Full wwPDB X-ray Structure Validation Report ⓘ

Nov 16, 2023 – 03:40 AM JST

PDB ID	:	6KMM
Title	:	Crystal Structure of HEPES bound Dye Decolorizing peroxidase from Bacillus subtilis
Authors	:	Dhankhar, P.; Dalal, V.; Mahto, J.K.; Kumar, P.
Deposited on	:	2019-07-31
Resolution	:	1.93 Å(reported)

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

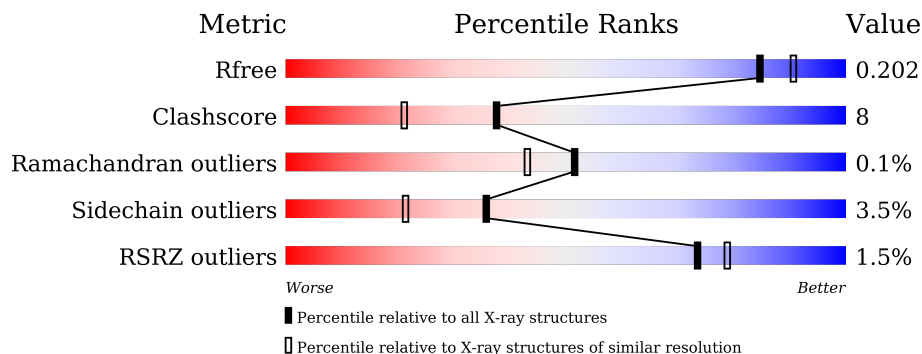|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 1.93 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		0.202
Clashscore		8
Ramachandran outliers		0.1%
Sidechain outliers		3.5%
RSRZ outliers		1.5%

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}	130704	4310 (1.96-1.92)
Clashscore	141614	1023 (1.94-1.94)
Ramachandran outliers	138981	1007 (1.94-1.94)
Sidechain outliers	138945	1007 (1.94-1.94)
RSRZ outliers	127900	4250 (1.96-1.92)

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	363	89% ... 10%
1	B	363	87% ... 11%
1	C	363	87% ... 12%
1	D	363	88% ... 10%
1	E	363	87% ... 11%
1	F	363	86% ... 12%

WORLDWIDE wwPDB PROTEIN DATA BANK

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
7	MPD	B	404	-	-	X	-

2 Entry composition ⓘ

There are 10 unique types of molecules in this entry. The entry contains 19445 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 Deferrochelatase/peroxidase EfeB.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	361	Total	C	N	O	S	0	3	0
			2828	1781	485	547	15			
1	B	361	Total	C	N	O	S	0	2	0
			2822	1778	484	546	14			
1	C	361	Total	C	N	O	S	0	2	0
			2816	1775	482	545	14			
1	D	359	Total	C	N	O	S	0	3	0
			2817	1774	481	548	14			
1	E	360	Total	C	N	O	S	0	2	0
			2811	1772	481	544	14			
1	F	363	Total	C	N	O	S	0	3	0
			2842	1788	485	555	14			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	initiating methionine	UNP A0A4P9FDJ4
B	1	MET	-	initiating methionine	UNP A0A4P9FDJ4
C	1	MET	-	initiating methionine	UNP A0A4P9FDJ4
D	1	MET	-	initiating methionine	UNP A0A4P9FDJ4
E	1	MET	-	initiating methionine	UNP A0A4P9FDJ4
F	1	MET	-	initiating methionine	UNP A0A4P9FDJ4

- Molecule 2 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$) (labeled as "Ligand of Interest" by depositor).

WORLDWIDE
wwPDB
PROTEIN DATA BANK

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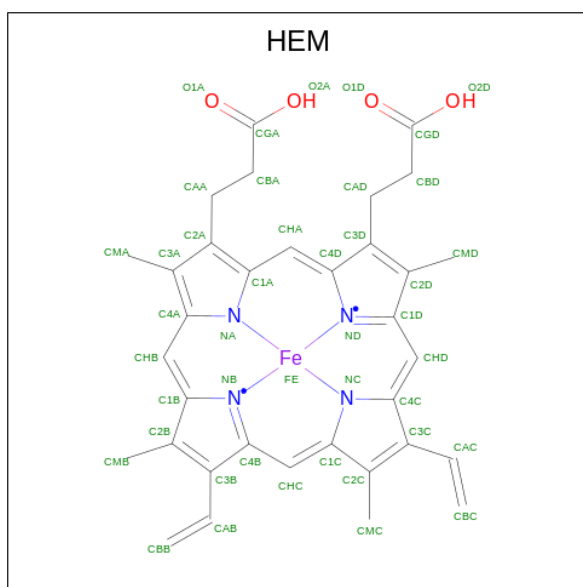
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	C	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	D	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	E	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	F	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		

- Molecule 3 is OXYGEN MOLECULE (three-letter code: OXY) (formula: O_2).

OXY

O1 O ———— O O2
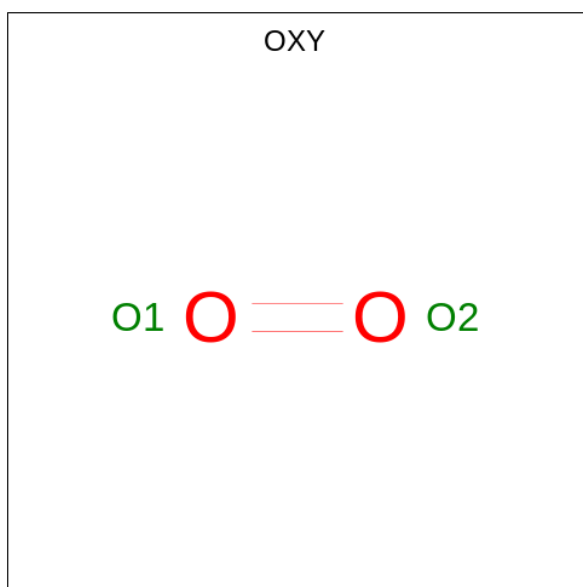
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total 2	O 2	0	0
3	B	1	Total 2	O 2	0	0
3	C	1	Total 2	O 2	0	0
3	D	1	Total 2	O 2	0	0
3	E	1	Total 2	O 2	0	0
3	F	1	Total 2	O 2	0	0

- Molecule 4 is 4-(2-HYDROXYETHYL)-1-PIPERAZINE ETHANESULFONIC ACID (three-letter code: EPE) (formula: $C_8H_{18}N_2O_4S$).
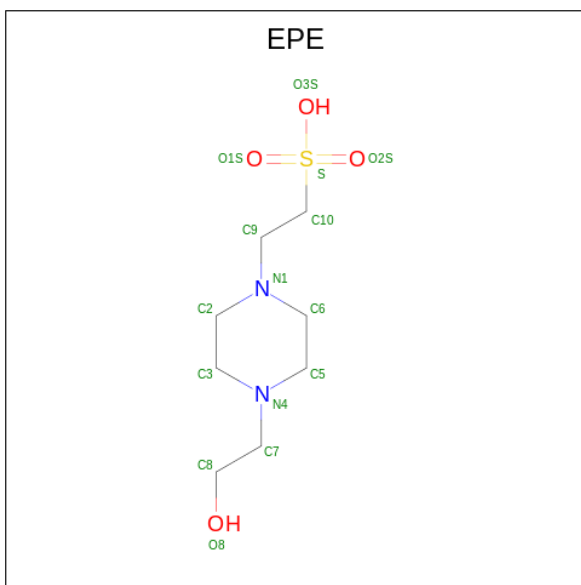
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	N	O	S	0	0
			15	8	2	4	1		
4	C	1	Total	C	N	O	S	0	0
			15	8	2	4	1		
4	D	1	Total	C	N	O	S	0	0
			15	8	2	4	1		
4	D	1	Total	C	N	O	S	0	0
			15	8	2	4	1		
4	F	1	Total	C	N	O	S	0	0
			15	8	2	4	1		

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).
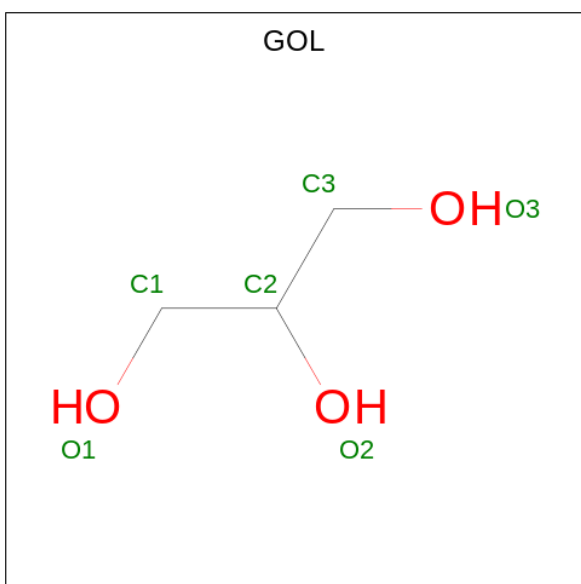
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total 6	C 3	O 3	0	0
5	A	1	Total 6	C 3	O 3	0	0
5	A	1	Total 6	C 3	O 3	0	0
5	C	1	Total 6	C 3	O 3	0	0
5	E	1	Total 6	C 3	O 3	0	0
5	E	1	Total 6	C 3	O 3	0	0

- Molecule 6 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	B	1	Total 1	Na 1	0	0

- Molecule 7 is (4S)-2-METHYL-2,4-PENTANEDIOL (three-letter code: MPD) (formula: $C_6H_{14}O_2$).
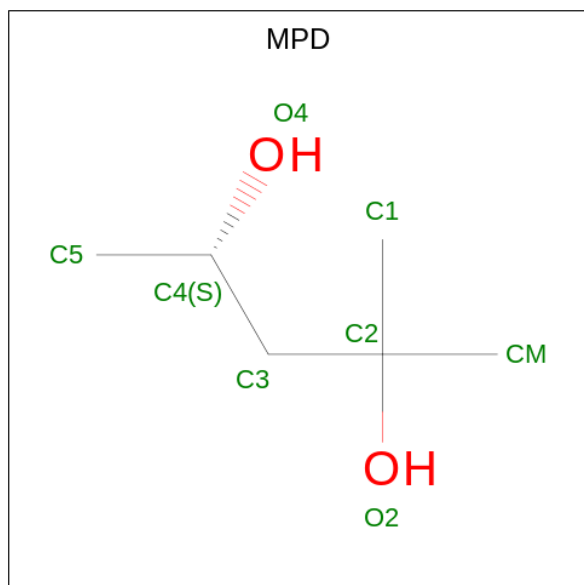
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	B	1	Total 8	C 6	O 2	0	0
7	C	1	Total 8	C 6	O 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	D	1	Total 8	C 6	O 2	0	0

- Molecule 8 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).
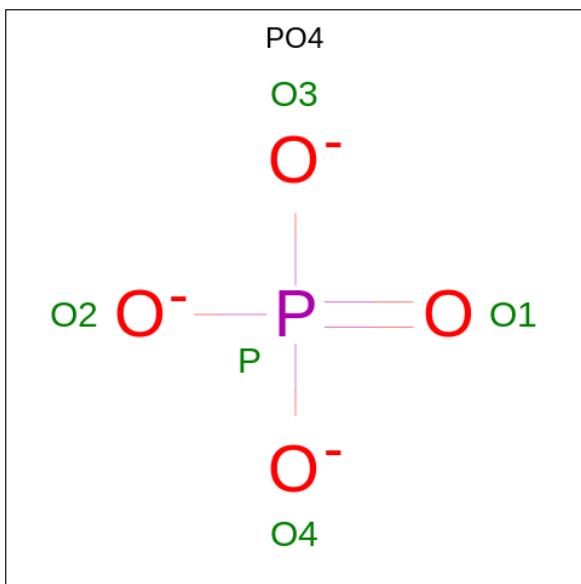
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	C	1	Total 5	O 4	P 1	0	0

- Molecule 9 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	C	1	Total 1	Cl 1	0	0
9	D	1	Total 1	Cl 1	0	0

- Molecule 10 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	342	Total 342	O 342	0	0
10	B	353	Total 353	O 353	0	0
10	C	396	Total 396	O 396	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	D	359	Total 359	O 359	0	0
10	E	311	Total 311	O 311	0	0
10	F	335	Total 335	O 335	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 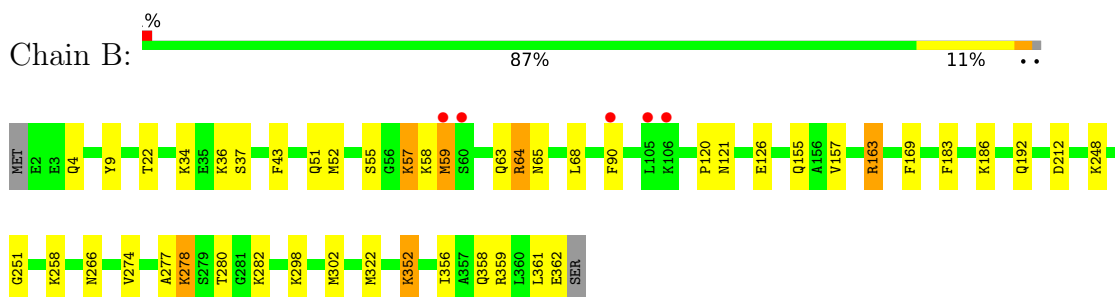issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). 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.
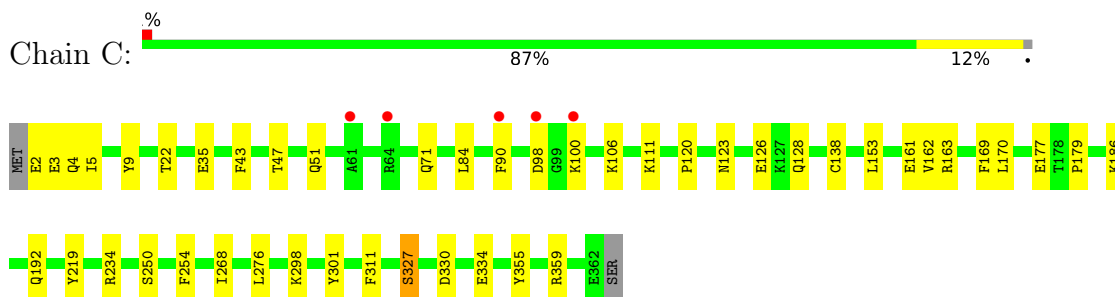
• Molecule 1: Deferrochelatase/peroxidase EfeB

