Full wwPDB X-ray Structure Validation Report ⓘ

Sep 17, 2023 – 05:40 AM EDT

PDB ID	:	4WNU
Title	:	Human Cytochrome P450 2D6 Quinidine Complex
Authors	:	Wang, A.; Stout, C.D.; Johnson, E.F.
Deposited on	:	2014-10-14
Resolution	:	2.26 Å(reported)

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

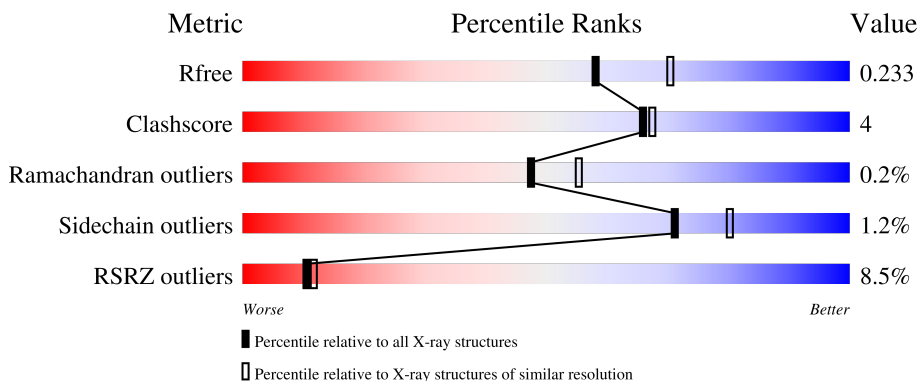|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

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 2.26 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		0.233
Clashscore		4
Ramachandran outliers		0.2%
Sidechain outliers		1.2%
RSRZ outliers		8.5%

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	1377 (2.26-2.26)
Clashscore	141614	1487 (2.26-2.26)
Ramachandran outliers	138981	1449 (2.26-2.26)
Sidechain outliers	138945	1450 (2.26-2.26)
RSRZ outliers	127900	1356 (2.26-2.26)

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	479	6% / 86% 8% 6%
1	B	479	9% / 85% 9% 5%
1	C	479	7% / 86% 8% 6%
1	D	479	9% / 81% 13% 6%

2   Entry composition ⓘ

There are 7 unique types of molecules in this entry. The entry contains 15307 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 2D6.

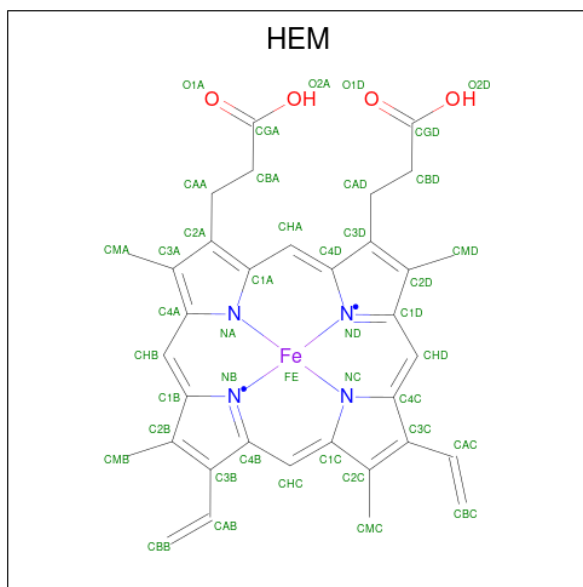| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	449	Total	C	N	O	S	0	0	0
			3553	2276	630	633	14			
1	B	453	Total	C	N	O	S	0	0	0
			3591	2302	637	638	14			
1	C	452	Total	C	N	O	S	0	0	0
			3575	2290	635	636	14			
1	D	450	Total	C	N	O	S	0	0	0
			3570	2288	633	635	14			

There are 60 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	23	MET	-	initiating methionine	UNP P10635
A	24	ALA	-	expression tag	UNP P10635
A	25	LYS	-	expression tag	UNP P10635
A	26	LYS	-	expression tag	UNP P10635
A	27	THR	-	expression tag	UNP P10635
A	28	SER	-	expression tag	UNP P10635
A	29	SER	-	expression tag	UNP P10635
A	30	LYS	-	expression tag	UNP P10635
A	31	GLY	-	expression tag	UNP P10635
A	32	LYS	-	expression tag	UNP P10635
A	33	LEU	-	expression tag	UNP P10635
A	498	HIS	-	expression tag	UNP P10635
A	499	HIS	-	expression tag	UNP P10635
A	500	HIS	-	expression tag	UNP P10635
A	501	HIS	-	expression tag	UNP P10635
B	23	MET	-	initiating methionine	UNP P10635
B	24	ALA	-	expression tag	UNP P10635
B	25	LYS	-	expression tag	UNP P10635
B	26	LYS	-	expression tag	UNP P10635
B	27	THR	-	expression tag	UNP P10635
B	28	SER	-	expression tag	UNP P10635

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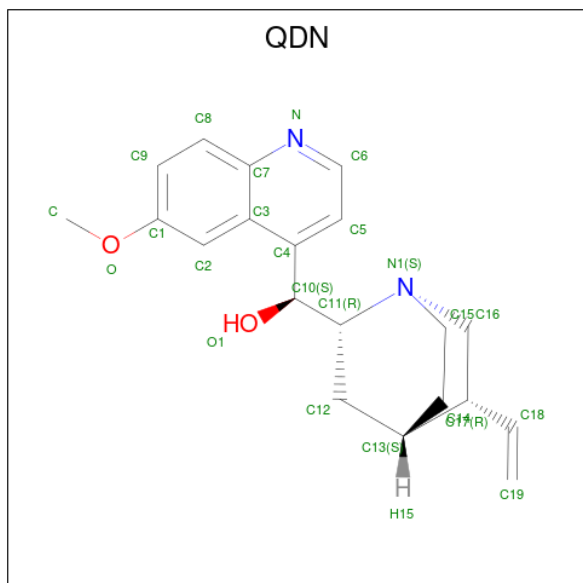
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Chain	Residue	Modelled	Actual	Comment	Reference
B	29	SER	-	expression tag	UNP P10635
B	30	LYS	-	expression tag	UNP P10635
B	31	GLY	-	expression tag	UNP P10635
B	32	LYS	-	expression tag	UNP P10635
B	33	LEU	-	expression tag	UNP P10635
B	498	HIS	-	expression tag	UNP P10635
B	499	HIS	-	expression tag	UNP P10635
B	500	HIS	-	expression tag	UNP P10635
B	501	HIS	-	expression tag	UNP P10635
C	23	MET	-	initiating methionine	UNP P10635
C	24	ALA	-	expression tag	UNP P10635
C	25	LYS	-	expression tag	UNP P10635
C	26	LYS	-	expression tag	UNP P10635
C	27	THR	-	expression tag	UNP P10635
C	28	SER	-	expression tag	UNP P10635
C	29	SER	-	expression tag	UNP P10635
C	30	LYS	-	expression tag	UNP P10635
C	31	GLY	-	expression tag	UNP P10635
C	32	LYS	-	expression tag	UNP P10635
C	33	LEU	-	expression tag	UNP P10635
C	498	HIS	-	expression tag	UNP P10635
C	499	HIS	-	expression tag	UNP P10635
C	500	HIS	-	expression tag	UNP P10635
C	501	HIS	-	expression tag	UNP P10635
D	23	MET	-	initiating methionine	UNP P10635
D	24	ALA	-	expression tag	UNP P10635
D	25	LYS	-	expression tag	UNP P10635
D	26	LYS	-	expression tag	UNP P10635
D	27	THR	-	expression tag	UNP P10635
D	28	SER	-	expression tag	UNP P10635
D	29	SER	-	expression tag	UNP P10635
D	30	LYS	-	expression tag	UNP P10635
D	31	GLY	-	expression tag	UNP P10635
D	32	LYS	-	expression tag	UNP P10635
D	33	LEU	-	expression tag	UNP P10635
D	498	HIS	-	expression tag	UNP P10635
D	499	HIS	-	expression tag	UNP P10635
D	500	HIS	-	expression tag	UNP P10635
D	501	HIS	-	expression tag	UNP P10635

- Molecule 2 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$).
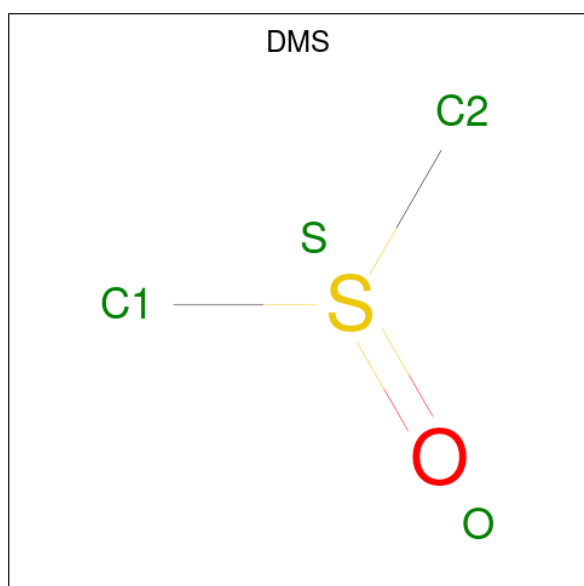
HEM

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		

- Molecule 3 is Quinidine (three-letter code: QDN) (formula: $C_{20}H_{24}N_2O_2$).

QDN

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total 24	C 20	N 2	O 2	0	0
3	B	1	Total 24	C 20	N 2	O 2	0	0
3	C	1	Total 24	C 20	N 2	O 2	0	0
3	D	1	Total 24	C 20	N 2	O 2	0	0

- Molecule 4 is DIMETHYL SULFOXIDE (three-letter code: DMS) (formula: C_2H_6OS).

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

- Molecule 5 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	2	Total 2	Zn 2	0	0
5	B	1	Total 1	Zn 1	0	0

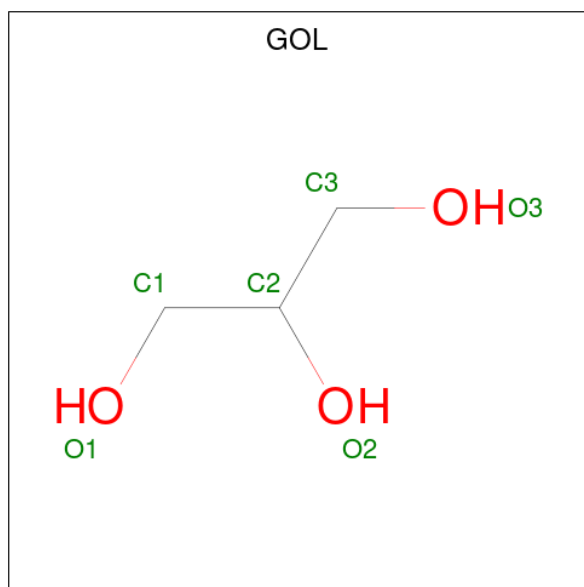*Continued on next page...*

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	C	1	Total 1	Zn 1	0	0
5	D	1	Total 1	Zn 1	0	0

- Molecule 6 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).

