W O R L D W I D E
wwPDB
PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report ⓘ

Sep 2, 2023 – 02:52 PM EDT

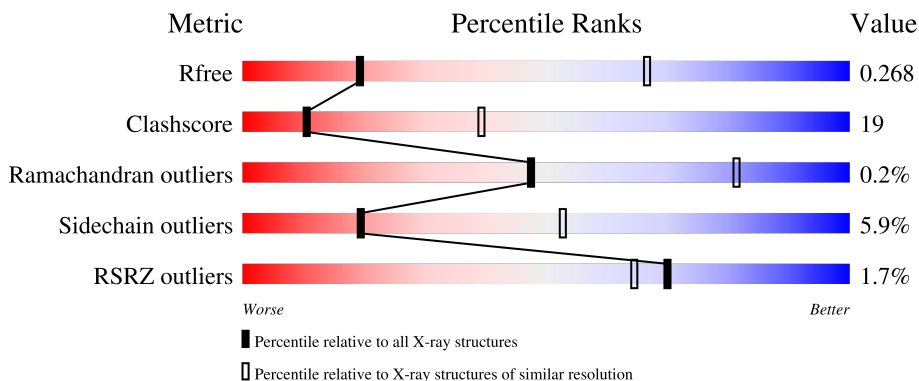|		
PDB ID	:	3R1A
Title	:	Closed crystal structure of cytochrome P450 2B4 covalently bound to the mechanism-based inactivator tert-butylphenylacetylene
Authors	:	Gay, S.C.; Zhang, H.; Stout, C.D.; Hollenberg, P.F.; Halpert, J.R.
Deposited on	:	2011-03-09
Resolution	:	3.50 Å(reported)

1 Overall quality at a glance ⓘ

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

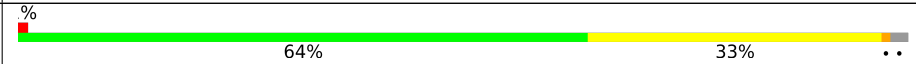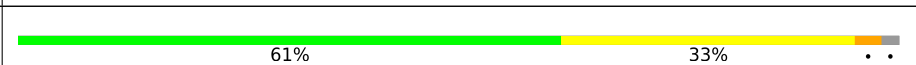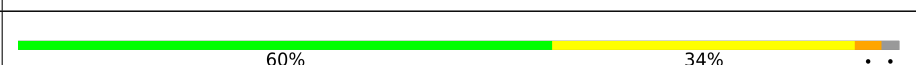The reported resolution of this entry is 3.50 Å.

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		0.268
Clashscore		19
Ramachandran outliers		0.2%
Sidechain outliers		5.9%
RSRZ outliers		1.7%

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	1659 (3.60-3.40)
Clashscore	141614	1036 (3.58-3.42)
Ramachandran outliers	138981	1005 (3.58-3.42)
Sidechain outliers	138945	1006 (3.58-3.42)
RSRZ outliers	127900	1559 (3.60-3.40)

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	476	64% 32% · ·
1	B	476	64% 33% · ·
1	C	476	61% 33% · ·
1	D	476	63% 33% · ·
1	E	476	60% 34% · ·

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Mol	Chain	Length	Quality of chain
1	F	476	63% 32%
1	G	476	% 65% 30%
1	H	476	11% 66% 30%

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 28813 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Cytochrome P450 2B4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	465	Total	C	N	O	S	0	0	0
			3618	2332	613	663	10			
1	B	465	Total	C	N	O	S	0	0	0
			3582	2314	595	662	11			
1	C	465	Total	C	N	O	S	0	0	0
			3637	2346	618	662	11			
1	D	465	Total	C	N	O	S	0	0	0
			3608	2327	604	666	11			
1	E	465	Total	C	N	O	S	0	0	0
			3588	2319	592	666	11			
1	F	465	Total	C	N	O	S	0	0	0
			3540	2292	581	656	11			
1	G	465	Total	C	N	O	S	0	0	0
			3545	2293	583	659	10			
1	H	464	Total	C	N	O	S	0	0	0
			3239	2079	539	612	9			

There are 264 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	21	ALA	GLU	engineered mutation	UNP P00178
A	?	-	PHE	deletion	UNP P00178
A	?	-	SER	deletion	UNP P00178
A	?	-	LEU	deletion	UNP P00178
A	?	-	LEU	deletion	UNP P00178
A	?	-	LEU	deletion	UNP P00178
A	?	-	LEU	deletion	UNP P00178
A	?	-	LEU	deletion	UNP P00178
A	?	-	ALA	deletion	UNP P00178
A	?	-	PHE	deletion	UNP P00178
A	?	-	LEU	deletion	UNP P00178
A	?	-	ALA	deletion	UNP P00178
A	?	-	GLY	deletion	UNP P00178

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Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	LEU	deletion	UNP P00178
A	?	-	LEU	deletion	UNP P00178
A	?	-	LEU	deletion	UNP P00178
A	?	-	LEU	deletion	UNP P00178
A	?	-	LEU	deletion	UNP P00178
A	?	-	PHE	deletion	UNP P00178
A	?	-	ARG	deletion	UNP P00178
A	22	LYS	GLY	engineered mutation	UNP P00178
A	23	LYS	HIS	engineered mutation	UNP P00178
A	24	THR	PRO	engineered mutation	UNP P00178
A	25	SER	LYS	engineered mutation	UNP P00178
A	26	SER	ALA	engineered mutation	UNP P00178
A	27	LYS	HIS	engineered mutation	UNP P00178
A	29	LYS	ARG	engineered mutation	UNP P00178
A	221	SER	PRO	conflict	UNP P00178
A	226	TYR	HIS	engineered mutation	UNP P00178
A	492	HIS	-	expression tag	UNP P00178
A	493	HIS	-	expression tag	UNP P00178
A	494	HIS	-	expression tag	UNP P00178
A	495	HIS	-	expression tag	UNP P00178
B	21	ALA	GLU	engineered mutation	UNP P00178
B	?	-	PHE	deletion	UNP P00178
B	?	-	SER	deletion	UNP P00178
B	?	-	LEU	deletion	UNP P00178
B	?	-	LEU	deletion	UNP P00178
B	?	-	LEU	deletion	UNP P00178
B	?	-	LEU	deletion	UNP P00178
B	?	-	LEU	deletion	UNP P00178
B	?	-	ALA	deletion	UNP P00178
B	?	-	PHE	deletion	UNP P00178
B	?	-	LEU	deletion	UNP P00178
B	?	-	ALA	deletion	UNP P00178
B	?	-	GLY	deletion	UNP P00178
B	?	-	LEU	deletion	UNP P00178
B	?	-	LEU	deletion	UNP P00178
B	?	-	LEU	deletion	UNP P00178
B	?	-	LEU	deletion	UNP P00178
B	?	-	LEU	deletion	UNP P00178
B	?	-	PHE	deletion	UNP P00178
B	?	-	ARG	deletion	UNP P00178
B	22	LYS	GLY	engineered mutation	UNP P00178
B	23	LYS	HIS	engineered mutation	UNP P00178

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Chain	Residue	Modelled	Actual	Comment	Reference
B	24	THR	PRO	engineered mutation	UNP P00178
B	25	SER	LYS	engineered mutation	UNP P00178
B	26	SER	ALA	engineered mutation	UNP P00178
B	27	LYS	HIS	engineered mutation	UNP P00178
B	29	LYS	ARG	engineered mutation	UNP P00178
B	221	SER	PRO	conflict	UNP P00178
B	226	TYR	HIS	engineered mutation	UNP P00178
B	492	HIS	-	expression tag	UNP P00178
B	493	HIS	-	expression tag	UNP P00178
B	494	HIS	-	expression tag	UNP P00178
B	495	HIS	-	expression tag	UNP P00178
C	21	ALA	GLU	engineered mutation	UNP P00178
C	?	-	PHE	deletion	UNP P00178
C	?	-	SER	deletion	UNP P00178
C	?	-	LEU	deletion	UNP P00178
C	?	-	LEU	deletion	UNP P00178
C	?	-	LEU	deletion	UNP P00178
C	?	-	LEU	deletion	UNP P00178
C	?	-	LEU	deletion	UNP P00178
C	?	-	ALA	deletion	UNP P00178
C	?	-	PHE	deletion	UNP P00178
C	?	-	LEU	deletion	UNP P00178
C	?	-	ALA	deletion	UNP P00178
C	?	-	GLY	deletion	UNP P00178
C	?	-	LEU	deletion	UNP P00178
C	?	-	LEU	deletion	UNP P00178
C	?	-	LEU	deletion	UNP P00178
C	?	-	LEU	deletion	UNP P00178
C	?	-	LEU	deletion	UNP P00178
C	?	-	PHE	deletion	UNP P00178
C	?	-	ARG	deletion	UNP P00178
C	22	LYS	GLY	engineered mutation	UNP P00178
C	23	LYS	HIS	engineered mutation	UNP P00178
C	24	THR	PRO	engineered mutation	UNP P00178
C	25	SER	LYS	engineered mutation	UNP P00178
C	26	SER	ALA	engineered mutation	UNP P00178
C	27	LYS	HIS	engineered mutation	UNP P00178
C	29	LYS	ARG	engineered mutation	UNP P00178
C	221	SER	PRO	conflict	UNP P00178
C	226	TYR	HIS	engineered mutation	UNP P00178
C	492	HIS	-	expression tag	UNP P00178
C	493	HIS	-	expression tag	UNP P00178

