Full wwPDB X-ray Structure Validation Report ⓘ

Feb 18, 2025 – 03:17 pm GMT

PDB ID	:	9HE9
Title	:	Unspecific peroxygenase from Psathyrella aberdarensis (PabUPO-II) in complex with lauric acid
Authors	:	Fernandez-Garcia, A.; Sanz-Aparicio, J.
Deposited on	:	2024-11-13
Resolution	:	2.15 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

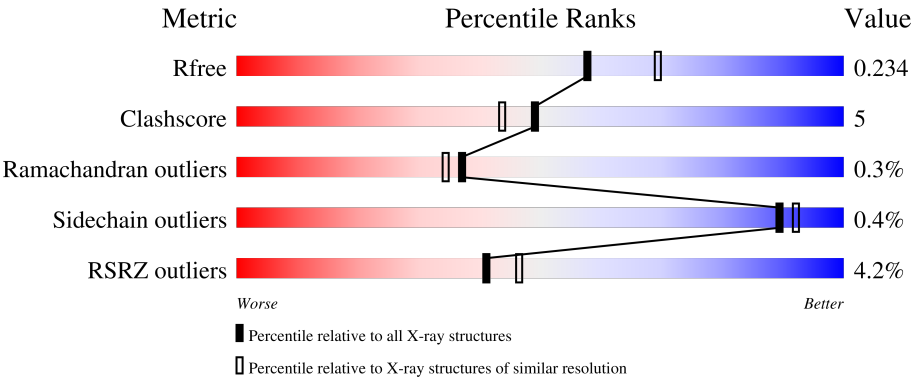
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.41

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.15 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	1881 (2.16-2.16)
Clashscore	180529	2047 (2.16-2.16)
Ramachandran outliers	177936	2027 (2.16-2.16)
Sidechain outliers	177891	2026 (2.16-2.16)
RSRZ outliers	164620	1882 (2.16-2.16)

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

Mol	Chain	Length	Quality of chain
1	A	335	2% 93% 7%
1	B	335	4% 92% 8%
1	C	335	7% 92% 8%
2	G	5	20% 80%
3	H	7	57% 43%

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Mol	Chain	Length	Quality of chain
4	X	4	50% 50%
4	l	4	50% 50%
5	Y	6	17% 67% 17%
6	n	2	100%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
8	EPE	B	402	-	-	X	-
8	EPE	C	401	-	-	X	-

2 Entry composition

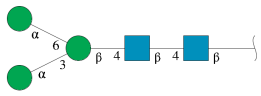
There are 13 unique types of molecules in this entry. The entry contains 9241 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Heme-thiolate peroxidase.

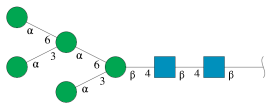
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	335	Total	C	N	O	S	0	8	0
			2637	1675	456	500	6			
1	B	335	Total	C	N	O	S	0	8	0
			2637	1676	455	499	7			
1	C	335	Total	C	N	O	S	0	8	0
			2637	1676	455	499	7			

- Molecule 2 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	G	5	Total	C	N	O	0	0	0
			61	34	2	25			

- Molecule 3 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

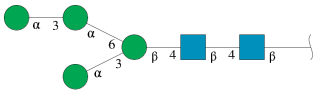


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	H	7	Total	C	N	O	0	0	0
			83	46	2	35			

- Molecule 4 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
4	X	4	Total	C	N	O	0	0	0
			50	28	2	20			
4	l	4	Total	C	N	O	0	0	0
			50	28	2	20			

- Molecule 5 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

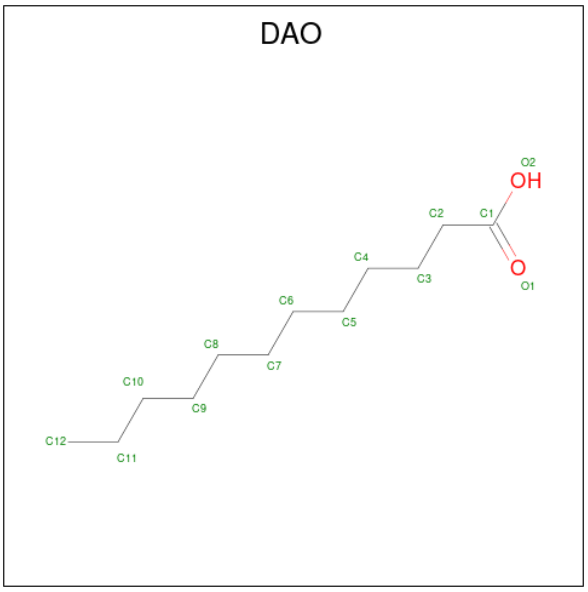


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
5	Y	6	Total	C	N	O	0	0	0
			72	40	2	30			

- Molecule 6 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

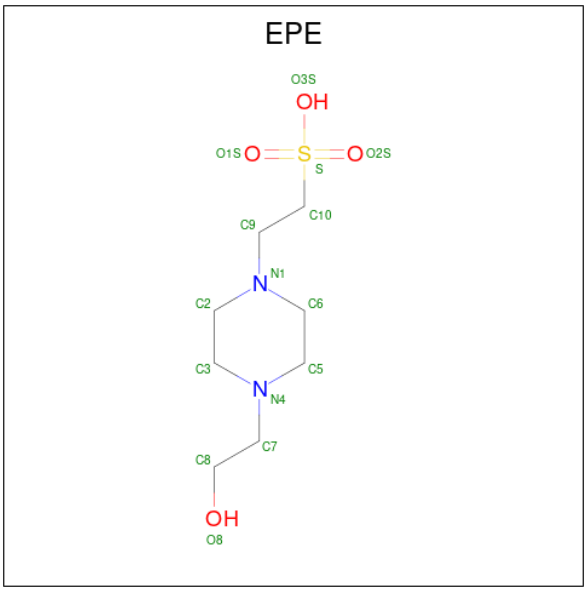
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
6	n	2	Total	C	N	O	0	0	0
			28	16	2	10			

- Molecule 7 is LAURIC ACID (three-letter code: DAO) (formula: $C_{12}H_{24}O_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	1	Total C O 14 12 2	0	0
7	B	1	Total C O 14 12 2	0	0

- Molecule 8 is 4-(2-HYDROXYETHYL)-1-PIPERAZINE ETHANESULFONIC ACID (three-letter code: EPE) (formula: $C_8H_{18}N_2O_4S$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	1	Total C N O S 15 8 2 4 1	0	0

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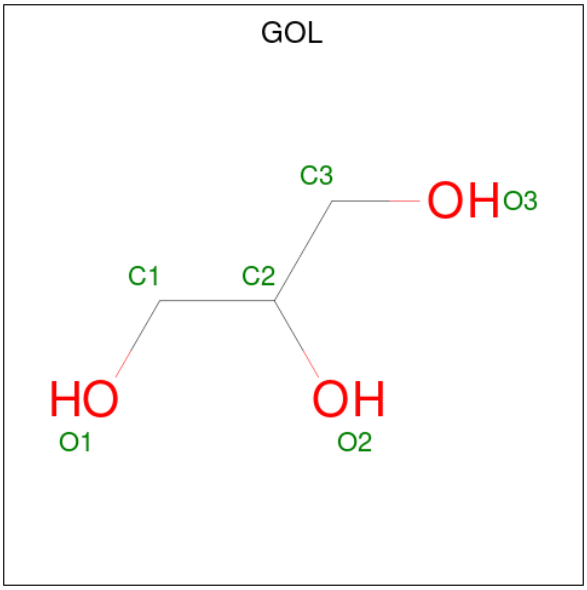
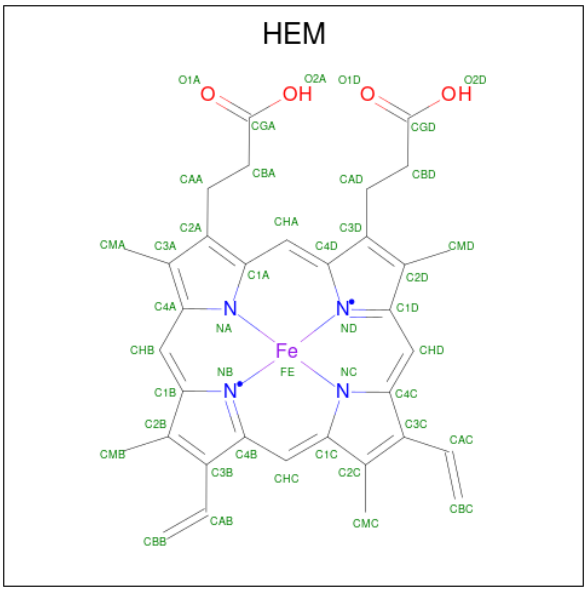
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	B	1	Total C N O S 15 8 2 4 1	0	0
8	C	1	Total C N O S 15 8 2 4 1	0	0

- Molecule 9 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



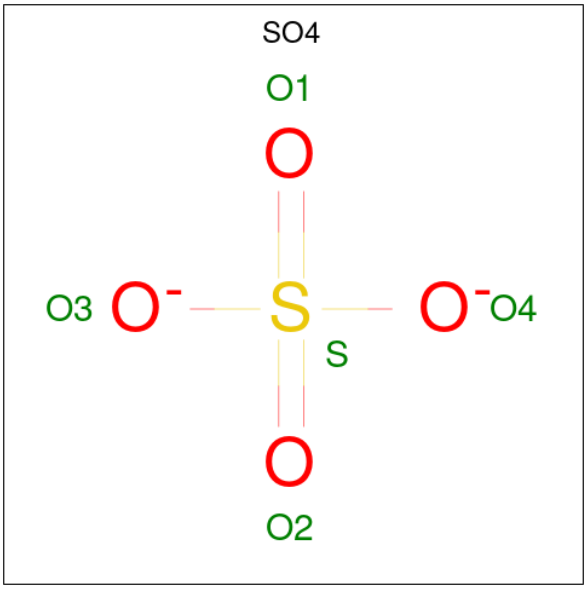
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	A	1	Total C O 6 3 3	0	0
9	A	1	Total C O 6 3 3	0	0
9	B	1	Total C O 6 3 3	0	0

- Molecule 10 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
10	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
10	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
10	C	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		

- Molecule 11 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
11	A	1	Total	O	S	0	0
			5	4	1		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
11	A	1	Total O S 5 4 1	0	0
11	B	1	Total O S 5 4 1	0	0
11	C	1	Total O S 5 4 1	0	0
11	C	1	Total O S 5 4 1	0	0

- Molecule 12 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

- Molecule 13 is water.

