Full wwPDB X-ray Structure Validation Report ⓘ

Aug 7, 2020 – 04:16 PM BST

PDB ID	:	5XZU
Title	:	Crystal structure of GH10 xylanase from Bispora. sp MEY-1 with xylobiose
Authors	:	You, S.; Chen, C.C.; Tu, T.; Guo, R.T.; Luo, H.Y.; Yao, B.
Deposited on	:	2017-07-14
Resolution	:	1.70 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 following versions of software and data (see references ⓘ) were used in the production of this report:

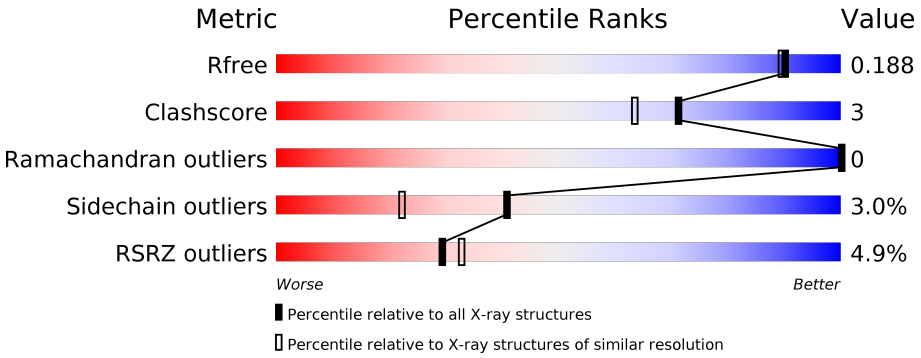
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.13.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.13.1

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 1.70 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4298 (1.70-1.70)
Clashscore	141614	4695 (1.70-1.70)
Ramachandran outliers	138981	4610 (1.70-1.70)
Sidechain outliers	138945	4610 (1.70-1.70)
RSRZ outliers	127900	4222 (1.70-1.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	335	3% 91% 8%
1	B	335	7% 91% 7%
2	C	2	100%

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
2	BGC	C	2	-	-	X	-

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 5985 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.

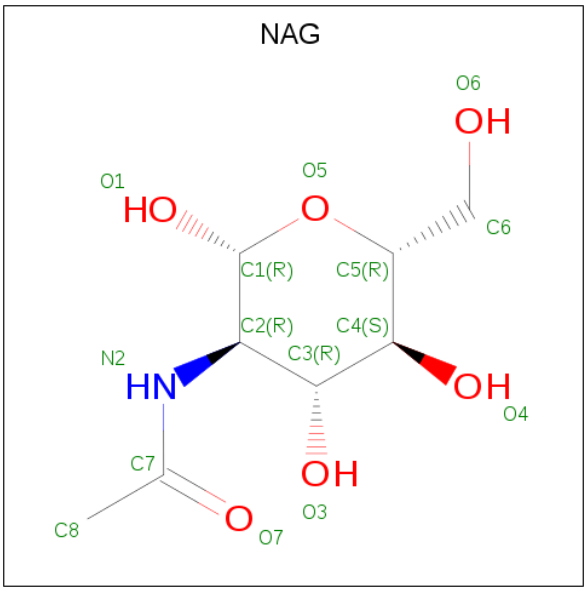
- Molecule 1 is a protein called Beta-xylanase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	334	Total	C	N	O	S	0	0	0
			2647	1689	429	519	10			
1	B	333	Total	C	N	O	S	0	0	0
			2638	1684	427	517	10			

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

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	C	2	Total	C	O		0	0	0
			23	12	11				

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



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

- Molecule 4 is water.

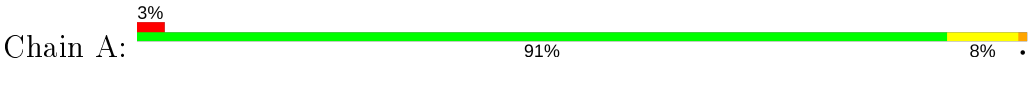
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	328	Total O 328 328	0	0
4	B	279	Total O 279 279	0	0

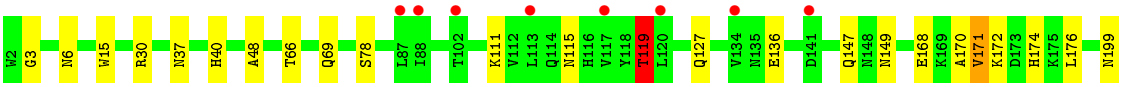
3 Residue-property plots (i)

