



# Full wwPDB X-ray Structure Validation Report ⓘ

Nov 2, 2024 – 12:12 PM EDT

PDB ID : 6D3U  
Title : Complex structure of Ulvan lyase from Nonlaben Ulvanivorans- NLR48  
Authors : Ulaganathan, T.; Cygler, M.  
Deposited on : 2018-04-16  
Resolution : 2.21 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 : 2022.3.0, CSD as543be (2022)  
Xtrriage (Phenix) : 1.20.1  
EDS : 3.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.003 (Gargrove)  
Density-Fitness : 1.0.11  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.39

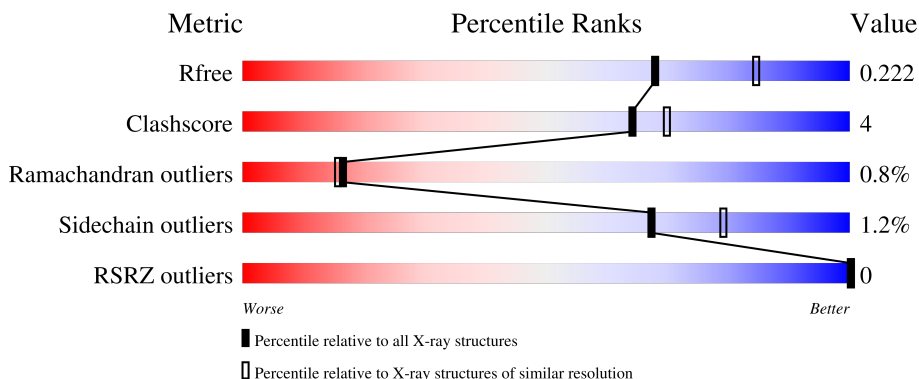
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.21 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))
$R_{free}$	164625	7167 (2.24-2.20)
Clashscore	180529	8096 (2.24-2.20)
Ramachandran outliers	177936	8010 (2.24-2.20)
Sidechain outliers	177891	8011 (2.24-2.20)
RSRZ outliers	164620	7166 (2.24-2.20)

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	303	 78% 7% 14%
1	B	303	 76% 10% 14%
2	C	4	 50% 50%
2	D	4	 50% 50%

## 2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 4467 atoms, of which 68 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.

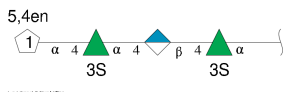
- Molecule 1 is a protein called Ulvan lyase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	260	Total	C	N	O	S	0	4	0
			2029	1248	366	408	7			
1	B	260	Total	C	N	O	S	0	4	0
			2028	1246	366	409	7			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	162	MET	LYS	engineered mutation	UNP A0A084JZF2
B	162	MET	LYS	engineered mutation	UNP A0A084JZF2

- Molecule 2 is an oligosaccharide called 4-deoxy-alpha-L-threo-hex-4-enopyranuronic acid-(1-4)-3-O-sulfo-alpha-L-rhamnopyranose-(1-4)-beta-D-glucopyranuronic acid-(1-4)-3-O-sulfo-alpha-L-rhamnopyranose.



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	H	O	S			
2	C	4	Total	C	H	O	S	0	0	0
			83	24	31	26	2			
2	D	4	Total	C	H	O	S	0	0	0
			83	24	31	26	2			

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

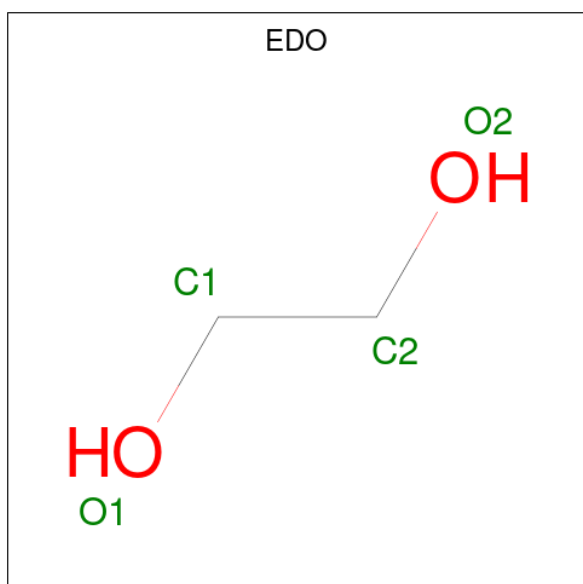
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Ca	0	0
			1	1		
3	B	1	Total	Ca	0	0
			1	1		

