WORLDWIDE wwPDB PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report (i)

Mar 4, 2024 – 04:10 PM JST

PDB ID	:	8IP1
Title	:	Escherichia coli OpgD mutant-D388N with beta-1,2-glucan
Authors	:	Motouchi, S.; Nakajima, M.
Deposited on	:	2023-03-13
Resolution	:	2.06 Å(reported)

The following versions of software and data (see references (i)) were used in the production of this report:

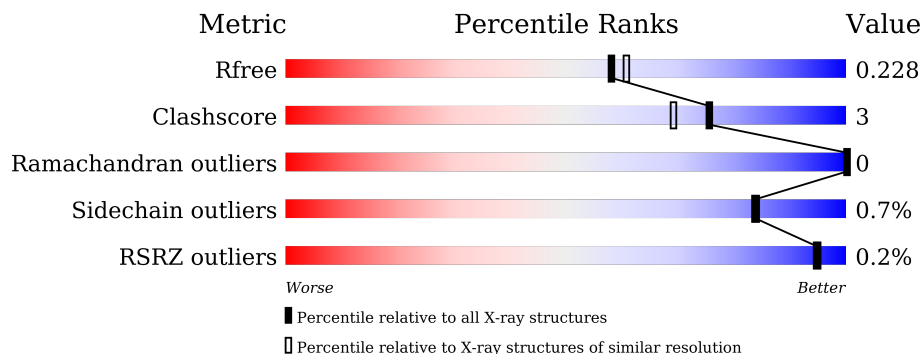|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry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

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 2.06 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	Percentile Ranks	Value
Rfree		0.228
Clashscore		3
Ramachandran outliers		0
Sidechain outliers		0.7%
RSRZ outliers		0.2%

Worse ← → Better

▮ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution

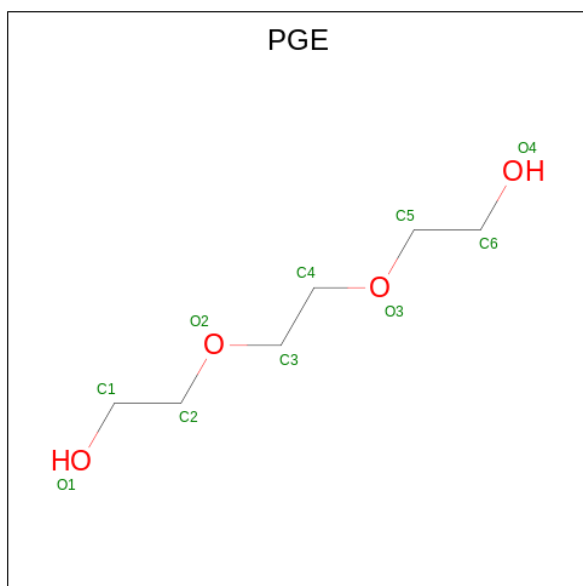| Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2684 (2.08-2.04)
Clashscore	141614	2801 (2.08-2.04)
Ramachandran outliers	138981	2768 (2.08-2.04)
Sidechain outliers	138945	2768 (2.08-2.04)
RSRZ outliers	127900	2646 (2.08-2.04)

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	559	81% 9% 10%
1	B	559	83% 6% · 10%
2	C	11	82% 18%
3	E	13	100%

2 Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 9013 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 Glucans biosynthesis protein D.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	502	Total 4075	C 2604	N 704	O 744	S 23	0	0	0
1	B	503	Total 4082	C 2608	N 705	O 746	S 23	0	0	0

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	388	ASN	ASP	engineered mutation	UNP P40120
A	552	LEU	-	expression tag	UNP P40120
A	553	GLU	-	expression tag	UNP P40120
A	554	HIS	-	expression tag	UNP P40120
A	555	HIS	-	expression tag	UNP P40120
A	556	HIS	-	expression tag	UNP P40120
A	557	HIS	-	expression tag	UNP P40120
A	558	HIS	-	expression tag	UNP P40120
A	559	HIS	-	expression tag	UNP P40120
B	388	ASN	ASP	engineered mutation	UNP P40120
B	552	LEU	-	expression tag	UNP P40120
B	553	GLU	-	expression tag	UNP P40120
B	554	HIS	-	expression tag	UNP P40120
B	555	HIS	-	expression tag	UNP P40120
B	556	HIS	-	expression tag	UNP P40120
B	557	HIS	-	expression tag	UNP P40120
B	558	HIS	-	expression tag	UNP P40120
B	559	HIS	-	expression tag	UNP P40120

