Full wwPDB X-ray Structure Validation Report (i)

Oct 30, 2023 – 07:02 PM JST

PDB ID	:	4YN3
Title	:	Crystal structure of Cucumisin complex with pro-peptide
Authors	:	Murayama, K.; Kato-Murayama, M.; Yokoyama, S.; Arima, K.; Shirouzu, M.
Deposited on	:	2015-03-09
Resolution	:	1.95 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 1.95 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.
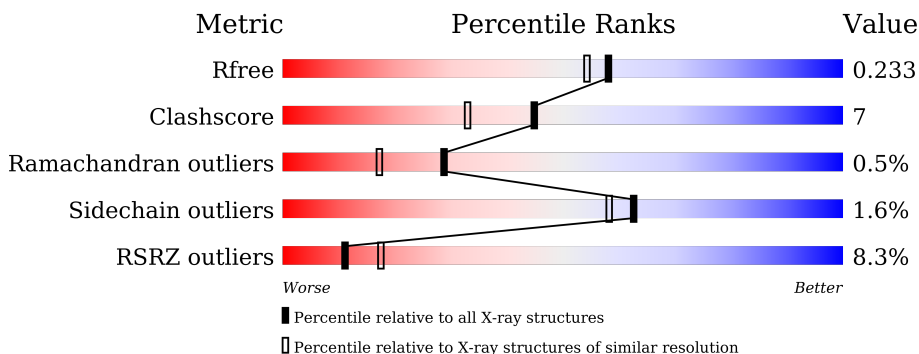
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2580 (1.96-1.96)
Clashscore	141614	2705 (1.96-1.96)
Ramachandran outliers	138981	2678 (1.96-1.96)
Sidechain outliers	138945	2678 (1.96-1.96)
RSRZ outliers	127900	2539 (1.96-1.96)

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	621	
2	B	96	
3	C	5	
4	D	3	

2 Entry composition ⓘ

There are 8 unique types of molecules in this entry. The entry contains 5568 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 Cucumisin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	596	Total 4530	C 2866	N 786	O 865	S 13	0	5	0

- Molecule 2 is a protein called Cucumisin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	65	Total 517	C 329	N 84	O 101	S 3	0	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-6	GLY	-	expression tag	UNP Q39547
B	-5	SER	-	expression tag	UNP Q39547
B	-4	SER	-	expression tag	UNP Q39547
B	-3	GLY	-	expression tag	UNP Q39547
B	-2	SER	-	expression tag	UNP Q39547
B	-1	SER	-	expression tag	UNP Q39547
B	0	GLY	-	expression tag	UNP Q39547
B	1	MET	-	expression tag	UNP Q39547

- Molecule 3 is an oligosaccharide called alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)]2-acetamido-2-deoxy-beta-D-glucopyranose.
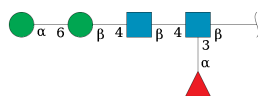
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	C	5	Total 60	C 34	N 2	O 24	0	0	0

- Molecule 4 is an oligosaccharide called alpha-L-fucopyranose-(1-3)-[2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)]2-acetamido-2-deoxy-beta-D-glucopyranose.
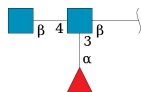
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
4	D	3	Total 38	C 22	N 2	O 14	0	0	0

- Molecule 5 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	2	Total 2	Cl 2	0	0

- Molecule 6 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).
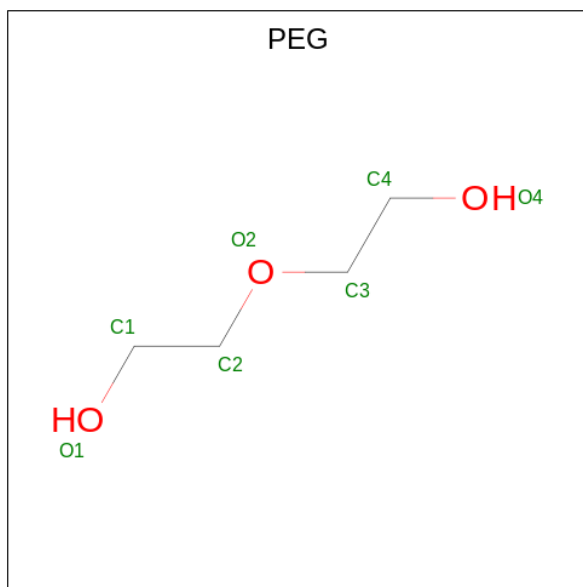
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total 7	C 4	O 3	0	0
6	A	1	Total 7	C 4	O 3	0	0
6	A	1	Total 7	C 4	O 3	0	0
6	A	1	Total 7	C 4	O 3	0	0

