



Full wwPDB X-ray Structure Validation Report ⓘ

Nov 29, 2022 – 12:23 pm GMT

PDB ID : 7ZMJ
Title : SFX structure of dye-type peroxidase DtpB R243A 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 : 2022-04-19
Resolution : 2.00 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-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

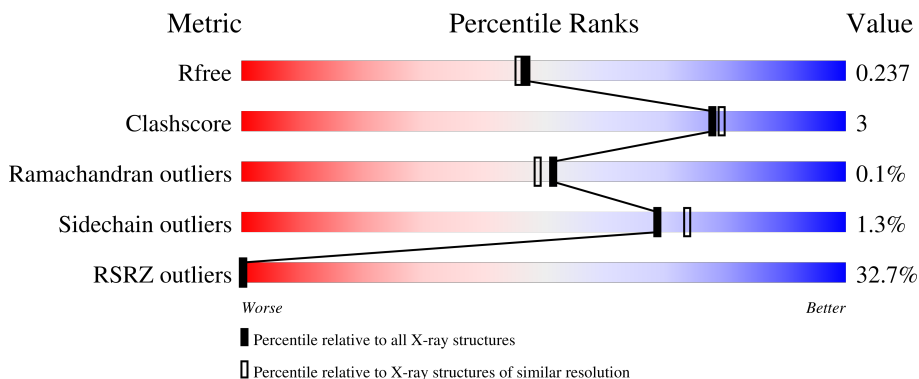
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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	8085 (2.00-2.00)
Clashscore	141614	9178 (2.00-2.00)
Ramachandran outliers	138981	9054 (2.00-2.00)
Sidechain outliers	138945	9053 (2.00-2.00)
RSRZ outliers	127900	7900 (2.00-2.00)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	307	
1	B	307	
1	C	307	
1	D	307	
1	E	307	

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Mol	Chain	Length	Quality of chain
1	F	307	 <p>A horizontal bar chart representing the quality of chain. The bar is divided into three segments: a red segment on the left labeled '35%', a green segment in the middle labeled '94%', and a yellow segment on the right labeled '6%'. The green segment is the largest, covering most of the bar.</p>

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 15188 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 Putative dye-decolorizing peroxidase (DyP), encapsulated subgroup.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	306	2341	1472	403	456	10	0	2	0
1	B	306	2323	1468	398	448	9	0	3	0
1	C	306	2340	1472	404	455	9	0	2	0
1	D	304	2345	1473	405	458	9	0	5	0
1	E	305	2355	1484	412	450	9	0	6	0
1	F	306	2358	1481	409	458	10	0	5	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	243	ALA	ARG	engineered mutation	UNP A0A7U9HFU5
B	243	ALA	ARG	engineered mutation	UNP A0A7U9HFU5
C	243	ALA	ARG	engineered mutation	UNP A0A7U9HFU5
D	243	ALA	ARG	engineered mutation	UNP A0A7U9HFU5
E	243	ALA	ARG	engineered mutation	UNP A0A7U9HFU5
F	243	ALA	ARG	engineered mutation	UNP A0A7U9HFU5

- 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).



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	C	1	Total	Mg	0	0
			1	1		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	166	Total	O	0	0
			166	166		

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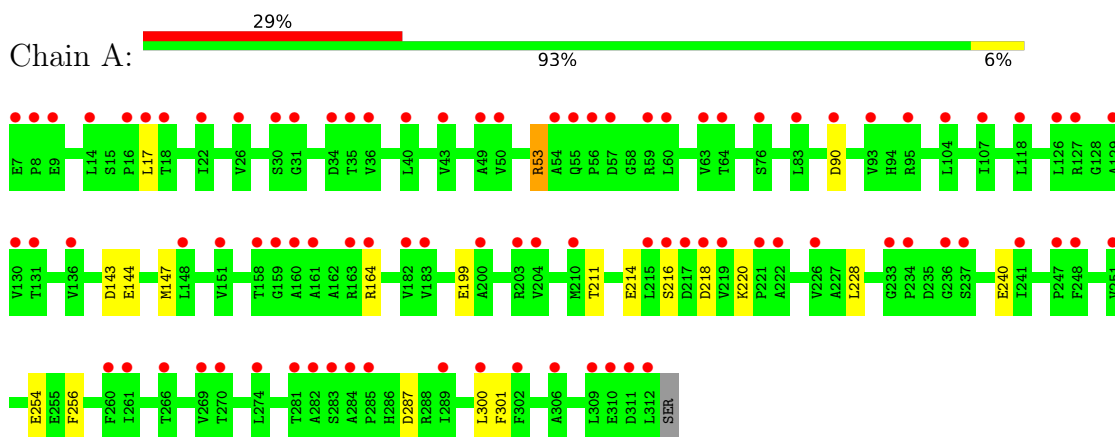
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	124	Total 124	O 124	0	0
4	C	150	Total 150	O 150	0	0
4	D	141	Total 141	O 141	0	0
4	E	145	Total 145	O 145	0	0
4	F	140	Total 140	O 140	0	0

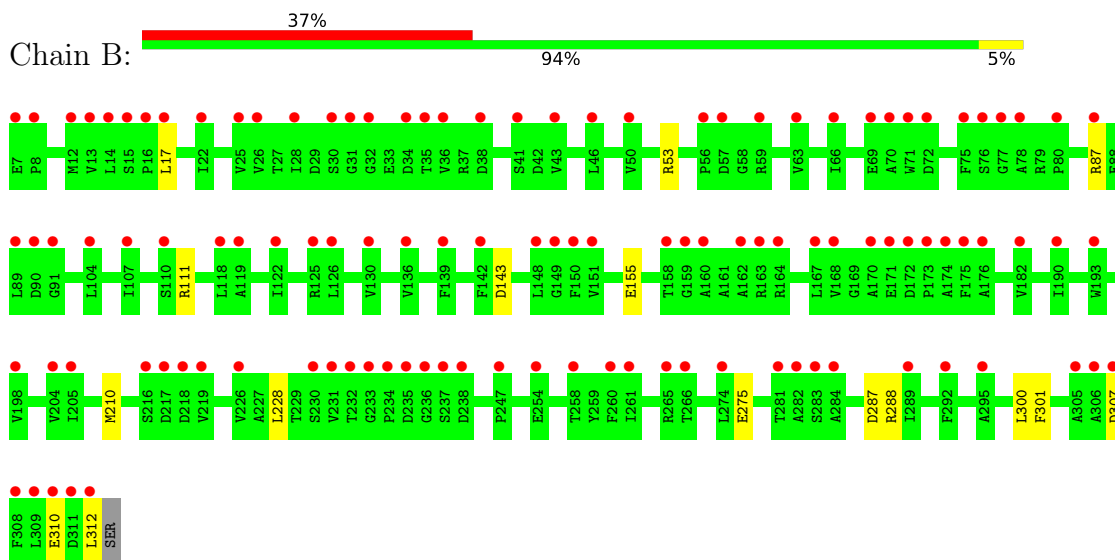
3 Residue-property plots [i](#)

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.

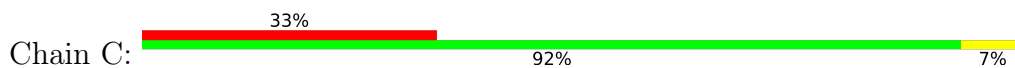
- Molecule 1: Putative dye-decolorizing peroxidase (DyP), encapsulated subgroup

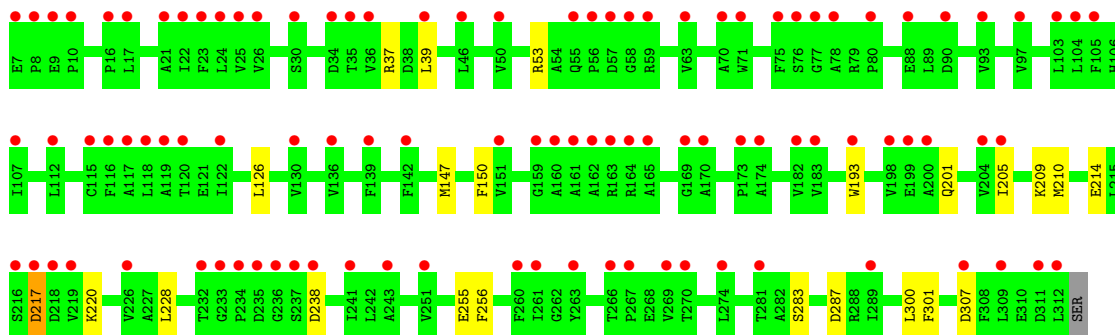


- Molecule 1: Putative dye-decolorizing peroxidase (DyP), encapsulated subgroup



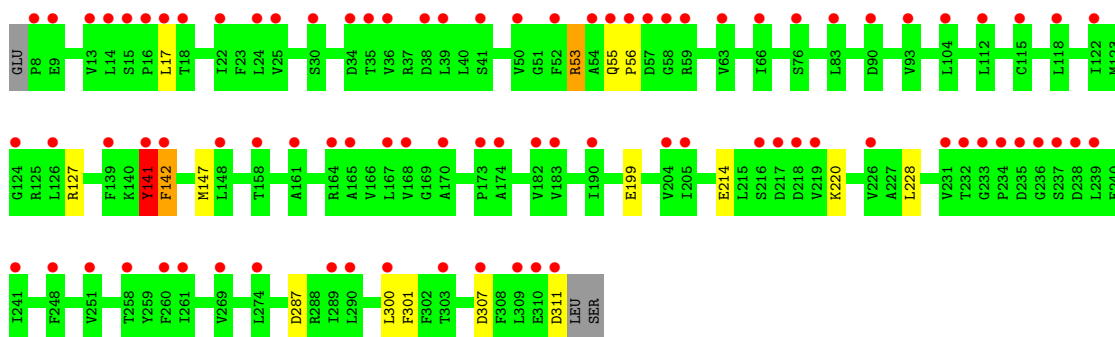
- Molecule 1: Putative dye-decolorizing peroxidase (DyP), encapsulated subgroup





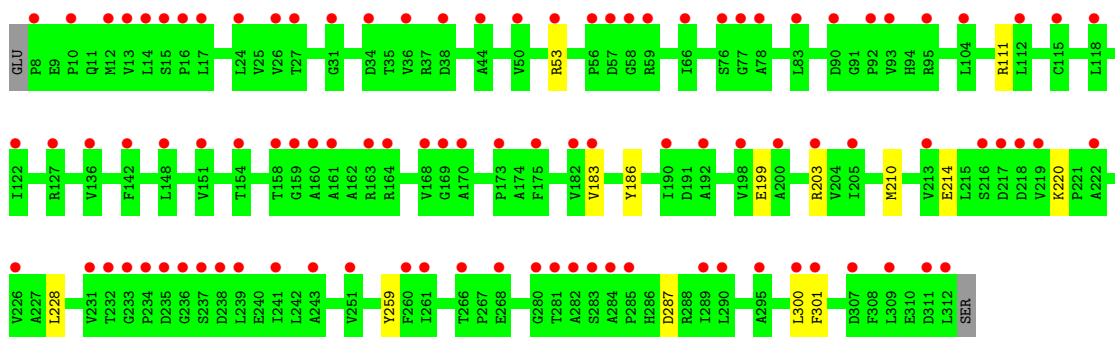
- Molecule 1: Putative dye-decolorizing peroxidase (DyP), encapsulated subgroup

Chain D: 28% 93% 5% ..



