WORLDWIDE PDB PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report ⓘ

Nov 2, 2021 – 09:32 AM EDT

PDB ID	:	2AZD
Title	:	X-Ray studies on Maltodextrin Phosphorylase (MalP) Complexes: recognition of substrates and CATALYTIC mechanism of phosphorylase family
Authors	:	Geremia, S.; Campagnolo, M.
Deposited on	:	2005-09-10
Resolution	:	2.16 Å(reported)

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	:	2.23.2
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)	:	2.23.2

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 2.16 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.
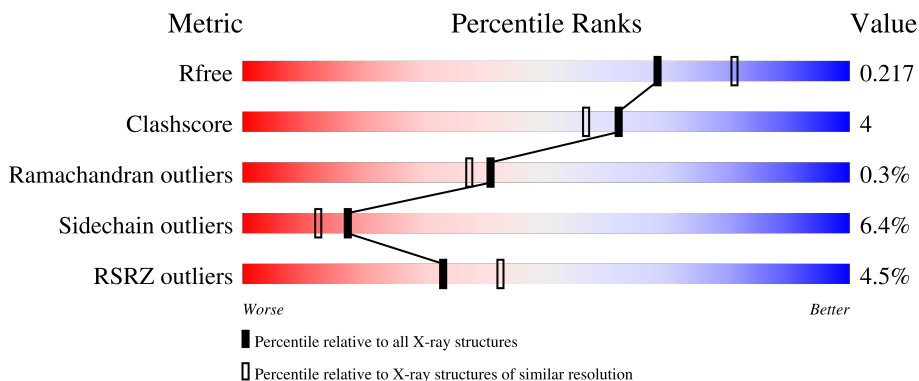
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1479 (2.16-2.16)
Clashscore	141614	1585 (2.16-2.16)
Ramachandran outliers	138981	1560 (2.16-2.16)
Sidechain outliers	138945	1559 (2.16-2.16)
RSRZ outliers	127900	1456 (2.16-2.16)

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	796	4% / 86% / 11% / ·
1	B	796	5% / 82% / 16% / ·
2	C	4	75% / 25%
2	D	4	50% / 50%

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	D	2	-	-	-	X
3	VO4	A	999	-	-	X	-
3	VO4	B	1999	-	-	X	-

2   Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 13556 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 Maltodextrin phosphorylase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	796	Total 6389	C 4079	N 1128	O 1162	S 20	0	0	0
1	B	796	Total 6389	C 4079	N 1128	O 1162	S 20	0	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	261	ALA	HIS	engineered mutation	UNP P00490
A	262	PHE	THR	engineered mutation	UNP P00490
A	263	GLU	ALA	engineered mutation	UNP P00490
B	261	ALA	HIS	engineered mutation	UNP P00490
B	262	PHE	THR	engineered mutation	UNP P00490
B	263	GLU	ALA	engineered mutation	UNP P00490

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

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	Trace
2	C	4	Total 45	C 24	O 21	0	0	0
2	D	4	Total 45	C 24	O 21	0	0	0

- Molecule 3 is VANADATE ION (three-letter code: VO4) (formula: O_4V).

VO4

O3

O⁻

O2 O⁻ — V = O O1

V

O⁻

O4
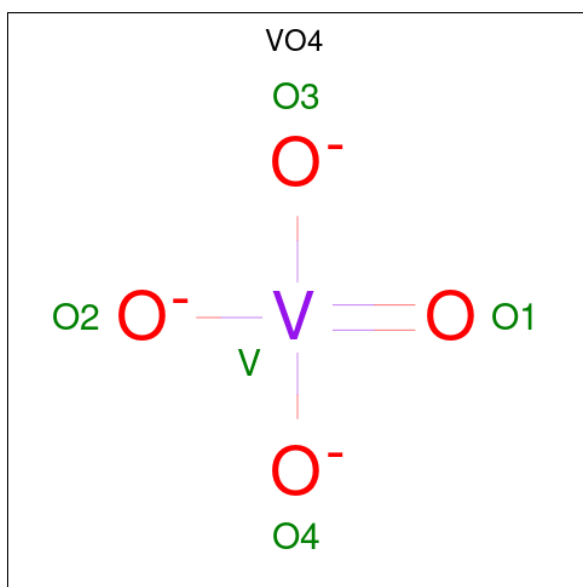
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	O 4	V 1	0	0
			5				
3	B	1	Total	O 4	V 1	0	0
			5				

- Molecule 4 is PYRIDOXAL-5'-PHOSPHATE (three-letter code: PLP) (formula: $C_8H_{10}NO_6P$).