• Molecule 7 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).
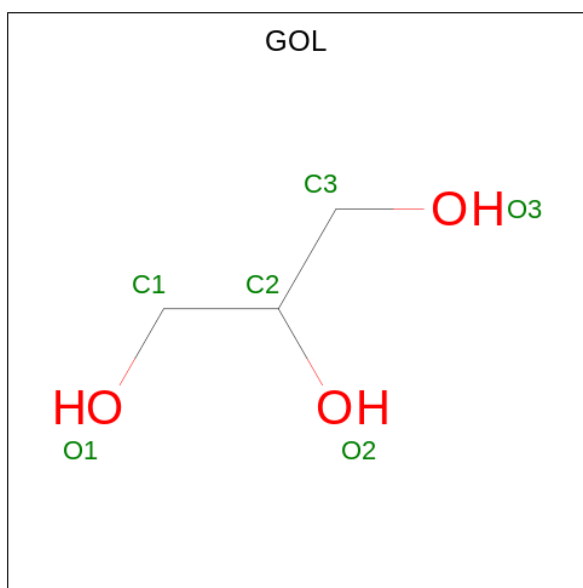
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	1	Total 6	C 3	O 3	0	0

• Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	353	Total 353	O 353	0	0
8	B	34	Total 34	O 34	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: Cucumisin

Chain A:
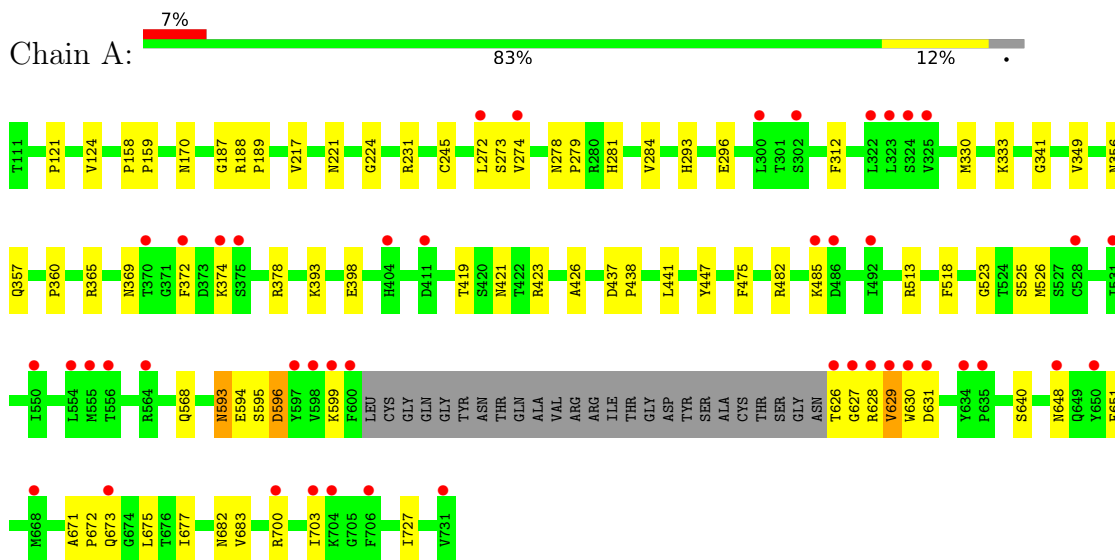
- Molecule 2: Cucumisin

Chain B:
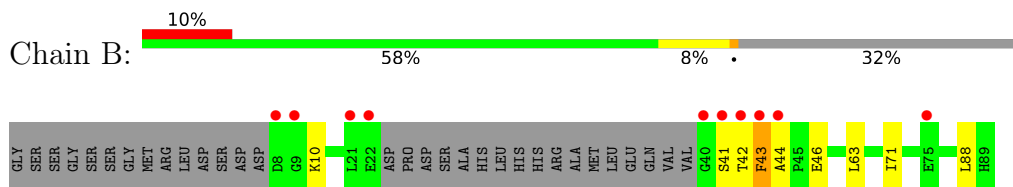
- Molecule 3: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain C:

- Molecule 4: alpha-L-fucopyranose-(1-3)-[2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain D:

NAG1
FUC2
NAG3

4 Data and refinement statistics ⓘ

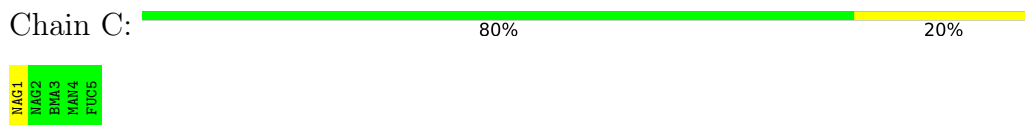| Property	Value	Source
Space group	P 42	Depositor
Cell constants a, b, c, α, β, γ	97.74Å 97.74Å 73.43Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	34.56 – 1.95 34.56 – 1.96	Depositor EDS
% Data completeness (in resolution range)	98.2 (34.56-1.95) 98.3 (34.56-1.96)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.10	Depositor
$< I/\sigma(I) >$ [1]	2.12 (at 1.95Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.184 , 0.222 0.195 , 0.233	Depositor DCC
R_{free} test set	2468 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å^2)	35.3	Xtriage
Anisotropy	0.124	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 55.8	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.029 for h,-k,-l	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	5568	wwPDB-VP
Average B, all atoms (Å^2)	41.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.44% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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 (i)

