Full wwPDB X-ray Structure Validation Report ⓘ

Oct 22, 2024 – 02:10 AM EDT

PDB ID	:	3MQE
Title	:	Structure of SC-75416 bound at the COX-2 active site
Authors	:	Wang, J.L.; Limburg, D.; Graneto, M.J.; Springer, J.; Rogier, J.; Kiefer, J.R.
Deposited on	:	2010-04-28
Resolution	:	2.80 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:

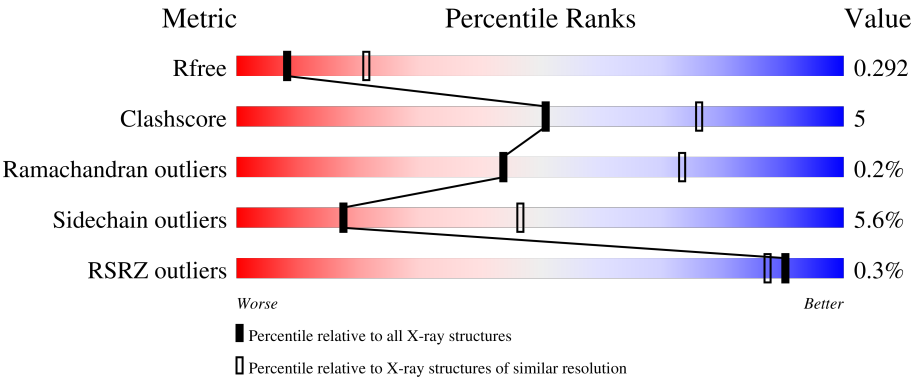
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 2.80 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	3657 (2.80-2.80)
Clashscore	180529	4123 (2.80-2.80)
Ramachandran outliers	177936	4071 (2.80-2.80)
Sidechain outliers	177891	4073 (2.80-2.80)
RSRZ outliers	164620	3659 (2.80-2.80)

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	587	78% 15% • 6%
1	B	587	80% 12% • 6%
1	C	587	82% 11% • 6%
1	D	587	81% 11% • 6%
2	E	3	100%

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Mol	Chain	Length	Quality of chain
2	F	3	33% 67%
2	G	3	100%
2	H	3	33% 67%

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
4	NAG	A	661	X	-	-	-
4	NAG	B	661	X	-	-	-
4	NAG	C	661	X	-	-	-
4	NAG	D	661	X	-	-	-

2 Entry composition (i)

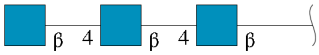
There are 7 unique types of molecules in this entry. The entry contains 18573 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Prostaglandin G/H synthase 2.

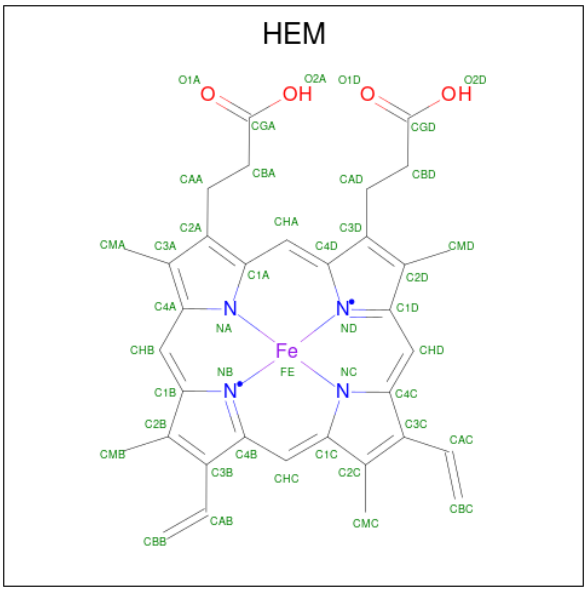
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	552	Total	C	N	O	S	0	0	0
			4474	2885	750	814	25			
1	B	552	Total	C	N	O	S	0	0	0
			4474	2885	750	814	25			
1	C	552	Total	C	N	O	S	0	0	0
			4474	2885	750	814	25			
1	D	552	Total	C	N	O	S	0	0	0
			4474	2885	750	814	25			

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



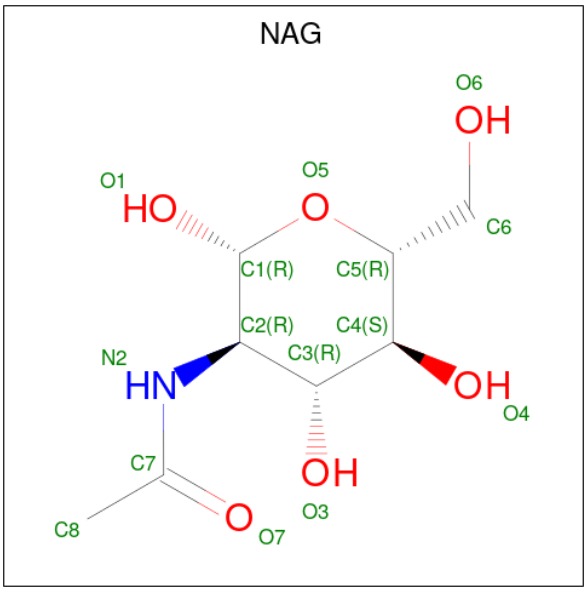
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	E	3	Total	C	N	O	0	0	0
			42	24	3	15			
2	F	3	Total	C	N	O	0	0	0
			42	24	3	15			
2	G	3	Total	C	N	O	0	0	0
			42	24	3	15			
2	H	3	Total	C	N	O	0	0	0
			42	24	3	15			

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



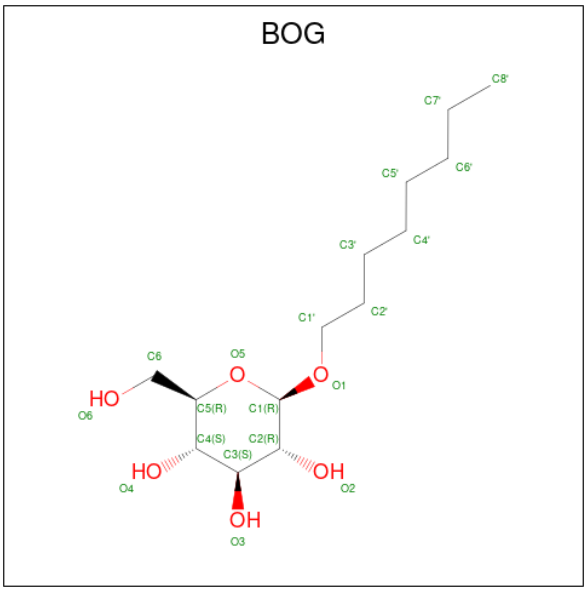
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
3	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
3	C	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
3	D	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		

- Molecule 4 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



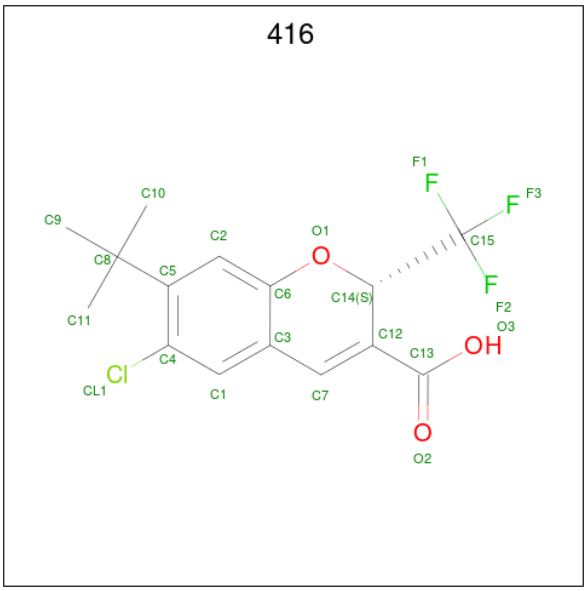
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C N O 14 8 1 5	0	0
4	A	1	Total C N O 14 8 1 5	0	0
4	B	1	Total C N O 14 8 1 5	0	0
4	B	1	Total C N O 14 8 1 5	0	0
4	C	1	Total C N O 14 8 1 5	0	0
4	C	1	Total C N O 14 8 1 5	0	0
4	D	1	Total C N O 14 8 1 5	0	0
4	D	1	Total C N O 14 8 1 5	0	0

- Molecule 5 is octyl beta-D-glucopyranoside (three-letter code: BOG) (formula: $C_{14}H_{28}O_6$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 20 14 6	0	0
5	C	1	Total C O 20 14 6	0	0

- Molecule 6 is (2S)-7-tert-butyl-6-chloro-2-(trifluoromethyl)-2H-chromene-3-carboxylic acid (three-letter code: 416) (formula: $C_{15}H_{14}ClF_3O_3$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
6	A	1	Total	C	Cl	F	O	0	0
			22	15	1	3	3		
6	B	1	Total	C	Cl	F	O	0	0
			22	15	1	3	3		
6	C	1	Total	C	Cl	F	O	0	0
			22	15	1	3	3		
6	D	1	Total	C	Cl	F	O	0	0
			22	15	1	3	3		

- Molecule 7 is water.

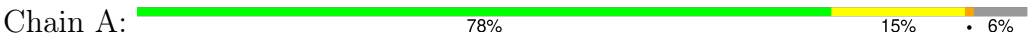
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	31	Total	O	0	0
			31	31		
7	B	24	Total	O	0	0
			24	24		
7	C	23	Total	O	0	0
			23	23		
7	D	19	Total	O	0	0
			19	19		

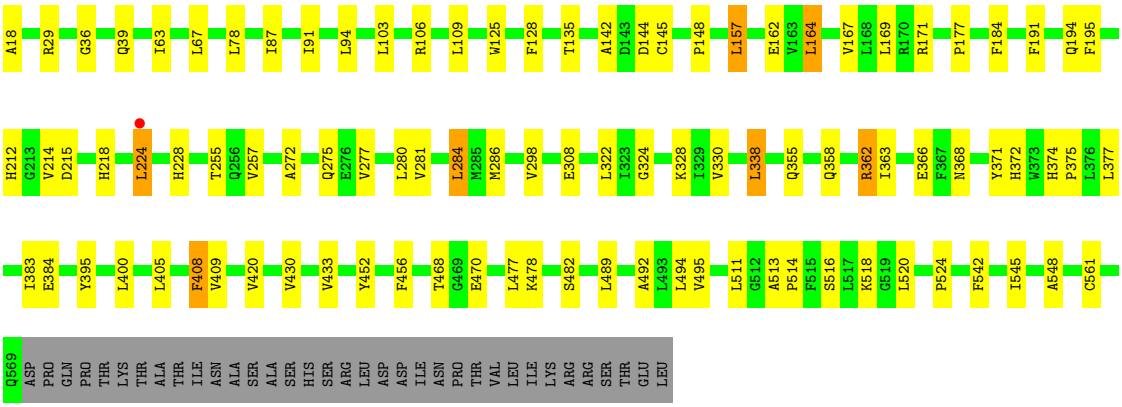
3 Residue-property plots (i)

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: Prostaglandin G/H synthase 2

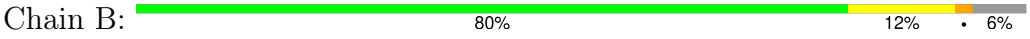
Chain A:

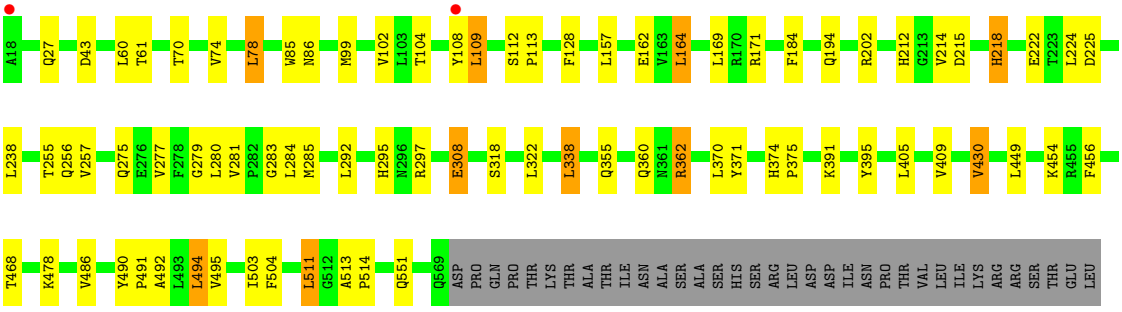




• Molecule 1: Prostaglandin G/H synthase 2

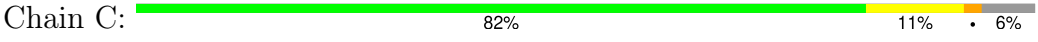
Chain B:

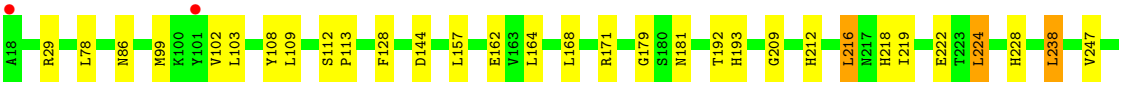


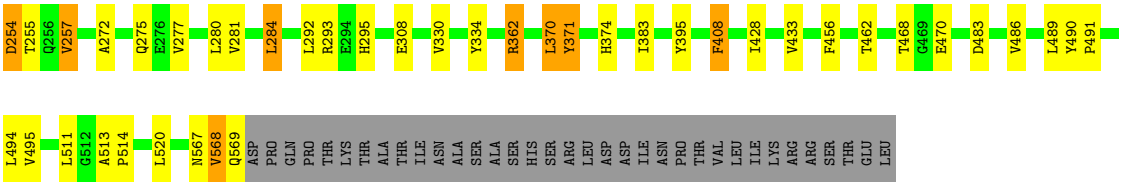


• Molecule 1: Prostaglandin G/H synthase 2

Chain C:

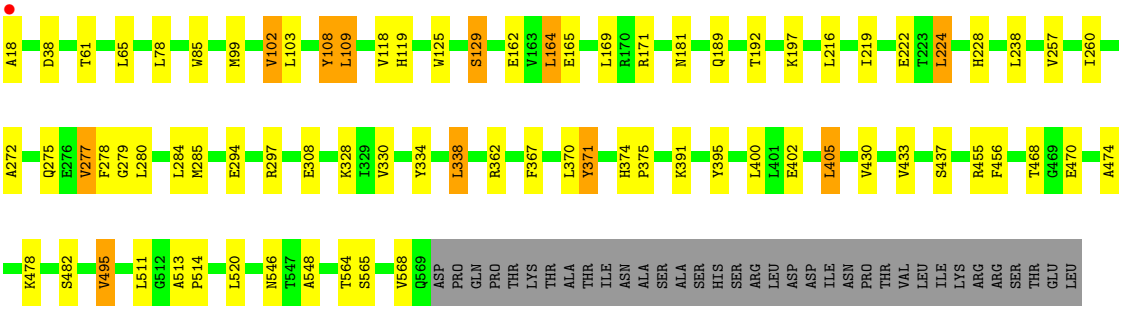






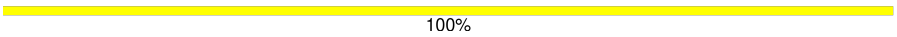
• Molecule 1: Prostaglandin G/H synthase 2

Chain D:



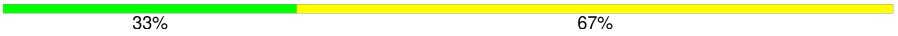
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E:



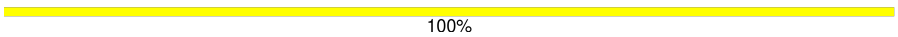
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F:



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

Chain G:



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

Chain H:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	183.70Å 140.38Å 129.74Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.80 20.00 – 2.80	Depositor EDS
% Data completeness (in resolution range)	99.2 (20.00-2.80) 98.8 (20.00-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.11	Depositor
$< I/\sigma(I) >$ [1]	1.98 (at 2.81Å)	Xtriage
Refinement program	REFMAC 5.5.0102	Depositor
R, R_{free}	0.236 , 0.290 0.236 , 0.292	Depositor DCC
R_{free} test set	8264 reflections (10.05%)	wwPDB-VP
Wilson B-factor (Å^2)	51.8	Xtriage
Anisotropy	0.261	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.28 , 43.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.47$, $< L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	18573	wwPDB-VP
Average B, all atoms (Å^2)	50.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 43.08 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.8586e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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, 416, HEM, BOG

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	0.50	0/4601	0.62	1/6239 (0.0%)
1	B	0.50	0/4601	0.60	0/6239
1	C	0.47	0/4601	0.58	0/6239
1	D	0.48	0/4601	0.59	0/6239
All	All	0.49	0/18404	0.60	1/24956 (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	A	215	ASP	CB-CG-OD1	5.34	123.11	118.30

