Full wwPDB EM Validation Report ⓘ

May 20, 2025 – 05:09 PM EDT

PDB ID	:	9BWG / pdb_00009bwg
EMDB ID	:	EMD-44974
Title	:	Homomeric alpha3 glycine receptor in the presence of 0.1 mM glycine and 0.1 mM zinc in a desensitized state
Authors	:	Kindig, K.; Gibbs, E.; Chakrapani, S.
Deposited on	:	2024-05-21
Resolution	:	2.59 Å(reported)

This is a Full wwPDB EM 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/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:

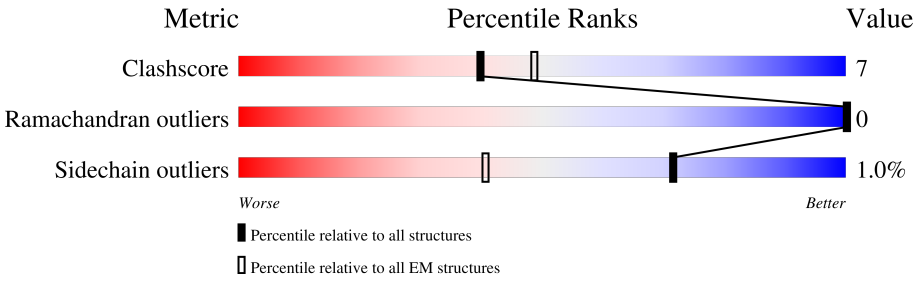
EMDB validation analysis	:	0.0.1.dev118
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0rc1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

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 2.59 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)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	478	58% 14% 28%
1	B	478	58% 14% 28%
1	C	478	58% 14% 28%
1	D	478	60% 12% 28%
1	E	478	58% 14% 28%
2	F	2	50% 50%
2	G	2	50% 50%
2	H	2	50% 50%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
2	I	2	50% 50%
2	J	2	50% 50%

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 14810 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 Glycine receptor subunit alpha-3.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	346	Total	C	N	O	S	0	0
			2822	1838	461	503	20		
1	B	346	Total	C	N	O	S	0	0
			2822	1838	461	503	20		
1	C	346	Total	C	N	O	S	0	0
			2822	1838	461	503	20		
1	D	346	Total	C	N	O	S	0	0
			2822	1838	461	503	20		
1	E	346	Total	C	N	O	S	0	0
			2822	1838	461	503	20		

There are 70 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	432	LEU	-	expression tag	UNP O75311
A	433	VAL	-	expression tag	UNP O75311
A	434	PRO	-	expression tag	UNP O75311
A	435	ARG	-	expression tag	UNP O75311
A	436	GLY	-	expression tag	UNP O75311
A	437	SER	-	expression tag	UNP O75311
A	438	HIS	-	expression tag	UNP O75311
A	439	HIS	-	expression tag	UNP O75311
A	440	HIS	-	expression tag	UNP O75311
A	441	HIS	-	expression tag	UNP O75311
A	442	HIS	-	expression tag	UNP O75311
A	443	HIS	-	expression tag	UNP O75311
A	444	HIS	-	expression tag	UNP O75311
A	445	HIS	-	expression tag	UNP O75311
B	432	LEU	-	expression tag	UNP O75311
B	433	VAL	-	expression tag	UNP O75311
B	434	PRO	-	expression tag	UNP O75311
B	435	ARG	-	expression tag	UNP O75311
B	436	GLY	-	expression tag	UNP O75311
B	437	SER	-	expression tag	UNP O75311

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
B	438	HIS	-	expression tag	UNP O75311
B	439	HIS	-	expression tag	UNP O75311
B	440	HIS	-	expression tag	UNP O75311
B	441	HIS	-	expression tag	UNP O75311
B	442	HIS	-	expression tag	UNP O75311
B	443	HIS	-	expression tag	UNP O75311
B	444	HIS	-	expression tag	UNP O75311
B	445	HIS	-	expression tag	UNP O75311
C	432	LEU	-	expression tag	UNP O75311
C	433	VAL	-	expression tag	UNP O75311
C	434	PRO	-	expression tag	UNP O75311
C	435	ARG	-	expression tag	UNP O75311
C	436	GLY	-	expression tag	UNP O75311
C	437	SER	-	expression tag	UNP O75311
C	438	HIS	-	expression tag	UNP O75311
C	439	HIS	-	expression tag	UNP O75311
C	440	HIS	-	expression tag	UNP O75311
C	441	HIS	-	expression tag	UNP O75311
C	442	HIS	-	expression tag	UNP O75311
C	443	HIS	-	expression tag	UNP O75311
C	444	HIS	-	expression tag	UNP O75311
C	445	HIS	-	expression tag	UNP O75311
D	432	LEU	-	expression tag	UNP O75311
D	433	VAL	-	expression tag	UNP O75311
D	434	PRO	-	expression tag	UNP O75311
D	435	ARG	-	expression tag	UNP O75311
D	436	GLY	-	expression tag	UNP O75311
D	437	SER	-	expression tag	UNP O75311
D	438	HIS	-	expression tag	UNP O75311
D	439	HIS	-	expression tag	UNP O75311
D	440	HIS	-	expression tag	UNP O75311
D	441	HIS	-	expression tag	UNP O75311
D	442	HIS	-	expression tag	UNP O75311
D	443	HIS	-	expression tag	UNP O75311
D	444	HIS	-	expression tag	UNP O75311
D	445	HIS	-	expression tag	UNP O75311
E	432	LEU	-	expression tag	UNP O75311
E	433	VAL	-	expression tag	UNP O75311
E	434	PRO	-	expression tag	UNP O75311
E	435	ARG	-	expression tag	UNP O75311
E	436	GLY	-	expression tag	UNP O75311
E	437	SER	-	expression tag	UNP O75311

Continued on next page...

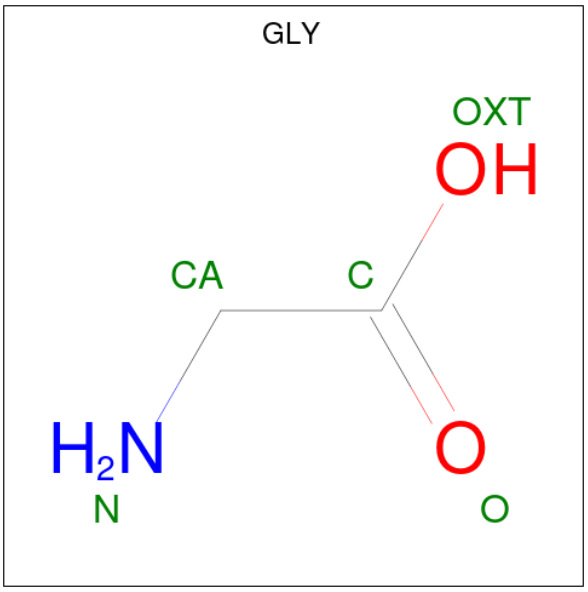
Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
E	438	HIS	-	expression tag	UNP O75311
E	439	HIS	-	expression tag	UNP O75311
E	440	HIS	-	expression tag	UNP O75311
E	441	HIS	-	expression tag	UNP O75311
E	442	HIS	-	expression tag	UNP O75311
E	443	HIS	-	expression tag	UNP O75311
E	444	HIS	-	expression tag	UNP O75311
E	445	HIS	-	expression tag	UNP O75311

- Molecule 2 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				AltConf	Trace
2	F	2	Total	C	N	O	0	0
			28	16	2	10		
2	G	2	Total	C	N	O	0	0
			28	16	2	10		
2	H	2	Total	C	N	O	0	0
			28	16	2	10		
2	I	2	Total	C	N	O	0	0
			28	16	2	10		
2	J	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 3 is GLYCINE (CCD ID: GLY) (formula: $C_2H_5NO_2$) (labeled as "Ligand of Interest" by depositor).

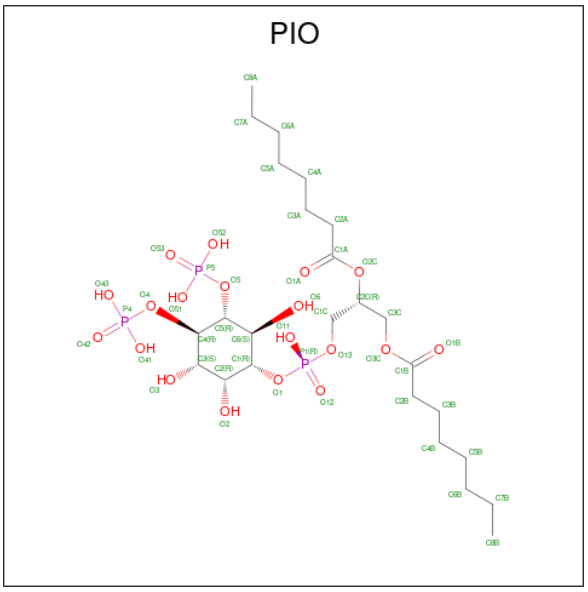


Mol	Chain	Residues	Atoms	AltConf
3	A	1	Total C N O 5 2 1 2	0
3	A	1	Total C N O 5 2 1 2	0
3	B	1	Total C N O 5 2 1 2	0
3	C	1	Total C N O 5 2 1 2	0
3	D	1	Total C N O 5 2 1 2	0

- Molecule 4 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
4	A	2	Total Zn 2 2	0
4	B	2	Total Zn 2 2	0
4	C	2	Total Zn 2 2	0
4	D	2	Total Zn 2 2	0
4	E	2	Total Zn 2 2	0

- Molecule 5 is [(2R)-2-octanoyloxy-3-[oxidanyl-[(1R,2R,3S,4R,5R,6S)-2,3,6-tris(oxidanyl)-4,5-diphosphonooxy-cyclohexyl]oxy-phosphoryl]oxy-propyl] octanoate (CCD ID: PIO) (formula: $C_{25}H_{49}O_{19}P_3$).



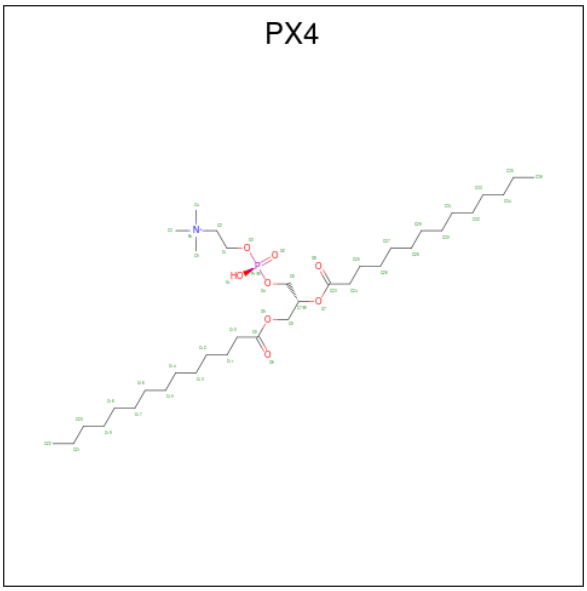
Mol	Chain	Residues	Atoms			AltConf
5	A	1	Total	C	O	0
			8	6	2	
5	A	1	Total	C	O	0
			10	8	2	
5	A	1	Total	C	O	0
			8	6	2	
5	A	1	Total	C	O	0
			10	8	2	
5	A	1	Total	C	O	0
			8	6	2	
5	B	1	Total	C	O	0
			8	6	2	
5	B	1	Total	C	O	0
			10	8	2	
5	B	1	Total	C	O	0
			8	6	2	
5	B	1	Total	C	O	0
			10	8	2	
5	B	1	Total	C	O	0
			8	6	2	
5	C	1	Total	C	O	0
			8	6	2	
5	C	1	Total	C	O	0
			10	8	2	
5	C	1	Total	C	O	0
			8	6	2	
5	C	1	Total	C	O	0
			10	8	2	

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms			AltConf
5	C	1	Total 8	C 6	O 2	0
5	D	1	Total 8	C 6	O 2	0
5	D	1	Total 10	C 8	O 2	0
5	D	1	Total 8	C 6	O 2	0
5	D	1	Total 10	C 8	O 2	0
5	D	1	Total 8	C 6	O 2	0
5	E	1	Total 8	C 6	O 2	0
5	E	1	Total 8	C 6	O 2	0
5	E	1	Total 10	C 8	O 2	0
5	E	1	Total 8	C 6	O 2	0
5	E	1	Total 10	C 8	O 2	0

- Molecule 6 is 1,2-DIMYRISTOYL-SN-GLYCERO-3-PHOSPHOCHOLINE (CCD ID: PX4) (formula: $C_{36}H_{73}NO_8P$).



Mol	Chain	Residues	Atoms	AltConf
6	A	1	Total C O 14 12 2	0
6	A	1	Total C O 14 12 2	0
6	A	1	Total C O 16 14 2	0
6	A	1	Total C O 14 12 2	0
6	B	1	Total C O 14 12 2	0
6	B	1	Total C O 14 12 2	0
6	B	1	Total C O 16 14 2	0
6	B	1	Total C O 14 12 2	0
6	C	1	Total C O 14 12 2	0
6	C	1	Total C O 14 12 2	0
6	C	1	Total C O 16 14 2	0
6	C	1	Total C O 14 12 2	0
6	D	1	Total C O 14 12 2	0
6	D	1	Total C O 14 12 2	0
6	D	1	Total C O 16 14 2	0
6	D	1	Total C O 14 12 2	0
6	E	1	Total C O 14 12 2	0
6	E	1	Total C O 16 14 2	0
6	E	1	Total C O 14 12 2	0
6	E	1	Total C O 14 12 2	0

- Molecule 7 is water.

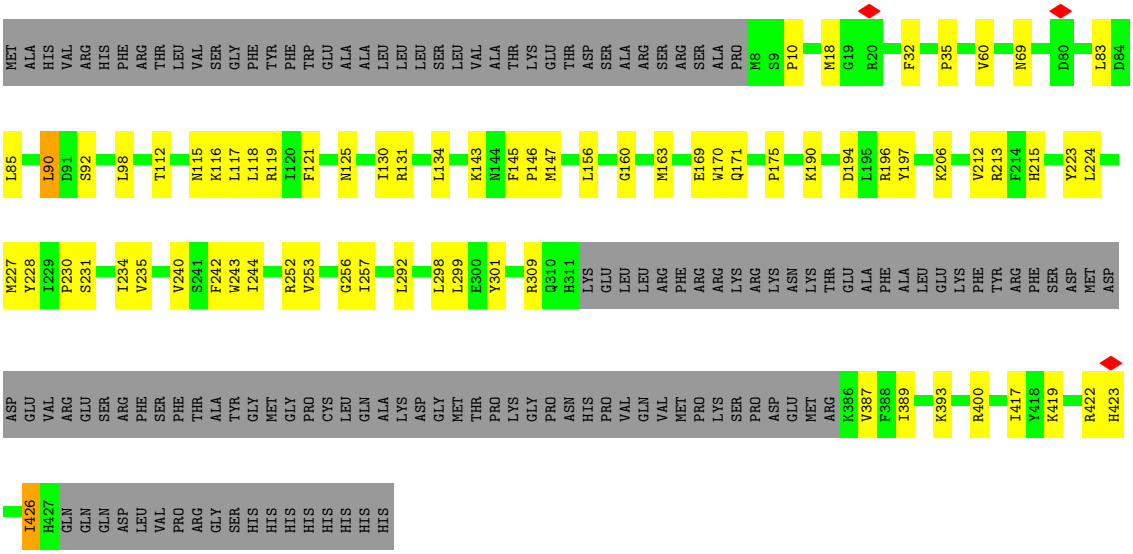
Mol	Chain	Residues	Atoms	AltConf
7	A	3	Total O 3 3	0
7	B	3	Total O 3 3	0
7	C	3	Total O 3 3	0
7	D	3	Total O 3 3	0
7	E	3	Total O 3 3	0

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.

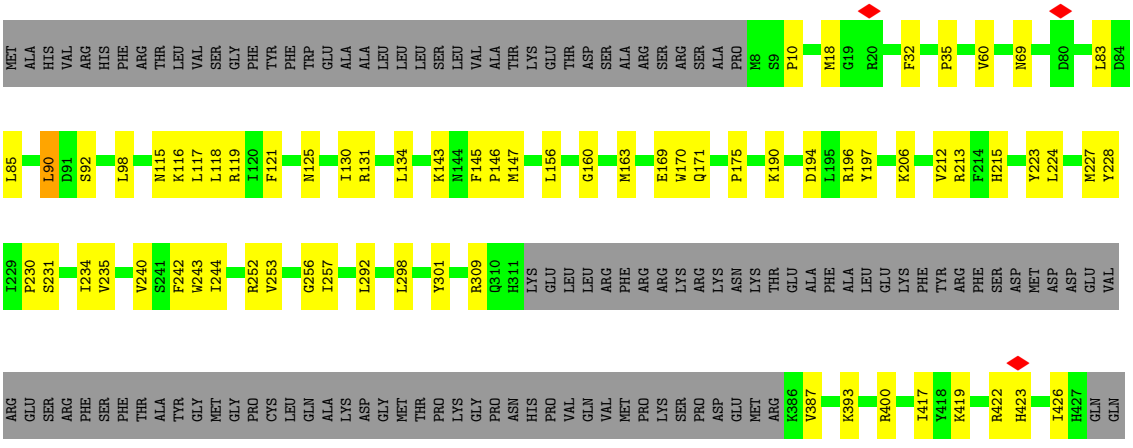
• Molecule 1: Glycine receptor subunit alpha-3

Chain A:



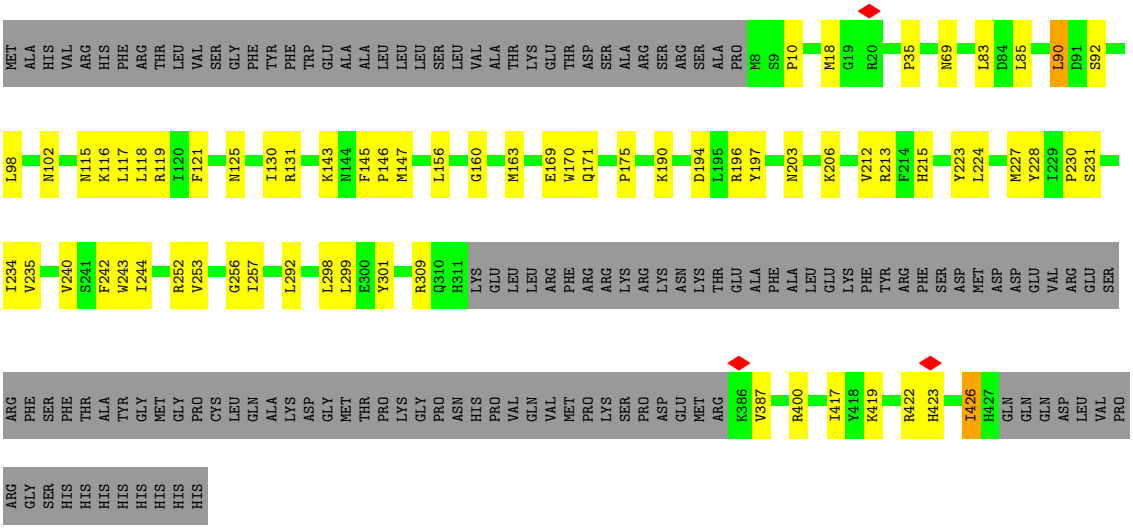
• Molecule 1: Glycine receptor subunit alpha-3

Chain B:



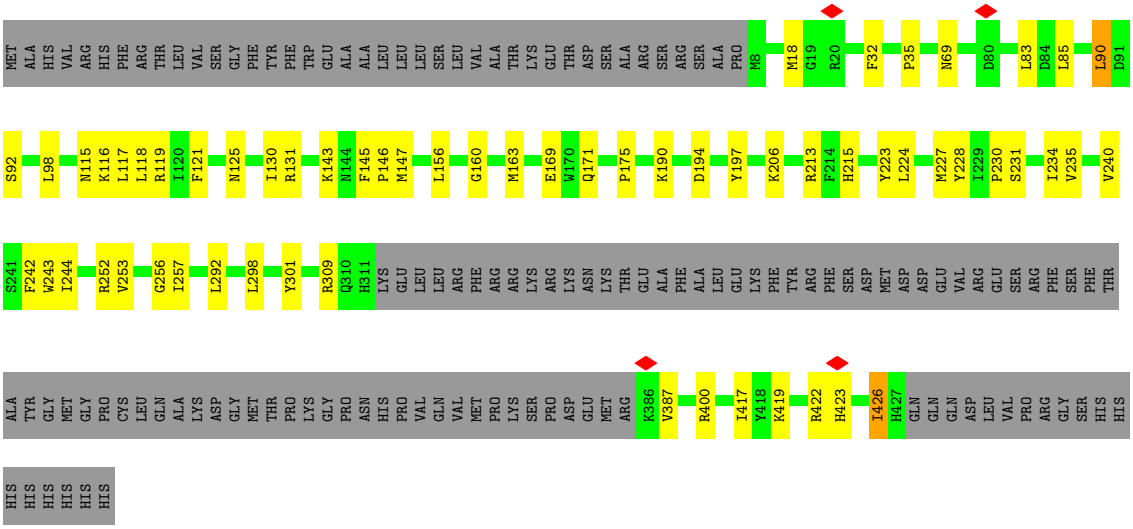
• Molecule 1: Glycine receptor subunit alpha-3

Chain C:



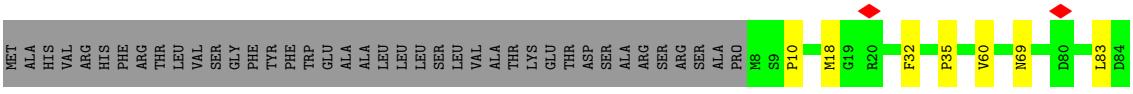
• Molecule 1: Glycine receptor subunit alpha-3

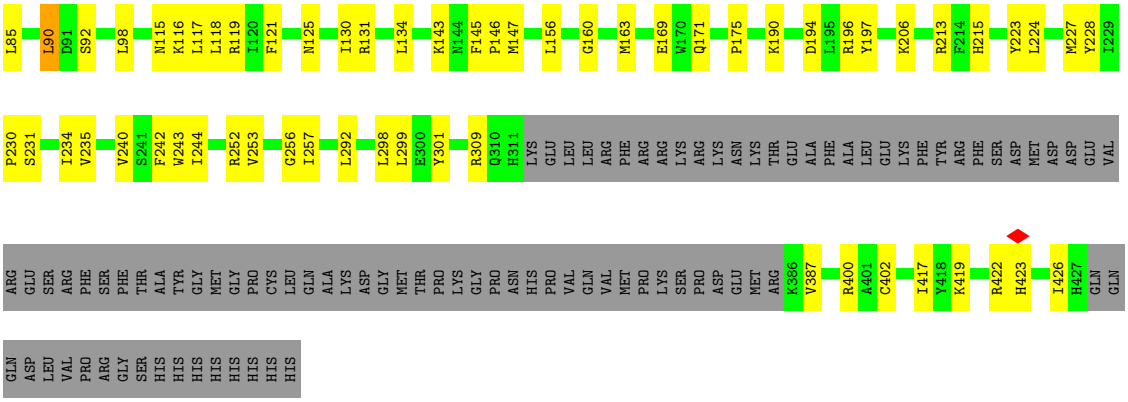
Chain D:



• Molecule 1: Glycine receptor subunit alpha-3

Chain E:





• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F:

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G:

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H:

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain I:

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C5	Depositor
Number of particles used	32894	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	60	Depositor
Minimum defocus (nm)	750	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.077	Depositor
Minimum map value	-0.026	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.011	Depositor
Map size (Å)	251.99998, 251.99998, 251.99998	wwPDB
Map dimensions	300, 300, 300	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: ZN, NAG, PX4, PIO

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	0.39	0/2895	0.66	5/3928 (0.1%)
1	B	0.39	0/2895	0.66	5/3928 (0.1%)
1	C	0.39	0/2895	0.66	5/3928 (0.1%)
1	D	0.39	0/2895	0.66	5/3928 (0.1%)
1	E	0.39	0/2895	0.66	5/3928 (0.1%)
All	All	0.39	0/14475	0.66	25/19640 (0.1%)

There are no bond length outliers.

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	145	PHE	CA-C-N	-7.01	112.58	119.87
1	C	145	PHE	C-N-CA	-7.01	112.58	119.87
1	A	145	PHE	CA-C-N	-7.00	112.59	119.87
1	A	145	PHE	C-N-CA	-7.00	112.59	119.87
1	D	145	PHE	CA-C-N	-6.96	112.63	119.87
1	D	145	PHE	C-N-CA	-6.96	112.63	119.87
1	E	145	PHE	CA-C-N	-6.96	112.63	119.87
1	E	145	PHE	C-N-CA	-6.96	112.63	119.87
1	B	145	PHE	CA-C-N	-6.95	112.64	119.87
1	B	145	PHE	C-N-CA	-6.95	112.64	119.87
1	D	423	HIS	N-CA-C	-6.15	105.81	113.38
1	C	423	HIS	N-CA-C	-6.13	105.83	113.38
1	B	423	HIS	N-CA-C	-6.13	105.84	113.38
1	A	423	HIS	N-CA-C	-6.13	105.84	113.38
1	E	423	HIS	N-CA-C	-6.12	105.85	113.38
1	E	143	LYS	N-CA-C	-5.93	102.29	110.35
1	B	143	LYS	N-CA-C	-5.90	102.32	110.35
1	C	143	LYS	N-CA-C	-5.90	102.32	110.35
1	A	143	LYS	N-CA-C	-5.90	102.33	110.35

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	143	LYS	N-CA-C	-5.87	102.36	110.35
1	D	143	LYS	CA-C-O	-5.12	116.12	121.55
1	A	143	LYS	CA-C-O	-5.09	116.15	121.55
1	C	143	LYS	CA-C-O	-5.09	116.15	121.55
1	B	143	LYS	CA-C-O	-5.08	116.17	121.55
1	E	143	LYS	CA-C-O	-5.05	116.20	121.55

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2822	0	2815	48	0
1	B	2822	0	2815	43	0
1	C	2822	0	2815	44	0
1	D	2822	0	2815	39	0
1	E	2822	0	2815	44	0
2	F	28	0	25	1	0
2	G	28	0	25	1	0
2	H	28	0	25	1	0
2	I	28	0	25	1	0
2	J	28	0	25	1	0
3	A	10	0	4	0	0
3	B	5	0	2	0	0
3	C	5	0	2	0	0
3	D	5	0	2	0	0
4	A	2	0	0	0	0
4	B	2	0	0	0	0
4	C	2	0	0	0	0
4	D	2	0	0	0	0
4	E	2	0	0	0	0
5	A	44	0	54	0	0
5	B	44	0	54	0	0
5	C	44	0	54	0	0
5	D	44	0	54	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	E	44	0	54	0	0
6	A	58	0	87	6	0
6	B	58	0	87	5	0
6	C	58	0	87	4	0
6	D	58	0	87	6	0
6	E	58	0	87	6	0
7	A	3	0	0	0	0
7	B	3	0	0	0	0
7	C	3	0	0	0	0
7	D	3	0	0	0	0
7	E	3	0	0	0	0
All	All	14810	0	14915	204	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 7.

