



# wwPDB X-ray Structure Validation Summary Report ⓘ

Sep 26, 2023 – 04:24 PM EDT

PDB ID : 6C1M  
Title : NavAb NormoPP mutant  
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Deposited on : 2018-01-04  
Resolution : 2.52 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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The following versions of software and data (see [references ⓘ](#)) 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 : 2.35.1  
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) : 2.35.1

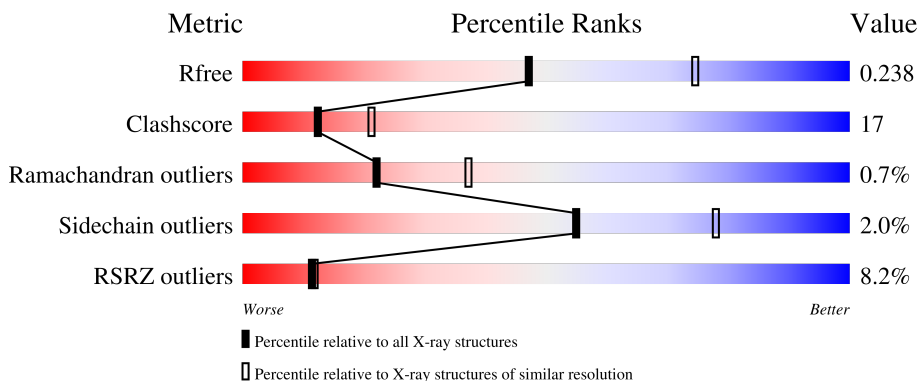
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.52 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	5743 (2.54-2.50)
Clashscore	141614	6463 (2.54-2.50)
Ramachandran outliers	138981	6335 (2.54-2.50)
Sidechain outliers	138945	6337 (2.54-2.50)
RSRZ outliers	127900	5630 (2.54-2.50)

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	285	
1	B	285	

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
2	PX4	B	2310	-	-	-	X
3	1N7	A	1307	-	-	-	X

## 2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 4336 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 Ion transport protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	230	1860	1262	281	304	13	0	0	0
1	B	223	1813	1235	269	296	13	0	0	0

There are 40 discrepancies between the modelled and reference sequences:

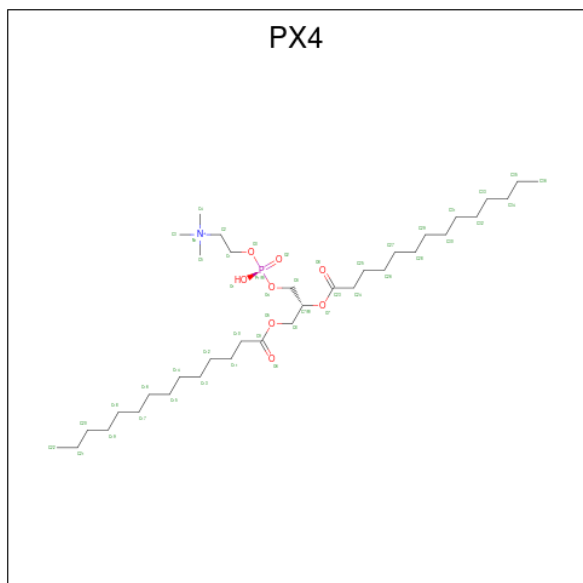
Chain	Residue	Modelled	Actual	Comment	Reference
A	983	MET	-	initiating methionine	UNP A8EVM5
A	984	ASP	-	expression tag	UNP A8EVM5
A	985	TYR	-	expression tag	UNP A8EVM5
A	986	LYS	-	expression tag	UNP A8EVM5
A	987	ASP	-	expression tag	UNP A8EVM5
A	988	ASP	-	expression tag	UNP A8EVM5
A	989	ASP	-	expression tag	UNP A8EVM5
A	990	ASP	-	expression tag	UNP A8EVM5
A	991	LYS	-	expression tag	UNP A8EVM5
A	992	GLY	-	expression tag	UNP A8EVM5
A	993	SER	-	expression tag	UNP A8EVM5
A	994	LEU	-	expression tag	UNP A8EVM5
A	995	VAL	-	expression tag	UNP A8EVM5
A	996	PRO	-	expression tag	UNP A8EVM5
A	997	ARG	-	expression tag	UNP A8EVM5
A	998	GLY	-	expression tag	UNP A8EVM5
A	999	SER	-	expression tag	UNP A8EVM5
A	1000	HIS	-	expression tag	UNP A8EVM5
A	1102	GLY	ARG	engineered mutation	UNP A8EVM5
A	1217	CYS	ILE	engineered mutation	UNP A8EVM5
B	1983	MET	-	initiating methionine	UNP A8EVM5
B	1984	ASP	-	expression tag	UNP A8EVM5
B	1985	TYR	-	expression tag	UNP A8EVM5
B	1986	LYS	-	expression tag	UNP A8EVM5
B	1987	ASP	-	expression tag	UNP A8EVM5

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1988	ASP	-	expression tag	UNP A8EVM5
B	1989	ASP	-	expression tag	UNP A8EVM5
B	1990	ASP	-	expression tag	UNP A8EVM5
B	1991	LYS	-	expression tag	UNP A8EVM5
B	1992	GLY	-	expression tag	UNP A8EVM5
B	1993	SER	-	expression tag	UNP A8EVM5
B	1994	LEU	-	expression tag	UNP A8EVM5
B	1995	VAL	-	expression tag	UNP A8EVM5
B	1996	PRO	-	expression tag	UNP A8EVM5
B	1997	ARG	-	expression tag	UNP A8EVM5
B	1998	GLY	-	expression tag	UNP A8EVM5
B	1999	SER	-	expression tag	UNP A8EVM5
B	2000	HIS	-	expression tag	UNP A8EVM5
B	2102	GLY	ARG	engineered mutation	UNP A8EVM5
B	2217	CYS	ILE	engineered mutation	UNP A8EVM5

- Molecule 2 is 1,2-DIMYRISTOYL-SN-GLYCERO-3-PHOSPHOCHOLINE (three-letter code: PX4) (formula: C<sub>36</sub>H<sub>73</sub>NO<sub>8</sub>P).



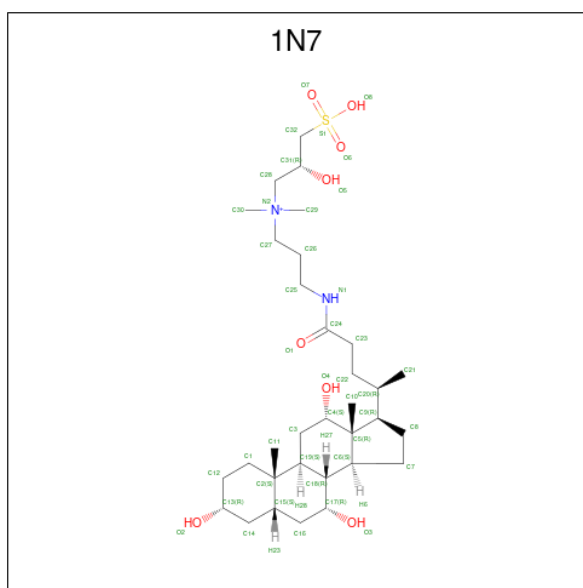
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	O	P	0	0
			40	31	8	1		
2	A	1	Total	C	O		0	0
			20	17	3			
2	A	1	Total	C	O	P	0	0
			41	32	8	1		

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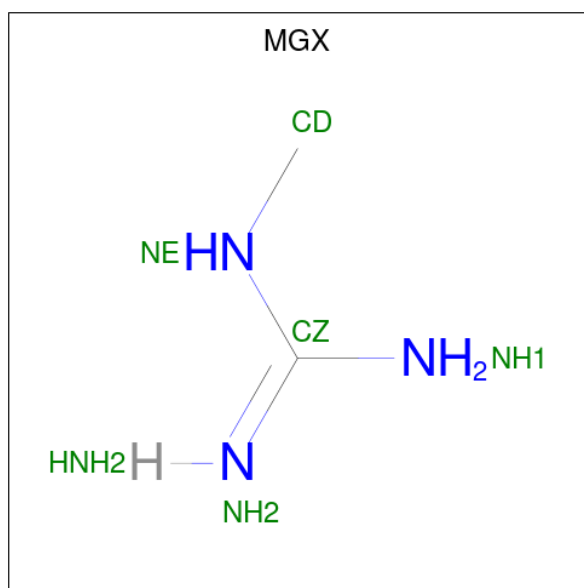
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C O P 41 32 8 1	0	0
2	A	1	Total C O 20 17 3	0	0
2	B	1	Total C N O P 46 36 1 8 1	0	0
2	B	1	Total C O 16 14 2	0	0
2	B	1	Total C O 21 17 4	0	0
2	B	1	Total C N O P 38 28 1 8 1	0	0
2	B	1	Total C N O P 43 33 1 8 1	0	0
2	B	1	Total C N O P 37 27 1 8 1	0	0
2	B	1	Total C O 17 15 2	0	0
2	B	1	Total C O P 41 32 8 1	0	0
2	B	1	Total C O 21 17 4	0	0
2	B	1	Total C O P 14 6 7 1	0	0

- Molecule 3 is CHAPSO (three-letter code: 1N7) (formula: C<sub>32</sub>H<sub>59</sub>N<sub>2</sub>O<sub>8</sub>S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			22	19	3		
3	A	1	Total	C	O	0	0
			27	24	3		
3	A	1	Total	C	O	0	0
			13	11	2		
3	A	1	Total	C	O	0	0
			12	11	1		
3	A	1	Total	C	O	0	0
			25	22	3		
3	B	1	Total	C	O	0	0
			26	23	3		
3	B	1	Total	C	O	0	0
			13	11	2		
3	B	1	Total	C	O	0	0
			13	11	2		

- Molecule 4 is 1-METHYLGUANIDINE (three-letter code: MGX) (formula: C<sub>2</sub>H<sub>7</sub>N<sub>3</sub>).

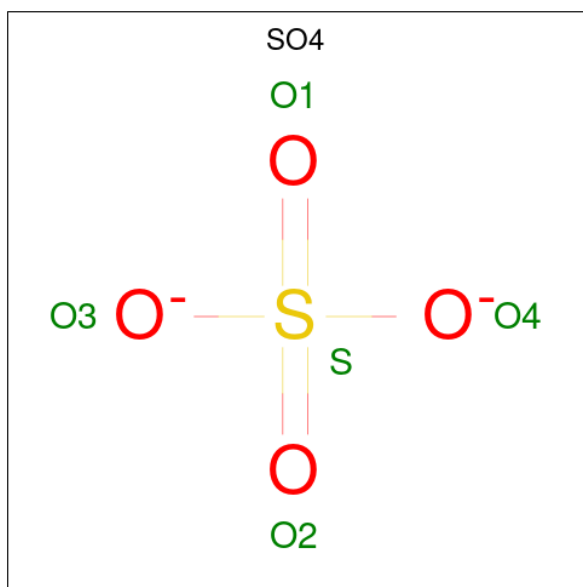


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	N	0	0
			5	2	3		
4	B	1	Total	C	N	0	0
			5	2	3		

- Molecule 5 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	2	Total Na 2 2	0	0
5	B	2	Total Na 2 2	0	0

- Molecule 6 is SULFATE ION (three-letter code: SO4) (formula: O<sub>4</sub>S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total O S 5 4 1	0	0
6	B	1	Total O S 5 4 1	0	0

- Molecule 7 is water.

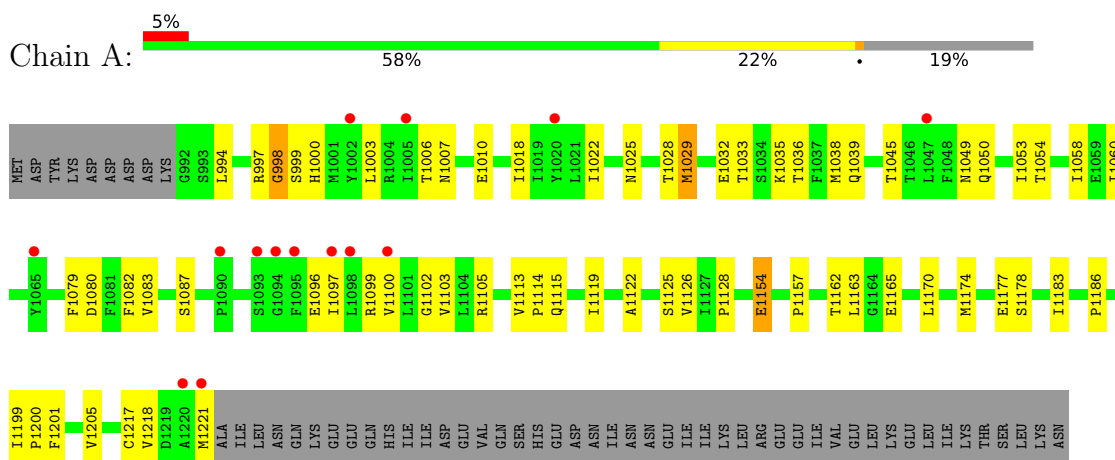
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	14	Total O 14 14	0	0
7	B	18	Total O 18 18	0	0



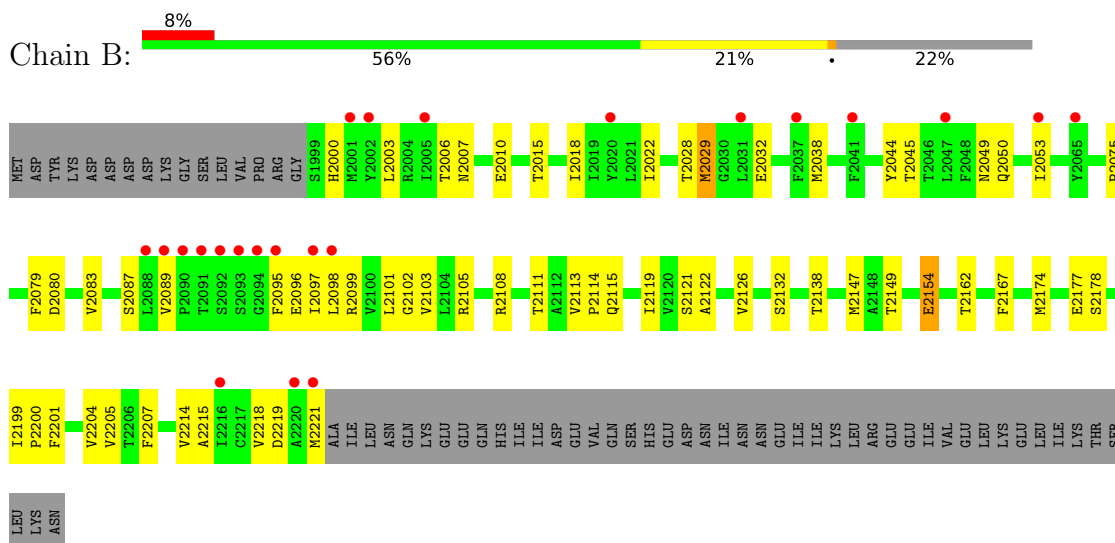
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Ion transport protein



- Molecule 1: Ion transport protein



## 4 Data and refinement statistics

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	126.33Å 126.24Å 191.59Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	42.31 – 2.52 42.31 – 2.52	Depositor EDS
% Data completeness (in resolution range)	98.0 (42.31-2.52) 98.1 (42.31-2.52)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.02 (at 2.51Å)	Xtrriage
Refinement program	PHENIX 1.9_1692	Depositor
R, $R_{free}$	0.203 , 0.227 0.220 , 0.238	Depositor DCC
$R_{free}$ test set	2501 reflections (4.89%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	64.1	Xtrriage
Anisotropy	0.475	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 84.1	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.35$	Xtrriage
Estimated twinning fraction	0.480 for k,h,-l	Xtrriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	4336	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	106.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.63% 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

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: PX4, NA, SO4, 1N7, MGX

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	0/1913	0.56	0/2602
1	B	0.50	0/1864	0.55	0/2536
All	All	0.51	0/3777	0.55	0/5138

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1860	0	1917	72	0
1	B	1813	0	1877	68	0
2	A	162	0	238	21	0
2	B	294	0	417	28	0
3	A	99	0	129	3	0
3	B	52	0	68	4	0
4	A	5	0	6	1	0
4	B	5	0	6	1	0
5	A	2	0	0	0	0
5	B	2	0	0	0	0
6	A	5	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	B	5	0	0	0	0
7	A	14	0	0	1	0
7	B	18	0	0	1	0
All	All	4336	0	4658	151	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 17.

