



# Full wwPDB X-ray Structure Validation Report ⓘ

Dec 3, 2023 – 10:39 am GMT

PDB ID : 1E70  
Title : 2-F-glucosylated MYROSINASE FROM SINAPIS ALBA  
Authors : Burmeister, W.P.  
Deposited on : 2000-08-23  
Resolution : 1.65 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](mailto: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>.

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

MolProbity : **FAILED**  
Mogul : 1.8.4, CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.36  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

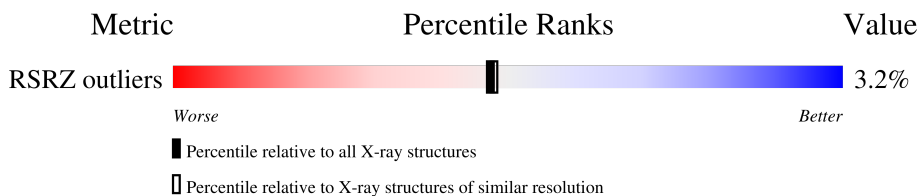
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.65 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))
RSRZ outliers	127900	1791 (1.66-1.66)

MolProbity failed to run properly - the sequence quality summary graphics cannot be shown.

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	MAN	C	3	X	-	-	-
4	XYP	C	4	-	-	-	X
4	MAN	C	5	-	-	-	X
5	NAG	M	961	X	-	-	X
5	NAG	M	971	-	-	-	X
5	NAG	M	991	X	-	-	X
8	SO4	M	1507	-	-	-	X
9	GOL	M	1513	-	X	-	-

## 2 Entry composition [i](#)

There are 10 unique types of molecules in this entry. The entry contains 5196 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 MYROSINASE MA1.

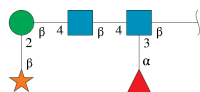
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	M	499	4086	2622	660	788	16	0	22	0

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



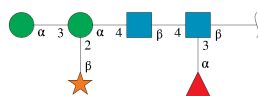
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
2	A	2	28	16	2	10	0	0	0

- Molecule 3 is an oligosaccharide called beta-D-xylopyranose-(1-2)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)]2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
3	B	5	58	33	2	23	0	0	0

- Molecule 4 is an oligosaccharide called beta-D-xylopyranose-(1-2)-[alpha-D-mannopyranose-(1-3)]alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)]2-acetamido-2-deoxy-beta-D-glucopyranose.



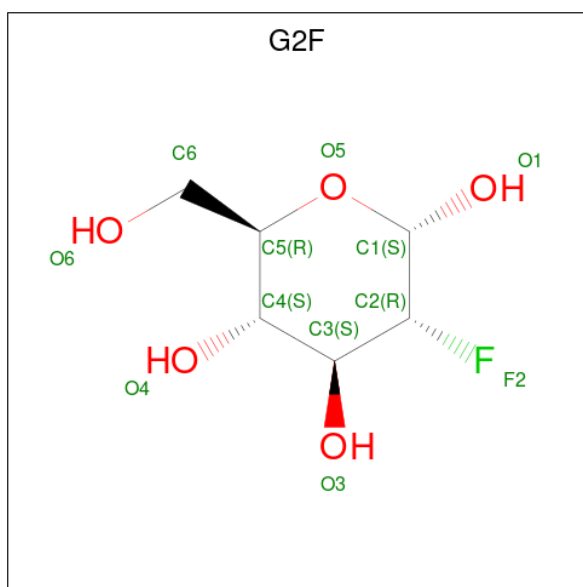
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
4	C	6	69	39	2	28	0	0	0

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula:  $C_8H_{15}NO_6$ ).



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

- Molecule 6 is 2-deoxy-2-fluoro-alpha-D-glucopyranose (three-letter code: G2F) (formula:  $C_6H_{11}FO_5$ ).

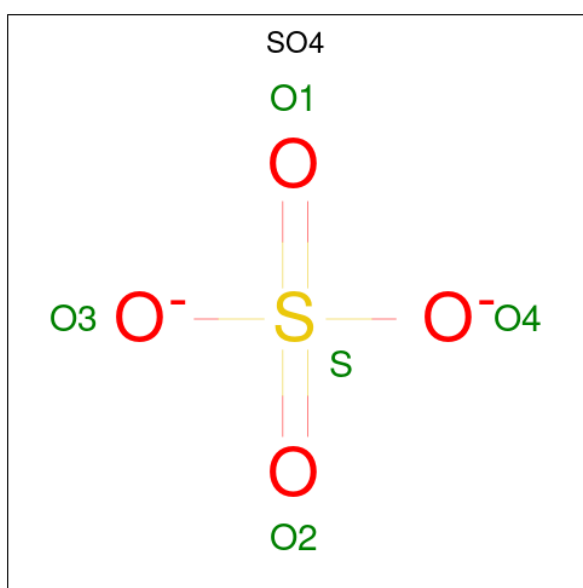


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	M	1	Total	C	F	O	0	0
			11	6	1	4		

- Molecule 7 is ZINC ION (three-letter code: ZN) (formula: Zn).

