Full wwPDB X-ray Structure Validation Report ⓘ

Nov 18, 2025 – 12:01 PM EST

PDB ID	:	9MWB / pdb_00009mwb
Title	:	Structure of human neuronal nitric oxide synthase R354A/G357D mutant heme domain bound with N-(4-(2-((3-(furan-2-carboximidamido)benzyl) amino)ethyl)phenyl)furan-2-carboximidamide
Authors	:	Li, H.; Poulos, T.L.
Deposited on	:	2025-01-17
Resolution	:	1.99 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:

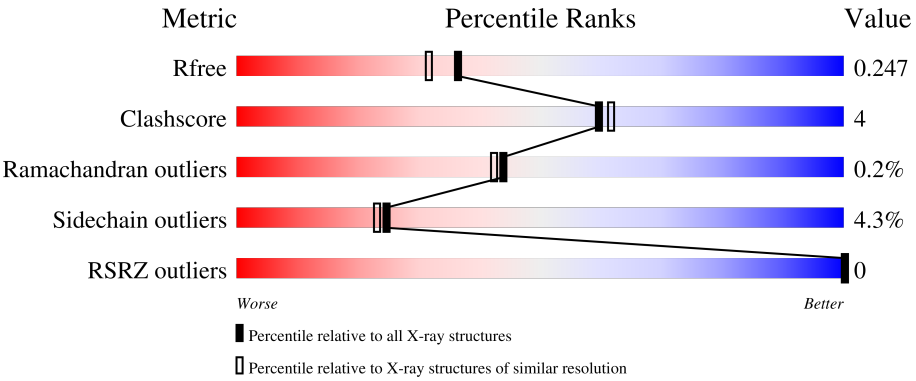
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.46

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 1.99 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	9409 (2.00-2.00)
Clashscore	180529	10737 (2.00-2.00)
Ramachandran outliers	177936	10628 (2.00-2.00)
Sidechain outliers	177891	10627 (2.00-2.00)
RSRZ outliers	164620	9409 (2.00-2.00)

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	423	88% 9% • •
1	B	423	84% 14% ••
1	C	423	89% 10% ••
1	D	423	84% 13% • •

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 15012 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.

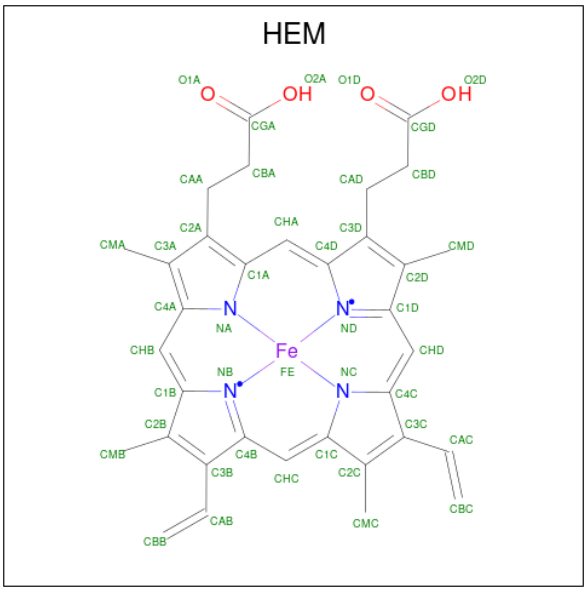
- Molecule 1 is a protein called Nitric oxide synthase, brain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	415	Total	C	N	O	S	0	4	0
			3398	2177	579	620	22			
1	B	419	Total	C	N	O	S	0	3	0
			3431	2194	589	627	21			
1	C	420	Total	C	N	O	S	0	4	0
			3441	2200	591	628	22			
1	D	414	Total	C	N	O	S	0	2	0
			3379	2164	575	619	21			

There are 16 discrepancies between the modelled and reference sequences:

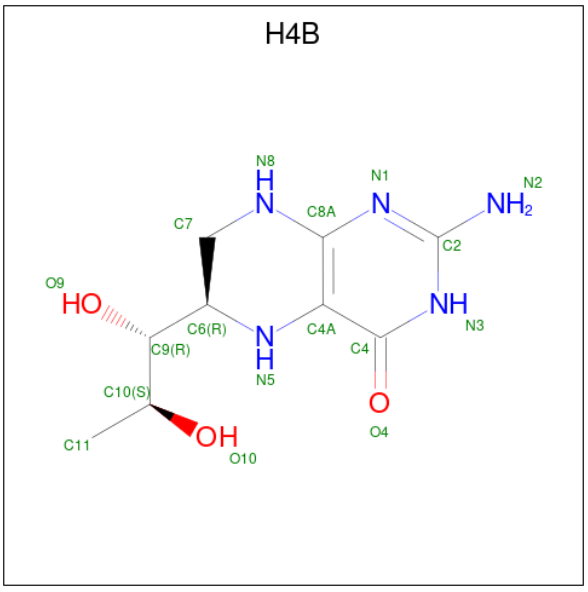
Chain	Residue	Modelled	Actual	Comment	Reference
A	354	ALA	ARG	engineered mutation	UNP P29475
A	357	ASP	GLY	engineered mutation	UNP P29475
A	723	LEU	-	expression tag	UNP P29475
A	724	VAL	-	expression tag	UNP P29475
B	354	ALA	ARG	engineered mutation	UNP P29475
B	357	ASP	GLY	engineered mutation	UNP P29475
B	723	LEU	-	expression tag	UNP P29475
B	724	VAL	-	expression tag	UNP P29475
C	354	ALA	ARG	engineered mutation	UNP P29475
C	357	ASP	GLY	engineered mutation	UNP P29475
C	723	LEU	-	expression tag	UNP P29475
C	724	VAL	-	expression tag	UNP P29475
D	354	ALA	ARG	engineered mutation	UNP P29475
D	357	ASP	GLY	engineered mutation	UNP P29475
D	723	LEU	-	expression tag	UNP P29475
D	724	VAL	-	expression tag	UNP P29475

- Molecule 2 is PROTOPORPHYRIN IX CONTAINING FE (CCD ID: HEM) (formula: $C_{34}H_{32}FeN_4O_4$).



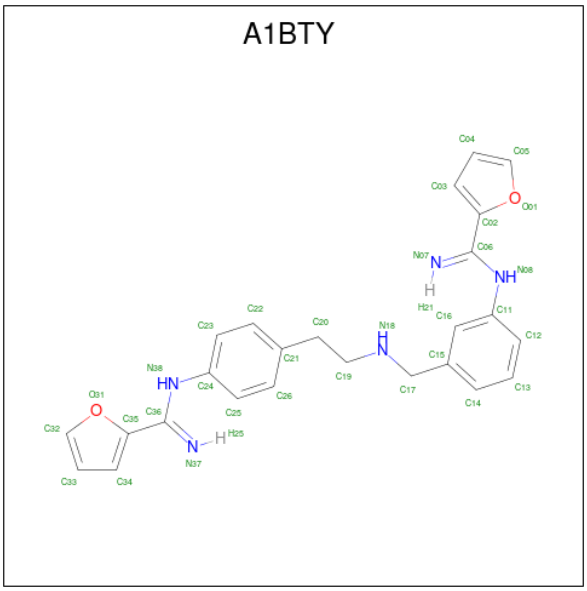
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	C	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	D	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		

- Molecule 3 is 5,6,7,8-TETRAHYDROBIOPTERIN (CCD ID: H4B) (formula: $C_9H_{15}N_5O_3$).



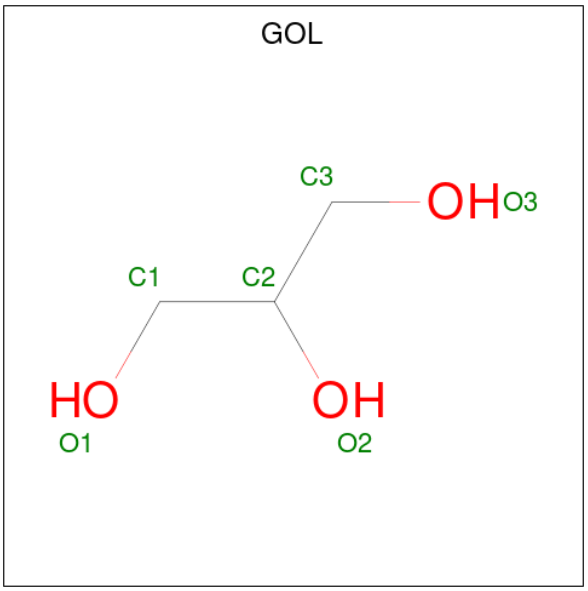
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C N O 17 9 5 3	0	0
3	B	1	Total C N O 17 9 5 3	0	0
3	C	1	Total C N O 17 9 5 3	0	0
3	D	1	Total C N O 17 9 5 3	0	0

- Molecule 4 is N-[3-({[2-(4-{[(E)-(furan-2-yl)(imino)methyl]amino}phenyl)ethyl]amino}methyl)phenyl]furan-2-carboximidamide (CCD ID: A1BTY) (formula: $C_{25}H_{25}N_5O_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C N O 32 25 5 2	0	0
4	B	1	Total C N O 32 25 5 2	0	0
4	C	1	Total C N O 32 25 5 2	0	0
4	D	1	Total C N O 32 25 5 2	0	0

- Molecule 5 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



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

- Molecule 6 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	B	1	Total Zn 1 1	0	0
6	C	1	Total Zn 1 1	0	0

- Molecule 7 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	260	Total O 260 260	0	0

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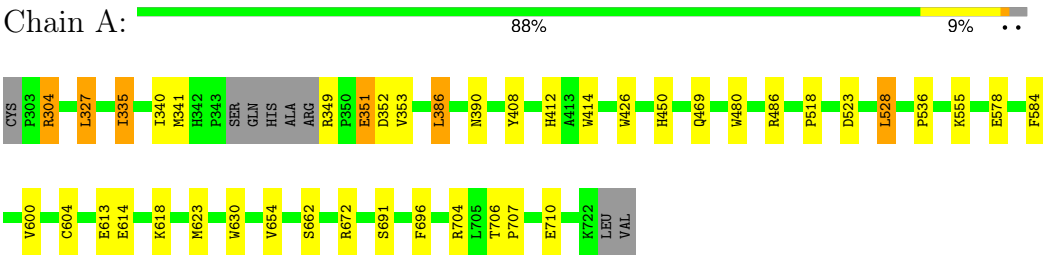
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	B	191	Total O 191 191	0	0
7	C	238	Total O 238 238	0	0
7	D	268	Total O 268 268	0	0

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.