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Chain	Residue	Modelled	Actual	Comment	Reference
C	494	HIS	-	expression tag	UNP P00178
C	495	HIS	-	expression tag	UNP P00178
D	21	ALA	GLU	engineered mutation	UNP P00178
D	?	-	PHE	deletion	UNP P00178
D	?	-	SER	deletion	UNP P00178
D	?	-	LEU	deletion	UNP P00178
D	?	-	LEU	deletion	UNP P00178
D	?	-	LEU	deletion	UNP P00178
D	?	-	LEU	deletion	UNP P00178
D	?	-	LEU	deletion	UNP P00178
D	?	-	ALA	deletion	UNP P00178
D	?	-	PHE	deletion	UNP P00178
D	?	-	LEU	deletion	UNP P00178
D	?	-	ALA	deletion	UNP P00178
D	?	-	GLY	deletion	UNP P00178
D	?	-	LEU	deletion	UNP P00178
D	?	-	LEU	deletion	UNP P00178
D	?	-	LEU	deletion	UNP P00178
D	?	-	LEU	deletion	UNP P00178
D	?	-	LEU	deletion	UNP P00178
D	?	-	PHE	deletion	UNP P00178
D	?	-	ARG	deletion	UNP P00178
D	22	LYS	GLY	engineered mutation	UNP P00178
D	23	LYS	HIS	engineered mutation	UNP P00178
D	24	THR	PRO	engineered mutation	UNP P00178
D	25	SER	LYS	engineered mutation	UNP P00178
D	26	SER	ALA	engineered mutation	UNP P00178
D	27	LYS	HIS	engineered mutation	UNP P00178
D	29	LYS	ARG	engineered mutation	UNP P00178
D	221	SER	PRO	conflict	UNP P00178
D	226	TYR	HIS	engineered mutation	UNP P00178
D	492	HIS	-	expression tag	UNP P00178
D	493	HIS	-	expression tag	UNP P00178
D	494	HIS	-	expression tag	UNP P00178
D	495	HIS	-	expression tag	UNP P00178
E	21	ALA	GLU	engineered mutation	UNP P00178
E	?	-	PHE	deletion	UNP P00178
E	?	-	SER	deletion	UNP P00178
E	?	-	LEU	deletion	UNP P00178
E	?	-	LEU	deletion	UNP P00178
E	?	-	LEU	deletion	UNP P00178
E	?	-	LEU	deletion	UNP P00178

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Chain	Residue	Modelled	Actual	Comment	Reference
E	?	-	LEU	deletion	UNP P00178
E	?	-	ALA	deletion	UNP P00178
E	?	-	PHE	deletion	UNP P00178
E	?	-	LEU	deletion	UNP P00178
E	?	-	ALA	deletion	UNP P00178
E	?	-	GLY	deletion	UNP P00178
E	?	-	LEU	deletion	UNP P00178
E	?	-	LEU	deletion	UNP P00178
E	?	-	LEU	deletion	UNP P00178
E	?	-	LEU	deletion	UNP P00178
E	?	-	LEU	deletion	UNP P00178
E	?	-	PHE	deletion	UNP P00178
E	?	-	ARG	deletion	UNP P00178
E	22	LYS	GLY	engineered mutation	UNP P00178
E	23	LYS	HIS	engineered mutation	UNP P00178
E	24	THR	PRO	engineered mutation	UNP P00178
E	25	SER	LYS	engineered mutation	UNP P00178
E	26	SER	ALA	engineered mutation	UNP P00178
E	27	LYS	HIS	engineered mutation	UNP P00178
E	29	LYS	ARG	engineered mutation	UNP P00178
E	221	SER	PRO	conflict	UNP P00178
E	226	TYR	HIS	engineered mutation	UNP P00178
E	492	HIS	-	expression tag	UNP P00178
E	493	HIS	-	expression tag	UNP P00178
E	494	HIS	-	expression tag	UNP P00178
E	495	HIS	-	expression tag	UNP P00178
F	21	ALA	GLU	engineered mutation	UNP P00178
F	?	-	PHE	deletion	UNP P00178
F	?	-	SER	deletion	UNP P00178
F	?	-	LEU	deletion	UNP P00178
F	?	-	LEU	deletion	UNP P00178
F	?	-	LEU	deletion	UNP P00178
F	?	-	LEU	deletion	UNP P00178
F	?	-	LEU	deletion	UNP P00178
F	?	-	ALA	deletion	UNP P00178
F	?	-	PHE	deletion	UNP P00178
F	?	-	LEU	deletion	UNP P00178
F	?	-	ALA	deletion	UNP P00178
F	?	-	GLY	deletion	UNP P00178
F	?	-	LEU	deletion	UNP P00178
F	?	-	LEU	deletion	UNP P00178
F	?	-	LEU	deletion	UNP P00178

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Chain	Residue	Modelled	Actual	Comment	Reference
F	?	-	LEU	deletion	UNP P00178
F	?	-	LEU	deletion	UNP P00178
F	?	-	PHE	deletion	UNP P00178
F	?	-	ARG	deletion	UNP P00178
F	22	LYS	GLY	engineered mutation	UNP P00178
F	23	LYS	HIS	engineered mutation	UNP P00178
F	24	THR	PRO	engineered mutation	UNP P00178
F	25	SER	LYS	engineered mutation	UNP P00178
F	26	SER	ALA	engineered mutation	UNP P00178
F	27	LYS	HIS	engineered mutation	UNP P00178
F	29	LYS	ARG	engineered mutation	UNP P00178
F	221	SER	PRO	conflict	UNP P00178
F	226	TYR	HIS	engineered mutation	UNP P00178
F	492	HIS	-	expression tag	UNP P00178
F	493	HIS	-	expression tag	UNP P00178
F	494	HIS	-	expression tag	UNP P00178
F	495	HIS	-	expression tag	UNP P00178
G	21	ALA	GLU	engineered mutation	UNP P00178
G	?	-	PHE	deletion	UNP P00178
G	?	-	SER	deletion	UNP P00178
G	?	-	LEU	deletion	UNP P00178
G	?	-	LEU	deletion	UNP P00178
G	?	-	LEU	deletion	UNP P00178
G	?	-	LEU	deletion	UNP P00178
G	?	-	LEU	deletion	UNP P00178
G	?	-	ALA	deletion	UNP P00178
G	?	-	PHE	deletion	UNP P00178
G	?	-	LEU	deletion	UNP P00178
G	?	-	ALA	deletion	UNP P00178
G	?	-	GLY	deletion	UNP P00178
G	?	-	LEU	deletion	UNP P00178
G	?	-	LEU	deletion	UNP P00178
G	?	-	LEU	deletion	UNP P00178
G	?	-	LEU	deletion	UNP P00178
G	?	-	LEU	deletion	UNP P00178
G	?	-	PHE	deletion	UNP P00178
G	?	-	ARG	deletion	UNP P00178
G	22	LYS	GLY	engineered mutation	UNP P00178
G	23	LYS	HIS	engineered mutation	UNP P00178
G	24	THR	PRO	engineered mutation	UNP P00178
G	25	SER	LYS	engineered mutation	UNP P00178
G	26	SER	ALA	engineered mutation	UNP P00178

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Chain	Residue	Modelled	Actual	Comment	Reference
G	27	LYS	HIS	engineered mutation	UNP P00178
G	29	LYS	ARG	engineered mutation	UNP P00178
G	221	SER	PRO	conflict	UNP P00178
G	226	TYR	HIS	engineered mutation	UNP P00178
G	492	HIS	-	expression tag	UNP P00178
G	493	HIS	-	expression tag	UNP P00178
G	494	HIS	-	expression tag	UNP P00178
G	495	HIS	-	expression tag	UNP P00178
H	21	ALA	GLU	engineered mutation	UNP P00178
H	?	-	PHE	deletion	UNP P00178
H	?	-	SER	deletion	UNP P00178
H	?	-	LEU	deletion	UNP P00178
H	?	-	LEU	deletion	UNP P00178
H	?	-	LEU	deletion	UNP P00178
H	?	-	LEU	deletion	UNP P00178
H	?	-	LEU	deletion	UNP P00178
H	?	-	ALA	deletion	UNP P00178
H	?	-	PHE	deletion	UNP P00178
H	?	-	LEU	deletion	UNP P00178
H	?	-	ALA	deletion	UNP P00178
H	?	-	GLY	deletion	UNP P00178
H	?	-	LEU	deletion	UNP P00178
H	?	-	LEU	deletion	UNP P00178
H	?	-	LEU	deletion	UNP P00178
H	?	-	LEU	deletion	UNP P00178
H	?	-	LEU	deletion	UNP P00178
H	?	-	PHE	deletion	UNP P00178
H	?	-	ARG	deletion	UNP P00178
H	22	LYS	GLY	engineered mutation	UNP P00178
H	23	LYS	HIS	engineered mutation	UNP P00178
H	24	THR	PRO	engineered mutation	UNP P00178
H	25	SER	LYS	engineered mutation	UNP P00178
H	26	SER	ALA	engineered mutation	UNP P00178
H	27	LYS	HIS	engineered mutation	UNP P00178
H	29	LYS	ARG	engineered mutation	UNP P00178
H	221	SER	PRO	conflict	UNP P00178
H	226	TYR	HIS	engineered mutation	UNP P00178
H	492	HIS	-	expression tag	UNP P00178
H	493	HIS	-	expression tag	UNP P00178
H	494	HIS	-	expression tag	UNP P00178
H	495	HIS	-	expression tag	UNP P00178

- Molecule 2 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (for-

mula: $C_{34}H_{32}FeN_4O_4$).

