wwPDB X-ray Structure Validation Summary Report (i)

Aug 20, 2023 – 01:47 AM EDT

PDB ID	:	2H89
Title	:	Avian Respiratory Complex II with Malonate Bound
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Deposited on	:	2006-06-06
Resolution	:	2.40 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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 (i) 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 (i)) were used in the production of this report:

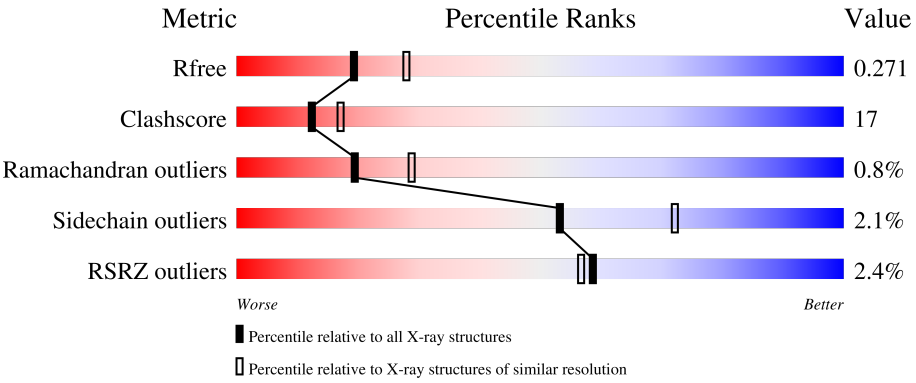
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

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 2.40 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	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)
RSRZ outliers	127900	3811 (2.40-2.40)

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	621	2% 64% 34%
2	B	252	5% 67% 26%
3	C	140	% 61% 38%
4	D	103	81% 17%

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
12	BHG	C	141	X	-	-	-
7	MLI	A	1002	-	-	X	-
8	UNL	A	1008	-	-	-	X
8	UNL	A	1014	-	-	-	X
8	UNL	A	1015	-	-	-	X
8	UNL	B	1005	-	-	-	X

2 Entry composition (i)

There are 15 unique types of molecules in this entry. The entry contains 9302 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 SUCCINATE DEHYDROGENASE FLAVOPROTEIN SUBUNIT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	613	Total	C	N	O	S	0	0	1
			4727	2957	843	898	29			

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	501	ARG	CYS	conflict	UNP Q9YHT1
A	556	LEU	PHE	conflict	UNP Q9YHT1
A	560	GLU	ASP	conflict	UNP Q9YHT1

- Molecule 2 is a protein called Succinate dehydrogenase Ip subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	241	Total	C	N	O	S	0	0	1
			1925	1218	326	359	22			

- Molecule 3 is a protein called SUCCINATE DEHYDROGENASE CYTOCHROME B, LARGE SUBUNIT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	139	Total	C	N	O	S	0	0	0
			1077	706	178	189	4			

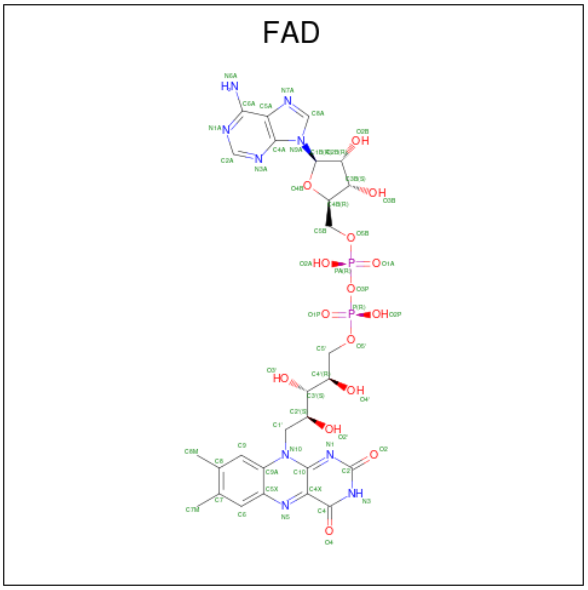
- Molecule 4 is a protein called SUCCINATE DEHYDROGENASE CYTOCHROME B, SMALL SUBUNIT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	102	Total	C	N	O	S	0	0	0
			771	508	122	138	3			

- Molecule 5 is POTASSIUM ION (three-letter code: K) (formula: K).

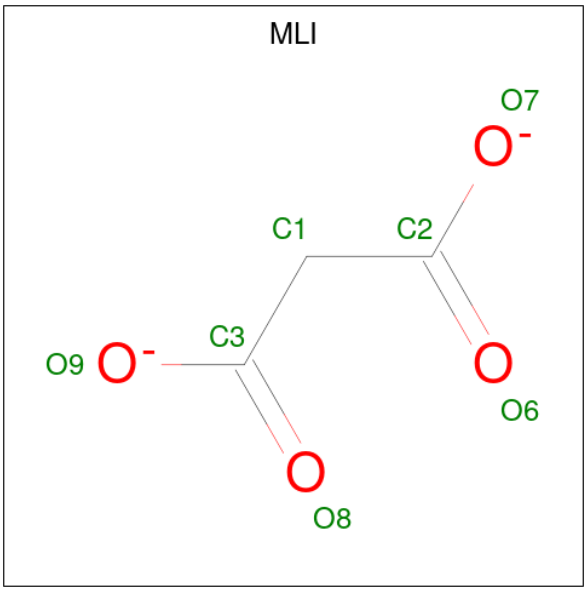
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total K 1 1	0	0
5	B	1	Total K 1 1	0	0

- Molecule 6 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula: $C_{27}H_{33}N_9O_{15}P_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total C N O P 53 27 9 15 2	0	0

- Molecule 7 is MALONATE ION (three-letter code: MLI) (formula: $C_3H_2O_4$).

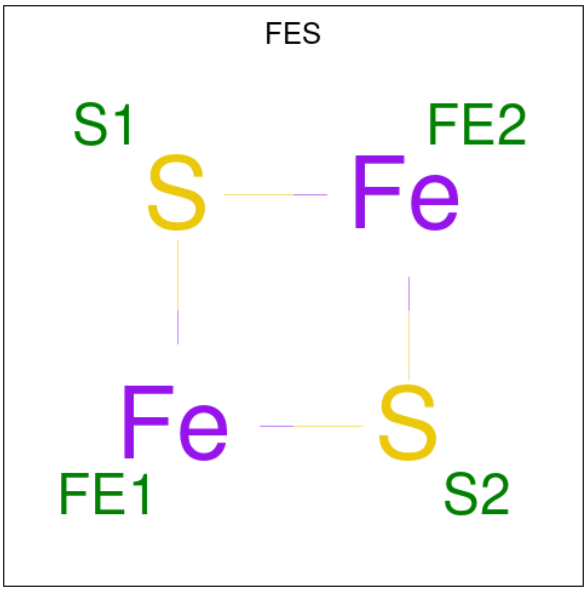


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	1	Total C O 7 3 4	0	0

- Molecule 8 is UNKNOWN LIGAND (three-letter code: UNL) (formula:).

