Full wwPDB X-ray Structure Validation Report ⓘ

Sep 3, 2023 – 06:25 PM EDT

PDB ID	:	3SCE
Title	:	Structure of the Thioalkalivibrio nitratireducens cytochrome c nitrite reductase with a covalent bond between the CE1 atom of Tyr303 and the CG atom of Gln360 (TvNiRb)
Authors	:	Trofimov, A.A.; Polyakov, K.M.; Boyko, K.M.; Tikhonova, T.V.; Popov, V.O.
Deposited on	:	2011-06-07
Resolution	:	1.45 Å(reported)

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

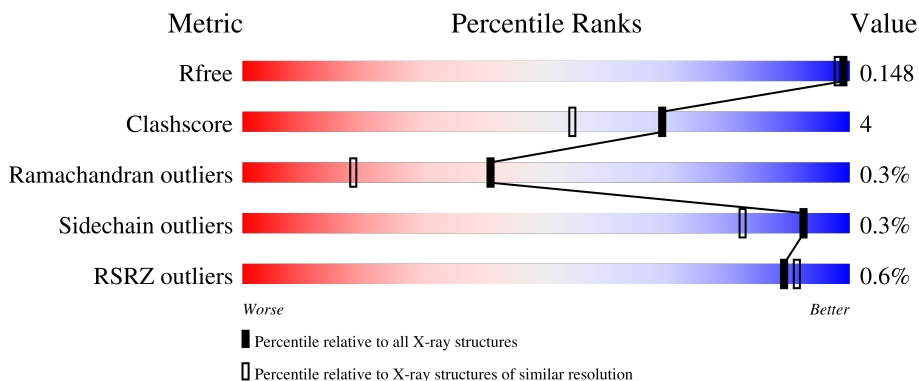|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh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

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 1.45 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		0.148
Clashscore		4
Ramachandran outliers		0.3%
Sidechain outliers		0.3%
RSRZ outliers		0.6%

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	1156 (1.46-1.46)
Clashscore	141614	1202 (1.46-1.46)
Ramachandran outliers	138981	1178 (1.46-1.46)
Sidechain outliers	138945	1178 (1.46-1.46)
RSRZ outliers	127900	1139 (1.46-1.46)

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	519	94% 6%
1	B	519	94% 5%

2   Entry composition ⓘ

There are 8 unique types of molecules in this entry. The entry contains 10447 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 Eight-heme nitrite reductase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	519	Total	C	N	O	S	0	20	0
			4184	2596	758	791	39			
1	B	519	Total	C	N	O	S	0	23	0
			4195	2600	761	795	39			

- Molecule 2 is HEME C (three-letter code: HEC) (formula: $C_{34}H_{34}FeN_4O_4$).

HEC

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	A	1	Total	C	Fe	N	O	0	1
			47	36	1	4	6		
2	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	A	1	Total	C	Fe	N	O	0	1
			46	35	1	4	6		

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

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
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	B	1	Total	C	Fe	N	O	0	1
			47	36	1	4	6		
2	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	B	1	Total	C	Fe	N	O	0	1
			47	36	1	4	6		
2	B	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	B	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		

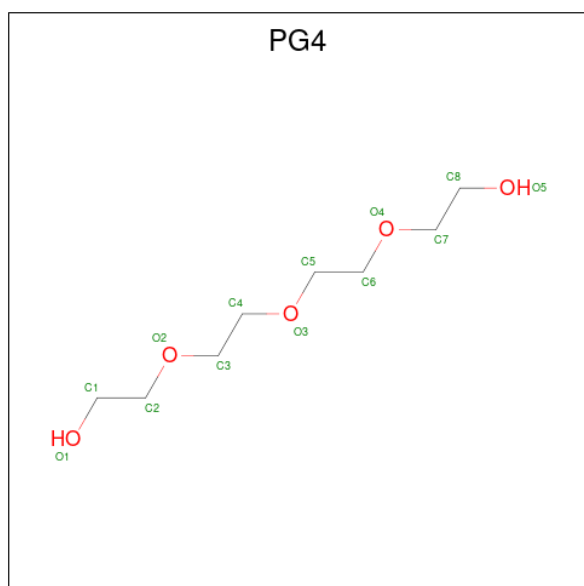- Molecule 3 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).
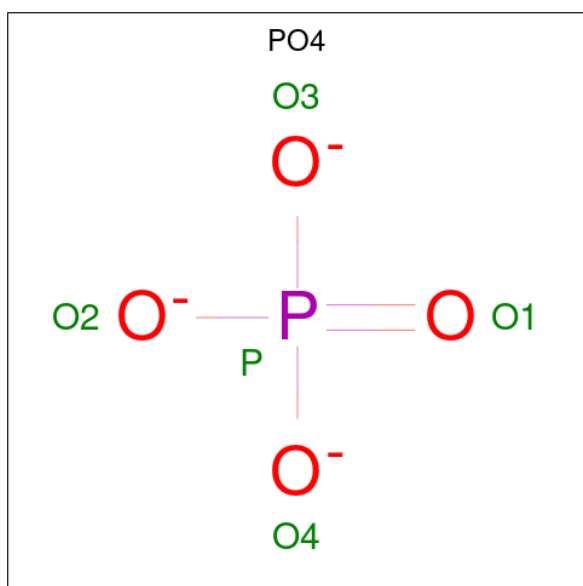
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 5	O 4	P 1	0	0
3	A	1	Total 5	O 4	P 1	0	0
3	B	1	Total 5	O 4	P 1	0	0
3	B	1	Total 5	O 4	P 1	0	0

- Molecule 4 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	2	Total 2	Ca 2	0	0
4	B	2	Total 2	Ca 2	0	0

- Molecule 5 is TETRAETHYLENE GLYCOL (three-letter code: PG4) (formula: $C_8H_{18}O_5$).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total 6	C 4	O 2	0	0
5	A	1	Total 6	C 4	O 2	0	0
5	A	1	Total 9	C 6	O 3	0	0
5	A	1	Total 7	C 4	O 3	0	0

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| Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total 5	C 3	O 2	0	0
5	A	1	Total 10	C 6	O 4	0	0
5	A	1	Total 5	C 3	O 2	0	0
5	A	1	Total 6	C 4	O 2	0	0
5	B	1	Total 8	C 5	O 3	0	0
5	B	1	Total 8	C 5	O 3	0	0
5	B	1	Total 9	C 6	O 3	0	0
5	B	1	Total 8	C 5	O 3	0	0
5	B	1	Total 9	C 6	O 3	0	0
5	B	1	Total 5	C 3	O 2	0	0
5	B	1	Total 7	C 5	O 2	0	0
5	B	1	Total 8	C 5	O 3	0	0

- Molecule 6 is 1-(2-METHOXY-ETHOXY)-2-{2-[2-(2-METHOXY-ETHOXY]-ETHOXY}-ETHANE (three-letter code: PG6) (formula: $C_{12}H_{26}O_6$).
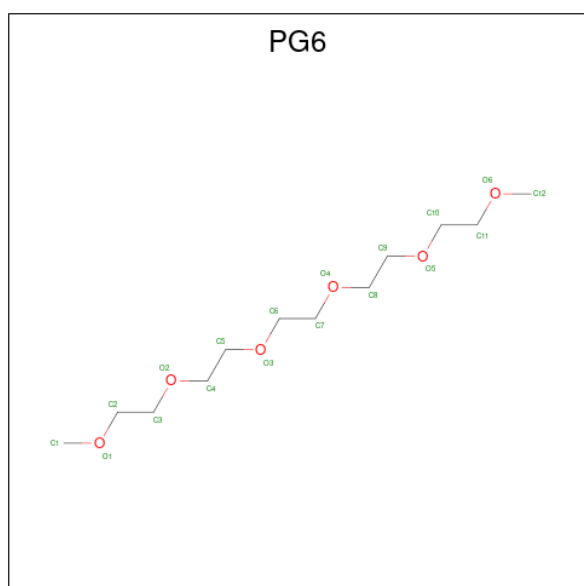
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total 7	C 4	O 3	0	0
6	A	1	Total 10	C 6	O 4	0	0
6	B	1	Total 5	C 3	O 2	0	0
6	B	1	Total 10	C 6	O 4	0	0
6	B	1	Total 5	C 3	O 2	0	0

- Molecule 7 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	2	Total 2	Na 2	0	0

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	601	Total 601	O 601	0	0
8	B	585	Total 585	O 585	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: Eight-heme nitrite reductase
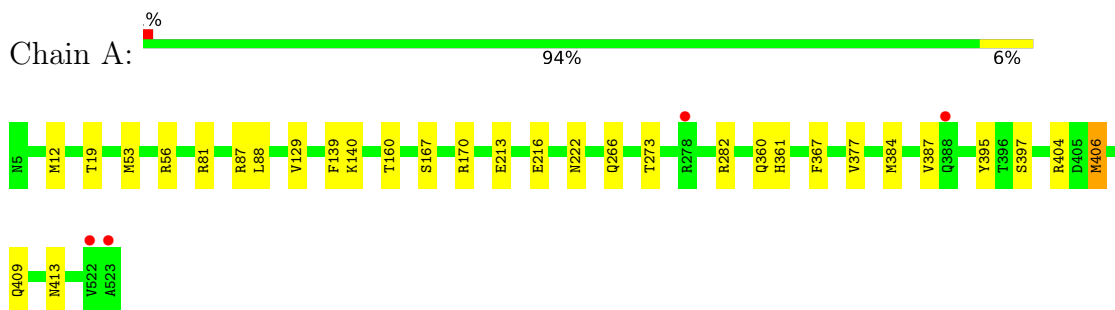
• Molecule 1: Eight-heme nitrite reductase
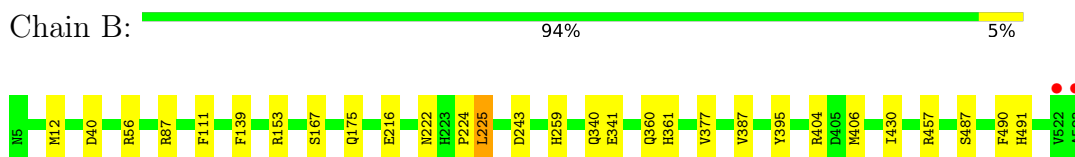
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 3	Depositor
Cell constants a, b, c, α, β, γ	193.00Å 193.00Å 193.00Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	100.00 – 1.45 29.43 – 1.40	Depositor EDS
% Data completeness (in resolution range)	99.9 (100.00-1.45) 99.9 (29.43-1.40)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.63 (at 1.40Å)	Xtriage
Refinement program	REFMAC 5.5.0072	Depositor
R, R_{free}	0.124 , 0.140 0.134 , 0.148	Depositor DCC
R_{free} test set	20931 reflections (4.51%)	wwPDB-VP
Wilson B-factor (Å^2)	12.8	Xtriage
Anisotropy	0.000	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.38 , 47.8	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.053 for l,-k,h	Xtriage
F_o,F_c correlation	0.98	EDS
Total number of atoms	10447	wwPDB-VP
Average B, all atoms (Å^2)	17.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.77% of the height of the origin peak. No significant pseudotranslation is detected.*

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

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: NA, PG6, HEC, PO4, CA, PG4

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	0.55	0/4401	0.73	4/5966 (0.1%)
1	B	0.57	0/4427	0.74	4/5999 (0.1%)
All	All	0.56	0/8828	0.73	8/11965 (0.1%)

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	56	ARG	NE-CZ-NH2	-6.27	117.16	120.30
1	A	404	ARG	NE-CZ-NH2	-6.07	117.27	120.30
1	A	282	ARG	NE-CZ-NH1	5.99	123.30	120.30
1	A	282	ARG	NE-CZ-NH2	-5.77	117.41	120.30
1	B	404	ARG	NE-CZ-NH1	5.75	123.17	120.30
1	B	243	ASP	CB-CG-OD1	5.65	123.39	118.30
1	B	87	ARG	NE-CZ-NH1	5.09	122.84	120.30
1	A	87	ARG	NE-CZ-NH1	5.06	122.83	120.30

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	4184	0	3911	30	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	4195	0	3910	20	0
2	A	351	0	192	6	0
2	B	352	0	196	8	0
3	A	10	0	0	1	0
3	B	10	0	0	1	0
4	A	2	0	0	0	0
4	B	2	0	0	0	0
5	A	54	0	64	7	0
5	B	62	0	69	6	0
6	A	17	0	20	1	0
6	B	20	0	20	1	0
7	A	2	0	0	0	0
8	A	601	0	0	14	0
8	B	585	0	0	9	0
All	All	10447	0	8382	64	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 4.