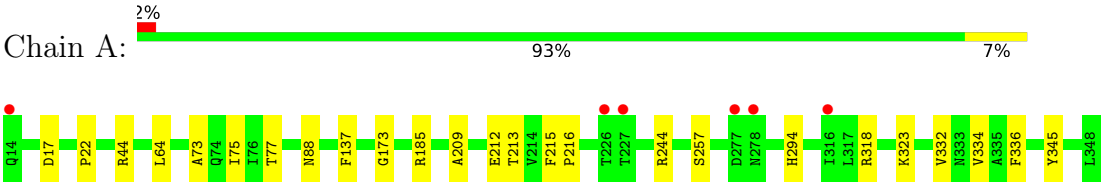
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
13	A	310	Total O 310 310	0	0
13	B	246	Total O 246 246	0	0
13	C	182	Total O 182 182	0	0

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 electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

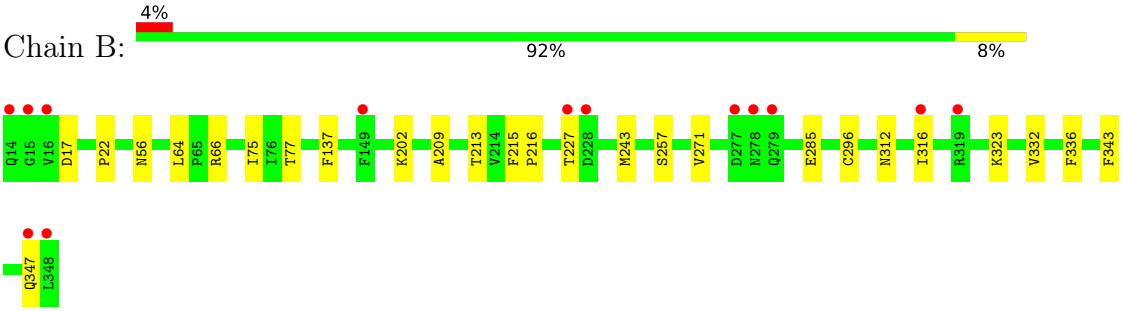
• Molecule 1: Heme-thiolate peroxidase

Chain A:



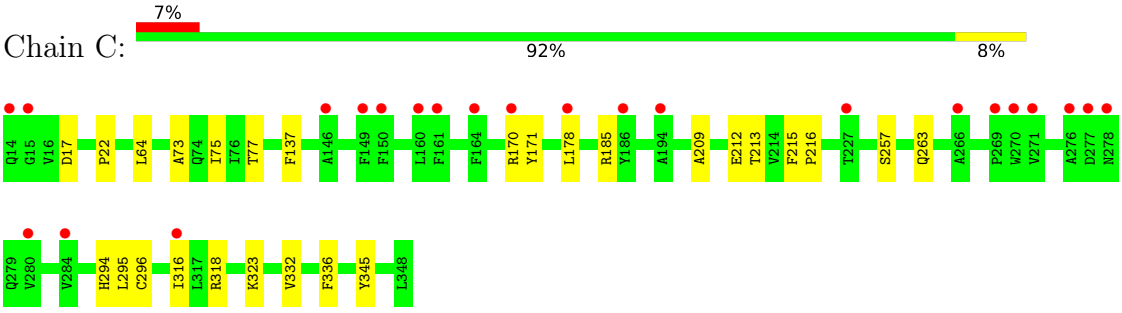
• Molecule 1: Heme-thiolate peroxidase

Chain B:



• Molecule 1: Heme-thiolate peroxidase

Chain C:

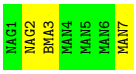


• Molecule 2: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G:

• Molecule 3: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H:



• Molecule 4: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

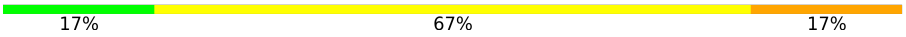
Chain X:

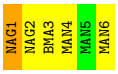
• Molecule 4: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain l:

• Molecule 5: alpha-D-mannopyranose-(1-3)-alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Y:





• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain n:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	271.88Å 75.00Å 105.45Å 90.00° 111.74° 90.00°	Depositor
Resolution (Å)	48.37 – 2.15 48.37 – 2.15	Depositor EDS
% Data completeness (in resolution range)	99.8 (48.37-2.15) 99.8 (48.37-2.15)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.29 (at 2.16Å)	Xtriage
Refinement program	REFMAC 5.8.0419	Depositor
R, R_{free}	0.199 , 0.227 0.205 , 0.234	Depositor DCC
R_{free} test set	5498 reflections (5.12%)	wwPDB-VP
Wilson B-factor (Å^2)	37.7	Xtriage
Anisotropy	0.625	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 36.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.005 for -h-2*l,-k,l	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	9241	wwPDB-VP
Average B, all atoms (Å^2)	51.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.61% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: NAG, HEM, DAO, MAN, MG, EPE, BMA, GOL, SO4

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	0.33	0/2742	0.61	0/3747
1	B	0.33	0/2742	0.61	1/3746 (0.0%)
1	C	0.34	0/2742	0.63	0/3746
All	All	0.33	0/8226	0.62	1/11239 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	202	LYS	CB-CA-C	-5.15	100.09	110.40

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	2637	0	2490	21	0
1	B	2637	0	2493	25	0
1	C	2637	0	2493	27	0
2	G	61	0	52	0	0
3	H	83	0	70	0	0
4	X	50	0	43	0	0
4	l	50	0	43	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	Y	72	0	61	1	0
6	n	28	0	25	0	0
7	A	14	0	23	1	0
7	B	14	0	23	1	0
8	A	15	0	18	3	0
8	B	15	0	18	10	0
8	C	15	0	18	9	0
9	A	12	0	16	1	0
9	B	6	0	8	2	0
10	A	43	0	30	5	0
10	B	43	0	30	2	0
10	C	43	0	30	4	0
11	A	10	0	0	0	0
11	B	5	0	0	0	0
11	C	10	0	0	1	0
12	A	1	0	0	0	0
12	B	1	0	0	0	0
12	C	1	0	0	0	0
13	A	310	0	0	5	0
13	B	246	0	0	4	0
13	C	182	0	0	5	0
All	All	9241	0	7984	87	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 5.

All (87) 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:B:296:CYS:CB	8:B:402:EPE:H52	1.74	1.18
1:B:296:CYS:HB2	8:B:402:EPE:H52	1.19	1.14
1:B:296:CYS:HB2	8:B:402:EPE:C5	1.81	1.10
1:B:343:PHE:CD1	1:B:347[A]:GLN:NE2	2.29	1.01
1:A:318[B]:ARG:NH1	1:A:345:TYR:O	2.08	0.86
1:C:296:CYS:H	8:C:401:EPE:H31	1.45	0.82
1:C:294:HIS:HA	8:C:401:EPE:H21	1.61	0.80
1:C:296:CYS:H	8:C:401:EPE:C3	1.94	0.80
1:C:318[B]:ARG:NH1	13:C:501:HOH:O	2.14	0.73
1:B:296:CYS:SG	8:B:402:EPE:H52	2.33	0.69
1:A:44:ARG:HB3	9:A:404:GOL:H2	1.77	0.67
10:C:402:HEM:HBB2	10:C:402:HEM:HHC	1.78	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:A:405:HEM:HBB2	10:A:405:HEM:HHC	1.78	0.64
10:B:404:HEM:HBB2	10:B:404:HEM:HHC	1.80	0.64
1:B:271:VAL:HG11	1:B:285[B]:GLU:CD	2.18	0.64
1:C:73:ALA:O	1:C:77[B]:THR:HG22	1.97	0.63
1:C:294:HIS:CA	8:C:401:EPE:H21	2.29	0.63
1:A:77[B]:THR:HG23	13:A:545:HOH:O	2.00	0.62
1:B:17:ASP:OD1	1:B:323:LYS:NZ	2.36	0.59
1:B:66:ARG:N	9:B:403:GOL:H31	2.19	0.57
1:A:77[A]:THR:HG22	13:A:741:HOH:O	2.05	0.57
1:C:296:CYS:HB2	8:C:401:EPE:H32	1.86	0.56
1:A:73:ALA:O	1:A:77[B]:THR:HG22	2.07	0.55
1:A:173:GLY:HA2	1:C:318[B]:ARG:NH2	2.22	0.54
1:C:295:LEU:N	8:C:401:EPE:H31	2.23	0.54
10:C:402:HEM:HMC2	10:C:402:HEM:HBC2	1.91	0.52
1:B:22:PRO:HG2	1:B:77[A]:THR:HG23	1.91	0.52
1:B:296:CYS:HB2	8:B:402:EPE:H51	1.83	0.52
1:A:22:PRO:HG2	1:A:77[A]:THR:HG23	1.93	0.51
1:C:22:PRO:HG2	1:C:77[A]:THR:HG23	1.92	0.51
1:B:296:CYS:CB	8:B:402:EPE:C5	2.59	0.51
1:C:185:ARG:NH2	1:C:212[B]:GLU:OE2	2.44	0.50
1:B:56:ASN:HB3	1:B:243[B]:MET:SD	2.52	0.50
1:B:66:ARG:H	9:B:403:GOL:H31	1.77	0.50
1:C:296:CYS:CB	8:C:401:EPE:H32	2.42	0.49
1:B:296:CYS:CA	8:B:402:EPE:H52	2.39	0.48
1:C:295:LEU:HB2	8:C:401:EPE:H81	1.94	0.48
10:C:402:HEM:HBC2	10:C:402:HEM:CMC	2.42	0.48
1:B:343:PHE:CE1	1:B:347[A]:GLN:NE2	2.78	0.48
1:A:77[B]:THR:HG21	13:A:716:HOH:O	2.14	0.48
1:B:209:ALA:O	1:B:213:THR:HG23	2.14	0.48
1:A:17:ASP:OD1	1:A:323:LYS:NZ	2.45	0.48
1:A:209:ALA:O	1:A:213:THR:HG23	2.14	0.47
1:B:312:ASN:ND2	13:B:502:HOH:O	2.44	0.47
1:C:17:ASP:OD1	1:C:323:LYS:NZ	2.46	0.47
1:A:215:PHE:N	1:A:216:PRO:CD	2.78	0.46
1:A:332:VAL:HG13	1:A:336:PHE:CD2	2.50	0.46
1:C:316:ILE:HG13	11:C:403:SO4:O1	2.15	0.46
1:A:212[A]:GLU:OE2	7:A:401:DAO:O1	2.33	0.46
1:B:215:PHE:N	1:B:216:PRO:CD	2.78	0.46
1:A:294:HIS:ND1	8:A:402:EPE:H21	2.31	0.46
1:B:227:THR:HG22	13:B:681:HOH:O	2.16	0.46
1:C:64:LEU:HD21	1:C:75:ILE:HA	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:178:LEU:HD21	1:C:263:GLN:OE1	2.16	0.46
10:A:405:HEM:HBC2	10:A:405:HEM:CMC	2.45	0.45
1:C:77[B]:THR:HG23	13:C:557:HOH:O	2.16	0.45
1:C:215:PHE:N	1:C:216:PRO:CD	2.79	0.45
1:B:64:LEU:HD21	1:B:75:ILE:HA	1.97	0.45
8:B:402:EPE:H81	13:B:639:HOH:O	2.15	0.45
1:C:318[B]:ARG:NH2	1:C:345:TYR:O	2.49	0.45
1:A:294:HIS:HA	8:A:402:EPE:H102	1.99	0.45
1:C:209:ALA:O	1:C:213:THR:HG23	2.16	0.45
1:C:332:VAL:HG13	1:C:336:PHE:CD2	2.50	0.45
1:A:318[B]:ARG:NH1	13:A:506:HOH:O	2.49	0.45
10:A:405:HEM:HHC	10:A:405:HEM:CBB	2.47	0.44
1:B:296:CYS:SG	8:B:402:EPE:C5	3.04	0.44
1:C:296:CYS:H	8:C:401:EPE:H32	1.79	0.44
1:A:318[B]:ARG:CZ	1:A:345:TYR:O	2.66	0.43
10:A:405:HEM:HBB2	10:A:405:HEM:CHC	2.47	0.43
1:B:332:VAL:HG13	1:B:336:PHE:CD2	2.53	0.43
10:A:405:HEM:HBC2	10:A:405:HEM:HMC2	2.01	0.43
7:B:401:DAO:H51	7:B:401:DAO:H82	1.80	0.43
8:A:402:EPE:H101	8:A:402:EPE:H22	1.82	0.43
1:C:77[B]:THR:HG21	13:C:646:HOH:O	2.19	0.42
1:A:64:LEU:HD21	1:A:75:ILE:HA	2.00	0.42
1:C:77[A]:THR:HG21	13:C:646:HOH:O	2.20	0.42
1:B:316:ILE:HG13	13:B:664:HOH:O	2.19	0.42
1:A:88[B]:ASN:HD21	1:A:334:VAL:HB	1.85	0.42
1:A:185:ARG:HE	1:A:213:THR:HG21	1.85	0.42
1:C:318[B]:ARG:NH2	13:C:516:HOH:O	2.52	0.42
1:C:170:ARG:HD2	1:C:171:TYR:CZ	2.55	0.41
10:B:404:HEM:HBB2	10:B:404:HEM:CHC	2.49	0.41
10:C:402:HEM:HBB2	10:C:402:HEM:CHC	2.47	0.41
1:B:296:CYS:H	8:B:402:EPE:H52	1.84	0.41
1:B:343:PHE:CG	1:B:347[A]:GLN:NE2	2.85	0.41
5:Y:1:NAG:H61	5:Y:2:NAG:C7	2.51	0.41
1:A:244[A]:ARG:NH1	13:A:501:HOH:O	2.34	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 X-ray entries followed by that with respect to entries of similar resolution.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	341/335 (102%)	332 (97%)	8 (2%)	1 (0%)	37	34
1	B	341/335 (102%)	333 (98%)	7 (2%)	1 (0%)	37	34
1	C	341/335 (102%)	332 (97%)	8 (2%)	1 (0%)	37	34
All	All	1023/1005 (102%)	997 (98%)	23 (2%)	3 (0%)	37	34