HEM
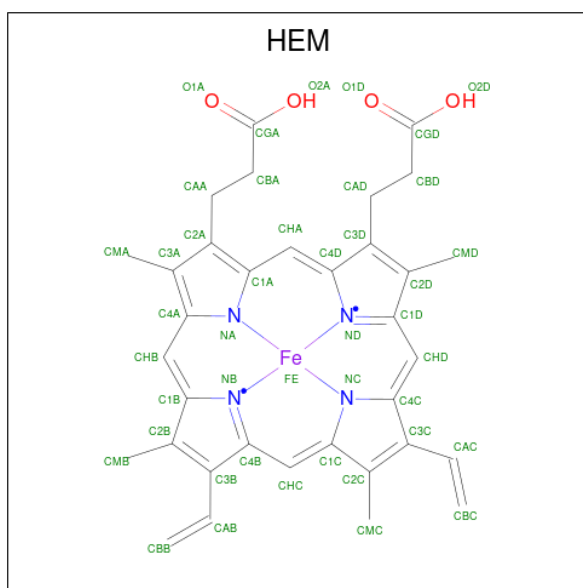
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	C	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	D	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	E	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	F	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	G	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	H	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		

- Molecule 3 is (4-tert-butylphenyl)acetaldehyde (three-letter code: TB2) (formula: $C_{12}H_{16}O$).

TB2
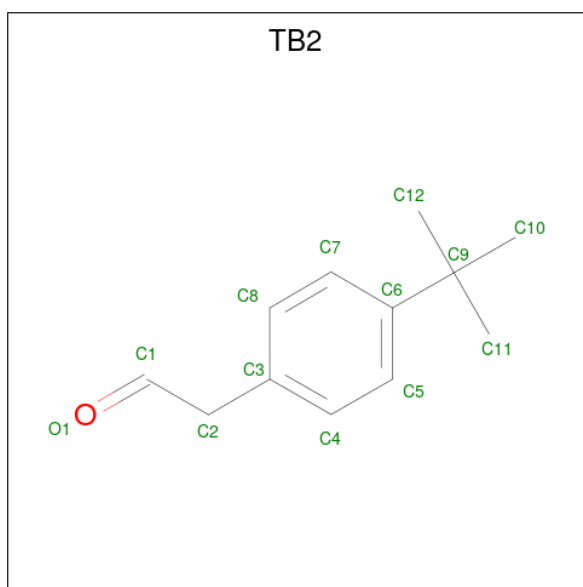
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			13	12	1		
3	B	1	Total	C	O	0	0
			13	12	1		
3	C	1	Total	C	O	0	0
			13	12	1		
3	D	1	Total	C	O	0	0
			13	12	1		
3	E	1	Total	C	O	0	0
			13	12	1		
3	F	1	Total	C	O	0	0
			13	12	1		
3	G	1	Total	C	O	0	0
			13	12	1		
3	H	1	Total	C	O	0	0
			13	12	1		

- Molecule 4 is water.

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

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	E	1	Total 1	O 1	0	0
4	F	1	Total 1	O 1	0	0
4	G	1	Total 1	O 1	0	0
4	H	1	Total 1	O 1	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: Cytochrome P450 2B4

Chain A:

- Molecule 1: Cytochrome P450 2B4

Chain B:

L437 G438 I441 T444 L448 F449 T452 I453 L454 F457 P465 E466 G478 N479 V480 P481 Y484 Q485 I486 R487 F488 L489 H492 HIS HIS HIS
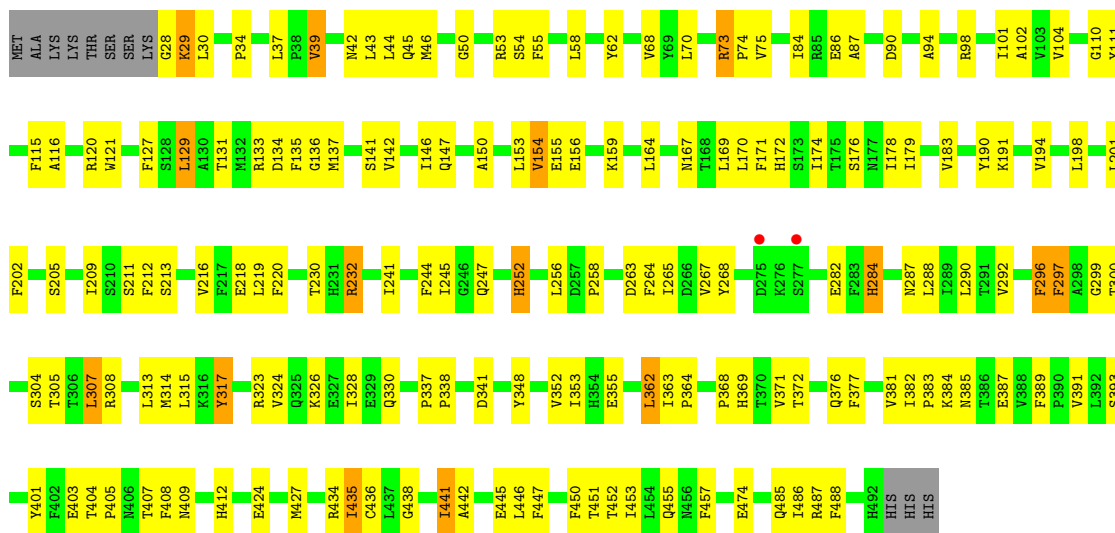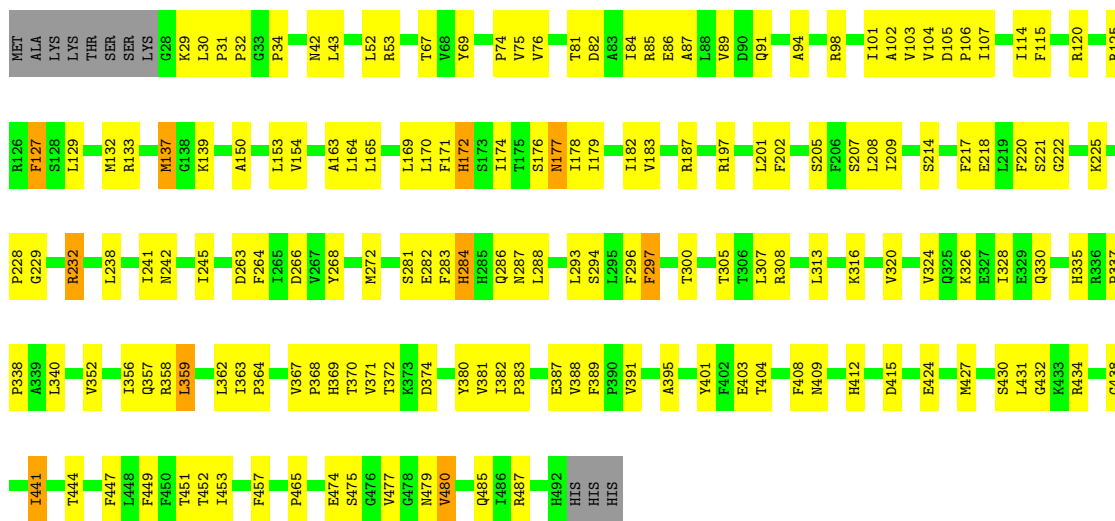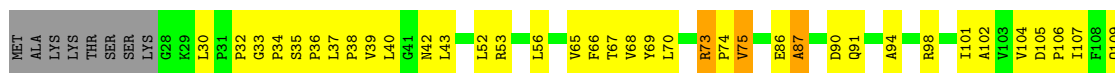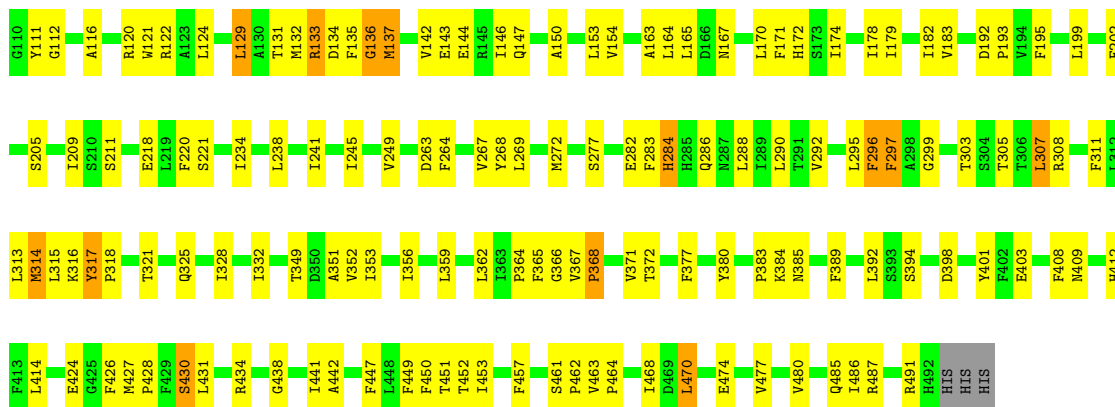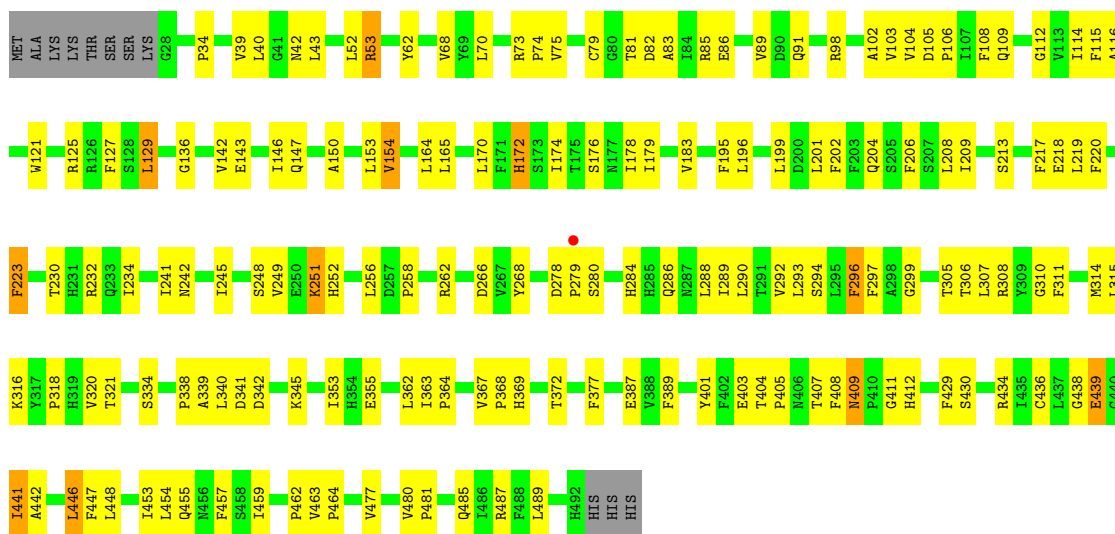
• Molecule 1: Cytochrome P450 2B4