5.1   Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: MAN, GOL, PEG, CL, NAG, BMA, FUC

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	0.32	0/4647	0.59	1/6344 (0.0%)
2	B	0.33	0/525	0.65	0/701
All	All	0.32	0/5172	0.60	1/7045 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	187	GLY	N-CA-C	5.12	125.90	113.10

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	4530	0	4429	62	0
2	B	517	0	505	6	0
3	C	60	0	52	0	0
4	D	38	0	34	0	0
5	A	2	0	0	1	0
6	A	28	0	40	0	0
7	A	6	0	6	0	0
8	A	353	0	0	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	B	34	0	0	2	0
All	All	5568	0	5066	67	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 7.

All (67) 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:221:ASN:HD22	1:A:224:GLY:H	1.11	0.96
1:A:374:LYS:HD2	1:A:374:LYS:H	1.35	0.92
1:A:279:PRO:HG2	1:A:482:ARG:HE	1.38	0.88
1:A:628:ARG:HD3	1:A:631:ASP:OD2	1.85	0.76
1:A:626:THR:HG22	1:A:627:GLY:H	1.56	0.70
1:A:349[B]:VAL:HG11	1:A:423:ARG:HB3	1.74	0.70
1:A:374:LYS:HD2	1:A:374:LYS:N	2.05	0.70
1:A:703:ILE:HD13	1:A:727:ILE:HG22	1.74	0.70
1:A:374:LYS:H	1:A:374:LYS:CD	2.06	0.67
1:A:357:GLN:HE21	1:A:357:GLN:HA	1.60	0.66
1:A:626:THR:HG22	1:A:627:GLY:N	2.12	0.64
1:A:357:GLN:HA	1:A:357:GLN:NE2	2.14	0.62
1:A:398:GLU:HG2	1:A:441:LEU:HD21	1.82	0.62
1:A:421:ASN:ND2	1:A:438:PRO:HG2	2.15	0.61
1:A:293:HIS:HA	1:A:296:GLU:HG2	1.83	0.61
1:A:682:ASN:OD1	1:A:683:VAL:HG23	2.01	0.60
1:A:628:ARG:O	1:A:629:VAL:HB	2.02	0.59
1:A:365:ARG:HG2	1:A:378:ARG:HB3	1.84	0.59
1:A:279:PRO:HG2	1:A:482:ARG:NE	2.14	0.59
2:B:42:THR:O	2:B:43:PHE:C	2.43	0.57
1:A:365:ARG:O	1:A:374:LYS:HG3	2.06	0.55
1:A:221:ASN:ND2	1:A:224:GLY:H	1.93	0.53
1:A:419:THR:HG21	1:A:441:LEU:HD22	1.90	0.53
1:A:273:SER:HB3	1:A:525[A]:SER:HB2	1.91	0.52
2:B:44:ALA:HB1	2:B:46:GLU:OE2	2.10	0.51
1:A:596:ASP:HA	1:A:599:LYS:HD3	1.93	0.51
1:A:333:LYS:HE2	8:A:1158:HOH:O	2.10	0.50
2:B:10:LYS:NZ	8:B:101:HOH:O	2.42	0.50
2:B:42:THR:O	2:B:44:ALA:N	2.43	0.50
1:A:349[A]:VAL:HG13	1:A:426:ALA:HB2	1.92	0.50
1:A:673:GLN:OE1	1:A:673:GLN:N	2.44	0.50
1:A:628:ARG:O	1:A:629:VAL:CB	2.59	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:121:PRO:O	1:A:124:VAL:HG13	2.13	0.49
1:A:727:ILE:HD12	1:A:727:ILE:N	2.28	0.48
1:A:594:GLU:HG2	1:A:595:SER:N	2.29	0.47
1:A:594:GLU:HG2	1:A:595:SER:H	1.79	0.47
1:A:369:ASN:HB3	1:A:372:PHE:CD2	2.49	0.47
1:A:593:ASN:HB2	1:A:594:GLU:OE1	2.15	0.46
1:A:278:ASN:HB3	8:B:126:HOH:O	2.14	0.46
1:A:369:ASN:HB3	1:A:372:PHE:HD2	1.81	0.46
1:A:596:ASP:O	1:A:599:LYS:HG2	2.16	0.45
1:A:648:ASN:OD1	1:A:700:ARG:HG2	2.17	0.45
1:A:349[B]:VAL:CG2	1:A:426:ALA:HB2	2.46	0.44
1:A:189:PRO:HA	5:A:809:CL:CL	2.55	0.44
1:A:245:CYS:SG	1:A:274[A]:VAL:HG11	2.57	0.44
1:A:330:MET:HG2	8:A:1079:HOH:O	2.18	0.44
1:A:360:PRO:HB2	1:A:393:LYS:HG2	2.00	0.43
1:A:365:ARG:NE	1:A:398:GLU:OE2	2.51	0.43
1:A:671:ALA:HA	1:A:672:PRO:HD3	1.90	0.43
1:A:273:SER:HB3	1:A:525[A]:SER:CB	2.48	0.43
2:B:63:LEU:CD1	2:B:71:ILE:HD12	2.48	0.43
1:A:593:ASN:C	1:A:593:ASN:HD22	2.21	0.43
1:A:341:GLY:HA3	1:A:447:TYR:OH	2.19	0.42
1:A:274[A]:VAL:HG12	2:B:88:LEU:HD23	2.01	0.42
1:A:281[A]:HIS:HB3	1:A:284:VAL:HG22	2.02	0.42
1:A:629:VAL:HG13	1:A:630:TRP:N	2.34	0.42
1:A:651:PHE:CD1	1:A:651:PHE:N	2.88	0.42
1:A:158:PRO:HA	1:A:159:PRO:HD3	1.98	0.42
1:A:485:LYS:HE3	1:A:640[A]:SER:OG	2.19	0.42
1:A:349[B]:VAL:HG22	1:A:426:ALA:HB2	2.02	0.41
1:A:671:ALA:HB2	1:A:677:ILE:HD12	2.01	0.41
1:A:672:PRO:HD2	1:A:675:LEU:HD12	2.03	0.41
1:A:217:VAL:HG11	1:A:518:PHE:HZ	1.86	0.41
1:A:475:PHE:CE1	1:A:523:GLY:HA2	2.55	0.41
1:A:272:LEU:CD1	1:A:274[A]:VAL:HG22	2.51	0.40
1:A:421:ASN:HD21	1:A:438:PRO:HG2	1.82	0.40
1:A:312:PHE:CZ	1:A:568:GLN:HG2	2.57	0.40