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	257	SER
1	B	257	SER
1	C	257	SER

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	282/274 (103%)	281 (100%)	1 (0%)	89	92
1	B	282/274 (103%)	281 (100%)	1 (0%)	89	92
1	C	282/274 (103%)	281 (100%)	1 (0%)	89	92
All	All	846/822 (103%)	843 (100%)	3 (0%)	89	92

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	137	PHE
1	B	137	PHE
1	C	137	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

28 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	G	1	2,1	14,14,15	0.41	0	17,19,21	1.47	3 (17%)
2	NAG	G	2	2	14,14,15	0.36	0	17,19,21	0.48	0
2	BMA	G	3	2	11,11,12	0.61	0	15,15,17	0.93	1 (6%)
2	MAN	G	4	2	11,11,12	0.75	0	15,15,17	0.91	1 (6%)
2	MAN	G	5	2	11,11,12	0.52	0	15,15,17	1.01	2 (13%)
3	NAG	H	1	3,1	14,14,15	0.29	0	17,19,21	0.68	0
3	NAG	H	2	3	14,14,15	0.36	0	17,19,21	0.97	1 (5%)
3	BMA	H	3	3	11,11,12	0.30	0	15,15,17	0.75	1 (6%)
3	MAN	H	4	3	11,11,12	0.41	0	15,15,17	0.74	0
3	MAN	H	5	3	11,11,12	0.41	0	15,15,17	0.53	0
3	MAN	H	6	3	11,11,12	0.45	0	15,15,17	0.63	0
3	MAN	H	7	3	11,11,12	0.37	0	15,15,17	0.92	1 (6%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	NAG	X	1	4,1	14,14,15	0.37	0	17,19,21	1.02	1 (5%)
4	NAG	X	2	4	14,14,15	0.24	0	17,19,21	0.74	0
4	BMA	X	3	4	11,11,12	0.51	0	15,15,17	0.81	1 (6%)
4	MAN	X	4	4	11,11,12	0.56	0	15,15,17	0.81	0
5	NAG	Y	1	5,1	14,14,15	0.29	0	17,19,21	0.71	1 (5%)
5	NAG	Y	2	5	14,14,15	0.31	0	17,19,21	0.58	0
5	BMA	Y	3	5	11,11,12	0.48	0	15,15,17	1.13	1 (6%)
5	MAN	Y	4	5	11,11,12	0.44	0	15,15,17	1.10	1 (6%)
5	MAN	Y	5	5	11,11,12	0.31	0	15,15,17	0.48	0
5	MAN	Y	6	5	11,11,12	0.58	0	15,15,17	1.20	2 (13%)
4	NAG	l	1	4,1	14,14,15	0.30	0	17,19,21	1.25	2 (11%)
4	NAG	l	2	4	14,14,15	0.35	0	17,19,21	0.82	1 (5%)
4	BMA	l	3	4	11,11,12	0.35	0	15,15,17	0.75	0
4	MAN	l	4	4	11,11,12	0.45	0	15,15,17	0.73	0
6	NAG	n	1	6,1	14,14,15	0.42	0	17,19,21	0.60	0
6	NAG	n	2	6	14,14,15	0.30	0	17,19,21	0.63	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	G	1	2,1	-	3/6/23/26	0/1/1/1
2	NAG	G	2	2	-	0/6/23/26	0/1/1/1
2	BMA	G	3	2	-	0/2/19/22	0/1/1/1
2	MAN	G	4	2	-	0/2/19/22	0/1/1/1
2	MAN	G	5	2	-	1/2/19/22	0/1/1/1
3	NAG	H	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	H	2	3	-	0/6/23/26	0/1/1/1
3	BMA	H	3	3	-	0/2/19/22	0/1/1/1
3	MAN	H	4	3	-	0/2/19/22	0/1/1/1
3	MAN	H	5	3	-	0/2/19/22	0/1/1/1
3	MAN	H	6	3	-	0/2/19/22	0/1/1/1
3	MAN	H	7	3	-	0/2/19/22	0/1/1/1
4	NAG	X	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	X	2	4	-	0/6/23/26	0/1/1/1
4	BMA	X	3	4	-	0/2/19/22	0/1/1/1
4	MAN	X	4	4	-	0/2/19/22	0/1/1/1
5	NAG	Y	1	5,1	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	Y	2	5	-	0/6/23/26	0/1/1/1
5	BMA	Y	3	5	-	0/2/19/22	0/1/1/1
5	MAN	Y	4	5	-	2/2/19/22	0/1/1/1
5	MAN	Y	5	5	-	0/2/19/22	0/1/1/1
5	MAN	Y	6	5	-	2/2/19/22	0/1/1/1
4	NAG	l	1	4,1	-	1/6/23/26	0/1/1/1
4	NAG	l	2	4	-	4/6/23/26	0/1/1/1
4	BMA	l	3	4	-	2/2/19/22	0/1/1/1
4	MAN	l	4	4	-	0/2/19/22	0/1/1/1
6	NAG	n	1	6,1	-	0/6/23/26	0/1/1/1
6	NAG	n	2	6	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	G	1	NAG	C1-O5-C5	3.65	117.14	112.19
5	Y	6	MAN	C1-C2-C3	3.56	114.05	109.67
4	l	1	NAG	C1-C2-N2	3.49	116.45	110.49
2	G	1	NAG	C1-C2-N2	3.28	116.10	110.49
3	H	7	MAN	C1-C2-C3	2.73	113.03	109.67
5	Y	6	MAN	C1-O5-C5	2.63	115.76	112.19
2	G	5	MAN	C1-C2-C3	2.59	112.85	109.67
4	l	1	NAG	O5-C1-C2	-2.58	107.22	111.29
2	G	4	MAN	C1-O5-C5	2.52	115.61	112.19
2	G	5	MAN	C1-O5-C5	2.46	115.52	112.19
2	G	3	BMA	C1-O5-C5	2.43	115.48	112.19
5	Y	4	MAN	C3-C4-C5	2.41	114.54	110.24
3	H	2	NAG	C1-C2-N2	2.39	114.56	110.49
4	X	1	NAG	C1-C2-N2	2.29	114.41	110.49
5	Y	1	NAG	C1-O5-C5	2.24	115.23	112.19
4	X	3	BMA	C1-O5-C5	2.20	115.17	112.19
5	Y	3	BMA	O2-C2-C3	2.19	114.52	110.14
4	l	2	NAG	C1-C2-N2	2.18	114.21	110.49
2	G	1	NAG	C2-N2-C7	2.12	125.92	122.90
3	H	3	BMA	C1-C2-C3	2.11	112.26	109.67

There are no chirality outliers.

All (19) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	Y	6	MAN	O5-C5-C6-O6
4	l	2	NAG	C8-C7-N2-C2
5	Y	6	MAN	C4-C5-C6-O6
4	l	2	NAG	O7-C7-N2-C2
5	Y	4	MAN	O5-C5-C6-O6
2	G	1	NAG	C1-C2-N2-C7
5	Y	4	MAN	C4-C5-C6-O6
2	G	1	NAG	C8-C7-N2-C2
2	G	1	NAG	O7-C7-N2-C2
4	l	3	BMA	C4-C5-C6-O6
4	l	1	NAG	C1-C2-N2-C7
4	l	3	BMA	O5-C5-C6-O6
4	l	2	NAG	C4-C5-C6-O6
4	l	2	NAG	O5-C5-C6-O6
6	n	2	NAG	O5-C5-C6-O6
6	n	2	NAG	C4-C5-C6-O6
2	G	5	MAN	O5-C5-C6-O6
4	X	1	NAG	C3-C2-N2-C7
4	X	1	NAG	C1-C2-N2-C7

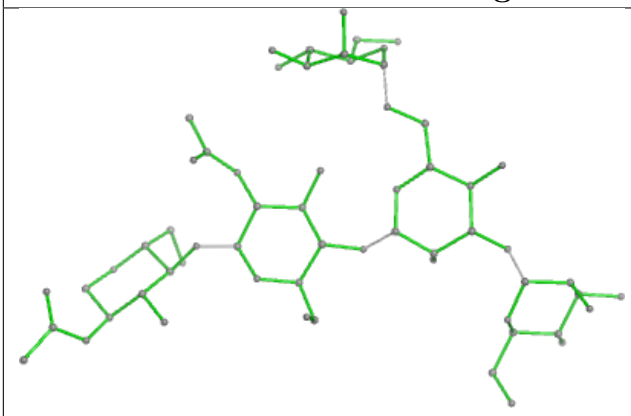
There are no ring outliers.

2 monomers are involved in 1 short contact:

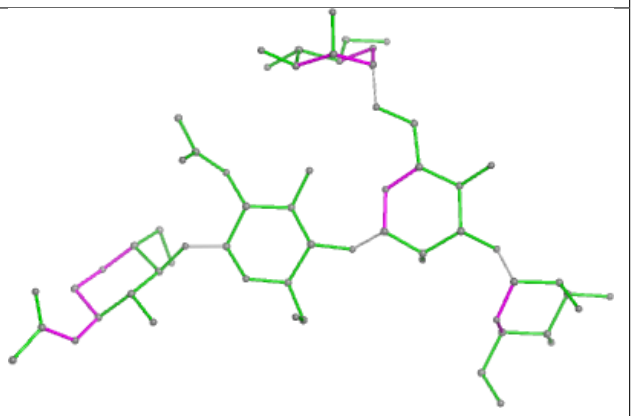
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	Y	2	NAG	1	0
5	Y	1	NAG	1	0