All (204) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:292:LEU:HD23	6:D:510:PX4:H71	1.27	1.12
1:B:292:LEU:HD23	6:B:510:PX4:H71	1.26	1.12
1:E:292:LEU:HD23	6:E:604:PX4:H71	1.40	1.04
1:A:292:LEU:HD23	6:A:511:PX4:H71	1.44	0.98
1:B:292:LEU:HD23	6:B:510:PX4:C36	1.93	0.98
1:C:292:LEU:HD23	6:C:510:PX4:H71	1.45	0.97
1:D:292:LEU:HD23	6:D:510:PX4:C36	1.95	0.95
1:E:292:LEU:HD23	6:E:604:PX4:C36	2.09	0.80
1:C:292:LEU:HD23	6:C:510:PX4:C36	2.11	0.80
1:A:292:LEU:HD23	6:A:511:PX4:C36	2.11	0.80
1:B:292:LEU:CD2	6:B:510:PX4:H71	2.09	0.79
1:E:163:MET:HG3	1:E:206:LYS:HE3	1.67	0.76
1:D:163:MET:HG3	1:D:206:LYS:HE3	1.67	0.76
1:D:292:LEU:CD2	6:D:510:PX4:H71	2.10	0.75
1:C:163:MET:HG3	1:C:206:LYS:HE3	1.67	0.74
1:A:163:MET:HG3	1:A:206:LYS:HE3	1.67	0.74
1:B:163:MET:HG3	1:B:206:LYS:HE3	1.67	0.74
1:D:224:LEU:HA	1:D:228:TYR:HB2	1.74	0.70
1:E:224:LEU:HA	1:E:228:TYR:HB2	1.74	0.70
1:C:224:LEU:HA	1:C:228:TYR:HB2	1.74	0.69
1:B:224:LEU:HA	1:B:228:TYR:HB2	1.74	0.69
1:A:224:LEU:HA	1:A:228:TYR:HB2	1.74	0.68

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:417:ILE:HD11	6:A:512:PX4:H21	1.78	0.66
1:E:292:LEU:CD2	6:E:604:PX4:H71	2.22	0.65
1:E:417:ILE:HD11	6:E:605:PX4:H21	1.79	0.63
1:C:292:LEU:CD2	6:C:510:PX4:H71	2.26	0.63
1:C:309:ARG:NH2	1:D:243:TRP:O	2.31	0.62
1:A:115:ASN:HD22	1:A:131:ARG:HD3	1.66	0.61
1:C:115:ASN:HD22	1:C:131:ARG:HD3	1.66	0.61
1:A:292:LEU:CD2	6:A:511:PX4:H71	2.25	0.61
1:A:160:GLY:HA2	1:B:117:LEU:HD12	1.83	0.61
1:D:242:PHE:O	1:D:400:ARG:NH1	2.35	0.60
1:B:115:ASN:HD22	1:B:131:ARG:HD3	1.65	0.60
1:B:242:PHE:O	1:B:400:ARG:NH1	2.35	0.60
1:E:115:ASN:HD22	1:E:131:ARG:HD3	1.66	0.60
1:C:417:ILE:HD11	6:C:511:PX4:H21	1.83	0.60
1:D:115:ASN:HD22	1:D:131:ARG:HD3	1.66	0.60
1:A:242:PHE:O	1:A:400:ARG:NH1	2.35	0.59
1:E:242:PHE:O	1:E:400:ARG:NH1	2.35	0.59
1:C:242:PHE:O	1:C:400:ARG:NH1	2.35	0.59
1:D:160:GLY:HA2	1:E:117:LEU:HD12	1.85	0.57
1:D:417:ILE:HD11	6:D:511:PX4:H21	1.86	0.57
1:A:309:ARG:NH2	1:B:243:TRP:O	2.39	0.56
1:A:35:PRO:HG2	2:F:1:NAG:H83	1.89	0.55
1:C:35:PRO:HG2	2:H:1:NAG:H83	1.89	0.55
1:B:35:PRO:HG2	2:G:1:NAG:H83	1.89	0.55
1:E:35:PRO:HG2	2:J:1:NAG:H83	1.89	0.55
1:B:419:LYS:HZ2	1:B:422:ARG:HH11	1.55	0.55
1:D:35:PRO:HG2	2:I:1:NAG:H83	1.89	0.54
1:A:230:PRO:O	1:A:234:ILE:HG12	2.08	0.54
1:D:230:PRO:O	1:D:234:ILE:HG12	2.08	0.54
1:C:230:PRO:O	1:C:234:ILE:HG12	2.08	0.54
1:A:223:TYR:HD1	1:A:227:MET:HE2	1.73	0.54
1:D:223:TYR:HD1	1:D:227:MET:HE2	1.73	0.54
1:A:419:LYS:HZ2	1:A:422:ARG:HH11	1.56	0.53
1:C:223:TYR:HD1	1:C:227:MET:HE2	1.73	0.53
1:E:230:PRO:O	1:E:234:ILE:HG12	2.08	0.53
1:B:160:GLY:HA2	1:C:117:LEU:HD12	1.90	0.53
1:B:417:ILE:HD11	6:B:511:PX4:H21	1.89	0.53
1:B:230:PRO:O	1:B:234:ILE:HG12	2.08	0.53
1:E:223:TYR:HD1	1:E:227:MET:HE2	1.73	0.52
1:A:243:TRP:O	1:E:309:ARG:NH2	2.42	0.52
1:B:223:TYR:HD1	1:B:227:MET:HE2	1.73	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:146:PRO:HG2	1:C:147:MET:HE2	1.91	0.52
1:B:419:LYS:NZ	1:B:422:ARG:HH11	2.08	0.52
1:C:419:LYS:NZ	1:C:422:ARG:HH11	2.08	0.52
1:A:419:LYS:NZ	1:A:422:ARG:HH11	2.08	0.52
1:C:169:GLU:OE1	1:C:197:TYR:OH	2.28	0.52
1:E:146:PRO:HG2	1:E:147:MET:HE2	1.91	0.52
1:A:146:PRO:HG2	1:A:147:MET:HE2	1.91	0.51
1:D:419:LYS:NZ	1:D:422:ARG:HH11	2.08	0.51
1:B:169:GLU:OE1	1:B:197:TYR:OH	2.28	0.51
1:E:169:GLU:OE1	1:E:197:TYR:OH	2.28	0.51
1:A:169:GLU:OE1	1:A:197:TYR:OH	2.28	0.51
1:E:419:LYS:NZ	1:E:422:ARG:HH11	2.08	0.51
1:B:309:ARG:NH2	1:C:243:TRP:O	2.43	0.51
1:D:146:PRO:HG2	1:D:147:MET:HE2	1.91	0.51
1:D:169:GLU:OE1	1:D:197:TYR:OH	2.28	0.51
1:A:69:ASN:ND2	1:A:125:ASN:OD1	2.36	0.51
1:B:146:PRO:HG2	1:B:147:MET:HE2	1.91	0.50
1:C:160:GLY:HA2	1:D:117:LEU:HD12	1.93	0.50
1:C:98:LEU:HD11	1:C:156:LEU:HD23	1.94	0.50
1:D:98:LEU:HD11	1:D:156:LEU:HD23	1.94	0.50
1:E:98:LEU:HD11	1:E:156:LEU:HD23	1.94	0.50
1:A:90:LEU:HD11	1:A:118:LEU:HB2	1.94	0.50
1:E:116:LYS:HG2	1:E:130:ILE:HD12	1.94	0.49
1:A:116:LYS:HG2	1:A:130:ILE:HD12	1.94	0.49
1:C:116:LYS:HG2	1:C:130:ILE:HD12	1.94	0.49
1:A:98:LEU:HD11	1:A:156:LEU:HD23	1.94	0.49
1:B:98:LEU:HD11	1:B:156:LEU:HD23	1.94	0.49
1:D:116:LYS:HG2	1:D:130:ILE:HD12	1.94	0.49
1:A:117:LEU:HD12	1:E:160:GLY:HA2	1.93	0.49
6:A:509:PX4:H62	1:E:299:LEU:HD22	1.95	0.49
1:D:90:LEU:HD11	1:D:118:LEU:HB2	1.94	0.49
1:E:90:LEU:HD11	1:E:118:LEU:HB2	1.94	0.48
1:E:419:LYS:HA	1:E:422:ARG:HG2	1.95	0.48
1:C:90:LEU:HD11	1:C:118:LEU:HB2	1.94	0.48
1:D:309:ARG:NH2	1:E:243:TRP:O	2.45	0.48
1:A:419:LYS:HA	1:A:422:ARG:HG2	1.95	0.48
1:B:90:LEU:HD11	1:B:118:LEU:HB2	1.94	0.48
1:D:419:LYS:HA	1:D:422:ARG:HG2	1.95	0.48
1:B:116:LYS:HG2	1:B:130:ILE:HD12	1.94	0.47
1:C:419:LYS:HA	1:C:422:ARG:HG2	1.95	0.47
1:B:419:LYS:HA	1:B:422:ARG:HG2	1.95	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:393:LYS:HE3	1:B:393:LYS:HB2	1.76	0.47
1:B:69:ASN:ND2	1:B:125:ASN:OD1	2.36	0.46
1:C:83:LEU:HD13	1:C:85:LEU:HD21	1.98	0.46
1:E:18:MET:HE3	1:E:92:SER:OG	2.16	0.46
1:E:69:ASN:ND2	1:E:125:ASN:OD1	2.36	0.46
1:C:83:LEU:HD23	1:C:83:LEU:HA	1.83	0.46
1:A:18:MET:HE3	1:A:92:SER:OG	2.16	0.45
1:B:18:MET:HE3	1:B:92:SER:OG	2.16	0.45
1:D:18:MET:HE3	1:D:92:SER:OG	2.16	0.45
1:D:32:PHE:CE2	1:E:10:PRO:HB3	2.51	0.45
1:C:18:MET:HE3	1:C:92:SER:OG	2.16	0.45
1:C:69:ASN:ND2	1:C:125:ASN:OD1	2.36	0.45
1:D:83:LEU:HD13	1:D:85:LEU:HD21	1.98	0.45
1:A:83:LEU:HD13	1:A:85:LEU:HD21	1.98	0.45
1:D:83:LEU:HD23	1:D:83:LEU:HA	1.83	0.45
1:B:83:LEU:HD13	1:B:85:LEU:HD21	1.98	0.45
1:A:240:VAL:O	1:A:244:ILE:HG12	2.17	0.45
1:E:240:VAL:O	1:E:244:ILE:HG12	2.17	0.45
1:D:190:LYS:HG3	1:D:215:HIS:HB2	1.99	0.45
1:C:119:ARG:HB3	1:C:121:PHE:HE1	1.83	0.44
1:E:83:LEU:HD13	1:E:85:LEU:HD21	1.98	0.44
1:D:240:VAL:O	1:D:244:ILE:HG12	2.17	0.44
1:E:419:LYS:HZ2	1:E:422:ARG:HH11	1.64	0.44
1:B:171:GLN:O	1:B:175:PRO:HG3	2.18	0.44
1:B:196:ARG:HD3	1:B:196:ARG:HA	1.78	0.44
1:D:252:ARG:HD3	1:D:301:TYR:CE1	2.53	0.44
1:E:252:ARG:HD3	1:E:301:TYR:CE1	2.53	0.44
1:B:119:ARG:HB3	1:B:121:PHE:HE1	1.83	0.44
1:B:240:VAL:O	1:B:244:ILE:HG12	2.17	0.44
1:C:419:LYS:HZ2	1:C:422:ARG:HH11	1.63	0.44
1:A:196:ARG:HD3	1:A:196:ARG:HA	1.78	0.44
1:C:252:ARG:HD3	1:C:301:TYR:CE1	2.53	0.44
1:C:256:GLY:HA3	1:C:298:LEU:HD13	2.00	0.44
1:C:231:SER:O	1:C:235:VAL:HG23	2.18	0.44
1:C:240:VAL:O	1:C:244:ILE:HG12	2.17	0.44
1:D:119:ARG:HB3	1:D:121:PHE:HE1	1.83	0.44
1:A:190:LYS:HG3	1:A:215:HIS:HB2	1.99	0.44
1:A:194:ASP:HB2	1:A:213:ARG:HB2	2.00	0.44
1:B:83:LEU:HD23	1:B:83:LEU:HA	1.83	0.44
1:C:194:ASP:HB2	1:C:213:ARG:HB2	2.00	0.44
1:D:171:GLN:O	1:D:175:PRO:HG3	2.18	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:231:SER:O	1:A:235:VAL:HG23	2.18	0.44
1:D:256:GLY:HA3	1:D:298:LEU:HD13	2.00	0.44
1:C:171:GLN:O	1:C:175:PRO:HG3	2.18	0.43
1:E:231:SER:O	1:E:235:VAL:HG23	2.18	0.43
1:E:256:GLY:HA3	1:E:298:LEU:HD13	1.99	0.43
1:A:256:GLY:HA3	1:A:298:LEU:HD13	1.99	0.43
1:D:253:VAL:O	1:D:257:ILE:HG12	2.18	0.43
1:A:118:LEU:C	1:A:118:LEU:HD23	2.44	0.43
1:C:253:VAL:O	1:C:257:ILE:HG12	2.18	0.43
1:E:194:ASP:HB2	1:E:213:ARG:HB2	2.00	0.43
1:A:299:LEU:HD22	6:B:508:PX4:H62	2.01	0.43
1:B:118:LEU:C	1:B:118:LEU:HD23	2.43	0.43
1:D:194:ASP:HB2	1:D:213:ARG:HB2	2.00	0.43
1:E:253:VAL:O	1:E:257:ILE:HG12	2.18	0.43
1:A:171:GLN:O	1:A:175:PRO:HG3	2.18	0.43
1:B:190:LYS:HG3	1:B:215:HIS:HB2	1.99	0.43
1:A:252:ARG:HD3	1:A:301:TYR:CE1	2.53	0.43
1:D:118:LEU:C	1:D:118:LEU:HD23	2.44	0.43
1:B:253:VAL:O	1:B:257:ILE:HG12	2.18	0.43
1:D:69:ASN:ND2	1:D:125:ASN:OD1	2.36	0.43
1:E:118:LEU:C	1:E:118:LEU:HD23	2.44	0.43
1:B:194:ASP:HB2	1:B:213:ARG:HB2	2.00	0.43
1:C:118:LEU:C	1:C:118:LEU:HD23	2.43	0.43
1:E:196:ARG:HA	1:E:196:ARG:HD3	1.78	0.43
1:B:256:GLY:HA3	1:B:298:LEU:HD13	1.99	0.43
1:D:426:ILE:H	1:D:426:ILE:HG12	1.58	0.43
1:C:190:LYS:HG3	1:C:215:HIS:HB2	1.99	0.43
1:E:417:ILE:CD1	6:E:605:PX4:H21	2.48	0.42
1:A:253:VAL:O	1:A:257:ILE:HG12	2.18	0.42
1:B:231:SER:O	1:B:235:VAL:HG23	2.18	0.42
1:B:252:ARG:HD3	1:B:301:TYR:CE1	2.53	0.42
1:E:171:GLN:O	1:E:175:PRO:HG3	2.18	0.42
1:A:389:ILE:HD12	1:A:389:ILE:HA	1.88	0.42
1:C:196:ARG:HD3	1:C:196:ARG:HA	1.78	0.42
1:D:231:SER:O	1:D:235:VAL:HG23	2.18	0.42
1:E:190:LYS:HG3	1:E:215:HIS:HB2	1.99	0.42
1:E:402:CYS:SG	6:E:604:PX4:H56	2.60	0.42
1:B:32:PHE:CE2	1:C:10:PRO:HB3	2.55	0.42
1:A:119:ARG:HB3	1:A:121:PHE:HE1	1.83	0.42
1:D:419:LYS:HZ2	1:D:422:ARG:HH11	1.66	0.42
1:E:119:ARG:HB3	1:E:121:PHE:HE1	1.83	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:426:ILE:H	1:C:426:ILE:HG12	1.58	0.42
1:A:426:ILE:H	1:A:426:ILE:HG12	1.58	0.41
1:A:10:PRO:HB3	1:E:32:PHE:CE2	2.55	0.41
1:A:417:ILE:CD1	6:A:512:PX4:H21	2.47	0.41
1:A:393:LYS:HE3	1:A:393:LYS:HB2	1.76	0.41
1:C:102:ASN:OD1	1:C:102:ASN:N	2.53	0.41
1:A:170:TRP:CZ2	1:A:212:VAL:CG1	3.04	0.41
1:B:170:TRP:CZ2	1:B:212:VAL:CG1	3.04	0.41
1:C:203:ASN:OD1	1:C:203:ASN:N	2.50	0.41
1:A:83:LEU:HD23	1:A:83:LEU:HA	1.83	0.41
1:B:60:VAL:HG12	1:B:134:LEU:HB2	2.03	0.41
1:C:170:TRP:CZ2	1:C:212:VAL:CG1	3.04	0.41
1:C:299:LEU:HD22	6:D:508:PX4:H62	2.03	0.41
1:A:60:VAL:HG12	1:A:134:LEU:HB2	2.03	0.41
1:A:112:THR:HB	1:E:98:LEU:O	2.20	0.41
1:A:32:PHE:CE2	1:B:10:PRO:HB3	2.56	0.40
6:D:510:PX4:H61	6:D:510:PX4:H54	1.90	0.40
1:E:60:VAL:HG12	1:E:134:LEU:HB2	2.03	0.40

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	342/478 (72%)	335 (98%)	7 (2%)	0	100	100
1	B	342/478 (72%)	335 (98%)	7 (2%)	0	100	100
1	C	342/478 (72%)	335 (98%)	7 (2%)	0	100	100
1	D	342/478 (72%)	336 (98%)	6 (2%)	0	100	100
1	E	342/478 (72%)	335 (98%)	7 (2%)	0	100	100
All	All	1710/2390 (72%)	1676 (98%)	34 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	314/430 (73%)	311 (99%)	3 (1%)	73	88
1	B	314/430 (73%)	311 (99%)	3 (1%)	73	88
1	C	314/430 (73%)	311 (99%)	3 (1%)	73	88
1	D	314/430 (73%)	311 (99%)	3 (1%)	73	88
1	E	314/430 (73%)	311 (99%)	3 (1%)	73	88
All	All	1570/2150 (73%)	1555 (99%)	15 (1%)	71	88

All (15) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	90	LEU
1	A	387	VAL
1	A	426	ILE
1	B	90	LEU
1	B	387	VAL
1	B	426	ILE
1	C	90	LEU
1	C	387	VAL
1	C	426	ILE
1	D	90	LEU
1	D	387	VAL
1	D	426	ILE
1	E	90	LEU
1	E	387	VAL
1	E	426	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	46	ASN
1	A	66	GLN
1	A	115	ASN
1	A	164	ASN
1	B	46	ASN
1	B	66	GLN
1	B	115	ASN
1	B	164	ASN
1	B	305	ASN
1	C	46	ASN
1	C	66	GLN
1	C	115	ASN
1	C	164	ASN
1	D	46	ASN
1	D	66	GLN
1	D	115	ASN
1	D	164	ASN
1	E	46	ASN
1	E	66	GLN
1	E	107	ASN
1	E	115	ASN
1	E	164	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

10 monosaccharides are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	NAG	F	1	1,2	14,14,15	0.20	0	17,19,21	0.43	0
2	NAG	F	2	2	14,14,15	0.25	0	17,19,21	0.43	0
2	NAG	G	1	1,2	14,14,15	0.20	0	17,19,21	0.43	0
2	NAG	G	2	2	14,14,15	0.24	0	17,19,21	0.43	0
2	NAG	H	1	1,2	14,14,15	0.21	0	17,19,21	0.43	0
2	NAG	H	2	2	14,14,15	0.24	0	17,19,21	0.44	0
2	NAG	I	1	1,2	14,14,15	0.21	0	17,19,21	0.44	0
2	NAG	I	2	2	14,14,15	0.25	0	17,19,21	0.44	0
2	NAG	J	1	1,2	14,14,15	0.21	0	17,19,21	0.43	0
2	NAG	J	2	2	14,14,15	0.24	0	17,19,21	0.44	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
2	NAG	F	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	F	2	2	-	1/6/23/26	0/1/1/1
2	NAG	G	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	G	2	2	-	1/6/23/26	0/1/1/1
2	NAG	H	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	H	2	2	-	1/6/23/26	0/1/1/1
2	NAG	I	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	I	2	2	-	1/6/23/26	0/1/1/1
2	NAG	J	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	J	2	2	-	1/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	F	2	NAG	C1-C2-N2-C7
2	G	2	NAG	C1-C2-N2-C7
2	H	2	NAG	C1-C2-N2-C7
2	I	2	NAG	C1-C2-N2-C7
2	J	2	NAG	C1-C2-N2-C7

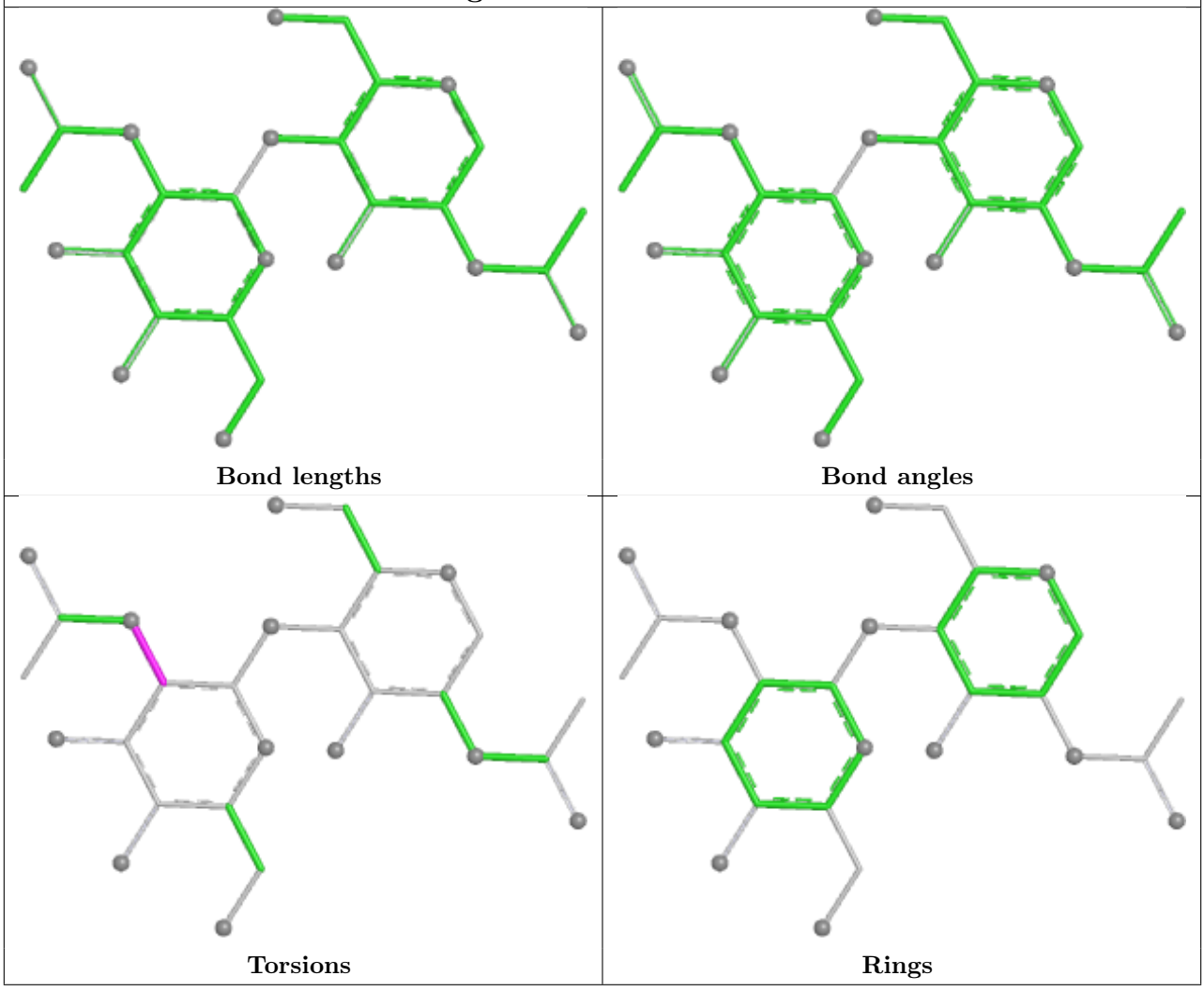
There are no ring outliers.