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: Beta-xylanase

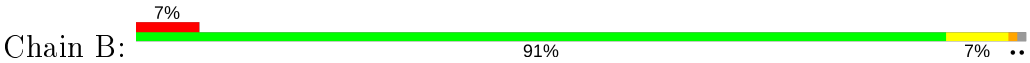
Chain A:

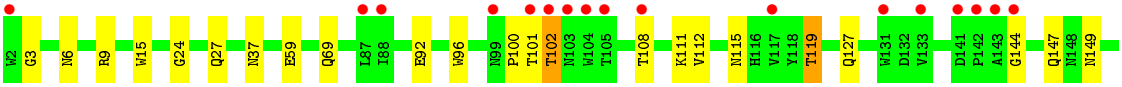


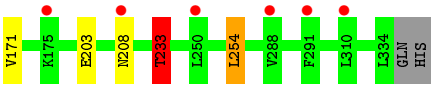


- Molecule 1: Beta-xylanase

Chain B:







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

Chain C:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	135.27Å 83.14Å 65.39Å 90.00° 94.25° 90.00°	Depositor
Resolution (Å)	25.00 – 1.70 24.80 – 1.70	Depositor EDS
% Data completeness (in resolution range)	99.7 (25.00-1.70) 99.7 (24.80-1.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	4.27 (at 1.70Å)	Xtriage
Refinement program	REFMAC 5.8.0155	Depositor
R, R_{free}	0.124 , 0.183 0.129 , 0.188	Depositor DCC
R_{free} test set	4011 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å^2)	26.7	Xtriage
Anisotropy	0.056	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.38 , 53.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.98	EDS
Total number of atoms	5985	wwPDB-VP
Average B, all atoms (Å^2)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.47% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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

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	0.54	0/2722	0.69	2/3723 (0.1%)
1	B	0.50	0/2713	0.69	4/3711 (0.1%)
All	All	0.52	0/5435	0.69	6/7434 (0.1%)

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
1	A	0	1
1	B	0	2
All	All	0	3

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	254	LEU	CA-CB-CG	6.49	130.23	115.30
1	B	9	ARG	NE-CZ-NH1	6.25	123.42	120.30
1	B	233	THR	CB-CA-C	-5.85	95.80	111.60
1	B	233	THR	N-CA-CB	5.41	120.59	110.30
1	A	254	LEU	CA-CB-CG	5.34	127.58	115.30
1	A	119	THR	N-CA-CB	5.16	120.10	110.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	15	TRP	Peptide
1	B	144	GLY	Peptide
1	B	15	TRP	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2647	0	2468	20	0
1	B	2638	0	2461	12	0
2	C	23	0	21	9	0
3	A	42	0	39	2	0
3	B	28	0	26	3	0
4	A	328	0	0	2	2
4	B	279	0	0	2	1
All	All	5985	0	5015	36	2

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 (36) 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:A:297:TRP:CH2	2:C:2:BGC:H6C1	1.84	1.12
1:A:297:TRP:CH2	2:C:2:BGC:C6	2.47	0.97
3:B:402:NAG:H81	4:B:709:HOH:O	1.68	0.92
1:A:69:GLN:HE22	1:A:127:GLN:HE22	1.24	0.85
1:A:37:ASN:HD22	3:A:403:NAG:H83	1.39	0.84
1:A:6:ASN:HD21	1:A:40:HIS:HD2	1.24	0.83
1:B:115:ASN:O	1:B:119:THR:HG23	1.80	0.82
1:A:297:TRP:HH2	2:C:2:BGC:H6C1	1.45	0.81
1:A:6:ASN:HD21	1:A:40:HIS:CD2	2.01	0.77
2:C:2:BGC:O4	2:C:2:BGC:O6	2.00	0.77
1:B:37:ASN:HD22	3:B:402:NAG:H83	1.51	0.73
1:B:69:GLN:HE22	1:B:127:GLN:HE22	1.38	0.72
1:B:3:GLY:H	1:B:6:ASN:HD22	1.38	0.69
1:B:233:THR:HG22	4:B:658:HOH:O	1.92	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:297:TRP:CH2	2:C:2:BGC:H6C2	2.28	0.68
1:A:147:GLN:HE21	1:A:149:ASN:HD22	1.41	0.67
1:A:297:TRP:CZ3	2:C:2:BGC:H6C1	2.31	0.64
1:A:115:ASN:O	1:A:119:THR:HG23	1.98	0.63
1:A:48:ALA:HB1	2:C:1:BGC:H6C1	1.82	0.61
1:B:147:GLN:HE21	1:B:149:ASN:HD22	1.49	0.60
1:A:168:GLU:OE2	1:A:172:LYS:HE2	2.04	0.58
1:A:170:ALA:O	1:A:174:HIS:HD2	1.88	0.56
1:B:59:GLU:HA	1:B:96:TRP:CD1	2.41	0.56
1:A:66:THR:HG21	4:A:734:HOH:O	2.06	0.54
1:B:24:GLY:H	1:B:27:GLN:HE21	1.58	0.52
1:B:101:THR:HG23	1:B:102:THR:HG22	1.95	0.48
1:A:171:VAL:HB	1:A:176:LEU:HB2	1.96	0.47
3:A:401:NAG:H83	3:A:401:NAG:H3	1.98	0.46
4:A:585:HOH:O	2:C:1:BGC:H1	2.16	0.45
1:A:136:GLU:OE2	2:C:2:BGC:O4	2.19	0.44
1:B:108:THR:O	1:B:112:VAL:HG23	2.17	0.44
1:B:37:ASN:ND2	3:B:402:NAG:H83	2.26	0.43
1:B:100:PRO:HB2	1:B:102:THR:O	2.19	0.43
1:A:6:ASN:ND2	1:A:40:HIS:HD2	2.04	0.43
1:A:199:ASN:O	1:A:203:GLU:HG2	2.19	0.42
1:A:3:GLY:H	1:A:6:ASN:HD22	1.66	0.41