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

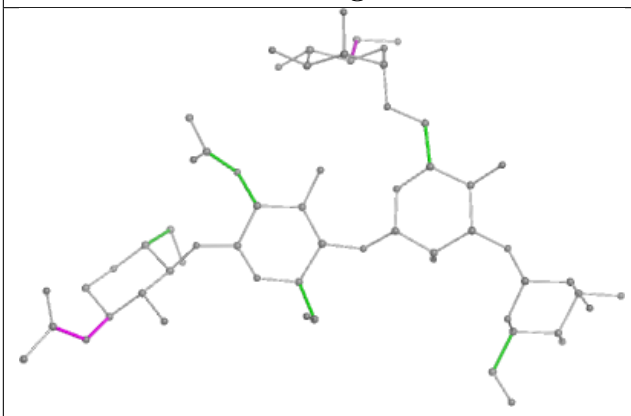
Oligosaccharide Chain G



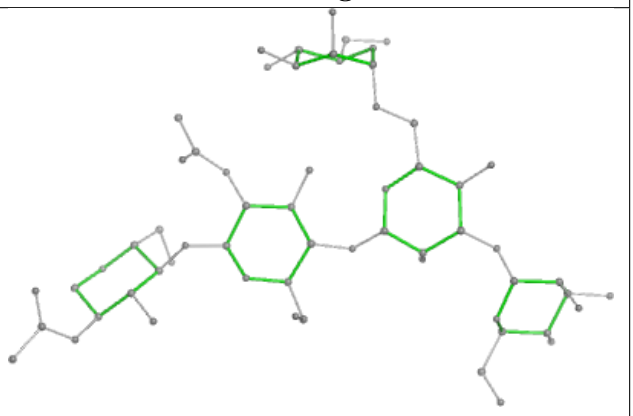
Bond lengths



Bond angles

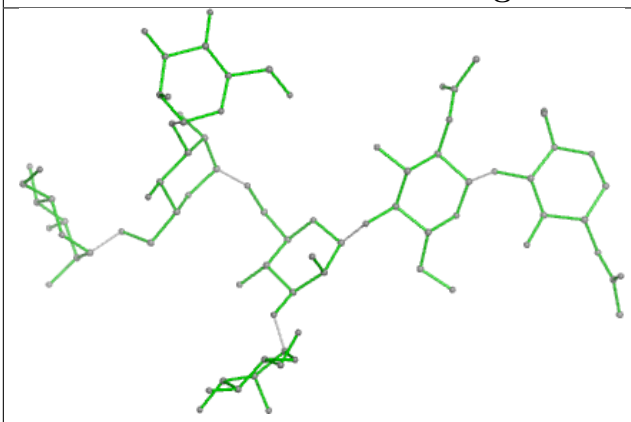


Torsions

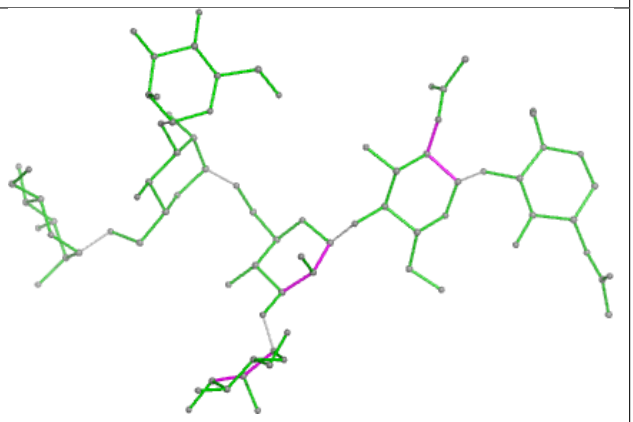


Rings

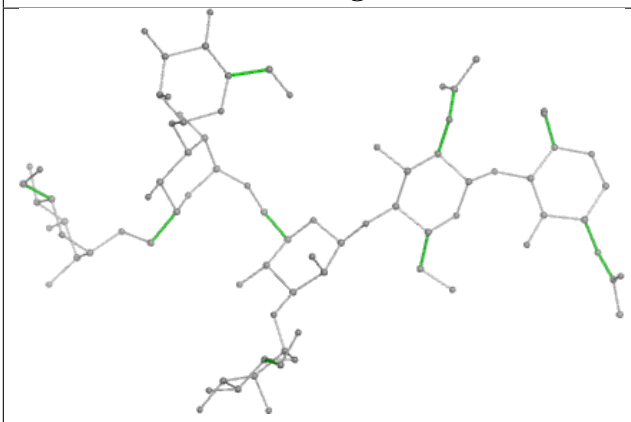
Oligosaccharide Chain H



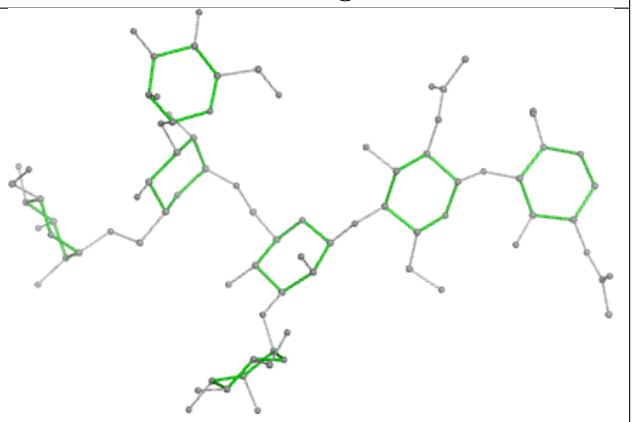
Bond lengths



Bond angles

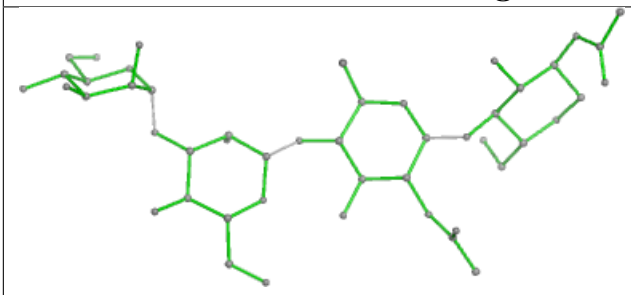


Torsions

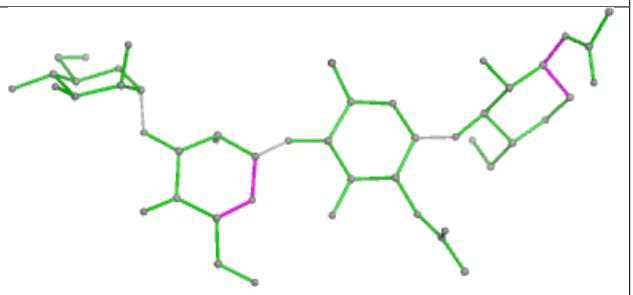


Rings

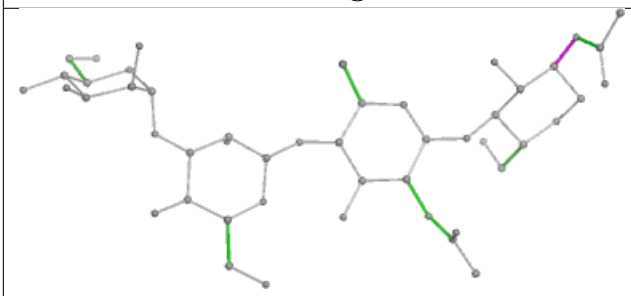
Oligosaccharide Chain X



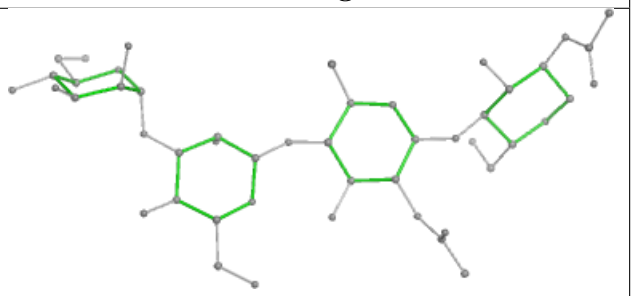
Bond lengths



Bond angles

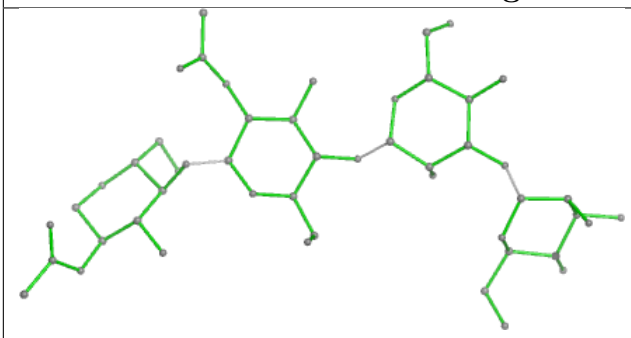


Torsions

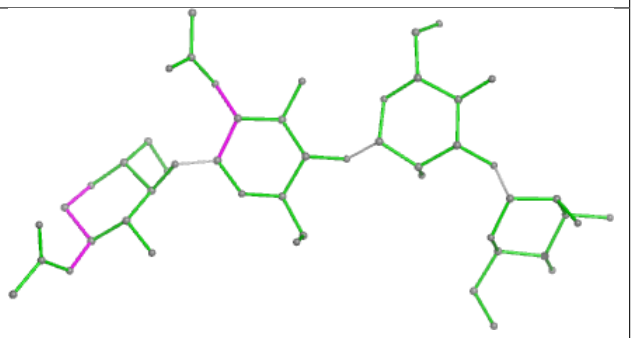


Rings

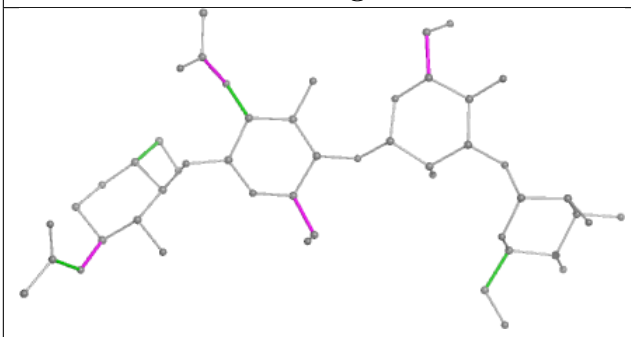
Oligosaccharide Chain l



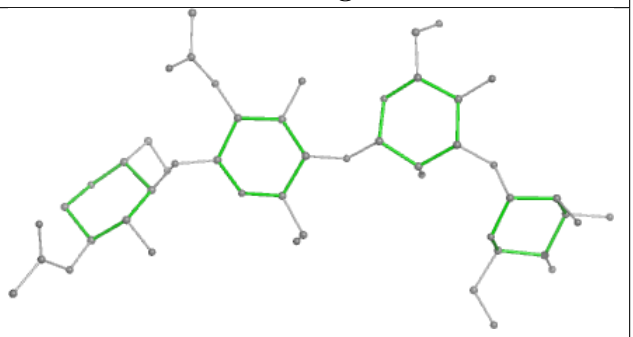
Bond lengths



Bond angles

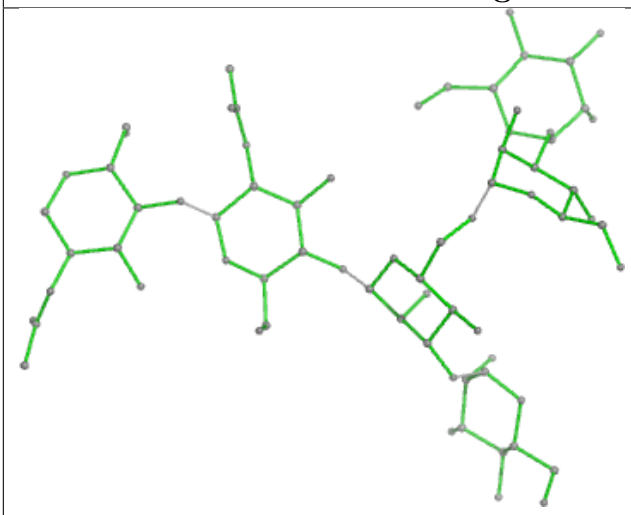


Torsions

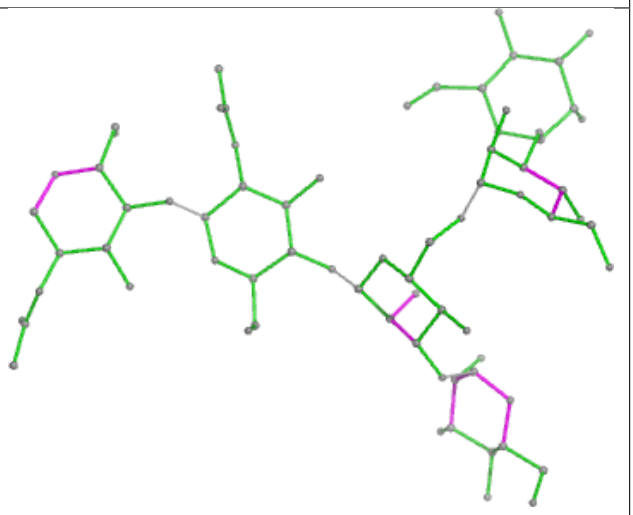


Rings

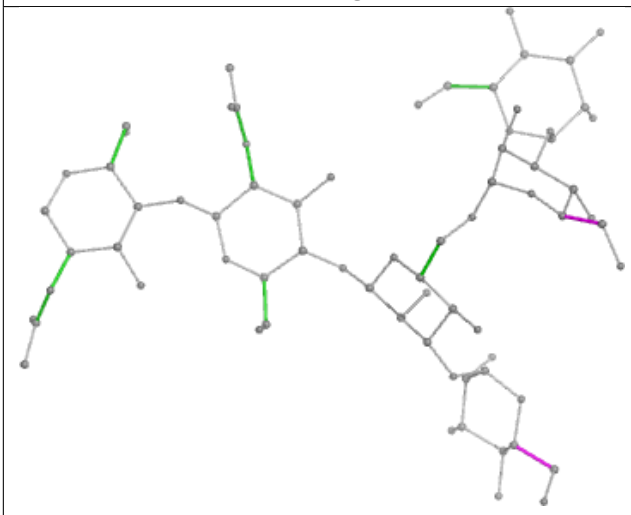
Oligosaccharide Chain Y



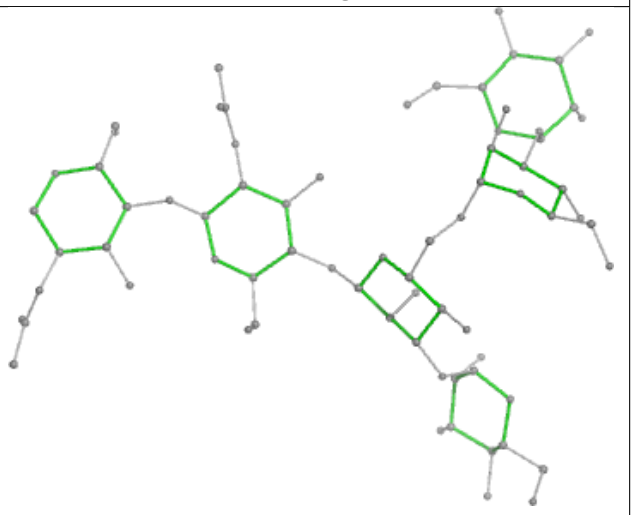
Bond lengths



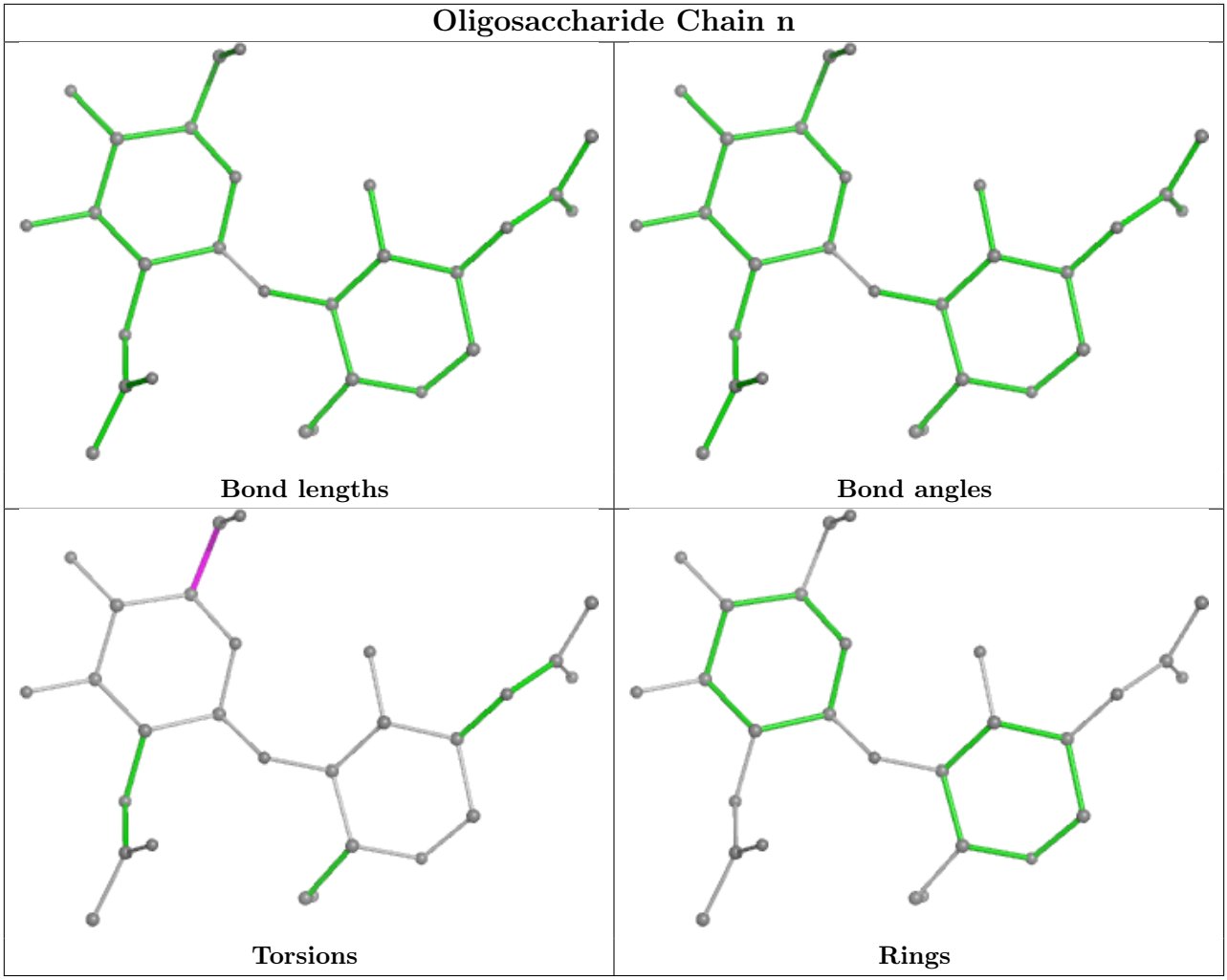
Bond angles



Torsions



Rings



5.6 Ligand geometry (i)

Of 19 ligands modelled in this entry, 3 are monoatomic - leaving 16 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	$\#\|Z\| > 2$
11	SO4	A	406	-	4,4,4	0.30	0	6,6,6	0.19	0
11	SO4	A	407	-	4,4,4	0.32	0	6,6,6	0.11	0
8	EPE	C	401	-	15,15,15	0.76	1 (6%)	18,20,20	0.86	1 (5%)
8	EPE	B	402	-	15,15,15	0.71	1 (6%)	18,20,20	0.72	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
9	GOL	B	403	-	5,5,5	0.11	0	5,5,5	0.34	0
11	SO4	C	404	-	4,4,4	0.29	0	6,6,6	0.05	0
9	GOL	A	403	-	5,5,5	0.09	0	5,5,5	0.24	0
10	HEM	C	402	1,12	41,50,50	1.31	6 (14%)	45,82,82	1.86	12 (26%)
9	GOL	A	404	-	5,5,5	0.12	0	5,5,5	0.28	0
10	HEM	B	404	1,12	41,50,50	1.31	5 (12%)	45,82,82	1.99	16 (35%)
11	SO4	C	403	-	4,4,4	0.25	0	6,6,6	0.05	0
7	DAO	A	401	-	13,13,13	0.57	0	13,13,13	0.62	0
8	EPE	A	402	-	15,15,15	0.90	1 (6%)	18,20,20	0.94	1 (5%)
10	HEM	A	405	1,12	41,50,50	1.31	5 (12%)	45,82,82	2.00	13 (28%)
11	SO4	B	405	-	4,4,4	0.26	0	6,6,6	0.19	0
7	DAO	B	401	-	13,13,13	0.55	0	13,13,13	0.70	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
8	EPE	C	401	-	-	0/9/19/19	0/1/1/1
8	EPE	B	402	-	-	0/9/19/19	0/1/1/1
9	GOL	B	403	-	-	4/4/4/4	-
9	GOL	A	403	-	-	2/4/4/4	-
10	HEM	C	402	1,12	-	1/12/54/54	-
9	GOL	A	404	-	-	0/4/4/4	-
10	HEM	B	404	1,12	-	3/12/54/54	-
7	DAO	A	401	-	-	6/11/11/11	-
8	EPE	A	402	-	-	2/9/19/19	0/1/1/1
10	HEM	A	405	1,12	-	0/12/54/54	-
7	DAO	B	401	-	-	9/11/11/11	-

All (19) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	A	405	HEM	C1B-NB	-4.43	1.32	1.40