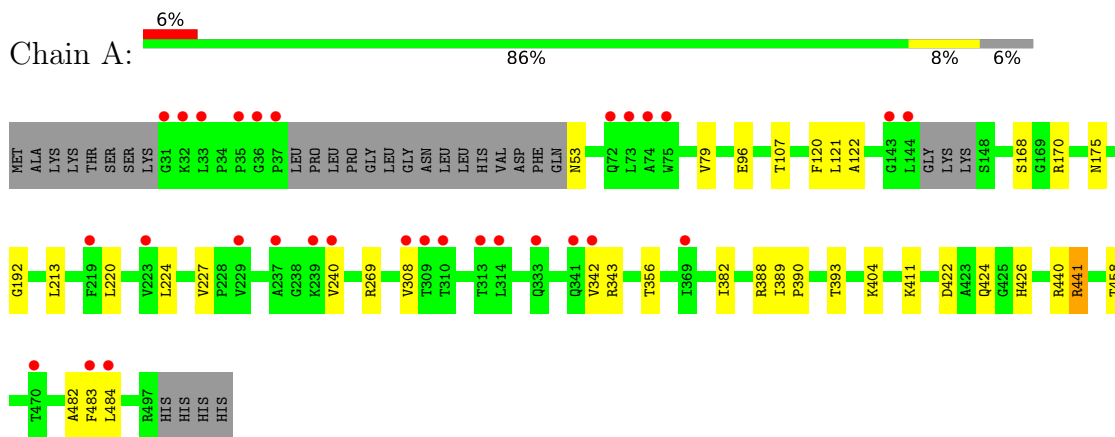| Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total 6	C 3	O 3	0	0
6	A	1	Total 6	C 3	O 3	0	0
6	A	1	Total 6	C 3	O 3	0	0
6	A	1	Total 6	C 3	O 3	0	0
6	B	1	Total 6	C 3	O 3	0	0
6	C	1	Total 6	C 3	O 3	0	0
6	C	1	Total 6	C 3	O 3	0	0
6	D	1	Total 6	C 3	O 3	0	0
6	D	1	Total 6	C 3	O 3	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	D	1	Total 6	C 3	O 3	0	0

- Molecule 7 is water.

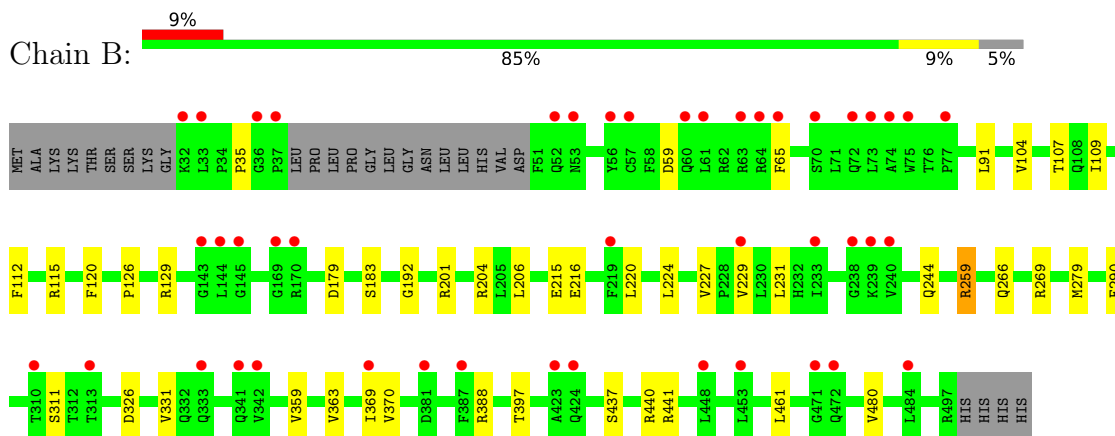| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	201	Total 201	O 201	0	0
7	B	174	Total 174	O 174	0	0
7	C	186	Total 186	O 186	0	0
7	D	108	Total 108	O 108	0	0

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.
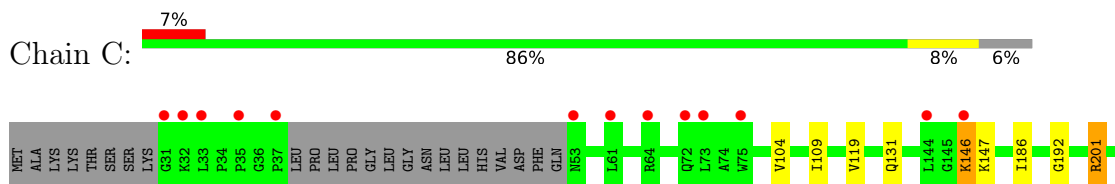
- Molecule 1: Cytochrome P450 2D6

Chain A:
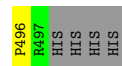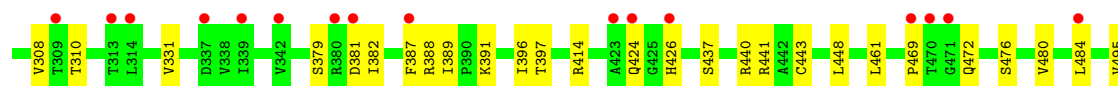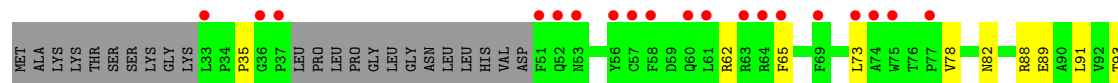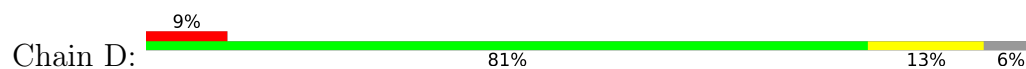

- Molecule 1: Cytochrome P450 2D6

Chain B:

- Molecule 1: Cytochrome P450 2D6

Chain C:

R204 L213 E216 S217 G218 F219 L220 R221 E222 V223 L224 V227 P228 V229 L230 L231 H232 I233 P234 A235 L236 A237 V240 E253 R269 D292 L302 F303 T309 T313 W316 V342 V359 V363 I369 V370 R380 F387 E406 P412

S437 R441 A482 F483 L484 P487 S488 L492 R497 HIS HIS HIS HIS

• Molecule 1: Cytochrome P450 2D6

Chain D:

MET ALA LYS LYS THR SER SER LYS GLY LYS L33 P34 P35 G36 P37 LEU PRO LEU PRO GLY LEU GLY ASN LEU LEU HIS VAL ASP F51 Q52 N53 Y56 C57 F58 D59 Q60 L61 R62 R63 R64 F65 F69 L73 A74 W75 T76 P77 V78 N82 R88 E89 A90 L91 V92 T93

E96 V104 T107 F112 A122 R140 G143 LEU GLY K146 L149 W152 H167 R170 V182 I186 E196 D199 P200 L213 G218 F219 L220 R221 L224 N225 A226 V227 P228 V229 H232 I233 P234 A235 L236 K239 R269 F303

V308 T309 T310 T313 L314 V331 D337 V338 I339 V342 S379 R380 D381 I382 F387 D388 I389 P390 K391 I396 T397 R414 A423 Q424 G425 H426 S437 R440 R441 A442 C443 L448 L461 P469 T470 G471 Q472 S476 V480 L484 V495

P496 R497 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	57.34Å　　192.11Å　　250.75Å 90.00°　　90.00°　　90.00°	Depositor
Resolution (Å)	38.04　–　2.26 38.32　–　2.26	Depositor EDS
% Data completeness (in resolution range)	98.4 (38.04-2.26) 98.4 (38.32-2.26)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.98 (at 2.27Å)	Xtriage
Refinement program	PHENIX	Depositor
R, R_{free}	0.190　,　0.232 0.192　,　0.233	Depositor DCC
R_{free} test set	6492 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å^2)	35.6	Xtriage
Anisotropy	0.421	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 51.6	EDS
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	15307	wwPDB-VP
Average B, all atoms (Å^2)	49.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 21.48 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 6.9501e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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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: QDN, DMS, ZN, GOL, HEM