The worst 5 of 151 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:A:1097:ILE:CD1	2:B:2305:PX4:H20	1.71	1.19
1:B:2028:THR:HG23	1:B:2045:THR:HG23	1.22	1.15
1:A:1097:ILE:HD11	2:B:2305:PX4:C9	1.75	1.14
1:A:1028:THR:HG23	1:A:1045:THR:HG23	1.13	1.11
1:A:1097:ILE:HD13	2:B:2305:PX4:H20	1.23	1.09

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	228/285 (80%)	213 (93%)	13 (6%)	2 (1%)	17	30
1	B	221/285 (78%)	209 (95%)	11 (5%)	1 (0%)	29	47
All	All	449/570 (79%)	422 (94%)	24 (5%)	3 (1%)	22	37

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	2000	HIS

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Mol	Chain	Res	Type
1	A	998	GLY
1	A	994	LEU

### 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	206/263 (78%)	202 (98%)	4 (2%)	57	79
1	B	202/263 (77%)	198 (98%)	4 (2%)	55	78
All	All	408/526 (78%)	400 (98%)	8 (2%)	55	78

5 of 8 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	2167	PHE
1	B	2154	GLU
1	B	2029	MET
1	A	1154	GLU
1	B	2049	ASN

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

Mol	Chain	Res	Type
1	A	1115	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 31 ligands modelled in this entry, 4 are monoatomic - leaving 27 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	PX4	B	2301	-	45,45,45	1.21	3 (6%)	51,53,53	1.06	2 (3%)
2	PX4	B	2303	-	20,20,45	1.25	1 (5%)	21,21,53	1.13	1 (4%)
3	1N7	A	1305	-	30,30,46	3.13	11 (36%)	47,48,72	2.62	13 (27%)
4	MGX	A	1308	-	4,4,4	4.76	3 (75%)	4,4,4	0.19	0
2	PX4	B	2308	-	40,40,45	1.11	2 (5%)	43,45,53	1.11	2 (4%)
6	SO4	B	2317	-	4,4,4	0.15	0	6,6,6	0.06	0
3	1N7	A	1307	-	13,13,46	1.95	3 (23%)	19,19,72	1.85	6 (31%)
2	PX4	B	2305	-	42,42,45	1.21	3 (7%)	48,50,53	1.51	5 (10%)
2	PX4	B	2309	-	20,20,45	1.25	2 (10%)	21,21,53	1.14	2 (9%)
3	1N7	A	1306	-	14,14,46	2.30	3 (21%)	21,21,72	2.79	12 (57%)
3	1N7	A	1304	-	25,25,46	3.06	10 (40%)	37,41,72	1.85	13 (35%)
2	PX4	B	2310	-	13,13,45	1.27	1 (7%)	16,17,53	1.10	1 (6%)
2	PX4	B	2304	-	37,37,45	1.18	3 (8%)	43,45,53	1.25	4 (9%)
4	MGX	B	2314	-	4,4,4	4.73	3 (75%)	4,4,4	0.26	0
3	1N7	A	1311	-	28,28,46	3.16	11 (39%)	46,46,72	2.51	15 (32%)
6	SO4	A	1314	-	4,4,4	0.16	0	6,6,6	0.06	0
3	1N7	B	2311	-	29,29,46	3.15	11 (37%)	47,47,72	2.59	19 (40%)
2	PX4	A	1310	-	19,19,45	1.21	1 (5%)	19,19,53	1.15	1 (5%)
3	1N7	B	2312	-	14,14,46	2.28	3 (21%)	21,21,72	2.05	8 (38%)
2	PX4	B	2302	-	15,15,45	2.10	3 (20%)	15,15,53	1.10	0
2	PX4	A	1302	-	19,19,45	1.13	1 (5%)	20,20,53	1.41	2 (10%)
2	PX4	A	1303	-	40,40,45	1.09	2 (5%)	43,45,53	1.16	2 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	PX4	A	1301	-	39,39,45	1.12	2 (5%)	43,44,53	1.17	2 (4%)
2	PX4	A	1309	-	40,40,45	1.06	2 (5%)	43,45,53	1.19	3 (6%)
2	PX4	B	2307	-	16,16,45	1.28	1 (6%)	16,16,53	0.98	1 (6%)
3	1N7	B	2313	-	14,14,46	2.37	3 (21%)	21,21,72	2.35	7 (33%)
2	PX4	B	2306	-	36,36,45	1.28	3 (8%)	42,44,53	1.21	3 (7%)

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	PX4	B	2301	-	-	26/49/49/49	-
2	PX4	B	2303	-	-	12/20/20/49	-
3	1N7	A	1305	-	-	5/7/72/92	0/4/4/4
4	MGX	A	1308	-	-	0/2/2/2	-
2	PX4	B	2308	-	-	21/44/44/49	-
3	1N7	A	1307	-	-	-	0/2/2/4
2	PX4	B	2305	-	-	23/46/46/49	-
2	PX4	B	2309	-	-	12/20/20/49	-
3	1N7	A	1306	-	-	-	0/2/2/4
2	PX4	B	2310	-	-	7/13/13/49	-
3	1N7	A	1304	-	-	-	0/4/4/4
2	PX4	B	2304	-	-	17/41/41/49	-
4	MGX	B	2314	-	-	0/2/2/2	-
3	1N7	A	1311	-	-	1/4/69/92	0/4/4/4
3	1N7	B	2311	-	-	1/6/71/92	0/4/4/4
2	PX4	A	1310	-	-	7/18/18/49	-
3	1N7	B	2312	-	-	-	0/2/2/4
2	PX4	B	2302	-	-	7/13/13/49	-
2	PX4	A	1302	-	-	11/19/19/49	-
2	PX4	A	1303	-	-	24/44/44/49	-
2	PX4	A	1301	-	-	17/41/41/49	-
2	PX4	A	1309	-	-	24/44/44/49	-
2	PX4	B	2307	-	-	7/15/15/49	-
3	1N7	B	2313	-	-	-	0/2/2/4
2	PX4	B	2306	-	-	19/40/40/49	-

The worst 5 of 91 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1308	MGX	CZ-NE	8.93	1.48	1.33
4	B	2314	MGX	CZ-NE	8.87	1.48	1.33
3	A	1305	1N7	C3-C4	8.37	1.67	1.53
3	A	1304	1N7	C3-C4	8.17	1.67	1.53
3	B	2311	1N7	C3-C4	8.14	1.67	1.53

The worst 5 of 124 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	1305	1N7	C6-C5-C4	8.10	114.94	107.40
3	A	1305	1N7	C9-C5-C4	7.64	124.64	117.67
3	B	2311	1N7	C6-C5-C4	7.27	114.17	107.40
3	A	1311	1N7	C6-C5-C4	6.73	113.67	107.40
2	B	2305	PX4	O7-C23-C24	6.31	125.11	111.50

There are no chirality outliers.

5 of 241 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1301	PX4	C6-O4-P1-O1
2	A	1301	PX4	C6-O4-P1-O2
2	A	1301	PX4	C6-O4-P1-O3
2	A	1301	PX4	O6-C9-O5-C8
2	A	1301	PX4	C10-C9-O5-C8

There are no ring outliers.

18 monomers are involved in 54 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	2301	PX4	11	0
2	B	2303	PX4	1	0
3	A	1305	1N7	2	0
4	A	1308	MGX	1	0
2	B	2308	PX4	2	0
2	B	2305	PX4	10	0
3	A	1304	1N7	1	0
2	B	2304	PX4	2	0
4	B	2314	MGX	1	0
3	B	2311	1N7	2	0
2	A	1310	PX4	2	0

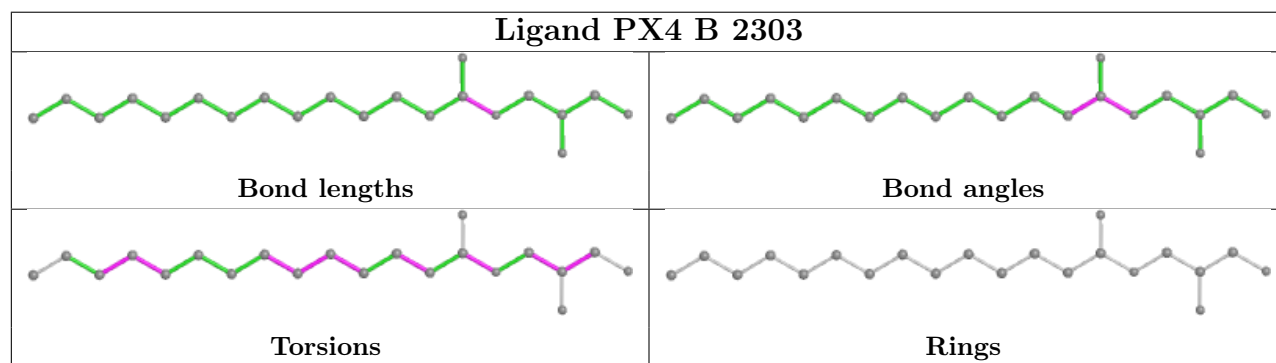
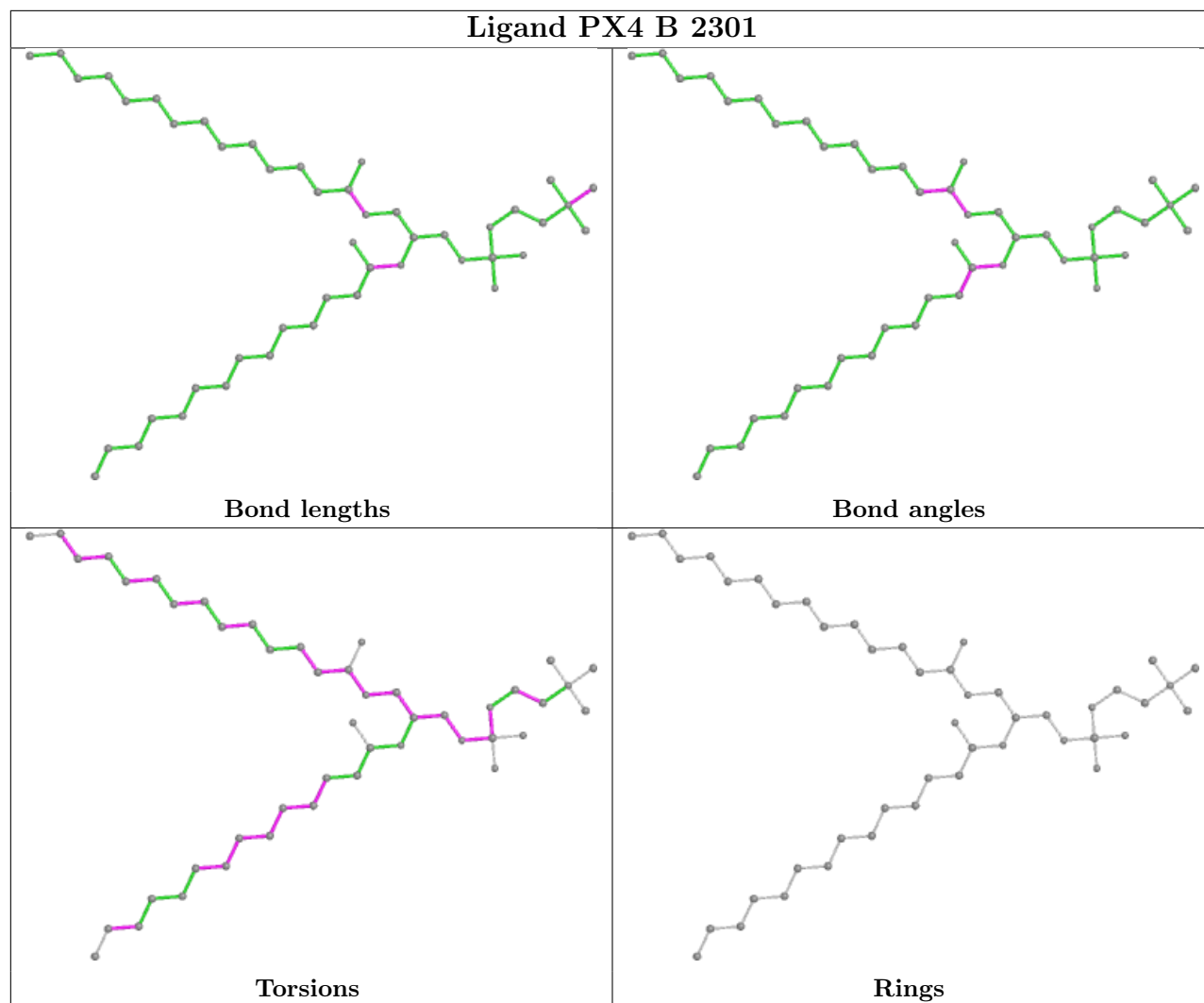
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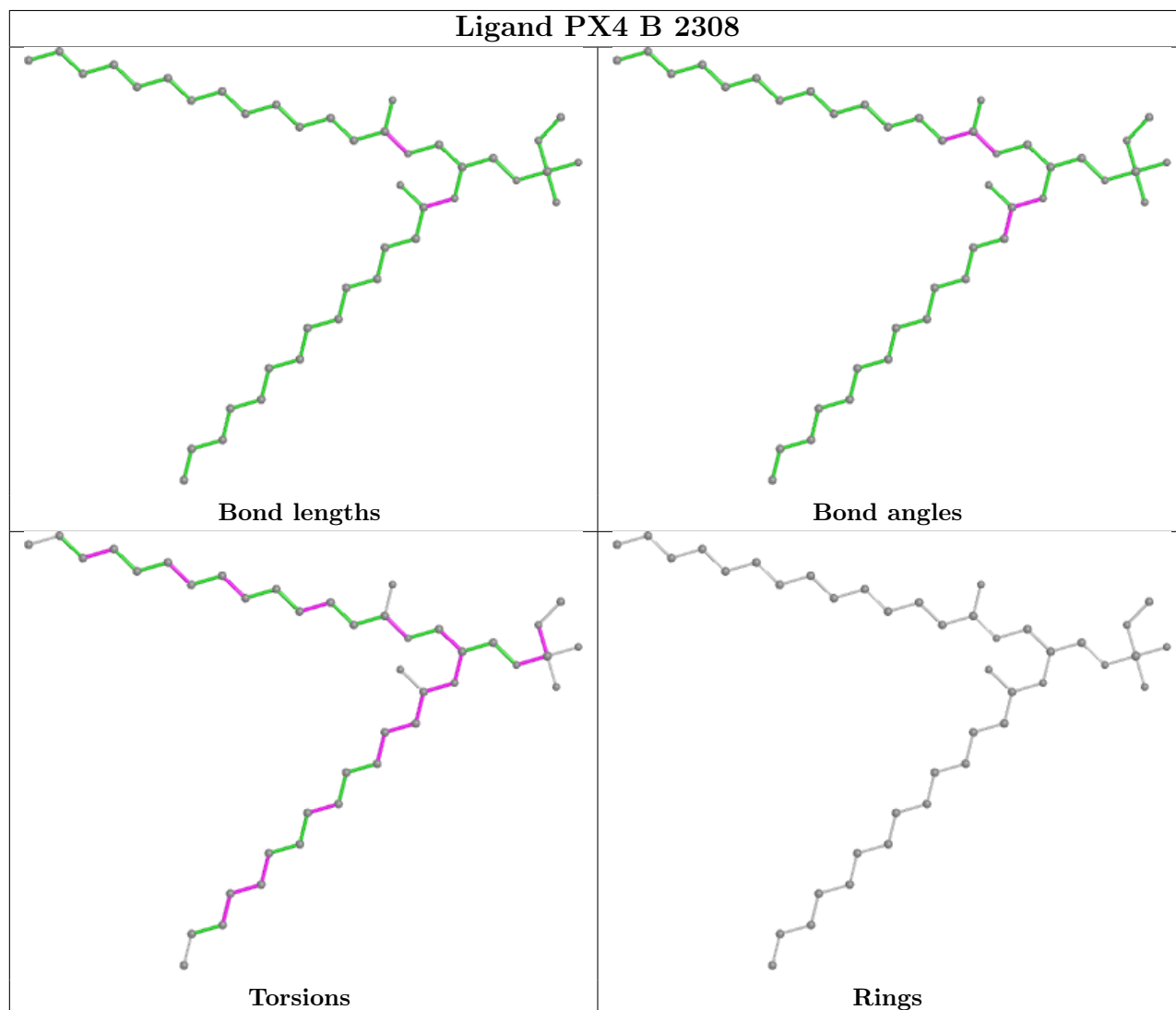
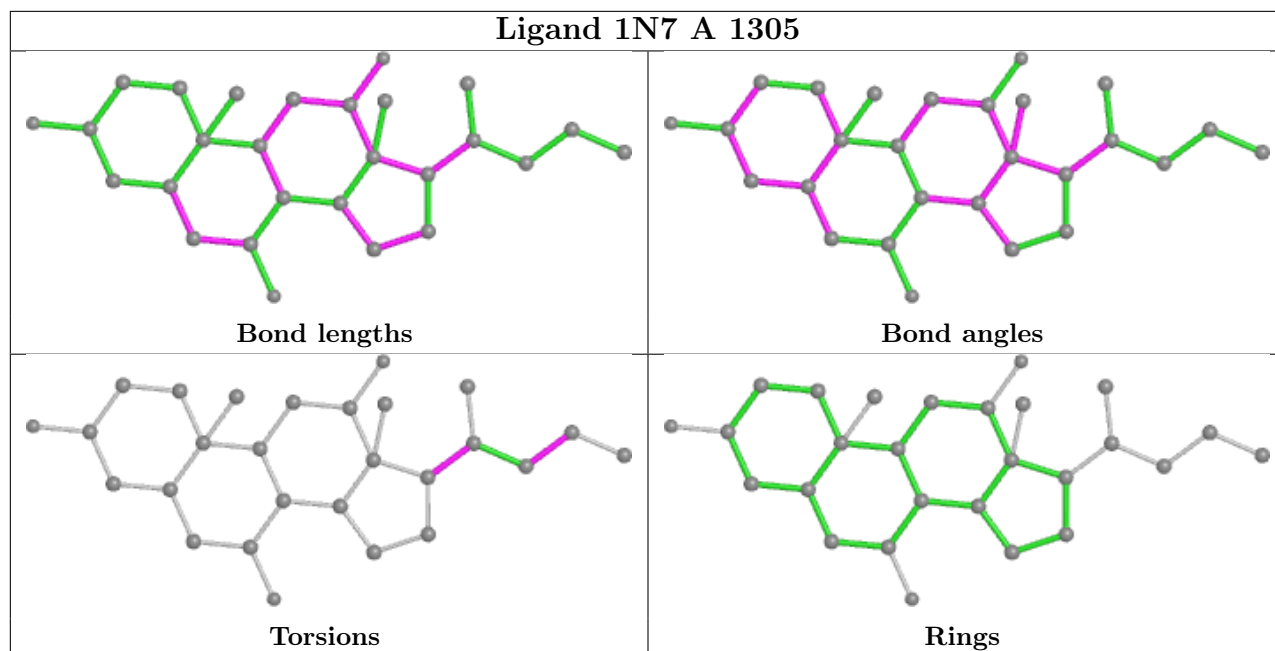


