Full wwPDB X-ray Structure Validation Report (i)

Nov 14, 2023 – 01:31 AM JST

PDB ID	:	5YSD
Title	:	Crystal structure of beta-1,2-glucooligosaccharide binding protein in complex with sophorotriose
Authors	:	Abe, K.; Nakajima, M.; Taguchi, H.; Arakawa, T.; Fushinobu, S.
Deposited on	:	2017-11-14
Resolution	:	2.10 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 (i) 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 (i)) were used in the production of this report:

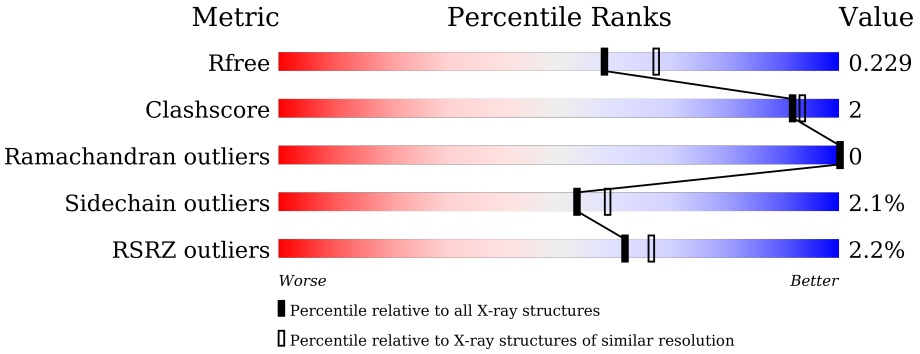
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.10 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	5197 (2.10-2.10)
Clashscore	141614	5710 (2.10-2.10)
Ramachandran outliers	138981	5647 (2.10-2.10)
Sidechain outliers	138945	5648 (2.10-2.10)
RSRZ outliers	127900	5083 (2.10-2.10)

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 <=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	397	.% 91% 6% •
1	B	397	4% 92% 6% •
2	C	3	100%
2	D	3	67% 33%

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 6538 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.

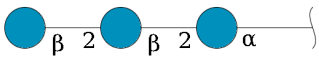
- Molecule 1 is a protein called Lin1841 protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	387	3065	1958	497	593	17	0	1	0
1	B	389	3078	1965	502	595	16	0	0	0

There are 18 discrepancies between the modelled and reference sequences:

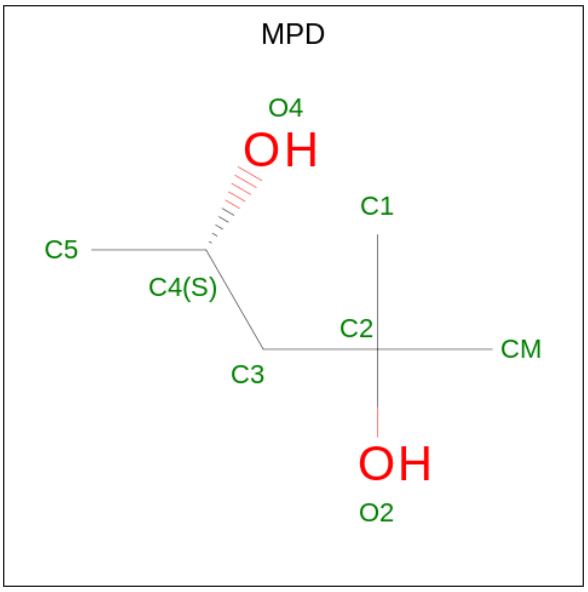
Chain	Residue	Modelled	Actual	Comment	Reference
A	26	MET	-	expression tag	UNP Q92AS8
A	415	LEU	-	expression tag	UNP Q92AS8
A	416	GLU	-	expression tag	UNP Q92AS8
A	417	HIS	-	expression tag	UNP Q92AS8
A	418	HIS	-	expression tag	UNP Q92AS8
A	419	HIS	-	expression tag	UNP Q92AS8
A	420	HIS	-	expression tag	UNP Q92AS8
A	421	HIS	-	expression tag	UNP Q92AS8
A	422	HIS	-	expression tag	UNP Q92AS8
B	26	MET	-	expression tag	UNP Q92AS8
B	415	LEU	-	expression tag	UNP Q92AS8
B	416	GLU	-	expression tag	UNP Q92AS8
B	417	HIS	-	expression tag	UNP Q92AS8
B	418	HIS	-	expression tag	UNP Q92AS8
B	419	HIS	-	expression tag	UNP Q92AS8
B	420	HIS	-	expression tag	UNP Q92AS8
B	421	HIS	-	expression tag	UNP Q92AS8
B	422	HIS	-	expression tag	UNP Q92AS8