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• Molecule 1: Deferrochelatase/peroxidase EfeB

MET E2 E3 Q4 K34 E35 K36 T41 L42 F43 T47 Q51 S55 G56 K57 K58 MET SER ALA E62 Q63 R64 N65 Q66 Y67 S80 P81 F90 G91 P92 K97 K100 D101 K106 N121 E126 K127 R163 K186 S198 K238 S249

K257 K258 E259 T260 K264 Q267 L295 Y301 Y335 K351 K352 Y355 S363

• Molecule 1: Deferrochelatase/peroxidase EfeB

Chain E:

87% 11%

MET GLU E3 Q4 H20 K34 F43 Q51 M52 S55 G56 M59 S60 A61 E62 Q63 R64 Q71 S80 P81 L84 F90 K100 K111 P120 N121 K127 G130 C138 Q155 E161 Q192 D197 E230 S249 K257

N271 F289 D296 P297 K298 K313 S327 A342 K352 Y355 Q358 E362 SER

• Molecule 1: Deferrochelatase/peroxidase EfeB

Chain F:

3% 86% 12%

M1 E2 E3 Q4 T22 K34 E35 I40 F43 R44 T47 Q51 K57 K58 M59 S60 A61 E62 Q63 Q71 F90 G91 P92 S93 E96 K97 D98 K106 S107 M119 P120 N121 D122 N123 L124 D125 E126 C134 F169 Q192 E195 K238

F244 G245 R246 S249 P253 K258 L265 L323 K324 A325 L326 S327 D330 Y355 I356 A357 Q358 R359 L360 L361 E362 S363

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	79.84Å 101.91Å 105.41Å 88.00° 76.43° 83.28°	Depositor
Resolution (Å)	69.91 – 1.93 69.91 – 1.93	Depositor EDS
% Data completeness (in resolution range)	92.8 (69.91-1.93) 92.8 (69.91-1.93)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.60 (at 1.92Å)	Xtriage
Refinement program	REFMAC 5.8.0253	Depositor
R, R_{free}	0.161 , 0.202 0.166 , 0.202	Depositor DCC
R_{free} test set	11128 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å^2)	29.2	Xtriage
Anisotropy	0.299	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 47.3	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	19445	wwPDB-VP
Average B, all atoms (Å^2)	45.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.96% 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: GOL, HEM, OXY, PO4, NA, CL, EPE, MPD

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	0.49	0/2888	0.81	0/3892
1	B	0.48	0/2882	0.84	0/3885
1	C	0.51	0/2876	0.85	0/3878
1	D	0.51	0/2876	0.84	0/3875
1	E	0.47	0/2871	0.81	0/3871
1	F	0.49	0/2902	0.85	0/3912
All	All	0.49	0/17295	0.83	0/23313

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	1
1	F	0	7
All	All	0	10

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (10) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	234[A]	ARG	Mainchain
1	A	234[B]	ARG	Mainchain
1	B	37[B]	SER	Mainchain
1	F	3	GLU	Mainchain

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Mol	Chain	Res	Type	Group
1	F	4[A]	GLN	Mainchain
1	F	4[B]	GLN	Mainchain
1	F	97	LYS	Mainchain
1	F	98[B]	ASP	Mainchain

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	2828	0	2771	36	0
1	B	2822	0	2763	48	0
1	C	2816	0	2754	42	0
1	D	2817	0	2748	36	0
1	E	2811	0	2752	35	0
1	F	2842	0	2770	48	0
2	A	43	0	30	6	0
2	B	43	0	30	3	0
2	C	43	0	30	2	0
2	D	43	0	30	2	0
2	E	43	0	30	2	0
2	F	43	0	30	4	0
3	A	2	0	0	0	0
3	B	2	0	0	0	0
3	C	2	0	0	0	0
3	D	2	0	0	0	0
3	E	2	0	0	0	0
3	F	2	0	0	0	0
4	A	15	0	18	3	0
4	C	15	0	18	3	0
4	D	30	0	36	5	0
4	F	15	0	18	0	0
5	A	18	0	24	3	0
5	C	6	0	8	0	0
5	E	12	0	16	0	0
6	B	1	0	0	0	0
7	B	8	0	14	11	0
7	C	8	0	14	4	0
7	D	8	0	14	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	C	5	0	0	0	0
9	C	1	0	0	0	0
9	D	1	0	0	0	0
10	A	342	0	0	8	0
10	B	353	0	0	12	0
10	C	396	0	0	9	0
10	D	359	0	0	12	0
10	E	311	0	0	8	0
10	F	335	0	0	9	0
All	All	19445	0	16918	263	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 8.

All (263) 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:F:134:CYS:HB2	10:F:750:HOH:O	1.53	1.08
1:E:43:PHE:CZ	1:E:90:PHE:HE1	1.74	1.06
1:C:43:PHE:HZ	1:C:90:PHE:CE1	1.79	1.00
1:B:302:MET:HG2	7:B:404:MPD:HM3	1.44	0.99
1:F:121:ASN:H	1:F:121:ASN:ND2	1.59	0.98
1:B:43:PHE:HZ	1:B:90:PHE:CE1	1.81	0.97
1:C:43:PHE:HZ	1:C:90:PHE:HE1	1.00	0.97
1:B:43:PHE:HZ	1:B:90:PHE:HE1	1.09	0.96
1:C:120:PRO:HA	10:C:533:HOH:O	1.66	0.96
1:D:3[B]:GLU:OE2	1:D:3[B]:GLU:HA	1.62	0.95
4:C:403:EPE:H91	10:C:776:HOH:O	1.65	0.95
1:E:43:PHE:HZ	1:E:90:PHE:HE1	1.11	0.95
1:D:43:PHE:HZ	1:D:90:PHE:HE1	1.14	0.95
1:C:43:PHE:CZ	1:C:90:PHE:CE1	2.54	0.94
1:B:43:PHE:CZ	1:B:90:PHE:CE1	2.55	0.94
1:E:43:PHE:CZ	1:E:90:PHE:CE1	2.56	0.94
1:A:43:PHE:HZ	1:A:90:PHE:HE1	1.18	0.91
1:A:225:ILE:HG21	2:A:401:HEM:HBB1	1.54	0.90
1:D:43:PHE:CZ	1:D:90:PHE:HE1	1.88	0.90
1:B:43:PHE:CZ	1:B:90:PHE:CZ	2.62	0.88
1:D:43:PHE:CZ	1:D:90:PHE:CE1	2.61	0.88
1:C:301:TYR:HD1	7:C:406:MPD:H32	1.41	0.85
1:C:43:PHE:CZ	1:C:90:PHE:HE1	1.88	0.84
1:A:43:PHE:CZ	1:A:90:PHE:HE1	1.97	0.83

