



# Full wwPDB X-ray Structure Validation Report ⓘ

May 26, 2020 – 03:25 am BST

PDB ID : 4IB4  
Title : Crystal structure of the chimeric protein of 5-HT2B-BRIL in complex with ergotamine  
Authors : Wacker, D.; Wang, C.; Katritch, V.; Han, G.W.; Huang, X.; Vardy, E.; McCorvy, J.D.; Jiang, Y.; Chu, M.; Siu, F.Y.; Liu, W.; Xu, H.E.; Cherezov, V.; Roth, B.L.; Stevens, R.C.; GPCR Network (GPCR)  
Deposited on : 2012-12-07  
Resolution : 2.70 Å(reported)

This is a Full wwPDB X-ray Structure Validation 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.

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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 : 2.11  
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) : 2.11

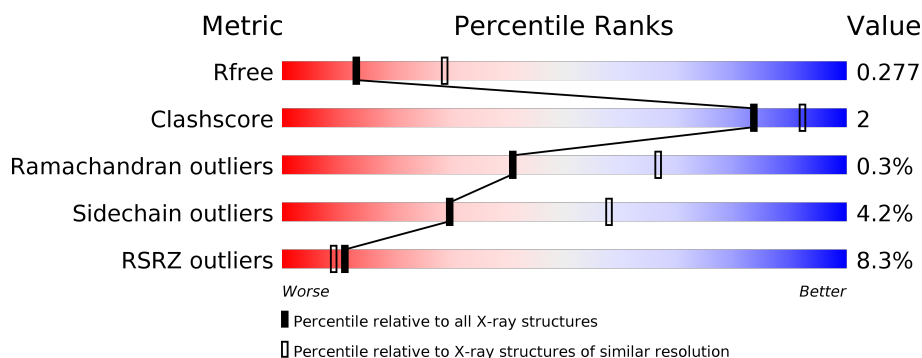
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.70 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	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

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	430	<div> <div>7%</div> <div>79%</div> <div>9%</div> <div>13%</div> </div>

## 2 Entry composition

There are 9 unique types of molecules in this entry. The entry contains 3064 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.

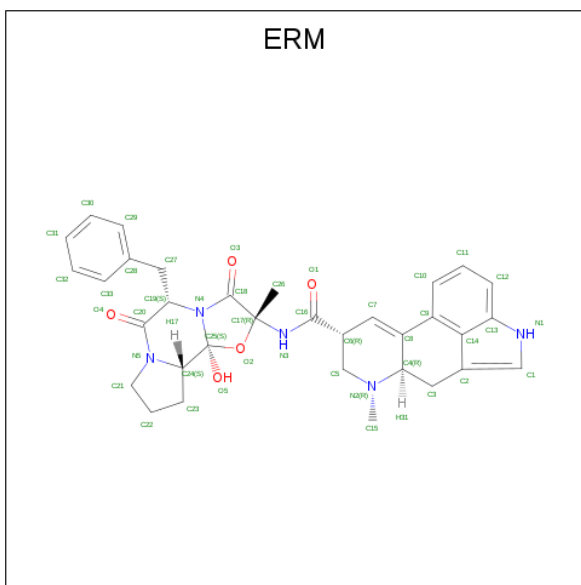
- Molecule 1 is a protein called Chimera protein of human 5-hydroxytryptamine receptor 2B and E. Coli soluble cytochrome b562.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	375	Total	C	N	O	S	0	1	0
			2850	1876	463	495	16			

There are 23 discrepancies between the modelled and reference sequences:

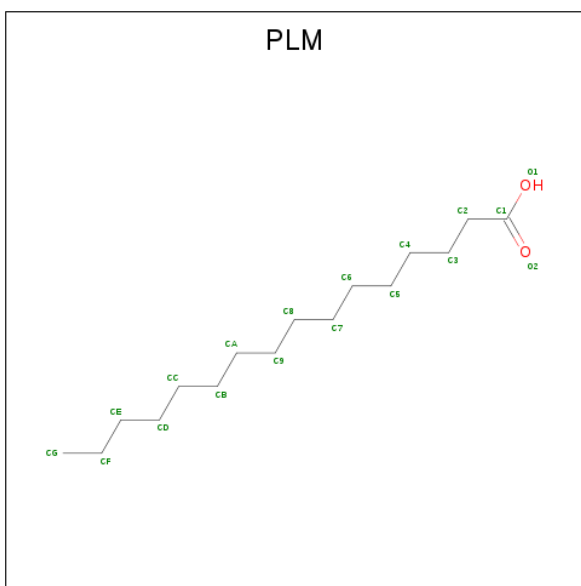
Chain	Residue	Modelled	Actual	Comment	Reference
A	26	ASP	-	EXPRESSION TAG	UNP P41595
A	27	TYR	-	EXPRESSION TAG	UNP P41595
A	28	LYS	-	EXPRESSION TAG	UNP P41595
A	29	ASP	-	EXPRESSION TAG	UNP P41595
A	30	ASP	-	EXPRESSION TAG	UNP P41595
A	31	ASP	-	EXPRESSION TAG	UNP P41595
A	32	ASP	-	EXPRESSION TAG	UNP P41595
A	33	GLY	-	EXPRESSION TAG	UNP P41595
A	34	ALA	-	EXPRESSION TAG	UNP P41595
A	35	PRO	-	EXPRESSION TAG	UNP P41595
A	144	TRP	MET	engineered mutation	UNP P41595
A	1007	TRP	MET	engineered mutation	UNP P0ABE7
A	1102	ILE	HIS	engineered mutation	UNP P0ABE7
A	1106	LEU	ARG	engineered mutation	UNP P0ABE7
A	406	GLY	-	EXPRESSION TAG	UNP P41595
A	407	ARG	-	EXPRESSION TAG	UNP P41595
A	408	PRO	-	EXPRESSION TAG	UNP P41595
A	409	LEU	-	EXPRESSION TAG	UNP P41595
A	410	GLU	-	EXPRESSION TAG	UNP P41595
A	411	VAL	-	EXPRESSION TAG	UNP P41595
A	412	LEU	-	EXPRESSION TAG	UNP P41595
A	413	PHE	-	EXPRESSION TAG	UNP P41595
A	414	GLN	-	EXPRESSION TAG	UNP P41595

- Molecule 2 is Ergotamine (three-letter code: ERM) (formula: C<sub>33</sub>H<sub>35</sub>N<sub>5</sub>O<sub>5</sub>).



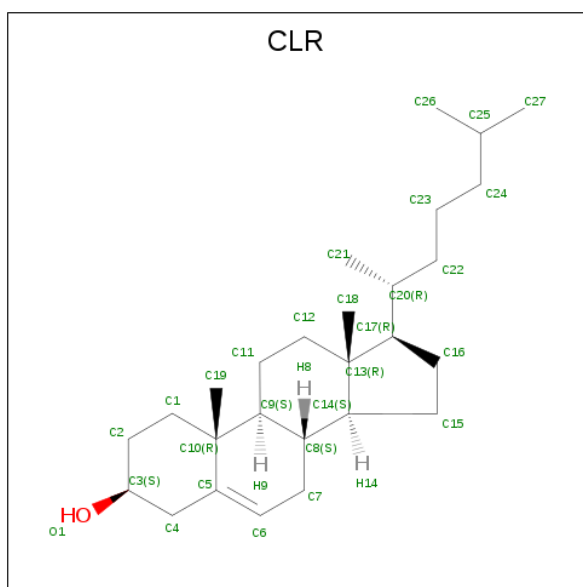
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			43	33	5	5		

- Molecule 3 is PALMITIC ACID (three-letter code: PLM) (formula:  $C_{16}H_{32}O_2$ ).