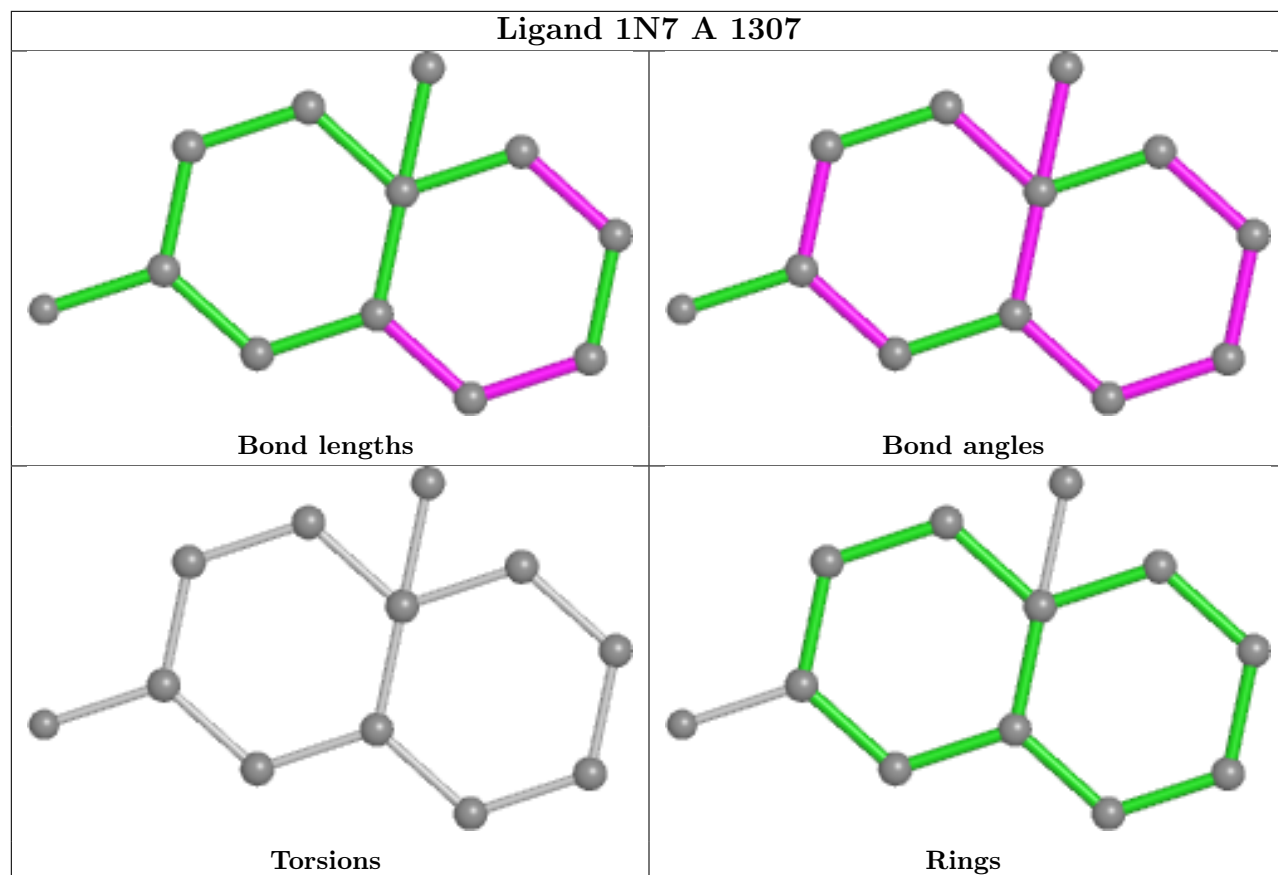
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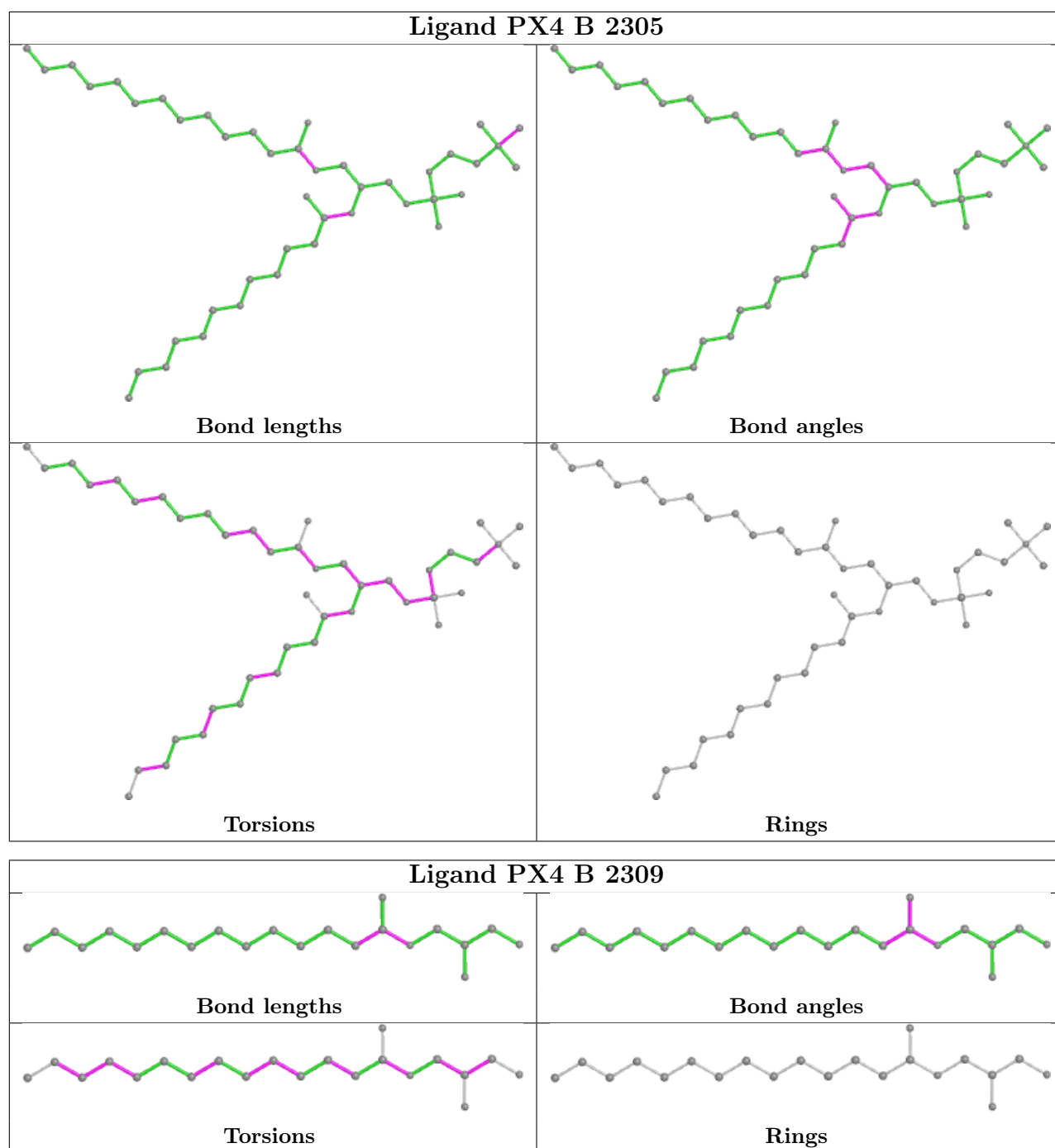
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	2302	PX4	1	0
2	A	1302	PX4	1	0
2	A	1303	PX4	3	0
2	A	1301	PX4	7	0
2	A	1309	PX4	8	0
2	B	2307	PX4	1	0
3	B	2313	1N7	2	0

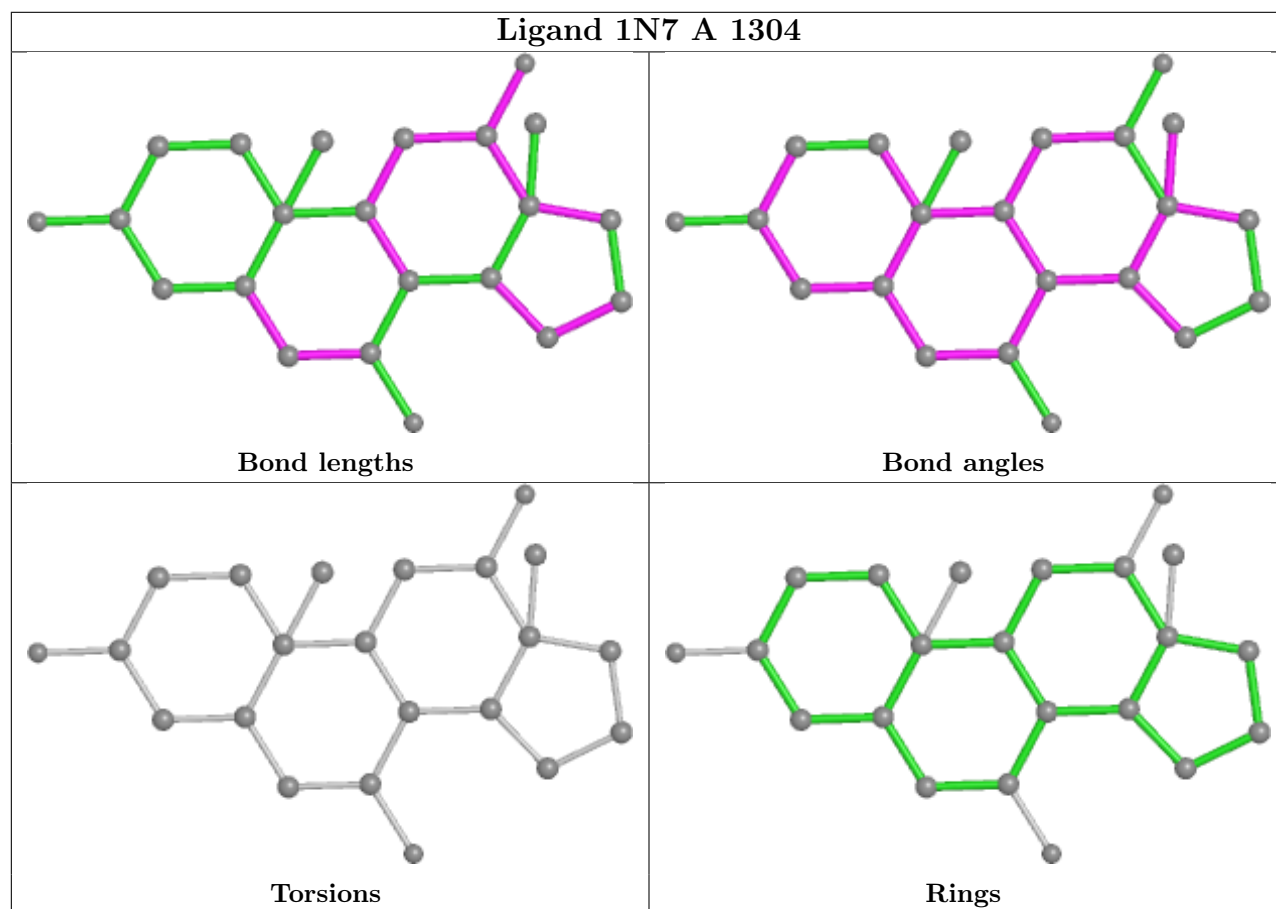
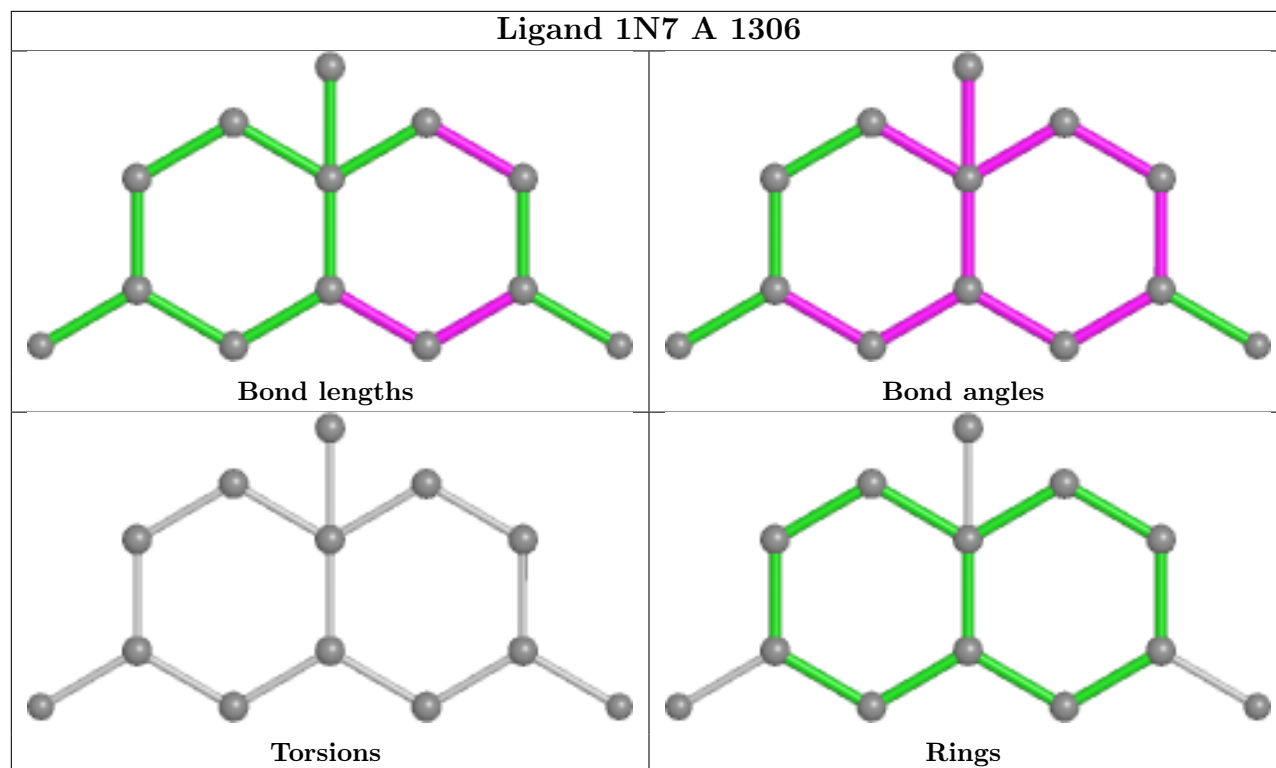
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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.