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	0.45	0/3647	0.58	2/4958 (0.0%)
1	B	0.41	0/3687	0.52	1/5011 (0.0%)
1	C	0.44	0/3670	0.55	1/4988 (0.0%)
1	D	0.38	0/3665	0.49	0/4981
All	All	0.42	0/14669	0.54	4/19938 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	441	ARG	NE-CZ-NH2	-9.21	115.69	120.30
1	C	441	ARG	NE-CZ-NH2	-6.73	116.94	120.30
1	B	441	ARG	NE-CZ-NH2	-6.17	117.22	120.30
1	A	422	ASP	CB-CG-OD1	5.23	123.01	118.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3553	0	3530	21	0
1	B	3591	0	3574	27	0
1	C	3575	0	3560	28	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	D	3570	0	3546	39	0
2	A	43	0	30	0	0
2	B	43	0	30	1	0
2	C	43	0	30	2	0
2	D	43	0	30	3	0
3	A	24	0	24	2	0
3	B	24	0	24	1	0
3	C	24	0	24	0	0
3	D	24	0	24	0	0
4	A	4	0	6	0	0
4	B	4	0	6	0	0
4	C	4	0	6	0	0
4	D	4	0	6	0	0
5	A	2	0	0	0	0
5	B	1	0	0	0	0
5	C	1	0	0	0	0
5	D	1	0	0	0	0
6	A	24	0	32	3	0
6	B	6	0	8	3	0
6	C	12	0	16	3	0
6	D	18	0	24	4	0
7	A	201	0	0	2	0
7	B	174	0	0	4	0
7	C	186	0	0	2	0
7	D	108	0	0	3	0
All	All	15307	0	14530	117	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 (117) 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:104:VAL:HG11	6:B:605:GOL:H11	1.60	0.83
1:D:140:ARG:NH1	7:D:780:HOH:O	2.23	0.71
1:C:224:LEU:HD21	1:C:236:LEU:HB3	1.70	0.71
1:C:369:ILE:HG13	1:C:370:VAL:HG23	1.78	0.66
1:C:146:LYS:HD2	1:C:147:LYS:HB2	1.79	0.65
1:B:369:ILE:HG13	1:B:370:VAL:HG23	1.78	0.65
1:B:91:LEU:HD11	1:B:397:THR:HG21	1.78	0.65
1:D:388:ARG:NH2	7:D:763:HOH:O	2.24	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:121:LEU:HD21	6:A:607:GOL:H32	1.82	0.62
1:C:224:LEU:HD23	1:C:231:LEU:HD23	1.81	0.61
1:D:122:ALA:O	1:D:441:ARG:NH2	2.18	0.60
1:C:192:GLY:O	1:C:269:ARG:NH2	2.35	0.58
1:B:388:ARG:NH1	7:B:850:HOH:O	2.33	0.58
1:D:186:ILE:HG21	1:D:303:PHE:HA	1.87	0.57
1:A:79:VAL:HG23	1:A:393:THR:HG21	1.86	0.57
1:A:175:ASN:HD22	1:A:175:ASN:H	1.51	0.56
1:C:119:VAL:HG22	1:C:131:GLN:HB3	1.86	0.56
1:C:221:ARG:HG3	1:C:222:GLU:H	1.71	0.56
1:C:221:ARG:HG3	1:C:222:GLU:N	2.21	0.56
1:D:227:VAL:HG12	1:D:229:VAL:HG12	1.88	0.56
1:A:175:ASN:OD1	6:A:609:GOL:H11	2.05	0.54
1:C:227:VAL:HG12	1:C:229:VAL:HG12	1.89	0.54
1:D:381:ASP:OD1	1:D:391:LYS:N	2.38	0.54
1:A:96:GLU:OE1	1:A:440:ARG:NH1	2.41	0.54
1:D:73:LEU:HD13	6:D:607:GOL:H2	1.88	0.54
1:B:115:ARG:HH12	1:B:126:PRO:HB2	1.72	0.53
1:A:175:ASN:H	1:A:175:ASN:ND2	2.07	0.53
1:B:440:ARG:NE	7:B:823:HOH:O	2.40	0.53
1:D:221:ARG:NH2	6:D:605:GOL:H11	2.23	0.53
1:C:224:LEU:HD22	1:C:240:VAL:HG21	1.91	0.53
2:D:601:HEM:HMB2	2:D:601:HEM:HBB2	1.90	0.52
1:B:227:VAL:HG12	1:B:229:VAL:HG12	1.91	0.52
1:C:146:LYS:CE	1:C:269:ARG:HD2	2.40	0.51
1:B:437:SER:HB3	2:B:601:HEM:HBA1	1.91	0.51
1:C:406:GLU:HA	1:C:412:PRO:HG3	1.92	0.51
1:A:192:GLY:O	1:A:269:ARG:NH2	2.42	0.51
1:C:104:VAL:HG11	6:C:605:GOL:H11	1.92	0.51
1:A:388:ARG:NH2	1:A:390:PRO:HG3	2.27	0.50
1:C:359:VAL:O	1:C:363:VAL:HG23	2.12	0.49
1:C:204:ARG:NE	7:C:835:HOH:O	2.44	0.49
1:D:152:TRP:HZ2	1:D:269:ARG:HH22	1.60	0.49
1:D:224:LEU:HD21	1:D:236:LEU:HB3	1.93	0.49
1:D:104:VAL:HG11	6:D:605:GOL:H12	1.95	0.49
1:C:316:TRP:CD1	1:C:487:PRO:HD3	2.47	0.49
1:D:382:ILE:HG13	1:D:389:ILE:HB	1.95	0.49
1:B:109:ILE:HD11	1:B:231:LEU:HD22	1.94	0.49
1:C:186:ILE:HG21	1:C:303:PHE:HA	1.95	0.49
1:C:216:GLU:OE2	6:C:605:GOL:O1	2.28	0.48
1:D:91:LEU:HD11	1:D:397:THR:HG21	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:88:ARG:NH1	7:D:753:HOH:O	2.46	0.48
1:D:149:LEU:HD13	1:D:448:LEU:HD13	1.96	0.48
1:B:331:VAL:HG11	1:B:461:LEU:HD12	1.95	0.48
1:C:201:ARG:HD2	1:C:253:GLU:OE2	2.15	0.47
1:D:167:HIS:O	1:D:170:ARG:HB2	2.15	0.47
2:C:601:HEM:HMB2	2:C:601:HEM:HBB2	1.95	0.47
1:B:129:ARG:HD2	7:B:701:HOH:O	2.14	0.47
1:A:213:LEU:HD21	1:A:308:VAL:HG21	1.96	0.47
1:C:146:LYS:HE2	1:C:269:ARG:HD2	1.96	0.46
1:A:122:ALA:O	1:A:441:ARG:NH2	2.31	0.46
1:B:35:PRO:HB2	1:B:65:PHE:HD2	1.80	0.46
1:B:215:GLU:OE1	1:B:244:GLN:HG3	2.15	0.46
1:D:443:CYS:HB2	2:D:601:HEM:NA	2.29	0.46
1:C:292:ASP:OD1	7:C:826:HOH:O	2.21	0.46
1:B:216:GLU:OE2	6:B:605:GOL:H32	2.16	0.45
1:A:342:VAL:HG13	1:A:343:ARG:H	1.81	0.45
1:C:213:LEU:HD12	1:C:213:LEU:HA	1.87	0.45
1:A:213:LEU:HD12	3:A:602:QDN:H19	1.98	0.45
1:B:216:GLU:OE1	6:B:605:GOL:O1	2.33	0.45
1:D:107:THR:HB	1:D:112:PHE:CD2	2.52	0.45
1:D:107:THR:HB	1:D:112:PHE:CG	2.52	0.45
1:D:221:ARG:HH21	6:D:605:GOL:H11	1.81	0.44
1:D:469:PRO:HG2	1:D:472:GLN:OE1	2.17	0.44
1:D:424:GLN:HB2	1:D:426:HIS:ND1	2.33	0.44
1:A:424:GLN:HG2	1:A:426:HIS:CE1	2.53	0.44
1:B:183:SER:OG	1:B:206:LEU:HD21	2.17	0.44
1:B:204:ARG:NE	7:B:806:HOH:O	2.40	0.44
1:D:308:VAL:HG22	1:D:484:LEU:HD22	2.00	0.44
1:D:96:GLU:OE1	1:D:440:ARG:NH1	2.50	0.44
1:D:221:ARG:O	1:D:225:ASN:HB2	2.18	0.43
1:B:326:ASP:N	1:B:326:ASP:OD1	2.50	0.43
1:A:356:THR:HG21	1:A:458:THR:HG22	2.01	0.43
1:B:179:ASP:OD1	1:B:311:SER:OG	2.29	0.43
1:D:35:PRO:HD3	1:D:387:PHE:CE1	2.53	0.43
1:C:369:ILE:O	1:C:484:LEU:HB2	2.18	0.43
1:B:359:VAL:O	1:B:363:VAL:HG23	2.19	0.43
1:A:483:PHE:CD2	1:A:484:LEU:HD13	2.53	0.43
1:D:89:GLU:O	1:D:93:THR:HB	2.19	0.43
1:A:220:LEU:O	1:A:224:LEU:HG	2.18	0.43
1:B:279:MET:HG3	1:B:290:PHE:O	2.19	0.43
1:D:213:LEU:HD11	1:D:308:VAL:HG11	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:107:THR:HB	1:B:112:PHE:CG	2.54	0.43
1:D:35:PRO:HB2	1:D:65:PHE:HD2	1.84	0.42
1:C:221:ARG:NH1	6:C:605:GOL:O2	2.46	0.42
1:D:331:VAL:HG11	1:D:461:LEU:HD12	2.01	0.42
1:A:440:ARG:HD2	7:A:754:HOH:O	2.19	0.42
1:A:404:LYS:NZ	7:A:834:HOH:O	2.52	0.42
1:C:227:VAL:HB	1:C:230:LEU:HD13	2.02	0.42
1:D:495:VAL:HA	1:D:496:PRO:HD3	1.77	0.42
1:D:104:VAL:HG13	1:D:225:ASN:HD21	1.83	0.42
1:D:437:SER:HB3	2:D:601:HEM:HBA1	2.00	0.42
1:A:120:PHE:CE2	3:A:602:QDN:H11	2.55	0.41
1:B:220:LEU:O	1:B:224:LEU:HG	2.21	0.41
1:D:149:LEU:HD23	1:D:149:LEU:HA	1.86	0.41
1:B:35:PRO:HB2	1:B:65:PHE:CD2	2.56	0.41
1:B:192:GLY:O	1:B:269:ARG:NH2	2.54	0.41
1:D:199:ASP:HA	1:D:200:PRO:HD3	1.91	0.41
1:A:107:THR:HG22	6:A:606:GOL:H32	2.02	0.41
1:B:259:ARG:HE	1:B:259:ARG:HB2	1.76	0.41
1:C:109:ILE:HD11	1:C:231:LEU:HD22	2.02	0.41
1:C:222:GLU:H	1:C:222:GLU:HG2	1.62	0.41
1:C:437:SER:HB3	2:C:601:HEM:HBA1	2.03	0.41
1:D:182:VAL:HG11	1:D:310:THR:HB	2.03	0.41
1:D:78:VAL:HG11	1:D:396:ILE:HD12	2.03	0.41
1:A:382:ILE:HG12	1:A:389:ILE:HB	2.02	0.40
1:B:120:PHE:CE2	3:B:602:QDN:H11	2.56	0.40
1:D:62:ARG:HE	1:D:82:ASN:HB3	1.86	0.40
1:D:379:SER:O	1:D:391:LYS:HG3	2.21	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	443/479 (92%)	430 (97%)	11 (2%)	2 (0%)	29	29
1	B	449/479 (94%)	436 (97%)	13 (3%)	0	100	100
1	C	448/479 (94%)	433 (97%)	14 (3%)	1 (0%)	47	55
1	D	444/479 (93%)	429 (97%)	15 (3%)	0	100	100
All	All	1784/1916 (93%)	1728 (97%)	53 (3%)	3 (0%)	47	55

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	168	SER
1	C	482	ALA
1	A	482	ALA

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	383/409 (94%)	378 (99%)	5 (1%)	69	79
1	B	387/409 (95%)	382 (99%)	5 (1%)	69	79
1	C	385/409 (94%)	381 (99%)	4 (1%)	76	84
1	D	385/409 (94%)	381 (99%)	4 (1%)	76	84
All	All	1540/1636 (94%)	1522 (99%)	18 (1%)	71	80

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	53	ASN
1	A	170	ARG
1	A	227	VAL
1	A	240	VAL
1	A	411	LYS
1	B	59	ASP
1	B	201	ARG
1	B	259	ARG

