wwPDB X-ray Structure Validation Summary Report (i)

Aug 27, 2026 – 04:07 pm BST

PDB ID	:	3ZBY / pdb_00003zby
Title	:	Ligand-free structure of CYP142 from Mycobacterium smegmatis
Authors	:	Garcia-Fernandez, E.; Frank, D.J.; Galan, B.; Kells, P.M.; Podust, L.M.; Garcia, J.L.; Ortiz de Montellano, P.R.
Deposited on	:	2012-11-13
Resolution	:	1.93 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) 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 (i)) were used in the production of this report:

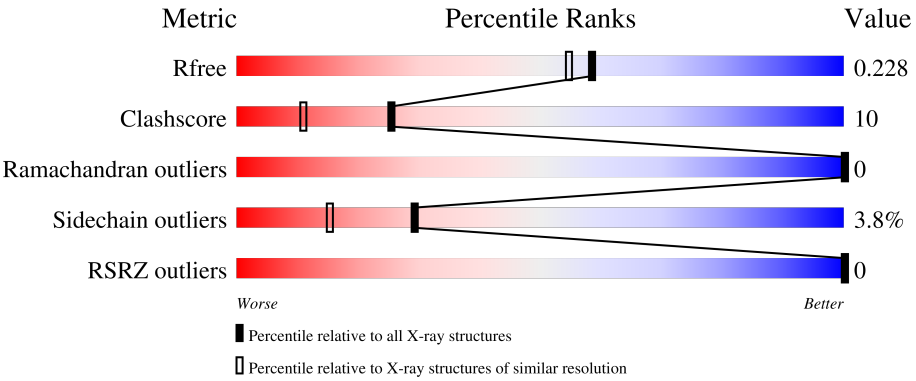
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.015 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.50

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 1.93 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}	180053	1452 (1.94-1.94)
Clashscore	190562	1494 (1.94-1.94)
Ramachandran outliers	187476	1479 (1.94-1.94)
Sidechain outliers	187428	1479 (1.94-1.94)
RSRZ outliers	180081	1453 (1.94-1.94)

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	407	82% 15%
1	B	407	80% 17%
1	C	407	83% 13%
1	D	407	81% 15%
1	E	407	83% 14%

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Mol	Chain	Length	Quality of chain
1	F	407	80% 16%
2	G	7	86% 14%
2	H	7	71% 29%
2	I	7	71% 29%
2	J	7	86% 14%
2	K	7	100%
2	L	7	86% 14%

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
2	GLC	G	1	X	-	-	-
2	GLC	G	7	X	-	-	-
2	GLC	H	1	X	-	-	-
2	GLC	H	7	X	-	-	-
2	GLC	I	1	X	-	-	-
2	GLC	I	7	X	-	-	-
2	GLC	J	7	X	-	-	-
2	GLC	K	1	X	-	-	-
2	GLC	K	4	X	-	-	-
2	GLC	K	7	X	-	-	-
2	GLC	L	4	X	-	-	-
2	GLC	L	6	X	-	-	-
4	SO4	A	502	-	-	X	-
4	SO4	B	504	-	-	X	-
4	SO4	C	504	-	-	X	-
4	SO4	D	504	-	-	X	-
4	SO4	E	504	-	-	X	-
4	SO4	F	504	-	-	X	-

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 22588 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 P450 HEME-THIOLATE PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	402	Total	C	N	O	S	0	5	0
			3171	1990	561	595	25			
1	B	404	Total	C	N	O	S	0	5	0
			3181	1994	559	604	24			
1	C	402	Total	C	N	O	S	0	7	0
			3180	1995	561	600	24			
1	D	402	Total	C	N	O	S	0	7	0
			3205	2005	569	606	25			
1	E	402	Total	C	N	O	S	0	6	0
			3199	1999	574	602	24			
1	F	402	Total	C	N	O	S	0	6	0
			3186	1996	563	603	24			

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	402	HIS	-	expression tag	UNP A0R4Q6
A	403	HIS	-	expression tag	UNP A0R4Q6
A	404	HIS	-	expression tag	UNP A0R4Q6
A	405	HIS	-	expression tag	UNP A0R4Q6
A	406	HIS	-	expression tag	UNP A0R4Q6
A	407	HIS	-	expression tag	UNP A0R4Q6
B	402	HIS	-	expression tag	UNP A0R4Q6
B	403	HIS	-	expression tag	UNP A0R4Q6
B	404	HIS	-	expression tag	UNP A0R4Q6
B	405	HIS	-	expression tag	UNP A0R4Q6
B	406	HIS	-	expression tag	UNP A0R4Q6
B	407	HIS	-	expression tag	UNP A0R4Q6
C	402	HIS	-	expression tag	UNP A0R4Q6
C	403	HIS	-	expression tag	UNP A0R4Q6
C	404	HIS	-	expression tag	UNP A0R4Q6
C	405	HIS	-	expression tag	UNP A0R4Q6
C	406	HIS	-	expression tag	UNP A0R4Q6

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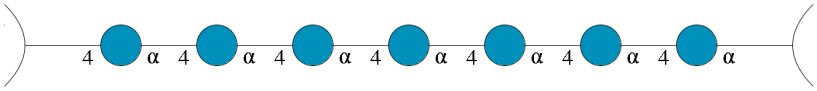
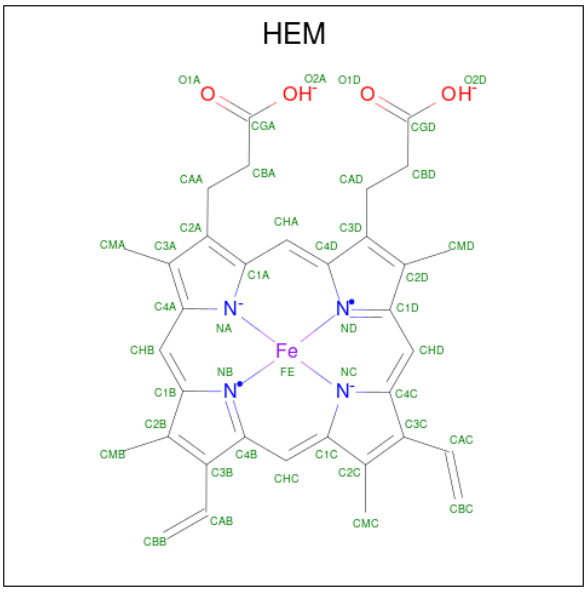
Chain	Residue	Modelled	Actual	Comment	Reference
C	407	HIS	-	expression tag	UNP A0R4Q6
D	402	HIS	-	expression tag	UNP A0R4Q6
D	403	HIS	-	expression tag	UNP A0R4Q6
D	404	HIS	-	expression tag	UNP A0R4Q6
D	405	HIS	-	expression tag	UNP A0R4Q6
D	406	HIS	-	expression tag	UNP A0R4Q6
D	407	HIS	-	expression tag	UNP A0R4Q6
E	402	HIS	-	expression tag	UNP A0R4Q6
E	403	HIS	-	expression tag	UNP A0R4Q6
E	404	HIS	-	expression tag	UNP A0R4Q6
E	405	HIS	-	expression tag	UNP A0R4Q6
E	406	HIS	-	expression tag	UNP A0R4Q6
E	407	HIS	-	expression tag	UNP A0R4Q6
F	402	HIS	-	expression tag	UNP A0R4Q6
F	403	HIS	-	expression tag	UNP A0R4Q6
F	404	HIS	-	expression tag	UNP A0R4Q6
F	405	HIS	-	expression tag	UNP A0R4Q6
F	406	HIS	-	expression tag	UNP A0R4Q6
F	407	HIS	-	expression tag	UNP A0R4Q6

- Molecule 2 is an oligosaccharide called Cycloheptakis-(1-4)-(alpha-D-glucopyranose).



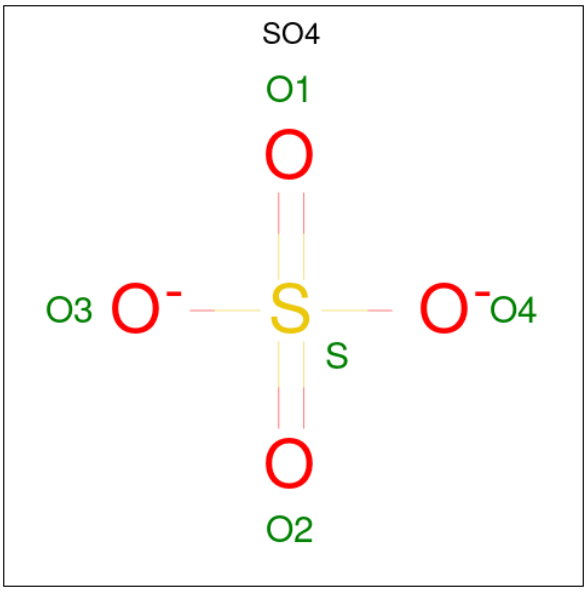
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	Trace
2	G	7	Total	C	O	0	0	0
			77	42	35			
2	H	7	Total	C	O	0	0	0
			77	42	35			
2	I	7	Total	C	O	0	0	0
			77	42	35			
2	J	7	Total	C	O	0	0	0
			77	42	35			
2	K	7	Total	C	O	0	0	0
			77	42	35			
2	L	7	Total	C	O	0	0	0
			77	42	35			

- Molecule 3 is PROTOPORPHYRIN IX CONTAINING FE (CCD ID: HEM) (formula: $C_{34}H_{32}FeN_4O_4$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
3	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
3	C	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
3	D	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
3	E	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
3	F	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		

- Molecule 4 is SULFATE ION (CCD ID: SO4) (formula: O_4S).



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

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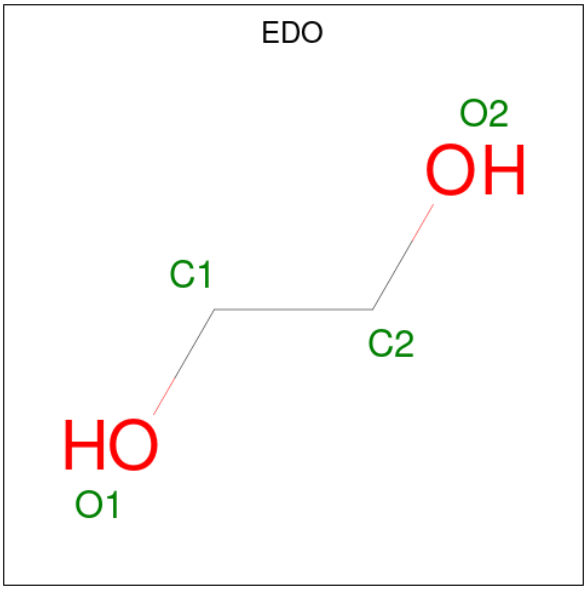
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	F	1	Total O S 5 4 1	0	0
4	F	1	Total O S 5 4 1	0	0
4	F	1	Total O S 5 4 1	0	0

- Molecule 5 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	D	1	Total C O 4 2 2	0	0
5	E	1	Total C O 4 2 2	0	0
5	F	1	Total C O 4 2 2	0	0

- Molecule 6 is water.

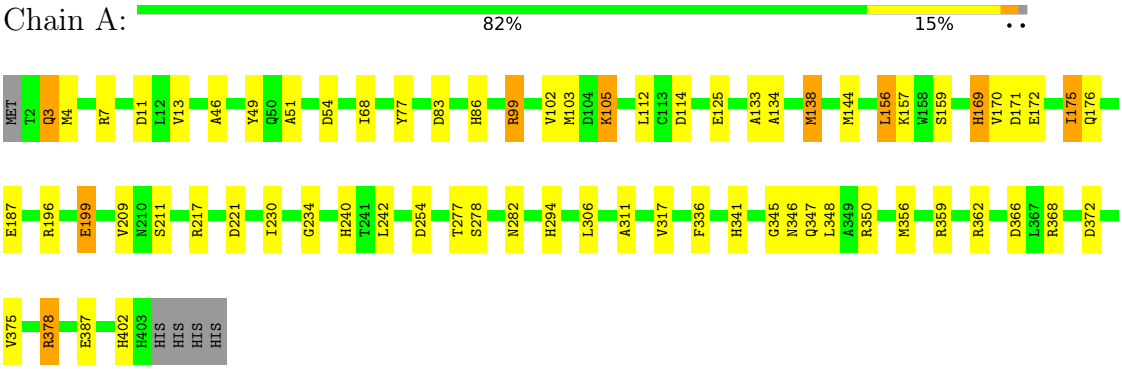
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	439	Total O 439 439	0	0
6	B	432	Total O 432 432	0	0
6	C	443	Total O 443 443	0	0
6	D	432	Total O 432 432	0	0
6	E	460	Total O 460 460	0	0
6	F	431	Total O 431 431	0	0

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.

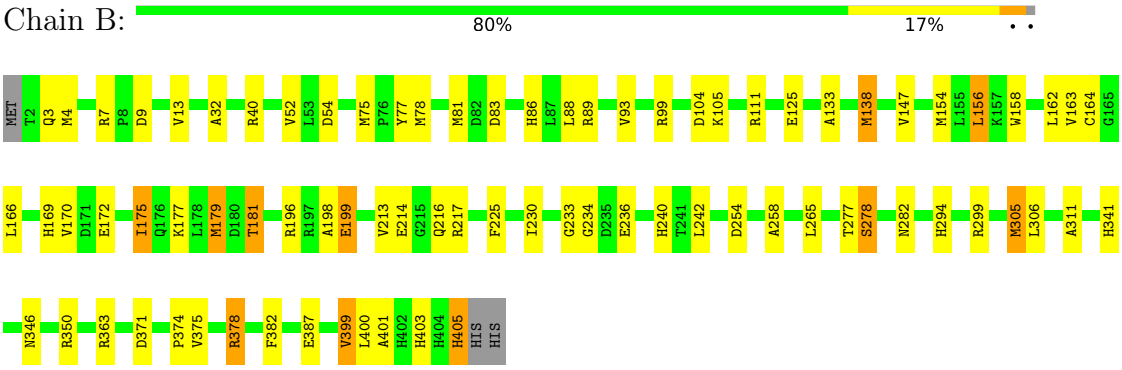
- Molecule 1: P450 HEME-THIOLATE PROTEIN

Chain A:



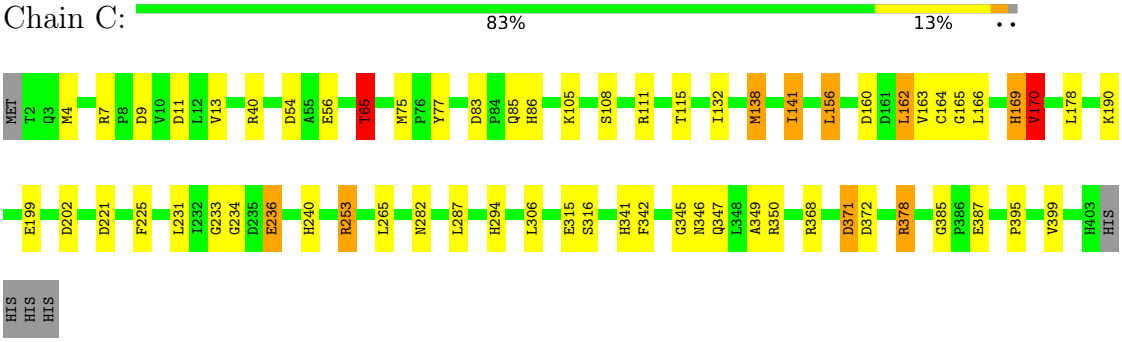
- Molecule 1: P450 HEME-THIOLATE PROTEIN

Chain B:



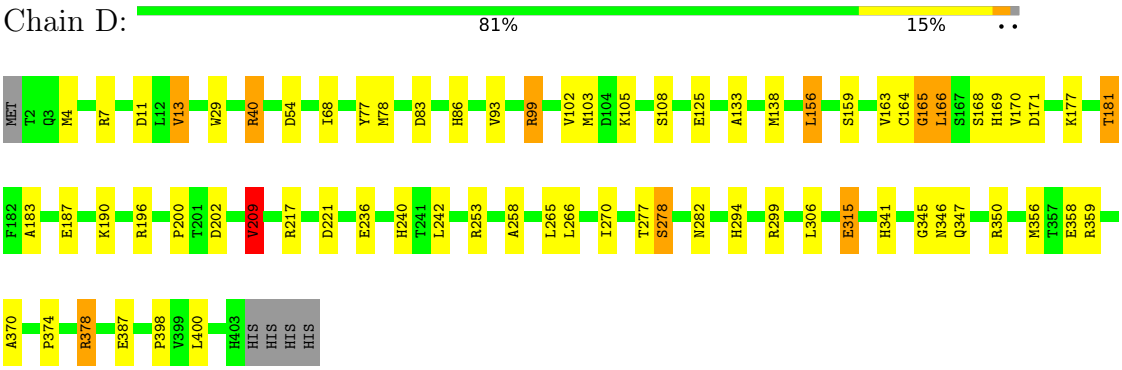
- Molecule 1: P450 HEME-THIOLATE PROTEIN