All (2) 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)
4:A:771:HOH:O	4:A:771:HOH:O[2_556]	2.02	0.18
4:A:681:HOH:O	4:B:624:HOH:O[4_555]	2.18	0.02

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	332/335 (99%)	326 (98%)	6 (2%)	0	100	100
1	B	331/335 (99%)	324 (98%)	7 (2%)	0	100	100
All	All	663/670 (99%)	650 (98%)	13 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	280/281 (100%)	272 (97%)	8 (3%)	42	23
1	B	279/281 (99%)	270 (97%)	9 (3%)	39	20
All	All	559/562 (100%)	542 (97%)	17 (3%)	41	22

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	30	ARG
1	A	78	SER
1	A	111	LYS
1	A	119	THR
1	A	171	VAL
1	A	208	ASN
1	A	254	LEU
1	A	318	ASN
1	B	92	GLU
1	B	102	THR
1	B	111	LYS
1	B	119	THR
1	B	171	VAL
1	B	203	GLU
1	B	208	ASN
1	B	233	THR
1	B	254	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	6	ASN
1	A	40	HIS
1	A	60	GLN
1	A	69	GLN
1	A	79	HIS
1	A	147	GLN
1	A	174	HIS
1	A	234	ASN
1	B	6	ASN
1	B	27	GLN
1	B	60	GLN
1	B	103	ASN
1	B	127	GLN
1	B	147	GLN
1	B	177	ASN
1	B	234	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

2 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	BGC	C	1	2	12,12,12	1.71	3 (25%)	17,17,17	3.66	10 (58%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	BGC	C	2	2	11,11,12	1.06	1 (9%)	15,15,17	3.47	7 (46%)

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	BGC	C	1	2	-	2/2/22/22	0/1/1/1
2	BGC	C	2	2	-	2/2/19/22	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	1	BGC	O4-C4	3.09	1.50	1.43
2	C	1	BGC	O5-C5	2.81	1.51	1.44
2	C	2	BGC	O5-C1	2.08	1.47	1.43
2	C	1	BGC	O5-C1	-2.05	1.37	1.42

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	2	BGC	O5-C5-C6	8.56	120.63	107.20
2	C	1	BGC	O4-C4-C5	7.38	127.62	109.30
2	C	1	BGC	C6-C5-C4	6.16	127.42	113.00
2	C	1	BGC	C3-C4-C5	-5.90	99.71	110.24
2	C	2	BGC	O5-C1-C2	-5.82	101.79	110.77
2	C	1	BGC	O2-C2-C1	-5.58	96.21	109.16
2	C	2	BGC	C6-C5-C4	-4.93	101.45	113.00
2	C	2	BGC	C1-C2-C3	4.24	114.88	109.67
2	C	1	BGC	O5-C5-C6	-3.73	97.16	106.44
2	C	1	BGC	O4-C4-C3	3.63	118.75	110.35
2	C	1	BGC	O2-C2-C3	3.45	118.33	110.35
2	C	1	BGC	O5-C1-C2	-3.33	104.34	110.28
2	C	2	BGC	O4-C4-C5	-3.33	101.04	109.30
2	C	1	BGC	C1-O5-C5	-3.15	107.72	113.66
2	C	2	BGC	O2-C2-C3	-2.69	104.75	110.14
2	C	2	BGC	C1-O5-C5	-2.41	108.93	112.19
2	C	1	BGC	O3-C3-C4	-2.27	105.11	110.35

There are no chirality outliers.

