wwPDB EM Validation Summary Report

Aug 13, 2026 – 03:22 pm BST

PDB ID	:	9I82 / pdb_00009i82
EMDB ID	:	EMD-52705
Title	:	Cryo-EM structure of PSII intermediate Psb27-PSII
Authors	:	Bohn, S.; Lo, Y.K.; Lambertz, J.; Furtges, T.; Rudack, T.; Nowaczyk, M.M.; Schuller, J.M.
Deposited on	:	2025-02-04
Resolution	:	2.80 Å(reported)

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
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.

The following versions of software and data (see references ⓘ) were used in the production of this report:

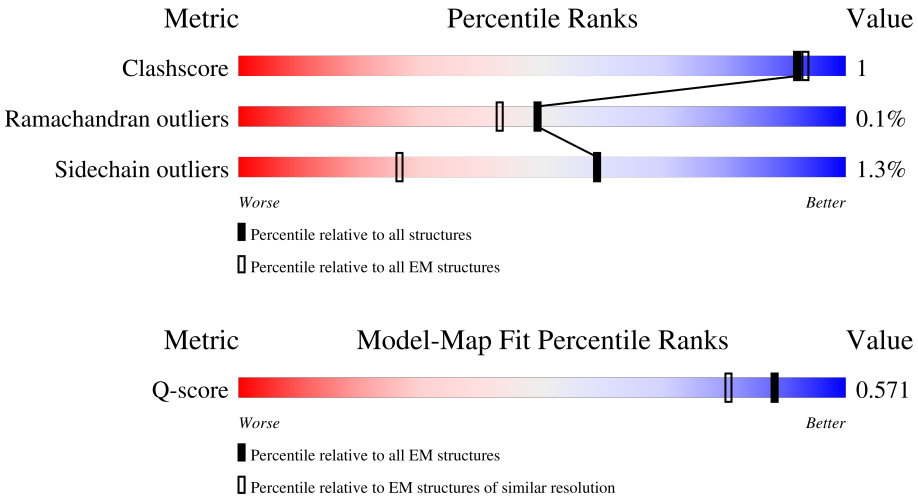
EMDB validation analysis	:	0.0.1.dev133
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.50

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

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)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	11806 (2.30 - 3.30)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	360	86% · 10%
2	B	510	90% 5% 5%
3	C	461	95% · ·
4	D	352	91% 5% ·

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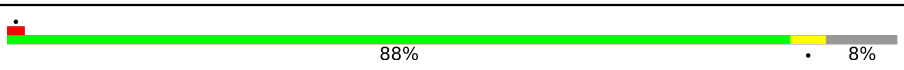
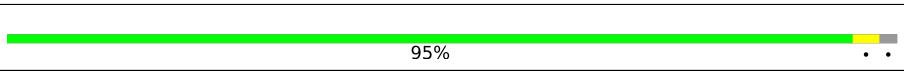
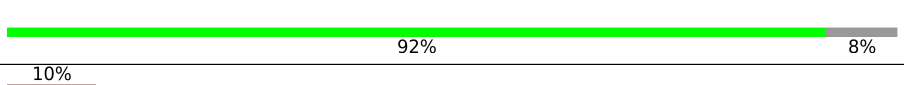
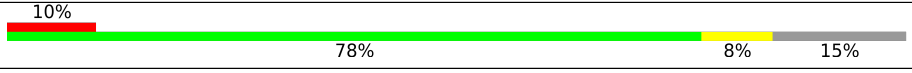
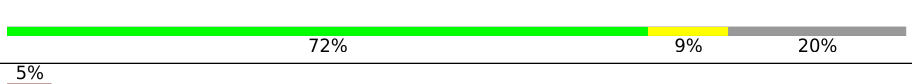
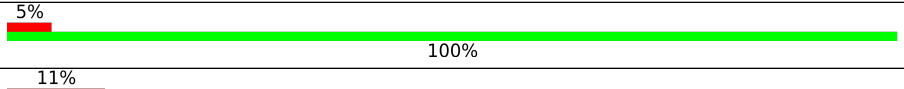
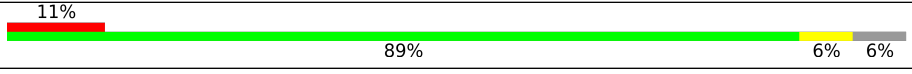
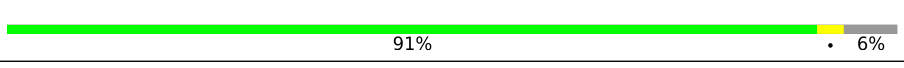
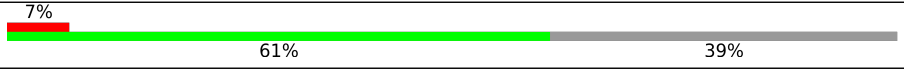
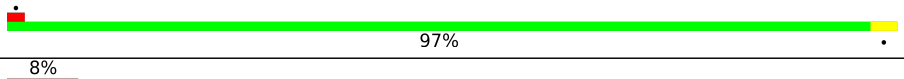
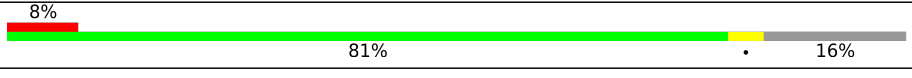
Mol	Chain	Length	Quality of chain
5	E	84	
6	F	45	
7	H	66	
8	I	38	
9	J	40	
10	K	46	
11	L	37	
12	M	36	
13	T	32	
14	X	41	
15	Y	46	
16	Z	62	
17	1	134	

2 Entry composition (i)

There are 28 unique types of molecules in this entry. The entry contains 20990 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Photosystem II protein D1 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	325	2559	1676	421	447	15	1	0

- Molecule 2 is a protein called Photosystem II CP47 reaction center protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	485	3812	2505	635	659	13	0	0

- Molecule 3 is a protein called Photosystem II CP43 reaction center protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	448	3466	2270	580	603	13	0	0

- Molecule 4 is a protein called Photosystem II D2 protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	340	2706	1794	440	460	12	0	0

- Molecule 5 is a protein called Cytochrome b559 subunit alpha.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	E	77	635	417	103	115	0	0

- Molecule 6 is a protein called Cytochrome b559 subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	38	307	207	50	49	1	0	0

- Molecule 7 is a protein called Photosystem II reaction center protein H.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	H	65	Total	C	N	O	S	0	0
			511	341	82	86	2		

- Molecule 8 is a protein called Photosystem II reaction center protein I.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	I	35	Total	C	N	O	S	0	0
			286	195	45	45	1		

- Molecule 9 is a protein called Photosystem II reaction center protein J.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	J	34	Total	C	N	O	S	0	0
			249	170	38	40	1		

- Molecule 10 is a protein called Photosystem II reaction center protein K.

Mol	Chain	Residues	Atoms				AltConf	Trace
10	K	37	Total	C	N	O	0	0
			293	204	43	46		

- Molecule 11 is a protein called Photosystem II reaction center protein L.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	L	37	Total	C	N	O	S	0	0
			304	202	48	53	1		

- Molecule 12 is a protein called Photosystem II reaction center protein M.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	M	34	Total	C	N	O	S	0	0
			267	178	40	48	1		

- Molecule 13 is a protein called Photosystem II reaction center protein T.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	T	30	Total	C	N	O	S	0	0
			256	180	36	38	2		

- Molecule 14 is a protein called Photosystem II reaction center X protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	X	35	Total	C	N	O	0	0
			254	172	38	44		

- Molecule 15 is a protein called Photosystem II reaction center protein Ycf12.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	Y	28	Total	C	N	O	S	0	0
			208	137	36	32	3		

- Molecule 16 is a protein called Photosystem II reaction center protein Z.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	Z	62	Total	C	N	O	S	0	0
			479	328	72	77	2		

- Molecule 17 is a protein called Photosystem II lipoprotein Psb27.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	1	113	Total	C	N	O	S	0	0
			893	556	161	173	3		

- Molecule 18 is FE (III) ION (CCD ID: FE) (formula: Fe) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
18	A	1	Total	Fe	0
			1	1	

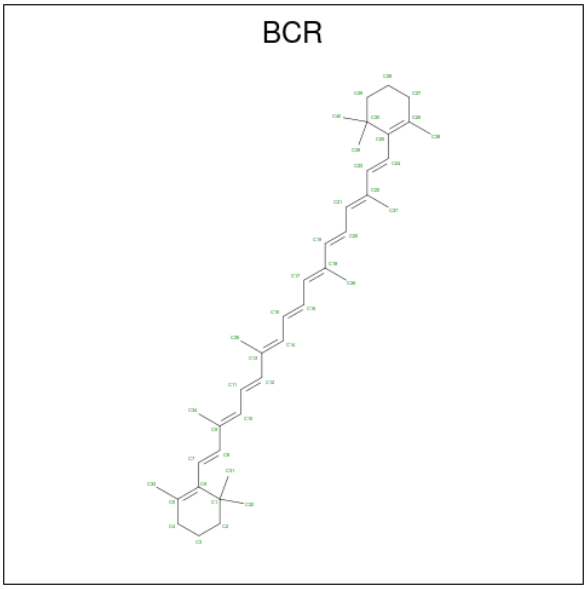
- Molecule 19 is MANGANESE (II) ION (CCD ID: MN) (formula: Mn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
19	A	1	Total	Mn	0
			1	1	

- Molecule 20 is CHLORIDE ION (CCD ID: CL) (formula: Cl) (labeled as "Ligand of Interest" by depositor).

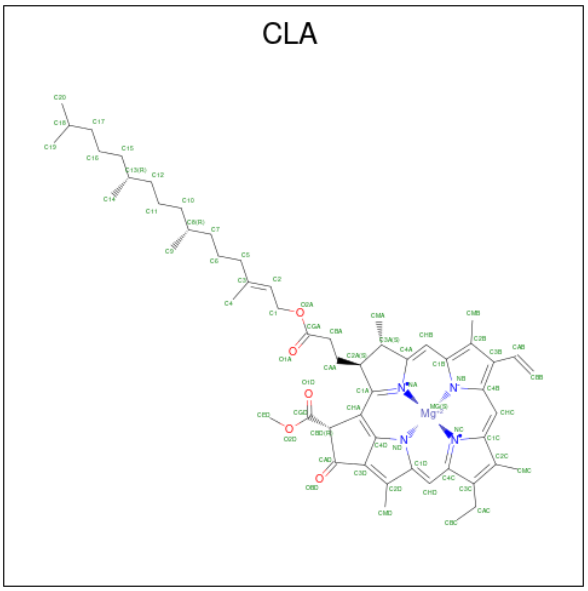
Mol	Chain	Residues	Atoms		AltConf
20	A	1	Total	Cl	0
			1	1	

- Molecule 21 is BETA-CAROTENE (CCD ID: BCR) (formula: $C_{40}H_{56}$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	AltConf
21	A	1	Total C 40 40	0
21	B	1	Total C 40 40	0
21	B	1	Total C 40 40	0
21	C	1	Total C 40 40	0
21	C	1	Total C 40 40	0
21	C	1	Total C 40 40	0
21	D	1	Total C 40 40	0
21	H	1	Total C 40 40	0
21	J	1	Total C 40 40	0
21	J	1	Total C 40 40	0
21	M	1	Total C 40 40	0

- Molecule 22 is CHLOROPHYLL A (CCD ID: CLA) (formula: $C_{55}H_{72}MgN_4O_5$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf
22	A	1	Total	C	N	O	0
			64	55	4	5	
22	A	1	Total	C	N	O	0
			64	55	4	5	
22	A	1	Total	C	N	O	0
			64	55	4	5	
22	A	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	

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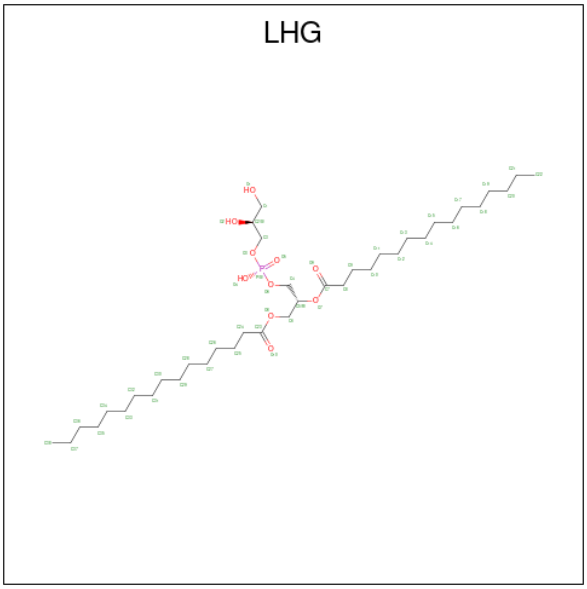
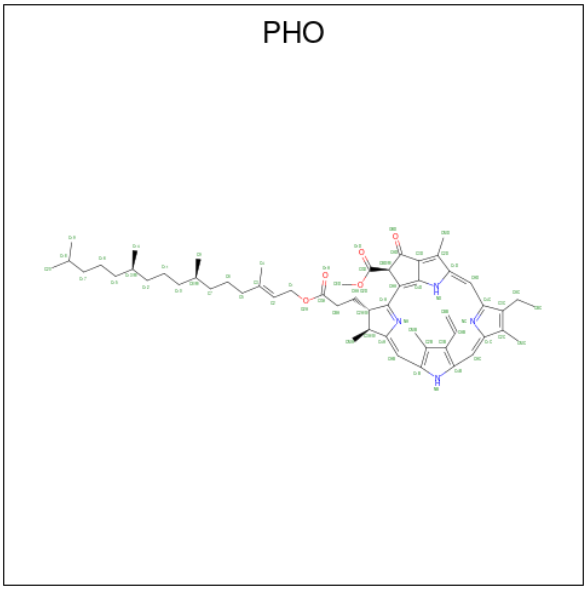
Mol	Chain	Residues	Atoms				AltConf
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	B	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	C	1	Total	C	N	O	0
			64	55	4	5	
22	D	1	Total	C	N	O	0
			64	55	4	5	
22	D	1	Total	C	N	O	0
			64	55	4	5	

- Molecule 23 is 1,2-DIPALMITOYL-PHOSPHATIDYL-GLYCEROLE (CCD ID: LHG) (formula: $C_{38}H_{75}O_{10}P$) (labeled as "Ligand of Interest" by depositor).



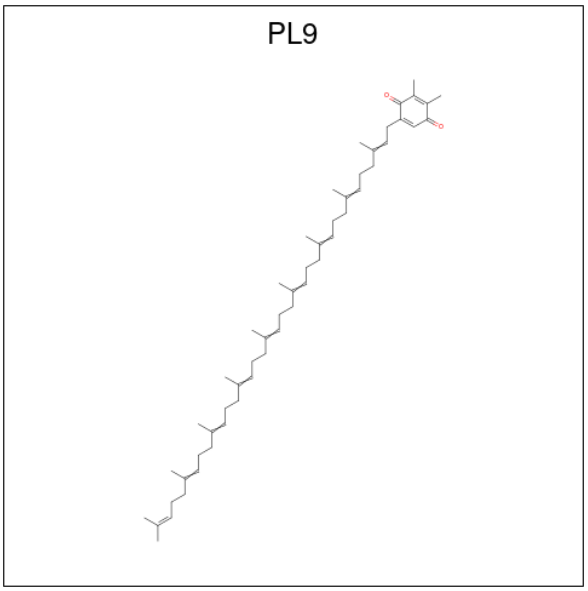
Mol	Chain	Residues	Atoms				AltConf
23	A	1	Total	C	O	P	0
			49	38	10	1	
23	A	1	Total	C	O	P	0
			49	38	10	1	

- Molecule 24 is PHEOPHYTIN A (CCD ID: PHO) (formula: $C_{55}H_{74}N_4O_5$) (labeled as "Ligand of Interest" by depositor).



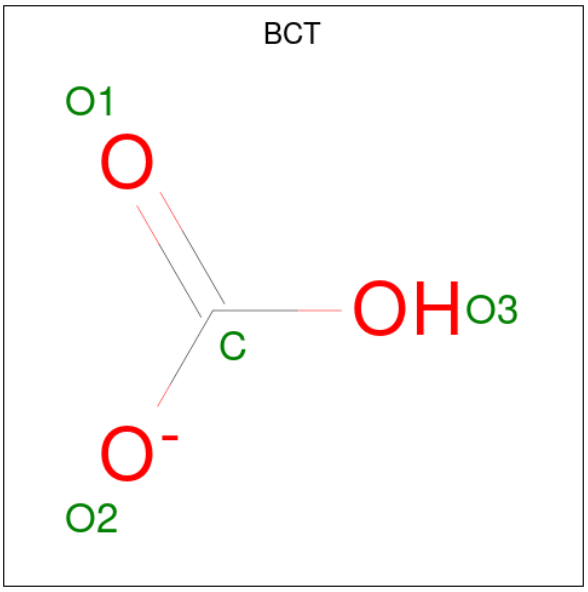
Mol	Chain	Residues	Atoms				AltConf
24	A	1	Total	C	N	O	0
			64	55	4	5	
24	D	1	Total	C	N	O	0
			64	55	4	5	

- Molecule 25 is 2,3-DIMETHYL-5-(3,7,11,15,19,23,27,31,35-NONAMETHYL-2,6,10,14,18,22,26,30,34-HEXATRIACONTANONAENYL-2,5-CYCLOHEXADIENE-1,4-DIONE-2,3-DIMETHYL-5-SOLANESYL-1,4-BENZOQUINONE (CCD ID: PL9) (formula: $C_{53}H_{80}O_2$) (labeled as "Ligand of Interest" by depositor).



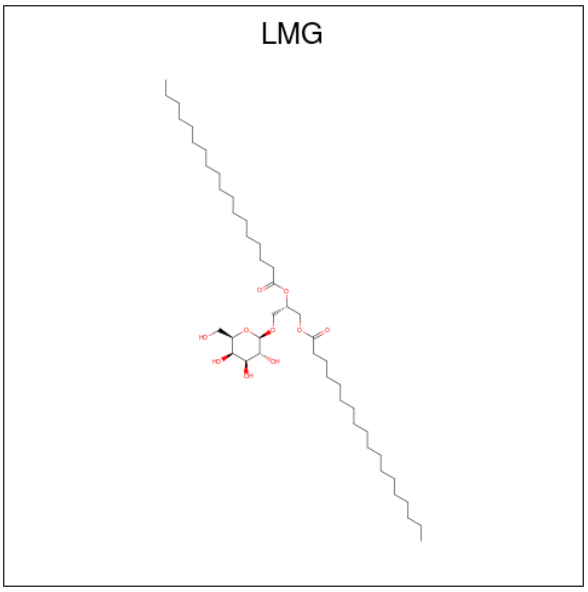
Mol	Chain	Residues	Atoms			AltConf
25	A	1	Total	C	O	0
			55	53	2	
25	D	1	Total	C	O	0
			55	53	2	

- Molecule 26 is BICARBONATE ION (CCD ID: BCT) (formula: CHO_3) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
26	A	1	Total	C	O	0
			4	1	3	

- Molecule 27 is 1,2-DISTEAROYL-MONOGALACTOSYL-DIGLYCERIDE (CCD ID: LMG) (formula: $C_{45}H_{86}O_{10}$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
27	C	1	Total	C	O	0
			55	45	10	
27	D	1	Total	C	O	0
			55	45	10	

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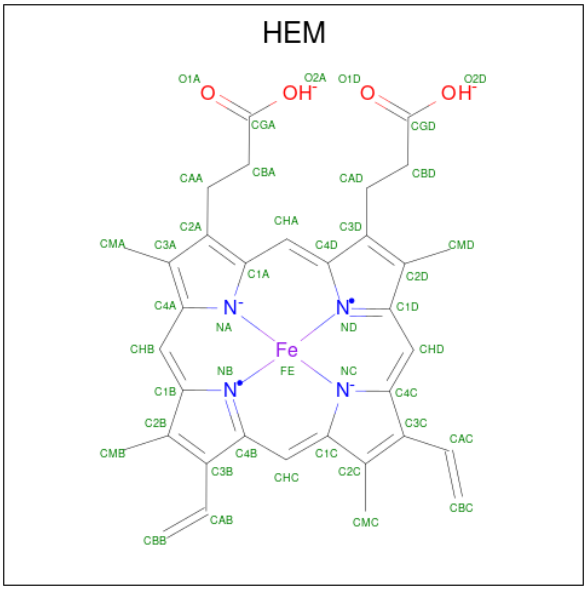
Mol	Chain	Residues	Atoms	AltConf
27	D	1	Total C O 55 45 10	0
27	D	1	Total C O 55 45 10	0
27	I	1	Total C O 55 45 10	0
27	K	1	Total C O 55 45 10	0
27	L	1	Total C O 55 45 10	0
27	M	1	Total C O 55 45 10	0

- Molecule 28 is PROTOPORPHYRIN IX CONTAINING FE (CCD ID: HEM) (formula: $C_{34}H_{32}FeN_4O_4$) (labeled as "Ligand of Interest" by depositor).



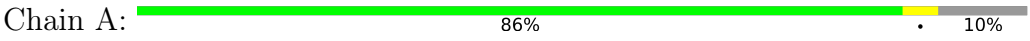
Mol	Chain	Residues	Atoms	AltConf
28	F	1	Total C N O 42 34 4 4	0

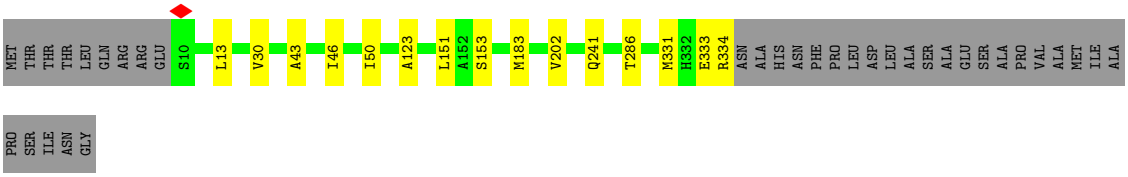
3 Residue-property plots (i)

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 atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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: Photosystem II protein D1 1

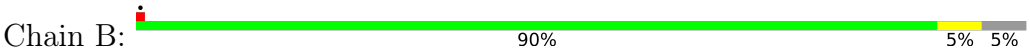
Chain A:

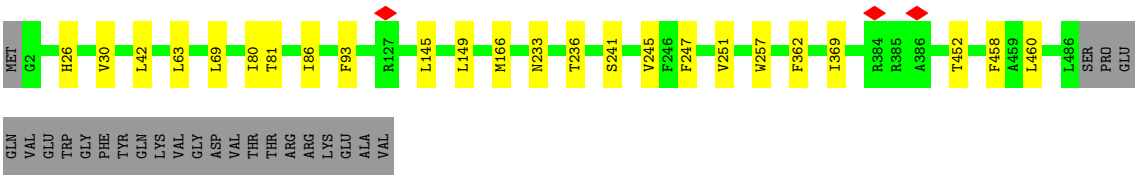




• Molecule 2: Photosystem II CP47 reaction center protein

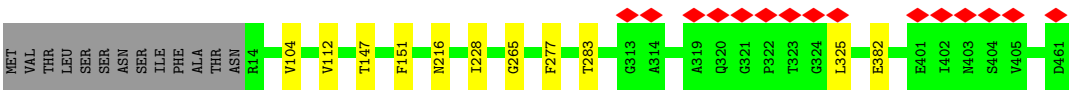
Chain B:





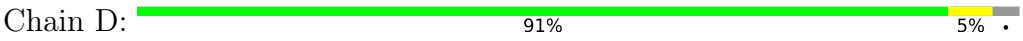
• Molecule 3: Photosystem II CP43 reaction center protein

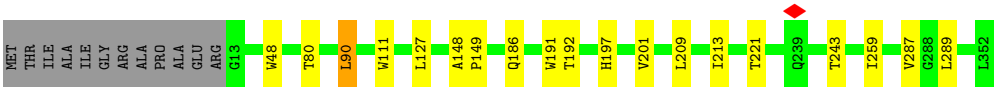
Chain C:



• Molecule 4: Photosystem II D2 protein

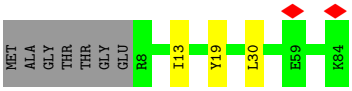
Chain D:





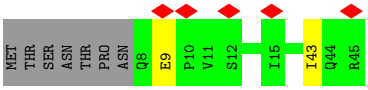
• Molecule 5: Cytochrome b559 subunit alpha

Chain E:



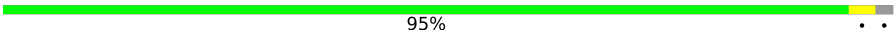
• Molecule 6: Cytochrome b559 subunit beta

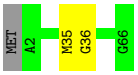
Chain F:



• Molecule 7: Photosystem II reaction center protein H

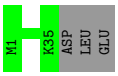
Chain H:





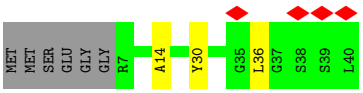
• Molecule 8: Photosystem II reaction center protein I

Chain I:



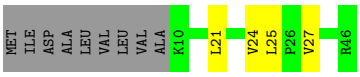
• Molecule 9: Photosystem II reaction center protein J

Chain J:



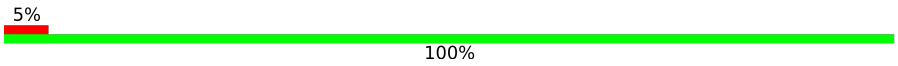
• Molecule 10: Photosystem II reaction center protein K

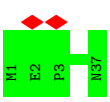
Chain K:



• Molecule 11: Photosystem II reaction center protein L

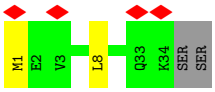
Chain L:





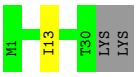
• Molecule 12: Photosystem II reaction center protein M

Chain M:



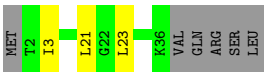
• Molecule 13: Photosystem II reaction center protein T

Chain T:



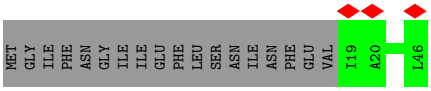
• Molecule 14: Photosystem II reaction center X protein

Chain X:



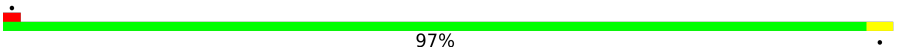
• Molecule 15: Photosystem II reaction center protein Ycf12

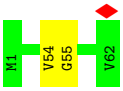
Chain Y:



• Molecule 16: Photosystem II reaction center protein Z

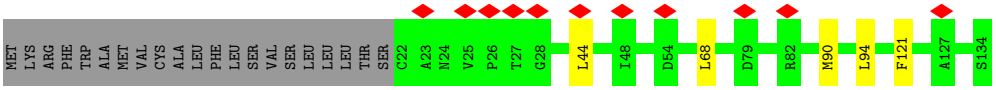
Chain Z:





• Molecule 17: Photosystem II lipoprotein Psb27

Chain 1:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	325601	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	55	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.127	Depositor
Minimum map value	-0.070	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.0061	Depositor
Map size (Å)	268.8, 268.8, 268.8	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.84, 0.84, 0.84	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CLA, MN, PHO, CL, FE, LHG, BCT, BCR, LMG, HEM, PL9

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	0.16	0/2642	0.36	0/3603
2	B	0.15	0/3947	0.35	0/5379
3	C	0.16	0/3579	0.34	0/4872
4	D	0.14	0/2801	0.31	0/3818
5	E	0.15	0/654	0.34	0/891
6	F	0.16	0/317	0.38	0/433
7	H	0.15	0/524	0.39	0/713
8	I	0.20	0/293	0.38	0/395
9	J	0.17	0/255	0.37	0/346
10	K	0.16	0/303	0.35	0/416
11	L	0.17	0/311	0.32	0/422
12	M	0.17	0/270	0.33	0/367
13	T	0.20	0/265	0.34	0/359
14	X	0.15	0/257	0.28	0/348
15	Y	0.16	0/209	0.40	0/279
16	Z	0.18	0/490	0.32	0/669
17	1	0.14	0/907	0.31	0/1220
All	All	0.16	0/18024	0.34	0/24530

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
7	H	0	1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
7	H	35	MET	Peptide

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	2559	0	2459	7	0
2	B	3812	0	3683	13	0
3	C	3466	0	3389	7	0
4	D	2706	0	2608	14	0
5	E	635	0	625	3	0
6	F	307	0	312	1	0
7	H	511	0	532	0	0
8	I	286	0	308	0	0
9	J	249	0	262	2	0
10	K	293	0	305	2	0
11	L	304	0	316	0	0
12	M	267	0	289	0	0
13	T	256	0	262	1	0
14	X	254	0	282	0	0
15	Y	208	0	237	0	0
16	Z	479	0	516	2	0
17	1	893	0	896	2	0
18	A	1	0	0	0	0
19	A	1	0	0	0	0
20	A	1	0	0	0	0
21	A	40	0	56	1	0
21	B	80	0	112	0	0
21	C	120	0	168	7	0
21	D	40	0	56	0	0
21	H	40	0	56	0	0
21	J	80	0	112	3	0
21	M	40	0	56	1	0
22	A	256	0	288	5	0
22	B	1024	0	1152	9	0
22	C	832	0	936	6	0
22	D	128	0	144	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
23	A	98	0	148	0	0
24	A	64	0	74	0	0
24	D	64	0	74	2	0
25	A	55	0	80	0	0
25	D	55	0	80	0	0
26	A	4	0	1	0	0
27	C	55	0	86	0	0
27	D	165	0	258	1	0
27	I	55	0	86	0	0
27	K	55	0	86	0	0
27	L	55	0	86	0	0
27	M	55	0	86	0	0
28	F	42	0	30	4	0
All	All	20990	0	21592	63	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 1.

The worst 5 of 63 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)
3:C:104:VAL:HG11	21:C:517:BCR:H323	1.70	0.72
17:1:44:LEU:HD11	17:1:121:PHE:CZ	2.31	0.65
21:C:502:BCR:H403	22:C:503:CLA:HMB2	1.79	0.64
17:1:68:LEU:HD22	17:1:94:LEU:HD22	1.83	0.61
4:D:186:GLN:HB2	22:D:403:CLA:HBC1	1.84	0.58

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 PDB entries followed by that with respect to all EM entries.

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	324/360 (90%)	304 (94%)	20 (6%)	0	100 100
2	B	483/510 (95%)	470 (97%)	13 (3%)	0	100 100
3	C	446/461 (97%)	428 (96%)	18 (4%)	0	100 100
4	D	338/352 (96%)	330 (98%)	8 (2%)	0	100 100
5	E	75/84 (89%)	72 (96%)	3 (4%)	0	100 100
6	F	36/45 (80%)	32 (89%)	3 (8%)	1 (3%)	4 14
7	H	63/66 (96%)	58 (92%)	4 (6%)	1 (2%)	7 27
8	I	33/38 (87%)	32 (97%)	1 (3%)	0	100 100
9	J	32/40 (80%)	31 (97%)	1 (3%)	0	100 100
10	K	35/46 (76%)	35 (100%)	0	0	100 100
11	L	35/37 (95%)	35 (100%)	0	0	100 100
12	M	32/36 (89%)	31 (97%)	1 (3%)	0	100 100
13	T	28/32 (88%)	28 (100%)	0	0	100 100
14	X	33/41 (80%)	32 (97%)	1 (3%)	0	100 100
15	Y	26/46 (56%)	23 (88%)	3 (12%)	0	100 100
16	Z	60/62 (97%)	58 (97%)	2 (3%)	0	100 100
17	1	111/134 (83%)	110 (99%)	1 (1%)	0	100 100
All	All	2190/2390 (92%)	2109 (96%)	79 (4%)	2 (0%)	49 77

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
7	H	36	GLY
6	F	9	GLU

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 PDB entries followed by that with respect to all EM entries.

