



Full wwPDB X-ray Structure Validation Report ⓘ

Apr 25, 2026 – 07:52 PM EDT

PDB ID : 3LN1 / pdb_00003ln1
Title : Structure of celecoxib bound at the COX-2 active site
Authors : Kiefer, J.R.; Kurumbail, R.G.; Stallings, W.C.; Pawlitz, J.L.
Deposited on : 2010-02-01
Resolution : 2.40 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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

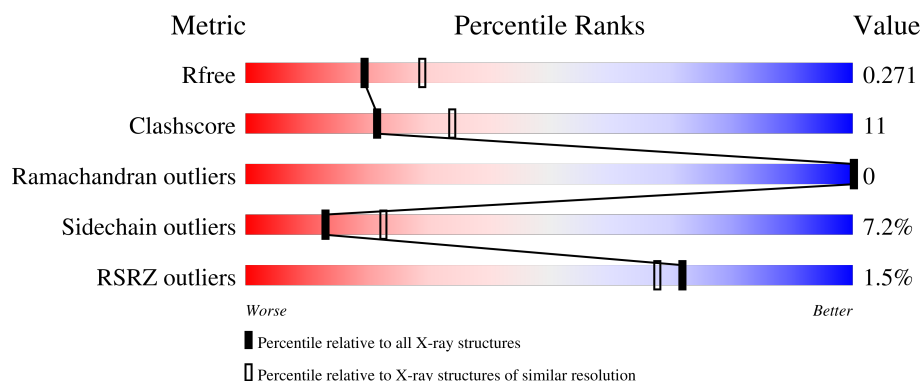
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

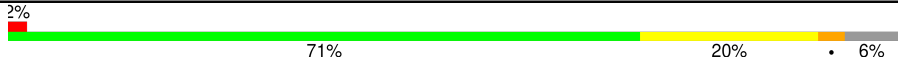
The reported resolution of this entry is 2.40 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	4912 (2.40-2.40)
Clashscore	190562	5391 (2.40-2.40)
Ramachandran outliers	187476	5320 (2.40-2.40)
Sidechain outliers	187428	5321 (2.40-2.40)
RSRZ outliers	180081	4916 (2.40-2.40)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	587	
1	B	587	
1	C	587	
1	D	587	
2	E	3	

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Mol	Chain	Length	Quality of chain
2	F	3	 33% 67%
2	G	3	 33% 67%
2	H	3	 67% 33%

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 18603 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 G/H synthase 2.

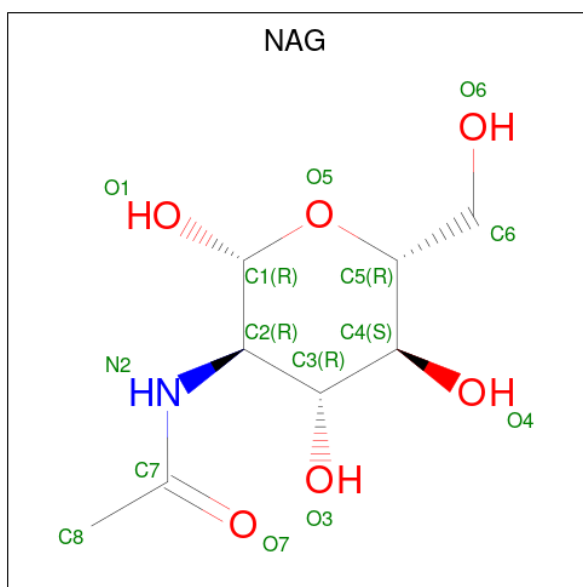
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	552	Total	C	N	O	S	0	0	0
			4474	2885	750	814	25			
1	B	552	Total	C	N	O	S	0	0	0
			4474	2885	750	814	25			
1	C	552	Total	C	N	O	S	0	0	0
			4474	2885	750	814	25			
1	D	552	Total	C	N	O	S	0	0	0
			4474	2885	750	814	25			

- Molecule 2 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



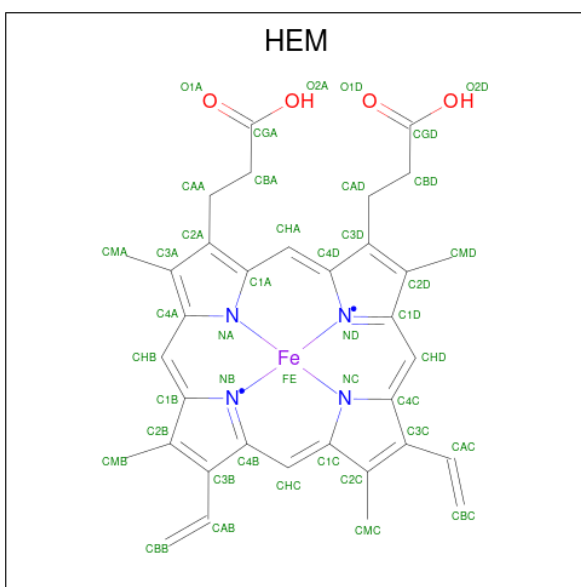
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	E	3	Total	C	N	O	0	0	0
			42	24	3	15			
2	F	3	Total	C	N	O	0	0	0
			42	24	3	15			
2	G	3	Total	C	N	O	0	0	0
			42	24	3	15			
2	H	3	Total	C	N	O	0	0	0
			42	24	3	15			

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: C₈H₁₅NO₆).



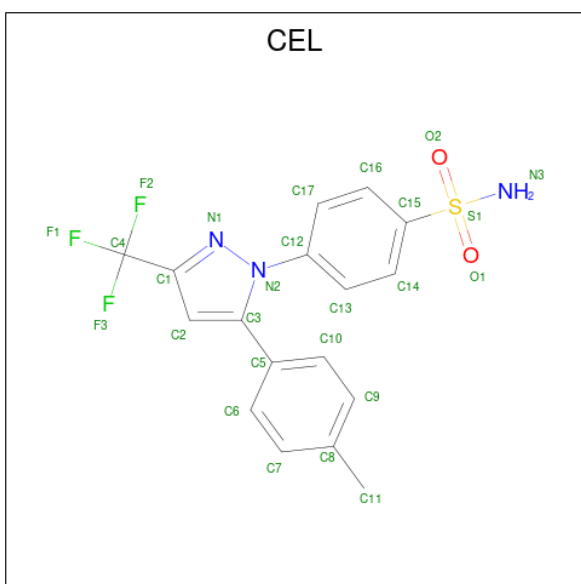
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			14	8	1	5		
3	A	1	Total	C	N	O	0	0
			14	8	1	5		
3	B	1	Total	C	N	O	0	0
			14	8	1	5		
3	B	1	Total	C	N	O	0	0
			14	8	1	5		
3	C	1	Total	C	N	O	0	0
			14	8	1	5		
3	C	1	Total	C	N	O	0	0
			14	8	1	5		
3	D	1	Total	C	N	O	0	0
			14	8	1	5		
3	D	1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

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



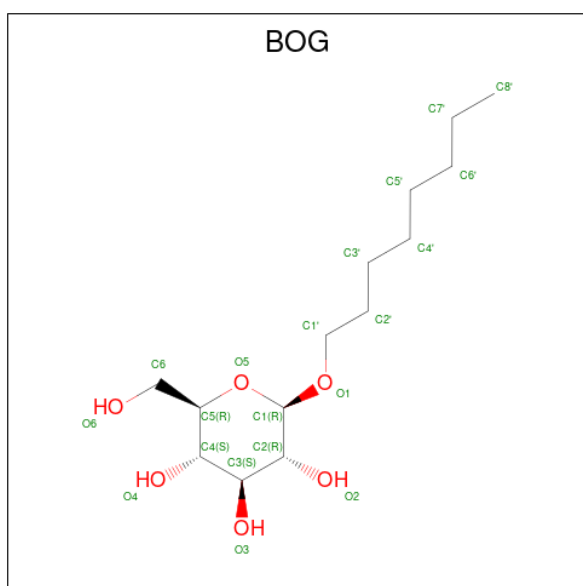
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
4	B	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
4	C	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
4	D	1	Total 43	C 34	Fe 1	N 4	O 4	0	0

- Molecule 5 is 4-[5-(4-METHYLPHENYL)-3-(TRIFLUOROMETHYL)-1H-PYRAZOL-1-YL]BENZENESULFONAMIDE (CCD ID: CEL) (formula: $C_{17}H_{14}F_3N_3O_2S$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total	C	F	N	O	S	
			26	17	3	3	2	1	0
5	B	1	Total	C	F	N	O	S	
			26	17	3	3	2	1	0
5	C	1	Total	C	F	N	O	S	
			26	17	3	3	2	1	0
5	D	1	Total	C	F	N	O	S	
			26	17	3	3	2	1	0

- Molecule 6 is octyl beta-D-glucopyranoside (CCD ID: BOG) (formula: $C_{14}H_{28}O_6$).



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

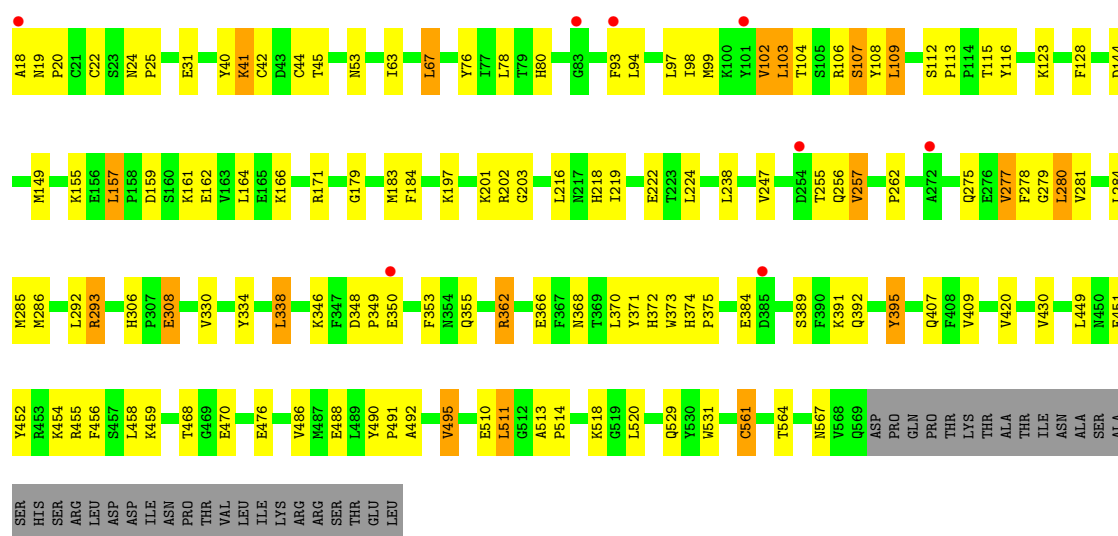
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	37	Total	O	0	0
			37	37		
7	B	33	Total	O	0	0
			33	33		
7	C	12	Total	O	0	0
			12	12		
7	D	29	Total	O	0	0
			29	29		

ILE
ASN
PRO
THR
VAL
LEU
ILE
LYS
ARG
ARG
SER
THR
GLU
LEU

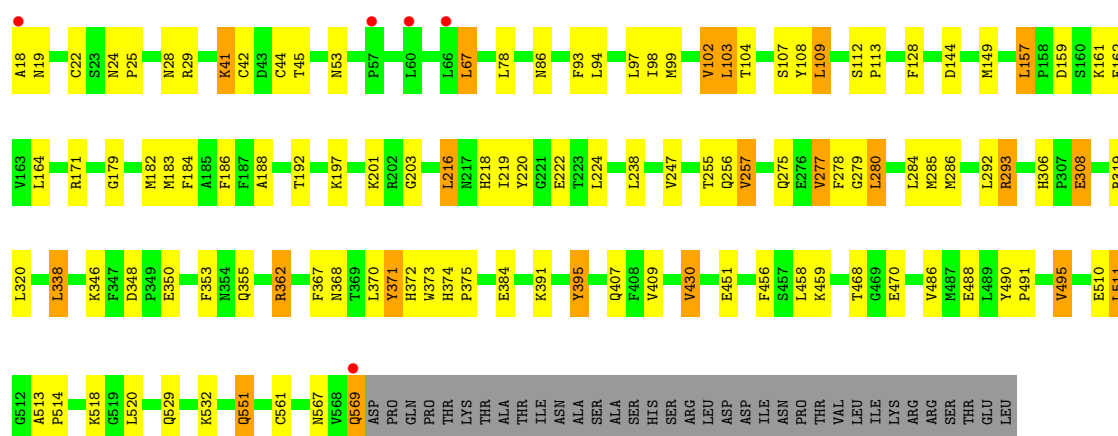
• Molecule 1: Prostaglandin G/H synthase 2

Chain C: 72% 19% 6%



• Molecule 1: Prostaglandin G/H synthase 2

Chain D: 74% 16% 6%



• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E: 67% 33%

NAG1
NAG2
NAG3

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F:  33% 67%

MAG1
MAG2
MAG3

- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G:  33% 67%

MAG1
MAG2
MAG3

- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H:  67% 33%

MAG1
MAG2
MAG3

4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α , β , γ	180.94Å 135.38Å 124.08Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	26.77 – 2.40 26.77 – 2.40	Depositor EDS
% Data completeness (in resolution range)	74.2 (26.77-2.40) 74.1 (26.77-2.40)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.10	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.39 (at 2.39Å)	Xtriage
Refinement program	REFMAC 5.4.0067	Depositor
R, R_{free}	0.232 , 0.264 0.240 , 0.271	Depositor DCC
R_{free} test set	8910 reflections (7.47%)	wwPDB-VP
Wilson B-factor (Å ²)	36.2	Xtriage
Anisotropy	0.261	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 25.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	18603	wwPDB-VP
Average B, all atoms (Å ²)	47.0	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 50.26 % 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 6.6381e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: BOG, HEM, NAG, CEL

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	0.71	0/4601	0.90	6/6239 (0.1%)
1	B	0.69	0/4601	0.88	10/6239 (0.2%)
1	C	0.67	0/4601	0.88	6/6239 (0.1%)
1	D	0.71	0/4601	0.89	4/6239 (0.1%)
All	All	0.69	0/18404	0.89	26/24956 (0.1%)

There are no bond length outliers.

All (26) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	203	GLY	CA-C-N	7.56	127.27	119.56
1	A	203	GLY	C-N-CA	7.56	127.27	119.56
1	D	203	GLY	CA-C-N	7.46	127.17	119.56
1	D	203	GLY	C-N-CA	7.46	127.17	119.56
1	C	203	GLY	CA-C-N	6.53	126.46	119.28
1	C	203	GLY	C-N-CA	6.53	126.46	119.28
1	B	203	GLY	CA-C-N	6.28	125.96	119.56
1	B	203	GLY	C-N-CA	6.28	125.96	119.56
1	C	561	CYS	CA-C-N	5.90	125.86	119.78
1	C	561	CYS	C-N-CA	5.90	125.86	119.78
1	B	24	ASN	CA-C-N	5.28	125.34	119.32
1	B	24	ASN	C-N-CA	5.28	125.34	119.32
1	B	113	PRO	CA-C-N	5.27	125.55	119.92
1	B	113	PRO	C-N-CA	5.27	125.55	119.92
1	A	279	GLY	N-CA-C	-5.18	108.53	115.32
1	A	139	PRO	O-C-N	5.18	123.58	121.15
1	B	262	PRO	CA-C-N	5.16	124.96	119.28
1	B	262	PRO	C-N-CA	5.16	124.96	119.28
1	C	262	PRO	CA-C-N	5.12	124.92	119.28
1	C	262	PRO	C-N-CA	5.12	124.92	119.28

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	532	LYS	CA-C-N	5.11	125.14	119.32
1	B	532	LYS	C-N-CA	5.11	125.14	119.32
1	D	532	LYS	CA-C-N	5.05	126.15	119.84
1	D	532	LYS	C-N-CA	5.05	126.15	119.84
1	A	262	PRO	CA-C-N	5.04	124.83	119.28
1	A	262	PRO	C-N-CA	5.04	124.83	119.28

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	4474	0	4373	98	0
1	B	4474	0	4373	94	1
1	C	4474	0	4372	93	0
1	D	4474	0	4373	87	0
2	E	42	0	37	1	0
2	F	42	0	37	3	0
2	G	42	0	37	7	0
2	H	42	0	37	1	0
3	A	28	0	26	2	0
3	B	28	0	26	4	0
3	C	28	0	26	2	0
3	D	28	0	26	1	0
4	A	43	0	30	5	0
4	B	43	0	30	3	0
4	C	43	0	30	2	0
4	D	43	0	30	1	0
5	A	26	0	14	0	0
5	B	26	0	14	0	0
5	C	26	0	14	0	0
5	D	26	0	14	0	0
6	A	20	0	28	0	1
6	D	20	0	28	0	0
7	A	37	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	B	33	0	0	1	0
7	C	12	0	0	0	0
7	D	29	0	0	0	0
All	All	18603	0	17975	393	1

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 11.