All (64) 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:406[A]:MET:CE	8:A:657:HOH:O	1.66	1.29
1:B:259[B]:HIS:CE1	8:B:853:HOH:O	1.99	1.16
1:A:406[A]:MET:HE3	8:A:657:HOH:O	1.34	1.09
1:A:222[B]:ASN:ND2	8:A:881:HOH:O	1.90	1.04
1:B:222[A]:ASN:ND2	8:B:938:HOH:O	1.98	0.95
1:B:259[B]:HIS:HE1	8:B:853:HOH:O	1.39	0.90
2:B:1002:HEC:HMC1	2:B:1002:HEC:HBC3	1.63	0.81
1:B:341[A]:GLU:OE2	8:B:1118:HOH:O	2.05	0.75
2:A:1002:HEC:HMC1	2:A:1002:HEC:HBC3	1.73	0.71
1:A:409[A]:GLN:NE2	1:A:413[A]:ASN:HD21	1.90	0.69
2:B:1008:HEC:HBC3	2:B:1008:HEC:HMC1	1.75	0.68
1:A:216[B]:GLU:OE1	8:A:693:HOH:O	0.68	0.68
1:A:12[B]:MET:HG2	8:A:1035:HOH:O	1.97	0.64
1:B:340:GLN:HE21	5:B:532:PG4:C3	2.12	0.62
1:A:377:VAL:HG22	2:A:1008:HEC:HBC2	1.83	0.60
1:A:167:SER:HB2	1:A:216[A]:GLU:HG2	1.84	0.59
5:A:528:PG4:H51	8:A:970:HOH:O	2.03	0.59
1:A:266:GLN:OE1	8:A:946:HOH:O	2.16	0.58
1:A:19[B]:THR:HG22	8:A:1103:HOH:O	2.02	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:213:GLU:OE2	8:A:674:HOH:O	2.17	0.57
1:B:377:VAL:HG22	2:B:1008:HEC:HBC2	1.86	0.56
1:B:457[B]:ARG:NE	8:B:571:HOH:O	2.38	0.55
1:A:53:MET:HE1	5:A:531:PG4:H21	1.88	0.55
1:B:457[B]:ARG:HD2	8:B:571:HOH:O	2.06	0.55
1:A:387[A]:VAL:HG21	1:A:395:TYR:CE1	2.42	0.55
1:A:273[A]:THR:HG23	8:A:979:HOH:O	2.07	0.54
1:B:387[B]:VAL:HG21	1:B:395:TYR:CE1	2.43	0.54
2:A:1001:HEC:HBB3	2:A:1001:HEC:HMB1	1.88	0.54
1:B:167:SER:HB2	1:B:216[B]:GLU:HG2	1.91	0.53
2:A:1001:HEC:HMC1	2:A:1001:HEC:HBC3	1.92	0.52
1:A:53:MET:CE	5:A:531:PG4:H21	2.40	0.52
1:A:167:SER:HB2	1:A:216[B]:GLU:HG3	1.93	0.51
1:B:40:ASP:HB2	5:B:534:PG4:H21	1.92	0.51
2:B:1008:HEC:HMD2	5:B:530:PG4:H12	1.92	0.51
1:A:81:ARG:HH22	5:A:533:PG4:C4	2.25	0.49
1:B:111:PHE:CZ	5:B:529:PG4:H31	2.47	0.49
1:A:12[A]:MET:HG3	8:A:929:HOH:O	2.12	0.49
2:B:1001:HEC:HBB3	2:B:1001:HEC:HMB1	1.94	0.48
1:B:153[B]:ARG:HG3	8:B:1033:HOH:O	2.12	0.47
1:A:19[A]:THR:HG23	8:A:600:HOH:O	2.15	0.46
1:B:139:PHE:HB2	6:B:524:PG6:H32	1.98	0.45
1:A:384:MET:HB2	1:A:397:SER:O	2.17	0.45
2:A:1008:HEC:HBC3	2:A:1008:HEC:HMC1	1.99	0.45
2:B:1002:HEC:HMC1	2:B:1002:HEC:CBC	2.42	0.44
1:B:12[B]:MET:HG3	8:B:1092:HOH:O	2.18	0.44
1:A:409[A]:GLN:HE22	1:A:413[A]:ASN:HD21	1.66	0.43
1:A:56:ARG:CB	5:A:531:PG4:H42	2.48	0.43
1:B:360:GLN:HG3	3:B:1:PO4:O1	2.19	0.43
2:B:1006:HEC:HMA3	2:B:1007[B]:HEC:HBA2	2.01	0.43
1:A:139:PHE:HB2	6:A:524:PG6:H32	2.00	0.42
5:B:531:PG4:H21	8:B:861:HOH:O	2.18	0.42
5:A:528:PG4:H51	5:A:528:PG4:H31	1.82	0.42
1:B:175:GLN:OE1	5:B:529:PG4:H12	2.20	0.41
2:B:1004:HEC:HMB1	2:B:1004:HEC:HBB3	2.01	0.41
1:B:430:ILE:HG21	1:B:490:PHE:HA	2.03	0.41
1:A:140:LYS:HG2	1:A:160:THR:HG23	2.01	0.41
1:A:406[A]:MET:HE2	8:A:657:HOH:O	1.67	0.41
1:B:487:SER:HB3	1:B:491:HIS:CE1	2.55	0.41
1:A:88[A]:LEU:HD21	8:A:1037:HOH:O	2.21	0.40
1:A:56:ARG:HB2	5:A:531:PG4:H42	2.04	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:129:VAL:HG11	2:A:1004:HEC:HMA1	2.02	0.40
1:A:360:GLN:HG3	3:A:1:PO4:O2	2.20	0.40
1:B:224:PRO:O	1:B:225:LEU:C	2.60	0.40

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	538/519 (104%)	514 (96%)	23 (4%)	1 (0%)	47	22
1	B	541/519 (104%)	517 (96%)	22 (4%)	2 (0%)	34	13
All	All	1079/1038 (104%)	1031 (96%)	45 (4%)	3 (0%)	41	18

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	225	LEU
1	A	361	HIS
1	B	361	HIS

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.

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	456/438 (104%)	453 (99%)	3 (1%)	84	65
1	B	458/438 (105%)	456 (100%)	2 (0%)	91	80
All	All	914/876 (104%)	909 (100%)	5 (0%)	92	75

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	170	ARG
1	A	406[A]	MET
1	A	406[B]	MET
1	B	406[A]	MET
1	B	406[B]	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	223	HIS
1	B	340	GLN

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 ⓘ

Of 51 ligands modelled in this entry, 6 are monoatomic - leaving 45 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
2	HEC	B	1006	1,4	32,50,50	2.01	4 (12%)	24,82,82	1.48	5 (20%)
2	HEC	B	1007[A]	-	32,50,50	2.19	6 (18%)	24,82,82	1.91	5 (20%)
2	HEC	A	1003	1	32,50,50	1.90	3 (9%)	24,82,82	1.65	5 (20%)
2	HEC	A	1005[A]	-	32,50,50	2.05	4 (12%)	24,82,82	1.89	5 (20%)
2	HEC	A	1004	8,1,3	32,50,50	1.85	3 (9%)	24,82,82	1.61	5 (20%)
5	PG4	A	530	-	4,4,12	0.35	0	3,3,11	0.48	0
5	PG4	B	531	-	8,8,12	0.58	0	7,7,11	0.52	0
2	HEC	B	1005[A]	-	32,50,50	2.09	4 (12%)	24,82,82	1.60	4 (16%)
3	PO4	B	527	-	4,4,4	0.74	0	6,6,6	0.42	0
5	PG4	A	526	-	5,5,12	0.50	0	4,4,11	0.34	0
2	HEC	B	1004	8,1,3	32,50,50	1.76	5 (15%)	24,82,82	1.67	4 (16%)
5	PG4	A	531	-	9,9,12	0.64	0	8,8,11	0.81	0
2	HEC	B	1008	1	32,50,50	2.49	7 (21%)	24,82,82	1.64	6 (25%)
2	HEC	B	1001	1	32,50,50	2.05	5 (15%)	24,82,82	1.51	4 (16%)
5	PG4	A	533	-	5,5,12	0.68	0	4,4,11	0.63	0
2	HEC	A	1001	1	32,50,50	1.96	4 (12%)	24,82,82	1.42	2 (8%)
5	PG4	A	529	-	6,6,12	0.42	0	5,5,11	0.43	0
2	HEC	B	1002	1	32,50,50	1.86	3 (9%)	24,82,82	1.36	4 (16%)
5	PG4	B	532	-	4,4,12	0.41	0	3,3,11	0.35	0
5	PG4	A	532	-	4,4,12	0.42	0	3,3,11	0.19	0
2	HEC	A	1002	1	32,50,50	1.86	3 (9%)	24,82,82	1.65	5 (20%)
3	PO4	B	1	2	4,4,4	0.92	0	6,6,6	0.96	0
5	PG4	B	4	-	7,7,12	0.46	0	6,6,11	0.36	0
2	HEC	A	1006	1,4	32,50,50	1.83	3 (9%)	24,82,82	1.73	6 (25%)
5	PG4	B	528	-	7,7,12	0.61	0	6,6,11	0.37	0
5	PG4	B	533	-	6,6,12	0.62	0	5,5,11	0.29	0
2	HEC	B	1003	1	32,50,50	1.92	3 (9%)	24,82,82	1.69	5 (20%)
2	HEC	A	1008	1	32,50,50	2.44	5 (15%)	24,82,82	1.85	6 (25%)
2	HEC	A	1007[B]	4	32,50,50	2.06	4 (12%)	24,82,82	1.73	6 (25%)
5	PG4	B	529	-	8,8,12	0.65	0	7,7,11	0.68	0
6	PG6	A	525	-	9,9,17	0.49	0	8,8,16	0.35	0
3	PO4	A	527	-	4,4,4	0.75	0	6,6,6	0.43	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
6	PG6	B	524	-	4,4,17	0.51	0	3,3,16	0.19	0
6	PG6	A	524	-	6,6,17	0.46	0	5,5,16	0.46	0
2	HEC	B	1007[B]	4	32,50,50	2.19	6 (18%)	24,82,82	1.94	7 (29%)
6	PG6	B	526	-	4,4,17	0.31	0	3,3,16	0.31	0
2	HEC	A	1005[B]	-	32,50,50	2.01	3 (9%)	24,82,82	2.07	7 (29%)
5	PG4	A	528	-	8,8,12	0.64	0	7,7,11	0.65	0
6	PG6	B	525	-	9,9,17	0.49	0	8,8,16	0.35	0
3	PO4	A	1	2	4,4,4	1.14	0	6,6,6	0.78	0
2	HEC	B	1005[B]	-	32,50,50	2.06	4 (12%)	24,82,82	1.78	6 (25%)
5	PG4	B	530	-	7,7,12	0.43	0	6,6,11	0.24	0
5	PG4	A	4	-	5,5,12	0.54	0	4,4,11	0.36	0
2	HEC	A	1007[A]	-	32,50,50	2.06	4 (12%)	24,82,82	1.70	6 (25%)
5	PG4	B	534	-	7,7,12	0.63	0	6,6,11	0.69	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	HEC	B	1006	1,4	-	0/10/54/54	-
2	HEC	B	1007[A]	-	-	2/10/54/54	-
2	HEC	A	1003	1	-	2/10/54/54	-
2	HEC	A	1005[A]	-	-	2/10/54/54	-
2	HEC	A	1004	8,1,3	-	2/10/54/54	-
5	PG4	A	530	-	-	1/2/2/10	-
5	PG4	B	531	-	-	4/6/6/10	-
2	HEC	B	1005[A]	-	-	4/10/54/54	-
5	PG4	A	526	-	-	1/3/3/10	-
2	HEC	B	1004	8,1,3	-	2/10/54/54	-
5	PG4	A	531	-	-	4/7/7/10	-
2	HEC	B	1008	1	-	2/10/54/54	-
2	HEC	B	1001	1	-	3/10/54/54	-
5	PG4	A	533	-	-	2/3/3/10	-
2	HEC	A	1001	1	-	4/10/54/54	-
5	PG4	A	529	-	-	3/4/4/10	-
2	HEC	B	1002	1	-	2/10/54/54	-
5	PG4	B	532	-	-	2/2/2/10	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	PG4	A	532	-	-	1/2/2/10	-
2	HEC	A	1002	1	-	2/10/54/54	-
5	PG4	B	4	-	-	4/5/5/10	-
2	HEC	A	1006	1,4	-	0/10/54/54	-
5	PG4	B	528	-	-	3/5/5/10	-
5	PG4	B	533	-	-	2/4/4/10	-
2	HEC	B	1003	1	-	3/10/54/54	-
2	HEC	A	1008	1	-	4/10/54/54	-
2	HEC	A	1007[B]	4	-	1/10/54/54	-
5	PG4	B	529	-	-	2/6/6/10	-
6	PG6	A	525	-	-	0/7/7/15	-
6	PG6	B	524	-	-	0/2/2/15	-
6	PG6	A	524	-	-	0/4/4/15	-
2	HEC	B	1007[B]	4	-	0/10/54/54	-
6	PG6	B	526	-	-	2/2/2/15	-
2	HEC	A	1005[B]	-	-	5/10/54/54	-
5	PG4	A	528	-	-	5/6/6/10	-
6	PG6	B	525	-	-	1/7/7/15	-
2	HEC	B	1005[B]	-	-	5/10/54/54	-
5	PG4	B	530	-	-	3/5/5/10	-
5	PG4	A	4	-	-	2/3/3/10	-
2	HEC	A	1007[A]	-	-	2/10/54/54	-
5	PG4	B	534	-	-	5/5/5/10	-