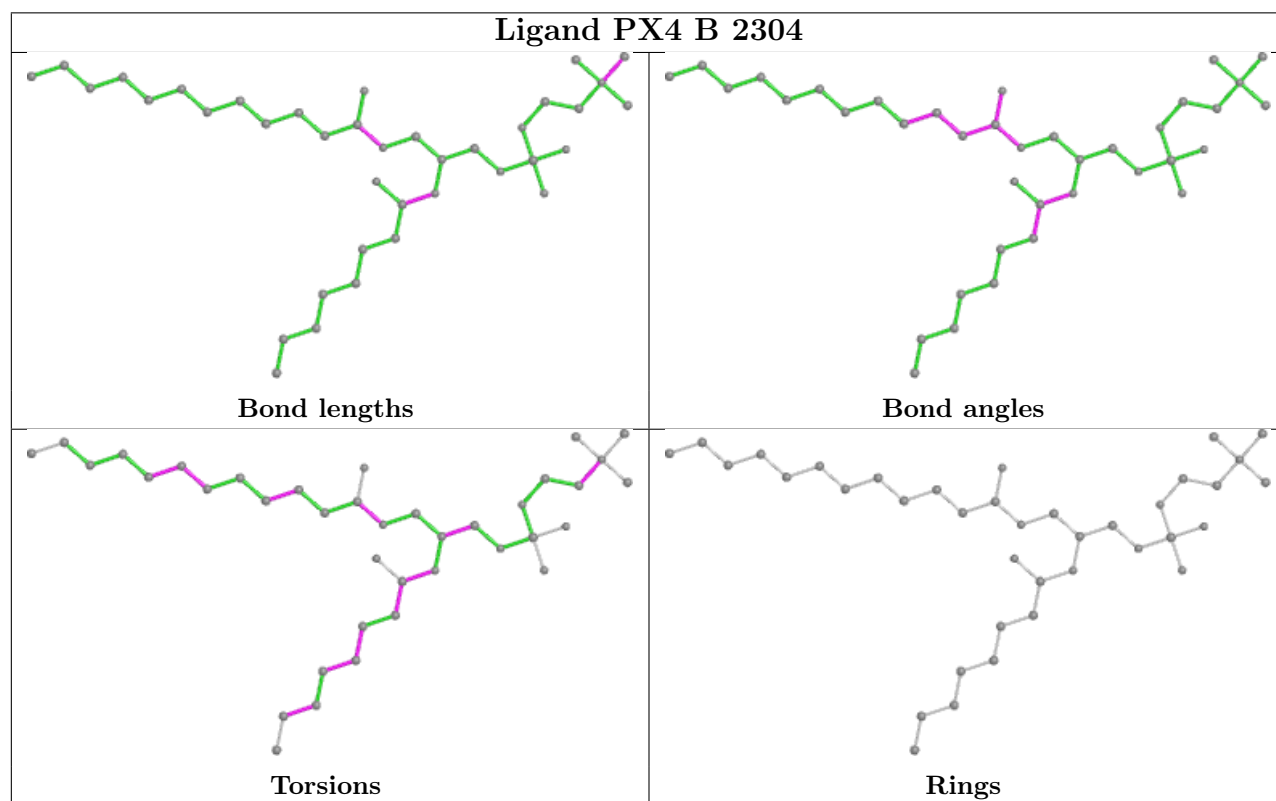
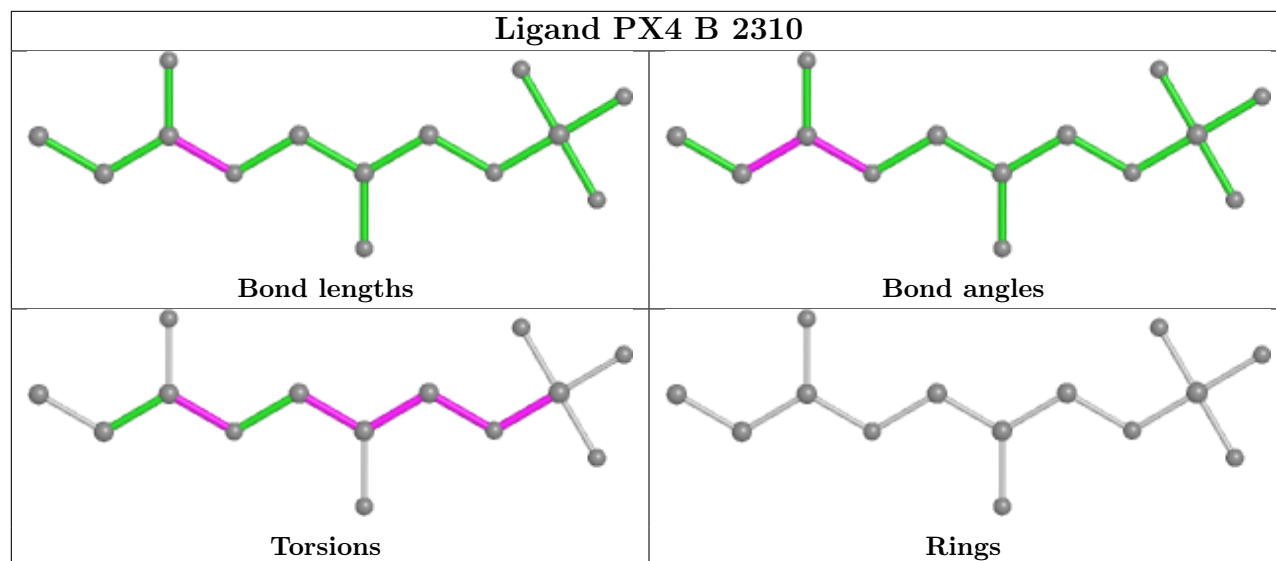


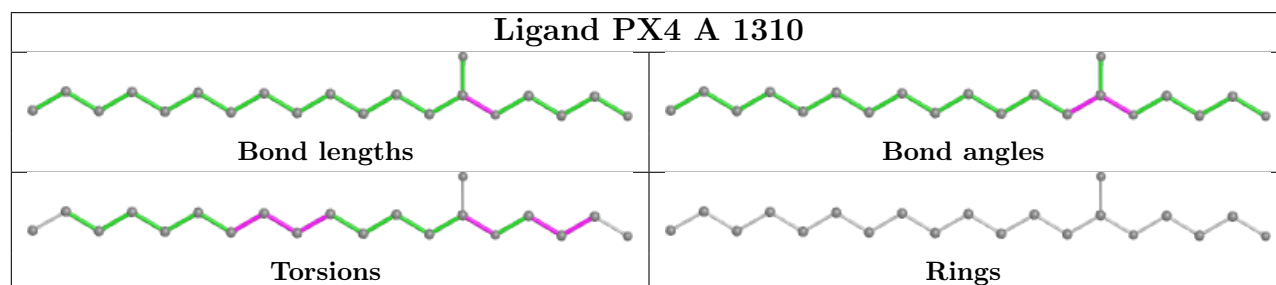
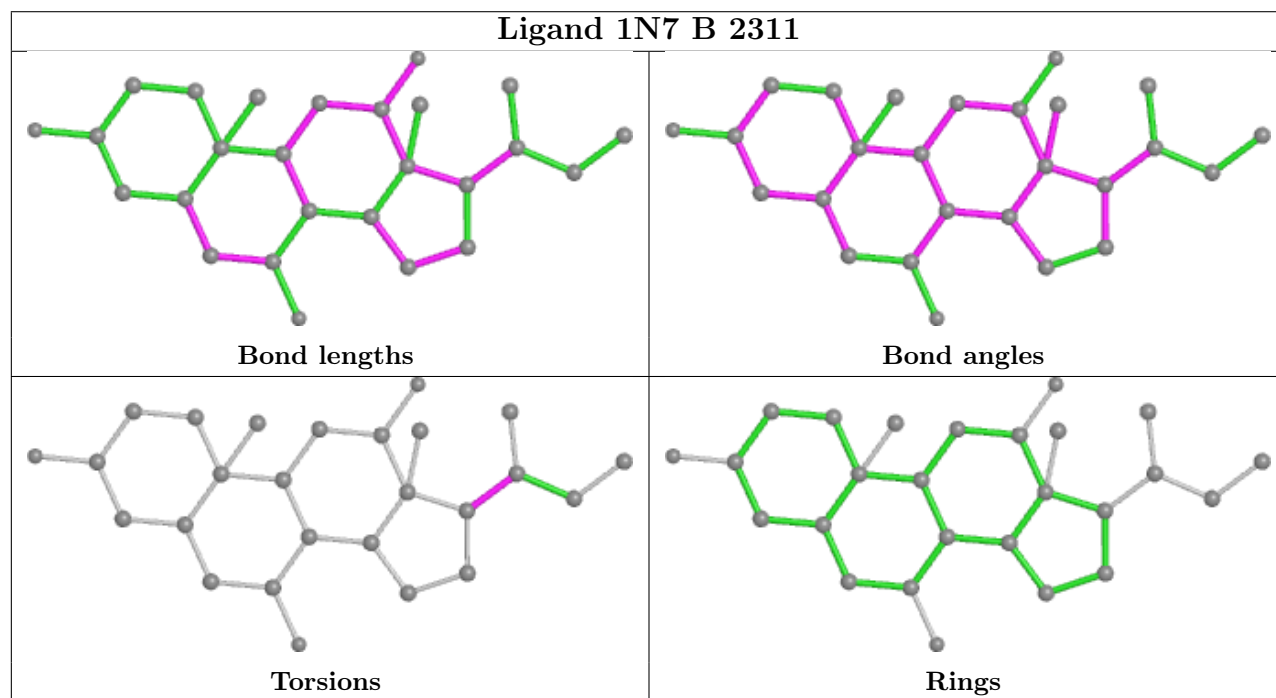
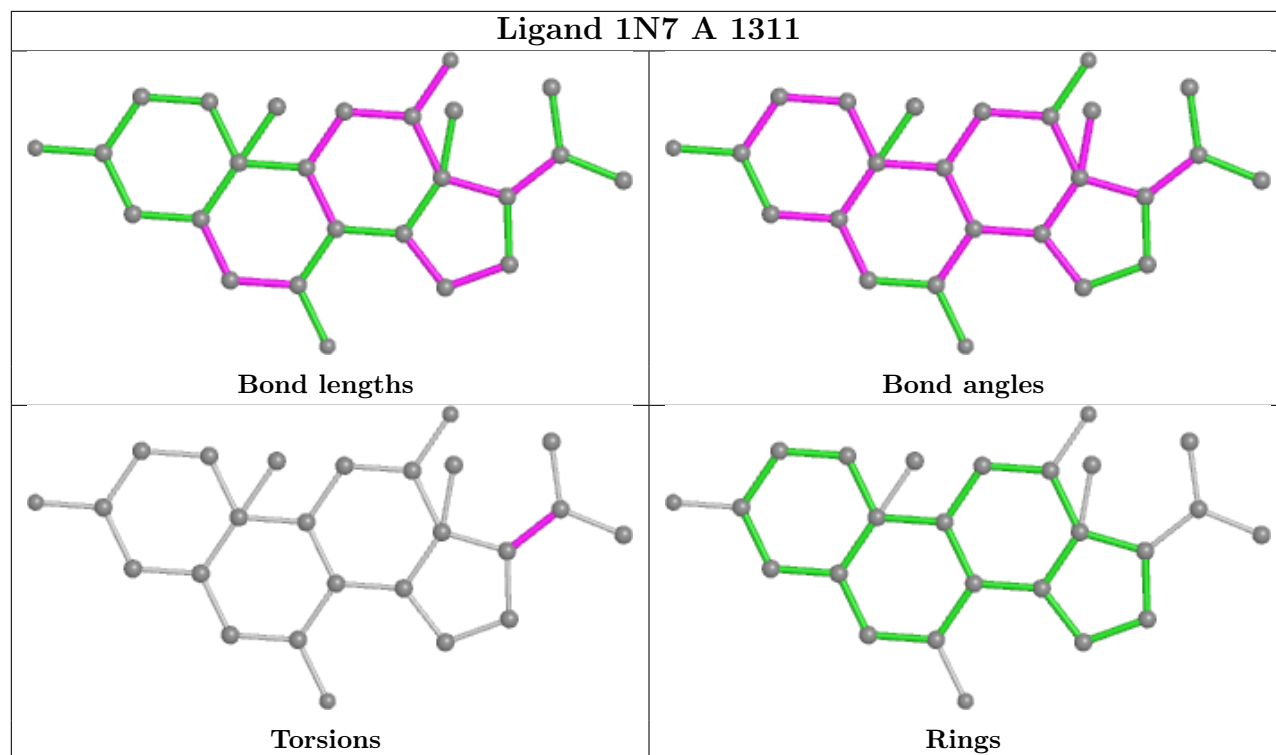