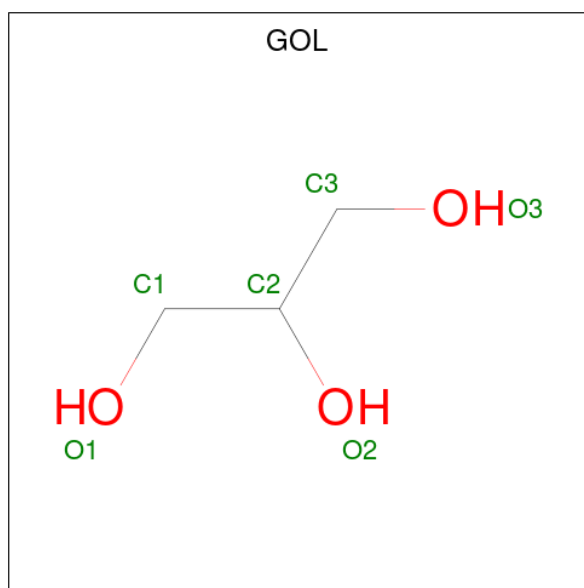
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	M	1	Total	Zn	0	0
			1	1		

- Molecule 8 is SULFATE ION (three-letter code: SO4) (formula: O<sub>4</sub>S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	M	1	Total O S 5 4 1	0	0
8	M	1	Total O S 5 4 1	0	0
8	M	1	Total O S 5 4 1	0	0
8	M	1	Total O S 5 4 1	0	0
8	M	1	Total O S 5 4 1	0	0
8	M	1	Total O S 5 4 1	0	0
8	M	1	Total O S 5 4 1	0	0
8	M	1	Total O S 5 4 1	0	0

- Molecule 9 is GLYCEROL (three-letter code: GOL) (formula:  $C_3H_8O_3$ ).



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

- Molecule 10 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	M	794	Total 794	O 794	0	0

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### 3 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	135.30Å 137.20Å 80.60Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	10.00 – 1.65 9.99 – 1.65	Depositor EDS
% Data completeness (in resolution range)	82.3 (10.00-1.65) 82.3 (9.99-1.65)	Depositor EDS
$R_{merge}$	0.09	Depositor
$R_{sym}$	0.09	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.09 (at 1.65Å)	Xtrriage
Refinement program	REFMAC	Depositor
R, $R_{free}$	0.169 , 0.195 (Not available) , (Not available)	Depositor DCC
$R_{free}$ test set	3755 reflections (5.09%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	23.2	Xtrriage
Anisotropy	0.229	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.49 , 72.3	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.017 for -k,-h,-l	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	5196	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	31.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.75% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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.



## 4 Model quality [i](#)

### 4.1 Standard geometry [i](#)

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### 4.2 Too-close contacts [i](#)

MolProbity failed to run properly - this section is therefore empty.

### 4.3 Torsion angles [i](#)

#### 4.3.1 Protein backbone [i](#)

MolProbity failed to run properly - this section is therefore empty.

#### 4.3.2 Protein sidechains [i](#)

MolProbity failed to run properly - this section is therefore empty.

#### 4.3.3 RNA [i](#)

MolProbity failed to run properly - this section is therefore empty.

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

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

### 4.5 Carbohydrates [i](#)

13 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	A	1	1,2	14,14,15	1.55	4 (28%)	17,19,21	3.30	9 (52%)
2	NAG	A	2	2	14,14,15	1.01	0	17,19,21	2.52	8 (47%)
3	NAG	B	1	1,3	14,14,15	1.19	2 (14%)	17,19,21	4.07	11 (64%)
3	NAG	B	2	3	14,14,15	1.22	2 (14%)	17,19,21	1.53	4 (23%)
3	BMA	B	3	3	11,11,12	1.88	2 (18%)	15,15,17	1.44	3 (20%)
3	XYP	B	4	3	9,9,10	0.81	0	10,12,14	3.03	3 (30%)
3	FUC	B	5	3	10,10,11	1.50	2 (20%)	14,14,16	1.92	6 (42%)
4	NAG	C	1	1,4	14,14,15	1.21	1 (7%)	17,19,21	2.87	5 (29%)
4	NAG	C	2	4	14,14,15	1.43	2 (14%)	17,19,21	2.41	7 (41%)
4	MAN	C	3	4	11,11,12	2.03	3 (27%)	15,15,17	6.46	10 (66%)
4	XYP	C	4	4	9,9,10	1.36	1 (11%)	10,12,14	3.76	5 (50%)
4	MAN	C	5	4	11,11,12	1.22	2 (18%)	15,15,17	1.96	6 (40%)
4	FUC	C	6	4	10,10,11	1.75	3 (30%)	14,14,16	2.46	7 (50%)

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	A	1	1,2	-	2/6/23/26	0/1/1/1
2	NAG	A	2	2	-	1/6/23/26	0/1/1/1
3	NAG	B	1	1,3	-	0/6/23/26	0/1/1/1
3	NAG	B	2	3	-	0/6/23/26	0/1/1/1
3	BMA	B	3	3	-	0/2/19/22	0/1/1/1
3	XYP	B	4	3	-	-	0/1/1/1
3	FUC	B	5	3	-	-	0/1/1/1
4	NAG	C	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	C	2	4	-	0/6/23/26	0/1/1/1
4	MAN	C	3	4	1/1/4/5	0/2/19/22	0/1/1/1
4	XYP	C	4	4	-	-	0/1/1/1
4	MAN	C	5	4	-	0/2/19/22	0/1/1/1
4	FUC	C	6	4	-	-	0/1/1/1

All (24) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	3	MAN	C2-C3	-4.66	1.45	1.52
3	B	3	BMA	C2-C3	-4.31	1.46	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	6	FUC	C2-C3	3.72	1.58	1.52
4	C	3	MAN	O5-C1	3.65	1.49	1.43
3	B	3	BMA	C4-C5	3.27	1.59	1.53
3	B	1	NAG	C3-C2	2.99	1.58	1.52
2	A	1	NAG	O5-C5	2.92	1.49	1.43
4	C	2	NAG	C1-C2	2.90	1.56	1.52
4	C	2	NAG	C3-C2	-2.87	1.46	1.52
4	C	1	NAG	O5-C5	2.76	1.49	1.43
4	C	3	MAN	O3-C3	2.69	1.49	1.43
2	A	1	NAG	C3-C2	2.52	1.57	1.52
3	B	2	NAG	O7-C7	2.45	1.28	1.23
4	C	6	FUC	C6-C5	2.42	1.57	1.51
3	B	5	FUC	C2-C3	2.38	1.56	1.52
2	A	1	NAG	C8-C7	2.31	1.55	1.50
4	C	5	MAN	O5-C5	2.26	1.48	1.43
4	C	5	MAN	C4-C3	2.20	1.57	1.52
3	B	1	NAG	O5-C5	2.18	1.47	1.43
3	B	2	NAG	C1-C2	2.15	1.55	1.52
2	A	1	NAG	O7-C7	-2.13	1.18	1.23
4	C	4	XYP	C2-C3	2.08	1.55	1.52
3	B	5	FUC	C6-C5	2.07	1.56	1.51
4	C	6	FUC	O2-C2	2.04	1.47	1.43

