



# Full wwPDB X-ray Structure Validation Report ⓘ

Jun 7, 2023 – 06:19 PM JST

PDB ID : 8IUC  
Title : Crystal structure of GH65 alpha-1,2-glucosidase from *Flavobacterium johnsoniae* in complex with isomaltose  
Authors : Nakamura, S.; Miyazaki, T.  
Deposited on : 2023-03-24  
Resolution : 1.56 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 : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.33  
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) : 2.33

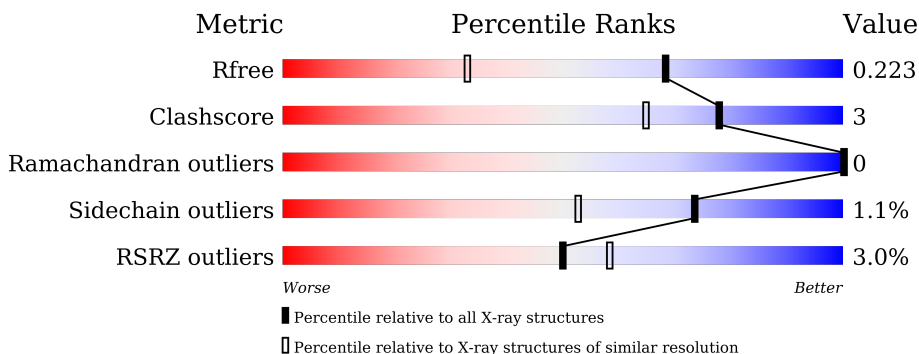
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.56 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	1483 (1.56-1.56)
Clashscore	141614	1529 (1.56-1.56)
Ramachandran outliers	138981	1498 (1.56-1.56)
Sidechain outliers	138945	1495 (1.56-1.56)
RSRZ outliers	127900	1465 (1.56-1.56)

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	678	 2% 90% 7% .
1	B	678	 5% 87% 10% .
1	C	678	 % 89% 8% . .
2	D	2	 50% 50%
2	E	2	 50% 50%
2	F	2	 50% 50%

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 33574 atoms, of which 15978 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 Candidate alpha glycoside phosphorylase Glycoside hydrolase family 65.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	659	10555	3392	5233	891	1017	22	160	12	0
1	B	659	10545	3389	5229	889	1015	23	159	12	0
1	C	659	10622	3411	5267	899	1022	23	158	15	0

There are 60 discrepancies between the modelled and reference sequences:

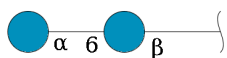
Chain	Residue	Modelled	Actual	Comment	Reference
A	4	MET	-	initiating methionine	UNP A5FBJ5
A	5	GLY	-	expression tag	UNP A5FBJ5
A	6	SER	-	expression tag	UNP A5FBJ5
A	7	SER	-	expression tag	UNP A5FBJ5
A	8	HIS	-	expression tag	UNP A5FBJ5
A	9	HIS	-	expression tag	UNP A5FBJ5
A	10	HIS	-	expression tag	UNP A5FBJ5
A	11	HIS	-	expression tag	UNP A5FBJ5
A	12	HIS	-	expression tag	UNP A5FBJ5
A	13	HIS	-	expression tag	UNP A5FBJ5
A	14	SER	-	expression tag	UNP A5FBJ5
A	15	SER	-	expression tag	UNP A5FBJ5
A	16	GLY	-	expression tag	UNP A5FBJ5
A	17	LEU	-	expression tag	UNP A5FBJ5
A	18	VAL	-	expression tag	UNP A5FBJ5
A	19	PRO	-	expression tag	UNP A5FBJ5
A	20	ARG	-	expression tag	UNP A5FBJ5
A	21	GLY	-	expression tag	UNP A5FBJ5
A	22	SER	-	expression tag	UNP A5FBJ5
A	23	HIS	-	expression tag	UNP A5FBJ5
B	4	MET	-	initiating methionine	UNP A5FBJ5
B	5	GLY	-	expression tag	UNP A5FBJ5

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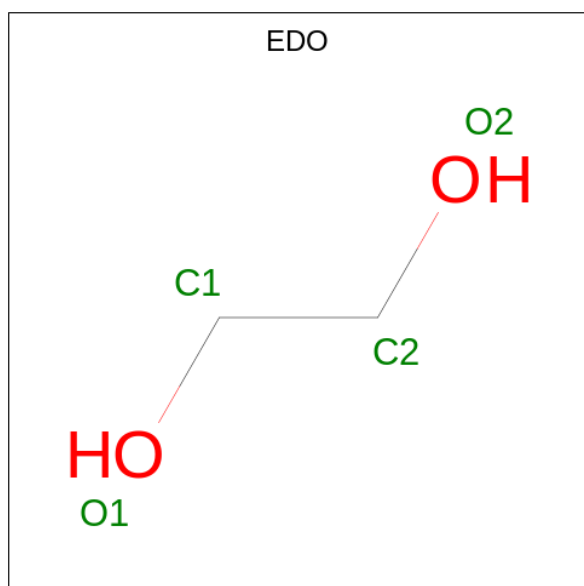
Chain	Residue	Modelled	Actual	Comment	Reference
B	6	SER	-	expression tag	UNP A5FBJ5
B	7	SER	-	expression tag	UNP A5FBJ5
B	8	HIS	-	expression tag	UNP A5FBJ5
B	9	HIS	-	expression tag	UNP A5FBJ5
B	10	HIS	-	expression tag	UNP A5FBJ5
B	11	HIS	-	expression tag	UNP A5FBJ5
B	12	HIS	-	expression tag	UNP A5FBJ5
B	13	HIS	-	expression tag	UNP A5FBJ5
B	14	SER	-	expression tag	UNP A5FBJ5
B	15	SER	-	expression tag	UNP A5FBJ5
B	16	GLY	-	expression tag	UNP A5FBJ5
B	17	LEU	-	expression tag	UNP A5FBJ5
B	18	VAL	-	expression tag	UNP A5FBJ5
B	19	PRO	-	expression tag	UNP A5FBJ5
B	20	ARG	-	expression tag	UNP A5FBJ5
B	21	GLY	-	expression tag	UNP A5FBJ5
B	22	SER	-	expression tag	UNP A5FBJ5
B	23	HIS	-	expression tag	UNP A5FBJ5
C	4	MET	-	initiating methionine	UNP A5FBJ5
C	5	GLY	-	expression tag	UNP A5FBJ5
C	6	SER	-	expression tag	UNP A5FBJ5
C	7	SER	-	expression tag	UNP A5FBJ5
C	8	HIS	-	expression tag	UNP A5FBJ5
C	9	HIS	-	expression tag	UNP A5FBJ5
C	10	HIS	-	expression tag	UNP A5FBJ5
C	11	HIS	-	expression tag	UNP A5FBJ5
C	12	HIS	-	expression tag	UNP A5FBJ5
C	13	HIS	-	expression tag	UNP A5FBJ5
C	14	SER	-	expression tag	UNP A5FBJ5
C	15	SER	-	expression tag	UNP A5FBJ5
C	16	GLY	-	expression tag	UNP A5FBJ5
C	17	LEU	-	expression tag	UNP A5FBJ5
C	18	VAL	-	expression tag	UNP A5FBJ5
C	19	PRO	-	expression tag	UNP A5FBJ5
C	20	ARG	-	expression tag	UNP A5FBJ5
C	21	GLY	-	expression tag	UNP A5FBJ5
C	22	SER	-	expression tag	UNP A5FBJ5
C	23	HIS	-	expression tag	UNP A5FBJ5