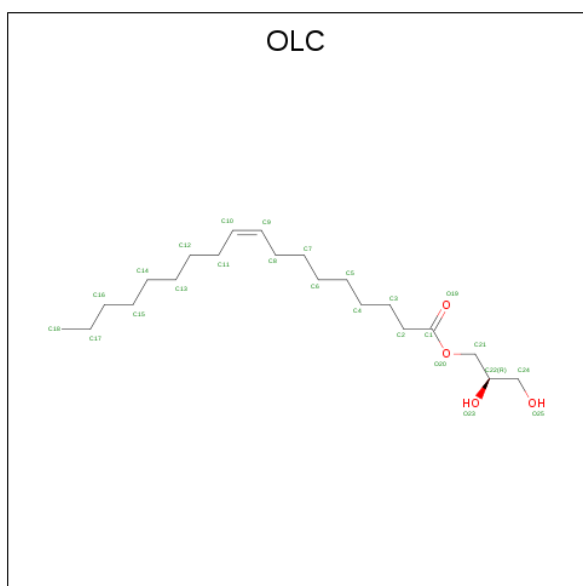
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			17	16	1		

- Molecule 4 is CHOLESTEROL (three-letter code: CLR) (formula:  $C_{27}H_{46}O$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			28	27	1		

- Molecule 5 is (2R)-2,3-dihydroxypropyl (9Z)-octadec-9-enoate (three-letter code: OLC) (formula:  $C_{21}H_{40}O_4$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			19	15	4		

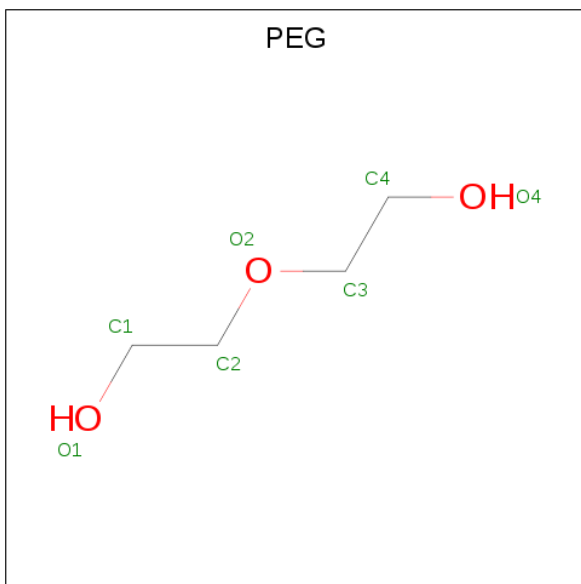
- Molecule 6 is (2S)-2,3-dihydroxypropyl (9Z)-octadec-9-enoate (three-letter code: OLB) (formula:  $C_{21}H_{40}O_4$ ).



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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	1	Total	C	O	0	0
			17	15	2		

- Molecule 8 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: C<sub>4</sub>H<sub>10</sub>O<sub>3</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	A	1	Total	C	O	0	0
			7	4	3		
8	A	1	Total	C	O	0	0
			7	4	3		

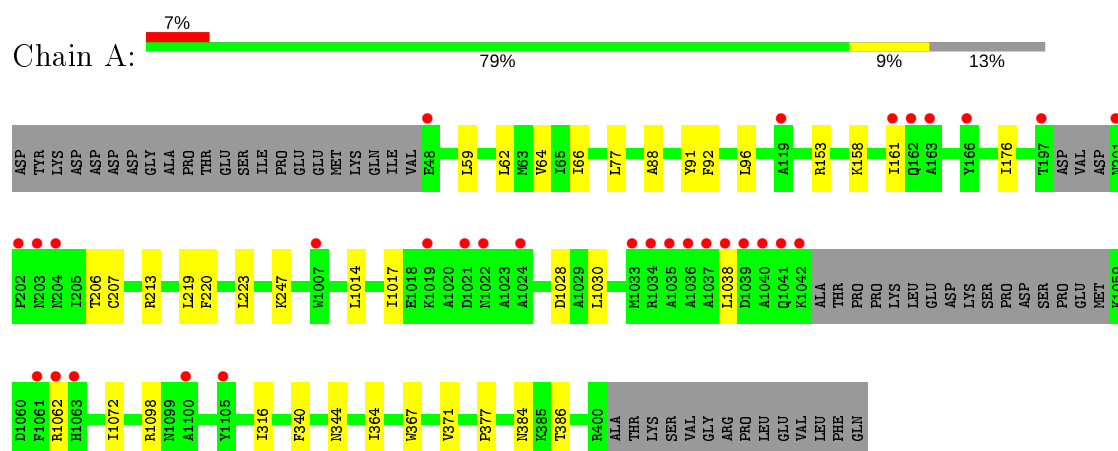
- Molecule 9 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	A	9	Total	O	0	0
			9	9		

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

These plots are drawn for all protein, RNA and DNA 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: Chimera protein of human 5-hydroxytryptamine receptor 2B and E. Coli soluble cytochrome b562





## 4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	60.57Å 119.75Å 170.61Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	24.84 – 2.70 24.69 – 2.70	Depositor EDS
% Data completeness (in resolution range)	90.7 (24.84-2.70) 90.7 (24.69-2.70)	Depositor EDS
$R_{merge}$	0.15	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.25 (at 2.72Å)	Xtriage
Refinement program	PHENIX, BUSTER 2.10.0	Depositor
R, $R_{free}$	0.224 , 0.266 0.235 , 0.277	Depositor DCC
$R_{free}$ test set	823 reflections (5.20%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	64.6	Xtriage
Anisotropy	0.185	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.30 , 71.4	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	3064	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	80.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.81% 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: OLA, OLB, OLC, ERM, PLM, PEG, CLR

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	0.46	0/2914	0.56	0/3975

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	2850	0	2847	14	0
2	A	43	0	35	0	0
3	A	17	0	31	0	0
4	A	28	0	46	1	0
5	A	19	0	25	0	0
6	A	47	0	61	2	0
7	A	37	0	57	1	0
8	A	14	0	18	1	0
9	A	9	0	0	0	0
All	All	3064	0	3120	15	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 2.

All (15) 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:92:PHE:HA	1:A:176:ILE:HD11	1.68	0.75
1:A:384:ASN:HB2	8:A:2010:PEG:H31	1.85	0.58
1:A:367:TRP:O	1:A:371:VAL:HG23	2.08	0.52
1:A:1014:LEU:HA	1:A:1017:ILE:HD12	1.94	0.50
1:A:1030:LEU:HG	1:A:1072:ILE:HG23	1.96	0.47
1:A:88:ALA:HA	1:A:91:TYR:HD2	1.81	0.45
1:A:220:PHE:HA	1:A:223:LEU:HD12	1.99	0.45
1:A:247:LYS:HB3	1:A:316:ILE:HD13	2.00	0.44
1:A:364:ILE:HG23	7:A:2008:OLA:H51	2.00	0.43
4:A:2003:CLR:H122	6:A:2006:OLB:H17	2.00	0.43
1:A:340:PHE:O	1:A:344:ASN:HB2	2.18	0.43
1:A:62:LEU:HA	1:A:66:ILE:HD12	2.01	0.42
1:A:77:LEU:HD21	6:A:2007:OLB:H3A	2.02	0.42
1:A:96:LEU:HG	1:A:377:PRO:HG3	2.02	0.41
1:A:64:VAL:HG22	1:A:371:VAL:HG22	2.03	0.41

There are no symmetry-related clashes.

## 5.3 Torsion angles ⓘ

### 5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	370/430 (86%)	361 (98%)	8 (2%)	1 (0%)	41 66

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	161	ILE

### 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	286/371 (77%)	274 (96%)	12 (4%)	30 58

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

Mol	Chain	Res	Type
1	A	59	LEU
1	A	153	ARG
1	A	158	LYS
1	A	206	THR
1	A	207	CYS
1	A	213	ARG
1	A	219	LEU
1	A	1028	ASP
1	A	1038	LEU
1	A	1062	ARG
1	A	1098	ARG
1	A	386	THR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1063	HIS
1	A	314	GLN
1	A	318	ASN

### 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 ⓘ

There are no carbohydrates in this entry.

