W O R L D W I D E

wwPDB

P R O T E I N   D A T A   B A N K

wwPDB X-ray Structure Validation Summary Report (i)

Aug 25, 2025 – 01:21 am BST

PDB ID	:	9HXX / pdb_00009hxx
Title	:	DtpB in complex with photocaged nitric oxide, 100 microsecond, 30 microjoule, SFX
Authors	:	Smyth, P.; Williams, L.J.; Hough, M.A.; Worrall, J.A.R.; Owen, R.L.
Deposited on	:	2025-01-08
Resolution	:	1.52 Å(reported)

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

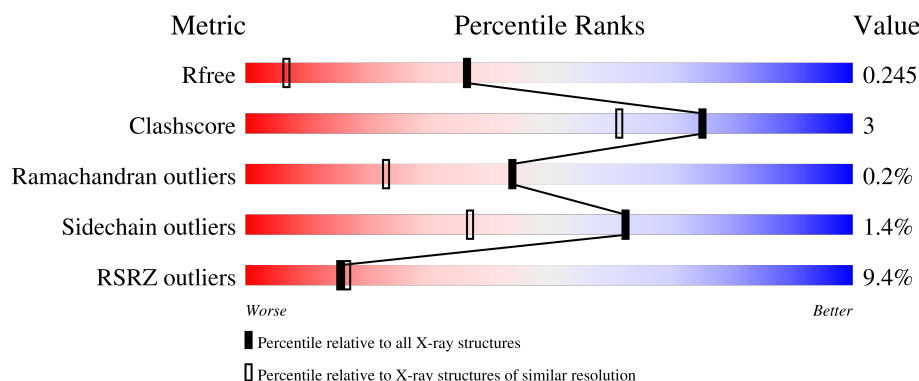|		
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

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 1.52 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.
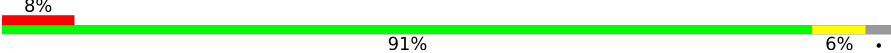
Metric	Percentile Ranks	Value
Rfree		0.245
Clashscore		3
Ramachandran outliers		0.2%
Sidechain outliers		1.4%
RSRZ outliers		9.4%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	5293 (1.54-1.50)
Clashscore	180529	5759 (1.54-1.50)
Ramachandran outliers	177936	5653 (1.54-1.50)
Sidechain outliers	177891	5650 (1.54-1.50)
RSRZ outliers	164620	5293 (1.54-1.50)

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 >=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	316	7% / 91%
1	B	316	7% / 88% / 8%
1	C	316	16% / 89% / 7%
1	D	316	9% / 89% / 7%
1	E	316	9% / 89% / 6%

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Mol	Chain	Length	Quality of chain
1	F	316	8% ▬▬▬ 91% ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬ 6% ▪

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

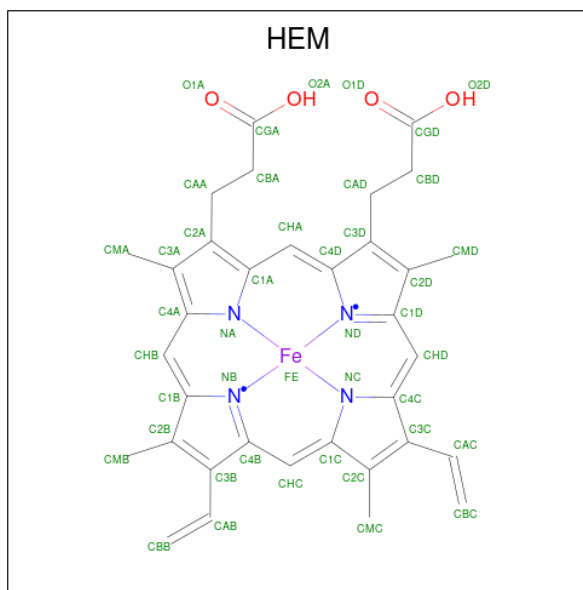| Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	NO	B	402	-	-	X	-
3	NO	D	402	-	-	X	-
3	NO	F	402	-	-	X	-

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 15479 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 Dye-decolorizing peroxidase (DyP), encapsulated subgroup.
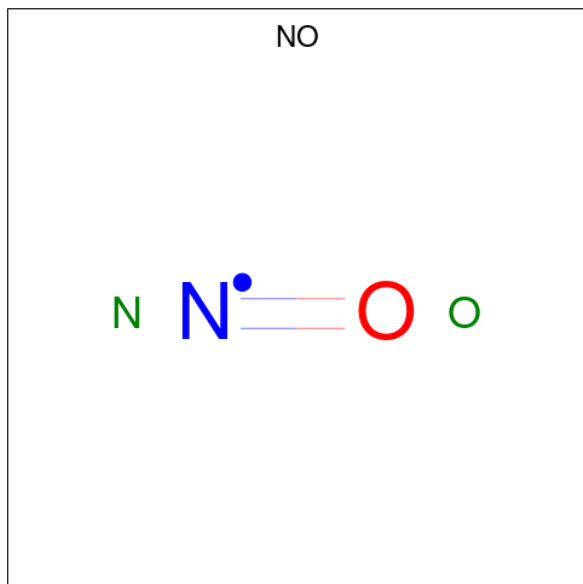
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	306	Total	C	N	O	S	0	2	0
			2346	1474	404	458	10			
1	B	306	Total	C	N	O	S	0	9	0
			2398	1506	414	469	9			
1	C	306	Total	C	N	O	S	0	2	0
			2336	1470	402	454	10			
1	D	306	Total	C	N	O	S	0	5	0
			2365	1488	409	459	9			
1	E	305	Total	C	N	O	S	0	2	0
			2323	1466	401	447	9			
1	F	305	Total	C	N	O	S	0	6	0
			2363	1487	408	458	10			

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

- Molecule 3 is NITRIC OXIDE (CCD ID: NO) (formula: NO).

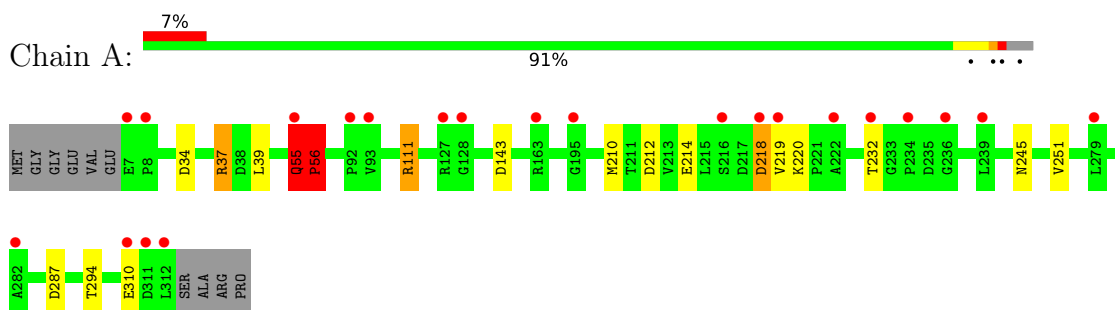| Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 2	N 1	O 1	0	0
3	B	1	Total 2	N 1	O 1	0	0
3	C	1	Total 2	N 1	O 1	0	0
3	D	1	Total 2	N 1	O 1	0	0
3	E	1	Total 2	N 1	O 1	0	0
3	F	1	Total 2	N 1	O 1	0	0

- Molecule 4 is water.