Chain C:



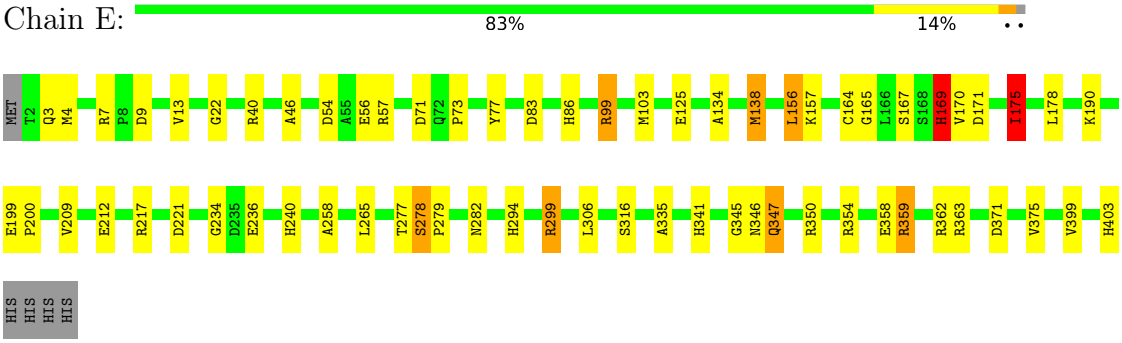
• Molecule 1: P450 HEME-THIOLATE PROTEIN

Chain D:



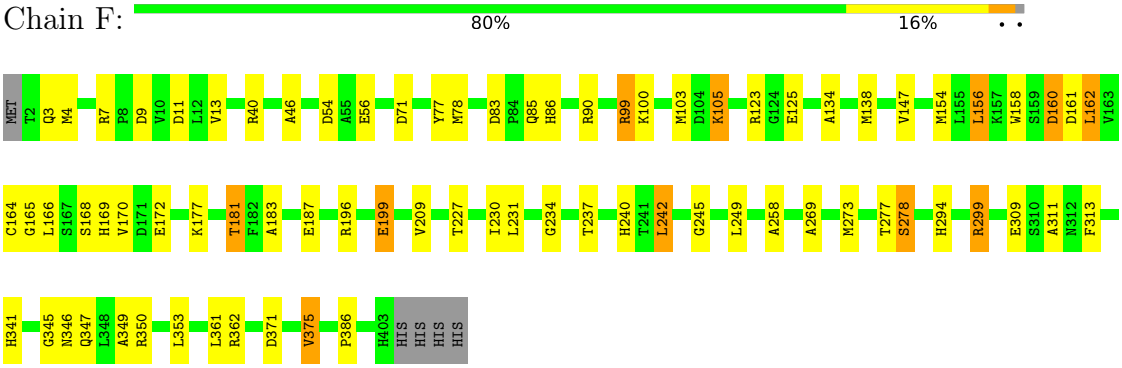
• Molecule 1: P450 HEME-THIOLATE PROTEIN

Chain E:



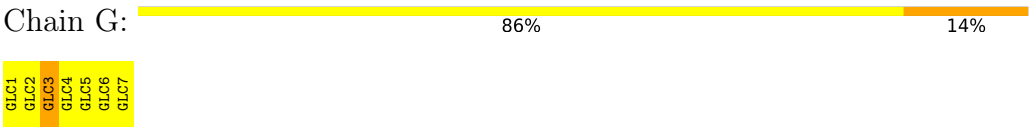
• Molecule 1: P450 HEME-THIOLATE PROTEIN

Chain F:



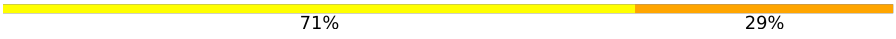
• Molecule 2: Cycloheptakis-(1-4)-(alpha-D-glucopyranose)

Chain G:



• Molecule 2: Cycloheptakis-(1-4)-(alpha-D-glucopyranose)

Chain H:





• Molecule 2: Cycloheptakis-(1-4)-(alpha-D-glucopyranose)

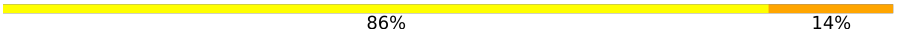
Chain I:





• Molecule 2: Cycloheptakis-(1-4)-(alpha-D-glucopyranose)

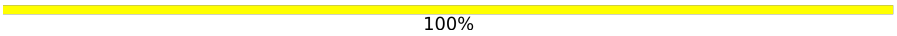
Chain J:





• Molecule 2: Cycloheptakis-(1-4)-(alpha-D-glucopyranose)

Chain K:





• Molecule 2: Cycloheptakis-(1-4)-(alpha-D-glucopyranose)

Chain L:





4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	94.05Å 162.85Å 266.44Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	266.44 – 1.93 266.44 – 1.93	Depositor EDS
% Data completeness (in resolution range)	94.3 (266.44-1.93) 94.6 (266.44-1.93)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.16 (at 1.92Å)	Xtriage
Refinement program	REFMAC 5.5.0109	Depositor
R, R_{free}	0.190 , 0.230 0.189 , 0.228	Depositor DCC
R_{free} test set	14356 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å^2)	22.0	Xtriage
Anisotropy	0.095	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 34.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.460 for -1/2*h+1/2*k,3/2*h+1/2*k,-l 0.467 for -1/2*h-1/2*k,-3/2*h+1/2*k,-l 0.467 for 1/2*h+1/2*k,3/2*h-1/2*k,-l 0.467 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l 0.467 for -h,-k,l	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	22588	wwPDB-VP
Average B, all atoms (Å^2)	25.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.10% 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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: EDO, HEM, SO4, GLC

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	1.40	7/3237 (0.2%)	1.18	8/4391 (0.2%)
1	B	1.43	14/3251 (0.4%)	1.18	6/4414 (0.1%)
1	C	1.41	7/3255 (0.2%)	1.19	10/4416 (0.2%)
1	D	1.37	8/3274 (0.2%)	1.19	9/4439 (0.2%)
1	E	1.41	9/3265 (0.3%)	1.22	15/4427 (0.3%)
1	F	1.41	17/3258 (0.5%)	1.20	14/4420 (0.3%)
All	All	1.41	62/19540 (0.3%)	1.19	62/26507 (0.2%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	D	0	1

The worst 5 of 62 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	278	SER	N-CA	9.88	1.53	1.46
1	F	278	SER	N-CA	9.43	1.53	1.46
1	D	278	SER	N-CA	7.09	1.51	1.46
1	F	278	SER	C-O	7.08	1.27	1.23
1	C	349	ALA	CA-CB	7.05	1.64	1.53

The worst 5 of 62 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	170	VAL	N-CA-C	10.41	120.92	110.82
1	F	162	LEU	N-CA-C	-8.46	101.28	111.69

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	156	LEU	CB-CA-C	7.86	124.22	110.85
1	E	170	VAL	N-CA-C	7.43	117.51	110.74
1	C	162	LEU	N-CA-C	-7.32	102.69	111.69

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	D	165	GLY	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3171	0	3105	59	0
1	B	3181	0	3091	76	0
1	C	3180	0	3116	51	0
1	D	3205	0	3134	64	0
1	E	3199	0	3132	53	0
1	F	3186	0	3126	65	0
2	G	77	0	63	1	0
2	H	77	0	63	4	0
2	I	77	0	63	3	0
2	J	77	0	63	2	0
2	K	77	0	60	0	0
2	L	77	0	61	1	0
3	A	43	0	30	6	0
3	B	43	0	30	6	0
3	C	43	0	30	5	0
3	D	43	0	30	6	0
3	E	43	0	30	6	0
3	F	43	0	30	10	0
4	A	10	0	0	8	0
4	B	15	0	0	5	0
4	C	15	0	0	3	0
4	D	15	0	0	5	0
4	E	15	0	0	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	F	15	0	0	5	0
5	A	4	0	5	0	0
5	B	4	0	5	1	0
5	C	4	0	5	1	0
5	D	4	0	5	0	0
5	E	4	0	5	0	0
5	F	4	0	5	0	0
6	A	439	0	0	17	0
6	B	432	0	0	15	0
6	C	443	0	0	13	0
6	D	432	0	0	12	0
6	E	460	0	0	14	1
6	F	431	0	0	18	1
All	All	22588	0	19287	378	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 10.

The worst 5 of 378 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:E:169:HIS:O	1:E:175:ILE:HD11	1.28	1.29
1:E:4:MET:N	4:E:504:SO4:O4	1.69	1.24
1:D:40:ARG:HH11	1:D:40:ARG:CG	1.58	1.14
1:F:164:CYS:HB3	6:F:899:HOH:O	1.49	1.12
1:F:230:ILE:HG23	3:F:501:HEM:HBC1	1.27	1.12

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:E:1046:HOH:O	6:F:601:HOH:O[3_545]	1.89	0.31

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	405/407 (100%)	393 (97%)	12 (3%)	0	100	100
1	B	407/407 (100%)	394 (97%)	13 (3%)	0	100	100
1	C	407/407 (100%)	391 (96%)	16 (4%)	0	100	100
1	D	407/407 (100%)	395 (97%)	12 (3%)	0	100	100
1	E	406/407 (100%)	395 (97%)	11 (3%)	0	100	100
1	F	406/407 (100%)	397 (98%)	9 (2%)	0	100	100
All	All	2438/2442 (100%)	2365 (97%)	73 (3%)	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 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	340/349 (97%)	327 (96%)	13 (4%)	29	15
1	B	341/349 (98%)	324 (95%)	17 (5%)	22	9
1	C	343/349 (98%)	328 (96%)	15 (4%)	25	12
1	D	346/349 (99%)	334 (96%)	12 (4%)	32	18
1	E	345/349 (99%)	332 (96%)	13 (4%)	29	15
1	F	346/349 (99%)	334 (96%)	12 (4%)	32	18
All	All	2061/2094 (98%)	1979 (96%)	82 (4%)	29	14

5 of 82 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	77	TYR
1	F	99[A]	ARG
1	E	125	GLU

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Mol	Chain	Res	Type
1	E	265	LEU
1	F	168	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 58 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	341	HIS
1	F	346	ASN
1	D	323	ASN
1	F	341	HIS
1	F	94	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

42 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	GLC	G	1	2	11,11,12	0.81	0	15,15,17	2.57	6 (40%)
2	GLC	G	2	2	11,11,12	1.15	1 (9%)	15,15,17	2.54	9 (60%)
2	GLC	G	3	2	11,11,12	1.11	0	15,15,17	2.44	7 (46%)
2	GLC	G	4	2	11,11,12	0.59	0	15,15,17	2.98	6 (40%)
2	GLC	G	5	2	11,11,12	0.76	0	15,15,17	2.52	7 (46%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	GLC	G	6	2	11,11,12	0.65	0	15,15,17	3.78	9 (60%)
2	GLC	G	7	2	11,11,12	0.68	0	15,15,17	2.49	7 (46%)
2	GLC	H	1	2	11,11,12	0.79	0	15,15,17	2.22	9 (60%)
2	GLC	H	2	2	11,11,12	1.63	1 (9%)	15,15,17	3.77	8 (53%)
2	GLC	H	3	2	11,11,12	0.94	1 (9%)	15,15,17	4.52	8 (53%)
2	GLC	H	4	2	11,11,12	0.75	0	15,15,17	2.65	10 (66%)
2	GLC	H	5	2	11,11,12	1.26	2 (18%)	15,15,17	2.75	6 (40%)
2	GLC	H	6	2	11,11,12	0.90	1 (9%)	15,15,17	3.70	9 (60%)
2	GLC	H	7	2	11,11,12	0.87	0	15,15,17	2.37	5 (33%)
2	GLC	I	1	2	11,11,12	1.30	1 (9%)	15,15,17	2.13	7 (46%)
2	GLC	I	2	2	11,11,12	1.81	1 (9%)	15,15,17	2.99	10 (66%)
2	GLC	I	3	2	11,11,12	1.68	2 (18%)	15,15,17	3.58	9 (60%)
2	GLC	I	4	2	11,11,12	0.77	0	15,15,17	3.03	8 (53%)
2	GLC	I	5	2	11,11,12	0.85	1 (9%)	15,15,17	2.10	6 (40%)
2	GLC	I	6	2	11,11,12	0.79	0	15,15,17	2.50	6 (40%)
2	GLC	I	7	2	11,11,12	0.91	0	15,15,17	2.76	6 (40%)
2	GLC	J	1	2	11,11,12	0.73	0	15,15,17	1.91	4 (26%)
2	GLC	J	2	2	11,11,12	0.91	0	15,15,17	2.90	7 (46%)
2	GLC	J	3	2	11,11,12	1.08	1 (9%)	15,15,17	3.15	9 (60%)
2	GLC	J	4	2	11,11,12	0.52	0	15,15,17	2.54	8 (53%)
2	GLC	J	5	2	11,11,12	0.57	0	15,15,17	1.80	6 (40%)
2	GLC	J	6	2	11,11,12	0.90	0	15,15,17	2.93	5 (33%)
2	GLC	J	7	2	11,11,12	0.59	0	15,15,17	2.92	5 (33%)
2	GLC	K	1	2	11,11,12	0.74	0	15,15,17	2.04	6 (40%)
2	GLC	K	2	2	11,11,12	1.00	0	15,15,17	2.48	5 (33%)
2	GLC	K	3	2	11,11,12	1.28	2 (18%)	15,15,17	3.35	11 (73%)
2	GLC	K	4	2	11,11,12	1.42	1 (9%)	15,15,17	3.38	8 (53%)
2	GLC	K	5	2	11,11,12	0.82	0	15,15,17	4.26	10 (66%)
2	GLC	K	6	2	11,11,12	0.84	0	15,15,17	2.80	9 (60%)
2	GLC	K	7	2	11,11,12	1.37	1 (9%)	15,15,17	3.68	6 (40%)
2	GLC	L	1	2	11,11,12	1.12	2 (18%)	15,15,17	2.94	8 (53%)
2	GLC	L	2	2	11,11,12	0.74	0	15,15,17	2.39	8 (53%)
2	GLC	L	3	2	11,11,12	0.59	0	15,15,17	1.75	5 (33%)
2	GLC	L	4	2	11,11,12	0.57	0	15,15,17	2.18	5 (33%)
2	GLC	L	5	2	11,11,12	0.63	0	15,15,17	2.39	9 (60%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	GLC	L	6	2	11,11,12	0.62	0	15,15,17	3.49	8 (53%)
2	GLC	L	7	2	11,11,12	0.88	1 (9%)	15,15,17	4.07	11 (73%)

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	GLC	G	1	2	1/1/4/5	2/2/19/22	0/1/1/1
2	GLC	G	2	2	-	1/2/19/22	0/1/1/1
2	GLC	G	3	2	-	0/2/19/22	0/1/1/1
2	GLC	G	4	2	-	2/2/19/22	0/1/1/1
2	GLC	G	5	2	-	2/2/19/22	0/1/1/1
2	GLC	G	6	2	-	1/2/19/22	0/1/1/1
2	GLC	G	7	2	1/1/4/5	2/2/19/22	0/1/1/1
2	GLC	H	1	2	1/1/4/5	1/2/19/22	0/1/1/1
2	GLC	H	2	2	-	2/2/19/22	0/1/1/1
2	GLC	H	3	2	-	2/2/19/22	0/1/1/1
2	GLC	H	4	2	-	2/2/19/22	0/1/1/1
2	GLC	H	5	2	-	0/2/19/22	0/1/1/1
2	GLC	H	6	2	-	0/2/19/22	0/1/1/1
2	GLC	H	7	2	1/1/4/5	2/2/19/22	0/1/1/1
2	GLC	I	1	2	1/1/4/5	2/2/19/22	0/1/1/1
2	GLC	I	2	2	-	1/2/19/22	0/1/1/1
2	GLC	I	3	2	-	0/2/19/22	0/1/1/1
2	GLC	I	4	2	-	1/2/19/22	0/1/1/1
2	GLC	I	5	2	-	0/2/19/22	0/1/1/1
2	GLC	I	6	2	-	1/2/19/22	0/1/1/1
2	GLC	I	7	2	1/1/4/5	0/2/19/22	0/1/1/1
2	GLC	J	1	2	-	0/2/19/22	0/1/1/1
2	GLC	J	2	2	-	2/2/19/22	0/1/1/1
2	GLC	J	3	2	-	0/2/19/22	0/1/1/1
2	GLC	J	4	2	-	1/2/19/22	0/1/1/1
2	GLC	J	5	2	-	2/2/19/22	0/1/1/1
2	GLC	J	6	2	-	1/2/19/22	0/1/1/1
2	GLC	J	7	2	1/1/4/5	1/2/19/22	0/1/1/1
2	GLC	K	1	2	1/1/4/5	2/2/19/22	0/1/1/1
2	GLC	K	2	2	-	1/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GLC	K	3	2	-	2/2/19/22	0/1/1/1
2	GLC	K	4	2	1/1/4/5	1/2/19/22	0/1/1/1
2	GLC	K	5	2	-	2/2/19/22	0/1/1/1
2	GLC	K	6	2	-	2/2/19/22	0/1/1/1
2	GLC	K	7	2	1/1/4/5	0/2/19/22	0/1/1/1
2	GLC	L	1	2	-	2/2/19/22	0/1/1/1
2	GLC	L	2	2	-	2/2/19/22	0/1/1/1
2	GLC	L	3	2	-	0/2/19/22	0/1/1/1
2	GLC	L	4	2	1/1/4/5	0/2/19/22	0/1/1/1
2	GLC	L	5	2	-	2/2/19/22	0/1/1/1
2	GLC	L	6	2	1/1/4/5	0/2/19/22	1/1/1/1
2	GLC	L	7	2	-	0/2/19/22	0/1/1/1