All (393) 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:D:128:PHE:O	1:D:362:ARG:NH2	2.00	0.94
1:B:128:PHE:O	1:B:362:ARG:NH2	2.00	0.94
1:A:128:PHE:O	1:A:362:ARG:NH2	2.03	0.91
1:C:128:PHE:O	1:C:362:ARG:NH2	2.03	0.91
1:A:280:LEU:HD22	1:A:395:TYR:HD2	1.40	0.86
1:C:280:LEU:HD22	1:C:395:TYR:HD2	1.42	0.84
1:C:279:GLY:HA2	1:C:285:MET:CE	2.08	0.83
1:C:384:GLU:HG3	1:C:407:GLN:CG	2.09	0.82
1:D:384:GLU:HG3	1:D:407:GLN:CG	2.10	0.82
1:B:384:GLU:HG3	1:B:407:GLN:CG	2.11	0.81
1:D:279:GLY:HA2	1:D:285:MET:CE	2.11	0.81
1:A:384:GLU:HG3	1:A:407:GLN:CG	2.12	0.80
1:A:279:GLY:HA2	1:A:285:MET:CE	2.10	0.80
1:D:306:HIS:HA	1:D:308:GLU:OE2	1.81	0.79
1:B:280:LEU:HD22	1:B:395:TYR:HD2	1.47	0.79
1:D:286:MET:CE	1:D:409:VAL:HG22	2.13	0.78
1:A:306:HIS:HA	1:A:308:GLU:OE2	1.84	0.78
1:A:18:ALA:HB3	1:A:144:ASP:OD2	1.83	0.78
1:D:280:LEU:HD22	1:D:395:TYR:HD2	1.49	0.78
1:C:561:CYS:SG	1:C:561:CYS:O	2.41	0.78
1:B:24:ASN:N	1:B:25:PRO:HD3	2.00	0.77
1:B:286:MET:CE	1:B:409:VAL:HG22	2.16	0.76
1:C:456:PHE:CG	1:C:511:LEU:HD22	2.21	0.76
1:D:24:ASN:N	1:D:25:PRO:HD3	2.02	0.75
1:A:24:ASN:N	1:A:25:PRO:HD3	2.01	0.75
1:B:306:HIS:HA	1:B:308:GLU:OE2	1.87	0.74
1:C:306:HIS:HA	1:C:308:GLU:OE2	1.86	0.74
1:D:286:MET:HE3	1:D:409:VAL:CG2	2.18	0.74
1:B:279:GLY:HA2	1:B:285:MET:CE	2.18	0.73
1:D:384:GLU:HG3	1:D:407:GLN:CD	2.14	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:53:ASN:ND2	3:B:661:NAG:H61	2.04	0.73
1:C:384:GLU:HG3	1:C:407:GLN:CD	2.14	0.73
1:A:456:PHE:CG	1:A:511:LEU:HD22	2.26	0.71
1:C:279:GLY:HA2	1:C:285:MET:HE3	1.71	0.71
1:A:384:GLU:HG3	1:A:407:GLN:CD	2.15	0.71
1:C:384:GLU:HG3	1:C:407:GLN:HG2	1.70	0.71
1:A:384:GLU:HG3	1:A:407:GLN:HG2	1.74	0.70
1:B:384:GLU:HG3	1:B:407:GLN:CD	2.16	0.70
4:B:605:HEM:HBB2	4:B:605:HEM:HHC	1.73	0.70
1:D:286:MET:HE3	1:D:409:VAL:HG23	1.74	0.70
1:B:384:GLU:HG3	1:B:407:GLN:HG2	1.72	0.70
1:B:456:PHE:CG	1:B:511:LEU:HD22	2.26	0.70
1:A:286:MET:CE	1:A:409:VAL:HG22	2.21	0.69
1:B:286:MET:HE3	1:B:409:VAL:CG2	2.22	0.69
1:D:456:PHE:CG	1:D:511:LEU:HD22	2.27	0.69
1:C:346:LYS:HE3	1:C:348:ASP:HB2	1.74	0.69
1:A:286:MET:HE3	1:A:409:VAL:CG2	2.23	0.68
1:D:384:GLU:HG3	1:D:407:GLN:HG2	1.74	0.68
1:A:279:GLY:HA2	1:A:285:MET:HE3	1.76	0.68
1:C:286:MET:CE	1:C:409:VAL:HG22	2.23	0.68
1:B:159:ASP:HB3	1:B:162:GLU:HB2	1.76	0.67
1:D:346:LYS:HE3	1:D:348:ASP:HB2	1.76	0.67
1:A:255:THR:OG1	1:A:257:VAL:HG13	1.95	0.67
1:A:346:LYS:HE3	1:A:348:ASP:HB2	1.75	0.67
1:B:166:LYS:HD3	1:B:476:GLU:OE1	1.93	0.67
2:G:2:NAG:H4	2:G:3:NAG:HN2	1.61	0.66
1:A:292:LEU:C	1:A:292:LEU:HD23	2.21	0.66
1:B:346:LYS:HE3	1:B:348:ASP:HB2	1.77	0.66
1:D:53:ASN:ND2	3:D:661:NAG:H61	2.09	0.66
1:C:166:LYS:HD3	1:C:476:GLU:OE1	1.96	0.66
1:D:159:ASP:HB3	1:D:162:GLU:HB2	1.78	0.65
1:A:166:LYS:HD3	1:A:476:GLU:OE1	1.96	0.65
1:C:286:MET:HE3	1:C:409:VAL:CG2	2.26	0.65
1:B:279:GLY:HA2	1:B:285:MET:HE3	1.77	0.64
1:C:53:ASN:ND2	3:C:661:NAG:H61	2.11	0.64
1:C:183:MET:SD	1:C:286:MET:HE1	2.37	0.64
1:D:255:THR:OG1	1:D:257:VAL:HG13	1.98	0.63
1:B:529:GLN:OE1	1:B:529:GLN:HA	1.98	0.63
1:D:98:ILE:O	1:D:102:VAL:HG13	1.99	0.63
1:C:529:GLN:HA	1:C:529:GLN:OE1	1.99	0.63
1:D:292:LEU:C	1:D:292:LEU:HD23	2.24	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:159:ASP:HB3	1:C:162:GLU:HB2	1.79	0.63
1:C:202:ARG:NH1	2:G:2:NAG:HN2	1.97	0.63
1:A:159:ASP:HB3	1:A:162:GLU:HB2	1.79	0.63
1:B:98:ILE:O	1:B:102:VAL:HG13	1.98	0.63
1:D:279:GLY:HA2	1:D:285:MET:HE3	1.80	0.62
1:D:286:MET:CE	1:D:409:VAL:CG2	2.77	0.62
1:A:19:ASN:HB3	1:A:22:CYS:SG	2.39	0.62
1:A:255:THR:O	1:A:256:GLN:HB2	1.99	0.62
1:C:286:MET:HE3	1:C:409:VAL:HG22	1.80	0.62
1:B:255:THR:OG1	1:B:257:VAL:HG13	2.00	0.62
1:C:24:ASN:N	1:C:25:PRO:HD3	2.15	0.61
1:C:149:MET:HE2	1:C:157:LEU:HD21	1.82	0.61
1:A:529:GLN:OE1	1:A:529:GLN:HA	2.01	0.61
1:A:458:LEU:HD21	1:A:510:GLU:HG3	1.82	0.61
1:B:286:MET:HE3	1:B:409:VAL:HG23	1.82	0.60
1:C:255:THR:OG1	1:C:257:VAL:HG13	2.00	0.60
1:B:292:LEU:HD23	1:B:292:LEU:C	2.26	0.60
1:A:98:ILE:O	1:A:102:VAL:HG13	2.02	0.60
1:D:286:MET:HE1	1:D:409:VAL:HG22	1.84	0.60
1:C:292:LEU:C	1:C:292:LEU:HD23	2.27	0.59
1:C:108:TYR:CE2	1:C:109:LEU:HD22	2.37	0.59
1:A:247:VAL:O	1:A:293:ARG:NH1	2.35	0.59
1:A:456:PHE:CD2	1:A:511:LEU:HD22	2.37	0.59
1:A:183:MET:SD	1:A:286:MET:HE1	2.44	0.58
1:D:183:MET:SD	1:D:286:MET:HE1	2.44	0.58
1:B:370:LEU:C	1:B:370:LEU:HD12	2.28	0.58
1:B:108:TYR:CE2	1:B:109:LEU:HD22	2.38	0.58
1:D:368:ASN:O	1:D:372:HIS:HD2	1.87	0.58
1:C:247:VAL:O	1:C:293:ARG:NH1	2.36	0.57
1:D:374:HIS:N	1:D:375:PRO:CD	2.67	0.57
1:C:368:ASN:O	1:C:372:HIS:HD2	1.88	0.57
1:A:286:MET:HE3	1:A:409:VAL:HG23	1.86	0.57
1:B:24:ASN:N	1:B:25:PRO:CD	2.67	0.57
1:A:280:LEU:HD22	1:A:395:TYR:CD2	2.32	0.57
1:B:112:SER:HA	1:B:113:PRO:C	2.30	0.56
1:D:28:ASN:O	1:D:29:ARG:HB2	2.04	0.56
1:D:529:GLN:OE1	1:D:529:GLN:HA	2.04	0.56
1:A:53:ASN:ND2	3:A:661:NAG:H61	2.19	0.56
3:B:661:NAG:O7	3:B:661:NAG:C3	2.52	0.56
1:B:286:MET:HE1	1:B:409:VAL:HG22	1.86	0.56
1:B:368:ASN:O	1:B:372:HIS:HD2	1.89	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:561:CYS:O	1:B:561:CYS:SG	2.63	0.56
2:G:2:NAG:H4	2:G:3:NAG:N2	2.18	0.56
1:C:20:PRO:HB2	1:C:40:TYR:HB3	1.87	0.56
1:C:98:ILE:O	1:C:102:VAL:HG13	2.06	0.56
1:D:108:TYR:CE2	1:D:109:LEU:HD22	2.41	0.56
1:A:24:ASN:N	1:A:25:PRO:CD	2.69	0.55
1:A:368:ASN:O	1:A:372:HIS:HD2	1.89	0.55
1:C:278:PHE:O	1:C:285:MET:HE2	2.06	0.55
1:D:99:MET:HE3	1:D:103:LEU:HD13	1.88	0.55
1:D:247:VAL:O	1:D:293:ARG:NH1	2.39	0.55
1:B:183:MET:SD	1:B:286:MET:HE1	2.47	0.55
1:C:216:LEU:HD13	1:C:219:ILE:HD12	1.89	0.54
1:B:28:ASN:O	1:B:29:ARG:HB2	2.07	0.54
3:B:661:NAG:O7	3:B:661:NAG:O3	2.21	0.54
1:A:99:MET:HE3	1:A:103:LEU:HD13	1.88	0.54
1:A:108:TYR:CE2	1:A:109:LEU:HD22	2.43	0.54
1:C:306:HIS:CA	1:C:308:GLU:OE2	2.55	0.54
1:B:247:VAL:O	1:B:293:ARG:NH1	2.40	0.54
1:C:280:LEU:HD22	1:C:395:TYR:CD2	2.33	0.54
1:C:255:THR:O	1:C:256:GLN:HB2	2.08	0.53
1:A:112:SER:HA	1:A:113:PRO:C	2.32	0.53
1:A:561:CYS:O	1:A:561:CYS:SG	2.67	0.53
1:A:97:LEU:HD23	1:A:97:LEU:O	2.09	0.53
2:H:3:NAG:O7	2:H:3:NAG:H3	2.07	0.53
1:C:112:SER:HA	1:C:113:PRO:C	2.32	0.53
1:B:458:LEU:HD21	1:B:510:GLU:HG3	1.91	0.53
1:B:513:ALA:N	1:B:514:PRO:CD	2.72	0.53
1:D:561:CYS:O	1:D:561:CYS:SG	2.66	0.53
1:D:458:LEU:HD21	1:D:510:GLU:HG3	1.90	0.53
1:B:216:LEU:HD22	1:B:218:HIS:HE1	1.74	0.53
1:B:255:THR:O	1:B:256:GLN:HB2	2.08	0.53
1:C:184:PHE:CZ	1:C:338:LEU:HD13	2.44	0.53
1:A:306:HIS:CA	1:A:308:GLU:OE2	2.55	0.53
1:D:490:TYR:HB3	1:D:491:PRO:HD3	1.91	0.53
1:A:24:ASN:H	1:A:25:PRO:HD3	1.71	0.52
1:B:99:MET:HE3	1:B:103:LEU:HD13	1.91	0.52
1:B:99:MET:HE3	1:B:103:LEU:CD1	2.38	0.52
1:C:99:MET:HE3	1:C:103:LEU:HD13	1.90	0.52
1:C:458:LEU:HD21	1:C:510:GLU:HG3	1.91	0.52
1:D:19:ASN:HB3	1:D:22:CYS:SG	2.49	0.52
1:D:197:LYS:NZ	1:D:222:GLU:HG2	2.24	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:104:THR:HG21	1:B:355:GLN:HG2	1.91	0.52
1:B:374:HIS:N	1:B:375:PRO:CD	2.72	0.52
1:A:374:HIS:N	1:A:375:PRO:CD	2.73	0.52
1:B:286:MET:CE	1:B:409:VAL:CG2	2.82	0.52
1:D:24:ASN:N	1:D:25:PRO:CD	2.71	0.52
1:D:278:PHE:O	1:D:285:MET:HE2	2.10	0.52
1:A:368:ASN:O	1:A:372:HIS:CD2	2.63	0.52
1:A:370:LEU:HD12	1:A:370:LEU:C	2.35	0.52
1:C:216:LEU:HD22	1:C:218:HIS:HE1	1.74	0.51
1:A:563:PHE:C	1:A:563:PHE:CD2	2.88	0.51
1:D:97:LEU:O	1:D:97:LEU:HD23	2.10	0.51
1:D:184:PHE:CZ	1:D:338:LEU:HD13	2.45	0.51
1:C:374:HIS:N	1:C:375:PRO:CD	2.73	0.51
1:D:24:ASN:H	1:D:25:PRO:HD3	1.71	0.51
1:D:104:THR:HG21	1:D:355:GLN:HG2	1.91	0.51
1:C:468:THR:HG22	1:C:495:VAL:HG13	1.93	0.51
1:D:255:THR:O	1:D:256:GLN:HB2	2.10	0.51
1:D:197:LYS:HZ2	1:D:222:GLU:HG2	1.75	0.51
1:D:182:MET:HE3	1:D:186:PHE:CE2	2.46	0.51
1:D:370:LEU:C	1:D:370:LEU:HD12	2.36	0.51
1:A:216:LEU:HD22	1:A:218:HIS:HE1	1.76	0.51
4:A:605:HEM:HHC	4:A:605:HEM:HBB2	1.93	0.51
1:A:513:ALA:HB3	1:A:514:PRO:HD3	1.93	0.50
1:B:490:TYR:HB3	1:B:491:PRO:HD3	1.93	0.50
1:C:456:PHE:CD2	1:C:511:LEU:HD22	2.47	0.50
1:A:458:LEU:HD11	1:A:510:GLU:HB2	1.94	0.50
1:B:184:PHE:CZ	1:B:338:LEU:HD13	2.47	0.50
1:C:184:PHE:CZ	1:C:338:LEU:CD1	2.94	0.50
1:C:368:ASN:O	1:C:372:HIS:CD2	2.64	0.50
1:D:99:MET:HE3	1:D:103:LEU:CD1	2.41	0.50
1:B:44:CYS:O	1:B:45:THR:C	2.54	0.50
1:C:513:ALA:N	1:C:514:PRO:CD	2.75	0.50
1:D:513:ALA:N	1:D:514:PRO:CD	2.75	0.50
1:A:99:MET:HE3	1:A:103:LEU:CD1	2.42	0.50
1:C:202:ARG:HH11	2:G:2:NAG:HN2	1.59	0.50
1:B:513:ALA:HB3	1:B:514:PRO:HD3	1.92	0.49
1:C:197:LYS:HZ1	1:C:222:GLU:HG2	1.76	0.49
1:C:277:VAL:O	1:C:280:LEU:HB2	2.12	0.49
1:D:368:ASN:O	1:D:372:HIS:CD2	2.65	0.49
1:C:490:TYR:HB3	1:C:491:PRO:HD3	1.93	0.49
1:A:277:VAL:O	1:A:280:LEU:HB2	2.13	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:99:MET:HE3	1:C:103:LEU:CD1	2.42	0.49
1:C:513:ALA:HB3	1:C:514:PRO:HD3	1.94	0.49
1:D:216:LEU:HA	1:D:218:HIS:CE1	2.47	0.49
1:D:456:PHE:CD2	1:D:511:LEU:HD22	2.47	0.49
1:D:458:LEU:HD11	1:D:510:GLU:HB2	1.94	0.49
1:D:513:ALA:HB3	1:D:514:PRO:HD3	1.93	0.49
1:B:19:ASN:HB3	1:B:22:CYS:SG	2.52	0.49
1:C:486:VAL:HG12	1:C:486:VAL:O	2.12	0.49
1:D:44:CYS:O	1:D:45:THR:C	2.55	0.49
1:D:277:VAL:O	1:D:280:LEU:HB2	2.12	0.49
1:A:286:MET:HE1	1:A:409:VAL:HG22	1.91	0.49
1:B:430:VAL:HG13	1:B:430:VAL:O	2.12	0.49
1:D:18:ALA:HB3	1:D:144:ASP:OD2	2.12	0.49
1:B:149:MET:HE2	1:B:157:LEU:HD21	1.94	0.49
1:D:159:ASP:OD2	1:D:161:LYS:HB3	2.12	0.49
1:A:44:CYS:O	1:A:45:THR:C	2.56	0.49
1:D:468:THR:HG22	1:D:495:VAL:HG13	1.94	0.49
1:A:486:VAL:HG12	1:A:486:VAL:O	2.11	0.48
1:D:216:LEU:HD22	1:D:218:HIS:HE1	1.77	0.48
1:D:486:VAL:HG12	1:D:486:VAL:O	2.13	0.48
2:E:3:NAG:C7	2:E:3:NAG:O3	2.61	0.48
1:A:192:THR:HG21	1:A:371:TYR:CE2	2.47	0.48
1:A:216:LEU:HA	1:A:218:HIS:CE1	2.48	0.48
1:A:216:LEU:HD13	1:A:219:ILE:HD12	1.95	0.48
1:C:197:LYS:NZ	1:C:222:GLU:HG2	2.28	0.48
4:B:605:HEM:HHC	4:B:605:HEM:CBB	2.41	0.48
1:A:184:PHE:CZ	1:A:338:LEU:HD13	2.47	0.48
1:B:216:LEU:HD13	1:B:219:ILE:HD12	1.96	0.48
1:B:368:ASN:O	1:B:372:HIS:CD2	2.66	0.48
1:B:350:GLU:HA	1:B:353:PHE:CD1	2.49	0.48
1:B:486:VAL:O	1:B:486:VAL:HG12	2.14	0.48
1:D:350:GLU:HA	1:D:353:PHE:CD1	2.48	0.48
1:B:197:LYS:NZ	1:B:222:GLU:HG2	2.28	0.48
1:D:112:SER:HA	1:D:113:PRO:C	2.37	0.48
1:D:306:HIS:CA	1:D:308:GLU:OE2	2.57	0.48
1:A:468:THR:HG22	1:A:495:VAL:HG13	1.95	0.47
2:G:3:NAG:O7	2:G:3:NAG:H3	2.13	0.47
1:A:149:MET:HE2	1:A:157:LEU:HD21	1.97	0.47
1:A:349:PRO:HG2	1:A:531:TRP:CD2	2.49	0.47
1:B:277:VAL:O	1:B:280:LEU:HB2	2.14	0.47
1:C:18:ALA:HB3	1:C:144:ASP:OD2	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:605:HEM:HHC	4:D:605:HEM:HBB2	1.96	0.47
1:B:278:PHE:O	1:B:285:MET:HE2	2.15	0.47
1:B:468:THR:HG22	1:B:495:VAL:HG13	1.96	0.47
1:B:560:GLY:O	1:B:561:CYS:C	2.58	0.47
1:C:286:MET:HE3	1:C:409:VAL:HG23	1.95	0.47
1:C:104:THR:HG21	1:C:355:GLN:HG2	1.96	0.47
1:C:281:VAL:HG11	4:C:605:HEM:CBB	2.45	0.46
1:A:513:ALA:N	1:A:514:PRO:CD	2.78	0.46
1:B:197:LYS:HZ2	1:B:222:GLU:HG2	1.81	0.46
1:B:216:LEU:HA	1:B:218:HIS:CE1	2.50	0.46
1:C:216:LEU:HA	1:C:218:HIS:CE1	2.50	0.46
1:D:569:GLN:HA	1:D:569:GLN:NE2	2.30	0.46
1:B:306:HIS:CA	1:B:308:GLU:OE2	2.61	0.46
2:F:2:NAG:H4	2:F:3:NAG:N2	2.28	0.46
1:B:159:ASP:OD2	1:B:161:LYS:HB3	2.15	0.46
1:B:456:PHE:CD2	1:B:511:LEU:HD22	2.51	0.46
1:D:179:GLY:O	1:D:567:ASN:HA	2.16	0.46
1:A:197:LYS:NZ	1:A:222:GLU:HG2	2.31	0.46
1:B:458:LEU:HD11	1:B:510:GLU:HB2	1.96	0.46
1:D:292:LEU:HD23	1:D:292:LEU:O	2.16	0.46
1:B:94:LEU:O	1:B:98:ILE:HG12	2.16	0.46
1:A:20:PRO:HB2	1:A:40:TYR:HB3	1.97	0.45
1:A:278:PHE:O	1:A:285:MET:HE2	2.17	0.45
1:C:97:LEU:HD23	1:C:97:LEU:O	2.16	0.45
1:D:511:LEU:N	1:D:511:LEU:HD23	2.30	0.45
1:B:184:PHE:CZ	1:B:338:LEU:CD1	2.99	0.45
1:C:449:LEU:HD22	1:C:492:ALA:CB	2.47	0.45
3:C:661:NAG:O7	3:C:661:NAG:C3	2.65	0.45
1:A:490:TYR:HB3	1:A:491:PRO:HD3	1.97	0.45
1:C:149:MET:CE	1:C:488:GLU:HG2	2.45	0.45
1:A:449:LEU:HD22	1:A:492:ALA:CB	2.46	0.45
1:C:451:GLU:OE1	1:C:451:GLU:HA	2.15	0.45
1:A:561:CYS:N	1:A:562:PRO:CD	2.80	0.45
1:B:179:GLY:O	1:B:567:ASN:HA	2.16	0.45
1:B:337:HIS:CE1	1:B:567:ASN:HB3	2.51	0.45
1:C:41:LYS:HG3	1:C:42:CYS:N	2.30	0.45
1:D:551:GLN:HE21	1:D:551:GLN:HA	1.80	0.45
1:D:41:LYS:HG3	1:D:42:CYS:N	2.30	0.45
1:A:104:THR:HG21	1:A:355:GLN:HG2	1.98	0.45
1:A:375:PRO:HB2	1:A:420:VAL:HA	1.99	0.45
1:A:184:PHE:CZ	1:A:338:LEU:CD1	3.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:63:ILE:HD12	1:B:63:ILE:H	1.82	0.44
1:C:350:GLU:HA	1:C:353:PHE:CD1	2.53	0.44
1:D:184:PHE:CZ	1:D:338:LEU:CD1	2.99	0.44
1:D:373:TRP:C	1:D:375:PRO:HD2	2.42	0.44
2:G:2:NAG:O7	2:G:2:NAG:H3	2.18	0.44
1:C:366:GLU:HG2	1:C:452:TYR:CE1	2.53	0.44
1:D:451:GLU:OE1	1:D:451:GLU:HA	2.17	0.44
2:F:3:NAG:O7	2:F:3:NAG:H3	2.17	0.44
1:A:94:LEU:O	1:A:98:ILE:HG12	2.17	0.44
1:D:367:PHE:O	1:D:370:LEU:HG	2.18	0.44
1:C:155:LYS:HA	1:C:155:LYS:HD3	1.89	0.44
1:A:454:LYS:HD2	1:A:460:PRO:HG3	2.00	0.44
1:C:44:CYS:O	1:C:45:THR:C	2.61	0.44
1:D:149:MET:CE	1:D:488:GLU:HG2	2.47	0.44
1:A:41:LYS:HG3	1:A:42:CYS:N	2.32	0.44
1:A:159:ASP:OD2	1:A:161:LYS:HB3	2.18	0.44
1:C:94:LEU:O	1:C:98:ILE:HG12	2.18	0.44
1:C:349:PRO:HG2	1:C:531:TRP:CD2	2.53	0.44
1:C:370:LEU:HD12	1:C:370:LEU:C	2.43	0.44
2:F:2:NAG:H4	2:F:3:NAG:HN2	1.83	0.44
1:D:255:THR:CB	1:D:257:VAL:HG13	2.48	0.44
1:C:179:GLY:O	1:C:567:ASN:HA	2.17	0.43
1:B:192:THR:HG21	1:B:371:TYR:CE2	2.53	0.43
1:B:389:SER:OG	1:B:392:GLN:HG3	2.19	0.43
1:C:115:THR:OG1	1:C:116:TYR:N	2.51	0.43
1:C:486:VAL:O	1:C:486:VAL:CG1	2.67	0.43
1:D:220:TYR:CE2	1:D:319:ARG:HG3	2.54	0.43
1:A:188:ALA:O	1:A:192:THR:HG23	2.18	0.43
1:A:286:MET:HG3	1:A:405:LEU:HD13	2.01	0.43
1:B:41:LYS:HG3	1:B:42:CYS:N	2.31	0.43
1:B:157:LEU:HD12	1:B:157:LEU:HA	1.82	0.43
1:C:184:PHE:CE1	1:C:338:LEU:HD13	2.53	0.43
1:D:430:VAL:O	1:D:430:VAL:HG13	2.18	0.43
1:A:157:LEU:HD12	1:A:157:LEU:HA	1.87	0.43
1:A:350:GLU:HA	1:A:353:PHE:CD1	2.53	0.43
1:A:281:VAL:HG11	4:A:605:HEM:CBB	2.49	0.43
1:A:384:GLU:CG	1:A:407:GLN:CD	2.90	0.43
1:B:104:THR:CG2	1:B:355:GLN:HG2	2.48	0.43
1:B:255:THR:CB	1:B:257:VAL:HG13	2.48	0.43
4:B:605:HEM:HBB2	4:B:605:HEM:CHC	2.41	0.43
1:C:31:GLU:OE1	1:C:123:LYS:NZ	2.50	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:94:LEU:O	1:D:98:ILE:HG12	2.18	0.43
1:D:384:GLU:CG	1:D:407:GLN:CD	2.88	0.43
1:A:384:GLU:HB3	1:A:385:ASP:H	1.48	0.43
1:B:320:LEU:HD23	1:B:320:LEU:HA	1.86	0.43
1:D:188:ALA:O	1:D:192:THR:HG23	2.19	0.43
1:A:142:ALA:HB3	1:A:145:CYS:SG	2.59	0.42
1:A:149:MET:CE	1:A:488:GLU:HG2	2.49	0.42
1:B:155:LYS:HA	1:B:155:LYS:HD3	1.92	0.42
1:C:157:LEU:HD12	1:C:157:LEU:HA	1.88	0.42
1:B:280:LEU:HD22	1:B:395:TYR:CD2	2.39	0.42
1:C:149:MET:HE3	1:C:488:GLU:HG2	2.02	0.42
1:C:330:VAL:HA	1:C:334:TYR:HB3	2.00	0.42
1:D:149:MET:HE2	1:D:157:LEU:HD21	2.01	0.42
1:B:384:GLU:CG	1:B:407:GLN:CD	2.90	0.42
1:C:458:LEU:HD11	1:C:510:GLU:HB2	2.00	0.42
1:A:78:LEU:HB3	1:A:341:TYR:CD1	2.55	0.42
1:C:19:ASN:HB3	1:C:22:CYS:SG	2.60	0.42
1:A:560:GLY:O	1:A:561:CYS:C	2.62	0.42
1:B:149:MET:CE	1:B:488:GLU:HG2	2.50	0.42
1:C:375:PRO:HB2	1:C:420:VAL:HA	2.00	0.42
1:A:149:MET:HE3	1:A:488:GLU:HG2	2.01	0.42
1:A:486:VAL:O	1:A:486:VAL:CG1	2.67	0.42
1:B:326:THR:O	1:B:330:VAL:HG23	2.19	0.42
1:B:449:LEU:HD22	1:B:492:ALA:CB	2.49	0.42
4:A:605:HEM:HBB2	4:A:605:HEM:CHC	2.50	0.42
1:A:63:ILE:HD12	1:A:63:ILE:H	1.85	0.42
1:A:28:ASN:O	1:A:29:ARG:HB2	2.20	0.42
1:A:179:GLY:O	1:A:567:ASN:HA	2.20	0.42
3:A:661:NAG:O7	3:A:661:NAG:H3	2.20	0.42
1:B:24:ASN:H	1:B:25:PRO:HD3	1.79	0.42
1:D:67:LEU:N	1:D:67:LEU:CD1	2.82	0.42
1:B:392:GLN:HA	3:B:681:NAG:O7	2.20	0.41
1:B:454:LYS:HD3	1:B:460:PRO:HG3	2.02	0.41
1:C:159:ASP:OD2	1:C:161:LYS:HB3	2.20	0.41
1:D:486:VAL:O	1:D:486:VAL:CG1	2.68	0.41
1:C:67:LEU:N	1:C:67:LEU:CD1	2.83	0.41
1:A:76:TYR:CD1	1:A:80:HIS:CE1	3.08	0.41
1:A:76:TYR:CE1	1:A:80:HIS:CE1	3.09	0.41
1:B:67:LEU:N	1:B:67:LEU:CD1	2.83	0.41
1:B:78:LEU:HB3	1:B:341:TYR:CD1	2.56	0.41
1:B:280:LEU:HD13	1:B:395:TYR:CE2	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:349:PRO:HG2	1:B:531:TRP:CD2	2.55	0.41
1:C:389:SER:OG	1:C:392:GLN:HG3	2.19	0.41
1:A:18:ALA:CB	1:A:144:ASP:OD2	2.61	0.41
1:A:308:GLU:CD	1:A:308:GLU:H	2.28	0.41
1:C:255:THR:CB	1:C:257:VAL:HG13	2.51	0.41
1:D:192:THR:HG21	1:D:371:TYR:CE2	2.55	0.41
1:A:292:LEU:C	1:A:292:LEU:CD2	2.93	0.41
4:A:605:HEM:HHC	4:A:605:HEM:CBB	2.51	0.41
1:C:24:ASN:N	1:C:25:PRO:CD	2.82	0.41
1:D:149:MET:HE3	1:D:488:GLU:HG2	2.03	0.41
1:A:186:PHE:HE1	4:A:605:HEM:HBB1	1.86	0.41
1:A:255:THR:CB	1:A:257:VAL:HG13	2.51	0.41
1:A:386:GLN:HG3	1:A:388:TYR:OH	2.21	0.41
1:A:449:LEU:HD22	1:A:492:ALA:HB1	2.02	0.41
1:B:201:LYS:H	1:B:201:LYS:HG2	1.67	0.41
1:B:486:VAL:O	1:B:486:VAL:CG1	2.69	0.41
1:B:511:LEU:N	1:B:511:LEU:HD23	2.36	0.41
1:C:76:TYR:CE1	1:C:80:HIS:CE1	3.09	0.41
1:D:216:LEU:HD13	1:D:219:ILE:HD12	2.02	0.41
1:A:389:SER:OG	1:A:392:GLN:HG3	2.21	0.41
1:C:449:LEU:HD22	1:C:492:ALA:HB1	2.03	0.41
1:A:29:ARG:HD3	1:A:455:ARG:HD2	2.03	0.40
1:B:267:GLU:OE1	7:B:607:HOH:O	2.21	0.40
1:C:372:HIS:CE1	4:C:605:HEM:HAD1	2.56	0.40
1:C:455:ARG:HD2	1:C:455:ARG:O	2.20	0.40
1:D:320:LEU:HD23	1:D:320:LEU:HA	1.91	0.40
1:B:90:ASN:O	1:B:92:PRO:HD3	2.22	0.40
2:G:2:NAG:C4	2:G:3:NAG:N2	2.84	0.40
1:C:106:ARG:O	1:C:107:SER:C	2.64	0.40
1:D:104:THR:CG2	1:D:355:GLN:HG2	2.51	0.40
1:D:346:LYS:CE	1:D:348:ASP:HB2	2.50	0.40
1:B:182:MET:HE3	1:B:186:PHE:CE2	2.56	0.40
1:B:292:LEU:HD23	1:B:292:LEU:O	2.20	0.40
1:C:63:ILE:CG2	1:C:67:LEU:HD22	2.51	0.40
1:C:373:TRP:C	1:C:375:PRO:HD2	2.47	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:476:GLU:OE1	6:A:703:BOG:O2[4_545]	2.02	0.18