- Molecule 2 is an oligosaccharide called alpha-D-glucopyranose-(1-6)-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	D	2	Total	C	H	O	8	0	0
			46	12	23	11			
2	E	2	Total	C	H	O	8	0	0
			46	12	23	11			
2	F	2	Total	C	H	O	8	0	0
			46	12	23	11			

- Molecule 3 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	H	O	1	0
			10	2	6	2		
3	A	1	Total	C	H	O	1	0
			10	2	6	2		
3	A	1	Total	C	H	O	1	0
			10	2	6	2		
3	A	1	Total	C	H	O	1	0
			10	2	6	2		
3	A	1	Total	C	H	O	1	0
			10	2	6	2		

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

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

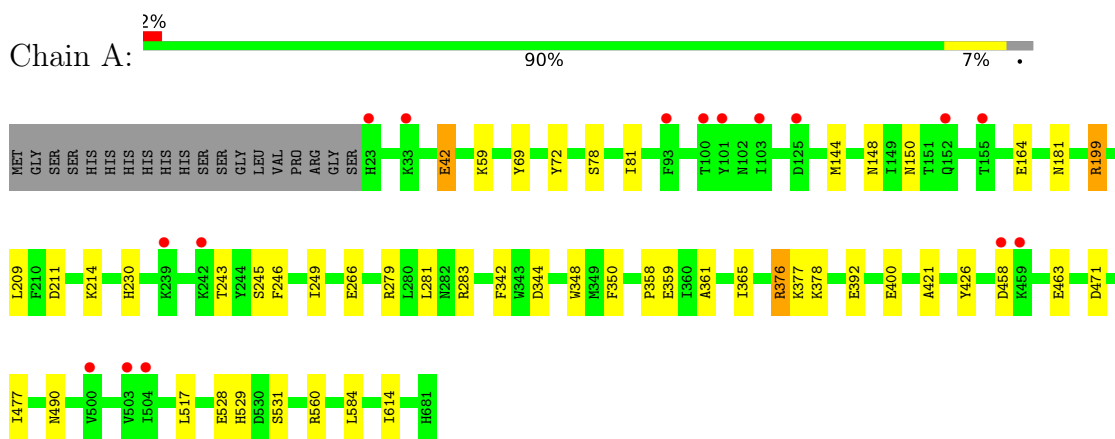
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	480	Total	O	0	0
			480	480		
4	B	425	Total	O	0	0
			425	425		
4	C	509	Total	O	0	0
			509	509		

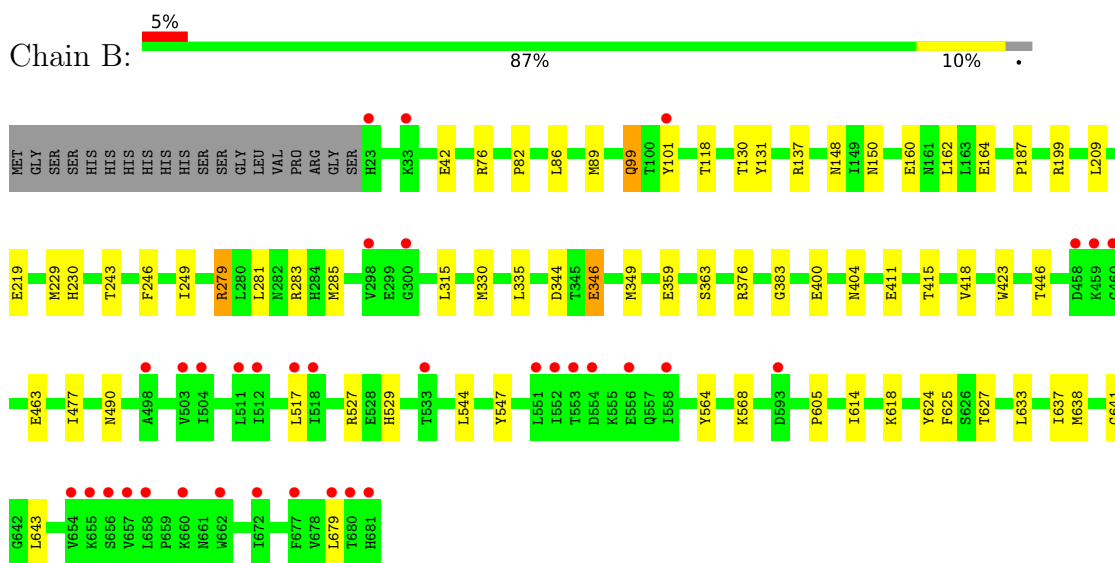
### 3 Residue-property plots [i](#)

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.

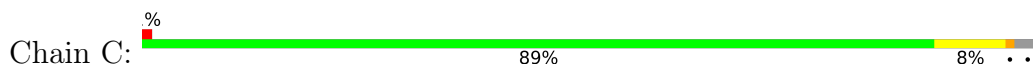
- Molecule 1: Candidate alpha glycoside phosphorylase Glycoside hydrolase family 65



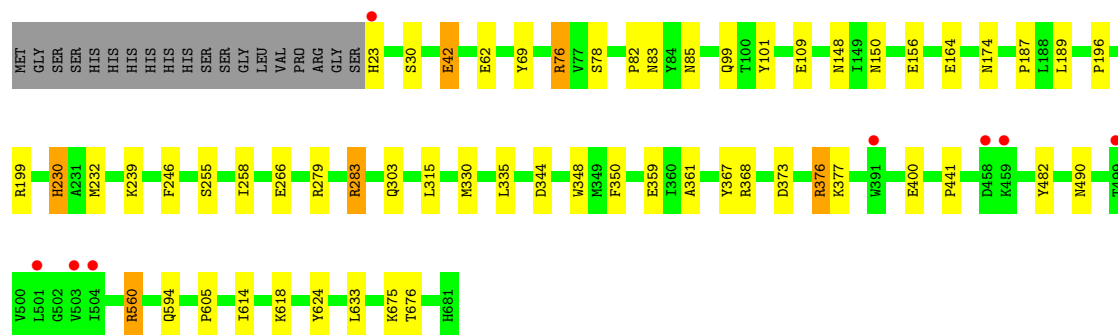
- Molecule 1: Candidate alpha glycoside phosphorylase Glycoside hydrolase family 65



- Molecule 1: Candidate alpha glycoside phosphorylase Glycoside hydrolase family 65







- Molecule 2: alpha-D-glucopyranose-(1-6)-beta-D-glucopyranose

Chain D: 50% 50%

BGC1  
GLC2

- Molecule 2: alpha-D-glucopyranose-(1-6)-beta-D-glucopyranose

Chain E: 50% 50%

BGC1  
GLC2

- Molecule 2: alpha-D-glucopyranose-(1-6)-beta-D-glucopyranose

Chain F: 50% 50%

BGC1  
GLC2

## 4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	122.94Å 194.09Å 111.88Å 90.00° 116.35° 90.00°	Depositor
Resolution (Å)	44.71 – 1.56 44.67 – 1.56	Depositor EDS
% Data completeness (in resolution range)	98.3 (44.71-1.56) 98.3 (44.67-1.56)	Depositor EDS
$R_{merge}$	0.07	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.68 (at 1.56Å)	Xtrriage
Refinement program	REFMAC 5.8.0405	Depositor
R, $R_{free}$	0.187 , 0.211 0.201 , 0.223	Depositor DCC
$R_{free}$ test set	16344 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	20.0	Xtrriage
Anisotropy	0.518	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.39 , 39.4	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	0.97	EDS
Total number of atoms	33574	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	29.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.50% 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: EDO, BGC, 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	0.77	7/5463 (0.1%)	1.00	12/7412 (0.2%)
1	B	0.78	8/5463 (0.1%)	1.03	8/7412 (0.1%)
1	C	0.77	8/5505 (0.1%)	1.02	10/7467 (0.1%)
All	All	0.77	23/16431 (0.1%)	1.02	30/22291 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2
1	B	0	2
1	C	0	1
All	All	0	5

