



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 2, 2023 – 10:16 PM EDT

PDB ID : 1HT8
Title : THE 2.7 ANGSTROM RESOLUTION MODEL OF OVINE COX-1 COM-
PLEXED WITH ALCLOFENAC
Authors : Selinsky, B.S.; Gupta, K.; Sharkey, C.T.; Loll, P.J.
Deposited on : 2000-12-29
Resolution : 2.69 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) 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 : 2.34
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) : 2.34

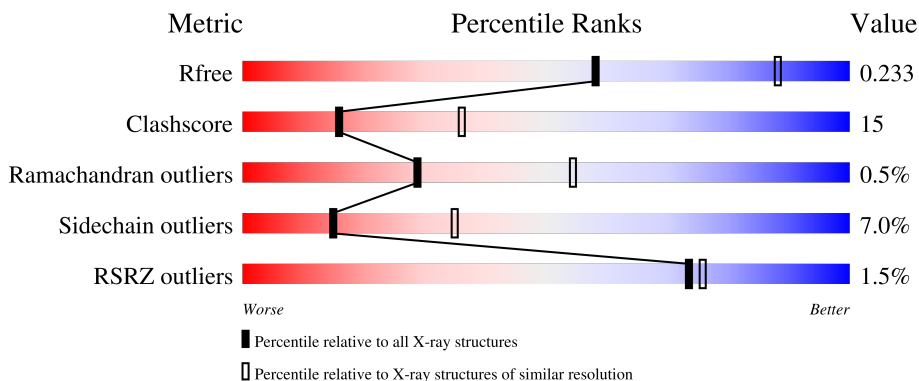
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.69 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

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 $\leq 5\%$. 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	551	
1	B	551	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	BOG	A	1801	-	-	-	X

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 9477 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 PROSTAGLANDIN H2 SYNTHASE-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	551	Total 4477	C 2903	N 758	O 788	S 28	0	0	0
1	B	551	Total 4477	C 2903	N 758	O 788	S 28	0	0	0

- Molecule 2 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



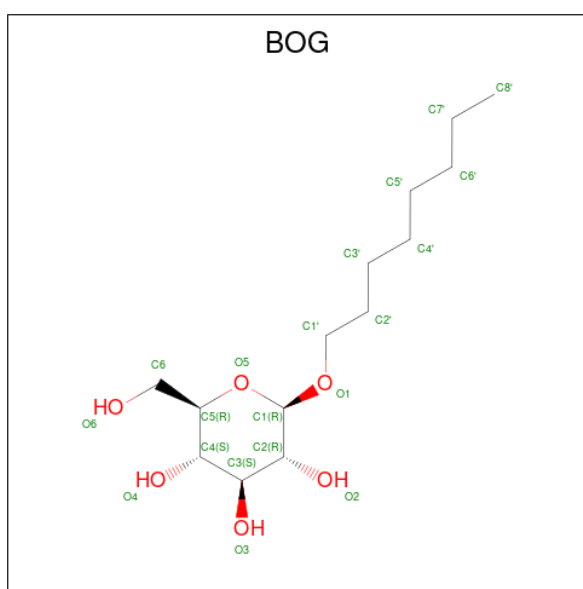
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	Total 14	C 8	N 1	O 5	0	0
2	A	1	Total 14	C 8	N 1	O 5	0	0
2	A	1	Total 14	C 8	N 1	O 5	0	0
2	A	1	Total 14	C 8	N 1	O 5	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 3 is octyl beta-D-glucopyranoside (three-letter code: BOG) (formula: $C_{14}H_{28}O_6$).



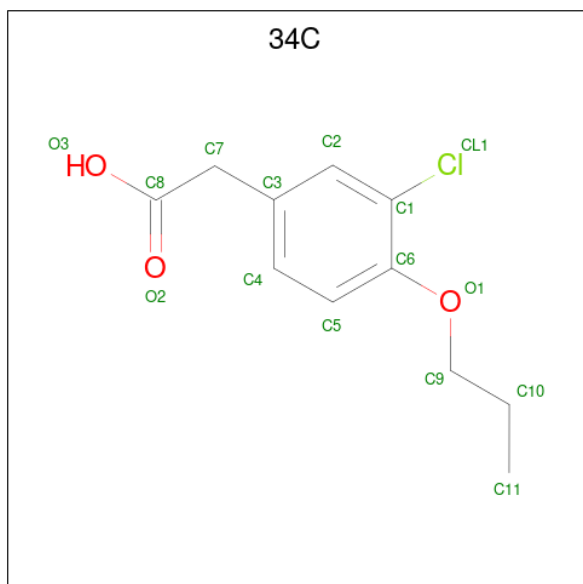
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	C O	0	0
			20	14 6		
3	A	1	Total	C O	0	0
			20	14 6		
3	B	1	Total	C O	0	0
			20	14 6		

- Molecule 4 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$).



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

- Molecule 5 is (3-CHLORO-4-PROPOXY-PHENYL)-ACETIC ACID (three-letter code: 34C) (formula: $C_{11}H_{13}ClO_3$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	
5	A	1	Total	C	Cl	O	0	0
			15	11	1	3		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	Cl	O		
5	B	1	15	11	1	3	0	0

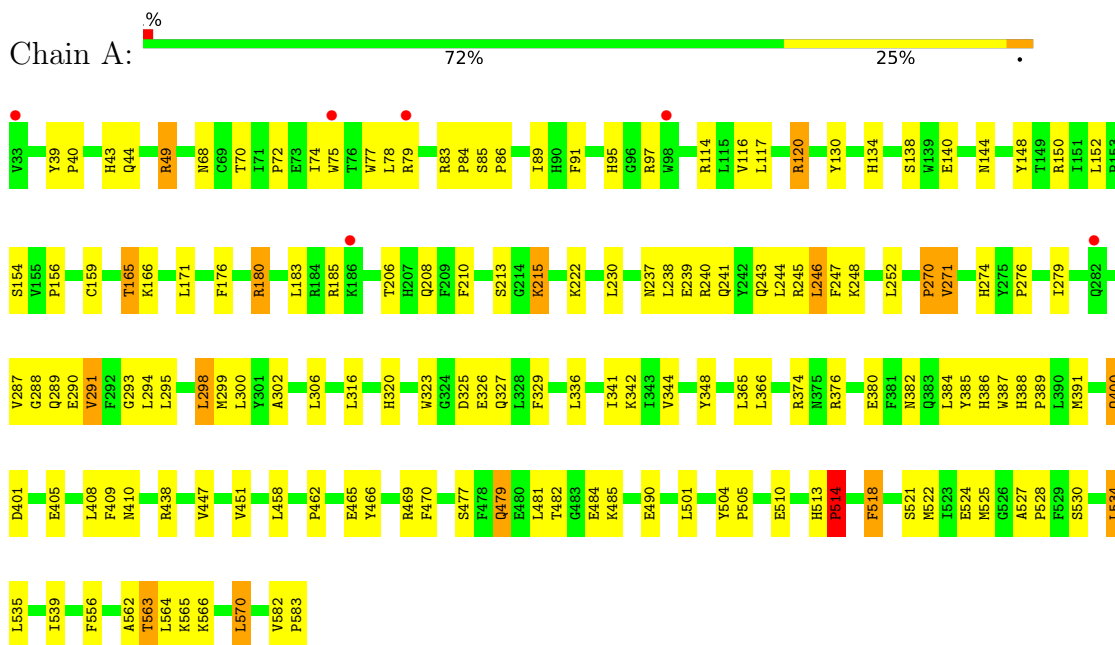
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	116	Total 116	O 116	0	0
6	B	119	Total 119	O 119	0	0

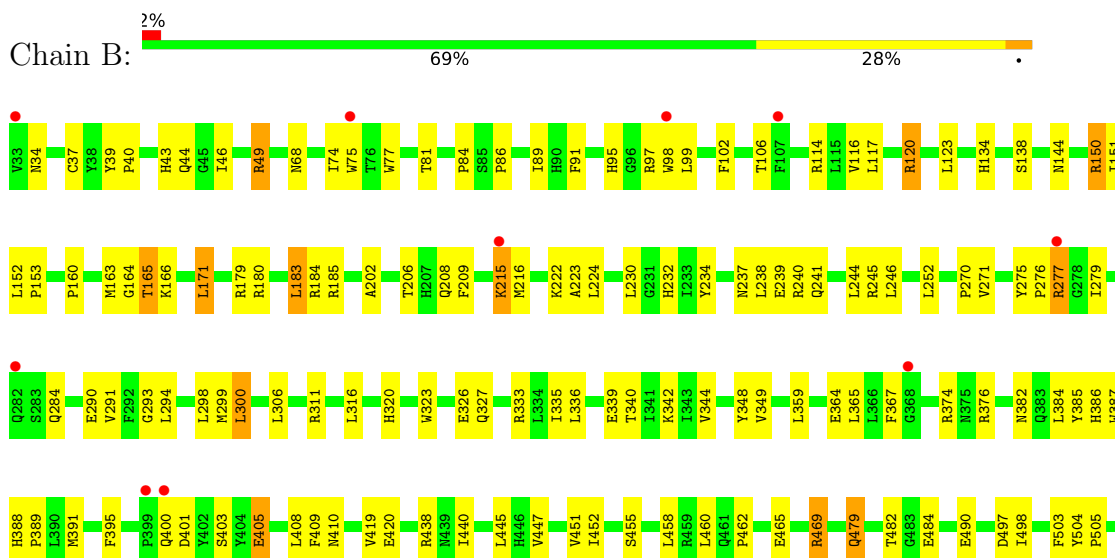
3 Residue-property plots

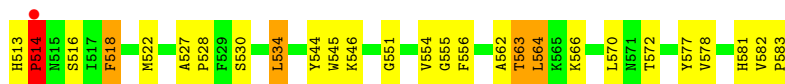
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: PROSTAGLANDIN H2 SYNTHASE-1