PLP

N1

N

C6   C2A

C2

C3

C5A C5

O3P   C4 OH

HO   O3

P   O O4P C4A

O   O4A

O1P   OH

O2P
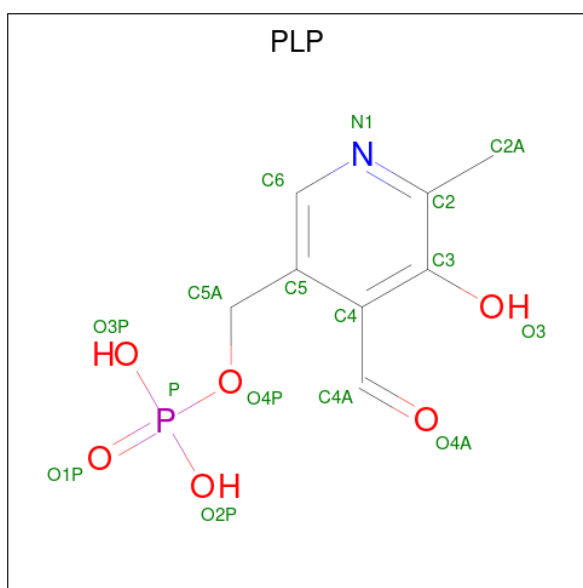
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	N	O	P	0	0
			15	8	1	5	1		
4	B	1	Total	C	N	O	P	0	0
			15	8	1	5	1		

W O R L D W I D E

wwPDB

PROTEIN DATA BANK

- Molecule 5 is 2-AMINO-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (three-letter code: TRS) (formula: $C_4H_{12}NO_3$).
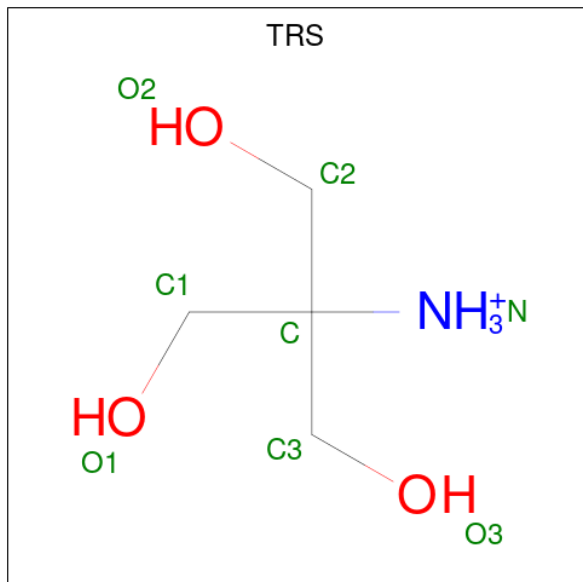
TRS

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

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	339	Total	O	0	0
			339	339		
6	B	293	Total	O	0	0
			293	293		