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



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	Trace
2	C	3	Total	C	O	0	0	0
			34	18	16			
2	D	3	Total	C	O	0	0	0
			34	18	16			

- Molecule 3 is (4S)-2-METHYL-2,4-PENTANEDIOL (three-letter code: MPD) (formula: $C_6H_{14}O_2$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			8	6	2		
3	A	1	Total	C	O	0	0
			8	6	2		
3	A	1	Total	C	O	0	0
			8	6	2		
3	B	1	Total	C	O	0	0
			8	6	2		
3	B	1	Total	C	O	0	0
			8	6	2		

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Mg		
4	A	1	1	1	0	0

- Molecule 5 is water.

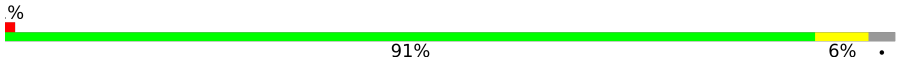
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
5	A	176	176	176	0	0
			Total	O		
5	B	110	110	110	0	0

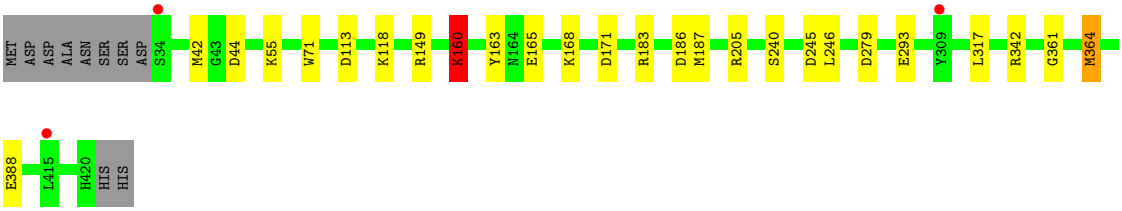
3 Residue-property plots (i)

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: Lin1841 protein

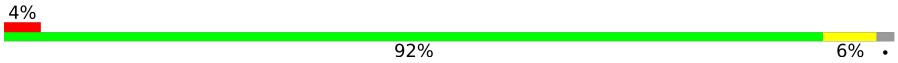
Chain A:





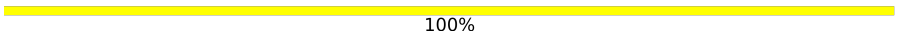
• Molecule 1: Lin1841 protein

Chain B:



• Molecule 2: beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-alpha-D-glucopyranose

Chain C:



• Molecule 2: beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-alpha-D-glucopyranose

Chain D:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	36.08Å 125.56Å 91.78Å 90.00° 101.61° 90.00°	Depositor
Resolution (Å)	44.95 – 2.10 36.55 – 2.10	Depositor EDS
% Data completeness (in resolution range)	96.4 (44.95-2.10) 96.4 (36.55-2.10)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.88 (at 2.10Å)	Xtriage
Refinement program	REFMAC 5.8.0158, Coot	Depositor
R, R_{free}	0.169 , 0.207 0.204 , 0.229	Depositor DCC
R_{free} test set	2264 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å^2)	28.4	Xtriage
Anisotropy	0.166	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 40.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.033 for h,-k,-h-l	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	6538	wwPDB-VP
Average B, all atoms (Å^2)	56.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.33% 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 (i)

5.1 Standard geometry (i)

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

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	1.01	3/3142 (0.1%)	0.99	11/4253 (0.3%)
1	B	0.91	1/3157 (0.0%)	0.91	6/4273 (0.1%)
All	All	0.96	4/6299 (0.1%)	0.95	17/8526 (0.2%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	378	GLU	CD-OE1	5.78	1.32	1.25
1	A	388	GLU	CD-OE2	-5.76	1.19	1.25
1	A	240	SER	CB-OG	-5.50	1.35	1.42
1	A	279	ASP	CB-CG	5.24	1.62	1.51