## 5.6 Ligand geometry ⓘ

11 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
7	OLA	A	2009	-	13,16,19	0.29	0	12,16,19	0.52	0
6	OLB	A	2005	-	14,14,24	1.01	1 (7%)	15,15,25	1.32	2 (13%)
5	OLC	A	2004	-	18,18,24	0.90	1 (5%)	18,19,25	1.30	2 (11%)
8	PEG	A	2010	-	6,6,6	1.48	1 (16%)	5,5,5	1.50	0
4	CLR	A	2003	-	31,31,31	0.54	0	48,48,48	1.34	4 (8%)
8	PEG	A	2011	-	6,6,6	1.48	1 (16%)	5,5,5	1.51	0
3	PLM	A	2002	1	16,16,17	0.88	1 (6%)	15,15,17	0.83	0
2	ERM	A	2001	-	46,50,50	1.38	6 (13%)	66,79,79	2.02	18 (27%)
7	OLA	A	2008	-	16,19,19	0.30	0	15,19,19	0.48	0
6	OLB	A	2007	-	15,15,24	0.94	1 (6%)	16,16,25	1.34	2 (12%)
6	OLB	A	2006	-	15,15,24	0.95	1 (6%)	16,16,25	1.28	2 (12%)

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
7	OLA	A	2009	-	-	4/12/14/17	-
6	OLB	A	2005	-	-	9/14/14/24	-
5	OLC	A	2004	-	-	12/18/18/24	-
8	PEG	A	2010	-	-	3/4/4/4	-
4	CLR	A	2003	-	-	4/10/68/68	0/4/4/4

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
8	PEG	A	2011	-	-	3/4/4/4	-
3	PLM	A	2002	1	-	9/13/14/15	-
2	ERM	A	2001	-	-	0/13/87/87	0/7/8/8
7	OLA	A	2008	-	-	12/15/17/17	-
6	OLB	A	2007	-	-	6/15/15/24	-
6	OLB	A	2006	-	-	8/15/15/24	-

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	2001	ERM	C9-C8	3.95	1.52	1.45
2	A	2001	ERM	C12-C13	-3.34	1.36	1.41
3	A	2002	PLM	O2-C1	3.34	1.38	1.19
2	A	2001	ERM	C11-C12	3.09	1.43	1.36
8	A	2010	PEG	O2-C2	-2.84	1.29	1.42
8	A	2011	PEG	O2-C2	-2.79	1.29	1.42
5	A	2004	OLC	O20-C1	2.73	1.41	1.33
2	A	2001	ERM	C4-N2	2.66	1.52	1.48
2	A	2001	ERM	C5-N2	2.56	1.51	1.47
6	A	2007	OLB	O20-C1	2.55	1.40	1.33
6	A	2005	OLB	O20-C1	2.52	1.40	1.33
6	A	2006	OLB	O20-C1	2.46	1.40	1.33
2	A	2001	ERM	C6-C16	2.01	1.56	1.53

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	2001	ERM	O2-C25-N4	-5.28	99.31	104.00
2	A	2001	ERM	C23-C24-N5	5.25	108.43	102.74
2	A	2001	ERM	C25-O2-C17	5.22	114.55	111.29
2	A	2001	ERM	C5-N2-C4	4.76	116.38	110.96
2	A	2001	ERM	C21-N5-C24	-4.01	105.23	111.48
2	A	2001	ERM	C25-N4-C18	4.00	116.64	112.64
2	A	2001	ERM	C22-C23-C24	-3.72	97.82	104.11
4	A	2003	CLR	C4-C5-C10	3.68	121.31	116.42
2	A	2001	ERM	C10-C9-C14	-3.19	115.62	120.10
4	A	2003	CLR	C15-C14-C13	2.99	107.45	103.84
2	A	2001	ERM	C22-C21-N5	2.93	108.40	103.25
4	A	2003	CLR	C4-C5-C6	-2.84	116.51	120.61
6	A	2007	OLB	O20-C1-C2	2.74	120.50	111.91
2	A	2001	ERM	O1-C16-C6	-2.70	118.48	121.48

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	2001	ERM	C6-C16-N3	2.70	117.90	114.60
6	A	2007	OLB	O20-C21-C22	2.68	118.72	105.77
6	A	2005	OLB	O20-C1-C2	2.67	120.29	111.91
6	A	2005	OLB	O20-C21-C22	2.61	118.39	105.77
2	A	2001	ERM	C21-N5-C20	2.60	127.65	123.10
2	A	2001	ERM	O5-C25-C24	2.55	112.52	109.78
6	A	2006	OLB	O20-C21-C22	2.54	118.02	105.77
5	A	2004	OLC	O20-C21-C22	2.46	117.63	105.77
2	A	2001	ERM	O4-C20-N5	-2.43	119.52	123.03
6	A	2006	OLB	O20-C1-C2	2.42	119.49	111.91
4	A	2003	CLR	C11-C9-C8	2.35	115.14	111.75
2	A	2001	ERM	C19-N4-C18	-2.26	123.51	125.93
5	A	2004	OLC	O20-C1-C2	2.25	118.98	111.91
2	A	2001	ERM	C26-C17-N3	-2.21	105.37	108.39
2	A	2001	ERM	C8-C4-N2	2.13	112.30	110.32
2	A	2001	ERM	C24-C25-N4	2.10	110.40	108.13

There are no chirality outliers.

All (70) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	2005	OLB	O20-C21-C22-C24
5	A	2004	OLC	O20-C21-C22-O23
3	A	2002	PLM	C1-C2-C3-C4
7	A	2008	OLA	C1-C2-C3-C4
6	A	2007	OLB	O20-C21-C22-C24
6	A	2005	OLB	C2-C1-O20-C21
6	A	2006	OLB	C2-C1-O20-C21
6	A	2006	OLB	O19-C1-O20-C21
6	A	2005	OLB	O20-C21-C22-O23
6	A	2007	OLB	O20-C21-C22-O23
6	A	2005	OLB	O19-C1-O20-C21
6	A	2007	OLB	O19-C1-O20-C21
8	A	2010	PEG	O2-C3-C4-O4
6	A	2007	OLB	C2-C1-O20-C21
5	A	2004	OLC	C1-C2-C3-C4
6	A	2005	OLB	C1-C2-C3-C4
6	A	2006	OLB	C1-C2-C3-C4
8	A	2010	PEG	O1-C1-C2-O2
8	A	2011	PEG	O2-C3-C4-O4
7	A	2008	OLA	C5-C6-C7-C8
6	A	2006	OLB	C2-C3-C4-C5

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Mol	Chain	Res	Type	Atoms
7	A	2008	OLA	C12-C13-C14-C15
7	A	2008	OLA	C2-C3-C4-C5
6	A	2006	OLB	C4-C5-C6-C7
6	A	2005	OLB	C21-C22-C24-O25
6	A	2006	OLB	C21-C22-C24-O25
7	A	2008	OLA	C14-C15-C16-C17
7	A	2009	OLA	C6-C7-C8-C9
7	A	2008	OLA	C11-C12-C13-C14
4	A	2003	CLR	C23-C24-C25-C27
5	A	2004	OLC	C5-C6-C7-C8
6	A	2005	OLB	C2-C3-C4-C5
7	A	2008	OLA	C6-C7-C8-C9
6	A	2006	OLB	C3-C4-C5-C6
4	A	2003	CLR	C20-C22-C23-C24
3	A	2002	PLM	C8-C9-CA-CB
5	A	2004	OLC	O20-C21-C22-C24
5	A	2004	OLC	C6-C7-C8-C9
7	A	2008	OLA	C4-C5-C6-C7
5	A	2004	OLC	O19-C1-O20-C21
4	A	2003	CLR	C23-C24-C25-C26
3	A	2002	PLM	C5-C6-C7-C8
8	A	2011	PEG	O1-C1-C2-O2
7	A	2008	OLA	C15-C16-C17-C18
6	A	2005	OLB	C5-C6-C7-C8
3	A	2002	PLM	C2-C3-C4-C5
3	A	2002	PLM	C9-CA-CB-CC
3	A	2002	PLM	CD-CE-CF-CG
5	A	2004	OLC	C9-C10-C11-C12
6	A	2007	OLB	C6-C7-C8-C9
5	A	2004	OLC	O23-C22-C24-O25
6	A	2005	OLB	C4-C5-C6-C7
8	A	2011	PEG	C1-C2-O2-C3
7	A	2008	OLA	C10-C11-C12-C13
3	A	2002	PLM	C3-C4-C5-C6
5	A	2004	OLC	C2-C3-C4-C5
8	A	2010	PEG	C4-C3-O2-C2
4	A	2003	CLR	C17-C20-C22-C23
6	A	2007	OLB	C5-C6-C7-C8
7	A	2009	OLA	C4-C5-C6-C7
5	A	2004	OLC	C3-C4-C5-C6
5	A	2004	OLC	C21-C22-C24-O25
3	A	2002	PLM	C7-C8-C9-CA

