



# Full wwPDB X-ray Structure Validation Report ⓘ

Nov 29, 2022 – 12:23 pm GMT

PDB ID : 7QZH  
Title : SFX structure of dye-type peroxidase DtpB D152A variant in the ferric state  
Authors : Lucic, M.; Worrall, J.A.R.; Hough, M.A.; Shilova, A.; Axford, D.A.; Owen, R.L.; Tosha, T.; Sugimoto, H.; Owada, S.  
Deposited on : 2022-01-31  
Resolution : 1.92 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>.

---

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

MolProbity : 4.02b-467  
Mogul : 1.8.4, CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.31.3  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0267  
CCP4 : 7.1.010 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.31.3

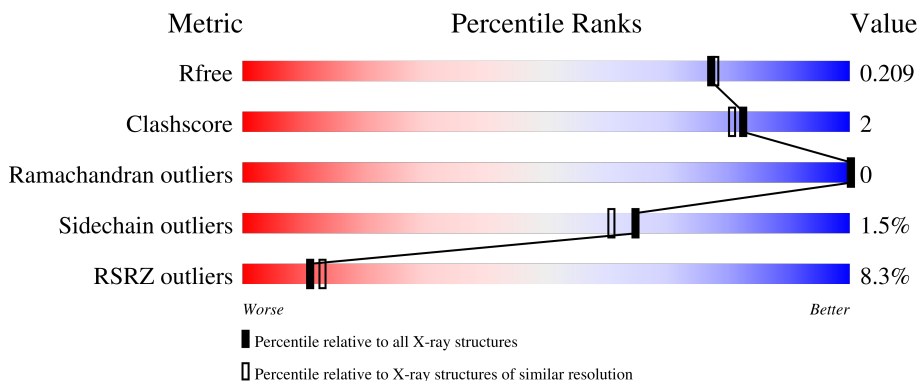
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.92 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))
$R_{free}$	130704	7937 (1.94-1.90)
Clashscore	141614	8644 (1.94-1.90)
Ramachandran outliers	138981	8530 (1.94-1.90)
Sidechain outliers	138945	8530 (1.94-1.90)
RSRZ outliers	127900	7793 (1.94-1.90)

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	316	 5% 88% 7% ..
1	B	316	 12% 91% 6% ..
1	C	316	 12% 87% 9% ..
1	D	316	 5% 88% 8% ..
1	E	316	 9% 90% 6% ..

Continued on next page...

*Continued from previous page...*

Mol	Chain	Length	Quality of chain
1	F	316	 5% 89% 7% ..

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 15080 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 Dyp-type peroxidase family.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	306	2339	1472	404	453	10	0	2	0
1	B	306	2320	1466	399	446	9	0	1	0
1	C	306	2371	1493	410	459	9	0	6	0
1	D	304	2319	1458	404	448	9	0	1	0
1	E	306	2356	1483	411	453	9	0	4	0
1	F	307	2343	1473	407	454	9	0	2	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	152	ALA	ASP	engineered mutation	UNP A0A7U8UU09
B	152	ALA	ASP	engineered mutation	UNP A0A7U8UU09
C	152	ALA	ASP	engineered mutation	UNP A0A7U8UU09
D	152	ALA	ASP	engineered mutation	UNP A0A7U8UU09
E	152	ALA	ASP	engineered mutation	UNP A0A7U8UU09
F	152	ALA	ASP	engineered mutation	UNP A0A7U8UU09

- Molecule 2 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: C<sub>34</sub>H<sub>32</sub>FeN<sub>4</sub>O<sub>4</sub>) (labeled as "Ligand of Interest" by depositor).



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		
2	E	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	F	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Mg	0	0
			1	1		
3	D	1	Total	Mg	0	0
			1	1		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	145	Total	O	0	0
			145	145		

*Continued on next page...*

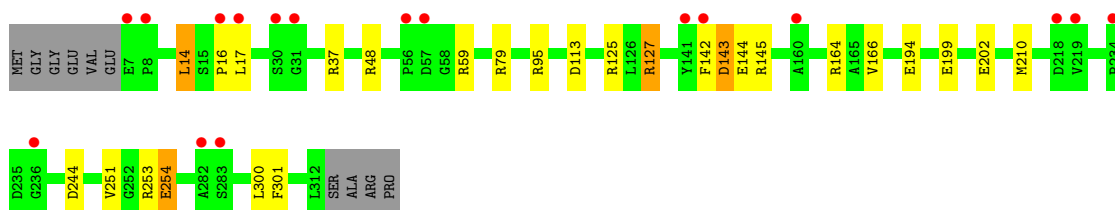
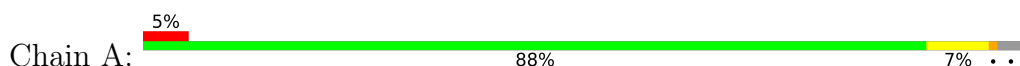
*Continued from previous page...*

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	115	Total 115	O 115	0	0
4	C	120	Total 120	O 120	0	0
4	D	131	Total 131	O 131	0	1
4	E	131	Total 131	O 131	0	0
4	F	130	Total 130	O 130	0	0

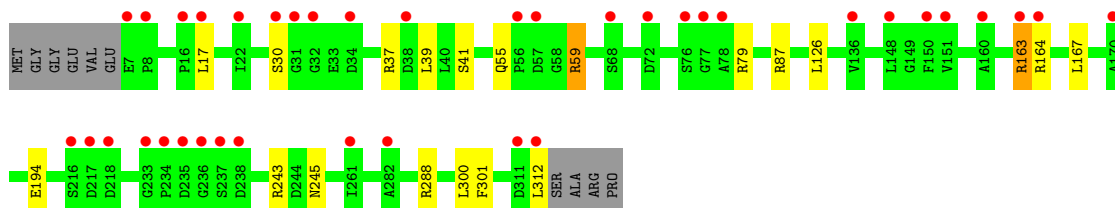
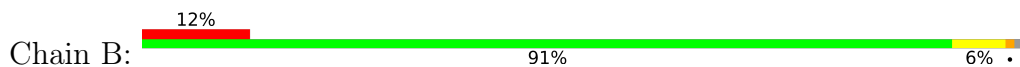
### 3 Residue-property plots [i](#)

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.

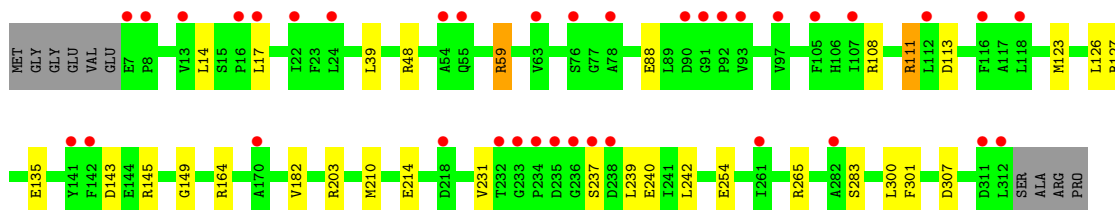
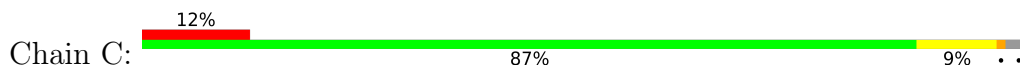
- Molecule 1: Dyp-type peroxidase family



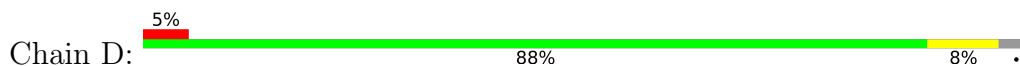
- Molecule 1: Dyp-type peroxidase family

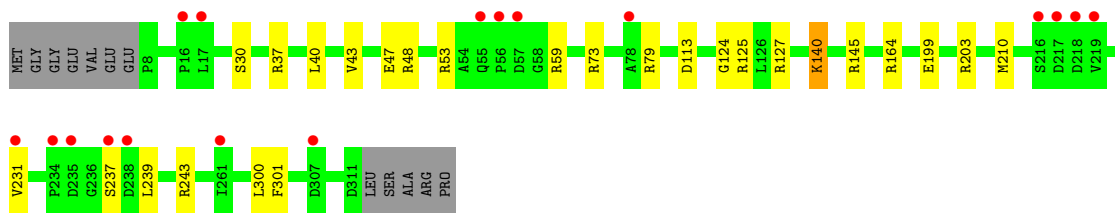


- Molecule 1: Dyp-type peroxidase family

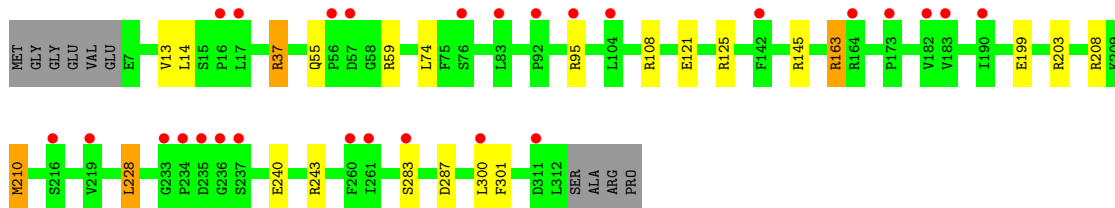
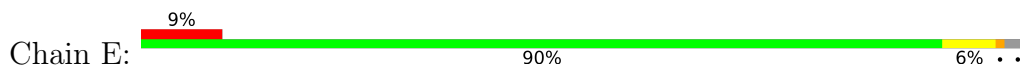


- Molecule 1: Dyp-type peroxidase family

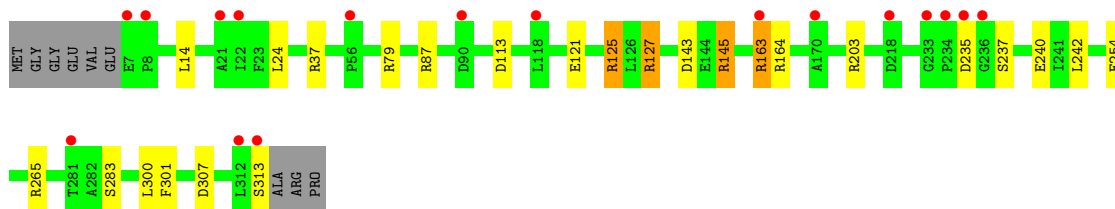
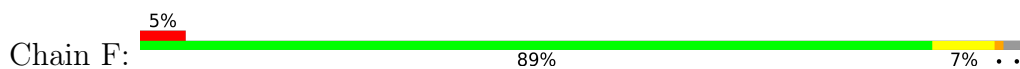