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	264/291 (91%)	257 (97%)	7 (3%)	39 74

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
2	B	385/407 (95%)	380 (99%)	5 (1%)	61 86
3	C	350/362 (97%)	348 (99%)	2 (1%)	78 92
4	D	275/283 (97%)	273 (99%)	2 (1%)	76 91
5	E	69/73 (94%)	69 (100%)	0	100 100
6	F	32/39 (82%)	32 (100%)	0	100 100
7	H	54/55 (98%)	54 (100%)	0	100 100
8	I	32/35 (91%)	32 (100%)	0	100 100
9	J	24/28 (86%)	23 (96%)	1 (4%)	26 61
10	K	30/37 (81%)	29 (97%)	1 (3%)	33 69
11	L	35/35 (100%)	35 (100%)	0	100 100
12	M	31/33 (94%)	29 (94%)	2 (6%)	15 43
13	T	27/29 (93%)	27 (100%)	0	100 100
14	X	28/34 (82%)	25 (89%)	3 (11%)	6 21
15	Y	21/37 (57%)	21 (100%)	0	100 100
16	Z	52/52 (100%)	52 (100%)	0	100 100
17	1	96/115 (84%)	95 (99%)	1 (1%)	68 88
All	All	1805/1945 (93%)	1781 (99%)	24 (1%)	59 86

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

Mol	Chain	Res	Type
4	D	90	LEU
10	K	21	LEU
9	J	30	TYR
12	M	1	MET
1	A	334	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 11 such sidechains are listed below:

Mol	Chain	Res	Type
4	D	186	GLN
4	D	224	GLN
11	L	6	ASN
4	D	322	ASN
2	B	395	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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 65 ligands modelled in this entry, 3 are monoatomic - leaving 62 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	$\#\|Z\| > 2$
22	CLA	B	612	-	58,69,73	2.25	10 (17%)	56,99,113	1.41	8 (14%)
22	CLA	B	618	-	58,69,73	2.27	11 (18%)	56,99,113	1.31	8 (14%)
22	CLA	B	611	-	58,69,73	2.25	10 (17%)	56,99,113	1.34	9 (16%)
21	BCR	M	101	-	41,41,41	0.40	0	56,56,56	0.63	0
22	CLA	C	504	-	58,69,73	2.21	11 (18%)	56,99,113	1.56	10 (17%)
21	BCR	J	102	-	41,41,41	0.36	0	56,56,56	0.69	0
22	CLA	C	512	-	58,69,73	2.24	11 (18%)	56,99,113	1.41	8 (14%)
23	LHG	A	409	-	48,48,48	0.51	0	51,54,54	0.53	1 (1%)
22	CLA	B	610	-	58,69,73	2.22	12 (20%)	56,99,113	1.48	9 (16%)
22	CLA	B	614	-	58,69,73	2.24	10 (17%)	56,99,113	1.46	11 (19%)
27	LMG	D	405	-	55,55,55	0.46	0	63,63,63	0.66	1 (1%)
25	PL9	D	408	-	55,55,55	0.96	3 (5%)	68,69,69	1.50	10 (14%)
22	CLA	B	604	-	58,69,73	2.26	11 (18%)	56,99,113	1.49	8 (14%)
22	CLA	A	408	-	58,69,73	2.21	11 (18%)	56,99,113	1.43	9 (16%)
21	BCR	B	601	-	41,41,41	0.35	0	56,56,56	0.72	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
22	CLA	B	608	-	58,69,73	2.24	11 (18%)	56,99,113	1.37	9 (16%)
22	CLA	C	509	-	58,69,73	2.24	12 (20%)	56,99,113	1.50	8 (14%)
22	CLA	D	403	-	58,69,73	2.25	10 (17%)	56,99,113	1.45	9 (16%)
21	BCR	J	101	-	41,41,41	0.36	0	56,56,56	0.77	1 (1%)
22	CLA	C	508	-	58,69,73	2.24	12 (20%)	56,99,113	1.39	8 (14%)
27	LMG	I	101	-	55,55,55	0.48	0	63,63,63	0.56	0
21	BCR	H	101	-	41,41,41	0.38	0	56,56,56	1.09	4 (7%)
24	PHO	D	407	-	58,69,69	2.09	9 (15%)	56,99,99	1.67	7 (12%)
22	CLA	B	606	-	58,69,73	2.24	9 (15%)	56,99,113	1.32	9 (16%)
27	LMG	D	401	-	55,55,55	0.47	0	63,63,63	0.62	1 (1%)
27	LMG	L	101	-	55,55,55	0.49	0	63,63,63	0.58	0
22	CLA	B	617	-	58,69,73	2.25	10 (17%)	56,99,113	1.41	8 (14%)
21	BCR	C	501	-	41,41,41	0.36	0	56,56,56	0.67	0
25	PL9	A	411	-	55,55,55	0.90	3 (5%)	68,69,69	1.44	11 (16%)
21	BCR	C	502	-	41,41,41	0.36	0	56,56,56	0.76	2 (3%)
22	CLA	C	507	-	58,69,73	2.24	11 (18%)	56,99,113	1.50	8 (14%)
21	BCR	D	402	-	41,41,41	0.34	0	56,56,56	0.61	0
22	CLA	B	609	-	58,69,73	2.24	11 (18%)	56,99,113	1.63	11 (19%)
23	LHG	A	412	-	48,48,48	0.52	0	51,54,54	0.49	0
22	CLA	B	615	-	58,69,73	2.26	12 (20%)	56,99,113	1.33	6 (10%)
22	CLA	C	503	-	58,69,73	2.32	9 (15%)	56,99,113	1.31	8 (14%)
24	PHO	A	410	-	58,69,69	2.08	10 (17%)	56,99,99	1.63	7 (12%)
22	CLA	A	405	-	58,69,73	2.29	12 (20%)	56,99,113	1.30	7 (12%)
22	CLA	B	607	-	58,69,73	2.23	10 (17%)	56,99,113	1.42	10 (17%)
22	CLA	A	406	-	58,69,73	2.26	13 (22%)	56,99,113	1.70	9 (16%)
22	CLA	C	516	-	58,69,73	2.26	11 (18%)	56,99,113	1.39	9 (16%)
22	CLA	C	514	-	58,69,73	2.26	12 (20%)	56,99,113	1.49	8 (14%)
21	BCR	B	602	-	41,41,41	0.35	0	56,56,56	0.74	0
22	CLA	B	616	-	58,69,73	2.23	11 (18%)	56,99,113	1.39	8 (14%)
22	CLA	B	603	-	58,69,73	2.27	12 (20%)	56,99,113	1.51	8 (14%)
22	CLA	C	506	-	58,69,73	2.28	12 (20%)	56,99,113	1.49	8 (14%)
26	BCT	A	413	18	2,3,3	0.88	0	2,3,3	3.19	2 (100%)
22	CLA	D	404	-	58,69,73	2.26	10 (17%)	56,99,113	1.40	8 (14%)
28	HEM	F	101	-	35,46,50	2.23	11 (31%)	28,68,82	1.26	3 (10%)
22	CLA	C	505	-	58,69,73	2.26	12 (20%)	56,99,113	1.48	7 (12%)
22	CLA	B	613	-	58,69,73	2.28	12 (20%)	56,99,113	1.51	13 (23%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
22	CLA	C	513	-	58,69,73	2.23	10 (17%)	56,99,113	1.39	7 (12%)
27	LMG	D	406	-	55,55,55	0.48	0	63,63,63	0.79	3 (4%)
27	LMG	K	101	-	55,55,55	0.48	0	63,63,63	0.62	0
22	CLA	A	407	-	58,69,73	2.23	11 (18%)	56,99,113	1.38	8 (14%)
27	LMG	M	102	-	55,55,55	0.46	0	63,63,63	0.67	0
22	CLA	B	605	-	58,69,73	2.24	10 (17%)	56,99,113	1.59	12 (21%)
22	CLA	C	510	-	58,69,73	2.25	11 (18%)	56,99,113	1.56	10 (17%)
22	CLA	C	511	-	58,69,73	2.26	12 (20%)	56,99,113	1.39	7 (12%)
21	BCR	A	404	-	41,41,41	0.32	0	56,56,56	0.54	0
27	LMG	C	515	-	55,55,55	0.46	0	63,63,63	0.63	1 (1%)
21	BCR	C	517	-	41,41,41	0.41	0	56,56,56	0.64	1 (1%)

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
22	CLA	B	612	-	-	19/37/87/115	0/5/5/9
22	CLA	B	618	-	-	15/37/87/115	0/5/5/9
22	CLA	B	611	-	-	12/37/87/115	0/5/5/9
21	BCR	M	101	-	-	7/29/63/63	0/2/2/2
22	CLA	C	504	-	-	19/37/87/115	0/5/5/9
21	BCR	J	102	-	-	9/29/63/63	0/2/2/2
22	CLA	C	512	-	-	12/37/87/115	0/5/5/9
23	LHG	A	409	-	-	17/53/53/53	-
22	CLA	B	610	-	-	12/37/87/115	0/5/5/9
22	CLA	B	614	-	-	11/37/87/115	0/5/5/9
27	LMG	D	405	-	-	11/50/70/70	0/1/1/1
25	PL9	D	408	-	-	11/53/73/73	0/1/1/1
22	CLA	B	604	-	-	13/37/87/115	0/5/5/9
22	CLA	A	408	-	-	11/37/87/115	0/5/5/9
21	BCR	B	601	-	-	7/29/63/63	0/2/2/2
22	CLA	B	608	-	-	9/37/87/115	0/5/5/9
22	CLA	C	509	-	-	6/37/87/115	0/5/5/9
22	CLA	D	403	-	-	13/37/87/115	0/5/5/9

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
21	BCR	J	101	-	-	6/29/63/63	0/2/2/2
22	CLA	C	508	-	-	11/37/87/115	0/5/5/9
27	LMG	I	101	-	-	8/50/70/70	0/1/1/1
21	BCR	H	101	-	-	15/29/63/63	0/2/2/2
24	PHO	D	407	-	-	7/37/103/103	0/5/6/6
22	CLA	B	606	-	-	6/37/87/115	0/5/5/9
27	LMG	D	401	-	-	10/50/70/70	0/1/1/1
27	LMG	L	101	-	-	14/50/70/70	0/1/1/1
22	CLA	B	617	-	-	9/37/87/115	0/5/5/9
21	BCR	C	501	-	-	8/29/63/63	0/2/2/2
25	PL9	A	411	-	-	17/53/73/73	0/1/1/1
21	BCR	C	502	-	-	7/29/63/63	0/2/2/2
22	CLA	C	507	-	-	16/37/87/115	0/5/5/9
21	BCR	D	402	-	-	11/29/63/63	0/2/2/2
22	CLA	B	609	-	-	11/37/87/115	0/5/5/9
23	LHG	A	412	-	-	14/53/53/53	-
22	CLA	B	615	-	-	6/37/87/115	0/5/5/9
22	CLA	C	503	-	-	11/37/87/115	0/5/5/9
24	PHO	A	410	-	-	10/37/103/103	0/5/6/6
22	CLA	A	405	-	-	11/37/87/115	0/5/5/9
22	CLA	B	607	-	-	15/37/87/115	0/5/5/9
22	CLA	A	406	-	-	11/37/87/115	0/5/5/9
22	CLA	C	516	-	-	9/37/87/115	0/5/5/9
22	CLA	C	514	-	-	9/37/87/115	0/5/5/9
21	BCR	B	602	-	-	14/29/63/63	0/2/2/2
22	CLA	B	616	-	-	11/37/87/115	0/5/5/9
22	CLA	B	603	-	-	8/37/87/115	0/5/5/9
22	CLA	C	506	-	-	7/37/87/115	0/5/5/9
22	CLA	D	404	-	-	9/37/87/115	0/5/5/9
28	HEM	F	101	-	-	4/12/30/54	0/4/4/8
22	CLA	C	505	-	-	12/37/87/115	0/5/5/9
22	CLA	B	613	-	-	13/37/87/115	0/5/5/9
22	CLA	C	513	-	-	4/37/87/115	0/5/5/9
27	LMG	D	406	-	-	11/50/70/70	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
27	LMG	K	101	-	-	12/50/70/70	0/1/1/1
22	CLA	A	407	-	-	9/37/87/115	0/5/5/9
27	LMG	M	102	-	-	14/50/70/70	0/1/1/1
22	CLA	B	605	-	-	11/37/87/115	0/5/5/9
22	CLA	C	510	-	-	11/37/87/115	0/5/5/9
22	CLA	C	511	-	-	11/37/87/115	0/5/5/9
21	BCR	A	404	-	-	8/29/63/63	0/2/2/2
27	LMG	C	515	-	-	13/50/70/70	0/1/1/1
21	BCR	C	517	-	-	6/29/63/63	0/2/2/2

The worst 5 of 421 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
24	D	407	PHO	C1B-C2B	9.60	1.50	1.39
24	A	410	PHO	C1B-C2B	9.50	1.50	1.39
22	B	605	CLA	C1B-C2B	9.36	1.50	1.39
22	C	506	CLA	C1B-C2B	9.35	1.49	1.39
22	C	516	CLA	C1B-C2B	9.28	1.49	1.39

The worst 5 of 358 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
24	D	407	PHO	C4D-CHA-CBD	-8.17	104.82	108.52
22	A	406	CLA	C4D-CHA-CBD	-7.68	105.04	108.52
22	B	603	CLA	C4D-CHA-CBD	-7.54	105.11	108.52
24	A	410	PHO	C4D-CHA-CBD	-7.08	105.31	108.52
22	C	505	CLA	C4D-CHA-CBD	-6.91	105.39	108.52

There are no chirality outliers.

5 of 654 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
21	A	404	BCR	C1-C6-C7-C8
21	A	404	BCR	C5-C6-C7-C8
21	B	601	BCR	C11-C12-C13-C14
21	B	601	BCR	C11-C12-C13-C35
21	B	602	BCR	C1-C6-C7-C8

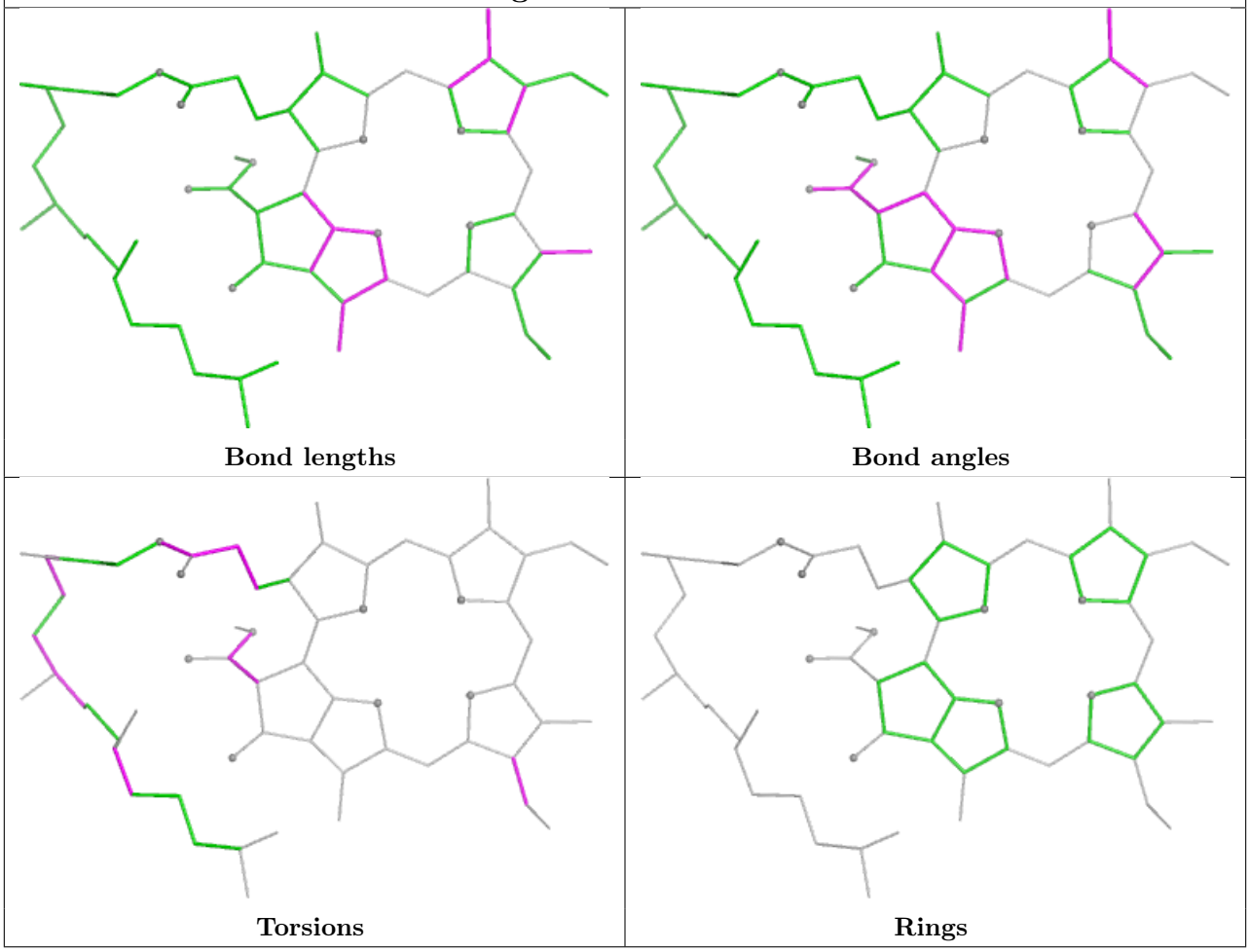
There are no ring outliers.

24 monomers are involved in 38 short contacts:

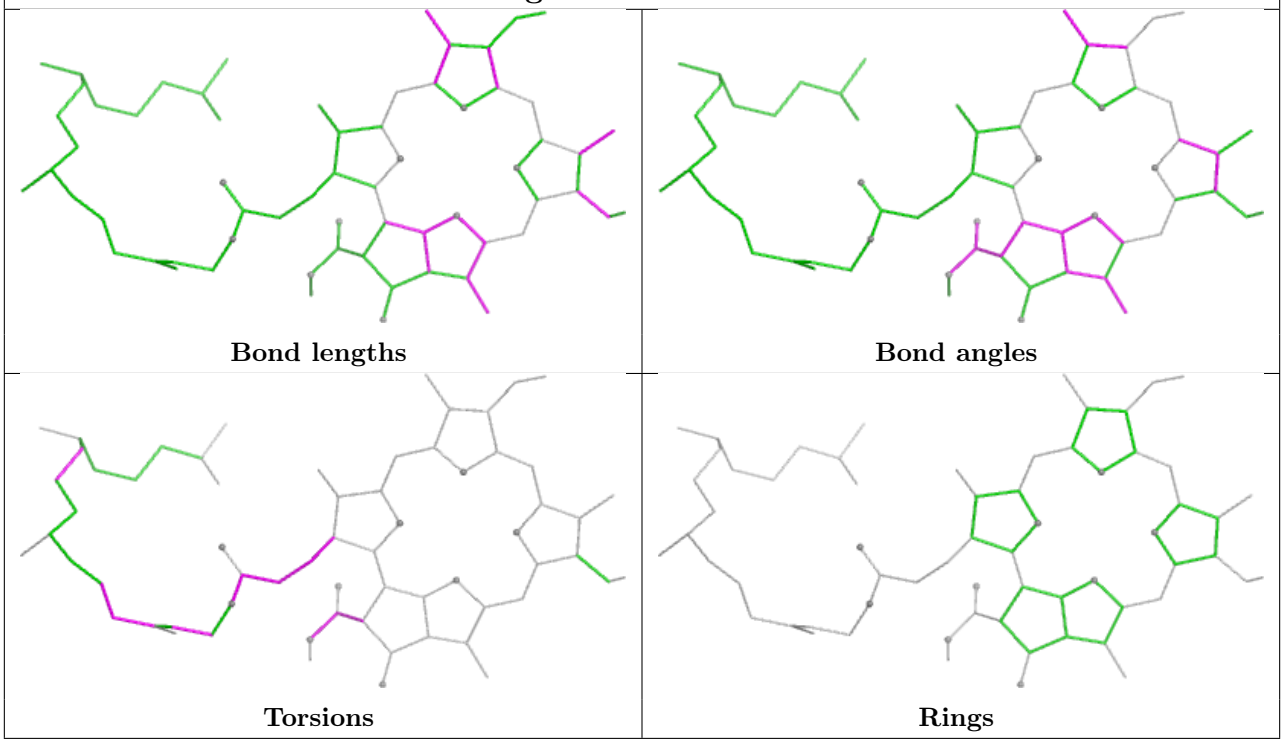
Mol	Chain	Res	Type	Clashes	Symm-Clashes
21	M	101	BCR	1	0
21	J	102	BCR	1	0
22	B	610	CLA	1	0
22	B	614	CLA	1	0
22	B	604	CLA	1	0
22	D	403	CLA	3	0
21	J	101	BCR	2	0
24	D	407	PHO	2	0
22	B	606	CLA	1	0
22	B	617	CLA	1	0
21	C	502	BCR	3	0
22	C	507	CLA	3	0
22	C	503	CLA	2	0
22	A	405	CLA	3	0
22	A	406	CLA	1	0
22	B	616	CLA	1	0
22	C	506	CLA	1	0
22	D	404	CLA	1	0
28	F	101	HEM	4	0
27	D	406	LMG	1	0
22	A	407	CLA	1	0
22	B	605	CLA	3	0
21	A	404	BCR	1	0
21	C	517	BCR	4	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 then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

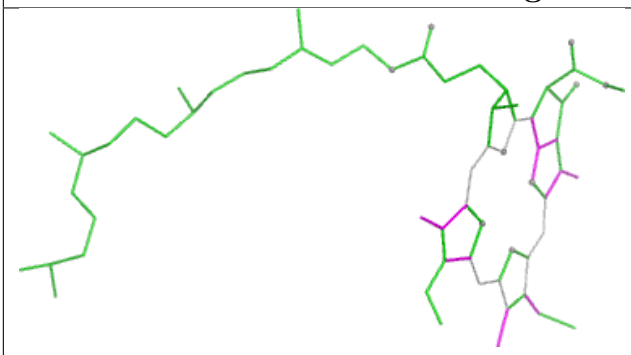
Ligand CLA B 612



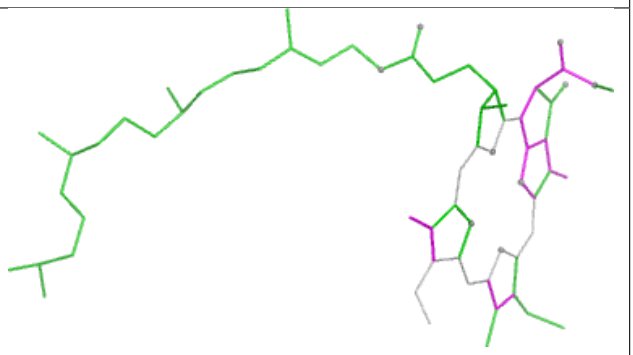
Ligand CLA B 618



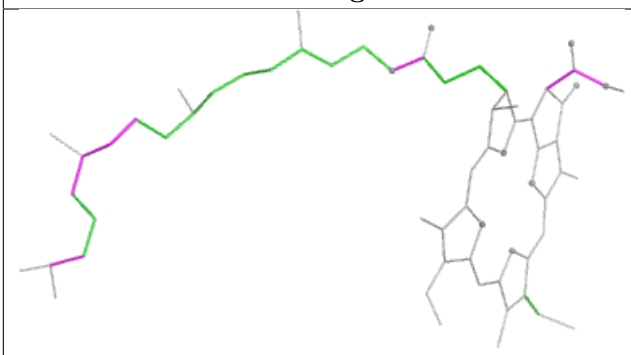
Ligand CLA B 611



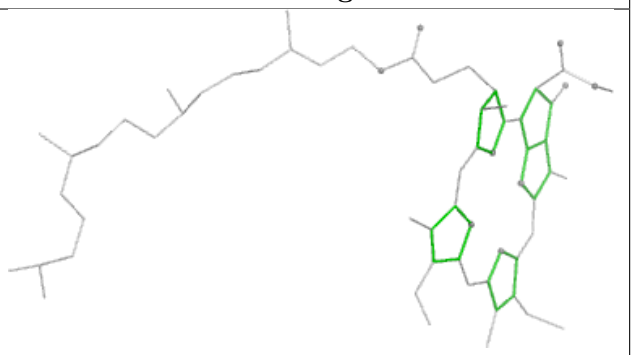
Bond lengths



Bond angles

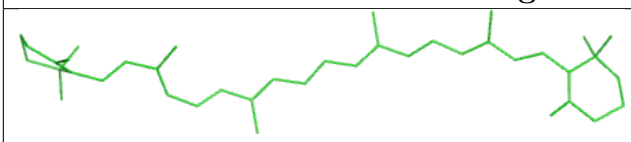


Torsions

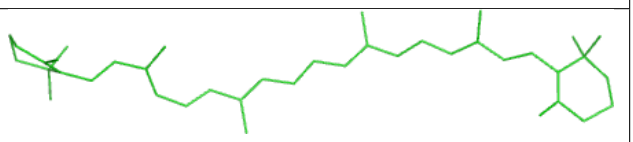


Rings

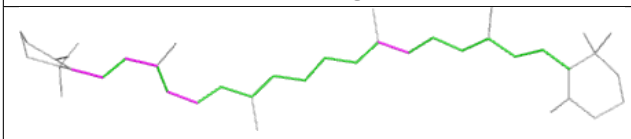
Ligand BCR M 101



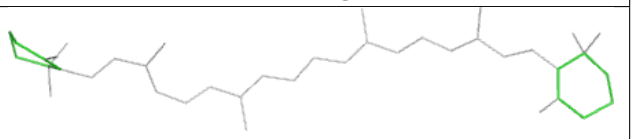
Bond lengths



Bond angles

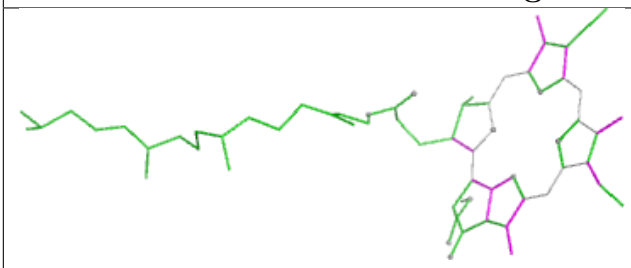


Torsions

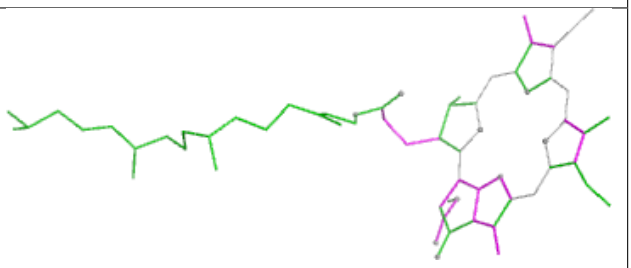


Rings

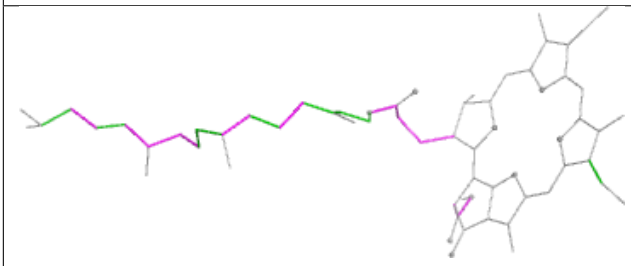
Ligand CLA C 504



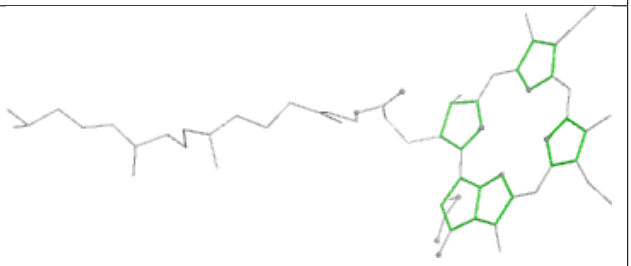
Bond lengths



Bond angles

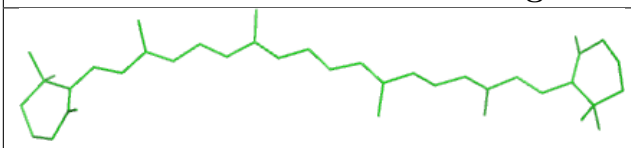


Torsions

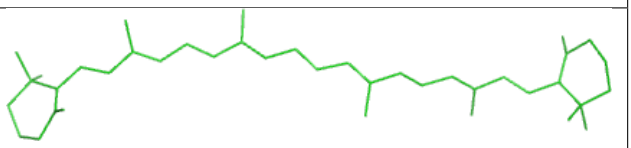


Rings

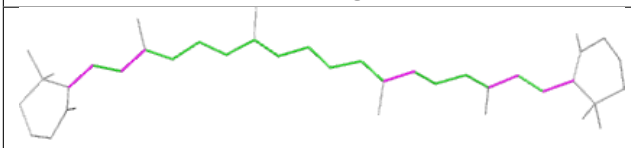
Ligand BCR J 102



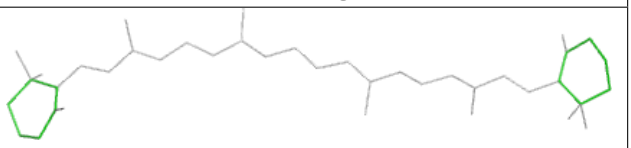
Bond lengths



Bond angles

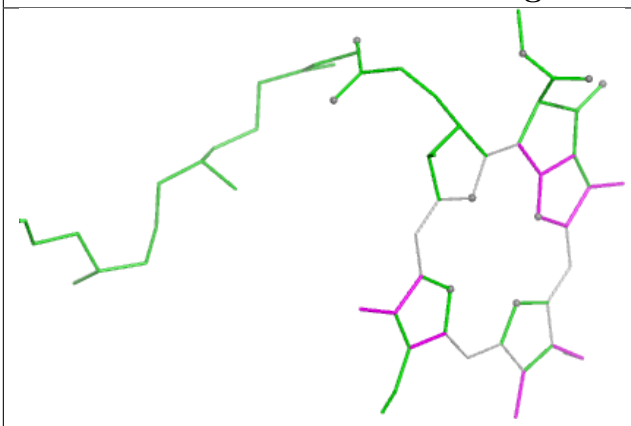


Torsions

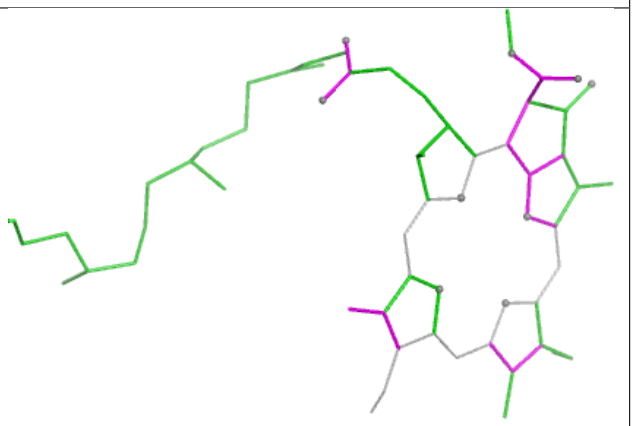


Rings

Ligand CLA C 512



Bond lengths



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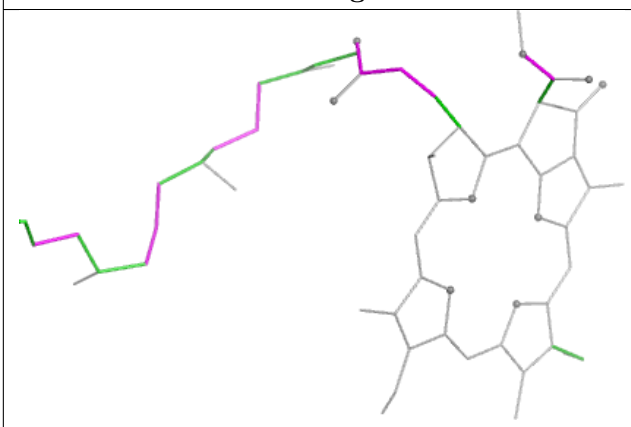
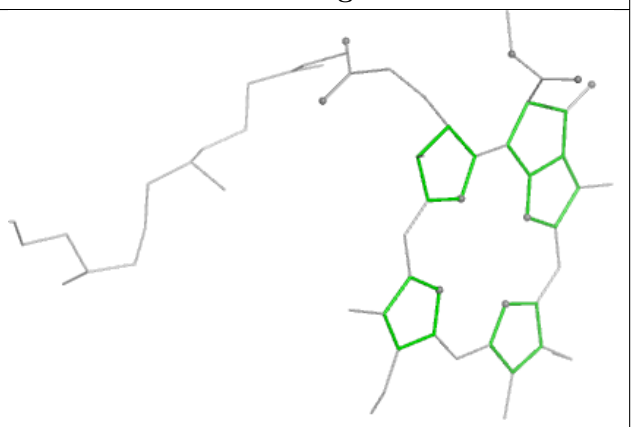
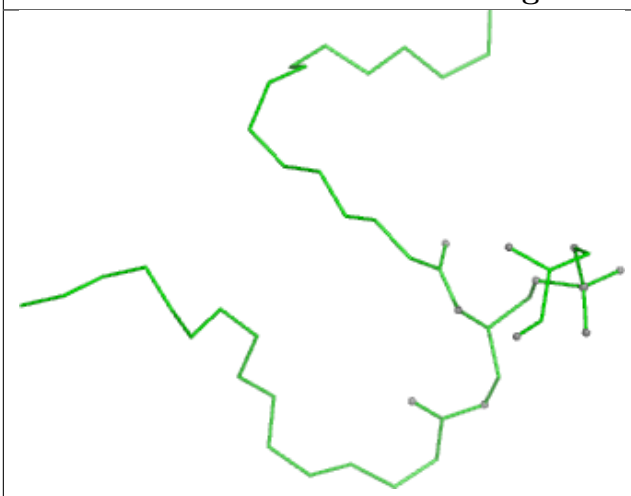