All (83) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1007[A]	HEC	C2B-C3B	-8.04	1.32	1.40
2	B	1007[B]	HEC	C2B-C3B	-8.04	1.32	1.40
2	A	1008	HEC	C2B-C3B	-7.97	1.32	1.40
2	B	1008	HEC	C2B-C3B	-7.73	1.32	1.40
2	B	1008	HEC	C3C-C2C	-7.59	1.32	1.40
2	A	1007[A]	HEC	C2B-C3B	-7.39	1.33	1.40
2	A	1007[B]	HEC	C2B-C3B	-7.39	1.33	1.40
2	A	1008	HEC	C3C-C2C	-7.09	1.33	1.40
2	A	1005[A]	HEC	C2B-C3B	-6.50	1.34	1.40
2	A	1005[B]	HEC	C2B-C3B	-6.50	1.34	1.40
2	B	1005[A]	HEC	C3C-C2C	-6.30	1.34	1.40
2	B	1005[B]	HEC	C3C-C2C	-6.30	1.34	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1007[A]	HEC	C3C-C2C	-6.27	1.34	1.40
2	B	1007[B]	HEC	C3C-C2C	-6.27	1.34	1.40
2	B	1005[A]	HEC	C2B-C3B	-6.18	1.34	1.40
2	B	1005[B]	HEC	C2B-C3B	-6.18	1.34	1.40
2	B	1006	HEC	C3C-C2C	-5.99	1.34	1.40
2	A	1007[A]	HEC	C3C-C2C	-5.85	1.34	1.40
2	A	1007[B]	HEC	C3C-C2C	-5.85	1.34	1.40
2	A	1003	HEC	C2B-C3B	-5.84	1.34	1.40
2	A	1001	HEC	C2B-C3B	-5.81	1.34	1.40
2	B	1001	HEC	C3C-C2C	-5.75	1.34	1.40
2	A	1001	HEC	C3C-C2C	-5.75	1.34	1.40
2	B	1003	HEC	C2B-C3B	-5.62	1.34	1.40
2	A	1005[A]	HEC	C3C-C2C	-5.54	1.35	1.40
2	A	1005[B]	HEC	C3C-C2C	-5.54	1.35	1.40
2	B	1001	HEC	C2B-C3B	-5.47	1.35	1.40
2	B	1006	HEC	C2B-C3B	-5.47	1.35	1.40
2	A	1004	HEC	C2B-C3B	-5.40	1.35	1.40
2	A	1002	HEC	C2B-C3B	-5.37	1.35	1.40
2	A	1002	HEC	C3C-C2C	-5.27	1.35	1.40
2	B	1003	HEC	C3C-C2C	-5.26	1.35	1.40
2	A	1006	HEC	C3C-C2C	-5.23	1.35	1.40
2	B	1002	HEC	C2B-C3B	-5.10	1.35	1.40
2	B	1002	HEC	C3C-C2C	-5.07	1.35	1.40
2	A	1004	HEC	C3C-C2C	-5.07	1.35	1.40
2	B	1008	HEC	C3D-C2D	4.59	1.51	1.37
2	B	1004	HEC	C2B-C3B	-4.53	1.36	1.40
2	A	1003	HEC	C3C-C2C	-4.43	1.36	1.40
2	A	1008	HEC	C3D-C2D	4.41	1.50	1.37
2	B	1004	HEC	C3C-C2C	-4.41	1.36	1.40
2	A	1006	HEC	C2B-C3B	-4.19	1.36	1.40
2	B	1001	HEC	C3D-C2D	4.18	1.50	1.37
2	A	1005[A]	HEC	C3D-C2D	3.99	1.49	1.37
2	A	1005[B]	HEC	C3D-C2D	3.99	1.49	1.37
2	A	1006	HEC	C3D-C2D	3.99	1.49	1.37
2	A	1003	HEC	C3D-C2D	3.88	1.49	1.37
2	B	1006	HEC	C3D-C2D	3.86	1.49	1.37
2	B	1003	HEC	C3D-C2D	3.84	1.49	1.37
2	B	1005[A]	HEC	C3D-C2D	3.73	1.48	1.37
2	B	1005[B]	HEC	C3D-C2D	3.73	1.48	1.37
2	A	1001	HEC	C3D-C2D	3.73	1.48	1.37
2	B	1004	HEC	C3D-C2D	3.65	1.48	1.37
2	B	1002	HEC	C3D-C2D	3.64	1.48	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1002	HEC	C3D-C2D	3.62	1.48	1.37
2	A	1004	HEC	C3D-C2D	3.45	1.47	1.37
2	B	1007[A]	HEC	C3D-C2D	3.33	1.47	1.37
2	B	1007[B]	HEC	C3D-C2D	3.33	1.47	1.37
2	A	1007[A]	HEC	C3D-C2D	3.18	1.47	1.37
2	A	1007[B]	HEC	C3D-C2D	3.18	1.47	1.37
2	A	1008	HEC	C3C-C4C	2.94	1.48	1.43
2	B	1008	HEC	C3C-C4C	2.72	1.48	1.43
2	B	1006	HEC	C4D-ND	2.34	1.41	1.36
2	A	1008	HEC	C1D-ND	2.31	1.40	1.36
2	B	1001	HEC	C4D-ND	2.27	1.40	1.36
2	B	1008	HEC	C1D-ND	2.27	1.40	1.36
2	B	1005[A]	HEC	C3C-C4C	2.27	1.47	1.43
2	B	1005[B]	HEC	C3C-C4C	2.27	1.47	1.43
2	B	1001	HEC	C1D-ND	2.25	1.40	1.36
2	A	1001	HEC	CBB-CAB	2.16	1.57	1.49
2	A	1005[A]	HEC	O2D-CGD	-2.11	1.23	1.30
2	B	1007[A]	HEC	C4D-CHA	-2.11	1.35	1.41
2	B	1007[B]	HEC	C4D-CHA	-2.11	1.35	1.41
2	A	1007[A]	HEC	CBB-CAB	2.10	1.57	1.49
2	A	1007[B]	HEC	CBB-CAB	2.10	1.57	1.49
2	B	1004	HEC	C1D-ND	2.08	1.40	1.36
2	B	1007[A]	HEC	CBB-CAB	2.07	1.57	1.49
2	B	1007[B]	HEC	CBB-CAB	2.07	1.57	1.49
2	B	1004	HEC	C3C-C4C	2.06	1.46	1.43
2	B	1007[A]	HEC	CAA-C2A	2.04	1.55	1.52
2	B	1007[B]	HEC	CAA-C2A	2.04	1.55	1.52
2	B	1008	HEC	CMA-C3A	2.04	1.56	1.51
2	B	1008	HEC	CBB-CAB	2.02	1.57	1.49

All (103) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1007[A]	HEC	CMB-C2B-C1B	-6.33	118.73	128.46
2	B	1007[B]	HEC	CMB-C2B-C1B	-6.33	118.73	128.46
2	A	1007[A]	HEC	CMB-C2B-C1B	-5.30	120.32	128.46
2	A	1007[B]	HEC	CMB-C2B-C1B	-5.30	120.32	128.46
2	A	1005[A]	HEC	CMB-C2B-C1B	-5.03	120.74	128.46
2	A	1005[B]	HEC	CMB-C2B-C1B	-5.03	120.74	128.46
2	A	1002	HEC	CMB-C2B-C1B	-4.69	121.26	128.46
2	A	1003	HEC	CMB-C2B-C1B	-4.61	121.38	128.46
2	B	1003	HEC	CMB-C2B-C1B	-4.60	121.39	128.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	1004	HEC	CMB-C2B-C1B	-4.51	121.54	128.46
2	A	1008	HEC	CMB-C2B-C1B	-4.48	121.58	128.46
2	A	1005[A]	HEC	CMB-C2B-C3B	4.21	130.78	125.82
2	A	1005[B]	HEC	CMB-C2B-C3B	4.21	130.78	125.82
2	A	1004	HEC	CMB-C2B-C1B	-4.16	122.07	128.46
2	B	1005[A]	HEC	CMB-C2B-C1B	-4.16	122.07	128.46
2	B	1005[B]	HEC	CMB-C2B-C1B	-4.16	122.07	128.46
2	A	1005[A]	HEC	CMC-C2C-C1C	-4.16	122.08	128.46
2	A	1005[B]	HEC	CMC-C2C-C1C	-4.16	122.08	128.46
2	B	1001	HEC	CMC-C2C-C1C	-4.14	122.10	128.46
2	A	1008	HEC	CMC-C2C-C1C	-3.92	122.44	128.46
2	A	1006	HEC	CMC-C2C-C1C	-3.86	122.53	128.46
2	B	1004	HEC	CMB-C2B-C3B	3.75	130.23	125.82
2	A	1004	HEC	C1D-C2D-C3D	-3.69	104.43	107.00
2	B	1006	HEC	CMC-C2C-C1C	-3.69	122.80	128.46
2	B	1001	HEC	CBA-CAA-C2A	-3.53	106.65	112.60
2	B	1004	HEC	CMC-C2C-C1C	-3.46	123.14	128.46
2	A	1001	HEC	CMC-C2C-C1C	-3.41	123.22	128.46
2	B	1008	HEC	CMB-C2B-C1B	-3.40	123.23	128.46
2	A	1002	HEC	CMC-C2C-C1C	-3.39	123.25	128.46
2	A	1005[B]	HEC	CBD-CAD-C3D	-3.39	106.84	112.62
2	A	1001	HEC	CMB-C2B-C1B	-3.38	123.27	128.46
2	B	1007[A]	HEC	CBD-CAD-C3D	-3.37	106.87	112.62
2	B	1007[B]	HEC	CBD-CAD-C3D	-3.37	106.87	112.62
2	A	1008	HEC	CBD-CAD-C3D	-3.36	106.89	112.62
2	B	1008	HEC	CBD-CAD-C3D	-3.23	107.11	112.62
2	B	1005[A]	HEC	CMB-C2B-C3B	3.23	129.62	125.82
2	B	1005[B]	HEC	CMB-C2B-C3B	3.23	129.62	125.82
2	B	1006	HEC	CMB-C2B-C1B	-3.21	123.52	128.46
2	A	1006	HEC	C1D-C2D-C3D	-3.21	104.76	107.00
2	B	1002	HEC	CMB-C2B-C1B	-3.20	123.55	128.46
2	A	1004	HEC	CMC-C2C-C1C	-3.12	123.67	128.46
2	B	1004	HEC	C1D-C2D-C3D	-3.11	104.83	107.00
2	A	1005[A]	HEC	CMC-C2C-C3C	3.11	129.47	125.82
2	A	1005[B]	HEC	CMC-C2C-C3C	3.11	129.47	125.82
2	B	1008	HEC	CBA-CAA-C2A	-3.10	107.38	112.60
2	A	1007[A]	HEC	CBD-CAD-C3D	-3.02	107.47	112.62
2	A	1007[B]	HEC	CBD-CAD-C3D	-3.02	107.47	112.62
2	B	1007[A]	HEC	CBA-CAA-C2A	-2.91	107.69	112.60
2	A	1006	HEC	CMB-C2B-C1B	-2.87	124.06	128.46
2	B	1008	HEC	CMC-C2C-C1C	-2.85	124.09	128.46
2	B	1007[A]	HEC	CMB-C2B-C3B	2.83	129.15	125.82