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: Maltodextrin phosphorylase
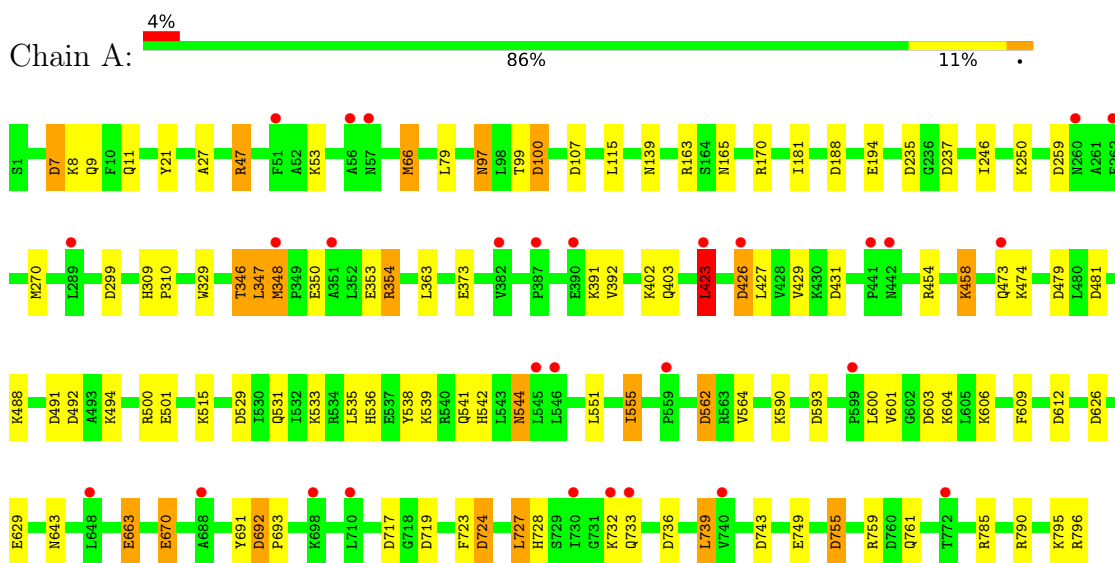
- Molecule 1: Maltodextrin phosphorylase
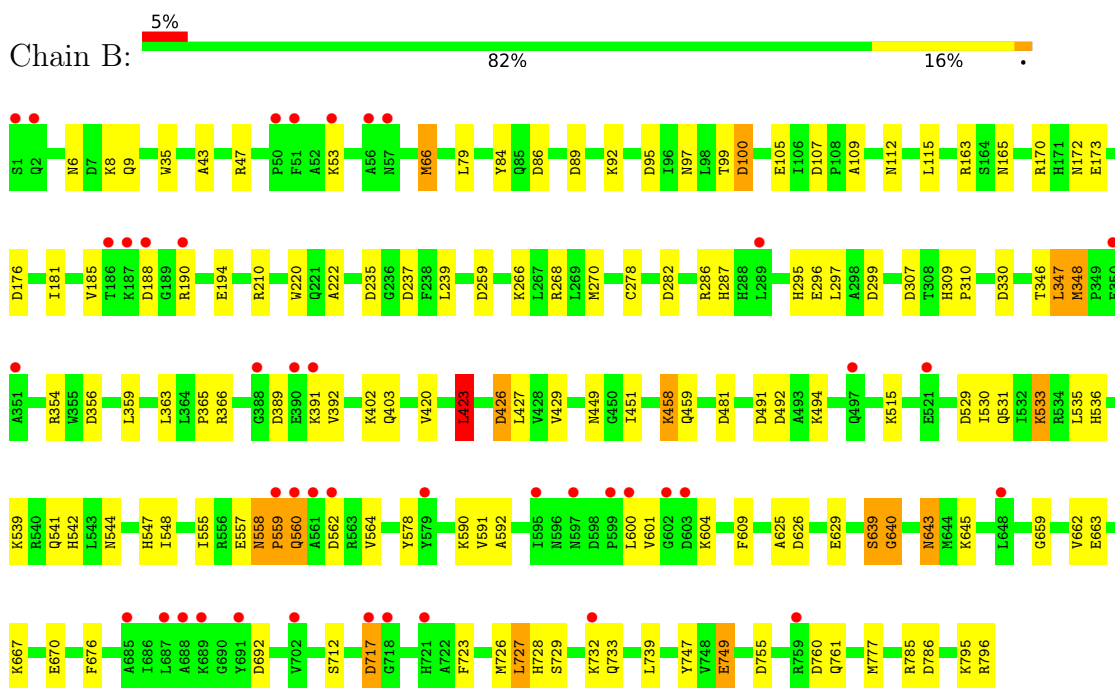
• Molecule 2: alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose-(1-4)-beta-D-glucopyranose

Chain C:

75%   25%

BGC1 GLC2 GLC3 GLC4

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

Chain D:

50%   50%

BGC1 GLC2 GLC3 GLC4

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	76.78Å 105.89Å 220.23Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	6.83 – 2.16 21.71 – 2.16	Depositor EDS
% Data completeness (in resolution range)	91.5 (6.83-2.16) 91.7 (21.71-2.16)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.70 (at 2.15Å)	Xtriage
Refinement program	REFMAC 5.1.24	Depositor
R, R_{free}	0.205 , 0.250 0.215 , 0.217	Depositor DCC
R_{free} test set	4477 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å^2)	31.8	Xtriage
Anisotropy	0.065	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 53.4	EDS
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	13556	wwPDB-VP
Average B, all atoms (Å^2)	39.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.98% 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: TRS, BGC, PLP, VO4, GLC

