



# Full wwPDB X-ray Structure Validation Report ⓘ

Nov 18, 2025 – 10:53 AM EST

PDB ID : 9MWC / pdb\_00009mwc  
Title : Structure of human neuronal nitric oxide synthase R354A/G357D mutant heme domain bound with N-(3-(((2-(3-(aminomethyl)-[1,1'-biphenyl]-4-yl)ethyl)amino)methyl)phenyl)furan-2-carboximidamide  
Authors : Li, H.; Poulos, T.L.  
Deposited on : 2025-01-17  
Resolution : 2.50 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](mailto: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>.

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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

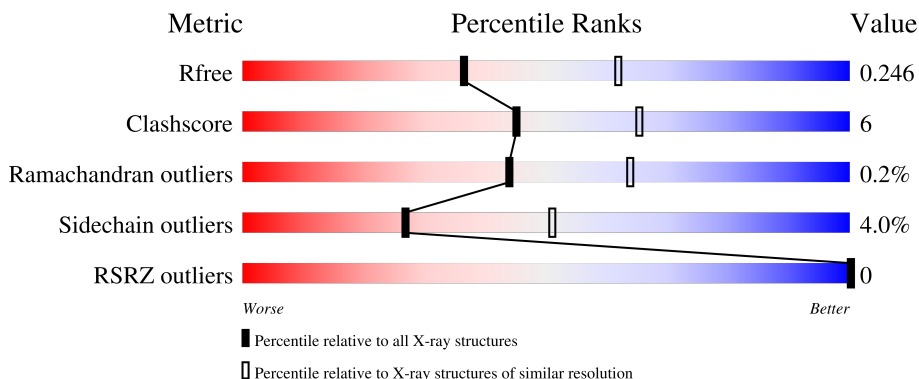
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.50 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	5504 (2.50-2.50)
Clashscore	180529	6282 (2.50-2.50)
Ramachandran outliers	177936	6191 (2.50-2.50)
Sidechain outliers	177891	6193 (2.50-2.50)
RSRZ outliers	164620	5504 (2.50-2.50)

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  $\geq 3$ , 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  $\leq 5\%$ . 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	82% 17% .
1	B	423	78% 19% .
1	C	423	81% 15% ..
1	D	423	85% 13% ..

## 2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 14369 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
			Total	C	N	O	S			
1	A	419	3435	2197	589	627	22	0	5	0
1	B	413	3373	2162	574	616	21	0	2	0
1	C	413	3388	2172	575	619	22	0	6	0
1	D	418	3420	2188	585	626	21	0	3	0

There are 16 discrepancies between the modelled and reference sequences:

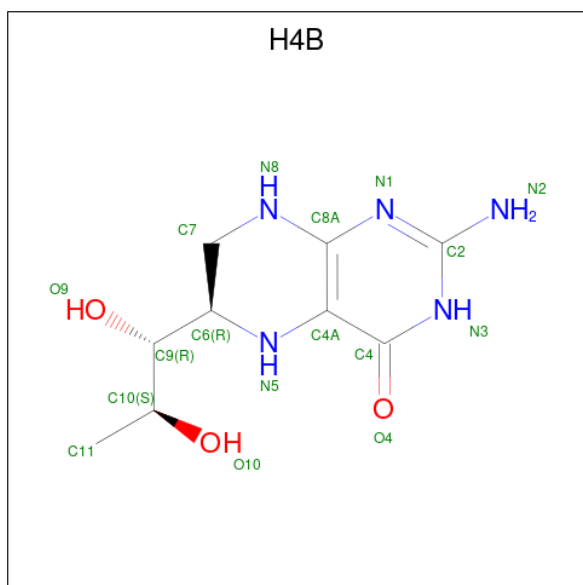
Chain	Residue	Modelled	Actual	Comment	Reference
A	354	ALA	ARG	engineered mutation	UNP P29475
A	357	ASP	GLY	engineered mutation	UNP P29475
A	723	LEU	-	expression tag	UNP P29475
A	724	VAL	-	expression tag	UNP P29475
B	354	ALA	ARG	engineered mutation	UNP P29475
B	357	ASP	GLY	engineered mutation	UNP P29475
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:  $C_{34}H_{32}FeN_4O_4$ ).



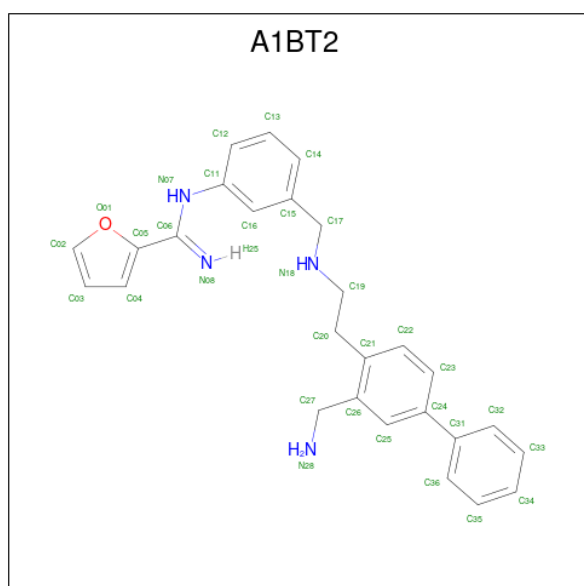
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
			Total	C	Fe	N			O
2	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	B	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	C	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	D	1	Total 43	C 34	Fe 1	N 4	O 4	0	0

- 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	0	0
			17	9	5	3		
3	B	1	Total	C	N	O	0	0
			17	9	5	3		
3	C	1	Total	C	N	O	0	0
			17	9	5	3		
3	C	1	Total	C	N	O	0	0
			17	9	5	3		

- Molecule 4 is N-{3-[(2-[3-(aminomethyl)[1,1'-biphenyl]-4-yl]ethyl)amino)methyl]phenyl}furan-2-carboximidamide (CCD ID: A1BT2) (formula: C<sub>27</sub>H<sub>28</sub>N<sub>4</sub>O) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	N	O	0	0
			32	27	4	1		
4	B	1	Total	C	N	O	0	0
			32	27	4	1		
4	C	1	Total	C	N	O	0	0
			32	27	4	1		
4	D	1	Total	C	N	O	0	0
			32	27	4	1		

- Molecule 5 is GLYCEROL (CCD ID: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



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	A	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	74	Total O 74 74	0	0

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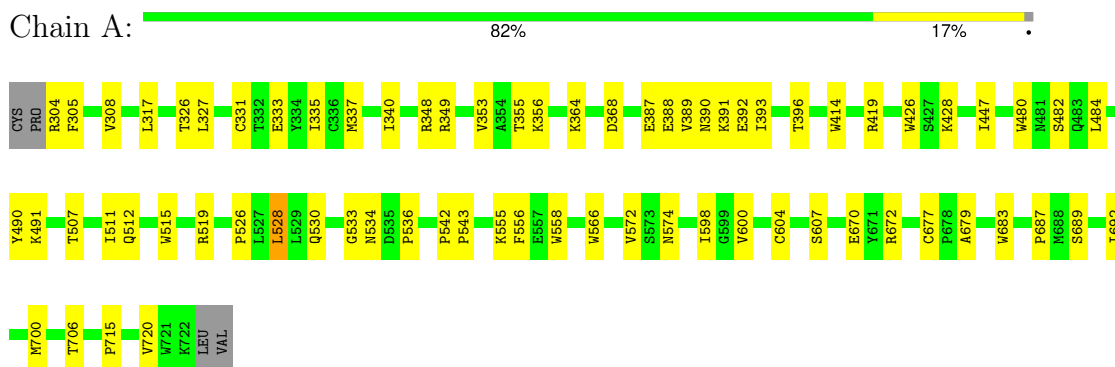
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<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>	<b>ZeroOcc</b>	<b>AltConf</b>
7	B	87	Total O 87 87	0	0
7	C	95	Total O 95 95	0	0
7	D	91	Total O 91 91	0	0

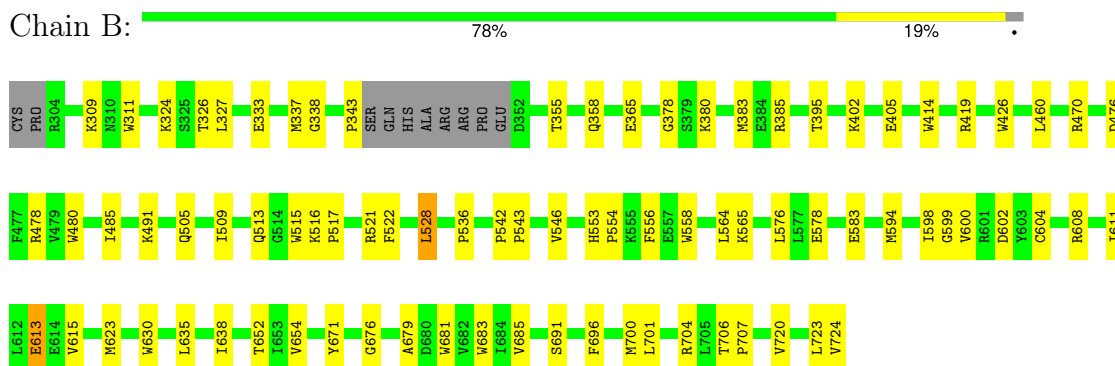
### 3 Residue-property plots [i](#)

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.

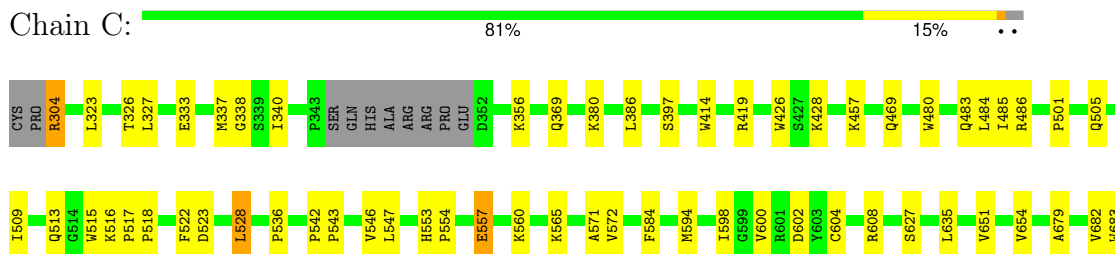
- Molecule 1: Nitric oxide synthase, brain



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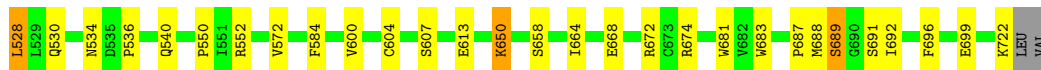






- Molecule 1: Nitric oxide synthase, brain

Chain D: 85% 13% ..



## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	52.34Å 118.07Å 165.24Å 90.00° 90.15° 90.00°	Depositor
Resolution (Å)	39.16 – 2.50 39.16 – 2.50	Depositor EDS
% Data completeness (in resolution range)	97.7 (39.16-2.50) 97.4 (39.16-2.50)	Depositor EDS
$R_{merge}$	0.14	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.22 (at 2.51Å)	Xtrriage
Refinement program	PHENIX (1.11.1_2575: ???)	Depositor
R, $R_{free}$	0.175 , 0.249 0.174 , 0.246	Depositor DCC
$R_{free}$ test set	3363 reflections (1.73%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	48.8	Xtrriage
Anisotropy	0.486	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.33 , 30.4	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	0.449 for h,-k,-l	Xtrriage
$F_o, F_c$ correlation	0.98	EDS
Total number of atoms	14369	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	57.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.88% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: H4B, A1BT2, ZN, GOL, 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	0.34	0/3548	0.52	0/4816
1	B	0.34	0/3474	0.55	1/4713 (0.0%)
1	C	0.35	0/3501	0.56	0/4751
1	D	0.33	0/3527	0.53	0/4787
All	All	0.34	0/14050	0.54	1/19067 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	599	GLY	N-CA-C	5.25	119.49	112.77

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3435	0	3352	42	0
1	B	3373	0	3290	46	0
1	C	3388	0	3313	40	0
1	D	3420	0	3328	30	0
2	A	43	0	30	2	0
2	B	43	0	30	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	C	43	0	30	2	0
2	D	43	0	30	3	0
3	A	17	0	15	0	0
3	B	17	0	15	0	0
3	C	34	0	30	0	0
4	A	32	0	0	1	0
4	B	32	0	0	0	0
4	C	32	0	0	1	0
4	D	32	0	0	2	0
5	A	12	0	16	1	0
5	B	6	0	8	0	0
5	C	12	0	16	1	0
5	D	6	0	8	0	0
6	A	1	0	0	0	0
6	C	1	0	0	0	0
7	A	74	0	0	1	0
7	B	87	0	0	3	0
7	C	95	0	0	1	0
7	D	91	0	0	1	0
All	All	14369	0	13511	160	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 6.

All (160) 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:528:LEU:HD22	1:D:536:PRO:HB2	1.49	0.92
1:A:528:LEU:HD22	1:A:536:PRO:HB2	1.52	0.91
1:C:723:LEU:HD23	1:C:724:VAL:HG22	1.64	0.80
1:C:704:ARG:HH11	1:C:704:ARG:HB3	1.49	0.76
1:C:557:GLU:OE1	1:C:560:LYS:NZ	2.19	0.76
1:C:691:SER:HB3	1:D:687:PRO:HB2	1.67	0.76
2:D:801:HEM:HBB2	2:D:801:HEM:HHC	1.69	0.75
2:A:801:HEM:HMC2	2:A:801:HEM:HBC2	1.70	0.74
2:A:801:HEM:HBB2	2:A:801:HEM:HHC	1.70	0.73
1:C:528:LEU:HD22	1:C:536:PRO:HB2	1.71	0.72
1:A:687:PRO:HB2	1:B:691:SER:HB3	1.72	0.72
1:B:327:LEU:HD12	1:B:704:ARG:HG2	1.72	0.71
1:D:664:ILE:O	1:D:668[B]:GLU:HG2	1.92	0.69
2:D:801:HEM:HBC2	2:D:801:HEM:HMC2	1.73	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:419:ARG:HD3	1:C:683:TRP:CD2	2.29	0.68
1:B:602:ASP:OD1	1:B:608:ARG:NH2	2.27	0.66
1:C:304:ARG:HH11	1:C:304:ARG:HG3	1.59	0.66
2:C:801:HEM:HBC2	2:C:801:HEM:HMC2	1.78	0.66
1:B:528:LEU:HD22	1:B:536:PRO:HB2	1.77	0.65
1:A:327:LEU:HD11	1:A:348:ARG:HG3	1.78	0.65
2:B:801:HEM:HMC2	2:B:801:HEM:HBC2	1.79	0.64
1:C:598:ILE:HA	1:C:602:ASP:HB2	1.82	0.61
1:D:326:THR:HB	1:D:327:LEU:HD12	1.82	0.61
1:A:364:LYS:NZ	1:A:368:ASP:OD2	2.33	0.61
1:D:689:SER:HB3	1:D:692:ILE:HD11	1.83	0.60
1:C:518:PRO:HG2	1:C:523:ASP:CG	2.28	0.58
1:B:598:ILE:HA	1:B:602:ASP:HB2	1.85	0.58
1:C:304:ARG:HH11	1:C:304:ARG:CG	2.16	0.57
1:C:480:TRP:HB2	1:C:528:LEU:HB3	1.85	0.57
1:B:480:TRP:HB2	1:B:528:LEU:HB3	1.86	0.57
1:A:600:VAL:O	1:A:604:CYS:HB2	2.05	0.56
1:B:419:ARG:HD3	1:B:683:TRP:CD2	2.40	0.56
1:D:668[A]:GLU:OE2	1:D:672:ARG:NH2	2.39	0.56
1:C:600:VAL:O	1:C:604:CYS:HB2	2.06	0.56
1:D:483:GLN:HB2	1:D:486:ARG:HG3	1.87	0.55
1:C:483:GLN:HB2	1:C:486:ARG:HG3	1.89	0.55
1:B:521:ARG:NH1	7:B:903:HOH:O	2.39	0.55
1:D:691:SER:HA	1:D:696:PHE:CG	2.41	0.54
1:C:679:ALA:HB3	1:C:700:MET:HB3	1.88	0.54
1:D:600:VAL:O	1:D:604:CYS:HB2	2.08	0.54
1:A:519:ARG:NH1	7:A:903:HOH:O	2.40	0.54
2:C:801:HEM:HHC	2:C:801:HEM:HBB2	1.89	0.54
1:B:522:PHE:HB2	1:B:565:LYS:HE3	1.90	0.53
1:B:378:GLY:HA2	1:B:383:MET:HE3	1.92	0.52
1:B:600:VAL:O	1:B:604:CYS:HB2	2.10	0.52
1:D:354:ALA:HB1	1:D:358:GLN:HB2	1.92	0.52
1:D:572:VAL:HG23	4:D:802:A1BT2:C04	2.41	0.51
1:A:335:ILE:HD11	1:B:701:LEU:HD22	1.93	0.51
1:B:691:SER:HA	1:B:696:PHE:CG	2.45	0.51
1:C:722:LYS:HD2	7:C:968:HOH:O	2.11	0.51
1:D:391:LYS:HA	1:D:394:ASP:HB2	1.93	0.51
1:D:419:ARG:HD3	1:D:683:TRP:CD2	2.46	0.51
1:B:600:VAL:HA	1:B:635:LEU:HD11	1.93	0.50
2:B:801:HEM:HBB2	2:B:801:HEM:HHC	1.93	0.50
1:A:419:ARG:HD3	1:A:683:TRP:CD2	2.47	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:509:ILE:O	1:B:513:GLN:HG2	2.12	0.49
1:C:485:ILE:HD13	1:C:546:VAL:HG13	1.92	0.49
1:A:556:PHE:HB3	1:A:558:TRP:CE2	2.47	0.49
1:A:572:VAL:HG23	4:A:803:A1BT2:C04	2.42	0.49
1:B:337:MET:HE3	1:B:343:PRO:HB3	1.93	0.49
1:C:419:ARG:HD3	1:C:683:TRP:CE2	2.47	0.49
1:C:304:ARG:HB2	1:C:323:LEU:HD21	1.94	0.48
1:C:326:THR:HG23	1:C:327:LEU:H	1.77	0.48
1:D:380:LYS:O	1:D:384:GLU:HG3	2.14	0.48
1:A:507:THR:O	1:A:511:ILE:HG13	2.14	0.48
1:B:355:THR:OG1	1:B:358:GLN:HG3	2.13	0.48
1:D:480:TRP:HB2	1:D:528:LEU:HB3	1.96	0.48
1:C:509:ILE:O	1:C:513:GLN:HG2	2.14	0.47
1:A:355:THR:HG21	5:A:806:GOL:H32	1.95	0.47
1:B:594:MET:HA	1:B:654:VAL:O	2.14	0.47
1:B:623:MET:HA	1:B:630:TRP:CD1	2.50	0.47
1:D:515:TRP:CE2	1:D:526:PRO:HD3	2.49	0.47
1:C:469:GLN:HB3	1:C:584:PHE:CE2	2.50	0.47
1:D:469:GLN:HB3	1:D:584:PHE:CE2	2.49	0.47
1:C:340:ILE:HD13	1:D:699:GLU:HB3	1.96	0.47
1:A:566:TRP:CD1	1:A:598:ILE:HG12	2.49	0.47
1:C:480:TRP:CE2	1:C:715:PRO:HB2	2.50	0.46
1:A:337:MET:HE2	1:A:340:ILE:HG13	1.98	0.46
1:B:522:PHE:CB	1:B:565:LYS:HE3	2.46	0.46
1:A:348:ARG:CD	1:A:706[B]:THR:HG21	2.45	0.46
1:D:490:TYR:CE1	1:D:519:ARG:HA	2.50	0.46
1:A:387:GLU:O	1:A:391:LYS:HG2	2.15	0.46
1:B:706:THR:HA	1:B:707:PRO:C	2.41	0.46
1:C:515:TRP:CZ3	1:C:517:PRO:HB3	2.51	0.46
1:A:530:GLN:HE21	1:A:533:GLY:HA2	1.81	0.46
1:B:485:ILE:HD13	1:B:546:VAL:HG13	1.98	0.45
1:D:327:LEU:HD11	1:D:348:ARG:HD2	1.98	0.45
1:A:348:ARG:HD2	1:A:706[B]:THR:HG21	1.98	0.45
1:A:390:ASN:HD22	1:A:391:LYS:HE2	1.82	0.45
1:D:650:LYS:HB2	1:D:650:LYS:HE3	1.44	0.45
1:A:515:TRP:CE2	1:A:526:PRO:HD3	2.52	0.45
1:D:374:ILE:O	1:D:376:ARG:HG2	2.16	0.45
1:D:415:ARG:NH1	1:D:674:ARG:HD2	2.32	0.45
1:C:600:VAL:HA	1:C:635:LEU:HD11	1.98	0.45
1:B:528:LEU:HD23	1:B:528:LEU:HA	1.83	0.45
1:A:689:SER:HB3	1:A:692:ILE:HD11	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:490:TYR:CE1	1:A:519:ARG:HA	2.52	0.45
1:A:428:LYS:HB3	1:A:428:LYS:HE2	1.57	0.44
1:B:309:LYS:NZ	7:B:906:HOH:O	2.50	0.44
1:A:308:VAL:HG22	1:A:317:LEU:HB2	1.98	0.44
1:D:415:ARG:CZ	1:D:674:ARG:HD2	2.47	0.44
1:B:470:ARG:HG3	1:B:476:ASP:OD1	2.17	0.44
1:C:691:SER:HA	1:C:696:PHE:CG	2.51	0.44
1:A:355:THR:HG23	1:D:324:LYS:HE3	1.99	0.44
1:A:482:SER:HA	1:A:574:ASN:HB3	1.98	0.44
1:A:414:TRP:CE3	1:A:426:TRP:HA	2.53	0.44
1:A:480:TRP:HB2	1:A:528:LEU:HB3	2.00	0.44
1:C:356:LYS:HE3	1:C:397:SER:OG	2.17	0.43
1:D:550:PRO:O	1:D:552:ARG:NH2	2.48	0.43
1:B:576:LEU:HD21	1:B:583:GLU:HB3	2.00	0.43
1:C:501:PRO:HG2	1:C:608:ARG:O	2.18	0.43
1:C:553:HIS:CG	1:C:554:PRO:HD2	2.53	0.43
1:B:309:LYS:HD3	1:B:311:TRP:CE2	2.54	0.43
1:B:419:ARG:HD3	1:B:683:TRP:CE2	2.52	0.43
1:B:556:PHE:HB3	1:B:558:TRP:CE2	2.52	0.43
1:B:385:ARG:NH1	1:B:402:LYS:HE2	2.33	0.43
1:A:331:CYS:O	1:B:333:GLU:HA	2.19	0.43
1:A:389:VAL:HG12	1:A:393:ILE:HD12	2.01	0.43
1:B:460:LEU:HG	1:B:652:THR:HB	2.00	0.43
1:B:385:ARG:NE	1:B:405:GLU:OE1	2.52	0.43
1:B:671:TYR:CD2	1:B:676:GLY:HA2	2.54	0.43
1:C:594:MET:HA	1:C:654:VAL:O	2.19	0.43
1:D:390:ASN:ND2	7:D:904:HOH:O	2.37	0.43
1:B:564:LEU:HD11	1:B:611:ILE:HD13	2.01	0.43
1:C:369:GLN:HG3	5:C:804:GOL:H2	1.99	0.43
1:B:615:VAL:HG21	1:B:638:ILE:HD11	2.01	0.42
1:A:392:GLU:O	1:A:396:THR:N	2.51	0.42
1:B:542:PRO:HA	1:B:543:PRO:HD3	1.94	0.42
1:C:572:VAL:HG23	4:C:803:A1BT2:C04	2.48	0.42
1:B:613:GLU:HG3	7:B:980:HOH:O	2.19	0.42
1:B:414:TRP:CE3	1:B:426:TRP:HA	2.55	0.42
1:B:553:HIS:CG	1:B:554:PRO:HD2	2.54	0.42
1:A:679:ALA:HB3	1:A:700:MET:HB3	2.01	0.42
1:B:515:TRP:CZ3	1:B:517:PRO:HB3	2.55	0.42
1:D:530:GLN:HG3	1:D:534:ASN:O	2.19	0.42
1:A:447:ILE:HG23	1:A:484:LEU:HD13	2.02	0.42
1:C:706[A]:THR:HA	1:C:707:PRO:C	2.45	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:388:GLU:O	1:A:392:GLU:HG3	2.19	0.42
1:C:542:PRO:HA	1:C:543:PRO:HD3	1.93	0.42
1:B:598:ILE:O	1:B:602:ASP:HB2	2.19	0.42
1:A:480:TRP:CE2	1:A:715:PRO:HB2	2.55	0.41
1:A:670:GLU:CB	1:A:677:CYS:HB2	2.50	0.41
1:B:681:TRP:CZ2	1:B:685:VAL:HG21	2.55	0.41
1:A:600:VAL:HG11	1:A:687:PRO:HG2	2.02	0.41
1:B:679:ALA:HB3	1:B:700:MET:HB3	2.00	0.41
1:D:327:LEU:HD21	1:D:348:ARG:HG3	2.02	0.41
1:A:356:LYS:NZ	1:A:390:ASN:OD1	2.35	0.41
1:C:522:PHE:HB2	1:C:565:LYS:HE3	2.02	0.41
1:C:414:TRP:CE3	1:C:426:TRP:HA	2.56	0.41
2:D:801:HEM:HBC2	2:D:801:HEM:CMC	2.46	0.41
1:A:490:TYR:CZ	1:A:519:ARG:HA	2.56	0.41
1:C:484:LEU:HD12	1:C:571:ALA:HB1	2.01	0.41
1:A:530:GLN:HG3	1:A:534:ASN:O	2.21	0.41
1:A:687:PRO:CB	1:B:691:SER:HB3	2.48	0.41
1:C:602:ASP:OD1	1:C:608:ARG:NH2	2.51	0.41
1:A:542:PRO:HA	1:A:543:PRO:HD3	1.93	0.40
1:C:547:LEU:HD21	1:C:651:VAL:HG22	2.04	0.40
1:B:478:ARG:HA	1:B:478:ARG:HD2	1.85	0.40
1:C:682:VAL:HG13	1:D:681:TRP:CZ3	2.56	0.40
4:D:802:A1BT2:C05	4:D:802:A1BT2:C12	2.99	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	422/423 (100%)	400 (95%)	21 (5%)	1 (0%)	44 64
1	B	411/423 (97%)	397 (97%)	13 (3%)	1 (0%)	44 64