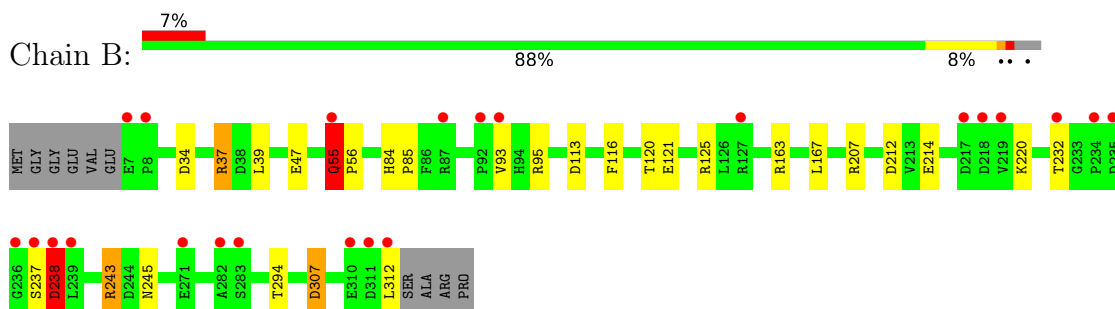| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	174	Total 174	O 174	0	0
4	B	181	Total 181	O 181	0	0
4	C	148	Total 148	O 148	0	0
4	D	189	Total 189	O 189	0	0
4	E	188	Total 188	O 188	0	0
4	F	198	Total 198	O 198	0	0

3 Residue-property plots ⓘ

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.
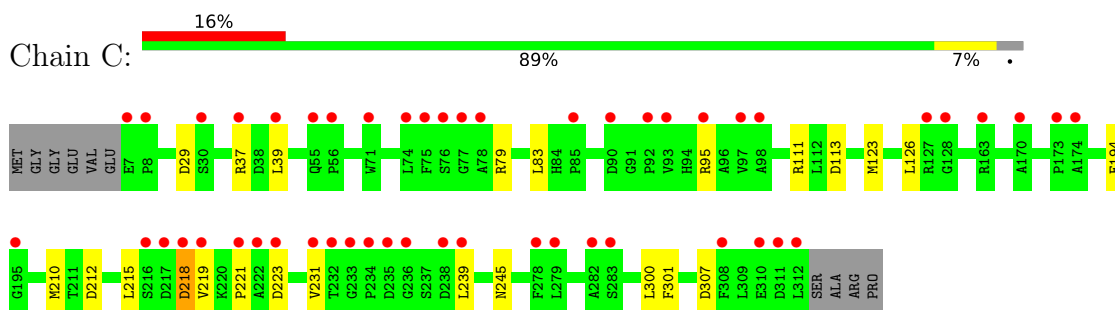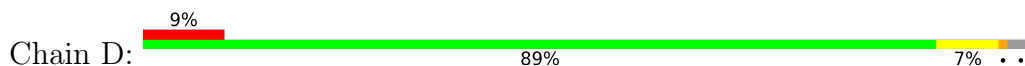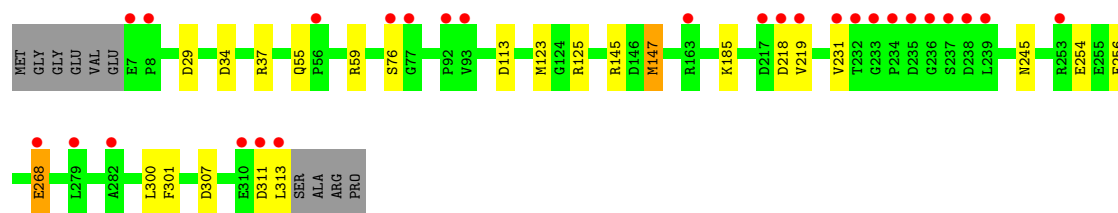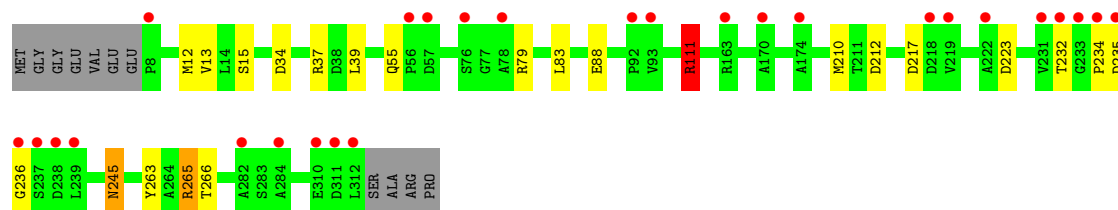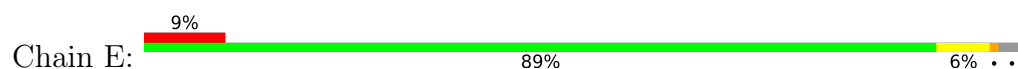
- Molecule 1: Dye-decolorizing peroxidase (DyP), encapsulated subgroup

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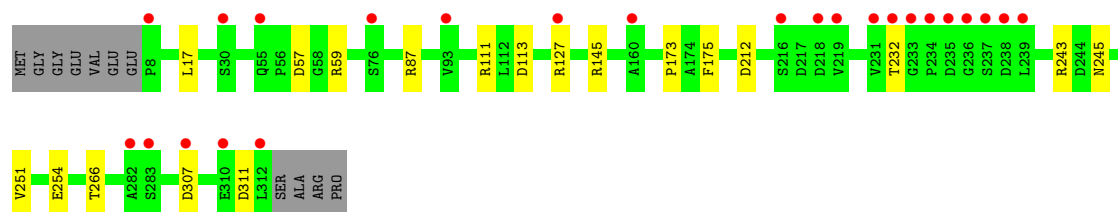- Molecule 1: Dye-decolorizing peroxidase (DyP), encapsulated subgroup

- Molecule 1: Dye-decolorizing peroxidase (DyP), encapsulated subgroup

MET GLY GLY GLU VAL GLU E7 P8 D29 D34 R37 Q55 P56 R59 S76 G77 P92 V93 D113 M123 G124 R125 R145 D146 M147 R163 K185 D217 D218 V219 V231 T232 G233 P234 D235 D236 S237 D238 L239 N245 R253 E254 E255 F256

E268 L279 A282 L300 F301 D307 E310 D311 L313 SER ALA ARG PRO

• Molecule 1: Dye-decolorizing peroxidase (DyP), encapsulated subgroup

Chain E:

9%

89%	6%

MET GLY GLY GLU VAL GLU P8 M12 V13 L14 S15 D34 R37 D38 L39 Q55 P56 D57 S76 G77 A78 R79 L83 E88 P92 V93 R111 R163 A170 A174 M210 T211 D212 D217 D218 V219 A222 D223 V231 T232 G233 P234 D235

G236 S237 D238 L239 N245 Y263 A264 R265 T266 A282 S283 A284 E310 D311 L312 SER ALA ARG PRO

• Molecule 1: Dye-decolorizing peroxidase (DyP), encapsulated subgroup

Chain F:

8%
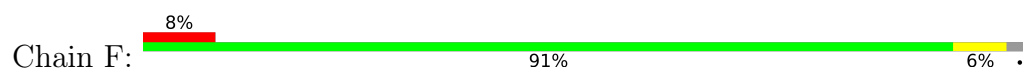
91%	6%

MET GLY GLY GLU VAL GLU P8 L17 S30 Q55 P56 D57 G58 R59 S76 R87 V93 R111 L112 D113 R127 R145 A160 P173 A174 F175 D212 S216 D217 D218 V219 V231 T232 G233 P234 D235 D236 S237 D238 L239 R243 D244 N245

V251 E254 T266 A282 S283 D307 E310 D311 L312 SER ALA ARG PRO

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	87.47Å 124.39Å 193.51Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	45.13 – 1.52 45.13 – 1.52	Depositor EDS
% Data completeness (in resolution range)	99.9 (45.13-1.52) 99.9 (45.13-1.52)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.66 (at 1.52Å)	Xtriage
Refinement program	REFMAC 5.8.0425	Depositor
R, R_{free}	0.209 , 0.235 0.220 , 0.245	Depositor DCC
R_{free} test set	2084 reflections (0.65%)	wwPDB-VP
Wilson B-factor (Å^2)	19.2	Xtriage
Anisotropy	0.013	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 32.6	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	15479	wwPDB-VP
Average B, all atoms (Å^2)	23.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.45% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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: HEM, NO

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	0.73	0/2396	1.19	8/3255 (0.2%)
1	B	0.78	0/2455	1.16	11/3338 (0.3%)
1	C	0.71	0/2392	1.17	6/3250 (0.2%)
1	D	0.78	0/2420	1.14	6/3286 (0.2%)
1	E	0.76	0/2376	1.16	6/3229 (0.2%)
1	F	0.75	0/2419	1.15	11/3284 (0.3%)
All	All	0.75	0/14458	1.16	48/19642 (0.2%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2
1	B	0	3
1	C	0	1
1	E	0	2
1	F	0	1
All	All	0	9

There are no bond length outliers.