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:43:PHE:CZ	1:A:90:PHE:CE1	2.67	0.83
1:F:57:LYS:HD2	1:F:58:LYS:HD2	1.61	0.82
1:B:302:MET:H	7:B:404:MPD:CM	1.94	0.81
1:B:302:MET:H	7:B:404:MPD:HM1	1.43	0.81
1:F:119:MET:CE	1:F:324:LYS:HA	2.13	0.79
1:E:52:MET:HE3	10:E:748:HOH:O	1.83	0.78
10:B:702:HOH:O	1:E:313:LYS:HE3	1.83	0.78
1:F:119:MET:HE3	1:F:324:LYS:HA	1.65	0.77
1:B:64:ARG:HG2	10:B:761:HOH:O	1.83	0.77
1:A:260:THR:HG22	4:A:403:EPE:H71	1.67	0.77
1:F:51:GLN:HG2	10:F:513:HOH:O	1.85	0.75
1:D:260:THR:HG22	4:D:404:EPE:H71	1.67	0.75
1:E:362:GLU:HG2	10:E:584:HOH:O	1.87	0.74
1:A:43:PHE:HZ	1:A:90:PHE:CE1	2.04	0.74
1:D:301:TYR:HD2	7:D:405:MPD:H4	1.52	0.74
1:D:260:THR:HG22	4:D:404:EPE:C7	2.18	0.74
1:A:67:TYR:OH	1:B:155:GLN:NE2	2.21	0.74
1:F:121:ASN:ND2	1:F:121:ASN:N	2.35	0.74
1:A:103:PHE:HB2	1:A:105:LEU:CD2	2.18	0.73
1:B:277:ALA:O	1:B:280:THR:HG22	1.89	0.73
1:C:43:PHE:CZ	1:C:90:PHE:CZ	2.77	0.72
1:B:43:PHE:CE1	1:B:90:PHE:HZ	2.08	0.71
1:A:119[A]:MET:HE3	1:A:120:PRO:HD2	1.73	0.71
1:D:4:GLN:HG2	10:D:717:HOH:O	1.91	0.71
1:A:225:ILE:CG2	2:A:401:HEM:HBB1	2.21	0.69
1:A:358:GLN:O	1:A:362:GLU:HG2	1.92	0.69
1:D:264:LYS:HD3	1:D:267:GLN:NE2	2.07	0.69
1:F:134:CYS:SG	10:F:750:HOH:O	2.50	0.69
1:F:134:CYS:CB	10:F:750:HOH:O	2.24	0.68
1:D:301:TYR:CD2	7:D:405:MPD:H4	2.27	0.68
7:B:404:MPD:H53	1:C:153:LEU:HB3	1.74	0.68
1:E:52:MET:CE	10:E:748:HOH:O	2.38	0.68
1:D:41:THR:HG21	10:D:773:HOH:O	1.94	0.68
1:E:3:GLU:O	1:E:4[A]:GLN:NE2	2.27	0.68
1:F:43:PHE:CZ	1:F:90:PHE:HE1	2.12	0.67
1:F:59:MET:HE1	10:F:534:HOH:O	1.94	0.67
1:B:298:LYS:HE3	10:B:792:HOH:O	1.95	0.66
1:C:2:GLU:HG3	1:C:3:GLU:N	2.11	0.66
1:A:225:ILE:HG21	2:A:401:HEM:CBB	2.24	0.66
1:B:43:PHE:CZ	1:B:90:PHE:HZ	2.11	0.66
1:E:192:GLN:HE21	1:E:192:GLN:HA	1.63	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:65:ASN:HB3	1:B:68:LEU:HD12	1.79	0.64
1:B:43:PHE:CE1	1:B:90:PHE:CZ	2.85	0.64
1:B:280:THR:HG23	1:B:282:LYS:H	1.63	0.63
1:D:238:LYS:HA	10:D:552:HOH:O	1.97	0.63
1:B:356:ILE:CD1	10:B:764:HOH:O	2.46	0.63
1:A:62:GLU:HB2	10:A:501:HOH:O	1.99	0.62
1:C:298:LYS:HD3	1:F:98[B]:ASP:OD1	1.99	0.62
1:E:3:GLU:C	1:E:4[A]:GLN:HE21	2.02	0.62
1:A:103:PHE:HB2	1:A:105:LEU:HD22	1.81	0.62
2:E:401:HEM:HMB2	2:E:401:HEM:HBB2	1.81	0.61
2:F:401:HEM:HMC1	2:F:401:HEM:HBC2	1.83	0.60
1:C:301:TYR:CD1	7:C:406:MPD:H32	2.32	0.60
1:F:120:PRO:HD2	1:F:327:SER:HB3	1.82	0.60
2:C:401:HEM:HBB2	2:C:401:HEM:HMB2	1.83	0.60
5:A:404:GOL:H32	10:A:658:HOH:O	2.02	0.60
1:D:43:PHE:HZ	1:D:90:PHE:CE1	2.00	0.60
1:E:51:GLN:O	1:E:55:SER:HB3	2.03	0.59
1:D:65:ASN:OD1	1:D:65:ASN:N	2.28	0.59
1:F:43:PHE:HZ	1:F:90:PHE:HE1	1.49	0.59
1:B:302:MET:CG	7:B:404:MPD:HM3	2.26	0.59
2:A:401:HEM:HMC1	2:A:401:HEM:HBC2	1.83	0.58
7:B:404:MPD:H52	1:C:162:VAL:CG2	2.32	0.58
1:F:92:PRO:HD2	10:F:721:HOH:O	2.02	0.58
1:A:264:LYS:HE3	1:A:267:GLN:OE1	2.03	0.58
1:B:43:PHE:CZ	1:B:90:PHE:HE1	1.98	0.58
1:C:123:ASN:OD1	1:F:106:LYS:CE	2.51	0.58
1:E:4[A]:GLN:NE2	1:E:4[A]:GLN:HA	2.19	0.58
1:E:43:PHE:HZ	1:E:90:PHE:CE1	2.02	0.58
1:B:302:MET:HB2	7:B:404:MPD:HM2	1.86	0.58
1:F:2:GLU:HG3	10:F:745:HOH:O	2.04	0.58
1:B:212:ASP:HB3	10:B:738:HOH:O	2.04	0.58
1:A:4:GLN:HG3	10:A:510:HOH:O	2.04	0.57
1:B:278:LYS:NZ	10:B:504:HOH:O	2.38	0.57
1:F:58:LYS:HD3	1:F:60:SER:O	2.04	0.57
1:D:51:GLN:O	1:D:55:SER:HB3	2.04	0.57
1:F:121:ASN:H	1:F:121:ASN:HD22	1.51	0.56
1:E:43:PHE:CE1	1:E:90:PHE:CE1	2.94	0.56
2:A:401:HEM:HBC2	2:A:401:HEM:CMC	2.36	0.56
1:B:126:GLU:OE2	1:B:163:ARG:NH2	2.36	0.56
1:D:41:THR:CG2	10:D:773:HOH:O	2.52	0.56
1:C:126:GLU:HG2	10:C:504:HOH:O	2.05	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:97:LYS:HE3	10:D:676:HOH:O	2.04	0.56
1:E:296:ASP:OD1	1:E:298:LYS:HG2	2.06	0.56
1:B:55:SER:OG	1:B:57:LYS:HG3	2.05	0.55
2:B:401:HEM:HBC2	2:B:401:HEM:HHD	1.89	0.55
1:D:43:PHE:CZ	1:D:90:PHE:CZ	2.95	0.55
4:D:404:EPE:H32	10:D:784:HOH:O	2.05	0.55
1:F:63:GLN:H	1:F:63:GLN:NE2	2.04	0.55
2:F:401:HEM:HBC2	2:F:401:HEM:CMC	2.36	0.55
1:D:335:TYR:OH	4:D:403:EPE:H51	2.07	0.55
1:F:362:GLU:HG2	10:F:614:HOH:O	2.07	0.55
1:E:192:GLN:HA	1:E:192:GLN:NE2	2.21	0.55
1:A:43:PHE:CZ	1:A:90:PHE:CZ	2.94	0.54
1:C:2:GLU:HG3	1:C:3:GLU:H	1.71	0.54
1:D:34:LYS:NZ	10:D:507:HOH:O	2.41	0.54
1:F:119:MET:HE1	1:F:324:LYS:HA	1.89	0.53
1:C:128:GLN:HG3	10:C:600:HOH:O	2.09	0.53
2:D:401:HEM:HMB2	2:D:401:HEM:HBB2	1.90	0.53
1:F:63:GLN:H	1:F:63:GLN:HE21	1.55	0.53
1:F:35:GLU:OE1	1:F:35:GLU:HA	2.08	0.52
1:C:43:PHE:CE1	1:C:90:PHE:CZ	2.97	0.52
1:C:123:ASN:OD1	1:F:106:LYS:HE2	2.10	0.52
1:D:43:PHE:CE1	1:D:90:PHE:CZ	2.98	0.52
7:D:405:MPD:H52	7:D:405:MPD:O2	2.10	0.52
1:F:43:PHE:CZ	1:F:90:PHE:CE1	2.97	0.52
1:F:58:LYS:HB2	1:F:60:SER:H	1.74	0.52
1:D:65:ASN:C	1:D:67:TYR:H	2.12	0.52
1:C:9:TYR:CE2	1:C:51[A]:GLN:HG3	2.45	0.52
1:C:43:PHE:CE1	1:C:90:PHE:HZ	2.28	0.52
1:E:271:ASN:ND2	10:E:510:HOH:O	2.42	0.52
2:E:401:HEM:HBB2	2:E:401:HEM:CMB	2.39	0.52
1:B:280:THR:HG21	1:B:322:MET:HG3	1.93	0.51
1:A:103:PHE:HB2	1:A:105:LEU:HD23	1.93	0.51
1:F:93:SER:HA	1:F:96:GLU:O	2.11	0.51
1:E:120:PRO:O	1:E:121:ASN:HB2	2.12	0.50
1:B:359:ARG:CB	10:B:773:HOH:O	2.60	0.50
1:F:122:ASP:HB3	1:F:124:LEU:HG	1.94	0.49
1:E:43:PHE:CE1	1:E:90:PHE:CZ	3.01	0.49
1:F:63:GLN:NE2	1:F:63:GLN:N	2.60	0.49
1:A:119[A]:MET:CE	1:A:324:LYS:HA	2.43	0.49
1:F:358:GLN:HG3	1:F:363:SER:HA	1.93	0.49
5:A:406:GOL:H32	10:A:650:HOH:O	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:334:GLU:OE2	4:C:403:EPE:H52	2.13	0.49
1:C:123:ASN:OD1	1:F:106:LYS:HE3	2.11	0.49
1:B:358:GLN:O	1:B:362:GLU:N	2.41	0.48
1:D:260:THR:HG22	4:D:404:EPE:H72	1.95	0.48
1:F:119:MET:HE1	1:F:324:LYS:CA	2.42	0.48
2:D:401:HEM:HBB2	2:D:401:HEM:CMB	2.43	0.48
1:B:266:ASN:H	1:B:266:ASN:ND2	2.11	0.48
1:D:101:ASP:HB2	1:D:106:LYS:HD3	1.95	0.48
1:B:59:MET:O	1:B:59:MET:HG3	2.14	0.48
1:E:155:GLN:HG2	10:E:714:HOH:O	2.13	0.48
1:B:302:MET:HB2	7:B:404:MPD:CM	2.44	0.48
1:A:126:GLU:OE1	1:A:163:ARG:NH2	2.46	0.48
1:B:51:GLN:HG3	10:B:713:HOH:O	2.14	0.48
1:E:355:TYR:CE1	1:E:358:GLN:HA	2.47	0.48
1:B:157:VAL:HG23	7:C:406:MPD:H51	1.96	0.48
1:C:254:PHE:HB2	1:C:268:ILE:HG22	1.95	0.48
1:C:163:ARG:NH2	10:C:504:HOH:O	2.36	0.47
2:F:401:HEM:HBB2	2:F:401:HEM:CMB	2.44	0.47
2:B:401:HEM:HBB2	2:B:401:HEM:HMB2	1.96	0.47
1:C:177:GLU:HG3	10:C:846:HOH:O	2.14	0.47
1:E:4[A]:GLN:NE2	1:E:4[A]:GLN:CA	2.77	0.47
1:A:4:GLN:CG	10:A:510:HOH:O	2.63	0.47
1:B:186:LYS:HD2	1:B:251:GLY:HA3	1.96	0.47
1:E:120:PRO:HG2	1:E:327:SER:HB3	1.96	0.47
2:C:401:HEM:HBB2	2:C:401:HEM:CMB	2.45	0.47
1:E:20:HIS:CE1	1:E:289:PHE:CZ	3.04	0.47
1:E:230:GLU:OE1	1:E:230:GLU:N	2.36	0.46
1:B:183:PHE:O	1:B:248:LYS:HE3	2.15	0.46
4:A:403:EPE:O3S	4:A:403:EPE:N1	2.48	0.46
1:F:326:LEU:HD22	1:F:330:ASP:OD2	2.15	0.46
1:A:25:TYR:HB3	1:A:149:LEU:HD22	1.97	0.46
1:F:119:MET:HE1	1:F:324:LYS:N	2.31	0.46
1:A:56:GLY:HA2	1:A:81:PRO:HG3	1.98	0.45
1:B:36:LYS:HE3	1:B:361:LEU:O	2.16	0.45
1:C:47:THR:HG21	1:C:355:TYR:HA	1.98	0.45
1:E:62:GLU:HB3	1:E:63:GLN:H	1.44	0.45
1:C:192:GLN:HA	1:C:192:GLN:NE2	2.32	0.45
1:D:295:LEU:HD12	1:D:295:LEU:HA	1.78	0.45
1:F:60:SER:CB	1:F:71:GLN:HE22	2.30	0.45
1:D:126:GLU:OE1	1:D:163:ARG:NH2	2.49	0.45
1:C:2:GLU:OE2	1:C:4:GLN:HG2	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:401:HEM:HBB2	2:F:401:HEM:HMB2	1.98	0.45
5:A:406:GOL:C3	10:A:650:HOH:O	2.65	0.44
1:C:192:GLN:NE2	10:C:514:HOH:O	2.45	0.44
1:E:120:PRO:HA	10:E:516:HOH:O	2.18	0.44
1:A:276:LEU:HD12	1:A:330:ASP:HA	1.98	0.44
1:E:56:GLY:HA2	1:E:81:PRO:HG3	1.99	0.44
1:F:356:ILE:O	1:F:357:ALA:HB3	2.17	0.44
1:D:127:LYS:HG2	10:D:824:HOH:O	2.17	0.44
1:F:192:GLN:NE2	10:F:511:HOH:O	2.50	0.44
1:C:219:TYR:O	1:C:311:PHE:HA	2.18	0.44
1:D:36:LYS:HE3	10:D:733:HOH:O	2.17	0.44
7:B:404:MPD:H52	1:C:162:VAL:HG21	1.99	0.44
1:B:9:TYR:CE2	1:B:352:LYS:HG2	2.53	0.44
1:C:3:GLU:HG3	1:C:5:ILE:HD12	2.00	0.44
1:E:257:LYS:HD2	1:E:257:LYS:HA	1.74	0.44
1:F:47:THR:HG21	1:F:355:TYR:HA	2.00	0.44
1:B:4:GLN:HB2	10:B:506:HOH:O	2.18	0.43
1:C:359:ARG:CB	10:C:808:HOH:O	2.65	0.43
1:D:186:LYS:HE2	1:D:259:GLU:OE1	2.18	0.43
1:A:3:GLU:N	10:A:511:HOH:O	2.50	0.43
1:B:120:PRO:O	1:B:121:ASN:HB2	2.17	0.43
1:E:84:LEU:HA	1:E:138:CYS:O	2.19	0.43
1:A:43:PHE:CE1	1:A:90:PHE:CZ	3.07	0.43
1:B:64:ARG:N	10:B:515:HOH:O	2.48	0.43
1:D:43:PHE:CE1	1:D:90:PHE:HZ	2.34	0.43
1:D:4:GLN:O	1:D:81:PRO:HB2	2.19	0.43
1:F:96:GLU:OE1	1:F:106:LYS:HE2	2.19	0.43
1:B:22:THR:O	1:B:169:PHE:HA	2.19	0.43
1:D:186:LYS:CE	10:D:509:HOH:O	2.67	0.43
1:A:43:PHE:CE1	1:A:90:PHE:HZ	2.37	0.42
1:B:362:GLU:HG3	10:B:597:HOH:O	2.18	0.42
1:C:170:LEU:HG	1:C:179:PRO:HB2	1.99	0.42
1:A:264:LYS:HB2	1:A:267:GLN:HG3	2.01	0.42
1:F:22:THR:O	1:F:169:PHE:HA	2.20	0.42
1:F:90:PHE:CE2	1:F:360:LEU:HD23	2.55	0.42
1:C:2:GLU:HA	10:C:751:HOH:O	2.19	0.42
1:F:246:ARG:NH1	1:F:253:PRO:HD3	2.35	0.42
1:A:103:PHE:CB	1:A:105:LEU:HD22	2.47	0.42
1:D:92:PRO:HD2	10:D:678:HOH:O	2.18	0.42
1:C:120:PRO:HD2	1:C:327:SER:OG	2.20	0.42
1:C:276:LEU:CD1	1:C:330:ASP:HA	2.50	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:234:ARG:NE	4:C:403:EPE:O2S	2.46	0.42
1:B:157:VAL:CG2	7:C:406:MPD:C5	2.98	0.41
2:A:401:HEM:HMC1	2:A:401:HEM:CBC	2.50	0.41
1:D:65:ASN:C	1:D:67:TYR:N	2.73	0.41
1:A:267:GLN:HE21	1:A:267:GLN:HB3	1.67	0.41
1:A:119[A]:MET:HE2	1:A:324:LYS:HA	2.02	0.41
1:B:52:MET:HA	1:B:57:LYS:HE2	2.02	0.41
1:B:52:MET:HG2	1:B:57:LYS:HE3	2.02	0.41
1:B:274:VAL:O	1:B:278:LYS:HB2	2.21	0.41
1:C:22:THR:O	1:C:169:PHE:HA	2.21	0.41
1:D:56:GLY:CA	10:D:573:HOH:O	2.68	0.41
1:F:119:MET:O	1:F:120:PRO:C	2.57	0.41
1:B:59:MET:O	1:B:59:MET:CG	2.68	0.41
1:F:40:ILE:HG22	1:F:44:ARG:HD2	2.03	0.41
1:A:205:TRP:O	1:A:313:LYS:HE2	2.21	0.41
1:C:186:LYS:HE3	1:C:250:SER:O	2.20	0.41
1:F:119:MET:CE	1:F:323:LEU:C	2.89	0.41
1:A:84:LEU:HA	1:A:138:CYS:O	2.21	0.41
1:D:47:THR:HG21	1:D:355:TYR:HA	2.03	0.41
1:E:130:GLY:H	1:E:342:ALA:HB2	1.85	0.41
1:A:189:THR:O	4:A:403:EPE:H51	2.21	0.41
1:C:84:LEU:HA	1:C:138:CYS:O	2.20	0.41
1:A:129:GLY:O	1:A:163:ARG:NE	2.44	0.41
1:A:174:LYS:HE2	10:A:679:HOH:O	2.21	0.41
1:E:4[A]:GLN:HE21	1:E:4[A]:GLN:N	2.19	0.40
1:E:192:GLN:NE2	10:E:522:HOH:O	2.49	0.40
1:E:327:SER:HB2	10:E:512:HOH:O	2.21	0.40
1:B:192:GLN:NE2	10:B:524:HOH:O	2.51	0.40
7:B:404:MPD:H52	1:C:162:VAL:HG23	2.01	0.40
1:F:323:LEU:HD12	1:F:323:LEU:HA	1.83	0.40
2:B:401:HEM:HBB2	2:B:401:HEM:CMB	2.51	0.40
1:E:127:LYS:HA	1:E:127:LYS:HD2	1.71	0.40
1:B:302:MET:CB	7:B:404:MPD:CM	2.99	0.40
1:F:362:GLU:O	1:F:363:SER:OXT	2.39	0.40

