



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 26, 2024 – 01:30 pm BST

PDB ID : 8QYI
Title : OleP in complex with lithocholic acid in high salt crystallization conditions
Authors : Fata, F.; Costanzo, A.; Freda, I.; Gugole, E.; Bulfaro, G.; Barbizzi, L.; Di Renzo, M.; Savino, C.; Vallone, B.; Montemiglio, L.C.
Deposited on : 2023-10-26
Resolution : 2.30 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 : 2.37.1
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) : 2.37.1

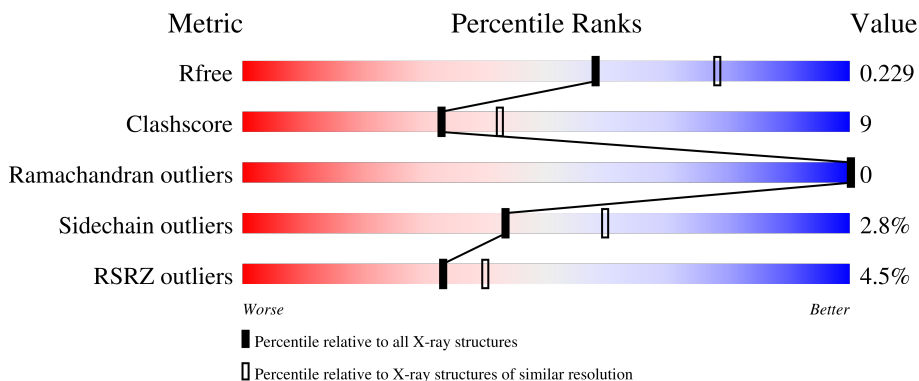
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 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	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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	398	85% 14% ..
1	B	398	86% 13% ..
1	C	398	88% 12%
1	D	398	81% 18% .
1	E	398	7% 82% 16% ..

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Mol	Chain	Length	Quality of chain
1	F	398	

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
4	FMT	A	505	-	-	X	-
4	FMT	A	524	-	-	-	X
4	FMT	B	503	-	-	-	X
4	FMT	B	511	-	-	-	X
4	FMT	B	513	-	-	X	-
4	FMT	C	519	-	-	-	X
4	FMT	C	520	-	-	-	X
4	FMT	D	505	-	-	X	-
4	FMT	D	514	-	-	X	-
4	FMT	E	505	-	-	-	X
4	FMT	F	507	-	-	-	X

2 Entry composition i

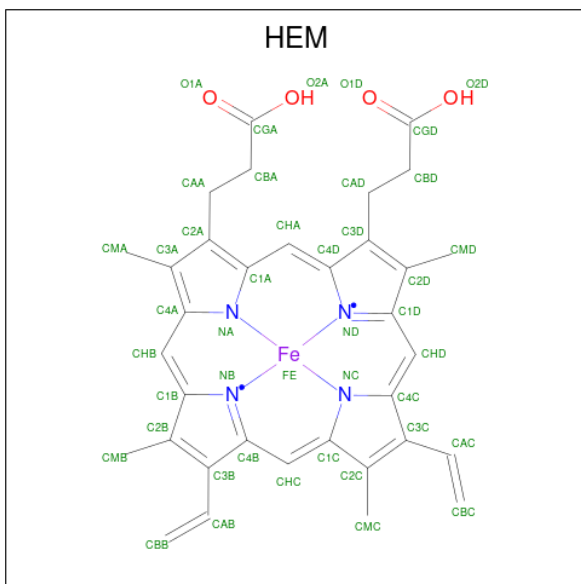
There are 6 unique types of molecules in this entry. The entry contains 20173 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Cytochrome P-450.

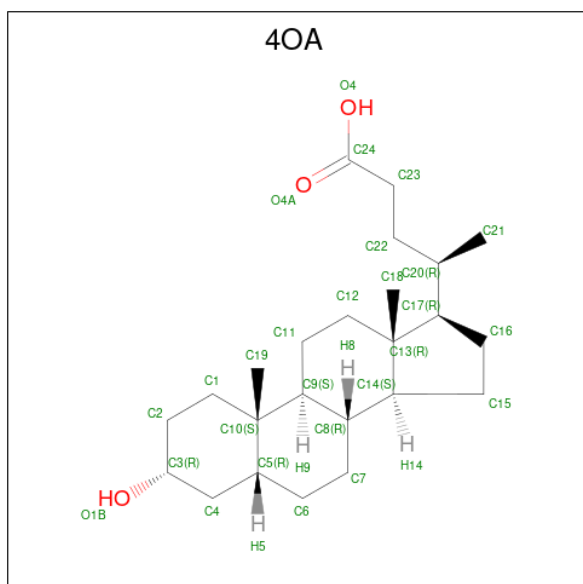
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	396	Total 3133	C 1975	N 559	O 584	S 15	0	8	0
1	B	396	Total 3108	C 1958	N 556	O 579	S 15	0	4	0
1	C	398	Total 3156	C 1988	N 567	O 587	S 14	0	9	0
1	D	397	Total 3122	C 1965	N 558	O 586	S 13	0	5	0
1	E	394	Total 3081	C 1939	N 554	O 575	S 13	0	1	0
1	F	396	Total 3094	C 1946	N 556	O 579	S 13	0	1	0

- Molecule 2 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$).



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 (3beta,5beta,14beta,17alpha)-3-hydroxycholestan-24-oic acid (three-letter code: 4OA) (formula: C₂₄H₄₀O₃) (labeled as "Ligand of Interest" by depositor).



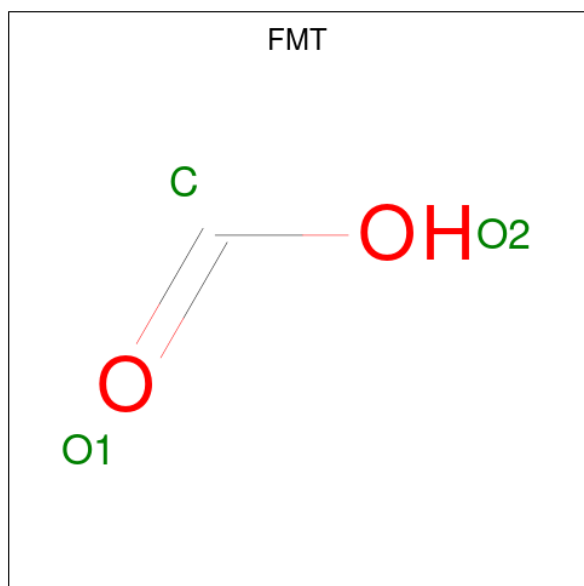
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			27	24	3		
3	B	1	Total	C	O	0	0
			27	24	3		
3	C	1	Total	C	O	0	0
			27	24	3		
3	D	1	Total	C	O	0	0
			27	24	3		
3	E	1	Total	C	O	0	0
			27	24	3		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	F	1	Total	C	O	0	0
			27	24	3		

- Molecule 4 is FORMIC ACID (three-letter code: FMT) (formula: CH₂O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			3	1	2		
4	A	1	Total	C	O	0	0
			3	1	2		
4	A	1	Total	C	O	0	0
			3	1	2		
4	A	1	Total	C	O	0	0
			3	1	2		
4	A	1	Total	C	O	0	0
			3	1	2		
4	A	1	Total	C	O	0	0
			3	1	2		
4	A	1	Total	C	O	0	0
			3	1	2		
4	A	1	Total	C	O	0	0
			3	1	2		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total 3	C 1	O 2	0	0
4	A	1	Total 3	C 1	O 2	0	0
4	A	1	Total 3	C 1	O 2	0	0
4	A	1	Total 3	C 1	O 2	0	0
4	A	1	Total 3	C 1	O 2	0	0
4	A	1	Total 3	C 1	O 2	0	0
4	A	1	Total 3	C 1	O 2	0	0
4	A	1	Total 3	C 1	O 2	0	0
4	A	1	Total 3	C 1	O 2	0	0
4	A	1	Total 3	C 1	O 2	0	0
4	A	1	Total 3	C 1	O 2	0	0
4	A	1	Total 3	C 1	O 2	0	0
4	A	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	B	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	C	1	Total 3	C 1	O 2	0	0
4	D	1	Total 3	C 1	O 2	0	0
4	D	1	Total 3	C 1	O 2	0	0
4	D	1	Total 3	C 1	O 2	0	0
4	D	1	Total 3	C 1	O 2	0	0
4	D	1	Total 3	C 1	O 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	D	1	Total 3	C 1	O 2	0	0
4	D	1	Total 3	C 1	O 2	0	0
4	D	1	Total 3	C 1	O 2	0	0
4	D	1	Total 3	C 1	O 2	0	0
4	D	1	Total 3	C 1	O 2	0	0
4	D	1	Total 3	C 1	O 2	0	0
4	D	1	Total 3	C 1	O 2	0	0
4	D	1	Total 3	C 1	O 2	0	0
4	D	1	Total 3	C 1	O 2	0	0
4	E	1	Total 3	C 1	O 2	0	0
4	E	1	Total 3	C 1	O 2	0	0
4	E	1	Total 3	C 1	O 2	0	0
4	E	1	Total 3	C 1	O 2	0	0
4	E	1	Total 3	C 1	O 2	0	0
4	E	1	Total 3	C 1	O 2	0	0
4	E	1	Total 3	C 1	O 2	0	0
4	E	1	Total 3	C 1	O 2	0	0
4	E	1	Total 3	C 1	O 2	0	0
4	E	1	Total 3	C 1	O 2	0	0
4	E	1	Total 3	C 1	O 2	0	0
4	F	1	Total 3	C 1	O 2	0	0
4	F	1	Total 3	C 1	O 2	0	0
4	F	1	Total 3	C 1	O 2	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	F	1	Total C O 3 1 2	0	0
4	F	1	Total C O 3 1 2	0	0
4	F	1	Total C O 3 1 2	0	0
4	F	1	Total C O 3 1 2	0	0
4	F	1	Total C O 3 1 2	0	0
4	F	1	Total C O 3 1 2	0	0
4	F	1	Total C O 3 1 2	0	0
4	F	1	Total C O 3 1 2	0	0

- Molecule 5 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total Na 1 1	0	0
5	B	1	Total Na 1 1	0	0
5	C	1	Total Na 1 1	0	0
5	D	1	Total Na 1 1	0	0
5	E	1	Total Na 1 1	0	0
5	F	1	Total Na 1 1	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	139	Total O 139 139	0	0
6	B	147	Total O 147 147	0	0
6	C	199	Total O 199 199	0	0

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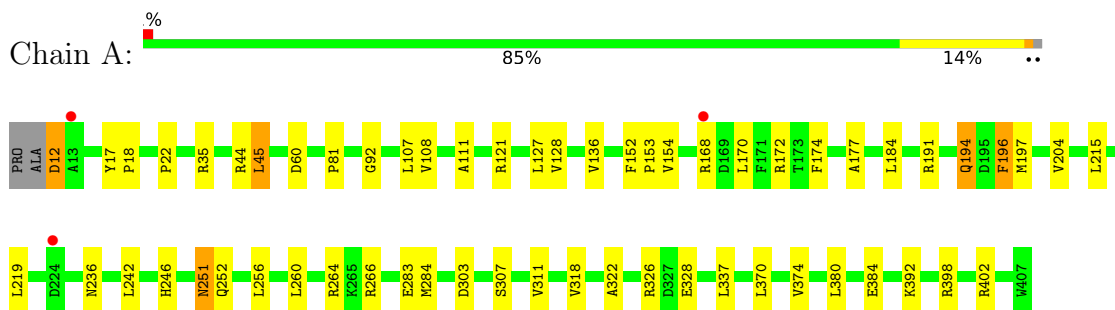
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	D	109	Total 109	O 109	0	0
6	E	77	Total 77	O 77	0	0
6	F	76	Total 76	O 76	0	0

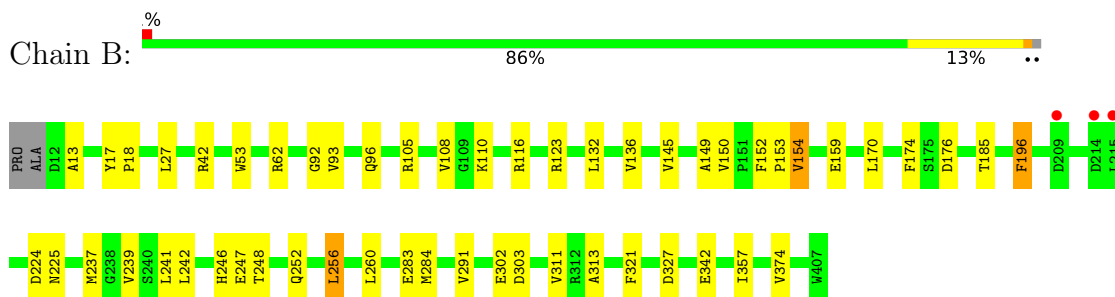
3 Residue-property plots [i](#)

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.

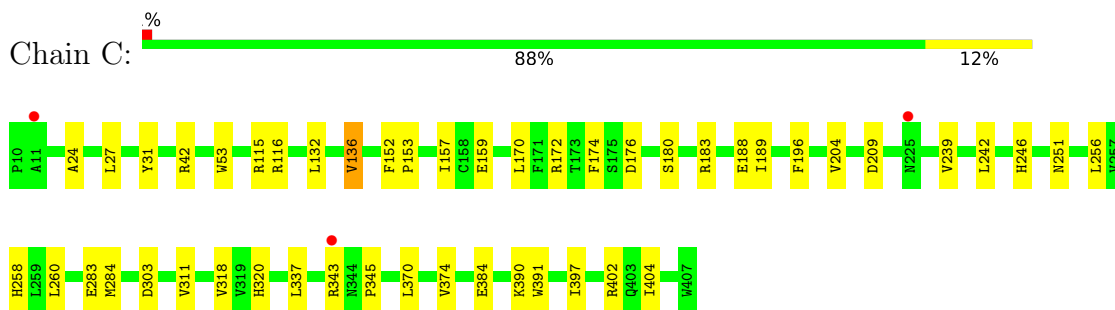
- Molecule 1: Cytochrome P-450



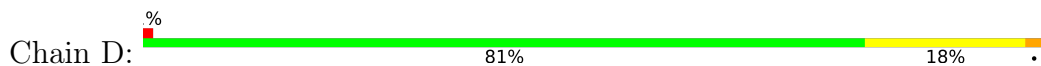
- Molecule 1: Cytochrome P-450

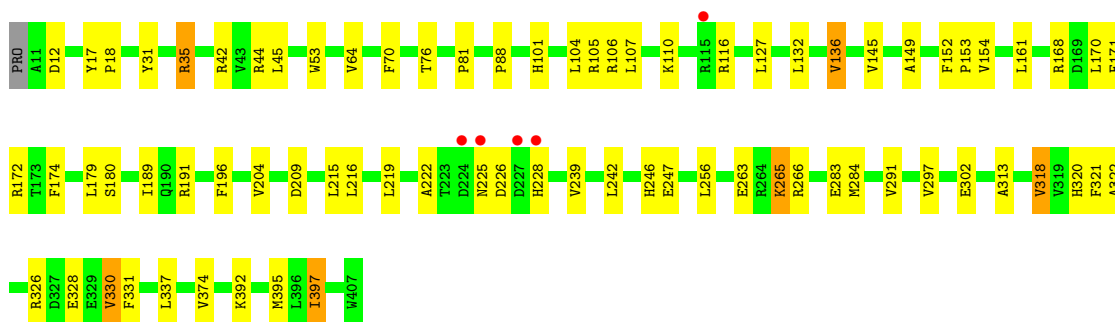


- Molecule 1: Cytochrome P-450

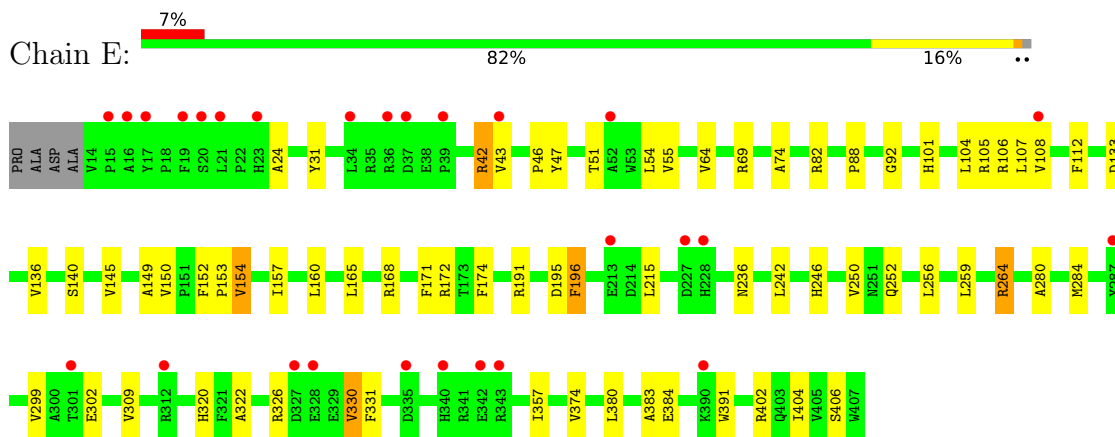


- Molecule 1: Cytochrome P-450

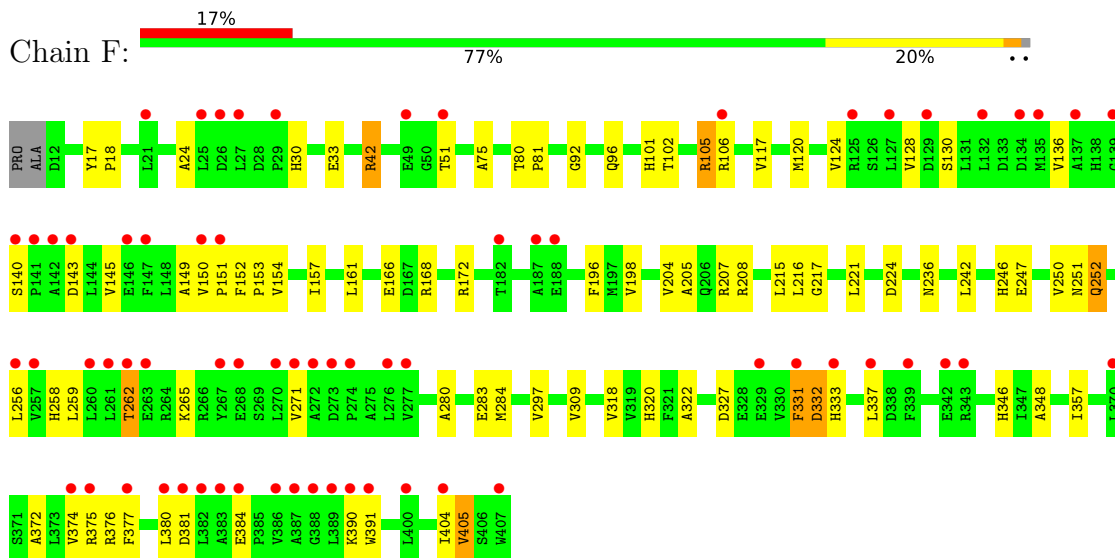




● Molecule 1: Cytochrome P-450



● Molecule 1: Cytochrome P-450



4 Data and refinement statistics i

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	249.37Å 109.27Å 160.66Å 90.00° 129.60° 90.00°	Depositor
Resolution (Å)	80.01 – 2.30 80.33 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.8 (80.01-2.30) 99.8 (80.33-2.30)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.94 (at 2.29Å)	Xtrriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.173 , 0.222 0.188 , 0.229	Depositor DCC
R_{free} test set	7213 reflections (4.90%)	wwPDB-VP
Wilson B-factor (Å ²)	46.2	Xtrriage
Anisotropy	0.252	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 37.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.011 for -h-2*1,-k,l	Xtrriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	20173	wwPDB-VP
Average B, all atoms (Å ²)	56.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 38.42 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 3.6981e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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: 4OA, FMT, HEM, NA

