wwPDB X-ray Structure Validation Summary Report (i)

Nov 6, 2023 – 02:30 AM EST

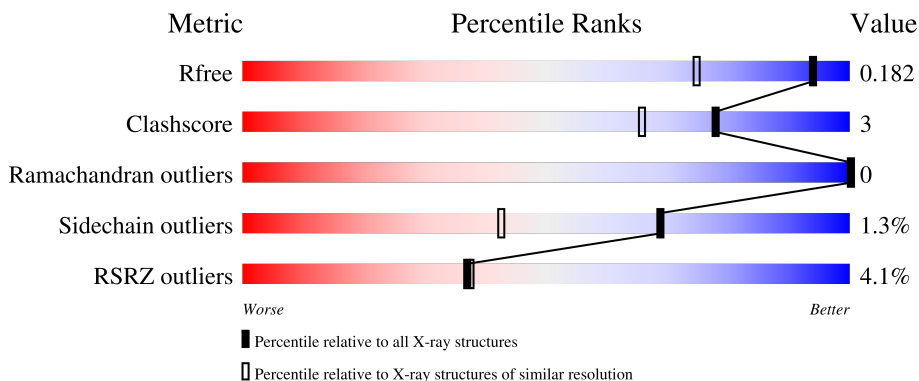|		
PDB ID	:	7S3T
Title	:	NzeB Diketopiperazine Dimerase Mutant: Q68I-G87A-A89G-I90V
Authors	:	Harris, N.R.; Shende, V.V.; Sanders, J.N.; Newmister, S.A.; Khatri, Y.; Movassaghi, M.; Houk, K.N.; Sherman, D.H.
Deposited on	:	2021-09-08
Resolution	:	1.40 Å(reported)

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1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.40 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		0.182
Clashscore		3
Ramachandran outliers		0
Sidechain outliers		1.3%
RSRZ outliers		4.1%

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	1714 (1.40-1.40)
Clashscore	141614	1812 (1.40-1.40)
Ramachandran outliers	138981	1763 (1.40-1.40)
Sidechain outliers	138945	1762 (1.40-1.40)
RSRZ outliers	127900	1674 (1.40-1.40)

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

Mol	Chain	Length	Quality of chain
1	A	401	4% 91% 7% •

2   Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 3534 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 NascB.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	396	3073	1932	554	575	12	0	7	0

There are 56 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	VAL	MET	conflict	UNP A0A3G1Q973
A	68	ILE	GLN	engineered mutation	UNP A0A3G1Q973
A	87	ALA	GLY	engineered mutation	UNP A0A3G1Q973
A	89	GLY	ALA	engineered mutation	UNP A0A3G1Q973
A	90	VAL	ILE	engineered mutation	UNP A0A3G1Q973
A	116	GLY	LYS	conflict	UNP A0A3G1Q973
A	119	ASN	HIS	conflict	UNP A0A3G1Q973
A	120	ASP	GLU	conflict	UNP A0A3G1Q973
A	121	LEU	TYR	conflict	UNP A0A3G1Q973
A	126	MET	ILE	conflict	UNP A0A3G1Q973
A	127	SER	GLY	conflict	UNP A0A3G1Q973
A	130	ALA	VAL	conflict	UNP A0A3G1Q973
A	131	SER	ASP	conflict	UNP A0A3G1Q973
A	140	ALA	ARG	conflict	UNP A0A3G1Q973
A	141	ASP	GLU	conflict	UNP A0A3G1Q973
A	143	VAL	ALA	conflict	UNP A0A3G1Q973
A	150	LEU	VAL	conflict	UNP A0A3G1Q973
A	160	SER	THR	conflict	UNP A0A3G1Q973
A	161	ALA	SER	conflict	UNP A0A3G1Q973
A	165	ASP	ALA	conflict	UNP A0A3G1Q973
A	166	LEU	ARG	conflict	UNP A0A3G1Q973
A	168	ALA	VAL	conflict	UNP A0A3G1Q973
A	169	HIS	GLY	conflict	UNP A0A3G1Q973
A	170	CYS	TRP	conflict	UNP A0A3G1Q973
A	180	VAL	ALA	conflict	UNP A0A3G1Q973
A	187	HIS	ARG	conflict	UNP A0A3G1Q973
A	191	GLN	GLU	conflict	UNP A0A3G1Q973