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	1007[B]	HEC	CMB-C2B-C3B	2.83	129.15	125.82
2	B	1002	HEC	CMC-C2C-C1C	-2.79	124.17	128.46
2	A	1006	HEC	CMC-C2C-C3C	2.79	129.10	125.82
2	B	1002	HEC	CAA-CBA-CGA	-2.74	106.08	113.76
2	B	1003	HEC	CMC-C2C-C1C	-2.70	124.31	128.46
2	A	1004	HEC	CMB-C2B-C3B	2.67	128.96	125.82
2	B	1005[A]	HEC	C1D-C2D-C3D	-2.64	105.16	107.00
2	B	1005[B]	HEC	C1D-C2D-C3D	-2.64	105.16	107.00
2	A	1007[A]	HEC	CMC-C2C-C1C	-2.64	124.41	128.46
2	A	1007[B]	HEC	CMC-C2C-C1C	-2.64	124.41	128.46
2	A	1002	HEC	CMB-C2B-C3B	2.60	128.88	125.82
2	B	1005[B]	HEC	CBD-CAD-C3D	-2.58	108.21	112.62
2	A	1008	HEC	CBA-CAA-C2A	-2.58	108.25	112.60
2	B	1005[A]	HEC	CMC-C2C-C1C	-2.56	124.53	128.46
2	B	1005[B]	HEC	CMC-C2C-C1C	-2.56	124.53	128.46
2	B	1007[B]	HEC	O2A-CGA-CBA	2.55	122.24	114.03
2	B	1008	HEC	O1A-CGA-CBA	-2.54	114.91	123.08
2	A	1003	HEC	CMC-C2C-C1C	-2.51	124.61	128.46
2	B	1001	HEC	CMB-C2B-C1B	-2.50	124.62	128.46
2	A	1008	HEC	O1A-CGA-CBA	-2.50	115.06	123.08
2	B	1002	HEC	C1D-C2D-C3D	-2.47	105.28	107.00
2	A	1002	HEC	CMC-C2C-C3C	2.42	128.67	125.82
2	A	1008	HEC	O2A-CGA-CBA	2.38	121.68	114.03
2	B	1005[B]	HEC	O2D-CGD-CBD	2.38	121.68	114.03
2	B	1001	HEC	CBD-CAD-C3D	-2.35	108.61	112.62
2	B	1003	HEC	CBA-CAA-C2A	-2.33	108.68	112.60
2	A	1002	HEC	CAA-CBA-CGA	-2.30	107.30	113.76
2	B	1007[A]	HEC	CMC-C2C-C1C	-2.30	124.94	128.46
2	B	1007[B]	HEC	CMC-C2C-C1C	-2.30	124.94	128.46
2	A	1007[A]	HEC	CMB-C2B-C3B	2.28	128.50	125.82
2	A	1007[B]	HEC	CMB-C2B-C3B	2.28	128.50	125.82
2	A	1006	HEC	O1A-CGA-CBA	-2.28	115.77	123.08
2	B	1003	HEC	O2D-CGD-CBD	2.28	121.34	114.03
2	A	1007[A]	HEC	CMA-C3A-C2A	2.27	129.23	124.94
2	A	1007[B]	HEC	CMA-C3A-C2A	2.27	129.23	124.94
2	A	1007[A]	HEC	CBA-CAA-C2A	-2.27	108.78	112.60
2	A	1007[B]	HEC	CBA-CAA-C2A	-2.27	108.78	112.60
2	A	1003	HEC	O2A-CGA-CBA	2.27	121.32	114.03
2	B	1006	HEC	C1D-C2D-C3D	-2.26	105.43	107.00
2	B	1006	HEC	CMC-C2C-C3C	2.23	128.44	125.82
2	A	1006	HEC	CMA-C3A-C2A	2.22	129.13	124.94
2	B	1007[B]	HEC	CBA-CAA-C2A	-2.22	108.87	112.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	1008	HEC	O2A-CGA-CBA	2.16	120.96	114.03
2	A	1003	HEC	CBD-CAD-C3D	-2.14	108.96	112.62
2	B	1007[B]	HEC	O1A-CGA-CBA	-2.13	116.25	123.08
2	A	1005[A]	HEC	C1D-C2D-C3D	-2.12	105.52	107.00
2	A	1005[B]	HEC	C1D-C2D-C3D	-2.12	105.52	107.00
2	A	1005[B]	HEC	O2D-CGD-CBD	2.08	120.72	114.03
2	A	1003	HEC	CBA-CAA-C2A	-2.08	109.10	112.60
2	B	1006	HEC	CMA-C3A-C2A	2.02	128.75	124.94
2	B	1003	HEC	O1D-CGD-CBD	-2.02	116.61	123.08
2	A	1004	HEC	CMC-C2C-C3C	2.00	128.18	125.82

There are no chirality outliers.

All (94) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	531	PG4	C6-C5-O3-C4
5	B	531	PG4	C1-C2-O2-C3
5	A	529	PG4	C1-C2-O2-C3
5	A	528	PG4	O2-C3-C4-O3
5	B	531	PG4	O2-C3-C4-O3
5	B	4	PG4	O2-C3-C4-O3
5	B	534	PG4	O2-C3-C4-O3
5	A	528	PG4	C3-C4-O3-C5
5	B	530	PG4	O2-C3-C4-O3
5	A	526	PG4	O1-C1-C2-O2
5	A	531	PG4	O3-C5-C6-O4
5	B	528	PG4	O1-C1-C2-O2
5	A	532	PG4	O1-C1-C2-O2
5	B	530	PG4	O1-C1-C2-O2
5	A	4	PG4	C4-C3-O2-C2
5	B	534	PG4	C3-C4-O3-C5
5	B	4	PG4	O1-C1-C2-O2
5	A	530	PG4	O1-C1-C2-O2
6	B	526	PG6	O2-C4-C5-O3
2	B	1005[B]	HEC	C3D-CAD-CBD-CGD
5	A	529	PG4	O1-C1-C2-O2
5	A	533	PG4	O1-C1-C2-O2
5	B	529	PG4	O2-C3-C4-O3
5	A	528	PG4	C6-C5-O3-C4
5	A	4	PG4	O1-C1-C2-O2
5	A	533	PG4	C4-C3-O2-C2
2	A	1005[B]	HEC	C3D-CAD-CBD-CGD

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Mol	Chain	Res	Type	Atoms
5	B	4	PG4	C4-C3-O2-C2
5	A	528	PG4	C4-C3-O2-C2
5	B	529	PG4	C1-C2-O2-C3
5	B	534	PG4	C4-C3-O2-C2
5	A	531	PG4	C1-C2-O2-C3
5	A	531	PG4	O2-C3-C4-O3
5	B	528	PG4	C1-C2-O2-C3
5	B	4	PG4	C1-C2-O2-C3
5	B	530	PG4	C4-C3-O2-C2
5	B	533	PG4	C4-C3-O2-C2
5	B	531	PG4	C6-C5-O3-C4
2	A	1001	HEC	CAA-CBA-CGA-O2A
5	B	534	PG4	O1-C1-C2-O2
2	A	1001	HEC	CAA-CBA-CGA-O1A
2	A	1005[A]	HEC	CAA-CBA-CGA-O2A
2	A	1005[B]	HEC	CAA-CBA-CGA-O2A
2	B	1005[A]	HEC	CAA-CBA-CGA-O1A
2	B	1005[A]	HEC	CAA-CBA-CGA-O2A
2	B	1005[B]	HEC	CAA-CBA-CGA-O1A
2	B	1005[B]	HEC	CAA-CBA-CGA-O2A
2	A	1005[A]	HEC	CAA-CBA-CGA-O1A
2	A	1005[B]	HEC	CAA-CBA-CGA-O1A
5	B	532	PG4	C1-C2-O2-C3
2	A	1004	HEC	CAA-CBA-CGA-O2A
2	A	1001	HEC	CAD-CBD-CGD-O1D
2	B	1002	HEC	CAA-CBA-CGA-O1A
2	A	1004	HEC	CAA-CBA-CGA-O1A
2	B	1004	HEC	CAA-CBA-CGA-O2A
2	B	1004	HEC	CAA-CBA-CGA-O1A
2	A	1001	HEC	CAD-CBD-CGD-O2D
2	A	1002	HEC	CAA-CBA-CGA-O1A
2	A	1002	HEC	CAA-CBA-CGA-O2A
2	A	1008	HEC	CAA-CBA-CGA-O2A
5	A	529	PG4	C4-C3-O2-C2
5	B	534	PG4	C1-C2-O2-C3
2	B	1008	HEC	CAA-CBA-CGA-O2A
2	B	1002	HEC	CAA-CBA-CGA-O2A
2	B	1005[B]	HEC	CAD-CBD-CGD-O2D
6	B	526	PG6	C4-C5-O3-C6
2	B	1003	HEC	CAD-CBD-CGD-O2D
2	B	1001	HEC	CAD-CBD-CGD-O2D
2	A	1008	HEC	CAD-CBD-CGD-O1D

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Mol	Chain	Res	Type	Atoms
2	A	1003	HEC	CAD-CBD-CGD-O2D
2	B	1007[A]	HEC	CAA-CBA-CGA-O1A
2	A	1008	HEC	CAA-CBA-CGA-O1A
5	B	532	PG4	O1-C1-C2-O2
2	A	1007[A]	HEC	CAA-CBA-CGA-O1A
2	A	1005[B]	HEC	CAD-CBD-CGD-O2D
2	B	1005[B]	HEC	CAD-CBD-CGD-O1D
2	B	1001	HEC	CAD-CBD-CGD-O1D
2	B	1008	HEC	CAA-CBA-CGA-O1A
5	B	531	PG4	C3-C4-O3-C5
5	B	533	PG4	O2-C3-C4-O3
2	A	1005[B]	HEC	CAD-CBD-CGD-O1D
2	B	1003	HEC	CAD-CBD-CGD-O1D
5	A	528	PG4	O1-C1-C2-O2
2	A	1003	HEC	CAD-CBD-CGD-O1D
2	B	1007[A]	HEC	CAA-CBA-CGA-O2A
2	A	1007[A]	HEC	CAA-CBA-CGA-O2A
6	B	525	PG6	O3-C6-C7-O4
2	A	1008	HEC	CAD-CBD-CGD-O2D
2	A	1007[B]	HEC	CAA-CBA-CGA-O2A
5	B	528	PG4	C4-C3-O2-C2
2	B	1003	HEC	CAA-CBA-CGA-O2A
2	B	1005[A]	HEC	CAD-CBD-CGD-O1D
2	B	1005[A]	HEC	CAD-CBD-CGD-O2D
2	B	1001	HEC	CAA-CBA-CGA-O1A

There are no ring outliers.

22 monomers are involved in 30 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	1006	HEC	1	0
2	A	1004	HEC	1	0
5	B	531	PG4	1	0
2	B	1004	HEC	1	0
5	A	531	PG4	4	0
2	B	1008	HEC	3	0
2	B	1001	HEC	1	0
5	A	533	PG4	1	0
2	A	1001	HEC	2	0
2	B	1002	HEC	2	0
5	B	532	PG4	1	0
2	A	1002	HEC	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	1	PO4	1	0
2	A	1008	HEC	2	0
5	B	529	PG4	2	0
6	B	524	PG6	1	0
6	A	524	PG6	1	0
2	B	1007[B]	HEC	1	0
5	A	528	PG4	2	0
3	A	1	PO4	1	0
5	B	530	PG4	1	0
5	B	534	PG4	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 HEC B 1006

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC B 1007 (A)

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC A 1003

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC A 1005 (A)

Bond lengths

Bond angles

Torsions

Rings

Full wwPDB X-ray Structure Validation Report

Ligand HEC A 1004

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC B 1005 (A)

Bond lengths

Bond angles

Torsions

Rings

Full wwPDB X-ray Structure Validation Report

Ligand HEC B 1004

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC B 1008

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC B 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC A 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC B 1002

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC A 1002

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC A 1006

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC B 1003

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC A 1008

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC A 1007 (B)

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC B 1007 (B)

Bond lengths

Bond angles

Torsions

Rings

Ligand PG6 B 526

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC A 1005 (B)

Bond lengths

Bond angles

Torsions

Rings

Ligand PG6 B 525

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC B 1005 (B)

Bond lengths

Bond angles

Torsions

Rings

Ligand HEC A 1007 (A)

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	519/519 (100%)	-0.71	4 (0%)	86	87	10, 14, 25, 52	3 (0%)
1	B	519/519 (100%)	-0.75	2 (0%)	92	94	10, 14, 25, 50	3 (0%)
All	All	1038/1038 (100%)	-0.73	6 (0%)	89	91	10, 14, 25, 52	6 (0%)

All (6) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	523	ALA	4.4
1	B	523	ALA	4.0
1	A	522	VAL	3.6
1	B	522	VAL	3.1
1	A	388	GLN	2.6
1	A	278	ARG	2.0