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	0/3224	0.97	0/4388
1	B	0.81	0/3187	0.97	0/4339
1	C	0.83	0/3245	0.98	0/4415
1	D	0.82	0/3204	0.99	2/4362 (0.0%)
1	E	0.78	0/3151	0.95	0/4291
1	F	0.78	0/3164	0.95	1/4309 (0.0%)
All	All	0.81	0/19175	0.97	3/26104 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	105	ARG	NE-CZ-NH2	-6.47	117.06	120.30
1	D	35	ARG	NE-CZ-NH1	5.32	122.96	120.30
1	D	35	ARG	NE-CZ-NH2	-5.09	117.75	120.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3133	0	3132	56	0
1	B	3108	0	3100	46	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	3156	0	3159	41	0
1	D	3122	0	3107	74	0
1	E	3081	0	3064	49	0
1	F	3094	0	3073	53	0
2	A	43	0	30	3	0
2	B	43	0	30	4	0
2	C	43	0	30	3	0
2	D	43	0	30	4	0
2	E	43	0	30	5	0
2	F	43	0	30	3	0
3	A	27	0	39	2	0
3	B	27	0	39	1	0
3	C	27	0	39	1	0
3	D	27	0	39	0	0
3	E	27	0	39	3	0
3	F	27	0	39	1	0
4	A	66	0	22	2	0
4	B	66	0	23	8	0
4	C	72	0	24	2	0
4	D	39	0	13	5	0
4	E	30	0	10	1	0
4	F	33	0	11	0	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
5	C	1	0	0	0	0
5	D	1	0	0	0	0
5	E	1	0	0	0	0
5	F	1	0	0	0	0
6	A	139	0	0	2	0
6	B	147	0	0	0	0
6	C	199	0	0	4	0
6	D	109	0	0	4	0
6	E	77	0	0	1	0
6	F	76	0	0	3	0
All	All	20173	0	19152	337	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 9.

All (337) 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:A:108:VAL:HG23	1:A:215[B]:LEU:CD1	1.60	1.31
1:A:108:VAL:CG2	1:A:215[B]:LEU:HD11	1.67	1.22
1:A:108:VAL:CG2	1:A:215[B]:LEU:HD21	1.94	0.98
1:A:108:VAL:HG21	1:A:215[B]:LEU:HD21	1.43	0.97
1:D:174:PHE:HB3	1:D:196:PHE:CD2	2.03	0.94
1:D:174:PHE:HB3	1:D:196:PHE:HD2	1.29	0.94
1:B:174:PHE:HB3	1:B:196:PHE:HD2	1.33	0.89
1:B:105:ARG:HD2	1:B:357:ILE:HD12	1.56	0.88
1:D:76:THR:HA	1:D:88:PRO:HG2	1.58	0.84
1:E:42:ARG:HG3	1:E:51:THR:HG22	1.60	0.84
1:C:174:PHE:HB3	1:C:196:PHE:HD2	1.44	0.82
1:B:174:PHE:HB3	1:B:196:PHE:CD2	2.15	0.81
1:F:145:VAL:HA	1:F:149:ALA:HB3	1.64	0.80
1:C:402:ARG:HD3	1:C:404:ILE:HG13	1.63	0.79
1:E:42:ARG:HG3	1:E:51:THR:CG2	2.12	0.78
1:D:101:HIS:NE2	1:D:105:ARG:HD2	1.99	0.77
1:D:174:PHE:CB	1:D:196:PHE:CD2	2.67	0.77
1:D:152:PHE:HB3	1:D:153:PRO:HD3	1.67	0.76
1:A:154:VAL:HG11	1:A:168:ARG:HD3	1.69	0.75
1:D:228:HIS:HB2	6:D:682:HOH:O	1.87	0.73
1:D:174:PHE:CB	1:D:196:PHE:HD2	2.00	0.73
1:A:108:VAL:CG2	1:A:215[B]:LEU:CD2	2.67	0.73
1:A:172:ARG:HD2	1:A:246:HIS:HE1	1.54	0.72
1:D:242:LEU:O	1:D:246:HIS:HD2	1.72	0.72
1:D:12:ASP:HB2	1:D:44:ARG:HH22	1.55	0.72
1:B:174:PHE:CB	1:B:196:PHE:CD2	2.73	0.72
1:C:174:PHE:CB	1:C:196:PHE:HD2	2.03	0.71
1:D:222:ALA:O	1:D:226:ASP:HB2	1.90	0.71
1:B:174:PHE:CB	1:B:196:PHE:HD2	2.04	0.71
1:E:108:VAL:HG12	1:E:215:LEU:HD11	1.74	0.69
1:A:108:VAL:HG23	1:A:215[B]:LEU:CG	2.22	0.69
1:A:108:VAL:HG23	1:A:215[B]:LEU:HD11	0.76	0.68
1:D:174:PHE:CD2	1:D:196:PHE:CD2	2.82	0.67
1:F:242:LEU:O	1:F:246:HIS:HD2	1.78	0.67
1:F:280:ALA:O	1:F:284:MET:HG3	1.94	0.67
1:D:326:ARG:HD3	6:D:652:HOH:O	1.93	0.67
1:E:256:LEU:HD22	1:E:284:MET:HB3	1.77	0.67
1:F:161:LEU:HD23	1:F:215:LEU:HD12	1.77	0.67
1:C:174:PHE:HB3	1:C:196:PHE:CD2	2.30	0.67
1:C:174:PHE:CB	1:C:196:PHE:CD2	2.78	0.66
1:D:12:ASP:HB2	1:D:44:ARG:NH2	2.10	0.66
1:C:256:LEU:HD22	1:C:284:MET:HB3	1.75	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:291:VAL:HB	4:D:514:FMT:H	1.76	0.66
1:D:35:ARG:NH2	6:D:602:HOH:O	2.27	0.66
1:E:384:GLU:OE1	1:E:402:ARG:NH1	2.27	0.66
1:A:108:VAL:HG21	1:A:215[B]:LEU:CD2	2.21	0.66
1:A:326:ARG:HD3	6:A:665:HOH:O	1.95	0.65
1:D:291:VAL:HB	4:D:514:FMT:C	2.27	0.65
2:D:501:HEM:HHC	2:D:501:HEM:HBB2	1.78	0.65
1:C:283:GLU:HG3	1:C:337:LEU:HD12	1.79	0.65
1:C:174:PHE:CD2	1:C:196:PHE:CD2	2.84	0.65
1:A:108:VAL:CG2	1:A:215[B]:LEU:CD1	2.47	0.64
1:A:108:VAL:CG2	1:A:215[B]:LEU:CG	2.76	0.64
1:C:251:ASN:HD22	1:C:397:ILE:HD12	1.62	0.64
1:B:152:PHE:HB3	1:B:153:PRO:HD3	1.78	0.64
1:A:328:GLU:HB2	4:A:505:FMT:C	2.28	0.63
1:D:256:LEU:HD22	1:D:284:MET:HB3	1.79	0.63
2:F:501:HEM:HMB2	2:F:501:HEM:HBB2	1.81	0.63
1:A:251:ASN:HD21	1:A:392:LYS:NZ	1.97	0.63
1:A:260:LEU:HG	1:A:284[A]:MET:HE1	1.80	0.63
1:E:191[A]:ARG:NH2	4:E:512:FMT:O1	2.32	0.63
1:C:196:PHE:HD1	1:C:239:VAL:HG22	1.63	0.62
1:E:157:ILE:HD12	1:E:160:LEU:HD23	1.80	0.62
1:E:191[A]:ARG:CZ	1:E:195:ASP:OD1	2.47	0.62
1:E:256:LEU:HD22	1:E:284:MET:CB	2.30	0.62
2:B:501:HEM:HHC	2:B:501:HEM:HBB2	1.82	0.62
1:D:101:HIS:HE1	2:D:501:HEM:O2D	1.83	0.62
1:A:197:MET:HG3	6:A:700:HOH:O	2.00	0.61
1:C:174:PHE:HD2	1:C:196:PHE:CD2	2.18	0.61
1:B:291:VAL:HB	4:B:513:FMT:C	2.31	0.61
1:D:392:LYS:HB3	1:D:395:MET:CE	2.31	0.61
1:B:321:PHE:HD2	4:B:513:FMT:H	1.66	0.60
1:D:174:PHE:HD2	1:D:196:PHE:CD2	2.18	0.60
1:D:110:LYS:O	1:D:116:ARG:HG3	2.00	0.60
1:F:150:VAL:HB	1:F:151:PRO:HD3	1.81	0.60
1:A:121:ARG:HD2	1:D:42:ARG:HH21	1.67	0.59
1:C:390:LYS:NZ	6:C:604:HOH:O	2.34	0.59
1:D:196:PHE:HD1	1:D:239:VAL:HG22	1.67	0.59
1:E:259:LEU:HB2	1:E:284:MET:CE	2.32	0.59
1:D:392:LYS:HB3	1:D:395:MET:HE2	1.85	0.59
1:C:343[B]:ARG:NH1	1:C:345:PRO:HG3	2.18	0.59
1:F:247:GLU:O	1:F:251:ASN:ND2	2.35	0.59
1:E:31:TYR:CZ	1:E:320:HIS:CD2	2.91	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:174:PHE:HB2	1:B:196:PHE:CE2	2.38	0.58
1:B:196:PHE:HD1	1:B:239:VAL:HG22	1.67	0.58
1:F:166:GLU:O	1:F:166:GLU:HG2	2.02	0.58
1:C:251:ASN:HD22	1:C:397:ILE:CD1	2.16	0.58
1:C:116:ARG:NH1	6:C:606:HOH:O	2.37	0.58
1:E:191[A]:ARG:NH2	1:E:195:ASP:OD1	2.37	0.58
1:F:102:THR:O	1:F:106[A]:ARG:HG3	2.03	0.58
1:F:320:HIS:CE1	1:F:322:ALA:HB3	2.39	0.58
1:D:283:GLU:HG3	1:D:337:LEU:HD12	1.86	0.57
1:B:242:LEU:O	1:B:246:HIS:HD2	1.86	0.57
1:D:174:PHE:HB2	1:D:196:PHE:CE2	2.38	0.57
1:C:196:PHE:CD1	1:C:239:VAL:HG22	2.40	0.57
1:D:174:PHE:CB	1:D:196:PHE:CE2	2.88	0.57
1:F:101:HIS:HD2	6:F:606:HOH:O	1.86	0.57
1:B:256:LEU:HD22	1:B:284[A]:MET:HB3	1.87	0.56
1:F:236:ASN:OD1	3:F:502:4OA:O4A	2.23	0.56
1:A:266:ARG:HD3	1:A:337:LEU:HD23	1.87	0.56
1:D:145:VAL:HA	1:D:149:ALA:HB3	1.86	0.56
1:E:133:ASP:O	1:E:136:VAL:HG22	2.04	0.56
1:D:132:LEU:O	1:D:136:VAL:HG13	2.05	0.56
1:B:260:LEU:HG	1:B:284[A]:MET:HE1	1.86	0.56
1:D:154:VAL:HG11	1:D:168:ARG:HD2	1.88	0.55
1:C:42:ARG:HG2	1:C:53:TRP:CZ3	2.41	0.55
1:B:93[A]:VAL:HG21	1:B:237:MET:SD	2.47	0.55
1:D:196:PHE:CD1	1:D:239:VAL:HG13	2.42	0.55
1:F:207:ARG:HG2	1:F:217:GLY:HA2	1.89	0.55
1:F:246:HIS:O	1:F:250:VAL:HG23	2.07	0.55
1:A:172:ARG:HD2	1:A:246:HIS:CE1	2.40	0.55
1:B:123:ARG:HD3	1:B:159:GLU:OE1	2.07	0.55
1:A:12:ASP:HB2	1:A:44:ARG:HH12	1.72	0.55
1:A:236:ASN:HD21	3:A:502:4OA:C24	2.20	0.55
2:C:501:HEM:HBC2	2:C:501:HEM:HMC2	1.89	0.54
2:B:501:HEM:HBC2	2:B:501:HEM:HMC2	1.90	0.54
1:F:172:ARG:HD2	1:F:246:HIS:CE1	2.43	0.54
1:D:191:ARG:HD3	6:E:620:HOH:O	2.06	0.54
1:C:172:ARG:HD2	1:C:246:HIS:CE1	2.43	0.54
1:A:45:LEU:HD22	1:A:81:PRO:CB	2.38	0.54
1:D:297:VAL:HG22	1:D:318:VAL:HG23	1.91	0.53
1:C:283:GLU:HG3	1:C:337:LEU:CD1	2.38	0.53
1:F:221:LEU:O	1:F:224:ASP:HB2	2.09	0.53
1:C:170:LEU:HD23	1:C:170:LEU:C	2.30	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:101:HIS:HE1	2:E:501:HEM:O2D	1.91	0.52
1:C:188:GLU:HB2	6:C:608:HOH:O	2.09	0.52
1:D:179:LEU:HD11	1:D:247:GLU:HG3	1.92	0.52
1:D:101:HIS:HD2	6:D:601:HOH:O	1.93	0.52
1:D:263:GLU:HB3	1:D:265[A]:LYS:HZ3	1.75	0.52
1:E:145:VAL:HG21	1:E:402:ARG:HA	1.91	0.52
1:F:105:ARG:HD3	1:F:357:ILE:HD12	1.91	0.52
1:D:152:PHE:CB	1:D:153:PRO:HD3	2.36	0.52
1:A:242:LEU:O	1:A:246:HIS:HD2	1.91	0.51
1:F:17:TYR:CD1	1:F:18:PRO:HA	2.46	0.51
1:A:45:LEU:HD22	1:A:81:PRO:HB3	1.92	0.51
1:D:107:LEU:HD22	1:D:219:LEU:HD23	1.92	0.51
2:D:501:HEM:HBC2	2:D:501:HEM:HMC2	1.93	0.51
1:B:150:VAL:O	1:B:154:VAL:HG13	2.11	0.51
1:C:159[A]:GLU:OE2	4:C:520:FMT:O2	2.29	0.51
1:E:69:ARG:HD2	1:E:302:GLU:CD	2.31	0.51
1:E:150:VAL:O	1:E:154:VAL:HG13	2.11	0.51
1:D:31:TYR:CZ	1:D:320:HIS:CD2	2.99	0.50
1:A:251:ASN:HD21	1:A:392:LYS:HZ2	1.58	0.50
1:D:174:PHE:HB2	1:D:196:PHE:HE2	1.74	0.50
1:B:17:TYR:CD1	1:B:18:PRO:HA	2.47	0.50
1:F:256:LEU:O	1:F:284:MET:HE1	2.11	0.50
1:A:170:LEU:C	1:A:170:LEU:HD23	2.32	0.50
1:A:191:ARG:NH2	1:A:194[A]:GLN:OE1	2.45	0.50
1:E:42:ARG:HG3	1:E:51:THR:HG21	1.93	0.50
1:F:161:LEU:O	1:F:216:LEU:HB2	2.12	0.50
1:F:283:GLU:HG3	1:F:337:LEU:HD12	1.92	0.50
1:B:291:VAL:HB	4:B:513:FMT:H	1.92	0.50
1:A:256:LEU:HD22	1:A:284[A]:MET:HB3	1.93	0.49
2:A:501:HEM:HBB2	2:A:501:HEM:HMB2	1.93	0.49
1:E:55:VAL:HG21	1:E:64:VAL:HG21	1.93	0.49
1:A:35:ARG:HH11	4:A:505:FMT:C	2.26	0.49
1:F:24:ALA:HA	1:F:391:TRP:CE2	2.47	0.49
2:F:501:HEM:HBB2	2:F:501:HEM:CMB	2.42	0.49
1:B:256:LEU:HD22	1:B:284[B]:MET:HB3	1.94	0.49
1:D:168:ARG:HA	1:D:171:PHE:CE2	2.46	0.49
1:E:152:PHE:HB3	1:E:153:PRO:HD3	1.93	0.49
1:F:30:HIS:HD2	1:F:33:GLU:OE2	1.95	0.49
1:F:42:ARG:HG2	1:F:51:THR:OG1	2.12	0.49
1:C:27:LEU:HD13	6:C:695:HOH:O	2.13	0.49
1:E:264:ARG:NH2	1:E:380:LEU:O	2.46	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:92:GLY:O	1:B:96:GLN:HG2	2.13	0.48
1:F:259:LEU:HB2	1:F:284:MET:CE	2.43	0.48
1:D:172:ARG:HD2	1:D:246:HIS:HE1	1.77	0.48
1:F:124:VAL:O	1:F:128:VAL:HG23	2.13	0.48
1:F:154:VAL:HG11	1:F:168:ARG:HD2	1.95	0.48
1:B:110:LYS:NZ	1:B:116:ARG:HE	2.10	0.48
1:D:170:LEU:C	1:D:170:LEU:HD23	2.33	0.48
1:F:258:HIS:O	1:F:262:THR:OG1	2.27	0.48
2:A:501:HEM:C1A	3:A:502:4OA:H6	2.48	0.48
1:B:196:PHE:CD1	1:B:239:VAL:HG22	2.46	0.48
1:A:22:PRO:HB2	1:A:398:ARG:HD3	1.96	0.48
1:E:242:LEU:O	1:E:246:HIS:HD2	1.96	0.48
1:B:176:ASP:OD1	1:B:247:GLU:OE2	2.32	0.48
1:D:242:LEU:O	1:D:246:HIS:CD2	2.61	0.48
1:A:92:GLY:HA2	1:A:236:ASN:HD22	1.79	0.48
1:B:196:PHE:CD1	1:B:239:VAL:HG13	2.49	0.48
1:D:265[A]:LYS:NZ	1:D:265[A]:LYS:HB2	2.28	0.47
1:E:236:ASN:HD21	3:E:502:4OA:C24	2.27	0.47
1:B:237:MET:HE3	1:B:241:LEU:HG	1.94	0.47
1:C:152:PHE:HB3	1:C:153:PRO:HD3	1.95	0.47
1:D:107:LEU:HD21	1:D:222:ALA:CB	2.45	0.47
1:D:263:GLU:HB3	1:D:265[A]:LYS:NZ	2.29	0.47
1:E:43:VAL:HG21	1:E:54:LEU:HB2	1.97	0.47
1:E:330:VAL:HG22	1:E:331:PHE:CD2	2.50	0.47
1:F:172:ARG:HD2	1:F:246:HIS:HE1	1.78	0.47
1:F:208:ARG:NH2	6:F:604:HOH:O	2.46	0.47
1:A:152:PHE:HB3	1:A:153:PRO:HD3	1.96	0.47
1:B:248:THR:O	1:B:252:GLN:HB2	2.15	0.47
1:D:179:LEU:HD13	1:D:397:ILE:HD11	1.96	0.47
1:A:172:ARG:CD	1:A:246:HIS:CE1	2.98	0.47
1:A:322:ALA:O	1:A:326:ARG:HG2	2.15	0.47
1:C:132:LEU:O	1:C:136:VAL:HG13	2.15	0.47
1:D:322:ALA:O	1:D:326:ARG:HG2	2.15	0.47
1:E:24:ALA:HA	1:E:391:TRP:CE2	2.50	0.47
1:A:303:ASP:HA	1:A:311:VAL:O	2.15	0.47
1:D:265[A]:LYS:HB2	1:D:265[A]:LYS:HZ2	1.80	0.47
1:B:42:ARG:HG2	1:B:53:TRP:CZ3	2.50	0.46
1:C:174:PHE:HB2	1:C:196:PHE:CE2	2.50	0.46
1:A:256:LEU:HD22	1:A:284[B]:MET:HB3	1.95	0.46
1:F:101:HIS:HE1	2:F:501:HEM:O2D	1.98	0.46
1:D:104:LEU:O	1:D:107:LEU:HB2	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:75:ALA:HA	1:F:80:THR:HG21	1.97	0.46
4:B:514:FMT:O1	4:B:517:FMT:C	2.63	0.46
1:C:31:TYR:CZ	1:C:320:HIS:CD2	3.04	0.46
1:D:45:LEU:HD12	1:D:81:PRO:CB	2.46	0.46
1:E:252:GLN:HA	1:E:252:GLN:OE1	2.16	0.46
1:B:321:PHE:CD2	4:B:513:FMT:H	2.50	0.46
1:E:322:ALA:O	1:E:326:ARG:HG2	2.15	0.46
2:E:501:HEM:HBC2	2:E:501:HEM:HMC2	1.99	0.45
1:A:172:ARG:CD	1:A:246:HIS:HE1	2.27	0.45
1:B:174:PHE:HB2	1:B:196:PHE:HE2	1.80	0.45
1:B:145:VAL:HA	1:B:149:ALA:HB3	1.98	0.45
1:C:242:LEU:O	1:C:246:HIS:HD2	1.99	0.45
1:E:172:ARG:NH1	1:E:246:HIS:HE1	2.14	0.45
1:B:170:LEU:HD12	1:B:170:LEU:HA	1.64	0.45
1:D:161:LEU:O	1:D:216:LEU:HG	2.17	0.45
1:F:161:LEU:HB3	1:F:216:LEU:HD13	1.98	0.45
1:F:332:ASP:O	1:F:333:HIS:C	2.55	0.45
1:B:174:PHE:CB	1:B:196:PHE:CE2	2.98	0.45
2:E:501:HEM:HBB2	2:E:501:HEM:HMB2	1.99	0.45
1:F:375:ARG:HG3	1:F:376:ARG:HG3	1.99	0.45
1:A:111:ALA:HB2	1:A:215[A]:LEU:HD21	1.99	0.45
1:C:176:ASP:OD1	1:C:183:ARG:NH2	2.50	0.45
1:D:64:VAL:HA	1:D:70:PHE:CD2	2.52	0.45
1:A:111:ALA:CB	1:A:215[A]:LEU:HD21	2.47	0.44
2:D:501:HEM:HBC2	2:D:501:HEM:CMC	2.47	0.44
1:E:46:PRO:HB2	1:E:47:TYR:CD2	2.52	0.44
1:A:260:LEU:HG	1:A:284[A]:MET:CE	2.45	0.44
3:C:502:4OA:H21A	3:C:502:4OA:H12	1.99	0.44
1:B:13:ALA:O	1:C:115[B]:ARG:NE	2.51	0.44
2:C:501:HEM:HBC2	2:C:501:HEM:CMC	2.47	0.44
1:F:117:VAL:O	1:F:120:MET:HG2	2.16	0.44
1:F:346:HIS:HD2	1:F:348:ALA:H	1.65	0.44
1:D:330:VAL:HG22	1:D:331:PHE:CE2	2.53	0.44
1:E:172:ARG:HH11	1:E:246:HIS:HE1	1.64	0.44
1:F:372:ALA:O	1:F:376:ARG:HB2	2.18	0.44
1:B:185:THR:HB	4:B:511:FMT:O2	2.18	0.44
2:B:501:HEM:C1A	3:B:502:4OA:H6	2.53	0.44
1:D:172:ARG:HD2	1:D:246:HIS:CE1	2.53	0.44
2:A:501:HEM:HMC2	2:A:501:HEM:HBC2	1.99	0.43
1:F:327:ASP:H	1:F:331:PHE:HE1	1.66	0.43
1:A:174:PHE:HB3	1:A:196:PHE:CD2	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:108:VAL:HG23	1:B:357:ILE:HD11	1.99	0.43
1:B:321:PHE:H	4:B:513:FMT:C	2.30	0.43
1:C:258:HIS:HE1	4:C:510:FMT:O2	2.00	0.43
1:E:104:LEU:O	1:E:107:LEU:HB3	2.18	0.43
1:D:180:SER:OG	1:D:189:ILE:HD11	2.19	0.43
1:F:152:PHE:HB3	1:F:153:PRO:HD3	2.00	0.43
1:B:132:LEU:O	1:B:136:VAL:HG13	2.18	0.43
1:D:321:PHE:HB2	4:D:514:FMT:H	2.00	0.43
1:F:150:VAL:O	1:F:154:VAL:CG2	2.67	0.43
1:B:62:ARG:HE	4:B:506:FMT:C	2.30	0.43
1:A:108:VAL:CG2	1:A:215[A]:LEU:HD13	2.48	0.43
1:B:27:LEU:HD23	1:B:27:LEU:HA	1.91	0.43
1:E:145:VAL:HA	1:E:149:ALA:HB3	1.99	0.43
3:E:502:4OA:H21A	3:E:502:4OA:H18B	2.00	0.43
1:A:215[B]:LEU:HD12	1:A:215[B]:LEU:HA	1.78	0.43
1:A:17:TYR:HA	1:A:18:PRO:C	2.39	0.43
1:B:110:LYS:HZ3	1:B:116:ARG:HE	1.66	0.43
1:D:42:ARG:NH2	1:D:53:TRP:CZ2	2.86	0.43
1:F:161:LEU:CD2	1:F:215:LEU:HD12	2.48	0.43
1:B:150:VAL:O	1:B:154:VAL:CG1	2.67	0.42
1:F:92:GLY:O	1:F:96:GLN:HG2	2.18	0.42
1:A:121:ARG:CD	1:D:42:ARG:HH21	2.32	0.42
1:B:283:GLU:OE1	1:B:283:GLU:HA	2.19	0.42
1:B:303:ASP:HA	1:B:311:VAL:O	2.19	0.42
1:D:265[B]:LYS:HG3	1:D:266:ARG:N	2.34	0.42
1:F:81:PRO:O	1:F:297:VAL:HG21	2.19	0.42
1:A:370:LEU:O	1:A:374:VAL:HB	2.19	0.42
1:B:302:GLU:HA	1:B:313:ALA:HB2	2.01	0.42
1:C:260:LEU:CD1	1:C:370[B]:LEU:HD11	2.49	0.42
1:A:283:GLU:HA	1:A:283:GLU:OE1	2.19	0.42
1:F:205:ALA:O	1:F:208:ARG:HB2	2.20	0.42
2:C:501:HEM:HBB2	2:C:501:HEM:HMB2	2.02	0.42
1:E:112:PHE:CZ	1:E:160:LEU:HD21	2.55	0.42
1:C:384:GLU:OE2	1:C:402:ARG:HD2	2.20	0.42
1:E:46:PRO:HB2	1:E:47:TYR:CE2	2.55	0.42
1:E:92:GLY:HA2	1:E:236:ASN:HD22	1.84	0.42
1:D:161:LEU:HD23	1:D:215:LEU:HD12	2.02	0.42
1:D:283:GLU:OE1	1:D:283:GLU:HA	2.20	0.42
1:E:383:ALA:HB3	1:E:404:ILE:HG22	2.02	0.42
1:A:384:GLU:OE2	1:A:402:ARG:HD3	2.20	0.42
2:E:501:HEM:C1A	3:E:502:4OA:H6	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:196:PHE:CD1	1:D:239:VAL:HG22	2.52	0.42
1:D:283:GLU:HG3	1:D:337:LEU:CD1	2.49	0.41
1:A:45:LEU:HD22	1:A:81:PRO:HB2	2.02	0.41
1:F:271:VAL:HA	1:F:374:VAL:HG13	2.01	0.41
1:A:264:ARG:NH1	1:A:380:LEU:O	2.53	0.41
1:E:31:TYR:CE1	1:E:320:HIS:CD2	3.08	0.41
1:E:168:ARG:HA	1:E:171:PHE:CE2	2.54	0.41
1:F:377:PHE:O	1:F:380:LEU:HB2	2.20	0.41
1:A:107:LEU:HD21	1:A:219:LEU:CD2	2.50	0.41
1:D:35:ARG:HH11	4:D:505:FMT:C	2.33	0.41
1:E:246:HIS:O	1:E:250:VAL:HG23	2.21	0.41
1:A:60:ASP:OD2	1:A:307:SER:OG	2.33	0.41
1:C:157:ILE:HD12	1:C:157:ILE:HA	1.96	0.41
1:C:402:ARG:HD3	1:C:404:ILE:CG1	2.40	0.41
1:A:128:VAL:HG23	1:A:152:PHE:CE1	2.55	0.41
1:F:143:ASP:HA	1:F:404:ILE:HA	2.02	0.41
2:B:501:HEM:HBC2	2:B:501:HEM:CMC	2.51	0.41
1:C:303:ASP:HA	1:C:311:VAL:O	2.20	0.41
1:D:302:GLU:HA	1:D:313:ALA:HB2	2.02	0.41
1:B:327:ASP:OD1	1:B:327:ASP:C	2.59	0.41
1:D:170:LEU:HA	1:E:106:ARG:HE	1.86	0.41
1:E:191[A]:ARG:HA	1:E:191[A]:ARG:HD2	1.85	0.41
1:E:280:ALA:O	1:E:284:MET:HG3	2.21	0.41
1:A:196:PHE:CZ	1:A:242:LEU:HD23	2.56	0.41
1:B:252:GLN:OE1	1:B:252:GLN:HA	2.20	0.41
1:C:24:ALA:HA	1:C:391:TRP:CE2	2.56	0.41
1:D:328[B]:GLU:HB2	4:D:505:FMT:O1	2.20	0.41
1:E:140:SER:OG	1:E:406:SER:HA	2.20	0.41
1:F:252:GLN:O	1:F:256:LEU:HD13	2.21	0.41
1:F:381:ASP:O	1:F:405:VAL:HG22	2.21	0.41
1:D:330:VAL:HG22	1:D:331:PHE:CD2	2.56	0.41
1:E:82:ARG:HD3	1:E:88:PRO:HD3	2.02	0.41
1:C:397:ILE:HG21	1:C:397:ILE:HD13	1.81	0.40
1:D:101:HIS:O	1:D:105:ARG:HG3	2.21	0.40
1:E:165:LEU:HD12	1:E:165:LEU:HA	1.94	0.40
1:E:174:PHE:HB3	1:E:196:PHE:CD2	2.56	0.40
1:C:42:ARG:HG2	1:C:53:TRP:CE3	2.56	0.40
1:D:17:TYR:HA	1:D:18:PRO:C	2.41	0.40
1:E:74:ALA:HB3	1:E:299:VAL:HB	2.04	0.40
2:E:501:HEM:HBC2	2:E:501:HEM:CMC	2.51	0.40
1:F:30:HIS:HE1	6:F:662:HOH:O	2.05	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:252:GLN:OE1	1:F:252:GLN:HA	2.20	0.40
1:C:180:SER:OG	1:C:189:ILE:HD11	2.21	0.40
1:E:105:ARG:CZ	1:E:357:ILE:HB	2.52	0.40
1:F:157:ILE:HD12	1:F:157:ILE:HA	1.89	0.40
1:A:177:ALA:HA	1:A:184:LEU:HD12	2.03	0.40
1:D:106:ARG:HA	1:D:106:ARG:HD2	1.95	0.40
1:C:172:ARG:HD2	1:C:246:HIS:HE1	1.86	0.40
1:F:327:ASP:N	1:F:331:PHE:HE1	2.19	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	402/398 (101%)	385 (96%)	17 (4%)	0	100	100
1	B	398/398 (100%)	387 (97%)	11 (3%)	0	100	100
1	C	405/398 (102%)	395 (98%)	10 (2%)	0	100	100
1	D	400/398 (100%)	374 (94%)	26 (6%)	0	100	100
1	E	393/398 (99%)	378 (96%)	15 (4%)	0	100	100
1	F	395/398 (99%)	376 (95%)	19 (5%)	0	100	100
All	All	2393/2388 (100%)	2295 (96%)	98 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	340/333 (102%)	329 (97%)	11 (3%)	39	54
1	B	336/333 (101%)	329 (98%)	7 (2%)	53	70
1	C	342/333 (103%)	337 (98%)	5 (2%)	65	79
1	D	337/333 (101%)	326 (97%)	11 (3%)	38	53
1	E	332/333 (100%)	325 (98%)	7 (2%)	53	70
1	F	333/333 (100%)	316 (95%)	17 (5%)	24	33
All	All	2020/1998 (101%)	1962 (97%)	58 (3%)	43	58