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	362/363 (100%)	351 (97%)	11 (3%)	0	100	100
1	B	361/363 (99%)	351 (97%)	10 (3%)	0	100	100
1	C	361/363 (99%)	347 (96%)	14 (4%)	0	100	100
1	D	358/363 (99%)	348 (97%)	10 (3%)	0	100	100
1	E	360/363 (99%)	351 (98%)	9 (2%)	0	100	100
1	F	364/363 (100%)	351 (96%)	11 (3%)	2 (0%)	29	17
All	All	2166/2178 (99%)	2099 (97%)	65 (3%)	2 (0%)	51	43

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	F	2	GLU
1	F	3	GLU

5.3.2 Protein sidechains ⓘ

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	305/305 (100%)	299 (98%)	6 (2%)	55	42
1	B	304/305 (100%)	294 (97%)	10 (3%)	38	24
1	C	303/305 (99%)	295 (97%)	8 (3%)	46	32
1	D	304/305 (100%)	292 (96%)	12 (4%)	32	17
1	E	303/305 (99%)	287 (95%)	16 (5%)	22	9

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	F	306/305 (100%)	294 (96%)	12 (4%)	32	17
All	All	1825/1830 (100%)	1761 (96%)	64 (4%)	36	21

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

Mol	Chain	Res	Type
1	A	59	MET
1	A	80	SER
1	A	96	GLU
1	A	105	LEU
1	A	111	LYS
1	A	267	GLN
1	B	34	LYS
1	B	57	LYS
1	B	58	LYS
1	B	59	MET
1	B	63	GLN
1	B	64	ARG
1	B	163	ARG
1	B	258	LYS
1	B	278	LYS
1	B	352	LYS
1	C	35	GLU
1	C	71	GLN
1	C	98	ASP
1	C	100	LYS
1	C	106	LYS
1	C	111	LYS
1	C	161	GLU
1	C	327	SER
1	D	34	LYS
1	D	35	GLU
1	D	58	LYS
1	D	65	ASN
1	D	80	SER
1	D	100	LYS
1	D	106	LYS
1	D	198	SER
1	D	249	SER
1	D	257	LYS
1	D	351	LYS
1	D	352	LYS

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Mol	Chain	Res	Type
1	E	4[A]	GLN
1	E	4[B]	GLN
1	E	34	LYS
1	E	59	MET
1	E	64	ARG
1	E	71	GLN
1	E	80	SER
1	E	100	LYS
1	E	111	LYS
1	E	127	LYS
1	E	161	GLU
1	E	197	ASP
1	E	249	SER
1	E	298	LYS
1	E	313	LYS
1	E	352	LYS
1	F	34	LYS
1	F	35	GLU
1	F	57	LYS
1	F	58	LYS
1	F	59	MET
1	F	63	GLN
1	F	107	SER
1	F	121	ASN
1	F	126	GLU
1	F	238	LYS
1	F	249	SER
1	F	258	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (17) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	83	ASN
1	A	271	ASN
1	A	283	GLN
1	B	4	GLN
1	B	83	ASN
1	B	155	GLN
1	B	266	ASN
1	C	71	GLN
1	C	192	GLN
1	D	256	GLN

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Mol	Chain	Res	Type
1	E	136	GLN
1	E	192	GLN
1	E	267	GLN
1	F	63	GLN
1	F	71	GLN
1	F	121	ASN
1	F	192	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 30 ligands modelled in this entry, 3 are monoatomic - leaving 27 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	$\#|Z| > 2$
3	OXY	B	402	-	1,1,1	0.04	0	-		
3	OXY	A	402	2	1,1,1	0.16	0	-		
5	GOL	A	404	-	5,5,5	0.09	0	5,5,5	0.36	0
5	GOL	E	404	-	5,5,5	0.17	0	5,5,5	0.70	0
2	HEM	D	401	3,1	41,50,50	1.39	7 (17%)	45,82,82	2.34	18 (40%)
7	MPD	D	405	-	7,7,7	0.34	0	9,10,10	0.73	0

WORLDWIDE
wwPDB
PROTEIN DATA BANK

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
2	HEM	A	401	3,1	41,50,50	1.49	8 (19%)	45,82,82	2.22	20 (44%)
7	MPD	B	404	-	7,7,7	0.27	0	9,10,10	0.64	0
7	MPD	C	406	-	7,7,7	0.31	0	9,10,10	0.49	0
5	GOL	C	404	-	5,5,5	0.14	0	5,5,5	0.53	0
4	EPE	D	404	-	15,15,15	1.86	1 (6%)	18,20,20	2.04	2 (11%)
2	HEM	E	401	3,1	41,50,50	1.29	6 (14%)	45,82,82	2.09	15 (33%)
3	OXY	C	402	2	1,1,1	0.08	0	-		
4	EPE	A	403	-	15,15,15	1.81	1 (6%)	18,20,20	1.96	5 (27%)
5	GOL	A	406	-	5,5,5	0.25	0	5,5,5	0.71	0
2	HEM	F	401	1	41,50,50	1.17	5 (12%)	45,82,82	2.08	8 (17%)
3	OXY	D	402	2	1,1,1	0.01	0	-		
4	EPE	D	403	-	15,15,15	1.71	2 (13%)	18,20,20	1.73	6 (33%)
5	GOL	A	405	-	5,5,5	0.10	0	5,5,5	0.31	0
3	OXY	F	402	-	1,1,1	0.04	0	-		
3	OXY	E	402	2	1,1,1	0.04	0	-		
2	HEM	B	401	1	41,50,50	1.45	6 (14%)	45,82,82	2.20	14 (31%)
5	GOL	E	403	-	5,5,5	0.07	0	5,5,5	0.37	0
8	PO4	C	405	-	4,4,4	0.63	0	6,6,6	0.46	0
4	EPE	C	403	-	15,15,15	1.85	1 (6%)	18,20,20	2.24	6 (33%)
2	HEM	C	401	3,1	41,50,50	1.33	5 (12%)	45,82,82	1.84	10 (22%)
4	EPE	F	403	-	15,15,15	1.96	1 (6%)	18,20,20	1.46	4 (22%)

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
5	GOL	A	404	-	-	2/4/4/4	-
5	GOL	E	404	-	-	3/4/4/4	-
2	HEM	D	401	3,1	-	4/12/54/54	-
7	MPD	D	405	-	-	3/5/5/5	-
2	HEM	A	401	3,1	-	4/12/54/54	-
7	MPD	B	404	-	-	2/5/5/5	-
7	MPD	C	406	-	-	3/5/5/5	-
5	GOL	C	404	-	-	2/4/4/4	-
4	EPE	D	404	-	-	4/9/19/19	0/1/1/1
2	HEM	E	401	3,1	-	4/12/54/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	EPE	A	403	-	-	5/9/19/19	0/1/1/1
5	GOL	A	406	-	-	2/4/4/4	-
2	HEM	F	401	1	-	4/12/54/54	-
4	EPE	D	403	-	-	4/9/19/19	0/1/1/1
5	GOL	A	405	-	-	2/4/4/4	-
2	HEM	B	401	1	-	4/12/54/54	-
5	GOL	E	403	-	-	1/4/4/4	-
4	EPE	C	403	-	-	4/9/19/19	0/1/1/1
2	HEM	C	401	3,1	-	4/12/54/54	-
4	EPE	F	403	-	-	4/9/19/19	0/1/1/1

All (43) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	F	403	EPE	C10-S	-6.86	1.67	1.77
4	D	404	EPE	C10-S	-6.62	1.68	1.77
4	A	403	EPE	C10-S	-6.51	1.68	1.77
4	C	403	EPE	C10-S	-6.35	1.68	1.77
4	D	403	EPE	C10-S	-5.51	1.69	1.77
2	D	401	HEM	C1B-NB	-4.03	1.33	1.40
2	A	401	HEM	C4D-ND	-3.91	1.33	1.40
2	B	401	HEM	C4B-NB	-3.57	1.31	1.38
2	C	401	HEM	C1B-NB	-3.20	1.34	1.40
2	A	401	HEM	C1B-NB	-3.11	1.34	1.40
2	B	401	HEM	CHB-C1B	3.01	1.42	1.35
2	A	401	HEM	C1A-NA	2.85	1.42	1.36
2	D	401	HEM	CHB-C1B	2.76	1.42	1.35
2	F	401	HEM	CHB-C1B	2.72	1.41	1.35
2	D	401	HEM	C1D-C2D	2.66	1.49	1.44
2	E	401	HEM	CMB-C2B	2.64	1.56	1.50
2	B	401	HEM	C4A-NA	2.64	1.41	1.36
2	E	401	HEM	CHB-C1B	2.58	1.41	1.35
2	F	401	HEM	C1B-NB	-2.53	1.35	1.40
2	C	401	HEM	CHB-C1B	2.52	1.41	1.35
2	C	401	HEM	CAA-C2A	2.48	1.55	1.52
2	E	401	HEM	C1B-NB	-2.46	1.36	1.40
2	C	401	HEM	CHA-C4D	2.42	1.41	1.35
2	E	401	HEM	FE-NB	2.42	2.08	1.96
2	F	401	HEM	CMB-C2B	2.40	1.55	1.50
2	A	401	HEM	CHA-C4D	2.37	1.41	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	401	HEM	CHA-C4D	2.30	1.40	1.35
2	A	401	HEM	C3B-C4B	2.29	1.49	1.44
2	E	401	HEM	C1A-NA	2.27	1.40	1.36
2	B	401	HEM	C1B-C2B	-2.25	1.40	1.44
2	D	401	HEM	C4B-NB	-2.18	1.34	1.38
2	D	401	HEM	C1A-NA	2.16	1.40	1.36
2	D	401	HEM	C3C-C2C	-2.13	1.37	1.40
2	B	401	HEM	C3C-C2C	-2.12	1.37	1.40
2	A	401	HEM	CBA-CGA	2.10	1.55	1.50
2	A	401	HEM	O1A-CGA	2.06	1.29	1.22
2	E	401	HEM	CBD-CAD	2.06	1.58	1.52
2	C	401	HEM	CMD-C2D	2.05	1.55	1.50
2	F	401	HEM	FE-NB	2.04	2.07	1.96
2	F	401	HEM	C3B-C4B	2.02	1.48	1.44
2	A	401	HEM	C4D-C3D	2.02	1.48	1.45
2	D	401	HEM	CBA-CGA	2.01	1.55	1.50
4	D	403	EPE	O1S-S	2.00	1.50	1.45