- Molecule 1: Dyp-type peroxidase family



- Molecule 1: Dyp-type peroxidase family





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	86.50Å 121.10Å 198.00Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	36.01 – 1.92 36.01 – 1.92	Depositor EDS
% Data completeness (in resolution range)	100.0 (36.01-1.92) 100.0 (36.01-1.92)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.54 (at 1.92Å)	Xtriage
Refinement program	REFMAC 5.8.0352	Depositor
R, $R_{free}$	0.173 , 0.202 0.182 , 0.209	Depositor DCC
$R_{free}$ test set	8027 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	31.3	Xtriage
Anisotropy	0.065	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	(Not available) , (Not available)	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.42$ , $\langle L^2 \rangle = 0.24$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	15080	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.48% 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: MG, 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	0.79	8/2389 (0.3%)	0.95	5/3245 (0.2%)
1	B	0.66	1/2370 (0.0%)	0.89	2/3222 (0.1%)
1	C	0.71	4/2421 (0.2%)	0.90	4/3290 (0.1%)
1	D	0.71	4/2369 (0.2%)	0.89	4/3217 (0.1%)
1	E	0.70	3/2406 (0.1%)	0.89	5/3268 (0.2%)
1	F	0.71	2/2393 (0.1%)	0.94	9/3251 (0.3%)
All	All	0.71	22/14348 (0.2%)	0.91	29/19493 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	6
1	B	0	5
1	C	0	4
1	D	0	5
1	E	0	5
1	F	0	4
All	All	0	29

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	240	GLU	CD-OE1	-7.86	1.17	1.25
1	A	254	GLU	CD-OE1	7.30	1.33	1.25
1	A	199	GLU	CD-OE1	7.01	1.33	1.25
1	B	194	GLU	CD-OE2	6.77	1.33	1.25
1	A	199	GLU	CD-OE2	6.76	1.33	1.25
1	A	144	GLU	CD-OE2	-6.69	1.18	1.25

*Continued on next page...*

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	113	ASP	CG-OD1	6.37	1.40	1.25
1	D	199	GLU	CD-OE2	6.19	1.32	1.25
1	C	240	GLU	CD-OE2	-6.09	1.19	1.25
1	C	88	GLU	CD-OE1	5.95	1.32	1.25
1	E	199	GLU	CD-OE1	5.73	1.31	1.25
1	D	199	GLU	CD-OE1	5.65	1.31	1.25
1	A	143	ASP	CG-OD1	5.55	1.38	1.25
1	D	47	GLU	CD-OE1	-5.47	1.19	1.25
1	A	194	GLU	CD-OE2	5.45	1.31	1.25
1	A	202	GLU	CD-OE1	-5.45	1.19	1.25
1	A	113	ASP	CG-OD1	5.37	1.37	1.25
1	E	240	GLU	CD-OE1	-5.27	1.19	1.25
1	C	135	GLU	CD-OE1	-5.26	1.19	1.25
1	E	121	GLU	CD-OE1	-5.21	1.20	1.25
1	F	113	ASP	CG-OD1	5.14	1.37	1.25
1	C	214	GLU	CD-OE1	-5.01	1.20	1.25

All (29) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	37	ARG	NE-CZ-NH1	8.22	124.41	120.30
1	A	164	ARG	NE-CZ-NH1	7.99	124.30	120.30
1	B	288	ARG	NE-CZ-NH2	-7.93	116.33	120.30
1	D	48	ARG	NE-CZ-NH2	-7.90	116.35	120.30
1	A	145	ARG	NE-CZ-NH2	-7.48	116.56	120.30
1	C	48	ARG	NE-CZ-NH1	6.92	123.76	120.30
1	F	37	ARG	NE-CZ-NH2	-6.59	117.00	120.30
1	A	143	ASP	CB-CG-OD2	-6.49	112.46	118.30
1	C	145	ARG	NE-CZ-NH2	-6.42	117.09	120.30
1	F	143	ASP	CB-CG-OD2	-6.24	112.69	118.30
1	E	243	ARG	NE-CZ-NH2	-6.17	117.21	120.30
1	B	243	ARG	NE-CZ-NH2	-6.14	117.23	120.30
1	A	48	ARG	NE-CZ-NH2	-6.06	117.27	120.30
1	E	145	ARG	NE-CZ-NH1	6.05	123.32	120.30
1	E	108	ARG	NE-CZ-NH1	-5.95	117.33	120.30
1	F	145	ARG	NE-CZ-NH2	-5.90	117.35	120.30
1	F	203	ARG	CG-CD-NE	-5.90	99.42	111.80
1	F	265	ARG	NE-CZ-NH2	-5.71	117.45	120.30
1	F	79	ARG	NE-CZ-NH1	5.67	123.14	120.30
1	F	87	ARG	NE-CZ-NH2	-5.64	117.48	120.30
1	F	79	ARG	NE-CZ-NH2	-5.53	117.54	120.30
1	C	265	ARG	NE-CZ-NH2	-5.37	117.61	120.30

Continued on next page...

*Continued from previous page...*

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	125[A]	ARG	NE-CZ-NH2	-5.34	117.63	120.30
1	E	125[B]	ARG	NE-CZ-NH2	-5.34	117.63	120.30
1	D	79	ARG	NE-CZ-NH1	5.33	122.97	120.30
1	D	145	ARG	NE-CZ-NH1	5.31	122.95	120.30
1	D	243	ARG	NE-CZ-NH2	-5.27	117.67	120.30
1	A	164	ARG	NE-CZ-NH2	-5.13	117.74	120.30
1	C	108	ARG	NE-CZ-NH1	-5.11	117.75	120.30

There are no chirality outliers.

All (29) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	127	ARG	Sidechain
1	A	253	ARG	Sidechain
1	A	37	ARG	Sidechain
1	A	59	ARG	Sidechain
1	A	79	ARG	Sidechain
1	A	95	ARG	Sidechain
1	B	163	ARG	Sidechain
1	B	164	ARG	Sidechain
1	B	37	ARG	Sidechain
1	B	59	ARG	Sidechain
1	B	87	ARG	Sidechain
1	C	111[A]	ARG	Sidechain
1	C	127	ARG	Sidechain
1	C	164	ARG	Sidechain
1	C	59	ARG	Sidechain
1	D	125[A]	ARG	Sidechain
1	D	164	ARG	Sidechain
1	D	37	ARG	Sidechain
1	D	59	ARG	Sidechain
1	D	73	ARG	Sidechain
1	E	163	ARG	Sidechain
1	E	203[A]	ARG	Sidechain
1	E	208	ARG	Sidechain
1	E	37	ARG	Sidechain
1	E	59	ARG	Sidechain
1	F	125[A]	ARG	Sidechain
1	F	145	ARG	Sidechain
1	F	163	ARG	Sidechain
1	F	164	ARG	Sidechain

## 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	2339	0	2265	17	0
1	B	2320	0	2242	12	0
1	C	2371	0	2293	20	0
1	D	2319	0	2250	10	0
1	E	2356	0	2282	10	0
1	F	2343	0	2266	10	0
2	A	43	0	30	2	0
2	B	43	0	30	2	0
2	C	43	0	30	0	0
2	D	43	0	30	0	0
2	E	43	0	30	0	0
2	F	43	0	30	0	0
3	A	1	0	0	0	0
3	D	1	0	0	0	0
4	A	145	0	0	6	0
4	B	115	0	0	1	0
4	C	120	0	0	2	0
4	D	131	0	0	2	0
4	E	131	0	0	2	0
4	F	130	0	0	1	0
All	All	15080	0	13778	70	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 2.

All (70) 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:127:ARG:HD3	1:F:254:GLU:OE2	1.64	0.96
1:A:16:PRO:O	4:A:501:HOH:O	2.04	0.75
1:E:55:GLN:CG	4:E:627:HOH:O	2.37	0.73
1:B:39[B]:LEU:HD13	1:B:126:LEU:HG	1.70	0.72
1:B:55:GLN:CG	1:C:17:LEU:CD1	2.70	0.69
1:B:163:ARG:HG3	1:B:167:LEU:HD12	1.76	0.66
1:B:39[B]:LEU:HD13	1:B:126:LEU:CG	2.25	0.65

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:210:MET:CE	1:E:210:MET:HB2	2.28	0.63
1:A:142:PHE:HB3	1:C:111[B]:ARG:HH12	1.65	0.62
1:C:182:VAL:HG22	1:C:300[B]:LEU:HD13	1.81	0.61
1:B:55:GLN:CG	1:C:17:LEU:HD11	2.31	0.60
1:A:142:PHE:HB3	1:C:111[B]:ARG:NH1	2.16	0.59
1:A:244:ASP:HB2	4:A:590:HOH:O	2.02	0.59
1:D:124:GLY:HA2	1:D:127:ARG:HH21	1.68	0.58
1:C:113:ASP:HB3	4:C:551:HOH:O	2.05	0.57
1:A:210[B]:MET:HE1	1:D:210:MET:HB2	1.86	0.57
1:A:251:VAL:HG12	1:C:123:MET:HG3	1.88	0.56
1:C:39:LEU:HD22	1:C:126:LEU:HD11	1.89	0.55
1:D:231:VAL:HG23	1:D:239:LEU:HB2	1.89	0.55
1:E:37:ARG:NH1	1:E:74:LEU:O	2.40	0.55
1:C:149:GLY:HA3	1:E:210:MET:HE1	1.90	0.54
1:B:245:ASN:ND2	4:B:504:HOH:O	2.40	0.54
1:C:182:VAL:CG2	1:C:300[B]:LEU:HD13	2.38	0.54
1:C:203:ARG:NH1	4:C:504:HOH:O	2.42	0.53
1:C:231:VAL:HG23	1:C:239:LEU:HB2	1.90	0.52
1:A:14:LEU:HD11	1:A:166:VAL:HG21	1.91	0.51
1:A:14:LEU:HD22	4:A:570:HOH:O	2.10	0.50
1:A:125:ARG:HD3	4:A:557:HOH:O	2.11	0.50
1:A:300:LEU:HD23	1:A:301:PHE:N	2.27	0.49
2:A:401:HEM:HMC2	2:A:401:HEM:HBC2	1.94	0.48
1:F:235:ASP:OD1	1:F:237:SER:OG	2.31	0.48
1:F:313:SER:O	4:F:501:HOH:O	2.20	0.48
1:B:41:SER:HB3	1:B:312:LEU:C	2.35	0.47
1:F:127:ARG:HH11	1:F:127:ARG:HG3	1.79	0.47
1:B:163:ARG:CZ	1:B:163:ARG:HB2	2.45	0.47
1:E:228:LEU:HD23	1:E:287:ASP:HA	1.95	0.47
1:F:121:GLU:O	1:F:125[B]:ARG:HG2	2.15	0.46
1:D:40:LEU:HA	1:D:43:VAL:HG23	1.98	0.46
1:D:127:ARG:CD	1:F:254:GLU:OE2	2.50	0.46
2:B:401:HEM:HBC2	2:B:401:HEM:HMC2	1.98	0.45
1:F:300:LEU:HD23	1:F:301:PHE:N	2.31	0.45
1:A:14:LEU:CD1	1:A:166:VAL:HG21	2.46	0.45
1:C:210:MET:HE1	1:E:210:MET:HB2	1.98	0.45
1:B:39[B]:LEU:CD1	1:B:126:LEU:HG	2.43	0.45
1:E:210:MET:O	1:E:210:MET:HG3	2.17	0.45
1:E:13[B]:VAL:HG23	1:E:14:LEU:HG	1.99	0.44
1:B:300:LEU:HD23	1:B:301:PHE:N	2.32	0.44
1:C:210:MET:HB3	4:E:629:HOH:O	2.18	0.44

