



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 21, 2024 – 03:38 PM EST

PDB ID : 4N7L
Title : Zinc Substituted Reaction Center M(L214H) Variant of Rhodobacter sphaeroides
Authors : Hardjasa, A.; Murphy, M.E.P.
Deposited on : 2013-10-15
Resolution : 2.85 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

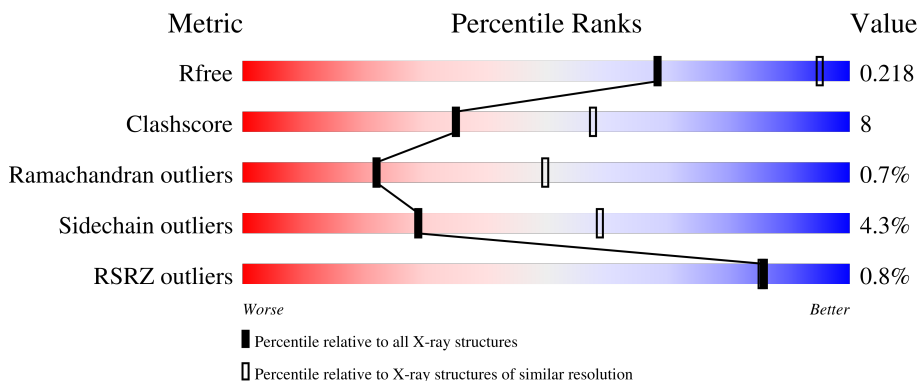
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.85 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3168 (2.90-2.82)
Clashscore	141614	3438 (2.90-2.82)
Ramachandran outliers	138981	3348 (2.90-2.82)
Sidechain outliers	138945	3351 (2.90-2.82)
RSRZ outliers	127900	3103 (2.90-2.82)

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

Mol	Chain	Length	Quality of chain
1	H	241	<div style="display: flex; align-items: center;"> <div style="width: 5%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 87%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 12%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey; margin-right: 5px;"></div> </div> <p style="text-align: center; margin-top: 5px;">87% 12% .</p>
2	L	281	<div style="display: flex; align-items: center;"> <div style="width: 5%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 81%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 17%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey; margin-right: 5px;"></div> </div> <p style="text-align: center; margin-top: 5px;">81% 17% .</p>
3	M	303	<div style="display: flex; align-items: center;"> <div style="width: 85%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 13%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey; margin-right: 5px;"></div> </div> <p style="text-align: center; margin-top: 5px;">85% 13% .</p>

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
10	HTO	L	307	-	-	-	X
10	HTO	L	308	-	-	-	X
14	PC1	M	411	-	-	-	X
4	GOL	H	301	-	-	-	X
4	GOL	H	303	-	-	-	X
4	GOL	H	304	-	-	-	X
4	GOL	L	310	-	-	-	X
5	GGD	H	306	-	-	-	X
6	LDA	L	301	-	-	-	X
6	LDA	L	302	-	-	-	X
6	LDA	L	303	-	-	-	X

2 Entry composition [i](#)

There are 15 unique types of molecules in this entry. The entry contains 7762 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Reaction center protein H chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	H	241	1850	1183	321	337	9	0	5	1

- Molecule 2 is a protein called Reaction center protein L chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	L	281	2239	1513	355	363	8	0	2	0

- Molecule 3 is a protein called Reaction center protein M chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	M	303	2413	1607	398	398	10	0	1	1

There is a discrepancy between the modelled and reference sequences:

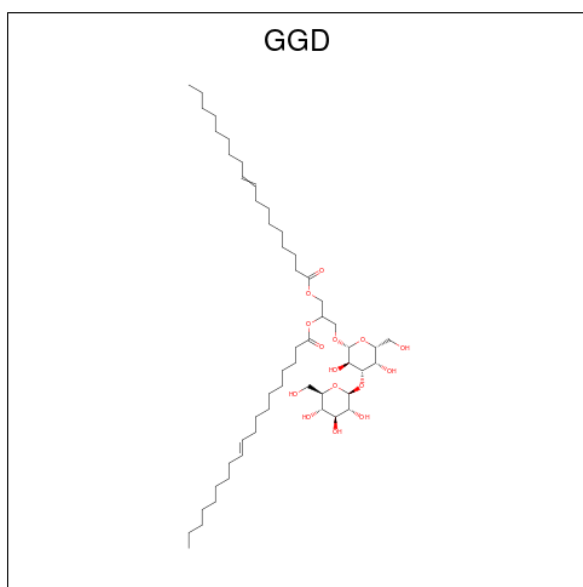
Chain	Residue	Modelled	Actual	Comment	Reference
M	214	HIS	LEU	engineered mutation	UNP P0C0Y9

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: C₃H₈O₃).



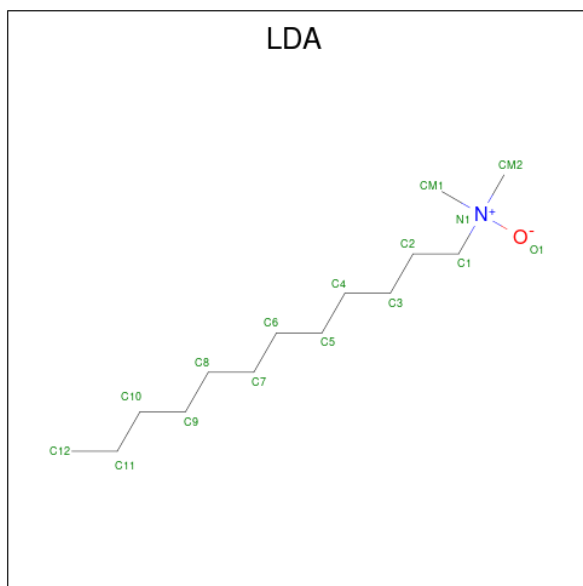
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	H	1	Total C O 6 3 3	0	0
4	H	1	Total C O 6 3 3	0	0
4	H	1	Total C O 6 3 3	0	0
4	H	1	Total C O 6 3 3	0	0
4	H	1	Total C O 6 3 3	0	0
4	L	1	Total C O 6 3 3	0	0
4	L	1	Total C O 6 3 3	0	0

- Molecule 5 is NONADEC-10-ENOIC ACID 2-[3,4-DIHYDROXY-6-HYDROXYMETHYL-5-(3,4,5-TRIHYDROXY-6-HYDROXYMETHYL-TETRAHYDRO-PYRAN-2-YLOXY)-TETRAHYDRO-PYRAN-2-YLOXY] -1-OCTADEC-9-ENOYLOXYMETHYL-ETHYL ESTER (three-letter code: GGD) (formula: C₅₂H₉₄O₁₅).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	H	1	Total	C	O	0	0
			57	42	15		

- Molecule 6 is LAURYL DIMETHYLAMINE-N-OXIDE (three-letter code: LDA) (formula: $C_{14}H_{31}NO$).



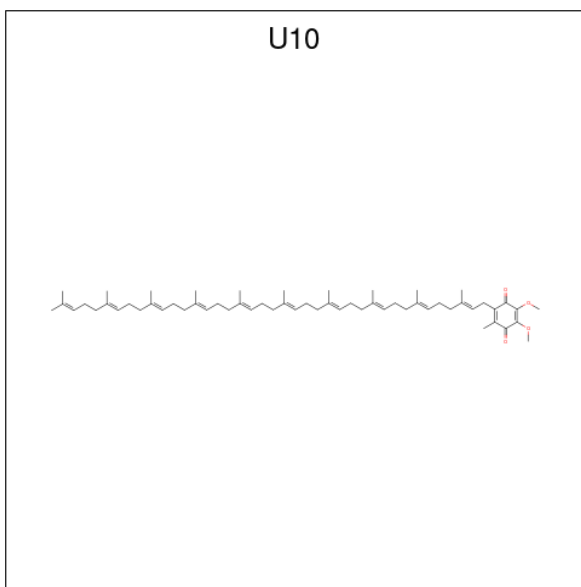
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	L	1	Total	C	N	O	0	0
			16	14	1	1		
6	L	1	Total	C	N	O	0	0
			16	14	1	1		

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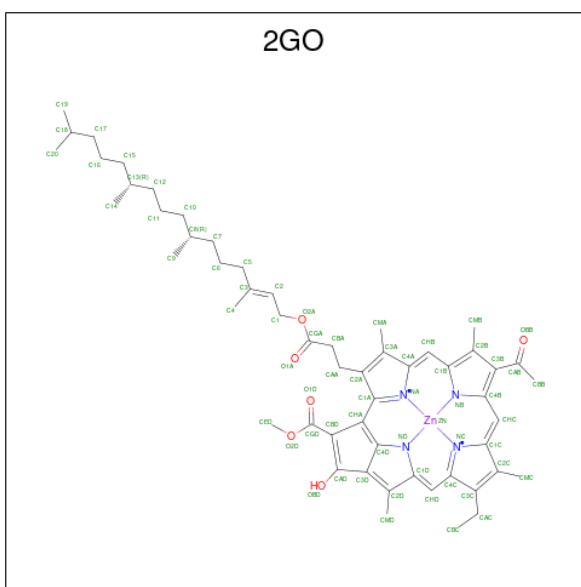
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	L	1	Total	C	N	O	0	0
			16	14	1	1		
6	M	1	Total	C	N	O	0	0
			16	14	1	1		
6	M	1	Total	C	N	O	0	0
			16	14	1	1		

- Molecule 7 is UBIQUINONE-10 (three-letter code: U10) (formula: $C_{59}H_{90}O_4$).



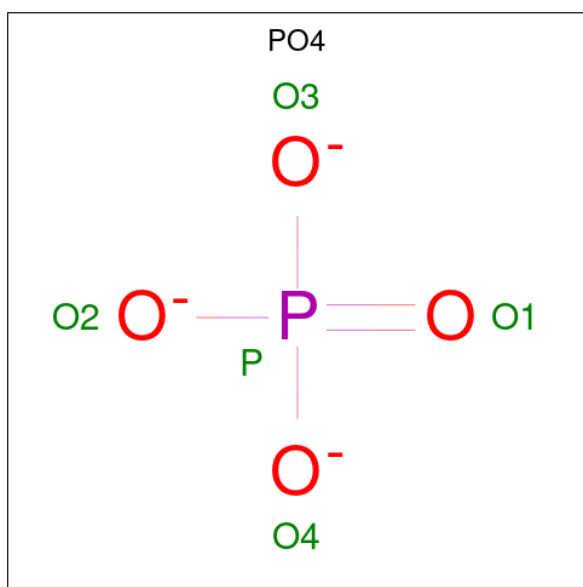
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	L	1	Total	C	O	0	1
			46	38	8		
7	M	1	Total	C	O	0	0
			48	44	4		

- Molecule 8 is [methyl 9-acetyl-14-ethyl-20-hydroxy-4,8,13,18-tetramethyl-3-{3-oxo-3-[(3,7,11,15-tetramethylhexadec-2-en-1-yl)oxy]propyl}-3,4,20,21-tetradecahydrophorbine-21-carboxylato(2-)-kappa 4 N 23 ,N 24 ,N 25 ,N 26]zinc (three-letter code: 2GO) (formula: $C_{55}H_{70}N_4O_6Zn$).



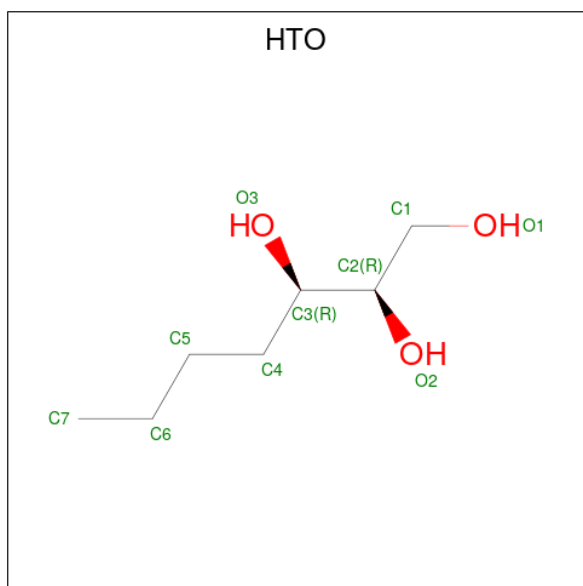
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	Zn		
8	L	1	Total	C	N	O	Zn	0	0
			66	55	4	6	1		
8	L	1	Total	C	N	O	Zn	0	0
			66	55	4	6	1		
8	M	1	Total	C	N	O	Zn	0	0
			66	55	4	6	1		
8	M	1	Total	C	N	O	Zn	0	0
			66	55	4	6	1		
8	M	1	Total	C	N	O	Zn	0	0
			66	55	4	6	1		

- Molecule 9 is PHOSPHATE ION (three-letter code: PO4) (formula: O₄P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	L	1	Total	O	P	0	0
			5	4	1		

- Molecule 10 is HEPTANE-1,2,3-TRIOL (three-letter code: HTO) (formula: C₇H₁₆O₃).

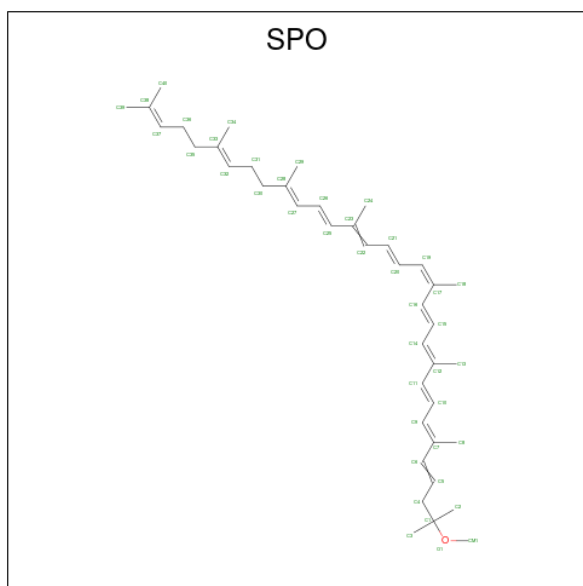


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
10	L	1	Total	C	O	0	0
			10	7	3		
10	L	1	Total	C	O	0	0
			10	7	3		

- Molecule 11 is FE (III) ION (three-letter code: FE) (formula: Fe).

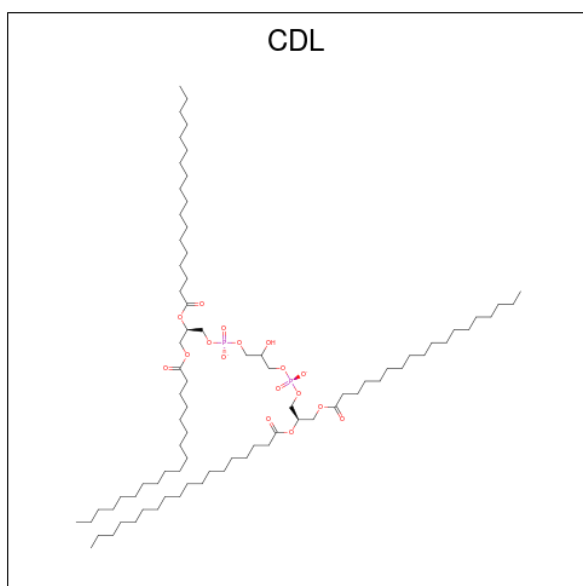
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
11	M	1	Total Fe 1 1	0	0

- Molecule 12 is SPHEROIDENE (three-letter code: SPO) (formula: $C_{41}H_{60}O$).



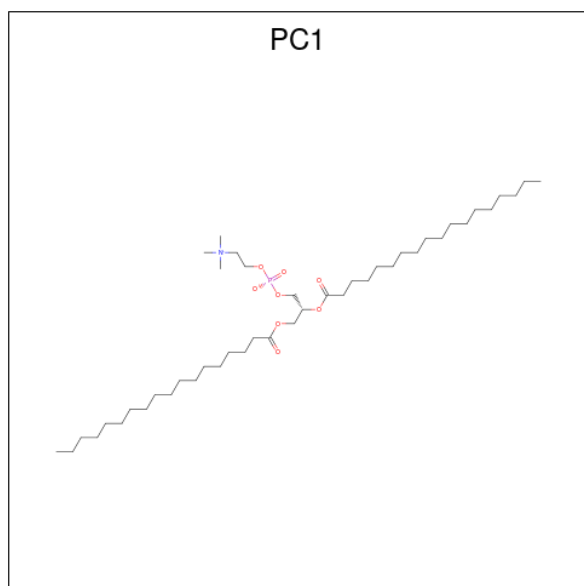
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
12	M	1	Total C O 42 41 1	0	0

- Molecule 13 is CARDIOLIPIN (three-letter code: CDL) (formula: $C_{81}H_{156}O_{17}P_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	O	P		
13	M	1	81	62	17	2	0	0

- Molecule 14 is 1,2-DIACYL-SN-GLYCERO-3-PHOSPHOCHOLINE (three-letter code: PC1) (formula: $C_{44}H_{88}NO_8P$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
14	M	1	43	33	1	8	1	0	0

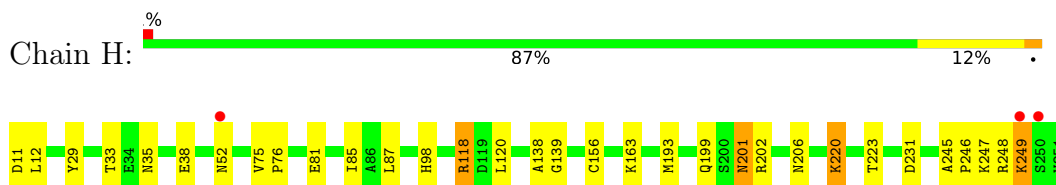
- Molecule 15 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
15	H	156	156	156	0	0
15	L	114	114	114	0	0
15	M	129	129	129	0	0

