Full wwPDB X-ray Structure Validation Report (i)

Apr 5, 2026 – 12:30 PM UTC

PDB ID	:	9L7R / pdb_0000l7r
Title	:	Crystal structure of P450cam-F87R mutant complex with (-)-ambroxide
Authors	:	Dong, S.; Feng, Y.G.
Deposited on	:	2024-12-27
Resolution	:	2.04 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 (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:

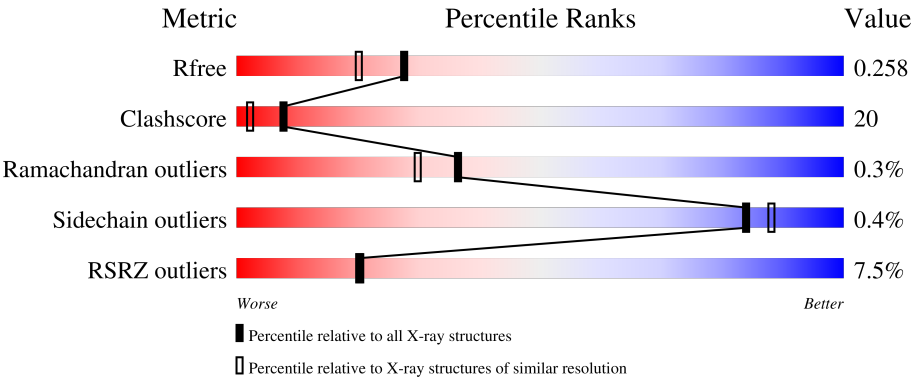
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

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 2.04 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}	180053	2260 (2.04-2.04)
Clashscore	190562	2333 (2.04-2.04)
Ramachandran outliers	187476	2318 (2.04-2.04)
Sidechain outliers	187428	2318 (2.04-2.04)
RSRZ outliers	180081	2260 (2.04-2.04)

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	467	3% 64% 22% 14%
1	B	467	10% 62% 23% · 14%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 6804 atoms, of which 116 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 Camphor 5-monooxygenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	400	Total	C	N	O	S	0	0	0
			3168	2006	556	589	17			
1	B	400	Total	C	N	O	S	0	0	0
			3156	1997	554	588	17			

There are 110 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-52	MET	-	initiating methionine	UNP P00183
A	-51	HIS	-	expression tag	UNP P00183
A	-50	HIS	-	expression tag	UNP P00183
A	-49	HIS	-	expression tag	UNP P00183
A	-48	HIS	-	expression tag	UNP P00183
A	-47	HIS	-	expression tag	UNP P00183
A	-46	HIS	-	expression tag	UNP P00183
A	-45	SER	-	expression tag	UNP P00183
A	-44	SER	-	expression tag	UNP P00183
A	-43	GLY	-	expression tag	UNP P00183
A	-42	LEU	-	expression tag	UNP P00183
A	-41	VAL	-	expression tag	UNP P00183
A	-40	PRO	-	expression tag	UNP P00183
A	-39	ARG	-	expression tag	UNP P00183
A	-38	GLY	-	expression tag	UNP P00183
A	-37	SER	-	expression tag	UNP P00183
A	-36	GLY	-	expression tag	UNP P00183
A	-35	MET	-	expression tag	UNP P00183
A	-34	LYS	-	expression tag	UNP P00183
A	-33	GLU	-	expression tag	UNP P00183
A	-32	THR	-	expression tag	UNP P00183
A	-31	ALA	-	expression tag	UNP P00183
A	-30	ALA	-	expression tag	UNP P00183
A	-29	ALA	-	expression tag	UNP P00183
A	-28	LYS	-	expression tag	UNP P00183

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-27	PHE	-	expression tag	UNP P00183
A	-26	GLU	-	expression tag	UNP P00183
A	-25	ARG	-	expression tag	UNP P00183
A	-24	GLN	-	expression tag	UNP P00183
A	-23	HIS	-	expression tag	UNP P00183
A	-22	MET	-	expression tag	UNP P00183
A	-21	ASP	-	expression tag	UNP P00183
A	-20	SER	-	expression tag	UNP P00183
A	-19	PRO	-	expression tag	UNP P00183
A	-18	ASP	-	expression tag	UNP P00183
A	-17	LEU	-	expression tag	UNP P00183
A	-16	GLY	-	expression tag	UNP P00183
A	-15	THR	-	expression tag	UNP P00183
A	-14	ASP	-	expression tag	UNP P00183
A	-13	ASP	-	expression tag	UNP P00183
A	-12	ASP	-	expression tag	UNP P00183
A	-11	ASP	-	expression tag	UNP P00183
A	-10	LYS	-	expression tag	UNP P00183
A	-9	ALA	-	expression tag	UNP P00183
A	-8	MET	-	expression tag	UNP P00183
A	-7	ALA	-	expression tag	UNP P00183
A	-6	ASP	-	expression tag	UNP P00183
A	-5	ILE	-	expression tag	UNP P00183
A	-4	GLY	-	expression tag	UNP P00183
A	-3	SER	-	expression tag	UNP P00183
A	-2	GLU	-	expression tag	UNP P00183
A	-1	PHE	-	expression tag	UNP P00183
A	87	ARG	PHE	engineered mutation	UNP P00183
A	247	LEU	VAL	conflict	UNP P00183
A	334	ALA	CYS	conflict	UNP P00183
B	-52	MET	-	initiating methionine	UNP P00183
B	-51	HIS	-	expression tag	UNP P00183
B	-50	HIS	-	expression tag	UNP P00183
B	-49	HIS	-	expression tag	UNP P00183
B	-48	HIS	-	expression tag	UNP P00183
B	-47	HIS	-	expression tag	UNP P00183
B	-46	HIS	-	expression tag	UNP P00183
B	-45	SER	-	expression tag	UNP P00183
B	-44	SER	-	expression tag	UNP P00183
B	-43	GLY	-	expression tag	UNP P00183
B	-42	LEU	-	expression tag	UNP P00183
B	-41	VAL	-	expression tag	UNP P00183

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-40	PRO	-	expression tag	UNP P00183
B	-39	ARG	-	expression tag	UNP P00183
B	-38	GLY	-	expression tag	UNP P00183
B	-37	SER	-	expression tag	UNP P00183
B	-36	GLY	-	expression tag	UNP P00183
B	-35	MET	-	expression tag	UNP P00183
B	-34	LYS	-	expression tag	UNP P00183
B	-33	GLU	-	expression tag	UNP P00183
B	-32	THR	-	expression tag	UNP P00183
B	-31	ALA	-	expression tag	UNP P00183
B	-30	ALA	-	expression tag	UNP P00183
B	-29	ALA	-	expression tag	UNP P00183
B	-28	LYS	-	expression tag	UNP P00183
B	-27	PHE	-	expression tag	UNP P00183
B	-26	GLU	-	expression tag	UNP P00183
B	-25	ARG	-	expression tag	UNP P00183
B	-24	GLN	-	expression tag	UNP P00183
B	-23	HIS	-	expression tag	UNP P00183
B	-22	MET	-	expression tag	UNP P00183
B	-21	ASP	-	expression tag	UNP P00183
B	-20	SER	-	expression tag	UNP P00183
B	-19	PRO	-	expression tag	UNP P00183
B	-18	ASP	-	expression tag	UNP P00183
B	-17	LEU	-	expression tag	UNP P00183
B	-16	GLY	-	expression tag	UNP P00183
B	-15	THR	-	expression tag	UNP P00183
B	-14	ASP	-	expression tag	UNP P00183
B	-13	ASP	-	expression tag	UNP P00183
B	-12	ASP	-	expression tag	UNP P00183
B	-11	ASP	-	expression tag	UNP P00183
B	-10	LYS	-	expression tag	UNP P00183
B	-9	ALA	-	expression tag	UNP P00183
B	-8	MET	-	expression tag	UNP P00183
B	-7	ALA	-	expression tag	UNP P00183
B	-6	ASP	-	expression tag	UNP P00183
B	-5	ILE	-	expression tag	UNP P00183
B	-4	GLY	-	expression tag	UNP P00183
B	-3	SER	-	expression tag	UNP P00183
B	-2	GLU	-	expression tag	UNP P00183
B	-1	PHE	-	expression tag	UNP P00183
B	87	ARG	PHE	engineered mutation	UNP P00183
B	247	LEU	VAL	conflict	UNP P00183