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:53:ARG:HD2	4:D:605:HOH:O	2.17	0.44
1:A:17:LEU:HA	4:A:619:HOH:O	2.18	0.44
1:F:127:ARG:HH11	1:F:127:ARG:CG	2.31	0.44
1:E:300:LEU:HD23	1:E:301:PHE:N	2.33	0.44
1:C:143[A]:ASP:OD1	1:C:143[A]:ASP:N	2.51	0.43
1:C:300[A]:LEU:HD23	1:C:301:PHE:N	2.33	0.43
1:D:300:LEU:HD23	1:D:301:PHE:N	2.33	0.43
1:A:14:LEU:HD11	1:A:166:VAL:CG2	2.50	0.42
1:B:17:LEU:HD12	1:B:17:LEU:H	1.83	0.42
1:A:143:ASP:OD1	1:A:143:ASP:N	2.51	0.42
1:D:203:ARG:NH1	4:D:512:HOH:O	2.52	0.42
1:A:127:ARG:CZ	1:C:254:GLU:HG2	2.50	0.41
1:A:254:GLU:OE1	4:A:502:HOH:O	2.22	0.41
1:D:140:LYS:HD3	1:D:140:LYS:HA	1.94	0.41
1:F:300:LEU:HD23	1:F:300:LEU:C	2.41	0.41
1:A:142:PHE:CB	1:C:111[B]:ARG:NH1	2.82	0.41
1:F:14:LEU:HD23	1:F:242:LEU:HD22	2.03	0.41
2:B:401:HEM:HBC2	2:B:401:HEM:CMC	2.51	0.40
2:A:401:HEM:HBC2	2:A:401:HEM:CMC	2.52	0.40
1:B:300:LEU:HD23	1:B:300:LEU:C	2.42	0.40
1:C:14:LEU:HD23	1:C:242:LEU:HD22	2.03	0.40
1:E:300:LEU:HD23	1:E:300:LEU:C	2.41	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	306/316 (97%)	301 (98%)	5 (2%)	0	100	100
1	B	305/316 (96%)	301 (99%)	4 (1%)	0	100	100
1	C	310/316 (98%)	305 (98%)	5 (2%)	0	100	100

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	303/316 (96%)	298 (98%)	5 (2%)	0	100	100
1	E	308/316 (98%)	305 (99%)	3 (1%)	0	100	100
1	F	307/316 (97%)	302 (98%)	5 (2%)	0	100	100
All	All	1839/1896 (97%)	1812 (98%)	27 (2%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	244/251 (97%)	243 (100%)	1 (0%)	91	91
1	B	238/251 (95%)	235 (99%)	3 (1%)	69	66
1	C	247/251 (98%)	243 (98%)	4 (2%)	62	58
1	D	242/251 (96%)	239 (99%)	3 (1%)	71	69
1	E	244/251 (97%)	239 (98%)	5 (2%)	55	49
1	F	244/251 (97%)	239 (98%)	5 (2%)	55	49
All	All	1459/1506 (97%)	1438 (99%)	21 (1%)	65	63

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	14	LEU
1	B	30	SER
1	B	59	ARG
1	B	79	ARG
1	C	59	ARG
1	C	237	SER
1	C	283	SER
1	C	307	ASP
1	D	30	SER
1	D	140	LYS

*Continued on next page...*



*Continued from previous page...*

Mol	Chain	Res	Type
1	D	237	SER
1	E	95	ARG
1	E	163	ARG
1	E	210	MET
1	E	228	LEU
1	E	283	SER
1	F	24	LEU
1	F	127	ARG
1	F	163	ARG
1	F	283	SER
1	F	307	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	245	ASN
1	E	245	ASN
1	F	245	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 monosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

Of 8 ligands modelled in this entry, 2 are monoatomic - leaving 6 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	F	401	1,4	41,50,50	1.82	13 (31%)	45,82,82	1.99	19 (42%)
2	HEM	A	401	1,4	41,50,50	1.60	10 (24%)	45,82,82	2.39	16 (35%)
2	HEM	C	401	1,4	41,50,50	1.53	8 (19%)	45,82,82	1.90	17 (37%)
2	HEM	B	401	1,4	41,50,50	1.44	6 (14%)	45,82,82	1.84	11 (24%)
2	HEM	E	401	1,4	41,50,50	1.59	7 (17%)	45,82,82	2.67	21 (46%)
2	HEM	D	401	1,4	41,50,50	1.46	9 (21%)	45,82,82	2.24	18 (40%)

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	HEM	F	401	1,4	-	4/12/54/54	-
2	HEM	A	401	1,4	-	6/12/54/54	-
2	HEM	C	401	1,4	-	6/12/54/54	-
2	HEM	B	401	1,4	-	4/12/54/54	-
2	HEM	E	401	1,4	-	4/12/54/54	-
2	HEM	D	401	1,4	-	4/12/54/54	-

All (53) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	401	HEM	CHA-C4D	4.06	1.45	1.35
2	A	401	HEM	C3B-C4B	4.06	1.53	1.44
2	F	401	HEM	C1D-C2D	3.92	1.52	1.44
2	E	401	HEM	CHB-C1B	3.92	1.45	1.35
2	B	401	HEM	C1B-NB	-3.53	1.34	1.40
2	C	401	HEM	C3B-C4B	3.52	1.51	1.44
2	A	401	HEM	C1B-C2B	3.33	1.51	1.44
2	A	401	HEM	C1B-NB	-3.31	1.34	1.40
2	C	401	HEM	CHB-C1B	3.31	1.43	1.35
2	D	401	HEM	FE-NB	3.26	2.13	1.96
2	C	401	HEM	CBA-CGA	3.23	1.58	1.50
2	B	401	HEM	CHA-C4D	3.20	1.43	1.35
2	C	401	HEM	CBD-CGD	3.11	1.57	1.50

*Continued on next page...*

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	401	HEM	C3C-CAC	2.99	1.53	1.47
2	B	401	HEM	FE-NB	2.94	2.11	1.96
2	B	401	HEM	C4D-ND	-2.90	1.35	1.40
2	C	401	HEM	CHA-C4D	2.90	1.42	1.35
2	F	401	HEM	C1B-NB	-2.84	1.35	1.40
2	F	401	HEM	CHB-C1B	2.82	1.42	1.35
2	F	401	HEM	O2D-CGD	-2.82	1.21	1.30
2	E	401	HEM	CHA-C4D	2.60	1.41	1.35
2	E	401	HEM	C1D-C2D	-2.59	1.39	1.44
2	F	401	HEM	C3C-C2C	-2.57	1.36	1.40
2	D	401	HEM	O1D-CGD	2.56	1.30	1.22
2	A	401	HEM	C4A-CHB	-2.54	1.33	1.41
2	B	401	HEM	O1A-CGA	2.53	1.30	1.22
2	C	401	HEM	FE-NB	2.48	2.09	1.96
2	F	401	HEM	FE-NB	2.44	2.09	1.96
2	F	401	HEM	C4D-C3D	2.43	1.49	1.45
2	E	401	HEM	C1B-NB	-2.43	1.36	1.40
2	E	401	HEM	C3B-C4B	-2.42	1.40	1.44
2	D	401	HEM	C3B-C2B	2.42	1.42	1.37
2	E	401	HEM	C3C-CAC	2.34	1.52	1.47
2	A	401	HEM	CBD-CGD	2.34	1.56	1.50
2	D	401	HEM	CMD-C2D	2.32	1.55	1.50
2	F	401	HEM	C2C-C1C	-2.31	1.37	1.42
2	B	401	HEM	CMA-C3A	2.27	1.56	1.51
2	D	401	HEM	CHB-C1B	2.26	1.40	1.35
2	A	401	HEM	C1D-C2D	2.25	1.48	1.44
2	C	401	HEM	CMB-C2B	2.25	1.55	1.50
2	A	401	HEM	C1A-NA	2.24	1.40	1.36
2	F	401	HEM	CMD-C2D	2.23	1.55	1.50
2	D	401	HEM	C1B-NB	-2.22	1.36	1.40
2	F	401	HEM	O1A-CGA	2.21	1.29	1.22
2	D	401	HEM	O2D-CGD	-2.18	1.23	1.30
2	A	401	HEM	CAA-C2A	2.15	1.55	1.52
2	A	401	HEM	C1D-ND	-2.10	1.34	1.38
2	C	401	HEM	CMA-C3A	2.07	1.55	1.51
2	D	401	HEM	CMB-C2B	2.04	1.55	1.50
2	D	401	HEM	C2C-C1C	2.03	1.47	1.42
2	E	401	HEM	C1A-CHA	-2.02	1.35	1.41
2	A	401	HEM	FE-NB	2.02	2.06	1.96
2	F	401	HEM	CBB-CAB	-2.01	1.20	1.30

