Full wwPDB X-ray Structure Validation Report (i)

Jun 25, 2024 – 09:06 PM EDT

PDB ID	:	7AUW
Title	:	Inhibitory complex of human meprin beta with mouse fetuin-B.
Authors	:	Eckhard, U.; Gomis-Ruth, F.X.
Deposited on	:	2020-11-03
Resolution	:	2.80 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*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references (1)) were used in the production of this report:

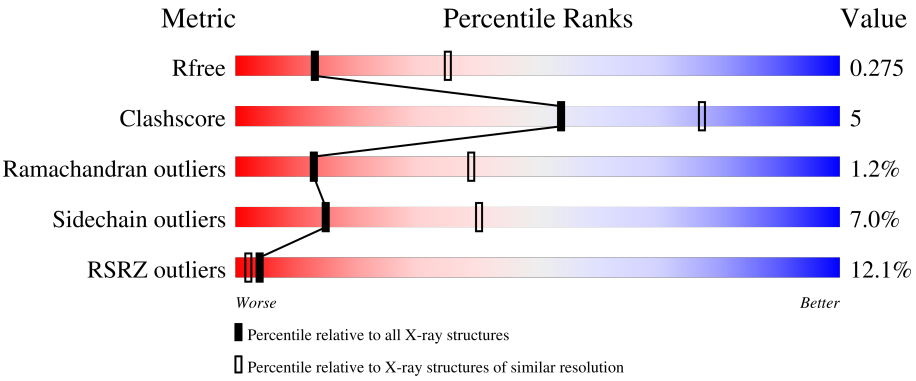
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.37.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.80 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	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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	550	2% 82% 13%
1	C	550	2% 79% 17%
2	B	394	19% 68% 11% 20%
2	D	394	26% 64% 10% 24%
3	E	7	43% 57%

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Mol	Chain	Length	Quality of chain
3	G	7	29% 71%
3	M	7	43% 57%
3	O	7	29% 71%
4	F	3	33% 67%
4	N	3	33% 67%
4	T	3	33% 67%
5	H	6	33% 33% 33%
5	P	6	50% 50%
6	I	3	33% 67%
6	Q	3	33% 67%
7	J	12	8% 67% 25%
7	R	12	8% 67% 25%
8	K	3	67% 33%
8	S	3	67% 33%
9	L	4	100%
10	U	3	33% 67%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
10	FUC	U	2	-	-	-	X
4	BMA	N	3	-	-	-	X
4	BMA	T	3	-	-	-	X
5	MAN	H	4	-	-	-	X
5	BMA	P	3	-	-	-	X
5	MAN	P	4	-	-	-	X
6	FUC	I	3	-	-	-	X
6	FUC	Q	3	-	-	-	X

2 Entry composition (i)

There are 15 unique types of molecules in this entry. The entry contains 13918 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 Meprin A subunit beta.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	532	Total	C	N	O	S	0	0	0
			4260	2679	740	820	21			
1	C	532	Total	C	N	O	S	0	0	0
			4260	2679	740	820	21			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	609	PRO	-	expression tag	UNP Q16820
A	610	SER	-	expression tag	UNP Q16820
A	611	LYS	-	expression tag	UNP Q16820
C	609	PRO	-	expression tag	UNP Q16820
C	610	SER	-	expression tag	UNP Q16820
C	611	LYS	-	expression tag	UNP Q16820

- Molecule 2 is a protein called Fetuin-B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	314	Total	C	N	O	S	0	0	0
			2129	1314	365	434	16			
2	D	298	Total	C	N	O	S	0	0	0
			1979	1219	346	399	15			

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	389	HIS	-	expression tag	UNP Q9QXC1
B	390	HIS	-	expression tag	UNP Q9QXC1
B	391	HIS	-	expression tag	UNP Q9QXC1
B	392	HIS	-	expression tag	UNP Q9QXC1
B	393	HIS	-	expression tag	UNP Q9QXC1
B	394	HIS	-	expression tag	UNP Q9QXC1

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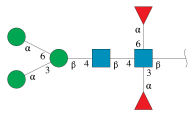
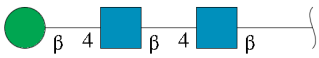
Chain	Residue	Modelled	Actual	Comment	Reference
D	389	HIS	-	expression tag	UNP Q9QXC1
D	390	HIS	-	expression tag	UNP Q9QXC1
D	391	HIS	-	expression tag	UNP Q9QXC1
D	392	HIS	-	expression tag	UNP Q9QXC1
D	393	HIS	-	expression tag	UNP Q9QXC1
D	394	HIS	-	expression tag	UNP Q9QXC1

- Molecule 3 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)][alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	E	7	Total	C	N	O	0	0	0
			81	46	2	33			
3	G	7	Total	C	N	O	0	0	0
			81	46	2	33			
3	M	7	Total	C	N	O	0	0	0
			81	46	2	33			
3	O	7	Total	C	N	O	0	0	0
			81	46	2	33			

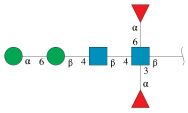
- Molecule 4 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
4	F	3	Total	C	N	O	0	0	0
			39	22	2	15			
4	N	3	Total	C	N	O	0	0	0
			39	22	2	15			
4	T	3	Total	C	N	O	0	0	0
			39	22	2	15			

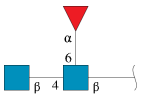
- Molecule 5 is an oligosaccharide called alpha-D-mannopyranose-(1-6)-beta-D-mannopyranos

e-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)][alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



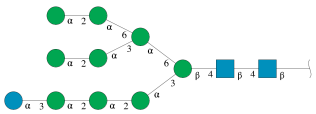
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
5	H	6	Total	C	N	O	0	0	0
			70	40	2	28			
5	P	6	Total	C	N	O	0	0	0
			70	40	2	28			

- Molecule 6 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
6	I	3	Total	C	N	O	0	0	0
			38	22	2	14			
6	Q	3	Total	C	N	O	0	0	0
			38	22	2	14			

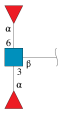
- Molecule 7 is an oligosaccharide called alpha-D-glucopyranose-(1-3)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
7	J	12	Total	C	N	O	0	0	0
			138	76	2	60			
7	R	12	Total	C	N	O	0	0	0
			138	76	2	60			

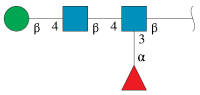
- Molecule 8 is an oligosaccharide called alpha-L-fucopyranose-(1-3)-[alpha-L-fucopyranose-(1

-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



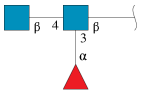
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf	Trace
8	K	3	Total C N O 34 20 1 13	0	0	0
8	S	3	Total C N O 34 20 1 13	0	0	0

- Molecule 9 is an oligosaccharide called 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
9	L	4	Total C N O 49 28 2 19	0	0	0

- Molecule 10 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
10	U	3	Total C N O 38 22 2 14	0	0	0

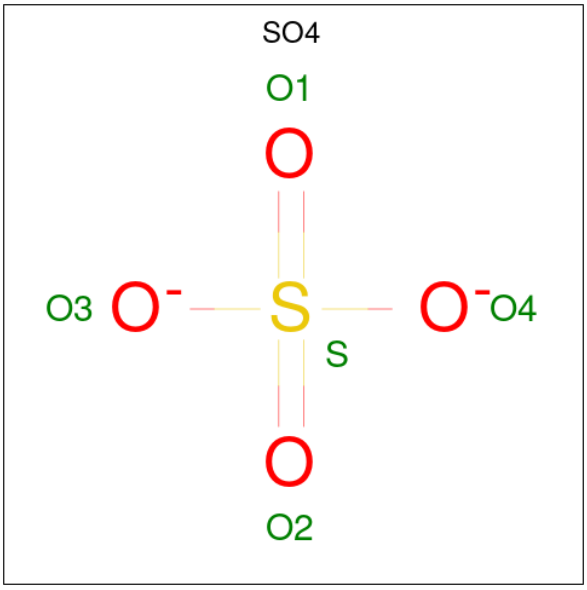
- Molecule 11 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
11	A	1	Total Na 1 1	0	0
11	C	1	Total Na 1 1	0	0

- Molecule 12 is ZINC ION (three-letter code: ZN) (formula: Zn).

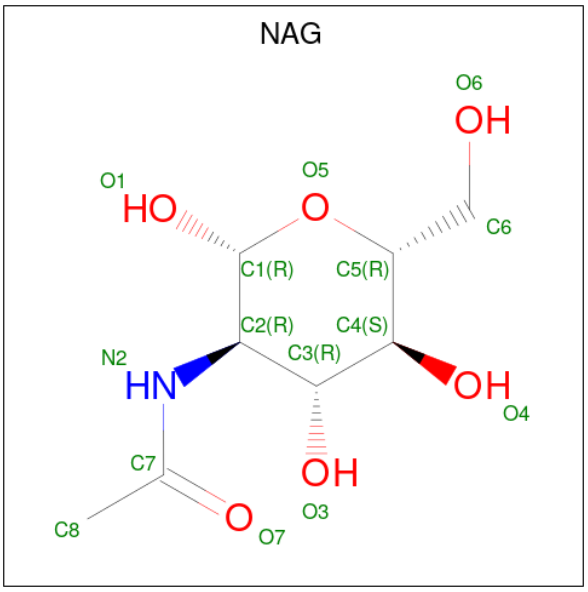
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
12	A	1	Total Zn 1 1	0	0
12	C	1	Total Zn 1 1	0	0

- Molecule 13 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
13	A	1	Total O S 5 4 1	0	0
13	C	1	Total O S 5 4 1	0	0

- Molecule 14 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
14	B	1	Total C N O 14 8 1 5	0	0

- Molecule 15 is water.

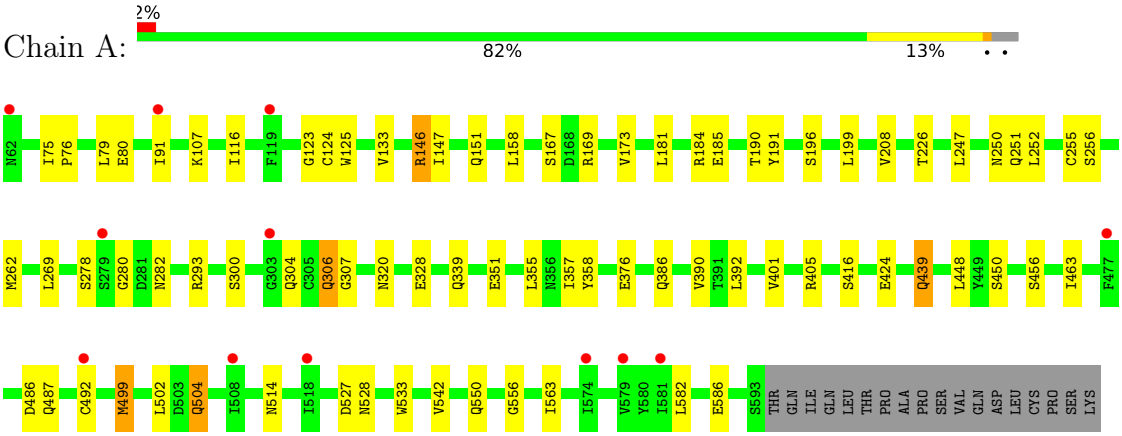
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
15	A	85	Total O 85 85	0	0
15	B	2	Total O 2 2	0	0
15	C	86	Total O 86 86	0	0
15	D	1	Total O 1 1	0	0

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.

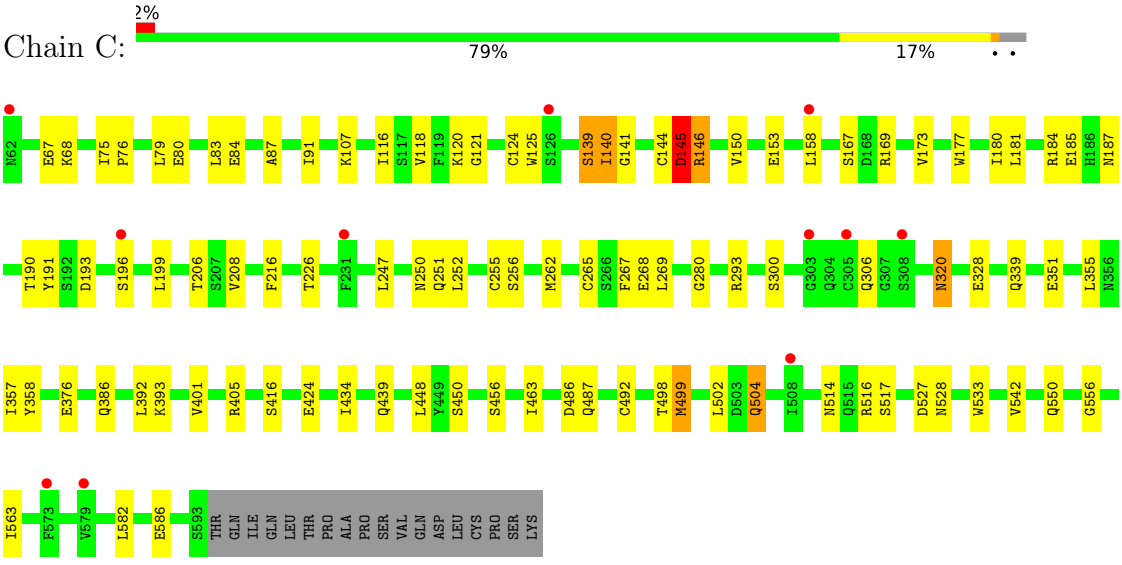
• Molecule 1: Meprin A subunit beta

Chain A:



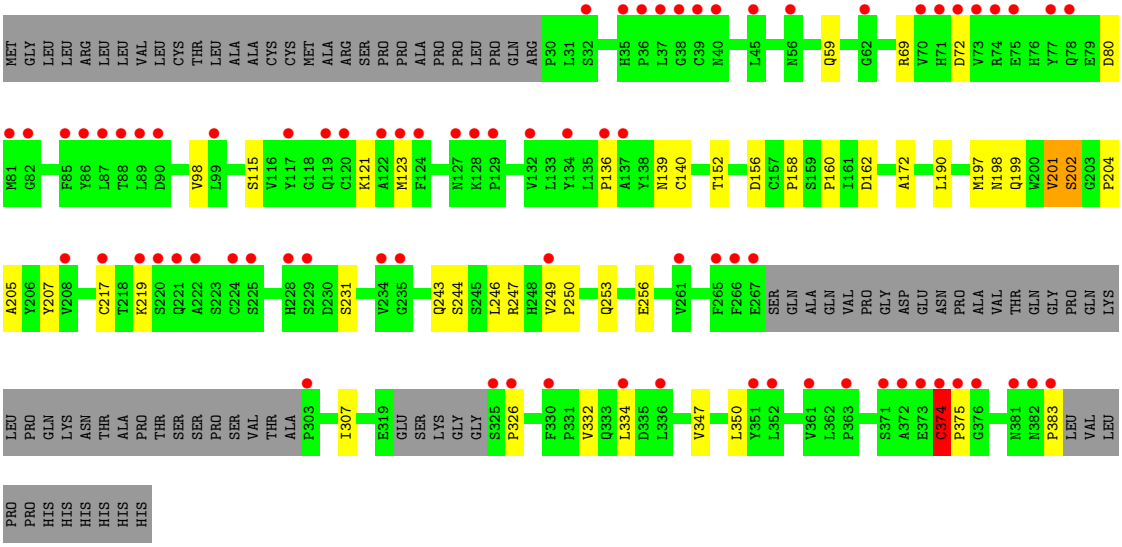
• Molecule 1: Meprin A subunit beta

Chain C:



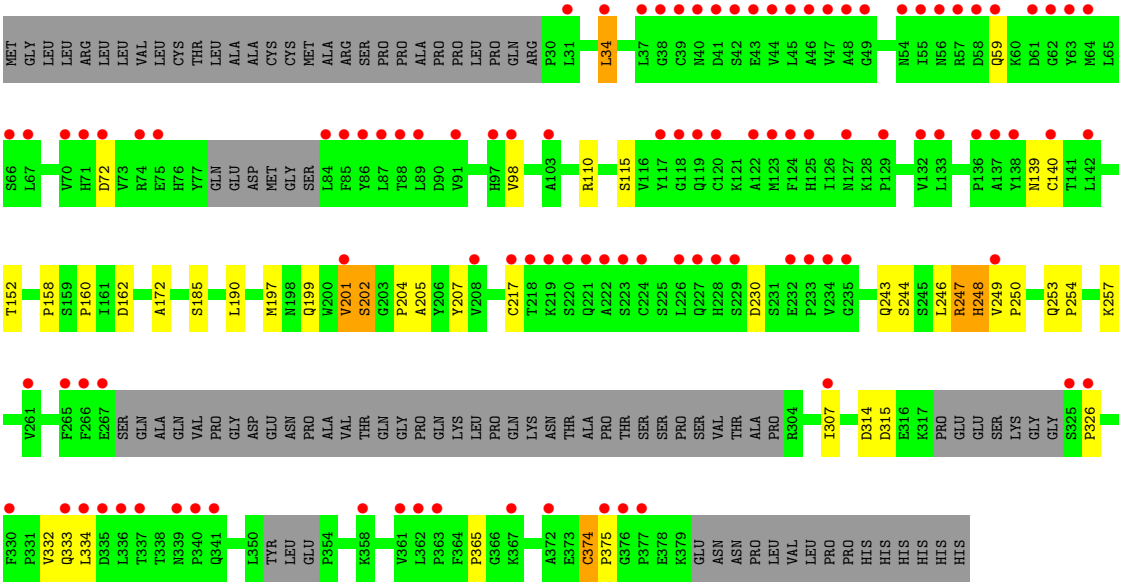
• Molecule 2: Fetuin-B

Chain B:



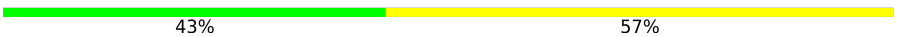
• Molecule 2: Fetuin-B

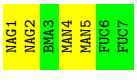
Chain D:



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

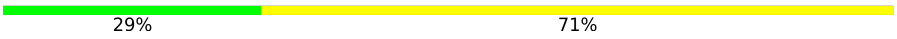
Chain E:





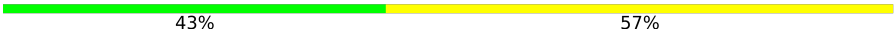
• Molecule 3: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)][alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

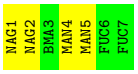
Chain G:



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

Chain M:



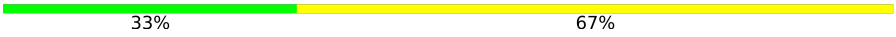


• Molecule 3: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)][alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain O:

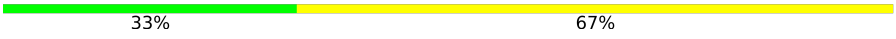
• Molecule 4: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F:



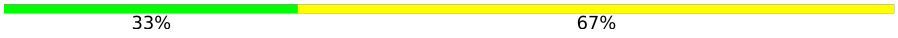
• Molecule 4: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain N:



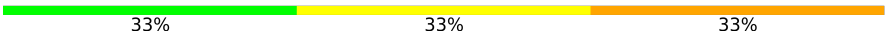
• Molecule 4: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

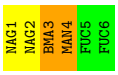
Chain T:



• Molecule 5: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)][alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

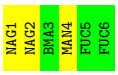
Chain H:





• Molecule 5: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)][alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain P:



• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain I:

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Q:

• Molecule 7: alpha-D-glucopyranose-(1-3)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:

• Molecule 7: alpha-D-glucopyranose-(1-3)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain R:

• Molecule 8: alpha-L-fucopyranose-(1-3)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

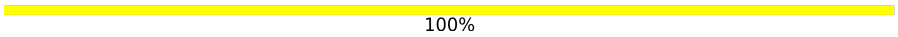
Chain K:

• Molecule 8: alpha-L-fucopyranose-(1-3)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain S:

• Molecule 9: 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 L:



• Molecule 10: alpha-L-fucopyranose-(1-3)-[2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain U:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	126.66Å 88.24Å 156.66Å 90.00° 113.82° 90.00°	Depositor
Resolution (Å)	76.26 – 2.80 76.26 – 2.80	Depositor EDS
% Data completeness (in resolution range)	93.8 (76.26-2.80) 93.8 (76.26-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.27 (at 2.82Å)	Xtriage
Refinement program	BUSTER 2.10.3	Depositor
R, R_{free}	0.236 , 0.261 0.258 , 0.275	Depositor DCC
R_{free} test set	744 reflections (1.01%)	wwPDB-VP
Wilson B-factor (Å^2)	73.6	Xtriage
Anisotropy	0.641	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 84.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.000 for h,-k,-h-l	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	13918	wwPDB-VP
Average B, all atoms (Å^2)	122.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.95% 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: FUC, SO4, MAN, NA, BMA, ZN, GLC, NAG

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	0.42	0/4368	0.60	0/5920
1	C	0.51	1/4368 (0.0%)	0.64	1/5920 (0.0%)
2	B	0.36	0/2177	0.51	0/2997
2	D	0.35	0/2020	0.49	0/2777
All	All	0.43	1/12933 (0.0%)	0.58	1/17614 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	145	ASP	CA-C	5.31	1.66	1.52

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	140	ILE	N-CA-CB	6.08	124.79	110.80

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	4260	0	4019	33	0
1	C	4260	0	4019	64	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	2129	0	1741	28	0
2	D	1979	0	1587	27	0
3	E	81	0	70	0	0
3	G	81	0	70	0	0
3	M	81	0	70	0	0
3	O	81	0	70	0	0
4	F	39	0	34	0	0
4	N	39	0	34	0	0
4	T	39	0	34	0	0
5	H	70	0	61	1	0
5	P	70	0	61	0	0
6	I	38	0	34	1	0
6	Q	38	0	34	1	0
7	J	138	0	115	2	0
7	R	138	0	115	2	0
8	K	34	0	31	0	0
8	S	34	0	31	0	0
9	L	49	0	43	0	0
10	U	38	0	34	2	0
11	A	1	0	0	0	0
11	C	1	0	0	0	0
12	A	1	0	0	0	0
12	C	1	0	0	0	0
13	A	5	0	0	0	0
13	C	5	0	0	0	0
14	B	14	0	13	0	0
15	A	85	0	0	0	0
15	B	2	0	0	0	0
15	C	86	0	0	1	0
15	D	1	0	0	0	0
All	All	13918	0	12320	139	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 5.