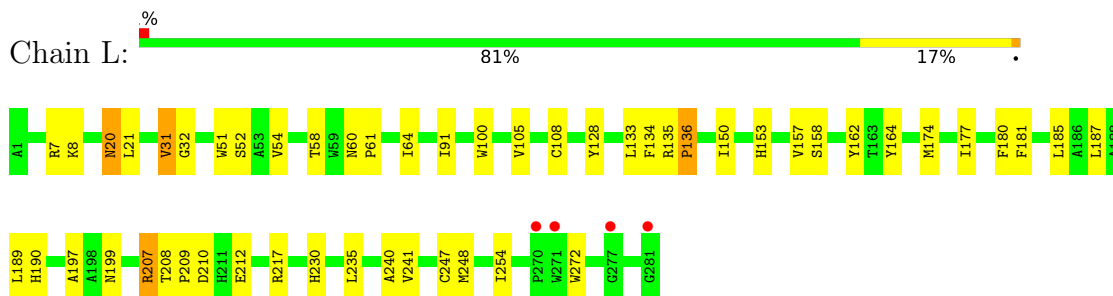
3 Residue-property plots

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

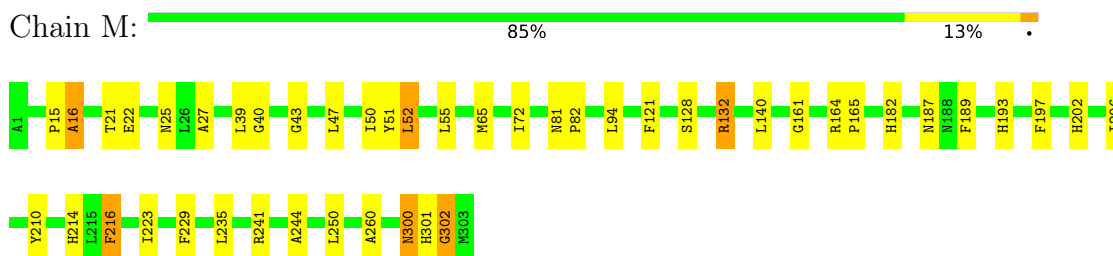
- Molecule 1: Reaction center protein H chain



- Molecule 2: Reaction center protein L chain



- Molecule 3: Reaction center protein M chain



4 Data and refinement statistics i

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α , β , γ	139.59Å 139.59Å 184.05Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	50.57 – 2.85 50.52 – 2.85	Depositor EDS
% Data completeness (in resolution range)	87.2 (50.57-2.85) 87.3 (50.52-2.85)	Depositor EDS
R_{merge}	0.17	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.59 (at 2.86Å)	Xtrriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.165 , 0.216 0.171 , 0.218	Depositor DCC
R_{free} test set	2153 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å ²)	54.8	Xtrriage
Anisotropy	0.024	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 67.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.018 for -h,-k,l	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	7762	wwPDB-VP
Average B, all atoms (Å ²)	54.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.65% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: SPO, FE, HTO, GGD, GOL, PO4, LDA, PC1, U10, 2GO, CDL

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	H	0.65	0/1930	0.82	0/2621
2	L	0.64	0/2339	0.72	0/3203
3	M	0.64	0/2511	0.74	0/3428
All	All	0.64	0/6780	0.76	0/9252

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
3	M	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
3	M	300	ASN	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	H	1850	0	1873	21	0
2	L	2239	0	2185	44	0
3	M	2413	0	2315	43	0
4	H	30	0	40	1	0
4	L	12	0	16	0	0
5	H	57	0	68	1	0
6	L	48	0	93	2	0
6	M	32	0	62	0	0
7	L	46	0	46	13	0
7	M	48	0	63	4	0
8	L	132	0	138	12	0
8	M	264	0	276	29	0
9	L	5	0	0	0	0
10	L	20	0	32	1	0
11	M	1	0	0	0	0
12	M	42	0	60	5	0
13	M	81	0	106	1	0
14	M	43	0	60	1	0
15	H	156	0	0	1	1
15	L	114	0	0	2	0
15	M	129	0	0	5	0
All	All	7762	0	7433	122	1

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 8.

All (122) 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:M:206:ILE:HD13	8:M:401:2GO:H9	1.58	0.84
3:M:210:TYR:HB3	8:M:402:2GO:H21	1.64	0.79
2:L:189:LEU:HD23	8:L:311:2GO:H8	1.64	0.78
8:M:404:2GO:H19	8:M:404:2GO:H22	1.72	0.70
3:M:55:LEU:HB3	15:M:559:HOH:O	1.91	0.70
3:M:210:TYR:HB3	8:M:402:2GO:CBB	2.21	0.70
2:L:189:LEU:CD2	8:L:311:2GO:H8	2.24	0.67
2:L:58:THR:HA	15:L:424:HOH:O	1.95	0.65
8:M:402:2GO:H19	8:M:402:2GO:H22	1.79	0.65
2:L:181:PHE:HB3	8:L:311:2GO:CBB	2.27	0.64
2:L:181:PHE:CD2	8:L:311:2GO:H20	2.33	0.64
7:L:304[B]:U10:O3	7:L:304[B]:U10:H4M3	1.98	0.63
2:L:177:ILE:HD13	8:M:403:2GO:H9	1.80	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:135:ARG:HB3	2:L:136:PRO:HD3	1.80	0.63
3:M:65:MET:HB3	3:M:121:PHE:CD2	2.35	0.60
3:M:210:TYR:CD2	8:M:402:2GO:H20	2.36	0.60
1:H:81:GLU:HG3	1:H:85[B]:ILE:HD11	1.85	0.59
8:M:403:2GO:H21	12:M:409:SPO:H243	1.86	0.58
2:L:164:TYR:O	15:L:469:HOH:O	2.17	0.57
7:L:304[A]:U10:H3M1	15:M:606:HOH:O	2.04	0.57
3:M:197:PHE:CZ	8:M:404:2GO:H21	2.40	0.56
8:M:401:2GO:H19	8:M:401:2GO:H21	1.87	0.56
6:L:303:LDA:C12	7:L:304[B]:U10:H1M1	2.35	0.56
7:L:304[A]:U10:H152	8:L:311:2GO:H1	1.89	0.55
1:H:248:ARG:HA	1:H:249[A]:LYS:HB3	1.89	0.55
3:M:300:ASN:O	3:M:302:GLY:N	2.40	0.55
1:H:248:ARG:HA	1:H:249[B]:LYS:HB3	1.89	0.55
2:L:230:HIS:CD2	3:M:223:ILE:HG13	2.42	0.54
1:H:199:GLN:OE1	1:H:202:ARG:NH1	2.39	0.54
1:H:201:ASN:H	1:H:201:ASN:HD22	1.56	0.53
2:L:180:PHE:CD2	2:L:240:ALA:HB1	2.43	0.53
2:L:51:TRP:O	2:L:54:VAL:N	2.41	0.52
3:M:197:PHE:HZ	8:M:404:2GO:CBB	2.23	0.52
1:H:75:VAL:HA	1:H:76:PRO:C	2.30	0.52
3:M:189:PHE:O	3:M:193:HIS:HD2	1.92	0.52
2:L:20:ASN:HD22	2:L:20:ASN:H	1.59	0.51
3:M:52:LEU:HB2	15:M:556:HOH:O	2.10	0.51
8:L:311:2GO:H21	8:M:403:2GO:H35	1.92	0.51
3:M:229:PHE:HB2	3:M:244:ALA:HB2	1.92	0.51
3:M:65:MET:HB3	3:M:121:PHE:CE2	2.47	0.50
2:L:187:LEU:HD13	3:M:216:PHE:CG	2.46	0.49
2:L:162:TYR:OH	3:M:187:ASN:ND2	2.45	0.49
6:L:303:LDA:H121	7:L:304[B]:U10:H1M1	1.94	0.49
7:L:304[B]:U10:O3	7:L:304[B]:U10:C4M	2.60	0.49
2:L:212:GLU:OE2	7:L:304[A]:U10:H3M2	2.13	0.49
7:L:304[B]:U10:H152	14:M:411:PC1:H281	1.95	0.49
3:M:300:ASN:C	3:M:302:GLY:N	2.66	0.49
3:M:15:PRO:O	3:M:16:ALA:C	2.50	0.48
1:H:156:CYS:HB3	1:H:206:ASN:O	2.14	0.48
2:L:180:PHE:CE2	2:L:240:ALA:HB1	2.49	0.48
2:L:217:ARG:O	3:M:50:ILE:HA	2.14	0.48
1:H:118[A]:ARG:HG3	1:H:120:LEU:HD12	1.95	0.47
2:L:100:TRP:CH2	7:M:408:U10:H251	2.50	0.47
2:L:61:PRO:O	2:L:150:ILE:HD12	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:87:LEU:HD11	2:L:8:LYS:HA	1.96	0.47
2:L:31:VAL:HG12	2:L:32:GLY:N	2.30	0.47
7:L:304[B]:U10:H153	3:M:47:LEU:HD11	1.96	0.47
2:L:133:LEU:HD23	2:L:134:PHE:CE1	2.49	0.47
3:M:202:HIS:CE1	3:M:206:ILE:HD11	2.50	0.47
1:H:206:ASN:HD21	1:H:248:ARG:HD3	1.79	0.47
3:M:260:ALA:HB2	7:M:408:U10:H103	1.96	0.47
7:M:408:U10:H1M1	7:M:408:U10:H8	1.96	0.47
2:L:207:ARG:NH1	3:M:140:LEU:O	2.48	0.47
3:M:197:PHE:CE1	8:M:404:2GO:H16	2.50	0.47
2:L:157:VAL:HG11	8:M:404:2GO:H20	1.97	0.46
2:L:135:ARG:HD2	2:L:248:MET:O	2.15	0.46
3:M:197:PHE:CZ	8:M:404:2GO:CBB	2.99	0.46
1:H:29:TYR:O	1:H:33:THR:HG23	2.16	0.46
2:L:185:LEU:HD13	8:L:311:2GO:ND	2.31	0.45
3:M:161:GLY:HA3	12:M:409:SPO:H292	1.98	0.45
7:L:304[B]:U10:H121	7:L:304[B]:U10:H101	1.62	0.45
1:H:98:HIS:CD2	2:L:7:ARG:HH21	2.34	0.45
3:M:164:ARG:HB3	3:M:165:PRO:HD3	1.98	0.45
1:H:52:ASN:ND2	5:H:306:GGD:HA41	2.31	0.45
3:M:25:ASN:OD1	3:M:27:ALA:HB3	2.17	0.44
7:L:304[B]:U10:O2	7:L:304[B]:U10:H3M3	2.17	0.44
2:L:187:LEU:HD13	3:M:216:PHE:HB2	1.99	0.44
8:M:403:2GO:CBB	12:M:409:SPO:H243	2.46	0.44
2:L:187:LEU:HD13	3:M:216:PHE:CB	2.48	0.44
2:L:128:TYR:HD1	8:M:401:2GO:H20	1.83	0.44
3:M:40:GLY:HA2	3:M:43:GLY:O	2.18	0.44
2:L:91:ILE:HD11	10:L:307:HTO:H2	1.99	0.43
8:L:311:2GO:H15	8:L:311:2GO:H10	2.00	0.43
2:L:174:MET:HB3	8:M:403:2GO:O1D	2.18	0.43
3:M:210:TYR:CG	8:M:402:2GO:H20	2.53	0.43
7:L:304[A]:U10:H71	7:L:304[A]:U10:H1M1	1.77	0.43
1:H:138:ALA:HA	1:H:139:GLY:HA2	1.76	0.43
2:L:208:THR:HB	2:L:209:PRO:HD2	2.01	0.42
2:L:60:ASN:O	2:L:64:ILE:HD12	2.19	0.42
3:M:50:ILE:CG1	3:M:51:TYR:N	2.82	0.42
8:M:402:2GO:CHD	8:M:402:2GO:H14	2.50	0.42
2:L:105:VAL:O	2:L:108:CYS:HB2	2.20	0.42
1:H:38:GLU:OE1	3:M:241:ARG:NH2	2.49	0.42
1:H:98:HIS:CD2	2:L:7:ARG:HE	2.38	0.42
8:L:311:2GO:H21	8:M:403:2GO:C1	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:M:409:SPO:H20	12:M:409:SPO:H181	1.85	0.42
1:H:206:ASN:HB2	15:M:515:HOH:O	2.19	0.41
2:L:177:ILE:HD11	8:L:305:2GO:C1B	2.50	0.41
8:M:401:2GO:C2B	8:M:402:2GO:H68	2.51	0.41
13:M:410:CDL:C75	13:M:410:CDL:C74	2.98	0.41
4:H:305:GOL:H31	2:L:199:ASN:HA	2.02	0.41
3:M:21:THR:O	3:M:22:GLU:C	2.56	0.41
2:L:150:ILE:O	2:L:153:HIS:ND1	2.52	0.41
3:M:250:LEU:HD23	3:M:250:LEU:HA	1.94	0.41
8:M:403:2GO:H21	8:M:403:2GO:H19	2.02	0.41
1:H:98:HIS:HD2	2:L:7:ARG:HH21	1.68	0.41
3:M:214:HIS:CE1	8:M:402:2GO:NA	2.88	0.41
7:M:408:U10:H353	7:M:408:U10:C30	2.51	0.41
12:M:409:SPO:H15	12:M:409:SPO:H131	1.84	0.41
1:H:35:ASN:OD1	3:M:260:ALA:HB1	2.21	0.41
8:L:305:2GO:CGA	8:M:401:2GO:H13	2.50	0.41
3:M:81:ASN:HA	3:M:82:PRO:HD2	1.96	0.41
3:M:210:TYR:CB	8:M:402:2GO:H21	2.44	0.41
3:M:132:ARG:HB2	15:M:559:HOH:O	2.20	0.41
2:L:190:HIS:ND1	7:L:304[A]:U10:O2	2.30	0.41
2:L:197:ALA:HB1	3:M:235:LEU:HD11	2.02	0.41
2:L:230:HIS:NE2	3:M:223:ILE:HG13	2.36	0.41
8:M:401:2GO:H34	8:M:402:2GO:H21	2.01	0.41
1:H:220[B]:LYS:HD3	15:H:533:HOH:O	2.21	0.41
2:L:241:VAL:HG21	8:M:402:2GO:H11	2.02	0.40
8:L:311:2GO:H24	8:M:403:2GO:H34	2.04	0.40
1:H:245:ALA:N	1:H:246:PRO:HD2	2.36	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:H:433:HOH:O	15:H:433:HOH:O[4_555]	1.98	0.22

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

of similar resolution.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	H	245/241 (102%)	235 (96%)	8 (3%)	2 (1%)	19	46
2	L	281/281 (100%)	259 (92%)	20 (7%)	2 (1%)	22	50
3	M	302/303 (100%)	280 (93%)	19 (6%)	3 (1%)	15	40
All	All	828/825 (100%)	774 (94%)	47 (6%)	7 (1%)	22	46

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	M	301	HIS
3	M	16	ALA
3	M	302	GLY
1	H	249[A]	LYS
1	H	249[B]	LYS
2	L	52	SER
2	L	31	VAL

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	H	200/196 (102%)	186 (93%)	14 (7%)	15	37
2	L	221/220 (100%)	211 (96%)	10 (4%)	27	57
3	M	237/237 (100%)	229 (97%)	8 (3%)	37	67
All	All	658/653 (101%)	626 (95%)	32 (5%)	29	54

All (32) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	11	ASP
1	H	12	LEU

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Mol	Chain	Res	Type
1	H	118[A]	ARG
1	H	118[B]	ARG
1	H	163[A]	LYS
1	H	163[B]	LYS
1	H	193	MET
1	H	201	ASN
1	H	220[A]	LYS
1	H	220[B]	LYS
1	H	220[C]	LYS
1	H	223	THR
1	H	231	ASP
1	H	247	LYS
2	L	20	ASN
2	L	21	LEU
2	L	136	PRO
2	L	158	SER
2	L	207	ARG
2	L	210	ASP
2	L	235	LEU
2	L	247	CYS
2	L	254	ILE
2	L	272	TRP
3	M	39	LEU
3	M	52	LEU
3	M	72	ILE
3	M	94	LEU
3	M	128	SER
3	M	132	ARG
3	M	182	HIS
3	M	216	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	H	98	HIS
1	H	201	ASN
1	H	206	ASN
2	L	20	ASN
2	L	264	GLN
3	M	77	GLN
3	M	187	ASN
3	M	193	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 29 ligands modelled in this entry, 1 is monoatomic - leaving 28 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
4	GOL	L	310	-	5,5,5	0.63	0	5,5,5	0.57	0
8	2GO	M	402	3	65,74,74	2.13	16 (24%)	76,115,115	3.33	32 (42%)
6	LDA	L	301	-	12,15,15	2.08	1 (8%)	14,17,17	0.51	0
4	GOL	H	305	-	5,5,5	0.70	0	5,5,5	0.92	0
14	PC1	M	411	-	42,42,53	1.40	4 (9%)	48,50,61	2.31	10 (20%)
7	U10	L	304[B]	-	23,23,63	2.03	2 (8%)	28,31,79	1.51	4 (14%)
8	2GO	M	404	3	65,74,74	2.03	13 (20%)	76,115,115	3.90	34 (44%)
12	SPO	M	409	-	40,41,41	0.78	0	47,50,50	1.74	13 (27%)
13	CDL	M	410	-	80,80,99	3.19	5 (6%)	86,92,111	1.33	8 (9%)
10	HTO	L	308	-	9,9,9	0.79	0	10,10,10	0.93	1 (10%)
9	PO4	L	306	-	4,4,4	0.88	0	6,6,6	0.52	0
4	GOL	L	309	-	5,5,5	0.55	0	5,5,5	0.64	0
6	LDA	M	406	-	12,15,15	2.13	1 (8%)	14,17,17	0.73	0
7	U10	M	408	-	48,48,63	1.73	4 (8%)	58,61,79	1.88	13 (22%)
4	GOL	H	302	-	5,5,5	0.69	0	5,5,5	1.08	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	GOL	H	301	-	5,5,5	0.69	0	5,5,5	0.60	0
6	LDA	L	303	-	12,15,15	2.07	1 (8%)	14,17,17	0.52	0
7	U10	L	304[A]	-	23,23,63	1.97	2 (8%)	28,31,79	2.36	6 (21%)
8	2GO	L	311	-	65,74,74	2.34	18 (27%)	76,115,115	3.64	35 (46%)
10	HTO	L	307	-	9,9,9	0.80	0	10,10,10	0.73	0
6	LDA	M	405	-	12,15,15	1.99	1 (8%)	14,17,17	0.67	1 (7%)
8	2GO	M	403	3	65,74,74	2.11	16 (24%)	76,115,115	3.62	34 (44%)
4	GOL	H	304	-	5,5,5	0.43	0	5,5,5	0.35	0
8	2GO	M	401	2	65,74,74	2.19	16 (24%)	76,115,115	3.93	38 (50%)
8	2GO	L	305	2	65,74,74	1.97	14 (21%)	76,115,115	3.93	30 (39%)
6	LDA	L	302	-	12,15,15	2.09	1 (8%)	14,17,17	0.48	0
5	GGD	H	306	-	58,58,68	1.01	3 (5%)	72,72,82	1.37	10 (13%)
4	GOL	H	303	-	5,5,5	0.38	0	5,5,5	0.24	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	GOL	L	310	-	-	1/4/4/4	-
8	2GO	M	402	3	-	7/37/97/97	-
6	LDA	L	301	-	-	6/13/13/13	-
4	GOL	H	305	-	-	2/4/4/4	-
14	PC1	M	411	-	-	26/46/46/57	-
7	U10	L	304[B]	-	-	6/15/39/87	0/1/1/1
8	2GO	M	404	3	-	8/37/97/97	-
12	SPO	M	409	-	-	6/47/47/47	-
13	CDL	M	410	-	-	43/91/91/110	-
10	HTO	L	308	-	-	3/10/10/10	-
4	GOL	L	309	-	-	2/4/4/4	-
6	LDA	M	406	-	-	7/13/13/13	-
7	U10	M	408	-	-	10/45/69/87	0/1/1/1
4	GOL	H	302	-	-	2/4/4/4	-
4	GOL	H	301	-	-	2/4/4/4	-
6	LDA	L	303	-	-	6/13/13/13	-
7	U10	L	304[A]	-	-	6/15/39/87	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
8	2GO	L	311	-	-	15/37/97/97	-
10	HTO	L	307	-	-	5/10/10/10	-
6	LDA	M	405	-	-	9/13/13/13	-
8	2GO	M	403	3	-	20/37/97/97	-
4	GOL	H	304	-	-	2/4/4/4	-
8	2GO	M	401	2	-	8/37/97/97	-
8	2GO	L	305	2	-	4/37/97/97	-
6	LDA	L	302	-	-	3/13/13/13	-
5	GGD	H	306	-	-	15/47/87/97	0/2/2/2
4	GOL	H	303	-	-	0/4/4/4	-