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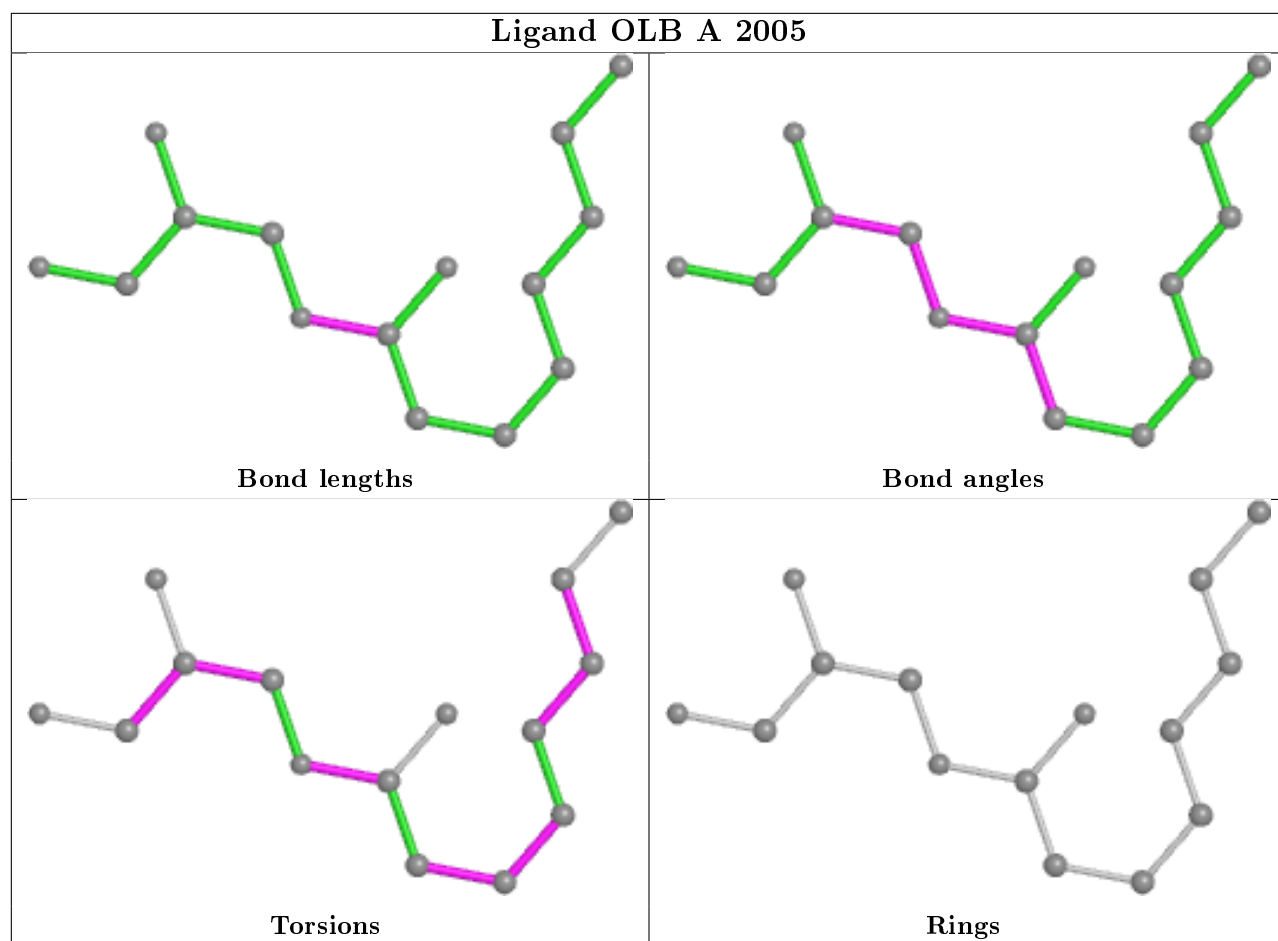
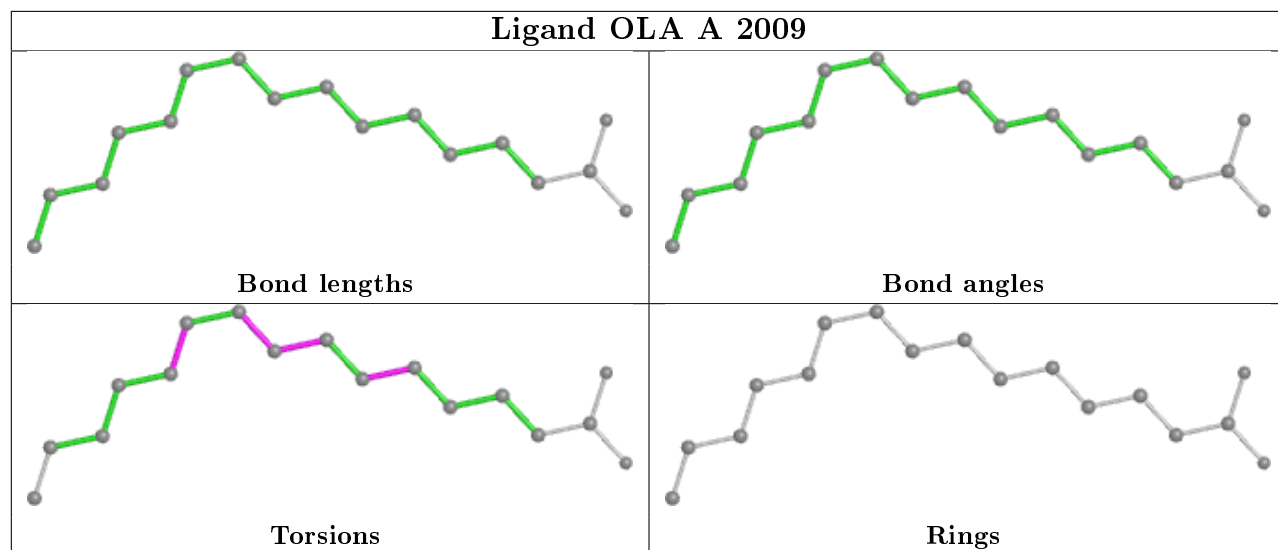
Mol	Chain	Res	Type	Atoms
6	A	2006	OLB	O20-C21-C22-O23
7	A	2009	OLA	C9-C10-C11-C12
7	A	2009	OLA	C7-C8-C9-C10
5	A	2004	OLC	O19-C1-C2-C3
7	A	2008	OLA	C13-C14-C15-C16
3	A	2002	PLM	CB-CC-CD-CE
7	A	2008	OLA	C3-C4-C5-C6