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	550/587 (94%)	529 (96%)	21 (4%)	0	100	100
1	B	550/587 (94%)	527 (96%)	23 (4%)	0	100	100
1	C	550/587 (94%)	533 (97%)	17 (3%)	0	100	100
1	D	550/587 (94%)	532 (97%)	18 (3%)	0	100	100
All	All	2200/2348 (94%)	2121 (96%)	79 (4%)	0	100	100

There are no Ramachandran outliers to report.

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	493/525 (94%)	458 (93%)	35 (7%)	13	23
1	B	493/525 (94%)	458 (93%)	35 (7%)	13	23
1	C	493/525 (94%)	458 (93%)	35 (7%)	13	23
1	D	493/525 (94%)	456 (92%)	37 (8%)	12	21
All	All	1972/2100 (94%)	1830 (93%)	142 (7%)	13	23

All (142) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	41	LYS
1	A	67	LEU

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Mol	Chain	Res	Type
1	A	78	LEU
1	A	93	PHE
1	A	102	VAL
1	A	103	LEU
1	A	107	SER
1	A	109	LEU
1	A	157	LEU
1	A	164	LEU
1	A	171	ARG
1	A	201	LYS
1	A	224	LEU
1	A	238	LEU
1	A	257	VAL
1	A	275	GLN
1	A	277	VAL
1	A	280	LEU
1	A	284	LEU
1	A	293	ARG
1	A	308	GLU
1	A	338	LEU
1	A	362	ARG
1	A	371	TYR
1	A	391	LYS
1	A	395	TYR
1	A	430	VAL
1	A	459	LYS
1	A	470	GLU
1	A	495	VAL
1	A	511	LEU
1	A	518	LYS
1	A	520	LEU
1	A	565	SER
1	A	568	VAL
1	B	41	LYS
1	B	67	LEU
1	B	78	LEU
1	B	93	PHE
1	B	102	VAL
1	B	103	LEU
1	B	107	SER
1	B	109	LEU
1	B	157	LEU

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Mol	Chain	Res	Type
1	B	164	LEU
1	B	171	ARG
1	B	201	LYS
1	B	224	LEU
1	B	238	LEU
1	B	257	VAL
1	B	275	GLN
1	B	277	VAL
1	B	280	LEU
1	B	284	LEU
1	B	293	ARG
1	B	308	GLU
1	B	338	LEU
1	B	362	ARG
1	B	371	TYR
1	B	391	LYS
1	B	395	TYR
1	B	430	VAL
1	B	454	LYS
1	B	459	LYS
1	B	470	GLU
1	B	495	VAL
1	B	511	LEU
1	B	518	LYS
1	B	520	LEU
1	B	552	SER
1	C	41	LYS
1	C	67	LEU
1	C	78	LEU
1	C	93	PHE
1	C	102	VAL
1	C	103	LEU
1	C	107	SER
1	C	109	LEU
1	C	157	LEU
1	C	164	LEU
1	C	171	ARG
1	C	201	LYS
1	C	224	LEU
1	C	238	LEU
1	C	257	VAL
1	C	275	GLN

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Mol	Chain	Res	Type
1	C	277	VAL
1	C	280	LEU
1	C	284	LEU
1	C	293	ARG
1	C	308	GLU
1	C	338	LEU
1	C	362	ARG
1	C	371	TYR
1	C	391	LYS
1	C	395	TYR
1	C	430	VAL
1	C	454	LYS
1	C	459	LYS
1	C	470	GLU
1	C	495	VAL
1	C	511	LEU
1	C	518	LYS
1	C	520	LEU
1	C	564	THR
1	D	41	LYS
1	D	67	LEU
1	D	78	LEU
1	D	86	ASN
1	D	93	PHE
1	D	102	VAL
1	D	103	LEU
1	D	107	SER
1	D	109	LEU
1	D	157	LEU
1	D	164	LEU
1	D	171	ARG
1	D	201	LYS
1	D	216	LEU
1	D	224	LEU
1	D	238	LEU
1	D	257	VAL
1	D	275	GLN
1	D	277	VAL
1	D	280	LEU
1	D	284	LEU
1	D	293	ARG
1	D	308	GLU

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Mol	Chain	Res	Type
1	D	338	LEU
1	D	362	ARG
1	D	371	TYR
1	D	391	LYS
1	D	395	TYR
1	D	430	VAL
1	D	459	LYS
1	D	470	GLU
1	D	495	VAL
1	D	511	LEU
1	D	518	LYS
1	D	520	LEU
1	D	551	GLN
1	D	569	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	24	ASN
1	A	39	GLN
1	A	268	ASN
1	A	313	GLN
1	A	546	ASN
1	A	567	ASN
1	B	268	ASN
1	B	546	ASN
1	B	569	GLN
1	C	24	ASN
1	C	90	ASN
1	C	268	ASN
1	C	355	GLN
1	C	546	ASN
1	C	569	GLN
1	D	90	ASN
1	D	264	HIS
1	D	355	GLN
1	D	407	GLN
1	D	551	GLN
1	D	569	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 ⓘ

12 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	NAG	E	1	1,2	14,14,15	0.59	0	17,19,21	1.35	2 (11%)
2	NAG	E	2	2	14,14,15	0.63	0	17,19,21	2.03	3 (17%)
2	NAG	E	3	2	14,14,15	0.62	0	17,19,21	1.98	2 (11%)
2	NAG	F	1	1,2	14,14,15	0.65	0	17,19,21	1.25	0
2	NAG	F	2	2	14,14,15	0.62	0	17,19,21	2.02	3 (17%)
2	NAG	F	3	2	14,14,15	0.69	0	17,19,21	1.44	2 (11%)
2	NAG	G	1	1,2	14,14,15	0.83	0	17,19,21	1.35	1 (5%)
2	NAG	G	2	2	14,14,15	0.58	0	17,19,21	1.71	4 (23%)
2	NAG	G	3	2	14,14,15	0.56	0	17,19,21	1.44	1 (5%)
2	NAG	H	1	1,2	14,14,15	0.77	1 (7%)	17,19,21	1.25	1 (5%)
2	NAG	H	2	2	14,14,15	0.57	0	17,19,21	1.76	4 (23%)
2	NAG	H	3	2	14,14,15	0.79	1 (7%)	17,19,21	2.37	3 (17%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	E	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	E	2	2	-	3/6/23/26	0/1/1/1
2	NAG	E	3	2	-	4/6/23/26	0/1/1/1
2	NAG	F	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	F	2	2	-	2/6/23/26	0/1/1/1
2	NAG	F	3	2	-	5/6/23/26	0/1/1/1
2	NAG	G	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	G	2	2	-	2/6/23/26	0/1/1/1
2	NAG	G	3	2	-	5/6/23/26	0/1/1/1
2	NAG	H	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	H	2	2	-	2/6/23/26	0/1/1/1
2	NAG	H	3	2	-	4/6/23/26	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	H	3	NAG	C1-C2	2.19	1.55	1.52
2	H	1	NAG	C2-N2	-2.01	1.42	1.46

All (26) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	H	3	NAG	C1-O5-C5	7.79	122.63	112.19
2	E	3	NAG	C1-O5-C5	7.25	121.91	112.19
2	F	2	NAG	C1-O5-C5	5.33	119.33	112.19
2	E	2	NAG	C1-O5-C5	5.24	119.21	112.19
2	G	3	NAG	C1-O5-C5	5.11	119.03	112.19
2	F	3	NAG	C1-O5-C5	4.38	118.06	112.19
2	H	2	NAG	O5-C5-C4	4.31	121.31	110.83
2	F	2	NAG	O5-C5-C4	4.26	121.20	110.83
2	E	2	NAG	O5-C1-C2	-4.24	104.73	111.29
2	G	2	NAG	C1-O5-C5	4.08	117.66	112.19
2	H	3	NAG	O5-C1-C2	3.85	117.24	111.29
2	E	2	NAG	O5-C5-C4	3.84	120.16	110.83
2	H	2	NAG	O5-C1-C2	-3.49	105.89	111.29
2	F	2	NAG	O5-C1-C2	-3.30	106.18	111.29
2	G	2	NAG	O5-C1-C2	-3.27	106.22	111.29
2	H	2	NAG	C1-O5-C5	2.96	116.15	112.19
2	E	1	NAG	O7-C7-N2	2.83	126.98	121.98
2	G	2	NAG	O5-C5-C4	2.56	117.06	110.83
2	E	1	NAG	O5-C1-C2	-2.33	107.68	111.29

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	H	1	NAG	O5-C5-C6	2.30	112.13	107.66
2	G	2	NAG	O4-C4-C5	-2.24	103.81	109.32
2	G	1	NAG	O7-C7-C8	-2.23	118.08	122.05
2	H	3	NAG	C3-C4-C5	-2.19	106.25	110.23
2	E	3	NAG	O5-C5-C6	2.19	111.92	107.66
2	F	3	NAG	O5-C5-C6	2.14	111.83	107.66
2	H	2	NAG	C6-C5-C4	-2.13	107.79	113.02

There are no chirality outliers.