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Mol	Chain	Res	Type
1	B	266	GLN
1	B	480	VAL
1	C	146	LYS
1	C	201	ARG
1	C	488	SER
1	C	492	LEU
1	D	196	GLU
1	D	414	ARG
1	D	476	SER
1	D	480	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	463	HIS
1	C	53	ASN
1	C	266	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 27 ligands modelled in this entry, 5 are monoatomic - leaving 22 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	#$|Z| > 2$
6	GOL	A	609	-	5,5,5	0.40	0	5,5,5	0.66	0
2	HEM	A	601	1	41,50,50	1.49	5 (12%)	45,82,82	1.86	13 (28%)
2	HEM	B	601	1	41,50,50	1.43	5 (12%)	45,82,82	1.75	9 (20%)
3	QDN	D	602	-	27,27,27	0.19	0	39,39,39	0.28	0
6	GOL	A	606	-	5,5,5	0.32	0	5,5,5	0.32	0
6	GOL	A	607	-	5,5,5	0.43	0	5,5,5	0.58	0
3	QDN	C	602	-	27,27,27	0.16	0	39,39,39	0.36	0
6	GOL	C	605	-	5,5,5	0.50	0	5,5,5	0.56	0
6	GOL	D	605	-	5,5,5	0.46	0	5,5,5	0.40	0
4	DMS	C	603	-	3,3,3	0.62	0	3,3,3	0.88	0
4	DMS	D	603	-	3,3,3	0.70	0	3,3,3	0.88	0
6	GOL	A	608	-	5,5,5	0.36	0	5,5,5	0.30	0
2	HEM	D	601	1	41,50,50	1.45	5 (12%)	45,82,82	1.76	11 (24%)
6	GOL	D	606	-	5,5,5	0.36	0	5,5,5	0.43	0
6	GOL	B	605	-	5,5,5	0.41	0	5,5,5	0.47	0
3	QDN	B	602	-	27,27,27	0.17	0	39,39,39	0.29	0
2	HEM	C	601	1	41,50,50	1.45	4 (9%)	45,82,82	1.64	8 (17%)
6	GOL	C	606	-	5,5,5	0.36	0	5,5,5	0.40	0
4	DMS	A	603	-	3,3,3	0.66	0	3,3,3	0.66	0
3	QDN	A	602	-	27,27,27	0.19	0	39,39,39	0.33	0
4	DMS	B	603	-	3,3,3	0.73	0	3,3,3	0.92	0
6	GOL	D	607	-	5,5,5	0.36	0	5,5,5	0.31	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
6	GOL	C	605	-	-	2/4/4/4	-
6	GOL	A	609	-	-	3/4/4/4	-
6	GOL	D	605	-	-	2/4/4/4	-
2	HEM	A	601	1	-	4/12/54/54	-
2	HEM	B	601	1	-	3/12/54/54	-
6	GOL	A	608	-	-	2/4/4/4	-
6	GOL	C	606	-	-	2/4/4/4	-
2	HEM	D	601	1	-	2/12/54/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	QDN	D	602	-	-	1/12/33/33	0/5/4/4
6	GOL	A	606	-	-	2/4/4/4	-
3	QDN	A	602	-	-	0/12/33/33	0/5/4/4
6	GOL	B	605	-	-	4/4/4/4	-
6	GOL	D	607	-	-	2/4/4/4	-
6	GOL	A	607	-	-	4/4/4/4	-
6	GOL	D	606	-	-	2/4/4/4	-
3	QDN	C	602	-	-	0/12/33/33	0/5/4/4
3	QDN	B	602	-	-	2/12/33/33	0/5/4/4
2	HEM	C	601	1	-	4/12/54/54	-

All (19) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	601	HEM	C3C-C2C	-3.93	1.34	1.40
2	D	601	HEM	C3C-CAC	3.89	1.55	1.47
2	A	601	HEM	C3C-CAC	3.85	1.55	1.47
2	C	601	HEM	C3C-C2C	-3.76	1.35	1.40
2	D	601	HEM	C3C-C2C	-3.65	1.35	1.40
2	B	601	HEM	C3C-CAC	3.64	1.55	1.47
2	A	601	HEM	FE-NB	3.58	2.14	1.96
2	A	601	HEM	C3C-C2C	-3.47	1.35	1.40
2	C	601	HEM	C3C-CAC	3.37	1.54	1.47
2	C	601	HEM	FE-ND	3.32	2.13	1.96
2	D	601	HEM	CAB-C3B	3.11	1.55	1.47
2	B	601	HEM	CAB-C3B	3.03	1.55	1.47
2	A	601	HEM	CAB-C3B	2.86	1.55	1.47
2	D	601	HEM	FE-ND	2.86	2.11	1.96
2	C	601	HEM	CAB-C3B	2.73	1.54	1.47
2	B	601	HEM	FE-ND	2.67	2.10	1.96
2	A	601	HEM	FE-ND	2.56	2.09	1.96
2	D	601	HEM	CHB-C1B	2.32	1.40	1.35
2	B	601	HEM	FE-NB	2.08	2.07	1.96

All (41) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	601	HEM	C4C-CHD-C1D	4.69	128.75	122.56
2	A	601	HEM	C1B-NB-C4B	4.56	109.79	105.07
2	B	601	HEM	C4D-ND-C1D	4.52	109.75	105.07

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	601	HEM	C4D-ND-C1D	4.47	109.69	105.07
2	D	601	HEM	C1B-NB-C4B	4.14	109.35	105.07
2	D	601	HEM	C4C-CHD-C1D	3.96	127.78	122.56
2	B	601	HEM	C1B-NB-C4B	3.89	109.09	105.07
2	D	601	HEM	C4D-ND-C1D	3.79	108.99	105.07
2	C	601	HEM	C4D-ND-C1D	3.64	108.83	105.07
2	A	601	HEM	C4C-CHD-C1D	3.59	127.30	122.56
2	C	601	HEM	C1B-NB-C4B	3.55	108.74	105.07
2	B	601	HEM	C3D-C4D-ND	-3.37	106.42	110.17
2	B	601	HEM	C4C-CHD-C1D	3.31	126.92	122.56
2	B	601	HEM	C4B-CHC-C1C	3.23	126.82	122.56
2	D	601	HEM	C3B-C2B-C1B	3.19	108.86	106.49
2	D	601	HEM	C4B-CHC-C1C	3.09	126.64	122.56
2	C	601	HEM	CMC-C2C-C3C	3.08	130.44	124.68
2	A	601	HEM	C4B-CHC-C1C	3.01	126.53	122.56
2	D	601	HEM	CAA-CBA-CGA	-2.98	105.40	113.76
2	D	601	HEM	C2B-C1B-NB	-2.83	106.49	109.84
2	A	601	HEM	C2B-C1B-NB	-2.81	106.51	109.84
2	A	601	HEM	C3D-C4D-ND	-2.72	107.14	110.17
2	A	601	HEM	CAA-CBA-CGA	-2.69	106.22	113.76
2	B	601	HEM	C2D-C1D-ND	-2.68	106.67	109.88
2	A	601	HEM	C2D-C1D-ND	-2.67	106.69	109.88
2	A	601	HEM	C3B-C2B-C1B	2.53	108.36	106.49
2	C	601	HEM	C3B-C2B-C1B	2.43	108.29	106.49
2	D	601	HEM	C2D-C1D-ND	-2.41	106.99	109.88
2	D	601	HEM	C3D-C4D-ND	-2.35	107.55	110.17
2	C	601	HEM	CAA-CBA-CGA	-2.35	107.17	113.76
2	C	601	HEM	C2B-C1B-NB	-2.35	107.06	109.84
2	B	601	HEM	CHC-C4B-NB	2.35	126.98	124.43
2	D	601	HEM	CHC-C4B-NB	2.24	126.87	124.43
2	B	601	HEM	C2B-C1B-NB	-2.17	107.26	109.84
2	B	601	HEM	CAA-CBA-CGA	-2.17	107.68	113.76
2	C	601	HEM	C4B-CHC-C1C	2.14	125.39	122.56
2	A	601	HEM	C2C-C3C-C4C	2.10	108.36	106.90
2	A	601	HEM	CBD-CAD-C3D	-2.07	106.87	112.63
2	D	601	HEM	CMC-C2C-C3C	2.06	128.53	124.68
2	A	601	HEM	O2D-CGD-CBD	2.02	120.53	114.03
2	A	601	HEM	CMC-C2C-C3C	2.00	128.42	124.68

There are no chirality outliers.

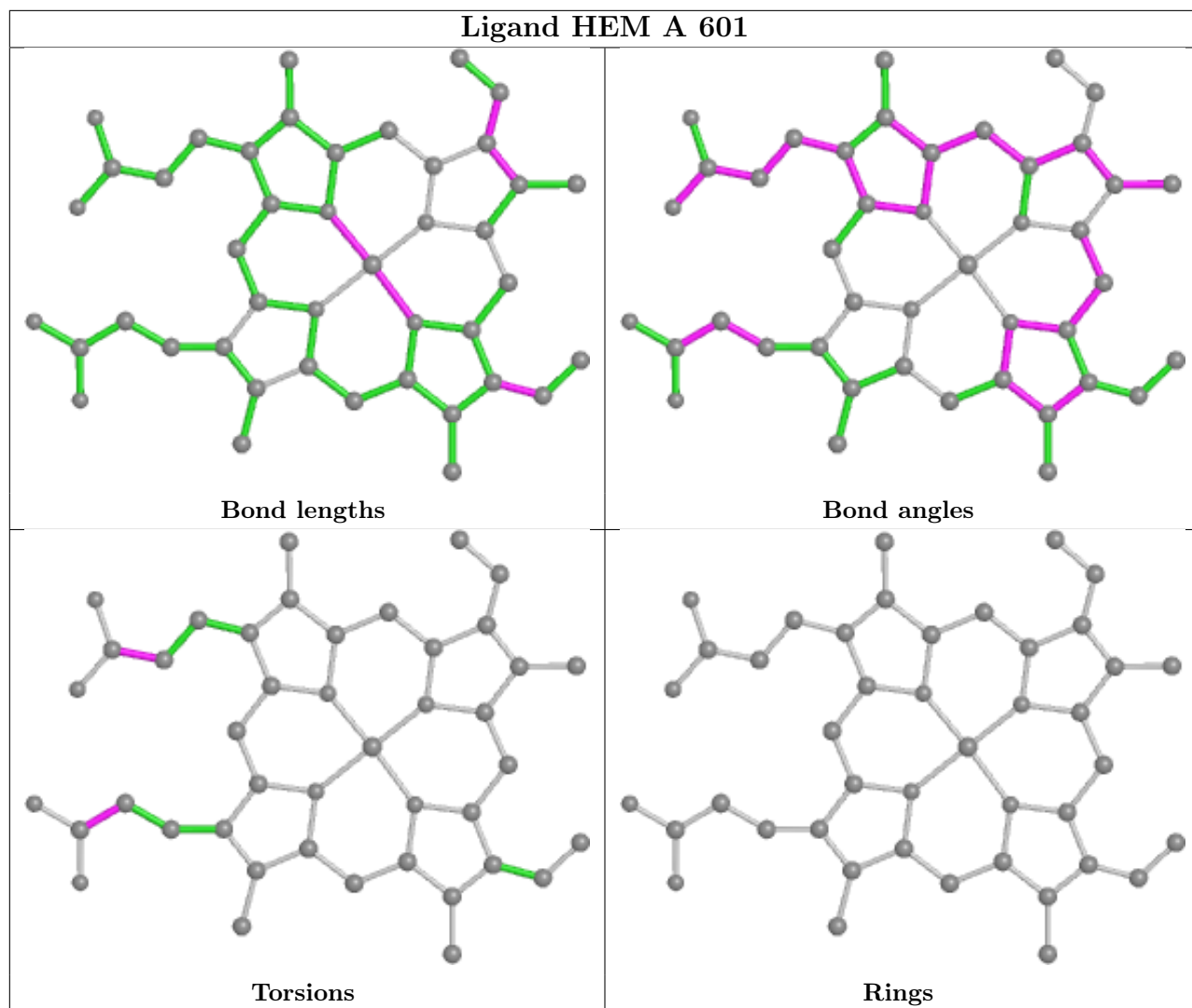All (41) torsion outliers are listed below:

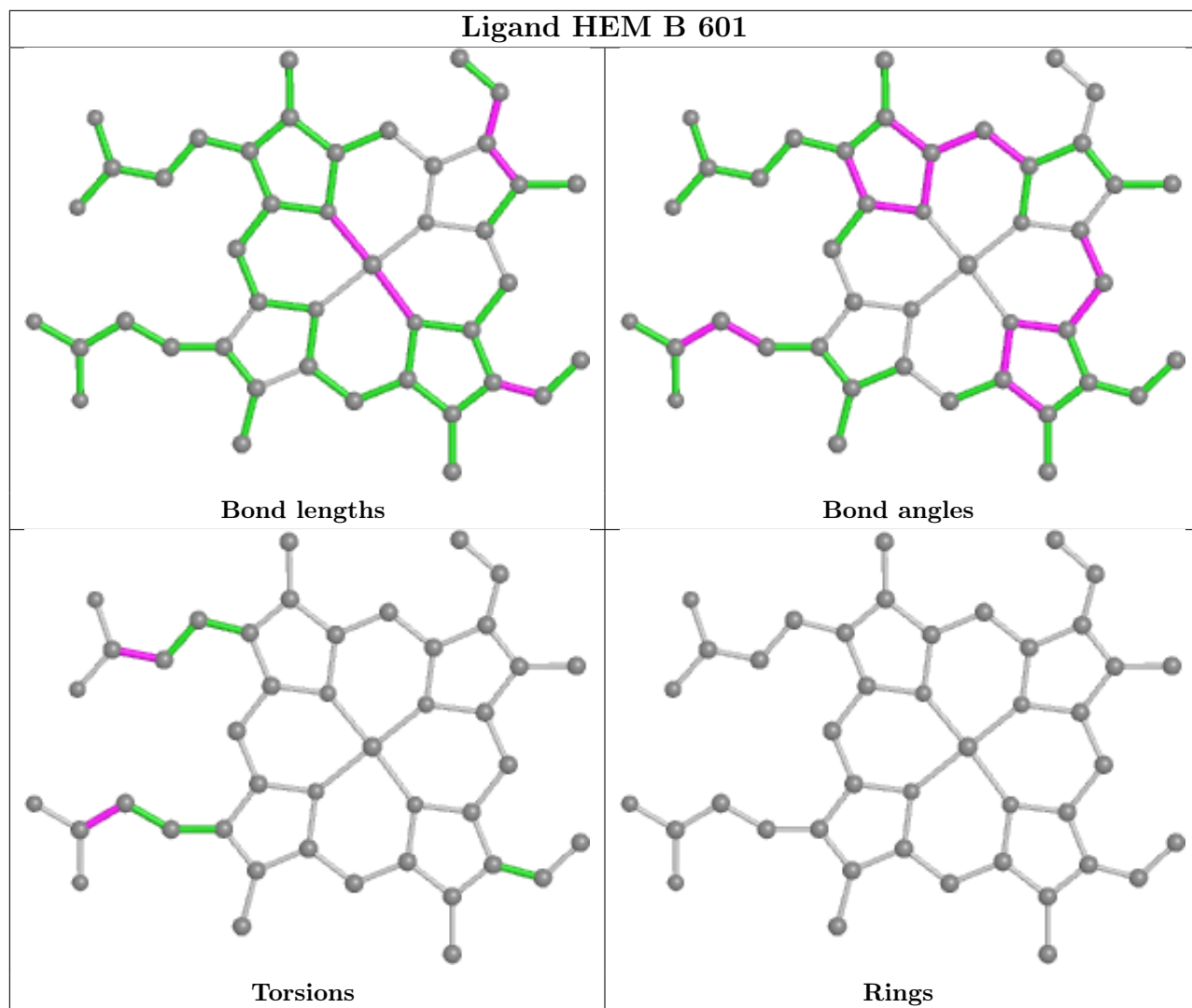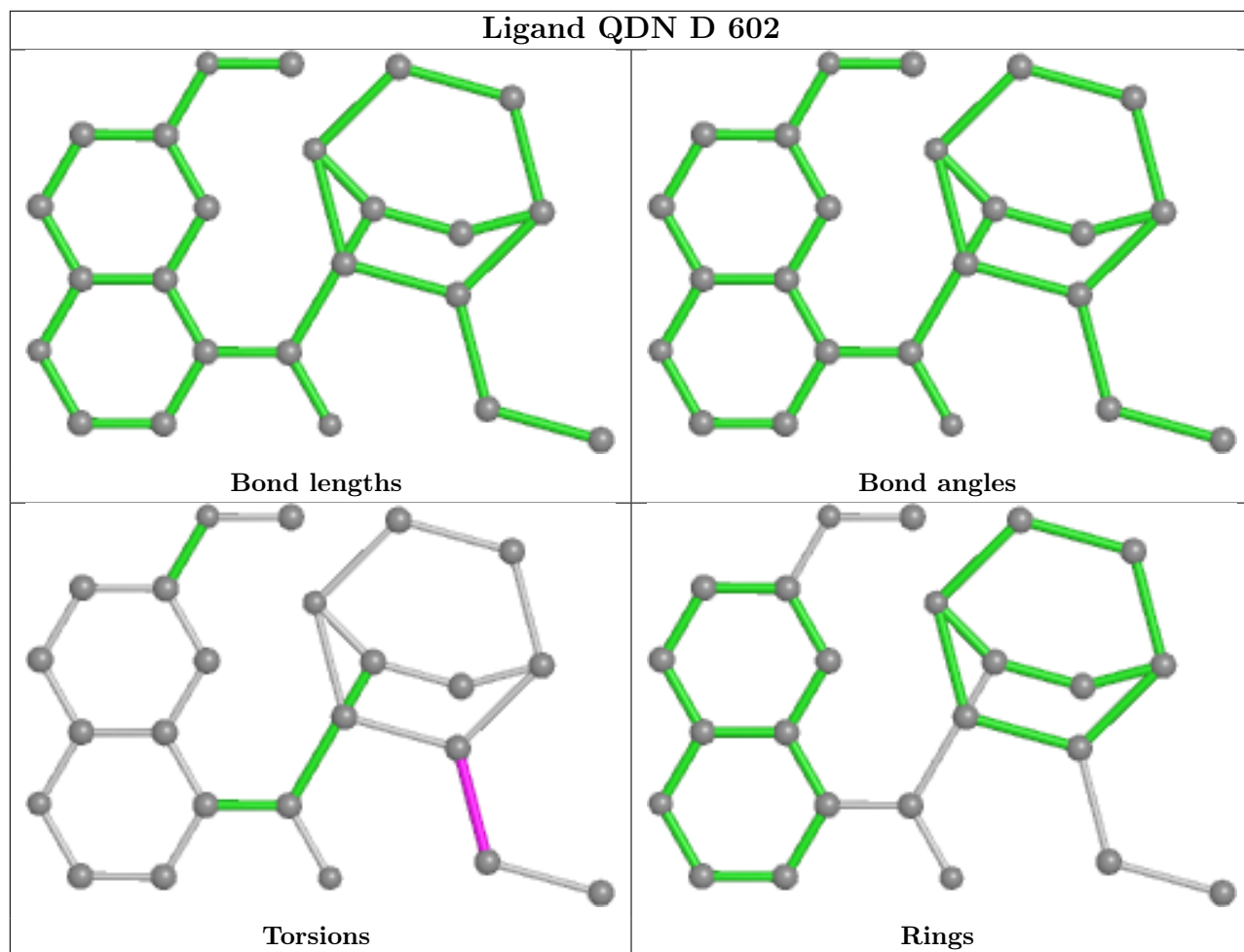| Mol	Chain	Res	Type	Atoms
6	A	607	GOL	O1-C1-C2-C3
6	A	608	GOL	O1-C1-C2-C3
6	C	605	GOL	C1-C2-C3-O3
6	C	605	GOL	O2-C2-C3-O3
6	C	606	GOL	O1-C1-C2-C3
6	D	606	GOL	O1-C1-C2-C3
6	A	607	GOL	O1-C1-C2-O2
6	C	606	GOL	O1-C1-C2-O2
6	A	607	GOL	C1-C2-C3-O3
6	A	609	GOL	O1-C1-C2-C3
6	B	605	GOL	O1-C1-C2-C3
6	D	605	GOL	O1-C1-C2-C3
6	D	606	GOL	O1-C1-C2-O2
3	B	602	QDN	C13-C17-C18-C19
6	A	607	GOL	O2-C2-C3-O3
6	A	608	GOL	O1-C1-C2-O2
6	A	606	GOL	O1-C1-C2-O2
6	A	609	GOL	O2-C2-C3-O3
6	B	605	GOL	O1-C1-C2-O2
6	D	605	GOL	O1-C1-C2-O2
6	D	607	GOL	O1-C1-C2-O2
6	A	606	GOL	O1-C1-C2-C3
3	D	602	QDN	C13-C17-C18-C19
6	A	609	GOL	O1-C1-C2-O2
6	D	607	GOL	O1-C1-C2-C3
2	B	601	HEM	CAA-CBA-CGA-O2A
6	B	605	GOL	C1-C2-C3-O3
2	D	601	HEM	CAA-CBA-CGA-O2A
6	B	605	GOL	O2-C2-C3-O3
2	A	601	HEM	CAA-CBA-CGA-O2A
2	B	601	HEM	CAA-CBA-CGA-O1A
2	C	601	HEM	CAA-CBA-CGA-O2A
2	C	601	HEM	CAA-CBA-CGA-O1A
2	A	601	HEM	CAA-CBA-CGA-O1A
2	D	601	HEM	CAA-CBA-CGA-O1A
3	B	602	QDN	C16-C17-C18-C19
2	B	601	HEM	CAD-CBD-CGD-O2D
2	C	601	HEM	CAD-CBD-CGD-O2D
2	A	601	HEM	CAD-CBD-CGD-O2D
2	C	601	HEM	CAD-CBD-CGD-O1D
2	A	601	HEM	CAD-CBD-CGD-O1D

