



# Full wwPDB X-ray Structure Validation Report ⓘ

Jul 9, 2024 – 04:04 PM EDT

PDB ID : 8VKB  
Title : Crystal structure of Plasmodium vivax glycylopeptide N-tetradecanoyltransferase (N-myristoyltransferase, NMT) bound to myristoyl-CoA and inhibitor 10b  
Authors : Fenwick, M.K.; Staker, B.L.; Phan, I.Q.; Early, J.; Myler, P.J.; Seattle Structural Genomics Center for Infectious Disease (SSGCID)  
Deposited on : 2024-01-08  
Resolution : 2.43 Å(reported)

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We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

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<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>.

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The following versions of software and data (see [references](#) ①) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtrriage (Phenix) : 1.13  
EDS : 2.37.1  
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) : 2.37.1

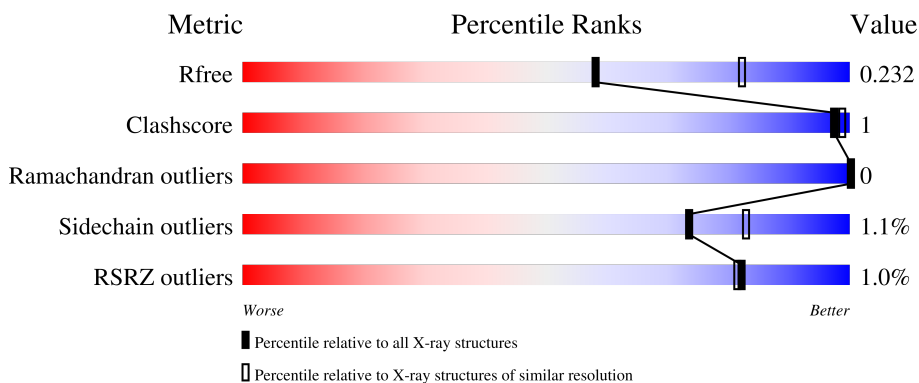
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

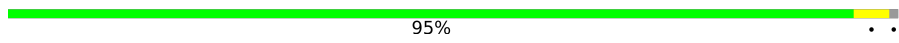
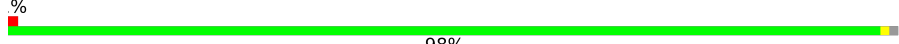
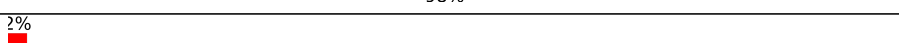
The reported resolution of this entry is 2.43 Å.

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	1564 (2.46-2.42)
Clashscore	141614	1631 (2.46-2.42)
Ramachandran outliers	138981	1617 (2.46-2.42)
Sidechain outliers	138945	1617 (2.46-2.42)
RSRZ outliers	127900	1547 (2.46-2.42)

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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	386	 95%
1	B	386	 98%
1	C	386	 96%

## 2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 20693 atoms, of which 9986 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.

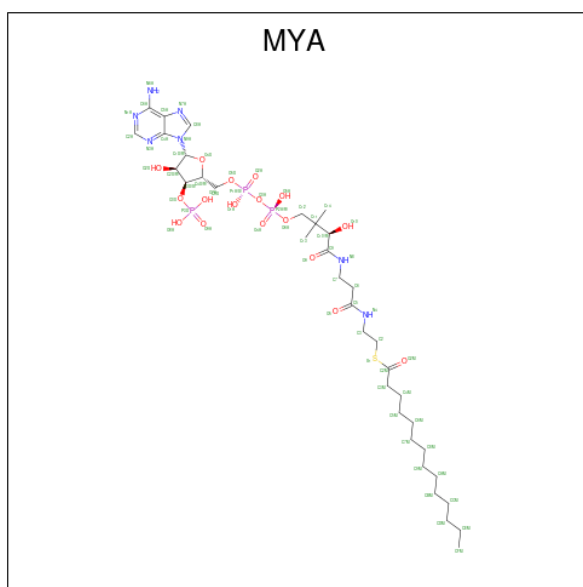
- Molecule 1 is a protein called Glycylpeptide N-tetradecanoyltransferase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	384	6493	2113	3233	535	601	11	0	12	0
1	B	384	6502	2114	3245	538	594	11	0	10	0
1	C	385	6334	2069	3151	519	584	11	0	6	0

There are 6 discrepancies between the modelled and reference sequences:

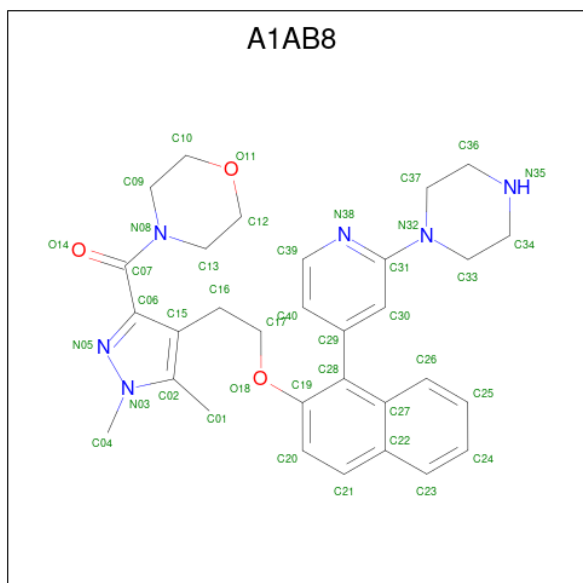
Chain	Residue	Modelled	Actual	Comment	Reference
A	25	GLY	-	expression tag	UNP A5K1A2
A	26	PRO	-	expression tag	UNP A5K1A2
B	25	GLY	-	expression tag	UNP A5K1A2
B	26	PRO	-	expression tag	UNP A5K1A2
C	25	GLY	-	expression tag	UNP A5K1A2
C	26	PRO	-	expression tag	UNP A5K1A2

- Molecule 2 is TETRADECANOYL-COA (three-letter code: MYA) (formula: C<sub>35</sub>H<sub>62</sub>N<sub>7</sub>O<sub>17</sub>P<sub>3</sub>S) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms							ZeroOcc	AltConf
			Total	C	H	N	O	P	S		
2	A	1	Total	C	H	N	O	P	S	0	0
			121	35	58	7	17	3	1		
2	B	1	Total	C	H	N	O	P	S	0	0
			121	35	58	7	17	3	1		
2	C	1	Total	C	H	N	O	P	S	0	0
			121	35	58	7	17	3	1		

- Molecule 3 is {1,5-dimethyl-4-[2-((1P)-1-[2-(piperazin-1-yl)pyridin-4-yl]naphthalen-2-yl)oxy]ethyl]-1H-pyrazol-3-yl}(morpholin-4-yl)methanone (three-letter code: A1AB8) (formula: C<sub>31</sub>H<sub>36</sub>N<sub>6</sub>O<sub>3</sub>) (labeled as "Ligand of Interest" by depositor).

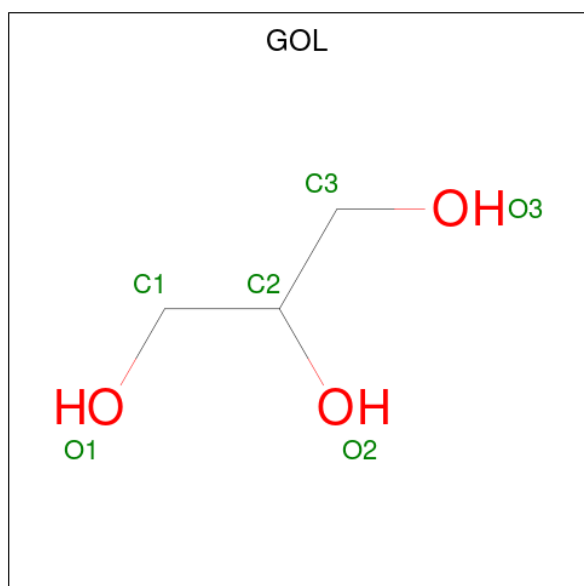


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
3	A	1	Total	C	H	N	O	0	0
			77	31	37	6	3		
3	B	1	Total	C	H	N	O	0	0
			77	31	37	6	3		
3	C	1	Total	C	H	N	O	0	0
			77	31	37	6	3		

