



# wwPDB X-ray Structure Validation Summary Report ⓘ

Sep 19, 2020 – 09:39 AM BST

PDB ID : 6Q4O  
Title : Fusidic acid bound AcrB\_I27A  
Authors : Tam, H.K.; Pos, K.M.  
Deposited on : 2018-12-06  
Resolution : 2.80 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 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 : 2.14.6  
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) : 2.14.6

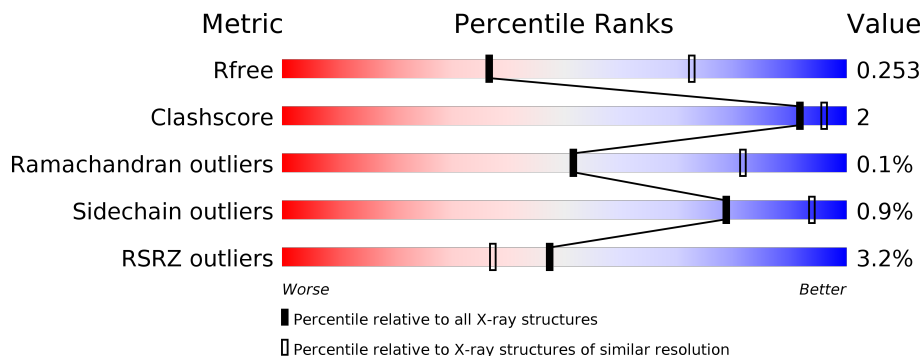
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.80 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	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on 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	1057	
1	B	1057	
1	C	1057	
2	D	169	
2	E	169	

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:

<b>Mol</b>	<b>Type</b>	<b>Chain</b>	<b>Res</b>	<b>Chirality</b>	<b>Geometry</b>	<b>Clashes</b>	<b>Electron density</b>
12	PTY	C	1119	-	-	-	X
3	LMT	A	1101	-	-	-	X
3	LMT	A	1103	-	-	-	X
5	DDQ	A	1107	-	-	-	X
5	DDQ	A	1109	-	-	-	X
7	HEX	B	1117	-	-	-	X
7	HEX	C	1114	-	-	-	X

## 2 Entry composition [i](#)

There are 14 unique types of molecules in this entry. The entry contains 27628 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 Multidrug efflux pump subunit AcrB.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	1042	Total 7952	C 5115	N 1314	O 1479	S 44	0	4	0
1	B	1034	Total 7860	C 5060	N 1296	O 1460	S 44	0	1	0
1	C	1035	Total 7871	C 5063	N 1303	O 1461	S 44	0	1	0

There are 27 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	27	ALA	ILE	engineered mutation	UNP P31224
A	1050	LEU	-	expression tag	UNP P31224
A	1051	GLU	-	expression tag	UNP P31224
A	1052	HIS	-	expression tag	UNP P31224
A	1053	HIS	-	expression tag	UNP P31224
A	1054	HIS	-	expression tag	UNP P31224
A	1055	HIS	-	expression tag	UNP P31224
A	1056	HIS	-	expression tag	UNP P31224
A	1057	HIS	-	expression tag	UNP P31224
B	27	ALA	ILE	engineered mutation	UNP P31224
B	1050	LEU	-	expression tag	UNP P31224
B	1051	GLU	-	expression tag	UNP P31224
B	1052	HIS	-	expression tag	UNP P31224
B	1053	HIS	-	expression tag	UNP P31224
B	1054	HIS	-	expression tag	UNP P31224
B	1055	HIS	-	expression tag	UNP P31224
B	1056	HIS	-	expression tag	UNP P31224
B	1057	HIS	-	expression tag	UNP P31224
C	27	ALA	ILE	engineered mutation	UNP P31224
C	1050	LEU	-	expression tag	UNP P31224
C	1051	GLU	-	expression tag	UNP P31224
C	1052	HIS	-	expression tag	UNP P31224
C	1053	HIS	-	expression tag	UNP P31224

*Continued on next page...*

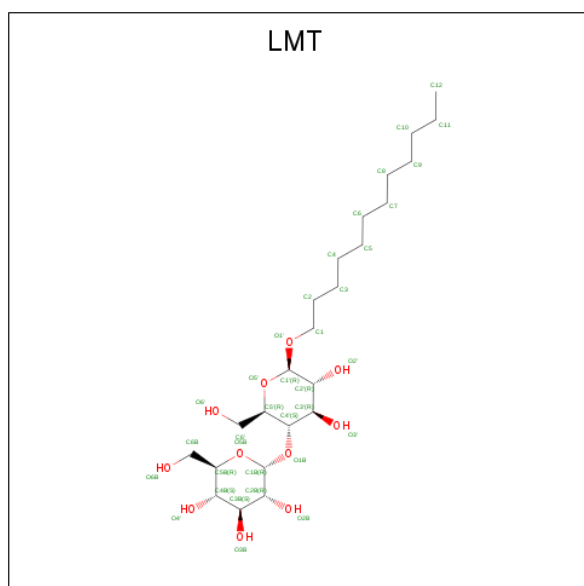
Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
C	1054	HIS	-	expression tag	UNP P31224
C	1055	HIS	-	expression tag	UNP P31224
C	1056	HIS	-	expression tag	UNP P31224
C	1057	HIS	-	expression tag	UNP P31224

- Molecule 2 is a protein called DARPIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	D	156	1182	745	207	229	1	0	0	0
2	E	154	1167	736	204	226	1	0	0	0

- Molecule 3 is DODECYL-BETA-D-MALTOSE (three-letter code: LMT) (formula:  $C_{24}H_{46}O_{11}$ ).



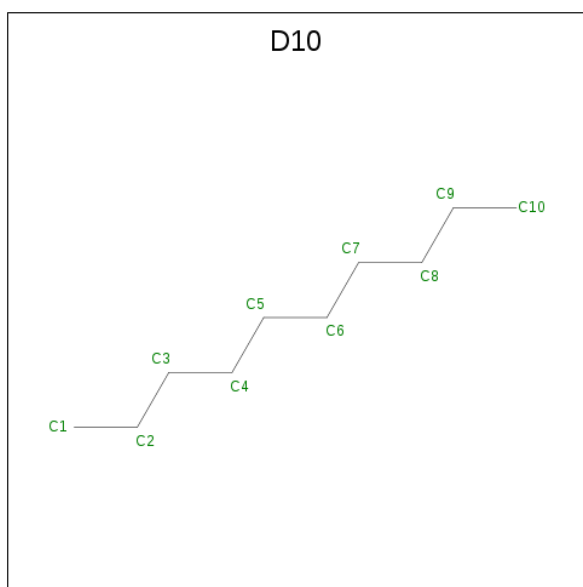
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
3	A	1	35	24	11	0	0
3	A	1	35	24	11	0	0
3	A	1	35	24	11	0	0
3	A	1	35	24	11	0	0
3	B	1	35	24	11	0	0

Continued on next page...

Continued from previous page...

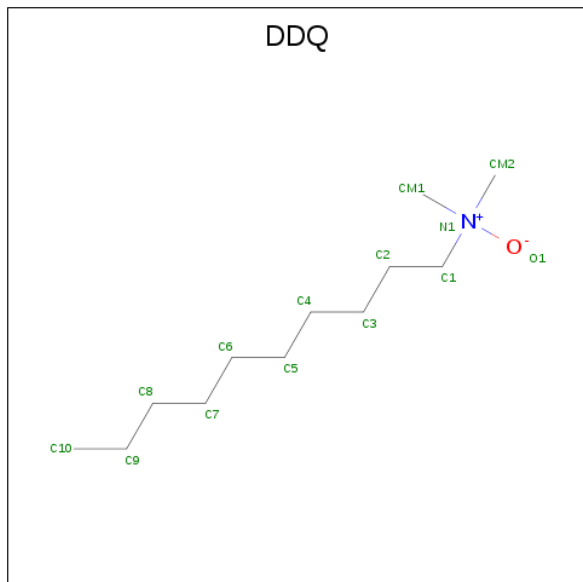
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	B	1	Total	C	O	0	0
			35	24	11		
3	C	1	Total	C	O	0	0
			35	24	11		
3	C	1	Total	C	O	0	0
			35	24	11		

- Molecule 4 is DECANE (three-letter code: D10) (formula: C<sub>10</sub>H<sub>22</sub>).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	C	0	0
			10	10		
4	A	1	Total	C	0	0
			10	10		
4	B	1	Total	C	0	0
			10	10		
4	B	1	Total	C	0	0
			10	10		
4	B	1	Total	C	0	0
			10	10		
4	C	1	Total	C	0	0
			10	10		
4	C	1	Total	C	0	0
			10	10		
4	C	1	Total	C	0	0
			10	10		

- Molecule 5 is DECYLAMINE-N,N-DIMETHYL-N-OXIDE (three-letter code: DDQ) (formula: C<sub>12</sub>H<sub>27</sub>NO).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
5	A	1	Total	C	N	O	0	0
			14	12	1	1		
5	A	1	Total	C	N	O	0	0
			14	12	1	1		
5	A	1	Total	C	N	O	0	0
			14	12	1	1		
5	B	1	Total	C	N	O	0	0
			14	12	1	1		
5	B	1	Total	C	N	O	0	0
			14	12	1	1		
5	B	1	Total	C	N	O	0	0
			14	12	1	1		
5	B	1	Total	C	N	O	0	0
			14	12	1	1		
5	C	1	Total	C	N	O	0	0
			14	12	1	1		
5	C	1	Total	C	N	O	0	0
			14	12	1	1		

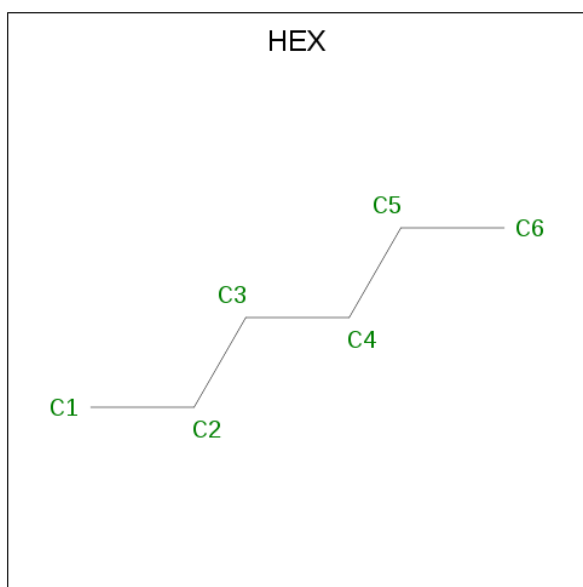
- Molecule 6 is GLYCEROL (three-letter code: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total C O 6 3 3	0	0
6	A	1	Total C O 6 3 3	0	0
6	B	1	Total C O 6 3 3	0	0
6	B	1	Total C O 6 3 3	0	0
6	B	1	Total C O 6 3 3	0	0
6	C	1	Total C O 6 3 3	0	0
6	C	1	Total C O 6 3 3	0	0
6	C	1	Total C O 6 3 3	0	0
6	C	1	Total C O 6 3 3	0	0
6	D	1	Total C O 6 3 3	0	0
6	E	1	Total C O 6 3 3	0	0

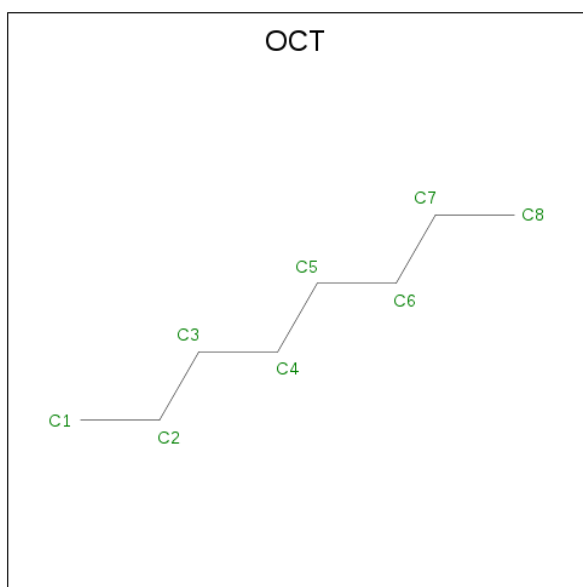
- Molecule 7 is HEXANE (three-letter code: HEX) (formula: C<sub>6</sub>H<sub>14</sub>).