All (102) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	401	HEM	C3B-C2B-C1B	7.08	111.73	106.49
2	A	401	HEM	C1B-NB-C4B	6.92	112.22	105.07
2	D	401	HEM	C1B-NB-C4B	6.67	111.96	105.07
2	D	401	HEM	CHC-C4B-NB	5.83	130.76	124.43
2	B	401	HEM	C1B-NB-C4B	5.23	110.47	105.07
2	A	401	HEM	CAD-C3D-C4D	5.13	133.63	124.66
2	A	401	HEM	CHD-C1D-ND	4.96	129.81	124.43
2	E	401	HEM	C4D-ND-C1D	-4.93	99.98	105.07
2	E	401	HEM	C2D-C1D-ND	4.61	115.40	109.88
2	E	401	HEM	CMC-C2C-C3C	4.56	133.20	124.68
2	B	401	HEM	CHC-C4B-NB	4.53	129.35	124.43
2	E	401	HEM	C2C-C3C-C4C	-4.50	103.75	106.90
2	E	401	HEM	C4B-C3B-C2B	-4.41	103.61	107.11
2	A	401	HEM	CHC-C4B-NB	4.34	129.14	124.43
2	A	401	HEM	CHB-C1B-NB	4.24	129.61	124.38
2	F	401	HEM	CHA-C4D-ND	4.13	129.49	124.38
2	C	401	HEM	CMA-C3A-C4A	-4.07	122.21	128.46
2	D	401	HEM	CHD-C1D-ND	4.04	128.82	124.43
2	E	401	HEM	CMA-C3A-C4A	-4.01	122.30	128.46
2	F	401	HEM	CHC-C4B-NB	3.89	128.66	124.43
2	E	401	HEM	CHB-C1B-NB	3.73	128.98	124.38
2	C	401	HEM	CMC-C2C-C3C	3.64	131.48	124.68
2	F	401	HEM	CMA-C3A-C4A	-3.56	122.99	128.46
2	A	401	HEM	CAD-C3D-C2D	-3.53	121.30	127.88
2	F	401	HEM	O2A-CGA-CBA	3.44	125.10	114.03
2	D	401	HEM	CAD-C3D-C4D	3.43	130.66	124.66
2	F	401	HEM	C2C-C3C-C4C	-3.41	104.52	106.90
2	E	401	HEM	C1B-NB-C4B	3.37	108.55	105.07
2	E	401	HEM	CHD-C1D-C2D	-3.33	119.77	124.98
2	A	401	HEM	CHD-C1D-C2D	-3.32	119.80	124.98
2	C	401	HEM	CMB-C2B-C1B	-3.31	119.99	125.04
2	B	401	HEM	CMC-C2C-C3C	3.31	130.86	124.68
2	F	401	HEM	C1D-C2D-C3D	-3.30	103.49	106.96
2	E	401	HEM	CMD-C2D-C1D	3.28	130.04	125.04
2	B	401	HEM	CMA-C3A-C4A	-3.27	123.44	128.46
2	A	401	HEM	CMA-C3A-C4A	-3.24	123.48	128.46
2	E	401	HEM	C2B-C1B-NB	-3.21	106.03	109.84
2	D	401	HEM	CAD-C3D-C2D	-3.21	121.90	127.88
2	B	401	HEM	CHD-C1D-ND	3.15	127.85	124.43
2	E	401	HEM	CMA-C3A-C2A	3.14	130.87	124.94
2	A	401	HEM	CBB-CAB-C3B	-3.08	112.31	127.62
2	A	401	HEM	O2D-CGD-CBD	3.04	123.79	114.03
2	E	401	HEM	O2D-CGD-O1D	-3.02	115.78	123.30

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	401	HEM	O1A-CGA-CBA	-3.01	113.41	123.08
2	C	401	HEM	CMB-C2B-C3B	2.87	135.33	128.30
2	D	401	HEM	CHD-C1D-C2D	-2.84	120.54	124.98
2	B	401	HEM	CHD-C1D-C2D	-2.83	120.56	124.98
2	E	401	HEM	O2D-CGD-CBD	2.78	122.95	114.03
2	D	401	HEM	C2C-C3C-C4C	-2.77	104.96	106.90
2	E	401	HEM	CBD-CAD-C3D	-2.74	105.03	112.63
2	E	401	HEM	CAD-CBD-CGD	-2.73	107.74	113.60
2	F	401	HEM	CHA-C4D-C3D	-2.69	120.27	125.33
2	B	401	HEM	C4B-C3B-C2B	2.68	109.24	107.11
2	D	401	HEM	CBA-CAA-C2A	-2.66	108.08	112.62
2	E	401	HEM	CAD-C3D-C2D	-2.65	122.93	127.88
2	E	401	HEM	CAD-C3D-C4D	2.64	129.28	124.66
2	C	401	HEM	C2B-C1B-NB	2.64	112.97	109.84
2	D	401	HEM	C3B-C2B-C1B	-2.58	104.57	106.49
2	F	401	HEM	CHB-C1B-NB	2.53	127.51	124.38
2	C	401	HEM	C4B-CHC-C1C	2.53	125.90	122.56
2	F	401	HEM	CMC-C2C-C3C	2.51	129.37	124.68
2	F	401	HEM	C1B-NB-C4B	2.51	107.66	105.07
2	A	401	HEM	C3C-C4C-NC	-2.49	106.23	110.94
2	D	401	HEM	C4B-CHC-C1C	2.47	125.82	122.56
2	F	401	HEM	C2D-C1D-ND	2.47	112.84	109.88
2	B	401	HEM	CHA-C4D-C3D	-2.46	120.70	125.33
2	C	401	HEM	CMA-C3A-C2A	2.45	129.57	124.94
2	C	401	HEM	C3B-C2B-C1B	-2.44	104.67	106.49
2	F	401	HEM	CHD-C1D-C2D	-2.42	121.19	124.98
2	D	401	HEM	C4B-C3B-C2B	2.36	108.99	107.11
2	C	401	HEM	O2D-CGD-CBD	2.34	121.56	114.03
2	C	401	HEM	CBA-CAA-C2A	2.34	116.62	112.62
2	C	401	HEM	CMD-C2D-C1D	2.33	128.59	125.04
2	C	401	HEM	CHD-C1D-C2D	-2.31	121.38	124.98
2	F	401	HEM	CBD-CAD-C3D	-2.30	106.23	112.63
2	B	401	HEM	CMA-C3A-C2A	2.28	129.24	124.94
2	C	401	HEM	CHA-C4D-ND	2.28	127.20	124.38
2	C	401	HEM	CAB-C3B-C2B	2.28	136.10	128.60
2	A	401	HEM	CAB-C3B-C2B	-2.27	121.13	128.60
2	A	401	HEM	CHA-C4D-ND	2.26	127.18	124.38
2	C	401	HEM	CHD-C1D-ND	2.24	126.86	124.43
2	A	401	HEM	O1A-CGA-CBA	-2.22	115.94	123.08
2	D	401	HEM	CHA-C4D-ND	2.22	127.12	124.38
2	F	401	HEM	CMA-C3A-C2A	2.21	129.10	124.94
2	D	401	HEM	C4D-ND-C1D	2.18	107.33	105.07

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	401	HEM	O2A-CGA-CBA	2.18	121.03	114.03
2	C	401	HEM	C2C-C3C-C4C	-2.15	105.39	106.90
2	F	401	HEM	CAD-CBD-CGD	-2.14	109.01	113.60
2	F	401	HEM	CAB-C3B-C2B	2.11	135.57	128.60
2	D	401	HEM	CMD-C2D-C1D	2.11	128.25	125.04
2	A	401	HEM	CMA-C3A-C2A	2.11	128.91	124.94
2	C	401	HEM	CAA-CBA-CGA	-2.10	107.87	113.76
2	B	401	HEM	CHA-C4D-ND	2.10	126.97	124.38
2	B	401	HEM	C4B-CHC-C1C	2.08	125.31	122.56
2	D	401	HEM	CAB-C3B-C2B	2.08	135.46	128.60
2	E	401	HEM	CAB-C3B-C4B	2.06	134.06	124.47
2	D	401	HEM	CMC-C2C-C3C	2.05	128.52	124.68
2	F	401	HEM	C3B-C2B-C1B	2.04	108.00	106.49
2	F	401	HEM	C3C-C4C-NC	-2.03	107.11	110.94
2	A	401	HEM	C4D-ND-C1D	2.02	107.16	105.07
2	E	401	HEM	CAA-CBA-CGA	-2.02	108.09	113.76
2	D	401	HEM	O2A-CGA-O1A	-2.01	118.28	123.30

There are no chirality outliers.

All (28) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	401	HEM	C2B-C3B-CAB-CBB
2	A	401	HEM	C4B-C3B-CAB-CBB
2	C	401	HEM	CAD-CBD-CGD-O2D
2	F	401	HEM	CAA-CBA-CGA-O2A
2	F	401	HEM	CAD-CBD-CGD-O2D
2	B	401	HEM	CAA-CBA-CGA-O2A
2	E	401	HEM	CAA-CBA-CGA-O1A
2	E	401	HEM	CAA-CBA-CGA-O2A
2	D	401	HEM	CAD-CBD-CGD-O1D
2	C	401	HEM	C2A-CAA-CBA-CGA
2	A	401	HEM	CAA-CBA-CGA-O2A
2	B	401	HEM	CAD-CBD-CGD-O2D
2	F	401	HEM	CAA-CBA-CGA-O1A
2	B	401	HEM	CAA-CBA-CGA-O1A
2	E	401	HEM	CAD-CBD-CGD-O2D
2	C	401	HEM	CAA-CBA-CGA-O1A
2	D	401	HEM	CAA-CBA-CGA-O1A
2	D	401	HEM	CAA-CBA-CGA-O2A
2	A	401	HEM	CAD-CBD-CGD-O1D
2	B	401	HEM	CAD-CBD-CGD-O1D

