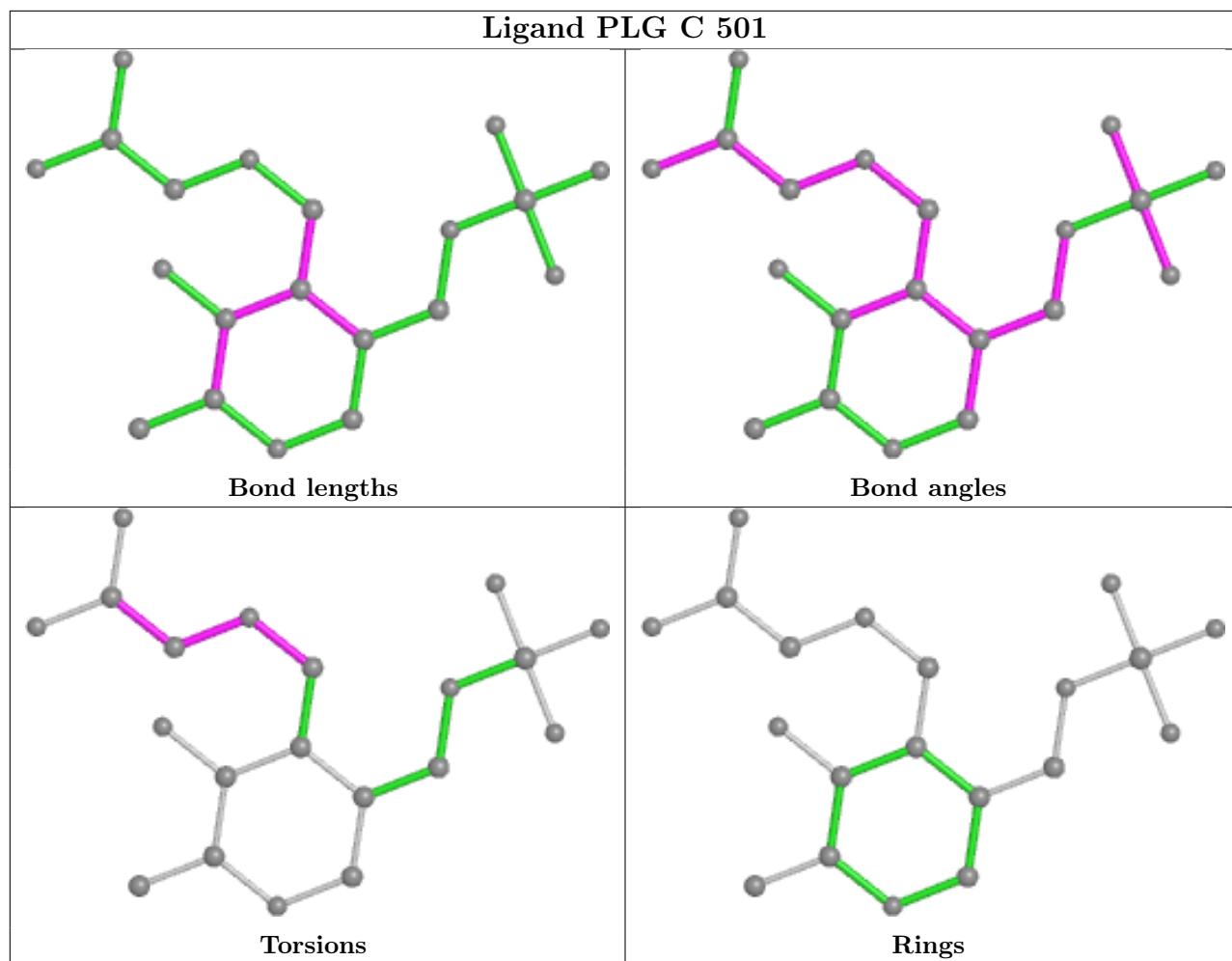
All (34) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	501	PLG	C-CA-N-C4A
2	B	501	PLG	C5-C4-C4A-N
2	B	501	PLG	C5A-OP4-P-OP1
2	B	501	PLG	C5A-OP4-P-OP3
2	C	501	PLG	C-CA-N-C4A
3	B	502	8A3	N51-C54-C56-F67
3	B	502	8A3	N51-C54-C56-F64
3	B	502	8A3	N51-C54-C56-F65
3	B	502	8A3	C55-N51-S44-O52
3	B	502	8A3	C14-C13-C4-C3
3	C	502	8A3	N51-C54-C56-F67
3	C	502	8A3	N51-C54-C56-F64
3	C	502	8A3	N51-C54-C56-F65
3	C	502	8A3	C55-N51-S44-O52
3	C	502	8A3	C14-C13-C4-C3
2	C	501	PLG	O-C-CA-N
2	C	501	PLG	OXT-C-CA-N
3	A	502	8A3	C55-N51-S44-O52
2	A	501	PLG	O-C-CA-N
2	B	501	PLG	C3-C4-C4A-N
2	A	501	PLG	OXT-C-CA-N
3	A	502	8A3	C16-C15-C4-C5
3	B	502	8A3	C16-C15-C4-C5
3	C	502	8A3	C16-C15-C4-C5
2	B	501	PLG	C5A-OP4-P-OP2
3	A	502	8A3	C14-C13-C4-C3
3	A	502	8A3	C20-C15-C4-C5
3	B	502	8A3	C20-C15-C4-C5
3	C	502	8A3	C20-C15-C4-C5
3	B	502	8A3	C14-C13-C4-C5
3	C	502	8A3	C14-C13-C4-C5
3	B	502	8A3	C55-N51-S44-C41
3	C	502	8A3	C55-N51-S44-C41
2	C	501	PLG	C4-C4A-N-CA

There are no ring outliers.

