



# Full wwPDB X-ray Structure Validation Report ⓘ

Dec 10, 2023 – 04:27 am GMT

PDB ID : 1E40  
Title : Tris/maltotriose complex of chimaeric amylase from *B. amyloliquefaciens* and *B. licheniformis* at 2.2Å  
Authors : Brzozowski, A.M.; Lawson, D.M.; Turkenburg, J.P.; Bisgaard-Frantzen, H.; Svendsen, A.; Borchert, T.V.; Dauter, Z.; Wilson, K.S.; Davies, G.J.  
Deposited on : 2000-06-27  
Resolution : 2.20 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 : 4.02b-467  
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

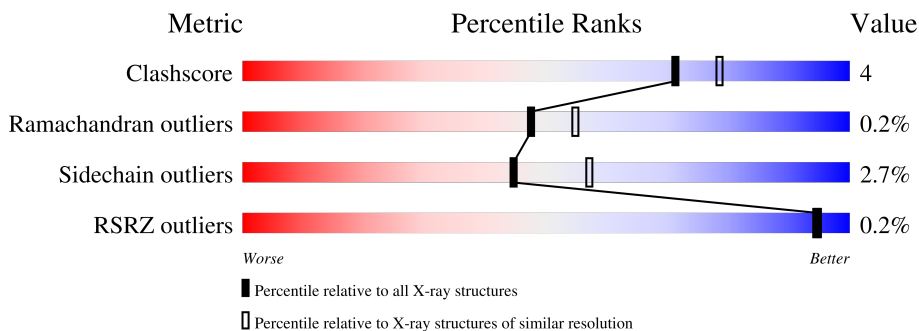
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.20 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))
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	483	
2	B	3	

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	GLC	B	1[A]	X	-	-	-
2	GLC	B	1[B]	X	-	-	-

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<b>Mol</b>	<b>Type</b>	<b>Chain</b>	<b>Res</b>	<b>Chirality</b>	<b>Geometry</b>	<b>Clashes</b>	<b>Electron density</b>
5	TRS	A	601	-	X	-	-

## 2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 4519 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 ALPHA-AMYLASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	483	3932	2490	679	757	6	9	11	0

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



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	Trace
			Total	C	O			
2	B	3	35	18	17	0	1	0

- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Ca		
3	A	4	4	4	0	0

- Molecule 4 is SODIUM ION (three-letter code: NA) (formula: Na).

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

- Molecule 5 is 2-AMINO-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (three-letter code: TRS) (formula: C<sub>4</sub>H<sub>12</sub>NO<sub>3</sub>).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
5	A	1	8	4	1	3	0	0

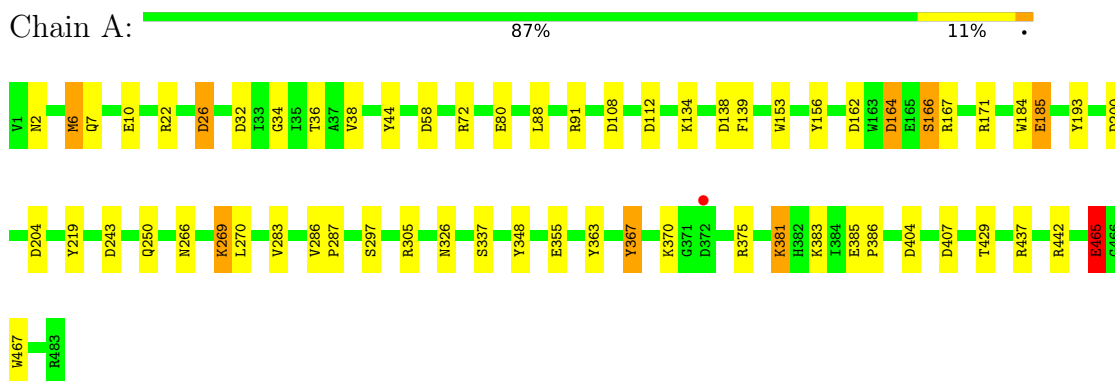
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
6	A	539	539	539	2	0

