



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 17, 2026 – 11:42 PM UTC

PDB ID : 9QE3 / pdb_00009qe3
Title : Structure of native leukocyte myeloperoxidase in complex with a truncated version of the Staphylococcal Peroxidase Inhibitor SPIN and selenocyanate at pH 5.5
Authors : Leitgeb, U.; Pfanzagl, V.
Deposited on : 2025-03-07
Resolution : 2.06 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:

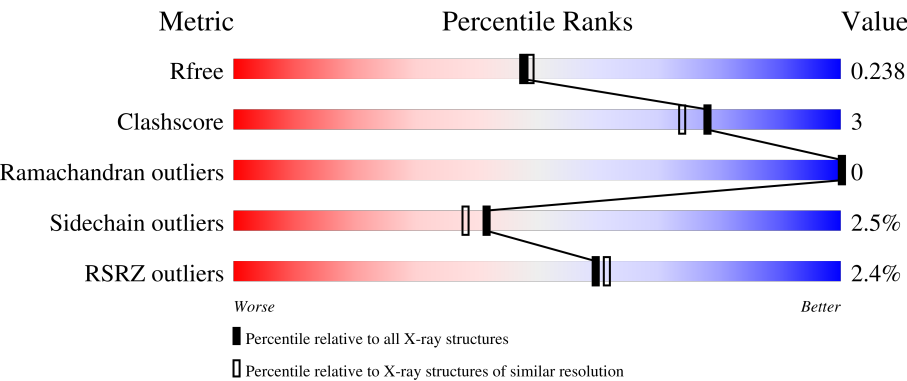
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal 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 i

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

The reported resolution of this entry is 2.06 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	3774 (2.08-2.04)
Clashscore	190562	3883 (2.08-2.04)
Ramachandran outliers	187476	3860 (2.08-2.04)
Sidechain outliers	187428	3860 (2.08-2.04)
RSRZ outliers	180081	3775 (2.08-2.04)

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	E	60	2% 85% 10% 5%
1	F	60	42% 77% 18% • •
2	A	114	82% 10% 8%
2	C	114	% 78% 13% • 8%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
3	B	467	89% 9% .
3	D	467	89% 9% ..
4	G	5	20% 80%
4	H	5	40% 60%

2 Entry composition [i](#)

There are 9 unique types of molecules in this entry. The entry contains 20731 atoms, of which 9899 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 Myeloperoxidase inhibitor SPIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	E	57	Total	C	H	N	O	0	0	0
			902	292	440	77	93			
1	F	58	Total	C	H	N	O	0	0	0
			918	298	446	80	94			

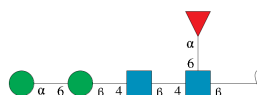
- Molecule 2 is a protein called Myeloperoxidase light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	A	105	Total	C	H	N	O	0	0	0
			1627	532	785	149	156			
2	C	105	Total	C	H	N	O	0	0	0
			1627	532	785	149	156			

- Molecule 3 is a protein called Myeloperoxidase heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	B	465	Total	C	H	N	O	0	0	0
			7379	2346	3654	686	666			
3	D	464	Total	C	H	N	O	0	0	0
			7369	2343	3649	685	665			

- Molecule 4 is an oligosaccharide called alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



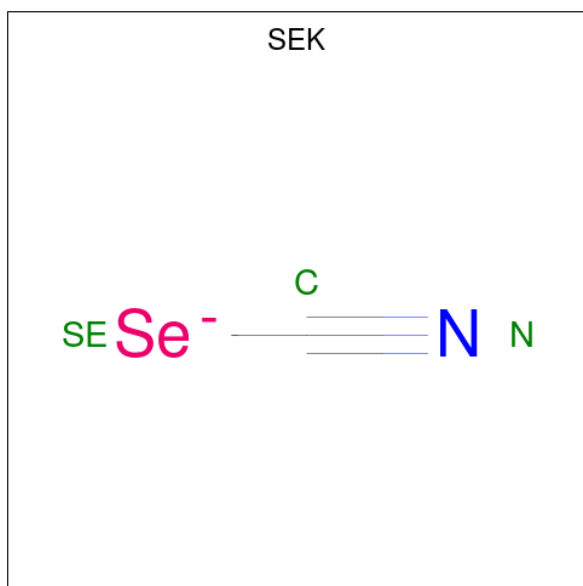
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	G	5	Total	C	H	N	O	0	0	0
			98	34	38	2	24			

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	H	5	Total	C	H	N	O	0	0	0
			98	34	38	2	24			

- Molecule 5 is SELENOCYANATE ION (CCD ID: SEK) (formula: CNSe).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total	C	N	Se	0	0
			3	1	1	1		
5	A	1	Total	C	N	Se	0	0
			3	1	1	1		
5	A	1	Total	C	N	Se	0	0
			3	1	1	1		
5	A	1	Total	C	N	Se	0	0
			3	1	1	1		
5	C	1	Total	C	N	Se	0	0
			3	1	1	1		
5	C	1	Total	C	N	Se	0	0
			3	1	1	1		
5	B	1	Total	C	N	Se	0	0
			3	1	1	1		
5	B	1	Total	C	N	Se	0	0
			3	1	1	1		
5	B	1	Total	C	N	Se	0	0
			3	1	1	1		
5	B	1	Total	C	N	Se	0	1
			6	2	2	2		

Continued on next page...

Continued from previous page...

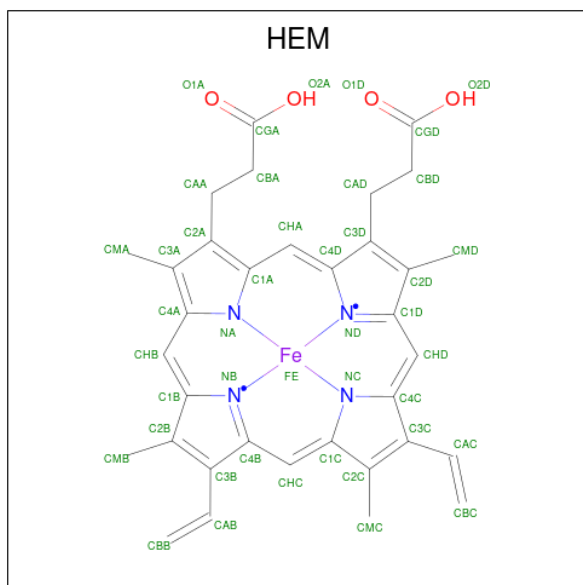
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	B	1	Total 3	C 1	N 1	Se 1	0	0
5	B	1	Total 3	C 1	N 1	Se 1	0	0
5	B	1	Total 3	C 1	N 1	Se 1	0	0
5	B	1	Total 3	C 1	N 1	Se 1	0	0
5	B	1	Total 3	C 1	N 1	Se 1	0	0
5	B	1	Total 3	C 1	N 1	Se 1	0	0
5	B	1	Total 3	C 1	N 1	Se 1	0	0
5	B	1	Total 3	C 1	N 1	Se 1	0	0
5	B	1	Total 3	C 1	N 1	Se 1	0	0
5	D	1	Total 3	C 1	N 1	Se 1	0	0
5	D	1	Total 3	C 1	N 1	Se 1	0	0
5	D	1	Total 3	C 1	N 1	Se 1	0	0
5	D	1	Total 3	C 1	N 1	Se 1	0	0
5	D	1	Total 3	C 1	N 1	Se 1	0	0
5	D	1	Total 6	C 2	N 2	Se 2	0	1
5	D	1	Total 3	C 1	N 1	Se 1	0	0
5	D	1	Total 3	C 1	N 1	Se 1	0	0
5	D	1	Total 3	C 1	N 1	Se 1	0	0
5	D	1	Total 3	C 1	N 1	Se 1	0	0
5	D	1	Total 3	C 1	N 1	Se 1	0	0
5	D	1	Total 3	C 1	N 1	Se 1	0	0

Continued on next page...

Continued from previous page...