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	597/621 (96%)	572 (96%)	24 (4%)	1 (0%)	47	38
2	B	61/96 (64%)	57 (93%)	2 (3%)	2 (3%)	4	0
All	All	658/717 (92%)	629 (96%)	26 (4%)	3 (0%)	29	17

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	629	VAL
2	B	43	PHE
2	B	41	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	498/512 (97%)	489 (98%)	9 (2%)	59	53
2	B	56/82 (68%)	56 (100%)	0	100	100
All	All	554/594 (93%)	545 (98%)	9 (2%)	62	58

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	170	ASN
1	A	188	ARG
1	A	231	ARG

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Mol	Chain	Res	Type
1	A	356	ASN
1	A	437	ASP
1	A	513	ARG
1	A	526	MET
1	A	593	ASN
1	A	596	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	170	ASN
1	A	221	ASN
1	A	247	ASN
1	A	303	ASN
1	A	357	GLN
1	A	421	ASN
1	A	515	ASN
1	A	593	ASN
2	B	57	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 ⓘ

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	
3	NAG	C	1	3,1	14,14,15	0.55	0		17,19,21	0.68	1 (5%)	
3	NAG	C	2	3	14,14,15	0.53	0		17,19,21	0.61	0	
3	BMA	C	3	3	11,11,12	0.46	0		15,15,17	0.34	0	
3	MAN	C	4	3	11,11,12	0.47	0		15,15,17	0.58	0	
3	FUC	C	5	3	10,10,11	0.50	0		14,14,16	0.44	0	
4	NAG	D	1	4,1	14,14,15	0.61	0		17,19,21	0.74	0	
4	FUC	D	2	4	10,10,11	0.54	0		14,14,16	0.37	0	
4	NAG	D	3	4	14,14,15	0.50	0		17,19,21	0.67	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
3	NAG	C	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	C	2	3	-	1/6/23/26	0/1/1/1
3	BMA	C	3	3	-	0/2/19/22	0/1/1/1
3	MAN	C	4	3	-	0/2/19/22	0/1/1/1
3	FUC	C	5	3	-	-	0/1/1/1
4	NAG	D	1	4,1	-	4/6/23/26	0/1/1/1
4	FUC	D	2	4	-	-	0/1/1/1
4	NAG	D	3	4	-	4/6/23/26	0/1/1/1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	1	NAG	C2-N2-C7	-2.02	120.03	122.90

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	D	1	NAG	C8-C7-N2-C2
4	D	1	NAG	O7-C7-N2-C2
4	D	3	NAG	C8-C7-N2-C2
4	D	3	NAG	O7-C7-N2-C2
4	D	1	NAG	O5-C5-C6-O6
4	D	3	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	D	3	NAG	O5-C5-C6-O6
4	D	1	NAG	C4-C5-C6-O6
3	C	2	NAG	C4-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

