Full wwPDB EM Validation Report ⓘ

Jun 2, 2026 – 12:20 PM EDT

PDB ID	:	9YHS / pdb_00009yhs
EMDB ID	:	EMD-72972
Title	:	AM12-340 Fab in complex with HIV-1 Env 5MUT-3fill SOSIP
Authors	:	Gristick, H.B.; Gavor, E.; Bjorkman, P.J.
Deposited on	:	2025-09-30
Resolution	:	4.30 Å(reported)

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 ⓘ 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 ⓘ) were used in the production of this report:

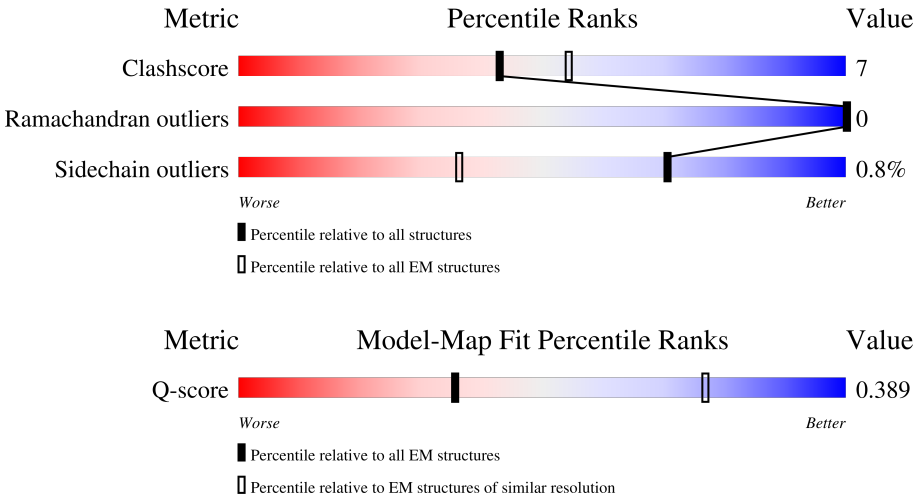
EMDB validation analysis	:	0.0.1.dev132
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

1 Overall quality at a glance

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

The reported resolution of this entry is 4.30 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	4585 (3.80 - 4.80)

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	H	129	77% 22%
1	J	129	77% 22%
1	M	129	72% 27%
2	K	112	86% 14%

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Mol	Chain	Length	Quality of chain
2	L	112	86% 14%
2	N	112	87% 13%
3	A	153	69% 10% 21%
3	B	153	69% 10% 21%
3	C	153	71% 8% 21%
4	E	479	77% 15% 8%
4	F	479	76% 15% 8%
4	G	479	78% 14% 8%
5	D	3	33% 67%
5	X	3	33% 67%
5	i	3	33% 67%
6	I	2	50% 50%
6	O	2	100%
6	Q	2	100%
6	R	2	100%
6	U	2	100%
6	V	2	50% 50%
6	W	2	100%
6	Y	2	50% 50%
6	Z	2	100%
6	b	2	100%
6	c	2	100%
6	f	2	100%
6	g	2	50% 50%
6	h	2	100%

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Mol	Chain	Length	Quality of chain
6	j	2	50% 50%
6	k	2	100%
6	m	2	100%
6	n	2	100%
6	q	2	100%
6	r	2	50% 50%
6	s	2	100%
7	P	5	100%
7	a	5	60% 40%
7	l	5	60% 40%
8	S	5	60% 20% 20%
8	d	5	60% 20% 20%
8	o	5	60% 20% 20%
9	T	6	33% 50% 17%
9	e	6	33% 50% 17%
9	p	6	67% 17% 17%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
10	NAG	E	602	X	-	-	-
10	NAG	F	602	X	-	-	-
10	NAG	G	602	X	-	-	-
6	NAG	R	1	X	-	-	-
6	NAG	U	1	X	-	-	-
6	NAG	c	1	X	-	-	-
6	NAG	f	1	X	-	-	-
6	NAG	n	1	X	-	-	-
6	NAG	q	1	X	-	-	-

2 Entry composition (i)

There are 10 unique types of molecules in this entry. The entry contains 20691 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 AM12-340 Fab heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	H	128	Total	C	N	O	S	0	0
			1001	639	168	191	3		
1	J	128	Total	C	N	O	S	0	0
			1001	639	168	191	3		
1	M	128	Total	C	N	O	S	0	0
			1001	639	168	191	3		

- Molecule 2 is a protein called AM12-340 Fab light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	L	112	Total	C	N	O	S	0	0
			861	541	151	166	3		
2	K	112	Total	C	N	O	S	0	0
			861	541	151	166	3		
2	N	112	Total	C	N	O	S	0	0
			861	541	151	166	3		

- Molecule 3 is a protein called BG505 MD39 SOSIP gp41.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	B	121	Total	C	N	O	S	0	0
			956	600	165	185	6		
3	C	121	Total	C	N	O	S	0	0
			956	600	165	185	6		
3	A	121	Total	C	N	O	S	0	0
			956	600	165	185	6		

There are 21 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	519	SER	PHE	conflict	UNP Q2N0S6
B	559	PRO	ILE	conflict	UNP Q2N0S6
B	561	PRO	ALA	conflict	UNP Q2N0S6

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Chain	Residue	Modelled	Actual	Comment	Reference
B	568	ASP	LEU	conflict	UNP Q2N0S6
B	570	HIS	VAL	conflict	UNP Q2N0S6
B	585	HIS	ARG	conflict	UNP Q2N0S6
B	605	CYS	THR	conflict	UNP Q2N0S6
C	519	SER	PHE	conflict	UNP Q2N0S6
C	559	PRO	ILE	conflict	UNP Q2N0S6
C	561	PRO	ALA	conflict	UNP Q2N0S6
C	568	ASP	LEU	conflict	UNP Q2N0S6
C	570	HIS	VAL	conflict	UNP Q2N0S6
C	585	HIS	ARG	conflict	UNP Q2N0S6
C	605	CYS	THR	conflict	UNP Q2N0S6
A	519	SER	PHE	conflict	UNP Q2N0S6
A	559	PRO	ILE	conflict	UNP Q2N0S6
A	561	PRO	ALA	conflict	UNP Q2N0S6
A	568	ASP	LEU	conflict	UNP Q2N0S6
A	570	HIS	VAL	conflict	UNP Q2N0S6
A	585	HIS	ARG	conflict	UNP Q2N0S6
A	605	CYS	THR	conflict	UNP Q2N0S6

- Molecule 4 is a protein called Envelope glycoprotein gp120.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	F	442	Total	C	N	O	S	0	0
			3482	2185	615	653	29		
4	G	442	Total	C	N	O	S	0	0
			3482	2185	615	653	29		
4	E	442	Total	C	N	O	S	0	0
			3482	2185	615	653	29		

There are 69 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	106	GLU	THR	conflict	UNP Q2N0S6
F	134	TYR	VAL	conflict	UNP Q2N0S6
F	136	PRO	ASN	conflict	UNP Q2N0S6
F	138	LEU	ILE	conflict	UNP Q2N0S6
F	140	ASN	ASP	conflict	UNP Q2N0S6
F	201	CYS	ILE	conflict	UNP Q2N0S6
F	230	ASN	ASP	conflict	UNP Q2N0S6
F	232	THR	LYS	conflict	UNP Q2N0S6
F	241	ASN	SER	conflict	UNP Q2N0S6
F	271	ILE	MET	conflict	UNP Q2N0S6

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Chain	Residue	Modelled	Actual	Comment	Reference
F	288	LEU	PHE	conflict	UNP Q2N0S6
F	304	VAL	ARG	conflict	UNP Q2N0S6
F	319	TYR	ALA	conflict	UNP Q2N0S6
F	332	ASN	THR	conflict	UNP Q2N0S6
F	344	ASN	LYS	conflict	UNP Q2N0S6
F	346	SER	VAL	conflict	UNP Q2N0S6
F	363	GLN	ASN	conflict	UNP Q2N0S6
F	433	CYS	ALA	conflict	UNP Q2N0S6
F	501	CYS	ALA	conflict	UNP Q2N0S6
F	509	ARG	GLU	conflict	UNP Q2N0S6
F	510	ARG	LYS	conflict	UNP Q2N0S6
F	512	ARG	ALA	conflict	UNP Q2N0S6
F	513	ARG	VAL	conflict	UNP Q2N0S6
G	106	GLU	THR	conflict	UNP Q2N0S6
G	134	TYR	VAL	conflict	UNP Q2N0S6
G	136	PRO	ASN	conflict	UNP Q2N0S6
G	138	LEU	ILE	conflict	UNP Q2N0S6
G	140	ASN	ASP	conflict	UNP Q2N0S6
G	201	CYS	ILE	conflict	UNP Q2N0S6
G	230	ASN	ASP	conflict	UNP Q2N0S6
G	232	THR	LYS	conflict	UNP Q2N0S6
G	241	ASN	SER	conflict	UNP Q2N0S6
G	271	ILE	MET	conflict	UNP Q2N0S6
G	288	LEU	PHE	conflict	UNP Q2N0S6
G	304	VAL	ARG	conflict	UNP Q2N0S6
G	319	TYR	ALA	conflict	UNP Q2N0S6
G	332	ASN	THR	conflict	UNP Q2N0S6
G	344	ASN	LYS	conflict	UNP Q2N0S6
G	346	SER	VAL	conflict	UNP Q2N0S6
G	363	GLN	ASN	conflict	UNP Q2N0S6
G	433	CYS	ALA	conflict	UNP Q2N0S6
G	501	CYS	ALA	conflict	UNP Q2N0S6
G	509	ARG	GLU	conflict	UNP Q2N0S6
G	510	ARG	LYS	conflict	UNP Q2N0S6
G	512	ARG	ALA	conflict	UNP Q2N0S6
G	513	ARG	VAL	conflict	UNP Q2N0S6
E	106	GLU	THR	conflict	UNP Q2N0S6
E	134	TYR	VAL	conflict	UNP Q2N0S6
E	136	PRO	ASN	conflict	UNP Q2N0S6
E	138	LEU	ILE	conflict	UNP Q2N0S6
E	140	ASN	ASP	conflict	UNP Q2N0S6
E	201	CYS	ILE	conflict	UNP Q2N0S6

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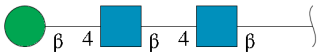
Chain	Residue	Modelled	Actual	Comment	Reference
E	230	ASN	ASP	conflict	UNP Q2N0S6
E	232	THR	LYS	conflict	UNP Q2N0S6
E	241	ASN	SER	conflict	UNP Q2N0S6
E	271	ILE	MET	conflict	UNP Q2N0S6
E	288	LEU	PHE	conflict	UNP Q2N0S6
E	304	VAL	ARG	conflict	UNP Q2N0S6
E	319	TYR	ALA	conflict	UNP Q2N0S6
E	332	ASN	THR	conflict	UNP Q2N0S6
E	344	ASN	LYS	conflict	UNP Q2N0S6
E	346	SER	VAL	conflict	UNP Q2N0S6
E	363	GLN	ASN	conflict	UNP Q2N0S6
E	433	CYS	ALA	conflict	UNP Q2N0S6
E	501	CYS	ALA	conflict	UNP Q2N0S6
E	509	ARG	GLU	conflict	UNP Q2N0S6
E	510	ARG	LYS	conflict	UNP Q2N0S6
E	512	ARG	ALA	conflict	UNP Q2N0S6
E	513	ARG	VAL	conflict	UNP Q2N0S6

- Molecule 5 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



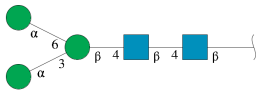
Mol	Chain	Residues	Atoms	AltConf	Trace
5	D	3	Total C N O 39 22 2 15	0	0
5	X	3	Total C N O 39 22 2 15	0	0
5	i	3	Total C N O 39 22 2 15	0	0

- 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	I	2	Total	C	N	O	0	0
			28	16	2	10		
6	O	2	Total	C	N	O	0	0
			28	16	2	10		
6	Q	2	Total	C	N	O	0	0
			28	16	2	10		
6	R	2	Total	C	N	O	0	0
			28	16	2	10		
6	U	2	Total	C	N	O	0	0
			28	16	2	10		
6	V	2	Total	C	N	O	0	0
			28	16	2	10		
6	W	2	Total	C	N	O	0	0
			28	16	2	10		
6	Y	2	Total	C	N	O	0	0
			28	16	2	10		
6	Z	2	Total	C	N	O	0	0
			28	16	2	10		
6	b	2	Total	C	N	O	0	0
			28	16	2	10		
6	c	2	Total	C	N	O	0	0
			28	16	2	10		
6	f	2	Total	C	N	O	0	0
			28	16	2	10		
6	g	2	Total	C	N	O	0	0
			28	16	2	10		
6	h	2	Total	C	N	O	0	0
			28	16	2	10		
6	j	2	Total	C	N	O	0	0
			28	16	2	10		
6	k	2	Total	C	N	O	0	0
			28	16	2	10		
6	m	2	Total	C	N	O	0	0
			28	16	2	10		
6	n	2	Total	C	N	O	0	0
			28	16	2	10		
6	q	2	Total	C	N	O	0	0
			28	16	2	10		
6	r	2	Total	C	N	O	0	0
			28	16	2	10		
6	s	2	Total	C	N	O	0	0
			28	16	2	10		

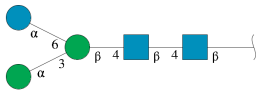
- Molecule 7 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyran

ose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-a cetamido-2-deoxy-beta-D-glucopyranose.



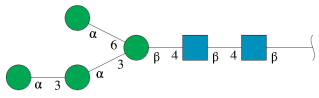
Mol	Chain	Residues	Atoms				AltConf	Trace
7	P	5	Total	C	N	O	0	0
			61	34	2	25		
7	a	5	Total	C	N	O	0	0
			61	34	2	25		
7	l	5	Total	C	N	O	0	0
			61	34	2	25		

- Molecule 8 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-glucopyrano se-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-ac etamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
8	S	5	Total	C	N	O	0	0
			61	34	2	25		
8	d	5	Total	C	N	O	0	0
			61	34	2	25		
8	o	5	Total	C	N	O	0	0
			61	34	2	25		

- Molecule 9 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-alpha-D-mannopyran ose-(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
9	T	6	Total	C	N	O	0	0
			72	40	2	30		
9	e	6	Total	C	N	O	0	0
			72	40	2	30		

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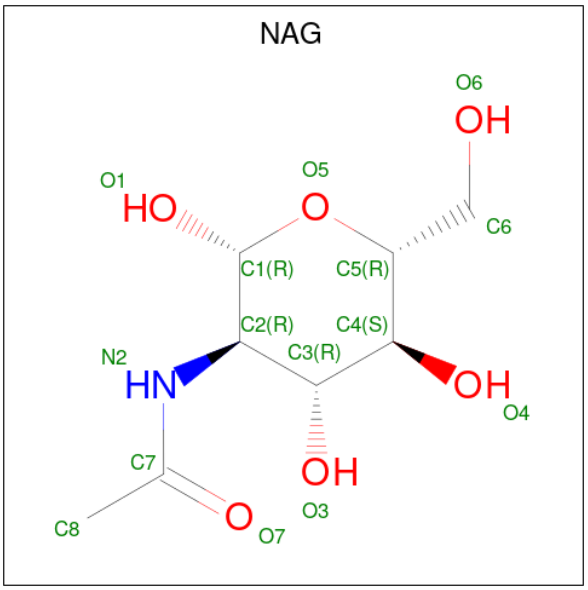
Mol	Chain	Residues	Atoms				AltConf	Trace
9	p	6	Total	C	N	O	0	0
			72	40	2	30		

- Molecule 10 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).



Mol	Chain	Residues	Atoms				AltConf
10	L	1	Total	C	N	O	0
			14	8	1	5	
10	K	1	Total	C	N	O	0
			14	8	1	5	
10	N	1	Total	C	N	O	0
			14	8	1	5	
10	B	1	Total	C	N	O	0
			14	8	1	5	
10	B	1	Total	C	N	O	0
			14	8	1	5	
10	B	1	Total	C	N	O	0
			14	8	1	5	
10	C	1	Total	C	N	O	0
			14	8	1	5	
10	C	1	Total	C	N	O	0
			14	8	1	5	
10	C	1	Total	C	N	O	0
			14	8	1	5	
10	F	1	Total	C	N	O	0
			14	8	1	5	

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Mol	Chain	Residues	Atoms	AltConf
10	F	1	Total C N O 14 8 1 5	0
10	F	1	Total C N O 14 8 1 5	0
10	F	1	Total C N O 14 8 1 5	0
10	F	1	Total C N O 14 8 1 5	0
10	F	1	Total C N O 14 8 1 5	0
10	F	1	Total C N O 14 8 1 5	0
10	F	1	Total C N O 14 8 1 5	0
10	G	1	Total C N O 14 8 1 5	0
10	G	1	Total C N O 14 8 1 5	0
10	G	1	Total C N O 14 8 1 5	0
10	G	1	Total C N O 14 8 1 5	0
10	G	1	Total C N O 14 8 1 5	0
10	G	1	Total C N O 14 8 1 5	0
10	G	1	Total C N O 14 8 1 5	0
10	G	1	Total C N O 14 8 1 5	0
10	A	1	Total C N O 14 8 1 5	0
10	A	1	Total C N O 14 8 1 5	0
10	A	1	Total C N O 14 8 1 5	0
10	E	1	Total C N O 14 8 1 5	0
10	E	1	Total C N O 14 8 1 5	0
10	E	1	Total C N O 14 8 1 5	0

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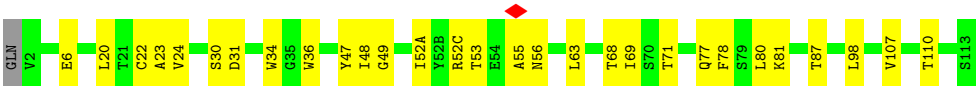
Mol	Chain	Residues	Atoms				AltConf
10	E	1	Total	C	N	O	0
			14	8	1	5	
10	E	1	Total	C	N	O	0
			14	8	1	5	
10	E	1	Total	C	N	O	0
			14	8	1	5	
10	E	1	Total	C	N	O	0
			14	8	1	5	
10	E	1	Total	C	N	O	0
			14	8	1	5	

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.

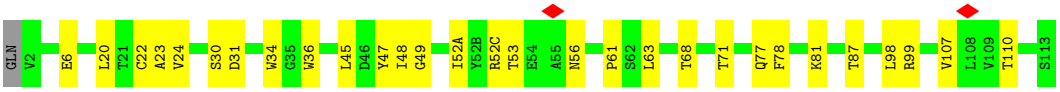
• Molecule 1: AM12-340 Fab heavy chain

Chain H:



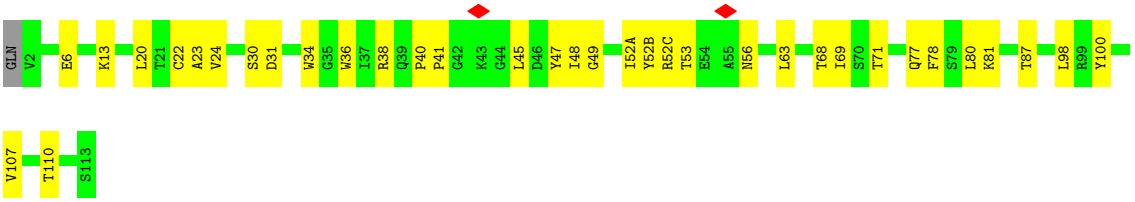
• Molecule 1: AM12-340 Fab heavy chain

Chain J:



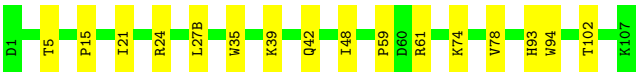
• Molecule 1: AM12-340 Fab heavy chain

Chain M:



• Molecule 2: AM12-340 Fab light chain

Chain L:

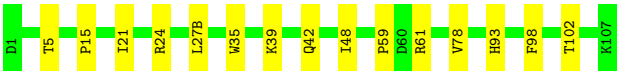


• Molecule 2: AM12-340 Fab light chain

Chain K:

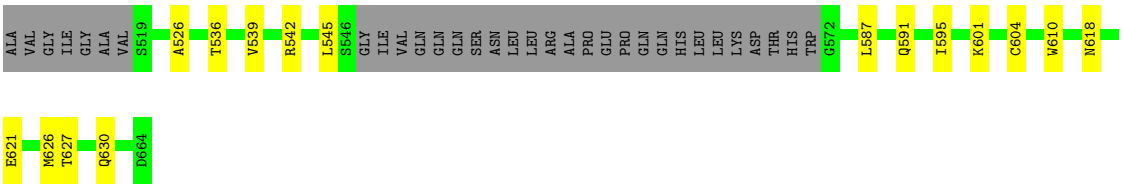
• Molecule 2: AM12-340 Fab light chain

Chain N:



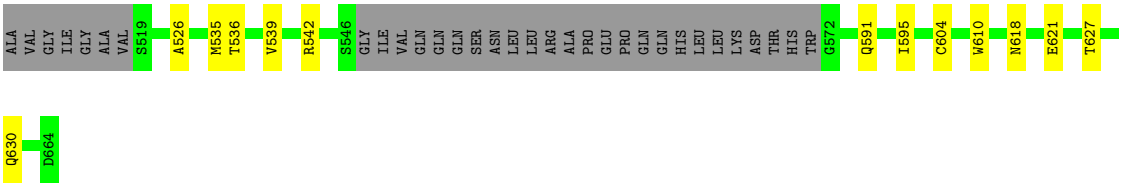
• Molecule 3: BG505 MD39 SOSIP gp41

Chain B:



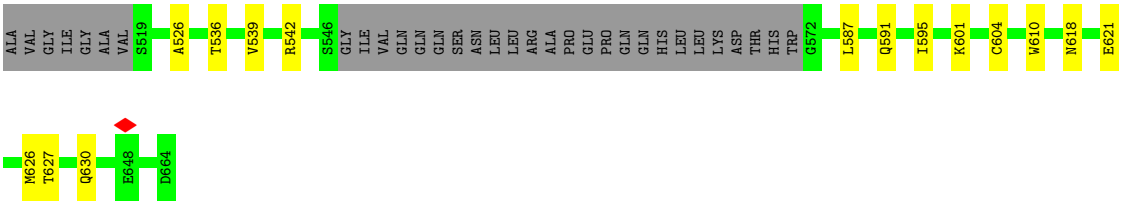
• Molecule 3: BG505 MD39 SOSIP gp41

Chain C:



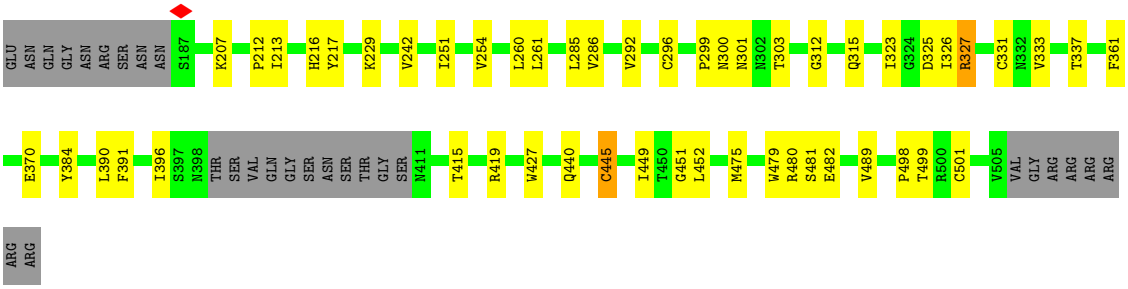
• Molecule 3: BG505 MD39 SOSIP gp41

Chain A:



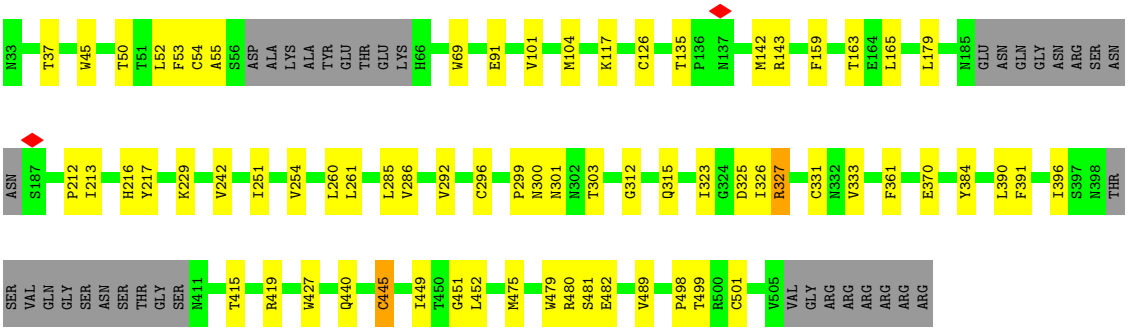
• Molecule 4: Envelope glycoprotein gp120

Chain F:



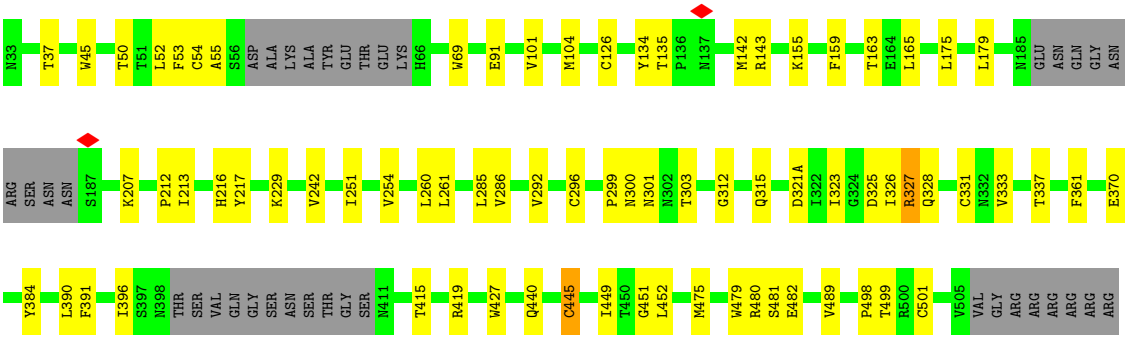
• Molecule 4: Envelope glycoprotein gp120

Chain G:



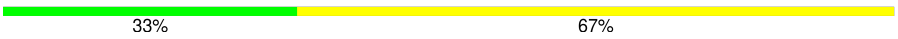
• Molecule 4: Envelope glycoprotein gp120

Chain E:



• Molecule 5: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain D:

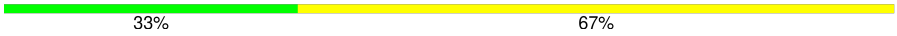


• Molecule 5: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain X:

• Molecule 5: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain i:

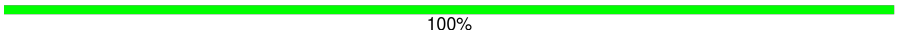


• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain I:

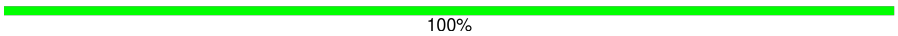
• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain O:



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

Chain Q:



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

Chain R:

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

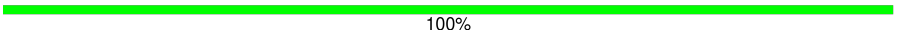
Chain U:

• 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:

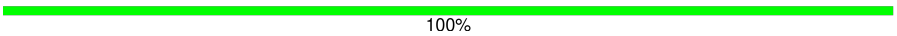


• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Y:

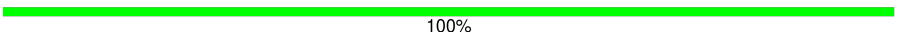
• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Z:



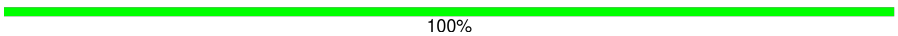
• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain b:



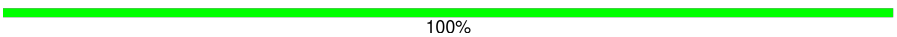
• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain c:



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

Chain f:



• 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

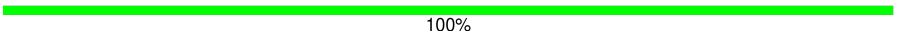
Chain h:

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

Chain j:

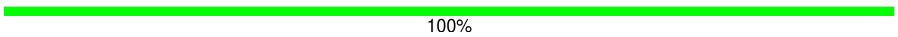
• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain k:



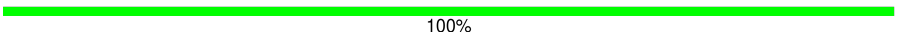
• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain m:



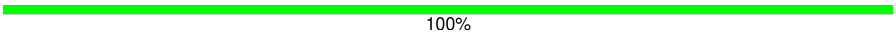
• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain n:



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

Chain q:



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

Chain r:

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

Chain s:

• Molecule 7: 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 7: 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 a:

• Molecule 7: 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 l:

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

Chain S:

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

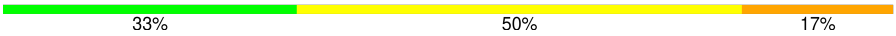
Chain d:

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

Chain o:

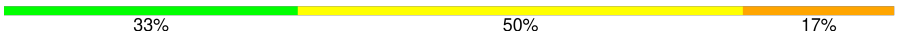
• Molecule 9: alpha-D-mannopyranose-(1-3)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

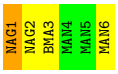
Chain T:



• Molecule 9: alpha-D-mannopyranose-(1-3)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain e:





• Molecule 9: alpha-D-mannopyranose-(1-3)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain p:


NAG1
NAG2
BMA3
MAN4
MAN5
MAN6

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	19541	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/Å^2$)	60	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	1200	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.178	Depositor
Minimum map value	-0.102	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.0272	Depositor
Map size (Å)	313.2, 313.2, 313.2	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.87, 0.87, 0.87	Depositor

5 Model quality

5.1 Standard geometry

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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	H	0.15	0/1028	0.31	0/1405
1	J	0.14	0/1028	0.31	0/1405
1	M	0.14	0/1028	0.31	0/1405
2	K	0.13	0/886	0.24	0/1208
2	L	0.13	0/886	0.24	0/1208
2	N	0.13	0/886	0.24	0/1208
3	A	0.10	0/972	0.22	0/1317
3	B	0.10	0/972	0.22	0/1317
3	C	0.10	0/972	0.22	0/1317
4	E	0.12	0/3556	0.28	0/4833
4	F	0.12	0/3556	0.28	0/4833
4	G	0.12	0/3556	0.28	0/4833
All	All	0.12	0/19326	0.27	0/26289

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	H	1001	0	975	19	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	J	1001	0	975	19	0
1	M	1001	0	975	25	0
2	K	861	0	831	9	0
2	L	861	0	831	9	0
2	N	861	0	831	8	0
3	A	956	0	927	12	0
3	B	956	0	927	13	0
3	C	956	0	927	10	0
4	E	3482	0	3399	52	0
4	F	3482	0	3399	51	0
4	G	3482	0	3399	45	0
5	D	39	0	34	0	0
5	X	39	0	34	0	0
5	i	39	0	34	0	0
6	I	28	0	25	1	0
6	O	28	0	25	0	0
6	Q	28	0	25	0	0
6	R	28	0	25	0	0
6	U	28	0	25	0	0
6	V	28	0	25	1	0
6	W	28	0	25	0	0
6	Y	28	0	25	1	0
6	Z	28	0	25	0	0
6	b	28	0	25	0	0
6	c	28	0	25	0	0
6	f	28	0	25	0	0
6	g	28	0	25	1	0
6	h	28	0	25	0	0
6	j	28	0	25	1	0
6	k	28	0	25	0	0
6	m	28	0	25	0	0
6	n	28	0	25	0	0
6	q	28	0	25	0	0
6	r	28	0	25	1	0
6	s	28	0	25	0	0
7	P	61	0	52	0	0
7	a	61	0	52	1	0
7	l	61	0	52	1	0
8	S	61	0	52	5	0
8	d	61	0	52	5	0
8	o	61	0	52	5	0
9	T	72	0	61	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
9	e	72	0	61	4	0
9	p	72	0	61	3	0
10	A	42	0	39	0	0
10	B	42	0	39	0	0
10	C	42	0	39	0	0
10	E	112	0	104	1	0
10	F	112	0	104	1	0
10	G	112	0	104	1	0
10	K	14	0	13	0	0
10	L	14	0	13	0	0
10	N	14	0	13	0	0
All	All	20691	0	19986	268	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 7.

All (268) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:G:296:CYS:HB2	4:G:445:CYS:H	1.39	0.86
4:E:296:CYS:HB2	4:E:445:CYS:H	1.39	0.86
4:F:296:CYS:HB2	4:F:445:CYS:H	1.39	0.86
1:H:30:SER:HA	1:H:52(A):ILE:HG13	1.70	0.73
1:J:30:SER:HA	1:J:52(A):ILE:HG13	1.70	0.73
1:M:30:SER:HA	1:M:52(A):ILE:HG13	1.70	0.72
2:K:39:LYS:HB2	2:K:42:GLN:HB2	1.75	0.68
1:M:98:LEU:HD22	4:E:323:ILE:HD11	1.76	0.68
2:N:39:LYS:HB2	2:N:42:GLN:HB2	1.76	0.68
2:L:39:LYS:HB2	2:L:42:GLN:HB2	1.75	0.68
4:E:69:TRP:HE1	4:E:213:ILE:H	1.46	0.64
4:G:69:TRP:HE1	4:G:213:ILE:H	1.46	0.64
4:F:296:CYS:HA	4:F:331:CYS:HA	1.81	0.63
1:M:100:TYR:O	4:E:326:ILE:HG12	1.99	0.63
4:F:69:TRP:HE1	4:F:213:ILE:H	1.46	0.63
4:G:299:PRO:HB2	4:G:325:ASP:HB3	1.81	0.62
4:G:296:CYS:HA	4:G:331:CYS:HA	1.81	0.62
4:E:104:MET:HE1	4:E:251:ILE:HG21	1.82	0.62
4:G:104:MET:HE1	4:G:251:ILE:HG21	1.82	0.62
4:F:299:PRO:HB2	4:F:325:ASP:HB3	1.81	0.62
4:F:499:THR:HG23	4:F:501:CYS:H	1.65	0.62
4:E:296:CYS:HA	4:E:331:CYS:HA	1.81	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:299:PRO:HB2	4:E:325:ASP:HB3	1.81	0.61
2:K:15:PRO:HA	2:K:78:VAL:HB	1.82	0.61
2:N:15:PRO:HA	2:N:78:VAL:HB	1.82	0.61
4:E:499:THR:HG23	4:E:501:CYS:H	1.65	0.61
4:G:499:THR:HG23	4:G:501:CYS:H	1.65	0.61
4:F:104:MET:HE1	4:F:251:ILE:HG21	1.82	0.60
2:L:15:PRO:HA	2:L:78:VAL:HB	1.82	0.60
4:G:159:PHE:HA	6:Y:1:NAG:H82	1.83	0.59
4:E:159:PHE:HA	6:j:1:NAG:H82	1.84	0.59
1:H:52(C):ARG:HB2	8:d:2:NAG:H3	1.83	0.59
4:F:159:PHE:HA	6:I:1:NAG:H82	1.84	0.59
4:E:142:MET:HB3	4:E:326:ILE:HB	1.85	0.58
4:G:142:MET:HB3	4:G:326:ILE:HB	1.86	0.58
4:G:303:THR:HG22	8:d:1:NAG:H62	1.85	0.58
3:C:591:GLN:HE22	3:A:542:ARG:HA	1.66	0.58
3:B:542:ARG:HA	3:A:591:GLN:HE22	1.68	0.58
4:E:303:THR:HG22	8:o:1:NAG:H62	1.85	0.58
3:B:591:GLN:HE22	3:C:542:ARG:HA	1.68	0.57
4:F:303:THR:HG22	8:S:1:NAG:H62	1.85	0.57
4:F:142:MET:HB3	4:F:326:ILE:HB	1.86	0.57
4:E:251:ILE:HD12	4:E:482:GLU:HG3	1.87	0.57
4:F:251:ILE:HD12	4:F:482:GLU:HG3	1.87	0.56
4:G:251:ILE:HD12	4:G:482:GLU:HG3	1.87	0.56
4:G:260:LEU:HD12	4:G:451:GLY:HA3	1.87	0.55
4:G:101:VAL:HG13	4:G:479:TRP:HB2	1.89	0.55
4:E:55:ALA:HB3	4:E:216:HIS:HB2	1.88	0.55
8:d:1:NAG:H61	8:d:2:NAG:N2	2.22	0.55
4:E:101:VAL:HG13	4:E:479:TRP:HB2	1.89	0.55
4:E:260:LEU:HD12	4:E:451:GLY:HA3	1.88	0.55
4:E:333:VAL:HG21	4:E:390:LEU:HD21	1.89	0.55
4:G:55:ALA:HB3	4:G:216:HIS:HB2	1.88	0.55
4:F:55:ALA:HB3	4:F:216:HIS:HB2	1.88	0.55
4:F:260:LEU:HD12	4:F:451:GLY:HA3	1.88	0.55
8:S:1:NAG:H61	8:S:2:NAG:N2	2.22	0.54
4:F:101:VAL:HG13	4:F:479:TRP:HB2	1.89	0.54
4:G:333:VAL:HG21	4:G:390:LEU:HD21	1.89	0.54
4:E:285:LEU:HD23	4:E:481:SER:HB2	1.90	0.54
4:F:285:LEU:HD23	4:F:481:SER:HB2	1.90	0.54
8:o:1:NAG:H61	8:o:2:NAG:N2	2.22	0.54
4:G:285:LEU:HD23	4:G:481:SER:HB2	1.90	0.54
1:J:31:ASP:HA	1:J:98:LEU:HD12	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:31:ASP:HA	1:H:98:LEU:HD12	1.90	0.53
4:F:333:VAL:HG21	4:F:390:LEU:HD21	1.89	0.53
4:E:69:TRP:HZ2	4:E:212:PRO:HA	1.74	0.53
1:H:98:LEU:HD22	4:G:323:ILE:HD11	1.91	0.53
1:M:31:ASP:HA	1:M:98:LEU:HD12	1.91	0.53
4:F:326:ILE:HG13	4:F:327:ARG:H	1.73	0.53
4:G:69:TRP:HZ2	4:G:212:PRO:HA	1.74	0.53
4:G:301:ASN:HB3	4:G:323:ILE:HG23	1.92	0.52
4:E:326:ILE:HG13	4:E:327:ARG:H	1.73	0.52
4:G:326:ILE:HG13	4:G:327:ARG:H	1.73	0.52
1:J:52(C):ARG:HB2	8:S:2:NAG:H3	1.91	0.52
4:F:301:ASN:HB3	4:F:323:ILE:HG23	1.92	0.52
4:F:69:TRP:HZ2	4:F:212:PRO:HA	1.74	0.51
4:E:301:ASN:HB3	4:E:323:ILE:HG23	1.92	0.51
4:G:163:THR:HG23	4:G:165:LEU:H	1.76	0.50
2:N:5:THR:HB	2:N:24:ARG:HB2	1.93	0.50
2:L:5:THR:HB	2:L:24:ARG:HB2	1.93	0.50
4:F:163:THR:HG23	4:F:165:LEU:H	1.76	0.50
2:K:5:THR:HB	2:K:24:ARG:HB2	1.94	0.50
4:E:45:TRP:CD1	4:E:489:VAL:HG21	2.47	0.50
4:E:163:THR:HG23	4:E:165:LEU:H	1.76	0.49
9:p:1:NAG:H61	9:p:2:NAG:C7	2.43	0.49
3:B:526:ALA:HB1	4:F:45:TRP:HZ3	1.77	0.49
8:o:1:NAG:H61	8:o:2:NAG:HN2	1.78	0.49
4:F:45:TRP:CD1	4:F:489:VAL:HG21	2.47	0.49
3:A:526:ALA:HB1	4:E:45:TRP:HZ3	1.77	0.49
8:S:1:NAG:H61	8:S:2:NAG:HN2	1.78	0.49
1:J:47:TYR:CE2	1:J:49:GLY:HA2	2.48	0.49
1:H:47:TYR:CZ	1:H:49:GLY:HA2	2.48	0.49
1:H:47:TYR:CE2	1:H:49:GLY:HA2	2.48	0.49
1:M:47:TYR:CE2	1:M:49:GLY:HA2	2.48	0.49
9:T:1:NAG:H61	9:T:2:NAG:C7	2.43	0.49
8:d:1:NAG:H61	8:d:2:NAG:HN2	1.78	0.48
1:H:87:THR:HG23	1:H:110:THR:HA	1.95	0.48
4:G:45:TRP:CD1	4:G:489:VAL:HG21	2.47	0.48
9:e:1:NAG:H61	9:e:2:NAG:C7	2.43	0.48
1:J:47:TYR:CZ	1:J:49:GLY:HA2	2.48	0.48
4:G:179:LEU:HD11	4:G:419:ARG:HE	1.79	0.48
1:M:47:TYR:CZ	1:M:49:GLY:HA2	2.48	0.48
3:C:526:ALA:HB1	4:G:45:TRP:HZ3	1.78	0.48
1:J:87:THR:HG23	1:J:110:THR:HA	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:36:TRP:O	1:M:48:ILE:HB	2.14	0.48
1:M:52(B):TYR:HE2	4:E:321(A):ASP:HB3	1.78	0.48
3:B:627:THR:H	3:B:630:GLN:NE2	2.12	0.48
4:E:179:LEU:HD11	4:E:419:ARG:HE	1.79	0.48
3:B:610:TRP:CD2	4:F:498:PRO:HB3	2.49	0.48
3:C:627:THR:H	3:C:630:GLN:NE2	2.12	0.48
4:F:179:LEU:HD11	4:F:419:ARG:HE	1.79	0.48
1:M:87:THR:HG23	1:M:110:THR:HA	1.95	0.47
4:E:440:GLN:NE2	8:o:1:NAG:H5	2.30	0.47
9:p:1:NAG:H61	9:p:2:NAG:N2	2.29	0.47
1:J:36:TRP:O	1:J:48:ILE:HB	2.14	0.47
4:F:286:VAL:HB	4:F:452:LEU:HB2	1.96	0.47
9:e:1:NAG:H61	9:e:2:NAG:N2	2.29	0.47
4:G:286:VAL:HB	4:G:452:LEU:HB2	1.96	0.47
4:G:440:GLN:NE2	8:d:1:NAG:H5	2.29	0.47
9:T:1:NAG:H61	9:T:2:NAG:N2	2.29	0.47
1:H:36:TRP:O	1:H:48:ILE:HB	2.14	0.47
1:M:52(C):ARG:HB2	8:o:2:NAG:H3	1.97	0.47
3:C:610:TRP:CD2	4:G:498:PRO:HB3	2.49	0.47
4:E:312:GLY:HA3	4:E:315:GLN:HE21	1.80	0.47
3:B:604:CYS:O	4:F:37:THR:HG23	2.15	0.47
3:A:627:THR:H	3:A:630:GLN:NE2	2.12	0.47
4:F:440:GLN:NE2	8:S:1:NAG:H5	2.30	0.47
1:J:23:ALA:HB2	1:J:77:GLN:HE22	1.80	0.47
3:A:610:TRP:CD2	4:E:498:PRO:HB3	2.49	0.47
9:T:3:BMA:H62	9:T:6:MAN:H2	1.76	0.47
1:H:23:ALA:HB2	1:H:77:GLN:HE22	1.80	0.46
4:G:312:GLY:HA3	4:G:315:GLN:HE21	1.80	0.46
3:A:604:CYS:O	4:E:37:THR:HG23	2.16	0.46
4:G:326:ILE:HG13	4:G:327:ARG:N	2.31	0.46
4:E:286:VAL:HB	4:E:452:LEU:HB2	1.96	0.46
6:r:1:NAG:H61	6:r:2:NAG:C7	2.46	0.46
3:C:618:ASN:HB2	3:C:621:GLU:HG2	1.97	0.46
6:V:1:NAG:H61	6:V:2:NAG:C7	2.46	0.46
4:F:370:GLU:HG3	4:F:384:TYR:HE2	1.81	0.46
6:g:1:NAG:H61	6:g:2:NAG:C7	2.46	0.46
4:E:326:ILE:HG13	4:E:327:ARG:N	2.31	0.46
1:M:23:ALA:HB2	1:M:77:GLN:HE22	1.80	0.46
1:M:71:THR:HG22	1:M:78:PHE:HB3	1.98	0.46
4:F:312:GLY:HA3	4:F:315:GLN:HE21	1.80	0.46
3:B:618:ASN:HB2	3:B:621:GLU:HG2	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:326:ILE:HG13	4:F:327:ARG:N	2.31	0.46
4:E:300:ASN:HA	4:E:325:ASP:O	2.16	0.46
4:E:370:GLU:HG3	4:E:384:TYR:HE2	1.81	0.45
4:F:300:ASN:HA	4:F:325:ASP:O	2.16	0.45
4:G:101:VAL:HG21	4:G:480:ARG:HG3	1.99	0.45
3:A:626:MET:HE3	3:A:626:MET:HB2	1.88	0.45
1:H:36:TRP:HE1	1:H:78:PHE:HD2	1.65	0.45
2:K:27(B):LEU:HD23	2:K:93:HIS:HD2	1.81	0.45
1:J:36:TRP:HE1	1:J:78:PHE:HD2	1.65	0.45
4:F:101:VAL:HG21	4:F:480:ARG:HG3	1.99	0.45
4:G:53:PHE:O	4:G:54:CYS:HB3	2.17	0.45
3:C:604:CYS:O	4:G:37:THR:HG23	2.15	0.45
2:N:59:PRO:HB2	2:N:61:ARG:HG2	1.99	0.45
4:G:300:ASN:HA	4:G:325:ASP:O	2.16	0.45
1:M:68:THR:OG1	1:M:81:LYS:HB2	2.17	0.45
1:J:71:THR:HG22	1:J:78:PHE:HB3	1.98	0.45
1:M:36:TRP:HE1	1:M:78:PHE:HD2	1.65	0.45
2:L:59:PRO:HB2	2:L:61:ARG:HG2	1.99	0.44
4:G:370:GLU:HG3	4:G:384:TYR:HE2	1.81	0.44
1:J:45:LEU:HD21	2:K:98:PHE:HD2	1.83	0.44
4:F:53:PHE:O	4:F:54:CYS:HB3	2.17	0.44
4:G:361:PHE:HB3	4:G:391:PHE:HB3	2.00	0.44
1:H:68:THR:OG1	1:H:81:LYS:HB2	2.17	0.44
1:J:68:THR:OG1	1:J:81:LYS:HB2	2.17	0.44
2:L:27(B):LEU:HD23	2:L:93:HIS:HD2	1.81	0.44
2:N:35:TRP:HB2	2:N:48:ILE:HG22	1.99	0.44
3:A:618:ASN:HB2	3:A:621:GLU:HG2	1.97	0.44
4:E:53:PHE:O	4:E:54:CYS:HB3	2.17	0.44
4:E:101:VAL:HG21	4:E:480:ARG:HG3	1.99	0.44
4:F:361:PHE:HB3	4:F:391:PHE:HB3	2.00	0.44
3:A:587:LEU:HD23	3:A:587:LEU:HA	1.83	0.44
4:E:254:VAL:HG21	4:E:261:LEU:O	2.18	0.44
1:H:71:THR:HG22	1:H:78:PHE:HB3	1.98	0.44
2:K:59:PRO:HB2	2:K:61:ARG:HG2	1.99	0.44
4:F:254:VAL:HG21	4:F:261:LEU:O	2.18	0.44
4:E:207:LYS:HA	4:E:207:LYS:HD3	1.76	0.44
1:J:98:LEU:HD22	4:F:323:ILE:HD11	2.00	0.44
2:N:27(B):LEU:HD23	2:N:93:HIS:HD2	1.81	0.44
3:C:591:GLN:O	3:C:595:ILE:HG12	2.18	0.43
3:A:591:GLN:O	3:A:595:ILE:HG12	2.18	0.43
4:E:91:GLU:HB3	4:E:242:VAL:HG21	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:292:VAL:HB	4:E:449:ILE:HG13	2.00	0.43
2:L:21:ILE:HD11	2:L:102:THR:HG21	2.00	0.43
1:M:20:LEU:HD21	1:M:107:VAL:HG21	2.00	0.43
4:G:292:VAL:HB	4:G:449:ILE:HG13	2.00	0.43
4:G:254:VAL:HG21	4:G:261:LEU:O	2.18	0.43
1:H:20:LEU:HD21	1:H:107:VAL:HG21	2.00	0.43
3:B:626:MET:HE3	3:B:626:MET:HB2	1.87	0.43
4:G:117:LYS:HB2	4:G:117:LYS:HE2	1.81	0.43
3:B:587:LEU:HD23	3:B:587:LEU:HA	1.83	0.43
4:F:104:MET:HB2	4:F:217:TYR:HE2	1.84	0.43
2:K:35:TRP:HB2	2:K:48:ILE:HG22	1.99	0.43
3:B:601:LYS:HB3	3:B:601:LYS:HE3	1.88	0.43
4:G:91:GLU:HB3	4:G:242:VAL:HG21	2.00	0.43
4:E:361:PHE:HB3	4:E:391:PHE:HB3	2.00	0.43
4:E:52:LEU:HD13	4:E:217:TYR:HB3	2.01	0.43
1:H:55:ALA:O	2:L:94:TRP:HH2	2.02	0.42
2:L:35:TRP:HB2	2:L:48:ILE:HG22	1.99	0.42
4:F:292:VAL:HB	4:F:449:ILE:HG13	2.00	0.42
4:G:52:LEU:HD13	4:G:217:TYR:HB3	2.01	0.42
1:J:99:ARG:HB3	4:F:326:ILE:HG23	2.01	0.42
1:M:40:PRO:HA	1:M:41:PRO:HD3	1.93	0.42
4:F:229:LYS:NZ	10:F:605:NAG:H62	2.35	0.42
3:A:601:LYS:HB3	3:A:601:LYS:HE3	1.88	0.42
2:K:21:ILE:HD11	2:K:102:THR:HG21	2.01	0.42
4:F:91:GLU:HB3	4:F:242:VAL:HG21	2.00	0.42
4:G:229:LYS:NZ	10:G:605:NAG:H62	2.35	0.42
4:E:299:PRO:HG2	4:E:327:ARG:HB2	2.02	0.42
4:G:104:MET:HB2	4:G:217:TYR:HE2	1.84	0.42
4:E:327:ARG:HB3	4:E:328:GLN:H	1.73	0.42
1:J:6:GLU:HG2	1:J:22:CYS:SG	2.60	0.42
1:J:20:LEU:HD21	1:J:107:VAL:HG21	2.00	0.42
4:F:207:LYS:HA	4:F:207:LYS:HD3	1.76	0.42
4:E:104:MET:HB2	4:E:217:TYR:HE2	1.84	0.42
2:N:21:ILE:HD11	2:N:102:THR:HG21	2.01	0.42
3:C:536:THR:O	3:C:539:VAL:HG12	2.20	0.42
1:H:53:THR:HG1	1:H:56:ASN:HB2	1.85	0.42
3:B:591:GLN:O	3:B:595:ILE:HG12	2.18	0.42
4:F:52:LEU:HD13	4:F:217:TYR:HB3	2.01	0.42
4:G:135:THR:HB	4:G:143:ARG:HD3	2.02	0.42
4:E:135:THR:HB	4:E:143:ARG:HD3	2.02	0.41
4:E:415:THR:OG1	9:p:1:NAG:H62	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:53:THR:OG1	1:J:56:ASN:HB2	2.20	0.41
1:M:24:VAL:HG11	1:M:34:TRP:CH2	2.55	0.41
1:M:53:THR:OG1	1:M:56:ASN:HB2	2.20	0.41
3:B:545:LEU:HD23	3:B:545:LEU:HA	1.89	0.41
4:G:415:THR:OG1	9:e:1:NAG:H62	2.20	0.41
4:E:229:LYS:NZ	10:E:605:NAG:H62	2.35	0.41
1:M:6:GLU:HG2	1:M:22:CYS:SG	2.60	0.41
1:M:13:LYS:HE2	1:M:13:LYS:HB3	1.90	0.41
1:M:69:ILE:HA	1:M:80:LEU:HA	2.03	0.41
4:F:427:TRP:HE1	4:F:475:MET:HG3	1.85	0.41
4:F:415:THR:OG1	9:T:1:NAG:H62	2.20	0.41
1:M:45:LEU:HD21	2:N:98:PHE:HD2	1.85	0.41
4:F:135:THR:HB	4:F:143:ARG:HD3	2.02	0.41
4:F:299:PRO:HG2	4:F:327:ARG:HB2	2.02	0.41
3:A:536:THR:O	3:A:539:VAL:HG12	2.20	0.41
7:l:3:BMA:H62	7:l:5:MAN:H2	1.87	0.41
1:M:38:ARG:HD2	1:M:48:ILE:HD11	2.03	0.41
4:G:299:PRO:HG2	4:G:327:ARG:HB2	2.02	0.41
1:H:24:VAL:HG11	1:H:34:TRP:CH2	2.56	0.41
3:B:536:THR:O	3:B:539:VAL:HG12	2.20	0.41
1:H:6:GLU:HG2	1:H:22:CYS:SG	2.60	0.41
1:H:53:THR:OG1	1:H:56:ASN:HB2	2.20	0.41
1:J:24:VAL:HG11	1:J:34:TRP:CH2	2.56	0.41
4:F:95:MET:HE2	4:F:96:TRP:CE2	2.56	0.41
4:F:155:LYS:HA	4:F:155:LYS:HD2	1.89	0.41
4:F:292:VAL:HG22	4:F:337:THR:HG22	2.03	0.41
4:G:427:TRP:HE1	4:G:475:MET:HG3	1.85	0.41
4:E:427:TRP:HE1	4:E:475:MET:HG3	1.85	0.41
1:J:61:PRO:HD3	2:K:95:PRO:HB3	2.03	0.40
1:M:52(B):TYR:CE2	4:E:321(A):ASP:HB3	2.56	0.40
2:L:74:LYS:HE2	2:L:74:LYS:HB3	1.95	0.40
4:E:155:LYS:HA	4:E:155:LYS:HD2	1.89	0.40
9:e:3:BMA:H62	9:e:6:MAN:H2	1.76	0.40
1:H:69:ILE:HA	1:H:80:LEU:HA	2.03	0.40
4:F:117:LYS:HE2	4:F:117:LYS:HB2	1.81	0.40
4:E:134:TYR:HE1	4:E:175:LEU:HD21	1.87	0.40
1:M:53:THR:HG1	1:M:56:ASN:HB2	1.86	0.40
3:C:535:MET:HE2	3:C:535:MET:HB3	1.82	0.40
7:a:3:BMA:H62	7:a:5:MAN:H2	1.87	0.40
4:F:134:TYR:HE1	4:F:175:LEU:HD21	1.87	0.40
4:E:292:VAL:HG22	4:E:337:THR:HG22	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	H	126/129 (98%)	117 (93%)	9 (7%)	0	100	100
1	J	126/129 (98%)	117 (93%)	9 (7%)	0	100	100
1	M	126/129 (98%)	117 (93%)	9 (7%)	0	100	100
2	K	110/112 (98%)	107 (97%)	3 (3%)	0	100	100
2	L	110/112 (98%)	107 (97%)	3 (3%)	0	100	100
2	N	110/112 (98%)	107 (97%)	3 (3%)	0	100	100
3	A	117/153 (76%)	116 (99%)	1 (1%)	0	100	100
3	B	117/153 (76%)	116 (99%)	1 (1%)	0	100	100
3	C	117/153 (76%)	116 (99%)	1 (1%)	0	100	100
4	E	434/479 (91%)	426 (98%)	8 (2%)	0	100	100
4	F	434/479 (91%)	426 (98%)	8 (2%)	0	100	100
4	G	434/479 (91%)	426 (98%)	8 (2%)	0	100	100
All	All	2361/2619 (90%)	2298 (97%)	63 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	H	109/110 (99%)	108 (99%)	1 (1%)	70	76
1	J	109/110 (99%)	108 (99%)	1 (1%)	70	76
1	M	109/110 (99%)	108 (99%)	1 (1%)	70	76
2	K	98/98 (100%)	98 (100%)	0	100	100
2	L	98/98 (100%)	98 (100%)	0	100	100
2	N	98/98 (100%)	98 (100%)	0	100	100
3	A	104/130 (80%)	104 (100%)	0	100	100
3	B	104/130 (80%)	104 (100%)	0	100	100
3	C	104/130 (80%)	104 (100%)	0	100	100
4	E	398/429 (93%)	393 (99%)	5 (1%)	61	72
4	F	398/429 (93%)	393 (99%)	5 (1%)	61	72
4	G	398/429 (93%)	393 (99%)	5 (1%)	61	72
All	All	2127/2301 (92%)	2109 (99%)	18 (1%)	70	77