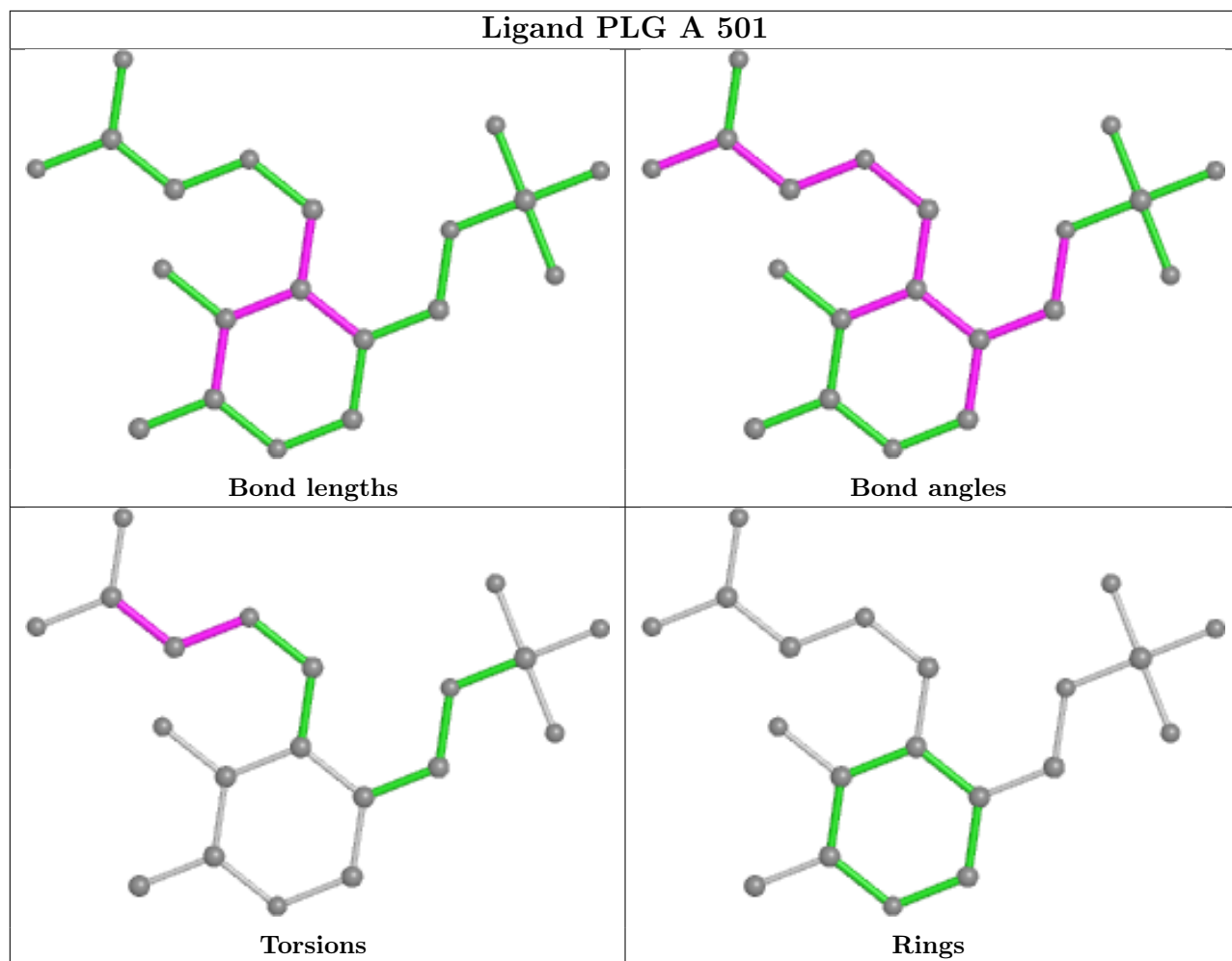No monomer is involved in short contacts.