*Continued on next page...*

*Continued from previous page...*

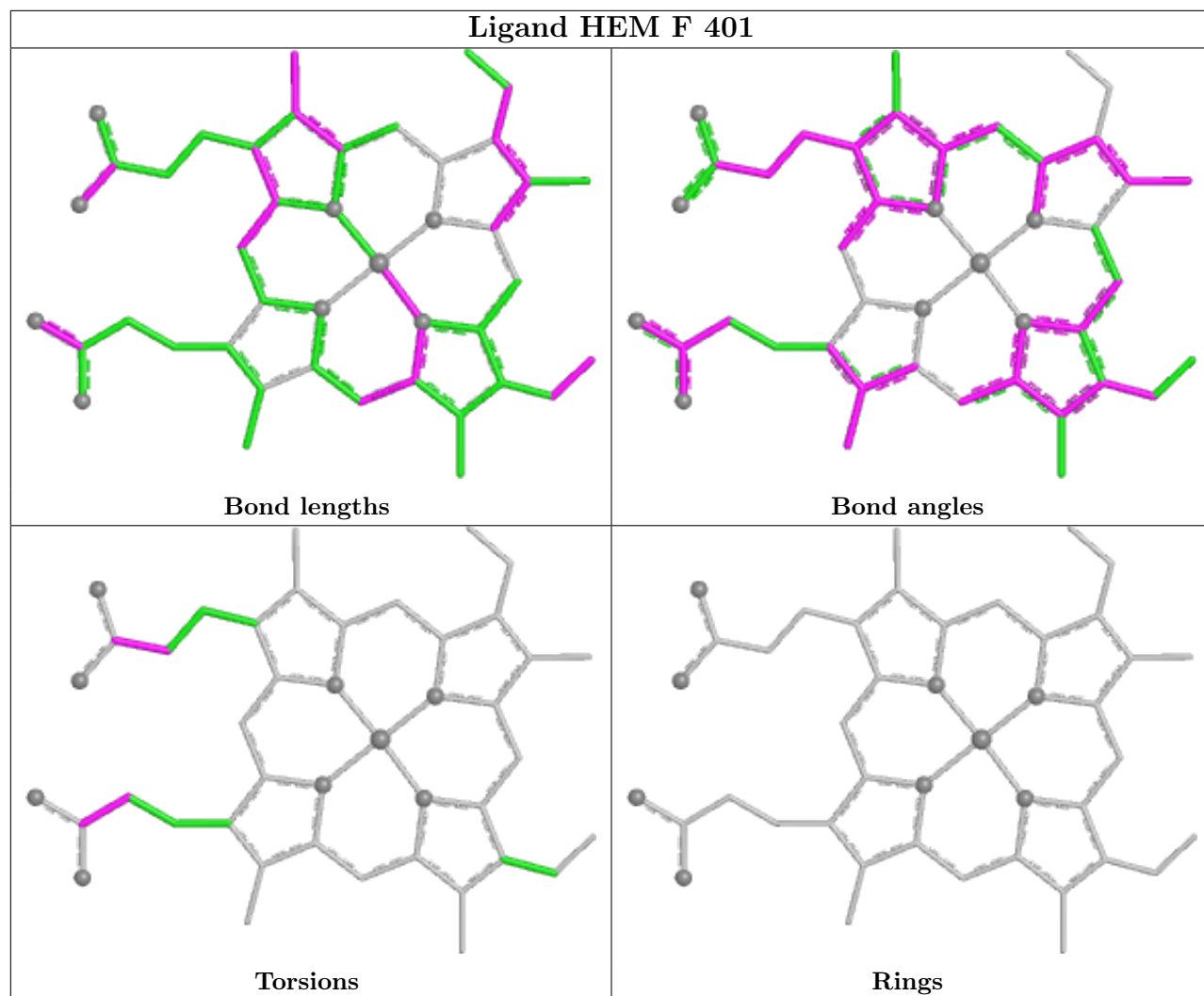
Mol	Chain	Res	Type	Atoms
2	D	401	HEM	CAD-CBD-CGD-O2D
2	E	401	HEM	CAD-CBD-CGD-O1D
2	F	401	HEM	CAD-CBD-CGD-O1D
2	C	401	HEM	CAD-CBD-CGD-O1D
2	A	401	HEM	CAA-CBA-CGA-O1A
2	C	401	HEM	C4B-C3B-CAB-CBB
2	C	401	HEM	CAA-CBA-CGA-O2A
2	A	401	HEM	CAD-CBD-CGD-O2D

There are no ring outliers.

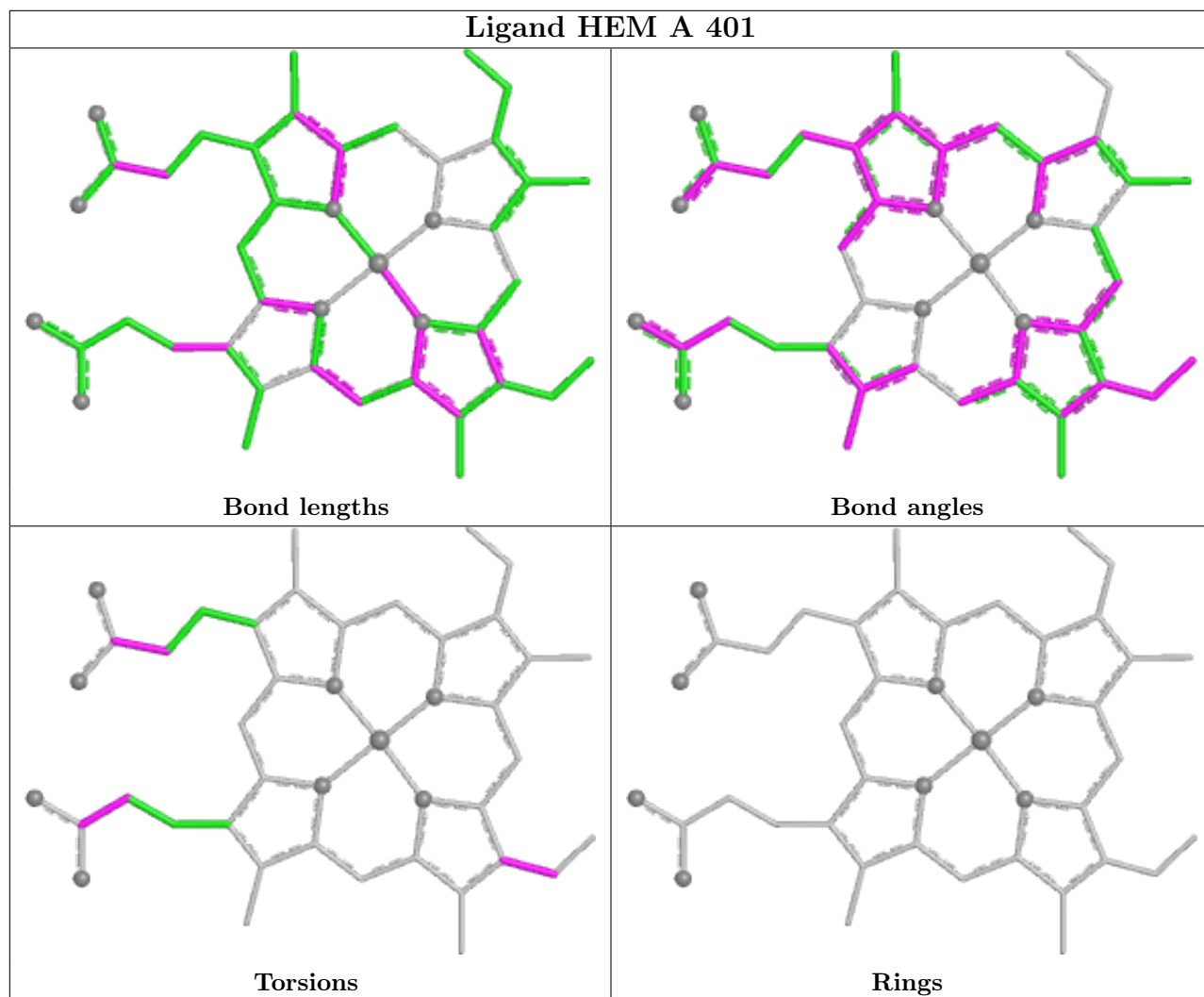
2 monomers are involved in 4 short contacts:

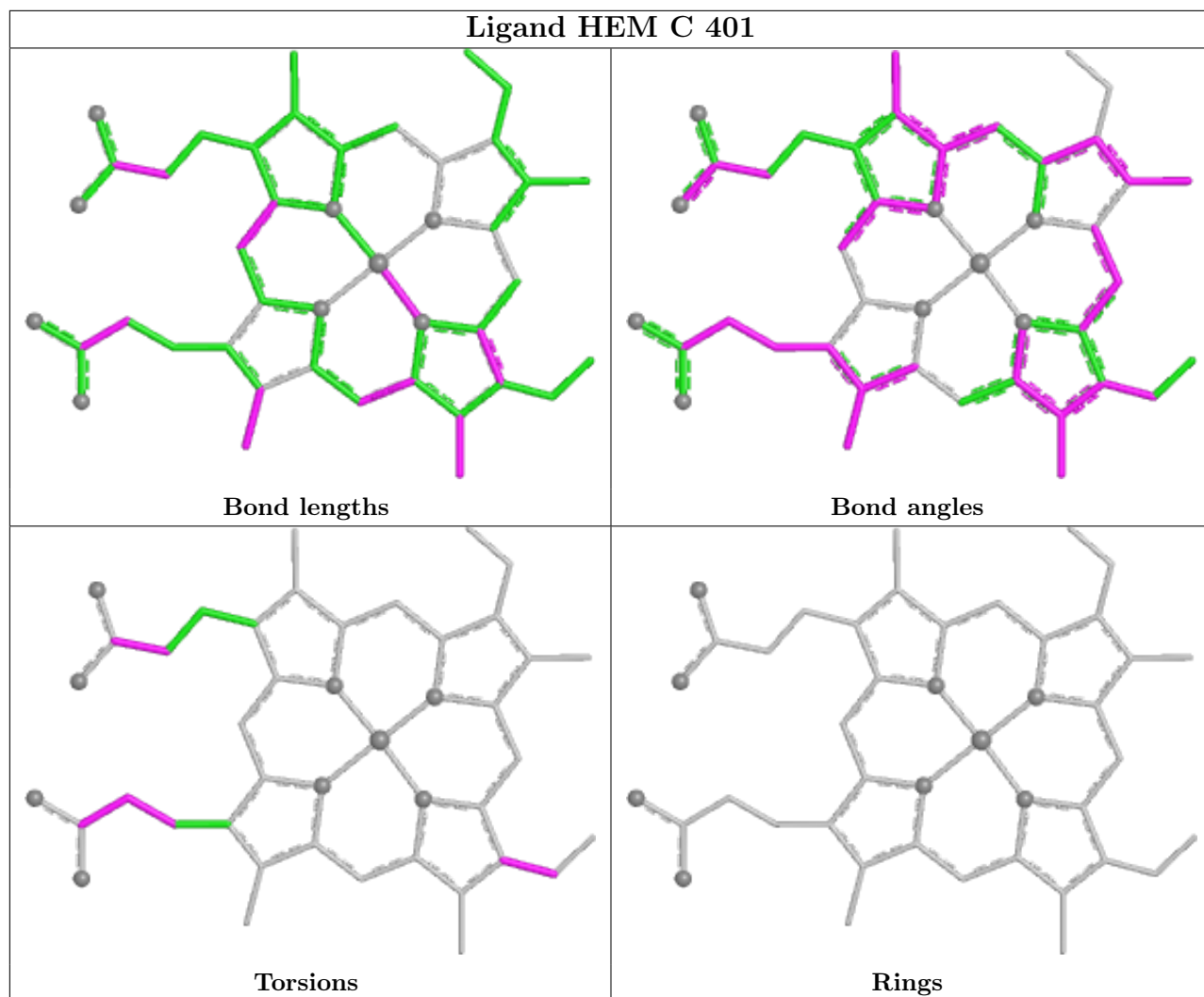
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	401	HEM	2	0
2	B	401	HEM	2	0