All (84) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	3	MAN	C6-C5-C4	13.10	143.68	113.00
4	C	3	MAN	O4-C4-C5	9.97	134.06	109.30
4	C	3	MAN	C1-O5-C5	-9.59	99.20	112.19
4	C	3	MAN	O5-C5-C6	-8.94	93.19	107.20
2	A	1	NAG	C1-O5-C5	-8.44	100.75	112.19
4	C	3	MAN	C3-C4-C5	8.38	125.19	110.24
4	C	1	NAG	O5-C1-C2	8.02	123.95	111.29
3	B	1	NAG	C8-C7-N2	-7.75	102.97	116.10
3	B	1	NAG	C1-O5-C5	-7.65	101.83	112.19
3	B	4	XYP	C1-C2-C3	7.52	118.91	109.67
4	C	4	XYP	O3-C3-C4	6.88	123.16	109.99
3	B	1	NAG	C2-N2-C7	-6.57	113.55	122.90
4	C	4	XYP	C4-C3-C2	-6.56	103.13	110.92
3	B	1	NAG	C4-C3-C2	-6.27	101.83	111.02
2	A	2	NAG	C1-O5-C5	-6.14	103.87	112.19
2	A	1	NAG	C8-C7-N2	-5.78	106.31	116.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	3	MAN	O4-C4-C3	-5.76	97.03	110.35
4	C	3	MAN	C2-C3-C4	-5.68	101.07	110.89
4	C	6	FUC	C1-C2-C3	-5.67	102.70	109.67
4	C	1	NAG	C1-O5-C5	-5.49	104.76	112.19
3	B	1	NAG	O7-C7-N2	5.19	131.50	121.95
4	C	2	NAG	O4-C4-C5	-5.03	96.81	109.30
3	B	4	XYP	O2-C2-C3	-4.97	100.19	110.14
2	A	1	NAG	O7-C7-N2	4.89	130.94	121.95
4	C	2	NAG	O4-C4-C3	-4.80	99.25	110.35
4	C	3	MAN	O2-C2-C3	-4.52	101.09	110.14
4	C	4	XYP	O4-C4-C3	4.02	118.19	110.14
4	C	4	XYP	O4-C4-C5	3.88	117.08	109.15
2	A	2	NAG	O5-C5-C4	-3.87	101.40	110.83
4	C	6	FUC	C6-C5-C4	-3.67	106.28	113.07
4	C	1	NAG	C8-C7-N2	-3.66	109.91	116.10
4	C	5	MAN	O2-C2-C3	-3.52	103.08	110.14
3	B	1	NAG	C1-C2-N2	-3.51	104.48	110.49
4	C	4	XYP	O2-C2-C3	-3.46	103.21	110.14
4	C	2	NAG	C2-N2-C7	-3.43	118.01	122.90
4	C	3	MAN	O3-C3-C2	-3.39	103.50	109.99
3	B	2	NAG	O7-C7-N2	-3.39	115.73	121.95
4	C	3	MAN	C1-C2-C3	-3.33	105.57	109.67
2	A	2	NAG	O5-C1-C2	3.30	116.49	111.29
2	A	2	NAG	O5-C5-C6	-3.25	102.11	107.20
2	A	1	NAG	C2-N2-C7	-3.21	118.33	122.90
3	B	5	FUC	C6-C5-C4	-3.15	107.25	113.07
3	B	5	FUC	O3-C3-C2	-3.15	103.96	109.99
4	C	6	FUC	O3-C3-C2	-3.14	103.97	109.99
3	B	1	NAG	O5-C5-C4	-3.14	103.18	110.83
2	A	1	NAG	C4-C3-C2	-3.14	106.42	111.02
2	A	1	NAG	C1-C2-N2	-3.08	105.23	110.49
4	C	1	NAG	O5-C5-C6	-2.95	102.57	107.20
4	C	2	NAG	C8-C7-N2	-2.90	111.19	116.10
4	C	5	MAN	C1-C2-C3	2.89	113.22	109.67
4	C	5	MAN	C2-C3-C4	-2.88	105.91	110.89
3	B	1	NAG	O3-C3-C2	-2.87	103.52	109.47
4	C	2	NAG	O5-C5-C4	-2.86	103.86	110.83
2	A	1	NAG	O4-C4-C3	-2.83	103.81	110.35
2	A	2	NAG	O3-C3-C2	-2.76	103.76	109.47
2	A	1	NAG	O3-C3-C2	-2.64	104.00	109.47
4	C	2	NAG	O5-C1-C2	-2.63	107.14	111.29
4	C	5	MAN	O2-C2-C1	-2.62	103.80	109.15