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

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	Trace
2	C	11	Total 122	C 66	O 56	0	0	0

- Molecule 3 is an oligosaccharide called beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	Trace
3	E	13	Total 144	C 78	O 66	0	0	0

- Molecule 4 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total 7	C 4	O 3	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total 7	C 4	O 3	0	0

- Molecule 5 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: $C_6H_{14}O_4$).

PGE

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	B	1	Total 10	C 6	O 4	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	277	Total 277	O 277	0	0
6	B	289	Total 289	O 289	0	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: Glucans biosynthesis protein D

Chain A:

• Molecule 1: Glucans biosynthesis protein D

Chain B:
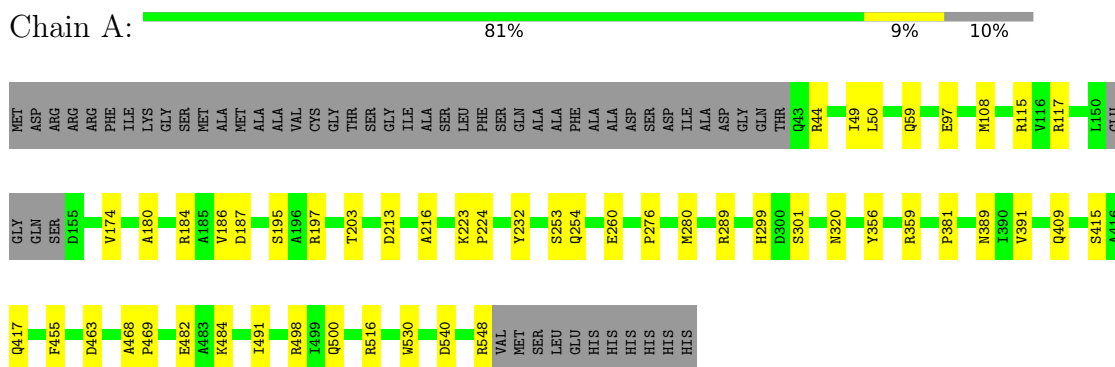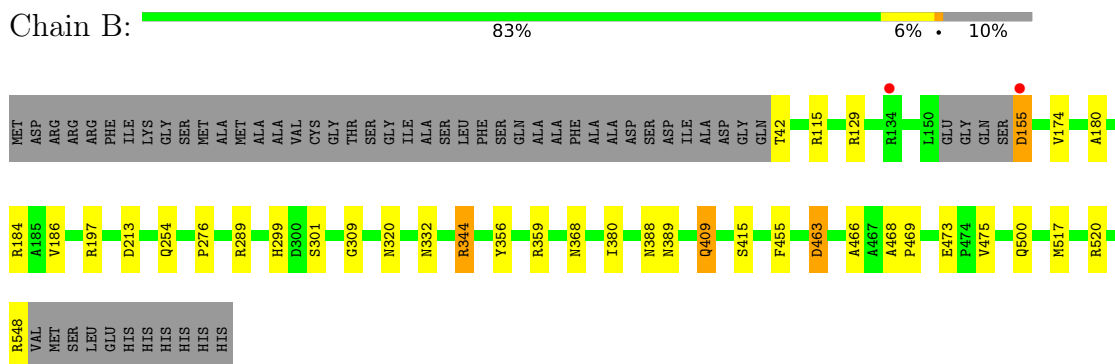
• Molecule 2: beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2) -beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-gluc opyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1 -2)-beta-D-glucopyranose

Chain C:
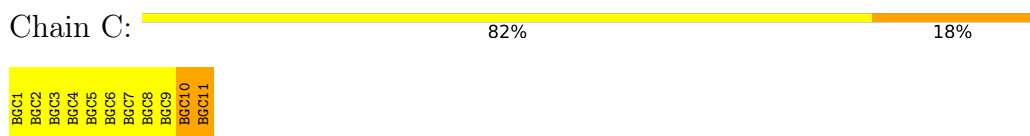
• Molecule 3: beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2) -beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-gluc

opyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1
-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose-(1-2)-beta-D-glucopyranose