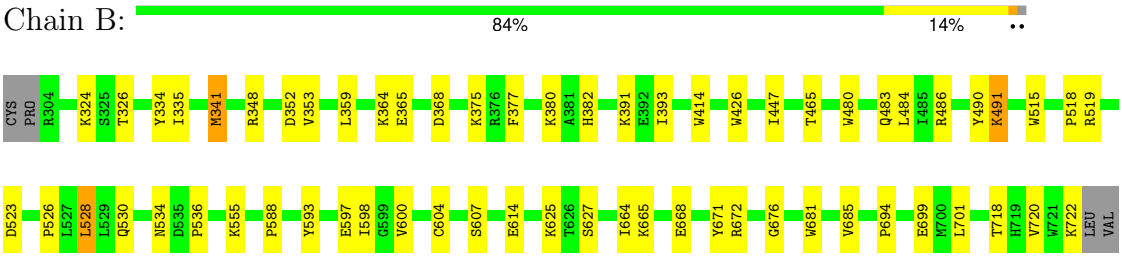
• Molecule 1: Nitric oxide synthase, brain

Chain A:



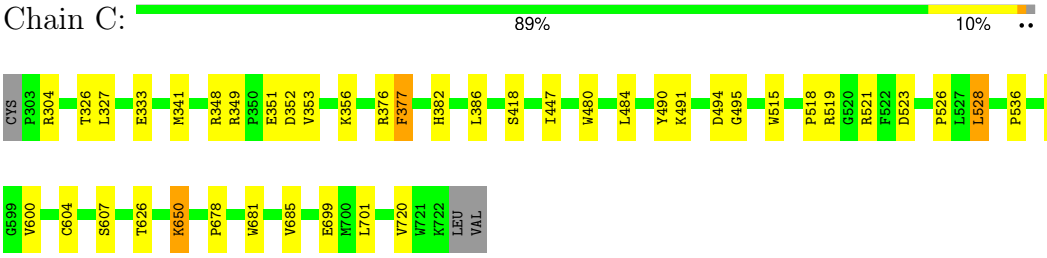
• Molecule 1: Nitric oxide synthase, brain

Chain B:



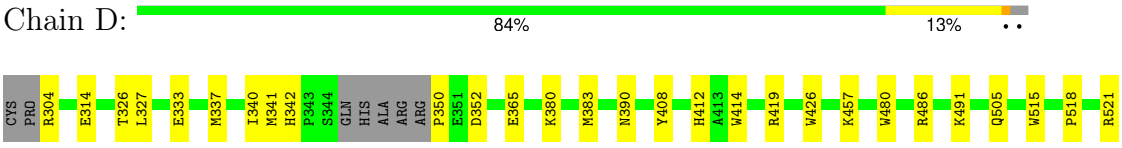
• Molecule 1: Nitric oxide synthase, brain

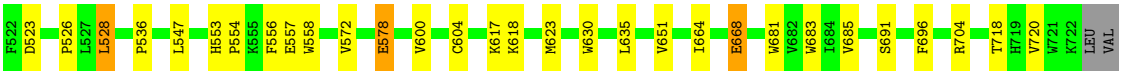
Chain C:



• Molecule 1: Nitric oxide synthase, brain

Chain D:




F522
D523
P526
L527
L528
P536
L547
H553
P554
K555
F556
E557
W558
V572
E578
V600
C604
K617
K618
M623
W630
L635
V651
I664
E668
W681
V682
W683
I684
V685
S691
F696
R704
T718
H719
V720
W721
K722
LEU
VAL

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	118.48Å 52.26Å 165.05Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.82 – 1.99 49.82 – 1.99	Depositor EDS
% Data completeness (in resolution range)	99.1 (49.82-1.99) 99.2 (49.82-1.99)	Depositor EDS
R_{merge}	0.27	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.05 (at 2.00Å)	Xtriage
Refinement program	PHENIX (1.11.1_2575: ???)	Depositor
R, R_{free}	0.201 , 0.254 0.195 , 0.247	Depositor DCC
R_{free} test set	6922 reflections (4.98%)	wwPDB-VP
Wilson B-factor (Å^2)	30.4	Xtriage
Anisotropy	0.882	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 31.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.457 for h,-k,-l	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	15012	wwPDB-VP
Average B, all atoms (Å^2)	43.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.94% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, GOL, H4B, A1BTY, HEM

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	0.31	0/3507	0.52	0/4760
1	B	0.29	0/3538	0.49	0/4801
1	C	0.30	0/3549	0.50	0/4816
1	D	0.32	0/3481	0.52	0/4723
All	All	0.31	0/14075	0.51	0/19100

There are no bond length outliers.

There are no bond angle outliers.

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	3398	0	3316	32	0
1	B	3431	0	3341	28	0
1	C	3441	0	3352	22	0
1	D	3379	0	3289	27	0
2	A	43	0	30	2	0
2	B	43	0	30	2	0
2	C	43	0	30	2	0
2	D	43	0	30	3	0
3	A	17	0	15	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	17	0	15	0	0
3	C	17	0	15	0	0
3	D	17	0	15	1	0
4	A	32	0	0	1	0
4	B	32	0	0	2	0
4	C	32	0	0	2	0
4	D	32	0	0	1	0
5	A	12	0	16	0	0
5	B	6	0	8	0	0
5	C	12	0	16	0	0
5	D	6	0	8	0	0
6	B	1	0	0	0	0
6	C	1	0	0	0	0
7	A	260	0	0	5	0
7	B	191	0	0	1	0
7	C	238	0	0	5	0
7	D	268	0	0	2	0
All	All	15012	0	13526	116	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 4.

All (116) 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:A:613:GLU:HG3	1:A:623:MET:HE1	1.60	0.83
1:B:528:LEU:HD22	1:B:536:PRO:HB2	1.64	0.79
1:B:348:ARG:NH2	7:B:901:HOH:O	2.17	0.78
1:D:528:LEU:HD22	1:D:536:PRO:HB2	1.67	0.76
1:D:337:MET:HE2	1:D:340:ILE:HG13	1.66	0.76
2:D:801:HEM:HBB2	2:D:801:HEM:HHC	1.72	0.72
1:A:528:LEU:HD22	1:A:536:PRO:HB2	1.70	0.71
1:A:327:LEU:HD21	1:A:706[B]:THR:HG23	1.74	0.68
1:D:341:MET:HE2	3:D:802:H4B:H9	1.74	0.68
1:A:341:MET:HE2	3:A:802:H4B:H9	1.76	0.67
1:C:528:LEU:HD22	1:C:536:PRO:HB2	1.75	0.67
2:B:802:HEM:HHC	2:B:802:HEM:HBB2	1.78	0.66
1:B:664:ILE:O	1:B:668[B]:GLU:HG2	1.96	0.66
1:C:376:ARG:O	7:C:901:HOH:O	2.14	0.65
2:C:801:HEM:HBC2	2:C:801:HEM:HMC2	1.79	0.65
2:A:801:HEM:HMC2	2:A:801:HEM:HBC2	1.79	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:801:HEM:HBB2	2:A:801:HEM:HHC	1.82	0.61
1:A:480:TRP:HB2	1:A:528:LEU:HB3	1.82	0.61
2:C:801:HEM:HHC	2:C:801:HEM:HBB2	1.83	0.60
2:D:801:HEM:HBC2	2:D:801:HEM:HMC2	1.82	0.60
1:A:335:ILE:HD11	1:B:701:LEU:HD22	1.82	0.59
1:D:521:ARG:NH1	7:D:905:HOH:O	2.28	0.59
1:D:664:ILE:O	1:D:668:GLU:HG2	2.02	0.59
1:D:578:GLU:OE1	7:D:901:HOH:O	2.17	0.59
1:A:518:PRO:HG2	1:A:523:ASP:CG	2.29	0.57
2:B:802:HEM:HMC2	2:B:802:HEM:HBC2	1.86	0.57
1:C:626:THR:HG22	7:C:1113:HOH:O	2.03	0.57
1:C:348:ARG:NH2	7:C:902:HOH:O	2.35	0.56
1:B:490:TYR:CE1	1:B:519:ARG:HA	2.41	0.56
1:C:521:ARG:NH1	7:C:905:HOH:O	2.40	0.54
1:D:327:LEU:HD12	1:D:704:ARG:HG2	1.89	0.54
1:B:483:GLN:HB2	1:B:486:ARG:HG3	1.89	0.54
1:D:414:TRP:CE3	1:D:426:TRP:HA	2.43	0.54
1:C:519:ARG:HD3	7:C:978:HOH:O	2.08	0.54
1:D:480:TRP:HB2	1:D:528:LEU:HB3	1.88	0.53
1:B:518:PRO:HG2	1:B:523:ASP:CG	2.34	0.52
1:A:349:ARG:HG2	1:A:351:GLU:H	1.73	0.52
1:B:668[A]:GLU:OE2	1:B:672:ARG:NH2	2.39	0.52
1:C:701:LEU:HD21	1:D:337:MET:HE3	1.91	0.52
1:B:480:TRP:HB2	1:B:528:LEU:HB3	1.92	0.52
1:A:704:ARG:NH2	1:A:710:GLU:OE2	2.42	0.51
1:D:518:PRO:HG2	1:D:523:ASP:CG	2.35	0.51
1:B:364:LYS:NZ	1:B:368:ASP:OD2	2.41	0.51
1:C:600:VAL:O	1:C:604:CYS:HB2	2.11	0.51
1:C:377:PHE:HA	1:C:382:HIS:ND1	2.25	0.50
1:A:327:LEU:HD23	1:A:327:LEU:N	2.25	0.50
1:A:390:ASN:ND2	7:A:907:HOH:O	2.43	0.50
1:C:480:TRP:HB2	1:C:528:LEU:HB3	1.93	0.50
1:C:447:ILE:HG23	1:C:484:LEU:HD13	1.93	0.50
1:B:334:TYR:C	1:B:335:ILE:HG13	2.37	0.49
1:B:597:GLU:OE1	4:B:804:A1BTY:N08	2.46	0.49
1:A:351:GLU:O	1:A:353:VAL:N	2.46	0.49
1:B:671:TYR:CE2	1:B:676:GLY:HA2	2.47	0.48
1:A:414:TRP:CE3	1:A:426:TRP:HA	2.49	0.47
1:D:515:TRP:CE2	1:D:526:PRO:HD3	2.50	0.47
1:B:600:VAL:O	1:B:604:CYS:HB2	2.14	0.47
1:D:681:TRP:CE2	1:D:685:VAL:HG21	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:419:ARG:HD3	1:D:683:TRP:CD2	2.50	0.46
1:D:547:LEU:HD21	1:D:651:VAL:HG22	1.97	0.46
1:A:600:VAL:O	1:A:604:CYS:HB2	2.16	0.46
1:D:553:HIS:CG	1:D:554:PRO:HD2	2.51	0.46
1:D:623:MET:HE3	1:D:630:TRP:CZ3	2.51	0.46
1:B:530:GLN:HG3	1:B:534:ASN:O	2.15	0.45
1:C:699:GLU:HB3	1:D:340:ILE:HD13	1.98	0.45
1:A:486:ARG:NE	7:A:901:HOH:O	2.12	0.45
1:B:465:THR:O	1:B:588:PRO:HD2	2.17	0.45
1:C:341:MET:HE3	1:C:341:MET:HB2	1.73	0.45
1:C:597:GLU:OE1	4:C:803:A1BTY:N08	2.50	0.45
1:B:377:PHE:HA	1:B:382:HIS:ND1	2.32	0.45
1:A:304:ARG:CZ	1:A:304:ARG:HB3	2.46	0.45
1:C:490:TYR:CE1	1:C:519:ARG:HA	2.52	0.44
1:C:593:TYR:CD1	1:C:598:ILE:HD11	2.52	0.44
1:A:623:MET:HA	1:A:630:TRP:CD1	2.53	0.44
1:B:491:LYS:HA	1:B:491:LYS:HD2	1.66	0.44
1:D:691:SER:HA	1:D:696:PHE:CG	2.53	0.43
1:A:578:GLU:OE1	7:A:902:HOH:O	2.21	0.43
1:D:600:VAL:O	1:D:604:CYS:HB2	2.18	0.43
1:C:518:PRO:HG2	1:C:523:ASP:CG	2.44	0.43
4:B:804:A1BTY:C02	4:B:804:A1BTY:C12	2.97	0.43
1:B:341:MET:HE3	1:B:341:MET:HB2	1.66	0.43
1:B:447:ILE:HG23	1:B:484:LEU:HD13	1.99	0.43
1:C:650:LYS:HE3	1:C:650:LYS:HB2	1.90	0.43
1:A:706[A]:THR:HA	1:A:707:PRO:C	2.44	0.43
1:D:350:PRO:C	1:D:352:ASP:H	2.27	0.43
1:A:594:MET:HA	1:A:654:VAL:O	2.19	0.43
1:B:593:TYR:CD1	1:B:598:ILE:HD11	2.54	0.43
1:D:556:PHE:HB3	1:D:558:TRP:CE2	2.54	0.43
1:D:572:VAL:HG23	4:D:803:A1BTY:C03	2.49	0.42
1:A:327:LEU:HD23	1:A:327:LEU:H	1.84	0.42
1:A:340:ILE:HD13	1:B:699:GLU:HB3	2.01	0.42
1:B:515:TRP:CE2	1:B:526:PRO:HD3	2.54	0.42
1:C:494:ASP:OD2	1:C:495:GLY:N	2.52	0.42
1:D:408:TYR:CE1	1:D:412:HIS:CE1	3.07	0.42
1:A:597:GLU:OE1	4:A:803:A1BTY:N08	2.53	0.42
1:A:662:SER:HB2	7:A:1051:HOH:O	2.18	0.42
1:A:704:ARG:CZ	1:A:704:ARG:HB3	2.50	0.42
1:B:668[B]:GLU:HG2	1:B:668[B]:GLU:H	1.71	0.42
1:C:681:TRP:CZ2	1:C:685:VAL:HG21	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:801:HEM:HHC	2:D:801:HEM:CBB	2.44	0.42
1:A:486:ARG:HG3	7:A:994:HOH:O	2.19	0.42
1:C:418[B]:SER:OG	1:C:678:PRO:HB2	2.20	0.42
1:D:681:TRP:CZ2	1:D:685:VAL:HG21	2.54	0.42
1:A:386:LEU:HD13	1:A:386:LEU:HA	1.78	0.41
4:C:803:A1BTY:C02	4:C:803:A1BTY:C12	2.96	0.41
1:A:528:LEU:HD23	1:A:528:LEU:HA	1.89	0.41
1:B:359:LEU:HD23	1:B:393:ILE:HG12	2.02	0.41
1:A:450:HIS:C	1:A:450:HIS:CD2	2.97	0.41
1:B:414:TRP:CE3	1:B:426:TRP:HA	2.55	0.41
1:D:558:TRP:CE3	1:D:618:LYS:HD3	2.55	0.41
1:A:408:TYR:CE1	1:A:412:HIS:CE1	3.08	0.41
1:A:691:SER:HA	1:A:696:PHE:CG	2.56	0.41
1:B:681:TRP:CZ2	1:B:685:VAL:HG21	2.56	0.41
1:A:469:GLN:HB3	1:A:584:PHE:CE2	2.56	0.40
1:B:664:ILE:HG13	1:B:694:PRO:HB2	2.03	0.40
1:C:515:TRP:CD1	1:C:526:PRO:HG3	2.56	0.40
1:D:600:VAL:HA	1:D:635:LEU:HD11	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	415/423 (98%)	407 (98%)	7 (2%)	1 (0%)	44 42
1	B	420/423 (99%)	406 (97%)	14 (3%)	0	100 100
1	C	422/423 (100%)	405 (96%)	15 (4%)	2 (0%)	25 21
1	D	412/423 (97%)	400 (97%)	12 (3%)	0	100 100
All	All	1669/1692 (99%)	1618 (97%)	48 (3%)	3 (0%)	44 42