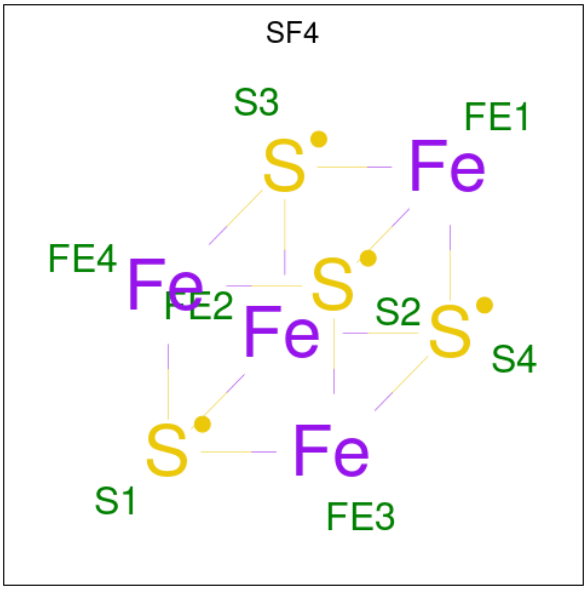
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	15	Total O 15 15	0	0
8	B	10	Total C O 15 3 12	0	0
8	C	9	Total O 11 11	0	0
8	D	6	Total O 6 6	0	0

- Molecule 9 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe_2S_2).



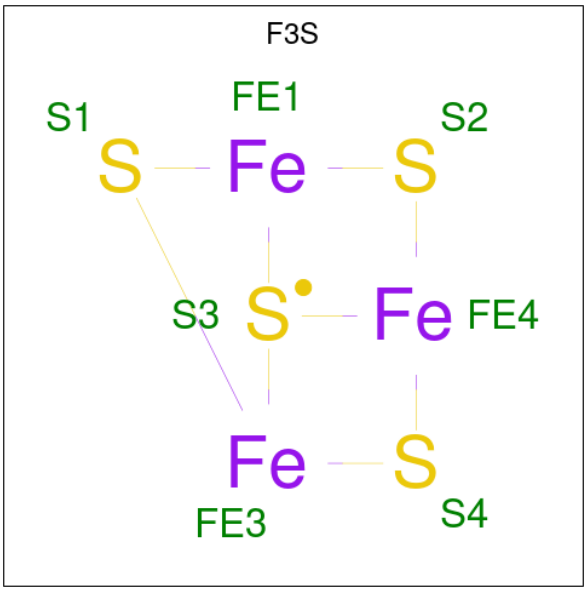
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	Fe	S		
9	B	1	4	2	2	0	0

- Molecule 10 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe_4S_4).



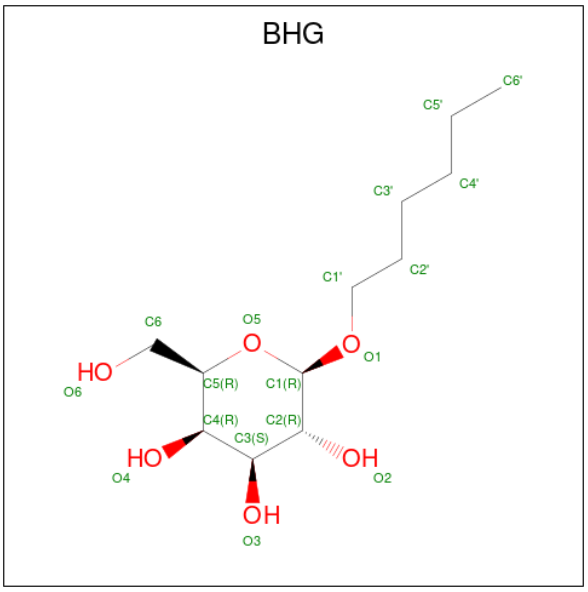
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	Fe	S		
10	B	1	8	4	4	0	0

- Molecule 11 is FE3-S4 CLUSTER (three-letter code: F3S) (formula: Fe_3S_4).



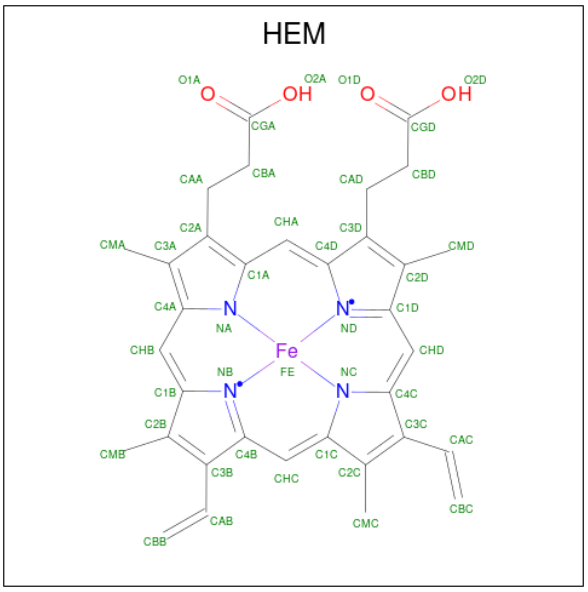
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
11	B	1	Total Fe S 7 3 4	0	0

- Molecule 12 is hexyl beta-D-galactopyranoside (three-letter code: BHG) (formula: $C_{12}H_{24}O_6$).



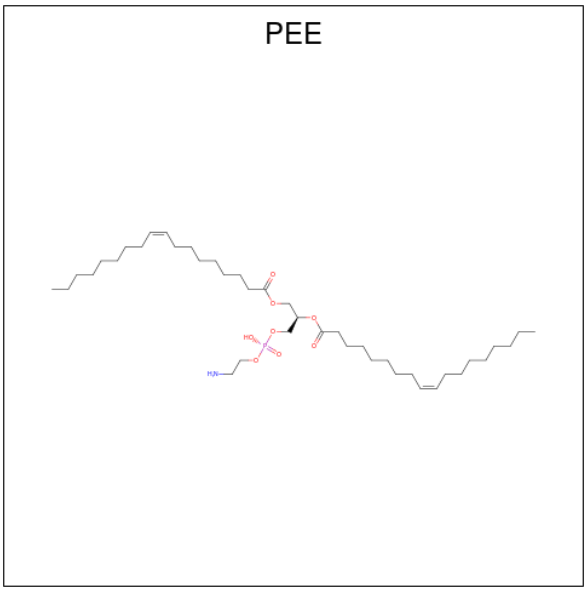
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
12	C	1	Total C O 18 12 6	0	0

- Molecule 13 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
13	C	1	Total	C	Fe	N	O	0	0
			41	32	1	4	4		

- Molecule 14 is 1,2-dioleoyl-sn-glycero-3-phosphoethanolamine (three-letter code: PEE) (formula: $C_{41}H_{78}NO_8P$).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
14	C	1	Total	C	0	0
			11	11		
14	D	1	Total	C	0	0
			24	24		

- Molecule 15 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
15	A	292	Total O 292 292	0	0
15	B	166	Total O 166 166	0	0
15	C	61	Total O 61 61	0	0
15	D	61	Total O 61 61	0	0

