W O R L D W I D E

wwPDB

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

wwPDB X-ray Structure Validation Summary Report (i)

May 13, 2020 – 11:34 pm BST

PDB ID	:	2PBJ
Title	:	GSH-heme bound microsomal prostaglandin E synthase
Authors	:	Takusagawa, F.; Yamada, T.
Deposited on	:	2007-03-28
Resolution	:	2.80 Å(reported)

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

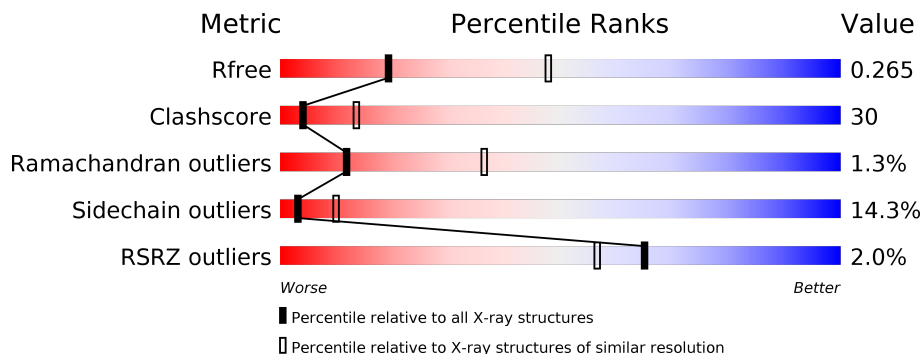|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.11
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

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 2.80 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Rfree		0.265
Clashscore		30
Ramachandran outliers		1.3%
Sidechain outliers		14.3%
RSRZ outliers		2.0%

Worse   *Better*

■ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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 on the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	290	2% 50% 34% 9% 6%
1	B	290	2% 49% 36% 9% 6%
1	C	290	% 49% 37% 9% 6%
1	D	290	2% 48% 38% 9% 6%

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 9279 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.
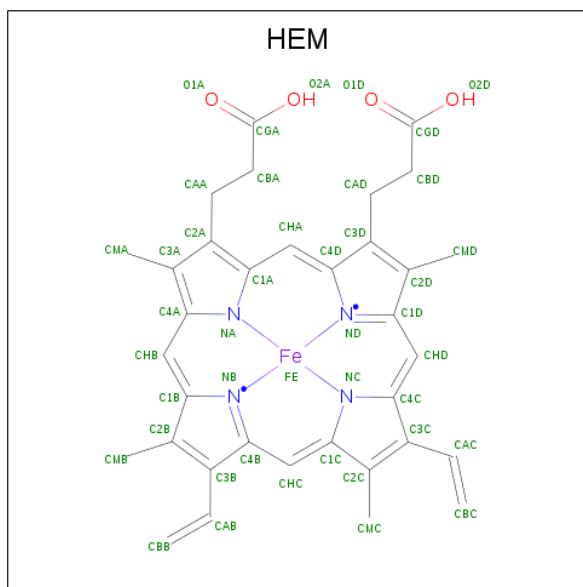
- Molecule 1 is a protein called Prostaglandin E synthase 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	274	Total 2214	C 1421	N 376	O 407	S 10	0	0	0
1	B	274	Total 2214	C 1421	N 376	O 407	S 10	0	0	0
1	C	274	Total 2214	C 1421	N 376	O 407	S 10	0	0	0
1	D	274	Total 2214	C 1421	N 376	O 407	S 10	0	0	0

- Molecule 2 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	1	Total 1	Cl 1	0	0
2	A	1	Total 1	Cl 1	0	0
2	D	1	Total 1	Cl 1	0	0
2	C	1	Total 1	Cl 1	0	0

- Molecule 3 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$).

HEM

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
3	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
3	C	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
3	D	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		

• Molecule 4 is GLUTATHIONE (three-letter code: GSH) (formula: $C_{10}H_{17}N_3O_6S$).

GSH
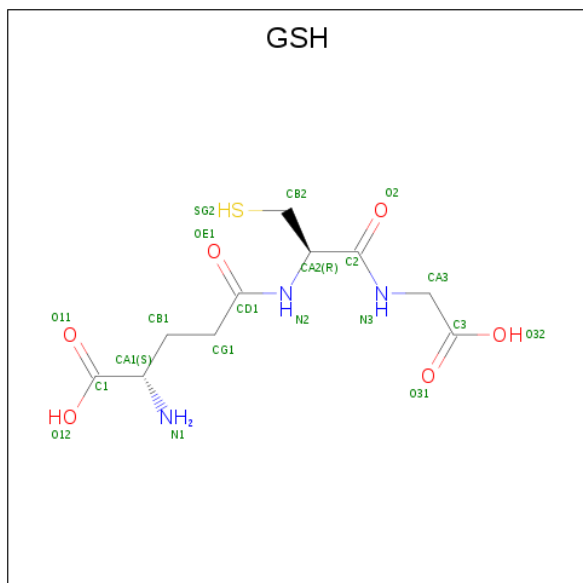
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total 20	C 10	N 3	O 6	S 1	0	0
4	B	1	Total 20	C 10	N 3	O 6	S 1	0	0
4	C	1	Total 20	C 10	N 3	O 6	S 1	0	0
4	D	1	Total 20	C 10	N 3	O 6	S 1	0	0