All (118) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	M	410	CDL	C75-C74	26.18	2.98	1.51
7	L	304[B]	U10	C6-C1	8.73	1.51	1.35
7	M	408	U10	C6-C1	8.66	1.51	1.35
7	L	304[A]	U10	C6-C1	7.94	1.49	1.35
6	M	406	LDA	O1-N1	-7.24	1.25	1.42
6	L	303	LDA	O1-N1	-7.05	1.25	1.42
8	M	401	2GO	C2A-C3A	7.04	1.51	1.36
6	L	301	LDA	O1-N1	-7.02	1.25	1.42
6	L	302	LDA	O1-N1	-6.99	1.25	1.42
8	L	311	2GO	C3C-C2C	6.86	1.51	1.36
8	M	402	2GO	C3C-C2C	6.82	1.51	1.36
8	M	404	2GO	C2A-C3A	6.77	1.51	1.36
8	L	311	2GO	C2A-C3A	6.63	1.50	1.36
8	M	401	2GO	C3C-C2C	6.58	1.50	1.36
8	M	403	2GO	C3C-C2C	6.49	1.50	1.36
6	M	405	LDA	O1-N1	-6.43	1.27	1.42
8	M	404	2GO	C3C-C2C	6.34	1.50	1.36
8	M	402	2GO	C2A-C3A	6.22	1.50	1.36
8	L	311	2GO	O2D-CGD	6.17	1.47	1.33
8	L	305	2GO	C3C-C2C	6.10	1.49	1.36
8	L	305	2GO	C2A-C3A	5.94	1.49	1.36
8	M	403	2GO	C2A-C3A	5.93	1.49	1.36
8	L	311	2GO	C3D-C2D	5.90	1.50	1.39
14	M	411	PC1	O31-C31	5.82	1.50	1.33
8	M	402	2GO	O2D-CGD	5.58	1.45	1.33
8	M	401	2GO	O2D-CGD	5.50	1.45	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	M	403	2GO	C3D-C2D	5.44	1.49	1.39
8	M	403	2GO	C1A-NA	-5.07	1.28	1.38
13	M	410	CDL	OA8-CA7	5.06	1.48	1.33
8	L	311	2GO	C4C-C3C	5.03	1.53	1.45
8	M	404	2GO	O2D-CGD	4.99	1.44	1.33
8	M	403	2GO	O2A-CGA	4.94	1.47	1.33
13	M	410	CDL	OB8-CB7	4.90	1.47	1.33
8	M	401	2GO	O2A-CGA	4.88	1.47	1.33
8	L	311	2GO	O2A-CGA	4.85	1.47	1.33
14	M	411	PC1	O2I-C2I	4.85	1.48	1.34
13	M	410	CDL	OA6-CA5	4.84	1.48	1.34
8	L	305	2GO	O2D-CGD	4.83	1.44	1.33
8	M	402	2GO	C3D-C2D	4.82	1.48	1.39
13	M	410	CDL	OB6-CB5	4.76	1.47	1.34
8	M	403	2GO	O2D-CGD	4.63	1.43	1.33
8	L	305	2GO	C1A-NA	-4.48	1.29	1.38
8	M	404	2GO	C1D-ND	-4.47	1.31	1.37
8	L	305	2GO	C3B-C2B	4.44	1.47	1.39
8	M	402	2GO	C4C-C3C	4.31	1.52	1.45
8	L	305	2GO	C3D-C2D	4.26	1.47	1.39
5	H	306	GGD	OC8-CC7	4.23	1.45	1.33
8	M	402	2GO	C1A-NA	-4.17	1.29	1.38
8	M	401	2GO	C4C-NC	-4.14	1.28	1.37
8	M	402	2GO	C1C-C2C	4.03	1.52	1.44
5	H	306	GGD	OC6-CC5	4.01	1.45	1.34
8	M	401	2GO	C3B-C2B	3.89	1.46	1.39
8	M	401	2GO	C1A-NA	-3.87	1.30	1.38
8	M	404	2GO	O2A-CGA	3.85	1.44	1.33
8	L	311	2GO	C1C-C2C	3.82	1.52	1.44
8	L	305	2GO	O2A-CGA	3.81	1.44	1.33
8	M	402	2GO	C1A-C2A	3.73	1.53	1.45
8	M	402	2GO	O2A-CGA	3.72	1.44	1.33
8	L	311	2GO	C1A-C2A	3.68	1.53	1.45
8	M	401	2GO	C1A-C2A	3.67	1.53	1.45
8	L	311	2GO	C1A-NA	-3.63	1.31	1.38
8	M	404	2GO	C4C-NC	-3.62	1.29	1.37
8	L	311	2GO	C2D-C1D	3.62	1.50	1.42
8	M	401	2GO	C1D-ND	-3.52	1.32	1.37
8	M	403	2GO	C1C-C2C	3.50	1.51	1.44
8	M	404	2GO	C1A-C2A	3.47	1.52	1.45
7	L	304[B]	U10	C4-C3	3.40	1.50	1.36
8	M	401	2GO	C3D-C2D	3.37	1.45	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	M	403	2GO	C3B-C2B	3.35	1.45	1.39
8	M	404	2GO	C3D-C2D	3.31	1.45	1.39
8	M	401	2GO	C4A-C3A	3.31	1.51	1.44
7	M	408	U10	C4-C3	3.29	1.49	1.36
8	L	311	2GO	C4A-C3A	3.28	1.50	1.44
8	M	404	2GO	C4A-C3A	3.26	1.50	1.44
8	L	311	2GO	C3B-C2B	3.26	1.45	1.39
8	M	401	2GO	C1C-C2C	3.26	1.50	1.44
8	M	404	2GO	C3B-C2B	3.22	1.45	1.39
7	L	304[A]	U10	C4-C3	3.16	1.49	1.36
8	L	311	2GO	CHD-C4C	3.09	1.50	1.41
8	M	403	2GO	C4C-NC	-3.04	1.30	1.37
8	M	404	2GO	C1A-NA	-3.03	1.32	1.38
8	M	402	2GO	C3B-C2B	3.02	1.44	1.39
8	L	305	2GO	C1C-C2C	2.94	1.50	1.44
8	L	305	2GO	C1D-ND	-2.92	1.33	1.37
8	M	402	2GO	C4A-C3A	2.88	1.50	1.44
8	M	402	2GO	C1D-ND	-2.87	1.33	1.37
8	L	305	2GO	C4C-NC	-2.86	1.31	1.37
8	M	403	2GO	C1A-C2A	2.83	1.51	1.45
8	L	311	2GO	C4B-CHC	2.80	1.48	1.41
8	M	403	2GO	C4A-NA	-2.79	1.32	1.38
8	M	403	2GO	C1B-CHB	2.73	1.48	1.41
8	M	404	2GO	C1C-C2C	2.72	1.49	1.44
8	L	311	2GO	C1B-CHB	2.66	1.48	1.41
8	L	305	2GO	C1B-CHB	2.62	1.48	1.41
8	M	403	2GO	C1D-ND	-2.56	1.33	1.37
7	M	408	U10	C33-C34	2.56	1.39	1.33
8	L	311	2GO	CHA-C1A	2.52	1.50	1.41
8	M	401	2GO	C4A-NA	-2.49	1.33	1.38
8	M	401	2GO	C1C-NC	-2.42	1.33	1.38
8	M	402	2GO	C2D-C1D	2.39	1.48	1.42
14	M	411	PC1	C3-C2	2.37	1.58	1.50
8	M	404	2GO	C1B-CHB	2.34	1.47	1.41
8	L	305	2GO	C4C-C3C	2.30	1.49	1.45
8	L	311	2GO	OBD-CAD	-2.29	1.26	1.33
8	M	403	2GO	C4C-C3C	2.28	1.49	1.45
8	L	305	2GO	C1A-C2A	2.28	1.50	1.45
8	L	311	2GO	C4D-ND	2.24	1.39	1.37
8	M	401	2GO	C2D-C1D	2.20	1.47	1.42
8	M	403	2GO	CMC-C2C	2.20	1.55	1.50
7	M	408	U10	C7-C6	2.20	1.55	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	M	402	2GO	OBD-CAD	-2.19	1.27	1.33
8	M	402	2GO	C1B-CHB	2.19	1.47	1.41
8	M	402	2GO	C4A-NA	-2.18	1.34	1.38
8	L	305	2GO	C2D-C1D	2.16	1.47	1.42
8	M	401	2GO	CAA-C2A	2.14	1.56	1.51
8	M	403	2GO	C2D-C1D	2.05	1.47	1.42
5	H	306	GGD	OA1-CA1	2.02	1.43	1.40
14	M	411	PC1	C1-C2	2.02	1.56	1.50

All (269) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	L	305	2GO	CAC-C3C-C4C	-12.81	108.19	124.81
8	M	404	2GO	C2A-C1A-NA	12.64	115.49	109.01
8	M	404	2GO	CAC-C3C-C4C	-12.45	108.66	124.81
8	M	401	2GO	C2A-C1A-NA	12.14	115.24	109.01
8	M	403	2GO	CMA-C3A-C4A	-12.12	106.58	125.04
8	L	305	2GO	C2A-C1A-NA	11.73	115.03	109.01
8	L	311	2GO	C2A-C1A-NA	11.03	114.67	109.01
8	M	403	2GO	C2A-C1A-NA	11.01	114.66	109.01
8	L	305	2GO	CMA-C3A-C4A	-10.75	108.66	125.04
8	L	305	2GO	CMC-C2C-C1C	-10.75	108.67	125.04
8	L	311	2GO	CAC-C3C-C2C	-10.66	109.29	127.53
8	M	401	2GO	CAC-C3C-C4C	-10.61	111.04	124.81
8	M	401	2GO	CMA-C3A-C4A	-10.16	109.57	125.04
8	L	311	2GO	CAA-C2A-C3A	-9.84	109.55	127.88
8	M	401	2GO	CAA-C2A-C3A	-9.83	109.57	127.88
8	M	402	2GO	C2A-C1A-NA	9.82	114.05	109.01
8	M	404	2GO	CAA-C2A-C3A	-9.73	109.76	127.88
8	M	401	2GO	CAC-C3C-C2C	-9.37	111.51	127.53
8	L	305	2GO	CAA-C2A-C3A	-9.31	110.53	127.88
8	M	402	2GO	CAA-C2A-C3A	-9.09	110.94	127.88
8	M	404	2GO	CMC-C2C-C1C	-9.07	111.22	125.04
8	M	403	2GO	CAC-C3C-C2C	-8.98	112.17	127.53
8	L	305	2GO	CAC-C3C-C2C	-8.59	112.84	127.53
7	L	304[A]	U10	C7-C6-C5	8.46	128.66	118.48
8	M	401	2GO	CHD-C4C-C3C	-8.21	112.77	124.84
8	M	401	2GO	CMC-C2C-C1C	-8.12	112.67	125.04
14	M	411	PC1	C15-N-C13	-7.96	88.51	108.97
8	M	402	2GO	CMA-C3A-C4A	-7.76	113.22	125.04
8	M	402	2GO	CAC-C3C-C2C	-7.72	114.33	127.53
8	M	403	2GO	CAC-C3C-C4C	-7.71	114.80	124.81

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	M	403	2GO	CAA-C2A-C3A	-7.58	113.77	127.88
8	M	404	2GO	CMA-C3A-C4A	-7.57	113.51	125.04
8	M	402	2GO	CMC-C2C-C1C	-7.55	113.53	125.04
8	M	404	2GO	CHD-C4C-C3C	-7.47	113.86	124.84
8	L	311	2GO	CMA-C3A-C4A	-7.46	113.68	125.04
8	L	311	2GO	CMC-C2C-C1C	-7.23	114.02	125.04
8	M	404	2GO	CAC-C3C-C2C	-7.21	115.20	127.53
8	M	403	2GO	CMC-C2C-C1C	-7.12	114.20	125.04
8	L	305	2GO	CHD-C4C-C3C	-7.10	114.40	124.84
8	M	404	2GO	C1C-C2C-C3C	-6.99	99.61	106.96
8	M	403	2GO	C1C-C2C-C3C	-6.98	99.61	106.96
8	M	403	2GO	CHD-C4C-C3C	-6.96	114.61	124.84
8	L	311	2GO	CAD-CBD-CGD	-6.93	105.91	126.70
8	M	404	2GO	CHA-CBD-CGD	-6.80	103.27	125.12
14	M	411	PC1	C14-N-C13	-6.78	91.55	108.97
8	M	401	2GO	C1C-C2C-C3C	-6.73	99.88	106.96
8	M	402	2GO	C4A-C3A-C2A	-6.58	100.04	106.96
8	L	311	2GO	C4A-C3A-C2A	-6.44	100.18	106.96
8	M	404	2GO	CHA-CBD-CAD	-6.42	100.82	107.17
8	M	404	2GO	CMA-C3A-C2A	-6.24	109.19	126.12
8	L	311	2GO	CHA-CBD-CAD	-6.22	101.02	107.17
8	M	401	2GO	CAD-CBD-CGD	-6.17	108.18	126.70
7	M	408	U10	C30-C29-C31	6.17	125.65	115.27
8	M	404	2GO	CAD-CBD-CGD	-6.15	108.27	126.70
8	M	403	2GO	CMA-C3A-C2A	-6.09	109.59	126.12
8	M	401	2GO	C1A-C2A-C3A	-6.07	98.61	106.61
8	L	305	2GO	CMA-C3A-C2A	-5.91	110.08	126.12
8	L	311	2GO	O2D-CGD-CBD	5.91	122.53	111.80
14	M	411	PC1	O21-C21-C22	5.80	124.00	111.50
8	M	403	2GO	C1A-C2A-C3A	-5.79	98.97	106.61
8	L	305	2GO	C1A-C2A-C3A	-5.70	99.10	106.61
8	L	311	2GO	CAD-C3D-C4D	-5.61	105.34	108.47
8	L	311	2GO	CMC-C2C-C3C	-5.59	110.95	126.12
8	M	402	2GO	CMA-C3A-C2A	-5.51	111.16	126.12
8	M	402	2GO	C1C-C2C-C3C	-5.51	101.17	106.96
8	M	402	2GO	CHD-C4C-C3C	-5.48	116.78	124.84
8	L	305	2GO	CHA-CBD-CAD	-5.46	101.77	107.17
8	L	305	2GO	C1C-C2C-C3C	-5.42	101.25	106.96
8	M	402	2GO	CAD-CBD-CGD	-5.42	110.44	126.70
8	L	305	2GO	CHA-C1A-C2A	-5.39	119.25	128.18
8	M	402	2GO	CMC-C2C-C3C	-5.34	111.61	126.12
8	M	404	2GO	CHA-C1A-C2A	-5.31	119.38	128.18