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	279	ASP	CB-CG-OD1	10.43	127.69	118.30
1	A	245	ASP	CB-CG-OD1	8.19	125.67	118.30
1	A	205	ARG	NE-CZ-NH2	-7.73	116.43	120.30
1	A	342	ARG	NE-CZ-NH2	-7.73	116.44	120.30
1	B	342	ARG	NE-CZ-NH2	-7.19	116.70	120.30
1	A	342	ARG	NE-CZ-NH1	6.69	123.65	120.30
1	B	245	ASP	CB-CG-OD1	6.63	124.26	118.30
1	A	245	ASP	CB-CG-OD2	-6.39	112.55	118.30
1	B	44	ASP	CB-CG-OD1	-6.21	112.71	118.30
1	A	293	GLU	OE1-CD-OE2	-6.09	115.99	123.30
1	A	186	ASP	CB-CG-OD1	-6.06	112.84	118.30
1	A	149	ARG	NE-CZ-NH1	6.02	123.31	120.30
1	A	171	ASP	CB-CG-OD1	5.92	123.63	118.30
1	B	279	ASP	CB-CG-OD1	5.84	123.55	118.30
1	A	160	LYS	CD-CE-NZ	5.78	125.00	111.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	171	ASP	CB-CG-OD1	5.49	123.24	118.30
1	B	59	ASP	CB-CG-OD2	-5.03	113.77	118.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3065	0	2985	11	0
1	B	3078	0	2991	6	0
2	C	34	0	30	0	0
2	D	34	0	30	0	0
3	A	24	0	42	6	0
3	B	16	0	28	0	0
4	A	1	0	0	0	0
5	A	176	0	0	1	0
5	B	110	0	0	1	0
All	All	6538	0	6106	20	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 2.

All (20) 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:A:503:MPD:H12	3:A:503:MPD:H52	1.67	0.74
1:B:50:LYS:HD2	1:B:66:VAL:HB	1.88	0.55
1:A:246:LEU:HG	3:A:503:MPD:H13	1.91	0.52
1:A:163:TYR:HA	3:A:501:MPD:HM1	1.93	0.50
1:B:73:ASN:HB3	5:B:697:HOH:O	2.12	0.49
1:A:42[B]:MET:CE	1:A:71:TRP:CH2	2.97	0.48
1:A:42[B]:MET:HE3	1:A:71:TRP:CZ3	2.49	0.47
1:A:113:ASP:HB3	1:A:317:LEU:HD21	1.97	0.47
3:A:503:MPD:H12	3:A:503:MPD:C5	2.43	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:113:ASP:HB3	1:B:317:LEU:HD21	1.96	0.46
1:B:42:MET:HE3	1:B:71:TRP:CZ3	2.52	0.45
1:A:183:ARG:CZ	1:A:187:MET:HE2	2.47	0.44
3:A:501:MPD:HM2	5:A:653:HOH:O	2.18	0.44
1:B:183:ARG:HD2	1:B:187:MET:HE1	2.01	0.42
1:B:111:THR:O	1:B:115:GLU:HG2	2.20	0.42
1:A:364:MET:HE3	1:A:364:MET:HB3	1.99	0.41
1:A:361:GLY:HA2	1:A:364:MET:HE2	2.02	0.41
1:A:160:LYS:HE2	1:A:160:LYS:HA	2.03	0.40
1:A:165:GLU:H	3:A:501:MPD:HM3	1.86	0.40
1:A:42[B]:MET:HE2	1:A:71:TRP:CH2	2.56	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	386/397 (97%)	378 (98%)	8 (2%)	0	100	100
1	B	387/397 (98%)	380 (98%)	7 (2%)	0	100	100
All	All	773/794 (97%)	758 (98%)	15 (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	333/341 (98%)	327 (98%)	6 (2%)	59	65
1	B	334/341 (98%)	326 (98%)	8 (2%)	49	53
All	All	667/682 (98%)	653 (98%)	14 (2%)	53	59

All (14) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	44	ASP
1	A	55	LYS
1	A	118	LYS
1	A	160	LYS
1	A	168	LYS
1	A	364	MET
1	B	35	LYS
1	B	50	LYS
1	B	51	GLU
1	B	121	ASN
1	B	168	LYS
1	B	246	LEU
1	B	311	ASN
1	B	411	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	67	GLN