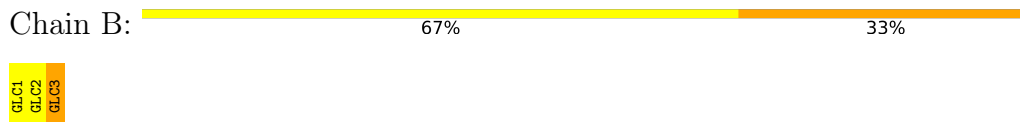
### 3 Residue-property plots

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: ALPHA-AMYLASE



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



## 4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	52.72Å 78.27Å 238.86Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.20 43.73 – 2.22	Depositor EDS
% Data completeness (in resolution range)	94.0 (20.00-2.20) 96.9 (43.73-2.22)	Depositor EDS
$R_{merge}$	0.05	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	9.07 (at 2.22Å)	Xtrriage
Refinement program	REFMAC	Depositor
R, $R_{free}$	0.130 , 0.210 0.136 , (Not available)	Depositor DCC
$R_{free}$ test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	13.0	Xtrriage
Anisotropy	0.363	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 59.3	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	4519	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	16.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.45% 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.

## 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: TRS, GLC, NA, CA

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	0.61	1/4102 (0.0%)	1.31	41/5568 (0.7%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	442	ARG	CB-CG	11.84	1.84	1.52

All (41) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	108	ASP	CB-CG-OD2	11.28	128.45	118.30
1	A	156	TYR	CB-CG-CD2	-10.71	114.58	121.00
1	A	162	ASP	CB-CG-OD1	10.16	127.44	118.30
1	A	305	ARG	NE-CZ-NH2	-9.73	115.44	120.30
1	A	167	ARG	NE-CZ-NH2	-9.48	115.56	120.30
1	A	91	ARG	NE-CZ-NH2	-9.35	115.62	120.30
1	A	442	ARG	CD-NE-CZ	9.25	136.56	123.60
1	A	91	ARG	NE-CZ-NH1	8.70	124.65	120.30
1	A	156	TYR	CB-CG-CD1	7.74	125.64	121.00
1	A	72	ARG	NE-CZ-NH1	7.67	124.14	120.30
1	A	162	ASP	CB-CG-OD2	-7.67	111.39	118.30
1	A	72	ARG	NE-CZ-NH2	-7.59	116.50	120.30
1	A	437	ARG	NE-CZ-NH1	-7.01	116.80	120.30
1	A	442	ARG	CA-CB-CG	-7.00	97.99	113.40
1	A	204	ASP	CB-CG-OD2	6.86	124.47	118.30
1	A	72	ARG	CD-NE-CZ	6.83	133.16	123.60
1	A	171	ARG	NE-CZ-NH2	6.56	123.58	120.30
1	A	465	GLU	OE1-CD-OE2	6.48	131.08	123.30
1	A	167	ARG	NE-CZ-NH1	6.43	123.52	120.30
1	A	404	ASP	CB-CG-OD1	6.31	123.98	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	367	TYR	CA-C-O	-6.20	107.08	120.10
1	A	200	ASP	CB-CG-OD2	6.20	123.88	118.30
1	A	80	GLU	OE1-CD-OE2	-5.98	116.13	123.30
1	A	243	ASP	CB-CG-OD1	5.97	123.68	118.30
1	A	348	TYR	CB-CG-CD2	5.87	124.52	121.00
1	A	355	GLU	OE1-CD-OE2	-5.61	116.57	123.30
1	A	164	ASP	CB-CG-OD2	-5.59	113.27	118.30
1	A	367	TYR	CA-C-N	5.53	127.25	116.20
1	A	26	ASP	CB-CG-OD2	5.46	123.21	118.30
1	A	22	ARG	NE-CZ-NH2	-5.42	117.59	120.30
1	A	442	ARG	NE-CZ-NH2	5.36	122.98	120.30
1	A	58	ASP	CB-CG-OD2	5.29	123.06	118.30
1	A	156	TYR	CZ-CE2-CD2	-5.26	115.06	119.80
1	A	348	TYR	CB-CG-CD1	-5.25	117.85	121.00
1	A	219	TYR	CB-CG-CD2	-5.24	117.85	121.00
1	A	138	ASP	CB-CG-OD1	5.24	123.02	118.30
1	A	167	ARG	CD-NE-CZ	5.22	130.90	123.60
1	A	219	TYR	CB-CG-CD1	5.21	124.12	121.00
1	A	437	ARG	NE-CZ-NH2	5.18	122.89	120.30
1	A	185	GLU	OE1-CD-OE2	-5.16	117.11	123.30
1	A	32	ASP	CB-CG-OD1	5.09	122.88	118.30