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

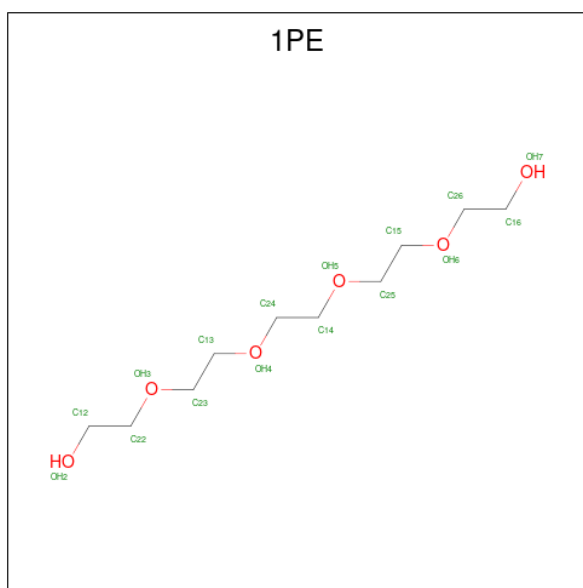
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	5	Total	Cl	0	0
			5	5		
4	B	5	Total	Cl	0	0
			5	5		
4	C	8	Total	Cl	0	0
			8	8		

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



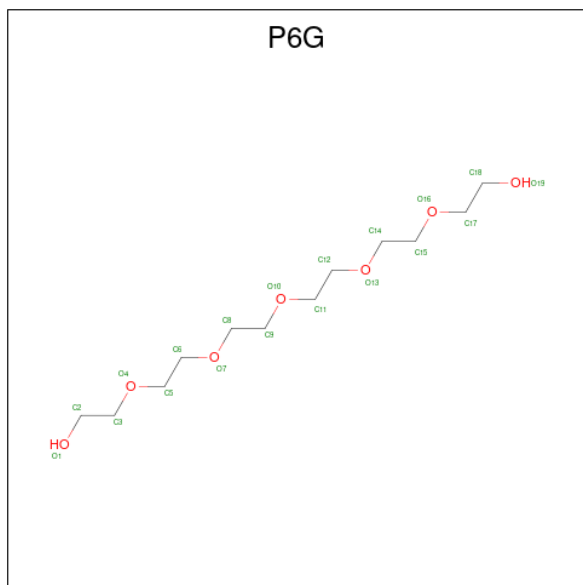
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total	C	H	O	0	0
			14	3	8	3		
5	B	1	Total	C	H	O	0	0
			14	3	8	3		
5	C	1	Total	C	H	O	0	0
			14	3	8	3		

- Molecule 6 is PENTAETHYLENE GLYCOL (three-letter code: 1PE) (formula:  $C_{10}H_{22}O_6$ ).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
6	A	1	38	10	22	6	0	0

- Molecule 7 is HEXAETHYLENE GLYCOL (three-letter code: P6G) (formula:  $C_{12}H_{26}O_7$ ).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
7	B	1	45	12	26	7	0	0

- Molecule 8 is water.

<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>		<b>ZeroOcc</b>	<b>AltConf</b>
8	A	215	Total 219	O 219	0	7
8	B	222	Total 223	O 223	0	7
8	C	183	Total 185	O 185	0	3

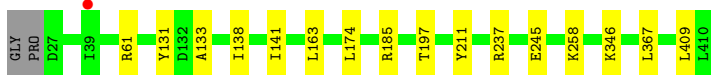


### 3 Residue-property plots [i](#)

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.

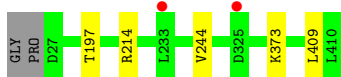
- Molecule 1: Glycylpeptide N-tetradecanoyltransferase

Chain A:  95%



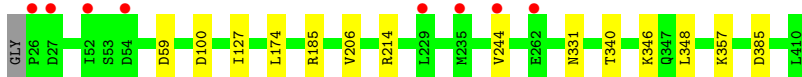
- Molecule 1: Glycylpeptide N-tetradecanoyltransferase

Chain B:  98%



- Molecule 1: Glycylpeptide N-tetradecanoyltransferase

Chain C:  96%



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	57.37Å 119.78Å 176.88Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.13 – 2.43 48.13 – 2.43	Depositor EDS
% Data completeness (in resolution range)	98.5 (48.13-2.43) 98.5 (48.13-2.43)	Depositor EDS
$R_{merge}$	0.16	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.89 (at 2.42Å)	Xtrriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, $R_{free}$	0.185 , 0.233 0.185 , 0.232	Depositor DCC
$R_{free}$ test set	2347 reflections (5.09%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	27.8	Xtrriage
Anisotropy	0.275	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.41 , 44.4	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	20693	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	34.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.43% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: 1PE, CL, P6G, GOL, MYA, A1AB8

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	0/3352	0.46	0/4539
1	B	0.25	0/3338	0.46	0/4517
1	C	0.25	0/3280	0.45	0/4445
All	All	0.25	0/9970	0.46	0/13501

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 [i](#)

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	3260	3233	3209	9	0
1	B	3257	3245	3235	1	0
1	C	3183	3151	3122	6	0
2	A	63	58	58	0	0
2	B	63	58	58	0	0
2	C	63	58	58	0	0
3	A	40	37	0	0	0
3	B	40	37	0	0	0
3	C	40	37	0	0	0
4	A	5	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	B	5	0	0	0	0
4	C	8	0	0	0	0
5	A	6	8	8	0	0
5	B	6	8	8	0	0
5	C	6	8	8	0	0
6	A	16	22	22	0	0
7	B	19	26	26	0	0
8	A	219	0	0	3	0
8	B	223	0	0	0	0
8	C	185	0	0	3	0
All	All	10707	9986	9812	16	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 1.

All (16) 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:B:197:THR:HG23	1:B:409:LEU:HD22	1.75	0.69
1:A:141:ILE:HD12	1:A:163:LEU:HD13	1.90	0.53
1:C:385:ASP:O	8:C:601:HOH:O	2.19	0.50
1:C:340:THR:HB	1:C:348:LEU:HD22	1.93	0.50
1:A:61:ARG:NH2	8:A:609:HOH:O	2.39	0.50
1:A:174:LEU:HD23	1:A:174:LEU:O	2.15	0.47
1:A:245:GLU:OE1	8:A:601:HOH:O	2.20	0.47
1:A:131:TYR:CE2	1:A:133:ALA:HB3	2.51	0.46
1:C:59:ASP:OD1	8:C:602:HOH:O	2.20	0.45
1:A:185:ARG:NH1	8:A:623:HOH:O	2.50	0.45
1:A:211:TYR:HB3	1:A:367:LEU:HD23	1.99	0.43
1:C:127:ILE:HD11	1:C:185:ARG:HD2	2.01	0.43
1:C:206:VAL:HG13	8:C:605:HOH:O	2.19	0.42
1:C:244:VAL:HG11	1:C:357:LYS:HD2	2.02	0.42
1:A:197:THR:HG23	1:A:409:LEU:HD22	2.01	0.41
1:A:138:ILE:HD12	1:A:138:ILE:C	2.40	0.41

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	394/386 (102%)	382 (97%)	12 (3%)	0	100	100
1	B	392/386 (102%)	378 (96%)	14 (4%)	0	100	100
1	C	389/386 (101%)	374 (96%)	15 (4%)	0	100	100
All	All	1175/1158 (102%)	1134 (96%)	41 (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	360/351 (103%)	356 (99%)	4 (1%)	73	83
1	B	357/351 (102%)	354 (99%)	3 (1%)	81	88
1	C	349/351 (99%)	344 (99%)	5 (1%)	67	78
All	All	1066/1053 (101%)	1054 (99%)	12 (1%)	73	83

All (12) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	237	ARG
1	A	258	LYS
1	A	346[A]	LYS
1	A	346[B]	LYS
1	B	214	ARG

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Mol	Chain	Res	Type
1	B	244	VAL
1	B	373	LYS
1	C	100	ASP
1	C	174	LEU
1	C	214	ARG
1	C	331	ASN
1	C	346	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	187	ASN
1	A	274	GLN
1	A	320	GLN
1	A	331	ASN
1	B	274	GLN
1	C	320	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