• Molecule 1: PROSTAGLANDIN H2 SYNTHASE-1





4 Data and refinement statistics

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α , β , γ	99.15Å 208.45Å 222.40Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.92 – 2.69 19.92 – 2.69	Depositor EDS
% Data completeness (in resolution range)	98.2 (19.92-2.69) 98.1 (19.92-2.69)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	5.62 (at 2.71Å)	Xtrriage
Refinement program	CNS	Depositor
R, R_{free}	0.211 , 0.242 0.201 , 0.233	Depositor DCC
R_{free} test set	4807 reflections (7.59%)	wwPDB-VP
Wilson B-factor (Å ²)	28.7	Xtrriage
Anisotropy	0.065	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 43.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.91	EDS
Total number of atoms	9477	wwPDB-VP
Average B, all atoms (Å ²)	24.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.08% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ 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: NAG, BOG, 34C, 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	0.40	0/4615	0.65	1/6264 (0.0%)
1	B	0.41	0/4615	0.64	0/6264
All	All	0.40	0/9230	0.64	1/12528 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	148	TYR	N-CA-C	-5.22	96.92	111.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4477	0	4386	131	0
1	B	4477	0	4386	139	0
2	A	56	0	52	10	0
2	B	56	0	52	9	0
3	A	40	0	56	10	0
3	B	20	0	28	3	0
4	A	43	0	30	5	0
4	B	43	0	30	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	A	15	0	10	0	0
5	B	15	0	10	2	0
6	A	116	0	0	3	0
6	B	119	0	0	1	0
All	All	9477	0	9040	267	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 15.