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3932	0	3669	26	0
2	B	35	0	23	2	0
3	A	4	0	0	0	0
4	A	1	0	0	0	0
5	A	8	0	12	0	0
6	A	539	0	0	10	0
All	All	4519	0	3704	27	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 4.

All (27) 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:367:TYR:CZ	6:A:2415:HOH:O	2.34	0.80
1:A:26:ASP:CG	6:A:2038:HOH:O	2.34	0.66
1:A:370:LYS:HG3	6:A:2008:HOH:O	1.96	0.66
1:A:26:ASP:CB	6:A:2038:HOH:O	2.46	0.62
6:A:2537:HOH:O	2:B:3:GLC:H61	2.01	0.58
1:A:7:GLN:HE22	1:A:326:ASN:HB2	1.72	0.55
1:A:184:TRP:CD2	1:A:185:GLU:HA	2.44	0.53
1:A:270[B]:LEU:HD12	1:A:283:VAL:HG21	1.91	0.51
1:A:112:ASP:OD1	1:A:134:LYS:NZ	2.40	0.50
1:A:38[A]:VAL:HG21	1:A:88:LEU:HD13	1.94	0.48
1:A:269:LYS:HE3	6:A:2336:HOH:O	2.13	0.47
1:A:184:TRP:CG	1:A:185:GLU:HA	2.49	0.47
1:A:164:ASP:OD1	1:A:166:SER:HB2	2.14	0.47
1:A:36:THR:HB	2:B:3:GLC:H62	1.96	0.47
1:A:286:VAL:HB	1:A:287:PRO:HD3	1.97	0.46
1:A:2:ASN:HA	6:A:2003:HOH:O	2.14	0.46
1:A:266:ASN:ND2	6:A:2341:HOH:O	2.39	0.46
1:A:465:GLU:HB3	1:A:467:TRP:HD1	1.80	0.46
1:A:26:ASP:HB2	6:A:2038:HOH:O	2.14	0.45
1:A:34:GLY:HA3	6:A:2441:HOH:O	2.15	0.44
1:A:375:ARG:HG2	1:A:375:ARG:HH11	1.83	0.43
1:A:7:GLN:O	1:A:363:TYR:HB2	2.19	0.43
1:A:385:GLU:N	1:A:386:PRO:CD	2.81	0.43
1:A:139:PHE:HB2	1:A:153:TRP:HB2	1.99	0.43
1:A:407:ASP:O	1:A:429:THR:HA	2.19	0.42
1:A:6:MET:CE	1:A:363:TYR:HA	2.49	0.41
1:A:381:LYS:O	1:A:385:GLU:HG3	2.21	0.41

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	492/483 (102%)	473 (96%)	18 (4%)	1 (0%)	47 55

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	337	SER

### 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	415/404 (103%)	402 (97%)	13 (3%)	40 51

All (13) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	6	MET
1	A	10	GLU
1	A	44	TYR
1	A	166	SER
1	A	193	TYR
1	A	250[A]	GLN
1	A	250[B]	GLN
1	A	269	LYS
1	A	297[A]	SER
1	A	297[B]	SER
1	A	381	LYS
1	A	383	LYS
1	A	465	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	7	GLN
1	A	25	ASN
1	A	66	GLN
1	A	132	GLN
1	A	246	GLN
1	A	333	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](#)