- Molecule 5 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	52	Total 52	O 52	0	0
5	B	39	Total 39	O 39	0	0
5	C	40	Total 40	O 40	0	0
5	D	36	Total 36	O 36	0	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA and DNA 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.
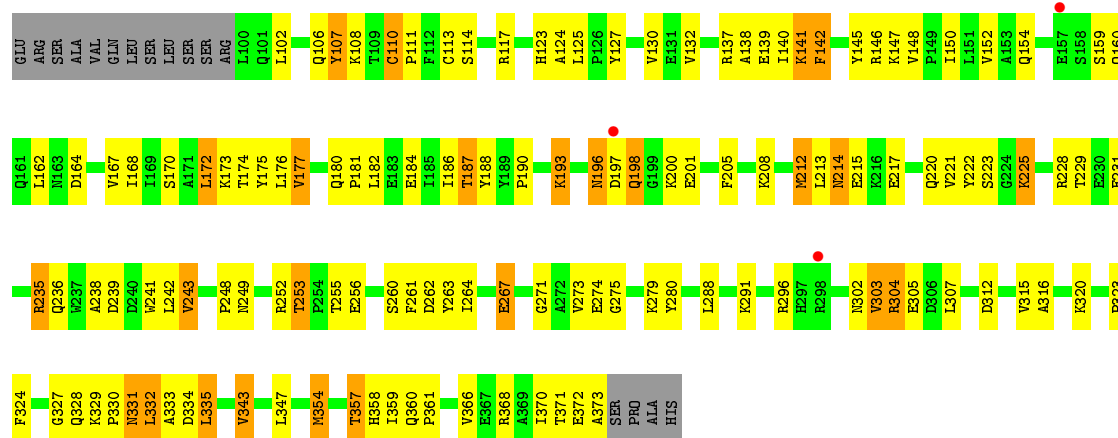
- Molecule 1: Prostaglandin E synthase 2
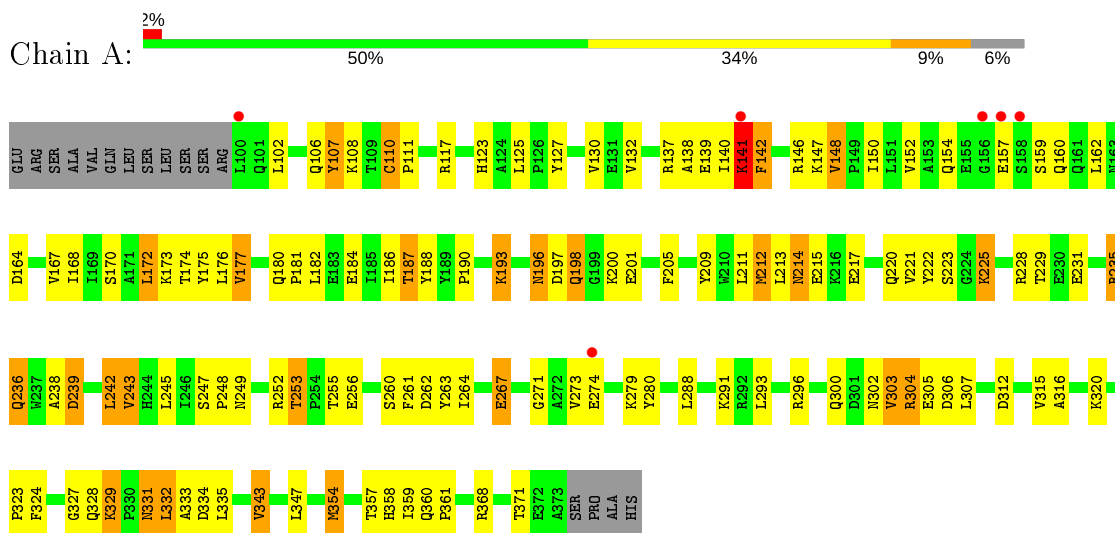
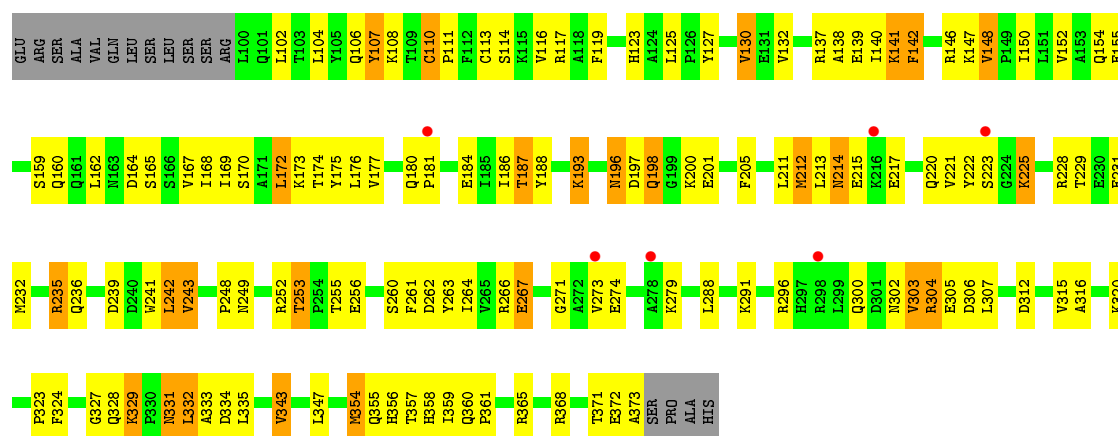
- Molecule 1: Prostaglandin E synthase 2
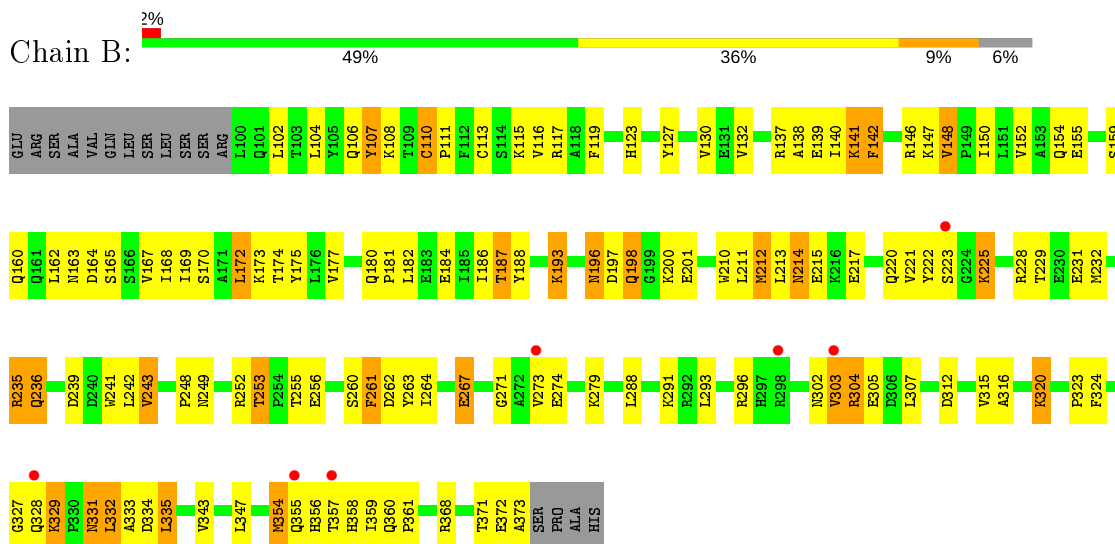
- Molecule 1: Prostaglandin E synthase 2

• Molecule 1: Prostaglandin E synthase 2

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	127.00Å　　122.49Å　　110.97Å 90.00°　　　111.00°　　　90.00°	Depositor
Resolution (Å)	20.00　–　2.80 85.19　–　2.80	Depositor EDS
% Data completeness (in resolution range)	100.0 (20.00-2.80) 88.1 (85.19-2.80)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$<I/\sigma(I)>$ [1]	6.13 (at 2.82Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.242　,　0.269 0.238　,　0.265	Depositor DCC
R_{free} test set	3503 reflections (9.95%)	wwPDB-VP
Wilson B-factor (Å²)	32.4	Xtriage
Anisotropy	0.396	Xtriage
Bulk solvent k_{sol}(e/Å³), B_{sol}(Å²)	0.37 , 52.5	EDS
L-test for twinning[2]	$<|L|> = 0.48$, $<L^2> = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.88	EDS
Total number of atoms	9279	wwPDB-VP
Average B, all atoms (Å²)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.79% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $<|L|>$, $<L^2>$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: GSH, CL, 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	0.43	0/2266	0.66	1/3070 (0.0%)
1	B	0.44	0/2266	0.67	2/3070 (0.1%)
1	C	0.42	0/2266	0.66	2/3070 (0.1%)
1	D	0.43	0/2266	0.66	1/3070 (0.0%)
All	All	0.43	0/9064	0.66	6/12280 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	C	0	1
All	All	0	2

There are no bond length outliers.