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 8A3 B 502

Bond lengths

Bond angles

Torsions

Rings

Ligand PLG C 501

Bond lengths

Bond angles

Torsions

Rings

Ligand 8A3 A 502

Bond lengths

Bond angles

Torsions

Rings

Ligand 8A3 C 502

Bond lengths

Bond angles

Torsions

Rings

Ligand PLG A 501

Bond lengths

Bond angles

Torsions

Rings

Ligand PLG B 501

Bond lengths

Bond angles

Torsions

Rings
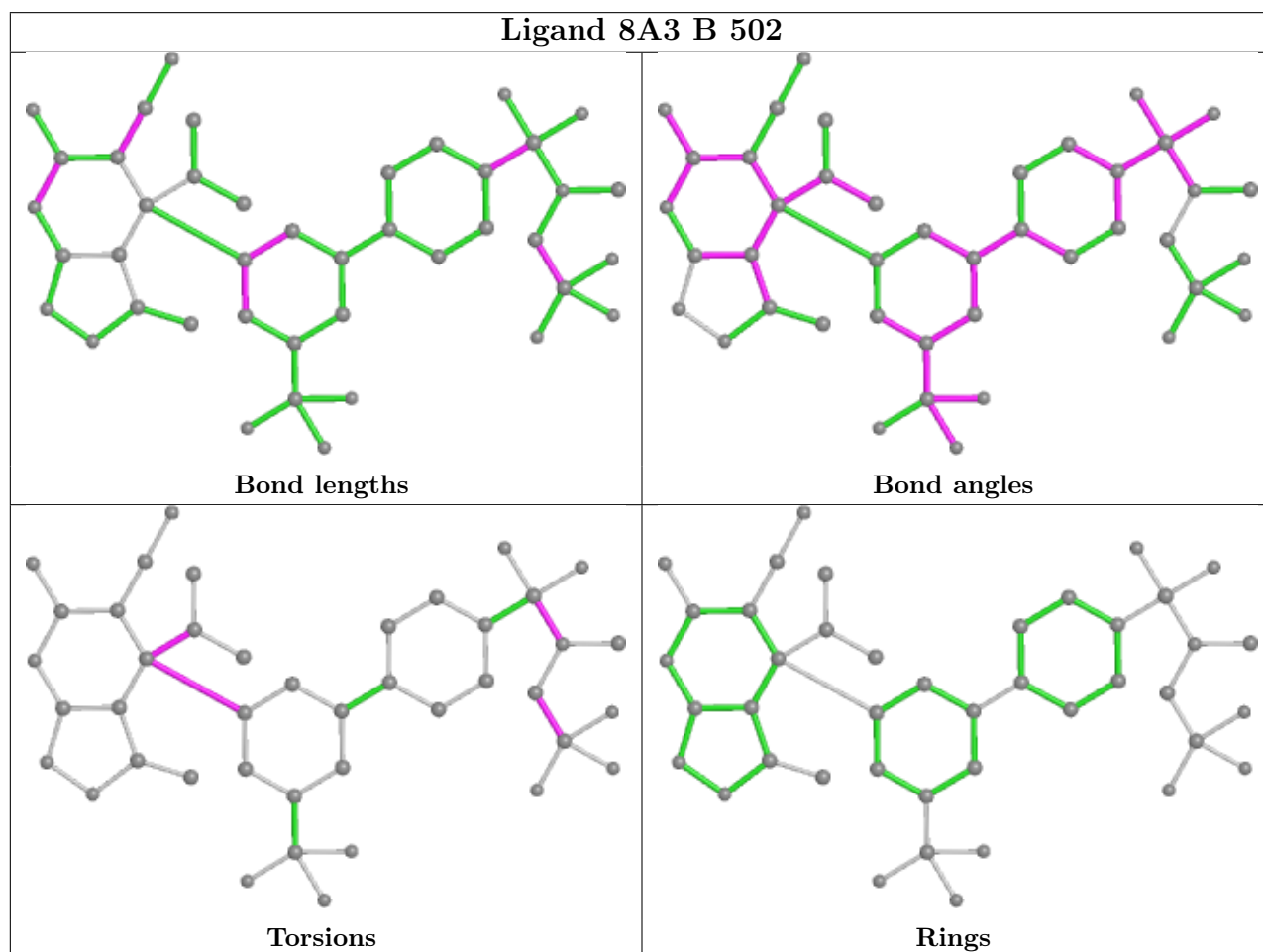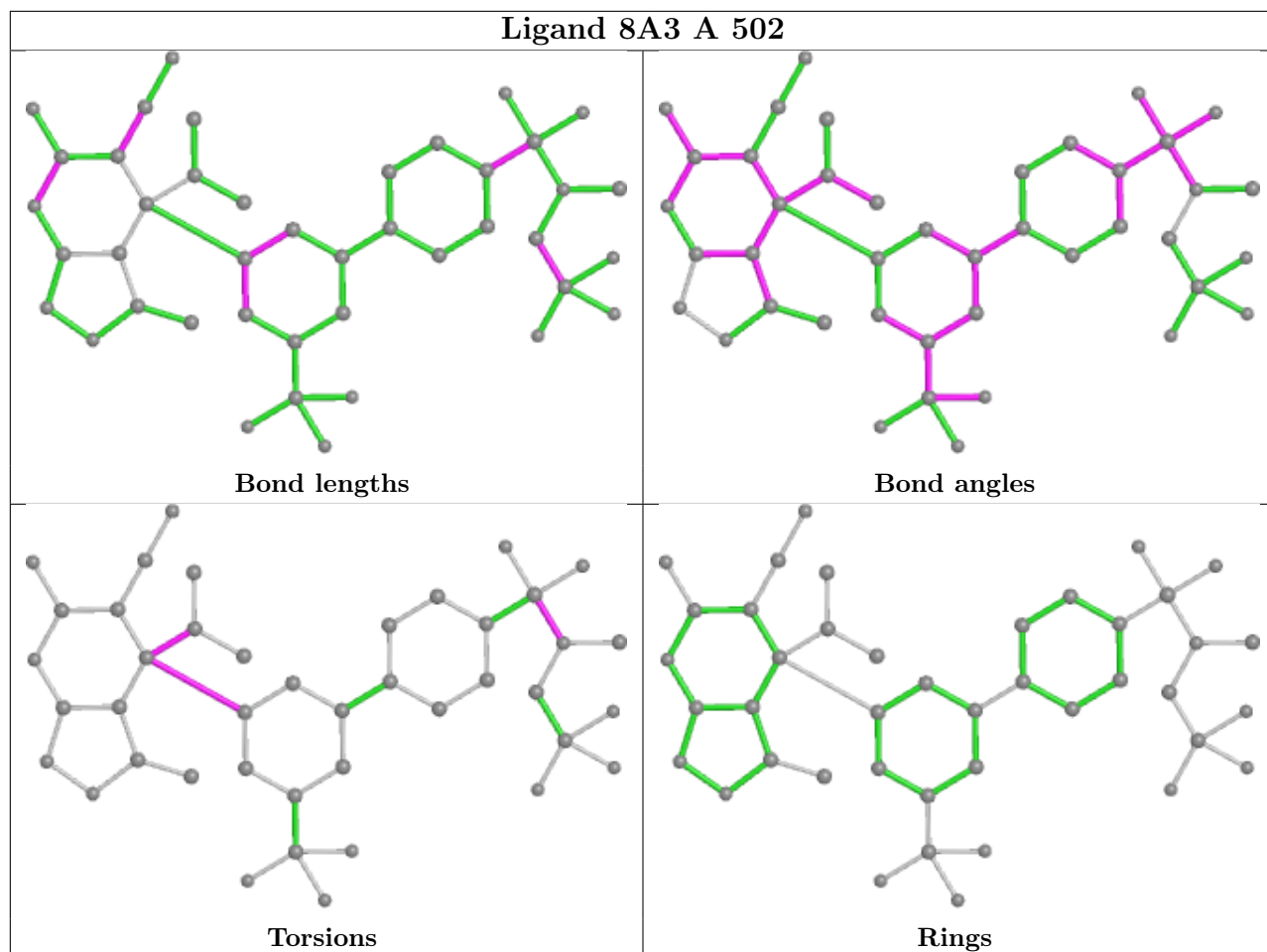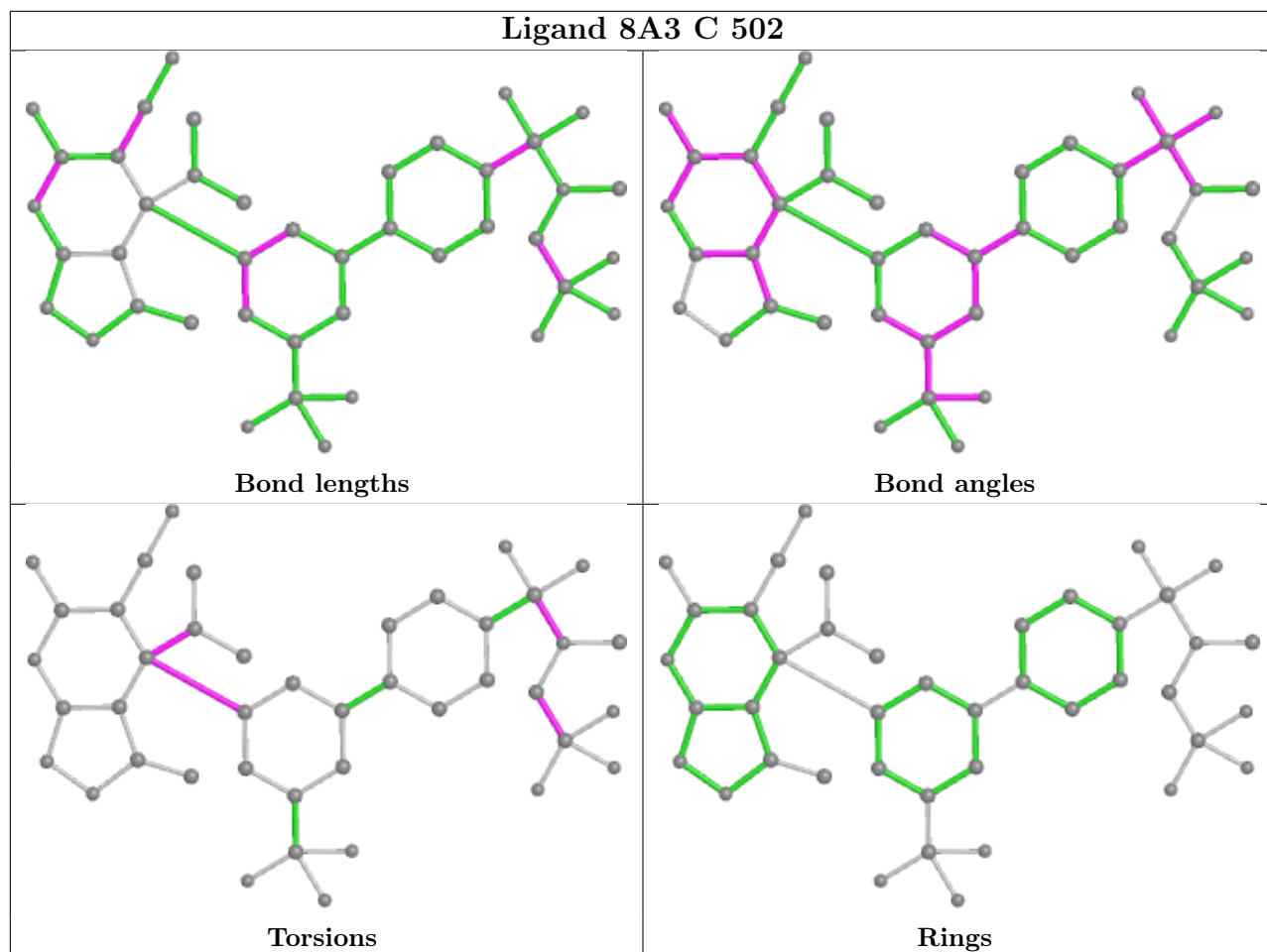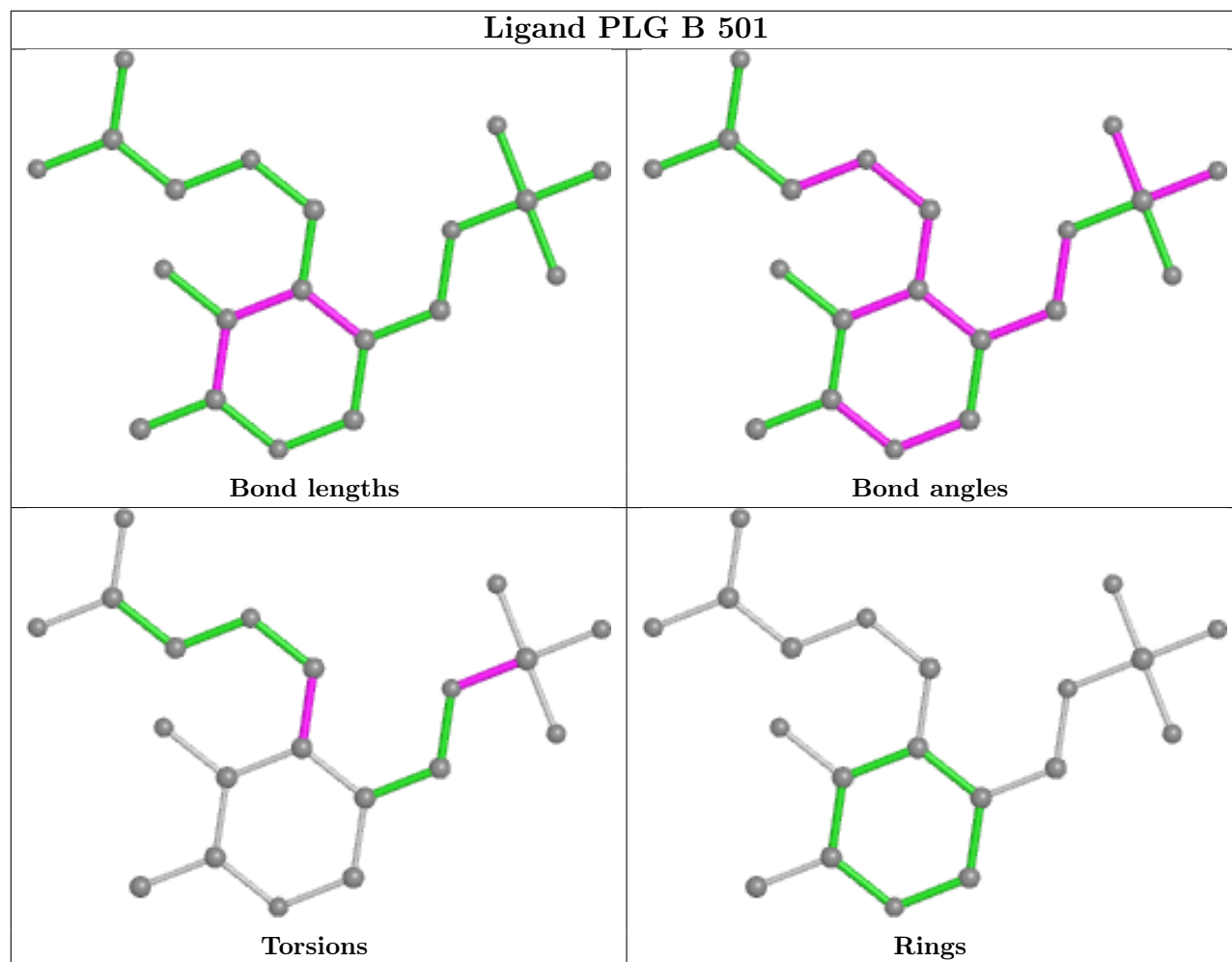
5.7 Other polymers ⓘ