4 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	B	1[A]	-	12,12,12	0.83	0	17,17,17	1.82	5 (29%)
2	GLC	B	1[B]	-	12,12,12	0.79	0	17,17,17	1.75	5 (29%)
2	GLC	B	2	2	11,11,12	1.24	1 (9%)	15,15,17	2.26	2 (13%)
2	GLC	B	3	2	11,11,12	0.98	1 (9%)	15,15,17	1.89	3 (20%)

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	B	1[A]	-	1/1/5/5	0/2/22/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GLC	B	1[B]	-	1/1/5/5	0/2/22/22	0/1/1/1
2	GLC	B	2	2	-	0/2/19/22	0/1/1/1
2	GLC	B	3	2	-	2/2/19/22	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	2	GLC	O5-C1	-2.87	1.39	1.43
2	B	3	GLC	O5-C1	-2.33	1.40	1.43

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	2	GLC	C1-O5-C5	7.66	122.57	112.19
2	B	3	GLC	C1-O5-C5	5.60	119.78	112.19
2	B	1[A]	GLC	C1-O5-C5	4.17	121.53	113.66
2	B	1[B]	GLC	C1-O5-C5	4.17	121.53	113.66
2	B	1[A]	GLC	C3-C4-C5	-3.22	104.49	110.24
2	B	1[B]	GLC	C3-C4-C5	-3.22	104.49	110.24
2	B	3	GLC	C3-C4-C5	-2.71	105.41	110.24
2	B	1[A]	GLC	O3-C3-C2	2.48	116.08	110.35
2	B	1[B]	GLC	O3-C3-C2	2.48	116.08	110.35
2	B	1[A]	GLC	O4-C4-C3	2.34	115.76	110.35
2	B	1[B]	GLC	O4-C4-C3	2.34	115.76	110.35
2	B	3	GLC	O4-C4-C3	2.30	115.67	110.35
2	B	1[A]	GLC	O5-C5-C4	2.17	113.64	109.69
2	B	1[B]	GLC	O5-C5-C4	2.17	113.64	109.69
2	B	2	GLC	C3-C4-C5	-2.03	106.62	110.24

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	B	1[A]	GLC	C1
2	B	1[B]	GLC	C1

All (2) torsion outliers are listed below:

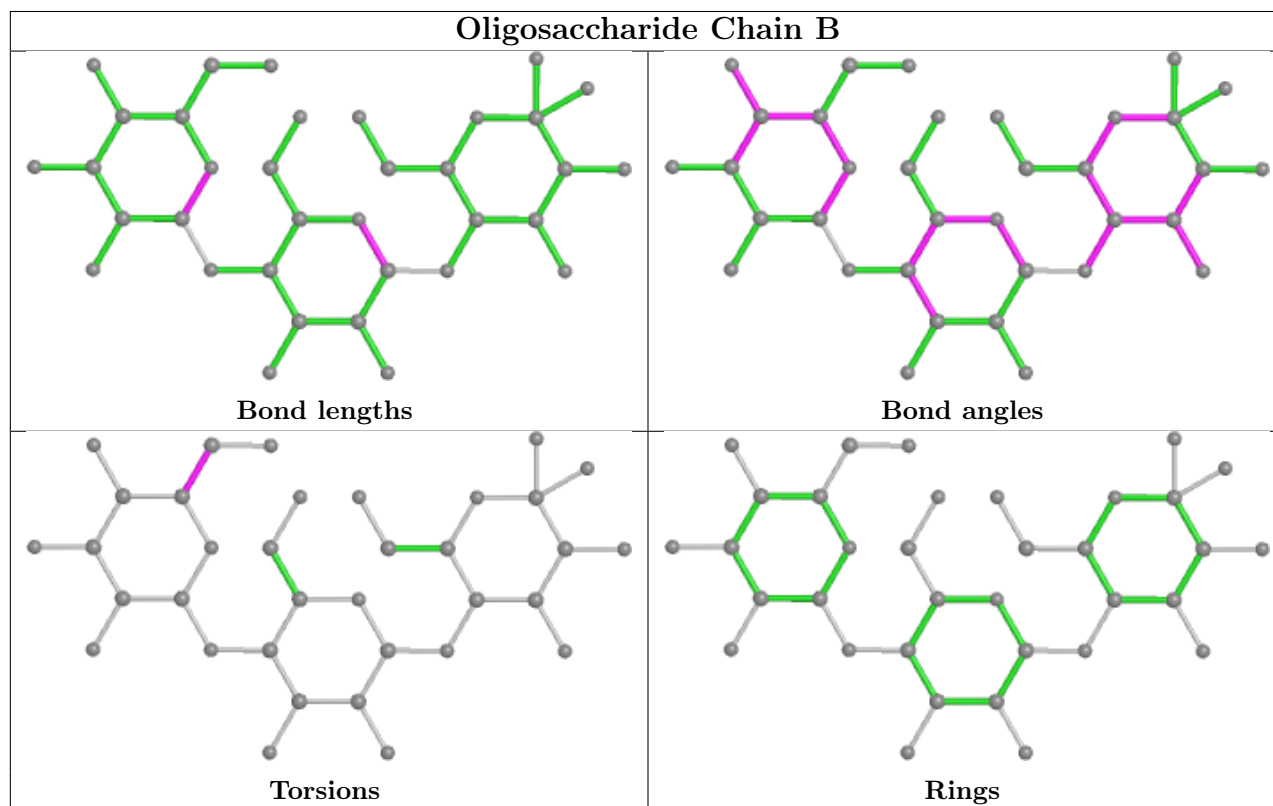
Mol	Chain	Res	Type	Atoms
2	B	3	GLC	O5-C5-C6-O6
2	B	3	GLC	C4-C5-C6-O6

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	3	GLC	2	0

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



## 5.6 Ligand geometry [i](#)

Of 6 ligands modelled in this entry, 5 are monoatomic - leaving 1 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	$\# Z  > 2$
5	TRS	A	601	-	7,7,7	1.85	3 (42%)	9,9,9	2.20	5 (55%)

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	TRS	A	601	-	-	5/9/9/9	-

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	601	TRS	C-N	3.03	1.59	1.49
5	A	601	TRS	O2-C2	2.92	1.52	1.42
5	A	601	TRS	C3-C	-2.07	1.46	1.53

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	601	TRS	O3-C3-C	-3.20	100.87	111.00
5	A	601	TRS	C2-C-C1	-3.14	101.08	110.81
5	A	601	TRS	C3-C-C2	2.40	118.26	110.81
5	A	601	TRS	C3-C-C1	2.19	117.59	110.81
5	A	601	TRS	O2-C2-C	-2.02	104.58	111.00

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	601	TRS	C3-C-C1-O1
5	A	601	TRS	N-C-C1-O1
5	A	601	TRS	C1-C-C2-O2
5	A	601	TRS	C2-C-C1-O1
5	A	601	TRS	C3-C-C2-O2

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

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 [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, 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	A	483/483 (100%)	-0.99	1 (0%) 95   94	6, 12, 24, 44	2 (0%)