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	352	ASP
1	C	351	GLU
1	C	377	PHE

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	375/378 (99%)	365 (97%)	10 (3%)	40	42
1	B	377/378 (100%)	357 (95%)	20 (5%)	19	16
1	C	379/378 (100%)	365 (96%)	14 (4%)	29	29
1	D	372/378 (98%)	352 (95%)	20 (5%)	18	16
All	All	1503/1512 (99%)	1439 (96%)	64 (4%)	25	23

All (64) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	304	ARG
1	A	327	LEU
1	A	335	ILE
1	A	351	GLU
1	A	386	LEU
1	A	528	LEU
1	A	555	LYS
1	A	614	GLU
1	A	618	LYS
1	A	672	ARG
1	B	324	LYS
1	B	326	THR
1	B	341	MET
1	B	352	ASP
1	B	353	VAL
1	B	365	GLU
1	B	375	LYS
1	B	380	LYS
1	B	391	LYS

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Mol	Chain	Res	Type
1	B	491	LYS
1	B	528	LEU
1	B	555	LYS
1	B	607	SER
1	B	614	GLU
1	B	625	LYS
1	B	627	SER
1	B	665	LYS
1	B	718	THR
1	B	720	VAL
1	B	722	LYS
1	C	304	ARG
1	C	326	THR
1	C	327	LEU
1	C	333	GLU
1	C	349	ARG
1	C	352	ASP
1	C	353	VAL
1	C	356	LYS
1	C	386	LEU
1	C	491	LYS
1	C	528	LEU
1	C	607	SER
1	C	650	LYS
1	C	720	VAL
1	D	304	ARG
1	D	314	GLU
1	D	326	THR
1	D	333	GLU
1	D	342	HIS
1	D	365	GLU
1	D	380	LYS
1	D	383	MET
1	D	390	ASN
1	D	457	LYS
1	D	486	ARG
1	D	491	LYS
1	D	505	GLN
1	D	528	LEU
1	D	557	GLU
1	D	578	GLU
1	D	617	LYS

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Mol	Chain	Res	Type
1	D	668	GLU
1	D	718	THR
1	D	720	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	430	GLN
1	A	540	GLN
1	B	369	GLN
1	B	430	GLN
1	B	513	GLN
1	B	669	ASN
1	C	342	HIS
1	C	369	GLN
1	D	669	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)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 20 ligands modelled in this entry, 2 are monoatomic - leaving 18 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	A1BTY	D	803	-	27,35,35	0.94	1 (3%)	27,46,46	1.18	2 (7%)
5	GOL	A	804	-	5,5,5	0.38	0	5,5,5	0.26	0
2	HEM	B	802	1	42,50,50	1.52	4 (9%)	46,82,82	1.68	11 (23%)
5	GOL	A	805	-	5,5,5	0.25	0	5,5,5	0.72	0
5	GOL	C	804	-	5,5,5	0.36	0	5,5,5	0.39	0
5	GOL	D	804	-	5,5,5	0.38	0	5,5,5	0.26	0
4	A1BTY	A	803	-	27,35,35	0.95	3 (11%)	27,46,46	1.03	1 (3%)
2	HEM	C	801	1	42,50,50	1.53	5 (11%)	46,82,82	1.56	6 (13%)
4	A1BTY	C	803	-	27,35,35	1.07	4 (14%)	27,46,46	1.47	5 (18%)
4	A1BTY	B	804	-	27,35,35	1.00	4 (14%)	27,46,46	1.36	3 (11%)
5	GOL	C	805	-	5,5,5	0.26	0	5,5,5	0.72	0
3	H4B	D	802	-	16,18,18	0.72	0	14,26,26	2.40	5 (35%)
3	H4B	A	802	-	16,18,18	0.77	0	14,26,26	2.31	6 (42%)
2	HEM	D	801	1	42,50,50	1.46	5 (11%)	46,82,82	1.64	8 (17%)
3	H4B	B	803	-	16,18,18	0.86	0	14,26,26	2.49	7 (50%)
2	HEM	A	801	1	42,50,50	1.50	5 (11%)	46,82,82	1.56	5 (10%)
5	GOL	B	805	-	5,5,5	0.33	0	5,5,5	0.34	0
3	H4B	C	802	-	16,18,18	0.83	0	14,26,26	2.23	6 (42%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	A1BTY	D	803	-	-	2/15/23/23	0/4/4/4
5	GOL	A	804	-	-	2/4/4/4	-
2	HEM	B	802	1	-	0/12/54/54	-
5	GOL	A	805	-	-	2/4/4/4	-
5	GOL	C	804	-	-	2/4/4/4	-
5	GOL	D	804	-	-	2/4/4/4	-
4	A1BTY	A	803	-	-	2/15/23/23	0/4/4/4
2	HEM	C	801	1	-	0/12/54/54	-
4	A1BTY	C	803	-	-	5/15/23/23	0/4/4/4
4	A1BTY	B	804	-	-	2/15/23/23	0/4/4/4
5	GOL	C	805	-	-	2/4/4/4	-
3	H4B	D	802	-	-	0/8/17/17	0/2/2/2
3	H4B	A	802	-	-	0/8/17/17	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	HEM	D	801	1	-	1/12/54/54	-
3	H4B	B	803	-	-	0/8/17/17	0/2/2/2
2	HEM	A	801	1	-	0/12/54/54	-
5	GOL	B	805	-	-	4/4/4/4	-
3	H4B	C	802	-	-	0/8/17/17	0/2/2/2

All (31) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	801	HEM	C3C-C4C	3.87	1.47	1.41
2	B	802	HEM	C3C-C2C	-3.83	1.35	1.40
2	A	801	HEM	C3C-C2C	-3.79	1.35	1.40
2	C	801	HEM	C3C-C2C	-3.79	1.35	1.40
2	D	801	HEM	C3C-C2C	-3.60	1.35	1.40
2	D	801	HEM	C3C-C4C	3.39	1.46	1.41
2	A	801	HEM	C3C-CAC	3.35	1.55	1.47
2	A	801	HEM	C3C-C4C	3.28	1.46	1.41
2	B	802	HEM	C3C-CAC	3.24	1.54	1.47
2	C	801	HEM	C3C-CAC	3.17	1.54	1.47
2	B	802	HEM	CAB-C3B	3.06	1.55	1.47
2	D	801	HEM	C3C-CAC	3.05	1.54	1.47
2	D	801	HEM	CAB-C3B	2.97	1.55	1.47
2	C	801	HEM	CAB-C3B	2.91	1.55	1.47
2	A	801	HEM	CAB-C3B	2.86	1.55	1.47
4	C	803	A1BTY	C06-N08	-2.80	1.33	1.38
4	C	803	A1BTY	C24-N38	-2.79	1.36	1.41
2	B	802	HEM	C3C-C4C	2.78	1.45	1.41
4	B	804	A1BTY	C11-N08	-2.37	1.36	1.41
4	A	803	A1BTY	C06-N08	-2.35	1.34	1.38
4	B	804	A1BTY	C24-N38	-2.35	1.36	1.41
2	A	801	HEM	CMD-C2D	2.32	1.55	1.50
4	C	803	A1BTY	C11-N08	-2.27	1.37	1.41
2	D	801	HEM	C3B-C2B	-2.25	1.32	1.37
4	B	804	A1BTY	C06-N08	-2.21	1.34	1.38
2	C	801	HEM	CMB-C2B	2.15	1.55	1.50
4	B	804	A1BTY	C03-C02	-2.12	1.36	1.38
4	A	803	A1BTY	C11-N08	-2.11	1.37	1.41
4	C	803	A1BTY	C36-N38	-2.10	1.34	1.38
4	D	803	A1BTY	C24-N38	-2.02	1.37	1.41
4	A	803	A1BTY	C24-N38	-2.00	1.37	1.41