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)

6 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	GLC	C	1	2	12,12,12	0.58	0	17,17,17	1.86	6 (35%)
2	BGC	C	2	2	11,11,12	0.60	0	15,15,17	1.35	3 (20%)
2	BGC	C	3	2	11,11,12	0.84	0	15,15,17	1.26	2 (13%)
2	GLC	D	1	2	12,12,12	0.46	0	17,17,17	1.35	2 (11%)
2	BGC	D	2	2	11,11,12	0.54	0	15,15,17	0.86	0
2	BGC	D	3	2	11,11,12	0.66	0	15,15,17	0.76	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
2	GLC	C	1	2	-	0/2/22/22	0/1/1/1
2	BGC	C	2	2	-	0/2/19/22	0/1/1/1
2	BGC	C	3	2	-	0/2/19/22	0/1/1/1
2	GLC	D	1	2	-	0/2/22/22	0/1/1/1
2	BGC	D	2	2	-	0/2/19/22	0/1/1/1
2	BGC	D	3	2	-	0/2/19/22	0/1/1/1

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	1	GLC	O5-C1-C2	4.17	117.73	110.28
2	C	2	BGC	C1-O5-C5	3.03	116.29	112.19
2	D	1	GLC	C1-O5-C5	2.99	119.30	113.66
2	C	1	GLC	O3-C3-C2	-2.55	104.45	110.35
2	C	1	GLC	O2-C2-C3	-2.48	104.62	110.35
2	C	3	BGC	C1-C2-C3	2.40	112.61	109.67
2	C	1	GLC	C1-O5-C5	2.34	118.07	113.66
2	C	2	BGC	C1-C2-C3	2.19	112.36	109.67
2	C	3	BGC	O4-C4-C3	-2.17	105.34	110.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	2	BGC	O4-C4-C3	-2.16	105.35	110.35
2	C	1	GLC	O1-C1-O5	-2.09	104.12	110.38
2	C	1	GLC	O2-C2-C1	2.06	113.94	109.16
2	D	1	GLC	O2-C2-C3	-2.03	105.66	110.35

There are no chirality outliers.

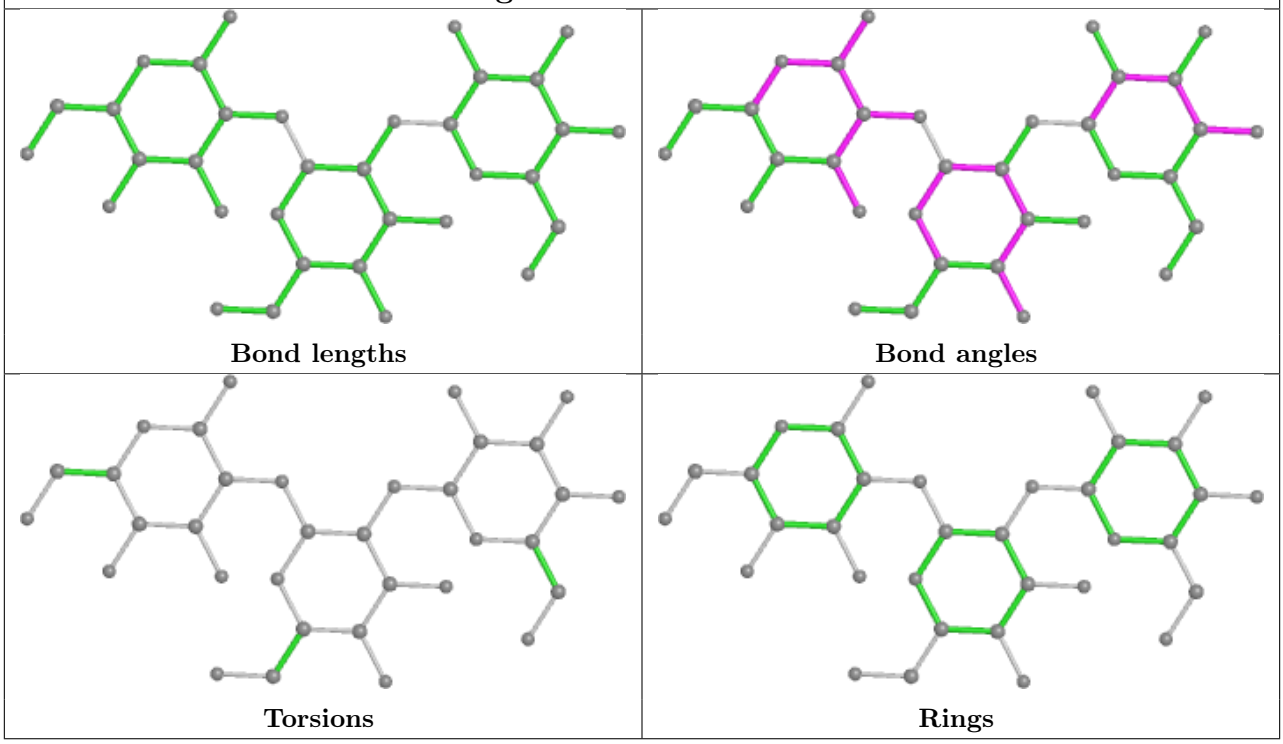
There are no torsion outliers.