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
5	PG4	A	533	6/13	0.55	0.28	25,38,41,47	0
5	PG4	B	528	8/13	0.64	0.15	37,48,50,52	0
5	PG4	A	528	9/13	0.65	0.21	34,43,49,50	0
5	PG4	B	531	9/13	0.65	0.27	41,46,48,53	0
5	PG4	A	532	5/13	0.67	0.20	46,47,50,51	0
5	PG4	B	534	8/13	0.67	0.35	38,42,45,47	0
5	PG4	A	529	7/13	0.68	0.20	50,51,54,56	0
6	PG6	A	525	10/18	0.72	0.17	20,21,26,28	10
5	PG4	A	531	10/13	0.73	0.32	35,44,50,50	0
5	PG4	B	532	5/13	0.76	0.23	41,43,46,46	0
6	PG6	B	525	10/18	0.78	0.13	19,23,26,29	10
5	PG4	A	530	5/13	0.79	0.19	45,45,49,51	0
5	PG4	A	526	6/13	0.79	0.19	38,47,50,51	0
5	PG4	A	4	6/13	0.82	0.16	45,46,49,56	0
5	PG4	B	533	7/13	0.83	0.25	42,44,47,49	0
6	PG6	B	526	5/18	0.83	0.14	41,44,48,51	0
5	PG4	B	4	8/13	0.84	0.18	45,48,52,53	0
5	PG4	B	530	8/13	0.85	0.26	44,49,50,51	0
5	PG4	B	529	9/13	0.90	0.21	15,22,28,28	9
7	NA	A	534	1/1	0.90	0.12	25,25,25,25	1
3	PO4	A	527	5/5	0.94	0.10	16,17,19,19	5
6	PG6	B	524	5/18	0.95	0.08	19,28,35,38	0
6	PG6	A	524	7/18	0.96	0.07	19,31,49,53	0
3	PO4	B	527	5/5	0.96	0.11	12,15,16,17	5
3	PO4	B	1	5/5	0.98	0.17	9,9,11,12	5
2	HEC	B	1008	43/43	0.98	0.07	12,17,30,43	0
2	HEC	A	1008	43/43	0.98	0.08	11,17,28,44	0
7	NA	A	535	1/1	0.98	0.22	31,31,31,31	0
2	HEC	A	1002	43/43	0.99	0.05	10,11,13,15	0
2	HEC	A	1003	43/43	0.99	0.06	9,11,20,31	0
2	HEC	A	1001	43/43	0.99	0.05	11,13,16,19	0
2	HEC	B	1004	43/43	0.99	0.07	10,11,13,13	0
2	HEC	B	1005[A]	43/43	0.99	0.06	9,11,14,18	4
2	HEC	B	1005[B]	43/43	0.99	0.06	9,11,21,27	4
2	HEC	B	1006	43/43	0.99	0.06	8,10,11,13	0
2	HEC	B	1007[A]	43/43	0.99	0.06	9,11,13,17	4
2	HEC	B	1007[B]	43/43	0.99	0.06	9,11,12,14	4
2	HEC	A	1005[A]	43/43	0.99	0.05	9,10,13,16	4
2	HEC	B	1002	43/43	0.99	0.06	11,13,15,17	0
2	HEC	B	1003	43/43	0.99	0.06	10,12,21,32	0
2	HEC	B	1001	43/43	0.99	0.05	12,15,19,23	0
3	PO4	A	1	5/5	0.99	0.16	8,9,12,14	5
2	HEC	A	1005[B]	43/43	0.99	0.05	9,10,18,31	4