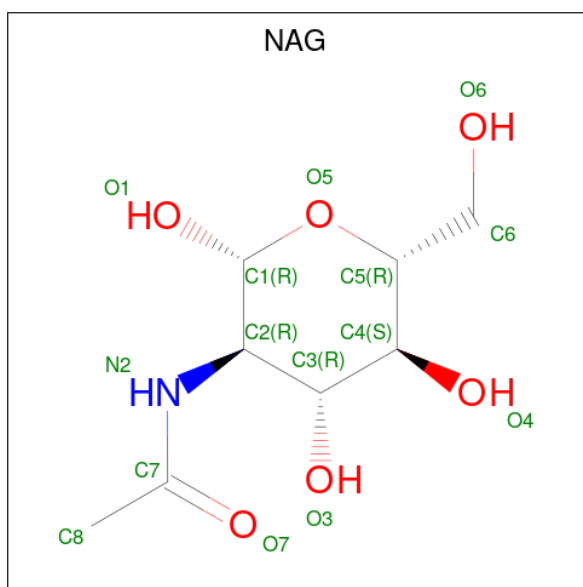
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	D	1	Total	C	N	Se	0	0
			3	1	1	1		

- Molecule 6 is PROTOPORPHYRIN IX CONTAINING FE (CCD ID: HEM) (formula: $C_{34}H_{32}FeN_4O_4$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
6	A	1	Total	C	Fe	H	N	O	0	0
			59	34	1	16	4	4		
6	C	1	Total	C	Fe	H	N	O	0	0
			59	34	1	16	4	4		

- Molecule 7 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
7	B	1	Total	C	H	N	O	0	0
			22	8	8	1	5		
7	B	1	Total	C	H	N	O	0	0
			22	8	8	1	5		
7	D	1	Total	C	H	N	O	0	0
			22	8	8	1	5		
7	D	1	Total	C	H	N	O	0	0
			22	8	8	1	5		

- Molecule 8 is CALCIUM ION (CCD ID: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	B	1	Total	Ca	0	0
			1	1		
8	D	1	Total	Ca	0	0
			1	1		

- Molecule 9 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	E	14	Total	O	0	0
			14	14		
9	F	4	Total	O	0	0
			4	4		
9	A	56	Total	O	0	0
			56	56		

Continued on next page...

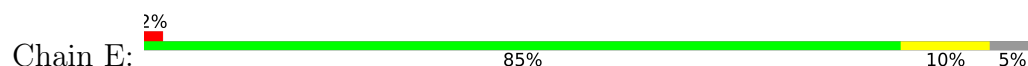
Continued from previous page...

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	C	39	Total 39	O 39	0	0
9	B	174	Total 174	O 174	0	0
9	D	116	Total 116	O 116	0	0

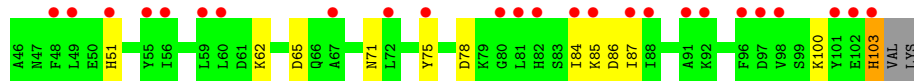
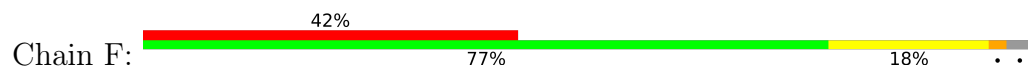
3 Residue-property plots [i](#)

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.

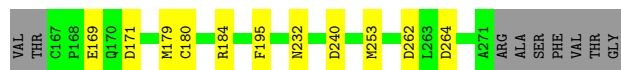
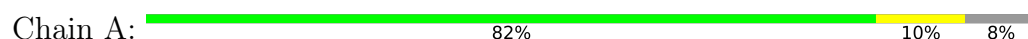
- Molecule 1: Myeloperoxidase inhibitor SPIN



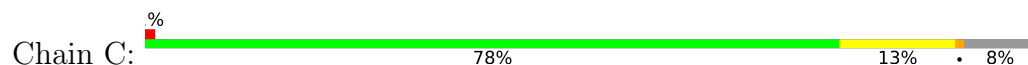
- Molecule 1: Myeloperoxidase inhibitor SPIN



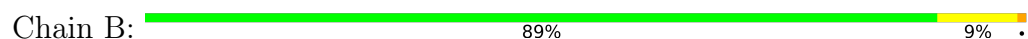
- Molecule 2: Myeloperoxidase light chain



- Molecule 2: Myeloperoxidase light chain



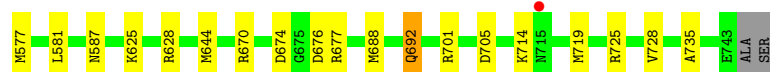
- Molecule 3: Myeloperoxidase heavy chain





- Molecule 3: Myeloperoxidase heavy chain

Chain D: 89% 9% ..



- Molecule 4: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G: 20% 80%



- Molecule 4: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H: 40% 60%



4 Data and refinement statistics

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, α , β , γ	110.51 Å 110.51 Å 241.57 Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.89 – 2.06 19.89 – 2.06	Depositor EDS
% Data completeness (in resolution range)	68.4 (19.89-2.06) 67.1 (19.89-2.06)	Depositor EDS
R_{merge}	0.35	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.48 (at 2.06 Å)	Xtriage
Refinement program	REFMAC 5.8.0430 (refmacat 0.4.100)	Depositor
R, R_{free}	0.179 , 0.234 0.179 , 0.238	Depositor DCC
R_{free} test set	3150 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å ²)	29.7	Xtriage
Anisotropy	0.048	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.39 , 30.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	20731	wwPDB-VP
Average B, all atoms (Å ²)	39.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.49% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: BMA, MAN, FUC, CA, NAG, HEM, SEK, CSO

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	E	0.65	0/469	1.31	2/629 (0.3%)
1	F	0.60	0/480	1.36	4/644 (0.6%)
2	A	0.74	0/867	1.24	5/1181 (0.4%)
2	C	0.67	0/867	1.20	4/1181 (0.3%)
3	B	0.71	0/3803	1.20	12/5158 (0.2%)
3	D	0.66	0/3798	1.19	18/5151 (0.3%)
All	All	0.68	0/10284	1.21	45/13944 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
3	B	0	7
3	D	0	7
All	All	0	14

There are no bond length outliers.

All (45) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	692	GLN	N-CA-CB	9.85	124.60	110.12
3	B	506	GLN	CB-CA-C	9.58	121.88	108.76
3	D	323	ASN	CB-CA-C	-8.32	96.70	110.85
3	B	569	ARG	CD-NE-CZ	7.84	135.38	124.40
3	B	351	ARG	CB-CA-C	7.46	125.59	110.38
3	D	383	HIS	CB-CA-C	7.26	124.61	110.67
3	D	692	GLN	CB-CA-C	-6.90	99.34	110.79
2	A	264	ASP	CA-CB-CG	6.58	119.19	112.60

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	569	ARG	NE-CZ-NH2	-6.51	113.34	119.20
1	E	86	ASP	CA-CB-CG	6.48	119.08	112.60
3	D	470	THR	CA-CB-OG1	-6.26	100.21	109.60
3	D	409	MET	CB-CA-C	6.04	118.26	109.20
3	B	313	PHE	CA-CB-CG	5.89	119.69	113.80
3	D	322	SER	CA-C-N	5.84	128.58	120.29
3	D	322	SER	C-N-CA	5.84	128.58	120.29
3	D	438	ASP	CA-CB-CG	5.82	118.42	112.60
1	F	86	ASP	CA-CB-CG	5.68	118.28	112.60
3	D	674	ASP	CA-CB-CG	5.68	118.28	112.60
2	C	240	ASP	CA-CB-CG	5.63	118.23	112.60
1	F	71	ASN	CA-CB-CG	5.59	118.19	112.60
2	C	253	MET	CG-SD-CE	-5.55	88.69	100.90
3	B	692	GLN	N-CA-CB	5.50	118.20	110.12
3	D	520	GLU	CB-CA-C	5.49	117.34	109.11
3	D	520	GLU	CB-CG-CD	5.43	121.83	112.60
3	B	484	ASP	CA-CB-CG	5.37	117.97	112.60
3	B	338	ASP	CA-CB-CG	5.35	117.95	112.60
3	B	571	ARG	CG-CD-NE	-5.33	100.27	112.00
3	D	371	ASP	CA-CB-CG	5.31	117.91	112.60
3	D	719	MET	CG-SD-CE	5.29	112.53	100.90
1	E	61	ASP	CA-CB-CG	5.22	117.83	112.60
3	D	380	ASP	CA-CB-CG	5.20	117.80	112.60
3	D	484	ASP	CA-CB-CG	5.17	117.77	112.60
2	C	264	ASP	CA-CB-CG	5.16	117.76	112.60
3	B	438	ASP	CA-CB-CG	5.14	117.74	112.60
3	D	338	ASP	CA-CB-CG	5.13	117.73	112.60
1	F	103	HIS	CA-CB-CG	5.09	118.89	113.80
2	C	262	ASP	CA-CB-CG	5.07	117.67	112.60
2	A	240	ASP	CA-CB-CG	5.07	117.67	112.60
3	B	544	ASP	CA-CB-CG	5.06	117.66	112.60
2	A	262	ASP	CA-CB-CG	5.06	117.66	112.60
2	A	179	MET	CG-SD-CE	-5.05	89.78	100.90
3	D	506	GLN	CB-CA-C	5.04	116.33	108.61
1	F	65	ASP	CA-CB-CG	5.03	117.63	112.60
2	A	195	PHE	N-CA-CB	5.02	117.42	110.04
3	B	409	MET	CG-SD-CE	-5.00	89.89	100.90

There are no chirality outliers.