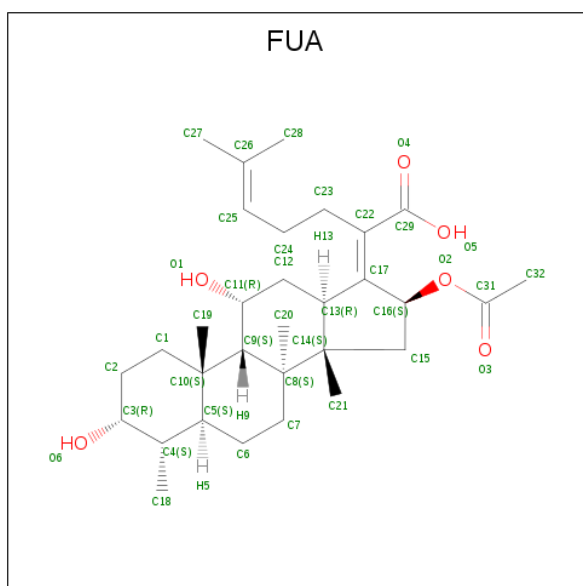
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	1	Total C 6 6	0	0
7	B	1	Total C 6 6	0	0
7	B	1	Total C 6 6	0	0
7	B	1	Total C 6 6	0	0
7	B	1	Total C 6 6	0	0
7	C	1	Total C 6 6	0	0
7	C	1	Total C 6 6	0	0
7	C	1	Total C 6 6	0	0
7	C	1	Total C 6 6	0	0

- Molecule 8 is N-OCTANE (three-letter code: OCT) (formula: C<sub>8</sub>H<sub>18</sub>).



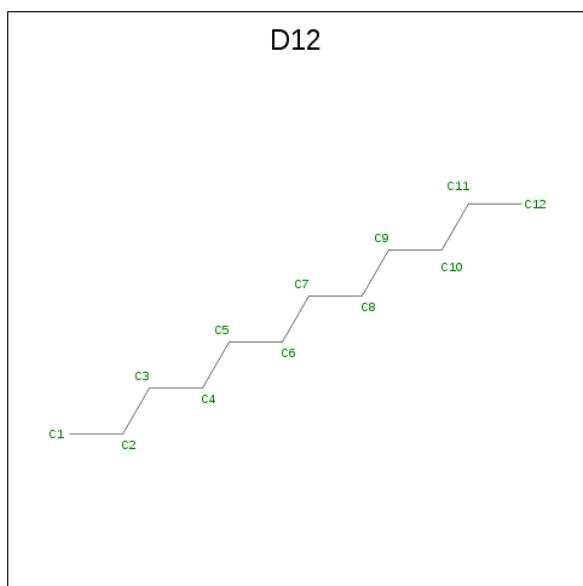
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	1	Total C 8 8	0	0
8	A	1	Total C 8 8	0	0
8	B	1	Total C 8 8	0	0
8	B	1	Total C 8 8	0	0

- Molecule 9 is FUSIDIC ACID (three-letter code: FUA) (formula:  $C_{31}H_{48}O_6$ ) (labeled as "Ligand of Interest" by author).



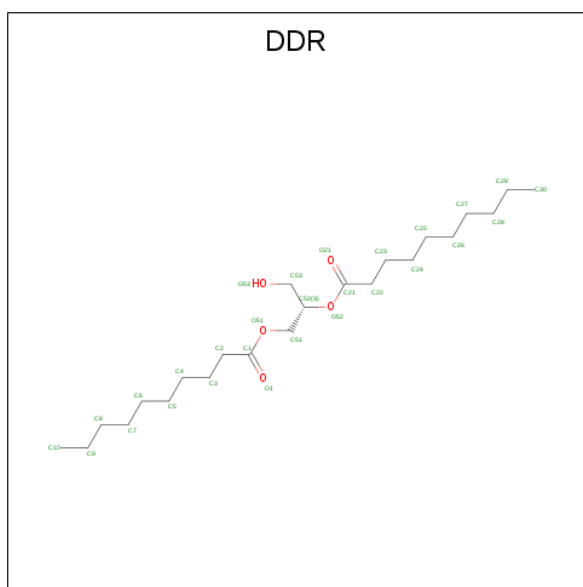
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	B	1	Total	C O	0	0
			37	31 6		

- Molecule 10 is DODECANE (three-letter code: D12) (formula:  $C_{12}H_{26}$ ).



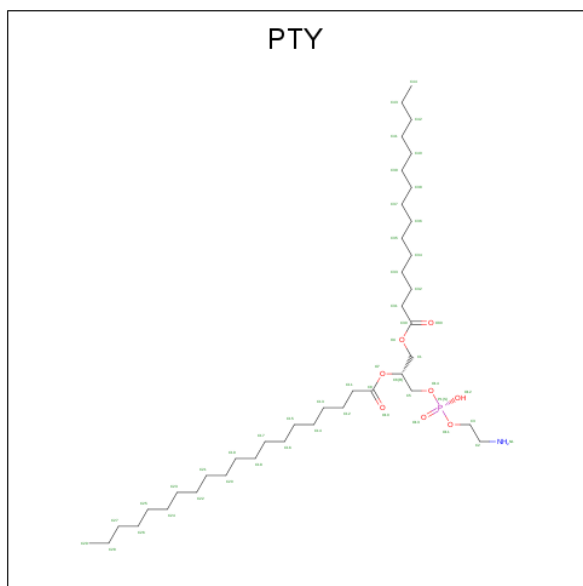
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	B	1	Total	C	0	0
			12	12		
10	C	1	Total	C	0	0
			12	12		
10	C	1	Total	C	0	0
			12	12		
10	C	1	Total	C	0	0
			12	12		

- Molecule 11 is (2S)-3-hydroxypropane-1,2-diyl didecanoate (three-letter code: DDR) (formula:  $C_{23}H_{44}O_5$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
11	B	1	Total	C	O	0	0
			28	23	5		

- Molecule 12 is PHOSPHATIDYLETHANOLAMINE (three-letter code: PTY) (formula:  $C_{40}H_{80}NO_8P$ ).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
12	C	1	Total	C	N	O	P	0	0
			50	40	1	8	1		
12	C	1	Total	C	N	O	P	0	0
			50	40	1	8	1		

*Continued on next page...*

Continued from previous page...

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
12	C	1	Total	C	N	O	P	0	0
			50	40	1	8	1		
12	C	1	Total	C	N	O	P	0	0
			50	40	1	8	1		

- Molecule 13 is SULFATE ION (three-letter code: SO4) (formula: O<sub>4</sub>S).

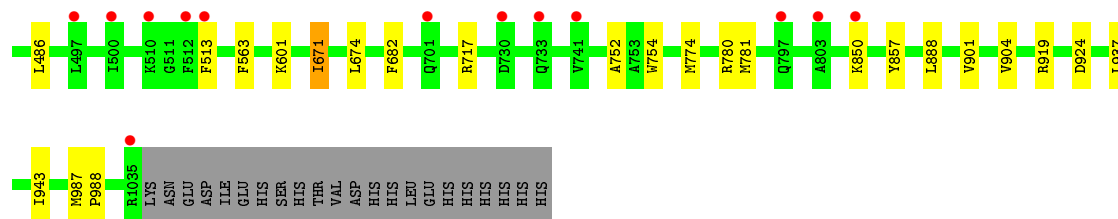


Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
13	C	1	Total	O S	0	0
			5	4 1		

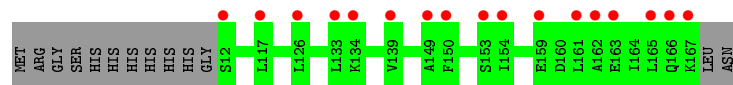
- Molecule 14 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
14	A	197	Total	O	0	0
			197	197		
14	B	173	Total	O	0	0
			173	173		
14	C	227	Total	O	0	0
			227	227		
14	D	34	Total	O	0	0
			34	34		
14	E	9	Total	O	0	0
			9	9		

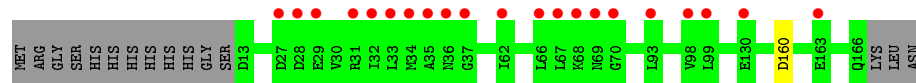
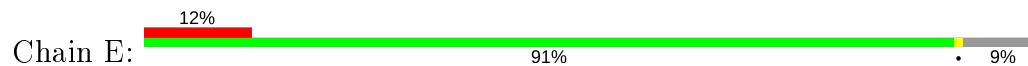




• Molecule 2: DARPIN



• Molecule 2: DARPIN



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	145.20Å 162.57Å 243.46Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.52 – 2.80 47.47 – 2.80	Depositor EDS
% Data completeness (in resolution range)	98.8 (47.52-2.80) 98.8 (47.47-2.80)	Depositor EDS
$R_{merge}$	0.19	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.68 (at 2.81Å)	Xtrriage
Refinement program	REFMAC 5.8.0238	Depositor
R, $R_{free}$	0.212 , 0.256 0.213 , 0.253	Depositor DCC
$R_{free}$ test set	6961 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	45.4	Xtrriage
Anisotropy	0.383	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 42.9	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.91	EDS
Total number of atoms	27628	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	50.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.48% 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: GOL, D10, D12, DDR, DDQ, HEX, SO4, PTY, FUA, LMT, OCT

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	0.65	0/8116	0.71	0/11018
1	B	0.65	0/8014	0.70	0/10883
1	C	0.65	0/8024	0.70	0/10895
2	D	0.67	0/1201	0.70	0/1632
2	E	0.67	0/1186	0.70	0/1613
All	All	0.65	0/26541	0.70	0/36041

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	7952	0	8100	36	0
1	B	7860	0	8009	23	0
1	C	7871	0	8026	33	0
2	D	1182	0	1169	0	0
2	E	1167	0	1151	0	0
3	A	140	0	184	0	0
3	B	70	0	92	1	0
3	C	70	0	92	0	0

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	A	20	0	44	0	0
4	B	30	0	66	0	0
4	C	30	0	66	0	0
5	A	42	0	81	0	0
5	B	56	0	108	0	0
5	C	28	0	54	0	0
6	A	12	0	16	0	0
6	B	18	0	24	0	0
6	C	24	0	32	0	0
6	D	6	0	8	0	0
6	E	6	0	8	0	0
7	A	6	0	14	0	0
7	B	24	0	56	0	0
7	C	24	0	56	0	0
8	A	16	0	36	0	0
8	B	16	0	36	1	0
9	B	37	0	47	6	0
10	B	12	0	26	0	0
10	C	36	0	78	0	0
11	B	28	0	44	0	0
12	C	200	0	316	2	0
13	C	5	0	0	0	0
14	A	197	0	0	0	0
14	B	173	0	0	0	0
14	C	227	0	0	0	0
14	D	34	0	0	0	0
14	E	9	0	0	0	0
All	All	27628	0	28039	90	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.

The worst 5 of 90 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:671:ILE:HD11	1:C:674:LEU:HD12	1.64	0.80
9:B:1101:FUA:H202	9:B:1101:FUA:H5	1.66	0.76
1:A:968:VAL:HG11	1:A:1023:PRO:HG3	1.68	0.75
1:C:360:GLN:HG2	1:C:513:PHE:CG	2.32	0.65
1:C:57:VAL:HG21	1:C:86:GLY:HA2	1.80	0.64

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	1044/1057 (99%)	1014 (97%)	27 (3%)	3 (0%)	41	72
1	B	1033/1057 (98%)	1012 (98%)	21 (2%)	0	100	100
1	C	1034/1057 (98%)	1014 (98%)	20 (2%)	0	100	100
2	D	154/169 (91%)	152 (99%)	2 (1%)	0	100	100
2	E	152/169 (90%)	150 (99%)	2 (1%)	0	100	100
All	All	3417/3509 (97%)	3342 (98%)	72 (2%)	3 (0%)	51	81

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1034	SER
1	A	126	GLY
1	A	1037	ASN

#### 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	851/862 (99%)	845 (99%)	6 (1%)	84	95
1	B	840/862 (97%)	832 (99%)	8 (1%)	76	93
1	C	841/862 (98%)	832 (99%)	9 (1%)	73	92

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	D	121/132 (92%)	121 (100%)	0	100	100
2	E	119/132 (90%)	118 (99%)	1 (1%)	81	94
All	All	2772/2850 (97%)	2748 (99%)	24 (1%)	78	94

5 of 24 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	601	LYS
1	B	1032	ARG
1	C	919	ARG
1	B	610	PHE
1	B	801	PHE

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 6 such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1000	GLN
1	C	124	GLN
1	B	439	GLN
1	A	747	ASN
1	B	1000	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](#)

60 ligands are modelled in this entry.