All (27) torsion outliers are listed below:

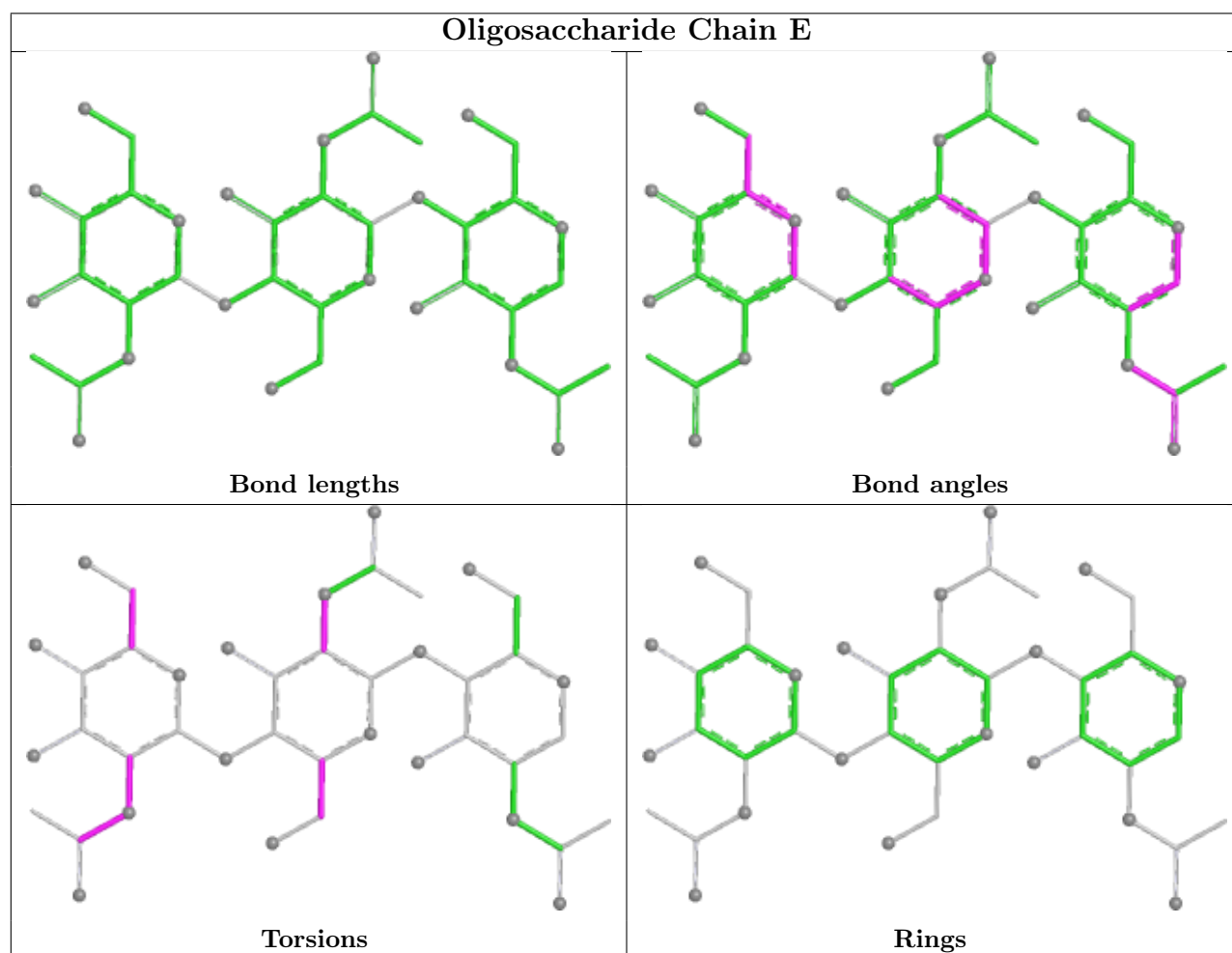
Mol	Chain	Res	Type	Atoms
2	E	3	NAG	C3-C2-N2-C7
2	E	3	NAG	C8-C7-N2-C2
2	E	3	NAG	O7-C7-N2-C2
2	F	3	NAG	C3-C2-N2-C7
2	G	3	NAG	C3-C2-N2-C7
2	H	2	NAG	C3-C2-N2-C7
2	H	3	NAG	O7-C7-N2-C2
2	H	3	NAG	C8-C7-N2-C2
2	G	3	NAG	C4-C5-C6-O6
2	F	3	NAG	C8-C7-N2-C2
2	F	3	NAG	O7-C7-N2-C2
2	G	3	NAG	C8-C7-N2-C2
2	F	3	NAG	O5-C5-C6-O6
2	G	3	NAG	O5-C5-C6-O6
2	G	3	NAG	O7-C7-N2-C2
2	E	2	NAG	C4-C5-C6-O6
2	F	3	NAG	C4-C5-C6-O6
2	H	2	NAG	C4-C5-C6-O6
2	E	3	NAG	O5-C5-C6-O6
2	H	3	NAG	O5-C5-C6-O6
2	G	2	NAG	C3-C2-N2-C7
2	G	2	NAG	C4-C5-C6-O6
2	E	2	NAG	C1-C2-N2-C7
2	E	2	NAG	C3-C2-N2-C7
2	F	2	NAG	C3-C2-N2-C7
2	H	3	NAG	C3-C2-N2-C7
2	F	2	NAG	C1-C2-N2-C7

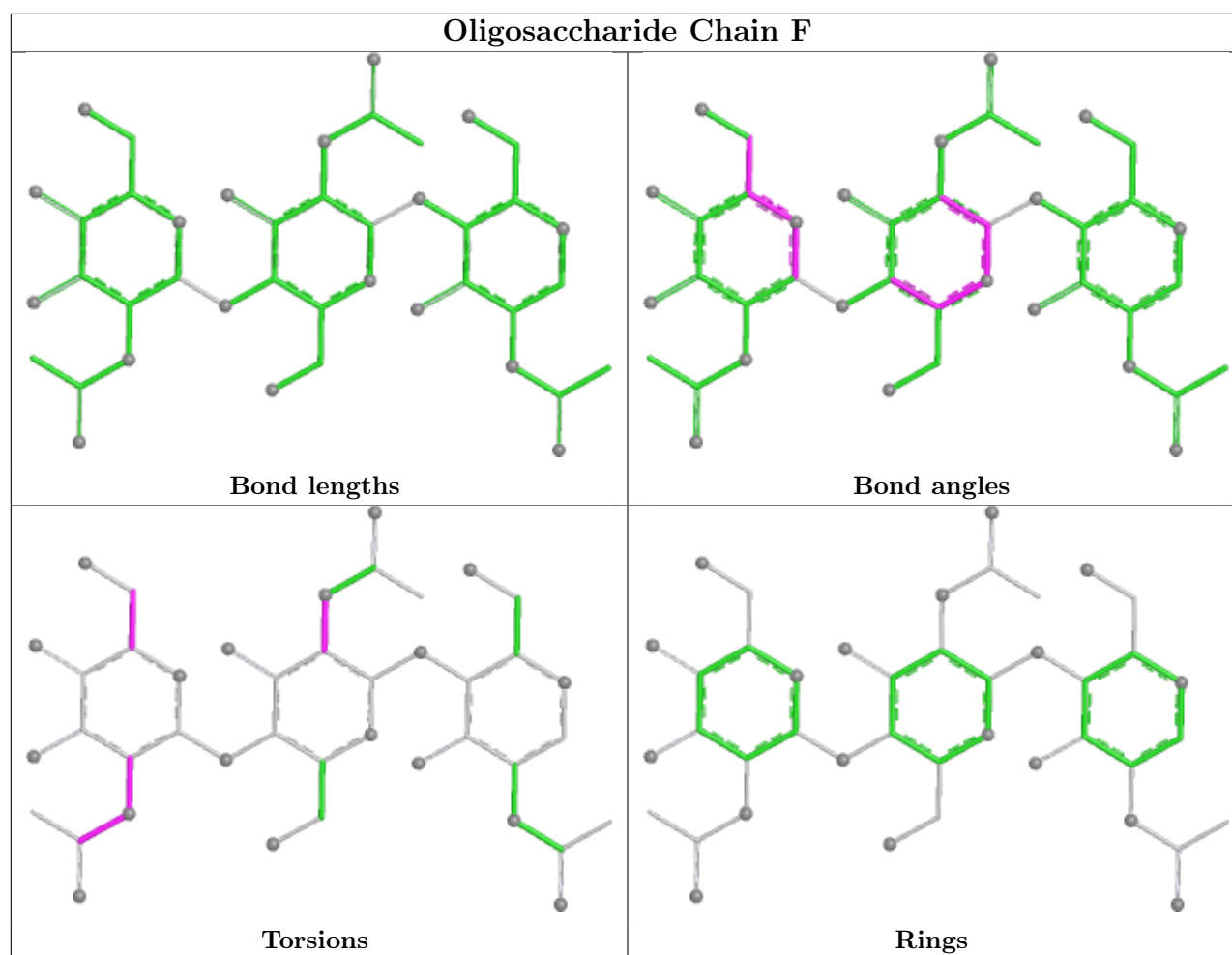
There are no ring outliers.

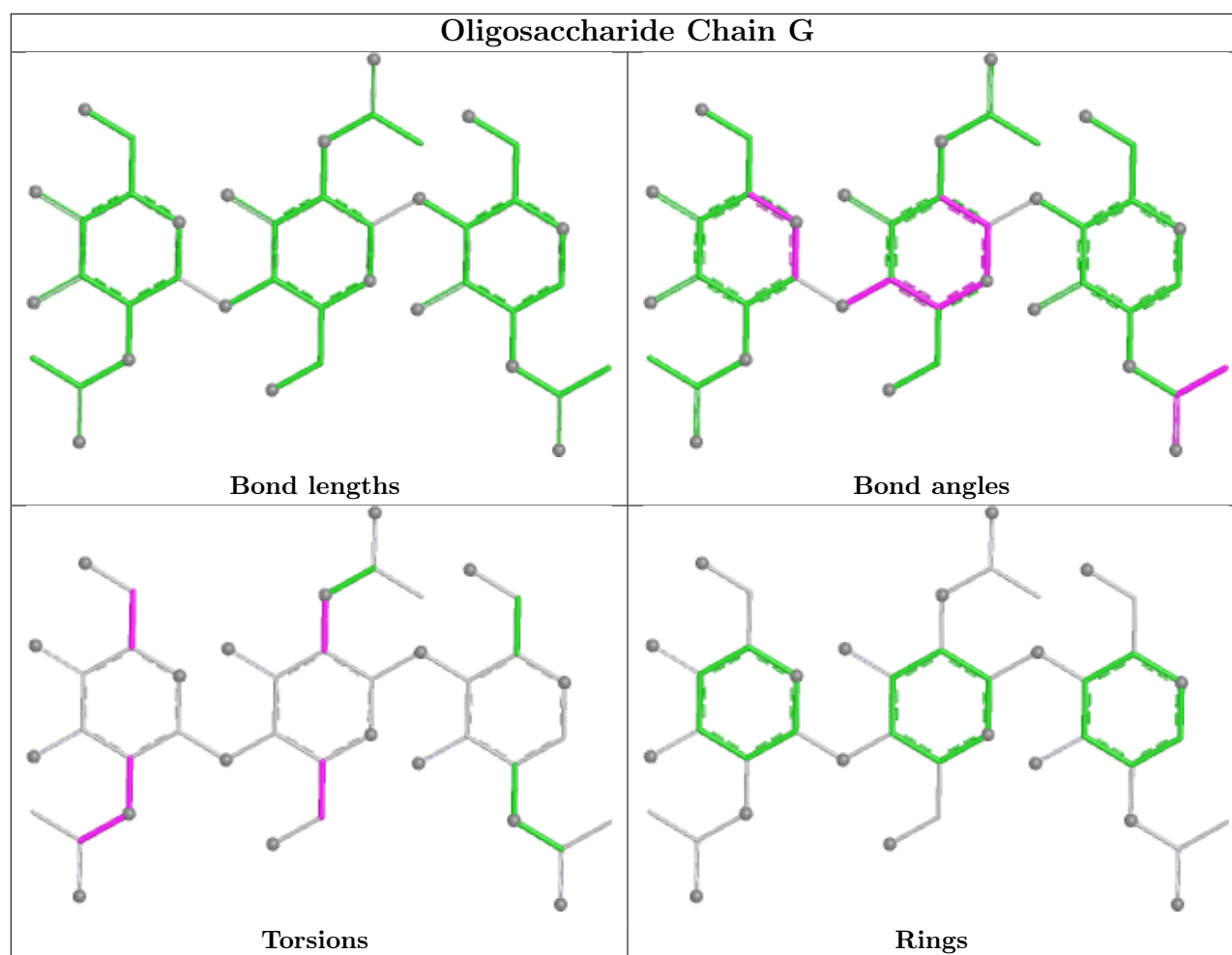
6 monomers are involved in 12 short contacts:

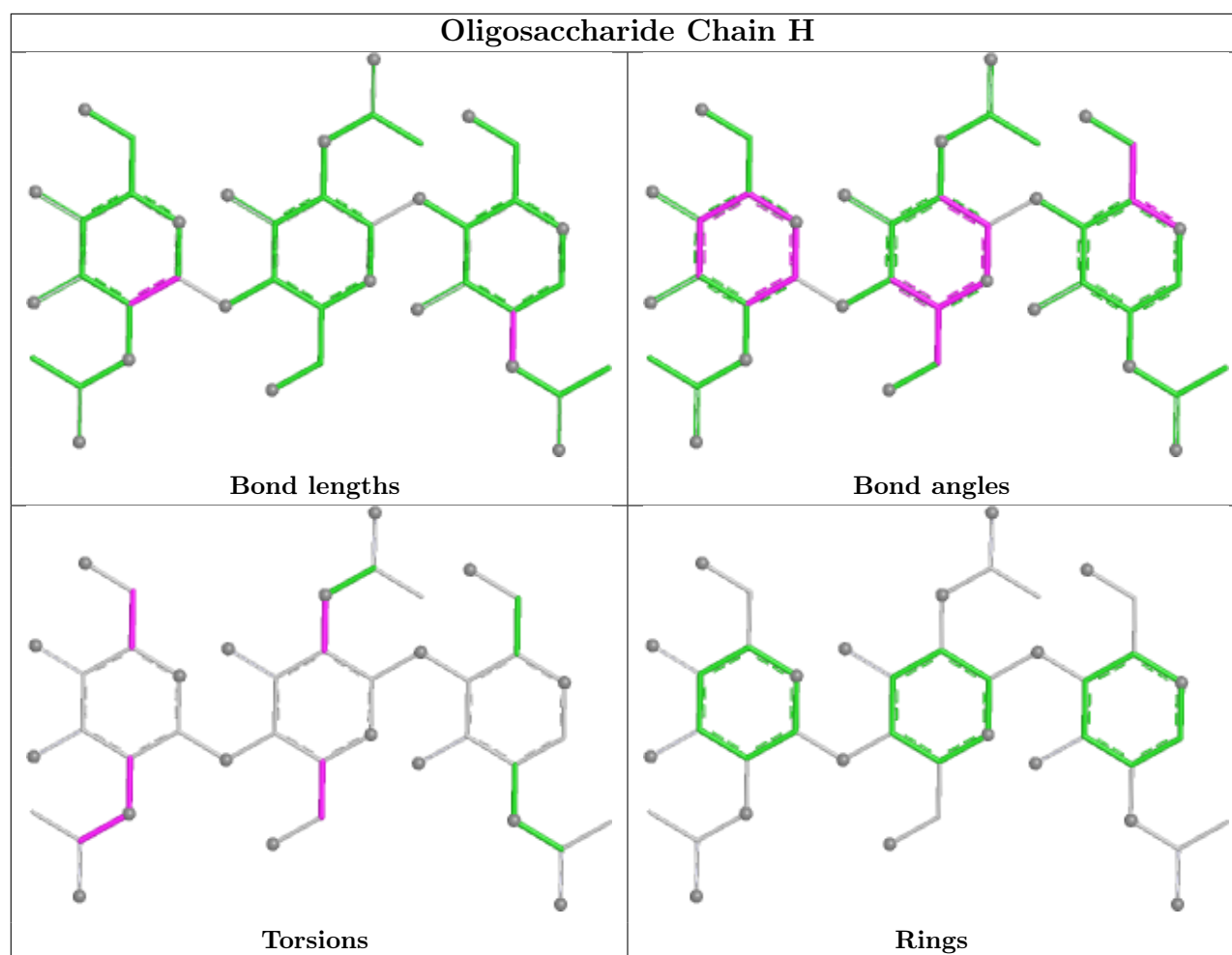
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	G	3	NAG	4	0
2	E	3	NAG	1	0
2	G	2	NAG	6	0
2	F	3	NAG	3	0
2	H	3	NAG	1	0
2	F	2	NAG	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.









5.6 Ligand geometry [i](#)

18 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	$\# Z > 2$
6	BOG	A	703	-	20,20,20	0.61	0	25,25,25	0.98	1 (4%)
3	NAG	C	681	1	14,14,15	0.62	0	17,19,21	1.45	3 (17%)
5	CEL	D	682	-	28,28,28	1.48	2 (7%)	43,43,43	1.23	6 (13%)
3	NAG	A	661	1	14,14,15	0.76	1 (7%)	17,19,21	2.02	3 (17%)
4	HEM	A	605	1	50,50,50	1.94	7 (14%)	67,82,82	1.41	8 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	HEM	B	605	1	50,50,50	1.96	10 (20%)	67,82,82	1.53	12 (17%)
3	NAG	B	661	1	14,14,15	0.84	1 (7%)	17,19,21	1.71	3 (17%)
3	NAG	C	661	1	14,14,15	0.63	0	17,19,21	1.75	4 (23%)
4	HEM	C	605	1	50,50,50	1.91	8 (16%)	67,82,82	1.34	5 (7%)
5	CEL	C	682	-	28,28,28	1.28	2 (7%)	43,43,43	1.42	7 (16%)
6	BOG	D	703	-	20,20,20	0.60	0	25,25,25	1.37	2 (8%)
3	NAG	A	681	1	14,14,15	0.48	0	17,19,21	1.39	2 (11%)
3	NAG	D	681	1	14,14,15	0.46	0	17,19,21	1.69	4 (23%)
3	NAG	B	681	1	14,14,15	0.64	0	17,19,21	1.19	1 (5%)
5	CEL	B	682	-	28,28,28	1.43	3 (10%)	43,43,43	1.58	5 (11%)
3	NAG	D	661	1	14,14,15	0.80	1 (7%)	17,19,21	1.76	4 (23%)
4	HEM	D	605	1	50,50,50	1.93	6 (12%)	67,82,82	1.45	8 (11%)
5	CEL	A	682	-	28,28,28	1.57	3 (10%)	43,43,43	1.82	13 (30%)

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	BOG	A	703	-	-	4/11/31/31	0/1/1/1
3	NAG	C	681	1	-	4/6/23/26	0/1/1/1
5	CEL	D	682	-	-	0/20/20/20	0/3/3/3
3	NAG	A	661	1	-	5/6/23/26	0/1/1/1
4	HEM	A	605	1	-	3/14/54/54	-
4	HEM	B	605	1	-	2/14/54/54	-
3	NAG	B	661	1	-	2/6/23/26	0/1/1/1
3	NAG	C	661	1	-	5/6/23/26	0/1/1/1
4	HEM	C	605	1	-	2/14/54/54	-
5	CEL	C	682	-	-	4/20/20/20	0/3/3/3
6	BOG	D	703	-	-	4/11/31/31	0/1/1/1
3	NAG	A	681	1	-	2/6/23/26	0/1/1/1
3	NAG	D	681	1	-	0/6/23/26	0/1/1/1
3	NAG	B	681	1	-	0/6/23/26	0/1/1/1
5	CEL	B	682	-	-	0/20/20/20	0/3/3/3
3	NAG	D	661	1	-	4/6/23/26	0/1/1/1
4	HEM	D	605	1	-	4/14/54/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	CEL	A	682	-	-	0/20/20/20	0/3/3/3