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	4474	0	4373	50	0
1	B	4474	0	4373	46	0
1	C	4474	0	4373	42	0
1	D	4474	0	4373	40	0
2	E	42	0	37	0	0
2	F	42	0	37	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	G	42	0	37	0	0
2	H	42	0	37	1	0
3	A	43	0	30	2	0
3	B	43	0	30	1	0
3	C	43	0	30	1	0
3	D	43	0	30	0	0
4	A	28	0	26	0	0
4	B	28	0	26	0	0
4	C	28	0	26	0	0
4	D	28	0	26	0	0
5	A	20	0	28	0	0
5	C	20	0	28	0	0
6	A	22	0	13	2	0
6	B	22	0	13	2	0
6	C	22	0	13	1	0
6	D	22	0	13	3	0
7	A	31	0	0	0	0
7	B	24	0	0	1	0
7	C	23	0	0	0	0
7	D	19	0	0	0	0
All	All	18573	0	17972	185	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 (185) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:328:LYS:NZ	1:D:546:ASN:O	2.13	0.81
1:C:513:ALA:HB3	1:C:514:PRO:HD3	1.63	0.80
1:B:128:PHE:O	1:B:362:ARG:NH2	2.18	0.76
1:C:179:GLY:O	1:C:568:VAL:HG23	1.85	0.76
1:A:184:PHE:CZ	1:A:338:LEU:HD11	2.22	0.75
1:C:468:THR:HG22	1:C:495:VAL:HG12	1.66	0.74
1:D:257:VAL:CG2	1:D:272:ALA:HB1	2.18	0.74
1:D:257:VAL:HG21	1:D:272:ALA:HB1	1.74	0.70
1:A:468:THR:HG22	1:A:495:VAL:CG1	2.23	0.68
1:A:164:LEU:HD22	1:A:169:LEU:HG	1.75	0.67
1:B:27:GLN:HE22	1:B:454:LYS:NZ	1.91	0.67
1:C:255:THR:OG1	1:C:257:VAL:HG12	1.96	0.66
1:A:377:LEU:HD21	3:A:605:HEM:HBB2	1.78	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:B:701:416:CL1	6:B:701:416:H11B	2.32	0.66
1:A:456:PHE:CG	1:A:511:LEU:HD22	2.31	0.66
1:D:109:LEU:O	1:D:455:ARG:NH2	2.29	0.65
1:D:197:LYS:HZ1	1:D:222:GLU:HG3	1.62	0.64
1:A:191:PHE:O	1:A:194:GLN:NE2	2.30	0.63
1:C:277:VAL:HG23	1:C:280:LEU:HD12	1.81	0.63
1:C:483:ASP:HB3	1:C:486:VAL:HG23	1.81	0.62
1:C:128:PHE:O	1:C:362:ARG:NH2	2.32	0.62
1:D:189:GLN:CD	1:D:284:LEU:HD11	2.21	0.61
1:B:275:GLN:OE1	1:B:277:VAL:HG12	2.01	0.61
1:A:328:LYS:HG2	1:A:548:ALA:HB3	1.82	0.61
1:B:184:PHE:CZ	1:B:338:LEU:HD11	2.36	0.60
1:C:192:THR:HG21	1:C:371:TYR:CE2	2.37	0.60
1:A:128:PHE:O	1:A:362:ARG:NH2	2.34	0.60
1:B:456:PHE:CG	1:B:511:LEU:HD22	2.37	0.59
1:D:468:THR:HG22	1:D:495:VAL:HG13	1.84	0.59
1:A:330:VAL:HG11	1:A:520:LEU:HD11	1.85	0.59
1:B:238:LEU:HD13	1:B:295:HIS:CD2	2.38	0.59
1:D:328:LYS:HG2	1:D:548:ALA:HB3	1.86	0.58
1:B:491:PRO:O	1:B:495:VAL:HG23	2.03	0.58
1:A:87:ILE:HG22	1:A:91:ILE:HD12	1.86	0.57
1:C:456:PHE:CG	1:C:511:LEU:HD22	2.40	0.57
1:C:257:VAL:CG1	1:C:272:ALA:HB1	2.35	0.56
1:C:257:VAL:HG11	1:C:272:ALA:HB1	1.87	0.56
6:C:701:416:CL1	6:C:701:416:H11B	2.42	0.56
1:D:260:ILE:HD12	1:D:277:VAL:HG23	1.88	0.56
1:C:280:LEU:HD22	1:C:395:TYR:CE2	2.41	0.56
1:A:286:MET:HE1	1:A:409:VAL:HG22	1.88	0.56
1:B:281:VAL:HG12	1:B:283:GLY:H	1.70	0.56
1:D:456:PHE:CD2	1:D:511:LEU:HD22	2.41	0.56
1:C:216:LEU:CD1	1:C:219:ILE:HD12	2.35	0.55
1:D:279:GLY:HA2	1:D:285:MET:CE	2.36	0.55
6:A:701:416:H11B	6:A:701:416:CL1	2.43	0.55
1:C:181:ASN:HB3	1:C:568:VAL:HG22	1.87	0.55
1:A:224:LEU:HD22	1:A:228:HIS:CD2	2.41	0.55
1:C:383:ILE:HD13	1:C:408:PHE:CE1	2.42	0.55
1:D:513:ALA:HB3	1:D:514:PRO:HD3	1.88	0.55
1:B:164:LEU:HD22	1:B:169:LEU:HG	1.90	0.54
1:C:112:SER:HA	1:C:113:PRO:C	2.28	0.54
1:D:374:HIS:CE1	1:D:433:VAL:HG11	2.41	0.54
1:D:400:LEU:HD11	1:D:405:LEU:HD22	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:468:THR:HG22	1:B:495:VAL:HG12	1.90	0.53
1:A:377:LEU:CD2	3:A:605:HEM:HBB2	2.39	0.53
1:B:318:SER:O	1:B:322:LEU:HD13	2.08	0.53
1:B:255:THR:O	1:B:256:GLN:HB2	2.07	0.53
1:C:456:PHE:CD2	1:C:511:LEU:HD22	2.43	0.53
1:D:192:THR:HG21	1:D:371:TYR:CE2	2.44	0.53
1:C:374:HIS:CE1	1:C:433:VAL:HG11	2.44	0.52
1:A:125:TRP:CZ2	1:B:215:ASP:HB3	2.45	0.52
1:A:257:VAL:HG21	1:A:272:ALA:HB1	1.91	0.52
3:C:605:HEM:HBC2	3:C:605:HEM:HHD	1.91	0.52
1:A:358:GLN:O	1:A:518:LYS:NZ	2.42	0.51
1:B:99:MET:O	1:B:102:VAL:HG22	2.10	0.51
1:B:225:ASP:HB2	7:B:612:HOH:O	2.09	0.51
1:D:280:LEU:HD22	1:D:395:TYR:CE2	2.46	0.51
1:B:214:VAL:HG12	1:B:214:VAL:O	2.10	0.51
1:D:338:LEU:HD23	6:D:701:416:H14	1.93	0.51
1:B:280:LEU:HD22	1:B:395:TYR:CD2	2.46	0.51
1:C:277:VAL:CG2	1:C:280:LEU:HD12	2.41	0.51
1:C:280:LEU:HD22	1:C:395:TYR:HE2	1.76	0.50
1:A:214:VAL:O	1:A:214:VAL:HG12	2.12	0.50
1:C:108:TYR:CE2	1:C:109:LEU:HD22	2.46	0.50
1:C:468:THR:HG22	1:C:495:VAL:CG1	2.38	0.50
1:B:374:HIS:N	1:B:375:PRO:CD	2.73	0.50
1:B:99:MET:HE3	1:B:102:VAL:HG21	1.94	0.50
1:D:456:PHE:CG	1:D:511:LEU:HD22	2.46	0.50
1:A:374:HIS:N	1:A:375:PRO:CD	2.75	0.50
1:D:18:ALA:HB1	1:D:38:ASP:OD1	2.12	0.49
1:A:280:LEU:HD22	1:A:395:TYR:CE2	2.46	0.49
1:B:375:PRO:HG2	1:B:494:LEU:HD13	1.93	0.49
1:C:224:LEU:HD22	1:C:228:HIS:NE2	2.27	0.49
1:C:216:LEU:HD12	1:C:219:ILE:HD12	1.93	0.49
1:A:36:GLY:C	1:B:308:GLU:HG2	2.33	0.49
1:B:405:LEU:O	1:B:409:VAL:HG23	2.12	0.49
1:D:164:LEU:HD22	1:D:169:LEU:HG	1.94	0.49
1:B:511:LEU:HD23	1:B:511:LEU:N	2.27	0.49
1:B:78:LEU:CD1	1:B:85:TRP:CZ2	2.95	0.49
1:B:513:ALA:HB3	1:B:514:PRO:HD3	1.95	0.48
1:C:292:LEU:C	1:C:292:LEU:HD23	2.33	0.48
1:A:148:PRO:HG2	1:A:157:LEU:HD22	1.95	0.48
1:C:370:LEU:C	1:C:370:LEU:HD12	2.34	0.48
1:B:279:GLY:HA2	1:B:285:MET:CE	2.44	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:224:LEU:HD22	1:D:228:HIS:CD2	2.48	0.48
1:A:516:SER:O	1:A:520:LEU:HD22	2.13	0.48
1:B:108:TYR:CZ	1:B:109:LEU:HD22	2.49	0.48
3:B:605:HEM:CMB	3:B:605:HEM:HBB2	2.44	0.48
1:D:374:HIS:N	1:D:375:PRO:CD	2.76	0.48
1:A:383:ILE:HD13	1:A:408:PHE:CE1	2.49	0.47
1:A:298:VAL:HG21	1:A:322:LEU:HD11	1.96	0.47
1:D:118:VAL:HG13	1:D:119:HIS:CD2	2.50	0.47
1:B:370:LEU:C	1:B:370:LEU:HD12	2.34	0.47
1:D:216:LEU:HB3	1:D:219:ILE:HD12	1.97	0.47
1:D:278:PHE:CD1	1:D:284:LEU:HD23	2.49	0.47
1:A:184:PHE:CE1	1:A:338:LEU:HD11	2.49	0.47
1:D:125:TRP:O	1:D:129:SER:OG	2.32	0.47
1:A:18:ALA:HB3	1:A:144:ASP:OD2	2.16	0.47
1:A:255:THR:HB	1:A:257:VAL:HG13	1.97	0.47
1:C:254:ASP:C	1:C:254:ASP:OD2	2.54	0.46
2:H:2:NAG:H4	2:H:3:NAG:N2	2.30	0.46
1:D:278:PHE:HD1	1:D:284:LEU:HD23	1.80	0.46
1:D:468:THR:OG1	1:D:474:ALA:HB2	2.16	0.46
1:C:212:HIS:CE1	1:C:362:ARG:HD2	2.51	0.46
1:A:524:PRO:HG3	1:B:128:PHE:CE2	2.51	0.46
1:A:366:GLU:HG2	1:A:452:TYR:CE1	2.51	0.45
1:B:194:GLN:HB3	1:B:218:HIS:CD2	2.50	0.45
6:D:701:416:H11B	6:D:701:416:CL1	2.53	0.45
1:A:324:GLY:HA3	1:A:545:ILE:HD13	1.98	0.45
1:A:456:PHE:CD2	1:A:511:LEU:HD22	2.51	0.45
1:A:281:VAL:HB	1:A:284:LEU:HD22	1.98	0.45
1:B:70:THR:O	1:B:74:VAL:HG23	2.16	0.45
1:A:374:HIS:CE1	1:A:433:VAL:HG11	2.52	0.45
1:D:181:ASN:HB3	1:D:568:VAL:HG23	1.98	0.44
1:C:99:MET:O	1:C:102:VAL:HG22	2.17	0.44
1:A:91:ILE:HB	1:A:94:LEU:HD12	2.00	0.44
1:D:165:GLU:HA	1:D:169:LEU:HD12	2.00	0.44
1:B:449:LEU:HD22	1:B:492:ALA:CB	2.48	0.44
6:D:701:416:CL1	6:D:701:416:H9A	2.55	0.44
1:B:112:SER:HA	1:B:113:PRO:C	2.38	0.44
1:B:456:PHE:CD2	1:B:511:LEU:HD22	2.52	0.44
1:C:330:VAL:CG1	1:C:520:LEU:HD21	2.47	0.44
1:A:513:ALA:HB3	1:A:514:PRO:HD3	1.99	0.44
1:B:27:GLN:HE22	1:B:454:LYS:HZ2	1.64	0.44
1:C:490:TYR:HB3	1:C:491:PRO:CD	2.47	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:99:MET:HE3	1:B:102:VAL:CG2	2.47	0.43
1:C:209:GLY:HA2	1:C:222:GLU:OE2	2.18	0.43
1:A:368:ASN:O	1:A:372:HIS:HD2	2.01	0.43
1:A:142:ALA:HB3	1:A:145:CYS:SG	2.58	0.43
1:C:238:LEU:HD13	1:C:295:HIS:CD2	2.53	0.43
1:A:257:VAL:CG2	1:A:272:ALA:HB1	2.48	0.43
1:C:281:VAL:HB	1:C:284:LEU:HD22	2.00	0.43
1:D:78:LEU:HD13	1:D:85:TRP:CZ2	2.54	0.43
1:A:167:VAL:HG21	1:A:477:LEU:HD21	2.00	0.42
1:A:400:LEU:HD11	1:A:405:LEU:HD22	2.00	0.42
1:B:430:VAL:O	1:B:430:VAL:HG13	2.19	0.42
1:C:490:TYR:HB3	1:C:491:PRO:HD3	2.01	0.42
1:D:108:TYR:CE2	1:D:109:LEU:HD22	2.55	0.42
1:D:294:GLU:OE1	1:D:297:ARG:NH1	2.52	0.42
1:A:430:VAL:O	1:A:430:VAL:HG13	2.18	0.42
1:B:486:VAL:HG12	1:B:486:VAL:O	2.19	0.42
1:D:99:MET:HE3	1:D:102:VAL:CG2	2.49	0.42
1:B:43:ASP:OD1	1:B:43:ASP:C	2.58	0.42
1:A:135:THR:HG22	1:A:363:ILE:O	2.20	0.42
1:A:561:CYS:O	1:A:561:CYS:SG	2.78	0.42
1:C:330:VAL:O	1:C:334:TYR:HB3	2.20	0.42
1:A:468:THR:HG22	1:A:495:VAL:HG13	2.00	0.42
1:B:490:TYR:N	1:B:491:PRO:HD2	2.34	0.42
1:A:368:ASN:O	1:A:372:HIS:CD2	2.73	0.42
1:D:330:VAL:HA	1:D:334:TYR:HB3	2.01	0.41
1:B:78:LEU:HD12	1:B:85:TRP:CZ2	2.55	0.41
1:B:104:THR:HG22	1:B:355:GLN:HG2	2.02	0.41
1:D:61:THR:O	1:D:65:LEU:HG	2.20	0.41
6:B:701:416:CL1	6:B:701:416:H9A	2.57	0.41
1:D:257:VAL:HG22	1:D:272:ALA:HB1	1.99	0.41
1:D:430:VAL:O	1:D:430:VAL:HG13	2.20	0.41
1:A:224:LEU:HD22	1:A:228:HIS:NE2	2.36	0.41
1:B:27:GLN:HE22	1:B:454:LYS:HZ1	1.66	0.41
1:B:503:ILE:HG23	1:B:504:PHE:CD2	2.55	0.41
1:C:247:VAL:O	1:C:293:ARG:NH1	2.54	0.41
1:C:489:LEU:HD12	1:C:489:LEU:O	2.21	0.41
1:C:568:VAL:O	1:C:568:VAL:HG12	2.21	0.41
1:A:375:PRO:HB2	1:A:420:VAL:HA	2.03	0.40
1:B:503:ILE:HG23	1:B:504:PHE:CG	2.56	0.40
1:D:495:VAL:HG13	1:D:495:VAL:O	2.21	0.40
1:C:168:LEU:HD22	1:C:494:LEU:HD12	2.04	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:374:HIS:CE1	1:C:433:VAL:CG1	3.04	0.40
1:A:63:ILE:O	1:A:67:LEU:HD13	2.21	0.40
6:A:701:416:CL1	6:A:701:416:H9A	2.58	0.40
1:B:292:LEU:C	1:B:292:LEU:HD23	2.42	0.40
1:D:328:LYS:NZ	1:D:546:ASN:C	2.74	0.40
1:A:375:PRO:HG2	1:A:494:LEU:HD22	2.03	0.40
1:A:489:LEU:O	1:A:492:ALA:HB3	2.21	0.40
1:C:216:LEU:HD13	1:C:219:ILE:HD12	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	550/587 (94%)	519 (94%)	29 (5%)	2 (0%)	30	61
1	B	550/587 (94%)	519 (94%)	30 (6%)	1 (0%)	44	73
1	C	550/587 (94%)	528 (96%)	21 (4%)	1 (0%)	44	73
1	D	550/587 (94%)	512 (93%)	38 (7%)	0	100	100
All	All	2200/2348 (94%)	2078 (94%)	118 (5%)	4 (0%)	44	73

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	212	HIS
1	B	212	HIS
1	A	384	GLU
1	C	568	VAL

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	493/525 (94%)	466 (94%)	27 (6%)	18	47
1	B	493/525 (94%)	466 (94%)	27 (6%)	18	47
1	C	493/525 (94%)	465 (94%)	28 (6%)	17	46
1	D	493/525 (94%)	464 (94%)	29 (6%)	16	44
All	All	1972/2100 (94%)	1861 (94%)	111 (6%)	17	47

All (111) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	29	ARG
1	A	39	GLN
1	A	78	LEU
1	A	103	LEU
1	A	106	ARG
1	A	109	LEU
1	A	157	LEU
1	A	162	GLU
1	A	164	LEU
1	A	171	ARG
1	A	177	PRO
1	A	195	PHE
1	A	218	HIS
1	A	224	LEU
1	A	275	GLN
1	A	277	VAL
1	A	284	LEU
1	A	308	GLU
1	A	338	LEU
1	A	355	GLN
1	A	362	ARG
1	A	371	TYR
1	A	408	PHE
1	A	470	GLU

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Mol	Chain	Res	Type
1	A	478	LYS
1	A	482	SER
1	A	542	PHE
1	B	60	LEU
1	B	61	THR
1	B	78	LEU
1	B	86	ASN
1	B	109	LEU
1	B	157	LEU
1	B	162	GLU
1	B	164	LEU
1	B	171	ARG
1	B	202	ARG
1	B	218	HIS
1	B	222	GLU
1	B	224	LEU
1	B	257	VAL
1	B	284	LEU
1	B	297	ARG
1	B	308	GLU
1	B	338	LEU
1	B	360	GLN
1	B	362	ARG
1	B	371	TYR
1	B	391	LYS
1	B	430	VAL
1	B	478	LYS
1	B	494	LEU
1	B	511	LEU
1	B	551	GLN
1	C	29	ARG
1	C	78	LEU
1	C	86	ASN
1	C	103	LEU
1	C	144	ASP
1	C	157	LEU
1	C	162	GLU
1	C	164	LEU
1	C	171	ARG
1	C	193	HIS
1	C	216	LEU
1	C	218	HIS

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Mol	Chain	Res	Type
1	C	224	LEU
1	C	238	LEU
1	C	254	ASP
1	C	257	VAL
1	C	275	GLN
1	C	284	LEU
1	C	308	GLU
1	C	362	ARG
1	C	370	LEU
1	C	371	TYR
1	C	408	PHE
1	C	428	ILE
1	C	462	THR
1	C	470	GLU
1	C	567	ASN
1	C	569	GLN
1	D	102	VAL
1	D	103	LEU
1	D	108	TYR
1	D	109	LEU
1	D	129	SER
1	D	162	GLU
1	D	164	LEU
1	D	171	ARG
1	D	224	LEU
1	D	238	LEU
1	D	275	GLN
1	D	277	VAL
1	D	308	GLU
1	D	338	LEU
1	D	362	ARG
1	D	367	PHE
1	D	370	LEU
1	D	371	TYR
1	D	391	LYS
1	D	402	GLU
1	D	405	LEU
1	D	437	SER
1	D	470	GLU
1	D	478	LYS
1	D	482	SER
1	D	495	VAL