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	415/423 (98%)	399 (96%)	15 (4%)	1 (0%)	44	64
1	D	419/423 (99%)	400 (96%)	19 (4%)	0	100	100
All	All	1667/1692 (98%)	1596 (96%)	68 (4%)	3 (0%)	44	64

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	338	GLY
1	C	338	GLY
1	A	353	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	379/378 (100%)	367 (97%)	12 (3%)	34	60
1	B	371/378 (98%)	357 (96%)	14 (4%)	28	53
1	C	375/378 (99%)	360 (96%)	15 (4%)	27	51
1	D	376/378 (100%)	358 (95%)	18 (5%)	21	43
All	All	1501/1512 (99%)	1442 (96%)	59 (4%)	27	52

All (59) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	304	ARG
1	A	305	PHE
1	A	326	THR
1	A	333	GLU
1	A	349	ARG
1	A	491	LYS
1	A	512	GLN
1	A	528	LEU
1	A	555	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	607	SER
1	A	672	ARG
1	A	720	VAL
1	B	324	LYS
1	B	326	THR
1	B	365	GLU
1	B	380	LYS
1	B	395	THR
1	B	491	LYS
1	B	505	GLN
1	B	516	LYS
1	B	528	LEU
1	B	578	GLU
1	B	613	GLU
1	B	720	VAL
1	B	723	LEU
1	B	724	VAL
1	C	304	ARG
1	C	333	GLU
1	C	337	MET
1	C	380	LYS
1	C	386	LEU
1	C	428	LYS
1	C	457	LYS
1	C	505	GLN
1	C	516	LYS
1	C	528	LEU
1	C	557	GLU
1	C	627	SER
1	C	704	ARG
1	C	723	LEU
1	C	724	VAL
1	D	305	PHE
1	D	308	VAL
1	D	320	THR
1	D	326	THR
1	D	349	ARG
1	D	383	MET
1	D	397	SER
1	D	424	ILE
1	D	491	LYS
1	D	528	LEU

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Mol	Chain	Res	Type
1	D	540	GLN
1	D	607	SER
1	D	613	GLU
1	D	650	LYS
1	D	658	SER
1	D	688	MET
1	D	689	SER
1	D	722	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	441	HIS
1	A	513	GLN
1	B	342	HIS
1	B	606	ASN
1	C	532	ASN
1	D	719	HIS

### 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
2	HEM	A	801	1	42,50,50	1.49	7 (16%)	46,82,82	1.78	12 (26%)
2	HEM	C	801	1	42,50,50	1.46	5 (11%)	46,82,82	1.79	15 (32%)
3	H4B	B	802	-	16,18,18	0.85	0	14,26,26	2.29	5 (35%)
2	HEM	D	801	1	42,50,50	1.48	6 (14%)	46,82,82	1.85	11 (23%)
3	H4B	C	807	-	16,18,18	0.84	0	14,26,26	2.25	5 (35%)
4	A1BT2	A	803	-	31,35,35	0.82	3 (9%)	36,46,46	1.07	2 (5%)
5	GOL	C	805	-	5,5,5	0.42	0	5,5,5	0.36	0
5	GOL	B	804	-	5,5,5	0.33	0	5,5,5	0.36	0
5	GOL	A	806	-	5,5,5	0.41	0	5,5,5	0.49	0
4	A1BT2	B	803	-	31,35,35	0.74	2 (6%)	36,46,46	0.73	0
3	H4B	A	802	-	16,18,18	0.85	0	14,26,26	2.28	4 (28%)
4	A1BT2	C	803	-	31,35,35	0.77	2 (6%)	36,46,46	0.72	0
5	GOL	D	803	-	5,5,5	0.39	0	5,5,5	0.42	0
5	GOL	C	804	-	5,5,5	0.34	0	5,5,5	0.30	0
2	HEM	B	801	1	42,50,50	1.50	6 (14%)	46,82,82	1.98	13 (28%)
4	A1BT2	D	802	-	31,35,35	0.78	2 (6%)	36,46,46	0.73	1 (2%)
3	H4B	C	802	-	16,18,18	0.86	0	14,26,26	2.41	6 (42%)
5	GOL	A	804	-	5,5,5	0.32	0	5,5,5	0.54	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. <sup>1,2</sup> means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	HEM	A	801	1	-	1/12/54/54	-
2	HEM	C	801	1	-	0/12/54/54	-
3	H4B	B	802	-	-	0/8/17/17	0/2/2/2
2	HEM	D	801	1	-	2/12/54/54	-
3	H4B	C	807	-	-	3/8/17/17	0/2/2/2
4	A1BT2	A	803	-	-	7/17/21/21	0/4/4/4
5	GOL	C	805	-	-	1/4/4/4	-
5	GOL	B	804	-	-	2/4/4/4	-
5	GOL	A	806	-	-	3/4/4/4	-
4	A1BT2	B	803	-	-	3/17/21/21	0/4/4/4

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	H4B	A	802	-	-	3/8/17/17	0/2/2/2
4	A1BT2	C	803	-	-	1/17/21/21	0/4/4/4
5	GOL	D	803	-	-	4/4/4/4	-
5	GOL	C	804	-	-	2/4/4/4	-
2	HEM	B	801	1	-	1/12/54/54	-
4	A1BT2	D	802	-	-	1/17/21/21	0/4/4/4
3	H4B	C	802	-	-	0/8/17/17	0/2/2/2
5	GOL	A	804	-	-	3/4/4/4	-