5 monomers are involved in 5 short contacts:

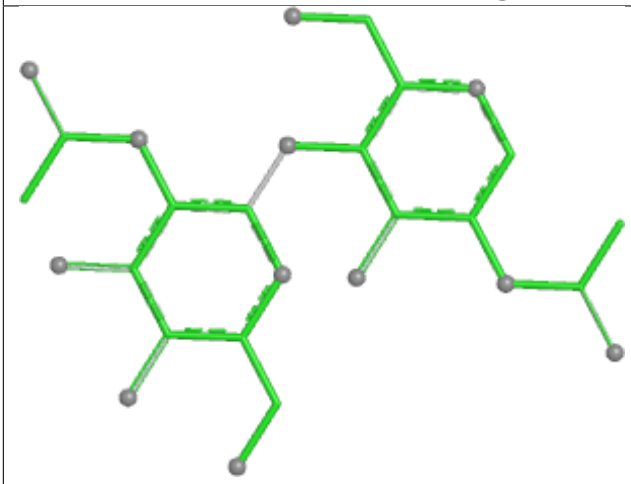
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	H	1	NAG	1	0
2	J	1	NAG	1	0
2	G	1	NAG	1	0
2	F	1	NAG	1	0
2	I	1	NAG	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

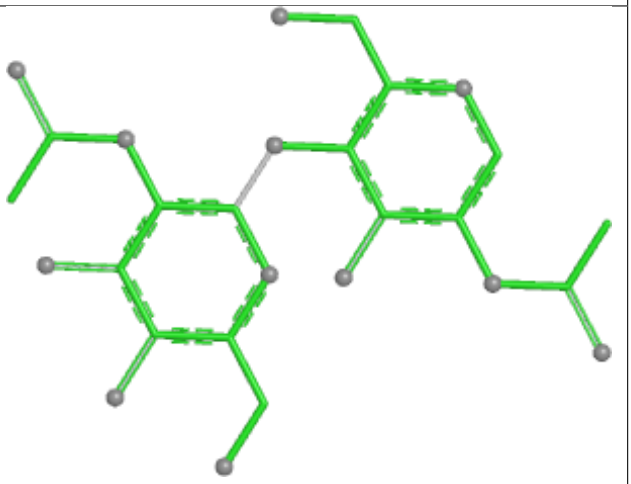
Oligosaccharide Chain F



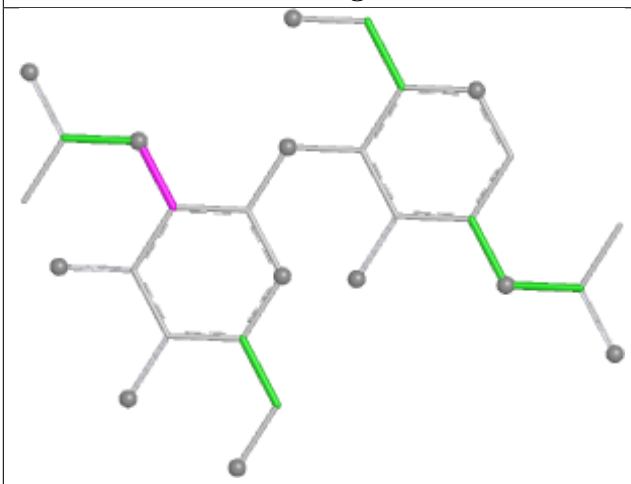
Oligosaccharide Chain G



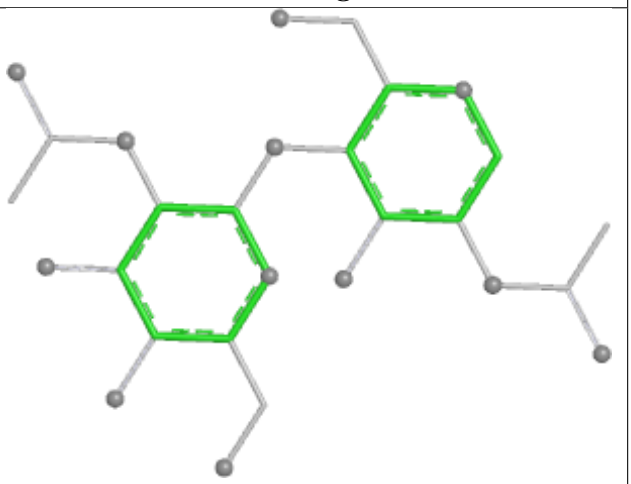
Bond lengths



Bond angles

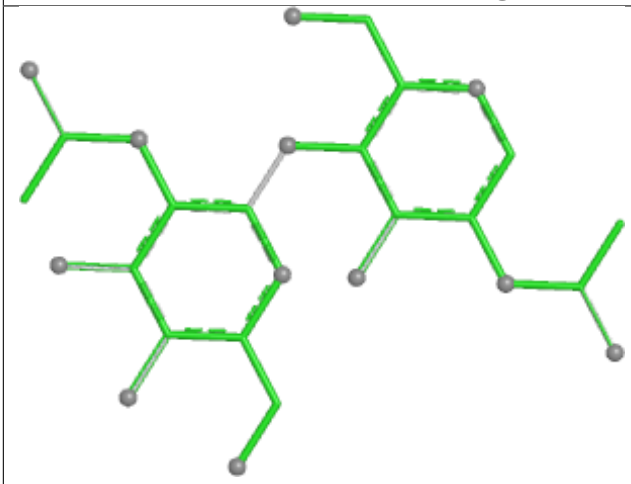


Torsions

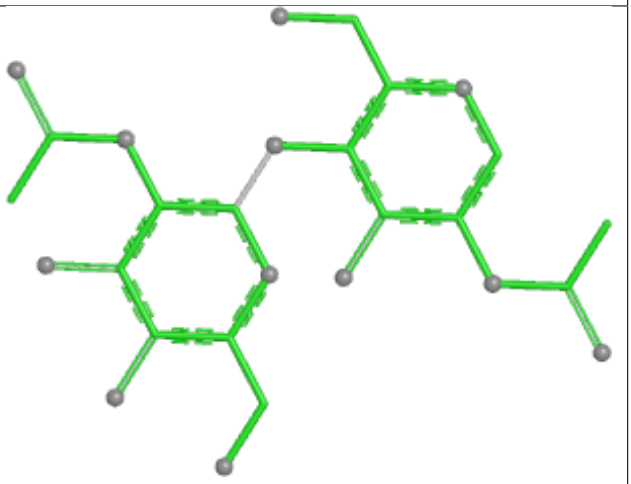


Rings

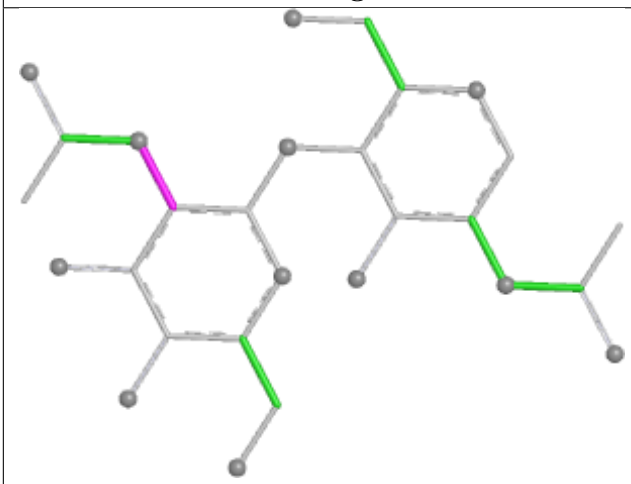
Oligosaccharide Chain H



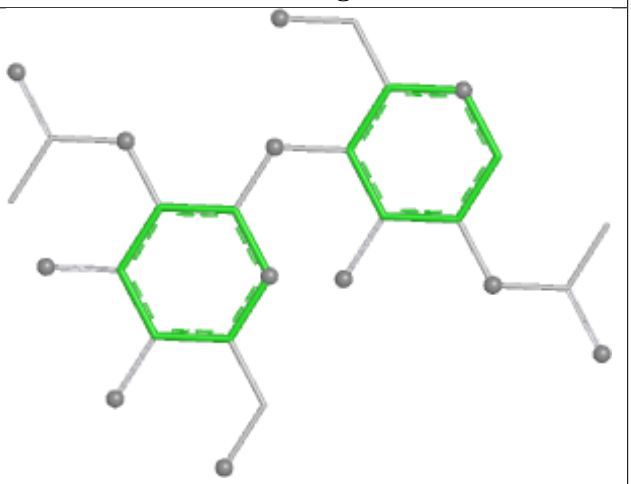
Bond lengths



Bond angles

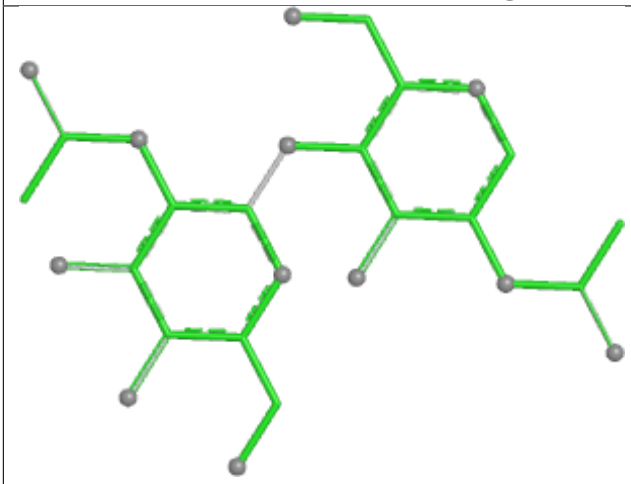


Torsions

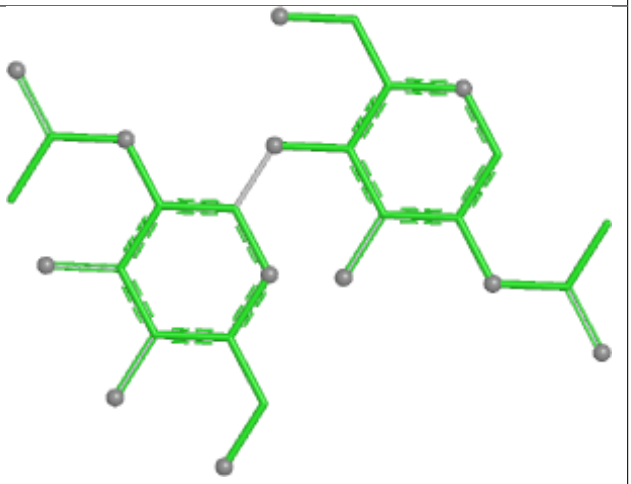


Rings

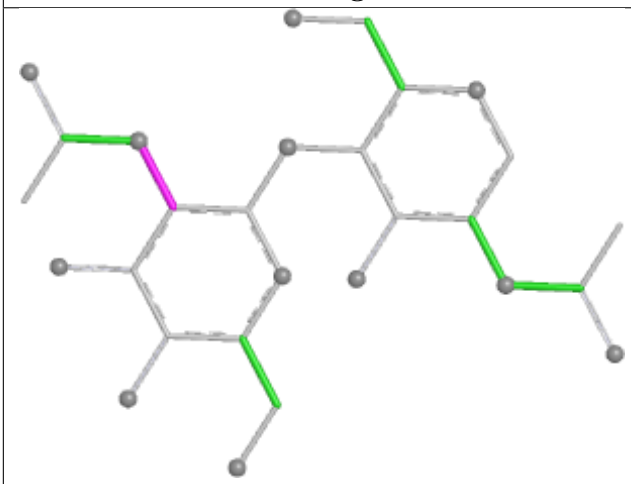
Oligosaccharide Chain I



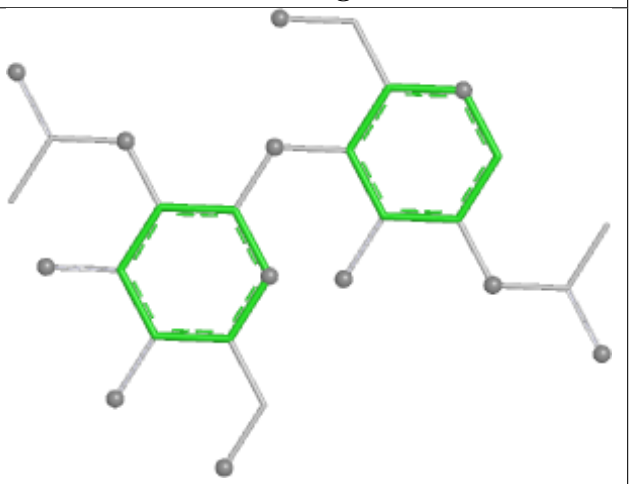
Bond lengths



Bond angles

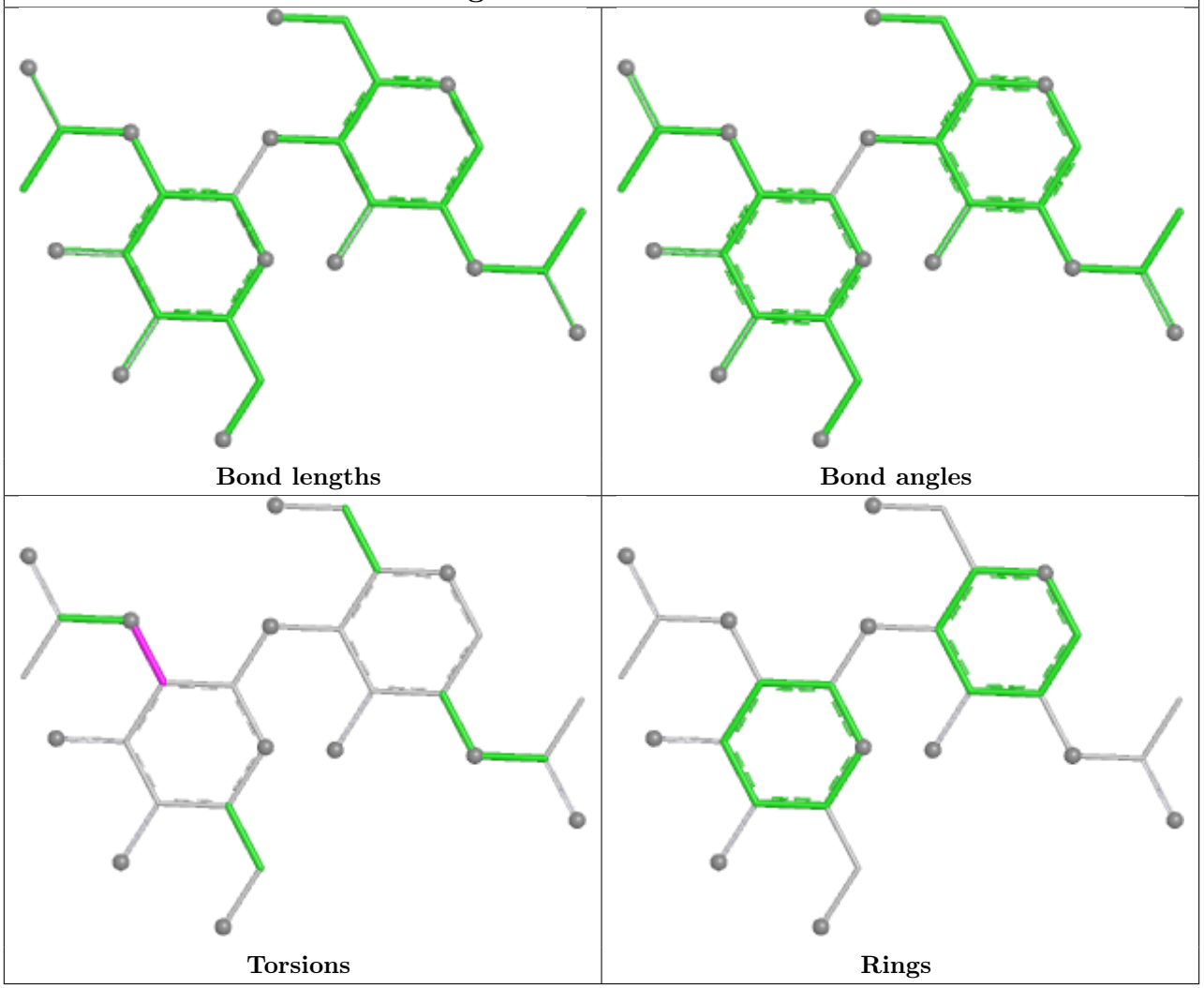


Torsions



Rings

Oligosaccharide Chain J



5.6 Ligand geometry (i)

Of 60 ligands modelled in this entry, 10 are monoatomic - leaving 50 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	$\#\|Z\| > 2$
5	PIO	A	508	-	9,9,47	0.49	0	9,9,65	0.48	0
5	PIO	D	507	-	9,9,47	0.49	0	9,9,65	0.48	0
6	PX4	C	509	-	13,13,45	2.46	3 (23%)	13,13,53	1.17	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
5	PIO	E	606	-	7,7,47	0.55	0	7,7,65	0.55	0
6	PX4	C	510	-	15,15,45	0.39	0	15,15,53	0.28	0
6	PX4	E	603	-	13,13,45	2.46	3 (23%)	13,13,53	1.17	0
5	PIO	E	608	-	9,9,47	0.50	0	9,9,65	0.48	0
6	PX4	B	510	-	15,15,45	0.39	0	15,15,53	0.28	0
5	PIO	D	505	-	9,9,47	0.50	0	9,9,65	0.49	0
5	PIO	A	513	-	7,7,47	0.55	0	7,7,65	0.55	0
6	PX4	C	508	-	13,13,45	2.46	3 (23%)	13,13,53	1.17	0
5	PIO	E	609	-	7,7,47	0.55	0	7,7,65	0.54	0
5	PIO	A	506	-	9,9,47	0.50	0	9,9,65	0.48	0
5	PIO	D	504	-	7,7,47	0.56	0	7,7,65	0.55	0
3	GLY	A	504	-	4,4,4	1.16	1 (25%)	3,4,4	1.64	1 (33%)
6	PX4	B	508	-	13,13,45	2.46	3 (23%)	13,13,53	1.16	0
5	PIO	C	506	-	7,7,47	0.56	0	7,7,65	0.55	0
6	PX4	D	509	-	13,13,45	2.46	3 (23%)	13,13,53	1.17	0
3	GLY	D	501	-	4,4,4	1.15	1 (25%)	3,4,4	1.64	1 (33%)
6	PX4	B	511	-	13,13,45	0.33	0	13,13,53	0.36	0
5	PIO	B	506	-	7,7,47	0.56	0	7,7,65	0.55	0
6	PX4	A	509	-	13,13,45	2.46	3 (23%)	13,13,53	1.17	0
6	PX4	A	510	-	13,13,45	2.45	3 (23%)	13,13,53	1.17	0
5	PIO	B	504	-	7,7,47	0.56	0	7,7,65	0.54	0
5	PIO	B	512	-	7,7,47	0.55	0	7,7,65	0.55	0
5	PIO	C	507	-	9,9,47	0.49	0	9,9,65	0.48	0
5	PIO	E	610	-	9,9,47	0.48	0	9,9,65	0.47	0
6	PX4	D	510	-	15,15,45	0.38	0	15,15,53	0.27	0
5	PIO	B	507	-	9,9,47	0.49	0	9,9,65	0.48	0
6	PX4	C	511	-	13,13,45	0.33	0	13,13,53	0.36	0
5	PIO	B	505	-	9,9,47	0.50	0	9,9,65	0.48	0
3	GLY	B	501	-	4,4,4	1.16	1 (25%)	3,4,4	1.64	1 (33%)
5	PIO	D	506	-	7,7,47	0.55	0	7,7,65	0.55	0
6	PX4	E	611	-	13,13,45	2.46	3 (23%)	13,13,53	1.17	0
6	PX4	A	512	-	13,13,45	0.34	0	13,13,53	0.36	0
5	PIO	C	505	-	9,9,47	0.49	0	9,9,65	0.48	0
5	PIO	A	505	-	7,7,47	0.55	0	7,7,65	0.55	0
5	PIO	C	512	-	7,7,47	0.54	0	7,7,65	0.54	0
5	PIO	A	507	-	7,7,47	0.55	0	7,7,65	0.55	0
6	PX4	B	509	-	13,13,45	2.46	3 (23%)	13,13,53	1.17	0
6	PX4	D	508	-	13,13,45	2.46	3 (23%)	13,13,53	1.17	0
6	PX4	E	605	-	13,13,45	0.33	0	13,13,53	0.37	0
3	GLY	A	501	-	4,4,4	1.16	1 (25%)	3,4,4	1.64	1 (33%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
5	PIO	C	504	-	7,7,47	0.56	0	7,7,65	0.55	0
6	PX4	E	604	-	15,15,45	0.39	0	15,15,53	0.28	0
5	PIO	E	607	-	7,7,47	0.55	0	7,7,65	0.54	0
6	PX4	D	511	-	13,13,45	0.33	0	13,13,53	0.37	0
3	GLY	C	501	-	4,4,4	1.16	1 (25%)	3,4,4	1.64	1 (33%)
6	PX4	A	511	-	15,15,45	0.39	0	15,15,53	0.28	0
5	PIO	D	512	-	7,7,47	0.54	0	7,7,65	0.54	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
5	PIO	A	508	-	-	3/7/7/68	-
5	PIO	D	507	-	-	3/7/7/68	-
6	PX4	C	509	-	-	9/11/11/49	-
5	PIO	E	606	-	-	3/5/5/68	-
6	PX4	C	510	-	-	6/13/13/49	-
6	PX4	E	603	-	-	9/11/11/49	-
5	PIO	E	608	-	-	1/7/7/68	-
6	PX4	B	510	-	-	6/13/13/49	-
5	PIO	D	505	-	-	1/7/7/68	-
5	PIO	A	513	-	-	3/5/5/68	-
6	PX4	C	508	-	-	4/11/11/49	-
5	PIO	E	609	-	-	2/5/5/68	-
5	PIO	A	506	-	-	1/7/7/68	-
5	PIO	D	504	-	-	3/5/5/68	-
3	GLY	A	504	-	-	0/2/2/2	-
6	PX4	B	508	-	-	4/11/11/49	-
5	PIO	C	506	-	-	2/5/5/68	-
6	PX4	D	509	-	-	9/11/11/49	-
3	GLY	D	501	-	-	0/2/2/2	-
6	PX4	B	511	-	-	4/11/11/49	-
5	PIO	B	506	-	-	2/5/5/68	-
6	PX4	A	509	-	-	4/11/11/49	-
6	PX4	A	510	-	-	9/11/11/49	-
5	PIO	B	504	-	-	3/5/5/68	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	PIO	B	512	-	-	3/5/5/68	-
5	PIO	C	507	-	-	3/7/7/68	-
5	PIO	E	610	-	-	3/7/7/68	-
6	PX4	D	510	-	-	6/13/13/49	-
5	PIO	B	507	-	-	3/7/7/68	-
6	PX4	C	511	-	-	4/11/11/49	-
5	PIO	B	505	-	-	1/7/7/68	-
3	GLY	B	501	-	-	0/2/2/2	-
5	PIO	D	506	-	-	2/5/5/68	-
6	PX4	E	611	-	-	4/11/11/49	-
6	PX4	A	512	-	-	4/11/11/49	-
5	PIO	C	505	-	-	1/7/7/68	-
5	PIO	A	505	-	-	3/5/5/68	-
5	PIO	C	512	-	-	3/5/5/68	-
5	PIO	A	507	-	-	2/5/5/68	-
6	PX4	B	509	-	-	9/11/11/49	-
6	PX4	D	508	-	-	4/11/11/49	-
6	PX4	E	605	-	-	4/11/11/49	-
3	GLY	A	501	-	-	0/2/2/2	-
5	PIO	C	504	-	-	3/5/5/68	-
6	PX4	E	604	-	-	6/13/13/49	-
5	PIO	E	607	-	-	3/5/5/68	-
6	PX4	D	511	-	-	4/11/11/49	-
3	GLY	C	501	-	-	0/2/2/2	-
6	PX4	A	511	-	-	6/13/13/49	-
5	PIO	D	512	-	-	3/5/5/68	-

All (35) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	E	611	PX4	O7-C23	5.01	1.47	1.30
6	C	508	PX4	O7-C23	5.01	1.47	1.30
6	B	509	PX4	O7-C23	5.00	1.47	1.30
6	B	508	PX4	O7-C23	5.00	1.47	1.30
6	A	509	PX4	O7-C23	5.00	1.47	1.30
6	D	508	PX4	O7-C23	4.99	1.47	1.30
6	E	603	PX4	O7-C23	4.99	1.47	1.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	C	509	PX4	O7-C23	4.99	1.47	1.30
6	D	509	PX4	O7-C23	4.98	1.47	1.30
6	A	510	PX4	O7-C23	4.98	1.47	1.30
6	C	508	PX4	C24-C23	4.50	1.61	1.50
6	A	509	PX4	C24-C23	4.49	1.61	1.50
6	D	508	PX4	C24-C23	4.49	1.61	1.50
6	E	611	PX4	C24-C23	4.49	1.61	1.50
6	B	508	PX4	C24-C23	4.47	1.60	1.50
6	B	509	PX4	C24-C23	4.47	1.60	1.50
6	E	603	PX4	C24-C23	4.47	1.60	1.50
6	D	509	PX4	C24-C23	4.47	1.60	1.50
6	A	510	PX4	C24-C23	4.47	1.60	1.50
6	C	509	PX4	C24-C23	4.47	1.60	1.50
6	D	509	PX4	C25-C24	2.40	1.61	1.52
6	B	509	PX4	C25-C24	2.39	1.60	1.52
6	E	603	PX4	C25-C24	2.39	1.60	1.52
6	C	509	PX4	C25-C24	2.38	1.60	1.52
6	A	509	PX4	C25-C24	2.38	1.60	1.52
6	A	510	PX4	C25-C24	2.38	1.60	1.52
6	C	508	PX4	C25-C24	2.38	1.60	1.52
6	E	611	PX4	C25-C24	2.37	1.60	1.52
6	B	508	PX4	C25-C24	2.37	1.60	1.52
6	D	508	PX4	C25-C24	2.36	1.60	1.52
3	A	504	GLY	OXT-C	-2.21	1.23	1.30
3	B	501	GLY	OXT-C	-2.21	1.23	1.30
3	C	501	GLY	OXT-C	-2.21	1.23	1.30
3	A	501	GLY	OXT-C	-2.21	1.23	1.30
3	D	501	GLY	OXT-C	-2.19	1.23	1.30

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	501	GLY	OXT-C-O	-2.07	118.00	123.33
3	C	501	GLY	OXT-C-O	-2.07	118.01	123.33
3	D	501	GLY	OXT-C-O	-2.07	118.01	123.33
3	A	501	GLY	OXT-C-O	-2.06	118.03	123.33
3	A	504	GLY	OXT-C-O	-2.06	118.03	123.33

There are no chirality outliers.