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\mathring{A}^2$)	Q<0.9
2	HEC	A	1006	43/43	0.99	0.07	8,10,11,12	0
2	HEC	A	1007[A]	43/43	0.99	0.06	9,11,13,15	3
4	CA	A	3	1/1	0.99	0.10	14,14,14,14	1
4	CA	B	3	1/1	0.99	0.11	14,14,14,14	1
2	HEC	A	1007[B]	43/43	0.99	0.06	9,11,12,13	3
2	HEC	A	1004	43/43	0.99	0.07	9,11,13,14	0
4	CA	A	2	1/1	1.00	0.02	14,14,14,14	0
4	CA	B	2	1/1	1.00	0.02	13,13,13,13	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.
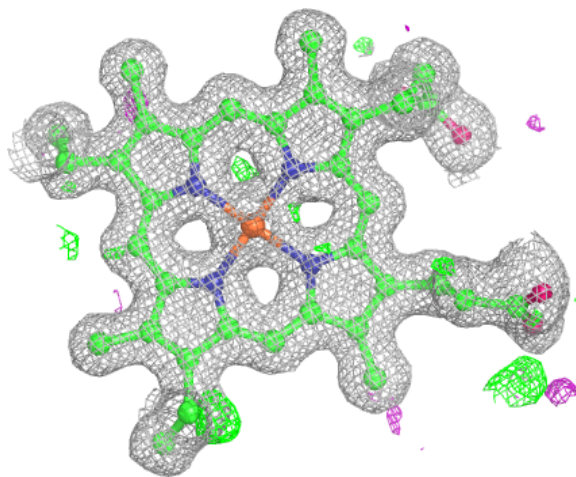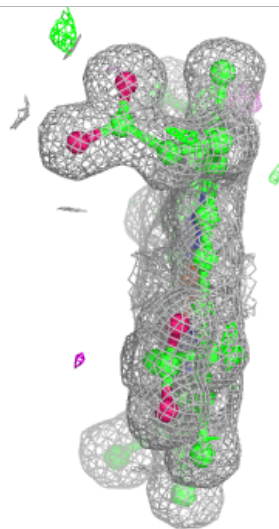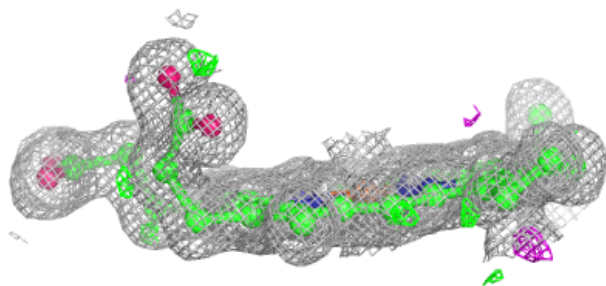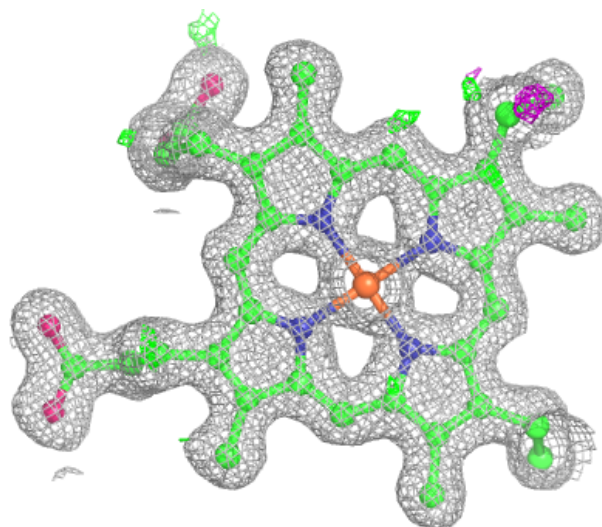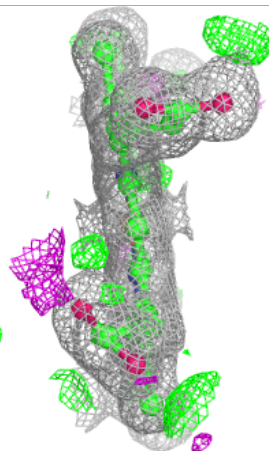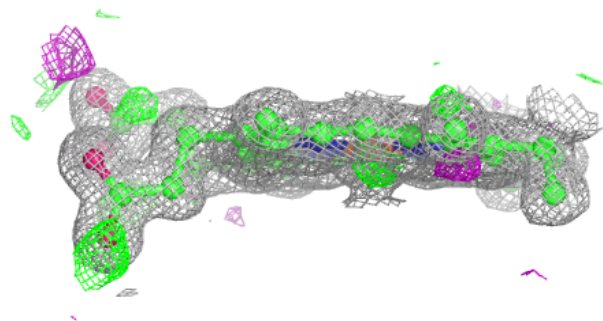
Electron density around PG6 B 525:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)
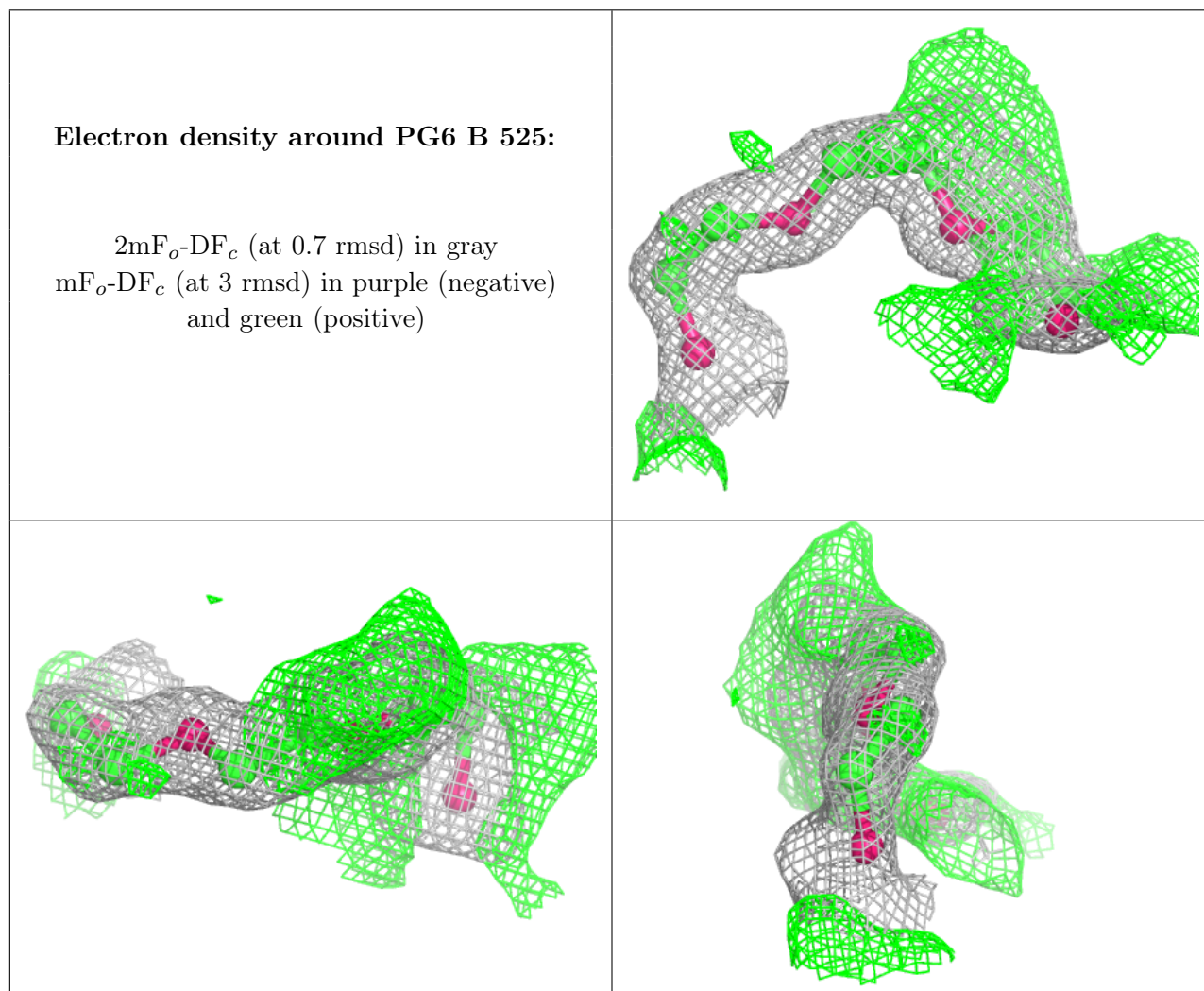
Electron density around PG6 B 526:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
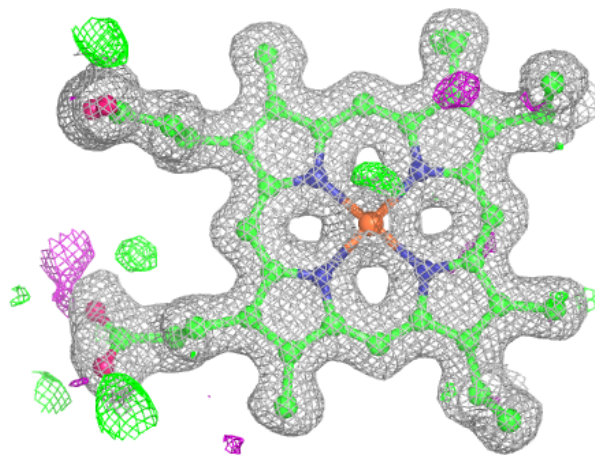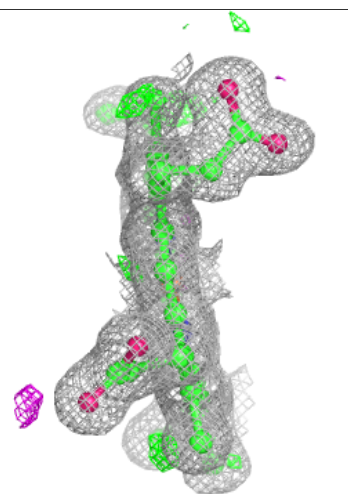and green (positive)
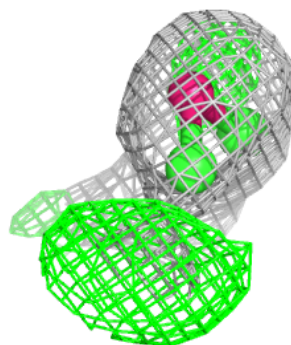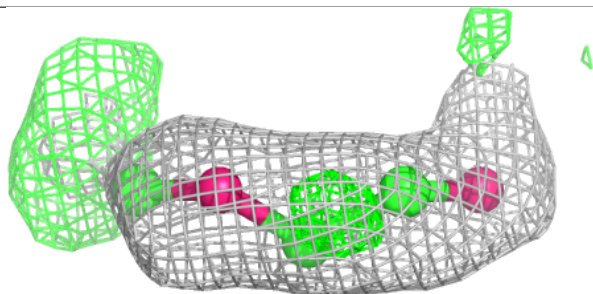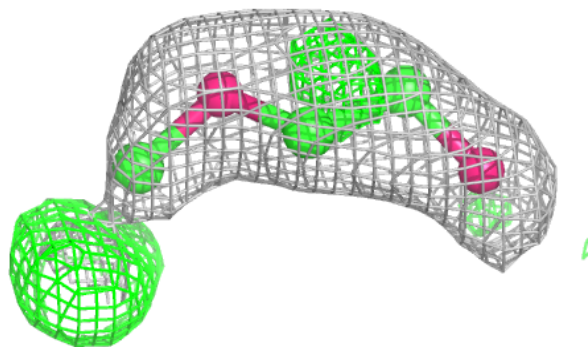
Electron density around HEC B 1008:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
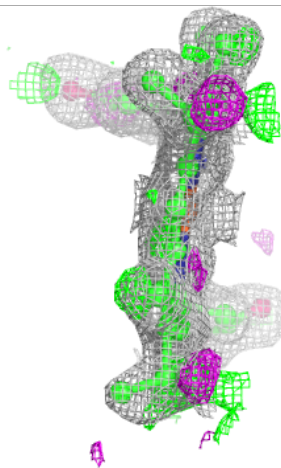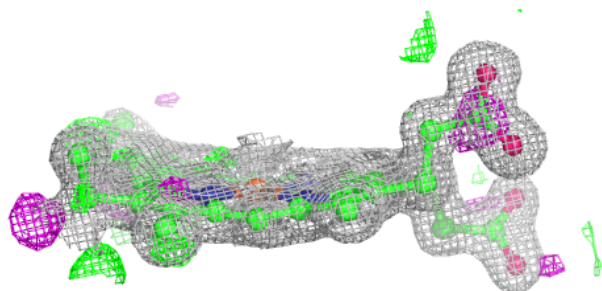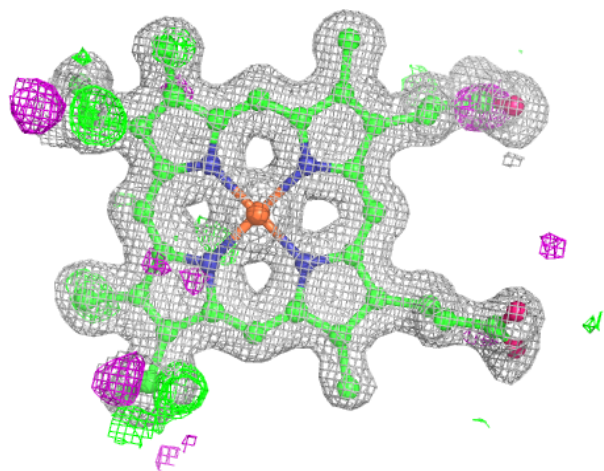
Electron density around HEC A 1008:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
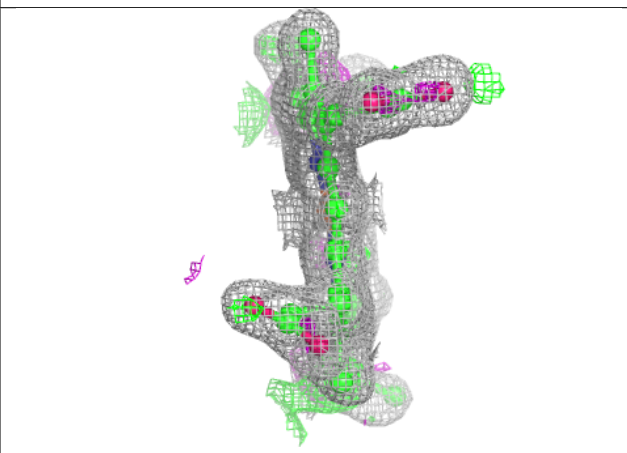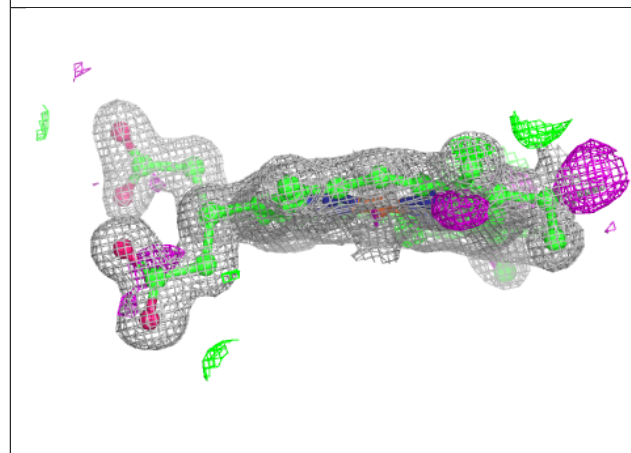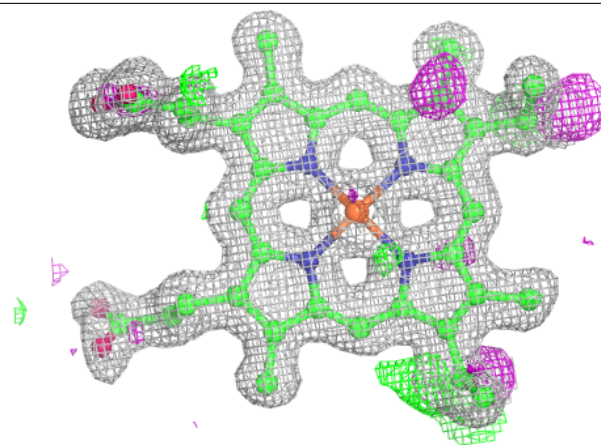
Electron density around HEC A 1002:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
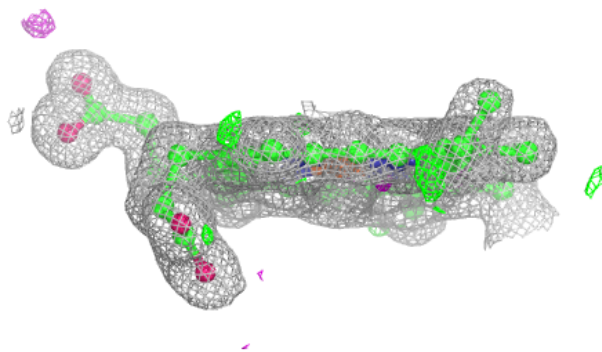$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
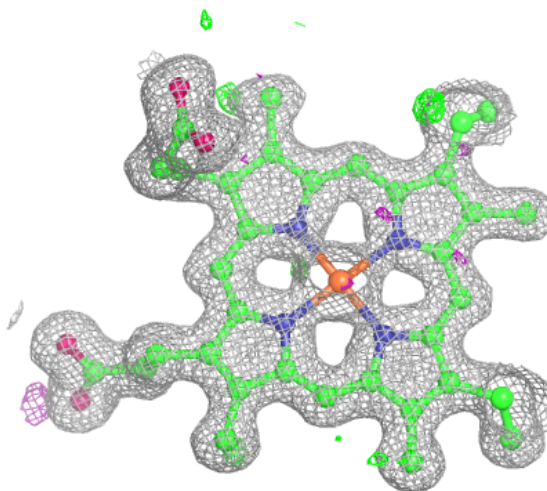and green (positive)
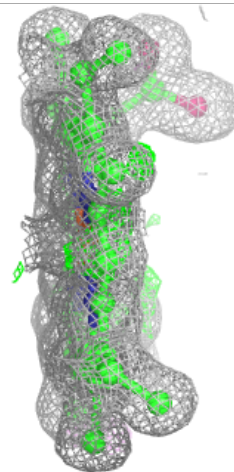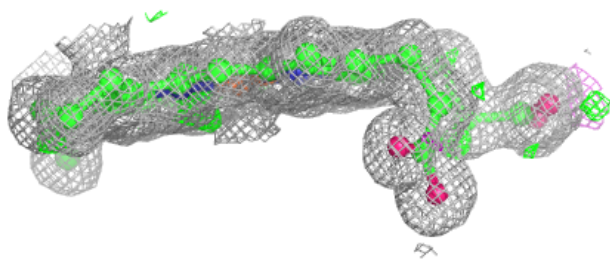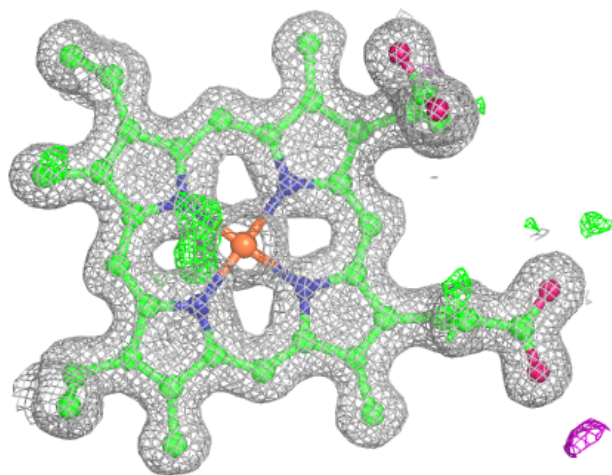
Electron density around HEC A 1003:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
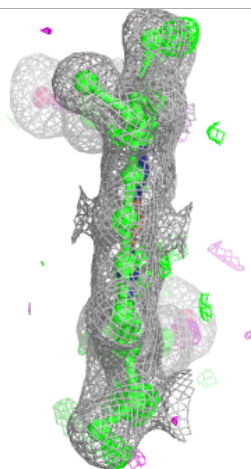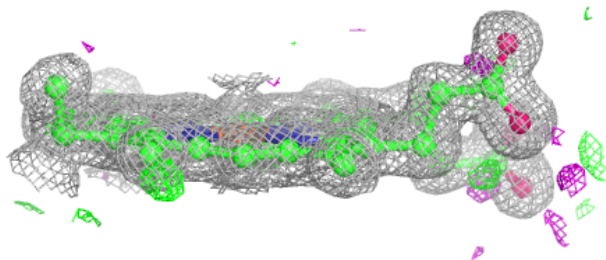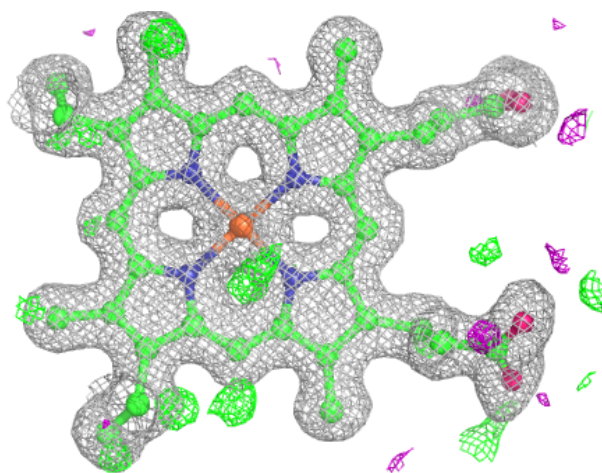
Electron density around HEC A 1001:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
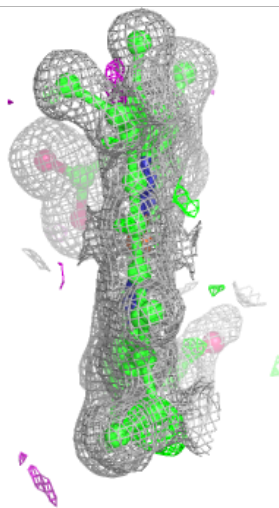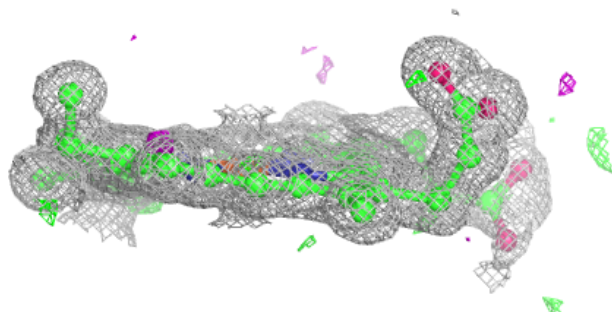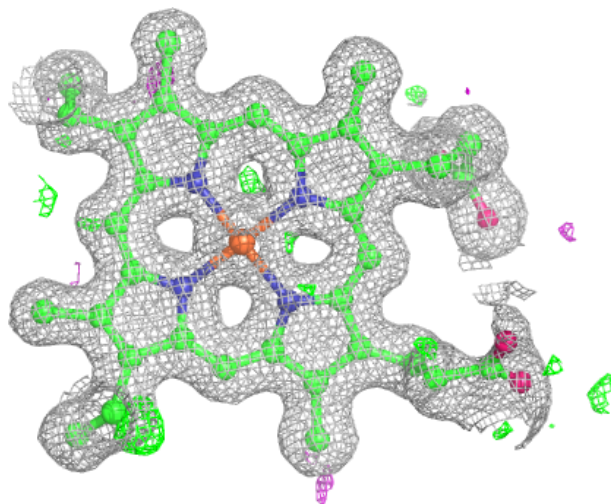and green (positive)
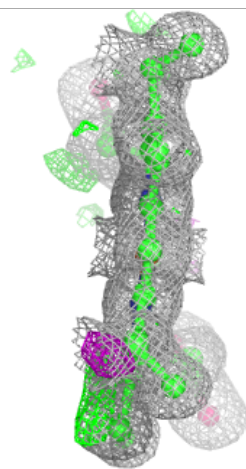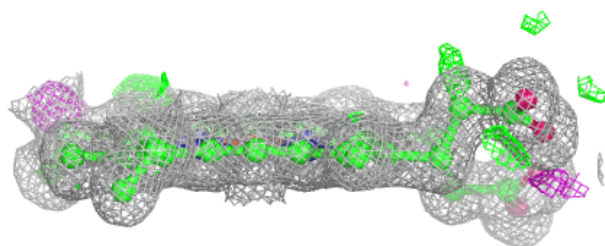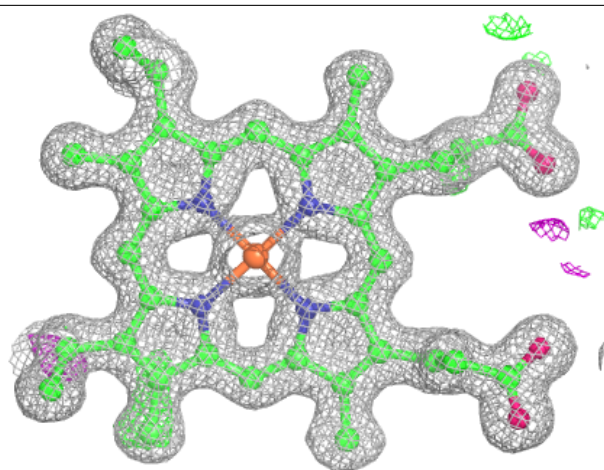
Electron density around HEC B 1004:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
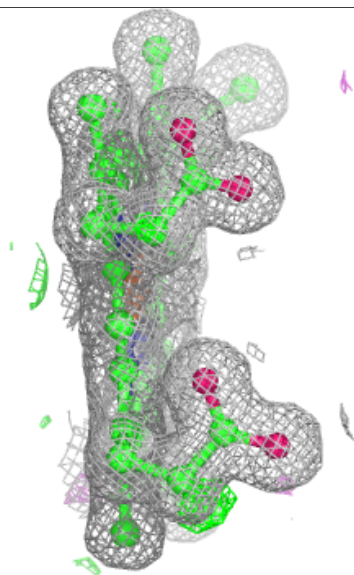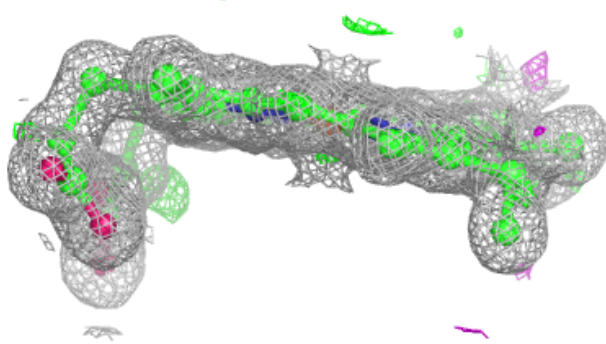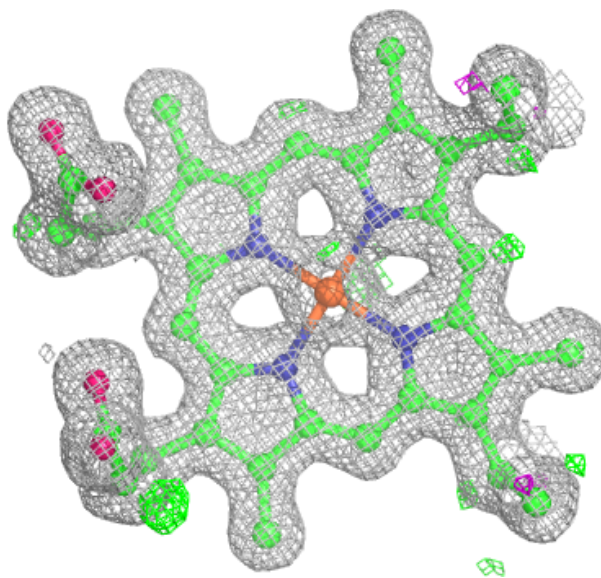
Electron density around HEC B 1005 (A):