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Chain	Residue	Modelled	Actual	Comment	Reference
A	194	GLU	ARG	conflict	UNP A0A3G1Q973
A	205	GLY	ALA	conflict	UNP A0A3G1Q973
A	206	THR	GLY	conflict	UNP A0A3G1Q973
A	214	LEU	HIS	conflict	UNP A0A3G1Q973
A	220	VAL	THR	conflict	UNP A0A3G1Q973
A	221	ASP	PRO	conflict	UNP A0A3G1Q973
A	222	GLN	ALA	conflict	UNP A0A3G1Q973
A	234	GLY	ALA	conflict	UNP A0A3G1Q973
A	235	SER	GLU	conflict	UNP A0A3G1Q973
A	254	LEU	ILE	conflict	UNP A0A3G1Q973
A	261	ASP	GLU	conflict	UNP A0A3G1Q973
A	262	ALA	SER	conflict	UNP A0A3G1Q973
A	268	ALA	THR	conflict	UNP A0A3G1Q973
A	271	GLU	ASP	conflict	UNP A0A3G1Q973
A	283	TYR	HIS	conflict	UNP A0A3G1Q973
A	287	SER	ALA	conflict	UNP A0A3G1Q973
A	290	SER	ALA	conflict	UNP A0A3G1Q973
A	291	VAL	ALA	conflict	UNP A0A3G1Q973
A	301	ILE	LEU	conflict	UNP A0A3G1Q973
A	307	LYS	GLY	conflict	UNP A0A3G1Q973
A	316	LEU	PHE	conflict	UNP A0A3G1Q973
A	321	HIS	ARG	conflict	UNP A0A3G1Q973
A	331	VAL	ARG	conflict	UNP A0A3G1Q973
A	350	PHE	THR	conflict	UNP A0A3G1Q973
A	360	VAL	LEU	conflict	UNP A0A3G1Q973
A	370	ARG	CYS	conflict	UNP A0A3G1Q973
A	371	ARG	HIS	conflict	UNP A0A3G1Q973
A	384	SER	ARG	conflict	UNP A0A3G1Q973
A	397	ILE	LEU	conflict	UNP A0A3G1Q973

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

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

- Molecule 3 is (3S,8aS)-3-(1H-indol-3-ylmethyl)hexahydropyrrolo[1,2-a]pyrazine-1,4-d ione (three-letter code: QRP) (formula: $C_{16}H_{17}N_3O_2$) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			21	16	3	2		
3	A	1	Total	C	N	O	0	0
			21	16	3	2		

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).

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

- Molecule 5 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1	Total 1	Mg 1	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	367	Total 367	O 367	0	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: NascB
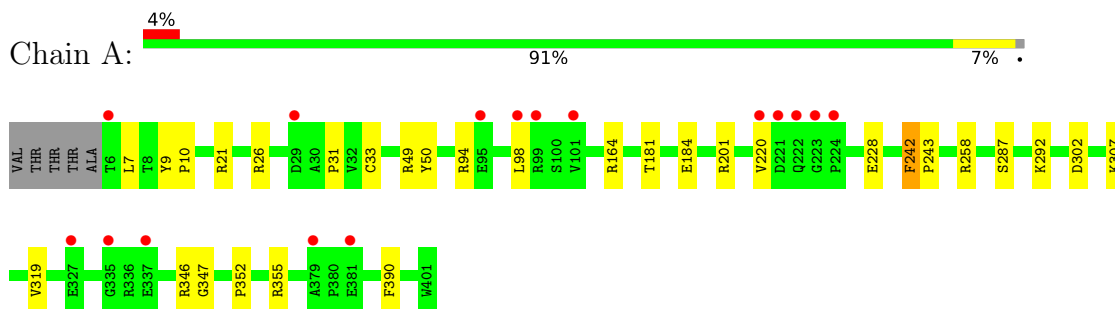
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	42.12Å 92.16Å 53.94Å 90.00° 104.22° 90.00°	Depositor
Resolution (Å)	45.48 – 1.40 40.83 – 1.40	Depositor EDS
% Data completeness (in resolution range)	91.9 (45.48-1.40) 89.6 (40.83-1.40)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	0.22 (at 1.39Å)	Xtriage
Refinement program	PHENIX 1.19.2_4158	Depositor
R, R_{free}	0.171 , 0.182 0.170 , 0.182	Depositor DCC
R_{free} test set	1991 reflections (2.73%)	wwPDB-VP
Wilson B-factor (Å^2)	15.8	Xtriage
Anisotropy	0.512	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 44.5	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	3534	wwPDB-VP
Average B, all atoms (Å^2)	22.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.47% of the height of the origin peak. No significant pseudotranslation is detected.*

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

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: MG, CSO, CCS, HEM, EDO, QRP

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	0.35	0/3146	0.66	0/4273

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2   Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3073	0	3029	17	0
2	A	43	0	30	1	0
3	A	42	0	34	0	0
4	A	8	0	12	0	0
5	A	1	0	0	0	0
6	A	367	0	0	4	1
All	All	3534	0	3105	18	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 3.