All (108) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	404	EPE	O2S-S-C10	7.57	116.03	106.92
2	D	401	HEM	CHC-C4B-NB	7.01	132.05	124.43
2	F	401	HEM	C1B-NB-C4B	6.73	112.02	105.07
2	F	401	HEM	CHC-C4B-NB	6.50	131.49	124.43
2	D	401	HEM	C1B-NB-C4B	6.49	111.78	105.07
2	E	401	HEM	CHC-C4B-NB	6.33	131.31	124.43
2	E	401	HEM	C1B-NB-C4B	6.17	111.45	105.07
2	C	401	HEM	CHC-C4B-NB	5.84	130.77	124.43
2	A	401	HEM	C1B-NB-C4B	5.49	110.74	105.07
2	B	401	HEM	CAD-CBD-CGD	-5.23	102.35	113.60
2	B	401	HEM	C1B-NB-C4B	5.13	110.37	105.07
4	C	403	EPE	O3S-S-C10	4.91	113.71	105.77
2	B	401	HEM	CHC-C4B-NB	4.61	129.44	124.43
2	C	401	HEM	C1B-NB-C4B	4.47	109.69	105.07
2	D	401	HEM	CMA-C3A-C4A	-4.45	121.62	128.46
2	A	401	HEM	CHB-C1B-NB	4.42	129.85	124.38
2	F	401	HEM	CHD-C1D-ND	4.36	129.17	124.43
4	A	403	EPE	O1S-S-C10	4.26	112.04	106.92
4	C	403	EPE	O3S-S-O2S	-4.11	101.22	111.27
2	D	401	HEM	C2C-C3C-C4C	4.03	109.71	106.90
2	F	401	HEM	CHA-C4D-ND	3.96	129.27	124.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	401	HEM	CHD-C1D-C2D	-3.94	118.82	124.98
4	A	403	EPE	C6-C5-N4	-3.87	102.70	110.64
2	A	401	HEM	C2C-C3C-C4C	3.71	109.49	106.90
2	A	401	HEM	CAB-C3B-C2B	-3.67	116.50	128.60
2	A	401	HEM	CAA-CBA-CGA	-3.60	103.66	113.76
2	A	401	HEM	CAD-CBD-CGD	-3.57	105.92	113.60
2	A	401	HEM	CHD-C1D-C2D	-3.57	119.40	124.98
2	B	401	HEM	CHB-C1B-NB	3.53	128.75	124.38
2	F	401	HEM	CHB-C1B-NB	3.52	128.74	124.38
4	C	403	EPE	O8-C8-C7	-3.40	97.07	111.19
2	C	401	HEM	CAD-CBD-CGD	-3.35	106.39	113.60
2	B	401	HEM	CHD-C1D-ND	3.35	128.07	124.43
2	E	401	HEM	CMA-C3A-C4A	-3.29	123.41	128.46
2	B	401	HEM	CHA-C4D-ND	3.23	128.37	124.38
4	D	403	EPE	O2S-S-C10	3.22	110.79	106.92
2	E	401	HEM	CHD-C1D-ND	3.14	127.84	124.43
2	B	401	HEM	C3C-C4C-NC	-3.09	105.10	110.94
2	C	401	HEM	CHA-C4D-ND	3.06	128.16	124.38
2	A	401	HEM	CHA-C4D-ND	3.05	128.15	124.38
2	D	401	HEM	CMC-C2C-C3C	3.00	130.29	124.68
2	B	401	HEM	O2D-CGD-O1D	-3.00	115.83	123.30
4	C	403	EPE	C6-N1-C2	2.97	115.52	108.83
2	D	401	HEM	CAD-CBD-CGD	-2.97	107.21	113.60
4	F	403	EPE	C5-C6-N1	-2.96	104.57	110.64
4	C	403	EPE	C3-C2-N1	2.94	116.68	110.64
4	D	403	EPE	O3S-S-O1S	2.93	118.44	111.27
2	B	401	HEM	CHA-C4D-C3D	-2.92	119.84	125.33
2	A	401	HEM	CHA-C4D-C3D	-2.91	119.86	125.33
2	F	401	HEM	CHA-C4D-C3D	-2.91	119.86	125.33
2	E	401	HEM	CAD-CBD-CGD	-2.91	107.35	113.60
2	E	401	HEM	CHD-C1D-C2D	-2.89	120.46	124.98
2	B	401	HEM	CAA-CBA-CGA	-2.86	105.73	113.76
2	D	401	HEM	C4A-C3A-C2A	2.86	108.98	107.00
2	F	401	HEM	CHD-C1D-C2D	-2.83	120.55	124.98
4	A	403	EPE	C5-C6-N1	-2.80	104.91	110.64
2	A	401	HEM	C2D-C1D-ND	2.79	113.22	109.88
2	E	401	HEM	C4A-C3A-C2A	2.76	108.91	107.00
2	E	401	HEM	CMC-C2C-C3C	2.75	129.83	124.68
2	D	401	HEM	C3D-C4D-ND	2.74	113.22	110.17
4	F	403	EPE	O2S-S-C10	2.73	110.20	106.92
2	E	401	HEM	CAD-C3D-C4D	2.69	129.37	124.66
2	A	401	HEM	CHD-C1D-ND	2.68	127.34	124.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	C	403	EPE	C5-N4-C3	2.66	114.81	108.83
2	E	401	HEM	CHA-C4D-ND	2.62	127.61	124.38
2	B	401	HEM	C2D-C1D-ND	2.60	112.99	109.88
2	B	401	HEM	O2D-CGD-CBD	2.59	122.35	114.03
2	C	401	HEM	O2A-CGA-O1A	-2.56	116.92	123.30
2	C	401	HEM	O2A-CGA-CBA	2.54	122.19	114.03
4	A	403	EPE	O3S-S-C10	2.50	109.81	105.77
4	D	403	EPE	O3S-S-O2S	-2.49	105.18	111.27
4	D	403	EPE	O2S-S-O1S	-2.47	105.41	113.95
2	D	401	HEM	O2A-CGA-CBA	2.44	121.88	114.03
2	D	401	HEM	CHA-C4D-C3D	-2.44	120.75	125.33
4	A	403	EPE	C2-C3-N4	-2.44	105.64	110.64
2	A	401	HEM	O2D-CGD-O1D	-2.42	117.27	123.30
2	C	401	HEM	CHD-C1D-C2D	-2.41	121.21	124.98
2	C	401	HEM	CHB-C1B-NB	2.41	127.36	124.38
2	D	401	HEM	CHB-C1B-NB	2.40	127.34	124.38
2	A	401	HEM	CAB-C3B-C4B	2.36	135.45	124.47
2	A	401	HEM	CHC-C4B-NB	2.32	126.95	124.43
2	A	401	HEM	C4B-CHC-C1C	2.31	125.61	122.56
2	A	401	HEM	CHB-C1B-C2B	-2.31	120.34	126.72
4	D	404	EPE	C9-N1-C2	-2.30	105.34	111.23
2	D	401	HEM	CMA-C3A-C2A	2.30	129.28	124.94
2	E	401	HEM	O2D-CGD-O1D	-2.28	117.62	123.30
2	D	401	HEM	C4D-ND-C1D	-2.26	102.74	105.07
2	A	401	HEM	CMA-C3A-C4A	-2.24	125.02	128.46
4	D	403	EPE	O8-C8-C7	-2.24	101.91	111.19
2	F	401	HEM	O2A-CGA-CBA	2.23	121.21	114.03
2	E	401	HEM	O2D-CGD-CBD	2.22	121.15	114.03
2	C	401	HEM	CHA-C4D-C3D	-2.21	121.18	125.33
2	E	401	HEM	CHA-C4D-C3D	-2.21	121.18	125.33
4	D	403	EPE	O3S-S-C10	2.21	109.33	105.77
4	F	403	EPE	O3S-S-O2S	-2.20	105.90	111.27
2	A	401	HEM	C3C-C4C-NC	-2.19	106.81	110.94
2	D	401	HEM	CAD-C3D-C4D	2.16	128.43	124.66
2	D	401	HEM	C4B-CHC-C1C	2.15	125.40	122.56
2	D	401	HEM	O2A-CGA-O1A	-2.13	117.99	123.30
2	A	401	HEM	O2D-CGD-CBD	2.12	120.85	114.03
2	D	401	HEM	O2D-CGD-CBD	2.11	120.79	114.03
2	E	401	HEM	CMB-C2B-C1B	2.10	128.23	125.04
2	B	401	HEM	C2C-C3C-C4C	2.09	108.36	106.90
2	A	401	HEM	CHC-C4B-C3B	2.06	127.72	124.57
2	C	401	HEM	CHD-C1D-ND	2.06	126.66	124.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	401	HEM	CAA-CBA-CGA	-2.04	108.03	113.76
4	F	403	EPE	C7-N4-C5	-2.02	106.07	111.23
2	D	401	HEM	CHC-C4B-C3B	-2.01	121.49	124.57

There are no chirality outliers.

All (65) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	403	EPE	C9-C10-S-O2S
4	A	403	EPE	C9-C10-S-O3S
4	C	403	EPE	C8-C7-N4-C5
4	C	403	EPE	C9-C10-S-O2S
4	D	404	EPE	S-C10-C9-N1
5	A	404	GOL	O1-C1-C2-C3
5	A	405	GOL	O1-C1-C2-C3
5	A	406	GOL	C1-C2-C3-O3
5	C	404	GOL	C1-C2-C3-O3
5	E	404	GOL	O1-C1-C2-C3
7	C	406	MPD	CM-C2-C3-C4
7	D	405	MPD	C2-C3-C4-O4
7	D	405	MPD	C2-C3-C4-C5
5	C	404	GOL	O2-C2-C3-O3
4	D	403	EPE	C9-C10-S-O3S
5	E	403	GOL	C1-C2-C3-O3
5	A	404	GOL	O1-C1-C2-O2
5	A	405	GOL	O1-C1-C2-O2
5	A	406	GOL	O2-C2-C3-O3
4	A	403	EPE	C8-C7-N4-C5
5	E	404	GOL	O1-C1-C2-O2
4	D	403	EPE	C10-C9-N1-C6
4	D	404	EPE	C10-C9-N1-C2
4	F	403	EPE	C10-C9-N1-C2
7	C	406	MPD	O2-C2-C3-C4
4	A	403	EPE	C8-C7-N4-C3
4	A	403	EPE	C9-C10-S-O1S
4	C	403	EPE	C9-C10-S-O1S
4	D	403	EPE	C9-C10-S-O1S
4	D	403	EPE	C9-C10-S-O2S
7	C	406	MPD	C1-C2-C3-C4
4	F	403	EPE	C8-C7-N4-C3
4	F	403	EPE	C8-C7-N4-C5
2	A	401	HEM	CAD-CBD-CGD-O2D

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Mol	Chain	Res	Type	Atoms
2	D	401	HEM	CAD-CBD-CGD-O2D
2	C	401	HEM	CAA-CBA-CGA-O2A
2	F	401	HEM	CAD-CBD-CGD-O1D
4	D	404	EPE	C10-C9-N1-C6
4	F	403	EPE	C10-C9-N1-C6
2	F	401	HEM	CAD-CBD-CGD-O2D
2	A	401	HEM	CAA-CBA-CGA-O2A
2	D	401	HEM	CAA-CBA-CGA-O1A
2	E	401	HEM	CAA-CBA-CGA-O1A
2	B	401	HEM	CAD-CBD-CGD-O2D
4	D	404	EPE	N4-C7-C8-O8
2	B	401	HEM	CAA-CBA-CGA-O1A
2	F	401	HEM	CAA-CBA-CGA-O2A
2	C	401	HEM	CAD-CBD-CGD-O1D
4	C	403	EPE	C9-C10-S-O3S
2	D	401	HEM	CAD-CBD-CGD-O1D
2	B	401	HEM	CAA-CBA-CGA-O2A
2	C	401	HEM	CAD-CBD-CGD-O2D
2	A	401	HEM	CAA-CBA-CGA-O1A
2	F	401	HEM	CAA-CBA-CGA-O1A
2	E	401	HEM	CAA-CBA-CGA-O2A
2	A	401	HEM	CAD-CBD-CGD-O1D
2	B	401	HEM	CAD-CBD-CGD-O1D
2	C	401	HEM	CAA-CBA-CGA-O1A
7	B	404	MPD	O2-C2-C3-C4
7	D	405	MPD	O2-C2-C3-C4
2	D	401	HEM	CAA-CBA-CGA-O2A
5	E	404	GOL	O2-C2-C3-O3
2	E	401	HEM	CAD-CBD-CGD-O2D
2	E	401	HEM	CAD-CBD-CGD-O1D
7	B	404	MPD	C2-C3-C4-O4

There are no ring outliers.

15 monomers are involved in 51 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	404	GOL	1	0
2	D	401	HEM	2	0
7	D	405	MPD	3	0
2	A	401	HEM	6	0
7	B	404	MPD	11	0
7	C	406	MPD	4	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	D	404	EPE	4	0
2	E	401	HEM	2	0
4	A	403	EPE	3	0
5	A	406	GOL	2	0
2	F	401	HEM	4	0
4	D	403	EPE	1	0
2	B	401	HEM	3	0
4	C	403	EPE	3	0
2	C	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 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.