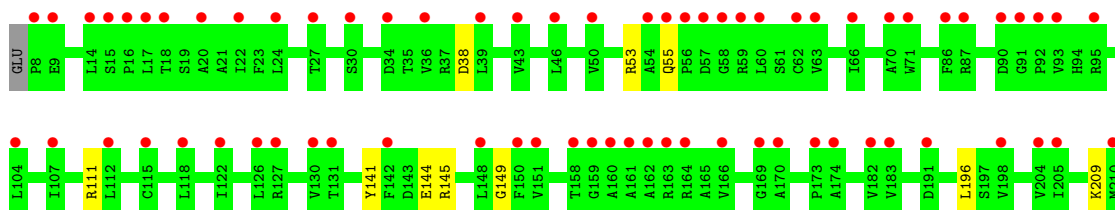
- Molecule 1: Putative dye-decolorizing peroxidase (DyP), encapsulated subgroup

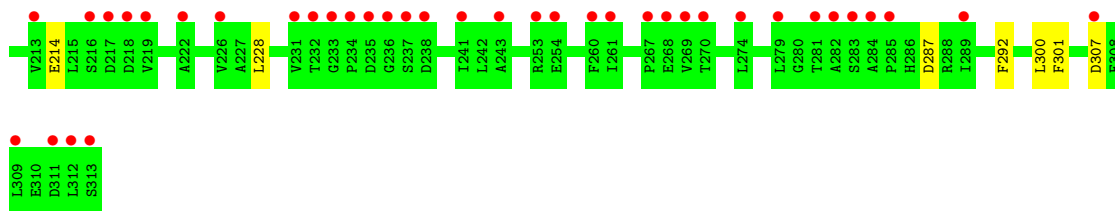
Chain E: 32% 95% 5% .



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

Chain F: 35% 94% 6%





4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	86.60Å 121.30Å 197.60Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	35.27 – 2.00 35.24 – 2.00	Depositor EDS
% Data completeness (in resolution range)	100.0 (35.27-2.00) 100.0 (35.24-2.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.45 (at 2.00Å)	Xtrriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.202 , 0.230 0.209 , 0.237	Depositor DCC
R_{free} test set	6916 reflections (4.91%)	wwPDB-VP
Wilson B-factor (Å ²)	29.7	Xtrriage
Anisotropy	0.048	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	(Not available) , (Not available)	EDS
L-test for twinning ²	$\langle L \rangle = 0.40$, $\langle L^2 \rangle = 0.23$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	15188	wwPDB-VP
Average B, all atoms (Å ²)	30.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.14% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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	0.83	3/2391 (0.1%)	0.91	1/3248 (0.0%)
1	B	0.76	1/2373 (0.0%)	0.85	2/3228 (0.1%)
1	C	0.76	0/2390	0.86	0/3248
1	D	0.79	2/2395 (0.1%)	0.90	3/3253 (0.1%)
1	E	0.78	0/2405	0.88	0/3267
1	F	0.78	1/2408 (0.0%)	0.86	1/3270 (0.0%)
All	All	0.79	7/14362 (0.0%)	0.88	7/19514 (0.0%)

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	199	GLU	CD-OE2	8.62	1.35	1.25
1	A	199	GLU	CD-OE1	6.58	1.32	1.25
1	D	199[A]	GLU	CD-OE1	6.56	1.32	1.25
1	D	199[B]	GLU	CD-OE1	6.56	1.32	1.25
1	B	155	GLU	CD-OE1	-5.83	1.19	1.25
1	F	144	GLU	CD-OE2	-5.56	1.19	1.25
1	A	144	GLU	CD-OE2	-5.44	1.19	1.25

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	141	TYR	CB-CG-CD2	-9.05	115.57	121.00
1	D	141	TYR	CB-CG-CD1	7.70	125.62	121.00
1	B	53	ARG	NE-CZ-NH2	-6.33	117.13	120.30
1	A	164	ARG	NE-CZ-NH1	5.53	123.07	120.30
1	B	288	ARG	NE-CZ-NH2	-5.31	117.65	120.30
1	F	145	ARG	NE-CZ-NH2	-5.25	117.67	120.30
1	D	141	TYR	CA-CB-CG	5.11	123.11	113.40

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2341	0	2263	14	0
1	B	2323	0	2231	11	0
1	C	2340	0	2265	22	0
1	D	2345	0	2264	12	0
1	E	2355	0	2282	11	0
1	F	2358	0	2275	11	0
2	A	43	0	30	2	0
2	B	43	0	30	2	0
2	C	43	0	30	1	0
2	D	43	0	30	1	0
2	E	43	0	30	2	0
2	F	43	0	30	1	0
3	A	1	0	0	0	0
3	C	1	0	0	0	0
4	A	166	0	0	4	0
4	B	124	0	0	2	0
4	C	150	0	0	2	0
4	D	141	0	0	2	0
4	E	145	0	0	0	0
4	F	140	0	0	2	0
All	All	15188	0	13760	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.

All (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:17:LEU:HA	4:D:622:HOH:O	1.57	1.02
1:B:17:LEU:HD11	4:B:572:HOH:O	1.79	0.83
1:D:141:TYR:HE2	1:D:147:MET:SD	2.06	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:214:GLU:OE1	4:A:501:HOH:O	2.05	0.74
1:C:37[B]:ARG:HB3	1:C:37[B]:ARG:HH11	1.51	0.74
1:B:310:GLU:OE2	4:B:501:HOH:O	2.04	0.73
1:C:201:GLN:O	1:C:205:ILE:CD1	2.41	0.69
1:D:300[B]:LEU:HD13	1:D:300[B]:LEU:C	2.15	0.67
1:A:254:GLU:OE1	4:A:502:HOH:O	2.13	0.66
1:C:255:GLU:OE1	4:C:502:HOH:O	2.13	0.65
1:C:283:SER:OG	4:C:501:HOH:O	2.12	0.65
1:C:193:TRP:HH2	1:C:205:ILE:HD11	1.62	0.64
2:A:401:HEM:HMC2	2:A:401:HEM:HBC2	1.80	0.62
1:C:201:GLN:O	1:C:205:ILE:HD12	1.99	0.62
1:C:193:TRP:CH2	1:C:205:ILE:HD11	2.36	0.61
1:F:214:GLU:OE1	4:F:501:HOH:O	2.16	0.61
1:C:37[B]:ARG:HB3	1:C:37[B]:ARG:NH1	2.15	0.61
1:C:205:ILE:HD12	1:C:205:ILE:N	2.15	0.60
1:F:141:TYR:HE2	4:F:603:HOH:O	1.83	0.60
2:B:401:HEM:HBC2	2:B:401:HEM:HMC2	1.83	0.59
1:D:141:TYR:CE2	1:D:147:MET:SD	2.92	0.58
1:A:53:ARG:NH1	4:A:505:HOH:O	2.37	0.58
1:C:37[B]:ARG:HH11	1:C:37[B]:ARG:CB	2.18	0.56
1:B:87:ARG:O	1:B:87:ARG:HG3	2.05	0.56
1:B:143:ASP:OD2	1:E:53[A]:ARG:NH2	2.40	0.55
1:A:240:GLU:OE2	4:A:503:HOH:O	2.18	0.54
1:B:210:MET:HE1	1:F:149:GLY:HA3	1.90	0.52
2:B:401:HEM:HBC2	2:B:401:HEM:CMC	2.39	0.52
1:C:214:GLU:OE2	1:C:220:LYS:NZ	2.32	0.51
1:B:87:ARG:NH1	1:B:275:GLU:OE2	2.43	0.50
1:C:150:PHE:CZ	1:C:205:ILE:HD13	2.45	0.50
1:C:201:GLN:O	1:C:205:ILE:HD13	2.11	0.50
1:D:214:GLU:OE2	1:D:220:LYS:NZ	2.31	0.50
1:E:228:LEU:HD12	1:E:287:ASP:HA	1.94	0.50
1:C:205:ILE:HD12	1:C:205:ILE:H	1.77	0.49
1:D:55:GLN:CG	1:D:56:PRO:HA	2.42	0.49
1:D:55:GLN:HG3	1:D:56:PRO:HA	1.93	0.49
2:C:401:HEM:HMC2	2:C:401:HEM:HBC2	1.93	0.48
1:D:53:ARG:NH1	4:D:505:HOH:O	2.45	0.48
1:D:228:LEU:HD12	1:D:287:ASP:HA	1.95	0.48
2:F:401:HEM:HMC1	2:F:401:HEM:HBC2	1.94	0.48
1:C:39:LEU:HD22	1:C:126:LEU:HD11	1.95	0.48
1:B:17:LEU:HD12	1:B:17:LEU:H	1.79	0.48
1:C:228:LEU:HD12	1:C:287:ASP:HA	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:143:ASP:HB2	1:F:53[B]:ARG:O	2.14	0.48
1:B:228[A]:LEU:HD12	1:B:287:ASP:HA	1.97	0.47
1:A:300:LEU:HD23	1:A:301:PHE:N	2.30	0.47
1:A:147:MET:HG2	1:A:256:PHE:HB3	1.96	0.47
1:E:186:TYR:CG	2:E:401:HEM:HBB1	2.50	0.47
1:A:228:LEU:HD12	1:A:287:ASP:HA	1.96	0.46
1:E:300:LEU:C	1:E:300:LEU:HD23	2.35	0.46
1:F:228:LEU:HD12	1:F:287:ASP:HA	1.98	0.46
2:A:401:HEM:HBC2	2:A:401:HEM:CMC	2.46	0.46
1:F:300:LEU:C	1:F:300:LEU:HD23	2.37	0.46
1:E:183[B]:VAL:HG22	1:E:259:TYR:CE1	2.51	0.46
1:C:209:LYS:HE2	1:E:210:MET:HE1	1.96	0.46
1:A:300:LEU:HD23	1:A:300:LEU:C	2.36	0.45
1:B:300:LEU:C	1:B:300:LEU:HD23	2.37	0.45
1:C:210:MET:CE	1:E:210:MET:HB2	2.46	0.45
1:E:183[B]:VAL:HG22	1:E:259:TYR:HE1	1.82	0.45
1:F:300:LEU:HD23	1:F:301:PHE:N	2.31	0.45
2:E:401:HEM:HBC2	2:E:401:HEM:HMC2	1.98	0.45
1:D:300[A]:LEU:C	1:D:300[A]:LEU:HD23	2.37	0.45
2:D:401:HEM:HMC2	2:D:401:HEM:HBC2	1.98	0.44
1:C:300:LEU:C	1:C:300:LEU:HD23	2.37	0.44
1:C:300:LEU:HD23	1:C:301:PHE:N	2.32	0.44
1:E:300:LEU:HD23	1:E:301:PHE:N	2.33	0.44
1:B:300:LEU:HD23	1:B:301:PHE:N	2.32	0.44
1:E:199:GLU:O	1:E:203[A]:ARG:HG3	2.17	0.44
1:D:300[A]:LEU:HD23	1:D:301:PHE:N	2.33	0.44
1:A:214:GLU:OE2	1:A:220:LYS:NZ	2.32	0.43
1:A:216:SER:HB2	1:A:218:ASP:OD1	2.19	0.43
1:E:214:GLU:OE2	1:E:220:LYS:NZ	2.32	0.43
1:C:147:MET:HG2	1:C:256:PHE:HB3	2.01	0.43
1:C:217:ASP:OD1	1:C:217:ASP:N	2.44	0.42
1:A:147:MET:CG	1:A:256:PHE:HB3	2.50	0.42
1:A:17:LEU:CD2	1:F:55:GLN:CB	2.98	0.42
1:B:210:MET:CE	1:F:209:LYS:HE2	2.50	0.41
1:F:196:LEU:HD11	1:F:292:PHE:CZ	2.56	0.41
1:A:211:THR:O	1:F:53[B]:ARG:NH2	2.55	0.40
1:D:300[B]:LEU:C	1:D:300[B]:LEU:CD1	2.89	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	306/307 (100%)	301 (98%)	5 (2%)	0	100	100
1	B	307/307 (100%)	301 (98%)	6 (2%)	0	100	100
1	C	306/307 (100%)	301 (98%)	5 (2%)	0	100	100
1	D	307/307 (100%)	301 (98%)	5 (2%)	1 (0%)	41	37
1	E	309/307 (101%)	303 (98%)	6 (2%)	0	100	100
1	F	309/307 (101%)	302 (98%)	7 (2%)	0	100	100
All	All	1844/1842 (100%)	1809 (98%)	34 (2%)	1 (0%)	51	49