The worst 5 of 18 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:7:LEU:HD21	1:A:21:ARG:HD2	1.81	0.62
1:A:181:THR:OG1	1:A:184:GLU:HG3	2.00	0.61
2:A:801:HEM:HBC2	2:A:801:HEM:HHD	1.82	0.59
1:A:98:LEU:HD21	1:A:220:VAL:HG22	1.84	0.58
1:A:228:GLU:OE2	6:A:901:HOH:O	2.18	0.55

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)
6:A:909:HOH:O	6:A:1232:HOH:O[2_656]	2.15	0.05

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	399/401 (100%)	393 (98%)	6 (2%)	0	100 100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	321/319 (101%)	317 (99%)	4 (1%)	71 47

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	164	ARG
1	A	242	PHE
1	A	292	LYS
1	A	307	LYS

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

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

2 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
1	CSO	A	178	1	3,6,7	0.65	0	0,6,8	-	-
1	CCS	A	33	1	8,9,10	2.03	3 (37%)	6,10,12	2.46	3 (50%)

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
1	CSO	A	178	1	-	0/1/5/7	-
1	CCS	A	33	1	-	0/6/8/10	-

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	33	CCS	OZ1-CE	4.57	1.37	1.22
1	A	33	CCS	CD-SG	-2.13	1.76	1.81
1	A	33	CCS	OZ2-CE	-2.11	1.23	1.30

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	33	CCS	OZ2-CE-CD	4.49	128.35	113.46
1	A	33	CCS	OZ1-CE-CD	-3.12	114.29	122.82
1	A	33	CCS	OZ2-CE-OZ1	-2.38	117.36	123.30

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 6 ligands modelled in this entry, 1 is monoatomic - leaving 5 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	EDO	A	804	-	3,3,3	0.51	0	2,2,2	0.33	0
4	EDO	A	805	-	3,3,3	0.54	0	2,2,2	0.26	0
3	QRP	A	803	-	23,24,24	2.64	6 (26%)	31,35,35	2.43	10 (32%)
3	QRP	A	802	-	23,24,24	3.08	9 (39%)	31,35,35	3.16	11 (35%)
2	HEM	A	801	1	41,50,50	1.52	7 (17%)	45,82,82	1.16	4 (8%)

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
4	EDO	A	804	-	-	0/1/1/1	-
4	EDO	A	805	-	-	0/1/1/1	-
3	QRP	A	803	-	-	0/3/30/30	0/4/4/4
3	QRP	A	802	-	-	0/3/30/30	0/4/4/4
2	HEM	A	801	1	-	0/12/54/54	-

The worst 5 of 22 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	802	QRP	CAJ-NAU	6.69	1.60	1.47
3	A	802	QRP	CAN-N	6.46	1.43	1.33
3	A	803	QRP	CAJ-NAU	6.37	1.59	1.47
3	A	802	QRP	C-NAU	6.21	1.47	1.34
3	A	802	QRP	CAT-NAU	-6.01	1.34	1.47

The worst 5 of 25 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	802	QRP	CB-CG-CD1	-9.42	116.33	127.97
3	A	803	QRP	CB-CG-CD1	-8.49	117.48	127.97
3	A	802	QRP	CAJ-NAU-C	7.91	136.91	123.10
3	A	802	QRP	CAJ-NAU-CAT	-6.25	102.09	112.00
3	A	802	QRP	CB-CG-CD2	5.80	135.28	126.25

There are no chirality outliers.

