Full wwPDB EM Validation Report

Oct 27, 2024 – 10:07 AM EDT

PDB ID	:	7RAI
EMDB ID	:	EMD-24362
Title	:	Cryo-EM structure of M4008_N1 Fab in complex with BG505 DS-SOSIP.664 Env trimer
Authors	:	Chan, K.-W.; Kong, X.P.
Deposited on	:	2021-07-01
Resolution	:	3.24 Å(reported)
Based on initial models	:	5U1F, 4OAW

This is a Full wwPDB EM 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/EMValidationReportHelp
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 (i)) were used in the production of this report:

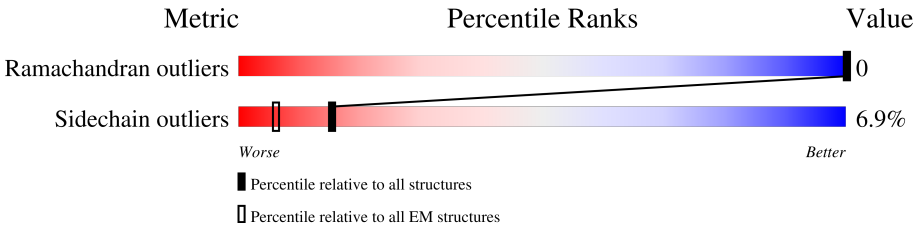
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.24 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)	EM structures (#Entries)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	476	88% 6% 6%
1	C	476	88% 6% 6%
1	E	476	88% 6% 6%
2	B	153	7% 80% 16%
2	D	153	7% 79% 5% 16%
2	F	153	7% 79% 5% 16%
3	H	264	43% 53%
3	I	264	44% 53%
3	J	264	44% 53%

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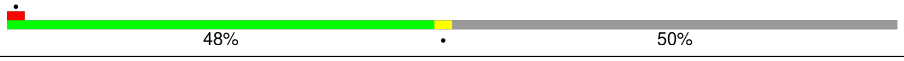
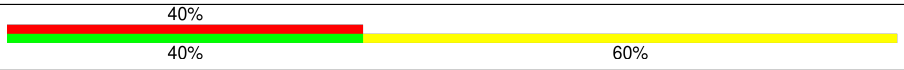
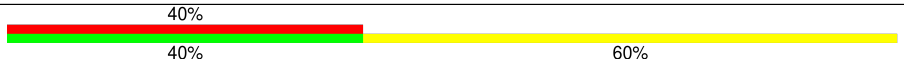
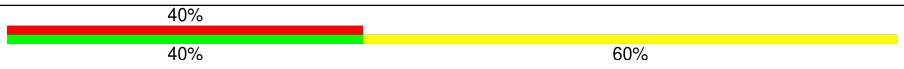
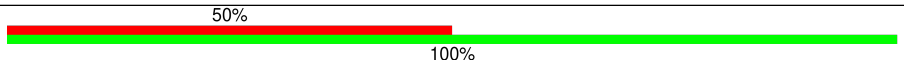
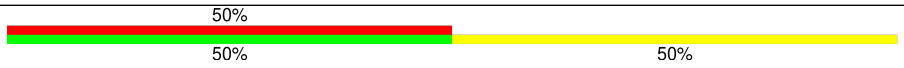
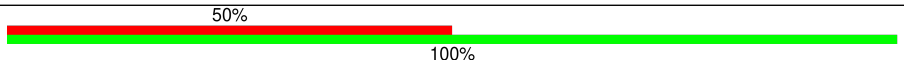
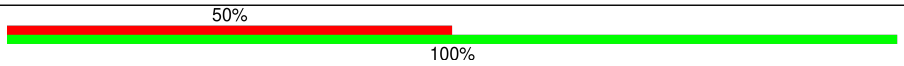
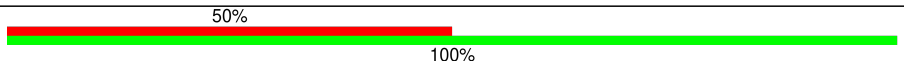
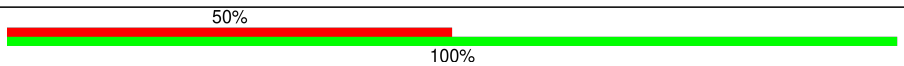
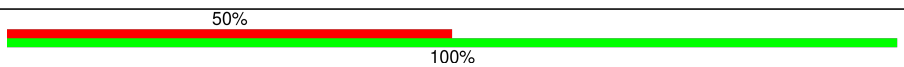
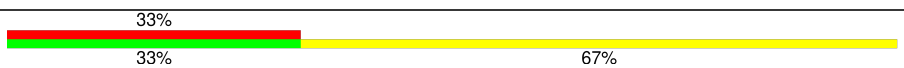
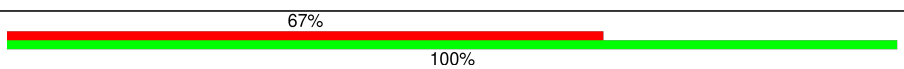
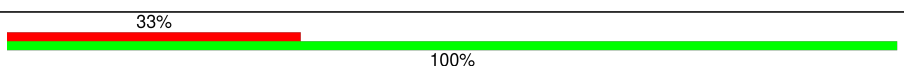
Mol	Chain	Length	Quality of chain
4	L	216	
4	M	216	
4	N	216	
5	G	5	
5	Y	5	
5	k	5	
6	K	2	
6	U	2	
6	V	2	
6	W	2	
6	X	2	
6	Z	2	
6	g	2	
6	h	2	
6	i	2	
6	j	2	
6	l	2	
6	s	2	
6	t	2	
6	u	2	
6	v	2	
7	O	3	
7	Q	3	
7	R	3	
7	S	3	

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Mol	Chain	Length	Quality of chain
7	T	3	33% 67% 33%
7	a	3	67% 67% 33%
7	c	3	33% 33% 67%
7	d	3	67% 100%
7	e	3	33% 100%
7	f	3	33% 67% 33%
7	m	3	67% 67% 33%
7	o	3	33% 33% 67%
7	p	3	67% 100%
7	q	3	100%
7	r	3	33% 67% 33%
8	P	7	29% 43% 57%
8	b	7	29% 43% 57%
8	n	7	29% 29% 71%

2 Entry composition (i)

There are 9 unique types of molecules in this entry. The entry contains 20652 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Envelope glycoprotein gp160.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	448	Total	C	N	O	S	0	0
			3524	2206	624	664	30		
1	C	448	Total	C	N	O	S	0	0
			3524	2206	624	664	30		
1	E	448	Total	C	N	O	S	0	0
			3524	2206	624	664	30		

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	201	CYS	ILE	engineered mutation	UNP Q2N0S6
A	332	ASN	THR	engineered mutation	UNP Q2N0S6
A	433	CYS	ALA	engineered mutation	UNP Q2N0S6
A	501	CYS	ALA	engineered mutation	UNP Q2N0S6
C	201	CYS	ILE	engineered mutation	UNP Q2N0S6
C	332	ASN	THR	engineered mutation	UNP Q2N0S6
C	433	CYS	ALA	engineered mutation	UNP Q2N0S6
C	501	CYS	ALA	engineered mutation	UNP Q2N0S6
E	201	CYS	ILE	engineered mutation	UNP Q2N0S6
E	332	ASN	THR	engineered mutation	UNP Q2N0S6
E	433	CYS	ALA	engineered mutation	UNP Q2N0S6
E	501	CYS	ALA	engineered mutation	UNP Q2N0S6

- Molecule 2 is a protein called HIV-1 Envelope Glycoprotein BG505 SOSIP.664 gp41.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	128	Total	C	N	O	S	0	0
			1010	638	174	192	6		
2	D	128	Total	C	N	O	S	0	0
			1010	638	174	192	6		
2	F	128	Total	C	N	O	S	0	0
			1010	638	174	192	6		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	559	PRO	ILE	engineered mutation	UNP Q2N0S6
B	605	CYS	THR	engineered mutation	UNP Q2N0S6
D	559	PRO	ILE	engineered mutation	UNP Q2N0S6
D	605	CYS	THR	engineered mutation	UNP Q2N0S6
F	559	PRO	ILE	engineered mutation	UNP Q2N0S6
F	605	CYS	THR	engineered mutation	UNP Q2N0S6

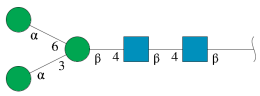
- Molecule 3 is a protein called M4008_N1 Fab heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	H	124	Total	C	N	O	S	0	0
			949	597	163	179	10		
3	I	124	Total	C	N	O	S	0	0
			949	597	163	179	10		
3	J	124	Total	C	N	O	S	0	0
			949	597	163	179	10		

- Molecule 4 is a protein called M4008_N1 Fab light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	L	108	Total	C	N	O	S	0	0
			824	513	151	155	5		
4	M	108	Total	C	N	O	S	0	0
			824	513	151	155	5		
4	N	108	Total	C	N	O	S	0	0
			824	513	151	155	5		

- Molecule 5 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)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
5	G	5	Total	C	N	O	0	0
			61	34	2	25		
5	Y	5	Total	C	N	O	0	0
			61	34	2	25		

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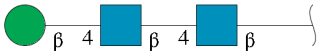
Mol	Chain	Residues	Atoms				AltConf	Trace
5	k	5	Total 61	C 34	N 2	O 25	0	0

- Molecule 6 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	K	2	Total 28	C 16	N 2	O 10	0	0
6	U	2	Total 28	C 16	N 2	O 10	0	0
6	V	2	Total 28	C 16	N 2	O 10	0	0
6	W	2	Total 28	C 16	N 2	O 10	0	0
6	X	2	Total 28	C 16	N 2	O 10	0	0
6	Z	2	Total 28	C 16	N 2	O 10	0	0
6	g	2	Total 28	C 16	N 2	O 10	0	0
6	h	2	Total 28	C 16	N 2	O 10	0	0
6	i	2	Total 28	C 16	N 2	O 10	0	0
6	j	2	Total 28	C 16	N 2	O 10	0	0
6	l	2	Total 28	C 16	N 2	O 10	0	0
6	s	2	Total 28	C 16	N 2	O 10	0	0
6	t	2	Total 28	C 16	N 2	O 10	0	0
6	u	2	Total 28	C 16	N 2	O 10	0	0
6	v	2	Total 28	C 16	N 2	O 10	0	0

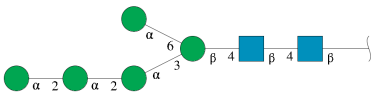
- Molecule 7 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-b

eta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



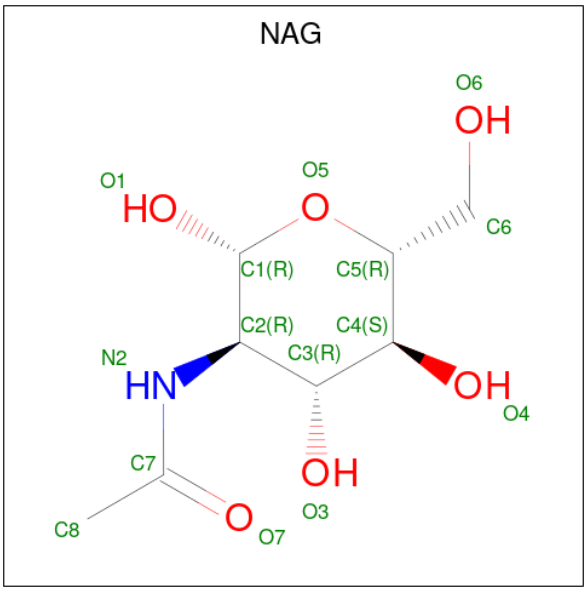
Mol	Chain	Residues	Atoms				AltConf	Trace
7	O	3	Total	C	N	O	0	0
			39	22	2	15		
7	Q	3	Total	C	N	O	0	0
			39	22	2	15		
7	R	3	Total	C	N	O	0	0
			39	22	2	15		
7	S	3	Total	C	N	O	0	0
			39	22	2	15		
7	T	3	Total	C	N	O	0	0
			39	22	2	15		
7	a	3	Total	C	N	O	0	0
			39	22	2	15		
7	c	3	Total	C	N	O	0	0
			39	22	2	15		
7	d	3	Total	C	N	O	0	0
			39	22	2	15		
7	e	3	Total	C	N	O	0	0
			39	22	2	15		
7	f	3	Total	C	N	O	0	0
			39	22	2	15		
7	m	3	Total	C	N	O	0	0
			39	22	2	15		
7	o	3	Total	C	N	O	0	0
			39	22	2	15		
7	p	3	Total	C	N	O	0	0
			39	22	2	15		
7	q	3	Total	C	N	O	0	0
			39	22	2	15		
7	r	3	Total	C	N	O	0	0
			39	22	2	15		

- Molecule 8 is an oligosaccharide called alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[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	AltConf	Trace
8	P	7	Total C N O 83 46 2 35	0	0
8	b	7	Total C N O 83 46 2 35	0	0
8	n	7	Total C N O 83 46 2 35	0	0

- Molecule 9 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



Mol	Chain	Residues	Atoms	AltConf
9	A	1	Total C N O 14 8 1 5	0
9	A	1	Total C N O 14 8 1 5	0
9	A	1	Total C N O 14 8 1 5	0
9	A	1	Total C N O 14 8 1 5	0
9	A	1	Total C N O 14 8 1 5	0
9	A	1	Total C N O 14 8 1 5	0

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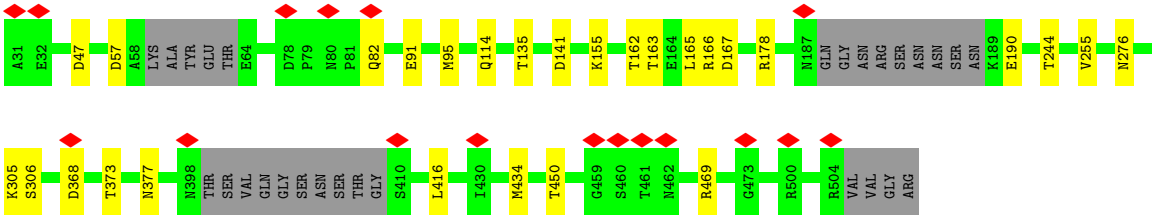
Mol	Chain	Residues	Atoms				AltConf
9	L	1	Total	C	N	O	0
			14	8	1	5	
9	C	1	Total	C	N	O	0
			14	8	1	5	
9	C	1	Total	C	N	O	0
			14	8	1	5	
9	C	1	Total	C	N	O	0
			14	8	1	5	
9	C	1	Total	C	N	O	0
			14	8	1	5	
9	C	1	Total	C	N	O	0
			14	8	1	5	
9	C	1	Total	C	N	O	0
			14	8	1	5	
9	M	1	Total	C	N	O	0
			14	8	1	5	
9	E	1	Total	C	N	O	0
			14	8	1	5	
9	E	1	Total	C	N	O	0
			14	8	1	5	
9	E	1	Total	C	N	O	0
			14	8	1	5	
9	E	1	Total	C	N	O	0
			14	8	1	5	
9	E	1	Total	C	N	O	0
			14	8	1	5	
9	E	1	Total	C	N	O	0
			14	8	1	5	
9	N	1	Total	C	N	O	0
			14	8	1	5	

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 atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

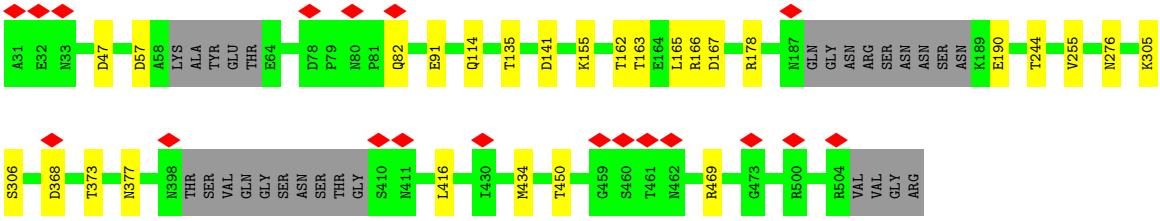
• Molecule 1: Envelope glycoprotein gp160

Chain A:



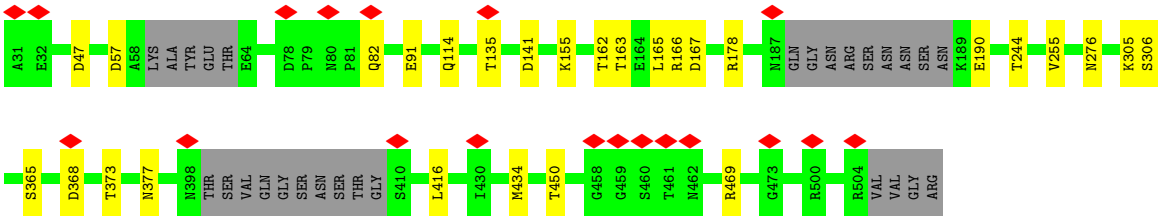
• Molecule 1: Envelope glycoprotein gp160

Chain C:



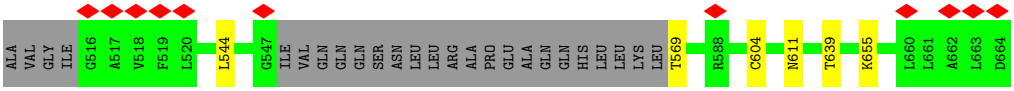
• Molecule 1: Envelope glycoprotein gp160

Chain E:



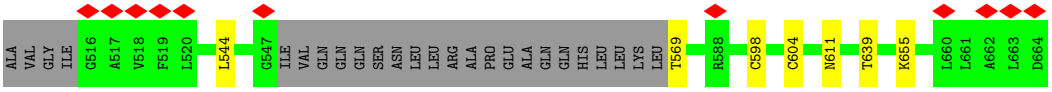
• Molecule 2: HIV-1 Envelope Glycoprotein BG505 SOSIP.664 gp41

Chain B:



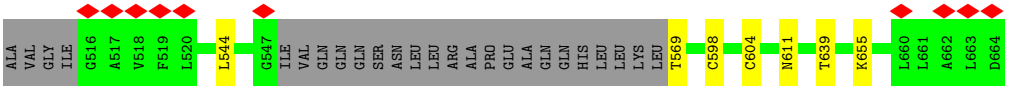
• Molecule 2: HIV-1 Envelope Glycoprotein BG505 SOSIP.664 gp41

Chain D:



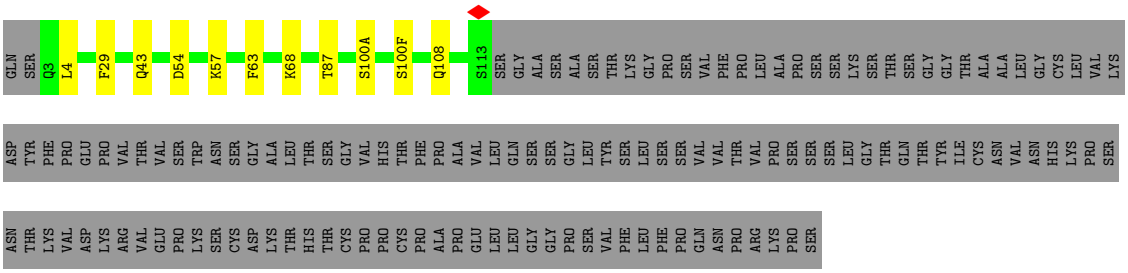
• Molecule 2: HIV-1 Envelope Glycoprotein BG505 SOSIP.664 gp41

Chain F:



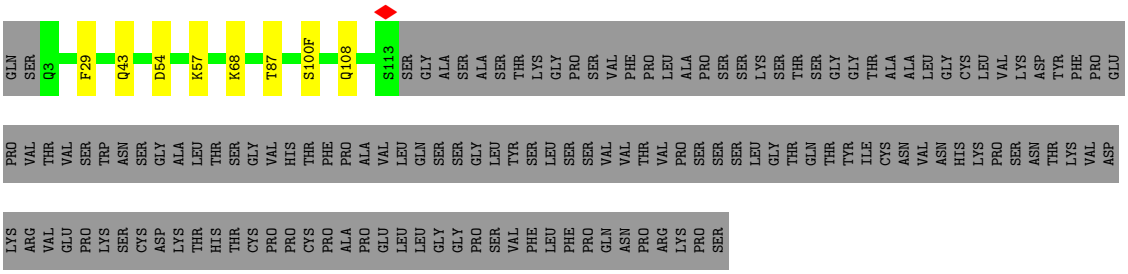
• Molecule 3: M4008_N1 Fab heavy chain

Chain H:



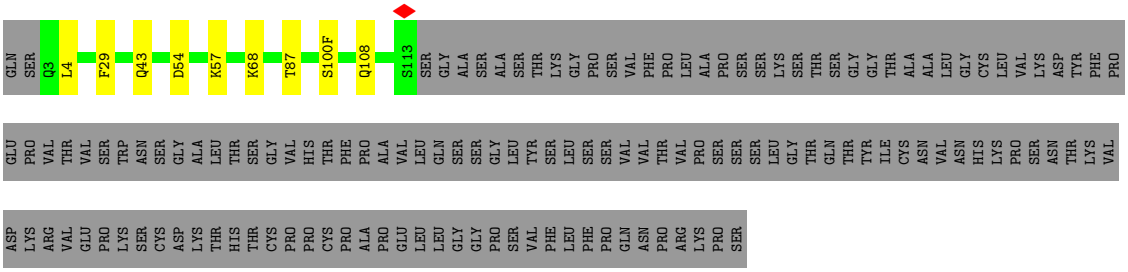
• Molecule 3: M4008_N1 Fab heavy chain

Chain I:



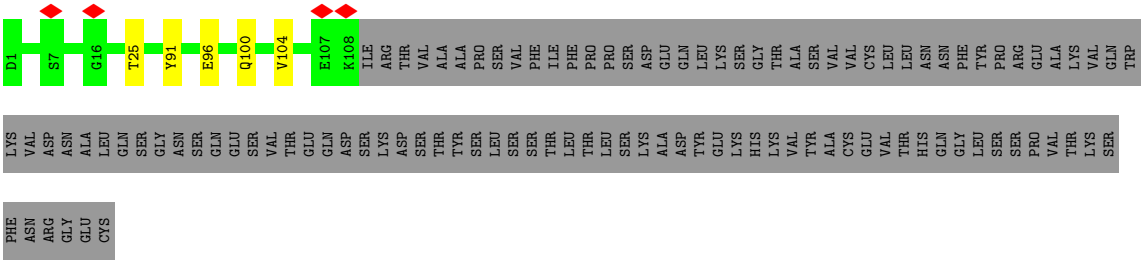
• Molecule 3: M4008_N1 Fab heavy chain

Chain J:



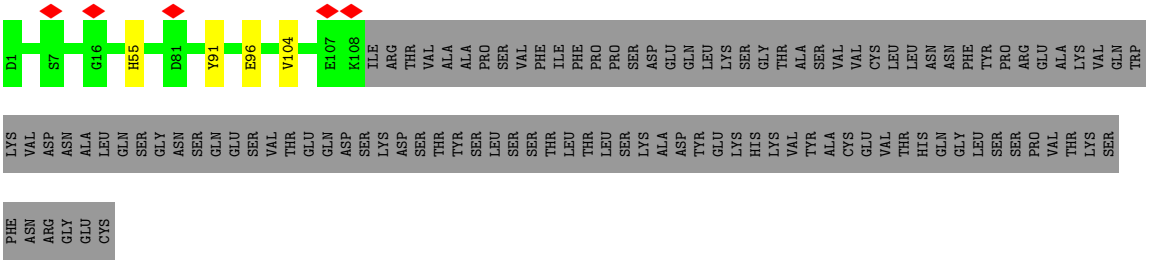
• Molecule 4: M4008_N1 Fab light chain

Chain L:



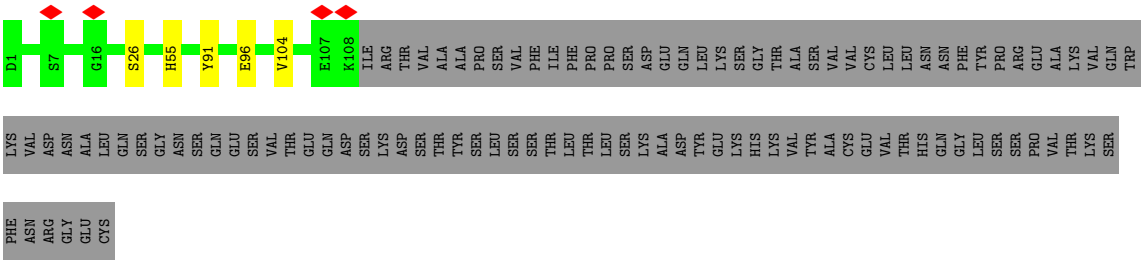
• Molecule 4: M4008_N1 Fab light chain

Chain M:



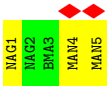
• Molecule 4: M4008_N1 Fab light chain

Chain N:



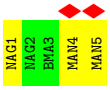
• Molecule 5: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G:



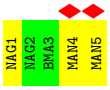
• Molecule 5: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Y:



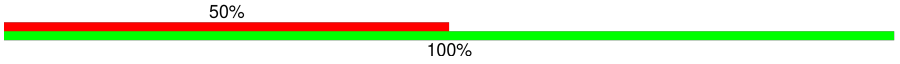
• Molecule 5: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain k:



• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K:



• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain U:

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain V:

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

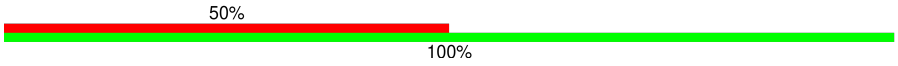
Chain W:

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain X:

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Z:



• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain g:

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain h:

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain i:

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain j:

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain l:

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

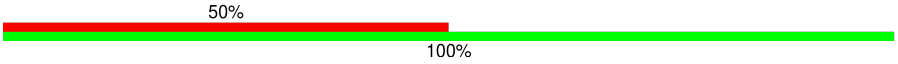
Chain s:

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain t:

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain u:



• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain v:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain O:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

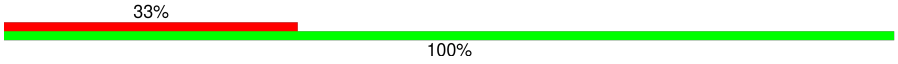
Chain Q:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain R:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain S:



• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain T:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain a:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain c:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain d:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain e:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain f:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain m:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

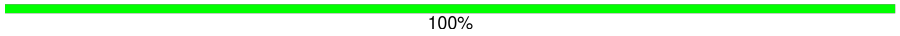
Chain o:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain p:

• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain q:

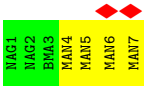


• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain r:

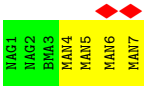
• Molecule 8: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain P:



• Molecule 8: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[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 b:



• Molecule 8: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[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 n:

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C3	Depositor
Number of particles used	281313	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	58.07	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	3.883	Depositor
Minimum map value	-2.176	Depositor
Average map value	0.006	Depositor
Map value standard deviation	0.103	Depositor
Recommended contour level	0.68	Depositor
Map size (Å)	314.4, 314.4, 314.4	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.048, 1.048, 1.048	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.41	0/3596	0.50	0/4880
1	C	0.42	0/3596	0.50	0/4880
1	E	0.41	0/3596	0.50	0/4880
2	B	0.32	0/1028	0.43	0/1394
2	D	0.32	0/1028	0.43	0/1394
2	F	0.32	0/1028	0.43	0/1394
3	H	0.43	0/973	0.48	0/1313
3	I	0.43	0/973	0.48	0/1313
3	J	0.43	0/973	0.48	0/1313
4	L	0.42	0/841	0.48	0/1132
4	M	0.42	0/841	0.48	0/1132
4	N	0.42	0/841	0.49	0/1132
All	All	0.40	0/19314	0.48	0/26157

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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 PDB entries followed by that with respect to all EM entries.