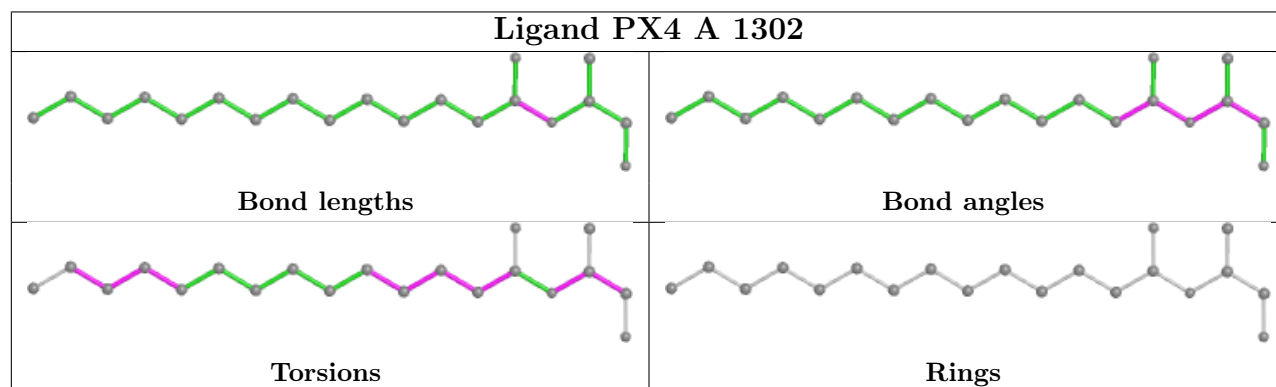
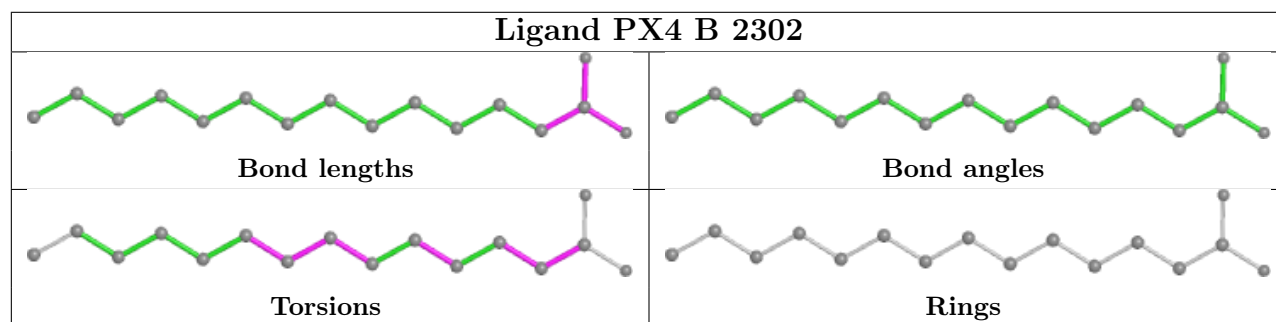
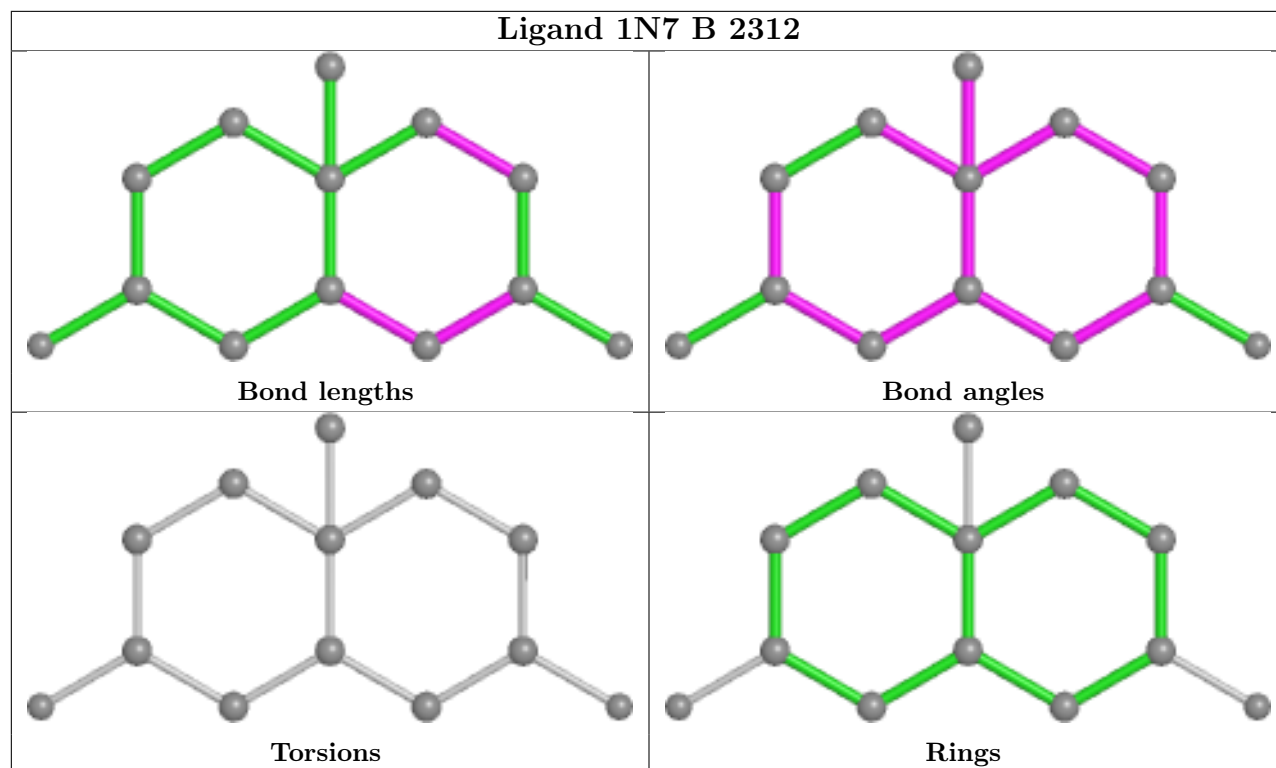


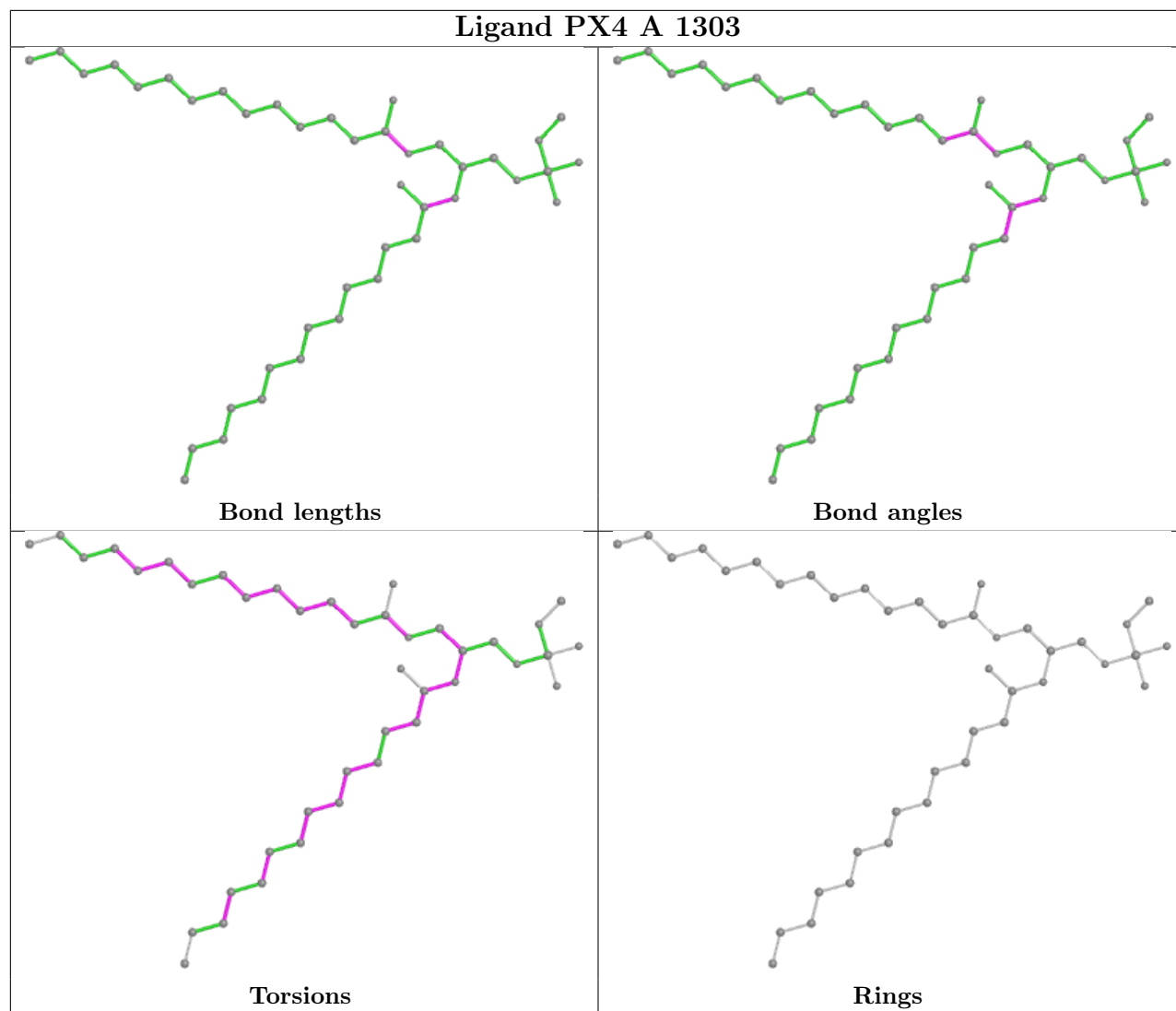


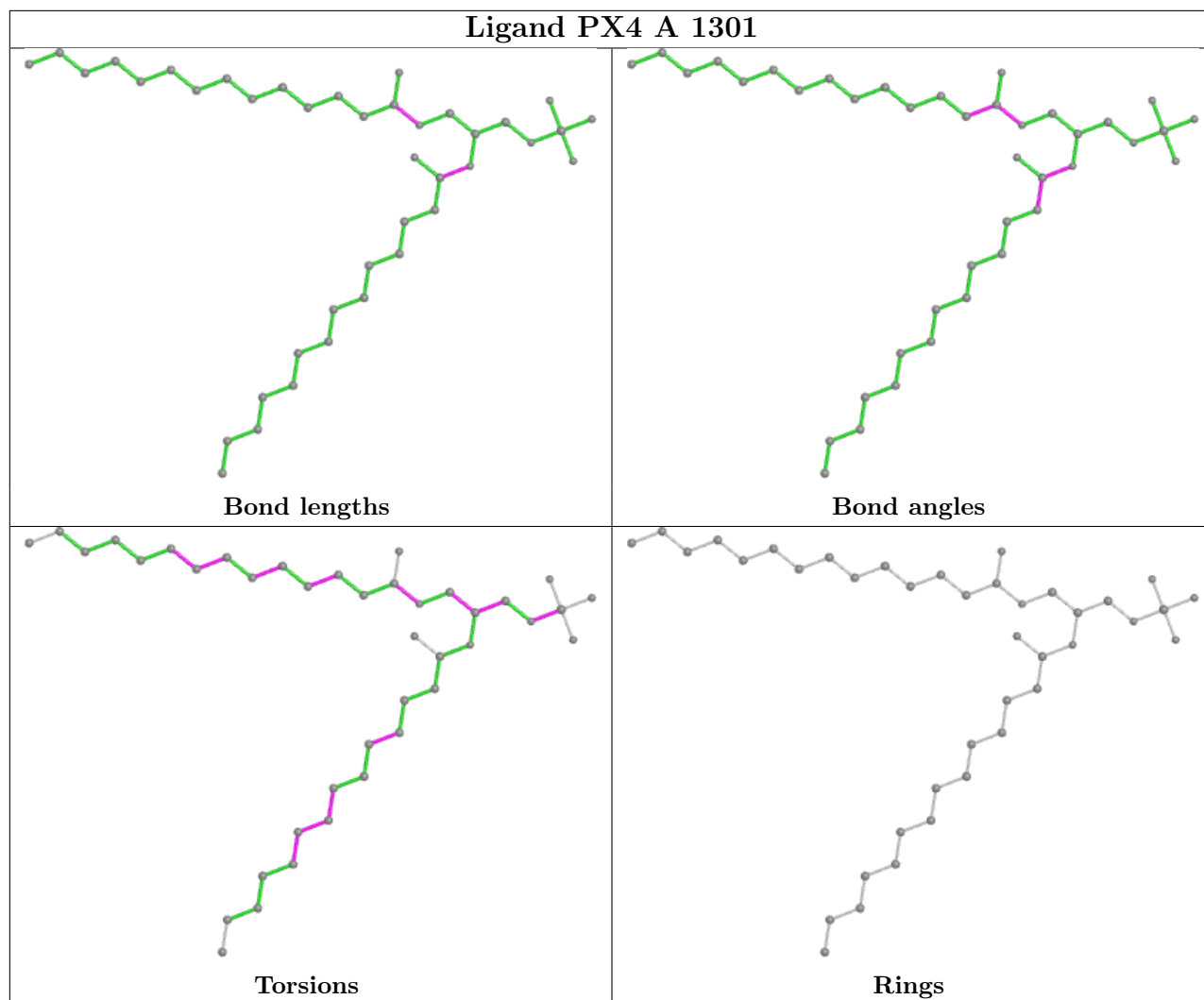


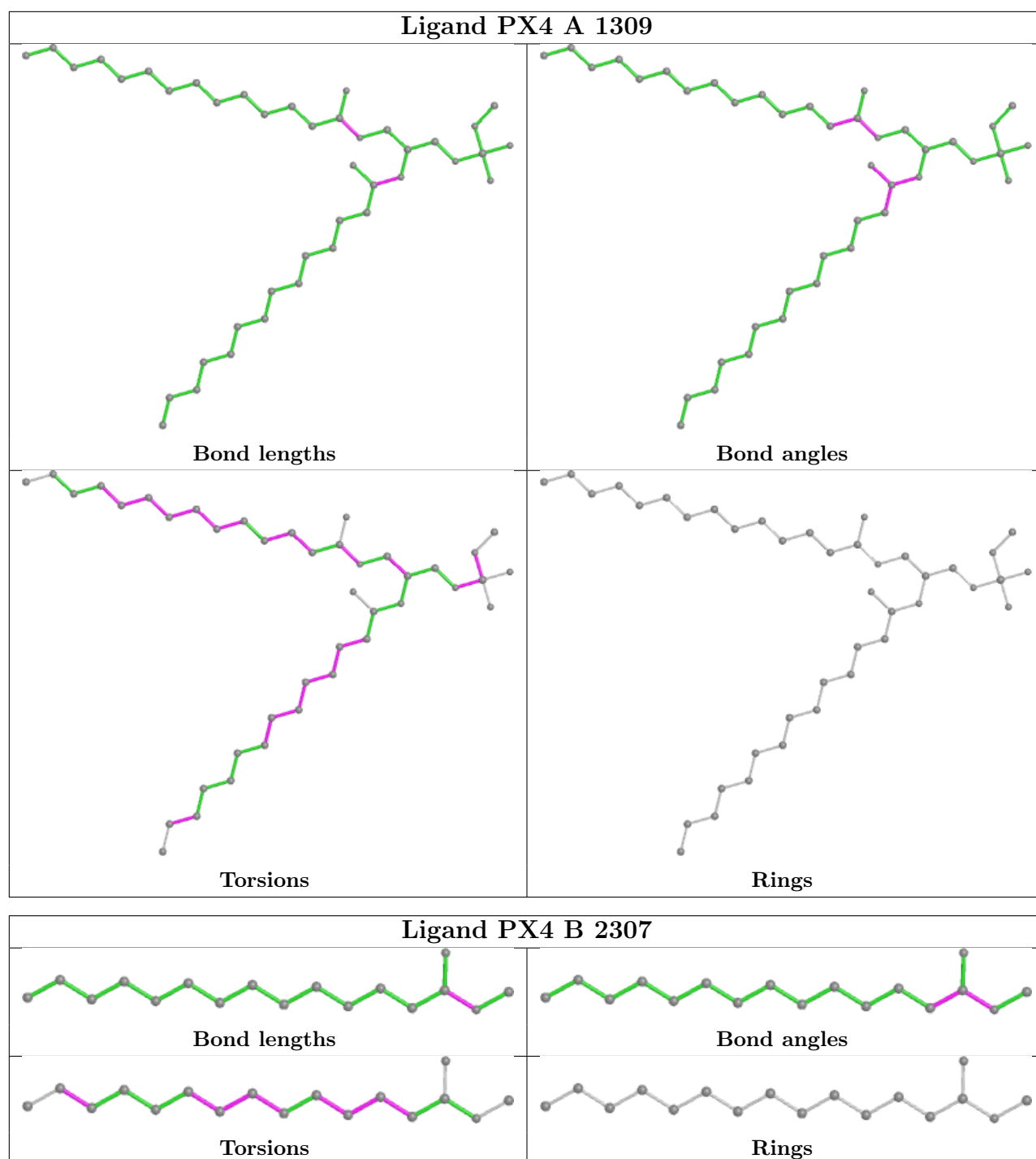


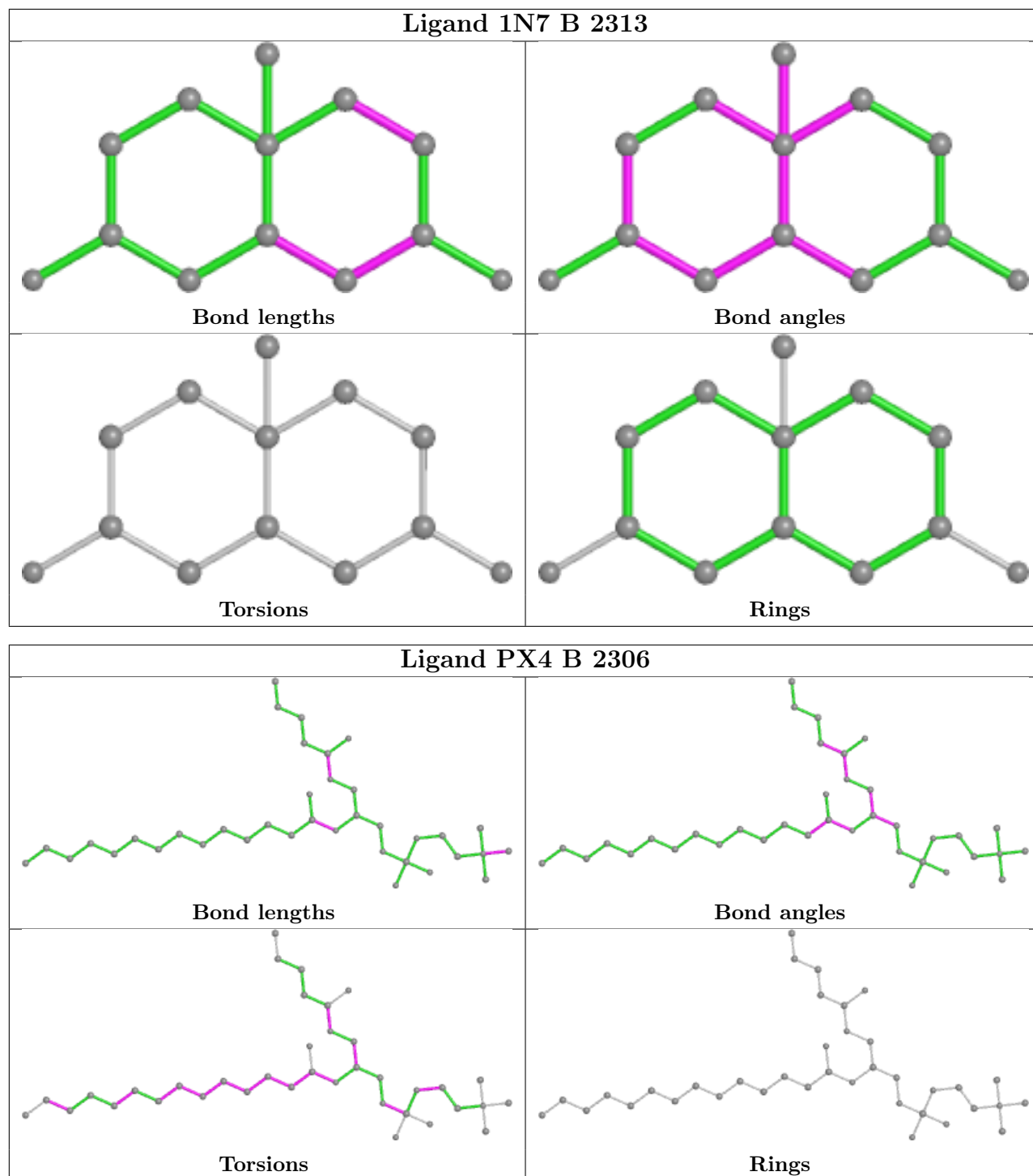












## 5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues

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	230/285 (80%)	0.71	14 (6%) 21 22	46, 100, 189, 231	0
1	B	223/285 (78%)	0.80	23 (10%) 6 6	44, 93, 179, 277	0
All	All	453/570 (79%)	0.75	37 (8%) 11 12	44, 97, 183, 277	0