All (14) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	B	302	ARG	Sidechain
3	B	524	ARG	Sidechain
3	B	569	ARG	Sidechain
3	B	571	ARG	Sidechain
3	B	604	ARG	Sidechain
3	B	670	ARG	Sidechain
3	B	715	ASN	Peptide
3	D	480	ARG	Sidechain
3	D	524	ARG	Sidechain
3	D	559	ARG	Sidechain
3	D	571	ARG	Sidechain
3	D	628	ARG	Sidechain
3	D	670	ARG	Sidechain
3	D	725	ARG	Sidechain

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	E	462	440	447	2	0
1	F	472	446	454	3	0
2	A	842	785	800	4	0
2	C	842	785	800	9	0
3	B	3725	3654	3717	29	0
3	D	3720	3649	3711	19	0
4	G	60	38	52	0	0
4	H	60	38	52	0	0
5	A	12	0	0	1	0
5	B	42	0	0	3	0
5	C	6	0	0	0	0
5	D	42	0	0	3	0
6	A	43	16	30	0	0
6	C	43	16	30	1	0
7	B	28	16	26	5	0
7	D	28	16	26	0	0
8	B	1	0	0	0	0
8	D	1	0	0	0	0
9	A	56	0	0	0	0
9	B	174	0	0	1	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
9	C	39	0	0	1	0
9	D	116	0	0	0	0
9	E	14	0	0	1	0
9	F	4	0	0	0	0
All	All	10832	9899	10145	58	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 3.

All (58) 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)
3:B:365:VAL:H	7:B:814:NAG:H81	1.42	0.82
2:C:268:GLU:OE2	9:C:401:HOH:O	1.98	0.81
3:D:502:HIS:HD1	3:D:587:ASN:HD21	1.29	0.79
3:B:502:HIS:HD1	3:B:587:ASN:HD21	1.29	0.77
3:D:577:MET:HE1	3:D:581:LEU:HD21	1.69	0.73
3:B:577:MET:HE1	3:B:581:LEU:HD21	1.73	0.70
3:B:356:MET:HA	3:B:356:MET:HE2	1.81	0.62
3:B:670:ARG:NH1	3:B:674:ASP:OD2	2.30	0.62
7:B:814:NAG:H83	9:B:915:HOH:O	1.99	0.62
3:B:365:VAL:HG22	7:B:814:NAG:H82	1.82	0.62
3:D:356:MET:HE2	3:D:356:MET:HA	1.87	0.57
3:B:390:THR:O	5:B:812:SEK:SE	2.72	0.56
3:B:365:VAL:N	7:B:814:NAG:H81	2.16	0.55
3:B:715:ASN:CG	3:B:716:ASN:H	2.15	0.55
3:B:415:MET:CE	3:B:547:LEU:CD2	2.85	0.54
1:E:84:ILE:HA	1:E:87:ILE:HD12	1.88	0.53
2:A:232:ASN:OD1	3:B:569:ARG:NH2	2.42	0.52
3:B:364:ALA:HA	7:B:814:NAG:H81	1.92	0.51
2:C:174:ARG:HH22	3:D:676:ASP:CG	2.19	0.51
3:B:434:ASN:HD21	3:B:743:GLU:H	1.59	0.50
2:A:171:ASP:OD1	3:B:677:ARG:NH2	2.45	0.50
3:B:365:VAL:HG12	3:B:420:LEU:HD21	1.93	0.49
3:D:326:ILE:HD13	5:D:801:SEK:N	2.28	0.49
3:B:577:MET:HE2	3:B:577:MET:HB3	1.77	0.48
3:B:314:ARG:HH21	5:B:805:SEK:SE	2.47	0.48
5:A:301:SEK:N	3:B:326:ILE:HD13	2.29	0.48
2:C:235:VAL:CG2	3:D:644:MET:HE1	2.44	0.48
3:D:701:ARG:HD3	3:D:735:ALA:HA	1.94	0.48
3:B:395:ARG:HH11	3:B:395:ARG:HB3	1.79	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:577:MET:CE	3:D:581:LEU:HD21	2.41	0.47
3:D:425:ARG:HH11	3:D:705:ASP:HB3	1.80	0.46
2:C:180:CYS:O	3:D:677:ARG:NH1	2.49	0.46
3:D:714:LYS:HG2	3:D:728:VAL:HG13	1.98	0.45
3:B:513:ASP:HA	3:B:519:MET:HE3	1.97	0.45
3:B:379:PHE:H	5:B:807:SEK:SE	2.49	0.45
3:B:422:GLU:HG2	3:B:453:MET:HE1	1.99	0.44
3:D:282:GLU:OE2	3:D:577:MET:HE3	2.18	0.44
1:E:51:HIS:HE1	9:E:202:HOH:O	2.00	0.44
3:B:422:GLU:CG	3:B:453:MET:HE1	2.47	0.43
2:C:204:GLU:HG3	2:C:217:VAL:HG11	2.00	0.43
3:B:715:ASN:CG	3:B:716:ASN:N	2.76	0.43
3:D:365:VAL:HG12	3:D:420:LEU:HD21	2.00	0.43
2:A:184:ARG:NH1	2:C:202:GLU:OE2	2.50	0.43
2:C:174:ARG:NH2	3:D:676:ASP:OD1	2.52	0.42
2:A:180:CYS:O	3:B:677:ARG:NH1	2.52	0.42
3:D:577:MET:HE2	3:D:577:MET:HB3	1.82	0.42
2:C:171:ASP:OD1	3:D:677:ARG:NH2	2.53	0.42
2:C:168:PRO:O	2:C:183:ARG:NH1	2.38	0.41
1:F:51:HIS:HB3	5:D:813:SEK:SE	2.70	0.41
1:F:84:ILE:HA	1:F:87:ILE:HD12	2.02	0.41
1:F:75:TYR:CD1	3:D:356:MET:HG3	2.55	0.41
3:B:415:MET:HA	3:B:415:MET:HE2	2.02	0.41
3:B:294:LEU:HB2	3:B:310:ILE:HB	2.03	0.41
3:D:314:ARG:HH21	5:D:809:SEK:SE	2.54	0.41
3:D:557:LEU:HD23	3:D:559:ARG:CD	2.51	0.40
6:C:302:HEM:HBC2	6:C:302:HEM:HMC2	2.04	0.40
3:B:389:LEU:HB3	3:B:392:ARG:HH21	1.86	0.40
3:B:572:LEU:HB3	3:B:581:LEU:HB2	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	E	55/60 (92%)	54 (98%)	1 (2%)	0	100	100
1	F	56/60 (93%)	55 (98%)	1 (2%)	0	100	100
2	A	103/114 (90%)	101 (98%)	2 (2%)	0	100	100
2	C	103/114 (90%)	102 (99%)	1 (1%)	0	100	100
3	B	462/467 (99%)	454 (98%)	8 (2%)	0	100	100
3	D	461/467 (99%)	453 (98%)	8 (2%)	0	100	100
All	All	1240/1282 (97%)	1219 (98%)	21 (2%)	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	E	50/53 (94%)	49 (98%)	1 (2%)	48	47
1	F	51/53 (96%)	46 (90%)	5 (10%)	7	3
2	A	90/97 (93%)	88 (98%)	2 (2%)	45	43
2	C	90/97 (93%)	87 (97%)	3 (3%)	33	28
3	B	409/411 (100%)	403 (98%)	6 (2%)	57	58
3	D	409/411 (100%)	399 (98%)	10 (2%)	43	40
All	All	1099/1122 (98%)	1072 (98%)	27 (2%)	42	38

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	92	LYS
1	F	62	LYS
1	F	78	ASP
1	F	85	LYS
1	F	100	LYS
1	F	103	HIS
2	A	169	GLU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	A	253	MET
2	C	170	GLN
2	C	253	MET
2	C	263	LEU
3	B	280	ASN
3	B	290	PRO
3	B	341	MET
3	B	351	ARG
3	B	395	ARG
3	B	527	LEU
3	D	360	LEU
3	D	383	HIS
3	D	465	LEU
3	D	480	ARG
3	D	515	ARG
3	D	520	GLU
3	D	527	LEU
3	D	625	LYS
3	D	688	MET
3	D	692	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	E	51	HIS
1	E	93	GLN
1	F	63	ASN
1	F	71	ASN
2	A	192	ASN
3	B	287	GLN
3	B	306	GLN
3	B	367	GLN
3	B	423	HIS
3	B	434	ASN
3	B	496	ASN
3	B	522	ASN
3	B	706	ASN
3	B	715	ASN
3	B	737	ASN
3	D	280	ASN
3	D	288	GLN
3	D	367	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	D	372	ASN
3	D	383	HIS
3	D	434	ASN
3	D	455	GLN
3	D	496	ASN
3	D	575	GLN
3	D	706	ASN
3	D	715	ASN
3	D	729	ASN
3	D	737	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