Chain C:

61%   33%

MET ALA LYS LYS THR SER SER LYS G28 K29 L30 P34 L37 P38 V39 N42 L43 L44 Q45 M46 G50 R53 S54 F55 L58 Y62 V68 Y69 L70 R73 P74 V75 I84 R85 E86 A87 D90 A94 R98 I101 A102 V103 V104 G110 Y111

F115 A116 R120 W121 F127 S128 L129 A130 T131 M132 R133 D134 F135 G136 M137 S141 V142 I146 Q147 A150 L153 V154 E155 E156 K159 L164 N167 T168 L169 L170 F171 H172 S173 I174 T175 S176 N177 I178 I179 V183 Y190 K191 V194 L198 L201

F202 S205 I209 S210 S211 F212 S213 V216 F217 E218 L219 F220 T230 H231 R232 I241 F244 I245 G246 Q247 H252 L256 D257 P258 D263 F264 I265 D266 V267 Y268 D275 K276 S277 E282 F283 H284 N287 L288 I289 L290 T291 V292 F296 F297 A298 G299 T300

S304 T305 T306 L307 R308 L313 M314 L315 K316 Y317 R323 V324 Q325 K326 E327 I328 E329 Q330 P337 P338 D341 Y348 V352 I353 H354 E355 L362 P363 P364 P368 H369 V370 V371 T372 Q376 F377 V381 I382 P383 K384 N385 T386 E387 V388 F389 P390 V391 L392 S393

Y401 F402 E403 T404 P405 N406 T407 F408 N409 H412 E424 M427 R434 I435 C436 L437 G438 I441 A442 E445 L446 F447 F450 T451 T452 I453 L454 Q455 N456 F457 E474 Q485 I486 R487 F488 H492 HIS HIS HIS

• Molecule 1: Cytochrome P450 2B4

Chain D:

63%   33%

MET ALA LYS LYS THR SER SER LYS G28 K29 L30 P31 P32 G33 P34 N42 L43 L52 R53 T67 V68 Y69 P74 V75 V76 T81 D82 A83 I84 R85 E86 A87 L88 V89 D90 Q91 A94 R98 I101 A102 V103 V104 D105 P106 I107 I114 F115 R120 R125

R126 F127 S128 L129 M132 R133 M137 G138 K139 A150 L153 V154 A163 L164 L165 L169 L170 F171 H172 S173 I174 T175 S176 N177 I178 I179 I182 V183 R187 R197 L201 F202 S205 F206 S207 L208 I209 S214 F217 E218 L219 F220 S221 G222 K225

P228 G229 R232 L238 I241 N242 I245 D263 F264 D266 V267 Y268 M272 S281 S282 F283 H284 M285 Q286 N287 L288 L293 S294 L295 F296 F297 T300 T305 T306 L307 R308 L313 K316 V320 V324 Q325 K326 E327 I328 E329 Q330 H335 R336 P337

P338 A339 L340 V352 I356 Q357 R358 L359 L362 I363 P364 V367 P368 H369 T370 V371 T372 K373 D374 Y380 V381 I382 P383 E387 V388 F389 P390 V391 A395 Y401 F402 E403 T404 F408 N409 H412 D415 E424 M427 S430 L431 G432 K433 R434 G438

I441 T444 F447 L448 F449 F450 T451 T452 I453 F457 P465 E474 S475 G476 V477 G478 N479 V480 Q485 I486 R487 H492 HIS HIS HIS

• Molecule 1: Cytochrome P450 2B4

Chain E:

60%   34%

MET ALA LYS LYS THR SER SER LYS G28 K29 L30 P31 P32 G33 P34 S35 P36 L37 P38 V39 L40 G41 N42 L43 L52 R53 L56 V65 F66 T67 V68 Y69 L70 R73 P74 V75 E86 A87 D90 Q91 A94 R98 I101 A102 V103 V104 D105 P106 I107 F108 Q109

G110 Y111 G112 A116 R120 W121 R122 A123 L124 L129 A130 T131 M132 R133 D134 F135 G136 M137 V142 E143 E144 R45 I146 Q147 A150 L153 V154 A163 L164 L165 D166 N167 L170 F171 H172 S173 I174 I178 I179 I182 V183 D192 P193 V194 F195 L199 F202

S205 I209 S210 S211 E218 L219 F220 S221 I234 L238 I241 I245 V249 D263 F264 V267 Y268 L269 M272 S277 E282 F283 H284 H285 Q286 N287 L288 L289 L290 T291 V292 L295 F296 F297 A298 G299 T303 S304 T305 T306 L307 R308 F311 L312

L313 M314 L315 K316 Y317 P318 T321 Q325 I328 I332 T349 D350 A351 V352 I353 I356 L359 L362 I363 P364 F365 G366 V367 P368 V371 T372 F377 Y380 P383 K384 N385 F389 L392 S393 S394 D398 Y401 F402 E403 F408 N409 H412

F413 L414 E424 G425 F426 M427 P428 F429 S430 L431 R434 G438 I441 A442 F447 L448 F449 P450 T451 T452 I453 F457 S461 P462 V463 P464 I468 D469 L470 E474 V477 V480 Q485 I486 R487 R491 H492 HIS HIS HIS

• Molecule 1: Cytochrome P450 2B4

Chain F: 63% 32%

MET ALA LYS LYS THR SER SER LYS G28 P34 V39 L40 G41 N42 L43 L52 R53 Y62 V68 Y69 L70 R73 P74 V75 C79 G80 T81 D82 A83 I84 R85 E86 V89 D90 Q91 R98 A102 V103 V104 D105 P106 I107 F108 Q109 G112 V113 I114 F115 A116

W121 R125 R126 F127 S128 L129 G136 V142 E143 I146 Q147 A150 L153 V154 L164 L165 L170 F171 H172 S173 I174 T175 S176 N177 I178 I179 V183 F195 F196 L199 D200 L201 F202 F203 Q204 S205 S206 S207 L208 I209 S213 F217 E218 L219 F220

F223 T230 H231 R232 Q233 I234 I241 N242 I245 S248 V249 E250 K251 H252 L256 D257 P258 R262 D266 V267 Y268 D278 P279 S280 H284 H285 Q286 N287 L288 I289 L290 T291 V292 L293 S294 L295 F296 F297 A298 G299 T305 T306 L307 R308 Y309 G310 F311 M314 L315

K316 Y317 P318 H319 V320 T321 S334 P338 A339 L340 D341 D342 K345 I353 H354 E355 L362 I363 P364 V367 P368 H369 T372 F377 E387 V388 F389 Y401 F402 E403 T404 P405 N406 F407 F408 N409 P410 G411 H412 F429 S430 R434 I435 C436 L437 G438 E439 G440

I441 A442 L446 F447 L448 I453 L454 Q455 N456 F457 S458 I459 P462 V463 P464 V477 V480 P481 Q485 I486 R487 F488 L489 H492 HIS HIS HIS

• Molecule 1: Cytochrome P450 2B4

Chain G: % 65% 30%

MET ALA LYS LYS THR SER SER LYS G28 P31 P32 G33 P34 S35 P36 L37 P38 V39 L40 G41 N42 M46 L52 F66 T67 V68 Y69 R73 P74 V75 V76 V77 I84 A87 R98 I101 A102 V103 V104 I107 F108 Y111 I114 W121 L124

A130 R133 D134 F135 G136 M137 G138 S141 V142 I146 A150 L153 V154 L164 T168 H172 S173 I174 I178 I179 V183 F188 V194 F195 L198 L199 F202 S205 S206 S207 L208 I209 S213 E218 S221 G222 F223 N237 L238 I241