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	L	311	2GO	CMA-C3A-C2A	-5.27	111.81	126.12
13	M	410	CDL	OA6-CA5-C11	5.26	122.83	111.50
8	M	403	2GO	CAD-CBD-CGD	-5.25	110.95	126.70
8	L	311	2GO	C1A-C2A-C3A	-5.25	99.69	106.61
8	M	401	2GO	CHA-C1A-C2A	-5.23	119.51	128.18
8	L	311	2GO	CHD-C4C-C3C	-5.18	117.22	124.84
8	L	305	2GO	C4A-C3A-C2A	-5.11	101.58	106.96
14	M	411	PC1	C15-N-C14	5.10	122.08	108.97
8	L	305	2GO	CAA-C2A-C1A	-5.06	113.91	128.29
13	M	410	CDL	OB6-CB5-C51	5.01	122.31	111.50
8	M	401	2GO	C4A-C3A-C2A	-4.96	101.74	106.96
8	L	311	2GO	CED-O2D-CGD	4.93	125.19	115.86
8	M	403	2GO	C2C-C1C-NC	4.90	115.46	109.07
8	M	404	2GO	C1A-C2A-C3A	-4.85	100.22	106.61
8	L	305	2GO	CAD-CBD-CGD	-4.80	112.29	126.70
8	M	402	2GO	CHA-CBD-CAD	-4.78	102.44	107.17
8	M	404	2GO	CMC-C2C-C3C	-4.77	113.17	126.12
8	M	401	2GO	O2D-CGD-CBD	4.74	120.40	111.80
8	M	403	2GO	CMC-C2C-C3C	-4.64	113.53	126.12
8	L	311	2GO	CHA-C1A-C2A	-4.60	120.55	128.18
7	L	304[A]	U10	C8-C7-C6	4.55	124.32	112.05
8	M	402	2GO	C4C-C3C-C2C	-4.54	100.28	106.90
8	L	305	2GO	C2C-C1C-NC	4.54	114.99	109.07
8	M	402	2GO	C3A-C4A-NA	4.50	114.94	109.07
13	M	410	CDL	C76-C75-C74	4.50	137.25	114.42
8	M	402	2GO	CAA-C2A-C1A	-4.43	115.70	128.29
5	H	306	GGD	OC6-CC5-C14	4.42	121.03	111.50
5	H	306	GGD	OB1-CA3-CA2	4.39	118.95	107.28
8	M	402	2GO	O2D-CGD-CBD	4.37	119.75	111.80
8	M	402	2GO	CHA-C1A-C2A	-4.36	120.95	128.18
8	M	403	2GO	CHA-C1A-C2A	-4.36	120.96	128.18
8	M	403	2GO	CHA-CBD-CAD	-4.35	102.86	107.17
8	L	305	2GO	CMC-C2C-C3C	-4.27	114.54	126.12
8	M	401	2GO	CHC-C1C-NC	4.22	130.04	124.68
8	L	311	2GO	CAC-C3C-C4C	-4.21	119.34	124.81
13	M	410	CDL	C75-C74-C73	-4.21	93.06	114.42
8	M	401	2GO	O1D-CGD-CBD	-4.20	116.86	124.62
8	M	403	2GO	C4A-C3A-C2A	-4.19	102.55	106.96
14	M	411	PC1	C3-O31-C31	4.16	132.53	117.12
14	M	411	PC1	C13-N-C12	-4.10	93.16	109.92
8	M	403	2GO	CHC-C1C-C2C	-4.07	115.46	126.72
7	L	304[B]	U10	C7-C8-C9	-4.05	120.04	126.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	M	404	2GO	C4C-C3C-C2C	-4.05	100.99	106.90
8	M	401	2GO	CAA-C2A-C1A	-4.03	116.83	128.29
8	L	311	2GO	C2C-C1C-NC	4.00	114.29	109.07
7	M	408	U10	C25-C24-C26	3.99	121.98	115.27
8	M	404	2GO	O2D-CGD-O1D	-3.97	115.89	123.53
8	M	401	2GO	CMC-C2C-C3C	-3.97	115.35	126.12
8	L	311	2GO	C4C-C3C-C2C	-3.93	101.17	106.90
7	M	408	U10	C20-C19-C21	3.93	121.88	115.27
8	M	401	2GO	CHC-C1C-C2C	-3.88	115.97	126.72
8	L	305	2GO	O2A-CGA-O1A	-3.87	113.84	123.59
8	M	401	2GO	CMA-C3A-C2A	-3.85	115.66	126.12
7	L	304[B]	U10	C10-C9-C11	3.84	121.72	115.27
8	M	403	2GO	C4B-C3B-CAB	3.79	134.44	127.13
8	L	305	2GO	CHC-C1C-C2C	-3.75	116.34	126.72
8	M	401	2GO	C2C-C1C-NC	3.75	113.95	109.07
8	L	311	2GO	C1C-C2C-C3C	-3.74	103.02	106.96
8	M	401	2GO	CHA-CBD-CAD	-3.71	103.50	107.17
7	L	304[A]	U10	C1M-C1-C6	-3.70	118.37	124.40
8	M	401	2GO	CHD-C4C-NC	3.69	131.36	124.73
8	M	402	2GO	CAC-C3C-C4C	-3.68	120.04	124.81
8	M	401	2GO	C1-O2A-CGA	3.67	126.08	116.44
8	L	305	2GO	CHB-C4A-NA	3.65	129.31	124.68
8	M	402	2GO	C1A-C2A-C3A	-3.64	101.81	106.61
8	M	404	2GO	CED-O2D-CGD	3.64	122.74	115.86
8	L	305	2GO	O2A-CGA-CBA	3.58	123.15	111.91
12	M	409	SPO	C3-C1-C4	-3.54	105.42	110.86
12	M	409	SPO	C21-C22-C23	-3.52	122.29	127.31
8	L	305	2GO	C4C-C3C-C2C	-3.51	101.78	106.90
8	L	311	2GO	CMB-C2B-C1B	3.49	133.83	128.46
8	L	311	2GO	C3A-C4A-NA	3.47	113.60	109.07
8	M	401	2GO	CED-O2D-CGD	3.47	122.42	115.86
8	M	403	2GO	CHC-C1C-NC	3.47	129.07	124.68
8	M	403	2GO	O2D-CGD-CBD	3.46	118.08	111.80
7	M	408	U10	C15-C14-C16	3.45	121.08	115.27
8	M	402	2GO	CHC-C1C-NC	3.45	129.06	124.68
8	L	305	2GO	CMB-C2B-C3B	3.43	131.10	124.68
8	M	404	2GO	C3A-C4A-NA	3.43	113.54	109.07
7	M	408	U10	C4M-O4-C4	3.43	128.61	116.47
12	M	409	SPO	C20-C19-C17	-3.42	122.43	127.31
8	M	401	2GO	C4C-C3C-C2C	-3.41	101.93	106.90
8	M	401	2GO	CHB-C4A-NA	3.39	128.97	124.68
8	M	402	2GO	CHA-CBD-CGD	-3.33	114.43	125.12

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	M	404	2GO	C4A-C3A-C2A	-3.32	103.46	106.96
8	L	305	2GO	C3C-C4C-NC	3.30	116.77	110.14
8	M	404	2GO	O2A-CGA-CBA	3.29	122.23	111.91
12	M	409	SPO	C6-C7-C9	-3.28	113.91	118.94
8	M	404	2GO	OBB-CAB-C3B	3.26	125.78	119.99
8	L	311	2GO	CHB-C4A-C3A	-3.24	117.76	126.72
8	M	402	2GO	CHC-C1C-C2C	-3.24	117.76	126.72
8	M	404	2GO	CAA-C2A-C1A	-3.23	119.11	128.29
7	M	408	U10	C31-C29-C28	-3.23	114.59	121.12
8	M	401	2GO	CHB-C4A-C3A	-3.19	117.91	126.72
8	M	404	2GO	CHD-C4C-NC	3.17	130.42	124.73
8	M	403	2GO	CHA-CBD-CGD	-3.16	114.97	125.12
8	M	401	2GO	CHA-CBD-CGD	-3.13	115.07	125.12
8	M	402	2GO	C2C-C1C-NC	3.12	113.14	109.07
8	L	311	2GO	CHB-C4A-NA	3.11	128.62	124.68
5	H	306	GGD	OC8-CC7-C31	3.10	121.65	111.91
8	L	311	2GO	CHC-C1C-C2C	-3.06	118.26	126.72
8	L	311	2GO	C1-O2A-CGA	3.05	124.45	116.44
8	M	404	2GO	O2A-CGA-O1A	-3.05	115.89	123.59
12	M	409	SPO	C34-C33-C35	3.04	120.38	115.27
5	H	306	GGD	OC8-CC7-OC9	-3.01	115.99	123.59
12	M	409	SPO	C15-C14-C12	-2.98	123.06	127.31
8	L	311	2GO	O1D-CGD-CBD	-2.97	119.14	124.62
8	M	401	2GO	C3A-C4A-NA	2.96	112.93	109.07
8	M	404	2GO	C2C-C1C-NC	2.96	112.93	109.07
8	L	305	2GO	CHC-C1C-NC	2.93	128.40	124.68
12	M	409	SPO	C8-C7-C6	2.93	122.69	118.08
8	M	404	2GO	CHC-C1C-C2C	-2.92	118.63	126.72
8	M	404	2GO	CHC-C1C-NC	2.92	128.38	124.68
8	M	403	2GO	CHD-C4C-NC	2.92	129.98	124.73
5	H	306	GGD	OC8-CC6-CC4	2.91	116.92	108.43
8	M	404	2GO	O2D-CGD-CBD	2.90	117.06	111.80
8	M	402	2GO	CHB-C4A-C3A	-2.90	118.70	126.72
8	M	401	2GO	C3C-C4C-NC	2.85	115.86	110.14
8	L	305	2GO	O2D-CGD-CBD	2.85	116.98	111.80
8	L	311	2GO	CAA-C2A-C1A	-2.84	120.23	128.29
8	L	311	2GO	C3C-C4C-NC	2.84	115.83	110.14
8	M	403	2GO	CHB-C4A-NA	2.83	128.27	124.68
8	M	404	2GO	CHB-C4A-C3A	-2.83	118.90	126.72
14	M	411	PC1	C15-N-C12	2.81	121.40	109.92
8	M	402	2GO	C1-C2-C3	-2.80	121.21	126.04
8	M	404	2GO	C3C-C4C-NC	2.78	115.71	110.14

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	M	401	2GO	O2A-CGA-CBA	2.73	120.48	111.91
8	M	404	2GO	CAD-C3D-C4D	-2.72	106.95	108.47
8	L	311	2GO	O2D-CGD-O1D	-2.71	118.31	123.53
8	M	401	2GO	C4C-CHD-C1D	-2.71	118.98	122.56
7	L	304[A]	U10	C7-C8-C9	-2.70	122.30	126.79
14	M	411	PC1	O21-C21-O22	-2.68	117.23	123.70
8	M	403	2GO	C4-C3-C2	-2.66	116.85	123.68
13	M	410	CDL	OA6-CA5-OA7	-2.66	117.27	123.70
8	M	403	2GO	CHB-C4A-C3A	-2.65	119.39	126.72
13	M	410	CDL	OB8-CB7-C71	2.64	120.18	111.91
8	M	402	2GO	O2A-CGA-CBA	2.63	120.17	111.91
8	M	403	2GO	C3C-C4C-NC	2.63	115.42	110.14
8	M	402	2GO	O2A-CGA-O1A	-2.62	116.97	123.59
8	M	403	2GO	C4C-CHD-C1D	-2.61	119.11	122.56
8	M	403	2GO	CAA-C2A-C1A	-2.60	120.90	128.29
14	M	411	PC1	C3-C2-C1	2.60	117.93	111.79
8	M	401	2GO	C6-C5-C3	-2.60	106.65	113.45
8	L	305	2GO	CHB-C4A-C3A	-2.59	119.55	126.72
8	L	311	2GO	CHA-CBD-CGD	-2.58	116.83	125.12
8	M	401	2GO	C4B-C3B-CAB	2.55	132.05	127.13
8	M	401	2GO	O2A-CGA-O1A	-2.54	117.19	123.59
7	M	408	U10	C17-C18-C19	-2.51	121.62	127.66
8	M	403	2GO	O1D-CGD-CBD	-2.50	120.00	124.62
7	L	304[B]	U10	C16-C14-C15	2.49	120.10	114.60
8	M	402	2GO	C4B-C3B-CAB	2.49	131.92	127.13
8	M	403	2GO	C1-O2A-CGA	2.48	122.94	116.44
8	M	403	2GO	C3A-C4A-NA	2.47	112.30	109.07
12	M	409	SPO	C18-C17-C16	2.45	121.93	118.08
8	M	401	2GO	C4-C3-C5	2.43	119.36	115.27
8	M	401	2GO	CAA-CBA-CGA	2.42	120.47	113.43
13	M	410	CDL	OB6-CB5-OB7	-2.39	117.91	123.70
12	M	409	SPO	C13-C12-C14	-2.39	119.57	122.92
12	M	409	SPO	C27-C26-C25	-2.38	115.79	123.22
8	M	403	2GO	C4C-C3C-C2C	-2.37	103.44	106.90
7	M	408	U10	C21-C19-C18	-2.34	116.38	121.12
5	H	306	GGD	CC6-CC4-CC3	-2.34	106.27	111.79
8	L	311	2GO	O2A-CGA-CBA	2.33	119.22	111.91
8	M	403	2GO	O2A-CGA-CBA	2.33	119.21	111.91
5	H	306	GGD	CB1-OB1-CA3	2.32	123.70	117.96
13	M	410	CDL	OB8-CB7-OB9	-2.31	117.77	123.59
8	L	311	2GO	CBB-CAB-C3B	-2.30	113.51	120.34
14	M	411	PC1	O31-C31-C32	2.30	119.12	111.91

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	L	311	2GO	O2A-C1-C2	2.29	114.66	108.64
5	H	306	GGD	OC6-CC5-OC7	-2.28	118.19	123.70
7	M	408	U10	C41-C39-C40	2.28	119.63	114.60
8	M	404	2GO	CHB-C4A-NA	2.25	127.54	124.68
12	M	409	SPO	C13-C12-C11	2.25	121.62	118.08
7	L	304[A]	U10	O2-C2-C3	-2.22	116.21	120.93
7	M	408	U10	C17-C16-C14	-2.22	105.66	112.98
7	M	408	U10	C32-C31-C29	2.20	120.23	112.98
8	M	402	2GO	C3C-C4C-NC	2.20	114.56	110.14
8	M	402	2GO	O2D-CGD-O1D	-2.20	119.30	123.53
12	M	409	SPO	C29-C28-C30	2.20	118.97	115.27
5	H	306	GGD	CA1-OA5-CA5	2.19	117.98	113.69
8	M	402	2GO	CAD-C3D-C4D	-2.19	107.25	108.47
8	M	402	2GO	CHD-C4C-NC	2.17	128.63	124.73
7	L	304[B]	U10	C12-C13-C14	-2.15	120.39	127.75
8	L	305	2GO	O2D-CGD-O1D	-2.15	119.39	123.53
8	M	401	2GO	C5-C3-C2	-2.15	116.77	121.12
8	L	305	2GO	C1-O2A-CGA	2.12	122.00	116.44
8	L	305	2GO	CHD-C4C-NC	2.11	128.53	124.73
8	L	311	2GO	CHC-C1C-NC	2.09	127.33	124.68
10	L	308	HTO	C4-C3-C2	2.09	118.31	113.35
7	M	408	U10	C11-C12-C13	-2.07	105.09	111.88
8	M	403	2GO	O2A-CGA-O1A	-2.05	118.41	123.59
7	L	304[A]	U10	C3M-O3-C3	2.04	123.68	116.47
6	M	405	LDA	O1-N1-C1	2.03	114.26	109.27
8	M	404	2GO	C4B-C3B-CAB	2.02	131.03	127.13
12	M	409	SPO	C31-C32-C33	-2.01	122.81	127.66
7	M	408	U10	C10-C9-C11	2.01	118.65	115.27
5	H	306	GGD	C15-C14-CC5	-2.00	106.33	113.62

There are no chirality outliers.

All (224) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	H	301	GOL	O1-C1-C2-C3
4	H	302	GOL	C1-C2-C3-O3
4	H	305	GOL	C1-C2-C3-O3
5	H	306	GGD	OC7-CC5-OC6-CC4
5	H	306	GGD	C14-CC5-OC6-CC4
6	M	405	LDA	C2-C1-N1-O1
6	M	405	LDA	C2-C1-N1-CM1
7	L	304[A]	U10	C1-C6-C7-C8

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Mol	Chain	Res	Type	Atoms
7	L	304[A]	U10	C5-C6-C7-C8
7	M	408	U10	C14-C16-C17-C18
7	M	408	U10	C30-C29-C31-C32
7	M	408	U10	C31-C32-C33-C34
7	M	408	U10	C34-C36-C37-C38
8	L	305	2GO	C1A-C2A-CAA-CBA
8	L	311	2GO	C2C-C3C-CAC-CBC
8	L	311	2GO	C1A-C2A-CAA-CBA
8	L	311	2GO	O2A-C1-C2-C3
8	M	401	2GO	C3A-C2A-CAA-CBA
8	M	402	2GO	C1A-C2A-CAA-CBA
8	M	402	2GO	O2A-C1-C2-C3
8	M	404	2GO	C1A-C2A-CAA-CBA
10	L	307	HTO	O3-C3-C4-C5
12	M	409	SPO	O1-C1-C4-C5
12	M	409	SPO	C2-C1-C4-C5
12	M	409	SPO	C3-C1-C4-C5
13	M	410	CDL	CA2-OA2-PA1-OA3
13	M	410	CDL	CA3-OA5-PA1-OA4
13	M	410	CDL	CB3-OB5-PB2-OB2
13	M	410	CDL	CB3-OB5-PB2-OB3
14	M	411	PC1	C1-O11-P-O12
14	M	411	PC1	C1-O11-P-O14
14	M	411	PC1	C22-C21-O21-C2
8	L	305	2GO	C4C-C3C-CAC-CBC
8	L	311	2GO	CBD-CGD-O2D-CED
13	M	410	CDL	OA9-CA7-OA8-CA6
8	M	404	2GO	C4C-C3C-CAC-CBC
13	M	410	CDL	OB7-CB5-OB6-CB4
13	M	410	CDL	C31-CA7-OA8-CA6
13	M	410	CDL	C71-CB7-OB8-CB6
13	M	410	CDL	C51-CB5-OB6-CB4
8	M	401	2GO	C2C-C3C-CAC-CBC
5	H	306	GGD	CA2-CA3-OB1-CB1
8	L	311	2GO	O1D-CGD-O2D-CED
7	M	408	U10	C28-C29-C31-C32
8	M	403	2GO	CBA-CGA-O2A-C1
14	M	411	PC1	O22-C21-O21-C2
8	M	403	2GO	O1A-CGA-O2A-C1
13	M	410	CDL	OB9-CB7-OB8-CB6
8	M	402	2GO	C4C-C3C-CAC-CBC
8	M	403	2GO	CBD-CGD-O2D-CED

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Mol	Chain	Res	Type	Atoms
5	H	306	GGD	OB5-CB5-CB6-OB6
7	L	304[B]	U10	C12-C11-C9-C10
7	L	304[B]	U10	C12-C11-C9-C8
7	L	304[B]	U10	C9-C11-C12-C13
13	M	410	CDL	C57-C58-C59-C60
5	H	306	GGD	CB4-CB5-CB6-OB6
8	M	403	2GO	C6-C7-C8-C9
8	M	403	2GO	C11-C12-C13-C14
8	M	401	2GO	C13-C15-C16-C17
4	H	302	GOL	O2-C2-C3-O3
13	M	410	CDL	CA5-C11-C12-C13
13	M	410	CDL	CB5-C51-C52-C53
7	L	304[A]	U10	C9-C11-C12-C13
7	M	408	U10	C19-C21-C22-C23
7	M	408	U10	C29-C31-C32-C33
14	M	411	PC1	C31-C32-C33-C34
8	M	403	2GO	O1D-CGD-O2D-CED
8	M	403	2GO	C1A-C2A-CAA-CBA
14	M	411	PC1	C11-O13-P-O11
14	M	411	PC1	C1-O11-P-O13
5	H	306	GGD	C33-C34-C35-C36
6	L	301	LDA	C2-C3-C4-C5
6	M	405	LDA	C2-C3-C4-C5
13	M	410	CDL	C31-C32-C33-C34
13	M	410	CDL	C52-C53-C54-C55
14	M	411	PC1	C28-C29-C2A-C2B
6	M	405	LDA	C4-C5-C6-C7
5	H	306	GGD	OA5-CA5-CA6-OA6
13	M	410	CDL	C11-C12-C13-C14
8	M	404	2GO	C6-C7-C8-C9
4	L	310	GOL	C1-C2-C3-O3
6	M	405	LDA	C11-C10-C9-C8
6	M	406	LDA	C3-C4-C5-C6
6	M	406	LDA	C11-C10-C9-C8
14	M	411	PC1	C27-C28-C29-C2A
5	H	306	GGD	C31-CC7-OC8-CC6
10	L	307	HTO	O1-C1-C2-O2
4	H	301	GOL	O1-C1-C2-O2
4	H	305	GOL	O2-C2-C3-O3
14	M	411	PC1	C29-C2A-C2B-C2C
13	M	410	CDL	C71-C72-C73-C74
14	M	411	PC1	C11-C12-N-C15