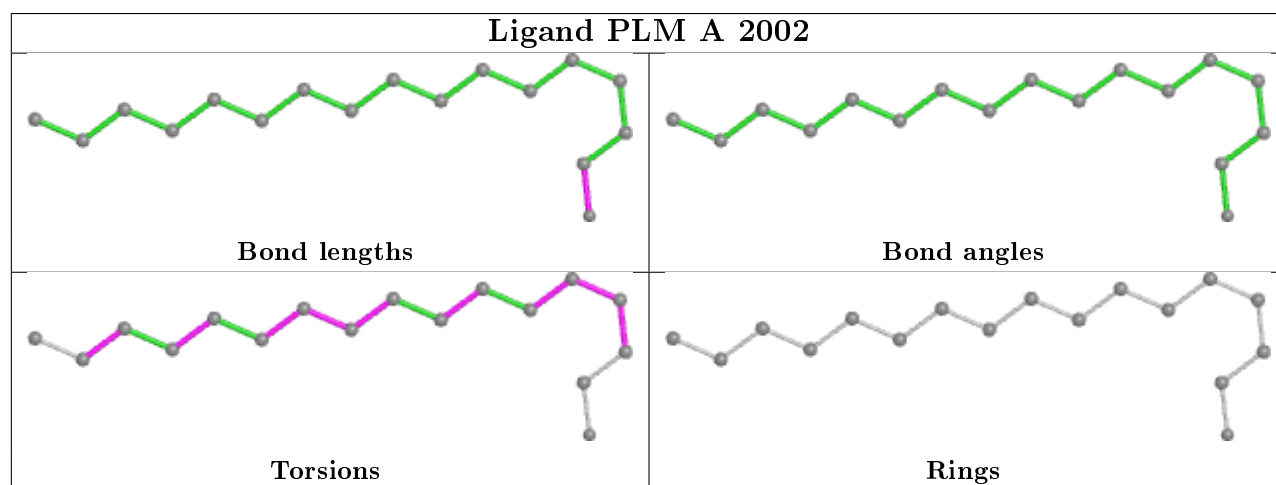
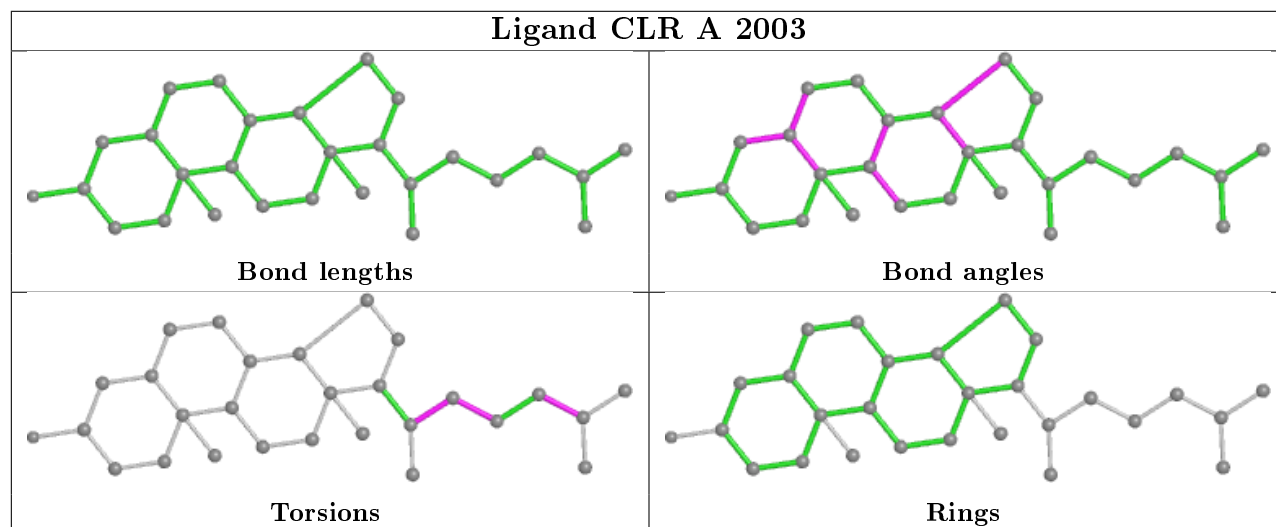
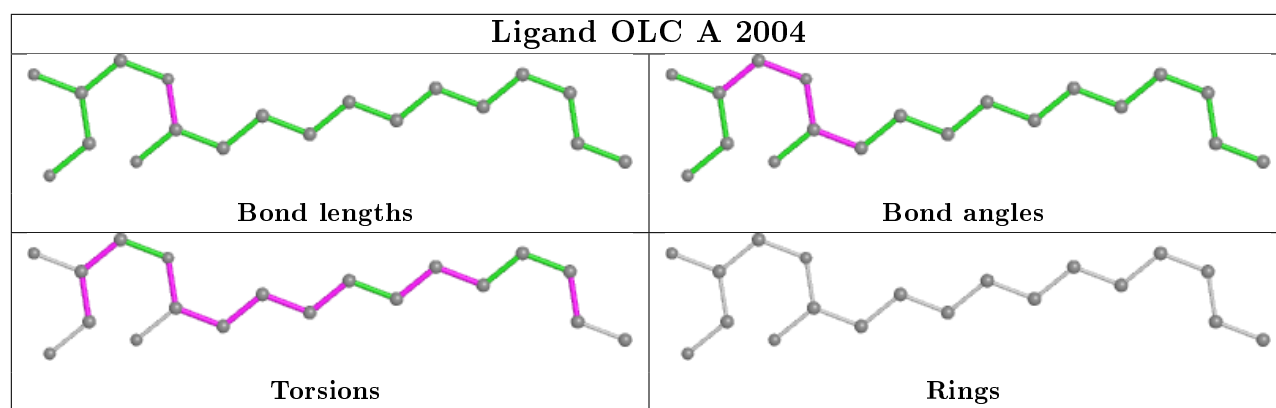
There are no ring outliers.

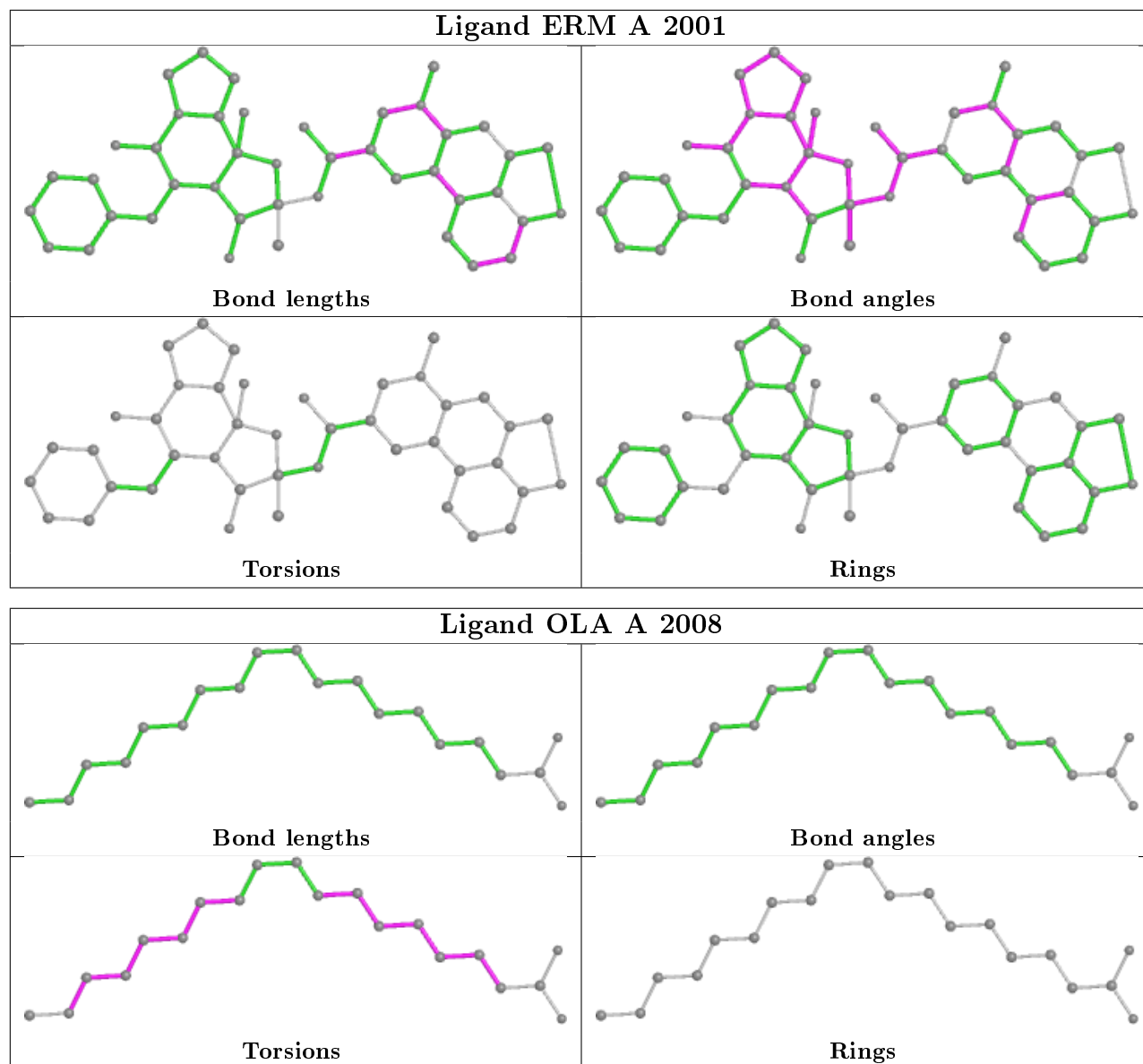
5 monomers are involved in 4 short contacts:

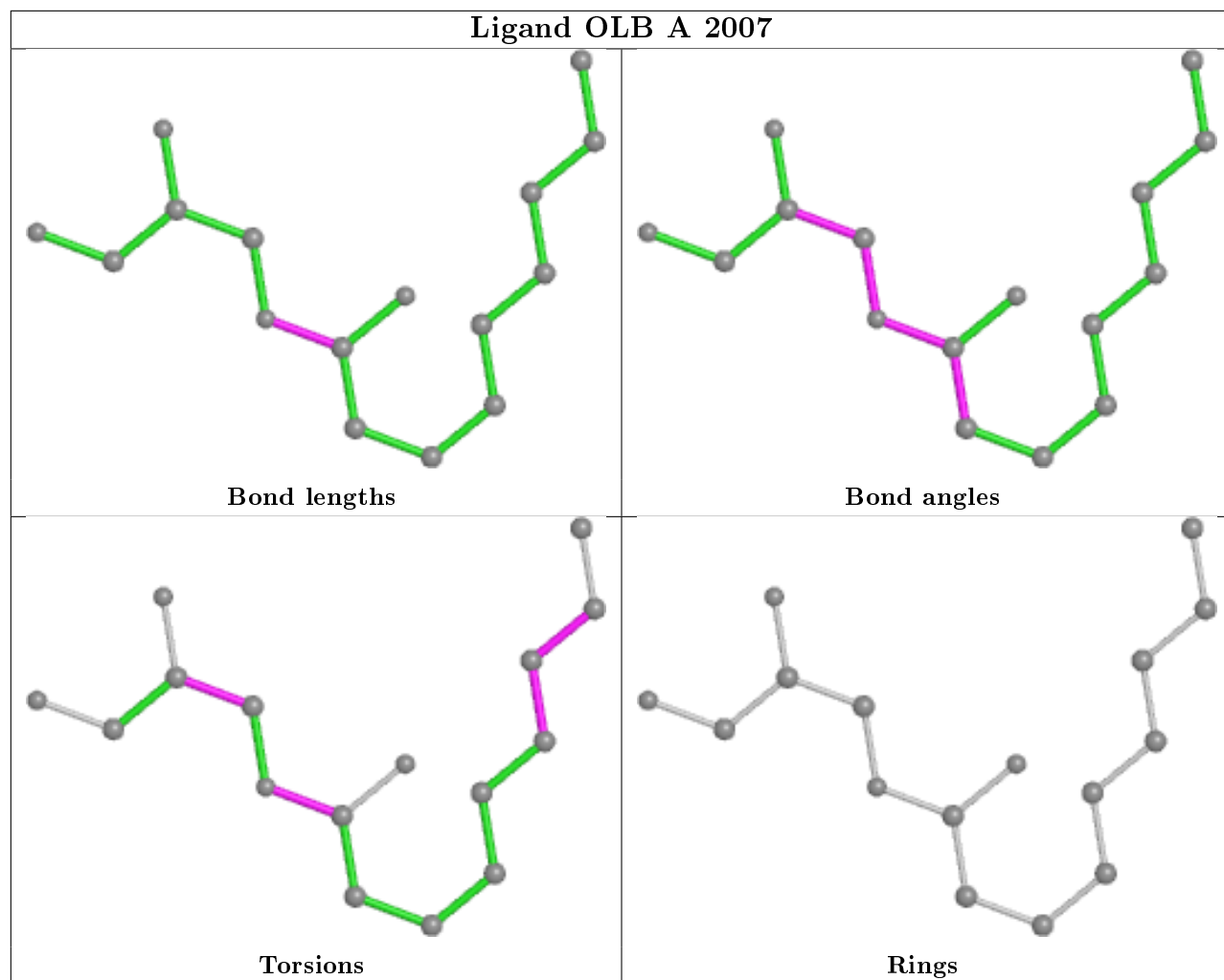
Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	A	2010	PEG	1	0
4	A	2003	CLR	1	0
7	A	2008	OLA	1	0
6	A	2007	OLB	1	0
6	A	2006	OLB	1	0

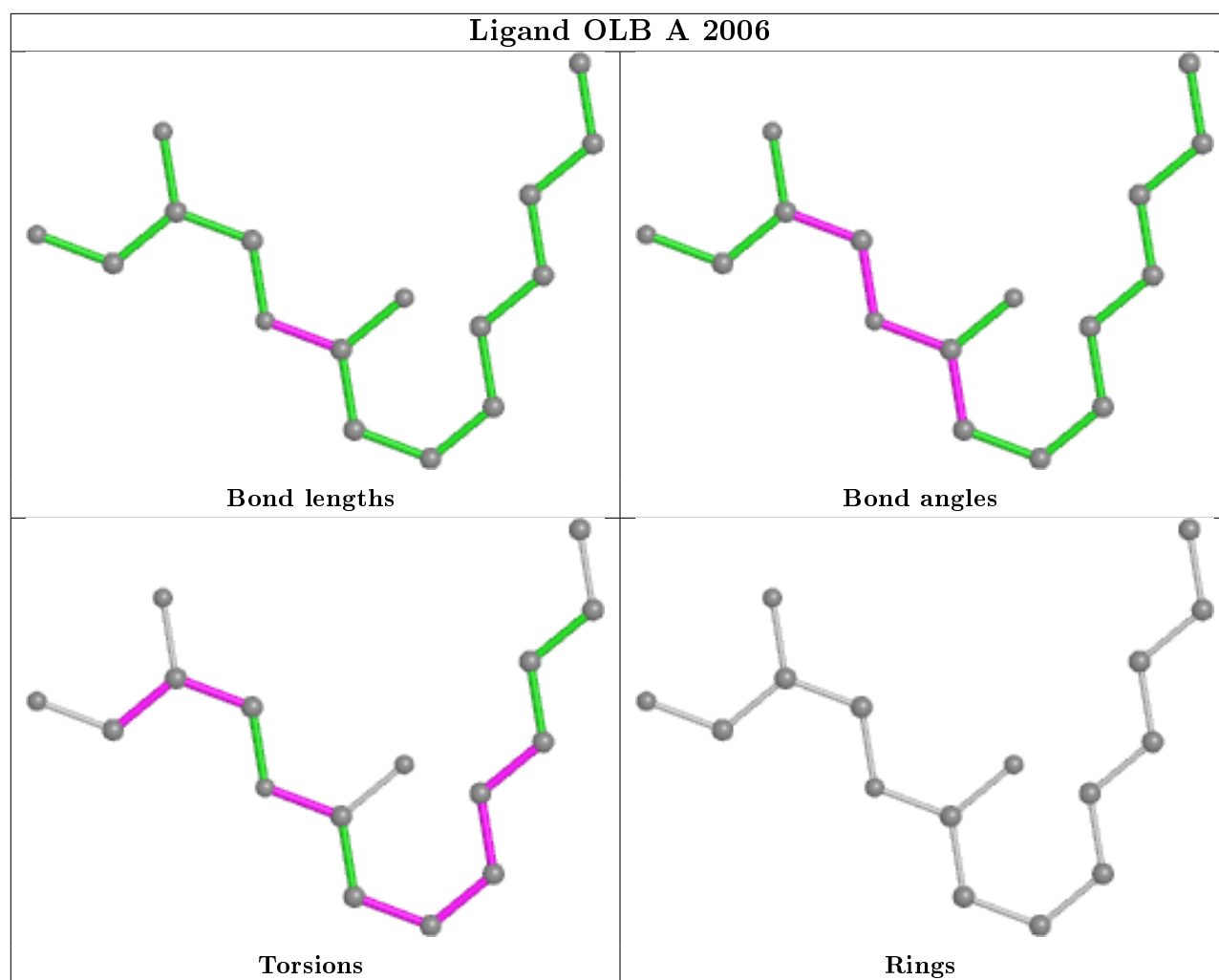
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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	375/430 (87%)	0.22	31 (8%) 11 9	43, 68, 140, 186	0

All (31) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1042	LYS	12.2
1	A	162	GLN	7.6
1	A	1041	GLN	5.9
1	A	1062	ARG	5.6
1	A	119	ALA	5.1
1	A	161	ILE	4.9
1	A	1035	ALA	4.8
1	A	1036	ALA	4.4
1	A	163	ALA	4.3
1	A	204	ASN	4.3
1	A	197	THR	3.9
1	A	1038	LEU	3.4
1	A	1037	ALA	3.3
1	A	201	ASN	3.0
1	A	1061	PHE	2.9
1	A	203	ASN	2.5
1	A	1063	HIS	2.5
1	A	48	GLU	2.5
1	A	1024	ALA	2.4
1	A	1100	ALA	2.4
1	A	1021	ASP	2.4
1	A	202	PRO	2.3
1	A	1105	TYR	2.3
1	A	166	TYR	2.3
1	A	1019	LYS	2.1
1	A	1007	TRP	2.1
1	A	1034	ARG	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	1040	ALA	2.1
1	A	1039	ASP	2.1
1	A	1033	MET	2.1
1	A	1022	ASN	2.0

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

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

## 6.3 Carbohydrates [i](#)

There are no carbohydrates 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.