10	B	404	HEM	C1B-NB	-3.40	1.34	1.40
10	C	402	HEM	C1B-NB	-3.24	1.34	1.40
8	A	402	EPE	O3S-S	3.16	1.58	1.47
10	B	404	HEM	C4D-ND	-3.08	1.35	1.40
8	C	401	EPE	O3S-S	2.78	1.57	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	B	404	HEM	C4B-NB	-2.68	1.33	1.38
8	B	402	EPE	O3S-S	2.62	1.56	1.47
10	C	402	HEM	FE-NB	2.60	2.09	1.96
10	C	402	HEM	C4D-ND	-2.57	1.35	1.40
10	C	402	HEM	CHB-C1B	2.42	1.41	1.35
10	C	402	HEM	C3B-C4B	2.32	1.49	1.44
10	A	405	HEM	C4D-ND	-2.22	1.36	1.40
10	B	404	HEM	FE-NB	2.15	2.07	1.96
10	A	405	HEM	C1D-C2D	2.15	1.48	1.44
10	B	404	HEM	C1D-ND	-2.14	1.34	1.38
10	A	405	HEM	C1D-ND	-2.11	1.34	1.38
10	A	405	HEM	FE-NB	2.10	2.07	1.96
10	C	402	HEM	C1D-ND	-2.01	1.34	1.38

All (43) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
10	A	405	HEM	CHC-C4B-NB	5.35	130.24	124.43
10	B	404	HEM	C1B-NB-C4B	4.92	110.15	105.07
10	A	405	HEM	C1B-NB-C4B	4.70	109.92	105.07
10	C	402	HEM	CHC-C4B-NB	4.67	129.51	124.43
10	C	402	HEM	C1B-NB-C4B	4.50	109.72	105.07
10	B	404	HEM	CHC-C4B-NB	4.32	129.12	124.43
10	A	405	HEM	CHB-C1B-NB	4.07	129.41	124.38
10	A	405	HEM	CBA-CAA-C2A	-4.05	105.70	112.62
10	B	404	HEM	CHB-C1B-NB	3.71	128.97	124.38
10	B	404	HEM	O2A-CGA-CBA	3.51	125.32	114.03
10	C	402	HEM	CHD-C1D-ND	3.50	128.23	124.43
8	A	402	EPE	O3S-S-C10	-3.38	100.30	105.77
10	A	405	HEM	CHA-C4D-ND	3.24	128.39	124.38
10	C	402	HEM	CBA-CAA-C2A	-3.24	107.08	112.62
10	B	404	HEM	CHA-C4D-ND	3.16	128.29	124.38
10	C	402	HEM	CHA-C4D-ND	3.08	128.18	124.38
10	C	402	HEM	CHB-C1B-NB	3.06	128.16	124.38
10	A	405	HEM	CHD-C1D-ND	2.86	127.54	124.43
10	A	405	HEM	CHA-C4D-C3D	-2.72	120.23	125.33
10	B	404	HEM	CHD-C1D-C2D	-2.68	120.80	124.98
10	B	404	HEM	CHA-C4D-C3D	-2.67	120.33	125.33
10	C	402	HEM	O2A-CGA-CBA	2.64	122.51	114.03
10	C	402	HEM	CHD-C1D-C2D	-2.60	120.92	124.98
10	C	402	HEM	CAD-CBD-CGD	-2.59	108.04	113.60
10	B	404	HEM	CHD-C1D-ND	2.58	127.23	124.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
8	C	401	EPE	O3S-S-C10	-2.51	101.71	105.77
10	B	404	HEM	CBA-CAA-C2A	-2.51	108.34	112.62
10	B	404	HEM	CMB-C2B-C1B	2.47	128.80	125.04
10	C	402	HEM	CHA-C4D-C3D	-2.41	120.80	125.33
10	B	404	HEM	O1A-CGA-CBA	-2.40	115.37	123.08
10	B	404	HEM	CMD-C2D-C1D	2.39	128.68	125.04
10	B	404	HEM	CAD-CBD-CGD	-2.32	108.61	113.60
10	B	404	HEM	O2D-CGD-CBD	2.31	121.45	114.03
10	A	405	HEM	CMD-C2D-C1D	2.29	128.53	125.04
10	A	405	HEM	CHD-C1D-C2D	-2.22	121.52	124.98
10	A	405	HEM	CMB-C2B-C1B	2.19	128.38	125.04
10	A	405	HEM	C2C-C3C-C4C	2.14	108.39	106.90
10	B	404	HEM	CAD-C3D-C4D	2.13	128.38	124.66
10	B	404	HEM	CHB-C1B-C2B	-2.10	120.90	126.72
10	C	402	HEM	CMD-C2D-C1D	2.07	128.18	125.04
10	C	402	HEM	CMB-C2B-C1B	2.02	128.11	125.04
10	A	405	HEM	O2D-CGD-O1D	-2.01	118.29	123.30
10	A	405	HEM	C3B-C2B-C1B	2.01	107.97	106.49

There are no chirality outliers.