All (33) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	801	HEM	C3C-C2C	-4.24	1.34	1.40
2	C	801	HEM	C3C-C2C	-4.07	1.34	1.40
2	D	801	HEM	C3C-C2C	-3.94	1.35	1.40
2	A	801	HEM	C3C-C2C	-3.71	1.35	1.40
2	A	801	HEM	C3C-CAC	3.20	1.54	1.47
2	C	801	HEM	C3C-CAC	3.19	1.54	1.47
2	D	801	HEM	C3C-CAC	3.06	1.54	1.47
2	B	801	HEM	C3C-CAC	2.98	1.54	1.47
2	C	801	HEM	CAB-C3B	2.98	1.55	1.47
2	C	801	HEM	C3C-C4C	2.96	1.45	1.41
2	B	801	HEM	CAB-C3B	2.96	1.55	1.47
2	D	801	HEM	CAB-C3B	2.87	1.55	1.47
4	A	803	A1BT2	C11-N07	-2.68	1.36	1.41
2	A	801	HEM	CAB-C3B	2.56	1.54	1.47
2	A	801	HEM	FE-NB	2.54	2.12	1.98
2	B	801	HEM	C3C-C4C	2.53	1.45	1.41
4	C	803	A1BT2	C06-N07	-2.53	1.34	1.38
2	D	801	HEM	CMB-C2B	2.44	1.55	1.50
4	C	803	A1BT2	C11-N07	-2.44	1.36	1.41
2	B	801	HEM	FE-ND	2.39	2.11	1.98
2	B	801	HEM	CMB-C2B	2.36	1.55	1.50
2	A	801	HEM	CMD-C2D	2.36	1.55	1.50
4	D	802	A1BT2	C11-N07	-2.32	1.37	1.41
4	B	803	A1BT2	C11-N07	-2.31	1.37	1.41
2	D	801	HEM	CMD-C2D	2.30	1.55	1.50
4	B	803	A1BT2	C06-N07	-2.29	1.34	1.38
4	A	803	A1BT2	C06-N07	-2.27	1.34	1.38
2	A	801	HEM	C3C-C4C	2.27	1.44	1.41
4	D	802	A1BT2	C06-N07	-2.15	1.34	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	801	HEM	CMB-C2B	2.11	1.55	1.50
2	D	801	HEM	CHA-C4D	2.11	1.39	1.34
2	A	801	HEM	CMB-C2B	2.10	1.55	1.50
4	A	803	A1BT2	C04-C05	-2.02	1.36	1.38

All (74) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	802	H4B	C8A-C4A-C4	5.96	119.92	114.50
3	A	802	H4B	C8A-C4A-C4	5.93	119.89	114.50
2	B	801	HEM	CBA-CAA-C2A	-5.92	102.58	112.54
3	C	802	H4B	C8A-C4A-C4	5.66	119.65	114.50
3	C	807	H4B	C8A-C4A-C4	5.26	119.28	114.50
2	D	801	HEM	CBA-CAA-C2A	-5.06	104.03	112.54
2	C	801	HEM	CBA-CAA-C2A	-4.90	104.30	112.54
2	B	801	HEM	C4B-CHC-C1C	4.72	128.79	122.56
2	A	801	HEM	CBA-CAA-C2A	-4.44	105.07	112.54
2	A	801	HEM	C4C-CHD-C1D	4.22	128.13	122.56
2	D	801	HEM	C4B-CHC-C1C	4.18	128.08	122.56
2	D	801	HEM	C4C-CHD-C1D	3.64	127.37	122.56
2	B	801	HEM	C4C-CHD-C1D	3.59	127.29	122.56
3	C	802	H4B	C2-N3-C4	3.51	120.84	115.96
2	C	801	HEM	C4B-CHC-C1C	3.45	127.11	122.56
2	A	801	HEM	C3B-C4B-NB	-3.41	107.02	109.47
2	D	801	HEM	C3B-C4B-NB	-3.39	107.03	109.47
3	C	807	H4B	C2-N3-C4	3.38	120.66	115.96
3	C	807	H4B	N1-C2-N3	-3.36	120.34	125.48
3	C	802	H4B	N1-C2-N3	-3.35	120.35	125.48
3	A	802	H4B	C2-N3-C4	3.18	120.38	115.96
3	B	802	H4B	C2-N3-C4	3.18	120.38	115.96
2	D	801	HEM	C4D-ND-C1D	3.16	108.95	105.21
2	B	801	HEM	C3B-C4B-NB	-3.13	107.22	109.47
2	B	801	HEM	C1B-NB-C4B	3.08	108.85	105.21
3	A	802	H4B	N1-C2-N3	-3.00	120.88	125.48
2	B	801	HEM	CBD-CAD-C3D	-2.91	104.49	112.53
2	B	801	HEM	C4D-ND-C1D	2.89	108.63	105.21
4	A	803	A1BT2	C19-C20-C21	-2.89	106.77	112.85
3	B	802	H4B	N1-C2-N3	-2.86	121.10	125.48
3	C	802	H4B	C11-C10-C9	-2.82	108.66	112.11
2	C	801	HEM	CHA-C4D-ND	2.76	127.80	124.37
2	C	801	HEM	C3B-C2B-C1B	2.76	108.48	106.41
2	C	801	HEM	C2C-C3C-C4C	2.74	108.81	106.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	801	HEM	CHC-C4B-C3B	2.70	128.71	124.57
2	C	801	HEM	C4D-ND-C1D	2.70	108.40	105.21
2	D	801	HEM	C1B-NB-C4B	2.61	108.30	105.21
2	A	801	HEM	C4D-ND-C1D	2.60	108.28	105.21
2	D	801	HEM	C3D-C4D-ND	-2.51	107.42	110.17
2	A	801	HEM	C3B-C2B-C1B	2.50	108.29	106.41
2	C	801	HEM	O1D-CGD-CBD	-2.47	115.25	123.09
2	A	801	HEM	C1B-NB-C4B	2.45	108.10	105.21
2	D	801	HEM	CBD-CAD-C3D	-2.44	105.80	112.53
2	C	801	HEM	C2D-C1D-ND	-2.43	107.10	109.90
2	B	801	HEM	C3B-C2B-C1B	2.40	108.21	106.41
3	B	802	H4B	C2-N1-C8A	2.37	120.23	114.59
2	D	801	HEM	C2D-C1D-ND	-2.34	107.20	109.90
2	C	801	HEM	C3D-C4D-ND	-2.33	107.61	110.17
2	A	801	HEM	C2C-C3C-C4C	2.32	108.52	106.90
2	C	801	HEM	CBD-CAD-C3D	-2.31	106.14	112.53
3	C	807	H4B	C2-N1-C8A	2.29	120.04	114.59
2	D	801	HEM	O1D-CGD-CBD	-2.29	115.82	123.09
3	A	802	H4B	C2-N1-C8A	2.27	119.98	114.59
2	B	801	HEM	O1D-CGD-CBD	-2.26	115.91	123.09
2	B	801	HEM	C3D-C4D-ND	-2.25	107.70	110.17
2	D	801	HEM	C2C-C3C-C4C	2.24	108.46	106.90
3	C	802	H4B	C2-N1-C8A	2.24	119.90	114.59
2	C	801	HEM	C4C-CHD-C1D	2.23	125.50	122.56
4	D	802	A1BT2	C19-C20-C21	-2.19	108.23	112.85
4	A	803	A1BT2	C23-C24-C31	-2.15	117.54	121.25
2	A	801	HEM	C2D-C1D-ND	-2.15	107.42	109.90
2	B	801	HEM	C3C-C4C-NC	-2.13	106.92	110.94
2	C	801	HEM	CMC-C2C-C3C	2.13	128.93	124.68
2	B	801	HEM	C2D-C1D-ND	-2.11	107.46	109.90
2	A	801	HEM	C4B-CHC-C1C	2.10	125.33	122.56
2	C	801	HEM	C3B-C4B-NB	-2.10	107.96	109.47
3	C	807	H4B	N2-C2-N1	2.08	120.35	117.22
2	C	801	HEM	C1B-NB-C4B	2.08	107.67	105.21
2	A	801	HEM	O1D-CGD-CBD	-2.06	116.56	123.09
3	B	802	H4B	N2-C2-N1	2.05	120.30	117.22
3	C	802	H4B	N2-C2-N1	2.05	120.30	117.22
2	C	801	HEM	O2D-CGD-CBD	2.04	120.45	114.00
2	B	801	HEM	C2B-C1B-NB	-2.04	107.49	109.84
2	A	801	HEM	CHB-C1B-NB	2.02	126.87	124.37

There are no chirality outliers.

All (37) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	802	H4B	C7-C6-C9-O9
3	A	802	H4B	C7-C6-C9-C10
4	A	803	A1BT2	C21-C26-C27-N28
4	B	803	A1BT2	N18-C19-C20-C21
4	C	803	A1BT2	N18-C19-C20-C21
4	D	802	A1BT2	N18-C19-C20-C21
5	A	806	GOL	C1-C2-C3-O3
5	C	804	GOL	O1-C1-C2-C3
3	C	807	H4B	C7-C6-C9-O9
5	A	804	GOL	O1-C1-C2-C3
5	A	804	GOL	C1-C2-C3-O3
5	B	804	GOL	O1-C1-C2-C3
5	C	805	GOL	O1-C1-C2-C3
5	D	803	GOL	O1-C1-C2-C3
5	A	806	GOL	O2-C2-C3-O3
5	B	804	GOL	O1-C1-C2-O2
5	C	804	GOL	O1-C1-C2-O2
4	A	803	A1BT2	C20-C19-N18-C17
5	A	804	GOL	O1-C1-C2-O2
5	D	803	GOL	O1-C1-C2-O2
3	C	807	H4B	C7-C6-C9-C10
5	A	806	GOL	O1-C1-C2-O2
4	A	803	A1BT2	C23-C24-C31-C32
2	A	801	HEM	C4B-C3B-CAB-CBB
2	D	801	HEM	C4B-C3B-CAB-CBB
4	A	803	A1BT2	C25-C24-C31-C32
4	A	803	A1BT2	C23-C24-C31-C36
2	D	801	HEM	C2A-CAA-CBA-CGA
5	D	803	GOL	C1-C2-C3-O3
5	D	803	GOL	O2-C2-C3-O3
4	A	803	A1BT2	N18-C19-C20-C21
4	B	803	A1BT2	C21-C26-C27-N28
3	A	802	H4B	N5-C6-C9-O9
3	C	807	H4B	N5-C6-C9-O9
2	B	801	HEM	CAD-CBD-CGD-O2D
4	A	803	A1BT2	N08-C06-N07-C11
4	B	803	A1BT2	N08-C06-N07-C11