Torsions

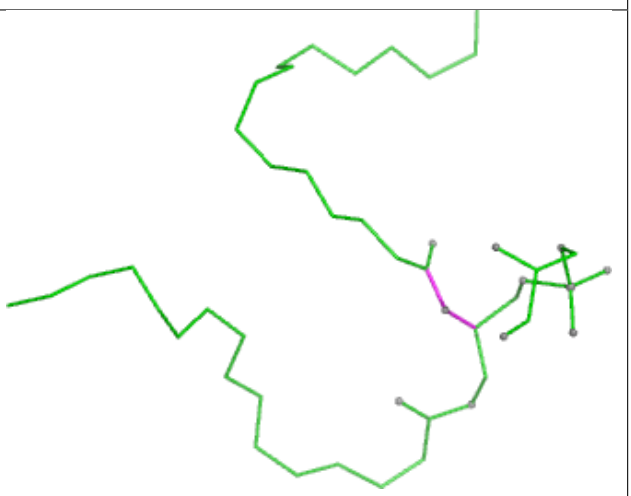


Rings

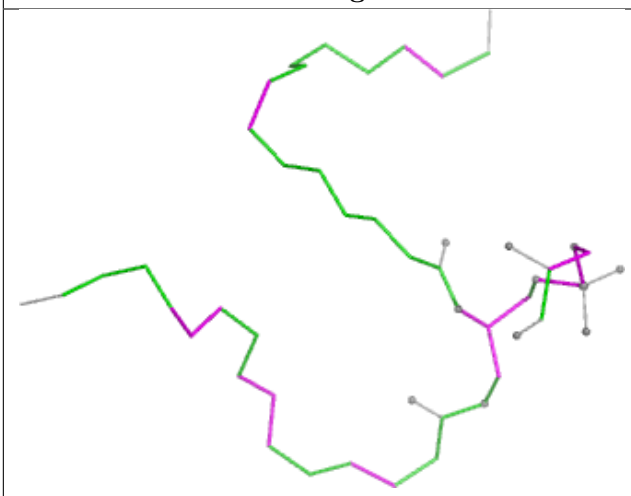
Ligand LHG A 409



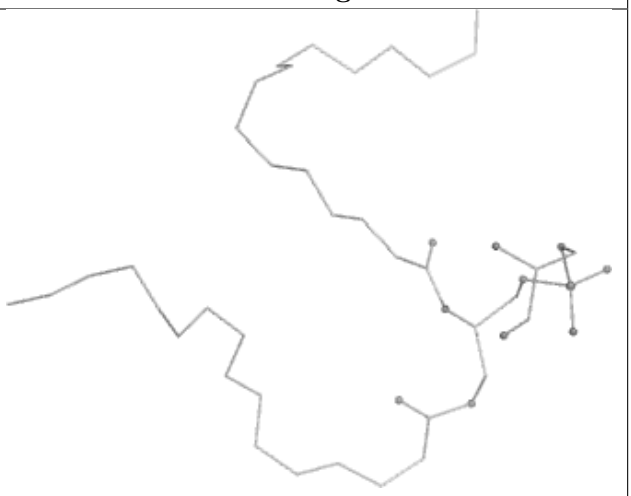
Bond lengths



Bond angles

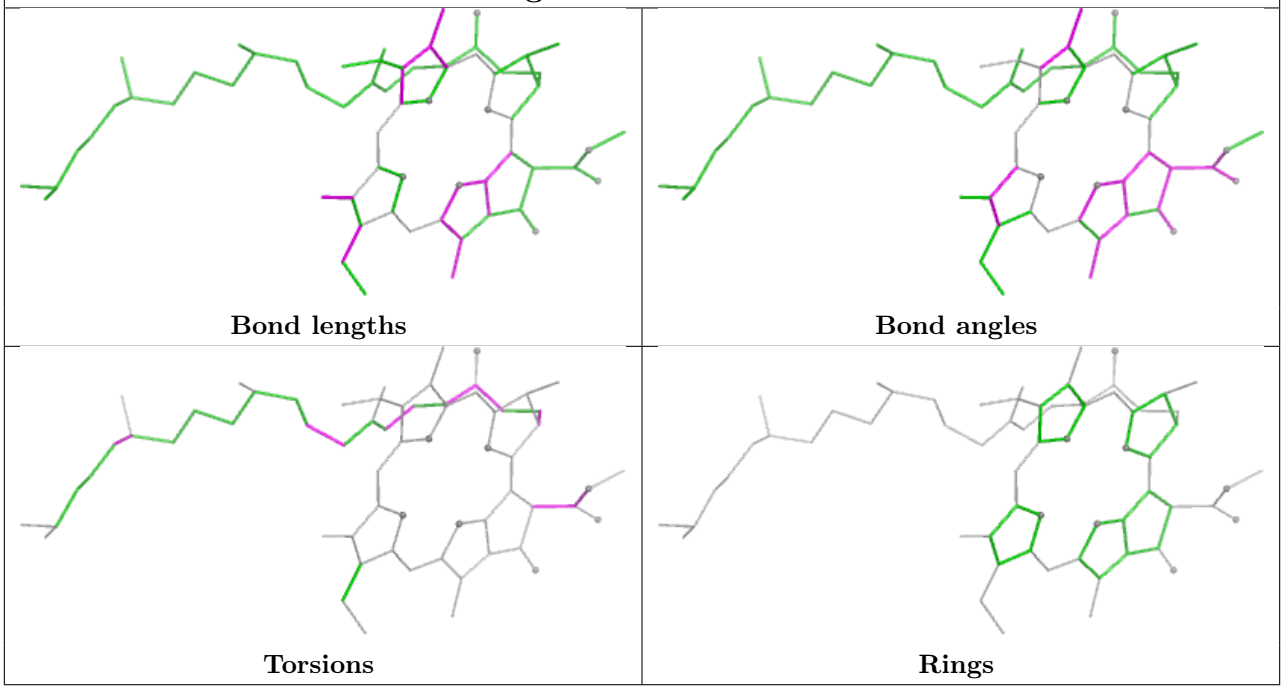


Torsions

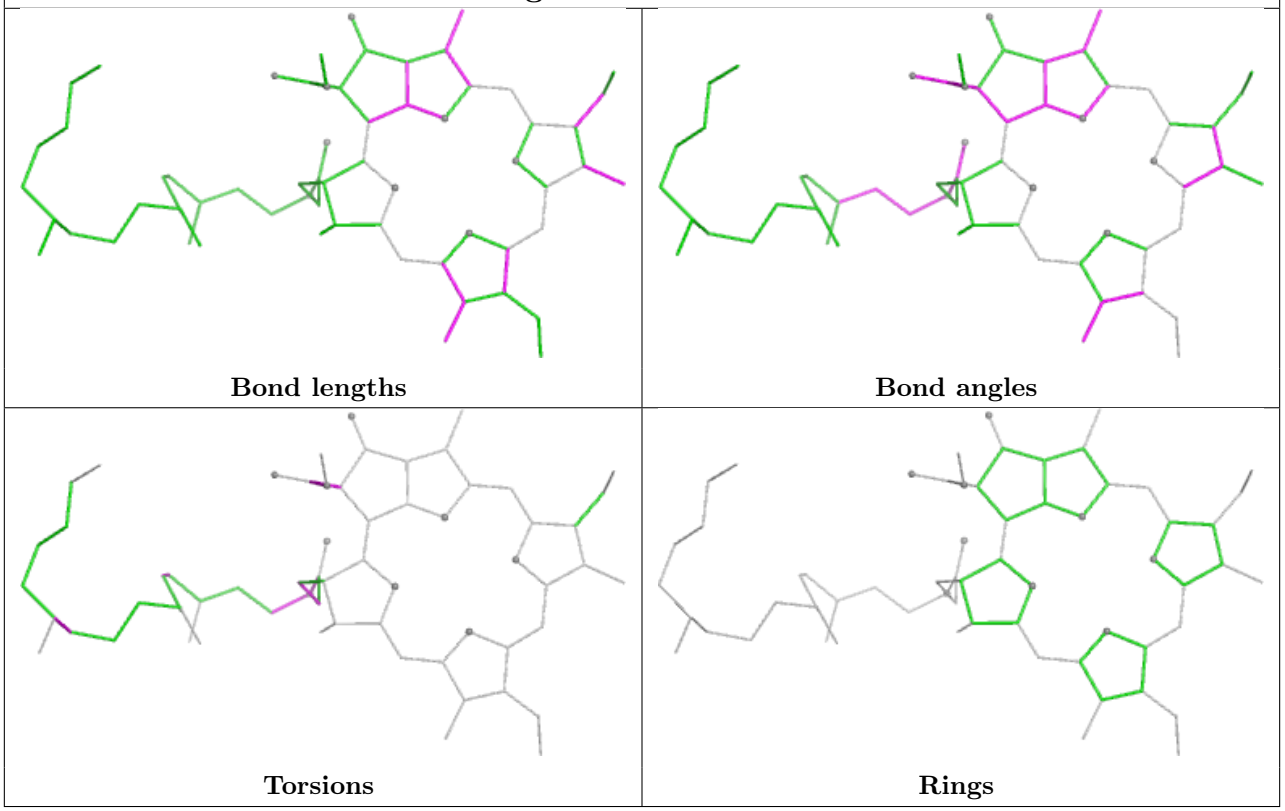


Rings

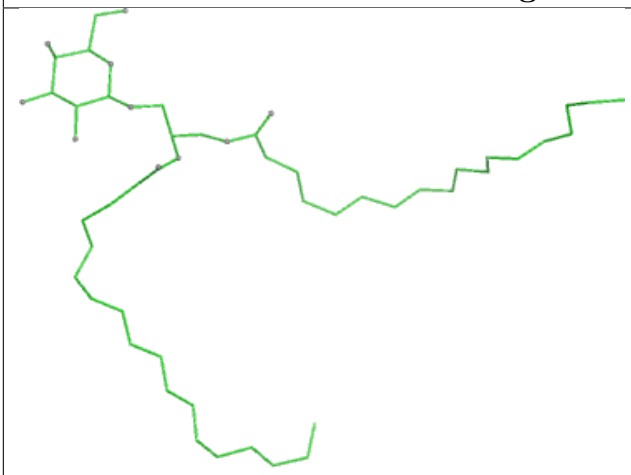
Ligand CLA B 610



Ligand CLA B 614

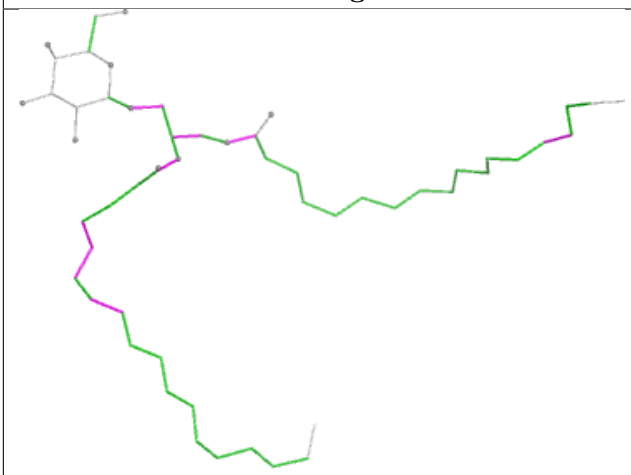


Ligand LMG D 405

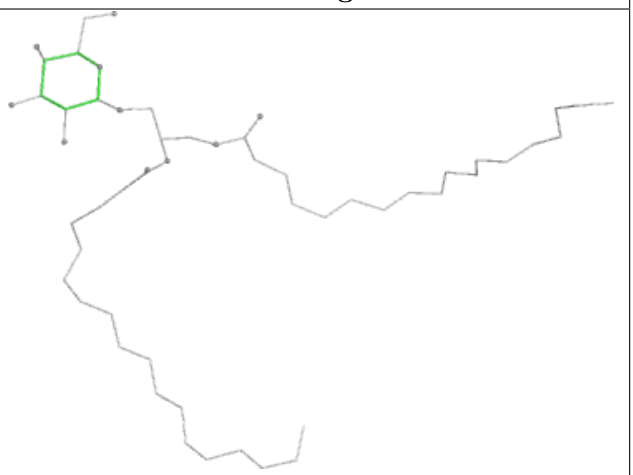


Bond lengths

Bond angles

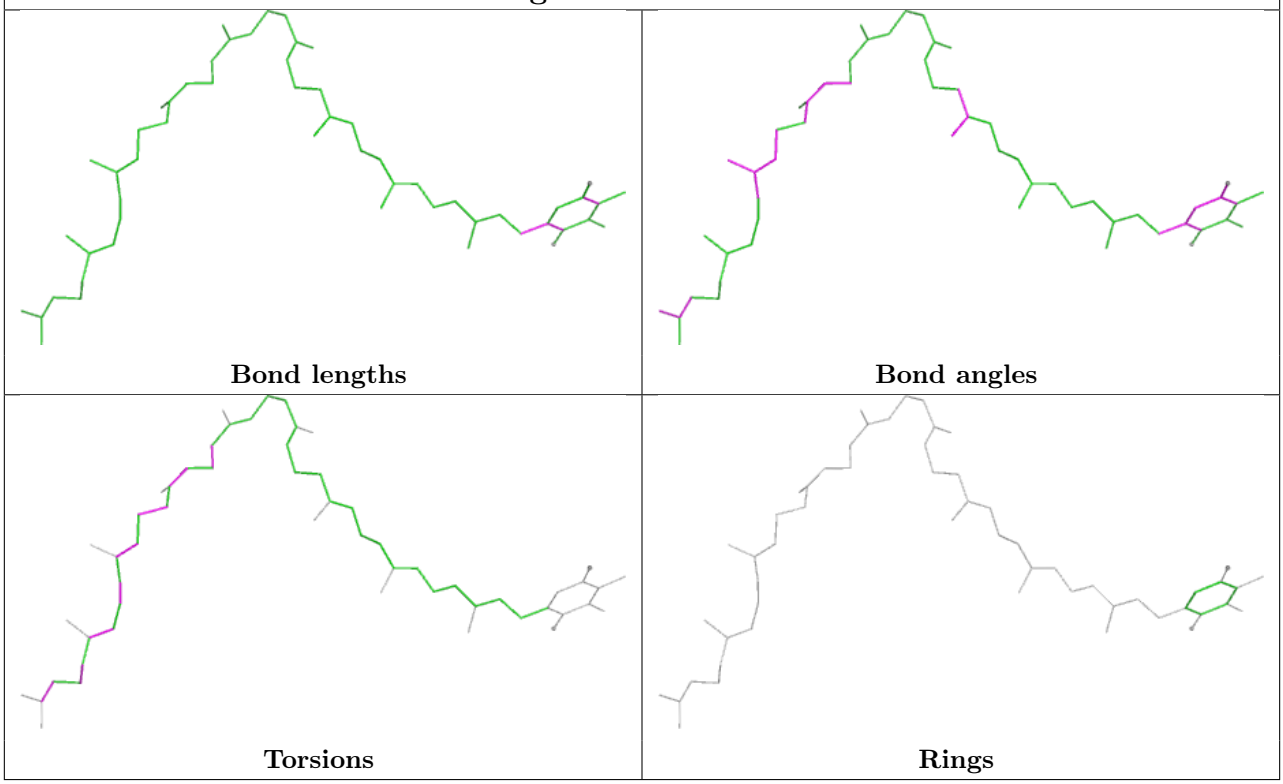


Torsions

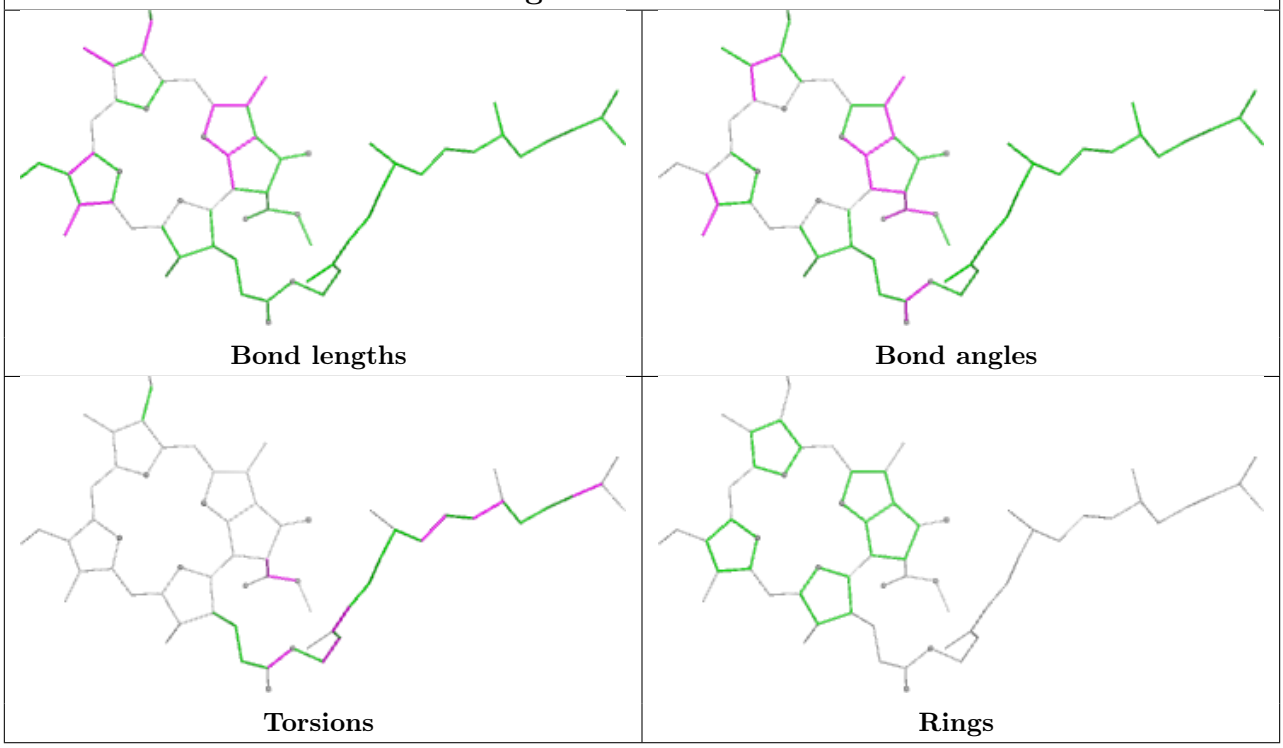


Rings

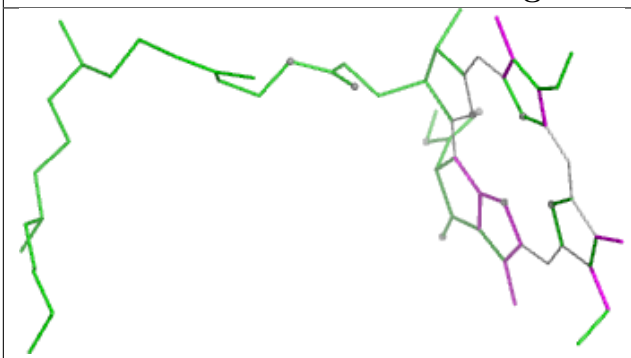
Ligand PL9 D 408



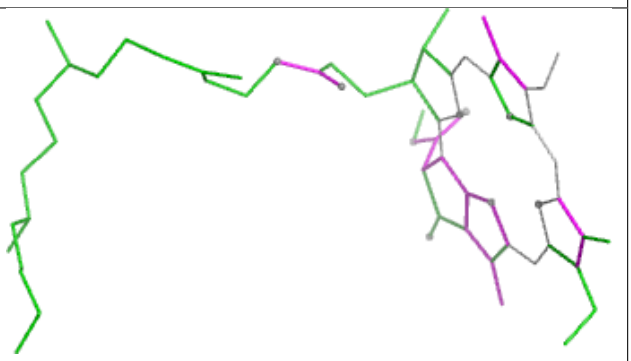
Ligand CLA B 604



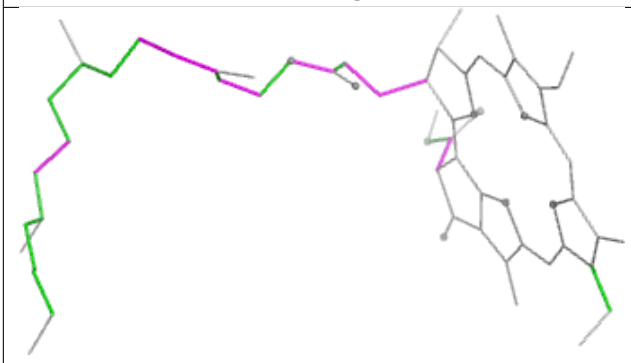
Ligand CLA A 408



Bond lengths



Bond angles



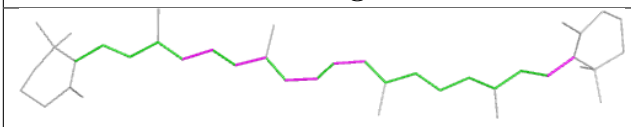
Torsions

Rings

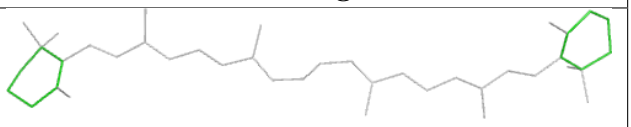
Ligand BCR B 601

Bond lengths

Bond angles

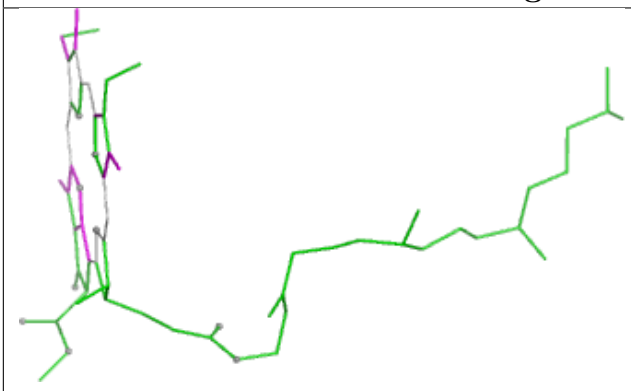


Torsions

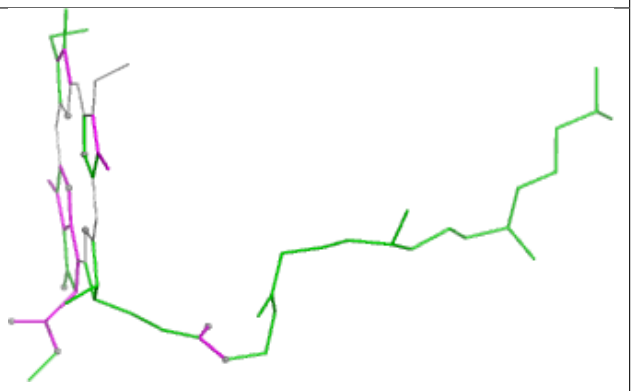


Rings

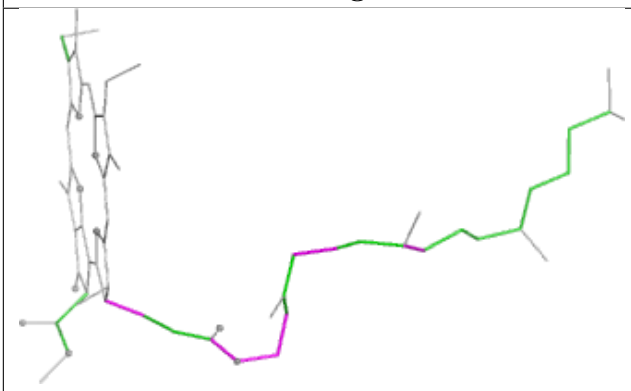
Ligand CLA B 608



Bond lengths



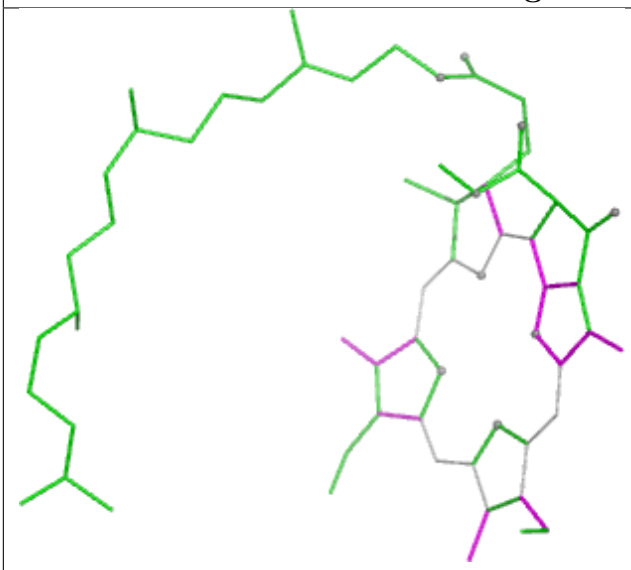
Bond angles



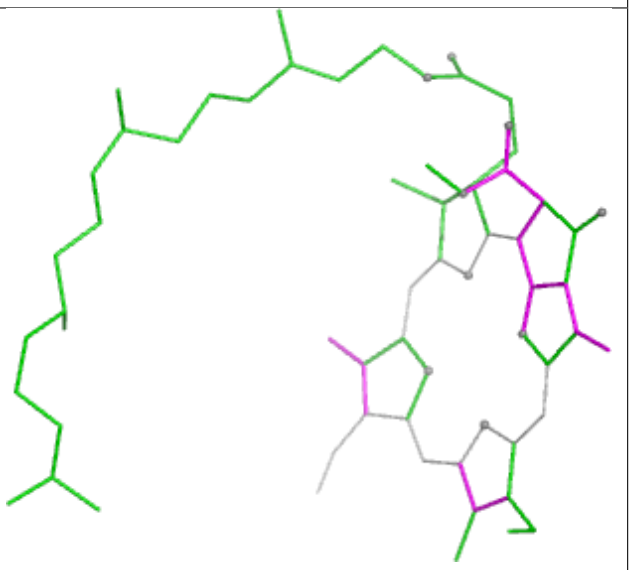
Torsions

Rings

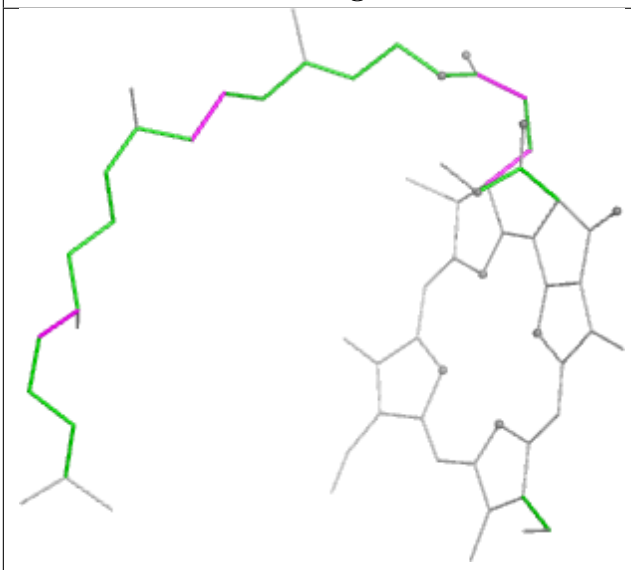
Ligand CLA C 509



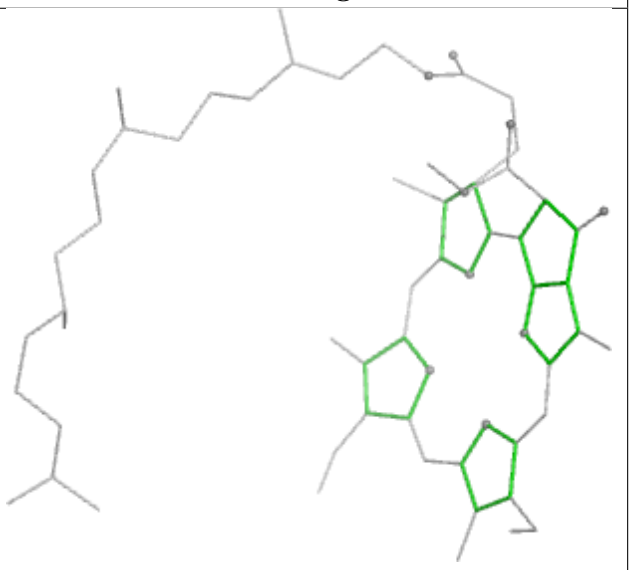
Bond lengths



Bond angles

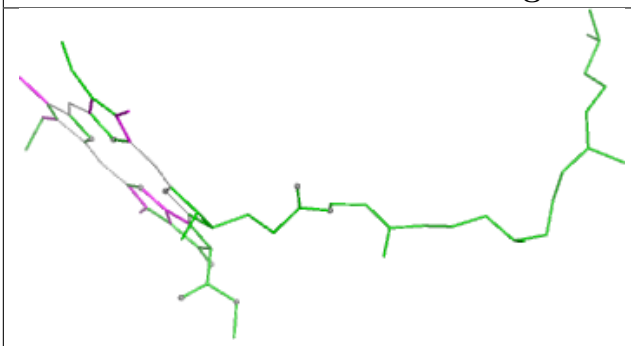


Torsions

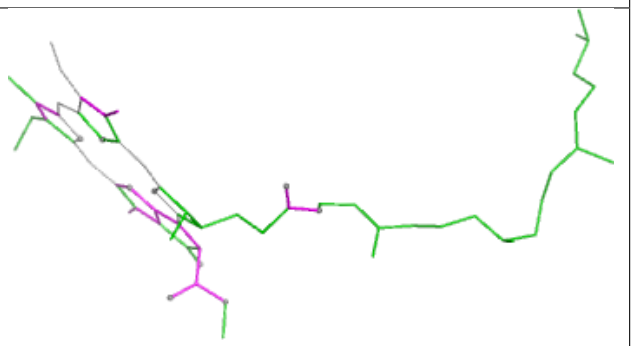


Rings

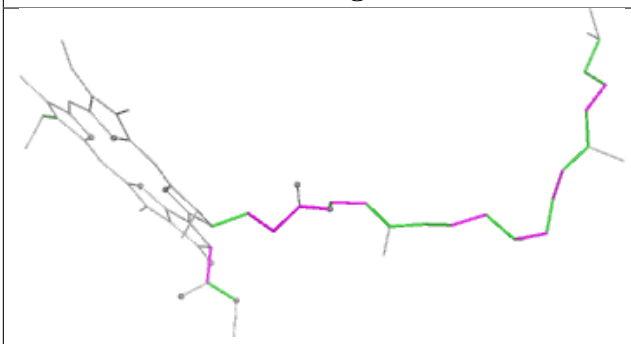
Ligand CLA D 403



Bond lengths



Bond angles



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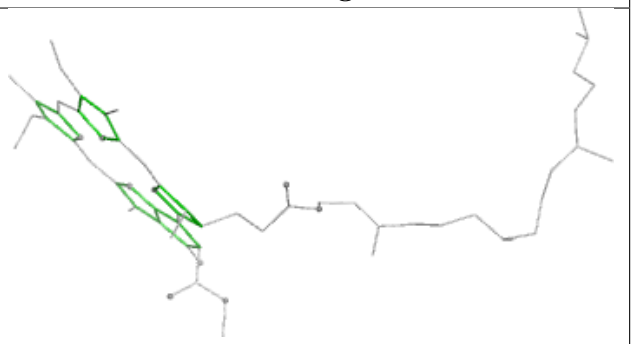
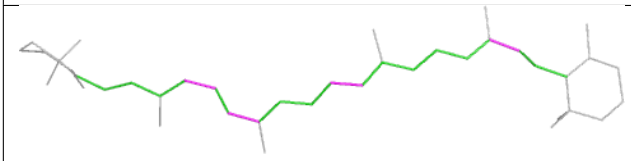


Rings

Ligand BCR J 101

Bond lengths

Bond angles



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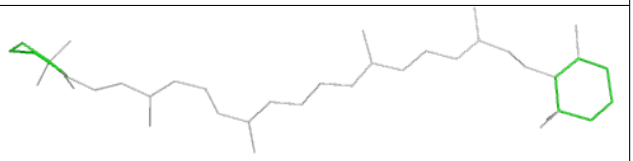
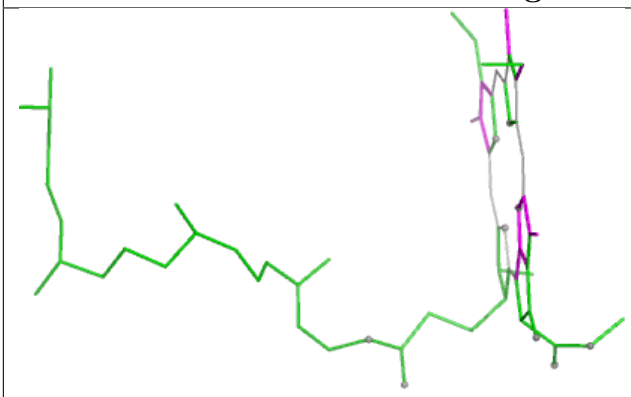
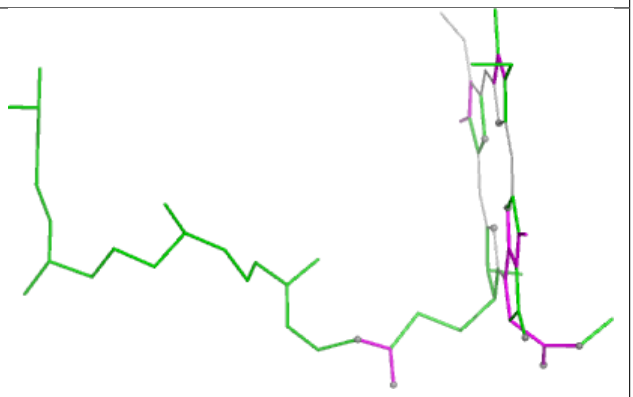