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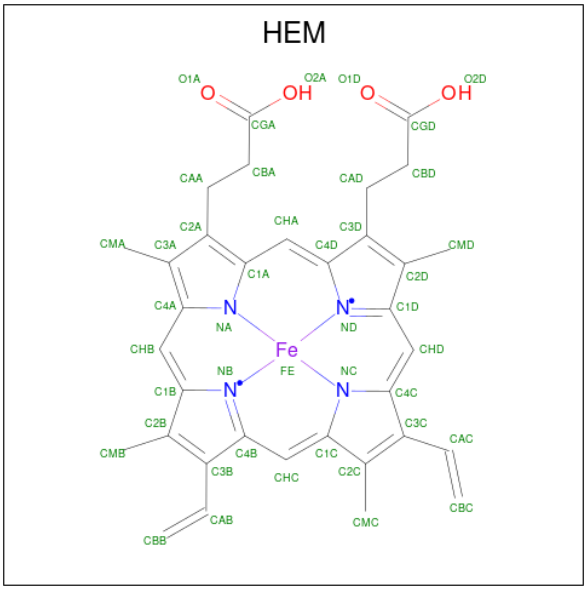
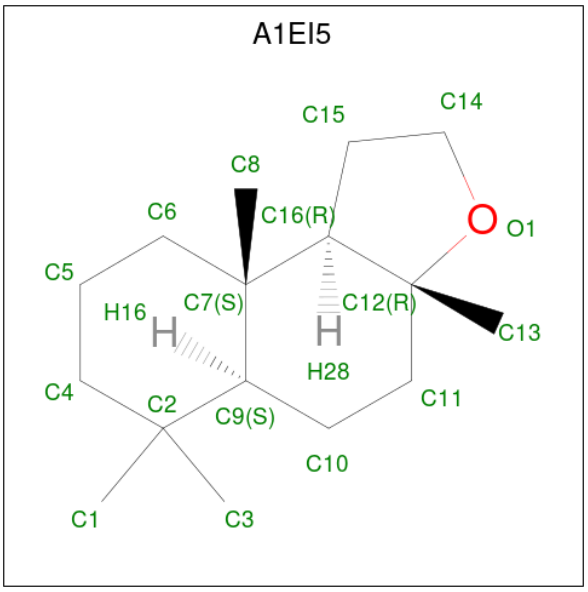
Chain	Residue	Modelled	Actual	Comment	Reference
B	334	ALA	CYS	conflict	UNP P00183

- Molecule 2 is PROTOPORPHYRIN IX CONTAINING FE (CCD ID: 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	H	N	O	0	0
			73	34	1	30	4	4		
2	B	1	Total	C	Fe	H	N	O	0	0
			73	34	1	30	4	4		

- Molecule 3 is (3 {a} {R},5 {a} {S},9 {a} {S},9 {b} {R})-3 {a},6,6,9 {a}-tetramethyl-2,4,5,5 {a},7,8,9,9 {b}-octahydro-1 {H}-benzo[e][1]benzofuran (CCD ID: A1EI5) (formula: $C_{16}H_{28}O$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	H	O	0	0
			45	16	28	1		
3	B	1	Total	C	H	O	0	0
			45	16	28	1		

- Molecule 4 is water.

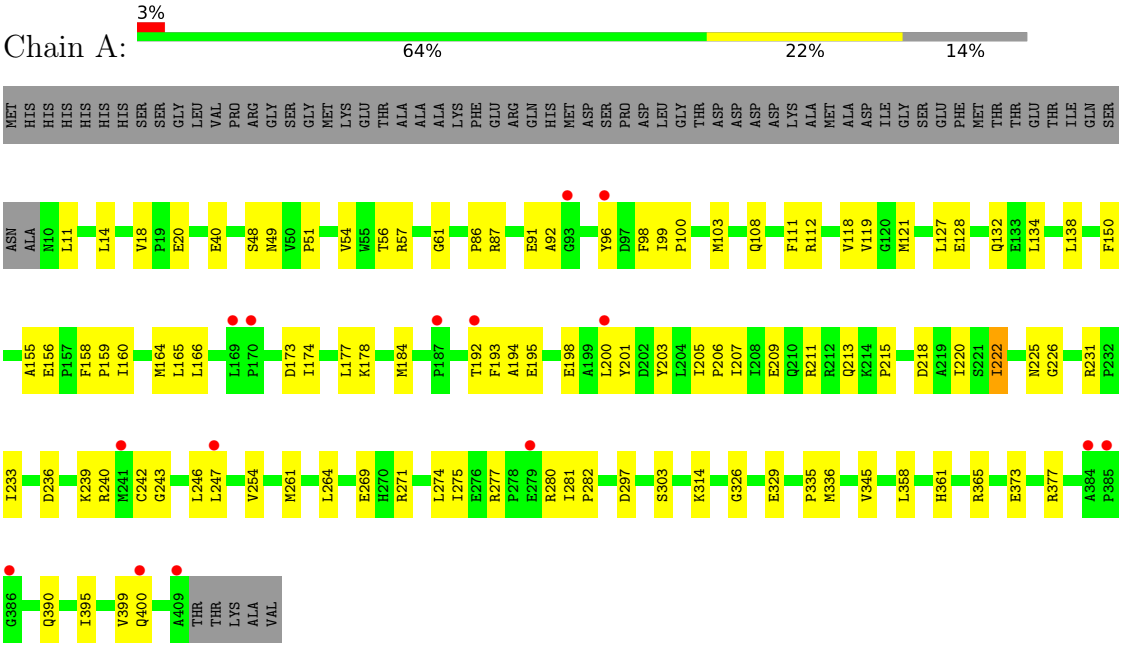
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	113	Total	O	0	0
			113	113		
4	B	131	Total	O	0	0
			131	131		

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.

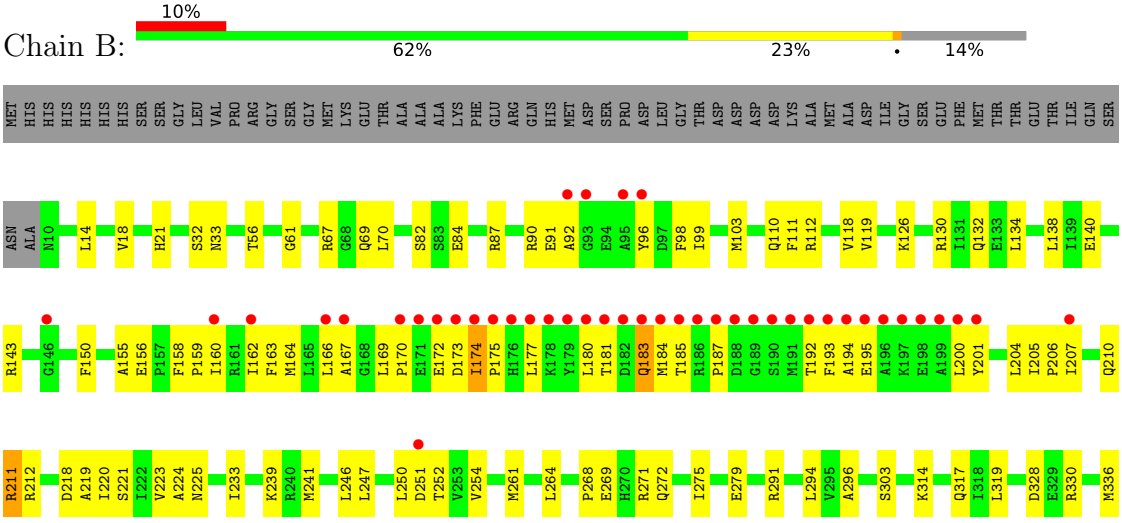
• Molecule 1: Camphor 5-monooxygenase

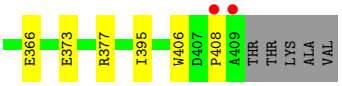
Chain A:



• Molecule 1: Camphor 5-monooxygenase

Chain B:




E366
E373
R377
I395
W406
D407
P408
A409
THR
THR
LYS
ALA
VAL

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	36.49Å 62.07Å 96.13Å 79.24° 80.85° 75.42°	Depositor
Resolution (Å)	29.82 – 2.04 29.82 – 2.04	Depositor EDS
% Data completeness (in resolution range)	92.7 (29.82-2.04) 88.4 (29.82-2.04)	Depositor EDS
R_{merge}	0.03	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.13 (at 2.03Å)	Xtriage
Refinement program	PHENIX (1.20.1_4487: ???)	Depositor
R, R_{free}	0.206 , 0.256 0.212 , 0.258	Depositor DCC
R_{free} test set	2008 reflections (4.26%)	wwPDB-VP
Wilson B-factor (Å^2)	33.8	Xtriage
Anisotropy	0.191	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 51.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.041 for h,h-k,h-l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	6804	wwPDB-VP
Average B, all atoms (Å^2)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 30.09 % 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 1.3879e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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: HEM, A1EI5

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	0.29	0/3246	0.37	0/4411
1	B	0.35	0/3232	0.46	0/4392
All	All	0.32	0/6478	0.42	0/8803

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	3168	0	3110	109	0
1	B	3156	0	3098	138	0
2	A	43	30	30	5	0
2	B	43	30	30	6	0
3	A	17	28	0	5	0
3	B	17	28	0	2	0
4	A	113	0	0	6	0
4	B	131	0	0	3	0
All	All	6688	116	6268	254	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 20.