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
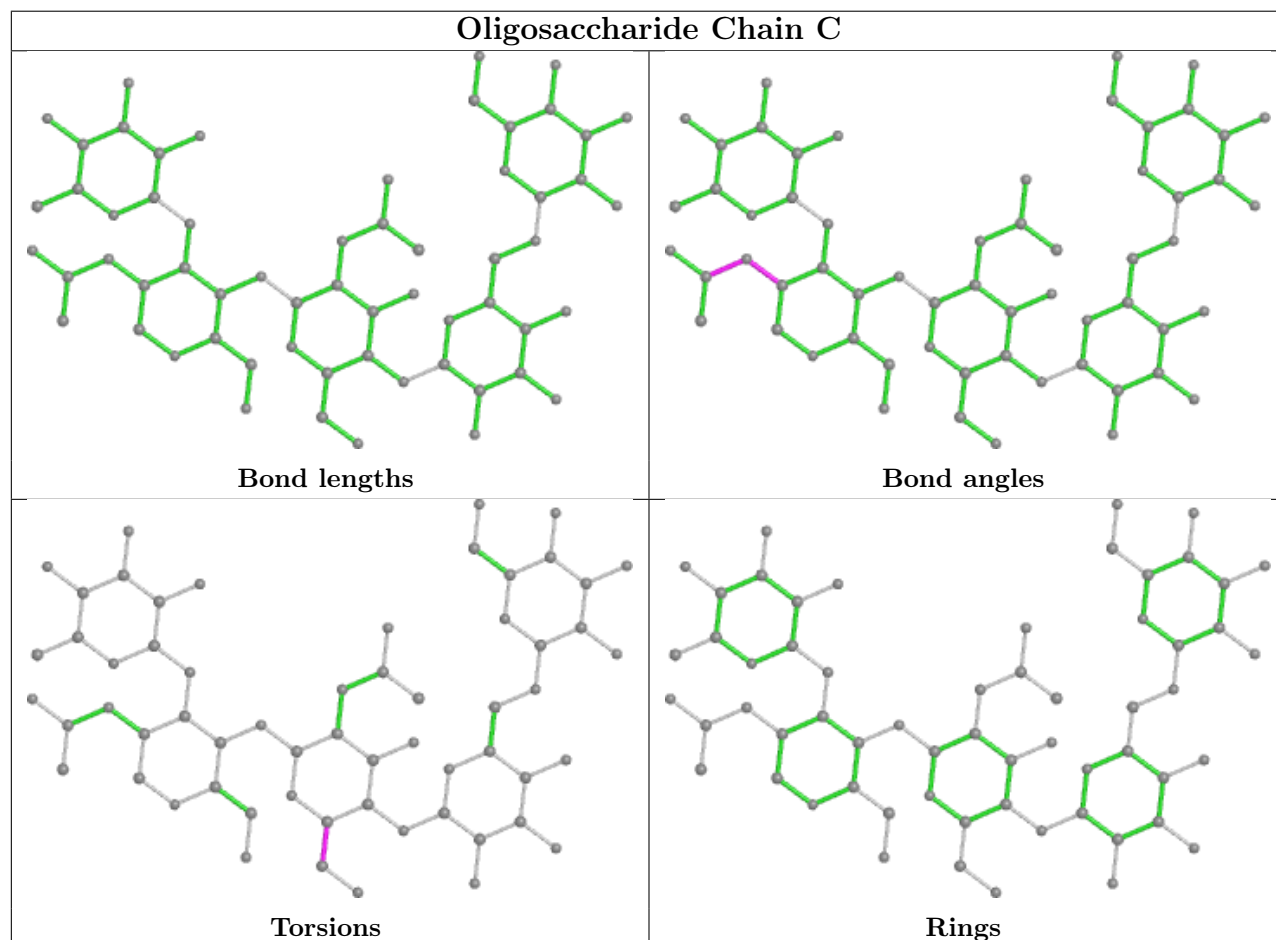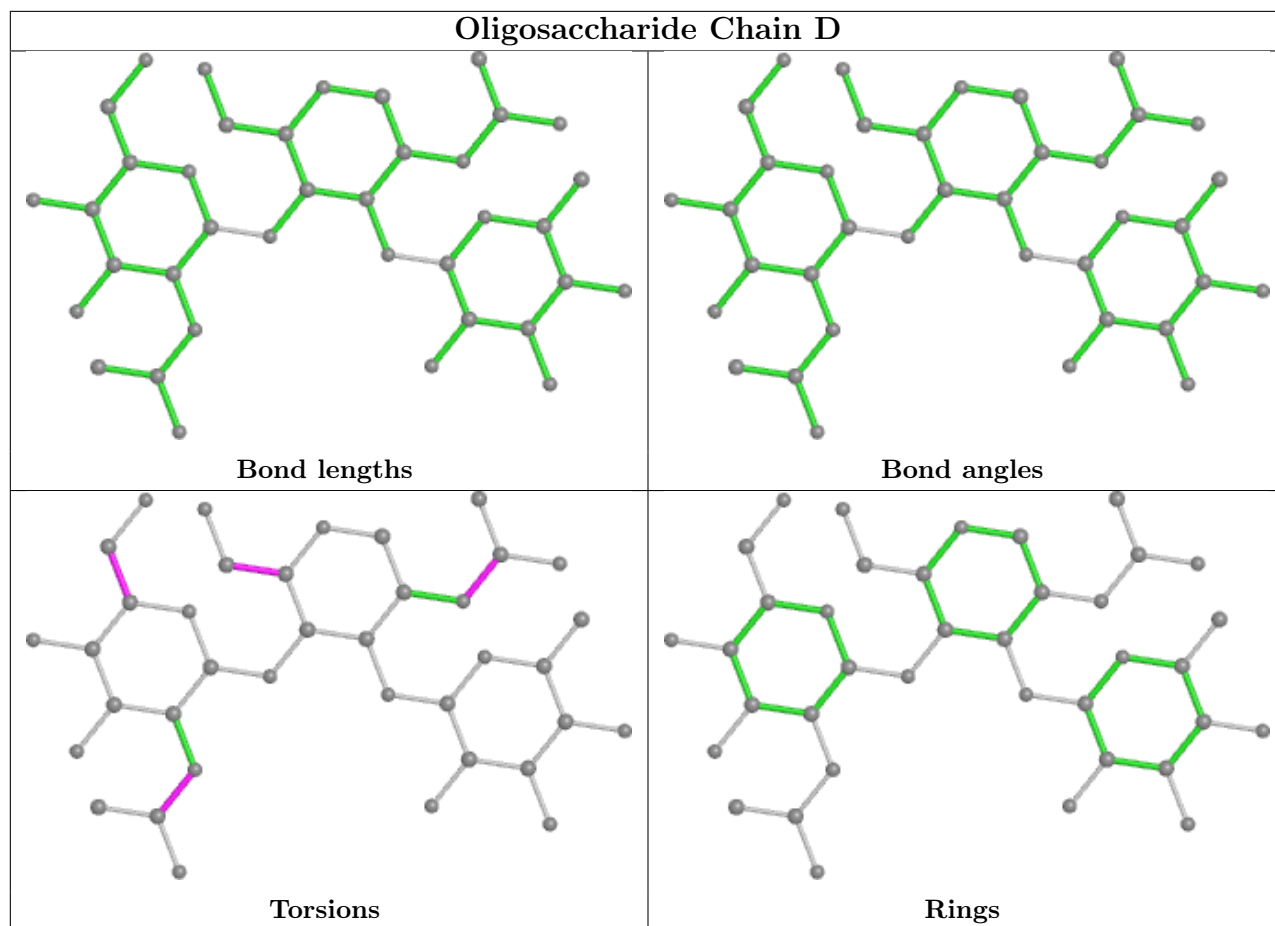
5.6 Ligand geometry (i)