- Molecule 4 is PHOSPHATE ION (three-letter code: PO4) (formula:  $O_4P$ ).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total O P 5 4 1	0	0
4	A	1	Total O P 5 4 1	0	0
4	B	1	Total O P 5 4 1	0	0
4	B	1	Total O P 5 4 1	0	0

- Molecule 5 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula:  $C_2H_6O_2$ ).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	B	1	Total	C	H	O	0	0
			10	2	6	2		

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	103	Total	O	0	0
			103	103		
6	B	109	Total	O	0	0
			109	109		



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	82.46Å 102.66Å 103.03Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	46.05 – 2.21 46.05 – 2.21	Depositor EDS
% Data completeness (in resolution range)	99.8 (46.05-2.21) 99.3 (46.05-2.21)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.10	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.31 (at 2.20Å)	Xtrriage
Refinement program	PHENIX (1.13_2998: ???)	Depositor
R, $R_{free}$	0.190 , 0.220 0.194 , 0.222	Depositor DCC
$R_{free}$ test set	42394 reflections (4.50%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	49.6	Xtrriage
Anisotropy	0.118	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 28.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.45$ , $\langle L^2 \rangle = 0.28$	Xtrriage
Estimated twinning fraction	0.417 for -h,l,k	Xtrriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	4467	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	54.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.11% 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: PO4, 83Y, BDP, GCD, EDO, 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	0.45	0/2081	0.65	0/2819
1	B	0.45	0/2079	0.65	0/2816
All	All	0.45	0/4160	0.65	0/5635

There are no bond length outliers.

There are no bond angle outliers.

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	2029	0	1887	12	0
1	B	2028	0	1878	15	0
2	C	52	31	11	1	0
2	D	52	31	11	2	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	A	10	0	0	0	0
4	B	10	0	0	0	0
5	B	4	6	6	1	0
6	A	103	0	0	1	0
6	B	109	0	0	1	0
All	All	4399	68	3793	30	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 (30) 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:44:GLN:C	1:B:91:ILE:HD11	2.06	0.76
1:A:248:THR:HG21	6:A:589:HOH:O	1.89	0.71
1:A:55[B]:CYS:HB3	1:A:82:CYS:SG	2.32	0.69
1:A:255:LYS:HG2	1:A:260:GLU:HG2	1.78	0.65
1:B:59:GLY:O	1:B:82:CYS:HA	1.98	0.62
2:D:3:83Y:O4	2:D:4:GCD:O3	2.18	0.60
1:B:281:TYR:O	1:B:282:ARG:HB3	2.06	0.54
1:B:204:GLN:HG2	1:B:217:THR:O	2.09	0.52
1:A:59:GLY:O	1:A:82:CYS:HA	2.09	0.52
2:D:3:83Y:C6	2:D:4:GCD:C5	2.86	0.52
1:A:281:TYR:O	1:A:282:ARG:HB3	2.11	0.50
1:B:89:SER:HB3	1:B:98:ILE:HD11	1.93	0.50
1:B:44:GLN:O	1:B:91:ILE:HD11	2.13	0.48
1:B:236:VAL:HG12	1:B:274:SER:HB3	1.97	0.47
1:A:141:ARG:HB2	1:A:291:ARG:HB2	1.96	0.46
2:C:3:83Y:O4	2:C:4:GCD:O3	2.19	0.46
1:A:160:GLN:HG3	1:A:162:MET:CE	2.46	0.45
1:B:249:LEU:HD13	1:B:264:ASN:HD21	1.83	0.44
1:B:221:LEU:O	1:B:222:LYS:HB3	2.18	0.43
1:A:237:GLY:O	1:A:250:HIS:HD2	2.02	0.43
1:A:272:ILE:HD13	1:B:172:PRO:HG2	1.99	0.43
1:B:55[B]:CYS:HB3	1:B:82:CYS:SG	2.59	0.43
1:B:45:THR:N	1:B:91:ILE:HD11	2.33	0.43
1:A:178:LEU:HD12	1:A:178:LEU:N	2.34	0.42
1:A:89:SER:HB3	1:A:98:ILE:HD11	2.00	0.41
1:B:182:HIS:O	1:B:198:PHE:HA	2.20	0.41
1:B:237:GLY:O	1:B:250:HIS:HD2	2.02	0.41
5:B:408:EDO:H22	6:B:595:HOH:O	2.20	0.41
1:B:135:ARG:HD3	1:B:137:ARG:CZ	2.51	0.41
1:A:204:GLN:HG2	1:A:217:THR:O	2.21	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	262/303 (86%)	249 (95%)	11 (4%)	2 (1%)	16	16
1	B	262/303 (86%)	251 (96%)	9 (3%)	2 (1%)	16	16
All	All	524/606 (86%)	500 (95%)	20 (4%)	4 (1%)	16	16