All (267) 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:563:THR:HG22	1:B:566:LYS:H	1.11	1.11
1:A:144:ASN:HD21	2:A:1671:NAG:C1	1.65	1.10
1:B:84:PRO:HG2	1:B:89:ILE:HD11	1.34	1.06
1:A:563:THR:HG22	1:A:566:LYS:H	1.26	1.01
1:A:185:ARG:HH21	1:A:438:ARG:NH1	1.57	1.01
1:A:391:MET:HG3	4:A:601:HEM:HAB	1.42	1.00
1:B:185:ARG:HH21	1:B:438:ARG:NH1	1.62	0.96
1:A:294:LEU:HD22	1:A:409:PHE:CE2	2.04	0.93
1:A:68:ASN:HD21	2:A:1661:NAG:C1	1.83	0.92
1:A:144:ASN:ND2	2:A:1671:NAG:C1	2.36	0.88
1:B:68:ASN:HD21	2:B:2661:NAG:C1	1.87	0.86
1:B:276:PRO:HD2	1:B:279:ILE:HD12	1.59	0.84
1:A:116:VAL:O	1:A:120:ARG:HB2	1.78	0.84
1:B:294:LEU:HD22	1:B:409:PHE:CE2	2.13	0.83
1:B:86:PRO:HG3	3:B:2802:BOG:H61	1.64	0.80
1:B:294:LEU:HD22	1:B:409:PHE:HE2	1.50	0.77
1:A:410:ASN:HD21	2:A:1681:NAG:C1	1.96	0.77
1:A:240:ARG:NH1	1:A:271:VAL:HG13	1.99	0.77
1:B:144:ASN:ND2	2:B:2671:NAG:C1	2.49	0.76
1:A:208:GLN:NE2	1:A:230:LEU:H	1.83	0.76
1:B:563:THR:HG22	1:B:566:LYS:N	1.97	0.75
1:A:185:ARG:HH21	1:A:438:ARG:HH11	1.33	0.74
1:A:243:GLN:HG3	1:A:270:PRO:HD2	1.71	0.72
1:B:208:GLN:NE2	1:B:230:LEU:H	1.87	0.72
1:A:84:PRO:HG2	1:A:89:ILE:HD11	1.70	0.71
1:B:144:ASN:HD21	2:B:2671:NAG:C2	2.02	0.71
1:B:144:ASN:HD21	2:B:2671:NAG:C1	2.04	0.71
1:B:150:ARG:HD3	1:B:152:LEU:O	1.90	0.71
1:A:527:ALA:HB3	1:A:528:PRO:HD3	1.73	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:387:TRP:HZ2	5:B:2701:34C:H111	1.57	0.70
1:B:114:ARG:HD3	1:B:365:LEU:O	1.92	0.69
1:B:208:GLN:HE21	1:B:230:LEU:H	1.40	0.69
1:B:410:ASN:HD21	2:B:2681:NAG:C1	2.05	0.69
1:B:185:ARG:HH21	1:B:438:ARG:HH11	1.39	0.68
1:A:150:ARG:HD3	1:A:152:LEU:O	1.94	0.68
1:A:116:VAL:HG22	3:A:1802:BOG:H2'1	1.75	0.68
1:A:462:PRO:HG2	1:A:465:GLU:HG2	1.75	0.68
1:A:185:ARG:HH21	1:A:438:ARG:HH12	1.43	0.67
1:B:241:GLN:HE21	1:B:245:ARG:HH11	1.41	0.67
1:B:237:ASN:ND2	1:B:239:GLU:HG2	2.10	0.67
1:B:527:ALA:HB3	1:B:528:PRO:HD3	1.77	0.67
1:A:49:ARG:O	1:B:320:HIS:HD2	1.77	0.67
1:B:389:PRO:HG3	1:B:440:ILE:HG12	1.77	0.66
1:B:185:ARG:HH21	1:B:438:ARG:HH12	1.42	0.65
1:B:582:VAL:HG22	1:B:583:PRO:HD2	1.80	0.64
1:B:447:VAL:O	1:B:451:VAL:HG23	1.98	0.64
1:B:150:ARG:HD2	1:B:153:PRO:HA	1.81	0.63
1:A:77:TRP:CZ2	3:A:1801:BOG:H7'2	2.32	0.63
1:A:213:SER:OG	1:A:215:LYS:HE3	1.99	0.62
1:B:180:ARG:O	1:B:438:ARG:NH1	2.32	0.62
1:B:180:ARG:HD3	1:B:490:GLU:OE2	1.99	0.62
1:B:68:ASN:ND2	2:B:2661:NAG:C1	2.61	0.62
1:A:294:LEU:O	1:A:408:LEU:O	2.16	0.62
1:B:582:VAL:CG2	1:B:583:PRO:HD2	2.30	0.62
1:A:410:ASN:ND2	2:A:1681:NAG:C1	2.63	0.62
1:A:180:ARG:HD3	1:A:490:GLU:OE2	2.00	0.62
1:A:86:PRO:HG3	3:A:1802:BOG:H61	1.81	0.61
2:B:2671:NAG:O4	2:B:2672:NAG:C1	2.49	0.61
1:B:293:GLY:HA2	1:B:299:MET:CE	2.31	0.60
1:A:77:TRP:NE1	3:A:1801:BOG:H5'2	2.16	0.60
1:A:144:ASN:HD21	2:A:1671:NAG:C2	2.15	0.60
1:B:116:VAL:HG22	3:B:2802:BOG:H2'1	1.82	0.60
1:B:518:PHE:CD1	1:B:522:MET:HG2	2.37	0.60
1:B:563:THR:CG2	1:B:566:LYS:H	2.01	0.60
1:A:320:HIS:HD2	1:B:49:ARG:O	1.84	0.59
1:B:134:HIS:HD2	1:B:138:SER:OG	1.85	0.59
4:B:601:HEM:HMB1	4:B:601:HEM:HBB2	1.83	0.59
1:A:387:TRP:HB2	4:A:601:HEM:HAC	1.85	0.59
1:B:344:VAL:O	1:B:348:TYR:HB3	2.02	0.58
1:A:374:ARG:HB3	1:B:374:ARG:NH1	2.19	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:165:THR:HG22	1:B:166:LYS:HD3	1.86	0.58
1:A:185:ARG:NH2	1:A:438:ARG:HH11	2.00	0.57
1:A:208:GLN:HE21	1:A:230:LEU:H	1.51	0.57
1:B:462:PRO:HG2	1:B:465:GLU:HG2	1.86	0.57
2:A:1671:NAG:O4	2:A:1672:NAG:C1	2.52	0.57
1:B:183:LEU:HD22	1:B:184:ARG:O	2.05	0.57
1:B:215:LYS:HZ1	1:B:222:LYS:HD2	1.68	0.57
1:A:180:ARG:NH2	1:A:490:GLU:OE1	2.38	0.57
1:B:215:LYS:HG2	1:B:216:MET:N	2.19	0.57
1:A:114:ARG:HD3	1:A:365:LEU:O	2.05	0.56
1:B:276:PRO:HD2	1:B:279:ILE:CD1	2.32	0.56
1:B:216:MET:HE1	6:B:2812:HOH:O	2.05	0.56
1:A:185:ARG:NH2	1:A:438:ARG:NH1	2.41	0.56
1:A:563:THR:HG22	1:A:566:LYS:N	2.09	0.56
1:B:410:ASN:ND2	2:B:2681:NAG:C1	2.69	0.55
1:A:291:VAL:O	1:A:294:LEU:HG	2.06	0.55
1:A:518:PHE:CD1	1:A:522:MET:HG2	2.40	0.55
1:B:179:ARG:HG2	1:B:179:ARG:HH11	1.71	0.55
1:B:91:PHE:O	1:B:95:HIS:HD2	1.89	0.55
1:A:504:TYR:HB3	1:A:505:PRO:HD3	1.89	0.55
1:A:374:ARG:HD2	6:A:1900:HOH:O	2.06	0.55
1:B:387:TRP:CZ2	5:B:2701:34C:H111	2.40	0.55
1:B:497:ASP:OD2	1:B:498:ILE:N	2.41	0.54
1:B:391:MET:HG3	4:B:601:HEM:HAB	1.88	0.54
1:B:323:TRP:CE3	1:B:327:GLN:HG2	2.43	0.54
1:B:98:TRP:CH2	1:B:99:LEU:HD13	2.43	0.54
1:B:294:LEU:O	1:B:408:LEU:O	2.26	0.54
1:B:241:GLN:NE2	1:B:245:ARG:HH11	2.05	0.53
1:A:237:ASN:ND2	1:A:239:GLU:HG2	2.22	0.53
1:B:577:TYR:CE2	1:B:583:PRO:HD3	2.43	0.53
1:A:274:HIS:O	1:A:294:LEU:HD21	2.09	0.53
1:A:68:ASN:ND2	2:A:1661:NAG:C1	2.63	0.53
1:B:364:GLU:HG2	1:B:367:PHE:CE1	2.44	0.53
1:A:185:ARG:HH11	1:A:185:ARG:HG2	1.73	0.53
1:A:323:TRP:CE3	1:A:327:GLN:HG2	2.43	0.53
1:B:116:VAL:O	1:B:120:ARG:HB2	2.09	0.53
1:B:84:PRO:HG2	1:B:89:ILE:CD1	2.24	0.53
1:B:382:ASN:OD1	1:B:386:HIS:HE1	1.92	0.52
1:A:462:PRO:HG2	1:A:465:GLU:CG	2.38	0.52
1:B:388:HIS:N	1:B:389:PRO:CD	2.72	0.52
1:B:391:MET:HE1	1:B:395:PHE:HE2	1.74	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:504:TYR:HB3	1:B:505:PRO:HD3	1.91	0.52
1:B:34:ASN:HB3	1:B:37:CYS:SG	2.49	0.52
1:B:566:LYS:O	1:B:570:LEU:HB2	2.10	0.52
1:B:387:TRP:HB2	4:B:601:HEM:HAC	1.93	0.51
1:B:151:ILE:CG2	1:B:469:ARG:NH1	2.74	0.51
1:A:366:LEU:HD12	1:A:535:LEU:HD12	1.92	0.51
1:A:91:PHE:O	1:A:95:HIS:HD2	1.94	0.51
1:A:215:LYS:HZ1	1:A:222:LYS:HD2	1.76	0.51
1:A:49:ARG:HG3	6:A:1805:HOH:O	2.10	0.51
1:A:291:VAL:HG22	1:A:294:LEU:HD12	1.93	0.51
1:A:374:ARG:NH1	1:B:374:ARG:HB3	2.27	0.50
1:B:581:HIS:ND1	1:B:582:VAL:O	2.44	0.50
1:A:479:GLN:O	1:A:482:THR:O	2.29	0.50
1:A:287:VAL:HG11	1:A:302:ALA:HB1	1.92	0.50
1:B:163:MET:CE	1:B:171:LEU:HD21	2.42	0.50
1:A:295:LEU:HD21	4:A:601:HEM:HBB2	1.94	0.50
1:B:403:SER:OG	1:B:405:GLU:HG2	2.12	0.50
1:A:120:ARG:NH1	3:A:1802:BOG:H3	2.27	0.50
1:A:382:ASN:OD1	1:A:386:HIS:HE1	1.95	0.49
1:B:342:LYS:HG2	1:B:562:ALA:HB3	1.94	0.49
1:A:215:LYS:HE2	1:A:215:LYS:H	1.75	0.49
1:B:530:SER:O	1:B:534:LEU:HD22	2.12	0.49
1:A:70:THR:O	1:A:72:PRO:HD3	2.13	0.49
1:B:183:LEU:HG	1:B:445:LEU:HD22	1.94	0.49
1:B:240:ARG:HG3	1:B:271:VAL:HG22	1.94	0.49
1:B:581:HIS:HD1	1:B:582:VAL:N	2.10	0.49
1:B:563:THR:HB	1:B:566:LYS:HD3	1.93	0.49
1:A:215:LYS:H	1:A:215:LYS:CE	2.26	0.49
1:B:49:ARG:HG3	1:B:49:ARG:HH11	1.78	0.49
1:B:163:MET:HE2	1:B:171:LEU:HD21	1.94	0.49
1:A:276:PRO:HD2	1:A:279:ILE:HD12	1.95	0.48
1:B:144:ASN:CG	2:B:2671:NAG:C1	2.82	0.48
1:A:306:LEU:HD23	1:A:306:LEU:C	2.34	0.48
1:B:513:HIS:HB3	1:B:514:PRO:HD2	1.95	0.48
1:B:340:THR:O	1:B:344:VAL:HG23	2.13	0.48
1:B:185:ARG:NH2	1:B:438:ARG:NH1	2.46	0.48
1:A:563:THR:HG23	1:A:565:LYS:H	1.79	0.48
1:B:89:ILE:HD12	1:B:89:ILE:N	2.28	0.47
1:A:140:GLU:OE2	1:A:144:ASN:ND2	2.43	0.47
1:B:49:ARG:HH11	1:B:49:ARG:CG	2.26	0.47
1:B:74:ILE:HG23	1:B:75:TRP:N	2.29	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:180:ARG:O	1:A:438:ARG:NH1	2.47	0.47
1:B:179:ARG:HG2	1:B:179:ARG:NH1	2.28	0.47
1:B:293:GLY:HA2	1:B:299:MET:HE2	1.97	0.47
1:B:185:ARG:NH2	1:B:438:ARG:HH11	2.11	0.47
1:A:530:SER:O	1:A:534:LEU:HD22	2.15	0.47
1:B:290:GLU:H	1:B:290:GLU:CD	2.18	0.47
1:A:388:HIS:N	1:A:389:PRO:CD	2.78	0.47
1:B:320:HIS:CE1	1:B:551:GLY:O	2.68	0.47
1:A:479:GLN:CD	1:A:479:GLN:H	2.18	0.46
1:A:582:VAL:CG2	1:A:583:PRO:HD2	2.44	0.46
1:B:120:ARG:NH1	3:B:2802:BOG:H3	2.30	0.46
1:A:144:ASN:CG	2:A:1671:NAG:C1	2.84	0.46
1:A:241:GLN:HE21	1:A:245:ARG:HH11	1.63	0.46
1:B:160:PRO:HD2	1:B:164:GLY:O	2.15	0.46
1:B:389:PRO:HG3	1:B:440:ILE:CG1	2.44	0.46
1:A:344:VAL:O	1:A:348:TYR:HB3	2.15	0.46
1:B:234:TYR:CE2	1:B:333:ARG:HG3	2.51	0.46
1:A:447:VAL:O	1:A:451:VAL:HG23	2.16	0.46
6:A:1817:HOH:O	1:B:546:LYS:HE3	2.16	0.46
1:A:176:PHE:CZ	1:A:180:ARG:HG3	2.51	0.46
1:B:77:TRP:CE2	1:B:81:THR:HG21	2.51	0.46
1:B:400:GLN:NE2	1:B:401:ASP:H	2.14	0.46
1:A:240:ARG:HE	1:A:288:GLY:HA2	1.81	0.45
1:B:384:LEU:C	1:B:384:LEU:HD23	2.37	0.45
1:A:566:LYS:O	1:A:570:LEU:HB2	2.17	0.45
1:A:79:ARG:HH11	1:A:79:ARG:HG2	1.81	0.45
1:A:210:PHE:HB3	4:A:601:HEM:HBD1	1.98	0.45
1:A:185:ARG:HG2	1:A:185:ARG:NH1	2.31	0.45
1:B:513:HIS:O	1:B:514:PRO:C	2.55	0.45
1:A:134:HIS:HD2	1:A:138:SER:OG	2.00	0.45
1:A:83:ARG:HD3	3:A:1802:BOG:O6	2.17	0.45
1:A:386:HIS:CE1	4:A:601:HEM:HAD2	2.52	0.45
1:B:208:GLN:HE22	1:B:230:LEU:HD12	1.82	0.45
1:B:102:PHE:CE2	1:B:106:THR:HG21	2.52	0.44
1:A:400:GLN:HE21	1:A:401:ASP:N	2.16	0.44
1:A:380:GLU:HG2	1:A:466:TYR:CE1	2.52	0.44
1:B:479:GLN:O	1:B:482:THR:O	2.36	0.44
1:A:77:TRP:CZ3	1:A:78:LEU:HD23	2.53	0.44
1:A:485:LYS:HA	1:A:485:LYS:HD3	1.87	0.44
1:B:277:ARG:HD2	1:B:277:ARG:HA	1.73	0.44
1:A:240:ARG:CZ	1:A:271:VAL:HG13	2.46	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:77:TRP:CE2	3:A:1801:BOG:H5'2	2.53	0.44
1:A:293:GLY:HA2	1:A:299:MET:CE	2.48	0.44
1:B:388:HIS:CE1	1:B:447:VAL:HG11	2.52	0.44
1:A:185:ARG:HE	1:A:438:ARG:HD3	1.83	0.43
1:B:344:VAL:HA	1:B:348:TYR:HB3	2.01	0.43
1:B:320:HIS:HE1	1:B:551:GLY:O	2.00	0.43
1:A:388:HIS:CE1	1:A:447:VAL:HG11	2.53	0.43
1:A:144:ASN:OD1	2:A:1671:NAG:C1	2.67	0.43
1:A:326:GLU:OE1	1:B:134:HIS:CE1	2.71	0.43
1:A:524:GLU:OE1	3:A:1802:BOG:H5	2.18	0.43
1:B:43:HIS:O	1:B:44:GLN:HB2	2.18	0.43
1:B:349:VAL:HG12	1:B:359:LEU:CD1	2.48	0.43
1:B:544:TYR:O	1:B:546:LYS:N	2.50	0.43
1:B:46:ILE:N	1:B:46:ILE:HD12	2.34	0.43
1:B:202:ALA:O	1:B:206:THR:HG23	2.18	0.43
1:A:246:LEU:O	1:A:247:PHE:HB2	2.18	0.43
1:B:40:PRO:O	1:B:68:ASN:HB3	2.18	0.43
1:B:554:VAL:HG13	1:B:555:GLY:N	2.34	0.43
1:B:564:LEU:HD13	1:B:578:VAL:HG22	2.00	0.43
1:B:275:TYR:CD2	1:B:284:GLN:HG2	2.54	0.43
1:B:39:TYR:N	1:B:40:PRO:CD	2.82	0.43
1:B:240:ARG:NH1	1:B:271:VAL:HG13	2.34	0.43
1:A:291:VAL:O	1:A:291:VAL:HG13	2.18	0.42
1:A:294:LEU:HD22	1:A:409:PHE:HE2	1.74	0.42
1:B:237:ASN:HD22	1:B:239:GLU:HG2	1.78	0.42
1:B:420:GLU:HG3	1:B:572:THR:HB	2.01	0.42
1:A:85:SER:O	1:A:89:ILE:HD12	2.18	0.42
1:A:582:VAL:HG22	1:A:583:PRO:HD2	2.00	0.42
1:A:43:HIS:O	1:A:44:GLN:HB2	2.19	0.42
1:A:477:SER:OG	1:A:479:GLN:HG2	2.19	0.42
1:A:470:PHE:CD2	1:A:525:MET:HG2	2.54	0.42
1:B:185:ARG:HG2	1:B:185:ARG:HH11	1.83	0.42
1:B:223:ALA:C	1:B:224:LEU:O	2.55	0.42
1:B:98:TRP:CG	1:B:99:LEU:N	2.88	0.42
1:A:130:TYR:HB2	1:A:150:ARG:HG3	2.01	0.42
1:A:341:ILE:HD12	1:A:539:ILE:HD11	2.01	0.42
1:A:241:GLN:NE2	1:A:245:ARG:HH11	2.17	0.42
1:B:513:HIS:HB2	1:B:516:SER:OG	2.20	0.42
1:A:180:ARG:HH21	1:A:490:GLU:CD	2.23	0.42
1:A:290:GLU:CD	1:A:290:GLU:H	2.22	0.42
1:B:300:LEU:HD21	1:B:419:VAL:HG13	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:B:601:HEM:HBB2	4:B:601:HEM:CMB	2.47	0.42
1:A:326:GLU:OE1	1:B:134:HIS:HE1	2.03	0.41
1:A:120:ARG:NH1	3:A:1802:BOG:H1	2.34	0.41
1:A:384:LEU:HG	1:A:522:MET:SD	2.61	0.41
1:B:306:LEU:C	1:B:306:LEU:HD23	2.40	0.41
1:A:247:PHE:HA	1:A:325:ASP:OD2	2.20	0.41
1:A:230:LEU:HD21	1:A:336:LEU:HB3	2.02	0.41
1:A:513:HIS:O	1:A:514:PRO:C	2.59	0.41
1:B:180:ARG:NH2	1:B:490:GLU:OE1	2.53	0.41
1:A:206:THR:HB	1:A:210:PHE:CD2	2.55	0.41
1:A:510:GLU:OE2	1:A:521:SER:HB2	2.20	0.41
1:A:156:PRO:HB2	1:A:159:CYS:SG	2.60	0.41
1:A:243:GLN:CG	1:A:270:PRO:HD2	2.45	0.41
1:B:582:VAL:HG22	1:B:583:PRO:CD	2.49	0.41
1:A:39:TYR:N	1:A:40:PRO:CD	2.84	0.41
1:A:40:PRO:O	1:A:68:ASN:HB3	2.20	0.41
1:A:74:ILE:HG23	1:A:75:TRP:N	2.36	0.41
1:A:245:ARG:HD2	1:A:329:PHE:CZ	2.55	0.41
1:A:295:LEU:HD12	1:A:298:LEU:HD22	2.03	0.41
1:B:335:ILE:O	1:B:339:GLU:HG3	2.20	0.41
1:A:165:THR:HG22	1:A:166:LYS:HD3	2.03	0.41
1:A:134:HIS:CE1	1:B:326:GLU:OE1	2.74	0.40
1:A:150:ARG:NH1	1:A:154:SER:HA	2.35	0.40
1:B:230:LEU:HD21	1:B:336:LEU:HB3	2.02	0.40
1:B:311:ARG:NH2	1:B:570:LEU:HD23	2.36	0.40
1:B:452:ILE:O	1:B:455:SER:HB3	2.21	0.40
1:A:237:ASN:ND2	1:A:240:ARG:H	2.20	0.40
1:A:77:TRP:CE2	3:A:1801:BOG:H7'2	2.56	0.40
1:A:342:LYS:HG2	1:A:562:ALA:HB3	2.04	0.40
1:A:481:LEU:HD22	1:A:501:LEU:HD22	2.04	0.40
1:B:180:ARG:HH21	1:B:490:GLU:CD	2.25	0.40
1:A:246:LEU:HD13	1:A:248:LYS:HB3	2.03	0.40
1:B:206:THR:HA	1:B:209:PHE:CZ	2.56	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	549/551 (100%)	518 (94%)	29 (5%)	2 (0%)	34	60
1	B	549/551 (100%)	516 (94%)	29 (5%)	4 (1%)	22	46
All	All	1098/1102 (100%)	1034 (94%)	58 (5%)	6 (0%)	29	54