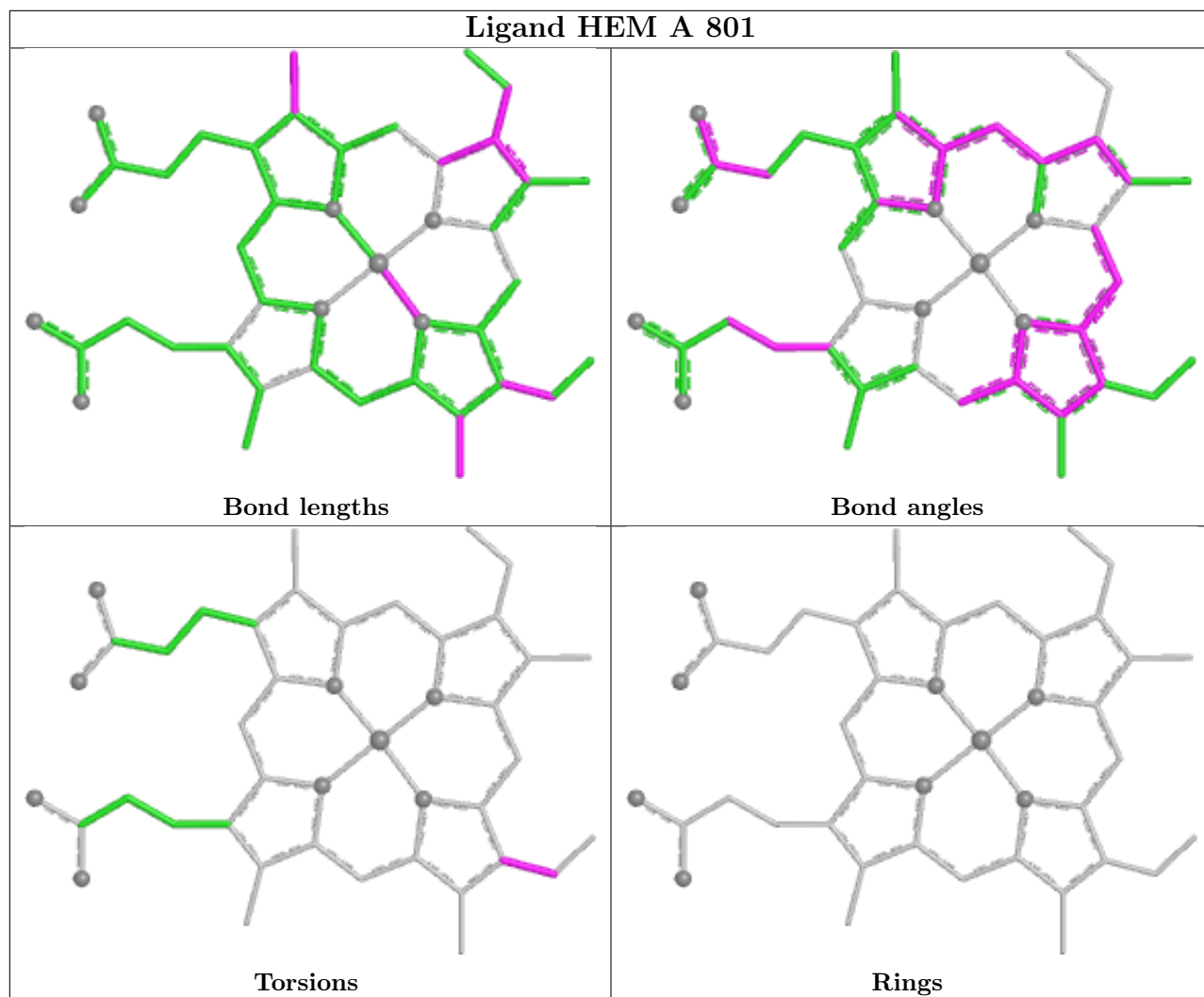
There are no ring outliers.

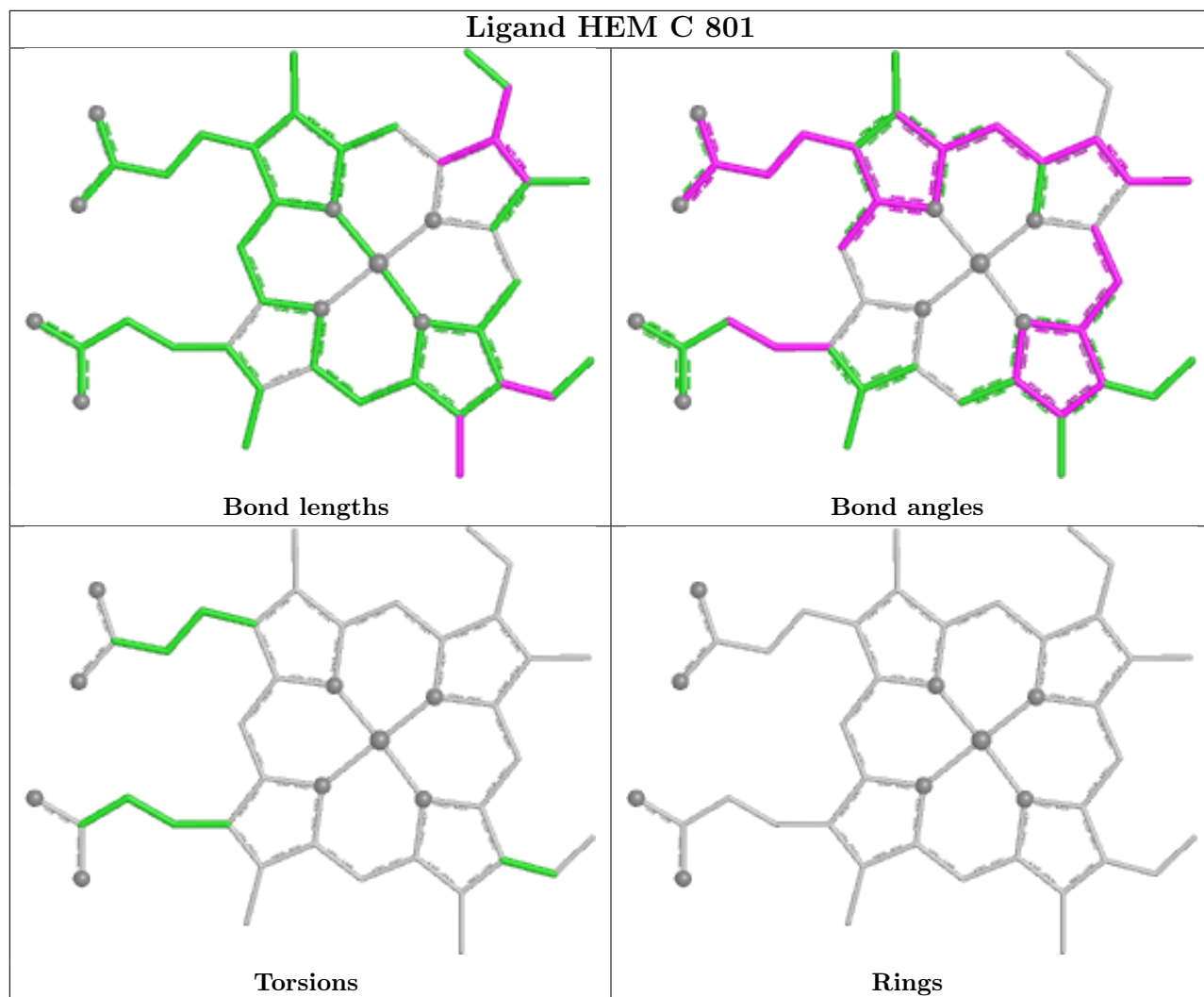
9 monomers are involved in 15 short contacts:

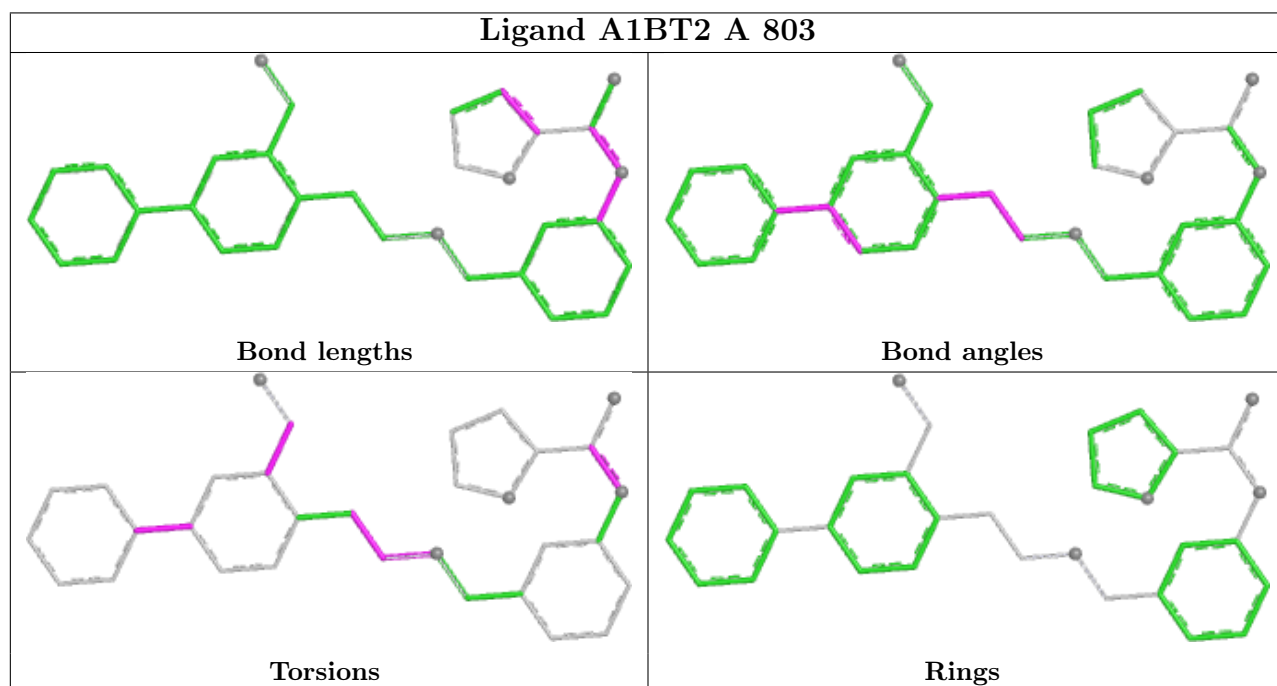
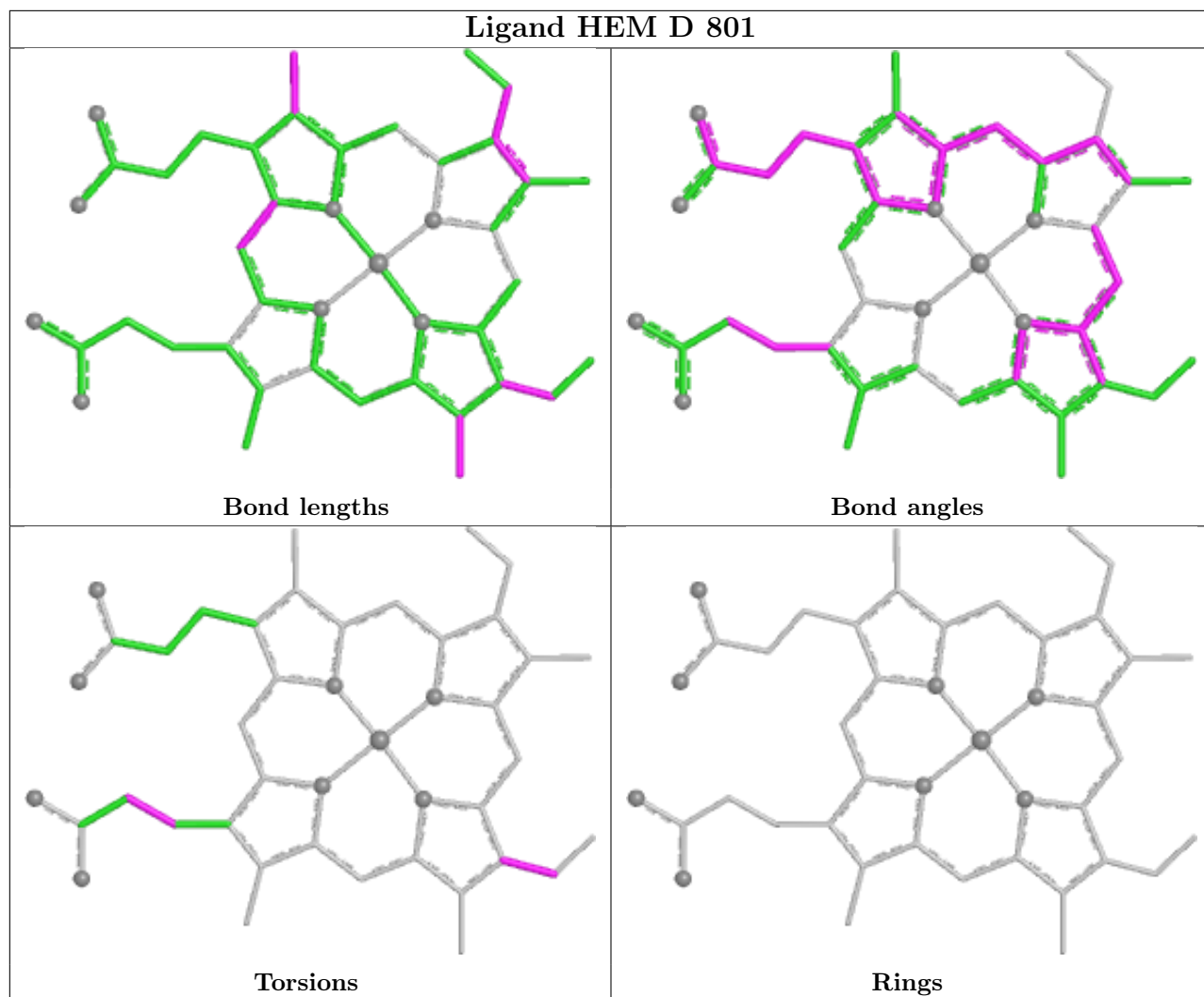