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(Å^2)	Q<0.9
1	A	442/442 (100%)	0.36	13 (2%)	51	50	20, 32, 45, 61	0
1	B	442/442 (100%)	0.45	21 (4%)	30	29	19, 33, 44, 58	0
1	C	442/442 (100%)	0.42	16 (3%)	42	42	20, 32, 45, 54	0
All	All	1326/1326 (100%)	0.41	50 (3%)	40	39	19, 32, 45, 61	0

All (50) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	419	LEU	7.1
1	A	419	LEU	5.5
1	C	2	PHE	4.6
1	A	365	VAL	4.5
1	A	363	ASP	4.4
1	A	362	VAL	4.3
1	C	413	VAL	3.9
1	A	228	ALA	3.7
1	B	365	VAL	3.7
1	B	203	ALA	3.5
1	C	419	LEU	3.1
1	B	407	GLN	3.0
1	C	201	VAL	3.0
1	A	418	GLY	3.0
1	B	409	GLY	3.0
1	C	412	LEU	3.0
1	B	202	ASN	2.8
1	B	2	PHE	2.7
1	C	410	LYS	2.7
1	B	364	ALA	2.7
1	B	412	LEU	2.6
1	B	86	ASN	2.6
1	B	413	VAL	2.5

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Mol	Chain	Res	Type	RSRZ
1	C	255	PRO	2.5
1	B	29	ILE	2.5
1	B	411	LYS	2.4
1	A	116	LYS	2.4
1	C	363	ASP	2.4
1	B	8	GLU	2.4
1	C	365	VAL	2.3
1	B	363	ASP	2.3
1	A	226	LEU	2.3
1	B	426	GLN	2.3
1	C	362	VAL	2.3
1	C	5	GLU	2.2
1	C	18	LEU	2.2
1	A	417	LYS	2.2
1	A	414	ASP	2.2
1	B	68	ASP	2.2
1	A	64	TYR	2.2
1	B	171	LEU	2.2
1	C	366	SER	2.1
1	B	7	LEU	2.1
1	C	219	ASN	2.1
1	A	366	SER	2.1
1	B	5	GLU	2.1
1	C	426	GLN	2.1
1	A	413	VAL	2.0
1	C	169	MET	2.0
1	B	256	GLY	2.0