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	514	PRO
1	B	514	PRO
1	B	270	PRO
1	B	503	PHE
1	B	545	TRP
1	A	270	PRO

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	486/486 (100%)	452 (93%)	34 (7%)	15	35
1	B	486/486 (100%)	452 (93%)	34 (7%)	15	35
All	All	972/972 (100%)	904 (93%)	68 (7%)	15	35

All (68) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	49	ARG
1	A	97	ARG
1	A	117	LEU
1	A	120	ARG
1	A	165	THR
1	A	171	LEU
1	A	180	ARG
1	A	183	LEU
1	A	215	LYS
1	A	238	LEU
1	A	244	LEU
1	A	246	LEU
1	A	252	LEU
1	A	271	VAL
1	A	289	GLN
1	A	291	VAL
1	A	298	LEU
1	A	300	LEU
1	A	316	LEU
1	A	376	ARG
1	A	385	TYR
1	A	400	GLN
1	A	405	GLU
1	A	458	LEU
1	A	469	ARG
1	A	479	GLN
1	A	484	GLU
1	A	514	PRO
1	A	518	PHE
1	A	534	LEU
1	A	556	PHE
1	A	563	THR
1	A	564	LEU
1	A	570	LEU
1	B	49	ARG
1	B	97	ARG
1	B	117	LEU
1	B	120	ARG
1	B	123	LEU
1	B	150	ARG
1	B	165	THR
1	B	171	LEU
1	B	183	LEU

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Mol	Chain	Res	Type
1	B	215	LYS
1	B	232	HIS
1	B	238	LEU
1	B	244	LEU
1	B	246	LEU
1	B	252	LEU
1	B	277	ARG
1	B	291	VAL
1	B	298	LEU
1	B	300	LEU
1	B	316	LEU
1	B	376	ARG
1	B	385	TYR
1	B	405	GLU
1	B	458	LEU
1	B	460	LEU
1	B	469	ARG
1	B	479	GLN
1	B	484	GLU
1	B	514	PRO
1	B	518	PHE
1	B	534	LEU
1	B	556	PHE
1	B	563	THR
1	B	564	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (30) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	56	GLN
1	A	68	ASN
1	A	95	HIS
1	A	134	HIS
1	A	203	GLN
1	A	208	GLN
1	A	237	ASN
1	A	241	GLN
1	A	274	HIS
1	A	320	HIS
1	A	375	ASN
1	A	386	HIS
1	A	400	GLN

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Mol	Chain	Res	Type
1	A	443	HIS
1	B	42	GLN
1	B	56	GLN
1	B	68	ASN
1	B	95	HIS
1	B	134	HIS
1	B	144	ASN
1	B	208	GLN
1	B	237	ASN
1	B	241	GLN
1	B	274	HIS
1	B	320	HIS
1	B	358	GLN
1	B	375	ASN
1	B	386	HIS
1	B	400	GLN
1	B	443	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