The worst 5 of 19 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	I	2	GLC	O5-C1	5.13	1.51	1.43
2	H	2	GLC	O5-C1	4.84	1.51	1.43
2	I	3	GLC	C2-C3	4.05	1.58	1.52
2	K	7	GLC	C2-C3	3.08	1.57	1.52
2	K	3	GLC	O5-C5	2.69	1.48	1.43

The worst 5 of 311 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	L	7	GLC	C3-C4-C5	-9.98	92.44	110.24
2	G	6	GLC	C3-C4-C5	-9.49	93.32	110.24
2	K	4	GLC	O5-C5-C4	-9.47	87.79	110.83
2	H	3	GLC	C1-C2-C3	-9.27	98.28	109.67
2	L	1	GLC	O5-C5-C6	-8.95	93.17	107.20

5 of 12 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	G	1	GLC	C1
2	G	7	GLC	C1
2	H	1	GLC	C1
2	H	7	GLC	C1
2	I	1	GLC	C1

5 of 47 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	H	7	GLC	C4-C5-C6-O6
2	K	3	GLC	O5-C5-C6-O6
2	L	2	GLC	O5-C5-C6-O6
2	H	7	GLC	O5-C5-C6-O6
2	I	1	GLC	C4-C5-C6-O6

All (1) ring outliers are listed below:

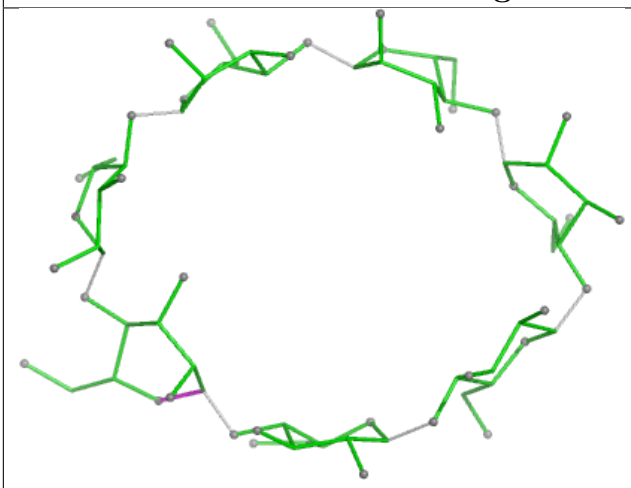
Mol	Chain	Res	Type	Atoms
2	L	6	GLC	C1-C2-C3-C4-C5-O5

7 monomers are involved in 11 short contacts:

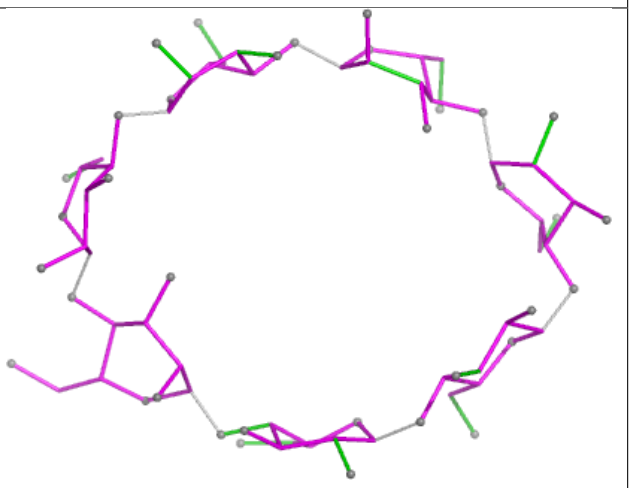
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	J	1	GLC	2	0
2	I	2	GLC	1	0
2	I	3	GLC	2	0
2	H	5	GLC	2	0
2	L	2	GLC	1	0
2	G	3	GLC	1	0
2	H	2	GLC	2	0