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	245	PRO
1	A	245	PRO
1	B	283	VAL
1	A	283	VAL

### 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	214/252 (85%)	211 (99%)	3 (1%)	62	75
1	B	213/252 (84%)	211 (99%)	2 (1%)	75	85
All	All	427/504 (85%)	422 (99%)	5 (1%)	67	79

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	162	MET
1	A	244	ASN

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Mol	Chain	Res	Type
1	A	248	THR
1	B	162	MET
1	B	244	ASN

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	264	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](#)

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	83Y	C	1	2	15,15,15	1.94	6 (40%)	21,23,23	1.33	4 (19%)
2	BDP	C	2	2	12,12,13	1.55	4 (33%)	14,17,19	1.26	1 (7%)
2	83Y	C	3	2	14,14,15	0.93	1 (7%)	18,21,23	1.48	3 (16%)
2	GCD	C	4	2	10,11,12	2.41	2 (20%)	12,15,17	3.08	5 (41%)
2	83Y	D	1	2	15,15,15	1.90	4 (26%)	21,23,23	1.36	3 (14%)
2	BDP	D	2	2	12,12,13	1.57	4 (33%)	14,17,19	1.24	1 (7%)
2	83Y	D	3	2	14,14,15	0.83	0	18,21,23	1.73	6 (33%)
2	GCD	D	4	2	10,11,12	2.40	1 (10%)	12,15,17	2.97	4 (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	83Y	C	1	2	-	0/5/25/25	0/1/1/1
2	BDP	C	2	2	-	0/4/21/24	0/1/1/1
2	83Y	C	3	2	-	3/5/22/25	0/1/1/1
2	GCD	C	4	2	-	4/4/17/20	0/1/1/1
2	83Y	D	1	2	-	0/5/25/25	0/1/1/1
2	BDP	D	2	2	-	0/4/21/24	0/1/1/1
2	83Y	D	3	2	-	3/5/22/25	0/1/1/1
2	GCD	D	4	2	-	4/4/17/20	0/1/1/1

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	4	GCD	O5-C5	6.94	1.46	1.37
2	D	4	GCD	O5-C5	6.70	1.46	1.37
2	C	1	83Y	O3-S	-4.25	1.44	1.57
2	D	1	83Y	O3-S	-4.16	1.44	1.57
2	D	1	83Y	O3-C3	-3.42	1.38	1.46
2	C	1	83Y	O3-C3	-2.92	1.39	1.46
2	D	2	BDP	C5-C6	-2.65	1.47	1.53
2	C	2	BDP	C5-C6	-2.44	1.47	1.53
2	C	1	83Y	O3S-S	-2.42	1.35	1.50
2	C	1	83Y	O5-C5	-2.42	1.39	1.44
2	D	2	BDP	O5-C1	-2.34	1.39	1.43
2	D	2	BDP	O6B-C6	-2.28	1.23	1.30
2	C	2	BDP	C4-C5	-2.27	1.49	1.53
2	D	1	83Y	O2-C2	-2.27	1.37	1.43
2	D	2	BDP	C4-C5	-2.23	1.49	1.53
2	C	1	83Y	O2S-S	-2.22	1.35	1.45
2	C	2	BDP	O5-C1	-2.18	1.40	1.43
2	D	1	83Y	O3S-S	-2.16	1.37	1.50
2	C	4	GCD	O6B-C6	-2.15	1.24	1.30
2	C	3	83Y	O3-C3	-2.14	1.41	1.46
2	C	2	BDP	O6B-C6	-2.07	1.24	1.30
2	C	1	83Y	O1S-S	-2.04	1.36	1.45