15 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	HEM	A	601	1	41,50,50	1.67	9 (21%)	45,82,82	1.61	9 (20%)
5	34C	A	1701	-	15,15,15	1.70	4 (26%)	19,19,19	1.19	2 (10%)
2	NAG	A	1671	-	14,14,15	0.88	1 (7%)	17,19,21	0.91	0
2	NAG	B	2671	-	14,14,15	1.04	1 (7%)	17,19,21	0.99	0
2	NAG	B	2681	-	14,14,15	1.44	4 (28%)	17,19,21	1.11	1 (5%)
3	BOG	B	2802	-	20,20,20	1.47	5 (25%)	25,25,25	0.87	2 (8%)
2	NAG	A	1661	-	14,14,15	1.50	3 (21%)	17,19,21	1.09	1 (5%)
2	NAG	B	2661	-	14,14,15	1.43	2 (14%)	17,19,21	1.09	1 (5%)
2	NAG	B	2672	-	14,14,15	1.20	2 (14%)	17,19,21	1.08	1 (5%)
3	BOG	A	1801	-	20,20,20	1.66	6 (30%)	25,25,25	1.14	2 (8%)
4	HEM	B	601	1	41,50,50	1.65	6 (14%)	45,82,82	1.50	6 (13%)
3	BOG	A	1802	-	20,20,20	1.46	5 (25%)	25,25,25	0.89	2 (8%)
2	NAG	A	1672	-	14,14,15	1.32	3 (21%)	17,19,21	1.10	2 (11%)
2	NAG	A	1681	-	14,14,15	1.51	4 (28%)	17,19,21	1.28	2 (11%)
5	34C	B	2701	-	15,15,15	1.72	4 (26%)	19,19,19	1.12	2 (10%)

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
4	HEM	A	601	1	-	3/12/54/54	-
5	34C	A	1701	-	-	1/8/8/8	0/1/1/1
2	NAG	A	1671	-	-	0/6/23/26	0/1/1/1
2	NAG	B	2671	-	-	4/6/23/26	0/1/1/1
2	NAG	B	2681	-	-	4/6/23/26	0/1/1/1
3	BOG	B	2802	-	-	3/11/31/31	0/1/1/1
2	NAG	A	1661	-	-	0/6/23/26	0/1/1/1
2	NAG	B	2661	-	-	2/6/23/26	0/1/1/1
2	NAG	B	2672	-	-	2/6/23/26	0/1/1/1
3	BOG	A	1801	-	-	1/11/31/31	0/1/1/1
4	HEM	B	601	1	-	0/12/54/54	-
3	BOG	A	1802	-	-	3/11/31/31	0/1/1/1
2	NAG	A	1672	-	-	2/6/23/26	0/1/1/1
2	NAG	A	1681	-	-	3/6/23/26	0/1/1/1
5	34C	B	2701	-	-	0/8/8/8	0/1/1/1

All (59) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	601	HEM	CBB-CAB	4.65	1.53	1.30
4	A	601	HEM	CBB-CAB	4.52	1.52	1.30
5	B	2701	34C	C7-C8	3.58	1.58	1.51
4	A	601	HEM	CBC-CAC	3.52	1.52	1.29
4	A	601	HEM	C3C-C2C	-3.51	1.35	1.40
4	B	601	HEM	C3C-CAC	3.42	1.54	1.47
5	A	1701	34C	C7-C8	3.40	1.58	1.51
3	A	1801	BOG	O5-C1	3.39	1.50	1.41
4	B	601	HEM	CBC-CAC	3.38	1.51	1.29
4	A	601	HEM	C3C-CAC	3.34	1.54	1.47
2	B	2661	NAG	C3-C2	3.30	1.59	1.52
4	B	601	HEM	C3C-C2C	-3.24	1.35	1.40
4	B	601	HEM	CAB-C3B	3.21	1.56	1.47
2	A	1661	NAG	C3-C2	3.11	1.59	1.52
5	A	1701	34C	C6-C1	3.10	1.45	1.39
5	B	2701	34C	C7-C3	-3.10	1.46	1.51
3	B	2802	BOG	O5-C1	2.97	1.49	1.41
3	A	1802	BOG	O5-C1	2.94	1.49	1.41
2	B	2681	NAG	C3-C2	2.90	1.58	1.52
4	A	601	HEM	CAB-C3B	2.81	1.55	1.47
2	B	2671	NAG	C4-C5	2.76	1.58	1.53
2	A	1681	NAG	C3-C2	2.75	1.58	1.52
5	A	1701	34C	C7-C3	-2.74	1.47	1.51
3	B	2802	BOG	C4-C5	-2.68	1.47	1.53
3	B	2802	BOG	O5-C5	2.67	1.50	1.44
4	A	601	HEM	CMB-C2B	2.66	1.56	1.50
3	A	1801	BOG	C3'-C2'	-2.66	1.36	1.51
3	A	1802	BOG	C4-C5	-2.62	1.47	1.53
2	A	1661	NAG	C4-C5	2.59	1.58	1.53
4	B	601	HEM	CMB-C2B	2.57	1.56	1.50
3	A	1801	BOG	O5-C5	2.57	1.50	1.44
2	A	1681	NAG	O5-C1	2.56	1.47	1.43
2	B	2661	NAG	C4-C5	2.54	1.58	1.53
3	A	1802	BOG	O5-C5	2.54	1.50	1.44
3	A	1801	BOG	C4-C3	2.52	1.58	1.52
2	B	2672	NAG	C4-C5	2.51	1.58	1.53
3	A	1802	BOG	C3'-C2'	-2.49	1.37	1.51
2	A	1672	NAG	C3-C2	2.48	1.57	1.52
2	A	1671	NAG	C4-C5	2.47	1.58	1.53
3	B	2802	BOG	C3'-C2'	-2.35	1.38	1.51
3	A	1801	BOG	C4-C5	-2.34	1.48	1.53
5	B	2701	34C	C11-C10	-2.33	1.30	1.49

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	1701	34C	C11-C10	-2.28	1.31	1.49
2	B	2681	NAG	O5-C5	2.28	1.48	1.43
5	B	2701	34C	C6-C1	2.26	1.43	1.39
4	A	601	HEM	C2C-C1C	2.24	1.47	1.42
2	A	1672	NAG	C4-C3	2.24	1.58	1.52
2	B	2672	NAG	C3-C2	2.17	1.57	1.52
4	A	601	HEM	CHA-C4D	2.13	1.40	1.35
2	A	1681	NAG	C4-C3	2.13	1.57	1.52
2	A	1661	NAG	O5-C5	2.11	1.47	1.43
2	B	2681	NAG	O5-C1	2.08	1.47	1.43
2	B	2681	NAG	C4-C3	2.08	1.57	1.52
2	A	1681	NAG	O5-C5	2.07	1.47	1.43
3	A	1802	BOG	C7'-C6'	-2.07	1.36	1.51
4	A	601	HEM	CAA-C2A	2.06	1.55	1.52
3	B	2802	BOG	C7'-C6'	-2.05	1.37	1.51
3	A	1801	BOG	C7'-C6'	-2.04	1.37	1.51
2	A	1672	NAG	C4-C5	2.02	1.57	1.53

All (33) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	601	HEM	CBA-CAA-C2A	-5.81	102.70	112.62
4	B	601	HEM	CBA-CAA-C2A	-4.72	104.57	112.62
3	A	1801	BOG	C1'-O1-C1	4.54	121.37	113.84
4	B	601	HEM	C2B-C1B-NB	3.79	114.33	109.84
4	A	601	HEM	C2B-C1B-NB	3.60	114.10	109.84
5	A	1701	34C	O3-C8-O2	-3.46	114.69	123.30
5	B	2701	34C	O3-C8-O2	-3.45	114.70	123.30
3	A	1802	BOG	C1'-O1-C1	2.90	118.65	113.84
4	A	601	HEM	C3B-C2B-C1B	-2.82	104.39	106.49
3	B	2802	BOG	C1'-O1-C1	2.76	118.42	113.84
4	B	601	HEM	C3B-C2B-C1B	-2.68	104.50	106.49
2	A	1681	NAG	C2-N2-C7	2.66	126.69	122.90
4	A	601	HEM	C4B-CHC-C1C	2.64	126.04	122.56
4	B	601	HEM	C4B-CHC-C1C	2.59	125.98	122.56
4	A	601	HEM	CAA-CBA-CGA	2.44	120.61	113.76
5	A	1701	34C	C11-C10-C9	2.41	126.88	112.32
4	A	601	HEM	C4C-CHD-C1D	2.36	125.68	122.56
4	A	601	HEM	C2D-C1D-ND	2.35	112.70	109.88
4	B	601	HEM	C1D-C2D-C3D	-2.34	104.50	106.96
3	B	2802	BOG	O1-C1-C2	2.27	111.85	108.30
4	B	601	HEM	C4C-CHD-C1D	2.27	125.55	122.56

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1661	NAG	O7-C7-C8	-2.25	117.87	122.06
2	A	1672	NAG	O7-C7-C8	-2.23	117.91	122.06
2	A	1681	NAG	O7-C7-C8	-2.19	117.99	122.06
2	B	2672	NAG	O7-C7-C8	-2.18	118.01	122.06
2	B	2681	NAG	C1-O5-C5	2.17	115.14	112.19
5	B	2701	34C	C11-C10-C9	2.16	125.38	112.32
4	A	601	HEM	C1D-C2D-C3D	-2.13	104.72	106.96
2	A	1672	NAG	C4-C3-C2	-2.12	107.91	111.02
3	A	1802	BOG	O1-C1-C2	2.11	111.60	108.30
2	B	2661	NAG	O7-C7-C8	-2.07	118.22	122.06
3	A	1801	BOG	O1-C1-C2	2.06	111.51	108.30
4	A	601	HEM	CBB-CAB-C3B	-2.01	117.63	127.62

There are no chirality outliers.