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	142	PHE

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	245/245 (100%)	243 (99%)	2 (1%)	81	86
1	B	237/245 (97%)	234 (99%)	3 (1%)	69	74
1	C	245/245 (100%)	241 (98%)	4 (2%)	62	67
1	D	246/245 (100%)	240 (98%)	6 (2%)	49	51
1	E	243/245 (99%)	242 (100%)	1 (0%)	91	93
1	F	246/245 (100%)	243 (99%)	3 (1%)	71	76

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	1462/1470 (100%)	1443 (99%)	19 (1%)	69 74

All (19) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	53	ARG
1	A	90	ASP
1	B	111	ARG
1	B	307	ASP
1	B	312	LEU
1	C	53	ARG
1	C	217	ASP
1	C	238	ASP
1	C	307	ASP
1	D	53	ARG
1	D	127	ARG
1	D	141	TYR
1	D	142	PHE
1	D	307	ASP
1	D	311	ASP
1	E	111	ARG
1	F	38	ASP
1	F	111	ARG
1	F	307	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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

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	E	401	1,4	41,50,50	1.26	4 (9%)	45,82,82	2.26	17 (37%)
2	HEM	B	401	1,4	41,50,50	1.33	3 (7%)	45,82,82	2.18	11 (24%)
2	HEM	A	401	1,4	41,50,50	1.46	6 (14%)	45,82,82	2.30	21 (46%)
2	HEM	F	401	1,4	41,50,50	1.49	8 (19%)	45,82,82	1.76	10 (22%)
2	HEM	D	401	1,4	41,50,50	1.62	11 (26%)	45,82,82	1.72	9 (20%)
2	HEM	C	401	1,4	41,50,50	1.34	6 (14%)	45,82,82	1.57	9 (20%)

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	E	401	1,4	-	4/12/54/54	-
2	HEM	B	401	1,4	-	4/12/54/54	-
2	HEM	A	401	1,4	-	5/12/54/54	-
2	HEM	F	401	1,4	-	4/12/54/54	-
2	HEM	D	401	1,4	-	4/12/54/54	-
2	HEM	C	401	1,4	-	4/12/54/54	-

All (38) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	401	HEM	C1B-NB	-4.79	1.32	1.40
2	F	401	HEM	C1B-NB	-4.58	1.32	1.40
2	A	401	HEM	C1B-NB	-4.55	1.32	1.40
2	D	401	HEM	CHB-C1B	3.75	1.44	1.35
2	D	401	HEM	C4D-ND	-3.42	1.34	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	401	HEM	C3C-C2C	-3.39	1.35	1.40
2	D	401	HEM	FE-NB	3.23	2.12	1.96
2	E	401	HEM	C1B-NB	-3.10	1.35	1.40
2	E	401	HEM	C3C-C2C	-3.06	1.36	1.40
2	C	401	HEM	C1B-NB	-3.02	1.35	1.40
2	C	401	HEM	CHA-C4D	2.91	1.42	1.35
2	D	401	HEM	CHA-C4D	2.79	1.42	1.35
2	A	401	HEM	C1D-C2D	2.74	1.49	1.44
2	A	401	HEM	C1D-ND	-2.73	1.33	1.38
2	B	401	HEM	C1D-ND	-2.66	1.33	1.38
2	F	401	HEM	C4D-C3D	2.65	1.49	1.45
2	A	401	HEM	CMB-C2B	2.63	1.56	1.50
2	D	401	HEM	C4B-NB	-2.59	1.33	1.38
2	C	401	HEM	CHB-C1B	2.58	1.41	1.35
2	F	401	HEM	C1D-C2D	2.56	1.49	1.44
2	D	401	HEM	C3C-C2C	-2.54	1.36	1.40
2	D	401	HEM	C1D-ND	-2.46	1.33	1.38
2	D	401	HEM	C3B-C4B	2.42	1.49	1.44
2	E	401	HEM	O1A-CGA	2.41	1.30	1.22
2	A	401	HEM	CHB-C1B	2.39	1.41	1.35
2	F	401	HEM	CHB-C1B	2.38	1.41	1.35
2	C	401	HEM	CHD-C1D	-2.30	1.34	1.41
2	F	401	HEM	FE-NB	2.30	2.08	1.96
2	F	401	HEM	CHA-C4D	2.25	1.40	1.35
2	D	401	HEM	C1B-NB	-2.23	1.36	1.40
2	C	401	HEM	C1A-NA	2.15	1.40	1.36
2	F	401	HEM	C4D-ND	-2.14	1.36	1.40
2	D	401	HEM	C4D-C3D	2.13	1.48	1.45
2	D	401	HEM	C3D-C2D	-2.11	1.32	1.36
2	E	401	HEM	CHA-C4D	2.11	1.40	1.35
2	B	401	HEM	FE-NB	2.08	2.07	1.96
2	A	401	HEM	FE-NB	2.06	2.07	1.96
2	F	401	HEM	O2D-CGD	-2.03	1.23	1.30

All (77) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	401	HEM	C1B-NB-C4B	6.41	111.69	105.07
2	B	401	HEM	C1B-NB-C4B	6.03	111.30	105.07
2	B	401	HEM	CHD-C1D-ND	5.75	130.68	124.43
2	F	401	HEM	CHC-C4B-NB	5.67	130.59	124.43
2	B	401	HEM	CHC-C4B-NB	5.41	130.31	124.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	401	HEM	C1B-NB-C4B	4.63	109.85	105.07
2	D	401	HEM	C1B-NB-C4B	4.61	109.83	105.07
2	E	401	HEM	CHD-C1D-ND	4.56	129.38	124.43
2	F	401	HEM	C1B-NB-C4B	4.55	109.77	105.07
2	E	401	HEM	CHB-C1B-NB	4.47	129.90	124.38
2	B	401	HEM	CHD-C1D-C2D	-4.03	118.68	124.98
2	A	401	HEM	CHD-C1D-ND	3.97	128.75	124.43
2	A	401	HEM	CHC-C4B-NB	3.92	128.69	124.43
2	C	401	HEM	CHA-C4D-ND	3.82	129.10	124.38
2	E	401	HEM	CMC-C2C-C3C	3.80	131.79	124.68
2	E	401	HEM	C4B-CHC-C1C	3.79	127.56	122.56
2	C	401	HEM	CHC-C4B-NB	3.78	128.54	124.43
2	B	401	HEM	CHA-C4D-ND	3.72	128.98	124.38
2	E	401	HEM	CMA-C3A-C4A	-3.64	122.87	128.46
2	A	401	HEM	CAD-C3D-C4D	3.61	130.96	124.66
2	D	401	HEM	CHD-C1D-ND	3.59	128.34	124.43
2	A	401	HEM	CHA-C4D-C3D	-3.54	118.68	125.33
2	A	401	HEM	CAD-CBD-CGD	-3.53	106.00	113.60
2	B	401	HEM	CBA-CAA-C2A	3.43	118.48	112.62
2	E	401	HEM	CAB-C3B-C2B	-3.41	117.37	128.60
2	F	401	HEM	CHB-C1B-NB	3.38	128.55	124.38
2	D	401	HEM	C4B-CHC-C1C	3.32	126.94	122.56
2	A	401	HEM	CHB-C1B-NB	3.21	128.34	124.38
2	E	401	HEM	CHD-C1D-C2D	-3.21	119.97	124.98
2	D	401	HEM	CHC-C4B-NB	3.18	127.89	124.43
2	E	401	HEM	CAD-C3D-C4D	3.16	130.18	124.66
2	E	401	HEM	O2D-CGD-CBD	3.15	124.14	114.03
2	A	401	HEM	C4B-C3B-C2B	-3.10	104.66	107.11
2	E	401	HEM	C3B-C2B-C1B	3.00	108.71	106.49
2	A	401	HEM	C3D-C4D-ND	2.99	113.49	110.17
2	B	401	HEM	CHB-C1B-NB	2.88	127.94	124.38
2	B	401	HEM	O2D-CGD-CBD	2.85	123.19	114.03
2	A	401	HEM	C4B-CHC-C1C	2.82	126.27	122.56
2	C	401	HEM	CHD-C1D-C2D	-2.79	120.62	124.98
2	A	401	HEM	CMA-C3A-C4A	-2.77	124.20	128.46
2	D	401	HEM	CHD-C1D-C2D	-2.69	120.78	124.98
2	A	401	HEM	CHA-C4D-ND	2.68	127.69	124.38
2	C	401	HEM	CMA-C3A-C4A	-2.67	124.36	128.46
2	E	401	HEM	CAB-C3B-C4B	2.66	136.85	124.47
2	C	401	HEM	CHD-C1D-ND	2.65	127.31	124.43
2	D	401	HEM	CAD-C3D-C4D	2.62	129.24	124.66
2	F	401	HEM	CHA-C4D-ND	2.61	127.61	124.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	401	HEM	O2A-CGA-CBA	2.61	122.42	114.03
2	C	401	HEM	CMD-C2D-C1D	2.58	128.97	125.04
2	A	401	HEM	CAB-C3B-C2B	-2.58	120.12	128.60
2	B	401	HEM	O2D-CGD-O1D	-2.56	116.91	123.30
2	A	401	HEM	C4A-C3A-C2A	2.55	108.77	107.00
2	A	401	HEM	CHD-C1D-C2D	-2.52	121.05	124.98
2	D	401	HEM	CHA-C4D-ND	2.49	127.46	124.38
2	E	401	HEM	O1D-CGD-CBD	-2.49	115.09	123.08
2	B	401	HEM	CHA-C4D-C3D	-2.48	120.67	125.33
2	C	401	HEM	CHA-C4D-C3D	-2.47	120.69	125.33
2	A	401	HEM	C4D-C3D-C2D	-2.46	103.32	106.90
2	A	401	HEM	C3B-C2B-C1B	2.42	108.28	106.49
2	B	401	HEM	O2A-CGA-CBA	2.37	121.65	114.03
2	C	401	HEM	C1B-NB-C4B	2.37	107.52	105.07
2	F	401	HEM	CHA-C4D-C3D	-2.37	120.88	125.33
2	E	401	HEM	CAA-CBA-CGA	-2.36	107.13	113.76
2	E	401	HEM	CHC-C4B-NB	2.35	126.99	124.43
2	D	401	HEM	CHB-C1B-NB	2.33	127.25	124.38
2	F	401	HEM	O2A-CGA-O1A	-2.25	117.69	123.30
2	F	401	HEM	O2D-CGD-CBD	2.23	121.20	114.03
2	A	401	HEM	O1D-CGD-CBD	-2.22	115.96	123.08
2	A	401	HEM	CMC-C2C-C3C	2.21	128.80	124.68
2	E	401	HEM	C4A-C3A-C2A	2.20	108.53	107.00
2	D	401	HEM	CMA-C3A-C4A	-2.15	125.15	128.46
2	C	401	HEM	C2C-C3C-C4C	-2.13	105.41	106.90
2	E	401	HEM	CMB-C2B-C3B	-2.06	123.25	128.30
2	A	401	HEM	O2A-CGA-CBA	2.05	120.63	114.03
2	A	401	HEM	O2D-CGD-CBD	2.03	120.56	114.03
2	F	401	HEM	CHD-C1D-ND	2.02	126.63	124.43
2	F	401	HEM	CHD-C1D-C2D	-2.00	121.85	124.98

There are no chirality outliers.