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	4	GCD	O5-C5-C4	-7.21	118.32	124.94
2	C	4	GCD	O5-C5-C4	-6.97	118.55	124.94
2	C	4	GCD	O5-C5-C6	6.22	123.29	111.85
2	D	4	GCD	O5-C5-C6	5.07	121.17	111.85
2	C	3	83Y	C2-C3-C4	-3.55	107.82	110.91
2	D	3	83Y	C2-C3-C4	-3.55	107.82	110.91
2	D	3	83Y	O4-C4-C3	-3.44	101.11	109.94
2	D	4	GCD	C1-O5-C5	3.29	122.38	115.42
2	C	2	BDP	O4-C4-C5	-3.18	102.49	109.76
2	D	3	83Y	O4-C4-C5	-2.98	103.15	109.74
2	C	1	83Y	O5-C1-C2	2.97	115.52	110.30
2	D	4	GCD	C1-C2-C3	-2.76	105.63	109.64
2	C	1	83Y	O4-C4-C3	-2.73	102.95	109.94
2	D	2	BDP	O4-C4-C5	-2.70	103.59	109.76
2	C	4	GCD	C1-C2-C3	-2.68	105.74	109.64
2	C	3	83Y	C3-O3-S	2.61	125.30	119.04
2	D	3	83Y	O2S-S-O1S	-2.56	102.38	112.24
2	C	4	GCD	C1-O5-C5	2.51	120.73	115.42
2	C	4	GCD	C4-C5-C6	-2.50	118.15	123.56
2	C	3	83Y	O4-C4-C3	-2.43	103.71	109.94
2	D	3	83Y	C3-O3-S	2.31	124.59	119.04
2	D	1	83Y	O3S-S-O3	2.27	111.58	106.37
2	D	1	83Y	C1-O5-C5	2.26	117.89	114.37
2	C	1	83Y	O3S-S-O3	2.20	111.42	106.37
2	C	1	83Y	C3-C4-C5	-2.20	105.35	110.12
2	D	3	83Y	O3S-S-O3	2.09	111.17	106.37
2	D	1	83Y	O4-C4-C3	-2.02	104.76	109.94

There are no chirality outliers.

All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	C	4	GCD	O5-C5-C6-O6A
2	C	4	GCD	O5-C5-C6-O6B
2	D	3	83Y	C3-O3-S-O1S
2	D	3	83Y	C3-O3-S-O2S
2	D	3	83Y	C3-O3-S-O3S
2	D	4	GCD	C4-C5-C6-O6A
2	D	4	GCD	C4-C5-C6-O6B
2	D	4	GCD	O5-C5-C6-O6A
2	D	4	GCD	O5-C5-C6-O6B
2	C	3	83Y	C3-O3-S-O1S
2	C	3	83Y	C3-O3-S-O2S