All (44) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	605	HEM	C3D-C2D	8.06	1.54	1.36
4	C	605	HEM	C3D-C2D	7.95	1.53	1.36
4	D	605	HEM	C3D-C2D	7.93	1.53	1.36
4	B	605	HEM	C3D-C2D	7.46	1.52	1.36
4	A	605	HEM	FE-NB	6.65	2.15	1.94
4	B	605	HEM	FE-NB	6.56	2.15	1.94
5	A	682	CEL	S1-N3	6.56	1.73	1.60
4	C	605	HEM	FE-NB	6.47	2.14	1.94
4	D	605	HEM	FE-NB	6.20	2.14	1.94
5	D	682	CEL	S1-N3	6.05	1.72	1.60
5	B	682	CEL	S1-N3	5.73	1.71	1.60
5	C	682	CEL	S1-N3	4.44	1.69	1.60
4	A	605	HEM	FE-NC	3.67	2.07	1.95
4	D	605	HEM	FE-NA	3.62	2.07	1.95
4	C	605	HEM	FE-NC	3.35	2.06	1.95
4	B	605	HEM	FE-NC	3.27	2.06	1.95
4	D	605	HEM	FE-NC	2.94	2.04	1.95
4	A	605	HEM	CAC-C3C	2.86	1.55	1.47
4	B	605	HEM	CAB-C3B	2.81	1.54	1.47
4	A	605	HEM	CAB-C3B	2.79	1.54	1.47
5	C	682	CEL	C5-C3	-2.66	1.44	1.48
4	D	605	HEM	CAB-C3B	2.60	1.54	1.47
3	B	661	NAG	C1-C2	2.57	1.55	1.52
4	C	605	HEM	CAB-C3B	2.56	1.54	1.47
4	C	605	HEM	CAC-C3C	2.47	1.54	1.47
4	A	605	HEM	CMB-C2B	2.42	1.55	1.50
4	C	605	HEM	CMB-C2B	2.37	1.55	1.50
3	D	661	NAG	C1-C2	2.36	1.55	1.52
5	A	682	CEL	C12-N2	-2.35	1.38	1.43
4	B	605	HEM	C3C-C2C	-2.35	1.32	1.37
4	C	605	HEM	C2A-C3A	-2.28	1.33	1.38
5	B	682	CEL	C5-C3	-2.27	1.44	1.48
4	D	605	HEM	CMA-C3A	2.16	1.55	1.50
5	D	682	CEL	N2-N1	-2.14	1.34	1.39
4	B	605	HEM	CBA-CGA	2.14	1.55	1.50
4	B	605	HEM	C2A-C3A	-2.13	1.33	1.38
4	A	605	HEM	FE-NA	2.09	2.02	1.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	661	NAG	C1-C2	2.07	1.55	1.52
4	B	605	HEM	CAC-C3C	2.06	1.52	1.47
4	B	605	HEM	CMB-C2B	2.05	1.55	1.50
4	C	605	HEM	O1A-CGA	2.05	1.28	1.22
5	B	682	CEL	N2-N1	-2.04	1.34	1.39
5	A	682	CEL	N2-N1	-2.00	1.34	1.39
4	B	605	HEM	FE-NA	2.00	2.01	1.95

All (91) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	682	CEL	C15-S1-N3	-5.88	100.22	108.40
3	A	661	NAG	O5-C1-C2	-5.58	102.66	111.29
4	D	605	HEM	C4D-ND-C1D	5.29	111.47	105.21
4	A	605	HEM	C4D-ND-C1D	5.00	111.13	105.21
5	B	682	CEL	C5-C3-N2	4.65	130.97	125.01
3	B	661	NAG	O5-C1-C2	-4.60	104.17	111.29
5	A	682	CEL	C5-C3-N2	4.52	130.82	125.01
4	C	605	HEM	C4D-ND-C1D	4.34	110.34	105.21
5	C	682	CEL	C5-C3-N2	4.10	130.27	125.01
5	A	682	CEL	O1-S1-N3	4.09	113.25	107.35
3	C	661	NAG	C4-C3-C2	3.99	116.86	111.02
5	B	682	CEL	O1-S1-O2	3.73	124.53	118.80
4	C	605	HEM	CBA-CAA-C2A	-3.70	102.32	112.53
3	D	661	NAG	O5-C1-C2	-3.69	105.58	111.29
4	B	605	HEM	C4D-ND-C1D	3.63	109.50	105.21
5	A	682	CEL	C17-C12-N2	-3.56	114.37	119.72
4	B	605	HEM	C3B-C4B-NB	-3.52	106.94	109.47
3	A	661	NAG	C1-O5-C5	3.50	116.88	112.19
4	A	605	HEM	C3B-C4B-NB	-3.46	106.99	109.47
4	B	605	HEM	C1B-NB-C4B	3.40	109.23	105.21
3	D	661	NAG	O3-C3-C2	3.37	116.40	109.40
3	C	661	NAG	O5-C1-C2	-3.36	106.09	111.29
3	D	681	NAG	O5-C5-C6	3.33	114.15	107.66
3	D	681	NAG	C1-O5-C5	-3.28	107.80	112.19
5	C	682	CEL	O1-S1-C15	-3.27	103.65	107.35
6	D	703	BOG	O5-C5-C4	-3.22	103.90	109.70
5	C	682	CEL	O1-S1-N3	3.19	111.95	107.35
4	C	605	HEM	C3B-C4B-NB	-3.14	107.22	109.47
5	D	682	CEL	C15-S1-N3	-3.08	104.11	108.40
5	A	682	CEL	C3-N2-N1	3.06	114.14	112.19
3	B	681	NAG	O5-C5-C6	3.04	113.59	107.66

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	605	HEM	C3B-C4B-NB	-3.03	107.29	109.47
3	D	681	NAG	C2-N2-C7	-3.01	118.87	122.90
4	D	605	HEM	C3B-C2B-C1B	2.98	108.65	106.41
3	A	681	NAG	C3-C4-C5	-2.94	104.91	110.23
3	A	681	NAG	O5-C5-C6	2.92	113.35	107.66
3	C	681	NAG	O5-C5-C6	2.85	113.20	107.66
5	A	682	CEL	O2-S1-C15	-2.83	104.15	107.35
3	A	661	NAG	O3-C3-C2	2.83	115.28	109.40
4	D	605	HEM	C1B-NB-C4B	2.76	108.48	105.21
4	B	605	HEM	C1D-C2D-C3D	-2.71	104.13	106.98
6	A	703	BOG	C1-O5-C5	-2.71	108.44	113.72
4	B	605	HEM	CMC-C2C-C1C	2.67	129.43	124.73
5	A	682	CEL	C16-C15-S1	-2.61	116.17	119.72
3	C	661	NAG	C1-O5-C5	2.60	115.67	112.19
5	D	682	CEL	C5-C3-N2	2.58	128.33	125.01
3	D	661	NAG	C4-C3-C2	-2.58	107.24	111.02
4	B	605	HEM	CMC-C2C-C3C	-2.57	122.21	128.43
5	A	682	CEL	C12-N2-N1	-2.54	114.99	118.67
4	B	605	HEM	C3B-C2B-C1B	2.53	108.31	106.41
5	C	682	CEL	F1-C4-C1	-2.53	107.67	112.86
4	B	605	HEM	C2B-C1B-NB	-2.52	106.95	109.84
3	C	681	NAG	C4-C3-C2	2.45	114.61	111.02
4	B	605	HEM	CBD-CAD-C3D	-2.45	105.76	112.53
3	B	661	NAG	O3-C3-C2	2.44	114.47	109.40
5	B	682	CEL	O2-S1-C15	-2.44	104.59	107.35
4	D	605	HEM	CHB-C1B-NB	2.44	127.38	124.37
4	A	605	HEM	C4B-C3B-C2B	2.43	109.52	107.28
6	D	703	BOG	C1-O5-C5	-2.43	108.97	113.72
4	D	605	HEM	C2B-C1B-NB	-2.42	107.06	109.84
4	A	605	HEM	O2D-CGD-CBD	2.40	121.59	114.00
3	D	681	NAG	C4-C3-C2	-2.40	107.50	111.02
5	D	682	CEL	C3-N2-N1	2.38	113.71	112.19
3	C	681	NAG	C1-C2-N2	-2.34	106.74	110.43
5	A	682	CEL	C16-C15-C14	2.28	123.44	120.47
4	B	605	HEM	CHD-C4C-NC	2.26	126.92	124.45
4	B	605	HEM	CMD-C2D-C1D	2.25	128.56	125.03
3	D	661	NAG	C1-O5-C5	2.23	115.17	112.19
5	D	682	CEL	C17-C12-N2	-2.22	116.39	119.72
4	C	605	HEM	C4B-C3B-C2B	2.22	109.32	107.28
4	A	605	HEM	CBB-CAB-C3B	-2.18	116.61	127.53
5	B	682	CEL	C5-C3-C2	-2.17	123.64	128.09
4	A	605	HEM	CBA-CAA-C2A	-2.17	106.54	112.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	605	HEM	CMD-C2D-C1D	2.15	128.40	125.03
4	B	605	HEM	CAA-CBA-CGA	2.15	119.36	113.67
5	C	682	CEL	C5-C3-C2	-2.13	123.73	128.09
5	A	682	CEL	C3-C2-C1	2.12	106.40	104.05
3	B	661	NAG	O4-C4-C5	2.09	114.47	109.32
5	C	682	CEL	C4-C1-N1	2.09	122.00	119.20
5	A	682	CEL	C17-C12-C13	2.08	123.14	119.18
4	D	605	HEM	CHA-C4D-ND	2.08	126.94	124.37
5	D	682	CEL	C3-C2-C1	2.08	106.36	104.05
5	A	682	CEL	F2-C4-C1	-2.08	108.60	112.86
4	A	605	HEM	C4D-C3D-C2D	-2.07	103.88	106.89
5	D	682	CEL	F1-C4-C1	-2.06	108.63	112.86
4	C	605	HEM	CBB-CAB-C3B	-2.06	117.25	127.53
3	C	661	NAG	O5-C5-C6	2.03	111.61	107.66
5	C	682	CEL	C15-S1-N3	-2.03	105.58	108.40
4	A	605	HEM	CHA-C4D-ND	2.02	126.87	124.37
5	A	682	CEL	C15-S1-N3	-2.01	105.61	108.40
5	A	682	CEL	C2-C3-N2	-2.00	104.09	105.84

There are no chirality outliers.

All (45) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	661	NAG	C3-C2-N2-C7
3	B	661	NAG	C3-C2-N2-C7
3	D	661	NAG	C3-C2-N2-C7
3	D	661	NAG	C8-C7-N2-C2
3	D	661	NAG	O7-C7-N2-C2
3	A	661	NAG	C8-C7-N2-C2
3	A	661	NAG	O7-C7-N2-C2
3	C	661	NAG	C8-C7-N2-C2
3	C	661	NAG	O7-C7-N2-C2
3	A	681	NAG	O5-C5-C6-O6
3	C	681	NAG	O5-C5-C6-O6
4	A	605	HEM	C2A-CAA-CBA-CGA
3	C	681	NAG	C8-C7-N2-C2
3	A	681	NAG	C4-C5-C6-O6
3	C	681	NAG	C4-C5-C6-O6
3	C	681	NAG	O7-C7-N2-C2
3	C	661	NAG	C4-C5-C6-O6
6	D	703	BOG	O5-C1-O1-C1'
6	D	703	BOG	C2-C1-O1-C1'

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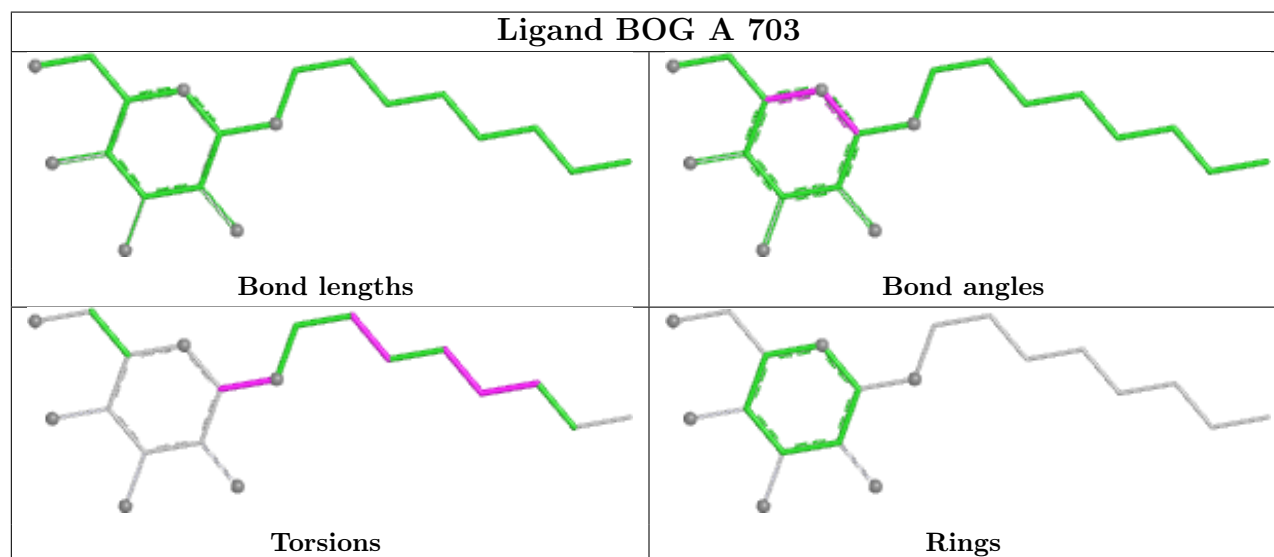
Mol	Chain	Res	Type	Atoms
5	C	682	CEL	C16-C15-S1-O2
3	A	661	NAG	C4-C5-C6-O6
5	C	682	CEL	C14-C15-S1-N3
4	A	605	HEM	C3A-C2A-CAA-CBA
5	C	682	CEL	C14-C15-S1-O2
6	D	703	BOG	C3'-C4'-C5'-C6'
5	C	682	CEL	C16-C15-S1-N3
3	C	661	NAG	O5-C5-C6-O6
4	D	605	HEM	C2A-CAA-CBA-CGA
3	A	661	NAG	O5-C5-C6-O6
3	D	661	NAG	C4-C5-C6-O6
6	A	703	BOG	C1'-C2'-C3'-C4'
3	C	661	NAG	C3-C2-N2-C7
6	A	703	BOG	C4'-C5'-C6'-C7'
6	D	703	BOG	C4'-C5'-C6'-C7'
6	A	703	BOG	C3'-C4'-C5'-C6'
4	A	605	HEM	C1A-C2A-CAA-CBA
6	A	703	BOG	O5-C1-O1-C1'
4	B	605	HEM	CAA-CBA-CGA-O2A
4	B	605	HEM	CAA-CBA-CGA-O1A
4	D	605	HEM	CAA-CBA-CGA-O2A
4	D	605	HEM	CAA-CBA-CGA-O1A
4	C	605	HEM	C4D-C3D-CAD-CBD
4	D	605	HEM	C3A-C2A-CAA-CBA
3	B	661	NAG	C4-C5-C6-O6
4	C	605	HEM	C2C-C3C-CAC-CBC

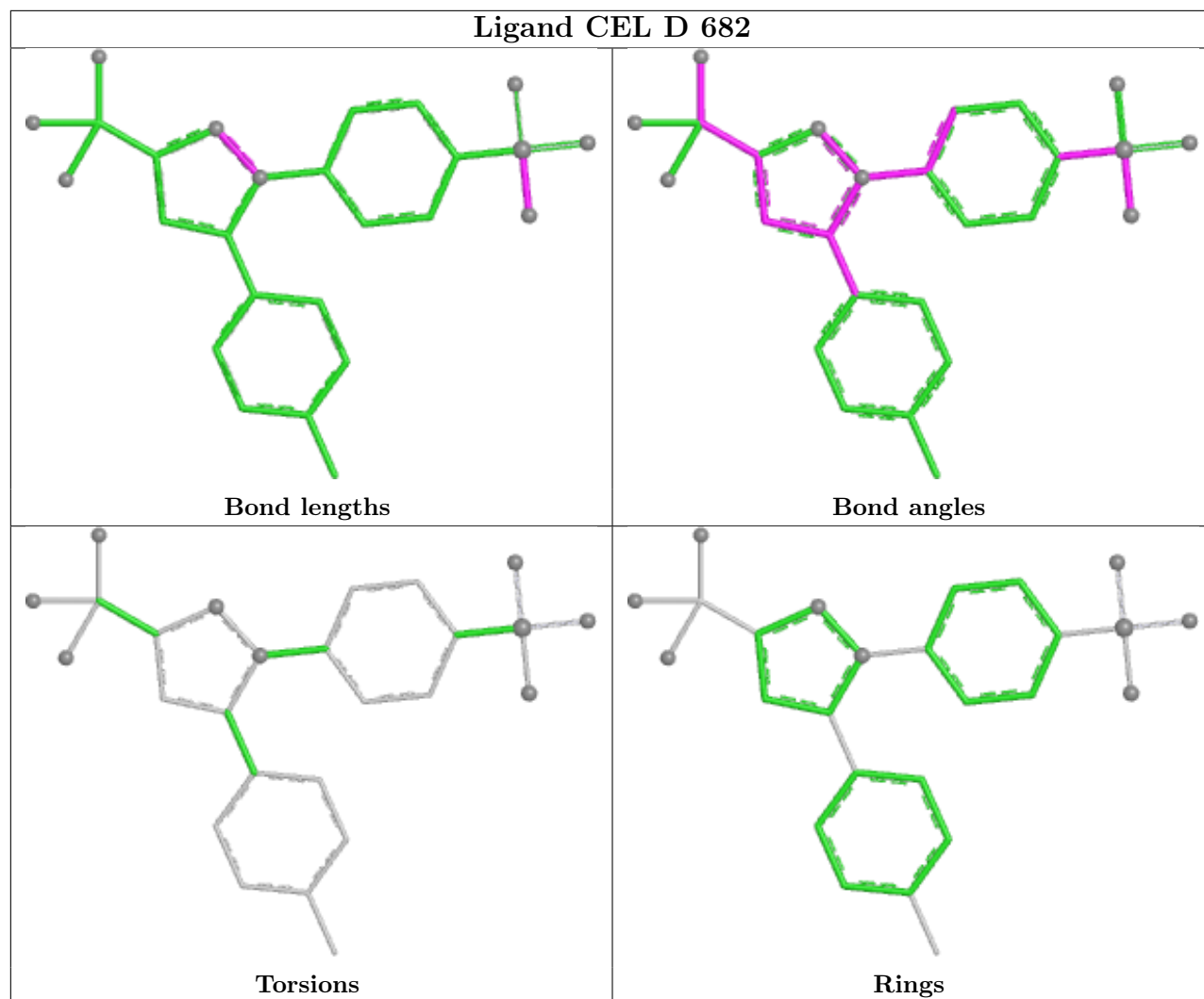
There are no ring outliers.