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
4	D10	C	1104	-	9,9,9	0.11	0	8,8,8	0.07	0
4	D10	B	1106	-	9,9,9	0.11	0	8,8,8	0.05	0
5	DDQ	C	1106	-	10,13,13	2.24	1 (10%)	12,15,15	0.38	0
7	HEX	C	1115	-	5,5,5	0.15	0	4,4,4	0.10	0
6	GOL	D	201	-	5,5,5	0.11	0	5,5,5	0.29	0
5	DDQ	B	1108	-	10,13,13	2.29	1 (10%)	12,15,15	0.45	0
6	GOL	E	201	-	5,5,5	0.09	0	5,5,5	0.25	0
8	OCT	A	1114	-	7,7,7	0.13	0	6,6,6	0.07	0
10	D12	B	1120	-	11,11,11	0.30	0	10,10,10	0.42	0
5	DDQ	C	1107	-	10,13,13	2.29	1 (10%)	12,15,15	0.45	0
5	DDQ	A	1107	-	10,13,13	2.25	1 (10%)	12,15,15	0.50	0
5	DDQ	A	1109	-	10,13,13	2.32	1 (10%)	12,15,15	0.43	0
5	DDQ	B	1110	-	10,13,13	2.27	1 (10%)	12,15,15	0.55	0
6	GOL	A	1111	-	5,5,5	0.09	0	5,5,5	0.27	0
3	LMT	A	1104	-	36,36,36	0.49	0	47,47,47	0.65	0
13	SO4	C	1123	-	4,4,4	0.38	0	6,6,6	0.05	0
6	GOL	C	1109	-	5,5,5	0.10	0	5,5,5	0.31	0
4	D10	C	1105	-	9,9,9	0.11	0	8,8,8	0.11	0
4	D10	A	1105	-	9,9,9	0.09	0	8,8,8	0.08	0
6	GOL	B	1113	-	5,5,5	0.11	0	5,5,5	0.31	0
11	DDR	B	1121	-	27,27,27	1.24	2 (7%)	29,29,29	1.23	2 (6%)
12	PTY	C	1116	-	49,49,49	0.27	0	52,54,54	0.32	0
7	HEX	A	1112	-	5,5,5	0.14	0	4,4,4	0.08	0
4	D10	A	1106	-	9,9,9	0.11	0	8,8,8	0.06	0
3	LMT	C	1101	-	36,36,36	0.48	1 (2%)	47,47,47	0.70	0
5	DDQ	A	1108	-	10,13,13	2.27	1 (10%)	12,15,15	0.54	0
3	LMT	C	1102	-	36,36,36	0.63	1 (2%)	47,47,47	1.17	7 (14%)
8	OCT	A	1113	-	7,7,7	0.13	0	6,6,6	0.08	0
6	GOL	B	1111	-	5,5,5	0.09	0	5,5,5	0.24	0
4	D10	C	1103	-	9,9,9	0.11	0	8,8,8	0.06	0
6	GOL	C	1111	-	5,5,5	0.08	0	5,5,5	0.25	0
7	HEX	B	1116	-	5,5,5	0.15	0	4,4,4	0.09	0
10	D12	C	1122	-	11,11,11	0.27	0	10,10,10	0.46	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
8	OCT	B	1119	-	7,7,7	0.11	0	6,6,6	0.09	0
7	HEX	B	1117	-	5,5,5	0.15	0	4,4,4	0.11	0
3	LMT	B	1103	-	36,36,36	0.47	0	47,47,47	0.61	0
4	D10	B	1104	-	9,9,9	0.12	0	8,8,8	0.07	0
6	GOL	A	1110	-	5,5,5	0.11	0	5,5,5	0.29	0
6	GOL	C	1110	-	5,5,5	0.10	0	5,5,5	0.31	0
6	GOL	B	1112	-	5,5,5	0.09	0	5,5,5	0.27	0
5	DDQ	B	1109	-	10,13,13	2.28	1 (10%)	12,15,15	0.43	0
5	DDQ	B	1107	-	10,13,13	2.27	1 (10%)	12,15,15	0.39	0
12	PTY	C	1119	-	49,49,49	0.27	0	52,54,54	0.34	0
7	HEX	C	1112	-	5,5,5	0.14	0	4,4,4	0.08	0
3	LMT	B	1102	-	36,36,36	0.45	0	47,47,47	0.68	0
7	HEX	C	1114	-	5,5,5	0.15	0	4,4,4	0.10	0
9	FUA	B	1101	-	36,40,40	0.47	0	46,64,64	0.89	2 (4%)
12	PTY	C	1117	-	49,49,49	0.27	0	52,54,54	0.36	0
3	LMT	A	1103	-	36,36,36	0.55	0	47,47,47	1.06	5 (10%)
10	D12	C	1120	-	11,11,11	0.31	0	10,10,10	0.39	0
4	D10	B	1105	-	9,9,9	0.12	0	8,8,8	0.08	0
7	HEX	C	1113	-	5,5,5	0.14	0	4,4,4	0.08	0
8	OCT	B	1118	-	7,7,7	0.11	0	6,6,6	0.05	0
7	HEX	B	1114	-	5,5,5	0.15	0	4,4,4	0.07	0
7	HEX	B	1115	-	5,5,5	0.15	0	4,4,4	0.10	0
6	GOL	C	1108	-	5,5,5	0.08	0	5,5,5	0.25	0
3	LMT	A	1101	-	36,36,36	0.47	0	47,47,47	0.58	0
12	PTY	C	1118	-	49,49,49	0.27	0	52,54,54	0.32	0
3	LMT	A	1102	-	36,36,36	0.52	1 (2%)	47,47,47	0.72	0
10	D12	C	1121	-	11,11,11	0.29	0	10,10,10	0.46	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
4	D10	C	1104	-	-	3/7/7/7	-
4	D10	B	1106	-	-	2/7/7/7	-
5	DDQ	C	1106	-	-	2/11/11/11	-
7	HEX	C	1115	-	-	0/3/3/3	-
6	GOL	D	201	-	-	4/4/4/4	-
5	DDQ	B	1108	-	-	3/11/11/11	-

Continued on next page...

*Continued from previous page...*

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	GOL	E	201	-	-	0/4/4/4	-
8	OCT	A	1114	-	-	0/5/5/5	-
10	D12	B	1120	-	-	3/9/9/9	-
5	DDQ	C	1107	-	-	6/11/11/11	-
5	DDQ	A	1107	-	-	3/11/11/11	-
5	DDQ	A	1109	-	-	1/11/11/11	-
5	DDQ	B	1110	-	-	5/11/11/11	-
6	GOL	A	1111	-	-	1/4/4/4	-
3	LMT	A	1104	-	-	10/21/61/61	0/2/2/2
7	HEX	C	1114	-	-	0/3/3/3	-
6	GOL	C	1109	-	-	2/4/4/4	-
4	D10	C	1105	-	-	4/7/7/7	-
4	D10	A	1105	-	-	0/7/7/7	-
6	GOL	B	1113	-	-	2/4/4/4	-
11	DDR	B	1121	-	-	17/29/29/29	-
12	PTY	C	1116	-	-	31/53/53/53	-
7	HEX	A	1112	-	-	1/3/3/3	-
4	D10	A	1106	-	-	3/7/7/7	-
3	LMT	C	1101	-	-	10/21/61/61	0/2/2/2
5	DDQ	A	1108	-	-	1/11/11/11	-
3	LMT	C	1102	-	-	8/21/61/61	0/2/2/2
8	OCT	A	1113	-	-	0/5/5/5	-
6	GOL	B	1111	-	-	0/4/4/4	-
4	D10	C	1103	-	-	2/7/7/7	-
6	GOL	C	1111	-	-	0/4/4/4	-
7	HEX	B	1116	-	-	0/3/3/3	-
10	D12	C	1122	-	-	3/9/9/9	-
8	OCT	B	1119	-	-	4/5/5/5	-
7	HEX	B	1117	-	-	1/3/3/3	-
3	LMT	B	1103	-	-	5/21/61/61	0/2/2/2
4	D10	B	1104	-	-	1/7/7/7	-
6	GOL	A	1110	-	-	0/4/4/4	-
6	GOL	C	1110	-	-	2/4/4/4	-
6	GOL	B	1112	-	-	0/4/4/4	-
5	DDQ	B	1109	-	-	1/11/11/11	-
5	DDQ	B	1107	-	-	5/11/11/11	-
12	PTY	C	1119	-	-	19/53/53/53	-
7	HEX	C	1112	-	-	1/3/3/3	-

*Continued on next page...*

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	LMT	B	1102	-	-	6/21/61/61	0/2/2/2
9	FUA	B	1101	-	-	3/11/92/92	0/4/4/4
12	PTY	C	1117	-	-	24/53/53/53	-
3	LMT	A	1103	-	-	10/21/61/61	0/2/2/2
10	D12	C	1120	-	-	2/9/9/9	-
4	D10	B	1105	-	-	2/7/7/7	-
7	HEX	C	1113	-	-	0/3/3/3	-
8	OCT	B	1118	-	-	2/5/5/5	-
7	HEX	B	1114	-	-	0/3/3/3	-
7	HEX	B	1115	-	-	0/3/3/3	-
6	GOL	C	1108	-	-	1/4/4/4	-
3	LMT	A	1101	-	-	10/21/61/61	0/2/2/2
12	PTY	C	1118	-	-	29/53/53/53	-
3	LMT	A	1102	-	-	14/21/61/61	0/2/2/2
10	D12	C	1121	-	-	3/9/9/9	-

The worst 5 of 14 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	1109	DDQ	O1-N1	-7.27	1.25	1.42
5	C	1107	DDQ	O1-N1	-7.20	1.25	1.42
5	B	1108	DDQ	O1-N1	-7.17	1.25	1.42
5	B	1109	DDQ	O1-N1	-7.14	1.25	1.42
5	A	1108	DDQ	O1-N1	-7.14	1.25	1.42

The worst 5 of 16 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
11	B	1121	DDR	O52-C21-C22	4.33	120.84	111.50
3	A	1103	LMT	O1B-C4'-C3'	3.32	116.11	107.28
3	C	1102	LMT	C1B-O5B-C5B	3.19	119.95	113.69
3	C	1102	LMT	O5'-C1'-C2'	-2.78	104.47	110.35
3	C	1102	LMT	O5B-C1B-C2B	2.75	116.17	110.35

There are no chirality outliers.

5 of 272 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	D	201	GOL	O1-C1-C2-O2

Continued on next page...



Continued from previous page...