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	440/476 (92%)	402 (91%)	38 (9%)	0	100	100
1	C	440/476 (92%)	402 (91%)	38 (9%)	0	100	100
1	E	440/476 (92%)	403 (92%)	37 (8%)	0	100	100
2	B	124/153 (81%)	117 (94%)	7 (6%)	0	100	100
2	D	124/153 (81%)	117 (94%)	7 (6%)	0	100	100
2	F	124/153 (81%)	116 (94%)	8 (6%)	0	100	100
3	H	122/264 (46%)	109 (89%)	13 (11%)	0	100	100
3	I	122/264 (46%)	111 (91%)	11 (9%)	0	100	100
3	J	122/264 (46%)	110 (90%)	12 (10%)	0	100	100
4	L	106/216 (49%)	95 (90%)	11 (10%)	0	100	100
4	M	106/216 (49%)	93 (88%)	13 (12%)	0	100	100
4	N	106/216 (49%)	94 (89%)	12 (11%)	0	100	100
All	All	2376/3327 (71%)	2169 (91%)	207 (9%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	401/424 (95%)	373 (93%)	28 (7%)	12	39
1	C	401/424 (95%)	374 (93%)	27 (7%)	13	41

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	E	401/424 (95%)	373 (93%)	28 (7%)	12 39
2	B	108/129 (84%)	102 (94%)	6 (6%)	17 48
2	D	108/129 (84%)	101 (94%)	7 (6%)	14 42
2	F	108/129 (84%)	101 (94%)	7 (6%)	14 42
3	H	101/222 (46%)	90 (89%)	11 (11%)	5 21
3	I	101/222 (46%)	93 (92%)	8 (8%)	10 35
3	J	101/222 (46%)	92 (91%)	9 (9%)	8 29
4	L	88/185 (48%)	83 (94%)	5 (6%)	17 47
4	M	88/185 (48%)	84 (96%)	4 (4%)	23 54
4	N	88/185 (48%)	83 (94%)	5 (6%)	17 47
All	All	2094/2880 (73%)	1949 (93%)	145 (7%)	15 40

All (145) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	47	ASP
1	A	57	ASP
1	A	82	GLN
1	A	91	GLU
1	A	95	MET
1	A	114	GLN
1	A	135	THR
1	A	141	ASP
1	A	155	LYS
1	A	162	THR
1	A	163	THR
1	A	165	LEU
1	A	166	ARG
1	A	167	ASP
1	A	178	ARG
1	A	190	GLU
1	A	244	THR
1	A	255	VAL
1	A	276	ASN
1	A	305	LYS
1	A	306	SER
1	A	368	ASP
1	A	373	THR

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Mol	Chain	Res	Type
1	A	377	ASN
1	A	416	LEU
1	A	434	MET
1	A	450	THR
1	A	469	ARG
2	B	544	LEU
2	B	569	THR
2	B	604	CYS
2	B	611	ASN
2	B	639	THR
2	B	655	LYS
3	H	4	LEU
3	H	29	PHE
3	H	43	GLN
3	H	54	ASP
3	H	57	LYS
3	H	63	PHE
3	H	68	LYS
3	H	87	THR
3	H	100(A)	SER
3	H	100(F)	SER
3	H	108	GLN
4	L	25	THR
4	L	91	TYR
4	L	96	GLU
4	L	100	GLN
4	L	104	VAL
1	C	47	ASP
1	C	57	ASP
1	C	82	GLN
1	C	91	GLU
1	C	114	GLN
1	C	135	THR
1	C	141	ASP
1	C	155	LYS
1	C	162	THR
1	C	163	THR
1	C	165	LEU
1	C	166	ARG
1	C	167	ASP
1	C	178	ARG
1	C	190	GLU

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Mol	Chain	Res	Type
1	C	244	THR
1	C	255	VAL
1	C	276	ASN
1	C	305	LYS
1	C	306	SER
1	C	368	ASP
1	C	373	THR
1	C	377	ASN
1	C	416	LEU
1	C	434	MET
1	C	450	THR
1	C	469	ARG
2	D	544	LEU
2	D	569	THR
2	D	598	CYS
2	D	604	CYS
2	D	611	ASN
2	D	639	THR
2	D	655	LYS
3	I	29	PHE
3	I	43	GLN
3	I	54	ASP
3	I	57	LYS
3	I	68	LYS
3	I	87	THR
3	I	100(F)	SER
3	I	108	GLN
4	M	55	HIS
4	M	91	TYR
4	M	96	GLU
4	M	104	VAL
1	E	47	ASP
1	E	57	ASP
1	E	82	GLN
1	E	91	GLU
1	E	114	GLN
1	E	135	THR
1	E	141	ASP
1	E	155	LYS
1	E	162	THR
1	E	163	THR
1	E	165	LEU

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Mol	Chain	Res	Type
1	E	166	ARG
1	E	167	ASP
1	E	178	ARG
1	E	190	GLU
1	E	244	THR
1	E	255	VAL
1	E	276	ASN
1	E	305	LYS
1	E	306	SER
1	E	365	SER
1	E	368	ASP
1	E	373	THR
1	E	377	ASN
1	E	416	LEU
1	E	434	MET
1	E	450	THR
1	E	469	ARG
2	F	544	LEU
2	F	569	THR
2	F	598	CYS
2	F	604	CYS
2	F	611	ASN
2	F	639	THR
2	F	655	LYS
3	J	4	LEU
3	J	29	PHE
3	J	43	GLN
3	J	54	ASP
3	J	57	LYS
3	J	68	LYS
3	J	87	THR
3	J	100(F)	SER
3	J	108	GLN
4	N	26	SER
4	N	55	HIS
4	N	91	TYR
4	N	96	GLU
4	N	104	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (42) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	66	HIS
1	A	99	ASN
1	A	114	GLN
1	A	258	GLN
1	A	293	GLN
2	B	540	GLN
2	B	607	ASN
2	B	611	ASN
3	H	6	GLN
3	H	43	GLN
3	H	108	GLN
4	L	6	GLN
4	L	79	GLN
4	L	89	GLN
1	C	66	HIS
1	C	99	ASN
1	C	114	GLN
1	C	249	HIS
1	C	258	GLN
1	C	293	GLN
2	D	540	GLN
2	D	607	ASN
2	D	611	ASN
3	I	6	GLN
3	I	43	GLN
3	I	108	GLN
4	M	6	GLN
4	M	79	GLN
4	M	89	GLN
1	E	66	HIS
1	E	99	ASN
1	E	114	GLN
1	E	258	GLN
1	E	293	GLN
2	F	540	GLN
2	F	607	ASN
2	F	611	ASN
3	J	6	GLN
3	J	43	GLN
3	J	108	GLN
4	N	6	GLN
4	N	79	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

111 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	$\#\|Z\| > 2$
5	NAG	G	1	5,1	14,14,15	0.43	0	17,19,21	0.78	1 (5%)
5	NAG	G	2	5	14,14,15	0.23	0	17,19,21	0.39	0
5	BMA	G	3	5	11,11,12	0.52	0	15,15,17	0.87	0
5	MAN	G	4	5	11,11,12	0.69	0	15,15,17	0.97	2 (13%)
5	MAN	G	5	5	11,11,12	0.55	0	15,15,17	1.10	2 (13%)
6	NAG	K	1	6,1	14,14,15	0.23	0	17,19,21	0.60	0
6	NAG	K	2	6	14,14,15	0.19	0	17,19,21	0.44	0
7	NAG	O	1	7,1	14,14,15	0.46	0	17,19,21	0.68	1 (5%)
7	NAG	O	2	7	14,14,15	0.21	0	17,19,21	0.37	0
7	BMA	O	3	7	11,11,12	0.47	0	15,15,17	0.71	0
8	NAG	P	1	8,1	14,14,15	0.33	0	17,19,21	0.50	0
8	NAG	P	2	8	14,14,15	0.17	0	17,19,21	0.71	0
8	BMA	P	3	8	11,11,12	0.60	0	15,15,17	0.87	0
8	MAN	P	4	8	11,11,12	0.80	0	15,15,17	1.34	2 (13%)
8	MAN	P	5	8	11,11,12	0.59	0	15,15,17	1.34	2 (13%)
8	MAN	P	6	8	11,11,12	0.58	0	15,15,17	1.01	2 (13%)
8	MAN	P	7	8	11,11,12	0.63	0	15,15,17	1.11	2 (13%)
7	NAG	Q	1	7,1	14,14,15	0.35	0	17,19,21	0.70	1 (5%)
7	NAG	Q	2	7	14,14,15	0.35	0	17,19,21	1.36	2 (11%)
7	BMA	Q	3	7	11,11,12	0.55	0	15,15,17	0.74	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
7	NAG	R	1	7,1	14,14,15	0.53	0	17,19,21	0.51	0
7	NAG	R	2	7	14,14,15	0.19	0	17,19,21	0.41	0
7	BMA	R	3	7	11,11,12	0.56	0	15,15,17	0.70	0
7	NAG	S	1	7,1	14,14,15	0.47	0	17,19,21	0.39	0
7	NAG	S	2	7	14,14,15	0.24	0	17,19,21	0.40	0
7	BMA	S	3	7	11,11,12	0.54	0	15,15,17	0.77	0
7	NAG	T	1	7,1	14,14,15	0.44	0	17,19,21	0.49	0
7	NAG	T	2	7	14,14,15	0.37	0	17,19,21	1.33	2 (11%)
7	BMA	T	3	7	11,11,12	0.49	0	15,15,17	0.72	0
6	NAG	U	1	6,1	14,14,15	0.53	0	17,19,21	1.44	2 (11%)
6	NAG	U	2	6	14,14,15	0.17	0	17,19,21	0.50	0
6	NAG	V	1	6,1	14,14,15	0.45	0	17,19,21	0.59	0
6	NAG	V	2	6	14,14,15	0.44	0	17,19,21	1.34	1 (5%)
6	NAG	W	1	6,1	14,14,15	0.48	0	17,19,21	0.48	0
6	NAG	W	2	6	14,14,15	0.23	0	17,19,21	0.40	0
6	NAG	X	1	6,1	14,14,15	0.41	0	17,19,21	1.38	2 (11%)
6	NAG	X	2	6	14,14,15	0.23	0	17,19,21	0.38	0
5	NAG	Y	1	5,1	14,14,15	0.43	0	17,19,21	0.77	1 (5%)
5	NAG	Y	2	5	14,14,15	0.25	0	17,19,21	0.39	0
5	BMA	Y	3	5	11,11,12	0.52	0	15,15,17	0.85	0
5	MAN	Y	4	5	11,11,12	0.70	0	15,15,17	0.97	2 (13%)
5	MAN	Y	5	5	11,11,12	0.57	0	15,15,17	1.09	2 (13%)
6	NAG	Z	1	6,1	14,14,15	0.27	0	17,19,21	0.57	0
6	NAG	Z	2	6	14,14,15	0.21	0	17,19,21	0.44	0
7	NAG	a	1	7,1	14,14,15	0.44	0	17,19,21	0.68	1 (5%)
7	NAG	a	2	7	14,14,15	0.19	0	17,19,21	0.36	0
7	BMA	a	3	7	11,11,12	0.47	0	15,15,17	0.70	0
8	NAG	b	1	8,1	14,14,15	0.28	0	17,19,21	0.50	0
8	NAG	b	2	8	14,14,15	0.20	0	17,19,21	0.66	0
8	BMA	b	3	8	11,11,12	0.60	0	15,15,17	0.87	0
8	MAN	b	4	8	11,11,12	0.80	0	15,15,17	1.31	2 (13%)
8	MAN	b	5	8	11,11,12	0.56	0	15,15,17	1.28	2 (13%)
8	MAN	b	6	8	11,11,12	0.59	0	15,15,17	1.02	2 (13%)
8	MAN	b	7	8	11,11,12	0.61	0	15,15,17	1.10	2 (13%)
7	NAG	c	1	7,1	14,14,15	0.36	0	17,19,21	0.71	1 (5%)
7	NAG	c	2	7	14,14,15	0.35	0	17,19,21	1.37	2 (11%)
7	BMA	c	3	7	11,11,12	0.57	0	15,15,17	0.73	0
7	NAG	d	1	7,1	14,14,15	0.54	0	17,19,21	0.51	0
7	NAG	d	2	7	14,14,15	0.19	0	17,19,21	0.40	0
7	BMA	d	3	7	11,11,12	0.59	0	15,15,17	0.70	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
7	NAG	e	1	7,1	14,14,15	0.48	0	17,19,21	0.38	0
7	NAG	e	2	7	14,14,15	0.22	0	17,19,21	0.40	0
7	BMA	e	3	7	11,11,12	0.54	0	15,15,17	0.78	0
7	NAG	f	1	7,1	14,14,15	0.43	0	17,19,21	0.50	0
7	NAG	f	2	7	14,14,15	0.37	0	17,19,21	1.32	2 (11%)
7	BMA	f	3	7	11,11,12	0.50	0	15,15,17	0.71	0
6	NAG	g	1	6,1	14,14,15	0.53	0	17,19,21	1.45	2 (11%)
6	NAG	g	2	6	14,14,15	0.18	0	17,19,21	0.51	0
6	NAG	h	1	6,1	14,14,15	0.43	0	17,19,21	0.58	0
6	NAG	h	2	6	14,14,15	0.38	0	17,19,21	1.33	2 (11%)
6	NAG	i	1	6,1	14,14,15	0.49	0	17,19,21	0.48	0
6	NAG	i	2	6	14,14,15	0.25	0	17,19,21	0.40	0
6	NAG	j	1	6,1	14,14,15	0.40	0	17,19,21	1.39	2 (11%)
6	NAG	j	2	6	14,14,15	0.22	0	17,19,21	0.38	0
5	NAG	k	1	5,1	14,14,15	0.45	0	17,19,21	0.78	1 (5%)
5	NAG	k	2	5	14,14,15	0.25	0	17,19,21	0.39	0
5	BMA	k	3	5	11,11,12	0.50	0	15,15,17	0.86	0
5	MAN	k	4	5	11,11,12	0.70	0	15,15,17	0.97	2 (13%)
5	MAN	k	5	5	11,11,12	0.57	0	15,15,17	1.05	2 (13%)
6	NAG	l	1	6,1	14,14,15	0.26	0	17,19,21	0.60	0
6	NAG	l	2	6	14,14,15	0.19	0	17,19,21	0.43	0
7	NAG	m	1	7,1	14,14,15	0.44	0	17,19,21	0.69	1 (5%)
7	NAG	m	2	7	14,14,15	0.23	0	17,19,21	0.36	0
7	BMA	m	3	7	11,11,12	0.49	0	15,15,17	0.70	0
8	NAG	n	1	8,1	14,14,15	0.27	0	17,19,21	0.48	0
8	NAG	n	2	8	14,14,15	0.18	0	17,19,21	0.68	0
8	BMA	n	3	8	11,11,12	0.61	0	15,15,17	0.86	1 (6%)
8	MAN	n	4	8	11,11,12	0.81	0	15,15,17	1.32	2 (13%)
8	MAN	n	5	8	11,11,12	0.59	0	15,15,17	1.36	2 (13%)
8	MAN	n	6	8	11,11,12	0.58	0	15,15,17	1.01	2 (13%)
8	MAN	n	7	8	11,11,12	0.62	0	15,15,17	1.10	2 (13%)
7	NAG	o	1	7,1	14,14,15	0.37	0	17,19,21	0.71	1 (5%)
7	NAG	o	2	7	14,14,15	0.35	0	17,19,21	1.36	2 (11%)
7	BMA	o	3	7	11,11,12	0.56	0	15,15,17	0.75	0
7	NAG	p	1	7,1	14,14,15	0.52	0	17,19,21	0.52	0
7	NAG	p	2	7	14,14,15	0.18	0	17,19,21	0.40	0
7	BMA	p	3	7	11,11,12	0.59	0	15,15,17	0.71	0
7	NAG	q	1	7,1	14,14,15	0.50	0	17,19,21	0.39	0
7	NAG	q	2	7	14,14,15	0.22	0	17,19,21	0.41	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
7	BMA	q	3	7	11,11,12	0.56	0	15,15,17	0.78	0
7	NAG	r	1	7,1	14,14,15	0.43	0	17,19,21	0.50	0
7	NAG	r	2	7	14,14,15	0.37	0	17,19,21	1.33	2 (11%)
7	BMA	r	3	7	11,11,12	0.51	0	15,15,17	0.72	0
6	NAG	s	1	6,1	14,14,15	0.51	0	17,19,21	1.44	2 (11%)
6	NAG	s	2	6	14,14,15	0.17	0	17,19,21	0.51	0
6	NAG	t	1	6,1	14,14,15	0.45	0	17,19,21	0.58	0
6	NAG	t	2	6	14,14,15	0.42	0	17,19,21	1.33	1 (5%)
6	NAG	u	1	6,1	14,14,15	0.48	0	17,19,21	0.47	0
6	NAG	u	2	6	14,14,15	0.24	0	17,19,21	0.41	0
6	NAG	v	1	6,1	14,14,15	0.40	0	17,19,21	1.39	2 (11%)
6	NAG	v	2	6	14,14,15	0.22	0	17,19,21	0.38	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	G	1	5,1	-	4/6/23/26	0/1/1/1
5	NAG	G	2	5	-	0/6/23/26	0/1/1/1
5	BMA	G	3	5	-	2/2/19/22	0/1/1/1
5	MAN	G	4	5	-	0/2/19/22	0/1/1/1
5	MAN	G	5	5	-	0/2/19/22	0/1/1/1
6	NAG	K	1	6,1	-	2/6/23/26	0/1/1/1
6	NAG	K	2	6	-	2/6/23/26	0/1/1/1
7	NAG	O	1	7,1	-	0/6/23/26	0/1/1/1
7	NAG	O	2	7	-	3/6/23/26	0/1/1/1
7	BMA	O	3	7	-	0/2/19/22	0/1/1/1
8	NAG	P	1	8,1	-	2/6/23/26	0/1/1/1
8	NAG	P	2	8	-	4/6/23/26	0/1/1/1
8	BMA	P	3	8	-	0/2/19/22	0/1/1/1
8	MAN	P	4	8	-	2/2/19/22	0/1/1/1
8	MAN	P	5	8	-	0/2/19/22	0/1/1/1
8	MAN	P	6	8	-	0/2/19/22	0/1/1/1
8	MAN	P	7	8	-	2/2/19/22	0/1/1/1
7	NAG	Q	1	7,1	-	4/6/23/26	0/1/1/1
7	NAG	Q	2	7	-	4/6/23/26	0/1/1/1
7	BMA	Q	3	7	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	NAG	R	1	7,1	-	2/6/23/26	0/1/1/1
7	NAG	R	2	7	-	0/6/23/26	0/1/1/1
7	BMA	R	3	7	-	2/2/19/22	0/1/1/1
7	NAG	S	1	7,1	-	2/6/23/26	0/1/1/1
7	NAG	S	2	7	-	4/6/23/26	0/1/1/1
7	BMA	S	3	7	-	2/2/19/22	0/1/1/1
7	NAG	T	1	7,1	-	2/6/23/26	0/1/1/1
7	NAG	T	2	7	-	6/6/23/26	0/1/1/1
7	BMA	T	3	7	-	0/2/19/22	0/1/1/1
6	NAG	U	1	6,1	-	6/6/23/26	0/1/1/1
6	NAG	U	2	6	-	0/6/23/26	0/1/1/1
6	NAG	V	1	6,1	-	2/6/23/26	0/1/1/1
6	NAG	V	2	6	-	4/6/23/26	0/1/1/1
6	NAG	W	1	6,1	-	2/6/23/26	0/1/1/1
6	NAG	W	2	6	-	2/6/23/26	0/1/1/1
6	NAG	X	1	6,1	-	4/6/23/26	0/1/1/1
6	NAG	X	2	6	-	0/6/23/26	0/1/1/1
5	NAG	Y	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	Y	2	5	-	0/6/23/26	0/1/1/1
5	BMA	Y	3	5	-	2/2/19/22	0/1/1/1
5	MAN	Y	4	5	-	0/2/19/22	0/1/1/1
5	MAN	Y	5	5	-	0/2/19/22	0/1/1/1
6	NAG	Z	1	6,1	-	2/6/23/26	0/1/1/1
6	NAG	Z	2	6	-	2/6/23/26	0/1/1/1
7	NAG	a	1	7,1	-	0/6/23/26	0/1/1/1
7	NAG	a	2	7	-	2/6/23/26	0/1/1/1
7	BMA	a	3	7	-	0/2/19/22	0/1/1/1
8	NAG	b	1	8,1	-	2/6/23/26	0/1/1/1
8	NAG	b	2	8	-	4/6/23/26	0/1/1/1
8	BMA	b	3	8	-	0/2/19/22	0/1/1/1
8	MAN	b	4	8	-	2/2/19/22	0/1/1/1
8	MAN	b	5	8	-	0/2/19/22	0/1/1/1
8	MAN	b	6	8	-	0/2/19/22	0/1/1/1
8	MAN	b	7	8	-	2/2/19/22	0/1/1/1
7	NAG	c	1	7,1	-	4/6/23/26	0/1/1/1
7	NAG	c	2	7	-	4/6/23/26	0/1/1/1
7	BMA	c	3	7	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	NAG	d	1	7,1	-	2/6/23/26	0/1/1/1
7	NAG	d	2	7	-	0/6/23/26	0/1/1/1
7	BMA	d	3	7	-	1/2/19/22	0/1/1/1
7	NAG	e	1	7,1	-	2/6/23/26	0/1/1/1
7	NAG	e	2	7	-	4/6/23/26	0/1/1/1
7	BMA	e	3	7	-	2/2/19/22	0/1/1/1
7	NAG	f	1	7,1	-	2/6/23/26	0/1/1/1
7	NAG	f	2	7	-	6/6/23/26	0/1/1/1
7	BMA	f	3	7	-	0/2/19/22	0/1/1/1
6	NAG	g	1	6,1	-	6/6/23/26	0/1/1/1
6	NAG	g	2	6	-	0/6/23/26	0/1/1/1
6	NAG	h	1	6,1	-	2/6/23/26	0/1/1/1
6	NAG	h	2	6	-	4/6/23/26	0/1/1/1
6	NAG	i	1	6,1	-	2/6/23/26	0/1/1/1
6	NAG	i	2	6	-	2/6/23/26	0/1/1/1
6	NAG	j	1	6,1	-	4/6/23/26	0/1/1/1
6	NAG	j	2	6	-	0/6/23/26	0/1/1/1
5	NAG	k	1	5,1	-	4/6/23/26	0/1/1/1
5	NAG	k	2	5	-	0/6/23/26	0/1/1/1
5	BMA	k	3	5	-	2/2/19/22	0/1/1/1
5	MAN	k	4	5	-	0/2/19/22	0/1/1/1
5	MAN	k	5	5	-	0/2/19/22	0/1/1/1
6	NAG	l	1	6,1	-	2/6/23/26	0/1/1/1
6	NAG	l	2	6	-	2/6/23/26	0/1/1/1
7	NAG	m	1	7,1	-	0/6/23/26	0/1/1/1
7	NAG	m	2	7	-	2/6/23/26	0/1/1/1
7	BMA	m	3	7	-	0/2/19/22	0/1/1/1
8	NAG	n	1	8,1	-	2/6/23/26	0/1/1/1
8	NAG	n	2	8	-	4/6/23/26	0/1/1/1
8	BMA	n	3	8	-	0/2/19/22	0/1/1/1
8	MAN	n	4	8	-	2/2/19/22	0/1/1/1
8	MAN	n	5	8	-	0/2/19/22	0/1/1/1
8	MAN	n	6	8	-	0/2/19/22	0/1/1/1
8	MAN	n	7	8	-	2/2/19/22	0/1/1/1
7	NAG	o	1	7,1	-	4/6/23/26	0/1/1/1
7	NAG	o	2	7	-	4/6/23/26	0/1/1/1
7	BMA	o	3	7	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	NAG	p	1	7,1	-	2/6/23/26	0/1/1/1
7	NAG	p	2	7	-	1/6/23/26	0/1/1/1
7	BMA	p	3	7	-	1/2/19/22	0/1/1/1
7	NAG	q	1	7,1	-	2/6/23/26	0/1/1/1
7	NAG	q	2	7	-	4/6/23/26	0/1/1/1
7	BMA	q	3	7	-	2/2/19/22	0/1/1/1
7	NAG	r	1	7,1	-	2/6/23/26	0/1/1/1
7	NAG	r	2	7	-	6/6/23/26	0/1/1/1
7	BMA	r	3	7	-	0/2/19/22	0/1/1/1
6	NAG	s	1	6,1	-	6/6/23/26	0/1/1/1
6	NAG	s	2	6	-	0/6/23/26	0/1/1/1
6	NAG	t	1	6,1	-	2/6/23/26	0/1/1/1
6	NAG	t	2	6	-	4/6/23/26	0/1/1/1
6	NAG	u	1	6,1	-	2/6/23/26	0/1/1/1
6	NAG	u	2	6	-	2/6/23/26	0/1/1/1
6	NAG	v	1	6,1	-	4/6/23/26	0/1/1/1
6	NAG	v	2	6	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (74) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	g	1	NAG	C2-N2-C7	4.72	129.22	122.90
6	U	1	NAG	C2-N2-C7	4.69	129.18	122.90
6	s	1	NAG	C2-N2-C7	4.69	129.18	122.90
7	c	2	NAG	C2-N2-C7	4.66	129.14	122.90
7	o	2	NAG	C2-N2-C7	4.66	129.14	122.90
7	Q	2	NAG	C2-N2-C7	4.65	129.13	122.90
6	V	2	NAG	C2-N2-C7	4.59	129.05	122.90
6	v	1	NAG	C2-N2-C7	4.57	129.02	122.90
6	X	1	NAG	C2-N2-C7	4.54	128.98	122.90
7	T	2	NAG	C2-N2-C7	4.53	128.97	122.90
6	j	1	NAG	C2-N2-C7	4.53	128.97	122.90
7	r	2	NAG	C2-N2-C7	4.53	128.97	122.90
7	f	2	NAG	C2-N2-C7	4.52	128.96	122.90
6	t	2	NAG	C2-N2-C7	4.52	128.96	122.90
6	h	2	NAG	C2-N2-C7	4.52	128.95	122.90
8	n	5	MAN	C1-O5-C5	3.69	117.12	112.19
8	P	5	MAN	C1-O5-C5	3.62	117.04	112.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
8	b	5	MAN	C1-O5-C5	3.35	116.68	112.19
8	P	4	MAN	C1-O5-C5	3.30	116.61	112.19
8	n	4	MAN	C1-O5-C5	3.22	116.50	112.19
8	b	4	MAN	C1-O5-C5	3.20	116.47	112.19
8	P	7	MAN	C1-O5-C5	3.14	116.39	112.19
8	P	4	MAN	O2-C2-C3	-3.13	103.67	110.15
8	b	7	MAN	C1-O5-C5	3.13	116.38	112.19
8	n	4	MAN	O2-C2-C3	-3.12	103.69	110.15
8	b	4	MAN	O2-C2-C3	-3.11	103.71	110.15
8	n	7	MAN	C1-O5-C5	3.10	116.34	112.19
8	n	5	MAN	O2-C2-C3	-3.02	103.89	110.15
8	b	5	MAN	O2-C2-C3	-2.99	103.96	110.15
8	P	5	MAN	O2-C2-C3	-2.98	103.98	110.15
5	G	5	MAN	C1-O5-C5	2.60	115.67	112.19
5	Y	5	MAN	C1-O5-C5	2.52	115.56	112.19
8	P	6	MAN	C1-O5-C5	2.47	115.50	112.19
8	b	6	MAN	C1-O5-C5	2.46	115.49	112.19
8	n	6	MAN	C1-O5-C5	2.43	115.44	112.19
6	g	1	NAG	C1-C2-N2	2.43	114.26	110.43
6	U	1	NAG	C1-C2-N2	2.42	114.25	110.43
6	s	1	NAG	C1-C2-N2	2.41	114.23	110.43
5	k	4	MAN	C1-O5-C5	2.40	115.40	112.19
5	k	5	MAN	C1-O5-C5	2.39	115.39	112.19
5	G	4	MAN	C1-O5-C5	2.38	115.38	112.19
5	Y	4	MAN	C1-O5-C5	2.38	115.38	112.19
5	G	1	NAG	C1-O5-C5	2.26	115.22	112.19
5	G	4	MAN	O2-C2-C3	-2.26	105.47	110.15
5	k	4	MAN	O2-C2-C3	-2.25	105.48	110.15
7	c	2	NAG	C1-C2-N2	2.25	113.98	110.43
5	Y	4	MAN	O2-C2-C3	-2.25	105.50	110.15
5	k	1	NAG	C1-O5-C5	2.25	115.19	112.19
7	Q	2	NAG	C1-C2-N2	2.24	113.97	110.43
7	o	2	NAG	C1-C2-N2	2.24	113.96	110.43
7	r	2	NAG	C1-C2-N2	2.24	113.96	110.43
5	G	5	MAN	O2-C2-C3	-2.22	105.56	110.15
5	Y	5	MAN	O2-C2-C3	-2.20	105.59	110.15
7	f	2	NAG	C1-C2-N2	2.19	113.88	110.43
6	j	1	NAG	C1-C2-N2	2.19	113.88	110.43
7	T	2	NAG	C1-C2-N2	2.19	113.88	110.43
5	Y	1	NAG	C1-O5-C5	2.18	115.11	112.19
6	v	1	NAG	C1-C2-N2	2.18	113.86	110.43
7	m	1	NAG	C1-O5-C5	2.17	115.10	112.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	X	1	NAG	C1-C2-N2	2.17	113.86	110.43
5	k	5	MAN	O2-C2-C3	-2.17	105.66	110.15
7	o	1	NAG	C1-O5-C5	2.17	115.09	112.19
8	b	6	MAN	O2-C2-C3	-2.11	105.78	110.15
7	c	1	NAG	C1-O5-C5	2.11	115.01	112.19
8	P	6	MAN	O2-C2-C3	-2.10	105.80	110.15
8	n	7	MAN	O2-C2-C3	-2.09	105.83	110.15
8	n	6	MAN	O2-C2-C3	-2.08	105.83	110.15
7	a	1	NAG	C1-O5-C5	2.08	114.98	112.19
7	Q	1	NAG	C1-O5-C5	2.08	114.97	112.19
6	h	2	NAG	C1-C2-N2	2.07	113.69	110.43
8	b	7	MAN	O2-C2-C3	-2.07	105.87	110.15
7	O	1	NAG	C1-O5-C5	2.07	114.95	112.19
8	P	7	MAN	O2-C2-C3	-2.06	105.89	110.15
8	n	3	BMA	O2-C2-C3	-2.04	105.93	110.15

There are no chirality outliers.