Full wwPDB X-ray Structure Validation Report

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 F 401

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM B 401

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM C 401

Bond lengths

Bond angles

Torsions

Rings
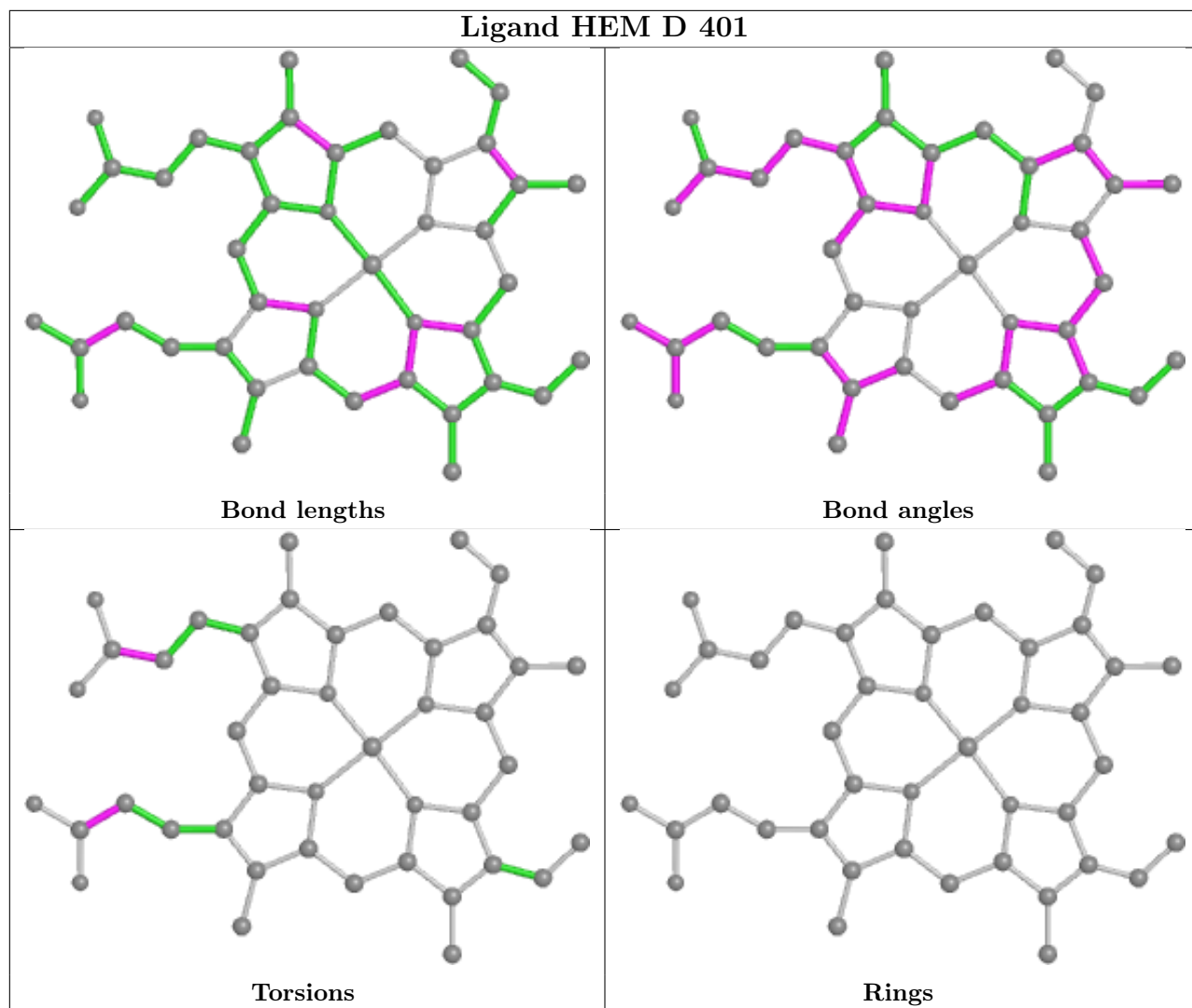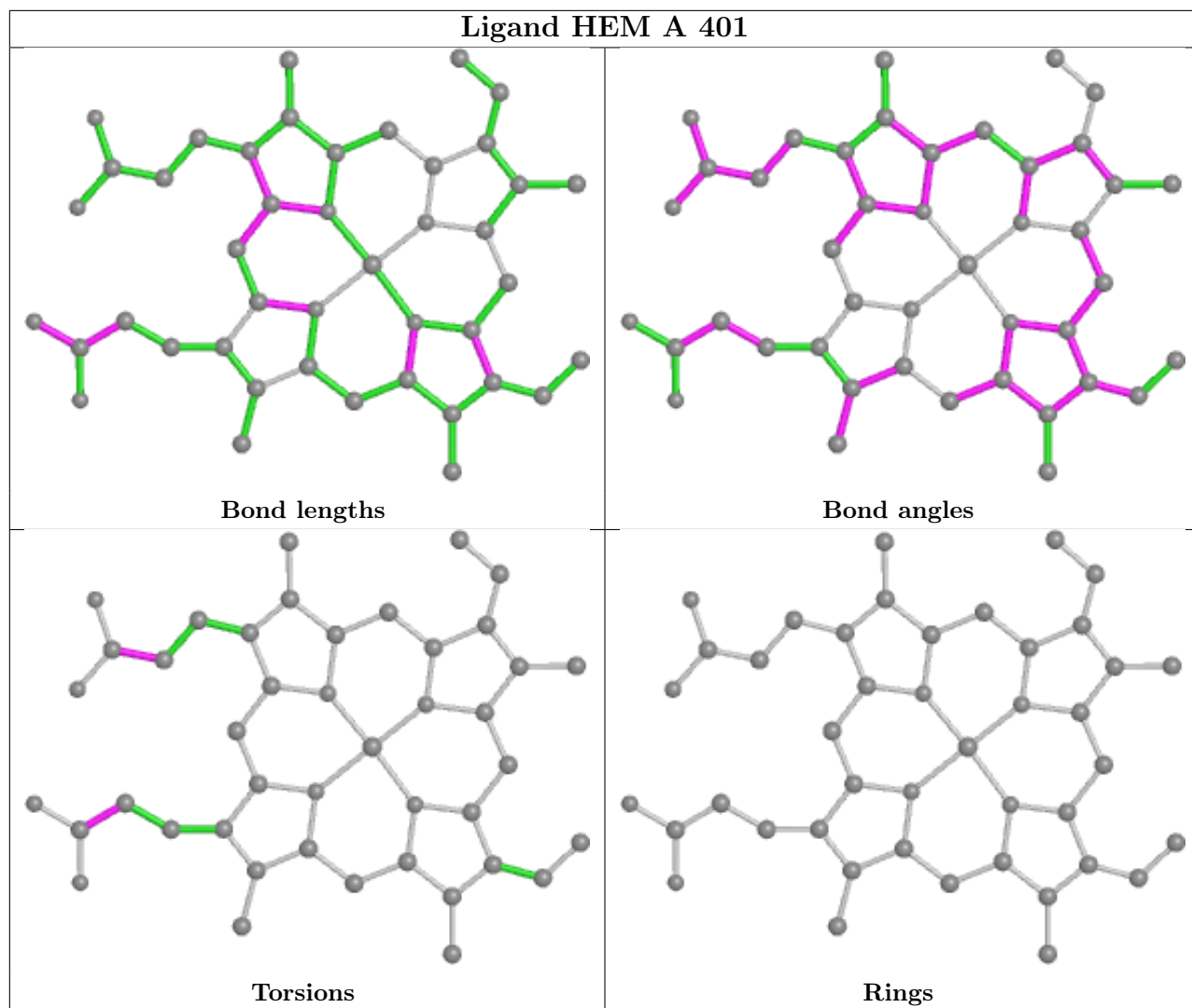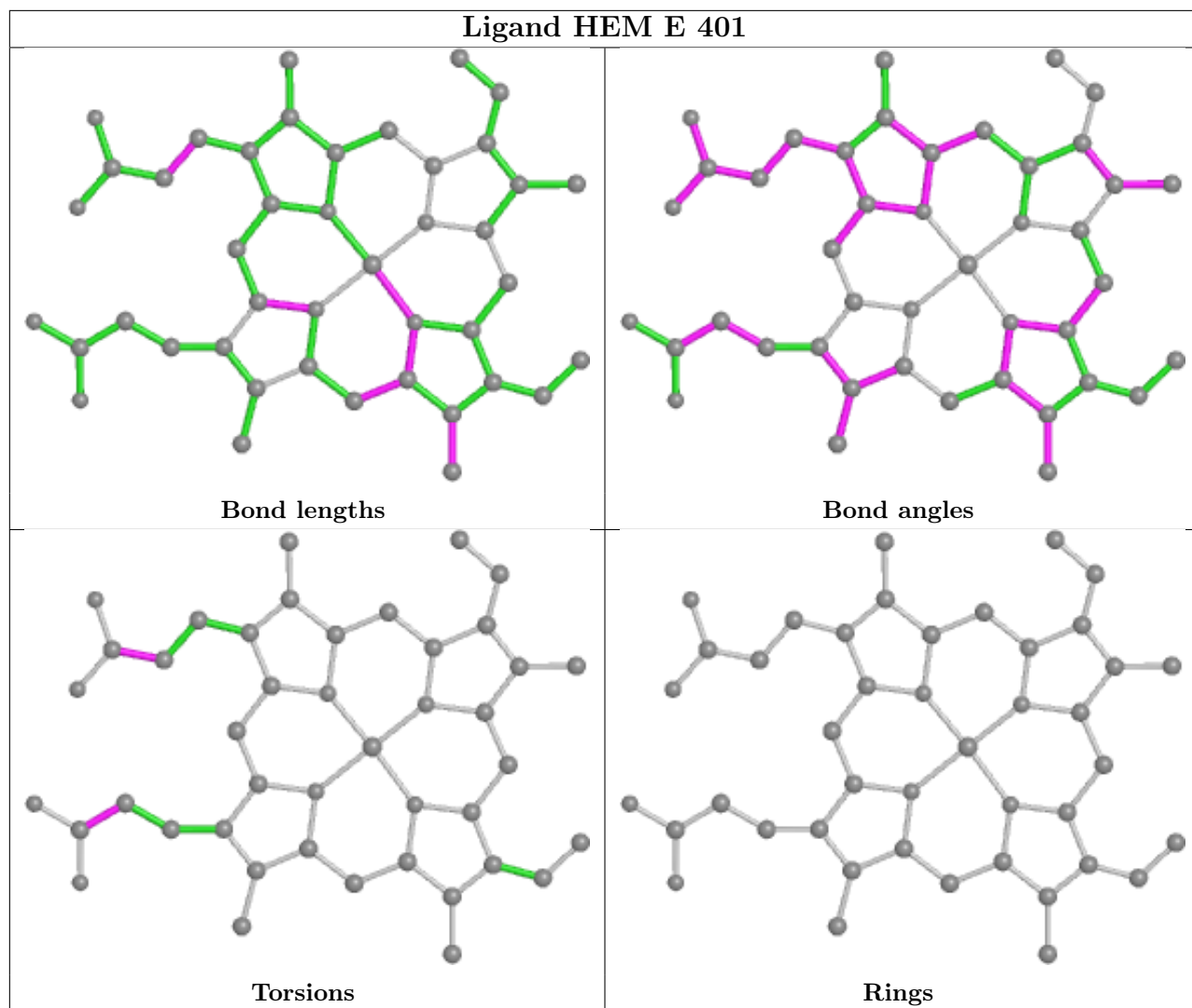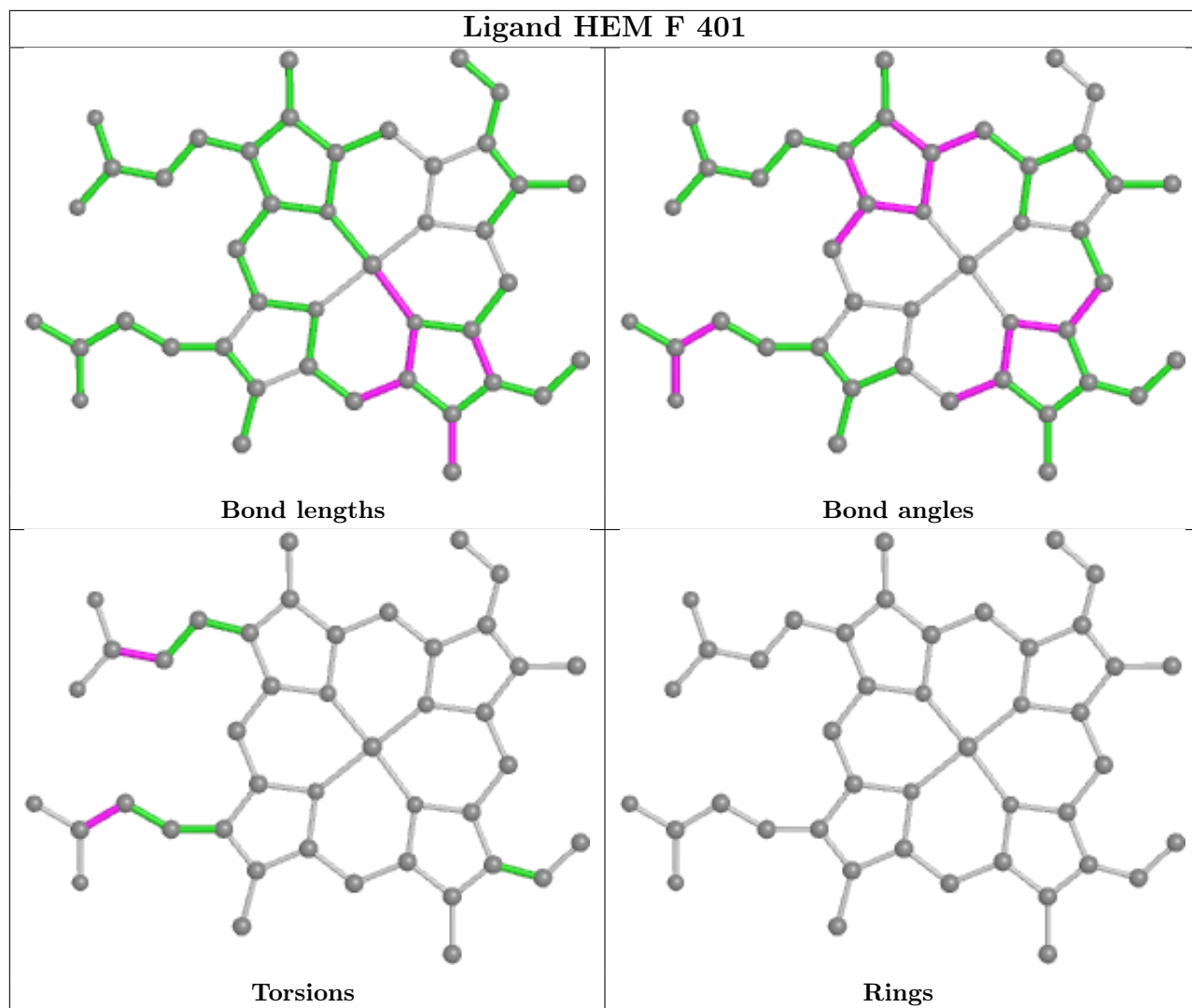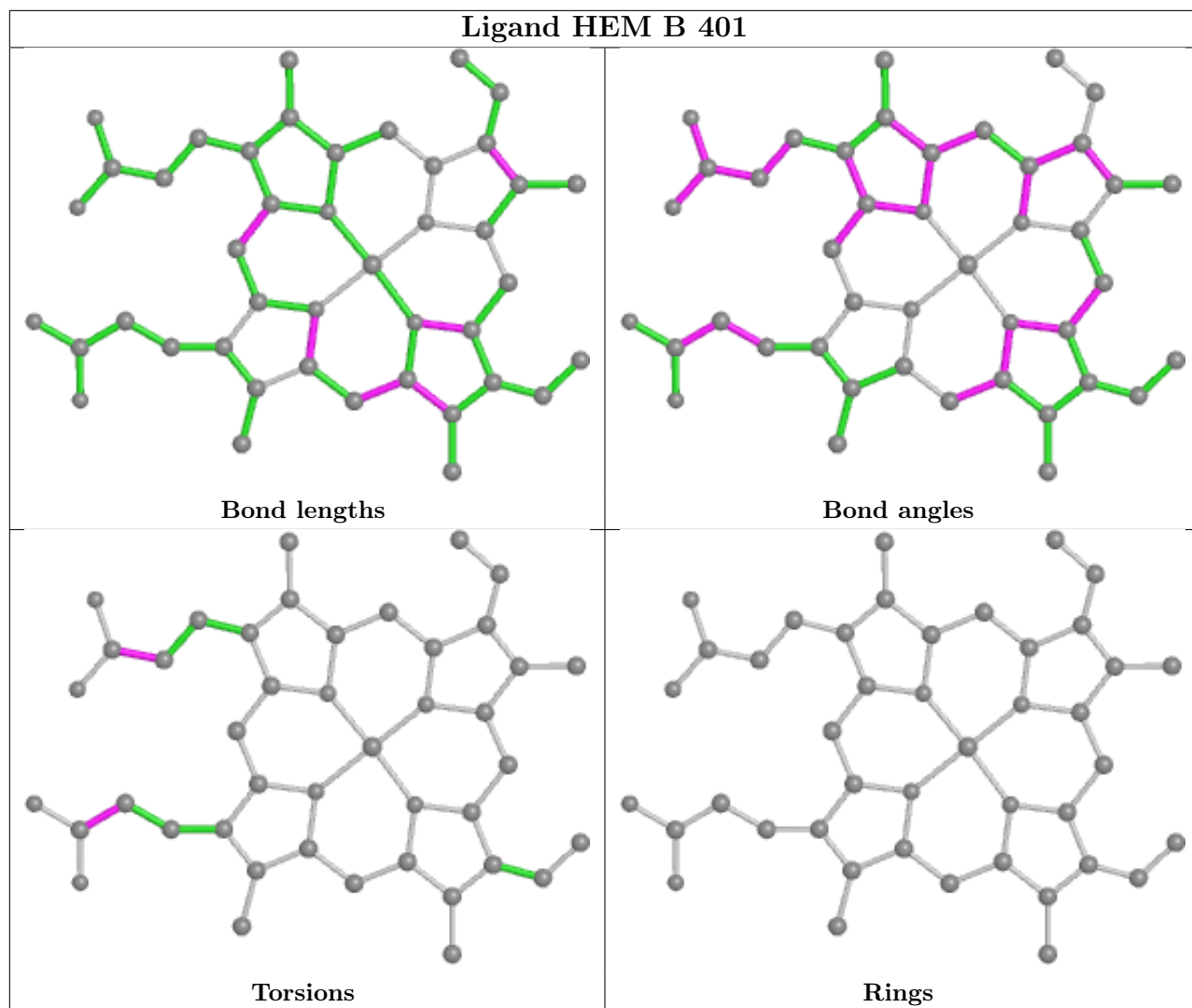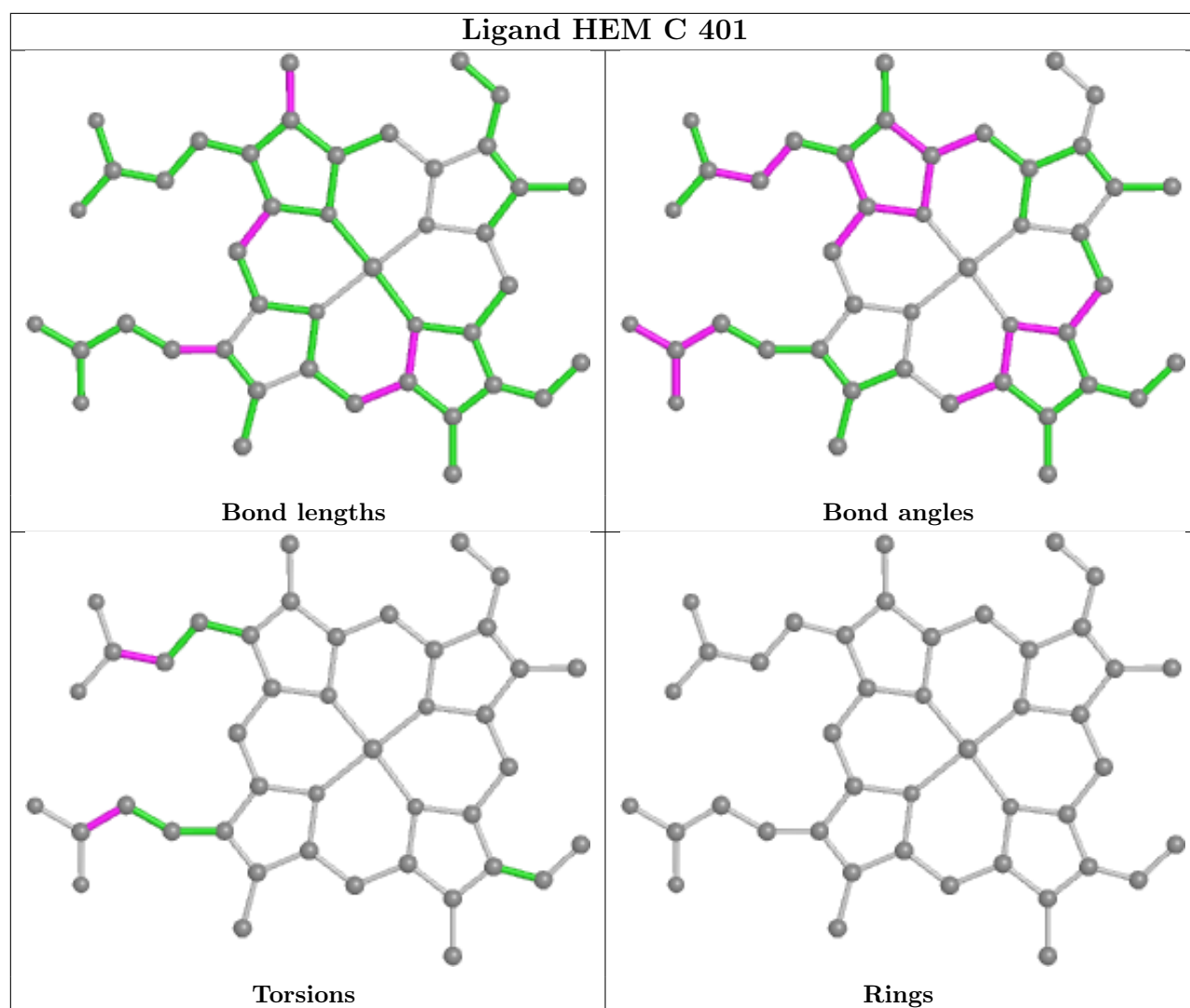
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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(Å^2)	Q<0.9
1	A	361/363 (99%)	-0.17	4 (1%)	80	84	27, 40, 68, 104	0
1	B	361/363 (99%)	-0.11	5 (1%)	75	80	26, 40, 68, 130	0
1	C	361/363 (99%)	-0.30	5 (1%)	75	80	26, 39, 62, 103	0
1	D	359/363 (98%)	-0.23	4 (1%)	80	84	26, 38, 66, 123	0
1	E	360/363 (99%)	-0.33	4 (1%)	80	84	29, 44, 68, 131	0
1	F	363/363 (100%)	-0.01	11 (3%)	50	57	28, 44, 69, 122	0
All	All	2165/2178 (99%)	-0.19	33 (1%)	73	79	26, 41, 68, 131	0