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

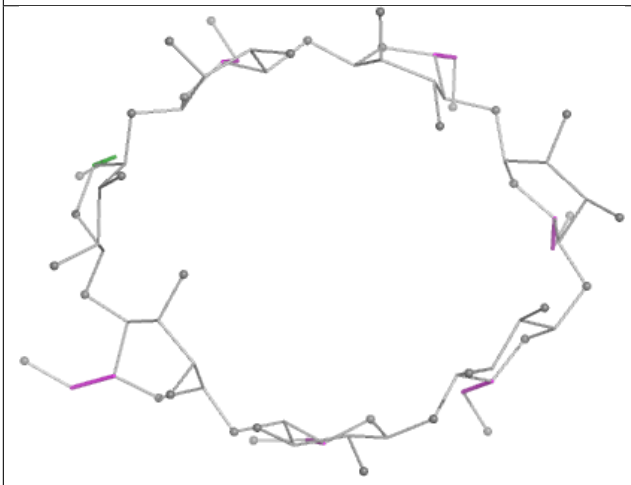
Oligosaccharide Chain G



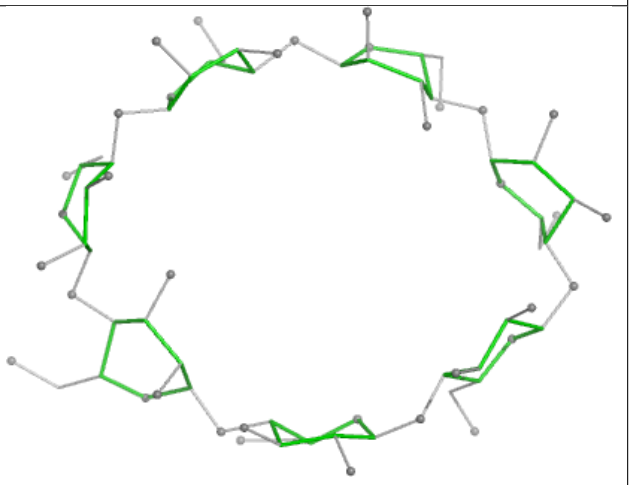
Bond lengths



Bond angles

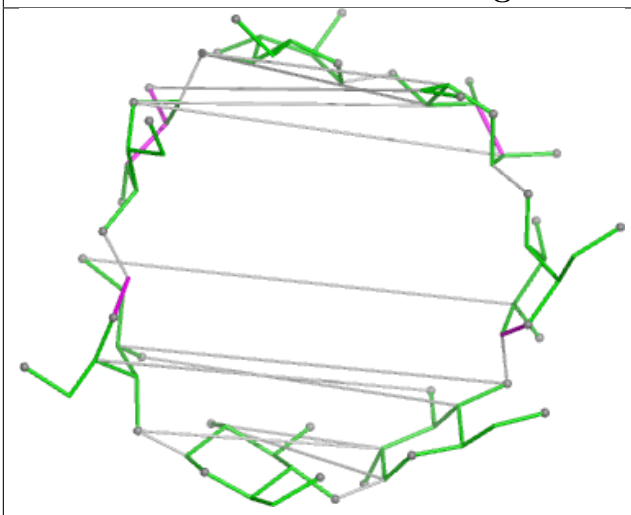


Torsions

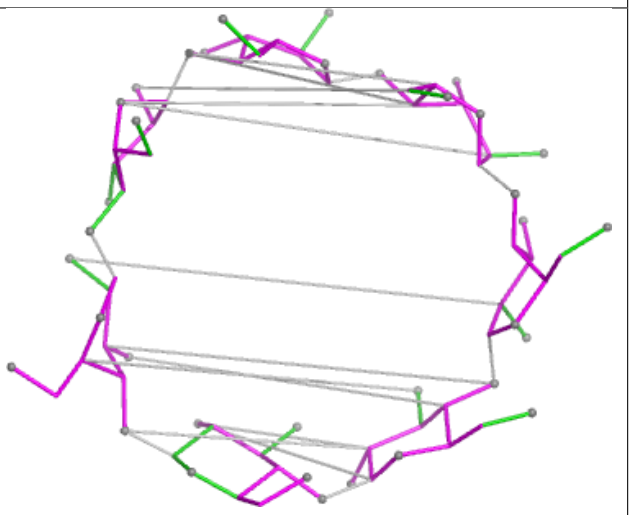


Rings

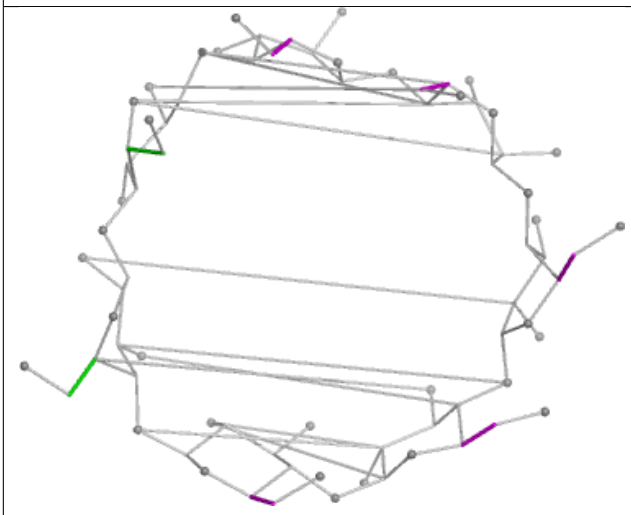
Oligosaccharide Chain H



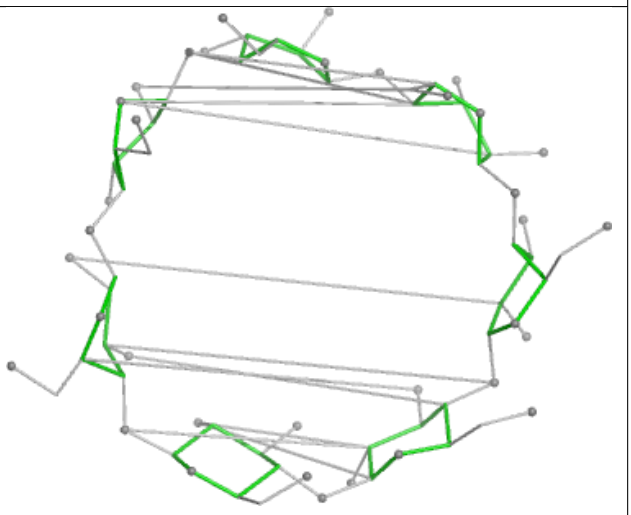
Bond lengths



Bond angles

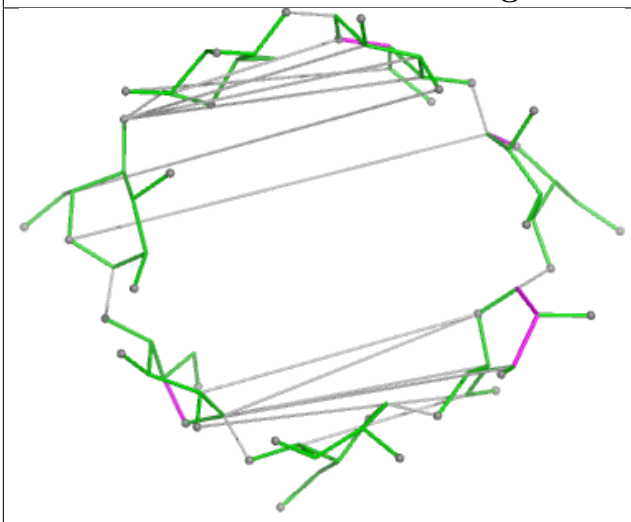


Torsions

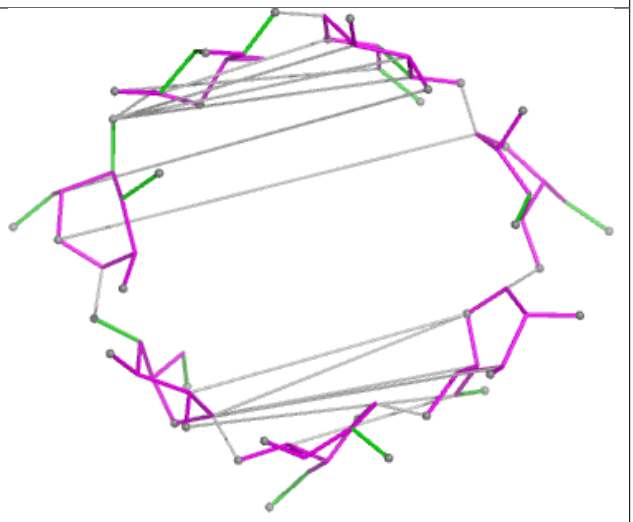


Rings

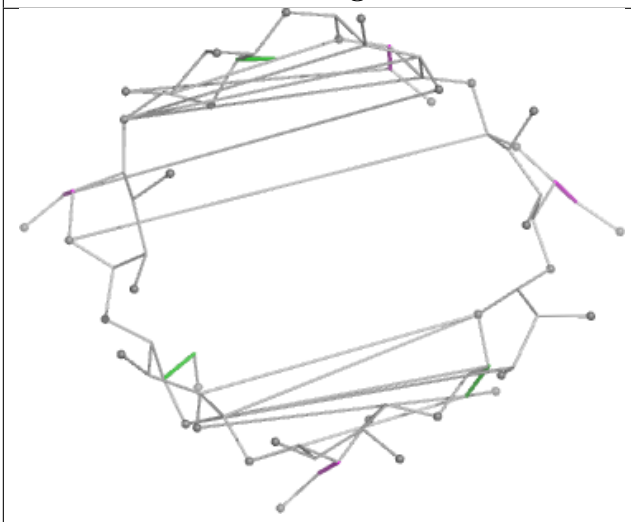
Oligosaccharide Chain I



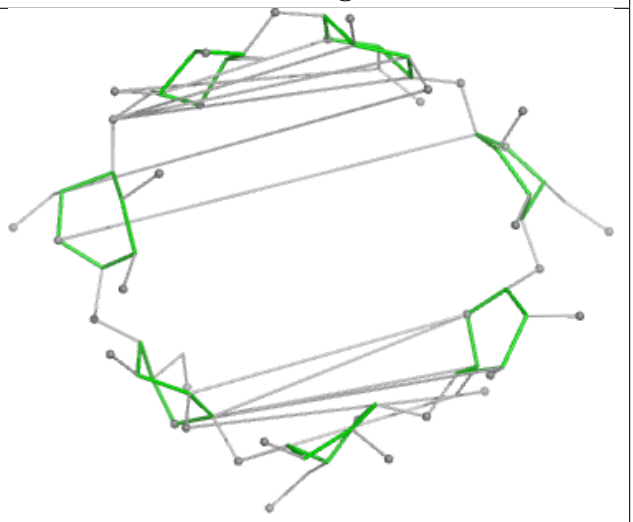
Bond lengths



Bond angles

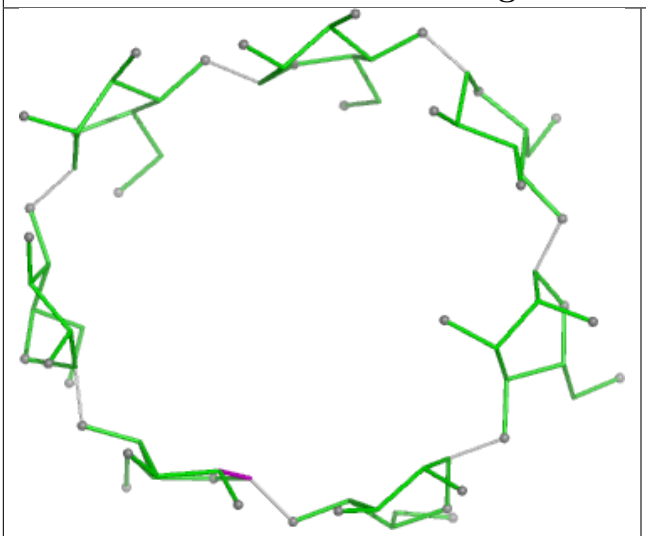


Torsions

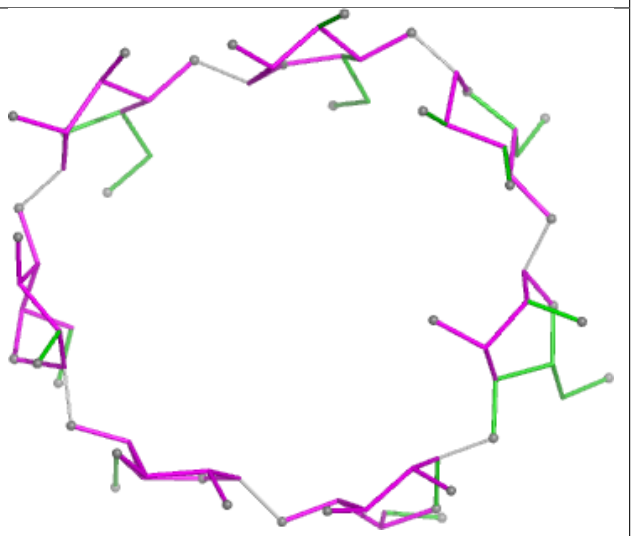


Rings

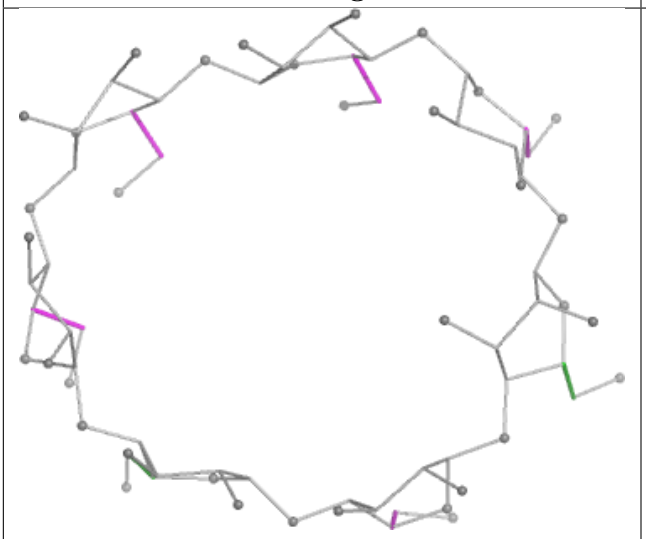
Oligosaccharide Chain J



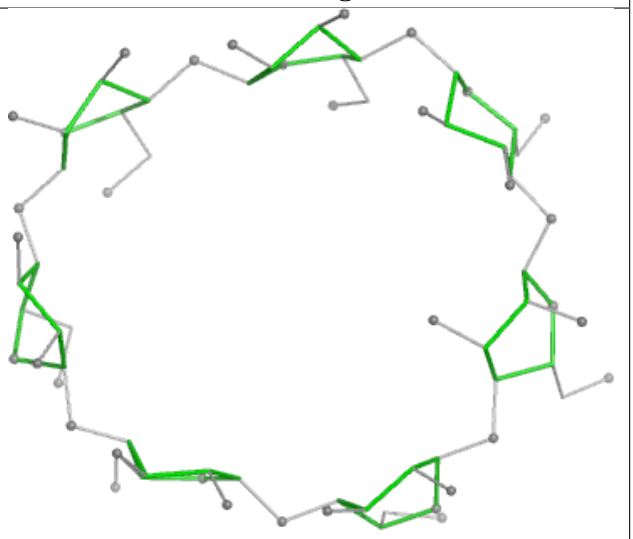
Bond lengths



Bond angles

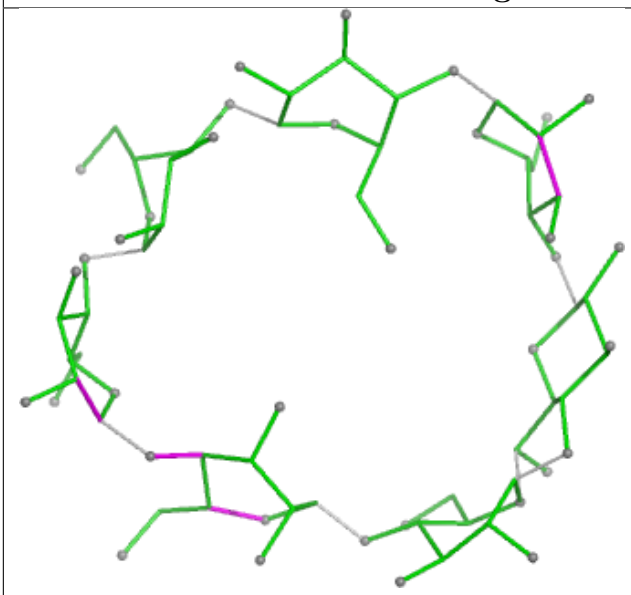


Torsions

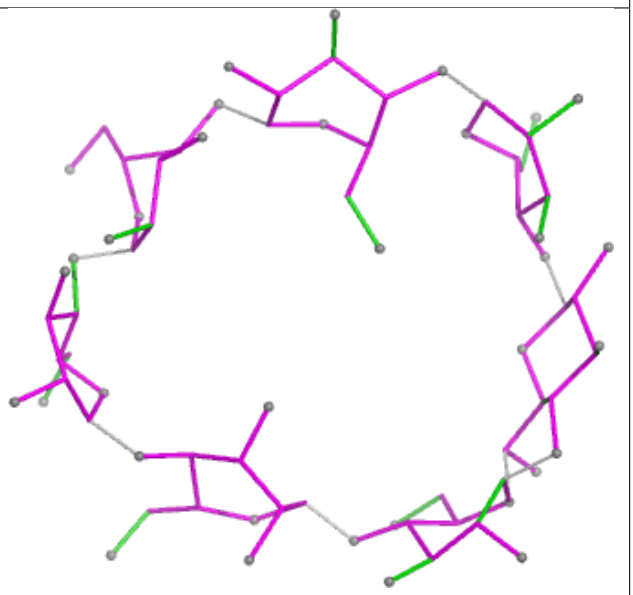


Rings

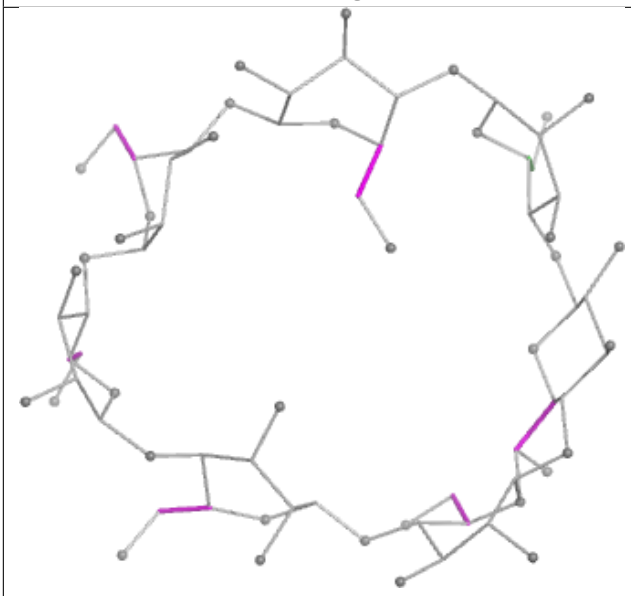
Oligosaccharide Chain K



Bond lengths



Bond angles



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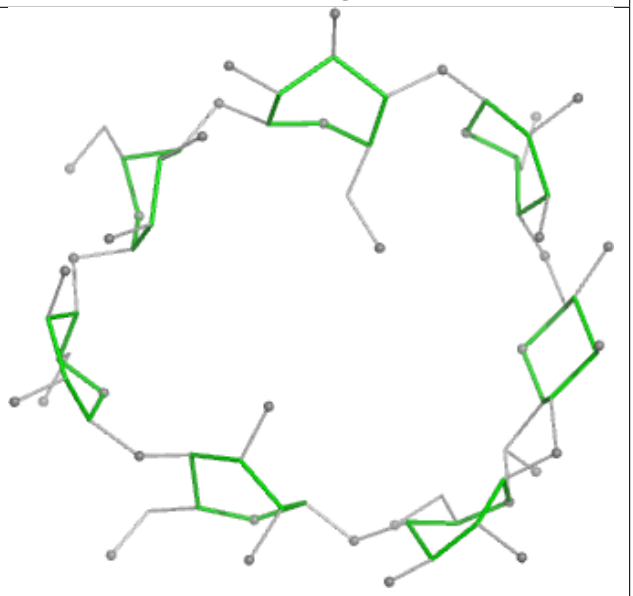
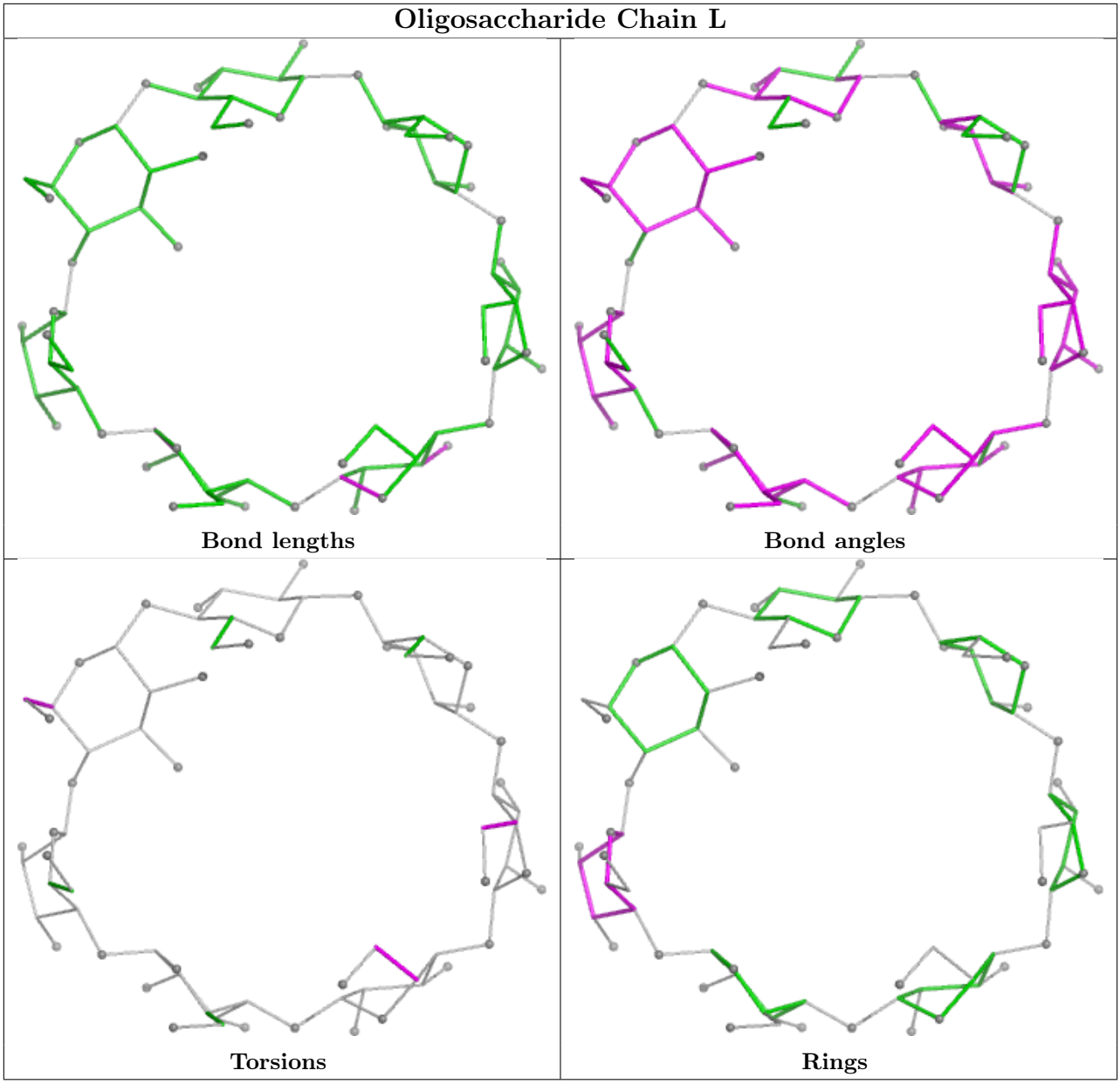


Rings



5.6 Ligand geometry (i)

29 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	HEM	E	501	1,5	50,50,50	2.21	13 (26%)	66,82,82	1.70	16 (24%)
4	SO4	B	503	-	4,4,4	0.53	0	6,6,6	0.64	0
5	EDO	A	504	3	3,3,3	1.36	0	2,2,2	0.97	0
4	SO4	D	504	-	4,4,4	0.74	0	6,6,6	1.08	0
4	SO4	E	502	-	4,4,4	0.59	0	6,6,6	0.61	0
4	SO4	C	502	-	4,4,4	0.67	0	6,6,6	0.91	0
5	EDO	D	505	3	3,3,3	1.18	0	2,2,2	0.86	0
4	SO4	A	503	-	4,4,4	0.57	0	6,6,6	0.80	0
3	HEM	A	501	1,5	50,50,50	2.22	11 (22%)	66,82,82	1.85	19 (28%)
5	EDO	E	505	3	3,3,3	1.41	0	2,2,2	0.93	0
4	SO4	B	504	-	4,4,4	0.69	0	6,6,6	0.88	0
5	EDO	C	505	3	3,3,3	0.85	0	2,2,2	0.11	0
4	SO4	D	503	-	4,4,4	0.92	0	6,6,6	0.57	0
4	SO4	C	504	-	4,4,4	0.53	0	6,6,6	0.85	0
5	EDO	F	505	3	3,3,3	1.33	0	2,2,2	0.77	0
5	EDO	B	505	3	3,3,3	1.41	0	2,2,2	1.00	0
4	SO4	E	504	-	4,4,4	0.48	0	6,6,6	0.66	0
4	SO4	C	503	-	4,4,4	0.70	0	6,6,6	0.57	0
4	SO4	F	503	-	4,4,4	0.84	0	6,6,6	0.72	0
3	HEM	F	501	1,5	50,50,50	1.93	11 (22%)	66,82,82	1.62	14 (21%)
4	SO4	E	503	-	4,4,4	0.76	0	6,6,6	0.52	0
3	HEM	D	501	1,5	50,50,50	2.03	13 (26%)	66,82,82	1.66	14 (21%)
3	HEM	C	501	1,5	50,50,50	2.22	14 (28%)	66,82,82	2.04	16 (24%)
3	HEM	B	501	1,5	50,50,50	2.11	14 (28%)	66,82,82	1.63	14 (21%)
4	SO4	A	502	-	4,4,4	0.66	0	6,6,6	1.12	0
4	SO4	F	502	-	4,4,4	0.65	0	6,6,6	0.61	0
4	SO4	F	504	-	4,4,4	0.40	0	6,6,6	0.58	0
4	SO4	D	502	-	4,4,4	0.73	0	6,6,6	0.61	0
4	SO4	B	502	-	4,4,4	0.68	0	6,6,6	0.73	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	EDO	D	505	3	-	1/1/1/1	-
3	HEM	A	501	1,5	-	0/14/54/54	-
3	HEM	F	501	1,5	-	2/14/54/54	-
5	EDO	E	505	3	-	1/1/1/1	-
5	EDO	C	505	3	-	1/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	HEM	D	501	1,5	-	1/14/54/54	-
5	EDO	F	505	3	-	1/1/1/1	-
3	HEM	E	501	1,5	-	1/14/54/54	-
3	HEM	C	501	1,5	-	0/14/54/54	-
5	EDO	B	505	3	-	1/1/1/1	-
5	EDO	A	504	3	-	1/1/1/1	-
3	HEM	B	501	1,5	-	0/14/54/54	-

The worst 5 of 76 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	501	HEM	C3D-C2D	8.34	1.54	1.36
3	E	501	HEM	C3D-C2D	8.22	1.54	1.36
3	C	501	HEM	C3D-C2D	8.05	1.53	1.36
3	F	501	HEM	C3D-C2D	7.42	1.52	1.36
3	B	501	HEM	C3D-C2D	7.34	1.52	1.36

The worst 5 of 93 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	501	HEM	C4D-ND-C1D	8.05	113.39	105.07
3	A	501	HEM	C4D-ND-C1D	6.29	111.57	105.07
3	E	501	HEM	C4D-ND-C1D	5.97	111.24	105.07
3	F	501	HEM	C4D-ND-C1D	5.69	110.95	105.07
3	D	501	HEM	C4A-NA-C1A	5.46	110.69	105.35

There are no chirality outliers.