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	63	LEU
1	J	63	LEU
1	M	63	LEU
4	F	50	THR
4	F	126	CYS
4	F	327	ARG
4	F	396	ILE
4	F	445	CYS
4	G	50	THR
4	G	126	CYS
4	G	327	ARG
4	G	396	ILE
4	G	445	CYS
4	E	50	THR
4	E	126	CYS
4	E	327	ARG
4	E	396	ILE
4	E	445	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (26) such sidechains are listed below:

Mol	Chain	Res	Type
1	H	76	ASN
1	H	77	GLN
2	L	53	ASN
2	L	93	HIS
1	J	77	GLN
2	K	53	ASN
2	K	93	HIS
1	M	77	GLN
2	N	53	ASN
2	N	93	HIS
3	B	640	GLN
3	B	650	GLN
3	C	650	GLN
4	F	246	GLN
4	F	315	GLN
4	F	398	ASN
4	F	440	GLN
4	G	246	GLN
4	G	283	ASN
4	G	315	GLN
4	G	398	ASN
4	G	440	GLN
3	A	650	GLN
4	E	246	GLN
4	E	315	GLN
4	E	398	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

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

5.5 Carbohydrates (i)

99 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	D	1	5,4	14,14,15	0.32	0	17,19,21	0.86	1 (5%)
5	NAG	D	2	5	14,14,15	0.32	0	17,19,21	0.86	1 (5%)
5	BMA	D	3	5	11,11,12	0.26	0	15,15,17	0.63	0
6	NAG	I	1	4,6	14,14,15	0.33	0	17,19,21	0.75	0
6	NAG	I	2	6	14,14,15	0.29	0	17,19,21	0.77	0
6	NAG	O	1	4,6	14,14,15	0.30	0	17,19,21	0.81	0
6	NAG	O	2	6	14,14,15	0.28	0	17,19,21	0.71	0
7	NAG	P	1	7,4	14,14,15	0.30	0	17,19,21	0.72	0
7	NAG	P	2	7	14,14,15	0.31	0	17,19,21	0.75	0
7	BMA	P	3	7	11,11,12	0.21	0	15,15,17	0.76	0
7	MAN	P	4	7	11,11,12	0.26	0	15,15,17	0.74	0
7	MAN	P	5	7	11,11,12	0.27	0	15,15,17	0.77	0
6	NAG	Q	1	4,6	14,14,15	0.30	0	17,19,21	0.63	0
6	NAG	Q	2	6	14,14,15	0.30	0	17,19,21	0.63	0
6	NAG	R	1	4,6	14,14,15	0.31	0	17,19,21	0.74	0
6	NAG	R	2	6	14,14,15	0.26	0	17,19,21	0.62	0
8	NAG	S	1	8,4	14,14,15	0.30	0	17,19,21	0.73	0
8	NAG	S	2	8	14,14,15	0.37	0	17,19,21	0.83	1 (5%)
8	BMA	S	3	8	11,11,12	0.22	0	15,15,17	0.68	0
8	MAN	S	4	8	11,11,12	0.24	0	15,15,17	0.62	0
8	GLC	S	5	8	11,11,12	0.24	0	15,15,17	0.66	0
9	NAG	T	1	9,4	14,14,15	0.25	0	17,19,21	1.27	2 (11%)
9	NAG	T	2	9	14,14,15	0.30	0	17,19,21	0.66	0
9	BMA	T	3	9	11,11,12	0.27	0	15,15,17	0.60	0
9	MAN	T	4	9	11,11,12	0.29	0	15,15,17	0.86	0
9	MAN	T	5	9	11,11,12	0.28	0	15,15,17	0.84	0
9	MAN	T	6	9	11,11,12	0.25	0	15,15,17	0.64	0
6	NAG	U	1	4,6	14,14,15	0.31	0	17,19,21	0.71	0
6	NAG	U	2	6	14,14,15	0.28	0	17,19,21	0.65	0
6	NAG	V	1	4,6	14,14,15	0.29	0	17,19,21	1.03	1 (5%)
6	NAG	V	2	6	14,14,15	0.32	0	17,19,21	0.75	0
6	NAG	W	1	4,6	14,14,15	0.33	0	17,19,21	0.81	0
6	NAG	W	2	6	14,14,15	0.31	0	17,19,21	0.68	0
5	NAG	X	1	5,4	14,14,15	0.33	0	17,19,21	0.85	1 (5%)
5	NAG	X	2	5	14,14,15	0.31	0	17,19,21	0.86	1 (5%)
5	BMA	X	3	5	11,11,12	0.28	0	15,15,17	0.62	0
6	NAG	Y	1	4,6	14,14,15	0.33	0	17,19,21	0.75	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
6	NAG	Y	2	6	14,14,15	0.29	0	17,19,21	0.77	0
6	NAG	Z	1	4,6	14,14,15	0.29	0	17,19,21	0.81	0
6	NAG	Z	2	6	14,14,15	0.29	0	17,19,21	0.70	0
7	NAG	a	1	7,4	14,14,15	0.30	0	17,19,21	0.71	0
7	NAG	a	2	7	14,14,15	0.31	0	17,19,21	0.75	0
7	BMA	a	3	7	11,11,12	0.21	0	15,15,17	0.76	0
7	MAN	a	4	7	11,11,12	0.28	0	15,15,17	0.74	0
7	MAN	a	5	7	11,11,12	0.28	0	15,15,17	0.77	0
6	NAG	b	1	4,6	14,14,15	0.30	0	17,19,21	0.63	0
6	NAG	b	2	6	14,14,15	0.29	0	17,19,21	0.63	0
6	NAG	c	1	4,6	14,14,15	0.31	0	17,19,21	0.73	0
6	NAG	c	2	6	14,14,15	0.26	0	17,19,21	0.62	0
8	NAG	d	1	8,4	14,14,15	0.30	0	17,19,21	0.75	0
8	NAG	d	2	8	14,14,15	0.36	0	17,19,21	0.83	1 (5%)
8	BMA	d	3	8	11,11,12	0.23	0	15,15,17	0.68	0
8	MAN	d	4	8	11,11,12	0.24	0	15,15,17	0.62	0
8	GLC	d	5	8	11,11,12	0.25	0	15,15,17	0.66	0
9	NAG	e	1	9,4	14,14,15	0.27	0	17,19,21	1.26	2 (11%)
9	NAG	e	2	9	14,14,15	0.28	0	17,19,21	0.66	0
9	BMA	e	3	9	11,11,12	0.28	0	15,15,17	0.59	0
9	MAN	e	4	9	11,11,12	0.30	0	15,15,17	0.86	0
9	MAN	e	5	9	11,11,12	0.28	0	15,15,17	0.84	0
9	MAN	e	6	9	11,11,12	0.25	0	15,15,17	0.64	0
6	NAG	f	1	4,6	14,14,15	0.30	0	17,19,21	0.71	0
6	NAG	f	2	6	14,14,15	0.28	0	17,19,21	0.66	0
6	NAG	g	1	4,6	14,14,15	0.30	0	17,19,21	1.03	1 (5%)
6	NAG	g	2	6	14,14,15	0.32	0	17,19,21	0.76	0
6	NAG	h	1	4,6	14,14,15	0.34	0	17,19,21	0.81	0
6	NAG	h	2	6	14,14,15	0.30	0	17,19,21	0.67	0
5	NAG	i	1	5,4	14,14,15	0.34	0	17,19,21	0.86	1 (5%)
5	NAG	i	2	5	14,14,15	0.32	0	17,19,21	0.85	1 (5%)
5	BMA	i	3	5	11,11,12	0.28	0	15,15,17	0.63	0
6	NAG	j	1	4,6	14,14,15	0.32	0	17,19,21	0.75	0
6	NAG	j	2	6	14,14,15	0.30	0	17,19,21	0.77	0
6	NAG	k	1	4,6	14,14,15	0.29	0	17,19,21	0.81	0
6	NAG	k	2	6	14,14,15	0.28	0	17,19,21	0.71	0
7	NAG	l	1	7,4	14,14,15	0.30	0	17,19,21	0.71	0
7	NAG	l	2	7	14,14,15	0.32	0	17,19,21	0.75	0
7	BMA	l	3	7	11,11,12	0.20	0	15,15,17	0.76	0
7	MAN	l	4	7	11,11,12	0.26	0	15,15,17	0.75	0
7	MAN	l	5	7	11,11,12	0.27	0	15,15,17	0.77	0
6	NAG	m	1	4,6	14,14,15	0.30	0	17,19,21	0.64	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
6	NAG	m	2	6	14,14,15	0.31	0	17,19,21	0.64	0
6	NAG	n	1	4,6	14,14,15	0.31	0	17,19,21	0.72	0
6	NAG	n	2	6	14,14,15	0.27	0	17,19,21	0.63	0
8	NAG	o	1	8,4	14,14,15	0.30	0	17,19,21	0.75	0
8	NAG	o	2	8	14,14,15	0.36	0	17,19,21	0.82	1 (5%)
8	BMA	o	3	8	11,11,12	0.22	0	15,15,17	0.68	0
8	MAN	o	4	8	11,11,12	0.24	0	15,15,17	0.62	0
8	GLC	o	5	8	11,11,12	0.24	0	15,15,17	0.66	0
9	NAG	p	1	9,4	14,14,15	0.27	0	17,19,21	1.27	2 (11%)
9	NAG	p	2	9	14,14,15	0.29	0	17,19,21	0.66	0
9	BMA	p	3	9	11,11,12	0.28	0	15,15,17	0.60	0
9	MAN	p	4	9	11,11,12	0.30	0	15,15,17	0.86	0
9	MAN	p	5	9	11,11,12	0.26	0	15,15,17	0.83	0
9	MAN	p	6	9	11,11,12	0.26	0	15,15,17	0.63	0
6	NAG	q	1	4,6	14,14,15	0.30	0	17,19,21	0.71	0
6	NAG	q	2	6	14,14,15	0.28	0	17,19,21	0.65	0
6	NAG	r	1	4,6	14,14,15	0.28	0	17,19,21	1.03	1 (5%)
6	NAG	r	2	6	14,14,15	0.32	0	17,19,21	0.75	0
6	NAG	s	1	4,6	14,14,15	0.34	0	17,19,21	0.82	0
6	NAG	s	2	6	14,14,15	0.32	0	17,19,21	0.67	0