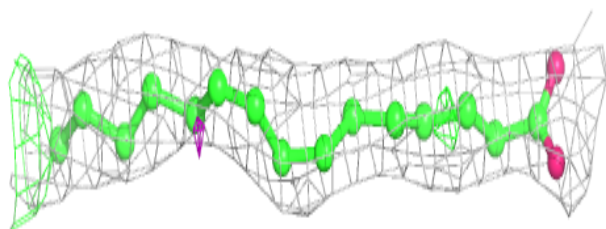
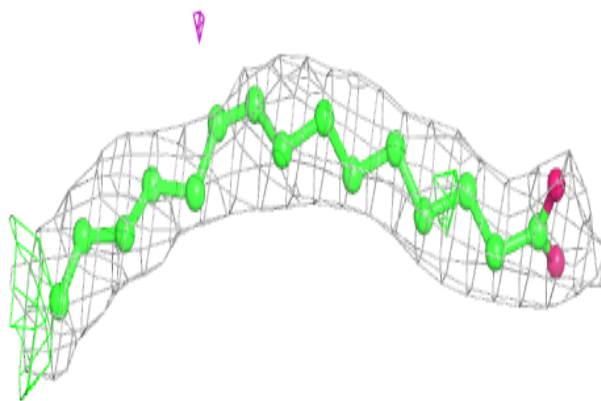
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
8	PEG	A	2011	7/7	0.63	0.27	85,87,88,88	0
7	OLA	A	2009	17/20	0.71	0.27	64,78,93,93	0
6	OLB	A	2007	16/25	0.71	0.34	88,96,100,101	0
6	OLB	A	2006	16/25	0.76	0.39	79,95,101,102	0
7	OLA	A	2008	20/20	0.79	0.35	81,88,97,98	0
6	OLB	A	2005	15/25	0.80	0.39	91,93,94,95	0
5	OLC	A	2004	19/25	0.88	0.24	65,70,72,72	0
8	PEG	A	2010	7/7	0.89	0.20	73,74,75,75	0
3	PLM	A	2002	17/18	0.90	0.18	71,74,75,75	0
4	CLR	A	2003	28/28	0.90	0.23	69,72,88,89	0
2	ERM	A	2001	43/43	0.94	0.20	53,57,61,63	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.

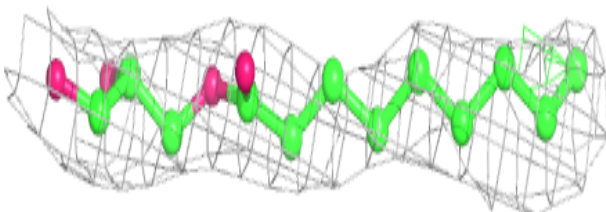
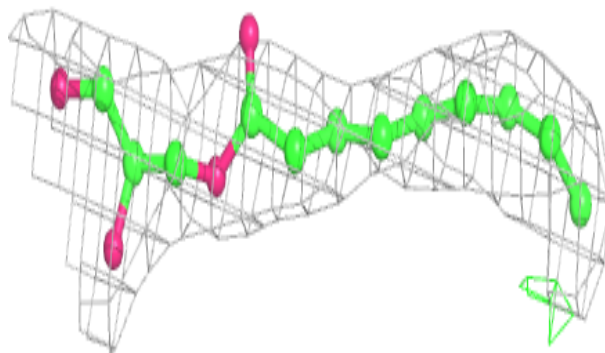


**Electron density around OLA A 2009:**

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

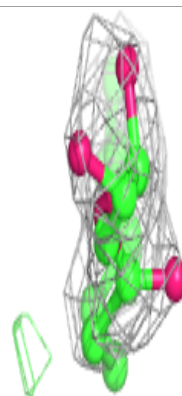
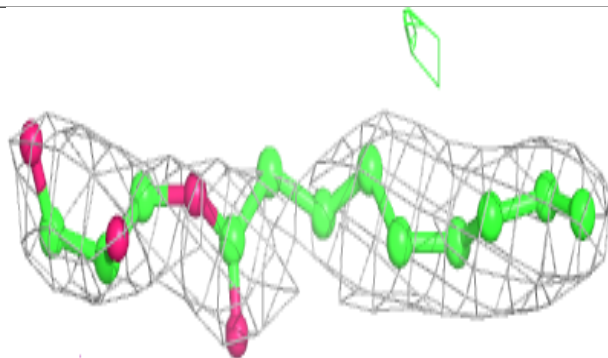
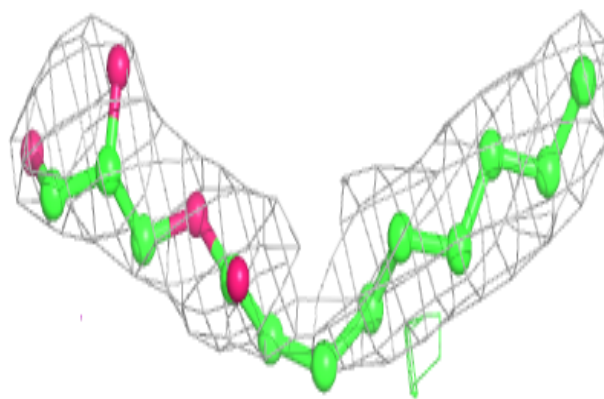
**Electron density around OLB A 2007:**

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

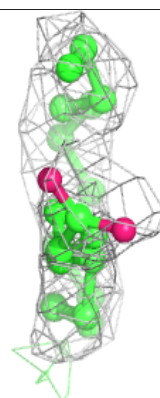
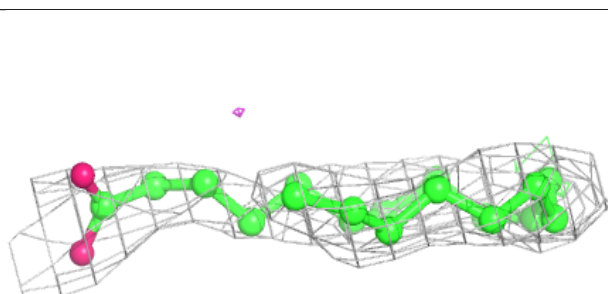
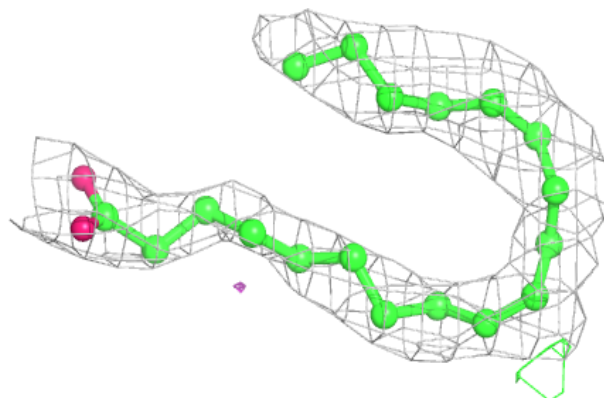