3 Residue-property plots (i)

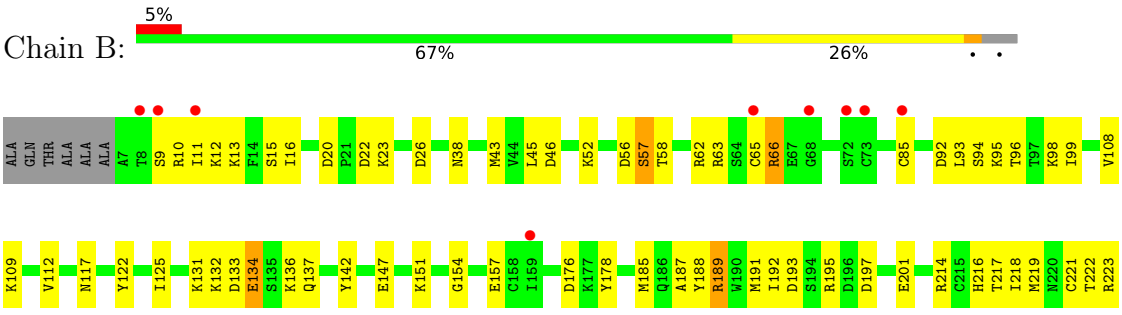
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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.

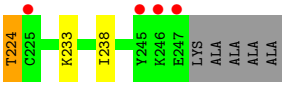
• Molecule 1: SUCCINATE DEHYDROGENASE FLAVOPROTEIN SUBUNIT

Chain A:

• Molecule 2: Succinate dehydrogenase Ip subunit

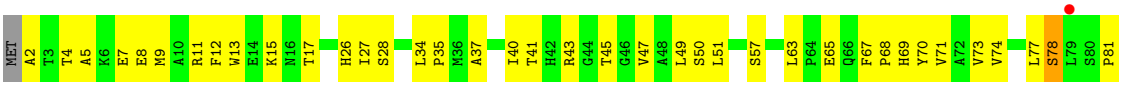
Chain B:

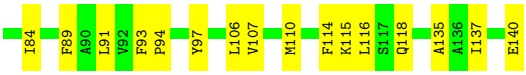




• Molecule 3: SUCCINATE DEHYDROGENASE CYTOCHROME B, LARGE SUBUNIT

Chain C:





• Molecule 4: SUCCINATE DEHYDROGENASE CYTOCHROME B, SMALL SUBUNIT

Chain D:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	70.52Å 84.12Å 292.21Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.74 – 2.40 50.74 – 2.29	Depositor EDS
% Data completeness (in resolution range)	86.3 (50.74-2.40) 79.7 (50.74-2.29)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.16	Depositor
$< I/\sigma(I) >$ [1]	1.23 (at 2.29Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.226 , 0.279 0.217 , 0.271	Depositor DCC
R_{free} test set	3091 reflections (4.90%)	wwPDB-VP
Wilson B-factor (Å^2)	54.8	Xtriage
Anisotropy	0.278	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.27 , 56.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.40$, $< L^2 > = 0.23$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	9302	wwPDB-VP
Average B, all atoms (Å^2)	59.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.07% of the height of the origin peak. No significant pseudotranslation is detected.*

[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: SF4, FAD, HEM, K, FES, MLI, F3S, BHG, PEE, UNL

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	0.41	0/4827	0.66	0/6535
2	B	0.44	0/1966	0.68	0/2651
3	C	0.44	0/1106	0.61	0/1503
4	D	0.42	0/794	0.56	0/1089
All	All	0.42	0/8693	0.65	0/11778

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	4727	0	4609	181	0
2	B	1925	0	1918	58	0
3	C	1077	0	1112	45	0
4	D	771	0	763	18	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
6	A	53	0	29	2	0
7	A	7	0	2	4	0
8	A	15	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	B	15	0	0	1	0
8	C	11	0	0	0	0
8	D	6	0	0	0	0
9	B	4	0	0	0	0
10	B	8	0	0	0	0
11	B	7	0	0	0	0
12	C	18	0	24	1	0
13	C	41	0	24	0	0
14	C	11	0	18	0	0
14	D	24	0	40	1	0
15	A	292	0	0	22	0
15	B	166	0	0	4	0
15	C	61	0	0	3	0
15	D	61	0	0	2	0
All	All	9302	0	8539	291	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 17.

The worst 5 of 291 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:297:ARG:HH22	7:A:1002:MLI:C3	1.65	1.08
1:A:365:TYR:CE1	1:A:397:GLU:HG3	2.11	0.86
3:C:4:THR:OG1	3:C:7:GLU:HG3	1.77	0.85
1:A:401:ALA:N	1:A:402:SER:HA	1.98	0.77
3:C:115:LYS:HB3	3:C:118:GLN:OE1	1.86	0.76

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	610/621 (98%)	551 (90%)	53 (9%)	6 (1%)	15 23
2	B	238/252 (94%)	216 (91%)	20 (8%)	2 (1%)	19 29
3	C	137/140 (98%)	130 (95%)	6 (4%)	1 (1%)	22 32
4	D	100/103 (97%)	94 (94%)	6 (6%)	0	100 100
All	All	1085/1116 (97%)	991 (91%)	85 (8%)	9 (1%)	19 29

5 of 9 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	57	SER
1	A	326	HIS
2	B	9	SER
1	A	480	ALA
3	C	78	SER

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	497/506 (98%)	487 (98%)	10 (2%)	55 74
2	B	215/219 (98%)	210 (98%)	5 (2%)	50 70
3	C	118/119 (99%)	116 (98%)	2 (2%)	60 78
4	D	78/79 (99%)	76 (97%)	2 (3%)	46 66
All	All	908/923 (98%)	889 (98%)	19 (2%)	53 72

5 of 19 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	224	THR
4	D	14	ARG
4	D	101	TRP
3	C	91	LEU
1	A	570	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 14 such sidechains are listed below:

Mol	Chain	Res	Type
1	A	534	GLN
2	B	38	ASN
4	D	69	ASN
3	C	26	HIS
4	D	9	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 51 ligands modelled in this entry, 2 are monoatomic and 40 are unknown - leaving 9 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	$\#\|Z\| > 2$
10	SF4	B	1003	2	0,12,12	-	-	-		
11	F3S	B	1004	2	0,9,9	-	-	-		
14	PEE	C	143	-	10,10,50	0.83	0	9,9,55	0.84	1 (11%)
6	FAD	A	1001	1	53,58,58	2.38	19 (35%)	68,89,89	1.67	12 (17%)
7	MLI	A	1002	-	6,6,6	1.62	1 (16%)	7,7,7	2.42	3 (42%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
14	PEE	D	105	-	22,22,50	1.17	1 (4%)	19,20,55	0.67	1 (5%)
12	BHG	C	141	-	18,18,18	1.91	6 (33%)	23,23,23	0.86	0
13	HEM	C	142	3,4	40,48,50	1.57	3 (7%)	46,80,82	1.66	8 (17%)
9	FES	B	1002	2	0,4,4	-	-	-		