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Mol	Chain	Res	Type
1	D	520	LEU
1	D	564	THR
1	D	565	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	360	GLN
1	A	551	GLN
1	A	569	GLN
1	B	27	GLN
1	B	72	ASN
1	B	264	HIS
1	B	313	GLN
1	B	360	GLN
1	B	374	HIS
1	B	556	ASN
1	B	567	ASN
1	C	190	HIS
1	C	374	HIS
1	C	551	GLN
1	C	569	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

12 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	E	1	1,2	14,14,15	0.48	0	17,19,21	2.47	3 (17%)
2	NAG	E	2	2	14,14,15	0.61	0	17,19,21	2.13	6 (35%)
2	NAG	E	3	2	14,14,15	0.77	1 (7%)	17,19,21	2.01	4 (23%)
2	NAG	F	1	1,2	14,14,15	0.73	0	17,19,21	1.06	0
2	NAG	F	2	2	14,14,15	0.47	0	17,19,21	1.69	3 (17%)
2	NAG	F	3	2	14,14,15	0.95	1 (7%)	17,19,21	1.89	3 (17%)
2	NAG	G	1	1,2	14,14,15	0.67	0	17,19,21	1.75	2 (11%)
2	NAG	G	2	2	14,14,15	0.46	0	17,19,21	1.67	5 (29%)
2	NAG	G	3	2	14,14,15	1.03	2 (14%)	17,19,21	2.65	7 (41%)
2	NAG	H	1	1,2	14,14,15	0.62	0	17,19,21	1.44	2 (11%)
2	NAG	H	2	2	14,14,15	0.71	0	17,19,21	1.40	2 (11%)
2	NAG	H	3	2	14,14,15	0.95	1 (7%)	17,19,21	2.50	5 (29%)

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	E	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	E	2	2	-	4/6/23/26	0/1/1/1
2	NAG	E	3	2	-	3/6/23/26	0/1/1/1
2	NAG	F	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	F	2	2	-	1/6/23/26	0/1/1/1
2	NAG	F	3	2	-	2/6/23/26	0/1/1/1
2	NAG	G	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	G	2	2	-	4/6/23/26	0/1/1/1
2	NAG	G	3	2	-	2/6/23/26	0/1/1/1
2	NAG	H	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	H	2	2	-	1/6/23/26	0/1/1/1
2	NAG	H	3	2	-	1/6/23/26	0/1/1/1

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	H	3	NAG	C1-C2	2.73	1.56	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	3	NAG	C1-C2	2.54	1.55	1.52
2	G	3	NAG	C1-C2	2.52	1.55	1.52
2	G	3	NAG	C2-N2	2.28	1.50	1.46
2	E	3	NAG	C1-C2	2.27	1.55	1.52

All (42) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	E	1	NAG	C1-O5-C5	8.72	123.88	112.19
2	H	3	NAG	C1-O5-C5	6.48	120.86	112.19
2	G	3	NAG	C2-N2-C7	6.37	131.43	122.90
2	E	3	NAG	C1-O5-C5	5.86	120.04	112.19
2	G	1	NAG	C1-O5-C5	5.57	119.65	112.19
2	G	3	NAG	C1-C2-N2	5.39	118.92	110.43
2	F	3	NAG	C1-O5-C5	5.21	119.17	112.19
2	G	3	NAG	C1-O5-C5	4.81	118.63	112.19
2	H	3	NAG	C1-C2-N2	4.67	117.80	110.43
2	E	2	NAG	C1-C2-N2	4.21	117.07	110.43
2	H	1	NAG	C1-O5-C5	4.20	117.82	112.19
2	H	3	NAG	C2-N2-C7	4.19	128.52	122.90
2	E	2	NAG	O5-C1-C2	-3.99	105.12	111.29
2	F	2	NAG	O5-C1-C2	-3.55	105.80	111.29
2	F	3	NAG	C2-N2-C7	3.45	127.53	122.90
2	F	2	NAG	C2-N2-C7	3.36	127.41	122.90
2	E	2	NAG	C2-N2-C7	3.30	127.32	122.90
2	G	1	NAG	O5-C1-C2	-3.28	106.22	111.29
2	G	2	NAG	C4-C3-C2	-3.24	106.26	111.02
2	E	2	NAG	C1-O5-C5	3.09	116.33	112.19
2	G	2	NAG	C1-C2-N2	3.03	115.20	110.43
2	H	2	NAG	C1-O5-C5	3.00	116.20	112.19
2	F	3	NAG	C1-C2-N2	2.94	115.06	110.43
2	E	3	NAG	C2-N2-C7	2.91	126.80	122.90
2	F	2	NAG	C1-C2-N2	2.87	114.96	110.43
2	E	2	NAG	C4-C3-C2	-2.75	106.99	111.02
2	H	3	NAG	C4-C3-C2	-2.71	107.05	111.02
2	H	1	NAG	O3-C3-C2	-2.64	103.91	109.40
2	G	3	NAG	O7-C7-C8	-2.55	117.52	122.05
2	G	3	NAG	O7-C7-N2	2.53	126.45	121.98
2	E	1	NAG	C1-C2-N2	2.53	114.42	110.43
2	H	3	NAG	O3-C3-C2	2.44	114.47	109.40
2	G	2	NAG	C2-N2-C7	2.42	126.15	122.90
2	H	2	NAG	O5-C1-C2	-2.39	107.60	111.29

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	G	2	NAG	O5-C1-C2	-2.39	107.60	111.29
2	E	3	NAG	C1-C2-N2	2.36	114.16	110.43
2	G	2	NAG	O5-C5-C6	2.29	112.12	107.66
2	E	2	NAG	O4-C4-C3	2.25	115.67	110.38
2	E	3	NAG	O7-C7-C8	-2.24	118.06	122.05
2	E	1	NAG	C6-C5-C4	-2.10	107.86	113.02
2	G	3	NAG	O5-C5-C6	2.07	111.69	107.66
2	G	3	NAG	C4-C3-C2	-2.04	108.03	111.02

There are no chirality outliers.

All (18) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	F	2	NAG	C3-C2-N2-C7
2	G	3	NAG	C1-C2-N2-C7
2	H	3	NAG	C3-C2-N2-C7
2	G	2	NAG	O5-C5-C6-O6
2	E	2	NAG	O5-C5-C6-O6
2	G	2	NAG	C4-C5-C6-O6
2	E	2	NAG	C4-C5-C6-O6
2	G	3	NAG	O5-C5-C6-O6
2	E	3	NAG	O5-C5-C6-O6
2	F	3	NAG	C3-C2-N2-C7
2	H	2	NAG	C3-C2-N2-C7
2	E	2	NAG	C3-C2-N2-C7
2	G	2	NAG	C3-C2-N2-C7
2	F	3	NAG	C4-C5-C6-O6
2	E	2	NAG	C1-C2-N2-C7
2	E	3	NAG	C1-C2-N2-C7
2	G	2	NAG	C1-C2-N2-C7
2	E	3	NAG	C3-C2-N2-C7

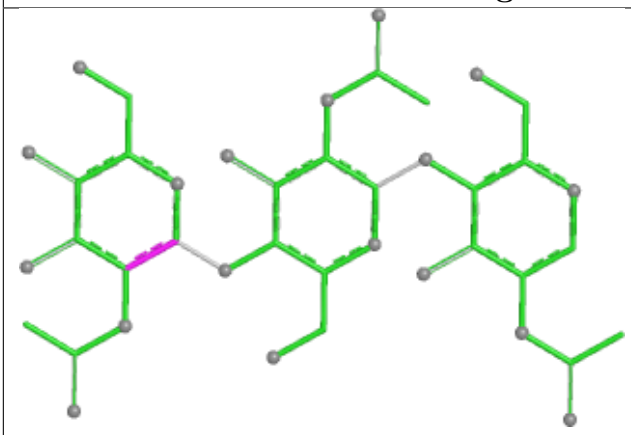
There are no ring outliers.

2 monomers are involved in 1 short contact:

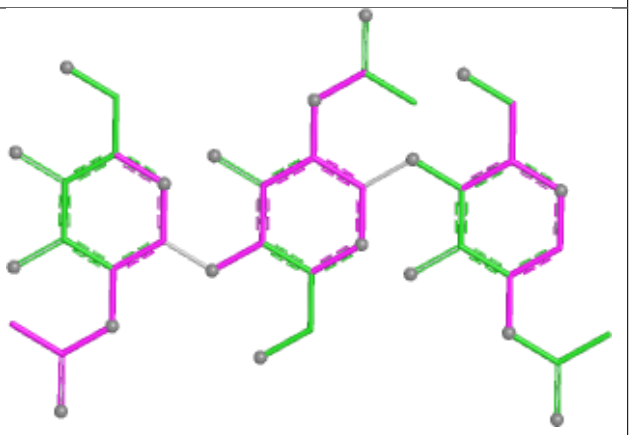
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	H	2	NAG	1	0
2	H	3	NAG	1	0