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	1.15	9/6539 (0.1%)	1.01	33/8865 (0.4%)
1	B	1.17	10/6539 (0.2%)	1.04	31/8865 (0.3%)
All	All	1.16	19/13078 (0.1%)	1.03	64/17730 (0.4%)

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	1
All	All	0	2

The worst 5 of 19 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	761	GLN	CG-CD	7.97	1.69	1.51
1	B	173	GLU	CD-OE2	6.89	1.33	1.25
1	A	474	LYS	CD-CE	6.59	1.67	1.51
1	B	662	VAL	CA-CB	6.37	1.68	1.54
1	B	420	VAL	CB-CG2	6.36	1.66	1.52

The worst 5 of 64 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	299	ASP	CB-CG-OD2	8.70	126.13	118.30
1	B	692	ASP	CB-CG-OD2	8.70	126.13	118.30
1	B	626	ASP	CB-CG-OD2	8.15	125.64	118.30
1	B	86	ASP	CB-CG-OD2	7.46	125.01	118.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	176	ASP	CB-CG-OD1	7.22	124.80	118.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	562	ASP	Peptide
1	B	559	PRO	Peptide

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	6389	0	6332	41	0
1	B	6389	0	6333	58	0
2	C	45	0	39	3	0
2	D	45	0	39	4	0
3	A	5	0	0	7	0
3	B	5	0	0	8	0
4	A	15	0	6	0	0
4	B	15	0	7	1	0
5	A	8	0	12	1	0
5	B	8	0	12	1	0
6	A	339	0	0	9	0
6	B	293	0	0	6	0
All	All	13556	0	12780	112	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.

The worst 5 of 112 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:B:348:MET:SD	1:B:348:MET:CE	2.02	1.47
1:B:557:GLU:O	1:B:558:ASN:HB2	1.76	0.86

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:347:LEU:O	1:B:348:MET:HB2	1.74	0.85
1:A:347:LEU:O	1:A:348:MET:HB2	1.82	0.77
1:B:295:HIS:CD2	1:B:296:GLU:HG3	2.22	0.74

There are no symmetry-related clashes.

5.3   Torsion angles ⓘ

5.3.1   Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	794/796 (100%)	772 (97%)	21 (3%)	1 (0%)	51	53
1	B	794/796 (100%)	758 (96%)	32 (4%)	4 (0%)	29	22
All	All	1588/1592 (100%)	1530 (96%)	53 (3%)	5 (0%)	41	37

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	449	ASN
1	B	558	ASN
1	B	348	MET
1	A	348	MET
1	B	639	SER

5.3.2   Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	667/667 (100%)	626 (94%)	41 (6%)	18	14
1	B	667/667 (100%)	623 (93%)	44 (7%)	16	11
All	All	1334/1334 (100%)	1249 (94%)	85 (6%)	17	12

5 of 85 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	427	LEU
1	B	609	PHE
1	B	458	LYS
1	B	544	ASN
1	B	712	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 27 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	97	ASN
1	B	178	GLN
1	B	531	GLN
1	B	139	ASN
1	B	221	GLN

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5   Carbohydrates ⓘ

8 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	0.69	0	17,17,17	1.42	3 (17%)
2	GLC	C	2	2	11,11,12	0.86	0	15,15,17	1.77	4 (26%)
2	GLC	C	3	2	11,11,12	0.77	0	15,15,17	1.16	1 (6%)
2	GLC	C	4	2	11,11,12	0.96	1 (9%)	15,15,17	2.36	4 (26%)
2	BGC	D	1	2	12,12,12	0.64	0	17,17,17	1.70	7 (41%)
2	GLC	D	2	2	11,11,12	1.14	1 (9%)	15,15,17	1.80	4 (26%)
2	GLC	D	3	2	11,11,12	0.77	0	15,15,17	1.43	3 (20%)
2	GLC	D	4	2	11,11,12	0.91	1 (9%)	15,15,17	2.30	5 (33%)

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	-	0/2/22/22	0/1/1/1
2	GLC	C	2	2	-	2/2/19/22	0/1/1/1
2	GLC	C	3	2	-	0/2/19/22	0/1/1/1
2	GLC	C	4	2	-	2/2/19/22	0/1/1/1
2	BGC	D	1	2	-	0/2/22/22	0/1/1/1
2	GLC	D	2	2	-	2/2/19/22	0/1/1/1
2	GLC	D	3	2	-	0/2/19/22	0/1/1/1
2	GLC	D	4	2	-	2/2/19/22	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	4	GLC	C2-C3	2.58	1.56	1.52
2	D	2	GLC	C4-C5	2.34	1.58	1.53
2	D	4	GLC	C2-C3	2.03	1.55	1.52