All (27) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	A	402	EPE	C10-C9-N1-C2
9	A	403	GOL	C1-C2-C3-O3
9	B	403	GOL	C1-C2-C3-O3
7	A	401	DAO	C4-C5-C6-C7
7	B	401	DAO	C5-C6-C7-C8
7	B	401	DAO	C1-C2-C3-C4
8	A	402	EPE	N4-C7-C8-O8
7	B	401	DAO	C2-C3-C4-C5
9	B	403	GOL	O1-C1-C2-C3
7	B	401	DAO	C7-C8-C9-C10
7	B	401	DAO	C9-C10-C11-C12
9	B	403	GOL	O1-C1-C2-O2
9	B	403	GOL	O2-C2-C3-O3
7	B	401	DAO	C3-C4-C5-C6
7	A	401	DAO	C11-C10-C9-C8
7	B	401	DAO	C6-C7-C8-C9
7	A	401	DAO	C5-C6-C7-C8
7	A	401	DAO	O1-C1-C2-C3
7	A	401	DAO	O2-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
9	A	403	GOL	O2-C2-C3-O3
7	A	401	DAO	C3-C4-C5-C6
7	B	401	DAO	C11-C10-C9-C8
10	B	404	HEM	CAA-CBA-CGA-O1A
10	C	402	HEM	CAA-CBA-CGA-O2A
10	B	404	HEM	CAA-CBA-CGA-O2A
7	B	401	DAO	O1-C1-C2-C3
10	B	404	HEM	CAD-CBD-CGD-O1D

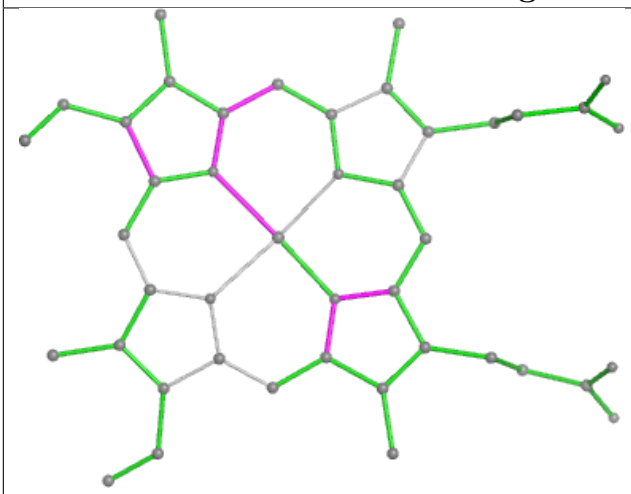
There are no ring outliers.

11 monomers are involved in 39 short contacts:

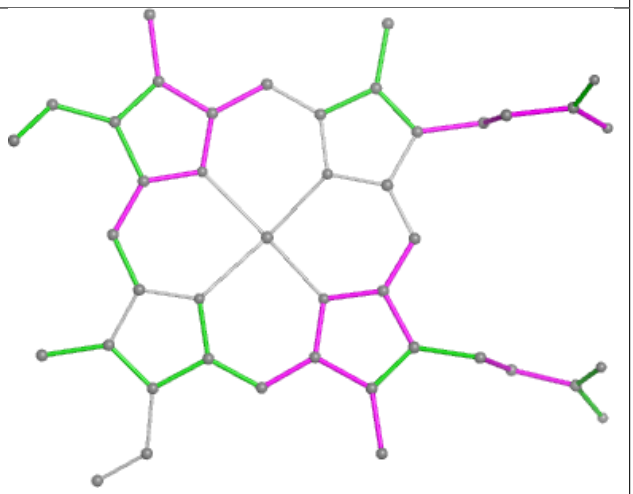
Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	C	401	EPE	9	0
8	B	402	EPE	10	0
9	B	403	GOL	2	0
10	C	402	HEM	4	0
9	A	404	GOL	1	0
10	B	404	HEM	2	0
11	C	403	SO4	1	0
7	A	401	DAO	1	0
8	A	402	EPE	3	0
10	A	405	HEM	5	0
7	B	401	DAO	1	0