The worst 5 of 48 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	55	GLN	CB-CA-C	10.99	126.67	109.42
1	F	254	GLU	CB-CG-CD	8.54	127.11	112.60
1	A	232	THR	CA-CB-OG1	-8.44	96.93	109.60
1	B	93	VAL	N-CA-CB	-8.31	104.82	111.64
1	D	147	MET	CG-SD-CE	7.88	118.23	100.90

There are no chirality outliers.

5 of 9 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	111	ARG	Sidechain
1	A	37	ARG	Sidechain
1	B	37	ARG	Sidechain
1	B	55	GLN	Mainchain,Peptide
1	C	111	ARG	Sidechain

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	2346	0	2270	7	0
1	B	2398	0	2313	19	0
1	C	2336	0	2267	15	0
1	D	2365	0	2294	16	0
1	E	2323	0	2256	13	0
1	F	2363	0	2300	6	0
2	A	43	0	30	1	0
2	B	43	0	30	1	0
2	C	43	0	30	1	0
2	D	43	0	30	2	0
2	E	43	0	30	1	0
2	F	43	0	30	2	0
3	A	2	0	0	1	0
3	B	2	0	0	2	0
3	C	2	0	0	1	0
3	D	2	0	0	2	0
3	E	2	0	0	0	0
3	F	2	0	0	4	0
4	A	174	0	0	1	0
4	B	181	0	0	4	0
4	C	148	0	0	1	0
4	D	189	0	0	3	0
4	E	188	0	0	2	0
4	F	198	0	0	2	0
All	All	15479	0	13880	81	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 3.

The worst 5 of 81 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:311:ASP:C	1:D:313:LEU:N	2.10	1.09
4:B:562:HOH:O	1:C:210[A]:MET:HE3	1.77	0.85
1:E:12:MET:HG3	1:E:15:SER:OG	1.80	0.81
1:D:300[B]:LEU:HD13	1:D:300[B]:LEU:C	2.09	0.77
1:E:55:GLN:HB3	4:F:687:HOH:O	1.85	0.76

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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%)	299 (98%)	7 (2%)	0	100	100
1	B	313/316 (99%)	307 (98%)	4 (1%)	2 (1%)	22	6
1	C	306/316 (97%)	301 (98%)	5 (2%)	0	100	100
1	D	308/316 (98%)	301 (98%)	7 (2%)	0	100	100
1	E	305/316 (96%)	298 (98%)	6 (2%)	1 (0%)	37	18
1	F	309/316 (98%)	304 (98%)	5 (2%)	0	100	100
All	All	1847/1896 (97%)	1810 (98%)	34 (2%)	3 (0%)	44	23

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	238	ASP
1	E	235	ASP
1	B	56	PRO

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	247/252 (98%)	241 (98%)	6 (2%)	44	15
1	B	253/252 (100%)	251 (99%)	2 (1%)	79	62
1	C	246/252 (98%)	244 (99%)	2 (1%)	79	62
1	D	249/252 (99%)	245 (98%)	4 (2%)	58	31
1	E	242/252 (96%)	238 (98%)	4 (2%)	56	28
1	F	250/252 (99%)	248 (99%)	2 (1%)	79	62
All	All	1487/1512 (98%)	1467 (99%)	20 (1%)	62	39

5 of 20 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	88	GLU
1	E	266	THR
1	F	307	ASP
1	F	17	LEU
1	B	55	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	55	GLN
1	E	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 ⓘ

There are no oligosaccharides in this entry.

5.6   Ligand geometry ⓘ

12 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
2	HEM	F	401	1	41,50,50	1.20	3 (7%)	45,82,82	2.08	16 (35%)
3	NO	C	402	2	0,1,1	-	-	-		
3	NO	A	402	2	0,1,1	-	-	-		
2	HEM	C	401	3,1	41,50,50	1.42	7 (17%)	45,82,82	2.25	13 (28%)
2	HEM	D	401	3,1	41,50,50	1.42	7 (17%)	45,82,82	2.05	18 (40%)
2	HEM	A	401	3,1	41,50,50	1.27	6 (14%)	45,82,82	2.23	18 (40%)
3	NO	B	402	2	0,1,1	-	-	-		
2	HEM	E	401	3,1	41,50,50	1.36	8 (19%)	45,82,82	2.40	14 (31%)
3	NO	F	402	-	0,1,1	-	-	-		
3	NO	D	402	2	0,1,1	-	-	-		
2	HEM	B	401	3,1	41,50,50	1.28	6 (14%)	45,82,82	2.09	17 (37%)
3	NO	E	402	2	0,1,1	-	-	-		

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	-	5/12/54/54	-
2	HEM	C	401	3,1	-	5/12/54/54	-
2	HEM	D	401	3,1	-	5/12/54/54	-
2	HEM	A	401	3,1	-	6/12/54/54	-
2	HEM	E	401	3,1	-	5/12/54/54	-

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	HEM	B	401	3,1	-	6/12/54/54	-

The worst 5 of 37 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	401	HEM	C3C-C2C	-3.84	1.35	1.40
2	E	401	HEM	C1B-NB	-3.55	1.34	1.40
2	B	401	HEM	C3C-C2C	-3.31	1.35	1.40
2	C	401	HEM	C4D-ND	-3.15	1.34	1.40
2	E	401	HEM	C4D-ND	-3.01	1.35	1.40

The worst 5 of 96 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	401	HEM	C1B-NB-C4B	6.38	111.67	105.07
2	E	401	HEM	CHC-C4B-NB	6.02	130.97	124.43
2	C	401	HEM	C1B-NB-C4B	5.91	111.17	105.07
2	B	401	HEM	C4D-ND-C1D	-5.21	99.69	105.07
2	C	401	HEM	CHC-C4B-NB	5.04	129.91	124.43

There are no chirality outliers.

5 of 32 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	401	HEM	C2B-C3B-CAB-CBB
2	E	401	HEM	C2B-C3B-CAB-CBB
2	B	401	HEM	C4B-C3B-CAB-CBB
2	B	401	HEM	C2B-C3B-CAB-CBB
2	D	401	HEM	C4B-C3B-CAB-CBB

There are no ring outliers.