All (175) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	510	PX4	C30-C31-C32-C33
6	B	509	PX4	C30-C31-C32-C33
6	C	509	PX4	C30-C31-C32-C33
6	D	509	PX4	C30-C31-C32-C33
6	E	603	PX4	C30-C31-C32-C33
6	B	509	PX4	C29-C30-C31-C32
6	E	603	PX4	C29-C30-C31-C32
6	A	510	PX4	C29-C30-C31-C32
6	C	509	PX4	C29-C30-C31-C32
6	D	509	PX4	C29-C30-C31-C32
6	A	509	PX4	C28-C29-C30-C31
6	B	508	PX4	C28-C29-C30-C31
6	D	508	PX4	C28-C29-C30-C31
6	E	611	PX4	C28-C29-C30-C31
6	C	508	PX4	C28-C29-C30-C31
6	B	509	PX4	C27-C28-C29-C30
6	C	509	PX4	C27-C28-C29-C30
6	D	509	PX4	C27-C28-C29-C30
6	A	510	PX4	C27-C28-C29-C30
6	E	603	PX4	C27-C28-C29-C30
6	A	510	PX4	C28-C29-C30-C31
6	B	509	PX4	C28-C29-C30-C31
6	C	509	PX4	C28-C29-C30-C31
6	D	509	PX4	C28-C29-C30-C31
6	E	603	PX4	C28-C29-C30-C31
5	B	507	PIO	C4A-C5A-C6A-C7A
5	A	508	PIO	C4A-C5A-C6A-C7A
5	C	507	PIO	C4A-C5A-C6A-C7A
5	D	507	PIO	C4A-C5A-C6A-C7A
5	E	610	PIO	C4A-C5A-C6A-C7A
6	A	510	PX4	C26-C27-C28-C29
6	B	509	PX4	C26-C27-C28-C29
6	C	509	PX4	C26-C27-C28-C29
6	E	603	PX4	C26-C27-C28-C29
6	D	509	PX4	C26-C27-C28-C29
6	A	510	PX4	C25-C26-C27-C28
6	B	509	PX4	C25-C26-C27-C28
6	C	509	PX4	C25-C26-C27-C28
6	D	509	PX4	C25-C26-C27-C28
6	E	603	PX4	C25-C26-C27-C28
6	A	510	PX4	C31-C32-C33-C34
6	B	509	PX4	C31-C32-C33-C34
6	C	509	PX4	C31-C32-C33-C34

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
6	D	509	PX4	C31-C32-C33-C34
6	E	603	PX4	C31-C32-C33-C34
6	A	511	PX4	C25-C26-C27-C28
6	B	510	PX4	C25-C26-C27-C28
6	D	510	PX4	C25-C26-C27-C28
6	E	604	PX4	C25-C26-C27-C28
6	C	510	PX4	C25-C26-C27-C28
6	A	511	PX4	C23-C24-C25-C26
6	B	510	PX4	C23-C24-C25-C26
6	D	510	PX4	C23-C24-C25-C26
6	E	604	PX4	C23-C24-C25-C26
6	C	510	PX4	C23-C24-C25-C26
6	B	508	PX4	C26-C27-C28-C29
6	E	611	PX4	C26-C27-C28-C29
6	A	509	PX4	C26-C27-C28-C29
6	D	508	PX4	C26-C27-C28-C29
6	C	508	PX4	C26-C27-C28-C29
5	A	505	PIO	O2C-C1A-C2A-C3A
5	B	504	PIO	O2C-C1A-C2A-C3A
5	C	504	PIO	O2C-C1A-C2A-C3A
5	D	504	PIO	O2C-C1A-C2A-C3A
5	E	607	PIO	O2C-C1A-C2A-C3A
6	D	508	PX4	O8-C23-C24-C25
6	E	611	PX4	O8-C23-C24-C25
6	A	509	PX4	O8-C23-C24-C25
6	B	508	PX4	O8-C23-C24-C25
6	C	508	PX4	O8-C23-C24-C25
6	A	512	PX4	C11-C10-C9-O6
6	B	511	PX4	C11-C10-C9-O6
6	C	511	PX4	C11-C10-C9-O6
6	D	511	PX4	C11-C10-C9-O6
6	E	605	PX4	C11-C10-C9-O6
5	B	507	PIO	O1A-C1A-C2A-C3A
6	A	509	PX4	O7-C23-C24-C25
6	B	508	PX4	O7-C23-C24-C25
6	C	508	PX4	O7-C23-C24-C25
6	D	508	PX4	O7-C23-C24-C25
5	A	508	PIO	O1A-C1A-C2A-C3A
5	C	507	PIO	O1A-C1A-C2A-C3A
5	D	507	PIO	O1A-C1A-C2A-C3A
5	E	610	PIO	O1A-C1A-C2A-C3A
6	E	611	PX4	O7-C23-C24-C25

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
6	B	510	PX4	C30-C31-C32-C33
6	C	510	PX4	C30-C31-C32-C33
6	A	511	PX4	C30-C31-C32-C33
6	E	604	PX4	C30-C31-C32-C33
6	D	510	PX4	C30-C31-C32-C33
6	A	510	PX4	O7-C23-C24-C25
6	D	509	PX4	O7-C23-C24-C25
6	E	603	PX4	O7-C23-C24-C25
6	B	509	PX4	O7-C23-C24-C25
6	C	509	PX4	O7-C23-C24-C25
5	E	608	PIO	C4A-C5A-C6A-C7A
6	A	512	PX4	C11-C10-C9-O5
6	B	511	PX4	C11-C10-C9-O5
6	D	511	PX4	C11-C10-C9-O5
6	E	605	PX4	C11-C10-C9-O5
5	C	505	PIO	C4A-C5A-C6A-C7A
5	D	505	PIO	C4A-C5A-C6A-C7A
5	A	506	PIO	C4A-C5A-C6A-C7A
6	C	511	PX4	C11-C10-C9-O5
5	B	505	PIO	C4A-C5A-C6A-C7A
6	A	512	PX4	C9-C10-C11-C12
6	B	511	PX4	C9-C10-C11-C12
6	E	605	PX4	C9-C10-C11-C12
6	C	511	PX4	C9-C10-C11-C12
5	D	504	PIO	O1A-C1A-C2A-C3A
6	D	511	PX4	C9-C10-C11-C12
5	A	505	PIO	O1A-C1A-C2A-C3A
5	A	508	PIO	O2C-C1A-C2A-C3A
5	B	504	PIO	O1A-C1A-C2A-C3A
5	B	507	PIO	O2C-C1A-C2A-C3A
5	C	504	PIO	O1A-C1A-C2A-C3A
5	C	507	PIO	O2C-C1A-C2A-C3A
5	D	507	PIO	O2C-C1A-C2A-C3A
5	E	607	PIO	O1A-C1A-C2A-C3A
5	E	610	PIO	O2C-C1A-C2A-C3A
6	A	511	PX4	O7-C23-C24-C25
6	B	510	PX4	O7-C23-C24-C25
6	C	510	PX4	O7-C23-C24-C25
6	D	510	PX4	O7-C23-C24-C25
6	E	604	PX4	O7-C23-C24-C25
6	A	510	PX4	O8-C23-C24-C25
6	B	509	PX4	O8-C23-C24-C25

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
6	C	509	PX4	O8-C23-C24-C25
6	D	509	PX4	O8-C23-C24-C25
6	E	603	PX4	O8-C23-C24-C25
6	A	511	PX4	O8-C23-C24-C25
6	B	510	PX4	O8-C23-C24-C25
6	C	510	PX4	O8-C23-C24-C25
6	D	510	PX4	O8-C23-C24-C25
6	E	604	PX4	O8-C23-C24-C25
5	C	504	PIO	C2A-C3A-C4A-C5A
5	E	607	PIO	C2A-C3A-C4A-C5A
5	C	512	PIO	C1A-C2A-C3A-C4A
5	A	505	PIO	C2A-C3A-C4A-C5A
5	B	504	PIO	C2A-C3A-C4A-C5A
5	D	504	PIO	C2A-C3A-C4A-C5A
5	A	513	PIO	C1A-C2A-C3A-C4A
5	B	512	PIO	C1A-C2A-C3A-C4A
5	D	512	PIO	C1A-C2A-C3A-C4A
5	E	606	PIO	C1A-C2A-C3A-C4A
5	B	512	PIO	O1A-C1A-C2A-C3A
5	E	606	PIO	O1A-C1A-C2A-C3A
5	A	513	PIO	O1A-C1A-C2A-C3A
5	C	512	PIO	O1A-C1A-C2A-C3A
5	D	512	PIO	O1A-C1A-C2A-C3A
6	D	510	PX4	C28-C29-C30-C31
5	E	609	PIO	O1A-C1A-C2A-C3A
5	A	507	PIO	O1A-C1A-C2A-C3A
5	B	506	PIO	O1A-C1A-C2A-C3A
5	C	506	PIO	O1A-C1A-C2A-C3A
5	D	506	PIO	O1A-C1A-C2A-C3A
6	E	604	PX4	C28-C29-C30-C31
6	A	511	PX4	C28-C29-C30-C31
6	B	510	PX4	C28-C29-C30-C31
6	C	510	PX4	C28-C29-C30-C31
5	A	513	PIO	O2C-C1A-C2A-C3A
5	B	512	PIO	O2C-C1A-C2A-C3A
5	C	512	PIO	O2C-C1A-C2A-C3A
5	D	512	PIO	O2C-C1A-C2A-C3A
5	E	606	PIO	O2C-C1A-C2A-C3A
6	D	511	PX4	C11-C12-C13-C14
6	C	511	PX4	C11-C12-C13-C14
6	E	605	PX4	C11-C12-C13-C14
6	A	512	PX4	C11-C12-C13-C14

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
6	B	511	PX4	C11-C12-C13-C14
5	D	506	PIO	O2C-C1A-C2A-C3A
5	A	507	PIO	O2C-C1A-C2A-C3A
5	C	506	PIO	O2C-C1A-C2A-C3A
5	E	609	PIO	O2C-C1A-C2A-C3A
5	B	506	PIO	O2C-C1A-C2A-C3A

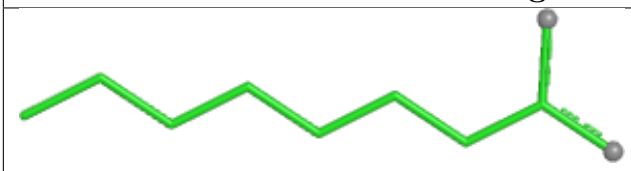
There are no ring outliers.

13 monomers are involved in 27 short contacts:

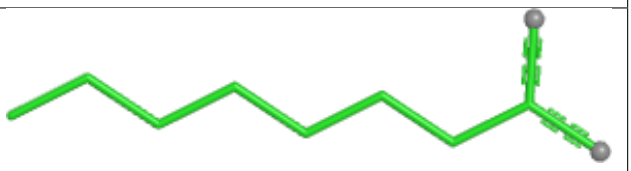
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	C	510	PX4	3	0
6	B	510	PX4	3	0
6	B	508	PX4	1	0
6	B	511	PX4	1	0
6	A	509	PX4	1	0
6	D	510	PX4	4	0
6	C	511	PX4	1	0
6	A	512	PX4	2	0
6	D	508	PX4	1	0
6	E	605	PX4	2	0
6	E	604	PX4	4	0
6	D	511	PX4	1	0
6	A	511	PX4	3	0