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	61	ALA	7.7
1	E	61	ALA	6.4
1	A	90	PHE	5.4
1	C	90	PHE	4.9
1	B	90	PHE	4.9
1	D	363	SER	4.9
1	E	90	PHE	4.5
1	A	363	SER	4.4
1	A	61	ALA	4.4
1	F	59	MET	4.0
1	F	363	SER	3.9
1	F	1	MET	3.8
1	F	2	GLU	3.6
1	F	63	GLN	3.4
1	D	90	PHE	3.4
1	D	63	GLN	2.9
1	E	62	GLU	2.8
1	F	90	PHE	2.8
1	C	100	LYS	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	64	ARG	2.7
1	F	62	GLU	2.6
1	B	105	LEU	2.5
1	B	106	LYS	2.5
1	F	60	SER	2.5
1	C	64	ARG	2.2
1	F	195	GLU	2.2
1	B	59	MET	2.1
1	D	121	ASN	2.1
1	F	244	PHE	2.0
1	F	265	LEU	2.0
1	E	64	ARG	2.0
1	C	98	ASP	2.0
1	B	60	SER	2.0

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates ⓘ

There are no monosaccharides 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
4	EPE	D	404	15/15	0.62	0.28	55,72,101,103	15
5	GOL	C	404	6/6	0.73	0.27	89,92,94,95	0
4	EPE	A	403	15/15	0.76	0.28	67,86,100,101	15
5	GOL	E	403	6/6	0.76	0.14	89,94,95,102	0
8	PO4	C	405	5/5	0.79	0.23	135,136,141,142	0
5	GOL	A	406	6/6	0.82	0.18	62,68,72,76	0
4	EPE	C	403	15/15	0.83	0.17	66,74,100,102	0
7	MPD	B	404	8/8	0.83	0.18	59,69,73,76	0
7	MPD	C	406	8/8	0.83	0.17	55,66,68,68	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	EPE	F	403	15/15	0.83	0.14	68,75,107,108	0
5	GOL	A	404	6/6	0.85	0.23	63,69,70,77	2
3	OXY	E	402	2/2	0.86	0.16	59,59,59,60	0
7	MPD	D	405	8/8	0.86	0.25	48,55,60,71	0
5	GOL	A	405	6/6	0.86	0.17	78,90,94,96	0
9	CL	D	406	1/1	0.87	0.07	97,97,97,97	0
5	GOL	E	404	6/6	0.89	0.17	62,64,69,70	0
3	OXY	C	402	2/2	0.89	0.14	48,48,48,54	0
4	EPE	D	403	15/15	0.90	0.17	49,54,79,82	0
9	CL	C	407	1/1	0.92	0.19	79,79,79,79	0
3	OXY	D	402	2/2	0.92	0.14	46,46,46,48	0
3	OXY	B	402	2/2	0.93	0.10	46,46,46,56	0
3	OXY	F	402	2/2	0.94	0.06	54,54,54,55	0
2	HEM	B	401	43/43	0.97	0.09	30,32,37,39	1
3	OXY	A	402	2/2	0.97	0.16	45,45,45,47	0
6	NA	B	403	1/1	0.97	0.21	48,48,48,48	0
2	HEM	C	401	43/43	0.98	0.09	30,33,38,41	0
2	HEM	D	401	43/43	0.98	0.08	25,29,32,34	0
2	HEM	E	401	43/43	0.98	0.08	34,37,41,44	0
2	HEM	F	401	43/43	0.98	0.12	39,44,50,52	0
2	HEM	A	401	43/43	0.99	0.10	28,30,34,38	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.
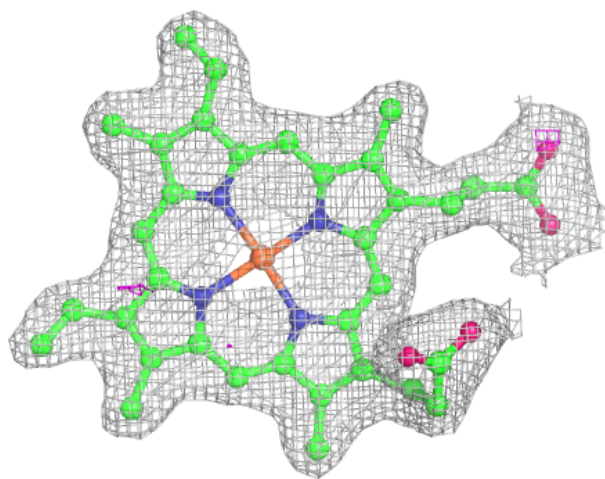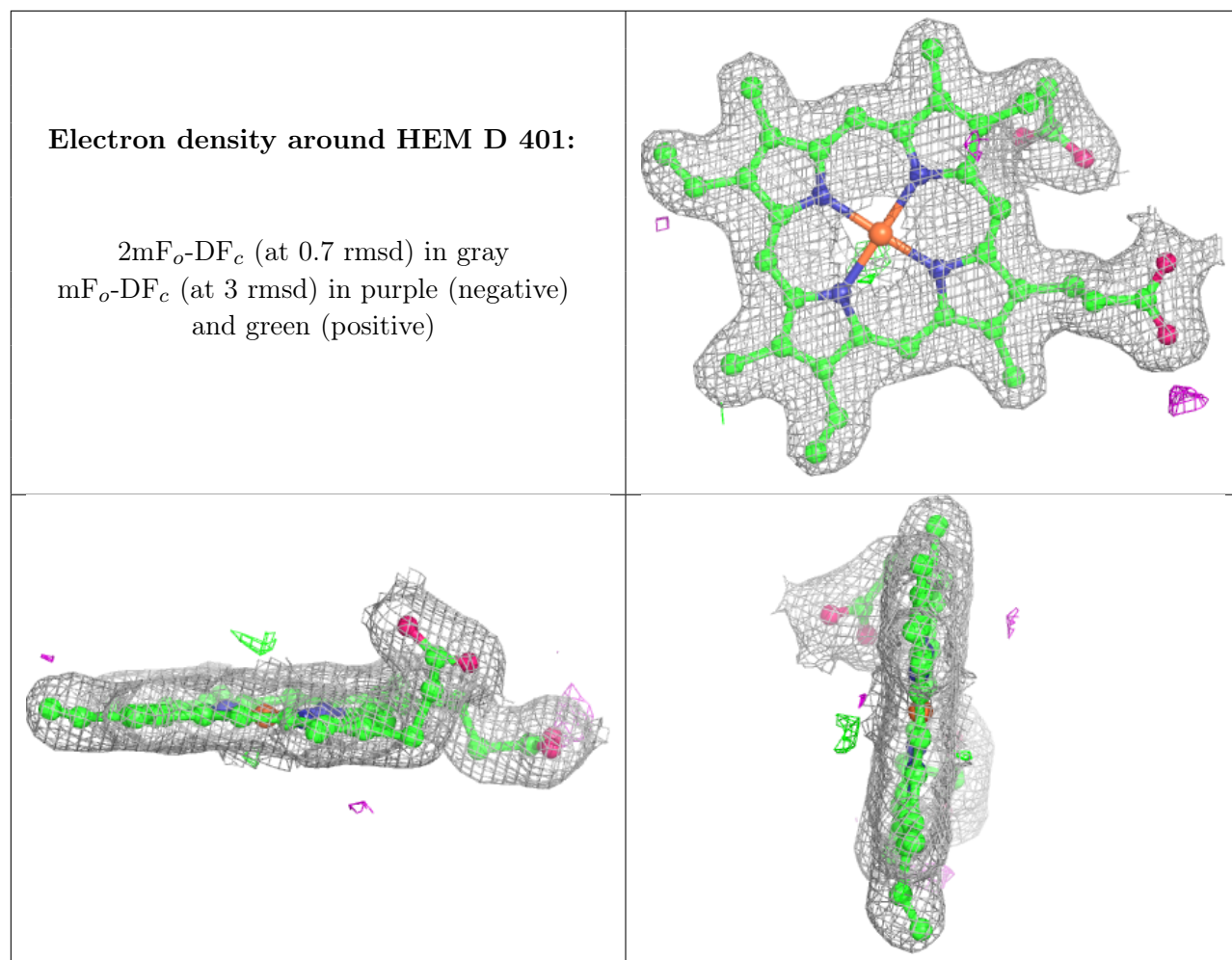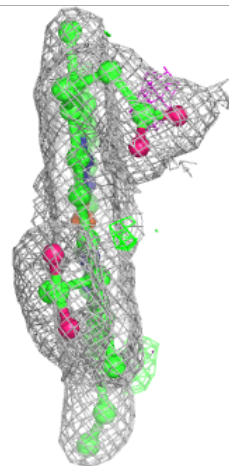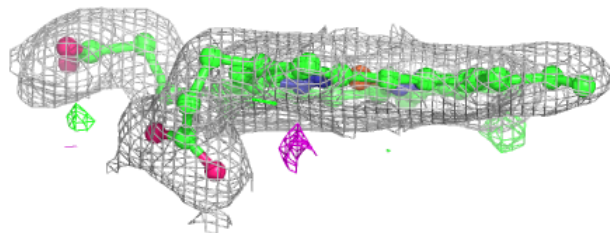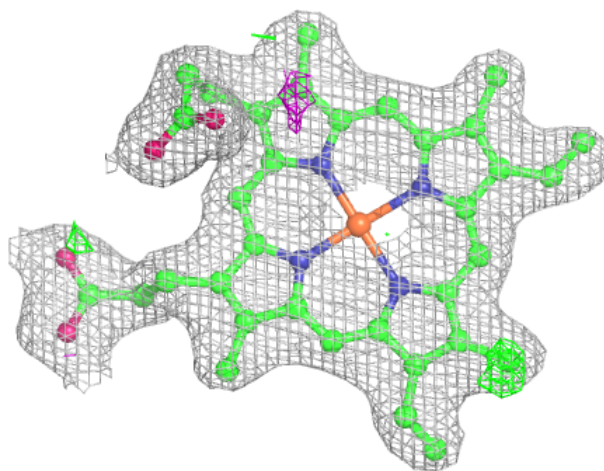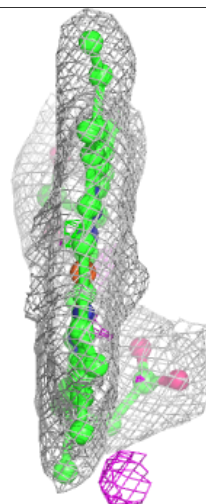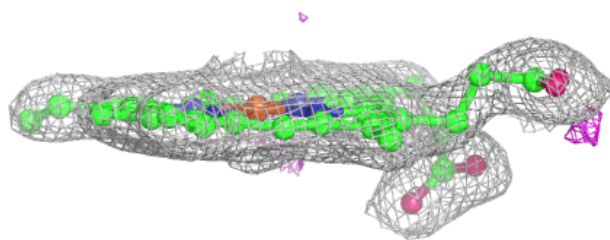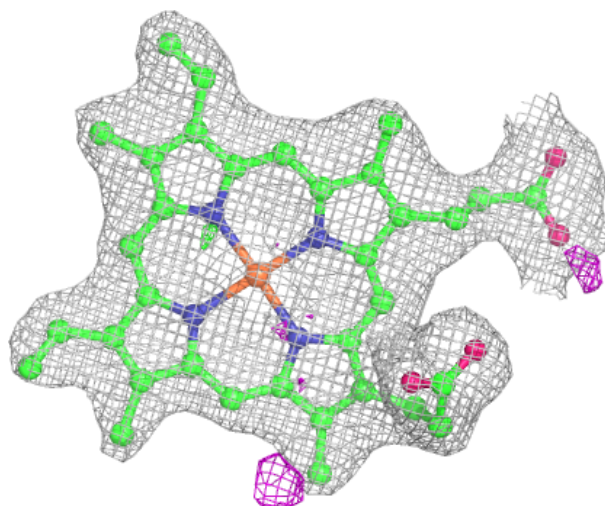
Electron density around HEM B 401:

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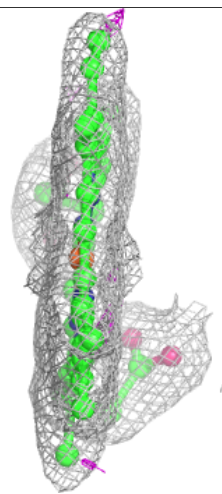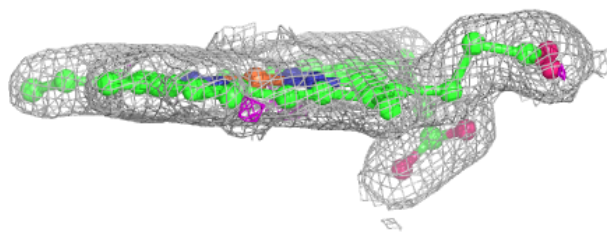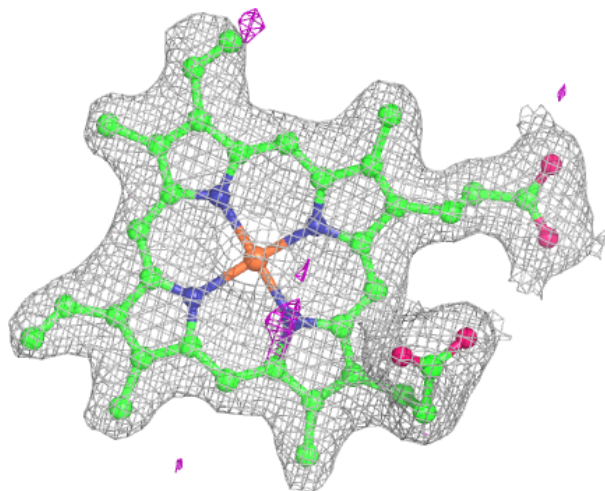
Electron density around HEM C 401:

$2mF_o$-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 D 401:

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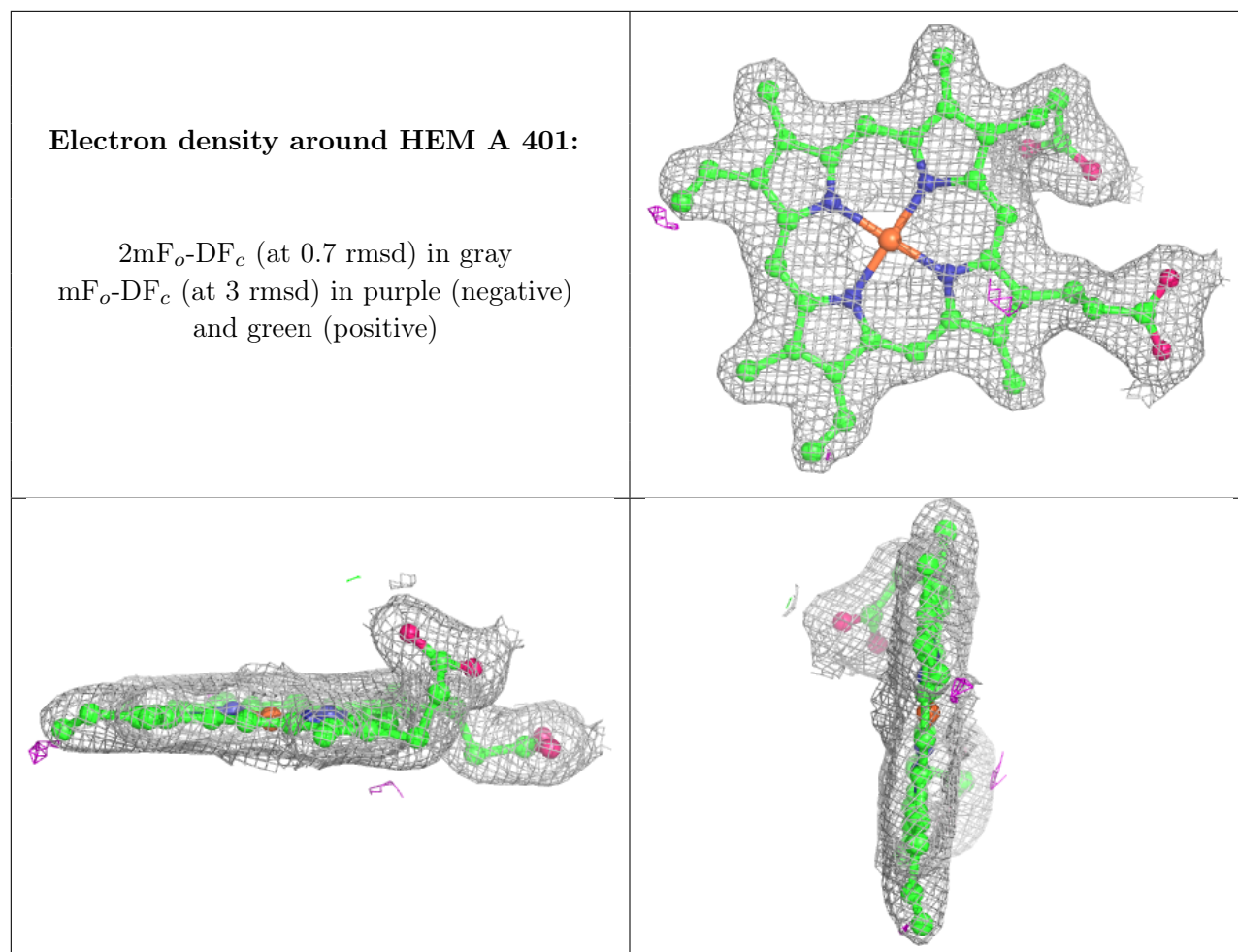and green (positive)
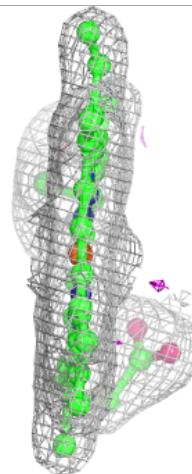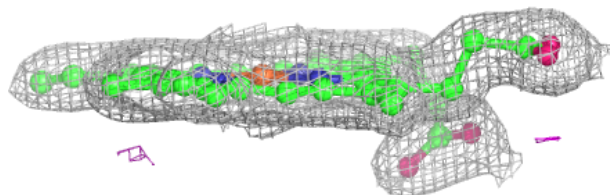
Electron density around HEM E 401:

$2mF_o-DF_c$ (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 ⓘ

There are no such residues in this entry.