All (58) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	12	ASP
1	A	45	LEU
1	A	127	LEU
1	A	136	VAL
1	A	194[A]	GLN
1	A	194[B]	GLN
1	A	196	PHE
1	A	204	VAL
1	A	251	ASN
1	A	252	GLN
1	A	318	VAL
1	B	154	VAL
1	B	196	PHE
1	B	224	ASP
1	B	225	ASN
1	B	256	LEU
1	B	342	GLU
1	B	374	VAL
1	C	136	VAL
1	C	204	VAL
1	C	209	ASP
1	C	318	VAL
1	C	374	VAL
1	D	127	LEU
1	D	136	VAL
1	D	204	VAL
1	D	209	ASP

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Mol	Chain	Res	Type
1	D	225	ASN
1	D	265[A]	LYS
1	D	265[B]	LYS
1	D	318	VAL
1	D	330	VAL
1	D	374	VAL
1	D	397	ILE
1	E	42	ARG
1	E	154	VAL
1	E	196	PHE
1	E	264	ARG
1	E	309	VAL
1	E	330	VAL
1	E	374	VAL
1	F	42	ARG
1	F	130	SER
1	F	136	VAL
1	F	140	SER
1	F	196	PHE
1	F	198	VAL
1	F	204	VAL
1	F	252	GLN
1	F	262	THR
1	F	265	LYS
1	F	309	VAL
1	F	318	VAL
1	F	331	PHE
1	F	332	ASP
1	F	384	GLU
1	F	390	LYS
1	F	405	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (29) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	236	ASN
1	A	246	HIS
1	A	251	ASN
1	A	258	HIS
1	A	351	HIS
1	B	96	GLN
1	B	193	GLN