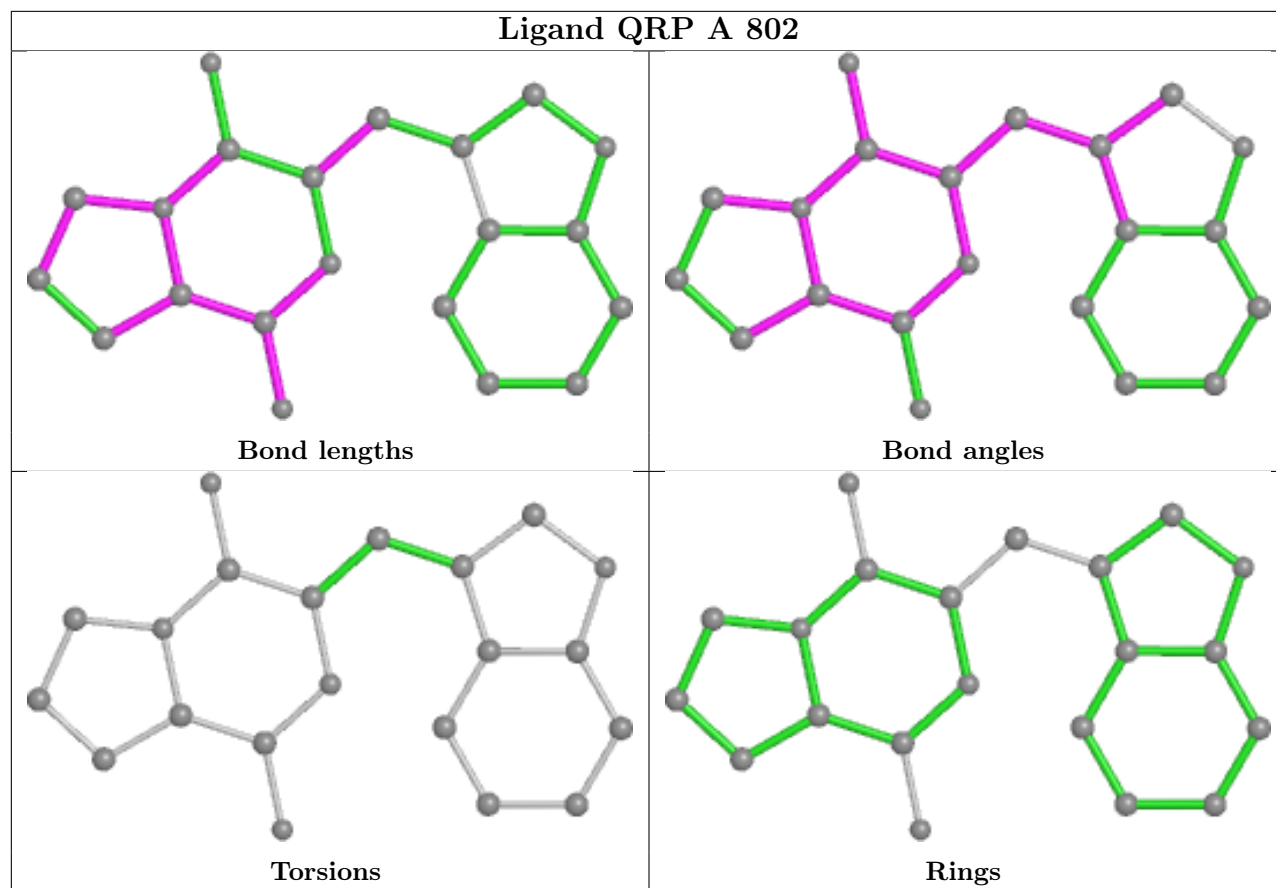There are no torsion outliers.

There are no ring outliers.