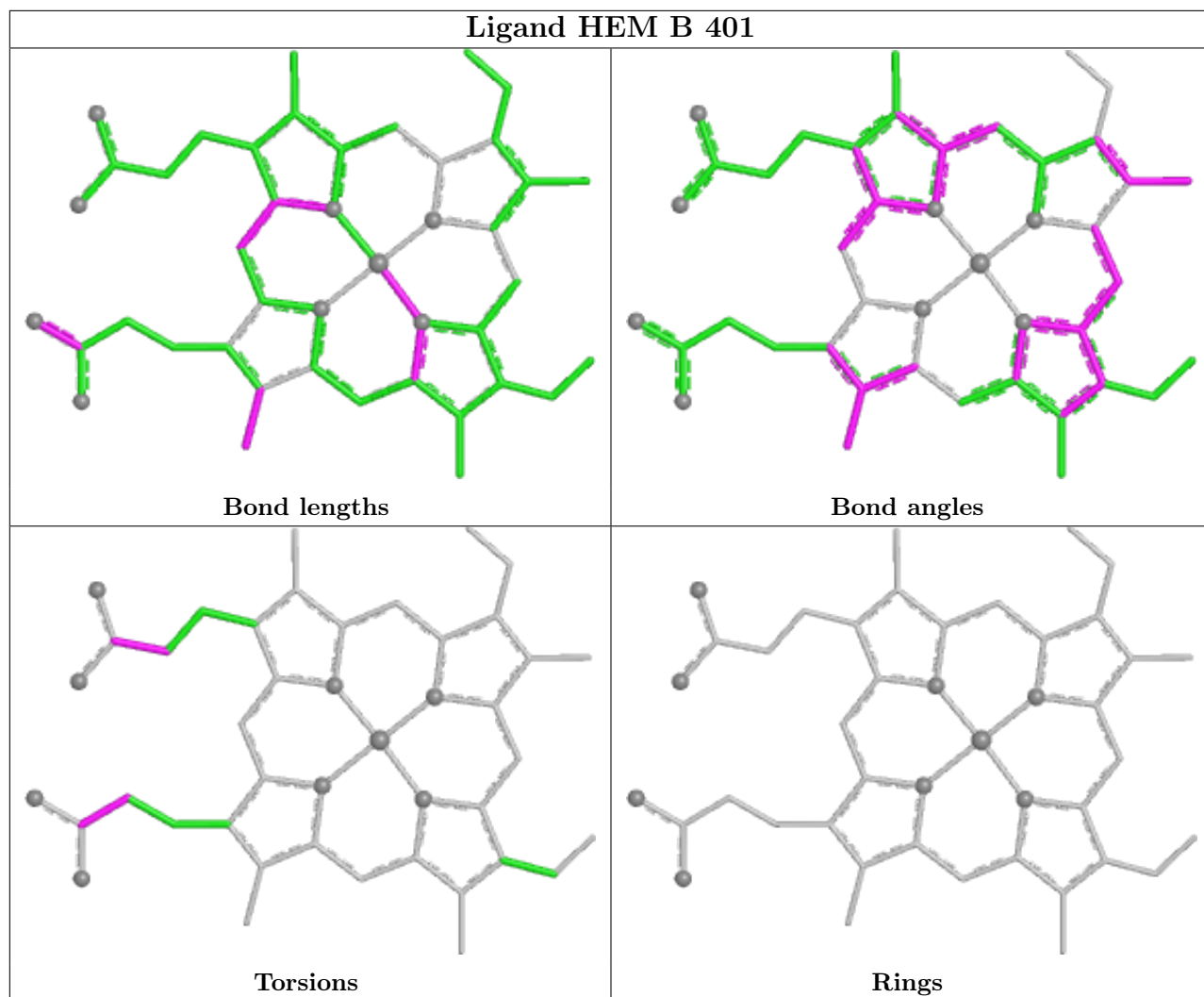
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