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Mol	Chain	Res	Type
1	B	246	HIS
1	B	351	HIS
1	B	393	GLN
1	C	30	HIS
1	C	193	GLN
1	C	246	HIS
1	C	258	HIS
1	D	193	GLN
1	D	246	HIS
1	D	351	HIS
1	E	101	HIS
1	E	193	GLN
1	E	236	ASN
1	E	246	HIS
1	E	320	HIS
1	F	30	HIS
1	F	101	HIS
1	F	193	GLN
1	F	236	ASN
1	F	246	HIS
1	F	346	HIS
1	F	351	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 120 ligands modelled in this entry, 6 are monoatomic - leaving 114 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
4	FMT	B	504	-	2,2,2	0.30	0	1,1,1	0.18	0
4	FMT	D	515	-	2,2,2	0.47	0	1,1,1	0.08	0
4	FMT	A	514	-	2,2,2	0.45	0	1,1,1	0.11	0
4	FMT	A	524	-	2,2,2	0.63	0	1,1,1	0.06	0
4	FMT	E	506	-	2,2,2	0.62	0	1,1,1	0.03	0
4	FMT	A	508	-	2,2,2	0.52	0	1,1,1	0.02	0
4	FMT	F	510	-	2,2,2	0.32	0	1,1,1	0.16	0
4	FMT	A	503	-	2,2,2	0.36	0	1,1,1	0.11	0
4	FMT	F	506	-	2,2,2	0.12	0	1,1,1	0.32	0
4	FMT	E	507	-	2,2,2	0.25	0	1,1,1	0.13	0
4	FMT	B	524	-	2,2,2	0.27	0	1,1,1	0.21	0
4	FMT	C	522	-	2,2,2	0.39	0	1,1,1	0.13	0
4	FMT	C	519	-	2,2,2	0.28	0	1,1,1	0.20	0
4	FMT	A	507	-	2,2,2	0.30	0	1,1,1	0.16	0
4	FMT	C	509	-	2,2,2	0.48	0	1,1,1	0.03	0
4	FMT	D	512	-	2,2,2	0.73	0	1,1,1	0.05	0
4	FMT	A	522	-	2,2,2	0.31	0	1,1,1	0.10	0
4	FMT	A	511	-	2,2,2	0.32	0	1,1,1	0.19	0
4	FMT	B	505	-	2,2,2	0.47	0	1,1,1	0.08	0
4	FMT	B	520	-	2,2,2	0.55	0	1,1,1	0.00	0
4	FMT	D	505	-	2,2,2	0.39	0	1,1,1	0.13	0
4	FMT	B	512	-	2,2,2	0.68	0	1,1,1	0.10	0
3	4OA	D	502	-	30,30,30	0.59	0	47,47,47	0.75	0
4	FMT	B	515	-	2,2,2	0.47	0	1,1,1	0.06	0
3	4OA	A	502	-	30,30,30	0.47	0	47,47,47	0.48	0
4	FMT	B	517	-	2,2,2	0.37	0	1,1,1	0.07	0
4	FMT	C	506	-	2,2,2	0.56	0	1,1,1	0.04	0
4	FMT	B	521	-	2,2,2	0.53	0	1,1,1	0.06	0
3	4OA	B	502	-	30,30,30	0.49	0	47,47,47	0.68	0
4	FMT	C	524	-	2,2,2	0.63	0	1,1,1	0.06	0
3	4OA	E	502	-	30,30,30	0.50	0	47,47,47	0.59	0
4	FMT	C	523	-	2,2,2	0.29	0	1,1,1	0.20	0
4	FMT	B	503	-	2,2,2	0.46	0	1,1,1	0.06	0
4	FMT	B	522	-	2,2,2	0.59	0	1,1,1	0.03	0
4	FMT	E	509	-	2,2,2	0.46	0	1,1,1	0.11	0
4	FMT	E	508	-	2,2,2	0.43	0	1,1,1	0.09	0
4	FMT	E	511	-	2,2,2	0.66	0	1,1,1	0.10	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	FMT	C	525	-	2,2,2	0.51	0	1,1,1	0.04	0
4	FMT	F	511	-	2,2,2	0.42	0	1,1,1	0.09	0
4	FMT	B	510	-	2,2,2	0.42	0	1,1,1	0.09	0
4	FMT	E	503	-	2,2,2	0.31	0	1,1,1	0.15	0
4	FMT	F	512	-	2,2,2	0.40	0	1,1,1	0.12	0
4	FMT	D	510	-	2,2,2	0.39	0	1,1,1	0.03	0
4	FMT	C	504	-	2,2,2	0.37	0	1,1,1	0.16	0
4	FMT	E	510	-	2,2,2	0.29	0	1,1,1	0.18	0
4	FMT	D	504	-	2,2,2	0.29	0	1,1,1	0.18	0
2	HEM	C	501	1	41,50,50	1.34	5 (12%)	45,82,82	1.97	13 (28%)
4	FMT	C	515	-	2,2,2	0.39	0	1,1,1	0.16	0
4	FMT	B	508	-	2,2,2	0.46	0	1,1,1	0.06	0
3	4OA	C	502	-	30,30,30	0.56	0	47,47,47	0.85	0
4	FMT	A	510	-	2,2,2	0.29	0	1,1,1	0.19	0
4	FMT	A	516	-	2,2,2	0.39	0	1,1,1	0.13	0
4	FMT	C	526	-	2,2,2	0.35	0	1,1,1	0.14	0
4	FMT	E	505	-	2,2,2	0.89	0	1,1,1	0.21	0
4	FMT	A	517	-	2,2,2	0.89	0	1,1,1	0.26	0
4	FMT	F	507	-	2,2,2	0.38	0	1,1,1	0.06	0
4	FMT	A	512	-	2,2,2	0.53	0	1,1,1	0.01	0
4	FMT	C	508	-	2,2,2	0.25	0	1,1,1	0.16	0
4	FMT	C	503	-	2,2,2	0.41	0	1,1,1	0.07	0
4	FMT	C	514	-	2,2,2	0.27	0	1,1,1	0.19	0
2	HEM	F	501	1	41,50,50	1.31	6 (14%)	45,82,82	1.83	11 (24%)
4	FMT	C	521	-	2,2,2	0.55	0	1,1,1	0.01	0
4	FMT	F	509	-	2,2,2	0.29	0	1,1,1	0.14	0
4	FMT	A	504	-	2,2,2	0.24	0	1,1,1	0.21	0
4	FMT	F	513	-	2,2,2	0.40	0	1,1,1	0.13	0
4	FMT	C	505	-	2,2,2	0.42	0	1,1,1	0.11	0
4	FMT	A	520	-	2,2,2	0.54	0	1,1,1	0.06	0
4	FMT	A	509	-	2,2,2	0.42	0	1,1,1	0.12	0
4	FMT	F	508	-	2,2,2	0.36	0	1,1,1	0.11	0
4	FMT	C	517	-	2,2,2	0.38	0	1,1,1	0.11	0
4	FMT	A	513	-	2,2,2	0.60	0	1,1,1	0.05	0
2	HEM	D	501	1	41,50,50	1.48	7 (17%)	45,82,82	2.32	20 (44%)
4	FMT	B	519	-	2,2,2	0.24	0	1,1,1	0.20	0
3	4OA	F	502	-	30,30,30	0.50	0	47,47,47	0.77	1 (2%)
4	FMT	C	520	-	2,2,2	0.40	0	1,1,1	0.11	0
4	FMT	D	509	-	2,2,2	0.40	0	1,1,1	0.08	0
4	FMT	D	506	-	2,2,2	0.44	0	1,1,1	0.05	0
4	FMT	C	512	-	2,2,2	0.07	0	1,1,1	0.27	0
4	FMT	B	511	-	2,2,2	0.42	0	1,1,1	0.08	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	FMT	B	516	-	2,2,2	0.49	0	1,1,1	0.01	0
4	FMT	A	505	-	2,2,2	0.49	0	1,1,1	0.04	0
4	FMT	A	521	-	2,2,2	0.33	0	1,1,1	0.10	0
4	FMT	D	508	-	2,2,2	0.57	0	1,1,1	0.05	0
4	FMT	D	503	-	2,2,2	0.83	0	1,1,1	0.27	0
4	FMT	A	506	-	2,2,2	0.33	0	1,1,1	0.10	0
4	FMT	B	518	-	2,2,2	0.60	0	1,1,1	0.02	0
2	HEM	E	501	1	41,50,50	1.37	7 (17%)	45,82,82	1.68	10 (22%)
4	FMT	B	507	-	2,2,2	0.37	0	1,1,1	0.12	0
4	FMT	B	506	-	2,2,2	0.64	0	1,1,1	0.07	0
4	FMT	A	518	-	2,2,2	0.72	0	1,1,1	0.02	0
4	FMT	E	504	-	2,2,2	0.95	0	1,1,1	0.24	0
4	FMT	C	510	-	2,2,2	0.28	0	1,1,1	0.20	0
4	FMT	E	512	-	2,2,2	0.32	0	1,1,1	0.13	0
4	FMT	A	523	-	2,2,2	0.47	0	1,1,1	0.04	0
4	FMT	B	513	-	2,2,2	1.31	0	1,1,1	0.62	0
4	FMT	D	511	-	2,2,2	0.31	0	1,1,1	0.20	0
4	FMT	D	513	-	2,2,2	0.47	0	1,1,1	0.20	0
4	FMT	F	505	-	2,2,2	0.71	0	1,1,1	0.02	0
4	FMT	B	523	-	2,2,2	0.48	0	1,1,1	0.02	0
4	FMT	C	518	-	2,2,2	0.38	0	1,1,1	0.10	0
4	FMT	A	519	-	2,2,2	0.24	0	1,1,1	0.23	0
4	FMT	C	516	-	2,2,2	0.44	0	1,1,1	0.12	0
4	FMT	C	513	-	2,2,2	0.57	0	1,1,1	0.01	0
4	FMT	F	504	-	2,2,2	0.39	0	1,1,1	0.11	0
4	FMT	C	507	-	2,2,2	0.09	0	1,1,1	0.24	0
4	FMT	A	515	-	2,2,2	0.56	0	1,1,1	0.29	0
4	FMT	B	514	-	2,2,2	0.61	0	1,1,1	0.29	0
4	FMT	B	509	-	2,2,2	0.31	0	1,1,1	0.19	0
4	FMT	D	514	-	2,2,2	0.72	0	1,1,1	0.27	0
4	FMT	D	507	-	2,2,2	0.62	0	1,1,1	0.18	0
4	FMT	C	511	-	2,2,2	0.27	0	1,1,1	0.23	0
2	HEM	A	501	1	41,50,50	1.36	5 (12%)	45,82,82	1.85	15 (33%)
2	HEM	B	501	1	41,50,50	1.47	7 (17%)	45,82,82	1.96	19 (42%)
4	FMT	F	503	-	2,2,2	0.38	0	1,1,1	0.10	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	4OA	C	502	-	-	3/9/67/67	0/4/4/4
3	4OA	D	502	-	-	1/9/67/67	0/4/4/4
3	4OA	B	502	-	-	3/9/67/67	0/4/4/4
2	HEM	E	501	1	-	0/12/54/54	-
3	4OA	A	502	-	-	3/9/67/67	0/4/4/4
2	HEM	F	501	1	-	0/12/54/54	-
2	HEM	D	501	1	-	1/12/54/54	-
3	4OA	E	502	-	-	4/9/67/67	0/4/4/4
2	HEM	A	501	1	-	0/12/54/54	-
3	4OA	F	502	-	-	7/9/67/67	0/4/4/4
2	HEM	B	501	1	-	1/12/54/54	-
2	HEM	C	501	1	-	0/12/54/54	-

All (37) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	HEM	C1B-NB	-4.02	1.33	1.40
2	B	501	HEM	C1B-NB	-3.52	1.34	1.40
2	D	501	HEM	C4D-ND	-3.50	1.34	1.40
2	C	501	HEM	C1B-NB	-3.48	1.34	1.40
2	F	501	HEM	C1B-NB	-3.43	1.34	1.40
2	A	501	HEM	C4B-NB	-3.35	1.31	1.38
2	E	501	HEM	C4D-ND	-3.31	1.34	1.40
2	E	501	HEM	C1B-NB	-3.30	1.34	1.40
2	D	501	HEM	C1B-NB	-3.28	1.34	1.40
2	B	501	HEM	C4D-ND	-3.13	1.34	1.40
2	D	501	HEM	C1A-CHA	-2.93	1.32	1.41
2	D	501	HEM	FE-ND	-2.84	1.82	1.96
2	E	501	HEM	FE-NB	2.78	2.10	1.96
2	F	501	HEM	CHB-C1B	2.69	1.41	1.35
2	B	501	HEM	C4B-NB	-2.61	1.33	1.38
2	B	501	HEM	CHB-C1B	2.59	1.41	1.35
2	F	501	HEM	CHA-C4D	2.58	1.41	1.35
2	F	501	HEM	FE-NB	2.56	2.09	1.96
2	D	501	HEM	C1D-ND	-2.52	1.33	1.38
2	D	501	HEM	CHB-C1B	2.48	1.41	1.35
2	A	501	HEM	CHB-C1B	2.45	1.41	1.35
2	C	501	HEM	CHB-C1B	2.36	1.41	1.35
2	C	501	HEM	C4D-ND	-2.30	1.36	1.40
2	C	501	HEM	FE-NB	2.27	2.08	1.96
2	B	501	HEM	FE-NB	2.27	2.08	1.96
2	C	501	HEM	C4B-NB	-2.25	1.34	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	HEM	CAA-C2A	2.23	1.55	1.52
2	E	501	HEM	C1D-ND	-2.23	1.34	1.38
2	E	501	HEM	C4B-NB	-2.22	1.34	1.38
2	A	501	HEM	C4D-ND	-2.21	1.36	1.40
2	D	501	HEM	C4A-CHB	-2.18	1.34	1.41
2	B	501	HEM	C3D-C2D	-2.17	1.32	1.36
2	F	501	HEM	C3C-C2C	-2.14	1.37	1.40
2	E	501	HEM	C3C-C2C	-2.06	1.37	1.40
2	B	501	HEM	C1D-ND	-2.06	1.34	1.38
2	E	501	HEM	CHA-C4D	2.04	1.40	1.35
2	F	501	HEM	C4D-ND	-2.02	1.36	1.40

All (89) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	501	HEM	C1B-NB-C4B	5.50	110.75	105.07
2	D	501	HEM	CHB-C1B-NB	5.45	131.12	124.38
2	C	501	HEM	CHC-C4B-NB	5.32	130.21	124.43
2	F	501	HEM	CHC-C4B-NB	5.20	130.08	124.43
2	D	501	HEM	CHC-C4B-NB	4.99	129.85	124.43
2	A	501	HEM	CHD-C1D-ND	4.97	129.83	124.43
2	D	501	HEM	C1B-NB-C4B	4.75	109.98	105.07
2	F	501	HEM	C1B-NB-C4B	4.57	109.79	105.07
2	A	501	HEM	CHC-C4B-NB	4.33	129.14	124.43
2	F	501	HEM	CHD-C1D-ND	4.32	129.12	124.43
2	D	501	HEM	CHA-C4D-ND	4.23	129.60	124.38
2	E	501	HEM	CHC-C4B-NB	4.12	128.91	124.43
2	D	501	HEM	CMD-C2D-C1D	3.75	130.75	125.04
2	E	501	HEM	C1B-NB-C4B	3.73	108.93	105.07
2	A	501	HEM	CHD-C1D-C2D	-3.72	119.16	124.98
2	C	501	HEM	CHD-C1D-ND	3.70	128.45	124.43
2	A	501	HEM	C1B-NB-C4B	3.59	108.78	105.07
2	B	501	HEM	CHD-C1D-ND	3.57	128.31	124.43
2	B	501	HEM	C1B-NB-C4B	3.48	108.67	105.07
2	E	501	HEM	CHD-C1D-ND	3.45	128.18	124.43
2	B	501	HEM	CMD-C2D-C1D	3.44	130.28	125.04
2	D	501	HEM	CHD-C1D-C2D	-3.40	119.67	124.98
2	D	501	HEM	CHD-C1D-ND	3.30	128.01	124.43
2	D	501	HEM	CAD-C3D-C4D	3.26	130.35	124.66
2	E	501	HEM	CHD-C1D-C2D	-3.25	119.90	124.98
2	D	501	HEM	CHA-C4D-C3D	-3.25	119.23	125.33
2	C	501	HEM	CHD-C1D-C2D	-3.16	120.04	124.98

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	501	HEM	CAD-C3D-C4D	3.12	130.10	124.66
2	B	501	HEM	CHA-C4D-ND	3.10	128.21	124.38
2	F	501	HEM	CHA-C4D-ND	2.99	128.08	124.38
2	B	501	HEM	C4A-C3A-C2A	2.97	109.06	107.00
2	A	501	HEM	CMC-C2C-C3C	2.96	130.22	124.68
2	B	501	HEM	CMB-C2B-C1B	2.94	129.52	125.04
2	B	501	HEM	CAD-C3D-C4D	2.88	129.69	124.66
2	B	501	HEM	CHA-C4D-C3D	-2.86	119.95	125.33
2	C	501	HEM	CBA-CAA-C2A	2.85	117.48	112.62
2	B	501	HEM	CAB-C3B-C2B	-2.80	119.39	128.60
2	F	501	HEM	C4B-C3B-C2B	-2.78	104.91	107.11
2	A	501	HEM	C4A-C3A-C2A	2.64	108.84	107.00
2	A	501	HEM	O2A-CGA-CBA	2.62	122.45	114.03
2	D	501	HEM	CMB-C2B-C1B	2.62	129.03	125.04
2	D	501	HEM	O2D-CGD-O1D	-2.60	116.81	123.30
2	D	501	HEM	CHB-C1B-C2B	-2.57	119.61	126.72
2	B	501	HEM	CHB-C1B-NB	2.57	127.56	124.38
2	F	501	HEM	CHC-C4B-C3B	-2.52	120.71	124.57
2	C	501	HEM	CHA-C4D-ND	2.52	127.49	124.38
2	D	501	HEM	CAB-C3B-C2B	-2.50	120.36	128.60
2	F	501	HEM	CHD-C1D-C2D	-2.49	121.08	124.98
2	E	501	HEM	CMC-C2C-C3C	2.49	129.33	124.68
2	C	501	HEM	C4B-CHC-C1C	2.45	125.79	122.56
2	D	501	HEM	CMC-C2C-C3C	2.44	129.25	124.68
2	C	501	HEM	CHB-C1B-NB	2.43	127.38	124.38
2	E	501	HEM	CBD-CAD-C3D	-2.43	105.88	112.63
2	A	501	HEM	CHC-C4B-C3B	-2.37	120.94	124.57
2	B	501	HEM	O2A-CGA-CBA	2.36	121.60	114.03
2	A	501	HEM	C4B-C3B-C2B	-2.34	105.26	107.11
2	D	501	HEM	CBD-CAD-C3D	-2.33	106.16	112.63
2	D	501	HEM	CBA-CAA-C2A	2.31	116.57	112.62
2	B	501	HEM	O2D-CGD-O1D	-2.31	117.53	123.30
2	B	501	HEM	CMA-C3A-C4A	-2.30	124.92	128.46
2	D	501	HEM	CAD-C3D-C2D	-2.30	123.60	127.88
2	F	501	HEM	O2A-CGA-O1A	-2.30	117.58	123.30
2	C	501	HEM	CAD-C3D-C2D	-2.28	123.62	127.88
2	A	501	HEM	CBA-CAA-C2A	2.27	116.50	112.62
2	B	501	HEM	CMC-C2C-C3C	2.25	128.88	124.68
2	B	501	HEM	O2D-CGD-CBD	2.24	121.23	114.03
2	E	501	HEM	O2A-CGA-O1A	-2.24	117.72	123.30
2	C	501	HEM	CMC-C2C-C3C	2.22	128.84	124.68
2	A	501	HEM	CBD-CAD-C3D	-2.22	106.46	112.63

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	501	HEM	CHA-C4D-ND	2.22	127.12	124.38
2	D	501	HEM	CMB-C2B-C3B	-2.21	122.89	128.30
2	B	501	HEM	CHD-C1D-C2D	-2.20	121.55	124.98
2	A	501	HEM	O2A-CGA-O1A	-2.18	117.87	123.30
2	A	501	HEM	CAB-C3B-C2B	2.13	135.63	128.60
2	F	501	HEM	C4D-ND-C1D	2.12	107.26	105.07
2	A	501	HEM	CAD-C3D-C4D	2.12	128.35	124.66
2	B	501	HEM	CAB-C3B-C4B	2.08	134.16	124.47
2	B	501	HEM	C4B-CHC-C1C	2.08	125.30	122.56
2	F	501	HEM	CBA-CAA-C2A	2.07	116.15	112.62
2	D	501	HEM	C3B-C2B-C1B	2.07	108.02	106.49
2	E	501	HEM	C1D-C2D-C3D	-2.05	104.80	106.96
2	E	501	HEM	CBA-CAA-C2A	2.03	116.09	112.62
2	F	501	HEM	C3C-C4C-NC	-2.03	107.11	110.94
2	C	501	HEM	CHA-C4D-C3D	-2.02	121.54	125.33
2	D	501	HEM	C2D-C1D-ND	2.02	112.30	109.88
2	A	501	HEM	CHA-C4D-ND	2.01	126.86	124.38
2	C	501	HEM	CMD-C2D-C1D	2.01	128.09	125.04
2	B	501	HEM	CMB-C2B-C3B	-2.00	123.39	128.30
3	F	502	4OA	C22-C23-C24	-2.00	107.19	112.51

There are no chirality outliers.