All (139) 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)
2:B:121:LYS:HE3	2:B:332:VAL:HB	1.08	1.03
1:C:140:ILE:HG23	1:C:144:CYS:HB2	1.39	1.00
1:C:146:ARG:HE	2:D:246:LEU:HD13	1.26	1.00

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:146:ARG:NE	2:D:246:LEU:HD13	1.93	0.84
1:C:120:LYS:HG3	1:C:141:GLY:HA2	1.61	0.82
5:H:3:BMA:H4	5:H:4:MAN:C1	2.09	0.82
1:A:251:GLN:HA	1:C:256:SER:HB2	1.66	0.75
2:B:121:LYS:CE	2:B:332:VAL:HB	2.03	0.75
1:A:256:SER:HB2	1:C:251:GLN:HA	1.68	0.75
1:C:84:GLU:HG3	1:C:120:LYS:NZ	2.03	0.74
1:C:140:ILE:HG23	1:C:144:CYS:CB	2.16	0.74
1:C:121:GLY:HA3	1:C:139:SER:OG	1.89	0.72
6:I:1:NAG:H2	6:I:3:FUC:H5	1.75	0.69
6:Q:1:NAG:H2	6:Q:3:FUC:H5	1.75	0.68
1:C:556:GLY:O	2:D:250:PRO:HD3	1.94	0.67
1:A:556:GLY:O	2:B:250:PRO:HD3	1.98	0.64
1:C:141:GLY:O	1:C:144:CYS:SG	2.57	0.62
1:A:181:LEU:HB2	1:A:184:ARG:HG3	1.82	0.62
1:C:191:TYR:HE2	2:D:152:THR:HG22	1.64	0.62
1:A:191:TYR:HE2	2:B:152:THR:HG22	1.63	0.62
1:C:498:THR:HG22	1:C:517:SER:OG	2.01	0.60
2:D:204:PRO:HG2	2:D:243:GLN:HB3	1.85	0.58
1:C:80:GLU:O	1:C:83:LEU:HD12	2.03	0.58
1:C:146:ARG:HE	2:D:246:LEU:CD1	2.09	0.58
2:B:204:PRO:HG2	2:B:243:GLN:HB3	1.85	0.57
1:A:328:GLU:HG3	1:A:401:VAL:HG22	1.86	0.57
2:D:249:VAL:HB	2:D:250:PRO:HD2	1.85	0.57
2:B:249:VAL:HB	2:B:250:PRO:HD2	1.87	0.56
1:A:339:GLN:HG3	1:A:424:GLU:HG2	1.87	0.56
2:B:158:PRO:HA	2:B:199:GLN:HB3	1.88	0.56
1:C:339:GLN:HG3	1:C:424:GLU:HG2	1.88	0.56
10:U:1:NAG:H3	10:U:2:FUC:H5	1.87	0.56
2:B:201:VAL:HG22	2:B:205:ALA:HB2	1.87	0.55
1:C:516:ARG:HH22	2:D:246:LEU:HD22	1.71	0.55
2:D:158:PRO:HA	2:D:199:GLN:HB3	1.88	0.55
1:C:181:LEU:HB2	1:C:184:ARG:HG3	1.87	0.55
1:C:125:TRP:CE2	1:C:139:SER:HB2	2.41	0.55
2:D:201:VAL:HG22	2:D:205:ALA:HB2	1.89	0.55
2:B:374:CYS:N	2:B:375:PRO:HD3	2.22	0.55
1:C:84:GLU:HG3	1:C:120:LYS:HZ2	1.71	0.54
1:C:328:GLU:HG3	1:C:401:VAL:HG22	1.88	0.54
1:C:199:LEU:HD11	1:C:252:LEU:HD13	1.89	0.54
1:C:84:GLU:HG3	1:C:120:LYS:HZ3	1.71	0.54
1:A:463:ILE:HG23	1:A:499:MET:HE2	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:U:1:NAG:H3	10:U:2:FUC:C5	2.39	0.53
1:C:463:ILE:HG23	1:C:499:MET:HE2	1.90	0.53
1:A:146:ARG:NH1	2:B:246:LEU:CB	2.72	0.52
1:A:199:LEU:HD11	1:A:252:LEU:HD13	1.90	0.52
1:C:320:ASN:HD22	1:C:320:ASN:H	1.56	0.52
1:C:358:TYR:HB2	1:C:401:VAL:HB	1.92	0.52
2:D:248:HIS:ND1	2:D:254:PRO:HB3	2.25	0.51
1:A:79:LEU:HD11	1:A:91:ILE:HG21	1.92	0.51
1:C:120:LYS:HA	1:C:141:GLY:HA2	1.92	0.51
1:A:358:TYR:HB2	1:A:401:VAL:HB	1.92	0.50
2:B:172:ALA:HB1	2:B:190:LEU:HD11	1.93	0.50
1:C:120:LYS:CG	1:C:141:GLY:HA2	2.38	0.50
1:A:147:ILE:O	1:A:151:GLN:HG3	2.11	0.50
1:A:184:ARG:HD2	2:B:198:ASN:OD1	2.11	0.49
1:A:339:GLN:HB2	1:A:392:LEU:HB2	1.93	0.49
1:C:502:LEU:HD13	1:C:582:LEU:HD11	1.94	0.49
1:C:79:LEU:HD11	1:C:91:ILE:HG21	1.93	0.49
1:C:339:GLN:HB2	1:C:392:LEU:HB2	1.94	0.49
1:C:84:GLU:CG	1:C:120:LYS:NZ	2.74	0.49
1:A:502:LEU:HD13	1:A:582:LEU:HD11	1.94	0.49
2:D:140:CYS:HB2	2:D:307:ILE:HG12	1.93	0.49
2:D:172:ALA:HB1	2:D:190:LEU:HD11	1.94	0.48
1:C:184:ARG:NE	1:C:216:PHE:CE1	2.79	0.48
1:A:173:VAL:HG12	1:A:226:THR:HG22	1.95	0.48
1:C:125:TRP:HA	1:C:153:GLU:OE1	2.14	0.48
1:C:320:ASN:HD22	1:C:320:ASN:N	2.12	0.48
1:A:357:ILE:HD12	1:A:390:VAL:HG21	1.97	0.47
2:B:123:MET:O	2:B:136:PRO:HD2	2.14	0.47
1:C:83:LEU:HD21	1:C:118:VAL:HG12	1.97	0.47
1:C:140:ILE:CD1	1:C:144:CYS:HB3	2.45	0.46
2:D:374:CYS:N	2:D:375:PRO:HD3	2.31	0.46
1:C:173:VAL:HG12	1:C:226:THR:HG22	1.96	0.46
2:B:202:SER:HB3	2:B:244:SER:OG	2.16	0.46
7:R:6:MAN:H2	7:R:7:GLC:H5	1.98	0.45
1:A:123:GLY:HA3	2:B:199:GLN:OE1	2.15	0.45
1:A:306:GLN:HG2	1:A:307:GLY:H	1.82	0.45
2:D:202:SER:HB3	2:D:244:SER:OG	2.17	0.45
1:C:516:ARG:HH12	2:D:247:ARG:H	1.65	0.45
2:B:160:PRO:HA	2:B:197:MET:HA	1.99	0.45
7:J:6:MAN:H2	7:J:7:GLC:H5	1.99	0.45
1:A:125:TRP:HA	2:B:156:ASP:HB2	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:249:VAL:HB	2:D:250:PRO:CD	2.46	0.45
2:B:249:VAL:HB	2:B:250:PRO:CD	2.47	0.44
1:C:140:ILE:HD13	1:C:144:CYS:HB3	1.98	0.44
1:C:393:LYS:NZ	15:C:801:HOH:O	2.30	0.44
2:D:34:LEU:HD13	2:D:365:PRO:HB3	2.00	0.44
2:B:139:ASN:HB2	2:B:334:LEU:HD13	2.00	0.44
1:A:487:GLN:HG3	7:J:12:MAN:H61	2.00	0.44
1:A:514:ASN:HD22	1:A:563:ILE:HD12	1.82	0.44
1:A:133:VAL:HG12	2:B:383:PRO:HA	1.99	0.44
1:C:75:ILE:HD11	1:C:158:LEU:HD21	2.00	0.44
2:D:197:MET:HB3	2:D:207:TYR:HB2	2.00	0.44
1:A:439:GLN:HE21	1:A:439:GLN:HB2	1.69	0.43
1:C:120:LYS:HG3	1:C:141:GLY:CA	2.42	0.43
2:B:121:LYS:HB2	2:B:332:VAL:HG11	2.00	0.43
1:C:502:LEU:HD23	1:C:504:GLN:HG2	2.00	0.43
1:A:75:ILE:HD11	1:A:158:LEU:HD21	2.00	0.43
2:B:347:VAL:O	2:B:350:LEU:HB2	2.18	0.43
1:C:434:ILE:HG21	1:C:448:LEU:HD13	2.00	0.43
2:D:139:ASN:HB2	2:D:334:LEU:HD13	2.00	0.43
1:A:502:LEU:HD23	1:A:504:GLN:HG2	2.00	0.43
2:B:140:CYS:HB2	2:B:307:ILE:HG22	2.00	0.43
1:C:121:GLY:CA	1:C:139:SER:OG	2.63	0.43
1:C:514:ASN:HD22	1:C:563:ILE:HD12	1.82	0.43
1:C:184:ARG:NH2	1:C:187:ASN:HD21	2.16	0.43
1:A:75:ILE:HG21	1:A:116:ILE:HD12	2.01	0.43
1:C:487:GLN:HG3	7:R:12:MAN:H61	1.99	0.43
2:D:160:PRO:HA	2:D:197:MET:HA	1.99	0.43
1:C:191:TYR:CE2	2:D:152:THR:HG22	2.50	0.43
2:B:197:MET:HB3	2:B:207:TYR:HB2	2.00	0.42
1:C:556:GLY:O	2:D:250:PRO:CD	2.66	0.42
2:D:199:GLN:HG2	2:D:207:TYR:HE1	1.85	0.42
1:A:191:TYR:CE2	2:B:152:THR:HG22	2.47	0.42
1:C:144:CYS:C	1:C:146:ARG:H	2.22	0.42
1:C:250:ASN:HB3	1:C:255:CYS:HB2	2.01	0.42
1:C:516:ARG:NH1	2:D:247:ARG:H	2.18	0.42
1:C:76:PRO:HA	1:C:107:LYS:O	2.20	0.41
1:A:76:PRO:HA	1:A:107:LYS:O	2.20	0.41
2:B:199:GLN:HG2	2:B:207:TYR:HE1	1.85	0.41
1:A:250:ASN:HB3	1:A:255:CYS:HB2	2.02	0.41
2:D:59:GLN:HB3	2:D:98:VAL:HG11	2.03	0.41
1:C:146:ARG:HB2	1:C:146:ARG:NH2	2.35	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:492:CYS:HB3	1:C:533:TRP:HB3	2.03	0.41
2:D:243:GLN:NE2	2:D:257:LYS:NZ	2.69	0.41
1:A:492:CYS:HB3	1:A:533:TRP:HB3	2.03	0.41
2:B:59:GLN:HB3	2:B:98:VAL:HG11	2.03	0.41
1:C:193:ASP:HA	1:C:196:SER:O	2.21	0.41
1:C:75:ILE:HG21	1:C:116:ILE:HD12	2.02	0.41
1:C:265:CYS:SG	1:C:267:PHE:CE2	3.14	0.41
2:B:307:ILE:O	2:B:307:ILE:HG13	2.21	0.40
1:C:177:TRP:HA	1:C:180:ILE:HD12	2.02	0.40
1:C:87:ALA:HA	1:C:145:ASP:HB3	2.03	0.40
1:A:75:ILE:HA	1:A:76:PRO:HD3	1.94	0.40
1:C:146:ARG:O	1:C:150:VAL:HG23	2.21	0.40
1:C:140:ILE:CG2	1:C:144:CYS:HB2	2.28	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	530/550 (96%)	493 (93%)	35 (7%)	2 (0%)	34	66
1	C	530/550 (96%)	489 (92%)	38 (7%)	3 (1%)	25	56
2	B	308/394 (78%)	280 (91%)	21 (7%)	7 (2%)	6	21
2	D	288/394 (73%)	259 (90%)	21 (7%)	8 (3%)	5	17
All	All	1656/1888 (88%)	1521 (92%)	115 (7%)	20 (1%)	13	39

All (20) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	326	PRO
2	D	247	ARG

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Mol	Chain	Res	Type
2	D	326	PRO
2	B	202	SER
2	B	231	SER
2	B	247	ARG
1	C	280	GLY
2	D	202	SER
2	D	230	ASP
2	B	219	LYS
2	D	217	CYS
2	D	315	ASP
1	A	280	GLY
1	A	504	GLN
2	B	253	GLN
1	C	145	ASP
1	C	504	GLN
2	D	253	GLN
2	D	185	SER
2	B	374	CYS

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	471/489 (96%)	435 (92%)	36 (8%)	13	36
1	C	471/489 (96%)	435 (92%)	36 (8%)	13	36
2	B	196/352 (56%)	187 (95%)	9 (5%)	27	60
2	D	173/352 (49%)	162 (94%)	11 (6%)	17	45
All	All	1311/1682 (78%)	1219 (93%)	92 (7%)	15	40

All (92) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	80	GLU
1	A	124	CYS
1	A	146	ARG

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Mol	Chain	Res	Type
1	A	167	SER
1	A	169	ARG
1	A	185	GLU
1	A	190	THR
1	A	196	SER
1	A	208	VAL
1	A	247	LEU
1	A	262	MET
1	A	269	LEU
1	A	278	SER
1	A	282	ASN
1	A	293	ARG
1	A	300	SER
1	A	304	GLN
1	A	306	GLN
1	A	320	ASN
1	A	351	GLU
1	A	355	LEU
1	A	376	GLU
1	A	386	GLN
1	A	405	ARG
1	A	416	SER
1	A	439	GLN
1	A	448	LEU
1	A	450	SER
1	A	456	SER
1	A	486	ASP
1	A	499	MET
1	A	527	ASP
1	A	528	ASN
1	A	542	VAL
1	A	550	GLN
1	A	586	GLU
2	B	69	ARG
2	B	72	ASP
2	B	80	ASP
2	B	115	SER
2	B	162	ASP
2	B	201	VAL
2	B	217	CYS
2	B	256	GLU
2	B	374	CYS

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Mol	Chain	Res	Type
1	C	67	GLU
1	C	68	LYS
1	C	124	CYS
1	C	139	SER
1	C	146	ARG
1	C	167	SER
1	C	169	ARG
1	C	185	GLU
1	C	190	THR
1	C	206	THR
1	C	208	VAL
1	C	247	LEU
1	C	262	MET
1	C	268	GLU
1	C	269	LEU
1	C	293	ARG
1	C	300	SER
1	C	306	GLN
1	C	320	ASN
1	C	351	GLU
1	C	355	LEU
1	C	357	ILE
1	C	376	GLU
1	C	386	GLN
1	C	405	ARG
1	C	416	SER
1	C	439	GLN
1	C	450	SER
1	C	456	SER
1	C	486	ASP
1	C	499	MET
1	C	527	ASP
1	C	528	ASN
1	C	542	VAL
1	C	550	GLN
1	C	586	GLU
2	D	34	LEU
2	D	72	ASP
2	D	110	ARG
2	D	115	SER
2	D	162	ASP
2	D	201	VAL

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Mol	Chain	Res	Type
2	D	248	HIS
2	D	314	ASP
2	D	332	VAL
2	D	333	GLN
2	D	374	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (17) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	62	ASN
1	A	186	HIS
1	A	282	ASN
1	A	306	GLN
1	A	439	GLN
1	A	510	GLN
2	B	59	GLN
2	B	243	GLN
1	C	187	ASN
1	C	282	ASN
1	C	306	GLN
1	C	320	ASN
1	C	386	GLN
1	C	439	GLN
1	C	510	GLN
2	D	59	GLN
2	D	243	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

92 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	E	1	1,3	14,14,15	0.39	0	17,19,21	2.00	4 (23%)
3	NAG	E	2	3	14,14,15	0.29	0	17,19,21	0.70	1 (5%)
3	BMA	E	3	3	11,11,12	0.31	0	15,15,17	0.79	0
3	MAN	E	4	3	11,11,12	0.45	0	15,15,17	1.01	1 (6%)
3	MAN	E	5	3	11,11,12	0.40	0	15,15,17	0.78	1 (6%)
3	FUC	E	6	3	10,10,11	0.34	0	14,14,16	0.62	0
3	FUC	E	7	3	10,10,11	0.40	0	14,14,16	0.75	0
4	NAG	F	1	1,4	14,14,15	0.35	0	17,19,21	1.01	1 (5%)
4	NAG	F	2	4	14,14,15	0.39	0	17,19,21	1.27	1 (5%)
4	BMA	F	3	4	11,11,12	0.32	0	15,15,17	0.61	0
3	NAG	G	1	1,3	14,14,15	0.28	0	17,19,21	0.79	1 (5%)
3	NAG	G	2	3	14,14,15	0.27	0	17,19,21	0.62	0
3	BMA	G	3	3	11,11,12	0.25	0	15,15,17	0.92	1 (6%)
3	MAN	G	4	3	11,11,12	0.34	0	15,15,17	0.68	1 (6%)
3	MAN	G	5	3	11,11,12	0.44	0	15,15,17	1.70	3 (20%)
3	FUC	G	6	3	10,10,11	0.34	0	14,14,16	0.96	1 (7%)
3	FUC	G	7	3	10,10,11	0.35	0	14,14,16	0.59	0
5	NAG	H	1	1,5	14,14,15	0.28	0	17,19,21	0.92	1 (5%)
5	NAG	H	2	5	14,14,15	0.32	0	17,19,21	0.88	1 (5%)
5	BMA	H	3	5	11,11,12	0.63	0	15,15,17	1.72	3 (20%)
5	MAN	H	4	5	11,11,12	0.44	0	15,15,17	1.29	2 (13%)
5	FUC	H	5	5	10,10,11	0.38	0	14,14,16	0.61	0
5	FUC	H	6	5	10,10,11	0.46	0	14,14,16	0.78	0
6	NAG	I	1	1,6	14,14,15	0.51	0	17,19,21	2.03	4 (23%)
6	NAG	I	2	6	14,14,15	0.37	0	17,19,21	1.00	1 (5%)
6	FUC	I	3	6	10,10,11	0.53	0	14,14,16	0.97	1 (7%)
7	NAG	J	1	1,7	14,14,15	0.24	0	17,19,21	0.95	1 (5%)
7	MAN	J	10	7	11,11,12	0.35	0	15,15,17	1.23	1 (6%)
7	MAN	J	11	7	11,11,12	0.28	0	15,15,17	0.92	1 (6%)
7	MAN	J	12	7	11,11,12	0.26	0	15,15,17	0.67	1 (6%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
7	NAG	J	2	7	14,14,15	0.34	0	17,19,21	0.94	1 (5%)
7	BMA	J	3	7	11,11,12	0.25	0	15,15,17	0.56	0
7	MAN	J	4	7	11,11,12	0.22	0	15,15,17	0.86	1 (6%)
7	MAN	J	5	7	11,11,12	0.30	0	15,15,17	0.91	1 (6%)
7	MAN	J	6	7	11,11,12	0.32	0	15,15,17	1.05	1 (6%)
7	GLC	J	7	7	11,11,12	0.49	0	15,15,17	0.87	1 (6%)
7	MAN	J	8	7	11,11,12	0.27	0	15,15,17	1.14	1 (6%)
7	MAN	J	9	7	11,11,12	0.33	0	15,15,17	1.37	2 (13%)
8	NAG	K	1	1,8	14,14,15	0.41	0	17,19,21	1.39	4 (23%)
8	FUC	K	2	8	10,10,11	0.45	0	14,14,16	0.63	0
8	FUC	K	3	8	10,10,11	0.46	0	14,14,16	0.67	0
9	NAG	L	1	9,2	14,14,15	0.35	0	17,19,21	0.92	2 (11%)
9	NAG	L	2	9	14,14,15	0.30	0	17,19,21	0.92	1 (5%)
9	BMA	L	3	9	11,11,12	0.37	0	15,15,17	0.85	1 (6%)
9	FUC	L	4	9	10,10,11	0.44	0	14,14,16	0.80	1 (7%)
3	NAG	M	1	1,3	14,14,15	0.39	0	17,19,21	2.02	4 (23%)
3	NAG	M	2	3	14,14,15	0.33	0	17,19,21	0.74	1 (5%)
3	BMA	M	3	3	11,11,12	0.28	0	15,15,17	0.62	0
3	MAN	M	4	3	11,11,12	0.41	0	15,15,17	0.99	1 (6%)
3	MAN	M	5	3	11,11,12	0.38	0	15,15,17	0.89	1 (6%)
3	FUC	M	6	3	10,10,11	0.29	0	14,14,16	0.62	0
3	FUC	M	7	3	10,10,11	0.42	0	14,14,16	0.81	0
4	NAG	N	1	1,4	14,14,15	0.36	0	17,19,21	0.98	1 (5%)
4	NAG	N	2	4	14,14,15	0.37	0	17,19,21	1.13	1 (5%)
4	BMA	N	3	4	11,11,12	0.31	0	15,15,17	0.68	0
3	NAG	O	1	1,3	14,14,15	0.28	0	17,19,21	0.85	1 (5%)
3	NAG	O	2	3	14,14,15	0.27	0	17,19,21	0.70	0
3	BMA	O	3	3	11,11,12	0.28	0	15,15,17	0.90	1 (6%)
3	MAN	O	4	3	11,11,12	0.32	0	15,15,17	0.66	1 (6%)
3	MAN	O	5	3	11,11,12	0.43	0	15,15,17	1.72	2 (13%)
3	FUC	O	6	3	10,10,11	0.38	0	14,14,16	0.94	1 (7%)
3	FUC	O	7	3	10,10,11	0.38	0	14,14,16	0.60	0
5	NAG	P	1	1,5	14,14,15	0.28	0	17,19,21	0.96	2 (11%)
5	NAG	P	2	5	14,14,15	0.29	0	17,19,21	0.91	1 (5%)
5	BMA	P	3	5	11,11,12	0.41	0	15,15,17	0.38	0
5	MAN	P	4	5	11,11,12	0.45	0	15,15,17	1.10	2 (13%)
5	FUC	P	5	5	10,10,11	0.40	0	14,14,16	0.64	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
5	FUC	P	6	5	10,10,11	0.45	0	14,14,16	0.77	0
6	NAG	Q	1	1,6	14,14,15	0.51	0	17,19,21	2.02	4 (23%)
6	NAG	Q	2	6	14,14,15	0.37	0	17,19,21	0.99	1 (5%)
6	FUC	Q	3	6	10,10,11	0.53	0	14,14,16	0.99	1 (7%)
7	NAG	R	1	1,7	14,14,15	0.24	0	17,19,21	0.94	1 (5%)
7	MAN	R	10	7	11,11,12	0.36	0	15,15,17	1.17	1 (6%)
7	MAN	R	11	7	11,11,12	0.26	0	15,15,17	0.91	1 (6%)
7	MAN	R	12	7	11,11,12	0.26	0	15,15,17	0.69	1 (6%)
7	NAG	R	2	7	14,14,15	0.33	0	17,19,21	0.90	1 (5%)
7	BMA	R	3	7	11,11,12	0.25	0	15,15,17	0.55	0
7	MAN	R	4	7	11,11,12	0.26	0	15,15,17	0.80	1 (6%)
7	MAN	R	5	7	11,11,12	0.34	0	15,15,17	0.91	1 (6%)
7	MAN	R	6	7	11,11,12	0.30	0	15,15,17	1.11	1 (6%)
7	GLC	R	7	7	11,11,12	0.51	0	15,15,17	0.99	2 (13%)
7	MAN	R	8	7	11,11,12	0.31	0	15,15,17	1.10	1 (6%)
7	MAN	R	9	7	11,11,12	0.30	0	15,15,17	1.36	2 (13%)
8	NAG	S	1	1,8	14,14,15	0.41	0	17,19,21	1.43	3 (17%)
8	FUC	S	2	8	10,10,11	0.43	0	14,14,16	0.61	0
8	FUC	S	3	8	10,10,11	0.46	0	14,14,16	0.67	0
4	NAG	T	1	4,2	14,14,15	0.33	0	17,19,21	0.77	1 (5%)
4	NAG	T	2	4	14,14,15	0.36	0	17,19,21	1.26	1 (5%)
4	BMA	T	3	4	11,11,12	0.26	0	15,15,17	0.41	0
10	NAG	U	1	2,10	14,14,15	0.34	0	17,19,21	0.96	2 (11%)
10	FUC	U	2	10	10,10,11	0.52	0	14,14,16	1.00	1 (7%)
10	NAG	U	3	10	14,14,15	0.31	0	17,19,21	0.71	1 (5%)