All (208) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	P	7	MAN	O5-C5-C6-O6
8	n	7	MAN	O5-C5-C6-O6
6	W	2	NAG	O5-C5-C6-O6
6	u	2	NAG	O5-C5-C6-O6
6	V	1	NAG	O5-C5-C6-O6
6	i	2	NAG	O5-C5-C6-O6
6	W	1	NAG	O5-C5-C6-O6
6	h	1	NAG	O5-C5-C6-O6
6	i	1	NAG	O5-C5-C6-O6
6	t	1	NAG	O5-C5-C6-O6
6	u	1	NAG	O5-C5-C6-O6
8	P	1	NAG	O5-C5-C6-O6
8	P	4	MAN	O5-C5-C6-O6
8	b	7	MAN	O5-C5-C6-O6
6	i	2	NAG	C4-C5-C6-O6
8	b	1	NAG	O5-C5-C6-O6
8	b	4	MAN	O5-C5-C6-O6
8	n	1	NAG	O5-C5-C6-O6
8	n	4	MAN	O5-C5-C6-O6
6	u	2	NAG	C4-C5-C6-O6
6	W	2	NAG	C4-C5-C6-O6
6	V	1	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
6	W	1	NAG	C4-C5-C6-O6
6	i	1	NAG	C4-C5-C6-O6
6	h	1	NAG	C4-C5-C6-O6
6	t	1	NAG	C4-C5-C6-O6
7	S	1	NAG	C4-C5-C6-O6
6	u	1	NAG	C4-C5-C6-O6
7	S	1	NAG	O5-C5-C6-O6
7	e	1	NAG	C4-C5-C6-O6
5	k	3	BMA	O5-C5-C6-O6
8	n	7	MAN	C4-C5-C6-O6
7	f	2	NAG	C4-C5-C6-O6
7	q	1	NAG	C4-C5-C6-O6
8	P	7	MAN	C4-C5-C6-O6
8	n	2	NAG	C4-C5-C6-O6
5	G	3	BMA	O5-C5-C6-O6
5	Y	3	BMA	O5-C5-C6-O6
6	U	1	NAG	C4-C5-C6-O6
8	b	1	NAG	C4-C5-C6-O6
6	g	1	NAG	C4-C5-C6-O6
6	s	1	NAG	C4-C5-C6-O6
7	S	3	BMA	C4-C5-C6-O6
8	b	7	MAN	C4-C5-C6-O6
7	e	3	BMA	C4-C5-C6-O6
7	r	2	NAG	C4-C5-C6-O6
8	n	4	MAN	C4-C5-C6-O6
7	T	1	NAG	O5-C5-C6-O6
7	e	1	NAG	O5-C5-C6-O6
7	q	1	NAG	O5-C5-C6-O6
8	P	1	NAG	C4-C5-C6-O6
8	P	4	MAN	C4-C5-C6-O6
7	q	3	BMA	C4-C5-C6-O6
8	b	4	MAN	C4-C5-C6-O6
8	n	1	NAG	C4-C5-C6-O6
5	G	1	NAG	C8-C7-N2-C2
5	G	1	NAG	O7-C7-N2-C2
5	Y	1	NAG	C8-C7-N2-C2
5	Y	1	NAG	O7-C7-N2-C2
5	k	1	NAG	C8-C7-N2-C2
5	k	1	NAG	O7-C7-N2-C2
6	K	1	NAG	C8-C7-N2-C2
6	K	1	NAG	O7-C7-N2-C2
6	U	1	NAG	C8-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
6	U	1	NAG	O7-C7-N2-C2
6	V	2	NAG	C8-C7-N2-C2
6	V	2	NAG	O7-C7-N2-C2
6	X	1	NAG	C8-C7-N2-C2
6	X	1	NAG	O7-C7-N2-C2
6	Z	1	NAG	C8-C7-N2-C2
6	Z	1	NAG	O7-C7-N2-C2
6	g	1	NAG	C8-C7-N2-C2
6	g	1	NAG	O7-C7-N2-C2
6	h	2	NAG	C8-C7-N2-C2
6	h	2	NAG	O7-C7-N2-C2
6	j	1	NAG	C8-C7-N2-C2
6	j	1	NAG	O7-C7-N2-C2
6	l	1	NAG	C8-C7-N2-C2
6	l	1	NAG	O7-C7-N2-C2
6	s	1	NAG	C8-C7-N2-C2
6	s	1	NAG	O7-C7-N2-C2
6	t	2	NAG	C8-C7-N2-C2
6	t	2	NAG	O7-C7-N2-C2
6	v	1	NAG	C8-C7-N2-C2
6	v	1	NAG	O7-C7-N2-C2
7	O	2	NAG	C8-C7-N2-C2
7	O	2	NAG	O7-C7-N2-C2
7	Q	1	NAG	C8-C7-N2-C2
7	Q	1	NAG	O7-C7-N2-C2
7	Q	2	NAG	C8-C7-N2-C2
7	Q	2	NAG	O7-C7-N2-C2
7	S	2	NAG	C8-C7-N2-C2
7	S	2	NAG	O7-C7-N2-C2
7	T	2	NAG	C8-C7-N2-C2
7	T	2	NAG	O7-C7-N2-C2
7	a	2	NAG	C8-C7-N2-C2
7	a	2	NAG	O7-C7-N2-C2
7	c	1	NAG	C8-C7-N2-C2
7	c	1	NAG	O7-C7-N2-C2
7	c	2	NAG	C8-C7-N2-C2
7	c	2	NAG	O7-C7-N2-C2
7	e	2	NAG	C8-C7-N2-C2
7	e	2	NAG	O7-C7-N2-C2
7	f	2	NAG	C8-C7-N2-C2
7	f	2	NAG	O7-C7-N2-C2
7	m	2	NAG	C8-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
7	m	2	NAG	O7-C7-N2-C2
7	o	1	NAG	C8-C7-N2-C2
7	o	1	NAG	O7-C7-N2-C2
7	o	2	NAG	C8-C7-N2-C2
7	o	2	NAG	O7-C7-N2-C2
7	q	2	NAG	C8-C7-N2-C2
7	q	2	NAG	O7-C7-N2-C2
7	r	2	NAG	C8-C7-N2-C2
7	r	2	NAG	O7-C7-N2-C2
7	S	3	BMA	O5-C5-C6-O6
7	f	1	NAG	O5-C5-C6-O6
6	U	1	NAG	O5-C5-C6-O6
7	e	3	BMA	O5-C5-C6-O6
6	g	1	NAG	O5-C5-C6-O6
7	T	1	NAG	C4-C5-C6-O6
7	T	2	NAG	C4-C5-C6-O6
7	q	3	BMA	O5-C5-C6-O6
5	G	3	BMA	C4-C5-C6-O6
5	Y	3	BMA	C4-C5-C6-O6
5	k	3	BMA	C4-C5-C6-O6
6	s	1	NAG	O5-C5-C6-O6
7	f	1	NAG	C4-C5-C6-O6
7	e	2	NAG	O5-C5-C6-O6
7	S	2	NAG	O5-C5-C6-O6
7	q	2	NAG	O5-C5-C6-O6
8	n	2	NAG	O5-C5-C6-O6
7	f	2	NAG	O5-C5-C6-O6
7	r	1	NAG	O5-C5-C6-O6
7	d	1	NAG	C4-C5-C6-O6
7	r	2	NAG	O5-C5-C6-O6
7	r	1	NAG	C4-C5-C6-O6
7	p	1	NAG	C4-C5-C6-O6
7	T	2	NAG	O5-C5-C6-O6
8	P	2	NAG	C4-C5-C6-O6
5	G	1	NAG	C4-C5-C6-O6
7	d	1	NAG	O5-C5-C6-O6
5	k	1	NAG	C4-C5-C6-O6
8	b	2	NAG	C4-C5-C6-O6
5	G	1	NAG	O5-C5-C6-O6
7	p	1	NAG	O5-C5-C6-O6
7	R	3	BMA	O5-C5-C6-O6
6	Z	2	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
7	R	1	NAG	C4-C5-C6-O6
5	k	1	NAG	O5-C5-C6-O6
7	p	3	BMA	O5-C5-C6-O6
7	Q	1	NAG	C4-C5-C6-O6
8	P	2	NAG	O5-C5-C6-O6
7	o	1	NAG	C4-C5-C6-O6
7	d	3	BMA	O5-C5-C6-O6
6	K	2	NAG	C4-C5-C6-O6
7	c	1	NAG	C4-C5-C6-O6
7	e	2	NAG	C4-C5-C6-O6
8	b	2	NAG	O5-C5-C6-O6
6	l	2	NAG	C4-C5-C6-O6
7	S	2	NAG	C4-C5-C6-O6
7	q	2	NAG	C4-C5-C6-O6
6	U	1	NAG	C3-C2-N2-C7
6	V	2	NAG	C3-C2-N2-C7
6	h	2	NAG	C3-C2-N2-C7
6	t	2	NAG	C3-C2-N2-C7
7	f	2	NAG	C3-C2-N2-C7
8	P	2	NAG	C3-C2-N2-C7
8	b	2	NAG	C3-C2-N2-C7
8	n	2	NAG	C3-C2-N2-C7
6	Z	2	NAG	O5-C5-C6-O6
7	Q	1	NAG	O5-C5-C6-O6
7	o	1	NAG	O5-C5-C6-O6
6	K	2	NAG	O5-C5-C6-O6
6	U	1	NAG	C1-C2-N2-C7
6	V	2	NAG	C1-C2-N2-C7
6	X	1	NAG	C1-C2-N2-C7
6	g	1	NAG	C1-C2-N2-C7
6	h	2	NAG	C1-C2-N2-C7
6	j	1	NAG	C1-C2-N2-C7
6	s	1	NAG	C1-C2-N2-C7
6	t	2	NAG	C1-C2-N2-C7
6	v	1	NAG	C1-C2-N2-C7
7	Q	2	NAG	C1-C2-N2-C7
7	T	2	NAG	C1-C2-N2-C7
7	c	2	NAG	C1-C2-N2-C7
7	f	2	NAG	C1-C2-N2-C7
7	o	2	NAG	C1-C2-N2-C7
7	r	2	NAG	C1-C2-N2-C7
8	P	2	NAG	C1-C2-N2-C7

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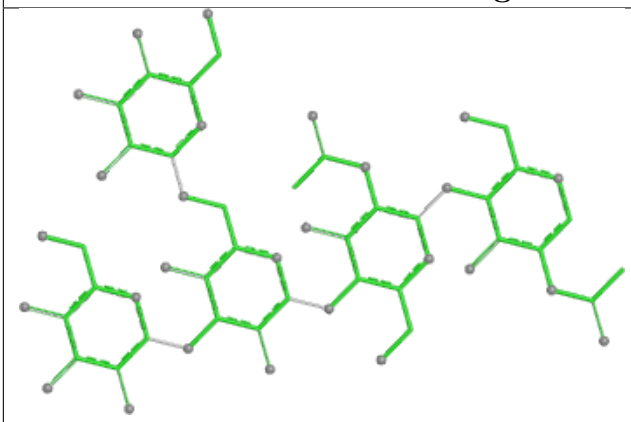
Mol	Chain	Res	Type	Atoms
8	b	2	NAG	C1-C2-N2-C7
8	n	2	NAG	C1-C2-N2-C7
6	X	1	NAG	C3-C2-N2-C7
6	g	1	NAG	C3-C2-N2-C7
6	j	1	NAG	C3-C2-N2-C7
6	s	1	NAG	C3-C2-N2-C7
6	v	1	NAG	C3-C2-N2-C7
7	Q	2	NAG	C3-C2-N2-C7
7	T	2	NAG	C3-C2-N2-C7
7	c	2	NAG	C3-C2-N2-C7
7	o	2	NAG	C3-C2-N2-C7
7	r	2	NAG	C3-C2-N2-C7
7	R	1	NAG	O5-C5-C6-O6
6	l	2	NAG	O5-C5-C6-O6
7	c	1	NAG	O5-C5-C6-O6
7	O	2	NAG	C4-C5-C6-O6
7	p	2	NAG	C4-C5-C6-O6
7	R	3	BMA	C4-C5-C6-O6

There are no ring outliers.

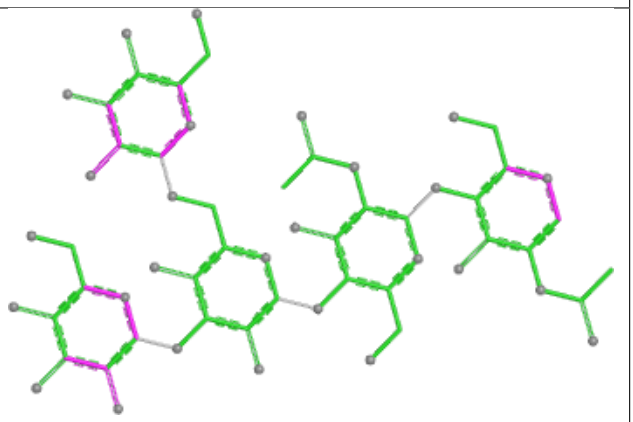
No monomer is involved in short contacts.

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

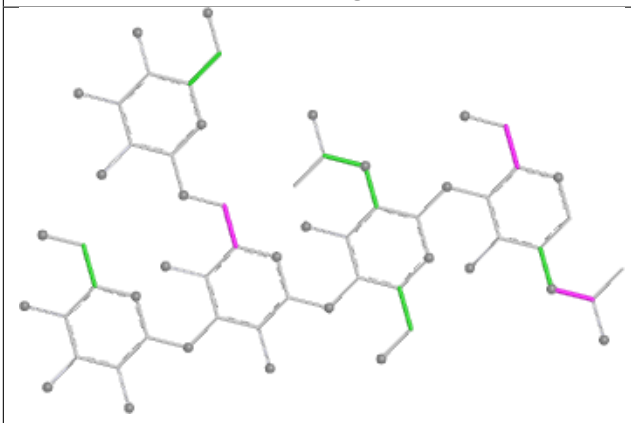
Oligosaccharide Chain G



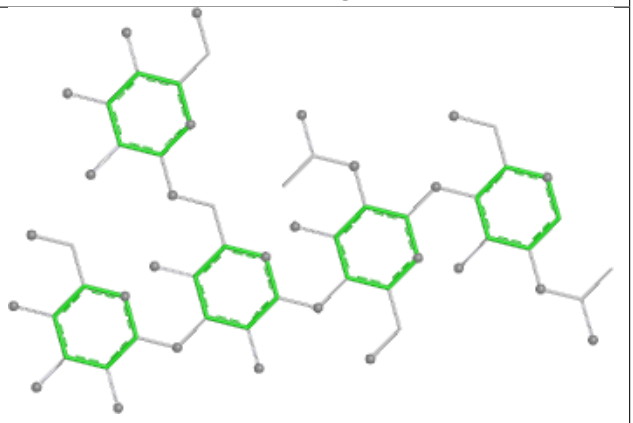
Bond lengths



Bond angles

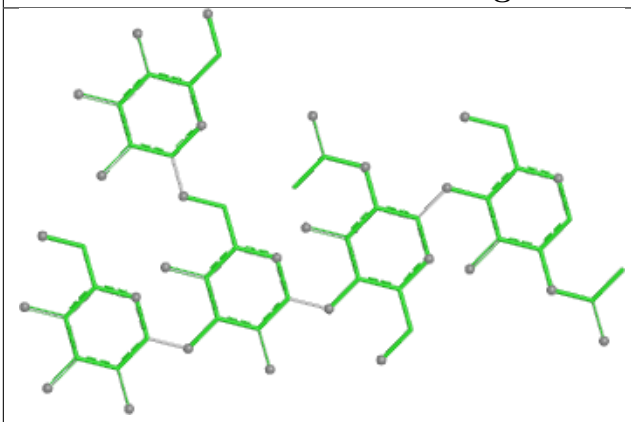


Torsions



Rings

Oligosaccharide Chain Y



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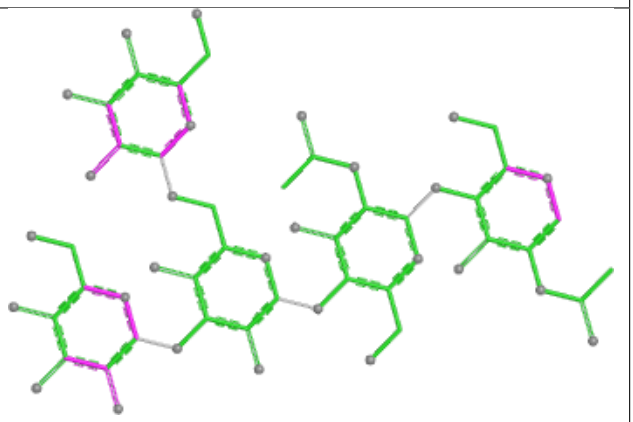

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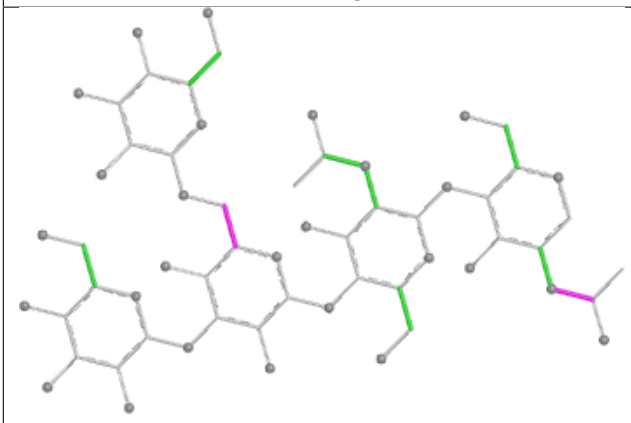

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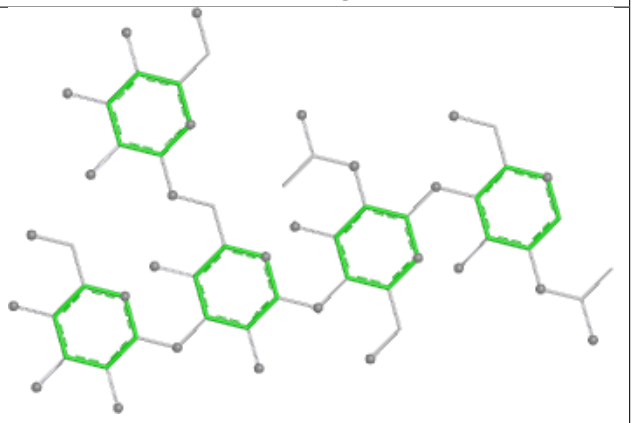
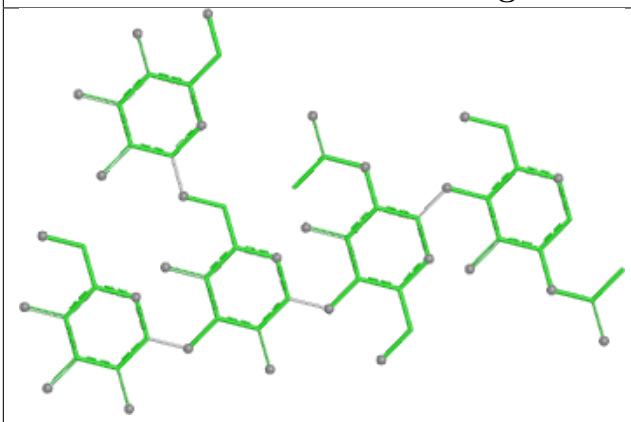


Rings

Oligosaccharide Chain k



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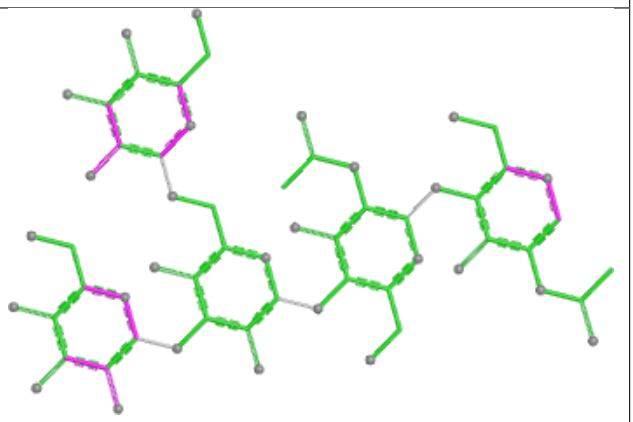

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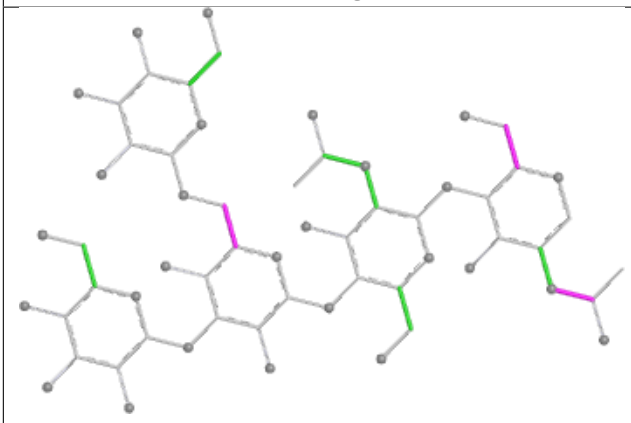

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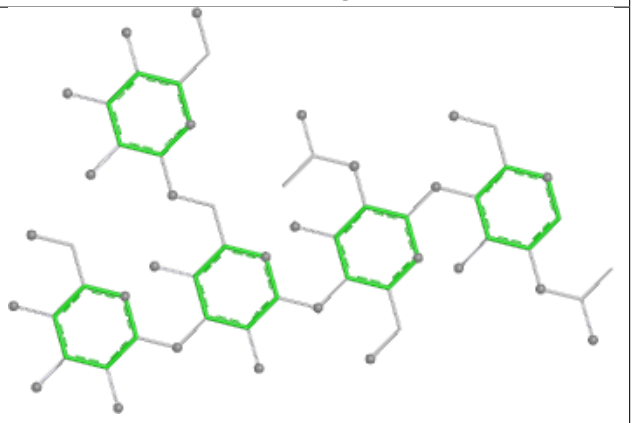
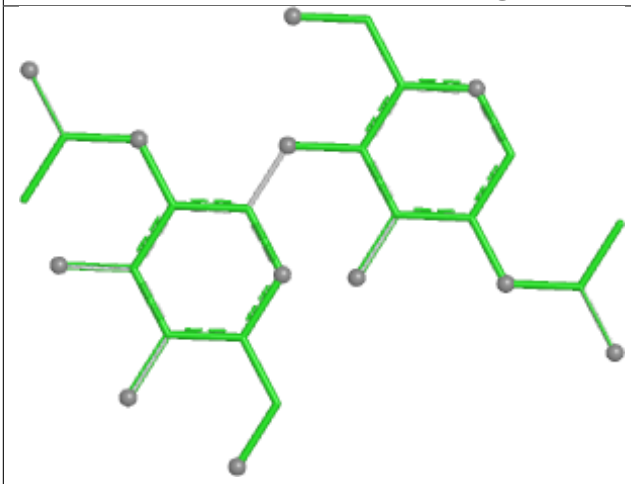


Rings

Oligosaccharide Chain K



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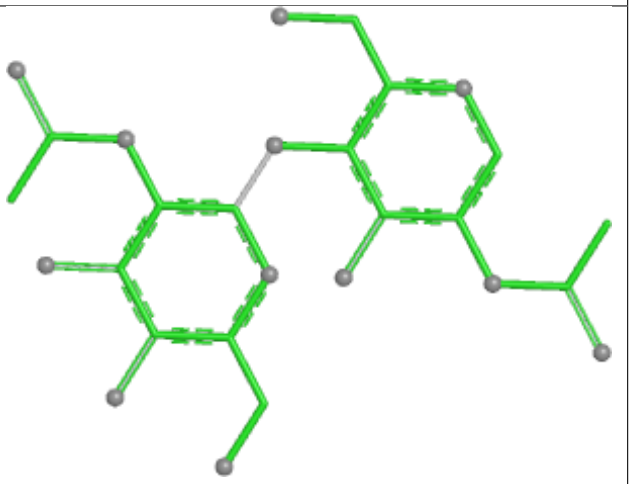

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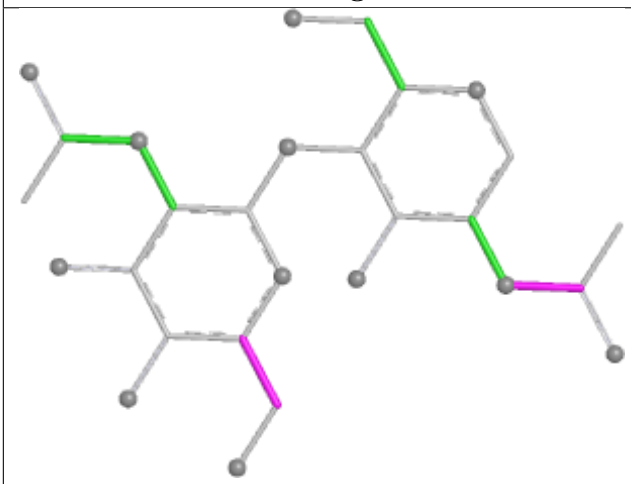

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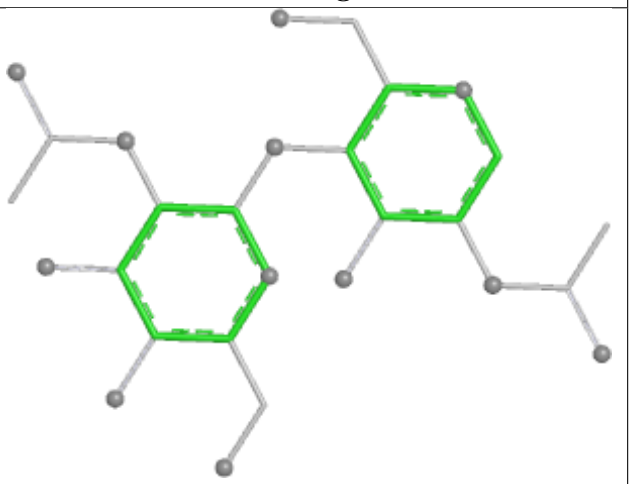
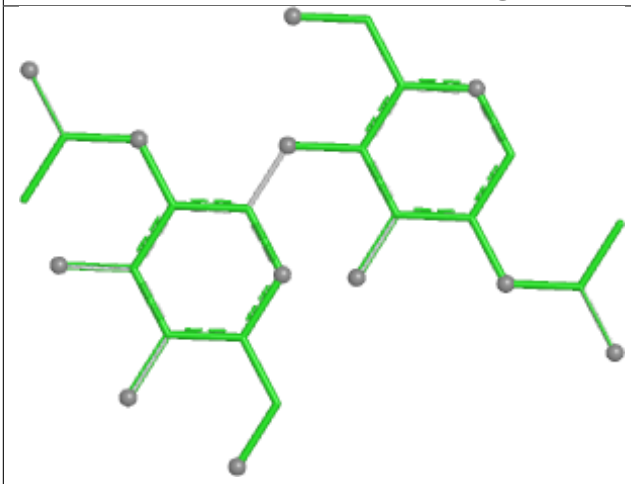


Rings

Oligosaccharide Chain U



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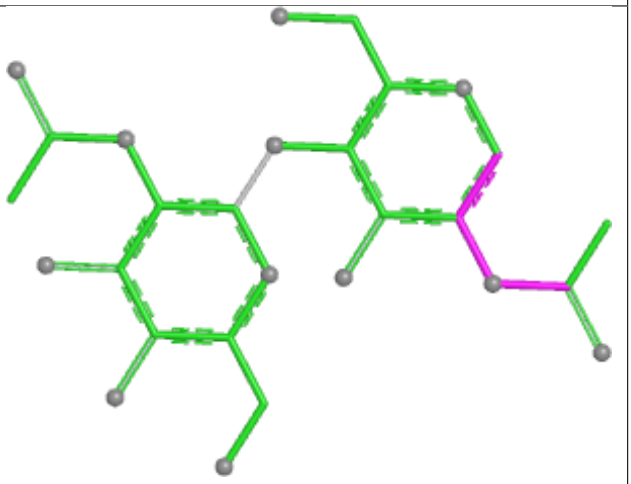

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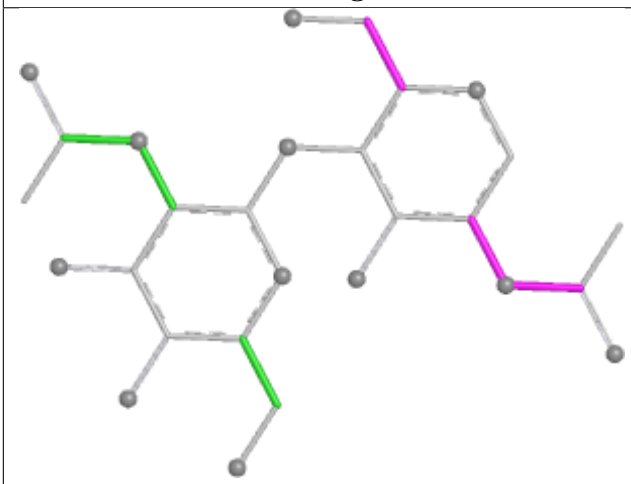