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	5	FUC	O2-C2-C3	-2.61	104.90	110.14
4	C	5	MAN	O5-C1-C2	-2.61	106.75	110.77
3	B	3	BMA	O2-C2-C1	2.60	114.48	109.15
3	B	5	FUC	C1-C2-C3	-2.60	106.47	109.67
4	C	1	NAG	C3-C4-C5	2.54	114.78	110.24
2	A	1	NAG	O4-C4-C5	-2.52	103.04	109.30
4	C	6	FUC	C1-O5-C5	2.48	118.39	112.78
4	C	6	FUC	O3-C3-C4	-2.47	104.63	110.35
3	B	1	NAG	C6-C5-C4	2.47	118.79	113.00
3	B	4	XYP	O3-C3-C4	2.45	114.69	109.99
2	A	2	NAG	C6-C5-C4	-2.45	107.28	113.00
3	B	2	NAG	O5-C5-C6	-2.41	103.43	107.20
4	C	6	FUC	O2-C2-C1	-2.39	104.27	109.15
2	A	2	NAG	O6-C6-C5	-2.33	103.29	111.29
4	C	2	NAG	O5-C5-C6	2.29	110.80	107.20
3	B	3	BMA	C1-C2-C3	2.25	112.43	109.67
3	B	1	NAG	O4-C4-C3	-2.25	105.15	110.35
3	B	5	FUC	O4-C4-C5	-2.25	104.68	109.67
3	B	3	BMA	C1-O5-C5	-2.23	109.17	112.19
3	B	1	NAG	C3-C4-C5	2.22	114.20	110.24
3	B	5	FUC	O5-C5-C6	-2.21	102.57	107.33
2	A	2	NAG	C8-C7-N2	-2.21	112.36	116.10
4	C	6	FUC	O2-C2-C3	-2.18	105.77	110.14
4	C	5	MAN	C3-C4-C5	-2.09	106.50	110.24
3	B	2	NAG	O7-C7-C8	-2.07	118.21	122.06
3	B	2	NAG	O3-C3-C2	-2.02	105.28	109.47

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
4	C	3	MAN	C1

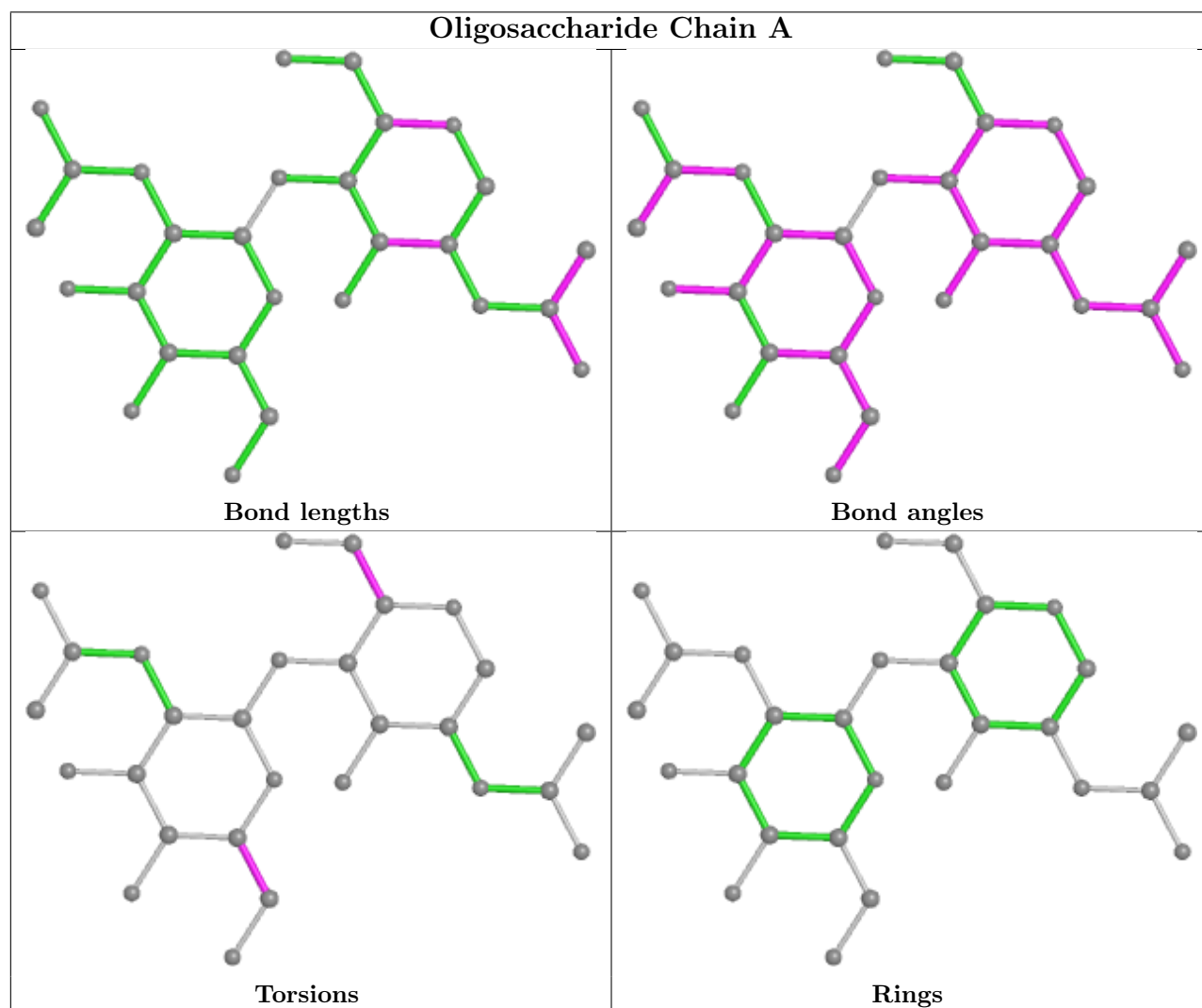
All (3) torsion outliers are listed below:

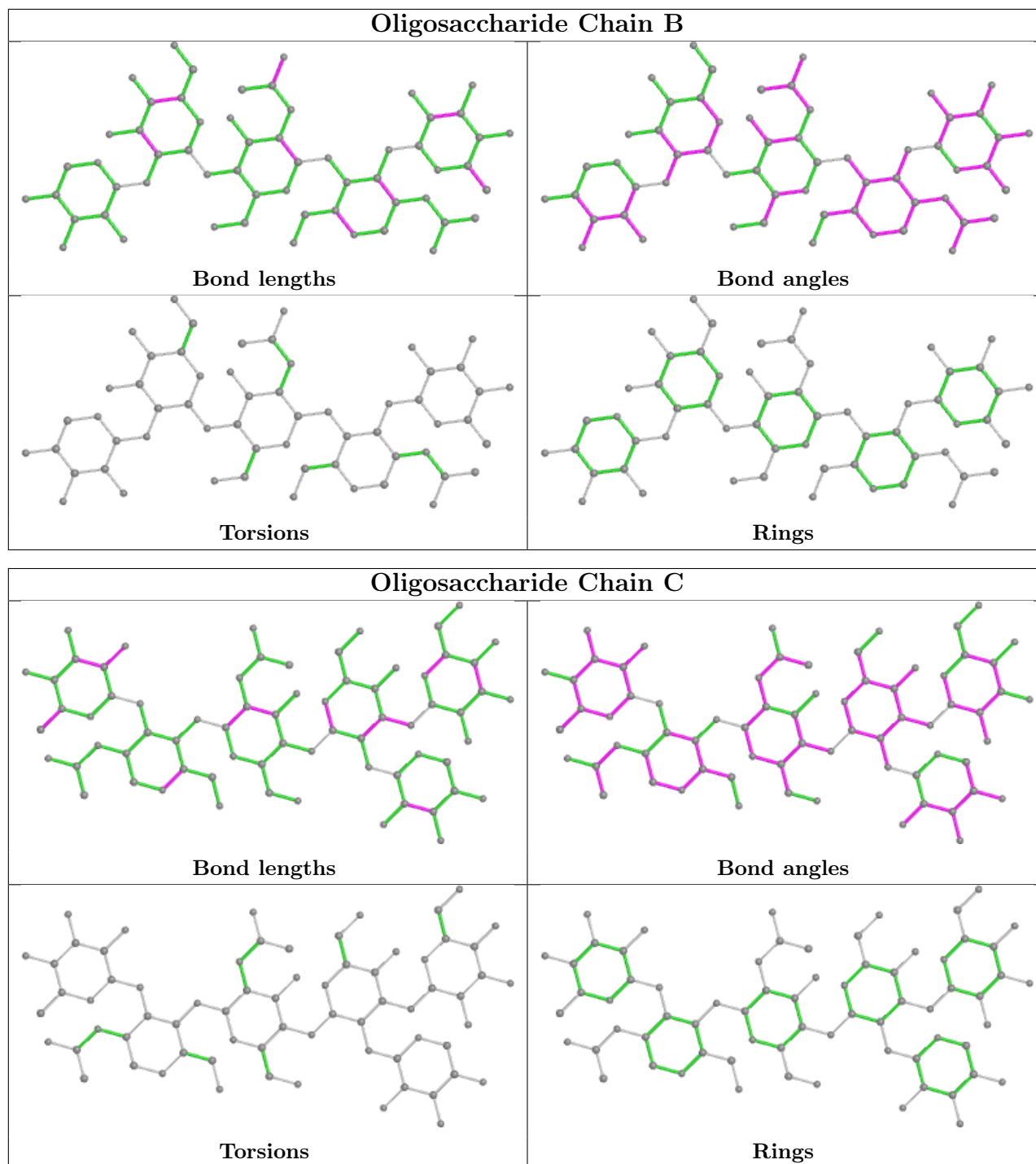
Mol	Chain	Res	Type	Atoms
2	A	1	NAG	O5-C5-C6-O6
2	A	1	NAG	C4-C5-C6-O6
2	A	2	NAG	C4-C5-C6-O6

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.





## 4.6 Ligand geometry [i](#)

Of 21 ligands modelled in this entry, 1 is monoatomic - leaving 20 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
9	GOL	M	1513	-	5,5,5	3.95	4 (80%)	5,5,5	2.47	3 (60%)
5	NAG	M	991	1	14,14,15	1.29	1 (7%)	17,19,21	1.93	6 (35%)
8	SO4	M	1507	-	4,4,4	0.78	0	6,6,6	1.41	1 (16%)
8	SO4	M	1510	-	4,4,4	0.53	0	6,6,6	0.43	0
8	SO4	M	1509	-	4,4,4	0.63	0	6,6,6	0.23	0
8	SO4	M	1506	-	4,4,4	0.49	0	6,6,6	1.65	1 (16%)
8	SO4	M	1505	-	4,4,4	0.61	0	6,6,6	0.30	0
9	GOL	M	1512[A]	-	5,5,5	0.75	0	5,5,5	1.79	1 (20%)
8	SO4	M	1503	-	4,4,4	0.47	0	6,6,6	0.37	0
5	NAG	M	931	1	14,14,15	1.71	2 (14%)	17,19,21	7.71	10 (58%)
9	GOL	M	1514	-	5,5,5	0.25	0	5,5,5	0.79	0
5	NAG	M	911	1	14,14,15	1.19	1 (7%)	17,19,21	1.97	4 (23%)
6	G2F	M	999	-	11,11,12	1.86	2 (18%)	10,15,17	2.71	4 (40%)
9	GOL	M	1512[B]	-	5,5,5	0.73	0	5,5,5	2.11	2 (40%)
5	NAG	M	971	1	14,14,15	1.34	1 (7%)	17,19,21	1.36	2 (11%)
5	NAG	M	901	1	14,14,15	1.08	1 (7%)	17,19,21	1.64	5 (29%)
8	SO4	M	1504	-	4,4,4	0.60	0	6,6,6	0.28	0
5	NAG	M	961	1	14,14,15	1.47	2 (14%)	17,19,21	2.46	5 (29%)
8	SO4	M	1508	-	4,4,4	0.75	0	6,6,6	0.68	0
9	GOL	M	1511	-	5,5,5	0.32	0	5,5,5	0.55	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
5	NAG	M	911	1	-	0/6/23/26	0/1/1/1
6	G2F	M	999	-	-	0/2/19/22	0/1/1/1
9	GOL	M	1513	-	-	3/4/4/4	-
5	NAG	M	991	1	1/1/5/7	2/6/23/26	0/1/1/1
9	GOL	M	1512[A]	-	-	0/4/4/4	-
5	NAG	M	971	1	-	2/6/23/26	0/1/1/1
9	GOL	M	1512[B]	-	-	2/4/4/4	-
5	NAG	M	901	1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	M	931	1	-	3/6/23/26	0/1/1/1
9	GOL	M	1511	-	-	1/4/4/4	-
9	GOL	M	1514	-	-	1/4/4/4	-
5	NAG	M	961	1	1/1/5/7	0/6/23/26	0/1/1/1