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	E	1	1,3	-	1/6/23/26	0/1/1/1
3	NAG	E	2	3	-	0/6/23/26	0/1/1/1
3	BMA	E	3	3	-	0/2/19/22	0/1/1/1
3	MAN	E	4	3	-	0/2/19/22	0/1/1/1
3	MAN	E	5	3	-	1/2/19/22	0/1/1/1
3	FUC	E	6	3	-	-	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	FUC	E	7	3	-	-	0/1/1/1
4	NAG	F	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	F	2	4	-	1/6/23/26	0/1/1/1
4	BMA	F	3	4	-	0/2/19/22	0/1/1/1
3	NAG	G	1	1,3	-	0/6/23/26	0/1/1/1
3	NAG	G	2	3	-	1/6/23/26	0/1/1/1
3	BMA	G	3	3	-	2/2/19/22	0/1/1/1
3	MAN	G	4	3	-	0/2/19/22	0/1/1/1
3	MAN	G	5	3	-	2/2/19/22	0/1/1/1
3	FUC	G	6	3	-	-	0/1/1/1
3	FUC	G	7	3	-	-	0/1/1/1
5	NAG	H	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	H	2	5	-	0/6/23/26	0/1/1/1
5	BMA	H	3	5	-	1/2/19/22	0/1/1/1
5	MAN	H	4	5	-	0/2/19/22	1/1/1/1
5	FUC	H	5	5	-	-	0/1/1/1
5	FUC	H	6	5	-	-	0/1/1/1
6	NAG	I	1	1,6	-	2/6/23/26	0/1/1/1
6	NAG	I	2	6	-	1/6/23/26	0/1/1/1
6	FUC	I	3	6	-	-	0/1/1/1
7	NAG	J	1	1,7	-	0/6/23/26	0/1/1/1
7	MAN	J	10	7	-	0/2/19/22	0/1/1/1
7	MAN	J	11	7	-	0/2/19/22	0/1/1/1
7	MAN	J	12	7	-	0/2/19/22	0/1/1/1
7	NAG	J	2	7	-	2/6/23/26	0/1/1/1
7	BMA	J	3	7	-	0/2/19/22	0/1/1/1
7	MAN	J	4	7	-	2/2/19/22	0/1/1/1
7	MAN	J	5	7	-	0/2/19/22	0/1/1/1
7	MAN	J	6	7	-	0/2/19/22	0/1/1/1
7	GLC	J	7	7	-	2/2/19/22	0/1/1/1
7	MAN	J	8	7	-	0/2/19/22	0/1/1/1
7	MAN	J	9	7	-	1/2/19/22	0/1/1/1
8	NAG	K	1	1,8	-	2/6/23/26	0/1/1/1
8	FUC	K	2	8	-	-	0/1/1/1
8	FUC	K	3	8	-	-	0/1/1/1
9	NAG	L	1	9,2	-	0/6/23/26	0/1/1/1
9	NAG	L	2	9	-	0/6/23/26	0/1/1/1
9	BMA	L	3	9	-	0/2/19/22	0/1/1/1
9	FUC	L	4	9	-	-	0/1/1/1
3	NAG	M	1	1,3	-	1/6/23/26	0/1/1/1
3	NAG	M	2	3	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	BMA	M	3	3	-	0/2/19/22	0/1/1/1
3	MAN	M	4	3	-	0/2/19/22	0/1/1/1
3	MAN	M	5	3	-	1/2/19/22	0/1/1/1
3	FUC	M	6	3	-	-	0/1/1/1
3	FUC	M	7	3	-	-	0/1/1/1
4	NAG	N	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	N	2	4	-	0/6/23/26	0/1/1/1
4	BMA	N	3	4	-	0/2/19/22	0/1/1/1
3	NAG	O	1	1,3	-	0/6/23/26	0/1/1/1
3	NAG	O	2	3	-	1/6/23/26	0/1/1/1
3	BMA	O	3	3	-	2/2/19/22	0/1/1/1
3	MAN	O	4	3	-	1/2/19/22	0/1/1/1
3	MAN	O	5	3	-	2/2/19/22	0/1/1/1
3	FUC	O	6	3	-	-	0/1/1/1
3	FUC	O	7	3	-	-	0/1/1/1
5	NAG	P	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	P	2	5	-	0/6/23/26	0/1/1/1
5	BMA	P	3	5	-	2/2/19/22	0/1/1/1
5	MAN	P	4	5	-	0/2/19/22	1/1/1/1
5	FUC	P	5	5	-	-	0/1/1/1
5	FUC	P	6	5	-	-	0/1/1/1
6	NAG	Q	1	1,6	-	2/6/23/26	0/1/1/1
6	NAG	Q	2	6	-	1/6/23/26	0/1/1/1
6	FUC	Q	3	6	-	-	0/1/1/1
7	NAG	R	1	1,7	-	0/6/23/26	0/1/1/1
7	MAN	R	10	7	-	0/2/19/22	0/1/1/1
7	MAN	R	11	7	-	0/2/19/22	0/1/1/1
7	MAN	R	12	7	-	0/2/19/22	0/1/1/1
7	NAG	R	2	7	-	2/6/23/26	0/1/1/1
7	BMA	R	3	7	-	0/2/19/22	0/1/1/1
7	MAN	R	4	7	-	2/2/19/22	0/1/1/1
7	MAN	R	5	7	-	0/2/19/22	0/1/1/1
7	MAN	R	6	7	-	0/2/19/22	0/1/1/1
7	GLC	R	7	7	-	2/2/19/22	0/1/1/1
7	MAN	R	8	7	-	0/2/19/22	0/1/1/1
7	MAN	R	9	7	-	1/2/19/22	0/1/1/1
8	NAG	S	1	1,8	-	2/6/23/26	0/1/1/1
8	FUC	S	2	8	-	-	0/1/1/1
8	FUC	S	3	8	-	-	0/1/1/1
4	NAG	T	1	4,2	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	T	2	4	-	0/6/23/26	0/1/1/1
4	BMA	T	3	4	-	0/2/19/22	0/1/1/1
10	NAG	U	1	2,10	-	0/6/23/26	0/1/1/1
10	FUC	U	2	10	-	-	0/1/1/1
10	NAG	U	3	10	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (98) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	I	1	NAG	C1-O5-C5	6.18	120.57	112.19
6	Q	1	NAG	C1-O5-C5	6.14	120.52	112.19
3	M	1	NAG	C1-O5-C5	5.44	119.56	112.19
3	E	1	NAG	C1-O5-C5	5.36	119.45	112.19
5	H	3	BMA	C1-O5-C5	5.08	119.07	112.19
3	O	5	MAN	C1-O5-C5	5.04	119.02	112.19
3	G	5	MAN	C1-O5-C5	4.83	118.74	112.19
3	M	1	NAG	C1-C2-N2	4.60	118.34	110.49
3	E	1	NAG	C1-C2-N2	4.54	118.23	110.49
4	T	2	NAG	O5-C1-C2	-4.31	104.48	111.29
4	F	2	NAG	O5-C1-C2	-3.92	105.09	111.29
7	J	8	MAN	C1-O5-C5	3.92	117.50	112.19
7	J	10	MAN	C1-O5-C5	3.90	117.48	112.19
7	R	8	MAN	C1-O5-C5	3.77	117.30	112.19
6	Q	1	NAG	C1-C2-N2	3.77	116.93	110.49
6	I	1	NAG	C1-C2-N2	3.75	116.90	110.49
4	N	2	NAG	O5-C1-C2	-3.73	105.40	111.29
7	R	10	MAN	C1-O5-C5	3.61	117.08	112.19
3	G	5	MAN	C1-C2-C3	3.52	114.00	109.67
3	O	5	MAN	C1-C2-C3	3.42	113.87	109.67
8	S	1	NAG	C3-C4-C5	3.39	116.29	110.24
5	H	4	MAN	C1-O5-C5	3.30	116.66	112.19
8	K	1	NAG	C3-C4-C5	3.28	116.09	110.24
3	O	1	NAG	C1-O5-C5	3.19	116.52	112.19
7	J	9	MAN	O2-C2-C1	3.18	115.65	109.15
7	R	9	MAN	C1-O5-C5	3.16	116.47	112.19
8	S	1	NAG	O5-C1-C2	-3.13	106.35	111.29
7	R	9	MAN	O2-C2-C1	3.12	115.53	109.15
9	L	3	BMA	C1-O5-C5	3.07	116.36	112.19
7	J	9	MAN	C1-O5-C5	3.07	116.35	112.19
5	P	1	NAG	C1-C2-N2	-3.01	105.35	110.49
7	R	6	MAN	C1-O5-C5	3.00	116.26	112.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	H	1	NAG	C1-C2-N2	-2.94	105.46	110.49
6	I	1	NAG	C3-C4-C5	2.93	115.47	110.24
7	J	6	MAN	C1-O5-C5	2.91	116.14	112.19
7	R	11	MAN	C1-O5-C5	2.90	116.12	112.19
7	J	11	MAN	C1-O5-C5	2.89	116.11	112.19
3	G	1	NAG	C1-O5-C5	2.88	116.10	112.19
6	Q	1	NAG	C3-C4-C5	2.87	115.36	110.24
4	F	1	NAG	O5-C1-C2	-2.85	106.80	111.29
7	J	4	MAN	C1-O5-C5	2.83	116.02	112.19
9	L	2	NAG	C1-O5-C5	2.82	116.02	112.19
3	M	1	NAG	C2-N2-C7	2.79	126.88	122.90
8	K	1	NAG	O5-C1-C2	-2.78	106.89	111.29
3	E	1	NAG	C2-N2-C7	2.76	126.84	122.90
4	N	1	NAG	O5-C1-C2	-2.70	107.03	111.29
3	M	5	MAN	C1-O5-C5	2.67	115.81	112.19
5	H	2	NAG	C1-O5-C5	2.66	115.80	112.19
7	R	4	MAN	C1-O5-C5	2.63	115.75	112.19
5	P	2	NAG	C1-O5-C5	2.63	115.75	112.19
10	U	3	NAG	C1-O5-C5	2.61	115.72	112.19
3	G	3	BMA	C1-O5-C5	2.60	115.71	112.19
5	P	4	MAN	C1-O5-C5	2.59	115.70	112.19
10	U	2	FUC	C1-O5-C5	2.58	118.63	112.78
10	U	1	NAG	C1-O5-C5	2.57	115.68	112.19
5	H	4	MAN	C1-C2-C3	2.56	112.81	109.67
4	T	1	NAG	C1-O5-C5	2.50	115.58	112.19
7	R	5	MAN	C1-O5-C5	2.49	115.57	112.19
6	I	3	FUC	C1-O5-C5	2.49	118.42	112.78
6	Q	3	FUC	C1-O5-C5	2.47	118.36	112.78
7	J	5	MAN	C1-O5-C5	2.44	115.50	112.19
6	Q	2	NAG	C2-N2-C7	2.40	126.32	122.90
9	L	1	NAG	O3-C3-C2	2.39	114.40	109.47
7	R	12	MAN	C1-O5-C5	2.35	115.38	112.19
5	P	4	MAN	C1-C2-C3	2.34	112.54	109.67
3	M	2	NAG	C1-O5-C5	2.32	115.34	112.19
6	I	2	NAG	C2-N2-C7	2.32	126.21	122.90
5	H	3	BMA	C3-C4-C5	2.30	114.35	110.24
3	E	4	MAN	C1-O5-C5	2.30	115.31	112.19
7	J	7	GLC	C1-O5-C5	2.30	115.30	112.19
7	R	7	GLC	C1-O5-C5	2.29	115.30	112.19
10	U	1	NAG	O3-C3-C2	2.29	114.20	109.47
8	S	1	NAG	O3-C3-C4	-2.27	105.09	110.35
8	K	1	NAG	O3-C3-C4	-2.27	105.10	110.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	M	1	NAG	C4-C3-C2	-2.27	107.69	111.02
3	E	1	NAG	C4-C3-C2	-2.26	107.71	111.02
7	J	12	MAN	C1-O5-C5	2.25	115.25	112.19
5	H	3	BMA	C2-C3-C4	2.25	114.78	110.89
3	O	4	MAN	C1-O5-C5	2.23	115.22	112.19
3	E	5	MAN	C1-O5-C5	2.23	115.21	112.19
3	O	3	BMA	C1-O5-C5	2.23	115.21	112.19
3	E	2	NAG	C1-O5-C5	2.21	115.19	112.19
3	M	4	MAN	C1-O5-C5	2.21	115.18	112.19
6	Q	1	NAG	O5-C1-C2	2.20	114.76	111.29
9	L	1	NAG	C1-O5-C5	2.20	115.17	112.19
7	R	1	NAG	O5-C1-C2	2.20	114.75	111.29
7	R	2	NAG	O5-C1-C2	-2.19	107.83	111.29
3	G	4	MAN	C1-O5-C5	2.18	115.15	112.19
6	I	1	NAG	O5-C1-C2	2.16	114.69	111.29
3	G	6	FUC	C1-C2-C3	2.14	112.30	109.67
3	O	6	FUC	C1-C2-C3	2.14	112.30	109.67
7	R	7	GLC	C1-C2-C3	2.13	112.29	109.67
7	J	2	NAG	O5-C1-C2	-2.12	107.94	111.29
7	J	1	NAG	O5-C1-C2	2.12	114.64	111.29
5	P	1	NAG	C1-O5-C5	2.11	115.05	112.19
9	L	4	FUC	C1-O5-C5	2.05	117.43	112.78
3	G	5	MAN	O5-C1-C2	2.05	113.94	110.77
8	K	1	NAG	C1-O5-C5	2.03	114.94	112.19

There are no chirality outliers.

All (43) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	J	2	NAG	O5-C5-C6-O6
7	J	2	NAG	C4-C5-C6-O6
6	I	1	NAG	O5-C5-C6-O6
6	Q	1	NAG	O5-C5-C6-O6
5	P	3	BMA	C4-C5-C6-O6
6	I	1	NAG	C4-C5-C6-O6
6	Q	1	NAG	C4-C5-C6-O6
8	S	1	NAG	O5-C5-C6-O6
7	J	7	GLC	O5-C5-C6-O6
7	R	7	GLC	O5-C5-C6-O6
3	O	3	BMA	O5-C5-C6-O6
3	G	3	BMA	O5-C5-C6-O6
5	P	3	BMA	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
8	K	1	NAG	O5-C5-C6-O6
8	S	1	NAG	C4-C5-C6-O6
8	K	1	NAG	C4-C5-C6-O6
3	G	3	BMA	C4-C5-C6-O6
3	O	3	BMA	C4-C5-C6-O6
3	E	1	NAG	C1-C2-N2-C7
3	M	1	NAG	C1-C2-N2-C7
7	J	7	GLC	C4-C5-C6-O6
7	R	2	NAG	O5-C5-C6-O6
7	R	7	GLC	C4-C5-C6-O6
7	R	4	MAN	C4-C5-C6-O6
5	H	3	BMA	O5-C5-C6-O6
7	R	4	MAN	O5-C5-C6-O6
7	J	9	MAN	O5-C5-C6-O6
7	R	9	MAN	O5-C5-C6-O6
3	O	4	MAN	O5-C5-C6-O6
3	G	5	MAN	C4-C5-C6-O6
3	O	5	MAN	C4-C5-C6-O6
7	R	2	NAG	C4-C5-C6-O6
3	M	5	MAN	O5-C5-C6-O6
7	J	4	MAN	C4-C5-C6-O6
7	J	4	MAN	O5-C5-C6-O6
3	E	5	MAN	O5-C5-C6-O6
3	G	5	MAN	O5-C5-C6-O6
4	F	2	NAG	O5-C5-C6-O6
3	O	5	MAN	O5-C5-C6-O6
3	O	2	NAG	C4-C5-C6-O6
3	G	2	NAG	C4-C5-C6-O6
6	I	2	NAG	C3-C2-N2-C7
6	Q	2	NAG	C3-C2-N2-C7

All (2) ring outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	P	4	MAN	C1-C2-C3-C4-C5-O5
5	H	4	MAN	C1-C2-C3-C4-C5-O5

14 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	U	2	FUC	2	0
6	Q	1	NAG	1	0

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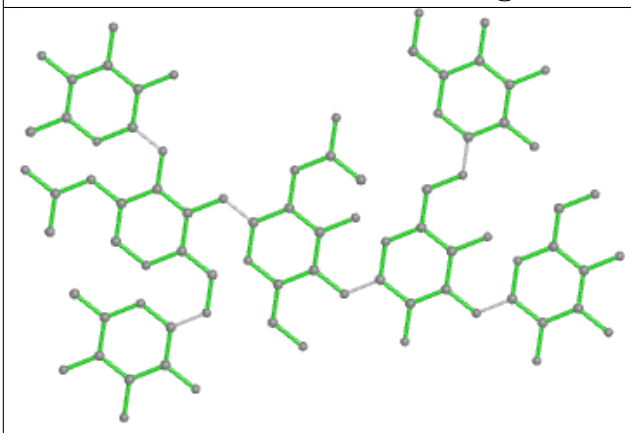
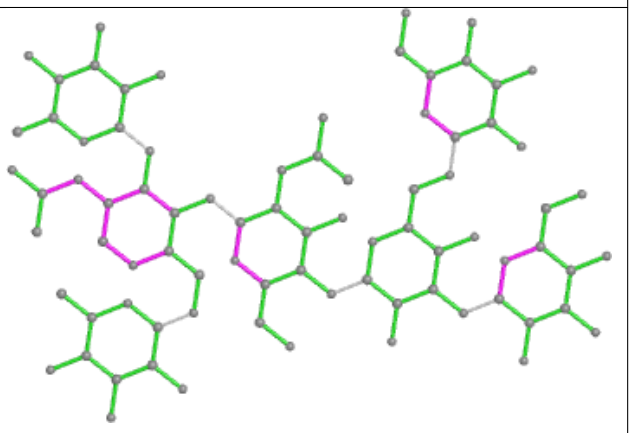
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	Q	3	FUC	1	0
6	I	1	NAG	1	0
5	H	4	MAN	1	0
7	J	12	MAN	1	0
7	R	7	GLC	1	0
7	J	7	GLC	1	0
6	I	3	FUC	1	0
7	J	6	MAN	1	0
10	U	1	NAG	2	0
5	H	3	BMA	1	0
7	R	12	MAN	1	0
7	R	6	MAN	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