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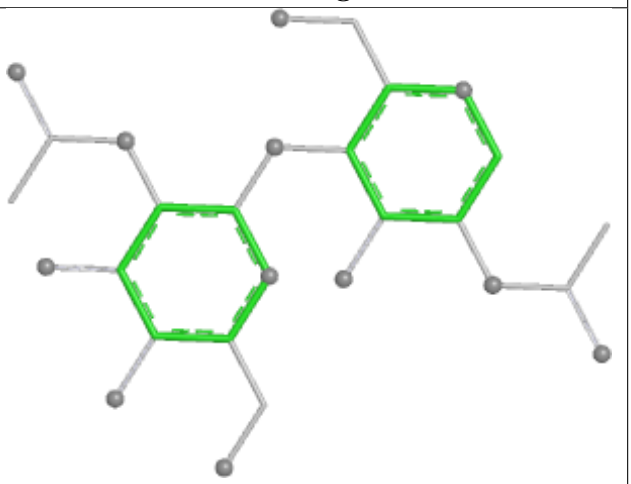
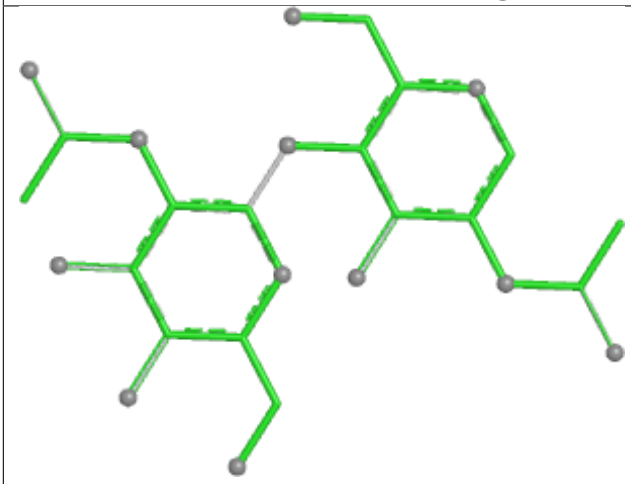


Rings

Oligosaccharide Chain V



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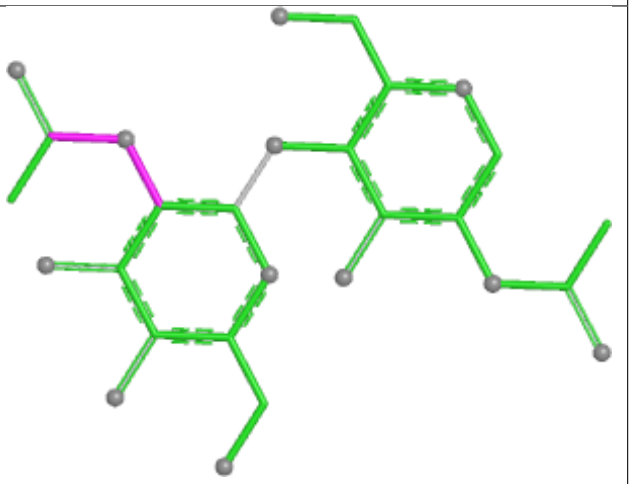

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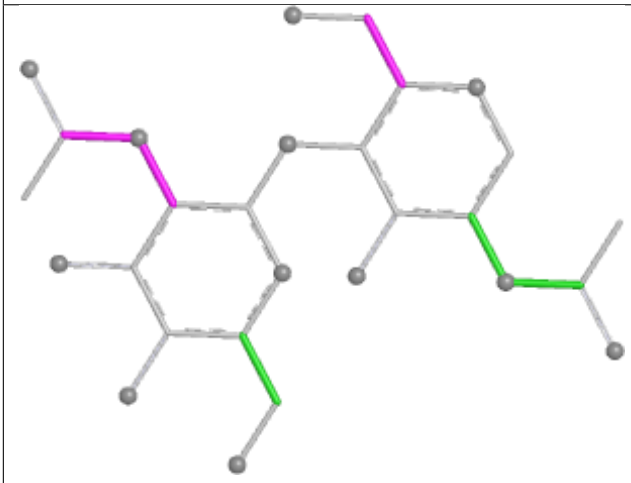

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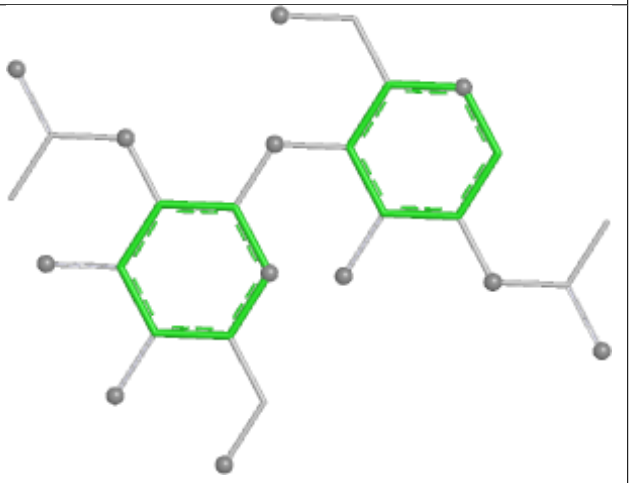
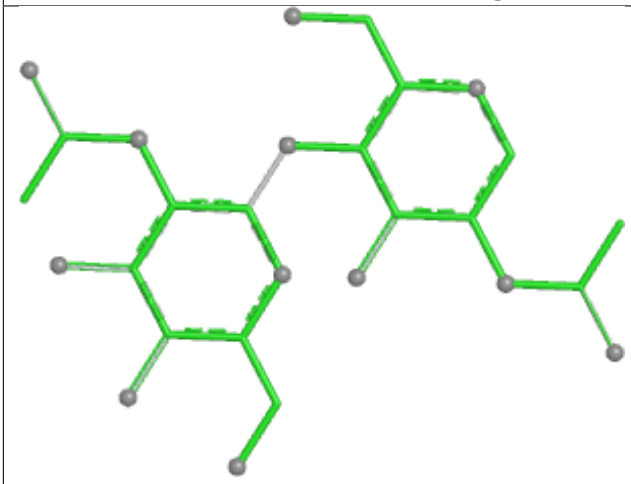


Rings

Oligosaccharide Chain W



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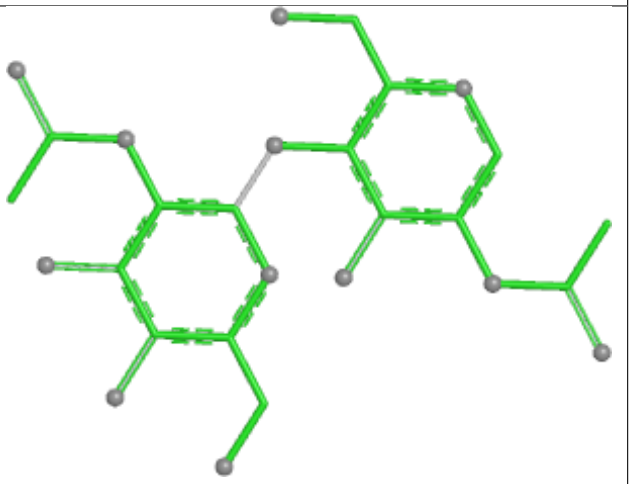

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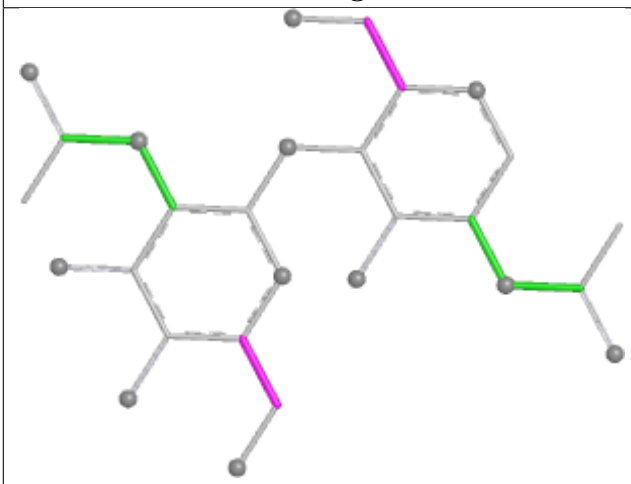

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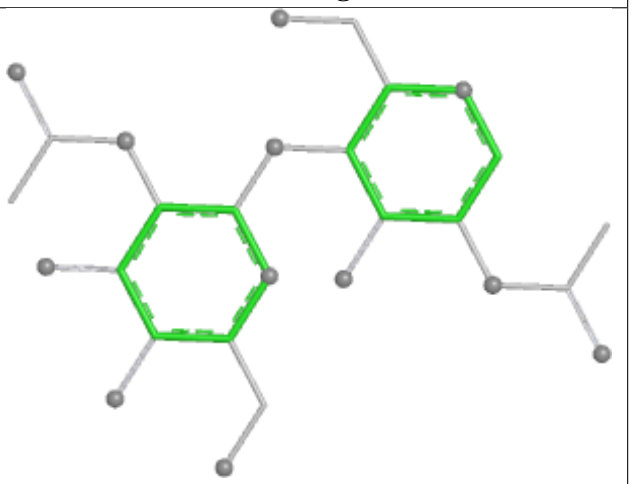
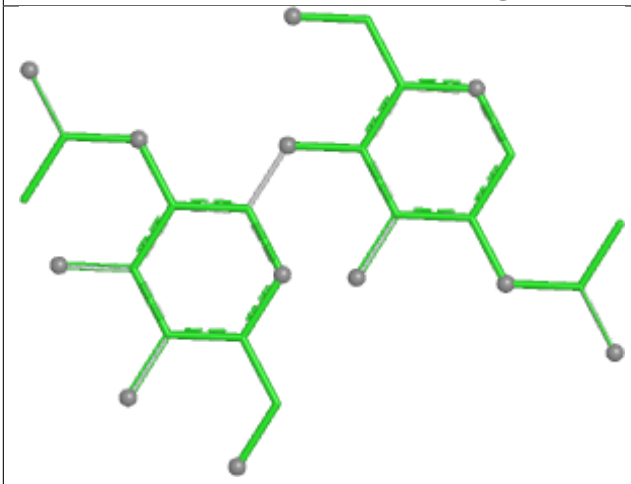


Rings

Oligosaccharide Chain X



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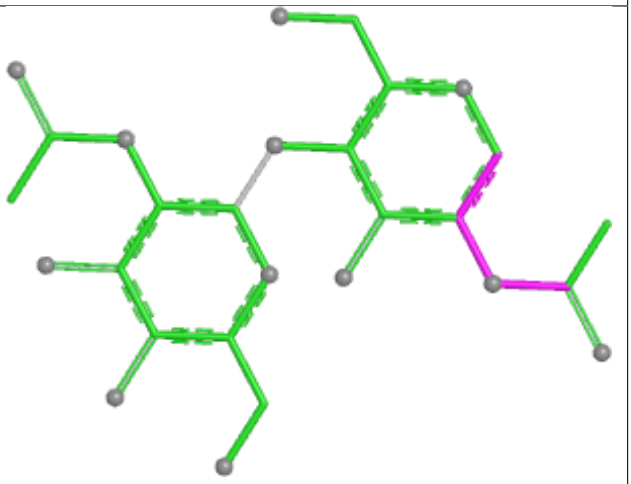

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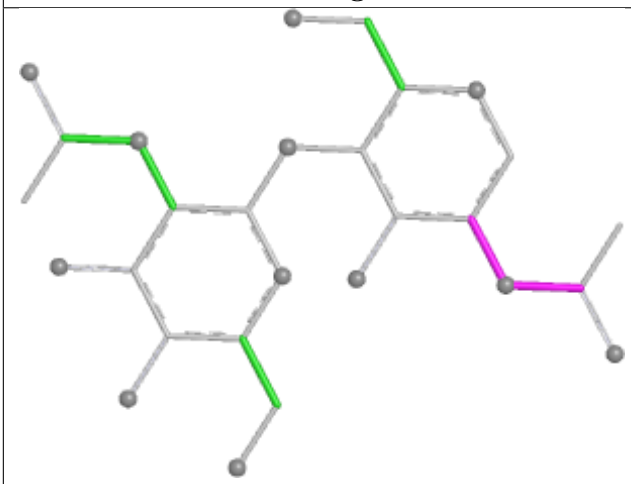

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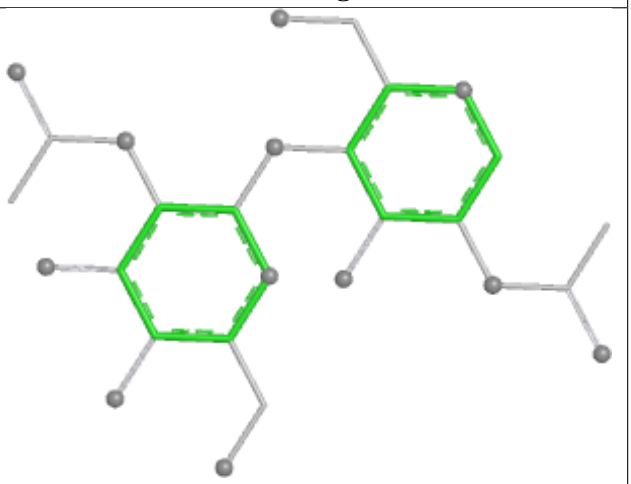
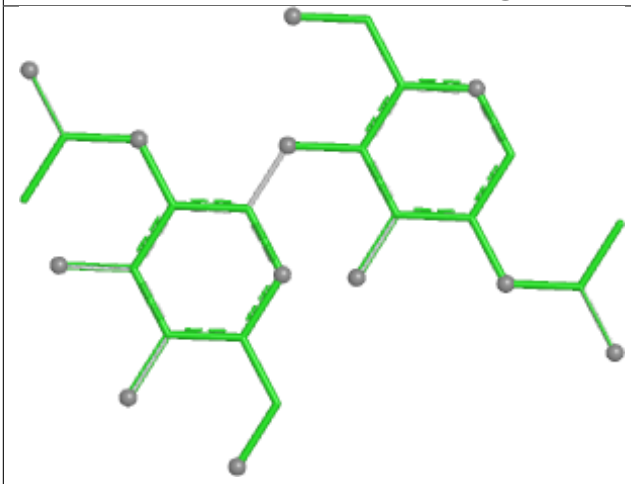


Rings

Oligosaccharide Chain Z



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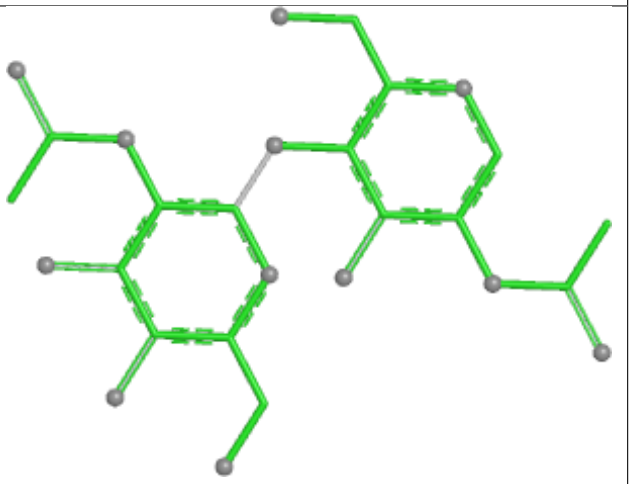

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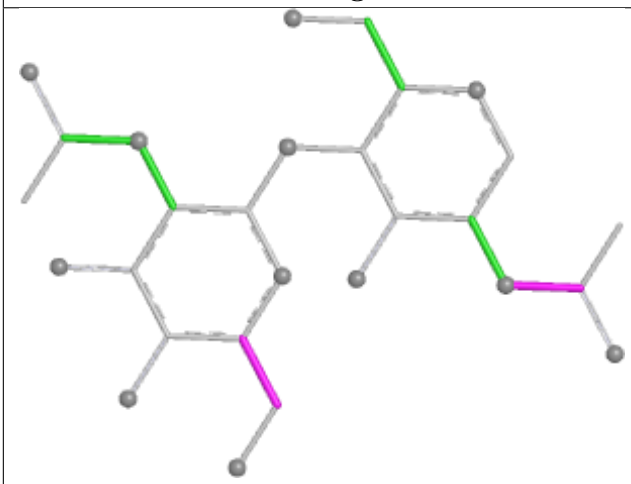

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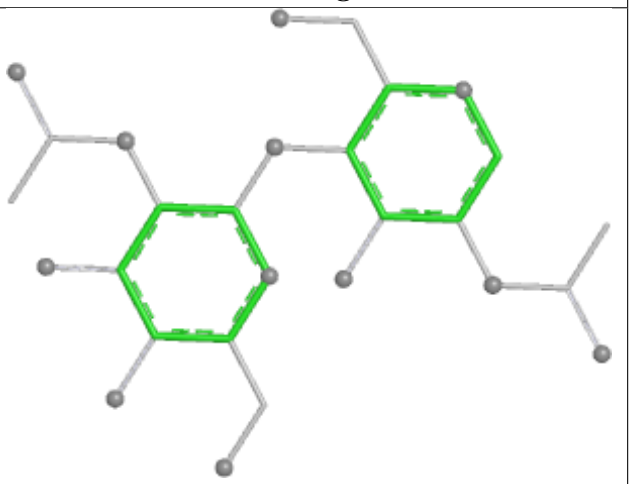
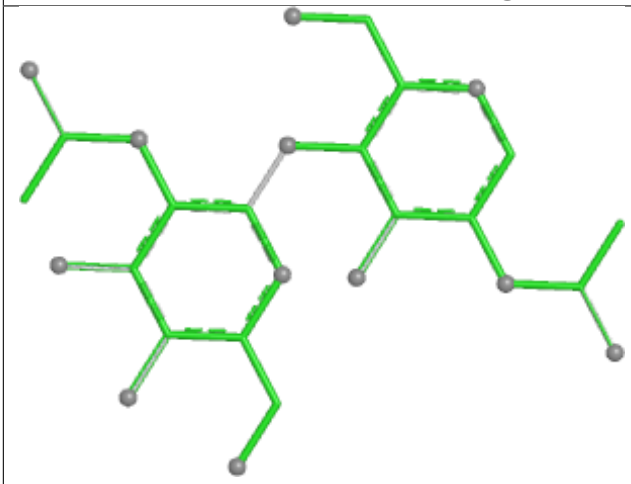


Rings

Oligosaccharide Chain g



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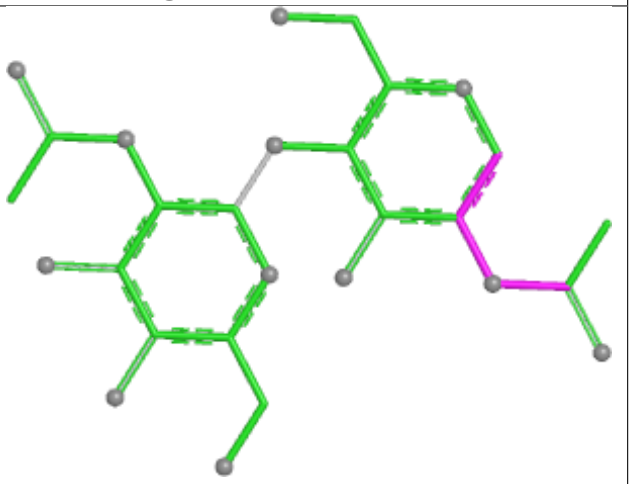

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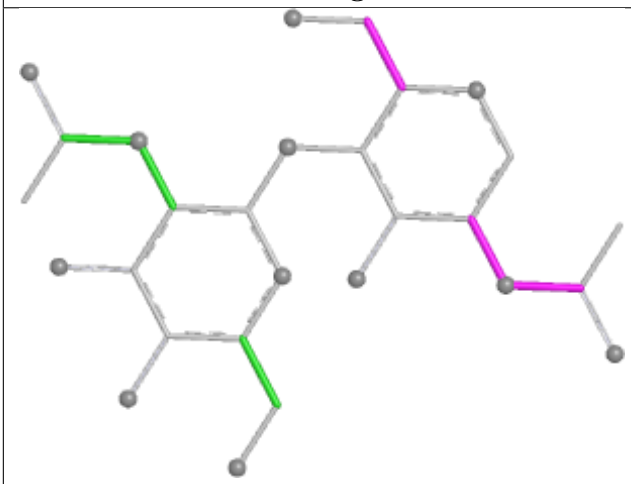

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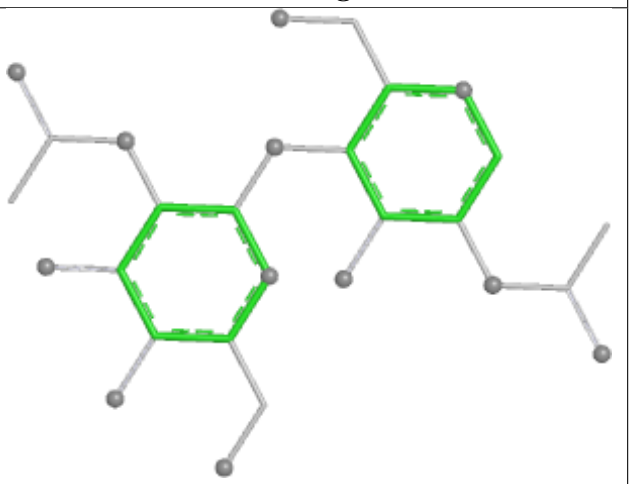
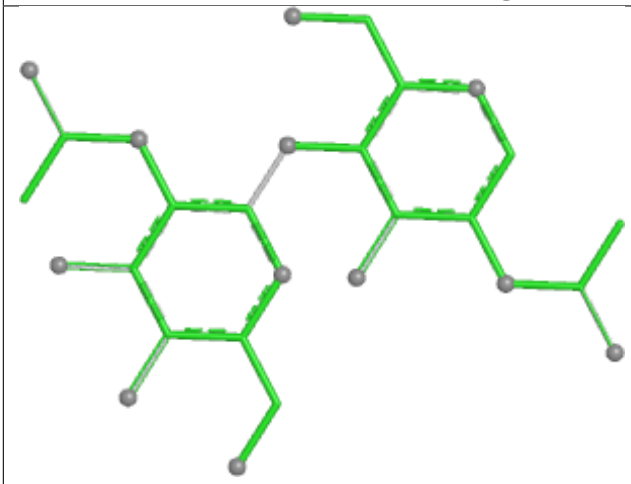


Rings

Oligosaccharide Chain h



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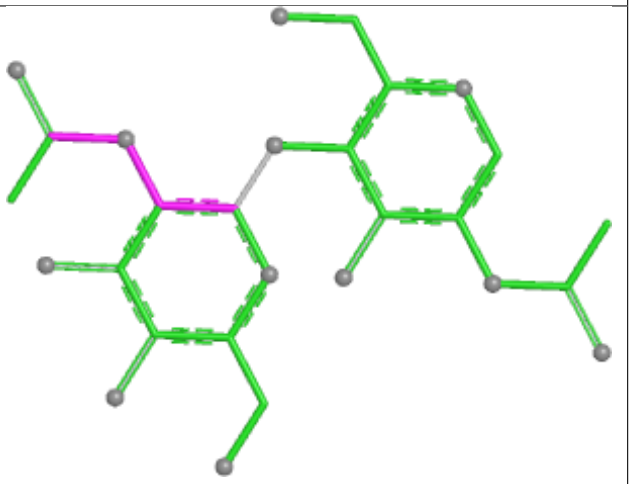

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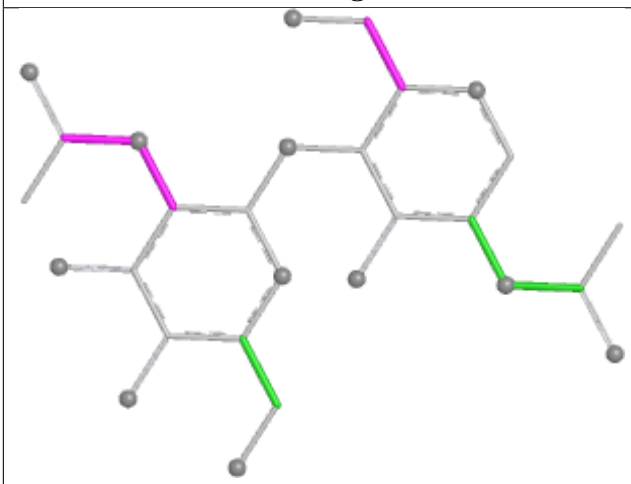

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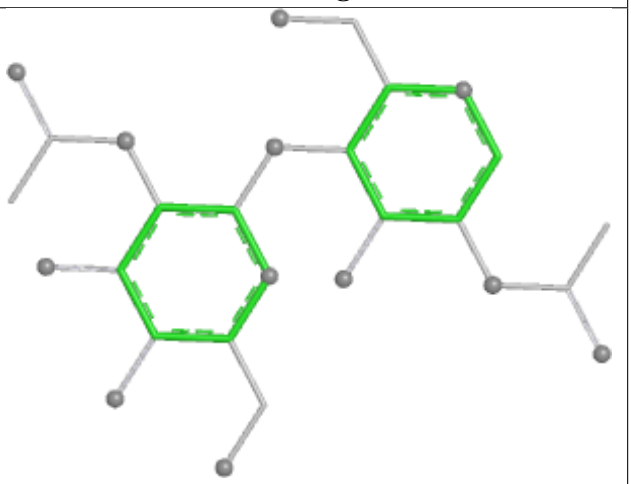
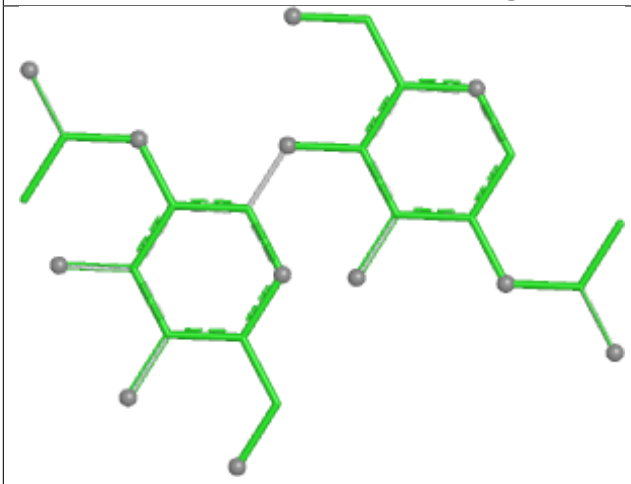


Rings

Oligosaccharide Chain i



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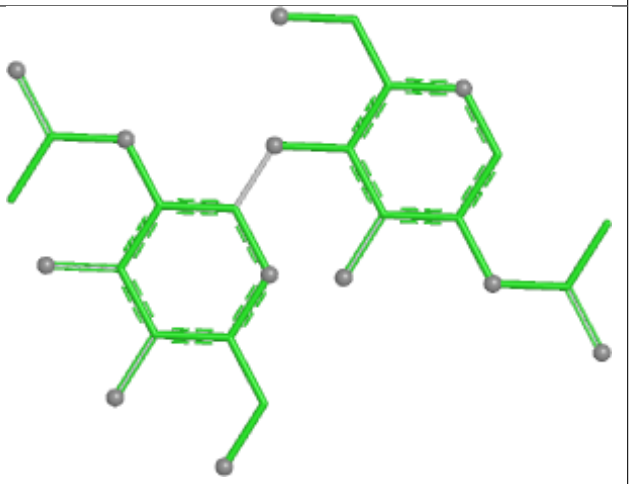

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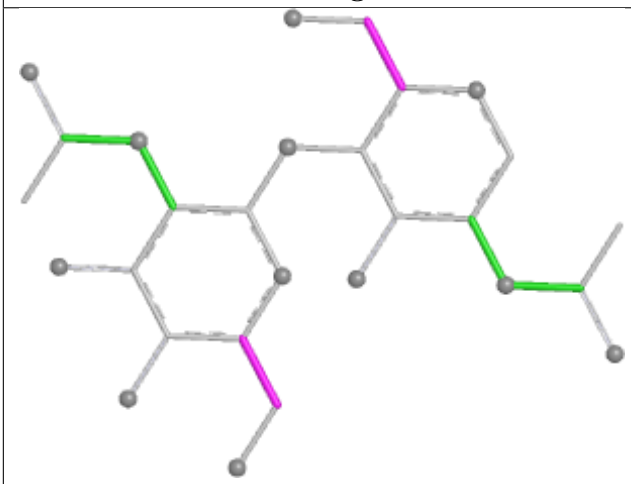