All (65) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	D	802	H4B	C8A-C4A-C4	5.26	119.28	114.50
2	A	801	HEM	CBA-CAA-C2A	-5.10	103.97	112.54
3	C	802	H4B	C8A-C4A-C4	5.04	119.09	114.50
3	A	802	H4B	C8A-C4A-C4	4.99	119.04	114.50
2	B	802	HEM	CBA-CAA-C2A	-4.67	104.68	112.54
2	D	801	HEM	CBA-CAA-C2A	-4.56	104.88	112.54
2	C	801	HEM	CBA-CAA-C2A	-4.46	105.05	112.54
2	D	801	HEM	C4B-CHC-C1C	4.34	128.29	122.56
2	C	801	HEM	C4B-CHC-C1C	4.30	128.23	122.56
3	B	803	H4B	C2-N3-C4	4.24	121.86	115.96
3	B	803	H4B	C8A-C4A-C4	4.16	118.29	114.50
3	D	802	H4B	C2-N3-C4	4.12	121.69	115.96
3	B	803	H4B	N1-C2-N3	-4.10	119.19	125.48
2	A	801	HEM	C4B-CHC-C1C	3.87	127.66	122.56
3	A	802	H4B	C2-N3-C4	3.58	120.94	115.96
4	C	803	A1BTY	C24-N38-C36	-3.57	120.19	128.41
3	A	802	H4B	N1-C2-N3	-3.54	120.05	125.48
3	D	802	H4B	N1-C2-N3	-3.47	120.16	125.48
2	B	802	HEM	C4B-CHC-C1C	3.40	127.04	122.56
3	C	802	H4B	N1-C2-N3	-3.20	120.58	125.48
3	C	802	H4B	C2-N3-C4	3.17	120.37	115.96
2	D	801	HEM	C3B-C2B-C1B	3.14	108.77	106.41
4	D	803	A1BTY	C17-C15-C14	-3.13	114.54	120.94
2	B	802	HEM	CMA-C3A-C4A	-2.84	124.29	128.46
2	B	802	HEM	C3B-C4B-NB	-2.82	107.44	109.47
2	C	801	HEM	CMA-C3A-C4A	-2.82	124.33	128.46
4	B	804	A1BTY	C17-C15-C14	-2.80	115.22	120.94
4	B	804	A1BTY	C24-N38-C36	-2.77	122.03	128.41
4	A	803	A1BTY	C17-C15-C14	-2.66	115.50	120.94
4	C	803	A1BTY	C17-C15-C14	-2.62	115.59	120.94
2	B	802	HEM	C3B-C2B-C1B	2.61	108.37	106.41
3	B	803	H4B	N2-C2-N3	2.57	121.08	117.22
3	B	803	H4B	C2-N1-C8A	2.54	120.63	114.59
2	C	801	HEM	C3B-C4B-NB	-2.54	107.65	109.47
3	A	802	H4B	C2-N1-C8A	2.47	120.46	114.59
3	A	802	H4B	N2-C2-N3	2.36	120.77	117.22
2	D	801	HEM	CMC-C2C-C3C	2.36	129.40	124.68
2	B	802	HEM	C4C-CHD-C1D	2.36	125.67	122.56
2	A	801	HEM	C3B-C2B-C1B	2.36	108.18	106.41
3	B	803	H4B	C4-C4A-N5	2.36	121.94	118.57
2	D	801	HEM	CHC-C4B-NB	2.34	126.96	124.44
4	D	803	A1BTY	C17-C15-C16	2.32	125.57	120.63
2	D	801	HEM	CMA-C3A-C4A	-2.29	125.09	128.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	802	H4B	C2-N1-C8A	2.29	120.04	114.59
2	D	801	HEM	C3D-C4D-ND	-2.29	107.66	110.17
3	B	803	H4B	C11-C10-C9	-2.29	109.32	112.11
2	B	802	HEM	C3D-C4D-ND	-2.25	107.70	110.17
4	C	803	A1BTY	C11-N08-C06	-2.23	123.28	128.41
4	C	803	A1BTY	C19-C20-C21	-2.20	107.87	112.83
2	A	801	HEM	CMA-C3A-C4A	-2.19	125.24	128.46
2	C	801	HEM	CMC-C2C-C3C	2.19	129.06	124.68
3	D	802	H4B	C2-N1-C8A	2.18	119.76	114.59
2	C	801	HEM	CHC-C4B-C3B	2.14	127.84	124.57
2	B	802	HEM	C2C-C3C-C4C	2.12	108.38	106.90
2	D	801	HEM	CAD-CBD-CGD	-2.10	108.08	113.67
4	B	804	A1BTY	C15-C17-N18	-2.10	106.19	112.79
3	C	802	H4B	N2-C2-N3	2.09	120.36	117.22
2	A	801	HEM	CMC-C2C-C3C	2.08	128.85	124.68
3	A	802	H4B	C4-C4A-N5	2.04	121.48	118.57
3	C	802	H4B	C4A-N5-C6	-2.04	115.62	121.16
2	B	802	HEM	C1B-NB-C4B	2.03	107.61	105.21
3	D	802	H4B	C4A-C4-N3	-2.03	118.78	123.91
4	C	803	A1BTY	C15-C17-N18	-2.01	106.48	112.79
2	B	802	HEM	C4D-ND-C1D	2.00	107.58	105.21
2	B	802	HEM	C4A-C3A-C2A	2.00	108.39	107.00

There are no chirality outliers.

All (26) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	C	803	A1BTY	N07-C06-N08-C11
5	A	804	GOL	O1-C1-C2-C3
5	A	805	GOL	O1-C1-C2-C3
5	B	805	GOL	O1-C1-C2-C3
5	B	805	GOL	C1-C2-C3-O3
5	C	804	GOL	C1-C2-C3-O3
5	D	804	GOL	O1-C1-C2-C3
5	C	805	GOL	O1-C1-C2-C3
5	A	804	GOL	O1-C1-C2-O2
5	A	805	GOL	O1-C1-C2-O2
5	B	805	GOL	O1-C1-C2-O2
5	C	804	GOL	O2-C2-C3-O3
5	C	805	GOL	O1-C1-C2-O2
5	B	805	GOL	O2-C2-C3-O3
5	D	804	GOL	O1-C1-C2-O2

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Mol	Chain	Res	Type	Atoms
4	A	803	A1BTY	C19-C20-C21-C26
4	B	804	A1BTY	C19-C20-C21-C26
4	D	803	A1BTY	C19-C20-C21-C26
4	B	804	A1BTY	C19-C20-C21-C22
4	A	803	A1BTY	C19-C20-C21-C22
4	D	803	A1BTY	C19-C20-C21-C22
4	C	803	A1BTY	C23-C24-N38-C36
4	C	803	A1BTY	C19-C20-C21-C26
2	D	801	HEM	C4B-C3B-CAB-CBB
4	C	803	A1BTY	C25-C24-N38-C36
4	C	803	A1BTY	C19-C20-C21-C22

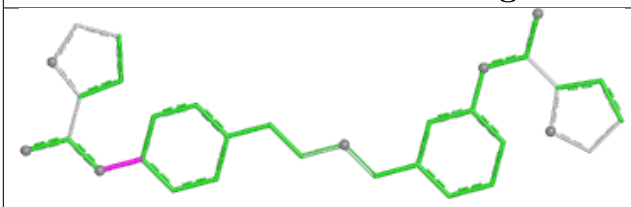
There are no ring outliers.

10 monomers are involved in 17 short contacts:

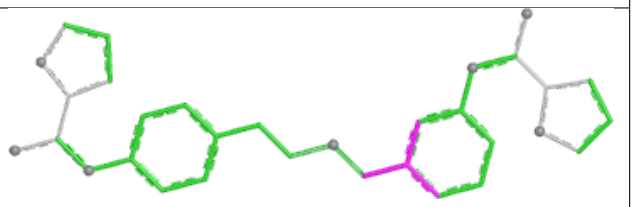
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	D	803	A1BTY	1	0
2	B	802	HEM	2	0
4	A	803	A1BTY	1	0
2	C	801	HEM	2	0
4	C	803	A1BTY	2	0
4	B	804	A1BTY	2	0
3	D	802	H4B	1	0
3	A	802	H4B	1	0
2	D	801	HEM	3	0
2	A	801	HEM	2	0