There are no ring outliers.
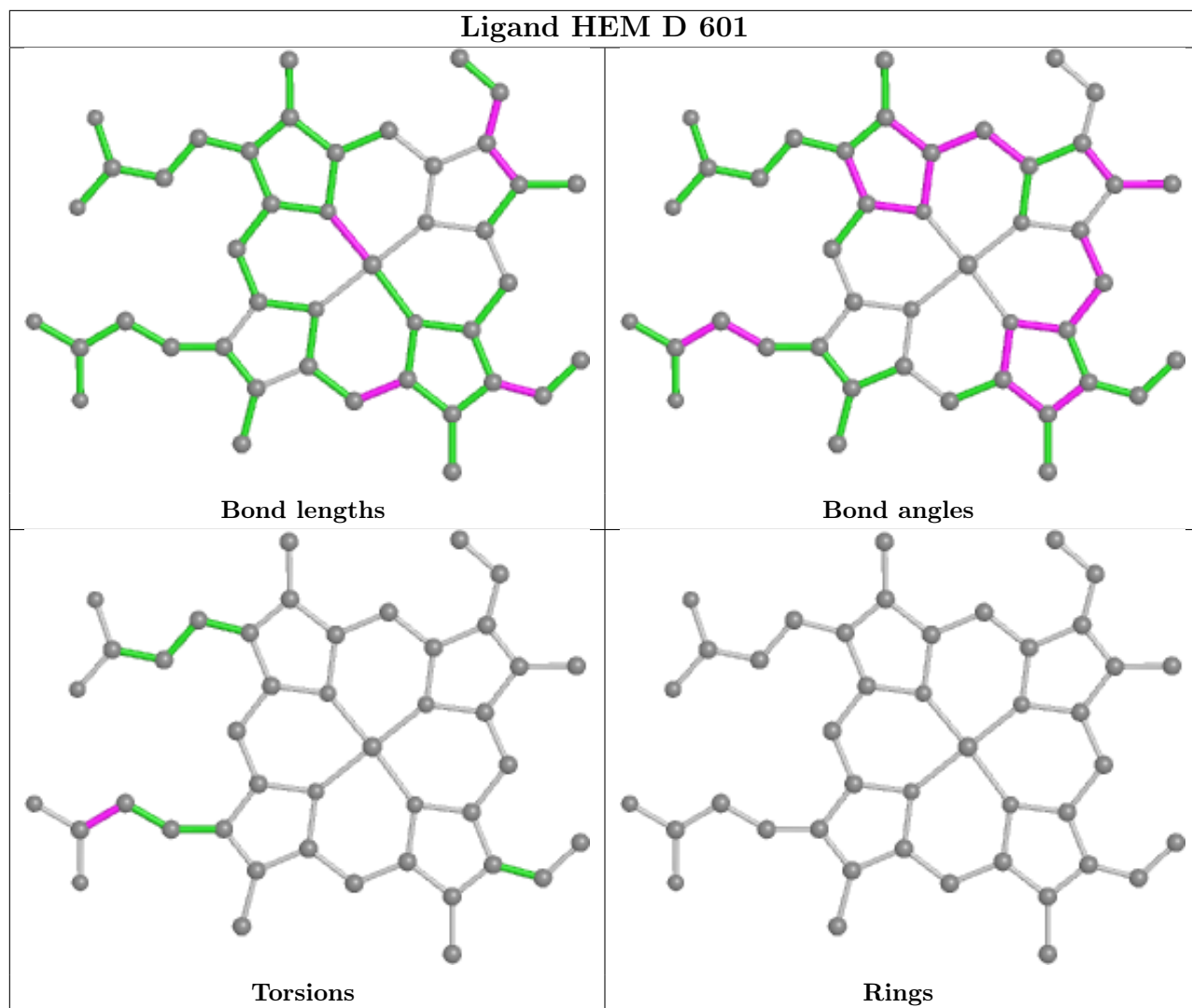
12 monomers are involved in 22 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	609	GOL	1	0
2	B	601	HEM	1	0
6	A	606	GOL	1	0
6	A	607	GOL	1	0
6	C	605	GOL	3	0
6	D	605	GOL	3	0
2	D	601	HEM	3	0
6	B	605	GOL	3	0
3	B	602	QDN	1	0
2	C	601	HEM	2	0
3	A	602	QDN	2	0
6	D	607	GOL	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.
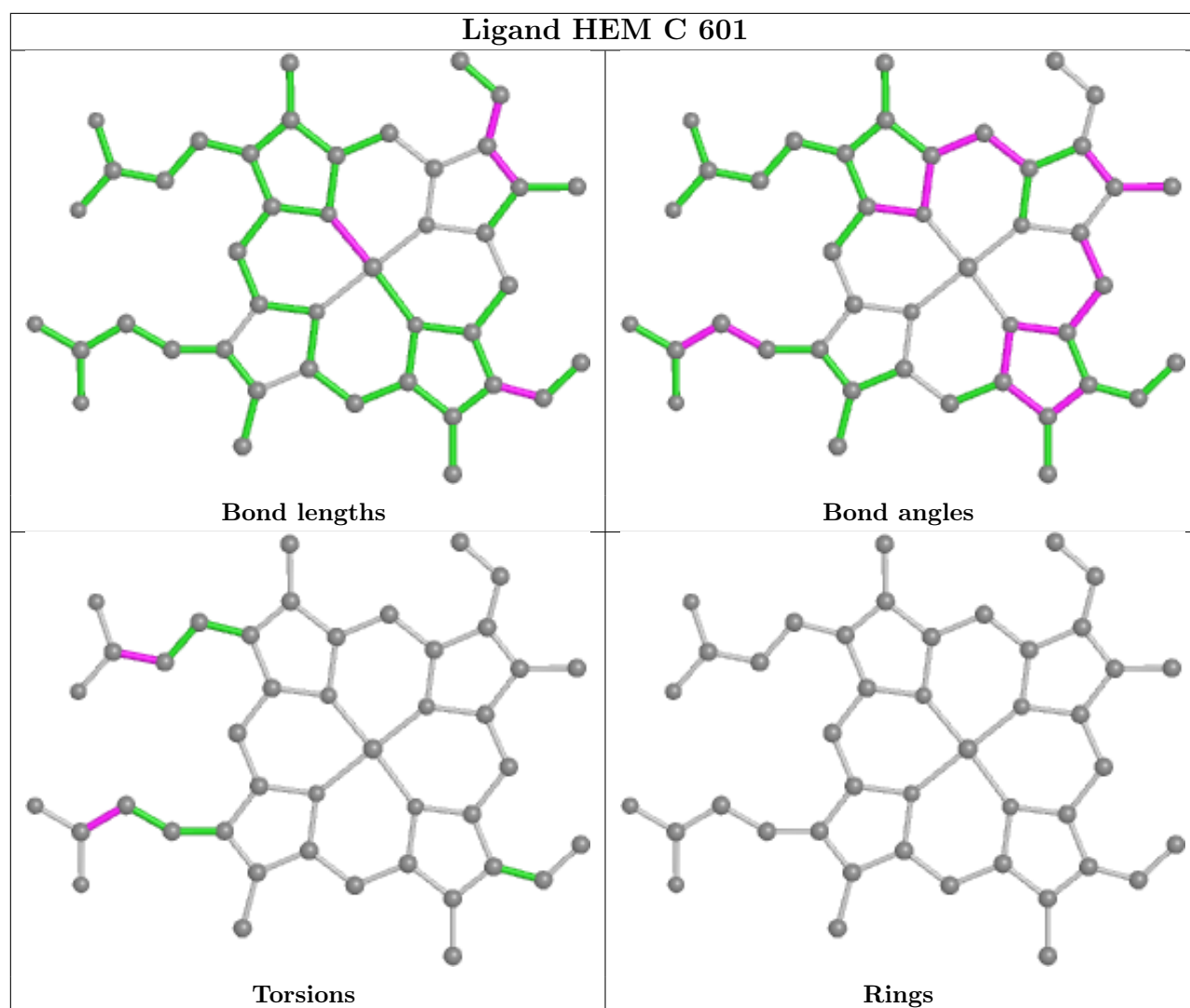
Ligand HEM A 601

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM B 601

Bond lengths

Bond angles

Torsions

Rings

Ligand QDN D 602

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM D 601

Bond lengths

Bond angles

Torsions

Rings

Ligand QDN B 602

Bond lengths

Bond angles

Torsions

Rings

Ligand HEM C 601

Bond lengths

Bond angles

Torsions

Rings
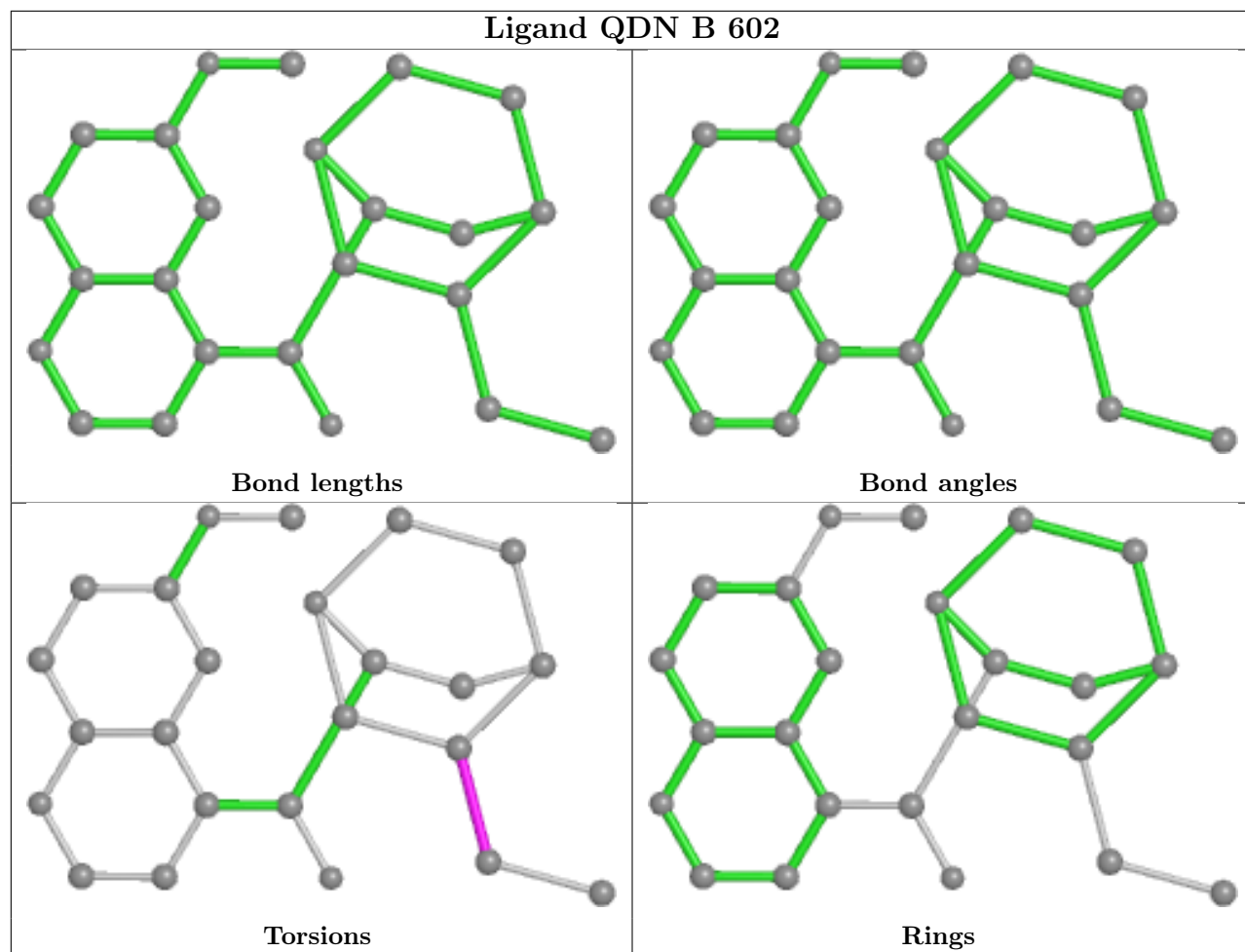
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6   Fit of model and data ⓘ

6.1   Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å²)	Q<0.9
1	A	449/479 (93%)	0.14	30 (6%)	17	19	23, 39, 78, 110	0
1	B	453/479 (94%)	0.35	45 (9%)	7	7	25, 49, 87, 108	0
1	C	452/479 (94%)	0.19	33 (7%)	15	15	23, 41, 85, 110	0
1	D	450/479 (93%)	0.36	45 (10%)	7	7	27, 53, 90, 114	0
All	All	1804/1916 (94%)	0.26	153 (8%)	10	12	23, 46, 86, 114	0