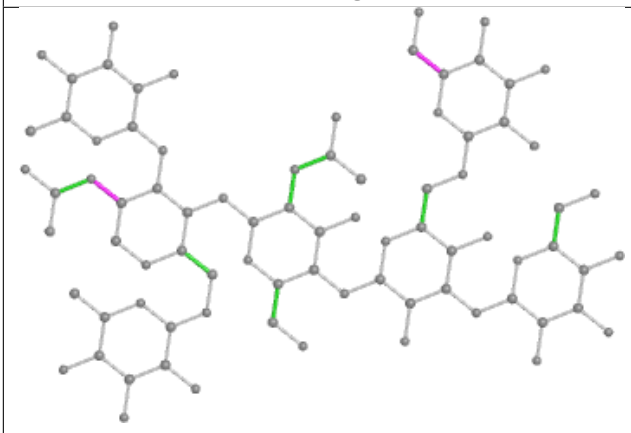
Oligosaccharide Chain E



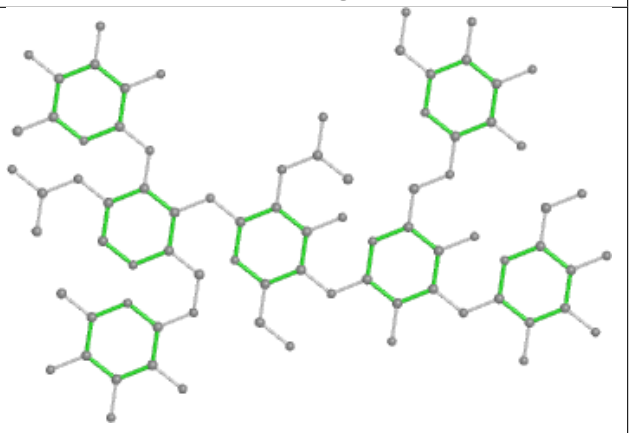
Bond lengths



Bond angles

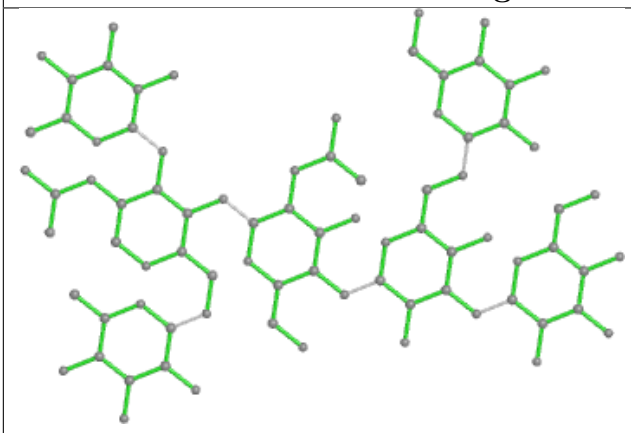


Torsions

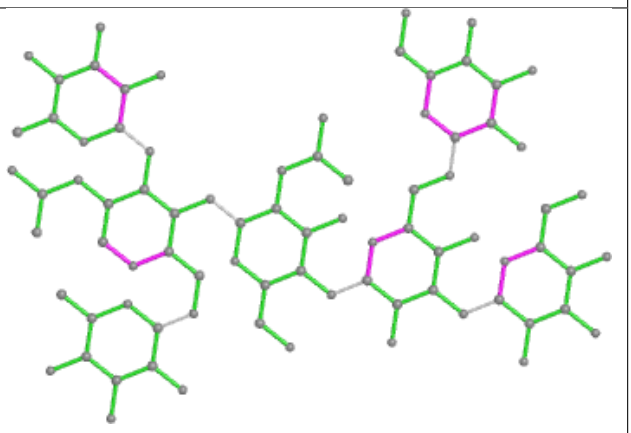


Rings

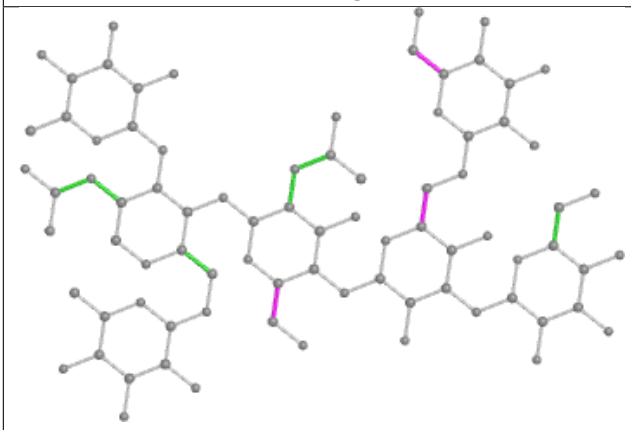
Oligosaccharide Chain G



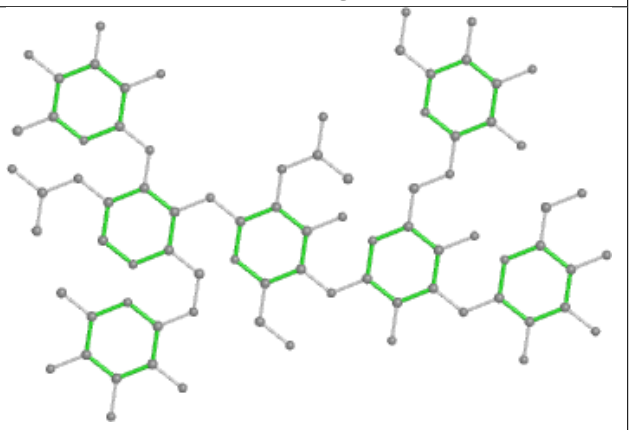
Bond lengths



Bond angles

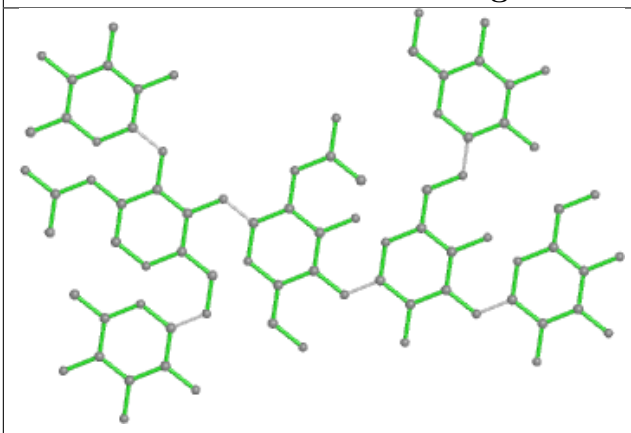


Torsions

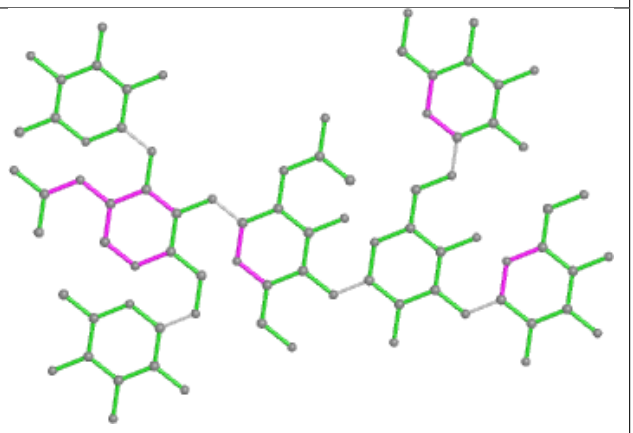


Rings

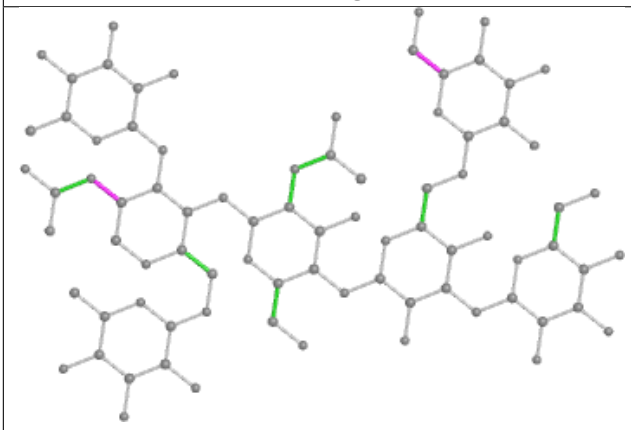
Oligosaccharide Chain M



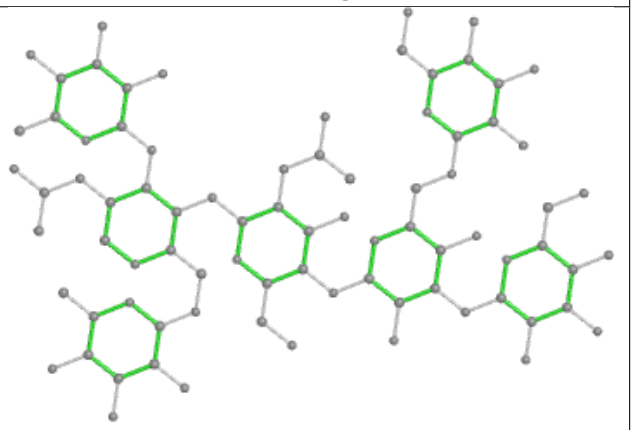
Bond lengths



Bond angles

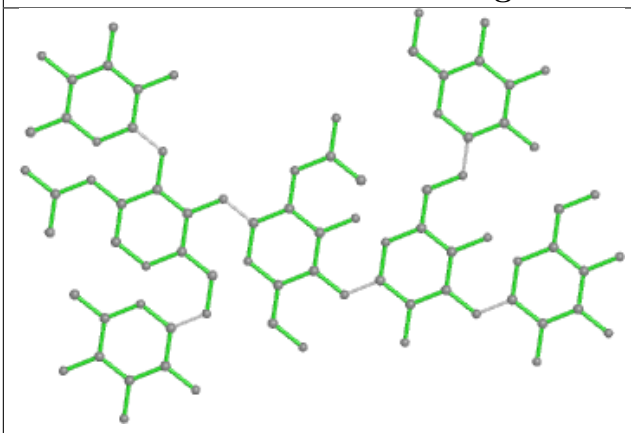


Torsions

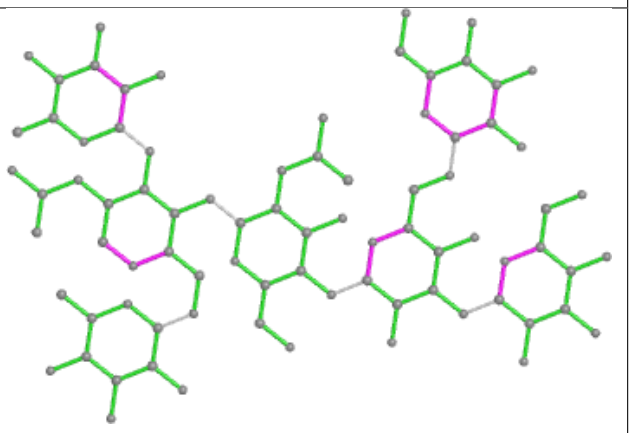


Rings

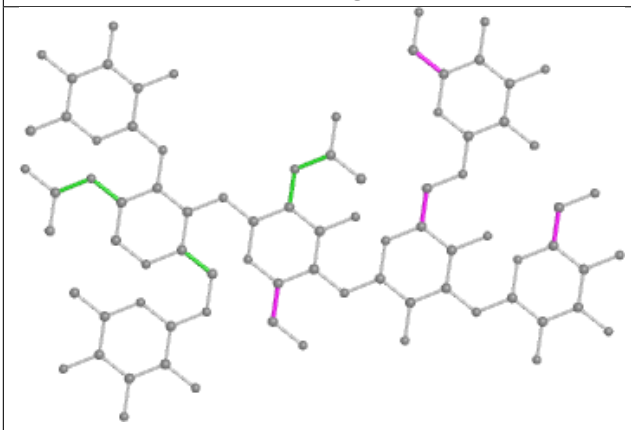
Oligosaccharide Chain O



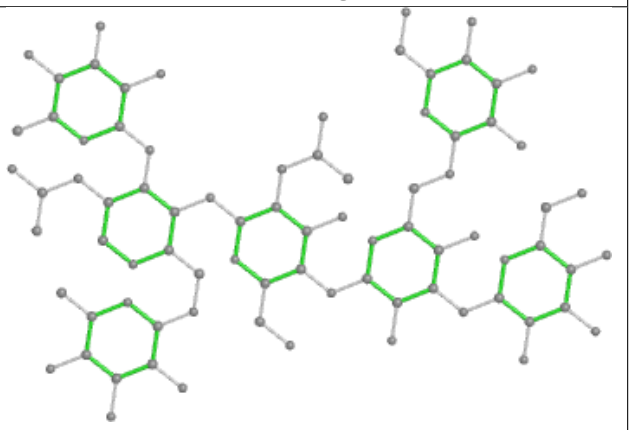
Bond lengths



Bond angles

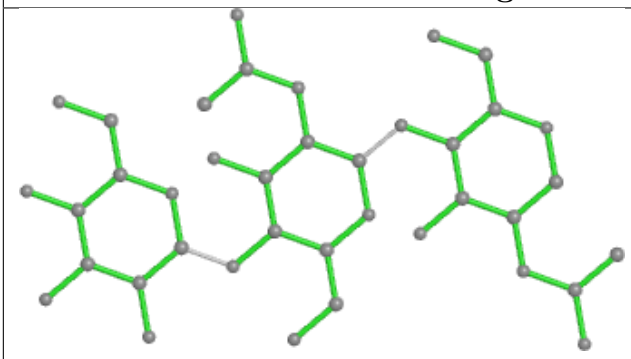


Torsions

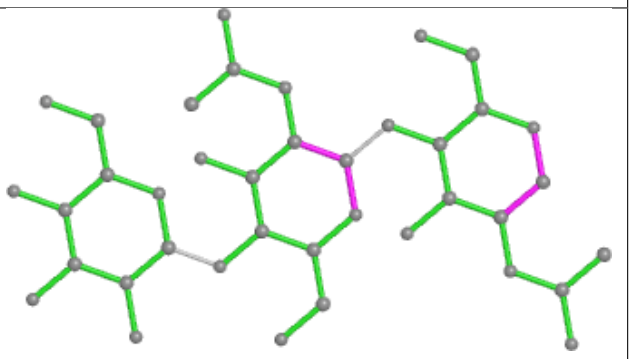


Rings

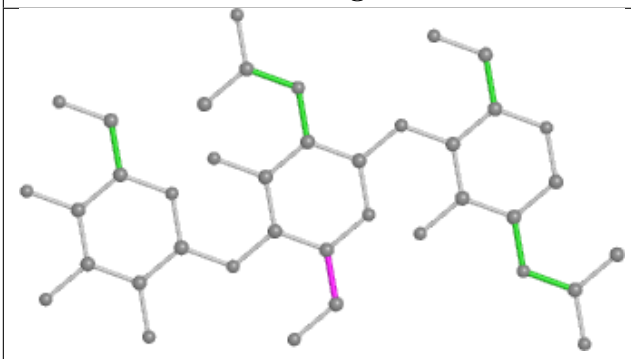
Oligosaccharide Chain F



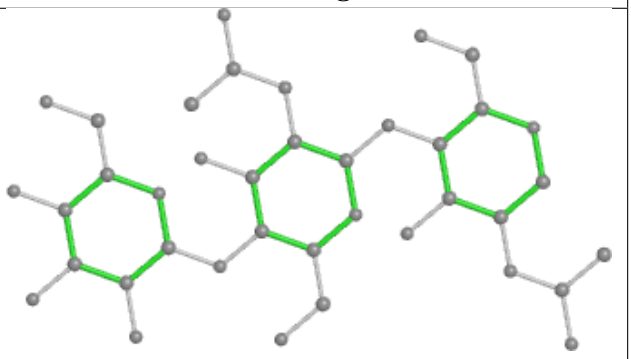
Bond lengths



Bond angles

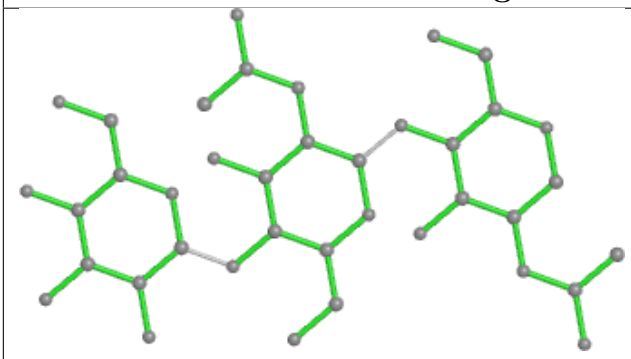


Torsions

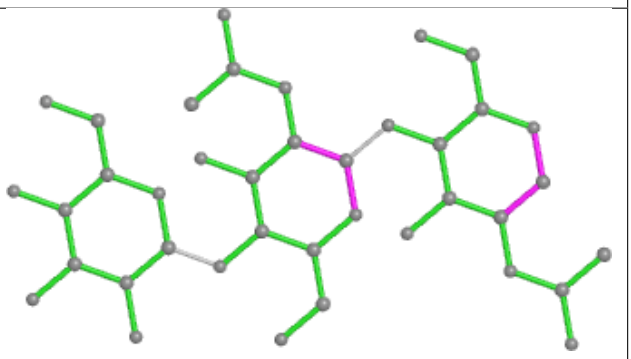


Rings

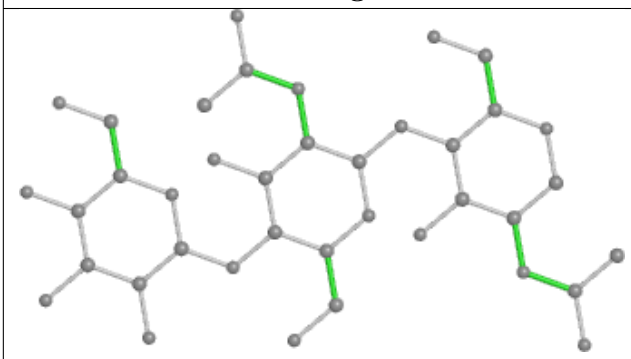
Oligosaccharide Chain N



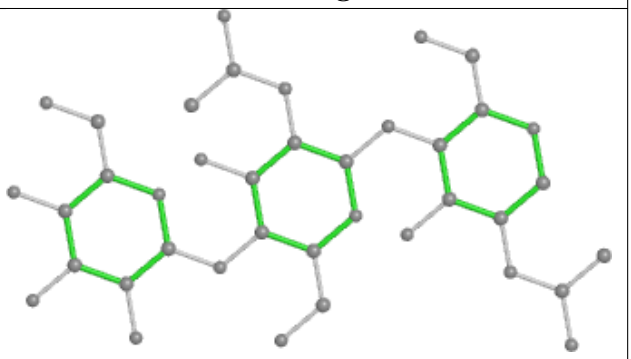
Bond lengths



Bond angles

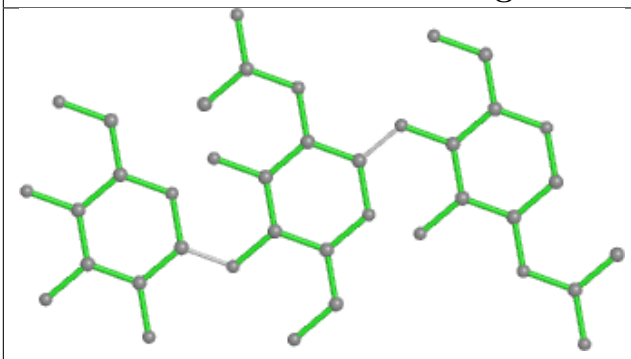


Torsions

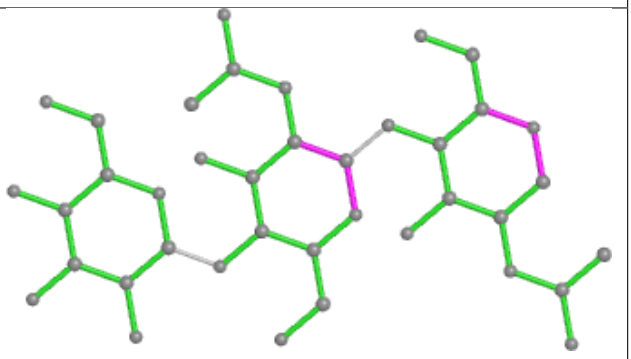


Rings

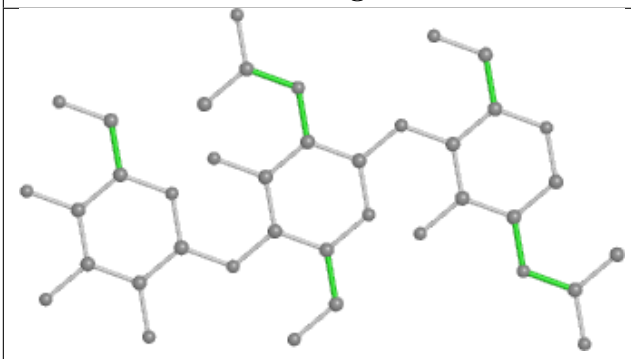
Oligosaccharide Chain T



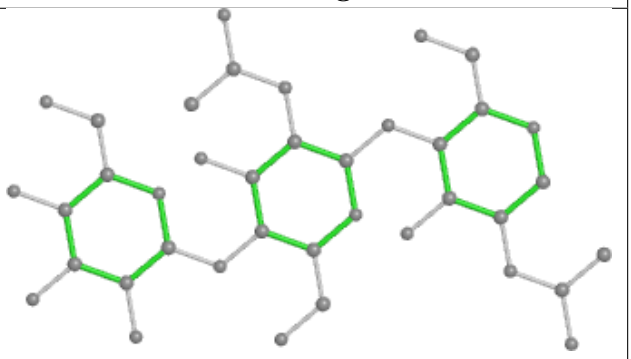
Bond lengths



Bond angles

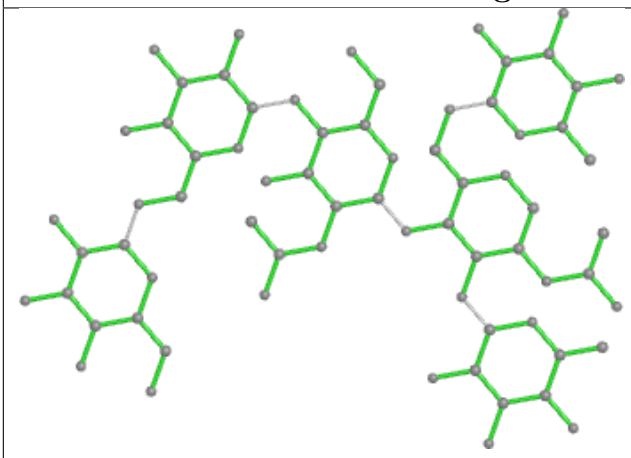


Torsions

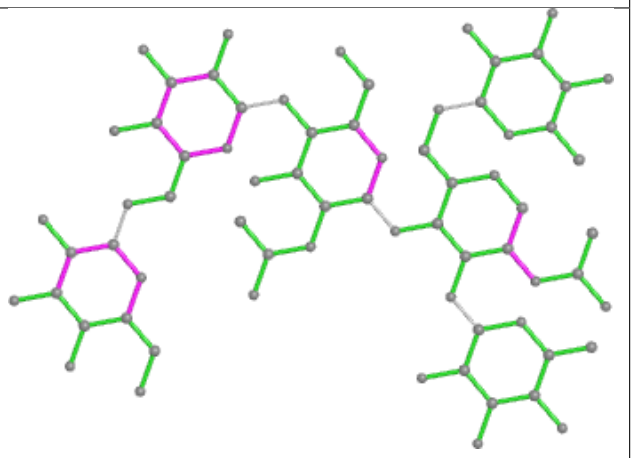


Rings

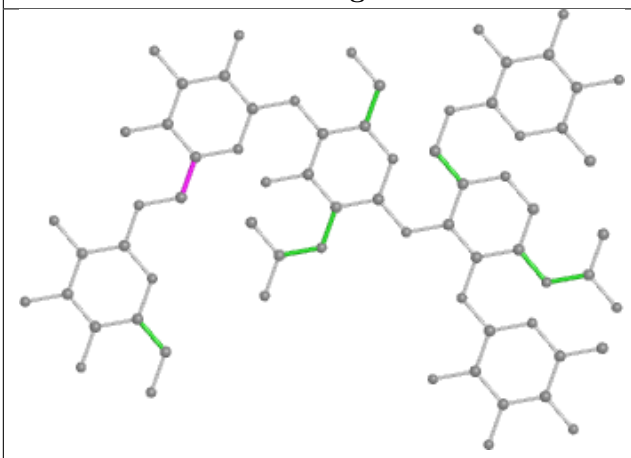
Oligosaccharide Chain H



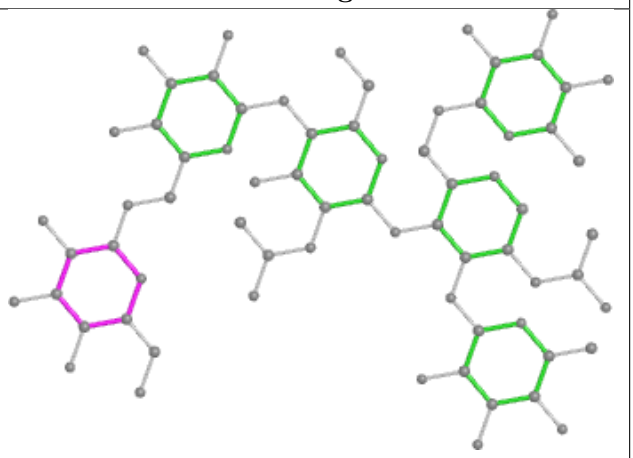
Bond lengths



Bond angles

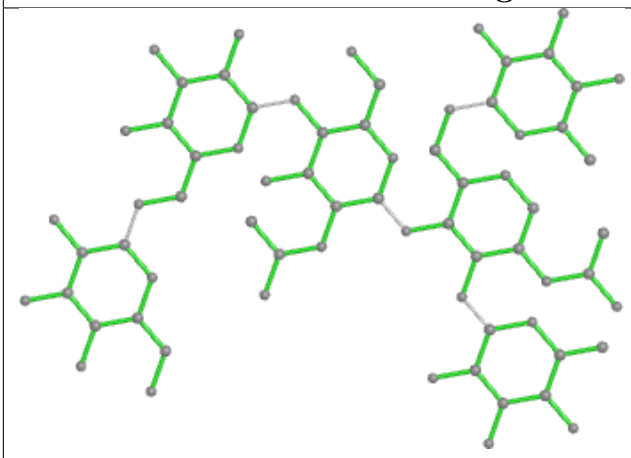


Torsions

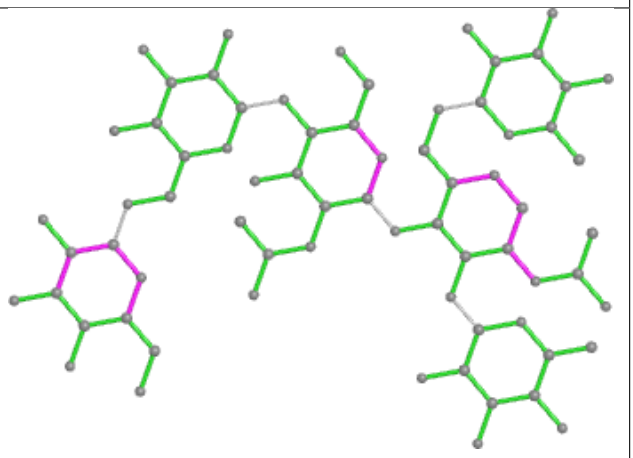


Rings

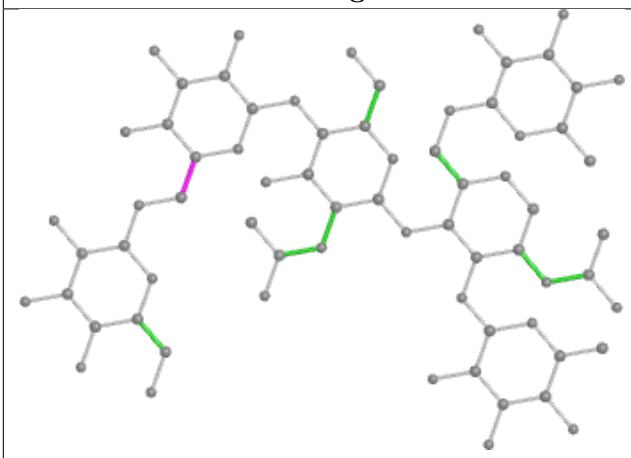
Oligosaccharide Chain P



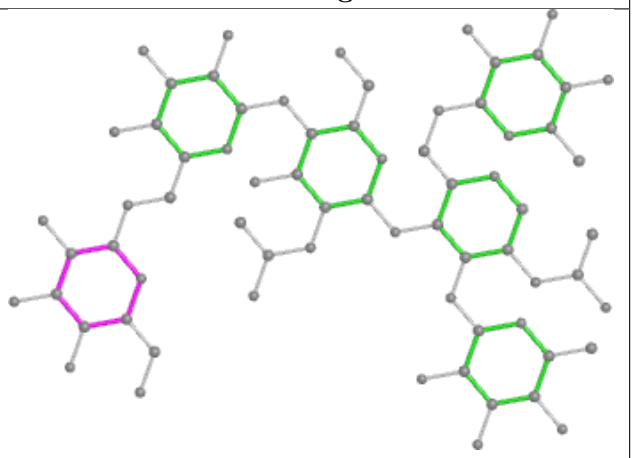
Bond lengths



Bond angles

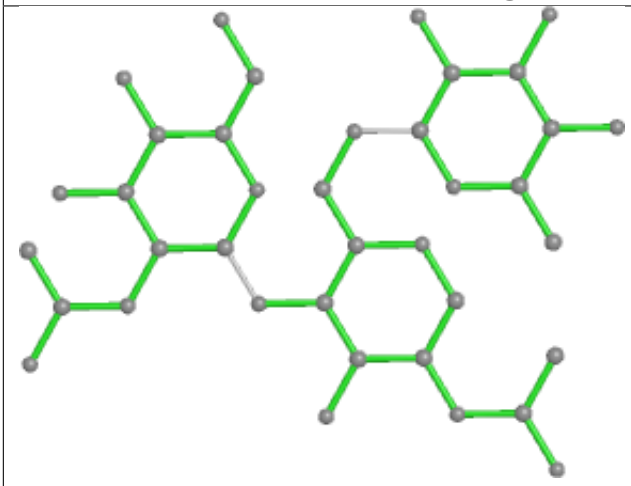


Torsions

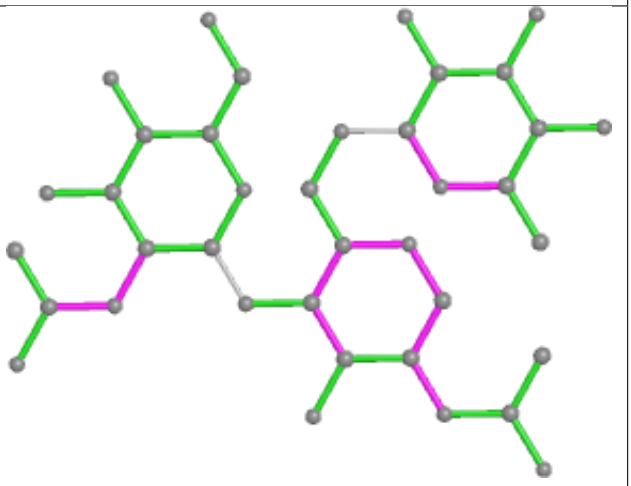


Rings

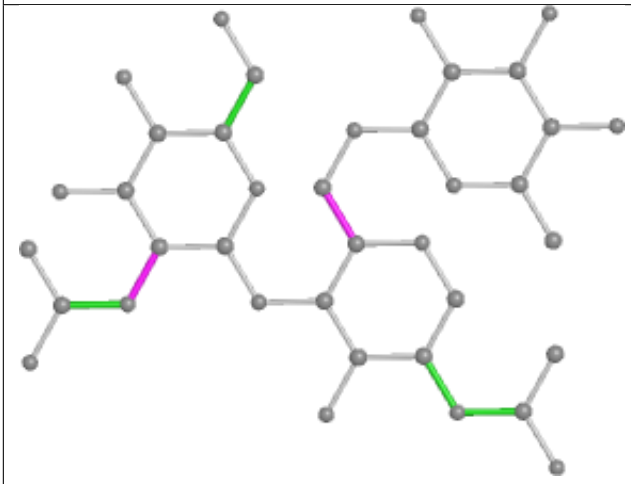
Oligosaccharide Chain I



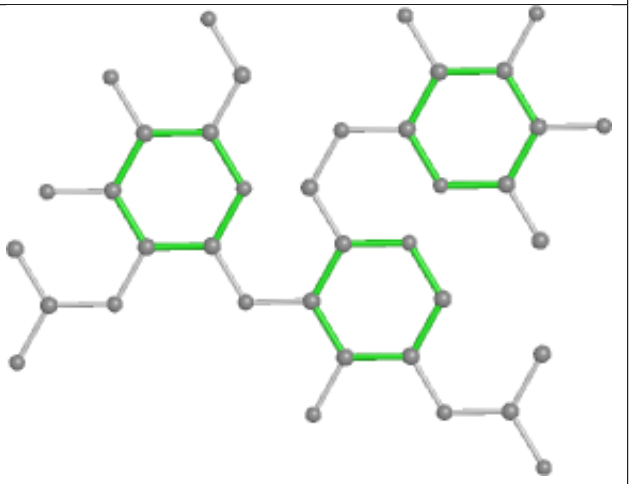
Bond lengths



Bond angles

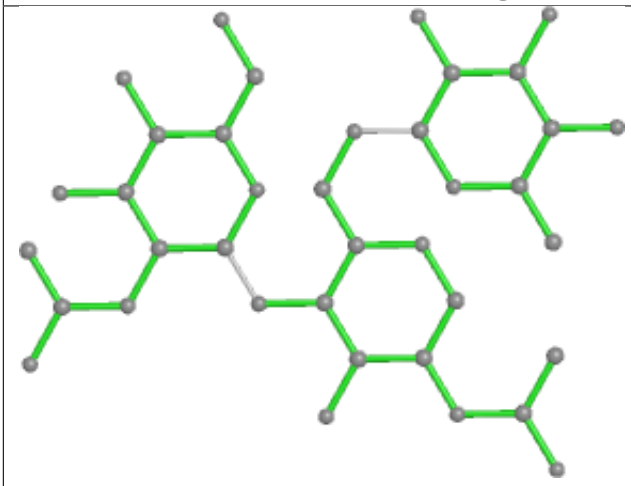


Torsions

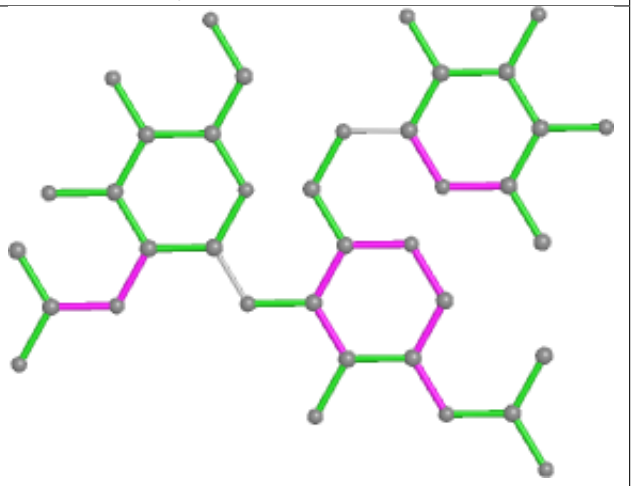


Rings

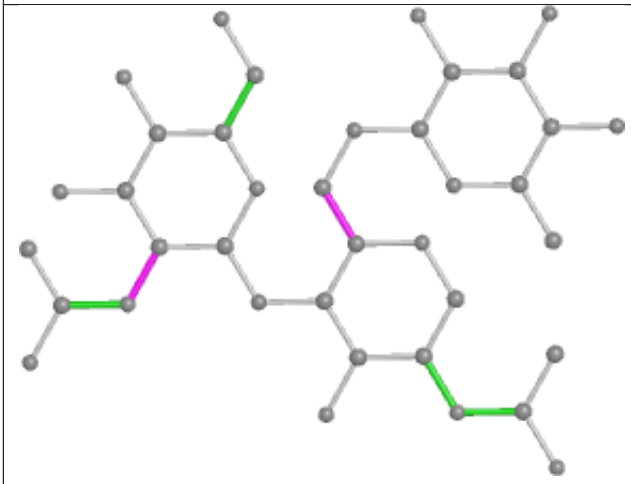
Oligosaccharide Chain Q



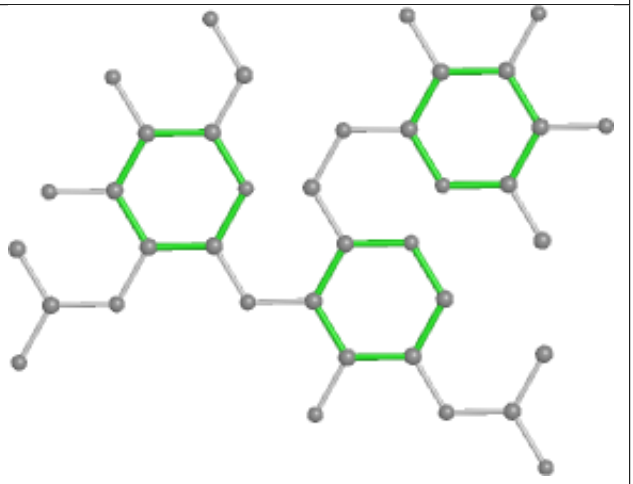
Bond lengths



Bond angles

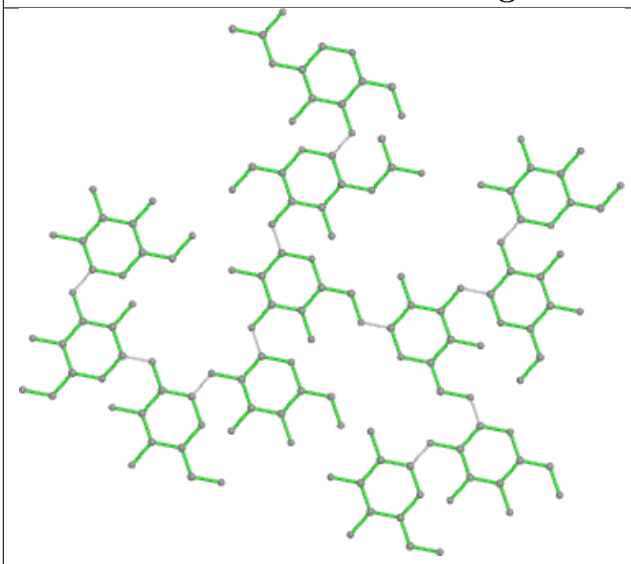


Torsions

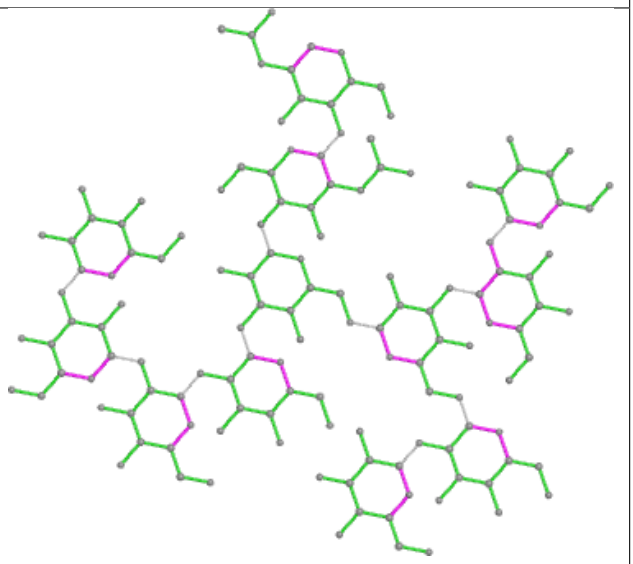


Rings

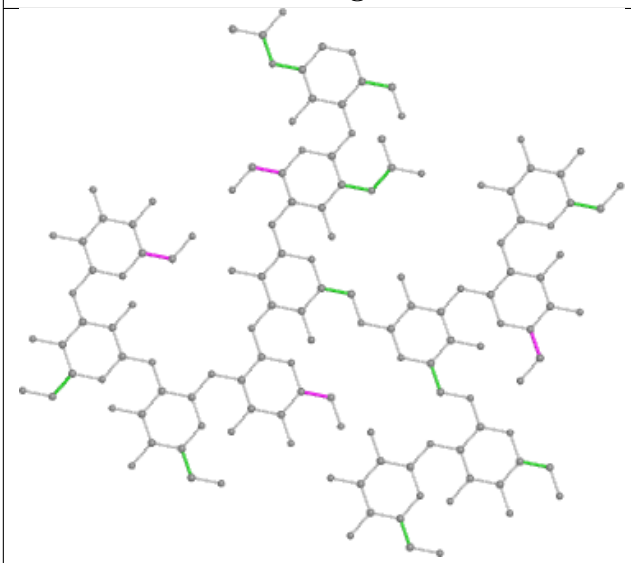
Oligosaccharide Chain J