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 PIO A 508

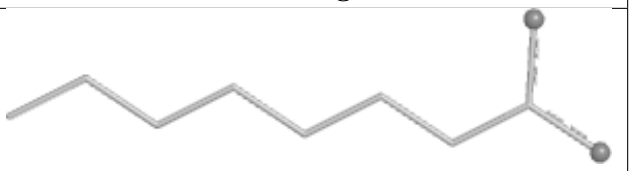


Bond lengths



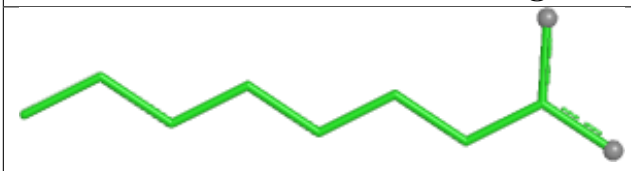
Bond angles

Torsions

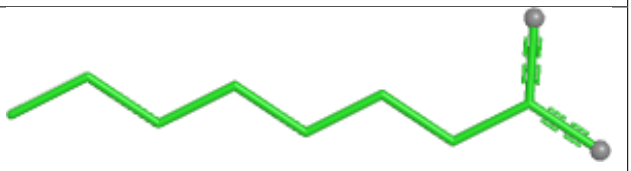


Rings

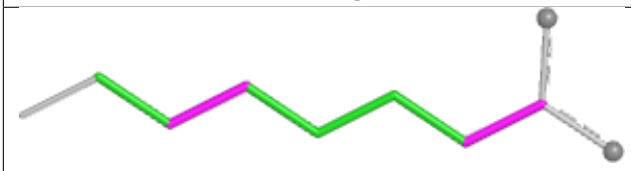
Ligand PIO D 507



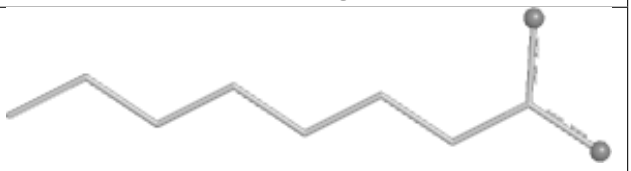
Bond lengths



Bond angles

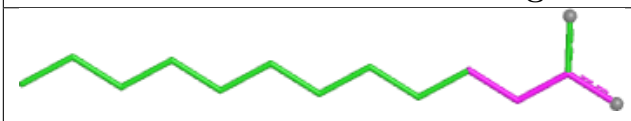


Torsions

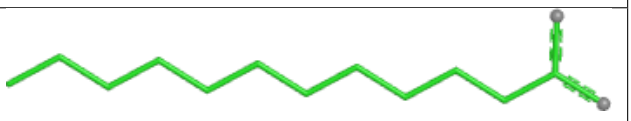


Rings

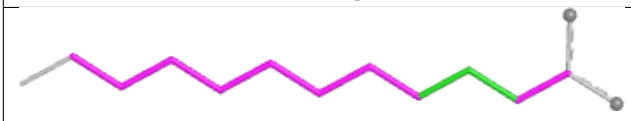
Ligand PX4 C 509



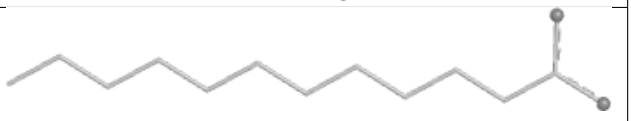
Bond lengths



Bond angles

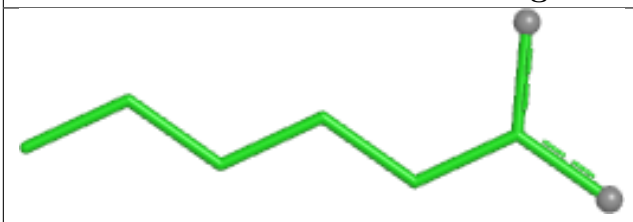


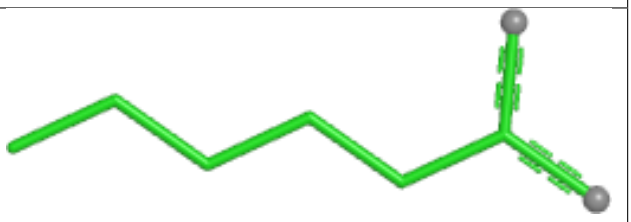
Torsions

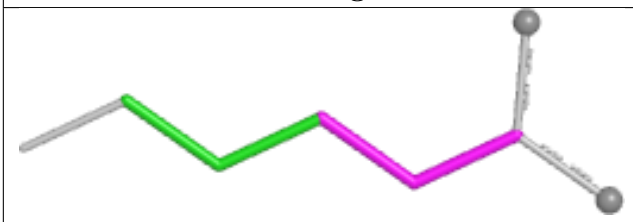


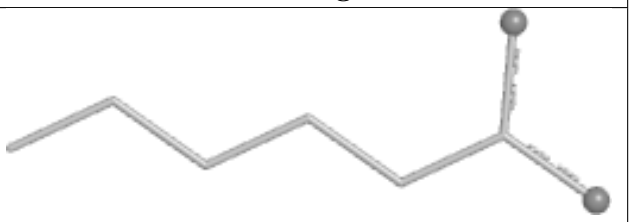
Rings

Ligand PIO E 606

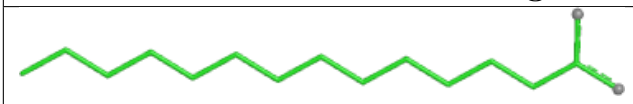

Bond lengths

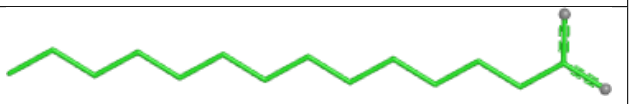

Bond angles

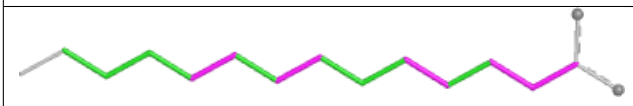

Torsions

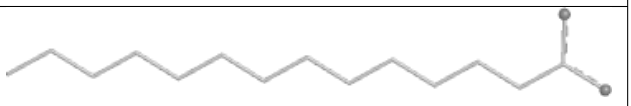

Rings

Ligand PX4 C 510

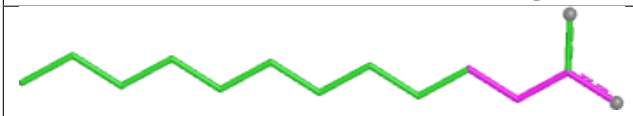

Bond lengths

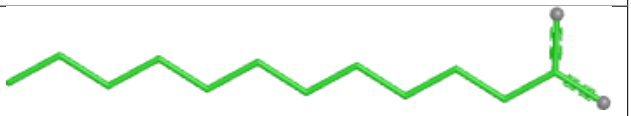

Bond angles

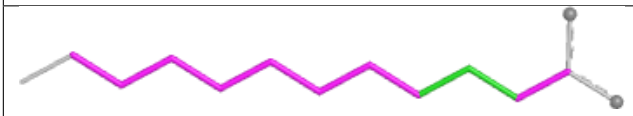

Torsions

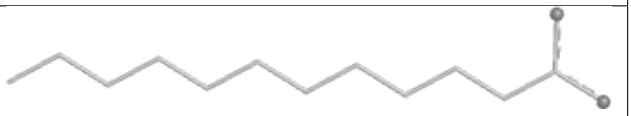

Rings

Ligand PX4 E 603

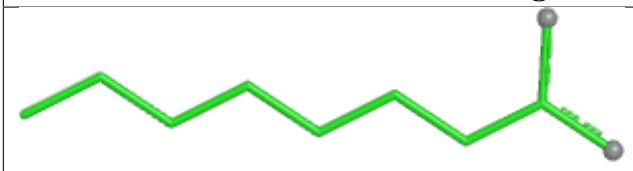

Bond lengths

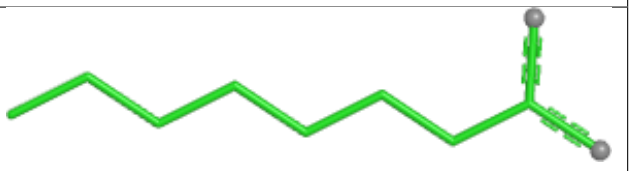

Bond angles

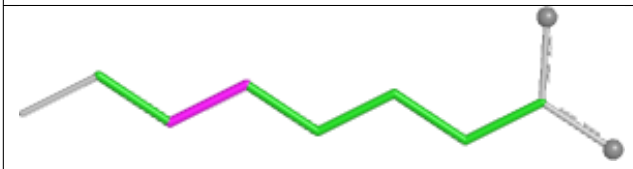

Torsions

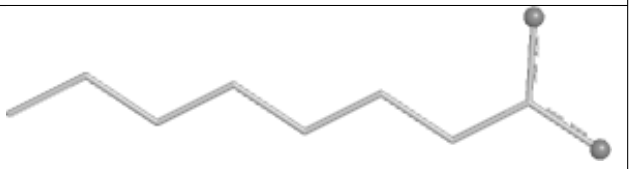

Rings

Ligand PIO E 608

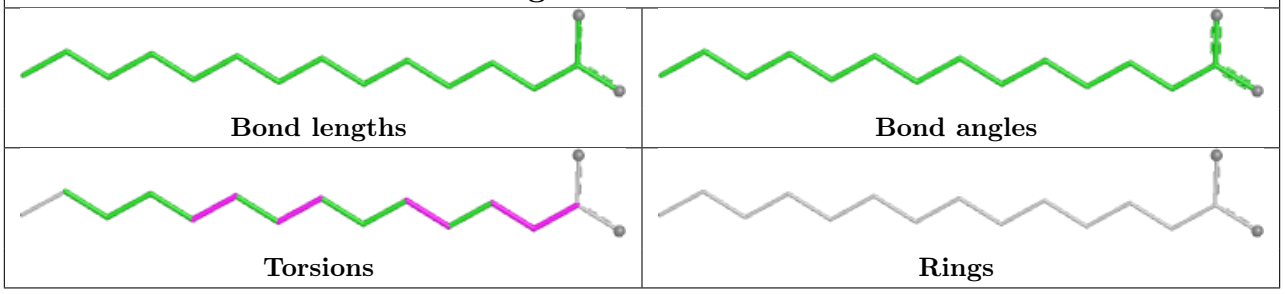

Bond lengths


Bond angles

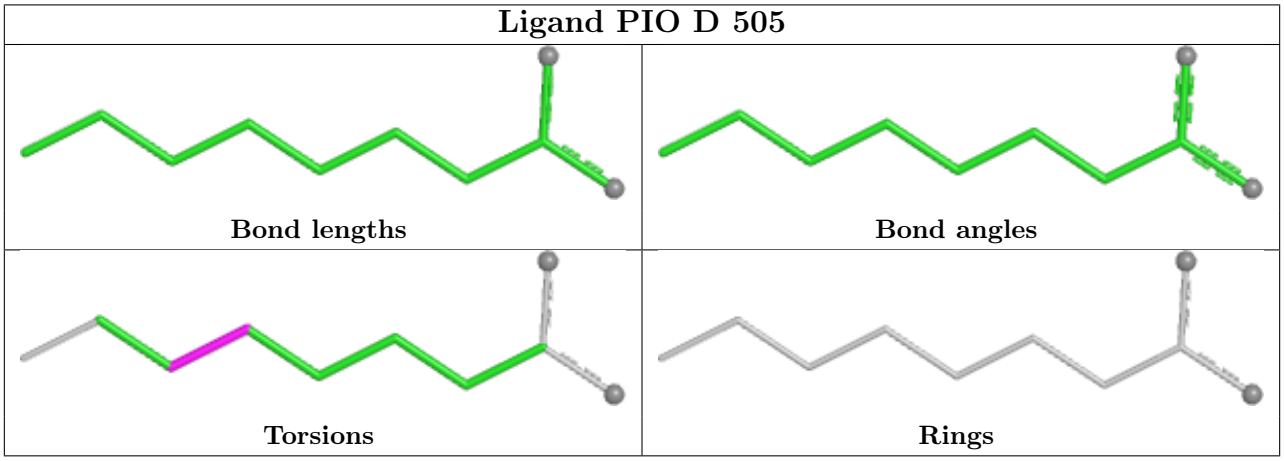

Torsions


Rings

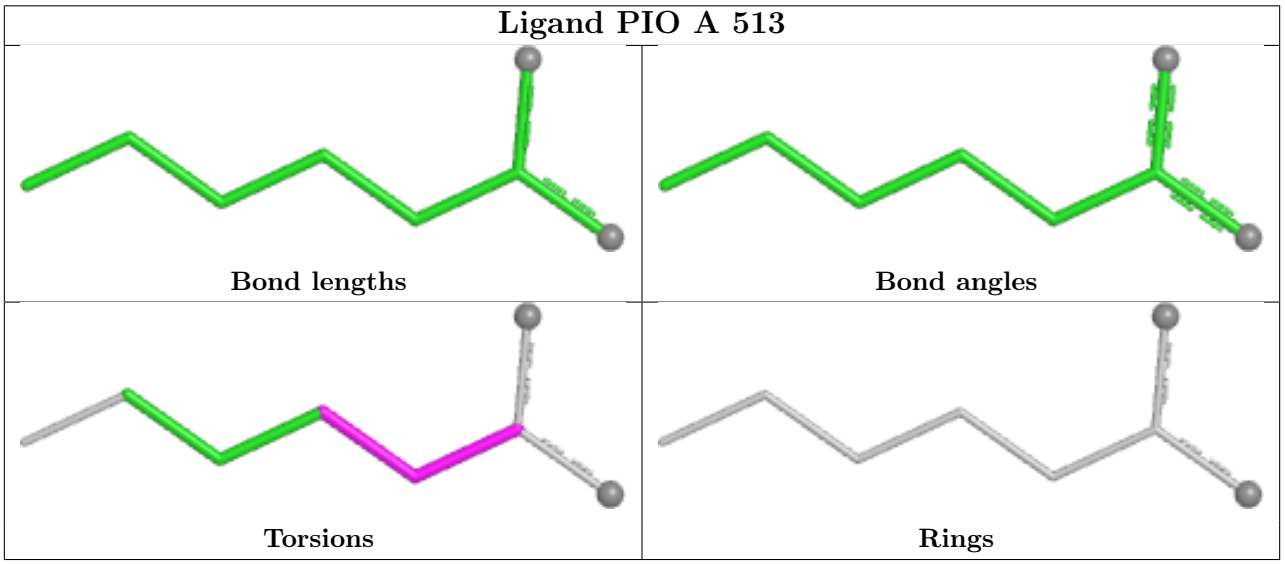
Ligand PX4 B 510



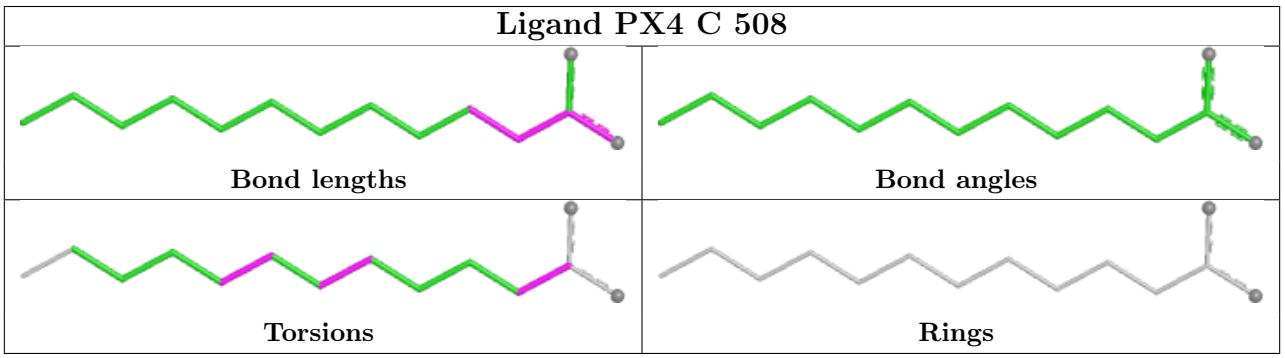
Ligand PIO D 505



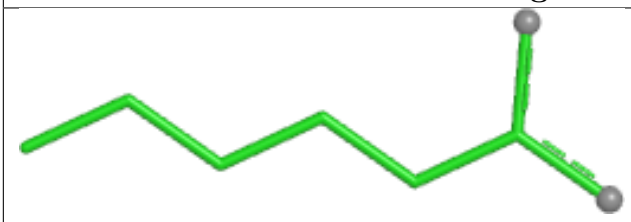
Ligand PIO A 513



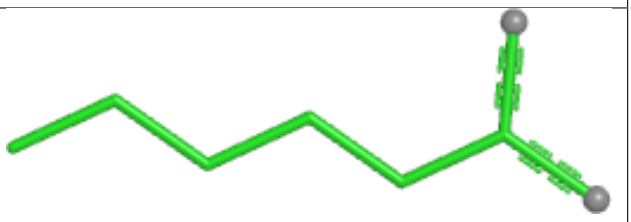
Ligand PX4 C 508



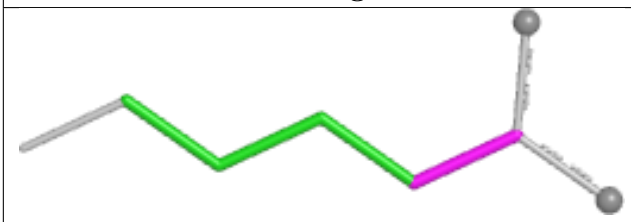
Ligand PIO E 609



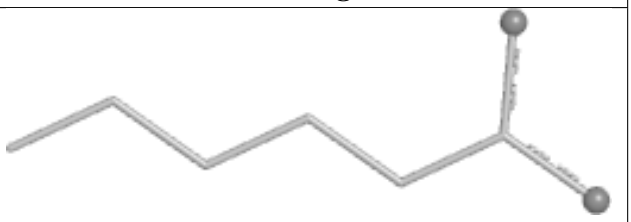
Bond lengths



Bond angles

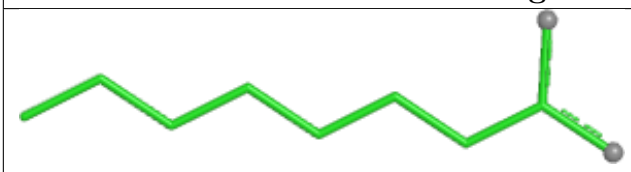


Torsions

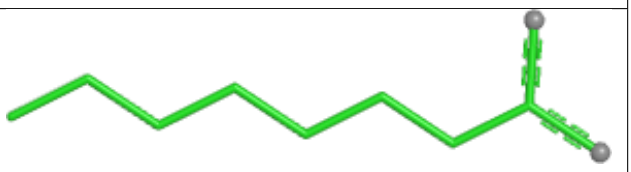


Rings

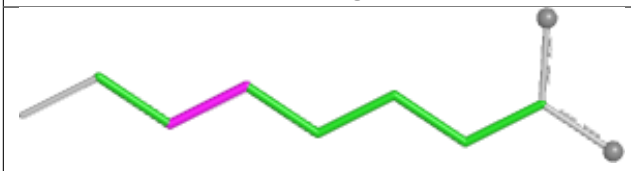
Ligand PIO A 506



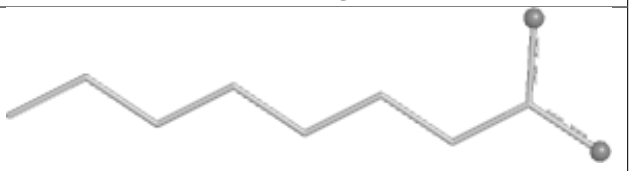
Bond lengths



Bond angles

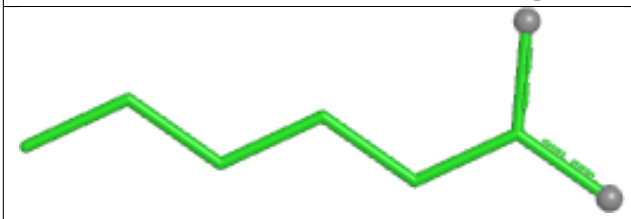


Torsions

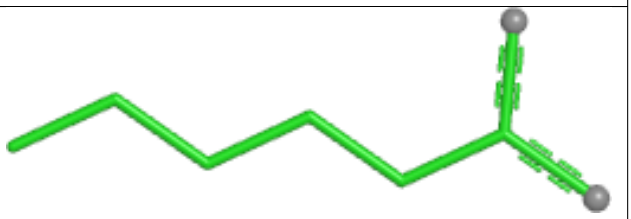


Rings

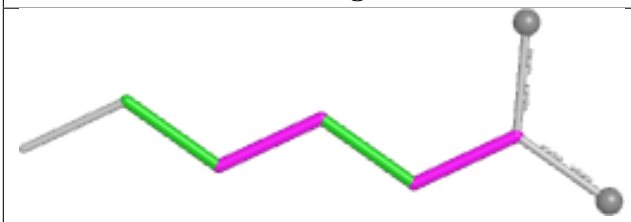
Ligand PIO D 504



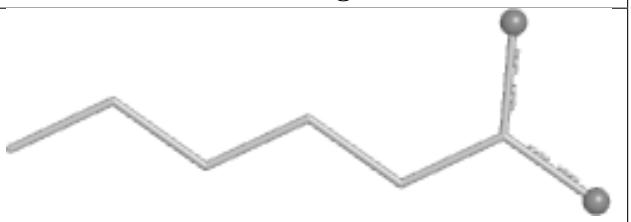
Bond lengths



Bond angles

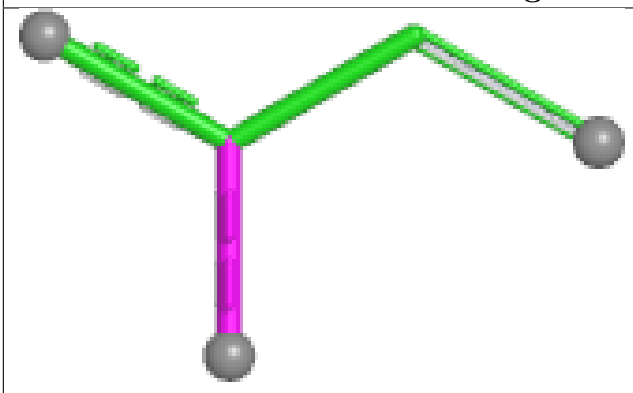


Torsions

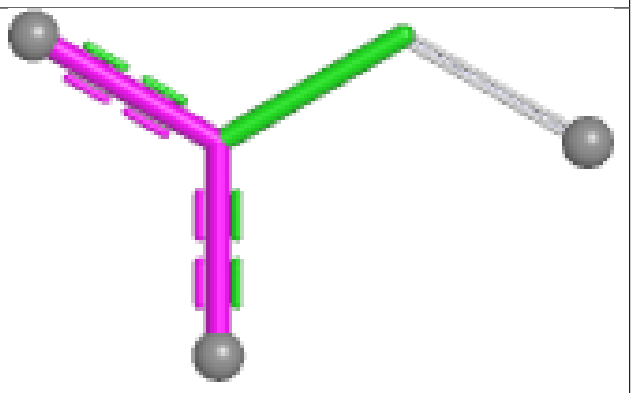


Rings

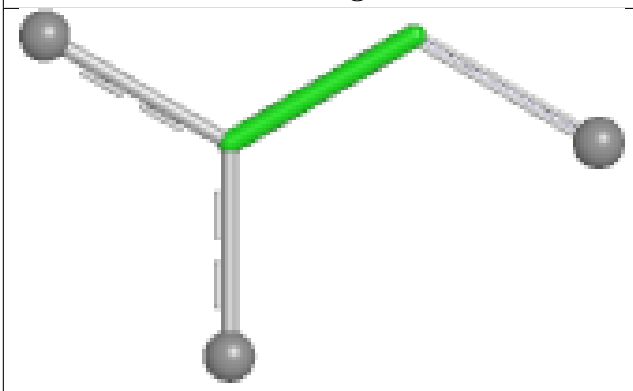
Ligand GLY A 504



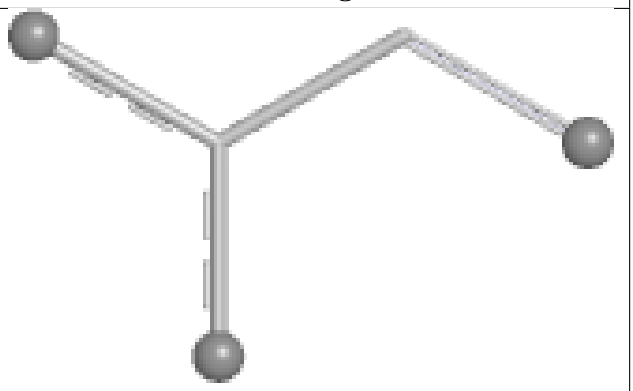
Bond lengths



Bond angles



Torsions

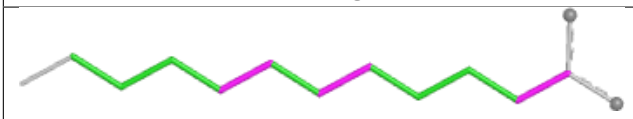


Rings

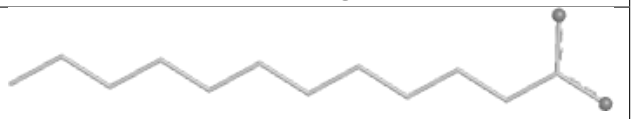
Ligand PX4 B 508

Bond lengths

Bond angles

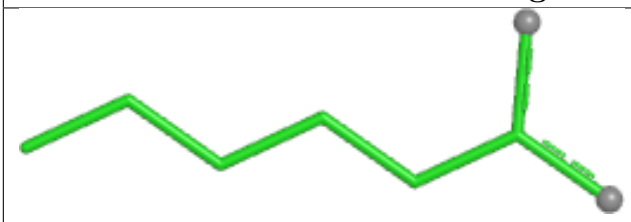


Torsions

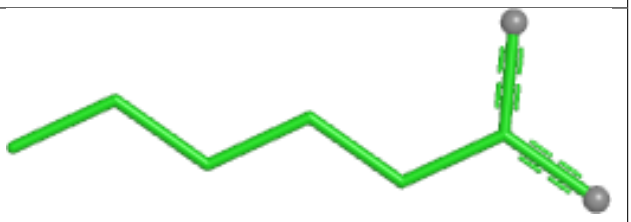


Rings

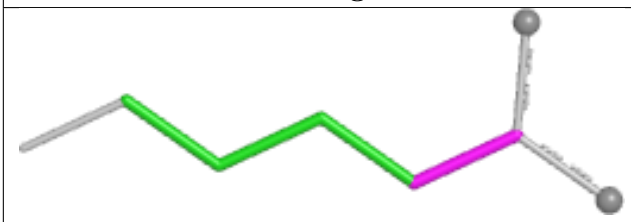
Ligand PIO C 506



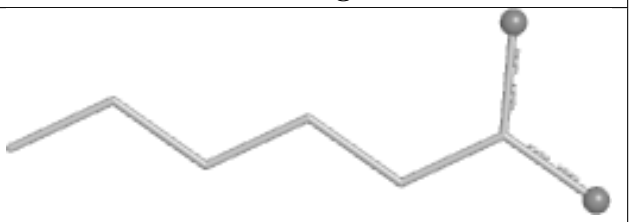
Bond lengths



Bond angles

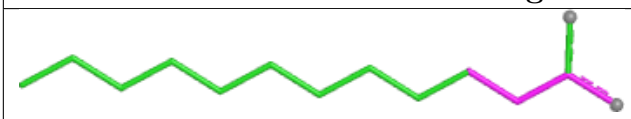


Torsions

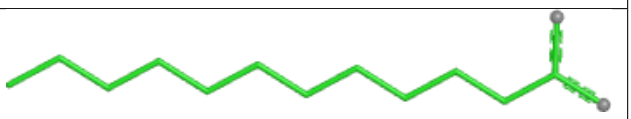


Rings

Ligand PX4 D 509

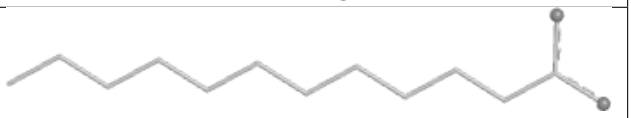


Bond lengths



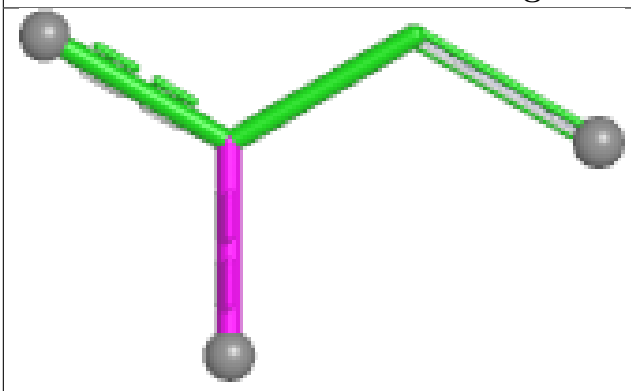
Bond angles

Torsions

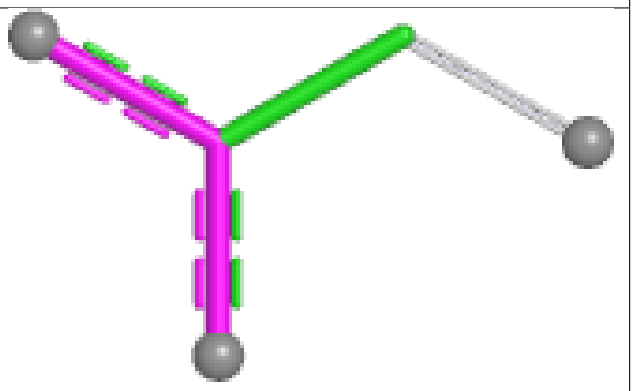


Rings

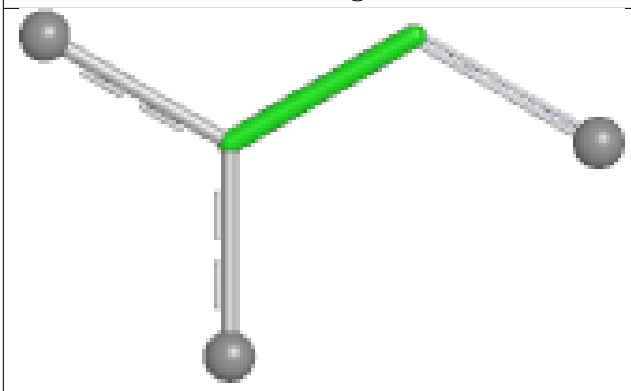
Ligand GLY D 501



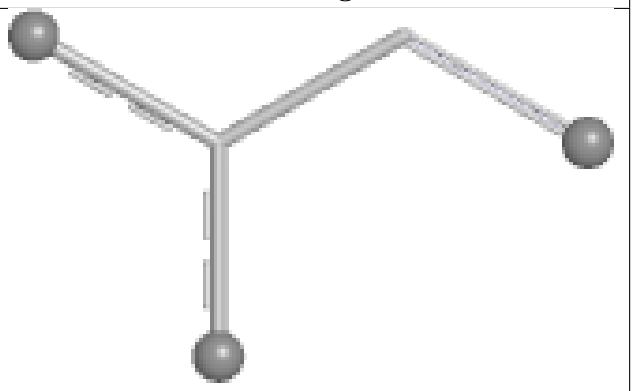
Bond lengths



Bond angles



Torsions

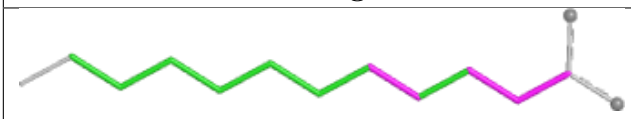


Rings

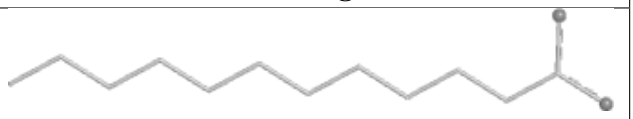
Ligand PX4 B 511

Bond lengths

Bond angles

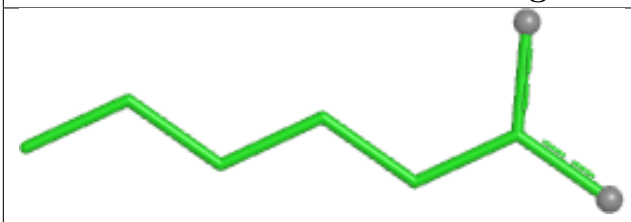


Torsions

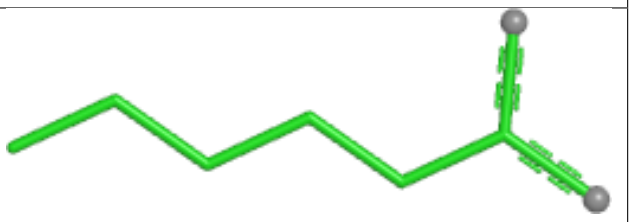


Rings