All (23) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	400	GLU	CD-OE1	10.30	1.36	1.25
1	A	164	GLU	CD-OE1	-8.81	1.16	1.25
1	C	164	GLU	CD-OE2	-8.70	1.16	1.25
1	B	164	GLU	CD-OE2	-8.32	1.16	1.25
1	A	164	GLU	CD-OE2	-8.23	1.16	1.25
1	B	346	GLU	CD-OE1	-6.53	1.18	1.25
1	B	411	GLU	CD-OE1	6.49	1.32	1.25
1	B	160	GLU	CD-OE1	-6.18	1.18	1.25
1	B	359	GLU	CD-OE2	5.84	1.32	1.25
1	C	109[A]	GLU	CD-OE2	5.80	1.32	1.25
1	C	109[B]	GLU	CD-OE2	5.80	1.32	1.25
1	A	42	GLU	CD-OE2	-5.77	1.19	1.25

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	266	GLU	CD-OE2	5.61	1.31	1.25
1	C	359	GLU	CD-OE2	5.56	1.31	1.25
1	C	400	GLU	CD-OE1	5.49	1.31	1.25
1	A	359	GLU	CD-OE2	5.48	1.31	1.25
1	C	156	GLU	CD-OE1	-5.45	1.19	1.25
1	C	42	GLU	CD-OE1	5.42	1.31	1.25
1	A	392	GLU	CD-OE2	5.26	1.31	1.25
1	B	363	SER	CA-CB	-5.23	1.45	1.52
1	A	266	GLU	CD-OE2	5.17	1.31	1.25
1	A	400	GLU	CD-OE2	5.15	1.31	1.25
1	B	219	GLU	CD-OE2	-5.08	1.20	1.25

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	376	ARG	NE-CZ-NH2	-12.09	114.25	120.30
1	A	376	ARG	NE-CZ-NH2	-10.62	114.99	120.30
1	B	376	ARG	NE-CZ-NH1	9.86	125.23	120.30
1	A	199	ARG	NE-CZ-NH2	-7.38	116.61	120.30
1	A	458	ASP	CB-CA-C	-7.28	95.85	110.40
1	A	376	ARG	NE-CZ-NH1	6.91	123.75	120.30
1	B	187	PRO	N-CD-CG	-6.89	92.86	103.20
1	A	426	TYR	CB-CG-CD2	-6.77	116.94	121.00
1	C	368	ARG	NE-CZ-NH1	-6.64	116.98	120.30
1	C	376[A]	ARG	NE-CZ-NH2	-6.49	117.06	120.30
1	C	376[B]	ARG	NE-CZ-NH2	-6.49	117.06	120.30
1	B	137	ARG	NE-CZ-NH2	-6.19	117.20	120.30
1	A	283	ARG	NE-CZ-NH2	6.18	123.39	120.30
1	B	283	ARG	NE-CZ-NH1	6.11	123.36	120.30
1	A	560	ARG	NE-CZ-NH2	6.10	123.35	120.30
1	C	76	ARG	NE-CZ-NH1	5.87	123.23	120.30
1	A	199	ARG	NE-CZ-NH1	5.53	123.07	120.30
1	A	342	PHE	CB-CG-CD1	5.45	124.62	120.80
1	C	482	TYR	CB-CG-CD2	5.34	124.20	121.00
1	C	560	ARG	NE-CZ-NH1	5.32	122.96	120.30
1	C	187	PRO	N-CD-CG	-5.31	95.23	103.20
1	A	72	TYR	CB-CG-CD2	5.28	124.17	121.00
1	A	283	ARG	NE-CZ-NH1	-5.27	117.67	120.30
1	B	199	ARG	NE-CZ-NH2	-5.25	117.67	120.30
1	C	367	TYR	CB-CG-CD2	-5.09	117.95	121.00
1	B	99	GLN	CB-CA-C	-5.08	100.24	110.40
1	C	283[A]	ARG	NE-CZ-NH2	-5.03	117.79	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	283[B]	ARG	NE-CZ-NH2	-5.03	117.79	120.30
1	B	423	TRP	CD1-CG-CD2	5.02	110.32	106.30
1	A	342	PHE	CB-CG-CD2	-5.01	117.29	120.80

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	376	ARG	Sidechain
1	A	81	ILE	Mainchain
1	B	279	ARG	Sidechain
1	B	76	ARG	Sidechain
1	C	76	ARG	Sidechain

## 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	5322	5233	5212	26	0
1	B	5316	5229	5212	39	0
1	C	5355	5267	5249	26	0
2	D	23	23	21	1	0
2	E	23	23	21	1	0
2	F	23	23	21	1	0
3	A	40	60	60	6	0
3	B	40	60	60	6	0
3	C	40	60	60	2	0
4	A	480	0	0	3	1
4	B	425	0	0	6	1
4	C	509	0	0	6	0
All	All	17596	15978	15916	93	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 3.