2 non-standard protein/DNA/RNA residues 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	$\# Z > 2$
3	CSO	D	316	3	3,6,7	0.96	0	1,6,8	1.13	0
3	CSO	B	316	3	3,6,7	0.88	0	1,6,8	1.55	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	CSO	D	316	3	-	0/1/5/7	-
3	CSO	B	316	3	-	0/1/5/7	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

10 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	$\# Z > 2$
4	NAG	G	1	4,3	14,14,15	0.37	0	17,19,21	1.50	2 (11%)
4	NAG	G	2	4	14,14,15	0.33	0	17,19,21	1.03	1 (5%)
4	BMA	G	3	4	11,11,12	0.70	0	15,15,17	0.83	0
4	MAN	G	4	4	11,11,12	0.60	0	15,15,17	0.99	1 (6%)
4	FUC	G	5	4	10,10,11	0.64	0	14,14,16	1.27	3 (21%)
4	NAG	H	1	4,3	14,14,15	0.33	0	17,19,21	0.91	1 (5%)
4	NAG	H	2	4	14,14,15	0.54	0	17,19,21	1.13	2 (11%)
4	BMA	H	3	4	11,11,12	0.87	0	15,15,17	0.76	0
4	MAN	H	4	4	11,11,12	0.62	0	15,15,17	0.71	0
4	FUC	H	5	4	10,10,11	0.99	1 (10%)	14,14,16	0.68	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	G	1	4,3	-	2/6/23/26	0/1/1/1
4	NAG	G	2	4	-	0/6/23/26	0/1/1/1
4	BMA	G	3	4	-	0/2/19/22	0/1/1/1
4	MAN	G	4	4	-	0/2/19/22	0/1/1/1

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	FUC	G	5	4	-	-	0/1/1/1
4	NAG	H	1	4,3	-	1/6/23/26	0/1/1/1
4	NAG	H	2	4	-	0/6/23/26	0/1/1/1
4	BMA	H	3	4	-	0/2/19/22	0/1/1/1
4	MAN	H	4	4	-	0/2/19/22	0/1/1/1
4	FUC	H	5	4	-	-	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	H	5	FUC	C2-C3	2.77	1.56	1.52

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	G	1	NAG	C2-N2-C7	3.79	127.98	122.90
4	G	1	NAG	O5-C1-C2	-3.17	106.39	111.29
4	G	5	FUC	C3-C4-C5	2.67	113.87	109.81
4	H	2	NAG	C2-N2-C7	2.60	126.38	122.90
4	G	4	MAN	C1-O5-C5	2.55	115.61	112.19
4	H	2	NAG	C1-O5-C5	2.36	115.35	112.19
4	H	1	NAG	C1-C2-N2	2.32	114.09	110.43
4	G	5	FUC	O3-C3-C2	-2.21	105.53	110.05
4	G	5	FUC	O4-C4-C3	-2.13	105.36	110.38
4	G	2	NAG	C4-C3-C2	-2.12	107.91	111.02

There are no chirality outliers.

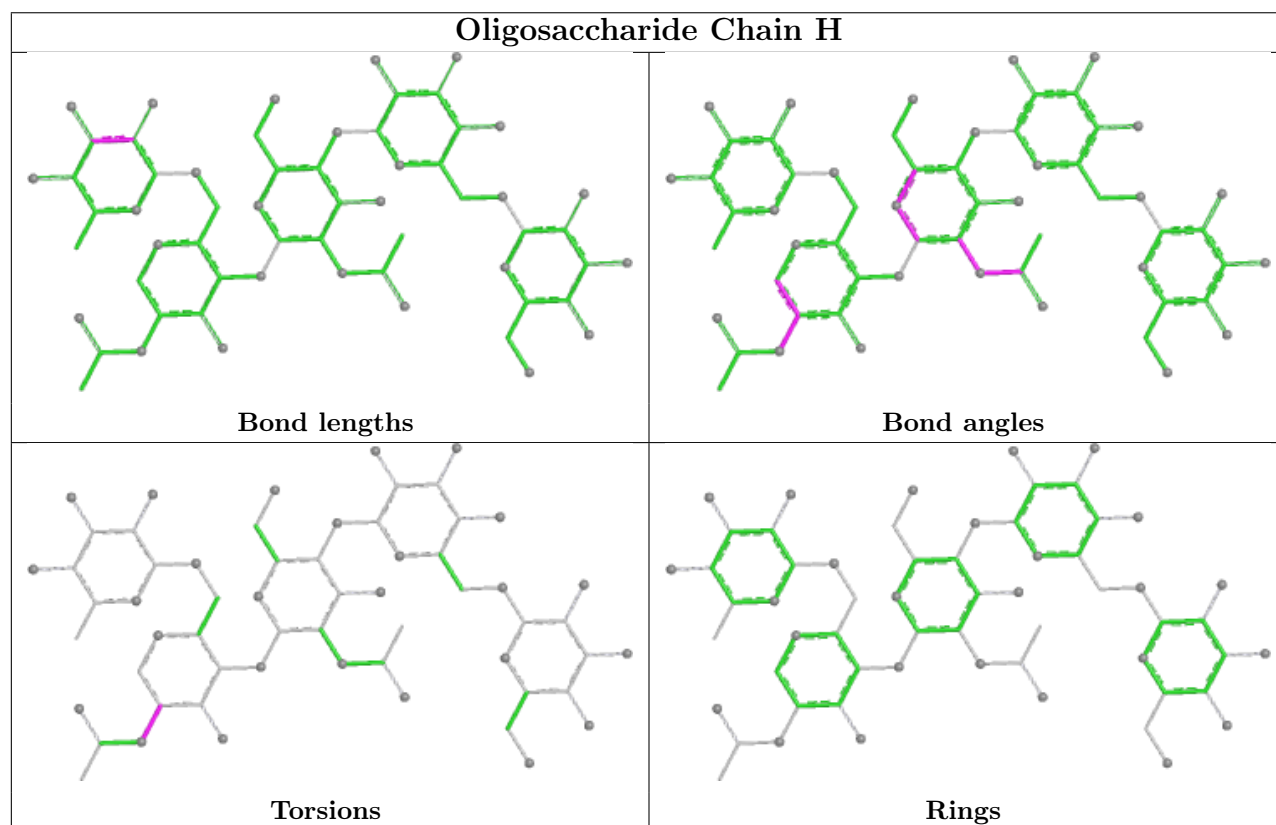
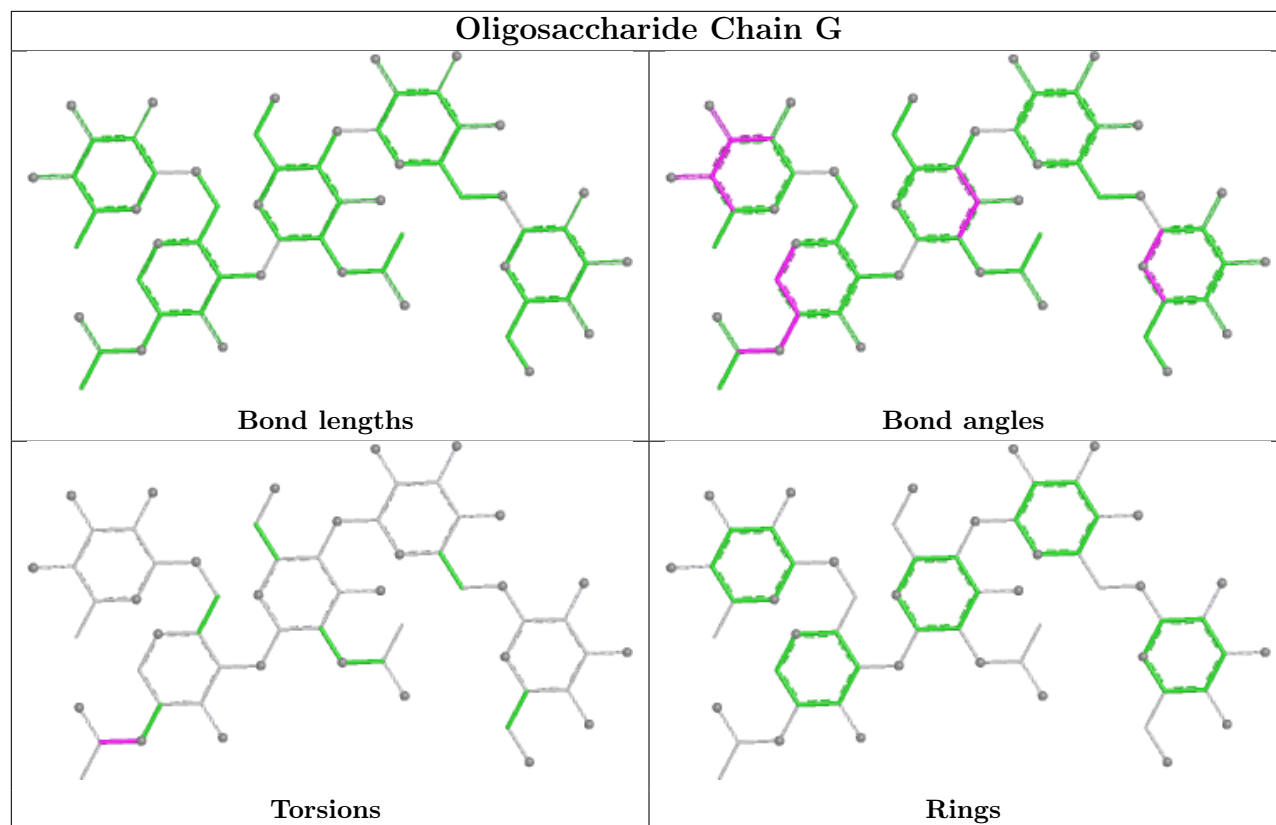
All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	G	1	NAG	C8-C7-N2-C2
4	G	1	NAG	O7-C7-N2-C2
4	H	1	NAG	C1-C2-N2-C7