The worst 5 of 37 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	2095	PHE	8.6
1	A	1095	PHE	8.3
1	B	2094	GLY	8.2
1	B	2037	PHE	6.7
1	B	2220	ALA	6.3

### 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.

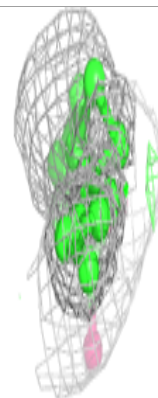
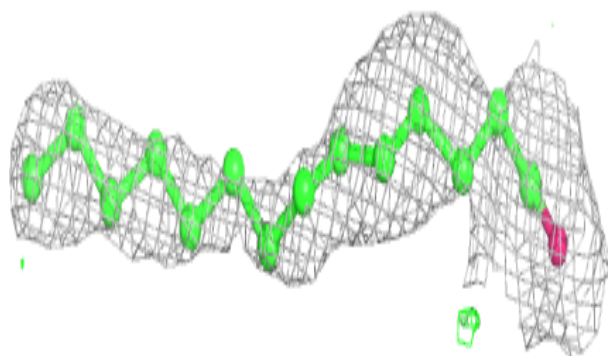
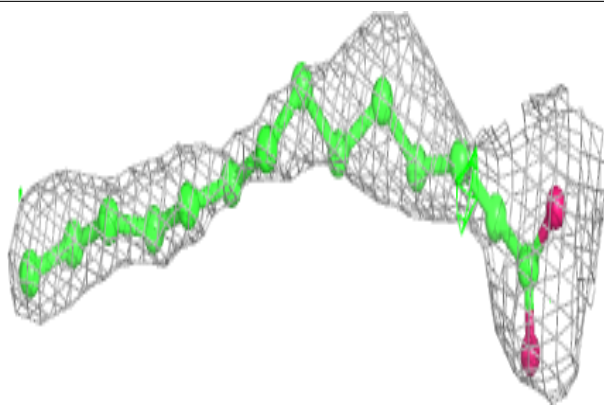
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
6	SO4	A	1314	5/5	0.14	0.29	297,298,300,302	0
2	PX4	B	2302	16/46	0.52	0.29	85,106,158,158	0
2	PX4	A	1310	20/46	0.55	0.39	87,111,146,147	0
2	PX4	B	2310	14/46	0.57	0.48	140,177,292,292	0
3	1N7	B	2313	13/43	0.61	0.30	134,153,166,178	0
3	1N7	A	1307	12/43	0.67	0.48	130,150,167,174	0
6	SO4	B	2317	5/5	0.72	0.25	293,293,294,296	0
2	PX4	A	1302	20/46	0.73	0.27	98,113,154,155	0
2	PX4	B	2308	41/46	0.77	0.37	74,126,188,206	0
2	PX4	A	1303	41/46	0.77	0.36	75,138,171,209	0
2	PX4	B	2309	21/46	0.78	0.30	63,101,121,129	0
2	PX4	B	2307	17/46	0.80	0.27	101,110,129,134	0
2	PX4	B	2303	21/46	0.80	0.25	64,103,117,183	0
3	1N7	A	1305	27/43	0.81	0.37	103,157,181,187	0
3	1N7	B	2312	13/43	0.84	0.19	128,146,155,160	0
3	1N7	B	2311	26/43	0.85	0.32	126,154,185,186	0
5	NA	B	2316	1/1	0.85	0.37	78,78,78,78	0
5	NA	A	1312	1/1	0.86	0.27	63,63,63,63	0
3	1N7	A	1304	22/43	0.86	0.40	127,154,180,188	0
2	PX4	B	2305	43/46	0.86	0.32	64,101,173,191	0
4	MGX	A	1308	5/5	0.86	0.20	110,110,119,121	0
2	PX4	B	2301	46/46	0.87	0.31	46,109,191,222	0
4	MGX	B	2314	5/5	0.87	0.23	111,115,123,124	0
3	1N7	A	1311	25/43	0.89	0.37	125,157,164,190	0
3	1N7	A	1306	13/43	0.89	0.23	109,143,161,165	0
5	NA	A	1313	1/1	0.91	0.20	74,74,74,74	0
2	PX4	A	1301	40/46	0.91	0.26	76,100,145,183	0
2	PX4	A	1309	41/46	0.93	0.22	72,101,143,159	0
2	PX4	B	2306	37/46	0.95	0.19	58,93,127,140	0
2	PX4	B	2304	38/46	0.95	0.20	59,91,117,131	0
5	NA	B	2315	1/1	0.96	0.23	54,54,54,54	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.

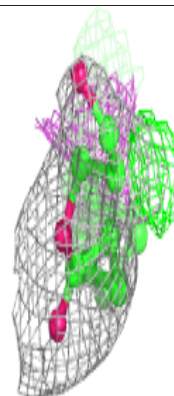
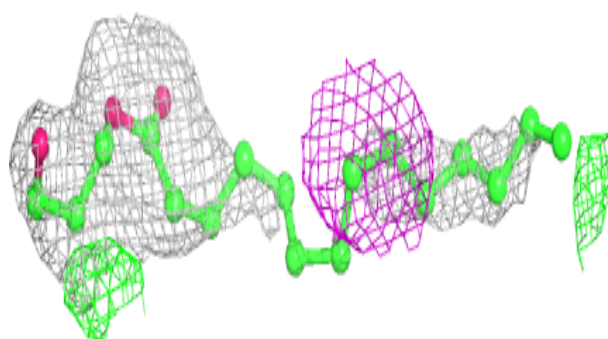
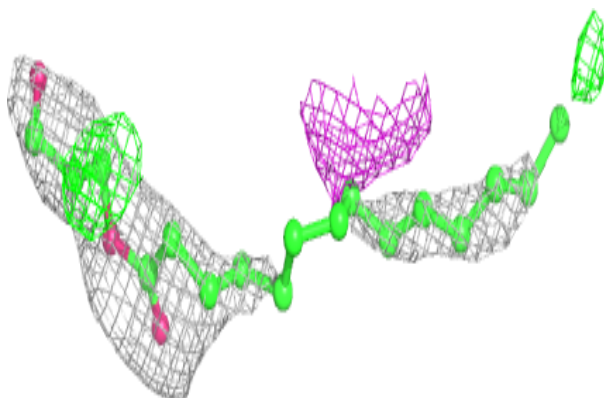


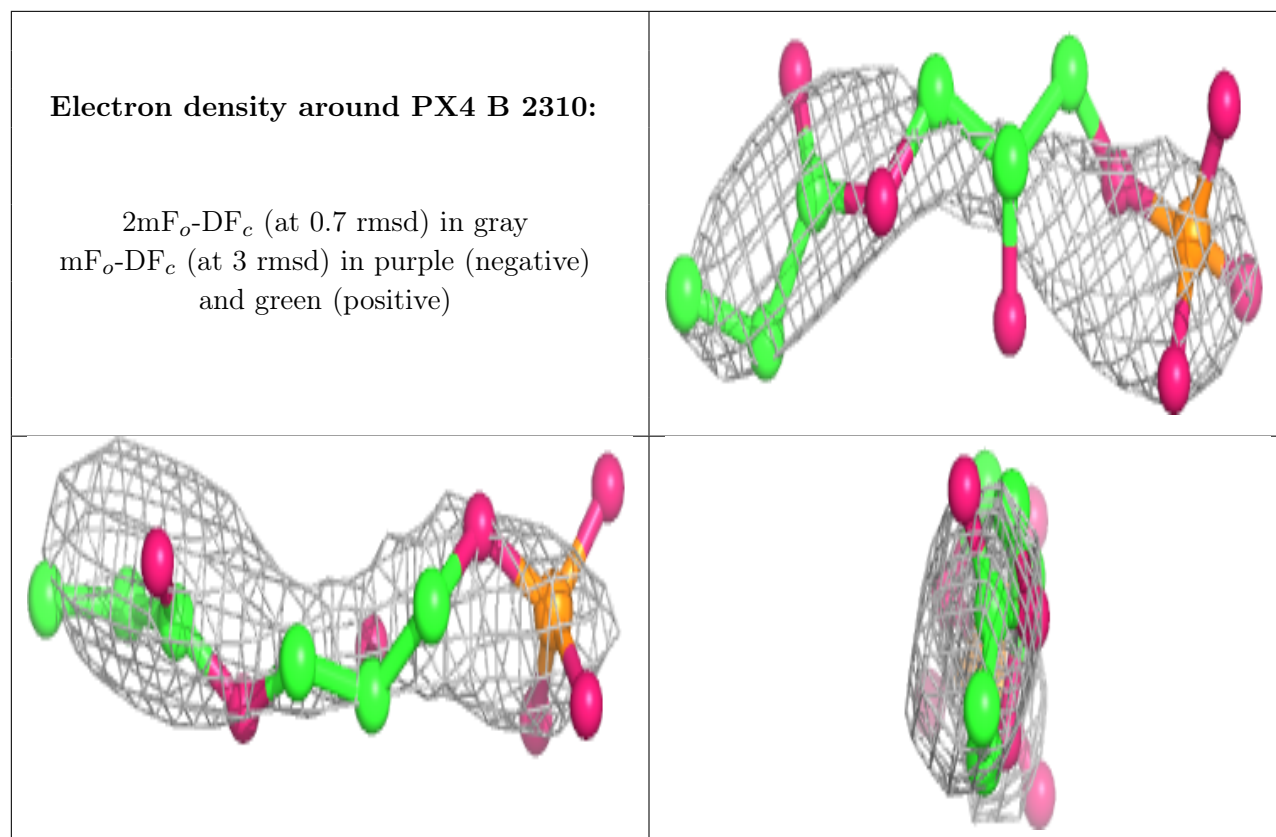
**Electron density around PX4 B 2302:**

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

**Electron density around PX4 A 1310:**

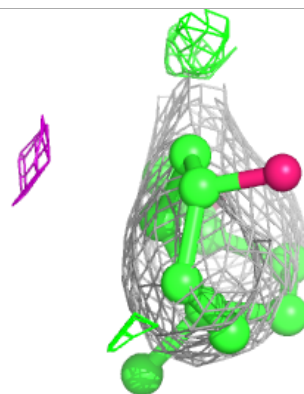
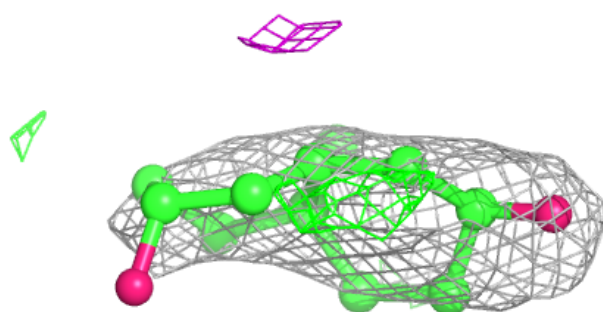
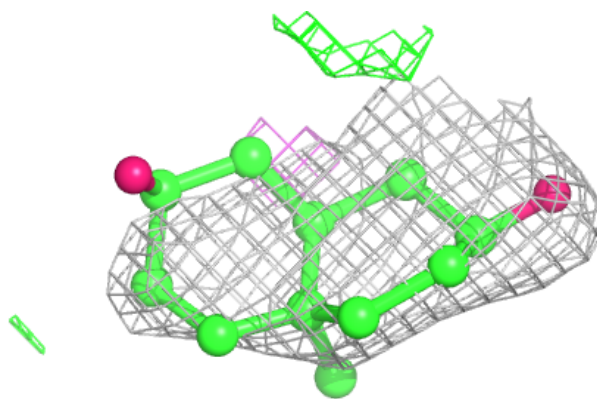
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 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





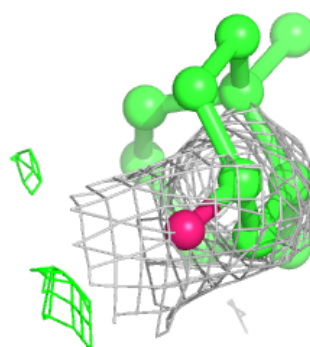
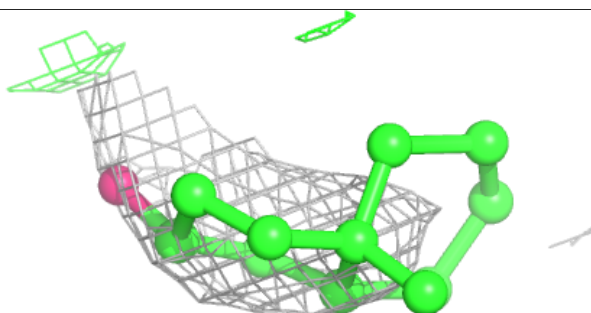
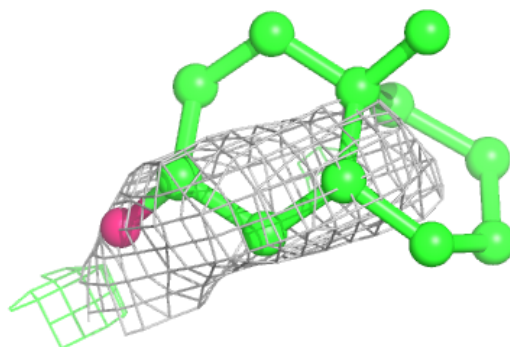
**Electron density around 1N7 B 2313:**

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and green (positive)

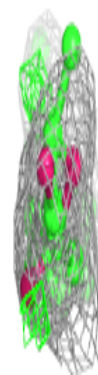
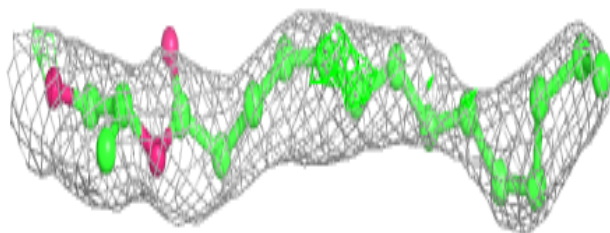
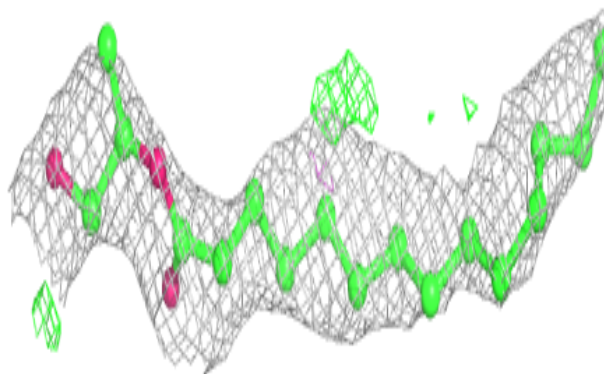