V249 N260 P261 R262 D263 F264 I265 D266 V267 Y268 L269 S277 E282 F283 H284 N287 L288 I289 L290 T291 S294 L295 F296 F297 E301 T302 T303 S304 T305 T306 L307 R308 Y309 L312 L315 K316 Y317 P318 H319 V320 V324 V331 I332 G333 S334 P338 D341

M346 R358 L362 I363 P364 F365 G366 V367 P368 H369 T370 V371 T372 Q376 F377 Y380 K384 N385 T386 E387 V388 V391 L392 S393 L396 Y401 T404 N409 H412 F413 L414 L420 E424 C436 L437 G438 I441 L446 F449 I453

F457 S458 I459 A460 S461 P465 I468 T471 P472 V477 G478 N479 V480 P481 P482 S483 Y484 Q485 I486 R487 F488 L489 H492 HIS HIS

• Molecule 1: Cytochrome P450 2B4

Chain H:

11%

66%   30%

MET ALA LYS LYS THR SER SER LYS G28 K29 L30 P31 P32 L37 P38 V39 N42 L43 M46 L52 L56 D64 V65 F66 T67 V68 Y69 L70 G71 S72 R73 P74 V75 V76 V77 L78 C79 G80 T81 I84 R85 V89 D90 Q91 A92 F95 R98 I101 A102

V103 V104 D105 P106 I107 I114 F115 R120 L124 R125 R126 F127 S128 L129 R133 D134 F135 G136 M137 V142 E143 E144 R145 I146 Q147 E148 V154 L157 L164 L165 H172 S176 N177 C180 V183 F188 V194 F195 L198 S205 F206 S207 L208 I209

S210 S211 S214 E218 L219 F220 F223 F227 T230 Q233 I234 Y235 R236 N237 L238 Q239 E240 I241 F244 I245 G246 Q247 F264 Y268 S277 D278 P279 E282 F283 H284 N287 L288 I289 L290 T291 S294 F297 A298 T305 T306 L307 R308 L312 L313

M314 L315 P318 H319 V320 T321 I328 V331 I332 G333 S334 Y348 Q357 L362 I363 P364 F365 G366 V367 P368 H369 T370 V371 T372 T375 Q376 V381 L392 P383 K384 N385 T386 E387 P390 V391 L392 S393 S394 A395 D398 Y401 F402 E403 T404 P405 N409 H412

N417 G418 A419 L420 E424 G425 P428 F429 S430 L431 G432 K433 R434 I435 C436 L437 G438 I441 E445 L446 F449 T452 I453 L454 Q455 N456 F457 S458 I459 A460 S461 P464 D467 P472 R473 E474 S475 G476 V477 G478 N479 V480 P481 P482 Q485 I486 R487 F488

R491 HIS HIS HIS

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	134.38Å 144.55Å 229.28Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	115.93 – 3.50 115.93 – 3.50	Depositor EDS
% Data completeness (in resolution range)	85.5 (115.93-3.50) 89.8 (115.93-3.50)	Depositor EDS
R_{merge}	0.16	Depositor
R_{sym}	0.16	Depositor
$< I/\sigma(I) >$ [1]	2.10 (at 3.49Å)	Xtriage
Refinement program	PHENIX 1.6.4_486	Depositor
R, R_{free}	0.206 , 0.285 0.199 , 0.268	Depositor DCC
R_{free} test set	2602 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å^2)	80.2	Xtriage
Anisotropy	0.072	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 61.3	EDS
L-test for twinning[2]	$< |L| > = 0.43$, $< L^2 > = 0.25$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.90	EDS
Total number of atoms	28813	wwPDB-VP
Average B, all atoms (Å^2)	73.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.16% 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: HEM, TB2

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	0.23	0/3711	0.48	1/5052 (0.0%)
1	B	0.23	0/3675	0.45	0/5010
1	C	0.23	0/3730	0.46	1/5072 (0.0%)
1	D	0.23	0/3701	0.49	2/5041 (0.0%)
1	E	0.23	0/3681	0.48	3/5017 (0.1%)
1	F	0.23	0/3633	0.46	0/4960
1	G	0.22	0/3638	0.49	0/4968
1	H	0.29	1/3313 (0.0%)	0.50	3/4554 (0.1%)
All	All	0.24	1/29082 (0.0%)	0.48	10/39674 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	H	135	PHE	CA-C	-5.95	1.37	1.52

The worst 5 of 10 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	H	136	GLY	CA-C-N	5.99	130.38	117.20
1	D	281	SER	CB-CA-C	5.89	121.28	110.10
1	E	137	MET	N-CA-C	-5.65	95.75	111.00
1	H	334	SER	N-CA-CB	-5.64	102.04	110.50
1	E	87	ALA	N-CA-C	5.51	125.87	111.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3618	0	3491	120	0
1	B	3582	0	3425	122	0
1	C	3637	0	3538	129	0
1	D	3608	0	3466	118	0
1	E	3588	0	3434	136	0
1	F	3540	0	3353	122	0
1	G	3545	0	3353	113	0
1	H	3239	0	2900	129	0
2	A	43	0	30	8	0
2	B	43	0	30	9	0
2	C	43	0	30	11	0
2	D	43	0	30	11	0
2	E	43	0	30	9	0
2	F	43	0	30	8	0
2	G	43	0	30	13	0
2	H	43	0	30	13	0
3	A	13	0	15	5	0
3	B	13	0	15	2	0
3	C	13	0	15	0	0
3	D	13	0	15	5	0
3	E	13	0	15	1	0
3	F	13	0	15	3	0
3	G	13	0	15	3	0
3	H	13	0	15	2	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
4	E	1	0	0	0	0
4	F	1	0	0	0	0
4	G	1	0	0	0	0
4	H	1	0	0	1	0
All	All	28813	0	27320	1039	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 19.

The worst 5 of 1039 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:232:ARG:HH11	1:B:232:ARG:HG2	1.00	1.15
2:H:500:HEM:HBD2	2:H:500:HEM:HHA	1.30	1.09
1:H:136:GLY:O	1:H:142:VAL:HB	1.58	1.03
1:F:136:GLY:O	1:F:142:VAL:HB	1.63	0.97
1:G:138:GLY:O	1:G:142:VAL:HG11	1.66	0.94

There are no symmetry-related clashes.

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	463/476 (97%)	435 (94%)	28 (6%)	0	100	100
1	B	463/476 (97%)	433 (94%)	28 (6%)	2 (0%)	34	72
1	C	463/476 (97%)	435 (94%)	26 (6%)	2 (0%)	34	72
1	D	463/476 (97%)	433 (94%)	29 (6%)	1 (0%)	47	81
1	E	463/476 (97%)	432 (93%)	29 (6%)	2 (0%)	34	72
1	F	463/476 (97%)	429 (93%)	34 (7%)	0	100	100
1	G	463/476 (97%)	434 (94%)	29 (6%)	0	100	100
1	H	462/476 (97%)	432 (94%)	30 (6%)	0	100	100
All	All	3703/3808 (97%)	3463 (94%)	233 (6%)	7 (0%)	47	81

5 of 7 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	366	GLY
1	B	39	VAL
1	B	29	LYS
1	D	29	LYS

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Mol	Chain	Res	Type
1	C	29	LYS

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	385/421 (91%)	363 (94%)	22 (6%)	20	53
1	B	379/421 (90%)	362 (96%)	17 (4%)	27	61
1	C	389/421 (92%)	368 (95%)	21 (5%)	22	55
1	D	384/421 (91%)	358 (93%)	26 (7%)	16	48
1	E	381/421 (90%)	358 (94%)	23 (6%)	19	52
1	F	370/421 (88%)	344 (93%)	26 (7%)	15	46
1	G	371/421 (88%)	342 (92%)	29 (8%)	12	42
1	H	304/421 (72%)	294 (97%)	10 (3%)	38	68
All	All	2963/3368 (88%)	2789 (94%)	174 (6%)	19	53

5 of 174 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	172	HIS
1	G	179	ILE
1	F	232	ARG
1	F	403	GLU
1	G	296	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 21 such sidechains are listed below:

Mol	Chain	Res	Type
1	G	456	ASN
1	H	45	GLN
1	H	369	HIS
1	H	177	ASN

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Mol	Chain	Res	Type
1	H	42	ASN

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5   Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6   Ligand geometry ⓘ

16 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	#$\|Z\| > 2$
2	HEM	C	500	1	41,50,50	1.93	6 (14%)	45,82,82	1.67	8 (17%)
2	HEM	G	500	1	41,50,50	1.98	6 (14%)	45,82,82	1.59	5 (11%)
2	HEM	F	500	1	41,50,50	1.96	7 (17%)	45,82,82	1.66	7 (15%)
3	TB2	A	501	1	13,13,13	0.62	0	18,18,18	1.70	2 (11%)
2	HEM	D	500	1	41,50,50	1.95	7 (17%)	45,82,82	1.64	7 (15%)
3	TB2	F	501	1	13,13,13	0.55	0	18,18,18	1.24	1 (5%)
3	TB2	B	501	1	13,13,13	0.62	0	18,18,18	1.04	1 (5%)
2	HEM	A	500	1	41,50,50	1.95	6 (14%)	45,82,82	1.59	6 (13%)
2	HEM	B	500	1	41,50,50	1.98	6 (14%)	45,82,82	1.79	8 (17%)
3	TB2	C	501	1	13,13,13	0.67	0	18,18,18	1.35	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
3	TB2	E	501	1	13,13,13	0.60	0	18,18,18	1.03	2 (11%)
2	HEM	E	500	4,1	41,50,50	1.97	6 (14%)	45,82,82	1.72	8 (17%)
2	HEM	H	500	-	41,50,50	1.97	8 (19%)	45,82,82	1.71	5 (11%)
3	TB2	H	501	1	13,13,13	0.65	0	18,18,18	1.02	1 (5%)
3	TB2	D	501	1	13,13,13	0.67	0	18,18,18	1.20	1 (5%)
3	TB2	G	501	1	13,13,13	0.73	0	18,18,18	1.03	1 (5%)