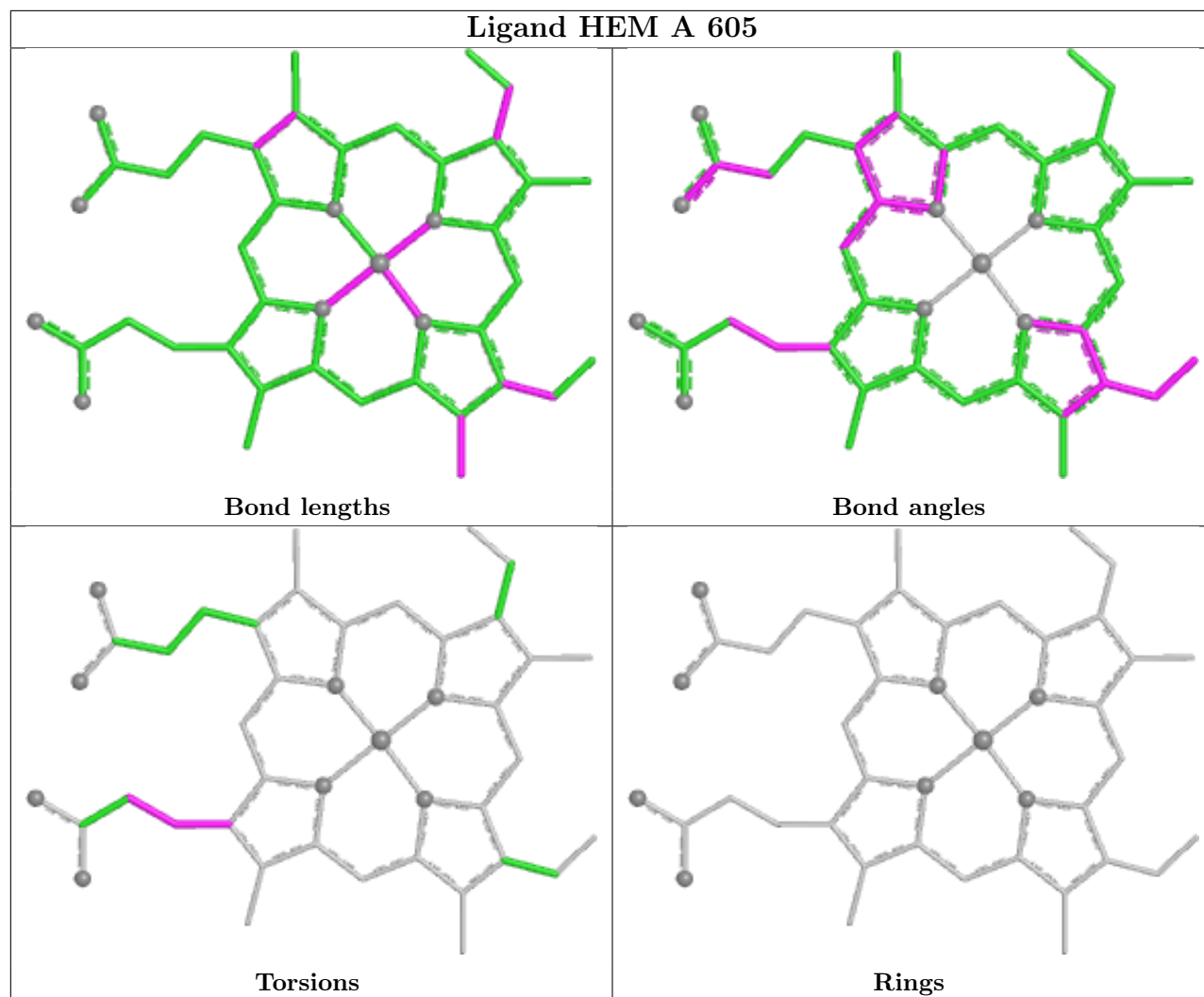
10 monomers are involved in 21 short contacts:

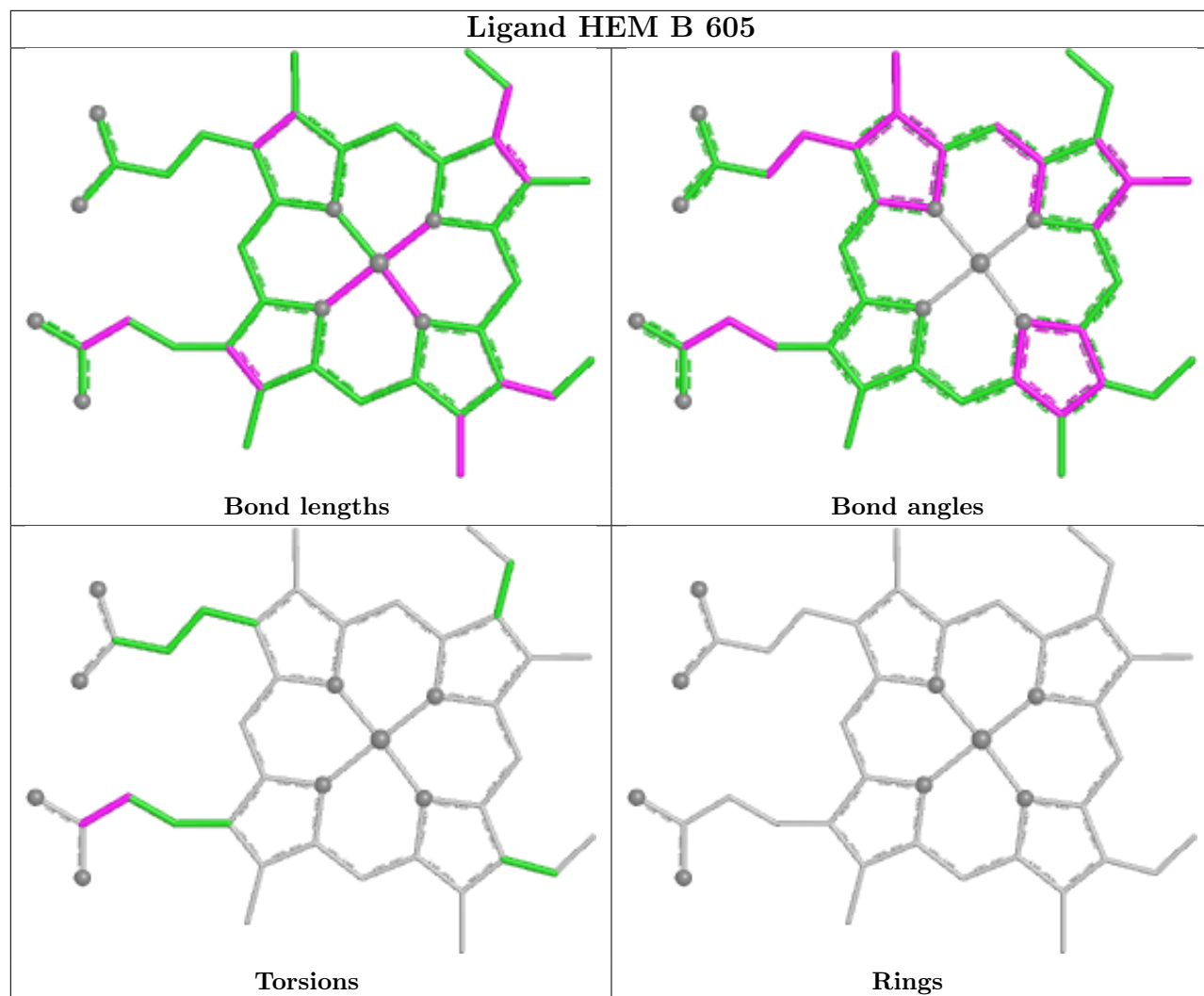
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	703	BOG	0	1
3	A	661	NAG	2	0
4	A	605	HEM	5	0
4	B	605	HEM	3	0
3	B	661	NAG	3	0
3	C	661	NAG	2	0
4	C	605	HEM	2	0
3	B	681	NAG	1	0
3	D	661	NAG	1	0
4	D	605	HEM	1	0

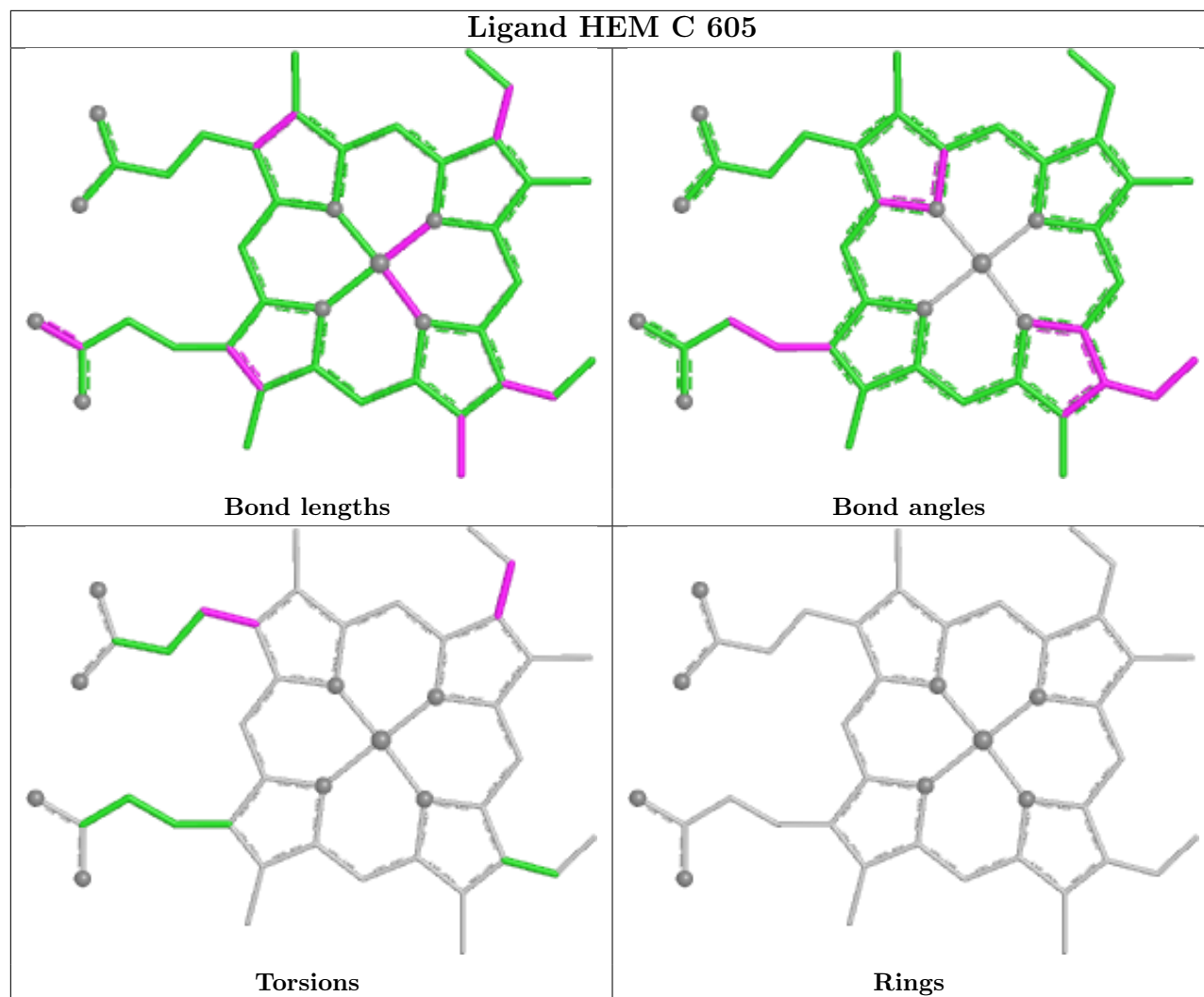
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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.