All (25) torsion outliers are listed below:

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

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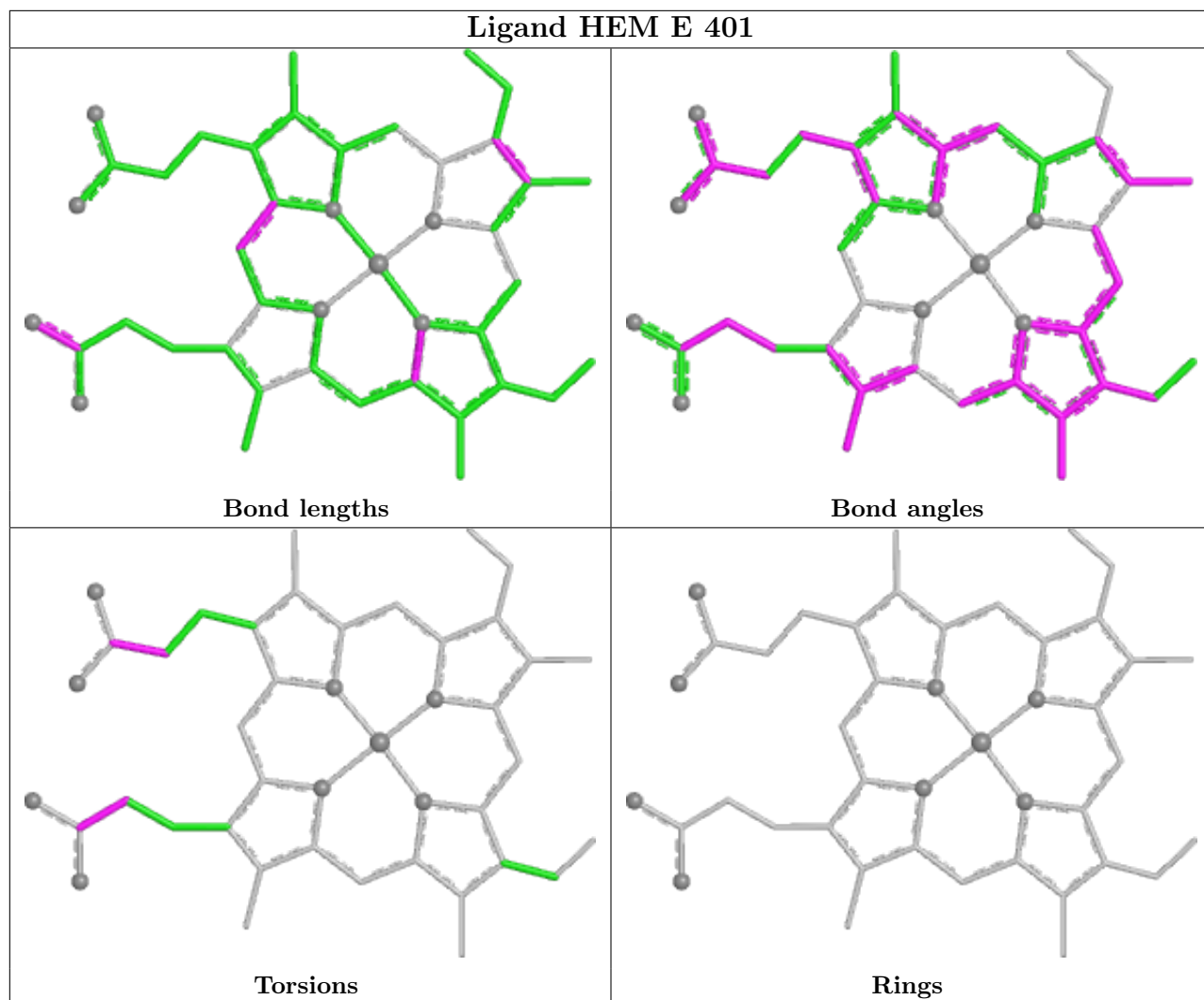
Mol	Chain	Res	Type	Atoms
2	A	401	HEM	CAD-CBD-CGD-O1D
2	D	401	HEM	CAD-CBD-CGD-O2D
2	E	401	HEM	CAA-CBA-CGA-O1A
2	D	401	HEM	CAA-CBA-CGA-O2A
2	A	401	HEM	CAA-CBA-CGA-O2A
2	F	401	HEM	CAA-CBA-CGA-O1A
2	E	401	HEM	CAA-CBA-CGA-O2A
2	E	401	HEM	CAD-CBD-CGD-O1D
2	B	401	HEM	CAA-CBA-CGA-O1A
2	C	401	HEM	CAA-CBA-CGA-O1A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

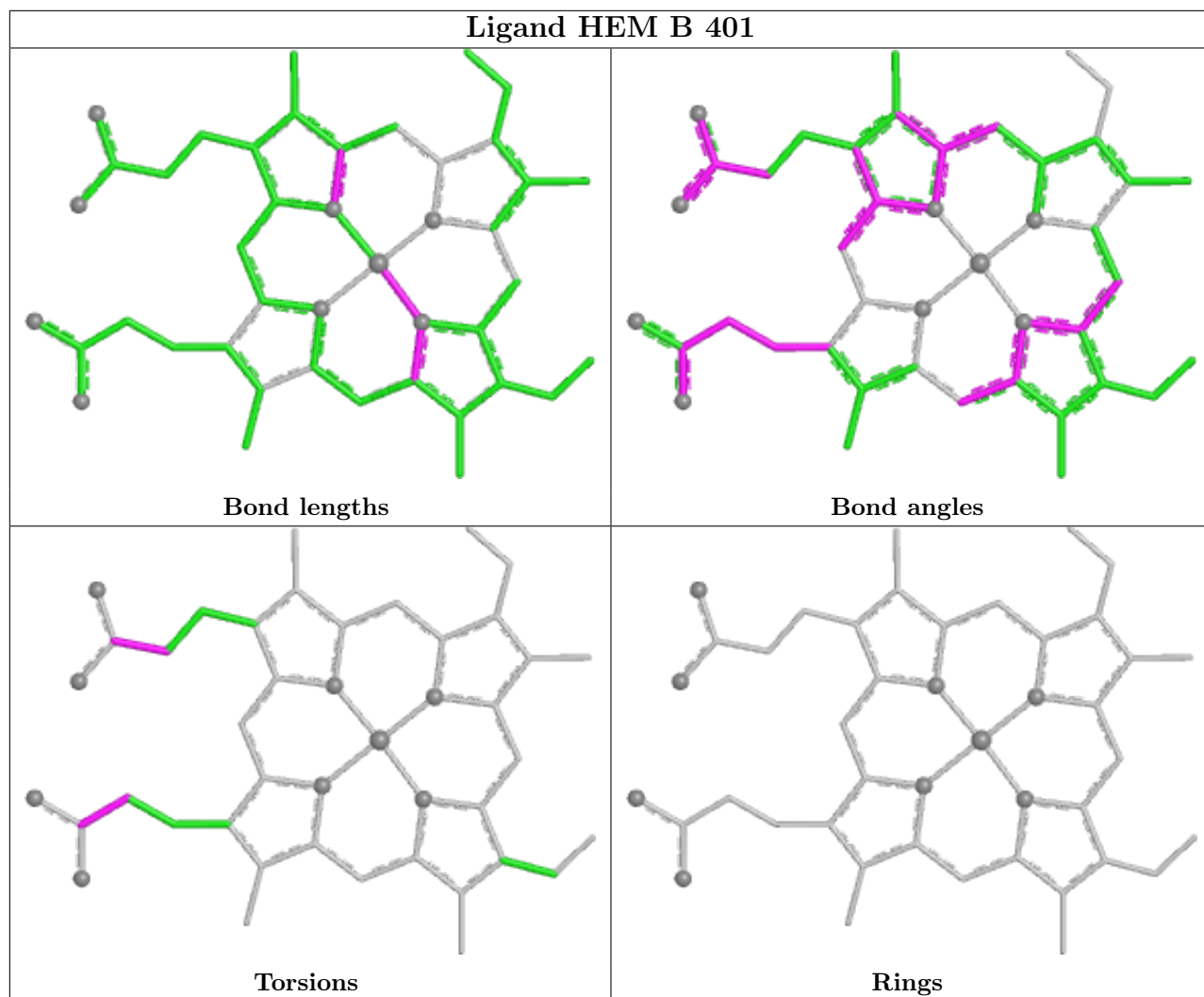
There are no ring outliers.

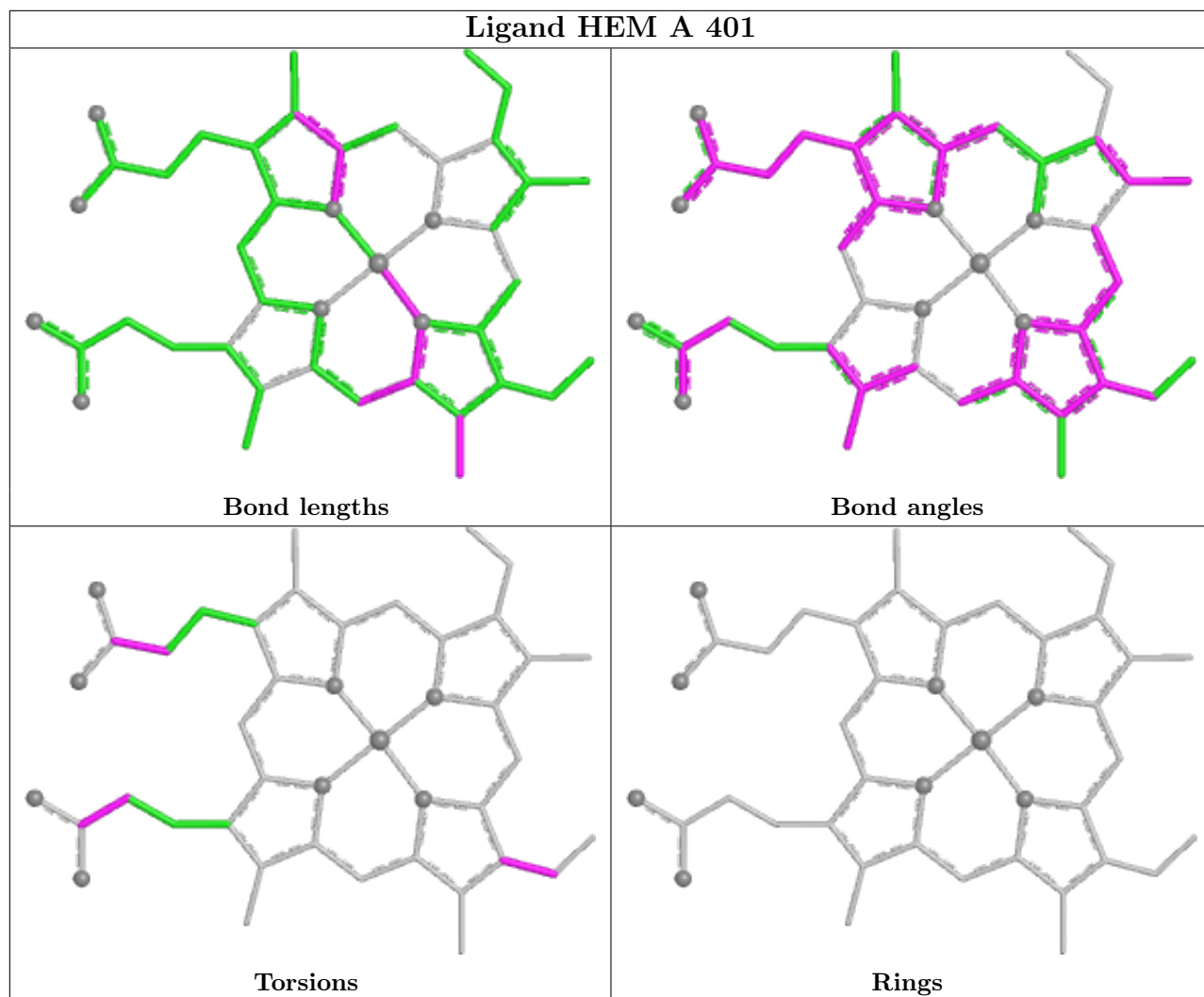
6 monomers are involved in 9 short contacts:

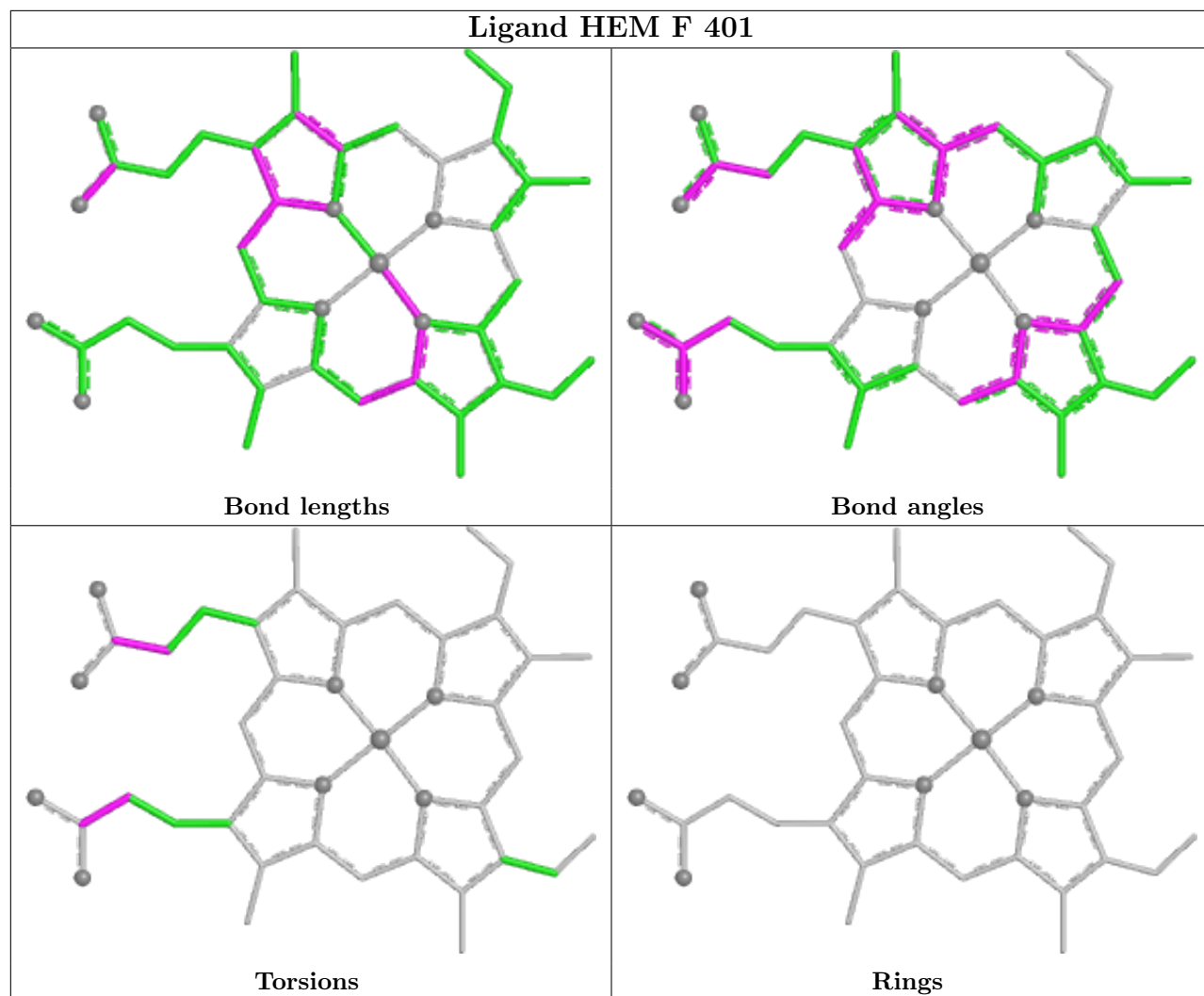
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	E	401	HEM	2	0
2	B	401	HEM	2	0
2	A	401	HEM	2	0
2	F	401	HEM	1	0
2	D	401	HEM	1	0
2	C	401	HEM	1	0

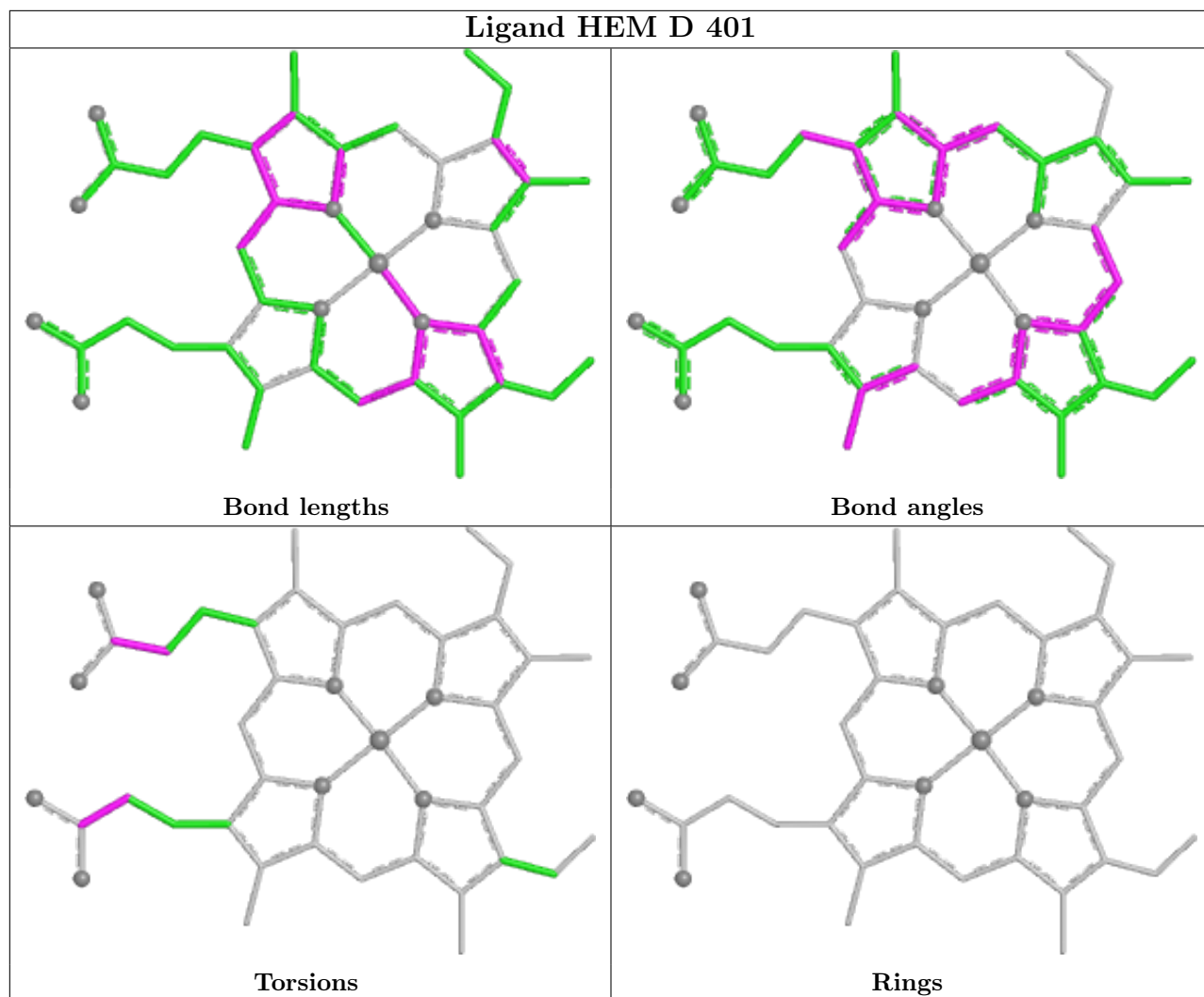
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

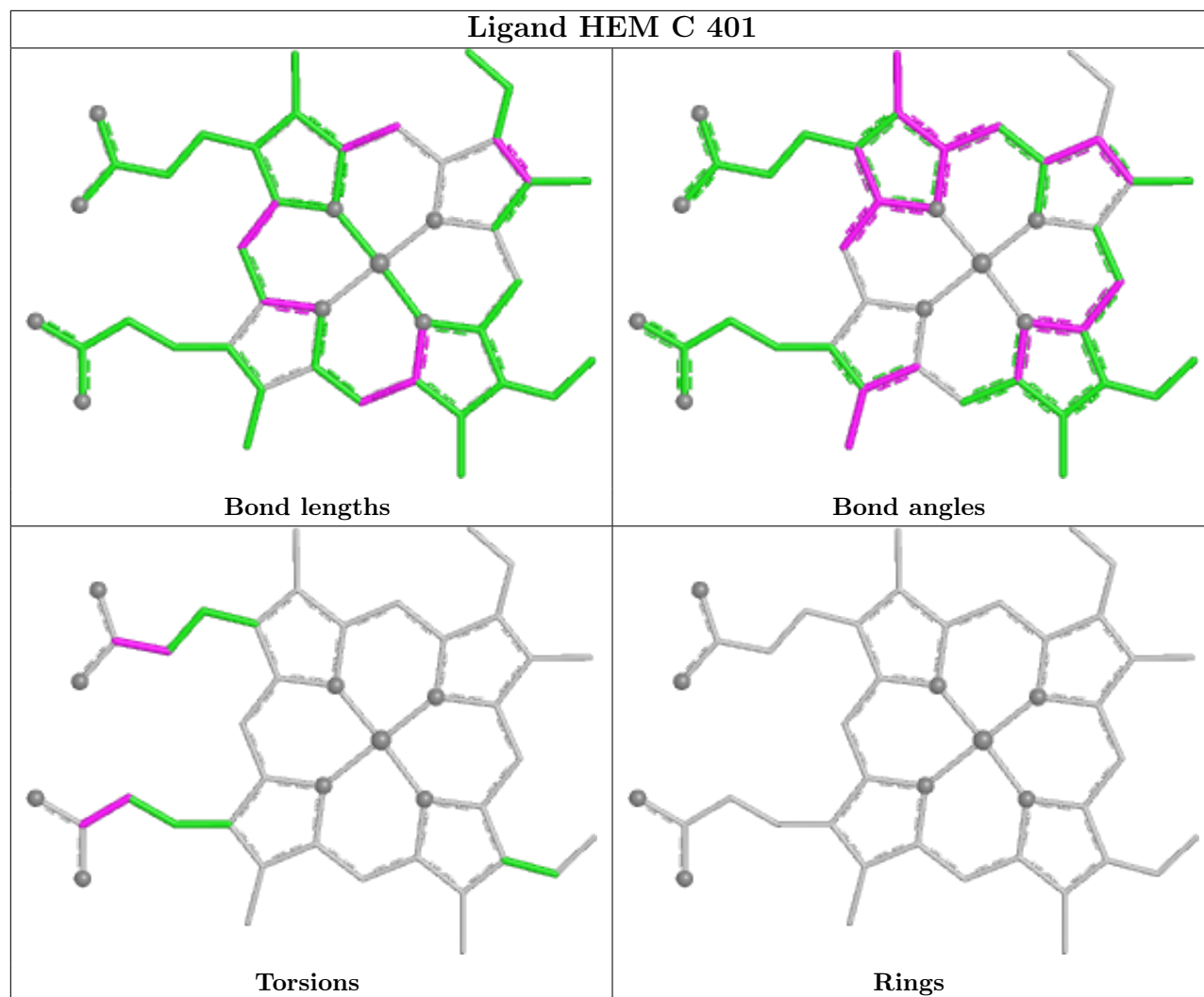












5.7 Other polymers [i](#)

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, 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	306/307 (99%)	1.67	89 (29%) 0 0	16, 24, 51, 72	0
1	B	306/307 (99%)	1.92	115 (37%) 0 0	19, 29, 57, 97	0
1	C	306/307 (99%)	1.73	101 (33%) 0 0	18, 27, 53, 112	0
1	D	304/307 (99%)	1.73	87 (28%) 0 0	17, 27, 52, 74	0
1	E	305/307 (99%)	1.81	99 (32%) 0 0	19, 27, 52, 100	0
1	F	306/307 (99%)	1.86	108 (35%) 0 0	18, 26, 52, 103	0
All	All	1833/1842 (99%)	1.79	599 (32%) 0 0	16, 27, 53, 112	0