**Electron density around 1N7 A 1307:**

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and green (positive)

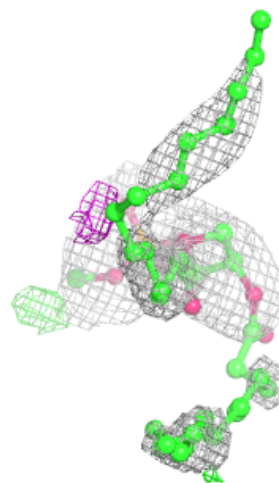
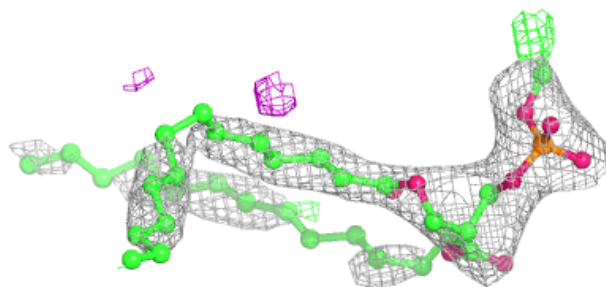
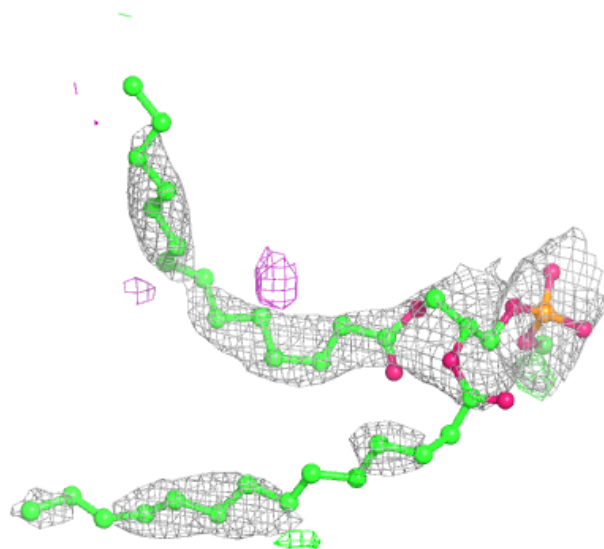
**Electron density around PX4 A 1302:**

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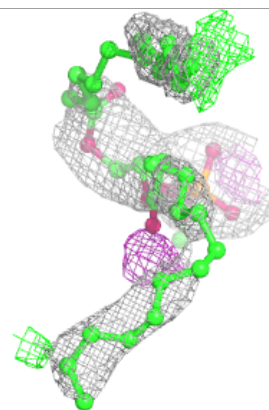
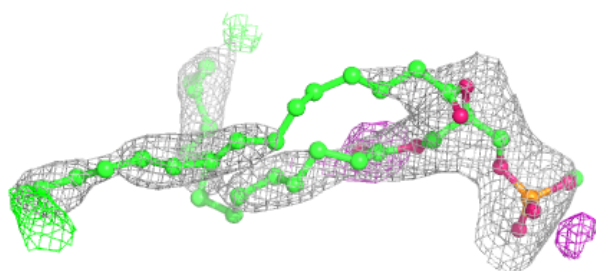
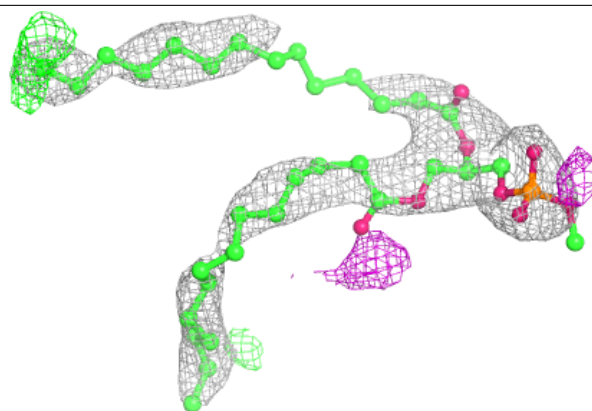
**Electron density around PX4 B 2308:**

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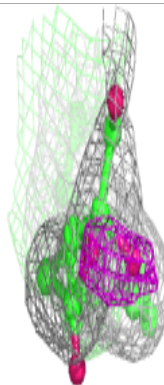
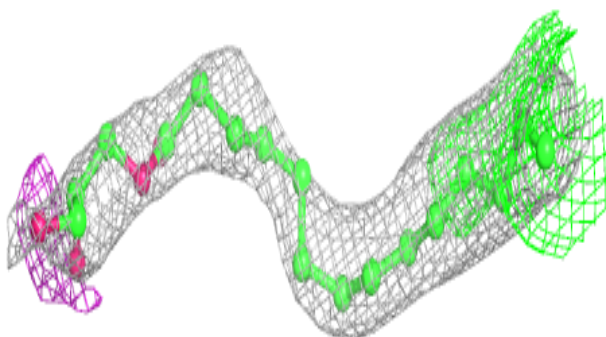
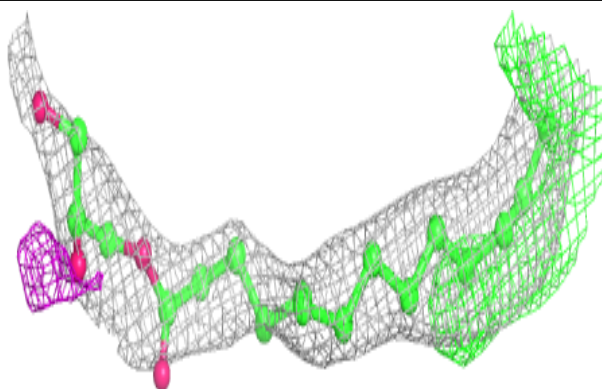


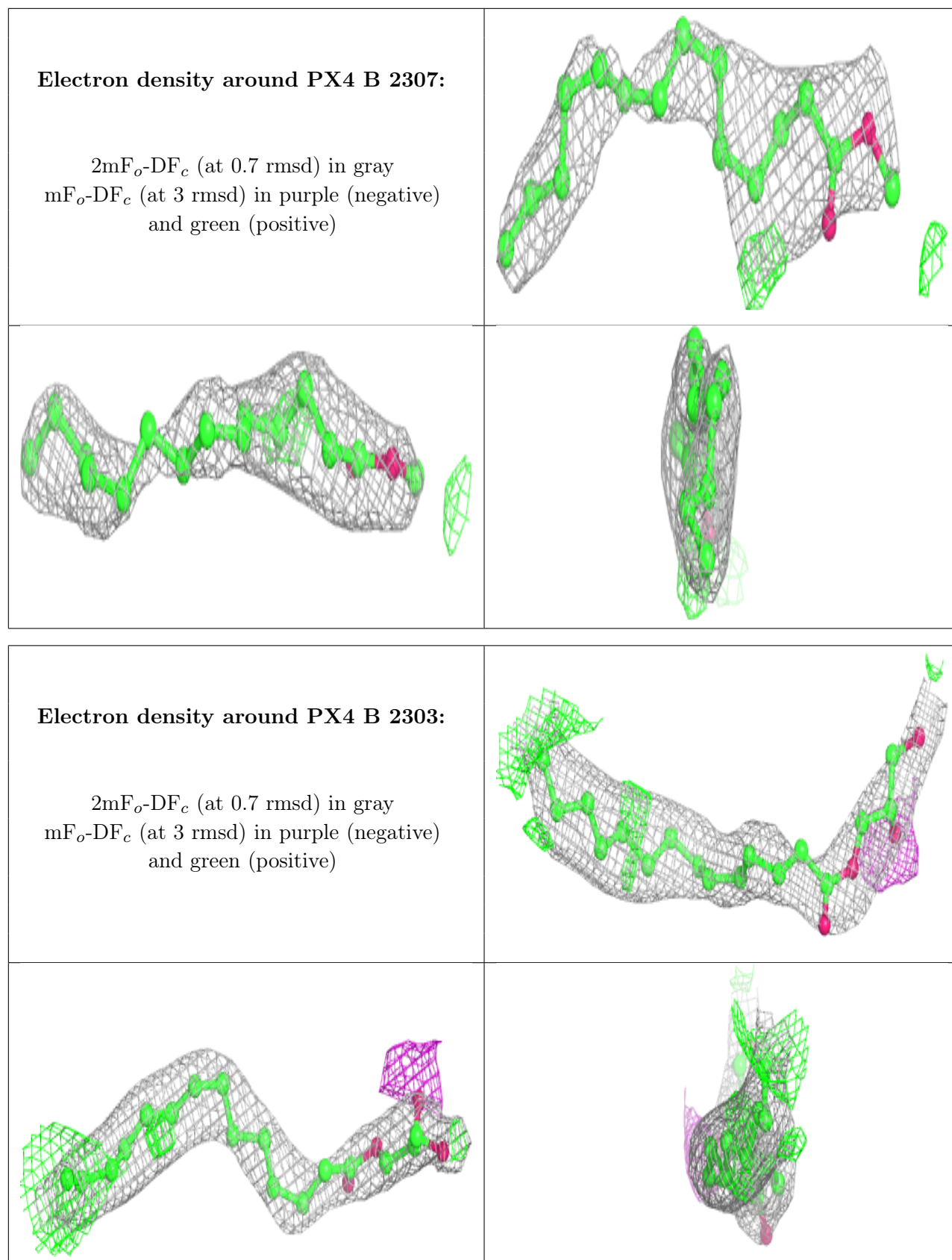
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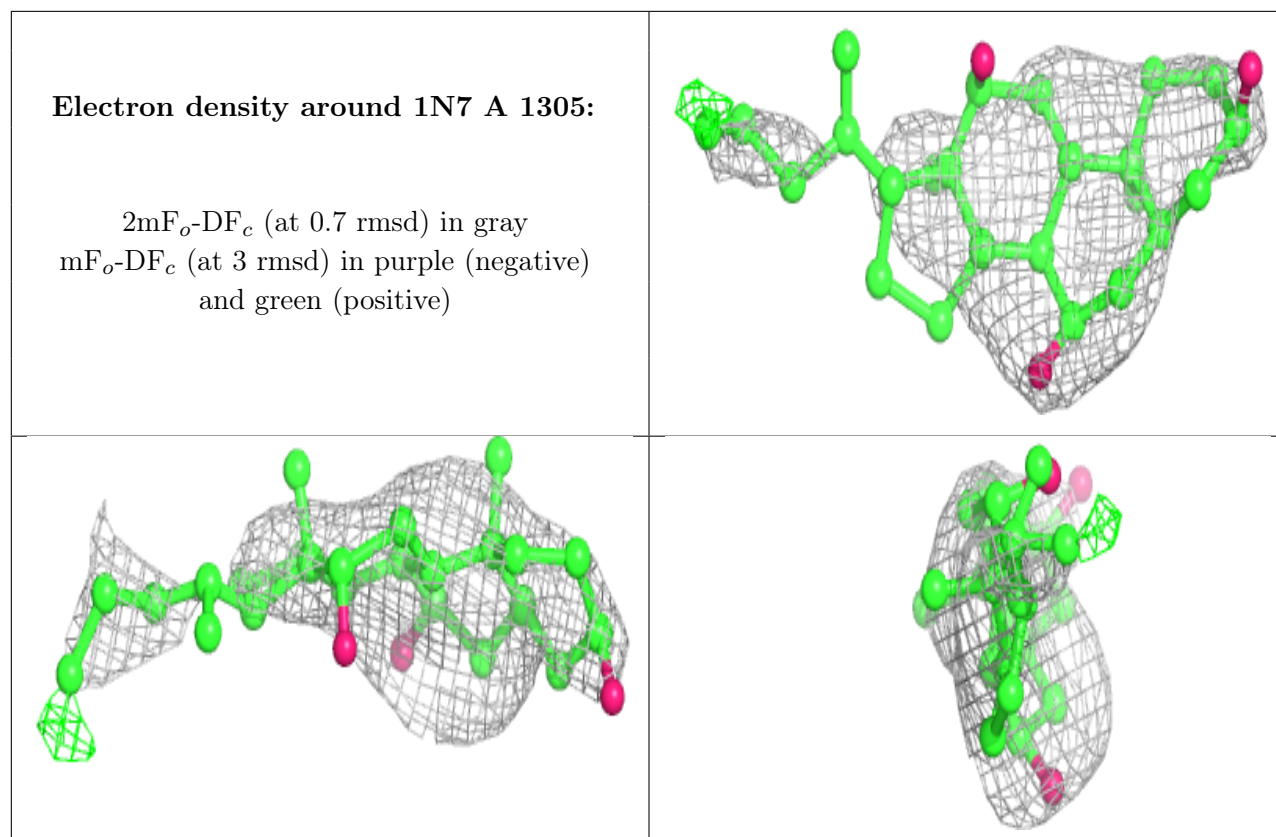
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 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

**Electron density around PX4 B 2309:**

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



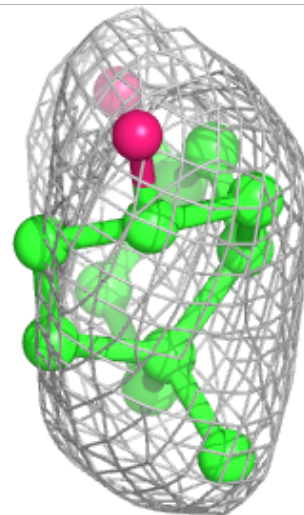
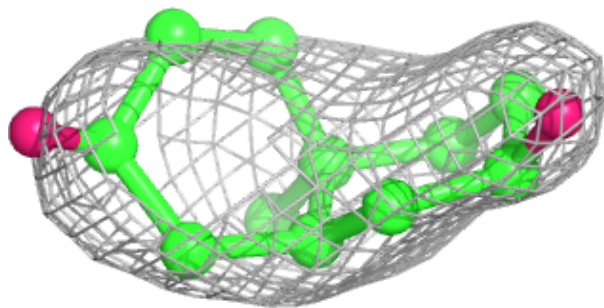
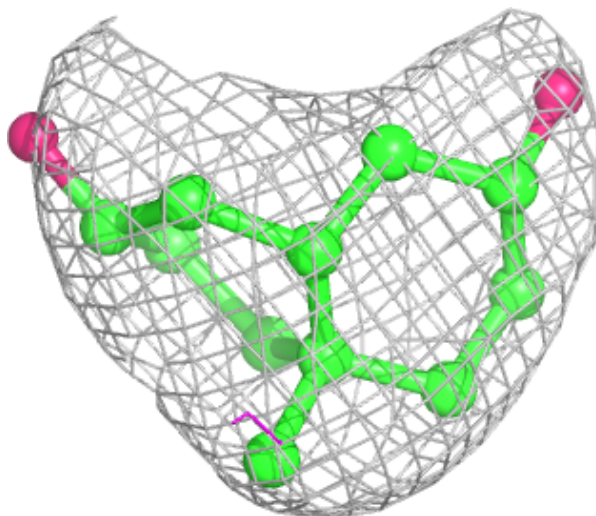






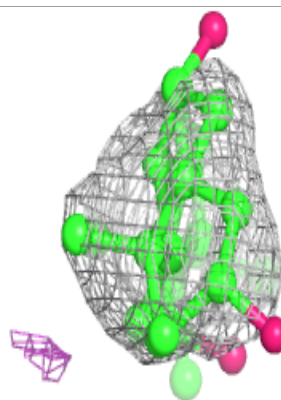
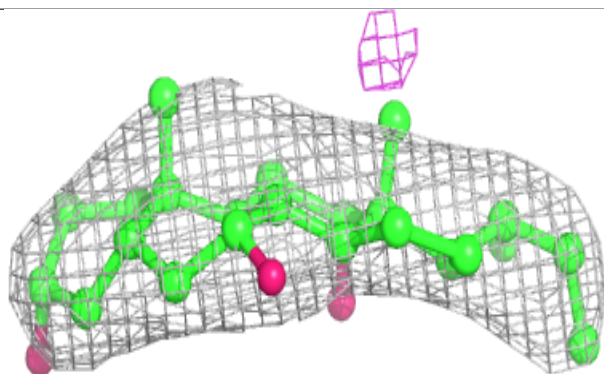
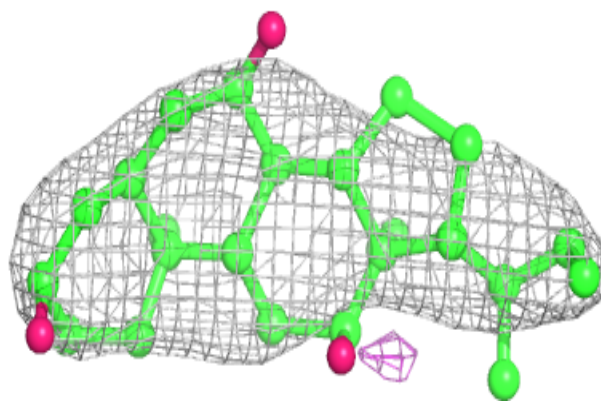
**Electron density around 1N7 B 2312:**