Rings

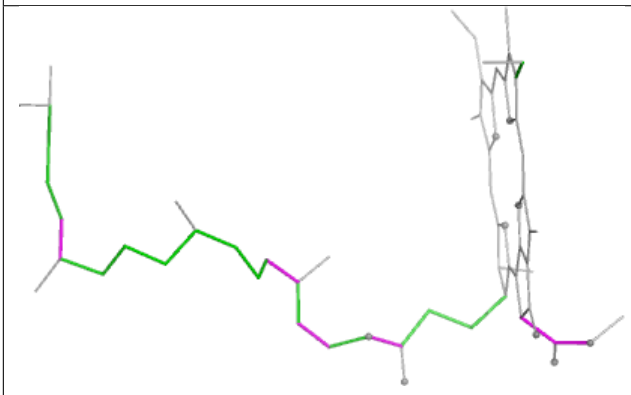
Ligand CLA C 508



Bond lengths



Bond angles



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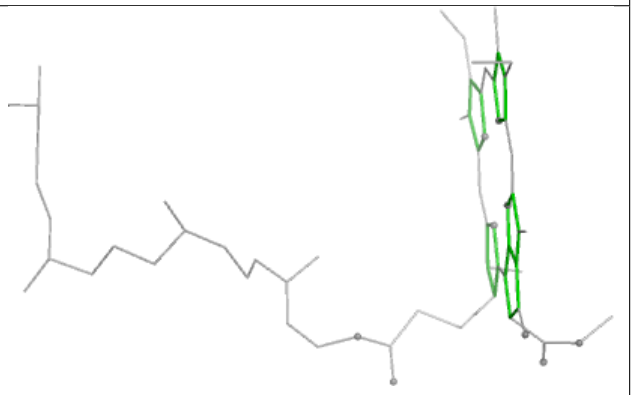
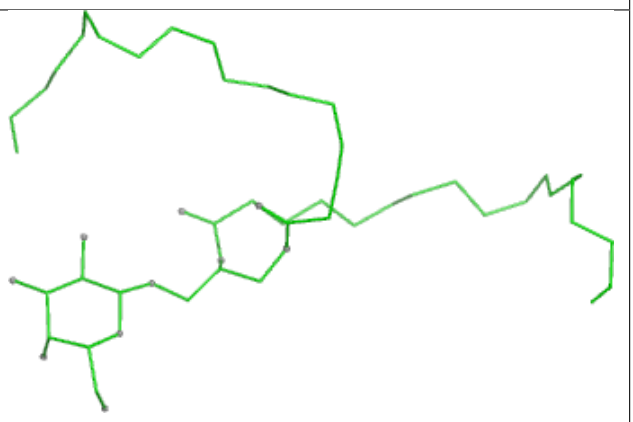


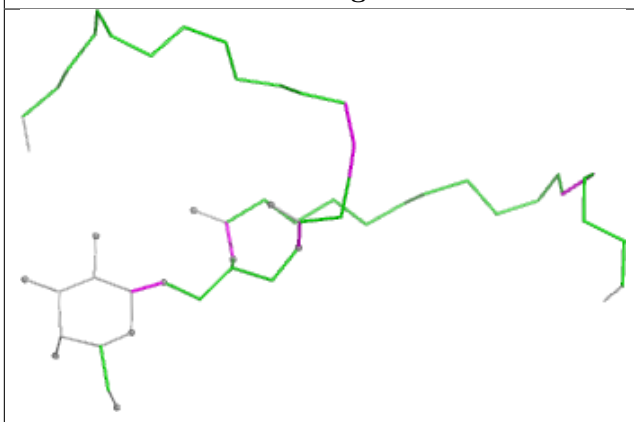
Rings

Ligand LMG I 101

Bond lengths



Bond angles



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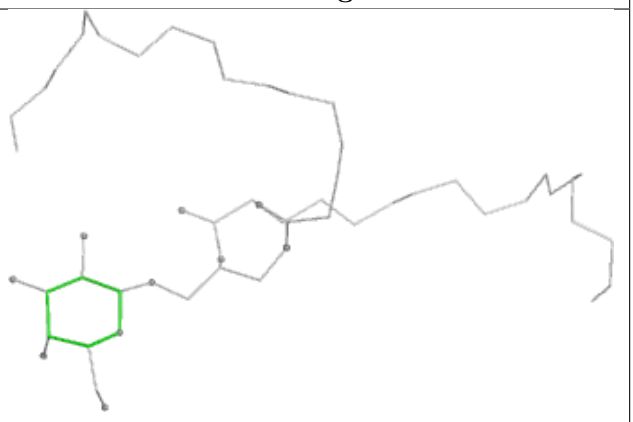
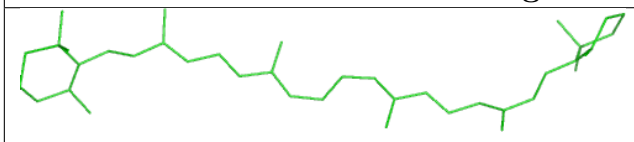
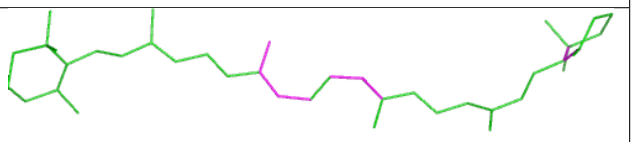


Rings

Ligand BCR H 101



Bond lengths



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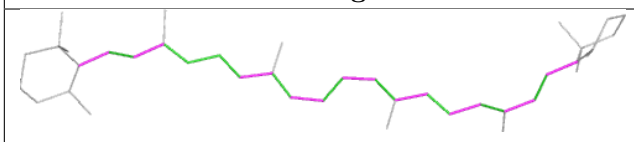

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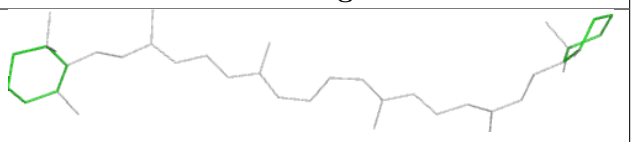
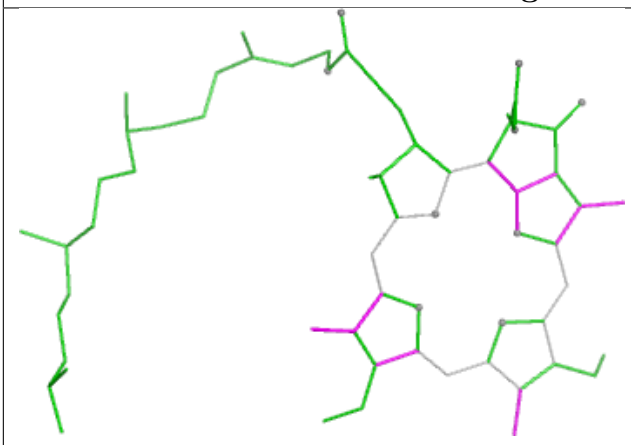


Rings

Ligand PHO D 407



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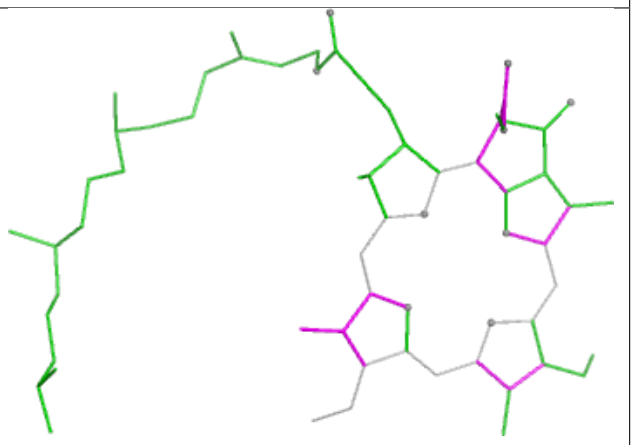
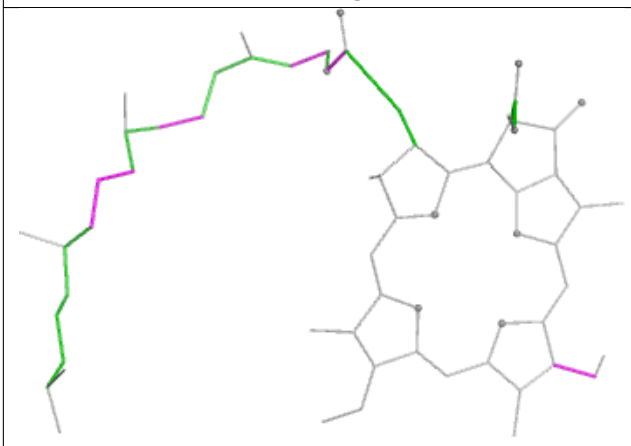
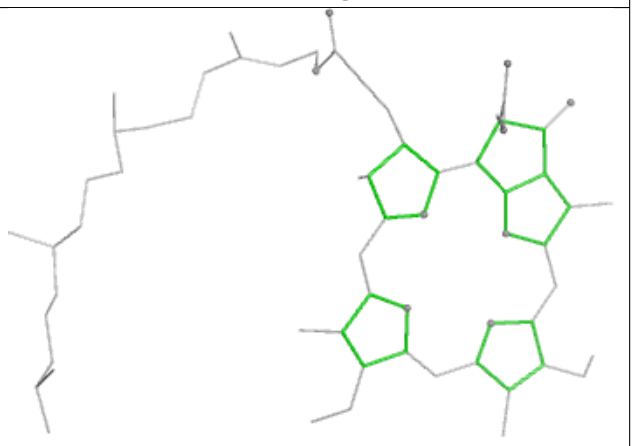


Bond angles

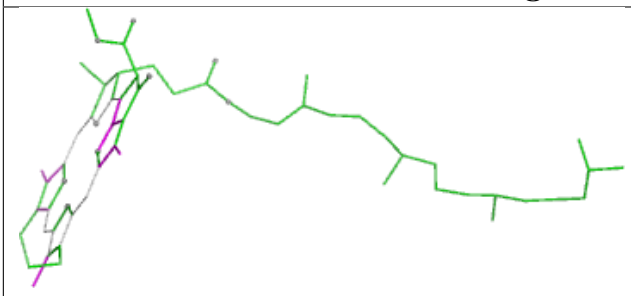


Torsions

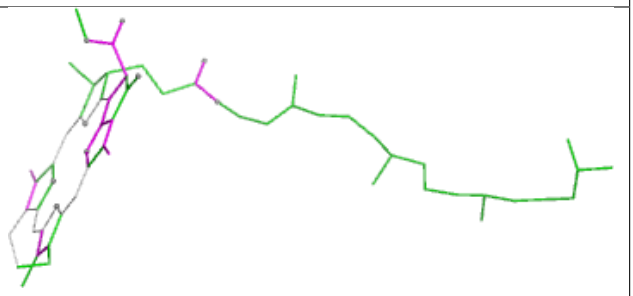


Rings

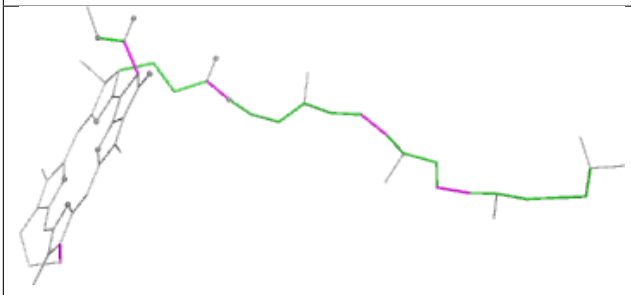
Ligand CLA B 606



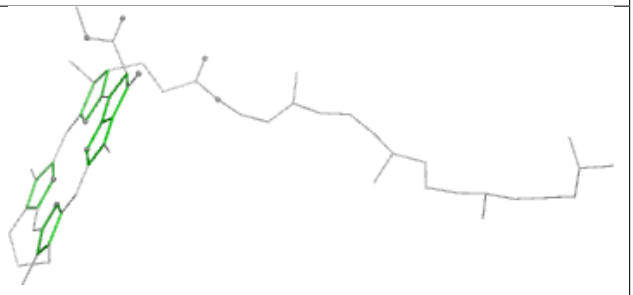
Bond lengths



Bond angles

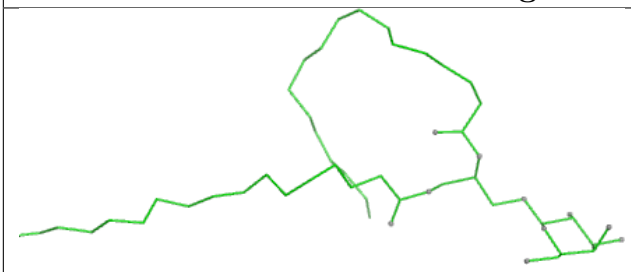


Torsions



Rings

Ligand LMG D 401



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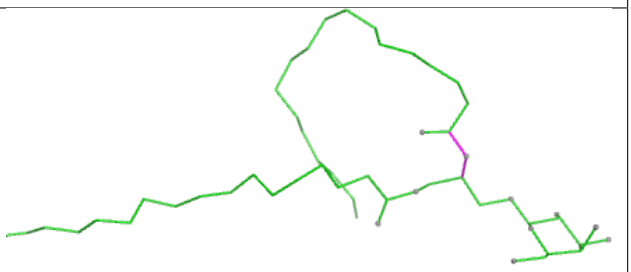
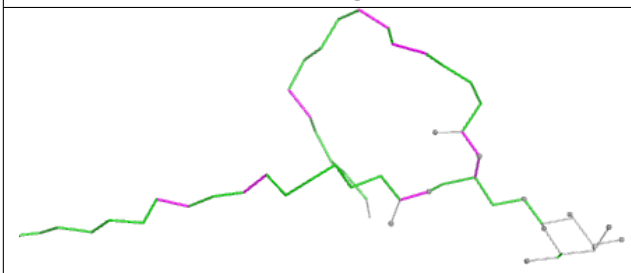


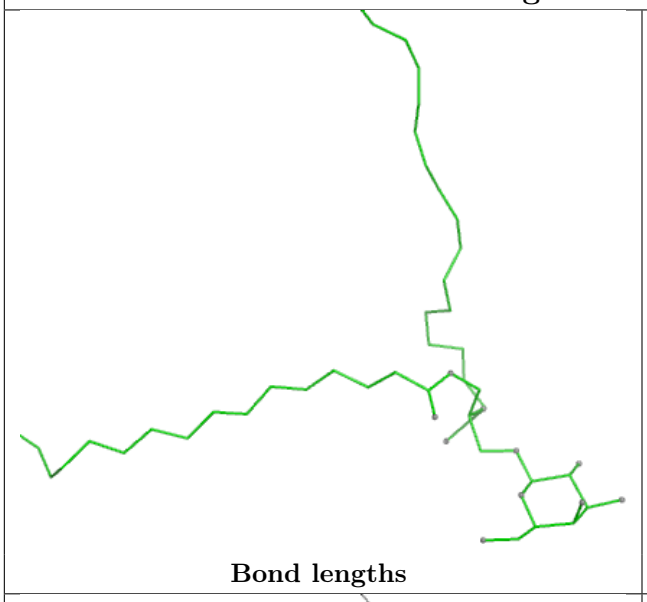
Bond angles



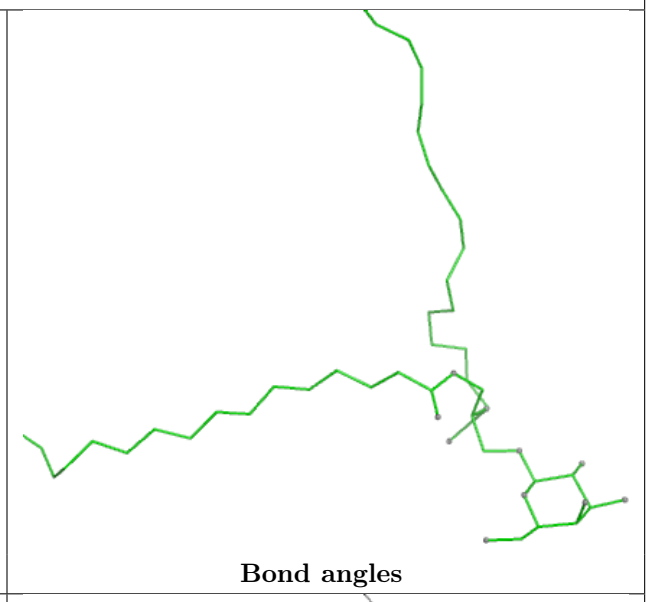
Torsions

Rings

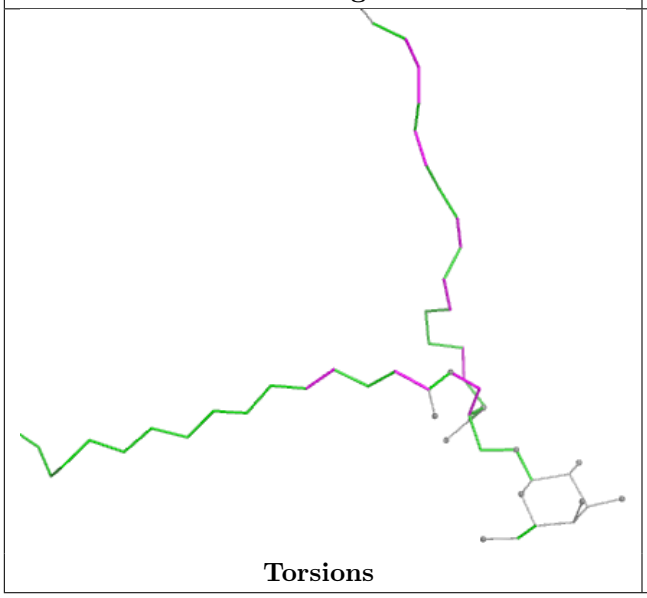
Ligand LMG L 101



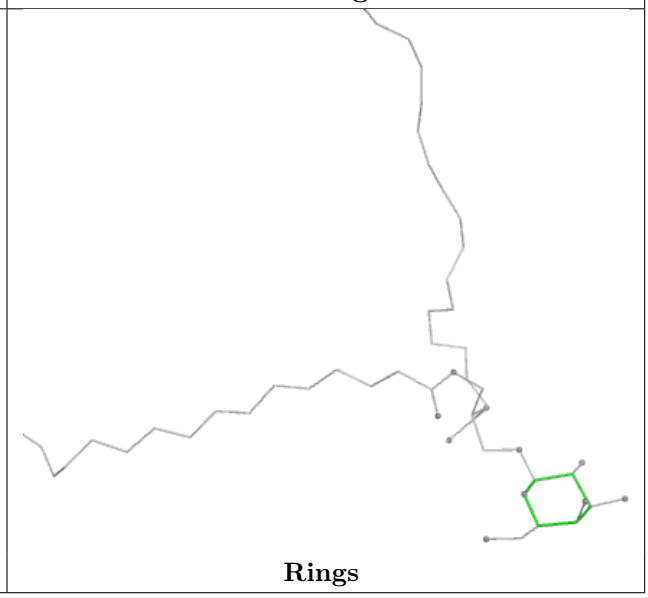
Bond lengths



Bond angles

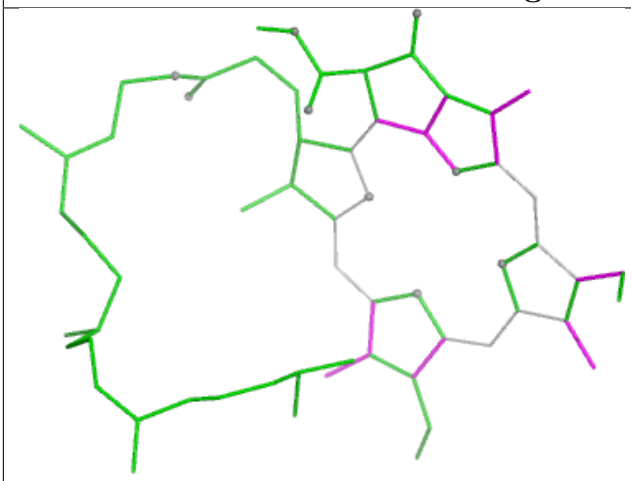


Torsions

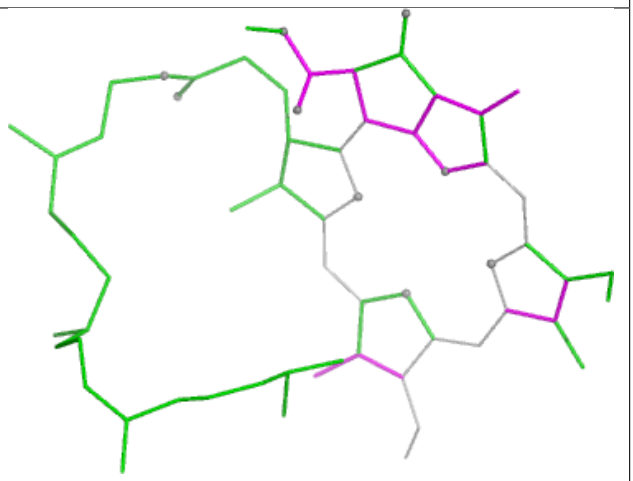


Rings

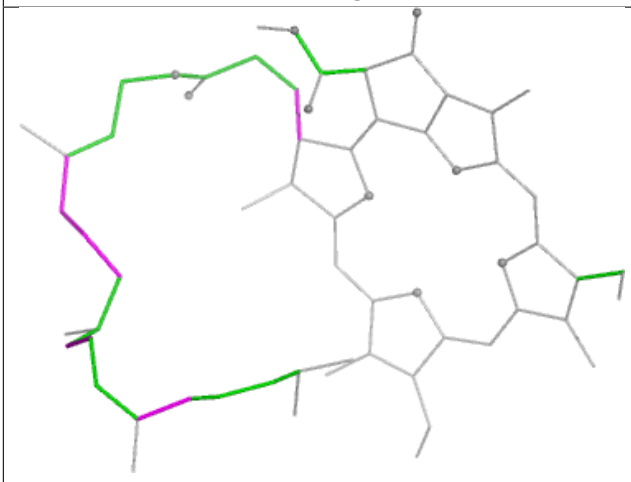
Ligand CLA B 617



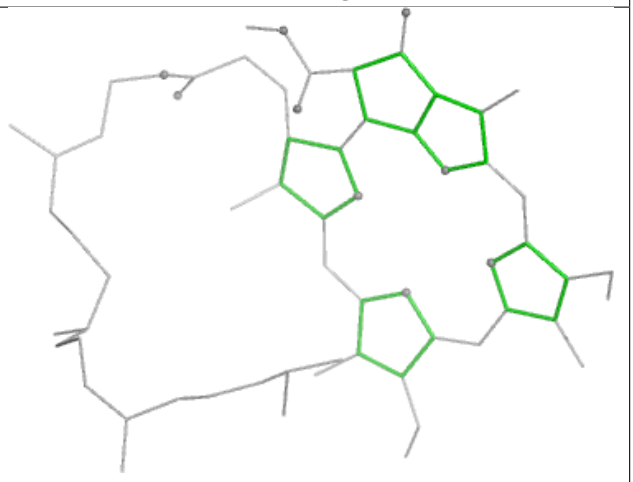
Bond lengths



Bond angles

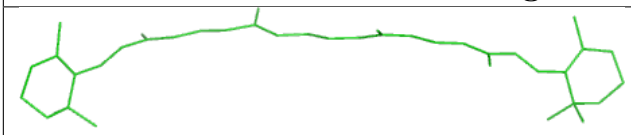


Torsions

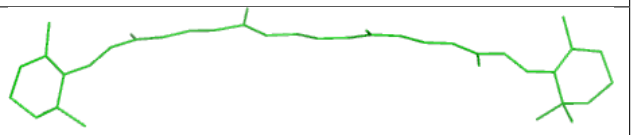


Rings

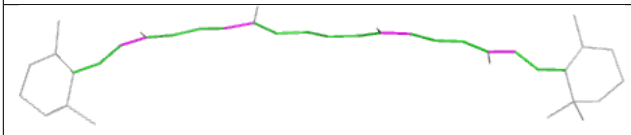
Ligand BCR C 501



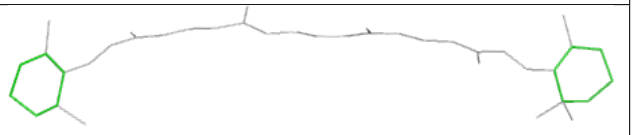
Bond lengths



Bond angles

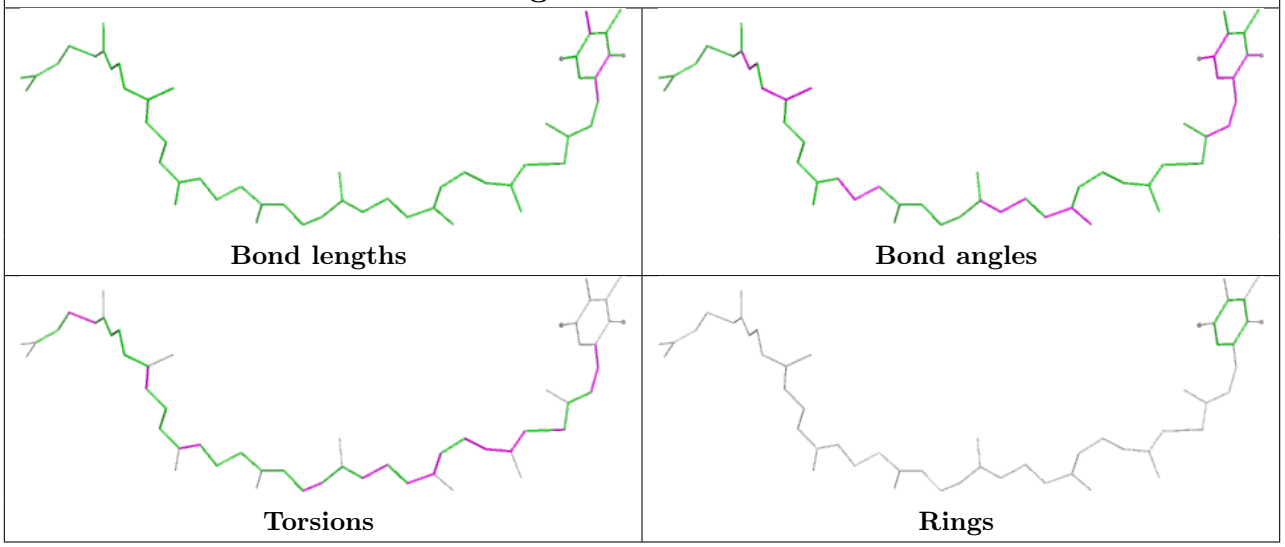


Torsions

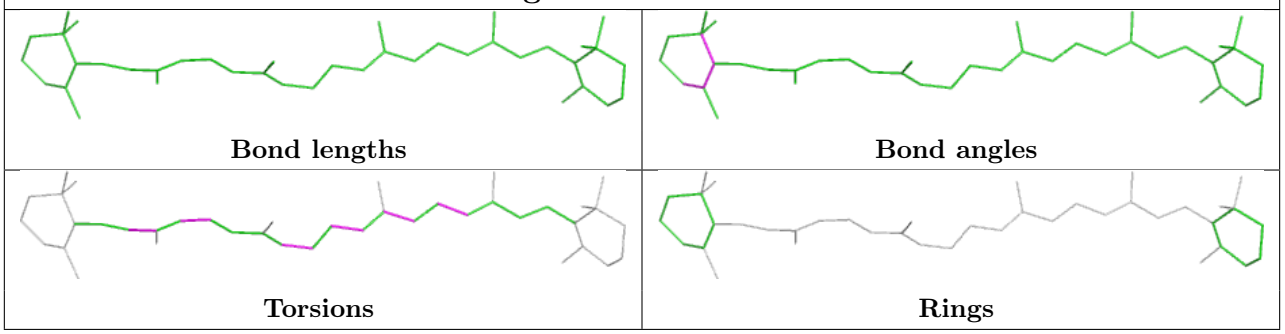


Rings

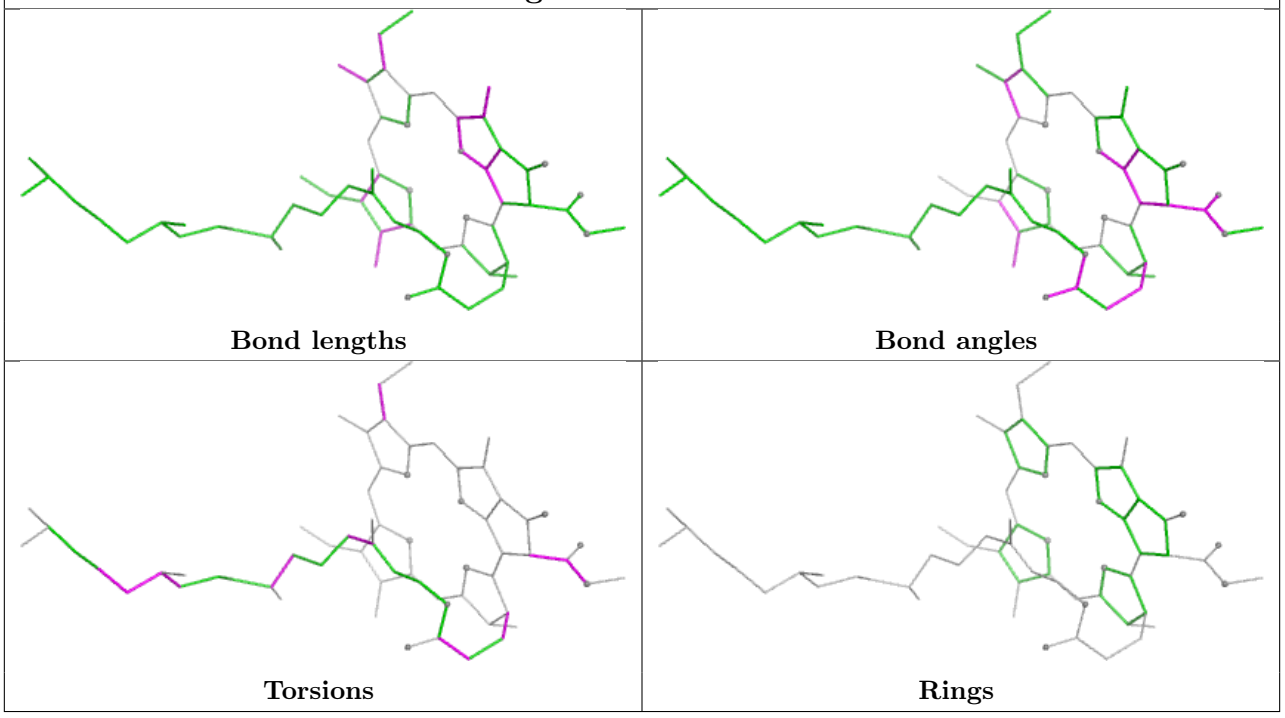
Ligand PL9 A 411

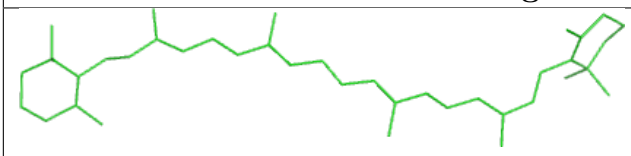
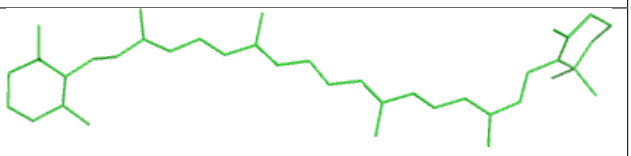
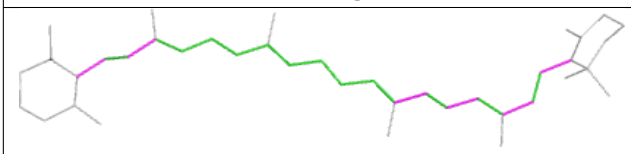
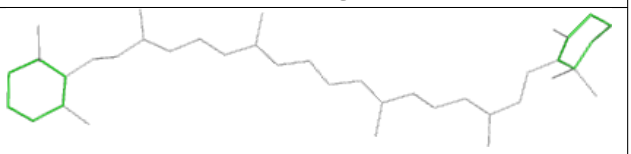


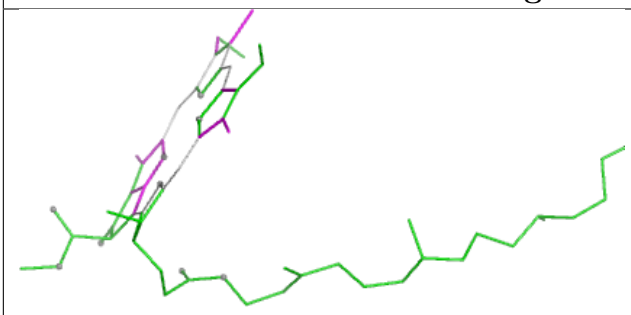
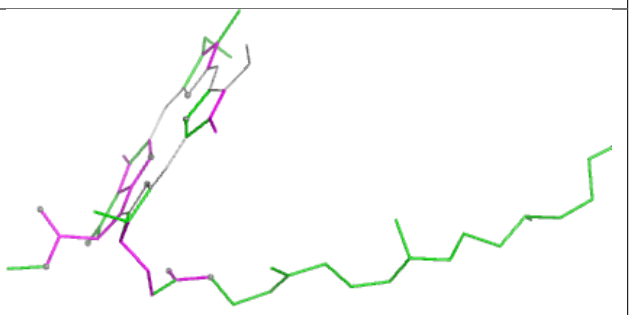
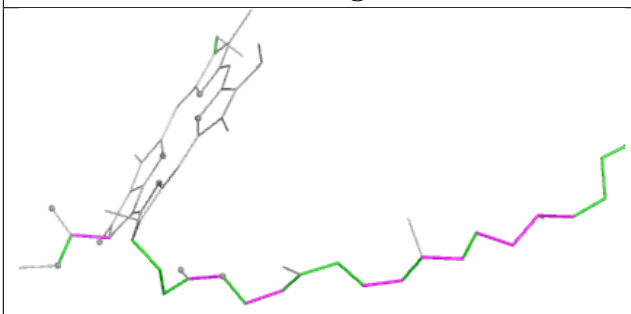
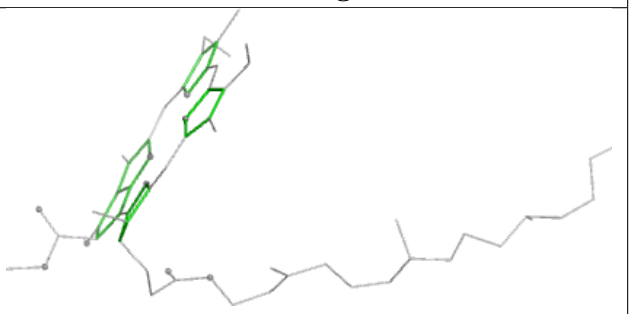
Ligand BCR C 502