All (23) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	D	502	4OA	C21-C20-C22-C23
3	F	502	4OA	C17-C20-C22-C23
3	B	502	4OA	C17-C20-C22-C23
3	E	502	4OA	C17-C20-C22-C23
2	B	501	HEM	C4B-C3B-CAB-CBB
2	D	501	HEM	C4B-C3B-CAB-CBB
3	F	502	4OA	C13-C17-C20-C22
3	F	502	4OA	C16-C17-C20-C22
3	F	502	4OA	C21-C20-C22-C23
3	F	502	4OA	C13-C17-C20-C21
3	C	502	4OA	C22-C23-C24-O4
3	E	502	4OA	C21-C20-C22-C23
3	E	502	4OA	C22-C23-C24-O4A
3	B	502	4OA	C22-C23-C24-O4A
3	B	502	4OA	C22-C23-C24-O4
3	C	502	4OA	C22-C23-C24-O4A
3	A	502	4OA	C22-C23-C24-O4

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Mol	Chain	Res	Type	Atoms
3	C	502	4OA	C17-C20-C22-C23
3	E	502	4OA	C22-C23-C24-O4
3	A	502	4OA	C22-C23-C24-O4A
3	F	502	4OA	C22-C23-C24-O4
3	A	502	4OA	C17-C20-C22-C23
3	F	502	4OA	C22-C23-C24-O4A

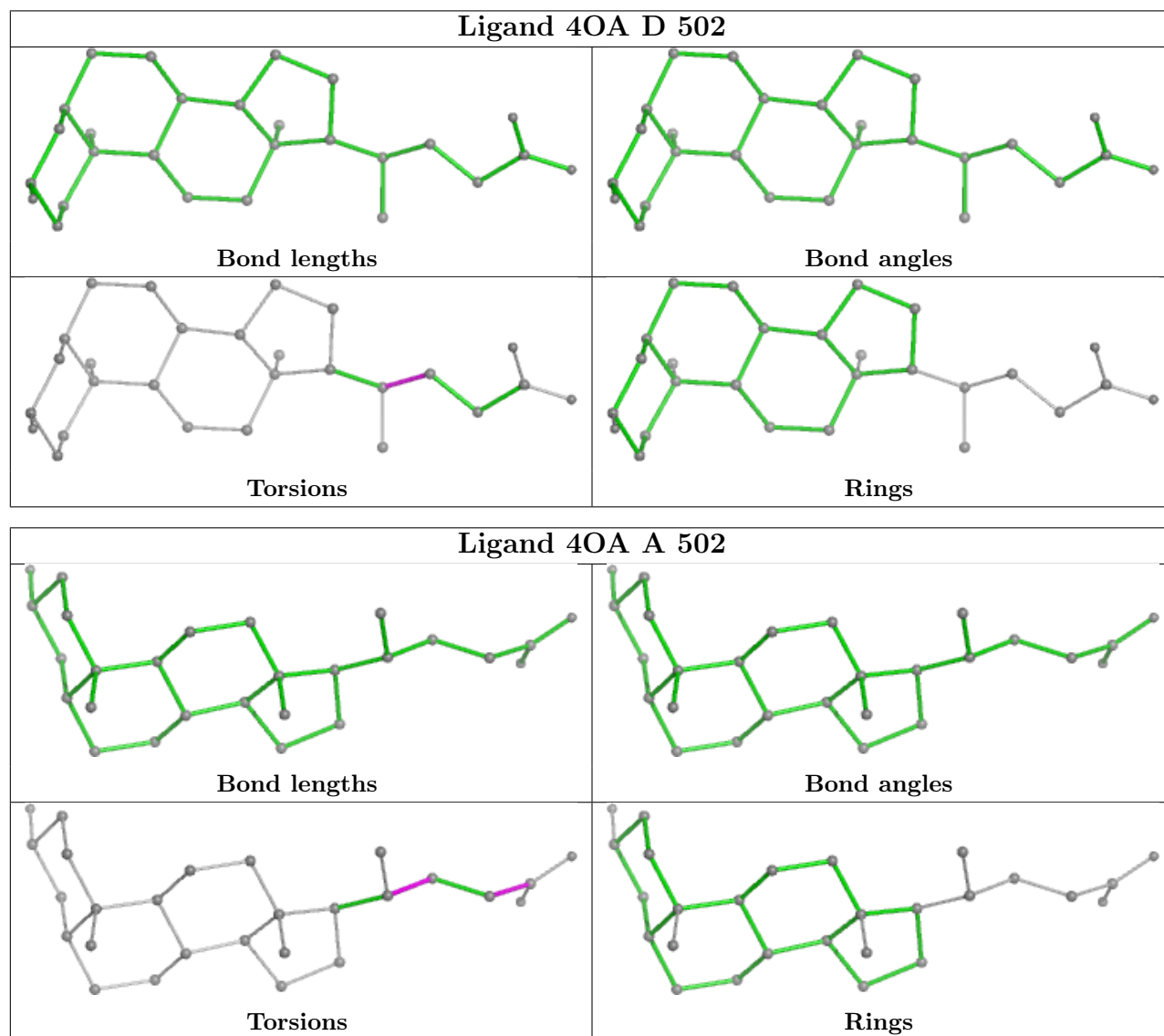
There are no ring outliers.

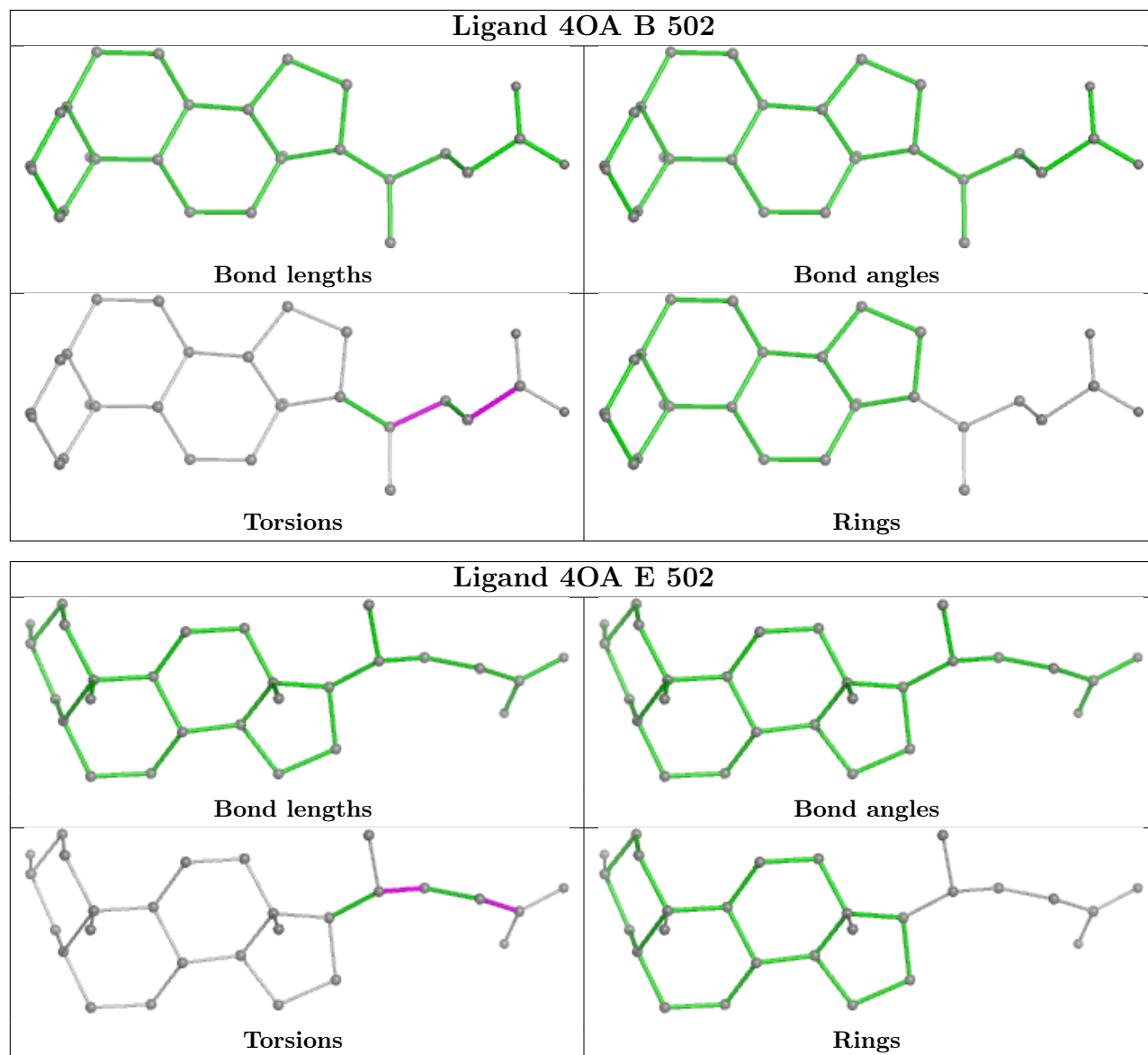
22 monomers are involved in 45 short contacts:

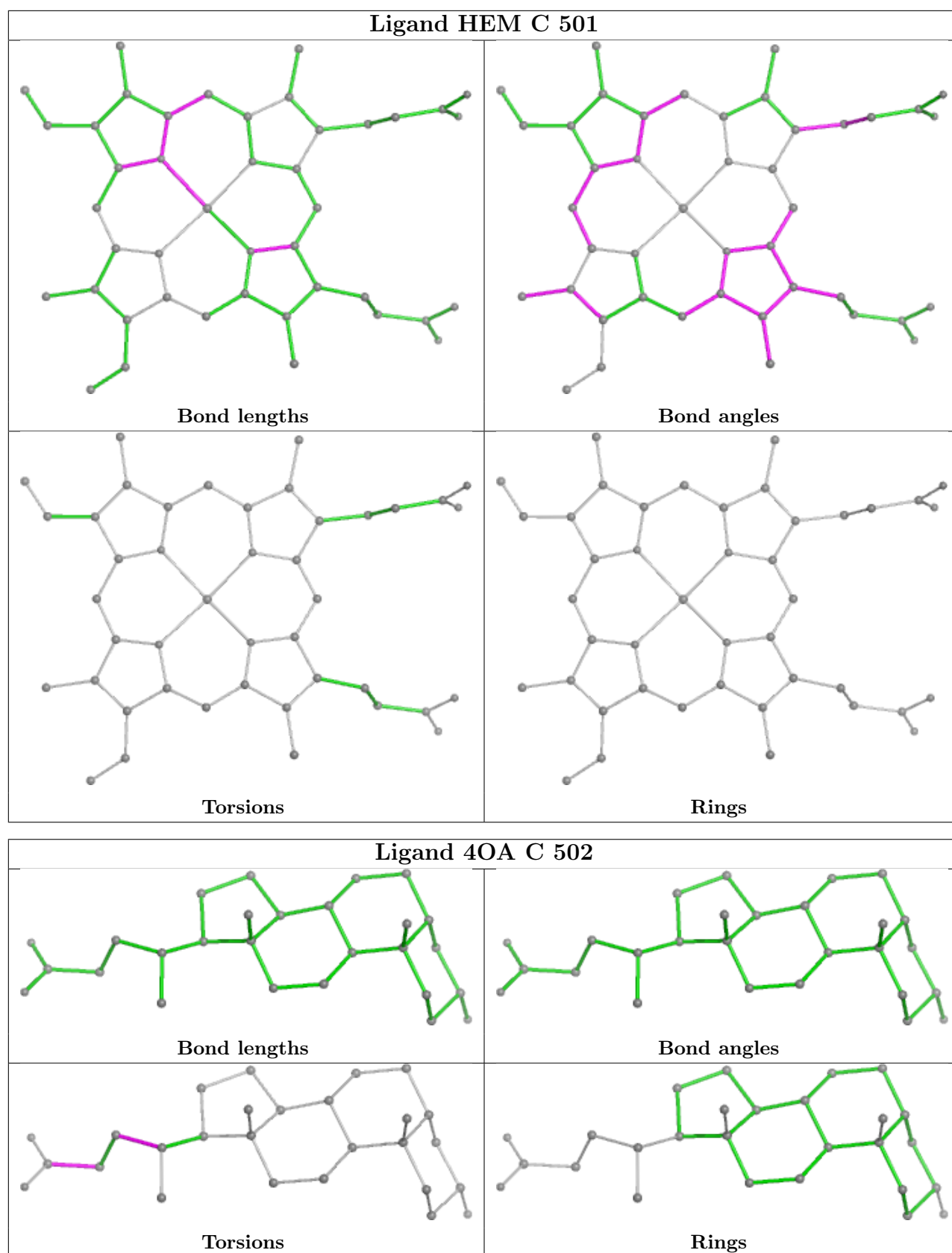
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	D	505	FMT	2	0
3	A	502	4OA	2	0
4	B	517	FMT	1	0
3	B	502	4OA	1	0
3	E	502	4OA	3	0
2	C	501	HEM	3	0
3	C	502	4OA	1	0
2	F	501	HEM	3	0
2	D	501	HEM	4	0
3	F	502	4OA	1	0
4	C	520	FMT	1	0
4	B	511	FMT	1	0
4	A	505	FMT	2	0
2	E	501	HEM	5	0
4	B	506	FMT	1	0
4	C	510	FMT	1	0
4	E	512	FMT	1	0
4	B	513	FMT	5	0
4	B	514	FMT	1	0
4	D	514	FMT	3	0
2	A	501	HEM	3	0
2	B	501	HEM	4	0

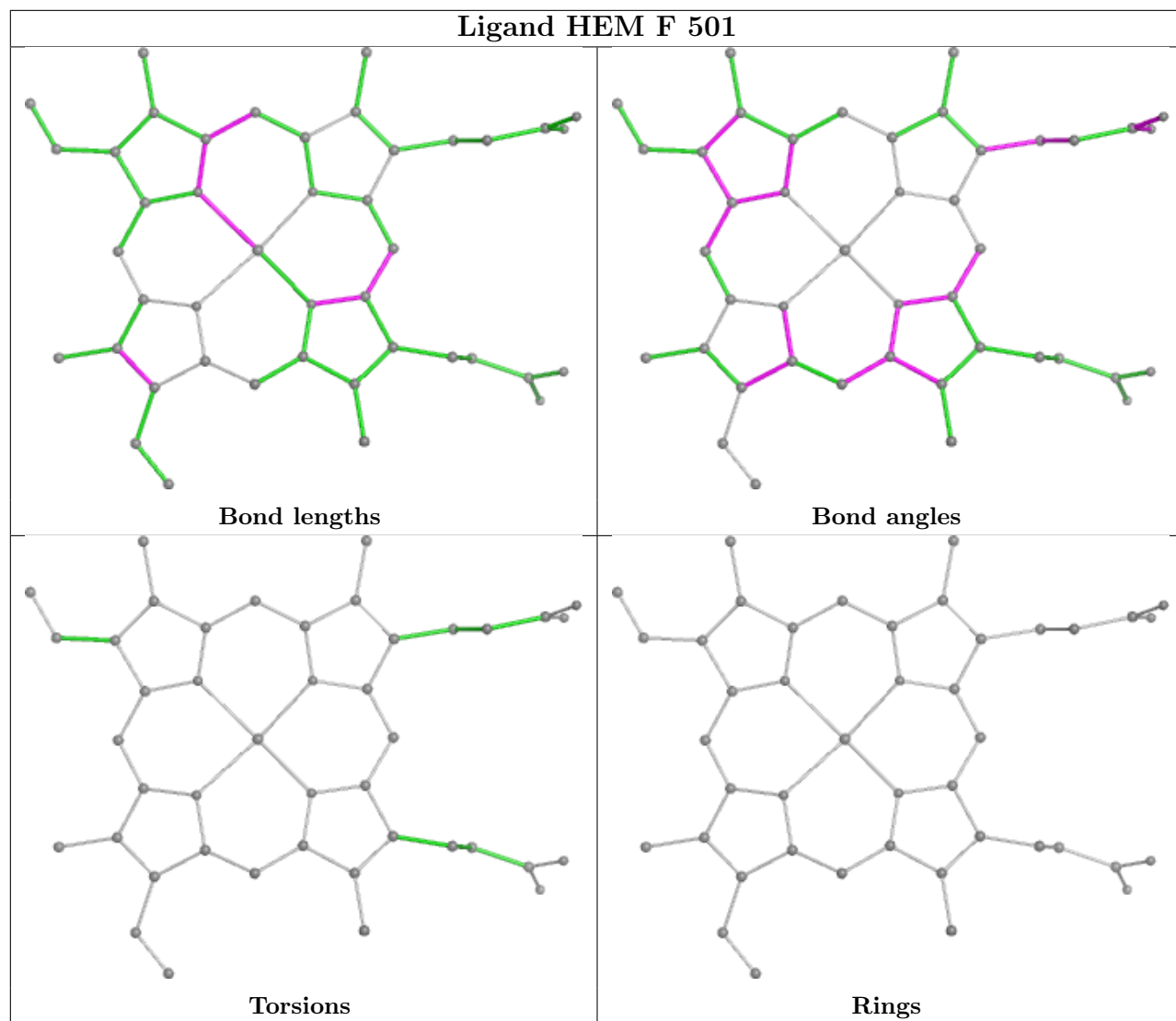
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