All (4) torsion outliers are listed below:

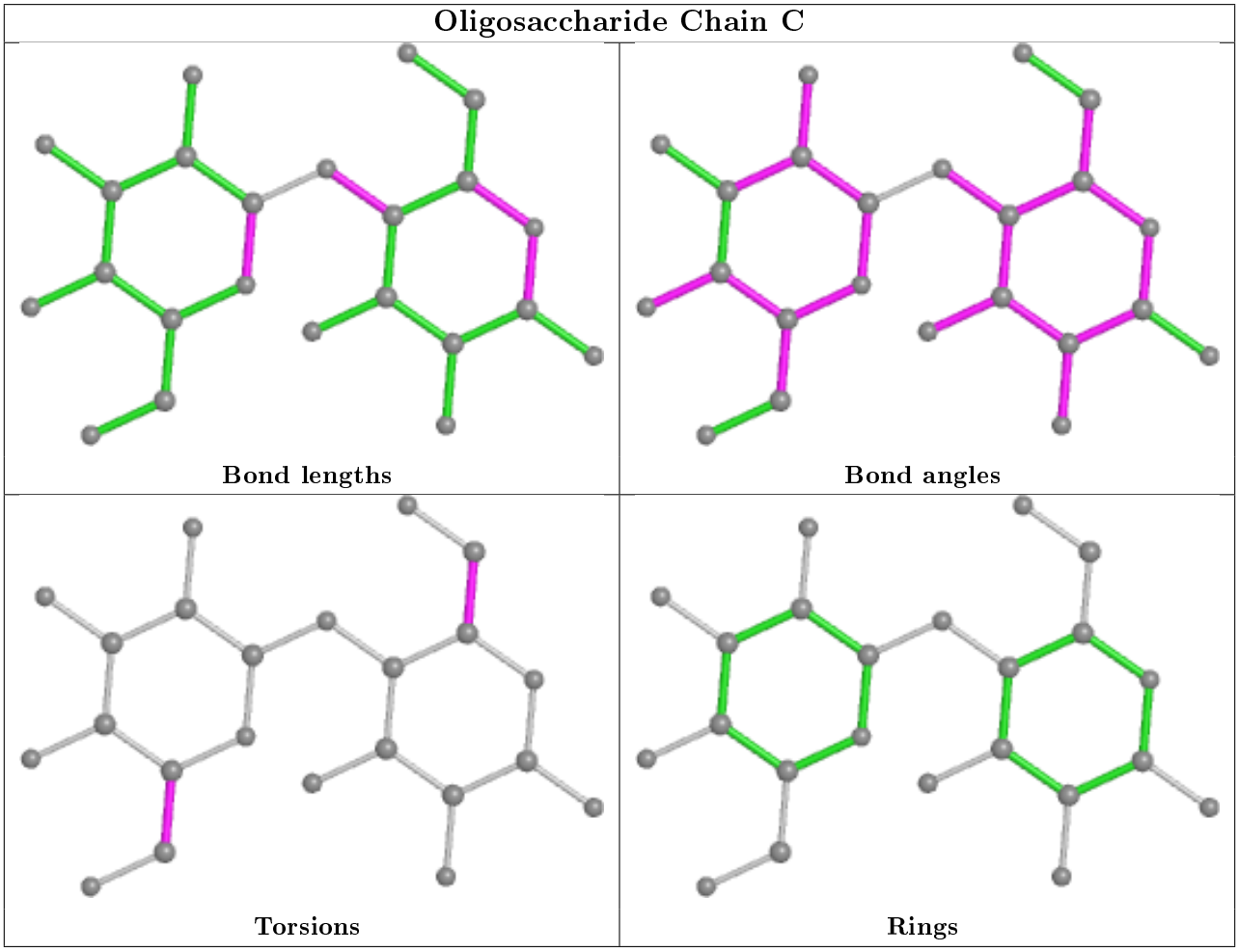
Mol	Chain	Res	Type	Atoms
2	C	1	BGC	O5-C5-C6-O6
2	C	2	BGC	O5-C5-C6-O6
2	C	1	BGC	C4-C5-C6-O6
2	C	2	BGC	C4-C5-C6-O6

There are no ring outliers.