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Mol	Chain	Res	Type	Atoms
6	L	303	LDA	C7-C8-C9-C10
8	L	311	2GO	C11-C12-C13-C15
8	M	403	2GO	C11-C12-C13-C15
8	M	404	2GO	C6-C7-C8-C10
7	L	304[B]	U10	C4-C3-O3-C3M
13	M	410	CDL	C58-C59-C60-C61
8	M	403	2GO	C4C-C3C-CAC-CBC
6	L	303	LDA	C1-C2-C3-C4
6	M	405	LDA	C7-C8-C9-C10
13	M	410	CDL	C59-C60-C61-C62
6	L	303	LDA	C4-C5-C6-C7
13	M	410	CDL	C38-C39-C40-C41
8	L	311	2GO	C11-C12-C13-C14
5	H	306	GGD	OC9-CC7-OC8-CC6
8	L	311	2GO	C5-C6-C7-C8
6	L	301	LDA	C5-C6-C7-C8
6	M	405	LDA	C6-C7-C8-C9
5	H	306	GGD	C35-C36-C37-C38
8	M	403	2GO	C10-C11-C12-C13
6	L	301	LDA	C9-C10-C11-C12
14	M	411	PC1	C25-C26-C27-C28
6	M	406	LDA	C9-C10-C11-C12
14	M	411	PC1	C3-C2-O21-C21
13	M	410	CDL	OA5-CA3-CA4-OA6
14	M	411	PC1	C2B-C2C-C2D-C2E
8	L	311	2GO	C6-C7-C8-C10
8	M	403	2GO	C6-C7-C8-C10
14	M	411	PC1	C22-C23-C24-C25
8	L	305	2GO	C14-C13-C15-C16
14	M	411	PC1	C33-C34-C35-C36
6	L	301	LDA	C4-C5-C6-C7
13	M	410	CDL	C15-C16-C17-C18
6	M	406	LDA	N1-C1-C2-C3
14	M	411	PC1	C21-C22-C23-C24
8	M	403	2GO	C15-C16-C17-C18
5	H	306	GGD	CA4-CA3-OB1-CB1
14	M	411	PC1	C2-C1-O11-P
14	M	411	PC1	C35-C36-C37-C38
13	M	410	CDL	C41-C42-C43-C44
8	M	402	2GO	C13-C15-C16-C17
10	L	307	HTO	C1-C2-C3-O3
10	L	307	HTO	C4-C5-C6-C7

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Mol	Chain	Res	Type	Atoms
13	M	410	CDL	CA3-OA5-PA1-OA2
4	L	309	GOL	O2-C2-C3-O3
13	M	410	CDL	C51-C52-C53-C54
13	M	410	CDL	OB6-CB4-CB6-OB8
13	M	410	CDL	C80-C81-C82-C83
8	M	401	2GO	C11-C10-C8-C9
13	M	410	CDL	C13-C14-C15-C16
8	M	403	2GO	C5-C6-C7-C8
6	M	406	LDA	C1-C2-C3-C4
8	M	404	2GO	C3A-C2A-CAA-CBA
13	M	410	CDL	C14-C15-C16-C17
14	M	411	PC1	O11-C1-C2-O21
6	L	301	LDA	C2-C1-N1-CM2
6	M	405	LDA	C2-C1-N1-CM2
13	M	410	CDL	C61-C62-C63-C64
4	H	304	GOL	O1-C1-C2-O2
4	L	309	GOL	C1-C2-C3-O3
13	M	410	CDL	CA3-OA5-PA1-OA3
14	M	411	PC1	C11-O13-P-O14
5	H	306	GGD	CC7-C31-C32-C33
13	M	410	CDL	OA5-CA3-CA4-CA6
14	M	411	PC1	O11-C1-C2-C3
13	M	410	CDL	C72-C73-C74-C75
6	L	302	LDA	C4-C5-C6-C7
8	M	401	2GO	C12-C13-C15-C16
6	L	302	LDA	C7-C8-C9-C10
13	M	410	CDL	CB3-CB4-CB6-OB8
14	M	411	PC1	O13-C11-C12-N
14	M	411	PC1	C37-C38-C39-C3A
8	L	311	2GO	C6-C7-C8-C9
12	M	409	SPO	C4-C1-O1-CM1
14	M	411	PC1	C11-C12-N-C13
5	H	306	GGD	C31-C32-C33-C34
7	L	304[A]	U10	C5-C4-O4-C4M
7	M	408	U10	C5-C6-C7-C8
8	L	311	2GO	CAD-CBD-CGD-O1D
8	M	404	2GO	CAD-CBD-CGD-O1D
8	L	311	2GO	CAD-CBD-CGD-O2D
8	M	404	2GO	CAD-CBD-CGD-O2D
13	M	410	CDL	C77-C78-C79-C80
12	M	409	SPO	C2-C1-O1-CM1
12	M	409	SPO	C3-C1-O1-CM1

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Mol	Chain	Res	Type	Atoms
8	M	401	2GO	C14-C13-C15-C16
8	M	403	2GO	C8-C10-C11-C12
8	M	402	2GO	C8-C10-C11-C12
6	M	405	LDA	C9-C10-C11-C12
10	L	308	HTO	C3-C4-C5-C6
8	L	311	2GO	C4C-C3C-CAC-CBC
8	M	404	2GO	CAA-CBA-CGA-O2A
8	L	305	2GO	CAD-CBD-CGD-O1D
10	L	308	HTO	C1-C2-C3-O3
8	M	403	2GO	C2C-C3C-CAC-CBC
8	L	311	2GO	C4-C3-C5-C6
10	L	307	HTO	C2-C3-C4-C5
4	H	304	GOL	O1-C1-C2-C3
6	L	303	LDA	C5-C6-C7-C8
6	L	303	LDA	C9-C10-C11-C12
8	M	403	2GO	CAD-CBD-CGD-O1D
8	M	403	2GO	C4-C3-C5-C6
8	L	311	2GO	C2-C3-C5-C6
6	M	406	LDA	C5-C6-C7-C8
13	M	410	CDL	C12-C11-CA5-OA6
13	M	410	CDL	C52-C51-CB5-OB6
6	L	302	LDA	C11-C10-C9-C8
8	M	403	2GO	C13-C15-C16-C17
10	L	308	HTO	O2-C2-C3-O3
13	M	410	CDL	OA7-CA5-OA6-CA4
13	M	410	CDL	C11-CA5-OA6-CA4
7	L	304[A]	U10	C3-C4-O4-C4M
8	M	402	2GO	CAD-CBD-CGD-O1D
8	M	403	2GO	C3-C5-C6-C7
8	M	401	2GO	CBD-CGD-O2D-CED
13	M	410	CDL	C52-C51-CB5-OB7
7	L	304[A]	U10	C12-C11-C9-C10
8	M	401	2GO	CAD-CBD-CGD-O2D
8	M	403	2GO	CAD-CBD-CGD-O2D
6	L	303	LDA	N1-C1-C2-C3
14	M	411	PC1	C34-C35-C36-C37
13	M	410	CDL	CA2-OA2-PA1-OA4
13	M	410	CDL	C12-C11-CA5-OA7
7	L	304[B]	U10	C5-C4-O4-C4M
7	M	408	U10	C5-C4-O4-C4M
6	L	301	LDA	C2-C1-N1-O1
6	M	406	LDA	C2-C1-N1-O1

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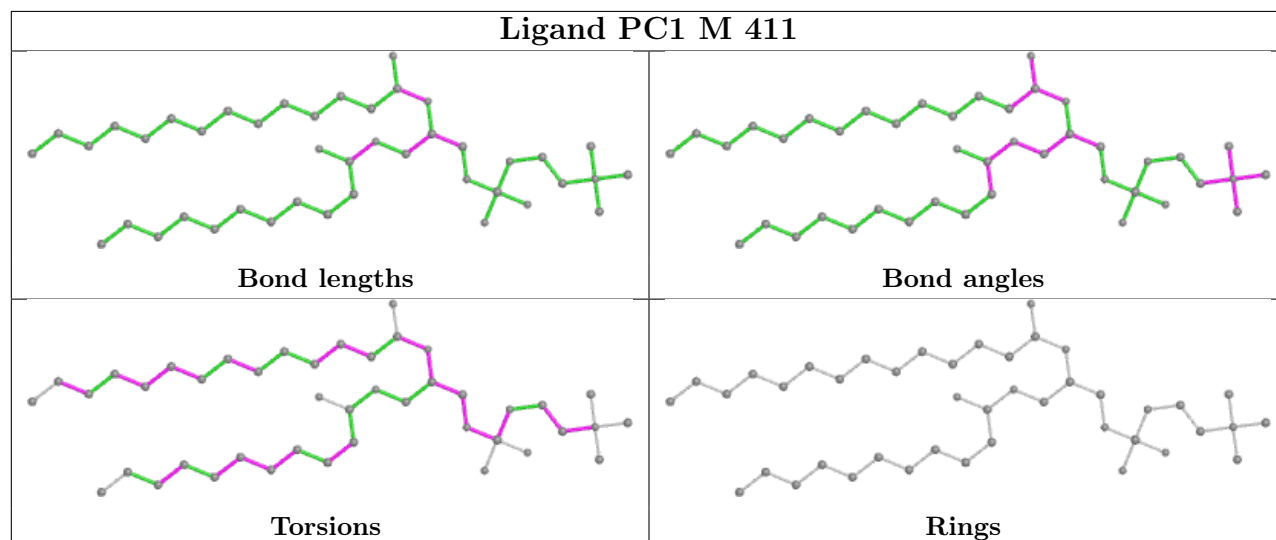
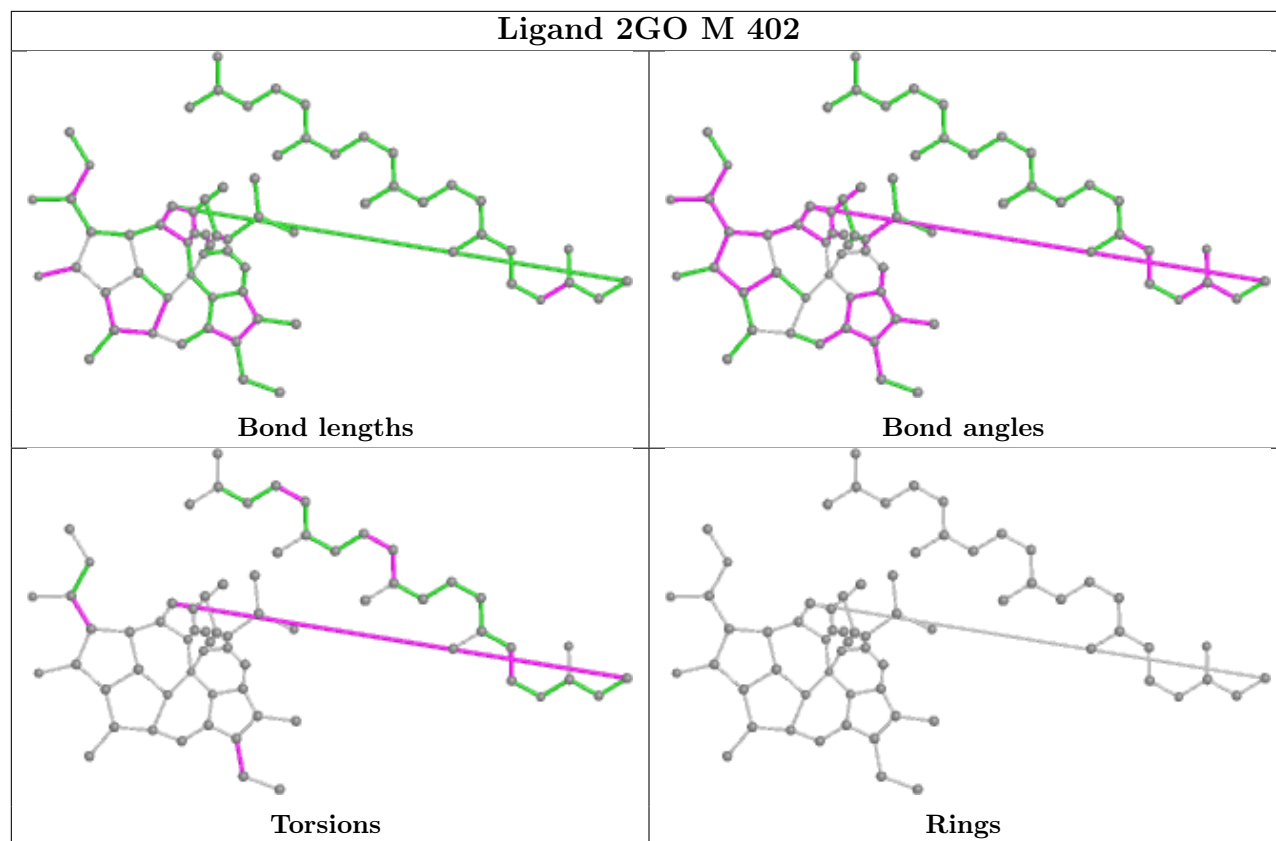
Mol	Chain	Res	Type	Atoms
8	M	402	2GO	C11-C10-C8-C9
5	H	306	GGD	C17-C18-C19-C20
5	H	306	GGD	CC5-C14-C15-C16
7	L	304[B]	U10	C3-C4-O4-C4M
7	M	408	U10	C3-C4-O4-C4M
13	M	410	CDL	C79-C80-C81-C82