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

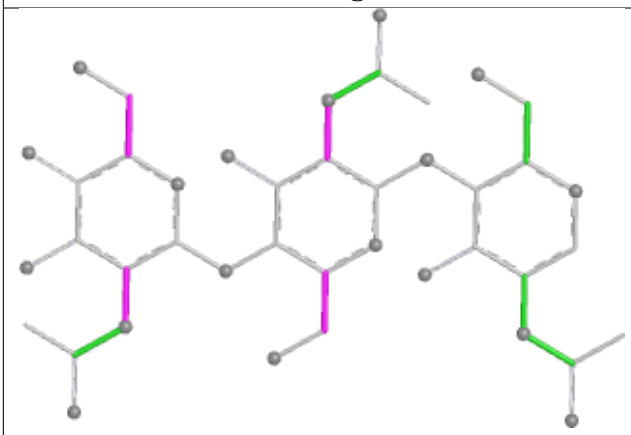
Oligosaccharide Chain E



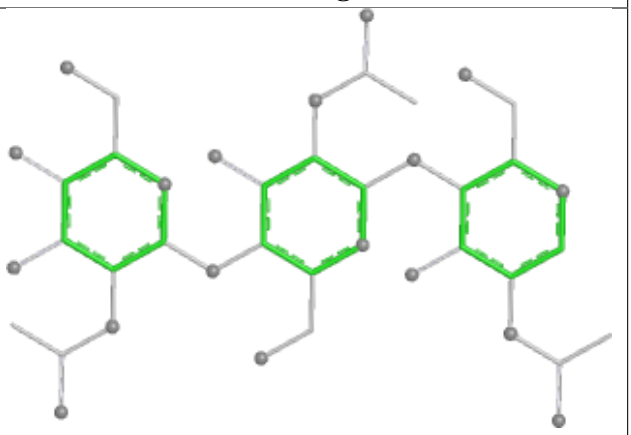
Bond lengths



Bond angles

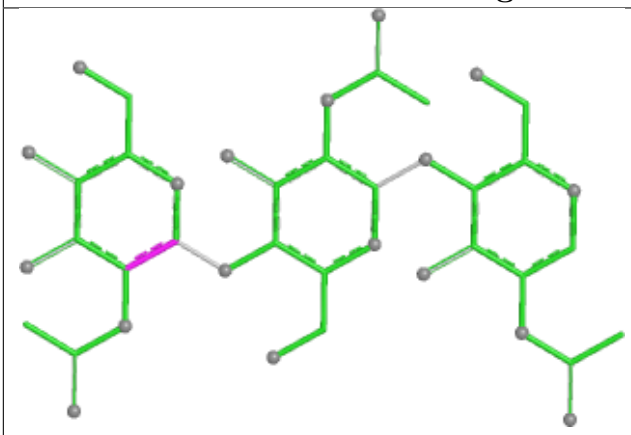


Torsions

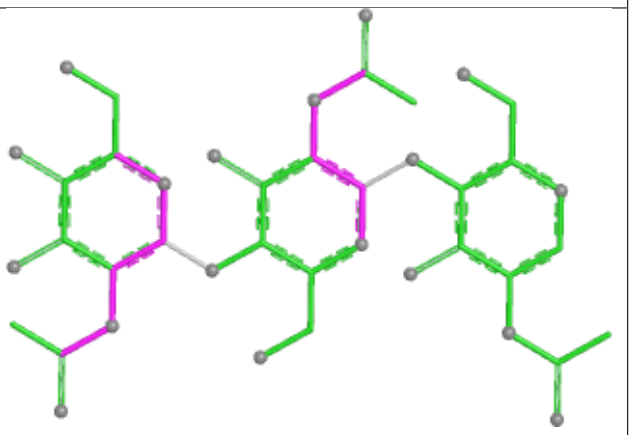


Rings

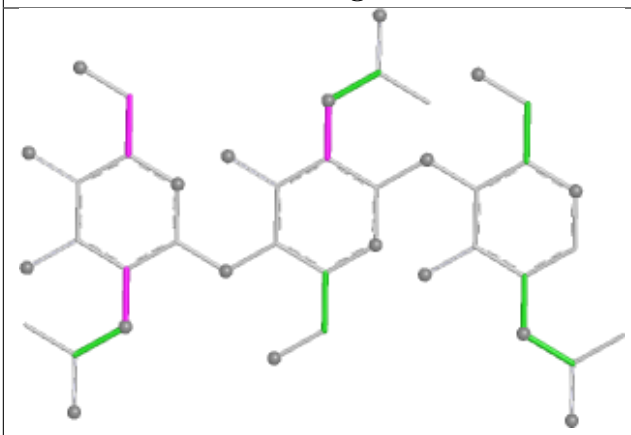
Oligosaccharide Chain F



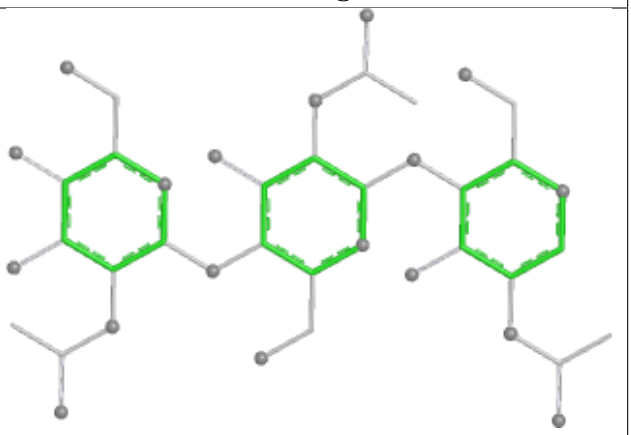
Bond lengths



Bond angles

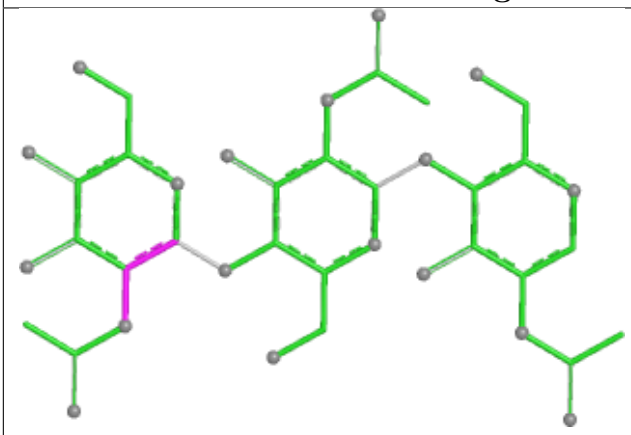


Torsions

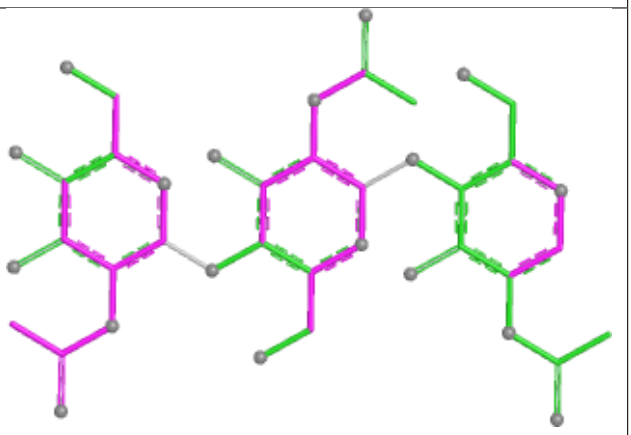


Rings

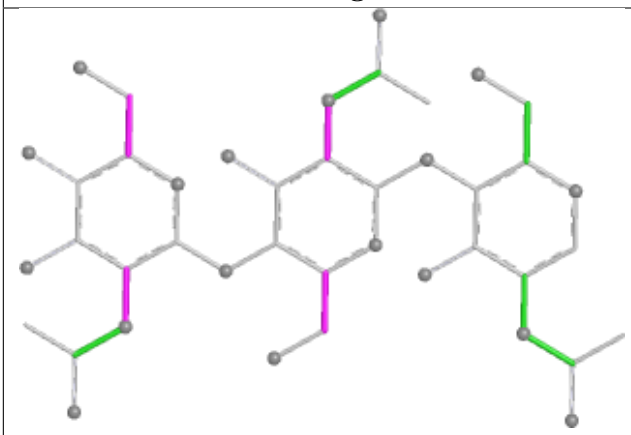
Oligosaccharide Chain G



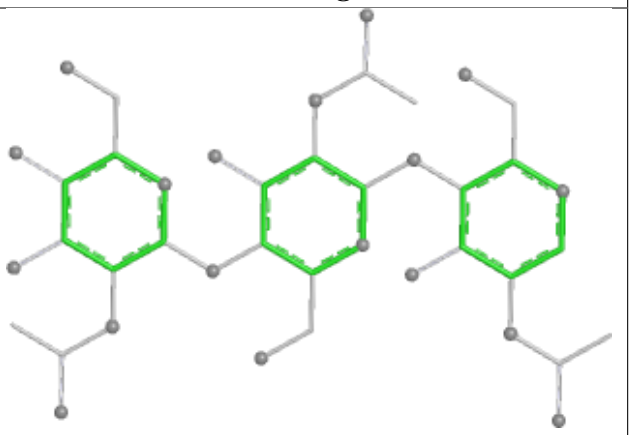
Bond lengths



Bond angles

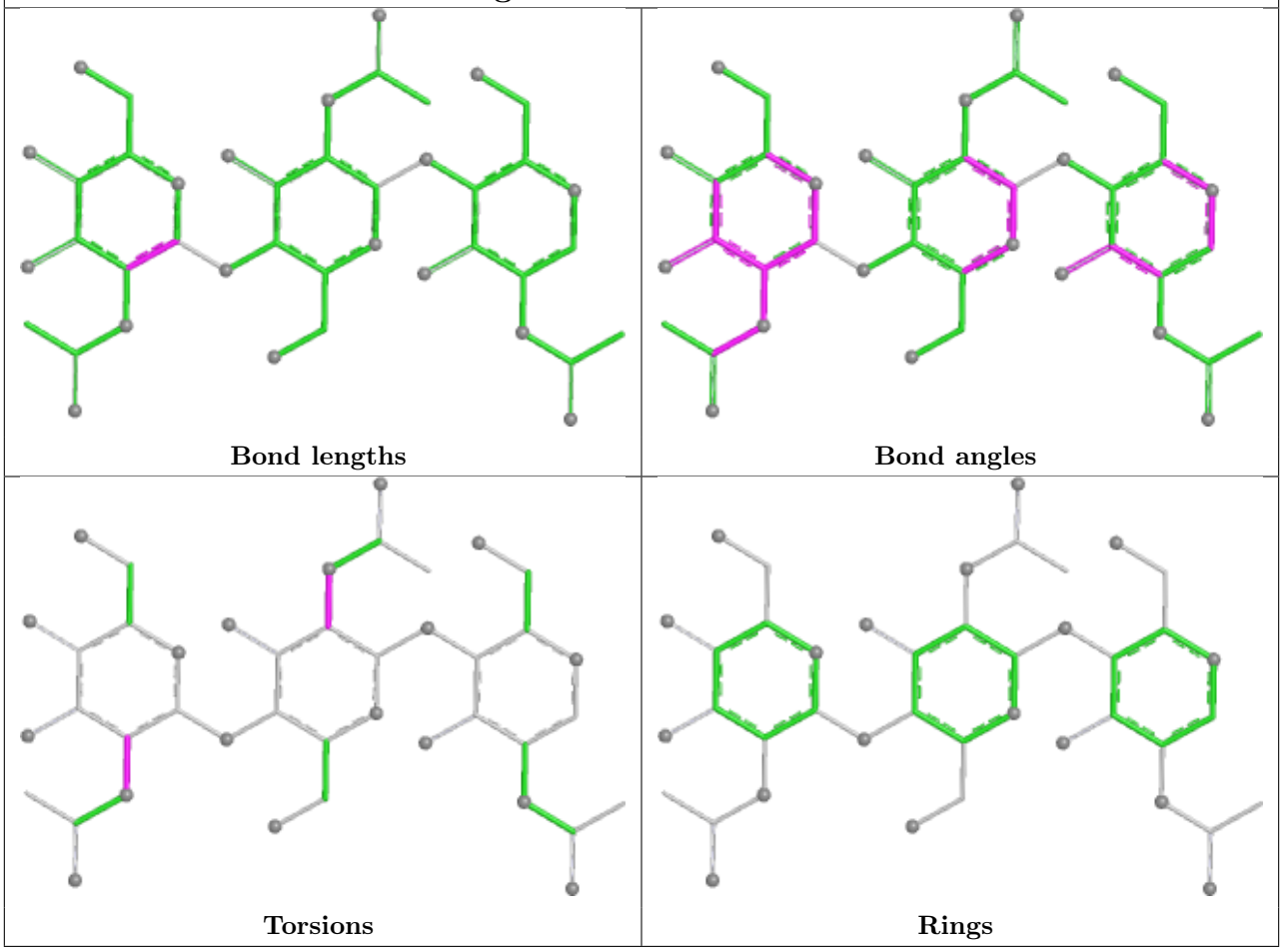


Torsions



Rings

Oligosaccharide Chain H



5.6 Ligand geometry (i)

18 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	$\#\|Z\| > 2$
6	416	B	701	-	23,23,23	1.13	1 (4%)	35,37,37	1.35	5 (14%)
6	416	C	701	-	23,23,23	1.25	2 (8%)	35,37,37	1.15	4 (11%)
3	HEM	B	605	1	42,50,50	1.89	5 (11%)	46,82,82	1.62	8 (17%)
4	NAG	B	661	1	14,14,15	0.61	0	17,19,21	1.74	5 (29%)
4	NAG	C	661	1	14,14,15	0.48	0	17,19,21	1.19	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
5	BOG	A	704	-	20,20,20	0.55	0	25,25,25	0.60	0
4	NAG	A	661	1	14,14,15	0.88	1 (7%)	17,19,21	2.16	6 (35%)
3	HEM	A	605	1	42,50,50	2.08	6 (14%)	46,82,82	1.61	8 (17%)
4	NAG	C	681	1	14,14,15	0.74	0	17,19,21	1.10	1 (5%)
4	NAG	A	681	1	14,14,15	0.55	0	17,19,21	1.08	1 (5%)
4	NAG	B	681	1	14,14,15	0.58	0	17,19,21	0.93	0
4	NAG	D	681	1	14,14,15	0.49	0	17,19,21	0.90	1 (5%)
5	BOG	C	703	-	20,20,20	0.54	0	25,25,25	0.95	2 (8%)
6	416	A	701	-	23,23,23	1.34	2 (8%)	35,37,37	1.06	2 (5%)
3	HEM	C	605	1	42,50,50	1.94	6 (14%)	46,82,82	1.60	8 (17%)
3	HEM	D	605	1	42,50,50	2.02	6 (14%)	46,82,82	1.69	8 (17%)
6	416	D	701	-	23,23,23	1.19	2 (8%)	35,37,37	1.51	7 (20%)
4	NAG	D	661	1	14,14,15	0.80	1 (7%)	17,19,21	2.72	6 (35%)

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
6	416	B	701	-	-	0/16/28/28	0/2/2/2
6	416	C	701	-	-	0/16/28/28	0/2/2/2
3	HEM	B	605	1	-	1/12/54/54	-
4	NAG	B	661	1	1/1/5/7	1/6/23/26	0/1/1/1
4	NAG	C	661	1	1/1/5/7	0/6/23/26	0/1/1/1
5	BOG	A	704	-	-	5/11/31/31	0/1/1/1
4	NAG	A	661	1	1/1/5/7	3/6/23/26	0/1/1/1
3	HEM	A	605	1	-	4/12/54/54	-
4	NAG	C	681	1	-	2/6/23/26	0/1/1/1
4	NAG	A	681	1	-	0/6/23/26	0/1/1/1
4	NAG	B	681	1	-	0/6/23/26	0/1/1/1
4	NAG	D	681	1	-	0/6/23/26	0/1/1/1
5	BOG	C	703	-	-	7/11/31/31	0/1/1/1
6	416	A	701	-	-	0/16/28/28	0/2/2/2
3	HEM	C	605	1	-	4/12/54/54	-
3	HEM	D	605	1	-	6/12/54/54	-
6	416	D	701	-	-	0/16/28/28	0/2/2/2
4	NAG	D	661	1	1/1/5/7	2/6/23/26	0/1/1/1

All (32) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	605	HEM	C3D-C2D	8.36	1.54	1.36
3	D	605	HEM	C3D-C2D	7.74	1.53	1.36
3	C	605	HEM	C3D-C2D	7.64	1.53	1.36
3	B	605	HEM	C3D-C2D	7.29	1.52	1.36
3	A	605	HEM	C3C-C2C	-5.29	1.33	1.40
3	D	605	HEM	C3C-C2C	-5.28	1.33	1.40
3	B	605	HEM	C3C-C2C	-5.11	1.33	1.40
3	C	605	HEM	C3C-C2C	-4.62	1.34	1.40
3	A	605	HEM	C3C-C4C	3.90	1.47	1.41
3	C	605	HEM	C3C-CAC	3.50	1.55	1.47
3	D	605	HEM	C3C-CAC	3.49	1.55	1.47
3	A	605	HEM	C3C-CAC	3.36	1.55	1.47
3	B	605	HEM	C3C-CAC	3.23	1.54	1.47
3	D	605	HEM	C3C-C4C	3.21	1.46	1.41
6	C	701	416	C13-C12	3.03	1.53	1.48
6	A	701	416	C13-C12	2.95	1.53	1.48
6	A	701	416	C14-C12	-2.87	1.48	1.51
4	A	661	NAG	C1-C2	2.84	1.56	1.52
3	D	605	HEM	CAB-C3B	2.82	1.54	1.47
3	C	605	HEM	CAB-C3B	2.81	1.54	1.47
3	B	605	HEM	C3C-C4C	2.79	1.45	1.41
3	B	605	HEM	CAB-C3B	2.77	1.54	1.47
3	C	605	HEM	C3C-C4C	2.74	1.45	1.41
3	A	605	HEM	CAB-C3B	2.68	1.54	1.47
4	D	661	NAG	C1-C2	2.53	1.55	1.52
3	D	605	HEM	FE-ND	2.51	2.12	1.98
6	C	701	416	C14-C12	-2.38	1.48	1.51
6	B	701	416	C13-C12	2.23	1.51	1.48
6	D	701	416	C14-C12	-2.19	1.49	1.51
6	D	701	416	C8-C5	-2.16	1.51	1.54
3	A	605	HEM	CMB-C2B	2.11	1.55	1.50
3	C	605	HEM	CMA-C3A	2.02	1.55	1.51

All (73) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	D	661	NAG	C1-O5-C5	6.34	120.68	112.19
4	D	661	NAG	C1-C2-N2	5.99	119.88	110.43
3	A	605	HEM	C4D-ND-C1D	5.92	112.22	105.21
3	B	605	HEM	C4D-ND-C1D	5.28	111.45	105.21
3	D	605	HEM	C4D-ND-C1D	5.25	111.43	105.21
3	C	605	HEM	C4D-ND-C1D	5.15	111.31	105.21

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	661	NAG	C1-C2-N2	5.01	118.33	110.43
4	A	661	NAG	C1-O5-C5	4.66	118.43	112.19
4	B	661	NAG	C1-O5-C5	4.50	118.22	112.19
4	D	661	NAG	C2-N2-C7	4.13	128.44	122.90
6	D	701	416	C3-C7-C12	-3.94	115.09	121.70
4	C	661	NAG	C1-O5-C5	3.68	117.12	112.19
4	D	661	NAG	O5-C1-C2	-3.46	105.93	111.29
6	D	701	416	C14-C12-C7	3.24	124.48	118.93
6	B	701	416	C3-C7-C12	-3.18	116.37	121.70
3	D	605	HEM	CMA-C3A-C4A	-3.12	123.89	128.46
6	D	701	416	C6-C3-C7	3.04	120.28	118.05
6	D	701	416	O2-C13-C12	-2.93	114.75	121.59
3	A	605	HEM	C4C-CHD-C1D	2.93	126.42	122.56
4	B	661	NAG	C2-N2-C7	2.88	126.75	122.90
3	B	605	HEM	CMD-C2D-C1D	2.86	129.51	125.03
6	B	701	416	O2-C13-C12	-2.86	114.92	121.59
3	D	605	HEM	C4C-CHD-C1D	2.85	126.32	122.56
4	D	661	NAG	O5-C5-C6	2.83	113.18	107.66
6	B	701	416	C14-C12-C7	2.83	123.78	118.93
3	B	605	HEM	C4B-CHC-C1C	2.80	126.25	122.56
3	D	605	HEM	C4A-C3A-C2A	2.78	108.93	107.00
4	A	661	NAG	C4-C3-C2	-2.72	107.03	111.02
3	C	605	HEM	CMA-C3A-C4A	-2.70	124.50	128.46
6	D	701	416	C7-C12-C13	-2.69	115.14	121.27
6	B	701	416	C7-C12-C13	-2.68	115.17	121.27
3	C	605	HEM	C3B-C4B-NB	-2.67	107.55	109.47
3	A	605	HEM	CMA-C3A-C4A	-2.67	124.55	128.46
6	B	701	416	O1-C6-C3	2.61	123.05	120.89
3	C	605	HEM	C3B-C2B-C1B	2.60	108.37	106.41
3	D	605	HEM	C3B-C4B-NB	-2.59	107.61	109.47
6	C	701	416	C3-C7-C12	-2.59	117.36	121.70
4	A	661	NAG	O3-C3-C2	2.57	114.75	109.40
6	A	701	416	C3-C7-C12	-2.57	117.39	121.70
3	A	605	HEM	CBD-CAD-C3D	-2.48	105.66	112.53
3	C	605	HEM	C1B-NB-C4B	2.48	108.14	105.21
3	D	605	HEM	C3B-C2B-C1B	2.47	108.27	106.41
3	D	605	HEM	C1B-NB-C4B	2.44	108.10	105.21
4	A	661	NAG	O5-C5-C6	2.44	112.41	107.66
4	C	681	NAG	O5-C5-C6	2.43	112.40	107.66
3	C	605	HEM	C4B-CHC-C1C	2.43	125.77	122.56
6	C	701	416	C7-C12-C13	-2.43	115.75	121.27
3	B	605	HEM	C3B-C4B-NB	-2.41	107.73	109.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	661	NAG	O5-C1-C2	-2.32	107.70	111.29
3	B	605	HEM	CHA-C4D-ND	2.31	127.24	124.37
3	D	605	HEM	O2A-CGA-CBA	2.31	121.30	114.00
3	A	605	HEM	CAA-CBA-CGA	2.30	120.03	113.83
3	C	605	HEM	CHD-C1D-ND	2.29	126.90	124.44
3	A	605	HEM	C1B-NB-C4B	2.29	107.92	105.21
4	D	681	NAG	C1-O5-C5	2.28	115.24	112.19
4	B	661	NAG	O5-C5-C6	2.28	112.10	107.66
3	A	605	HEM	CHD-C1D-ND	2.26	126.86	124.44
6	D	701	416	O3-C13-O2	2.25	129.25	123.90
5	C	703	BOG	C4-C3-C2	-2.24	106.90	110.83
6	D	701	416	O1-C6-C3	2.18	122.69	120.89
3	B	605	HEM	C1B-NB-C4B	2.17	107.78	105.21
6	C	701	416	C6-C3-C7	2.15	119.62	118.05
4	B	661	NAG	O3-C3-C2	2.10	113.76	109.40
6	C	701	416	C14-C12-C7	2.10	122.52	118.93
3	B	605	HEM	C3B-C2B-C1B	2.09	107.98	106.41
3	C	605	HEM	C4C-CHD-C1D	2.07	125.30	122.56
6	A	701	416	C14-C12-C7	2.06	122.46	118.93
3	A	605	HEM	CHA-C4D-ND	2.03	126.89	124.37
3	B	605	HEM	CBD-CAD-C3D	-2.03	106.92	112.53
4	D	661	NAG	C4-C3-C2	-2.03	108.04	111.02
4	A	681	NAG	C4-C3-C2	2.02	113.98	111.02
4	B	661	NAG	C4-C3-C2	-2.01	108.07	111.02
5	C	703	BOG	O5-C5-C4	-2.01	106.08	109.70

All (4) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
4	A	661	NAG	C1
4	B	661	NAG	C1
4	C	661	NAG	C1
4	D	661	NAG	C1

All (35) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	605	HEM	C3A-C2A-CAA-CBA
3	D	605	HEM	C1A-C2A-CAA-CBA
3	D	605	HEM	C3A-C2A-CAA-CBA
3	D	605	HEM	C2B-C3B-CAB-CBB
3	D	605	HEM	C4B-C3B-CAB-CBB

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Continued from previous page...

Mol	Chain	Res	Type	Atoms
4	B	661	NAG	C3-C2-N2-C7
4	D	661	NAG	C1-C2-N2-C7
5	C	703	BOG	C4-C5-C6-O6
4	C	681	NAG	O5-C5-C6-O6
5	C	703	BOG	O5-C5-C6-O6
5	A	704	BOG	C4'-C5'-C6'-C7'
5	A	704	BOG	C2'-C3'-C4'-C5'
5	C	703	BOG	C3'-C4'-C5'-C6'
3	A	605	HEM	C1A-C2A-CAA-CBA
5	C	703	BOG	C4'-C5'-C6'-C7'
4	A	661	NAG	C4-C5-C6-O6
5	A	704	BOG	C5'-C6'-C7'-C8'
5	C	703	BOG	C2'-C1'-O1-C1
5	C	703	BOG	C5'-C6'-C7'-C8'
4	A	661	NAG	C1-C2-N2-C7
4	C	681	NAG	C4-C5-C6-O6
3	D	605	HEM	CAA-CBA-CGA-O1A
3	D	605	HEM	CAA-CBA-CGA-O2A
5	A	704	BOG	C2'-C1'-O1-C1
3	A	605	HEM	CAA-CBA-CGA-O2A
5	C	703	BOG	C1'-C2'-C3'-C4'
4	A	661	NAG	C3-C2-N2-C7
5	A	704	BOG	C3'-C4'-C5'-C6'
3	C	605	HEM	CAA-CBA-CGA-O1A
3	A	605	HEM	CAA-CBA-CGA-O1A
3	C	605	HEM	CAA-CBA-CGA-O2A
3	C	605	HEM	CAD-CBD-CGD-O2D
4	D	661	NAG	C4-C5-C6-O6
3	C	605	HEM	CAD-CBD-CGD-O1D
3	B	605	HEM	CAD-CBD-CGD-O2D

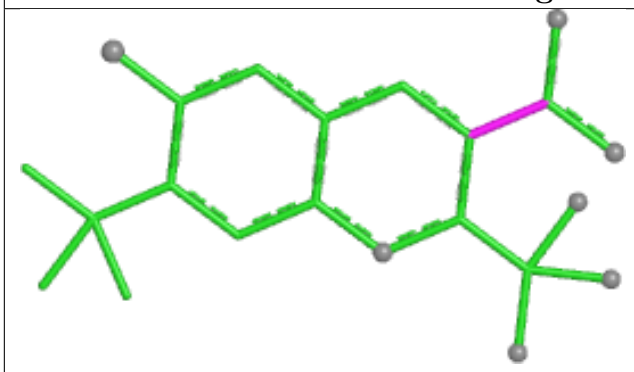
There are no ring outliers.