All (254) 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:180:LEU:HD23	1:B:200:LEU:HB2	1.26	1.12
1:A:205:ILE:HG13	1:A:206:PRO:HD3	1.07	1.07
1:B:180:LEU:CD2	1:B:200:LEU:HB2	1.85	1.06
1:A:184:MET:HE1	1:A:247:LEU:HD11	1.38	1.04
1:A:87:ARG:HH21	1:A:92:ALA:HB1	1.20	1.02
1:B:87:ARG:HE	1:B:395:ILE:CD1	1.73	1.01
1:B:87:ARG:HH21	1:B:92:ALA:HB1	1.26	1.00
1:A:205:ILE:HG13	1:A:206:PRO:CD	1.91	0.99
1:B:91:GLU:HG3	1:B:193:PHE:CE2	1.97	0.98
1:A:87:ARG:HD2	3:A:502:A1EI5:O1	1.63	0.98
1:A:87:ARG:NH2	1:A:92:ALA:HB1	1.81	0.96
1:B:193:PHE:HD1	1:B:194:ALA:H	1.08	0.95
1:B:87:ARG:NH2	1:B:92:ALA:HB1	1.84	0.92
1:B:193:PHE:HD1	1:B:194:ALA:N	1.69	0.89
1:B:156:GLU:O	1:B:160:ILE:HD12	1.72	0.89
1:A:205:ILE:CG1	1:A:206:PRO:HD3	2.01	0.89
1:B:98:PHE:CE2	1:B:247:LEU:HD21	2.10	0.86
1:B:174:ILE:N	1:B:175:PRO:HD3	1.90	0.86
1:A:87:ARG:HE	1:A:395:ILE:CD1	1.88	0.86
1:B:91:GLU:HG3	1:B:193:PHE:CZ	2.12	0.83
1:B:183:GLN:O	1:B:187:PRO:HD3	1.79	0.83
1:B:180:LEU:CD2	1:B:200:LEU:CB	2.56	0.83
1:A:329:GLU:HG3	1:A:335:PRO:HG3	1.60	0.82
1:B:181:THR:OG1	1:B:247:LEU:HB2	1.77	0.82
1:B:87:ARG:HE	1:B:395:ILE:HD13	1.41	0.82
1:B:174:ILE:H	1:B:175:PRO:HD3	1.44	0.82
1:B:180:LEU:HD23	1:B:200:LEU:CB	2.09	0.82
1:B:177:LEU:HD21	1:B:246:LEU:HD21	1.60	0.82
1:A:194:ALA:O	1:A:198:GLU:HG3	1.79	0.81
1:B:185:THR:HG21	1:B:251:ASP:OD2	1.80	0.81
1:B:87:ARG:NE	1:B:395:ILE:CD1	2.43	0.81
1:B:160:ILE:HG13	1:B:250:LEU:HD22	1.63	0.80
1:B:206:PRO:O	1:B:210:GLN:HG2	1.79	0.80
1:B:180:LEU:HD21	1:B:200:LEU:N	1.96	0.79
1:B:91:GLU:HG3	1:B:193:PHE:HE2	1.49	0.75
1:A:87:ARG:NH2	1:A:92:ALA:CB	2.50	0.74
1:B:140:GLU:HG2	1:B:377:ARG:HH11	1.51	0.74
1:B:193:PHE:CD1	1:B:194:ALA:N	2.48	0.74
1:A:87:ARG:HD2	3:A:502:A1EI5:C14	2.17	0.74
1:A:87:ARG:HE	1:A:395:ILE:HD13	1.52	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:90:ARG:HB2	1:B:317:GLN:HE22	1.54	0.73
1:B:211:ARG:HG2	1:B:211:ARG:HH11	1.53	0.72
1:B:111:PHE:HB3	1:B:241:MET:CE	2.19	0.72
1:A:118:VAL:CG1	1:A:222:ILE:HG12	2.19	0.71
1:A:274:LEU:HD13	1:A:281:ILE:HD13	1.72	0.71
1:B:180:LEU:HD21	1:B:200:LEU:CA	2.21	0.71
1:B:268:PRO:O	1:B:272:GLN:HG2	1.90	0.71
1:B:205:ILE:HB	1:B:206:PRO:CD	2.21	0.71
1:B:98:PHE:HE2	1:B:247:LEU:HD21	1.56	0.70
1:A:11:LEU:HD13	1:A:57:ARG:CZ	2.20	0.70
1:A:373:GLU:O	1:A:377:ARG:HD2	1.90	0.70
1:B:164:MET:HE2	1:B:172:GLU:HB3	1.72	0.70
1:B:174:ILE:N	1:B:175:PRO:CD	2.55	0.69
1:B:87:ARG:NE	1:B:395:ILE:HD13	2.08	0.67
1:A:11:LEU:HD22	1:A:57:ARG:HB2	1.76	0.67
1:A:236:ASP:OD1	1:A:239:LYS:NZ	2.28	0.67
1:A:200:LEU:HD21	1:A:246:LEU:HD13	1.77	0.67
1:A:203:TYR:O	1:A:207:ILE:HD13	1.94	0.67
2:A:501:HEM:HBB2	2:A:501:HEM:HMB2	1.78	0.66
1:B:160:ILE:HG21	1:B:174:ILE:HG22	1.78	0.66
1:B:143:ARG:NH1	1:B:408:PRO:O	2.21	0.65
1:B:272:GLN:HA	1:B:275:ILE:CG2	2.25	0.65
2:B:501:HEM:HMB1	2:B:501:HEM:HBB2	1.78	0.65
1:B:184:MET:HE1	1:B:247:LEU:HD22	1.78	0.64
1:A:243:GLY:O	1:A:247:LEU:HD13	1.97	0.64
1:B:87:ARG:NH2	1:B:92:ALA:CB	2.59	0.64
2:B:501:HEM:HBC2	2:B:501:HEM:HMC2	1.79	0.64
1:B:163:PHE:CE2	1:B:246:LEU:HA	2.33	0.64
1:B:207:ILE:CG2	1:B:211:ARG:HD2	2.27	0.64
1:A:11:LEU:HD13	1:A:57:ARG:NE	2.13	0.63
2:A:501:HEM:HMC2	2:A:501:HEM:HBC2	1.79	0.63
1:A:127:LEU:HD21	1:A:165:LEU:HD21	1.80	0.63
1:A:209:GLU:OE2	1:A:213:GLN:NE2	2.21	0.63
1:A:329:GLU:HG3	1:A:335:PRO:CG	2.30	0.61
1:A:49:ASN:HB3	1:B:126:LYS:HE3	1.83	0.61
1:B:184:MET:CE	1:B:247:LEU:HD22	2.29	0.61
1:A:399:VAL:O	1:A:400:GLN:HB3	2.00	0.61
1:A:201:TYR:CD2	1:A:239:LYS:HE2	2.36	0.60
1:B:207:ILE:HG22	1:B:211:ARG:HD2	1.83	0.60
1:B:180:LEU:CD2	1:B:200:LEU:CA	2.79	0.60
1:B:183:GLN:O	1:B:187:PRO:CD	2.48	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:159:PRO:HG2	1:A:254:VAL:HG22	1.84	0.59
1:B:272:GLN:HA	1:B:275:ILE:HG22	1.82	0.59
1:B:167:ALA:C	1:B:218:ASP:HB2	2.27	0.59
1:B:91:GLU:HA	1:B:91:GLU:OE1	2.02	0.59
1:A:160:ILE:CG2	1:A:174:ILE:HG12	2.32	0.58
1:B:134:LEU:O	1:B:138:LEU:HD12	2.04	0.58
1:B:160:ILE:HD13	1:B:174:ILE:HG21	1.86	0.57
1:B:205:ILE:HB	1:B:206:PRO:HD3	1.85	0.57
1:B:158:PHE:HB3	1:B:159:PRO:HD3	1.86	0.57
1:B:211:ARG:HH11	1:B:211:ARG:CG	2.16	0.57
1:B:111:PHE:HB3	1:B:241:MET:HE1	1.86	0.57
1:B:118:VAL:HG23	1:B:119:VAL:HG13	1.87	0.57
1:B:328:ASP:OD1	1:B:330:ARG:HG3	2.05	0.57
1:B:69:GLN:OE1	1:B:70:LEU:HD12	2.04	0.57
1:B:184:MET:HE1	1:B:247:LEU:CD2	2.33	0.57
1:B:140:GLU:HG2	1:B:377:ARG:NH1	2.19	0.56
1:B:177:LEU:HD21	1:B:246:LEU:CD2	2.31	0.56
1:A:128:GLU:HG3	1:A:365:ARG:HD2	1.86	0.56
1:A:150:PHE:CE2	1:A:155:ALA:HB2	2.39	0.56
1:B:82:SER:OG	1:B:84:GLU:HG3	2.05	0.56
1:B:110:GLN:NE2	4:B:605:HOH:O	2.28	0.55
1:B:264:LEU:O	1:B:271:ARG:HD3	2.07	0.55
1:B:291:ARG:CZ	1:B:336:MET:HE3	2.37	0.55
1:A:269:GLU:CD	1:A:269:GLU:H	2.14	0.55
1:B:180:LEU:HD21	1:B:200:LEU:HB2	1.81	0.55
1:B:183:GLN:HA	1:B:187:PRO:HA	1.88	0.55
1:B:303:SER:HA	1:B:314:LYS:HB2	1.88	0.55
1:A:156:GLU:HA	1:A:254:VAL:HG13	1.87	0.55
1:B:192:THR:HG22	1:B:195:GLU:HB2	1.88	0.54
1:A:118:VAL:HG23	1:A:119:VAL:HG13	1.88	0.54
1:A:277:ARG:HD2	1:A:280:ARG:CZ	2.38	0.54
1:A:207:ILE:HD12	1:A:207:ILE:H	1.72	0.54
1:A:184:MET:HE1	1:A:247:LEU:CD1	2.26	0.54
1:B:212:ARG:HA	1:B:225:ASN:HD21	1.72	0.54
1:B:87:ARG:HD2	3:B:502:A1EI5:O1	2.08	0.54
1:B:164:MET:HE2	1:B:172:GLU:H	1.73	0.54
1:A:132:GLN:NE2	1:A:373:GLU:OE2	2.38	0.53
1:B:185:THR:CG2	1:B:251:ASP:OD2	2.53	0.53
1:A:99:ILE:HD12	1:A:240:ARG:HB2	1.90	0.53
1:A:96:TYR:CZ	1:A:98:PHE:HB2	2.44	0.53
1:A:264:LEU:O	1:A:271:ARG:HD3	2.09	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:132:GLN:NE2	1:B:373:GLU:OE2	2.39	0.53
1:A:40:GLU:HG3	1:A:336:MET:HE2	1.90	0.53
1:A:281:ILE:N	1:A:282:PRO:CD	2.71	0.53
1:A:14:LEU:HD11	1:A:18:VAL:HB	1.91	0.53
1:B:269:GLU:OE1	1:B:269:GLU:N	2.23	0.53
1:B:134:LEU:HG	1:B:138:LEU:HD11	1.91	0.52