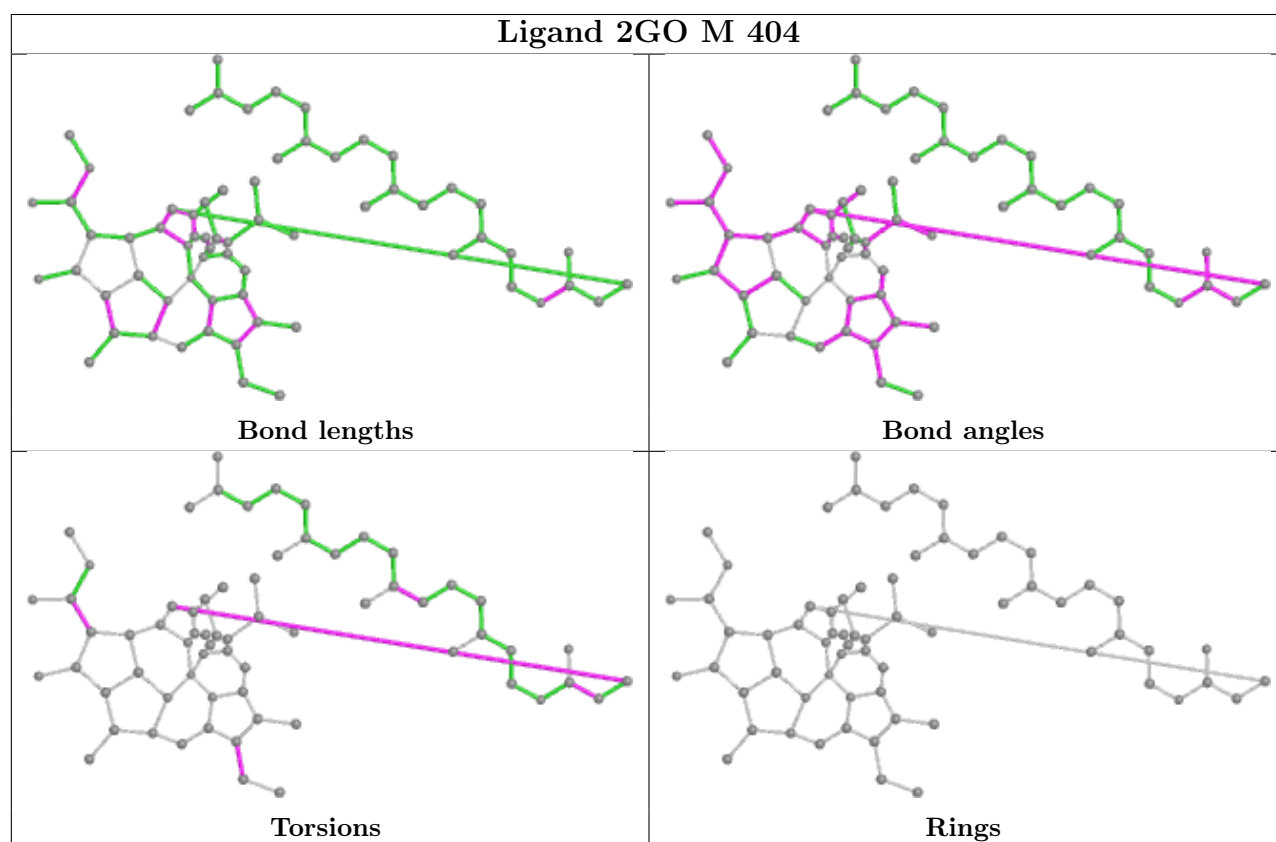
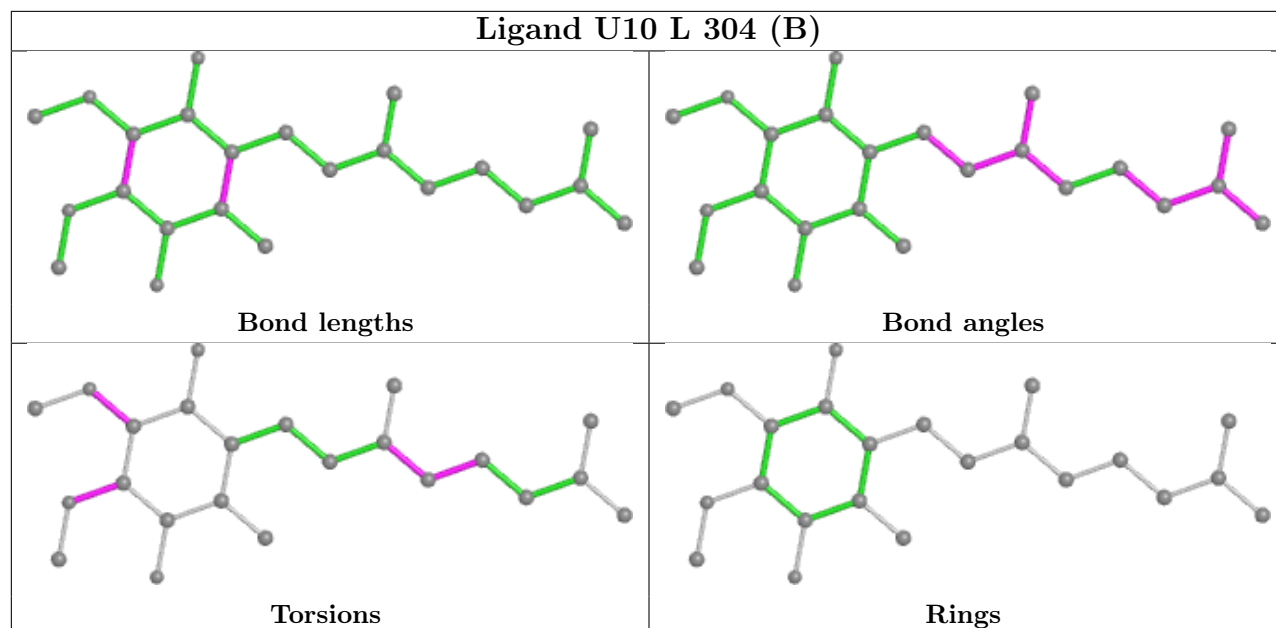
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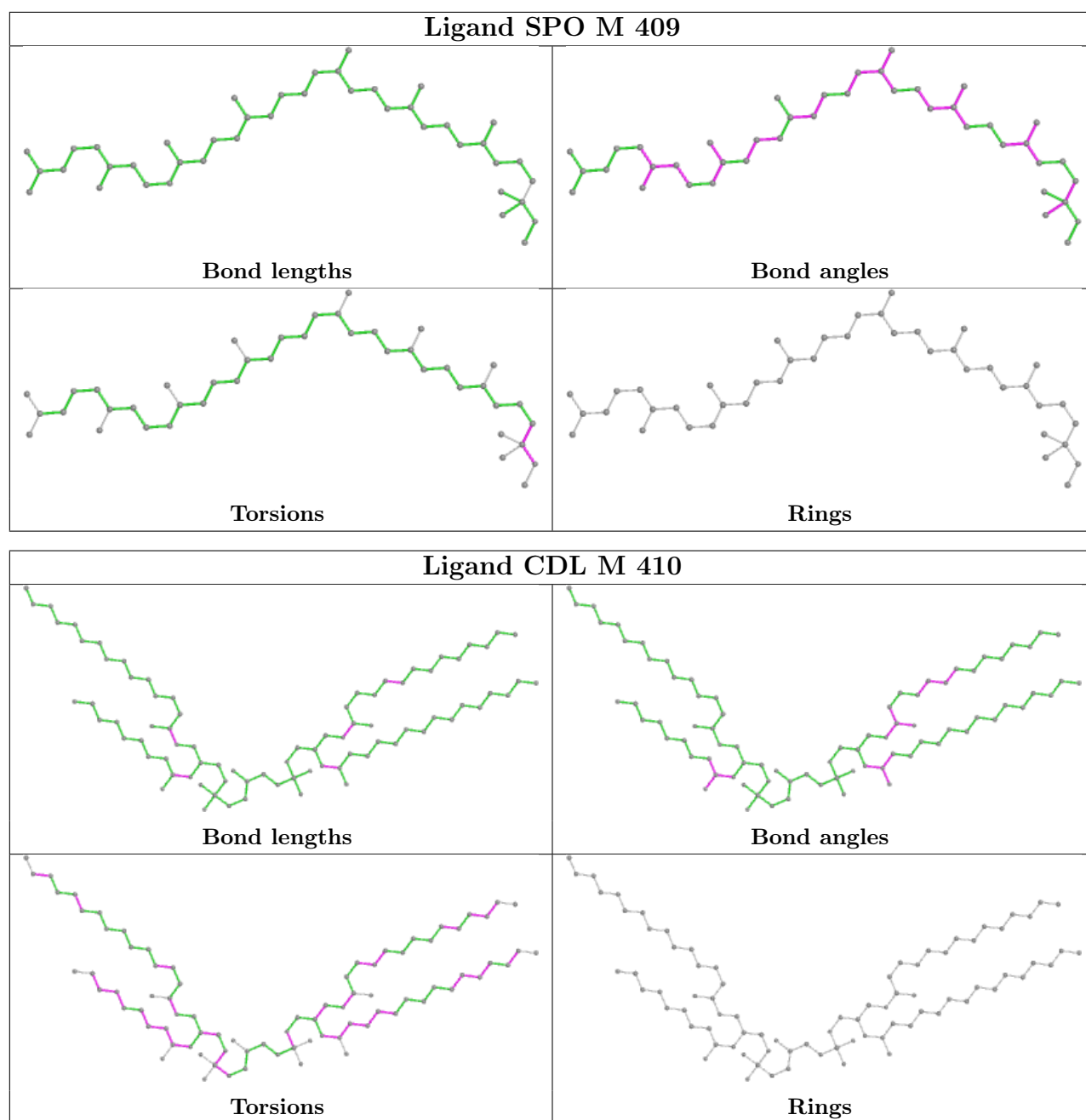
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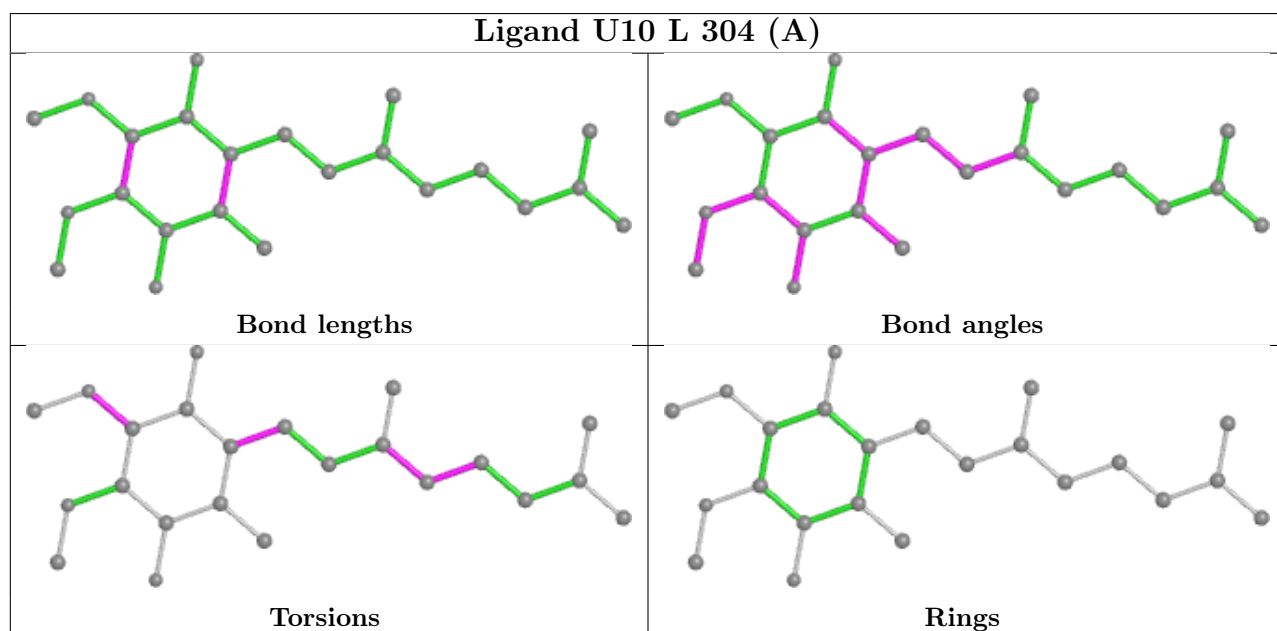
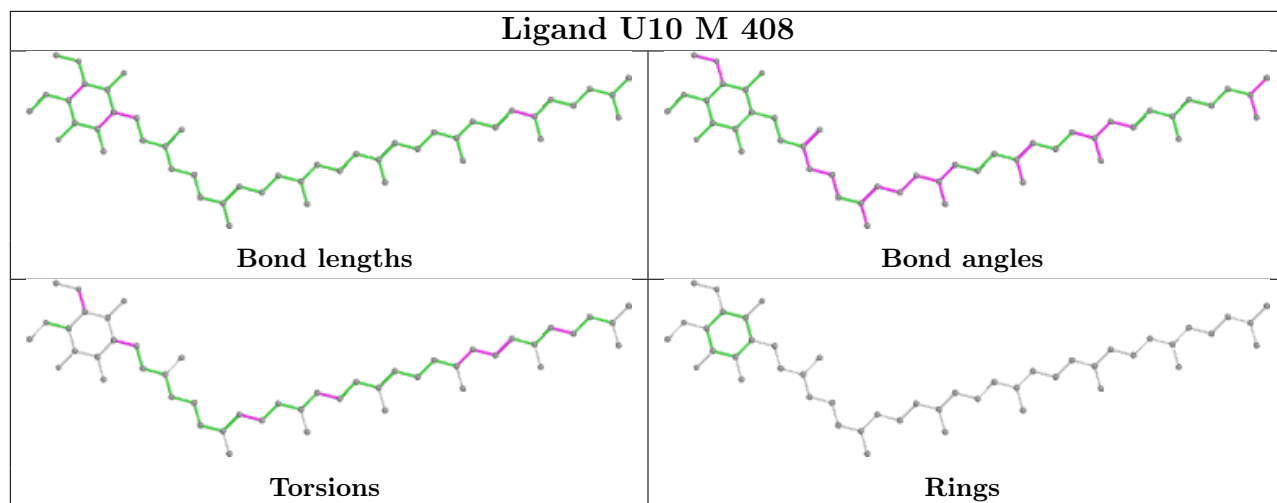
Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	M	402	2GO	11	0
4	H	305	GOL	1	0
14	M	411	PC1	1	0
7	L	304[B]	U10	8	0
8	M	404	2GO	6	0
12	M	409	SPO	5	0
13	M	410	CDL	1	0
7	M	408	U10	4	0
6	L	303	LDA	2	0
7	L	304[A]	U10	5	0
8	L	311	2GO	10	0
10	L	307	HTO	1	0
8	M	403	2GO	8	0
8	M	401	2GO	6	0
8	L	305	2GO	2	0
5	H	306	GGD	1	0

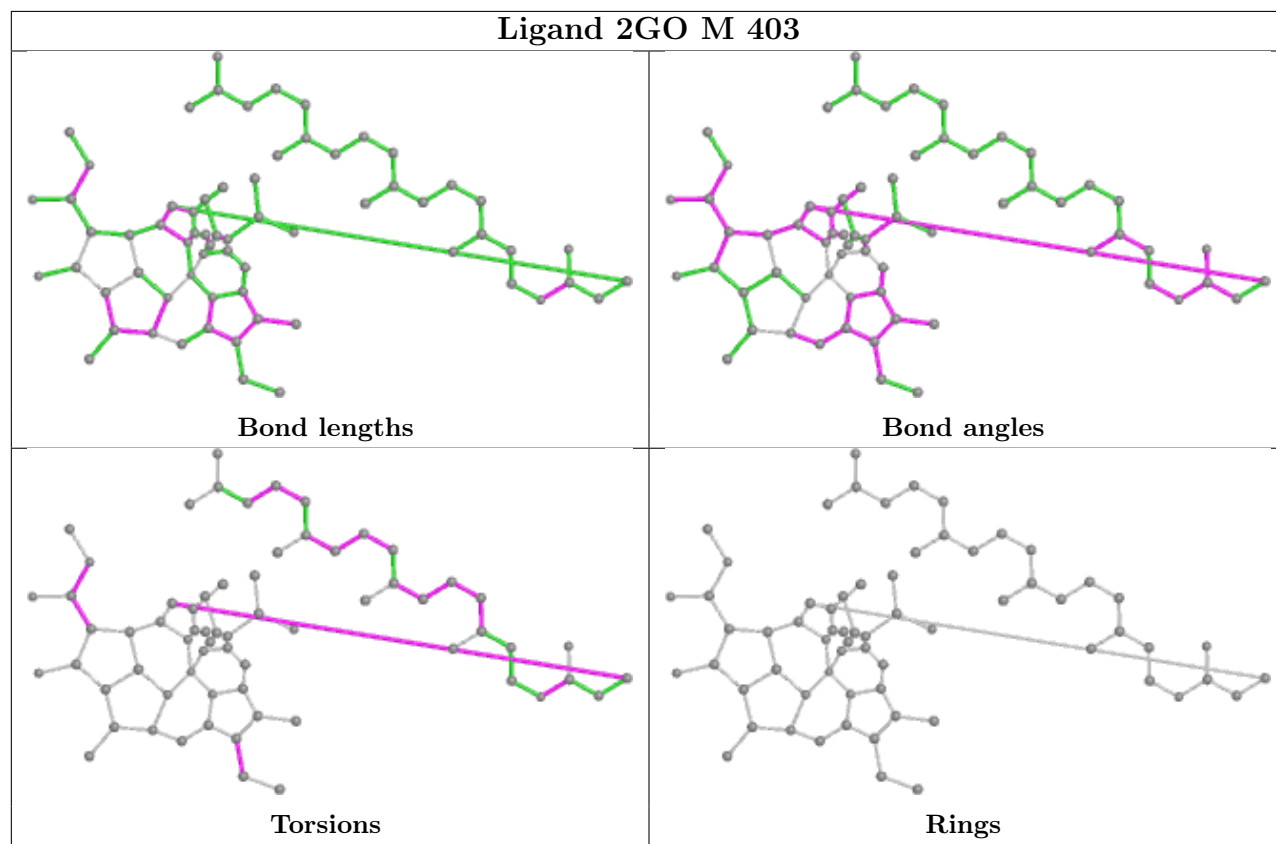
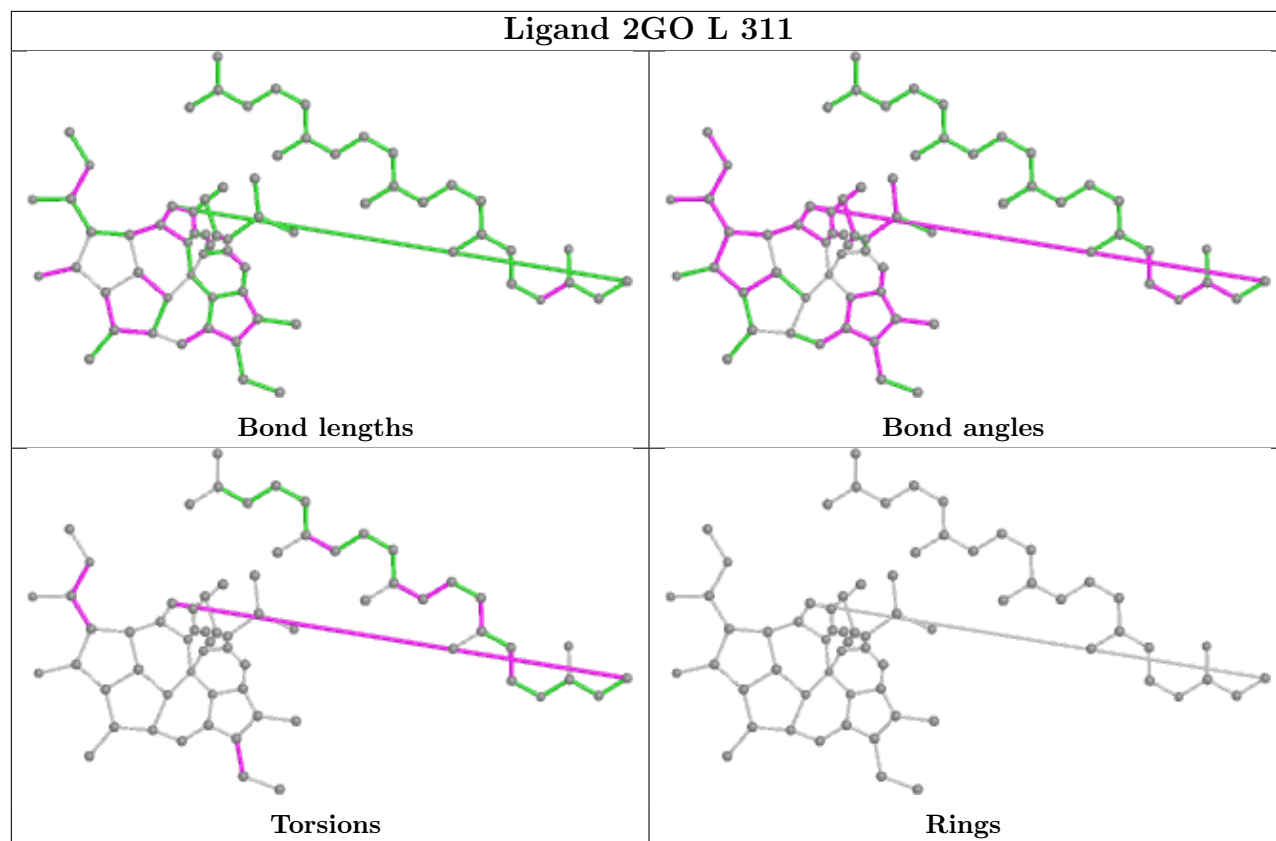
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