Of 29 ligands modelled in this entry, 18 are monoatomic - leaving 11 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$
2	MYA	B	501	-	57,65,65	1.58	10 (17%)	68,91,91	1.65	11 (16%)
5	GOL	B	509	-	5,5,5	0.84	0	5,5,5	1.05	0
6	1PE	A	507	-	15,15,15	0.12	0	14,14,14	0.13	0
2	MYA	A	501	-	57,65,65	1.58	10 (17%)	68,91,91	1.64	12 (17%)
3	A1AB8	A	502	-	43,45,45	1.75	7 (16%)	55,63,63	1.41	8 (14%)
5	GOL	A	506	-	5,5,5	0.89	0	5,5,5	0.95	0
2	MYA	C	501	-	57,65,65	1.62	11 (19%)	68,91,91	1.67	11 (16%)
5	GOL	C	511	-	5,5,5	0.86	0	5,5,5	0.96	0
3	A1AB8	B	502	-	43,45,45	1.75	6 (13%)	55,63,63	1.26	7 (12%)
3	A1AB8	C	502	-	43,45,45	1.74	8 (18%)	55,63,63	1.24	6 (10%)
7	P6G	B	508	-	18,18,18	0.12	0	17,17,17	0.10	0

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
2	MYA	B	501	-	-	11/60/80/80	0/3/3/3
5	GOL	B	509	-	-	2/4/4/4	-
6	1PE	A	507	-	-	6/13/13/13	-
2	MYA	A	501	-	-	12/60/80/80	0/3/3/3
3	A1AB8	A	502	-	-	2/18/38/38	0/6/6/6
5	GOL	A	506	-	-	4/4/4/4	-
2	MYA	C	501	-	-	12/60/80/80	0/3/3/3
5	GOL	C	511	-	-	4/4/4/4	-
3	A1AB8	B	502	-	-	1/18/38/38	0/6/6/6
3	A1AB8	C	502	-	-	0/18/38/38	0/6/6/6
7	P6G	B	508	-	-	1/16/16/16	-

All (52) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	502	A1AB8	C07-N08	5.73	1.47	1.34
3	C	502	A1AB8	C07-N08	5.63	1.47	1.34
3	A	502	A1AB8	C07-N08	5.45	1.46	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	501	MYA	C2M-S1	4.51	1.87	1.76
2	A	501	MYA	C2M-S1	4.46	1.86	1.76
2	B	501	MYA	C2M-S1	4.46	1.86	1.76
3	C	502	A1AB8	C31-N32	4.39	1.46	1.37
3	A	502	A1AB8	C31-N32	4.37	1.46	1.37
3	B	502	A1AB8	C31-N32	4.32	1.46	1.37
2	A	501	MYA	C5-N4	3.82	1.42	1.33
2	C	501	MYA	C5-N4	3.75	1.41	1.33
2	B	501	MYA	C5-N4	3.75	1.41	1.33
2	C	501	MYA	C3M-C2M	3.65	1.54	1.50
3	A	502	A1AB8	C02-N03	-3.59	1.32	1.37
2	C	501	MYA	C9-N8	3.53	1.41	1.33
2	A	501	MYA	C3M-C2M	3.46	1.54	1.50
2	B	501	MYA	C9-N8	3.40	1.41	1.33
3	C	502	A1AB8	C02-N03	-3.37	1.32	1.37
3	B	502	A1AB8	C27-C22	-3.36	1.36	1.43
3	C	502	A1AB8	C27-C22	-3.35	1.36	1.43
3	A	502	A1AB8	C27-C22	-3.34	1.36	1.43
3	B	502	A1AB8	C02-N03	-3.34	1.32	1.37
2	B	501	MYA	C3M-C2M	3.32	1.54	1.50
2	A	501	MYA	C9-N8	3.26	1.40	1.33
2	A	501	MYA	O3X-C3X	-3.06	1.32	1.44
2	B	501	MYA	O3X-C3X	-3.00	1.33	1.44
2	C	501	MYA	O3X-C3X	-2.98	1.33	1.44
3	B	502	A1AB8	C06-N05	-2.93	1.33	1.35
3	A	502	A1AB8	C06-N05	-2.92	1.33	1.35
2	C	501	MYA	C3X-C4X	2.91	1.60	1.52
2	A	501	MYA	C3X-C4X	2.88	1.60	1.52
3	C	502	A1AB8	C06-N05	-2.86	1.33	1.35
3	B	502	A1AB8	C28-C29	2.86	1.53	1.49
2	B	501	MYA	C3X-C4X	2.84	1.60	1.52
2	A	501	MYA	C2A-N1A	2.83	1.39	1.33
2	B	501	MYA	C2A-N1A	2.78	1.39	1.33
3	A	502	A1AB8	C28-C29	2.76	1.53	1.49
2	C	501	MYA	C2A-N1A	2.76	1.39	1.33
3	C	502	A1AB8	C28-C29	2.73	1.53	1.49
2	C	501	MYA	C4A-N3A	2.73	1.39	1.35
2	A	501	MYA	O6A-C12	-2.68	1.35	1.43
2	C	501	MYA	O6A-C12	-2.66	1.35	1.43
2	B	501	MYA	C4A-N3A	2.62	1.39	1.35
2	A	501	MYA	C4A-N3A	2.62	1.39	1.35
2	B	501	MYA	O6A-C12	-2.61	1.35	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	501	MYA	C2-S1	2.41	1.91	1.81
2	A	501	MYA	C2-S1	2.24	1.91	1.81
2	B	501	MYA	C2-S1	2.24	1.91	1.81
2	C	501	MYA	C6-C5	2.22	1.55	1.51
3	C	502	A1AB8	O18-C19	2.10	1.41	1.37
3	A	502	A1AB8	O14-C07	-2.10	1.18	1.22
3	C	502	A1AB8	O14-C07	-2.03	1.18	1.22

All (55) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	501	MYA	C3M-C2M-S1	6.28	120.76	113.46
2	B	501	MYA	C3M-C2M-S1	6.06	120.51	113.46
2	A	501	MYA	C3M-C2M-S1	6.05	120.50	113.46
2	A	501	MYA	C6-C5-N4	5.07	124.95	116.42
2	B	501	MYA	C6-C5-N4	4.94	124.74	116.42
2	C	501	MYA	C6-C5-N4	4.85	124.58	116.42
3	A	502	A1AB8	C12-C13-N08	4.72	119.88	109.84
2	B	501	MYA	C2-S1-C2M	3.58	113.03	101.87
2	A	501	MYA	C2-S1-C2M	3.53	112.85	101.87
2	C	501	MYA	C2-S1-C2M	3.46	112.65	101.87
2	C	501	MYA	C10-C9-N8	3.45	123.45	116.58
2	B	501	MYA	C10-C9-N8	3.45	123.44	116.58
2	A	501	MYA	C10-C9-N8	3.21	122.97	116.58
3	B	502	A1AB8	C29-C30-C31	3.19	119.38	118.25
2	C	501	MYA	O5-C5-N4	-3.18	117.02	123.01
3	A	502	A1AB8	C29-C30-C31	3.16	119.37	118.25
2	C	501	MYA	O2M-C2M-C3M	-3.11	120.31	123.99
2	A	501	MYA	O2M-C2M-C3M	-3.11	120.32	123.99
2	A	501	MYA	O5-C5-N4	-3.08	117.20	123.01
2	B	501	MYA	O2M-C2M-C3M	-3.05	120.39	123.99
2	B	501	MYA	O5-C5-N4	-3.04	117.28	123.01
2	C	501	MYA	O2M-C2M-S1	-2.84	118.92	122.61
2	C	501	MYA	C7-C6-C5	2.82	117.06	112.36
3	C	502	A1AB8	C39-N38-C31	2.80	120.56	116.86
2	B	501	MYA	O2M-C2M-S1	-2.71	119.09	122.61
3	A	502	A1AB8	C39-N38-C31	2.65	120.37	116.86
2	A	501	MYA	O2M-C2M-S1	-2.64	119.18	122.61
3	C	502	A1AB8	C29-C30-C31	2.63	119.18	118.25
3	A	502	A1AB8	C04-N03-C02	-2.57	125.47	128.82
2	B	501	MYA	O3X-P3X-O9A	-2.56	99.51	109.39
2	C	501	MYA	O3X-P3X-O9A	-2.56	99.52	109.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	502	A1AB8	C39-N38-C31	2.56	120.24	116.86
2	A	501	MYA	O9-C9-N8	-2.49	117.64	122.99
2	B	501	MYA	O9-C9-N8	-2.43	117.77	122.99
2	A	501	MYA	O3X-P3X-O9A	-2.41	100.09	109.39
2	A	501	MYA	C7-C6-C5	2.37	116.31	112.36
2	B	501	MYA	C7-C6-C5	2.37	116.30	112.36
2	C	501	MYA	O9-C9-N8	-2.36	117.93	122.99
3	C	502	A1AB8	C04-N03-C02	-2.29	125.82	128.82
2	A	501	MYA	O5-C5-C6	-2.28	117.85	122.02
3	C	502	A1AB8	C37-N32-C33	-2.24	106.57	111.52
2	B	501	MYA	O5-C5-C6	-2.21	117.98	122.02
3	A	502	A1AB8	C07-C06-N05	2.17	126.21	120.55
3	B	502	A1AB8	C07-C06-N05	2.17	126.20	120.55
3	C	502	A1AB8	C36-N35-C34	2.16	116.55	110.34
3	A	502	A1AB8	O11-C12-C13	2.13	116.49	111.80
3	B	502	A1AB8	C02-N03-N05	-2.13	109.51	112.10
3	B	502	A1AB8	C30-C31-N32	-2.09	119.81	122.29
3	B	502	A1AB8	C36-N35-C34	2.06	116.27	110.34
3	A	502	A1AB8	C02-N03-N05	-2.05	109.60	112.10
3	A	502	A1AB8	C30-C31-N32	-2.05	119.86	122.29
2	A	501	MYA	C4M-C3M-C2M	2.04	116.87	112.33
3	C	502	A1AB8	C02-N03-N05	-2.04	109.61	112.10
3	B	502	A1AB8	C04-N03-C02	-2.04	126.16	128.82
2	C	501	MYA	C4M-C3M-C2M	2.01	116.79	112.33

There are no chirality outliers.