Chain E: 100%

BGC1 BGC2 BGC3 BGC4 BGC5 BGC6 BGC7 BGC8 BGC9 BGC10 BGC11 BGC12 BGC13

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	58.09Å 87.10Å 110.85Å 90.00° 101.13° 90.00°	Depositor
Resolution (Å)	47.74 – 2.06 47.69 – 2.06	Depositor EDS
% Data completeness (in resolution range)	99.2 (47.74-2.06) 99.2 (47.69-2.06)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.34 (at 2.07Å)	Xtriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.175 , 0.224 0.184 , 0.228	Depositor DCC
R_{free} test set	3252 reflections (4.89%)	wwPDB-VP
Wilson B-factor (Å^2)	22.3	Xtriage
Anisotropy	0.076	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 47.4	EDS
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	9013	wwPDB-VP
Average B, all atoms (Å^2)	24.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.41% 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: PGE, BGC, PEG

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	0.66	0/4198	0.84	0/5697
1	B	0.65	0/4205	0.84	0/5707
All	All	0.66	0/8403	0.84	0/11404

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 ⓘ

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	4075	0	3892	29	0
1	B	4082	0	3899	22	0
2	C	122	0	102	1	0
3	E	144	0	120	1	0
4	A	14	0	20	2	0
5	B	10	0	14	0	0
6	A	277	0	0	2	0
6	B	289	0	0	2	0
All	All	9013	0	8047	51	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 3.

The worst 5 of 51 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:463:ASP:OD1	1:B:466:ALA:HB3	1.78	0.84
1:A:59:GLN:HE22	4:A:602:PEG:H22	1.46	0.80
1:B:368:ASN:OD1	1:B:409:GLN:NE2	2.22	0.73
1:A:59:GLN:HE22	4:A:602:PEG:C2	2.15	0.59
1:A:289:ARG:HD3	1:A:320:ASN:O	2.03	0.59

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	498/559 (89%)	483 (97%)	15 (3%)	0	100	100
1	B	499/559 (89%)	484 (97%)	15 (3%)	0	100	100
All	All	997/1118 (89%)	967 (97%)	30 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	427/470 (91%)	425 (100%)	2 (0%)	88	89

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	428/470 (91%)	424 (99%)	4 (1%)	78	78
All	All	855/940 (91%)	849 (99%)	6 (1%)	84	84

5 of 6 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	344	ARG
1	B	409	GLN
1	B	463	ASP
1	A	548	ARG
1	A	463	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	85	GLN
1	B	191	GLN
1	B	409	GLN
1	B	368	ASN
1	A	319	ASN

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 ⓘ

24 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	0.64	0	17,17,17	1.21	1 (5%)
2	BGC	C	10	2	11,11,12	0.55	0	15,15,17	1.37	4 (26%)
2	BGC	C	11	2	11,11,12	0.56	0	15,15,17	1.51	3 (20%)
2	BGC	C	2	2	11,11,12	0.48	0	15,15,17	1.99	6 (40%)
2	BGC	C	3	2	11,11,12	0.68	0	15,15,17	1.52	2 (13%)
2	BGC	C	4	2	11,11,12	1.03	0	15,15,17	1.51	3 (20%)
2	BGC	C	5	2	11,11,12	0.85	1 (9%)	15,15,17	1.30	1 (6%)
2	BGC	C	6	2	11,11,12	0.76	0	15,15,17	1.74	4 (26%)
2	BGC	C	7	2	11,11,12	0.66	0	15,15,17	2.95	3 (20%)
2	BGC	C	8	2	11,11,12	0.71	0	15,15,17	1.73	2 (13%)
2	BGC	C	9	2	11,11,12	0.52	0	15,15,17	1.31	2 (13%)
3	BGC	E	1	3	12,12,12	0.52	0	17,17,17	1.41	3 (17%)
3	BGC	E	10	3	11,11,12	0.53	0	15,15,17	1.50	3 (20%)
3	BGC	E	11	3	11,11,12	0.89	0	15,15,17	1.43	1 (6%)
3	BGC	E	12	3	11,11,12	0.63	0	15,15,17	1.61	4 (26%)
3	BGC	E	13	3	11,11,12	0.58	0	15,15,17	0.84	1 (6%)
3	BGC	E	2	3	11,11,12	0.61	0	15,15,17	2.01	3 (20%)
3	BGC	E	3	3	11,11,12	0.74	0	15,15,17	0.78	0
3	BGC	E	4	3	11,11,12	0.64	0	15,15,17	1.58	2 (13%)
3	BGC	E	5	3	11,11,12	0.52	0	15,15,17	1.82	3 (20%)
3	BGC	E	6	3	11,11,12	0.58	0	15,15,17	1.27	2 (13%)
3	BGC	E	7	3	11,11,12	0.78	0	15,15,17	2.66	6 (40%)
3	BGC	E	8	3	11,11,12	1.64	2 (18%)	15,15,17	1.89	5 (33%)
3	BGC	E	9	3	11,11,12	0.69	0	15,15,17	1.74	4 (26%)