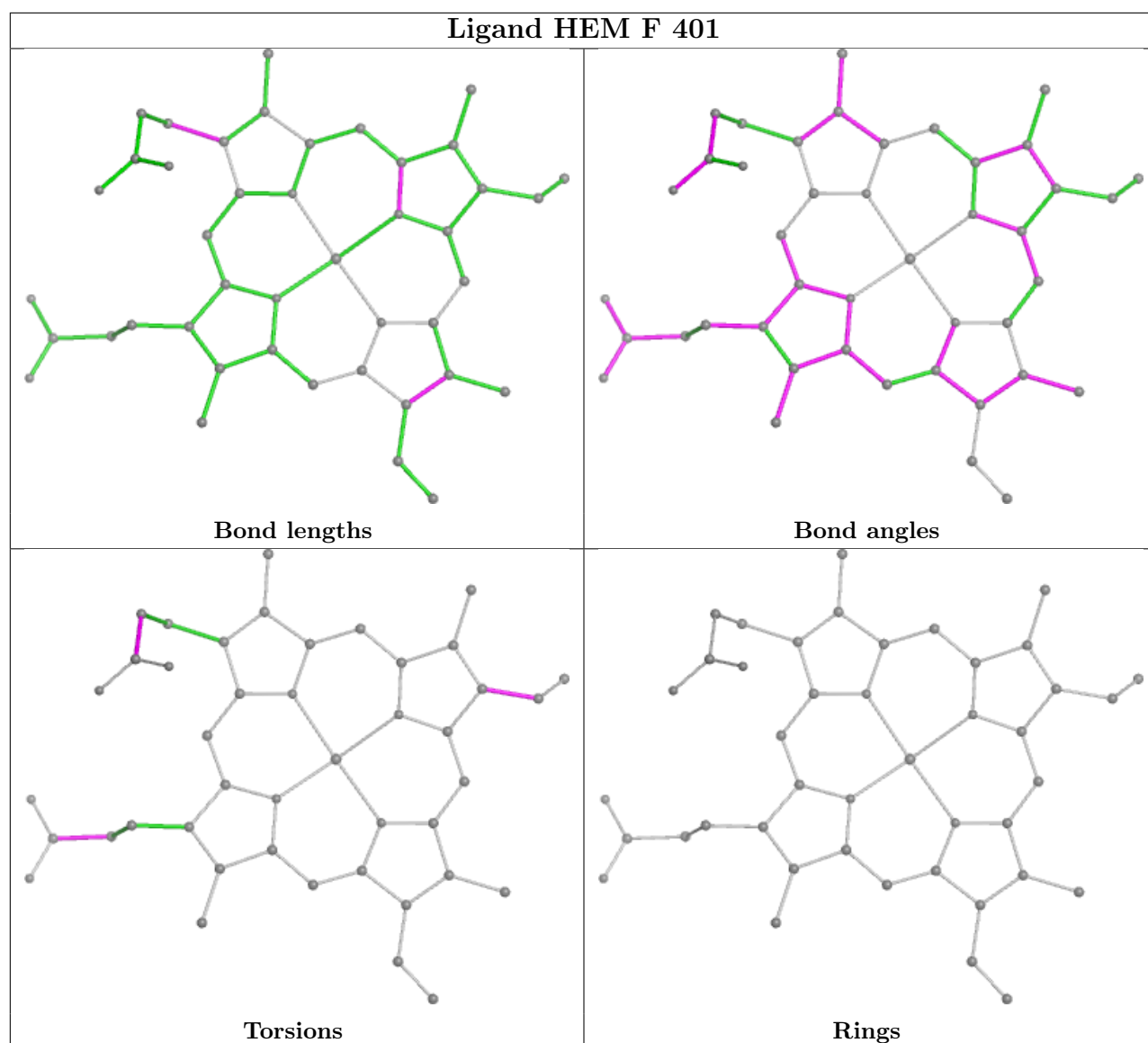11 monomers are involved in 15 short contacts:

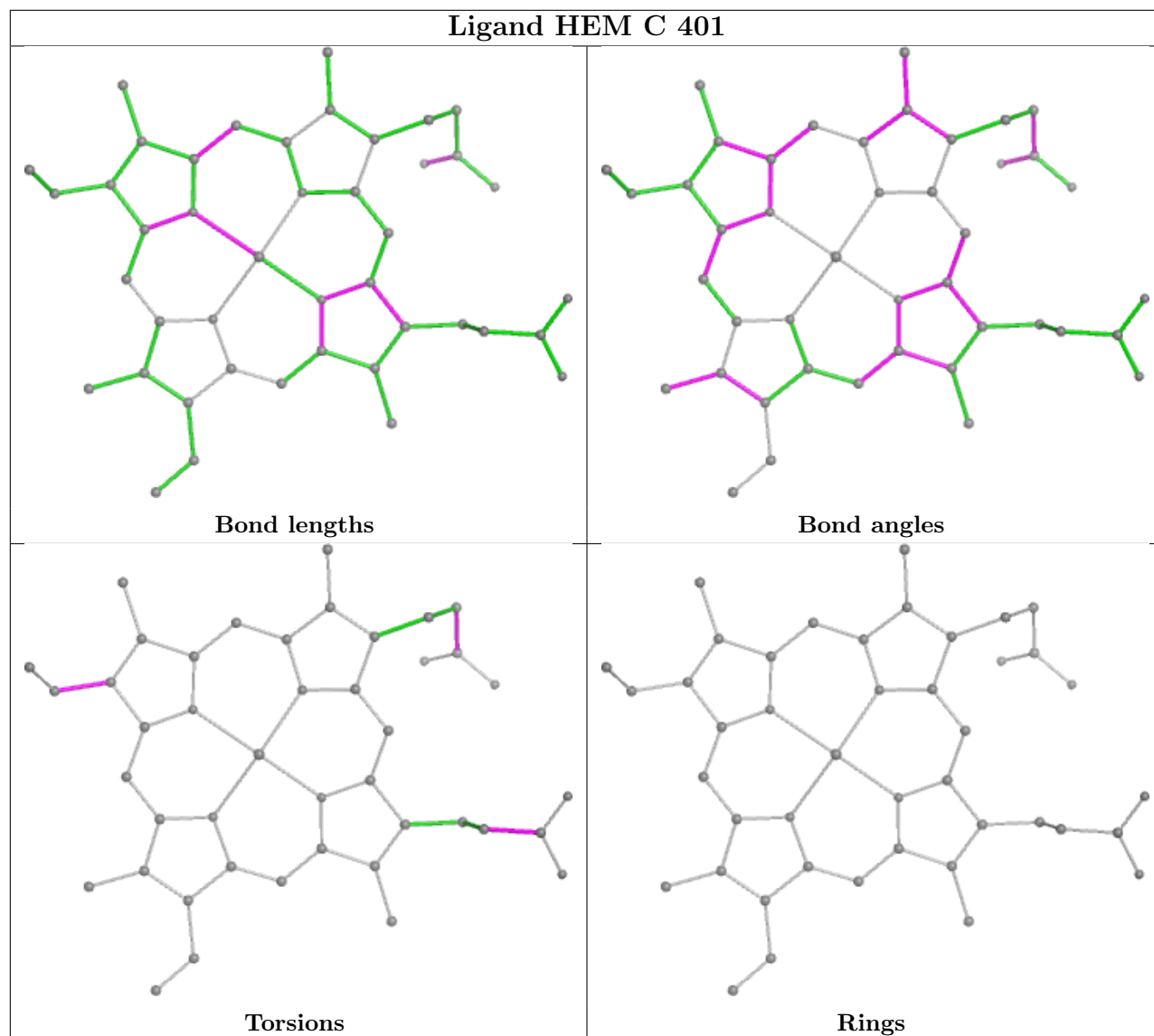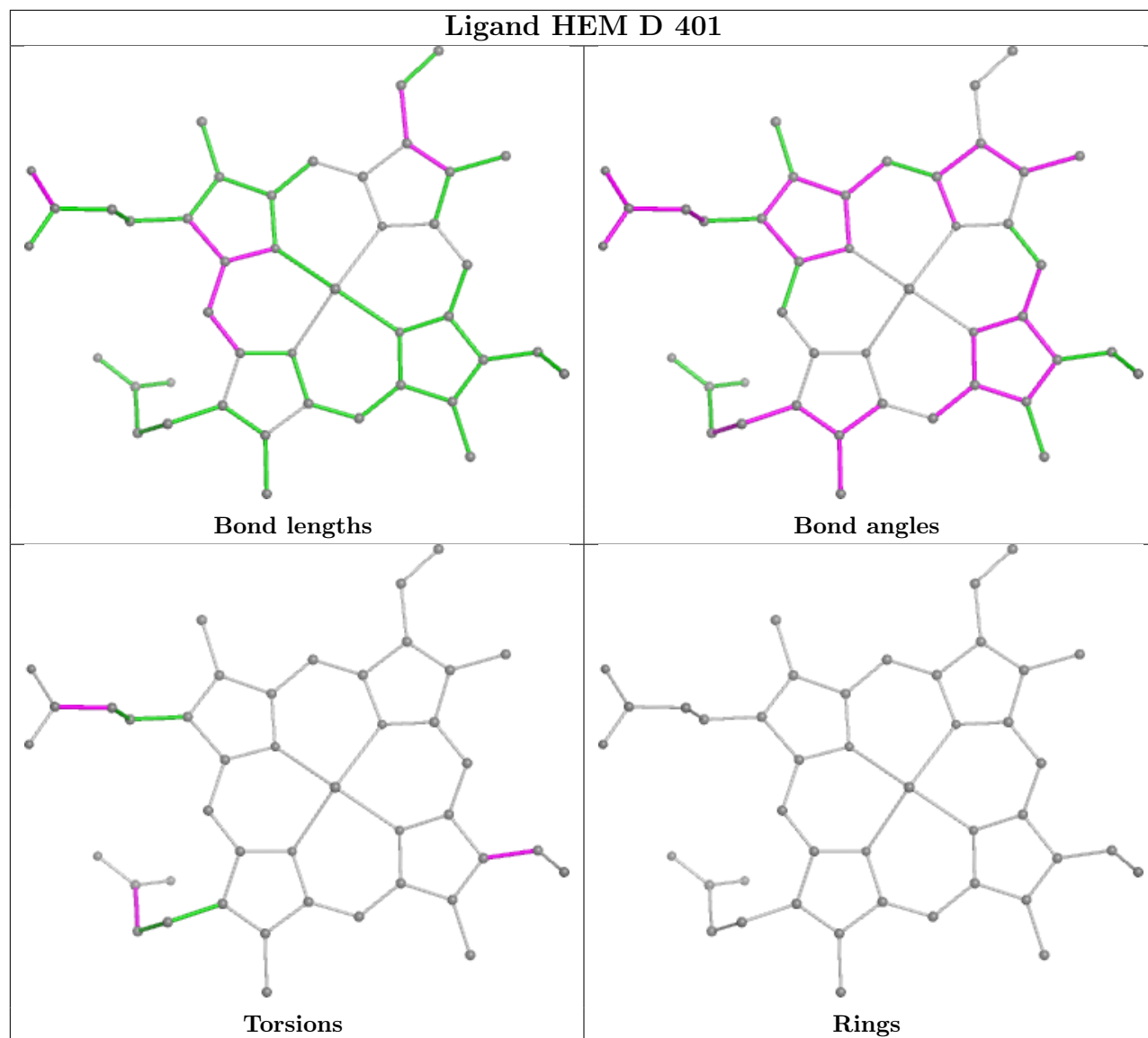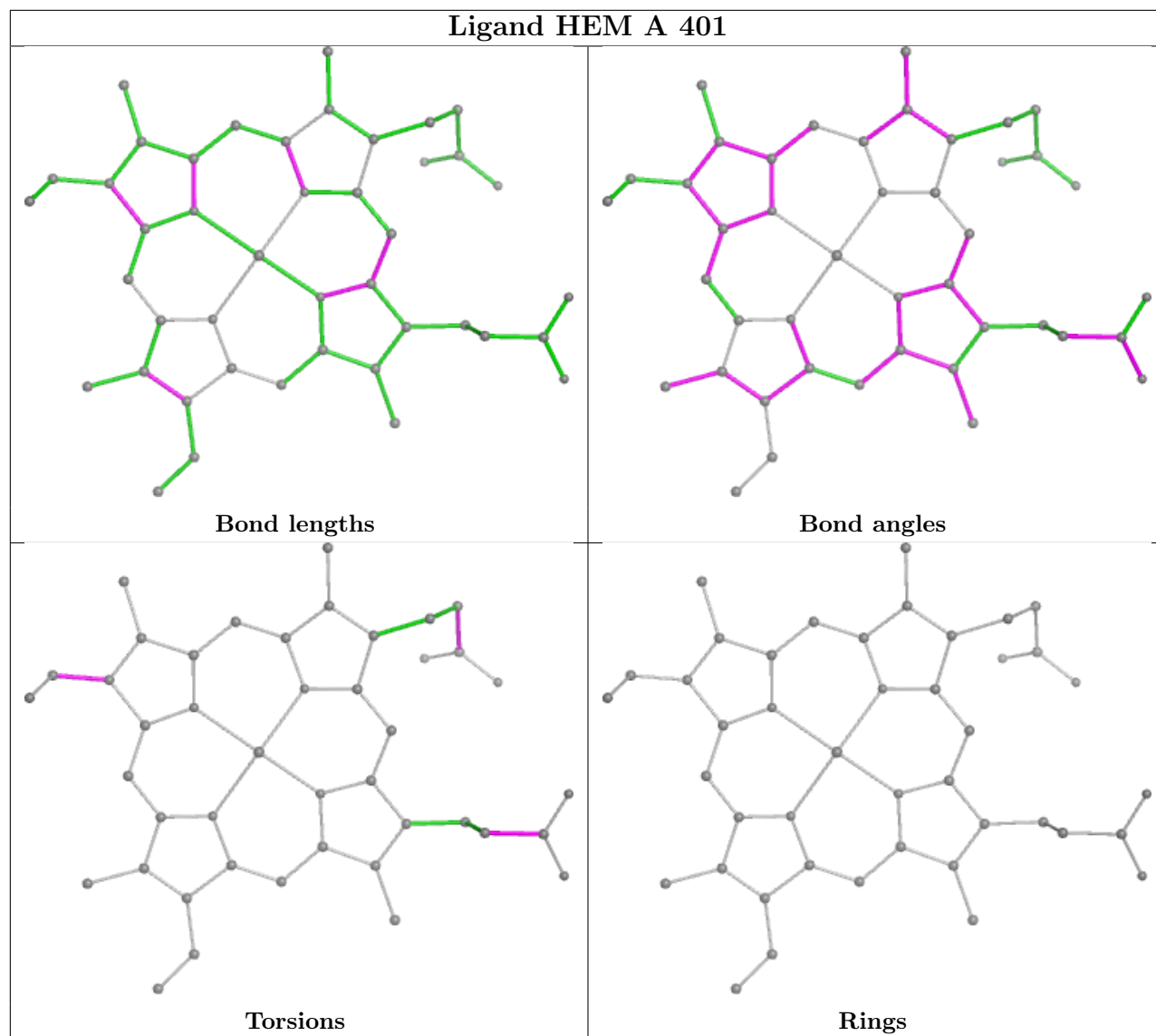| Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	F	401	HEM	2	0
3	C	402	NO	1	0
3	A	402	NO	1	0
2	C	401	HEM	1	0
2	D	401	HEM	2	0
2	A	401	HEM	1	0
3	B	402	NO	2	0