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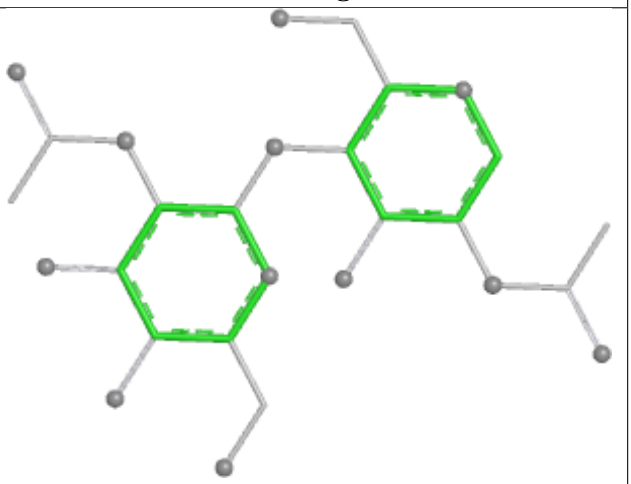
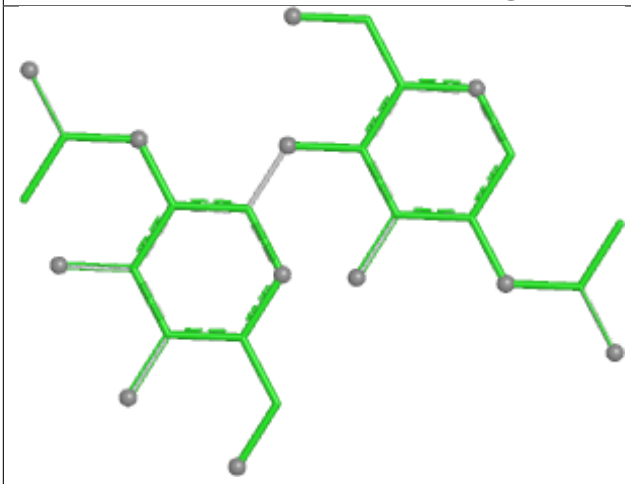


Rings

Oligosaccharide Chain j



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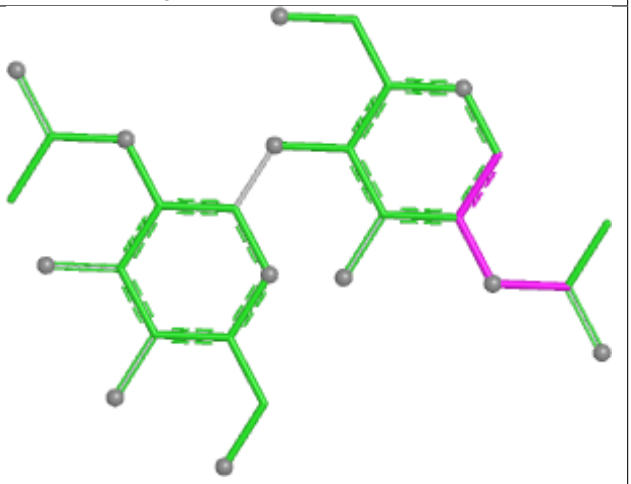

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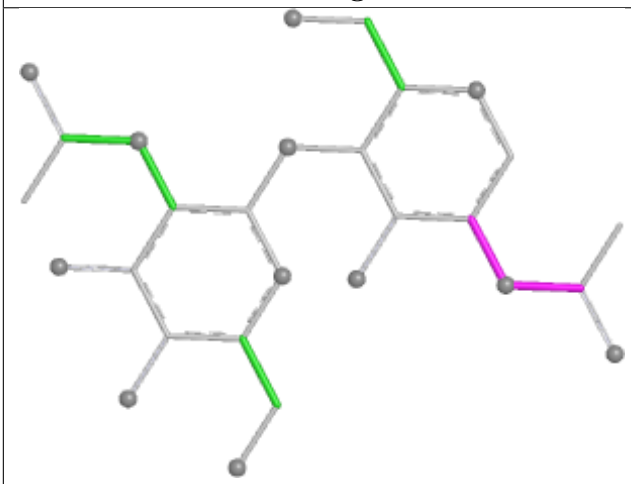

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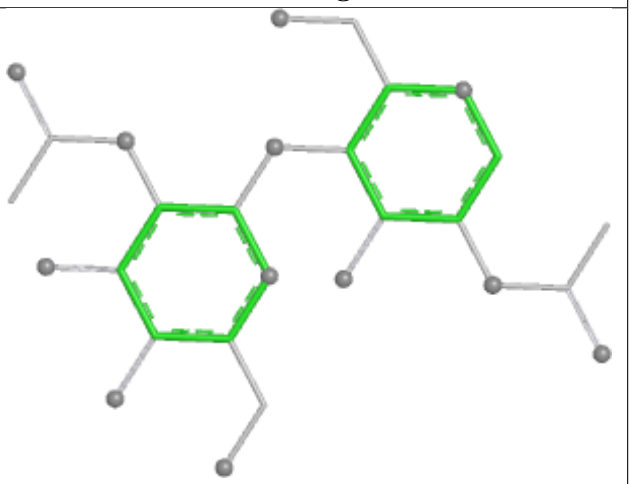
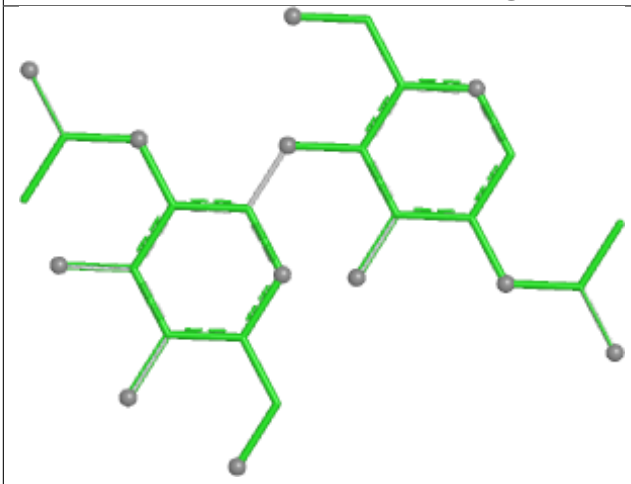


Rings

Oligosaccharide Chain l



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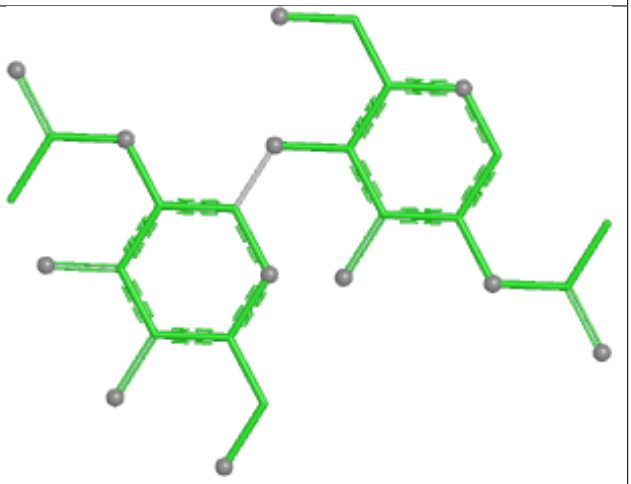
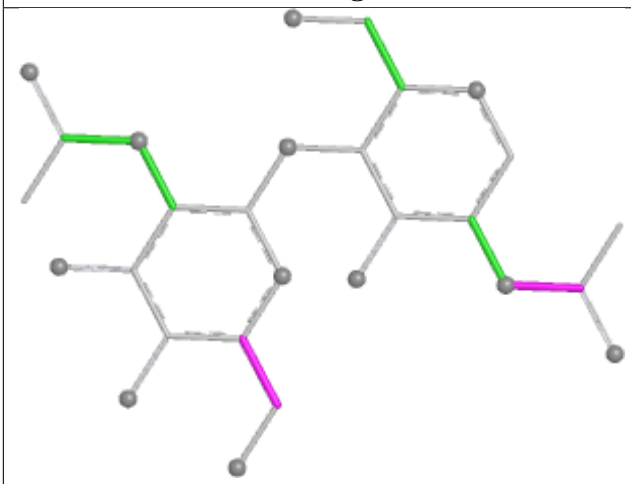


Bond angles



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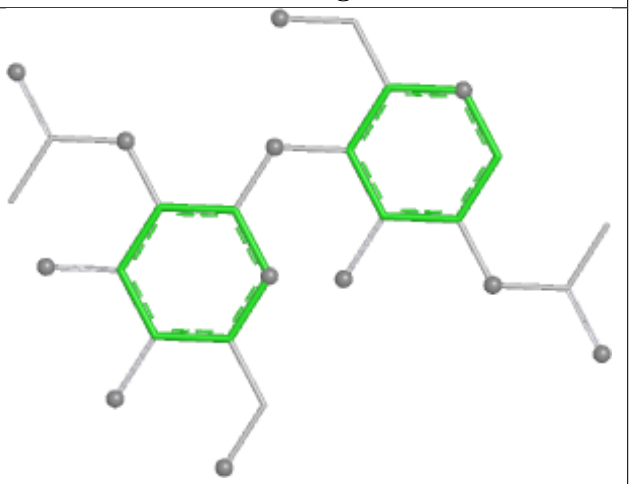
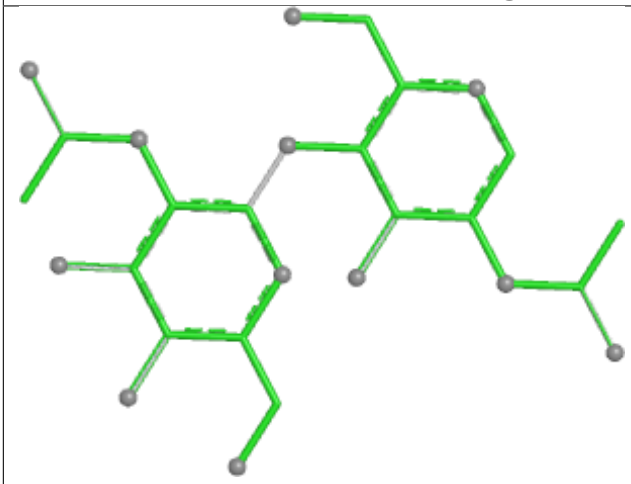


Rings

Oligosaccharide Chain s



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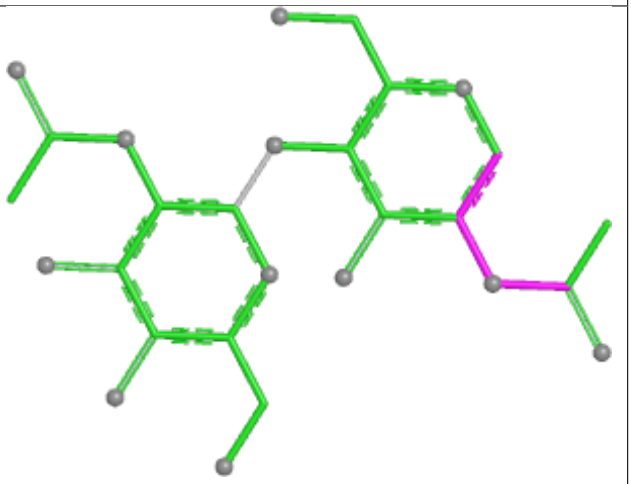
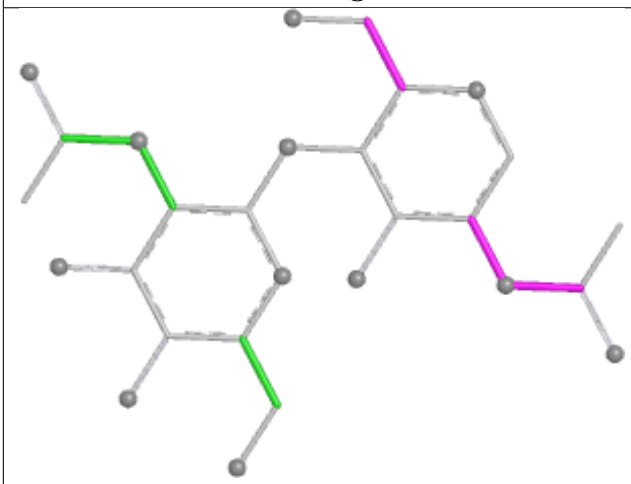


Bond angles



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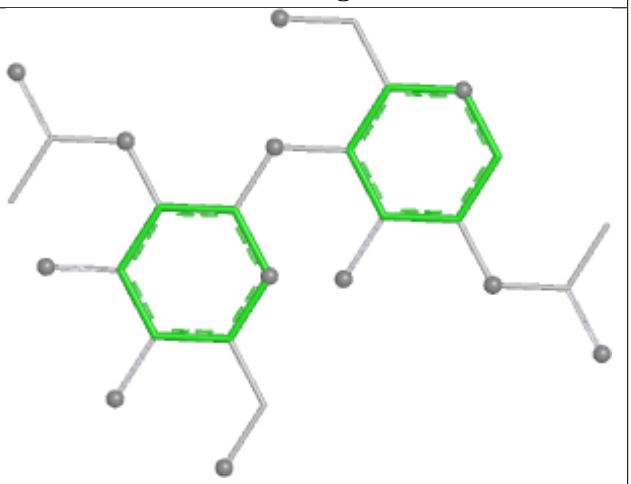
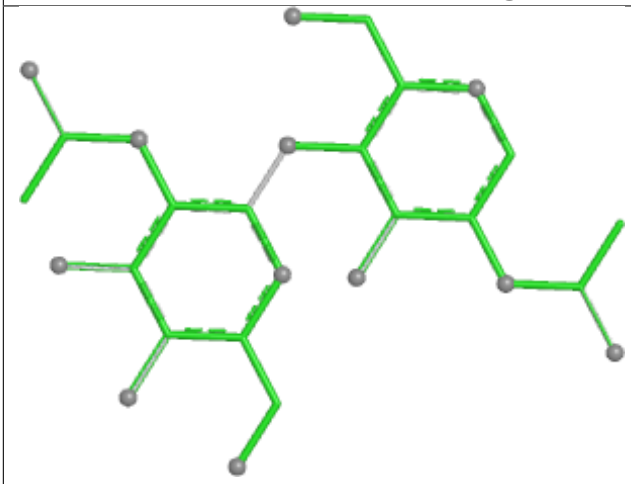
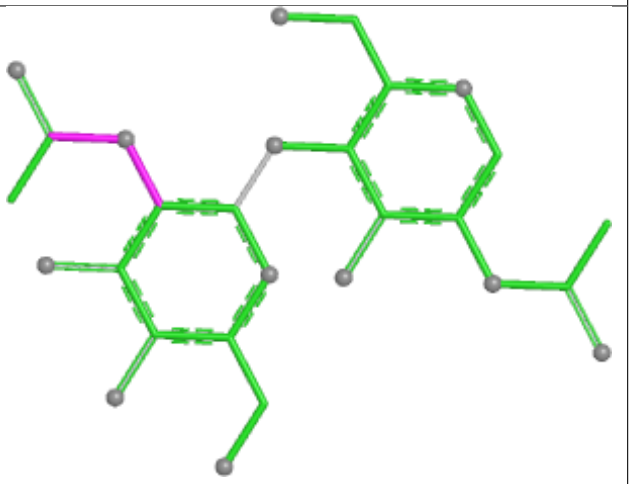


Rings

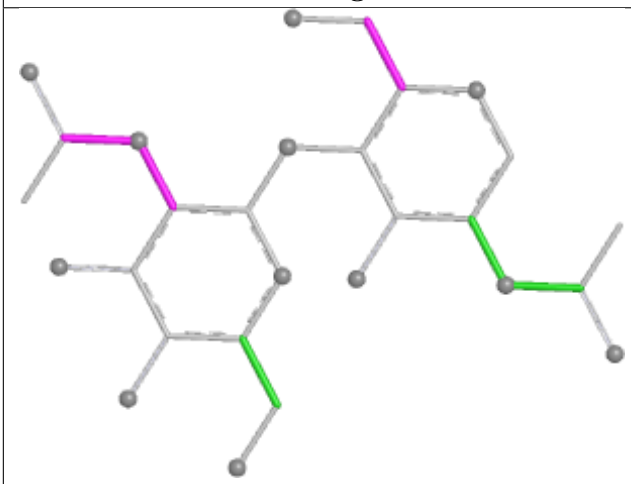
Oligosaccharide Chain t



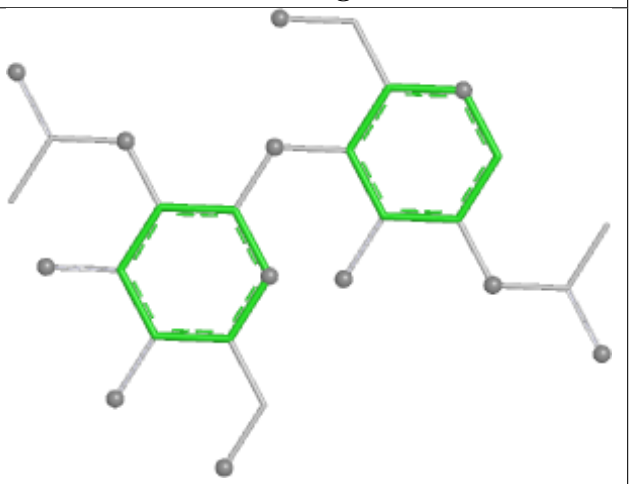
Bond lengths



Bond angles

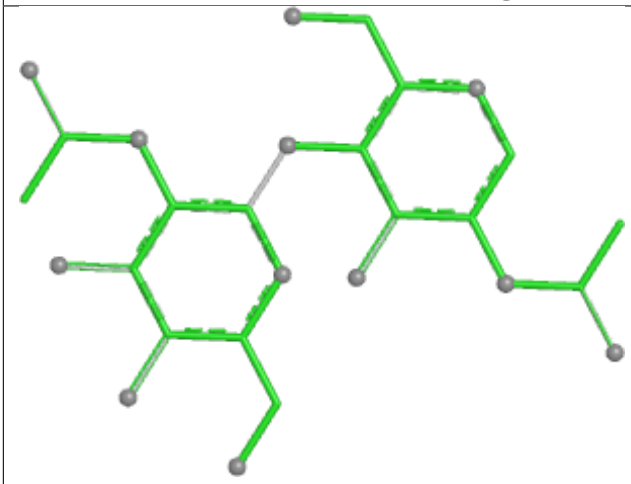


Torsions



Rings

Oligosaccharide Chain u



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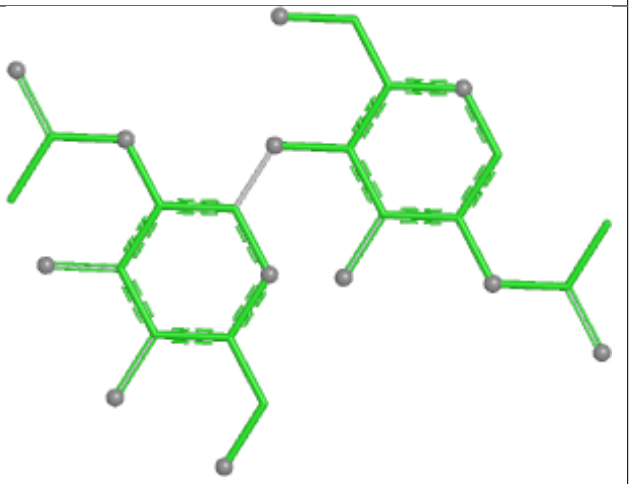

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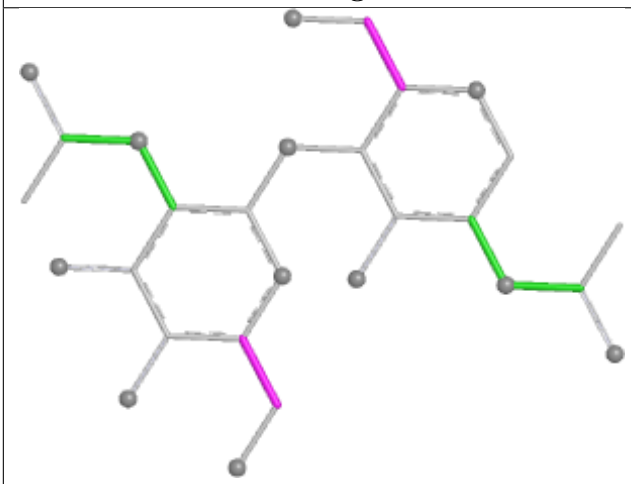

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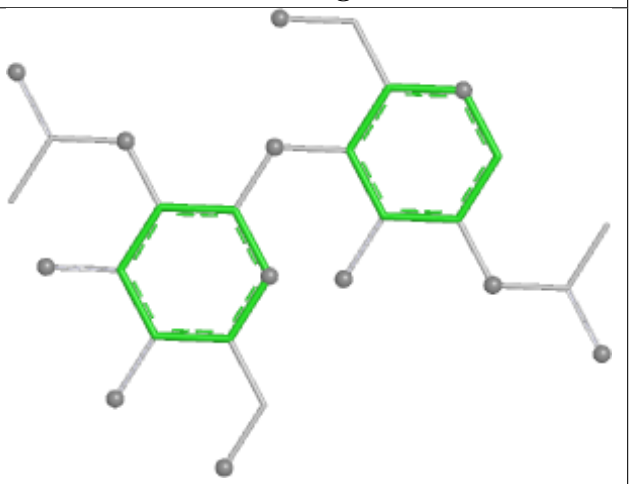
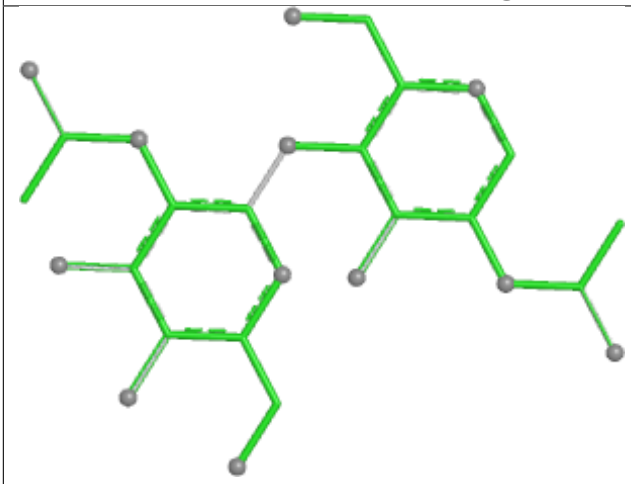


Rings

Oligosaccharide Chain v



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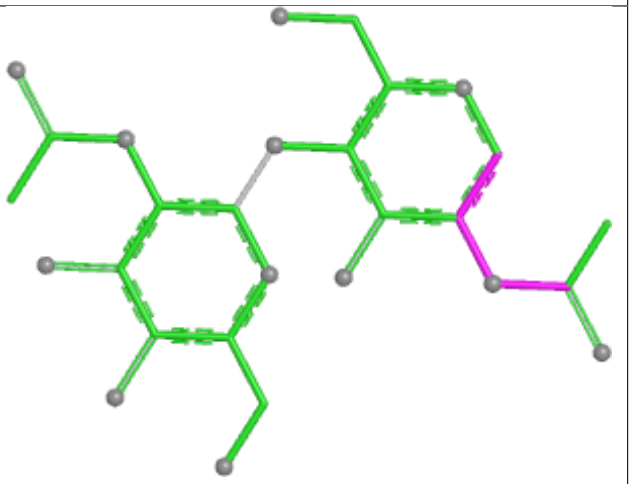

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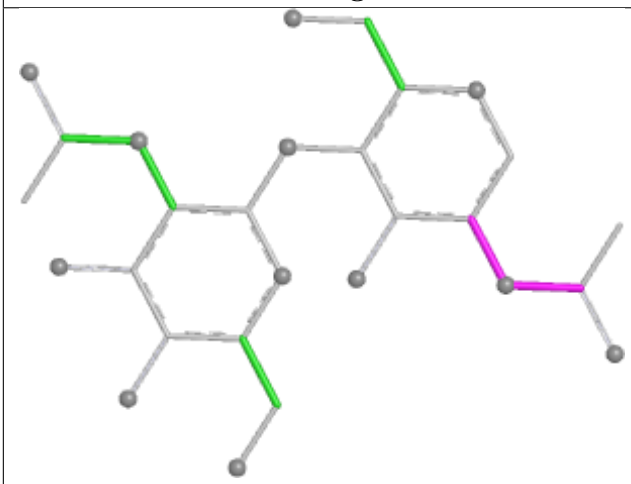

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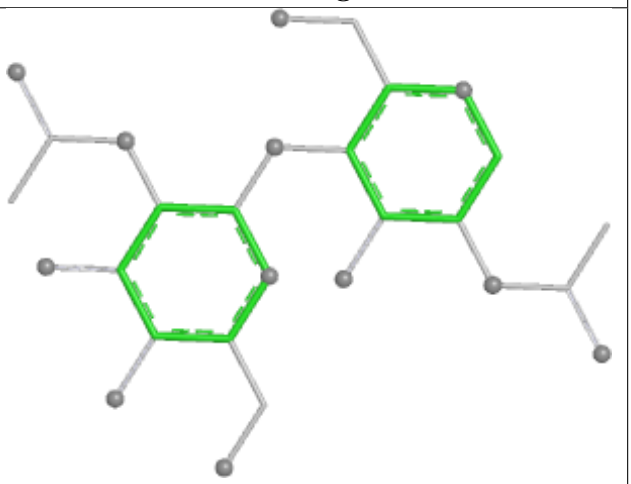
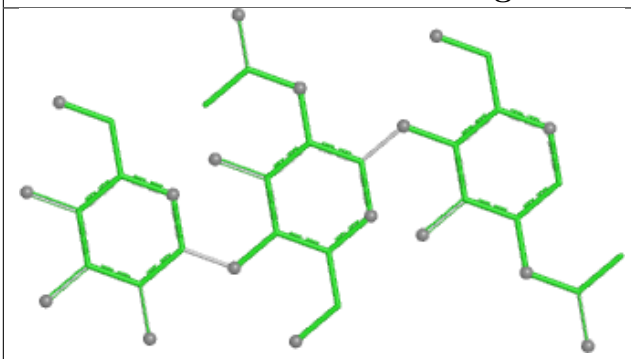


Rings

Oligosaccharide Chain O



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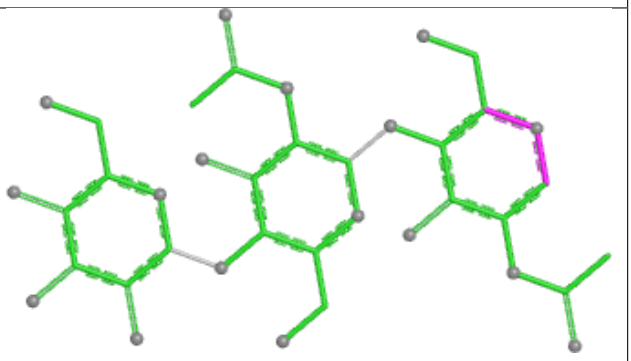

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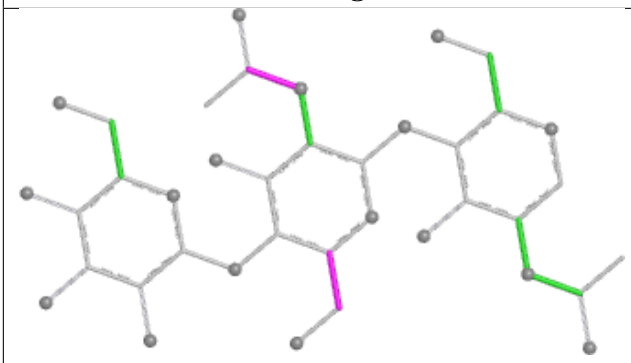

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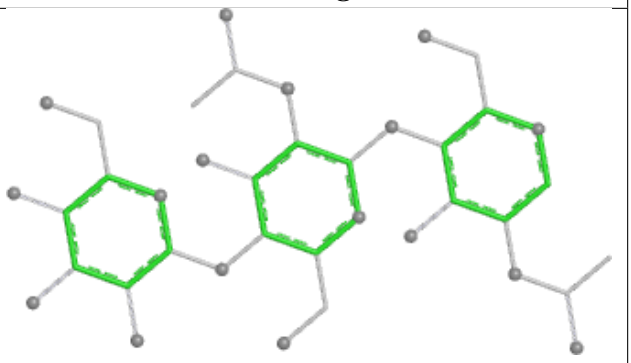
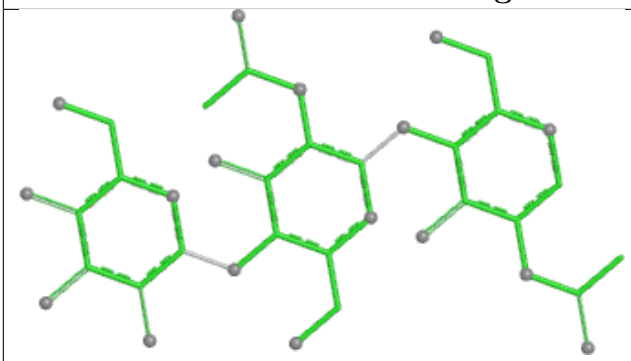


Rings

Oligosaccharide Chain Q



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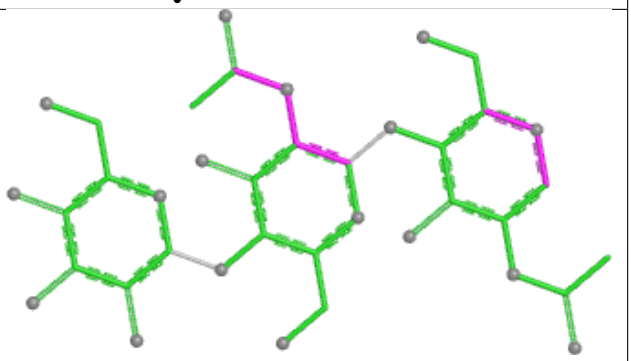