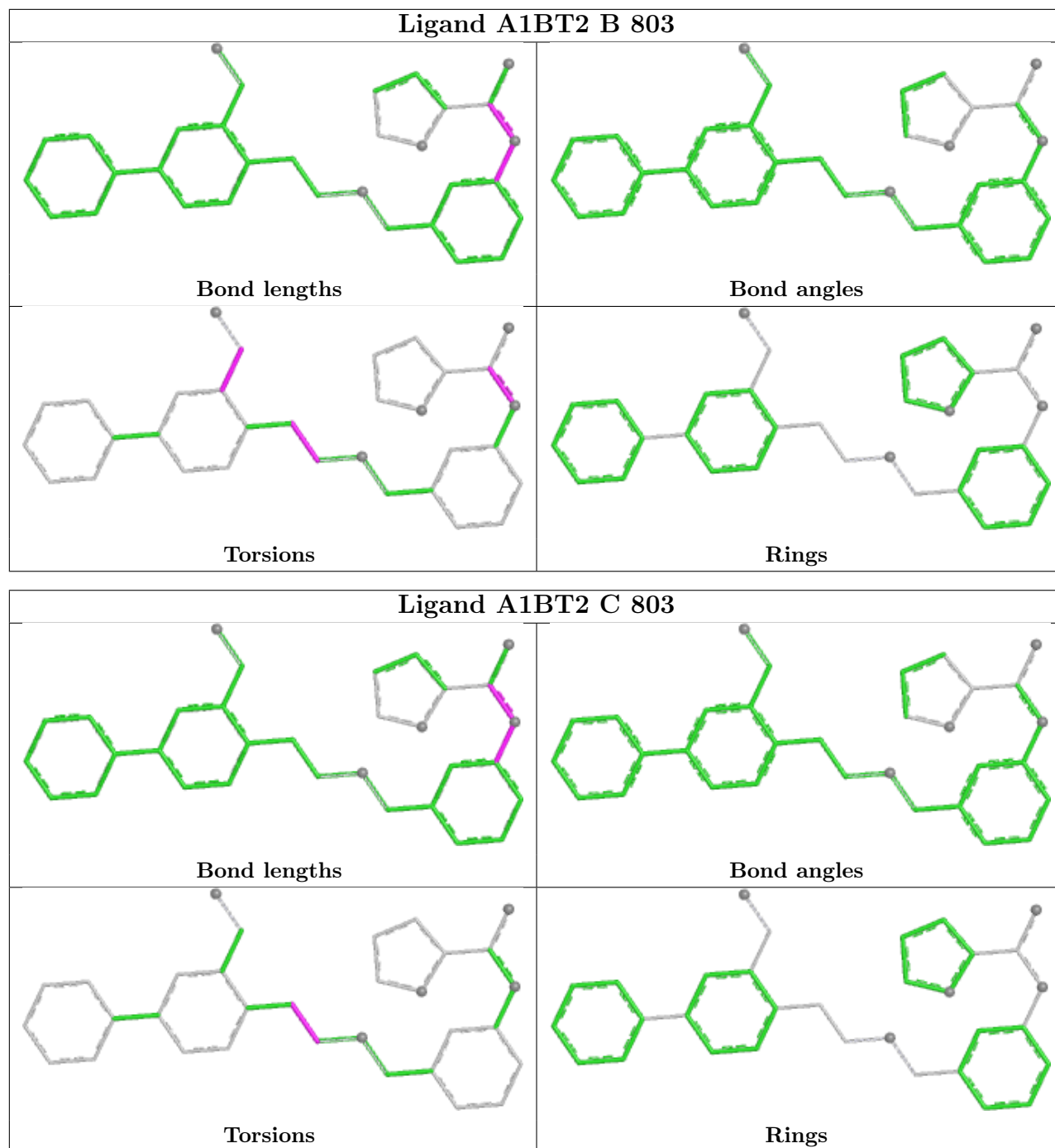
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	801	HEM	2	0
2	C	801	HEM	2	0
2	D	801	HEM	3	0
4	A	803	A1BT2	1	0
5	A	806	GOL	1	0
4	C	803	A1BT2	1	0
5	C	804	GOL	1	0
2	B	801	HEM	2	0
4	D	802	A1BT2	2	0

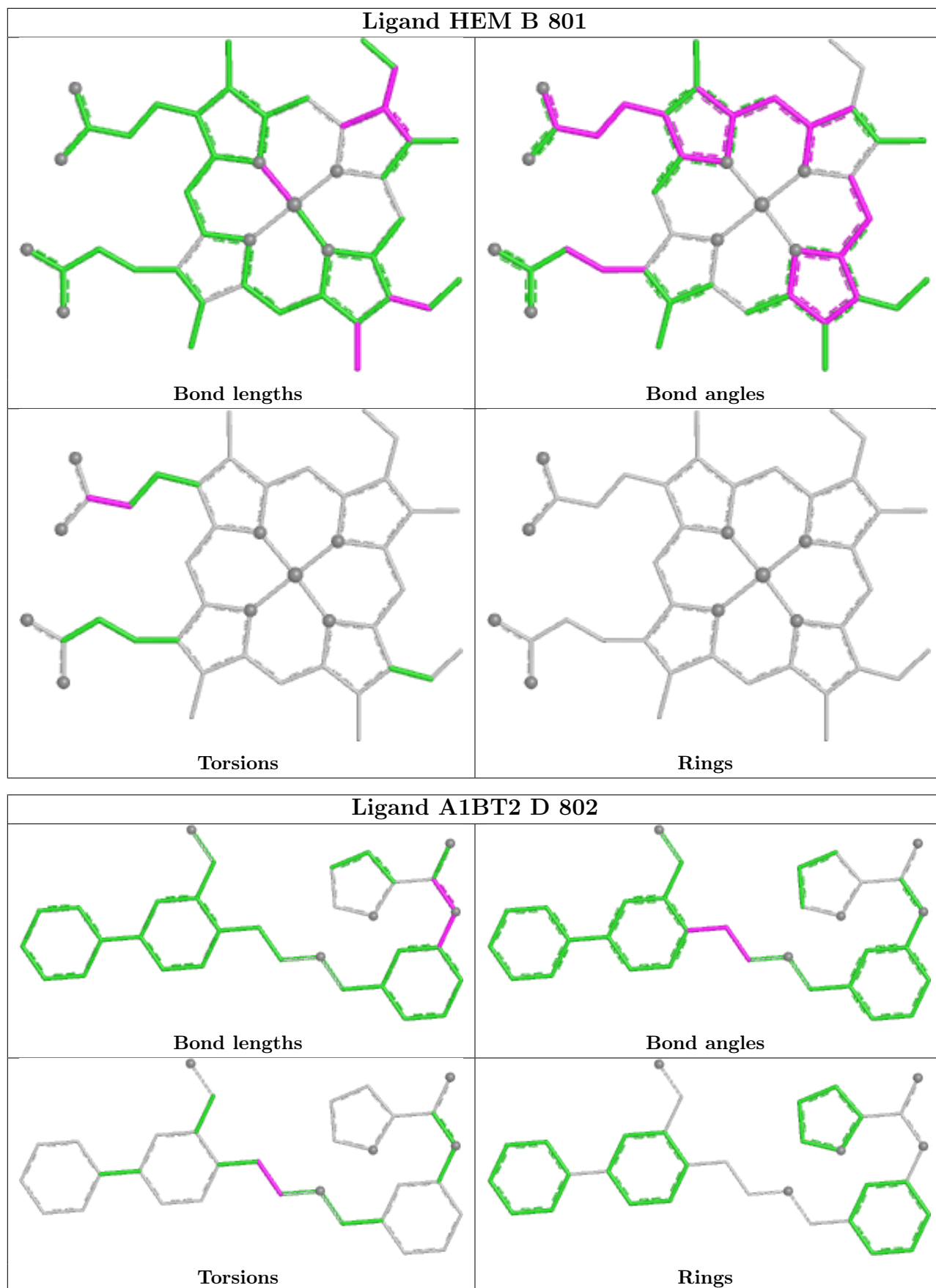
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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











## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	419/423 (99%)	-1.62	0 100 100	27, 54, 91, 128	5 (1%)
1	B	413/423 (97%)	-1.65	0 100 100	26, 52, 86, 104	2 (0%)
1	C	413/423 (97%)	-1.64	0 100 100	25, 51, 83, 119	6 (1%)
1	D	418/423 (98%)	-1.63	0 100 100	30, 55, 90, 128	3 (0%)
All	All	1663/1692 (98%)	-1.64	0 100 100	25, 53, 87, 128	16 (0%)

There are no RSRZ outliers to report.