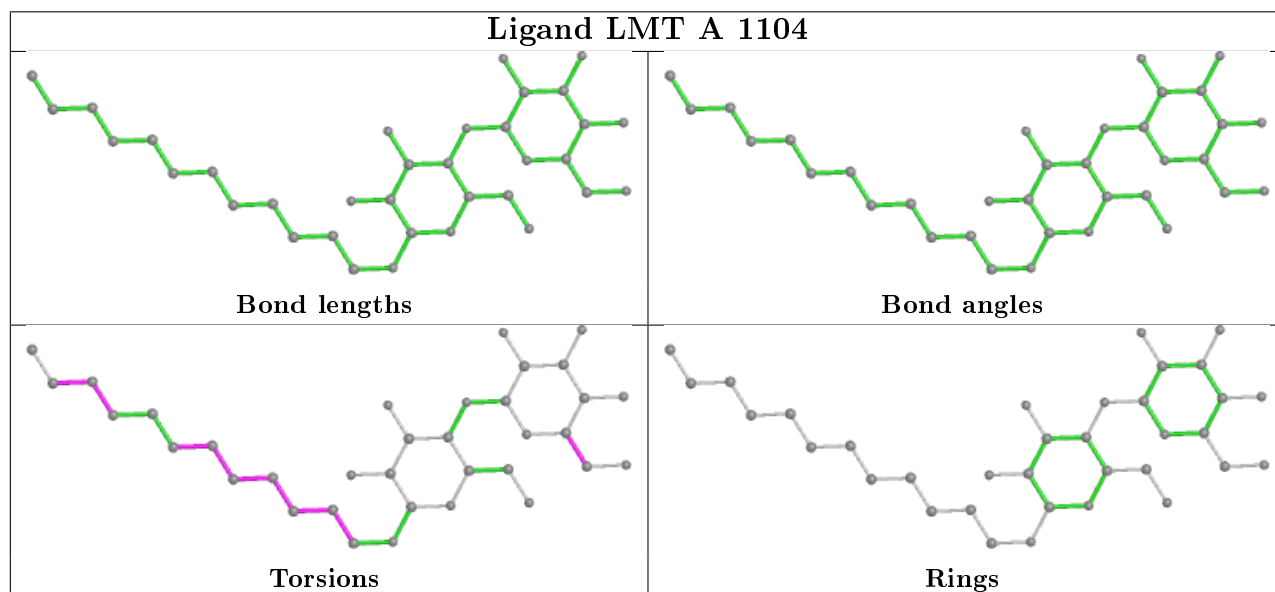
Mol	Chain	Res	Type	Atoms
6	D	201	GOL	O1-C1-C2-C3
5	C	1107	DDQ	C2-C1-N1-CM2
5	A	1107	DDQ	N1-C1-C2-C3
6	C	1109	GOL	O1-C1-C2-C3

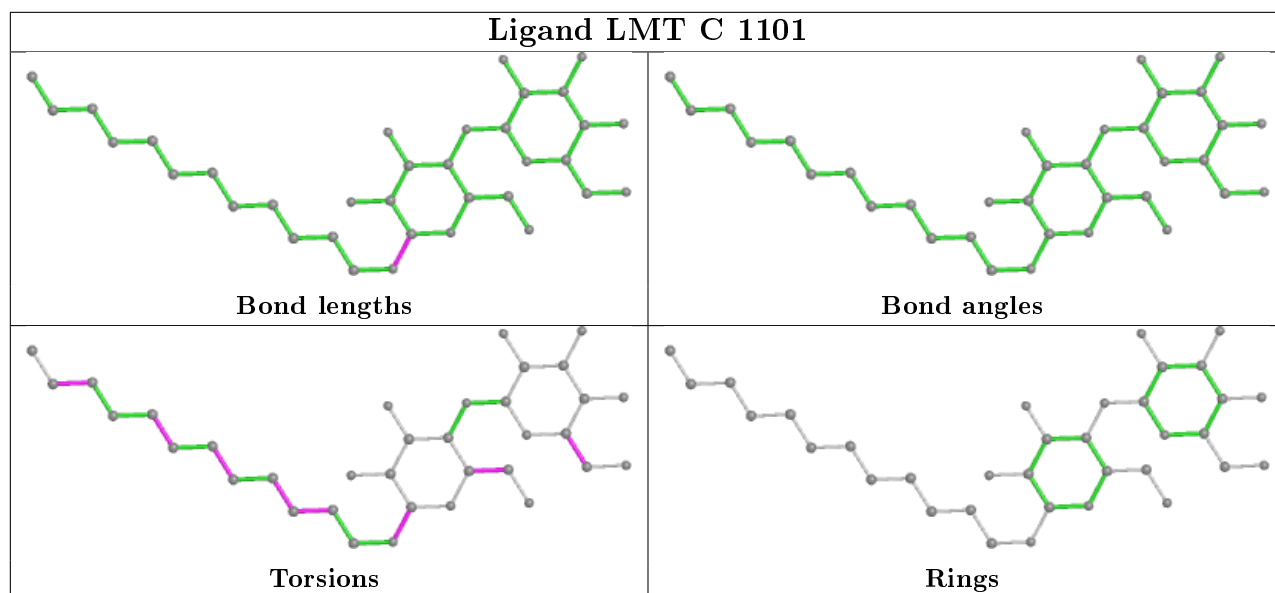
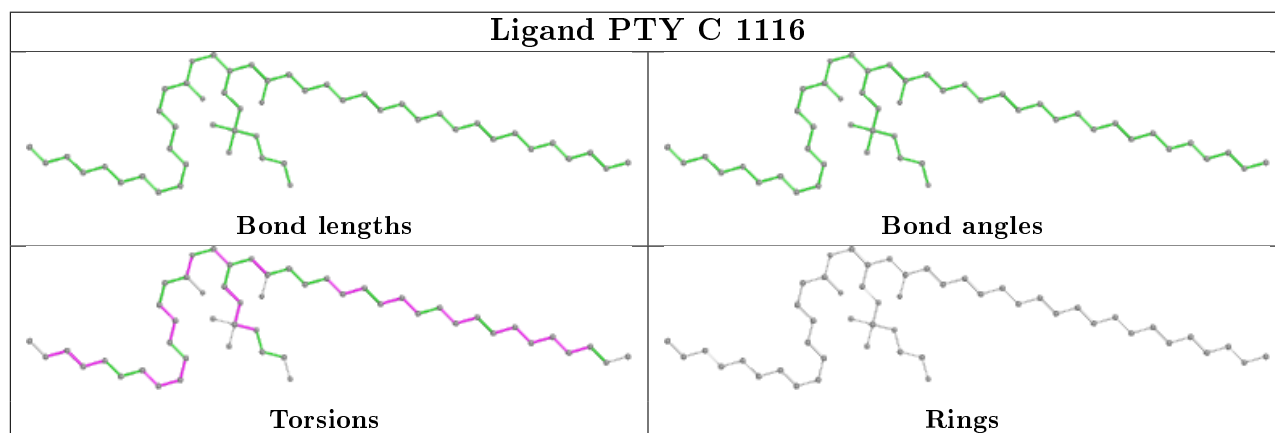
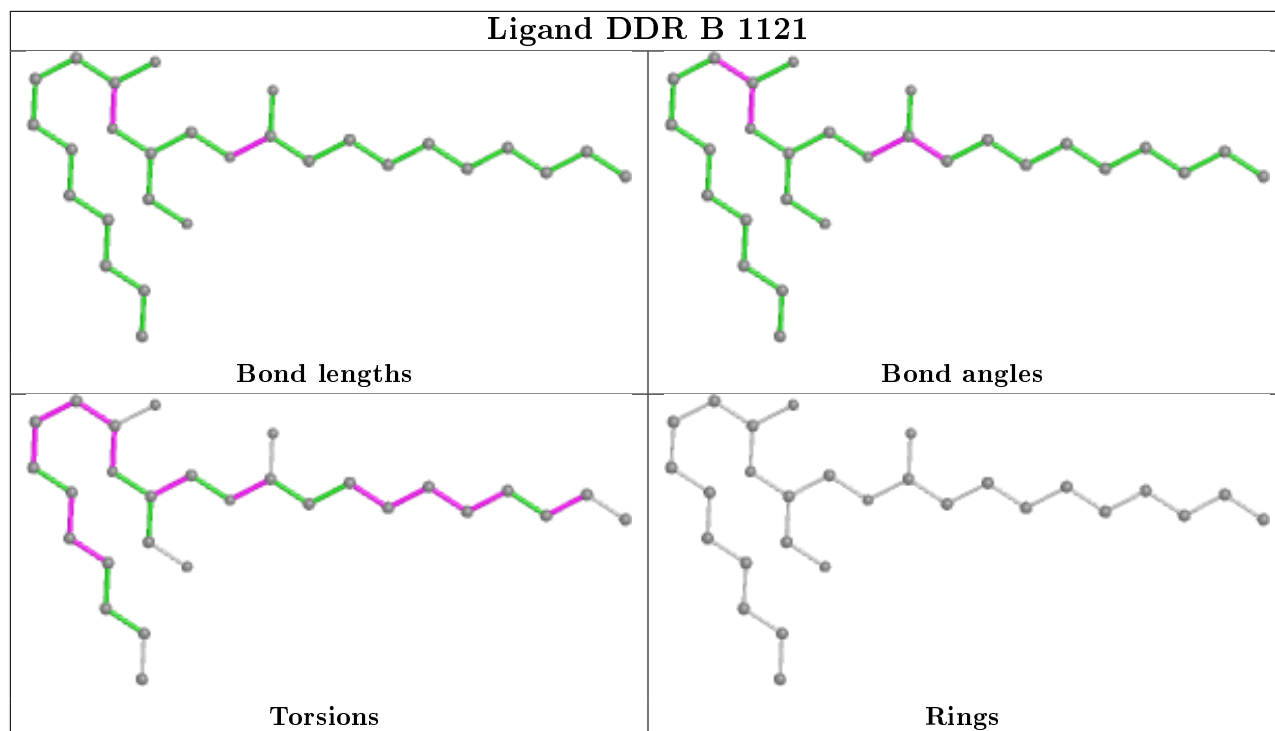
There are no ring outliers.

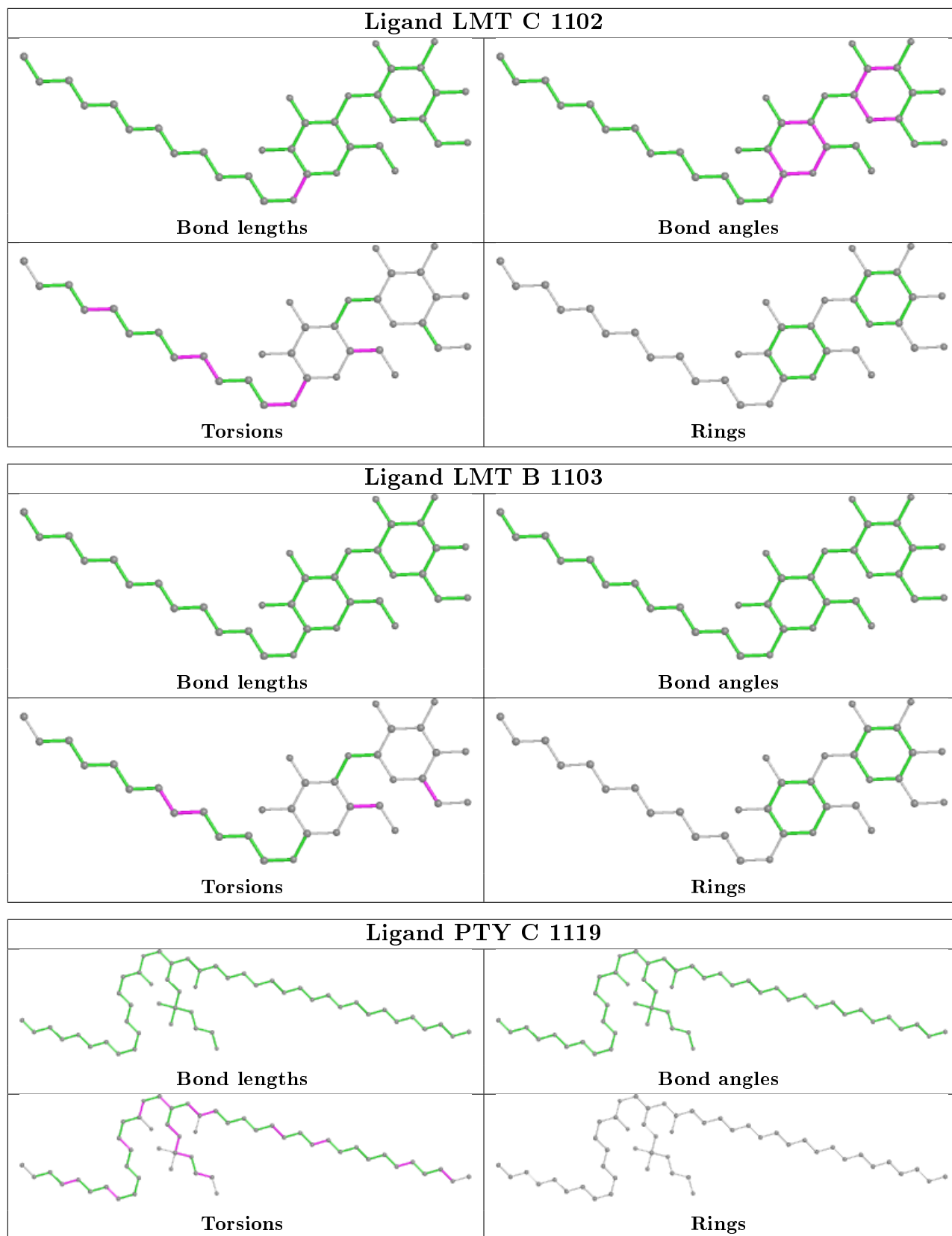
4 monomers are involved in 8 short contacts:

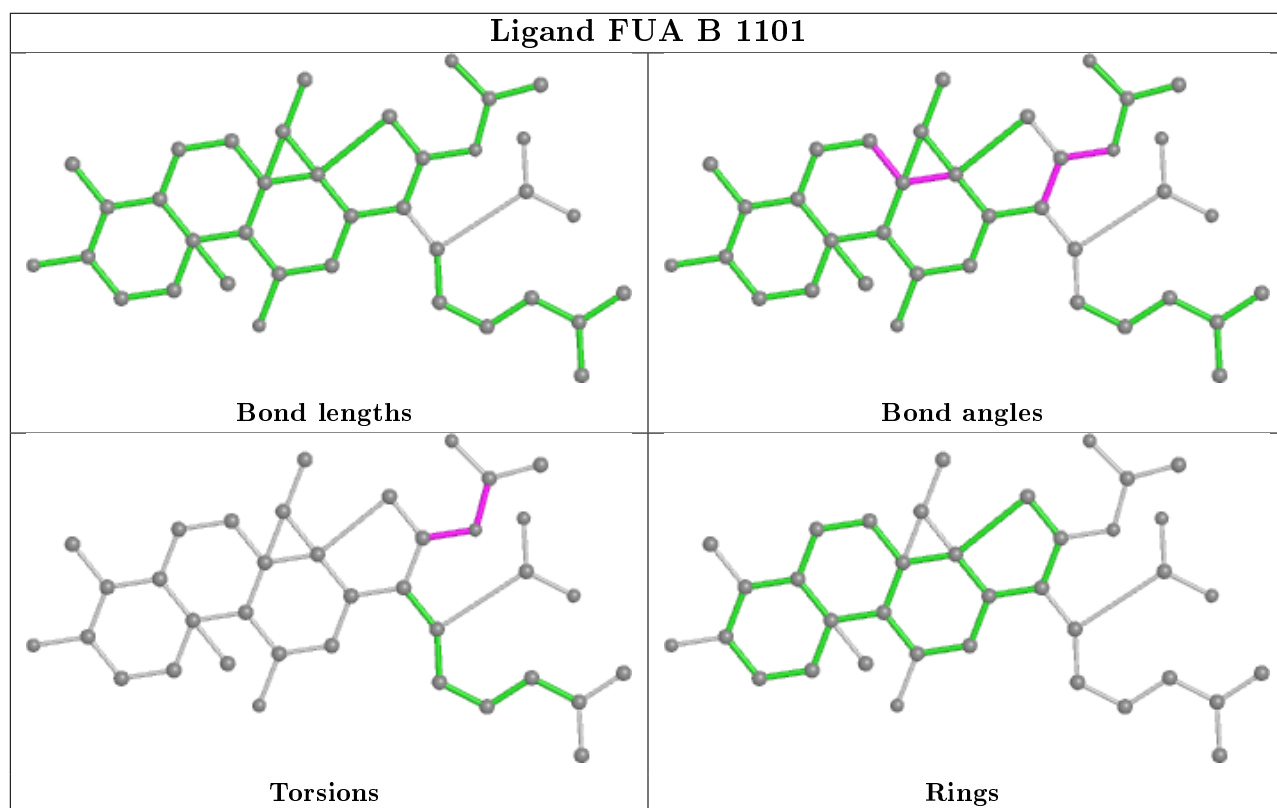
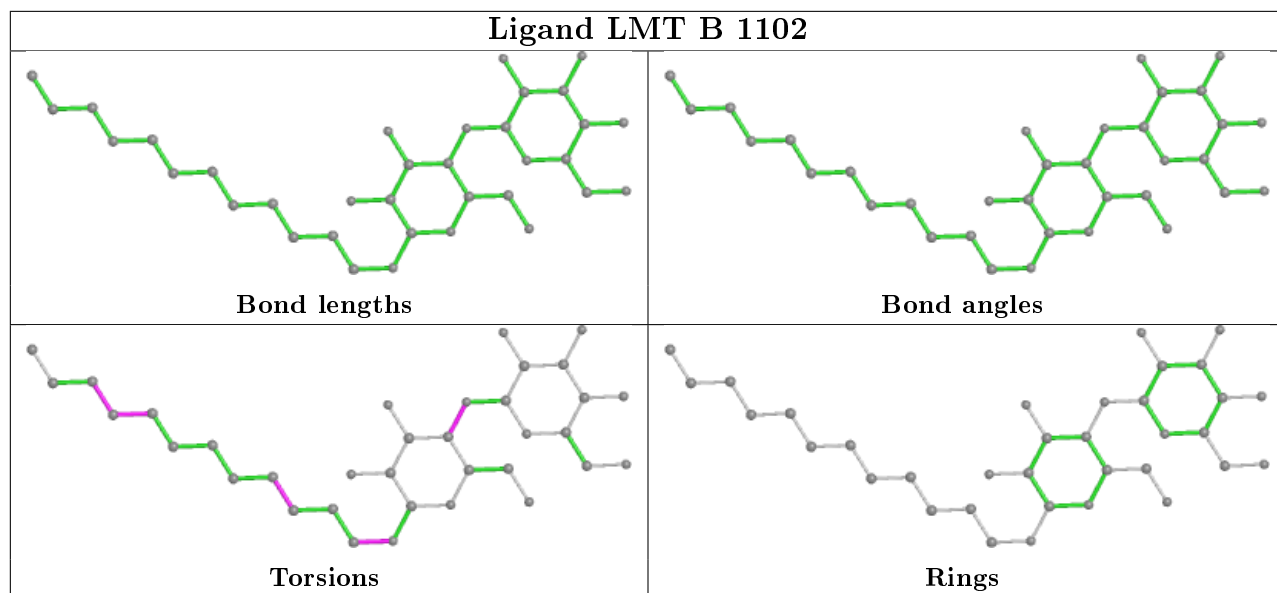
Mol	Chain	Res	Type	Clashes	Symm-Clashes
12	C	1116	PTY	2	0
8	B	1119	OCT	1	0
3	B	1102	LMT	1	0
9	B	1101	FUA	6	0

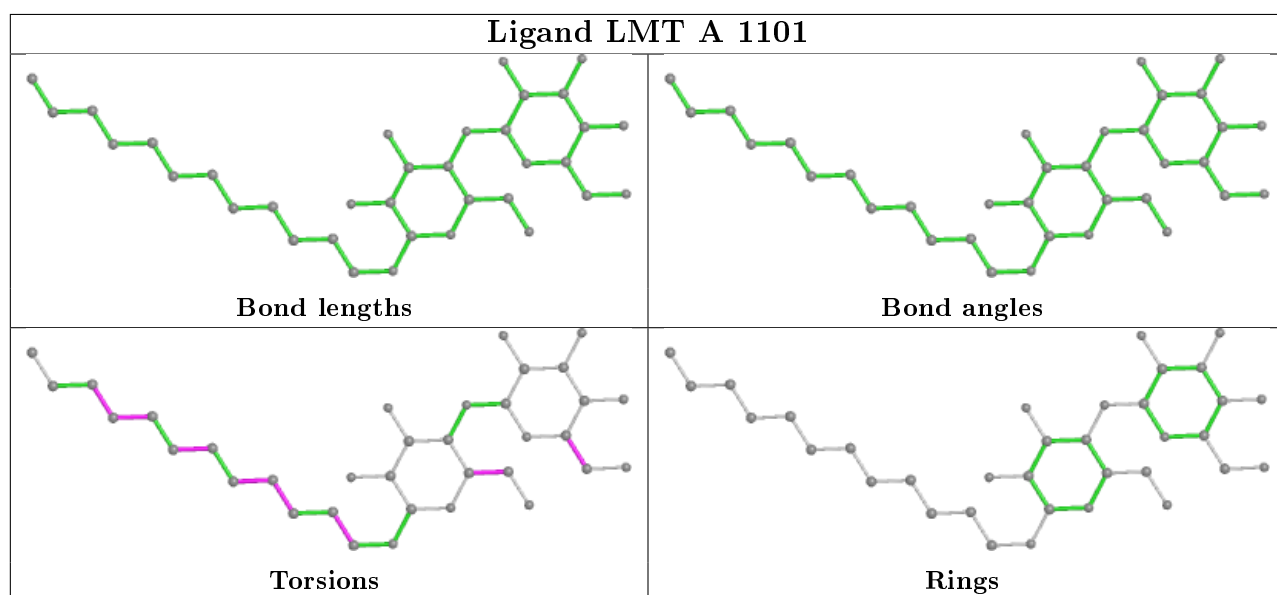
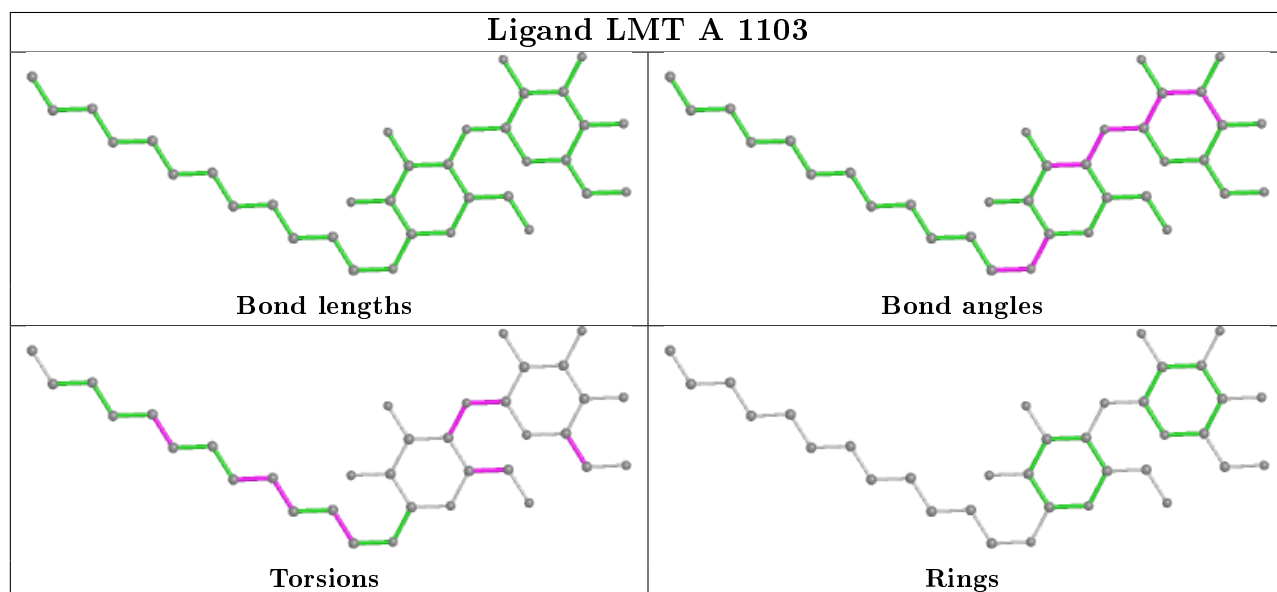
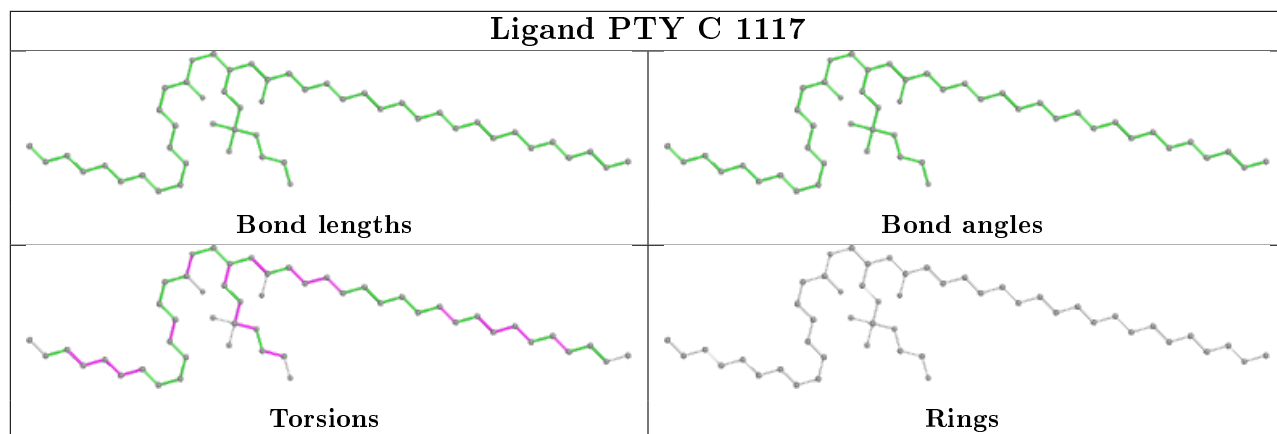
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