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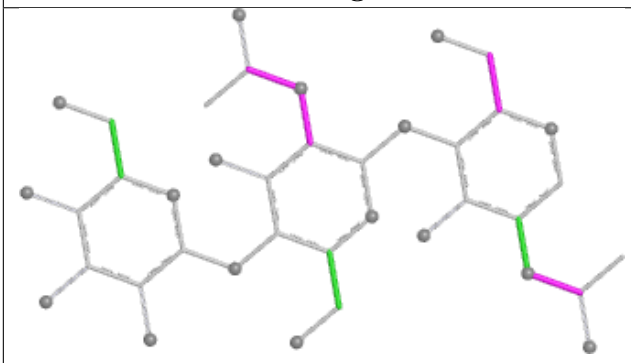

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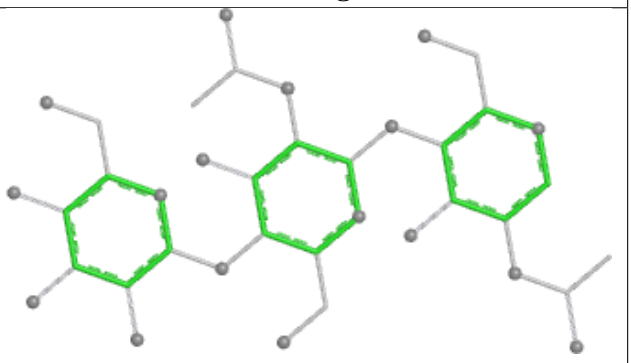
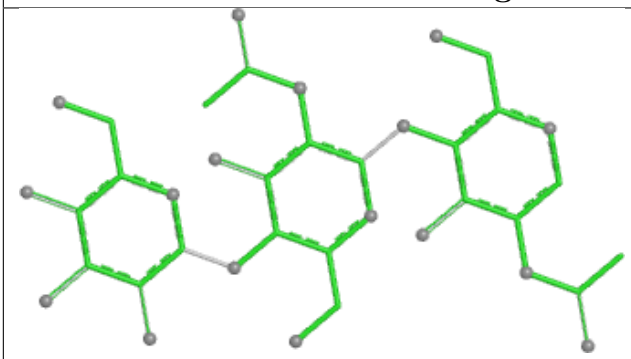


Rings

Oligosaccharide Chain R



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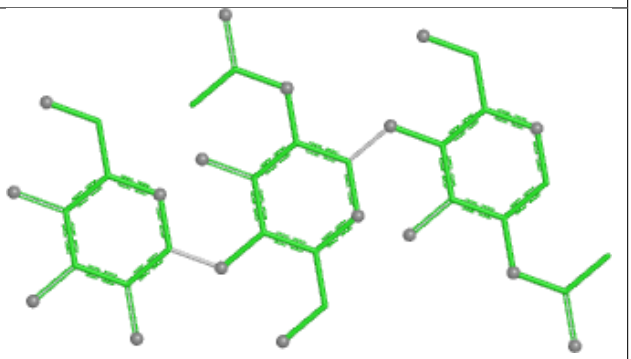
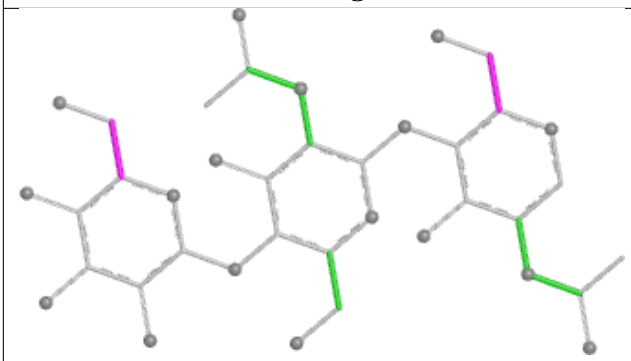


Bond angles



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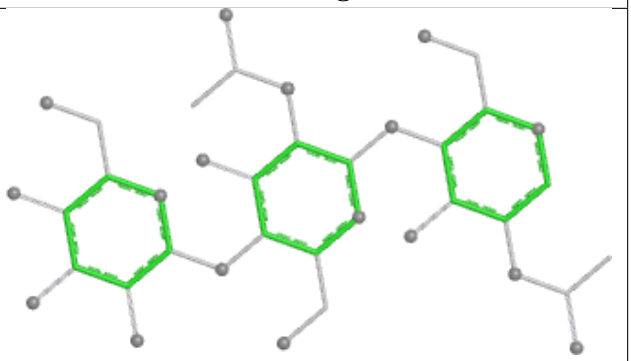
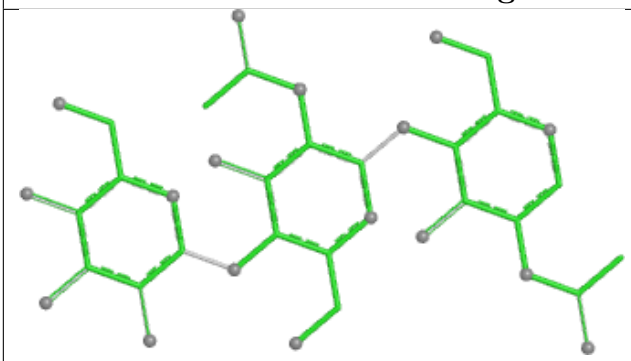


Rings

Oligosaccharide Chain S



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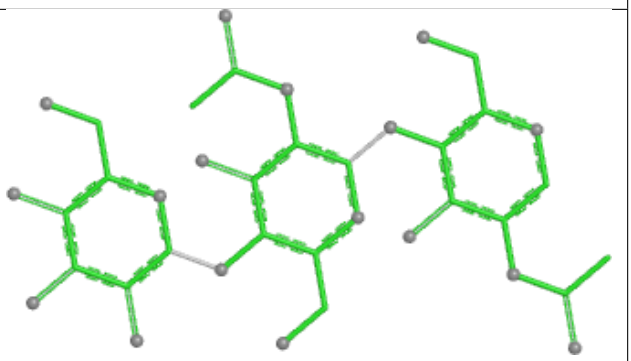

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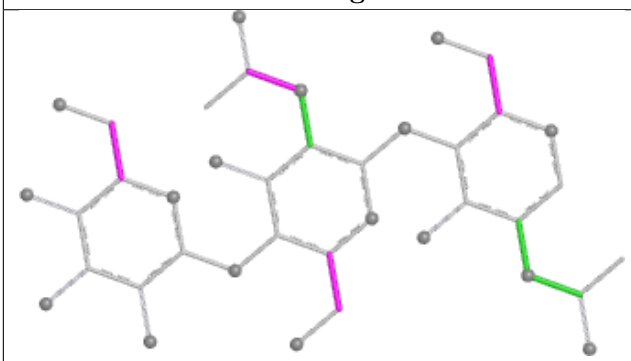

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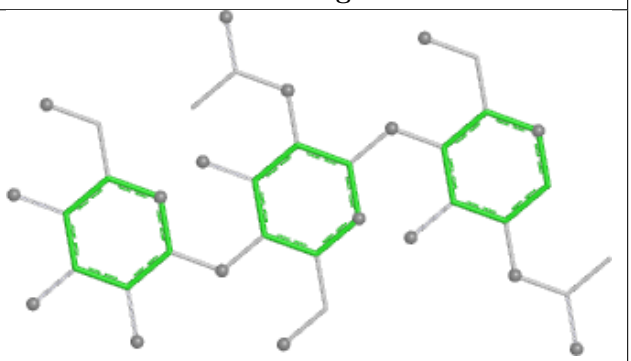
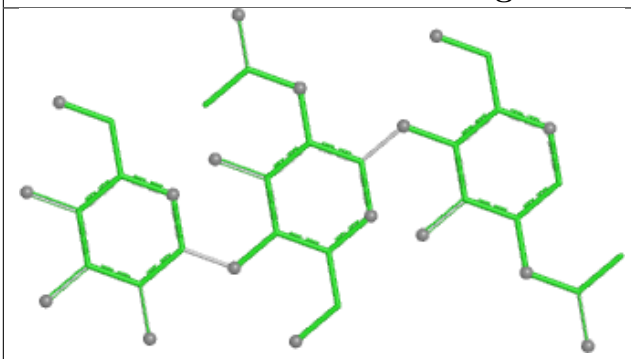


Rings

Oligosaccharide Chain T



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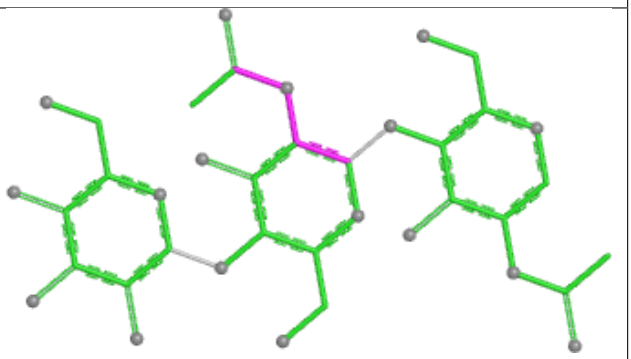

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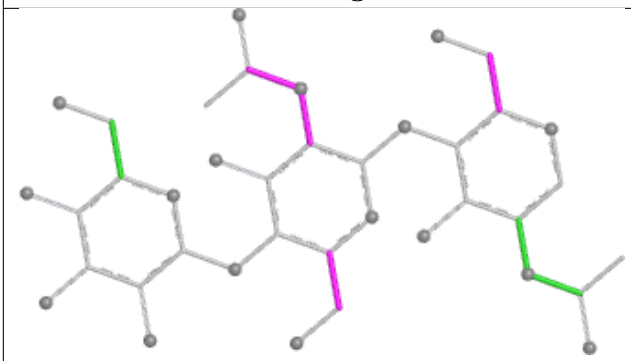

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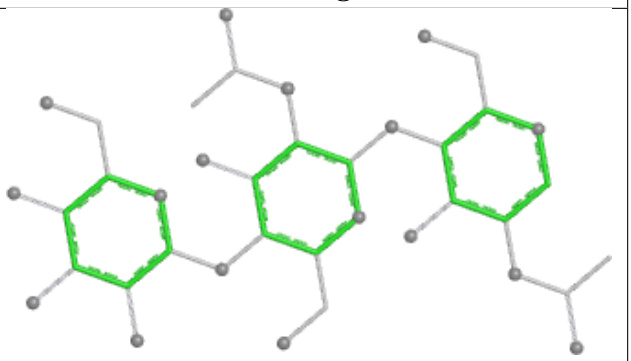
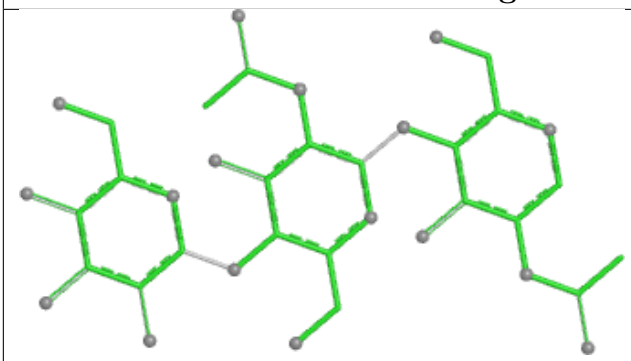


Rings

Oligosaccharide Chain a



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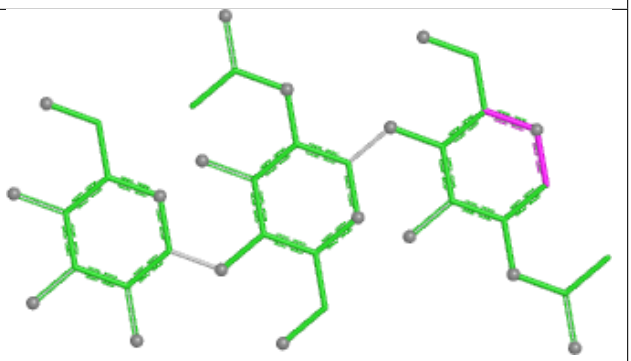

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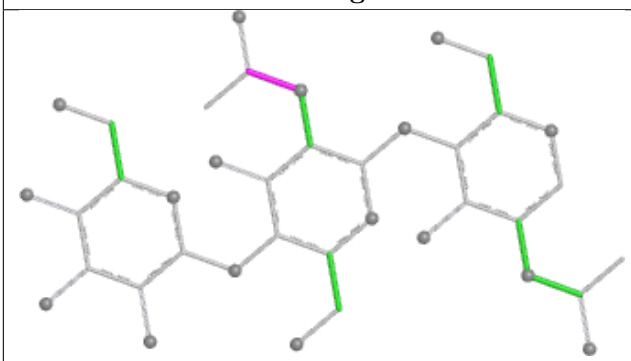

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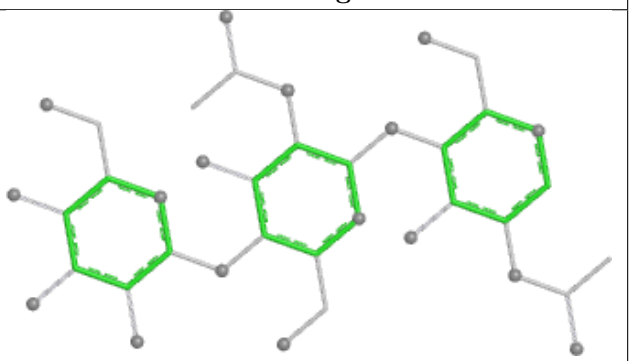
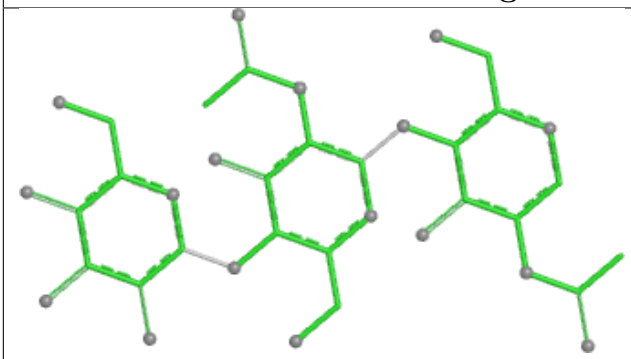


Rings

Oligosaccharide Chain c



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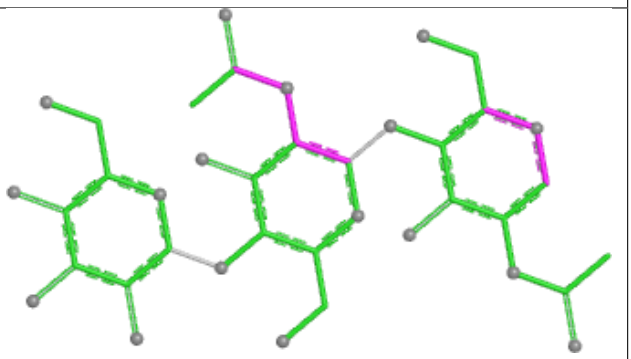

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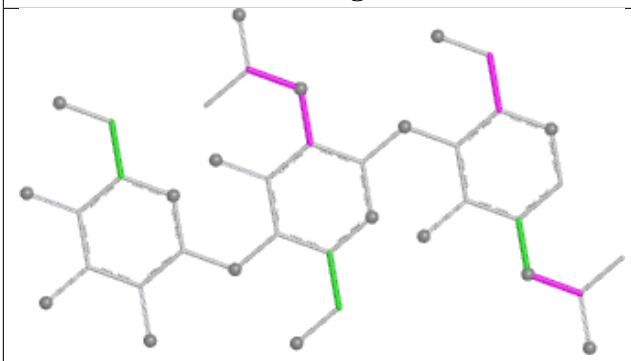

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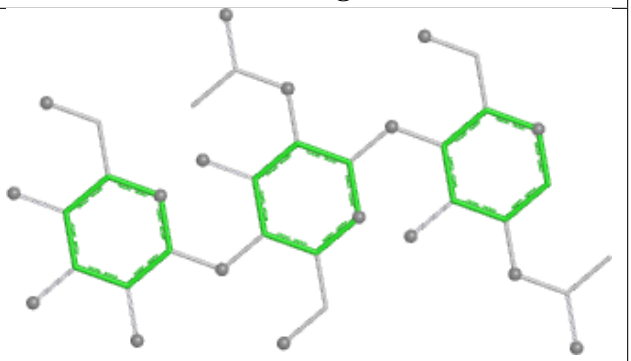
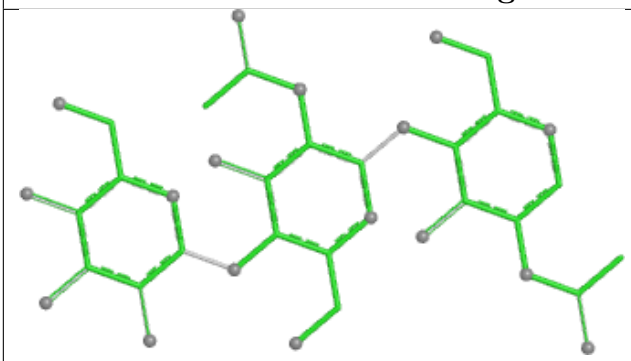


Rings

Oligosaccharide Chain d



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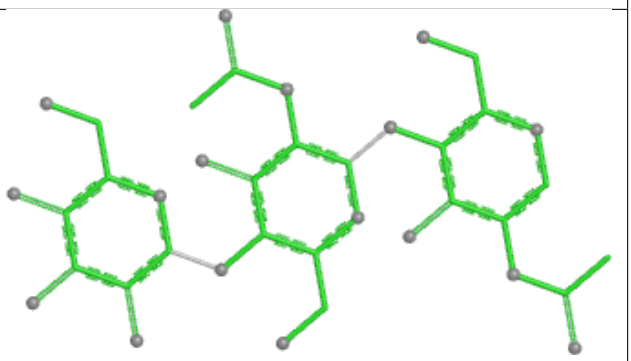

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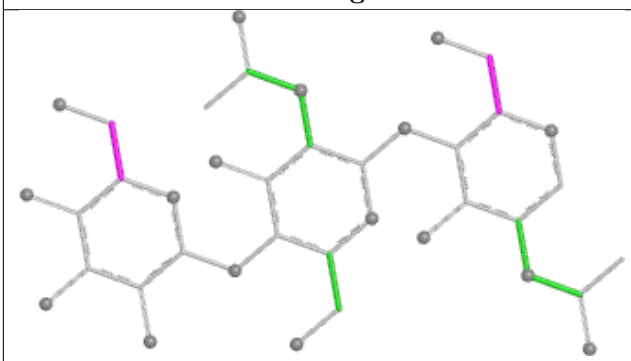

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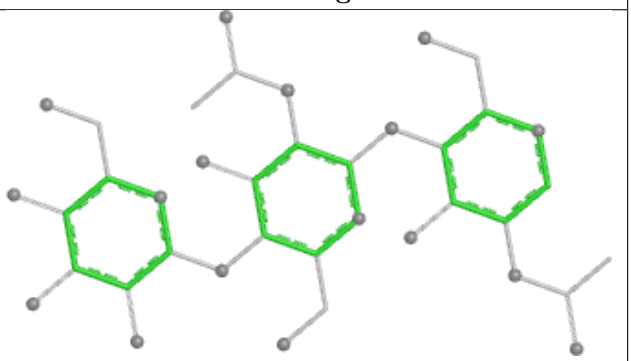
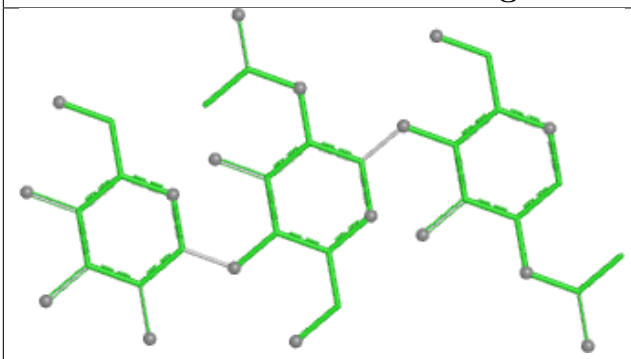


Rings

Oligosaccharide Chain e



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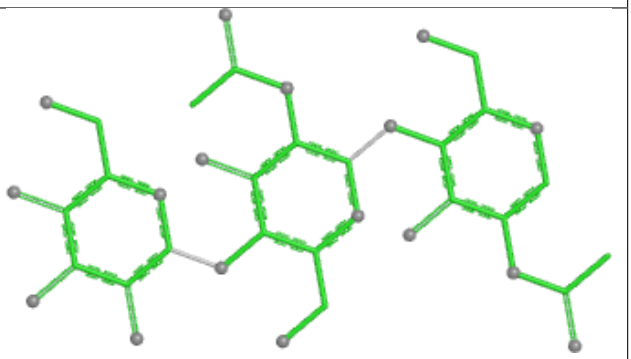

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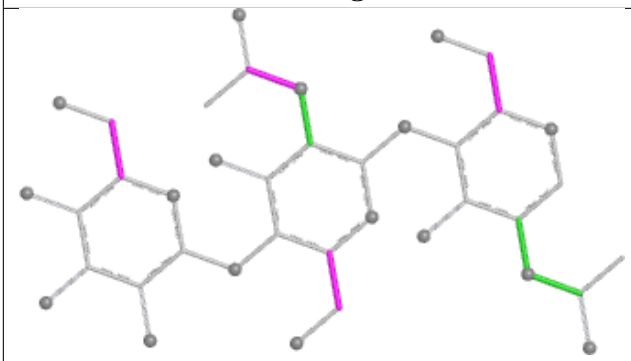

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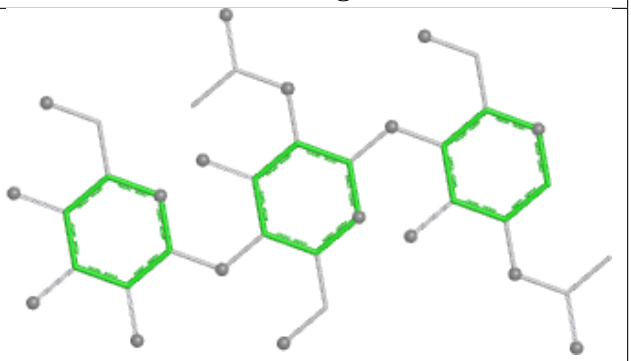
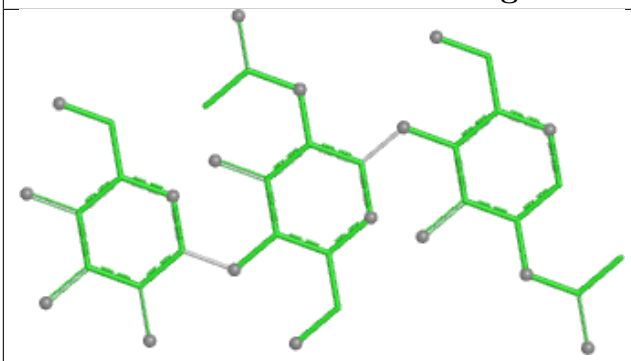


Rings

Oligosaccharide Chain f



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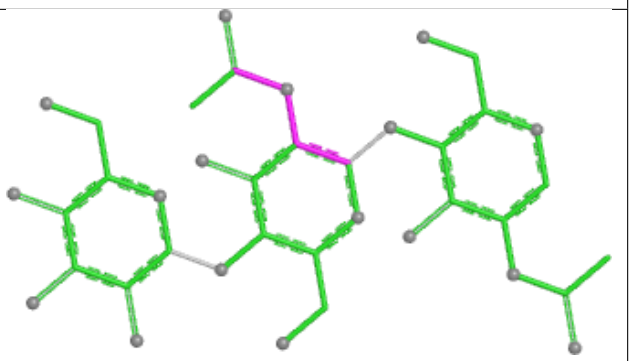
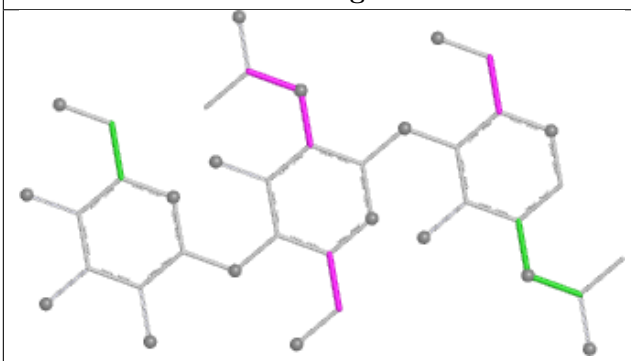


Bond angles



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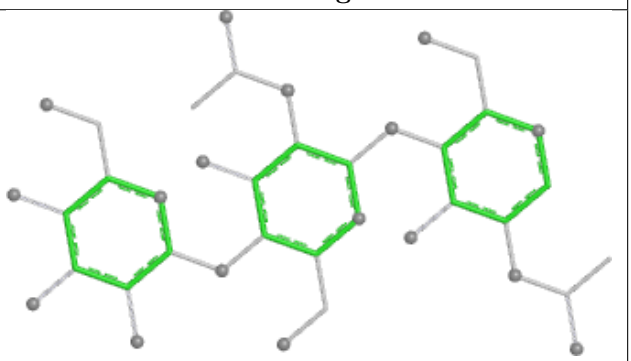
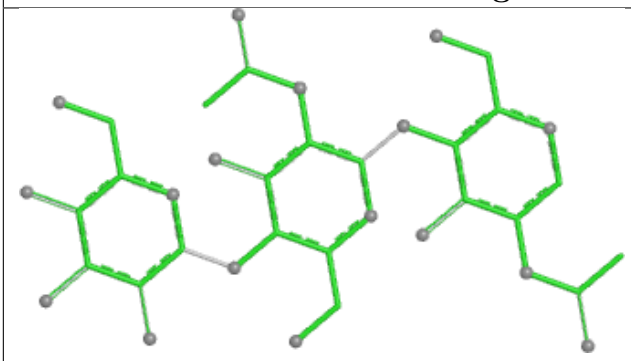


Rings

Oligosaccharide Chain m



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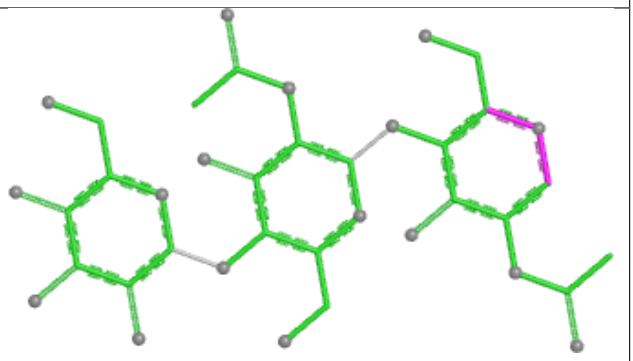
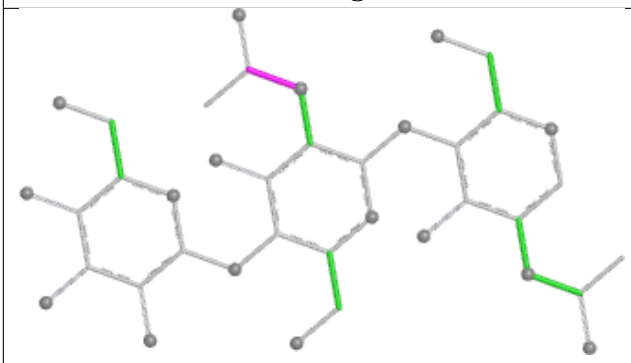


Bond angles



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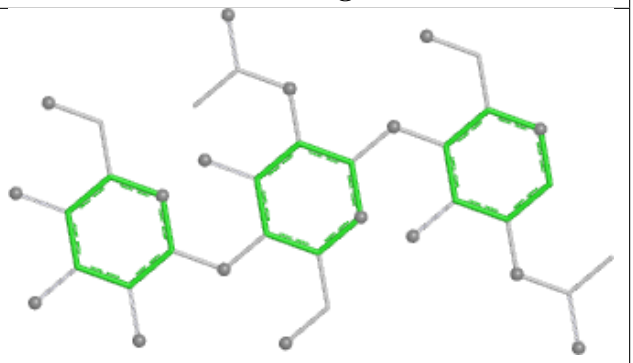
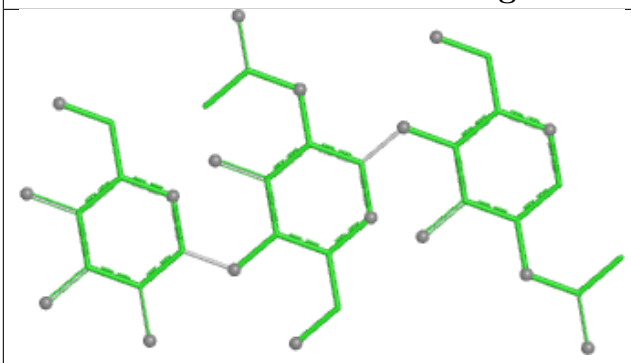
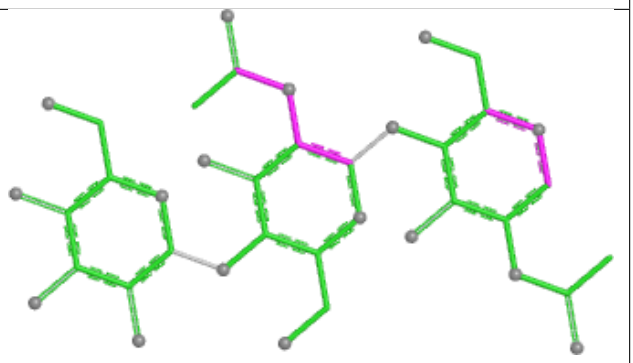