All (599) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	234	PRO	13.6
1	E	17	LEU	12.7
1	E	234	PRO	11.5
1	B	17	LEU	8.3
1	A	282	ALA	8.2
1	D	17	LEU	8.2
1	D	237	SER	8.0
1	F	237	SER	8.0
1	C	237	SER	7.7
1	F	236	GLY	7.7
1	B	233	GLY	7.6
1	E	237	SER	7.6
1	F	235	ASP	7.5
1	D	56	PRO	7.4
1	F	234	PRO	7.4
1	E	235	ASP	7.3
1	F	17	LEU	7.2
1	B	218	ASP	7.0
1	E	16	PRO	7.0

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Mol	Chain	Res	Type	RSRZ
1	D	142	PHE	7.0
1	B	234	PRO	6.7
1	D	218	ASP	6.6
1	A	57	ASP	6.6
1	D	234	PRO	6.6
1	B	76	SER	6.5
1	F	282	ALA	6.4
1	F	16	PRO	6.2
1	B	236	GLY	6.1
1	A	283	SER	6.1
1	B	8	PRO	6.1
1	C	8	PRO	6.0
1	B	16	PRO	6.0
1	D	55	GLN	5.8
1	C	233	GLY	5.8
1	A	218	ASP	5.7
1	B	160	ALA	5.7
1	D	16	PRO	5.6
1	D	57	ASP	5.6
1	A	219	VAL	5.5
1	D	235	ASP	5.4
1	F	170	ALA	5.4
1	D	311	ASP	5.3
1	B	282	ALA	5.3
1	E	170	ALA	5.2
1	E	236	GLY	5.2
1	F	233	GLY	5.2
1	B	173	PRO	5.1
1	A	7	GLU	5.1
1	B	237	SER	5.1
1	E	283	SER	5.0
1	F	91	GLY	5.0
1	B	34	ASP	5.0
1	B	216	SER	5.0
1	A	56	PRO	5.0
1	B	7	GLU	5.0
1	C	235	ASP	5.0
1	B	56	PRO	4.9
1	D	219	VAL	4.9
1	F	210[A]	MET	4.9
1	C	236	GLY	4.9
1	A	311	ASP	4.8

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Mol	Chain	Res	Type	RSRZ
1	E	233	GLY	4.8
1	A	16	PRO	4.8
1	A	17	LEU	4.8
1	C	311	ASP	4.7
1	A	236	GLY	4.7
1	F	90	ASP	4.6
1	A	217	ASP	4.6
1	E	311	ASP	4.6
1	B	90	ASP	4.6
1	B	217	ASP	4.6
1	B	311	ASP	4.6
1	F	218	ASP	4.6
1	D	232	THR	4.5
1	B	30	SER	4.5
1	C	55	GLN	4.5
1	C	17	LEU	4.5
1	A	31	GLY	4.5
1	E	282	ALA	4.5
1	E	56	PRO	4.5
1	C	170	ALA	4.5
1	F	313	SER	4.5
1	B	235	ASP	4.4
1	E	281	THR	4.4
1	B	170	ALA	4.4
1	F	57	ASP	4.3
1	F	8	PRO	4.3
1	D	238	ASP	4.3
1	A	281	THR	4.3
1	D	217	ASP	4.2
1	E	217	ASP	4.2
1	F	217	ASP	4.2
1	D	236	GLY	4.2
1	E	160	ALA	4.2
1	C	56	PRO	4.1
1	E	173	PRO	4.1
1	F	281	THR	4.0
1	E	232	THR	4.0
1	E	57	ASP	4.0
1	E	161	ALA	4.0
1	A	216	SER	3.9
1	D	174	ALA	3.9
1	E	14	LEU	3.9

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Mol	Chain	Res	Type	RSRZ
1	E	284	ALA	3.9
1	C	78	ALA	3.9
1	F	56	PRO	3.9
1	C	7	GLU	3.9
1	C	16	PRO	3.9
1	C	312	LEU	3.9
1	D	148	LEU	3.9
1	D	231	VAL	3.9
1	A	234	PRO	3.9
1	E	183[A]	VAL	3.9
1	E	163	ARG	3.8
1	C	218	ASP	3.8
1	C	232	THR	3.8
1	E	90	ASP	3.8
1	B	77	GLY	3.7
1	C	77	GLY	3.7
1	F	232	THR	3.7
1	B	57	ASP	3.7
1	D	54	ALA	3.7
1	D	15	SER	3.7
1	D	36	VAL	3.7
1	A	8	PRO	3.7
1	D	261	ILE	3.7
1	C	76	SER	3.7
1	A	34	ASP	3.7
1	F	39	LEU	3.6
1	B	232	THR	3.6
1	C	57	ASP	3.6
1	A	30	SER	3.6
1	A	237	SER	3.6
1	E	76	SER	3.6
1	D	161	ALA	3.6
1	C	261	ILE	3.6
1	C	118	LEU	3.6
1	F	14	LEU	3.6
1	B	175	PHE	3.5
1	F	283	SER	3.5
1	E	36	VAL	3.5
1	F	151	VAL	3.5
1	A	210[A]	MET	3.5
1	C	204	VAL	3.5
1	E	15	SER	3.5

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Mol	Chain	Res	Type	RSRZ
1	D	76	SER	3.4
1	D	8	PRO	3.4
1	F	22	ILE	3.4
1	B	274	LEU	3.4
1	E	169	GLY	3.4
1	B	75	PHE	3.4
1	F	162	ALA	3.4
1	F	284	ALA	3.4
1	E	312	LEU	3.4
1	C	217	ASP	3.4
1	C	90	ASP	3.4
1	A	55	GLN	3.3
1	C	161	ALA	3.3
1	D	170	ALA	3.3
1	F	173	PRO	3.3
1	F	260	PHE	3.3
1	B	309	LEU	3.3
1	F	216	SER	3.3
1	E	136	VAL	3.3
1	C	238	ASP	3.3
1	E	307	ASP	3.3
1	F	312	LEU	3.3
1	B	281	THR	3.3
1	C	107	ILE	3.3
1	F	112	LEU	3.3
1	C	9	GLU	3.3
1	C	182	VAL	3.3
1	A	233	GLY	3.3
1	F	307	ASP	3.3
1	B	22	ILE	3.3
1	B	12	MET	3.2
1	A	284	ALA	3.2
1	E	280	GLY	3.2
1	D	216	SER	3.2
1	B	13	VAL	3.2
1	F	219	VAL	3.2
1	C	216	SER	3.2
1	F	15	SER	3.2
1	F	205	ILE	3.2
1	D	141	TYR	3.2
1	B	307	ASP	3.2
1	C	22	ILE	3.2

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Mol	Chain	Res	Type	RSRZ
1	B	159	GLY	3.1
1	E	285	PRO	3.1
1	C	104	LEU	3.1
1	C	183	VAL	3.1
1	F	36	VAL	3.1
1	F	166	VAL	3.1
1	B	312	LEU	3.1
1	E	239	LEU	3.1
1	F	92	PRO	3.1
1	B	258	THR	3.1
1	B	283	SER	3.1
1	C	226	VAL	3.1
1	B	158	THR	3.1
1	A	118	LEU	3.1
1	B	126	LEU	3.1
1	D	289	ILE	3.1
1	C	219	VAL	3.1
1	B	310	GLU	3.1
1	B	193	TRP	3.1
1	A	309	LEU	3.1
1	F	127	ARG	3.1
1	B	91	GLY	3.0
1	C	116	PHE	3.0
1	C	80	PRO	3.0
1	F	285	PRO	3.0
1	B	148	LEU	3.0
1	A	36	VAL	3.0
1	D	34	ASP	3.0
1	B	172	ASP	3.0
1	B	204	VAL	3.0
1	E	104	LEU	3.0
1	B	306	ALA	3.0
1	E	66	ILE	3.0
1	E	226	VAL	3.0
1	A	164	ARG	3.0
1	F	159	GLY	3.0
1	A	161	ALA	3.0
1	F	182	VAL	2.9
1	B	238	ASP	2.9
1	B	89	LEU	2.9
1	C	24	LEU	2.9
1	B	130	VAL	2.9

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Mol	Chain	Res	Type	RSRZ
1	E	241	ILE	2.9
1	F	169	GLY	2.9
1	B	284	ALA	2.9
1	F	174	ALA	2.9
1	A	300	LEU	2.9
1	E	31	GLY	2.9
1	C	35	THR	2.9
1	B	151	VAL	2.9
1	C	173	PRO	2.9
1	D	30	SER	2.9
1	E	93	VAL	2.9
1	F	231	VAL	2.9
1	E	205	ILE	2.9
1	D	307	ASP	2.9
1	A	104	LEU	2.9
1	B	80	PRO	2.9
1	E	142	PHE	2.9
1	D	158	THR	2.9
1	A	90	ASP	2.9
1	D	251	VAL	2.8
1	A	261	ILE	2.8
1	D	66	ILE	2.8
1	B	308	PHE	2.8
1	D	18	THR	2.8
1	F	55	GLN	2.8
1	B	32	GLY	2.8
1	E	219	VAL	2.8
1	B	174	ALA	2.8
1	C	260	PHE	2.8
1	D	90	ASP	2.8
1	E	59	ARG	2.8
1	C	151	VAL	2.8
1	F	43[A]	VAL	2.8
1	C	241	ILE	2.8
1	D	173	PRO	2.8
1	B	219	VAL	2.8
1	F	198	VAL	2.8
1	C	243	ALA	2.8
1	B	261	ILE	2.8
1	E	261	ILE	2.8
1	F	261	ILE	2.8
1	A	182	VAL	2.8

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Mol	Chain	Res	Type	RSRZ
1	C	50	VAL	2.8
1	C	10	PRO	2.8
1	C	205	ILE	2.8
1	F	158	THR	2.8
1	F	142	PHE	2.8
1	F	46	LEU	2.8
1	A	83	LEU	2.7
1	B	72	ASP	2.7
1	A	54	ALA	2.7
1	A	222	ALA	2.7
1	A	151	VAL	2.7
1	B	231	VAL	2.7
1	E	8	PRO	2.7
1	F	66	ILE	2.7
1	F	122	ILE	2.7
1	A	160	ALA	2.7
1	E	127	ARG	2.7
1	F	161	ALA	2.7
1	C	169	GLY	2.7
1	B	266	THR	2.7
1	C	198	VAL	2.7
1	B	66	ILE	2.7
1	E	218	ASP	2.7
1	B	110	SER	2.7
1	A	95	ARG	2.7
1	B	70	ALA	2.7
1	C	46	LEU	2.7
1	E	151	VAL	2.7
1	D	205	ILE	2.7
1	E	164	ARG	2.7
1	B	78	ALA	2.7
1	D	35	THR	2.7
1	F	118	LEU	2.7
1	F	309	LEU	2.7
1	F	311	ASP	2.7
1	F	50	VAL	2.7
1	F	59	ARG	2.7
1	B	107	ILE	2.7
1	E	190	ILE	2.7
1	E	159	GLY	2.7
1	E	260	PHE	2.7
1	D	164	ARG	2.7