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
2	HEM	C	500	1	-	2/12/54/54	-
2	HEM	G	500	1	-	5/12/54/54	-
2	HEM	F	500	1	-	4/12/54/54	-
3	TB2	A	501	1	-	0/9/9/9	0/1/1/1
2	HEM	D	500	1	-	4/12/54/54	-
3	TB2	F	501	1	-	6/9/9/9	0/1/1/1
3	TB2	B	501	1	-	0/9/9/9	0/1/1/1
2	HEM	A	500	1	-	4/12/54/54	-
2	HEM	B	500	1	-	10/12/54/54	-
3	TB2	C	501	1	-	6/9/9/9	0/1/1/1
3	TB2	E	501	1	-	0/9/9/9	0/1/1/1
2	HEM	E	500	4,1	-	7/12/54/54	-
2	HEM	H	500	-	-	5/12/54/54	-
3	TB2	H	501	1	-	6/9/9/9	0/1/1/1
3	TB2	D	501	1	-	0/9/9/9	0/1/1/1
3	TB2	G	501	1	-	6/9/9/9	0/1/1/1

The worst 5 of 52 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	G	500	HEM	C3D-C2D	8.41	1.54	1.36
2	H	500	HEM	C3D-C2D	8.06	1.53	1.36
2	F	500	HEM	C3D-C2D	8.05	1.53	1.36
2	D	500	HEM	C3D-C2D	7.99	1.53	1.36
2	A	500	HEM	C3D-C2D	7.98	1.53	1.36

The worst 5 of 65 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	H	500	HEM	C4D-ND-C1D	6.80	112.10	105.07
2	B	500	HEM	C4D-ND-C1D	6.36	111.65	105.07
2	G	500	HEM	C4D-ND-C1D	6.26	111.54	105.07
2	F	500	HEM	C4D-ND-C1D	6.20	111.48	105.07
2	D	500	HEM	C4D-ND-C1D	6.20	111.48	105.07

There are no chirality outliers.

5 of 65 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	500	HEM	C1A-C2A-CAA-CBA
2	A	500	HEM	C3A-C2A-CAA-CBA
2	B	500	HEM	C1A-C2A-CAA-CBA
2	B	500	HEM	C2A-CAA-CBA-CGA
2	D	500	HEM	C1A-C2A-CAA-CBA

There are no ring outliers.

15 monomers are involved in 103 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	500	HEM	11	0
2	G	500	HEM	13	0
2	F	500	HEM	8	0
3	A	501	TB2	5	0
2	D	500	HEM	11	0
3	F	501	TB2	3	0
3	B	501	TB2	2	0
2	A	500	HEM	8	0
2	B	500	HEM	9	0
3	E	501	TB2	1	0
2	E	500	HEM	9	0
2	H	500	HEM	13	0
3	H	501	TB2	2	0
3	D	501	TB2	5	0
3	G	501	TB2	3	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier.

Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand HEM C 500

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM G 500

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM F 500

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM D 500

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM A 500

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM B 500

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM E 500

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM H 500

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(Å^2)	Q<0.9
1	A	465/476 (97%)	-0.21	3 (0%)	89	86	40, 59, 81, 119	0
1	B	465/476 (97%)	-0.21	3 (0%)	89	86	41, 67, 94, 143	0
1	C	465/476 (97%)	-0.08	2 (0%)	92	90	43, 67, 102, 147	0
1	D	465/476 (97%)	-0.30	0	100	100	41, 58, 82, 101	0
1	E	465/476 (97%)	-0.15	0	100	100	49, 65, 87, 108	0
1	F	465/476 (97%)	-0.16	1 (0%)	95	93	40, 68, 96, 114	0
1	G	465/476 (97%)	-0.07	3 (0%)	89	86	49, 75, 115, 133	0
1	H	464/476 (97%)	0.71	51 (10%)	5	6	93, 121, 143, 156	0
All	All	3719/3808 (97%)	-0.06	63 (1%)	70	64	40, 68, 126, 156	0

The worst 5 of 63 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	72	SER	4.8
1	H	425	GLY	4.3
1	H	430	SER	4.2
1	H	73	ARG	4.2
1	H	80	GLY	4.0