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

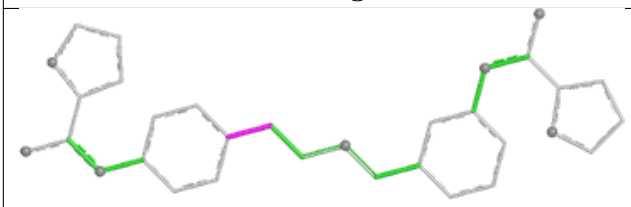
Ligand A1BTY D 803



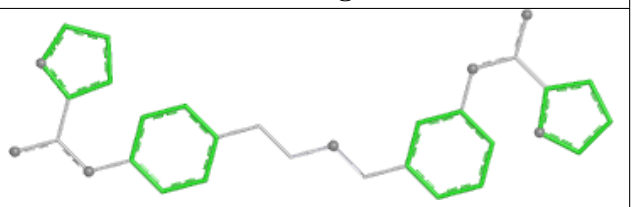
Bond lengths



Bond angles

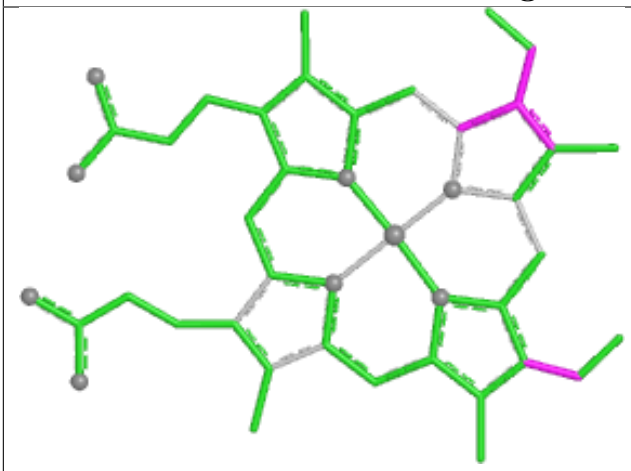


Torsions

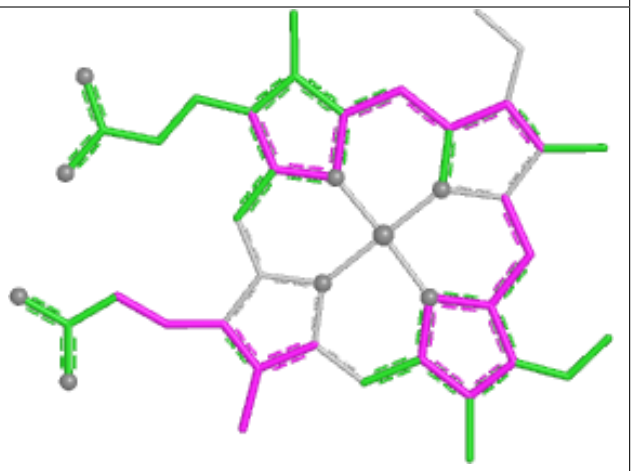


Rings

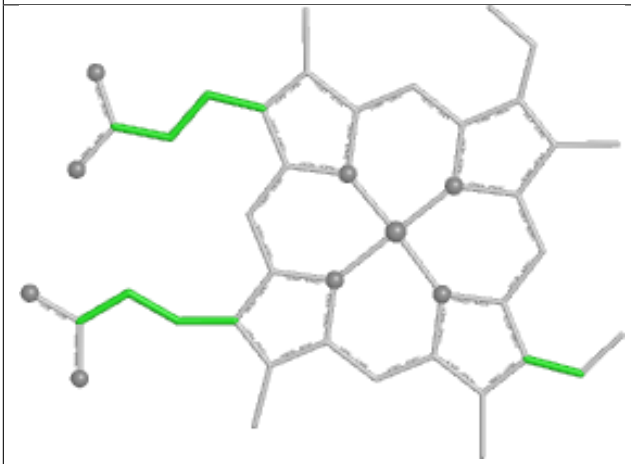
Ligand HEM B 802



Bond lengths



Bond angles



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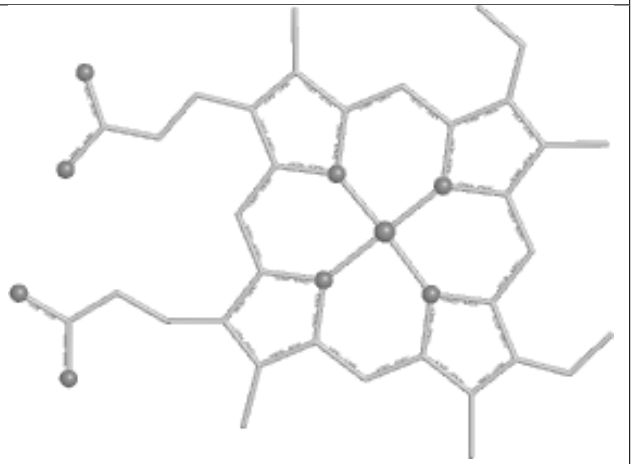
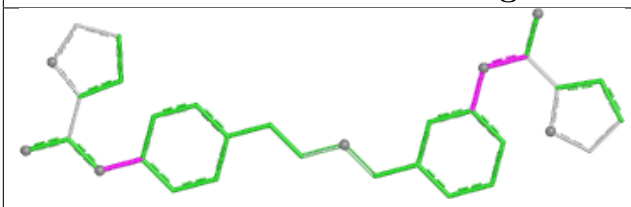
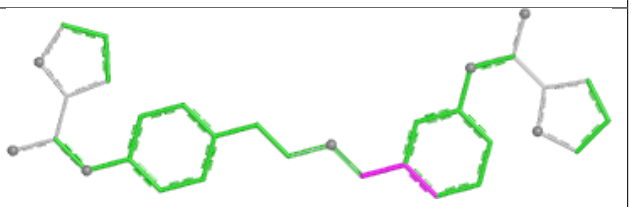


Rings

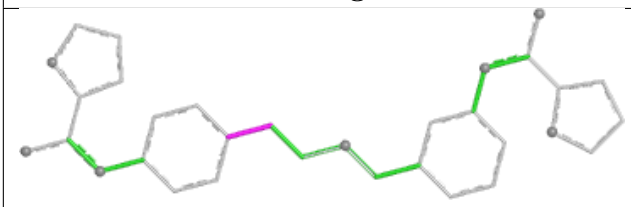
Ligand A1BTY A 803



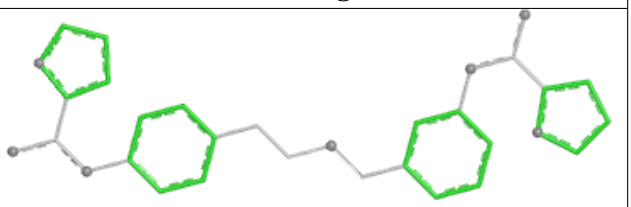
Bond lengths



Bond angles

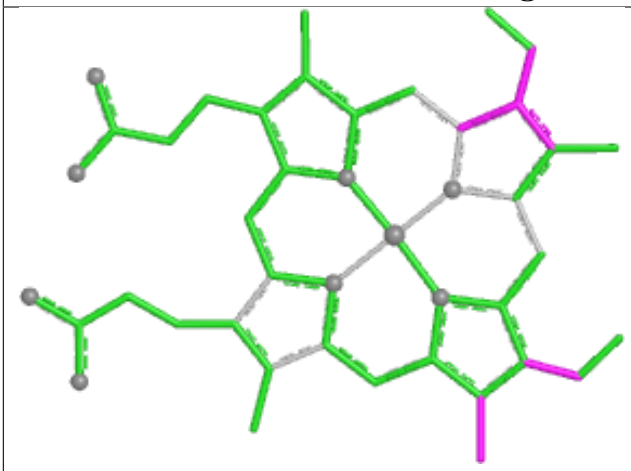


Torsions

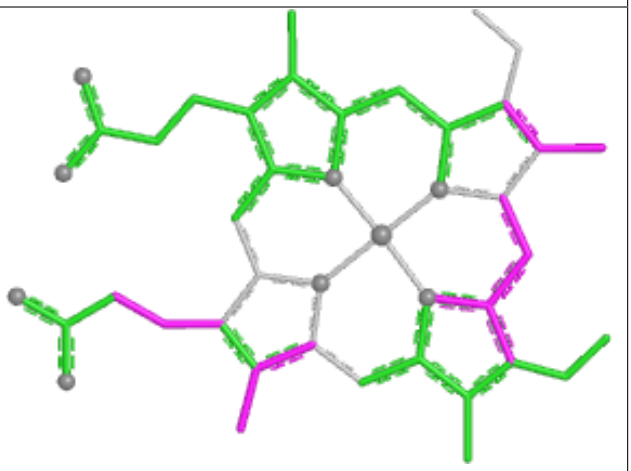


Rings

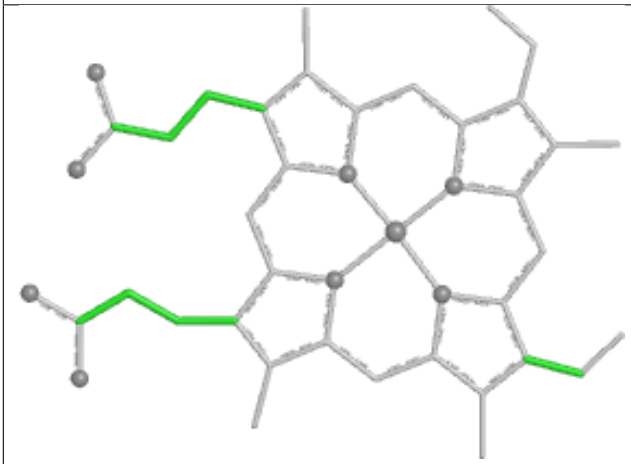
Ligand HEM C 801



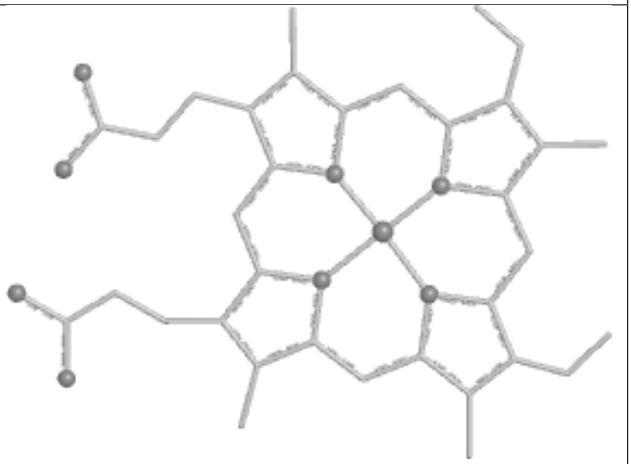
Bond lengths



Bond angles

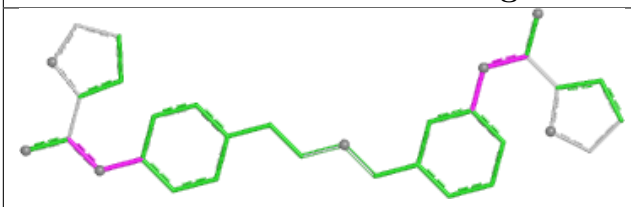


Torsions

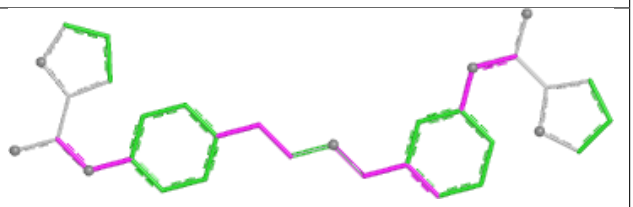


Rings

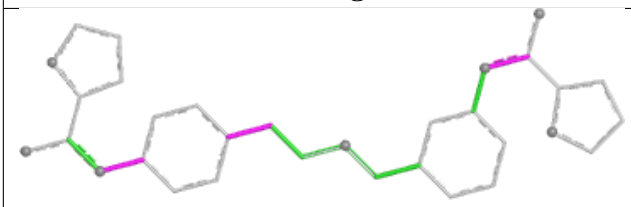
Ligand A1BTY C 803



Bond lengths



Bond angles



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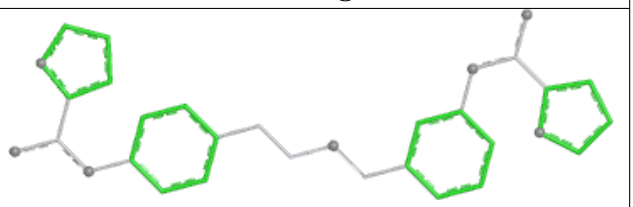
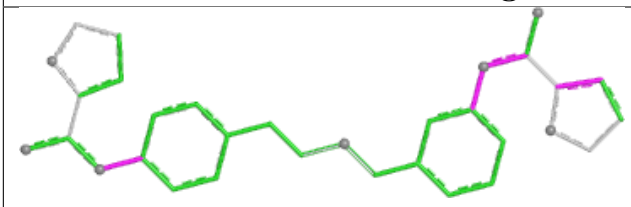