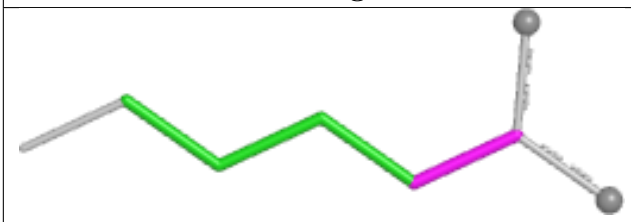
Ligand PIO B 506



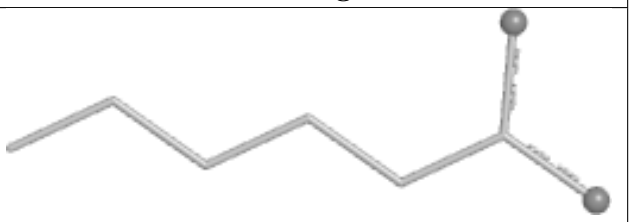
Bond lengths



Bond angles

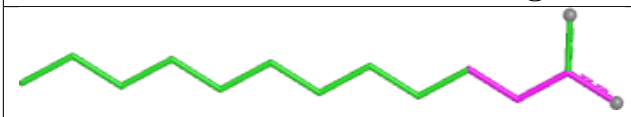


Torsions

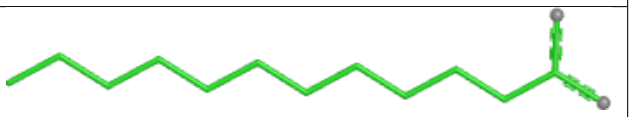


Rings

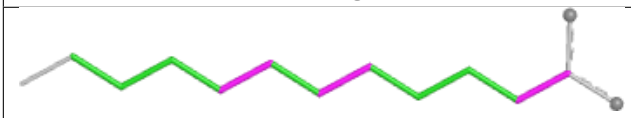
Ligand PX4 A 509



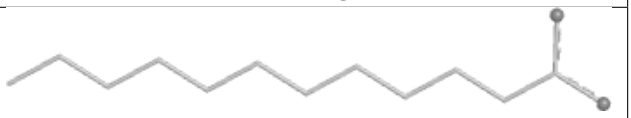
Bond lengths



Bond angles

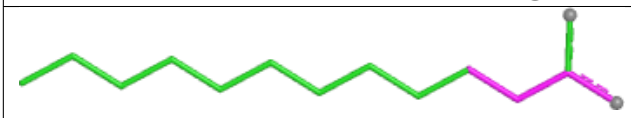


Torsions

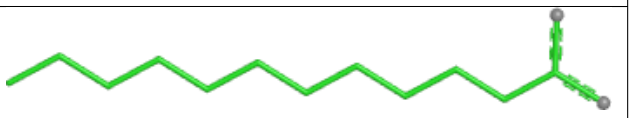


Rings

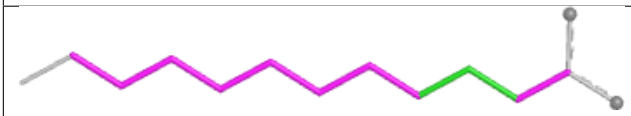
Ligand PX4 A 510



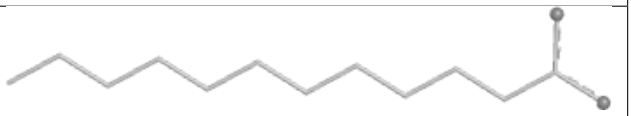
Bond lengths



Bond angles

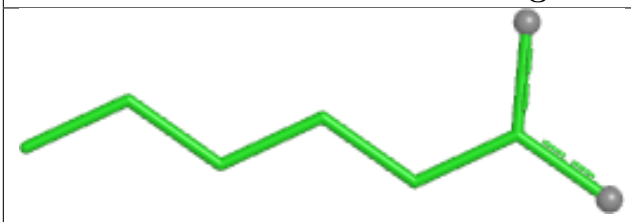


Torsions

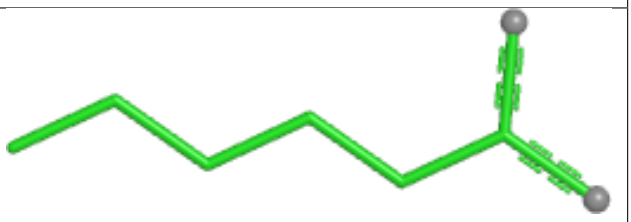


Rings

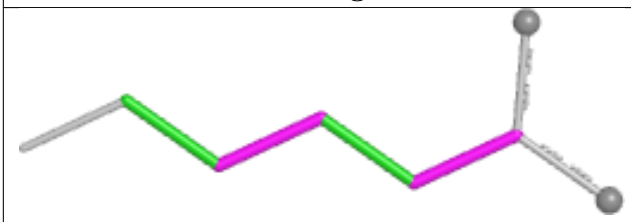
Ligand PIO B 504



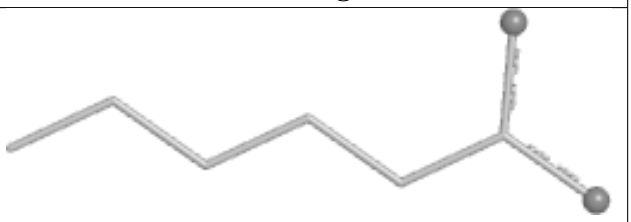
Bond lengths



Bond angles

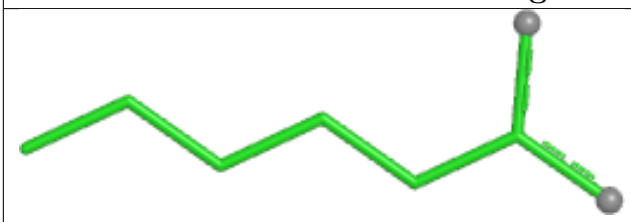


Torsions

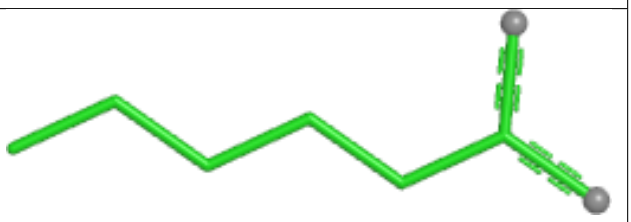


Rings

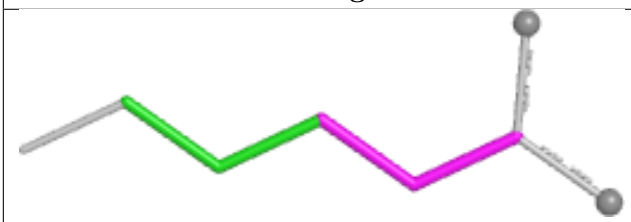
Ligand PIO B 512



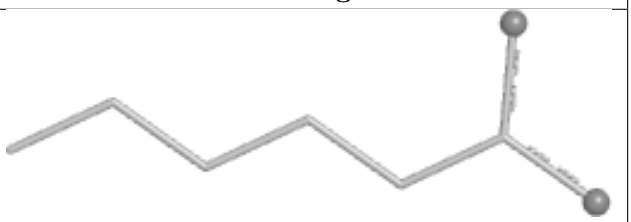
Bond lengths



Bond angles



Torsions

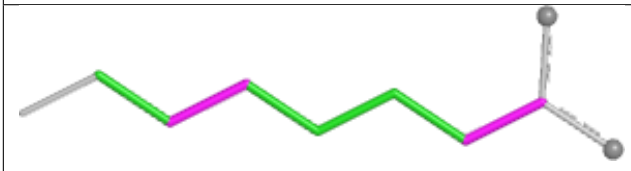


Rings

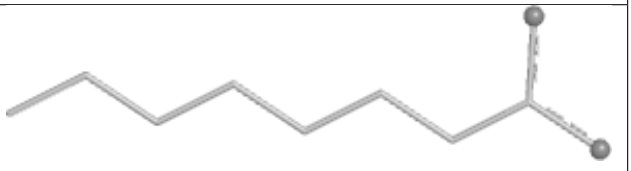
Ligand PIO C 507

Bond lengths

Bond angles

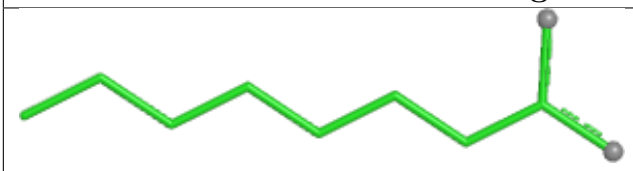


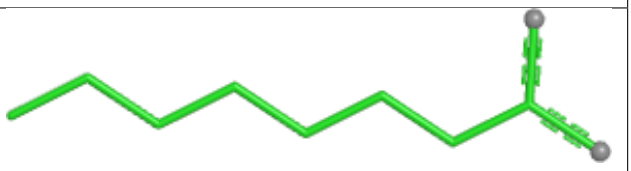
Torsions



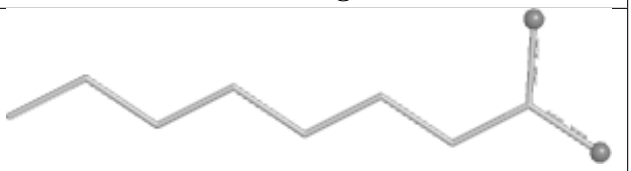
Rings

Ligand PIO E 610

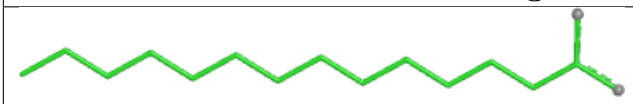

Bond lengths

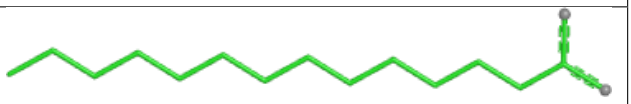

Bond angles

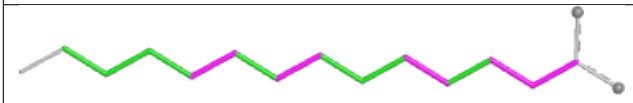

Torsions

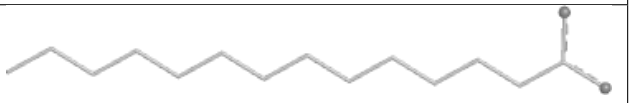

Rings

Ligand PX4 D 510


Bond lengths


Bond angles

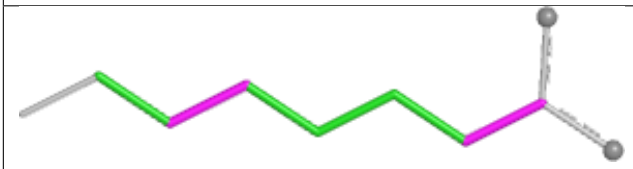

Torsions

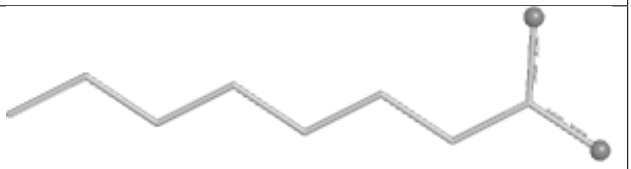

Rings

Ligand PIO B 507

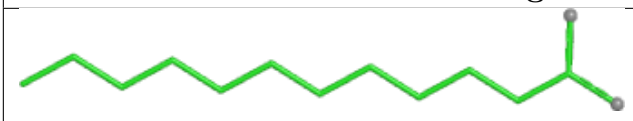

Bond lengths


Bond angles

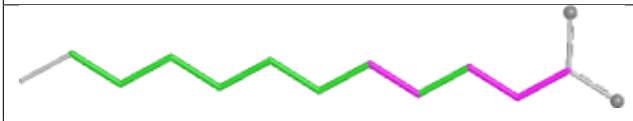

Torsions

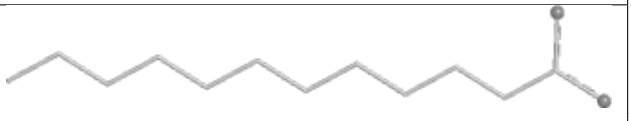

Rings

Ligand PX4 C 511

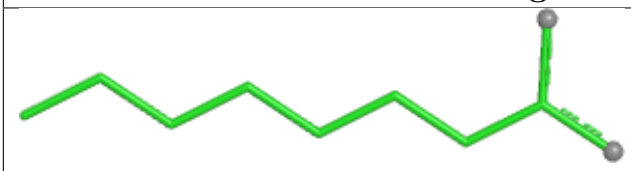

Bond lengths


Bond angles

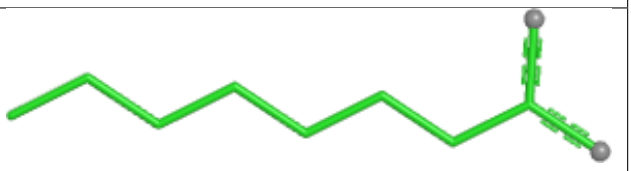

Torsions


Rings

Ligand PIO B 505

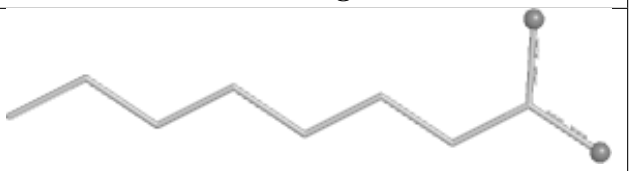


Bond lengths



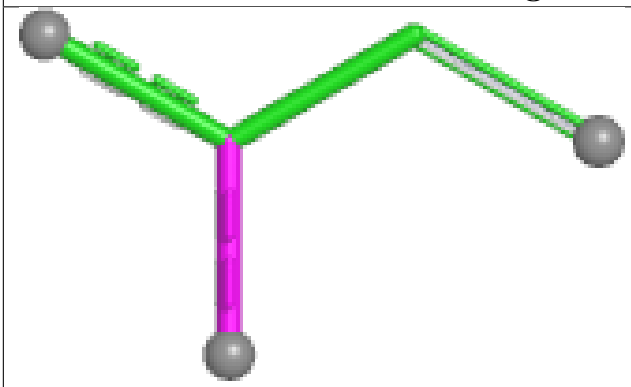
Bond angles

Torsions

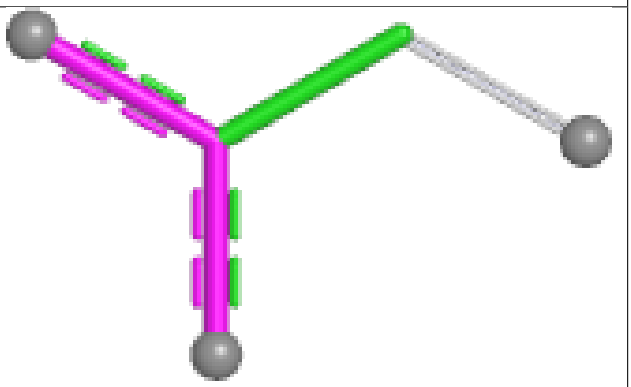


Rings

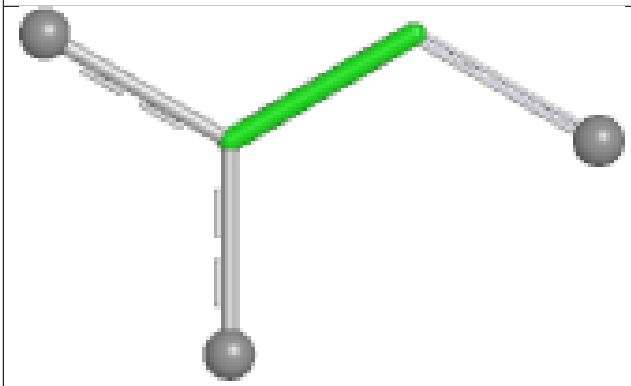
Ligand GLY B 501



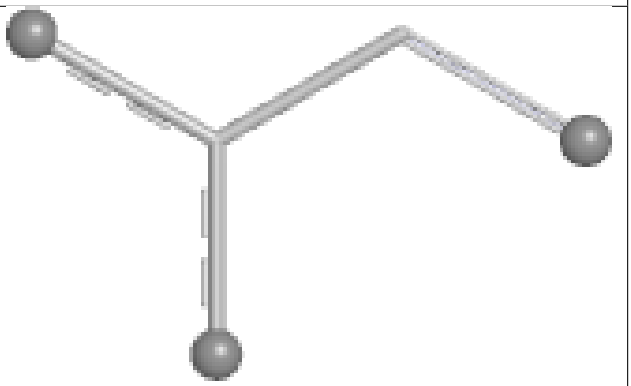
Bond lengths



Bond angles

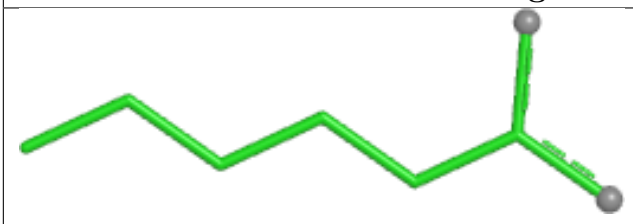


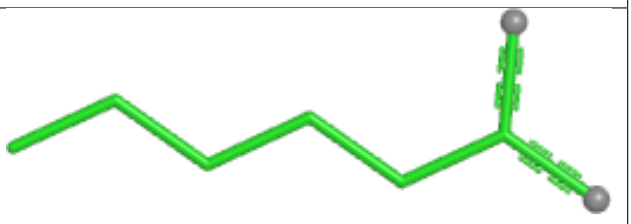
Torsions

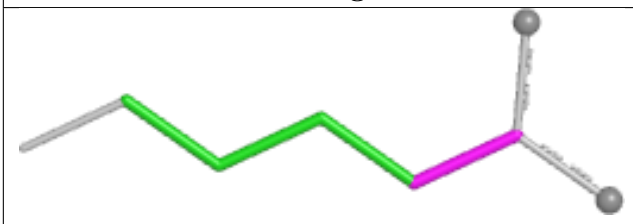


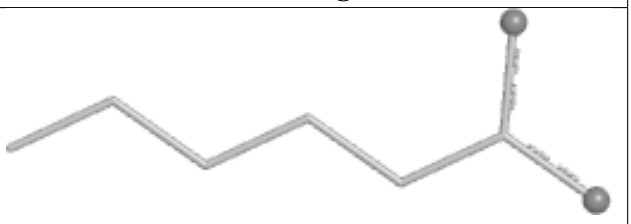
Rings

Ligand PIO D 506

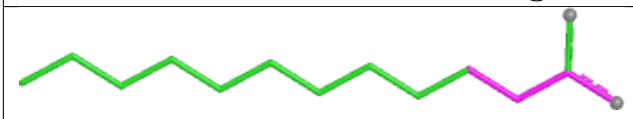

Bond lengths

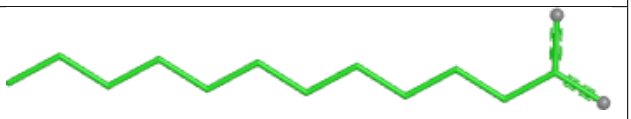

Bond angles

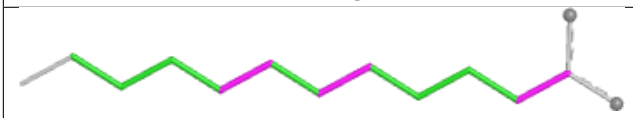

Torsions

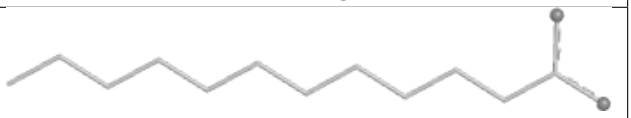

Rings

Ligand PX4 E 611

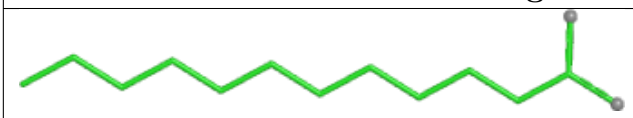

Bond lengths

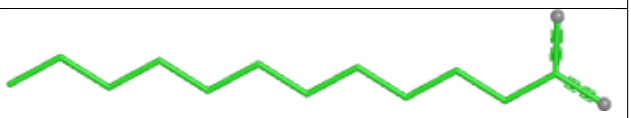

Bond angles

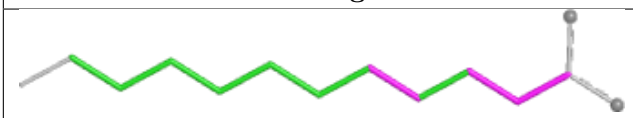

Torsions

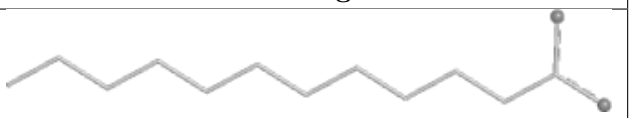

Rings

Ligand PX4 A 512


Bond lengths


Bond angles

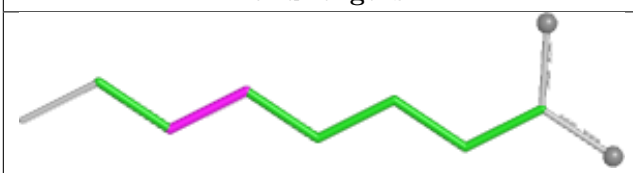

Torsions

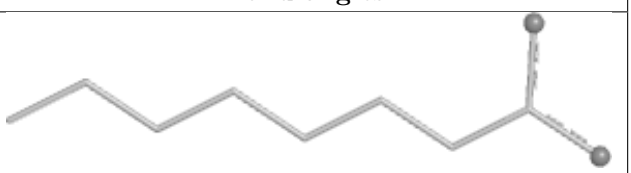

Rings

Ligand PIO C 505

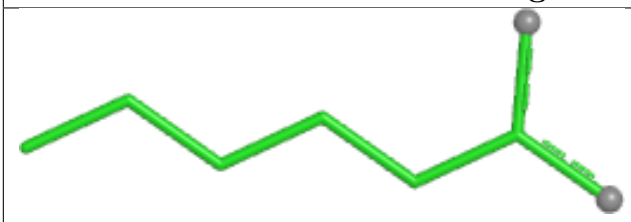

Bond lengths


Bond angles

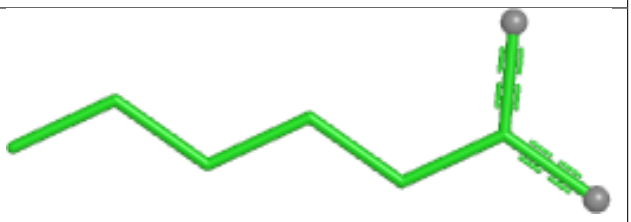

Torsions


Rings

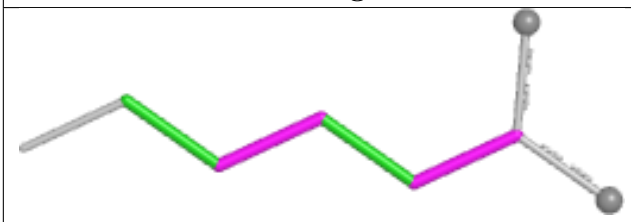
Ligand PIO A 505



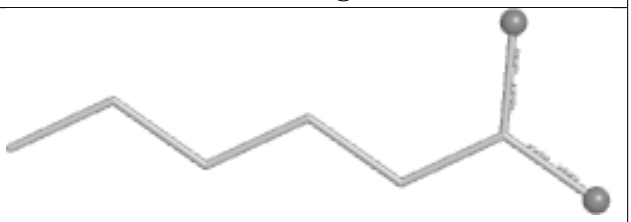
Bond lengths



Bond angles

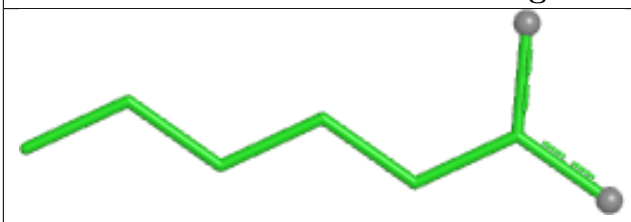


Torsions

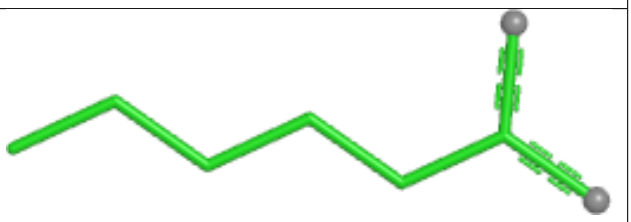


Rings

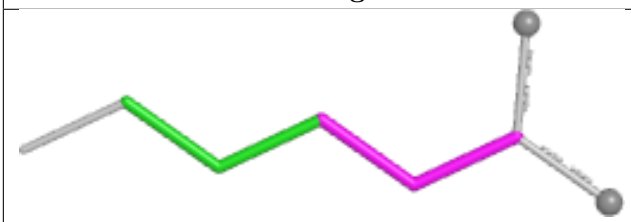
Ligand PIO C 512



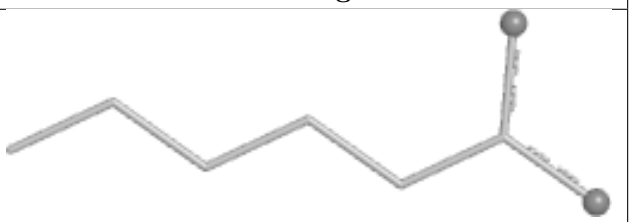
Bond lengths



Bond angles



Torsions

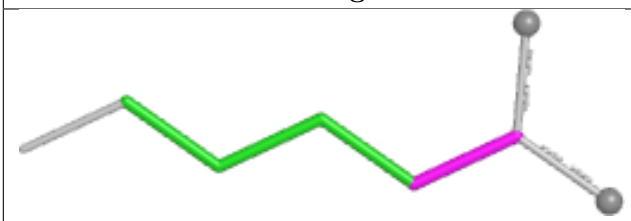


Rings

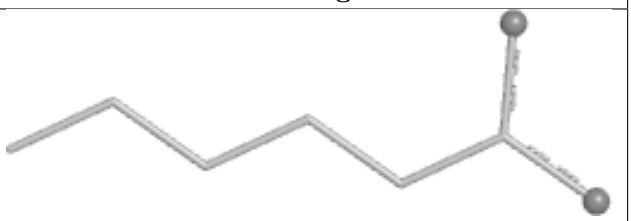