**Electron density around OLB A 2006:**

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

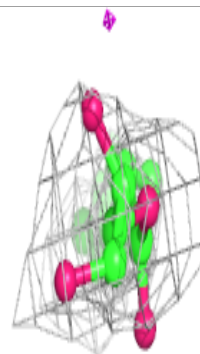
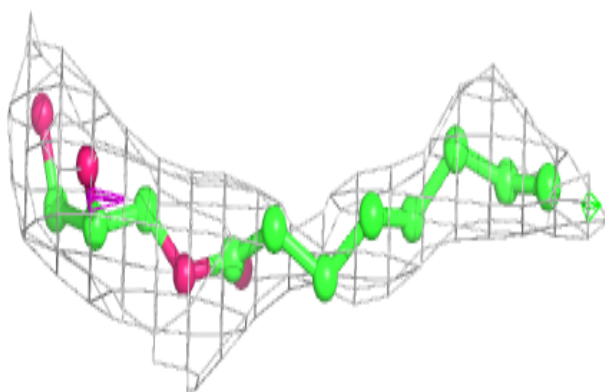
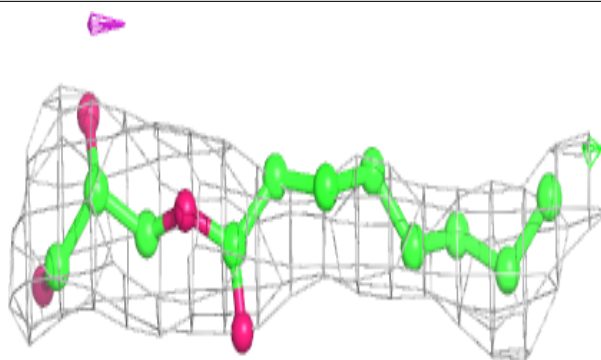
**Electron density around OLA A 2008:**

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

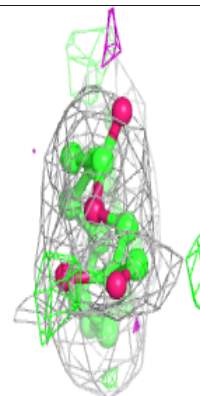
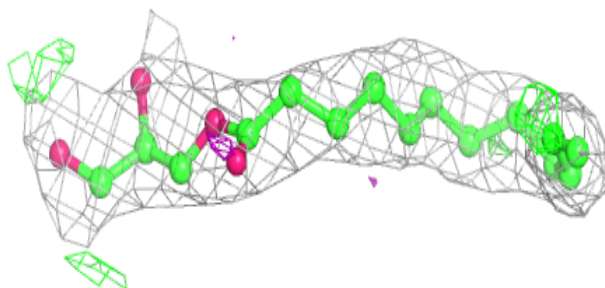
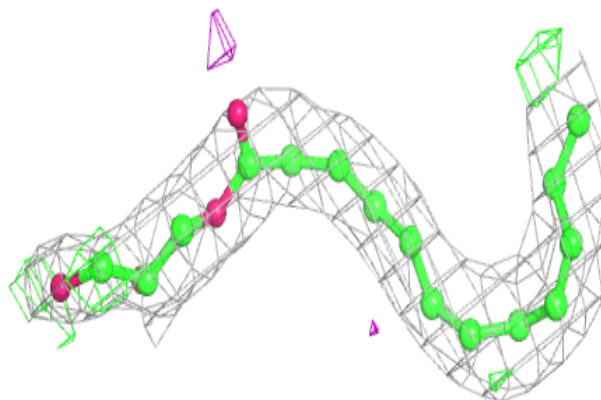


**Electron density around OLB A 2005:**

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

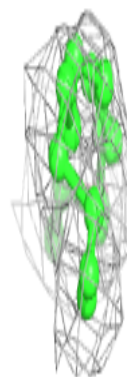
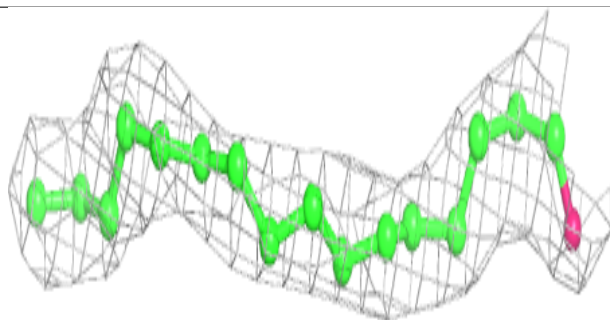
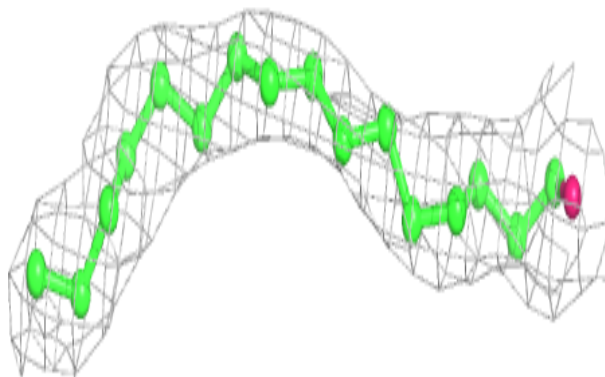
**Electron density around OLC A 2004:**

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

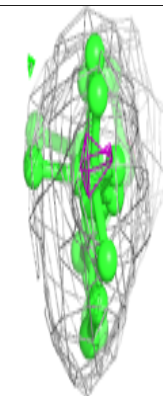
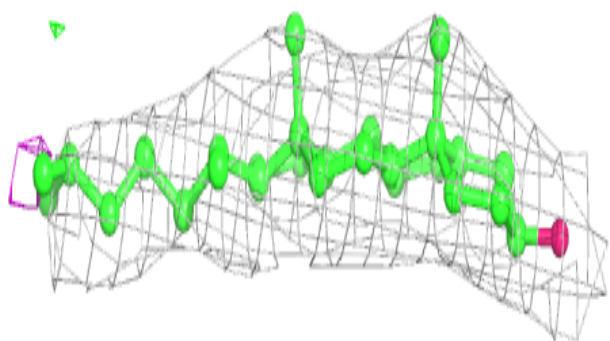
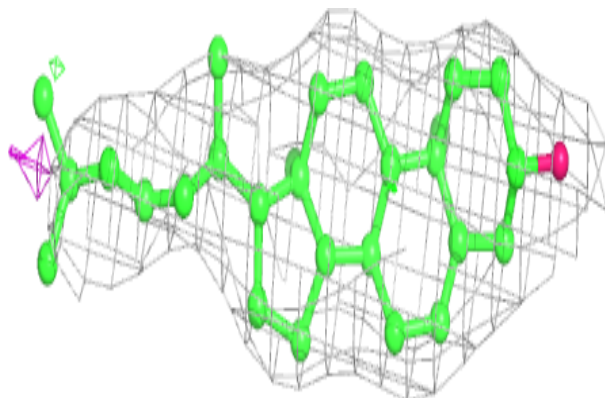


**Electron density around PLM A 2002:**

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

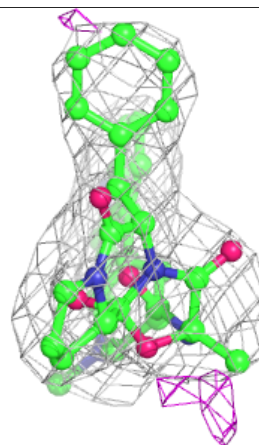
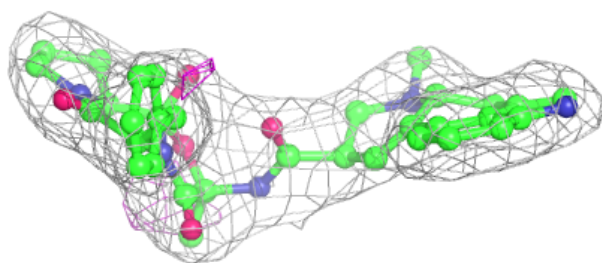
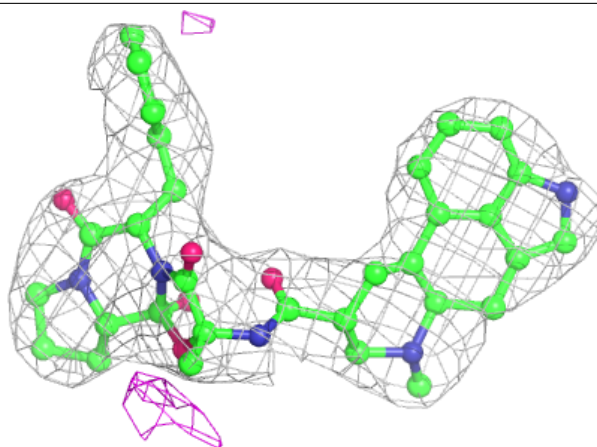
**Electron density around CLR A 2003:**

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



**Electron density around ERM A 2001:**

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



## 6.5 Other polymers ⓘ

There are no such residues in this entry.