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
14	PEE	C	143	-	-	7/8/8/54	-
10	SF4	B	1003	2	-	-	0/6/5/5
11	F3S	B	1004	2	-	-	0/3/3/3
6	FAD	A	1001	1	-	9/30/50/50	0/6/6/6
7	MLI	A	1002	-	-	0/4/4/4	-
14	PEE	D	105	-	-	12/18/18/54	-
12	BHG	C	141	-	1/1/5/5	4/9/29/29	0/1/1/1
13	HEM	C	142	3,4	-	5/10/50/54	-
9	FES	B	1002	2	-	-	0/1/1/1

The worst 5 of 30 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	1001	FAD	C4X-N5	5.21	1.40	1.30
13	C	142	HEM	CAC-C3C	-5.21	1.39	1.51
6	A	1001	FAD	C10-N10	5.18	1.48	1.37
6	A	1001	FAD	PA-O2A	-5.16	1.31	1.55
13	C	142	HEM	CAB-C3B	-5.05	1.40	1.50

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

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	1001	FAD	N3A-C2A-N1A	-5.59	119.94	128.68
13	C	142	HEM	C4B-CHC-C1C	5.44	129.73	122.56
7	A	1002	MLI	O9-C3-O8	4.09	133.49	123.30
6	A	1001	FAD	C5X-N5-C4X	3.90	124.55	118.07
6	A	1001	FAD	C4-C4X-N5	3.82	123.66	118.23

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
12	C	141	BHG	C4

5 of 37 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	1001	FAD	N10-C1'-C2'-O2'
6	A	1001	FAD	N10-C1'-C2'-C3'
6	A	1001	FAD	O4'-C4'-C5'-O5'
6	A	1001	FAD	C5'-O5'-P-O1P
6	A	1001	FAD	C5'-O5'-P-O2P

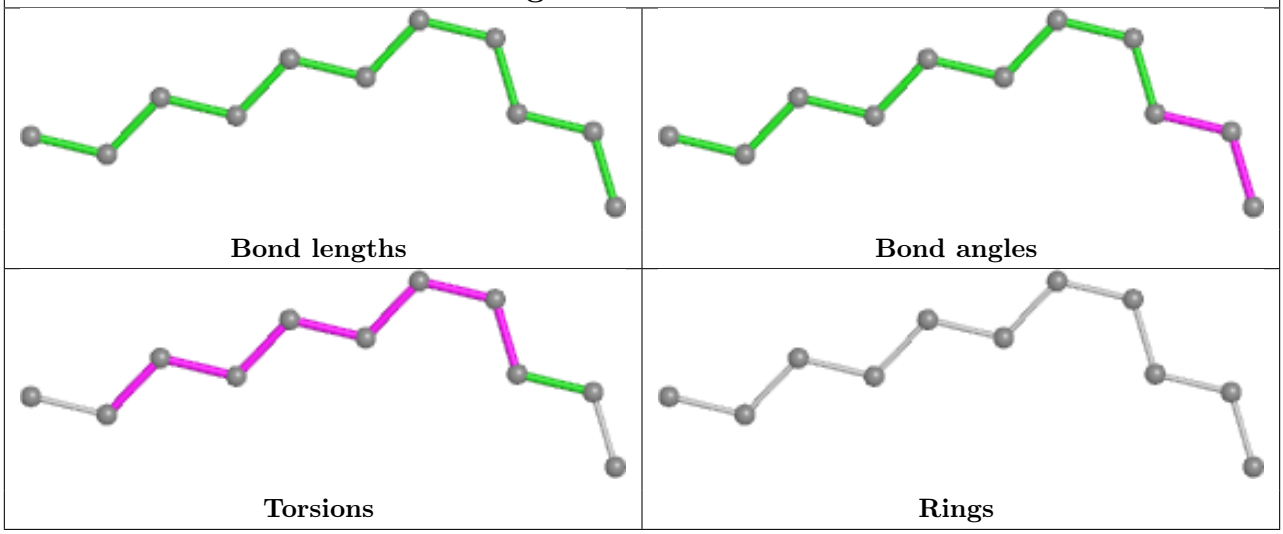
There are no ring outliers.

4 monomers are involved in 8 short contacts:

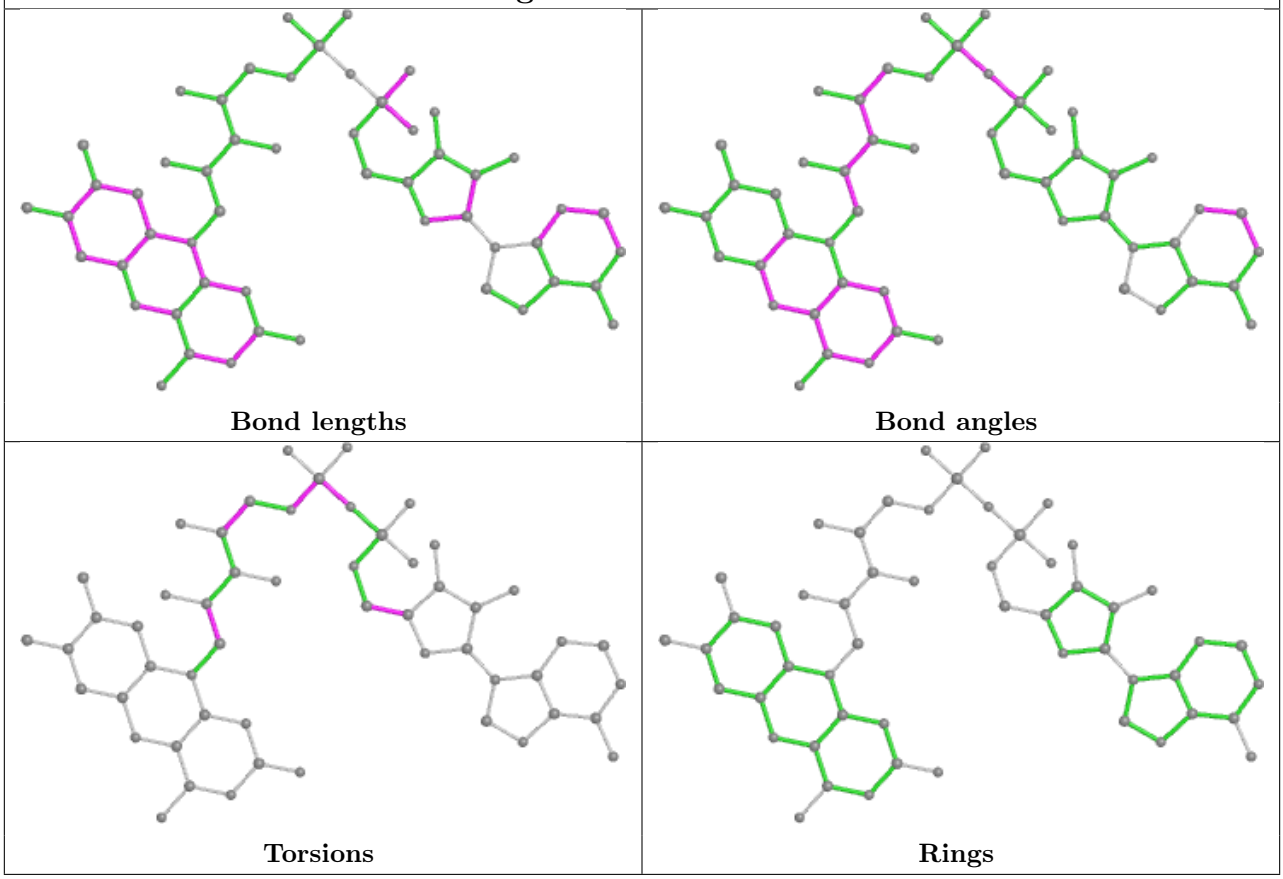
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	1001	FAD	2	0
7	A	1002	MLI	4	0
14	D	105	PEE	1	0
12	C	141	BHG	1	0

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.