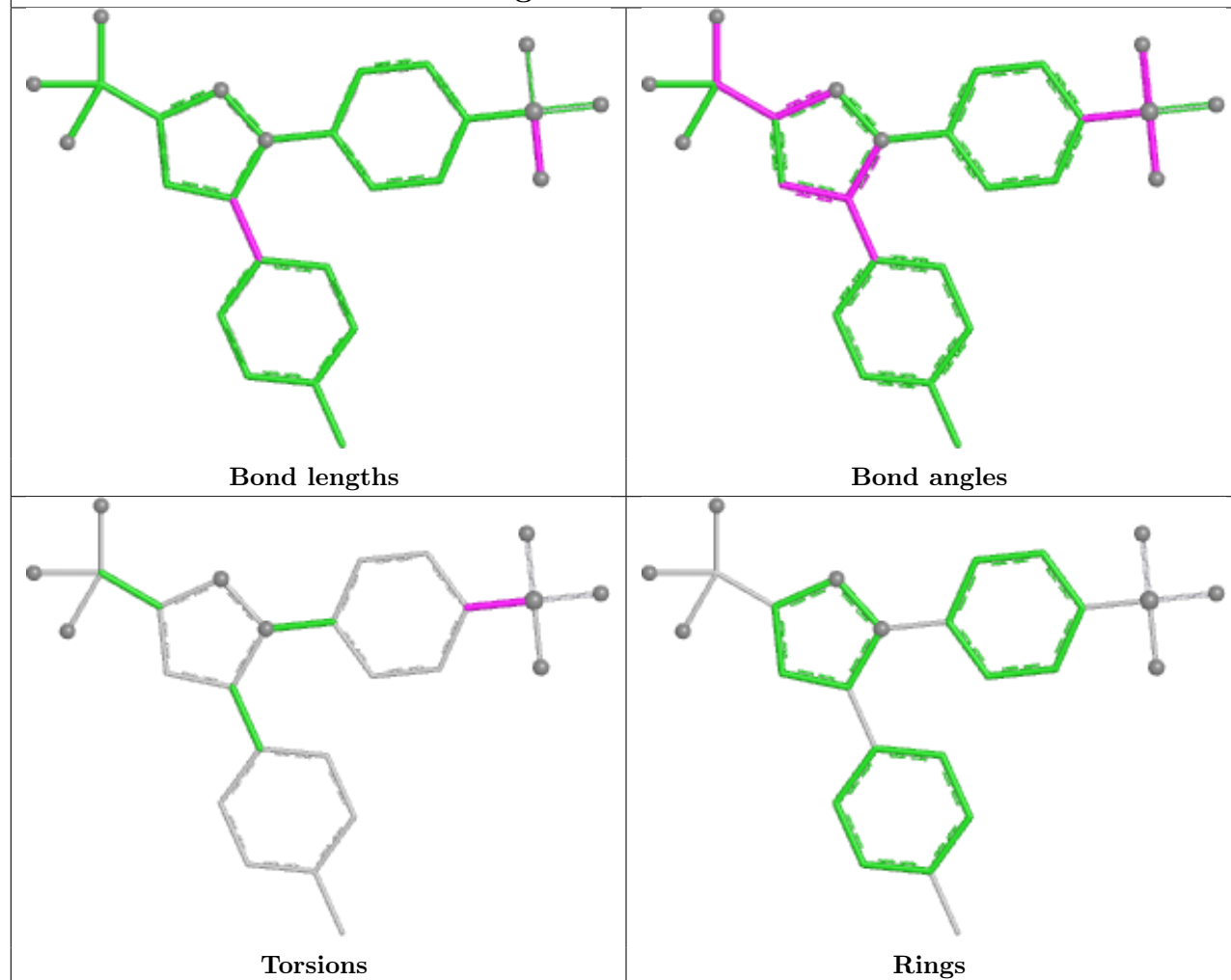




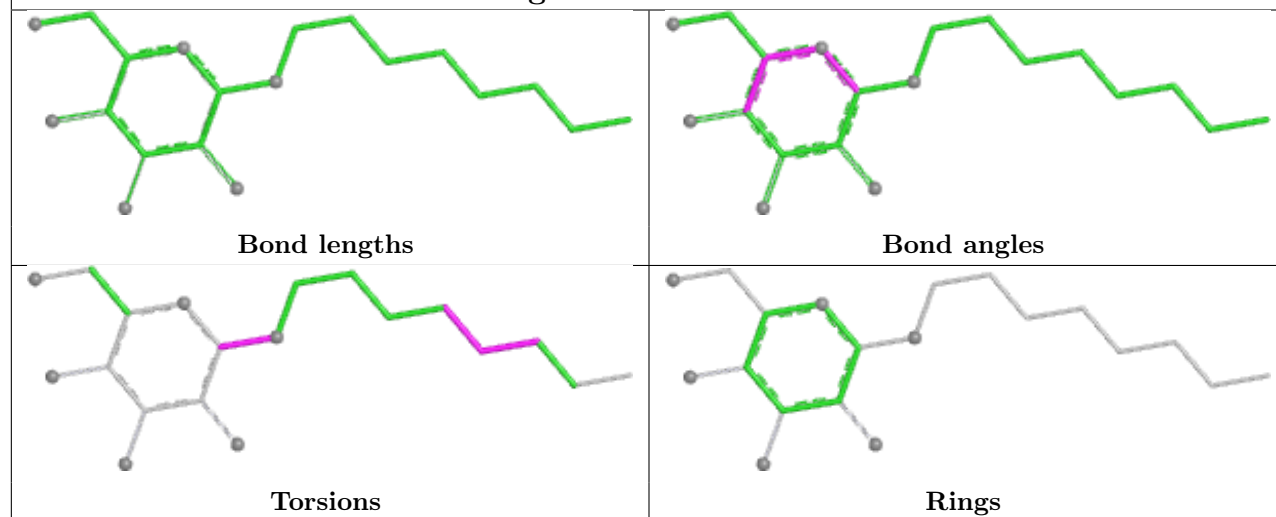




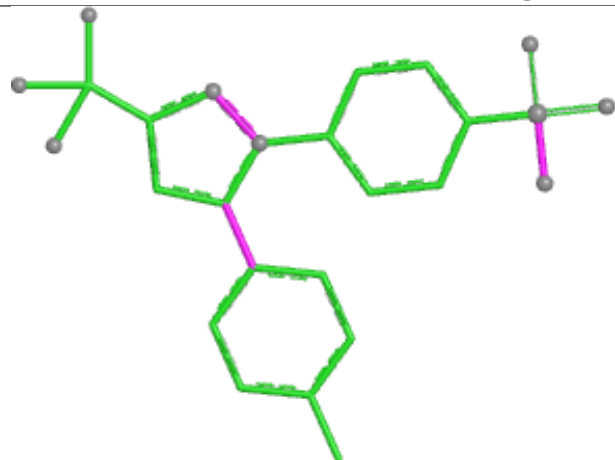
Ligand CEL C 682



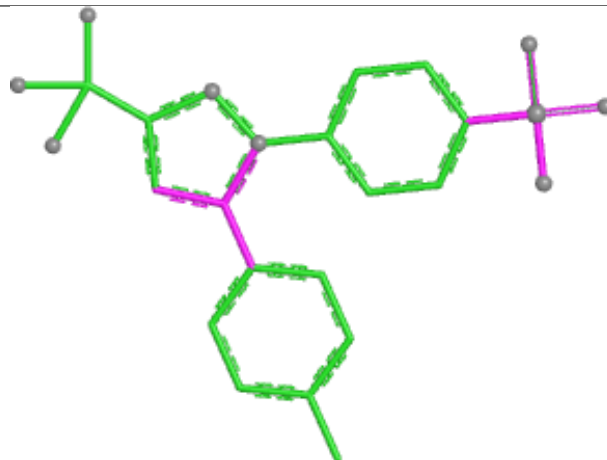
Ligand BOG D 703



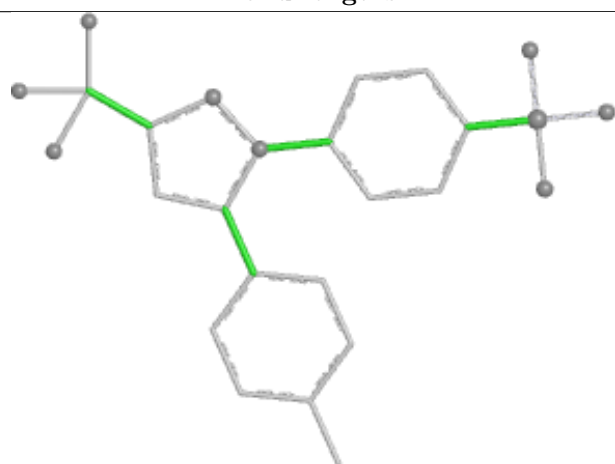
Ligand CEL B 682



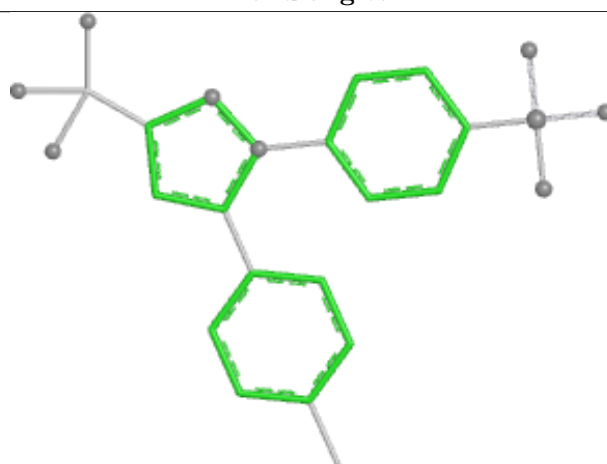
Bond lengths



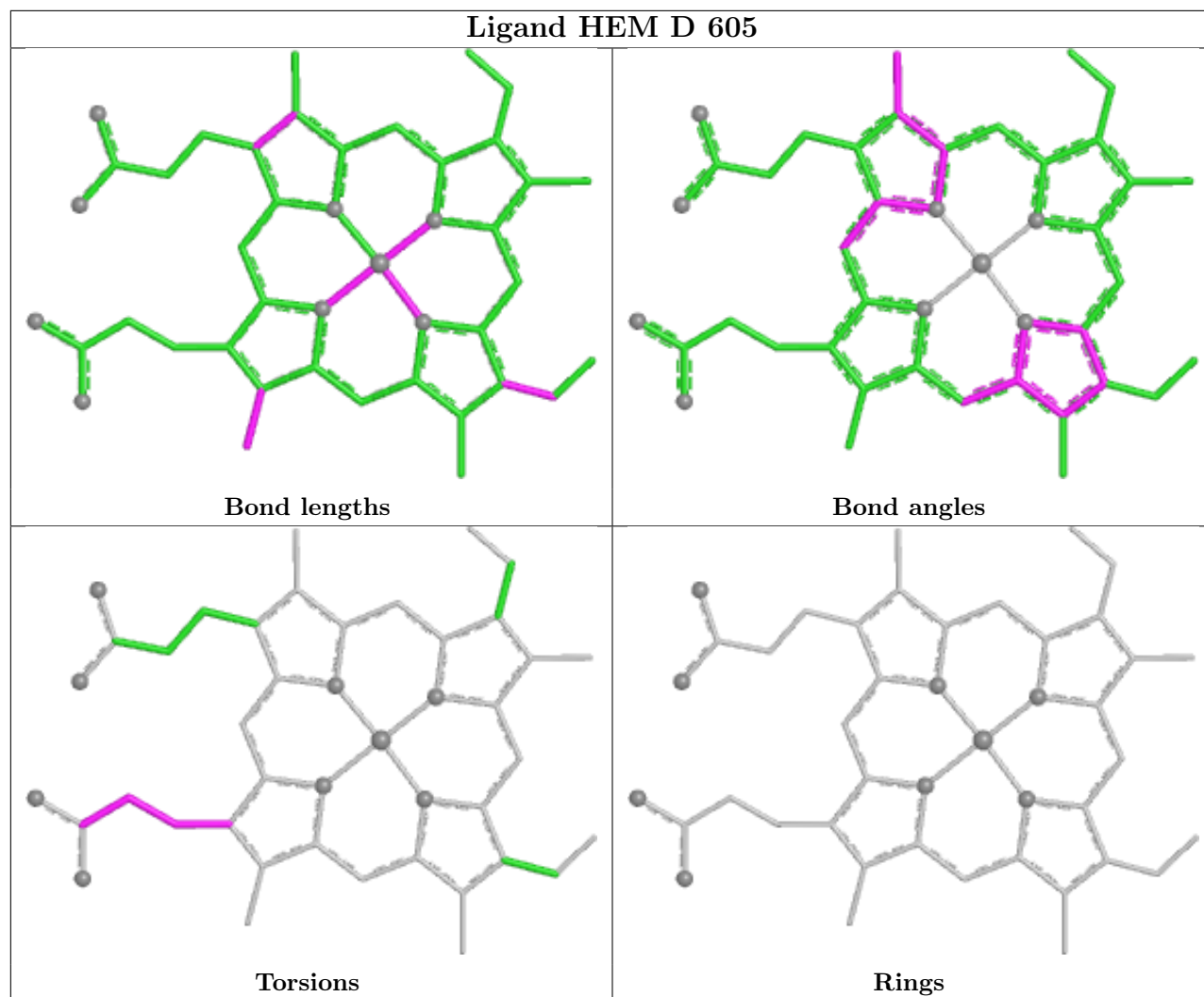
Bond angles

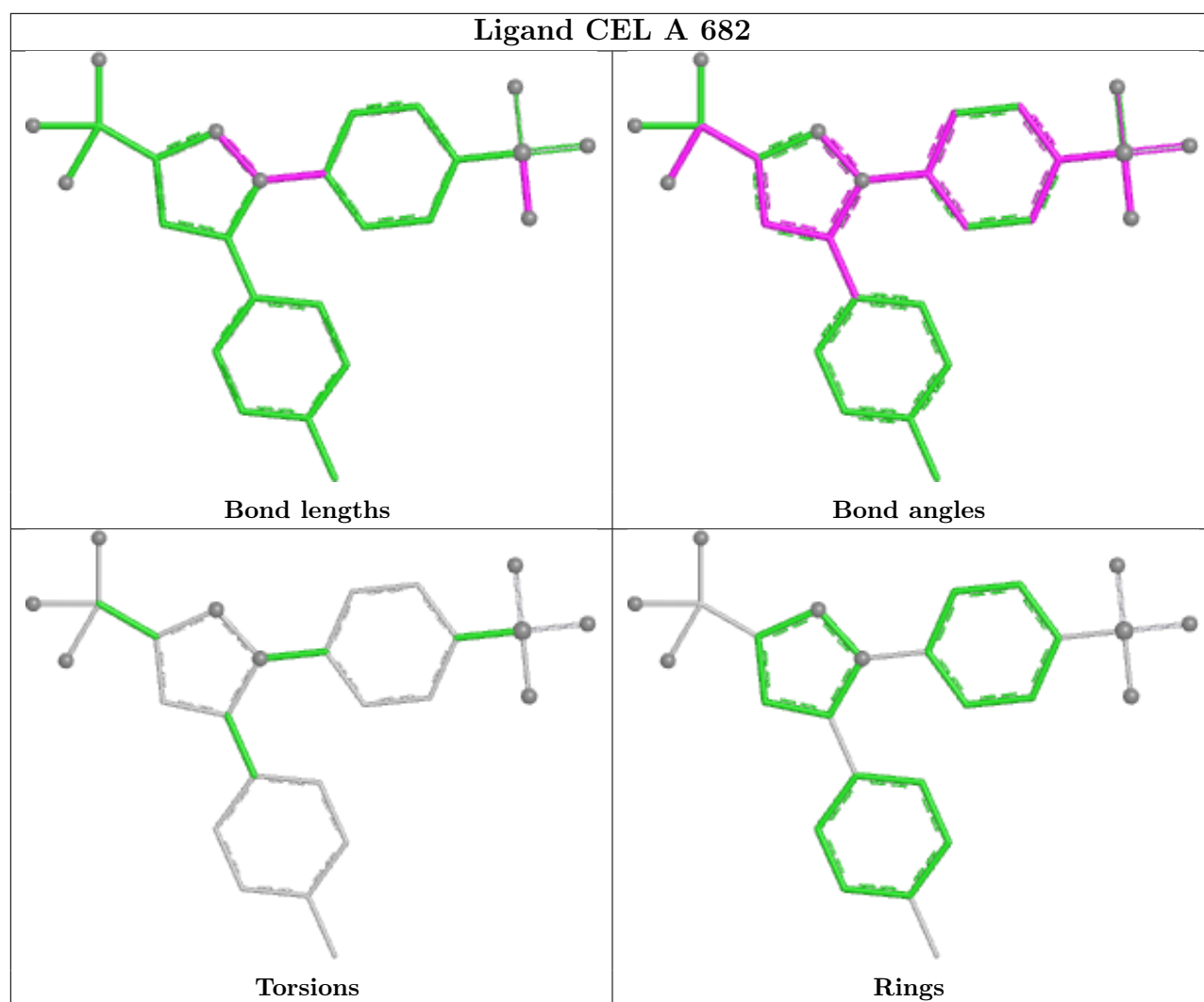


Torsions



Rings





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 ⓘ

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	552/587 (94%)	0.30	14 (2%) 58 54	34, 45, 60, 73	0
1	B	552/587 (94%)	0.22	6 (1%) 78 74	34, 45, 60, 73	0
1	C	552/587 (94%)	0.25	8 (1%) 73 69	34, 45, 60, 73	0
1	D	552/587 (94%)	0.29	5 (0%) 81 78	34, 46, 60, 73	0
All	All	2208/2348 (94%)	0.26	33 (1%) 72 68	34, 45, 60, 73	0

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	569	GLN	4.4
1	C	93	PHE	3.7
1	D	18	ALA	3.7
1	A	395	TYR	3.3
1	A	254	ASP	3.1
1	A	60	LEU	3.0
1	B	101	TYR	2.9
1	C	101	TYR	2.9
1	B	569	GLN	2.8
1	A	268	ASN	2.8
1	C	83	GLY	2.8
1	C	18	ALA	2.8
1	A	267	GLU	2.7
1	A	234	LYS	2.6
1	B	18	ALA	2.6
1	B	108	TYR	2.6
1	A	35	THR	2.4
1	D	60	LEU	2.3
1	D	57	PRO	2.2
1	C	254	ASP	2.2
1	C	385	ASP	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	76	TYR	2.2
1	A	101	TYR	2.2
1	A	78	LEU	2.2
1	B	385	ASP	2.2
1	C	350	GLU	2.2
1	B	59	PHE	2.1
1	A	18	ALA	2.1
1	A	93	PHE	2.1
1	D	66	LEU	2.1
1	C	272	ALA	2.1
1	A	269	LEU	2.0
1	A	107	SER	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 ⓘ

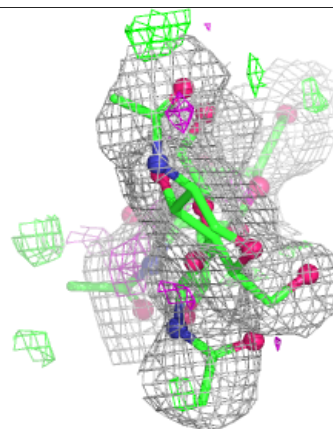
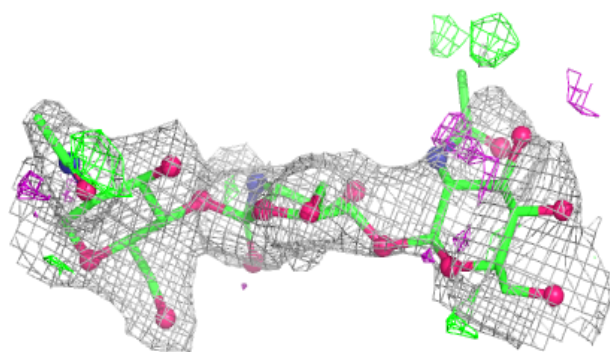
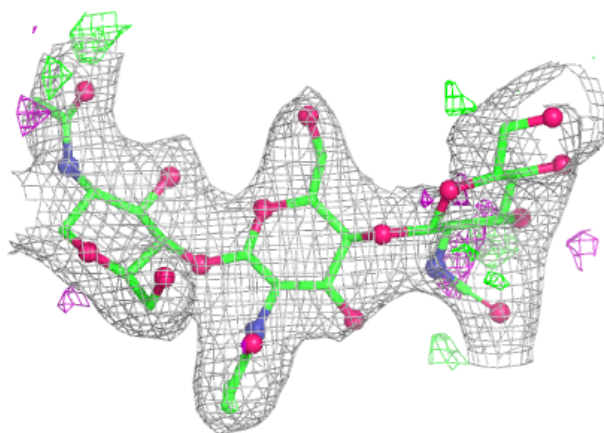
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	NAG	G	3	14/15	0.52	0.19	74,77,80,80	0
2	NAG	E	3	14/15	0.55	0.20	68,73,74,75	0
2	NAG	H	3	14/15	0.55	0.22	81,84,85,86	0
2	NAG	F	3	14/15	0.60	0.19	79,83,83,83	0
2	NAG	H	2	14/15	0.83	0.14	62,66,71,76	0
2	NAG	E	2	14/15	0.84	0.14	55,60,63,68	0
2	NAG	F	2	14/15	0.84	0.13	60,65,72,76	0
2	NAG	G	2	14/15	0.87	0.12	56,60,63,70	0
2	NAG	G	1	14/15	0.91	0.09	41,44,47,53	0
2	NAG	H	1	14/15	0.92	0.09	40,43,48,55	0
2	NAG	E	1	14/15	0.93	0.10	40,44,48,54	0
2	NAG	F	1	14/15	0.94	0.07	35,42,49,55	0

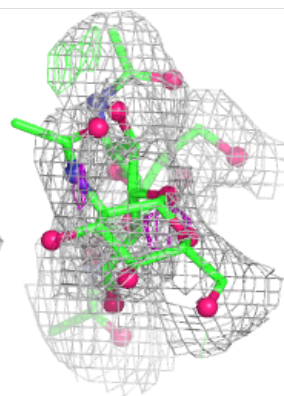
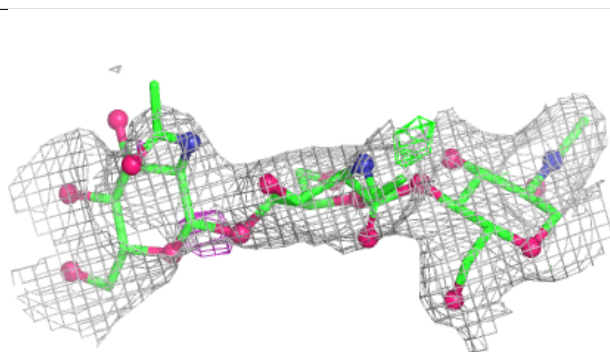
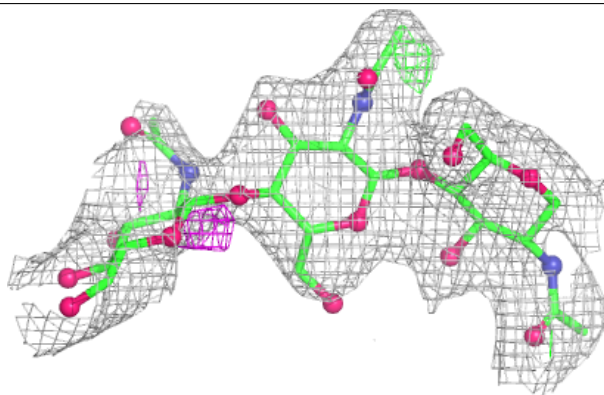
The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around Chain E:

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

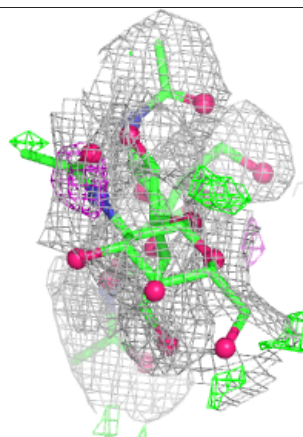
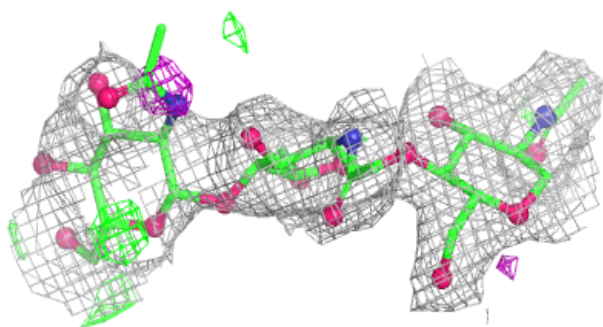
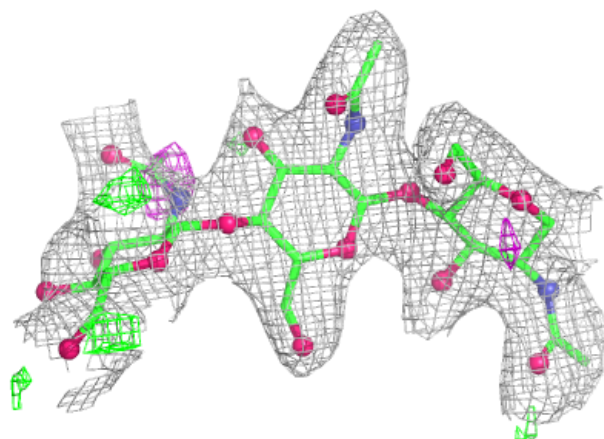
**Electron density around Chain F:**

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

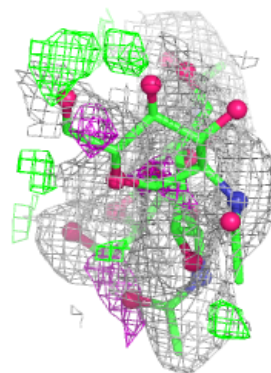
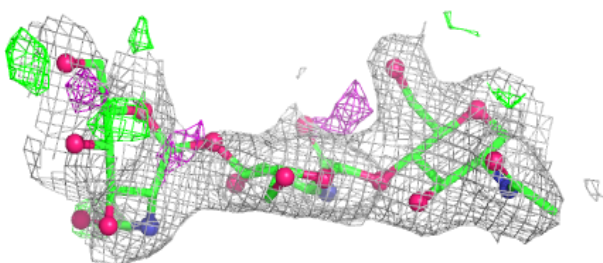
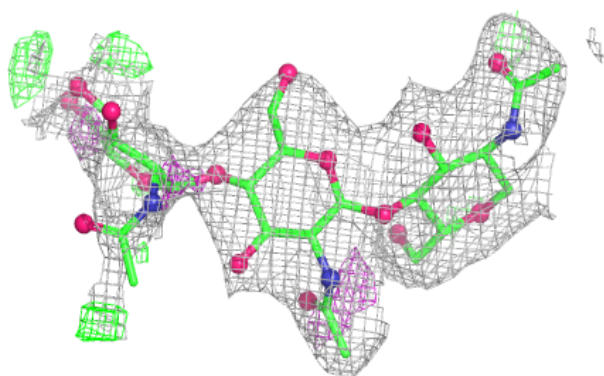


Electron density around Chain G:

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

**Electron density around Chain H:**

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



6.4 Ligands ⓘ

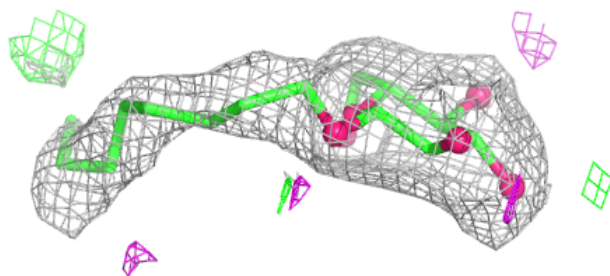
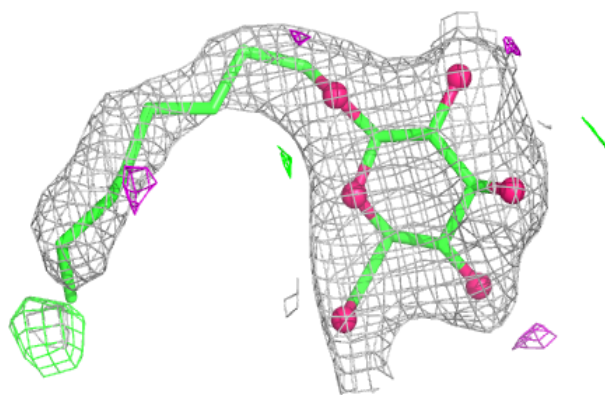
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	NAG	A	661	14/15	0.71	0.16	62,68,69,69	0
3	NAG	D	661	14/15	0.71	0.17	57,65,67,68	0
3	NAG	C	661	14/15	0.72	0.16	70,73,75,75	0
3	NAG	B	681	14/15	0.74	0.17	70,73,74,75	0
3	NAG	D	681	14/15	0.75	0.18	70,72,75,76	0
3	NAG	C	681	14/15	0.76	0.14	68,70,71,72	0
3	NAG	A	681	14/15	0.78	0.14	67,69,70,71	0
3	NAG	B	661	14/15	0.80	0.14	59,65,67,69	0
6	BOG	A	703	20/20	0.92	0.10	43,47,50,51	0
4	HEM	D	605	43/43	0.94	0.11	39,45,56,62	0
5	CEL	A	682	26/26	0.94	0.09	35,40,45,45	0
4	HEM	B	605	43/43	0.94	0.10	37,44,54,57	0
6	BOG	D	703	20/20	0.94	0.10	43,46,55,55	0
4	HEM	C	605	43/43	0.95	0.10	36,42,58,62	0
5	CEL	B	682	26/26	0.95	0.08	43,45,47,50	0
4	HEM	A	605	43/43	0.96	0.09	36,39,54,62	0
5	CEL	D	682	26/26	0.96	0.08	43,46,51,51	0
5	CEL	C	682	26/26	0.97	0.06	40,41,43,44	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.