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	M	1513	GOL	O2-C2	6.33	1.62	1.43
5	M	931	NAG	O7-C7	-4.38	1.13	1.23
9	M	1513	GOL	O1-C1	4.22	1.60	1.42
6	M	999	G2F	C2-C3	4.06	1.57	1.51
5	M	971	NAG	O7-C7	-4.01	1.14	1.23
5	M	961	NAG	O7-C7	-3.93	1.14	1.23
5	M	911	NAG	O7-C7	-3.75	1.14	1.23
5	M	991	NAG	O7-C7	-3.61	1.15	1.23
9	M	1513	GOL	C1-C2	3.45	1.65	1.51
5	M	901	NAG	O7-C7	-3.10	1.16	1.23
6	M	999	G2F	O5-C1	2.85	1.48	1.43
9	M	1513	GOL	C3-C2	2.81	1.63	1.51
5	M	931	NAG	C2-N2	-2.70	1.41	1.46
5	M	961	NAG	C2-N2	2.65	1.50	1.46

All (44) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	M	931	NAG	C2-N2-C7	28.95	164.12	122.90
5	M	931	NAG	O5-C1-C2	8.55	124.78	111.29
5	M	961	NAG	C1-O5-C5	7.90	122.89	112.19
5	M	931	NAG	O7-C7-N2	-6.27	110.43	121.95
6	M	999	G2F	C1-O5-C5	-5.11	105.27	112.19
5	M	911	NAG	C4-C3-C2	-4.92	103.81	111.02
6	M	999	G2F	O5-C5-C6	-4.56	100.05	107.20
5	M	971	NAG	O5-C1-C2	-4.13	104.76	111.29
5	M	991	NAG	C4-C3-C2	-3.96	105.21	111.02
5	M	961	NAG	C1-C2-N2	-3.90	103.83	110.49
6	M	999	G2F	C3-C4-C5	-3.90	103.29	110.24
5	M	991	NAG	O5-C1-C2	3.78	117.26	111.29
9	M	1512[A]	GOL	O2-C2-C1	3.76	125.69	109.12
9	M	1512[B]	GOL	O2-C2-C1	3.76	125.69	109.12
5	M	931	NAG	O7-C7-C8	3.59	128.72	122.06
9	M	1513	GOL	O3-C3-C2	3.54	127.16	110.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	M	931	NAG	C4-C3-C2	-3.46	105.95	111.02
5	M	901	NAG	C1-O5-C5	-3.45	107.52	112.19
5	M	901	NAG	O5-C1-C2	3.22	116.38	111.29
8	M	1506	SO4	O4-S-O3	-3.17	95.51	109.06
5	M	911	NAG	C1-O5-C5	-3.12	107.97	112.19
5	M	991	NAG	C2-N2-C7	-2.93	118.73	122.90
5	M	911	NAG	O3-C3-C2	-2.81	103.66	109.47
5	M	931	NAG	C8-C7-N2	2.80	120.85	116.10
9	M	1513	GOL	C3-C2-C1	2.79	122.56	111.70
5	M	901	NAG	C4-C3-C2	-2.69	107.07	111.02
5	M	911	NAG	O5-C5-C4	-2.68	104.32	110.83
9	M	1513	GOL	O1-C1-C2	2.60	122.67	110.20
5	M	991	NAG	C1-O5-C5	2.56	115.66	112.19
9	M	1512[B]	GOL	O1-C1-C2	2.51	122.24	110.20
5	M	961	NAG	C4-C3-C2	2.47	114.64	111.02
5	M	971	NAG	O5-C5-C4	-2.40	104.98	110.83
5	M	991	NAG	O5-C5-C4	-2.38	105.04	110.83
5	M	931	NAG	C3-C4-C5	2.38	114.48	110.24
5	M	931	NAG	C1-O5-C5	-2.34	109.02	112.19
8	M	1507	SO4	O3-S-O1	2.33	121.49	109.31
5	M	931	NAG	O4-C4-C5	-2.33	103.52	109.30
5	M	931	NAG	O5-C5-C4	-2.31	105.20	110.83
5	M	901	NAG	O3-C3-C4	2.21	115.46	110.35
5	M	901	NAG	O3-C3-C2	-2.19	104.93	109.47
6	M	999	G2F	C6-C5-C4	2.13	117.99	113.00
5	M	991	NAG	C6-C5-C4	-2.11	108.06	113.00
5	M	961	NAG	C8-C7-N2	-2.09	112.56	116.10
5	M	961	NAG	O3-C3-C2	-2.09	105.15	109.47

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
5	M	961	NAG	C1
5	M	991	NAG	C1

All (16) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	M	1512[B]	GOL	O1-C1-C2-C3
5	M	971	NAG	O5-C5-C6-O6
5	M	971	NAG	C4-C5-C6-O6
5	M	931	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
5	M	901	NAG	C4-C5-C6-O6
5	M	901	NAG	O5-C5-C6-O6
5	M	991	NAG	O5-C5-C6-O6
5	M	931	NAG	C4-C5-C6-O6
9	M	1513	GOL	O1-C1-C2-C3
9	M	1514	GOL	O1-C1-C2-C3
9	M	1512[B]	GOL	O1-C1-C2-O2
9	M	1513	GOL	O1-C1-C2-O2
5	M	931	NAG	C3-C2-N2-C7
5	M	991	NAG	C4-C5-C6-O6
9	M	1513	GOL	C1-C2-C3-O3
9	M	1511	GOL	O1-C1-C2-C3

There are no ring outliers.