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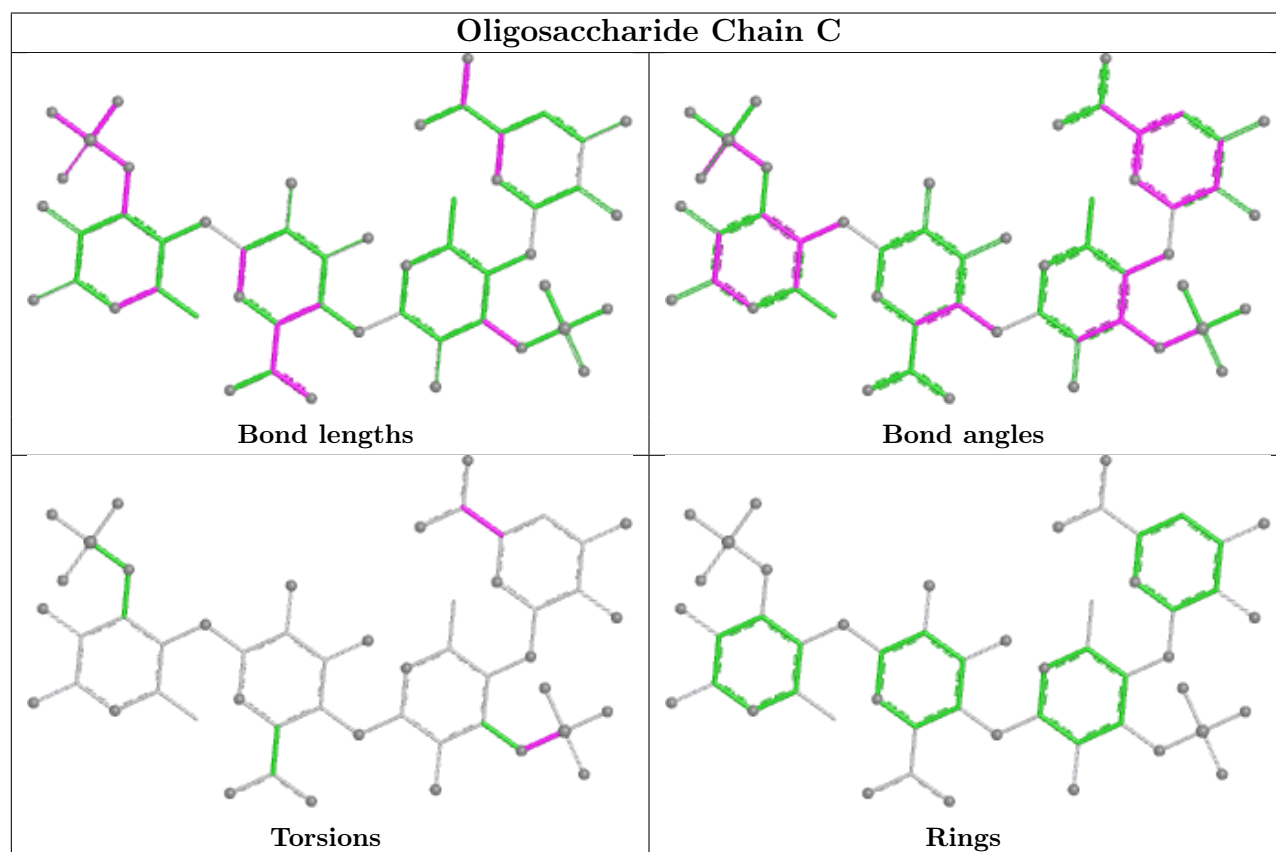
Mol	Chain	Res	Type	Atoms
2	C	3	83Y	C3-O3-S-O3S
2	C	4	GCD	C4-C5-C6-O6A
2	C	4	GCD	C4-C5-C6-O6B