7 monomers are involved in 12 short contacts:

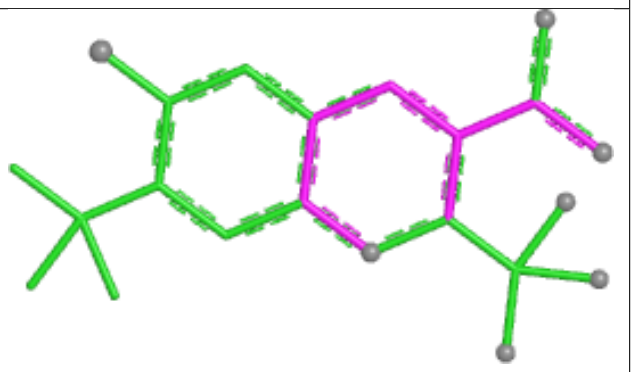
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	B	701	416	2	0
6	C	701	416	1	0
3	B	605	HEM	1	0
3	A	605	HEM	2	0
6	A	701	416	2	0
3	C	605	HEM	1	0
6	D	701	416	3	0

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

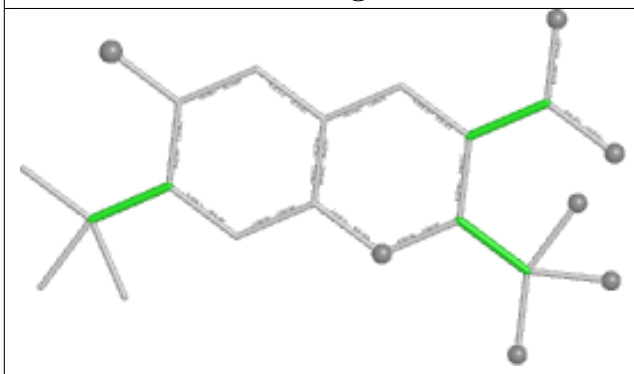
Ligand 416 B 701



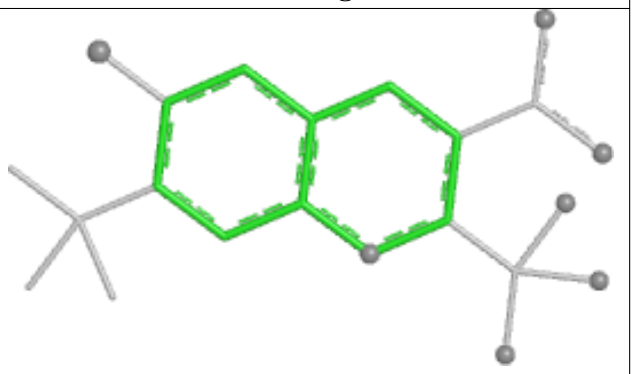
Bond lengths



Bond angles

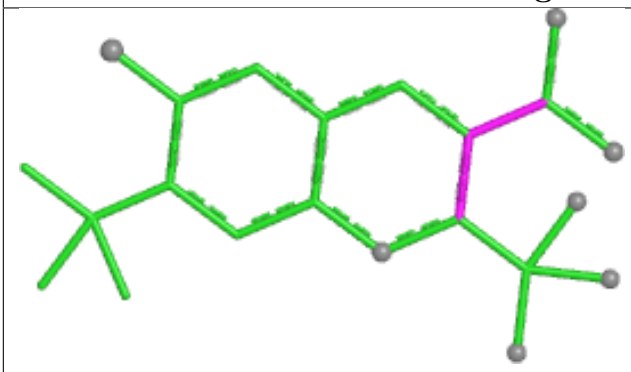


Torsions

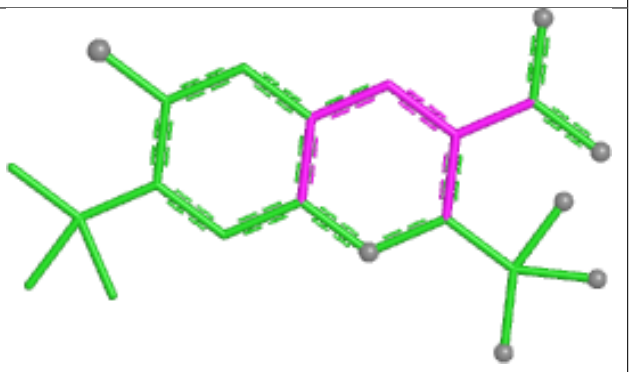


Rings

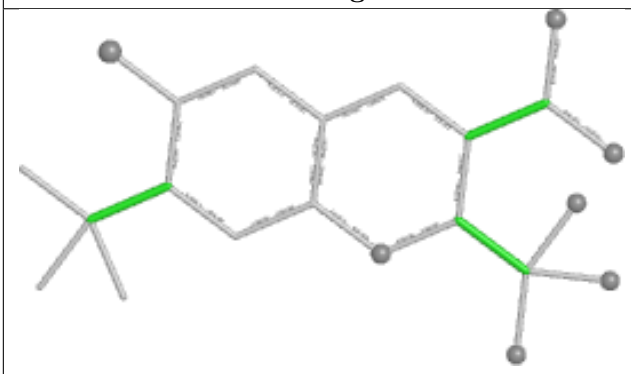
Ligand 416 C 701



Bond lengths



Bond angles



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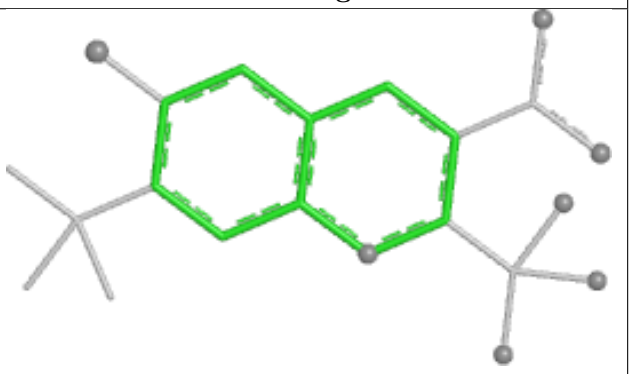
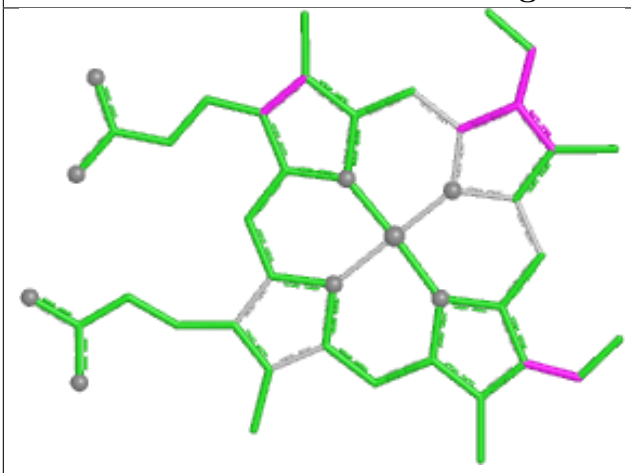


Rings

Ligand HEM B 605



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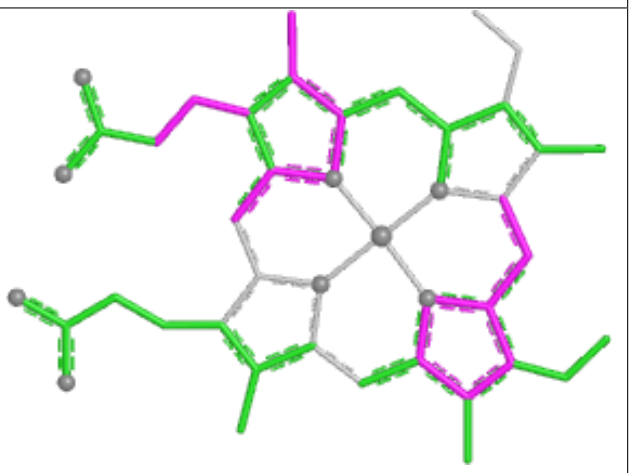
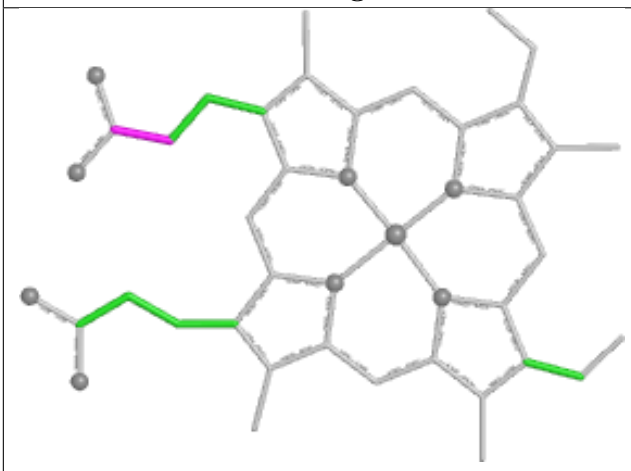
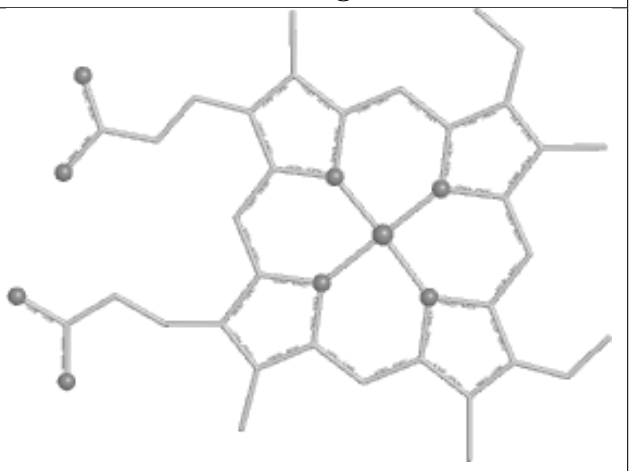