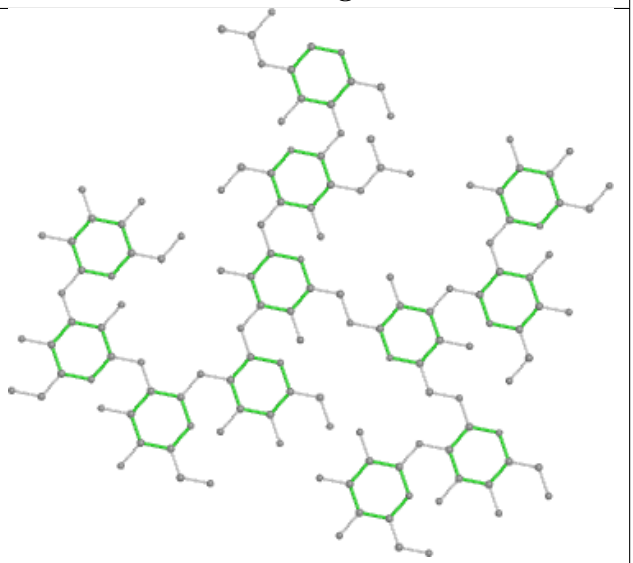
Bond lengths



Bond angles

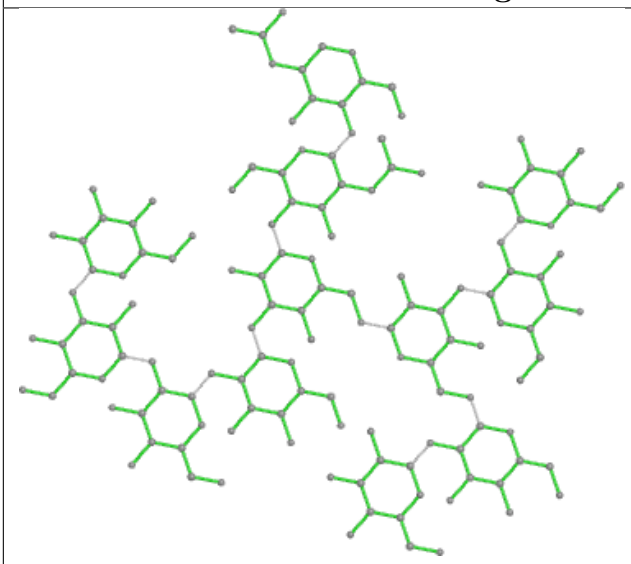


Torsions

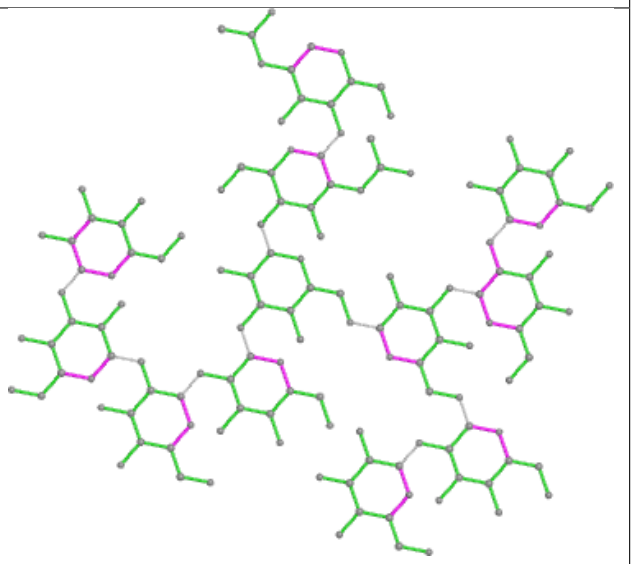


Rings

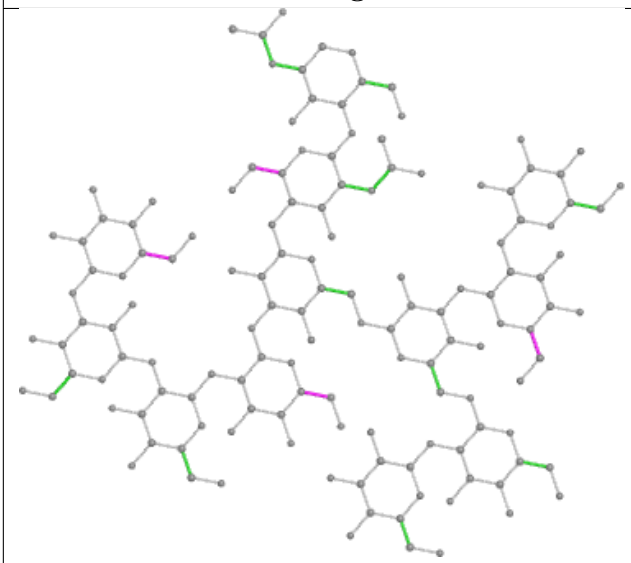
Oligosaccharide Chain R



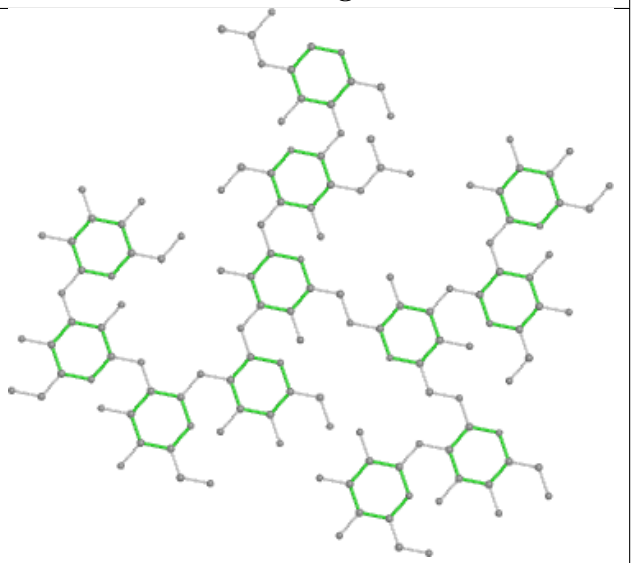
Bond lengths



Bond angles

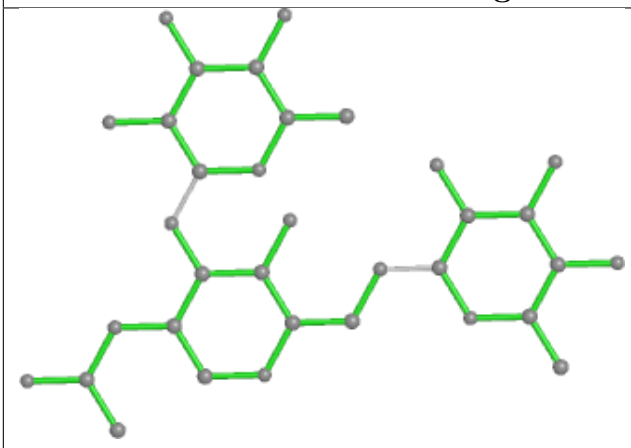


Torsions

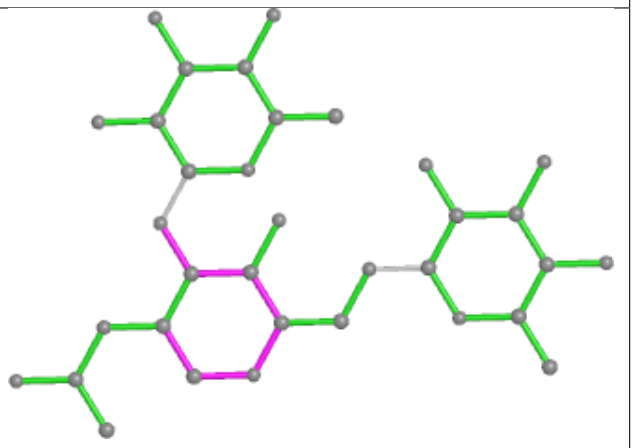


Rings

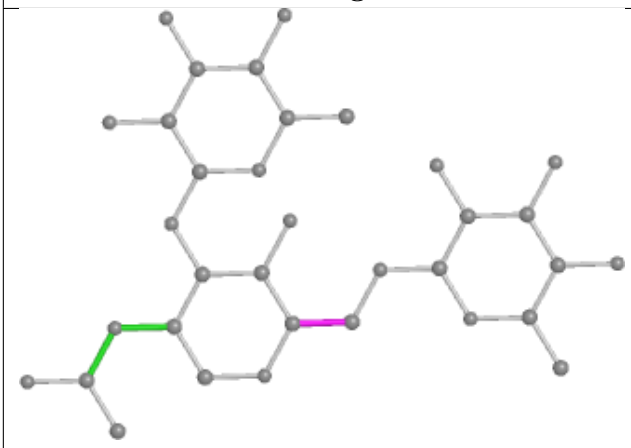
Oligosaccharide Chain K



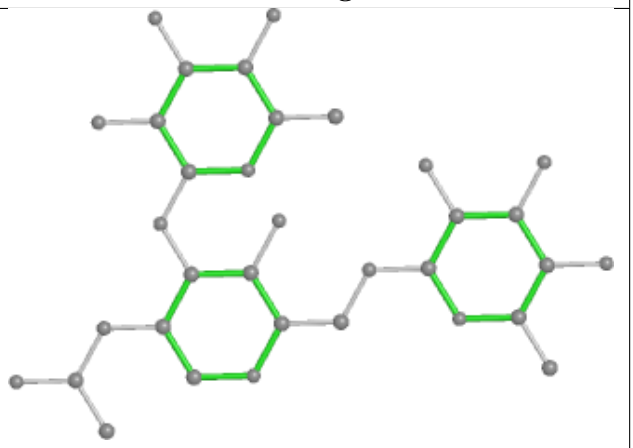
Bond lengths



Bond angles

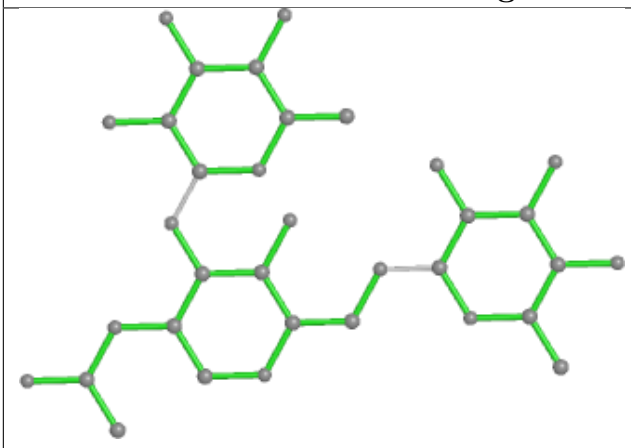


Torsions

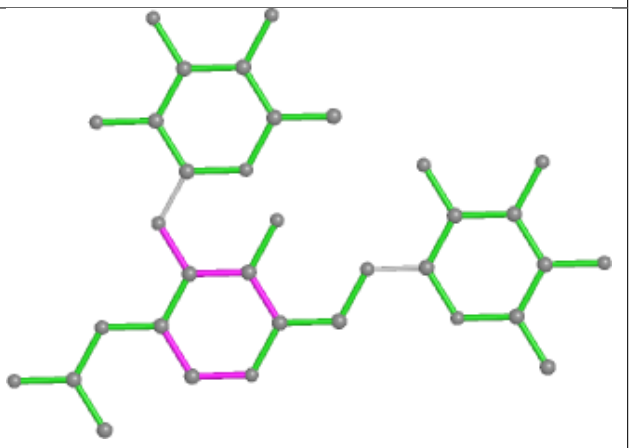


Rings

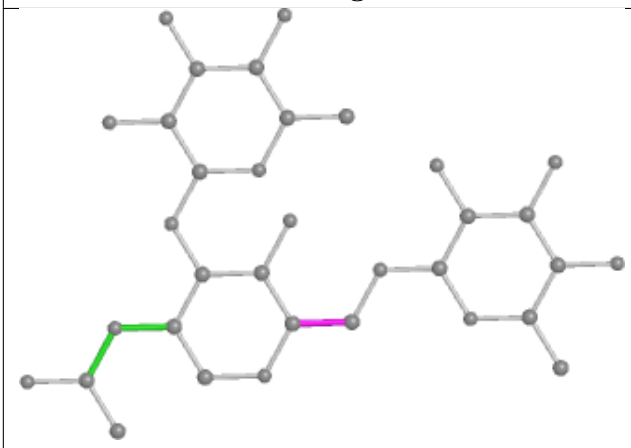
Oligosaccharide Chain S



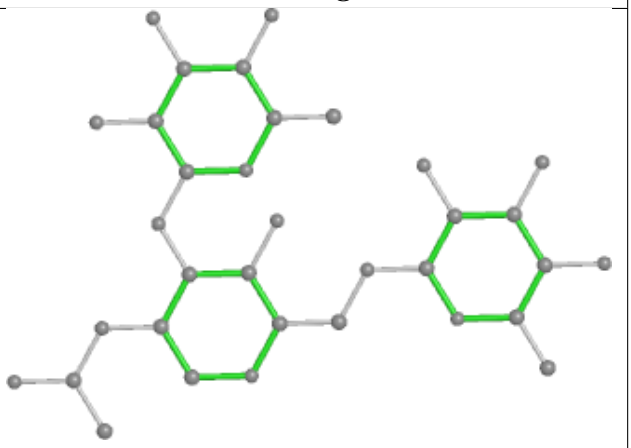
Bond lengths



Bond angles

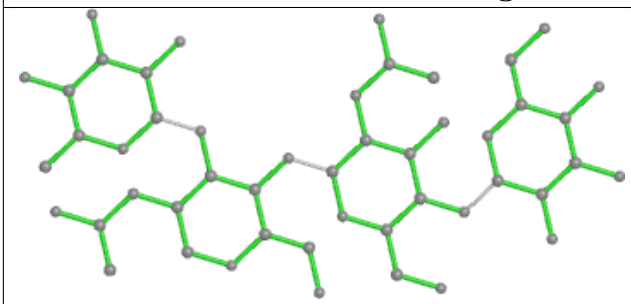


Torsions

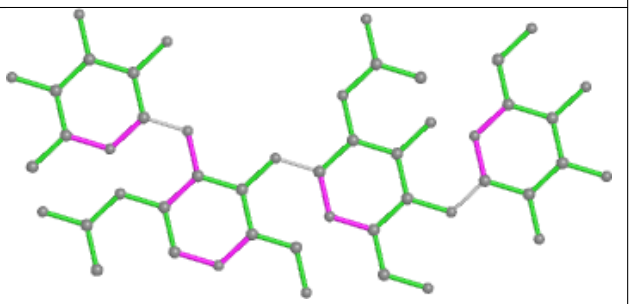


Rings

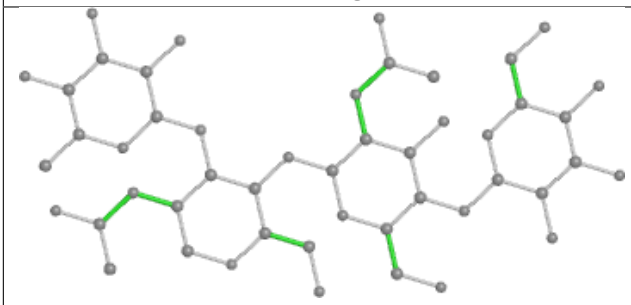
Oligosaccharide Chain L



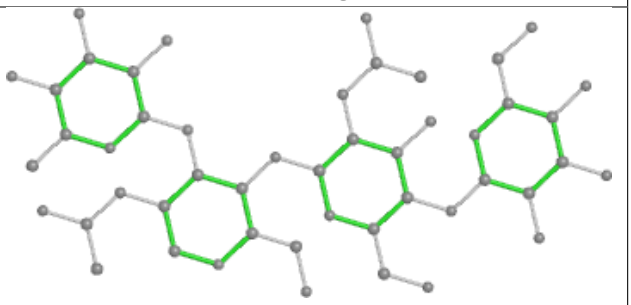
Bond lengths



Bond angles

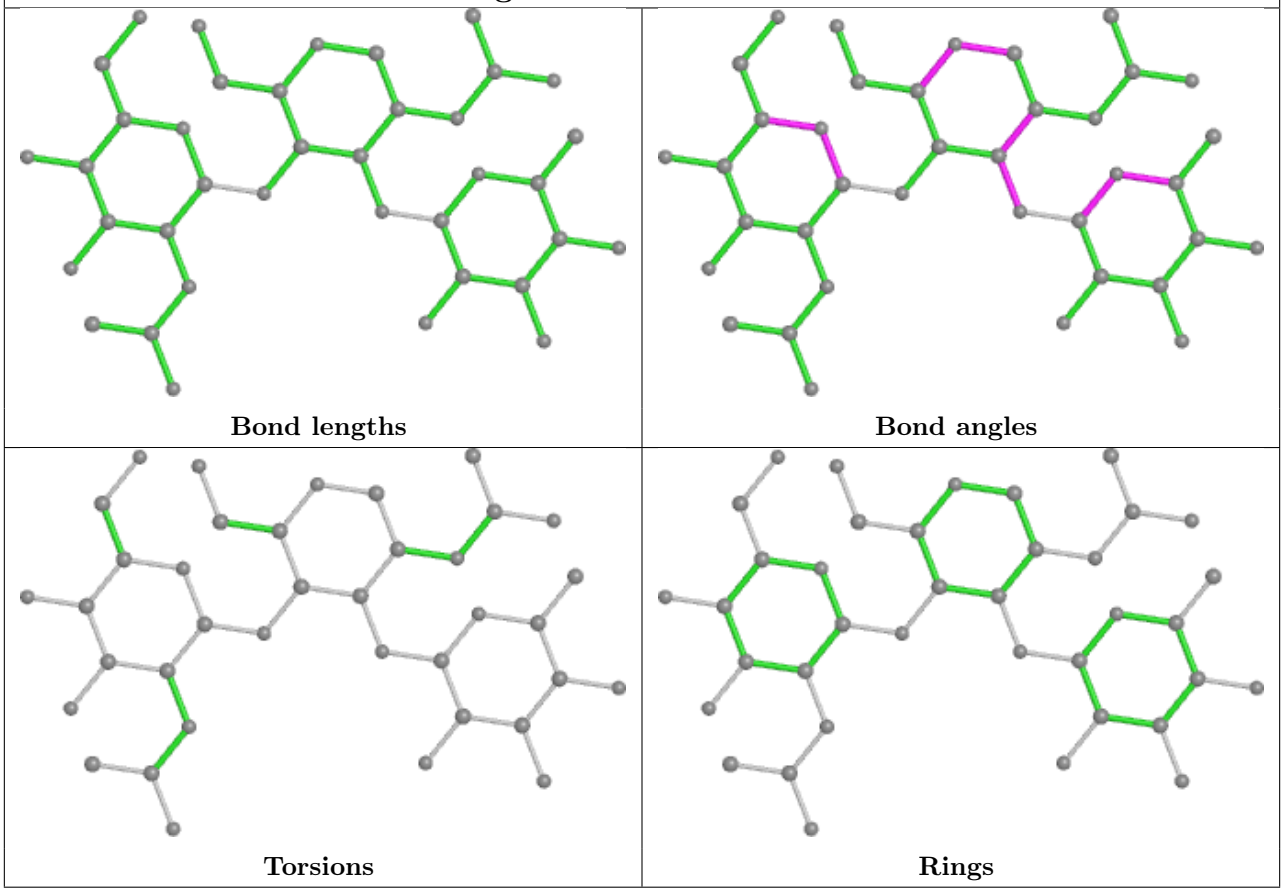


Torsions



Rings

Oligosaccharide Chain U



5.6 Ligand geometry (i)

Of 7 ligands modelled in this entry, 4 are monoatomic - leaving 3 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	$\#\|Z\| > 2$
13	SO4	C	703	-	4,4,4	0.19	0	6,6,6	0.06	0
14	NAG	B	701	2	14,14,15	0.34	0	17,19,21	0.69	1 (5%)
13	SO4	A	703	-	4,4,4	0.15	0	6,6,6	0.14	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
14	NAG	B	701	2	-	1/6/23/26	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})
14	B	701	NAG	C1-O5-C5	2.54	115.63	112.19

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
14	B	701	NAG	O5-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

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^{th} 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	532/550 (96%)	0.44	12 (2%) 60 51	84, 101, 129, 156	0
1	C	532/550 (96%)	0.44	11 (2%) 63 54	38, 102, 128, 156	0
2	B	314/394 (79%)	1.28	76 (24%) 0 0	99, 155, 210, 217	0
2	D	298/394 (75%)	1.55	103 (34%) 0 0	101, 160, 227, 231	0
All	All	1676/1888 (88%)	0.79	202 (12%) 4 2	38, 109, 207, 231	0

All (202) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	D	336	LEU	8.6
2	B	383	PRO	8.6
2	B	89	LEU	8.4
2	D	56	ASN	8.4
2	B	325	SER	8.1
2	B	36	PRO	6.5
2	B	229	SER	6.4
2	B	129	PRO	6.2
2	B	228	HIS	5.8
2	D	220	SER	5.7
2	D	44	VAL	5.6
2	B	82	GLY	5.5
2	B	123	MET	5.5
2	D	133	LEU	5.5
2	D	228	HIS	5.4
2	B	382	ASN	5.4
2	D	221	GLN	5.2
2	B	375	PRO	5.2
2	B	38	GLY	5.1
2	B	37	LEU	5.0
2	D	325	SER	4.9

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Mol	Chain	Res	Type	RSRZ
2	D	62	GLY	4.9
2	D	129	PRO	4.8
2	D	40	ASN	4.8
2	B	351	TYR	4.8
2	D	86	TYR	4.8
2	D	117	TYR	4.8
2	D	132	VAL	4.6
2	D	223	SER	4.6
2	D	138	TYR	4.6