5 of 10 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	F	501	HEM	C2C-C3C-CAC-CBC
3	F	501	HEM	C4C-C3C-CAC-CBC
5	B	505	EDO	O1-C1-C2-O2
5	D	505	EDO	O1-C1-C2-O2
5	A	504	EDO	O1-C1-C2-O2

There are no ring outliers.

14 monomers are involved in 74 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	501	HEM	6	0

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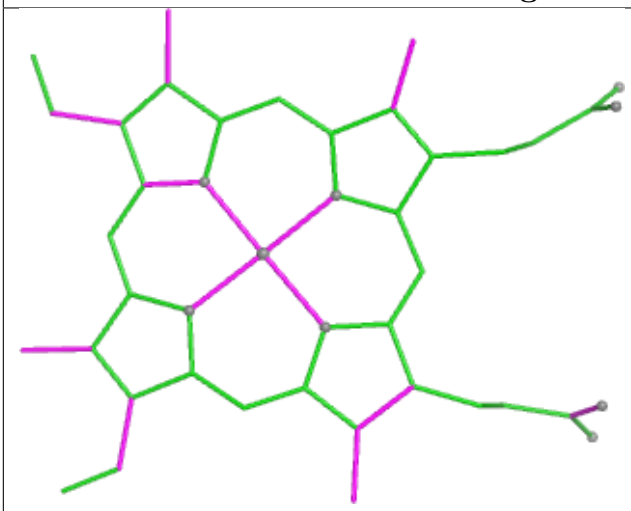
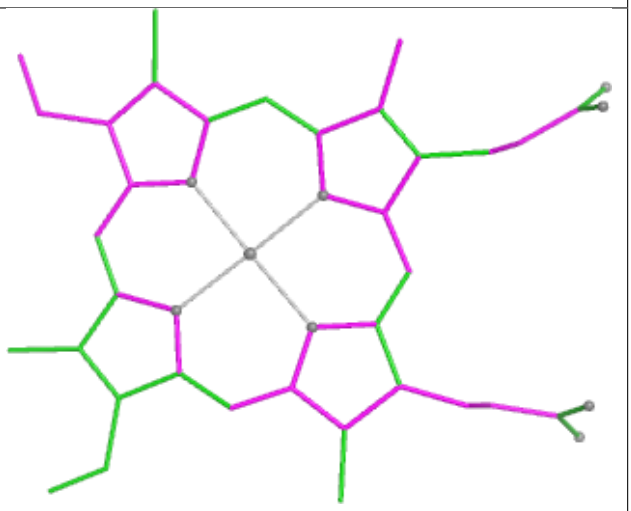
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	D	504	SO4	5	0
3	A	501	HEM	6	0
4	B	504	SO4	5	0
5	C	505	EDO	1	0
4	C	504	SO4	3	0
5	B	505	EDO	1	0
4	E	504	SO4	7	0
3	F	501	HEM	10	0
3	D	501	HEM	6	0
3	C	501	HEM	5	0
3	B	501	HEM	6	0
4	A	502	SO4	8	0
4	F	504	SO4	5	0

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.

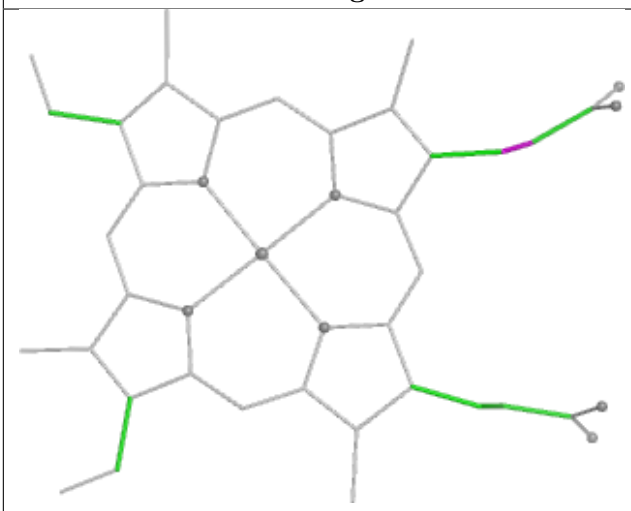
Ligand HEM E 501



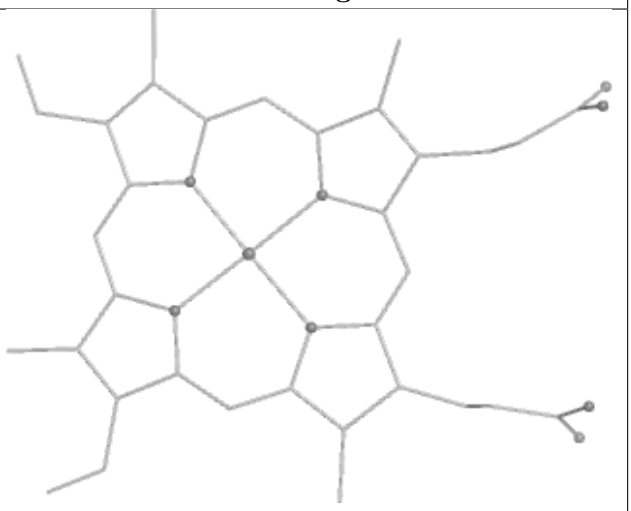
Bond lengths



Bond angles

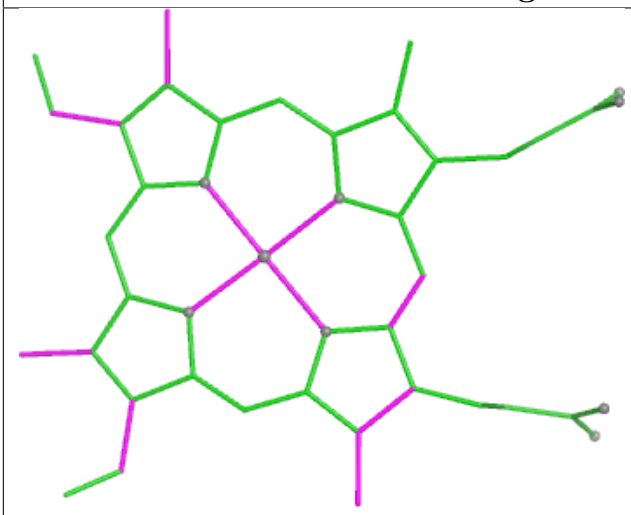


Torsions



Rings

Ligand HEM A 501



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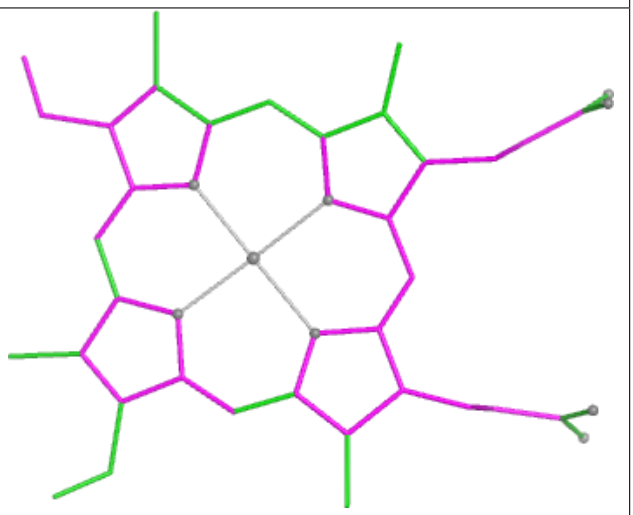

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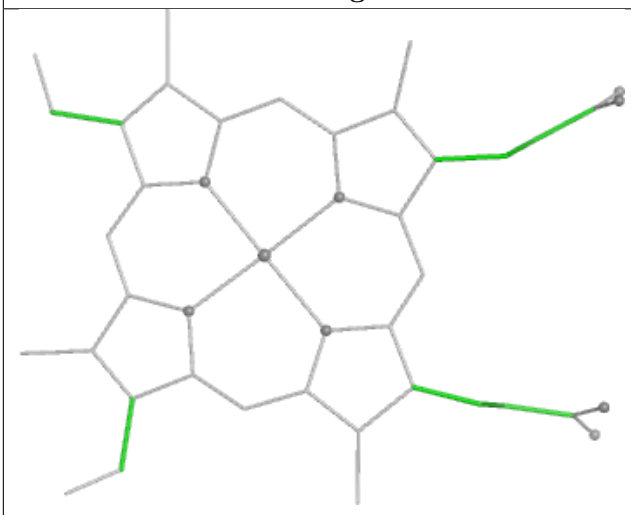
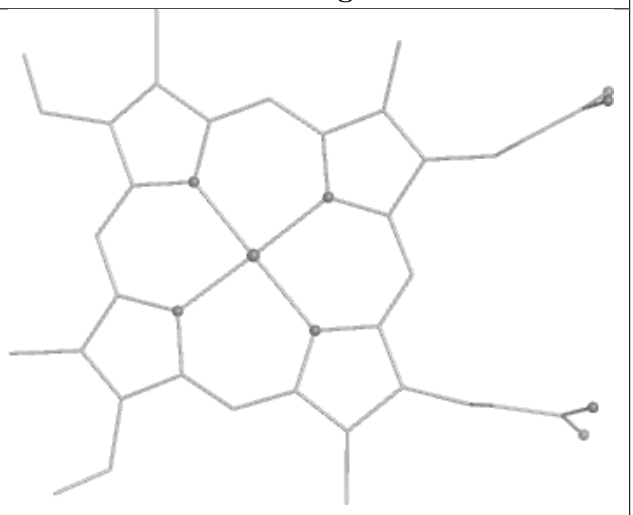
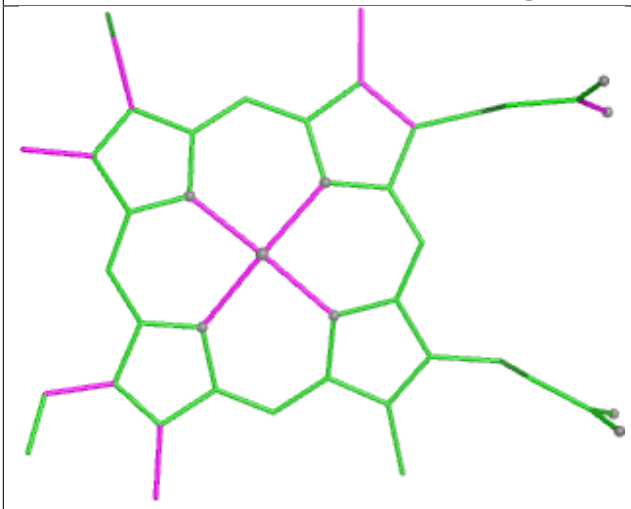


Torsions



Rings

Ligand HEM F 501



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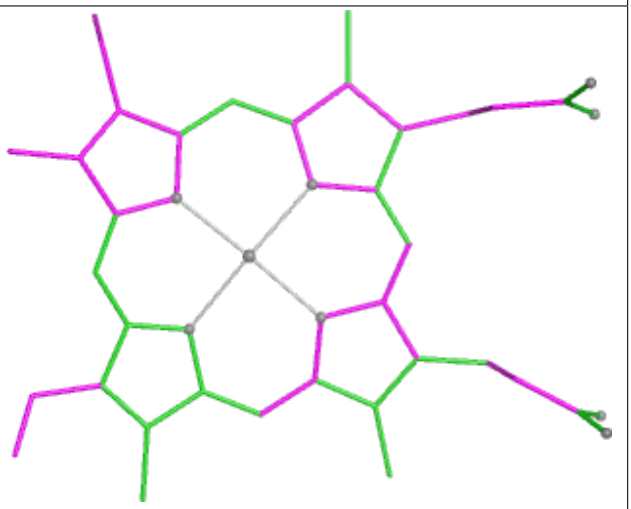

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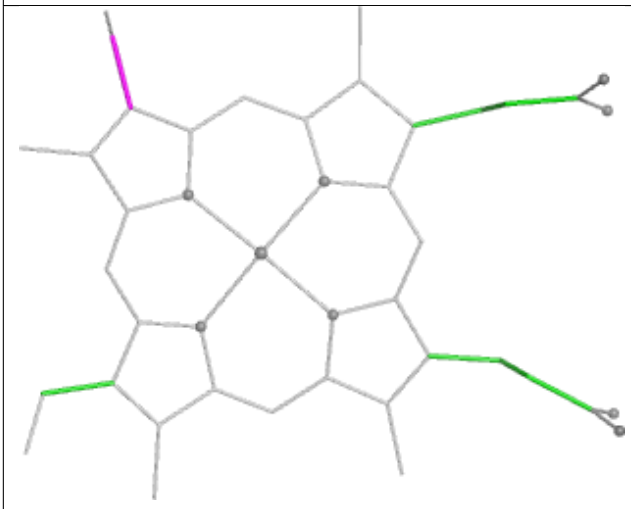

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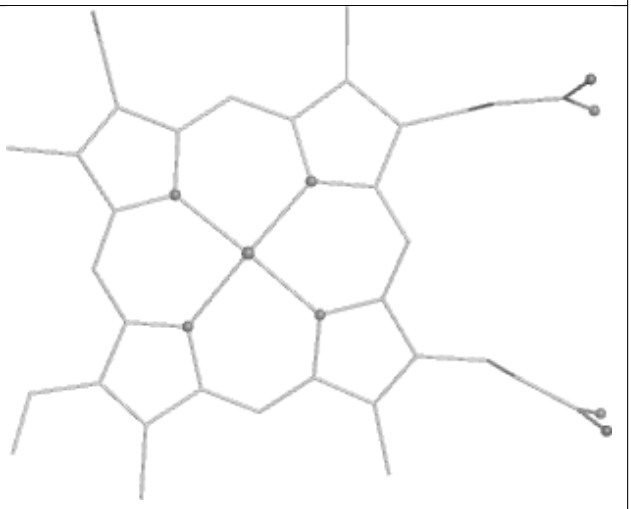
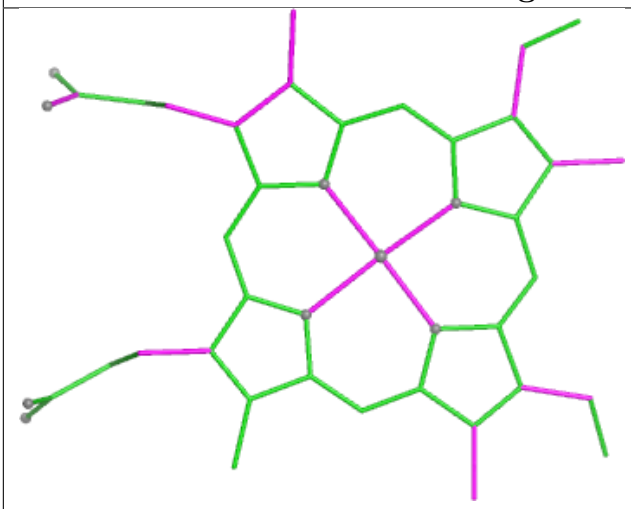
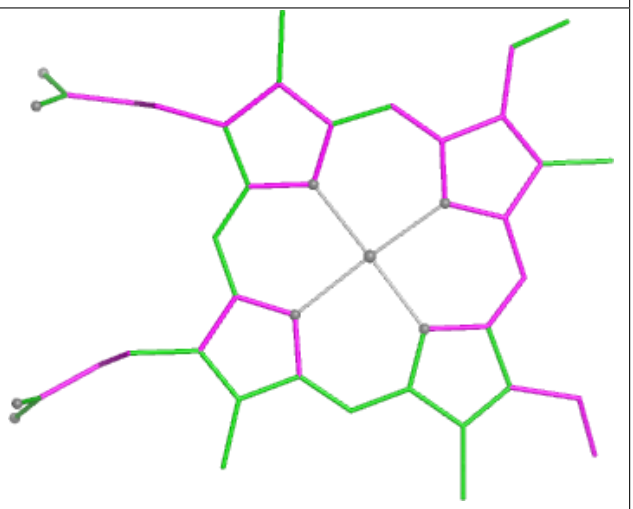