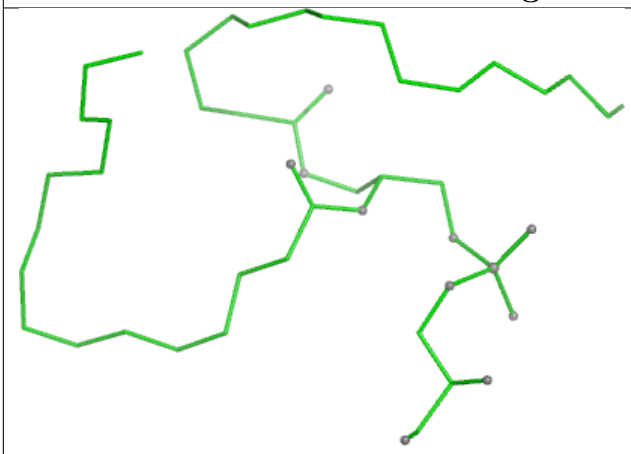
Ligand CLA C 507



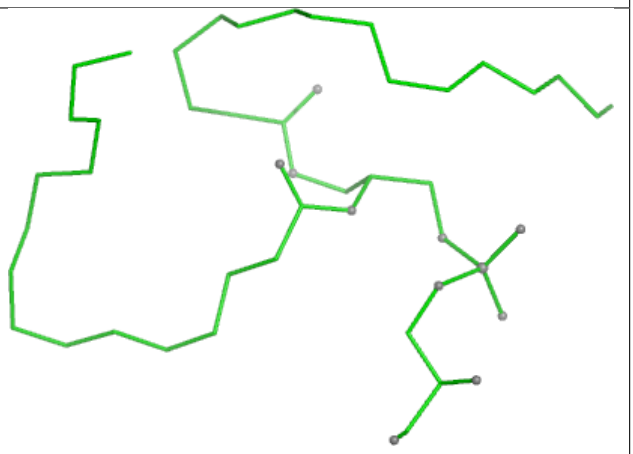
Ligand BCR D 402	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand CLA B 609	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand LHG A 412

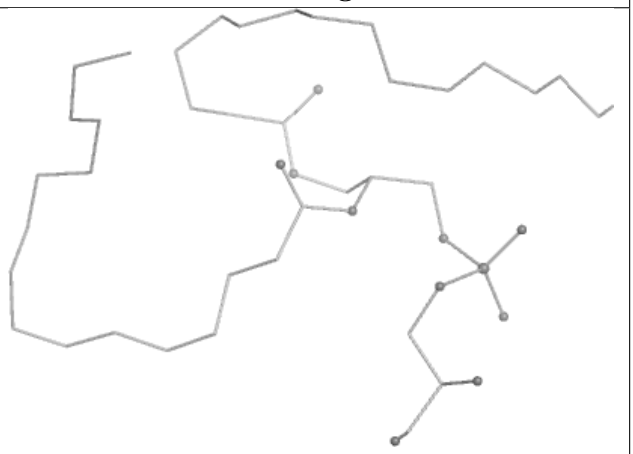


Bond lengths



Bond angles

Torsions



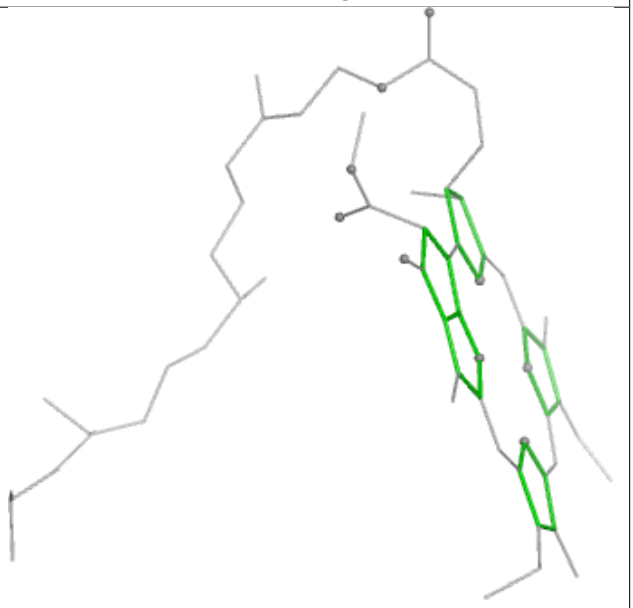
Rings

Ligand CLA B 615

Bond lengths

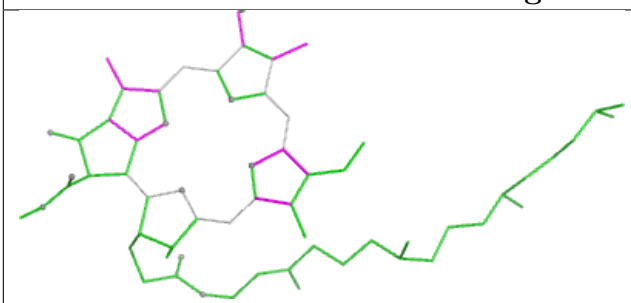
Bond angles

Torsions

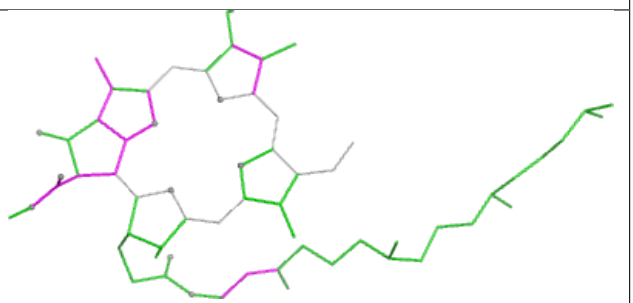


Rings

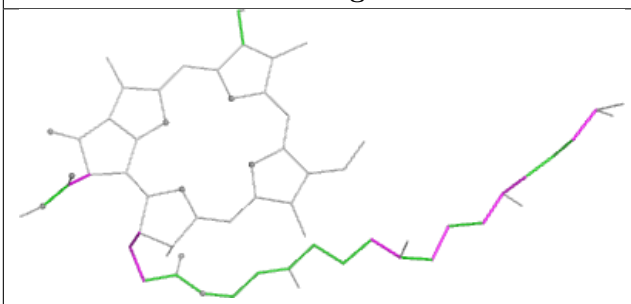
Ligand CLA C 503



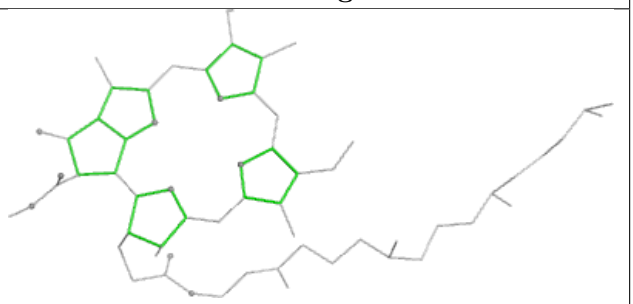
Bond lengths



Bond angles

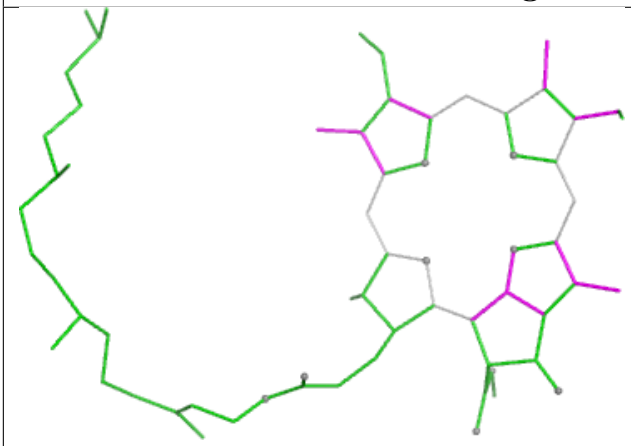


Torsions

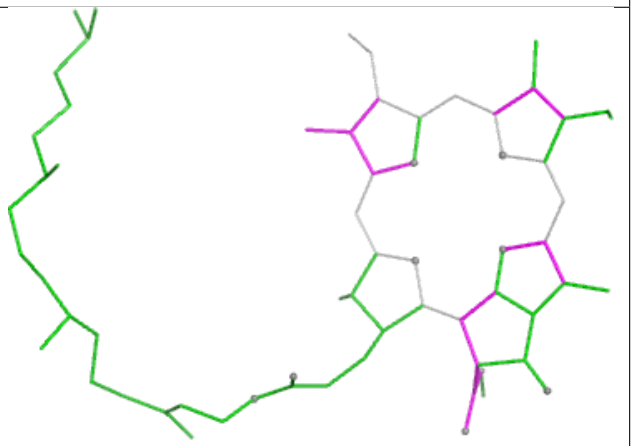


Rings

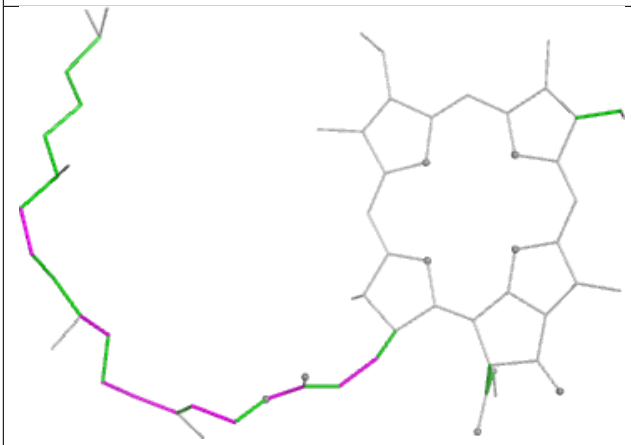
Ligand PHO A 410



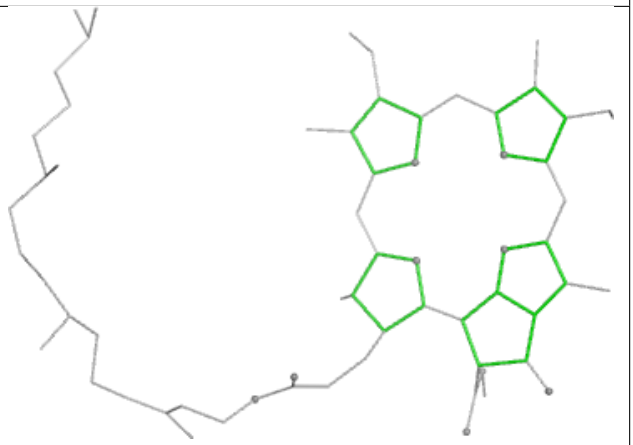
Bond lengths



Bond angles

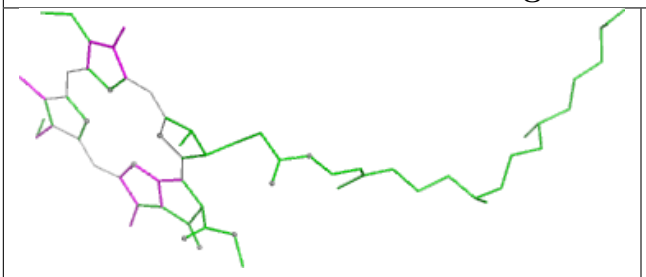


Torsions

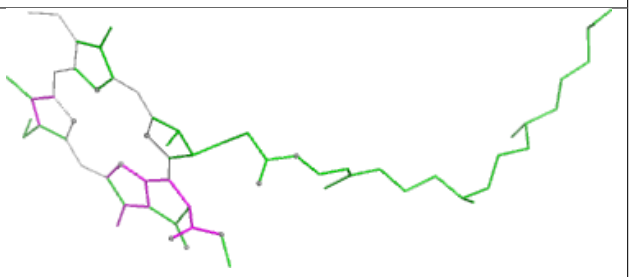


Rings

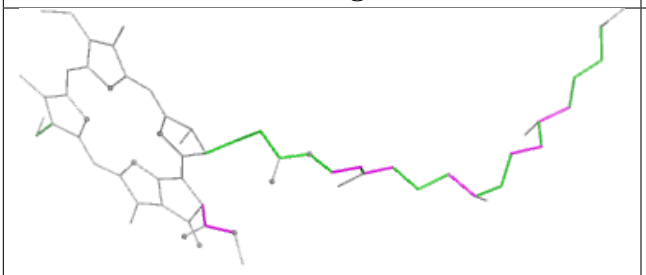
Ligand CLA A 405



Bond lengths



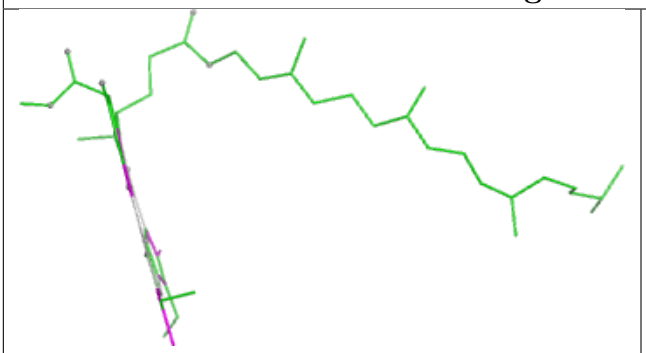
Bond angles



Torsions

Rings

Ligand CLA B 607



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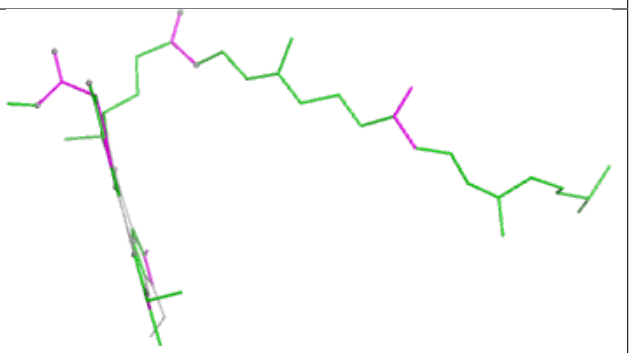
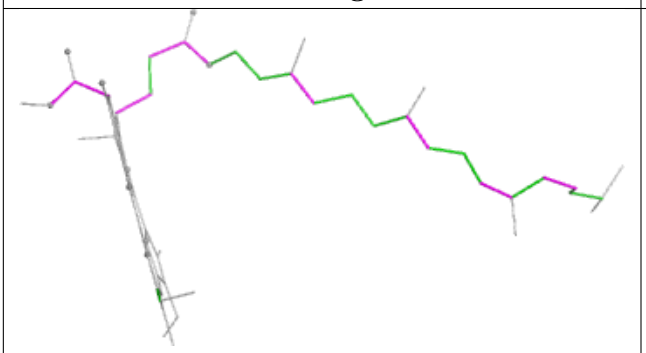
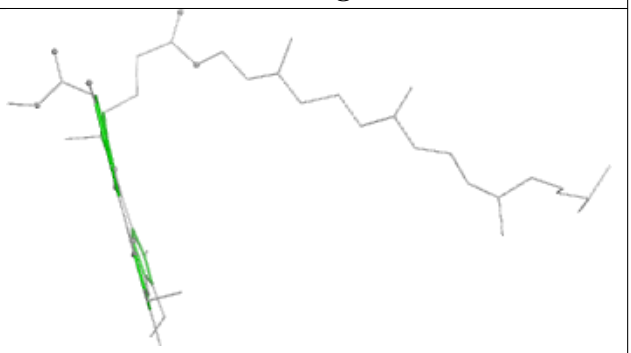


Bond angles

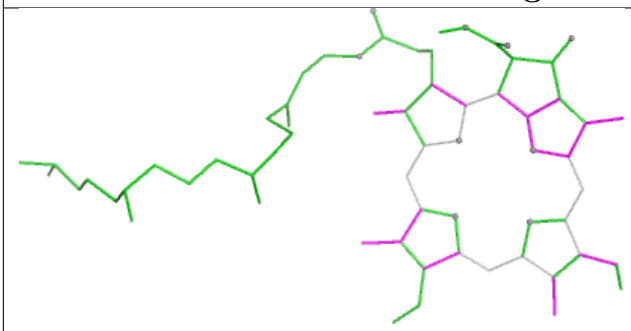


Torsions



Rings

Ligand CLA A 406



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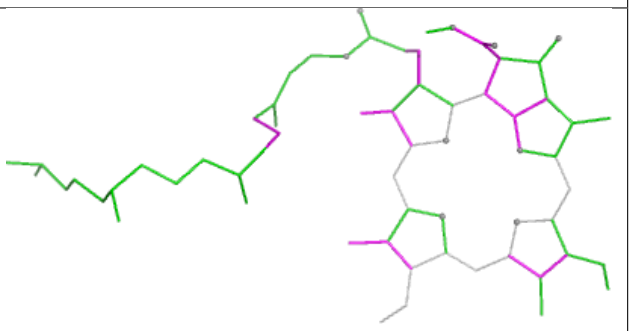
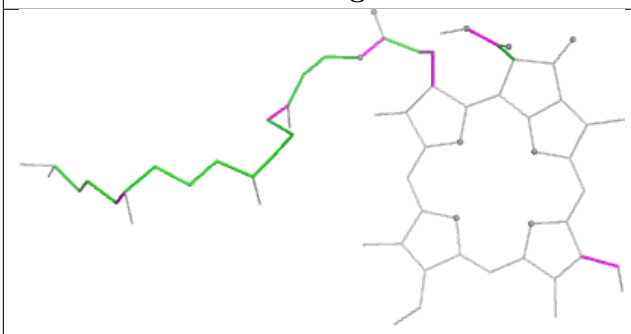
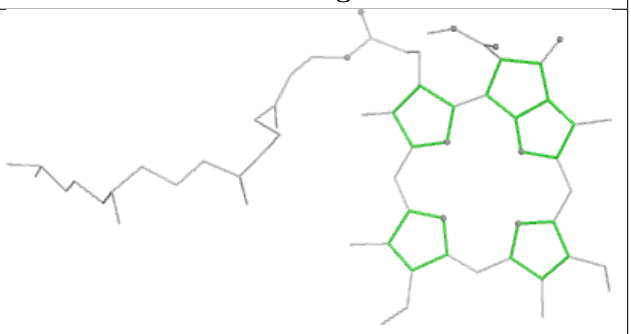