The worst 5 of 31 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	4	GLC	C1-O5-C5	6.79	121.40	112.19
2	C	4	GLC	C1-O5-C5	6.59	121.12	112.19

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	2	GLC	C1-O5-C5	4.86	118.78	112.19
2	D	2	GLC	C1-O5-C5	4.78	118.67	112.19
2	C	4	GLC	O2-C2-C3	3.96	118.07	110.14

There are no chirality outliers.

5 of 8 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	4	GLC	O5-C5-C6-O6
2	C	4	GLC	O5-C5-C6-O6
2	C	4	GLC	C4-C5-C6-O6
2	D	4	GLC	C4-C5-C6-O6
2	C	2	GLC	C4-C5-C6-O6

There are no ring outliers.

3 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	3	GLC	1	0
2	D	4	GLC	3	0
2	C	4	GLC	3	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.

Oligosaccharide Chain C

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain D

Bond lengths

Bond angles

Torsions

Rings
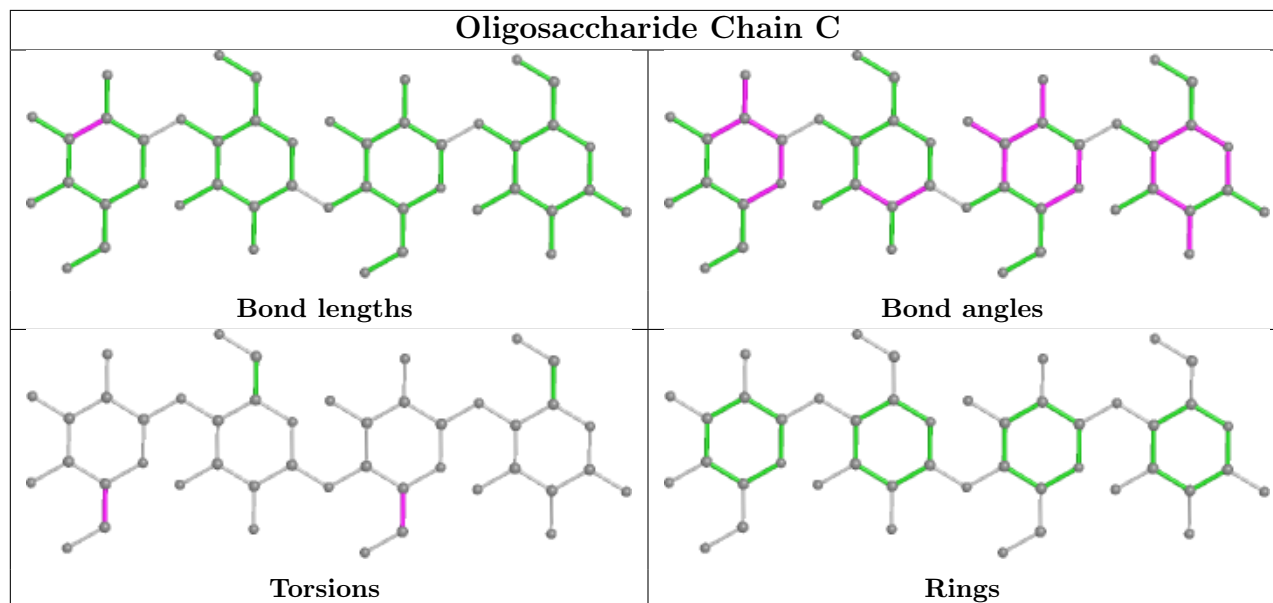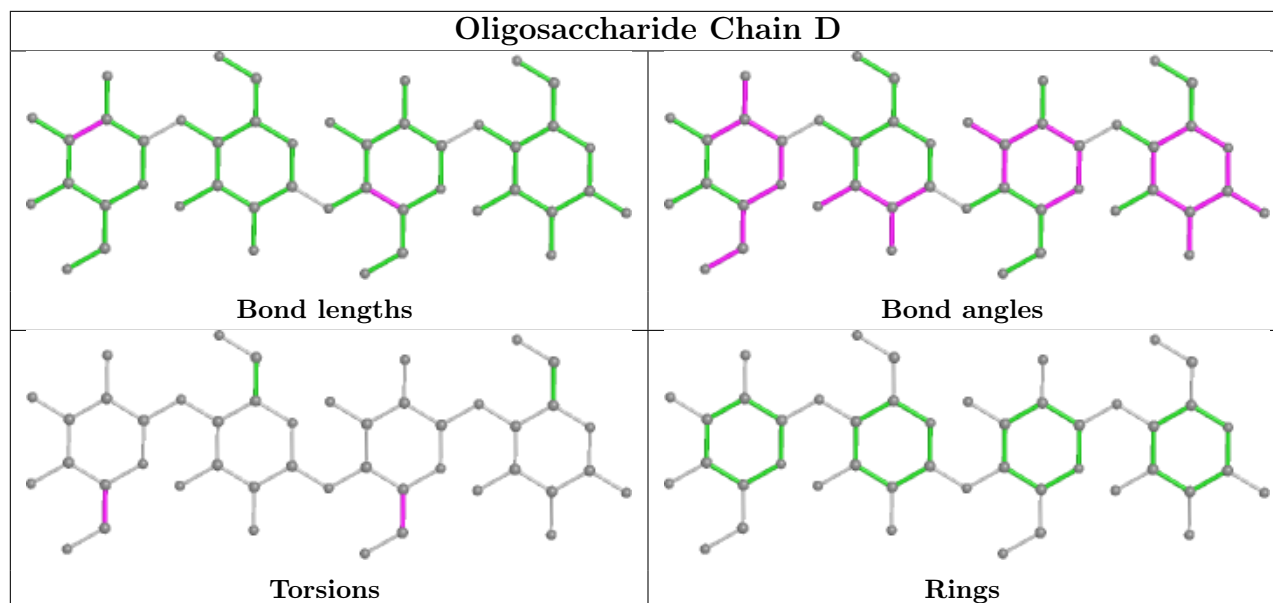
5.6 Ligand geometry ⓘ