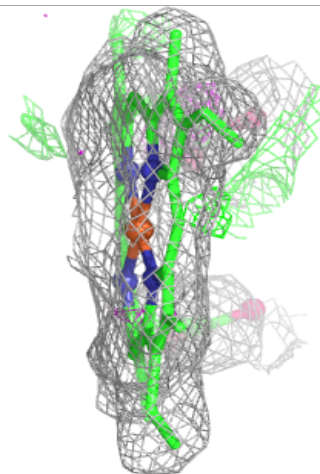
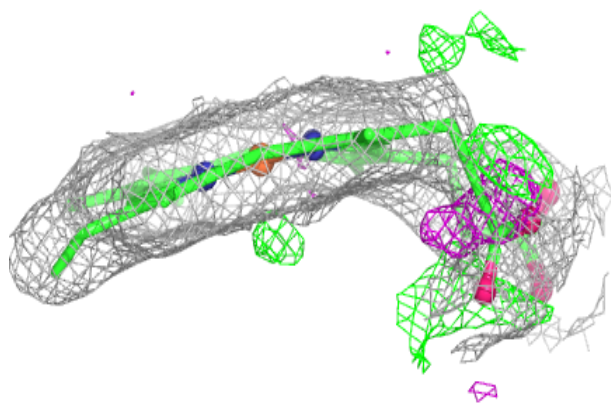
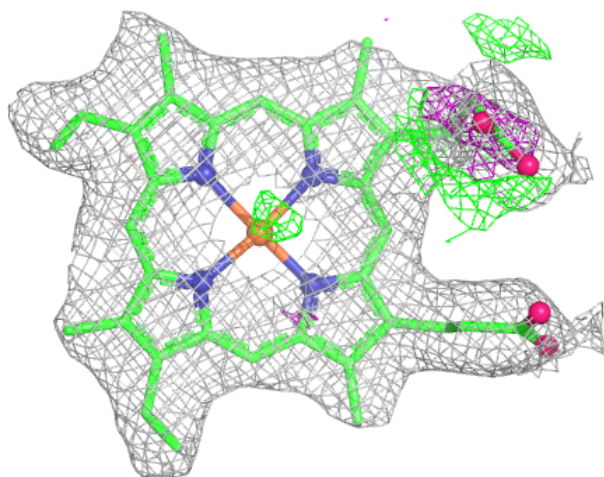
Electron density around BOG A 703:

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



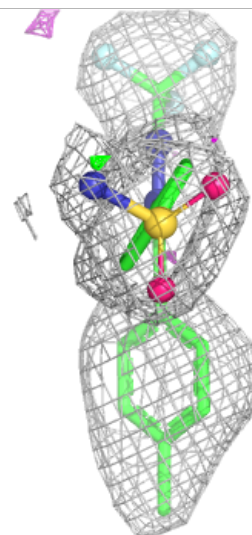
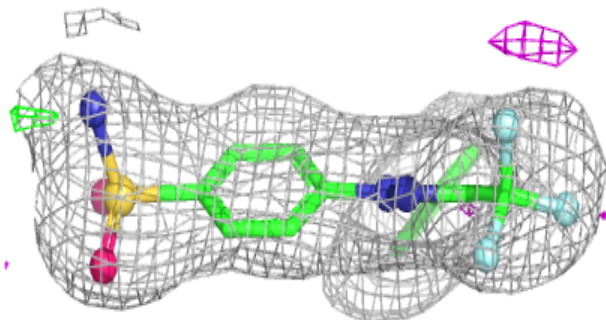
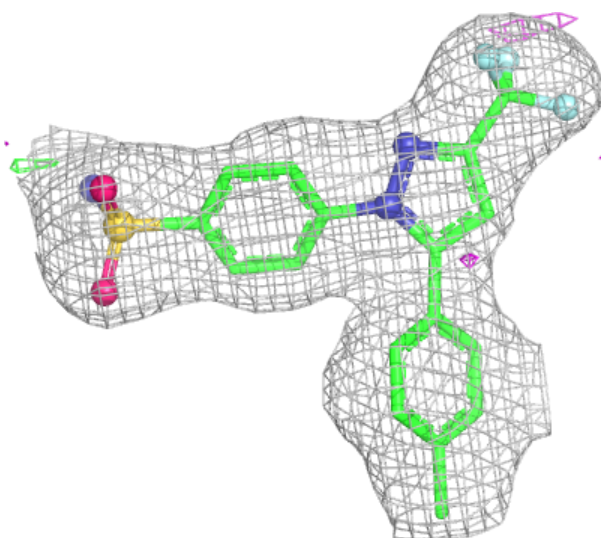
Electron density around HEM D 605:

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



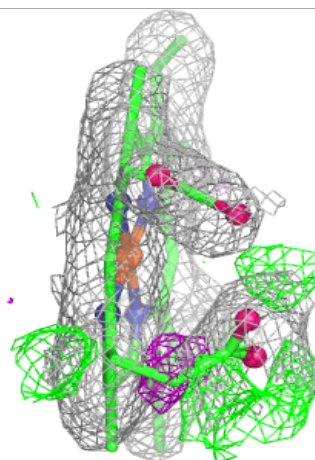
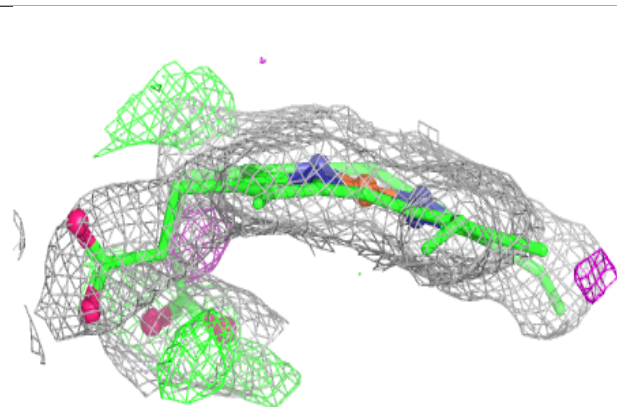
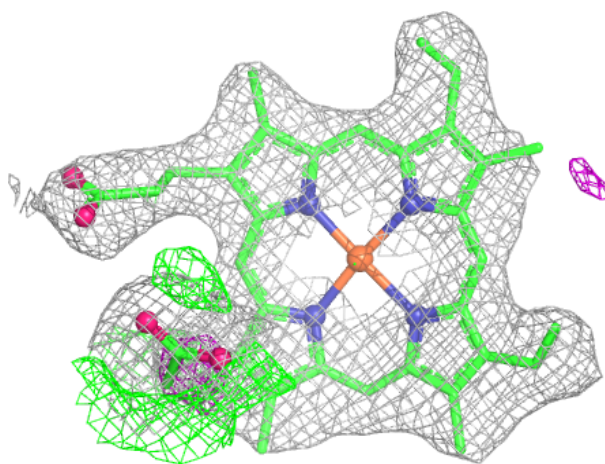
Electron density around CEL A 682:

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



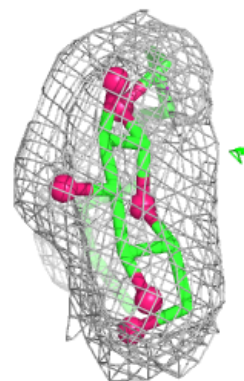
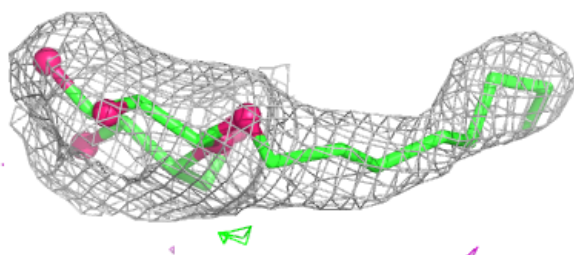
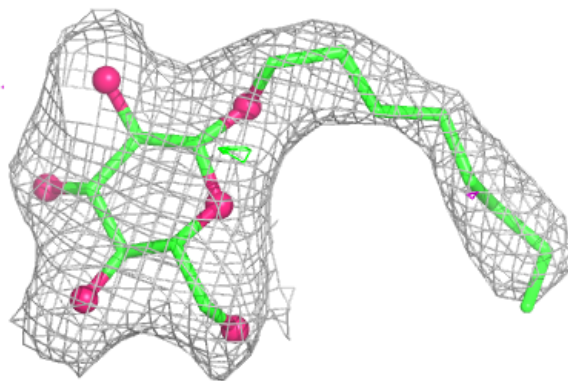
Electron density around HEM B 605:

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



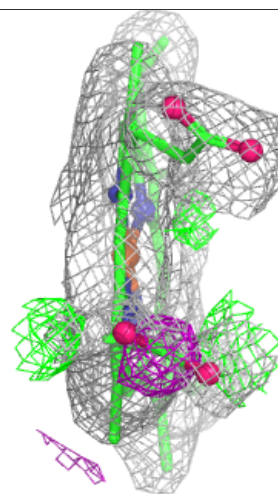
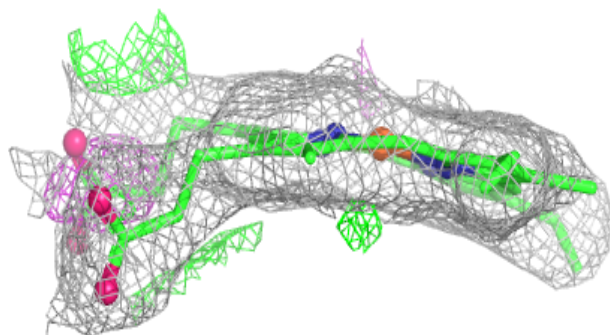
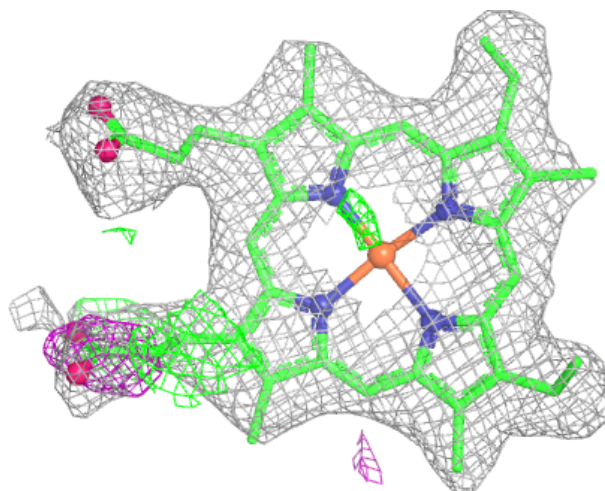
Electron density around BOG D 703:

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



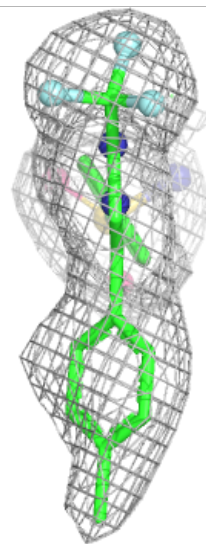
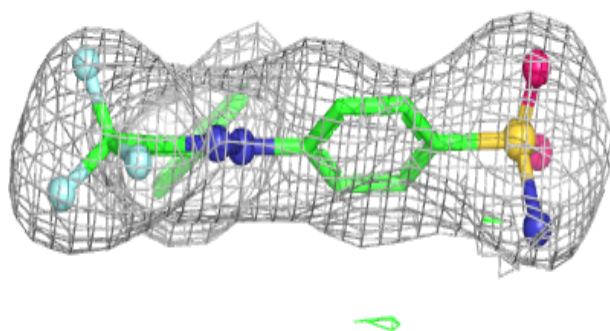
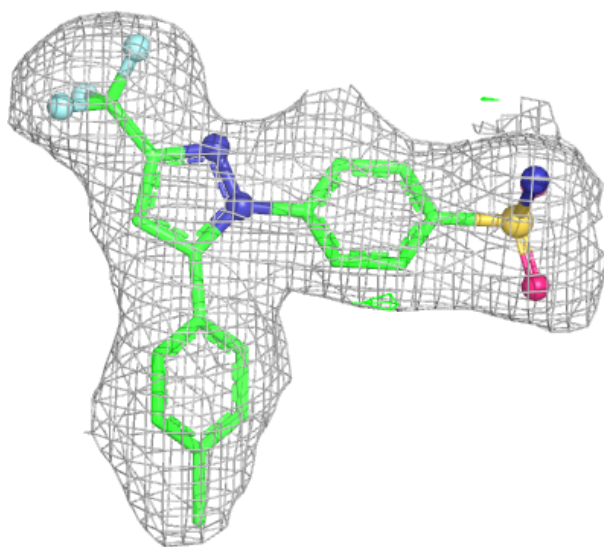
Electron density around HEM C 605:

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



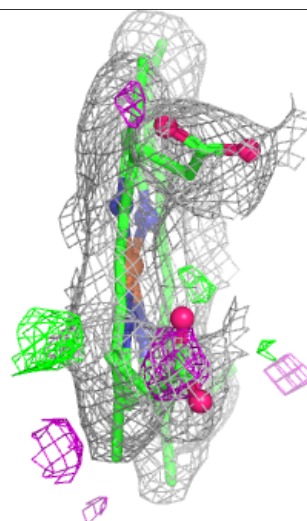
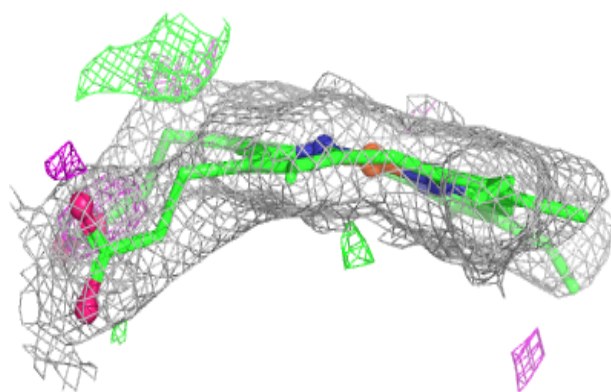
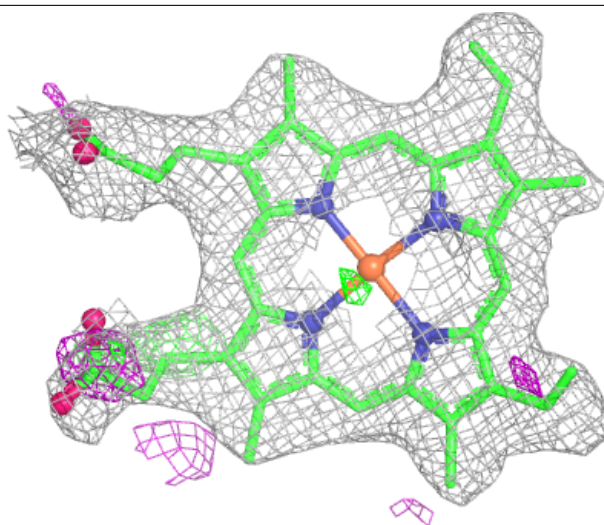
Electron density around CEL B 682:

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



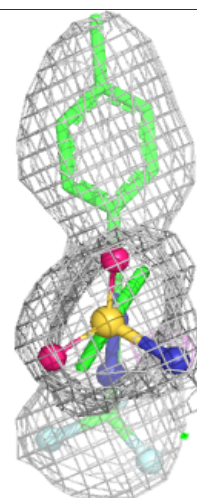
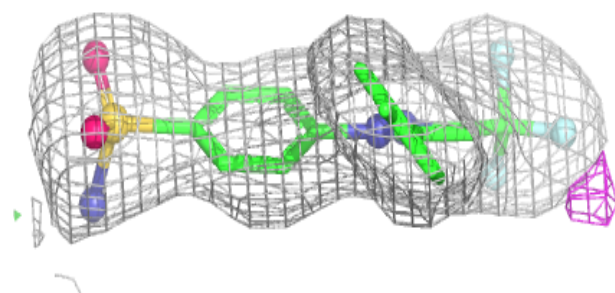
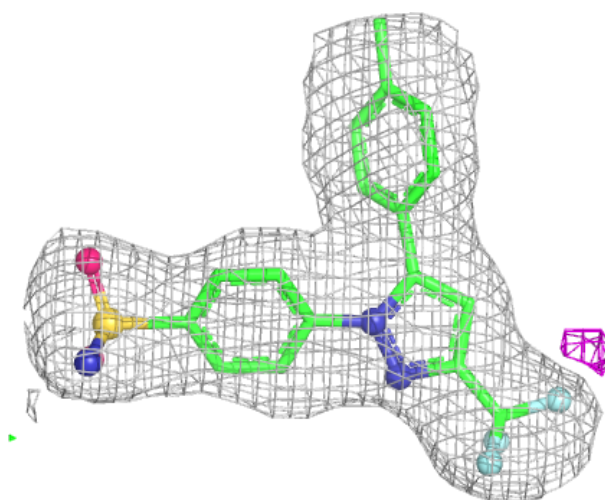
Electron density around HEM A 605:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



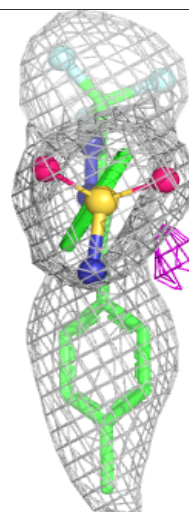
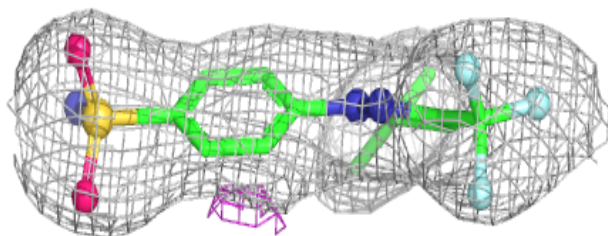
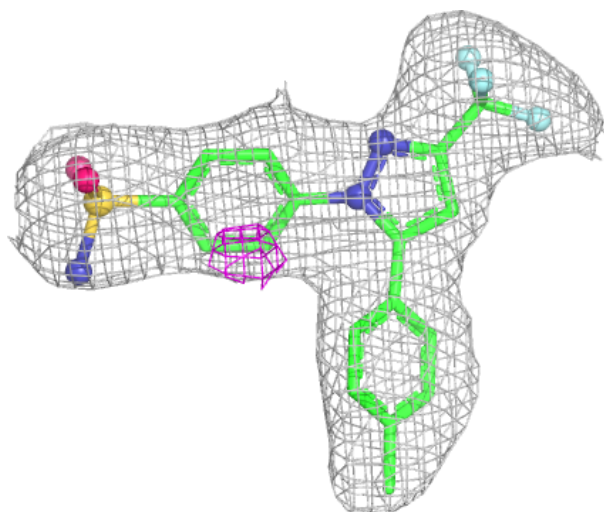
Electron density around CEL D 682:

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



Electron density around CEL C 682:

$2mF_o-DF_c$ (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.