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
6	PEG	A	811	-	6,6,6	0.51	0	5,5,5	0.69	0
6	PEG	A	814	-	6,6,6	0.45	0	5,5,5	0.75	0
6	PEG	A	812	-	6,6,6	0.48	0	5,5,5	0.71	0
6	PEG	A	813	-	6,6,6	0.50	0	5,5,5	0.71	0
7	GOL	A	815	-	5,5,5	2.03	3 (60%)	5,5,5	1.08	1 (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
6	PEG	A	811	-	-	0/4/4/4	-
6	PEG	A	814	-	-	1/4/4/4	-
6	PEG	A	812	-	-	0/4/4/4	-
6	PEG	A	813	-	-	0/4/4/4	-
7	GOL	A	815	-	-	0/4/4/4	-

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	815	GOL	O1-C1	-2.70	1.31	1.42
7	A	815	GOL	O3-C3	-2.23	1.33	1.42
7	A	815	GOL	C1-C2	2.12	1.60	1.51

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	815	GOL	O1-C1-C2	-2.24	99.46	110.20

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	814	PEG	O2-C3-C4-O4

There are no ring outliers.

No monomer is involved in short contacts.

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.

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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	596/621 (95%)	0.47	45 (7%)	13	21	25, 36, 62, 84	0
2	B	65/96 (67%)	0.90	10 (15%)	2	3	31, 41, 73, 79	0
All	All	661/717 (92%)	0.51	55 (8%)	11	17	25, 36, 63, 84	0

All (55) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	600	PHE	14.2
2	B	43	PHE	11.9
2	B	42	THR	8.0
1	A	626	THR	7.5
1	A	731	VAL	6.0
1	A	627	GLY	5.9
2	B	21	LEU	5.9
1	A	630	TRP	5.0
1	A	599	LYS	4.8
1	A	706	PHE	4.8
1	A	628	ARG	4.7
1	A	598	VAL	4.5
2	B	8	ASP	3.9
1	A	650	TYR	3.9
2	B	40	GLY	3.9
2	B	75	GLU	3.7
1	A	554	LEU	3.6
2	B	22	GLU	3.6
2	B	41	SER	3.5
1	A	323	LEU	3.5
1	A	631	ASP	3.4
1	A	555	MET	3.4
1	A	704	LYS	3.2
1	A	411	ASP	3.2