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

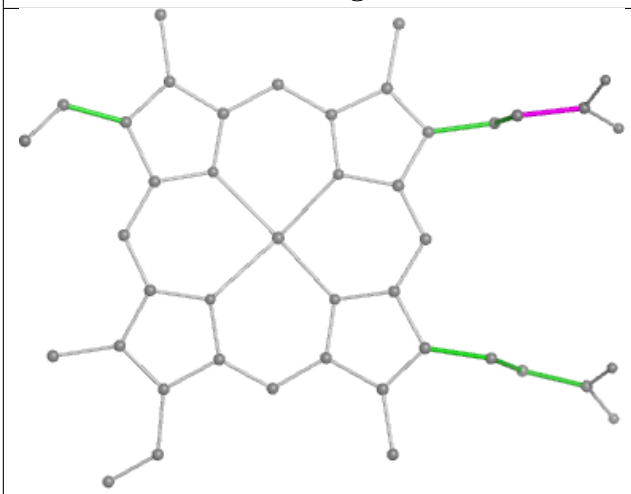
Ligand HEM C 402



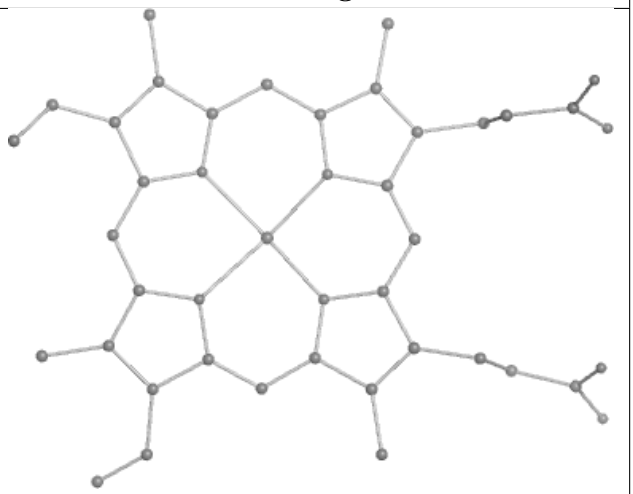
Bond lengths



Bond angles

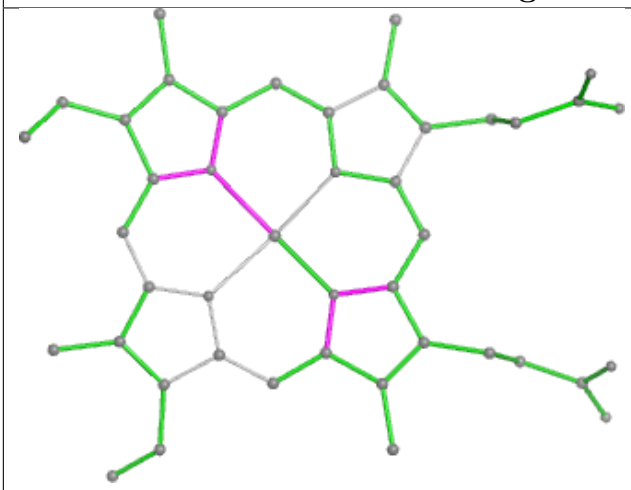


Torsions

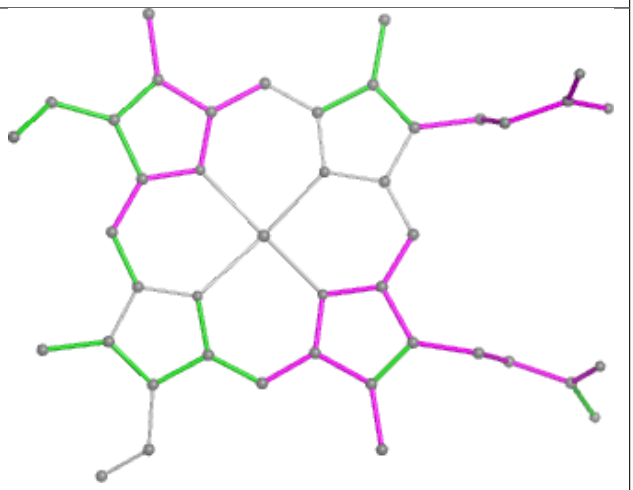


Rings

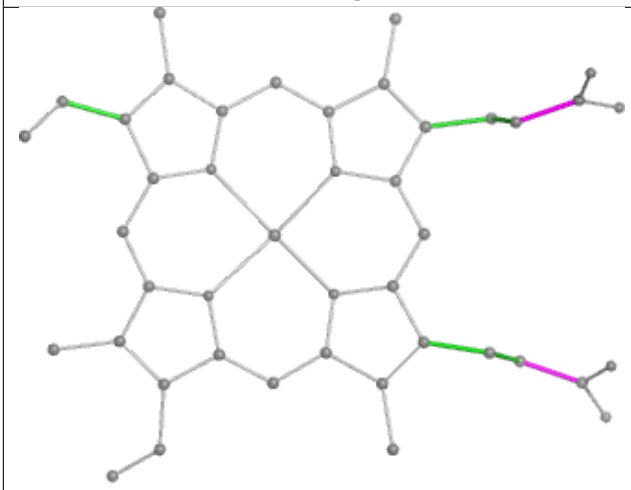
Ligand HEM B 404



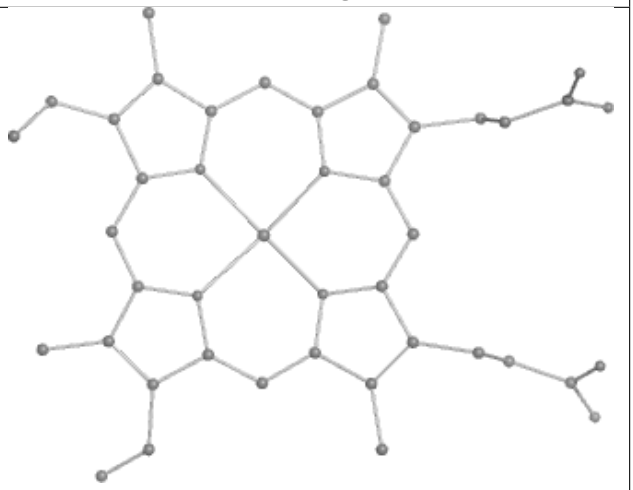
Bond lengths



Bond angles

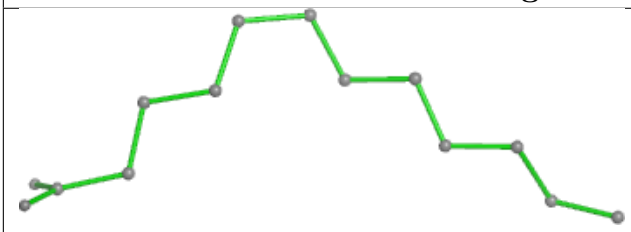


Torsions

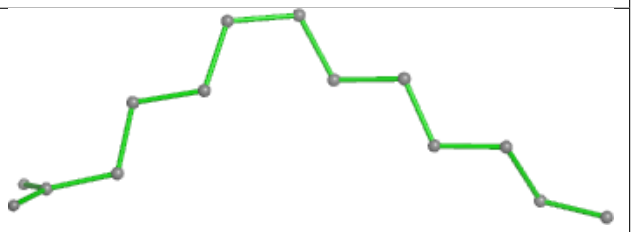


Rings

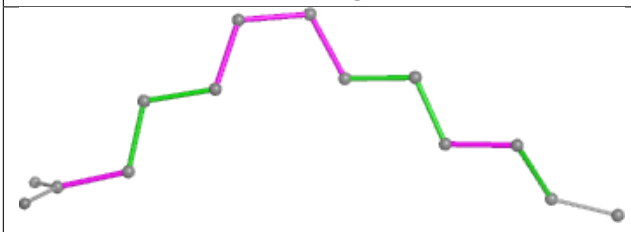
Ligand DAO A 401



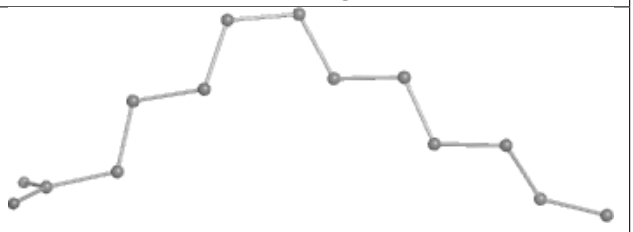
Bond lengths



Bond angles

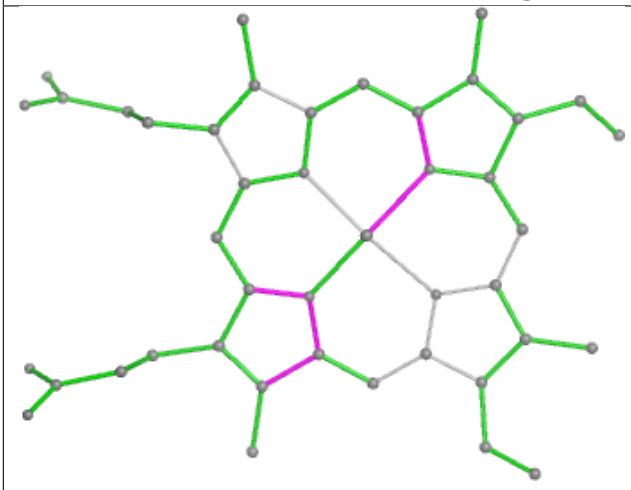


Torsions

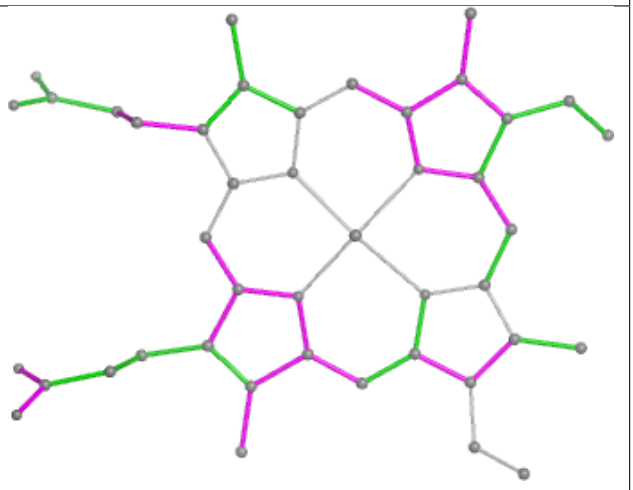


Rings

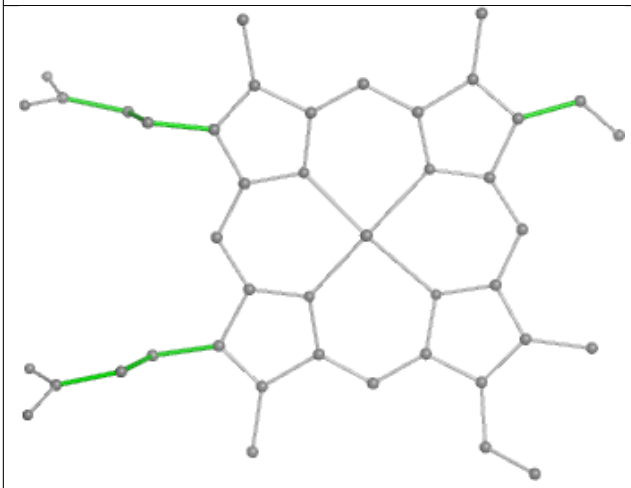
Ligand HEM A 405



Bond lengths



Bond angles



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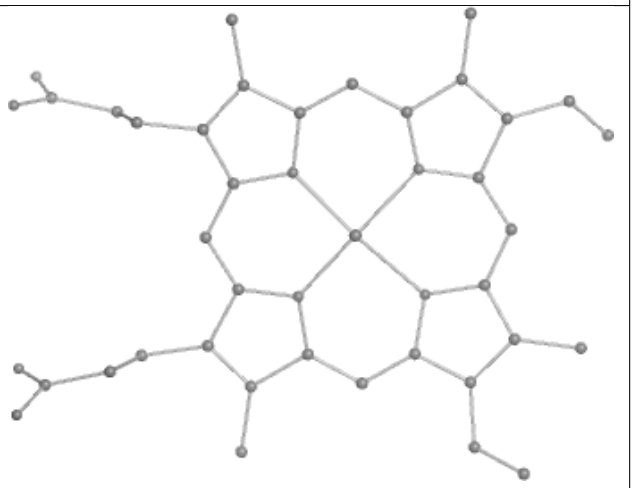
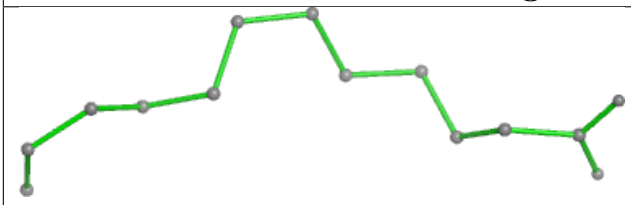
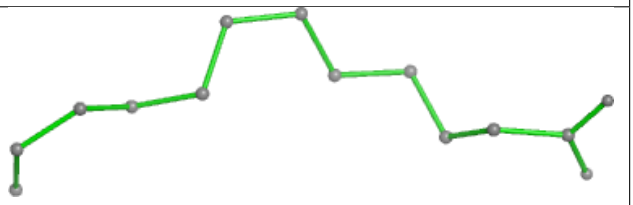


Rings

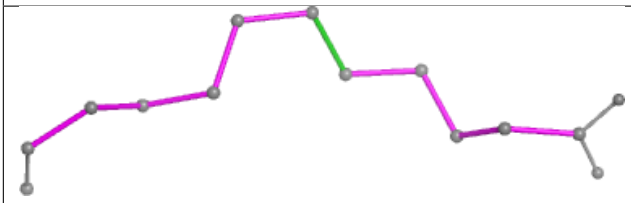
Ligand DAO B 401



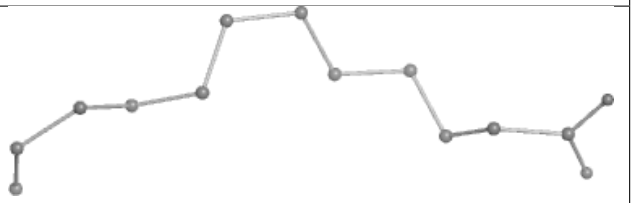
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	335/335 (100%)	0.08	6 (1%)	67	71	22, 41, 59, 119	8 (2%)
1	B	335/335 (100%)	0.32	13 (3%)	44	49	22, 46, 65, 138	8 (2%)
1	C	335/335 (100%)	0.70	23 (6%)	24	29	23, 52, 81, 145	8 (2%)
All	All	1005/1005 (100%)	0.37	42 (4%)	41	46	22, 46, 74, 145	24 (2%)

All (42) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	316	ILE	4.5
1	C	14	GLN	4.3
1	A	14	GLN	4.1
1	C	270	TRP	4.0
1	B	15	GLY	3.8
1	B	347[A]	GLN	3.7
1	B	348	LEU	3.7
1	A	316	ILE	3.5
1	C	186	TYR	3.4
1	B	277	ASP	3.2
1	A	227	THR	3.2
1	A	278	ASN	3.1
1	B	14	GLN	3.0
1	B	228	ASP	3.0
1	B	278	ASN	2.9
1	B	16	VAL	2.8
1	B	227	THR	2.8
1	C	15	GLY	2.7
1	C	178	LEU	2.7
1	C	149	PHE	2.7
1	A	226	THR	2.7
1	C	276	ALA	2.6
1	C	269	PRO	2.5

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Mol	Chain	Res	Type	RSRZ
1	C	160	LEU	2.5
1	C	150	PHE	2.5
1	C	227	THR	2.5
1	B	319	ARG	2.4
1	C	280	VAL	2.4
1	C	277	ASP	2.4
1	C	266	ALA	2.4
1	A	277	ASP	2.4
1	B	279	GLN	2.3
1	C	164	PHE	2.3
1	C	146	ALA	2.3
1	C	278	ASN	2.2
1	C	161	PHE	2.2
1	C	271	VAL	2.2
1	C	284	VAL	2.2
1	C	170	ARG	2.1
1	B	149	PHE	2.1
1	C	316	ILE	2.1
1	C	194	ALA	2.0

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

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

6.3 Carbohydrates (i)

SUGAR-RSR INFOmissingINFO

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
11	SO4	C	403	5/5	0.54	0.16	84,91,101,103	0
8	EPE	A	402	15/15	0.59	0.26	73,82,90,94	0
11	SO4	C	404	5/5	0.71	0.10	95,101,113,114	0
9	GOL	A	404	6/6	0.74	0.18	64,65,71,74	0

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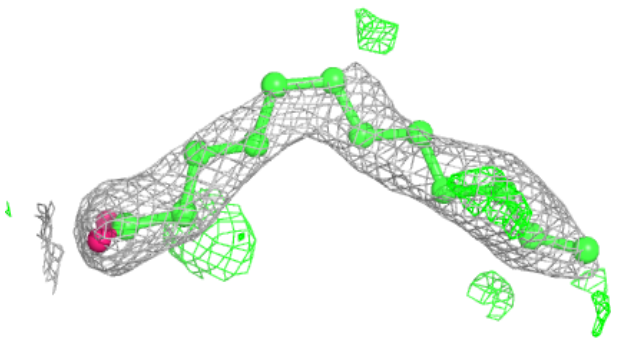
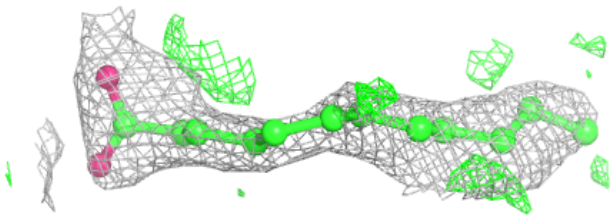
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
8	EPE	C	401	15/15	0.76	0.20	68,79,88,91	0
8	EPE	B	402	15/15	0.78	0.18	61,79,88,89	0
11	SO4	A	407	5/5	0.81	0.12	71,78,89,90	0
11	SO4	B	405	5/5	0.81	0.12	70,71,75,81	0
9	GOL	A	403	6/6	0.82	0.19	57,64,66,69	0
9	GOL	B	403	6/6	0.84	0.16	63,66,71,76	0
7	DAO	A	401	14/14	0.86	0.27	70,75,79,79	0
7	DAO	B	401	14/14	0.86	0.27	72,82,88,91	0
11	SO4	A	406	5/5	0.88	0.15	52,63,71,84	0
12	MG	B	406	1/1	0.90	0.16	64,64,64,64	0
12	MG	C	405	1/1	0.91	0.12	61,61,61,61	0
10	HEM	C	402	43/43	0.97	0.08	39,44,59,67	0
10	HEM	A	405	43/43	0.97	0.08	30,34,42,52	0
10	HEM	B	404	43/43	0.98	0.08	34,37,46,56	0
12	MG	A	408	1/1	0.99	0.02	41,41,41,41	0