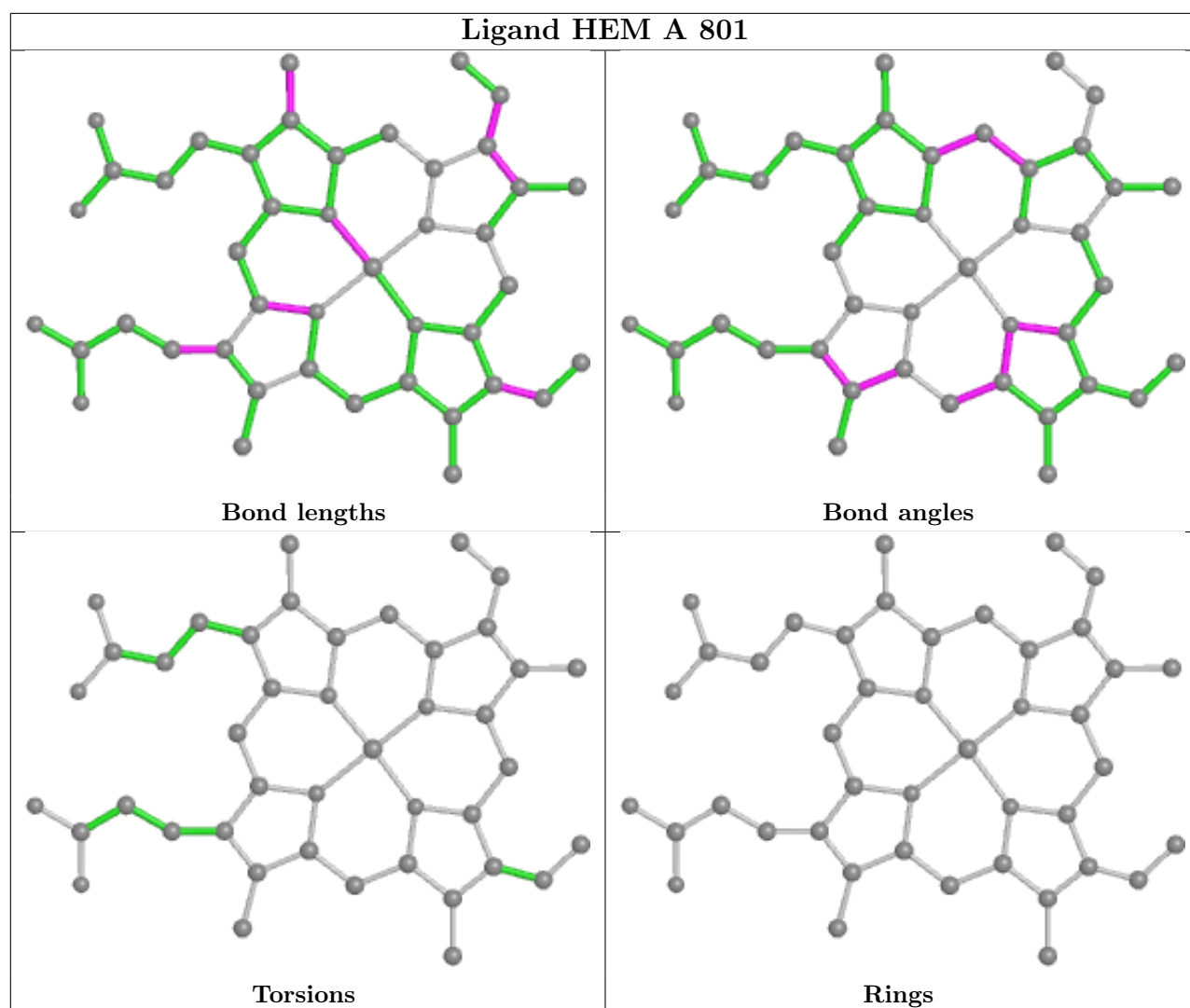1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	801	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 QRP A 803

Bond lengths

Bond angles

Torsions

Rings

Ligand QRP A 802