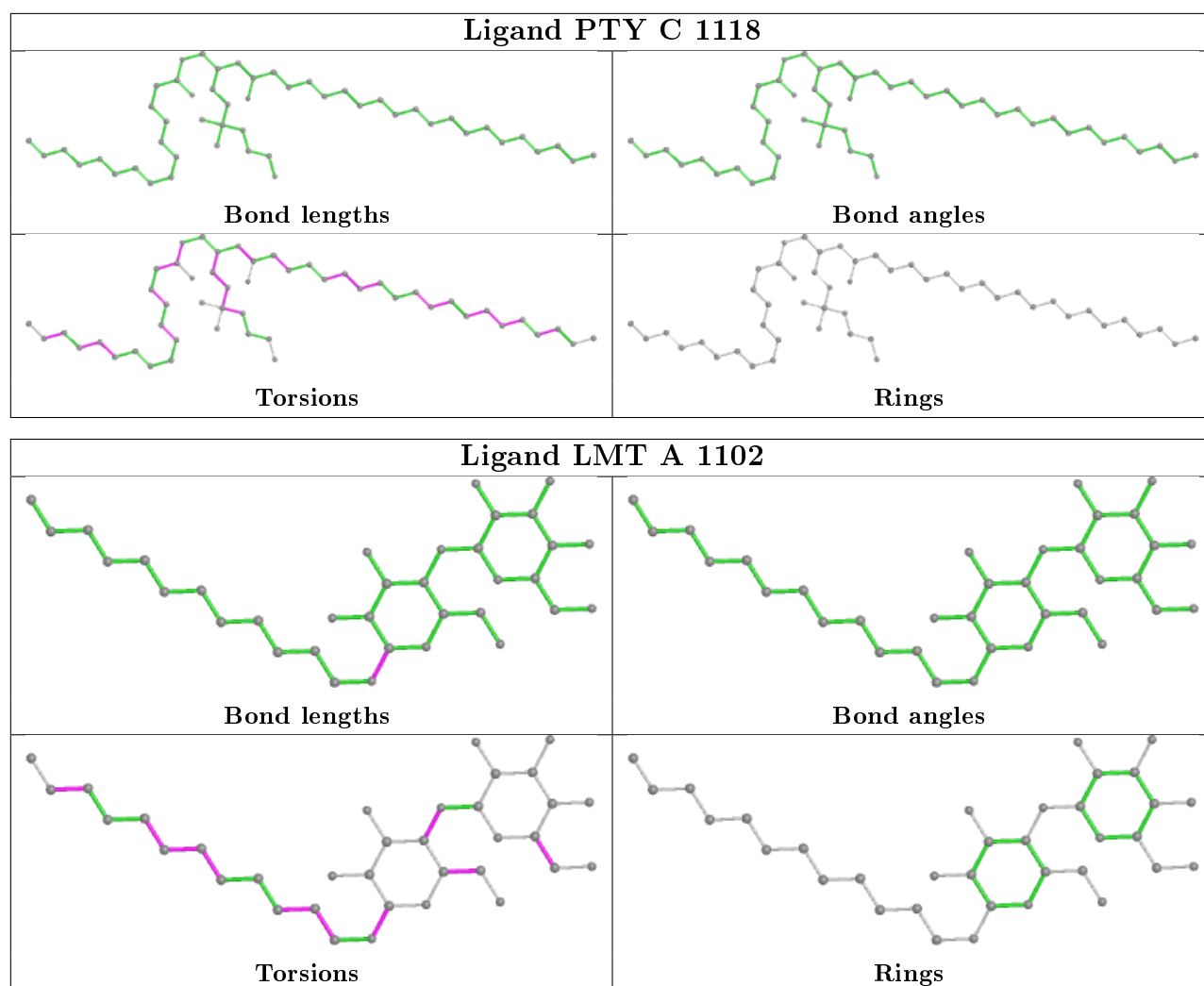












## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [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	1042/1057 (98%)	-0.05	34 (3%) 46 36	26, 50, 87, 138	0
1	B	1034/1057 (97%)	-0.15	22 (2%) 63 54	27, 47, 73, 92	0
1	C	1035/1057 (97%)	-0.16	15 (1%) 75 70	28, 42, 66, 100	0
2	D	156/169 (92%)	0.26	17 (10%) 5 3	39, 48, 80, 105	0
2	E	154/169 (91%)	0.78	21 (13%) 3 1	42, 63, 88, 98	0
All	All	3421/3509 (97%)	-0.06	109 (3%) 47 37	26, 47, 79, 138	0

The worst 5 of 109 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	871	ASN	4.9
1	A	874	PRO	4.6
1	A	676	THR	4.6
2	E	32	ILE	4.5
1	B	600	THR	4.3

### 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(Å <sup>2</sup> )	Q<0.9
12	PTY	C	1119	50/50	0.59	0.51	99,115,144,151	0
5	DDQ	A	1108	14/14	0.62	0.32	104,113,120,121	0
3	LMT	A	1103	35/35	0.62	0.41	78,110,135,135	0
4	D10	C	1105	10/10	0.67	0.32	76,80,83,83	0
12	PTY	C	1118	50/50	0.67	0.37	88,112,129,132	0
3	LMT	A	1101	35/35	0.68	0.46	80,107,125,126	0
5	DDQ	A	1109	14/14	0.68	0.55	97,100,100,100	0
12	PTY	C	1117	50/50	0.70	0.32	73,84,97,102	0
5	DDQ	B	1110	14/14	0.71	0.37	99,103,114,114	0
3	LMT	C	1102	35/35	0.72	0.39	74,91,104,106	0
12	PTY	C	1116	50/50	0.74	0.30	65,95,115,125	0
7	HEX	C	1114	6/6	0.74	0.42	69,72,73,73	0
5	DDQ	A	1107	14/14	0.76	0.52	92,102,112,112	0
10	D12	C	1120	12/12	0.76	0.23	62,69,74,74	0
7	HEX	C	1112	6/6	0.77	0.29	72,73,74,74	0
7	HEX	B	1115	6/6	0.77	0.31	63,65,66,66	0
7	HEX	B	1117	6/6	0.78	0.43	69,69,70,70	0
7	HEX	B	1116	6/6	0.80	0.30	63,64,65,65	0
8	OCT	B	1118	8/8	0.81	0.48	69,71,72,72	0
4	D10	A	1105	10/10	0.81	0.43	71,74,74,75	0
10	D12	C	1122	12/12	0.81	0.39	78,79,81,81	0
8	OCT	B	1119	8/8	0.81	0.34	83,85,86,86	0
8	OCT	A	1113	8/8	0.82	0.30	73,75,76,76	0
5	DDQ	B	1108	14/14	0.82	0.37	82,87,92,93	0
6	GOL	B	1113	6/6	0.82	0.33	69,70,71,72	0
6	GOL	D	201	6/6	0.82	0.44	63,65,66,68	0
5	DDQ	B	1109	14/14	0.83	0.28	78,90,102,105	0
5	DDQ	B	1107	14/14	0.83	0.25	70,76,92,93	0
6	GOL	C	1111	6/6	0.83	0.26	71,73,74,74	0
3	LMT	A	1102	35/35	0.83	0.23	64,81,98,99	0
4	D10	A	1106	10/10	0.84	0.32	61,63,64,64	0
6	GOL	B	1111	6/6	0.84	0.31	61,63,64,65	0
10	D12	C	1121	12/12	0.84	0.27	58,67,69,69	0
5	DDQ	C	1106	14/14	0.85	0.36	76,78,81,82	0
8	OCT	A	1114	8/8	0.85	0.31	65,66,67,67	0
7	HEX	B	1114	6/6	0.85	0.26	67,67,68,68	0
10	D12	B	1120	12/12	0.85	0.35	69,70,70,71	0
11	DDR	B	1121	28/28	0.86	0.34	75,88,99,101	0
4	D10	C	1103	10/10	0.88	0.32	68,69,69,70	0
7	HEX	C	1115	6/6	0.88	0.29	57,58,59,59	0

Continued on next page...



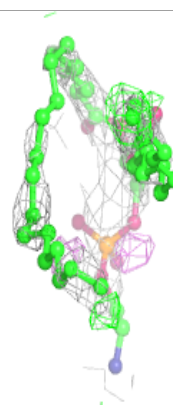
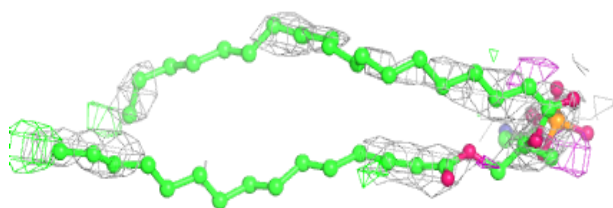
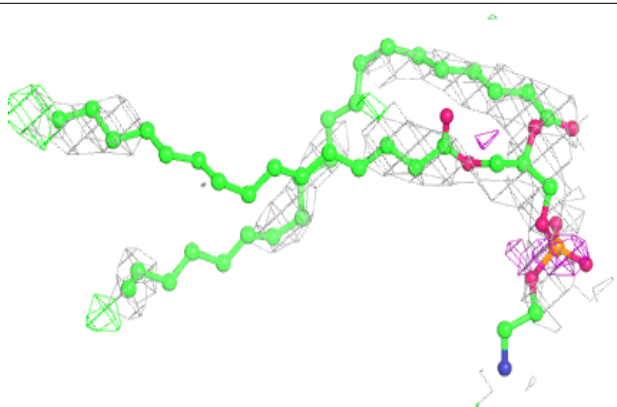
*Continued from previous page...*

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	LMT	A	1104	35/35	0.88	0.35	79,91,102,103	0
7	HEX	C	1113	6/6	0.89	0.32	74,75,75,75	0
6	GOL	C	1109	6/6	0.89	0.20	58,60,62,62	0
7	HEX	A	1112	6/6	0.89	0.21	79,80,81,82	0
4	D10	B	1105	10/10	0.90	0.36	63,65,68,68	0
6	GOL	A	1110	6/6	0.90	0.29	63,63,64,64	0
4	D10	C	1104	10/10	0.90	0.29	57,61,63,63	0
6	GOL	A	1111	6/6	0.90	0.18	72,73,73,74	0
6	GOL	E	201	6/6	0.90	0.19	61,62,63,64	0
5	DDQ	C	1107	14/14	0.91	0.24	82,86,90,91	0
6	GOL	C	1110	6/6	0.91	0.25	65,67,67,68	0
6	GOL	B	1112	6/6	0.91	0.21	52,54,56,59	0
3	LMT	B	1103	35/35	0.91	0.30	61,68,89,90	0
4	D10	B	1104	10/10	0.91	0.29	60,62,62,63	0
3	LMT	B	1102	35/35	0.92	0.21	64,67,69,71	0
9	FUA	B	1101	37/37	0.93	0.22	64,66,71,72	0
4	D10	B	1106	10/10	0.93	0.18	56,56,57,57	0
3	LMT	C	1101	35/35	0.94	0.25	52,60,76,76	0
13	SO4	C	1123	5/5	0.95	0.13	67,67,67,68	0
6	GOL	C	1108	6/6	0.96	0.14	37,39,39,40	0