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Mol	Chain	Res	Type	RSRZ
1	B	205	ILE	2.6
1	A	14	LEU	2.6
1	E	24[A]	LEU	2.6
1	F	30	SER	2.6
1	B	71	TRP	2.6
1	D	63	VAL	2.6
1	F	238	ASP	2.6
1	B	164	ARG	2.6
1	F	289	ILE	2.6
1	C	39	LEU	2.6
1	E	148	LEU	2.6
1	E	77	GLY	2.6
1	F	163	ARG	2.6
1	F	164	ARG	2.6
1	A	285	PRO	2.6
1	B	50	VAL	2.6
1	D	204	VAL	2.6
1	E	231	VAL	2.6
1	C	162	ALA	2.6
1	C	112	LEU	2.6
1	F	183	VAL	2.6
1	C	71	TRP	2.6
1	E	34	ASP	2.6
1	D	239	LEU	2.6
1	A	93	VAL	2.6
1	B	198	VAL	2.6
1	B	38[A]	ASP	2.6
1	A	64	THR	2.6
1	A	221	PRO	2.6
1	B	87	ARG	2.5
1	F	60	LEU	2.6
1	B	289	ILE	2.5
1	C	122	ILE	2.5
1	F	241	ILE	2.5
1	D	167	LEU	2.5
1	A	43	VAL	2.5
1	A	226	VAL	2.5
1	C	97	VAL	2.5
1	D	269	VAL	2.5
1	F	63	VAL	2.5
1	F	243	ALA	2.5
1	A	127	ARG	2.5

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Mol	Chain	Res	Type	RSRZ
1	B	190	ILE	2.5
1	F	107	ILE	2.5
1	F	191	ASP	2.5
1	B	104	LEU	2.5
1	B	305	ALA	2.5
1	F	54	ALA	2.5
1	C	25	VAL	2.5
1	E	12	MET	2.5
1	A	76	SER	2.5
1	B	150	PHE	2.5
1	A	148	LEU	2.5
1	C	119	ALA	2.5
1	C	193	TRP	2.5
1	E	213	VAL	2.5
1	E	266	THR	2.5
1	F	93	VAL	2.5
1	D	122	ILE	2.5
1	D	309	LEU	2.5
1	E	268	GLU	2.5
1	F	24	LEU	2.5
1	E	95	ARG	2.5
1	C	30	SER	2.5
1	E	38	ASP	2.5
1	B	119	ALA	2.5
1	A	18	THR	2.4
1	A	59	ARG	2.4
1	D	25	VAL	2.4
1	C	115	CYS	2.4
1	C	105	PHE	2.4
1	D	260	PHE	2.4
1	C	270	THR	2.4
1	D	303	THR	2.4
1	F	18	THR	2.4
1	C	103	LEU	2.4
1	E	300	LEU	2.4
1	F	9	GLU	2.4
1	C	307	ASP	2.4
1	B	26	VAL	2.4
1	D	183	VAL	2.4
1	C	289	ILE	2.4
1	A	158	THR	2.4
1	D	112	LEU	2.4

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Mol	Chain	Res	Type	RSRZ
1	E	290	LEU	2.4
1	F	148	LEU	2.4
1	F	274	LEU	2.4
1	C	136	VAL	2.4
1	C	163	ARG	2.4
1	A	49	ALA	2.4
1	A	260	PHE	2.4
1	E	216	SER	2.4
1	A	269	VAL	2.4
1	B	168	VAL	2.4
1	C	63	VAL	2.4
1	E	50	VAL	2.4
1	F	130	VAL	2.4
1	C	117	ALA	2.4
1	A	241	ILE	2.4
1	D	22	ILE	2.4
1	A	203	ARG	2.4
1	C	58	GLY	2.4
1	A	274	LEU	2.4
1	B	118	LEU	2.4
1	F	279	LEU	2.4
1	D	168	VAL	2.4
1	E	251	VAL	2.4
1	B	162	ALA	2.4
1	E	78	ALA	2.4
1	C	159	GLY	2.4
1	B	139	PHE	2.3
1	D	39	LEU	2.3
1	B	226	VAL	2.3
1	D	50	VAL	2.3
1	E	168	VAL	2.3
1	A	129	ALA	2.3
1	B	31	GLY	2.3
1	D	233	GLY	2.3
1	F	58	GLY	2.3
1	A	9	GLU	2.3
1	B	69	GLU	2.3
1	F	104	LEU	2.3
1	B	43	VAL	2.3
1	B	28	ILE	2.3
1	C	164	ARG	2.3
1	E	122	ILE	2.3

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Mol	Chain	Res	Type	RSRZ
1	C	23	PHE	2.3
1	D	126	LEU	2.3
1	D	310	GLU	2.3
1	A	130	VAL	2.3
1	A	251	VAL	2.3
1	D	58	GLY	2.3
1	A	200	ALA	2.3
1	B	35	THR	2.3
1	F	131	THR	2.3
1	D	300[A]	LEU	2.3
1	E	309	LEU	2.3
1	A	306	ALA	2.3
1	B	59	ARG	2.3
1	F	95	ARG	2.3
1	F	160	ALA	2.3
1	F	213	VAL	2.3
1	B	41	SER	2.3
1	B	125[A]	ARG	2.3
1	D	104	LEU	2.3
1	F	87	ARG	2.3
1	F	253	ARG	2.3
1	C	142	PHE	2.3
1	D	52	PHE	2.3
1	D	248	PHE	2.3
1	E	44	ALA	2.3
1	E	243	ALA	2.3
1	F	268	GLU	2.3
1	F	226	VAL	2.3
1	D	38	ASP	2.3
1	B	15	SER	2.3
1	A	22	ILE	2.3
1	A	310	GLU	2.3
1	E	289	ILE	2.3
1	C	160	ALA	2.2
1	C	200	ALA	2.2
1	C	263	TYR	2.2
1	C	34	ASP	2.2
1	A	107	ILE	2.2
1	B	122	ILE	2.2
1	D	241	ILE	2.2
1	A	40	LEU	2.2
1	A	270	THR	2.2

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Mol	Chain	Res	Type	RSRZ
1	B	14	LEU	2.2
1	B	46	LEU	2.2
1	F	222	ALA	2.2
1	B	292	PHE	2.2
1	D	139	PHE	2.2
1	E	175	PHE	2.2
1	A	26	VAL	2.2
1	A	136	VAL	2.2
1	B	36	VAL	2.2
1	E	13[A]	VAL	2.2
1	B	230	SER	2.2
1	B	247	PRO	2.2
1	C	21	ALA	2.2
1	E	53[A]	ARG	2.2
1	F	70	ALA	2.2
1	A	126	LEU	2.2
1	B	167	LEU	2.2
1	E	118	LEU	2.2
1	A	50	VAL	2.2
1	A	159	GLY	2.2
1	A	183	VAL	2.2
1	A	302	PHE	2.2
1	A	247	PRO	2.2
1	F	254	GLU	2.2
1	B	163	ARG	2.2
1	F	126	LEU	2.2
1	B	260	PHE	2.2
1	C	75	PHE	2.2
1	F	34	ASP	2.2
1	F	204	VAL	2.2
1	B	176	ALA	2.2
1	D	165	ALA	2.2
1	F	270	THR	2.2
1	F	71	TRP	2.2
1	A	312	LEU	2.2
1	D	115	CYS	2.2
1	F	62	CYS	2.2
1	C	93	VAL	2.2
1	C	130	VAL	2.2
1	E	182	VAL	2.2
1	E	198	VAL	2.2
1	A	35	THR	2.2

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Mol	Chain	Res	Type	RSRZ
1	C	70	ALA	2.2
1	C	174	ALA	2.2
1	E	238	ASP	2.2
1	B	136	VAL	2.1
1	B	254	GLU	2.1
1	C	199	GLU	2.1
1	C	281	THR	2.1
1	E	200	ALA	2.1
1	F	267	PRO	2.1
1	C	274	LEU	2.1
1	D	274	LEU	2.1
1	A	204	VAL	2.1
1	B	63	VAL	2.1
1	C	26	VAL	2.1
1	C	269	VAL	2.1
1	B	142	PHE	2.1
1	E	115	CYS	2.1
1	B	171	GLU	2.1
1	C	266	THR	2.1
1	E	222	ALA	2.1
1	A	289	ILE	2.1
1	A	163	ARG	2.1
1	D	59	ARG	2.1
1	A	63	VAL	2.1
1	C	36	VAL	2.1
1	C	251	VAL	2.1
1	A	266	THR	2.1
1	C	120	THR	2.1
1	C	267	PRO	2.1
1	E	92	PRO	2.1
1	D	24	LEU	2.1
1	D	118	LEU	2.1
1	D	124	GLY	2.1
1	E	83	LEU	2.1
1	D	41	SER	2.1
1	D	93	VAL	2.1
1	F	269	VAL	2.1
1	A	131	THR	2.1
1	C	165	ALA	2.1
1	D	83	LEU	2.1
1	B	265	ARG	2.1
1	C	88	GLU	2.1

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Mol	Chain	Res	Type	RSRZ
1	D	226	VAL	2.1
1	E	10	PRO	2.1
1	E	295	ALA	2.1
1	B	149	GLY	2.1
1	E	58	GLY	2.1
1	F	115	CYS	2.1
1	D	9	GLU	2.0
1	D	14	LEU	2.0
1	D	190	ILE	2.0
1	D	290	LEU	2.0
1	B	295	ALA	2.0
1	D	13	VAL	2.0
1	D	258	THR	2.0
1	E	158	THR	2.0
1	F	27	THR	2.0
1	C	139	PHE	2.0
1	E	301	PHE	2.0
1	F	150	PHE	2.0
1	C	59	ARG	2.0
1	E	203[A]	ARG	2.0
1	A	60	LEU	2.0
1	A	215	LEU	2.0
1	C	309	LEU	2.0
1	E	112	LEU	2.0
1	E	27	THR	2.0
1	E	192	ALA	2.0
1	B	25	VAL	2.0
1	E	26	VAL	2.0
1	A	248	PHE	2.0
1	F	86	PHE	2.0
1	E	154	THR	2.0
1	F	20	ALA	2.0
1	B	182	VAL	2.0
1	D	182	VAL	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](#)

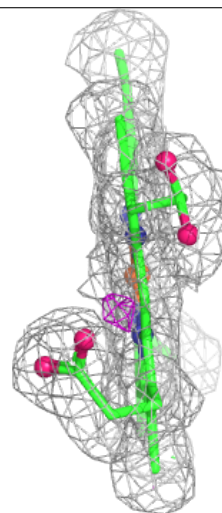
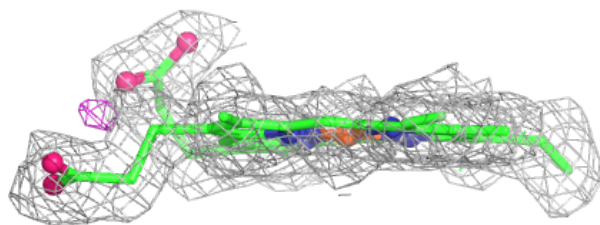
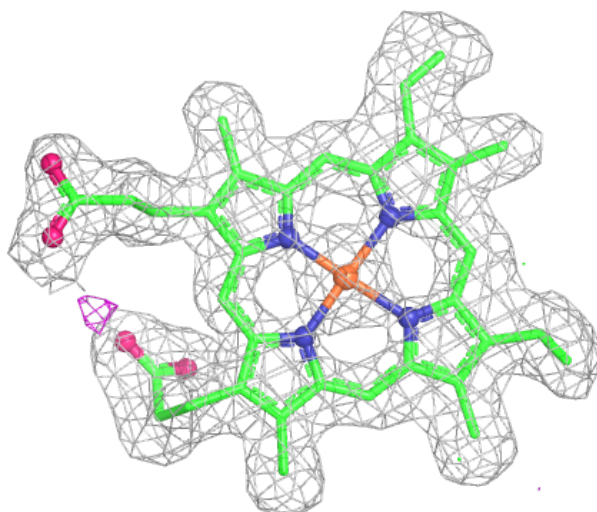
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists 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	MG	C	402	1/1	0.54	0.12	43,43,43,43	0
2	HEM	B	401	43/43	0.81	0.25	18,20,27,31	0
2	HEM	C	401	43/43	0.82	0.23	18,21,27,28	0
2	HEM	F	401	43/43	0.82	0.24	18,22,27,29	0
2	HEM	A	401	43/43	0.82	0.23	17,20,24,26	0
2	HEM	E	401	43/43	0.83	0.24	18,22,29,32	0
2	HEM	D	401	43/43	0.84	0.21	17,20,24,26	0
3	MG	A	402	1/1	0.98	0.16	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.