There are no ring outliers.

No monomer is involved in short contacts.

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

Of 42 ligands modelled in this entry, 2 are monoatomic - leaving 40 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# $ Z > 2$	Counts	RMSZ	# $ Z > 2$
6	HEM	A	304	9,2,3	50,50,50	2.04	16 (32%)	67,82,82	1.21	8 (11%)
5	SEK	D	802	-	1,2,2	0.28	0	0,1,1	-	-
5	SEK	D	801	-	1,2,2	0.24	0	0,1,1	-	-
5	SEK	D	808	-	1,2,2	0.64	0	0,1,1	-	-
7	NAG	B	815	3	14,14,15	0.48	0	17,19,21	1.72	4 (23%)
7	NAG	D	814	3	14,14,15	0.41	0	17,19,21	0.86	0
7	NAG	D	815	3	14,14,15	0.32	0	17,19,21	1.05	1 (5%)
5	SEK	B	812	-	1,2,2	2.15	1 (100%)	0,1,1	-	-
5	SEK	B	808	-	1,2,2	0.18	0	0,1,1	-	-
5	SEK	B	806	-	1,2,2	5.75	1 (100%)	0,1,1	-	-
5	SEK	B	811	-	1,2,2	0.09	0	0,1,1	-	-
5	SEK	B	804[A]	-	1,2,2	0.30	0	0,1,1	-	-
5	SEK	B	805	-	1,2,2	2.12	1 (100%)	0,1,1	-	-
5	SEK	D	804	-	1,2,2	1.29	0	0,1,1	-	-
5	SEK	D	803	-	1,2,2	1.56	0	0,1,1	-	-
5	SEK	D	810	-	1,2,2	1.28	0	0,1,1	-	-
5	SEK	B	801	-	1,2,2	0.08	0	0,1,1	-	-
5	SEK	C	303	-	1,2,2	0.31	0	0,1,1	-	-
5	SEK	B	813	-	1,2,2	0.26	0	0,1,1	-	-
7	NAG	B	814	3	14,14,15	0.53	0	17,19,21	0.96	0
5	SEK	A	301	-	1,2,2	0.53	0	0,1,1	-	-
5	SEK	B	802	-	1,2,2	3.45	1 (100%)	0,1,1	-	-
5	SEK	A	305	-	1,2,2	0.51	0	0,1,1	-	-
5	SEK	B	807	-	1,2,2	0.48	0	0,1,1	-	-
5	SEK	B	809	-	1,2,2	0.85	0	0,1,1	-	-
5	SEK	D	807	-	1,2,2	1.03	0	0,1,1	-	-
5	SEK	D	809	-	1,2,2	2.87	1 (100%)	0,1,1	-	-
5	SEK	D	806[B]	-	1,2,2	0.86	0	0,1,1	-	-
5	SEK	D	811	-	1,2,2	0.29	0	0,1,1	-	-
5	SEK	C	301	-	1,2,2	0.82	0	0,1,1	-	-

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	SEK	A	303	-	1,2,2	1.86	0	0,1,1	-	-
5	SEK	D	805	-	1,2,2	1.92	0	0,1,1	-	-
5	SEK	A	302	-	1,2,2	0.38	0	0,1,1	-	-
5	SEK	B	803	-	1,2,2	6.47	1 (100%)	0,1,1	-	-
5	SEK	D	812	-	1,2,2	0.27	0	0,1,1	-	-
5	SEK	B	810	-	1,2,2	0.88	0	0,1,1	-	-
5	SEK	D	806[A]	-	1,2,2	0.84	0	0,1,1	-	-
6	HEM	C	302	9,2,3	50,50,50	2.30	17 (34%)	67,82,82	1.30	10 (14%)
5	SEK	B	804[B]	-	1,2,2	1.19	0	0,1,1	-	-
5	SEK	D	813	-	1,2,2	0.74	0	0,1,1	-	-

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	HEM	A	304	9,2,3	-	4/14/54/54	-
7	NAG	B	814	3	-	2/6/23/26	0/1/1/1
7	NAG	B	815	3	-	5/6/23/26	0/1/1/1
7	NAG	D	814	3	-	0/6/23/26	0/1/1/1
7	NAG	D	815	3	-	4/6/23/26	0/1/1/1
6	HEM	C	302	9,2,3	-	4/14/54/54	-

All (39) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	C	302	HEM	FE-NA	7.66	2.20	1.95
5	B	803	SEK	C-N	-6.47	0.97	1.14
5	B	806	SEK	C-N	-5.75	0.99	1.14
6	A	304	HEM	FE-ND	5.46	2.11	1.94
6	C	302	HEM	FE-NB	5.43	2.11	1.94
6	A	304	HEM	FE-NA	5.28	2.12	1.95
6	A	304	HEM	C4D-C3D	-4.24	1.37	1.45
6	C	302	HEM	FE-NC	4.22	2.09	1.95
6	C	302	HEM	FE-ND	3.87	2.06	1.94
6	A	304	HEM	C1D-C2D	-3.85	1.36	1.44
6	C	302	HEM	C3B-C2B	3.48	1.44	1.37
6	A	304	HEM	C3C-C4C	-3.46	1.40	1.46
5	B	802	SEK	C-N	-3.45	1.05	1.14
6	C	302	HEM	C3C-C4C	-3.37	1.40	1.46

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	C	302	HEM	C1A-C2A	-3.26	1.38	1.44
6	A	304	HEM	C1B-C2B	-3.18	1.38	1.44
6	C	302	HEM	C3B-C4B	-3.05	1.39	1.44
6	C	302	HEM	C1D-C2D	-3.05	1.38	1.44
6	C	302	HEM	CHB-C1B	3.02	1.44	1.38
6	A	304	HEM	C3B-C4B	-2.99	1.39	1.44
6	C	302	HEM	C1B-C2B	-2.99	1.38	1.44
6	A	304	HEM	C1A-C2A	-2.99	1.38	1.44
6	A	304	HEM	C1B-NB	-2.94	1.35	1.40
6	A	304	HEM	CHD-C4C	2.91	1.44	1.38
5	D	809	SEK	C-N	2.87	1.22	1.14
6	C	302	HEM	C4D-C3D	-2.85	1.40	1.45
6	C	302	HEM	C1A-NA	-2.85	1.34	1.39
6	C	302	HEM	C4A-C3A	-2.83	1.36	1.43
6	C	302	HEM	C4A-NA	-2.83	1.34	1.39
6	A	304	HEM	C4A-C3A	-2.68	1.36	1.43
6	A	304	HEM	C4D-ND	-2.67	1.35	1.40
6	C	302	HEM	C1C-C2C	-2.54	1.40	1.45
6	A	304	HEM	C1A-NA	-2.44	1.35	1.39
6	A	304	HEM	C1C-C2C	-2.42	1.40	1.45
6	A	304	HEM	O2D-CGD	-2.41	1.22	1.30
6	A	304	HEM	C4A-NA	-2.20	1.35	1.39
5	B	812	SEK	C-N	-2.15	1.08	1.14
5	B	805	SEK	C-N	2.12	1.20	1.14
6	C	302	HEM	C3C-C2C	2.05	1.41	1.37