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	BGC	C	10	2	-	0/2/19/22	0/1/1/1
2	BGC	C	11	2	-	0/2/19/22	0/1/1/1
2	BGC	C	2	2	-	0/2/19/22	0/1/1/1
2	BGC	C	3	2	-	0/2/19/22	0/1/1/1
2	BGC	C	4	2	-	1/2/19/22	0/1/1/1

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	BGC	C	5	2	-	0/2/19/22	0/1/1/1
2	BGC	C	6	2	-	0/2/19/22	0/1/1/1
2	BGC	C	7	2	-	0/2/19/22	0/1/1/1
2	BGC	C	8	2	-	1/2/19/22	0/1/1/1
2	BGC	C	9	2	-	0/2/19/22	0/1/1/1
3	BGC	E	1	3	-	0/2/22/22	0/1/1/1
3	BGC	E	10	3	-	0/2/19/22	0/1/1/1
3	BGC	E	11	3	-	0/2/19/22	0/1/1/1
3	BGC	E	12	3	-	2/2/19/22	0/1/1/1
3	BGC	E	13	3	-	0/2/19/22	0/1/1/1
3	BGC	E	2	3	-	2/2/19/22	0/1/1/1
3	BGC	E	3	3	-	0/2/19/22	0/1/1/1
3	BGC	E	4	3	-	0/2/19/22	0/1/1/1
3	BGC	E	5	3	-	0/2/19/22	0/1/1/1
3	BGC	E	6	3	-	0/2/19/22	0/1/1/1
3	BGC	E	7	3	-	0/2/19/22	0/1/1/1
3	BGC	E	8	3	-	0/2/19/22	0/1/1/1
3	BGC	E	9	3	-	0/2/19/22	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	E	8	BGC	O4-C4	3.59	1.51	1.43
3	E	8	BGC	C2-C3	2.95	1.56	1.52
2	C	5	BGC	O5-C1	2.19	1.47	1.43

The worst 5 of 68 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	7	BGC	C1-O5-C5	7.61	122.50	112.19
3	E	7	BGC	C1-O5-C5	5.99	120.31	112.19
3	E	2	BGC	C1-O5-C5	5.41	119.53	112.19
2	C	7	BGC	C1-C2-C3	5.41	116.32	109.67
2	C	7	BGC	O2-C2-C3	-4.37	101.38	110.14

There are no chirality outliers.

5 of 6 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	E	12	BGC	C4-C5-C6-O6
3	E	2	BGC	C4-C5-C6-O6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
3	E	12	BGC	O5-C5-C6-O6
3	E	2	BGC	O5-C5-C6-O6
2	C	4	BGC	C4-C5-C6-O6

There are no ring outliers.

3 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	11	BGC	1	0
3	E	3	BGC	1	0
2	C	10	BGC	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.