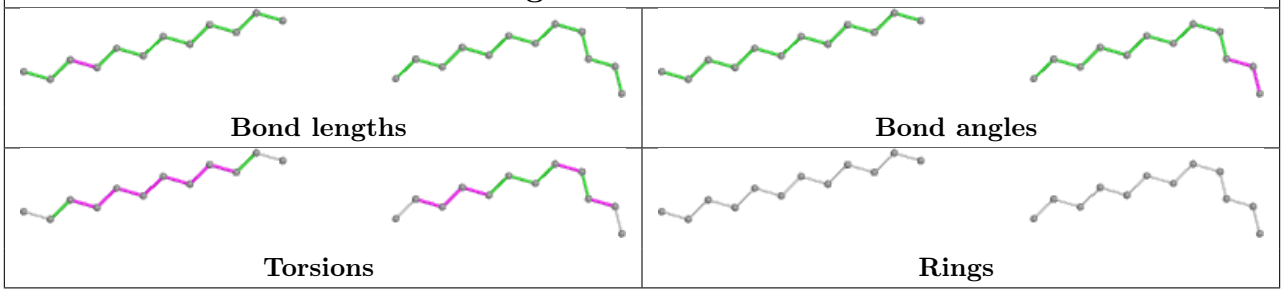
Ligand PEE C 143



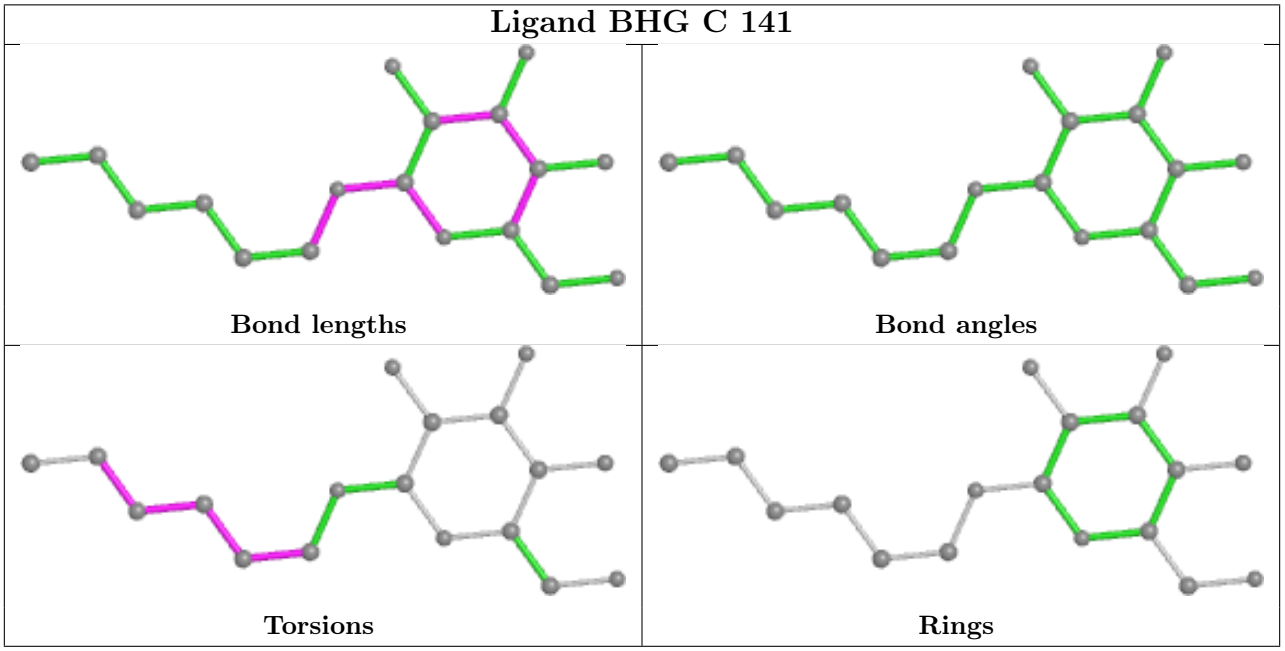
Ligand FAD A 1001



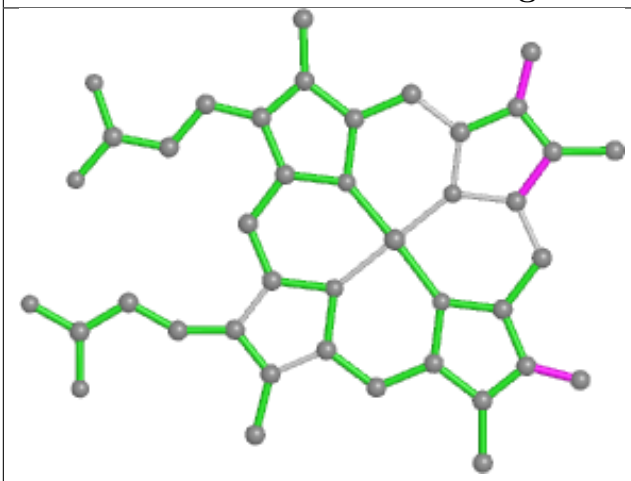
Ligand PEE D 105



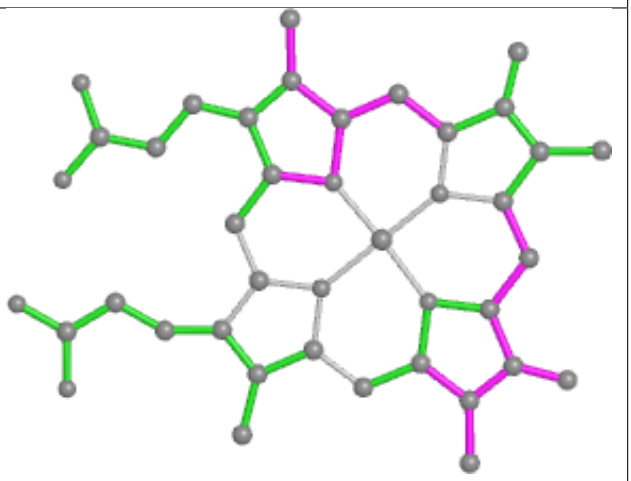
Ligand BHG C 141



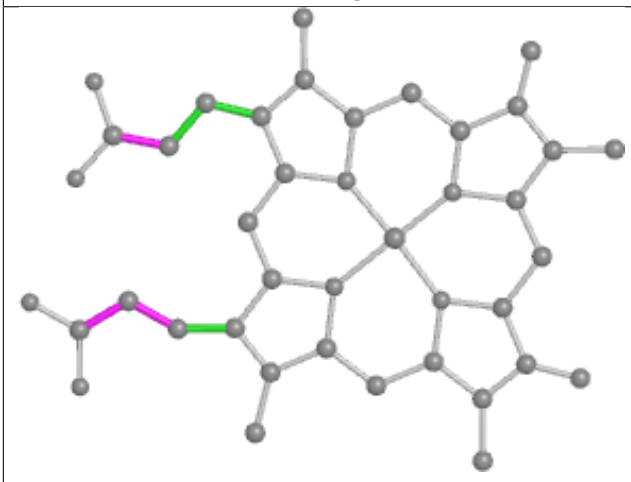
Ligand HEM C 142



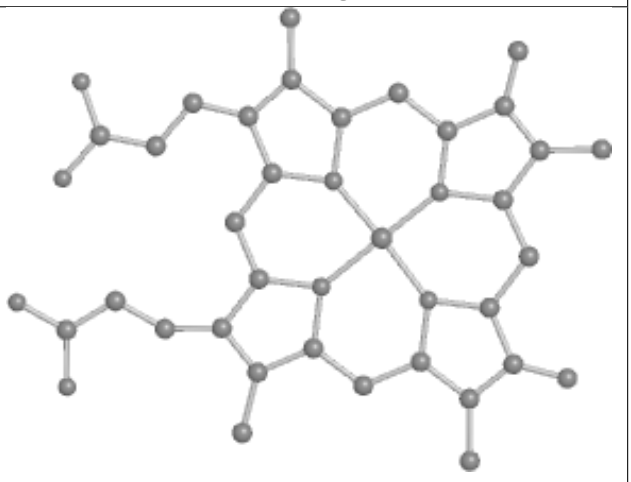
Bond lengths



Bond angles



Torsions



Rings

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

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, 95^{th} 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	613/621 (98%)	-0.27	12 (1%) 65 63	34, 58, 92, 123	0
2	B	241/252 (95%)	-0.20	13 (5%) 25 24	34, 50, 86, 115	0
3	C	139/140 (99%)	-0.52	1 (0%) 87 86	35, 55, 82, 93	0
4	D	102/103 (99%)	-0.69	0 100 100	39, 53, 78, 96	0
All	All	1095/1116 (98%)	-0.33	26 (2%) 59 57	34, 56, 89, 123	0

The worst 5 of 26 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	8	THR	4.2
1	A	289	PRO	3.7
2	B	9	SER	3.7
2	B	247	GLU	3.6
2	B	11	ILE	3.0

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

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

6.3 Carbohydrates

There are no monosaccharides in this entry.

6.4 Ligands

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} 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
8	UNL	A	1014	1/-	0.31	0.55	91,91,91,91	0
8	UNL	B	1005	6/-	0.37	0.87	154,157,158,158	0
8	UNL	A	1009	1/-	0.53	0.20	70,70,70,70	0
8	UNL	B	1008	1/-	0.59	0.25	74,74,74,74	0
8	UNL	A	1015	1/-	0.62	0.56	84,84,84,84	0
8	UNL	A	1005	1/-	0.67	0.13	73,73,73,73	0