All (55) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	501	MYA	C5X-O5X-P1A-O2A
2	A	501	MYA	C5X-O5X-P1A-O3A
2	B	501	MYA	C5X-O5X-P1A-O3A
2	C	501	MYA	C5X-O5X-P1A-O3A
2	C	501	MYA	C2M-C3M-C4M-C5M
5	B	509	GOL	O1-C1-C2-C3
2	B	501	MYA	C3X-C4X-C5X-O5X
5	A	506	GOL	O2-C2-C3-O3
2	B	501	MYA	C6-C7-N8-C9
5	A	506	GOL	O1-C1-C2-C3
5	A	506	GOL	C1-C2-C3-O3
5	C	511	GOL	O1-C1-C2-C3
2	C	501	MYA	C4M-C5M-C6M-C7M

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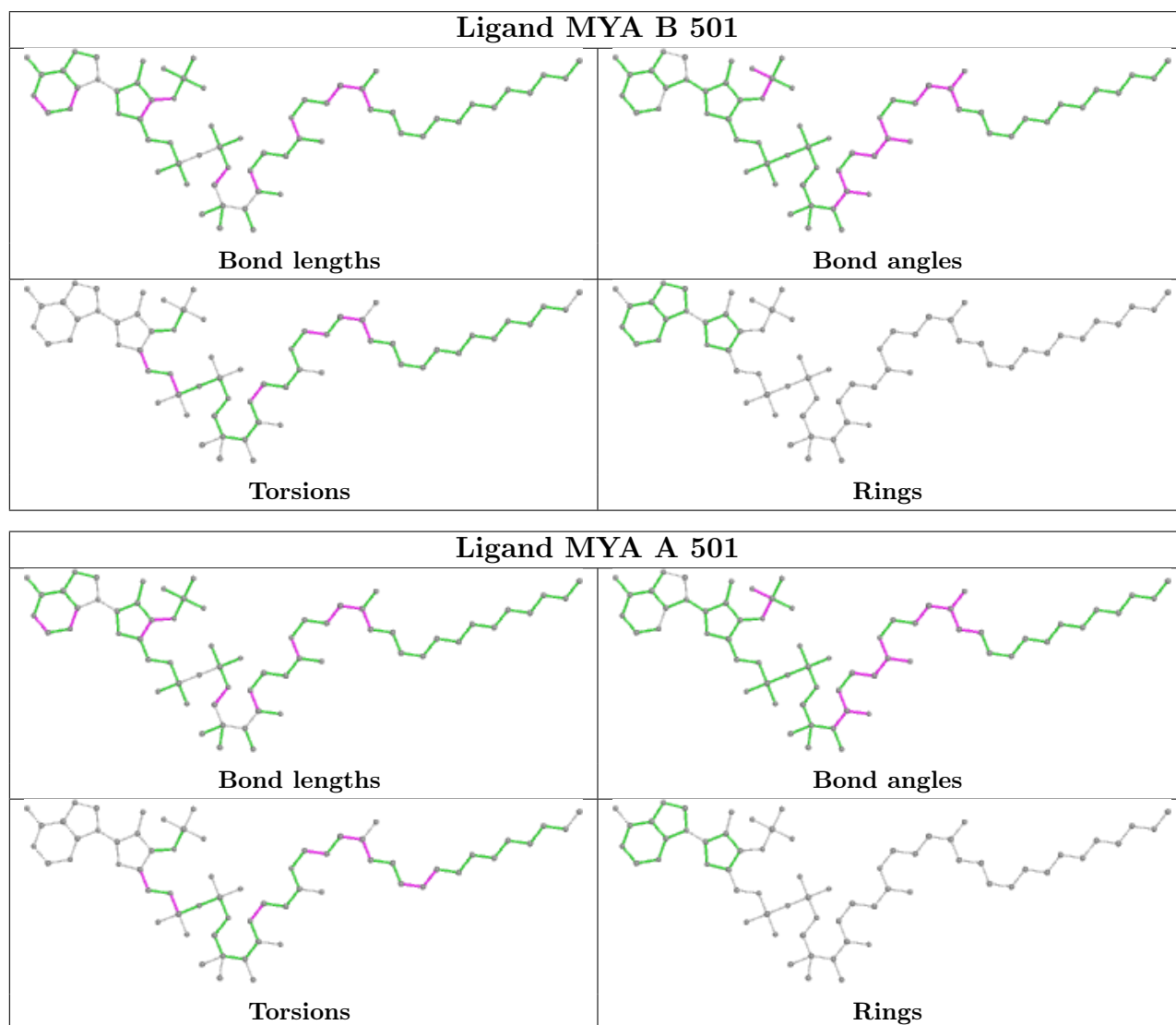
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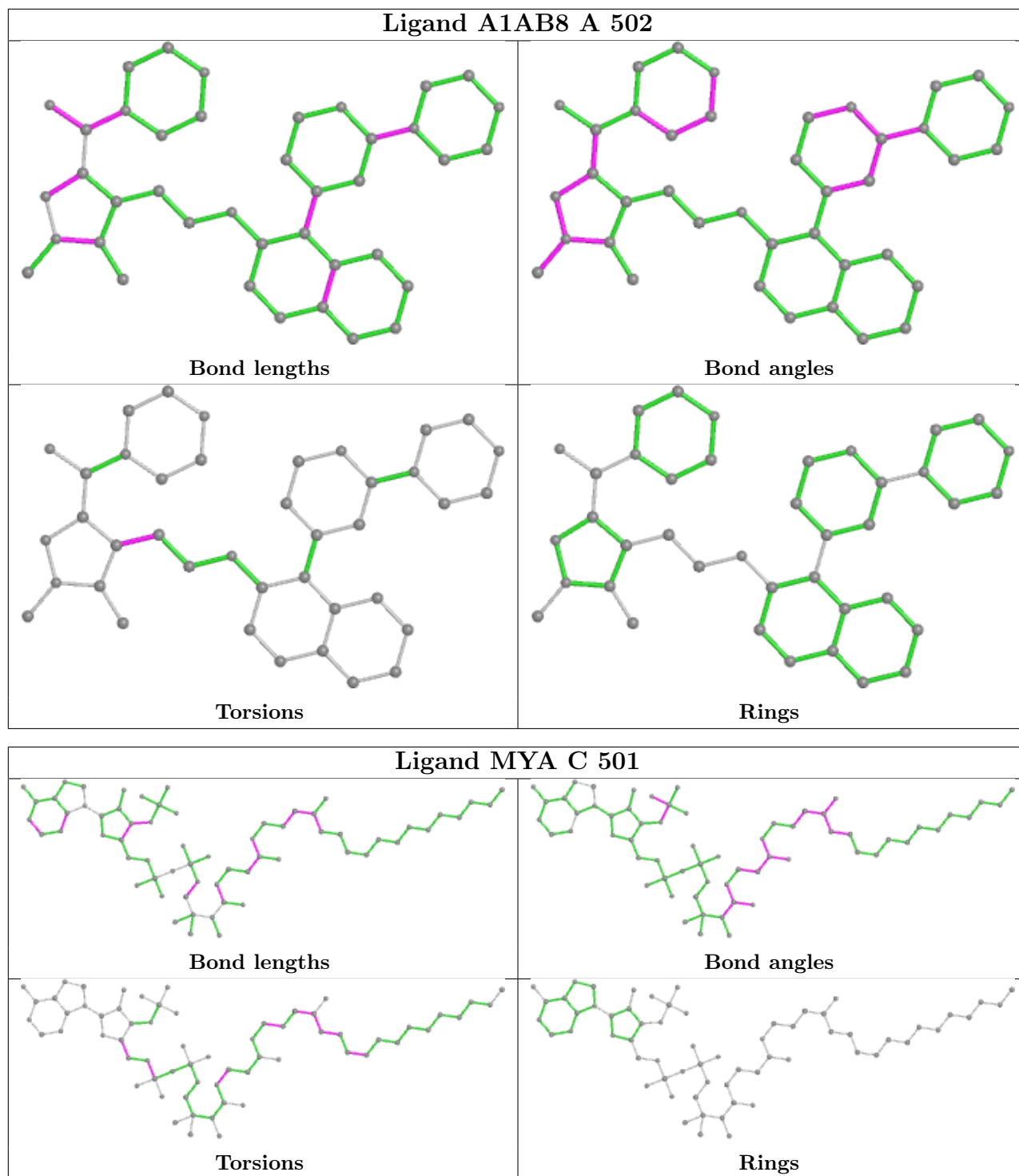
Mol	Chain	Res	Type	Atoms
5	C	511	GOL	O1-C1-C2-O2
2	C	501	MYA	C6-C7-N8-C9
2	B	501	MYA	O4X-C4X-C5X-O5X
2	C	501	MYA	C3X-C4X-C5X-O5X
2	A	501	MYA	S1-C2-C3-N4
2	A	501	MYA	O2M-C2M-S1-C2
2	B	501	MYA	O2M-C2M-S1-C2
2	C	501	MYA	O2M-C2M-S1-C2
2	A	501	MYA	S1-C2M-C3M-C4M
2	A	501	MYA	O2M-C2M-C3M-C4M
2	B	501	MYA	S1-C2M-C3M-C4M
2	B	501	MYA	O2M-C2M-C3M-C4M
2	C	501	MYA	S1-C2M-C3M-C4M
2	C	501	MYA	O2M-C2M-C3M-C4M
6	A	507	1PE	OH2-C12-C22-OH3
6	A	507	1PE	C12-C22-OH3-C23
2	A	501	MYA	C3M-C2M-S1-C2
2	B	501	MYA	C3M-C2M-S1-C2
2	C	501	MYA	C3M-C2M-S1-C2
5	C	511	GOL	C1-C2-C3-O3
2	A	501	MYA	C5X-O5X-P1A-O1A
2	B	501	MYA	C5X-O5X-P1A-O1A
2	B	501	MYA	C5X-O5X-P1A-O2A
2	C	501	MYA	C5X-O5X-P1A-O1A
2	C	501	MYA	C5X-O5X-P1A-O2A
3	A	502	A1AB8	C02-C15-C16-C17
2	A	501	MYA	C3X-C4X-C5X-O5X
2	B	501	MYA	S1-C2-C3-N4
6	A	507	1PE	OH4-C13-C23-OH3
6	A	507	1PE	C16-C26-OH6-C15
7	B	508	P6G	C5-C6-O7-C8
2	A	501	MYA	C6-C7-N8-C9
3	B	502	A1AB8	N38-C31-N32-C37
5	B	509	GOL	O1-C1-C2-O2
6	A	507	1PE	OH7-C16-C26-OH6
2	A	501	MYA	C4M-C5M-C6M-C7M
5	A	506	GOL	O1-C1-C2-O2
5	C	511	GOL	O2-C2-C3-O3
6	A	507	1PE	C14-C24-OH4-C13
2	A	501	MYA	C5M-C6M-C7M-C8M
3	A	502	A1AB8	C06-C15-C16-C17
2	C	501	MYA	S1-C2-C3-N4