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

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

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	R	2	6	-	0/6/23/26	0/1/1/1
8	NAG	S	1	8,4	-	0/6/23/26	0/1/1/1
8	NAG	S	2	8	-	0/6/23/26	0/1/1/1
8	BMA	S	3	8	-	2/2/19/22	0/1/1/1
8	MAN	S	4	8	-	0/2/19/22	0/1/1/1
8	GLC	S	5	8	-	0/2/19/22	0/1/1/1
9	NAG	T	1	9,4	-	2/6/23/26	0/1/1/1
9	NAG	T	2	9	-	3/6/23/26	0/1/1/1
9	BMA	T	3	9	-	1/2/19/22	0/1/1/1
9	MAN	T	4	9	-	0/2/19/22	0/1/1/1
9	MAN	T	5	9	-	0/2/19/22	0/1/1/1
9	MAN	T	6	9	-	0/2/19/22	0/1/1/1
6	NAG	U	1	4,6	1/1/5/7	0/6/23/26	0/1/1/1
6	NAG	U	2	6	-	1/6/23/26	0/1/1/1
6	NAG	V	1	4,6	-	2/6/23/26	0/1/1/1
6	NAG	V	2	6	-	3/6/23/26	0/1/1/1
6	NAG	W	1	4,6	-	0/6/23/26	0/1/1/1
6	NAG	W	2	6	-	0/6/23/26	0/1/1/1
5	NAG	X	1	5,4	-	0/6/23/26	0/1/1/1
5	NAG	X	2	5	-	1/6/23/26	0/1/1/1
5	BMA	X	3	5	-	0/2/19/22	0/1/1/1
6	NAG	Y	1	4,6	-	0/6/23/26	0/1/1/1
6	NAG	Y	2	6	-	0/6/23/26	0/1/1/1
6	NAG	Z	1	4,6	-	0/6/23/26	0/1/1/1
6	NAG	Z	2	6	-	0/6/23/26	0/1/1/1
7	NAG	a	1	7,4	-	0/6/23/26	0/1/1/1
7	NAG	a	2	7	-	1/6/23/26	0/1/1/1
7	BMA	a	3	7	-	2/2/19/22	0/1/1/1
7	MAN	a	4	7	-	0/2/19/22	0/1/1/1
7	MAN	a	5	7	-	0/2/19/22	0/1/1/1
6	NAG	b	1	4,6	-	0/6/23/26	0/1/1/1
6	NAG	b	2	6	-	0/6/23/26	0/1/1/1
6	NAG	c	1	4,6	1/1/5/7	1/6/23/26	0/1/1/1
6	NAG	c	2	6	-	0/6/23/26	0/1/1/1
8	NAG	d	1	8,4	-	0/6/23/26	0/1/1/1
8	NAG	d	2	8	-	0/6/23/26	0/1/1/1
8	BMA	d	3	8	-	2/2/19/22	0/1/1/1
8	MAN	d	4	8	-	0/2/19/22	0/1/1/1
8	GLC	d	5	8	-	0/2/19/22	0/1/1/1
9	NAG	e	1	9,4	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	NAG	e	2	9	-	3/6/23/26	0/1/1/1
9	BMA	e	3	9	-	1/2/19/22	0/1/1/1
9	MAN	e	4	9	-	0/2/19/22	0/1/1/1
9	MAN	e	5	9	-	0/2/19/22	0/1/1/1
9	MAN	e	6	9	-	0/2/19/22	0/1/1/1
6	NAG	f	1	4,6	1/1/5/7	0/6/23/26	0/1/1/1
6	NAG	f	2	6	-	1/6/23/26	0/1/1/1
6	NAG	g	1	4,6	-	2/6/23/26	0/1/1/1
6	NAG	g	2	6	-	3/6/23/26	0/1/1/1
6	NAG	h	1	4,6	-	0/6/23/26	0/1/1/1
6	NAG	h	2	6	-	0/6/23/26	0/1/1/1
5	NAG	i	1	5,4	-	0/6/23/26	0/1/1/1
5	NAG	i	2	5	-	1/6/23/26	0/1/1/1
5	BMA	i	3	5	-	0/2/19/22	0/1/1/1
6	NAG	j	1	4,6	-	0/6/23/26	0/1/1/1
6	NAG	j	2	6	-	0/6/23/26	0/1/1/1
6	NAG	k	1	4,6	-	0/6/23/26	0/1/1/1
6	NAG	k	2	6	-	0/6/23/26	0/1/1/1
7	NAG	l	1	7,4	-	0/6/23/26	0/1/1/1
7	NAG	l	2	7	-	1/6/23/26	0/1/1/1
7	BMA	l	3	7	-	2/2/19/22	0/1/1/1
7	MAN	l	4	7	-	0/2/19/22	0/1/1/1
7	MAN	l	5	7	-	0/2/19/22	0/1/1/1
6	NAG	m	1	4,6	-	0/6/23/26	0/1/1/1
6	NAG	m	2	6	-	0/6/23/26	0/1/1/1
6	NAG	n	1	4,6	1/1/5/7	1/6/23/26	0/1/1/1
6	NAG	n	2	6	-	0/6/23/26	0/1/1/1
8	NAG	o	1	8,4	-	0/6/23/26	0/1/1/1
8	NAG	o	2	8	-	0/6/23/26	0/1/1/1
8	BMA	o	3	8	-	2/2/19/22	0/1/1/1
8	MAN	o	4	8	-	0/2/19/22	0/1/1/1
8	GLC	o	5	8	-	0/2/19/22	0/1/1/1
9	NAG	p	1	9,4	-	2/6/23/26	0/1/1/1
9	NAG	p	2	9	-	3/6/23/26	0/1/1/1
9	BMA	p	3	9	-	1/2/19/22	0/1/1/1
9	MAN	p	4	9	-	0/2/19/22	0/1/1/1
9	MAN	p	5	9	-	0/2/19/22	0/1/1/1
9	MAN	p	6	9	-	0/2/19/22	0/1/1/1
6	NAG	q	1	4,6	1/1/5/7	0/6/23/26	0/1/1/1
6	NAG	q	2	6	-	1/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	r	1	4,6	-	2/6/23/26	0/1/1/1
6	NAG	r	2	6	-	3/6/23/26	0/1/1/1
6	NAG	s	1	4,6	-	0/6/23/26	0/1/1/1
6	NAG	s	2	6	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	T	1	NAG	O5-C1-C2	-2.66	107.17	111.29
9	e	1	NAG	O5-C1-C2	-2.65	107.19	111.29
9	p	1	NAG	O5-C1-C2	-2.64	107.21	111.29
6	g	1	NAG	O5-C1-C2	-2.27	107.78	111.29
6	r	1	NAG	O5-C1-C2	-2.26	107.79	111.29
5	X	2	NAG	O5-C1-C2	-2.25	107.81	111.29
5	D	2	NAG	O5-C1-C2	-2.25	107.81	111.29
6	V	1	NAG	O5-C1-C2	-2.24	107.83	111.29
5	i	2	NAG	O5-C1-C2	-2.23	107.84	111.29
9	p	1	NAG	C2-N2-C7	2.15	125.78	122.90
8	o	2	NAG	O5-C1-C2	-2.10	108.04	111.29
9	e	1	NAG	C2-N2-C7	2.10	125.71	122.90
9	T	1	NAG	C2-N2-C7	2.09	125.70	122.90
8	d	2	NAG	O5-C1-C2	-2.09	108.06	111.29
8	S	2	NAG	O5-C1-C2	-2.09	108.06	111.29
5	i	1	NAG	O5-C1-C2	-2.07	108.09	111.29
5	D	1	NAG	O5-C1-C2	-2.07	108.09	111.29
5	X	1	NAG	O5-C1-C2	-2.06	108.11	111.29

All (6) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
6	R	1	NAG	C3
6	U	1	NAG	C3
6	c	1	NAG	C3
6	f	1	NAG	C3
6	n	1	NAG	C3
6	q	1	NAG	C3

All (57) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	S	3	BMA	O5-C5-C6-O6
8	d	3	BMA	O5-C5-C6-O6
8	o	3	BMA	O5-C5-C6-O6
8	S	3	BMA	C4-C5-C6-O6
8	d	3	BMA	C4-C5-C6-O6
8	o	3	BMA	C4-C5-C6-O6
6	V	2	NAG	C8-C7-N2-C2
6	V	2	NAG	O7-C7-N2-C2
6	g	2	NAG	C8-C7-N2-C2
6	g	2	NAG	O7-C7-N2-C2
6	r	2	NAG	C8-C7-N2-C2
6	r	2	NAG	O7-C7-N2-C2
9	T	2	NAG	C8-C7-N2-C2
9	T	2	NAG	O7-C7-N2-C2
9	e	2	NAG	C8-C7-N2-C2
9	e	2	NAG	O7-C7-N2-C2
9	p	2	NAG	C8-C7-N2-C2
9	p	2	NAG	O7-C7-N2-C2
7	P	3	BMA	O5-C5-C6-O6
7	a	3	BMA	O5-C5-C6-O6
7	l	3	BMA	O5-C5-C6-O6
7	l	3	BMA	C4-C5-C6-O6
7	P	3	BMA	C4-C5-C6-O6
7	a	3	BMA	C4-C5-C6-O6
9	T	3	BMA	O5-C5-C6-O6
9	e	3	BMA	O5-C5-C6-O6
9	p	3	BMA	O5-C5-C6-O6
6	V	2	NAG	O5-C5-C6-O6
6	g	2	NAG	O5-C5-C6-O6
6	r	2	NAG	O5-C5-C6-O6
9	T	2	NAG	O5-C5-C6-O6
9	e	2	NAG	O5-C5-C6-O6
9	p	2	NAG	O5-C5-C6-O6
6	V	1	NAG	C1-C2-N2-C7
6	g	1	NAG	C1-C2-N2-C7
6	r	1	NAG	C1-C2-N2-C7
6	V	1	NAG	C3-C2-N2-C7
6	g	1	NAG	C3-C2-N2-C7
6	r	1	NAG	C3-C2-N2-C7
9	T	1	NAG	C3-C2-N2-C7
9	e	1	NAG	C3-C2-N2-C7
9	p	1	NAG	C3-C2-N2-C7
5	D	2	NAG	C1-C2-N2-C7

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Mol	Chain	Res	Type	Atoms
5	X	2	NAG	C1-C2-N2-C7
5	i	2	NAG	C1-C2-N2-C7
6	R	1	NAG	C1-C2-N2-C7
6	U	2	NAG	C1-C2-N2-C7
6	c	1	NAG	C1-C2-N2-C7
6	f	2	NAG	C1-C2-N2-C7
6	n	1	NAG	C1-C2-N2-C7
6	q	2	NAG	C1-C2-N2-C7
7	P	2	NAG	C1-C2-N2-C7
7	a	2	NAG	C1-C2-N2-C7
7	l	2	NAG	C1-C2-N2-C7
9	T	1	NAG	C1-C2-N2-C7
9	e	1	NAG	C1-C2-N2-C7
9	p	1	NAG	C1-C2-N2-C7

There are no ring outliers.

29 monomers are involved in 34 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	l	3	BMA	1	0
8	o	1	NAG	4	0
9	T	3	BMA	1	0
7	l	5	MAN	1	0
9	T	6	MAN	1	0
9	e	6	MAN	1	0
7	a	3	BMA	1	0
6	Y	1	NAG	1	0
9	T	1	NAG	3	0
6	j	1	NAG	1	0
8	S	2	NAG	3	0
8	d	1	NAG	4	0
8	d	2	NAG	3	0
9	e	3	BMA	1	0
9	e	2	NAG	2	0
9	p	2	NAG	2	0
8	o	2	NAG	3	0
6	g	1	NAG	1	0
6	r	2	NAG	1	0
6	r	1	NAG	1	0
9	T	2	NAG	2	0
6	I	1	NAG	1	0
9	p	1	NAG	3	0

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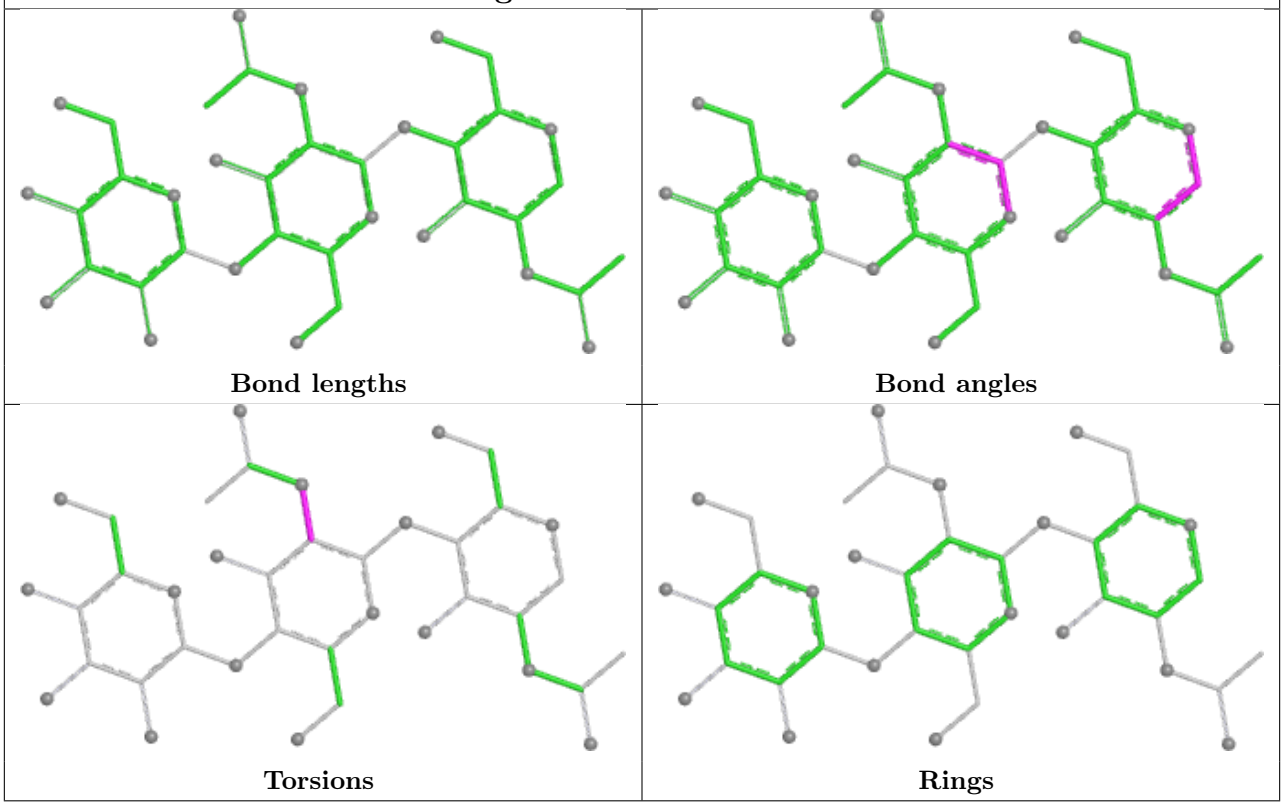
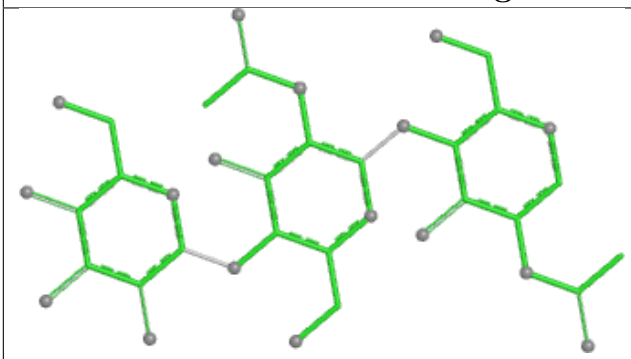
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	V	2	NAG	1	0
8	S	1	NAG	4	0
6	V	1	NAG	1	0
6	g	2	NAG	1	0
7	a	5	MAN	1	0
9	e	1	NAG	3	0