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	B	815	NAG	C1-C2-N2	3.91	116.59	110.43
6	C	302	HEM	O1A-CGA-CBA	-3.66	111.47	123.09
6	C	302	HEM	CHD-C4C-NC	-3.21	120.96	124.45
7	D	815	NAG	C1-O5-C5	3.18	116.44	112.19
7	B	815	NAG	C2-N2-C7	3.18	127.16	122.90
6	A	304	HEM	CHD-C1D-ND	-2.75	121.46	124.42
6	A	304	HEM	C3B-C4B-NB	2.51	111.27	109.47
6	A	304	HEM	CHD-C1D-C2D	2.40	128.82	125.03
6	A	304	HEM	CHD-C4C-NC	-2.40	121.84	124.45
6	A	304	HEM	C4B-C3B-C2B	-2.36	105.11	107.28
7	B	815	NAG	O4-C4-C5	2.33	115.07	109.32
6	C	302	HEM	CHD-C1D-C2D	2.30	128.66	125.03
6	A	304	HEM	CAB-C3B-C2B	-2.27	121.05	128.43

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	C	302	HEM	C1B-NB-C4B	2.25	107.87	105.21
7	B	815	NAG	C3-C4-C5	-2.24	106.17	110.23
6	A	304	HEM	O1A-CGA-CBA	-2.23	116.03	123.09
6	C	302	HEM	C1C-CHC-C4B	2.15	130.58	126.02
6	A	304	HEM	CAB-C3B-C4B	2.13	133.81	124.39
6	C	302	HEM	O2A-CGA-CBA	2.11	120.67	114.00
6	C	302	HEM	CHD-C4C-C3C	2.10	128.76	125.21
6	C	302	HEM	C4C-CHD-C1D	2.05	130.37	126.02
6	C	302	HEM	CHC-C1C-NC	-2.04	122.23	124.45
6	C	302	HEM	CMA-C3A-C4A	2.04	128.53	125.42

There are no chirality outliers.

All (19) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	B	815	NAG	C1-C2-N2-C7
7	B	815	NAG	C8-C7-N2-C2
7	B	815	NAG	O7-C7-N2-C2
7	D	815	NAG	C4-C5-C6-O6
7	D	815	NAG	O5-C5-C6-O6
7	B	814	NAG	C8-C7-N2-C2
7	B	814	NAG	O7-C7-N2-C2
7	D	815	NAG	C8-C7-N2-C2
7	D	815	NAG	O7-C7-N2-C2
7	B	815	NAG	C4-C5-C6-O6
7	B	815	NAG	O5-C5-C6-O6
6	C	302	HEM	CAD-CBD-CGD-O2D
6	C	302	HEM	CAA-CBA-CGA-O1A
6	A	304	HEM	CAD-CBD-CGD-O2D
6	C	302	HEM	CAD-CBD-CGD-O1D
6	C	302	HEM	CAA-CBA-CGA-O2A
6	A	304	HEM	CAD-CBD-CGD-O1D
6	A	304	HEM	CAA-CBA-CGA-O2A
6	A	304	HEM	CAA-CBA-CGA-O1A

There are no ring outliers.

9 monomers are involved in 13 short contacts:

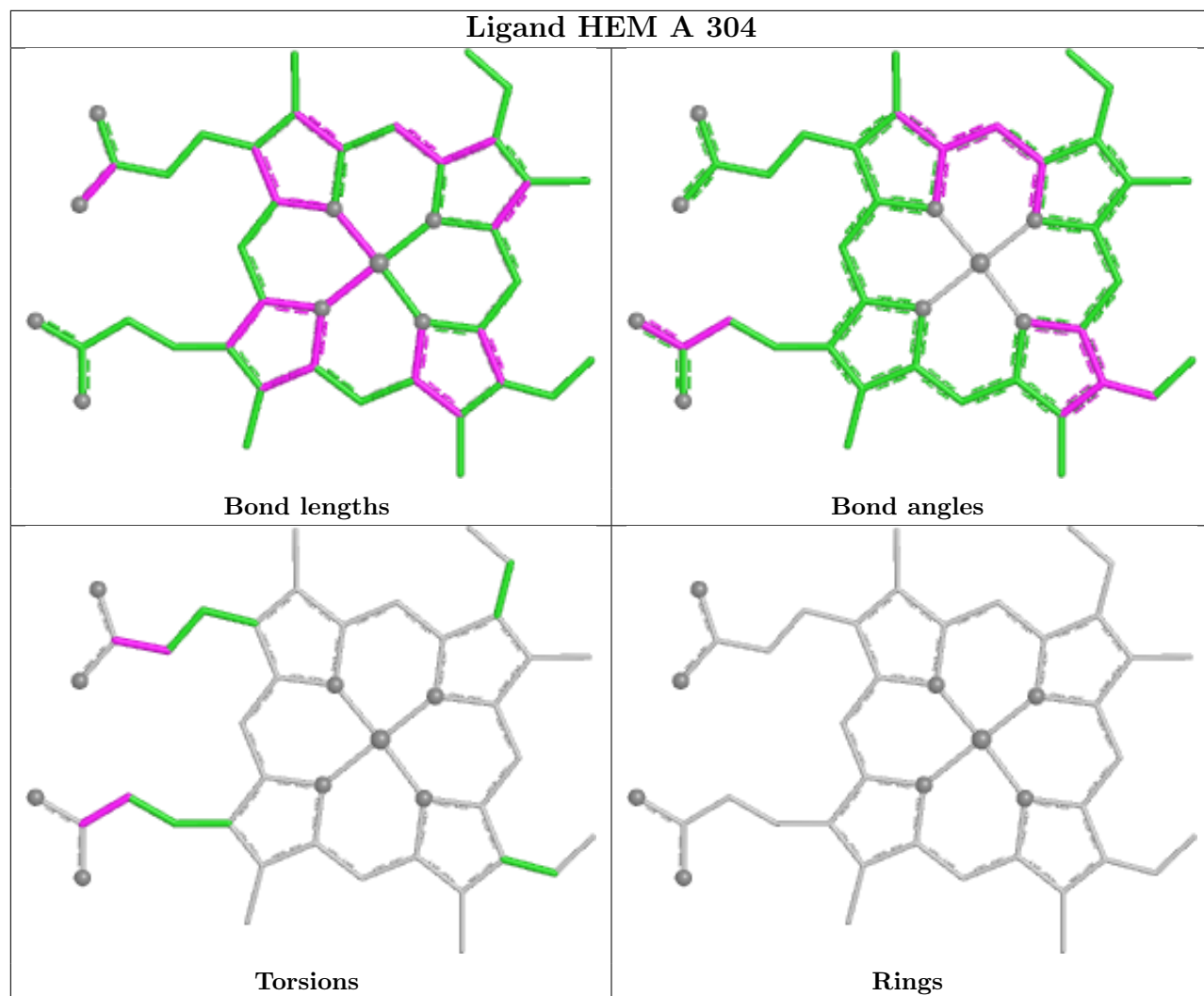
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	D	801	SEK	1	0
5	B	812	SEK	1	0