All (93) 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:148:ASN:OD1	1:A:245[B]:SER:OG	1.86	0.91
1:A:614:ILE:HD11	3:A:707:EDO:H21	1.60	0.84
1:A:209:LEU:HD11	1:A:249:ILE:HD11	1.63	0.79
1:A:209:LEU:HD11	1:A:249:ILE:CD1	2.15	0.76
1:B:209:LEU:HD11	1:B:249:ILE:CD1	2.16	0.75
1:B:130[B]:THR:HG21	4:B:1138:HOH:O	1.88	0.73
1:B:209:LEU:HD11	1:B:249:ILE:HD12	1.71	0.72
4:A:934:HOH:O	1:C:377:LYS:HD3	1.91	0.71
1:B:148:ASN:ND2	4:B:802:HOH:O	2.23	0.69
1:A:358:PRO:HG3	4:A:1028:HOH:O	1.92	0.68
1:C:246:PHE:HA	3:C:704:EDO:H11	1.78	0.65
1:A:377:LYS:HD3	4:B:945:HOH:O	1.99	0.62
1:B:315[B]:LEU:HD12	1:B:633:LEU:HD12	1.81	0.61
1:C:303:GLN:HG2	4:C:1240:HOH:O	2.00	0.61
1:B:614:ILE:HD11	3:B:708:EDO:H21	1.84	0.60
1:A:614:ILE:HG13	3:A:707:EDO:H22	1.84	0.59
1:A:150:ASN:OD1	1:A:243:THR:OG1	2.16	0.57
1:C:315:LEU:HD22	1:C:633:LEU:HD12	1.86	0.57
1:B:209:LEU:HD11	1:B:249:ILE:HD11	1.86	0.57
1:C:560:ARG:HD3	4:C:1262:HOH:O	2.04	0.56
1:C:23:HIS:HD2	1:C:30:SER:OG	1.88	0.56
1:C:614:ILE:HD11	3:C:705:EDO:H21	1.88	0.56
1:C:99:GLN:HG3	1:C:101:TYR:CE2	2.42	0.55
4:C:805:HOH:O	2:D:1:BGC:H6C1	2.06	0.55
1:C:62:GLU:HA	1:C:85:ASN:HD21	1.72	0.54
1:B:315[B]:LEU:HD12	1:B:633:LEU:CD1	2.37	0.54
1:C:189:LEU:HD22	1:C:232:MET:HG2	1.90	0.54
1:B:82:PRO:HD3	1:B:335:LEU:HD21	1.88	0.54
1:A:365[B]:ILE:HD11	1:A:421:ALA:HB1	1.91	0.53
1:B:86:LEU:H	1:B:86:LEU:HD23	1.74	0.53
1:B:463:GLU:HG2	1:B:517:LEU:HD12	1.91	0.53
1:B:605:PRO:HB2	1:B:618:LYS:HG2	1.91	0.53
1:A:463:GLU:HG2	1:A:517:LEU:HD12	1.90	0.52
1:B:330:MET:HA	1:B:624:TYR:O	2.11	0.51
1:B:162:LEU:HD23	1:B:229[B]:MET:SD	2.52	0.49
1:B:246:PHE:HA	3:B:707:EDO:H22	1.93	0.49
1:B:150:ASN:OD1	1:B:243:THR:OG1	2.16	0.49
1:C:69:TYR:HB3	1:C:78:SER:HB2	1.95	0.49
1:C:82:PRO:HG3	1:C:335[B]:LEU:HD11	1.94	0.49
1:C:605:PRO:HB2	1:C:618:LYS:HG2	1.95	0.47
1:A:209:LEU:HD11	1:A:249:ILE:HD12	1.94	0.47
1:C:350:PHE:CE2	1:C:361:ALA:HB1	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:614:ILE:CD1	3:A:707:EDO:H21	2.39	0.46
1:B:86:LEU:H	1:B:86:LEU:CD2	2.28	0.46
1:C:148:ASN:ND2	4:C:815:HOH:O	2.48	0.46
1:B:130[B]:THR:HG22	4:B:1078:HOH:O	2.15	0.45
1:B:86:LEU:HD23	1:B:86:LEU:N	2.31	0.45
1:B:130[A]:THR:HG23	4:B:1078:HOH:O	2.15	0.45
1:C:239:LYS:HE3	1:C:239:LYS:HB2	1.67	0.45
1:A:584:LEU:HD23	1:A:584:LEU:C	2.37	0.45
1:C:199:ARG:HG2	4:C:838:HOH:O	2.17	0.45
1:A:471:ASP:OD2	1:A:528:GLU:OE1	2.35	0.45
1:C:344:ASP:O	1:C:348:TRP:HB2	2.16	0.45
1:B:99:GLN:HG3	1:B:101:TYR:CE2	2.52	0.44
1:A:378:LYS:HE3	4:B:1031:HOH:O	2.17	0.44
1:A:350:PHE:CE2	1:A:361:ALA:HB1	2.53	0.43
1:B:625:PHE:CZ	1:B:627:THR:HB	2.53	0.43
1:B:637:ILE:HG23	1:B:643:LEU:HD12	2.00	0.43
1:A:199:ARG:HG2	4:A:824:HOH:O	2.18	0.43
1:C:330:MET:HA	1:C:624:TYR:O	2.18	0.43
1:B:638:MET:HG3	1:B:643:LEU:O	2.19	0.43
1:C:174:ASN:HB3	1:C:230:HIS:CG	2.54	0.43
1:B:564:TYR:CE2	1:B:568:LYS:HE3	2.53	0.43
1:A:344:ASP:O	1:A:348:TRP:HB2	2.19	0.42
1:B:544:LEU:HA	1:B:547:TYR:O	2.19	0.42
1:B:527:ARG:HG2	1:B:529:HIS:O	2.19	0.42
1:A:529:HIS:CE1	1:A:531:SER:HB2	2.54	0.42
1:B:614:ILE:HD11	3:B:708:EDO:C2	2.47	0.42
1:C:315:LEU:HD22	1:C:633:LEU:CD1	2.48	0.42
1:A:69:TYR:HB3	1:A:78:SER:HB2	2.01	0.42
1:A:144:MET:HE1	1:A:281:LEU:HG	2.02	0.42
1:B:477:ILE:C	1:B:477:ILE:HD12	2.40	0.42
3:A:705:EDO:H11	2:E:2:GLC:H62	2.01	0.42
1:B:614:ILE:HG13	3:B:708:EDO:H22	2.02	0.42
1:B:346:GLU:HG2	1:B:418:VAL:HA	2.01	0.42
1:B:383:GLY:O	1:C:283[A]:ARG:NH2	2.52	0.41
1:A:246:PHE:HA	3:A:706:EDO:H11	2.02	0.41
1:B:118:THR:HA	1:B:131:TYR:O	2.21	0.41
1:C:373[B]:ASP:HA	1:C:376[B]:ARG:HH11	1.85	0.41
1:C:675:LYS:HG3	1:C:676:THR:N	2.34	0.41
1:B:404:ASN:ND2	3:B:705:EDO:H12	2.35	0.41
1:A:181:ASN:O	1:A:214:LYS:NZ	2.50	0.41
3:B:705:EDO:H11	2:F:2:GLC:H62	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:415:THR:HG23	1:B:446:THR:HG22	2.03	0.41
1:B:641:GLY:HA2	1:B:679:LEU:HD13	2.03	0.41
1:C:594:GLN:NE2	4:C:807:HOH:O	2.41	0.41
1:B:281:LEU:O	1:B:285[A]:MET:HG2	2.21	0.40
1:C:255:SER:HA	1:C:258:ILE:O	2.20	0.40
1:A:148:ASN:OD1	1:A:245[A]:SER:HB2	2.20	0.40
1:A:211:ASP:OD2	3:A:706:EDO:H12	2.22	0.40
1:B:315[B]:LEU:HD21	1:B:349:MET:HG2	2.04	0.40
1:B:315[B]:LEU:HD23	1:B:315[B]:LEU:HA	1.96	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:1126:HOH:O	4:B:1088:HOH:O[2_555]	2.18	0.02

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	669/678 (99%)	645 (96%)	24 (4%)	0	100	100
1	B	669/678 (99%)	645 (96%)	24 (4%)	0	100	100
1	C	673/678 (99%)	654 (97%)	19 (3%)	0	100	100
All	All	2011/2034 (99%)	1944 (97%)	67 (3%)	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	577/581 (99%)	572 (99%)	5 (1%)	78	61
1	B	577/581 (99%)	571 (99%)	6 (1%)	76	57
1	C	581/581 (100%)	573 (99%)	8 (1%)	67	41
All	All	1735/1743 (100%)	1716 (99%)	19 (1%)	73	53

All (19) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	42	GLU
1	A	230	HIS
1	A	279	ARG
1	A	477	ILE
1	A	490	ASN
1	B	42	GLU
1	B	89	MET
1	B	230	HIS
1	B	279	ARG
1	B	344	ASP
1	B	490	ASN
1	C	42	GLU
1	C	83	ASN
1	C	150	ASN
1	C	196	PRO
1	C	230	HIS
1	C	279	ARG
1	C	441	PRO
1	C	490	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	24	GLN
1	A	85	ASN
1	A	158	ASN
1	A	259	ASN
1	B	24	GLN
1	B	85	ASN

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Mol	Chain	Res	Type
1	B	158	ASN
1	B	286	GLN
1	B	594	GLN
1	C	23	HIS
1	C	85	ASN
1	C	150	ASN
1	C	158	ASN
1	C	681	HIS