8	UNL	B	1011	1/-	0.68	0.23	71,71,71,71	0
8	UNL	C	151	1/-	0.68	0.24	77,77,77,77	0
8	UNL	A	1010	1/-	0.70	0.33	63,63,63,63	0
8	UNL	C	146	1/-	0.73	0.38	147,147,147,147	0
8	UNL	A	1004	1/-	0.73	0.09	56,56,56,56	0
14	PEE	C	143	11/51	0.74	0.34	57,60,65,66	0
14	PEE	D	105	24/51	0.74	0.29	59,70,82,83	0
8	UNL	C	148	2/-	0.76	0.18	68,68,68,71	0
8	UNL	C	150	1/-	0.77	0.26	48,48,48,48	0
8	UNL	A	1008	1/-	0.78	0.65	63,63,63,63	0
8	UNL	B	1009	1/-	0.79	0.28	70,70,70,70	0
8	UNL	C	144	2/-	0.80	0.25	74,74,74,75	0
8	UNL	B	1012	1/-	0.81	0.12	57,57,57,57	0
8	UNL	A	1012	1/-	0.81	0.20	49,49,49,49	0
8	UNL	D	132	1/-	0.86	0.30	47,47,47,47	0
8	UNL	D	110	1/-	0.87	0.23	79,79,79,79	0
8	UNL	B	1007	1/-	0.87	0.22	58,58,58,58	0
8	UNL	B	1010	1/-	0.88	0.18	55,55,55,55	0
12	BHG	C	141	18/18	0.88	0.17	49,52,59,60	0
8	UNL	B	1013	1/-	0.89	0.20	63,63,63,63	0
8	UNL	A	1006	1/-	0.90	0.18	69,69,69,69	0
8	UNL	A	1003	1/-	0.92	0.32	58,58,58,58	0
8	UNL	A	1017	1/-	0.92	0.30	56,56,56,56	0
8	UNL	C	152	1/-	0.92	0.28	53,53,53,53	0
8	UNL	B	1014	1/-	0.92	0.39	65,65,65,65	0
8	UNL	A	1013	1/-	0.93	0.04	61,61,61,61	0
8	UNL	D	125	1/-	0.93	0.14	50,50,50,50	0
8	UNL	A	1007	1/-	0.94	0.12	60,60,60,60	0
5	K	B	253	1/1	0.94	0.06	91,91,91,91	0
8	UNL	D	122	1/-	0.95	0.14	54,54,54,54	0
8	UNL	A	1011	1/-	0.95	0.10	68,68,68,68	0
8	UNL	D	142	1/-	0.96	0.11	54,54,54,54	0
7	MLI	A	1002	7/7	0.96	0.21	59,60,62,62	0
8	UNL	C	149	1/-	0.97	0.22	54,54,54,54	0
8	UNL	C	145	1/-	0.97	0.24	43,43,43,43	0
13	HEM	C	142	41/43	0.97	0.12	41,52,59,60	0
8	UNL	B	1006	1/-	0.97	0.07	41,41,41,41	0