The worst 5 of 6 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	107	TYR	N-CA-C	-5.91	95.04	111.00
1	B	107	TYR	N-CA-C	-5.81	95.31	111.00
1	D	107	TYR	N-CA-C	-5.74	95.50	111.00
1	A	107	TYR	N-CA-C	-5.64	95.77	111.00
1	C	357	THR	N-CA-C	5.11	124.79	111.00

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	280	TYR	Sidechain
1	C	280	TYR	Sidechain

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2214	0	2197	145	0
1	B	2214	0	2197	145	1
1	C	2214	0	2197	139	0
1	D	2214	0	2197	147	0
2	A	1	0	0	1	0
2	B	1	0	0	0	0
2	C	1	0	0	1	0
2	D	1	0	0	0	0
3	A	43	0	30	1	0
3	B	43	0	30	1	0
3	C	43	0	30	1	0
3	D	43	0	30	1	0
4	A	20	0	14	2	0
4	B	20	0	14	3	0
4	C	20	0	14	2	0
4	D	20	0	14	3	0
5	A	52	0	0	4	0
5	B	39	0	0	4	0
5	C	40	0	0	2	0
5	D	36	0	0	1	0
All	All	9279	0	8964	543	1

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 30.

The worst 5 of 543 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:B:225:LYS:H	1:B:225:LYS:HD3	1.15	1.06
1:D:225:LYS:H	1:D:225:LYS:HD3	1.17	1.06

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:225:LYS:H	1:A:225:LYS:HD3	1.18	1.04
1:C:225:LYS:HD3	1:C:225:LYS:H	1.20	1.03
1:A:187:THR:HG23	1:B:229:THR:HG21	1.38	1.01

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:223:SER:O	1:B:320:LYS:NZ[2_556]	1.92	0.28

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	272/290 (94%)	248 (91%)	20 (7%)	4 (2%)	10	33
1	B	272/290 (94%)	250 (92%)	20 (7%)	2 (1%)	22	53
1	C	272/290 (94%)	249 (92%)	18 (7%)	5 (2%)	8	28
1	D	272/290 (94%)	250 (92%)	19 (7%)	3 (1%)	14	41
All	All	1088/1160 (94%)	997 (92%)	77 (7%)	14 (1%)	12	36

5 of 14 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	142	PHE
1	B	142	PHE
1	C	142	PHE
1	D	142	PHE
1	C	303	VAL

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	233/247 (94%)	199 (85%)	34 (15%)	3	9
1	B	233/247 (94%)	200 (86%)	33 (14%)	3	10
1	C	233/247 (94%)	200 (86%)	33 (14%)	3	10
1	D	233/247 (94%)	200 (86%)	33 (14%)	3	10
All	All	932/988 (94%)	799 (86%)	133 (14%)	3	10

5 of 133 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	320	LYS
1	C	177	VAL
1	D	261	PHE
1	B	329	LYS
1	C	102	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 50 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	236	GLN
1	C	123	HIS
1	D	236	GLN
1	B	302	ASN
1	B	356	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 carbohydrates in this entry.

5.6 Ligand geometry (i)

Of 12 ligands modelled in this entry, 4 are monoatomic - leaving 8 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
3	HEM	B	476	-	27,50,50	1.46	3 (11%)	17,82,82	1.05	0
4	GSH	D	477	-	12,19,19	1.19	1 (8%)	15,24,24	1.14	2 (13%)
3	HEM	D	476	-	27,50,50	1.42	3 (11%)	17,82,82	1.06	0
4	GSH	C	477	-	12,19,19	1.09	1 (8%)	15,24,24	1.06	1 (6%)
4	GSH	A	477	-	12,19,19	1.01	1 (8%)	15,24,24	1.00	1 (6%)
4	GSH	B	477	-	12,19,19	1.11	1 (8%)	15,24,24	0.98	1 (6%)
3	HEM	C	476	-	27,50,50	1.52	3 (11%)	17,82,82	0.98	0
3	HEM	A	476	-	27,50,50	1.54	4 (14%)	17,82,82	1.00	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	HEM	B	476	-	-	1/6/54/54	-
4	GSH	D	477	-	-	5/18/24/24	-
3	HEM	D	476	-	-	1/6/54/54	-
4	GSH	C	477	-	-	5/18/24/24	-
4	GSH	A	477	-	-	5/18/24/24	-
4	GSH	B	477	-	-	5/18/24/24	-
3	HEM	C	476	-	-	1/6/54/54	-
3	HEM	A	476	-	-	1/6/54/54	-

The worst 5 of 17 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	476	HEM	C3B-C2B	-4.63	1.33	1.40
3	A	476	HEM	C3B-C2B	-4.63	1.34	1.40
3	C	476	HEM	C3B-C2B	-4.50	1.34	1.40
3	D	476	HEM	C3B-C2B	-4.46	1.34	1.40
4	D	477	GSH	CG1-CD1	3.24	1.57	1.51

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	477	GSH	CB1-CG1-CD1	-2.79	106.81	113.04
4	D	477	GSH	CA2-CB2-SG2	-2.67	111.19	114.19
4	A	477	GSH	CB1-CG1-CD1	-2.66	107.09	113.04
4	D	477	GSH	CB1-CG1-CD1	-2.49	107.47	113.04
4	B	477	GSH	CB1-CG1-CD1	-2.26	107.98	113.04

There are no chirality outliers.