### 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	BGC	D	1	2	12,12,12	1.51	2 (16%)	17,17,17	1.38	3 (17%)
2	GLC	D	2	2	11,11,12	0.94	0	15,15,17	1.20	1 (6%)
2	BGC	E	1	2	12,12,12	1.86	4 (33%)	17,17,17	1.62	3 (17%)
2	GLC	E	2	2	11,11,12	2.57	1 (9%)	15,15,17	1.40	1 (6%)
2	BGC	F	1	2	12,12,12	1.25	2 (16%)	17,17,17	1.70	6 (35%)
2	GLC	F	2	2	11,11,12	1.39	1 (9%)	15,15,17	1.36	1 (6%)

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	D	1	2	-	0/2/22/22	0/1/1/1
2	GLC	D	2	2	-	0/2/19/22	0/1/1/1
2	BGC	E	1	2	-	0/2/22/22	0/1/1/1
2	GLC	E	2	2	-	0/2/19/22	0/1/1/1
2	BGC	F	1	2	-	0/2/22/22	0/1/1/1
2	GLC	F	2	2	-	0/2/19/22	0/1/1/1

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	2	GLC	C2-C3	-8.14	1.40	1.52
2	E	1	BGC	C4-C5	4.15	1.61	1.53
2	D	1	BGC	C4-C5	3.81	1.61	1.53
2	F	2	GLC	O5-C1	2.88	1.48	1.43
2	E	1	BGC	C4-C3	2.77	1.59	1.52
2	F	1	BGC	C4-C5	2.32	1.57	1.53
2	E	1	BGC	O3-C3	2.28	1.48	1.43
2	F	1	BGC	C4-C3	2.18	1.57	1.52
2	D	1	BGC	O5-C1	2.18	1.48	1.42
2	E	1	BGC	C1-C2	2.12	1.57	1.52

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	2	GLC	C1-O5-C5	4.26	117.97	112.19
2	E	2	GLC	C1-O5-C5	3.53	116.97	112.19
2	F	1	BGC	O5-C1-C2	3.37	116.30	110.28
2	E	1	BGC	O3-C3-C4	3.13	117.58	110.35
2	F	1	BGC	O4-C4-C5	-2.93	102.02	109.30
2	D	1	BGC	O4-C4-C5	-2.80	102.33	109.30
2	D	1	BGC	O5-C1-C2	2.69	115.09	110.28
2	F	1	BGC	O3-C3-C4	2.60	116.36	110.35
2	D	2	GLC	O5-C5-C6	-2.46	103.35	107.20
2	E	1	BGC	O5-C1-C2	2.32	114.43	110.28
2	F	1	BGC	C1-C2-C3	2.25	114.98	110.31
2	E	1	BGC	O2-C2-C1	2.10	114.02	109.16
2	D	1	BGC	O1-C1-O5	-2.09	104.10	110.38
2	F	1	BGC	O1-C1-O5	-2.08	104.14	110.38
2	F	1	BGC	O3-C3-C2	-2.04	105.64	110.35

There are no chirality outliers.

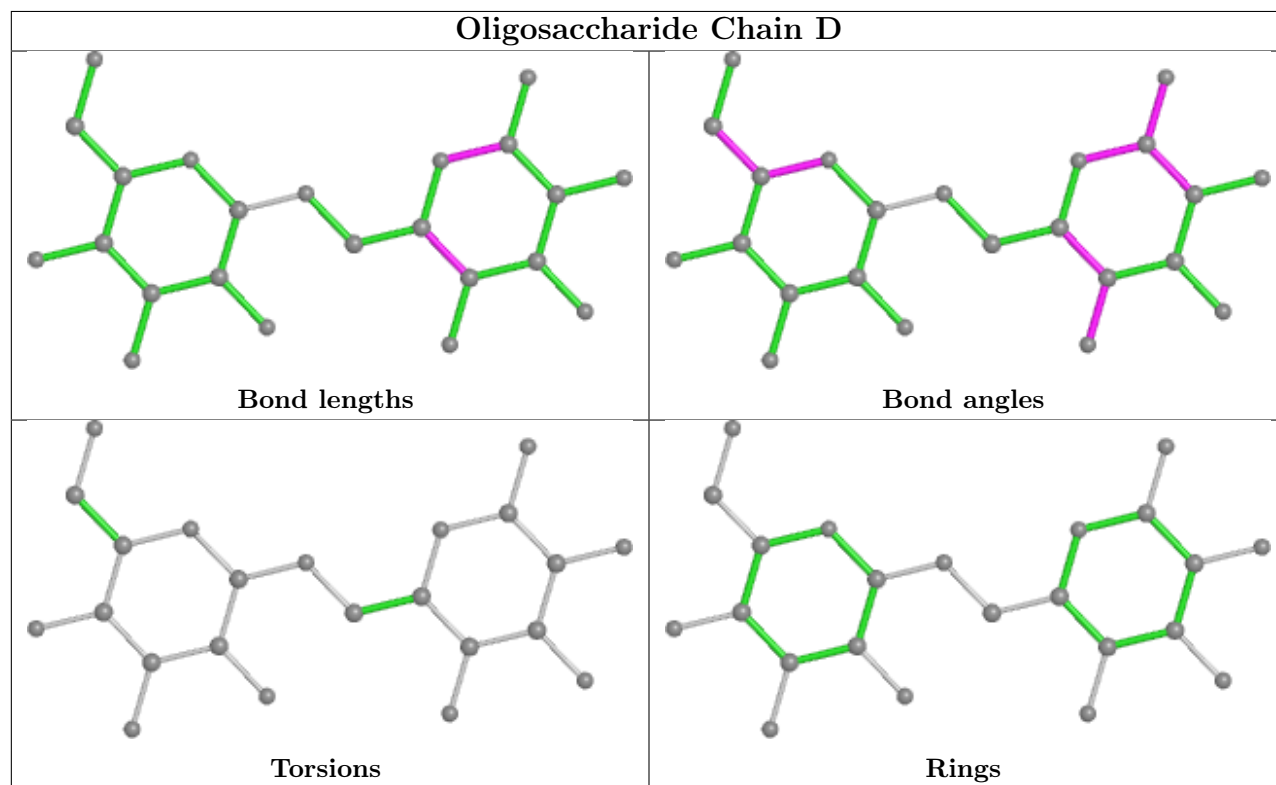
There are no torsion outliers.