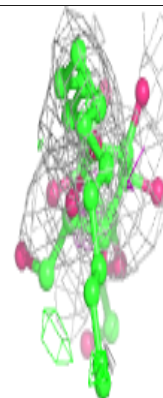
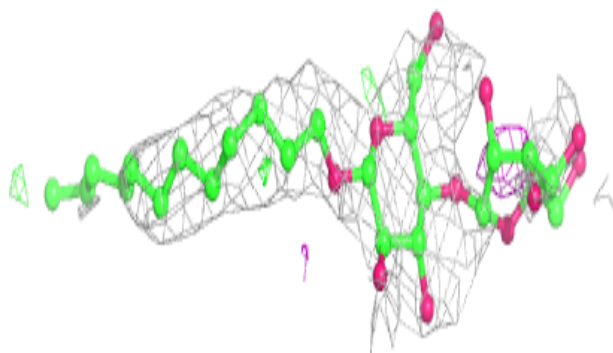
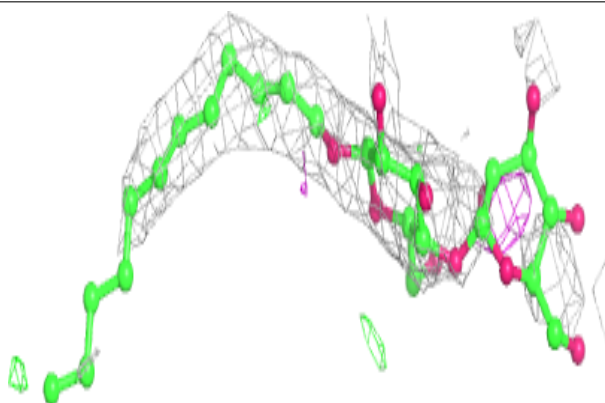
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

**Electron density around PTY C 1119:**

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

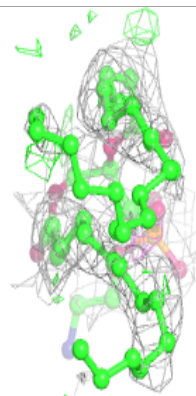
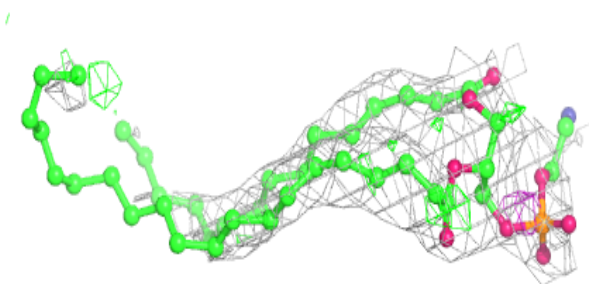
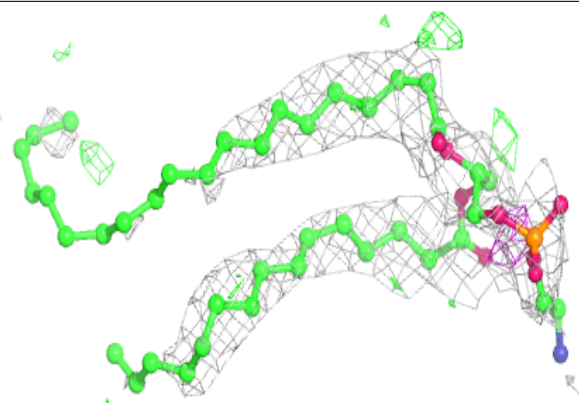
**Electron density around LMT A 1103:**

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

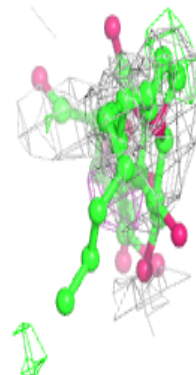
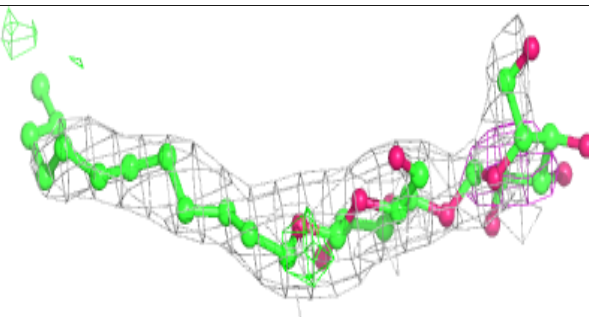
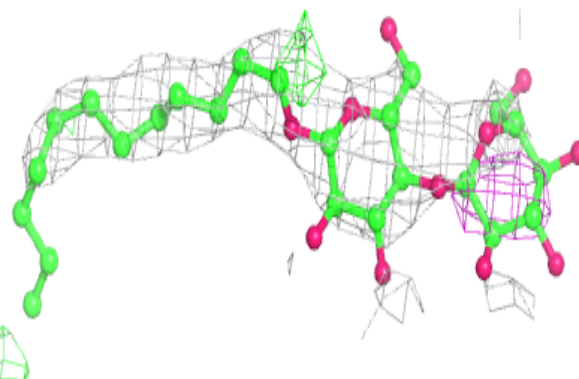


**Electron density around PTY C 1118:**

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

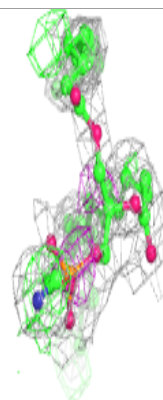
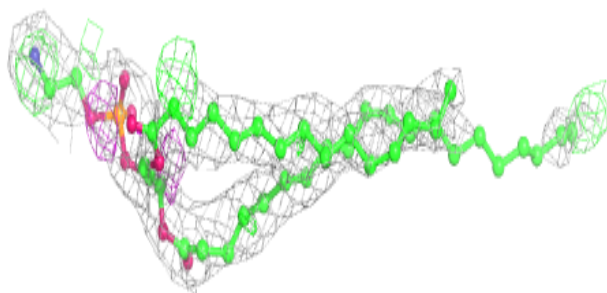
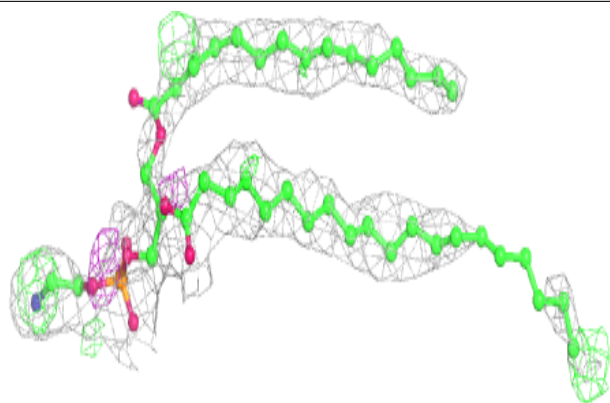
**Electron density around LMT A 1101:**

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

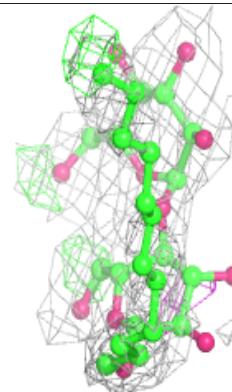
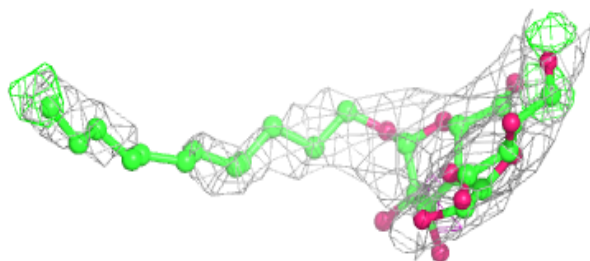
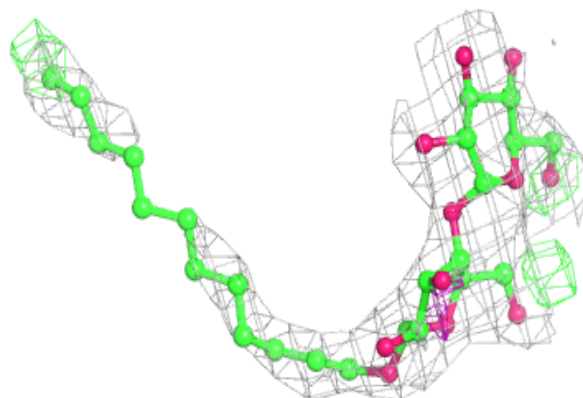


**Electron density around PTY C 1117:**

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

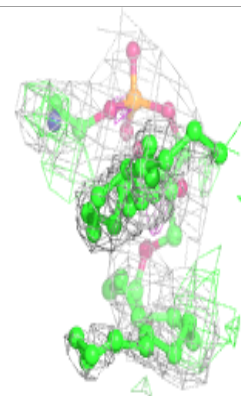
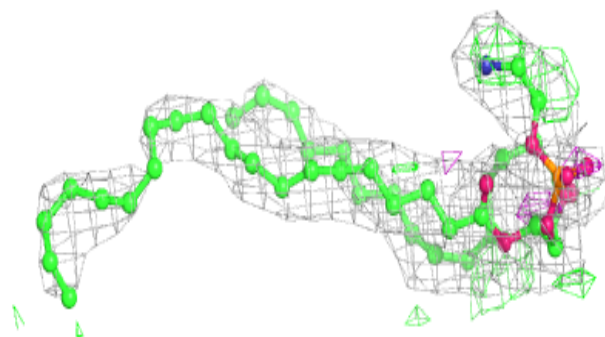
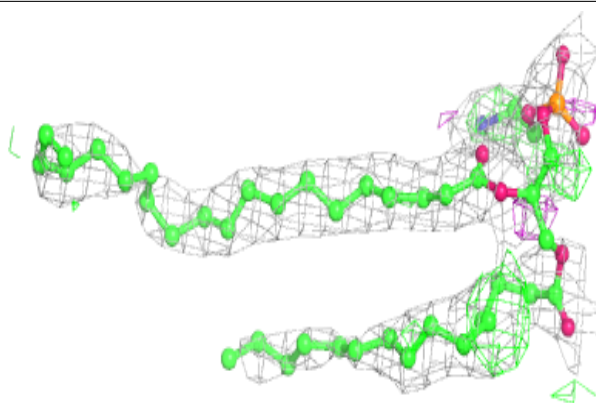
**Electron density around LMT C 1102:**

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

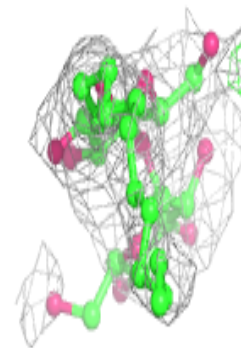
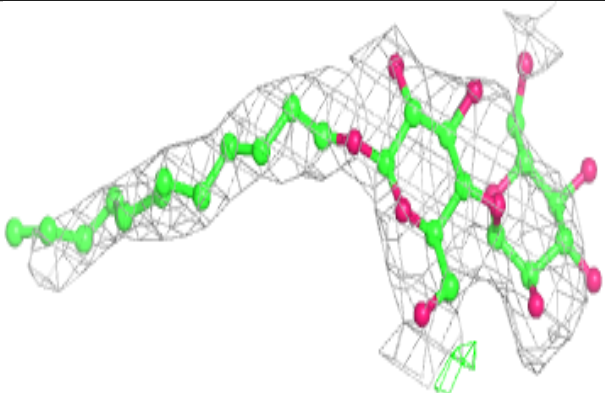
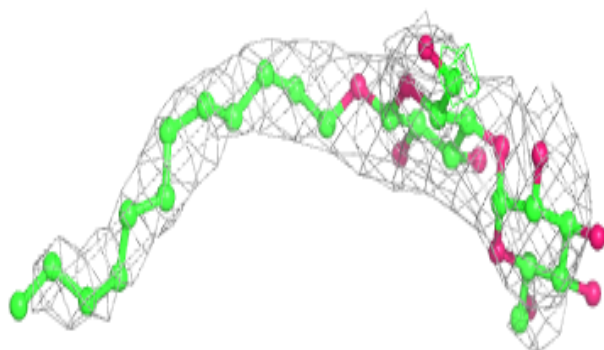