1:A:103:MET:HE1	1:A:111:PHE:CE2	2.44	0.52
1:A:207:ILE:HD12	1:A:207:ILE:N	2.25	0.52
1:B:87:ARG:NE	1:B:395:ILE:HD11	2.25	0.52
1:B:173:ASP:HB2	1:B:175:PRO:HD3	1.91	0.52
1:B:174:ILE:HG22	1:B:177:LEU:HD12	1.92	0.52
1:B:251:ASP:OD1	1:B:252:THR:N	2.40	0.52
1:A:218:ASP:OD2	1:A:220:ILE:HB	2.10	0.52
1:A:399:VAL:O	1:A:399:VAL:HG12	2.09	0.52
1:B:21:HIS:HE1	4:B:714:HOH:O	1.93	0.51
1:A:112:ARG:HG3	1:A:358:LEU:HD11	1.93	0.51
1:A:118:VAL:HG12	1:A:222:ILE:HG12	1.92	0.51
1:A:150:PHE:CZ	1:A:261:MET:HG3	2.46	0.51
1:B:32:SER:O	1:B:33:ASN:HB2	2.11	0.51
1:B:180:LEU:CD2	1:B:200:LEU:HD23	2.40	0.51
1:B:291:ARG:NH2	1:B:336:MET:HE3	2.26	0.51
1:A:87:ARG:HE	1:A:395:ILE:HD11	1.71	0.50
1:B:99:ILE:CG2	1:B:241:MET:HE3	2.41	0.50
1:A:160:ILE:HG21	1:A:174:ILE:HG12	1.92	0.50
1:B:99:ILE:HG12	1:B:103:MET:HE3	1.94	0.50
1:A:98:PHE:HE2	1:A:247:LEU:CD2	2.25	0.50
1:A:166:LEU:C	1:A:166:LEU:HD23	2.36	0.50
1:A:96:TYR:HD1	1:A:193:PHE:HZ	1.60	0.50
1:B:96:TYR:CZ	1:B:98:PHE:HB2	2.46	0.49
1:B:164:MET:CE	1:B:172:GLU:HB3	2.39	0.49
1:A:226:GLY:O	1:A:233:ILE:HG22	2.11	0.49
1:B:14:LEU:HD11	1:B:18:VAL:CG1	2.41	0.49
1:B:406:TRP:O	1:B:408:PRO:HD3	2.12	0.49
1:A:56:THR:O	1:A:61:GLY:HA2	2.13	0.49
1:B:166:LEU:CD2	1:B:219:ALA:HB2	2.43	0.49
1:B:155:ALA:O	1:B:254:VAL:HG22	2.12	0.49
1:A:390:GLN:O	1:A:400:GLN:HB3	2.13	0.49
1:B:150:PHE:CZ	1:B:261:MET:HG3	2.47	0.49
1:B:181:THR:OG1	1:B:247:LEU:CB	2.54	0.49
1:A:98:PHE:HE2	1:A:247:LEU:HD22	1.77	0.49
1:B:143:ARG:HH12	1:B:408:PRO:C	2.16	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:164:MET:HE2	1:B:172:GLU:CB	2.42	0.49
1:B:90:ARG:CB	1:B:317:GLN:HE22	2.25	0.48
1:A:192:THR:CG2	1:A:195:GLU:H	2.25	0.48
1:A:134:LEU:O	1:A:138:LEU:HD13	2.13	0.48
1:A:91:GLU:OE1	1:A:91:GLU:HA	2.14	0.48
1:A:211:ARG:NE	4:A:614:HOH:O	2.46	0.47
1:B:164:MET:SD	1:B:169:LEU:HD12	2.55	0.47
1:A:215:PRO:HB3	1:A:225:ASN:ND2	2.30	0.47
1:B:180:LEU:HD23	1:B:200:LEU:HD23	1.96	0.47
1:A:86:PRO:HG2	1:A:96:TYR:CD2	2.50	0.47
1:A:164:MET:HE1	1:A:177:LEU:HD12	1.97	0.47
1:A:329:GLU:HG3	1:A:335:PRO:CD	2.45	0.47
1:A:173:ASP:O	1:A:177:LEU:HG	2.15	0.47
1:A:399:VAL:O	1:A:399:VAL:CG1	2.62	0.47
1:A:281:ILE:HB	1:A:282:PRO:HD3	1.97	0.46
1:B:200:LEU:CD1	1:B:204:LEU:HD12	2.45	0.46
1:A:150:PHE:CE1	1:A:261:MET:HG3	2.50	0.46
1:B:246:LEU:O	1:B:250:LEU:HG	2.15	0.46
1:B:296:ALA:HB1	1:B:319:LEU:HD11	1.97	0.46
1:A:87:ARG:NE	1:A:395:ILE:CD1	2.70	0.46
1:B:177:LEU:HD13	1:B:250:LEU:CD1	2.45	0.46
1:A:48:SER:O	1:B:130:ARG:NH1	2.46	0.46
1:A:218:ASP:O	1:A:222:ILE:HG22	2.16	0.46
1:B:67:ARG:NH2	4:B:614:HOH:O	2.49	0.46
1:B:158:PHE:HB3	1:B:159:PRO:CD	2.46	0.46
1:B:211:ARG:CG	1:B:211:ARG:NH1	2.77	0.46
1:A:271:ARG:O	1:A:275:ILE:HG22	2.16	0.46
1:B:56:THR:O	1:B:61:GLY:HA2	2.16	0.46
1:A:11:LEU:HD13	1:A:57:ARG:NH2	2.30	0.45
1:A:192:THR:HG23	1:A:194:ALA:N	2.31	0.45
1:B:96:TYR:CE1	3:B:502:A1EI5:C13	2.99	0.45
1:B:177:LEU:HD13	1:B:250:LEU:HD11	1.98	0.45
1:A:11:LEU:CD1	1:A:57:ARG:NH2	2.79	0.45
1:A:121:MET:HE2	1:A:361:HIS:CG	2.51	0.45
1:B:14:LEU:HD11	1:B:18:VAL:HB	1.98	0.45
1:B:162:ILE:HD13	1:B:366:GLU:OE2	2.16	0.45
1:A:200:LEU:HD21	1:A:246:LEU:CD1	2.45	0.45
1:B:218:ASP:OD1	1:B:221:SER:OG	2.26	0.45
1:A:20:GLU:HG3	4:A:617:HOH:O	2.16	0.45
1:A:277:ARG:HD2	1:A:280:ARG:NH1	2.32	0.45
1:B:156:GLU:HA	1:B:254:VAL:HG22	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:220:ILE:HD13	1:A:242:CYS:SG	2.57	0.44
1:A:96:TYR:HD1	1:A:193:PHE:CZ	2.35	0.44
1:A:365:ARG:NH2	4:A:609:HOH:O	2.40	0.44
1:B:177:LEU:HD21	1:B:246:LEU:CG	2.47	0.44
1:B:99:ILE:HG22	1:B:241:MET:HE3	1.99	0.44
1:B:252:THR:HB	2:B:501:HEM:C3B	2.53	0.44
1:A:87:ARG:NE	1:A:395:ILE:HD11	2.33	0.44
2:A:501:HEM:HBB2	2:A:501:HEM:CMB	2.47	0.44
1:A:112:ARG:NH1	2:A:501:HEM:O1D	2.49	0.43
1:B:294:LEU:HD23	1:B:294:LEU:N	2.33	0.43
1:B:279:GLU:CD	1:B:279:GLU:H	2.26	0.43
1:A:297:ASP:OD2	3:A:502:A1EI5:C1	2.67	0.43
1:B:201:TYR:HB3	1:B:239:LYS:HD2	2.01	0.43
1:B:212:ARG:HG3	1:B:224:ALA:HB1	2.00	0.43
1:A:274:LEU:HB3	1:A:281:ILE:CD1	2.49	0.43
2:A:501:HEM:HBC2	2:A:501:HEM:CMC	2.47	0.43
3:A:502:A1EI5:C13	3:A:502:A1EI5:C8	2.97	0.43
1:A:96:TYR:CE1	3:A:502:A1EI5:C13	3.01	0.42
1:A:218:ASP:O	1:A:222:ILE:CG2	2.67	0.42
1:B:180:LEU:CD2	1:B:200:LEU:CD2	2.96	0.42
1:A:211:ARG:CZ	4:A:614:HOH:O	2.67	0.42
1:B:174:ILE:H	1:B:175:PRO:CD	2.22	0.42
1:A:127:LEU:CD2	1:A:165:LEU:HD21	2.48	0.42
1:A:178:LYS:NZ	4:A:621:HOH:O	2.52	0.42
1:A:345:VAL:O	1:A:345:VAL:HG12	2.19	0.42
1:B:218:ASP:OD2	1:B:220:ILE:HB	2.20	0.42
1:A:87:ARG:HH22	1:A:193:PHE:HB2	1.85	0.42
1:B:160:ILE:HG21	1:B:174:ILE:CG2	2.49	0.41
1:A:329:GLU:CG	1:A:335:PRO:HG3	2.42	0.41
1:B:173:ASP:CB	1:B:175:PRO:HD3	2.50	0.41
2:B:501:HEM:HBC2	2:B:501:HEM:CMC	2.47	0.41
1:B:206:PRO:O	1:B:210:GLN:CG	2.61	0.41
1:B:160:ILE:HG13	1:B:250:LEU:CD2	2.41	0.41
1:B:271:ARG:O	1:B:275:ILE:HG22	2.19	0.41
1:A:211:ARG:O	1:A:215:PRO:HA	2.21	0.41
1:B:160:ILE:CG1	1:B:250:LEU:HD22	2.42	0.41
1:B:166:LEU:C	1:B:166:LEU:HD23	2.45	0.41
2:B:501:HEM:HBB2	2:B:501:HEM:CMB	2.47	0.41
1:B:99:ILE:HG21	1:B:241:MET:HE3	2.03	0.41
1:A:158:PHE:HB3	1:A:159:PRO:HD3	2.03	0.41
1:A:326:GLY:HA3	4:A:661:HOH:O	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:303:SER:HA	1:A:314:LYS:HB2	2.03	0.41
1:A:100:PRO:HB2	1:A:108:GLN:HG3	2.03	0.40
1:B:119:VAL:HG12	1:B:166:LEU:HD11	2.04	0.40
1:A:51:PRO:HD2	1:A:54:VAL:CG1	2.51	0.40
1:A:86:PRO:CG	1:A:96:TYR:CD2	3.04	0.40
1:A:231:ARG:O	1:A:231:ARG:HD3	2.22	0.40
1:B:112:ARG:NH1	2:B:501:HEM:O1D	2.51	0.40
1:A:98:PHE:CE2	1:A:247:LEU:HD22	2.56	0.40
1:B:223:VAL:O	1:B:233:ILE:HG21	2.22	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	398/467 (85%)	387 (97%)	11 (3%)	0	100 100
1	B	398/467 (85%)	379 (95%)	17 (4%)	2 (0%)	24 16
All	All	796/934 (85%)	766 (96%)	28 (4%)	2 (0%)	36 30