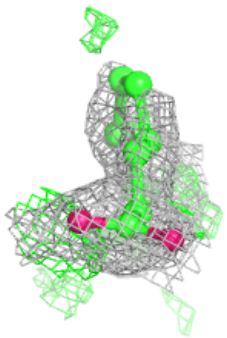
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around DAO A 401:

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

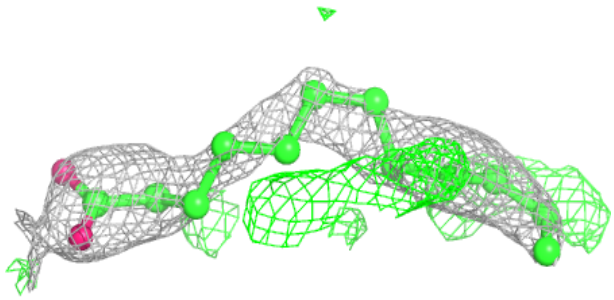


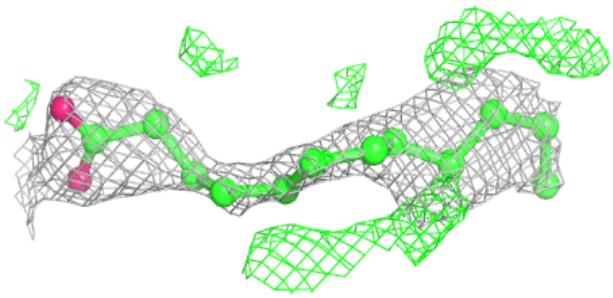


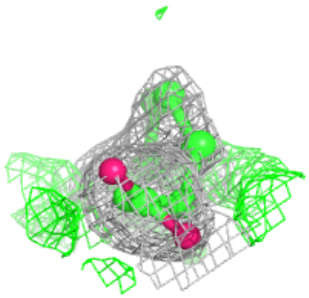


Electron density around DAO B 401:

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

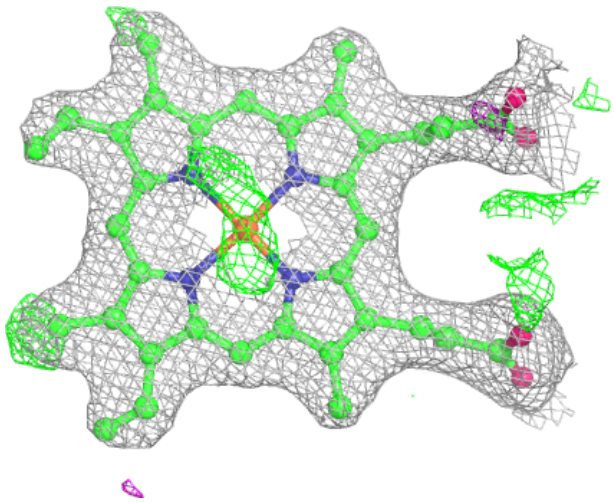


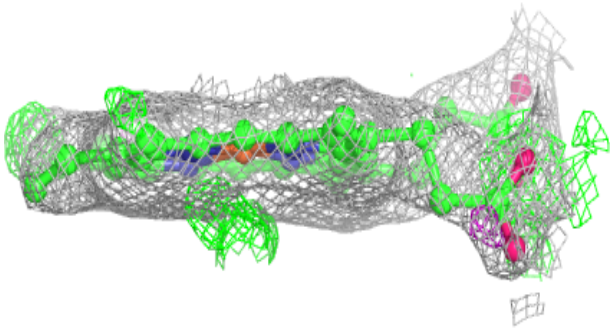




Electron density around HEM C 402:

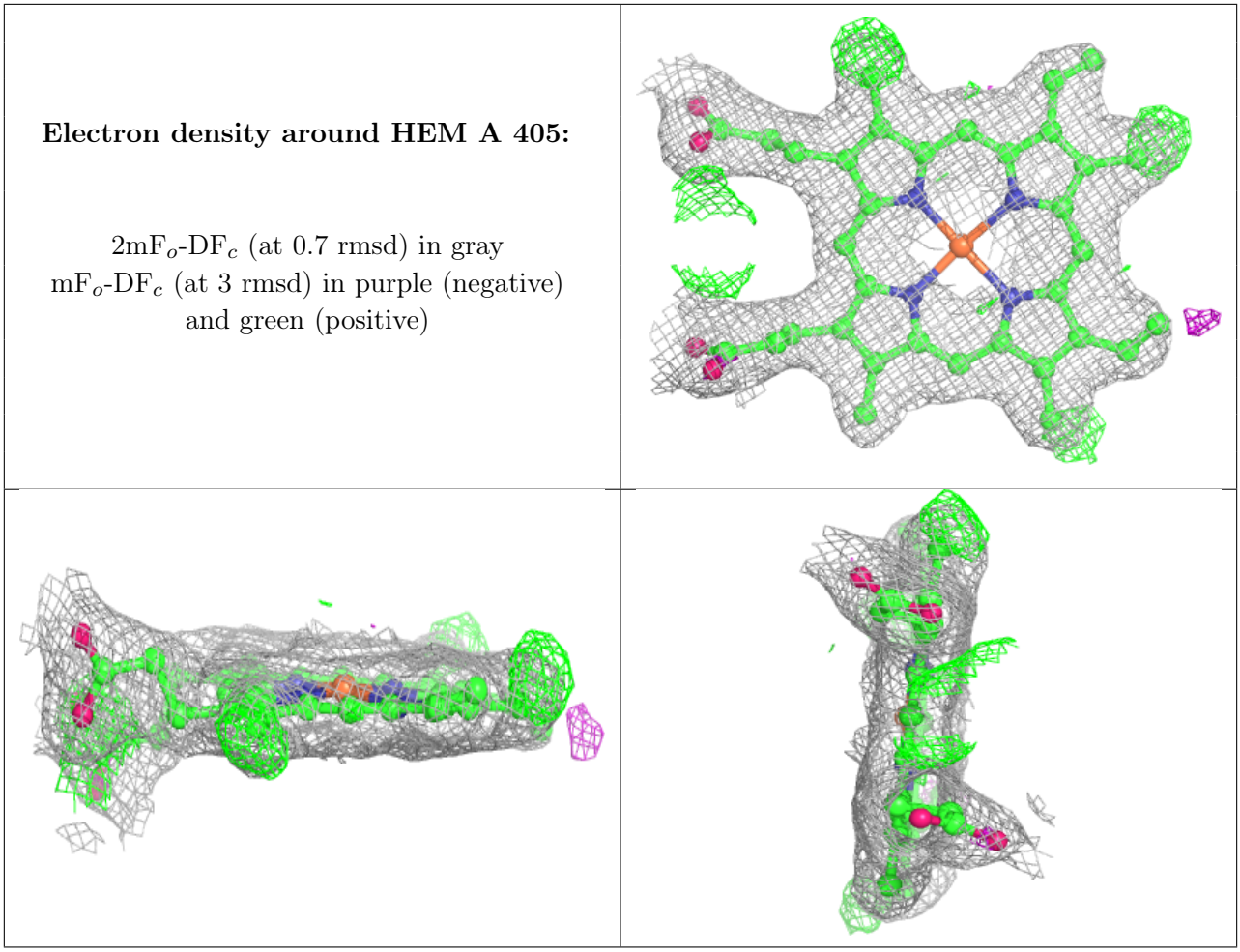
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)





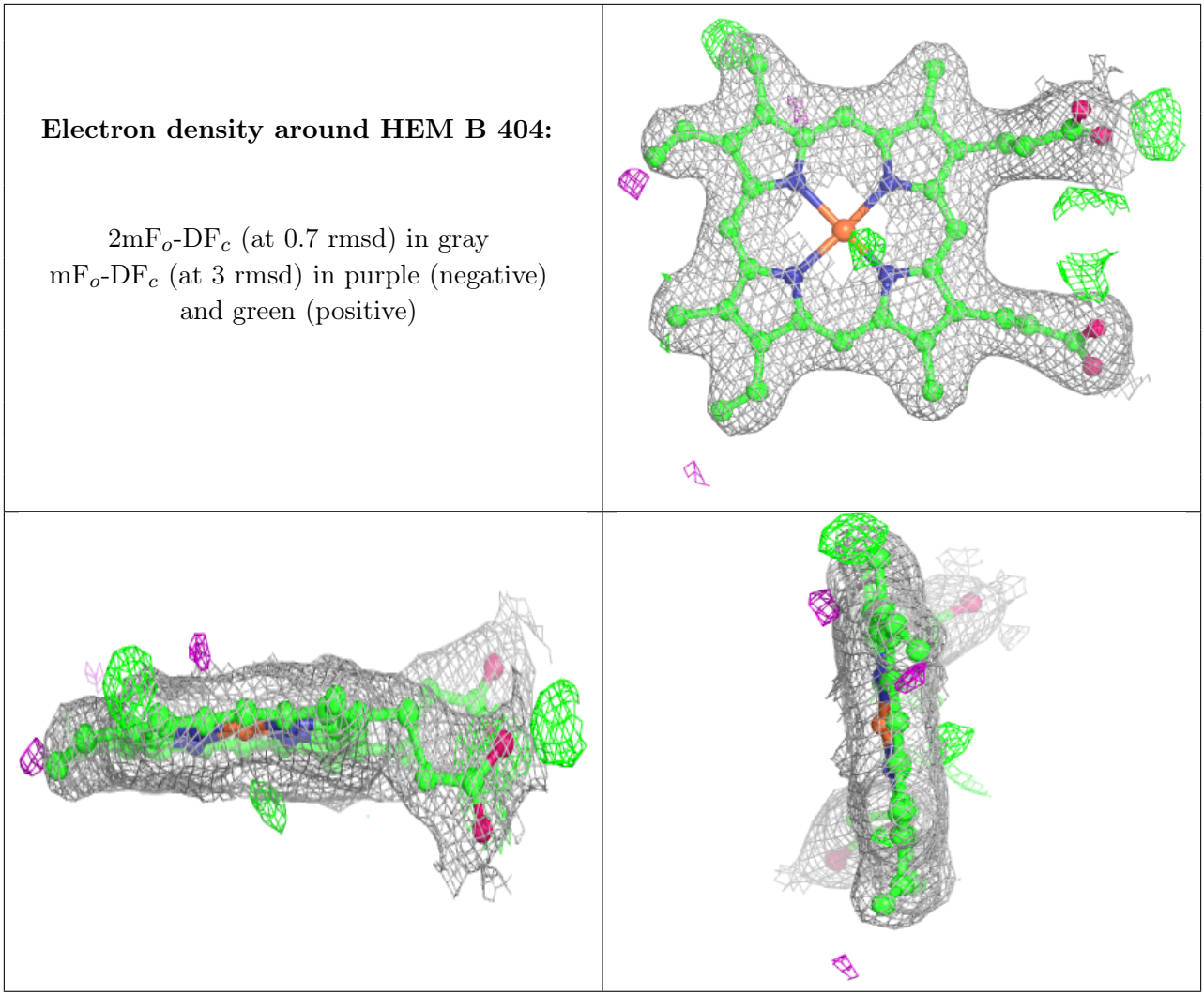
Electron density around HEM A 405:

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



Electron density around HEM B 404:

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



6.5 Other polymers

There are no such residues in this entry.