All (28) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1681	NAG	C8-C7-N2-C2
2	A	1681	NAG	O7-C7-N2-C2
2	B	2681	NAG	C8-C7-N2-C2
2	B	2681	NAG	O7-C7-N2-C2
2	A	1672	NAG	O5-C5-C6-O6
2	A	1672	NAG	C4-C5-C6-O6
2	B	2672	NAG	O5-C5-C6-O6
2	B	2672	NAG	C4-C5-C6-O6
3	A	1802	BOG	C3'-C4'-C5'-C6'
2	B	2671	NAG	O5-C5-C6-O6
2	B	2671	NAG	C4-C5-C6-O6
3	B	2802	BOG	C1'-C2'-C3'-C4'
2	B	2681	NAG	C4-C5-C6-O6
2	B	2661	NAG	C4-C5-C6-O6
3	A	1801	BOG	C3'-C4'-C5'-C6'
3	B	2802	BOG	C3'-C4'-C5'-C6'
5	A	1701	34C	C11-C10-C9-O1
2	B	2681	NAG	O5-C5-C6-O6
3	A	1802	BOG	C1'-C2'-C3'-C4'
3	A	1802	BOG	O1-C1'-C2'-C3'
2	B	2661	NAG	O5-C5-C6-O6
2	A	1681	NAG	C1-C2-N2-C7
2	B	2671	NAG	C8-C7-N2-C2
3	B	2802	BOG	O1-C1'-C2'-C3'
2	B	2671	NAG	O7-C7-N2-C2

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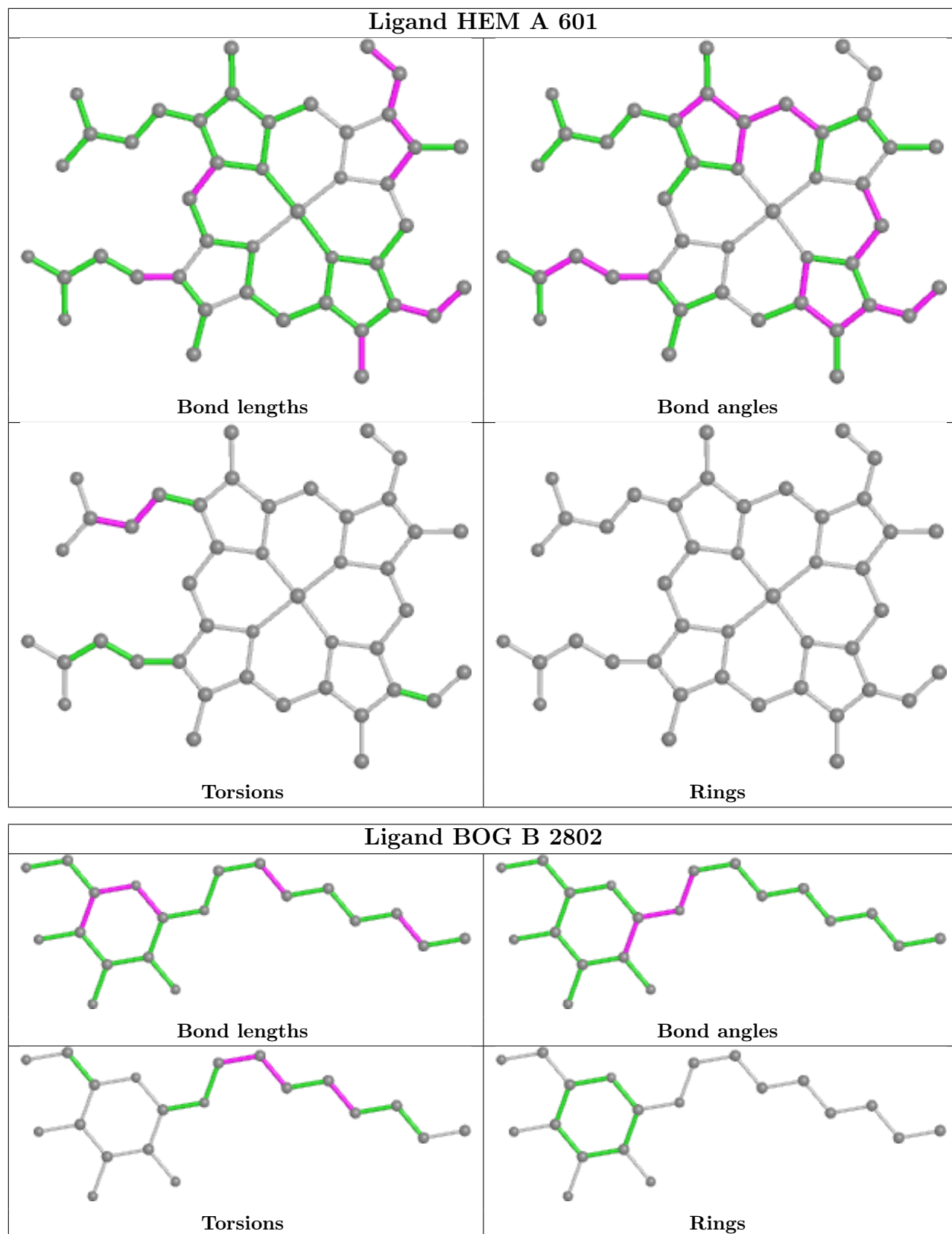
Mol	Chain	Res	Type	Atoms
4	A	601	HEM	C3D-CAD-CBD-CGD
4	A	601	HEM	CAD-CBD-CGD-O1D
4	A	601	HEM	CAD-CBD-CGD-O2D

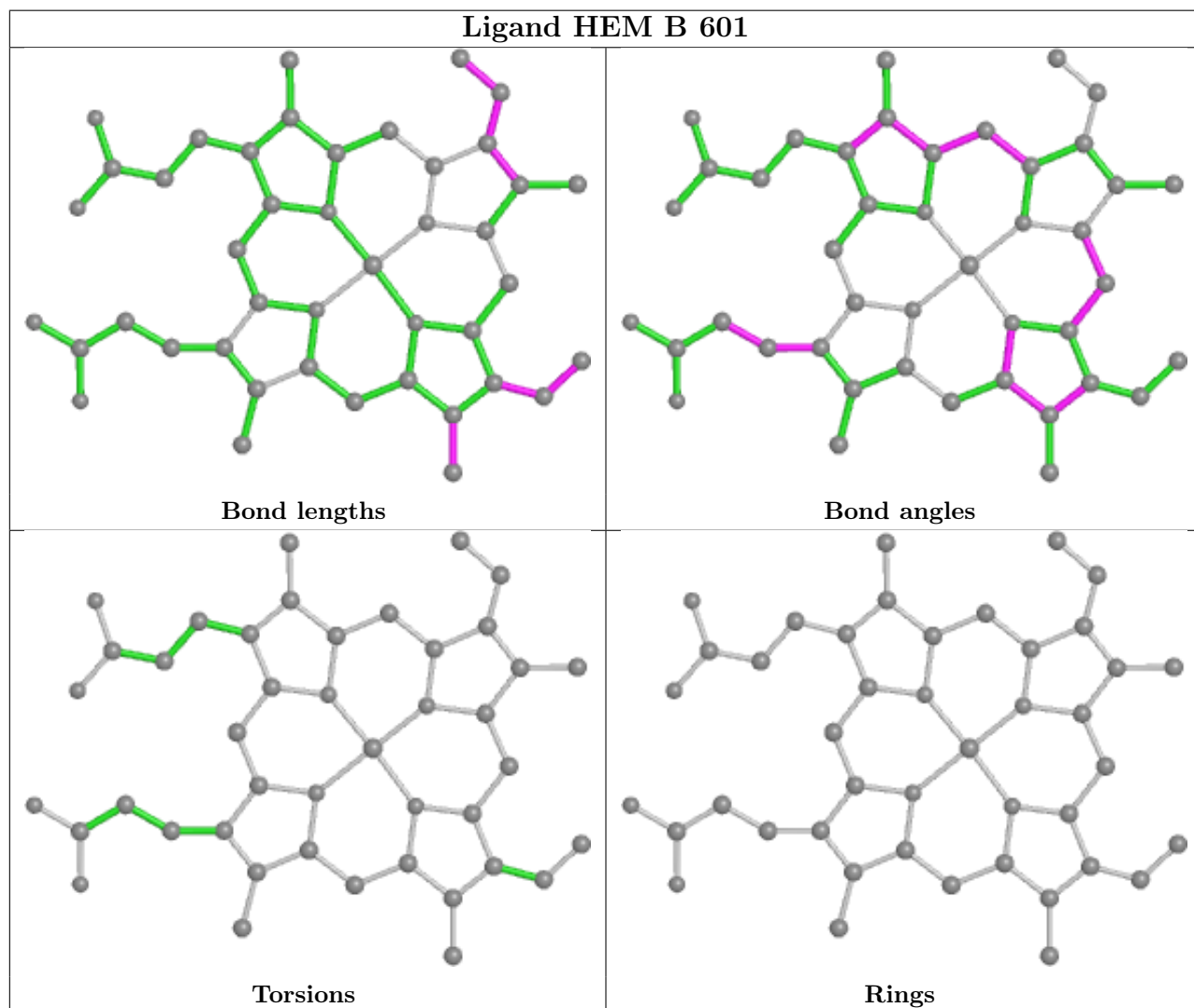
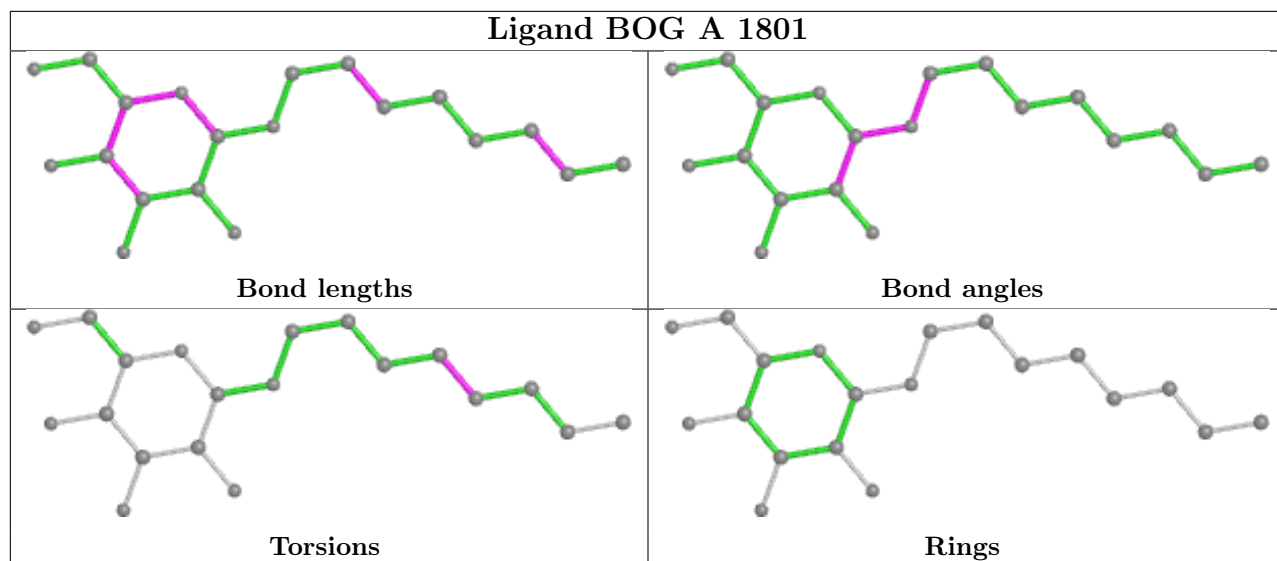
There are no ring outliers.