Oligosaccharide Chain C

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain E

Bond lengths

Bond angles

Torsions

Rings
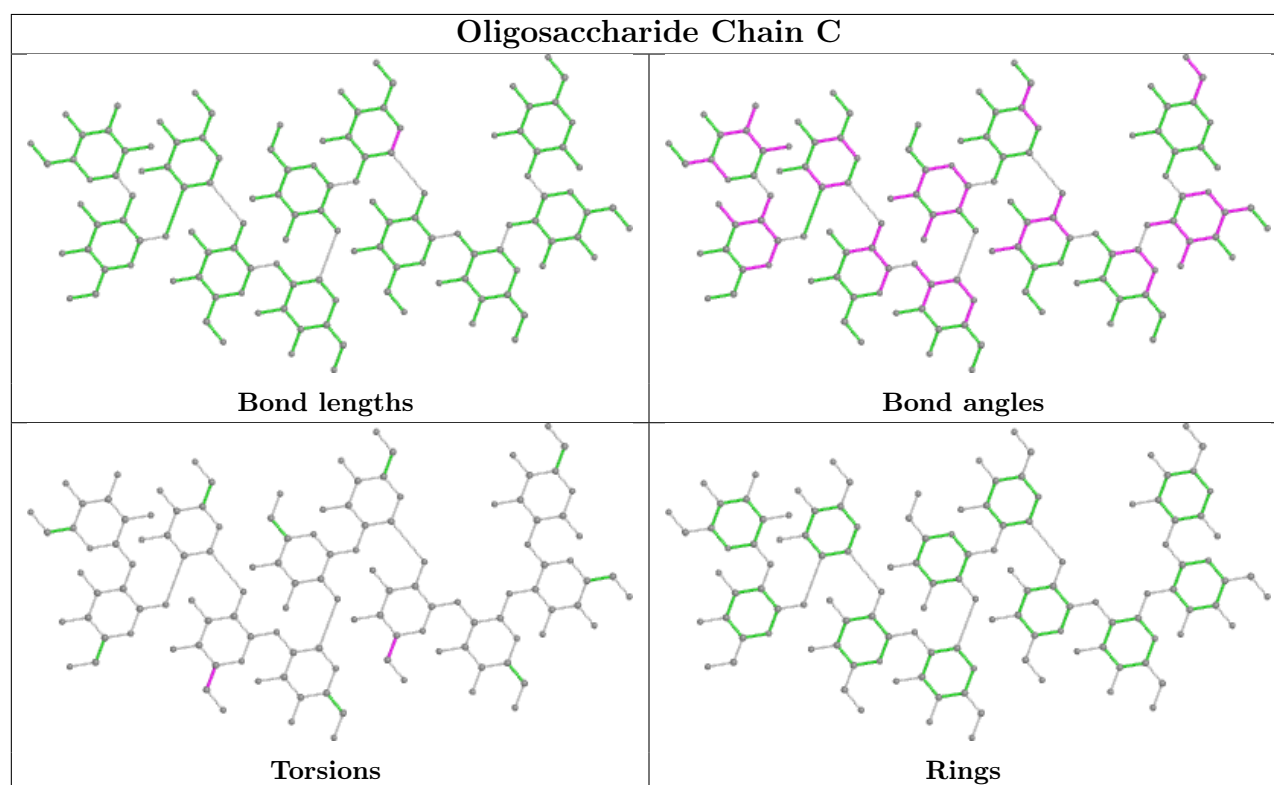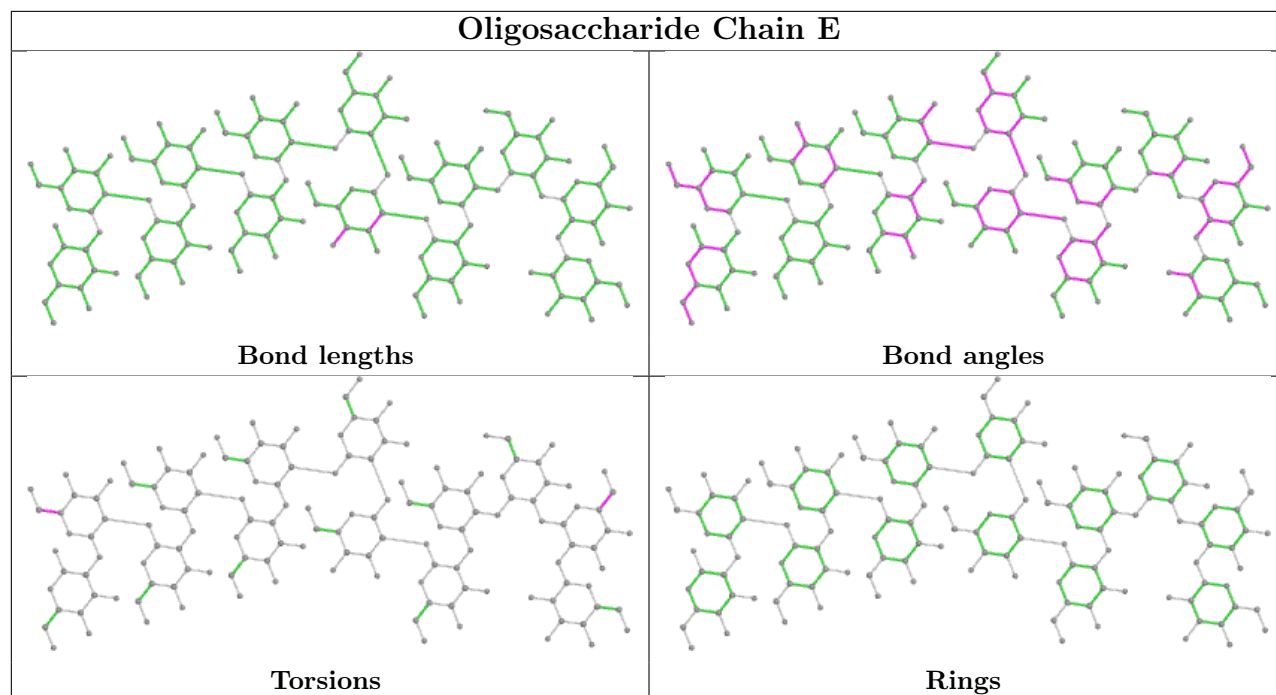
5.6 Ligand geometry ⓘ