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	170	PRO
1	B	174	ILE

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	344/400 (86%)	343 (100%)	1 (0%)	86 90
1	B	342/400 (86%)	340 (99%)	2 (1%)	78 83
All	All	686/800 (86%)	683 (100%)	3 (0%)	84 88

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	222	ILE
1	B	183	GLN
1	B	211	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	21	HIS
1	A	59	ASN
1	A	311	GLN
1	A	343	GLN
1	A	355	HIS
1	B	210	GLN
1	B	213	GLN
1	B	225	ASN
1	B	311	GLN
1	B	317	GLN
1	B	390	GLN

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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

4 ligands 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	$\#\|Z\| > 2$
3	A1EI5	A	502	-	19,19,19	0.74	0	30,32,32	1.10	2 (6%)
2	HEM	B	501	4,1	50,50,50	1.57	6 (12%)	67,82,82	1.57	12 (17%)
3	A1EI5	B	502	-	19,19,19	0.25	0	30,32,32	0.73	1 (3%)
2	HEM	A	501	4,1	50,50,50	1.56	7 (14%)	67,82,82	1.57	12 (17%)

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	A1EI5	A	502	-	-	-	0/3/3/3
2	HEM	B	501	4,1	-	6/14/54/54	-
3	A1EI5	B	502	-	-	-	0/3/3/3
2	HEM	A	501	4,1	-	6/14/54/54	-

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	HEM	FE-NB	5.39	2.11	1.94
2	B	501	HEM	FE-NB	5.38	2.11	1.94
2	B	501	HEM	FE-NC	4.34	2.09	1.95
2	A	501	HEM	FE-NC	4.31	2.09	1.95
2	B	501	HEM	C1B-NB	-3.20	1.34	1.40
2	A	501	HEM	C1B-NB	-3.18	1.34	1.40
2	B	501	HEM	C4D-ND	-3.05	1.35	1.40
2	A	501	HEM	C4D-ND	-3.01	1.35	1.40
2	A	501	HEM	FE-ND	-2.35	1.87	1.94
2	B	501	HEM	FE-ND	-2.33	1.87	1.94
2	B	501	HEM	C1C-C2C	-2.33	1.40	1.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	HEM	C1C-C2C	-2.28	1.40	1.45
2	A	501	HEM	C4B-NB	-2.00	1.34	1.38

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	501	HEM	CHC-C4B-NB	5.16	129.97	124.42
2	A	501	HEM	CHC-C4B-NB	5.09	129.90	124.42
2	B	501	HEM	CHD-C1D-ND	4.29	129.04	124.42
2	A	501	HEM	CHD-C1D-ND	4.29	129.04	124.42
2	B	501	HEM	CHA-C4D-ND	3.57	128.78	124.37
2	A	501	HEM	CHA-C4D-ND	3.56	128.78	124.37
3	A	502	A1EI5	C6-C7-C16	3.55	112.99	108.07
2	B	501	HEM	CHB-C1B-NB	3.15	128.26	124.37
2	A	501	HEM	CHB-C1B-NB	3.14	128.25	124.37
2	B	501	HEM	C1B-NB-C4B	3.00	108.76	105.21
2	A	501	HEM	C1B-NB-C4B	2.98	108.74	105.21
2	B	501	HEM	CHD-C1D-C2D	-2.57	120.97	125.03
2	A	501	HEM	CHD-C1D-C2D	-2.56	120.99	125.03
2	B	501	HEM	CHD-C4C-NC	2.49	127.16	124.45
2	A	501	HEM	CHD-C4C-NC	2.48	127.15	124.45
2	B	501	HEM	CHA-C4D-C3D	-2.22	121.14	125.23
2	A	501	HEM	CHA-C4D-C3D	-2.21	121.14	125.23
2	A	501	HEM	C4B-C3B-C2B	-2.09	105.36	107.28
2	A	501	HEM	O2A-CGA-CBA	2.09	120.59	114.00
3	A	502	A1EI5	C11-C10-C9	2.08	115.07	111.05
2	A	501	HEM	O2D-CGD-CBD	2.08	120.56	114.00
2	B	501	HEM	O2D-CGD-CBD	2.07	120.56	114.00
2	B	501	HEM	C4B-C3B-C2B	-2.07	105.38	107.28
2	B	501	HEM	O2A-CGA-CBA	2.07	120.53	114.00
2	B	501	HEM	C1A-CHA-C4D	-2.05	121.42	126.25
2	A	501	HEM	C1A-CHA-C4D	-2.04	121.44	126.25
3	B	502	A1EI5	O1-C12-C16	-2.01	99.09	102.30

There are no chirality outliers.

All (12) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	501	HEM	CAA-CBA-CGA-O2A
2	A	501	HEM	CAD-CBD-CGD-O2D
2	B	501	HEM	CAA-CBA-CGA-O2A
2	B	501	HEM	CAD-CBD-CGD-O2D

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Mol	Chain	Res	Type	Atoms
2	A	501	HEM	CAA-CBA-CGA-O1A
2	A	501	HEM	CAD-CBD-CGD-O1D
2	B	501	HEM	CAA-CBA-CGA-O1A
2	B	501	HEM	CAD-CBD-CGD-O1D
2	A	501	HEM	C2B-C3B-CAB-CBB
2	A	501	HEM	C2C-C3C-CAC-CBC
2	B	501	HEM	C2B-C3B-CAB-CBB
2	B	501	HEM	C2C-C3C-CAC-CBC

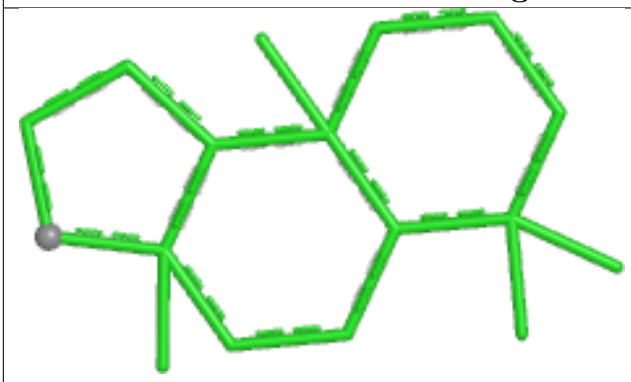
There are no ring outliers.

4 monomers are involved in 18 short contacts:

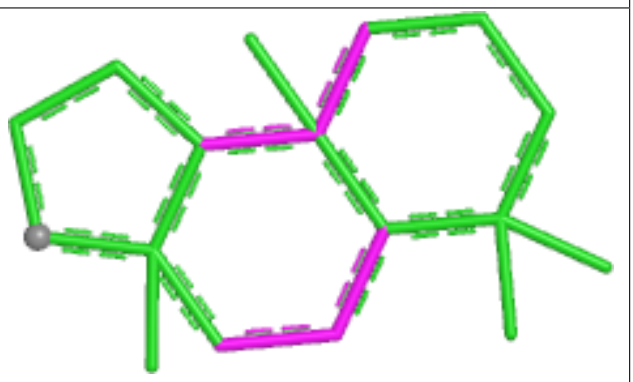
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	502	A1EI5	5	0
2	B	501	HEM	6	0
3	B	502	A1EI5	2	0
2	A	501	HEM	5	0

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.