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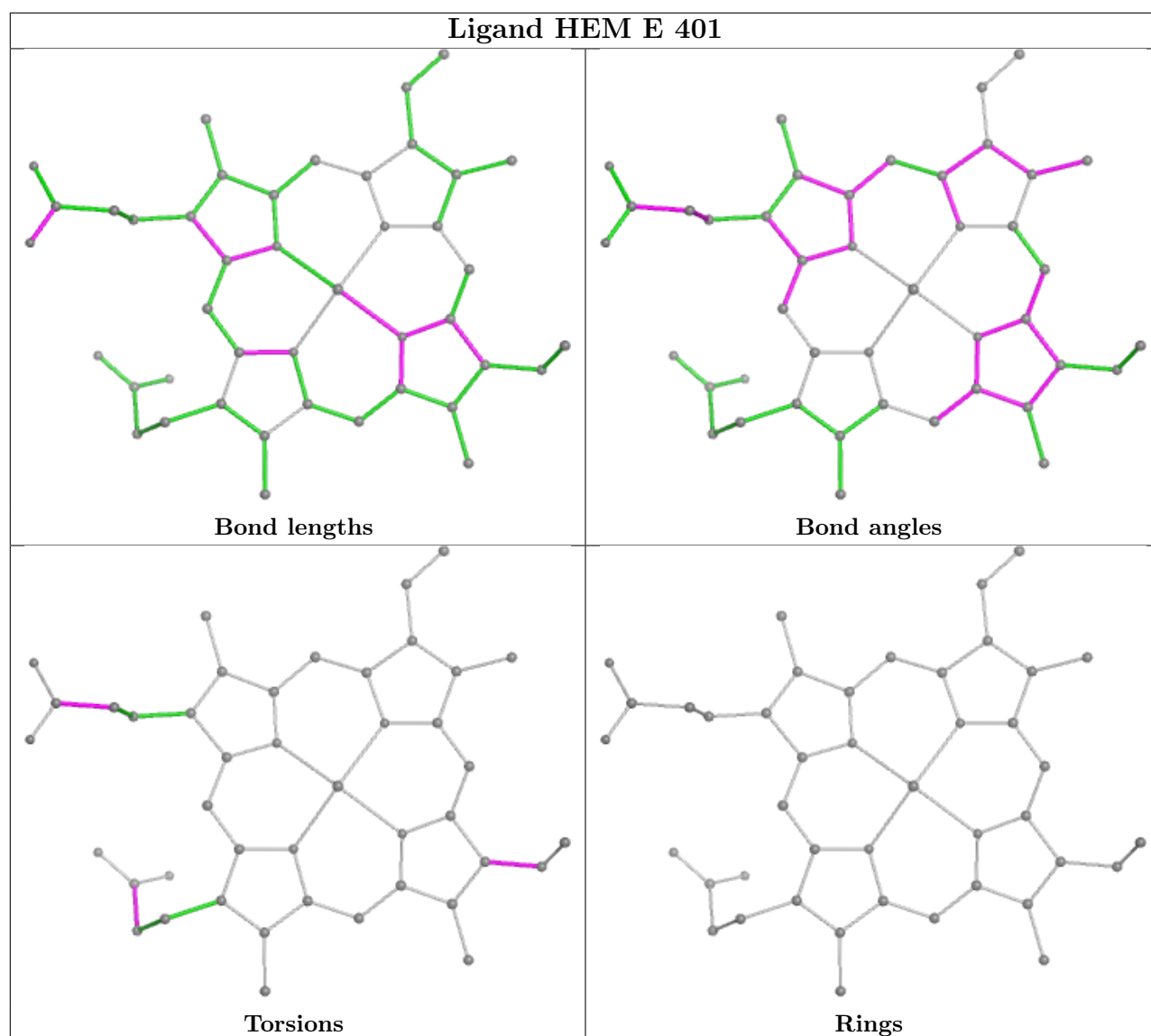| Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	E	401	HEM	1	0
3	F	402	NO	4	0
3	D	402	NO	2	0
2	B	401	HEM	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.
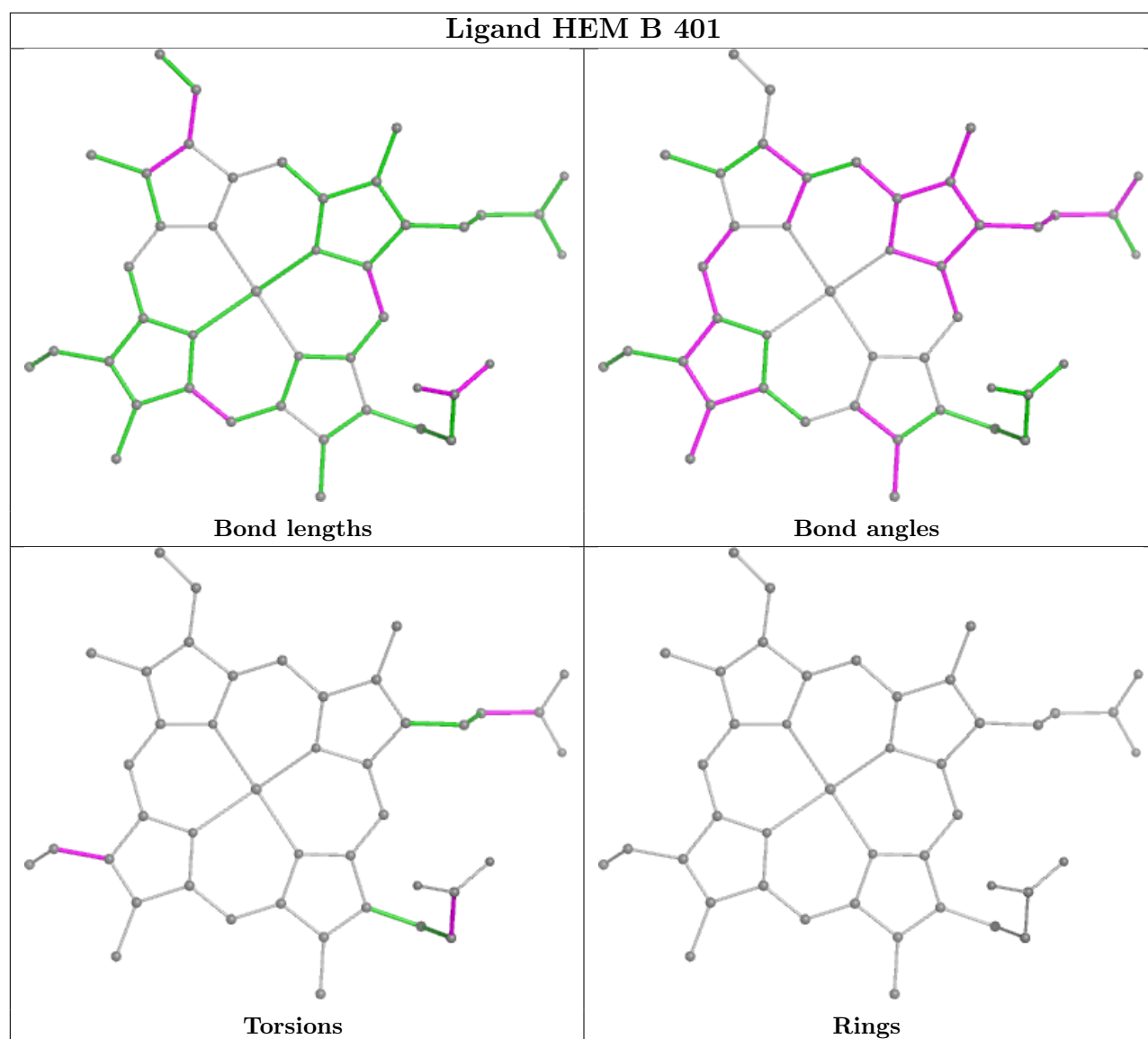
Ligand HEM F 401

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM C 401

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM D 401

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM A 401

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM E 401

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM B 401

Bond lengths

Bond angles

Torsions

Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	D	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	D	311:ASP	C	313:LEU	N	2.10

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å²)	Q<0.9
1	A	306/316 (96%)	0.38	22 (7%)	23	25	10, 20, 43, 78	2 (0%)
1	B	306/316 (96%)	0.18	23 (7%)	22	24	7, 16, 42, 75	9 (2%)
1	C	306/316 (96%)	0.97	50 (16%)	5	5	12, 25, 55, 82	2 (0%)
1	D	306/316 (96%)	0.28	27 (8%)	17	18	6, 18, 44, 87	5 (1%)
1	E	305/316 (96%)	0.32	27 (8%)	17	18	9, 19, 45, 79	2 (0%)
1	F	305/316 (96%)	0.25	24 (7%)	20	22	7, 18, 44, 84	6 (1%)
All	All	1834/1896 (96%)	0.40	173 (9%)	15	17	6, 19, 47, 87	26 (1%)

The worst 5 of 173 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	313	LEU	7.7
1	C	219	VAL	6.4
1	B	312	LEU	6.3
1	C	312	LEU	6.2
1	C	234	PRO	5.8