Rings

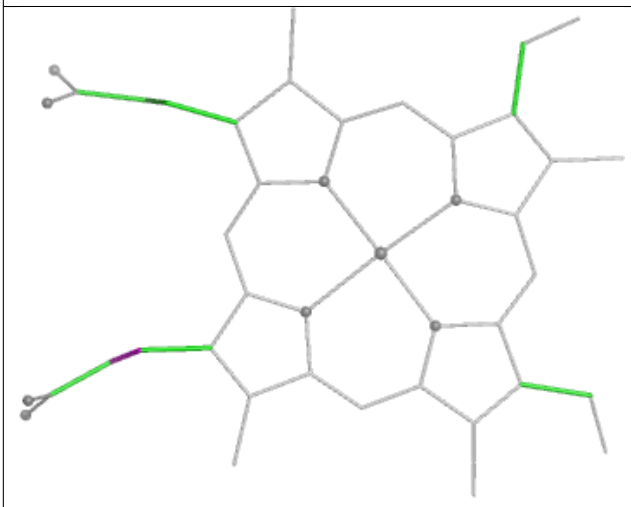
Ligand HEM D 501



Bond lengths



Bond angles



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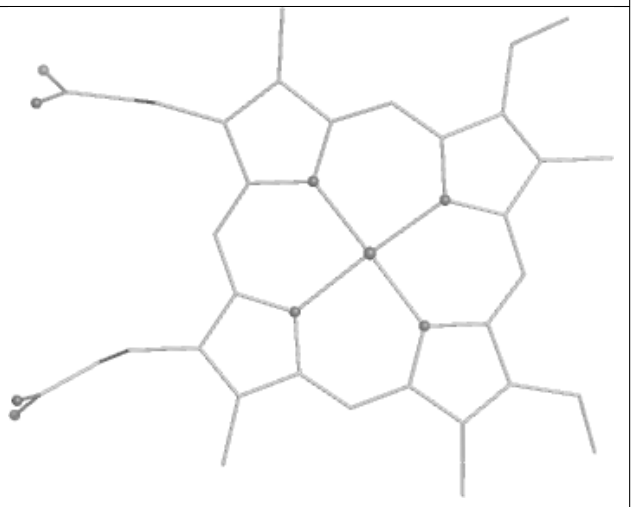
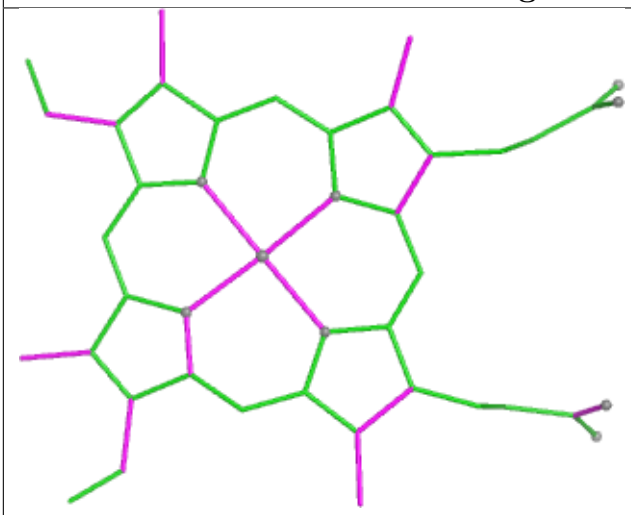
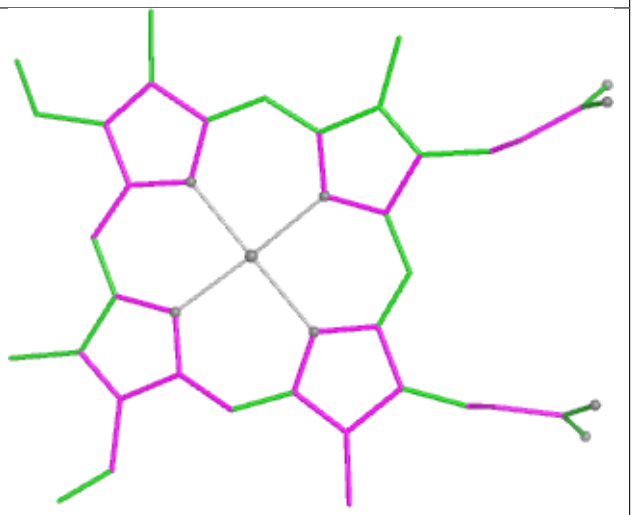


Rings

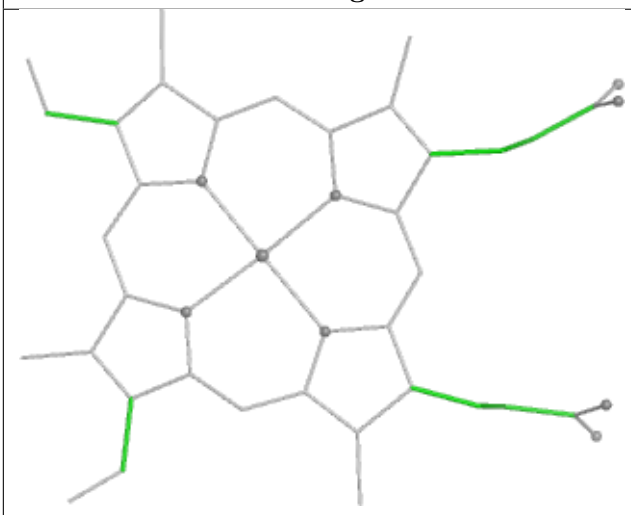
Ligand HEM C 501



Bond lengths



Bond angles



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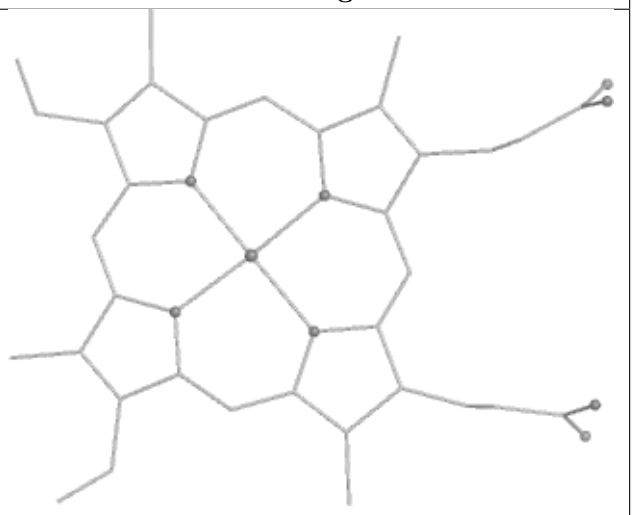
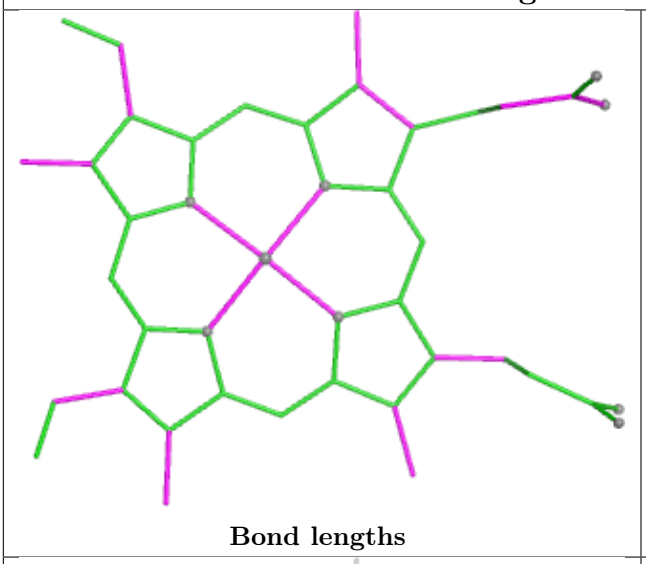
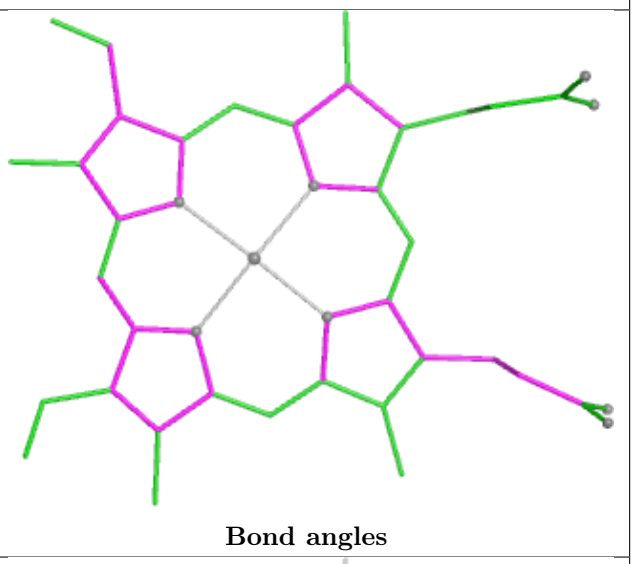


Rings

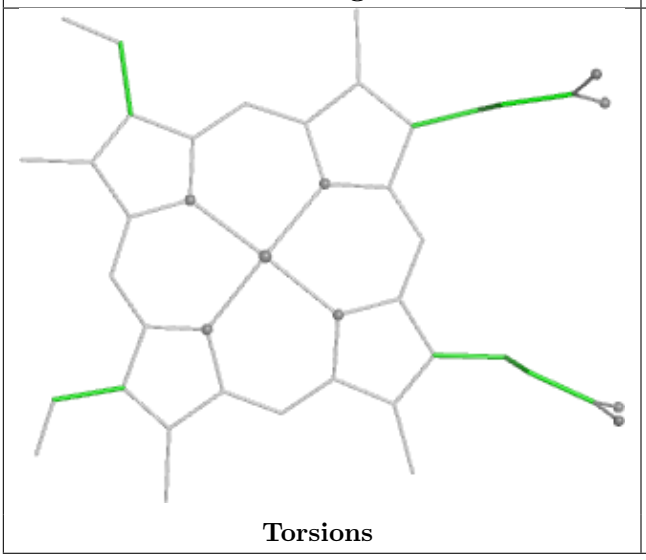
Ligand HEM B 501



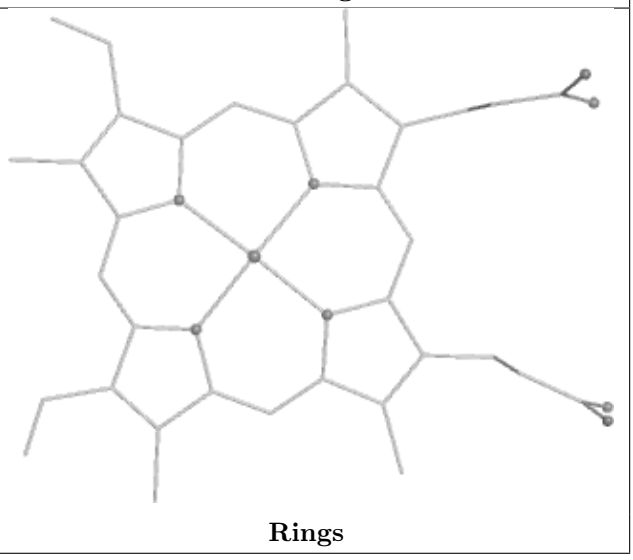
Bond lengths



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, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	402/407 (98%)	-1.37	0	100	100	9, 22, 44, 60	5 (1%)
1	B	404/407 (99%)	-1.37	0	100	100	10, 22, 44, 64	5 (1%)
1	C	402/407 (98%)	-1.36	0	100	100	9, 22, 43, 56	7 (1%)
1	D	402/407 (98%)	-1.36	0	100	100	9, 22, 43, 61	7 (1%)
1	E	402/407 (98%)	-1.36	0	100	100	11, 22, 43, 56	6 (1%)
1	F	402/407 (98%)	-1.36	0	100	100	9, 22, 44, 55	6 (1%)
All	All	2414/2442 (98%)	-1.36	0	100	100	9, 22, 44, 64	36 (1%)

There are no RSRZ outliers to report.

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

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

6.3 Carbohydrates

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	GLC	G	1	11/12	0.99	0.04	37,38,41,42	11
2	GLC	G	2	11/12	0.99	0.05	30,37,40,44	11
2	GLC	G	3	11/12	0.99	0.05	21,38,44,45	11
2	GLC	G	4	11/12	0.99	0.04	34,41,46,48	11
2	GLC	G	5	11/12	0.99	0.06	38,41,45,49	11
2	GLC	G	6	11/12	0.99	0.04	33,39,43,43	11

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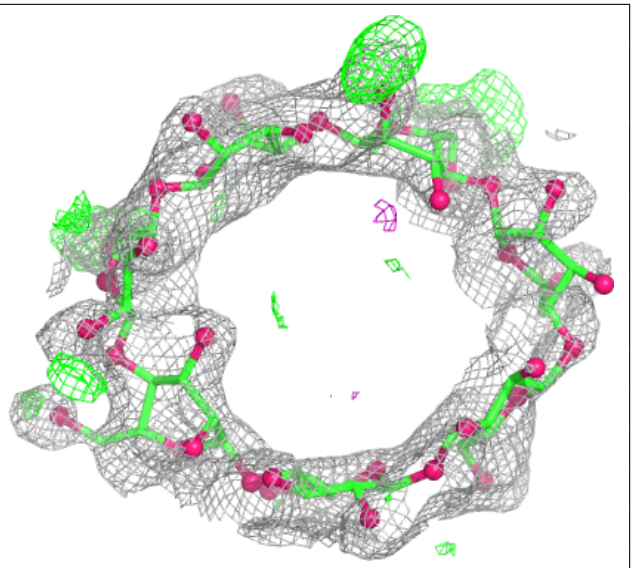
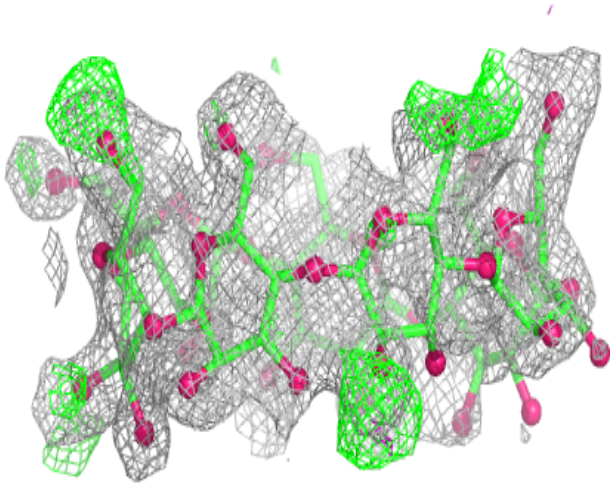
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	GLC	G	7	11/12	0.99	0.04	36,40,43,46	11
2	GLC	H	1	11/12	0.99	0.04	34,39,45,46	11
2	GLC	H	2	11/12	0.99	0.05	24,33,35,39	11
2	GLC	H	3	11/12	0.99	0.04	21,36,41,43	11
2	GLC	H	4	11/12	0.99	0.04	34,37,40,41	11
2	GLC	H	5	11/12	0.99	0.04	36,38,40,41	11
2	GLC	H	6	11/12	0.99	0.04	36,39,45,45	11
2	GLC	H	7	11/12	0.99	0.04	34,38,42,43	11
2	GLC	I	1	11/12	0.99	0.04	32,36,38,41	11
2	GLC	I	2	11/12	0.99	0.04	24,34,37,42	11
2	GLC	I	3	11/12	0.99	0.04	22,32,39,40	11
2	GLC	I	6	11/12	0.99	0.05	33,39,42,44	11
2	GLC	I	7	11/12	0.99	0.03	32,37,39,43	11
2	GLC	J	1	11/12	0.99	0.05	34,39,42,42	11
2	GLC	J	2	11/12	0.99	0.03	24,34,38,40	11
2	GLC	J	3	11/12	0.99	0.04	32,35,37,37	11
2	GLC	J	4	11/12	0.99	0.04	37,39,42,44	11
2	GLC	J	5	11/12	0.99	0.04	38,43,47,51	11
2	GLC	J	6	11/12	0.99	0.04	36,40,42,43	11
2	GLC	J	7	11/12	0.99	0.06	33,42,44,44	11
2	GLC	K	1	11/12	0.99	0.04	33,36,39,40	11
2	GLC	K	2	11/12	0.99	0.04	36,39,42,42	11
2	GLC	K	3	11/12	0.99	0.03	35,38,40,42	11
2	GLC	K	4	11/12	0.99	0.04	25,36,39,39	11
2	GLC	K	5	11/12	0.99	0.03	28,35,37,39	11
2	GLC	K	6	11/12	0.99	0.05	37,40,41,49	11
2	GLC	K	7	11/12	0.99	0.04	35,38,42,43	11
2	GLC	L	1	11/12	0.99	0.04	32,34,38,39	11
2	GLC	L	2	11/12	0.99	0.04	35,39,40,44	11
2	GLC	L	3	11/12	0.99	0.04	38,42,44,46	11
2	GLC	L	4	11/12	0.99	0.05	38,44,45,48	11
2	GLC	L	5	11/12	0.99	0.04	33,40,44,45	11
2	GLC	L	7	11/12	0.99	0.03	32,35,37,39	11
2	GLC	I	4	11/12	1.00	0.03	30,34,37,40	11
2	GLC	L	6	11/12	1.00	0.03	26,39,40,41	11
2	GLC	I	5	11/12	1.00	0.03	40,45,46,50	11