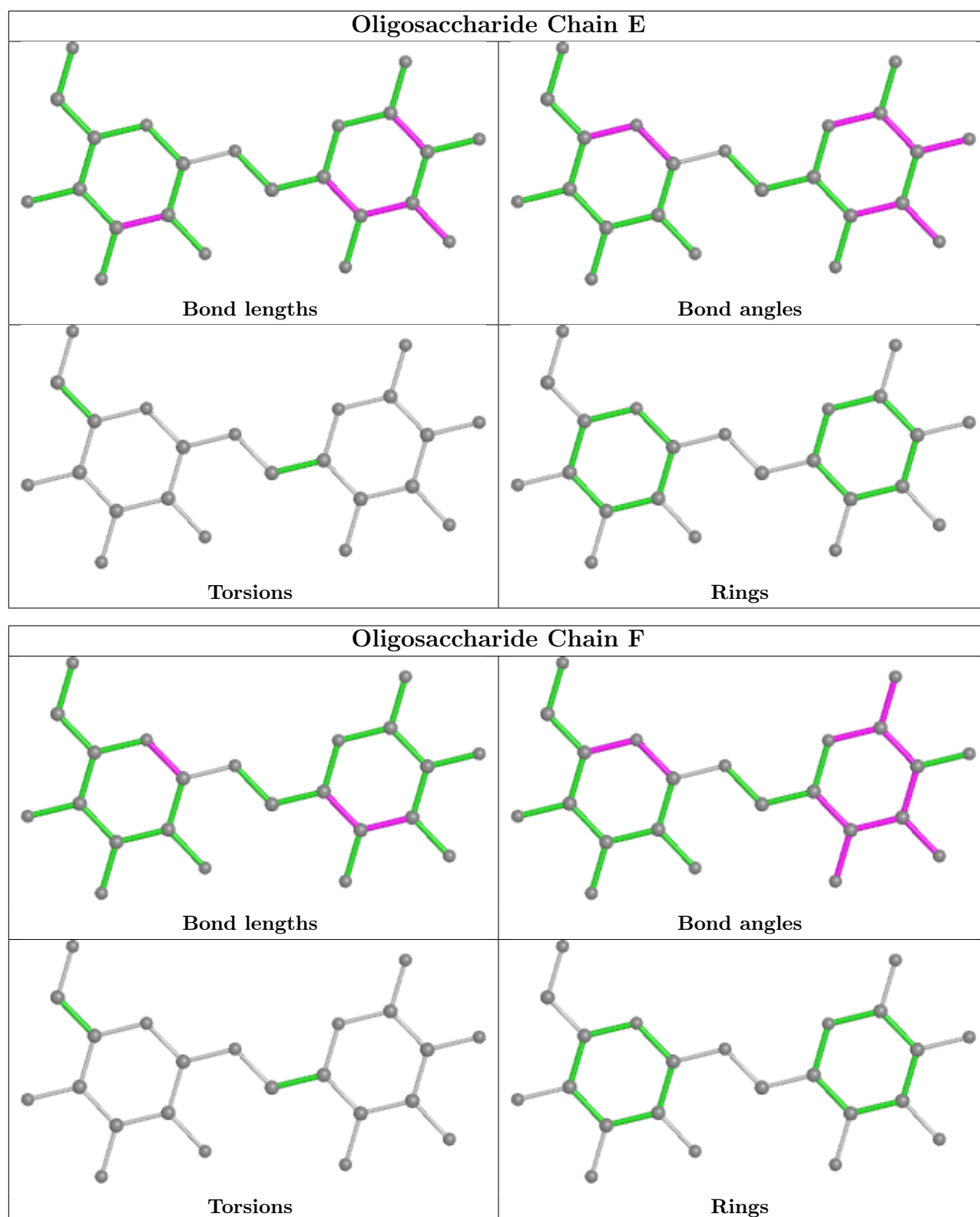
There are no ring outliers.

3 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	1	BGC	1	0
2	E	2	GLC	1	0
2	F	2	GLC	1	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](#)

30 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
3	EDO	A	703	-	3,3,3	0.41	0	2,2,2	0.50	0
3	EDO	B	711	-	3,3,3	0.33	0	2,2,2	0.79	0
3	EDO	B	709	-	3,3,3	0.52	0	2,2,2	0.34	0
3	EDO	B	705	-	3,3,3	0.65	0	2,2,2	0.55	0
3	EDO	B	710	-	3,3,3	0.33	0	2,2,2	0.73	0
3	EDO	A	706	-	3,3,3	0.86	0	2,2,2	0.27	0
3	EDO	C	706	-	3,3,3	0.42	0	2,2,2	0.40	0
3	EDO	C	709	-	3,3,3	0.18	0	2,2,2	0.84	0
3	EDO	A	712	-	3,3,3	0.93	0	2,2,2	1.01	0
3	EDO	C	703	-	3,3,3	0.47	0	2,2,2	0.55	0
3	EDO	A	709	-	3,3,3	0.35	0	2,2,2	0.40	0
3	EDO	C	707	-	3,3,3	0.36	0	2,2,2	0.14	0
3	EDO	C	708	-	3,3,3	0.19	0	2,2,2	0.24	0
3	EDO	B	706	-	3,3,3	1.12	0	2,2,2	0.61	0
3	EDO	A	710	-	3,3,3	0.32	0	2,2,2	0.45	0
3	EDO	C	704	-	3,3,3	0.54	0	2,2,2	0.31	0
3	EDO	C	702	-	3,3,3	0.37	0	2,2,2	0.32	0
3	EDO	A	707	-	3,3,3	0.94	0	2,2,2	1.08	0
3	EDO	C	701	-	3,3,3	0.47	0	2,2,2	0.31	0
3	EDO	B	707	-	3,3,3	0.85	0	2,2,2	0.49	0
3	EDO	B	704	-	3,3,3	0.25	0	2,2,2	0.55	0
3	EDO	B	703	-	3,3,3	0.50	0	2,2,2	0.85	0
3	EDO	A	708	-	3,3,3	0.36	0	2,2,2	0.23	0
3	EDO	B	712	-	3,3,3	0.30	0	2,2,2	1.06	0
3	EDO	B	708	-	3,3,3	1.00	0	2,2,2	0.50	0
3	EDO	A	705	-	3,3,3	0.54	0	2,2,2	0.41	0
3	EDO	A	711	-	3,3,3	0.12	0	2,2,2	0.77	0
3	EDO	A	704	-	3,3,3	0.55	0	2,2,2	0.63	0
3	EDO	C	710	-	3,3,3	0.17	0	2,2,2	0.29	0
3	EDO	C	705	-	3,3,3	0.84	0	2,2,2	0.63	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. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	EDO	A	703	-	-	0/1/1/1	-
3	EDO	B	711	-	-	1/1/1/1	-
3	EDO	B	709	-	-	1/1/1/1	-
3	EDO	B	705	-	-	1/1/1/1	-
3	EDO	B	710	-	-	0/1/1/1	-
3	EDO	A	706	-	-	1/1/1/1	-
3	EDO	C	706	-	-	1/1/1/1	-
3	EDO	C	709	-	-	1/1/1/1	-
3	EDO	A	712	-	-	1/1/1/1	-
3	EDO	C	703	-	-	0/1/1/1	-
3	EDO	A	709	-	-	1/1/1/1	-
3	EDO	C	707	-	-	0/1/1/1	-
3	EDO	C	708	-	-	0/1/1/1	-
3	EDO	B	706	-	-	1/1/1/1	-
3	EDO	A	710	-	-	0/1/1/1	-
3	EDO	C	704	-	-	0/1/1/1	-
3	EDO	C	702	-	-	0/1/1/1	-
3	EDO	A	707	-	-	0/1/1/1	-
3	EDO	C	701	-	-	0/1/1/1	-
3	EDO	B	707	-	-	0/1/1/1	-
3	EDO	B	704	-	-	0/1/1/1	-
3	EDO	B	703	-	-	0/1/1/1	-
3	EDO	A	708	-	-	0/1/1/1	-
3	EDO	B	712	-	-	1/1/1/1	-
3	EDO	B	708	-	-	0/1/1/1	-
3	EDO	A	705	-	-	1/1/1/1	-
3	EDO	A	711	-	-	1/1/1/1	-
3	EDO	A	704	-	-	0/1/1/1	-
3	EDO	C	710	-	-	1/1/1/1	-
3	EDO	C	705	-	-	0/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (13) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	711	EDO	O1-C1-C2-O2
3	A	705	EDO	O1-C1-C2-O2
3	A	709	EDO	O1-C1-C2-O2
3	B	705	EDO	O1-C1-C2-O2
3	B	711	EDO	O1-C1-C2-O2

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Mol	Chain	Res	Type	Atoms
3	C	709	EDO	O1-C1-C2-O2
3	A	712	EDO	O1-C1-C2-O2
3	C	706	EDO	O1-C1-C2-O2
3	A	706	EDO	O1-C1-C2-O2
3	C	710	EDO	O1-C1-C2-O2
3	B	706	EDO	O1-C1-C2-O2
3	B	709	EDO	O1-C1-C2-O2
3	B	712	EDO	O1-C1-C2-O2

There are no ring outliers.