Rings

Ligand A1BTY B 804



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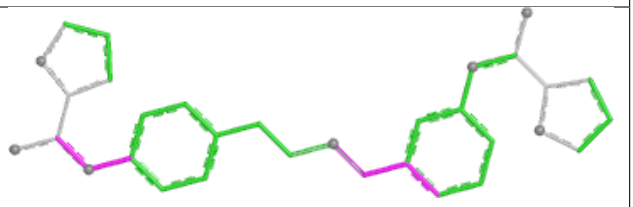
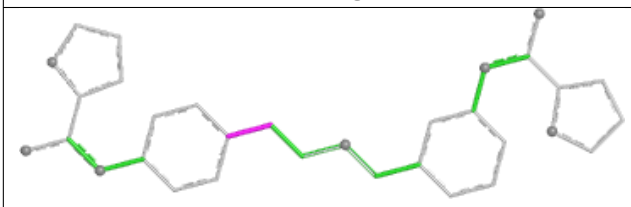
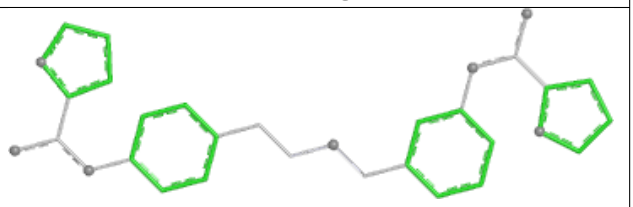


Bond angles

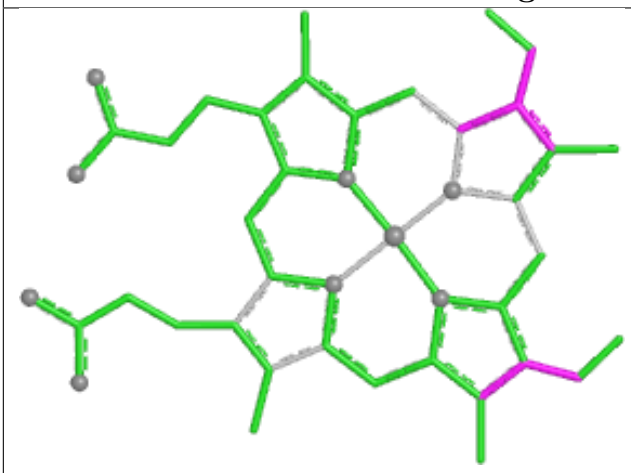


Torsions

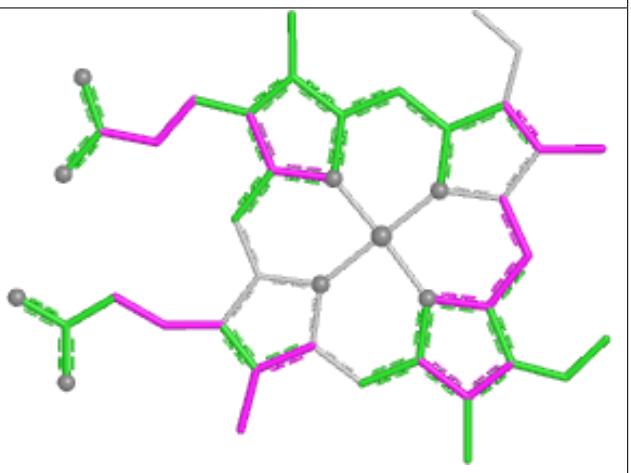


Rings

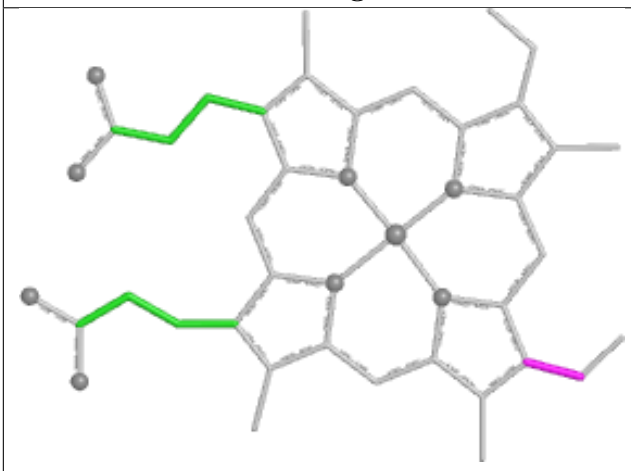
Ligand HEM D 801



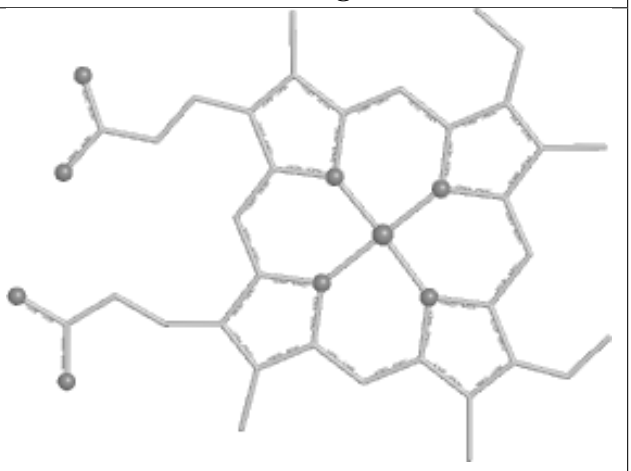
Bond lengths



Bond angles

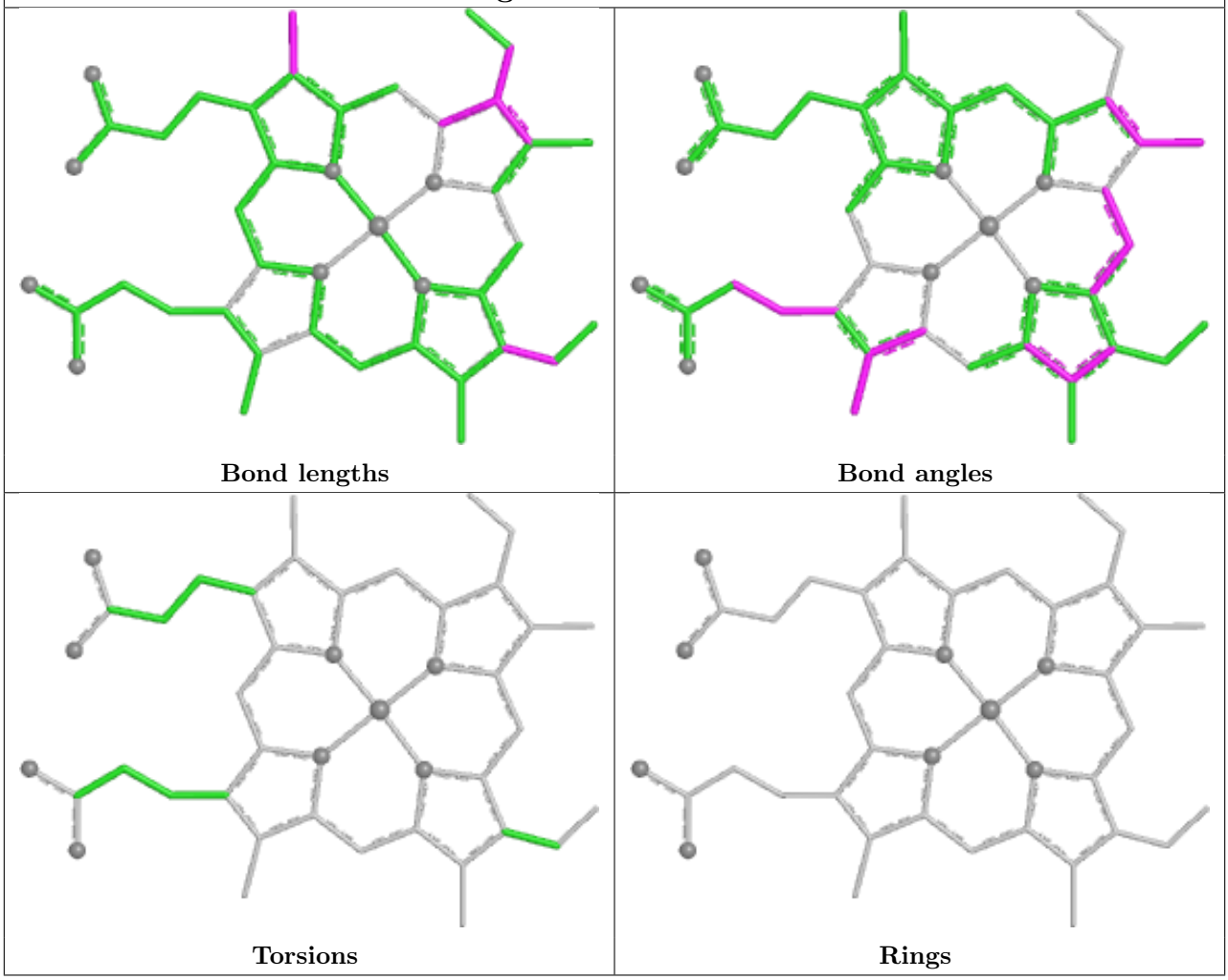


Torsions



Rings

Ligand HEM A 801



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	415/423 (98%)	-1.36	0	100	100	22, 38, 70, 139	4 (0%)
1	B	419/423 (99%)	-1.31	0	100	100	21, 41, 74, 121	3 (0%)
1	C	420/423 (99%)	-1.33	0	100	100	15, 41, 74, 134	4 (0%)
1	D	414/423 (97%)	-1.35	0	100	100	21, 38, 66, 129	2 (0%)
All	All	1668/1692 (98%)	-1.34	0	100	100	15, 40, 72, 139	13 (0%)

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

There are no oligosaccharides in this entry.