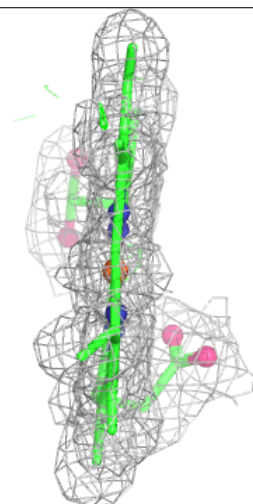
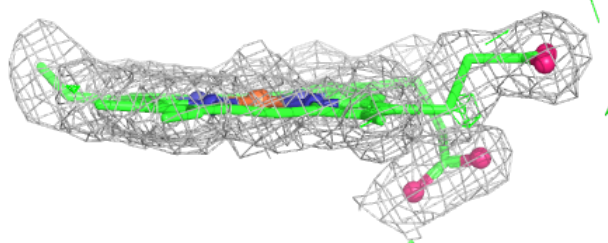
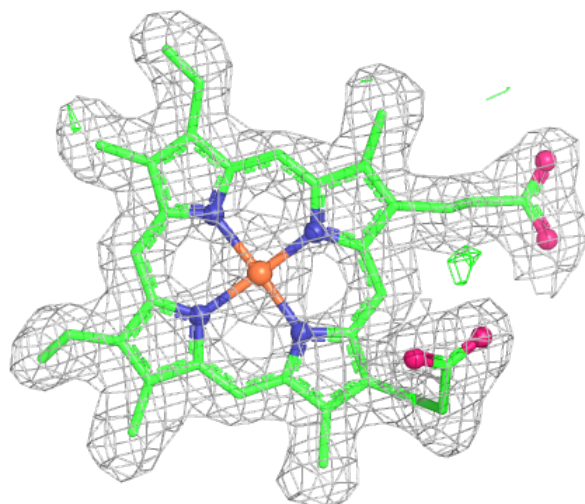
Electron density around HEM B 401:

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



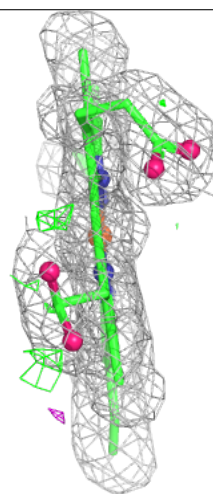
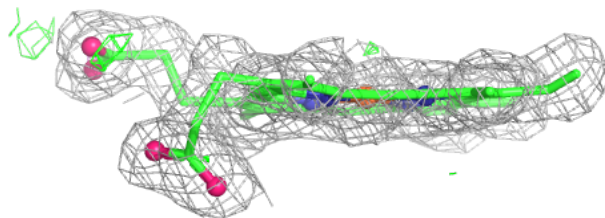
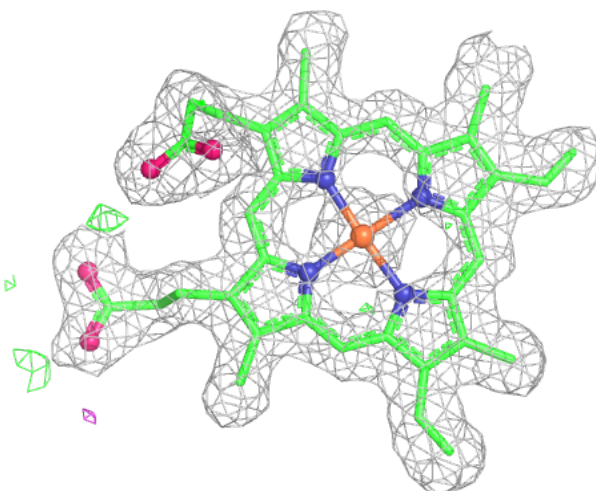
Electron density around HEM C 401:

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



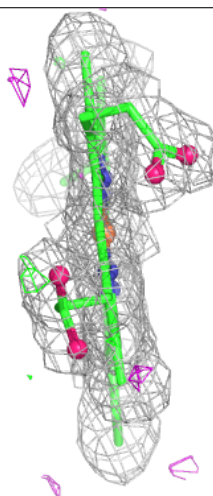
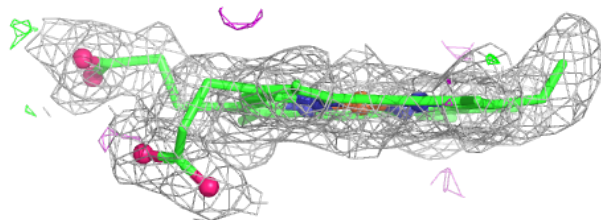
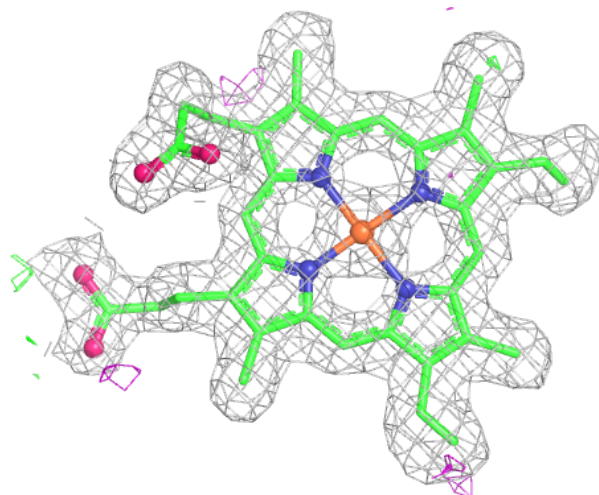
Electron density around HEM F 401:

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



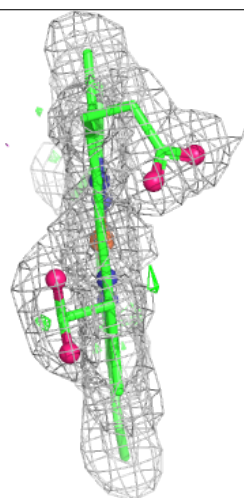
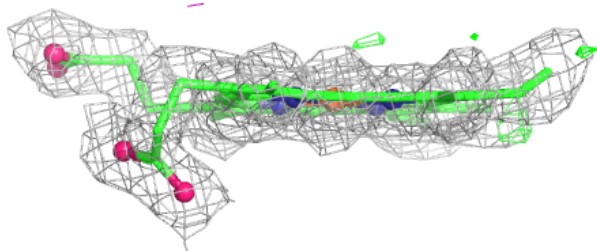
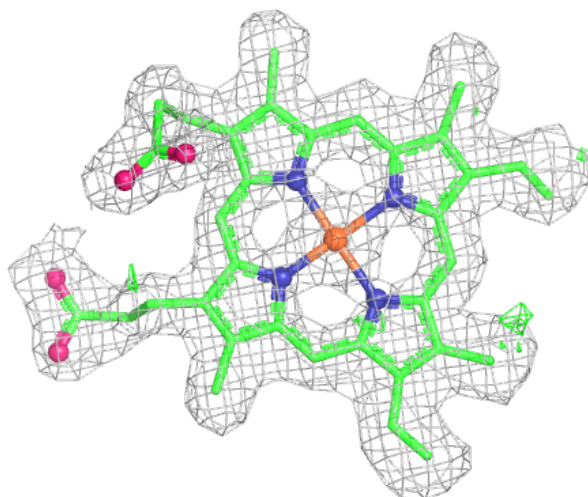
Electron density around HEM A 401:

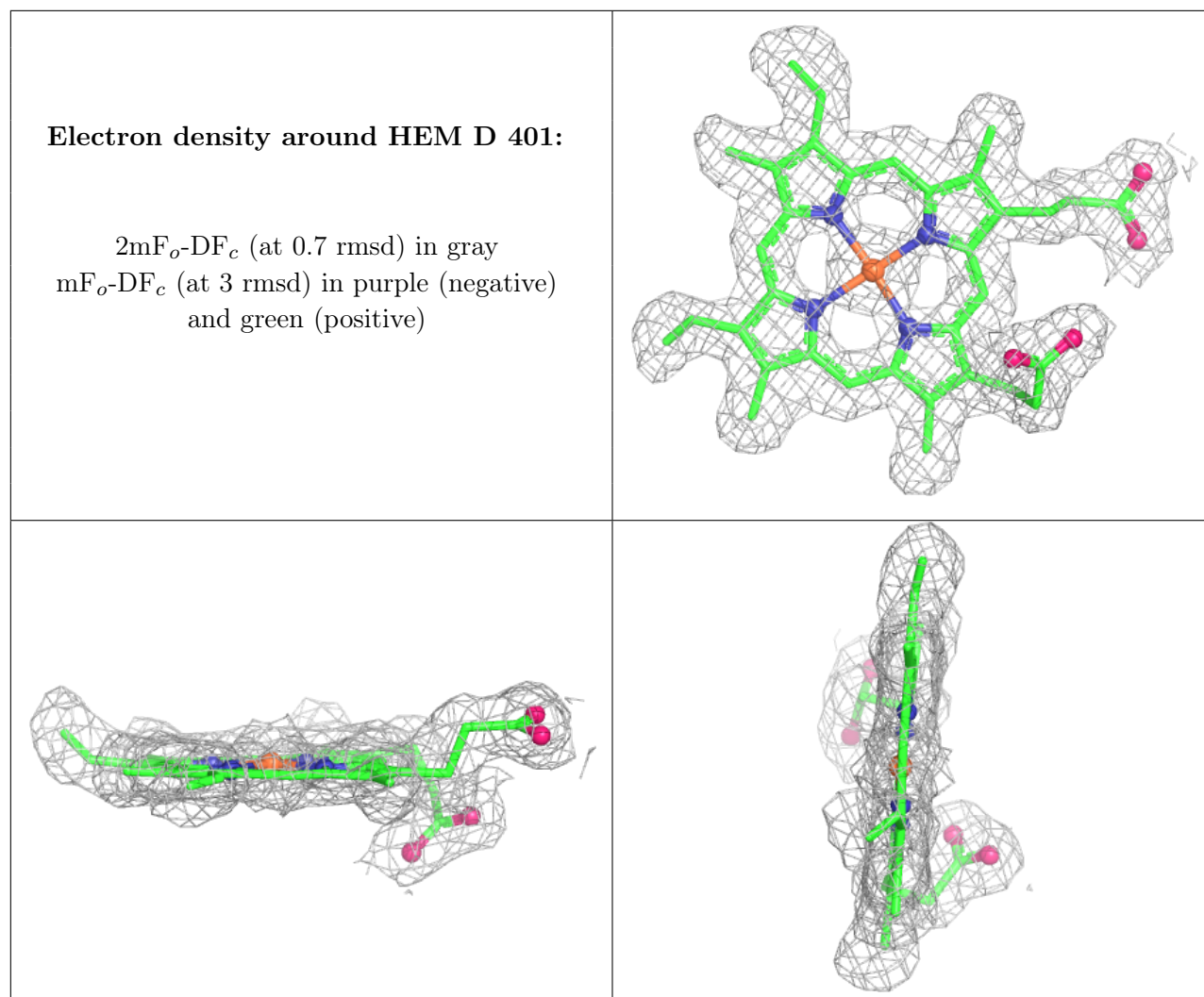
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



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)





6.5 Other polymers [i](#)

There are no such residues in this entry.