Ligand PIO A 507

Bond lengths

Bond angles

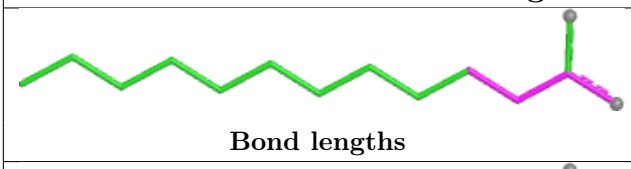


Torsions

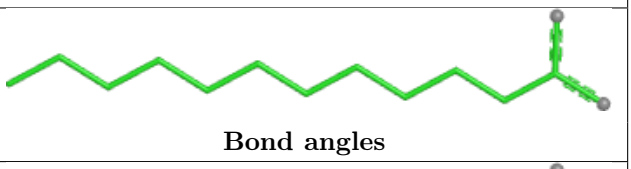


Rings

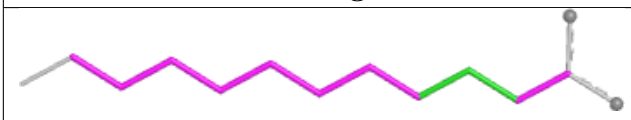
Ligand PX4 B 509



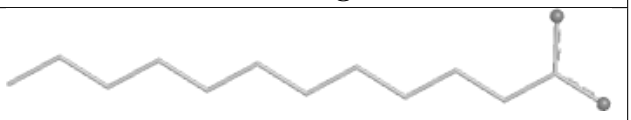
Bond lengths



Bond angles

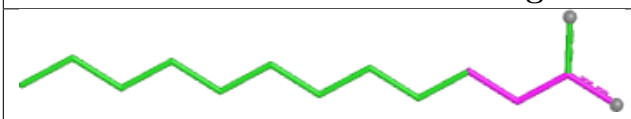


Torsions

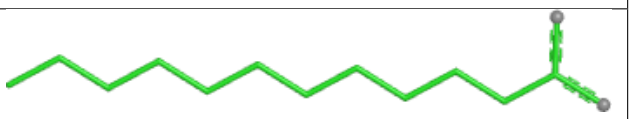


Rings

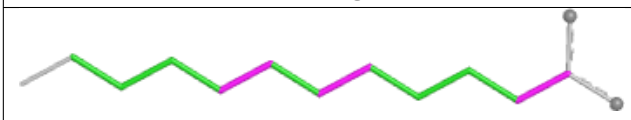
Ligand PX4 D 508



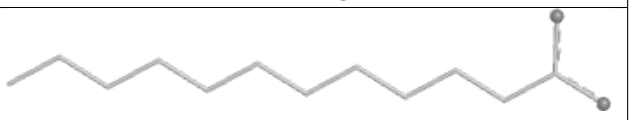
Bond lengths



Bond angles

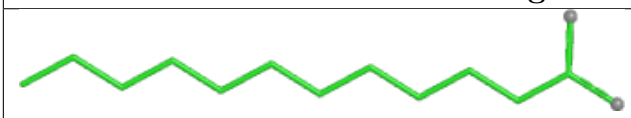


Torsions

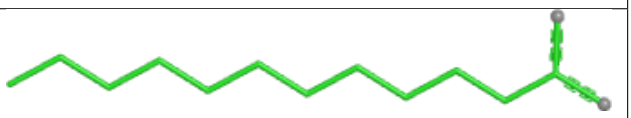


Rings

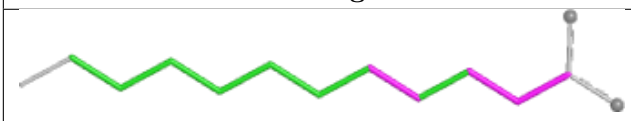
Ligand PX4 E 605



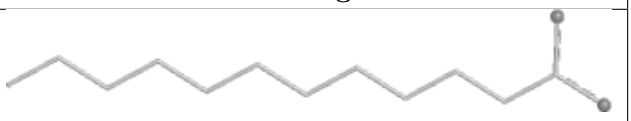
Bond lengths



Bond angles

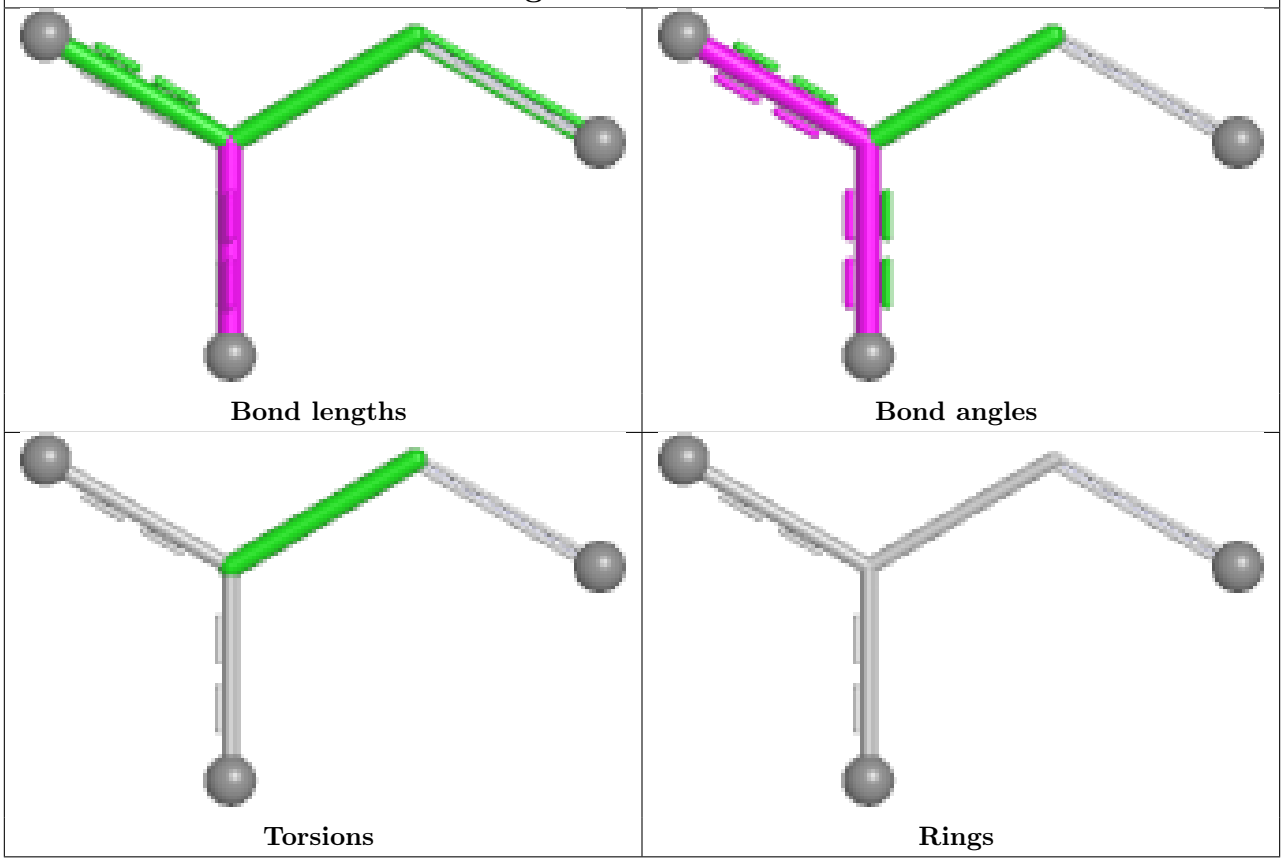


Torsions

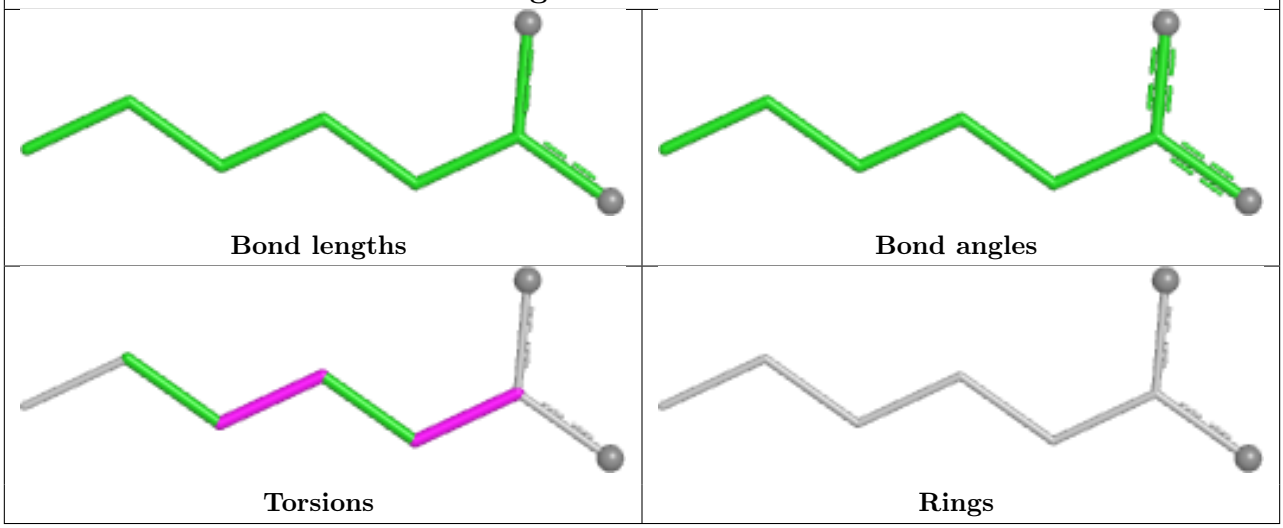


Rings

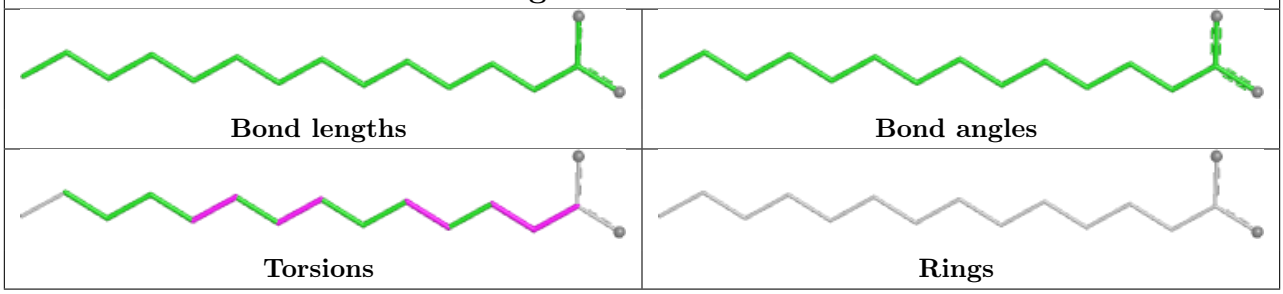
Ligand GLY A 501



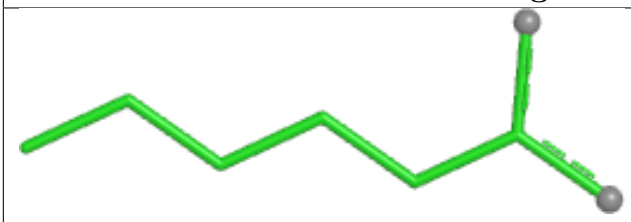
Ligand PIO C 504



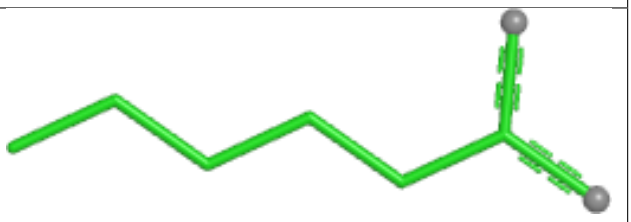
Ligand PX4 E 604



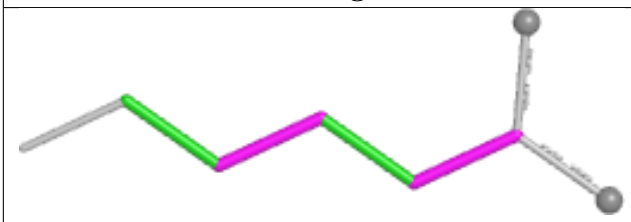
Ligand PIO E 607



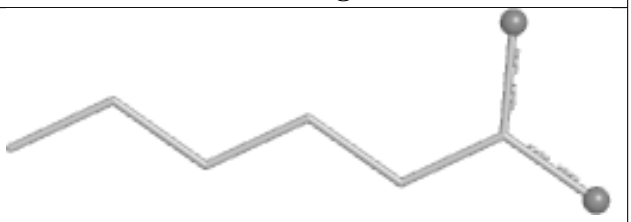
Bond lengths



Bond angles

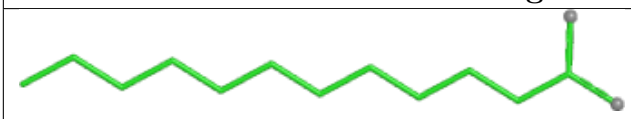


Torsions

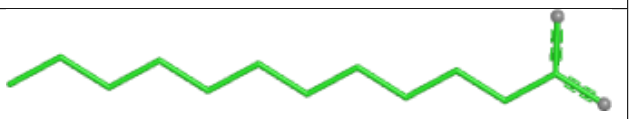


Rings

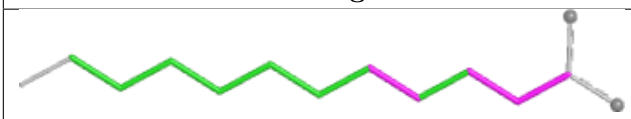
Ligand PX4 D 511



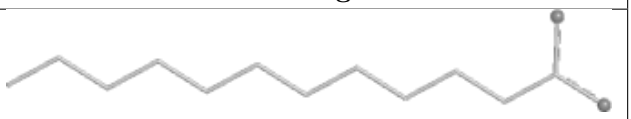
Bond lengths



Bond angles

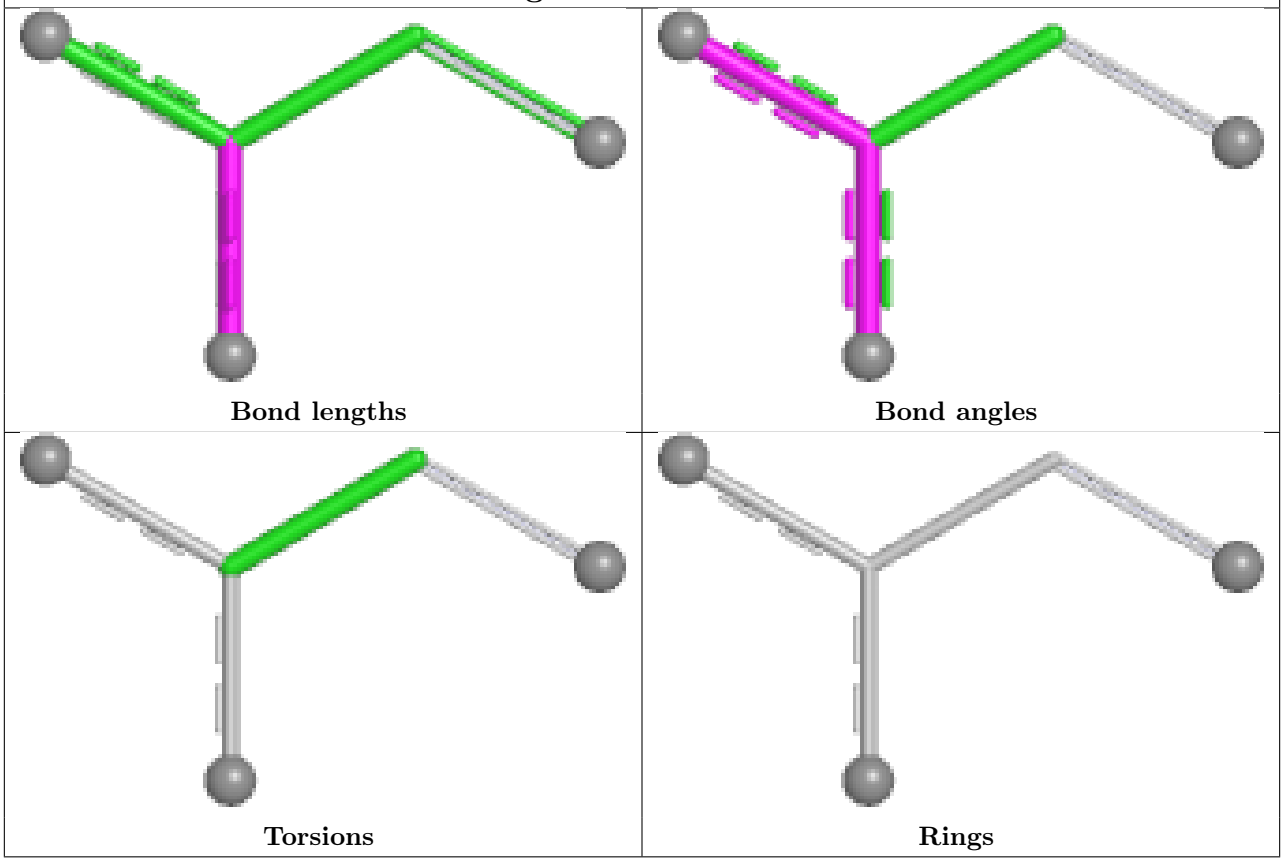


Torsions

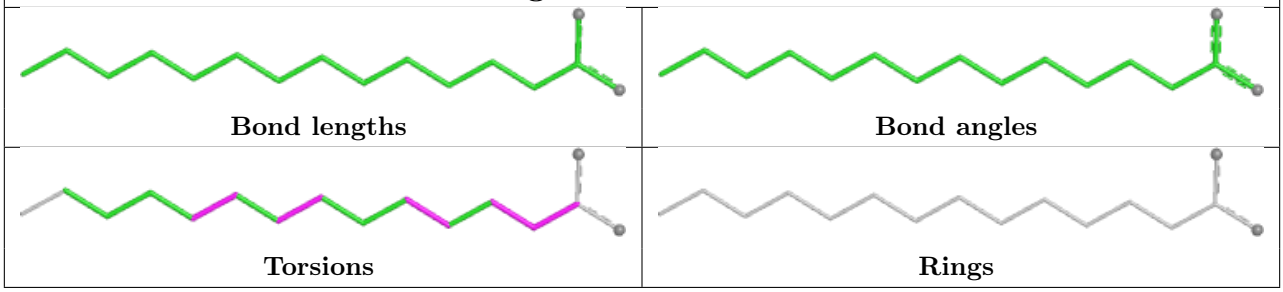


Rings

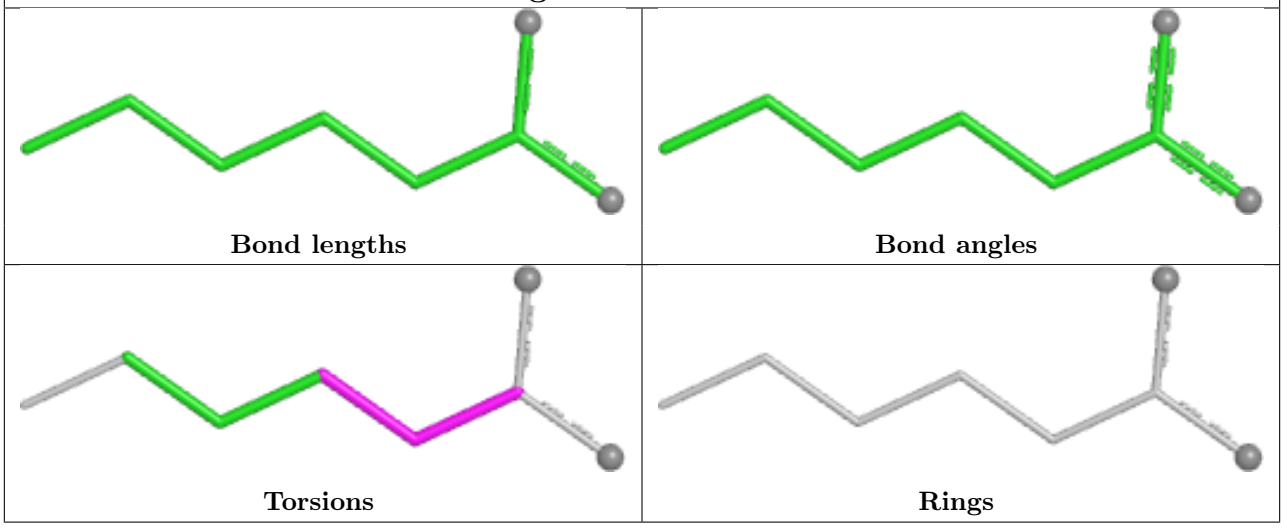
Ligand GLY C 501



Ligand PX4 A 511



Ligand PIO D 512



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.

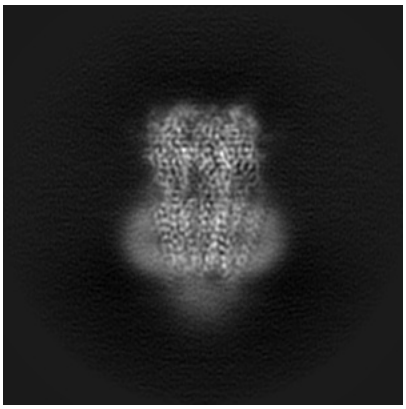
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-44974. These allow visual inspection of the internal detail of the map and identification of artifacts.

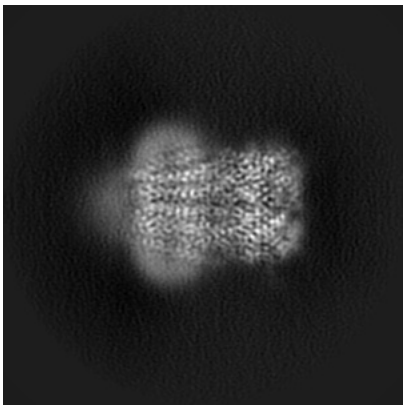
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

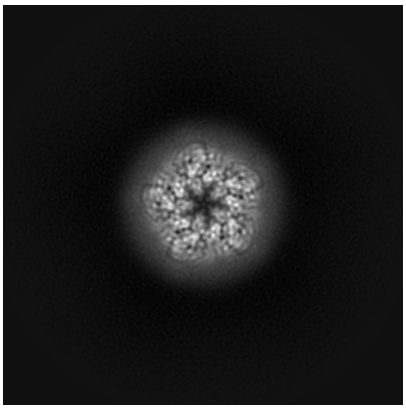
6.1.1 Primary map



X

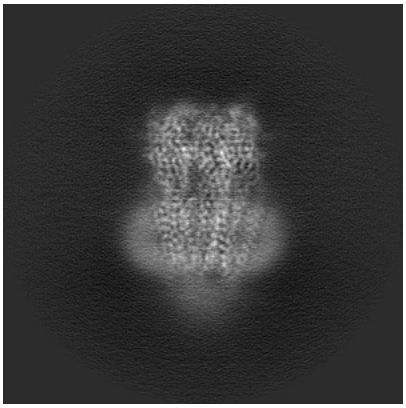


Y

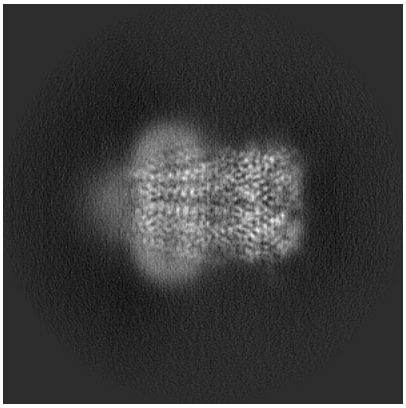


Z

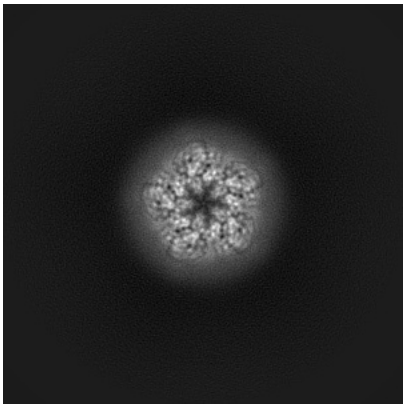
6.1.2 Raw map



X



Y

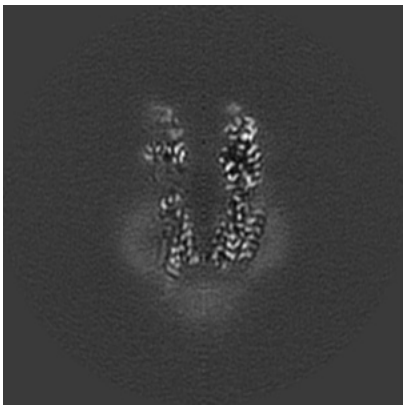


Z

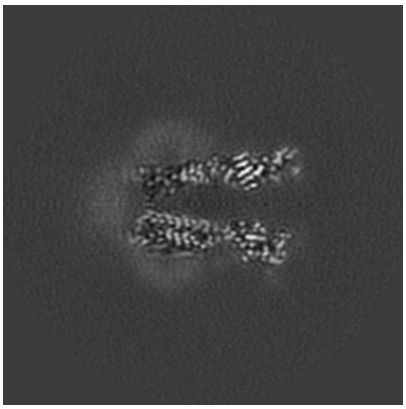
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

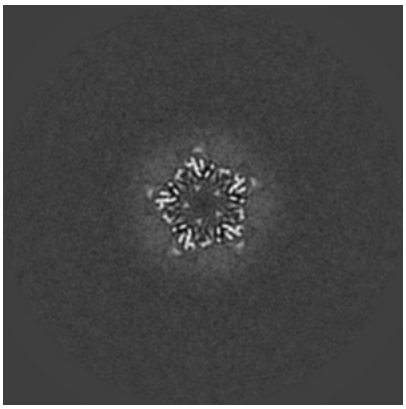
6.2.1 Primary map



X Index: 150

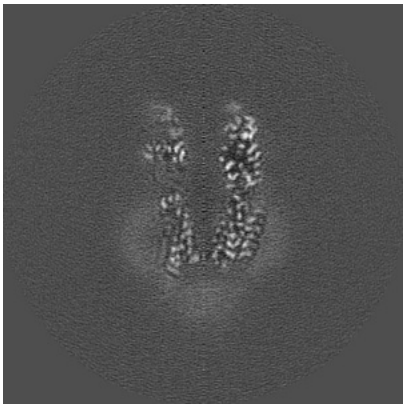


Y Index: 150

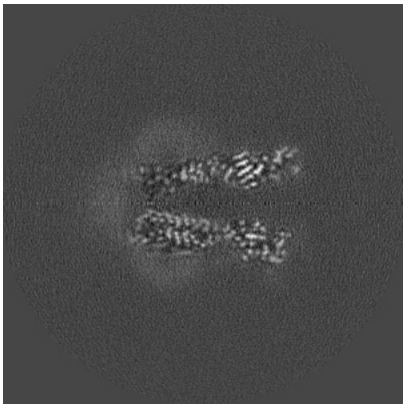


Z Index: 150

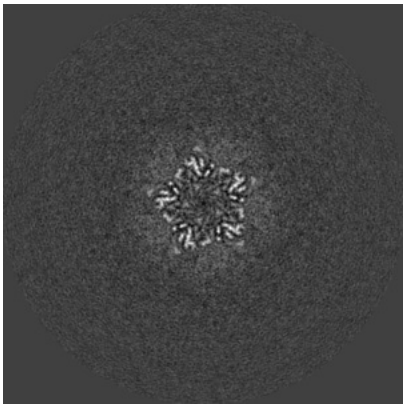
6.2.2 Raw map



X Index: 150



Y Index: 150

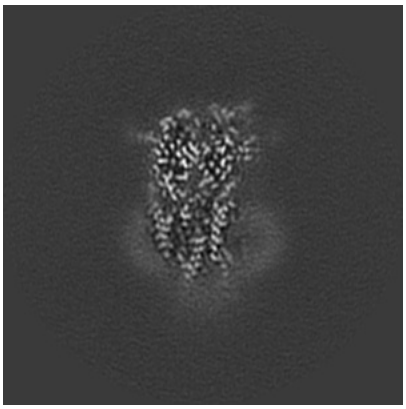


Z Index: 150

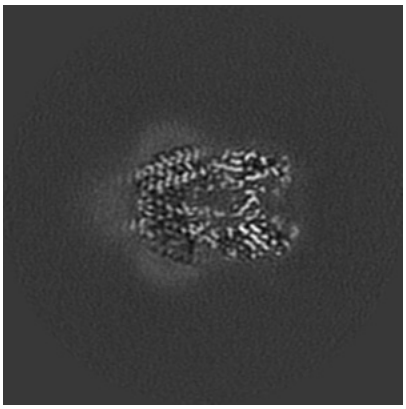
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

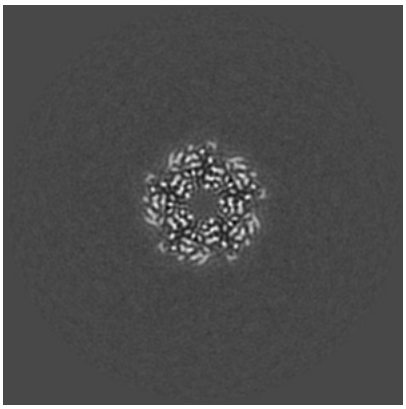
6.3.1 Primary map



X Index: 130

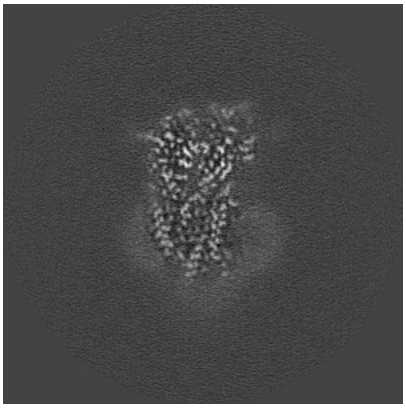


Y Index: 164

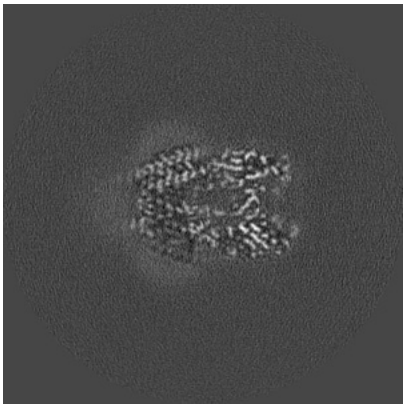


Z Index: 185

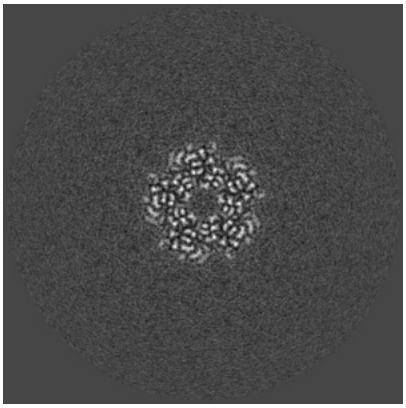
6.3.2 Raw map



X Index: 131



Y Index: 164

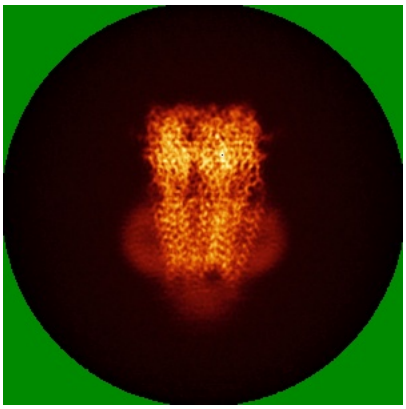


Z Index: 184

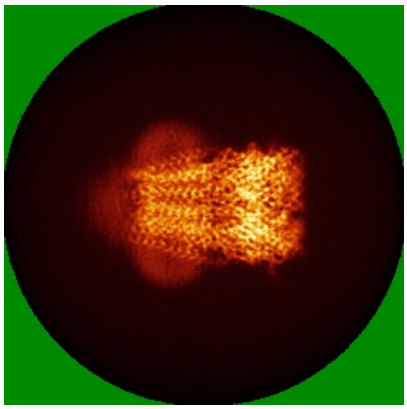
The images above show the largest variance slices of the map in three orthogonal directions.

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

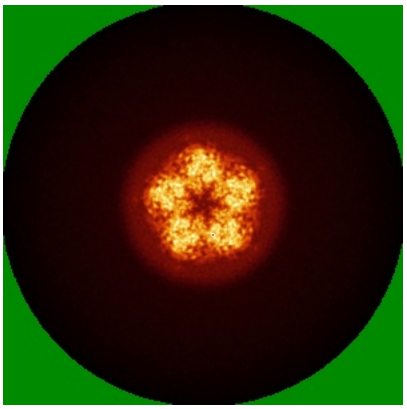
6.4.1 Primary map



X

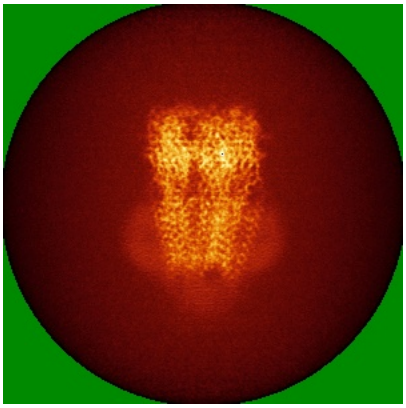


Y

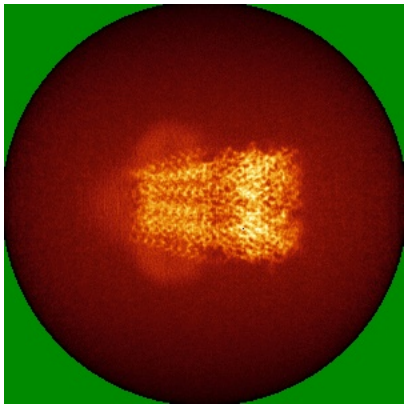


Z

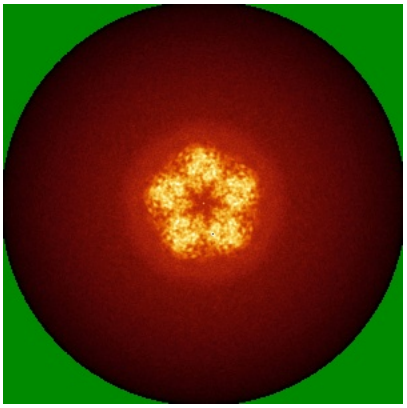
6.4.2 Raw map



X



Y

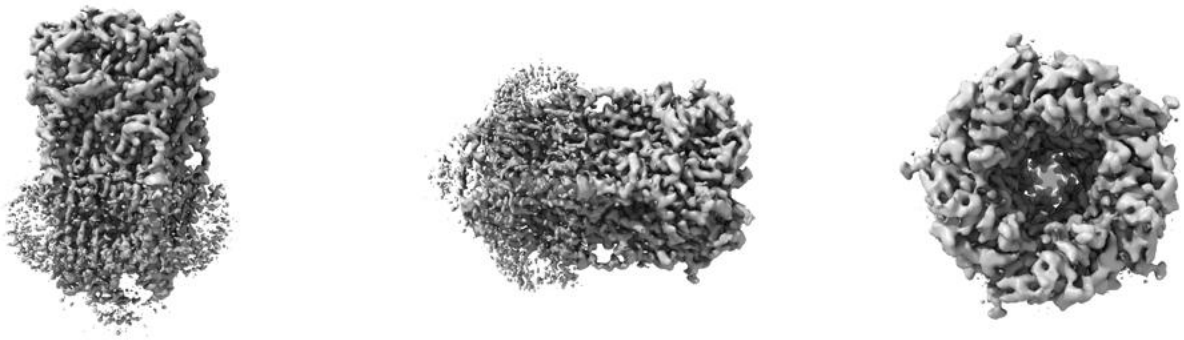


Z

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)

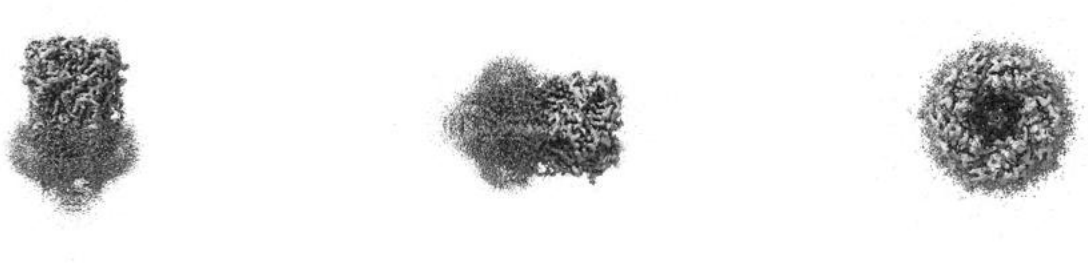
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.011. 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.