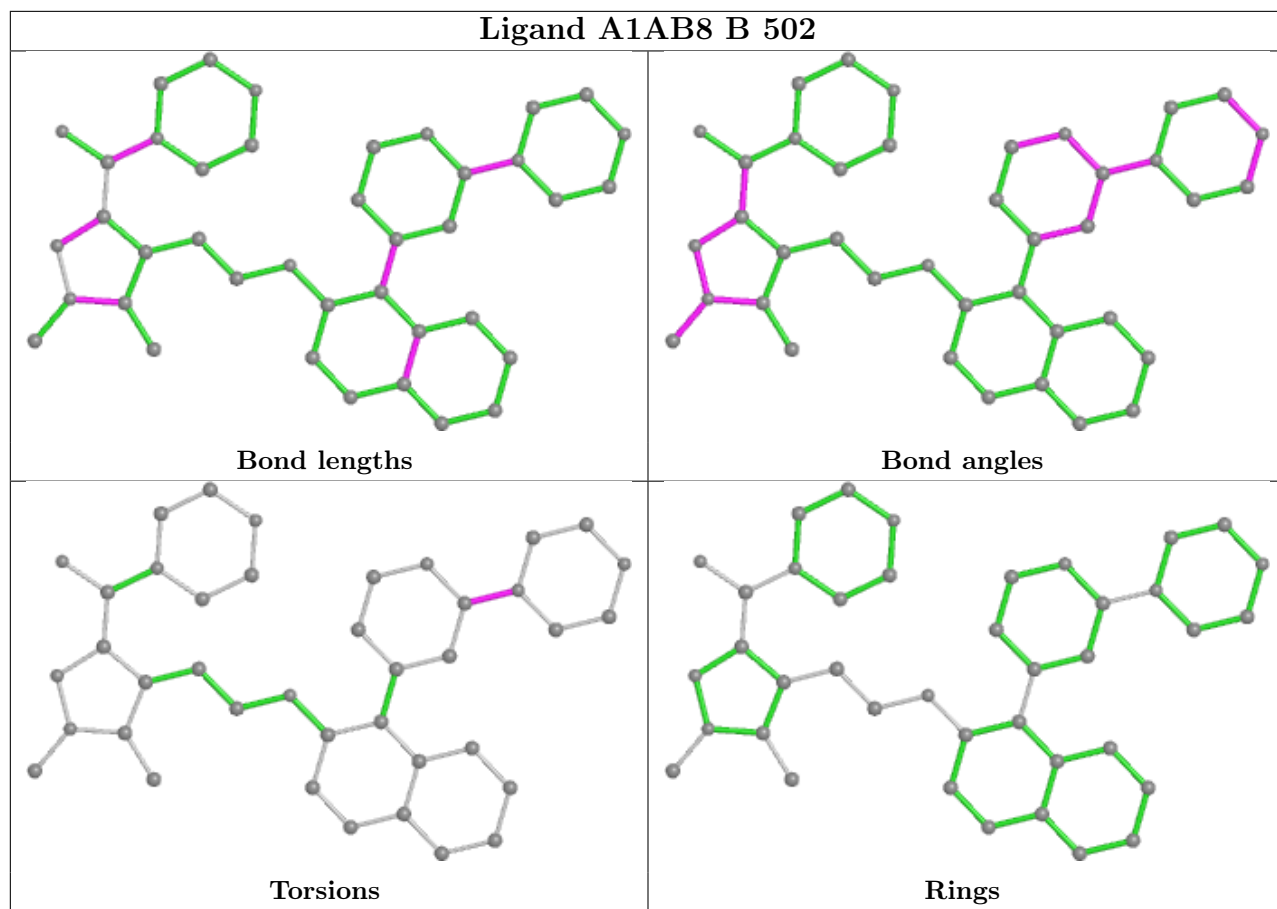
There are no ring outliers.