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

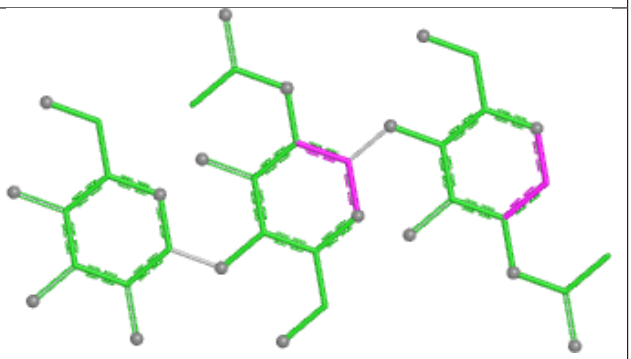
Oligosaccharide Chain D



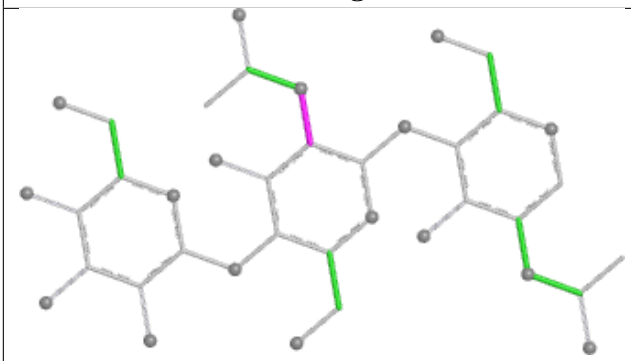
Oligosaccharide Chain X



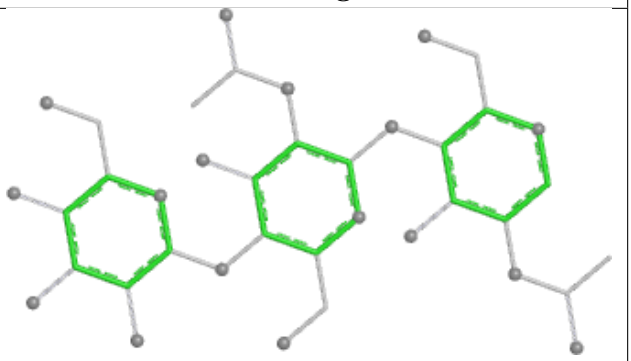
Bond lengths



Bond angles

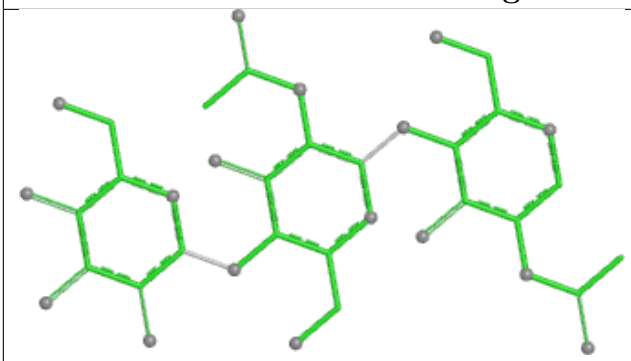


Torsions

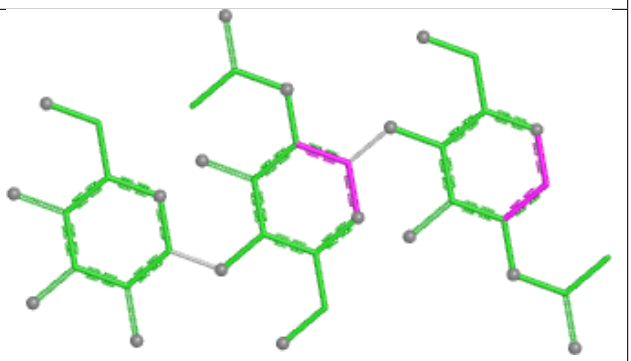


Rings

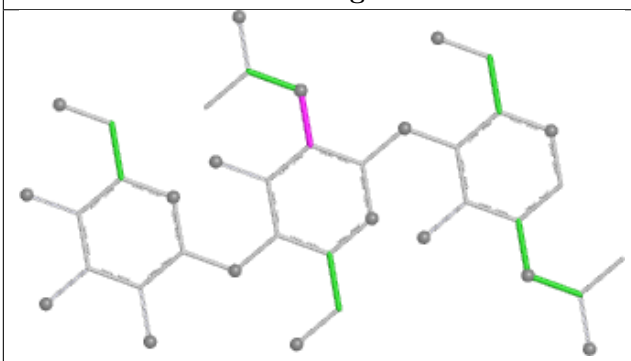
Oligosaccharide Chain i



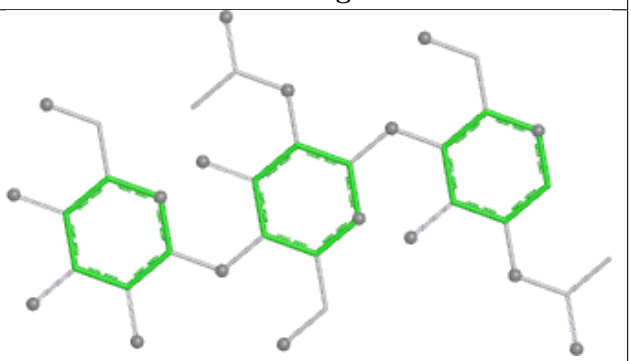
Bond lengths



Bond angles

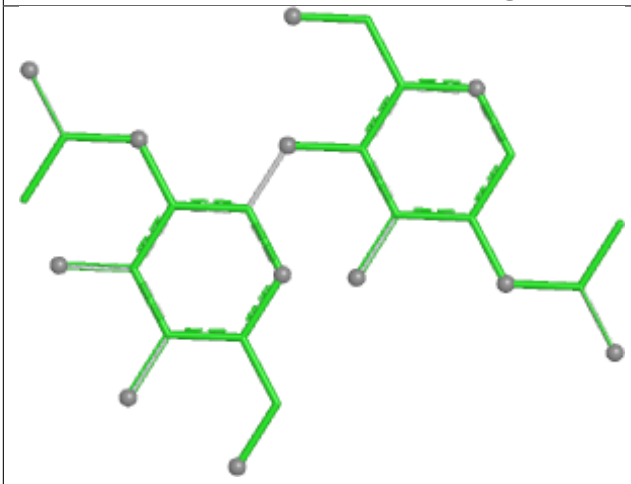


Torsions

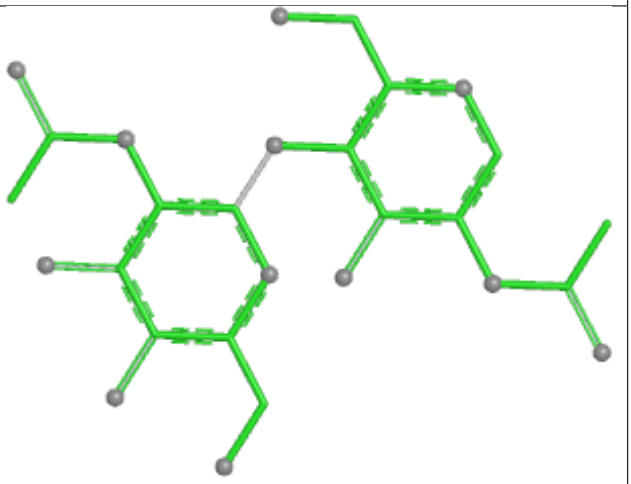


Rings

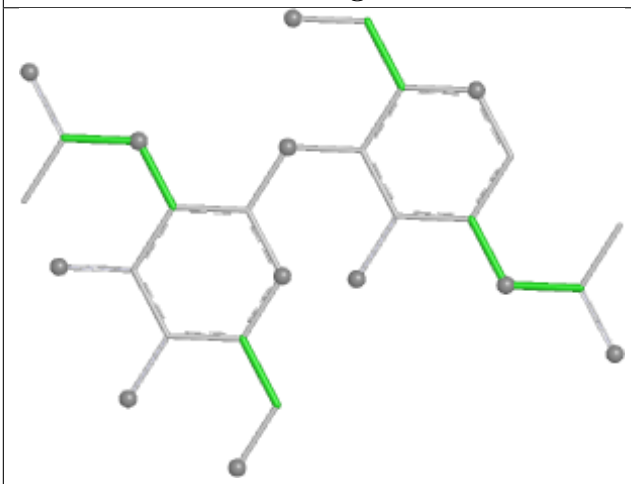
Oligosaccharide Chain I



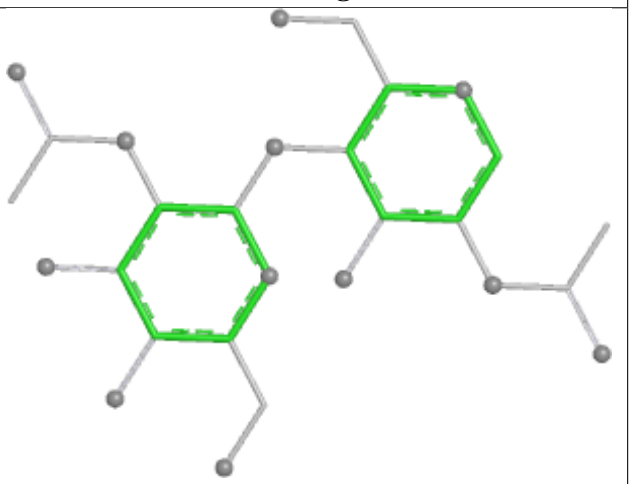
Bond lengths



Bond angles

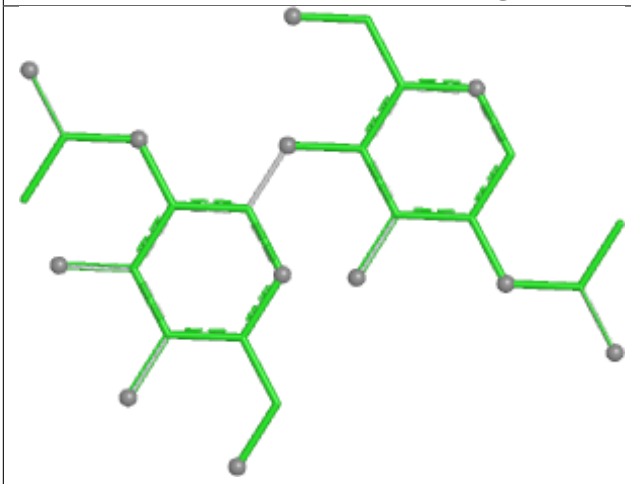


Torsions

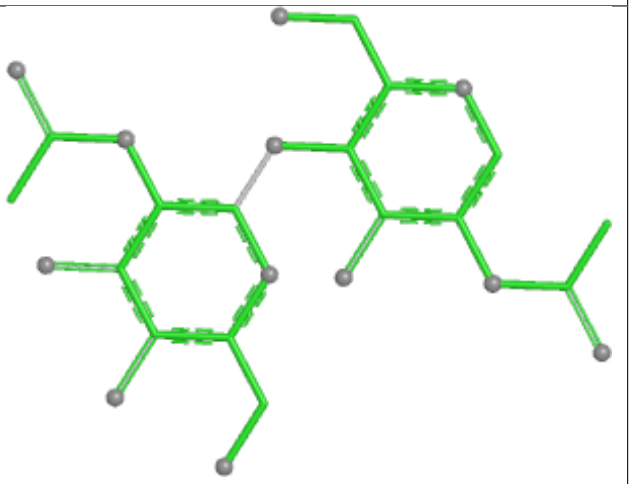


Rings

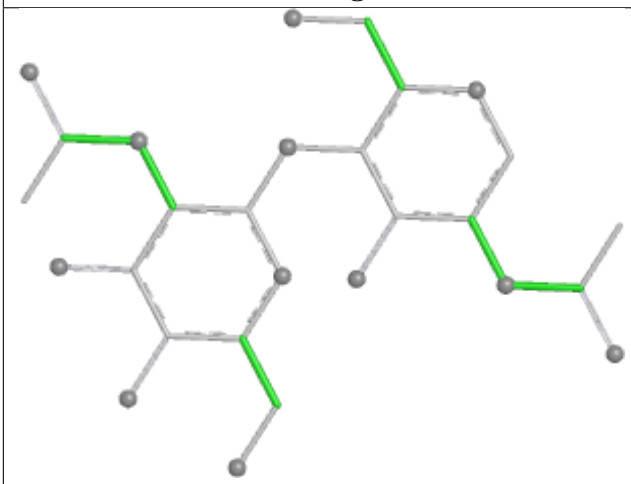
Oligosaccharide Chain O



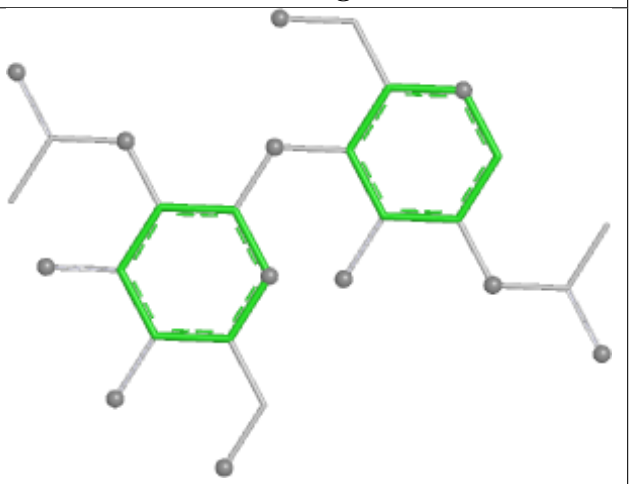
Bond lengths



Bond angles

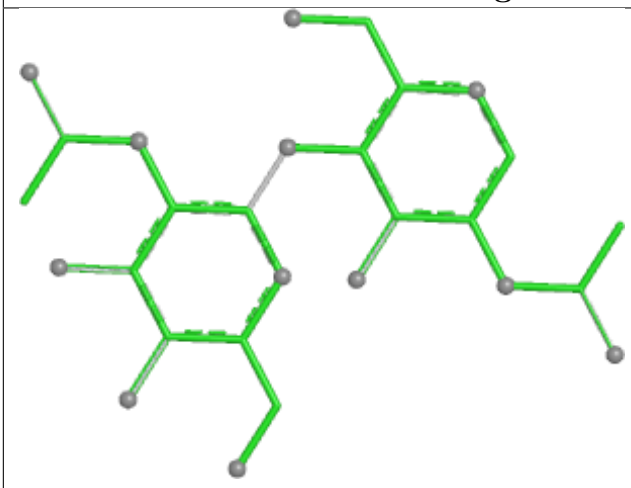


Torsions

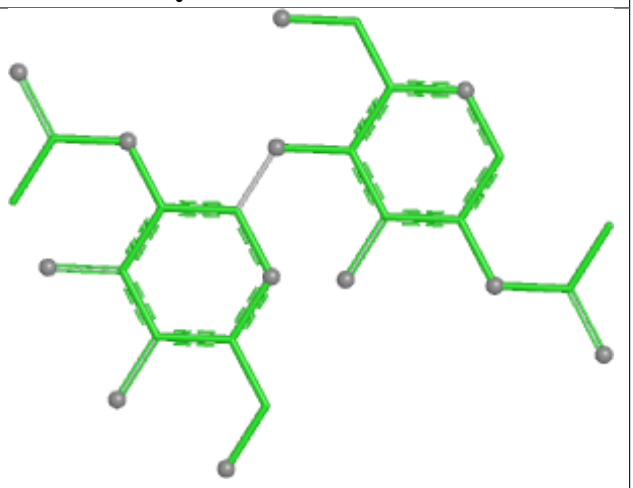


Rings

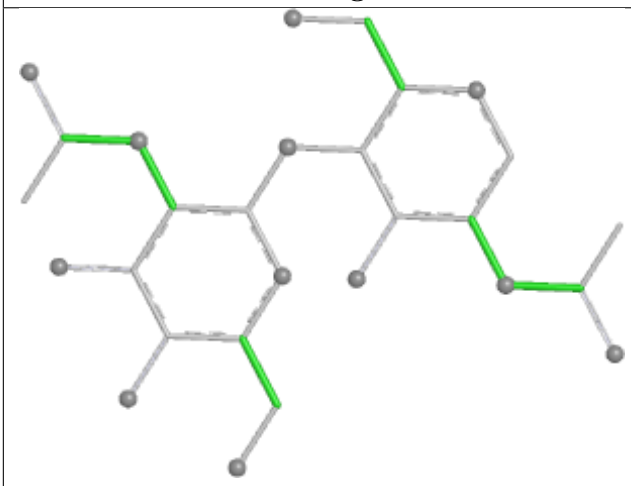
Oligosaccharide Chain Q



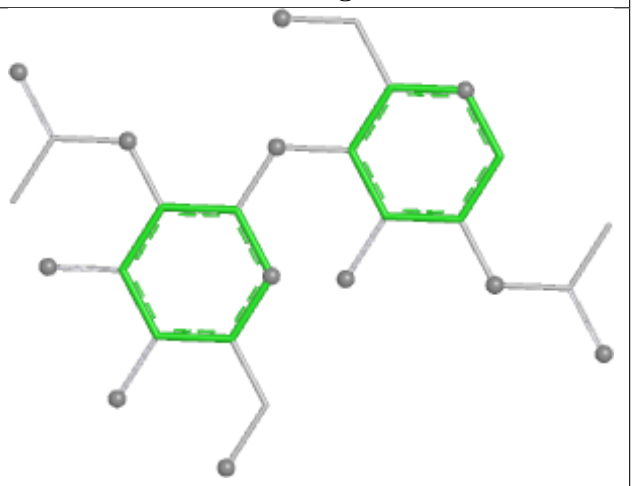
Bond lengths



Bond angles

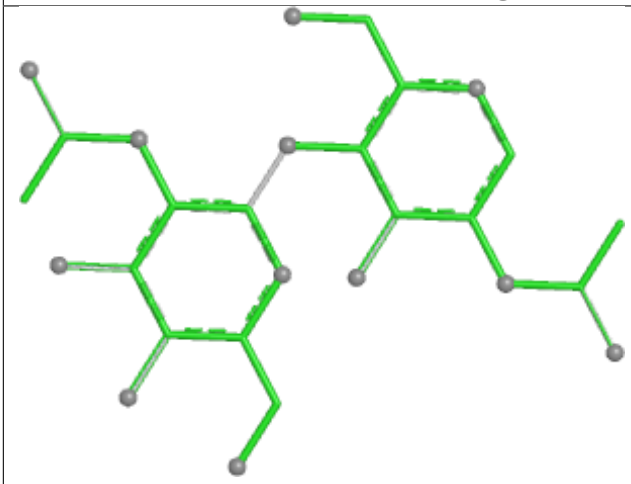


Torsions

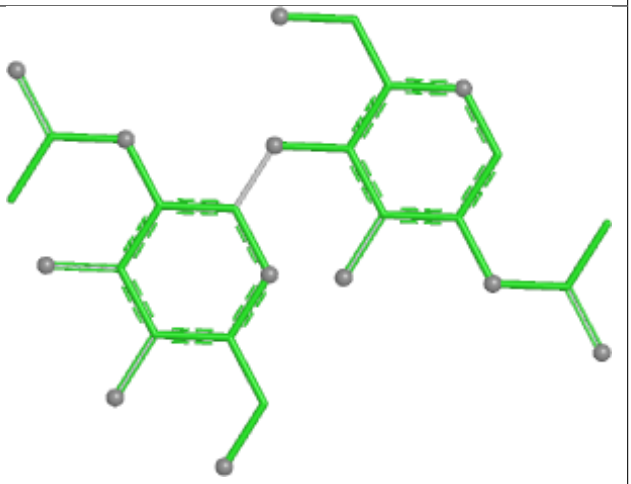


Rings

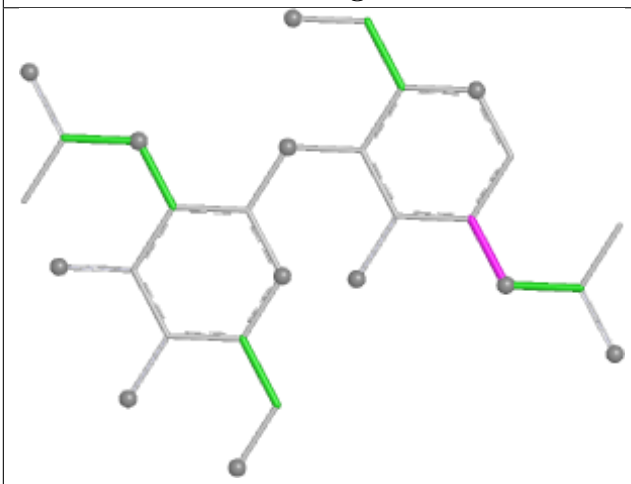
Oligosaccharide Chain R



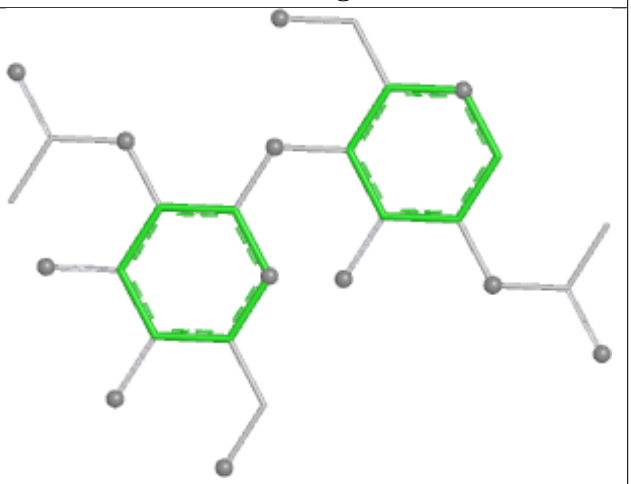
Bond lengths



Bond angles

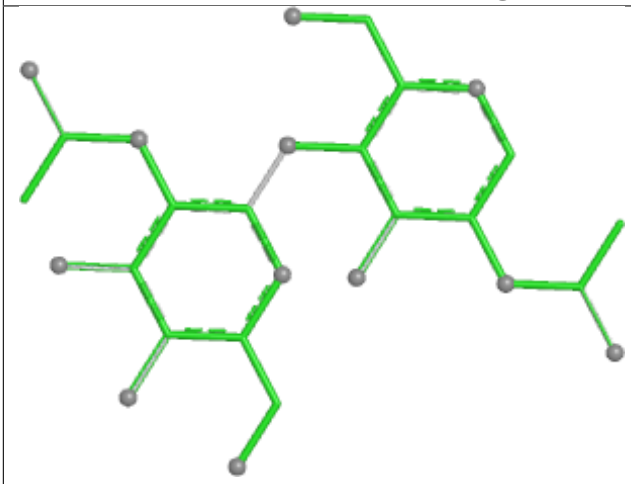


Torsions

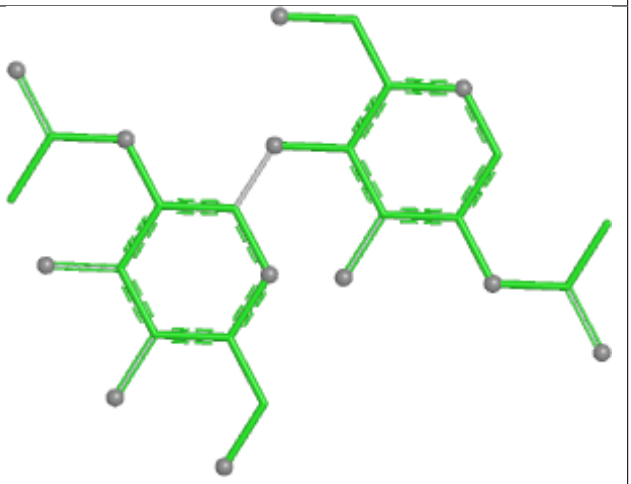


Rings

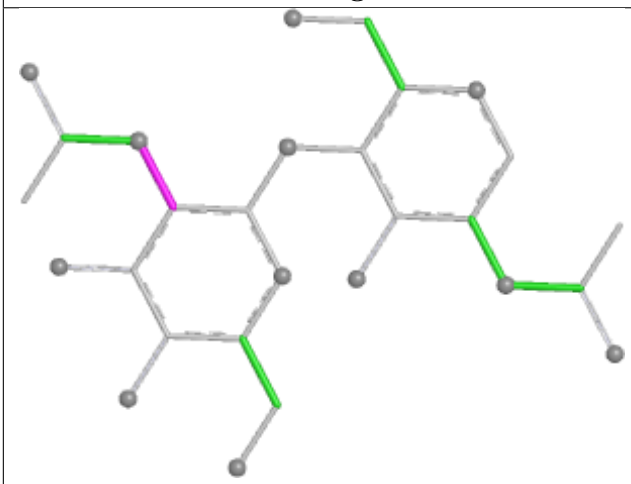
Oligosaccharide Chain U



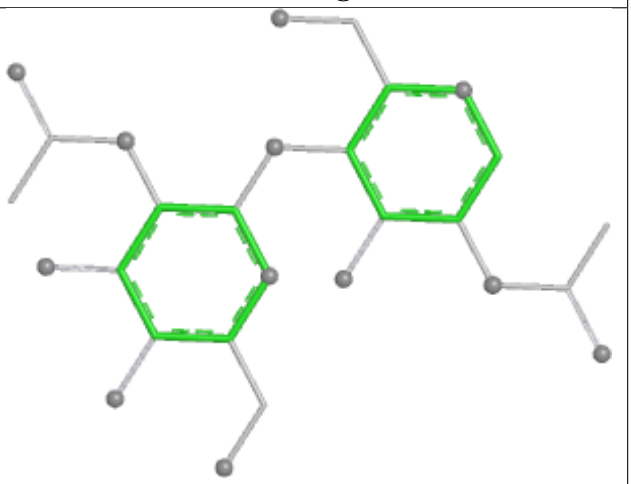
Bond lengths



Bond angles

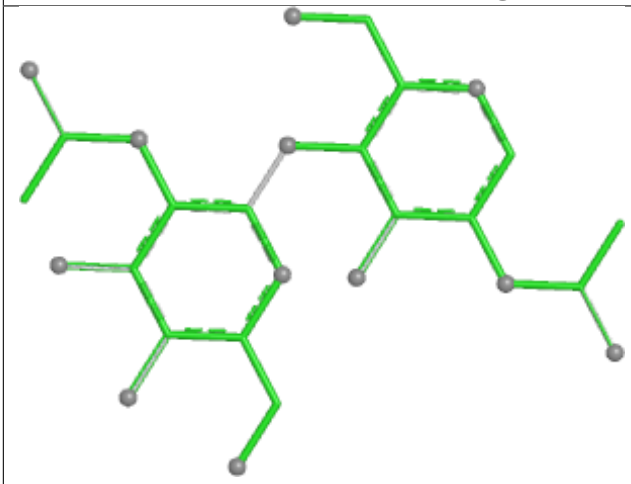


Torsions

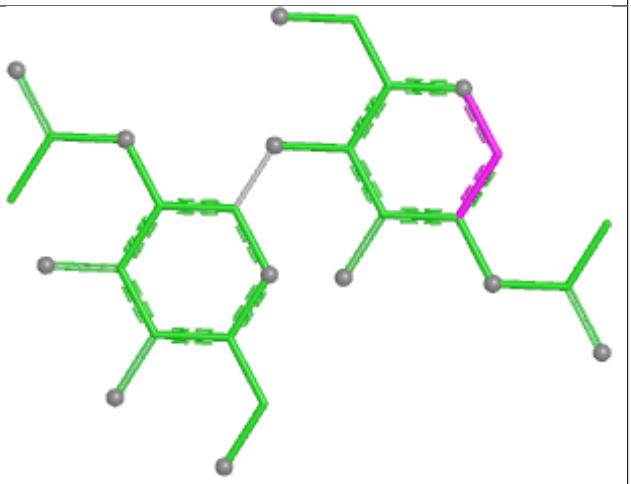


Rings

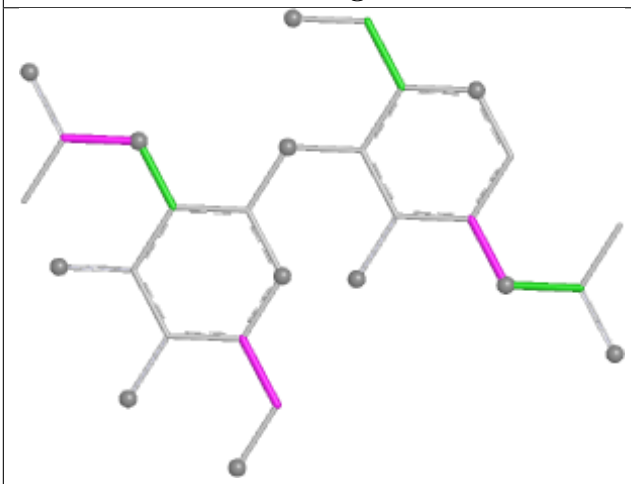
Oligosaccharide Chain V