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, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	NO	F	402	2/2	0.88	0.24	30,30,30,58	0
3	NO	C	402	2/2	0.91	0.16	38,38,38,52	0
3	NO	D	402	2/2	0.94	0.20	35,35,35,37	0
3	NO	A	402	2/2	0.94	0.16	30,30,30,49	0
3	NO	E	402	2/2	0.96	0.22	32,32,32,45	0
2	HEM	C	401	43/43	0.97	0.07	15,20,27,36	0
3	NO	B	402	2/2	0.97	0.21	31,31,31,44	0
2	HEM	A	401	43/43	0.98	0.06	13,16,20,27	0
2	HEM	E	401	43/43	0.99	0.05	12,14,21,26	0
2	HEM	F	401	43/43	0.99	0.06	11,13,18,23	0
2	HEM	B	401	43/43	0.99	0.04	9,11,17,20	0
2	HEM	D	401	43/43	0.99	0.05	12,14,20,26	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.
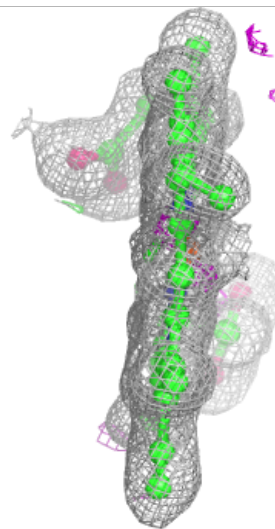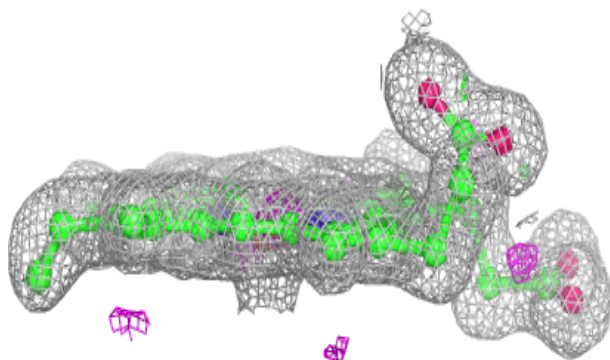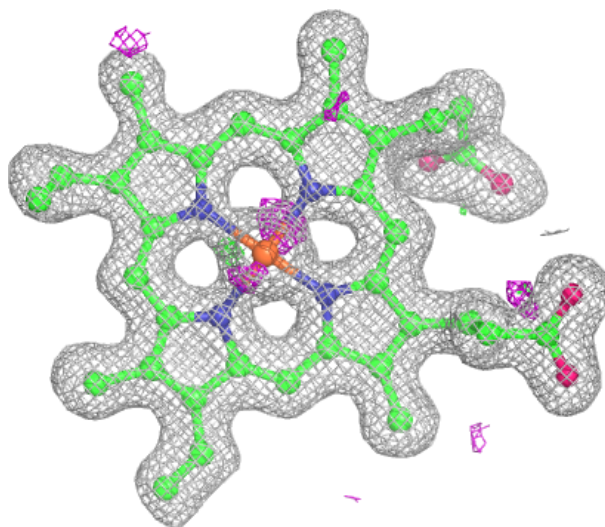
Electron density around HEM C 401:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
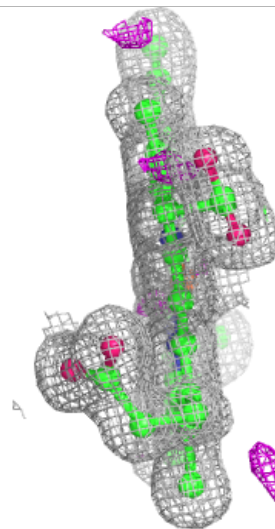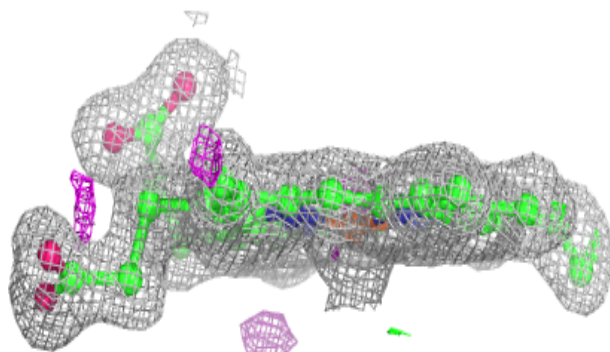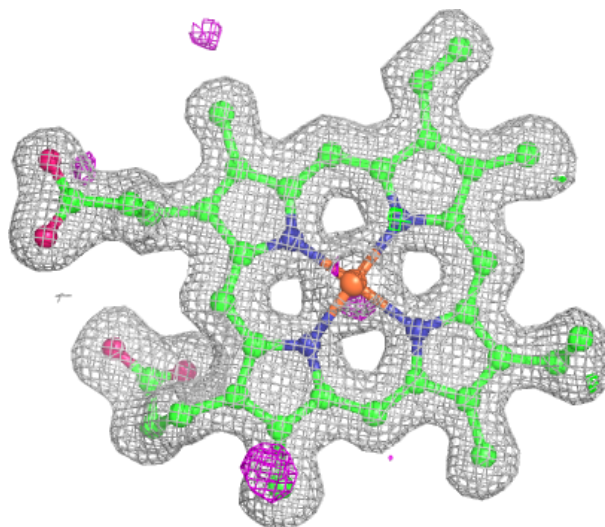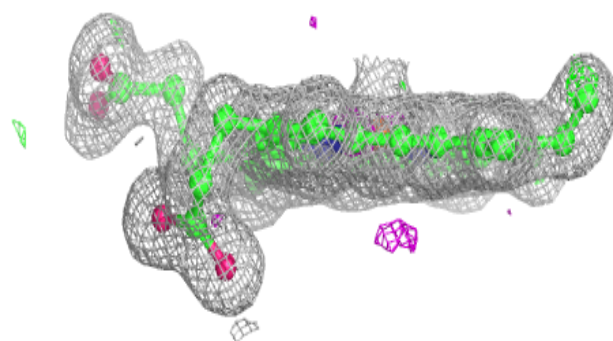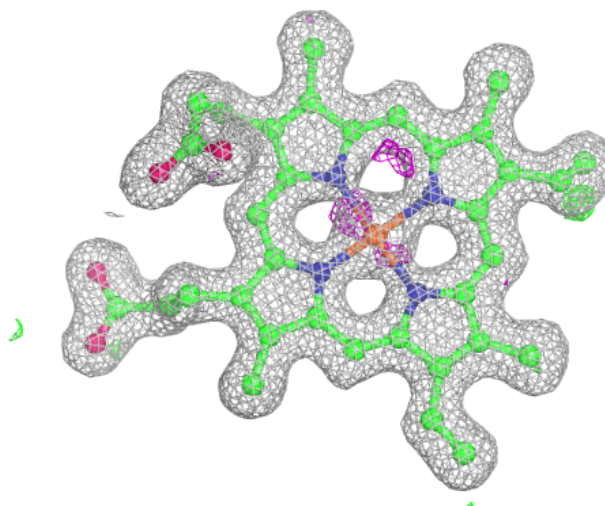and green (positive)
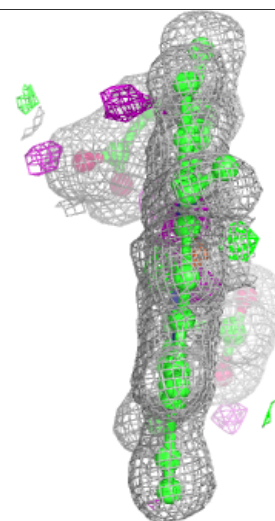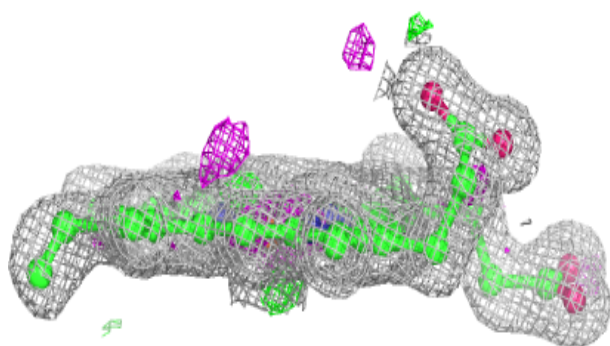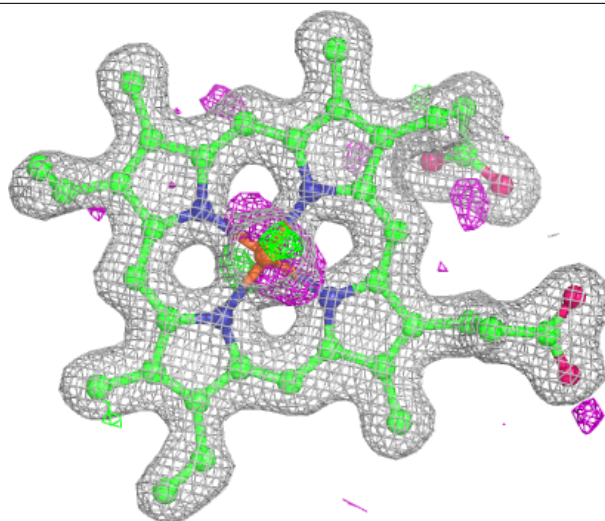
Electron density around HEM A 401:

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

Electron density around HEM E 401:

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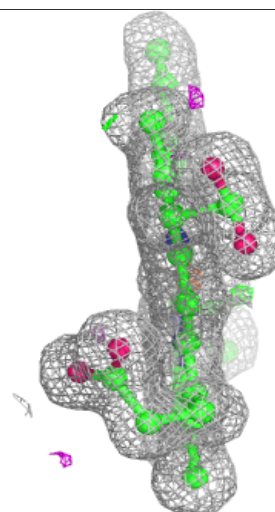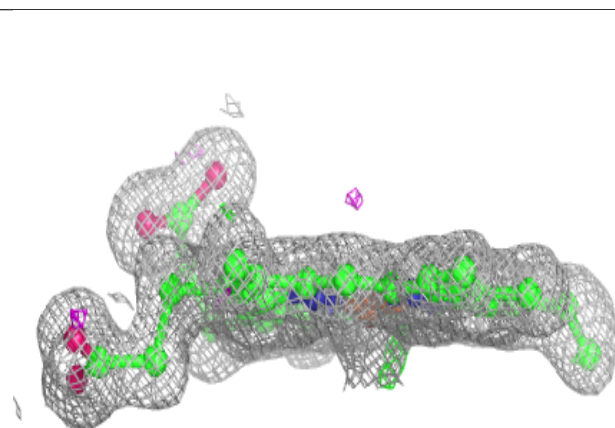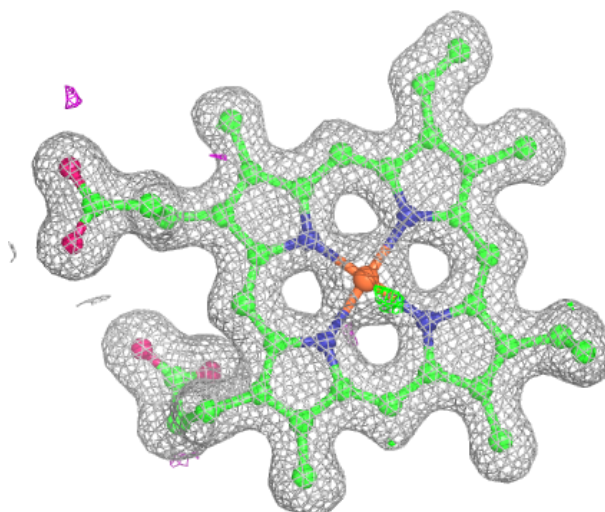mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around HEM F 401:

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

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)
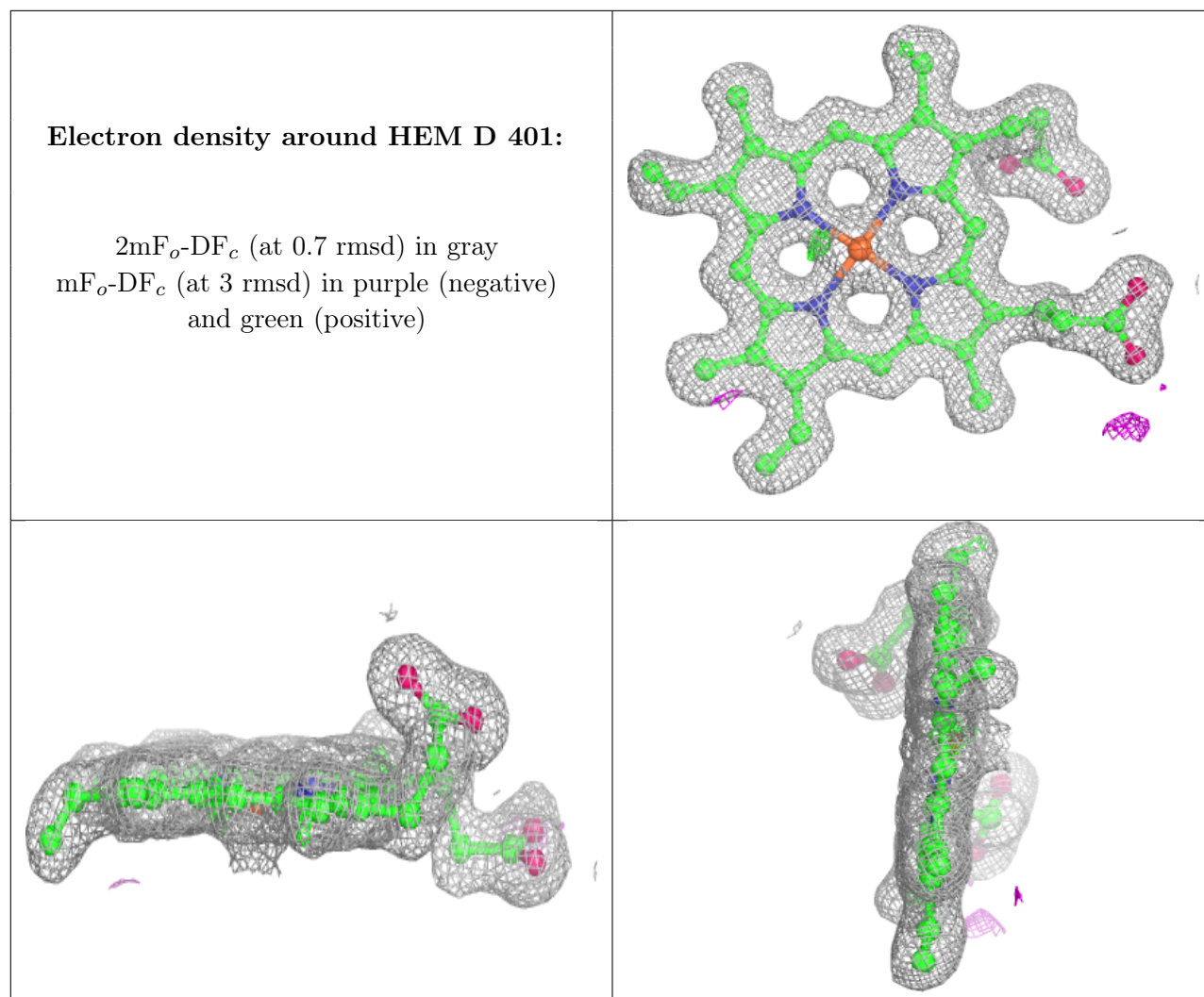
Electron density around HEM D 401:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.