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Mol	Chain	Res	Type	RSRZ
1	A	492	ILE	3.2
1	A	300	LEU	3.0
1	A	272	LEU	2.8
1	A	531	ILE	2.8
1	A	564	ARG	2.7
1	A	550	ILE	2.7
1	A	322	LEU	2.6
1	A	375	SER	2.6
1	A	700	ARG	2.5
1	A	673	GLN	2.5
2	B	9	GLY	2.5
1	A	597	TYR	2.5
1	A	629	VAL	2.5
1	A	404	HIS	2.4
2	B	44	ALA	2.4
1	A	668	MET	2.4
1	A	302	SER	2.4
1	A	374	LYS	2.4
1	A	325	VAL	2.4
1	A	370	THR	2.3
1	A	324	SER	2.3
1	A	274[A]	VAL	2.3
1	A	486	ASP	2.3
1	A	528	CYS	2.3
1	A	635	PRO	2.3
1	A	372	PHE	2.3
1	A	703	ILE	2.2
1	A	648	ASN	2.1
1	A	634	TYR	2.1
1	A	485	LYS	2.1
1	A	556	THR	2.0

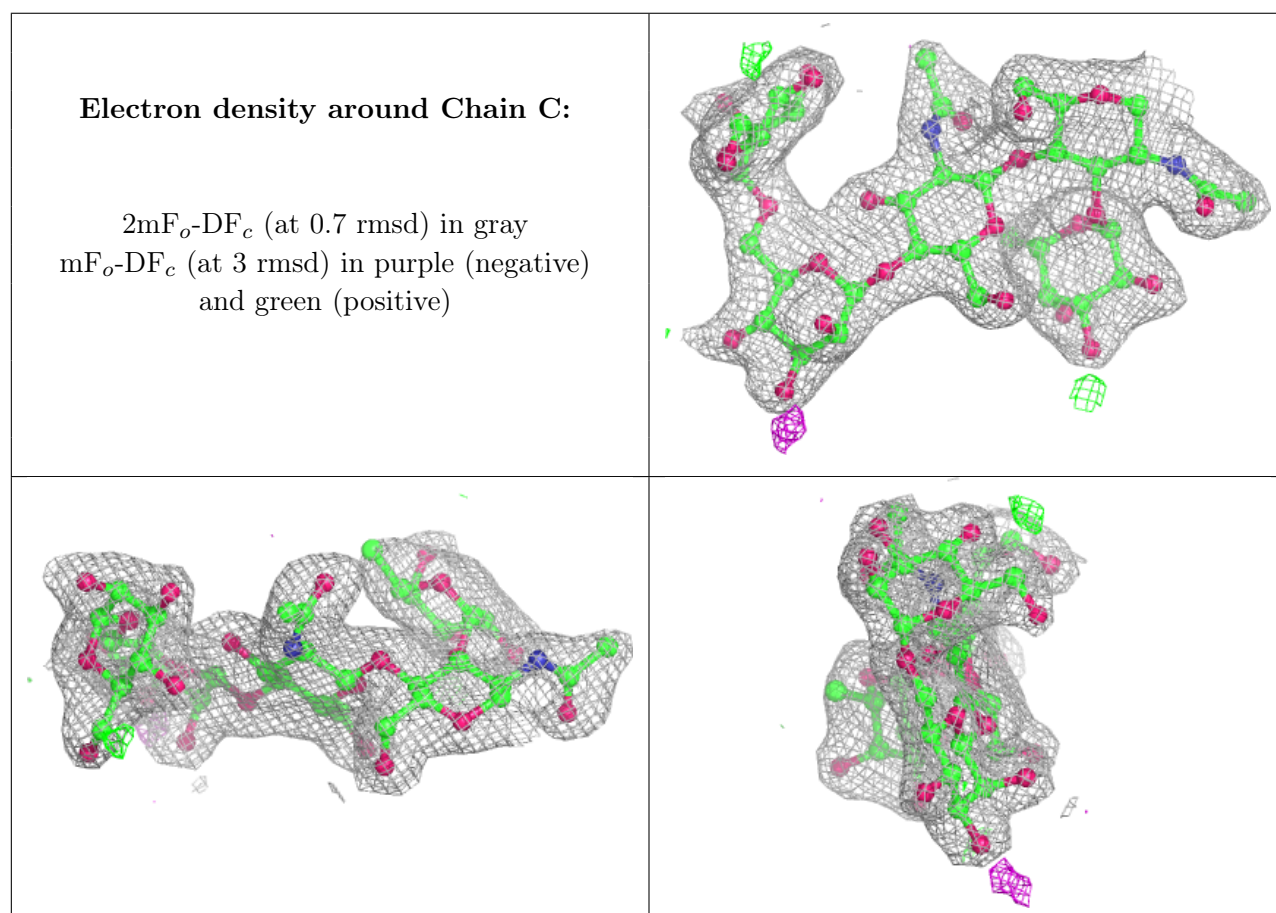## 6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