2	D	45	LEU	4.6
2	B	86	TYR	4.5
2	D	85	PHE	4.4
2	B	371	SER	4.4
2	D	224	CYS	4.4
2	B	73	VAL	4.3
2	B	72	ASP	4.3
2	B	372	ALA	4.3
2	D	307	ILE	4.3
2	D	91	VAL	4.3
2	B	70	VAL	4.2
2	D	48	ALA	4.2
2	D	37	LEU	4.2
2	D	208	VAL	4.2
2	D	234	VAL	4.1
2	D	84	LEU	4.1
2	B	81	MET	4.0
2	D	372	ALA	4.0
2	B	117	TYR	4.0
2	B	235	GLY	4.0
2	D	119	GLN	4.0
2	B	330	PHE	4.0
2	D	122	ALA	4.0
2	B	363	PRO	3.9
2	D	330	PHE	3.9
2	B	374	CYS	3.9
2	D	120	CYS	3.9
2	D	47	VAL	3.9
2	B	122	ALA	3.8
2	D	38	GLY	3.8
2	D	265	PHE	3.8
2	D	334	LEU	3.8
2	B	381	ASN	3.7

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Mol	Chain	Res	Type	RSRZ
2	D	41	ASP	3.6
2	B	87	LEU	3.6
1	A	303	GLY	3.6
2	D	49	GLY	3.6
2	B	334	LEU	3.5
2	D	217	CYS	3.5
2	B	75	GLU	3.5
2	D	363	PRO	3.5
2	D	42	SER	3.4
2	B	128	LYS	3.4
2	D	229	SER	3.3
2	D	61	ASP	3.3
2	B	71	HIS	3.3
2	B	265	PHE	3.3
2	D	66	SER	3.3
1	C	303	GLY	3.3
2	B	137	ALA	3.2
2	B	136	PRO	3.2
2	D	31	LEU	3.2
2	D	137	ALA	3.2
2	B	326	PRO	3.2
2	D	142	LEU	3.2
2	B	224	CYS	3.2
2	B	40	ASN	3.1
2	D	64	MET	3.1
2	B	336	LEU	3.1
2	D	358	LYS	3.1
2	D	222	ALA	3.1
2	D	74	ARG	3.1
2	D	72	ASP	3.1
1	A	508	ILE	3.0
2	D	333	GLN	3.0
2	D	70	VAL	3.0
2	D	87	LEU	3.0
2	B	267	GLU	3.0
2	B	88	THR	3.0
2	D	59	GLN	3.0
2	D	71	HIS	3.0
2	B	45	LEU	3.0
2	B	361	VAL	3.0
2	B	74	ARG	3.0
2	D	136	PRO	2.9

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Mol	Chain	Res	Type	RSRZ
2	B	99	LEU	2.9
2	D	375	PRO	2.9
2	D	339	ASN	2.9
2	D	55	ILE	2.9
2	D	57	ARG	2.9
2	B	266	PHE	2.9
2	D	89	LEU	2.9
2	D	123	MET	2.8
2	D	88	THR	2.8
2	D	337	THR	2.8
2	B	222	ALA	2.8
2	D	367	LYS	2.8
2	D	39	CYS	2.8
2	D	235	GLY	2.8
1	C	508	ILE	2.7
2	B	90	ASP	2.7
2	D	335	ASP	2.7
2	D	340	PRO	2.7
2	B	134	TYR	2.7
2	B	219	LYS	2.7
2	B	78	GLN	2.7
2	D	34	LEU	2.7
2	B	77	TYR	2.6
1	C	305	CYS	2.6
2	D	67	LEU	2.6
2	B	62	GLY	2.6
2	D	140	CYS	2.6
1	C	579	VAL	2.6
2	B	234	VAL	2.6
2	B	303	PRO	2.6
2	B	376	GLY	2.5
1	A	279	SER	2.5
2	D	63	TYR	2.5
1	C	231	PHE	2.5
1	C	308	SER	2.5
1	C	158	LEU	2.5
2	D	46	ALA	2.5
2	D	98	VAL	2.5
2	D	75	GLU	2.5
2	B	373	GLU	2.5
2	B	249	VAL	2.5
2	D	127	ASN	2.4

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Mol	Chain	Res	Type	RSRZ
2	D	266	PHE	2.4
2	D	118	GLY	2.4
2	D	267	GLU	2.4
2	B	217	CYS	2.4
2	B	124	PHE	2.4
2	D	227	GLN	2.4
2	D	103	ALA	2.4
1	A	579	VAL	2.3
2	B	220	SER	2.3
2	D	201	VAL	2.3
2	B	127	ASN	2.3
2	D	361	VAL	2.3
2	D	58	ASP	2.3
1	C	126	SER	2.3
2	B	120	CYS	2.3
2	D	326	PRO	2.3
2	D	125	HIS	2.3
2	D	377	PRO	2.3
2	B	85	PHE	2.3
1	A	518	ILE	2.2
2	B	261	VAL	2.2
2	D	376	GLY	2.2
2	B	39	CYS	2.2
2	B	352	LEU	2.2
1	A	477	PHE	2.2
1	C	62	ASN	2.2
2	D	261	VAL	2.2
1	A	581	ILE	2.2
2	B	132	VAL	2.2
2	D	219	LYS	2.1
2	D	233	PRO	2.1
1	A	119	PHE	2.1
2	D	226	LEU	2.1
2	D	43	GLU	2.1
2	D	362	LEU	2.1
2	D	341	GLN	2.1
2	B	56	ASN	2.1
1	C	196	SER	2.1
2	B	221	GLN	2.1
1	A	62	ASN	2.1
2	B	208	VAL	2.1
2	D	124	PHE	2.1