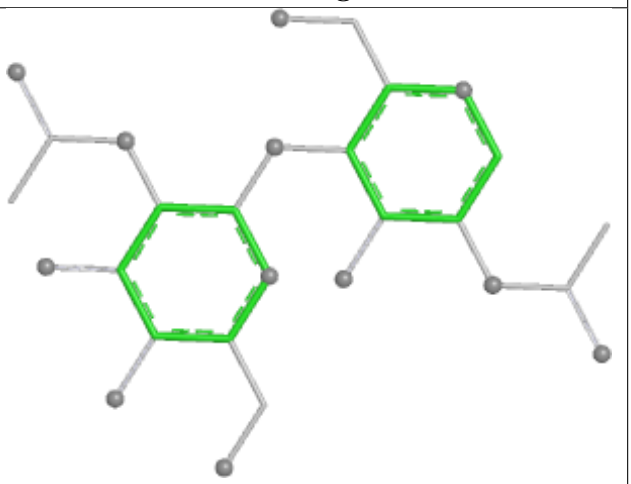
Bond lengths



Bond angles

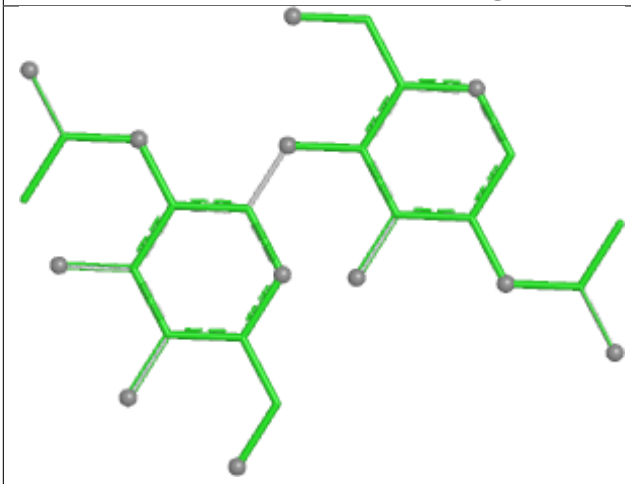


Torsions

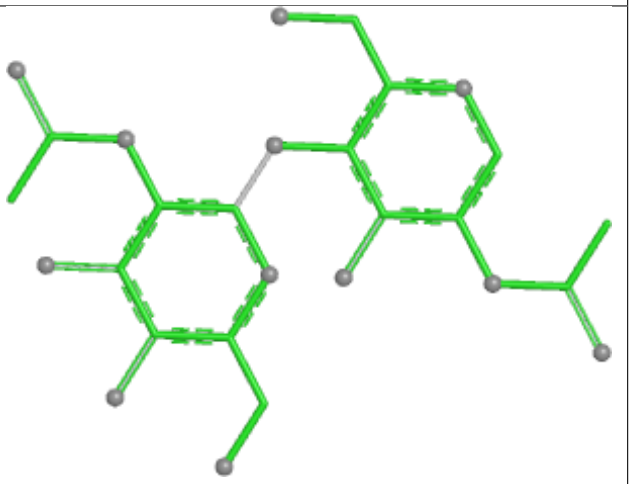


Rings

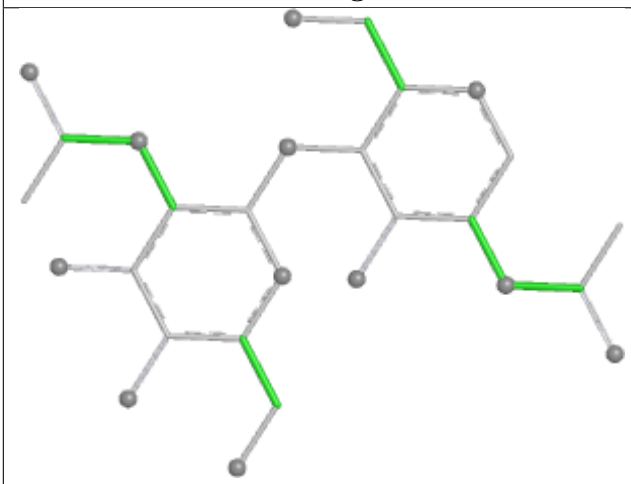
Oligosaccharide Chain W



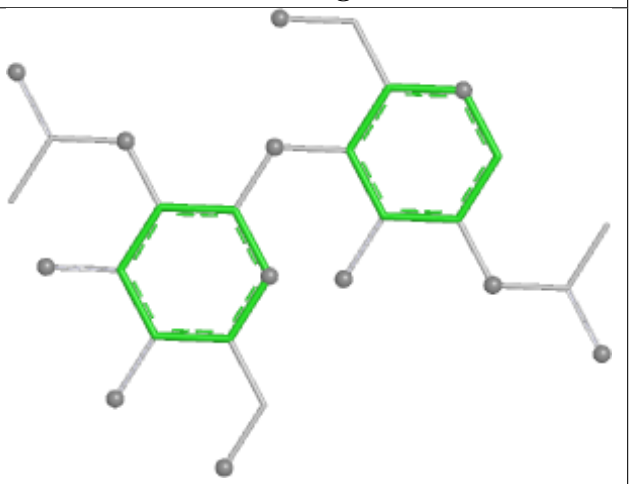
Bond lengths



Bond angles

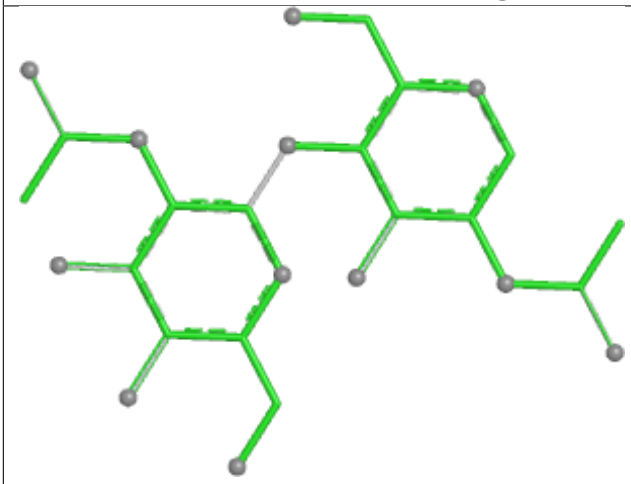


Torsions



Rings

Oligosaccharide Chain Y



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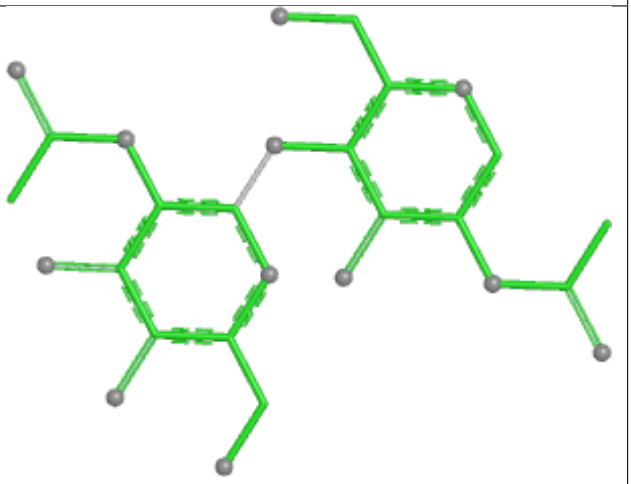
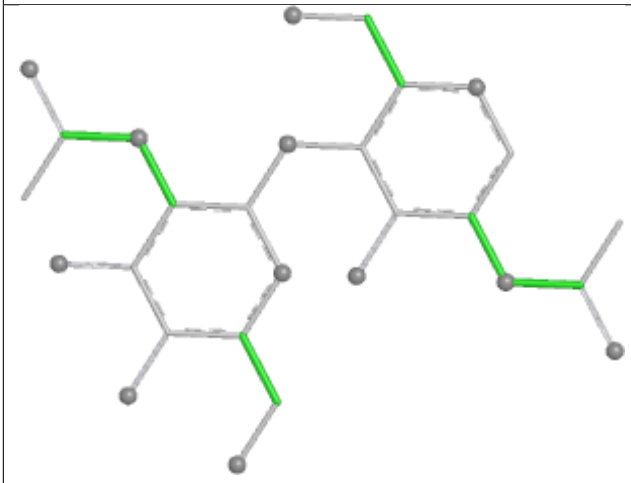


Bond angles



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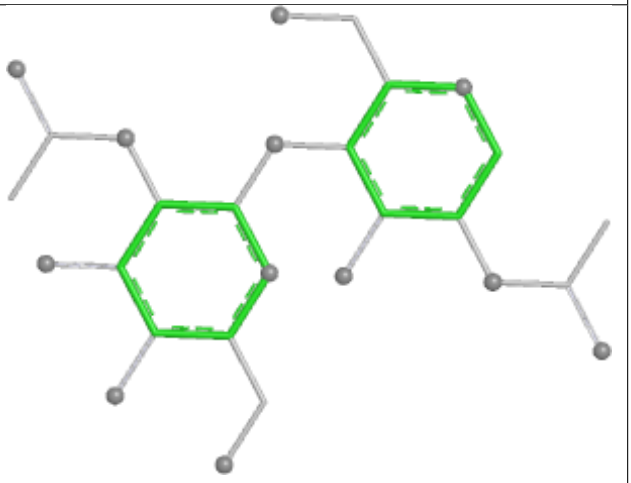
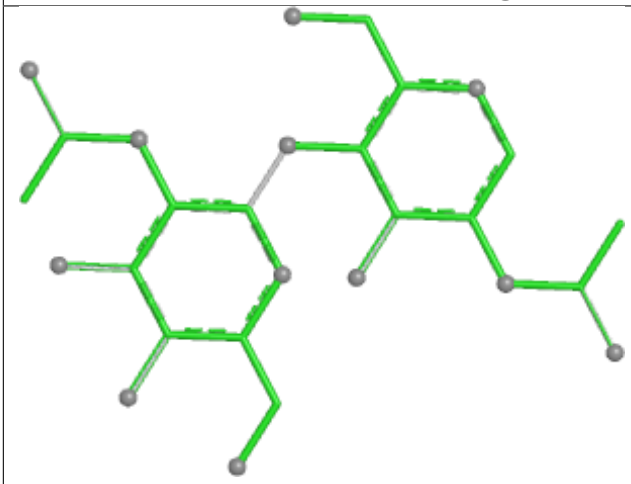


Rings

Oligosaccharide Chain Z



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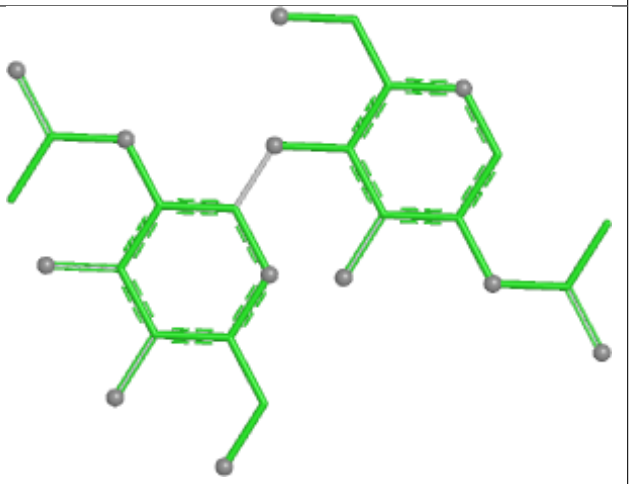

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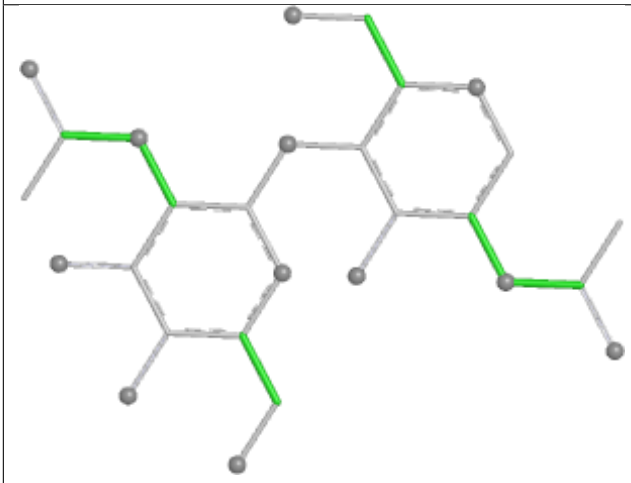

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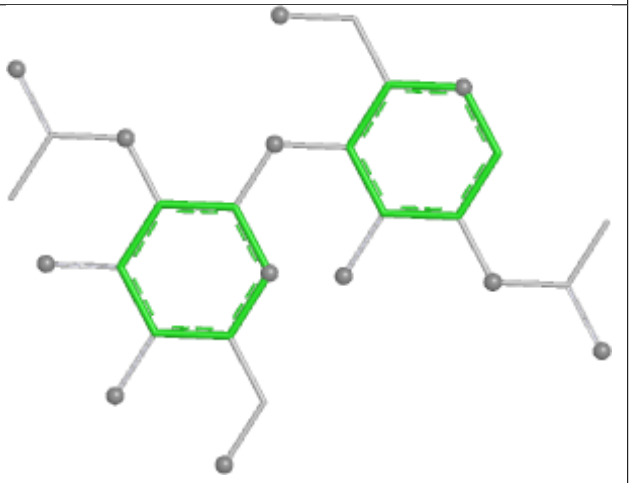
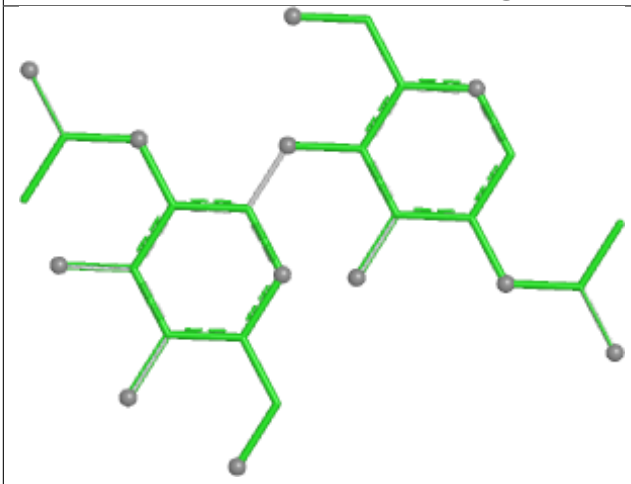


Rings

Oligosaccharide Chain b



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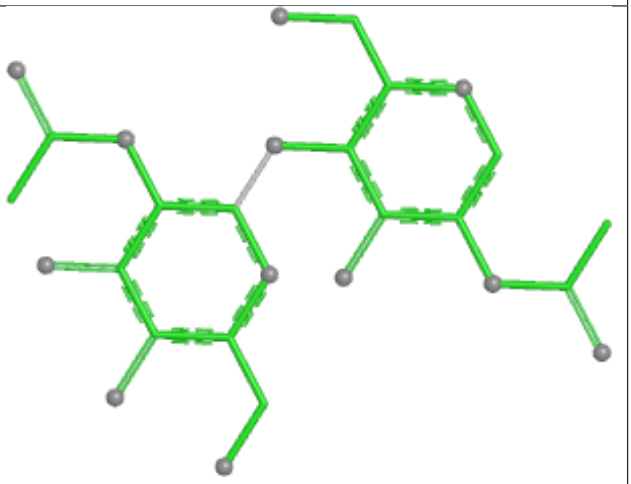

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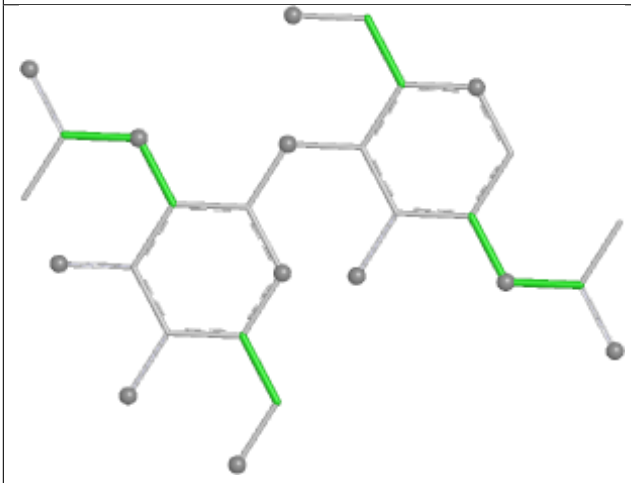

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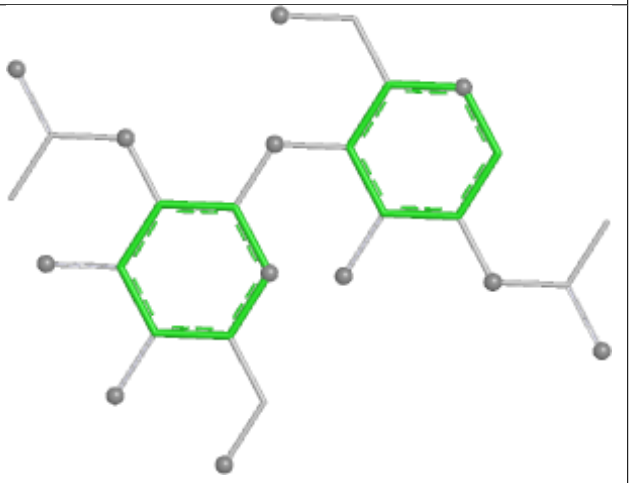
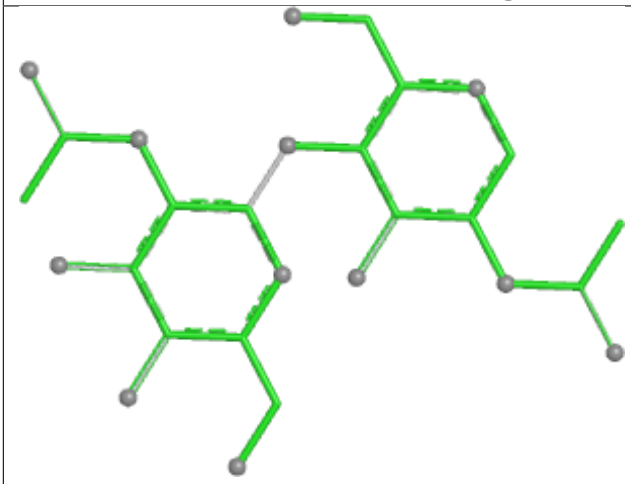


Rings

Oligosaccharide Chain c



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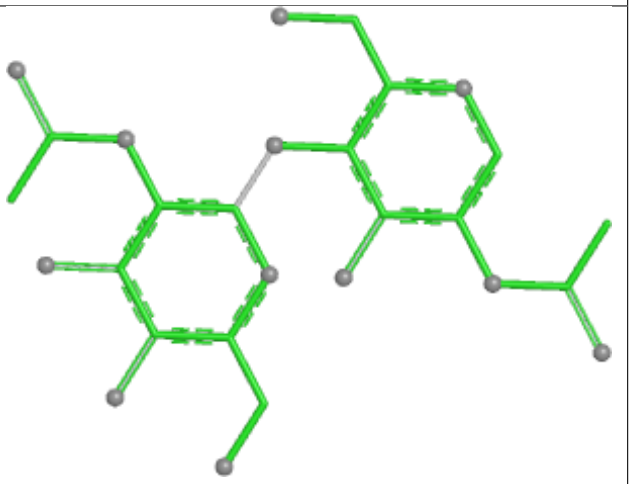

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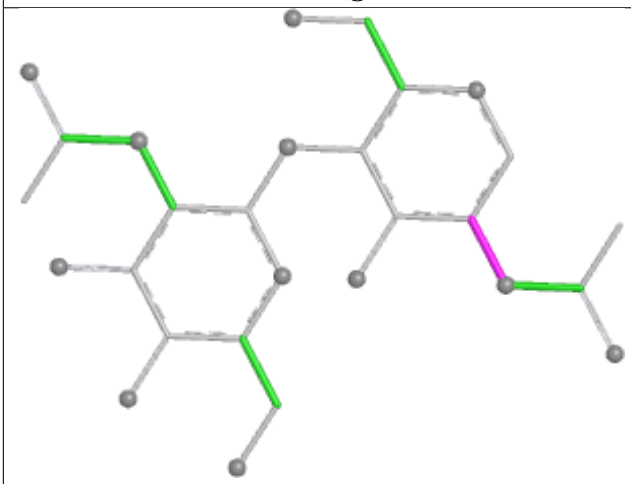

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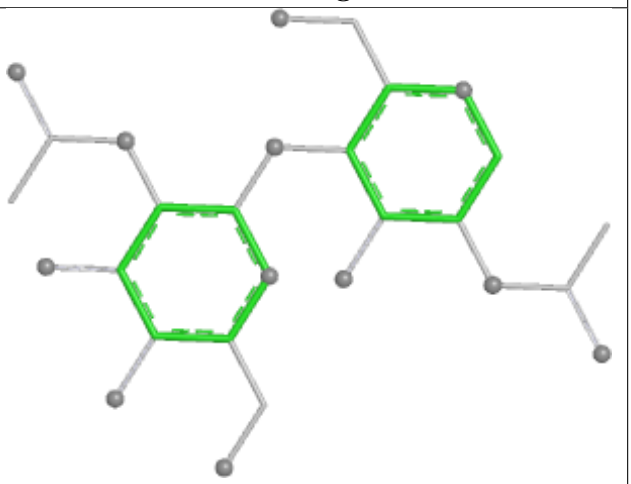
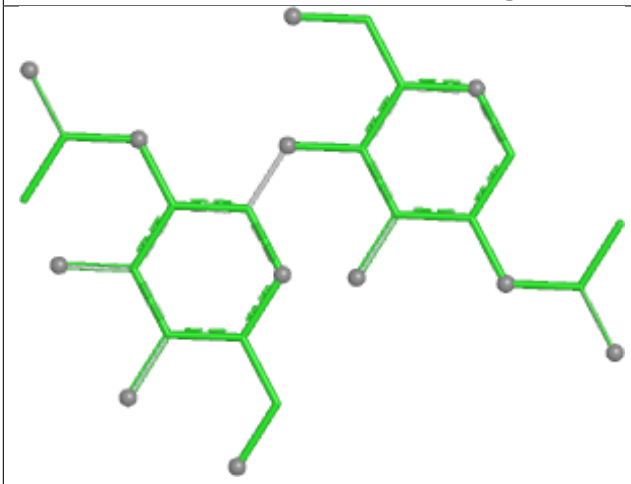


Rings

Oligosaccharide Chain f



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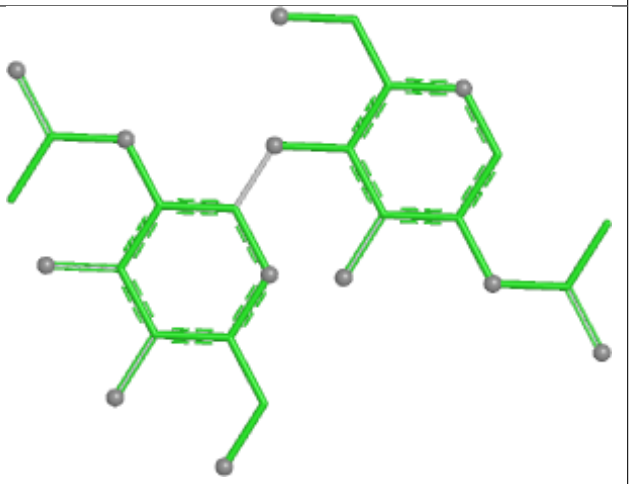