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, 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	TB2	E	501	13/13	0.93	0.43	48,53,58,59	0
3	TB2	H	501	13/13	0.93	0.40	96,103,107,110	0
3	TB2	F	501	13/13	0.94	0.47	46,51,63,66	0
2	HEM	H	500	43/43	0.94	0.38	92,106,114,114	0
3	TB2	D	501	13/13	0.95	0.41	48,56,60,60	0
3	TB2	B	501	13/13	0.95	0.47	54,60,67,69	0
3	TB2	G	501	13/13	0.96	0.42	57,62,73,77	0
2	HEM	G	500	43/43	0.97	0.34	59,70,89,98	0
2	HEM	C	500	43/43	0.97	0.33	45,56,66,72	0
3	TB2	A	501	13/13	0.97	0.41	42,49,57,57	0
2	HEM	F	500	43/43	0.97	0.34	43,53,62,72	0
3	TB2	C	501	13/13	0.97	0.38	40,51,55,57	0
2	HEM	E	500	43/43	0.98	0.29	48,55,60,62	0
2	HEM	B	500	43/43	0.98	0.33	41,59,68,72	0
2	HEM	A	500	43/43	0.98	0.31	39,49,54,57	0
2	HEM	D	500	43/43	0.98	0.30	36,44,53,55	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.
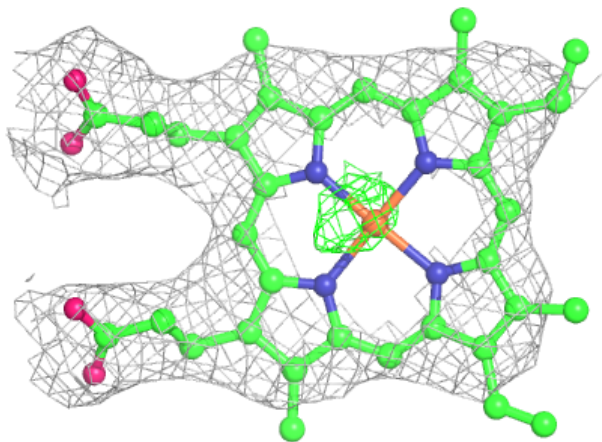
Electron density around HEM H 500:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
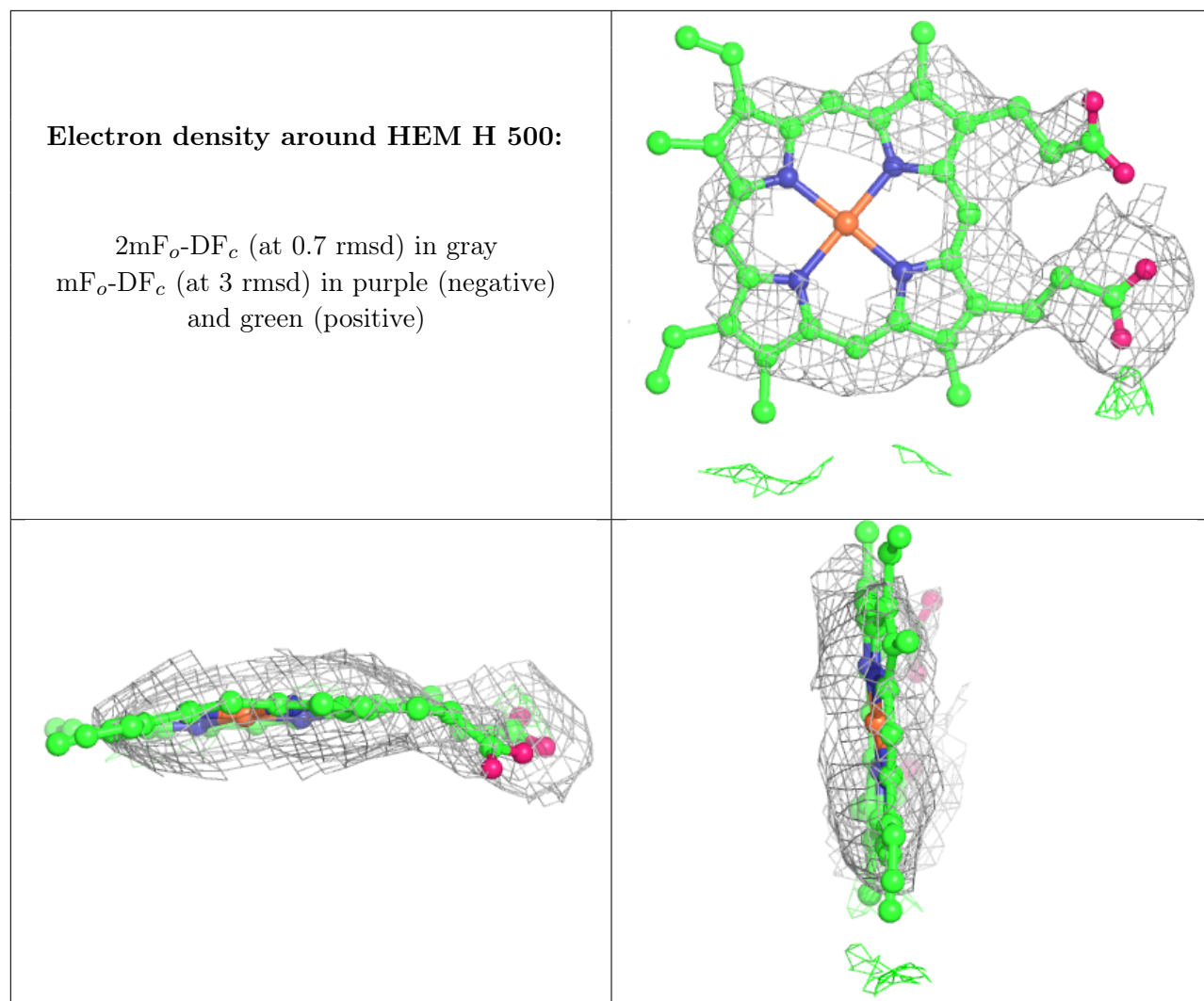
Electron density around HEM G 500:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
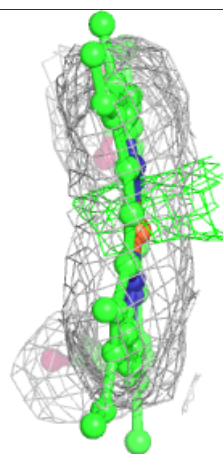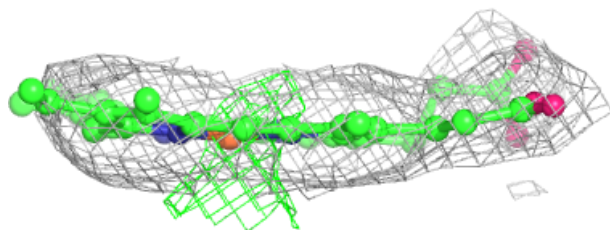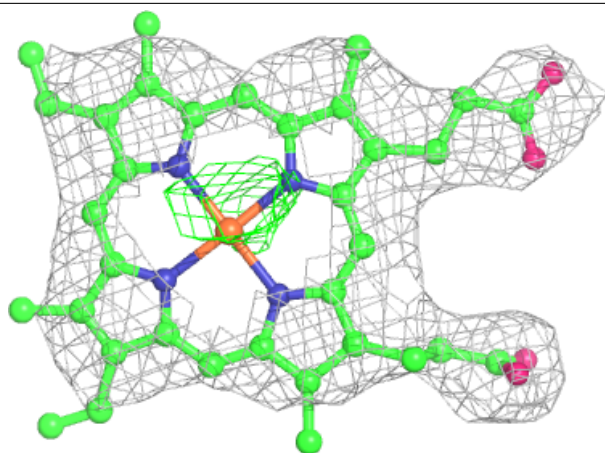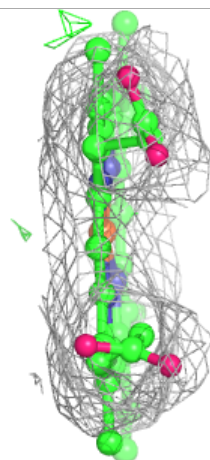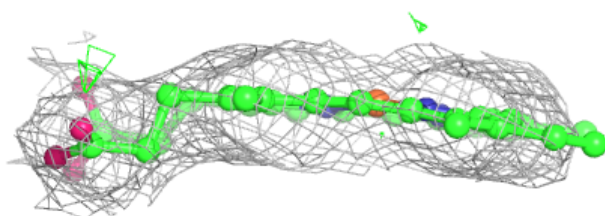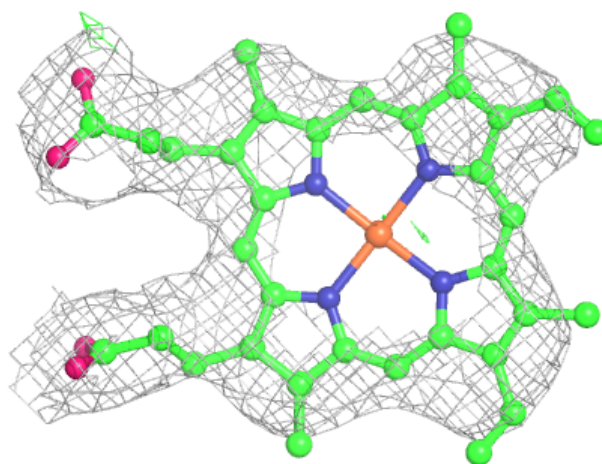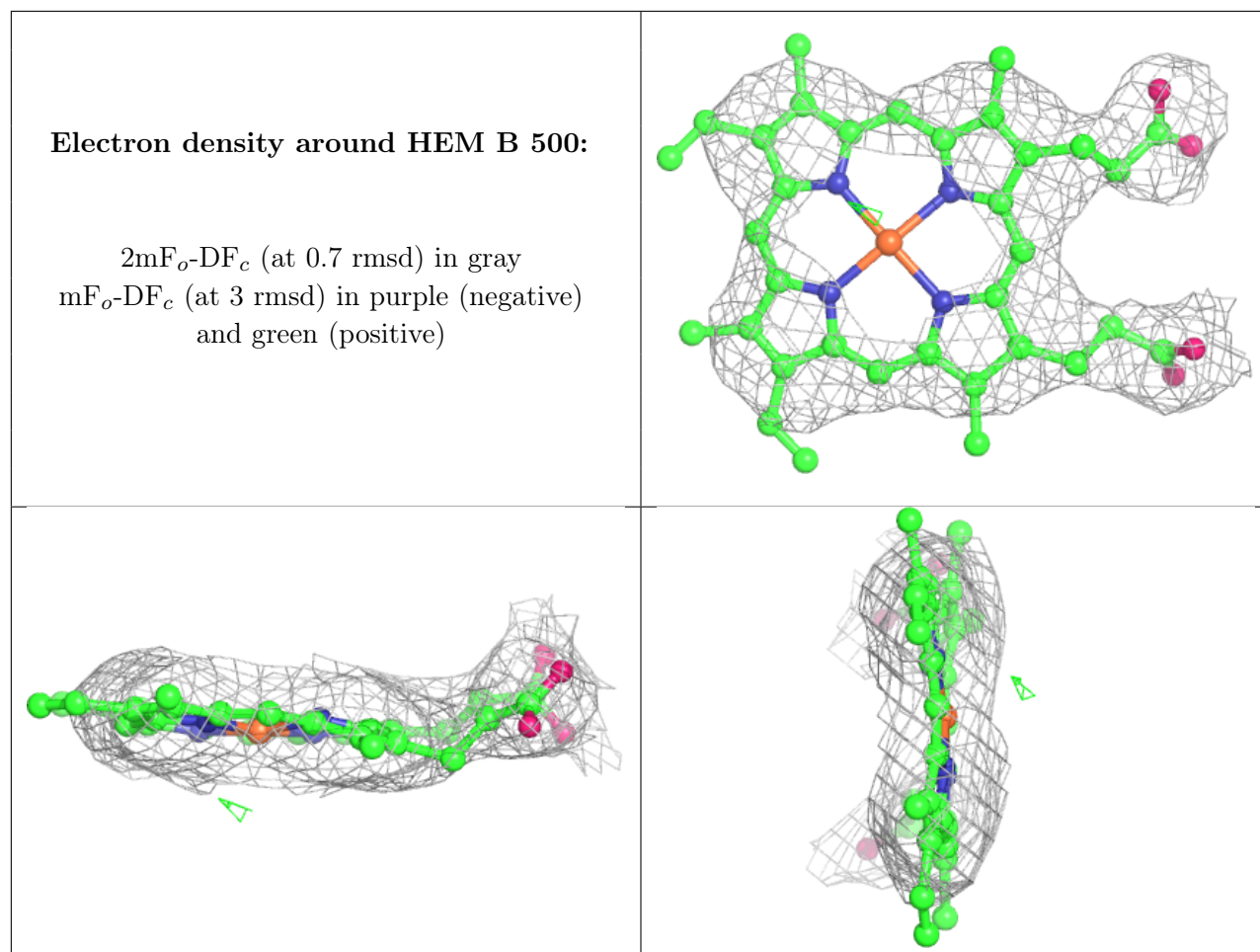and green (positive)
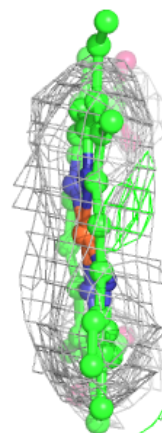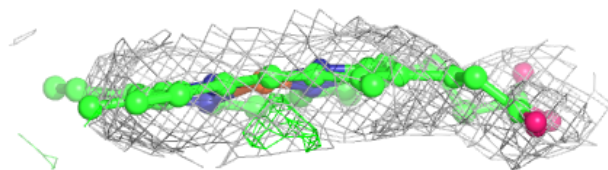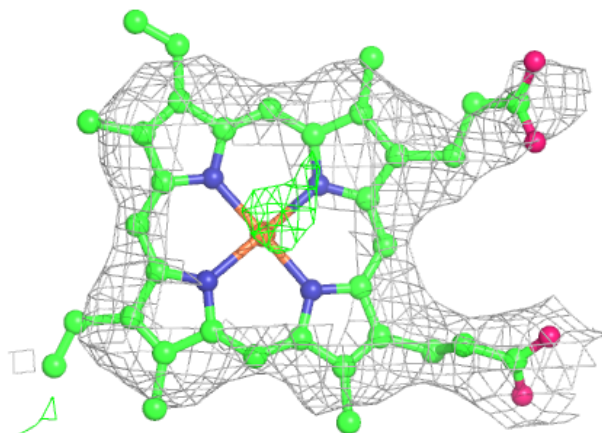
Electron density around HEM C 500:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
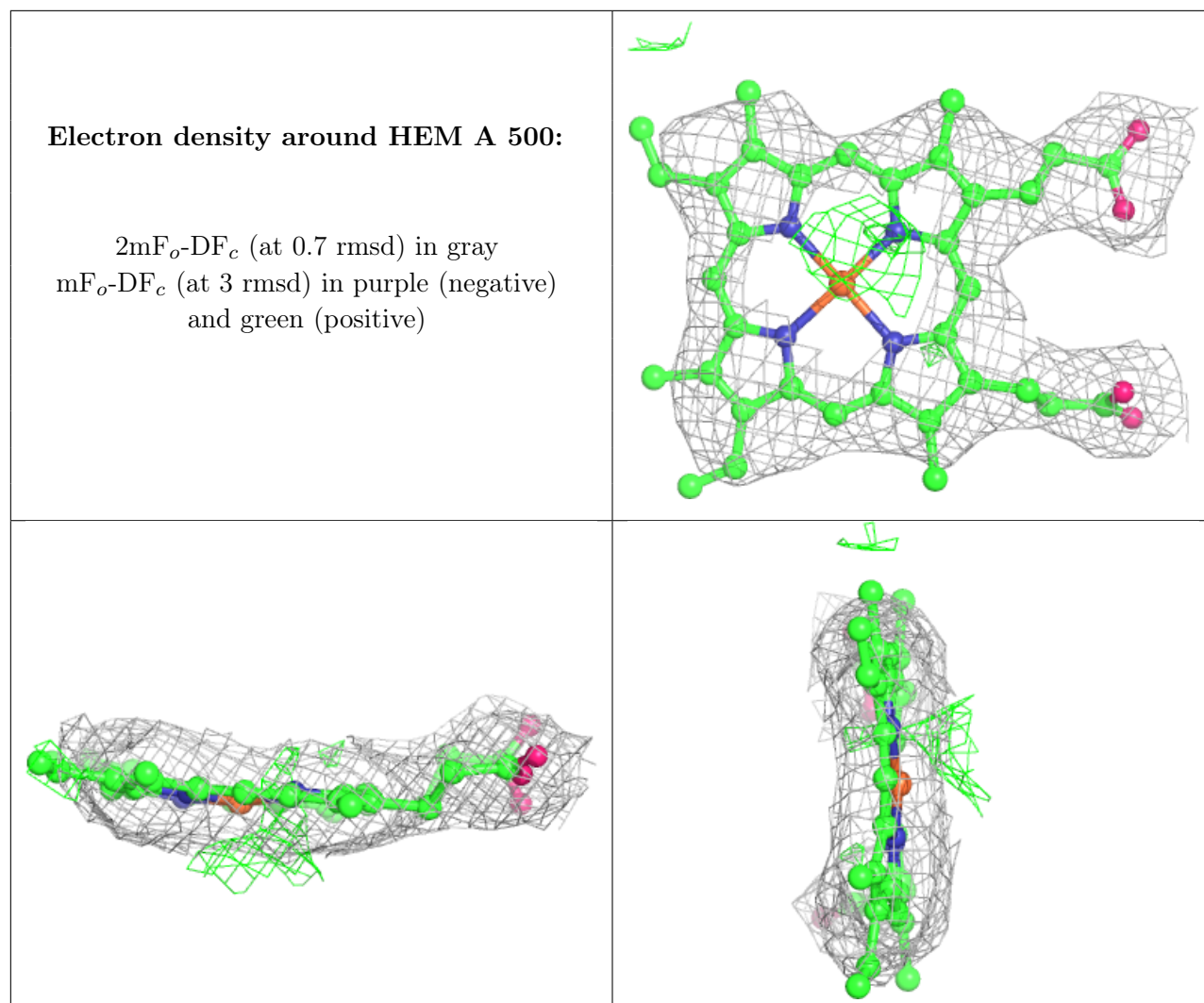mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
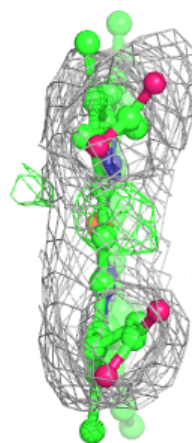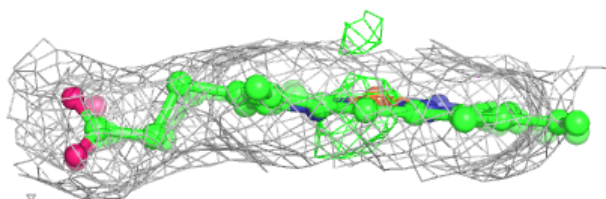
Electron density around HEM F 500:

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

Electron density around HEM E 500:

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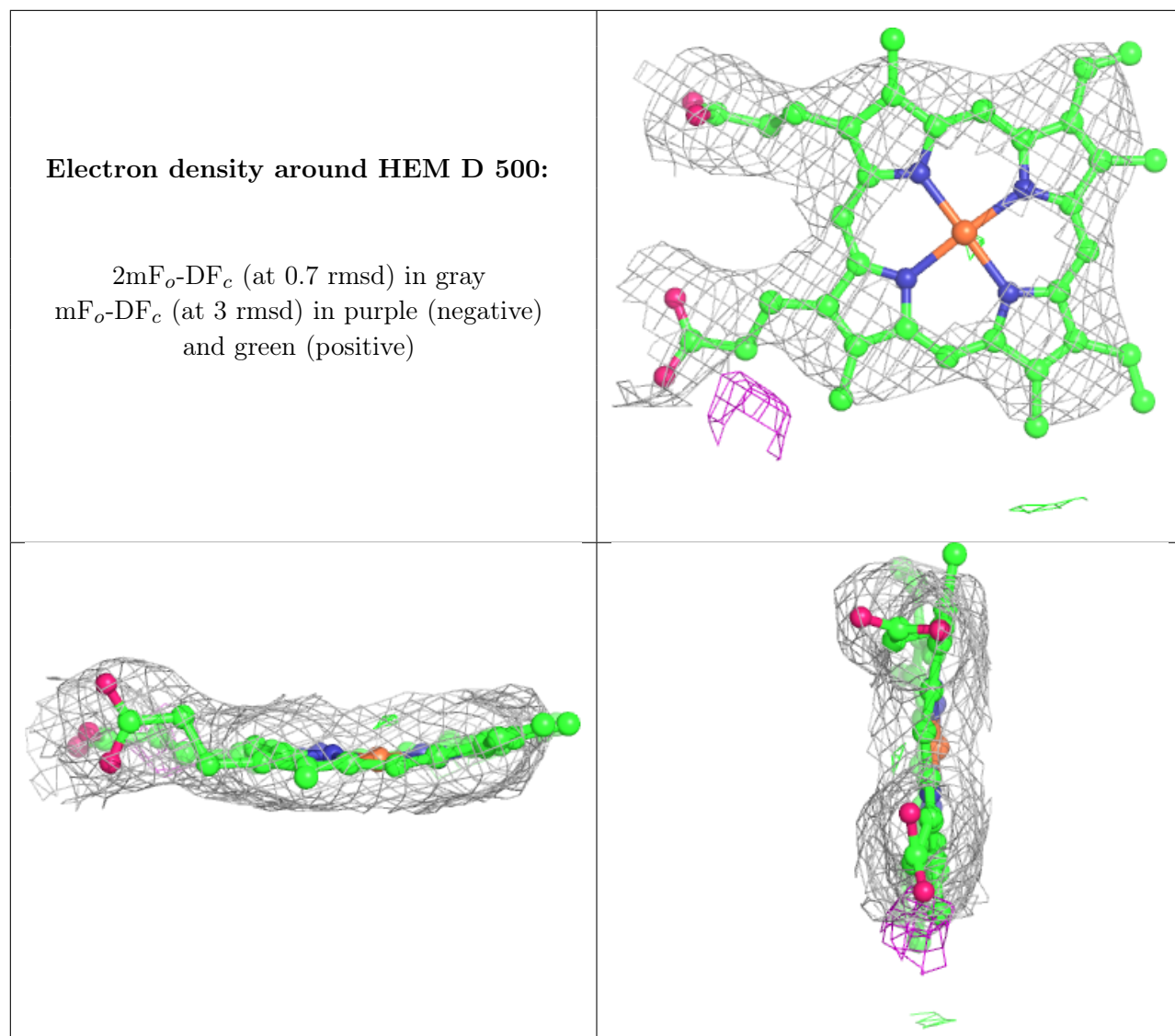mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around HEM B 500:

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

Electron density around HEM A 500:

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

Electron density around HEM D 500:

$2mF_o$-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.