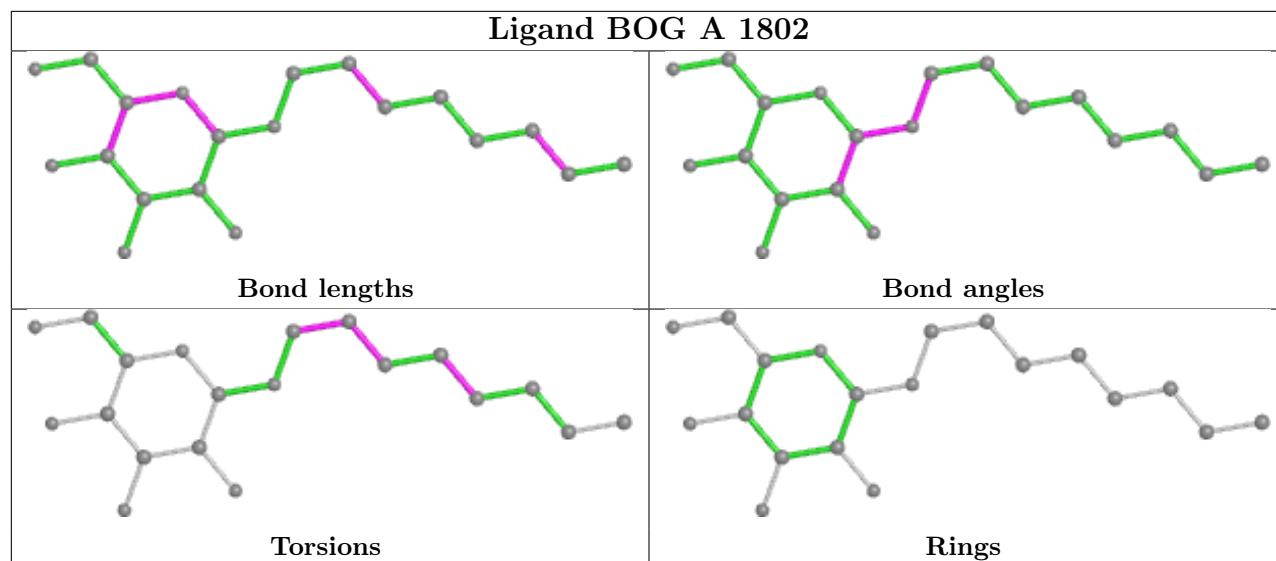
14 monomers are involved in 43 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	601	HEM	5	0
2	A	1671	NAG	6	0
2	B	2671	NAG	5	0
2	B	2681	NAG	2	0
3	B	2802	BOG	3	0
2	A	1661	NAG	2	0
2	B	2661	NAG	2	0
2	B	2672	NAG	1	0
3	A	1801	BOG	4	0
4	B	601	HEM	4	0
3	A	1802	BOG	6	0
2	A	1672	NAG	1	0
2	A	1681	NAG	2	0
5	B	2701	34C	2	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 than 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.







5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	551/551 (100%)	-0.56	6 (1%) 80 82	10, 23, 39, 53	0
1	B	551/551 (100%)	-0.54	11 (1%) 65 67	9, 23, 38, 52	0
All	All	1102/1102 (100%)	-0.55	17 (1%) 73 76	9, 23, 39, 53	0

All (17) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	282	GLN	3.8
1	B	215	LYS	2.7
1	B	514	PRO	2.5
1	A	33	VAL	2.5
1	B	33	VAL	2.4
1	B	400	GLN	2.4
1	A	75	TRP	2.4
1	B	98	TRP	2.4
1	A	79	ARG	2.3
1	B	107	PHE	2.3
1	B	368	GLY	2.2
1	B	75	TRP	2.2
1	A	98	TRP	2.1
1	B	399	PRO	2.1
1	B	282	GLN	2.0
1	B	277	ARG	2.0
1	A	186	LYS	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

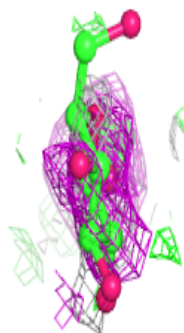
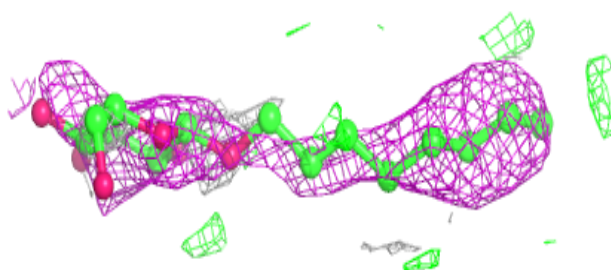
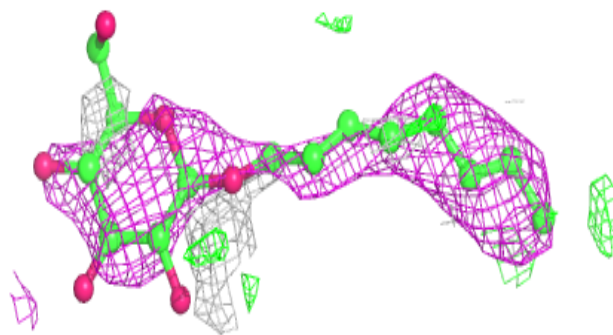
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	BOG	A	1801	20/20	0.45	1.02	38,63,68,69	0
2	NAG	B	2681	14/15	0.68	0.33	45,48,51,51	0
2	NAG	A	1681	14/15	0.73	0.35	45,47,49,52	0
3	BOG	A	1802	20/20	0.75	0.29	37,54,65,68	0
2	NAG	B	2661	14/15	0.77	0.29	40,42,44,45	0
2	NAG	A	1661	14/15	0.78	0.29	40,44,45,45	0
5	34C	A	1701	15/15	0.81	0.21	36,37,44,46	0
3	BOG	B	2802	20/20	0.82	0.28	37,54,65,68	0
2	NAG	B	2672	14/15	0.82	0.25	26,28,30,31	0
2	NAG	A	1672	14/15	0.83	0.27	26,28,31,31	0
5	34C	B	2701	15/15	0.85	0.22	35,37,43,44	0
2	NAG	A	1671	14/15	0.93	0.15	6,15,18,21	0
4	HEM	B	601	43/43	0.94	0.16	22,24,33,39	0
2	NAG	B	2671	14/15	0.94	0.15	9,17,19,23	0
4	HEM	A	601	43/43	0.94	0.14	23,25,32,38	0