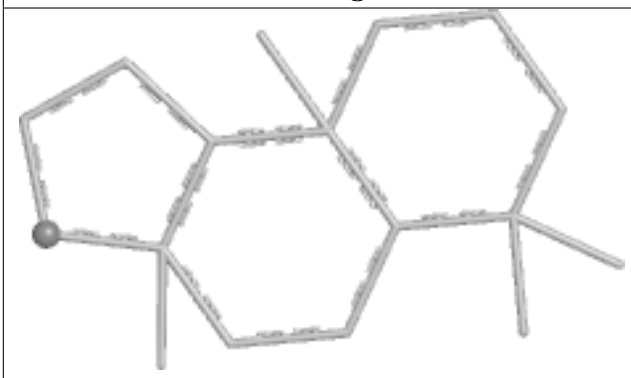
Ligand A1EI5 A 502



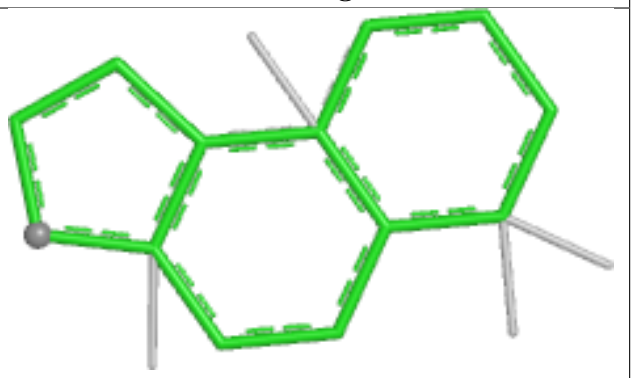
Bond lengths



Bond angles

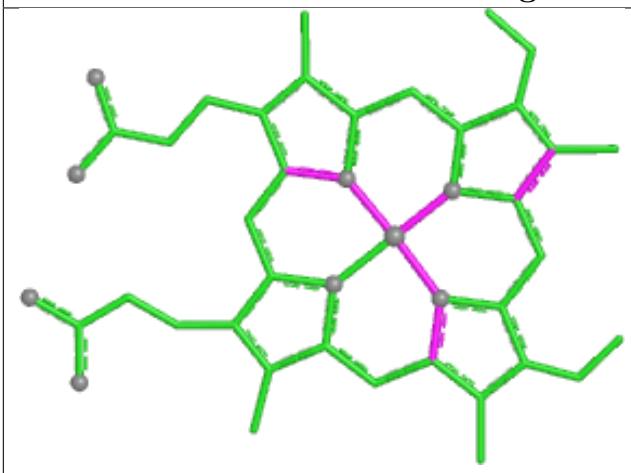


Torsions

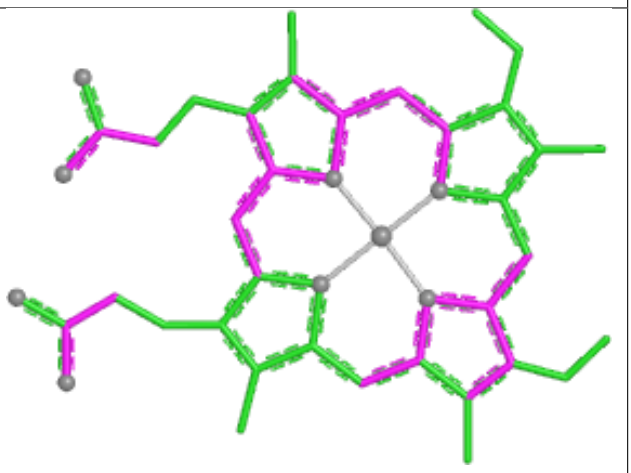


Rings

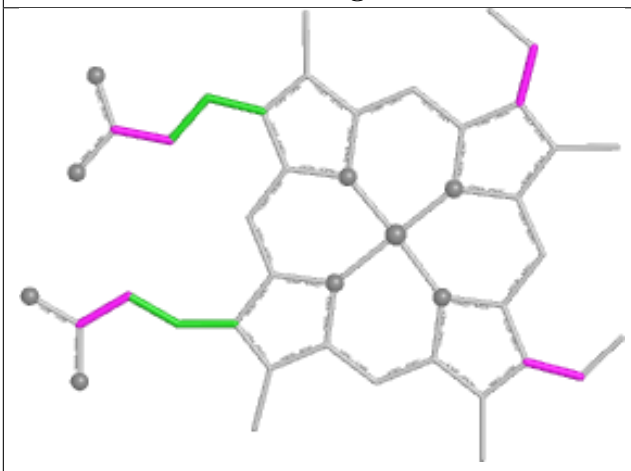
Ligand HEM B 501



Bond lengths



Bond angles



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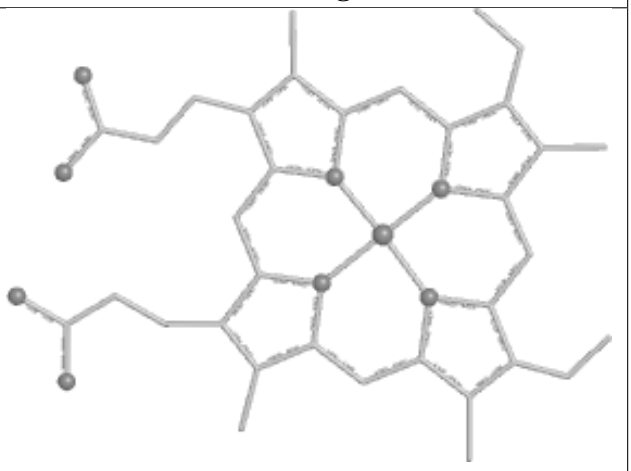
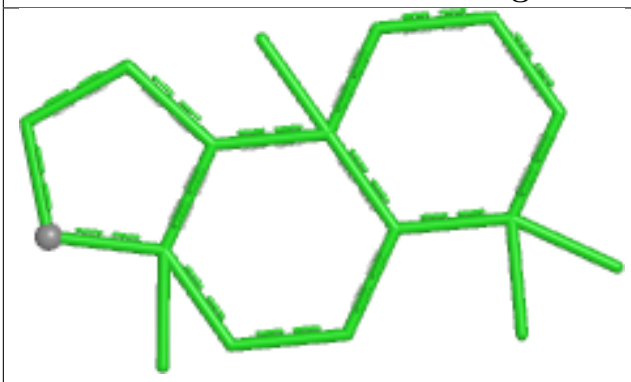
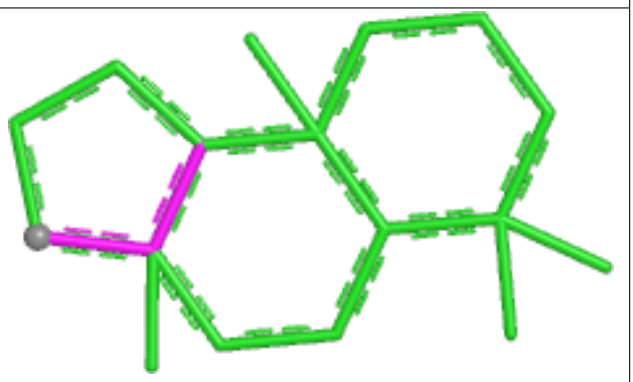