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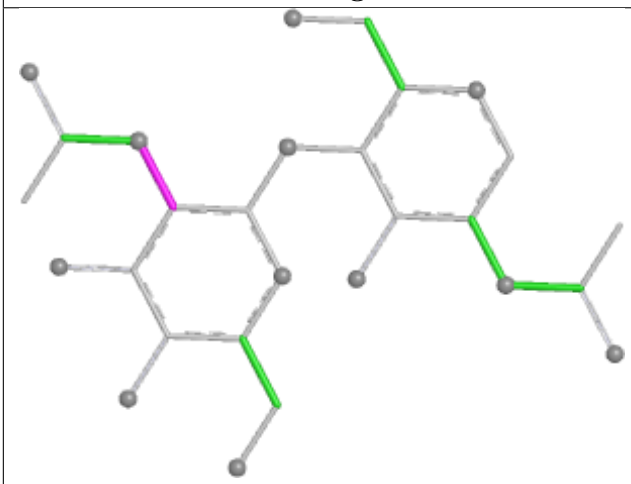

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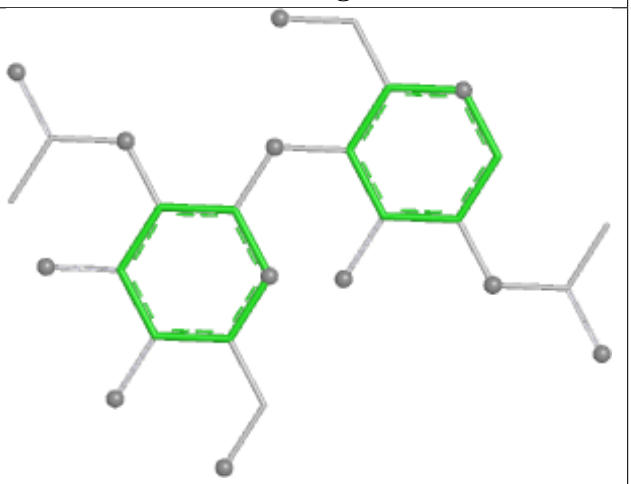
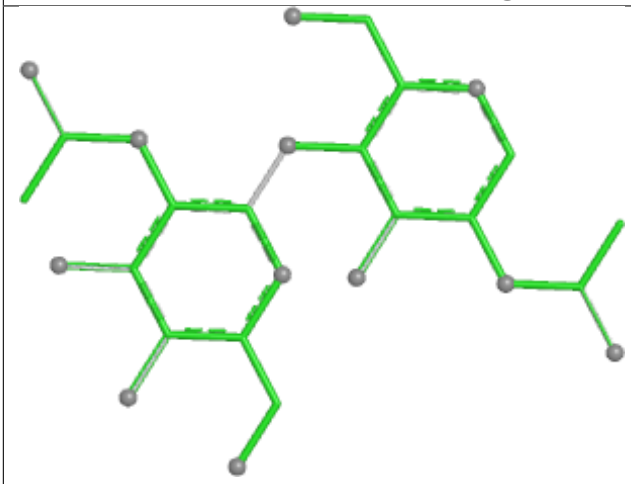


Rings

Oligosaccharide Chain g



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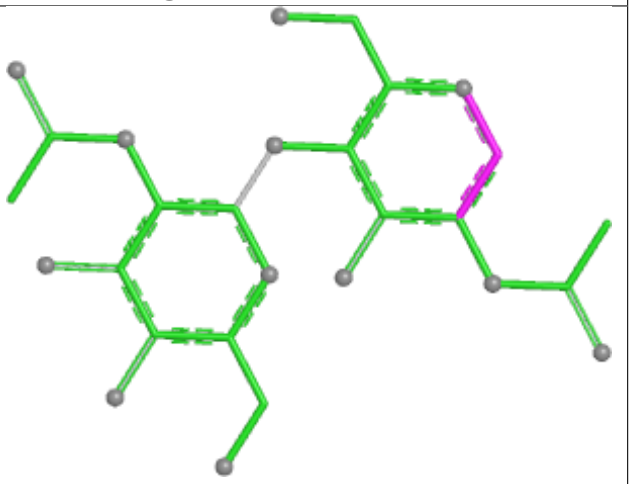
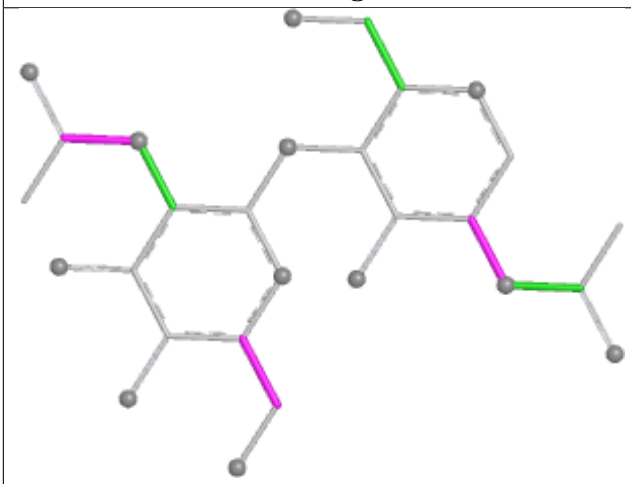


Bond angles



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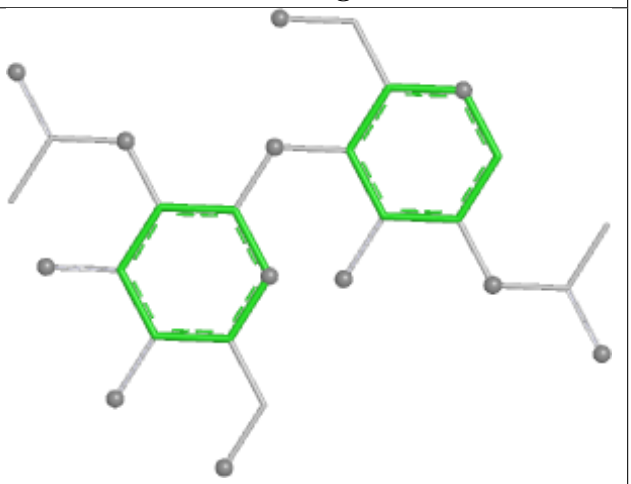
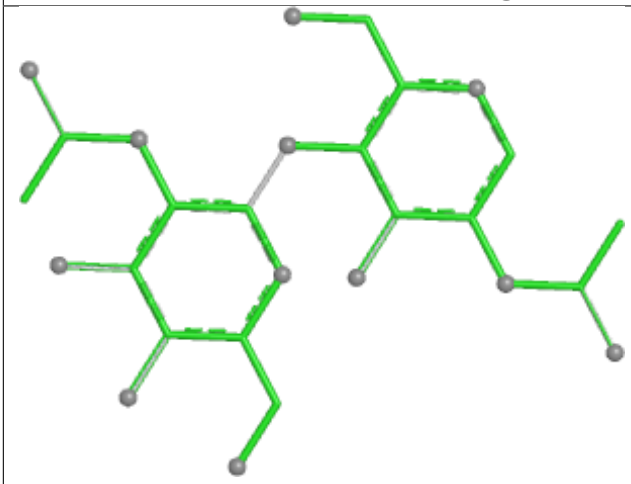


Rings

Oligosaccharide Chain h



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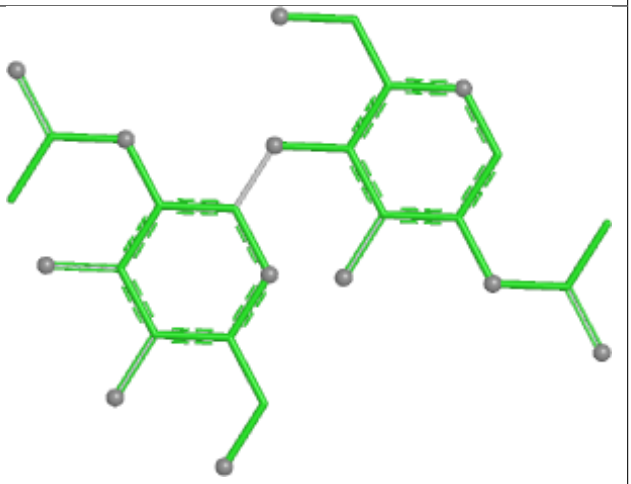

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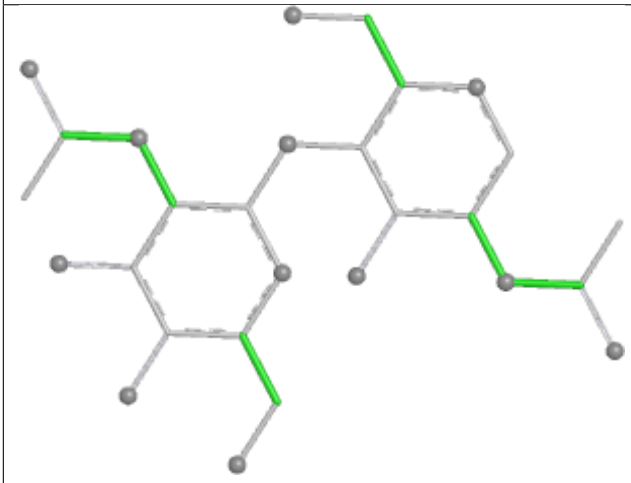

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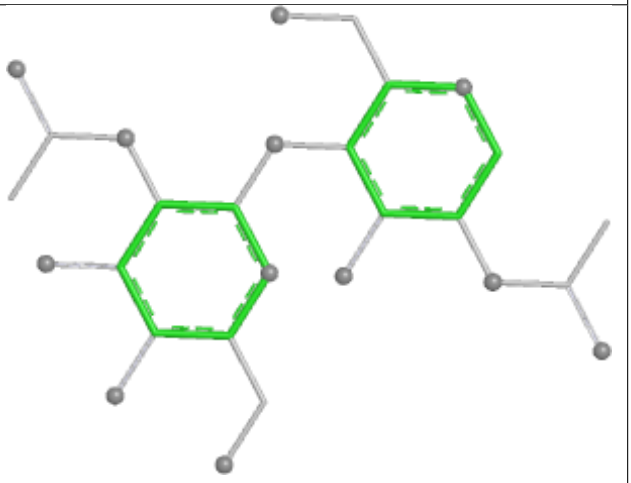
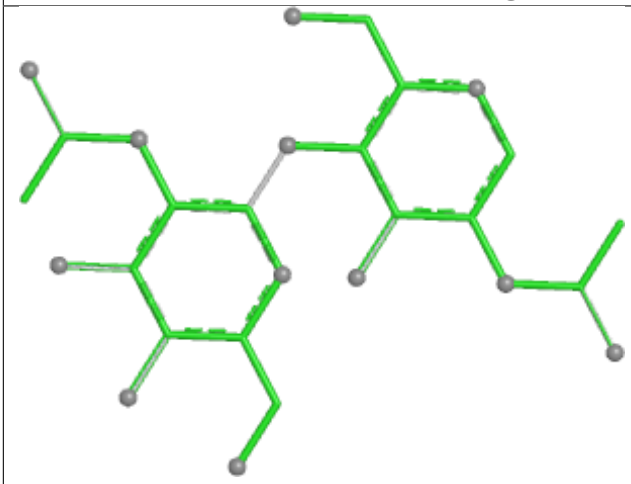


Rings

Oligosaccharide Chain j



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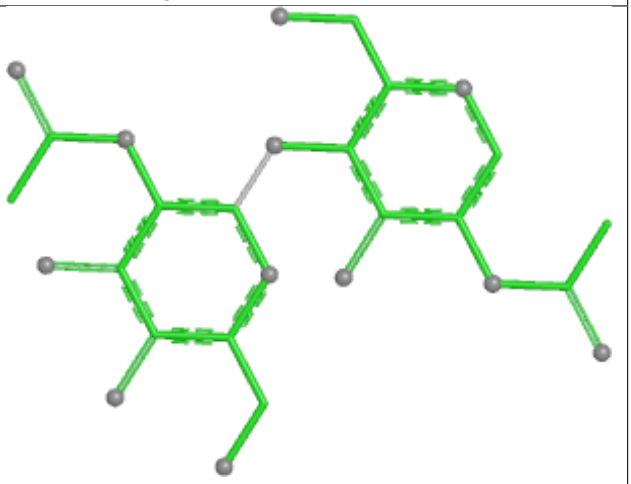
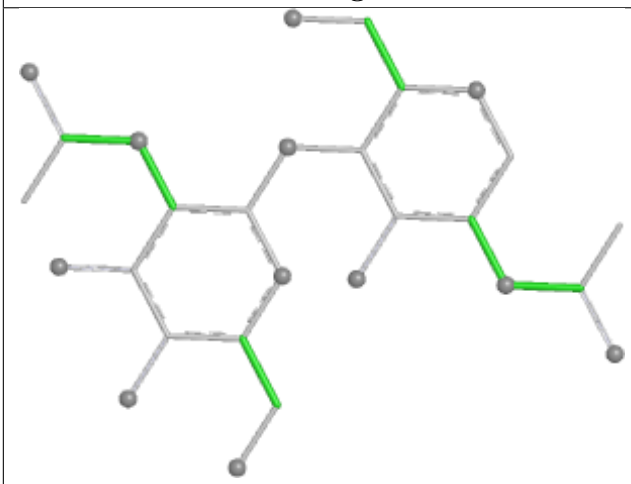


Bond angles



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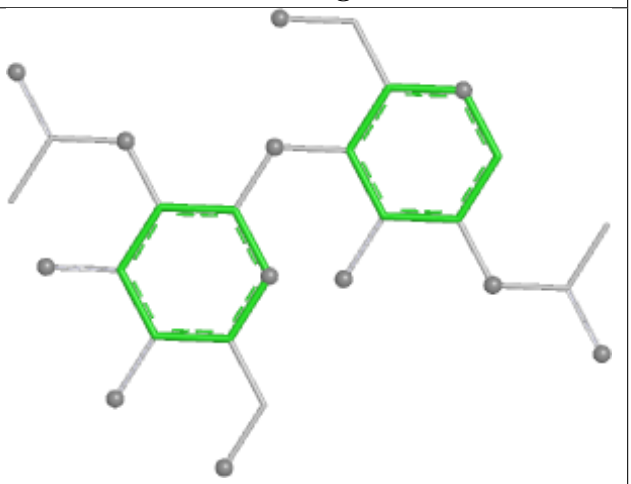
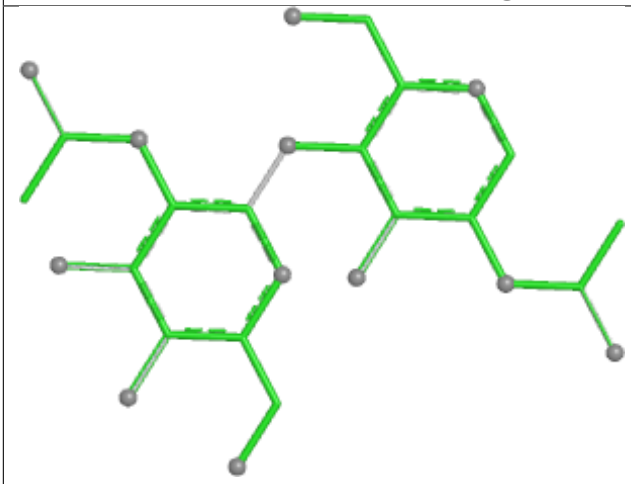


Rings

Oligosaccharide Chain k



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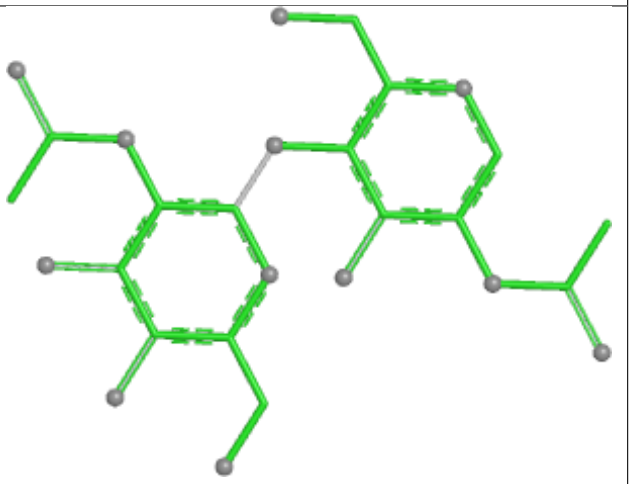
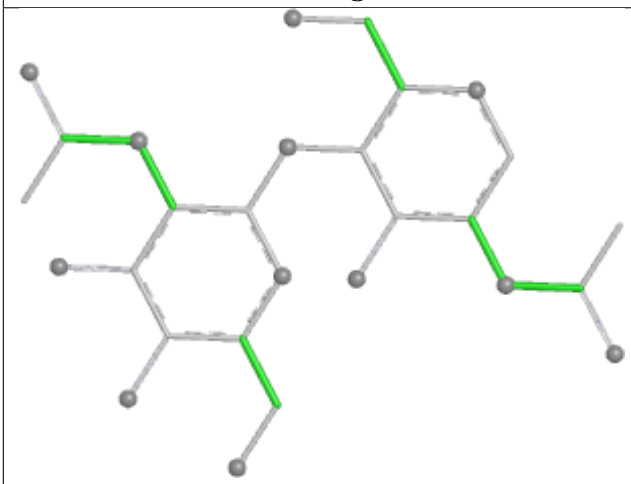


Bond angles



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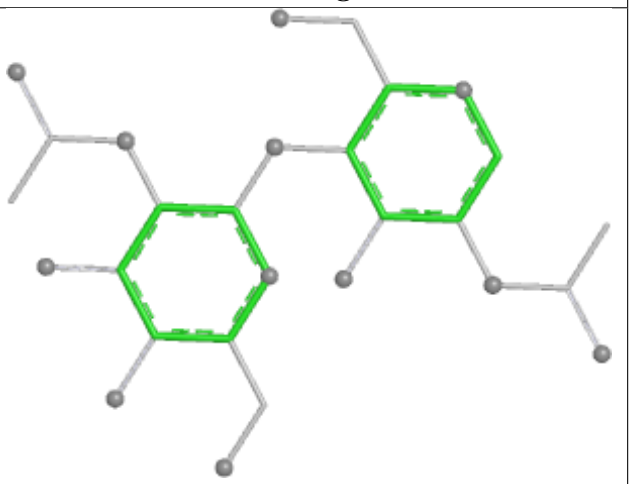
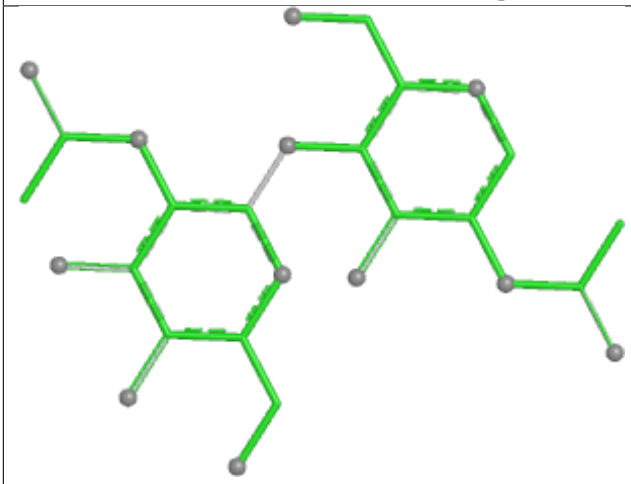


Rings

Oligosaccharide Chain m



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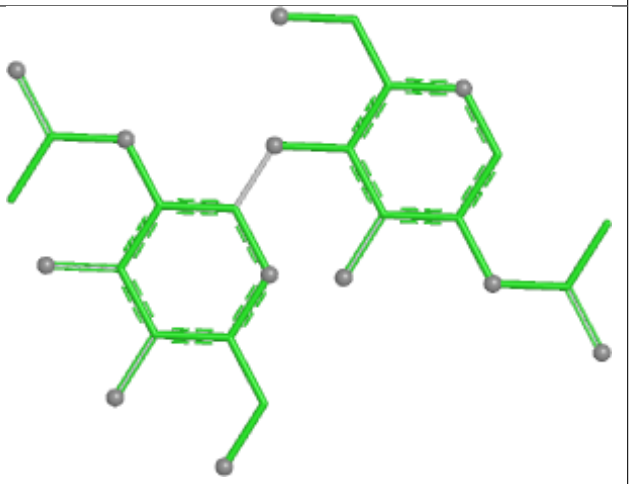

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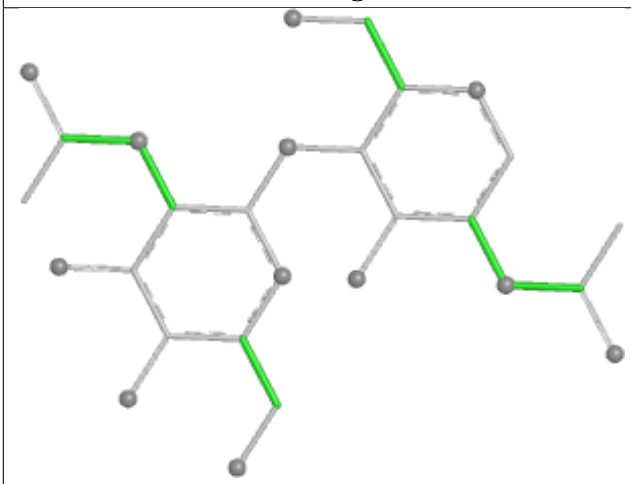

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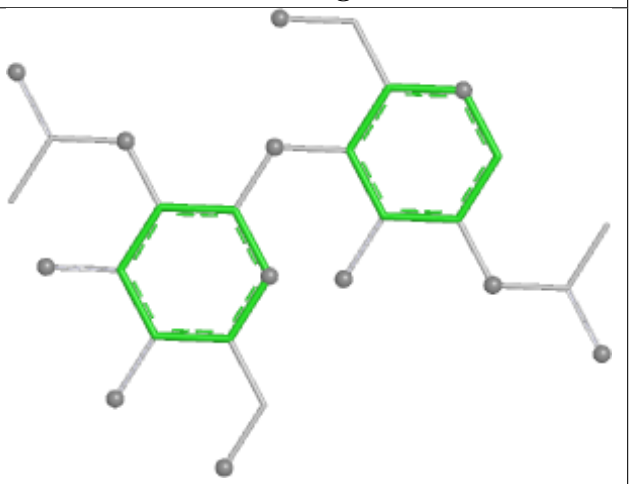
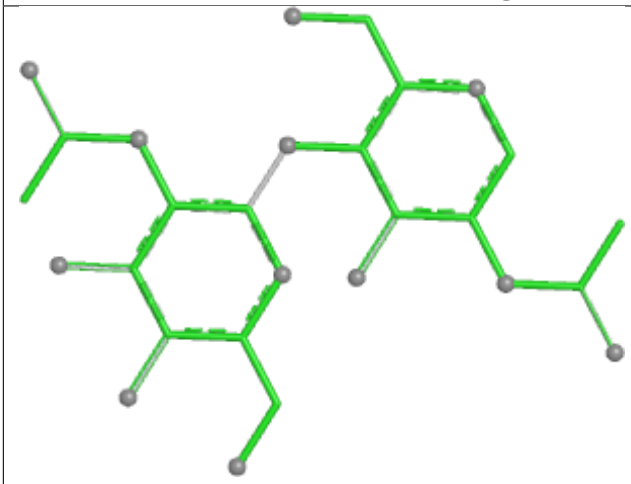