5 of 24 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	476	HEM	C2A-CAA-CBA-CGA
4	D	477	GSH	N1-CA1-CB1-CG1
4	D	477	GSH	C1-CA1-CB1-CG1
3	D	476	HEM	C2A-CAA-CBA-CGA
4	C	477	GSH	N1-CA1-CB1-CG1

There are no ring outliers.
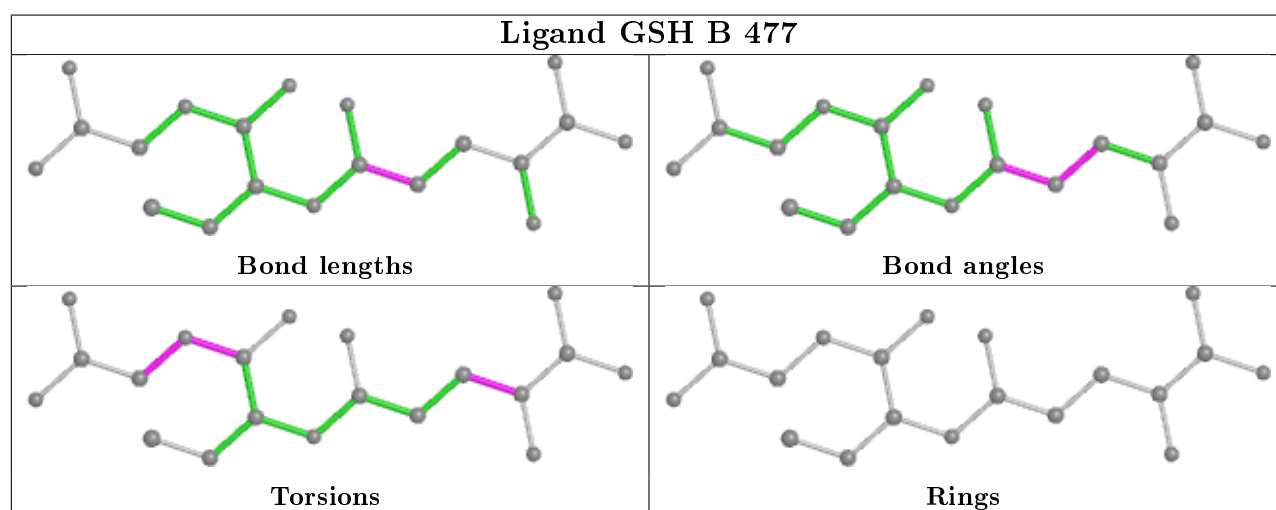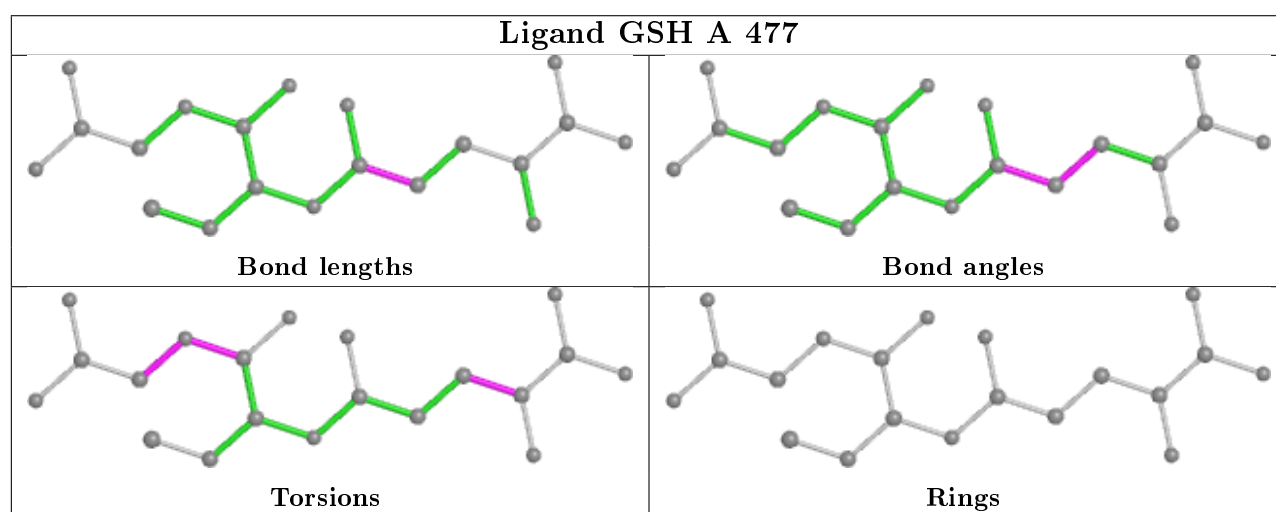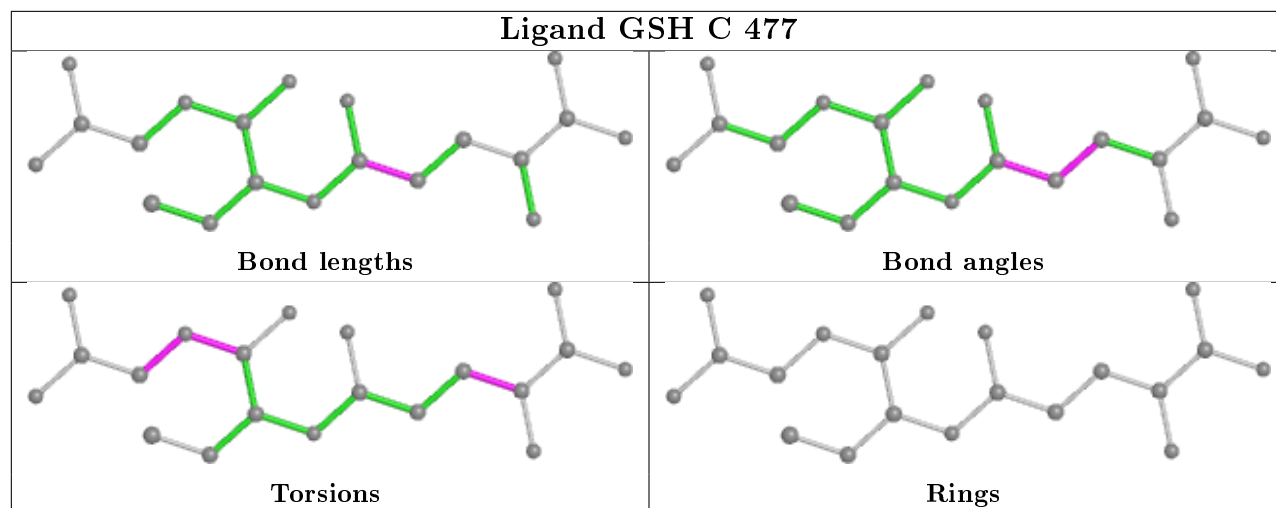
8 monomers are involved in 14 short contacts:

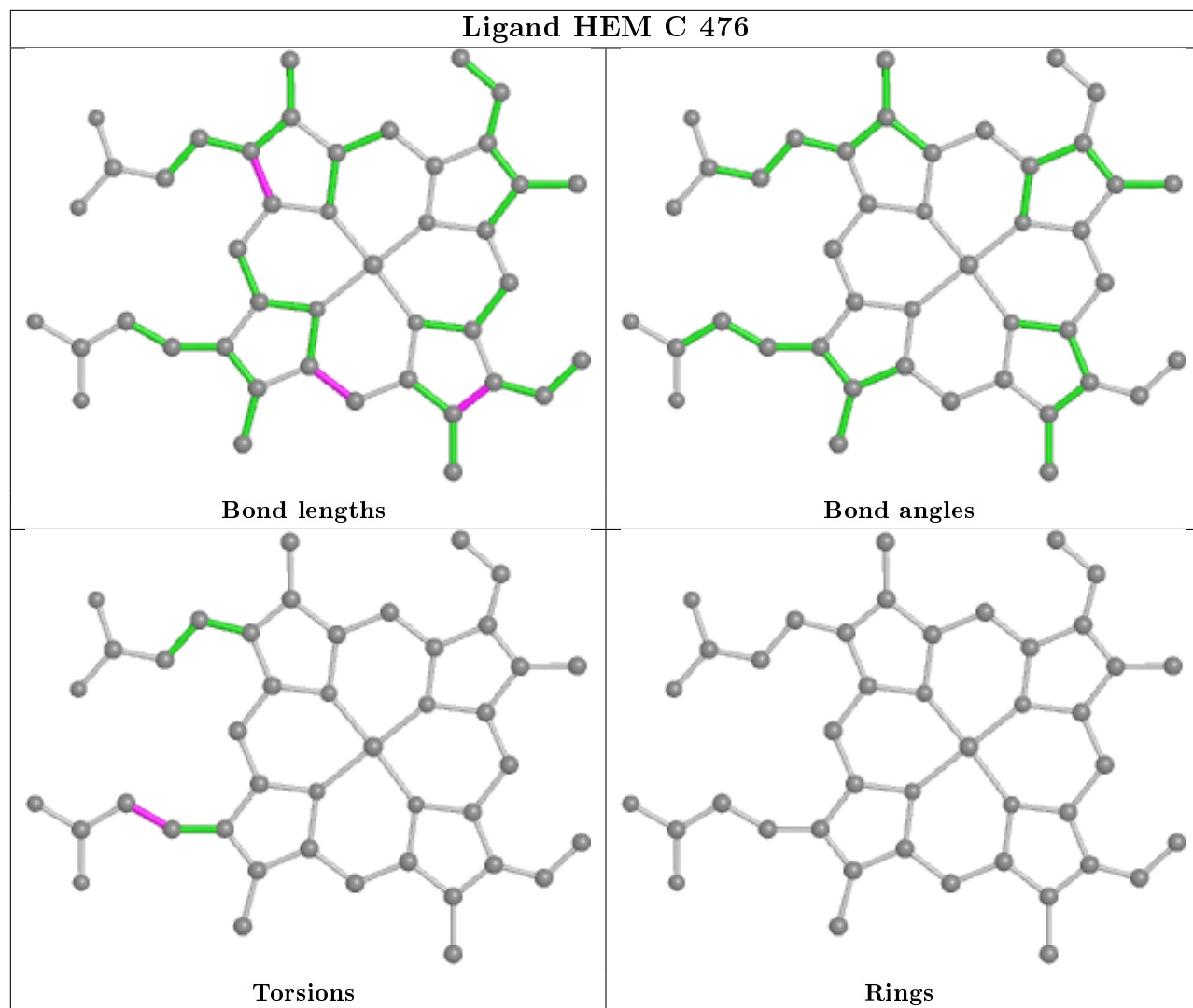| Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	476	HEM	1	0
4	D	477	GSH	3	0
3	D	476	HEM	1	0
4	C	477	GSH	2	0
4	A	477	GSH	2	0
4	B	477	GSH	3	0
3	C	476	HEM	1	0
3	A	476	HEM	1	0

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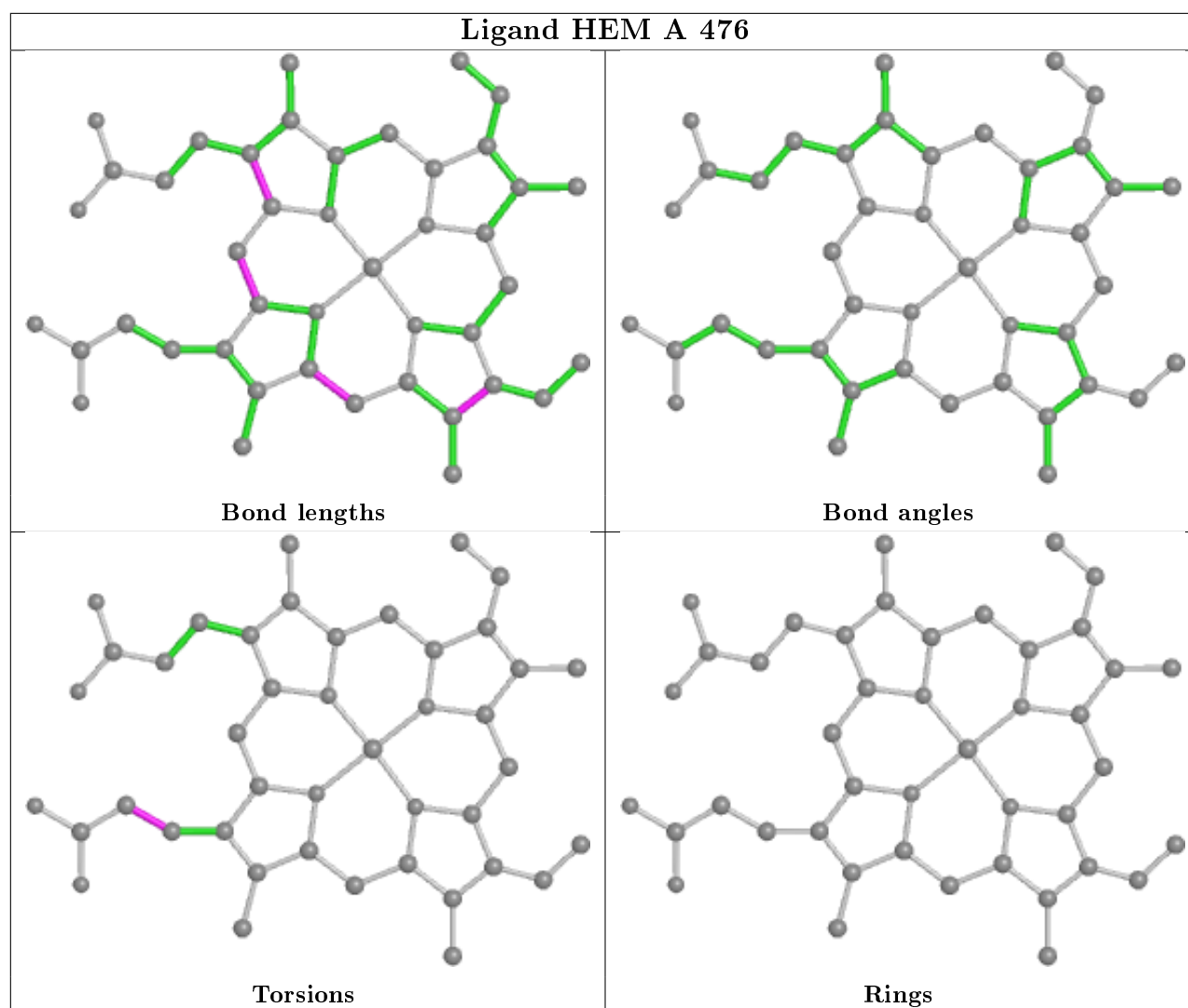
also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted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