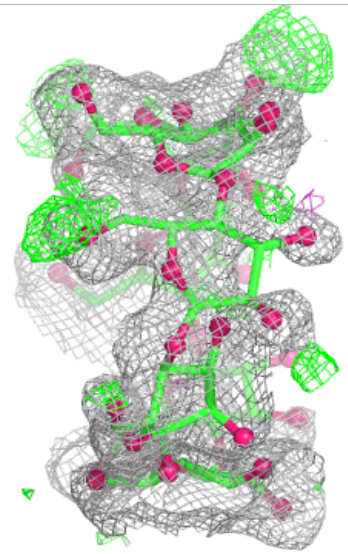
The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around Chain G:

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

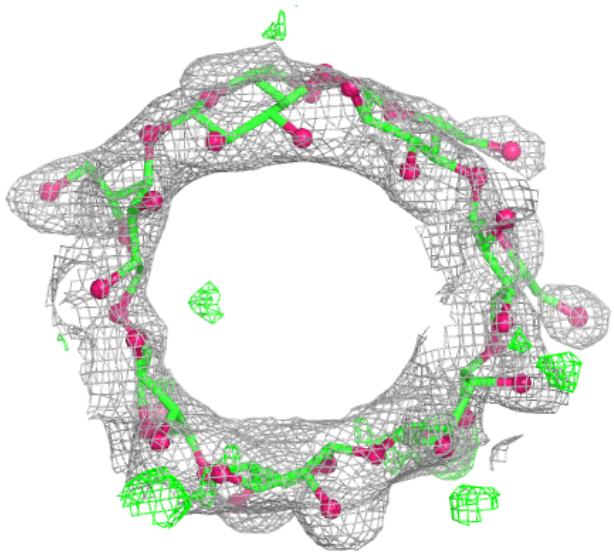


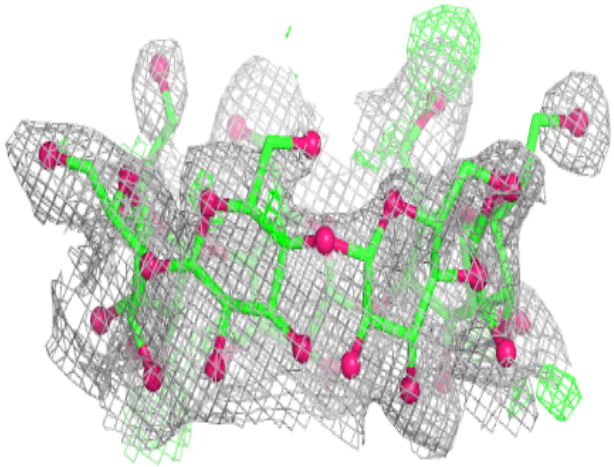


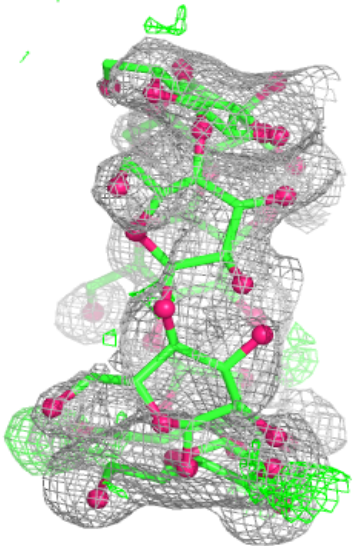


Electron density around Chain H:

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

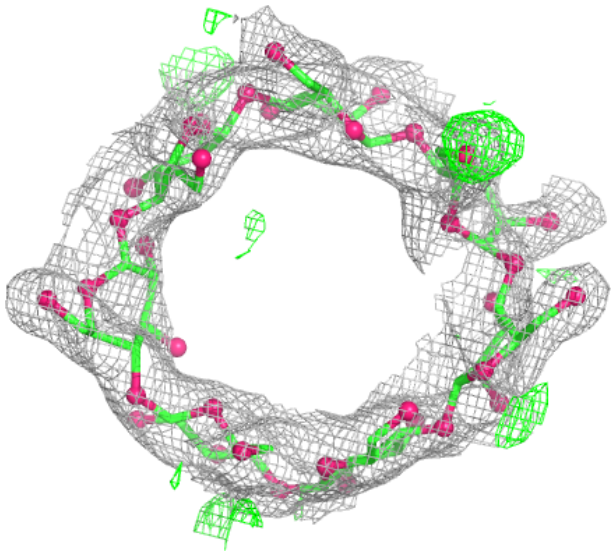


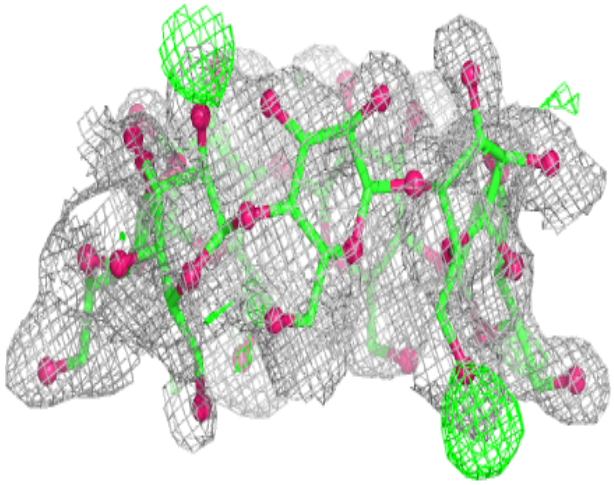


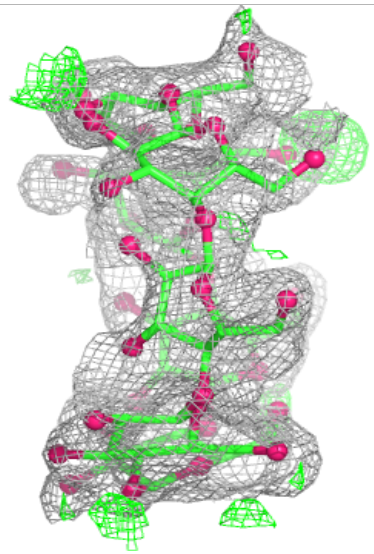


Electron density around Chain I:

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

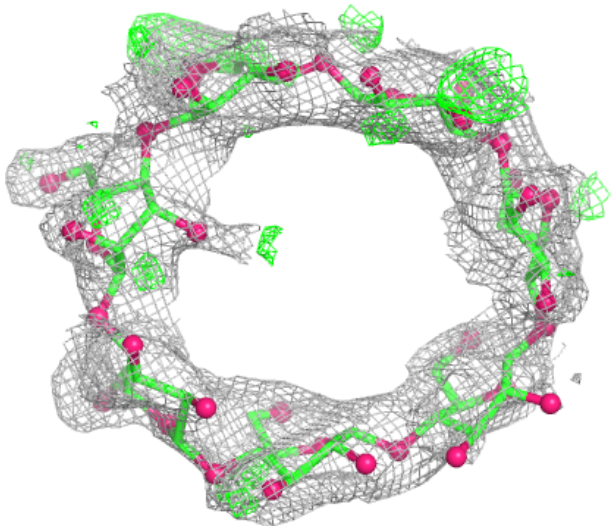


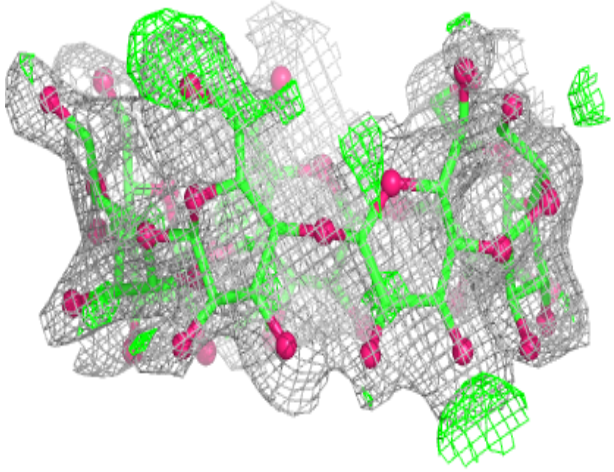


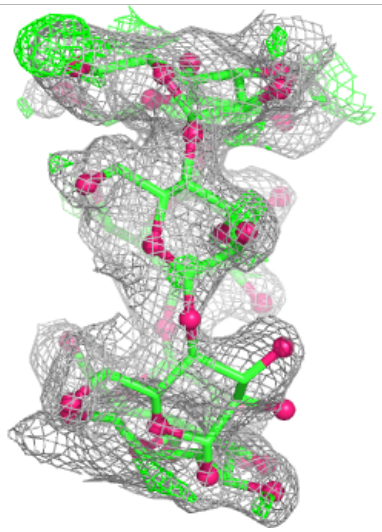


Electron density around Chain J:

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

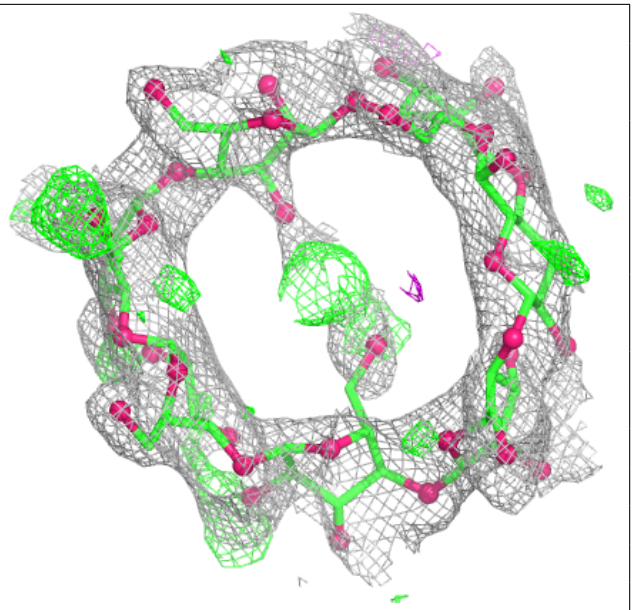


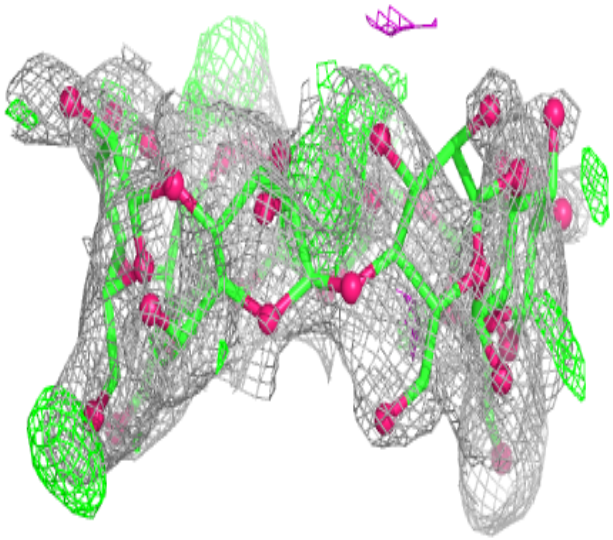


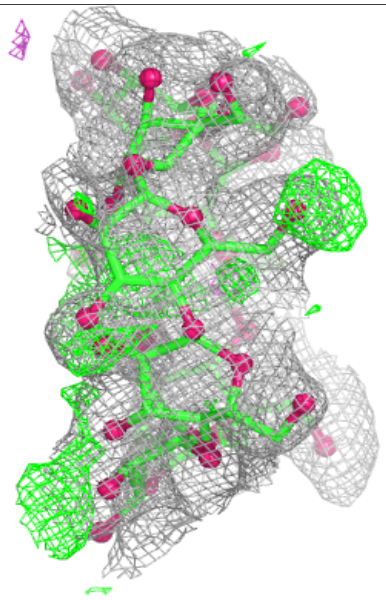


Electron density around Chain K:

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

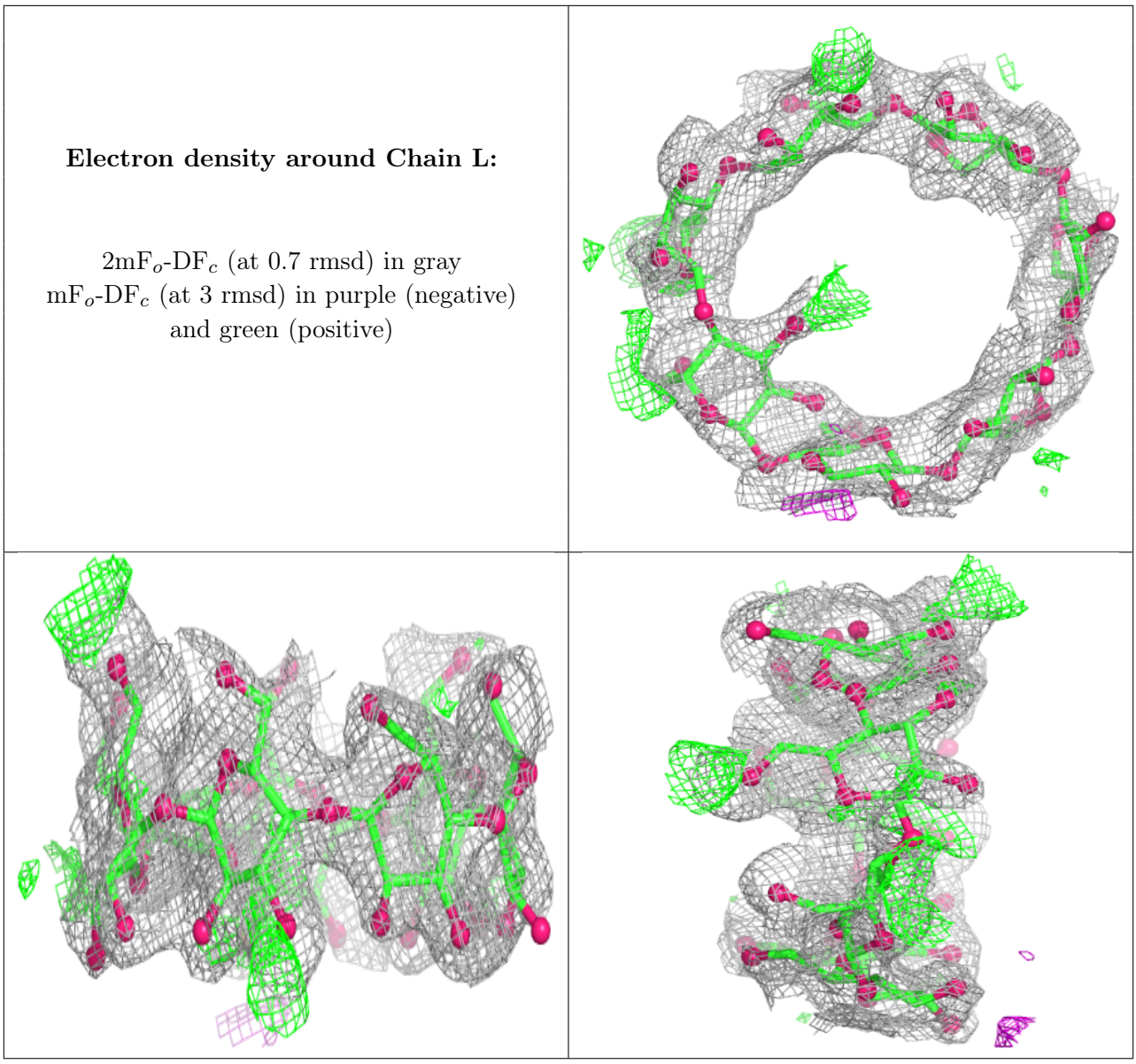






Electron density around Chain L:

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



6.4 Ligands

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	SO4	C	504	5/5	0.97	0.27	32,42,45,47	0
5	EDO	B	505	4/4	0.97	0.06	19,20,22,32	0
4	SO4	A	502	5/5	0.98	0.25	27,42,43,44	0
4	SO4	D	504	5/5	0.98	0.27	29,44,46,47	0
4	SO4	E	504	5/5	0.98	0.24	29,41,44,49	0