8 monomers are involved in 14 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	705	EDO	2	0
3	A	706	EDO	2	0
3	C	704	EDO	1	0
3	A	707	EDO	3	0
3	B	707	EDO	1	0
3	B	708	EDO	3	0
3	A	705	EDO	1	0
3	C	705	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

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<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	659/678 (97%)	-0.09	16 (2%) 59 65	18, 26, 46, 71	0
1	B	659/678 (97%)	0.16	35 (5%) 26 31	17, 29, 50, 70	0
1	C	659/678 (97%)	-0.18	8 (1%) 79 83	17, 25, 41, 57	0
All	All	1977/2034 (97%)	-0.04	59 (2%) 50 58	17, 26, 46, 71	0

All (59) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	504	ILE	6.7
1	A	101	TYR	6.6
1	B	517	LEU	5.3
1	B	511	LEU	4.6
1	B	552	ILE	4.4
1	B	558	ILE	4.4
1	A	100	THR	4.3
1	B	458	ASP	4.3
1	B	657	VAL	4.2
1	B	658	LEU	4.2
1	B	504	ILE	3.8
1	B	512	ILE	3.8
1	C	503	VAL	3.8
1	A	504	ILE	3.6
1	A	239	LYS	3.6
1	B	503	VAL	3.5
1	B	518	ILE	3.4
1	B	298	VAL	3.4
1	A	152	GLN	3.3
1	C	501	LEU	3.1
1	B	660	LYS	3.0
1	B	680	THR	3.0
1	B	459	LYS	2.9

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Mol	Chain	Res	Type	RSRZ
1	B	101	TYR	2.9
1	A	125	ASP	2.8
1	C	23	HIS	2.8
1	A	23	HIS	2.7
1	A	458	ASP	2.7
1	B	551	LEU	2.7
1	B	662	TRP	2.7
1	B	656	SER	2.6
1	B	553	THR	2.6
1	B	654	VAL	2.6
1	A	33	LYS	2.5
1	A	242	LYS	2.5
1	B	655	LYS	2.5
1	B	33	LYS	2.5
1	B	681	HIS	2.5
1	A	503	VAL	2.5
1	A	459	LYS	2.4
1	B	593	ASP	2.4
1	B	23	HIS	2.4
1	A	93	PHE	2.4
1	A	500	VAL	2.4
1	B	556	GLU	2.3
1	B	679	LEU	2.3
1	B	460	GLY	2.3
1	B	677	PHE	2.2
1	B	533	THR	2.1
1	B	554	ASP	2.1
1	C	391	TRP	2.1
1	A	155	THR	2.1
1	B	498	ALA	2.1
1	B	672	ILE	2.1
1	C	459	LYS	2.1
1	B	300	GLY	2.1
1	C	458	ASP	2.1
1	C	499	THR	2.0
1	A	103	ILE	2.0

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

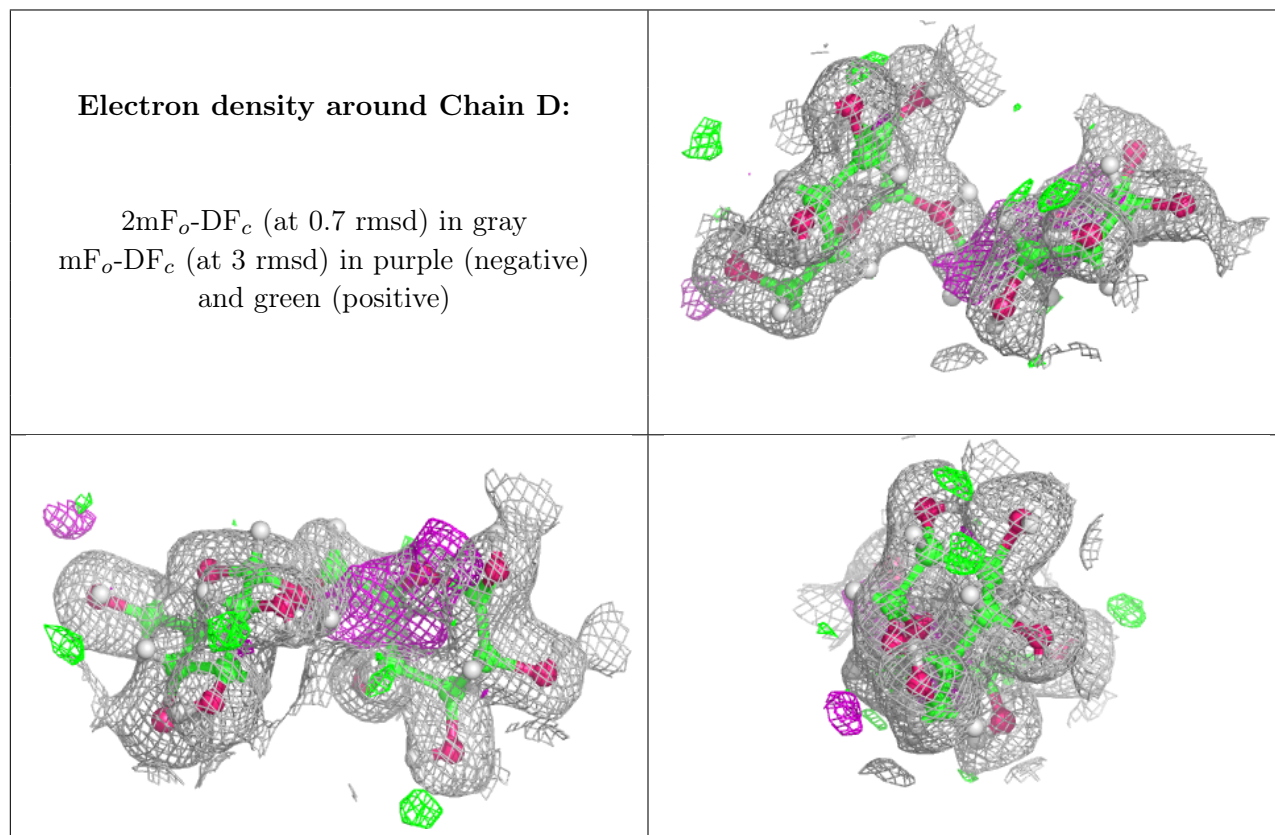
There are no non-standard protein/DNA/RNA residues in this entry.