All (153) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	75	TRP	8.7
1	A	75	TRP	7.8
1	B	75	TRP	7.2
1	B	33	LEU	6.4
1	A	219	PHE	6.1
1	C	75	TRP	6.0
1	B	219	PHE	5.5
1	D	219	PHE	5.3
1	D	65	PHE	5.1
1	D	234	PRO	4.9
1	B	144	LEU	4.8
1	B	72	GLN	4.8
1	D	33	LEU	4.8
1	C	219	PHE	4.7
1	A	32	LYS	4.6
1	C	144	LEU	4.6
1	D	235	ALA	4.5
1	B	56	TYR	4.5
1	B	65	PHE	4.3
1	B	37	PRO	4.1
1	D	61	LEU	4.0

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Mol	Chain	Res	Type	RSRZ
1	B	342	VAL	4.0
1	C	73	LEU	4.0
1	C	53	ASN	3.9
1	D	424	GLN	3.9
1	D	229	VAL	3.8
1	C	218	GLY	3.8
1	A	33	LEU	3.8
1	C	483	PHE	3.7
1	D	74	ALA	3.7
1	B	53	ASN	3.7
1	D	423	ALA	3.7
1	D	37	PRO	3.7
1	B	145	GLY	3.7
1	C	37	PRO	3.6
1	A	483	PHE	3.6
1	B	52	GLN	3.5
1	B	64	ARG	3.5
1	B	61	LEU	3.4
1	D	64	ARG	3.4
1	C	231	LEU	3.4
1	B	60	GLN	3.3
1	D	233	ILE	3.3
1	D	236	LEU	3.3
1	A	229	VAL	3.2
1	D	218	GLY	3.2
1	C	72	GLN	3.1
1	A	342	VAL	3.1
1	B	77	PRO	3.1
1	D	471	GLY	3.1
1	C	31	GLY	2.9
1	A	223	VAL	2.9
1	D	77	PRO	2.9
1	C	380	ARG	2.9
1	D	73	LEU	2.9
1	D	342	VAL	2.9
1	D	239	LYS	2.9
1	A	484	LEU	2.9
1	D	380	ARG	2.9
1	B	169	GLY	2.8
1	C	33	LEU	2.8
1	D	232	HIS	2.8
1	B	484	LEU	2.8

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Mol	Chain	Res	Type	RSRZ
1	D	57	CYS	2.8
1	B	333	GLN	2.8
1	A	35	PRO	2.8
1	A	313	THR	2.8
1	D	309	THR	2.8
1	D	313	THR	2.8
1	D	60	GLN	2.8
1	A	470	THR	2.7
1	B	381	ASP	2.7
1	C	484	LEU	2.7
1	C	233	ILE	2.7
1	B	229	VAL	2.7
1	C	387	PHE	2.7
1	A	73	LEU	2.6
1	B	73	LEU	2.6
1	D	314	LEU	2.6
1	C	232	HIS	2.6
1	C	146	LYS	2.6
1	A	36	GLY	2.6
1	A	74	ALA	2.6
1	B	63	ARG	2.6
1	B	448	LEU	2.6
1	A	237	ALA	2.6
1	C	309	THR	2.5
1	C	236	LEU	2.5
1	D	381	ASP	2.5
1	D	51	PHE	2.5
1	A	309	THR	2.5
1	B	238	GLY	2.5
1	B	423	ALA	2.5
1	D	56	TYR	2.5
1	A	37	PRO	2.5
1	B	341	GLN	2.5
1	C	61	LEU	2.5
1	B	240	VAL	2.4
1	B	239	LYS	2.4
1	D	69	PHE	2.4
1	B	233	ILE	2.4
1	C	229	VAL	2.4
1	B	424	GLN	2.4
1	A	72	GLN	2.4
1	D	339	ILE	2.4

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Mol	Chain	Res	Type	RSRZ
1	B	143	GLY	2.4
1	D	53	ASN	2.4
1	A	144	LEU	2.4
1	B	310	THR	2.4
1	C	342	VAL	2.3
1	B	170	ARG	2.3
1	A	31	GLY	2.3
1	A	143	GLY	2.3
1	B	32	LYS	2.3
1	B	57	CYS	2.3
1	D	484	LEU	2.3
1	D	470	THR	2.3
1	B	36	GLY	2.3
1	C	237	ALA	2.3
1	C	32	LYS	2.2
1	B	369	ILE	2.2
1	B	313	THR	2.2
1	C	313	THR	2.2
1	A	308	VAL	2.2
1	D	387	PHE	2.2
1	A	369	ILE	2.2
1	B	471	GLY	2.2
1	A	314	LEU	2.2
1	C	220	LEU	2.2
1	D	220	LEU	2.2
1	C	302	LEU	2.2
1	B	387	PHE	2.2
1	C	221	ARG	2.2
1	D	36	GLY	2.2
1	D	58	PHE	2.2
1	A	239	LYS	2.2
1	A	341	GLN	2.2
1	D	337	ASP	2.1
1	C	35	PRO	2.1
1	D	63	ARG	2.1
1	C	369	ILE	2.1
1	A	310	THR	2.1
1	C	234	PRO	2.1
1	D	426	HIS	2.1
1	B	472	GLN	2.1
1	D	52	GLN	2.1
1	C	64	ARG	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	240	VAL	2.1
1	B	70	SER	2.1
1	A	333	GLN	2.1
1	B	453	LEU	2.1
1	D	469	PRO	2.1
1	B	74	ALA	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
6	GOL	A	607	6/6	0.49	0.27	62,65,66,67	0
6	GOL	D	607	6/6	0.82	0.21	84,86,88,89	0
6	GOL	A	609	6/6	0.83	0.22	47,52,53,55	0
6	GOL	C	606	6/6	0.84	0.15	93,94,96,96	0
6	GOL	D	606	6/6	0.86	0.15	99,100,102,102	0
6	GOL	A	608	6/6	0.89	0.15	86,88,88,89	0
3	QDN	D	602	24/24	0.92	0.18	37,41,44,45	0
6	GOL	D	605	6/6	0.92	0.17	56,59,59,60	0
4	DMS	A	603	4/4	0.92	0.36	49,67,76,77	0
4	DMS	B	603	4/4	0.92	0.34	46,53,82,83	0
3	QDN	C	602	24/24	0.94	0.17	36,39,41,46	0
6	GOL	C	605	6/6	0.94	0.15	48,49,49,49	0
6	GOL	B	605	6/6	0.95	0.16	46,51,51,53	0
4	DMS	D	603	4/4	0.95	0.33	50,54,71,72	0
3	QDN	A	602	24/24	0.95	0.18	36,38,42,48	0
4	DMS	C	603	4/4	0.96	0.31	34,45,68,70	0
3	QDN	B	602	24/24	0.96	0.16	33,36,39,46	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	GOL	A	606	6/6	0.96	0.09	37,43,43,45	0
2	HEM	C	601	43/43	0.98	0.21	19,23,30,39	0
2	HEM	D	601	43/43	0.98	0.19	22,30,33,35	0
2	HEM	A	601	43/43	0.98	0.20	17,23,26,28	0
2	HEM	B	601	43/43	0.98	0.20	22,28,32,36	0
5	ZN	B	604	1/1	0.99	0.12	34,34,34,34	0
5	ZN	D	604	1/1	0.99	0.09	38,38,38,38	0
5	ZN	C	604	1/1	1.00	0.12	36,36,36,36	0
5	ZN	A	605	1/1	1.00	0.07	42,42,42,42	0
5	ZN	A	604	1/1	1.00	0.10	32,32,32,32	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.
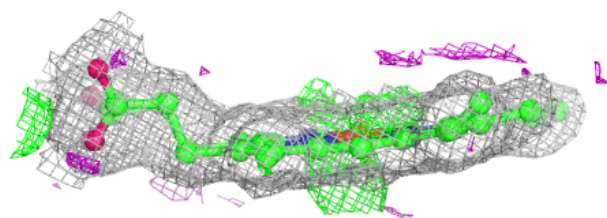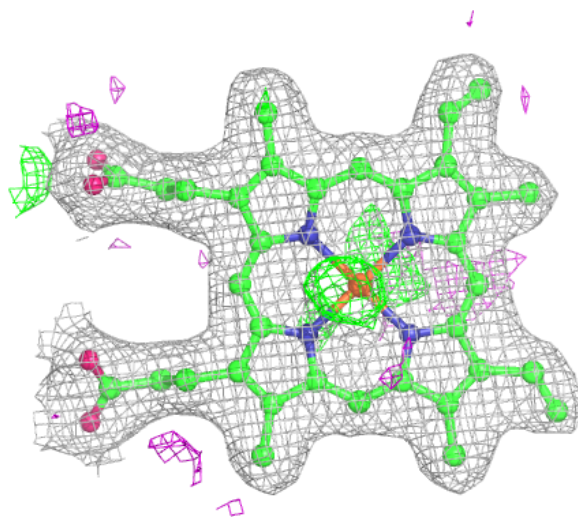