Bond angles

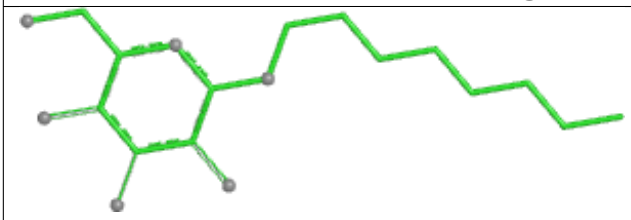


Torsions

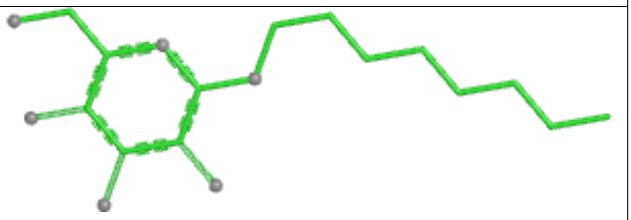


Rings

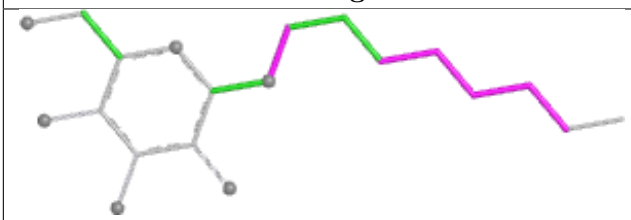
Ligand BOG A 704



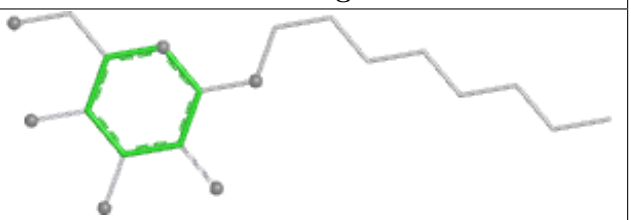
Bond lengths



Bond angles

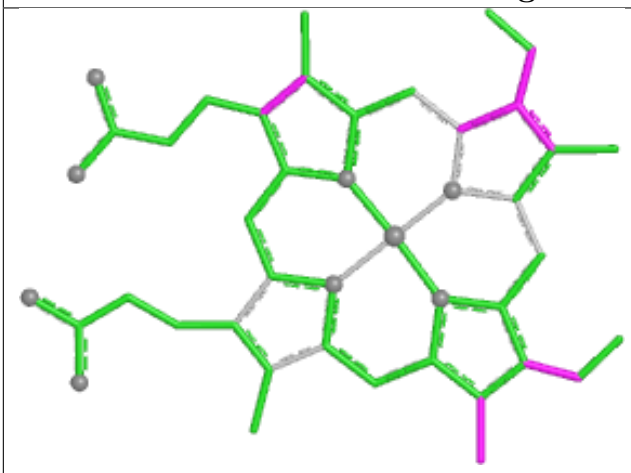


Torsions

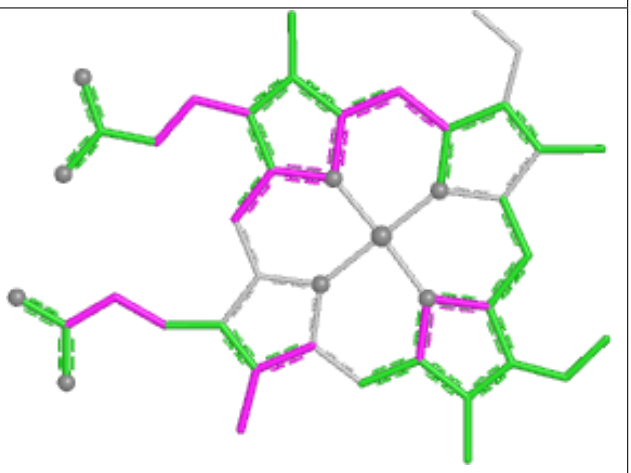


Rings

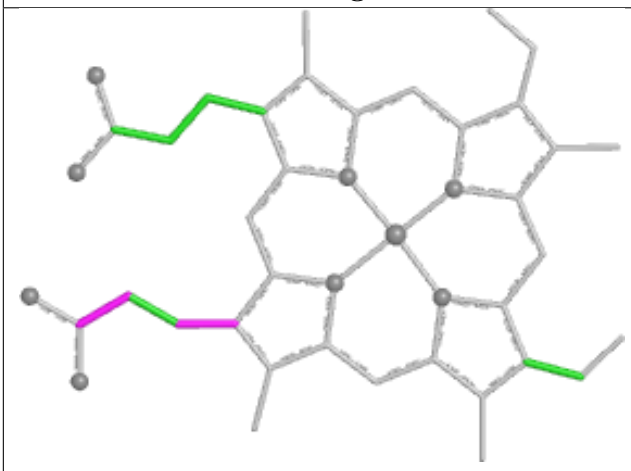
Ligand HEM A 605



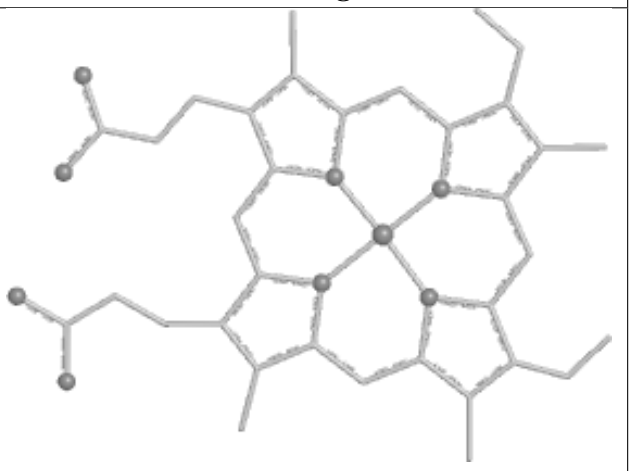
Bond lengths



Bond angles

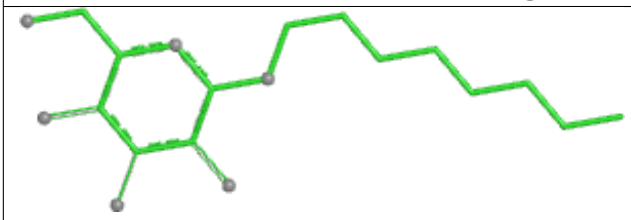


Torsions

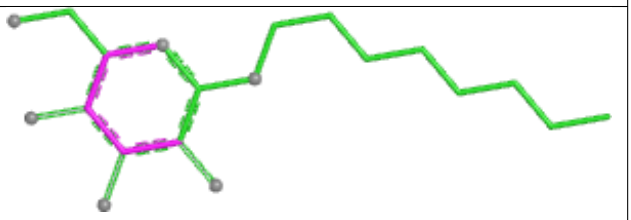


Rings

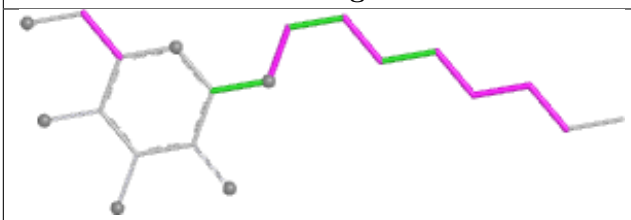
Ligand BOG C 703



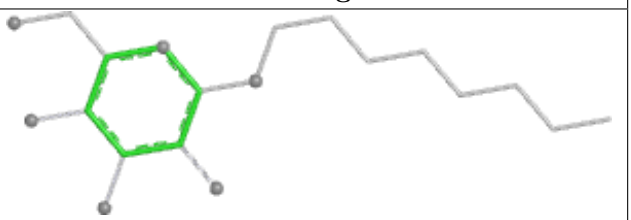
Bond lengths



Bond angles

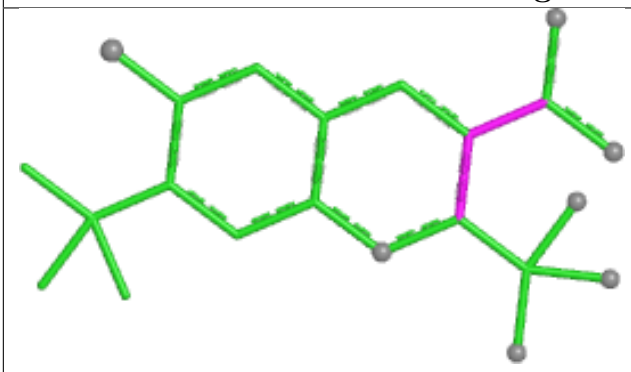


Torsions

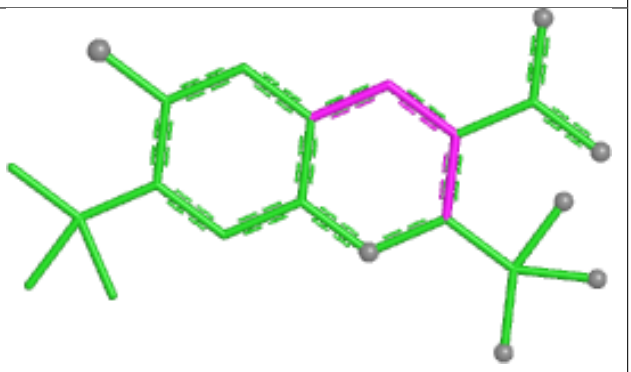


Rings

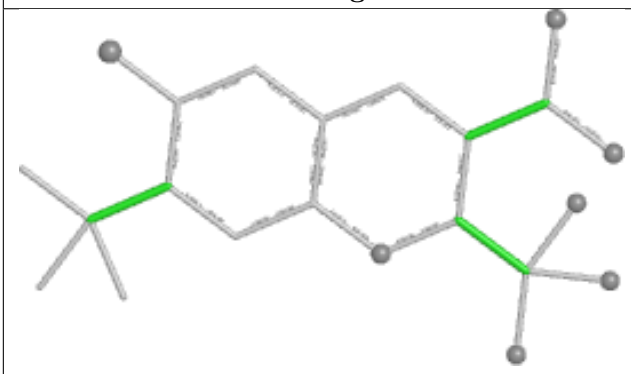
Ligand 416 A 701



Bond lengths



Bond angles



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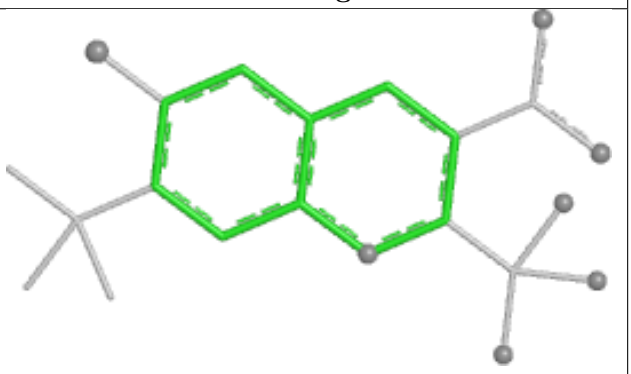
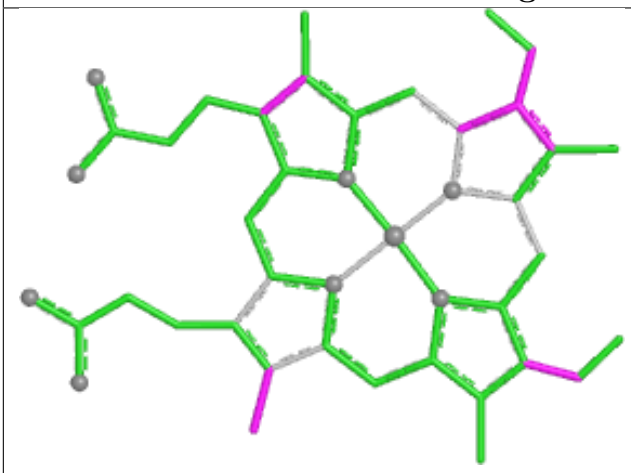


Rings

Ligand HEM C 605



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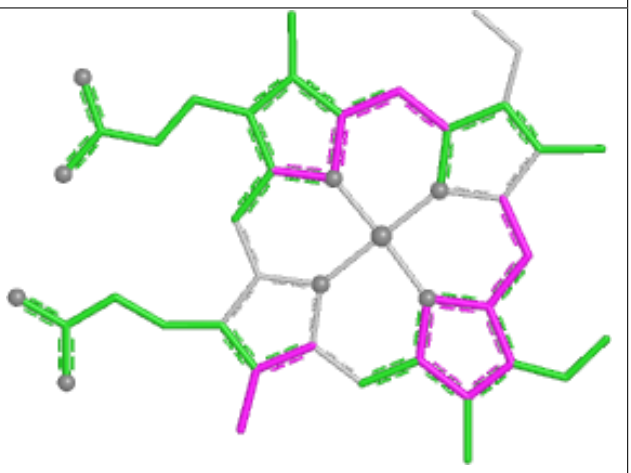
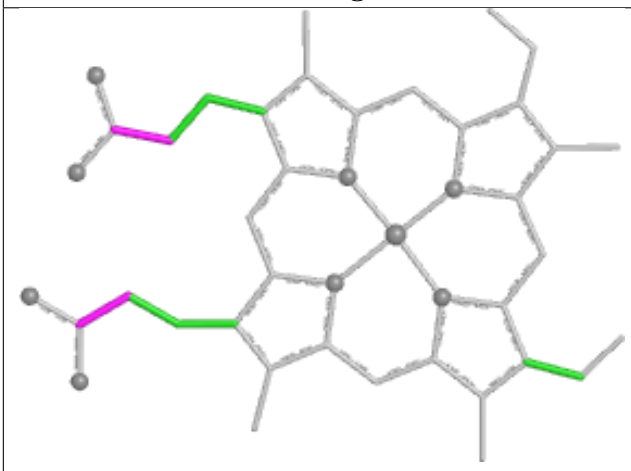


Bond angles



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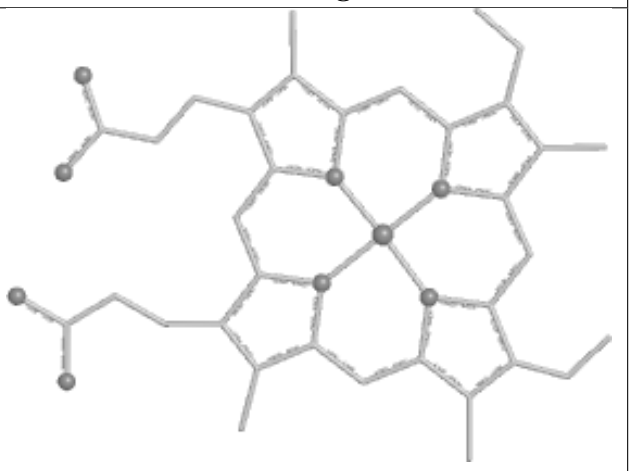
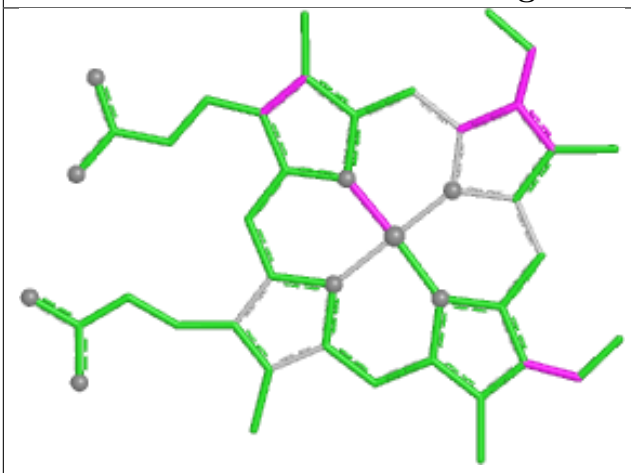
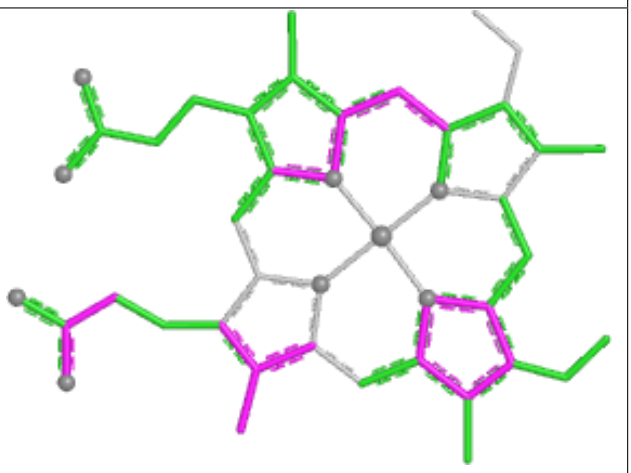


Rings

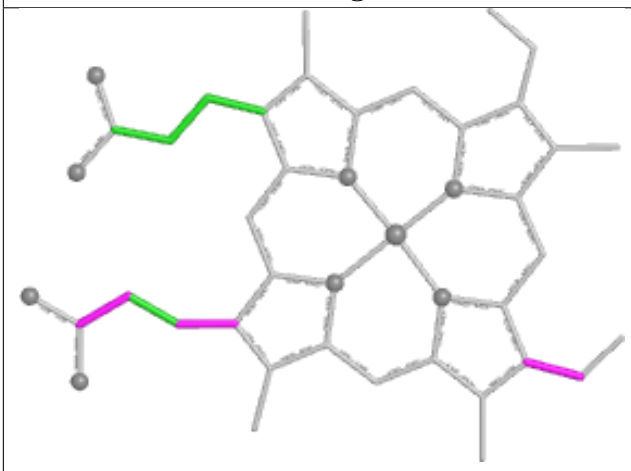
Ligand HEM D 605



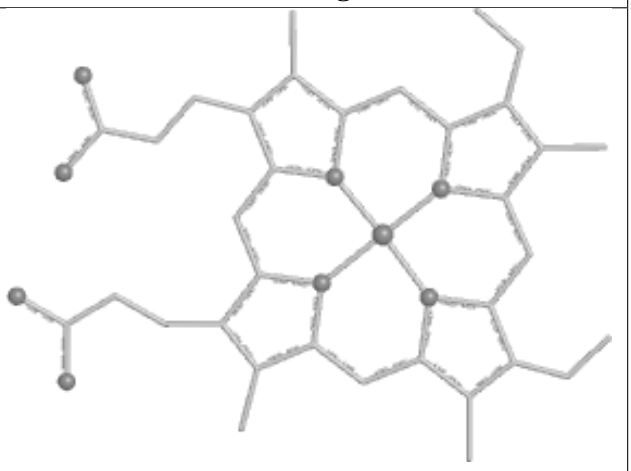
Bond lengths



Bond angles

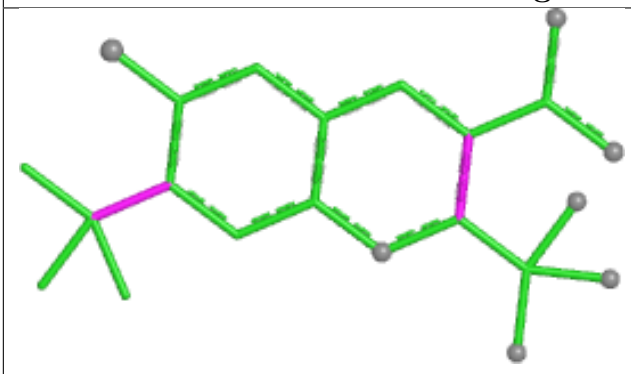


Torsions

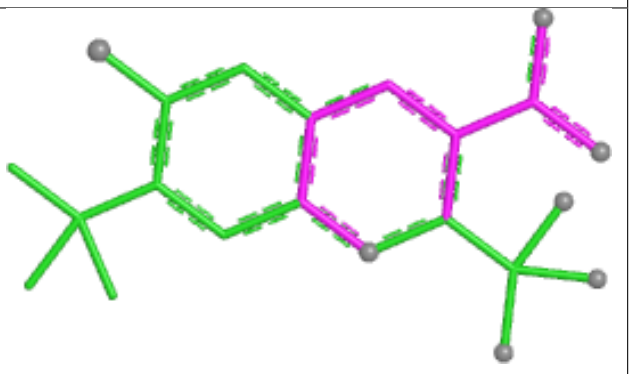


Rings

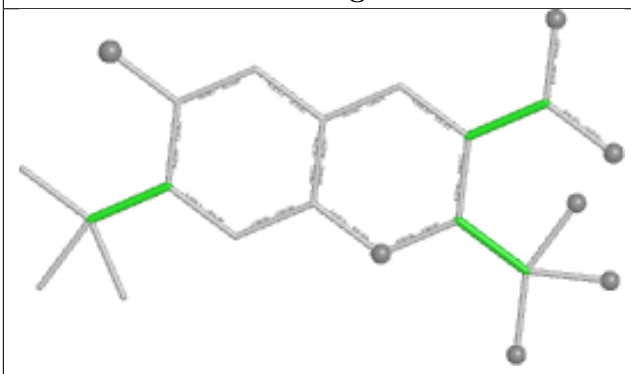
Ligand 416 D 701



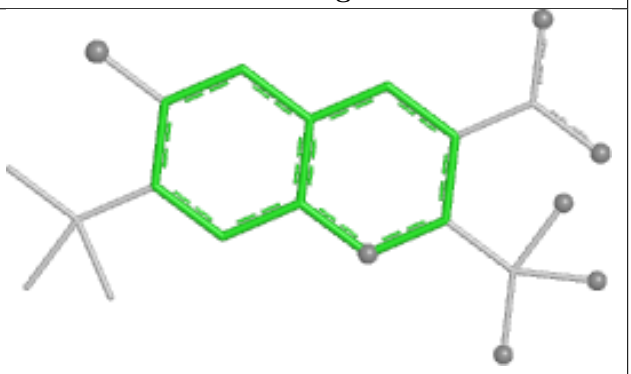
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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	552/587 (94%)	-0.42	1 (0%)	92	89	29, 47, 64, 78	0
1	B	552/587 (94%)	-0.43	2 (0%)	89	85	26, 46, 64, 76	0
1	C	552/587 (94%)	-0.23	2 (0%)	89	85	35, 54, 74, 88	0
1	D	552/587 (94%)	-0.26	1 (0%)	92	89	35, 53, 71, 82	0
All	All	2208/2348 (94%)	-0.34	6 (0%)	90	87	26, 50, 69, 88	0

All (6) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	18	ALA	3.4
1	B	18	ALA	2.7
1	C	18	ALA	2.6
1	B	108	TYR	2.1
1	C	101	TYR	2.0
1	A	224	LEU	2.0

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, 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
2	NAG	G	3	14/15	0.26	0.20	60,62,63,64	0

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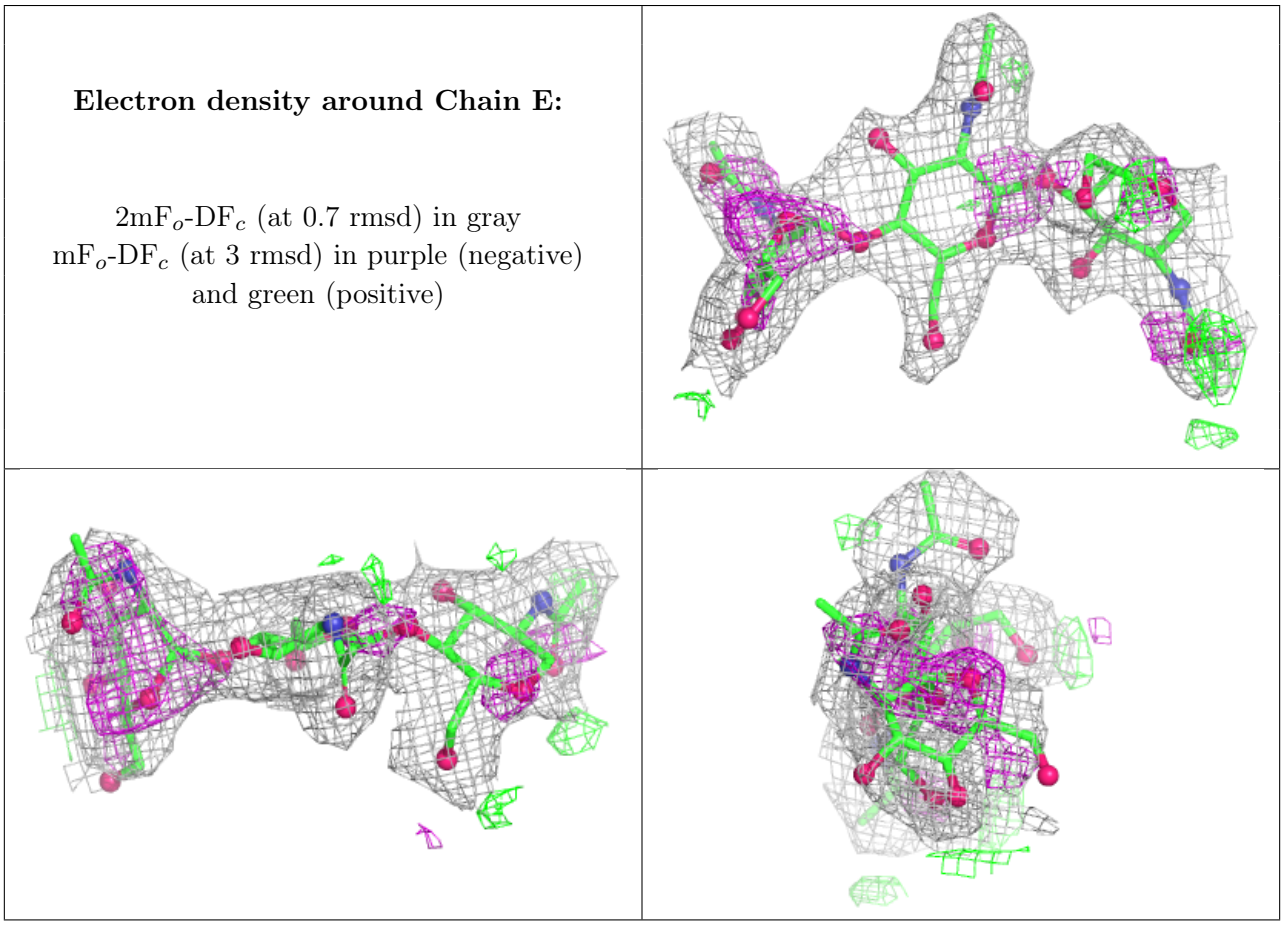
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	NAG	F	3	14/15	0.53	0.15	52,53,56,57	0
2	NAG	H	3	14/15	0.53	0.17	49,52,53,54	0
2	NAG	E	3	14/15	0.56	0.15	51,53,53,54	0
2	NAG	H	2	14/15	0.79	0.13	44,46,47,48	0
2	NAG	E	1	14/15	0.79	0.13	33,36,38,40	0
2	NAG	G	2	14/15	0.81	0.11	49,51,53,57	0
2	NAG	F	2	14/15	0.83	0.11	42,45,46,49	0
2	NAG	E	2	14/15	0.85	0.10	34,40,43,47	0
2	NAG	F	1	14/15	0.88	0.10	27,34,36,40	0
2	NAG	G	1	14/15	0.89	0.09	37,39,42,46	0
2	NAG	H	1	14/15	0.90	0.09	32,34,37,40	0

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.