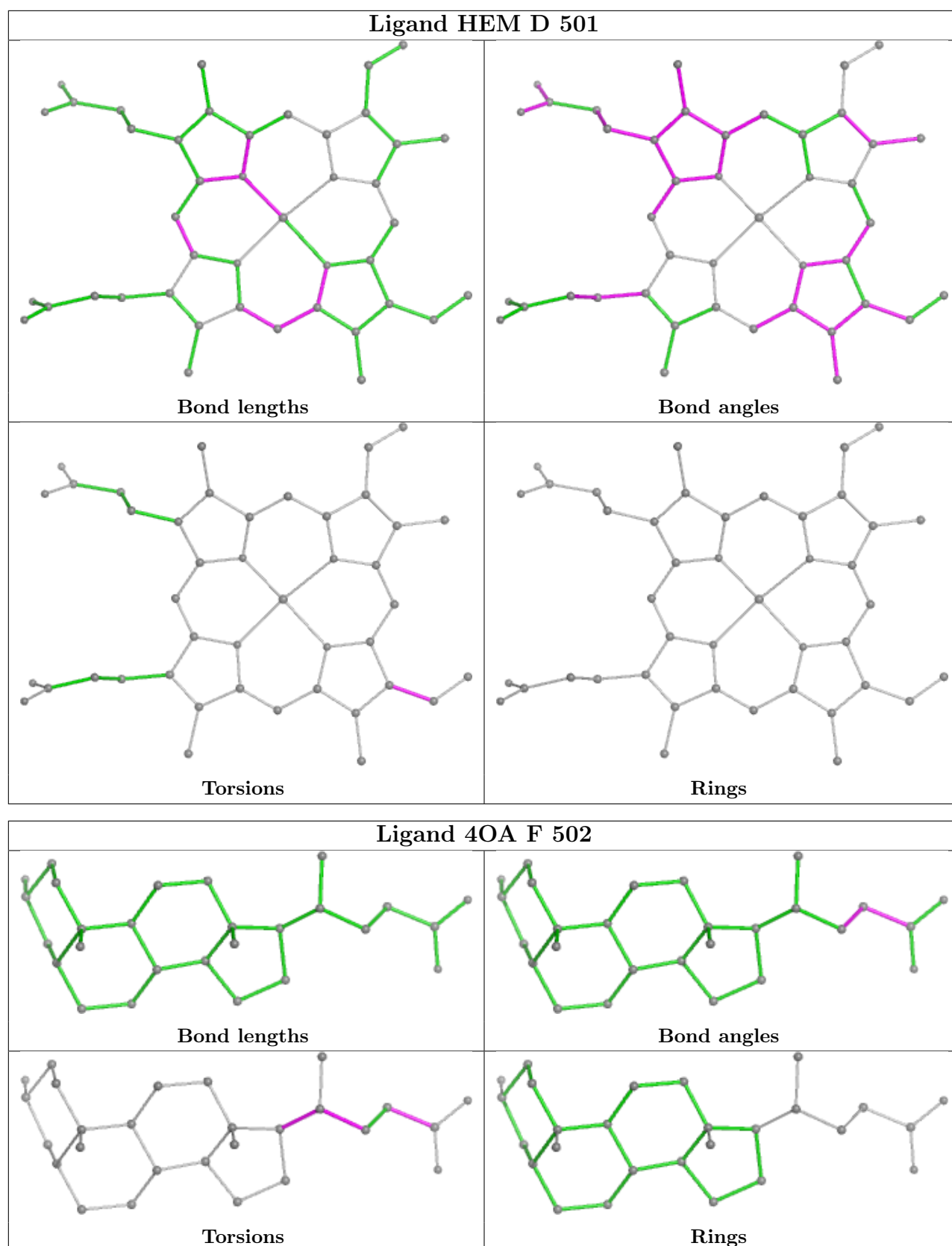
average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

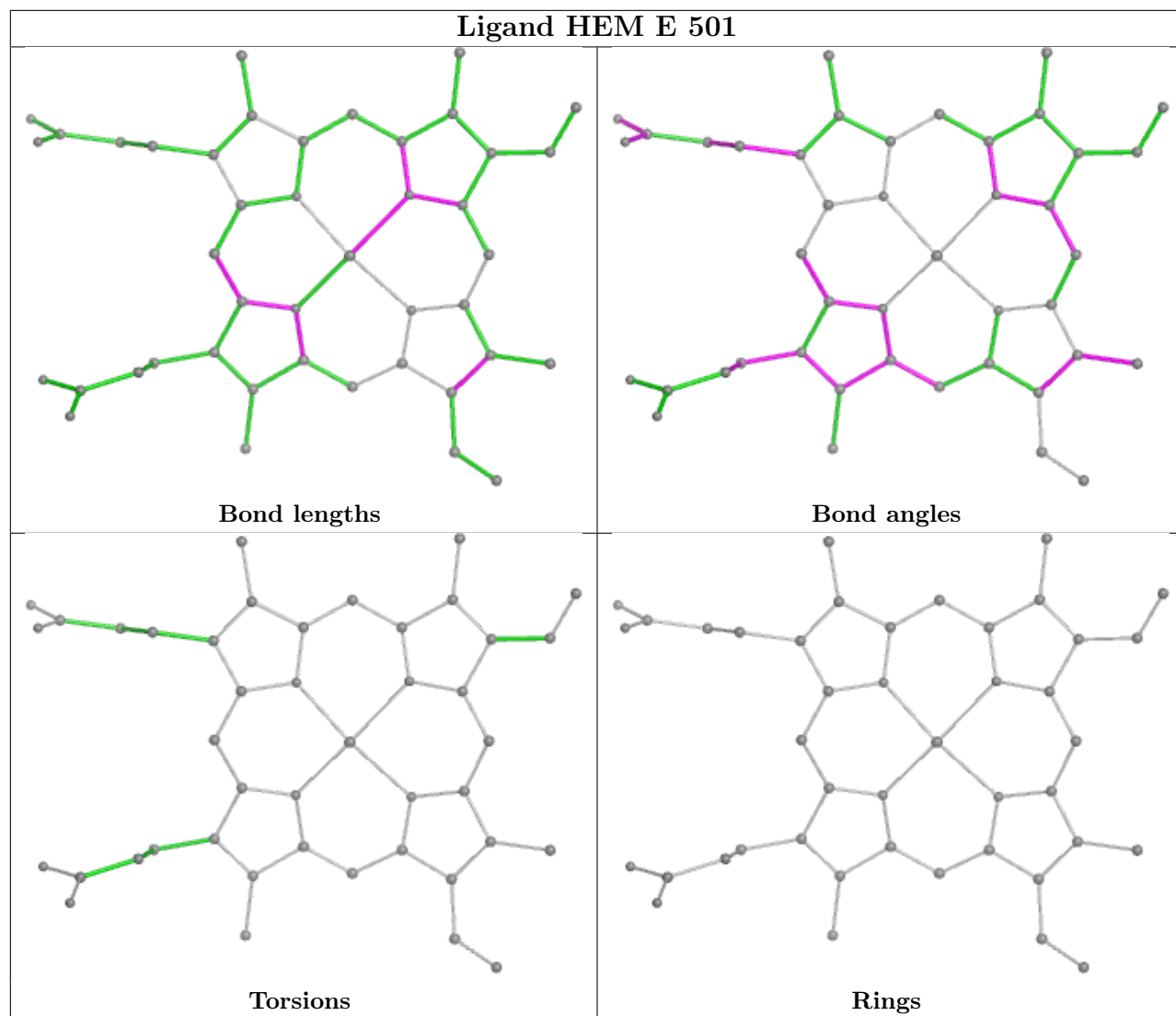


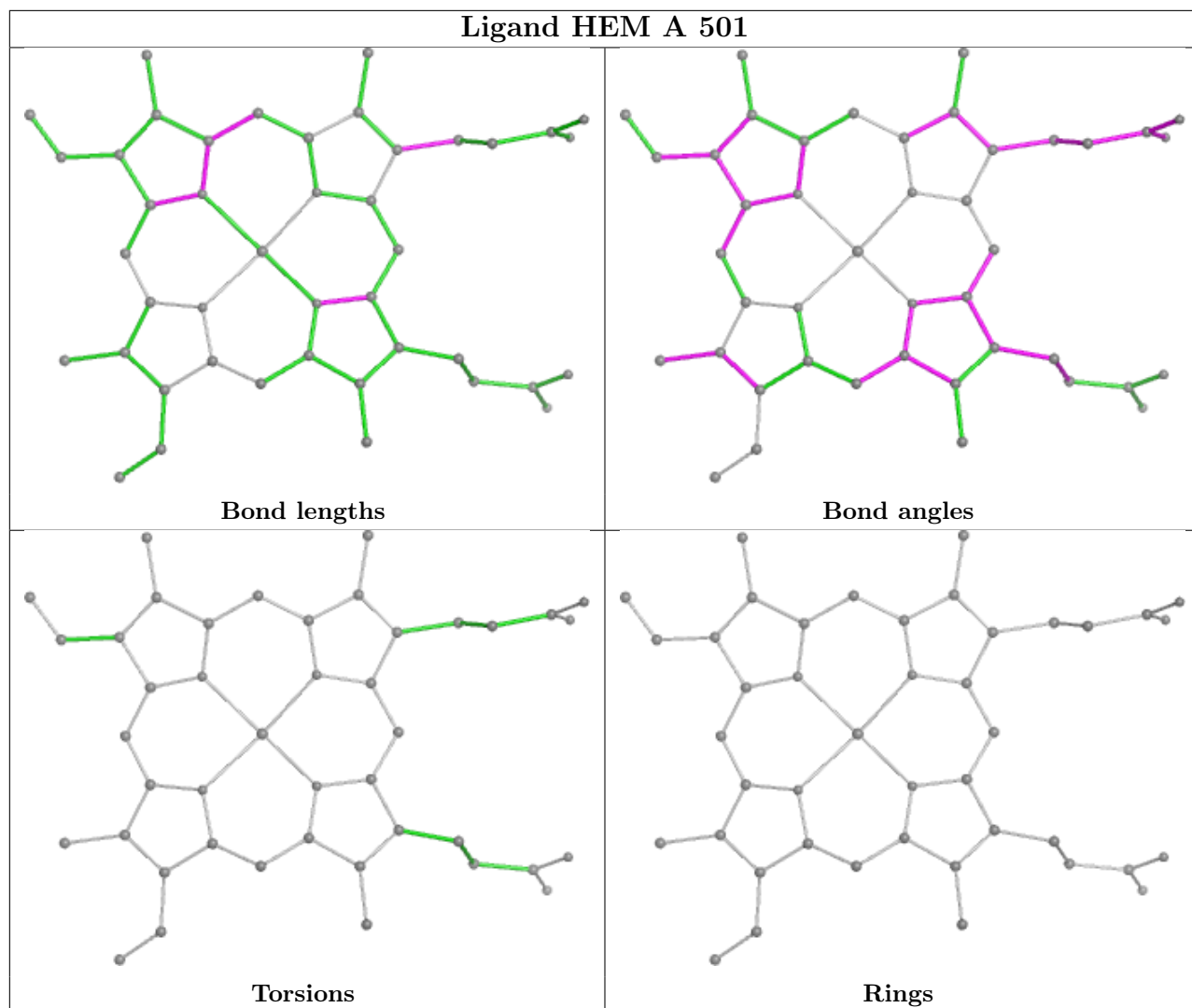


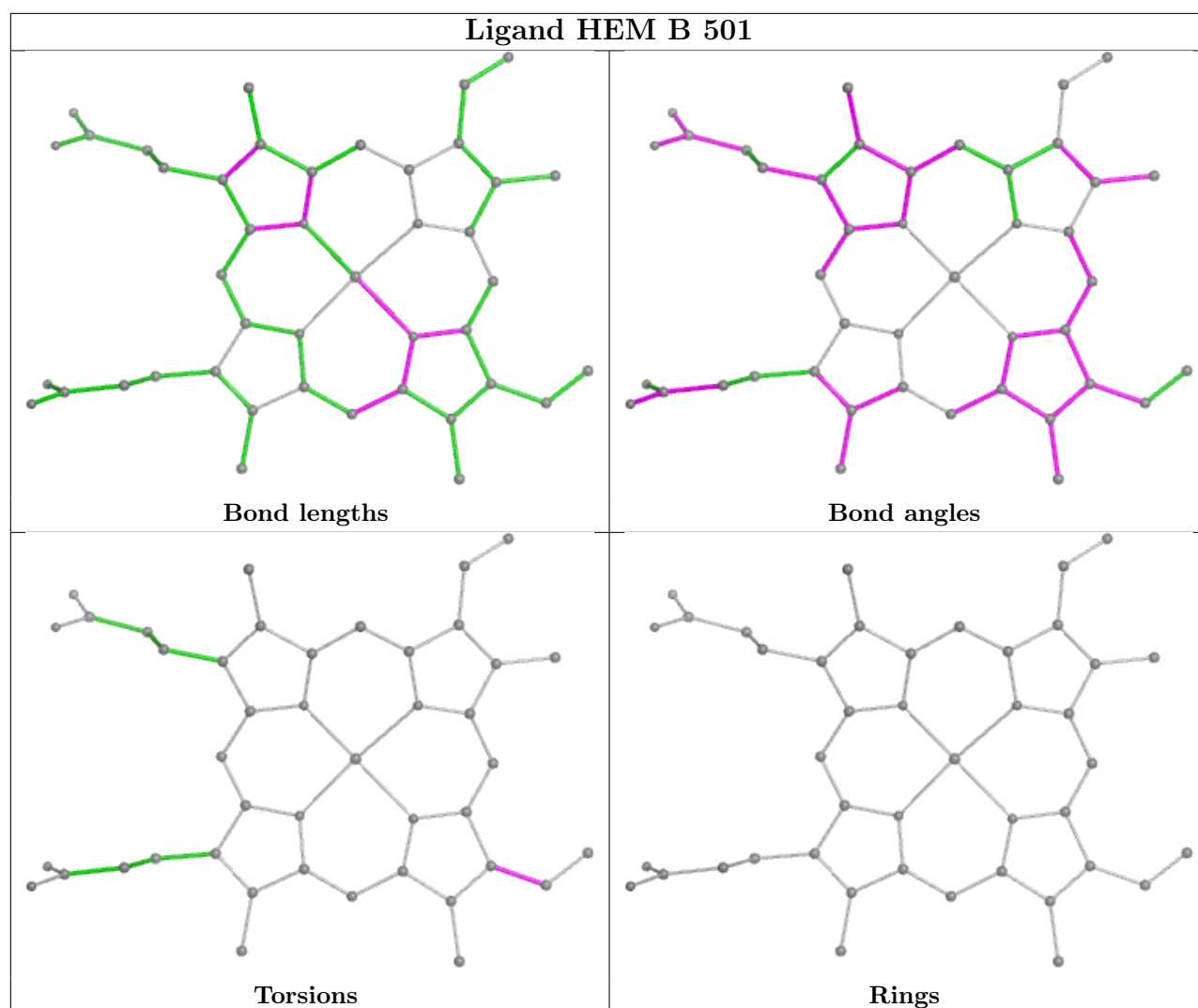












5.7 Other polymers [i](#)

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	396/398 (99%)	0.07	3 (0%) 86 89	32, 47, 74, 99	0
1	B	396/398 (99%)	-0.00	3 (0%) 86 89	30, 47, 75, 131	0
1	C	398/398 (100%)	0.05	3 (0%) 86 89	31, 43, 63, 102	0
1	D	397/398 (99%)	0.07	5 (1%) 77 81	35, 54, 78, 117	0
1	E	394/398 (98%)	0.37	27 (6%) 16 22	45, 62, 92, 125	0
1	F	396/398 (99%)	0.66	67 (16%) 1 2	42, 63, 105, 116	0
All	All	2377/2388 (99%)	0.20	108 (4%) 33 40	30, 53, 90, 131	0

All (108) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	141	PRO	6.0
1	D	228	HIS	5.9
1	F	383	ALA	5.8
1	F	261	LEU	5.1
1	F	270	LEU	5.0
1	F	404	ILE	4.9
1	C	11	ALA	4.6
1	B	209	ASP	4.5
1	F	142	ALA	4.4
1	F	388	GLY	4.2
1	E	312	ARG	4.0
1	F	267	TYR	4.0
1	E	16	ALA	3.9
1	E	43	VAL	3.8
1	F	262	THR	3.8
1	F	51	THR	3.8
1	F	182	THR	3.7
1	F	140	SER	3.6
1	F	257	VAL	3.5

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Mol	Chain	Res	Type	RSRZ
1	E	213	GLU	3.5
1	F	407	TRP	3.5
1	F	374	VAL	3.4
1	E	108	VAL	3.4
1	F	143	ASP	3.4
1	F	380	LEU	3.4
1	F	132	LEU	3.3
1	B	215	LEU	3.3
1	F	337	LEU	3.2
1	F	271	VAL	3.2
1	F	377	PHE	3.2
1	F	273	ASP	3.2
1	F	382	LEU	3.2
1	F	390	LYS	3.1
1	F	139	GLY	3.1
1	F	386	VAL	3.0
1	E	21	LEU	3.0
1	F	21	LEU	3.0
1	F	106[A]	ARG	2.9
1	E	228	HIS	2.9
1	F	268	GLU	2.9
1	E	15	PRO	2.9
1	F	331	PHE	2.9
1	F	343	ARG	2.9
1	F	137	ALA	2.9
1	E	342	GLU	2.9
1	F	333	HIS	2.9
1	F	277	VAL	2.9
1	C	343[A]	ARG	2.8
1	F	256	LEU	2.8
1	F	27	LEU	2.7
1	F	400	LEU	2.7
1	E	301	THR	2.7
1	F	151	PRO	2.7
1	F	387	ALA	2.7
1	F	274	PRO	2.6
1	F	272	ALA	2.6
1	F	135	MET	2.6
1	E	335	ASP	2.6
1	E	52	ALA	2.6
1	E	328	GLU	2.6
1	F	147	PHE	2.5

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Mol	Chain	Res	Type	RSRZ
1	F	339	PHE	2.5
1	E	287	TYR	2.5
1	D	115[A]	ARG	2.5
1	E	37	ASP	2.5
1	F	127	LEU	2.5
1	F	26	ASP	2.5
1	F	29	PRO	2.5
1	D	225	ASN	2.5
1	E	19	PHE	2.4
1	E	34	LEU	2.4
1	F	125	ARG	2.4
1	F	150	VAL	2.3
1	E	36	ARG	2.3
1	F	375	ARG	2.3
1	E	390	LYS	2.3
1	E	39	PRO	2.3
1	F	146	GLU	2.3
1	E	227	ASP	2.3
1	F	260	LEU	2.3
1	F	329	GLU	2.3
1	A	13	ALA	2.3
1	F	187	ALA	2.3
1	F	389	LEU	2.2
1	D	224	ASP	2.2
1	F	370	LEU	2.2
1	F	129	ASP	2.2
1	E	23	HIS	2.2
1	F	25	LEU	2.2
1	F	49	GLU	2.2
1	F	263	GLU	2.2
1	F	342	GLU	2.2
1	F	384	GLU	2.2
1	F	134	ASP	2.2
1	F	381	ASP	2.2
1	D	227	ASP	2.1
1	F	276	LEU	2.1
1	E	17	TYR	2.1
1	A	224	ASP	2.1
1	F	188	GLU	2.1
1	A	168	ARG	2.1
1	C	225	ASN	2.1
1	F	391	TRP	2.1