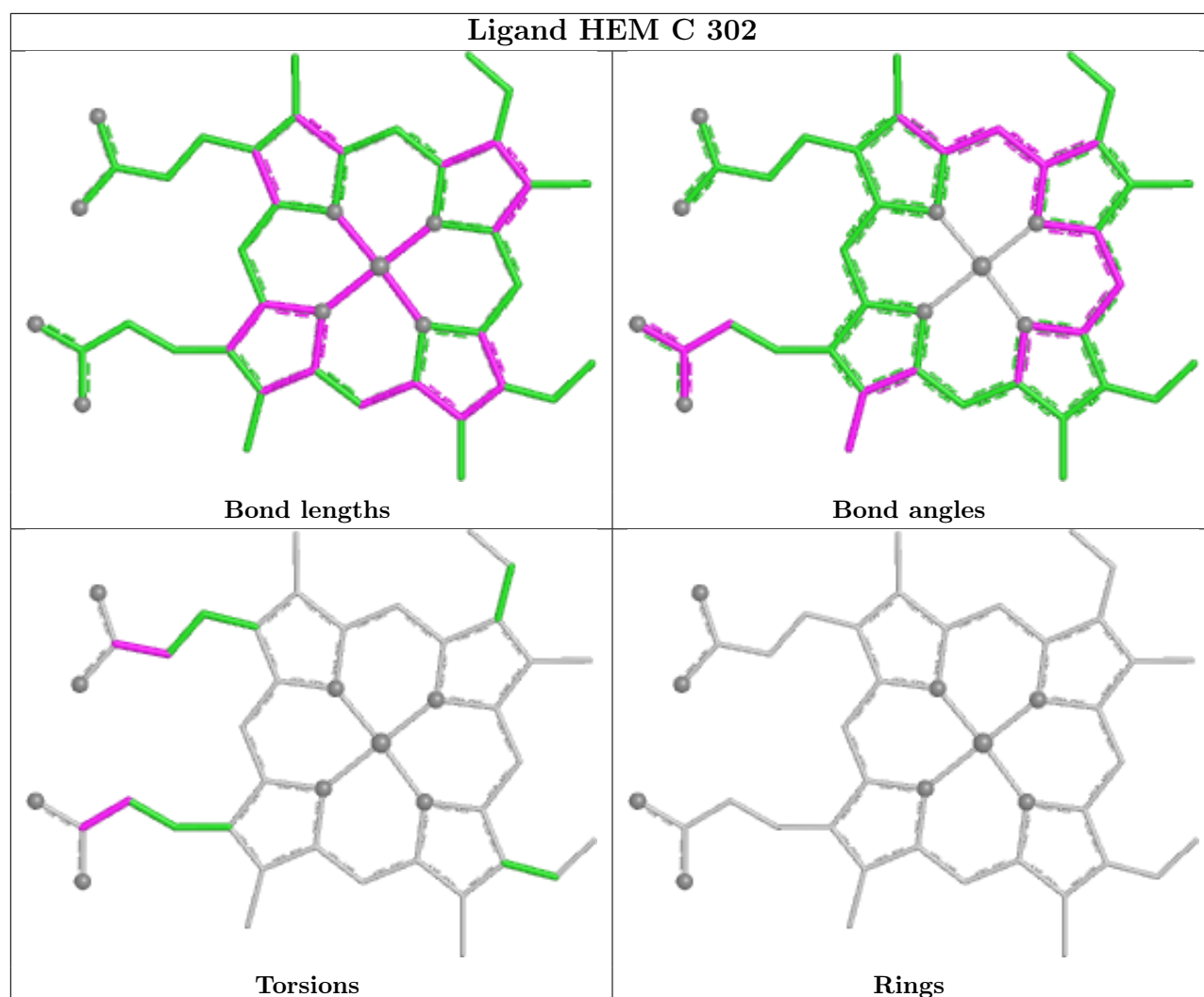
Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	805	SEK	1	0
7	B	814	NAG	5	0
5	A	301	SEK	1	0
5	B	807	SEK	1	0
5	D	809	SEK	1	0
6	C	302	HEM	1	0
5	D	813	SEK	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.





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	E	57/60 (95%)	-0.03	1 (1%) 67 69	29, 42, 72, 105	0
1	F	58/60 (96%)	1.89	25 (43%) 0 0	83, 108, 127, 144	0
2	A	105/114 (92%)	-0.74	0 100 100	19, 26, 46, 74	0
2	C	105/114 (92%)	-0.45	1 (0%) 79 82	21, 32, 60, 84	0
3	B	464/467 (99%)	-0.66	2 (0%) 88 90	19, 28, 49, 75	0
3	D	463/467 (99%)	-0.28	1 (0%) 91 93	21, 39, 67, 88	0
All	All	1252/1282 (97%)	-0.36	30 (2%) 59 61	19, 33, 83, 144	0

All (30) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	96	PHE	4.9
1	F	101	TYR	3.8
1	F	56	ILE	3.4
1	F	88	ILE	3.3
1	F	103	HIS	3.2
1	F	81	LEU	3.1
1	F	60	LEU	3.1
1	F	55	TYR	3.0
1	F	84	ILE	3.0
3	B	521	PRO	3.0
3	B	715	ASN	2.9
2	C	271	ALA	2.9
1	F	98	VAL	2.8
3	D	715	ASN	2.8
1	F	80	GLY	2.7
1	F	72	LEU	2.6
1	F	85	LYS	2.6
1	E	46	ALA	2.6
1	F	91	ALA	2.5

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	F	49	LEU	2.5
1	F	51	HIS	2.5
1	F	87	ILE	2.4
1	F	82	HIS	2.4
1	F	48	PHE	2.4
1	F	92	LYS	2.3
1	F	67	ALA	2.3
1	F	75	TYR	2.3
1	F	102	GLU	2.2
1	F	59	LEU	2.2
1	F	97	ASP	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [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(Å ²)	Q<0.9
3	CSO	D	316	7/8	0.93	0.06	25,27,27,30	1
3	CSO	B	316	7/8	0.97	0.05	23,24,25,25	1

6.3 Carbohydrates [i](#)

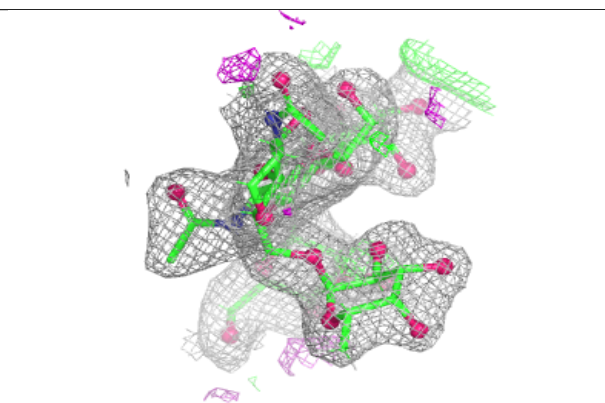
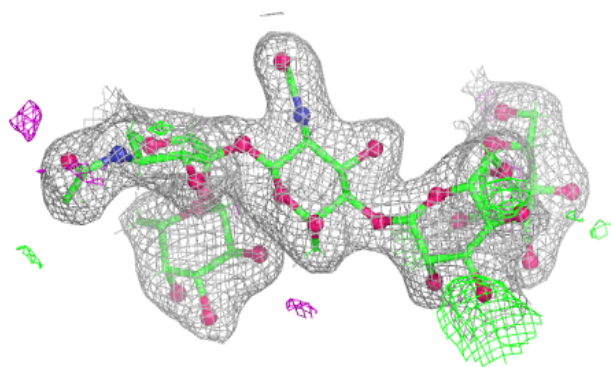
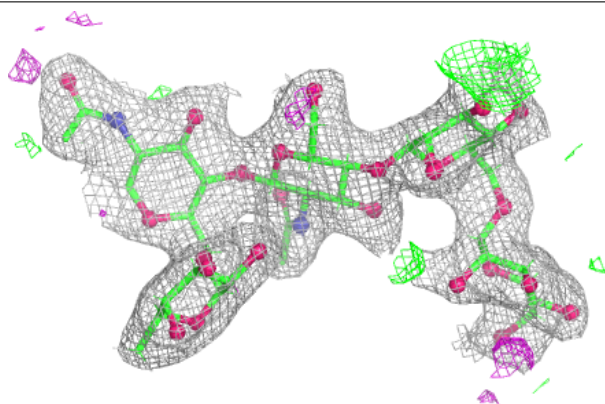
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	NAG	G	1	14/15	0.92	0.07	24,27,30,32	0
4	BMA	G	3	11/12	0.93	0.06	31,34,37,39	0
4	FUC	G	5	10/11	0.93	0.06	33,35,37,38	0
4	NAG	G	2	14/15	0.94	0.07	24,27,30,33	0
4	MAN	H	4	11/12	0.94	0.05	27,33,37,37	0
4	FUC	H	5	10/11	0.94	0.07	34,36,39,39	0
4	MAN	G	4	11/12	0.95	0.06	32,33,35,38	0
4	BMA	H	3	11/12	0.95	0.05	29,30,32,33	0
4	NAG	H	1	14/15	0.96	0.05	27,29,31,32	0
4	NAG	H	2	14/15	0.97	0.05	22,26,30,30	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.

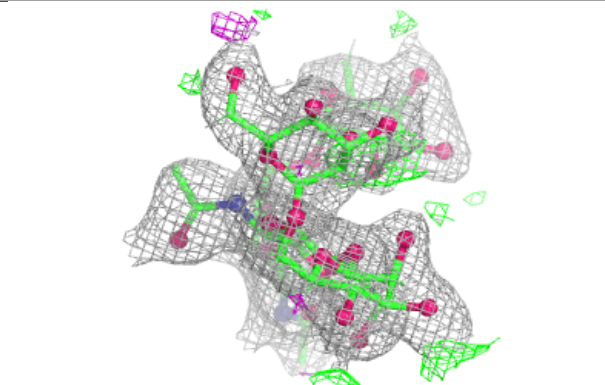
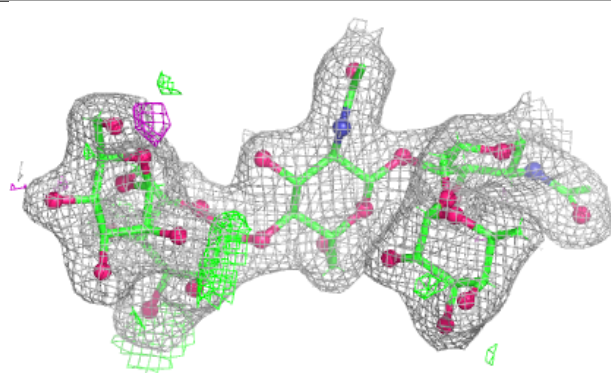
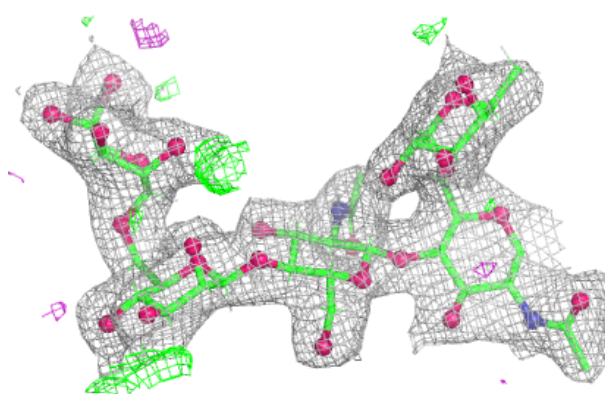
Electron density around Chain G:

$2mF_o-DF_c$ (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
5	SEK	D	808	3/3	0.72	0.18	50,50,50,51	1
5	SEK	B	813	3/3	0.73	0.25	64,64,76,81	1
5	SEK	B	810	3/3	0.73	0.19	46,46,49,66	1
5	SEK	A	302	3/3	0.78	0.19	49,49,53,58	1
5	SEK	B	812	3/3	0.83	0.18	33,33,34,43	1
7	NAG	D	814	14/15	0.83	0.10	41,55,60,62	0
7	NAG	D	815	14/15	0.85	0.10	62,67,68,70	0
7	NAG	B	815	14/15	0.87	0.09	42,48,55,58	0
5	SEK	D	802	3/3	0.87	0.14	27,27,31,38	1
5	SEK	B	806	3/3	0.87	0.13	29,29,31,54	1
5	SEK	B	804[B]	3/3	0.89	0.13	28,28,34,36	3
5	SEK	B	811	3/3	0.89	0.16	30,30,37,53	1
5	SEK	B	804[A]	3/3	0.89	0.13	16,16,21,26	3
7	NAG	B	814	14/15	0.91	0.07	26,37,42,43	0
5	SEK	D	812	3/3	0.91	0.11	61,61,65,66	1
5	SEK	D	809	3/3	0.92	0.08	31,31,37,38	1
5	SEK	B	809	3/3	0.92	0.29	29,29,33,41	1
5	SEK	B	808	3/3	0.93	0.19	31,31,33,38	3
5	SEK	D	807	3/3	0.93	0.28	23,23,25,26	1
5	SEK	B	803	3/3	0.93	0.26	20,20,24,48	1
5	SEK	D	806[A]	3/3	0.95	0.12	47,47,49,51	3
5	SEK	D	806[B]	3/3	0.95	0.12	27,27,30,33	3
5	SEK	D	811	3/3	0.96	0.10	59,59,71,75	1
5	SEK	A	303	3/3	0.96	0.08	34,34,38,43	1
5	SEK	B	807	3/3	0.96	0.08	30,30,36,43	1
5	SEK	B	802	3/3	0.97	0.09	25,25,34,36	1
5	SEK	D	805	3/3	0.97	0.09	48,48,60,61	0
5	SEK	C	303	3/3	0.97	0.09	46,46,48,52	1
5	SEK	D	813	3/3	0.97	0.09	56,56,66,73	1
5	SEK	B	805	3/3	0.98	0.06	30,30,32,32	1
5	SEK	A	301	3/3	0.98	0.08	37,37,41,49	1
5	SEK	D	810	3/3	0.98	0.09	42,42,45,47	1
6	HEM	C	302	43/43	0.98	0.06	26,30,36,37	0
6	HEM	A	304	43/43	0.99	0.05	19,22,31,31	0
5	SEK	D	801	3/3	0.99	0.07	35,35,36,49	1
5	SEK	D	803	3/3	0.99	0.09	37,37,60,67	0
8	CA	B	816	1/1	0.99	0.03	23,23,23,23	0

Continued on next page...

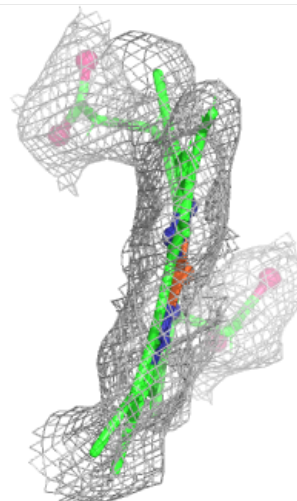
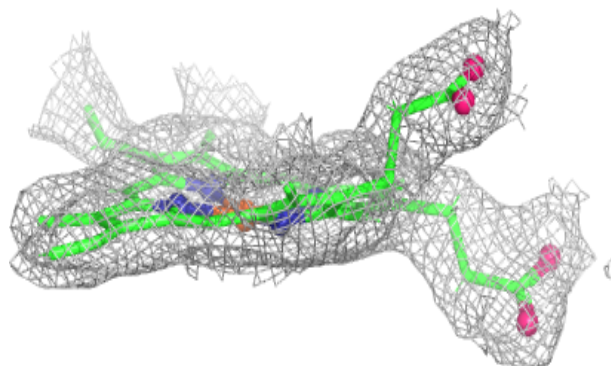
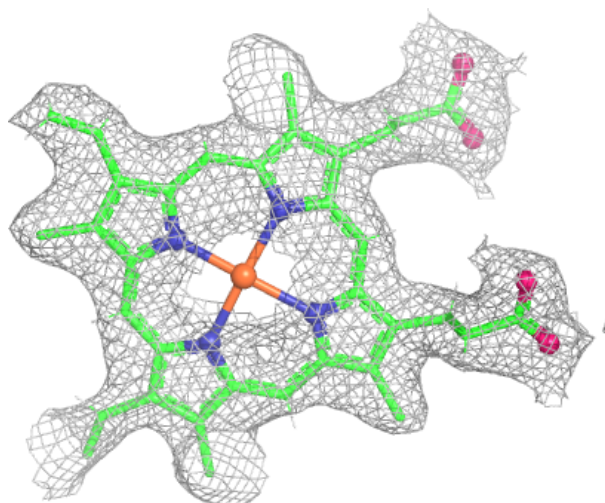
Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
8	CA	D	816	1/1	0.99	0.02	27,27,27,27	0
5	SEK	C	301	3/3	1.00	0.04	17,17,19,27	0
5	SEK	D	804	3/3	1.00	0.05	35,35,37,39	0
5	SEK	A	305	3/3	1.00	0.04	18,18,19,25	0
5	SEK	B	801	3/3	1.00	0.04	30,30,34,36	0

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

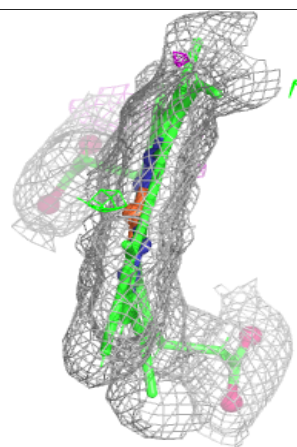
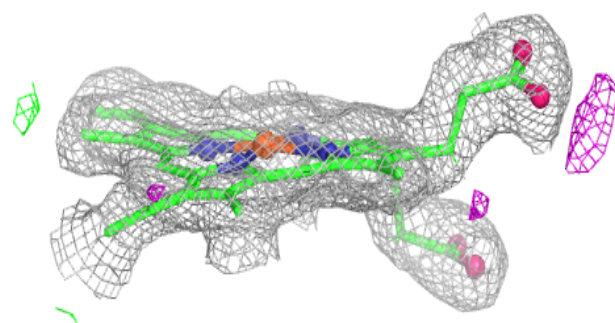
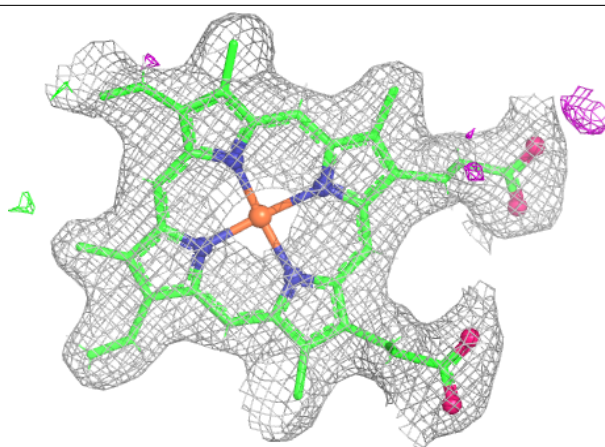
Electron density around HEM C 302:

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 304:

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



6.5 Other polymers ⓘ

There are no such residues in this entry.