6 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	#$|Z| > 2$
5	TRS	A	990	-	7,7,7	0.73	0	9,9,9	1.40	1 (11%)
5	TRS	B	1990	-	7,7,7	0.45	0	9,9,9	1.53	2 (22%)
4	PLP	B	900	1	15,15,16	1.26	1 (6%)	20,22,23	1.24	2 (10%)
3	VO4	B	1999	-	1,4,4	2.24	1 (100%)	-		
3	VO4	A	999	-	1,4,4	2.18	1 (100%)	-		
4	PLP	A	900	1	15,15,16	1.30	3 (20%)	20,22,23	1.56	4 (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
4	PLP	A	900	1	-	1/6/6/8	0/1/1/1

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	PLP	B	900	1	-	0/6/6/8	0/1/1/1
5	TRS	B	1990	-	-	2/9/9/9	-
5	TRS	A	990	-	-	2/9/9/9	-

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	900	PLP	C2-N1	2.76	1.39	1.33
4	B	900	PLP	C2-N1	2.62	1.38	1.33
4	A	900	PLP	C6-N1	2.56	1.39	1.34
3	B	1999	VO4	O1-V	-2.24	1.49	1.63
4	A	900	PLP	O3-C3	-2.19	1.31	1.37

The worst 5 of 9 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	900	PLP	C3-C4-C5	3.19	122.19	118.74
5	B	1990	TRS	O3-C3-C	-3.10	101.18	111.00
4	A	900	PLP	C4A-C4-C3	-2.85	115.67	120.50
4	A	900	PLP	C4A-C4-C5	2.81	123.83	120.94
4	A	900	PLP	C2A-C2-N1	2.71	122.95	117.67

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	990	TRS	N-C-C1-O1
5	B	1990	TRS	N-C-C1-O1
4	A	900	PLP	C6-C5-C5A-O4P
5	B	1990	TRS	C3-C-C1-O1
5	A	990	TRS	C3-C-C1-O1

There are no ring outliers.