All (1) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	372	ASP	2.2

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

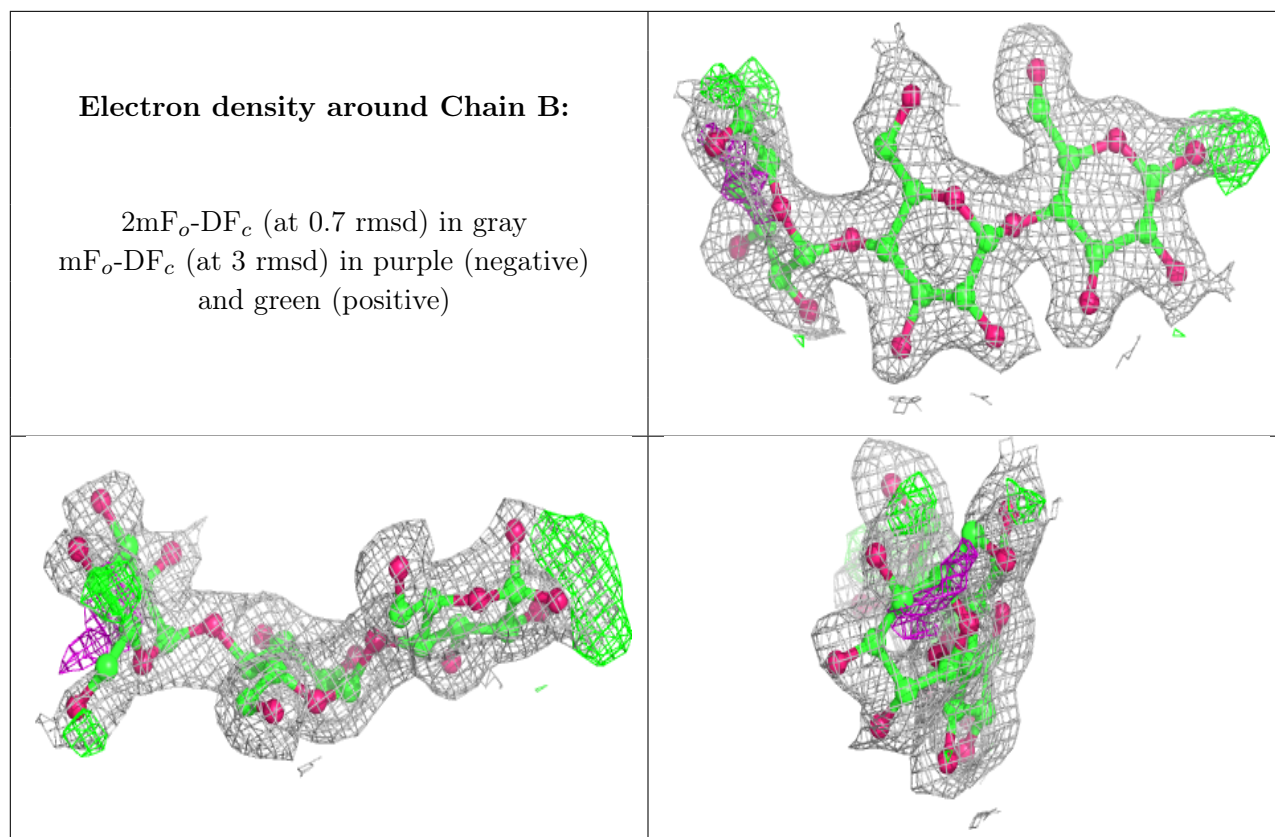
There are no non-standard protein/DNA/RNA residues in this entry.

### 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<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
2	GLC	B	3	11/12	0.72	0.25	40,42,44,44	0
2	GLC	B	1[B]	12/12	0.89	0.11	27,28,28,29	1
2	GLC	B	1[A]	12/12	0.89	0.11	27,28,29,29	1
2	GLC	B	2	11/12	0.93	0.10	24,29,31,35	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.



## 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, 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	TRS	A	601	8/8	0.94	0.09	13,22,23,23	0
4	NA	A	505	1/1	0.98	0.08	9,9,9,9	0
3	CA	A	502	1/1	0.99	0.05	8,8,8,8	0
3	CA	A	503	1/1	0.99	0.07	17,17,17,17	0
3	CA	A	501	1/1	1.00	0.04	8,8,8,8	0
3	CA	A	504	1/1	1.00	0.04	14,14,14,14	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.