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

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

### 6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

### 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
4	A1BT2	A	803	32/32	0.98	0.07	33,75,118,119	0
5	GOL	C	805	6/6	0.98	0.04	57,69,74,75	0
3	H4B	C	802	17/17	0.99	0.03	53,69,75,75	0
3	H4B	C	807	17/17	0.99	0.03	58,67,81,85	0

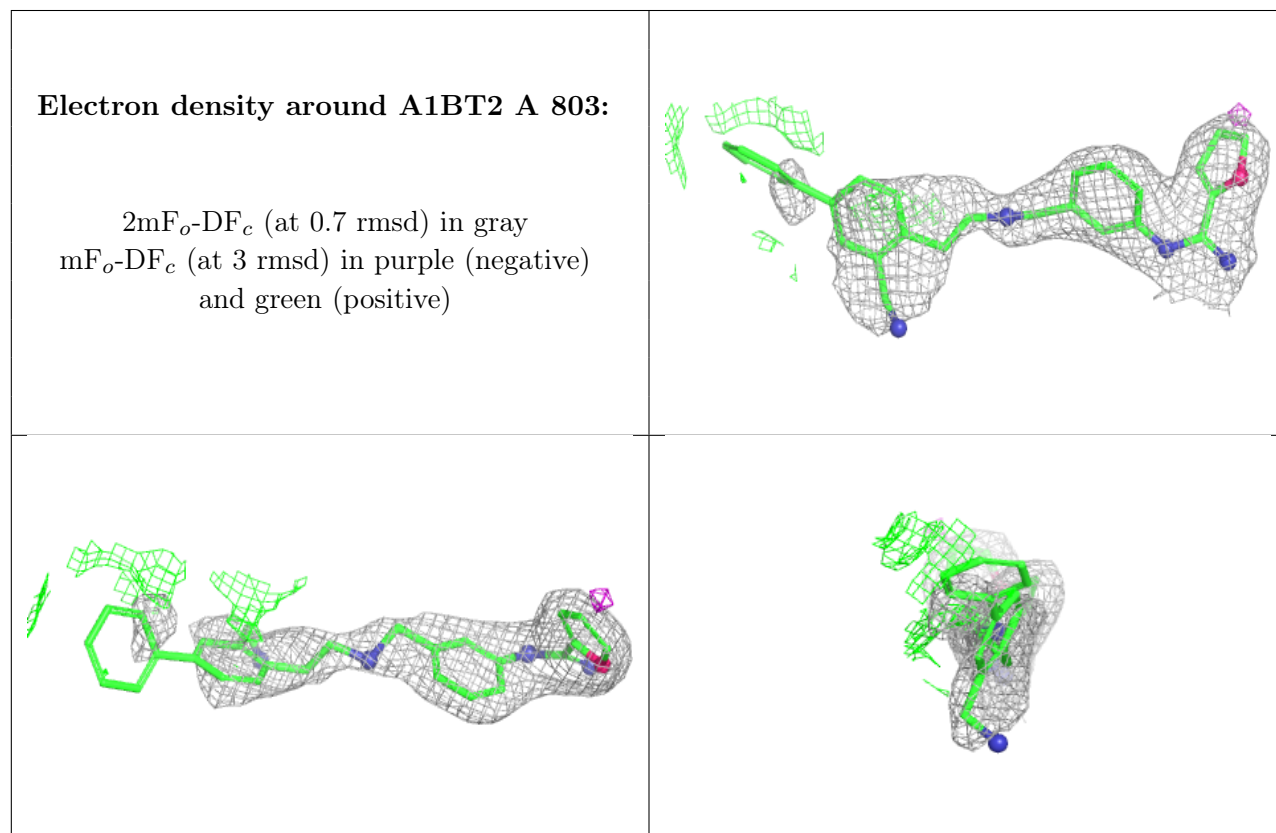
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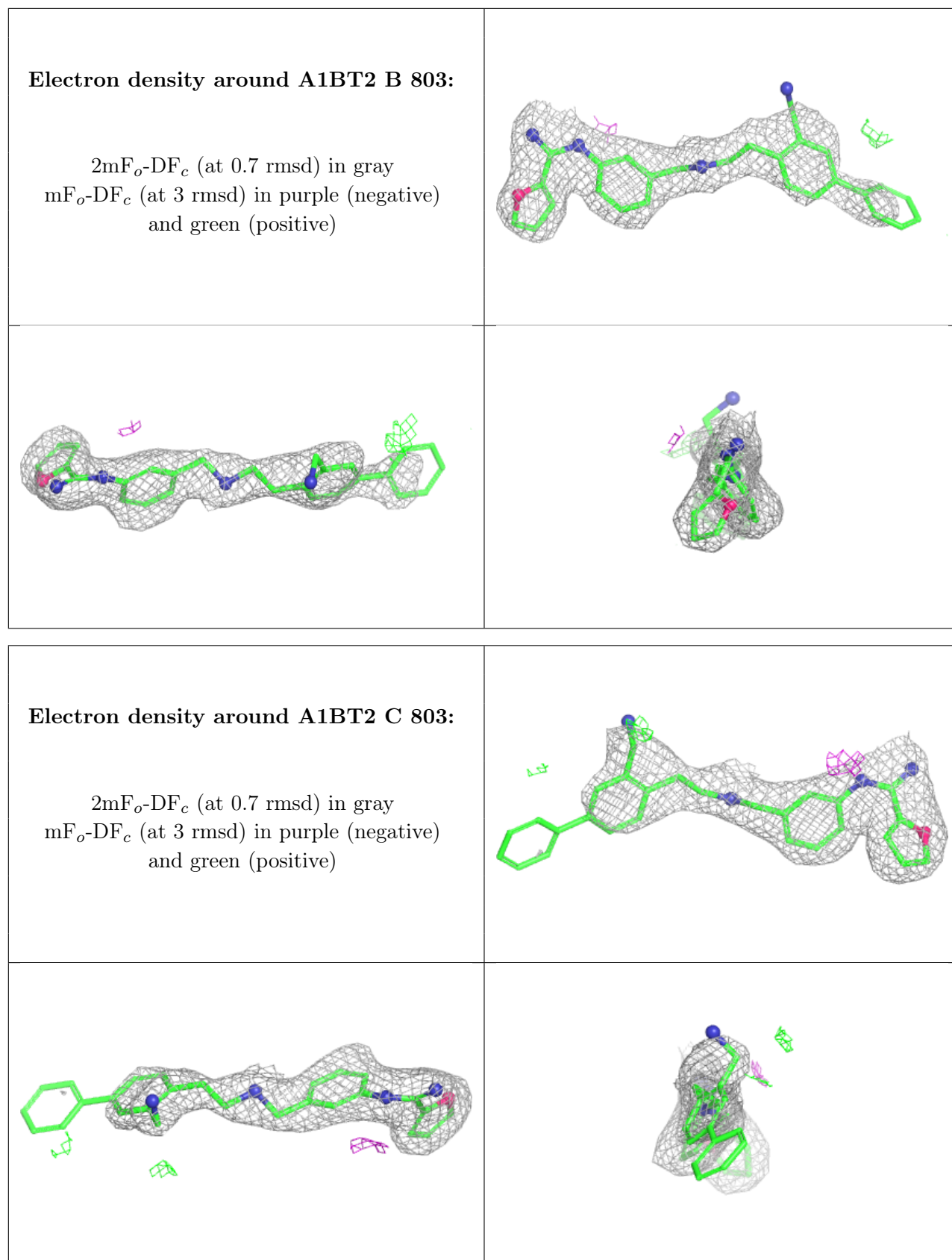


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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	H4B	A	802	17/17	0.99	0.04	52,76,88,90	0
4	A1BT2	B	803	32/32	0.99	0.05	39,63,96,100	0
4	A1BT2	C	803	32/32	0.99	0.04	33,58,109,110	0
4	A1BT2	D	802	32/32	0.99	0.06	34,67,103,105	0
5	GOL	A	804	6/6	0.99	0.04	63,73,77,80	0
5	GOL	A	806	6/6	0.99	0.04	65,70,78,79	0
5	GOL	B	804	6/6	0.99	0.05	61,68,70,72	0
5	GOL	C	804	6/6	0.99	0.05	69,76,82,86	0
3	H4B	B	802	17/17	0.99	0.03	43,66,80,84	0
5	GOL	D	803	6/6	0.99	0.03	59,66,74,77	0
2	HEM	C	801	43/43	1.00	0.03	36,49,59,66	0
2	HEM	D	801	43/43	1.00	0.03	29,42,56,60	0
2	HEM	A	801	43/43	1.00	0.03	36,48,59,63	0
2	HEM	B	801	43/43	1.00	0.03	33,47,58,60	0
6	ZN	A	805	1/1	1.00	0.00	54,54,54,54	0
6	ZN	C	806	1/1	1.00	0.01	51,51,51,51	0

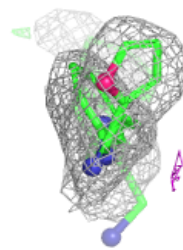
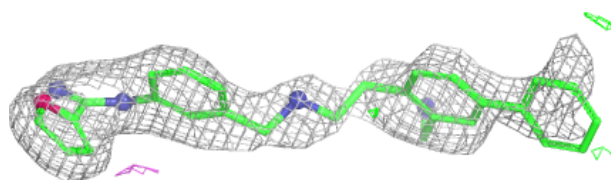
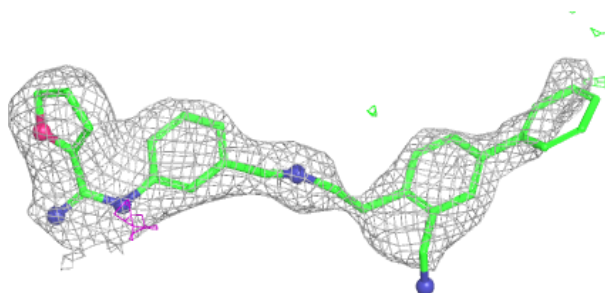
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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