5 monomers are involved in 17 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	990	TRS	1	0
5	B	1990	TRS	1	0
4	B	900	PLP	1	0
3	B	1999	VO4	8	0

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	999	VO4	7	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, 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	796/796 (100%)	0.08	29 (3%)	42	51	22, 37, 59, 74	0
1	B	796/796 (100%)	0.16	42 (5%)	26	35	22, 37, 60, 76	0
All	All	1592/1592 (100%)	0.12	71 (4%)	33	42	22, 37, 60, 76	0

The worst 5 of 71 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	559	PRO	5.4
1	B	562	ASP	5.1
1	B	560	GLN	4.9
1	B	702	VAL	4.6
1	B	561	ALA	4.5

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

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

6.3　Carbohydrates ⓘ

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.
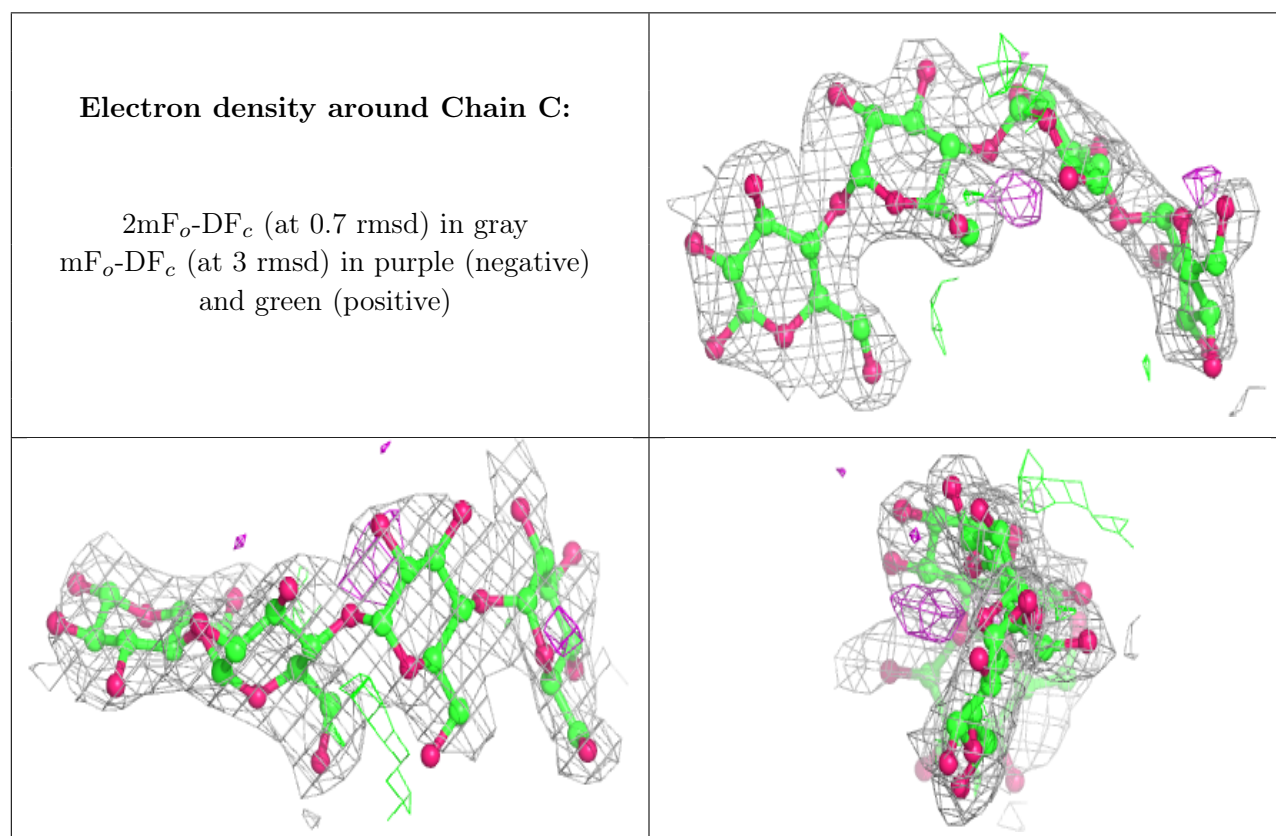
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	GLC	D	4	11/12	0.51	0.39	73,77,79,79	0
2	GLC	D	2	11/12	0.56	0.41	74,76,77,77	0
2	GLC	C	2	11/12	0.56	0.24	73,76,77,77	0
2	GLC	C	4	11/12	0.68	0.28	73,77,78,78	0
2	BGC	D	1	12/12	0.80	0.38	77,79,80,81	0