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM A 801

Bond lengths

Bond angles

Torsions

Rings
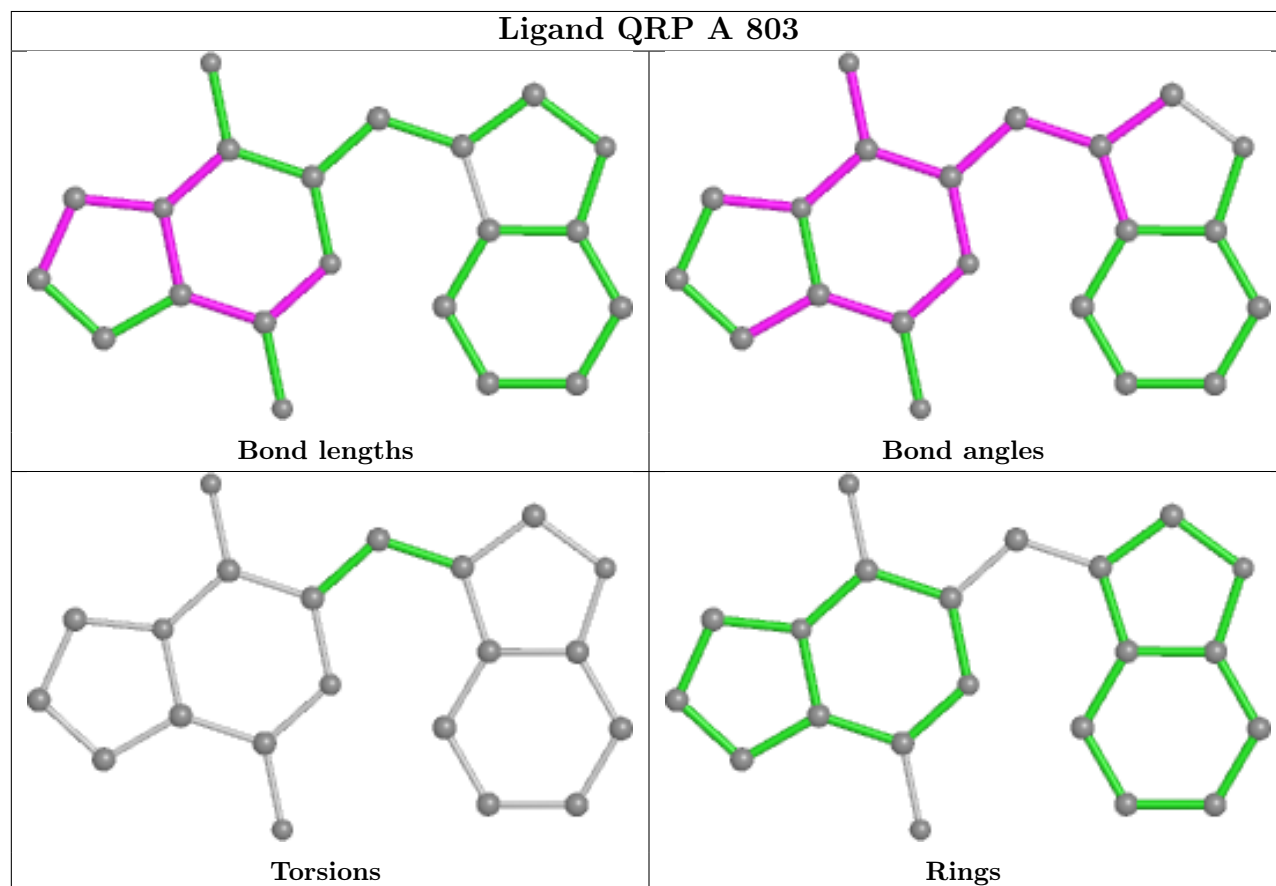
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å²)	Q<0.9
1	A	394/401 (98%)	-0.02	16 (4%)	37	37	13, 19, 39, 52	0