Ligand HEM B 476

Bond lengths

Bond angles

Torsions

Rings

Ligand GSH D 477

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM D 476

Bond lengths

Bond angles

Torsions

Rings

Ligand GSH C 477

Bond lengths

Bond angles

Torsions

Rings

Ligand GSH A 477

Bond lengths

Bond angles

Torsions

Rings

Ligand GSH B 477

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM C 476

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM A 476

Bond lengths

Bond angles

Torsions

Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data (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	274/290 (94%)	0.20	6 (2%)	62	52	13, 29, 57, 71	0
1	B	274/290 (94%)	0.40	7 (2%)	56	46	11, 28, 58, 71	0
1	C	274/290 (94%)	0.21	3 (1%)	80	75	14, 29, 57, 70	0
1	D	274/290 (94%)	0.36	6 (2%)	62	52	13, 28, 57, 70	0
All	All	1096/1160 (94%)	0.29	22 (2%)	65	56	11, 28, 57, 71	0

The worst 5 of 22 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	273	VAL	6.5
1	D	273	VAL	4.3
1	A	158	SER	3.8
1	D	223	SER	3.5
1	B	223	SER	2.9

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

There are no non-standard protein/DNA/RNA residues in this entry.
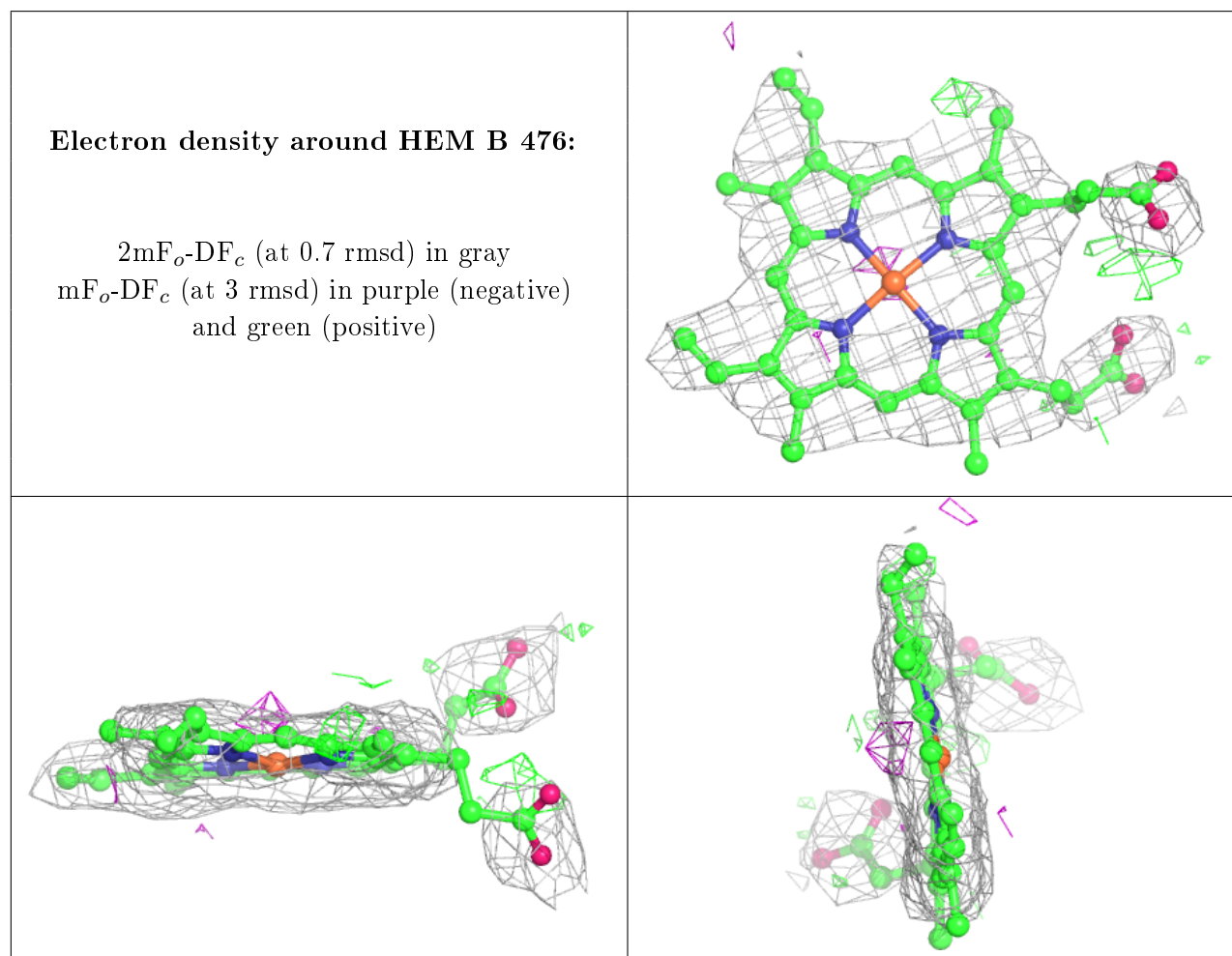
6.3 Carbohydrates (i)

There are no carbohydrates in this entry.