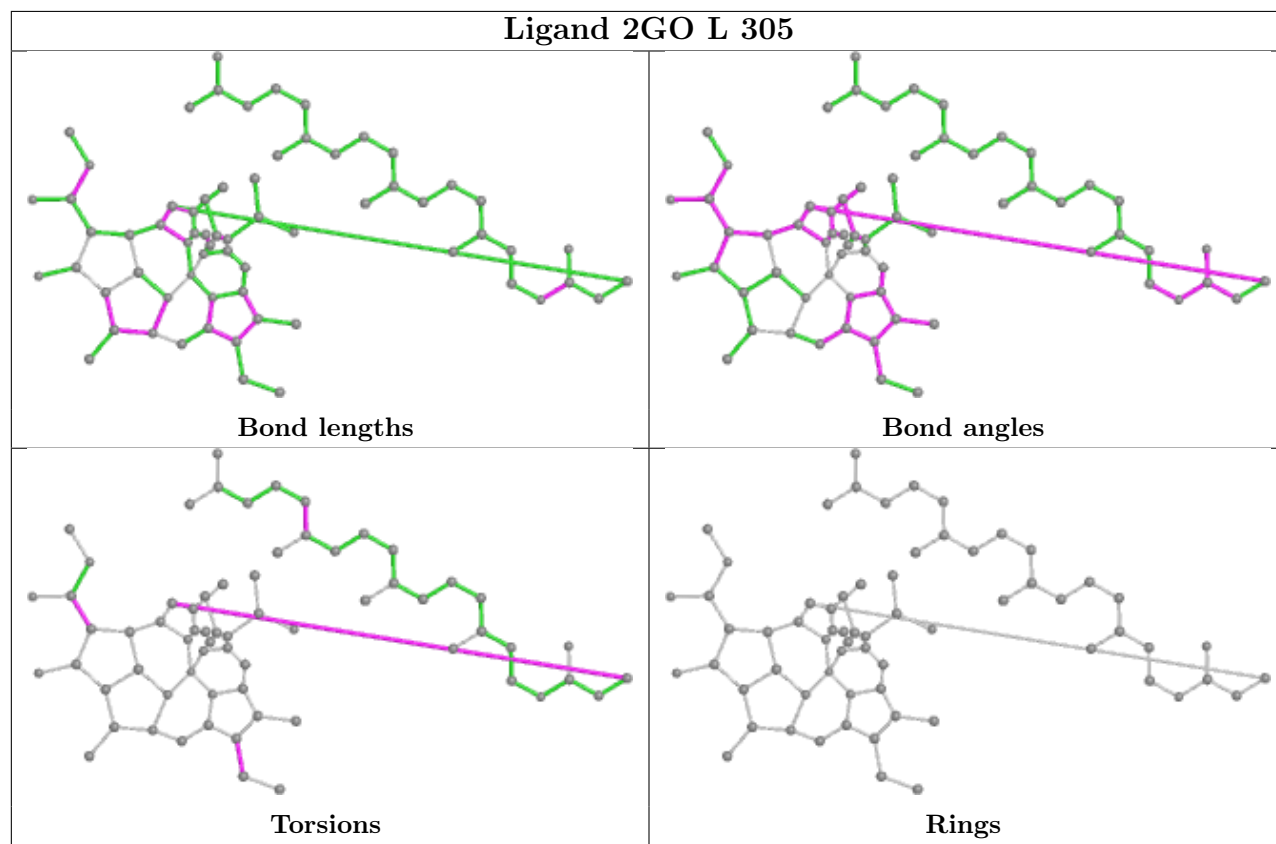
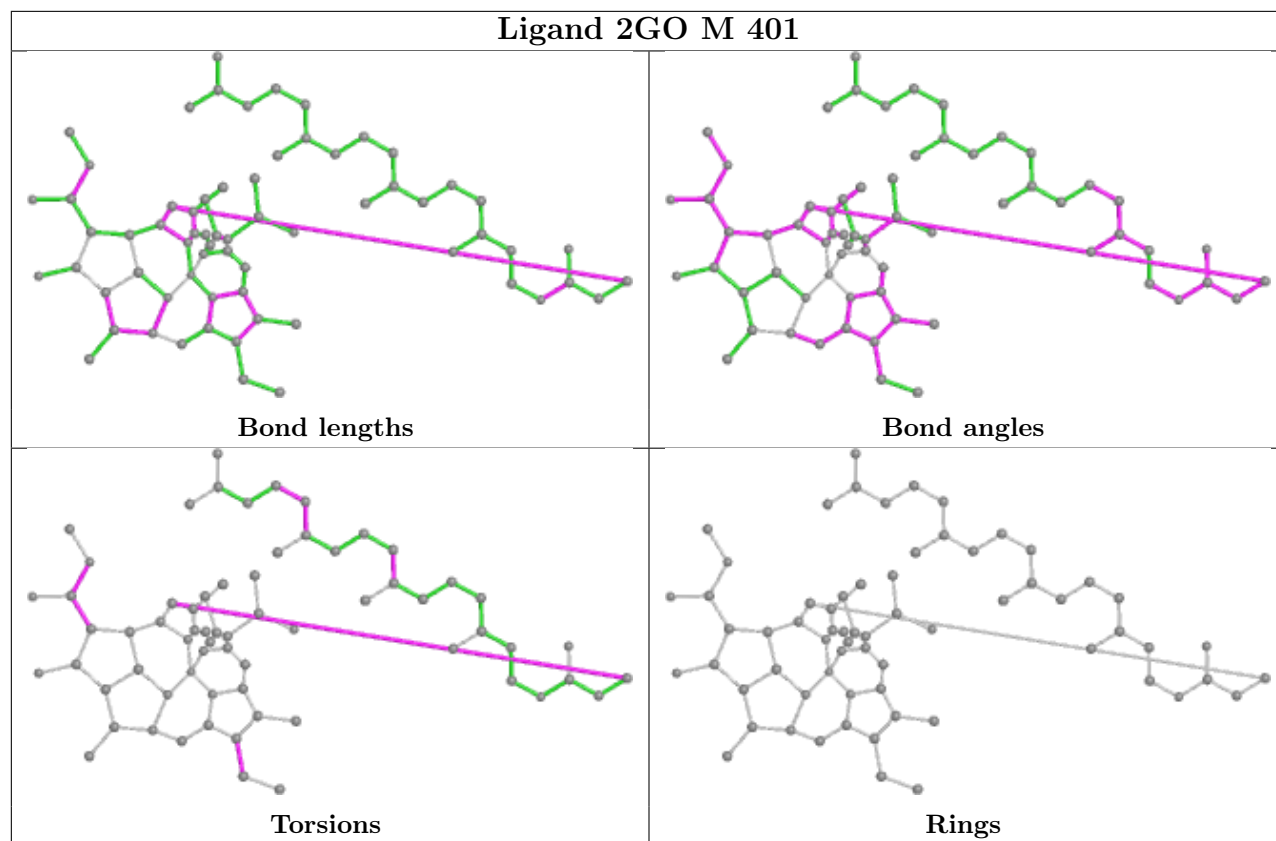


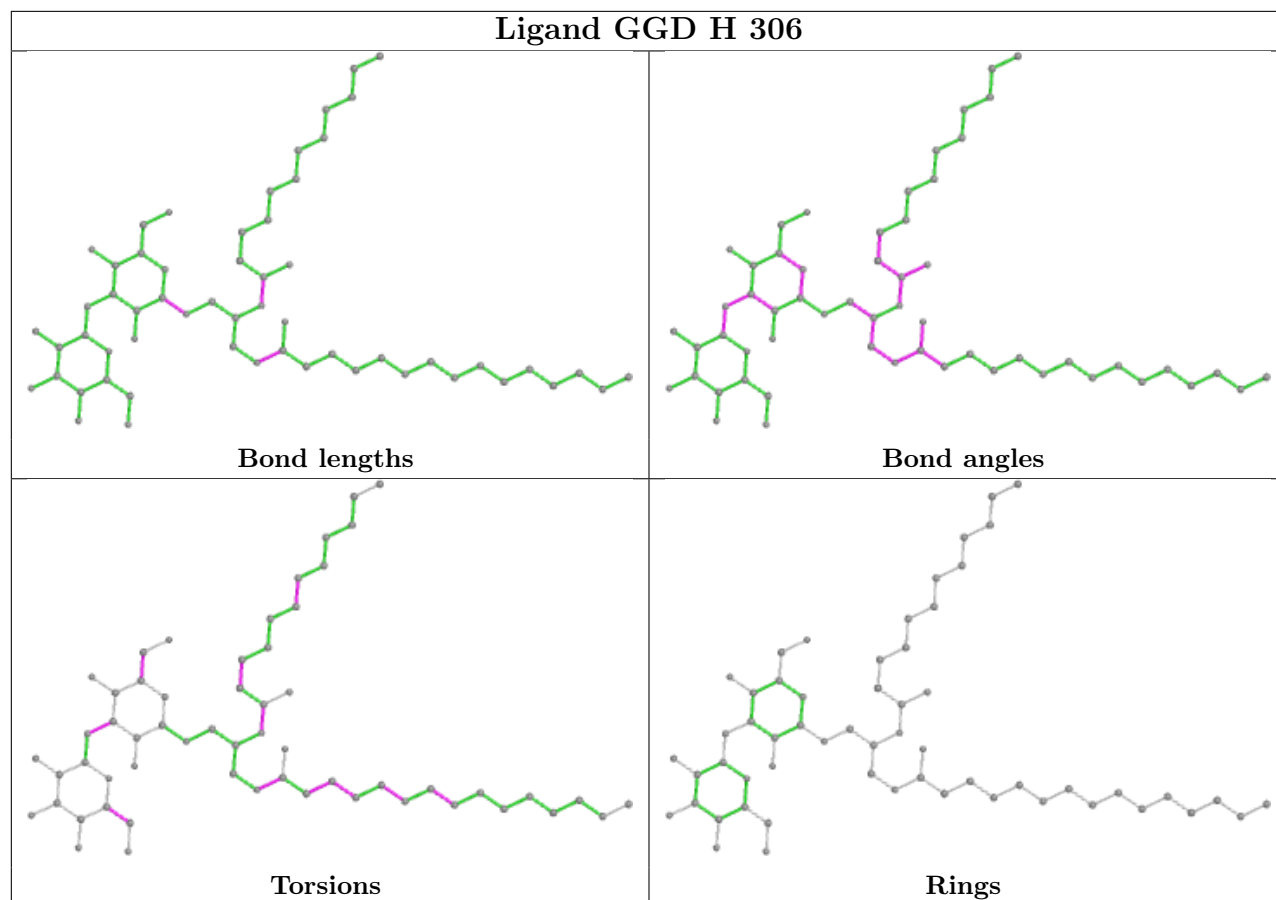












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

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

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

In the following table, the column labelled '#RSRZ > 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q < 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	H	241/241 (100%)	-0.64	3 (1%) 79 78	33, 47, 67, 141	3 (1%)
2	L	281/281 (100%)	-0.58	4 (1%) 75 74	34, 48, 82, 109	0
3	M	303/303 (100%)	-0.49	0 100 100	31, 50, 77, 92	6 (1%)
All	All	825/825 (100%)	-0.57	7 (0%) 86 85	31, 48, 78, 141	9 (1%)

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	249[A]	LYS	3.2
2	L	281	GLY	2.8
2	L	277	GLY	2.8
1	H	250	SER	2.3
2	L	271[A]	TRP	2.3
2	L	270	PRO	2.2
1	H	52	ASN	2.1

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum,

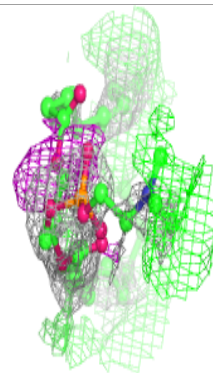
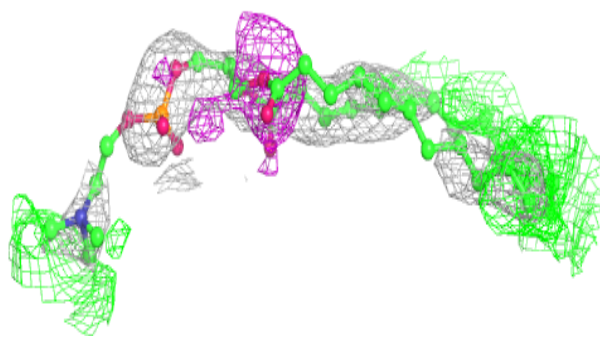
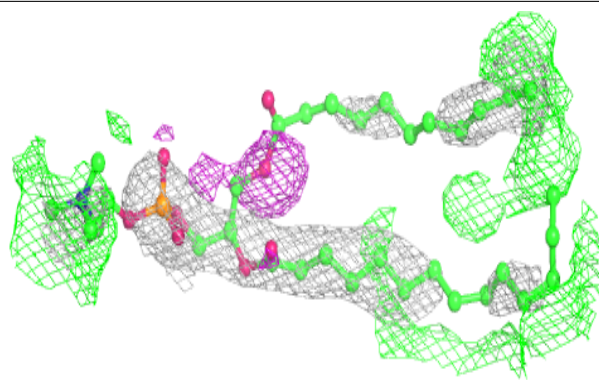
median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
6	LDA	L	302	16/16	0.50	0.54	74,96,139,142	0
14	PC1	M	411	43/54	0.59	0.49	79,115,160,164	0
4	GOL	L	310	6/6	0.61	0.46	88,103,108,112	0
5	GGD	H	306	57/67	0.62	0.56	67,132,184,197	0
6	LDA	L	303	16/16	0.65	0.50	70,118,144,144	0
4	GOL	H	304	6/6	0.69	0.41	86,95,99,102	0
6	LDA	L	301	16/16	0.70	0.62	63,114,151,153	0
4	GOL	H	303	6/6	0.70	0.65	97,113,117,118	0
4	GOL	H	301	6/6	0.76	0.41	90,106,116,120	0
10	HTO	L	308	10/10	0.77	0.93	89,100,116,127	0
7	U10	L	304[A]	23/63	0.78	0.35	69,80,92,94	23
7	U10	L	304[B]	23/63	0.78	0.35	38,44,49,52	23
10	HTO	L	307	10/10	0.79	0.75	84,101,113,113	0
4	GOL	H	302	6/6	0.81	0.47	66,78,82,86	0
8	2GO	L	311	66/66	0.84	0.32	75,108,133,143	0
7	U10	M	408	48/63	0.85	0.26	61,76,91,94	0
4	GOL	L	309	6/6	0.86	0.40	75,83,84,89	0
13	CDL	M	410	81/100	0.89	0.35	64,96,144,149	0
6	LDA	M	405	16/16	0.89	0.38	65,86,92,93	0
6	LDA	M	406	16/16	0.90	0.26	62,79,106,106	0
4	GOL	H	305	6/6	0.95	0.21	49,63,73,78	0
12	SPO	M	409	42/42	0.95	0.24	41,59,96,117	0
9	PO4	L	306	5/5	0.97	0.15	84,87,95,99	0
8	2GO	M	401	66/66	0.98	0.16	28,39,65,78	0
8	2GO	M	402	66/66	0.98	0.16	34,42,55,62	0
8	2GO	M	403	66/66	0.98	0.15	33,41,128,145	0
8	2GO	M	404	66/66	0.98	0.17	39,48,98,121	0
8	2GO	L	305	66/66	0.98	0.18	37,44,61,77	0
11	FE	M	407	1/1	0.99	0.16	40,40,40,40	0

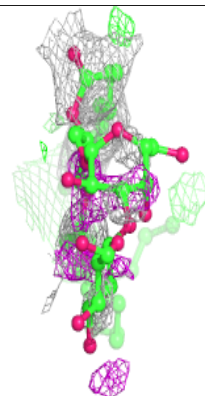
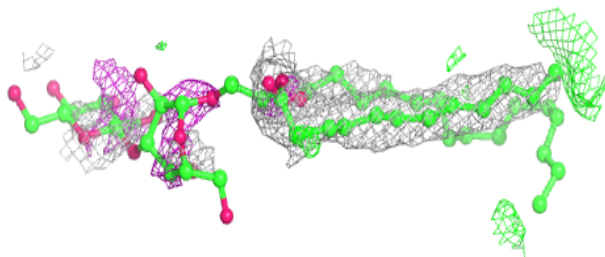
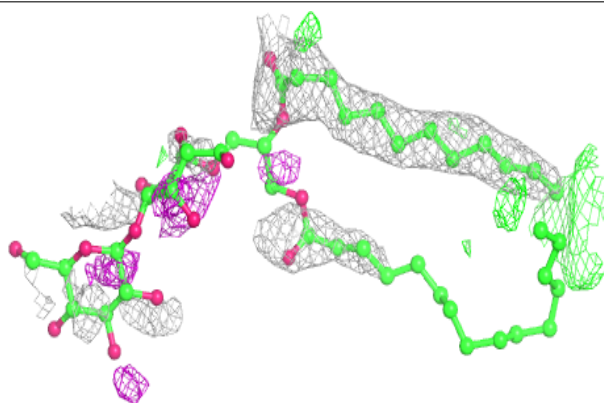
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around PC1 M 411:

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

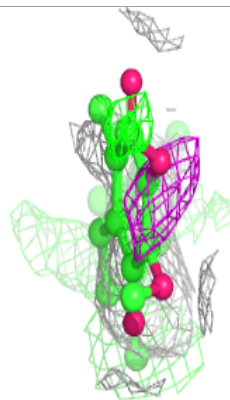
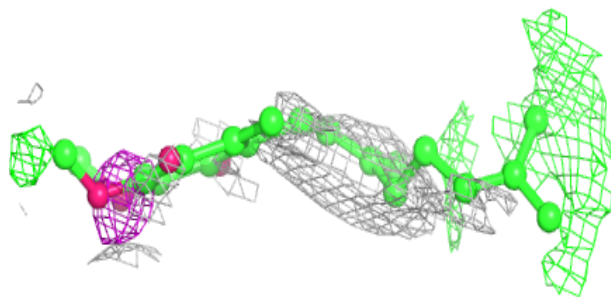
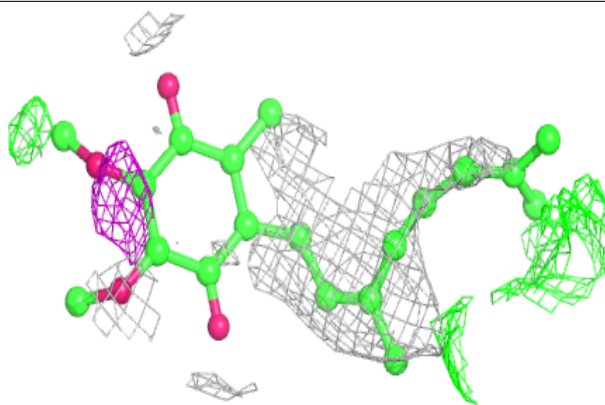
**Electron density around GGD H 306:**

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

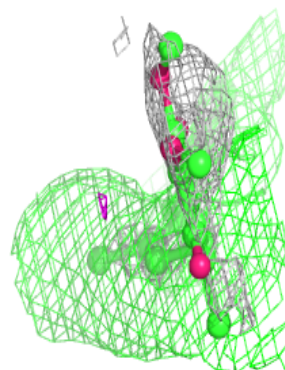
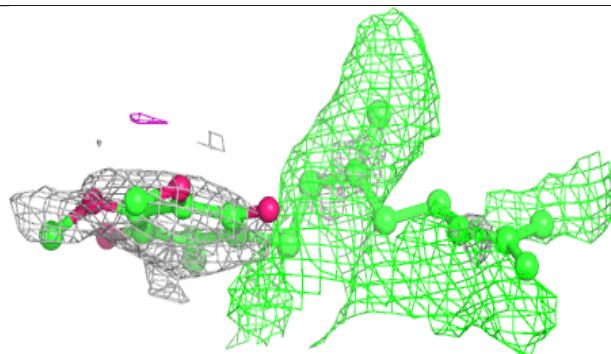
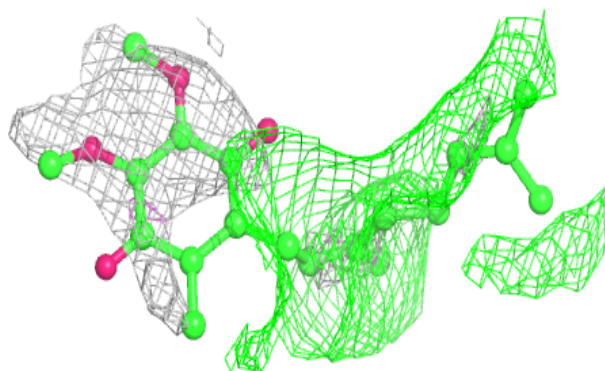


Electron density around U10 L 304 (A):