Electron density around QDN D 602:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative) and green (positive)
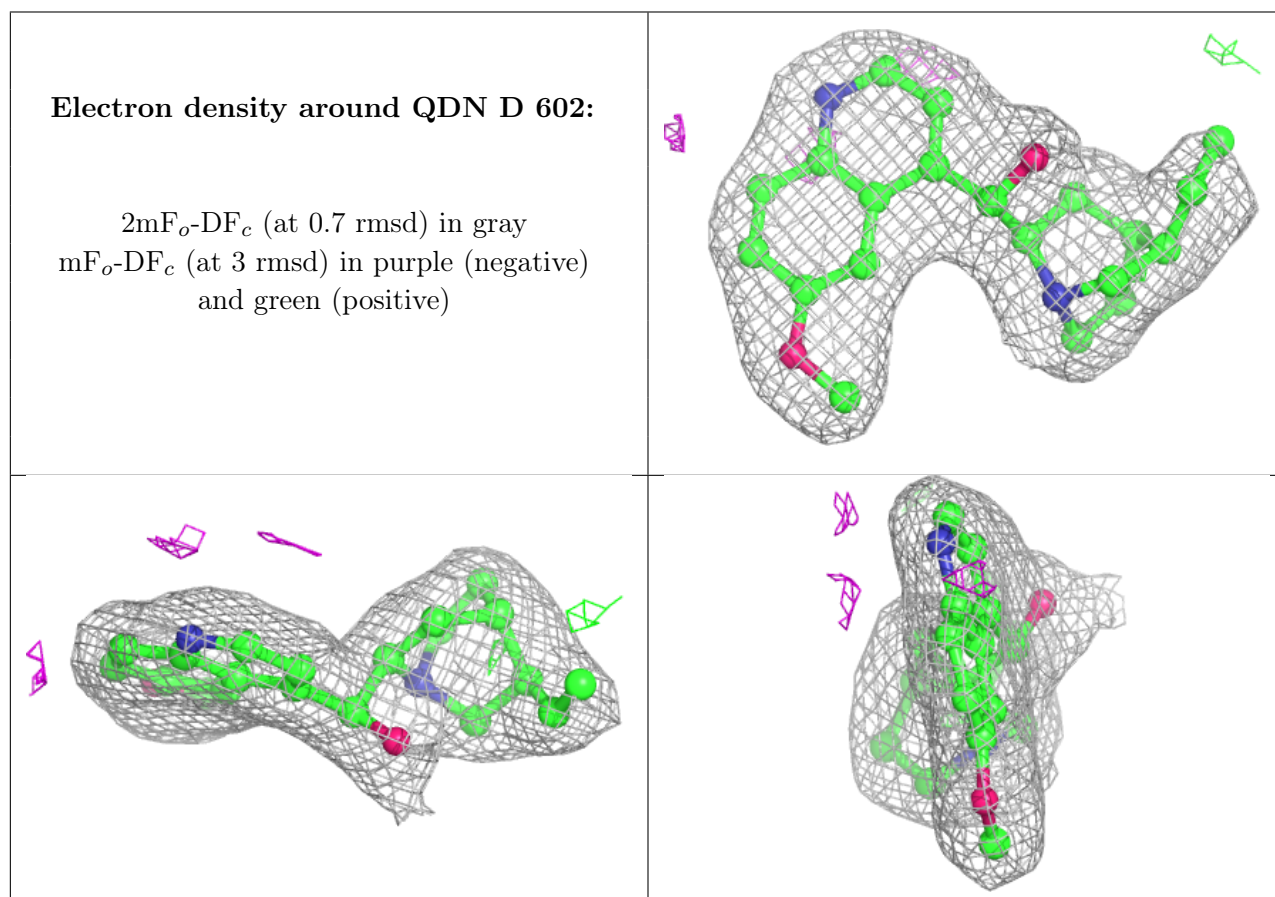
Electron density around QDN B 602:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
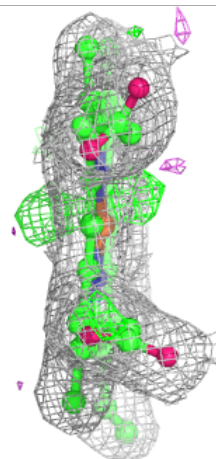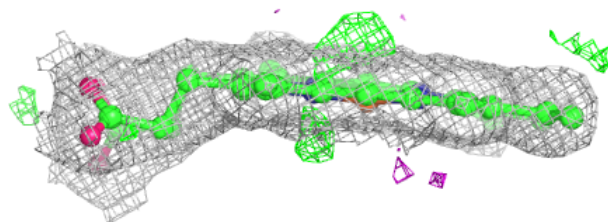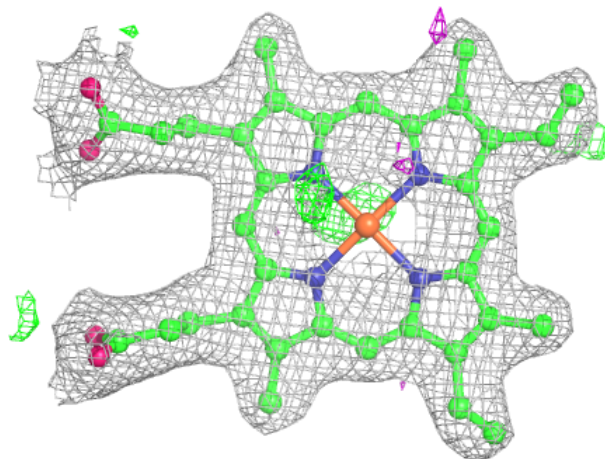mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
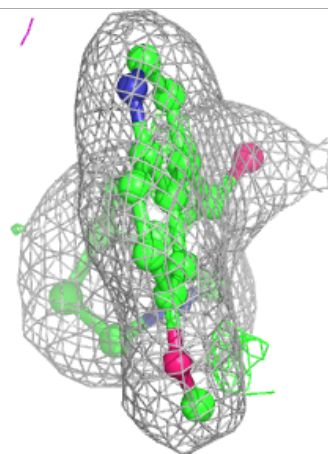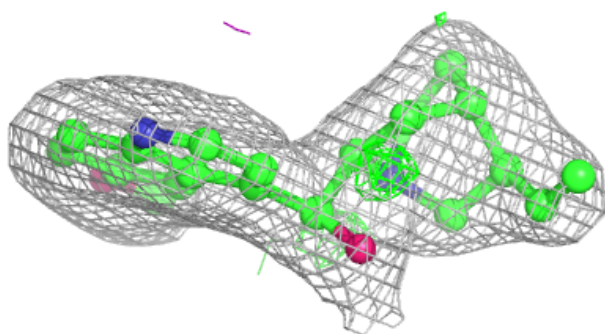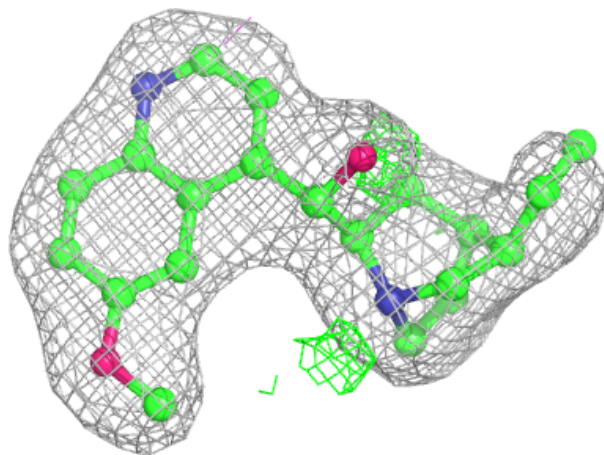
Electron density around HEM C 601:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
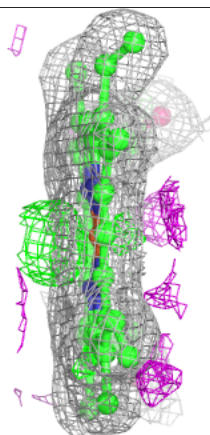$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
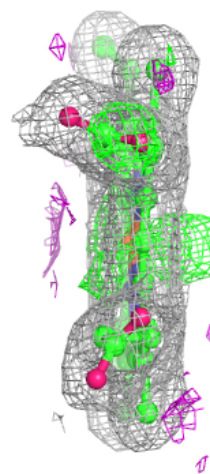
Electron density around HEM D 601:

$2mF_o$-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 601:

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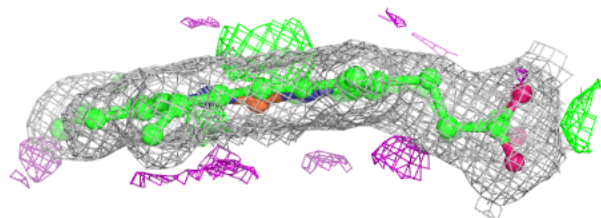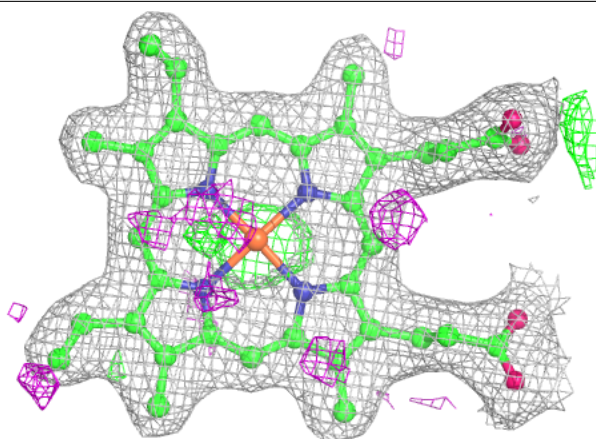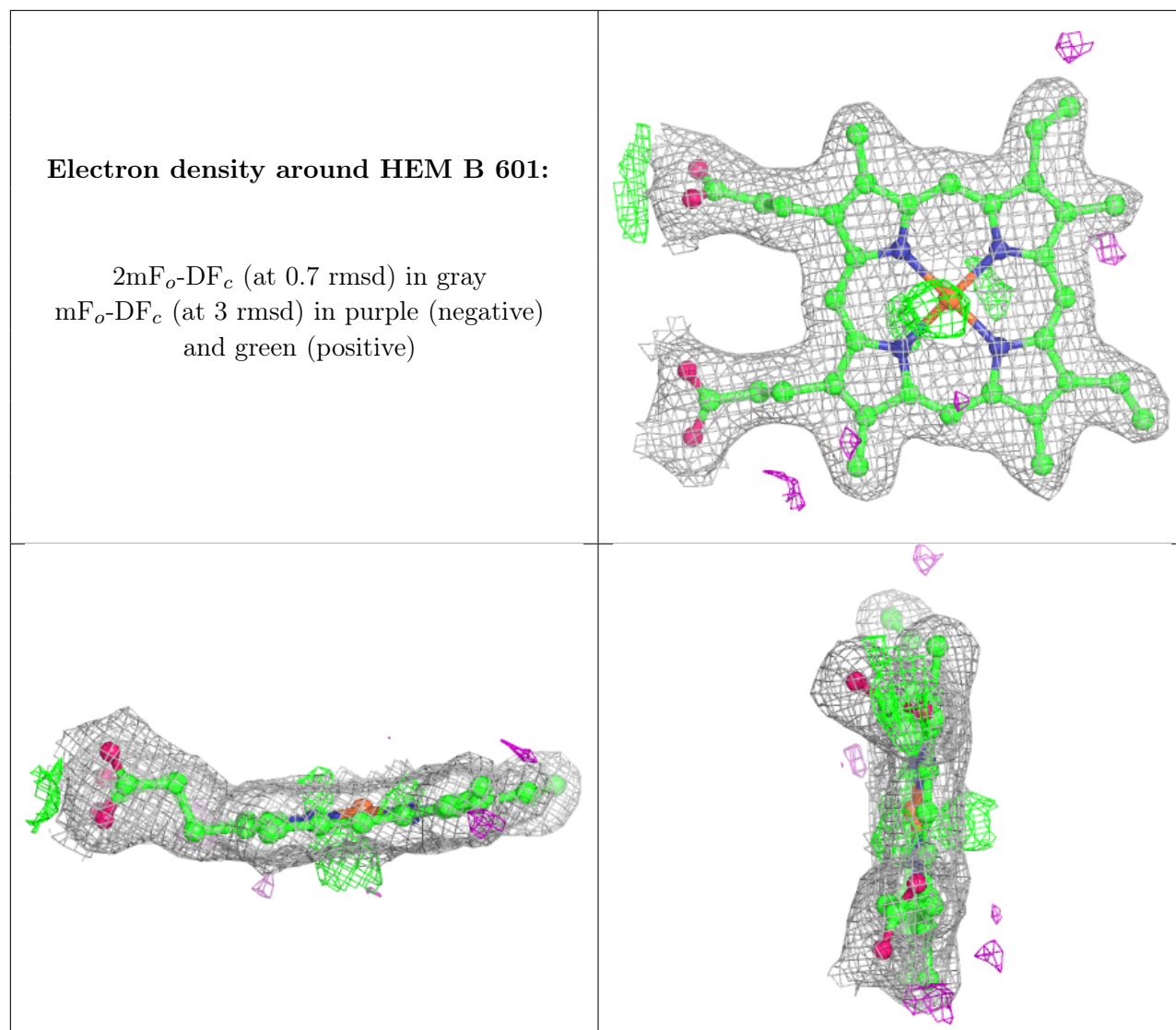mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around HEM B 601:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.