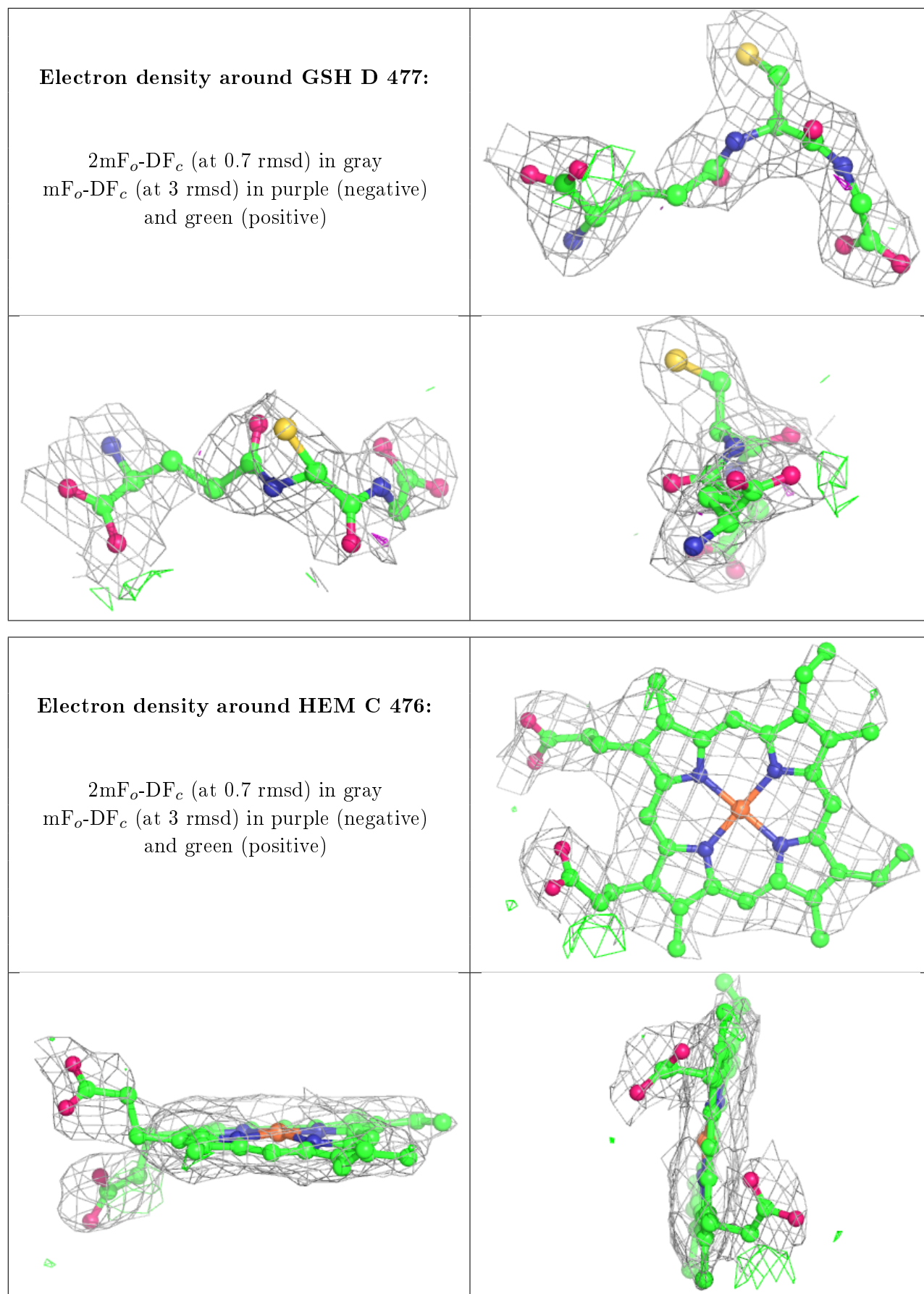## 6.4 Ligands (i)

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	HEM	B	476	43/43	0.92	0.25	39,44,52,54	0
4	GSH	D	477	20/20	0.92	0.22	28,35,44,44	0
3	HEM	C	476	43/43	0.92	0.20	38,43,51,52	0
3	HEM	A	476	43/43	0.92	0.23	37,44,51,53	0
3	HEM	D	476	43/43	0.93	0.22	37,43,51,54	0
4	GSH	B	477	20/20	0.93	0.22	28,35,45,45	0
4	GSH	A	477	20/20	0.94	0.22	28,36,45,46	0
4	GSH	C	477	20/20	0.94	0.22	29,36,43,44	0
2	CL	A	475	1/1	0.97	0.25	16,16,16,16	0
2	CL	B	475	1/1	0.98	0.23	16,16,16,16	0
2	CL	D	475	1/1	0.98	0.27	18,18,18,18	0
2	CL	C	475	1/1	0.99	0.28	17,17,17,17	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.
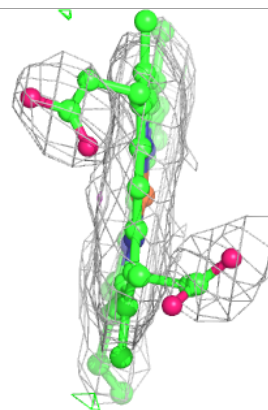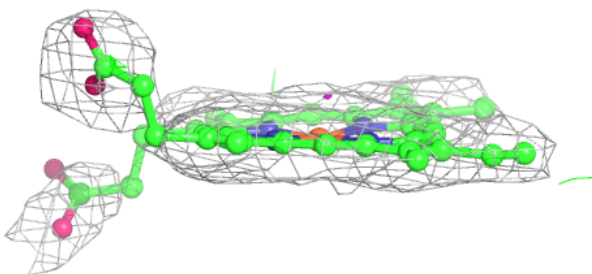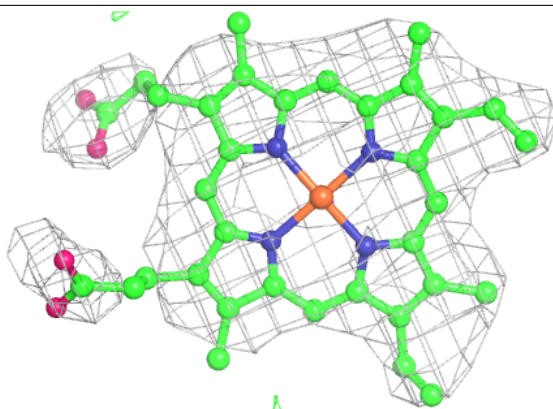
Electron density around HEM B 476:

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

Electron density around GSH D 477:

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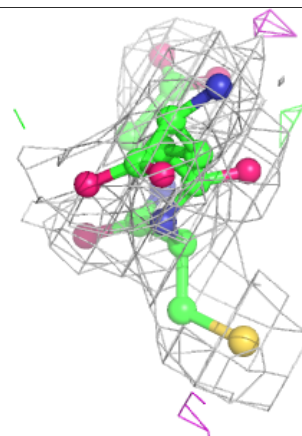mF_o-DF_c (at 3 rmsd) in purple (negative)
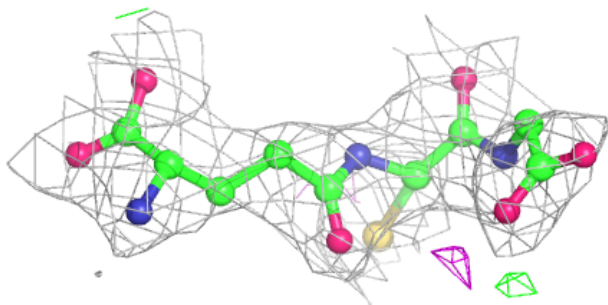and green (positive)

Electron density around HEM C 476:

$2mF_o$-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 476:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
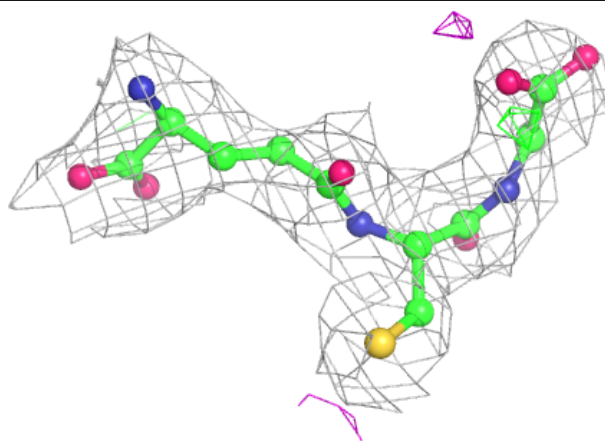and green (positive)
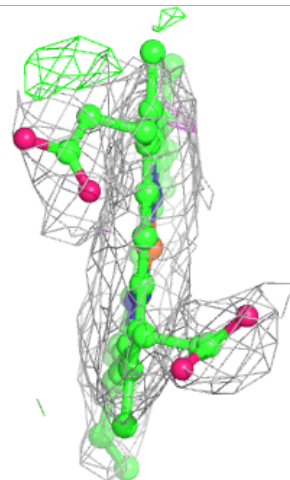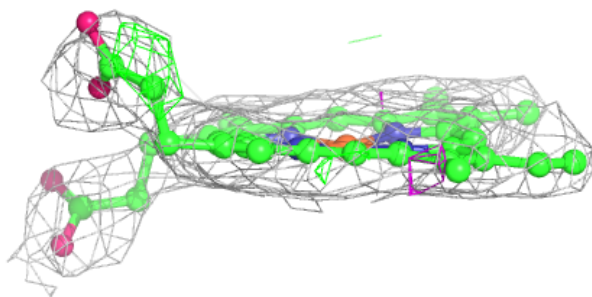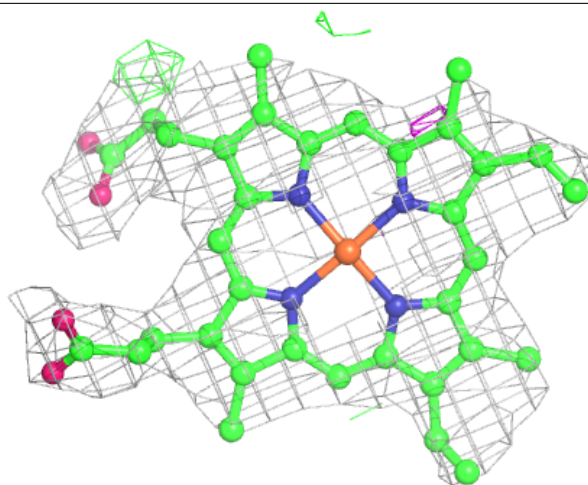
Electron density around HEM D 476:

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

Electron density around GSH B 477:

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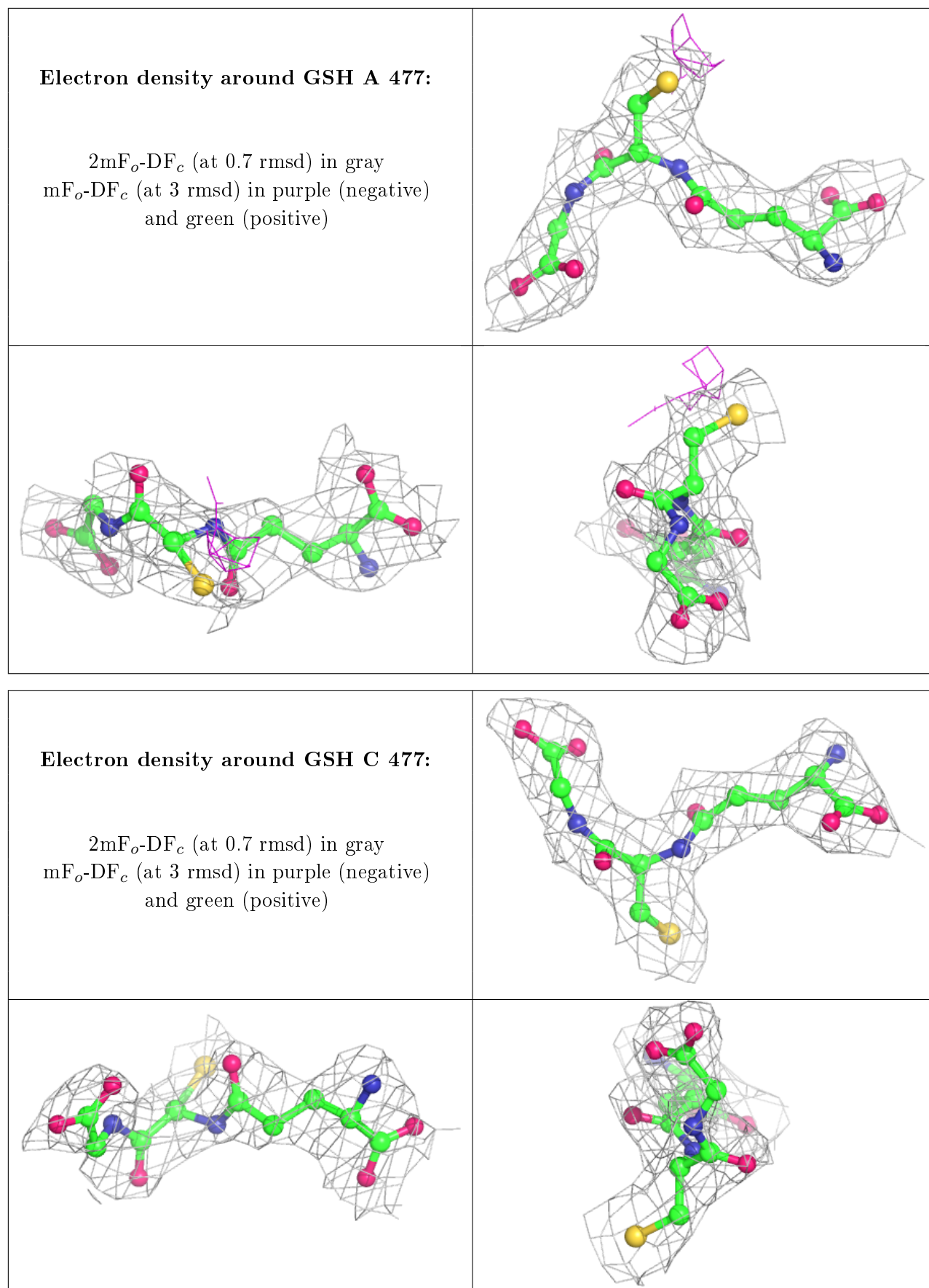mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around GSH A 477:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray

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

Electron density around GSH C 477:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray

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

6.5 Other polymers (i)

There are no such residues in this entry.