There are no ring outliers.

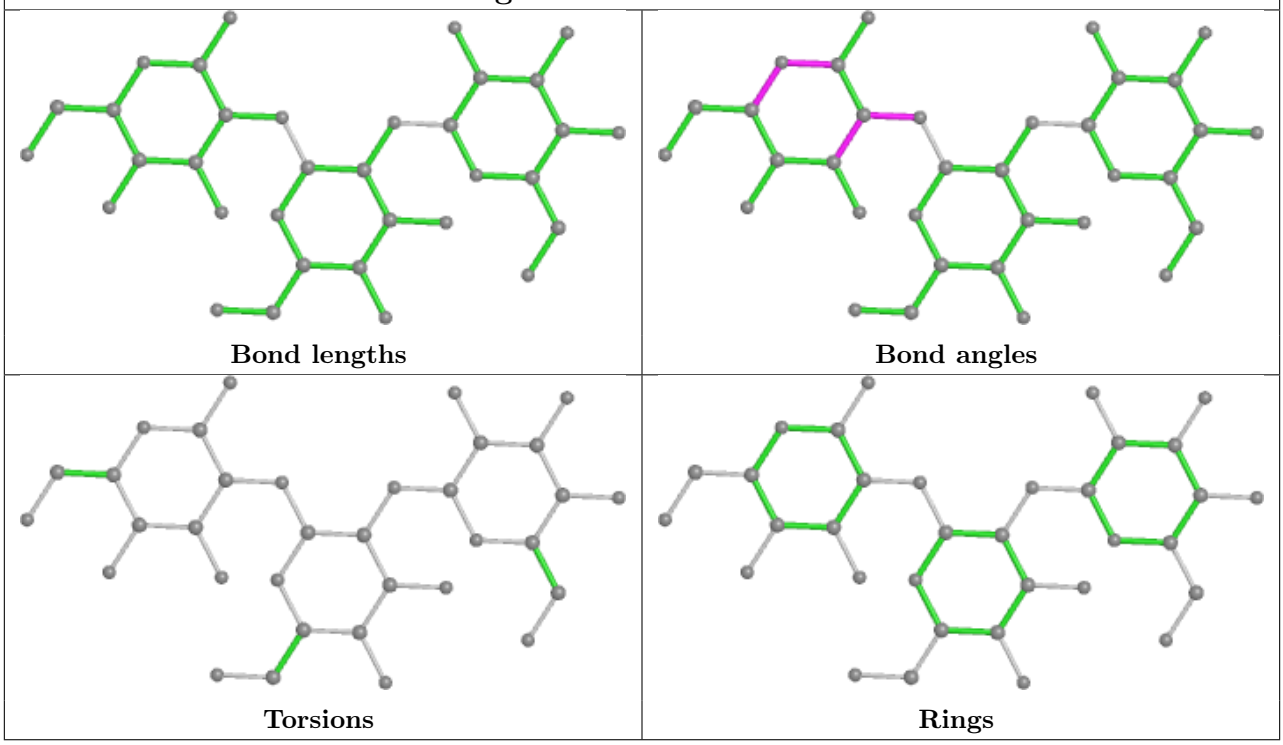
No monomer is involved in short contacts.