2 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	1	BGC	2	0
2	C	2	BGC	7	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)

5 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	$\#\|Z\| > 2$
3	NAG	A	402	1	14,14,15	0.43	0	17,19,21	1.10	1 (5%)
3	NAG	B	402	1	14,14,15	0.70	1 (7%)	17,19,21	1.81	4 (23%)
3	NAG	B	401	1	14,14,15	0.43	0	17,19,21	0.88	1 (5%)
3	NAG	A	403	1	14,14,15	0.68	0	17,19,21	1.36	3 (17%)
3	NAG	A	401	1	14,14,15	0.48	0	17,19,21	1.85	6 (35%)

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	NAG	A	402	1	-	2/6/23/26	0/1/1/1
3	NAG	B	402	1	-	2/6/23/26	0/1/1/1
3	NAG	B	401	1	-	2/6/23/26	0/1/1/1
3	NAG	A	403	1	-	2/6/23/26	0/1/1/1
3	NAG	A	401	1	-	5/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	402	NAG	C8-C7	-2.13	1.46	1.50

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	402	NAG	C1-C2-N2	4.30	117.84	110.49
3	A	401	NAG	O5-C1-C2	-4.11	104.80	111.29
3	B	402	NAG	C2-N2-C7	3.95	128.53	122.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	403	NAG	C2-N2-C7	3.38	127.71	122.90
3	A	403	NAG	C1-O5-C5	3.02	116.28	112.19
3	A	401	NAG	C8-C7-N2	2.89	120.99	116.10
3	A	401	NAG	C4-C3-C2	-2.74	107.00	111.02
3	A	401	NAG	C2-N2-C7	2.60	126.61	122.90
3	A	401	NAG	C1-C2-N2	2.56	114.86	110.49
3	B	402	NAG	O5-C5-C6	2.35	110.89	107.20
3	A	402	NAG	C8-C7-N2	2.33	120.05	116.10
3	B	402	NAG	O7-C7-N2	2.32	126.22	121.95
3	B	401	NAG	C2-N2-C7	2.13	125.94	122.90
3	A	403	NAG	C1-C2-N2	2.12	114.11	110.49
3	A	401	NAG	O5-C5-C6	2.05	110.42	107.20

There are no chirality outliers.

All (13) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	401	NAG	O5-C5-C6-O6
3	A	401	NAG	C4-C5-C6-O6
3	A	402	NAG	C8-C7-N2-C2
3	A	402	NAG	O7-C7-N2-C2
3	B	402	NAG	C8-C7-N2-C2
3	B	402	NAG	O7-C7-N2-C2
3	B	401	NAG	C8-C7-N2-C2
3	B	401	NAG	O7-C7-N2-C2
3	A	403	NAG	C8-C7-N2-C2
3	A	403	NAG	O7-C7-N2-C2
3	A	401	NAG	C8-C7-N2-C2
3	A	401	NAG	O7-C7-N2-C2
3	A	401	NAG	C3-C2-N2-C7

There are no ring outliers.

3 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	402	NAG	3	0
3	A	403	NAG	1	0
3	A	401	NAG	1	0

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} 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	334/335 (99%)	-0.13	10 (2%)	50	54	20, 26, 45, 64	0
1	B	333/335 (99%)	0.13	23 (6%)	16	19	21, 33, 58, 84	0
All	All	667/670 (99%)	0.00	33 (4%)	29	33	20, 29, 53, 84	0

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	101	THR	6.2
1	B	102	THR	5.6
1	B	143	ALA	5.1
1	B	103	ASN	4.5
1	B	104	TRP	3.9
1	B	133	VAL	3.7
1	A	141	ASP	3.3
1	B	142	PRO	3.3
1	B	141	ASP	3.2
1	B	288	VAL	3.1
1	B	105	THR	3.1
1	A	310	LEU	3.0
1	B	88	ILE	2.9
1	A	88	ILE	2.8
1	B	87	LEU	2.8
1	B	99	ASN	2.8
1	B	144	GLY	2.7
1	A	288	VAL	2.6
1	B	117	VAL	2.4
1	B	310	LEU	2.4
1	A	117	VAL	2.3
1	B	108	THR	2.3
1	B	175	LYS	2.2
1	A	120	LEU	2.2