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Mol	Chain	Res	Type	RSRZ
2	D	249	VAL	2.1
2	B	119	GLN	2.0
1	A	492	CYS	2.0
2	B	35	HIS	2.0
2	D	97	HIS	2.0
1	A	574	ILE	2.0
2	B	32	SER	2.0
2	D	218	THR	2.0
2	D	54	ASN	2.0
1	A	91	ILE	2.0
2	D	232	GLU	2.0
2	B	225	SER	2.0
1	C	573	PHE	2.0

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^{th} 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
6	FUC	I	3	10/11	0.24	0.43	155,156,156,156	0
5	MAN	H	4	11/12	0.26	0.46	160,160,161,161	0
4	BMA	T	3	11/12	0.36	0.41	234,234,234,234	0
5	BMA	P	3	11/12	0.39	0.41	159,160,163,164	0
5	MAN	P	4	11/12	0.41	0.41	166,166,167,167	0
3	MAN	O	5	11/12	0.44	0.32	168,168,169,169	0
6	FUC	Q	3	10/11	0.49	0.41	156,157,157,157	0
5	BMA	H	3	11/12	0.54	0.30	155,157,158,159	0
9	BMA	L	3	11/12	0.57	0.37	195,196,196,196	0
4	NAG	T	2	14/15	0.58	0.22	233,233,234,234	0
3	MAN	G	5	11/12	0.64	0.23	168,169,170,170	0
6	NAG	I	1	14/15	0.65	0.29	148,150,153,154	0
3	MAN	O	4	11/12	0.65	0.27	168,168,169,169	0
8	FUC	K	3	10/11	0.68	0.21	163,163,163,163	0
8	NAG	S	1	14/15	0.69	0.21	151,153,155,155	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	NAG	Q	1	14/15	0.70	0.31	148,151,153,155	0
10	FUC	U	2	10/11	0.70	0.49	195,195,195,195	0
4	NAG	N	2	14/15	0.73	0.36	161,163,165,166	0
5	FUC	P	6	10/11	0.73	0.21	144,144,144,144	0
3	BMA	E	3	11/12	0.75	0.15	149,152,155,157	0
9	FUC	L	4	10/11	0.75	0.31	185,185,186,186	0
8	FUC	S	3	10/11	0.75	0.35	155,155,156,156	0
9	NAG	L	2	14/15	0.76	0.19	189,191,192,193	0
8	NAG	K	1	14/15	0.76	0.24	157,159,161,162	0
10	NAG	U	3	14/15	0.76	0.27	195,196,196,196	0
4	NAG	T	1	14/15	0.77	0.34	232,232,233,233	0
3	BMA	O	3	11/12	0.78	0.15	164,166,167,167	0
10	NAG	U	1	14/15	0.78	0.21	192,193,194,194	0
7	GLC	J	7	11/12	0.79	0.22	145,146,146,146	0
7	GLC	R	7	11/12	0.79	0.23	150,151,151,151	0
5	FUC	H	6	10/11	0.79	0.23	139,140,140,140	0
3	BMA	M	3	11/12	0.79	0.20	143,147,150,152	0
5	NAG	P	2	14/15	0.80	0.27	149,151,154,156	0
4	BMA	N	3	11/12	0.80	0.59	168,170,170,170	0
5	FUC	P	5	10/11	0.81	0.30	144,144,145,145	0
4	NAG	F	2	14/15	0.81	0.26	150,152,154,156	0
4	BMA	F	3	11/12	0.81	0.40	157,158,159,160	0
3	MAN	M	4	11/12	0.81	0.21	149,150,150,150	0
5	FUC	H	5	10/11	0.81	0.32	140,140,140,141	0
6	NAG	Q	2	14/15	0.81	0.19	153,154,155,155	0
8	FUC	S	2	10/11	0.81	0.18	155,156,156,156	0
6	NAG	I	2	14/15	0.82	0.17	153,154,154,154	0
3	MAN	G	4	11/12	0.83	0.16	168,169,169,169	0
9	NAG	L	1	14/15	0.83	0.16	182,183,185,187	0
8	FUC	K	2	10/11	0.84	0.22	162,162,162,162	0
3	MAN	E	4	11/12	0.84	0.19	153,154,154,155	0
7	MAN	R	10	11/12	0.85	0.19	128,130,131,131	0
5	NAG	H	2	14/15	0.86	0.24	145,147,150,153	0
3	FUC	O	7	10/11	0.86	0.25	140,141,142,142	0
4	NAG	F	1	14/15	0.86	0.29	139,142,144,147	0
3	MAN	M	5	11/12	0.86	0.19	154,155,156,156	0
7	MAN	J	9	11/12	0.88	0.27	116,117,119,122	0
7	MAN	J	10	11/12	0.89	0.17	125,126,126,127	0
7	MAN	R	9	11/12	0.89	0.31	117,118,121,125	0
3	NAG	M	2	14/15	0.90	0.22	130,132,136,140	0
3	MAN	E	5	11/12	0.90	0.16	157,157,159,159	0
3	NAG	O	1	14/15	0.90	0.15	143,146,148,151	0

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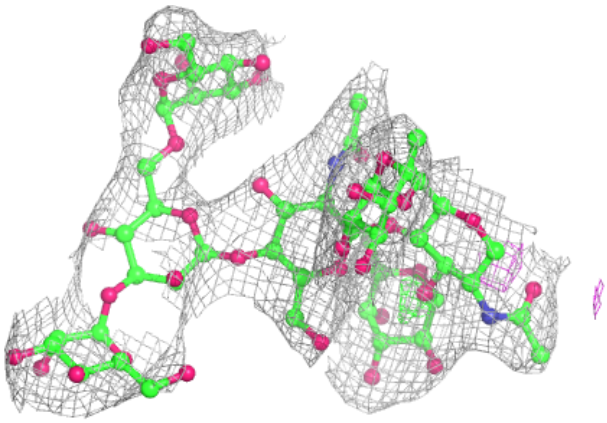
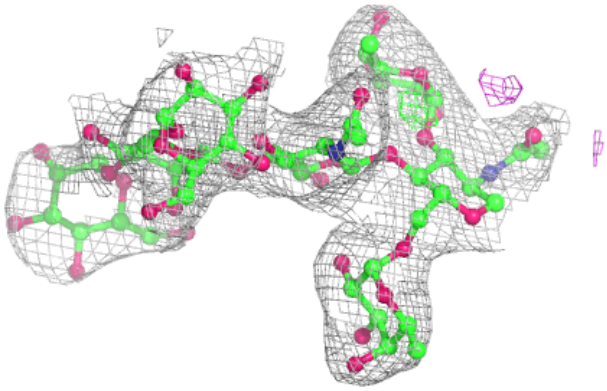
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	FUC	O	6	10/11	0.90	0.19	148,149,149,149	0
4	NAG	N	1	14/15	0.90	0.24	149,152,155,158	0
3	NAG	G	1	14/15	0.91	0.14	142,146,148,150	0
5	NAG	H	1	14/15	0.92	0.14	134,135,139,142	0
3	FUC	G	6	10/11	0.92	0.20	148,149,149,150	0
3	NAG	E	2	14/15	0.93	0.18	136,138,142,145	0
3	NAG	O	2	14/15	0.93	0.21	154,155,158,161	0
5	NAG	P	1	14/15	0.93	0.12	138,140,144,146	0
7	MAN	J	6	11/12	0.94	0.19	139,142,143,143	0
3	BMA	G	3	11/12	0.94	0.07	164,166,167,167	0
7	MAN	R	12	11/12	0.94	0.27	114,115,116,116	0
3	FUC	M	6	10/11	0.94	0.27	124,124,125,125	0
3	NAG	E	1	14/15	0.94	0.21	125,127,131,133	0
7	NAG	R	1	14/15	0.94	0.27	109,110,112,112	0
7	MAN	R	6	11/12	0.94	0.23	142,145,146,148	0
3	FUC	G	7	10/11	0.94	0.26	139,139,140,140	0
7	NAG	J	1	14/15	0.95	0.28	104,106,110,111	0
7	BMA	R	3	11/12	0.95	0.26	115,116,118,121	0
7	MAN	R	5	11/12	0.95	0.28	132,134,136,139	0
7	MAN	J	8	11/12	0.95	0.20	111,112,114,116	0
7	MAN	J	5	11/12	0.95	0.23	130,133,133,136	0
3	FUC	E	7	10/11	0.95	0.20	132,132,132,132	0
7	MAN	J	12	11/12	0.95	0.28	113,113,114,114	0
7	MAN	R	4	11/12	0.96	0.24	123,123,126,129	0
3	NAG	M	1	14/15	0.96	0.23	121,123,125,128	0
3	NAG	G	2	14/15	0.96	0.17	153,155,158,161	0
7	NAG	J	2	14/15	0.96	0.25	104,106,107,109	0
7	MAN	R	8	11/12	0.96	0.23	114,116,117,118	0
7	NAG	R	2	14/15	0.96	0.25	108,111,112,113	0
3	FUC	M	7	10/11	0.96	0.18	126,126,126,127	0
7	MAN	J	4	11/12	0.97	0.20	121,122,123,127	0
7	MAN	R	11	11/12	0.97	0.23	116,117,118,118	0
7	MAN	J	11	11/12	0.97	0.23	112,113,114,114	0
3	FUC	E	6	10/11	0.97	0.25	126,126,127,127	0
7	BMA	J	3	11/12	0.98	0.21	110,112,114,118	0

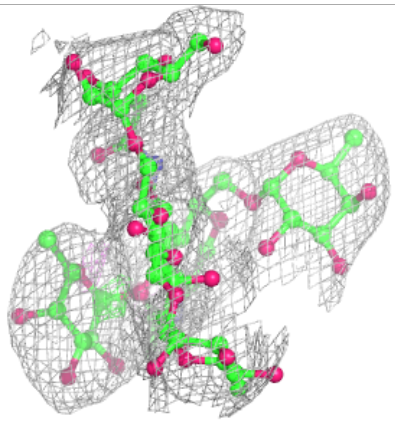
The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around Chain E:

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

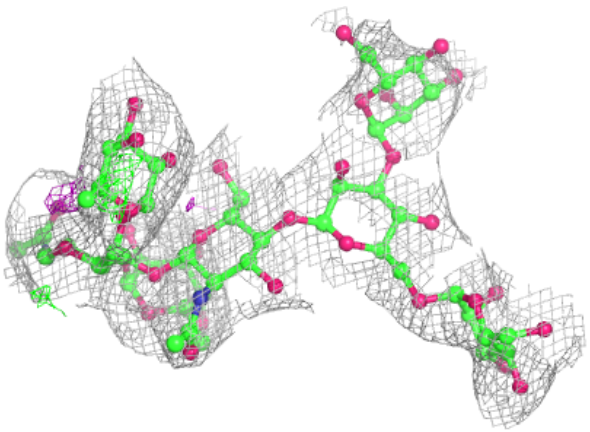


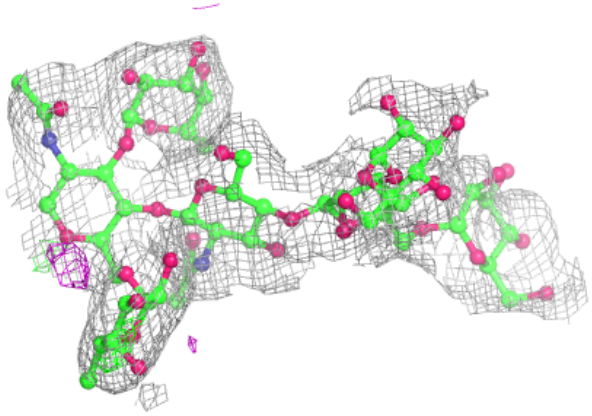


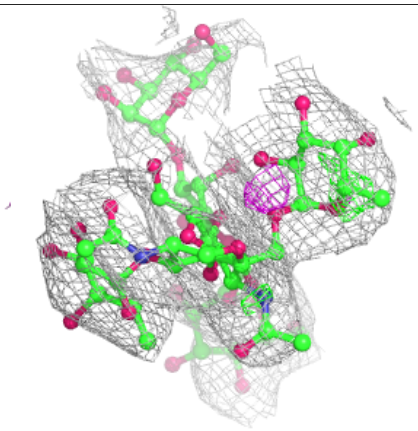


Electron density around Chain G:

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

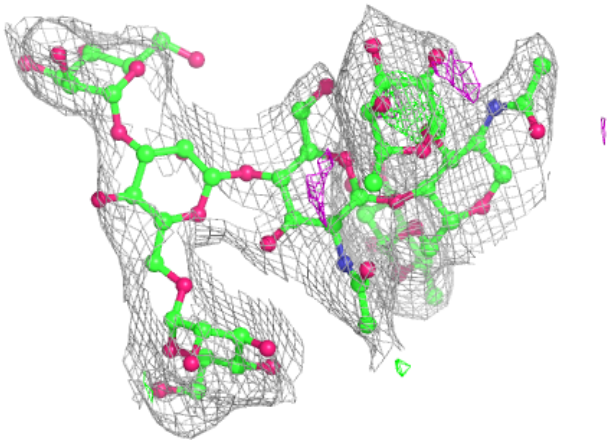


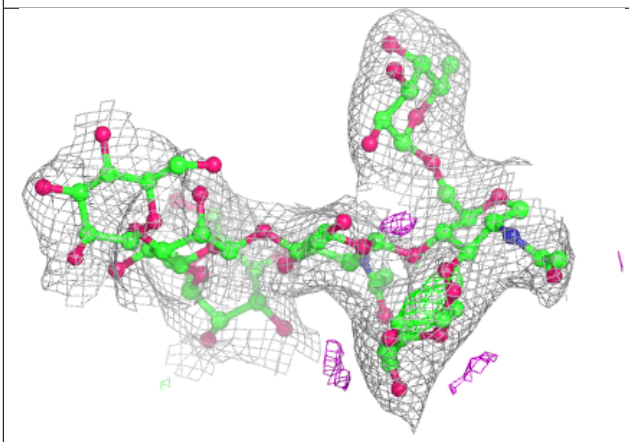


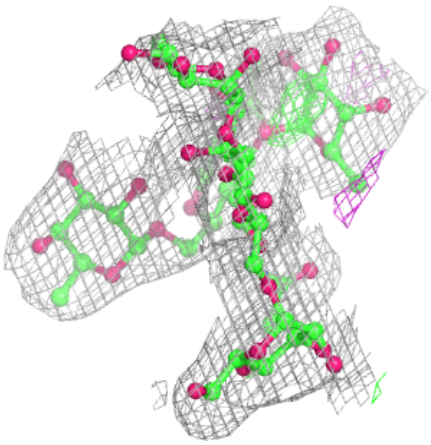


Electron density around Chain M:

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

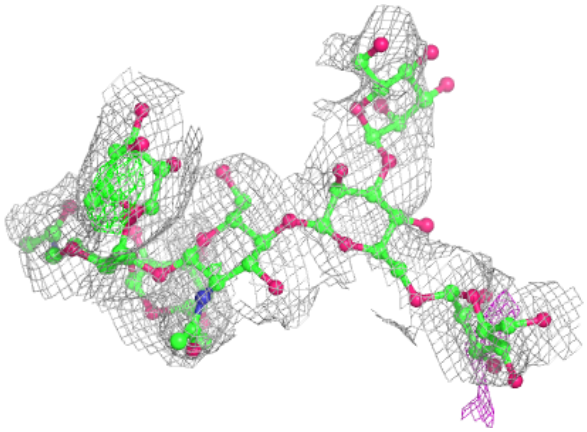


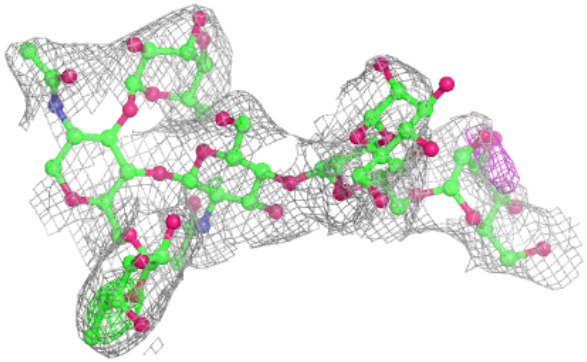


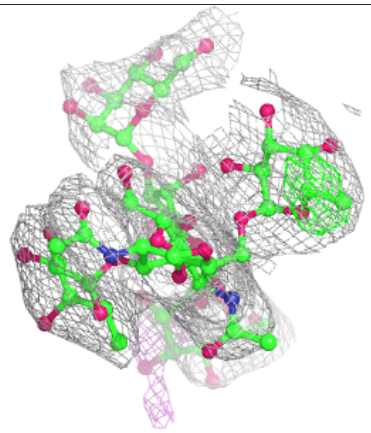


Electron density around Chain O:

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

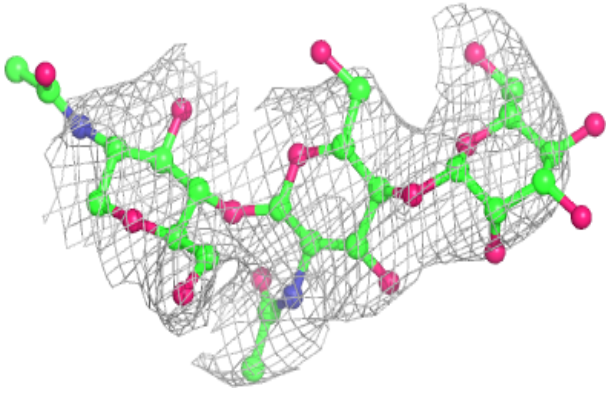


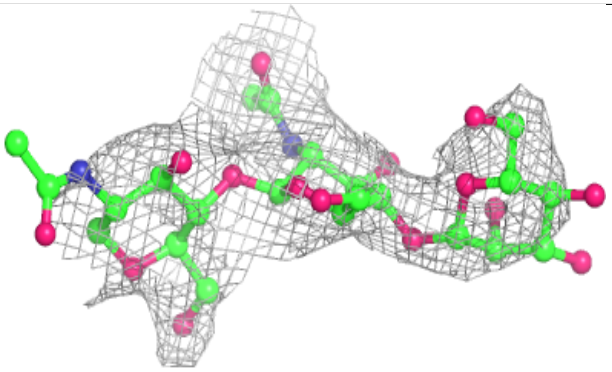


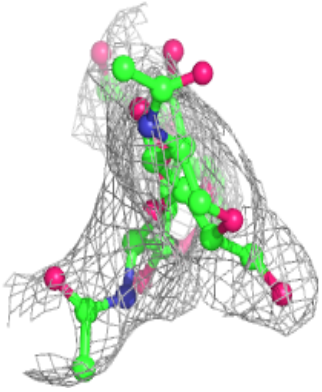


Electron density around Chain F:

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

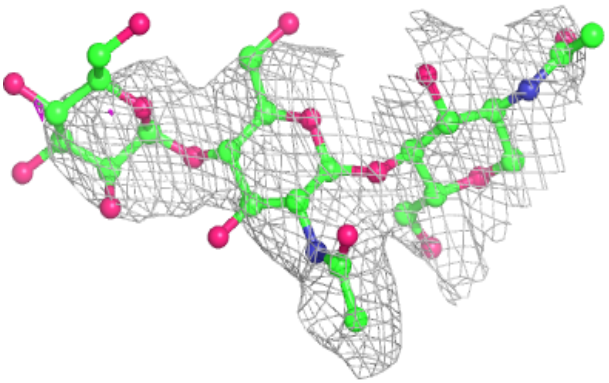


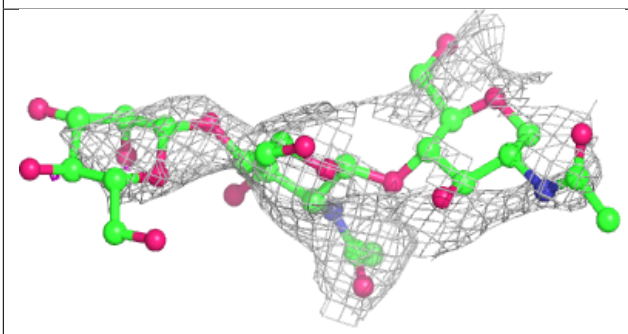


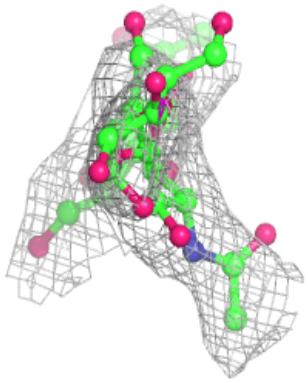


Electron density around Chain N:

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

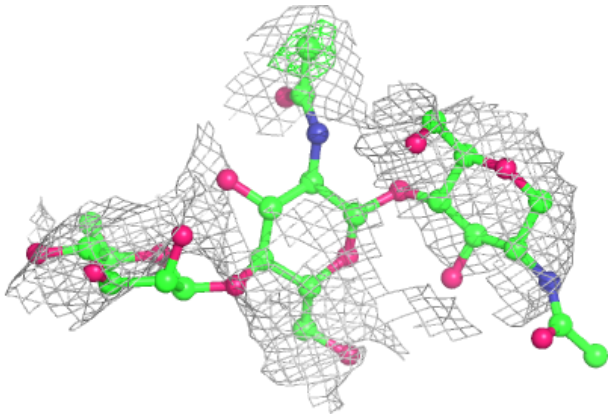


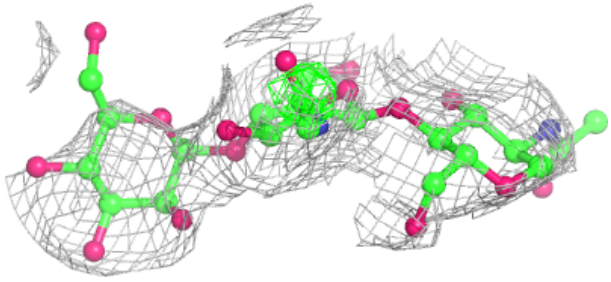


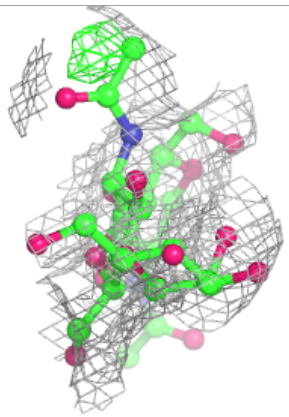


Electron density around Chain T:

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

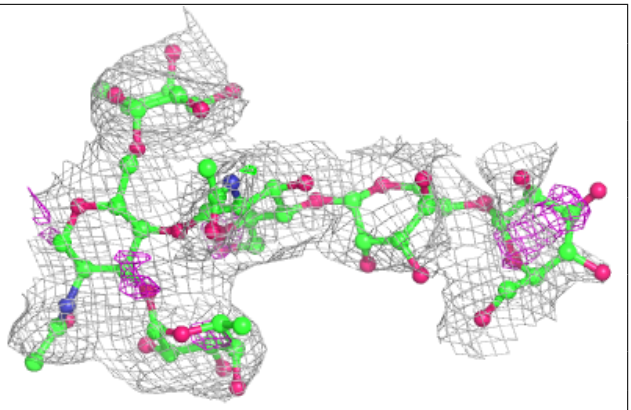


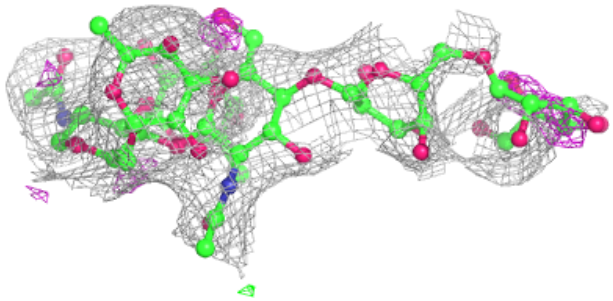


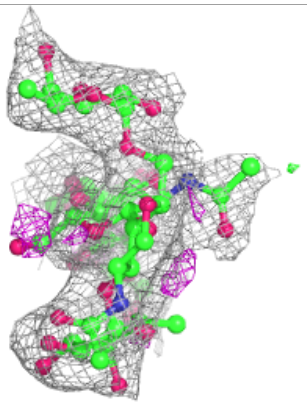


Electron density around Chain H:

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

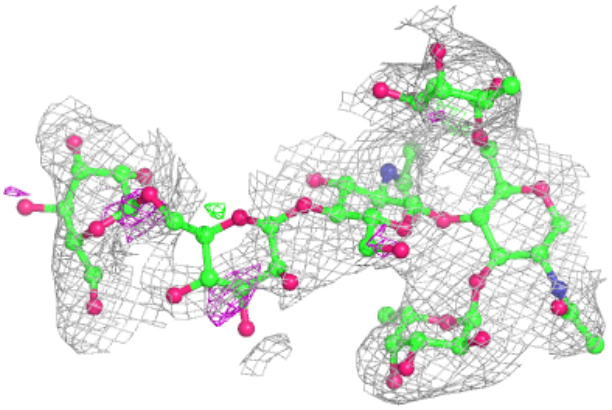


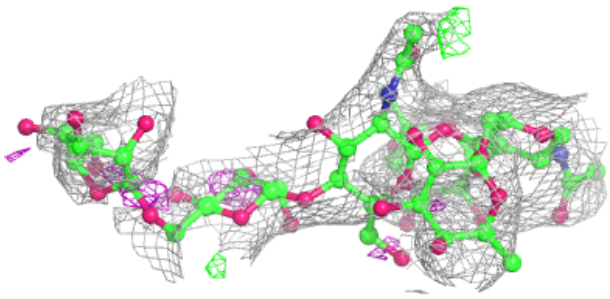


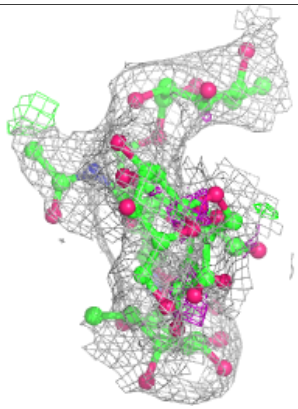


Electron density around Chain P:

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

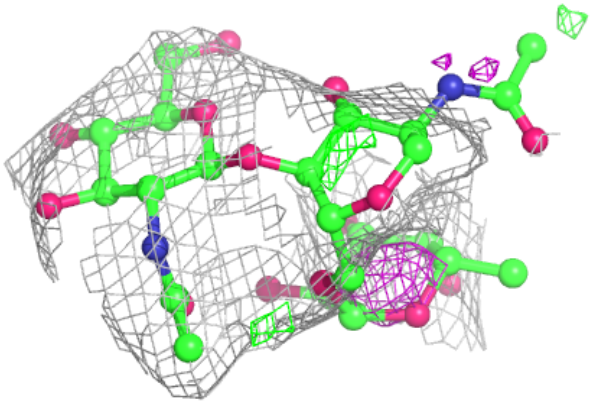


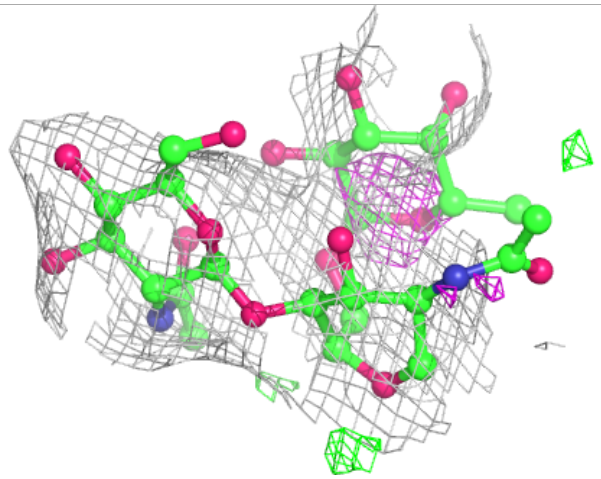


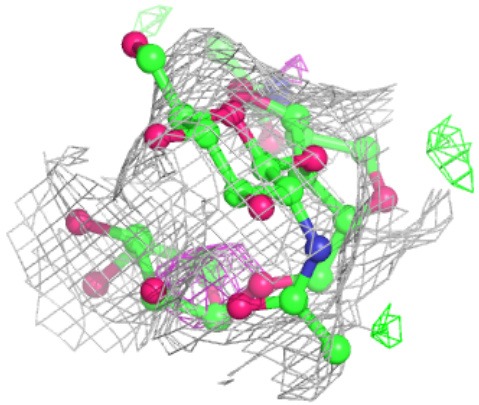


Electron density around Chain I:

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

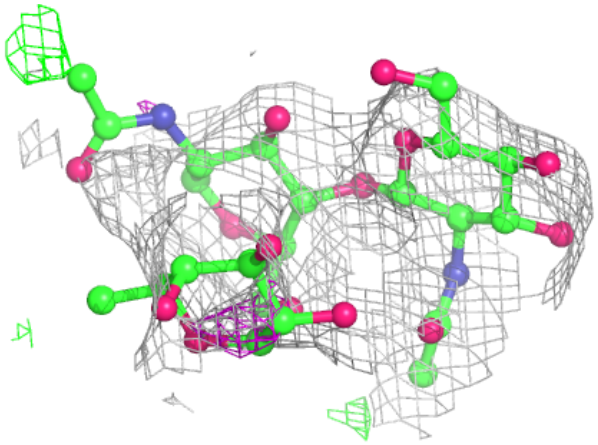


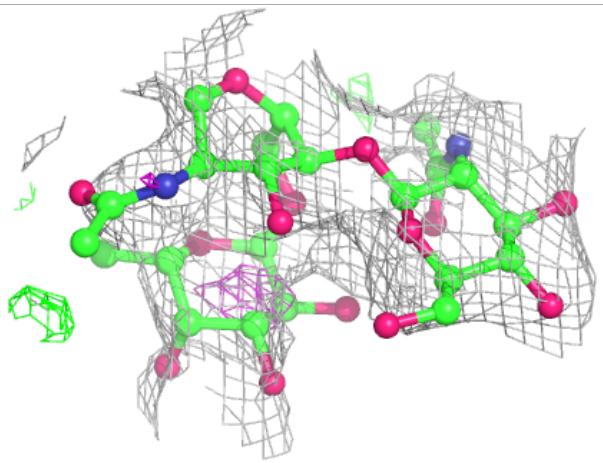


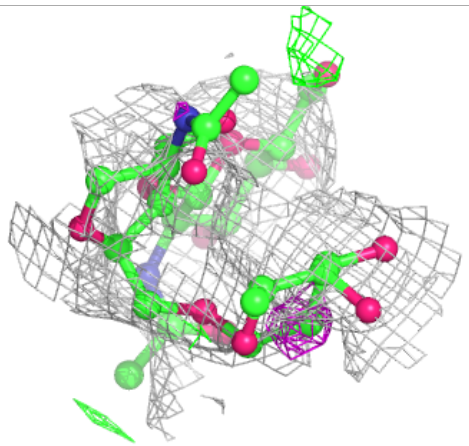


Electron density around Chain Q:

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

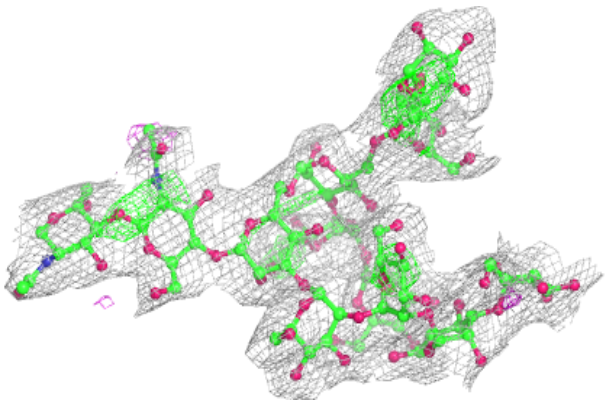


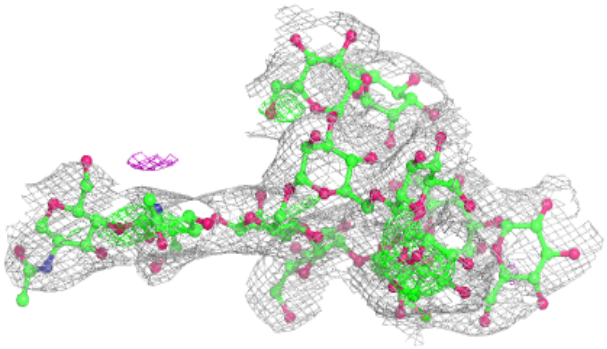


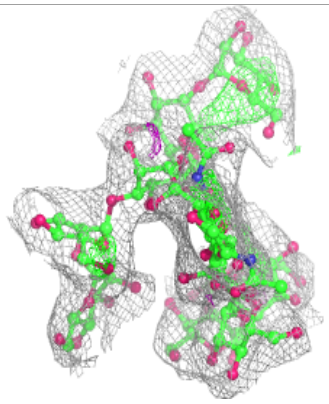


Electron density around Chain J:

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

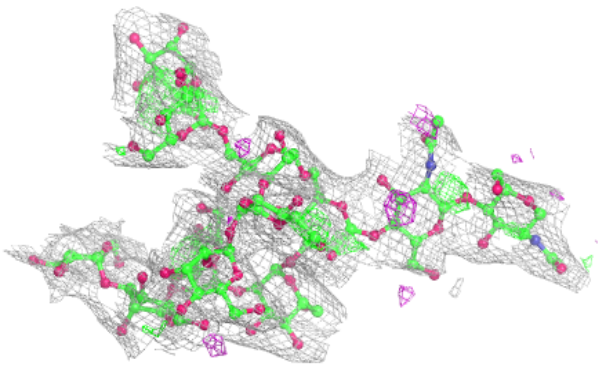


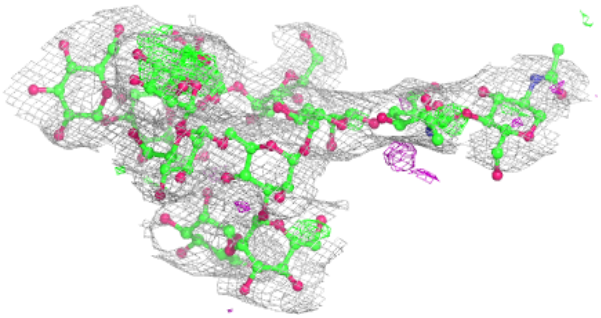


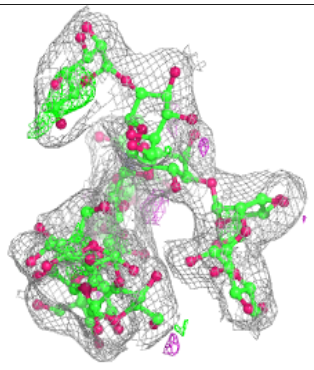


Electron density around Chain R:

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

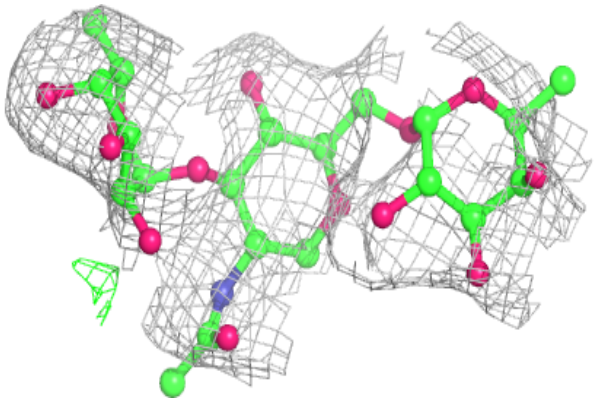


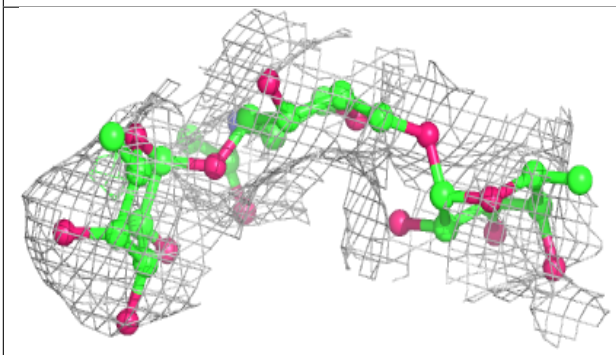


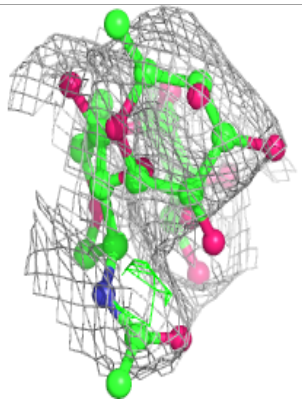


Electron density around Chain K:

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

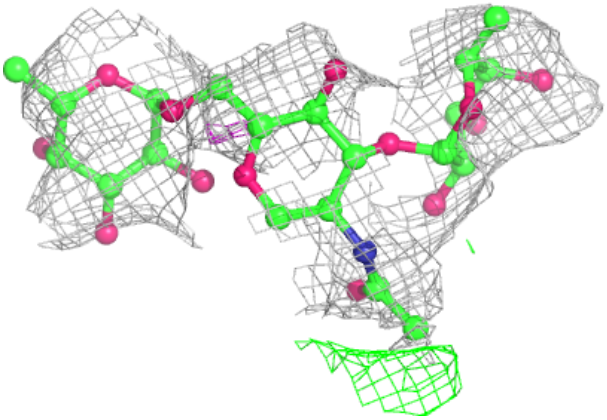


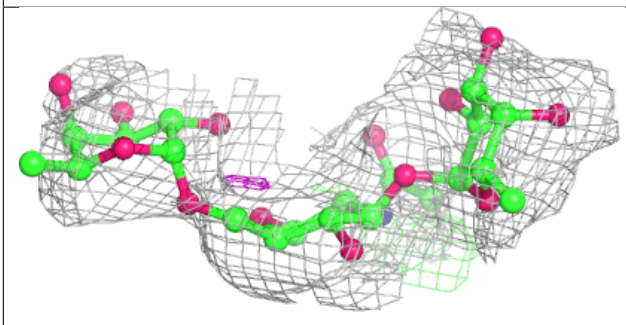


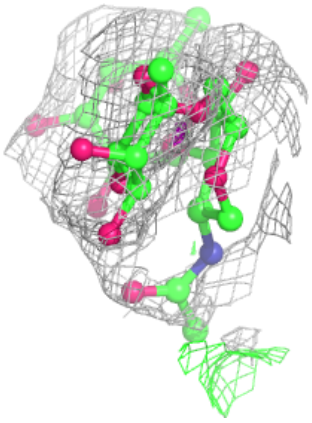


Electron density around Chain S:

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

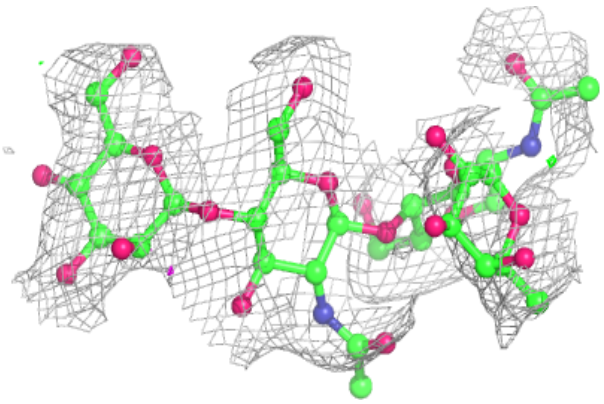


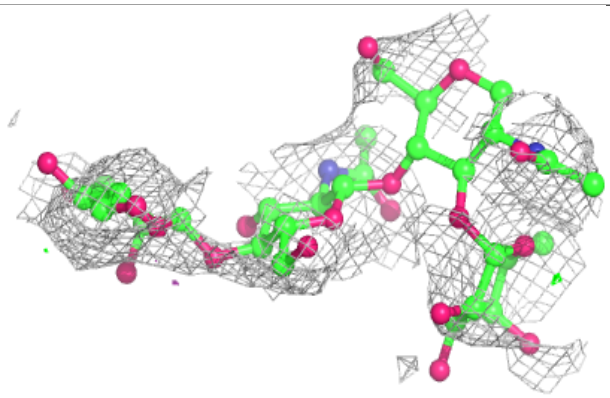


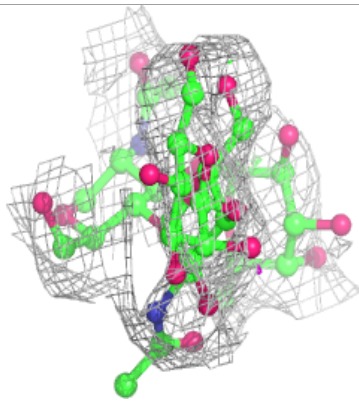


Electron density around Chain L:

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

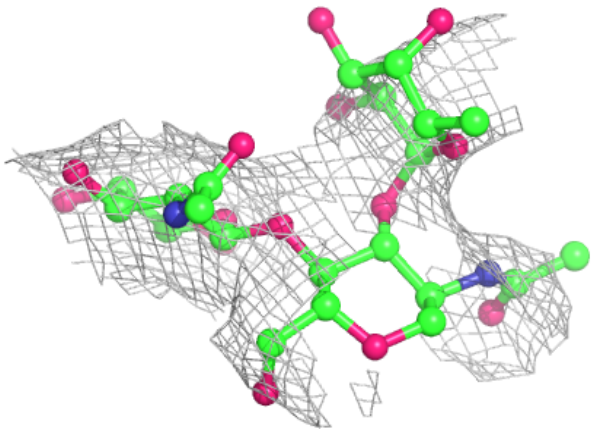


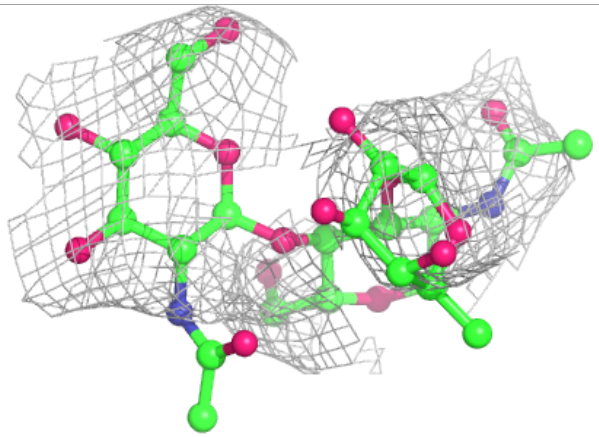


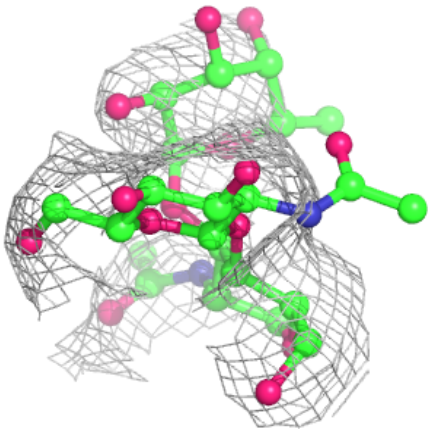


Electron density around Chain U:

$2mF_o$-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^{th} 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
14	NAG	B	701	14/15	0.51	0.36	204,204,204,204	0
13	SO4	C	703	5/5	0.86	0.29	170,170,170,170	0
11	NA	C	701	1/1	0.90	0.12	97,97,97,97	0
13	SO4	A	703	5/5	0.90	0.21	160,160,160,160	0
11	NA	A	701	1/1	0.98	0.09	92,92,92,92	0
12	ZN	A	702	1/1	0.98	0.19	97,97,97,97	0
12	ZN	C	702	1/1	0.98	0.16	90,90,90,90	0

6.5 Other polymers (i)

There are no such residues in this entry.