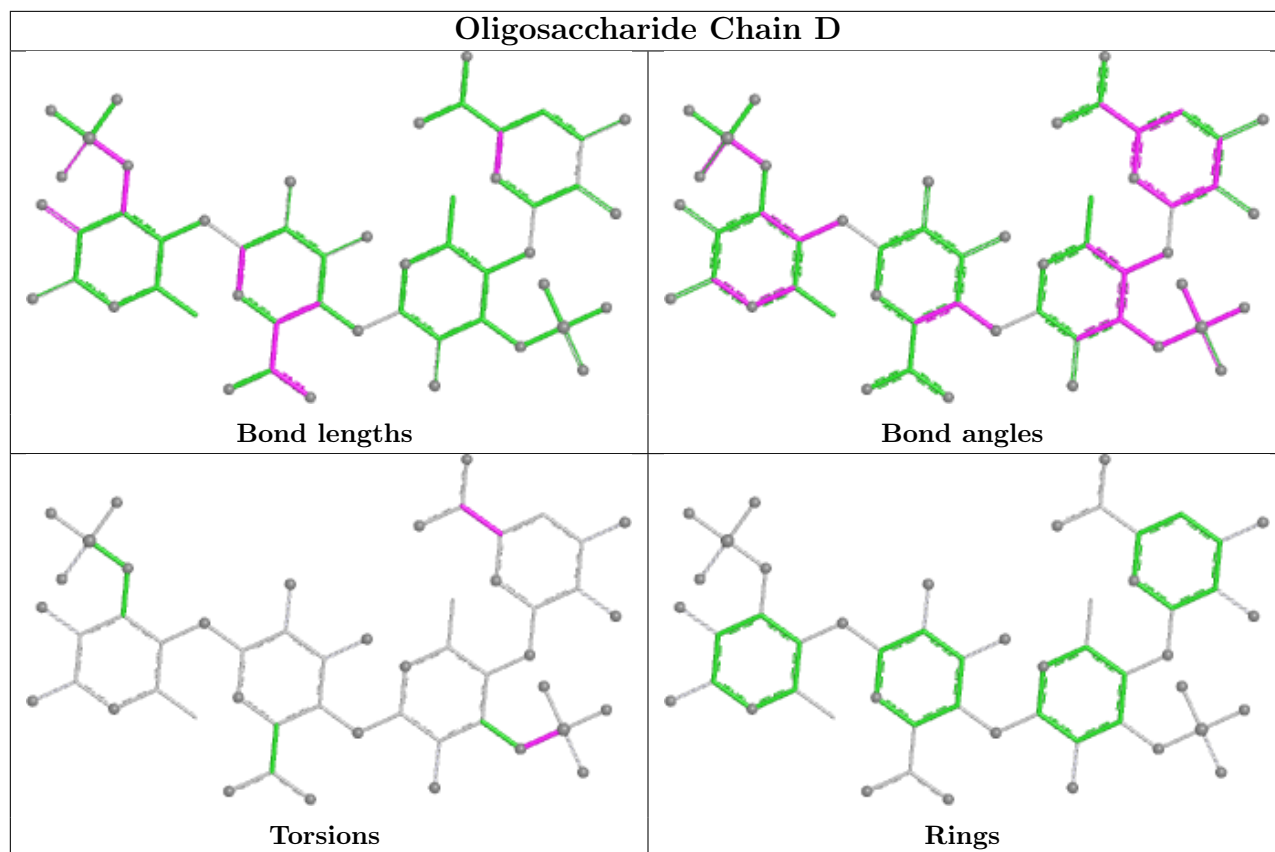
There are no ring outliers.

4 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	3	83Y	1	0
2	D	3	83Y	2	0
2	C	4	GCD	1	0
2	D	4	GCD	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 7 ligands modelled in this entry, 2 are 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	$\# Z  > 2$
4	PO4	A	402	-	4,4,4	1.10	0	6,6,6	0.51	0
5	EDO	B	408	-	3,3,3	0.43	0	2,2,2	0.53	0
4	PO4	B	403	-	4,4,4	0.80	0	6,6,6	0.52	0
4	PO4	A	403	-	4,4,4	0.92	0	6,6,6	0.61	0
4	PO4	B	402	-	4,4,4	0.78	0	6,6,6	0.51	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns.

'-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	EDO	B	408	-	-	1/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	408	EDO	O1-C1-C2-O2

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	408	EDO	1	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, 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	260/303 (85%)	-1.27	0 <a href="#">100</a> <a href="#">100</a>	26, 50, 79, 107	4 (1%)
1	B	260/303 (85%)	-1.26	0 <a href="#">100</a> <a href="#">100</a>	27, 50, 80, 99	4 (1%)
All	All	520/606 (85%)	-1.27	0 <a href="#">100</a> <a href="#">100</a>	26, 50, 79, 107	8 (1%)

There are no RSRZ outliers to report.