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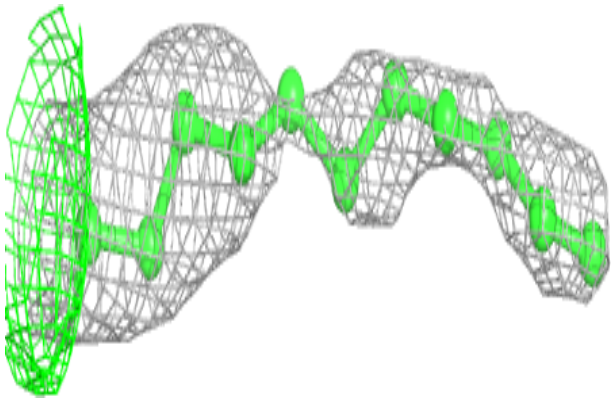
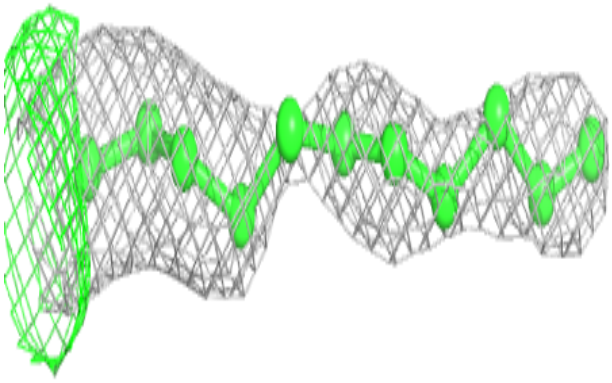
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
8	UNL	A	1016	1/-	0.97	0.09	43,43,43,43	0
8	UNL	D	109	1/-	0.98	0.19	53,53,53,53	0
6	FAD	A	1001	53/53	0.98	0.24	35,46,54,58	0
11	F3S	B	1004	7/7	0.99	0.14	31,36,37,43	0
8	UNL	C	147	1/-	0.99	0.21	49,49,49,49	0
5	K	A	622	1/1	0.99	0.14	50,50,50,50	0
9	FES	B	1002	4/4	0.99	0.18	38,44,48,52	0
10	SF4	B	1003	8/8	0.99	0.17	39,46,50,51	0

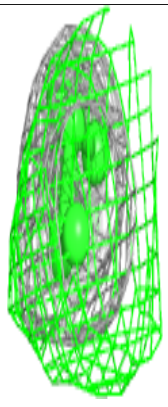
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around PEE C 143:

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

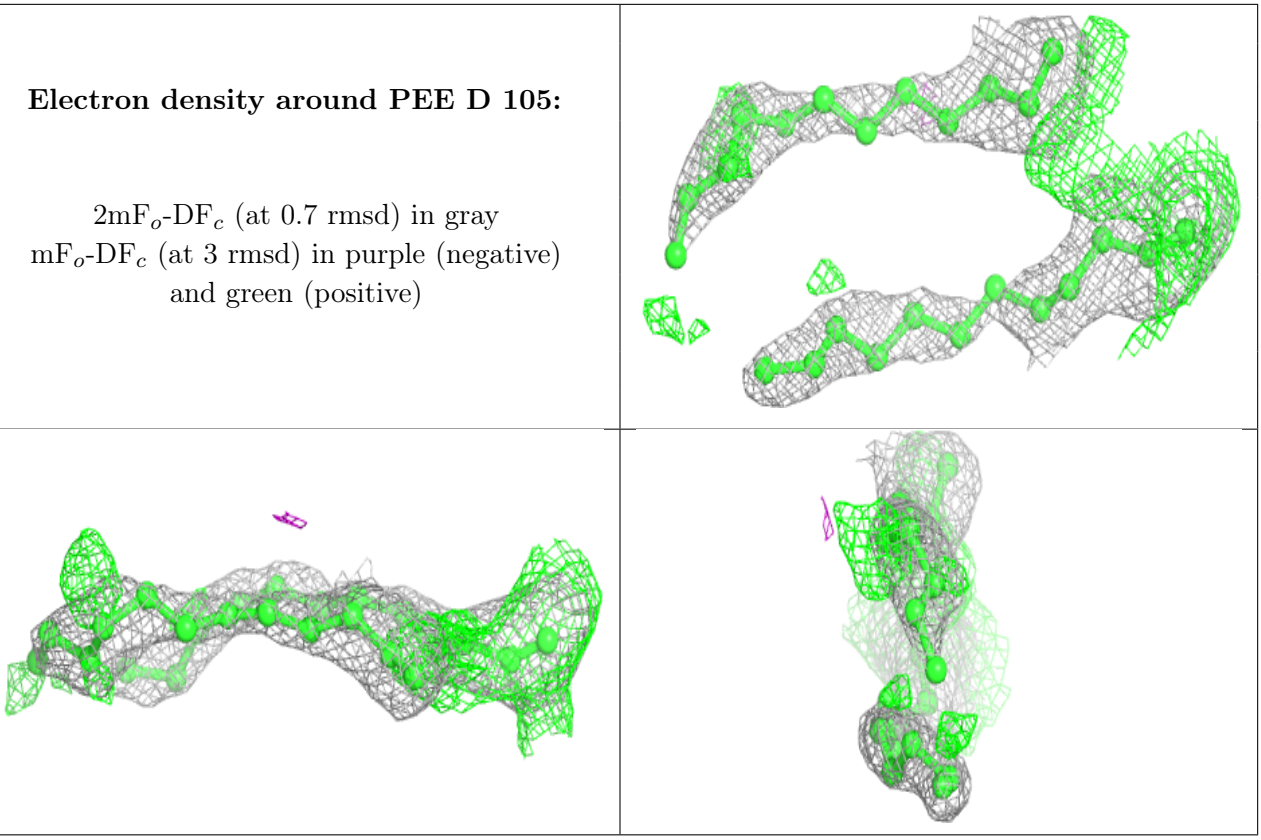






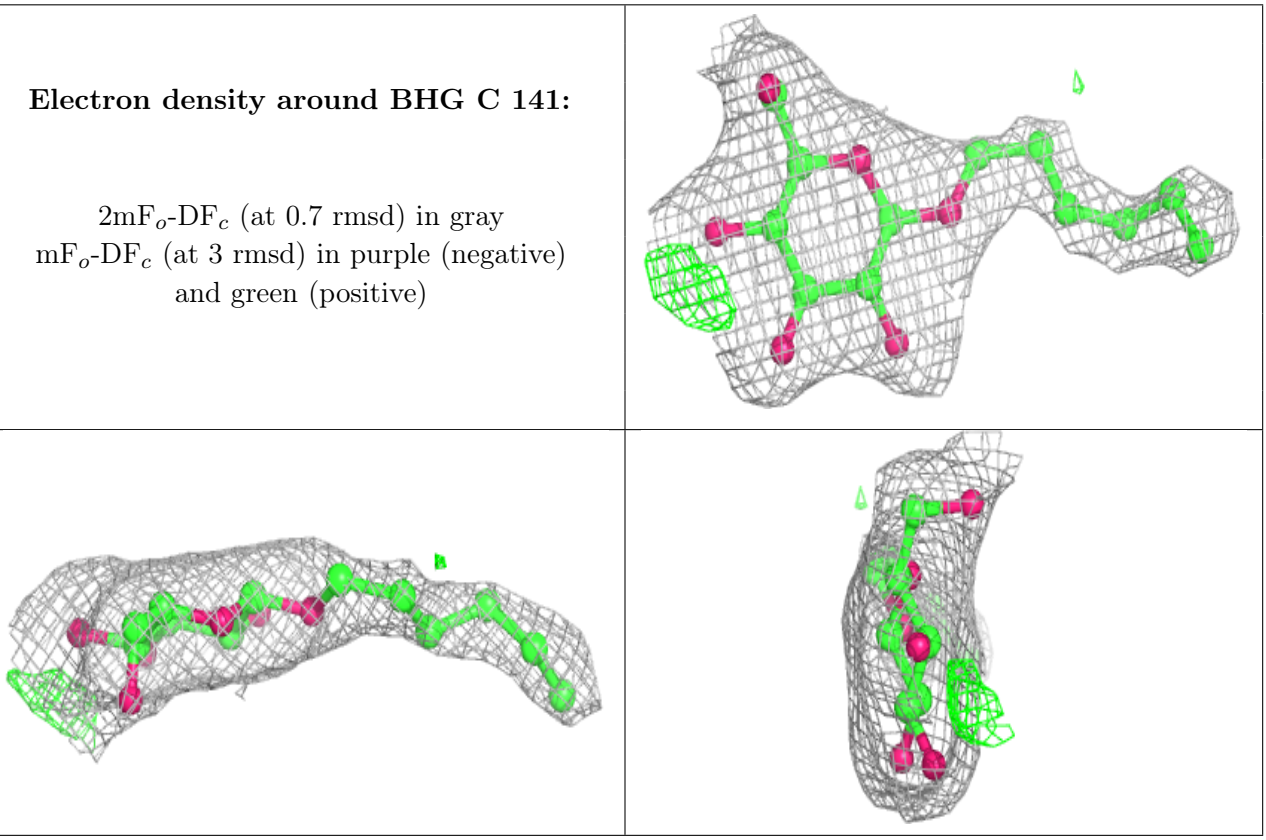
Electron density around PEE D 105:

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



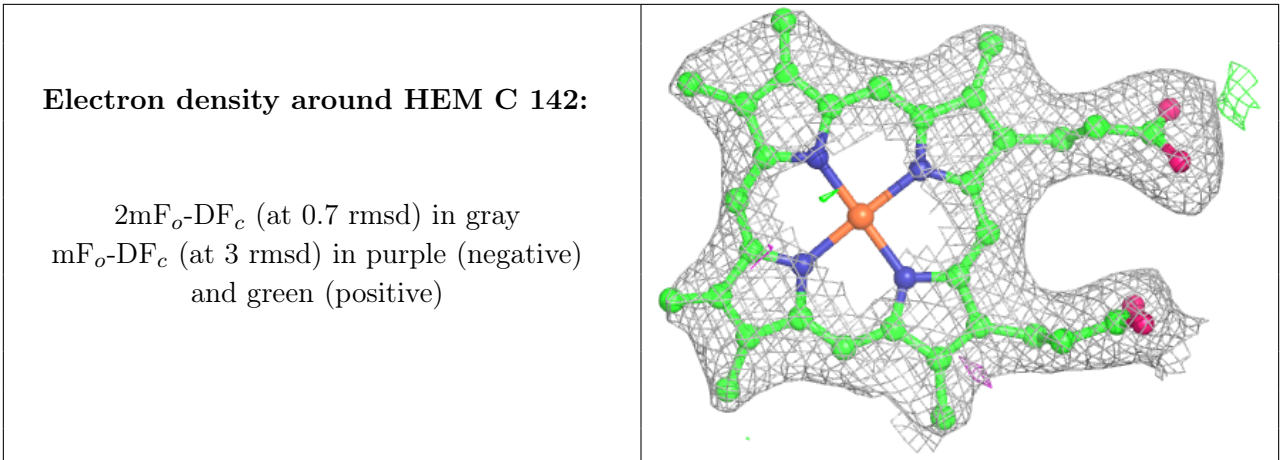
Electron density around BHG C 141:

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



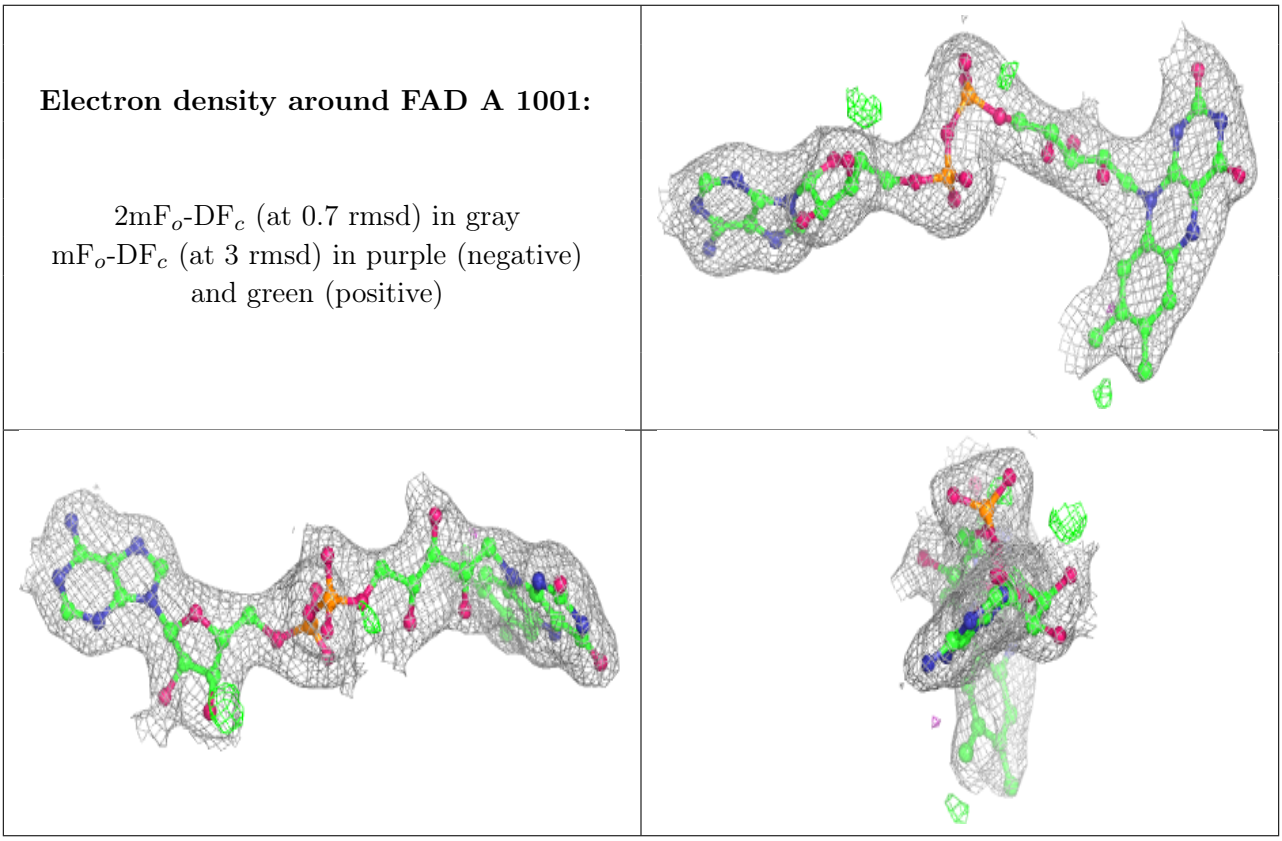
Electron density around HEM C 142:

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



Electron density around FAD A 1001:

$2mF_o$-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.