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	GLC	D	3	11/12	0.82	0.18	71,73,75,77	0
2	GLC	C	3	11/12	0.84	0.16	70,73,75,77	0
2	BGC	C	1	12/12	0.84	0.19	77,79,79,81	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.
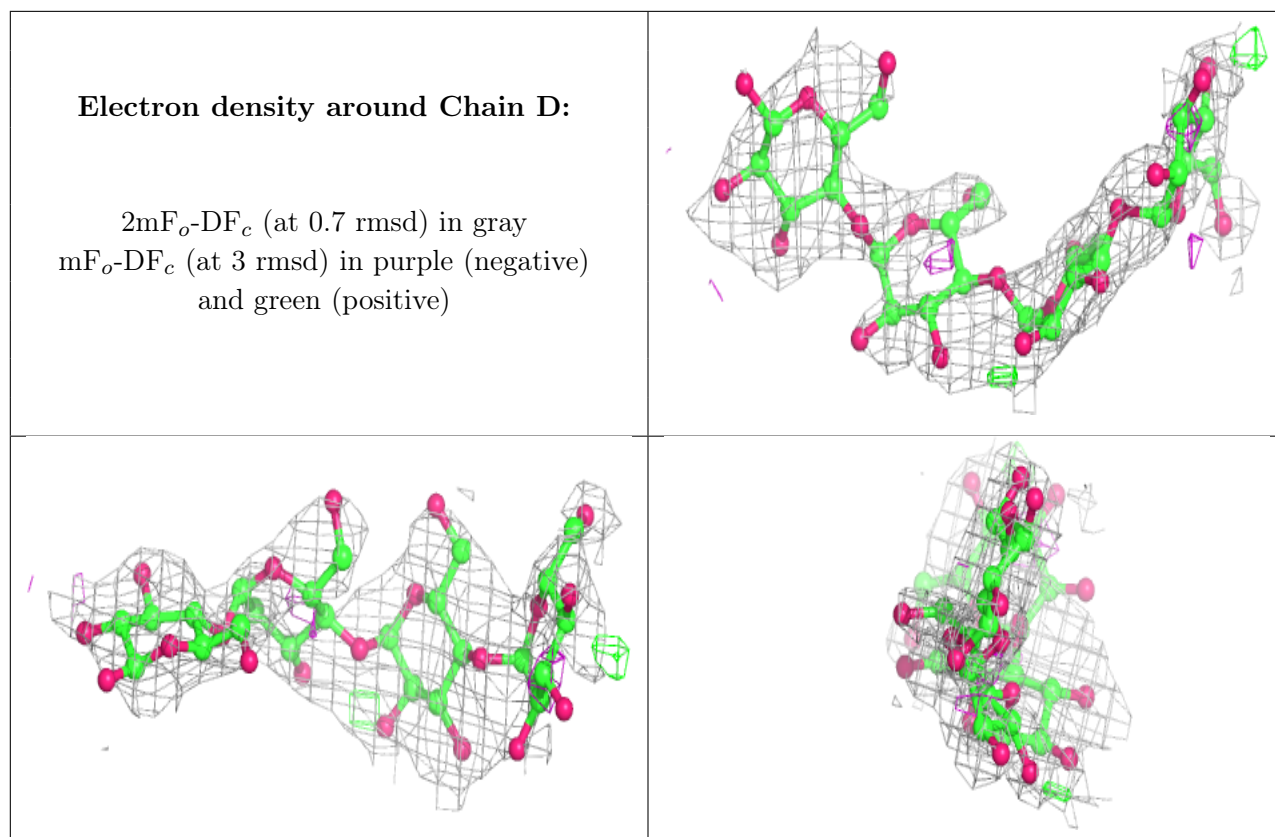
Electron density around Chain C:

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 ⓘ

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($Å^2$)	Q<0.9
5	TRS	A	990	8/8	0.87	0.19	47,49,50,55	0
3	VO4	B	1999	5/5	0.89	0.29	75,76,77,83	0
5	TRS	B	1990	8/8	0.89	0.17	48,49,50,53	0
3	VO4	A	999	5/5	0.91	0.23	75,75,77,82	0
4	PLP	B	900	15/16	0.96	0.09	25,29,40,42	0
4	PLP	A	900	15/16	0.97	0.08	20,26,36,36	0

6.5 Other polymers ⓘ

There are no such residues in this entry.