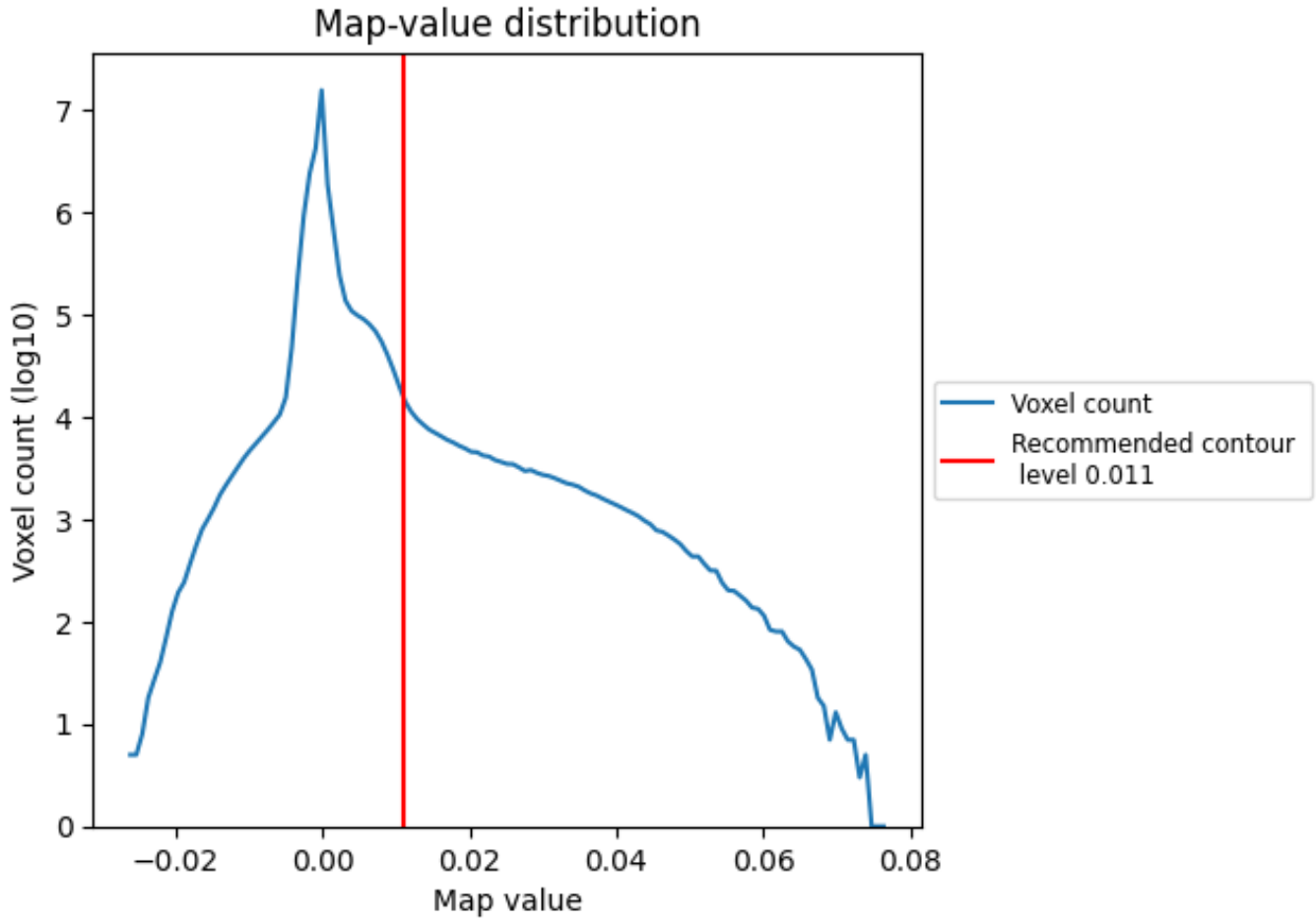
6.6 Mask visualisation (i)

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

7 Map analysis

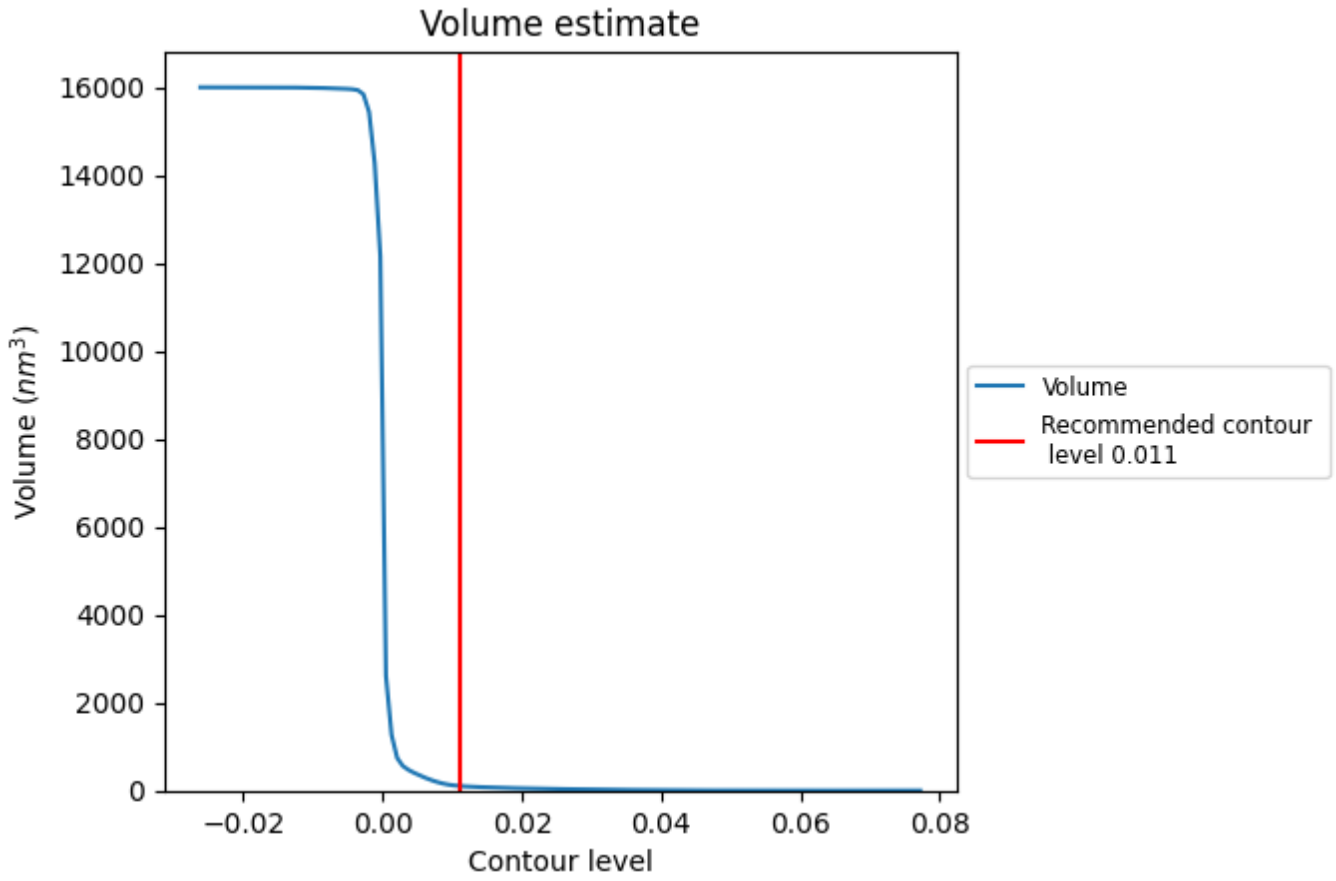
This section contains the results of statistical analysis of the map.

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.

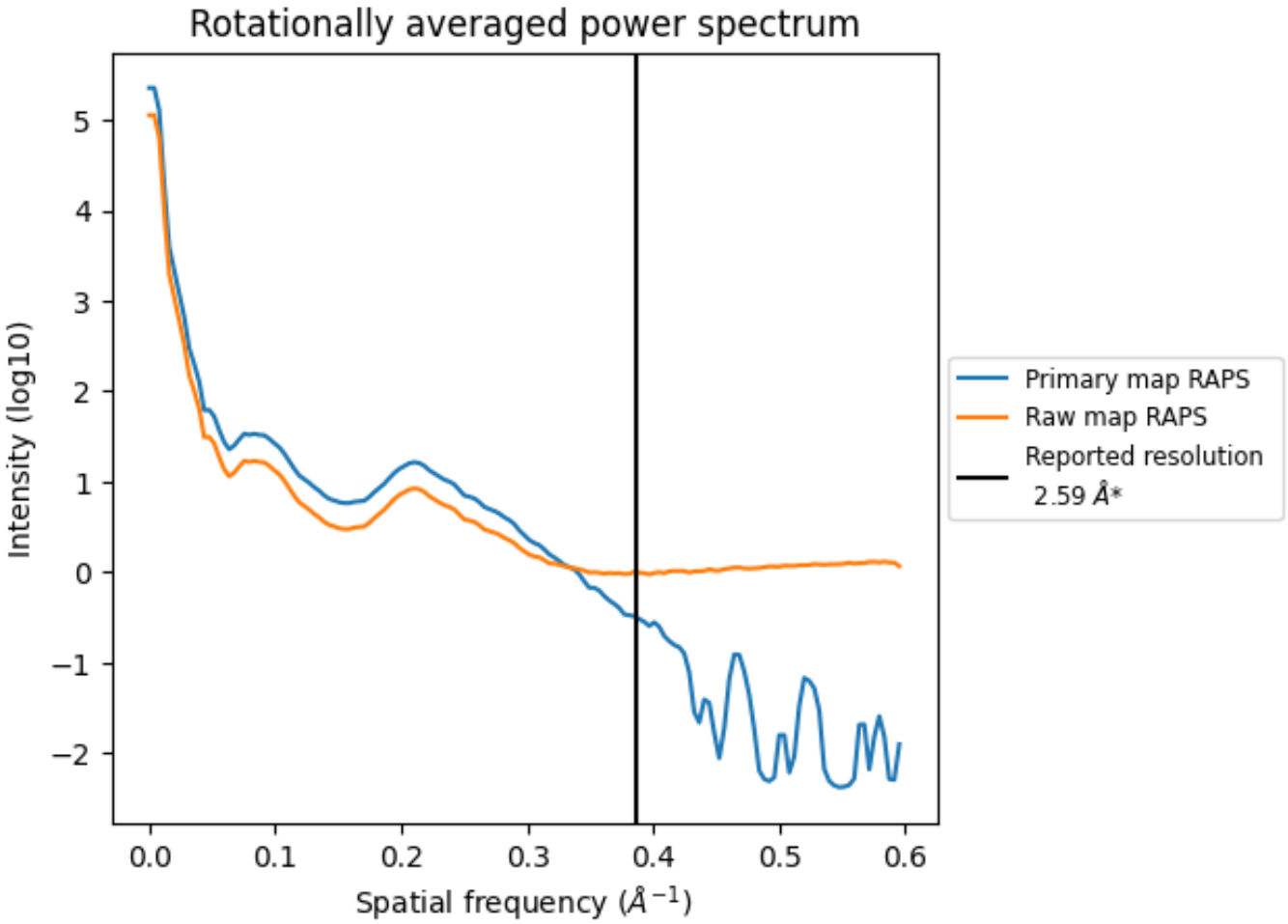
7.2 Volume estimate



The volume at the recommended contour level is 105 nm^3; this corresponds to an approximate mass of 94 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)

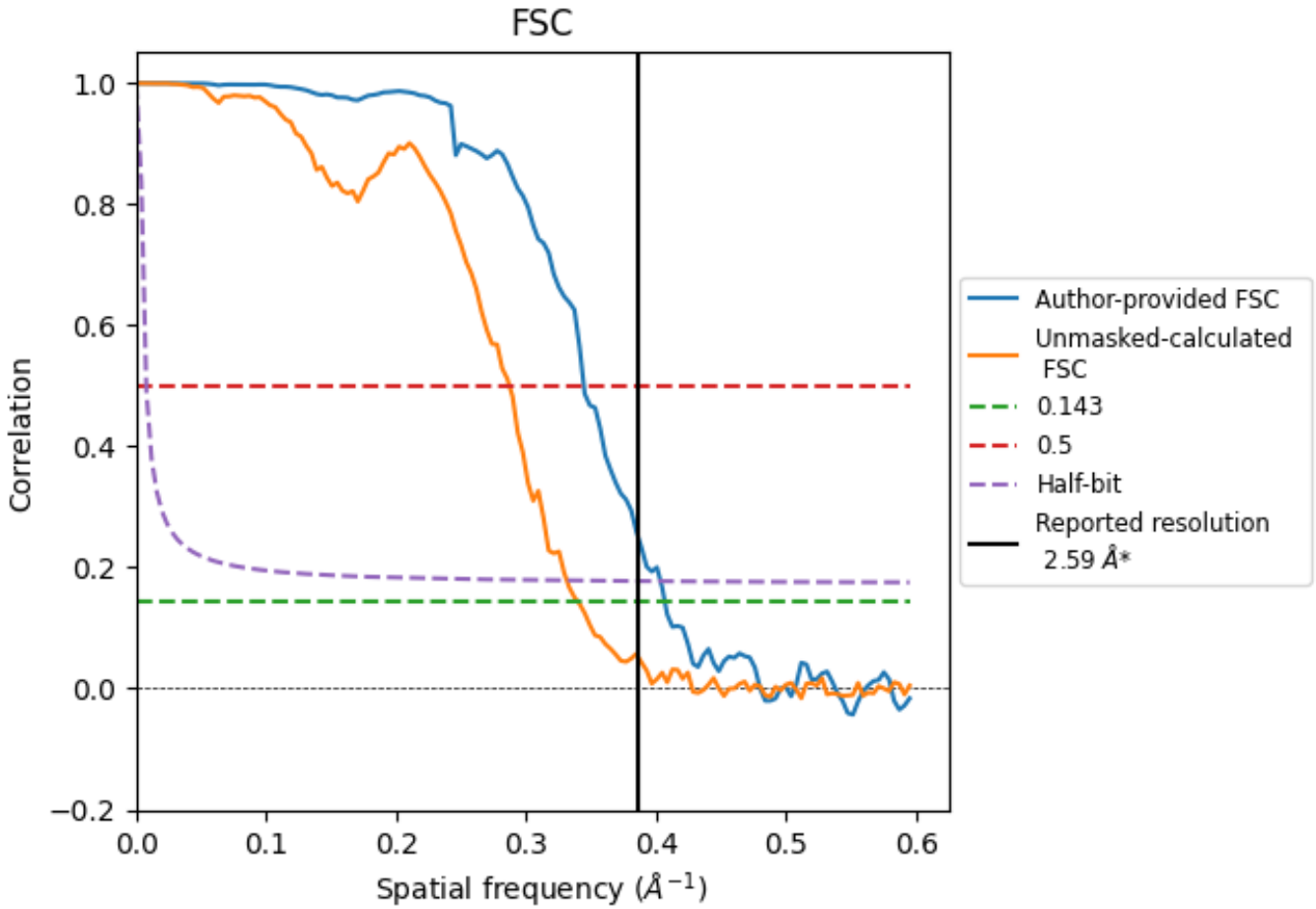


*Reported resolution corresponds to spatial frequency of 0.386 $Å^{-1}$

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 0.386 Å^{-1}

8.2 Resolution estimates (i)

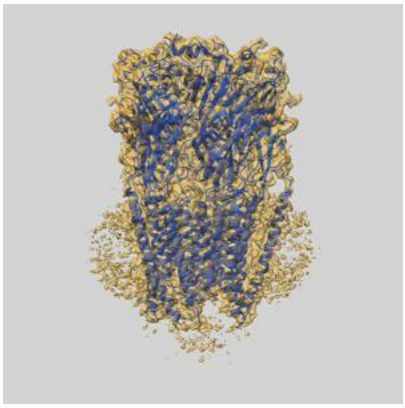
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.59	-	-
Author-provided FSC curve	2.46	2.90	2.48
Unmasked-calculated*	2.94	3.48	3.02

*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 2.94 differs from the reported value 2.59 by more than 10 %

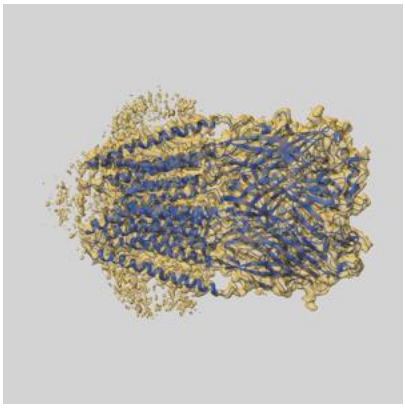
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-44974 and PDB model 9BWG. Per-residue inclusion information can be found in section 3 on page 12.

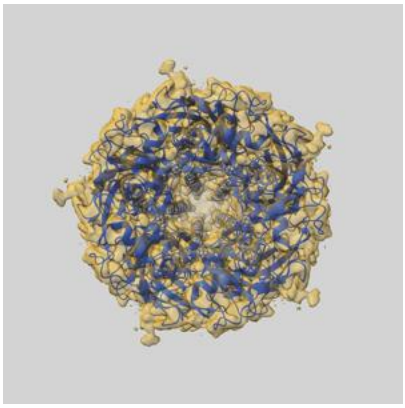
9.1 Map-model overlay



X



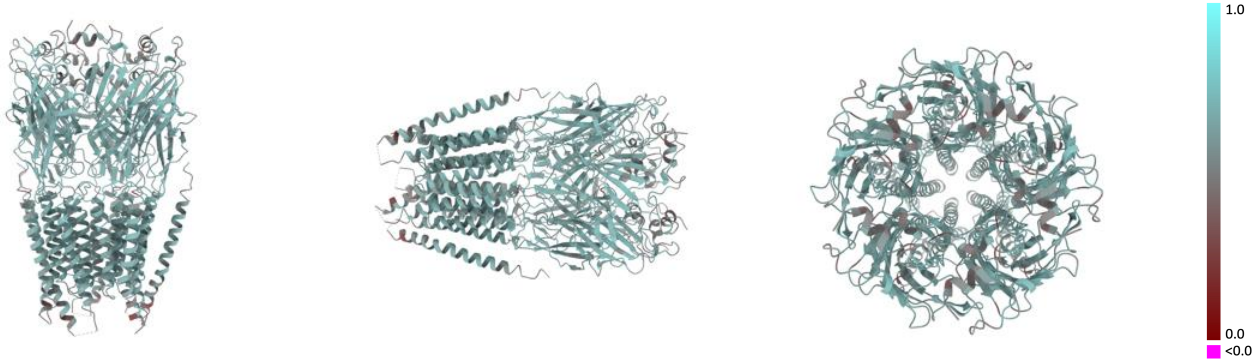
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.011 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.

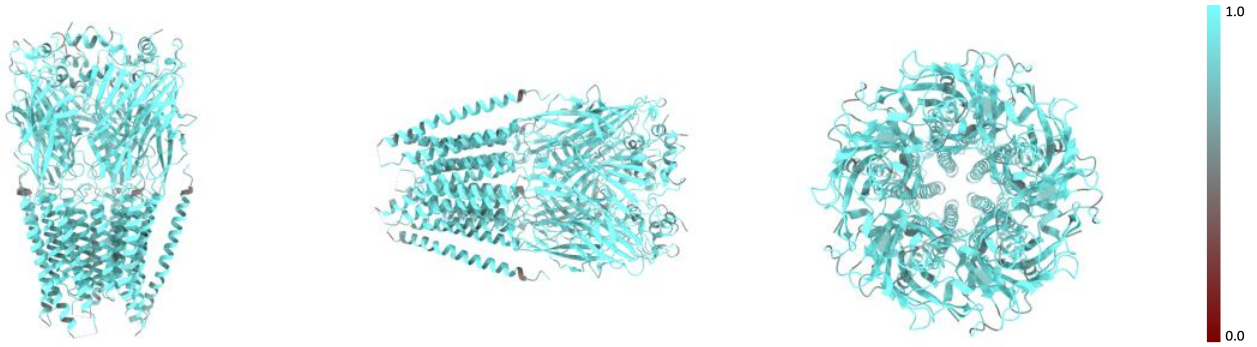
9.2 Q-score mapped to coordinate model (i)



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.

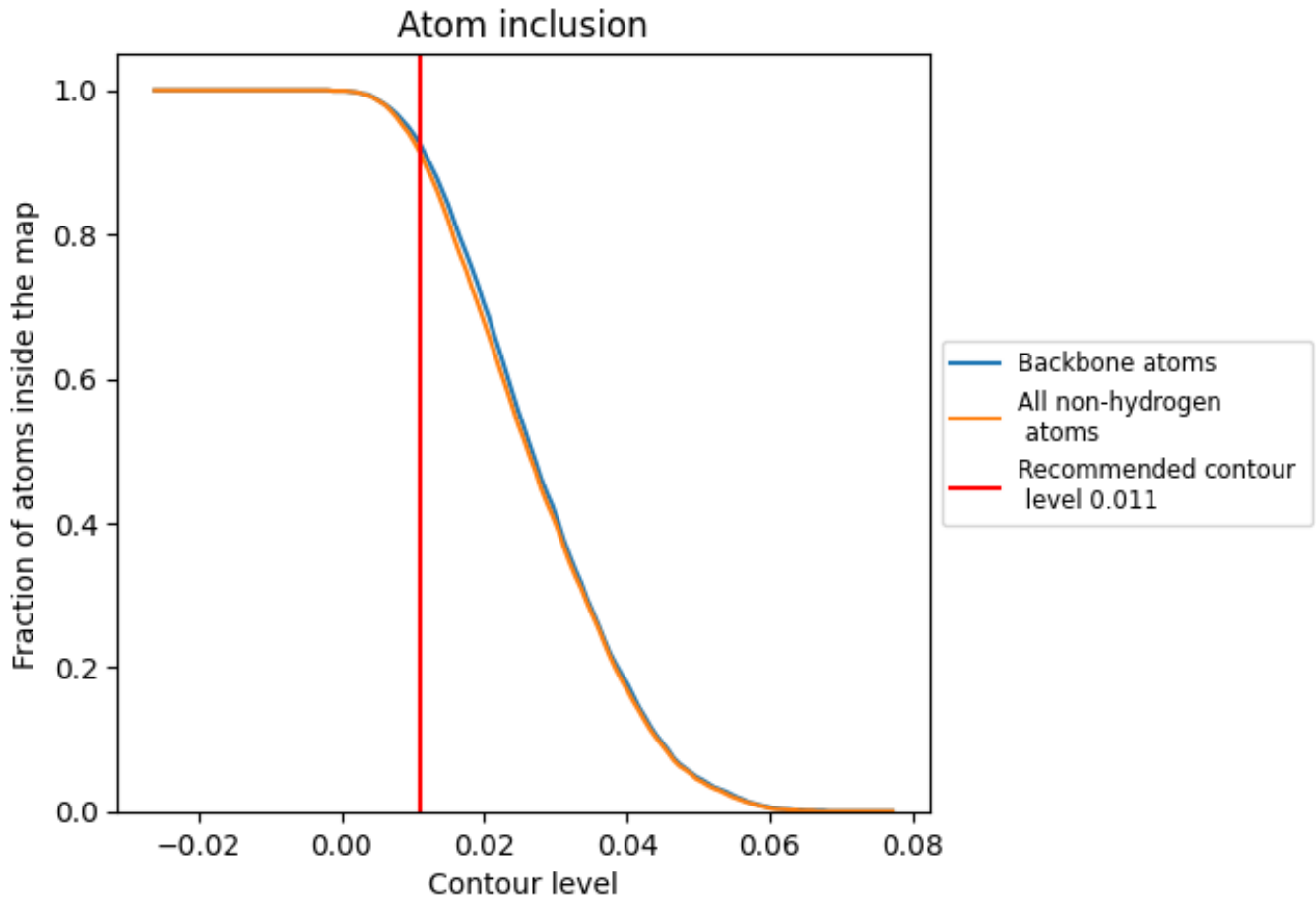
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.011).

9.4 Atom inclusion (i)



At the recommended contour level, 93% 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 (0.011) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9140	0.5970
A	0.9190	0.5990
B	0.9190	0.5970
C	0.9190	0.5990
D	0.9160	0.5970
E	0.9180	0.5980
F	0.6790	0.5020
G	0.6430	0.4990
H	0.6430	0.5040
I	0.7140	0.5070
J	0.6790	0.5020