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

Oligosaccharide Chain C



Oligosaccharide Chain D



5.6 Ligand geometry (i)

Of 6 ligands modelled in this entry, 1 is monoatomic - leaving 5 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	$\#\|Z\| > 2$
3	MPD	A	502	-	7,7,7	0.32	0	9,10,10	0.48	0
3	MPD	A	501	-	7,7,7	1.05	0	9,10,10	1.70	2 (22%)
3	MPD	A	503	-	7,7,7	0.86	0	9,10,10	1.18	0
3	MPD	B	502	-	7,7,7	0.39	0	9,10,10	1.15	1 (11%)
3	MPD	B	501	-	7,7,7	0.59	0	9,10,10	1.14	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	MPD	A	502	-	-	1/5/5/5	-
3	MPD	A	501	-	-	3/5/5/5	-
3	MPD	A	503	-	-	1/5/5/5	-
3	MPD	B	502	-	-	3/5/5/5	-
3	MPD	B	501	-	-	1/5/5/5	-

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	501	MPD	CM-C2-C1	-3.39	103.51	110.57
3	B	502	MPD	CM-C2-C1	-2.62	105.11	110.57
3	A	501	MPD	O4-C4-C5	-2.59	98.17	109.38

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	501	MPD	O2-C2-C3-C4
3	A	501	MPD	CM-C2-C3-C4
3	A	501	MPD	C2-C3-C4-C5
3	B	502	MPD	C1-C2-C3-C4
3	B	502	MPD	O2-C2-C3-C4
3	A	503	MPD	C2-C3-C4-C5
3	B	501	MPD	C2-C3-C4-C5
3	B	502	MPD	CM-C2-C3-C4
3	A	502	MPD	O2-C2-C3-C4

There are no ring outliers.

2 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	501	MPD	3	0
3	A	503	MPD	3	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data (i)

6.1 Protein, DNA and RNA chains (i)

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	387/397 (97%)	-0.16	3 (0%)	86	88	28, 45, 87, 116	0
1	B	389/397 (97%)	0.30	14 (3%)	42	49	33, 66, 104, 135	0
All	All	776/794 (97%)	0.07	17 (2%)	62	66	28, 52, 100, 135	0

All (17) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	115	GLU	3.4
1	A	309	TYR	3.0
1	B	341	ALA	2.7
1	B	170	TRP	2.6
1	B	93	MET	2.5
1	B	78	LEU	2.5
1	B	90	VAL	2.4
1	B	309	TYR	2.2
1	A	415	LEU	2.2
1	B	91	VAL	2.2
1	B	54	GLN	2.2
1	B	319	PHE	2.1
1	B	320	MET	2.1
1	A	34	SER	2.1
1	B	322	TYR	2.1
1	B	72	ALA	2.0
1	B	159	LYS	2.0