The worst 5 of 16 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	223	GLY	6.0
1	A	6	THR	4.7
1	A	224	PRO	3.5
1	A	99	ARG	3.5
1	A	379	ALA	3.2

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

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(Å²)	Q<0.9
1	CSO	A	178	7/8	0.95	0.09	18,20,28,33	0
1	CCS	A	33	10/11	0.97	0.08	16,19,36,39	0

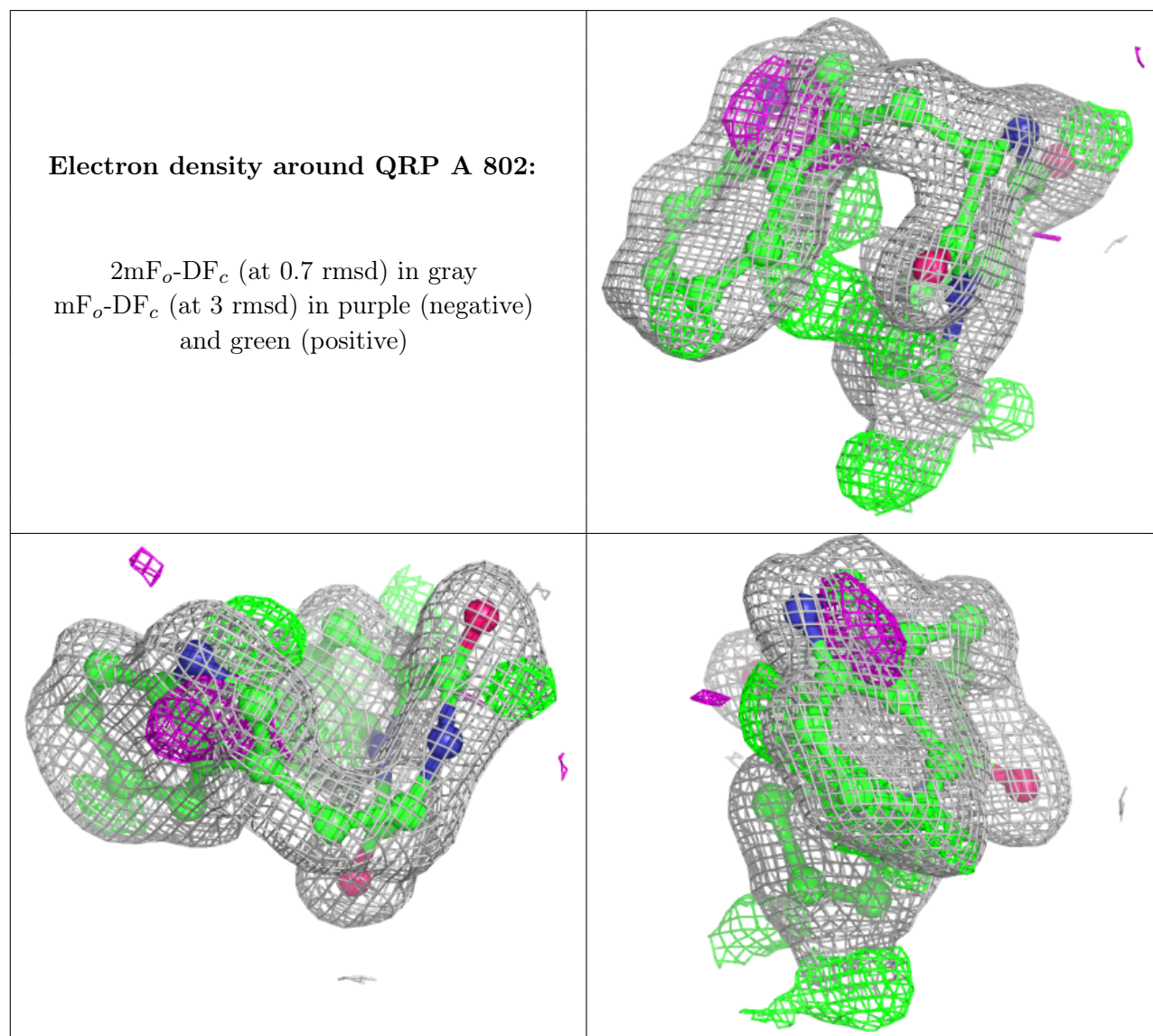## 6.3 Carbohydrates ⓘ

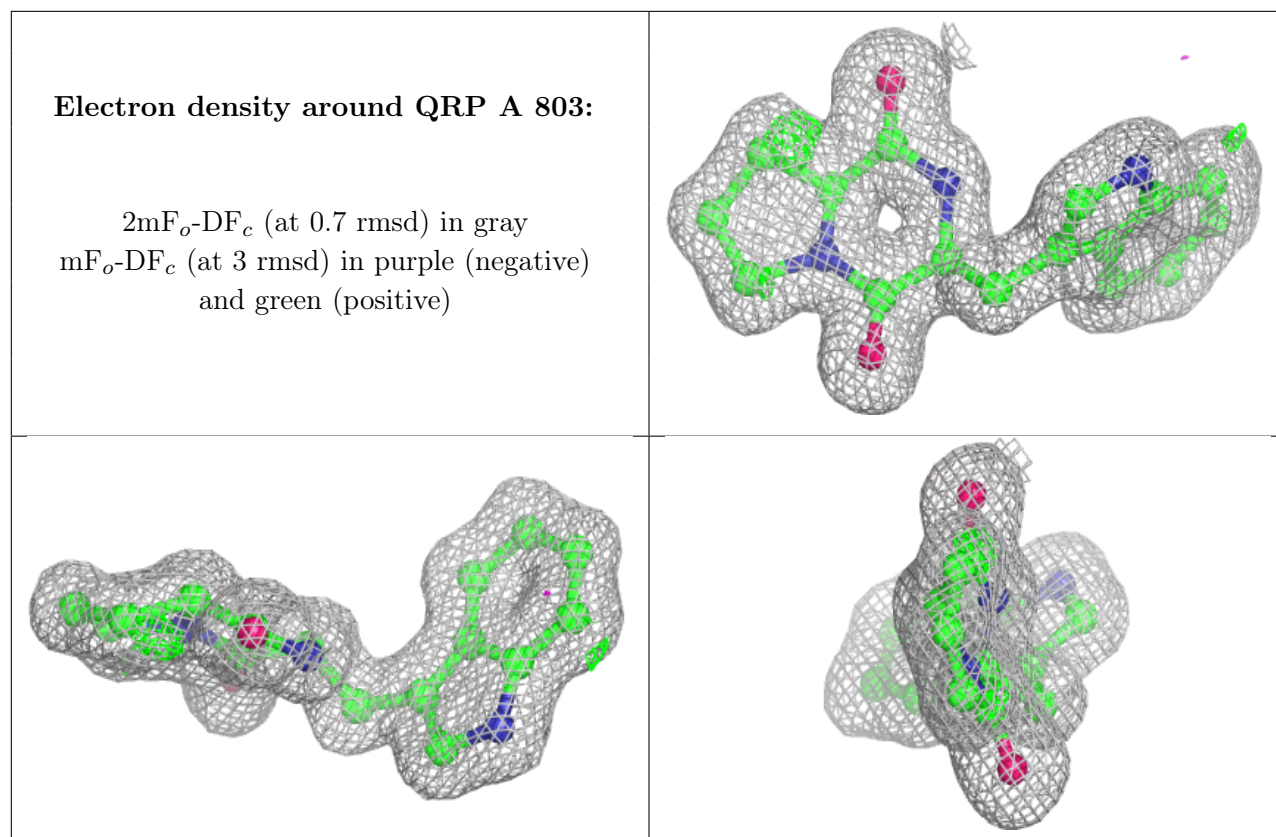There are no monosaccharides in this entry.