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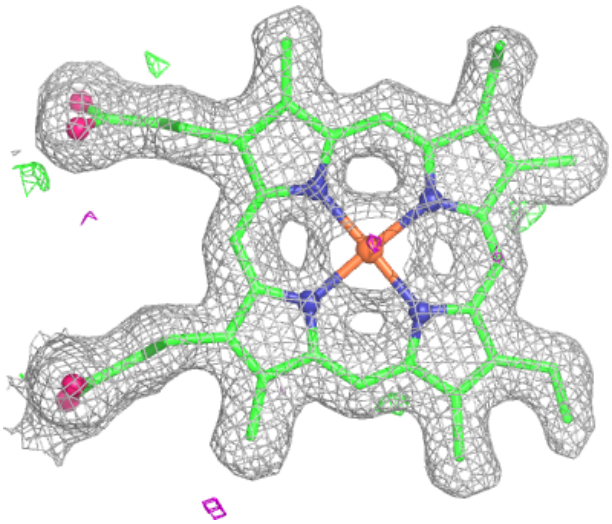
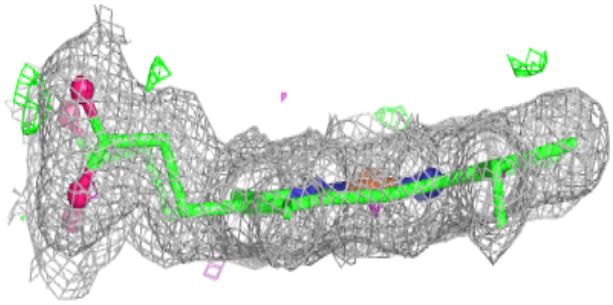
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	SO4	F	504	5/5	0.98	0.27	27,41,41,48	0
5	EDO	A	504	4/4	0.98	0.05	19,22,23,30	0
4	SO4	B	504	5/5	0.98	0.26	30,43,45,49	0
5	EDO	D	505	4/4	0.98	0.05	19,20,21,34	0
5	EDO	F	505	4/4	0.98	0.04	18,21,22,27	0
4	SO4	B	503	5/5	0.99	0.08	23,29,30,31	0
4	SO4	E	502	5/5	0.99	0.08	27,28,31,32	0
4	SO4	E	503	5/5	0.99	0.10	34,34,35,38	0
4	SO4	A	503	5/5	0.99	0.10	27,30,31,33	0
4	SO4	F	502	5/5	0.99	0.09	25,25,31,32	0
4	SO4	F	503	5/5	0.99	0.10	33,34,36,37	0
4	SO4	C	502	5/5	0.99	0.09	26,28,29,32	0
4	SO4	C	503	5/5	0.99	0.10	33,33,35,36	0
4	SO4	B	502	5/5	0.99	0.08	30,30,35,36	0
5	EDO	C	505	4/4	0.99	0.04	21,23,26,30	0
4	SO4	D	502	5/5	0.99	0.09	25,26,31,31	0
5	EDO	E	505	4/4	0.99	0.04	22,23,23,31	0
4	SO4	D	503	5/5	0.99	0.09	30,31,35,35	0
3	HEM	F	501	43/43	1.00	0.02	10,14,19,28	0
3	HEM	A	501	43/43	1.00	0.02	11,14,17,22	0
3	HEM	B	501	43/43	1.00	0.02	10,13,16,24	0
3	HEM	C	501	43/43	1.00	0.02	9,14,17,24	0
3	HEM	D	501	43/43	1.00	0.02	8,14,16,22	0
3	HEM	E	501	43/43	1.00	0.02	9,14,17,22	0

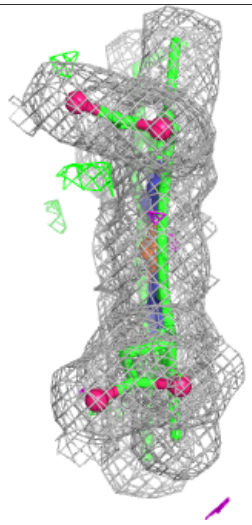
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around HEM F 501:

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

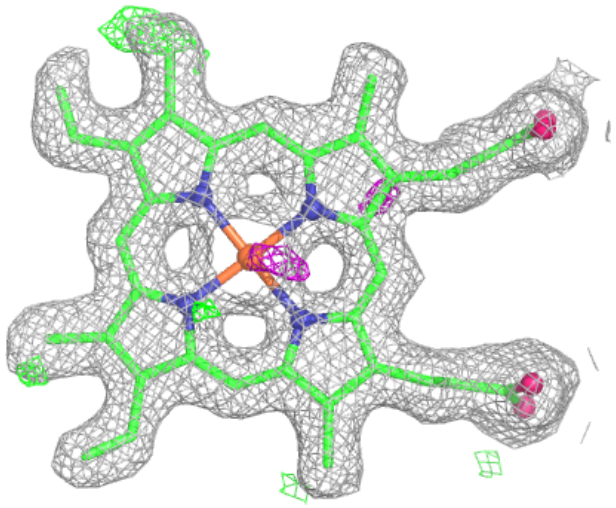


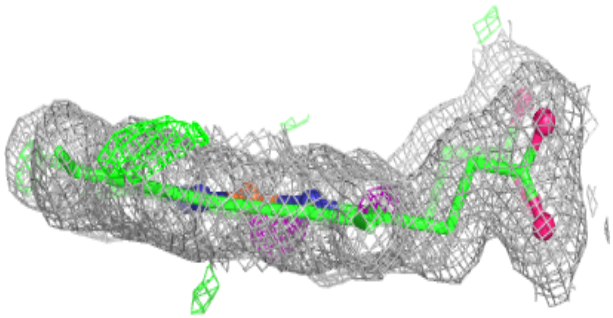


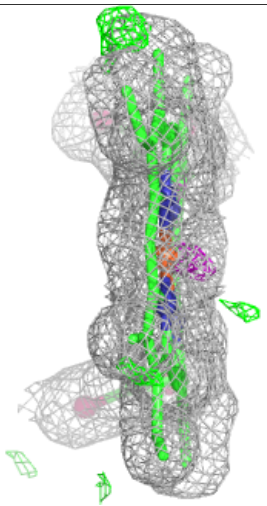


Electron density around HEM A 501:

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

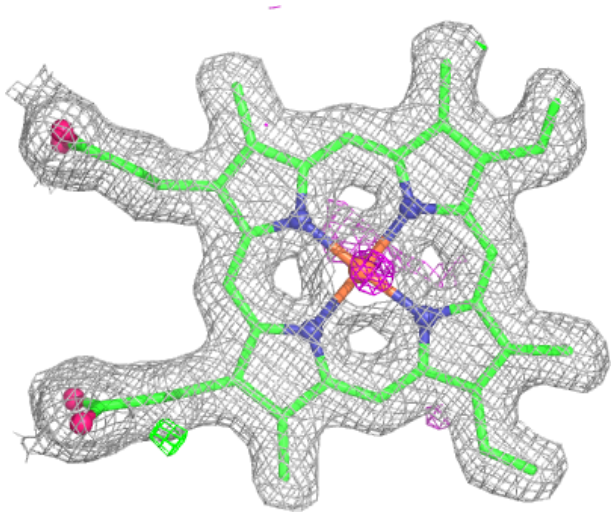


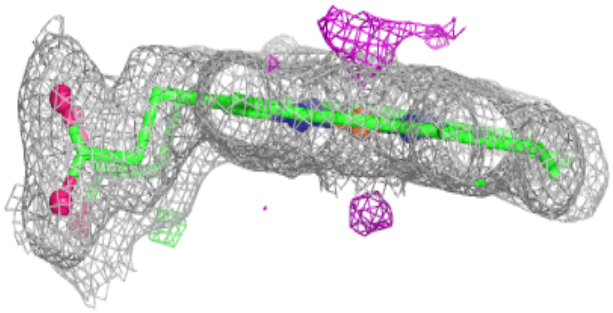


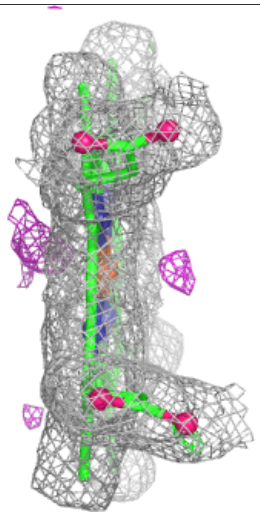


Electron density around HEM B 501:

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

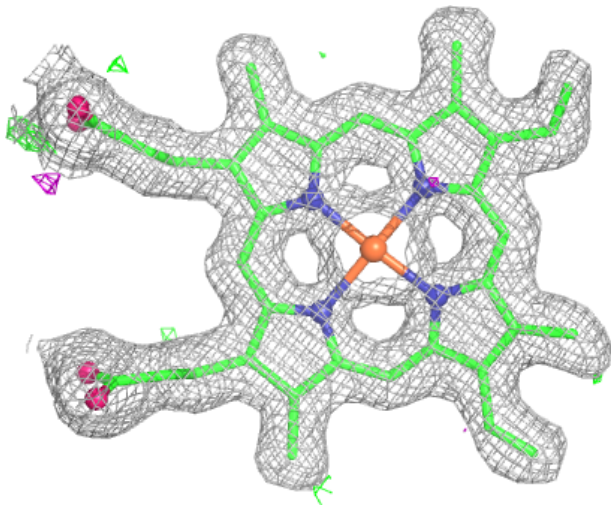


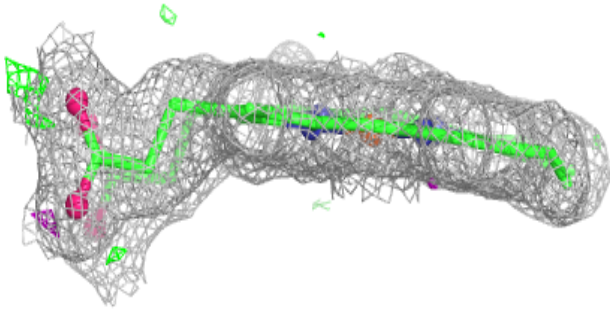


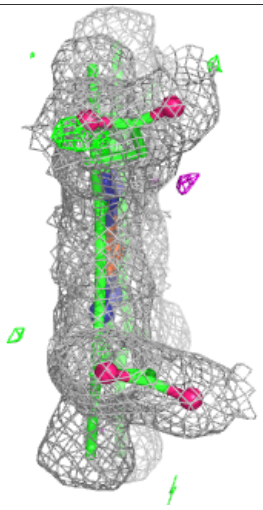


Electron density around HEM C 501:

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

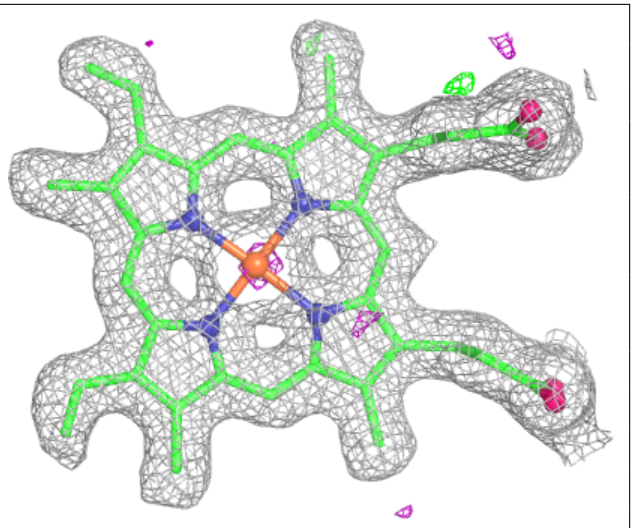


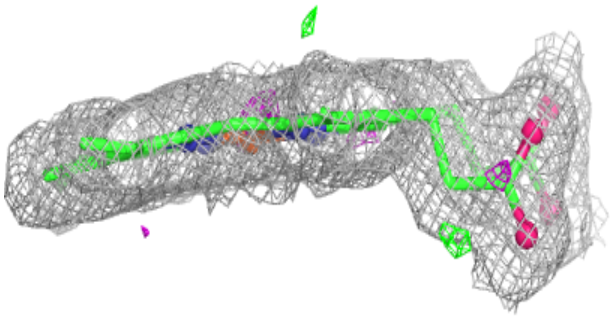


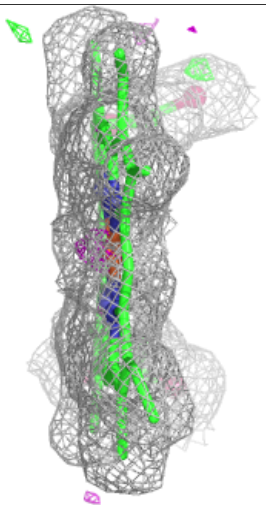


Electron density around HEM D 501:

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

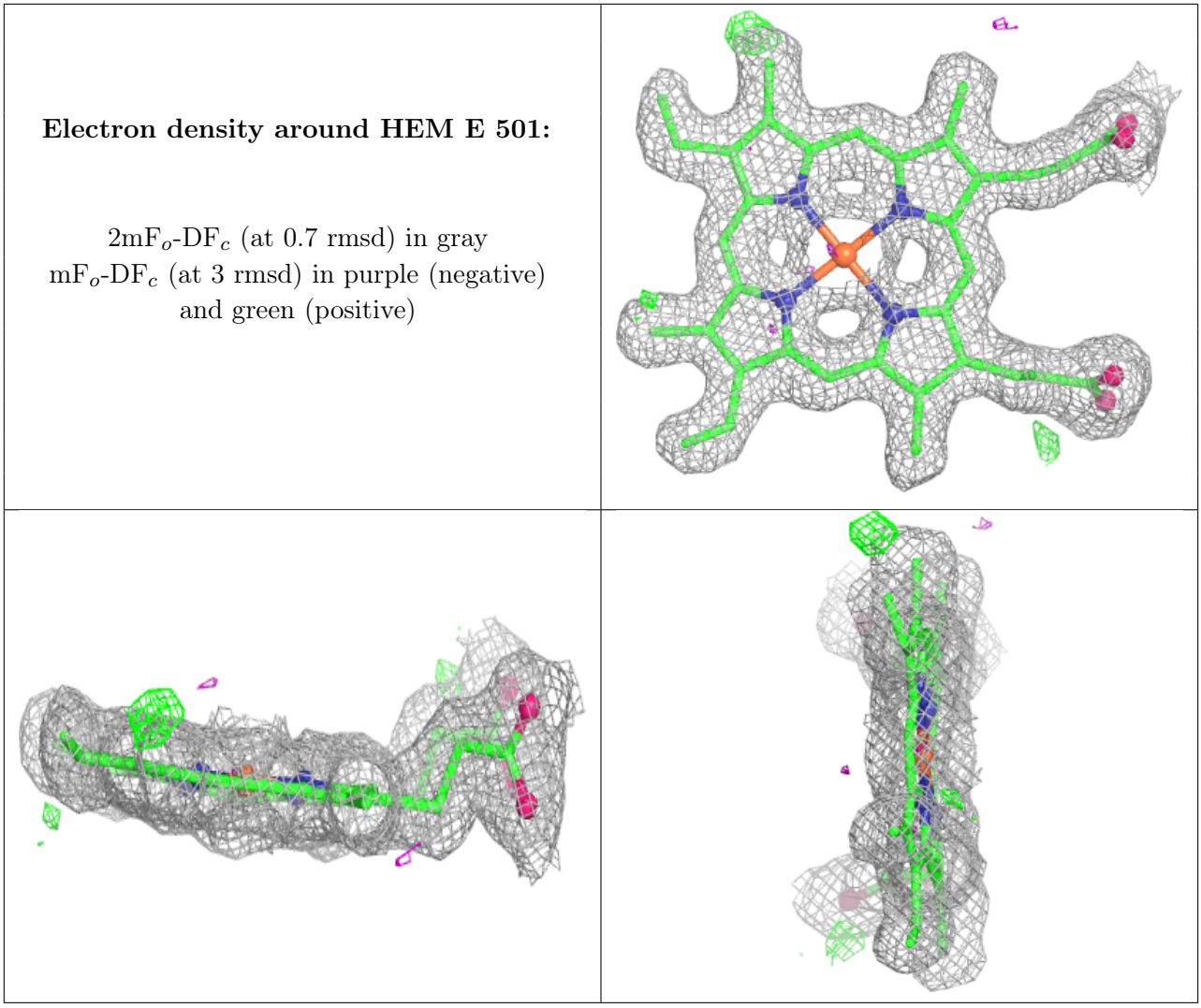






Electron density around HEM E 501:

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



6.5 Other polymers (i)

There are no such residues in this entry.