No monomer is involved in short contacts.

#### 4.7 Other polymers [i](#)

There are no such residues in this entry.

#### 4.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

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

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

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	M	499/501 (99%)	-0.13	16 (3%) 47 48	20, 25, 39, 66	1 (0%)

All (16) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	M	376	ALA	9.0
1	M	380	ASP	5.6
1	M	375	LYS	4.7
1	M	374	ASP	4.3
1	M	417	ASP	3.9
1	M	378	SER	3.8
1	M	377	ASP	3.4
1	M	3	GLU	3.3
1	M	379	THR	3.2
1	M	27	SER	2.9
1	M	421	ASN	2.7
1	M	481	ASN	2.4
1	M	483	VAL	2.2
1	M	305[A]	GLU	2.1
1	M	343	ASN	2.1
1	M	19	ALA	2.1

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

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

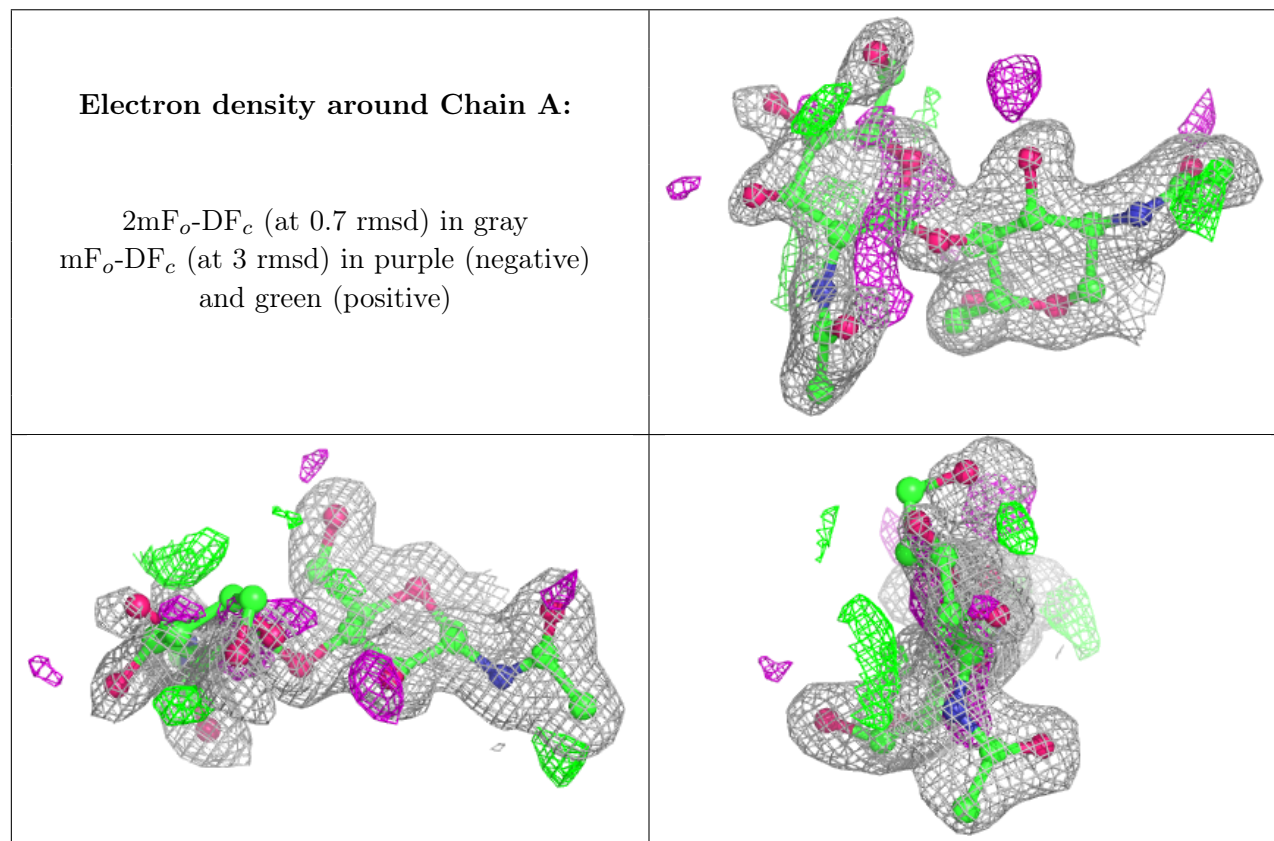
### 5.3 Carbohydrates [i](#)

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, 95<sup>th</sup> 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.