### 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](#)

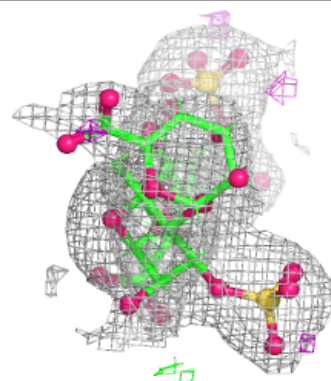
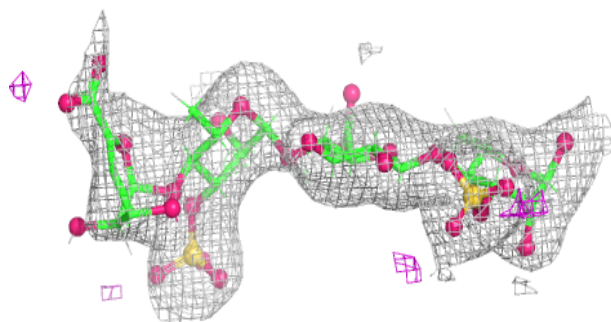
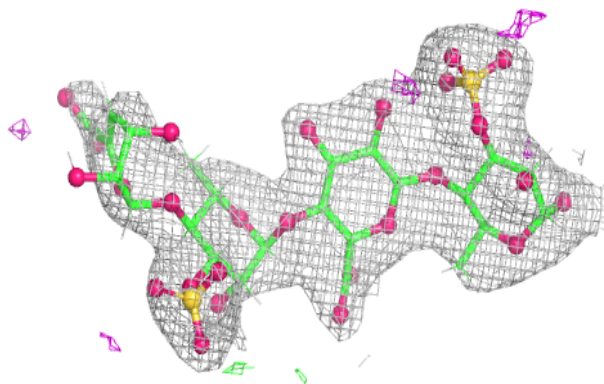
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q< 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	GCD	D	4	11/12	0.92	0.10	137,149,181,183	0
2	GCD	C	4	11/12	0.94	0.09	127,133,160,160	0
2	83Y	D	3	14/15	0.96	0.08	102,130,155,157	0
2	83Y	C	3	14/15	0.97	0.06	94,121,144,148	0
2	BDP	D	2	12/13	0.97	0.07	69,95,118,125	0
2	BDP	C	2	12/13	0.98	0.05	70,93,111,122	0
2	83Y	D	1	15/15	0.99	0.06	54,65,81,81	0
2	83Y	C	1	15/15	0.99	0.06	54,63,85,85	0

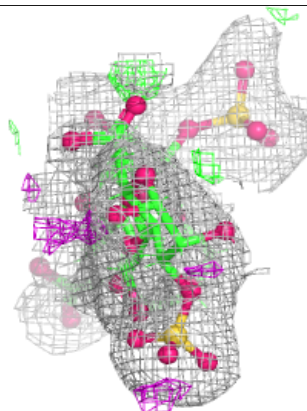
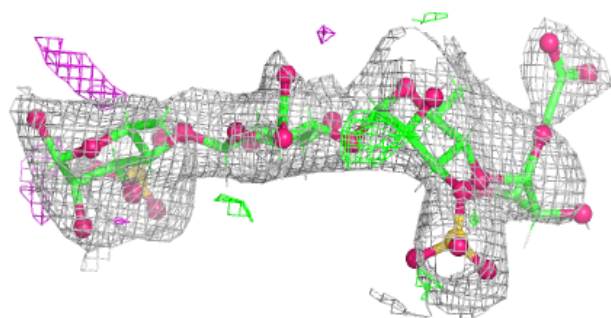
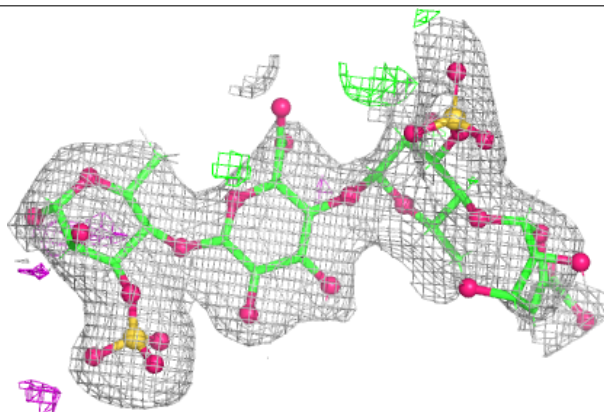
The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

**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, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
4	PO4	A	403	5/5	0.97	0.06	58,71,85,86	0
4	PO4	B	402	5/5	0.97	0.09	58,65,67,71	5
5	EDO	B	408	4/4	0.97	0.07	61,75,78,93	0
4	PO4	B	403	5/5	0.98	0.05	55,69,79,81	0
4	PO4	A	402	5/5	0.98	0.07	65,65,73,79	5
3	CA	B	401	1/1	0.99	0.02	44,44,44,44	0
3	CA	A	401	1/1	1.00	0.02	42,42,42,42	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.