Rings

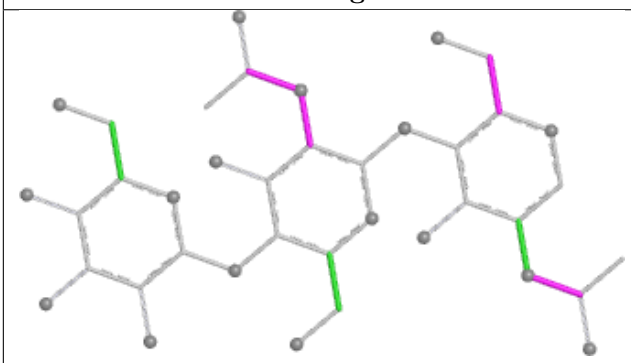
Oligosaccharide Chain o



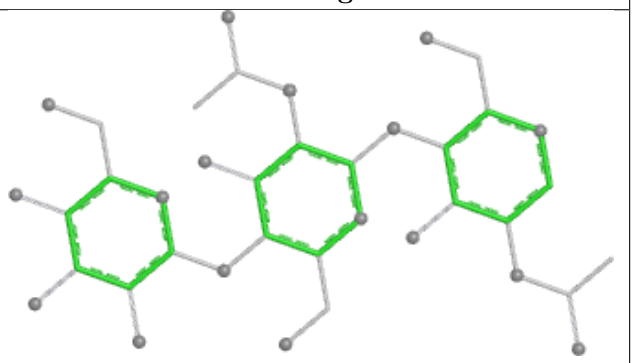
Bond lengths



Bond angles

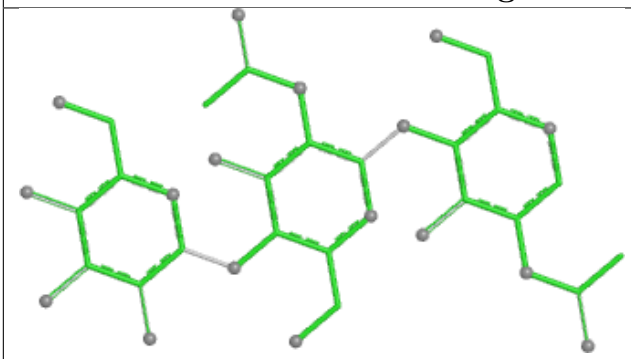


Torsions

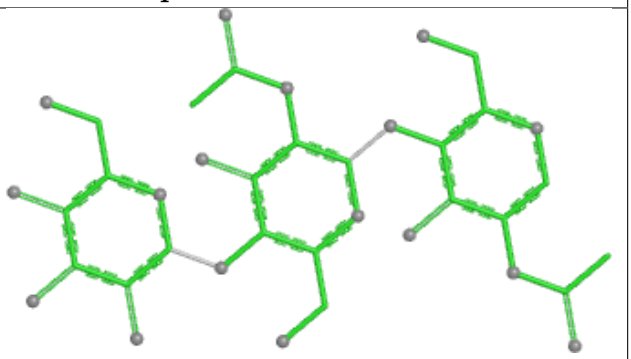


Rings

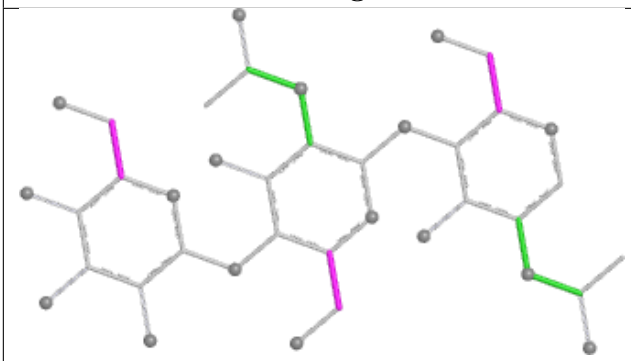
Oligosaccharide Chain p



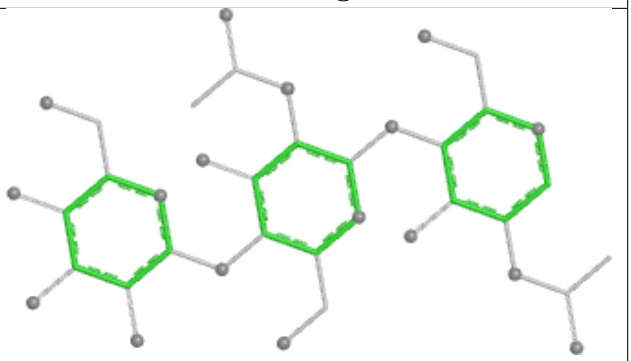
Bond lengths



Bond angles

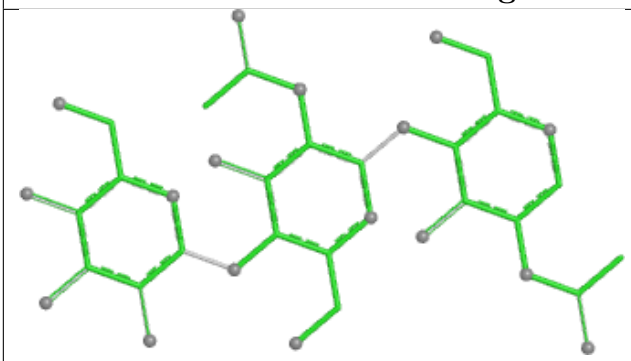


Torsions

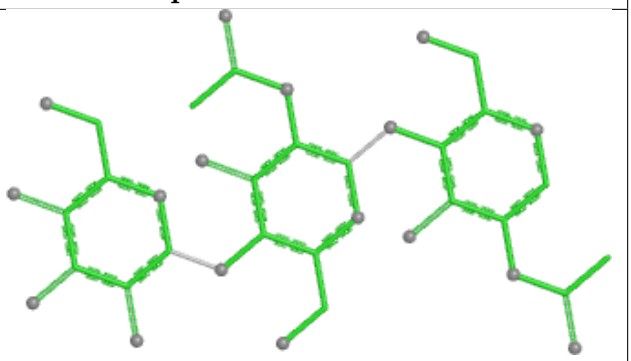


Rings

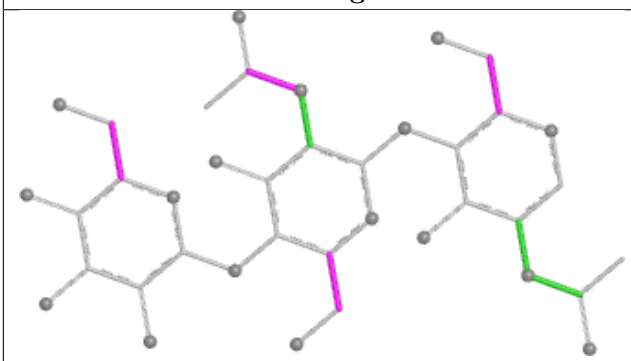
Oligosaccharide Chain q



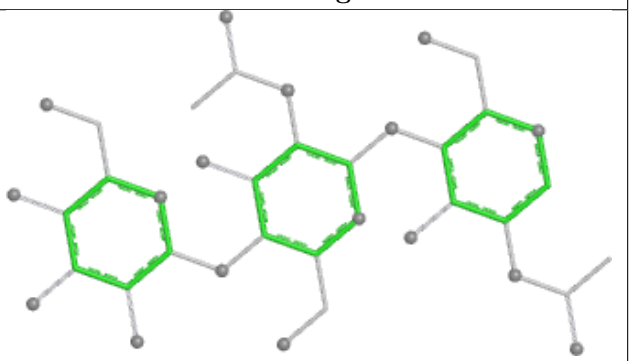
Bond lengths



Bond angles

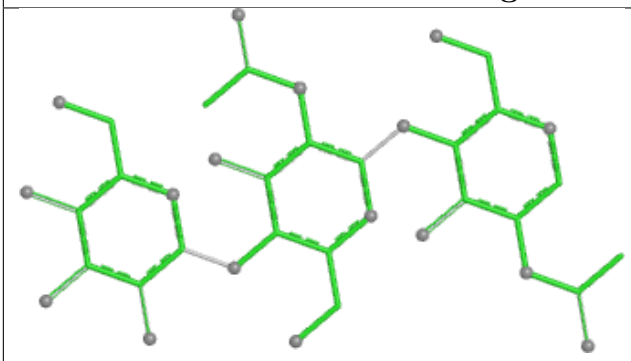


Torsions

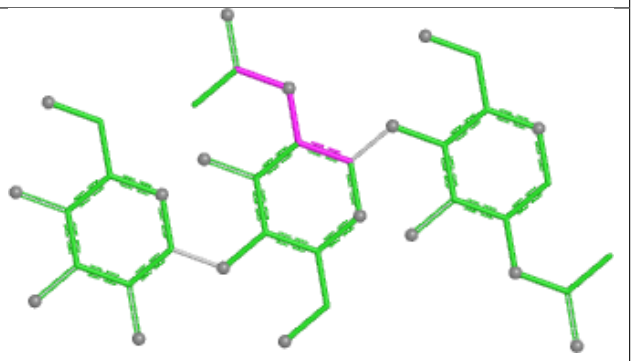


Rings

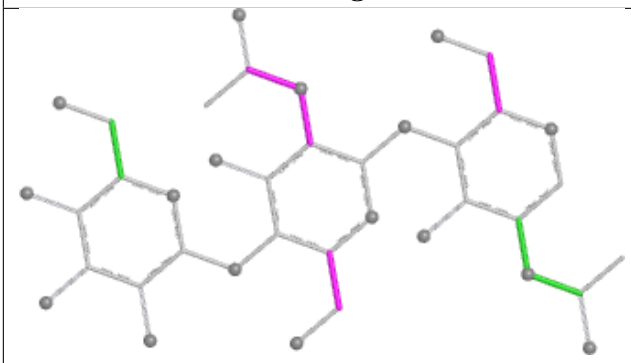
Oligosaccharide Chain r



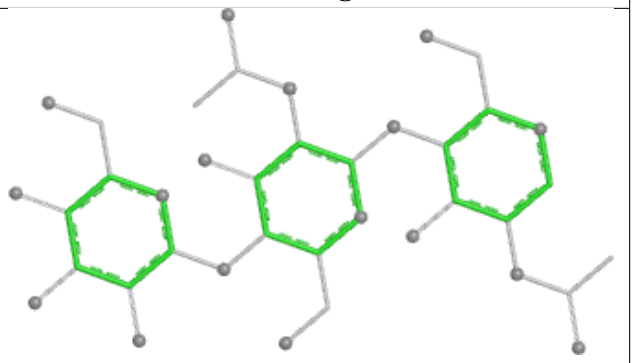
Bond lengths



Bond angles

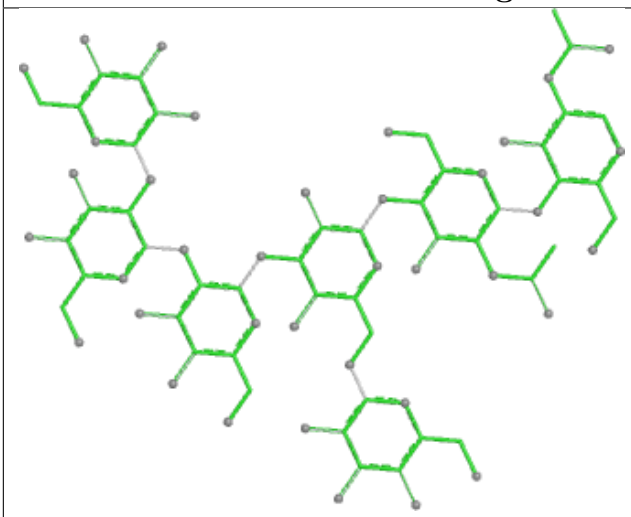


Torsions

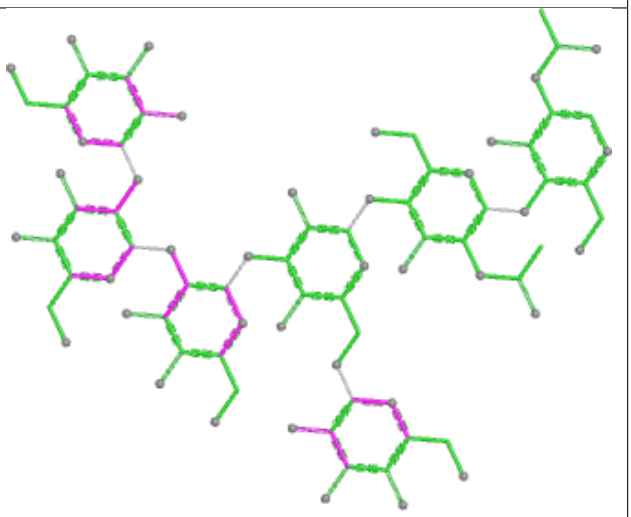


Rings

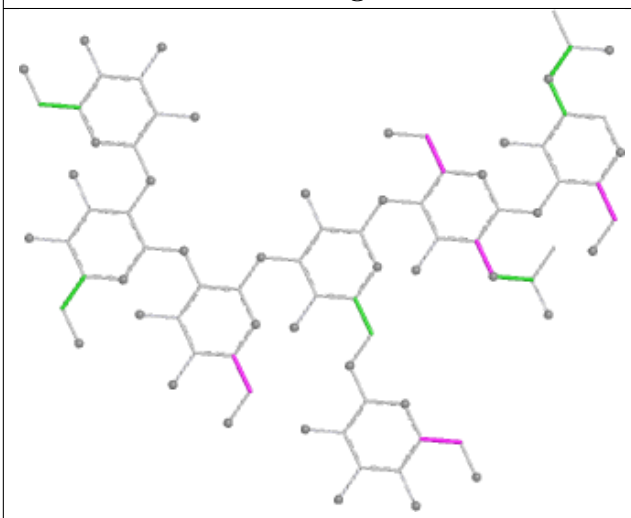
Oligosaccharide Chain P



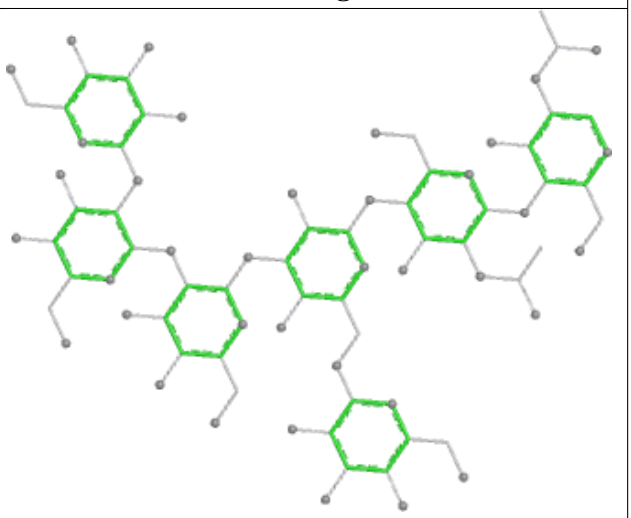
Bond lengths



Bond angles

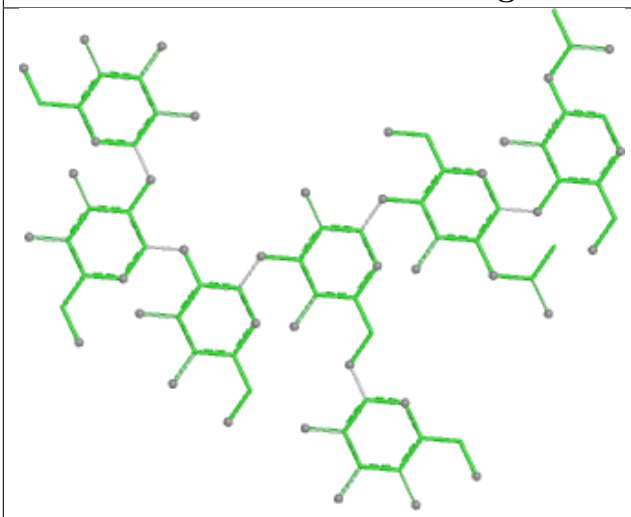


Torsions

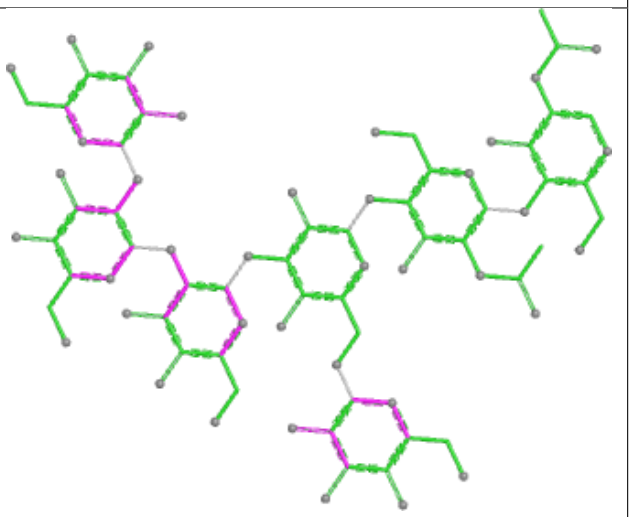


Rings

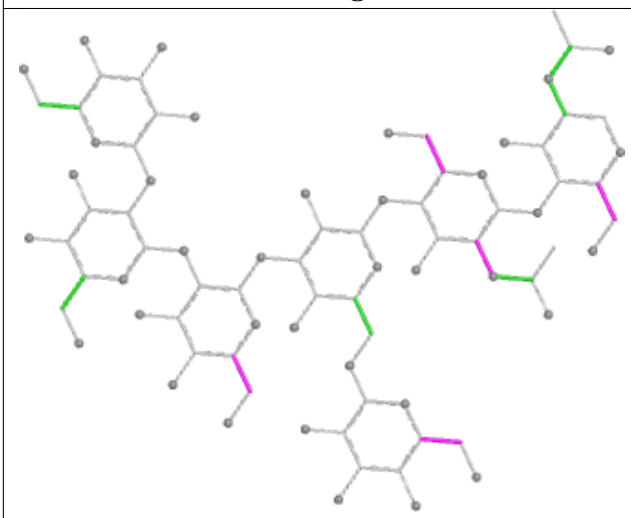
Oligosaccharide Chain b



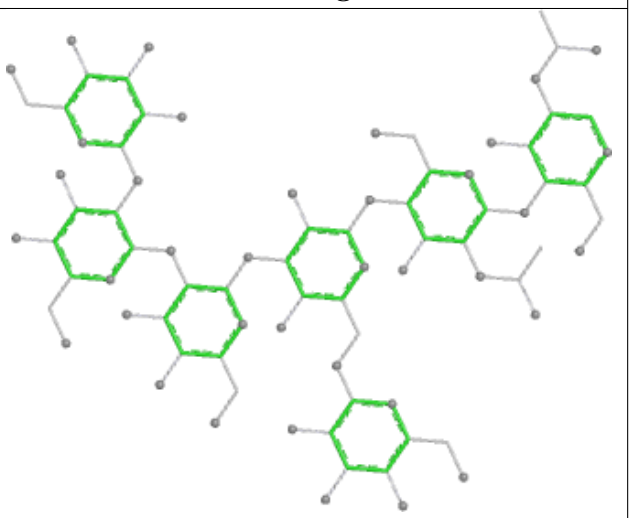
Bond lengths



Bond angles

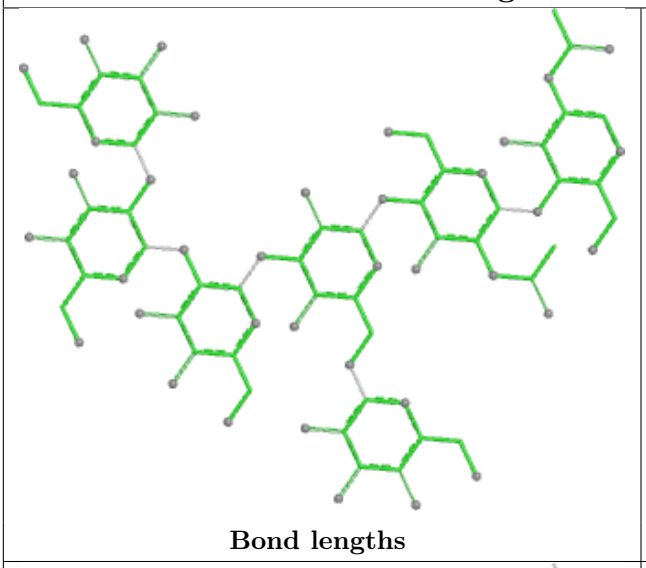


Torsions

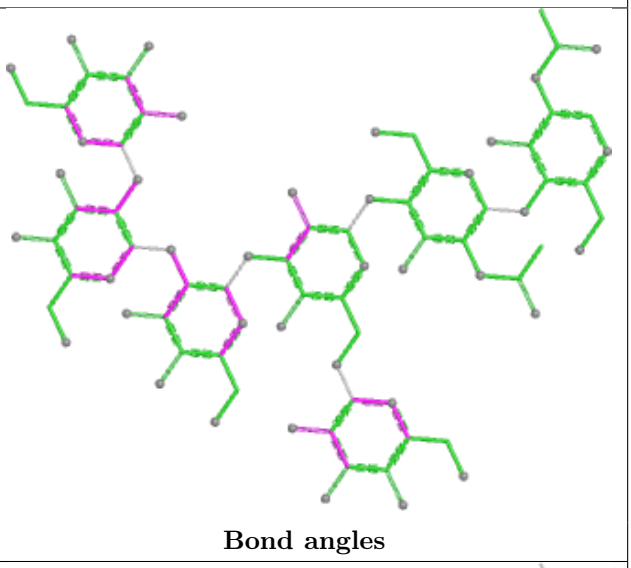


Rings

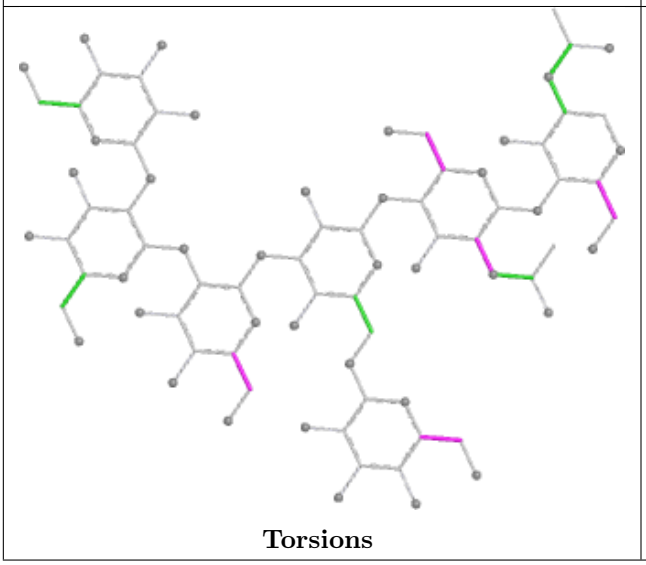
Oligosaccharide Chain n



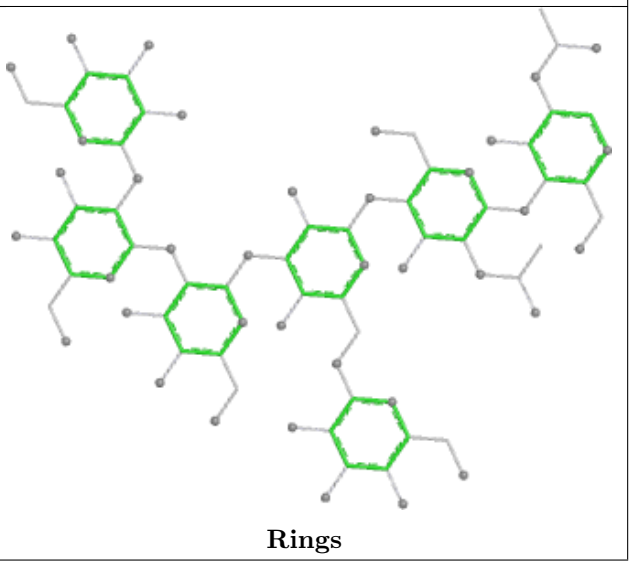
Bond lengths



Bond angles



Torsions



Rings

5.6 Ligand geometry

21 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
9	NAG	C	605	1	14,14,15	0.19	0	17,19,21	0.49	0
9	NAG	C	601	1	14,14,15	0.41	0	17,19,21	0.38	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
9	NAG	A	606	1	14,14,15	0.25	0	17,19,21	0.46	0
9	NAG	E	604	1	14,14,15	0.31	0	17,19,21	0.50	0
9	NAG	A	602	1	14,14,15	0.18	0	17,19,21	0.45	0
9	NAG	A	605	1	14,14,15	0.18	0	17,19,21	0.49	0
9	NAG	M	1001	4	14,14,15	0.20	0	17,19,21	0.46	0
9	NAG	E	603	1	14,14,15	0.26	0	17,19,21	0.45	0
9	NAG	C	606	1	14,14,15	0.25	0	17,19,21	0.48	0
9	NAG	A	601	1	14,14,15	0.39	0	17,19,21	0.37	0
9	NAG	C	602	1	14,14,15	0.19	0	17,19,21	0.45	0
9	NAG	C	604	1	14,14,15	0.32	0	17,19,21	0.50	0
9	NAG	L	1001	4	14,14,15	0.20	0	17,19,21	0.46	0
9	NAG	E	606	1	14,14,15	0.23	0	17,19,21	0.48	0
9	NAG	C	603	1	14,14,15	0.26	0	17,19,21	0.44	0
9	NAG	A	604	1	14,14,15	0.32	0	17,19,21	0.50	0
9	NAG	A	603	1	14,14,15	0.25	0	17,19,21	0.45	0
9	NAG	E	605	1	14,14,15	0.18	0	17,19,21	0.47	0
9	NAG	N	1001	4	14,14,15	0.22	0	17,19,21	0.45	0
9	NAG	E	601	1	14,14,15	0.40	0	17,19,21	0.37	0
9	NAG	E	602	1	14,14,15	0.20	0	17,19,21	0.46	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
9	NAG	C	605	1	-	2/6/23/26	0/1/1/1
9	NAG	C	601	1	-	3/6/23/26	0/1/1/1
9	NAG	A	606	1	-	1/6/23/26	0/1/1/1
9	NAG	E	604	1	-	0/6/23/26	0/1/1/1
9	NAG	A	602	1	-	2/6/23/26	0/1/1/1
9	NAG	A	605	1	-	2/6/23/26	0/1/1/1
9	NAG	M	1001	4	-	0/6/23/26	0/1/1/1
9	NAG	E	603	1	-	2/6/23/26	0/1/1/1
9	NAG	C	606	1	-	1/6/23/26	0/1/1/1
9	NAG	A	601	1	-	3/6/23/26	0/1/1/1
9	NAG	C	602	1	-	2/6/23/26	0/1/1/1
9	NAG	C	604	1	-	0/6/23/26	0/1/1/1
9	NAG	L	1001	4	-	0/6/23/26	0/1/1/1
9	NAG	E	606	1	-	1/6/23/26	0/1/1/1
9	NAG	C	603	1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	NAG	A	604	1	-	0/6/23/26	0/1/1/1
9	NAG	A	603	1	-	2/6/23/26	0/1/1/1
9	NAG	E	605	1	-	2/6/23/26	0/1/1/1
9	NAG	N	1001	4	-	0/6/23/26	0/1/1/1
9	NAG	E	601	1	-	3/6/23/26	0/1/1/1
9	NAG	E	602	1	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (30) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	C	602	NAG	O5-C5-C6-O6
9	E	602	NAG	O5-C5-C6-O6
9	A	603	NAG	C4-C5-C6-O6
9	C	603	NAG	C4-C5-C6-O6
9	E	603	NAG	C4-C5-C6-O6
9	A	605	NAG	O5-C5-C6-O6
9	C	605	NAG	O5-C5-C6-O6
9	E	605	NAG	O5-C5-C6-O6
9	A	602	NAG	O5-C5-C6-O6
9	E	603	NAG	O5-C5-C6-O6
9	C	603	NAG	O5-C5-C6-O6
9	E	605	NAG	C4-C5-C6-O6
9	A	603	NAG	O5-C5-C6-O6
9	A	602	NAG	C4-C5-C6-O6
9	E	602	NAG	C4-C5-C6-O6
9	C	602	NAG	C4-C5-C6-O6
9	C	605	NAG	C4-C5-C6-O6
9	A	605	NAG	C4-C5-C6-O6
9	A	601	NAG	C8-C7-N2-C2
9	A	601	NAG	O7-C7-N2-C2
9	C	601	NAG	C8-C7-N2-C2
9	C	601	NAG	O7-C7-N2-C2
9	E	601	NAG	C8-C7-N2-C2
9	E	601	NAG	O7-C7-N2-C2
9	A	606	NAG	O5-C5-C6-O6
9	C	606	NAG	O5-C5-C6-O6
9	E	601	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
9	A	601	NAG	O5-C5-C6-O6
9	E	606	NAG	O5-C5-C6-O6
9	C	601	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.