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

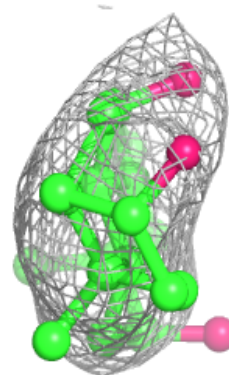
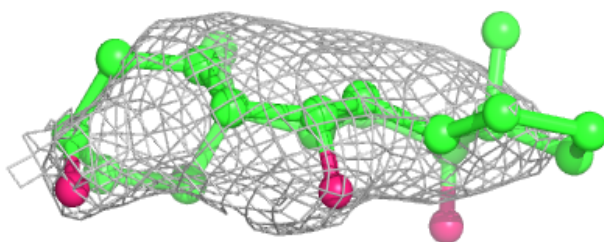
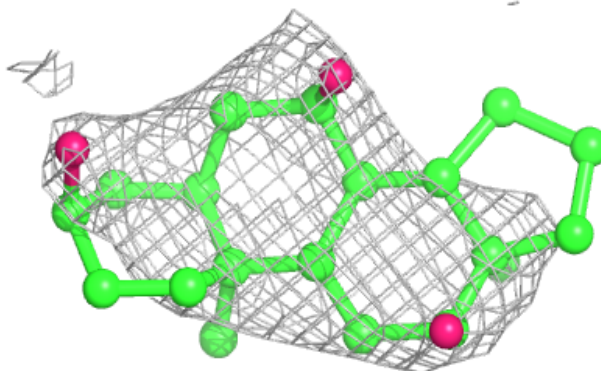


**Electron density around 1N7 B 2311:**

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

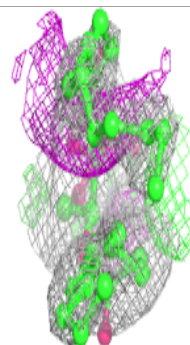
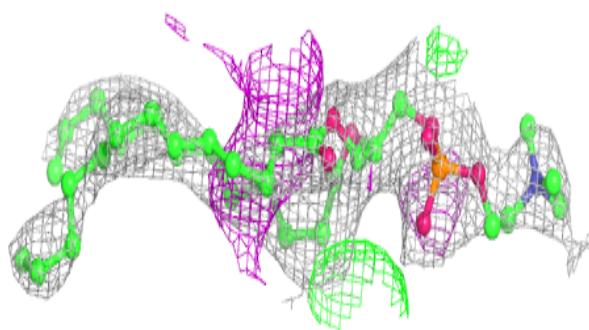
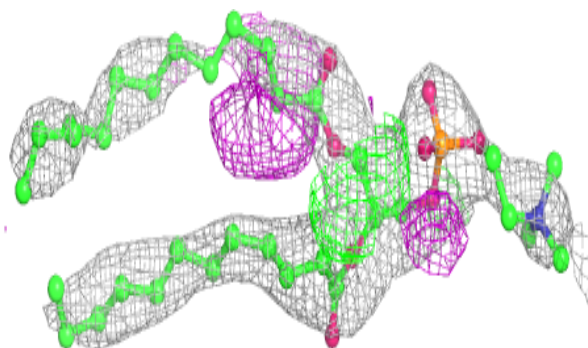
**Electron density around 1N7 A 1304:**

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

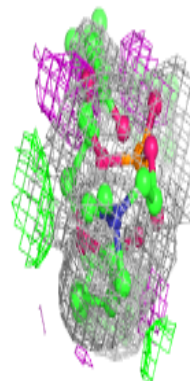
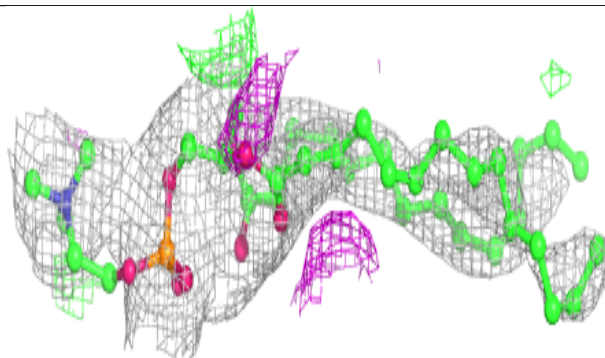
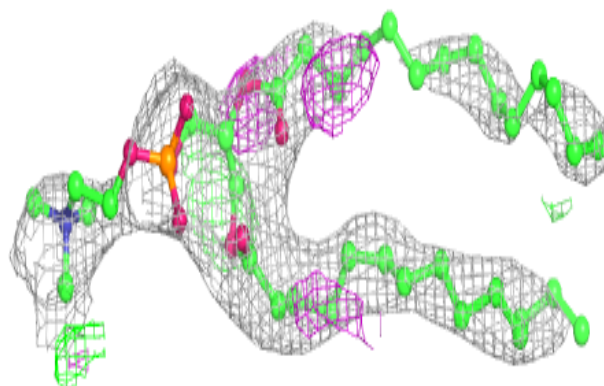


**Electron density around PX4 B 2305:**

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

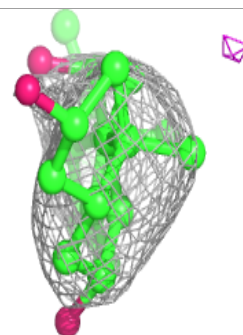
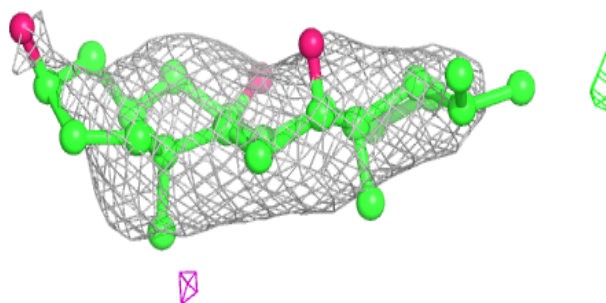
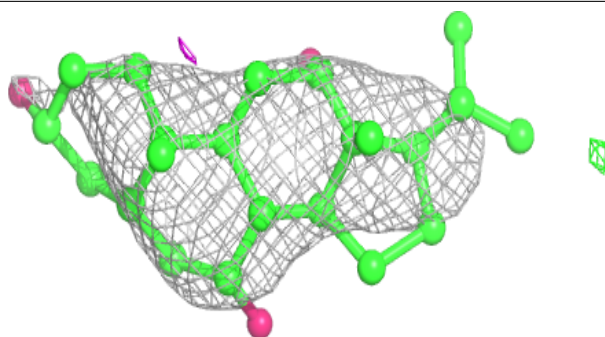
**Electron density around PX4 B 2301:**

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

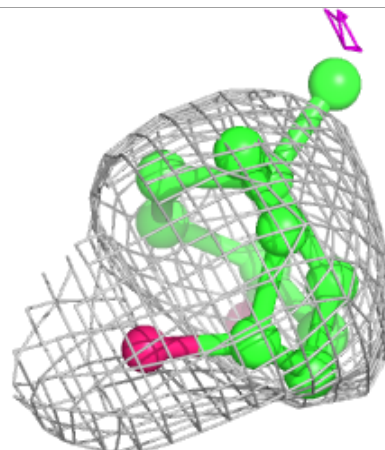
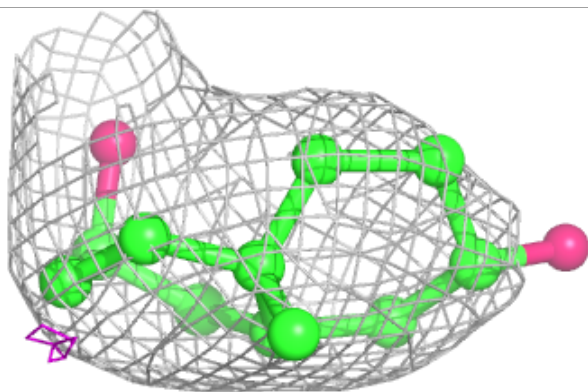
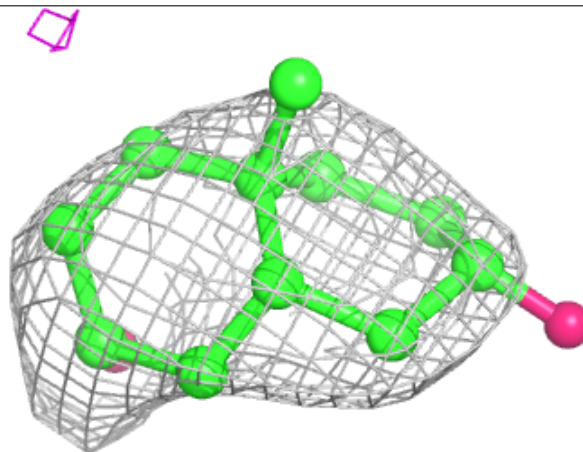


**Electron density around 1N7 A 1311:**

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

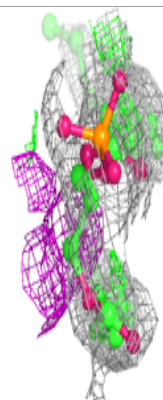
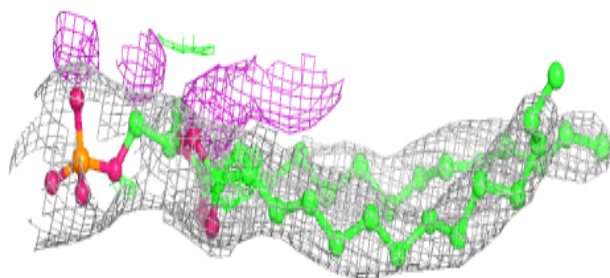
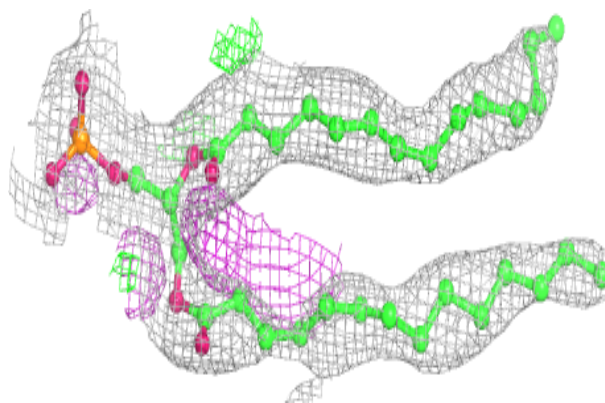
**Electron density around 1N7 A 1306:**

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

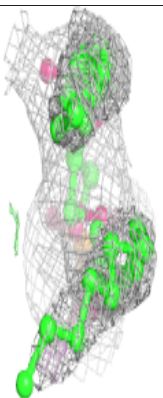
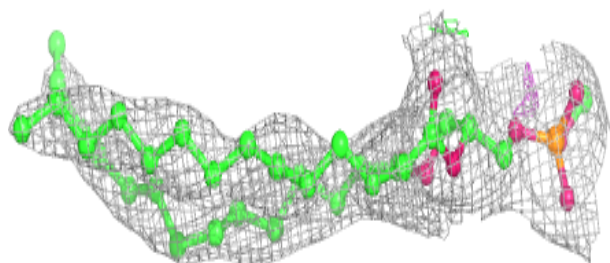
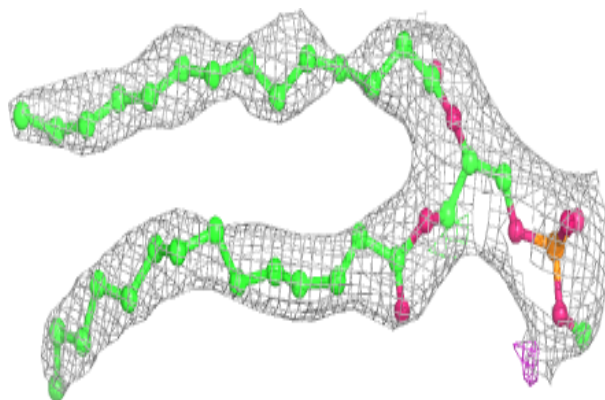


**Electron density around PX4 A 1301:**

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

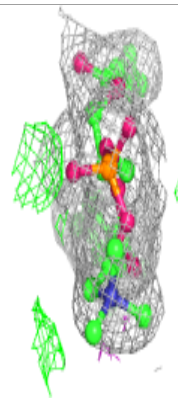
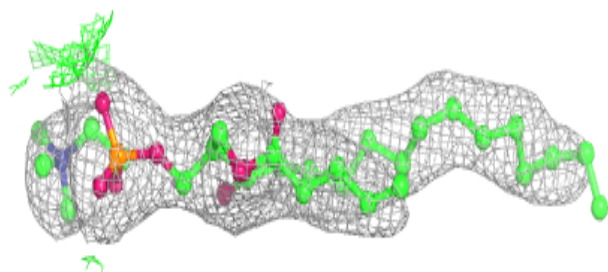
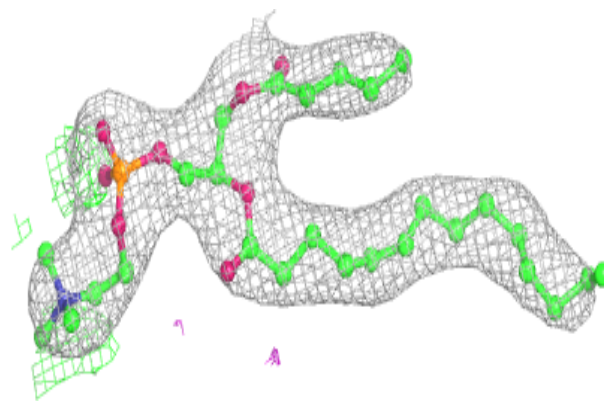
**Electron density around PX4 A 1309:**

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

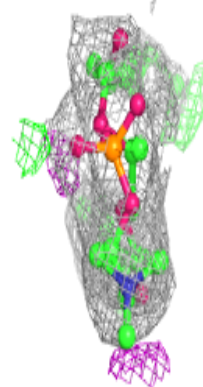
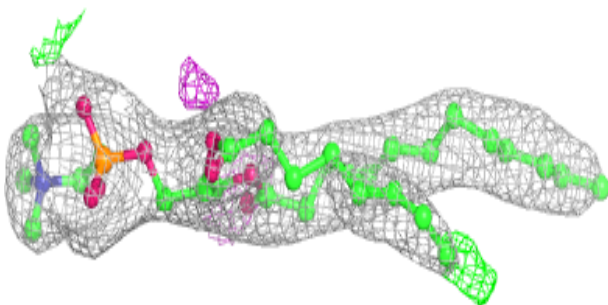
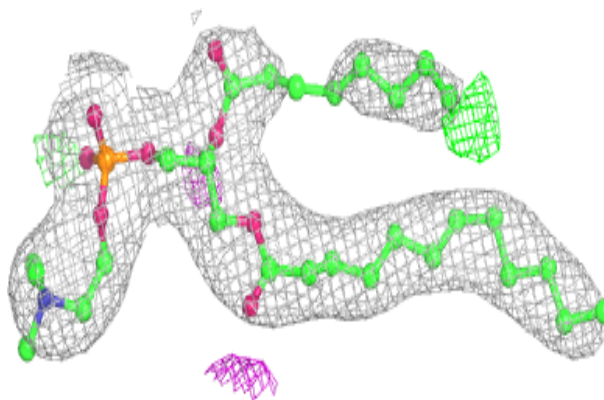


**Electron density around PX4 B 2306:**

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

**Electron density around PX4 B 2304:**

$2mF_o-DF_c$  (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.