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

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

6.3 Carbohydrates (i)

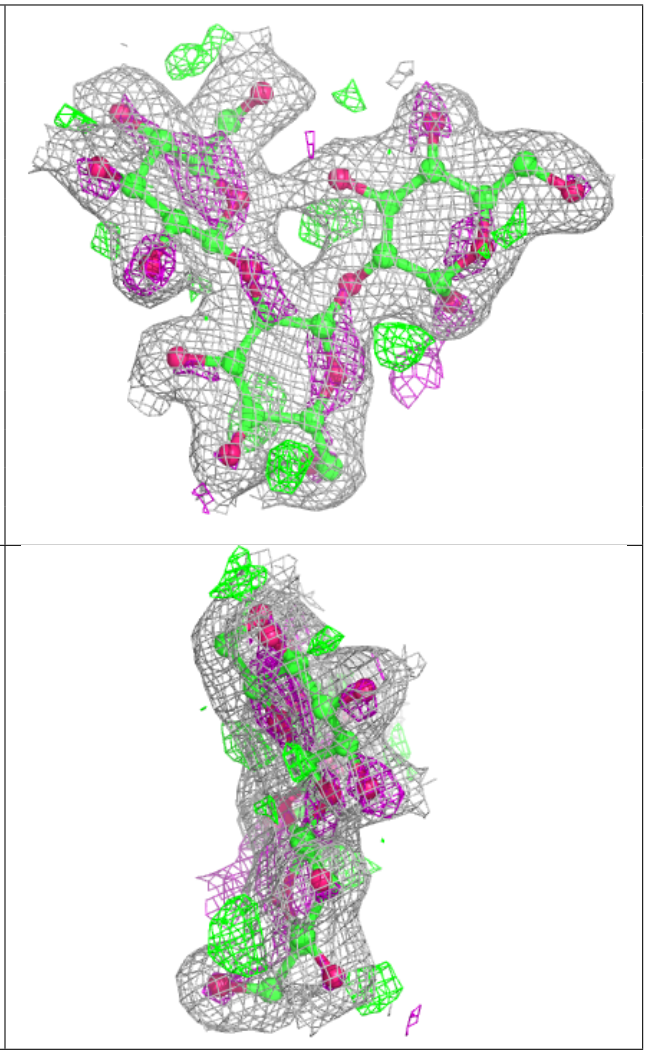
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	GLC	D	1	12/12	0.95	0.07	26,28,32,39	0
2	BGC	D	2	11/12	0.95	0.07	25,28,31,33	0
2	GLC	C	1	12/12	0.96	0.08	19,22,23,28	0
2	BGC	C	3	11/12	0.97	0.06	17,18,19,21	0
2	BGC	C	2	11/12	0.98	0.06	18,20,21,21	0
2	BGC	D	3	11/12	0.98	0.06	22,25,26,27	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.

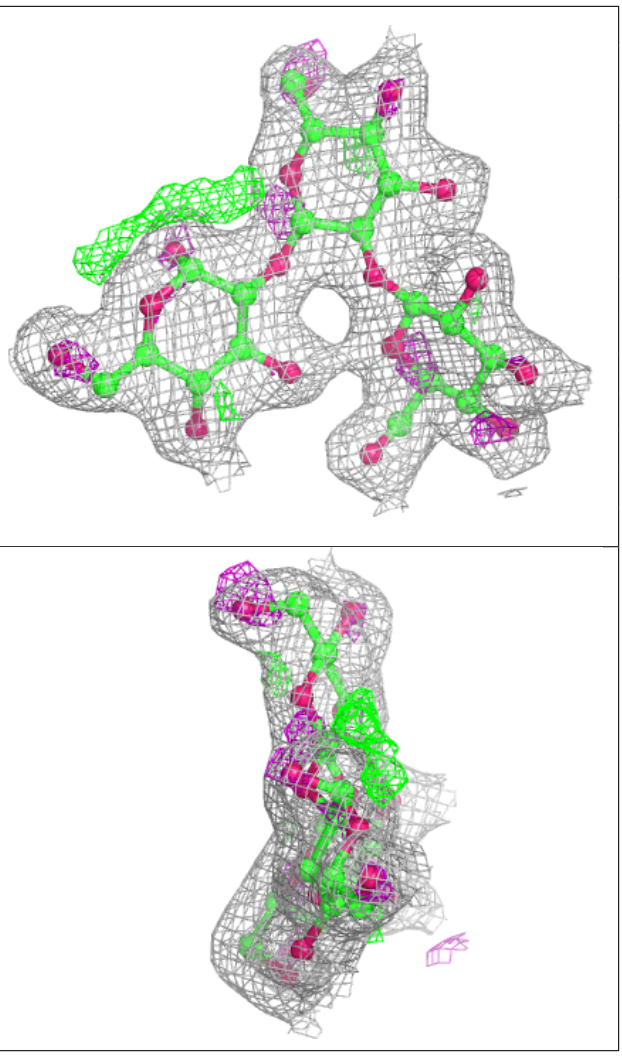
Electron density around Chain C:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative) and green (positive)



Electron density around Chain D:

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



6.4 Ligands (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	MPD	A	501	8/8	0.84	0.23	29,34,44,50	0
3	MPD	B	501	8/8	0.85	0.16	51,55,63,67	0
3	MPD	B	502	8/8	0.86	0.16	43,47,48,49	0
3	MPD	A	502	8/8	0.87	0.18	43,51,59,63	0
3	MPD	A	503	8/8	0.89	0.15	36,45,50,50	0
4	MG	A	504	1/1	0.91	0.16	33,33,33,33	0

6.5 Other polymers (i)

There are no such residues in this entry.