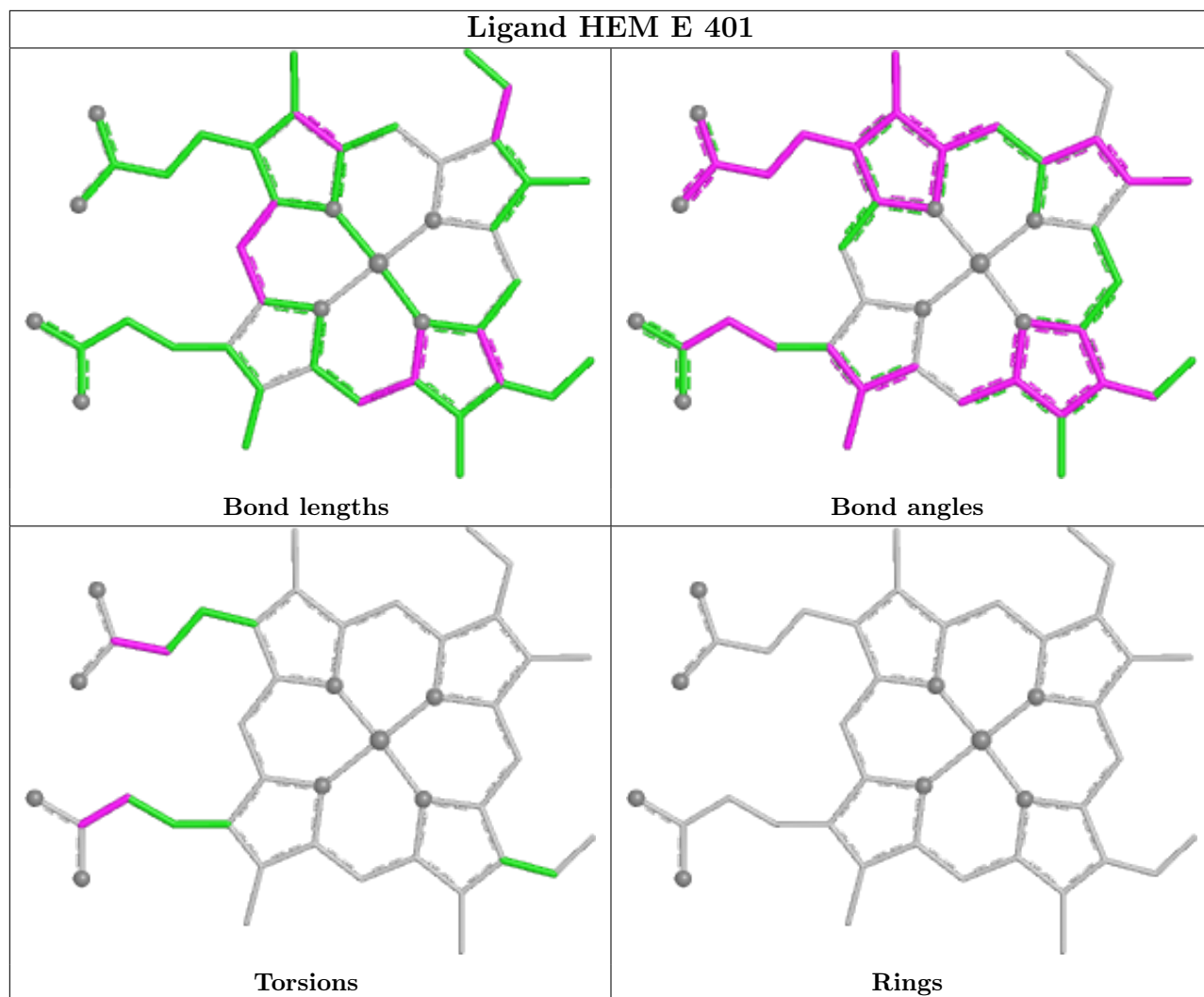


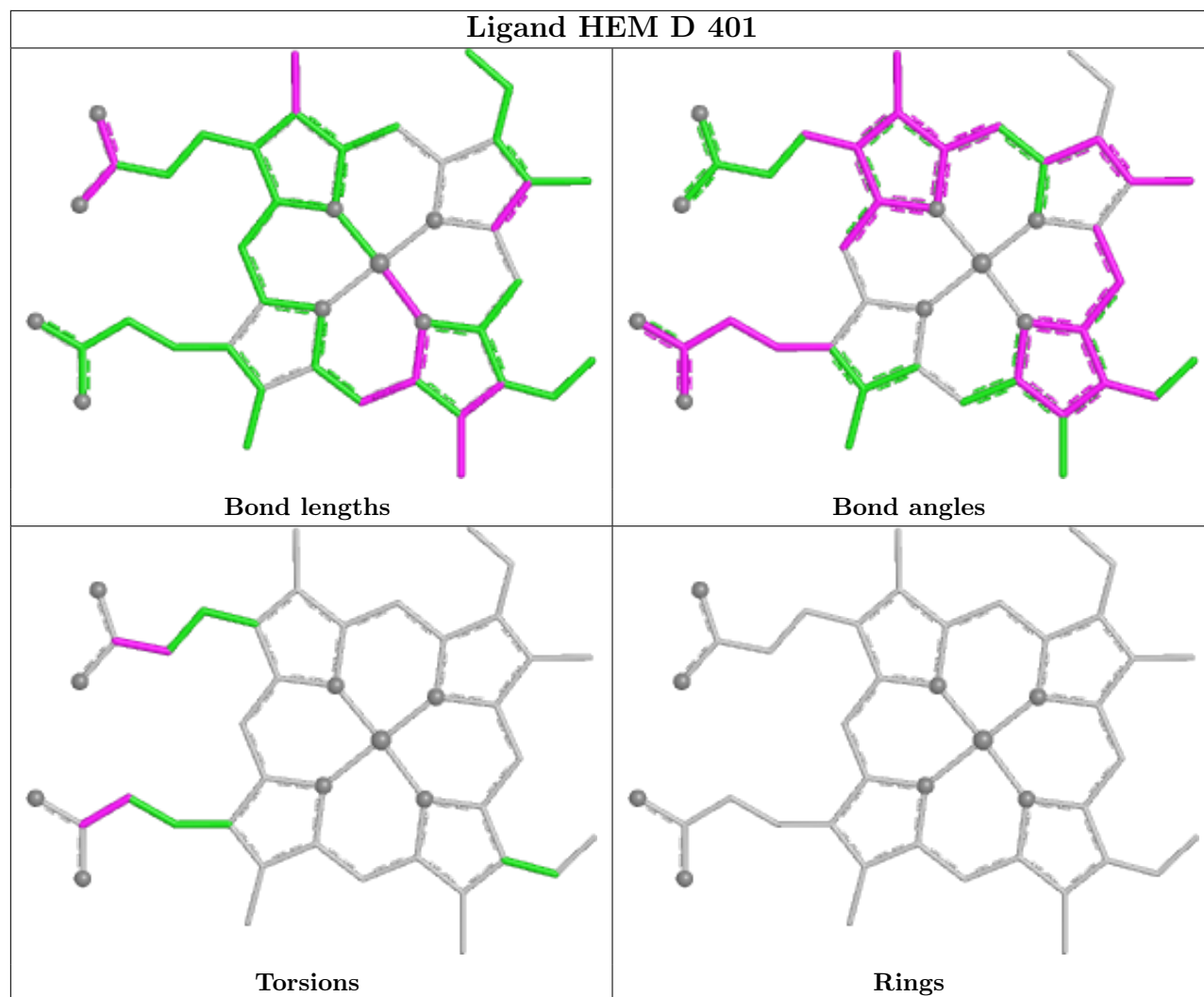












## 5.7 Other polymers [i](#)

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	306/316 (96%)	0.64	17 (5%) 24 27	20, 28, 55, 88	0
1	B	306/316 (96%)	0.80	38 (12%) 4 4	21, 32, 60, 106	0
1	C	306/316 (96%)	0.72	37 (12%) 4 5	21, 30, 60, 107	0
1	D	304/316 (96%)	0.49	17 (5%) 24 27	19, 29, 56, 79	0
1	E	306/316 (96%)	0.66	27 (8%) 10 11	21, 29, 56, 89	0
1	F	307/316 (97%)	0.62	17 (5%) 25 28	21, 29, 56, 95	0
All	All	1835/1896 (96%)	0.65	153 (8%) 11 13	19, 30, 57, 107	0

All (153) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	234	PRO	7.1
1	C	142	PHE	7.1
1	A	17	LEU	6.3
1	A	282	ALA	6.2
1	C	233	GLY	5.8
1	F	235	ASP	5.6
1	C	17	LEU	5.4
1	E	234	PRO	5.1
1	E	17	LEU	5.1
1	D	16	PRO	4.8
1	B	56	PRO	4.8
1	D	219	VAL	4.6
1	F	236	GLY	4.6
1	A	142	PHE	4.4
1	B	236	GLY	4.4
1	B	76	SER	4.4
1	E	235	ASP	4.4
1	F	313	SER	4.2
1	B	218	ASP	4.2

*Continued on next page...*

*Continued from previous page...*

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	160	ALA	4.1
1	A	57	ASP	4.1
1	D	17	LEU	4.0
1	A	16	PRO	4.0
1	F	234	PRO	3.9
1	B	238	ASP	3.9
1	A	7	GLU	3.9
1	D	217	ASP	3.8
1	A	218	ASP	3.7
1	F	8	PRO	3.7
1	A	56	PRO	3.6
1	C	8	PRO	3.6
1	B	8	PRO	3.6
1	B	31	GLY	3.6
1	D	231	VAL	3.5
1	E	56	PRO	3.5
1	B	170	ALA	3.5
1	B	78	ALA	3.5
1	D	234	PRO	3.5
1	A	30	SER	3.4
1	B	57	ASP	3.4
1	F	170	ALA	3.3
1	B	233	GLY	3.3
1	B	7	GLU	3.3
1	B	32	GLY	3.3
1	C	235	ASP	3.3
1	C	234	PRO	3.3
1	E	16	PRO	3.3
1	F	7	GLU	3.2
1	C	237	SER	3.2
1	D	218	ASP	3.2
1	B	312	LEU	3.2
1	C	218	ASP	3.2
1	B	148	LEU	3.1
1	C	261	ILE	3.1
1	D	56	PRO	3.1
1	B	16	PRO	3.1
1	C	312	LEU	3.1
1	C	107	ILE	3.1
1	C	170	ALA	3.0
1	C	90	ASP	3.0
1	C	76	SER	3.0

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	RSRZ
1	E	233	GLY	3.0
1	B	77	GLY	2.9
1	E	76	SER	2.9
1	F	233	GLY	2.9
1	F	21	ALA	2.9
1	B	163	ARG	2.9
1	F	90	ASP	2.8
1	F	163	ARG	2.8
1	F	218	ASP	2.8
1	B	136	VAL	2.8
1	C	311	ASP	2.8
1	E	104	LEU	2.8
1	A	31	GLY	2.7
1	A	283	SER	2.7
1	B	237	SER	2.7
1	B	217	ASP	2.7
1	C	22	ILE	2.7
1	E	236	GLY	2.7
1	C	282	ALA	2.7
1	E	311	ASP	2.7
1	A	236	GLY	2.7
1	C	93	VAL	2.6
1	E	283	SER	2.6
1	D	57	ASP	2.6
1	B	151	VAL	2.6
1	C	236	GLY	2.6
1	B	282	ALA	2.6
1	C	78	ALA	2.6
1	D	307	ASP	2.6
1	C	105	PHE	2.5
1	B	30	SER	2.5
1	D	237	SER	2.5
1	E	182	VAL	2.5
1	A	141	TYR	2.5
1	D	216	SER	2.5
1	B	261	ILE	2.5
1	C	16	PRO	2.5
1	E	173	PRO	2.5
1	B	164	ARG	2.5
1	E	183	VAL	2.5
1	C	7	GLU	2.5
1	C	63	VAL	2.4

*Continued on next page...*



*Continued from previous page...*

Mol	Chain	Res	Type	RSRZ
1	F	118	LEU	2.4
1	C	55	GLN	2.4
1	E	92	PRO	2.4
1	B	22	ILE	2.4
1	B	311	ASP	2.4
1	E	95	ARG	2.4
1	C	141	TYR	2.4
1	A	160	ALA	2.4
1	A	8	PRO	2.4
1	E	57	ASP	2.3
1	E	260	PHE	2.3
1	C	232	THR	2.3
1	D	55	GLN	2.3
1	D	261	ILE	2.3
1	F	22	ILE	2.3
1	B	34	ASP	2.3
1	E	190	ILE	2.3
1	F	56	PRO	2.3
1	F	281	THR	2.3
1	E	300	LEU	2.2
1	E	142	PHE	2.2
1	B	68	SER	2.2
1	E	237	SER	2.2
1	C	54	ALA	2.2
1	C	97	VAL	2.2
1	B	216	SER	2.2
1	A	219	VAL	2.2
1	E	261	ILE	2.2
1	C	112	LEU	2.2
1	D	235	ASP	2.2
1	C	13	VAL	2.2
1	E	83	LEU	2.1
1	E	164	ARG	2.1
1	C	116	PHE	2.1
1	B	235	ASP	2.1
1	C	238	ASP	2.1
1	E	219	VAL	2.1
1	C	24[A]	LEU	2.1
1	D	78	ALA	2.1
1	C	91	GLY	2.1
1	B	150	PHE	2.1
1	F	312	LEU	2.1

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	RSRZ
1	D	238	ASP	2.1
1	A	234	PRO	2.1
1	E	216	SER	2.0
1	C	92	PRO	2.0
1	B	17	LEU	2.0
1	C	118	LEU	2.0
1	B	38	ASP	2.0
1	B	72	ASP	2.0

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

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

## 6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 6.4 Ligands [i](#)

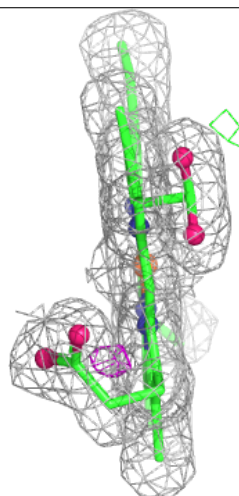
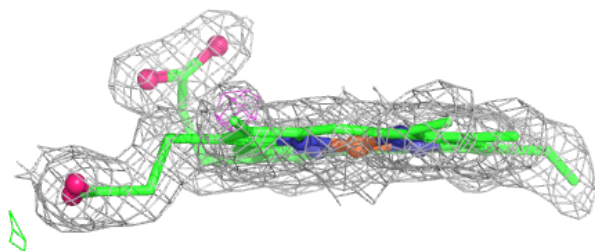
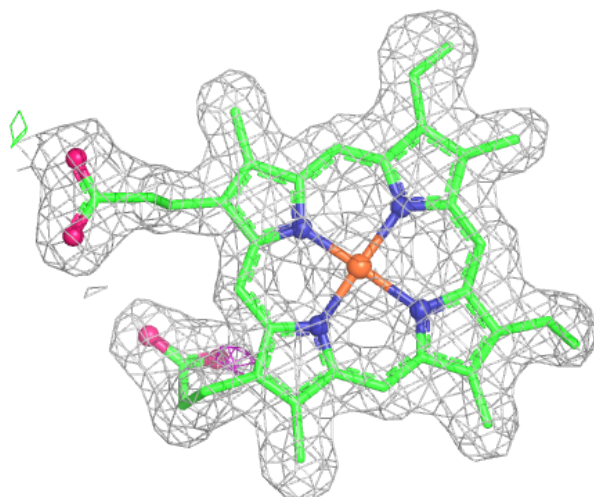
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 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
3	MG	D	402	1/1	0.83	0.08	47,47,47,47	0
2	HEM	B	401	43/43	0.93	0.15	19,22,29,37	0
2	HEM	D	401	43/43	0.93	0.14	20,22,27,32	0
2	HEM	E	401	43/43	0.93	0.15	16,23,29,40	0
2	HEM	F	401	43/43	0.93	0.14	19,23,28,30	0
2	HEM	A	401	43/43	0.93	0.13	21,24,31,37	0
2	HEM	C	401	43/43	0.94	0.13	22,27,31,34	0
3	MG	A	402	1/1	0.99	0.05	21,21,21,21	0