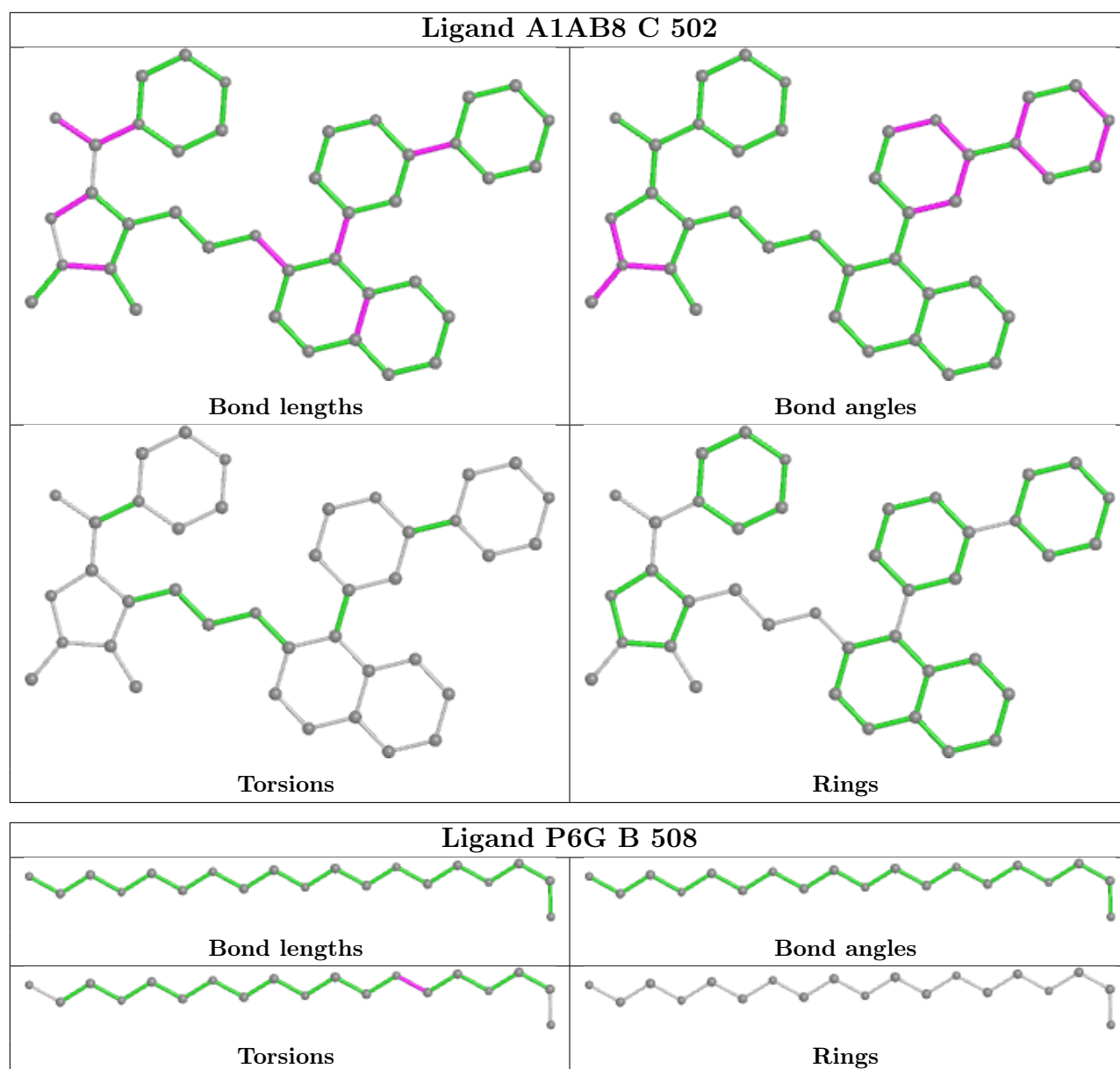
No monomer is involved in short contacts.

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 than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.









## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	384/386 (99%)	-0.33	1 (0%) 94 94	19, 28, 42, 76	0
1	B	384/386 (99%)	-0.25	2 (0%) 91 91	19, 28, 45, 84	0
1	C	385/386 (99%)	-0.08	8 (2%) 63 60	21, 31, 60, 96	0
All	All	1153/1158 (99%)	-0.22	11 (0%) 82 81	19, 29, 51, 96	0

All (11) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	325	ASP	3.6
1	C	26	PRO	3.5
1	C	244	VAL	3.1
1	C	27	ASP	2.7
1	C	54	ASP	2.5
1	C	52	ILE	2.4
1	C	235	MET	2.2
1	C	229	LEU	2.2
1	B	233	LEU	2.1
1	C	262	GLU	2.0
1	A	39	ILE	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](#)

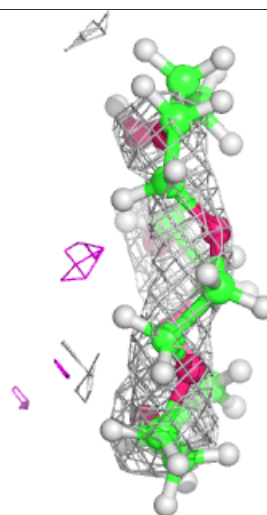
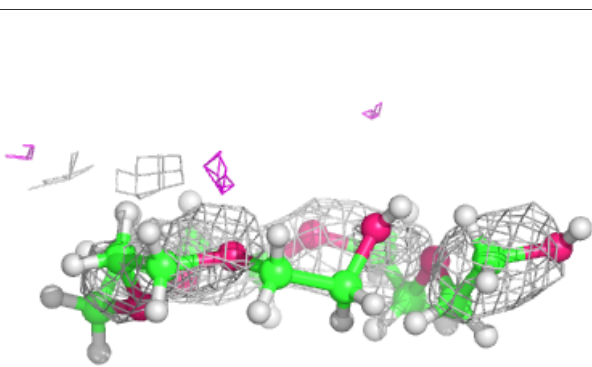
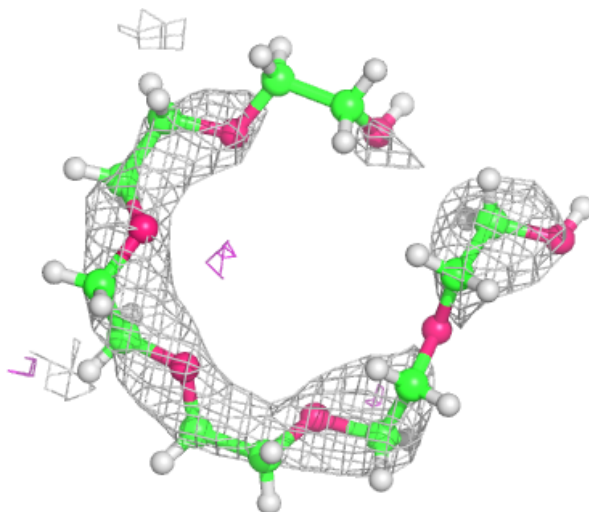
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
6	1PE	A	507	16/16	0.78	0.27	45,58,67,70	0
7	P6G	B	508	19/19	0.85	0.28	31,40,48,48	45
5	GOL	A	506	6/6	0.86	0.19	27,39,46,51	0
5	GOL	C	511	6/6	0.88	0.23	31,37,44,44	0
4	CL	A	505	1/1	0.90	0.30	56,56,56,56	0
3	A1AB8	B	502	40/40	0.91	0.15	25,34,42,45	0
3	A1AB8	C	502	40/40	0.91	0.16	29,41,50,50	0
5	GOL	B	509	6/6	0.91	0.15	30,36,43,52	0
4	CL	C	509	1/1	0.93	0.23	50,50,50,50	0
2	MYA	C	501	63/63	0.94	0.13	21,32,46,50	0
4	CL	C	506	1/1	0.94	0.14	43,43,43,43	0
4	CL	C	510	1/1	0.95	0.21	53,53,53,53	0
3	A1AB8	A	502	40/40	0.95	0.15	25,31,44,48	0
4	CL	C	503	1/1	0.95	0.10	38,38,38,38	0
2	MYA	B	501	63/63	0.96	0.14	19,26,32,36	0
2	MYA	A	501	63/63	0.96	0.12	18,26,35,40	0
4	CL	B	504	1/1	0.96	0.16	38,38,38,38	0
4	CL	B	505	1/1	0.97	0.27	47,47,47,47	0
4	CL	B	506	1/1	0.98	0.05	50,50,50,50	0
4	CL	B	507	1/1	0.98	0.05	28,28,28,28	0
4	CL	A	504	1/1	0.98	0.08	24,24,24,24	0
4	CL	C	505	1/1	0.98	0.05	39,39,39,39	0
4	CL	A	508	1/1	0.98	0.06	33,33,33,33	0
4	CL	C	507	1/1	0.98	0.14	39,39,39,39	0
4	CL	C	508	1/1	0.98	0.25	38,38,38,38	0
4	CL	C	504	1/1	0.99	0.04	26,26,26,26	0
4	CL	B	503	1/1	0.99	0.06	21,21,21,21	0
4	CL	A	503	1/1	0.99	0.04	21,21,21,21	0
4	CL	A	509	1/1	0.99	0.05	35,35,35,35	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.