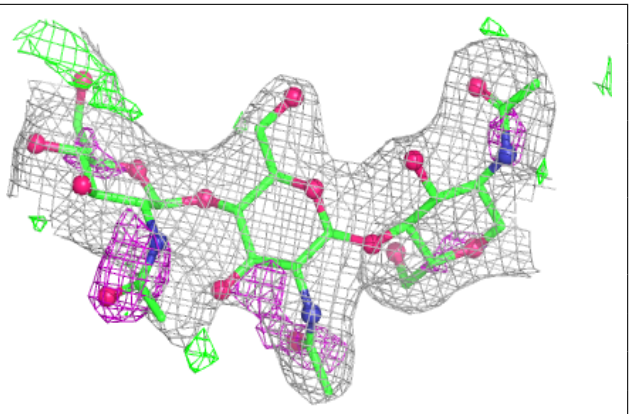
Electron density around Chain E:

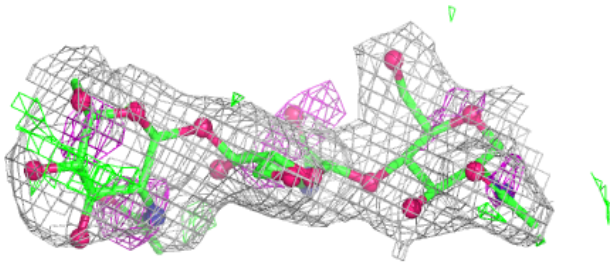
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

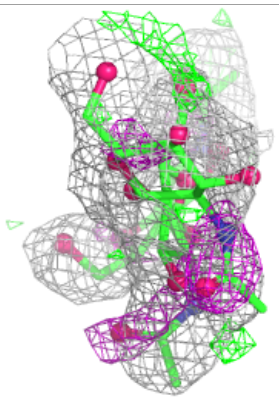


Electron density around Chain F:

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

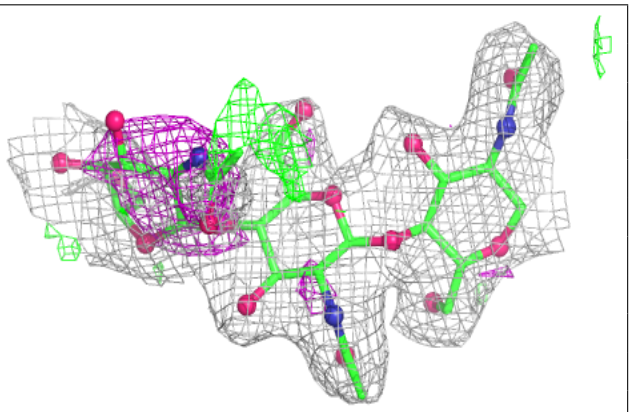


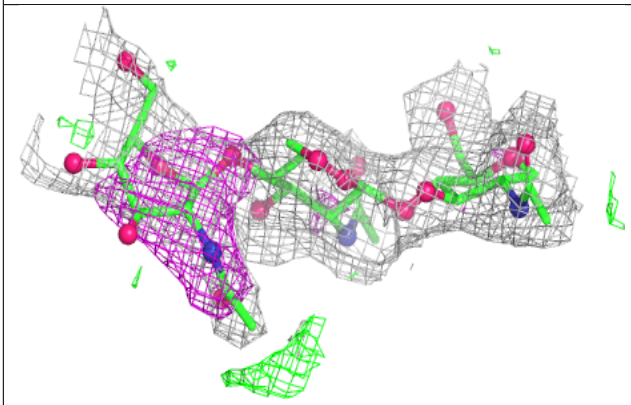


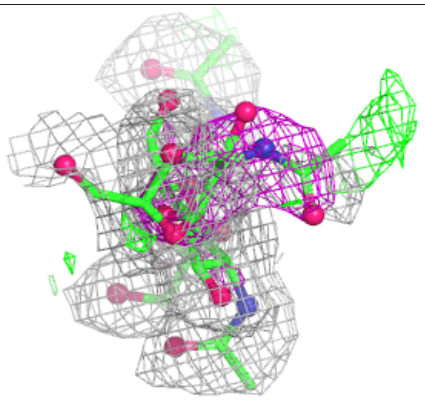


Electron density around Chain G:

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

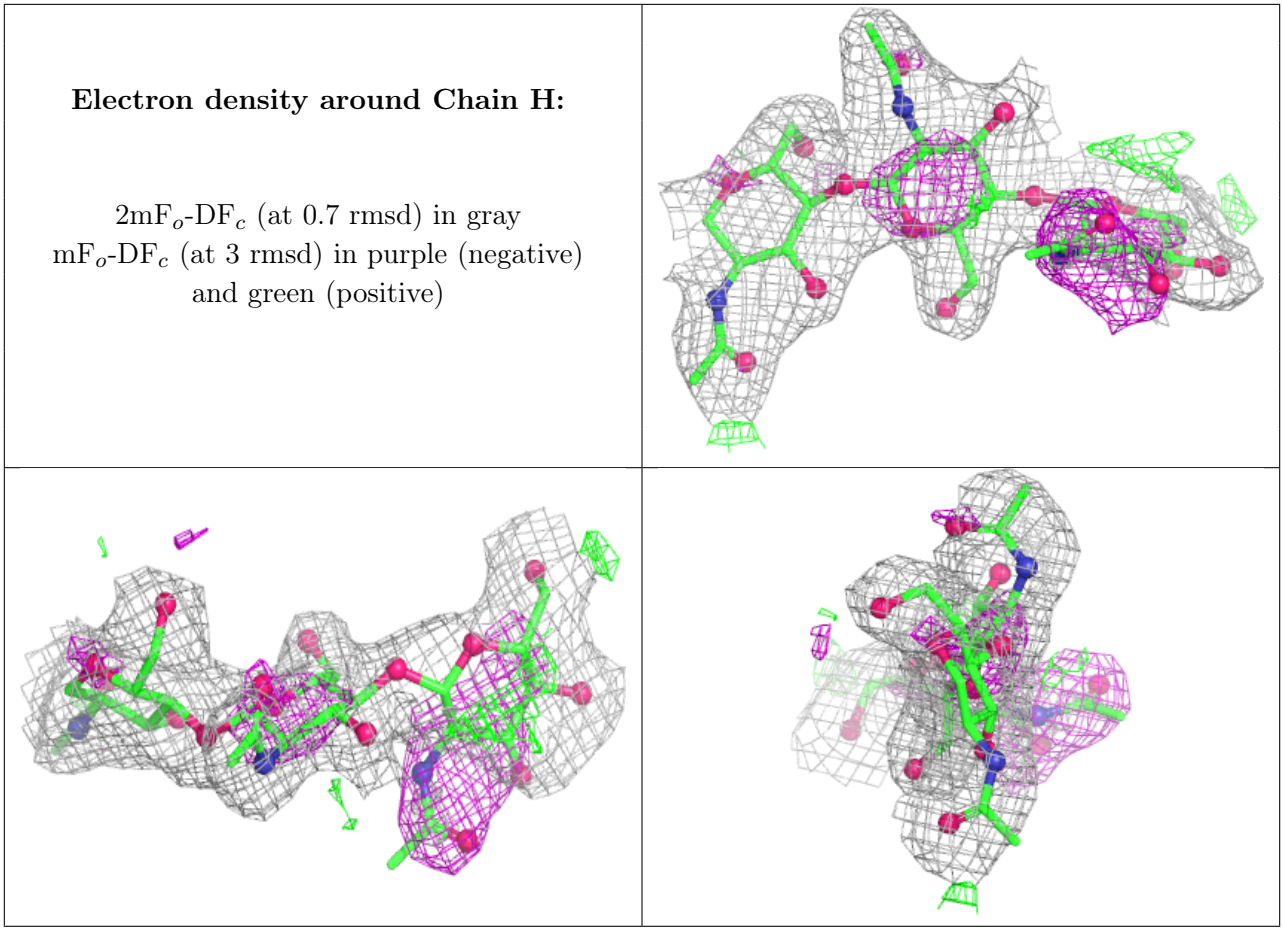






Electron density around Chain H:

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



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, 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
4	NAG	C	681	14/15	0.41	0.18	54,57,58,58	0
4	NAG	B	661	14/15	0.77	0.20	36,39,41,41	0
4	NAG	D	661	14/15	0.77	0.18	34,37,38,38	0
4	NAG	A	681	14/15	0.79	0.19	49,52,53,54	0
4	NAG	A	661	14/15	0.80	0.15	31,36,39,40	0
4	NAG	C	661	14/15	0.83	0.15	35,39,42,42	0
4	NAG	B	681	14/15	0.87	0.15	44,46,47,48	0
4	NAG	D	681	14/15	0.89	0.16	43,44,46,46	0
6	416	A	701	22/22	0.91	0.09	49,52,53,53	0
6	416	C	701	22/22	0.92	0.09	55,59,63,63	0
6	416	D	701	22/22	0.92	0.09	52,55,56,58	0
5	BOG	C	703	20/20	0.93	0.10	55,56,58,58	0

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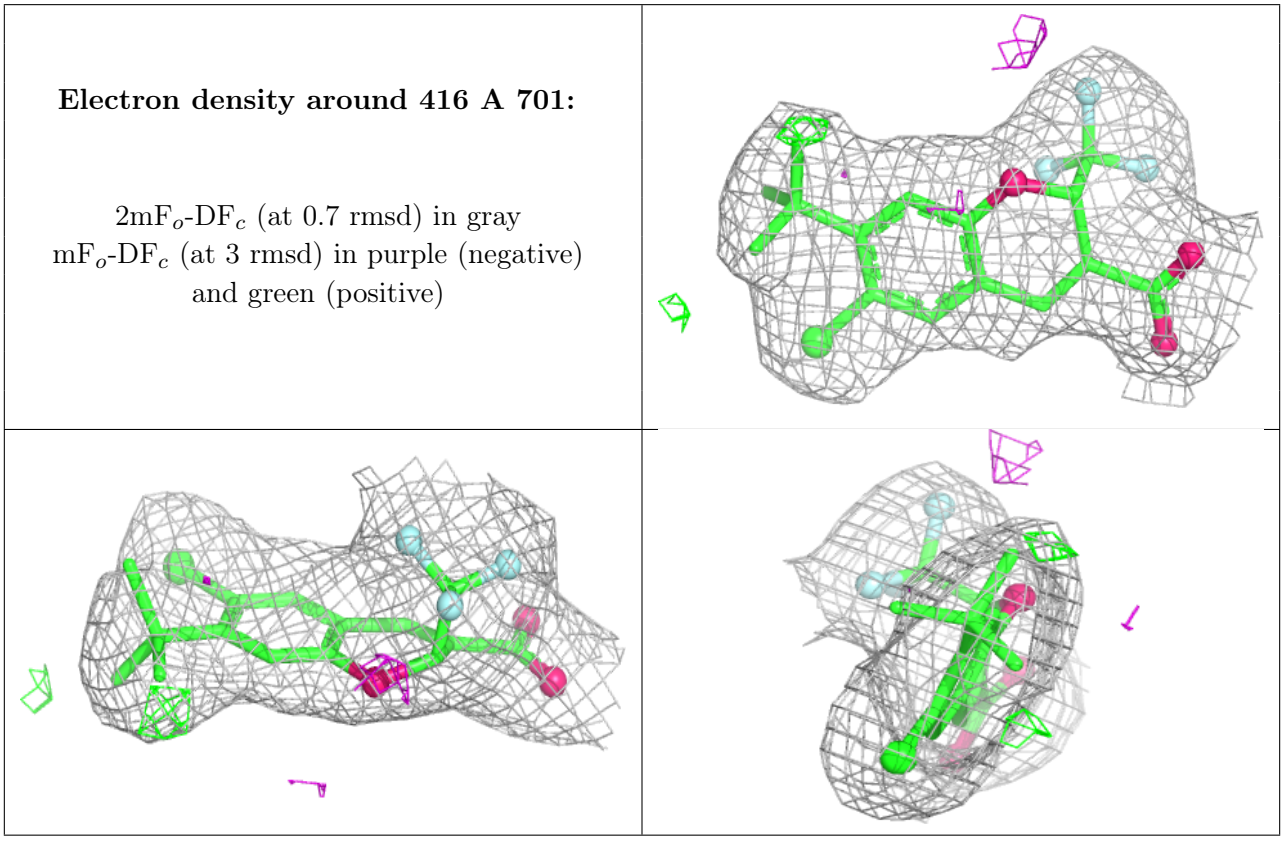
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	416	B	701	22/22	0.93	0.09	49,52,55,57	0
5	BOG	A	704	20/20	0.95	0.07	39,41,44,44	0
3	HEM	A	605	43/43	0.95	0.09	24,32,39,41	0
3	HEM	C	605	43/43	0.95	0.09	29,33,38,40	0
3	HEM	D	605	43/43	0.96	0.09	32,35,44,47	0
3	HEM	B	605	43/43	0.97	0.07	31,32,38,41	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.

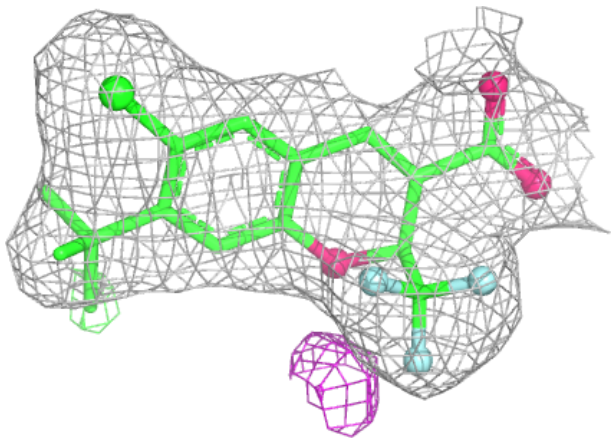
Electron density around 416 A 701:

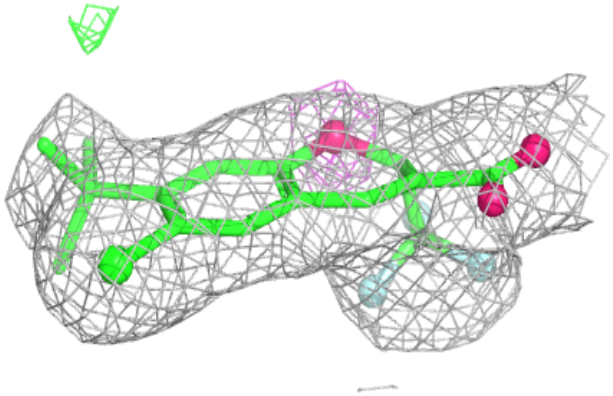
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

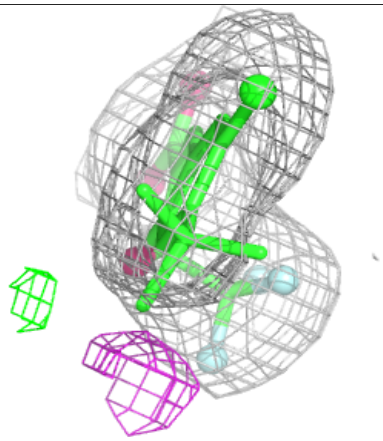


Electron density around 416 C 701:

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

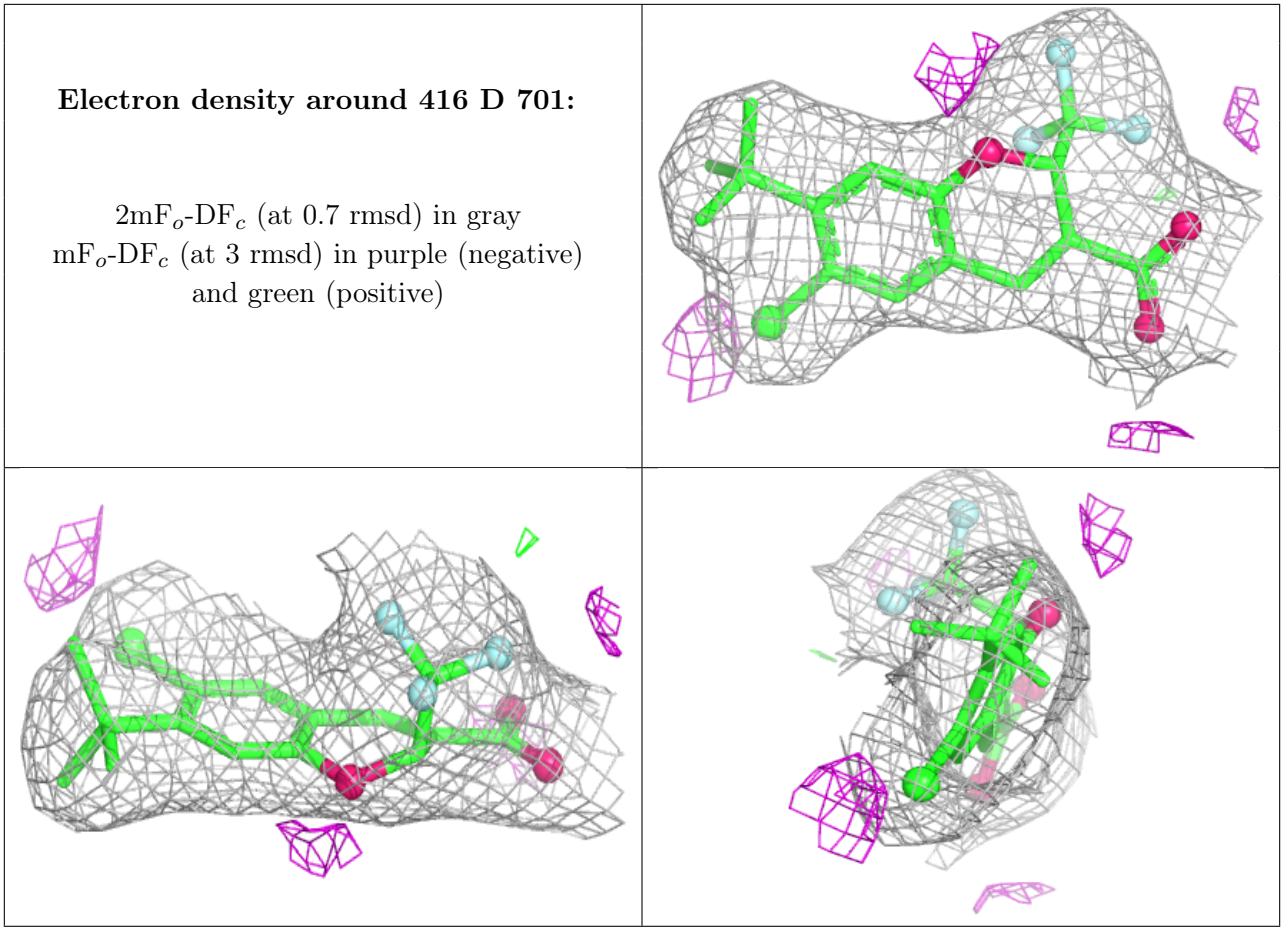






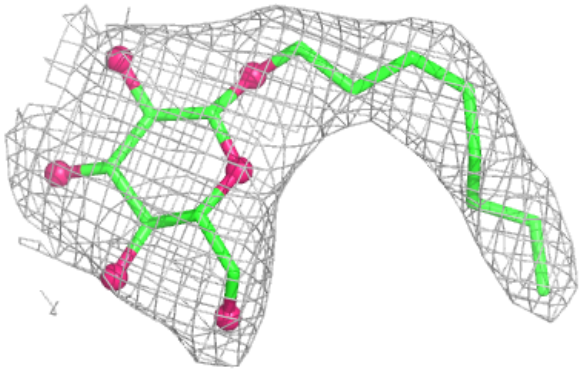
Electron density around 416 D 701:

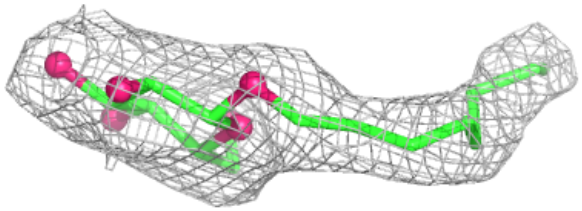
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

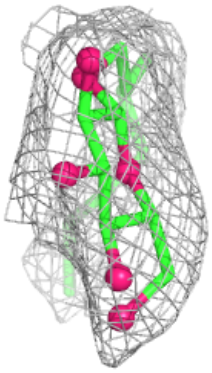


Electron density around BOG C 703:

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

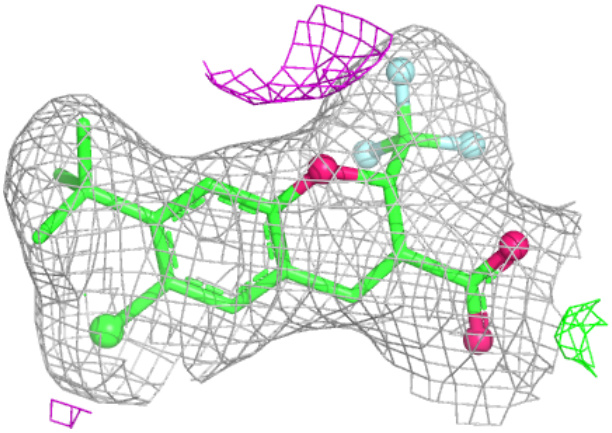


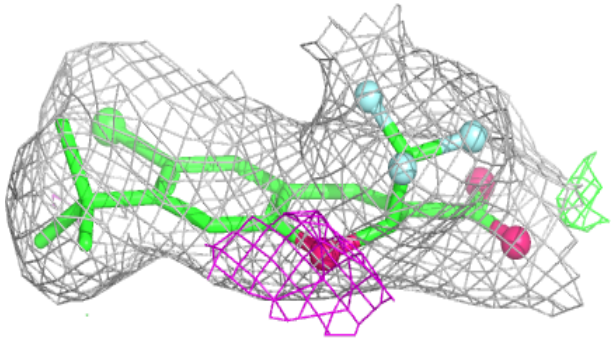


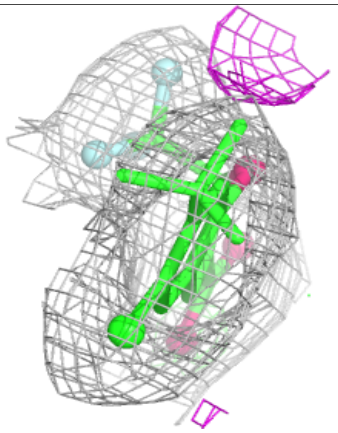


Electron density around 416 B 701:

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

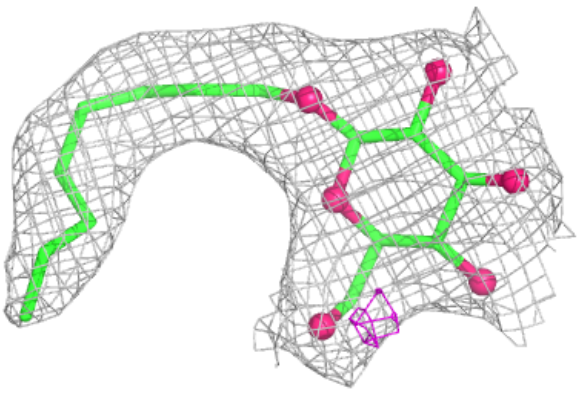


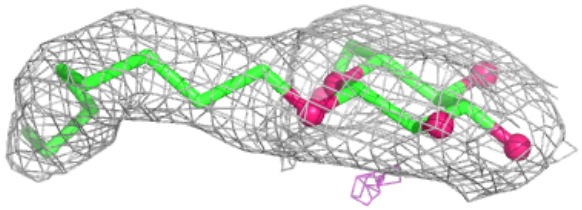


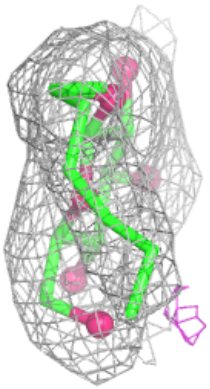


Electron density around BOG A 704:

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

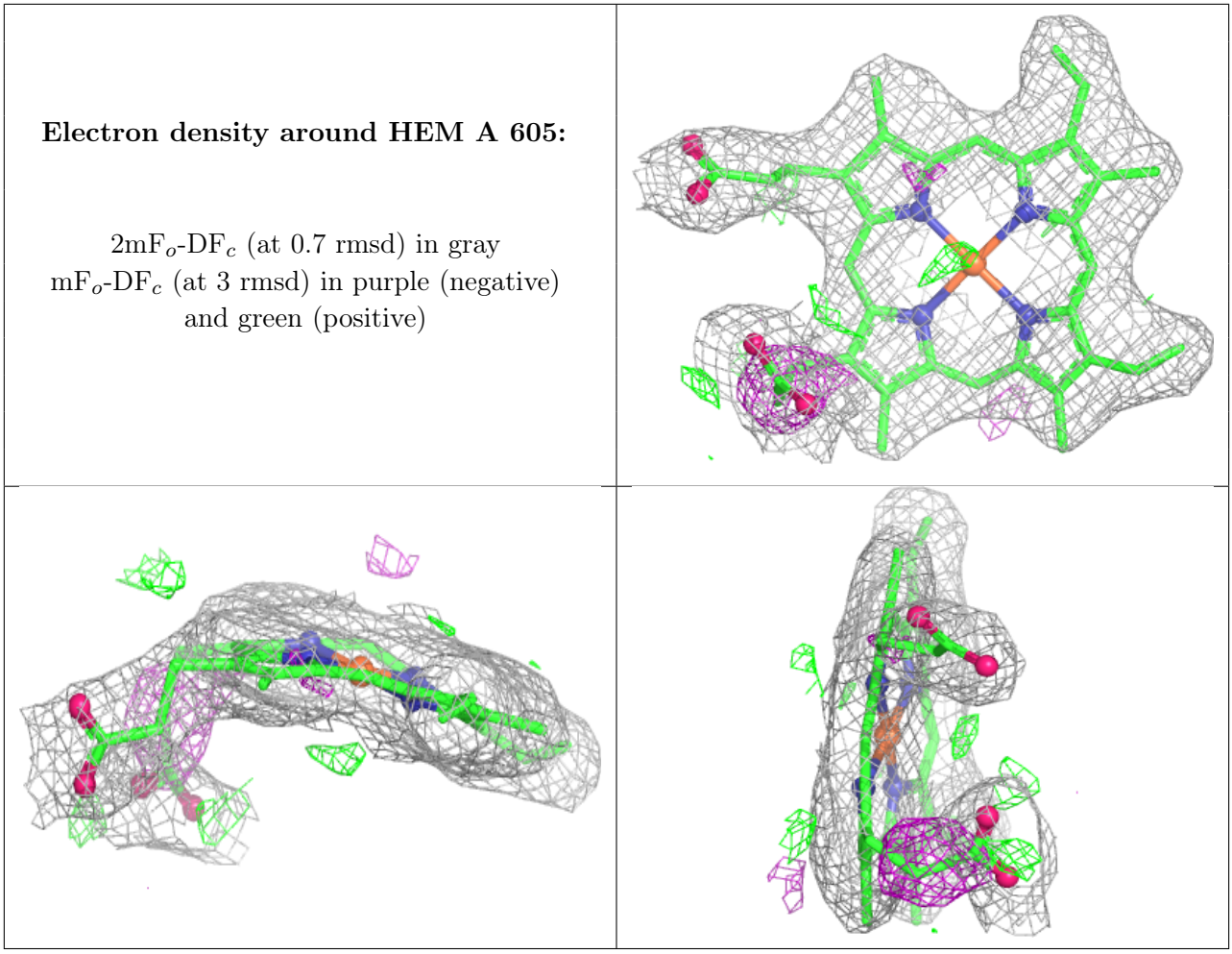






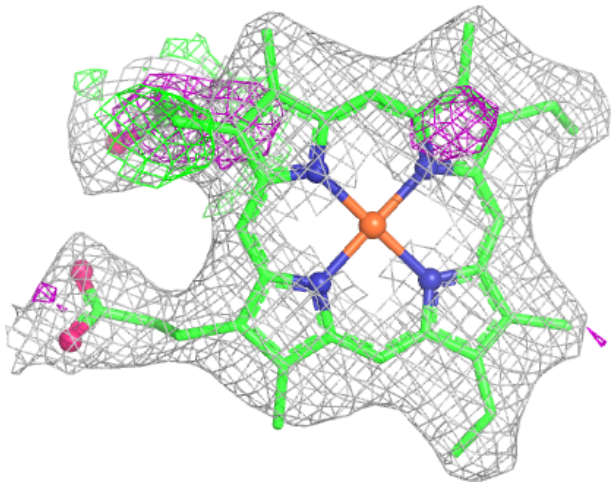
Electron density around HEM A 605:

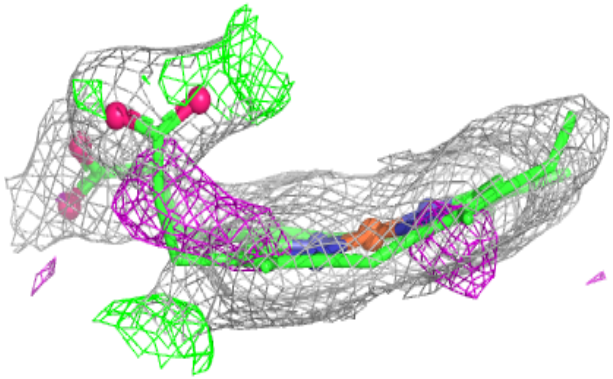
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

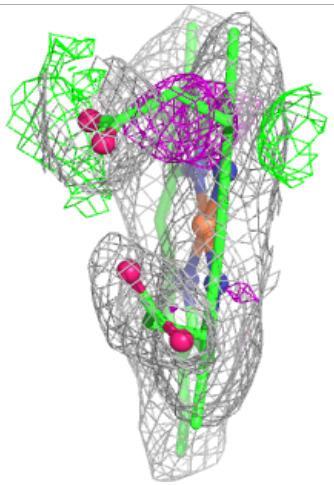


Electron density around HEM C 605:

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

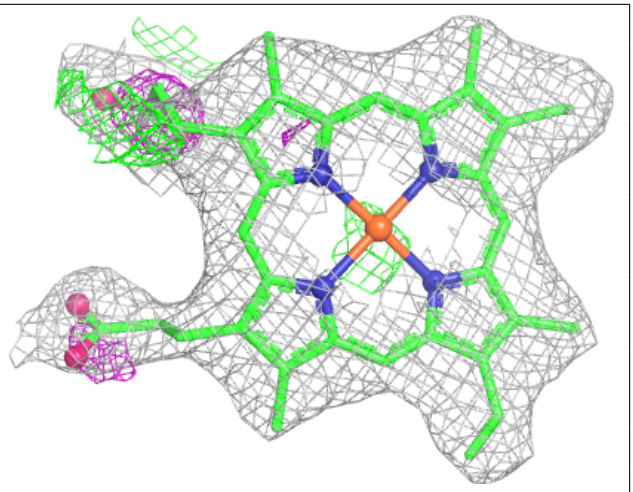


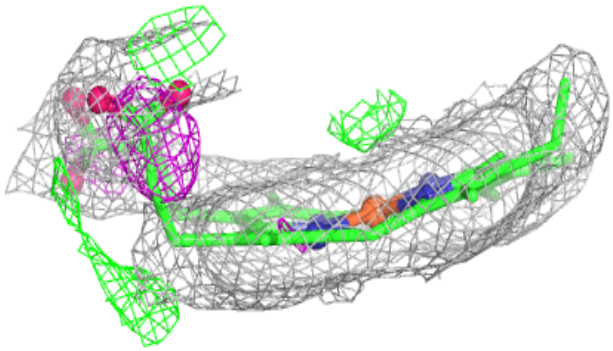




Electron density around HEM D 605:

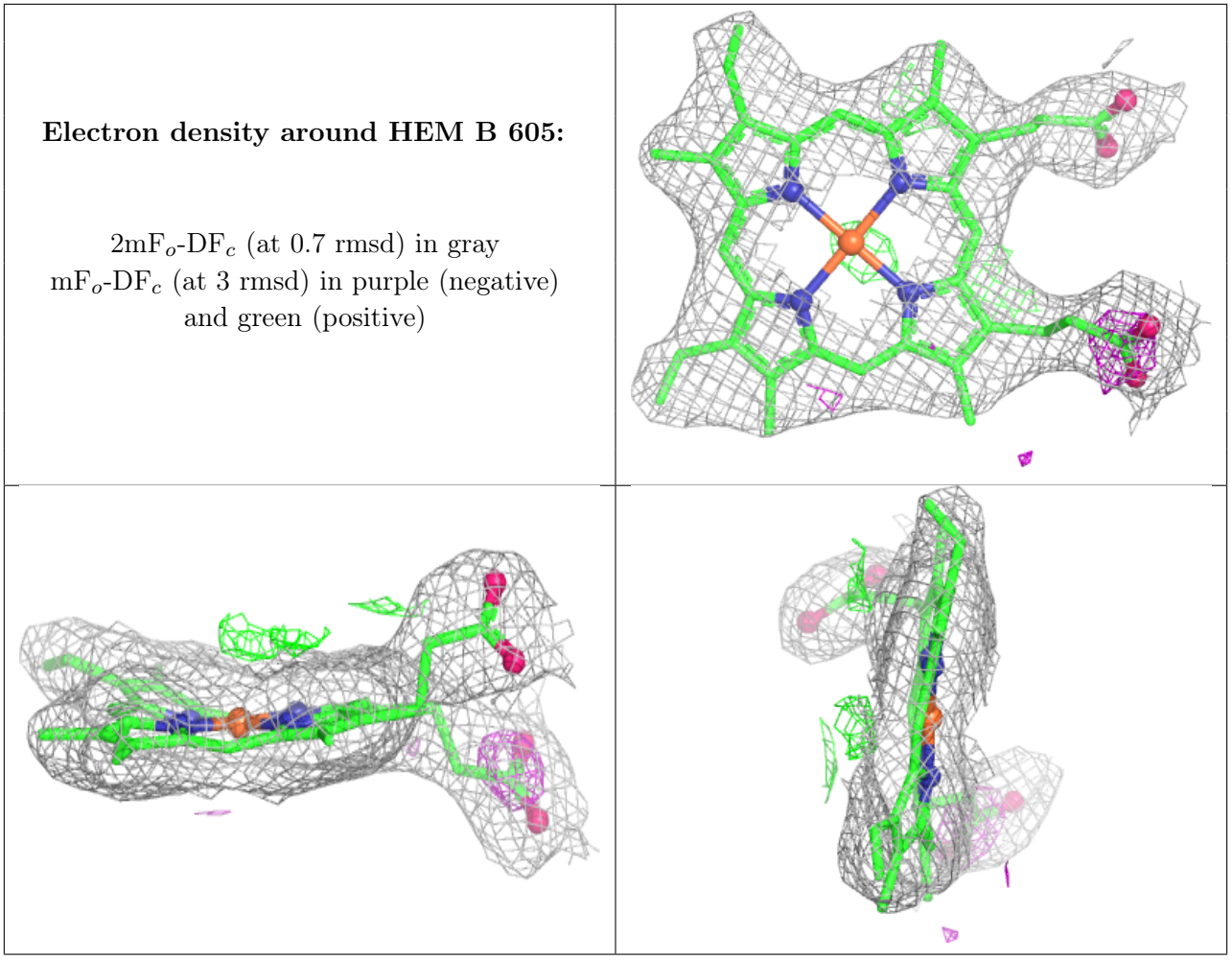
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)





Electron density around HEM B 605:

$2mF_o$-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.