3 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	PGE	B	601	-	9,9,9	0.16	0	8,8,8	0.18	0
4	PEG	A	601	-	6,6,6	0.12	0	5,5,5	0.20	0
4	PEG	A	602	-	6,6,6	0.14	0	5,5,5	0.12	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	PGE	B	601	-	-	3/7/7/7	-
4	PEG	A	601	-	-	2/4/4/4	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	PEG	A	602	-	-	1/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 6 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	602	PEG	O1-C1-C2-O2
4	A	601	PEG	O2-C3-C4-O4
4	A	601	PEG	C1-C2-O2-C3
5	B	601	PGE	C6-C5-O3-C4
5	B	601	PGE	C3-C4-O3-C5

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	602	PEG	2	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	502/559 (89%)	-0.43	0	100	100	15, 22, 37, 55	0
1	B	503/559 (89%)	-0.33	2 (0%)	92	93	15, 22, 37, 58	0
All	All	1005/1118 (89%)	-0.38	2 (0%)	95	95	15, 22, 37, 58	0

All (2) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	155	ASP	3.2
1	B	134	ARG	2.2

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.
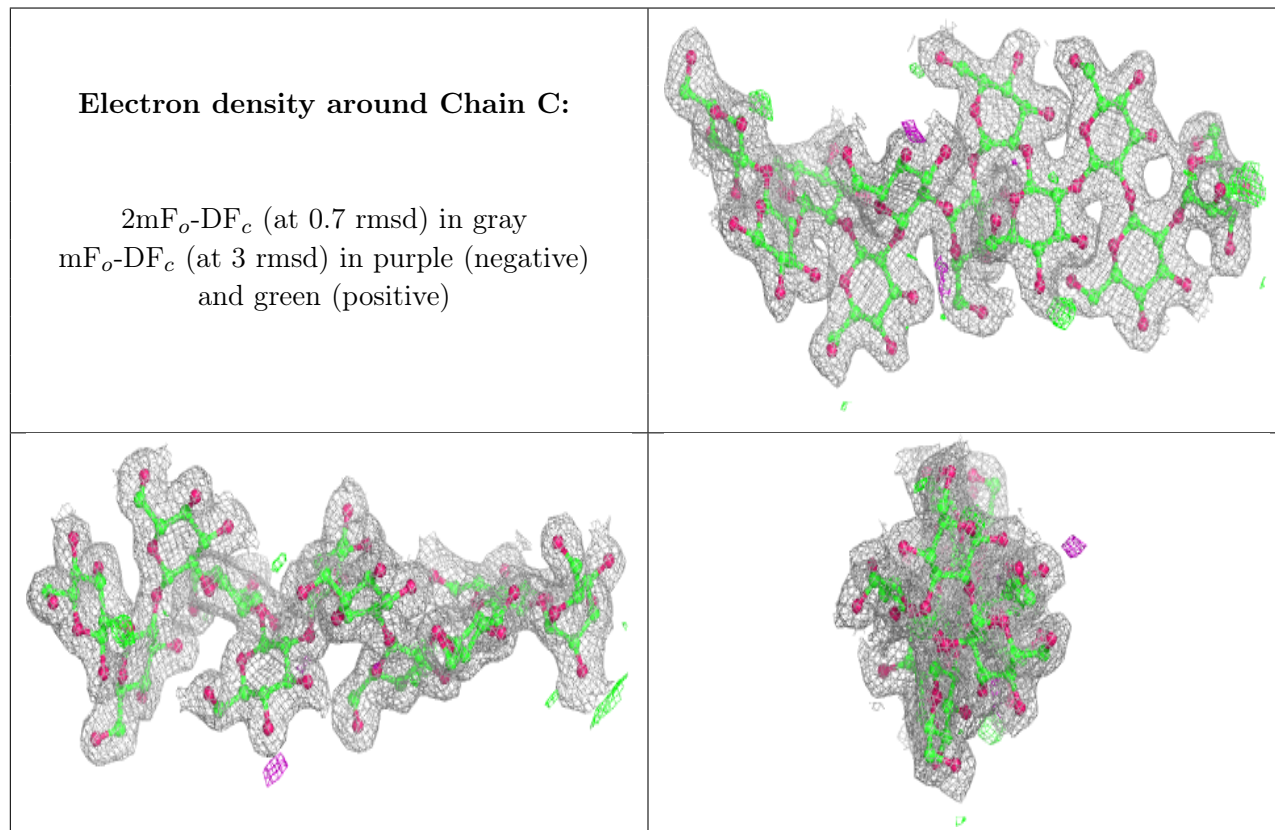