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
5	GOL	A	805	6/6	0.97	0.07	56,62,64,66	0
5	GOL	A	804	6/6	0.98	0.05	54,70,72,72	0
5	GOL	B	805	6/6	0.98	0.05	68,72,83,85	0
4	A1BTY	A	803	32/32	0.99	0.05	19,49,106,108	0

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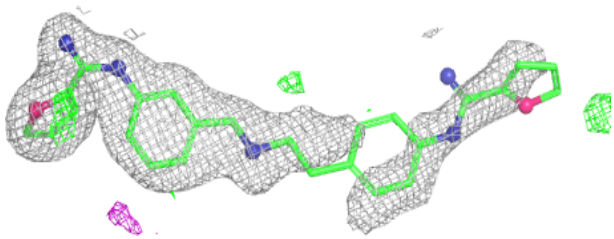
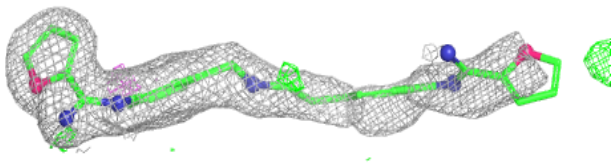
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	A1BTY	B	804	32/32	0.99	0.05	16,52,95,96	0
4	A1BTY	C	803	32/32	0.99	0.06	16,59,92,99	0
4	A1BTY	D	803	32/32	0.99	0.06	23,54,106,108	0
3	H4B	B	803	17/17	0.99	0.04	22,39,46,49	0
3	H4B	C	802	17/17	0.99	0.03	35,42,46,49	0
3	H4B	D	802	17/17	0.99	0.03	29,36,43,43	0
5	GOL	C	804	6/6	0.99	0.05	52,73,81,84	0
5	GOL	C	805	6/6	0.99	0.04	36,41,48,52	0
5	GOL	D	804	6/6	0.99	0.05	69,73,74,77	0
2	HEM	D	801	43/43	1.00	0.03	17,28,39,44	0
3	H4B	A	802	17/17	1.00	0.02	30,38,45,54	0
2	HEM	A	801	43/43	1.00	0.03	18,29,37,44	0
2	HEM	B	802	43/43	1.00	0.03	22,30,44,49	0
2	HEM	C	801	43/43	1.00	0.03	24,31,44,46	0
6	ZN	B	801	1/1	1.00	0.01	37,37,37,37	0
6	ZN	C	806	1/1	1.00	0.01	36,36,36,36	0

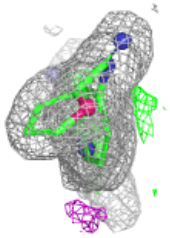
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around A1BTY A 803:

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

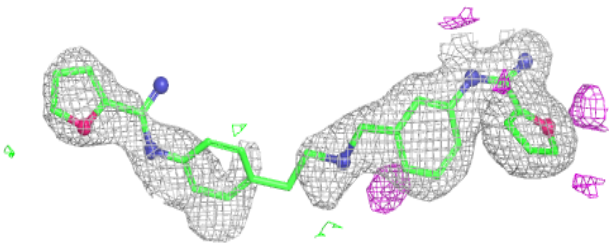


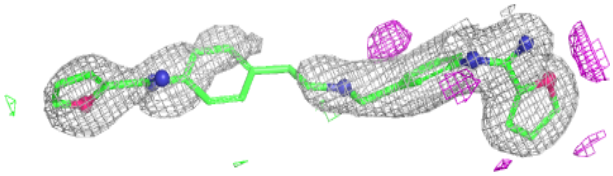


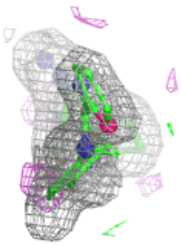


Electron density around A1BTY B 804:

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

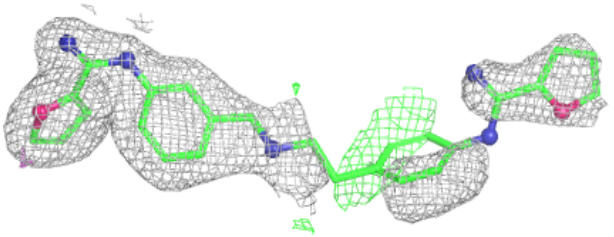


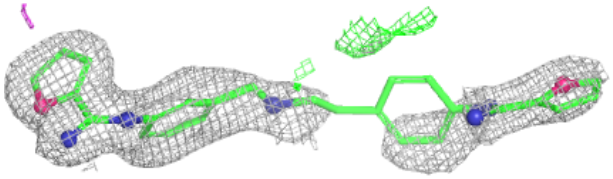


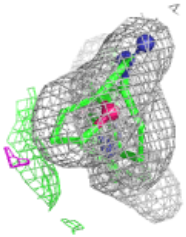


Electron density around A1BTY C 803:

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

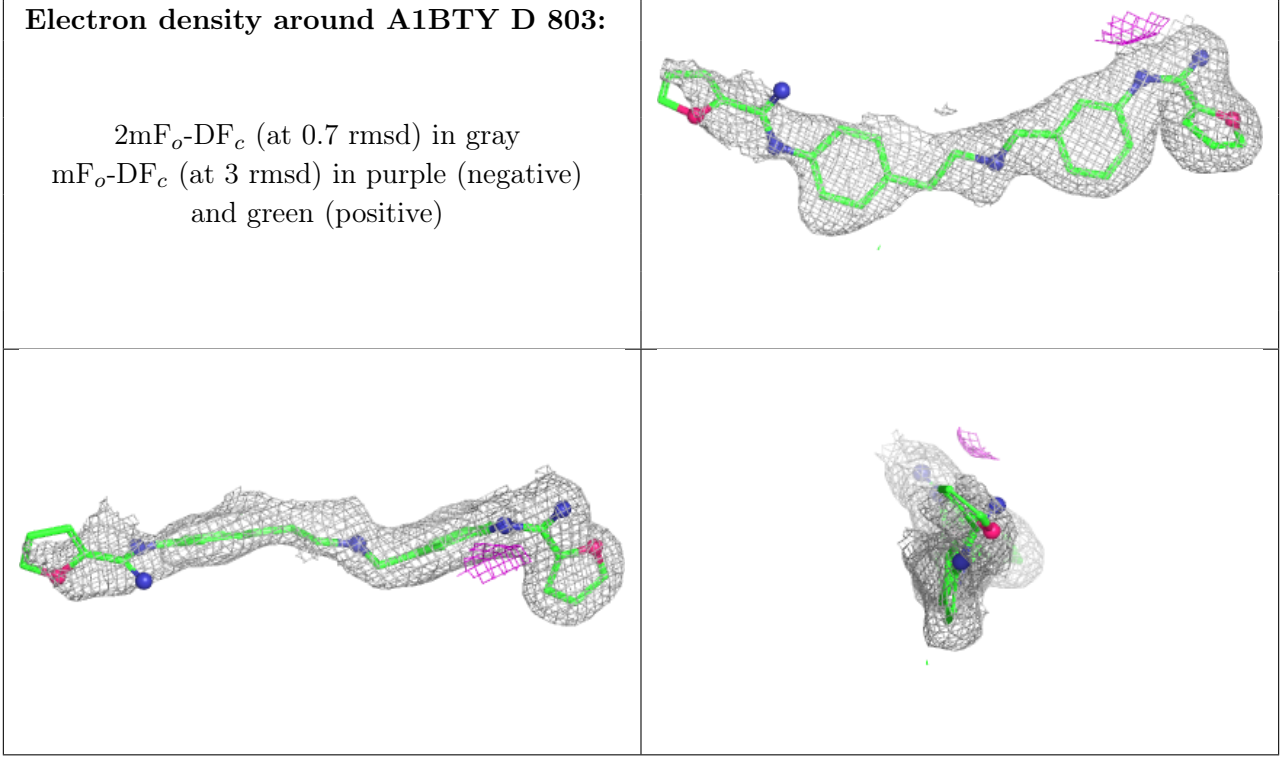






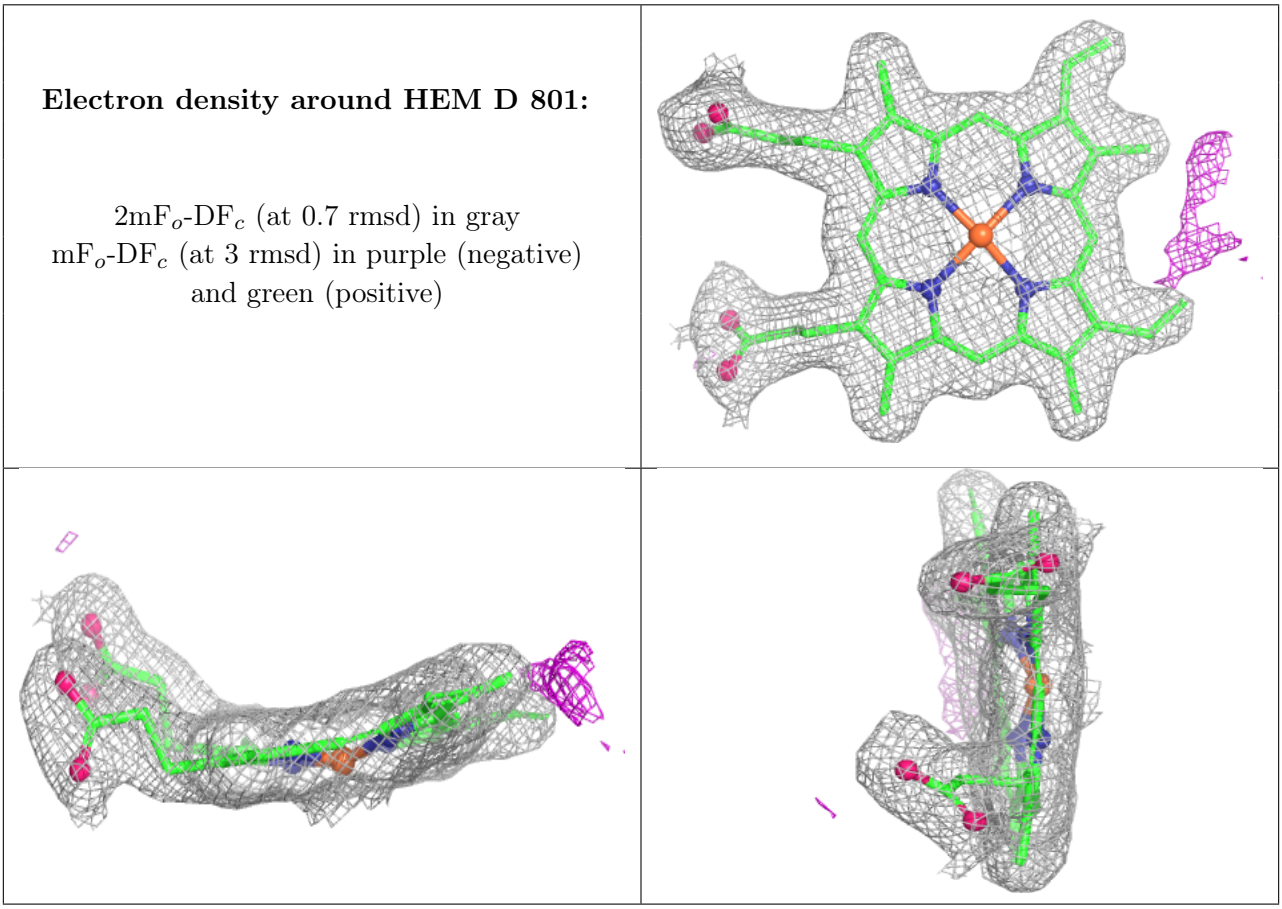
Electron density around A1BTY D 803:

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



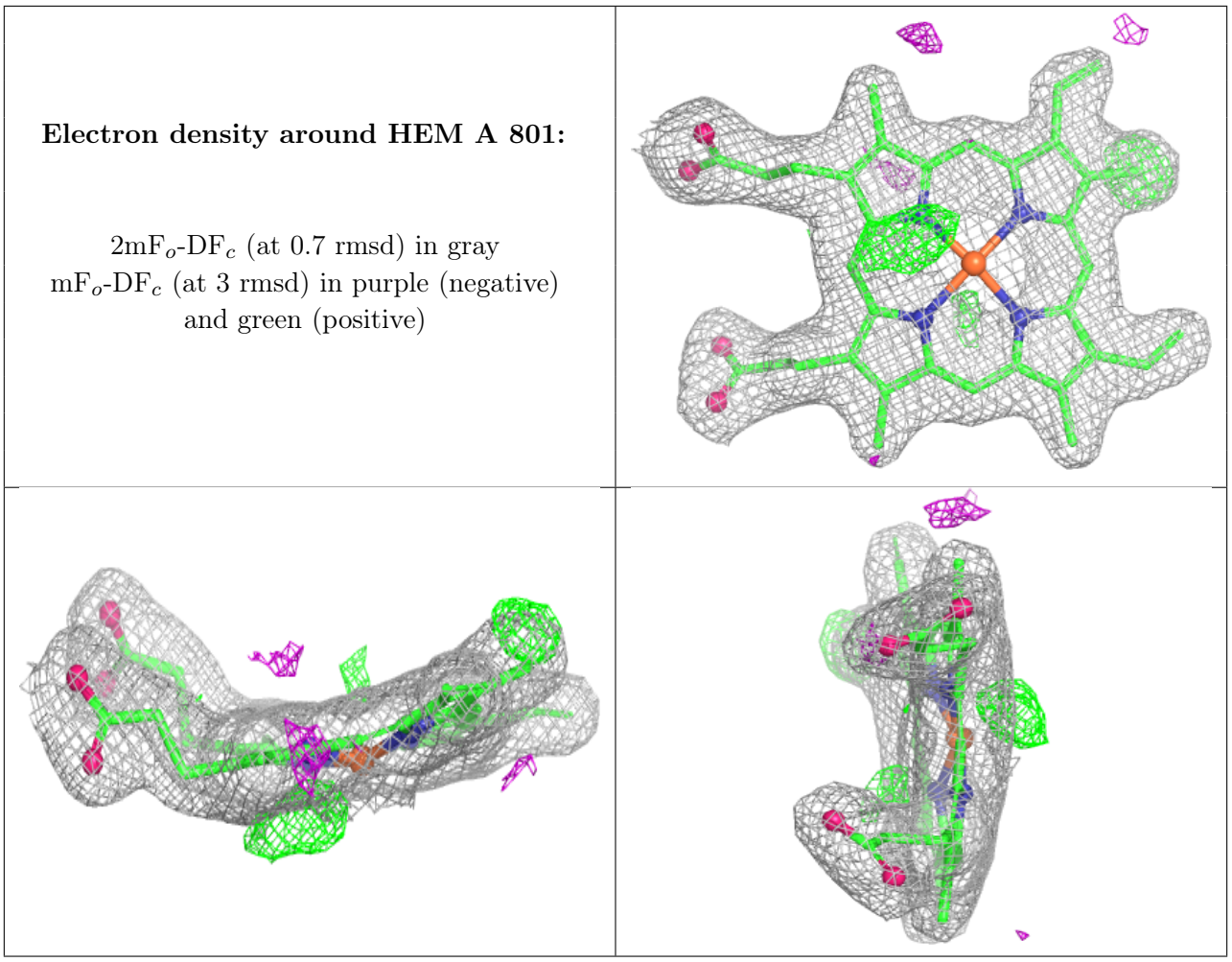
Electron density around HEM D 801:

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



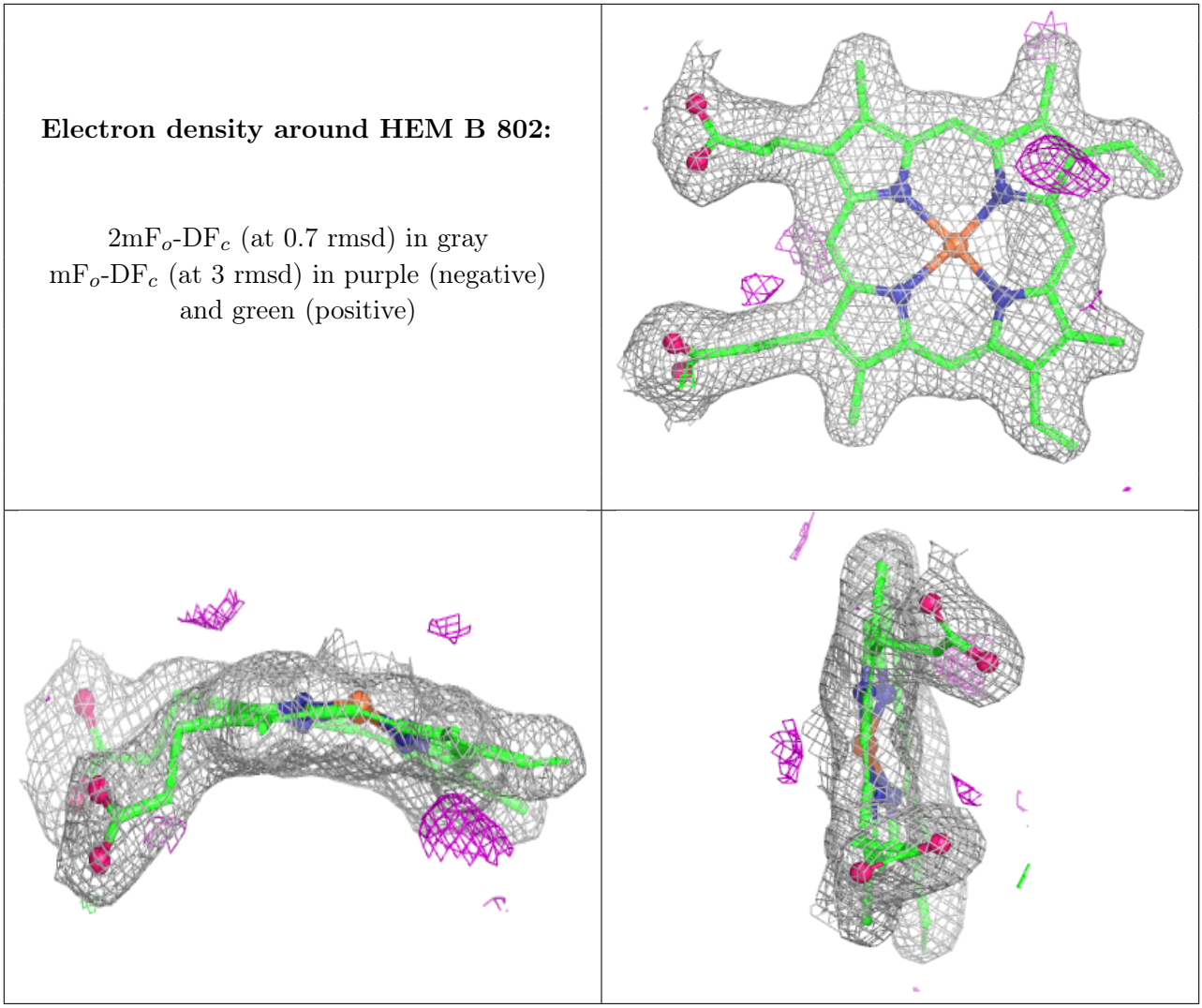
Electron density around HEM A 801:

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



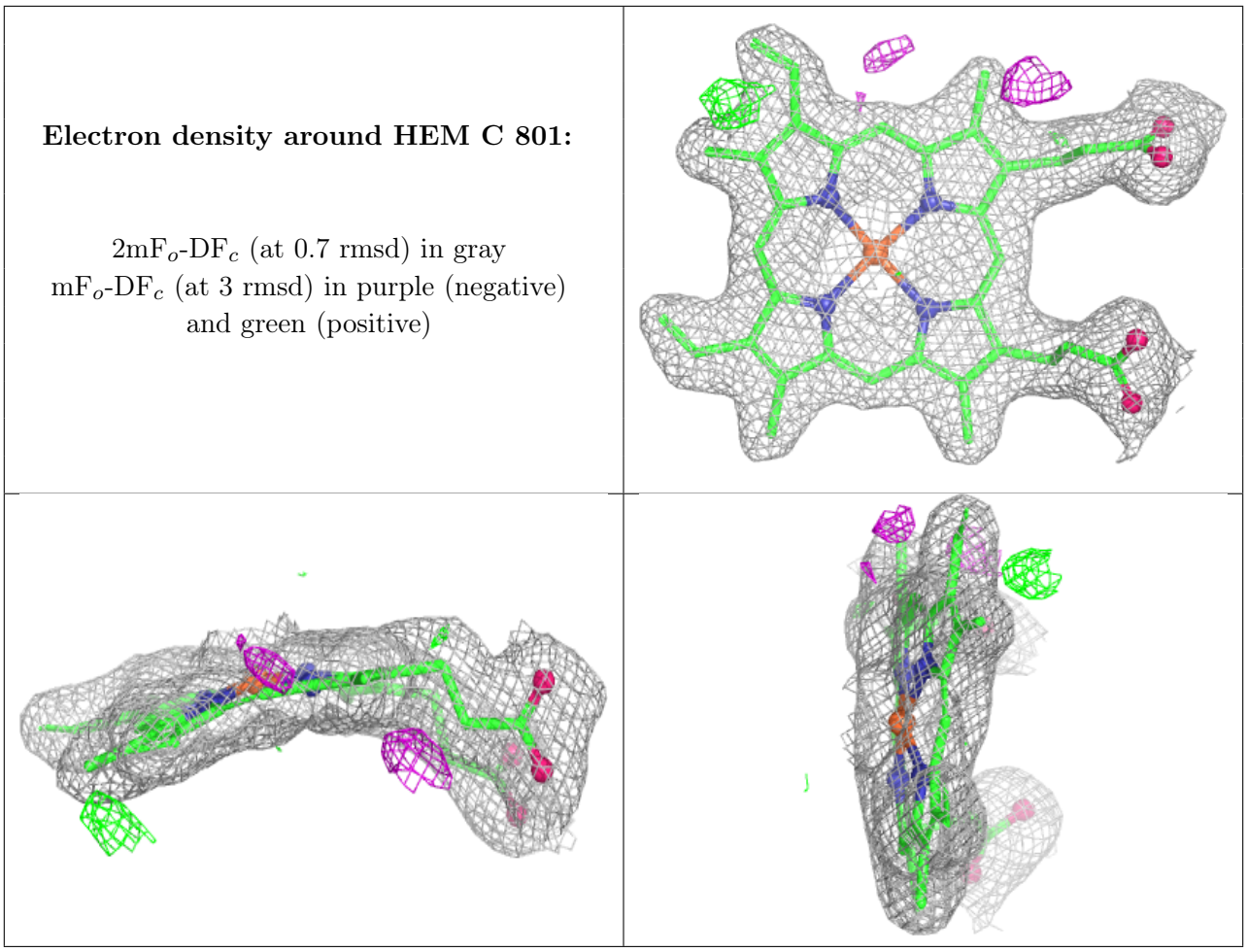
Electron density around HEM B 802:

$2mF_o$-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 801:

$2mF_o$-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.