### 6.3 Carbohydrates [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.

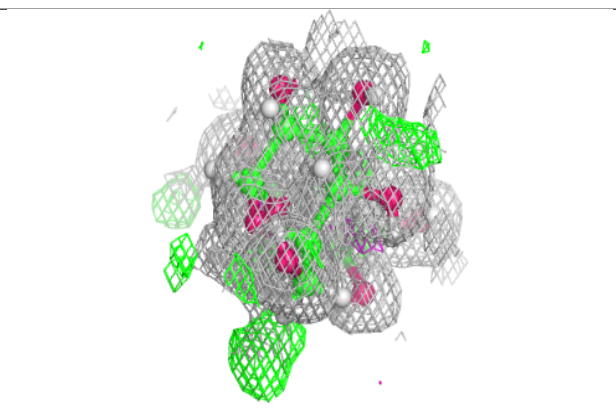
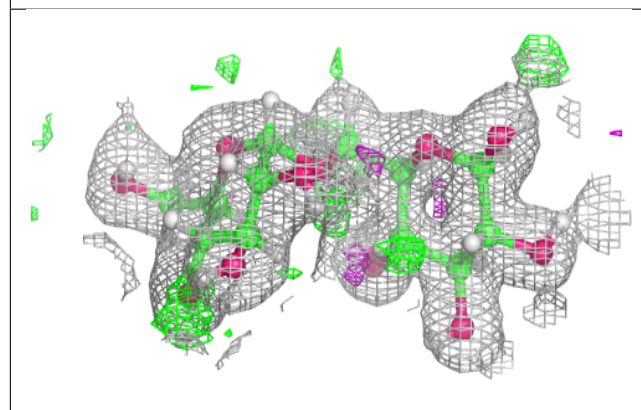
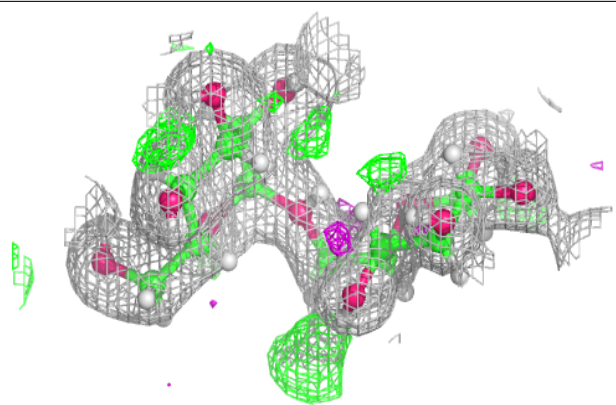
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
2	BGC	F	1	12/12	0.72	0.17	34,43,45,48	4
2	BGC	D	1	12/12	0.86	0.12	26,34,43,43	4
2	BGC	E	1	12/12	0.89	0.09	27,33,43,43	4
2	GLC	D	2	11/12	0.96	0.09	18,20,43,43	4
2	GLC	F	2	11/12	0.96	0.08	21,24,43,43	4
2	GLC	E	2	11/12	0.97	0.11	17,20,43,43	4

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.

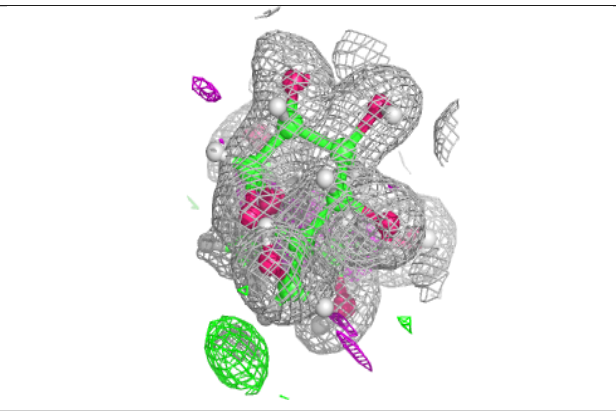
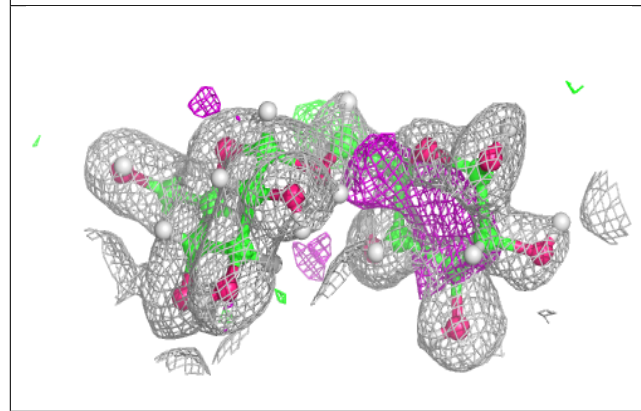
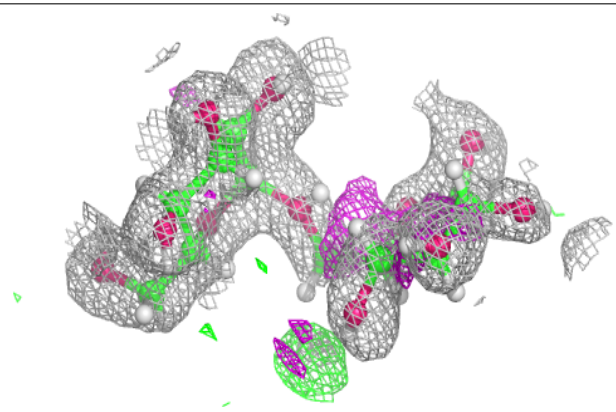


**Electron density around Chain E:**

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

**Electron density around Chain F:**

$2mF_o-DF_c$  (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
3	EDO	A	712	4/4	0.68	0.28	43,52,52,53	1
3	EDO	C	708	4/4	0.75	0.15	43,51,54,55	1
3	EDO	B	706	4/4	0.76	0.21	43,45,46,47	1
3	EDO	B	712	4/4	0.78	0.18	43,52,54,54	1
3	EDO	B	710	4/4	0.85	0.23	37,43,47,50	1
3	EDO	B	708	4/4	0.86	0.17	31,36,38,43	1
3	EDO	B	705	4/4	0.88	0.09	33,34,43,46	1
3	EDO	A	711	4/4	0.88	0.16	40,41,46,51	1
3	EDO	A	706	4/4	0.89	0.14	35,39,43,44	1
3	EDO	B	707	4/4	0.89	0.07	33,34,35,43	1
3	EDO	C	710	4/4	0.90	0.16	43,48,53,59	1
3	EDO	C	709	4/4	0.91	0.10	43,49,56,59	1
3	EDO	A	708	4/4	0.91	0.12	34,39,41,43	1
3	EDO	C	704	4/4	0.92	0.10	34,36,42,43	1
3	EDO	C	705	4/4	0.93	0.10	25,31,35,43	1
3	EDO	A	705	4/4	0.94	0.09	29,31,43,45	1
3	EDO	C	706	4/4	0.94	0.11	33,37,38,43	1
3	EDO	C	707	4/4	0.94	0.17	37,39,41,43	1
3	EDO	A	707	4/4	0.95	0.11	24,31,37,43	1
3	EDO	A	709	4/4	0.96	0.17	29,42,43,44	1
3	EDO	B	703	4/4	0.97	0.11	24,26,31,43	1
3	EDO	B	704	4/4	0.97	0.10	25,26,27,43	1
3	EDO	B	709	4/4	0.97	0.07	36,37,38,43	1
3	EDO	A	703	4/4	0.97	0.08	19,20,22,43	1
3	EDO	B	711	4/4	0.97	0.08	33,38,43,43	1
3	EDO	A	710	4/4	0.97	0.16	34,39,42,43	1
3	EDO	C	701	4/4	0.97	0.08	20,23,25,43	1
3	EDO	C	702	4/4	0.98	0.11	21,26,28,43	1
3	EDO	C	703	4/4	0.98	0.04	29,37,40,43	1
3	EDO	A	704	4/4	0.98	0.08	20,23,27,43	1

## 6.5 Other polymers [i](#)

There are no such residues in this entry.