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Mol	Chain	Res	Type	RSRZ
1	E	340	HIS	2.0
1	E	20	SER	2.0
1	E	327	ASP	2.0
1	B	214	ASP	2.0
1	E	343	ARG	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
4	FMT	F	510	3/3	0.31	0.26	88,88,91,97	0
4	FMT	C	519	3/3	0.45	0.42	91,91,96,99	0
4	FMT	A	511	3/3	0.48	0.31	83,83,83,89	0
4	FMT	F	513	3/3	0.48	0.24	96,96,96,102	0
4	FMT	A	519	3/3	0.50	0.20	78,78,86,87	0
4	FMT	C	523	3/3	0.53	0.24	89,89,90,93	0
4	FMT	C	522	3/3	0.57	0.28	80,80,84,87	0
4	FMT	C	514	3/3	0.57	0.31	84,84,86,88	0
4	FMT	B	503	3/3	0.58	0.50	69,69,80,89	0
4	FMT	F	512	3/3	0.59	0.21	74,74,88,91	0
4	FMT	A	510	3/3	0.60	0.25	85,85,91,94	0
4	FMT	E	510	3/3	0.63	0.27	86,86,95,95	0
4	FMT	B	511	3/3	0.63	0.70	71,71,72,82	0
4	FMT	F	511	3/3	0.67	0.32	72,72,78,86	0
4	FMT	C	506	3/3	0.68	0.32	60,60,76,81	0
4	FMT	A	509	3/3	0.69	0.35	71,71,77,79	0
4	FMT	E	505	3/3	0.70	0.46	60,60,60,79	0
4	FMT	B	506	3/3	0.70	0.30	59,59,67,73	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
4	FMT	C	525	3/3	0.70	0.18	67,67,71,74	0
4	FMT	D	505	3/3	0.71	0.33	73,73,84,86	0
4	FMT	D	509	3/3	0.71	0.30	78,78,82,84	0
4	FMT	B	516	3/3	0.71	0.37	64,64,73,83	0
4	FMT	B	520	3/3	0.71	0.22	57,57,70,75	0
4	FMT	B	515	3/3	0.73	0.21	65,65,76,77	0
4	FMT	B	504	3/3	0.74	0.21	89,89,91,92	0
4	FMT	B	512	3/3	0.74	0.21	59,59,63,77	0
4	FMT	E	509	3/3	0.74	0.26	80,80,84,90	0
4	FMT	A	513	3/3	0.74	0.21	61,61,64,77	0
4	FMT	F	503	3/3	0.75	0.33	80,80,83,90	0
4	FMT	C	509	3/3	0.75	0.20	65,65,72,78	0
4	FMT	C	511	3/3	0.75	0.20	77,77,81,85	0
4	FMT	A	512	3/3	0.75	0.36	62,62,78,82	0
4	FMT	A	516	3/3	0.75	0.36	69,69,79,83	0
4	FMT	E	508	3/3	0.76	0.29	73,73,80,81	0
4	FMT	D	504	3/3	0.76	0.24	73,73,79,80	0
4	FMT	D	515	3/3	0.76	0.30	71,71,79,85	0
4	FMT	C	503	3/3	0.76	0.27	64,64,65,76	0
4	FMT	B	519	3/3	0.77	0.23	79,79,83,84	0
4	FMT	A	524	3/3	0.78	0.46	61,61,67,80	0
4	FMT	C	520	3/3	0.78	0.47	70,70,76,77	0
4	FMT	A	508	3/3	0.79	0.29	61,61,70,75	0
4	FMT	F	507	3/3	0.79	0.43	67,67,73,81	0
4	FMT	B	522	3/3	0.79	0.27	74,74,76,90	0
4	FMT	A	520	3/3	0.80	0.22	60,60,62,67	0
4	FMT	C	526	3/3	0.81	0.13	76,76,82,83	0
4	FMT	B	510	3/3	0.81	0.24	81,81,86,86	0
4	FMT	A	505	3/3	0.81	0.17	52,52,61,62	0
4	FMT	D	513	3/3	0.82	0.24	46,46,46,47	3
4	FMT	F	508	3/3	0.82	0.17	67,67,76,81	0
4	FMT	A	518	3/3	0.83	0.20	54,54,70,73	0
4	FMT	F	505	3/3	0.83	0.35	64,64,69,81	0
4	FMT	E	504	3/3	0.83	0.33	48,48,50,66	0
4	FMT	C	524	3/3	0.83	0.30	48,48,54,57	3
4	FMT	C	516	3/3	0.84	0.23	64,64,75,77	0
4	FMT	A	507	3/3	0.85	0.36	73,73,73,75	0
4	FMT	A	514	3/3	0.85	0.23	71,71,74,83	0
4	FMT	C	517	3/3	0.85	0.38	67,67,67,69	0
4	FMT	D	508	3/3	0.85	0.24	57,57,62,70	0
4	FMT	E	506	3/3	0.86	0.58	64,64,66,79	0
4	FMT	B	524	3/3	0.86	0.17	88,88,88,89	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
4	FMT	D	511	3/3	0.86	0.24	70,70,72,75	0
4	FMT	C	513	3/3	0.87	0.40	59,59,70,80	0
4	FMT	D	507	3/3	0.87	0.14	56,56,63,65	0
4	FMT	C	508	3/3	0.87	0.41	62,62,67,70	0
4	FMT	E	511	3/3	0.87	0.33	59,59,60,69	0
4	FMT	B	518	3/3	0.87	0.28	58,58,70,79	0
4	FMT	C	507	3/3	0.87	0.17	56,56,56,60	0
4	FMT	D	512	3/3	0.88	0.37	56,56,63,72	0
4	FMT	B	507	3/3	0.88	0.38	65,65,70,72	0
4	FMT	A	521	3/3	0.88	0.43	71,71,72,75	0
4	FMT	A	515	3/3	0.89	0.20	48,48,56,56	0
4	FMT	B	509	3/3	0.89	0.24	66,66,70,71	0
4	FMT	D	503	3/3	0.89	0.30	50,50,50,63	0
4	FMT	D	514	3/3	0.89	0.26	45,45,49,57	0
4	FMT	A	523	3/3	0.89	0.41	66,66,80,86	0
4	FMT	A	517	3/3	0.90	0.34	32,32,38,47	3
4	FMT	A	504	3/3	0.90	0.16	81,81,83,84	0
4	FMT	E	503	3/3	0.90	0.13	66,66,72,76	0
5	NA	E	513	1/1	0.90	0.27	61,61,61,61	0
4	FMT	F	509	3/3	0.91	0.26	54,54,58,60	0
4	FMT	C	510	3/3	0.91	0.30	69,69,73,76	0
4	FMT	A	503	3/3	0.91	0.27	69,69,75,76	0
4	FMT	B	521	3/3	0.91	0.13	66,66,70,75	0
4	FMT	B	513	3/3	0.91	0.20	30,30,34,48	0
4	FMT	D	506	3/3	0.91	0.26	63,63,66,72	0
4	FMT	C	521	3/3	0.92	0.27	55,55,61,66	0
4	FMT	E	512	3/3	0.92	0.31	84,84,91,95	0
4	FMT	B	514	3/3	0.92	0.14	47,47,50,55	0
4	FMT	C	518	3/3	0.92	0.22	65,65,71,74	0
4	FMT	B	505	3/3	0.92	0.15	61,61,80,82	0
4	FMT	C	505	3/3	0.92	0.18	58,58,61,64	0
4	FMT	B	508	3/3	0.93	0.15	52,52,59,67	0
4	FMT	B	523	3/3	0.93	0.16	57,57,71,73	0
4	FMT	F	504	3/3	0.93	0.40	65,65,69,74	0
4	FMT	B	517	3/3	0.94	0.15	51,51,53,58	0
4	FMT	C	504	3/3	0.94	0.15	59,59,61,64	0
4	FMT	D	510	3/3	0.94	0.50	57,57,67,72	0
4	FMT	A	506	3/3	0.94	0.25	59,59,61,63	0
4	FMT	F	506	3/3	0.95	0.29	58,58,61,65	0
3	4OA	A	502	27/27	0.95	0.18	35,38,54,59	0
5	NA	C	527	1/1	0.95	0.16	44,44,44,44	0
3	4OA	E	502	27/27	0.95	0.13	42,46,64,65	0

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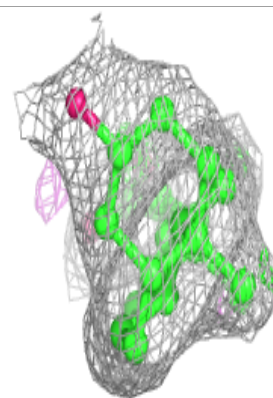
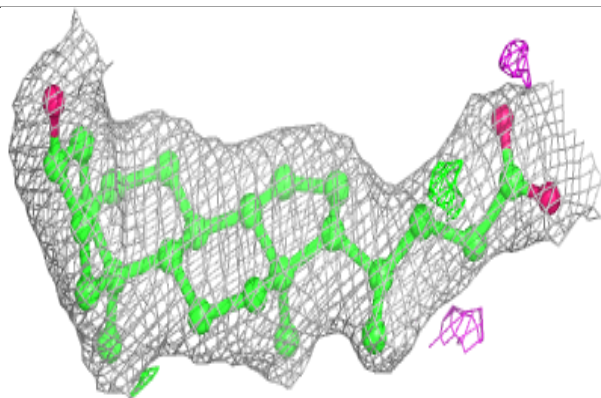
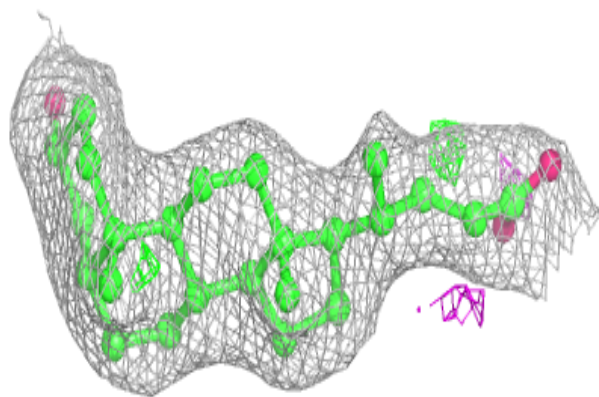
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	4OA	F	502	27/27	0.96	0.13	45,49,64,72	0
4	FMT	C	515	3/3	0.96	0.17	56,56,68,68	0
3	4OA	D	502	27/27	0.96	0.15	41,45,70,78	0
4	FMT	C	512	3/3	0.96	0.22	51,51,53,53	0
3	4OA	C	502	27/27	0.96	0.17	35,40,69,77	0
4	FMT	E	507	3/3	0.96	0.20	69,69,71,72	0
3	4OA	B	502	27/27	0.97	0.13	33,36,54,58	0
5	NA	D	516	1/1	0.97	0.16	50,50,50,50	0
2	HEM	F	501	43/43	0.97	0.12	44,50,58,77	0
5	NA	F	514	1/1	0.97	0.13	55,55,55,55	0
2	HEM	E	501	43/43	0.98	0.13	37,42,50,52	0
4	FMT	A	522	3/3	0.98	0.13	45,45,46,50	0
2	HEM	C	501	43/43	0.98	0.15	32,34,38,49	0
5	NA	A	525	1/1	0.98	0.17	50,50,50,50	0
2	HEM	B	501	43/43	0.99	0.14	28,32,38,50	0
2	HEM	A	501	43/43	0.99	0.14	30,33,36,46	0
2	HEM	D	501	43/43	0.99	0.14	27,33,46,48	0
5	NA	B	525	1/1	0.99	0.12	43,43,43,43	0

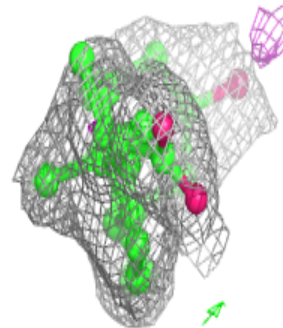
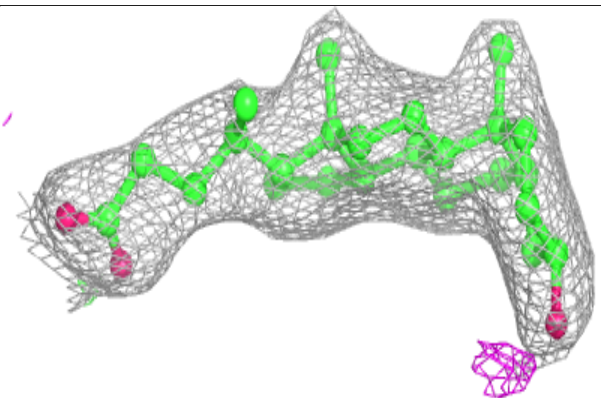
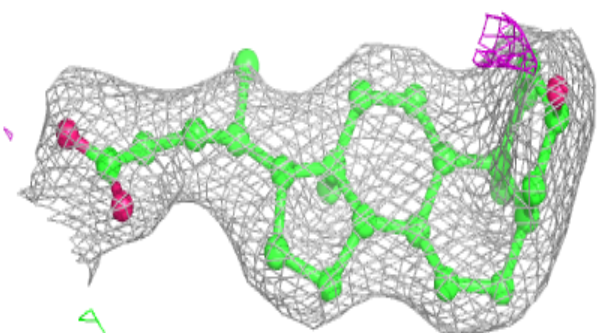
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around 4OA A 502:

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

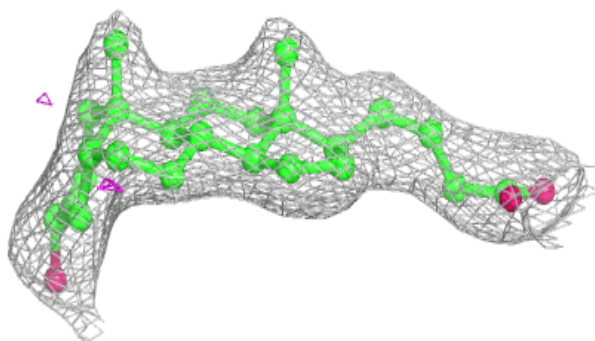
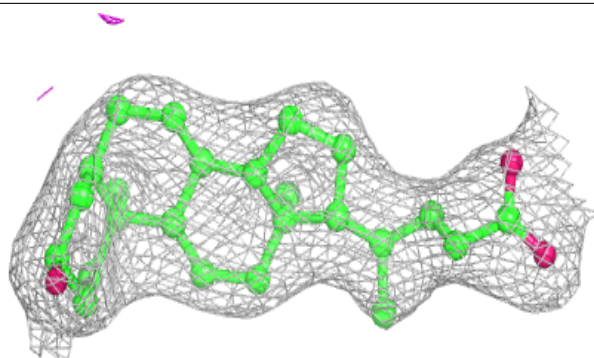
**Electron density around 4OA E 502:**

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

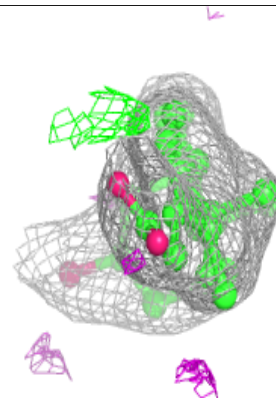
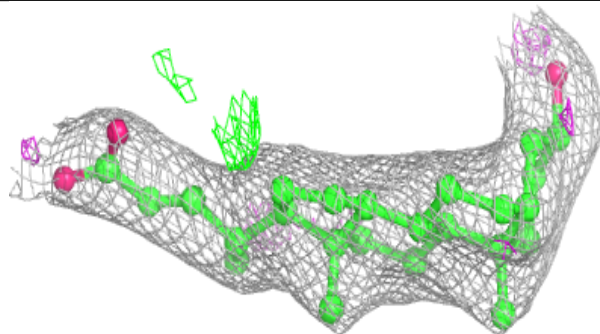
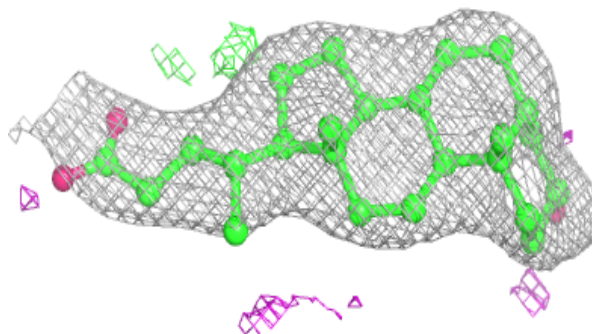


Electron density around 4OA F 502:

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

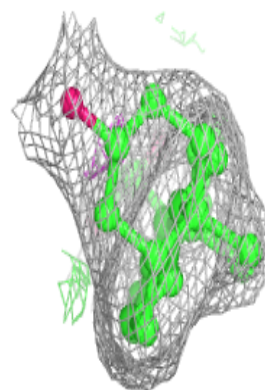
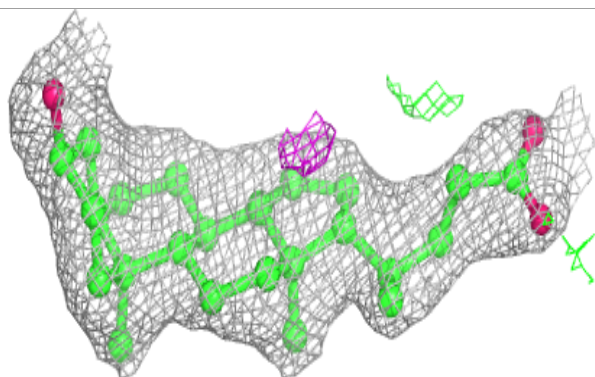
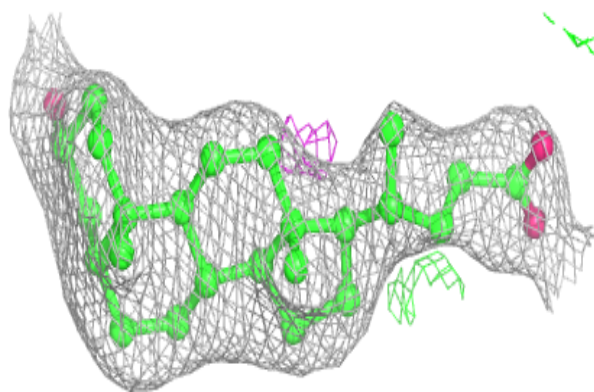
**Electron density around 4OA D 502:**