Bond angles

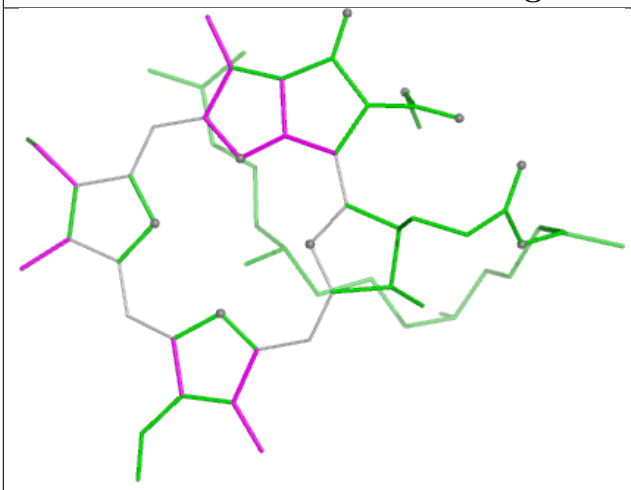


Torsions

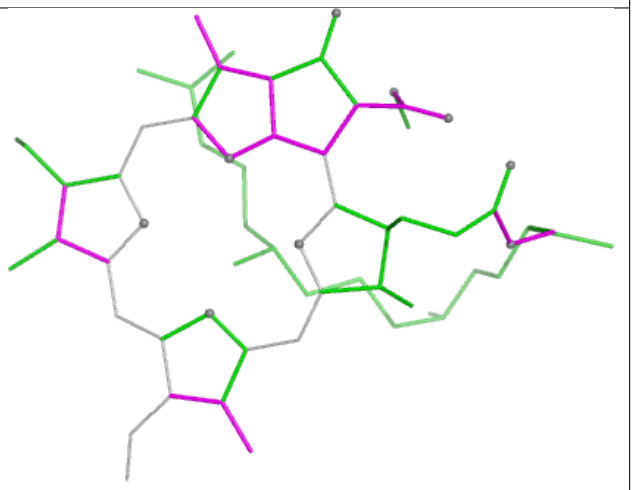


Rings

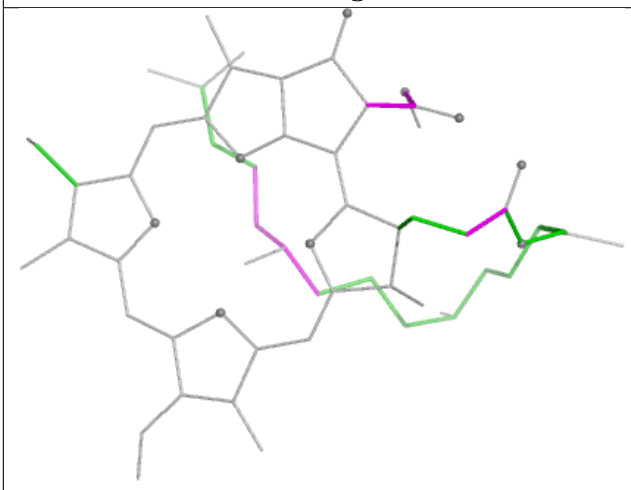
Ligand CLA C 516



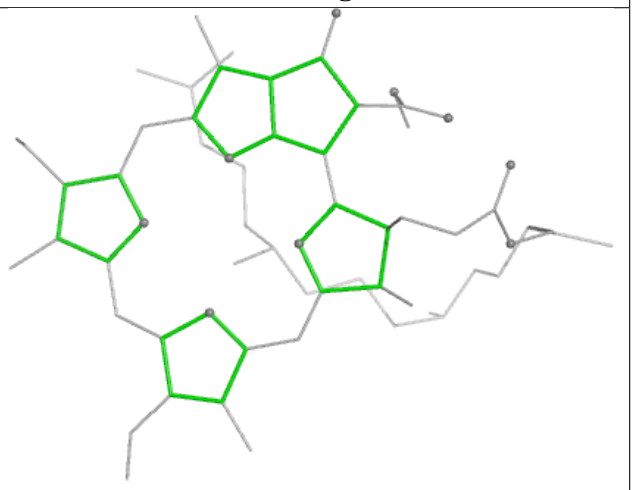
Bond lengths



Bond angles

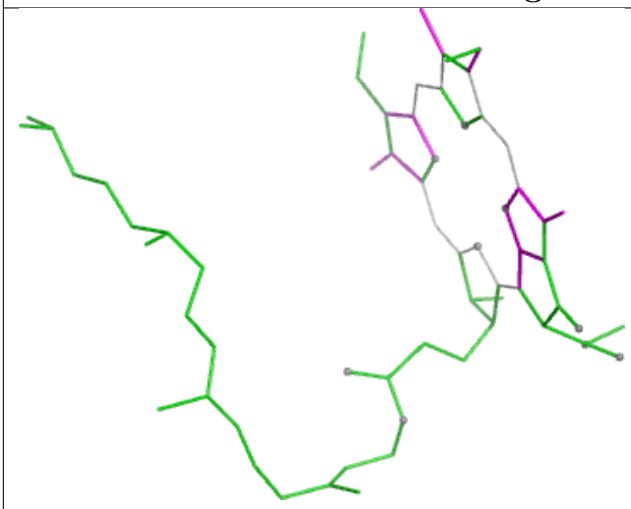


Torsions

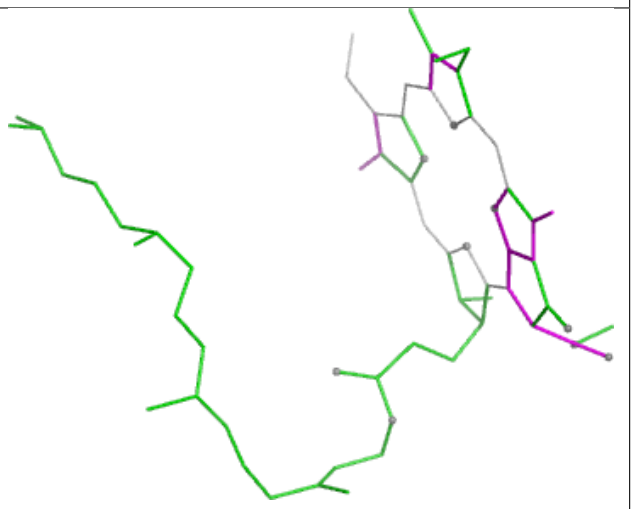


Rings

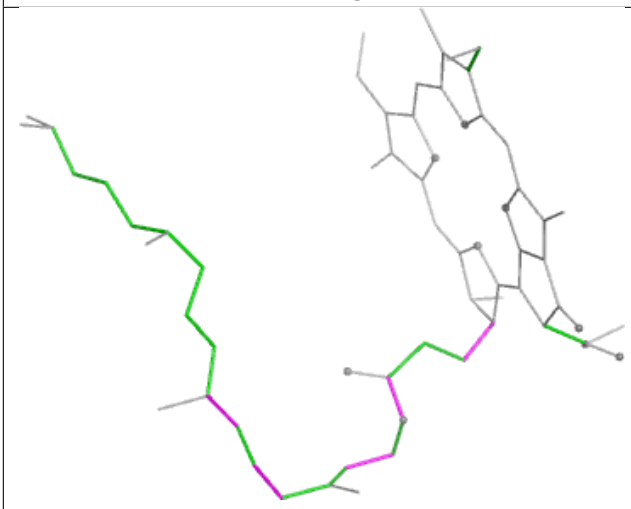
Ligand CLA C 514



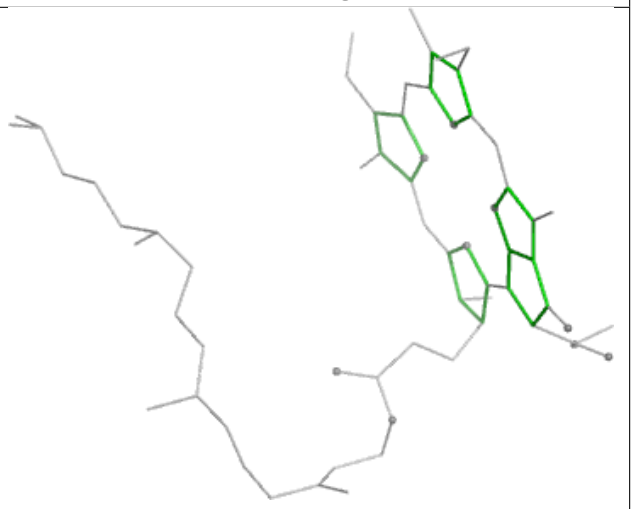
Bond lengths



Bond angles



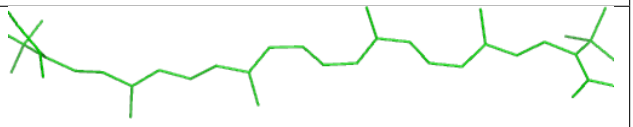
Torsions



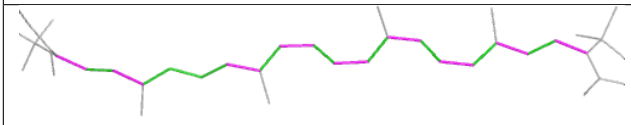
Rings

Ligand BCR B 602

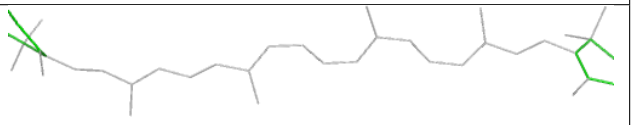
Bond lengths



Bond angles

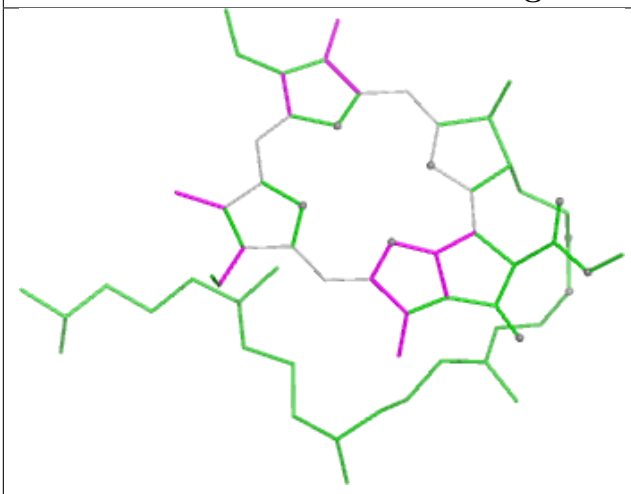


Torsions



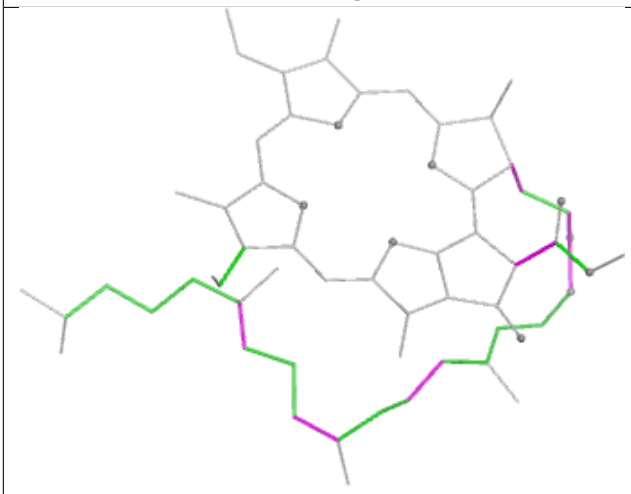
Rings

Ligand CLA B 616

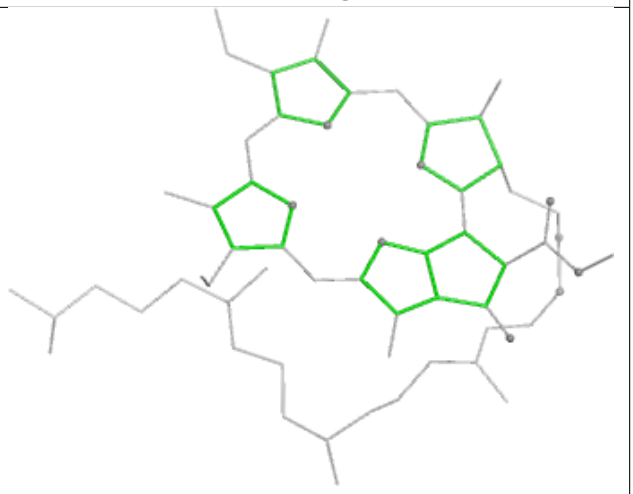


Bond lengths

Bond angles

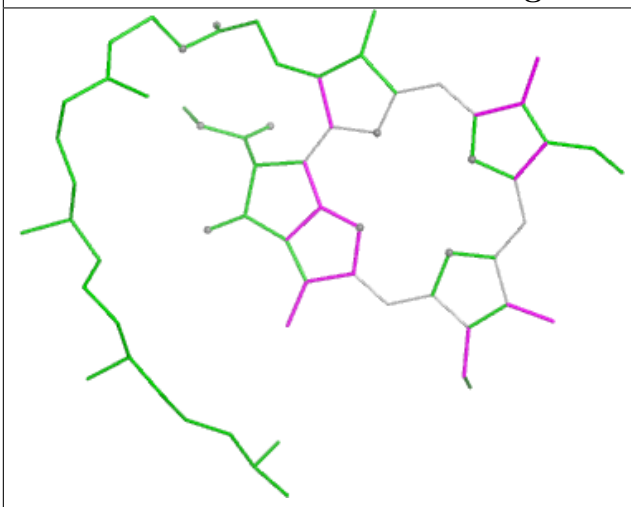


Torsions

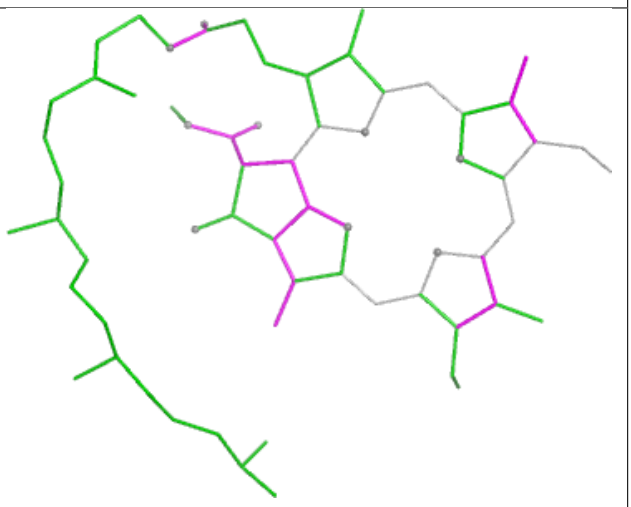


Rings

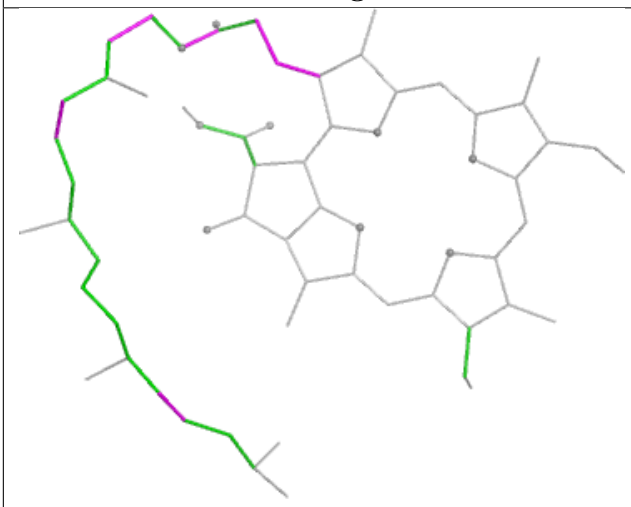
Ligand CLA B 603



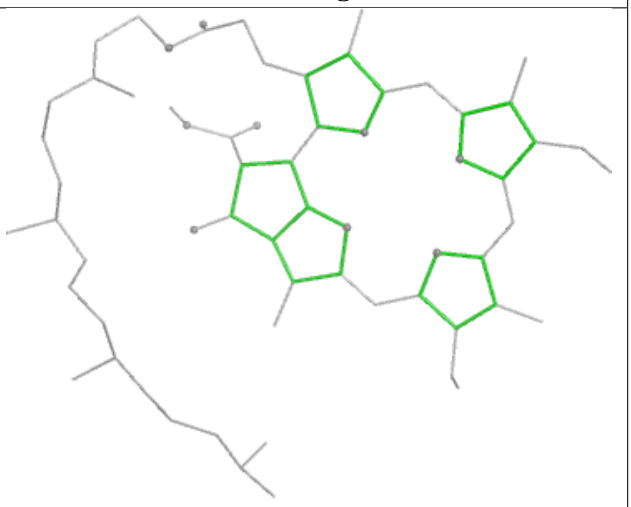
Bond lengths



Bond angles

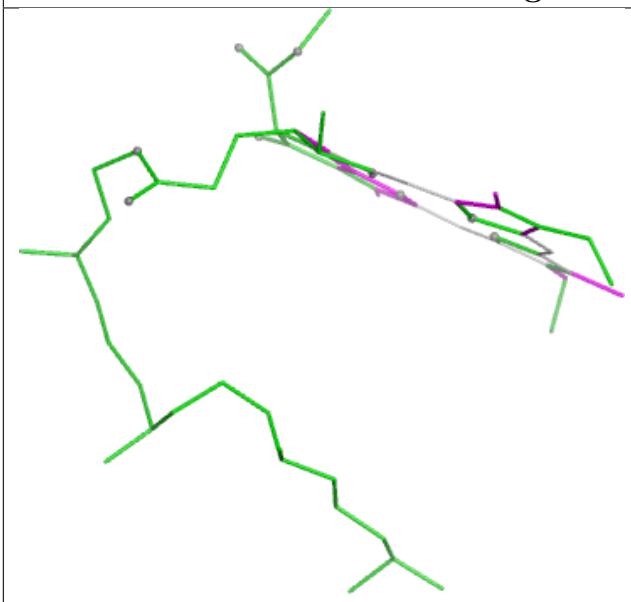


Torsions

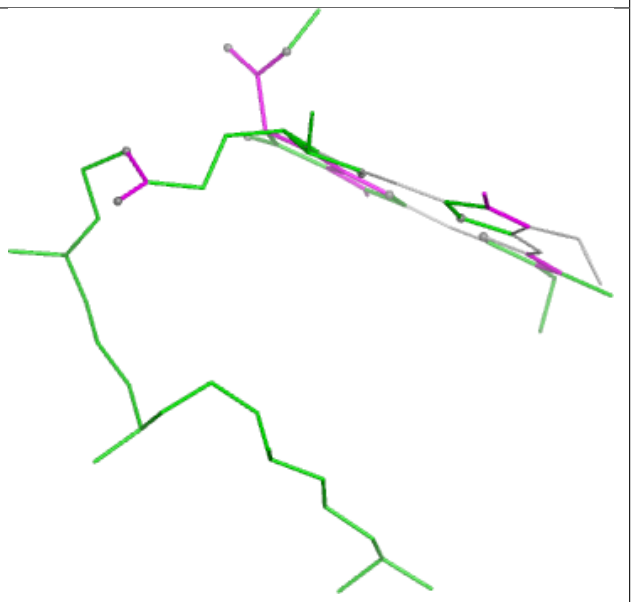


Rings

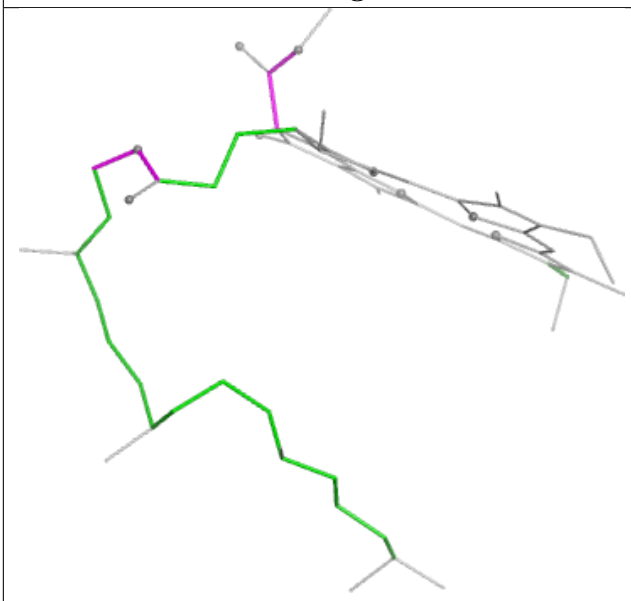
Ligand CLA C 506



Bond lengths



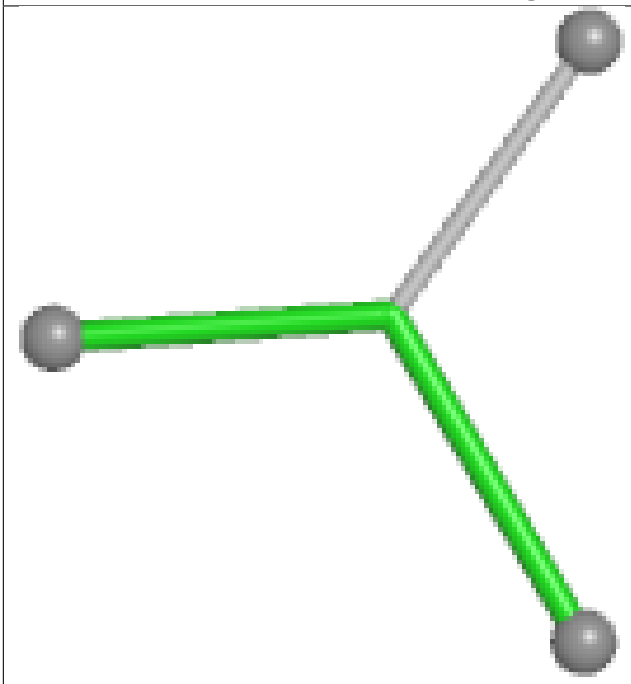
Bond angles



Torsions

Rings

Ligand BCT A 413



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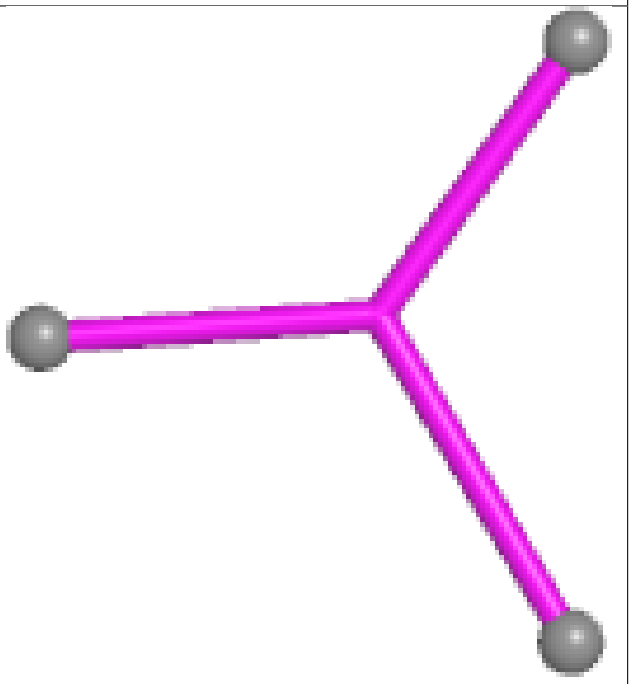
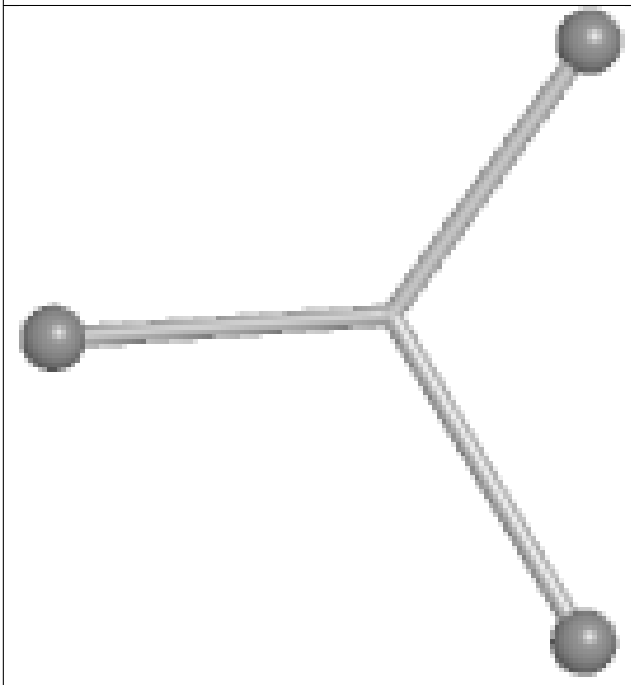
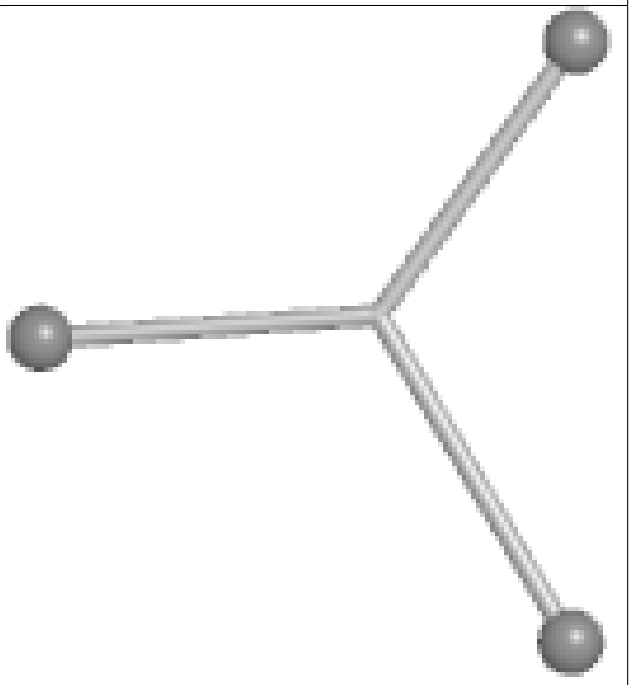


Bond angles

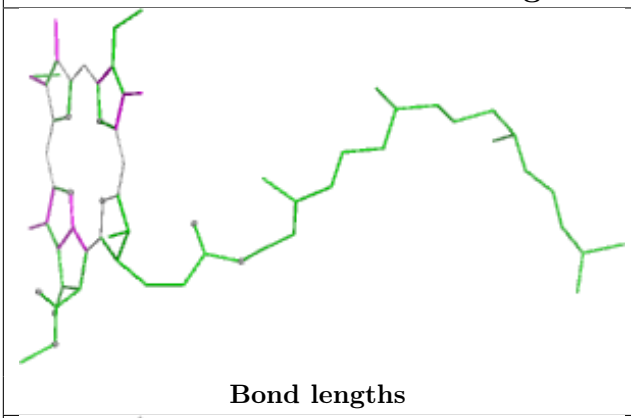


Torsions

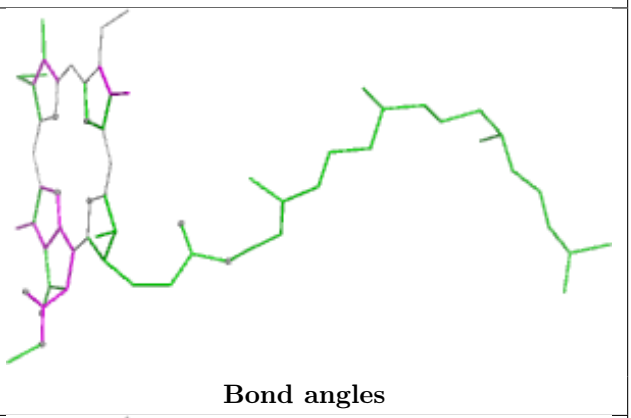


Rings

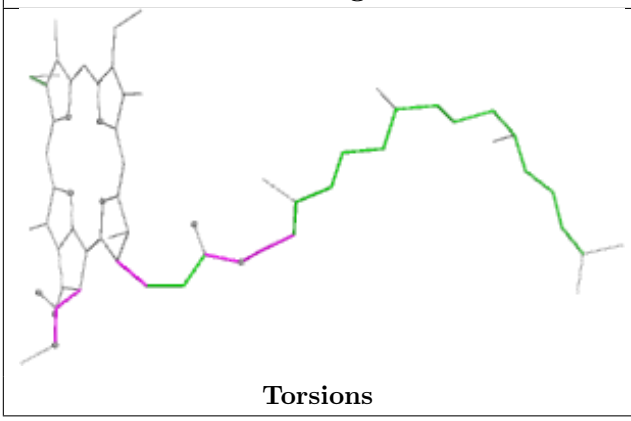
Ligand CLA D 404



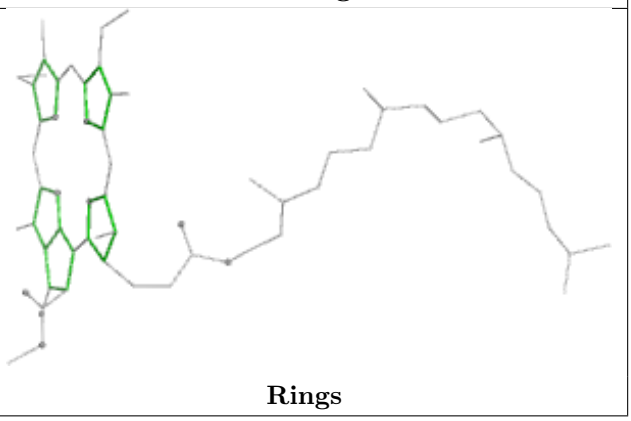
Bond lengths



Bond angles

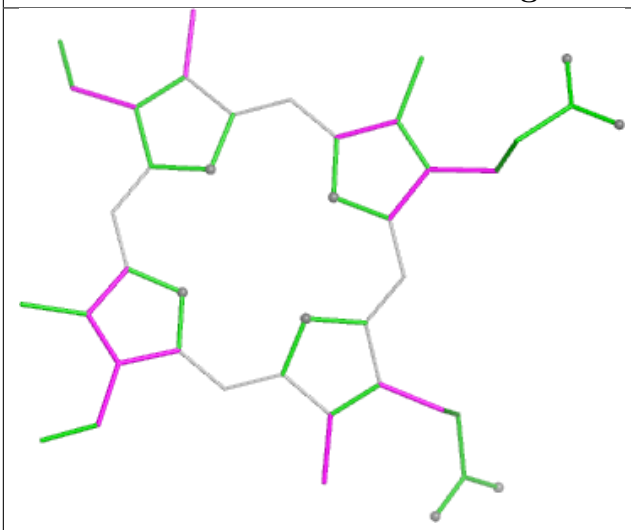


Torsions

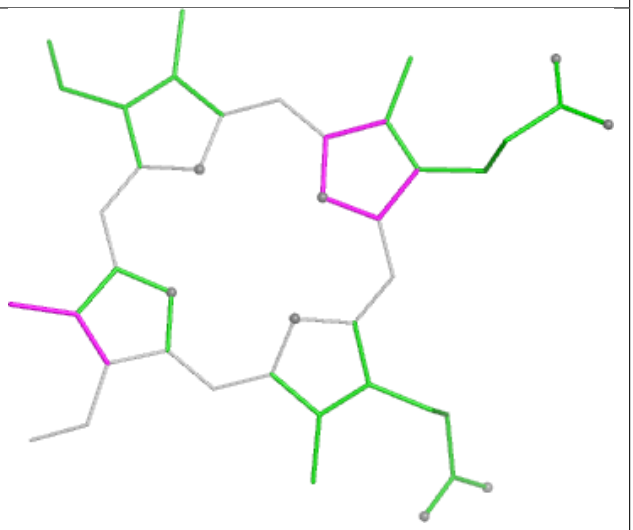


Rings

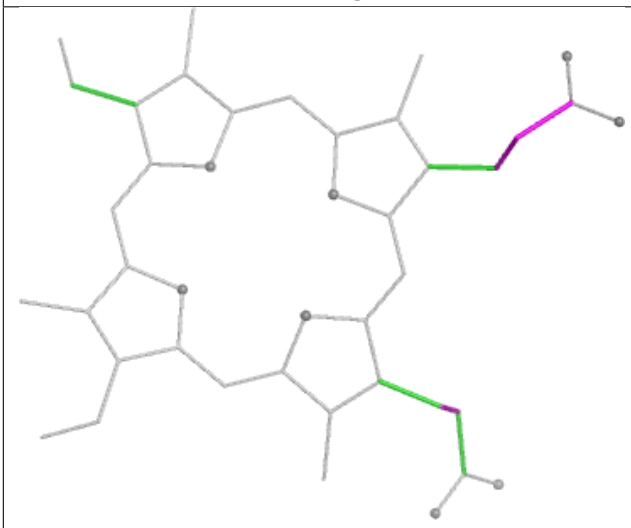
Ligand HEM F 101



Bond lengths



Bond angles



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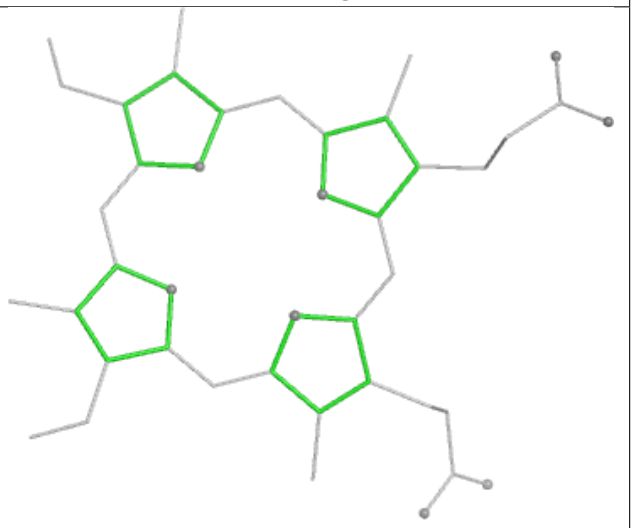
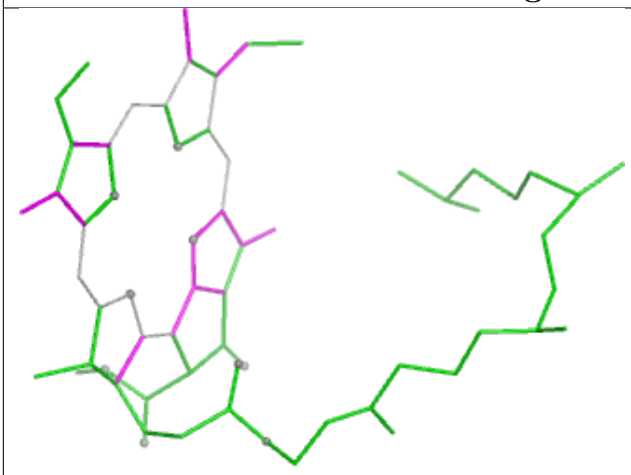
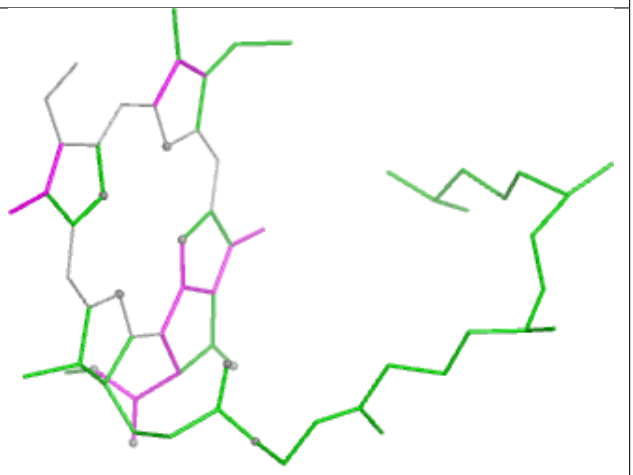


Rings

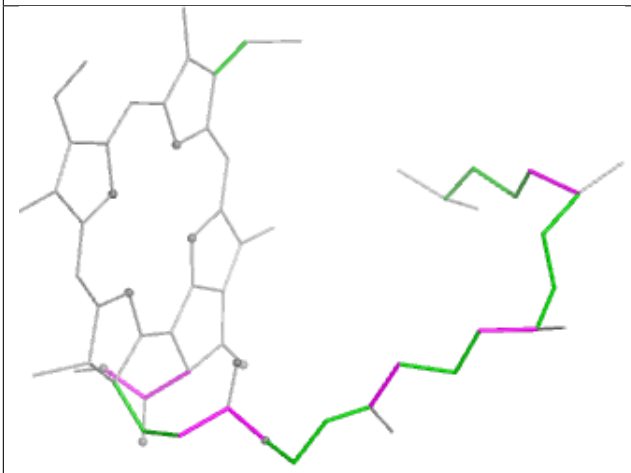
Ligand CLA C 505



Bond lengths



Bond angles



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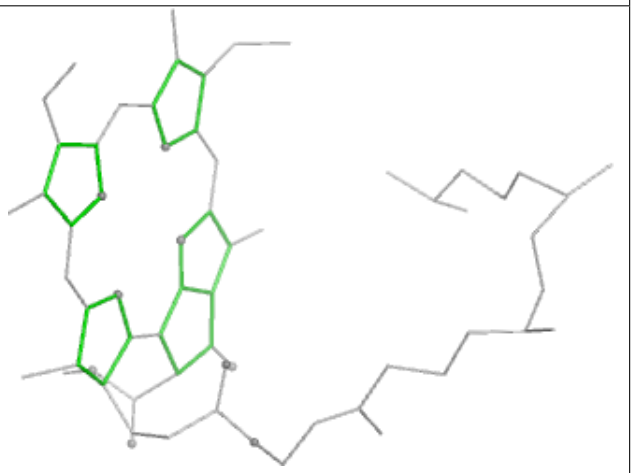
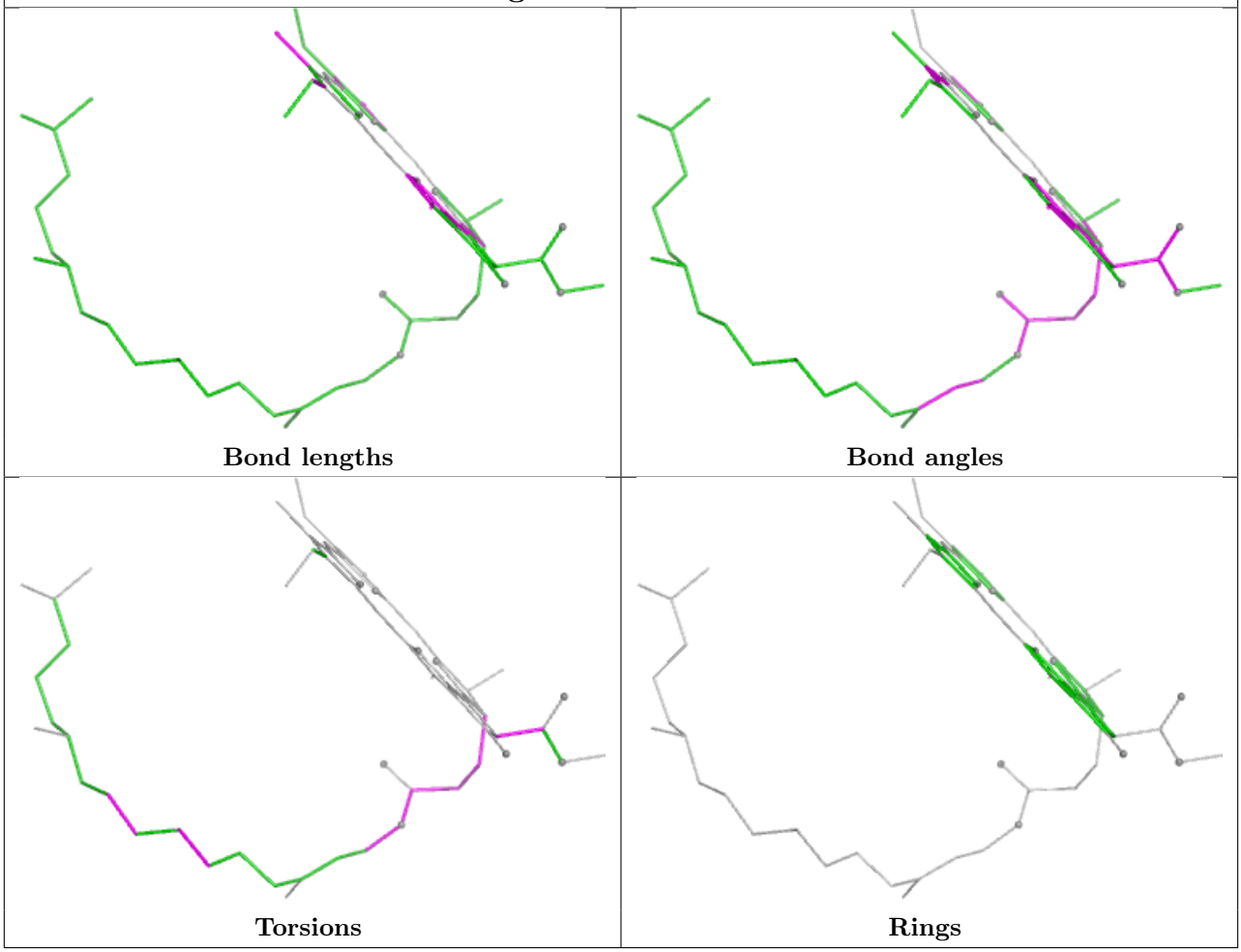