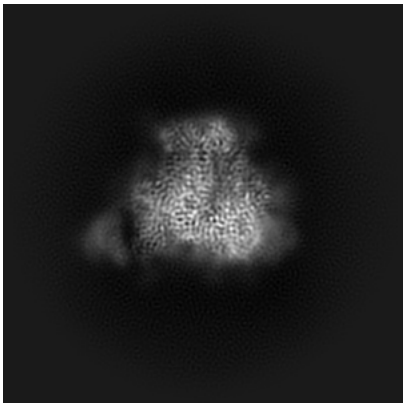
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-24362. These allow visual inspection of the internal detail of the map and identification of artifacts.

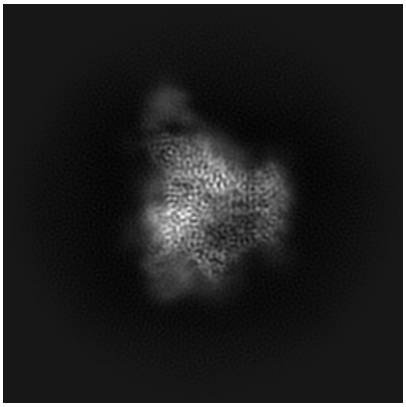
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

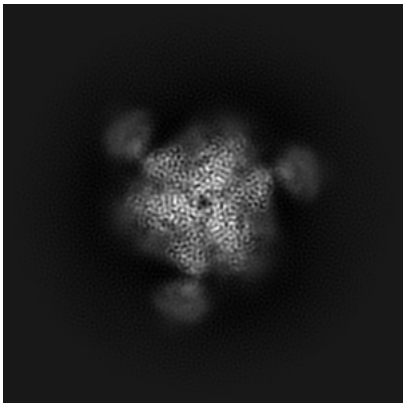
6.1.1 Primary map



X



Y

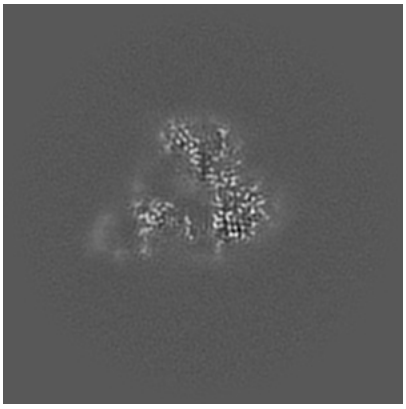


Z

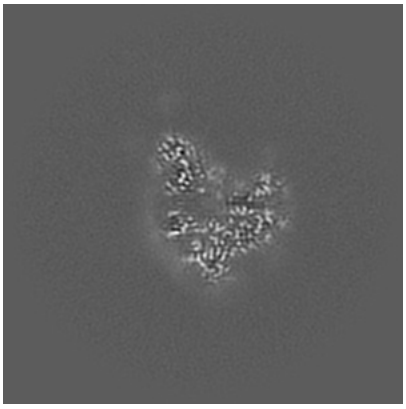
The images above show the map projected in three orthogonal directions.

6.2 Central slices

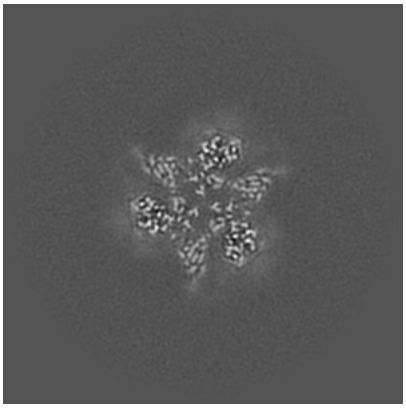
6.2.1 Primary map



X Index: 150



Y Index: 150

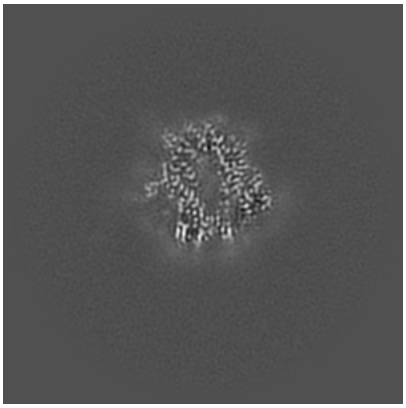


Z Index: 150

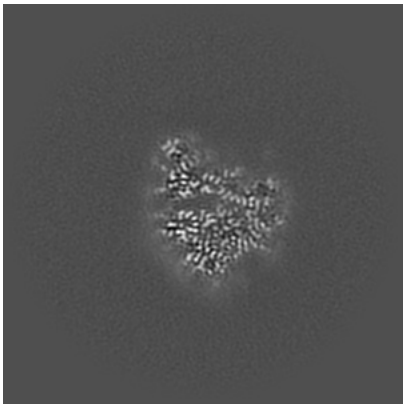
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

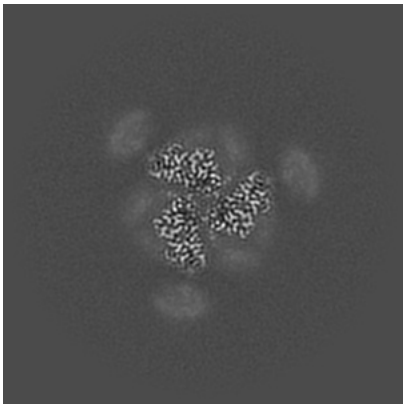
6.3.1 Primary map



X Index: 161



Y Index: 145

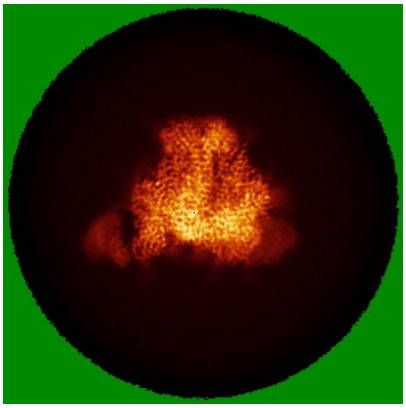


Z Index: 131

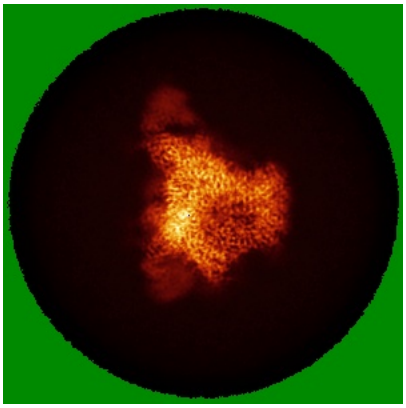
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

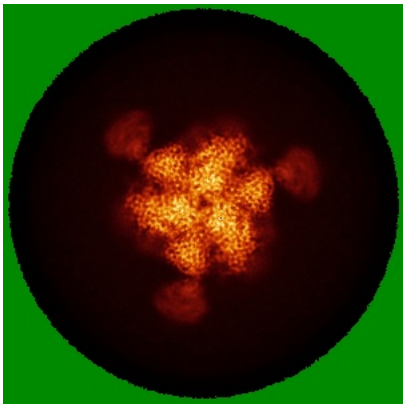
6.4.1 Primary map



X



Y



Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.68. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

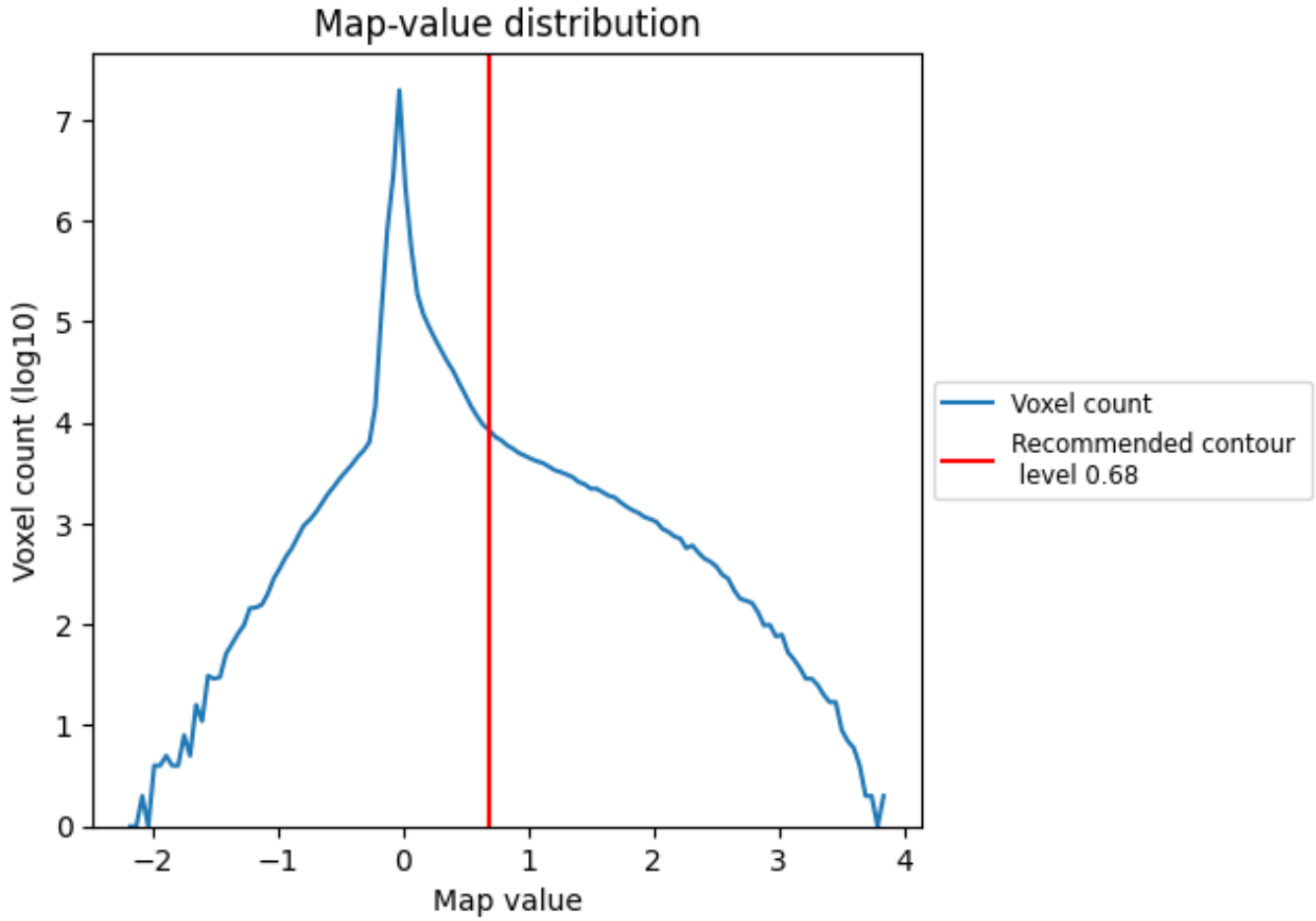
6.6 Mask visualisation (i)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis

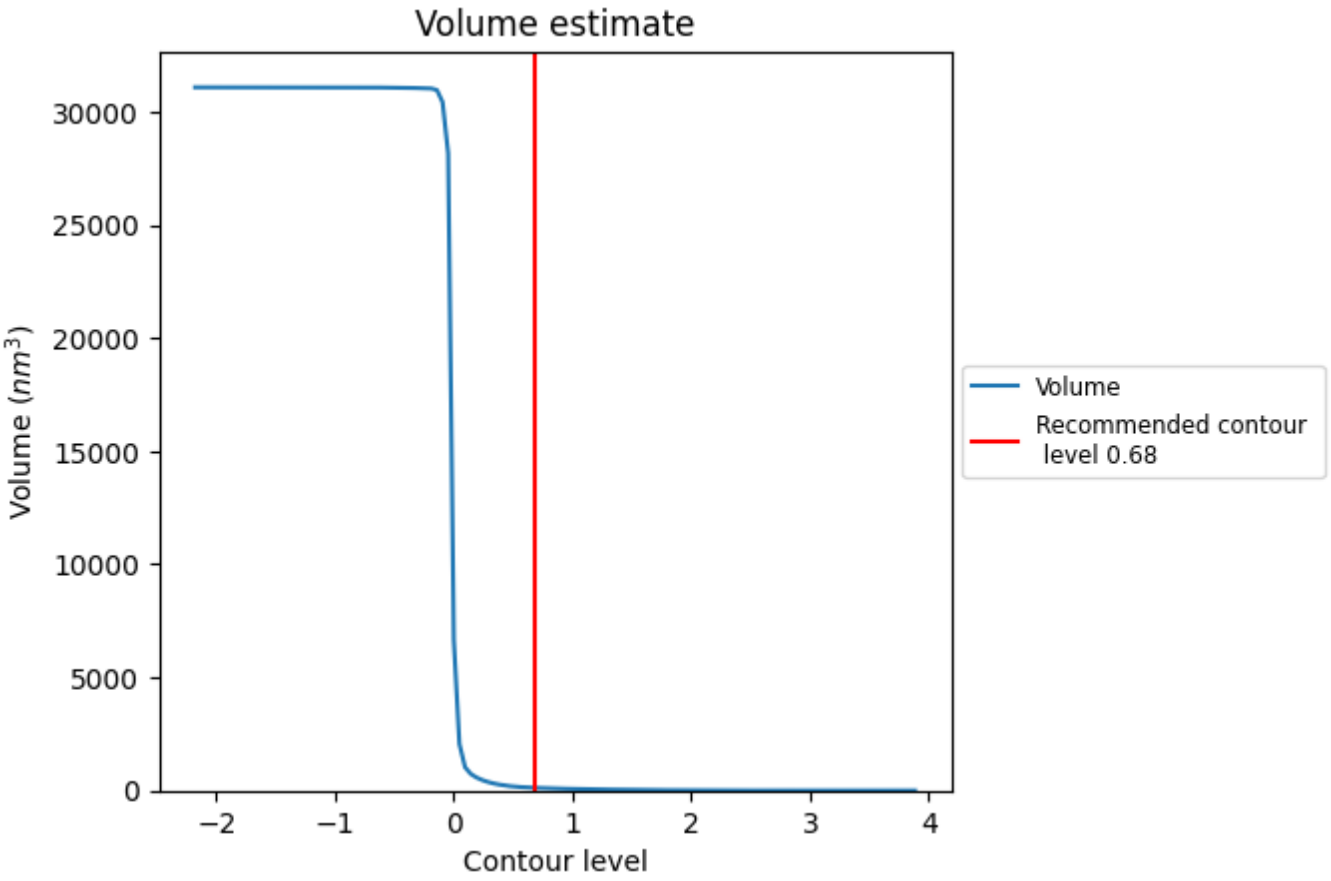
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

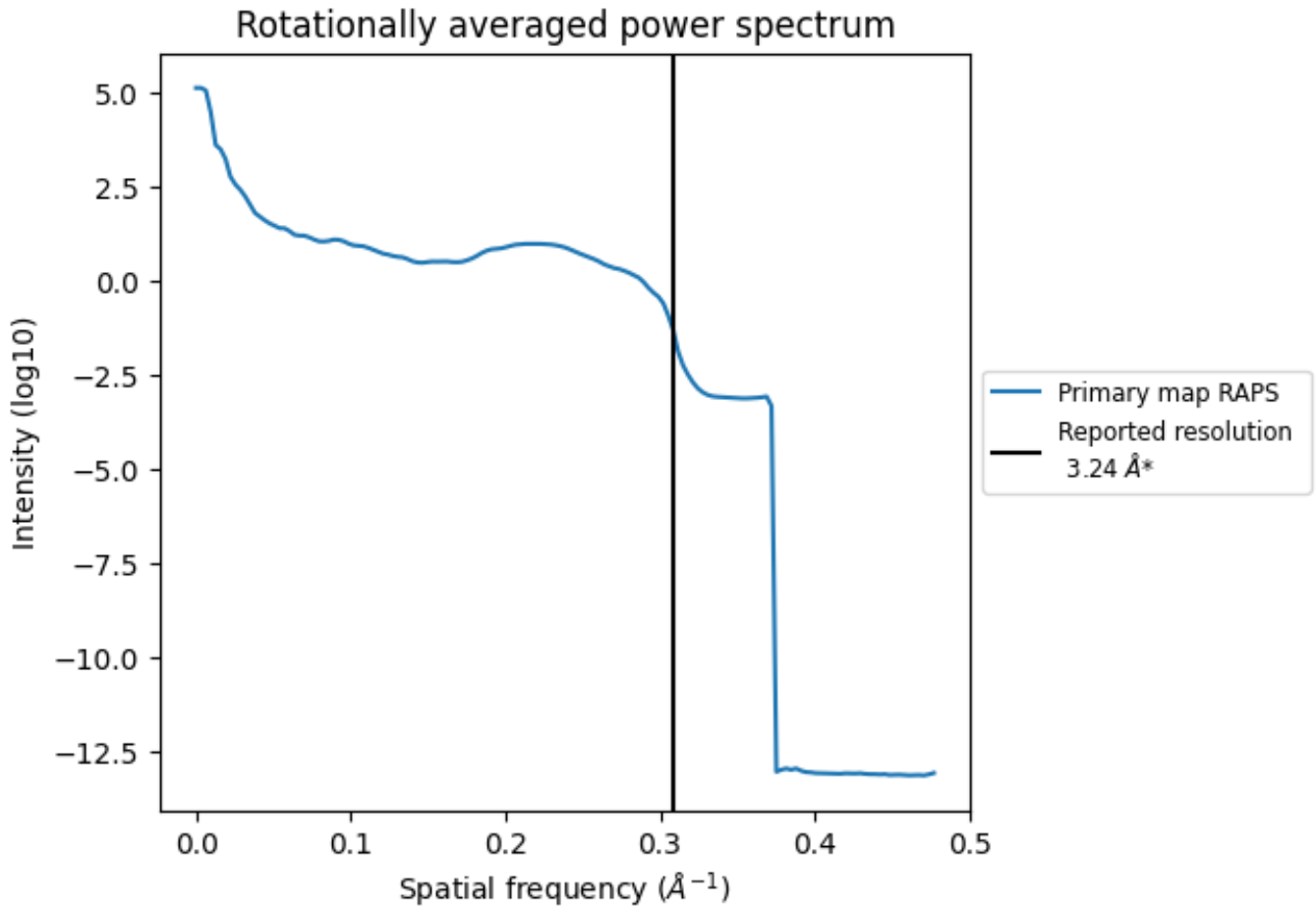
7.2 Volume estimate



The volume at the recommended contour level is 122 nm^3; this corresponds to an approximate mass of 110 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum (i)



*Reported resolution corresponds to spatial frequency of 0.309 $Å^{-1}$

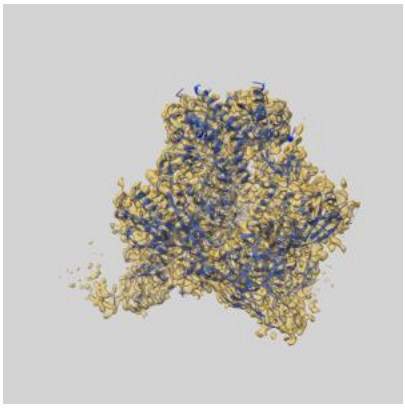
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

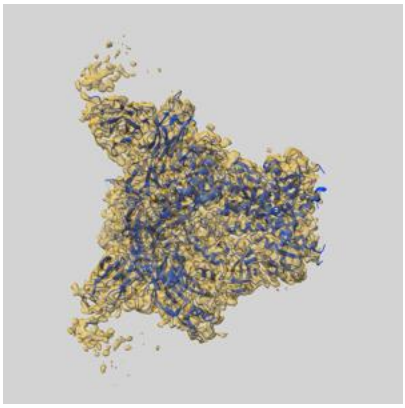
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-24362 and PDB model 7RAI. Per-residue inclusion information can be found in section 3 on page 11.

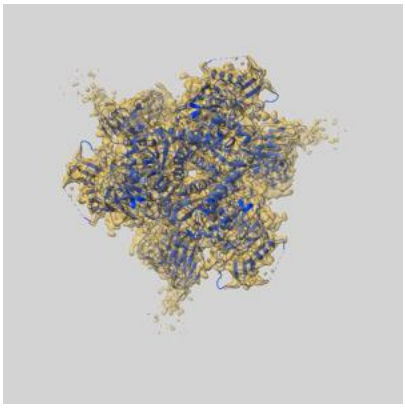
9.1 Map-model overlay



X



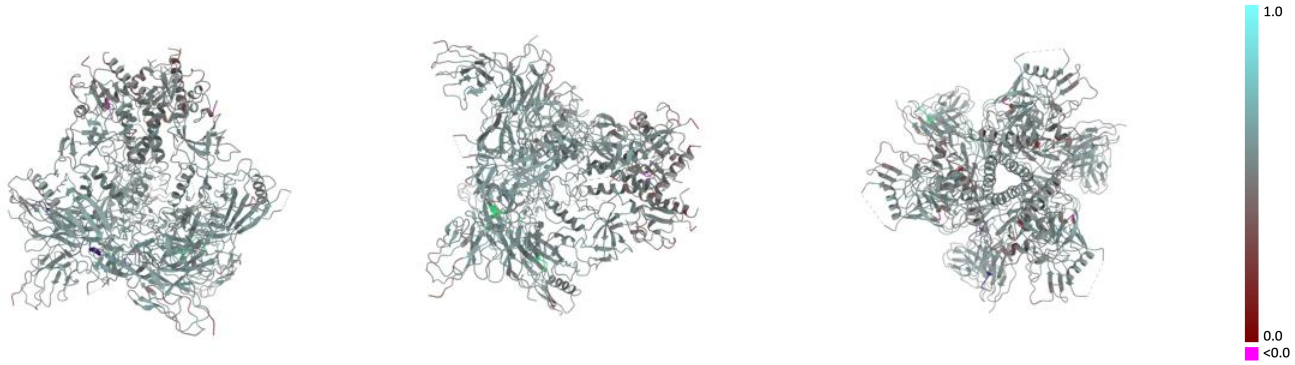
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.68 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

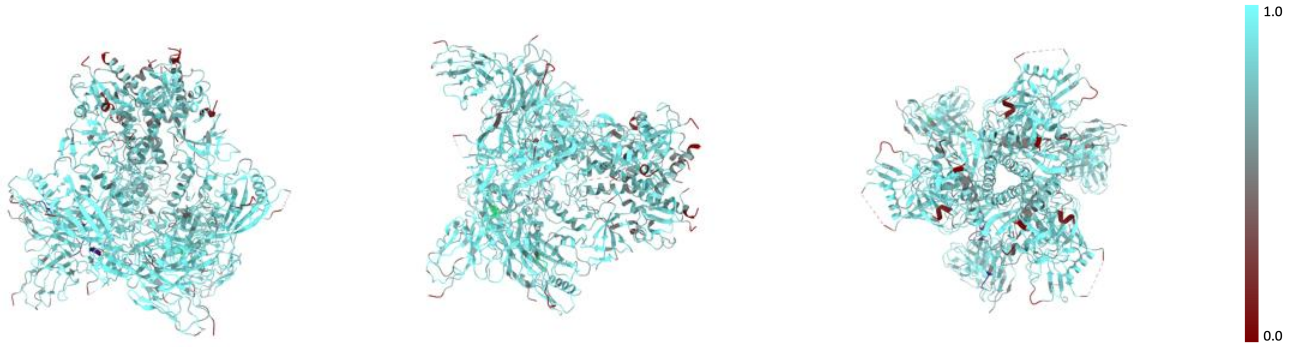
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

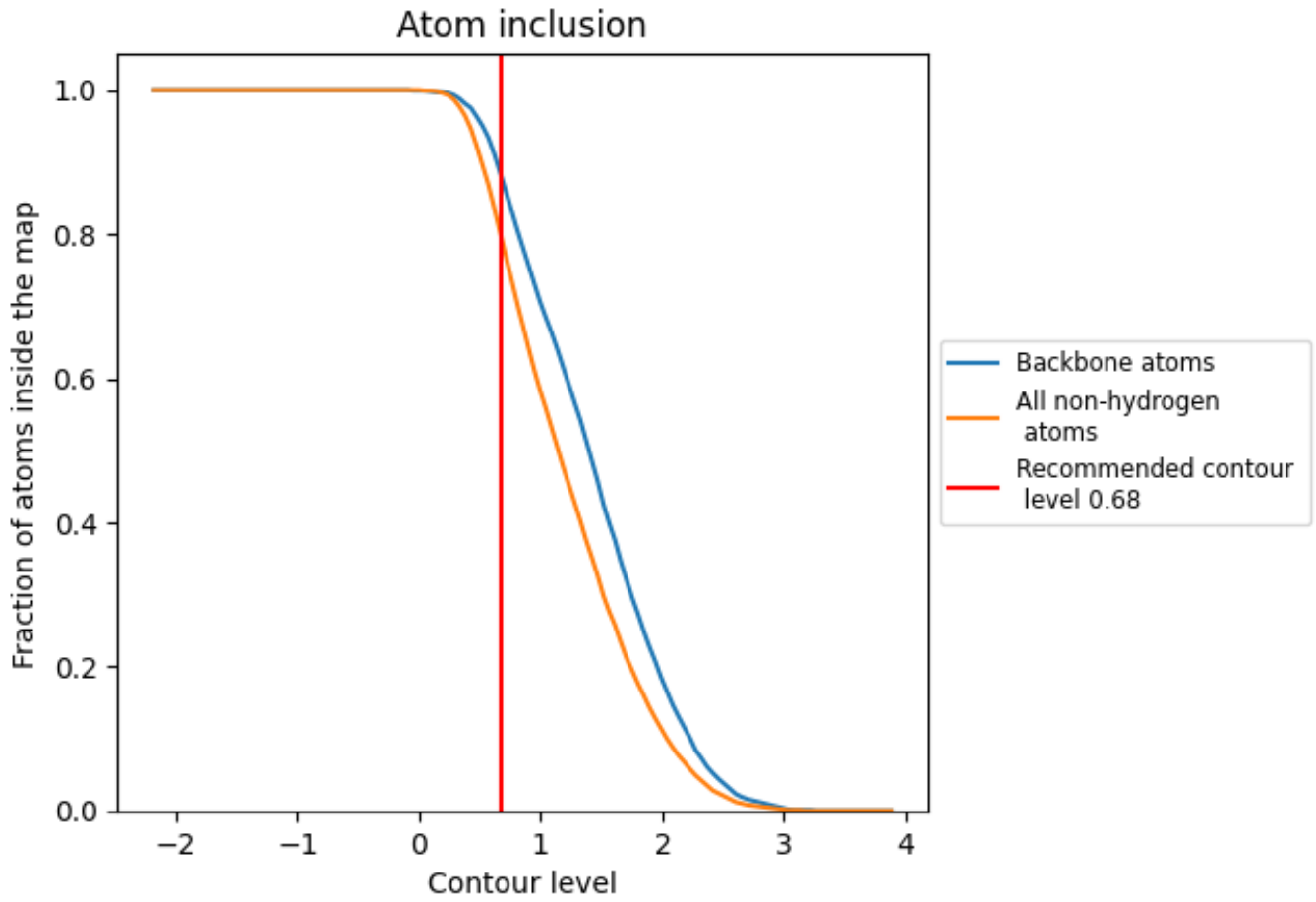
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.68).

9.4 Atom inclusion (i)



At the recommended contour level, 88% of all backbone atoms, 79% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.68) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7930	0.5290
A	0.8350	0.5430
B	0.7320	0.4880
C	0.8350	0.5420
D	0.7400	0.4880
E	0.8360	0.5410
F	0.7310	0.4910
G	0.5740	0.4720
H	0.8190	0.5560
I	0.8220	0.5510
J	0.8190	0.5520
K	0.4290	0.4530
L	0.8060	0.5210
M	0.8020	0.5220
N	0.8030	0.5230
O	0.4620	0.4880
P	0.6150	0.5150
Q	0.3330	0.3810
R	0.3850	0.3980
S	0.5900	0.5120
T	0.5640	0.4630
U	0.5710	0.4650
V	0.6790	0.5040
W	0.5000	0.4530
X	0.6790	0.5170
Y	0.5740	0.4760
Z	0.4290	0.4430
a	0.4360	0.5100
b	0.6260	0.5130
c	0.3330	0.4040
d	0.3850	0.4060
e	0.6670	0.5040
f	0.5640	0.4680
g	0.6070	0.4590
h	0.6790	0.5150

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Chain	Atom inclusion	Q-score
i	0.5000	0.4800
j	0.6430	0.5200
k	0.5570	0.4780
l	0.4290	0.4510
m	0.4100	0.5030
n	0.6260	0.5210
o	0.3330	0.3950
p	0.4100	0.4030
q	0.6150	0.5040
r	0.5640	0.4590
s	0.5710	0.4720
t	0.6790	0.4990
u	0.4640	0.4700
v	0.6430	0.5210