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

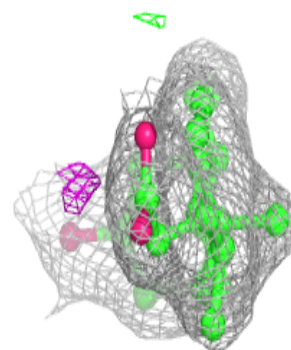
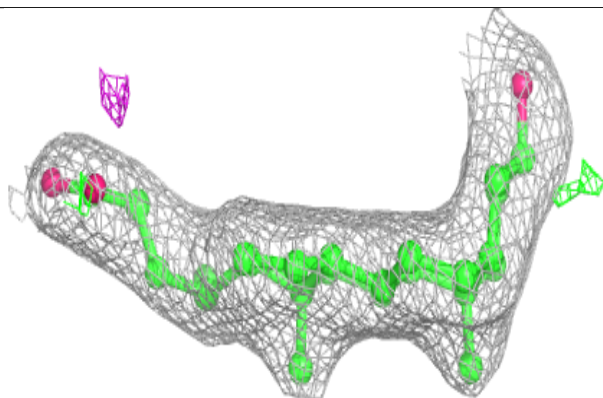
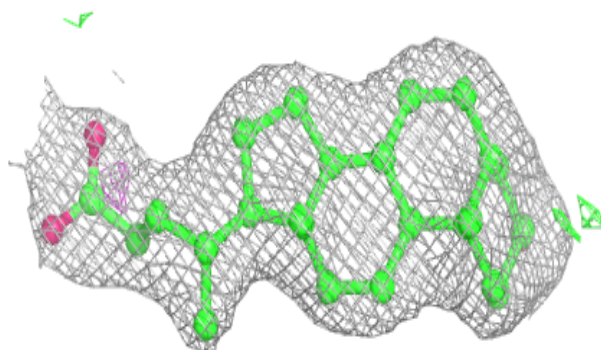


Electron density around 4OA C 502:

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

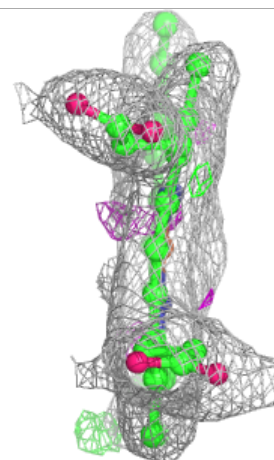
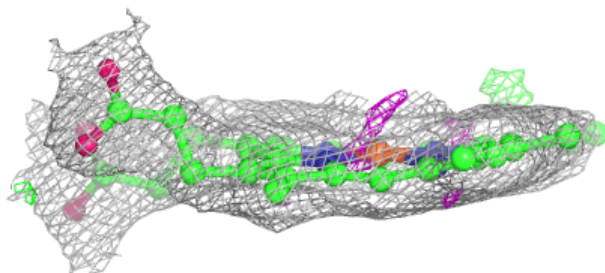
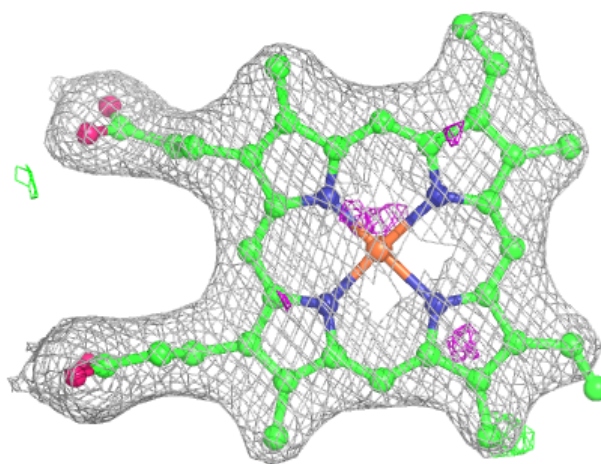
**Electron density around 4OA B 502:**

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



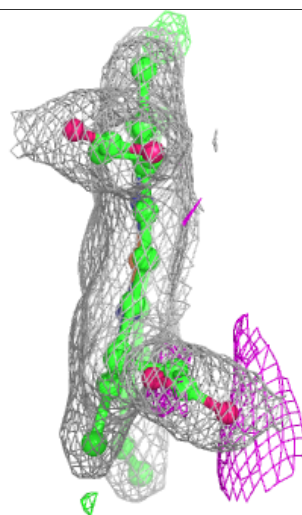
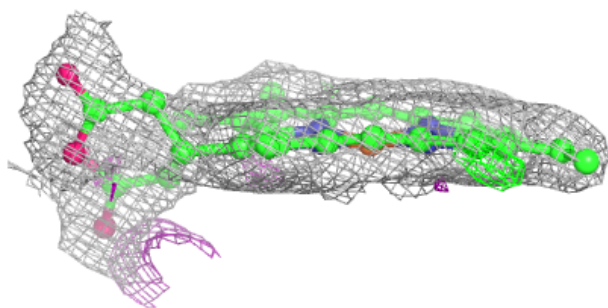
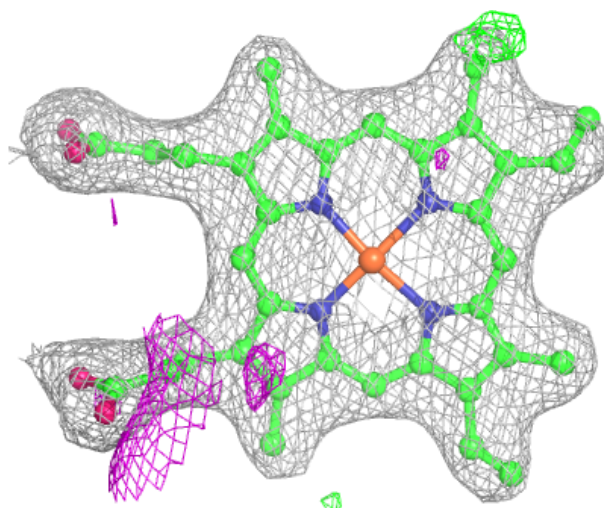
Electron density around HEM F 501:

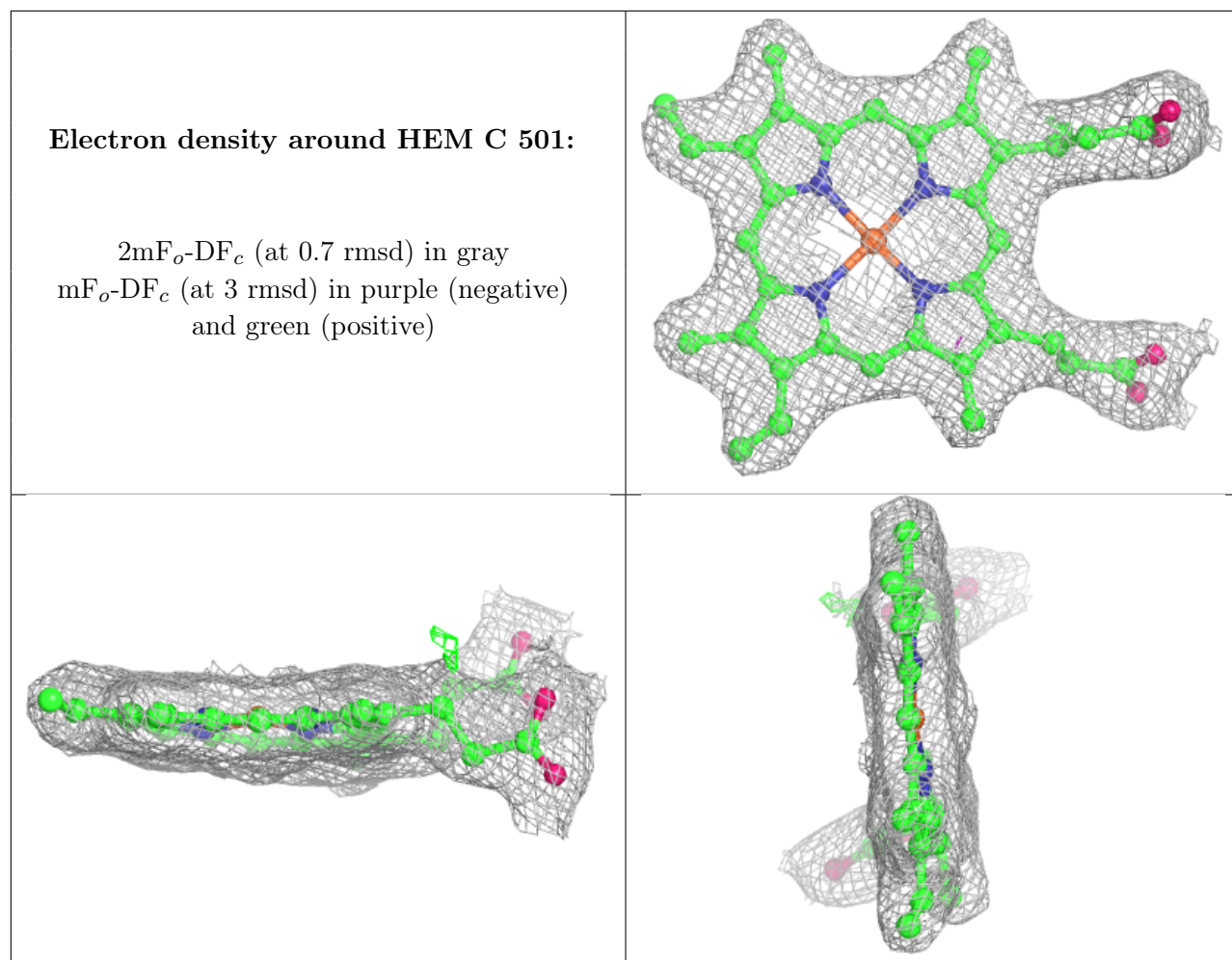
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around HEM E 501:

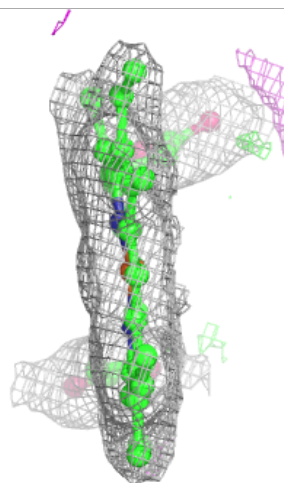
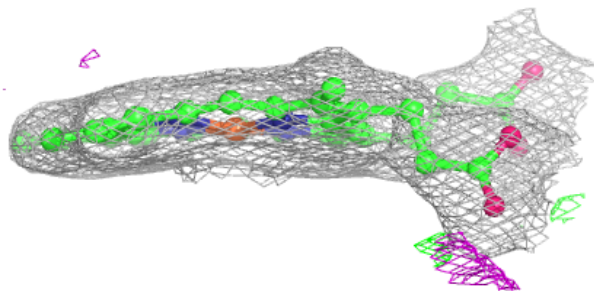
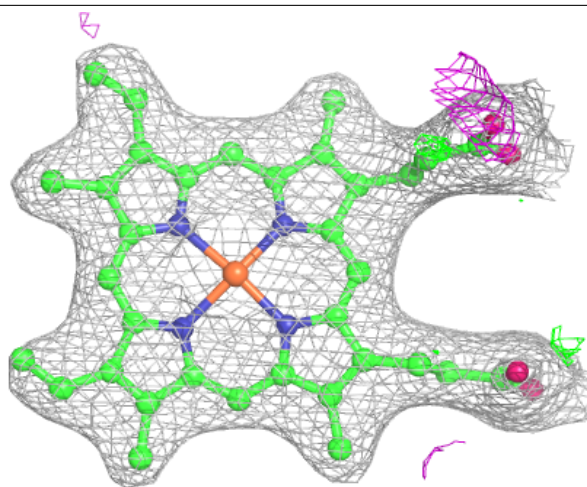
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

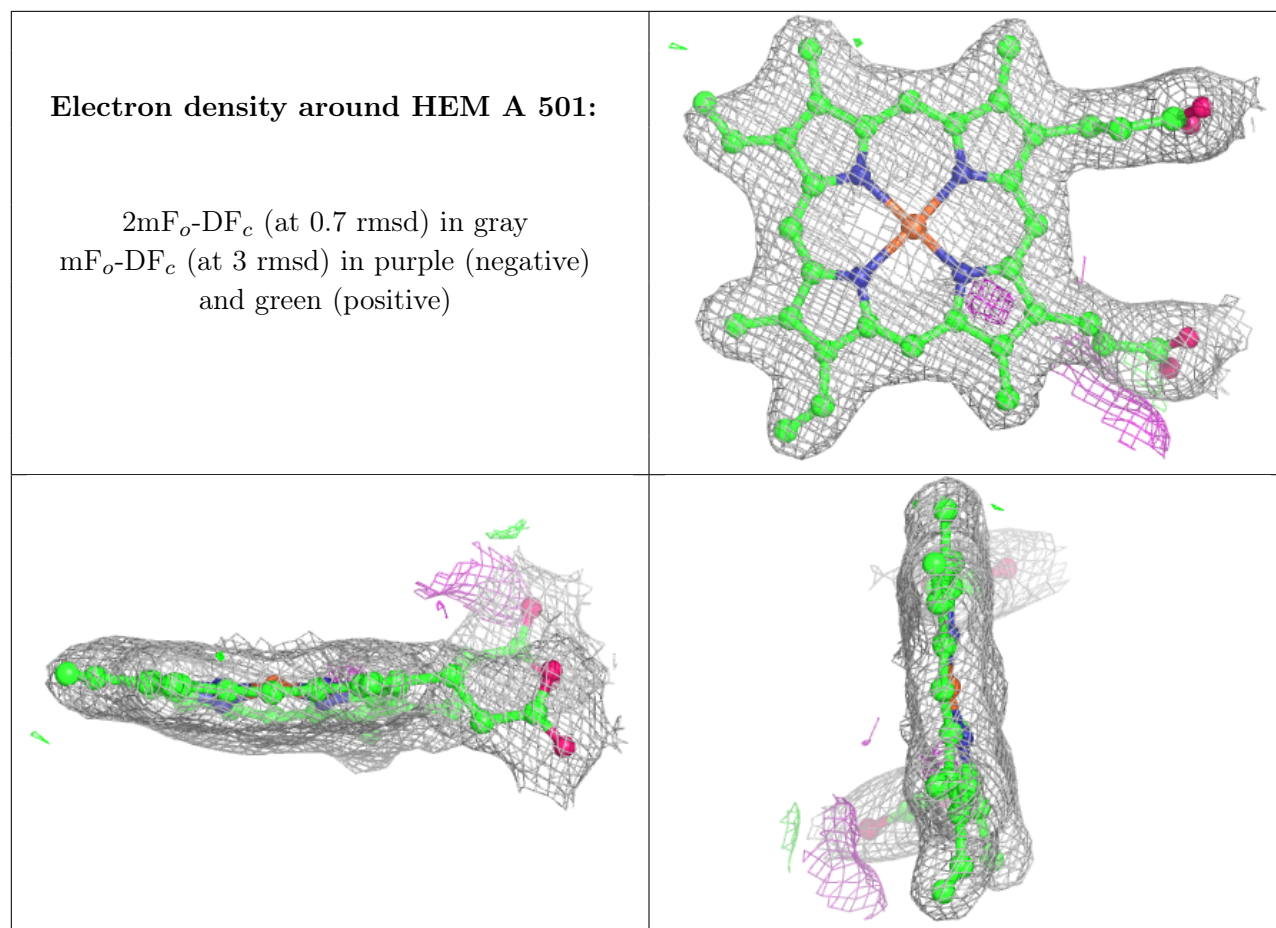


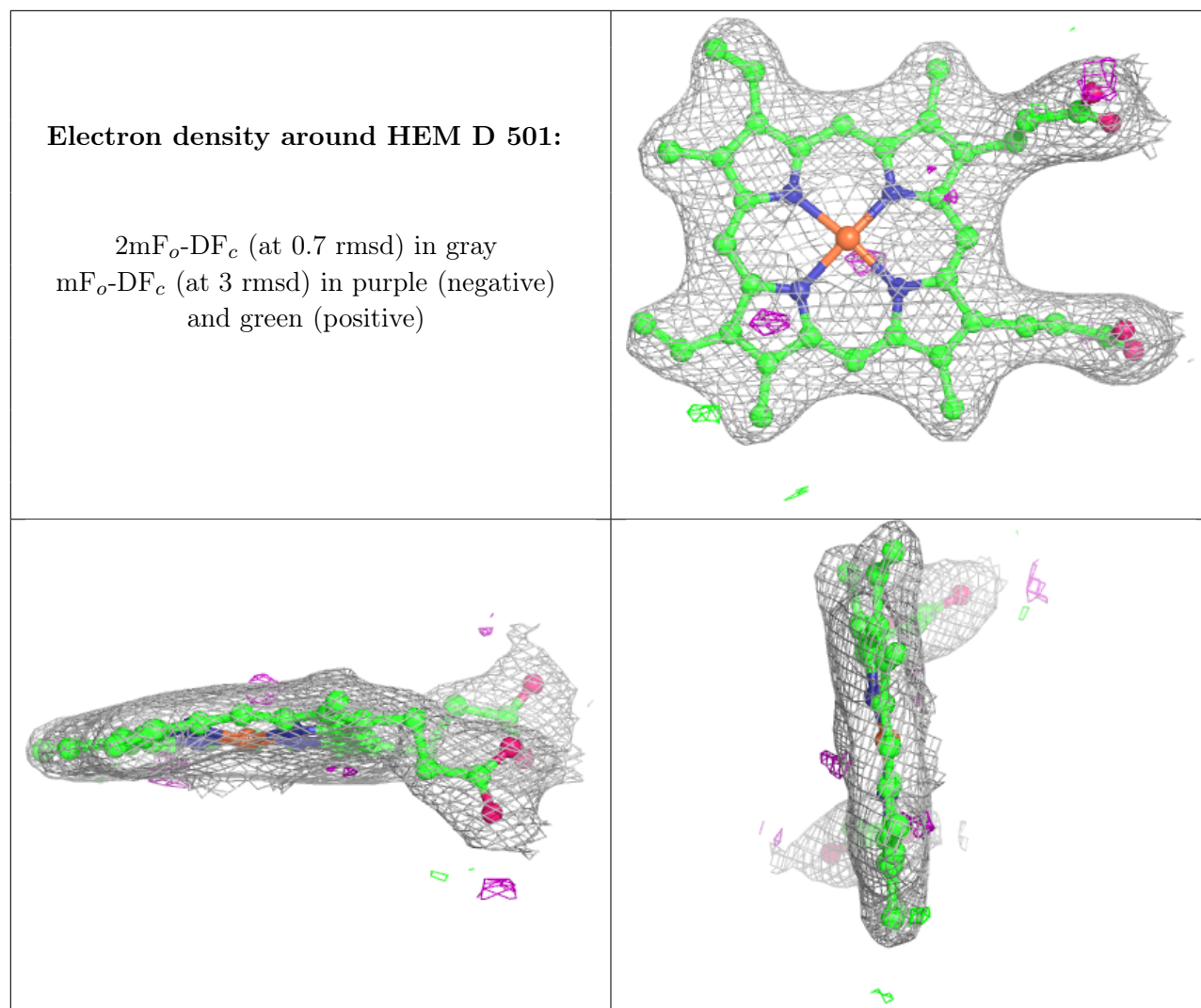


Electron density around HEM B 501:

$2mF_o-DF_c$ (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.