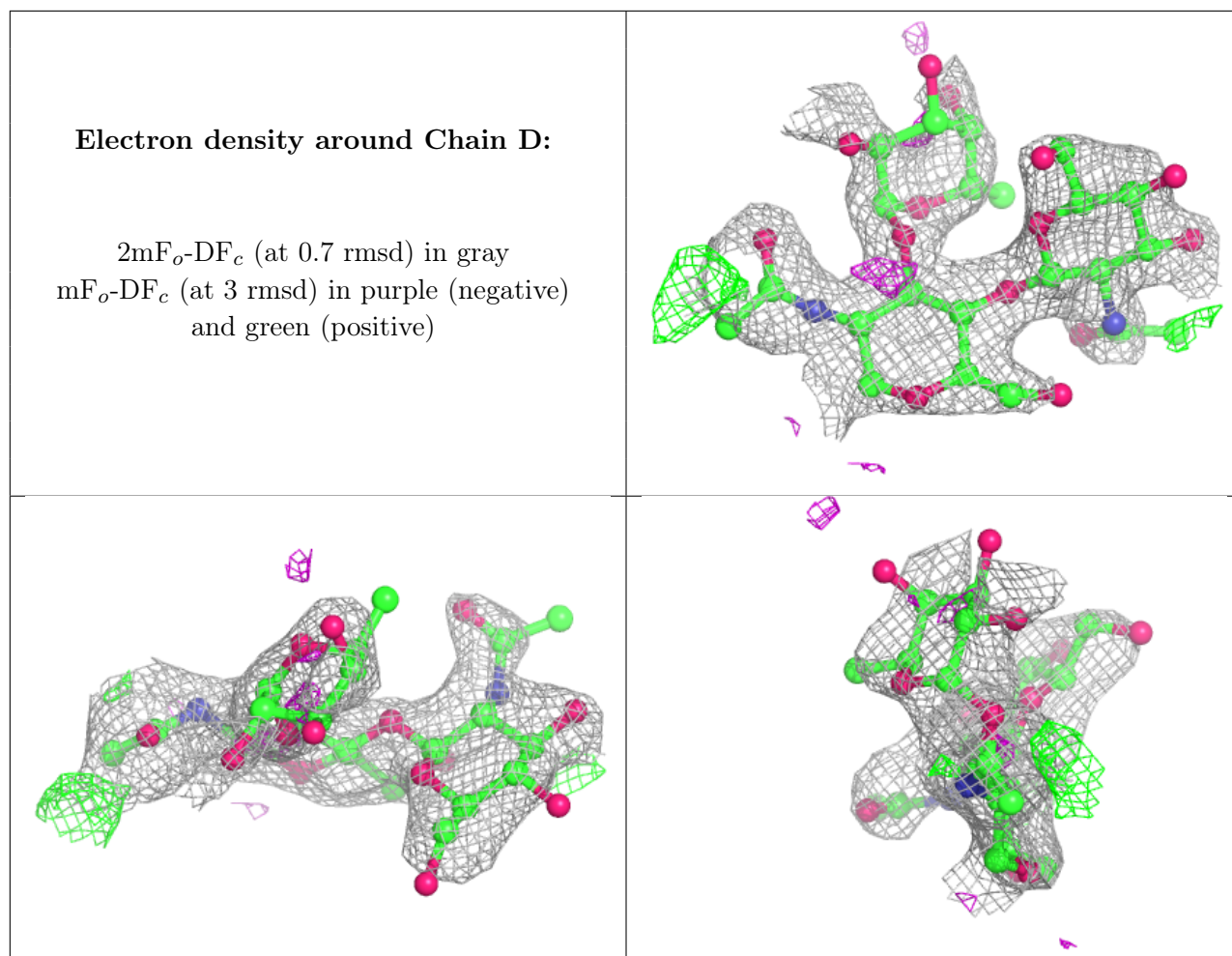There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates ⓘ

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	NAG	D	1	14/15	0.72	0.34	71,74,78,78	0
4	FUC	D	2	10/11	0.81	0.43	80,81,81,82	0
4	NAG	D	3	14/15	0.83	0.33	80,81,83,83	0
3	MAN	C	4	11/12	0.94	0.18	49,51,53,53	0
3	BMA	C	3	11/12	0.94	0.13	43,45,49,49	0
3	NAG	C	1	14/15	0.96	0.10	36,38,41,41	0
3	NAG	C	2	14/15	0.96	0.08	37,40,43,43	0
3	FUC	C	5	10/11	0.96	0.07	46,49,50,52	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:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (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
7	GOL	A	815	6/6	0.76	0.19	51,54,57,57	0
6	PEG	A	811	7/7	0.83	0.15	47,48,49,52	0
6	PEG	A	813	7/7	0.85	0.23	69,70,70,71	0
6	PEG	A	812	7/7	0.85	0.20	63,63,66,68	0
6	PEG	A	814	7/7	0.88	0.14	63,63,65,65	0
5	CL	A	810	1/1	0.92	0.21	60,60,60,60	0
5	CL	A	809	1/1	0.97	0.07	49,49,49,49	1

6.5 Other polymers ⓘ

There are no such residues in this entry.