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

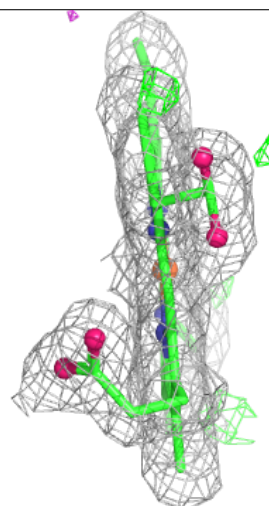
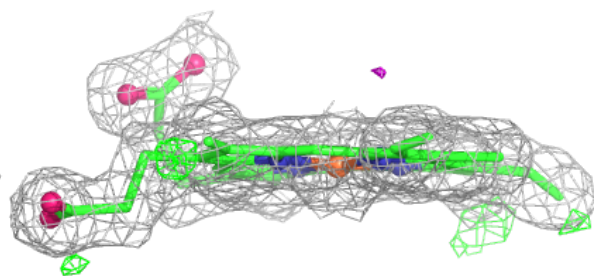
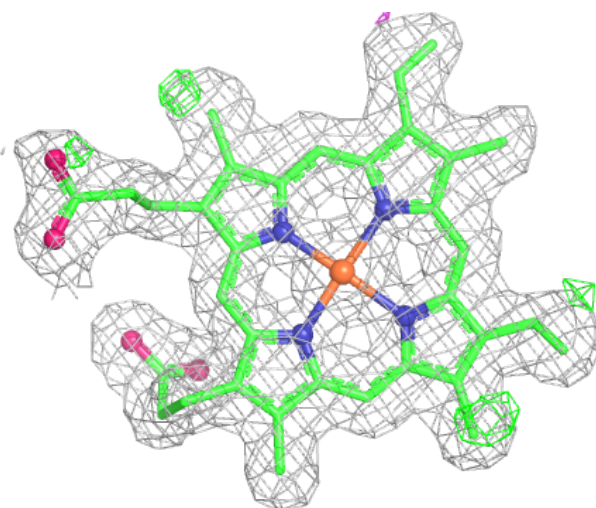
**Electron density around HEM B 401:**

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



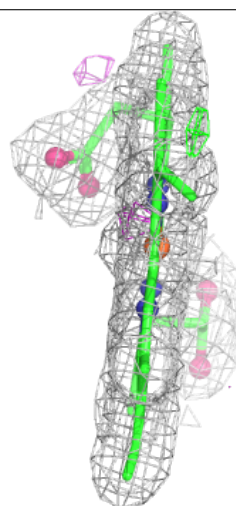
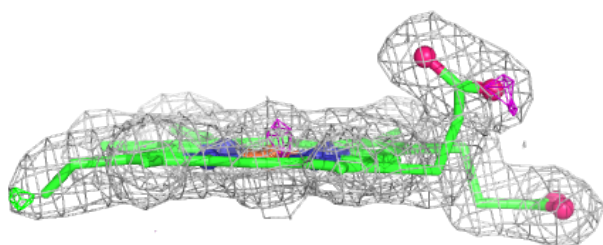
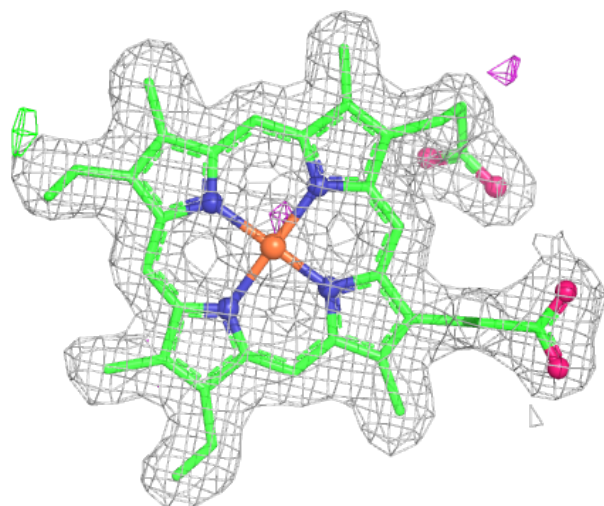
**Electron density around HEM D 401:**

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



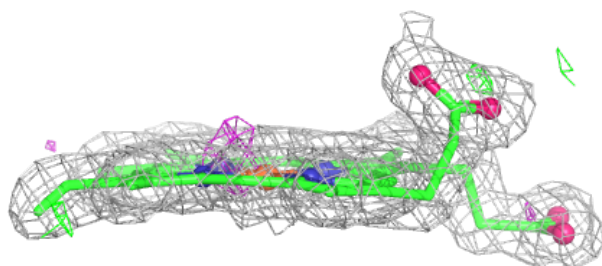
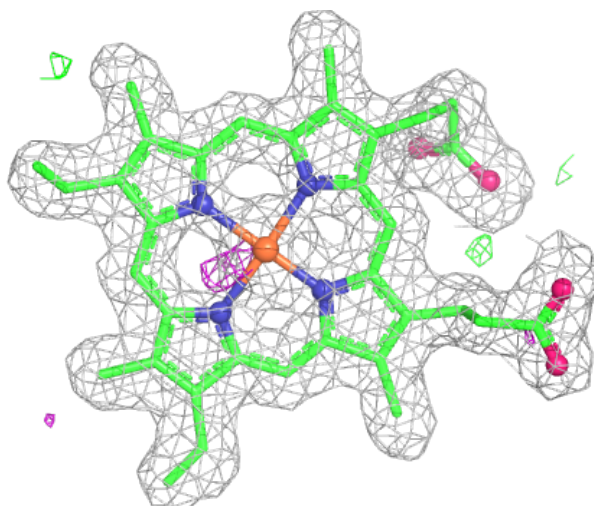
**Electron density around HEM E 401:**

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



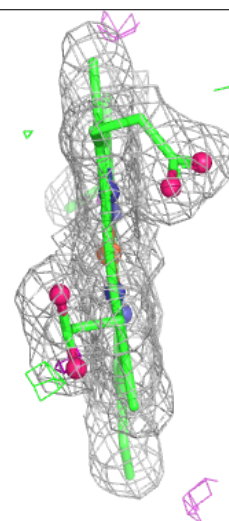
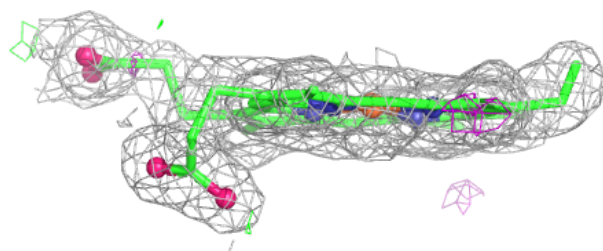
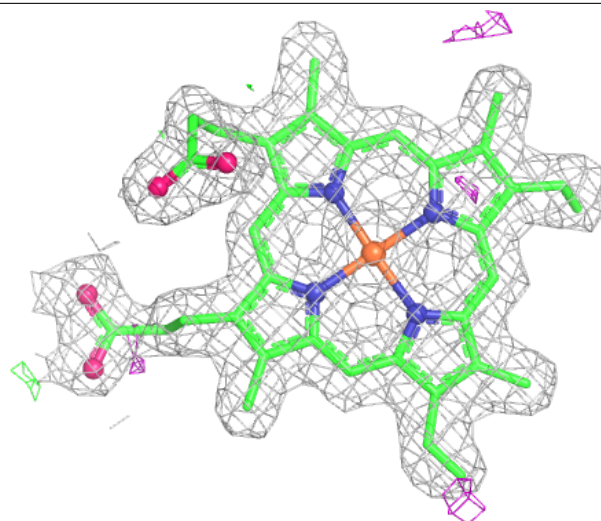
**Electron density around HEM F 401:**

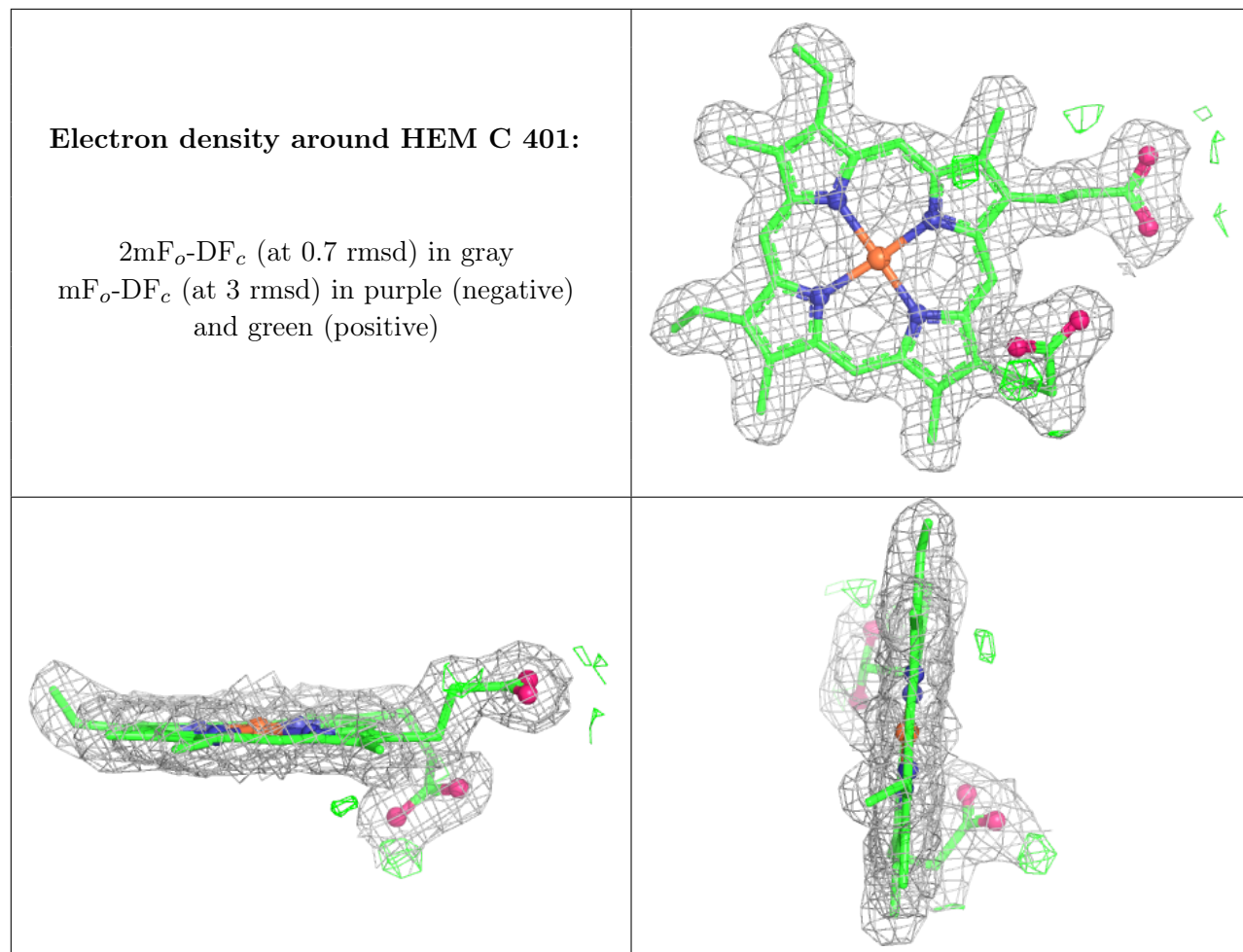
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



**Electron density around HEM A 401:**

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





## 6.5 Other polymers [i](#)

There are no such residues in this entry.