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
3	8A3	C	502	42/42	0.79	0.29	34,39,53,57	0
3	8A3	A	502	42/42	0.82	0.21	36,41,54,55	0
3	8A3	B	502	42/42	0.85	0.26	34,40,53,56	0
4	CL	C	503	1/1	0.87	0.10	44,44,44,44	1
4	CL	A	503	1/1	0.93	0.09	37,37,37,37	0
2	PLG	C	501	20/20	0.93	0.16	20,26,28,28	0
2	PLG	A	501	20/20	0.94	0.14	21,27,29,29	0
2	PLG	B	501	20/20	0.94	0.17	20,25,28,28	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.
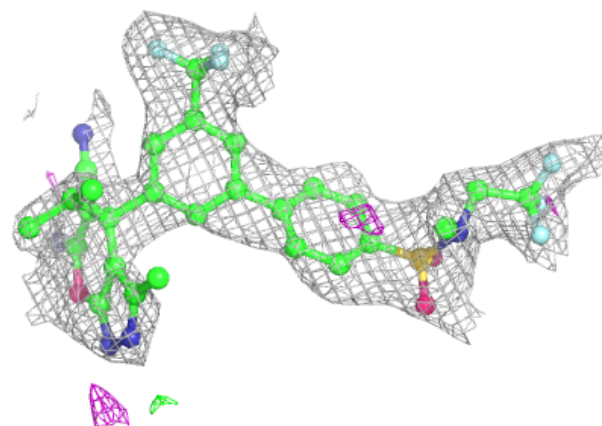
Electron density around 8A3 C 502:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
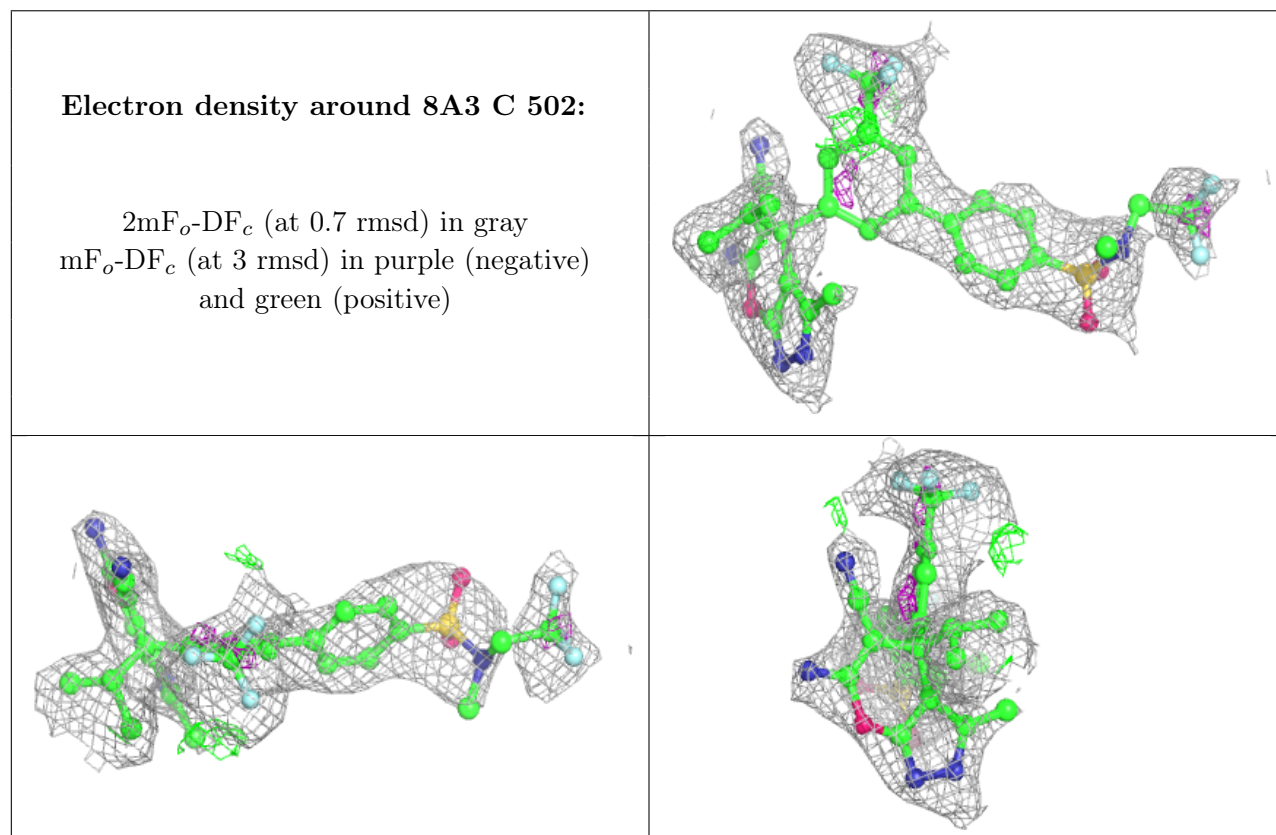
Electron density around 8A3 A 502:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
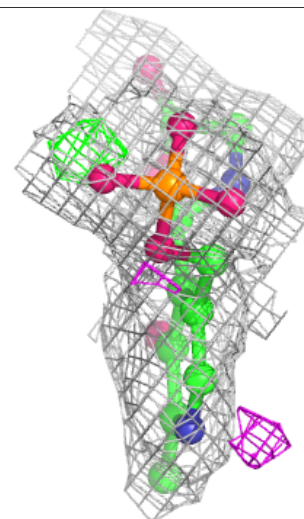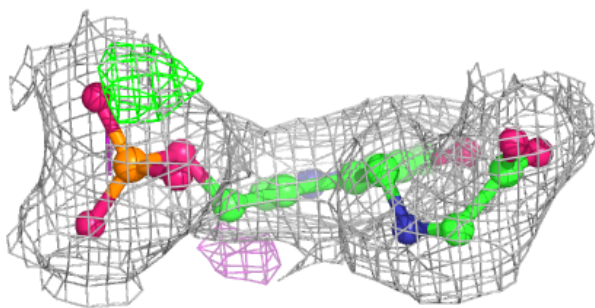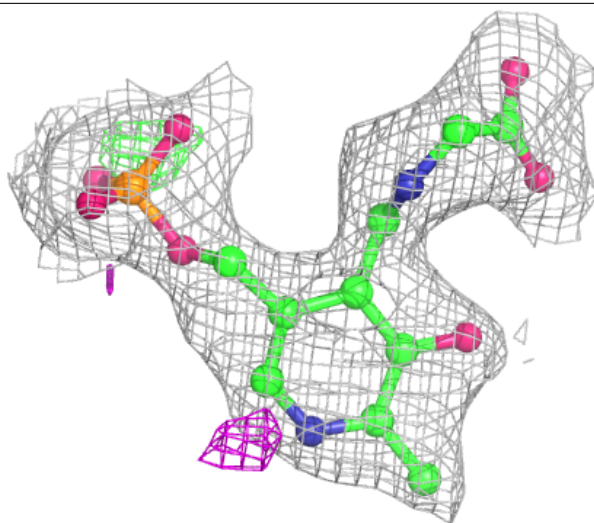and green (positive)
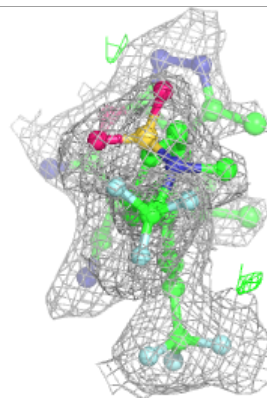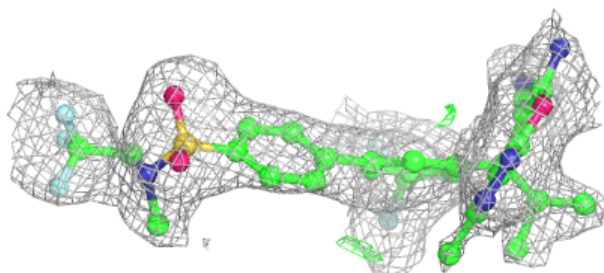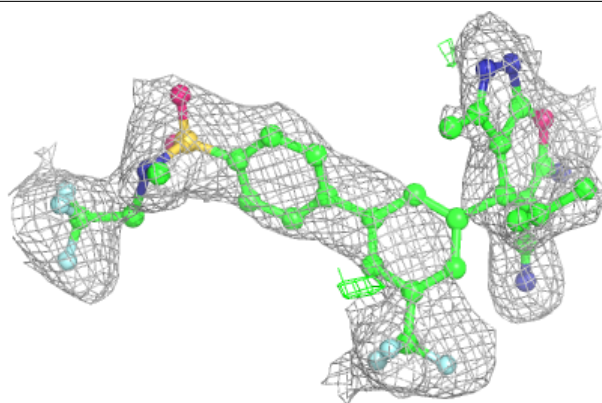
Electron density around 8A3 B 502:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
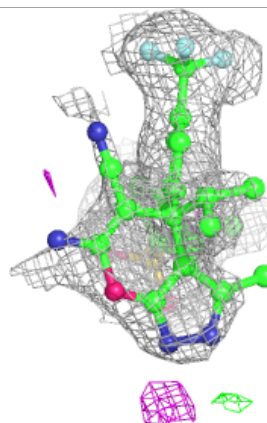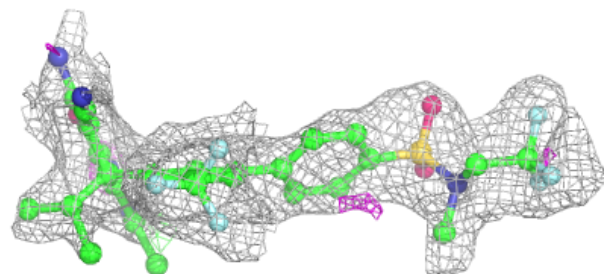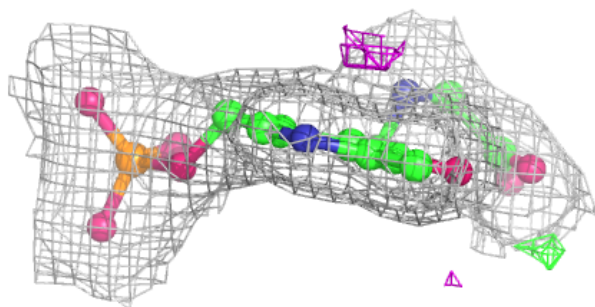
Electron density around PLG C 501:

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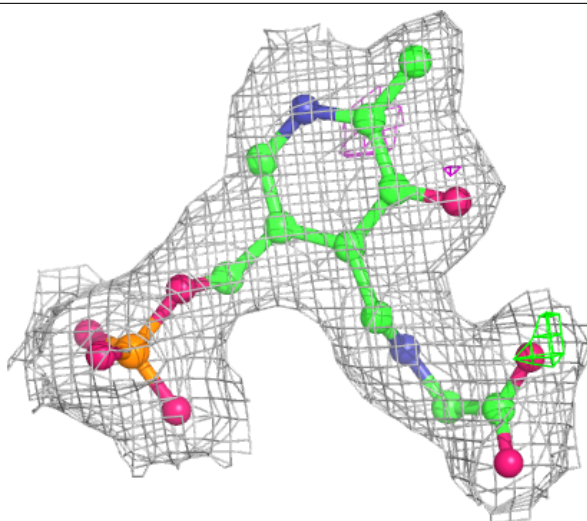and green (positive)

Electron density around PLG A 501:

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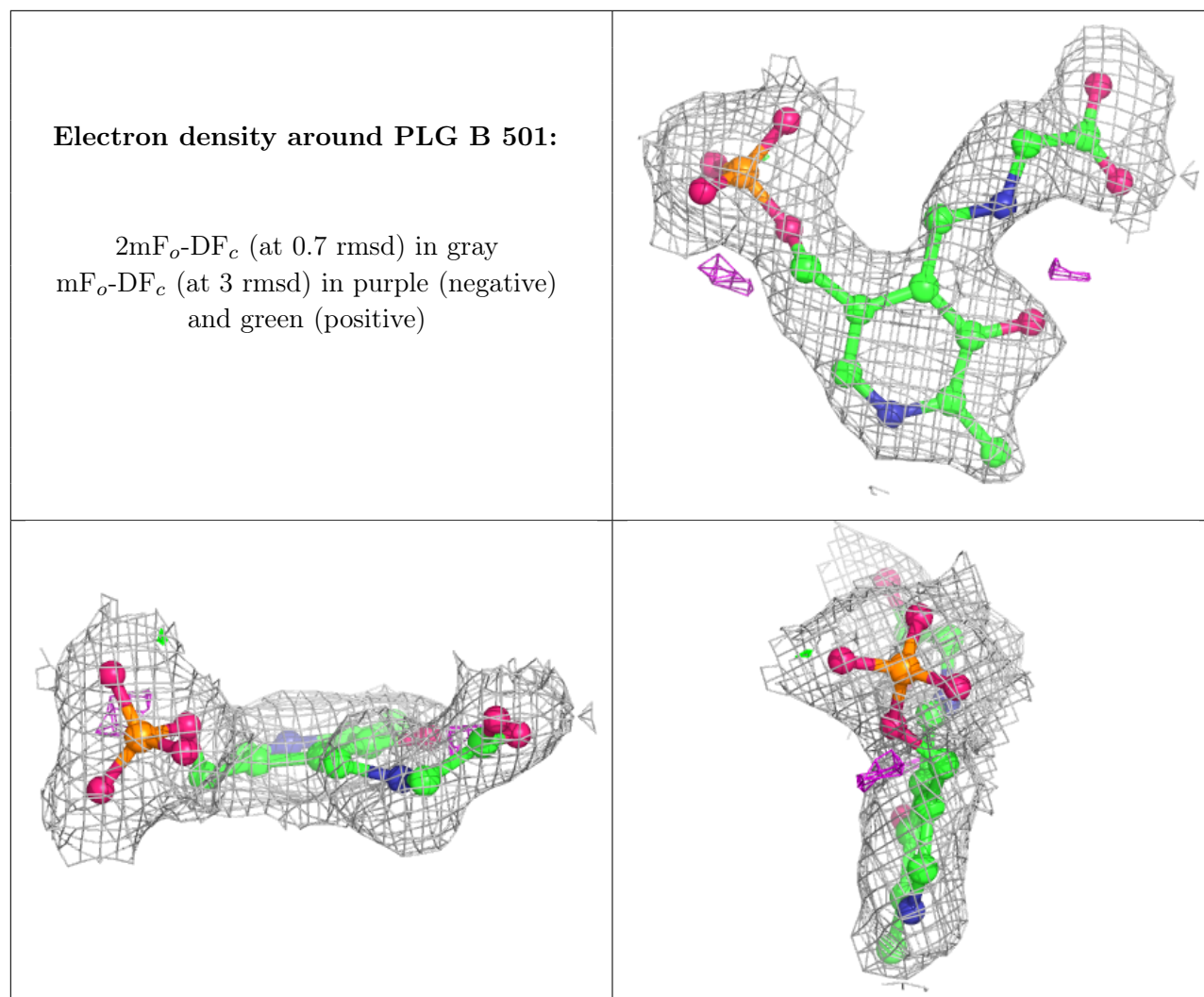and green (positive)

Electron density around PLG B 501:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.