Rings

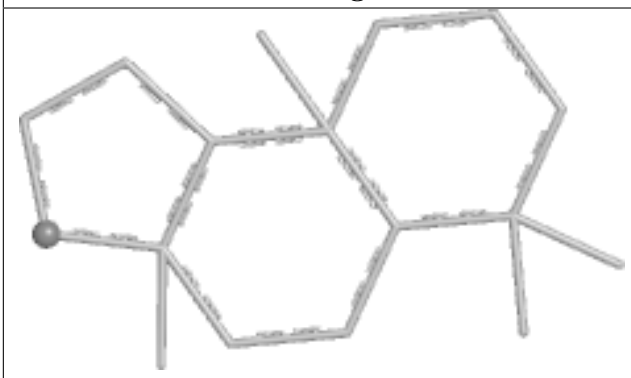
Ligand A1EI5 B 502



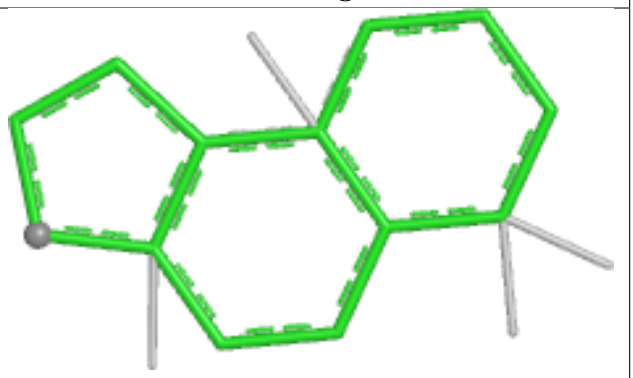
Bond lengths



Bond angles

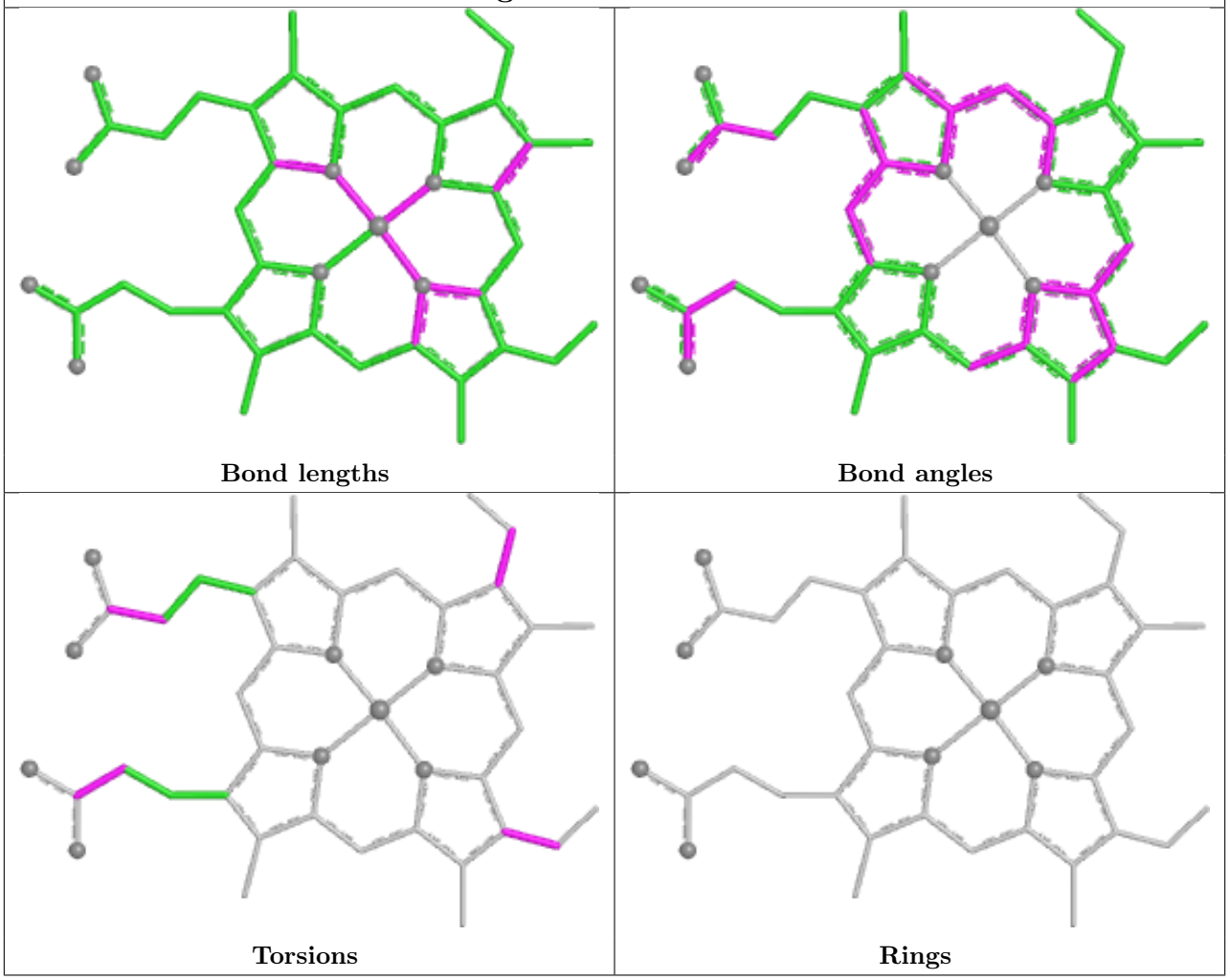


Torsions



Rings

Ligand HEM A 501



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, 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	400/467 (85%)	0.54	15 (3%) 44 44	28, 46, 70, 84	0
1	B	400/467 (85%)	0.70	45 (11%) 10 9	26, 45, 87, 108	0
All	All	800/934 (85%)	0.62	60 (7%) 20 20	26, 46, 81, 108	0

All (60) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	177	LEU	6.9
1	B	179	TYR	6.3
1	B	180	LEU	6.2
1	B	181	THR	5.8
1	B	183	GLN	5.4
1	B	184	MET	4.8
1	B	173	ASP	4.8
1	B	193	PHE	4.7
1	B	174	ILE	4.7
1	B	175	PRO	4.6
1	B	172	GLU	4.5
1	B	96	TYR	4.4
1	B	185	THR	4.3
1	B	200	LEU	4.1
1	B	191	MET	3.6
1	B	176	HIS	3.6
1	A	384	ALA	3.6
1	B	92	ALA	3.5
1	B	166	LEU	3.4
1	B	199	ALA	3.3
1	B	93	GLY	3.3
1	A	409	ALA	3.3
1	B	182	ASP	3.3
1	B	194	ALA	3.1

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Mol	Chain	Res	Type	RSRZ
1	A	200	LEU	3.1
1	B	196	ALA	3.0
1	A	279	GLU	3.0
1	B	187	PRO	3.0
1	A	187	PRO	2.9
1	B	160	ILE	2.9
1	B	408	PRO	2.9
1	B	190	SER	2.8
1	A	247	LEU	2.8
1	B	95	ALA	2.7
1	B	178	LYS	2.6
1	B	409	ALA	2.5
1	A	96	TYR	2.5
1	B	192	THR	2.5
1	A	170	PRO	2.5
1	B	170	PRO	2.5
1	B	189	GLY	2.5
1	B	188	ASP	2.4
1	B	251	ASP	2.4
1	B	186	ARG	2.4
1	B	195	GLU	2.3
1	B	162	ILE	2.2
1	B	201	TYR	2.2
1	A	400	GLN	2.2
1	B	197	LYS	2.2
1	A	192	THR	2.2
1	B	207	ILE	2.1
1	A	385	PRO	2.1
1	B	146	GLY	2.1
1	B	167	ALA	2.1
1	B	198	GLU	2.1
1	A	93	GLY	2.1
1	A	241	MET	2.1
1	B	171	GLU	2.0
1	A	169	LEU	2.0
1	A	386	GLY	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 oligosaccharides in this entry.

6.4 Ligands (i)

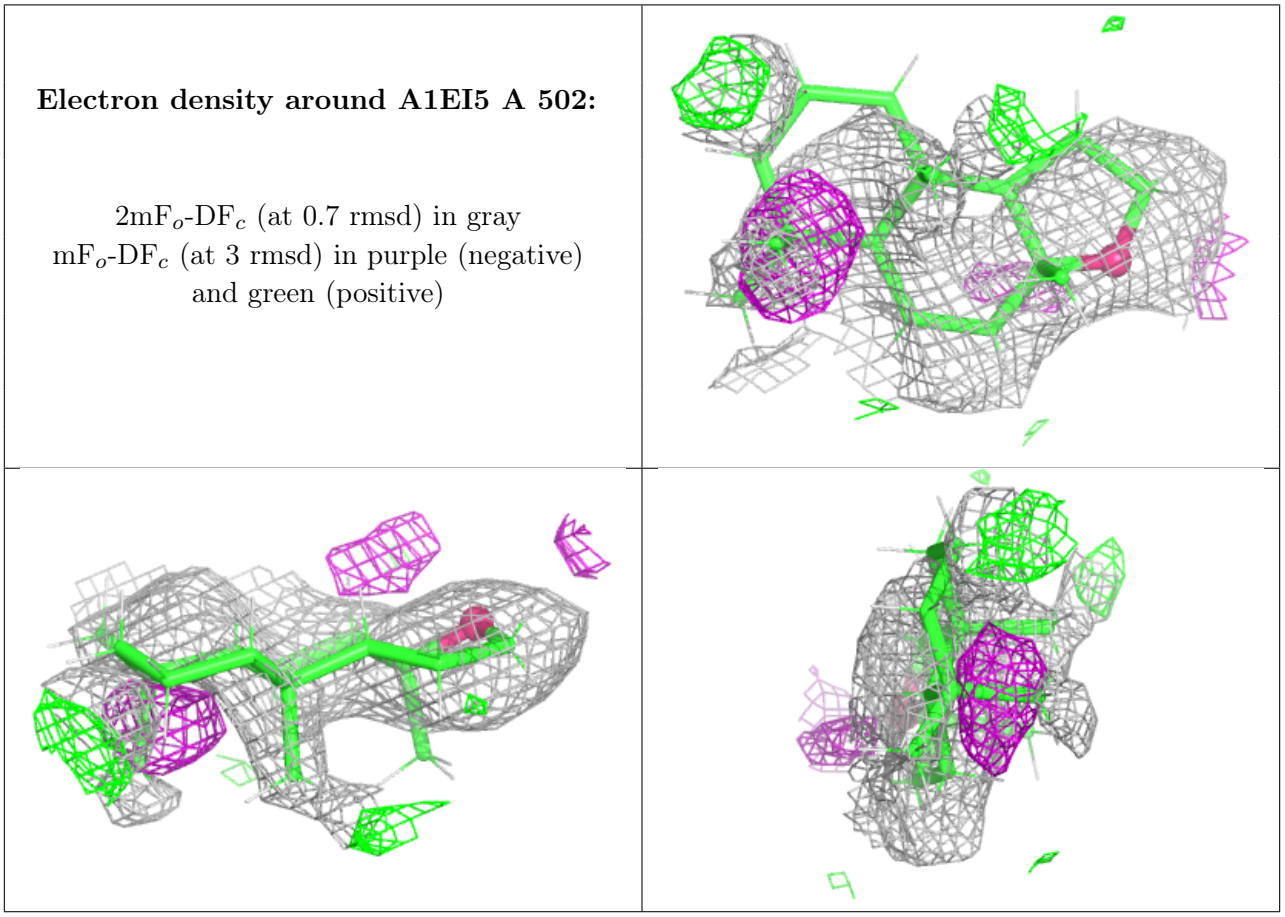
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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
3	A1EI5	A	502	17/17	0.58	0.17	50,69,79,84	0
3	A1EI5	B	502	17/17	0.63	0.20	51,70,89,96	0
2	HEM	A	501	43/43	0.95	0.09	23,34,42,43	0
2	HEM	B	501	43/43	0.95	0.09	21,30,39,47	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.