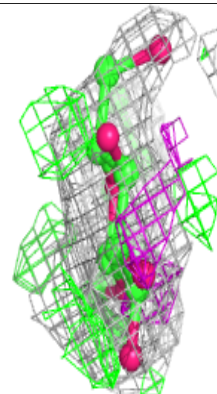
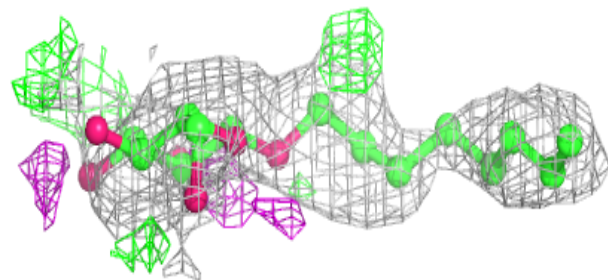
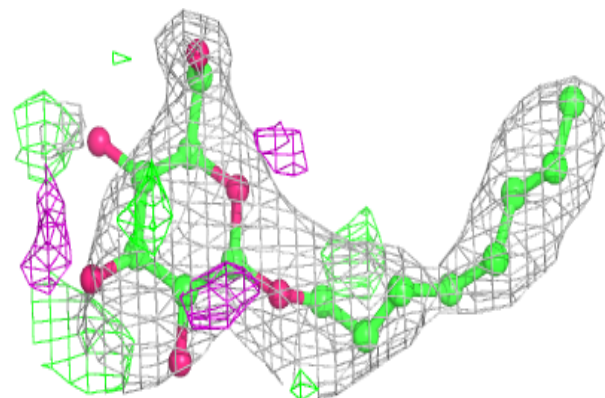
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around BOG A 1801:

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

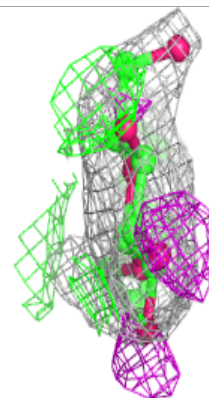
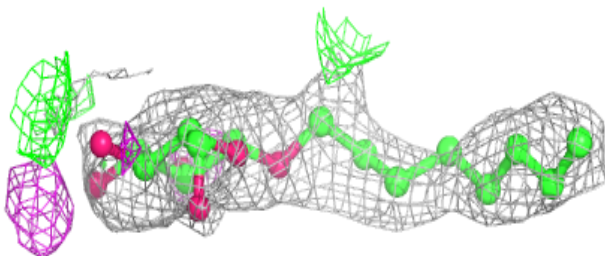
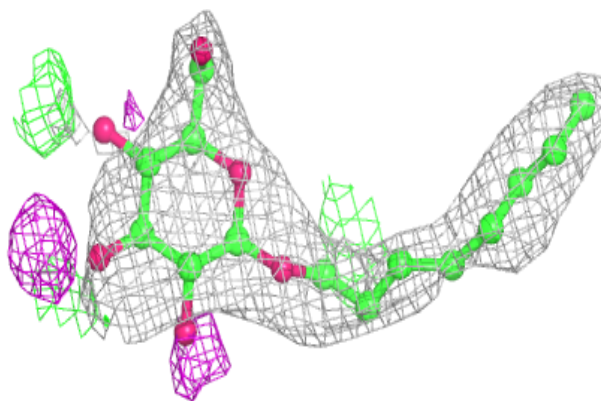
**Electron density around BOG A 1802:**

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



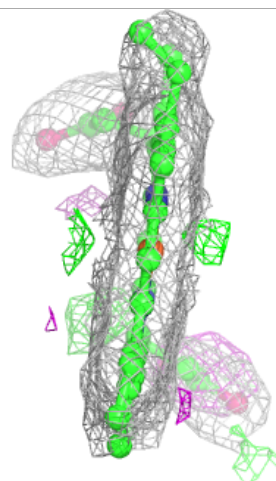
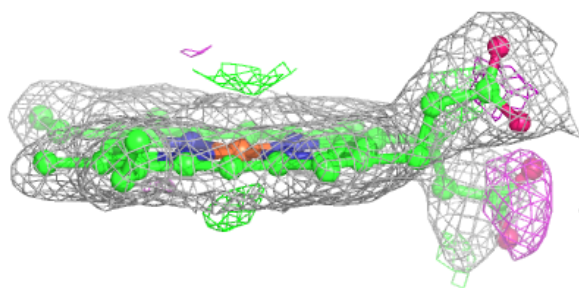
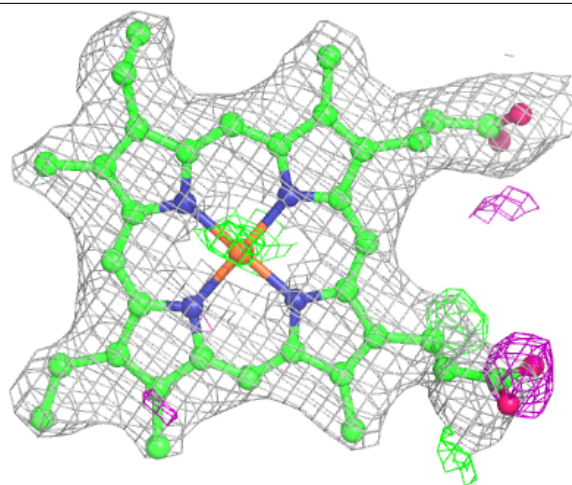
Electron density around BOG B 2802:

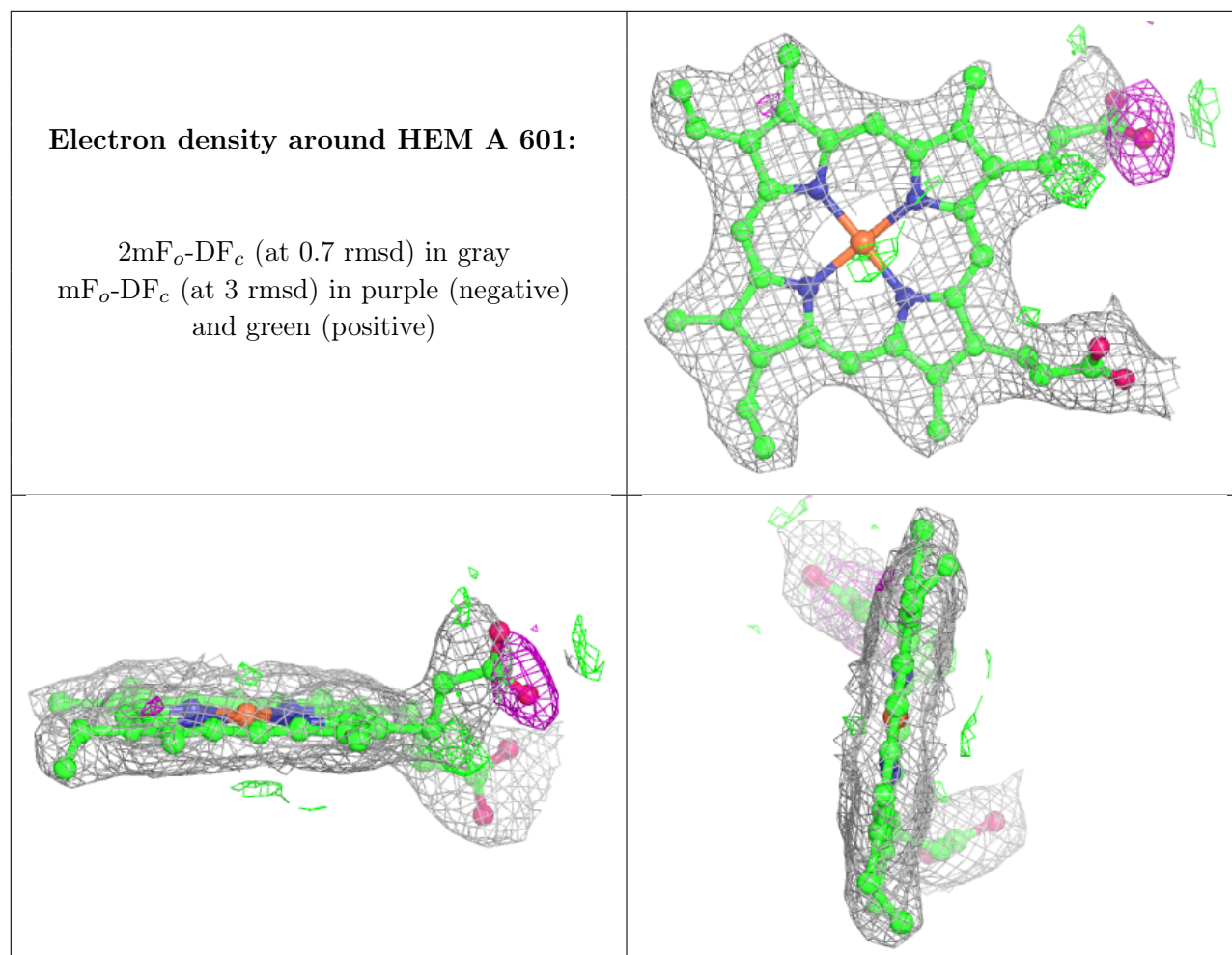
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around HEM B 601:

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





6.5 Other polymers [\(i\)](#)

There are no such residues in this entry.