Rings

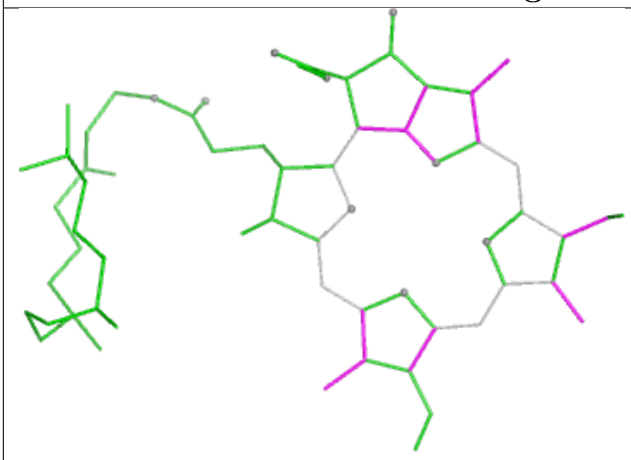
Ligand CLA B 613



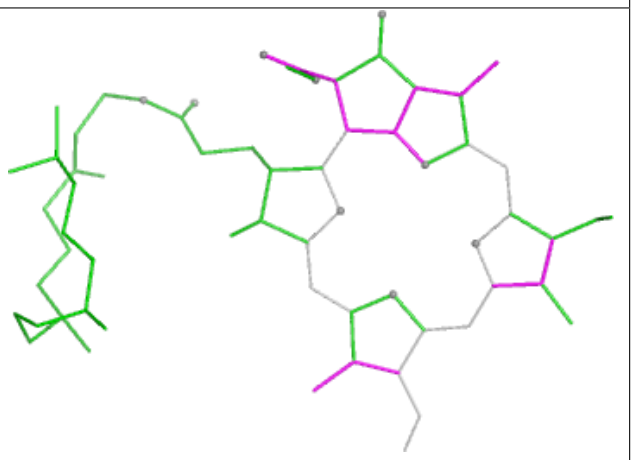
Bond lengths | **Bond angles**

Torsions | **Rings**

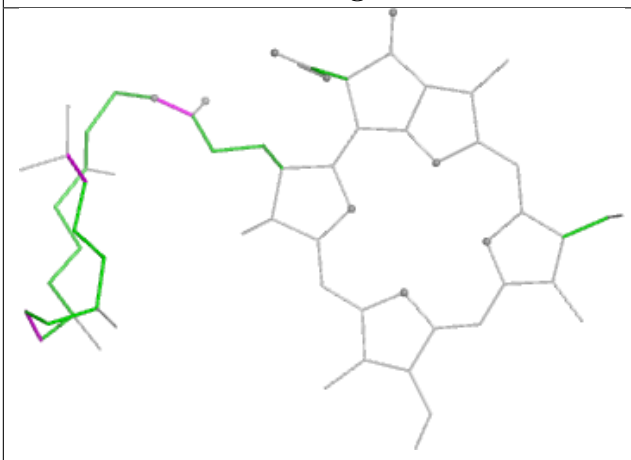
Ligand CLA C 513



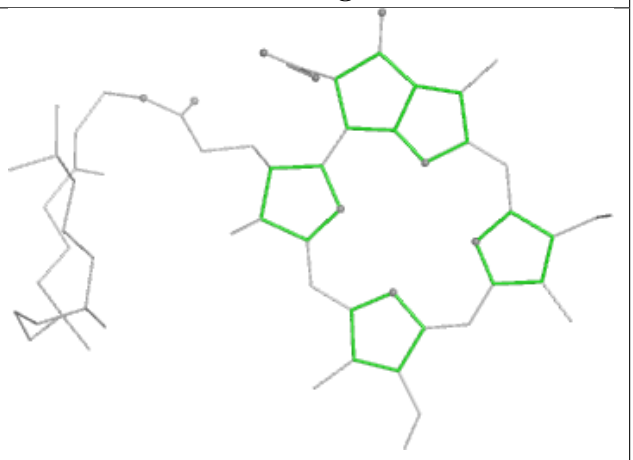
Bond lengths



Bond angles

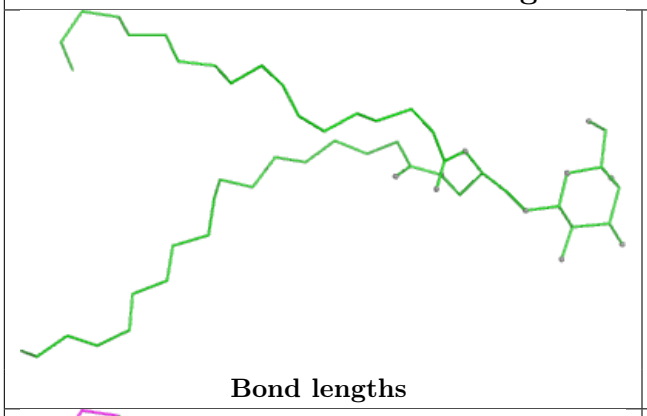


Torsions

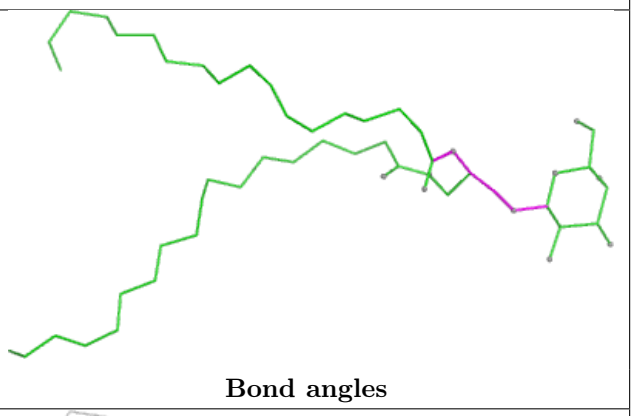


Rings

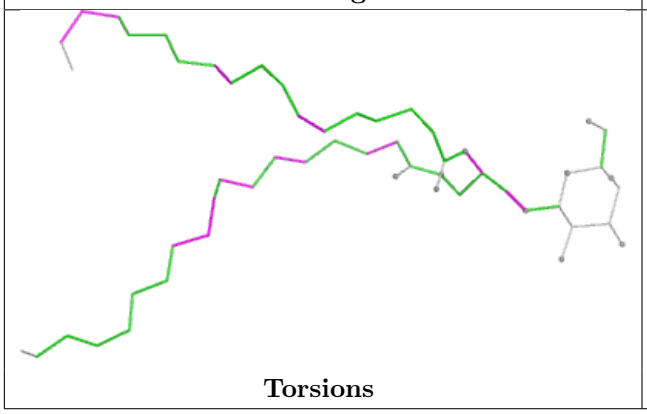
Ligand LMG D 406



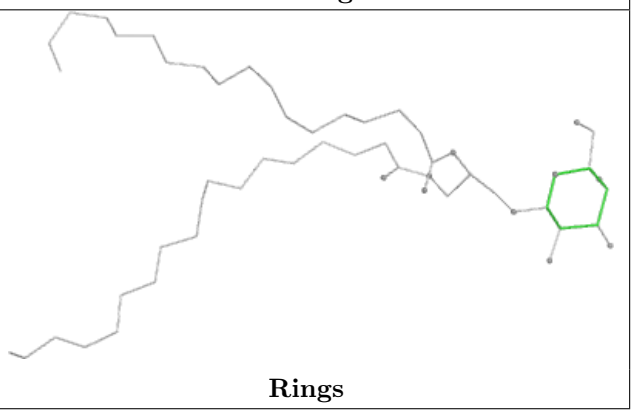
Bond lengths



Bond angles

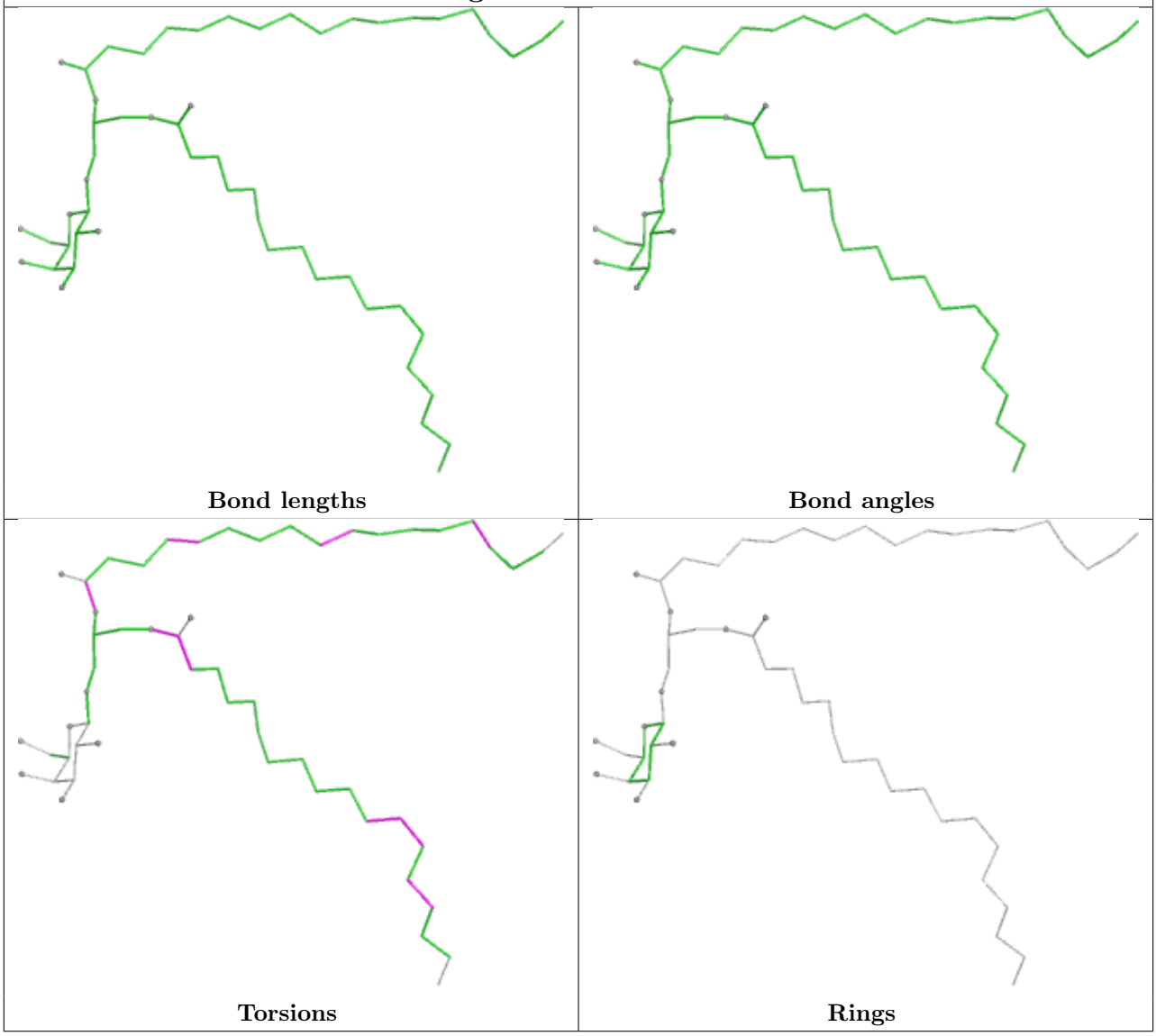


Torsions



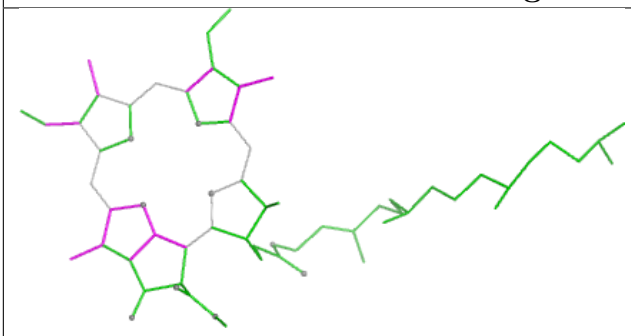
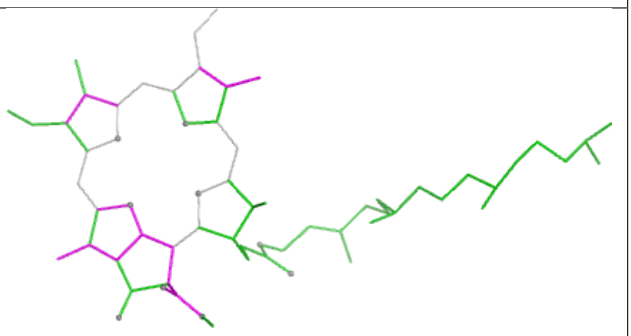
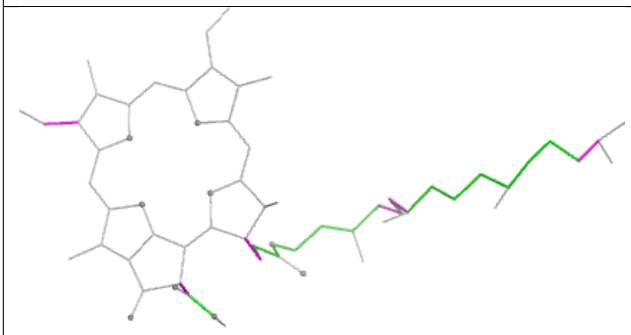
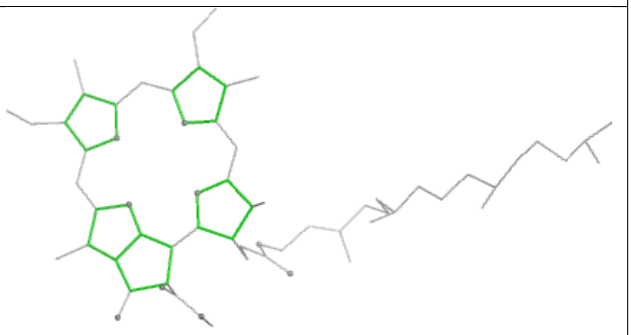
Rings

Ligand LMG K 101

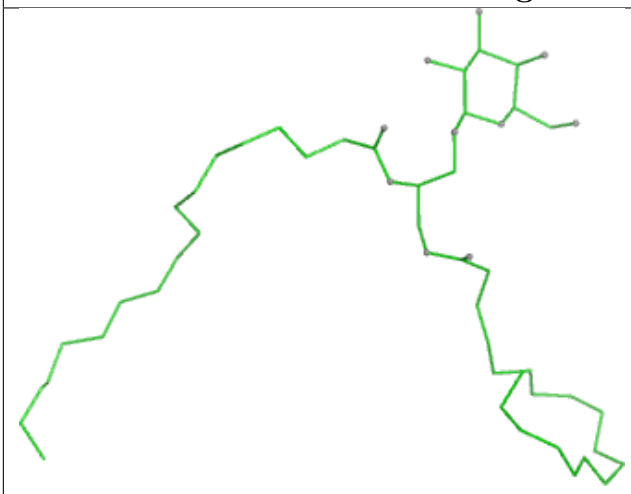


Bond lengths | **Bond angles**

Torsions | **Rings**

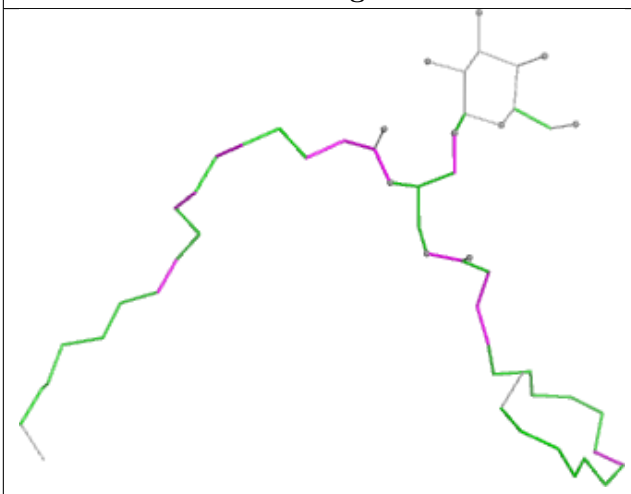
Ligand CLA A 407	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand LMG M 102

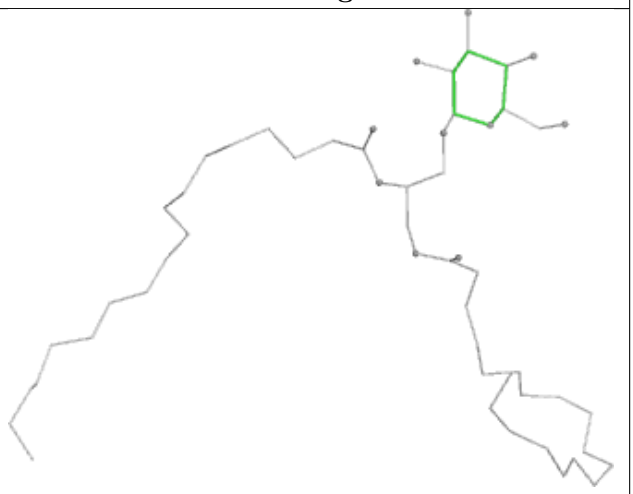


Bond lengths

Bond angles

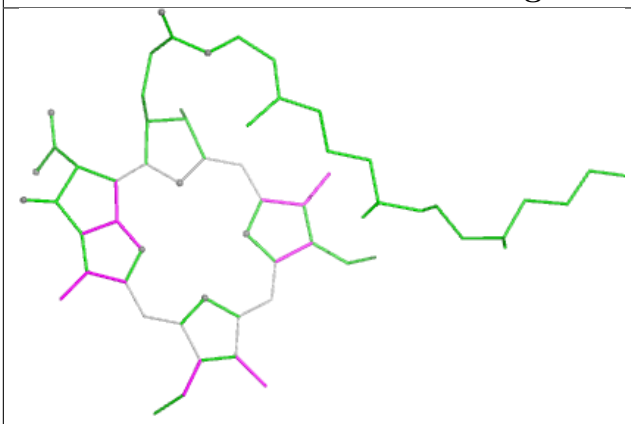


Torsions

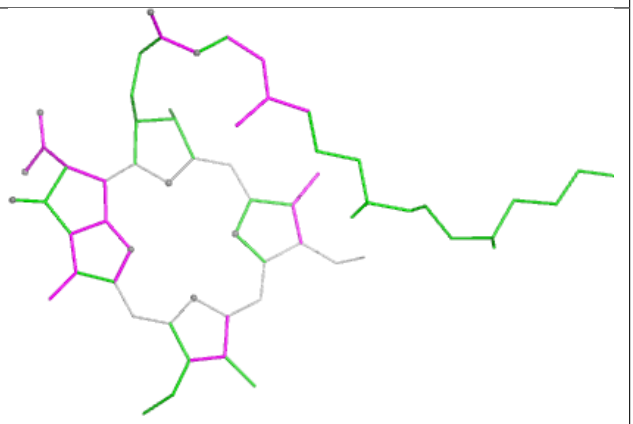


Rings

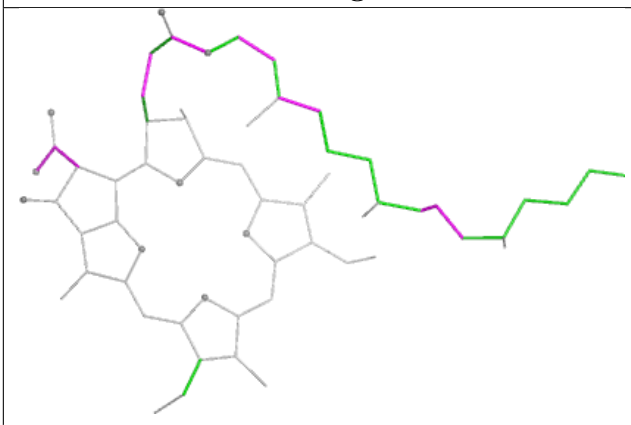
Ligand CLA B 605



Bond lengths



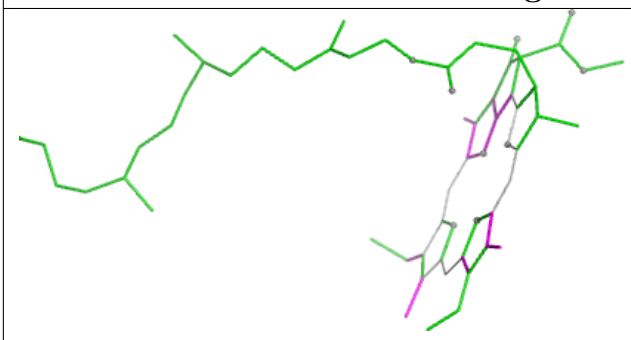
Bond angles



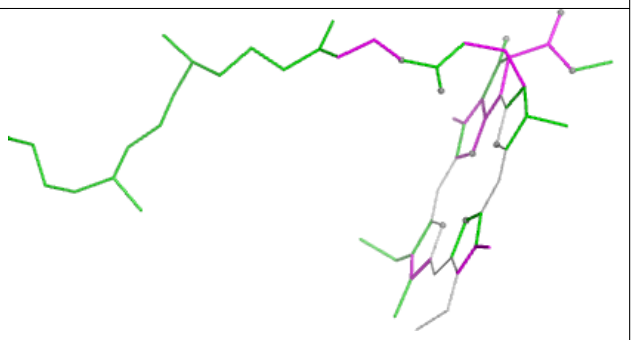
Torsions

Rings

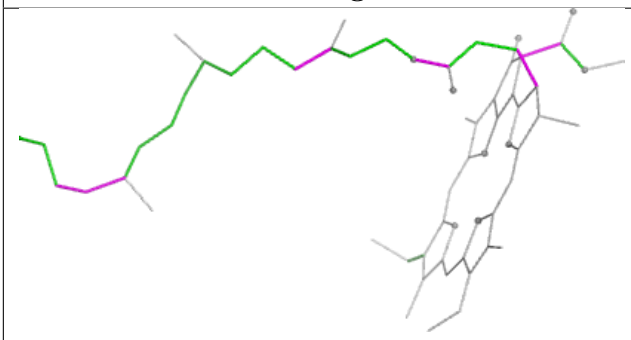
Ligand CLA C 510



Bond lengths



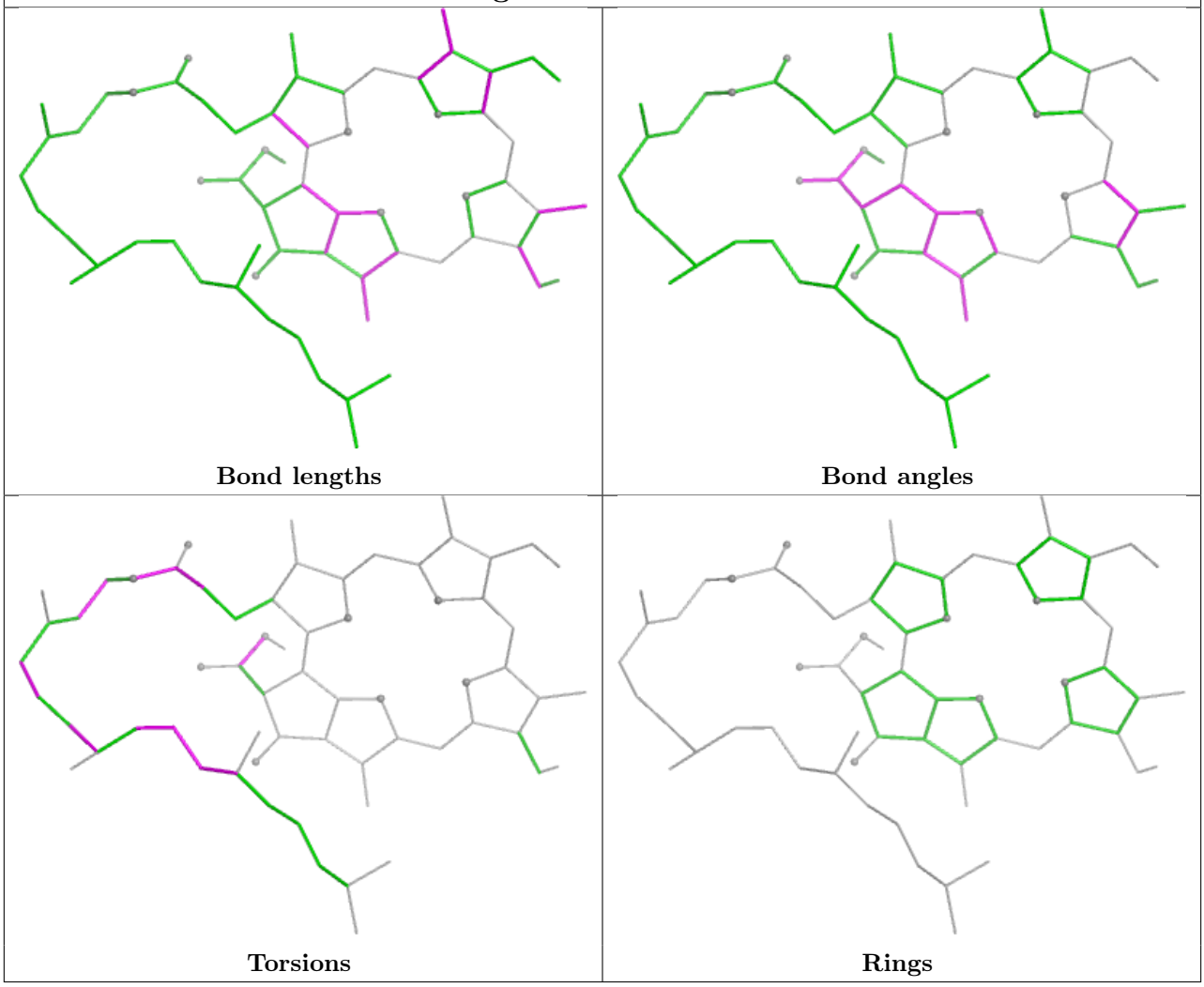
Bond angles



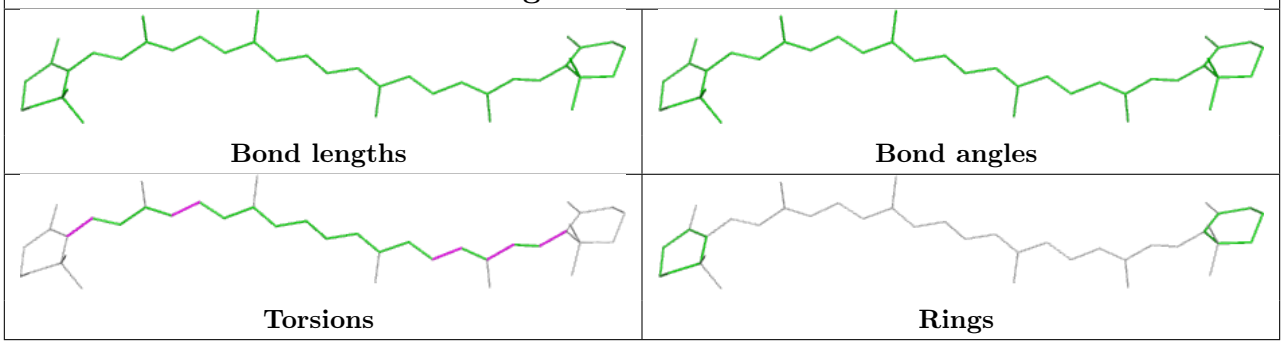
Torsions

Rings

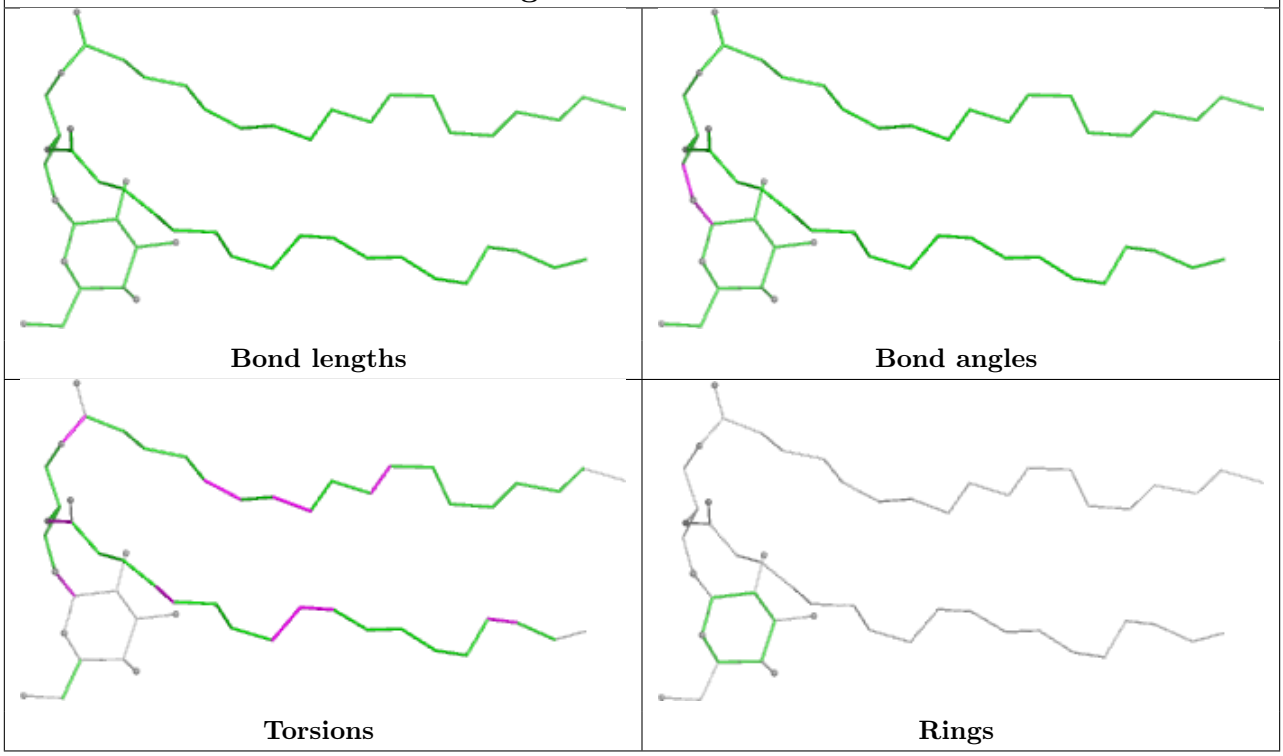
Ligand CLA C 511



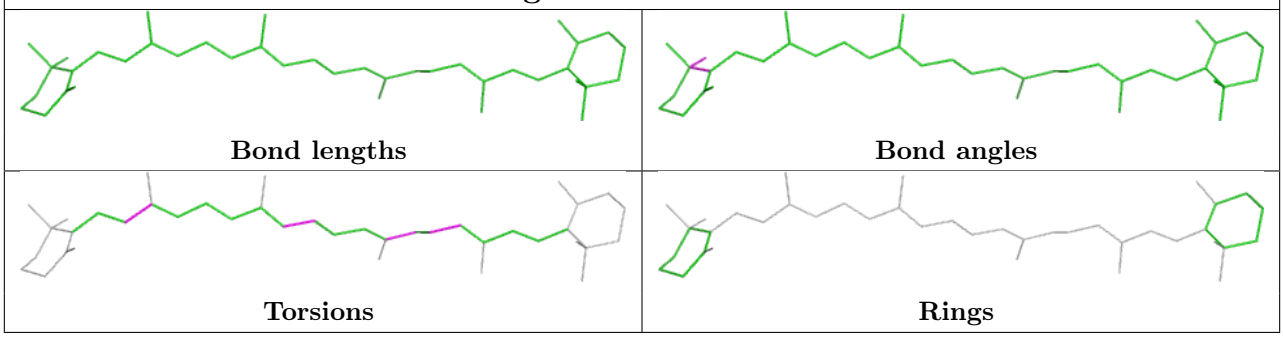
Ligand BCR A 404



Ligand LMG C 515



Ligand BCR C 517



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.

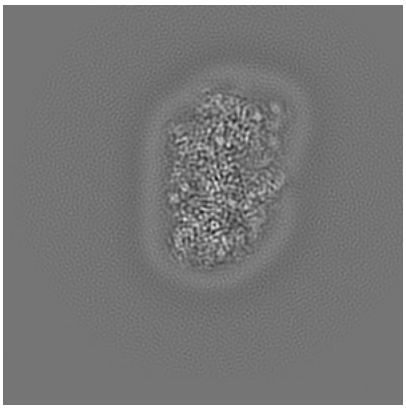
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-52705. These allow visual inspection of the internal detail of the map and identification of artifacts.

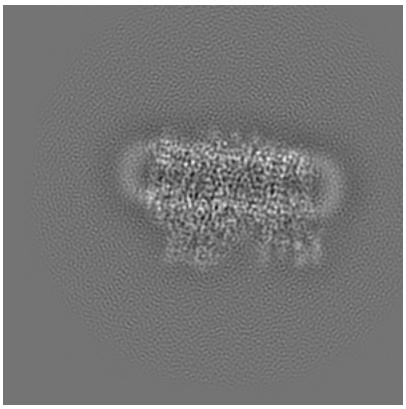
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

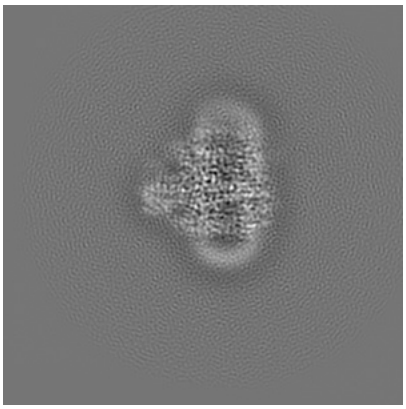
6.1.1 Primary map



X

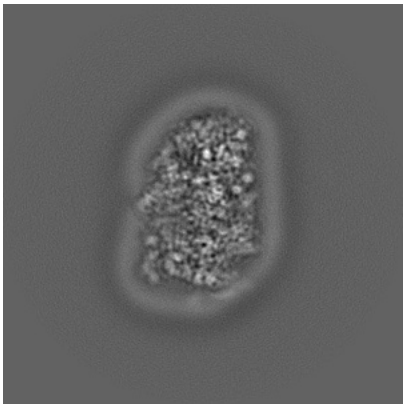


Y

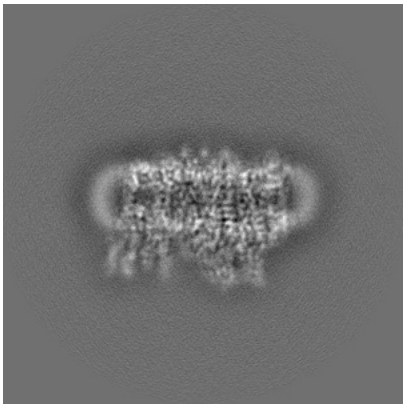


Z

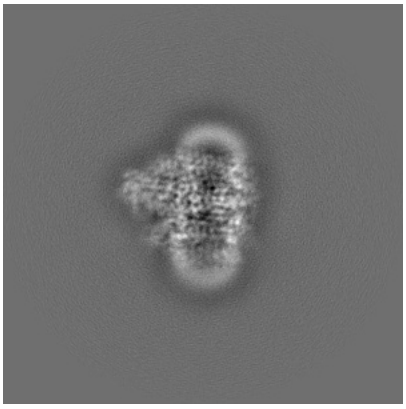
6.1.2 Raw map



X



Y

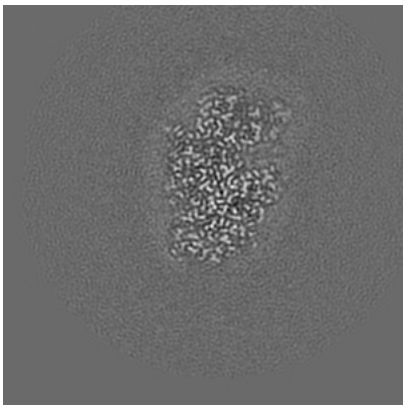


Z

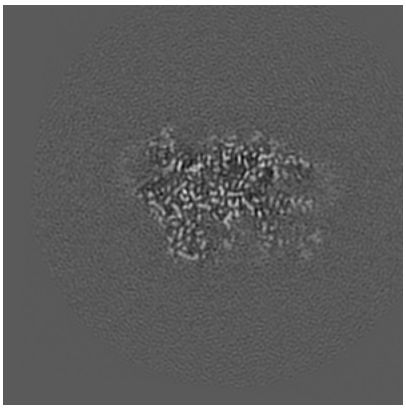
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

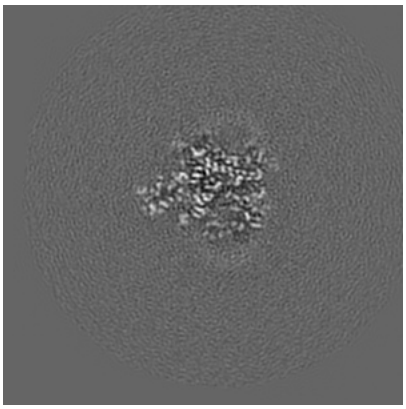
6.2.1 Primary map



X Index: 160

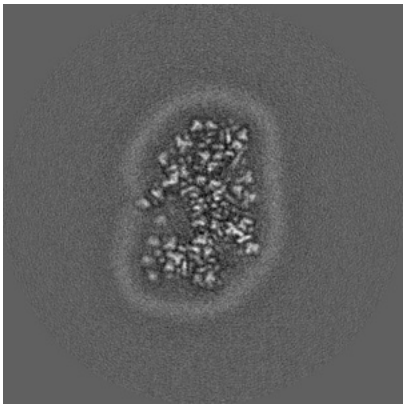


Y Index: 160

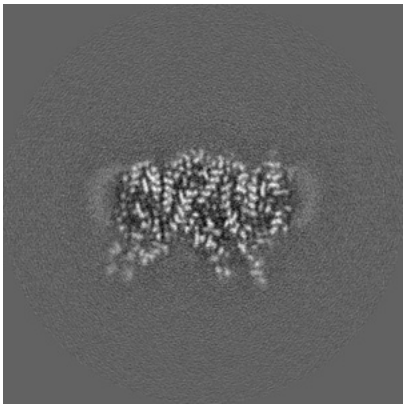


Z Index: 160

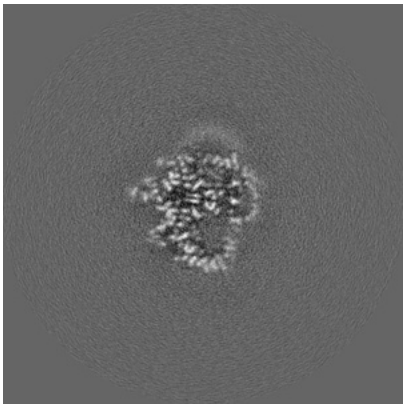
6.2.2 Raw map



X Index: 160



Y Index: 160

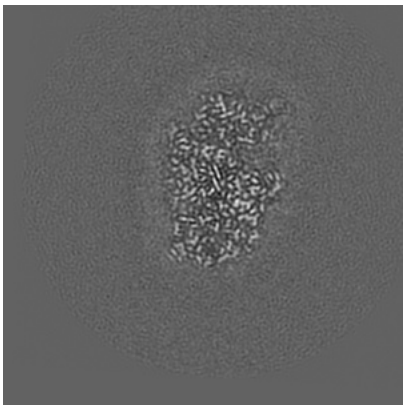


Z Index: 160

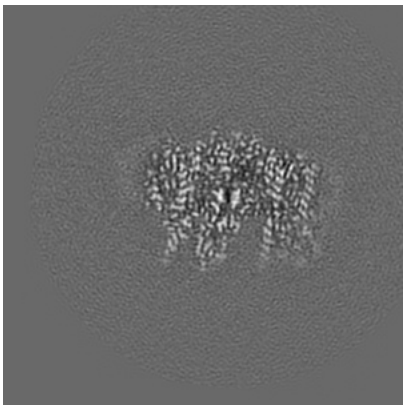
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