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
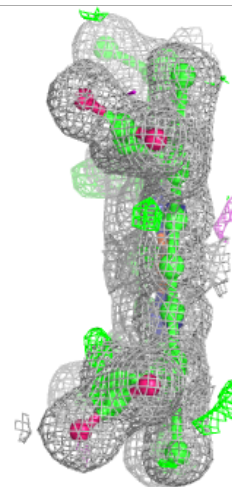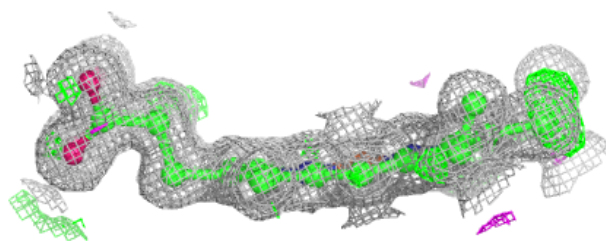and green (positive)
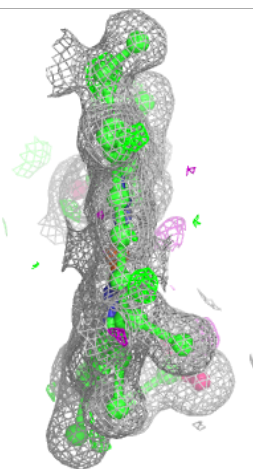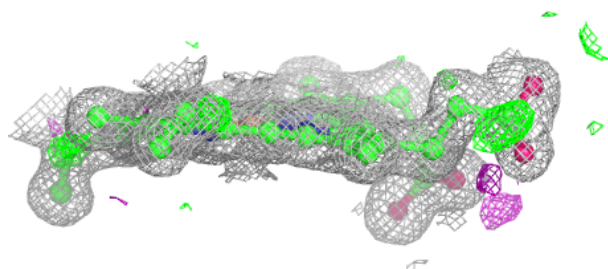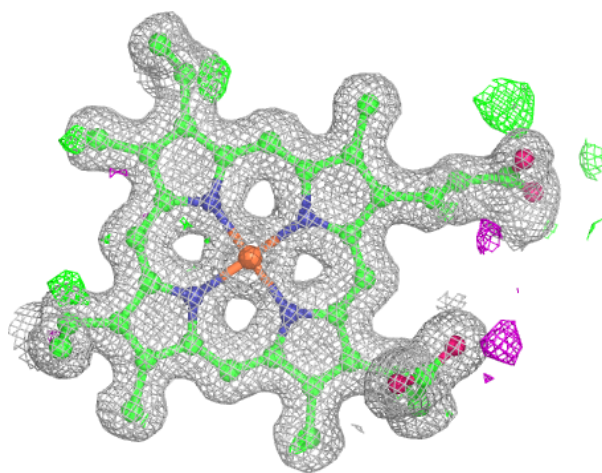
Electron density around HEC B 1005 (B):

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
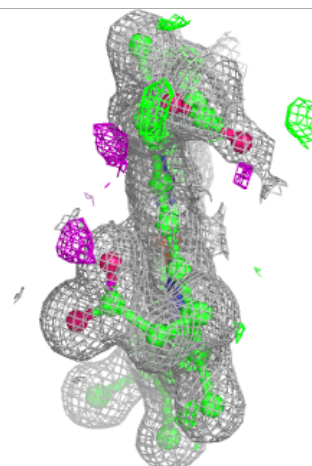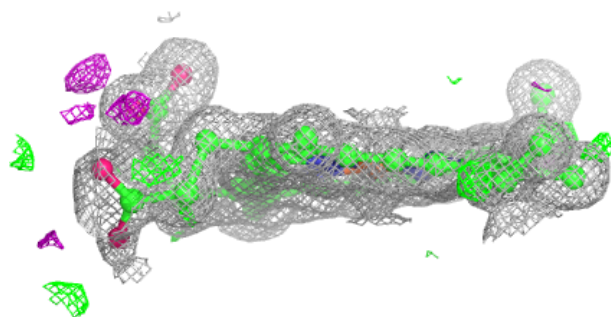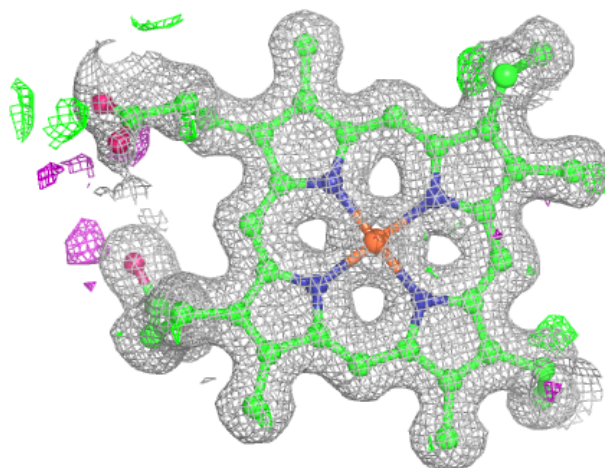
Electron density around HEC B 1006:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
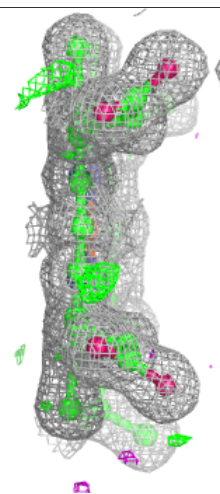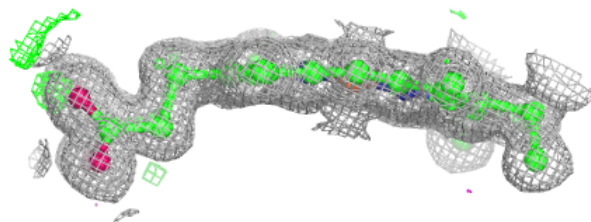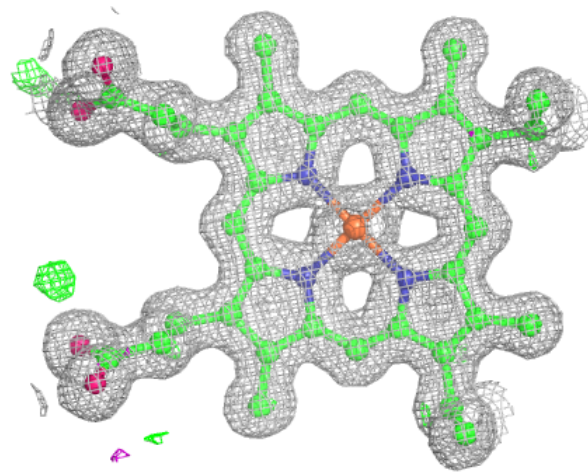
Electron density around HEC B 1007 (A):