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	BGC	E	12	11/12	0.85	0.16	30,34,39,39	0
3	BGC	E	13	11/12	0.86	0.16	30,34,37,40	0
3	BGC	E	8	11/12	0.92	0.10	18,21,24,25	0
3	BGC	E	1	12/12	0.93	0.12	21,23,29,30	0
2	BGC	C	11	11/12	0.95	0.09	21,22,23,23	0
3	BGC	E	11	11/12	0.95	0.08	19,22,25,26	0
2	BGC	C	1	12/12	0.95	0.09	19,21,24,24	0

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	BGC	E	2	11/12	0.95	0.08	21,23,29,33	0
2	BGC	C	8	11/12	0.96	0.07	17,19,21,23	0
2	BGC	C	2	11/12	0.96	0.08	18,21,26,30	0
3	BGC	E	4	11/12	0.97	0.07	16,17,18,19	0
3	BGC	E	5	11/12	0.97	0.09	15,16,17,18	0
3	BGC	E	6	11/12	0.97	0.08	14,15,16,16	0
3	BGC	E	7	11/12	0.97	0.08	15,16,17,17	0
2	BGC	C	10	11/12	0.97	0.09	15,18,20,21	0
3	BGC	E	9	11/12	0.97	0.10	17,17,18,21	0
3	BGC	E	10	11/12	0.97	0.06	18,18,20,20	0
2	BGC	C	4	11/12	0.97	0.07	16,17,18,19	0
2	BGC	C	7	11/12	0.97	0.07	14,16,17,17	0
2	BGC	C	3	11/12	0.97	0.09	14,15,16,16	0
2	BGC	C	5	11/12	0.98	0.08	14,15,16,18	0
3	BGC	E	3	11/12	0.98	0.07	16,17,18,18	0
2	BGC	C	6	11/12	0.98	0.06	15,16,17,18	0
2	BGC	C	9	11/12	0.98	0.08	18,18,20,21	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 E:

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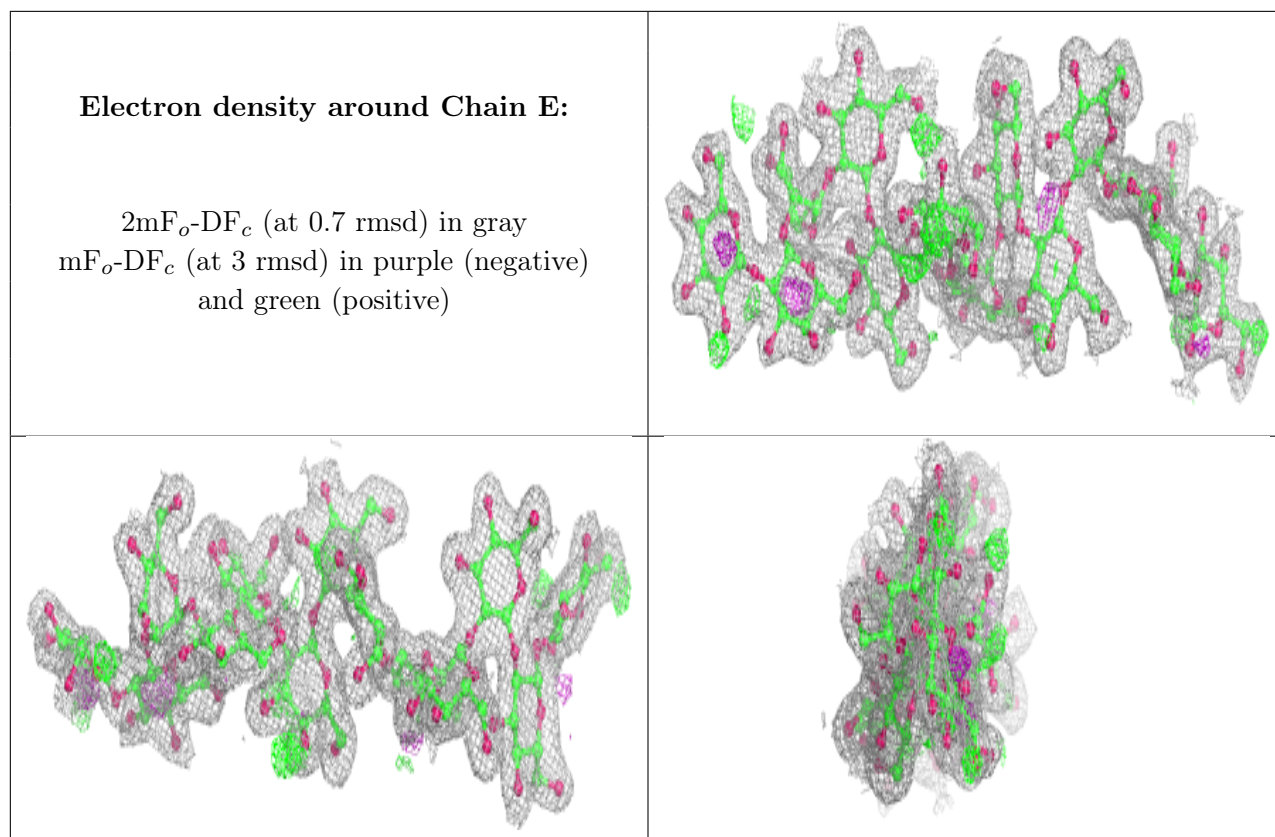
6.4 Ligands (i)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	PEG	A	601	7/7	0.85	0.17	37,38,39,40	0
4	PEG	A	602	7/7	0.90	0.25	42,42,44,44	0
5	PGE	B	601	10/10	0.95	0.11	24,31,33,34	0

6.5 Other polymers (i)

There are no such residues in this entry.