6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum,
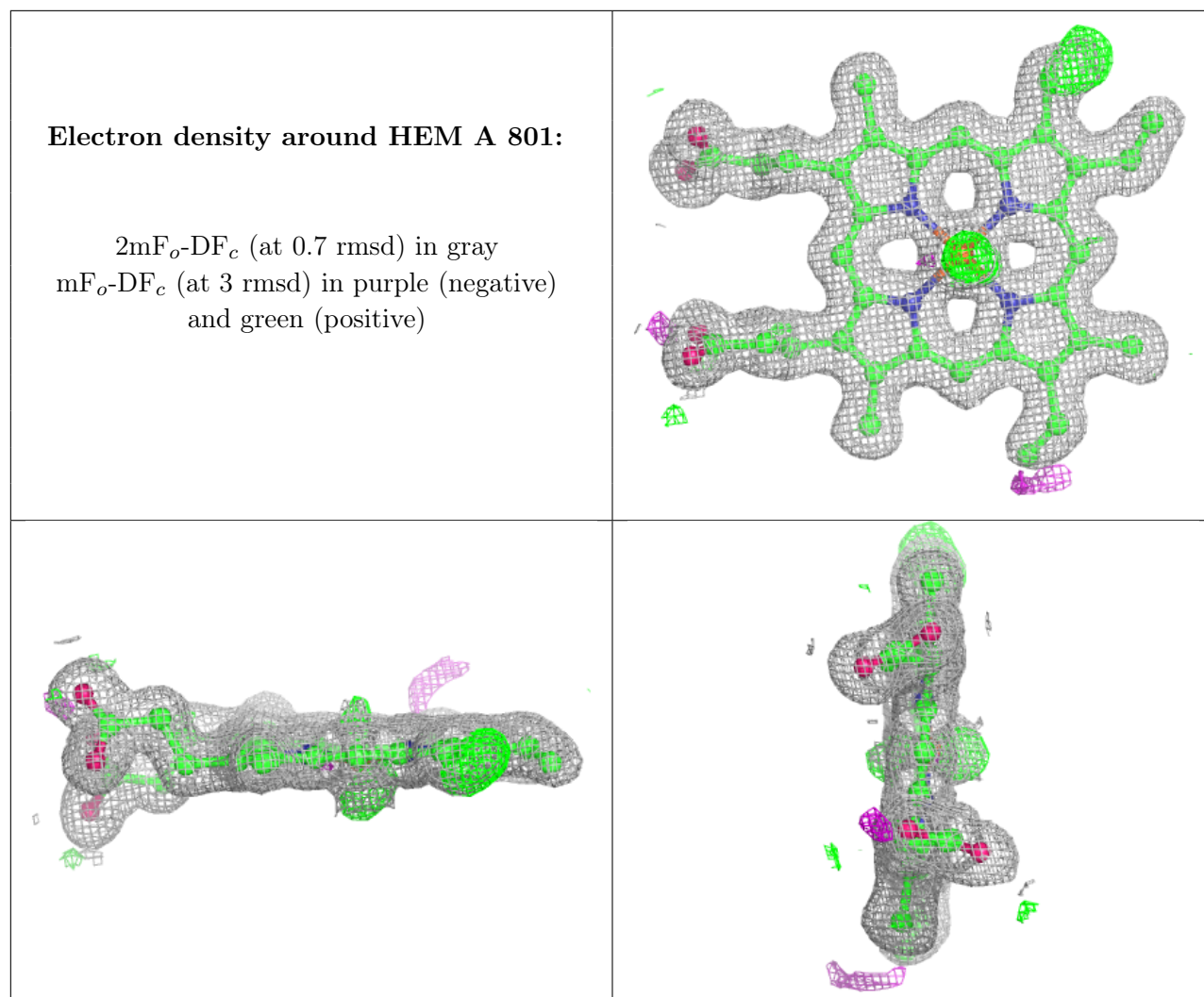
median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($Å^2$)	Q<0.9
3	QRP	A	802	21/21	0.85	0.12	19,22,25,27	0
4	EDO	A	804	4/4	0.85	0.12	24,26,28,35	0
4	EDO	A	805	4/4	0.90	0.13	21,25,26,34	0
3	QRP	A	803	21/21	0.96	0.10	12,15,16,17	0
2	HEM	A	801	43/43	0.98	0.10	12,15,21,25	0
5	MG	A	806	1/1	0.99	0.04	16,16,16,16	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 QRP A 802:

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

Electron density around QRP A 803:

$2mF_o$-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 801:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

6.5 Other polymers ⓘ

There are no such residues in this entry.