**Electron density around PTY C 1116:**

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

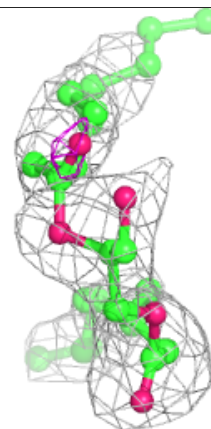
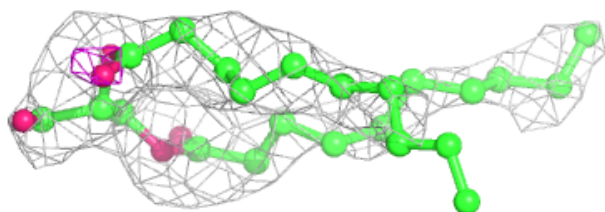
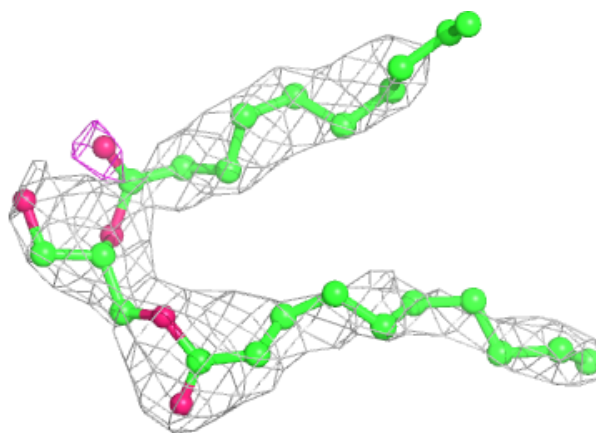
**Electron density around LMT A 1102:**

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

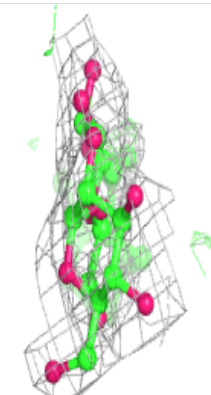
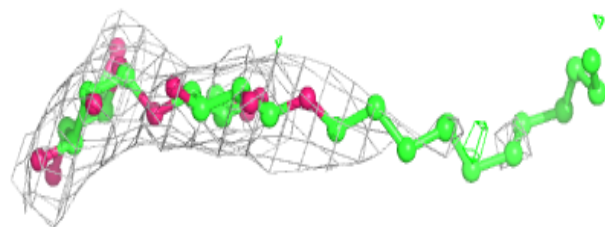
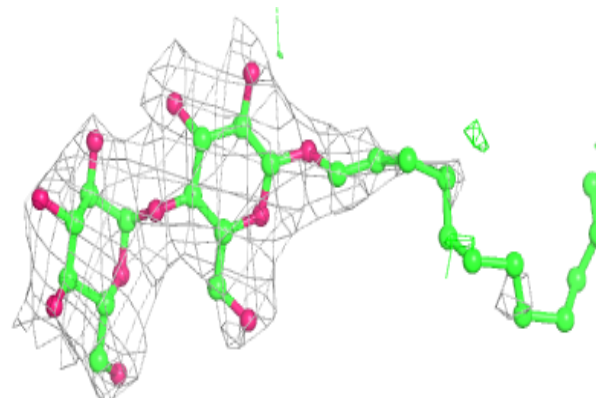


**Electron density around DDR B 1121:**

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

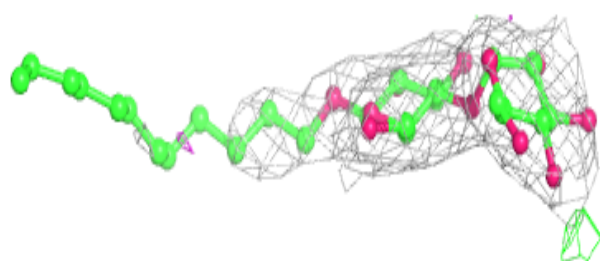
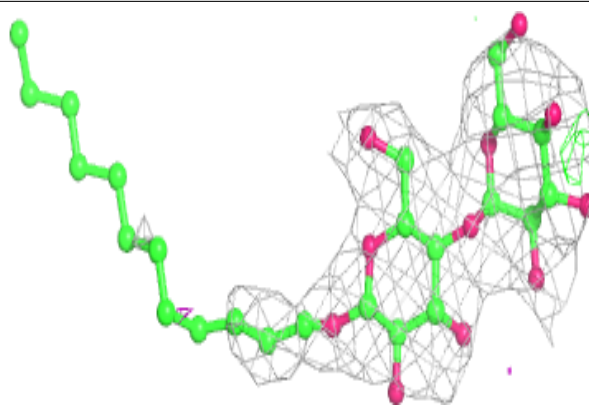
**Electron density around LMT A 1104:**

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

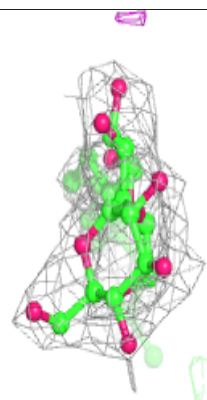
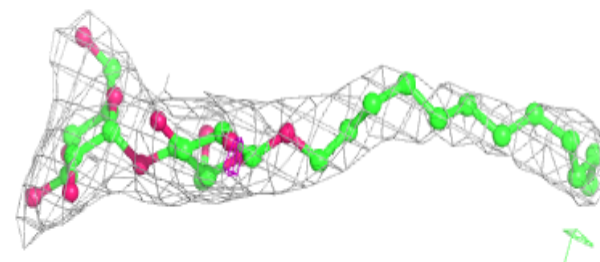
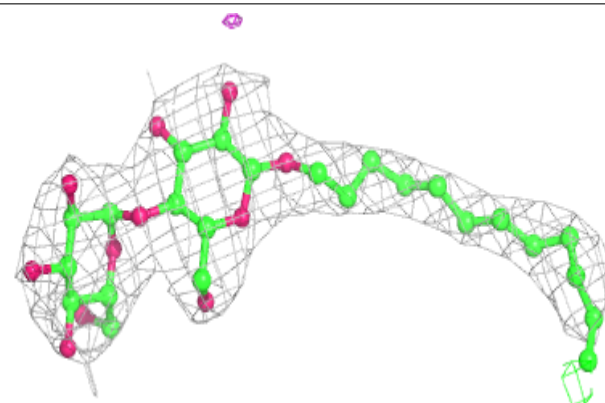


**Electron density around LMT B 1103:**

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

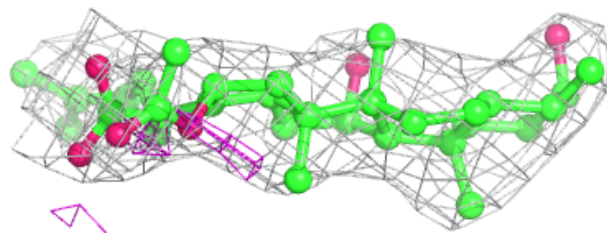
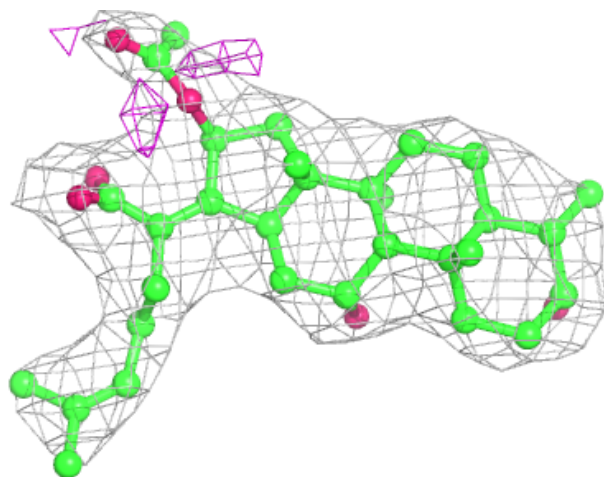
**Electron density around LMT B 1102:**

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

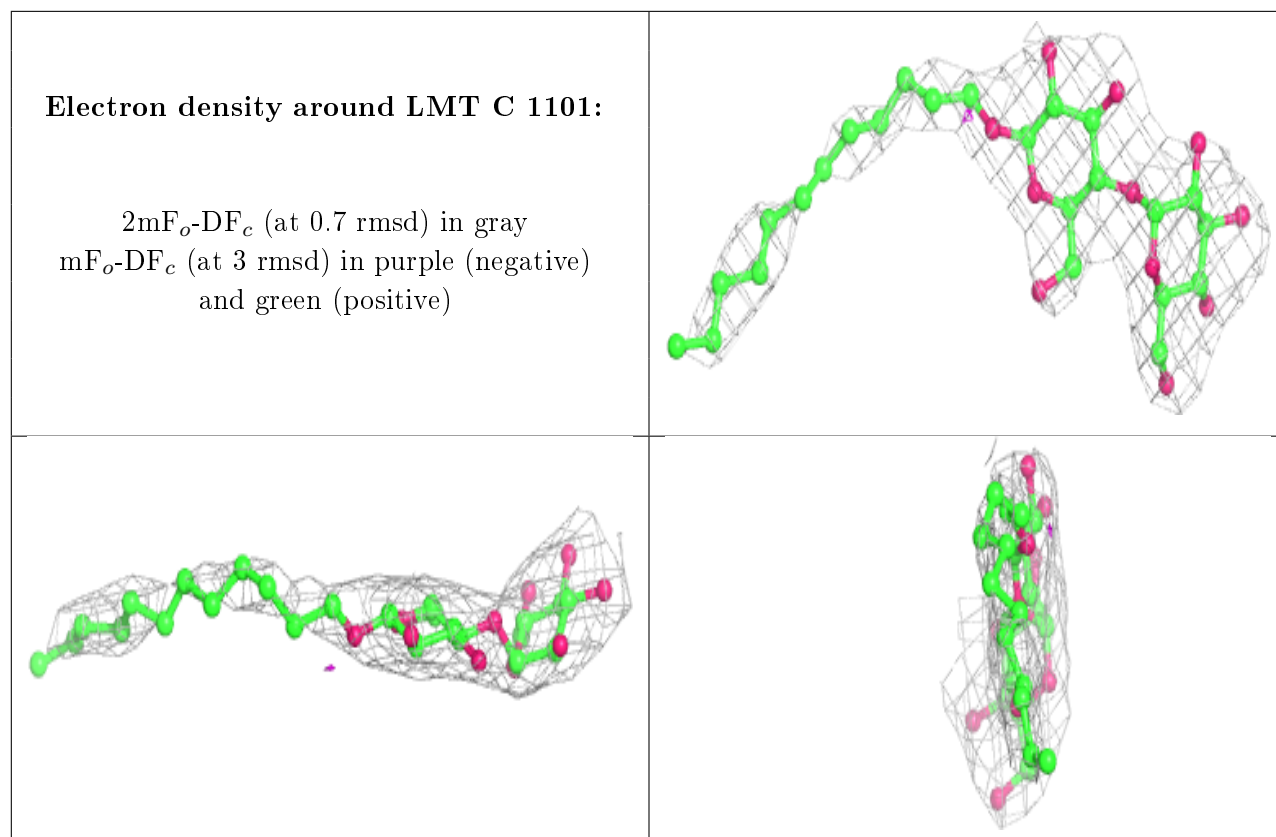


**Electron density around FUA B 1101:**

$2mF_o-DF_c$  (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.