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Mol	Chain	Res	Type	RSRZ
1	B	131	TRP	2.2
1	B	208	ASN	2.2
1	A	87	LEU	2.2
1	A	113	LEU	2.2
1	B	2	TRP	2.2
1	A	134	VAL	2.1
1	B	250	LEU	2.1
1	B	291	PHE	2.1
1	A	102	THR	2.0

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

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

6.3 Carbohydrates (i)

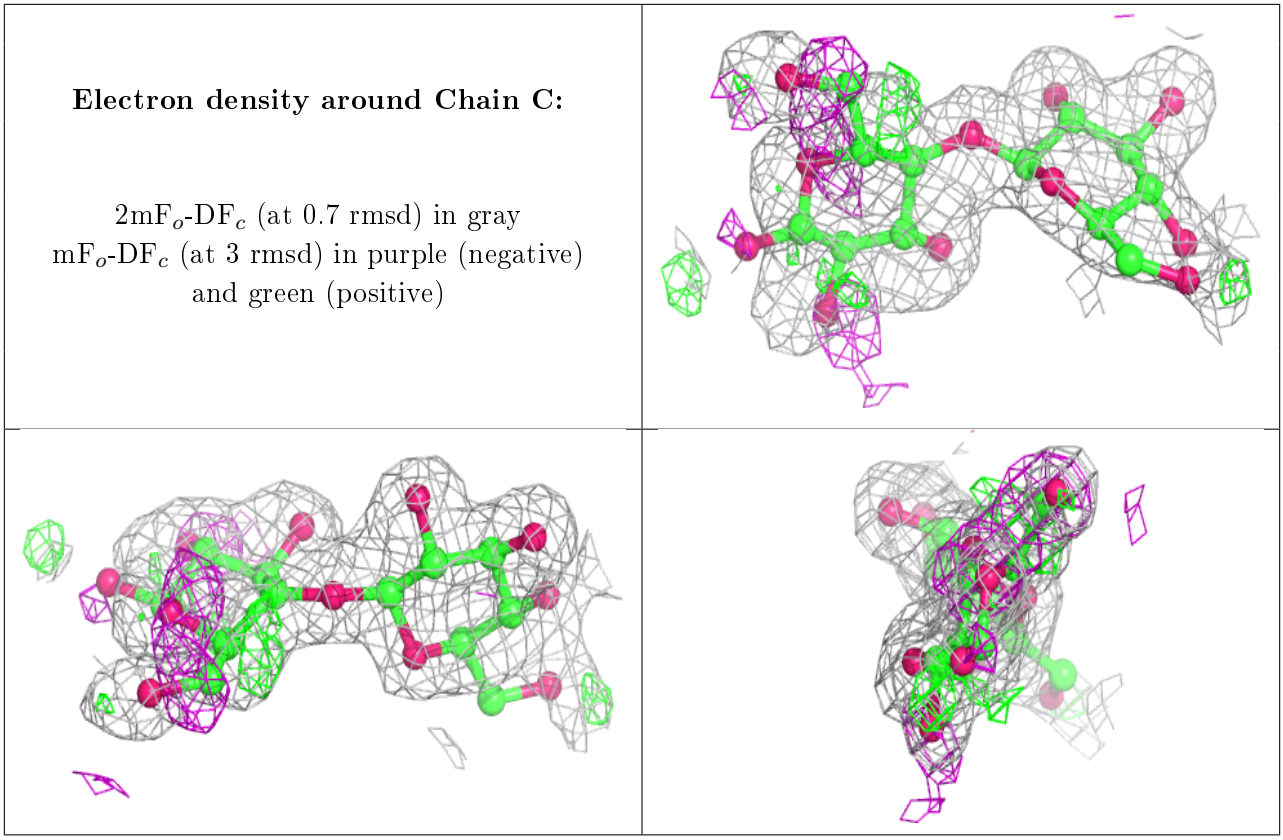
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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	BGC	C	1	12/12	0.81	0.18	32,46,73,84	0
2	BGC	C	2	11/12	0.92	0.12	26,30,77,78	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 C:

$2mF_o$-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, 95^{th} 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	B	401	14/15	0.91	0.20	41,48,52,59	0
3	NAG	A	403	14/15	0.92	0.12	34,44,48,48	0
3	NAG	A	402	14/15	0.95	0.18	43,57,65,67	0
3	NAG	A	401	14/15	0.95	0.17	43,52,69,70	0
3	NAG	B	402	14/15	0.96	0.07	28,33,37,42	0

6.5 Other polymers

There are no such residues in this entry.