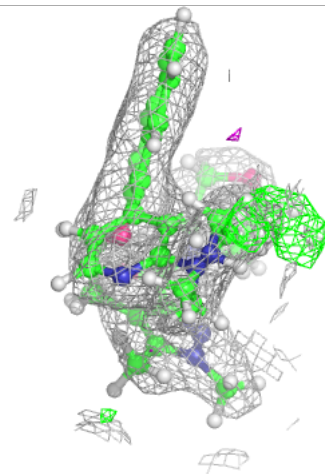
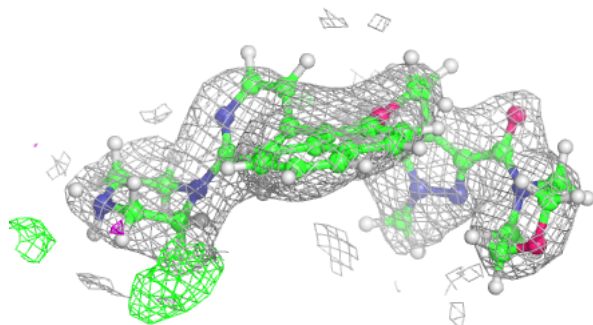
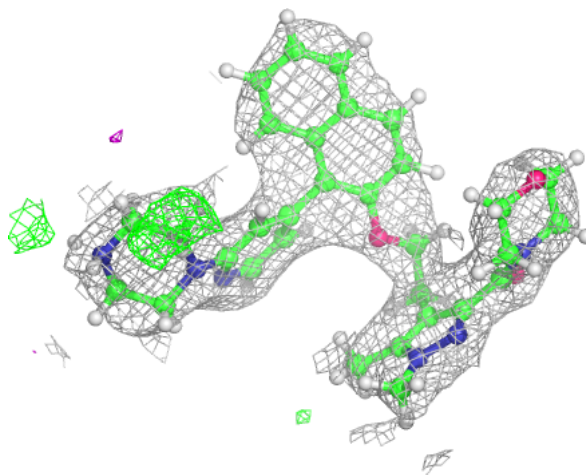
**Electron density around P6G B 508:**

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



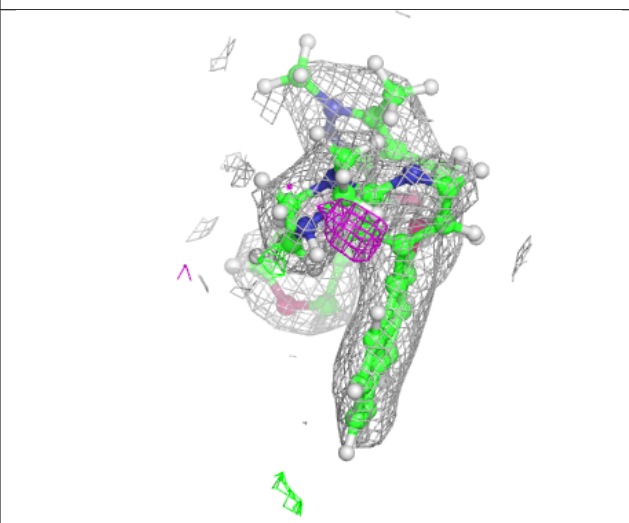
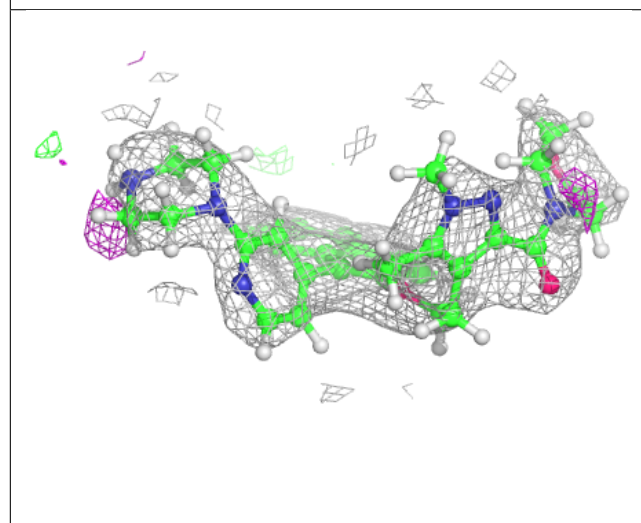
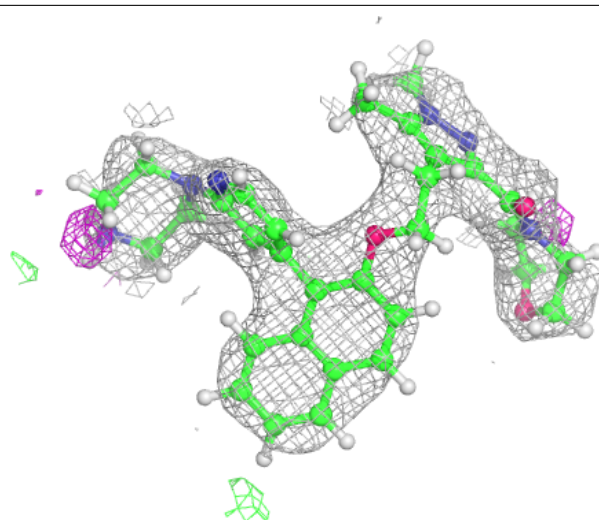
**Electron density around A1AB8 B 502:**

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



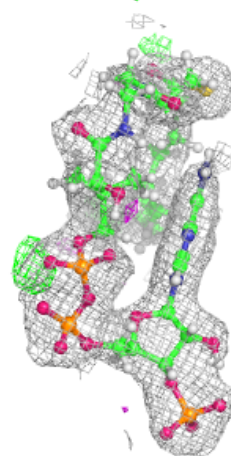
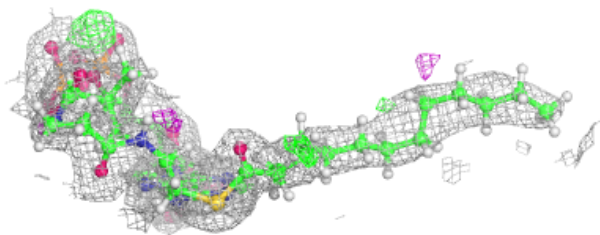
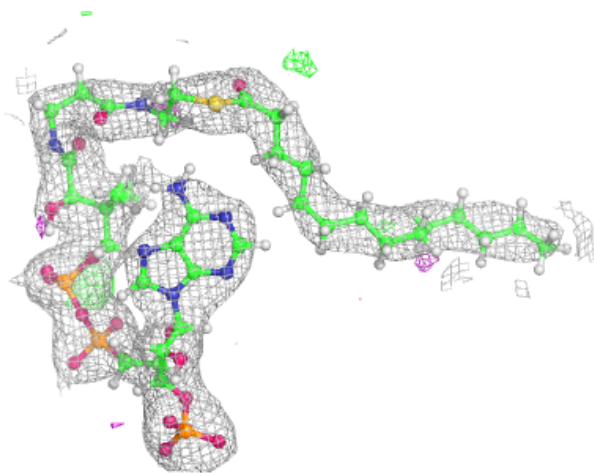
**Electron density around A1AB8 C 502:**

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



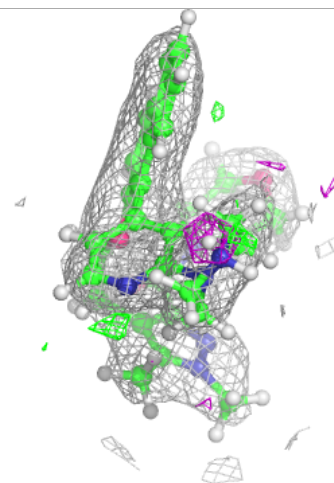
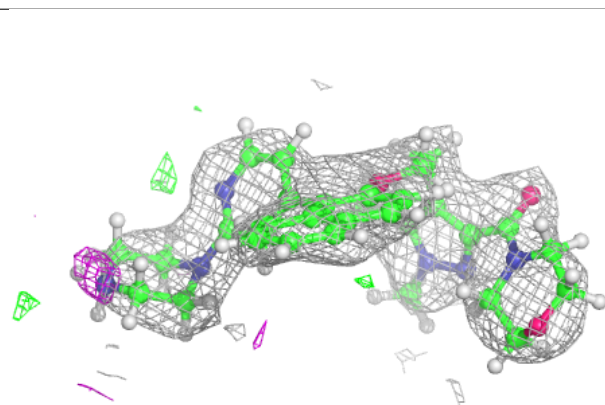
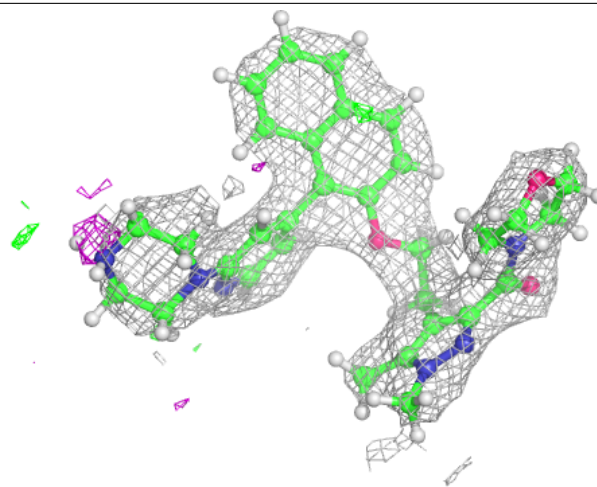
**Electron density around MYA C 501:**