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

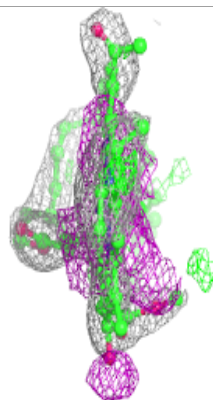
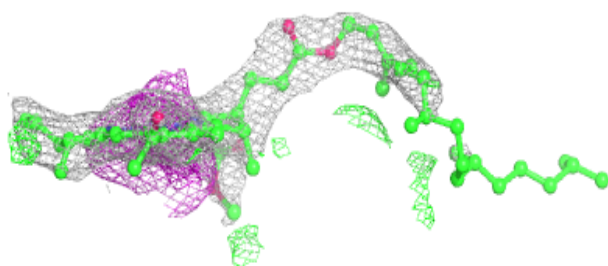
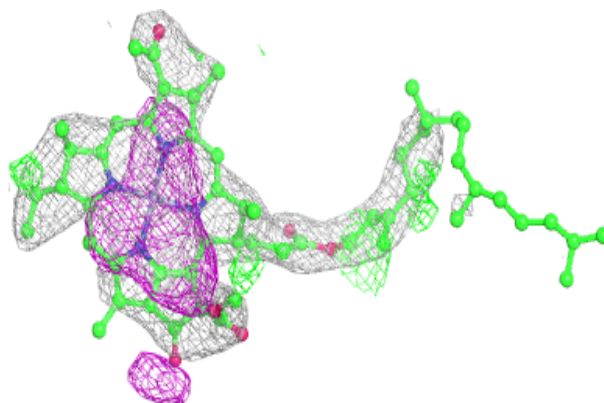
**Electron density around U10 L 304 (B):**

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

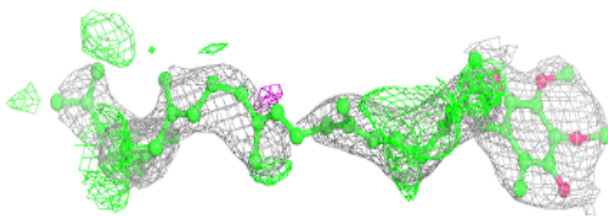
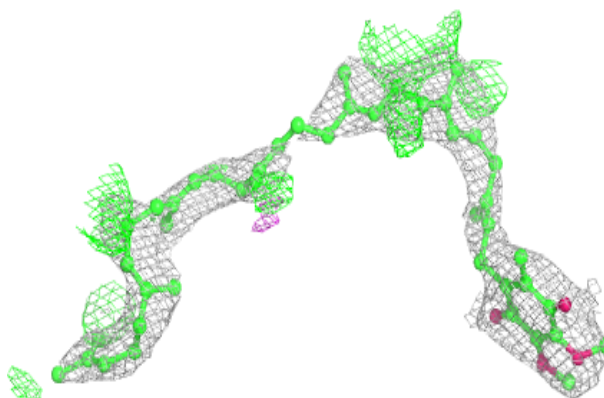


Electron density around 2GO L 311:

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

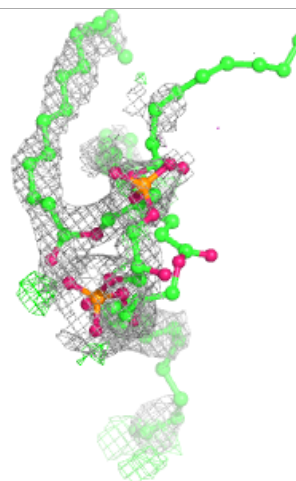
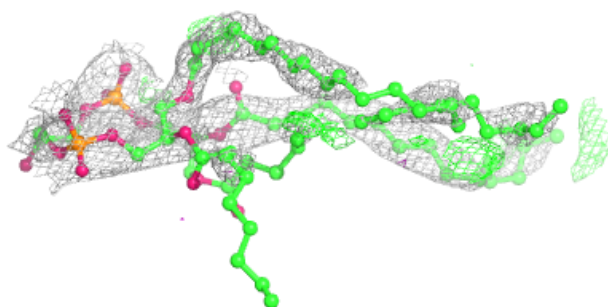
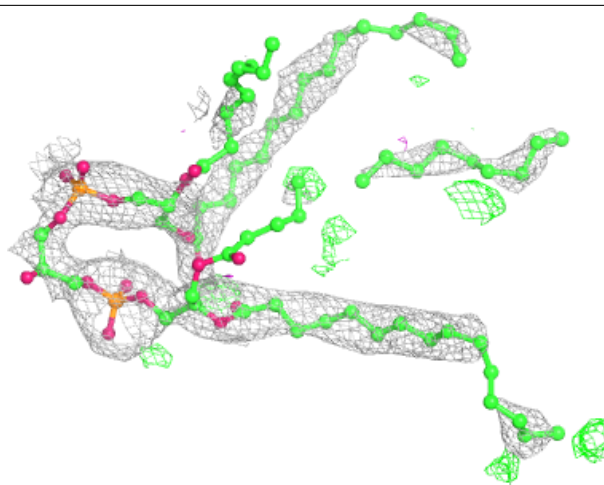
**Electron density around U10 M 408:**

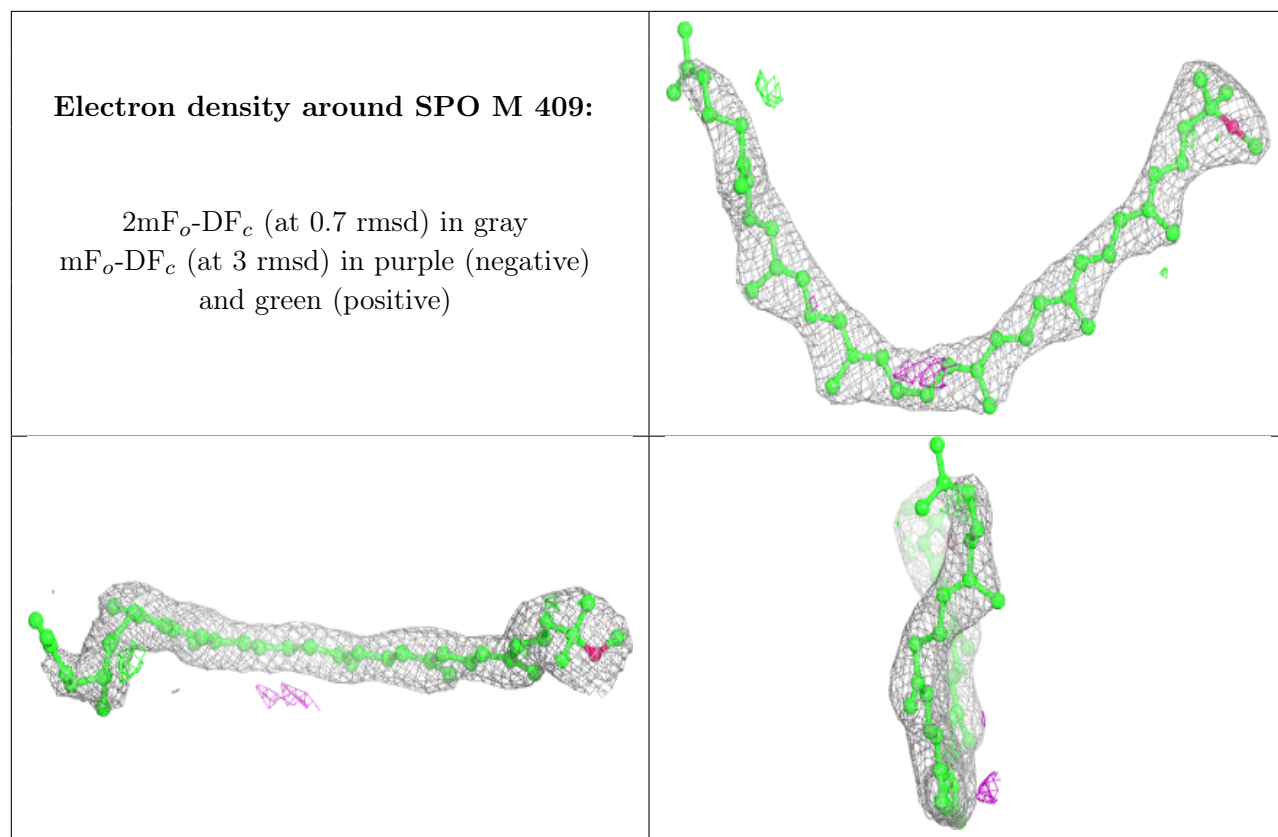
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around CDL M 410:

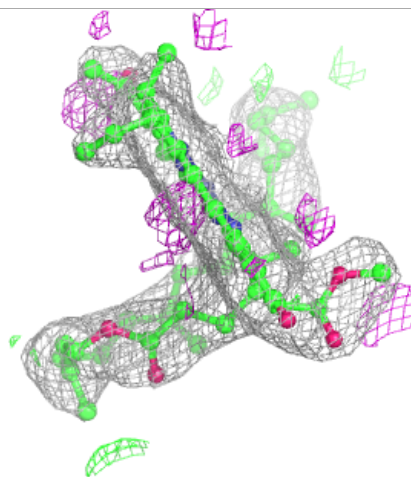
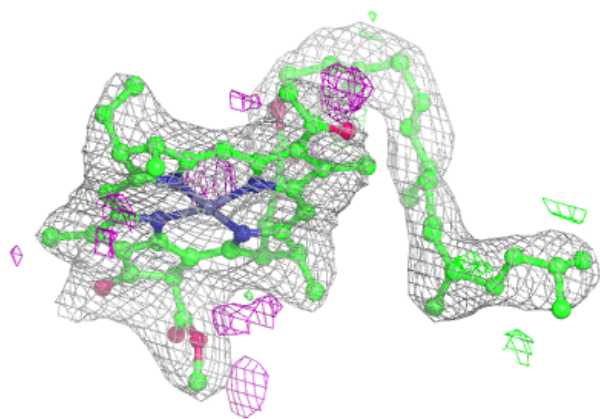
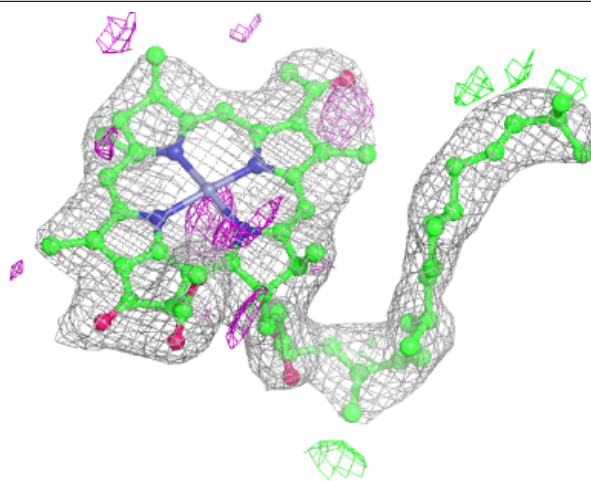
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





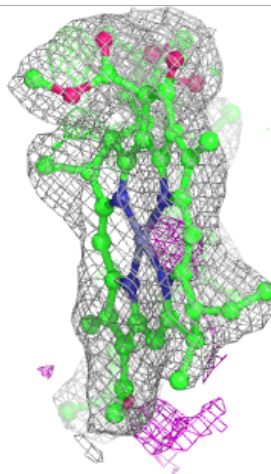
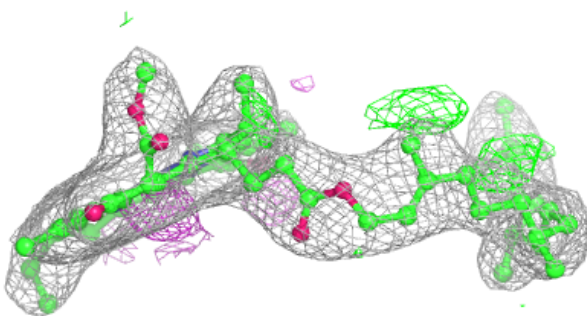
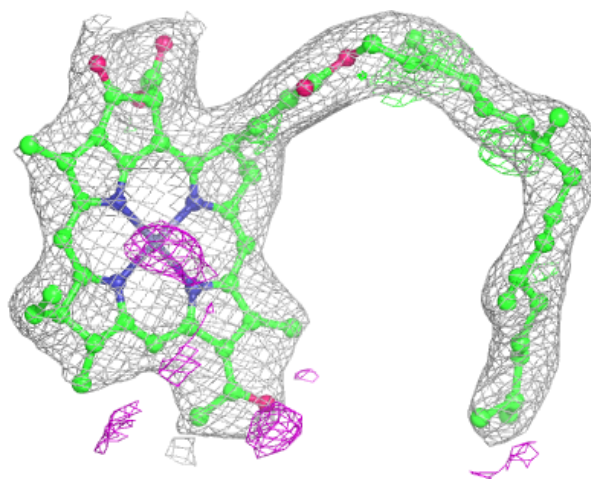
Electron density around 2GO M 401:

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



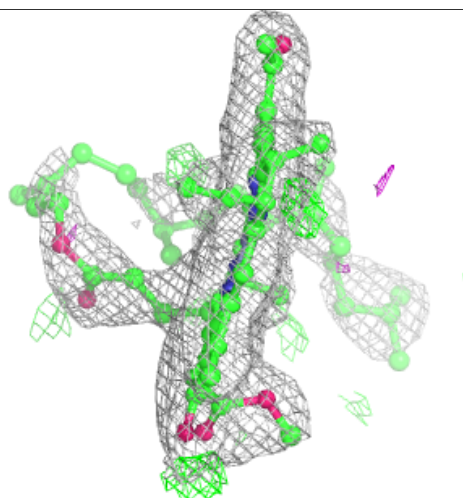
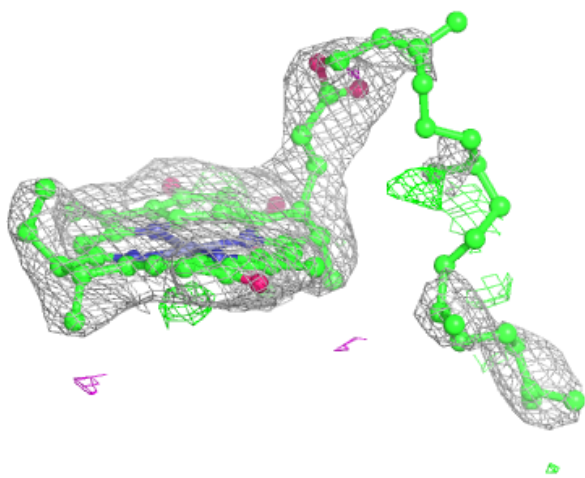
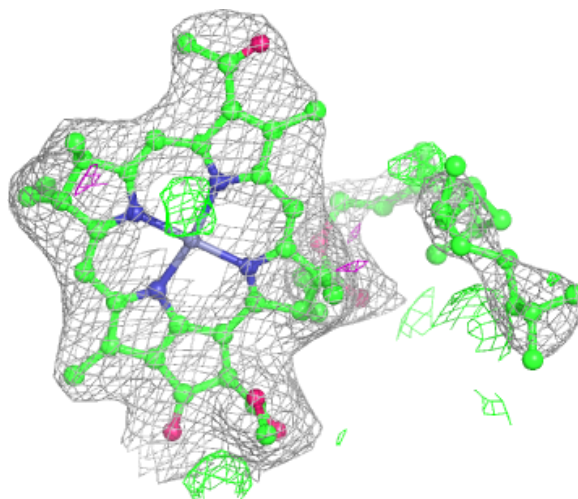
Electron density around 2GO M 402:

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



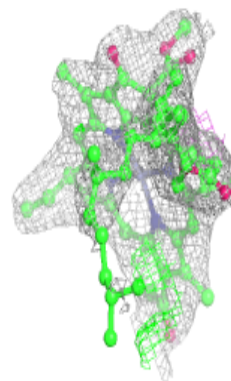
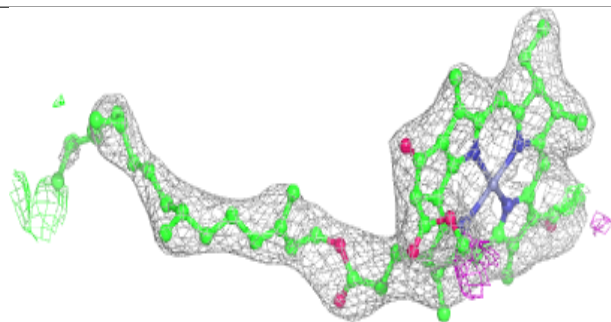
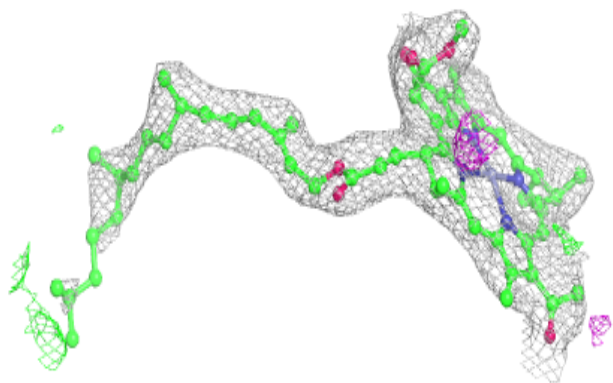
Electron density around 2GO M 403:

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

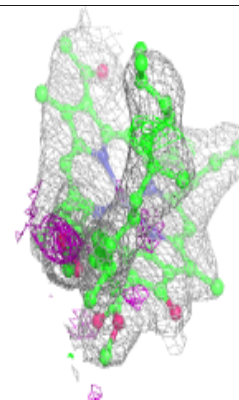
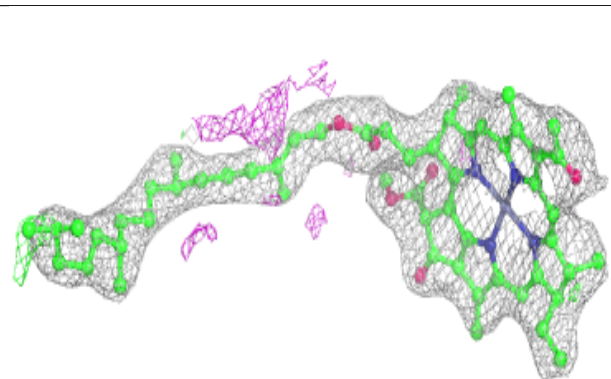
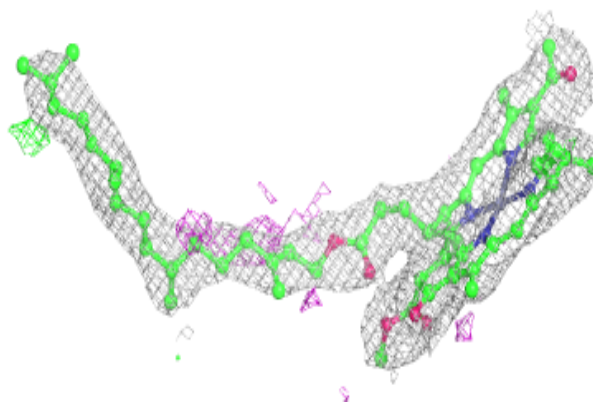


Electron density around 2GO M 404:

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

**Electron density around 2GO L 305:**

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



6.5 Other polymers [i](#)

There are no such residues in this entry.