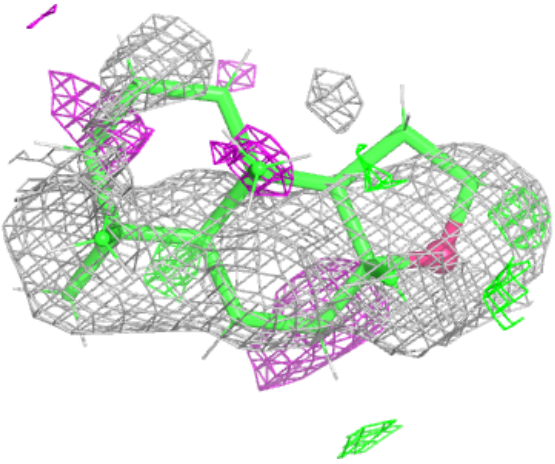
Electron density around A1EI5 A 502:

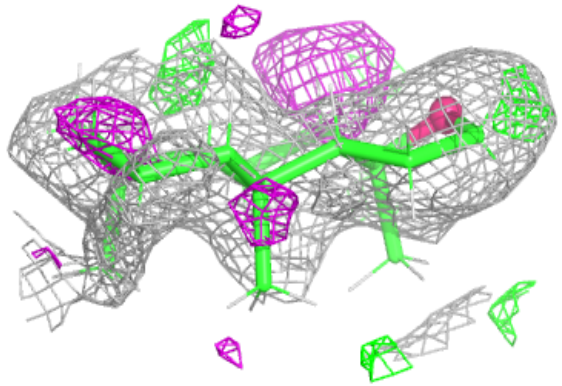
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

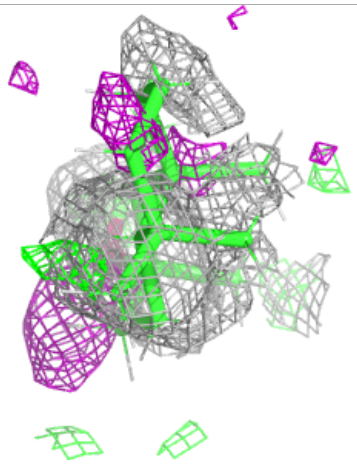


Electron density around A1EI5 B 502:

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

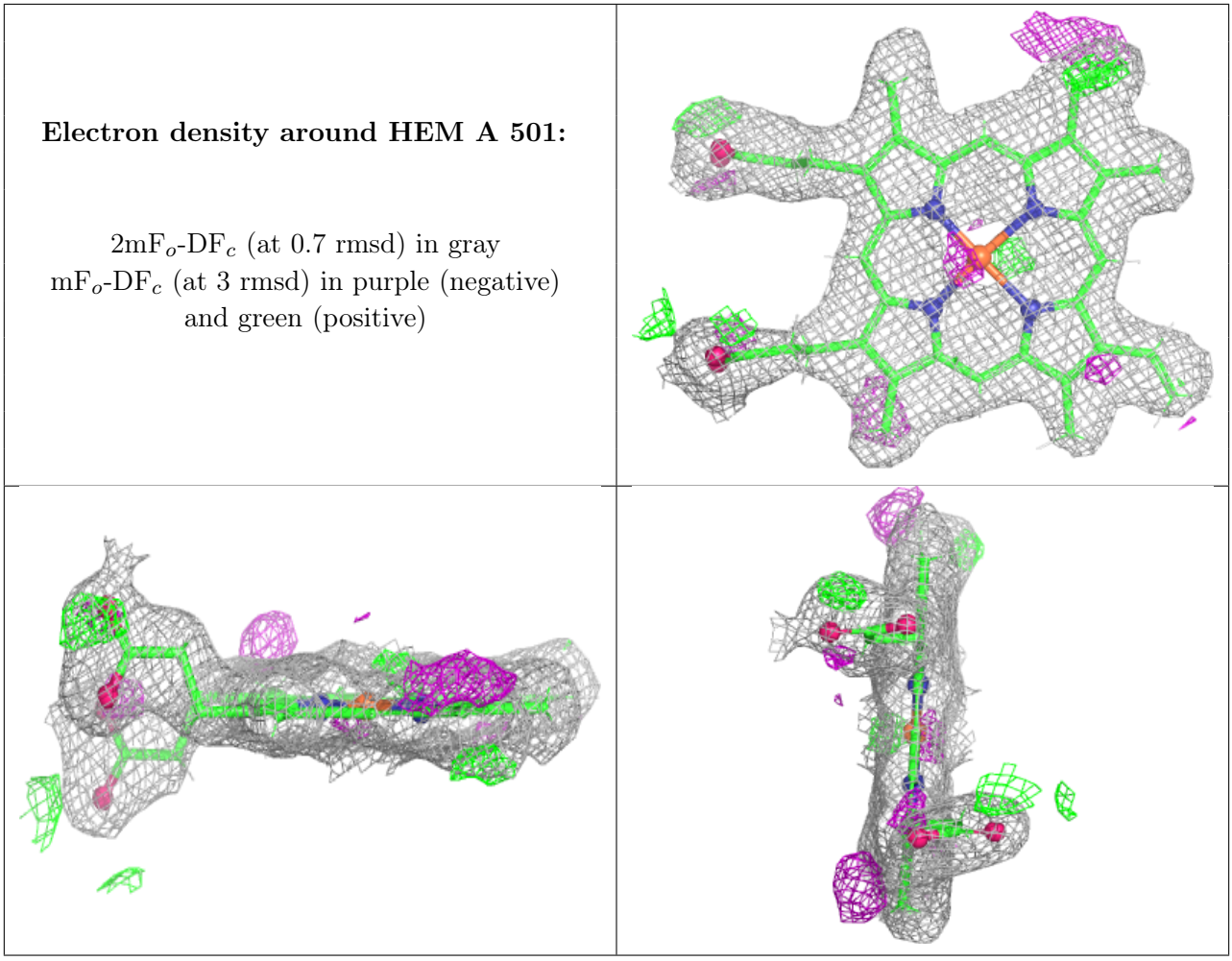






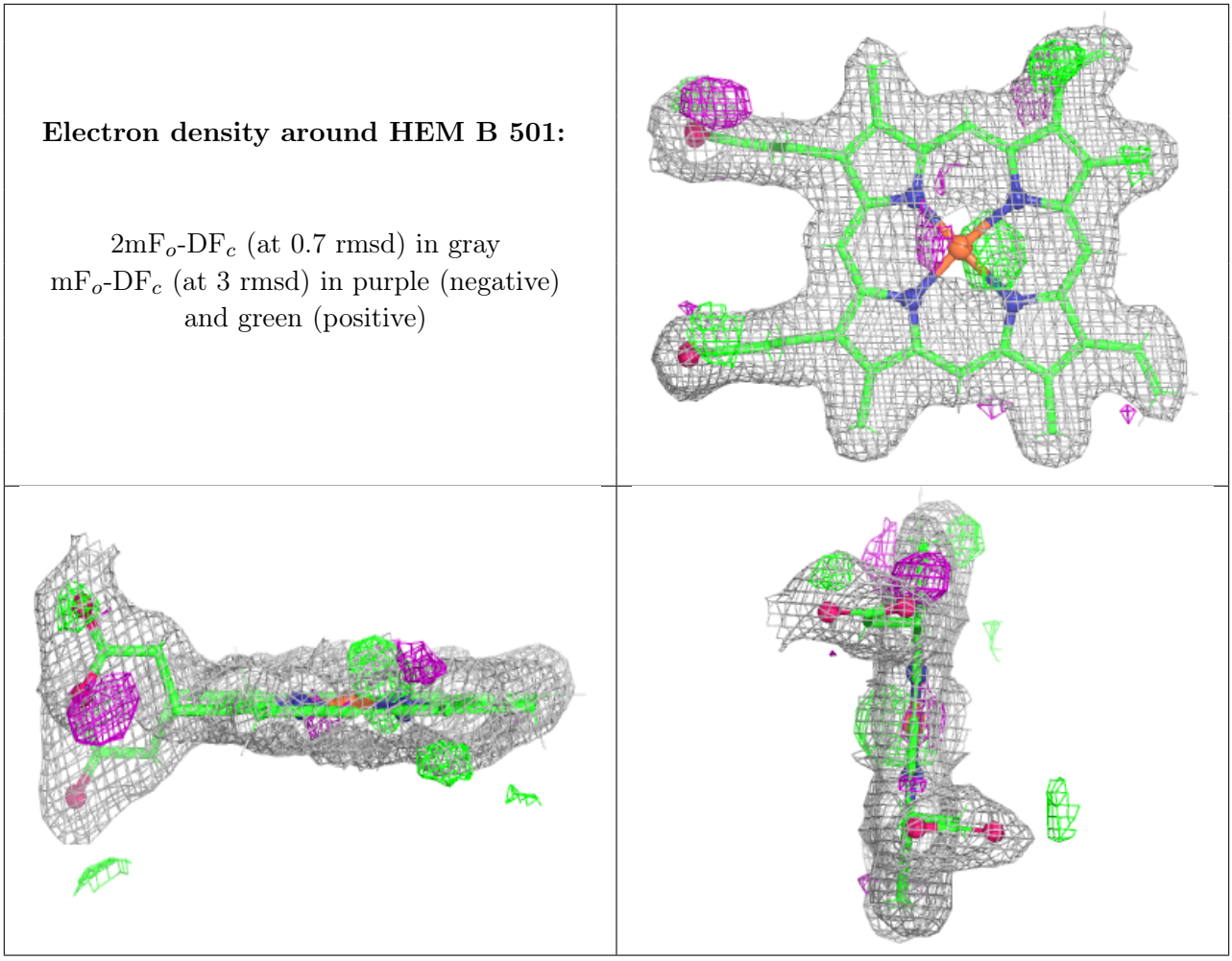
Electron density around HEM A 501:

$2mF_o$-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

There are no such residues in this entry.