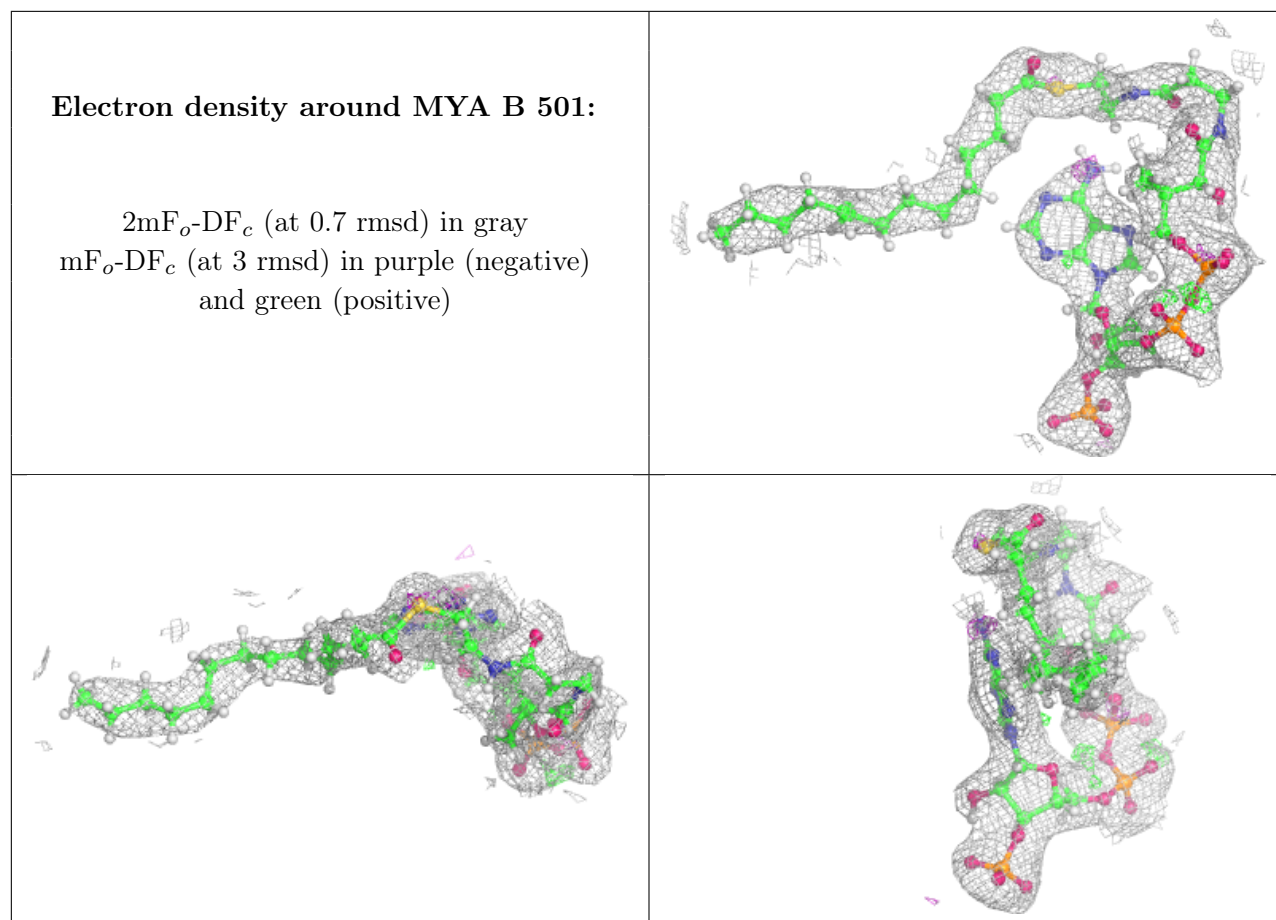
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

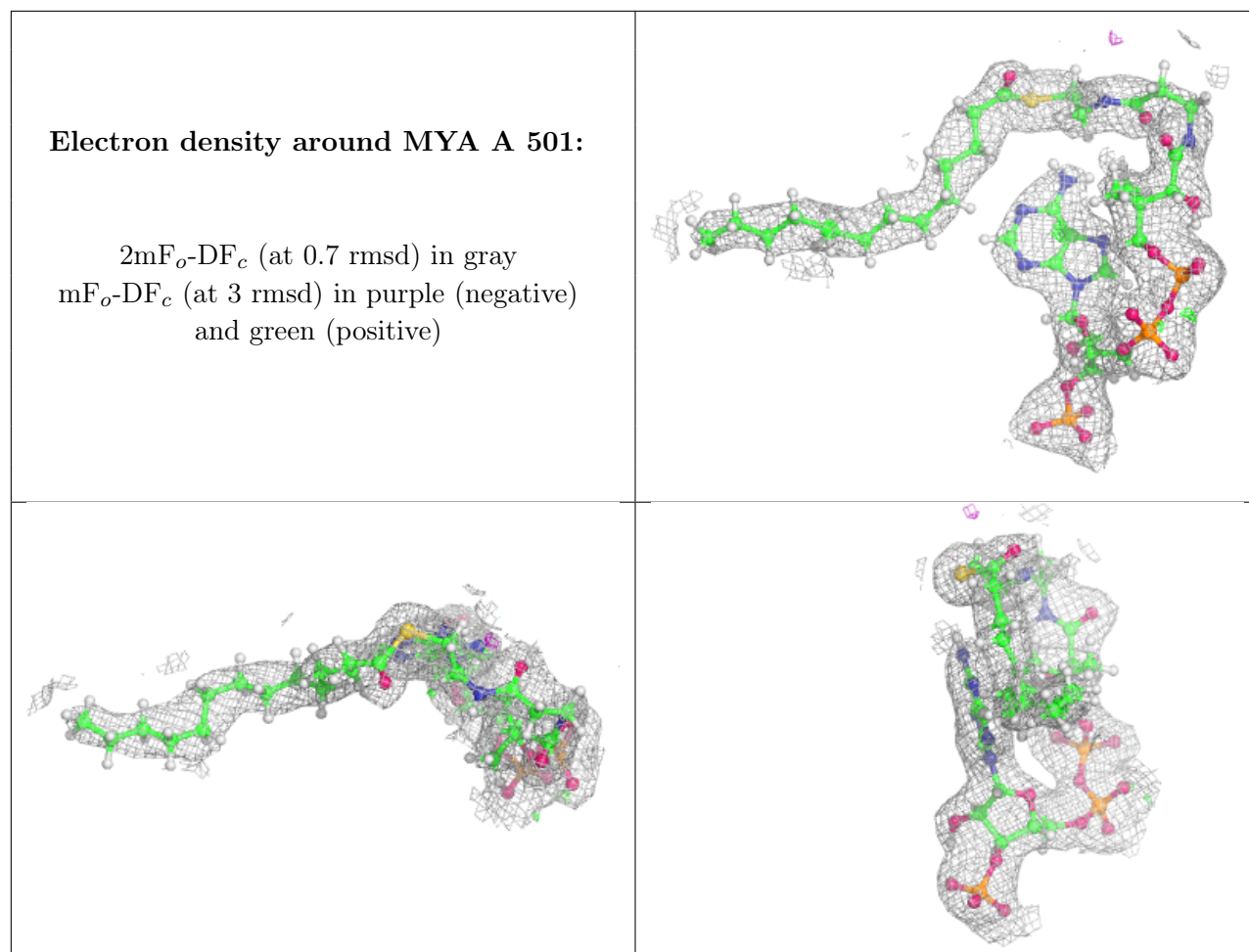


**Electron density around A1AB8 A 502:**

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







## 6.5 Other polymers [i](#)

There are no such residues in this entry.