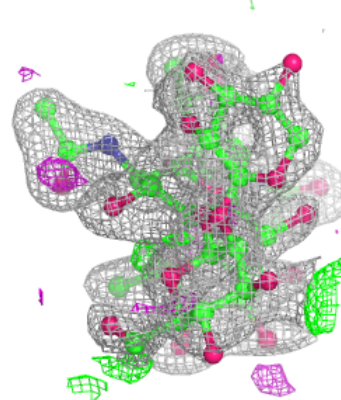
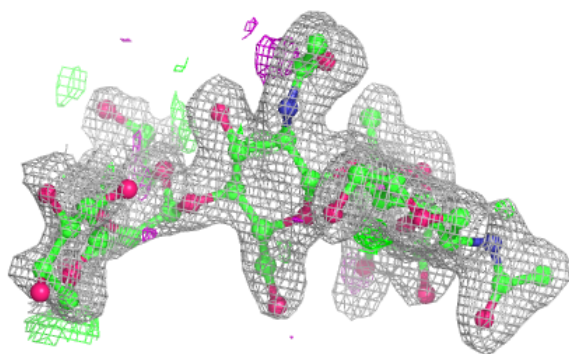
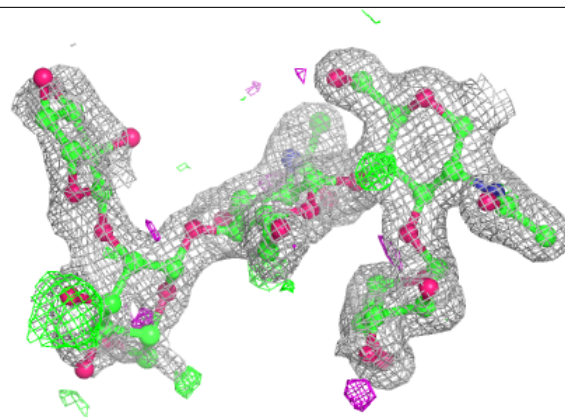
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
4	MAN	C	5	11/12	0.24	0.50	42,55,57,57	0
4	XYP	C	4	9/10	0.44	0.43	56,59,60,62	0
2	NAG	A	2	14/15	0.53	0.38	49,52,56,58	0
3	BMA	B	3	11/12	0.71	0.36	53,57,59,59	0
4	MAN	C	3	11/12	0.72	0.16	44,48,52,54	0
3	XYP	B	4	9/10	0.74	0.39	59,60,62,62	0
3	FUC	B	5	10/11	0.83	0.21	41,43,47,49	0
3	NAG	B	2	14/15	0.87	0.14	39,43,48,49	0
4	FUC	C	6	10/11	0.87	0.15	38,39,43,43	0
2	NAG	A	1	14/15	0.90	0.10	29,34,38,42	0
4	NAG	C	2	14/15	0.90	0.12	34,37,40,42	0
3	NAG	B	1	14/15	0.91	0.08	30,33,36,36	0
4	NAG	C	1	14/15	0.92	0.09	30,32,35,36	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.

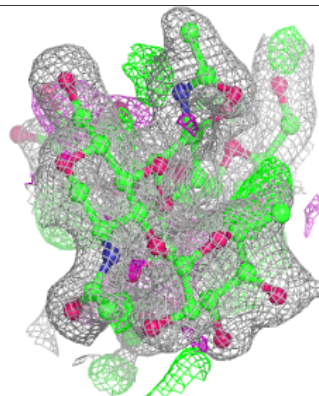
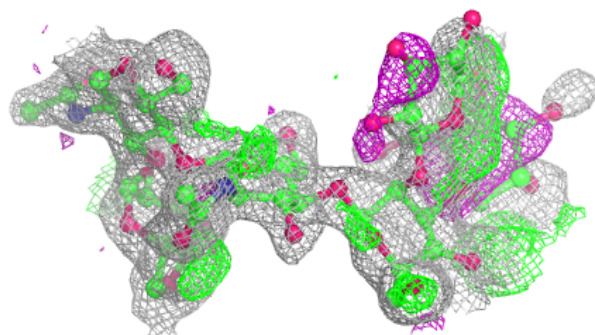
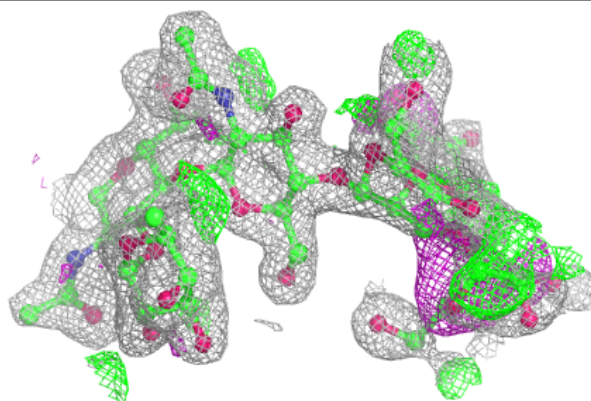


**Electron density around Chain B:**

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

**Electron density around Chain C:**

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





## 5.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
5	NAG	M	961	14/15	0.36	0.56	59,63,66,67	0
5	NAG	M	991	14/15	0.43	0.62	57,58,63,64	0
8	SO4	M	1507	5/5	0.46	0.47	50,52,53,54	5
5	NAG	M	971	14/15	0.54	0.50	69,75,76,76	0
9	GOL	M	1511	6/6	0.60	0.34	55,56,56,56	6
5	NAG	M	931	14/15	0.64	0.34	53,58,60,60	0
8	SO4	M	1508	5/5	0.68	0.29	42,46,47,47	5
9	GOL	M	1514	6/6	0.68	0.29	57,59,59,60	6
5	NAG	M	901	14/15	0.71	0.20	42,45,50,52	0
8	SO4	M	1505	5/5	0.74	0.34	54,56,56,58	5
9	GOL	M	1513	6/6	0.76	0.29	20,26,29,36	0
8	SO4	M	1509	5/5	0.77	0.30	54,55,55,55	5
5	NAG	M	911	14/15	0.83	0.21	36,40,41,45	0
8	SO4	M	1510	5/5	0.87	0.37	62,62,63,64	1
9	GOL	M	1512[B]	6/6	0.91	0.14	23,26,28,29	2
6	G2F	M	999	11/12	0.91	0.10	27,32,35,37	0
9	GOL	M	1512[A]	6/6	0.91	0.14	16,23,28,28	2
8	SO4	M	1506	5/5	0.94	0.12	35,36,37,40	0
8	SO4	M	1504	5/5	0.96	0.15	36,39,41,41	5
8	SO4	M	1503	5/5	0.98	0.14	37,40,41,43	5
7	ZN	M	1502	1/1	0.99	0.02	21,21,21,21	1

## 5.5 Other polymers [i](#)

There are no such residues in this entry.