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
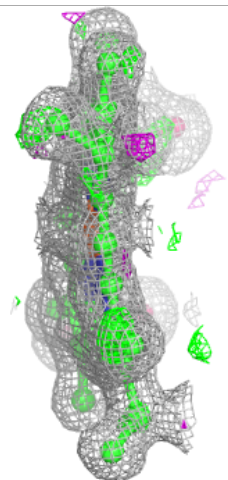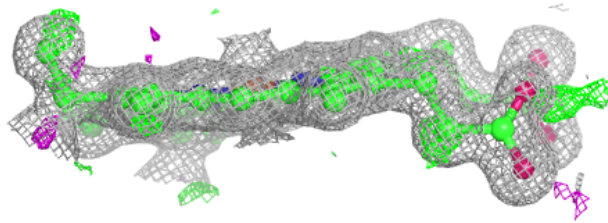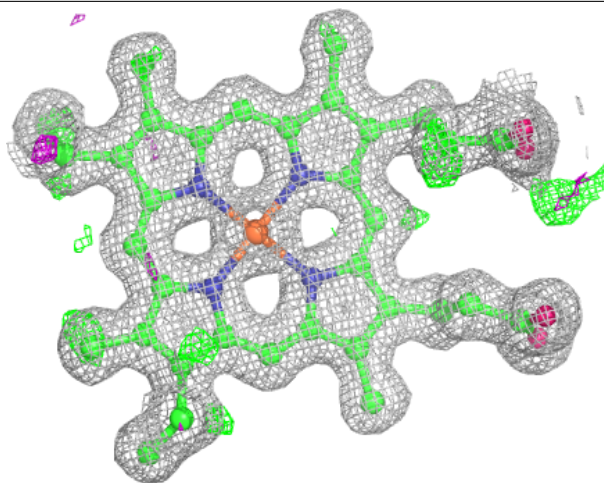
Electron density around HEC B 1007 (B):

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
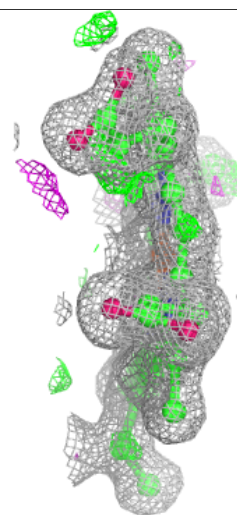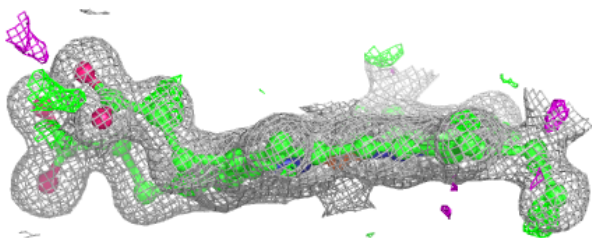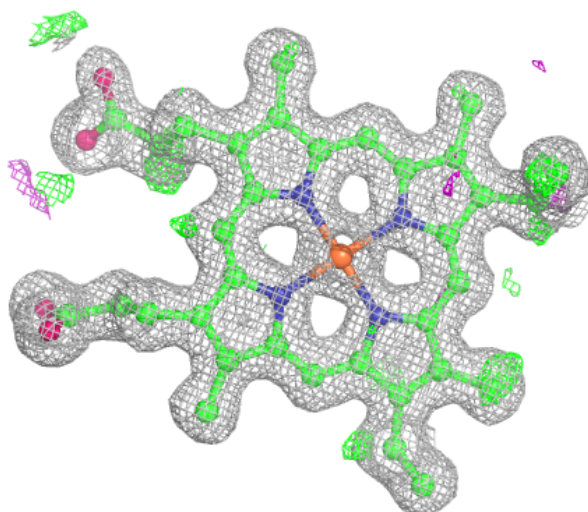
Electron density around HEC A 1005 (A):

$2mF_o$-DF_c (at 0.7 rmsd) in gray
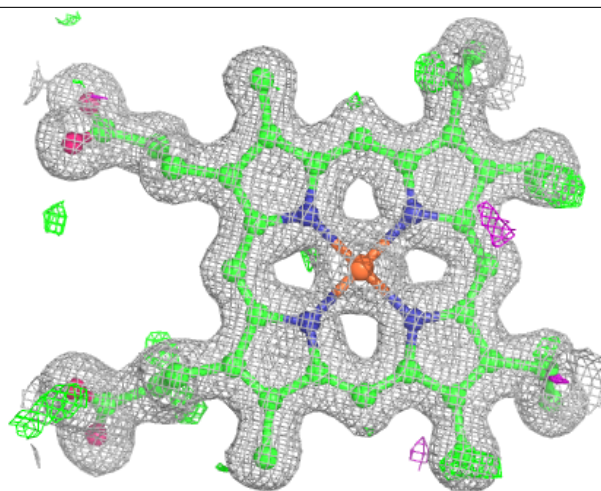mF_o-DF_c (at 3 rmsd) in purple (negative)
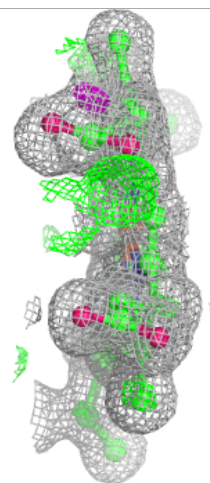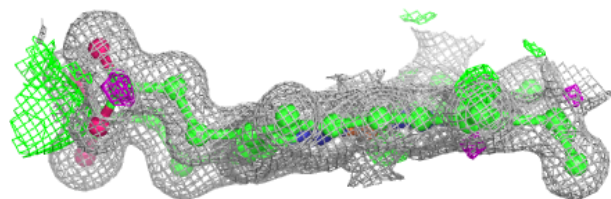and green (positive)
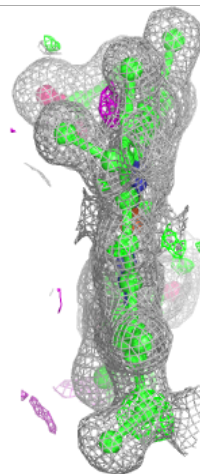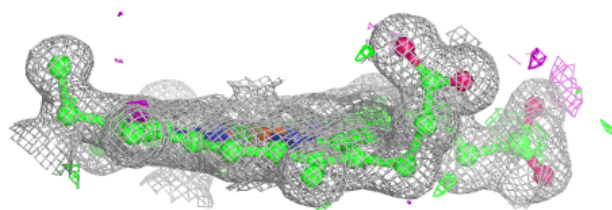
Electron density around HEC B 1002:

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

Electron density around HEC B 1003:

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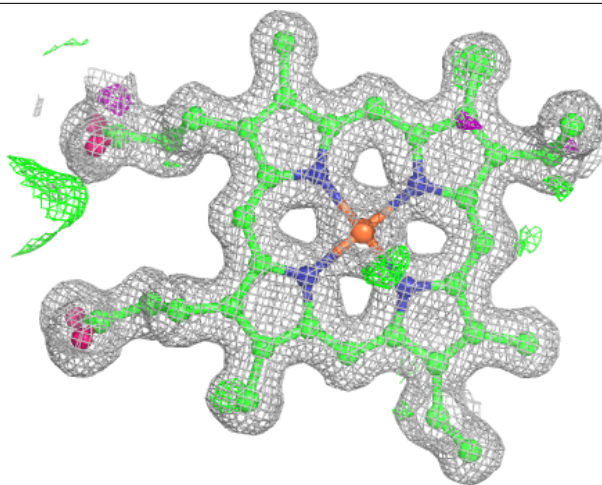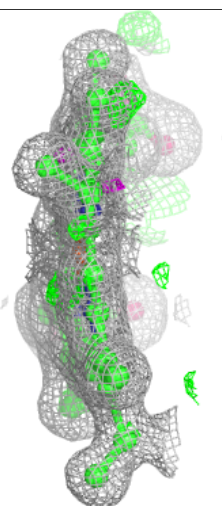and green (positive)

Electron density around HEC B 1001:

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

Electron density around HEC A 1005 (B):

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

Electron density around HEC A 1006:

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

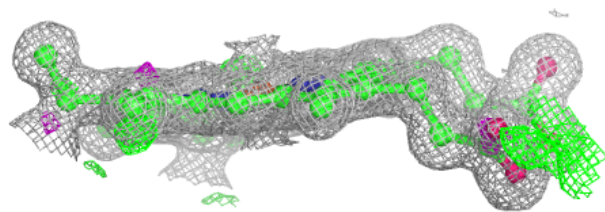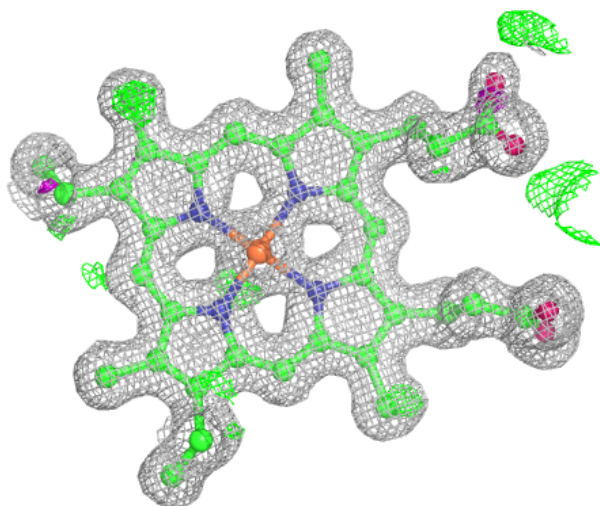**Electron density around HEC A 1007 (A):**

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

Electron density around HEC A 1007 (B):
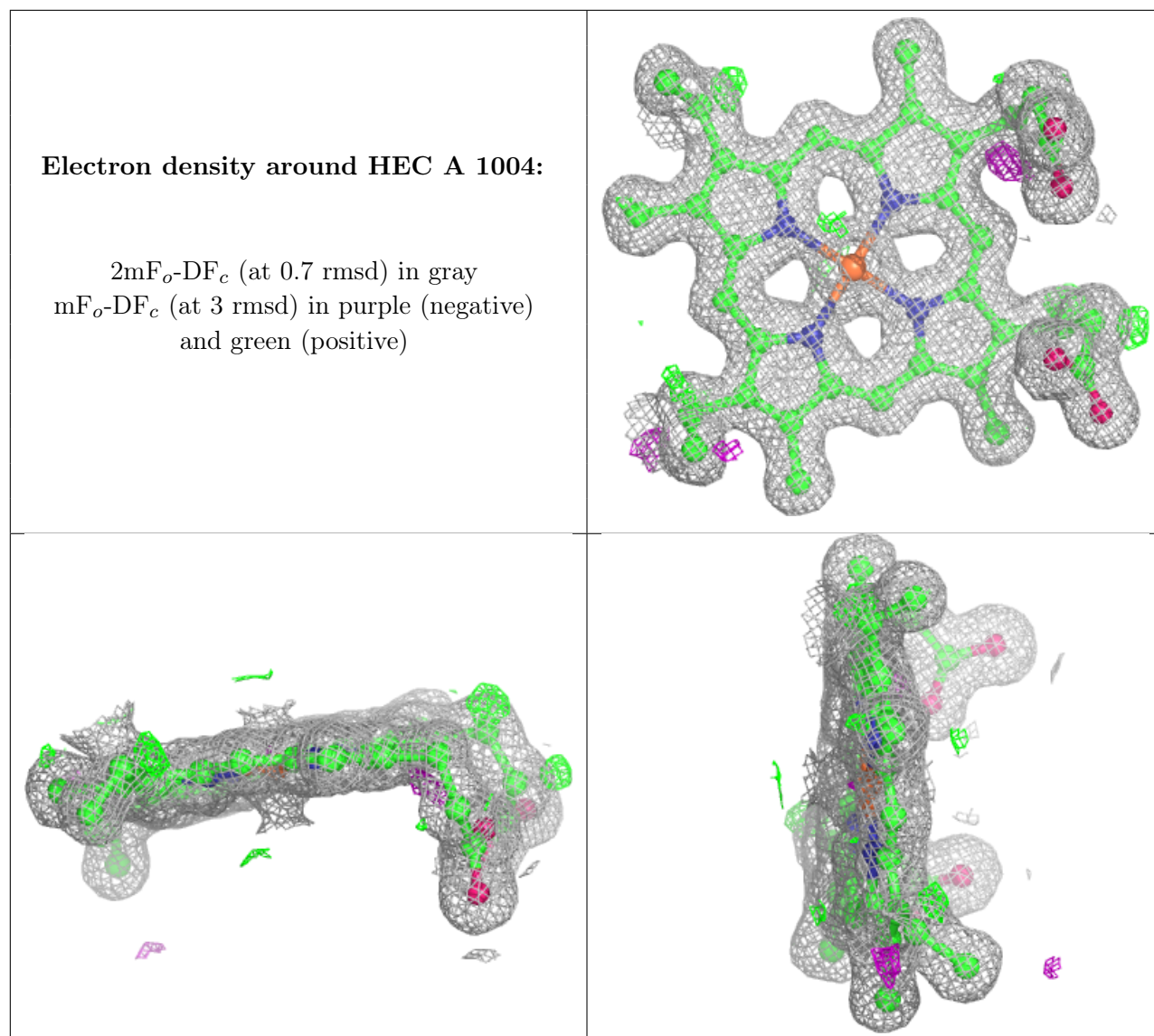
$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around HEC A 1004:

$2mF_o$-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.