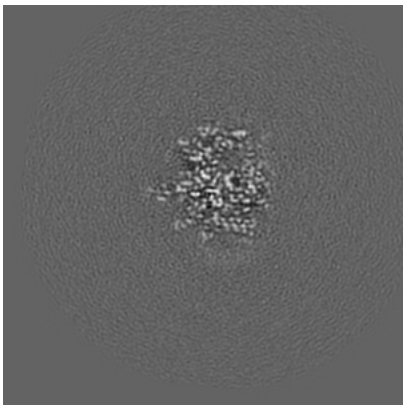
6.3.1 Primary map



X Index: 163

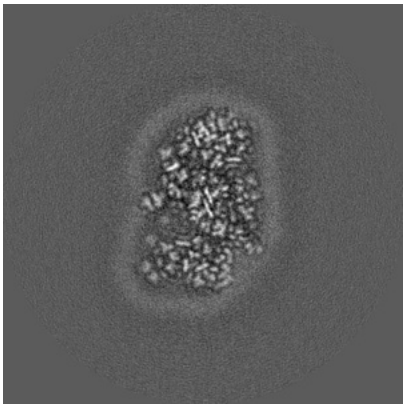


Y Index: 171

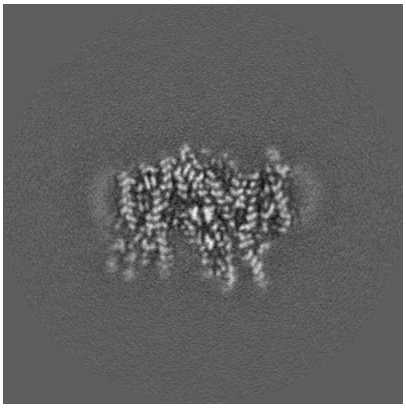


Z Index: 174

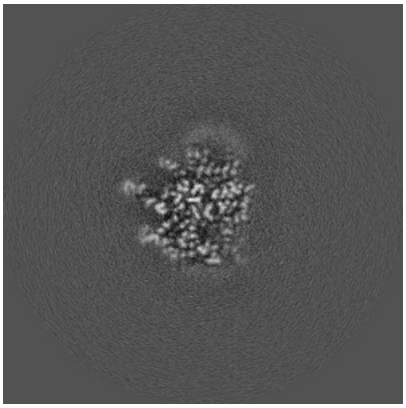
6.3.2 Raw map



X Index: 152



Y Index: 165

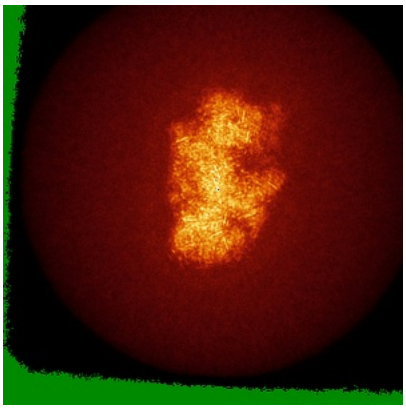


Z Index: 168

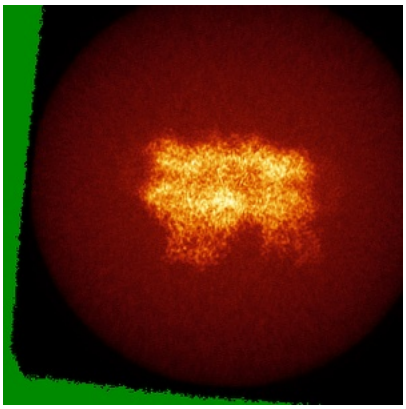
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

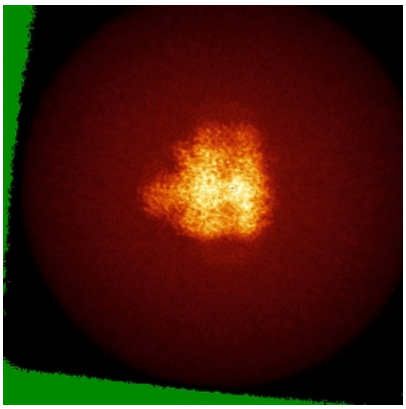
6.4.1 Primary map



X

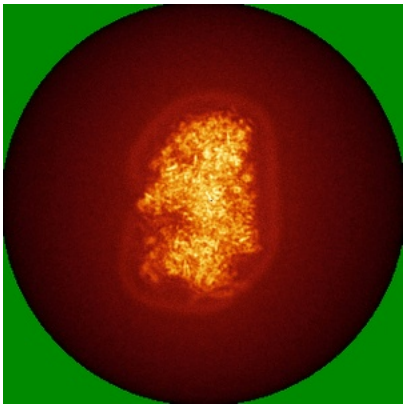


Y

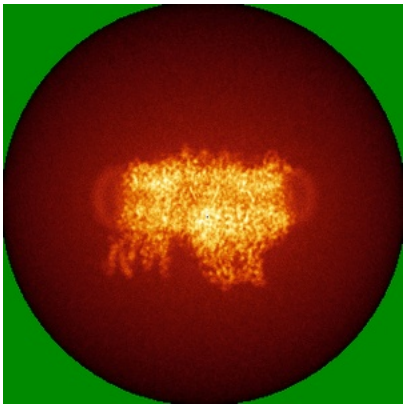


Z

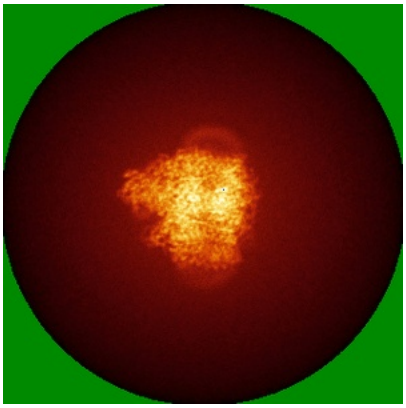
6.4.2 Raw map



X



Y

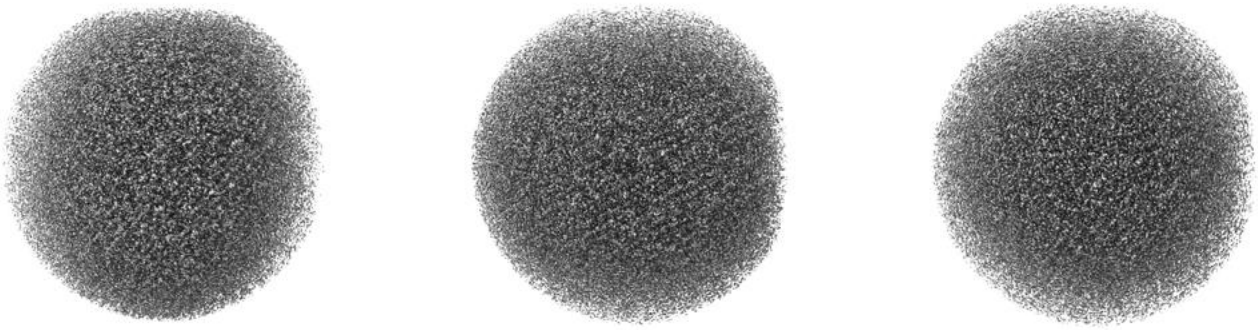


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

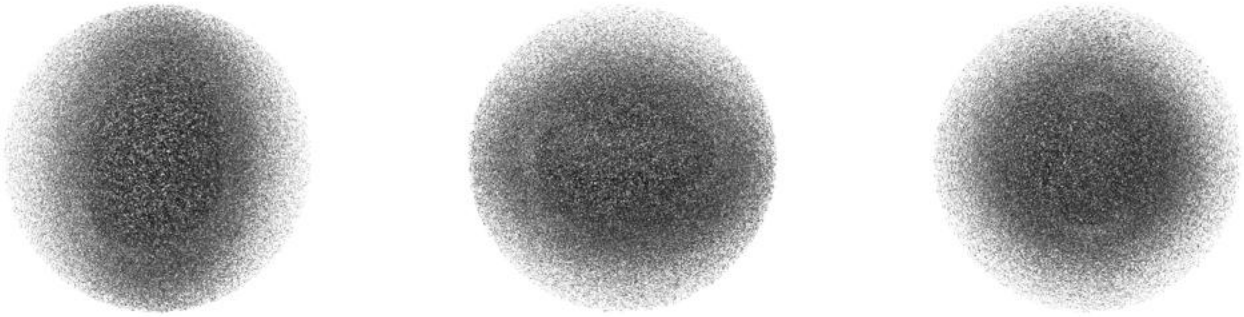
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.0061. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

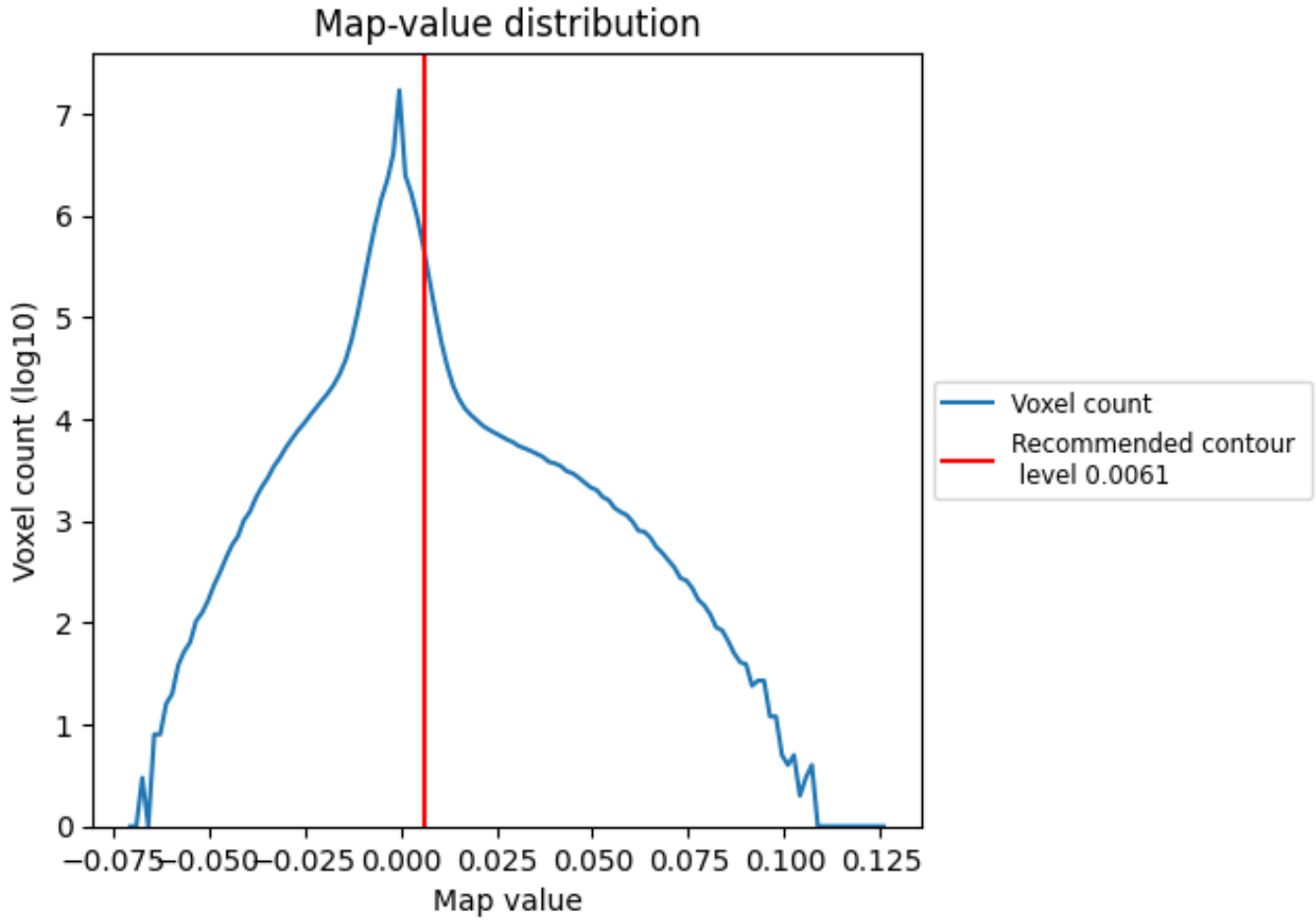
6.6 Mask visualisation (i)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis

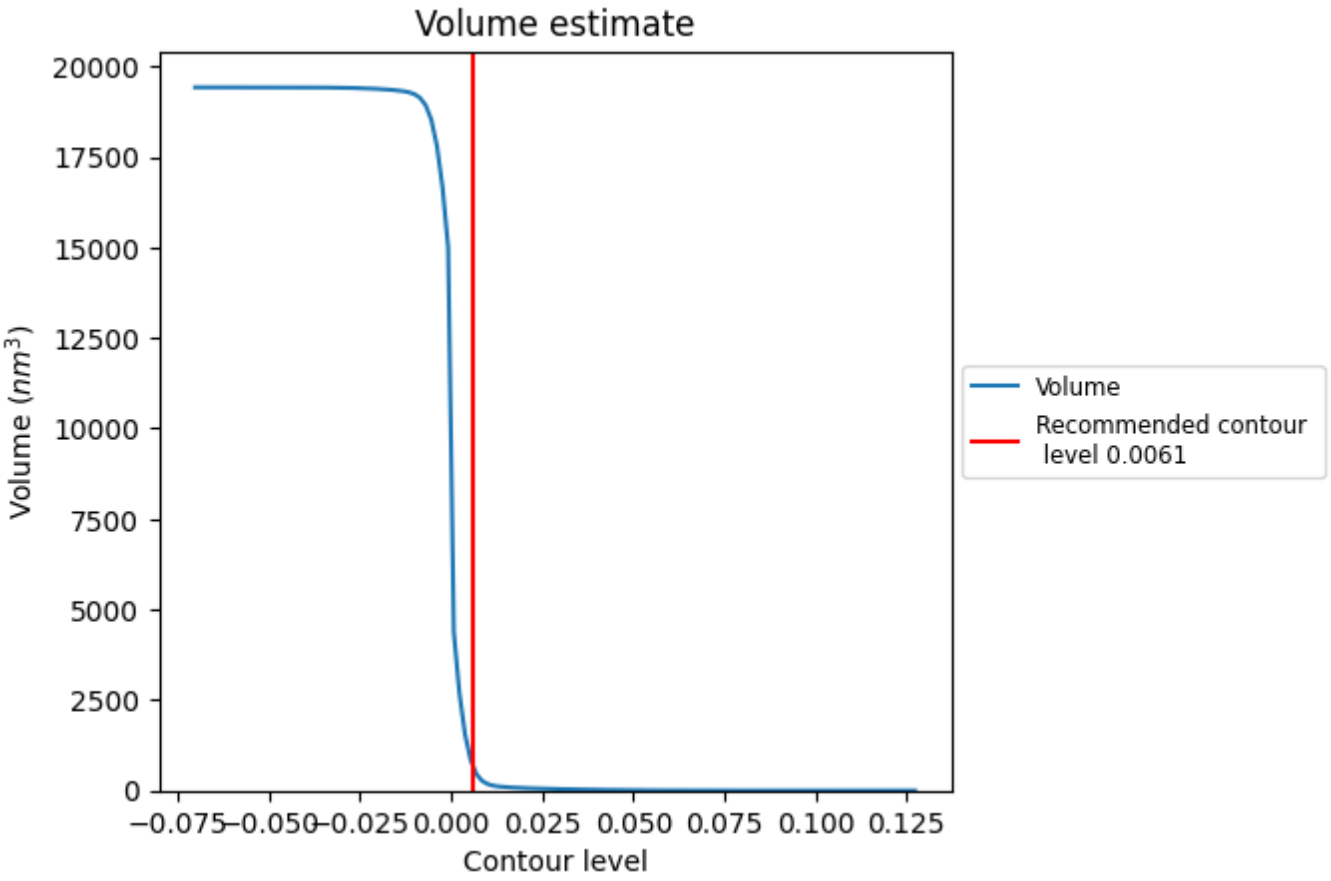
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

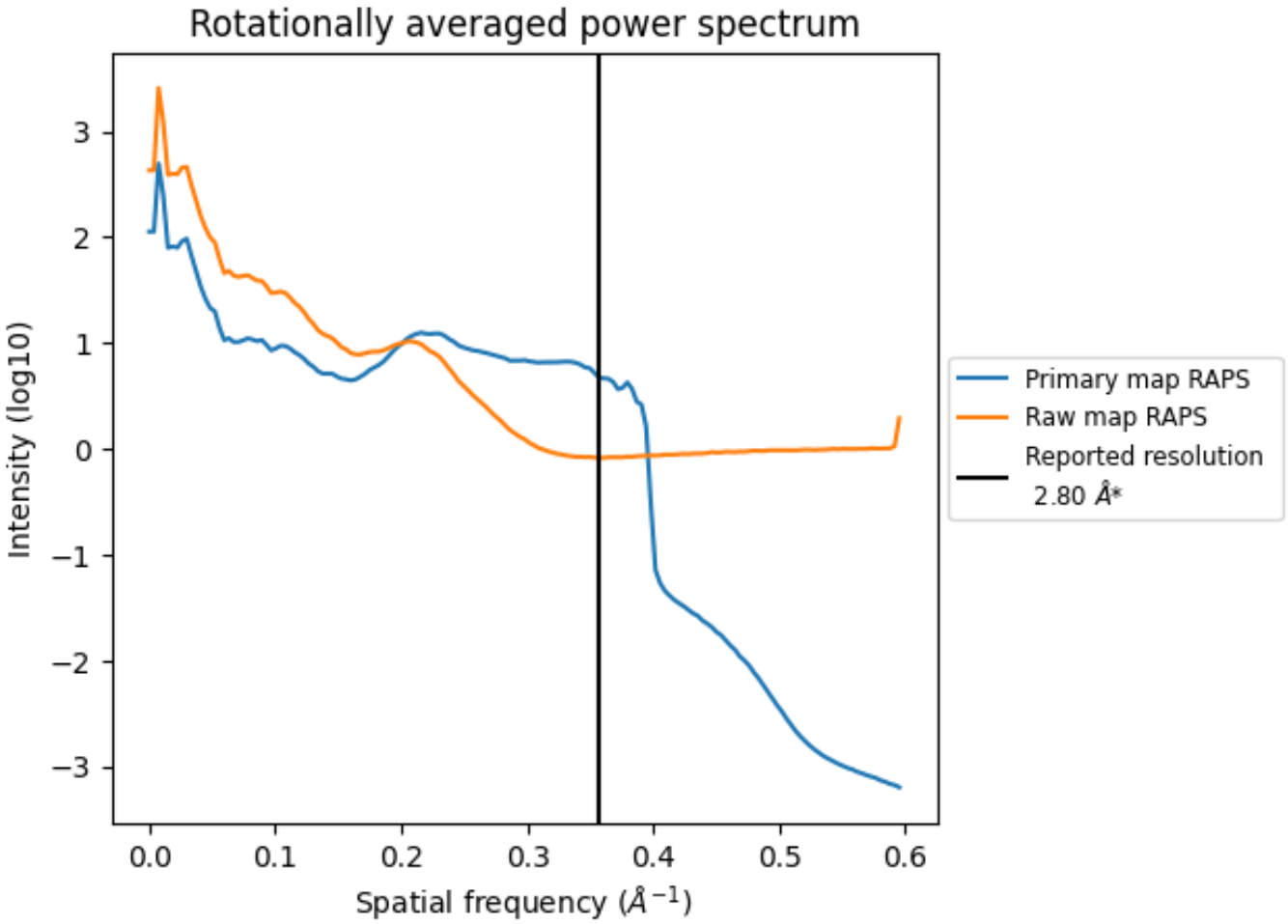
7.2 Volume estimate (i)



The volume at the recommended contour level is 660 nm^3; this corresponds to an approximate mass of 596 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum (i)

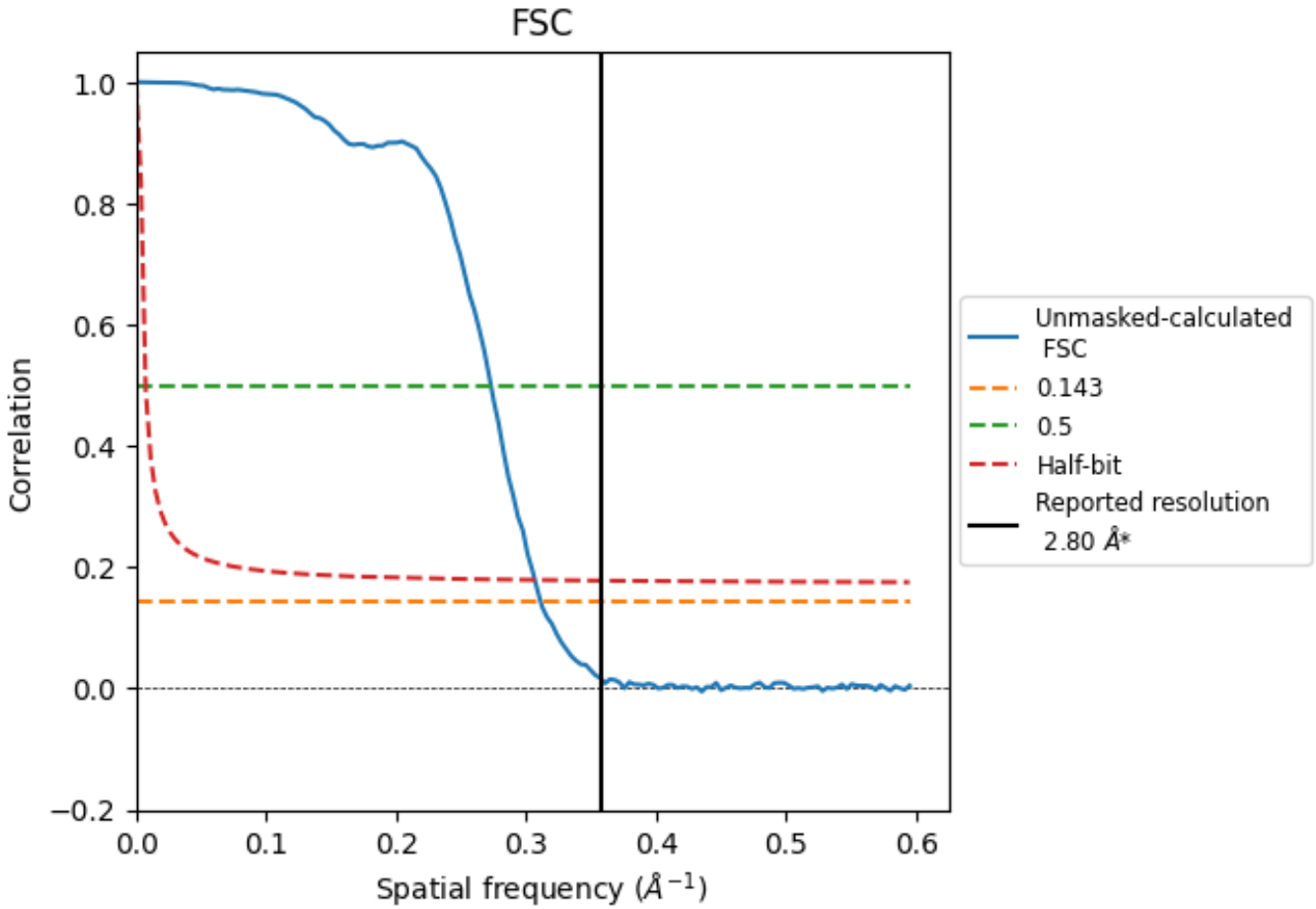


*Reported resolution corresponds to spatial frequency of 0.357 Å^{-1}

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.357 Å^{-1}

8.2 Resolution estimates (i)

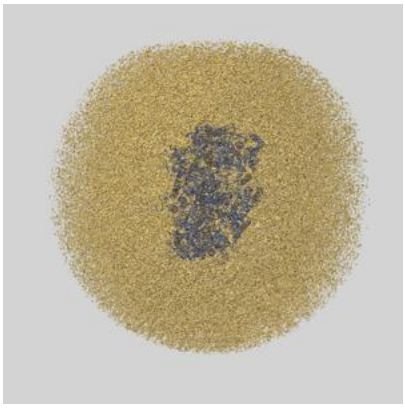
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.80	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.21	3.66	3.26

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.21 differs from the reported value 2.8 by more than 10 %

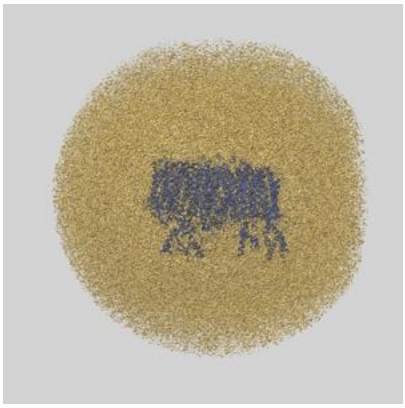
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-52705 and PDB model 9I82. Per-residue inclusion information can be found in section 3 on page 14.

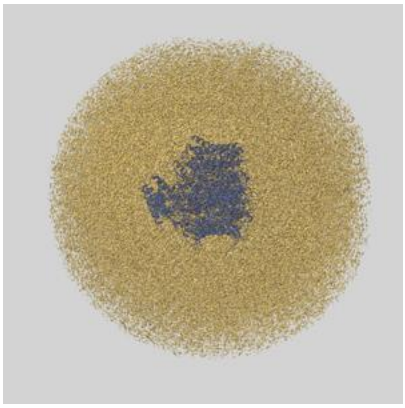
9.1 Map-model overlay



X



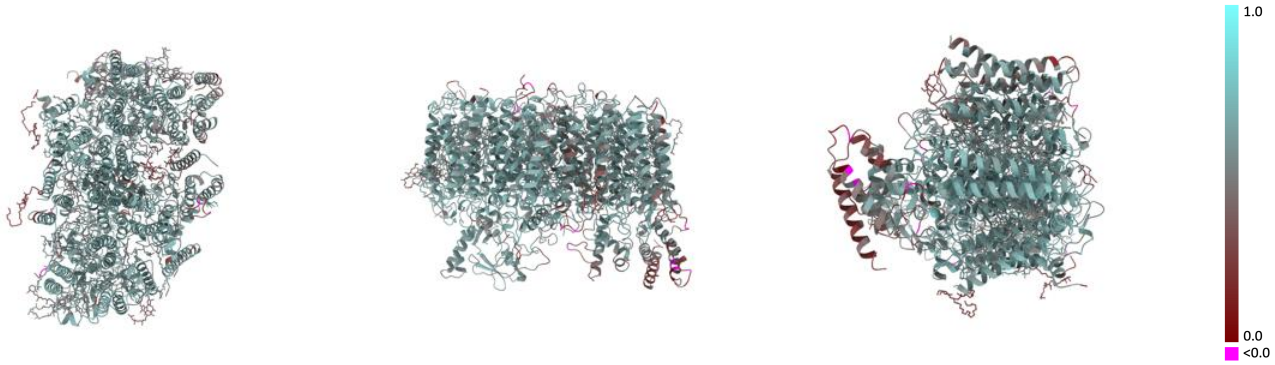
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0061 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

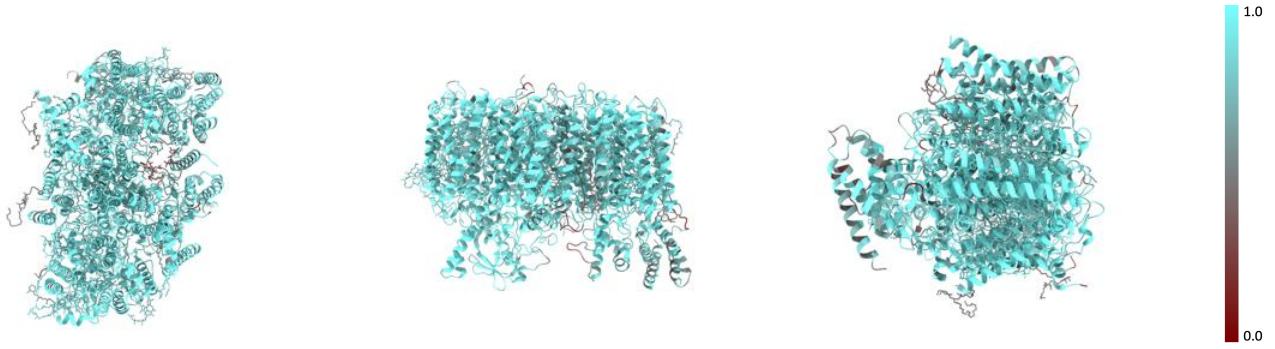
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

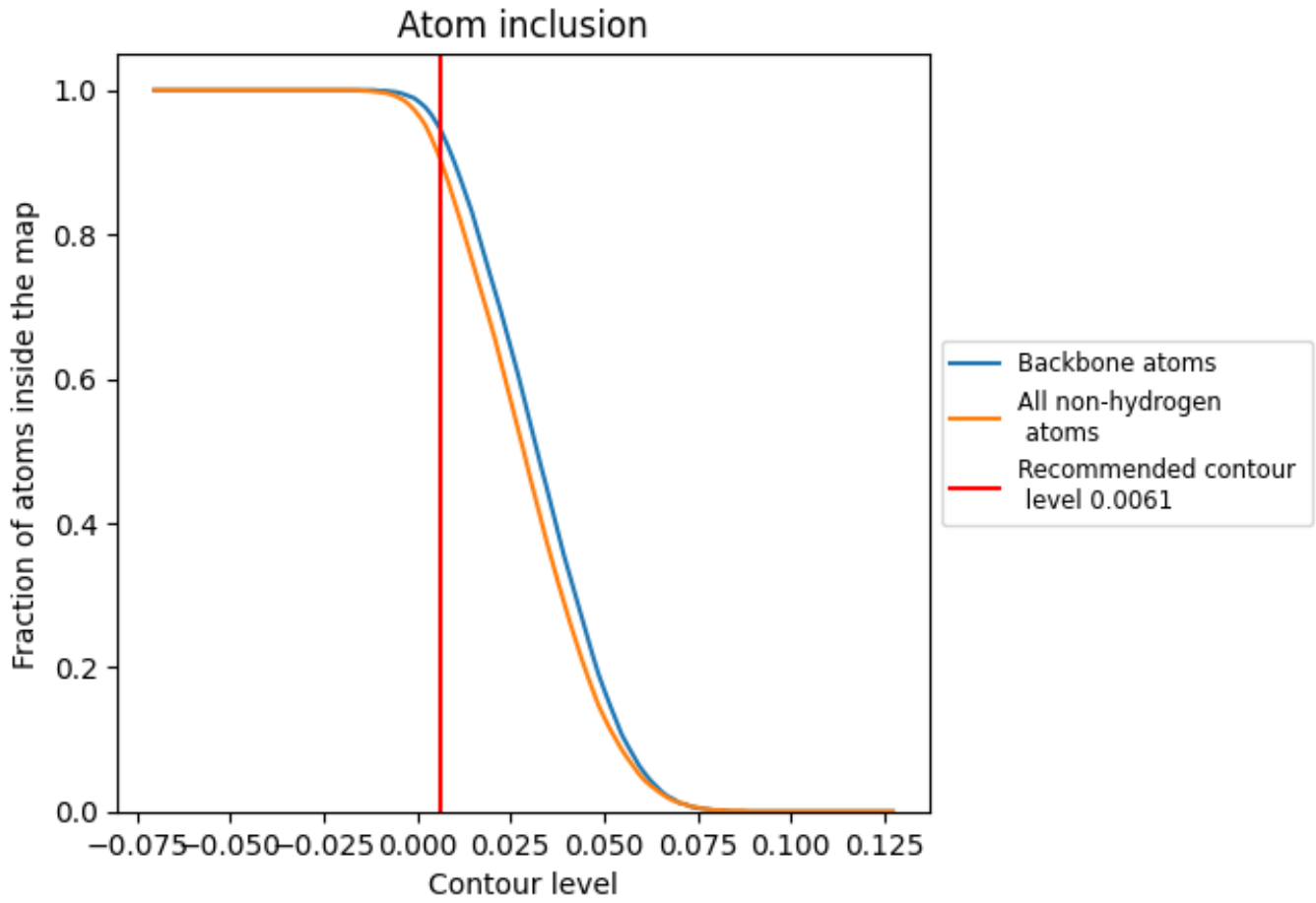
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0061).

9.4 Atom inclusion (i)



At the recommended contour level, 95% of all backbone atoms, 91% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.0061) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9060	0.5710
1	0.7180	0.3610
A	0.9350	0.6050
B	0.9390	0.5950
C	0.9000	0.5720
D	0.9550	0.6180
E	0.8850	0.5330
F	0.8110	0.4870
H	0.9480	0.6030
I	0.8780	0.5370
J	0.7440	0.4520
K	0.8370	0.5320
L	0.8780	0.5660
M	0.7780	0.4830
T	0.9600	0.6120
X	0.9130	0.5600
Y	0.7840	0.4620
Z	0.8350	0.4890