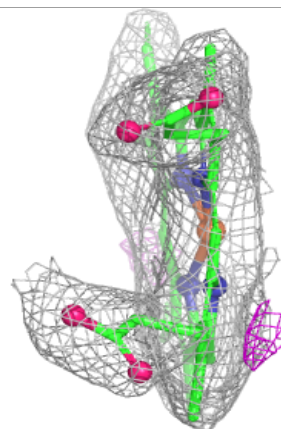
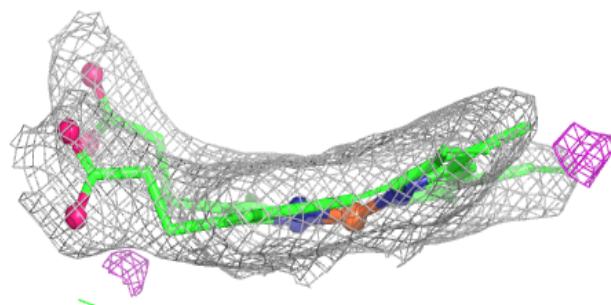
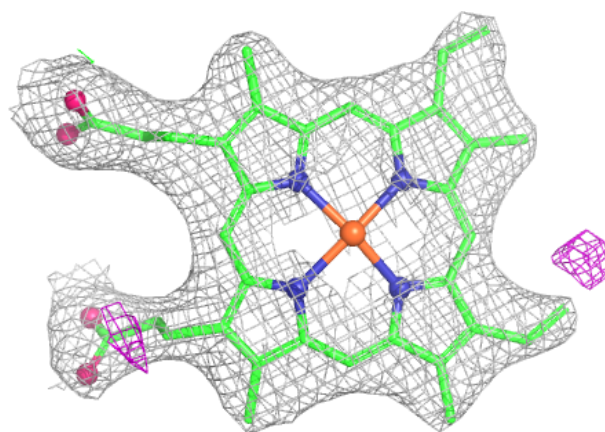


**Electron density around A1BT2 D 802:**

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

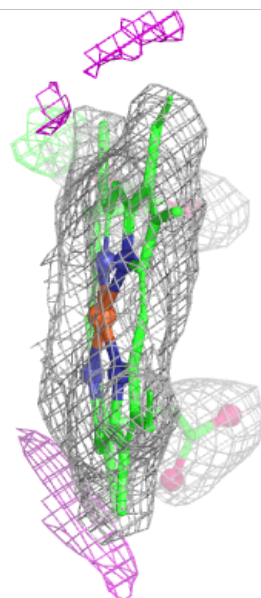
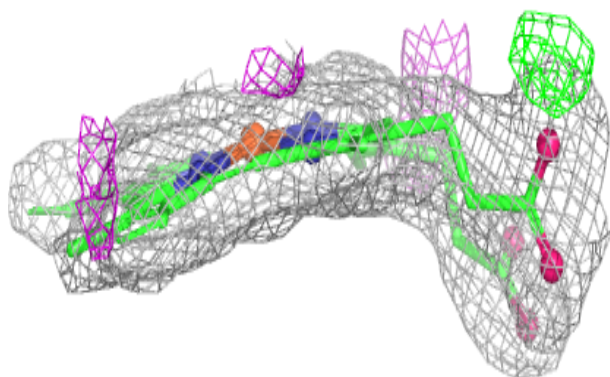
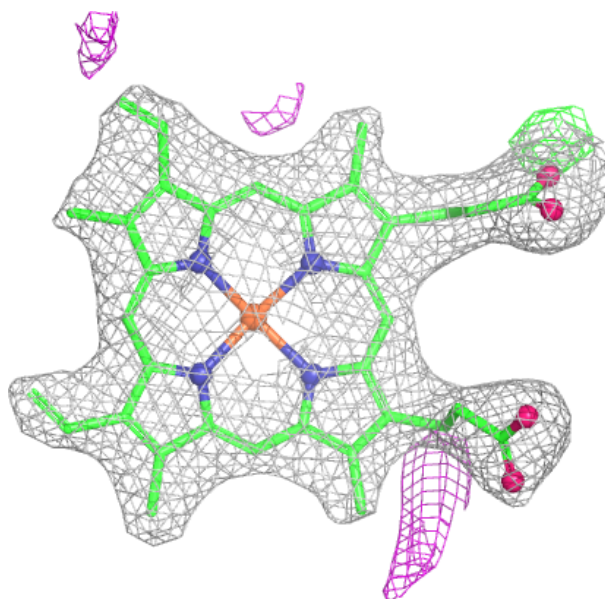
**Electron density around HEM C 801:**

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



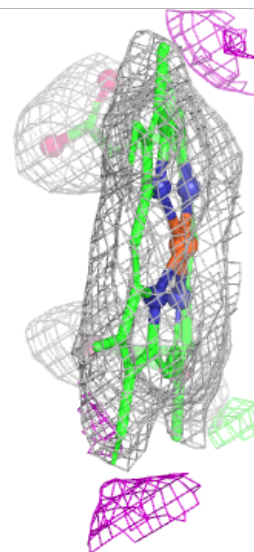
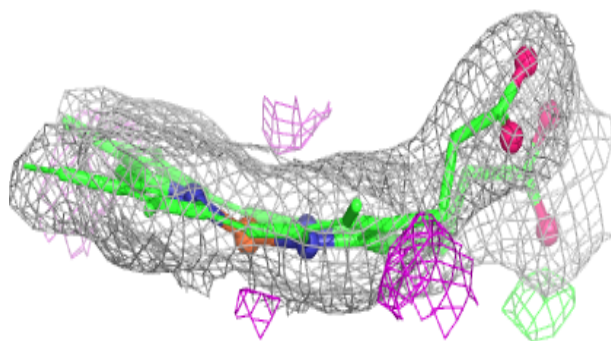
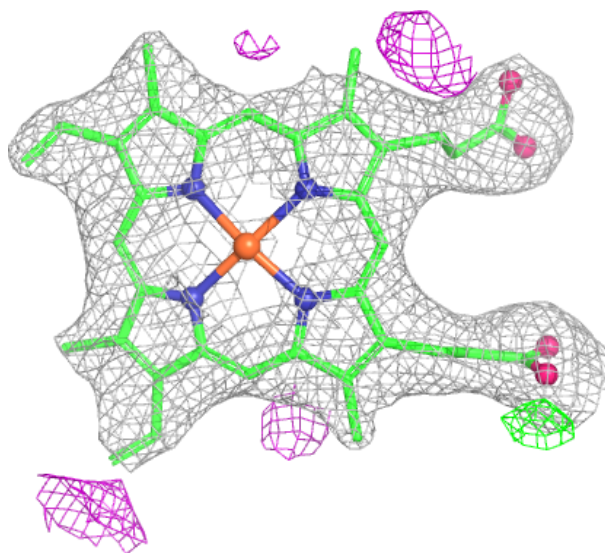
**Electron density around HEM D 801:**

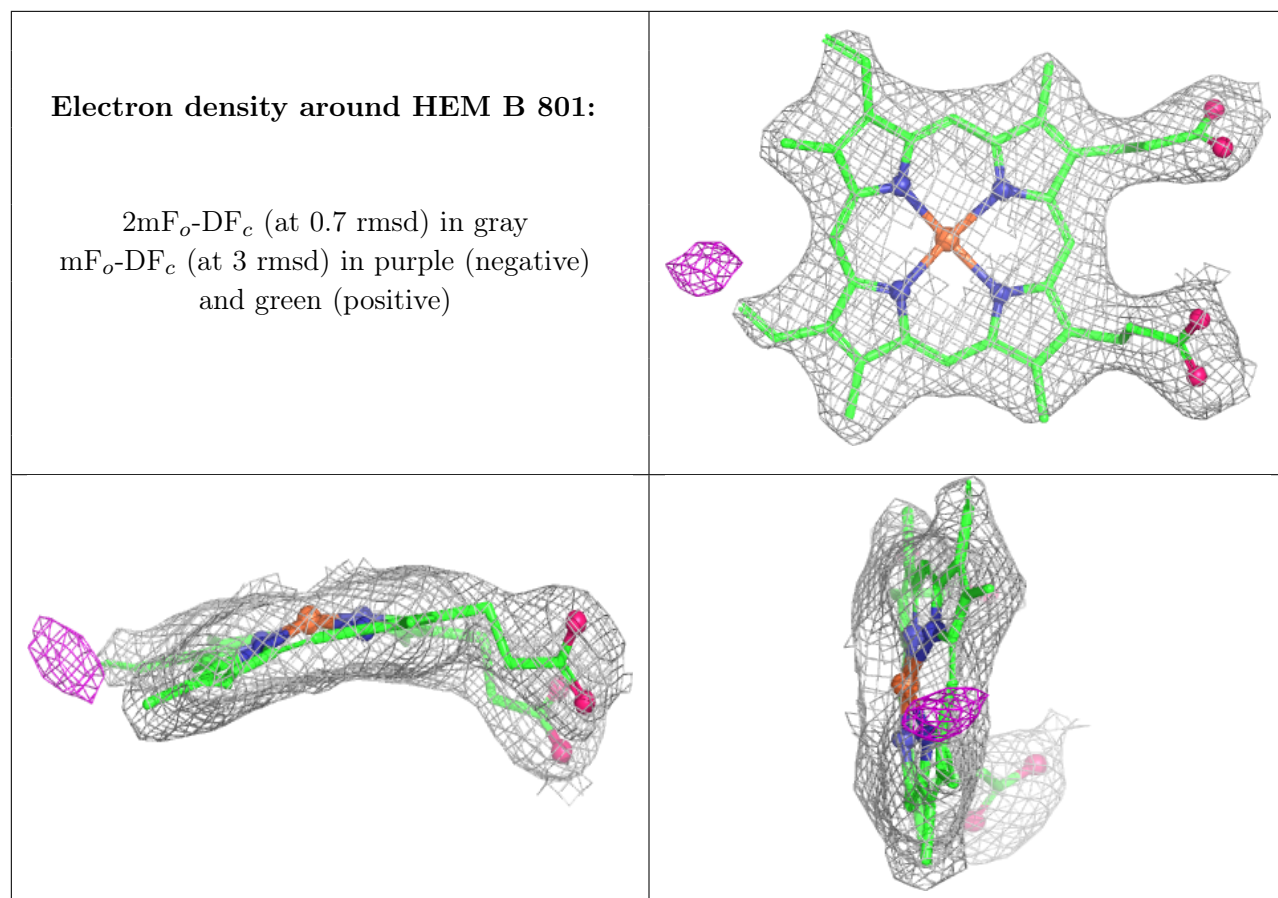
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



**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)





## 6.5 Other polymers [i](#)

There are no such residues in this entry.