Rings

Oligosaccharide Chain n



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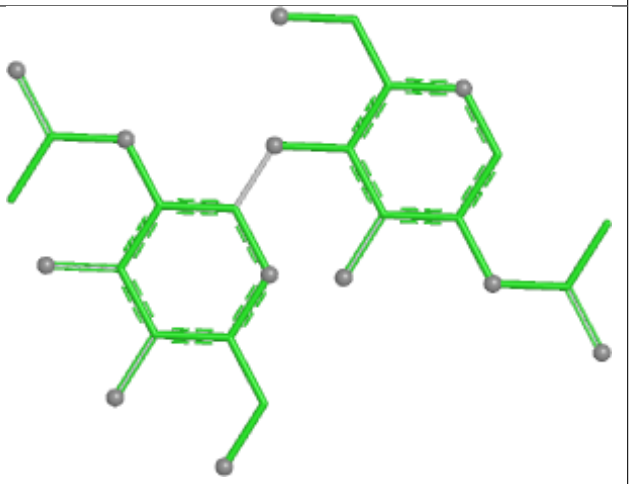

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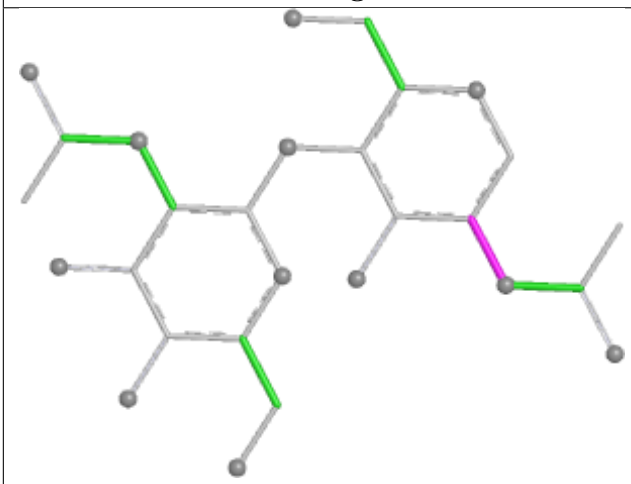

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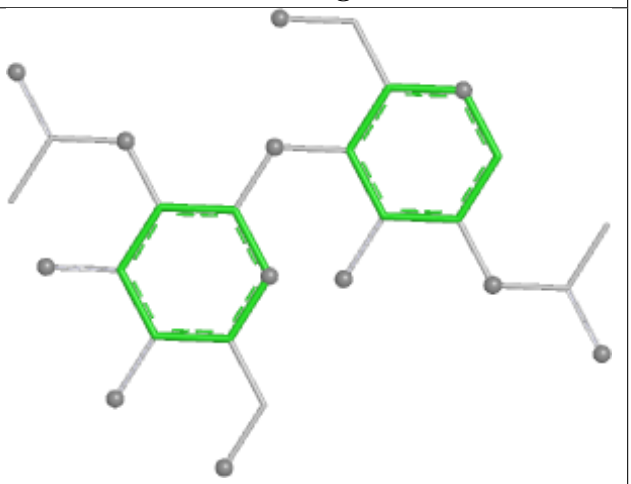
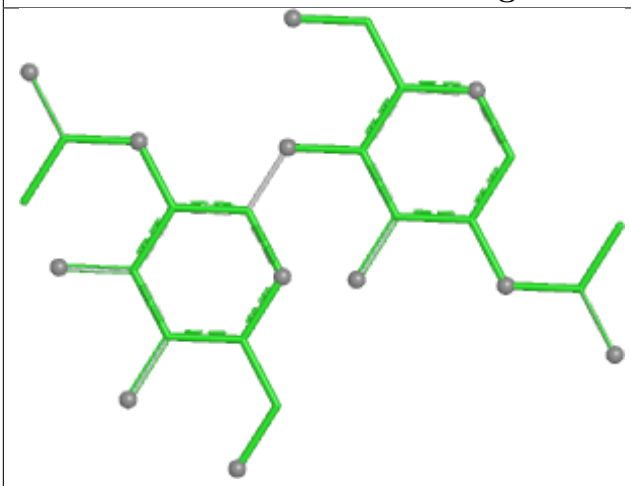


Rings

Oligosaccharide Chain q



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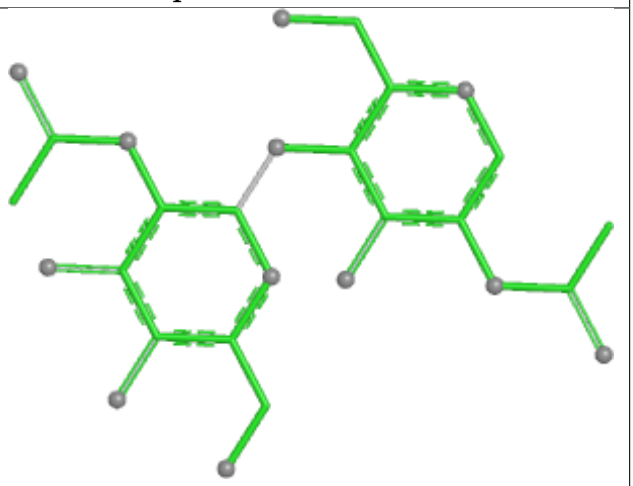
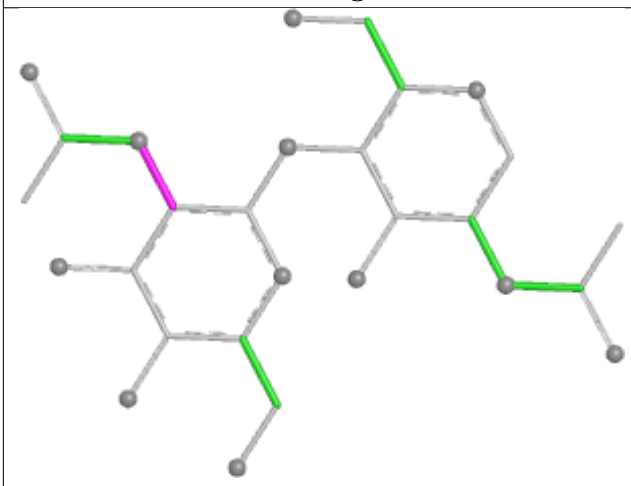


Bond angles



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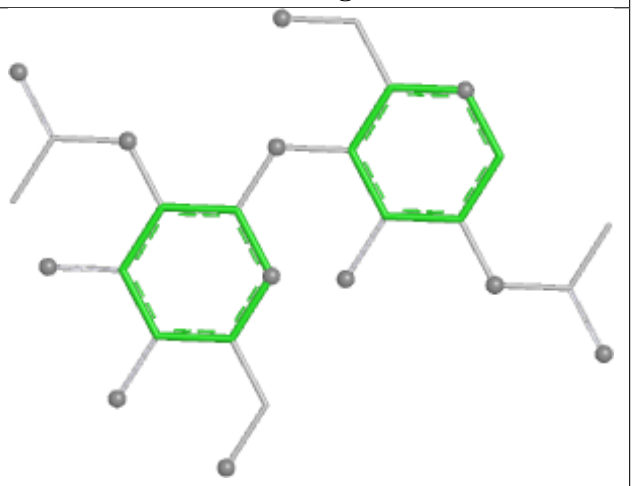
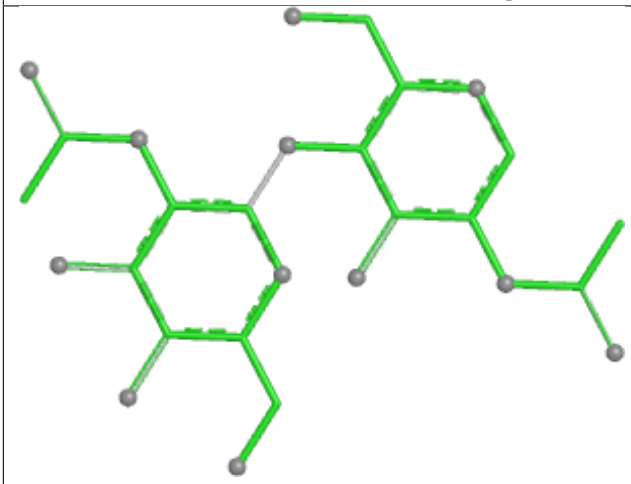
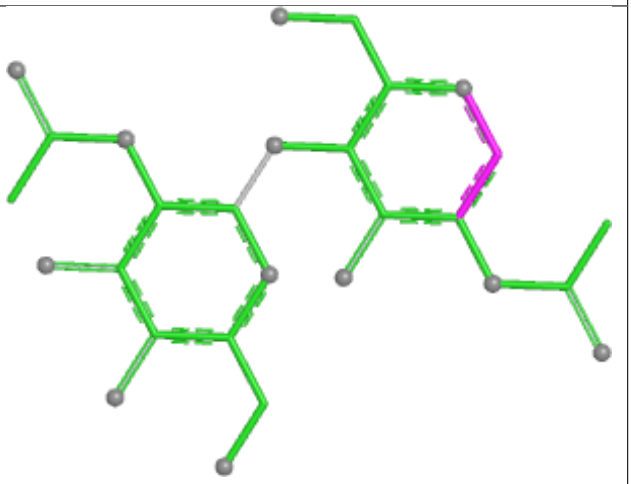


Rings

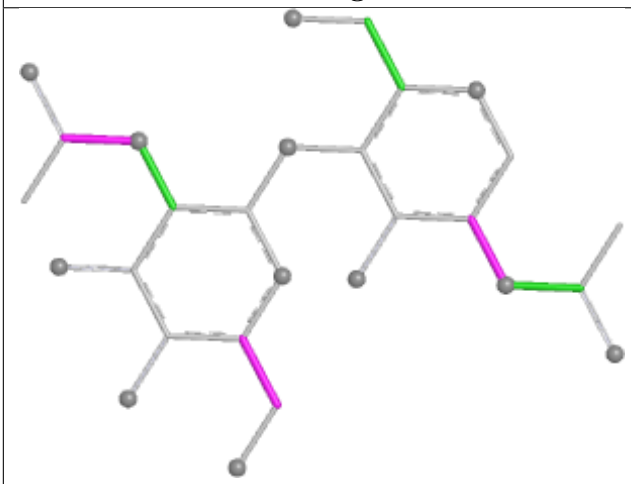
Oligosaccharide Chain r



Bond lengths



Bond angles



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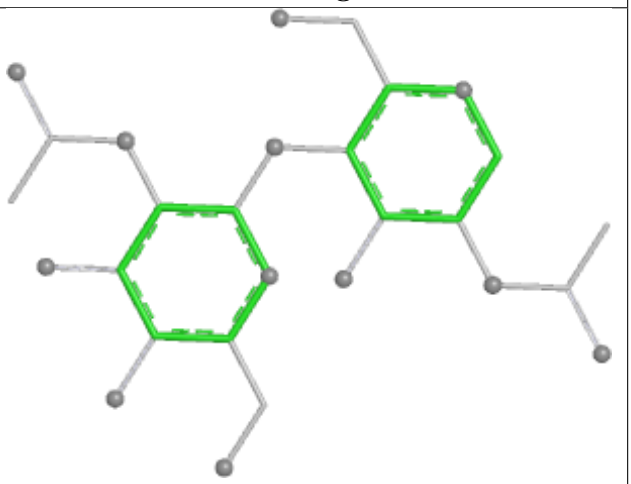
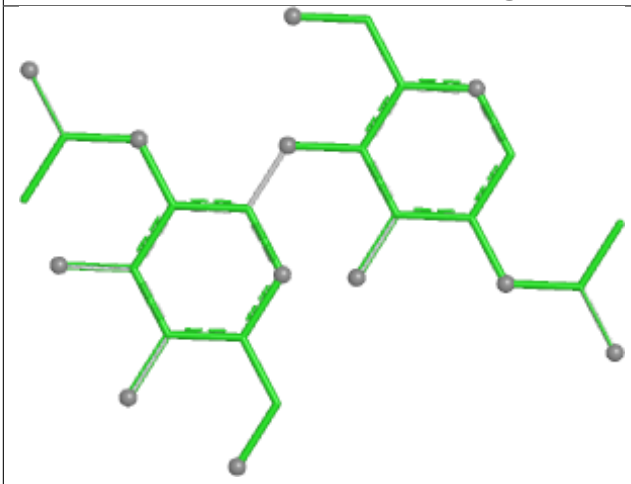
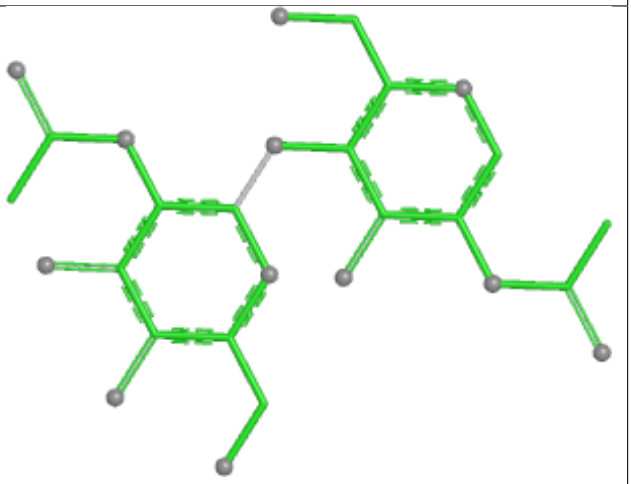


Rings

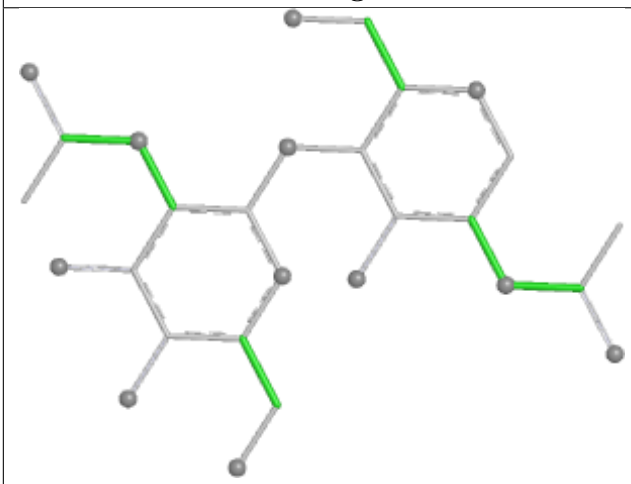
Oligosaccharide Chain s



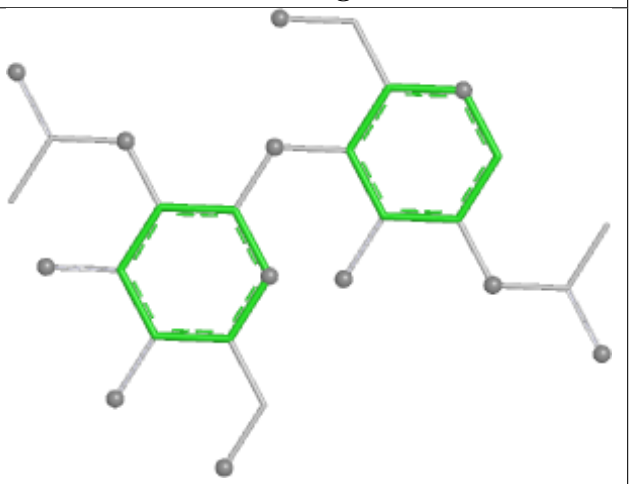
Bond lengths



Bond angles

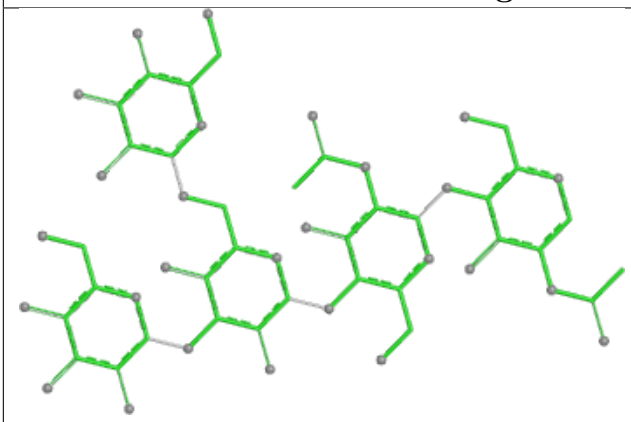


Torsions

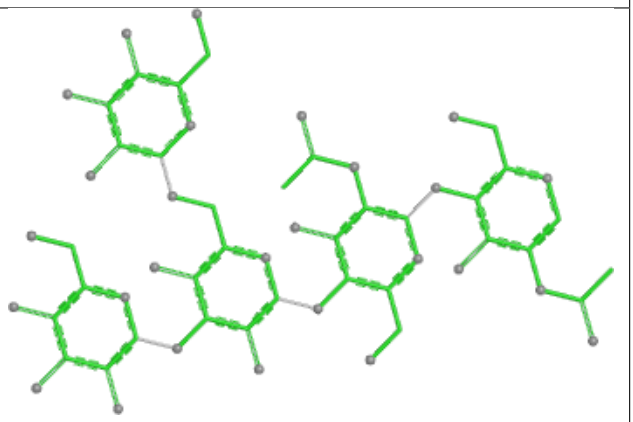


Rings

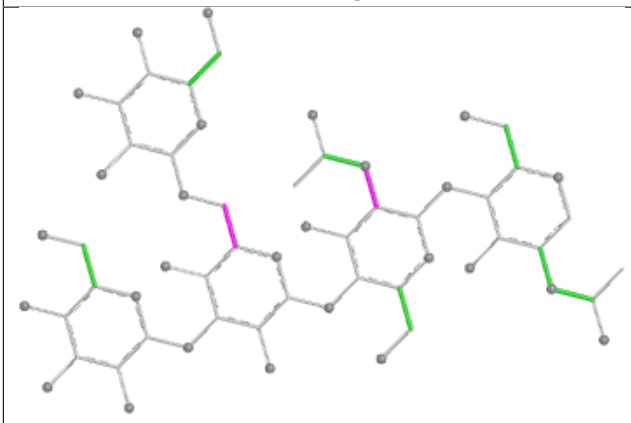
Oligosaccharide Chain P



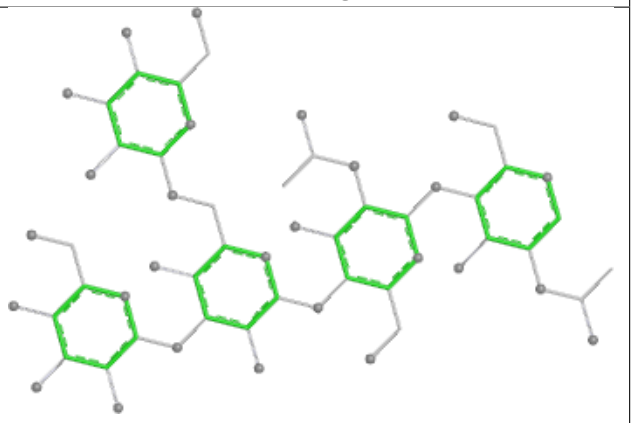
Bond lengths



Bond angles

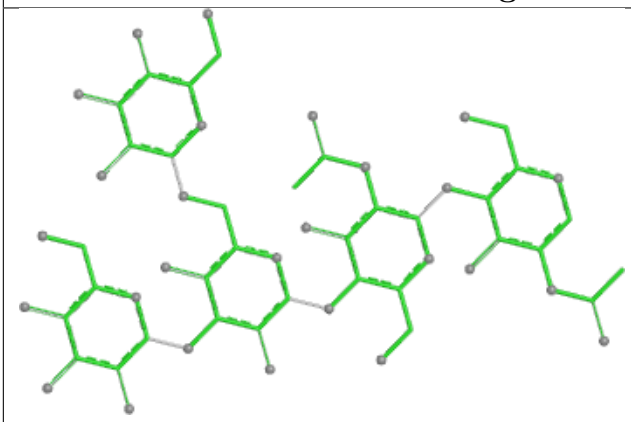


Torsions

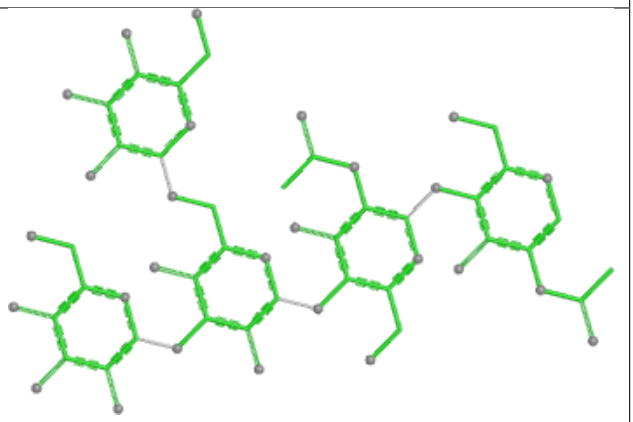


Rings

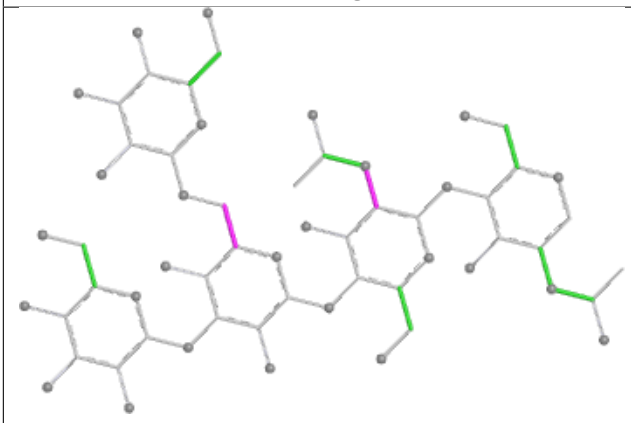
Oligosaccharide Chain a



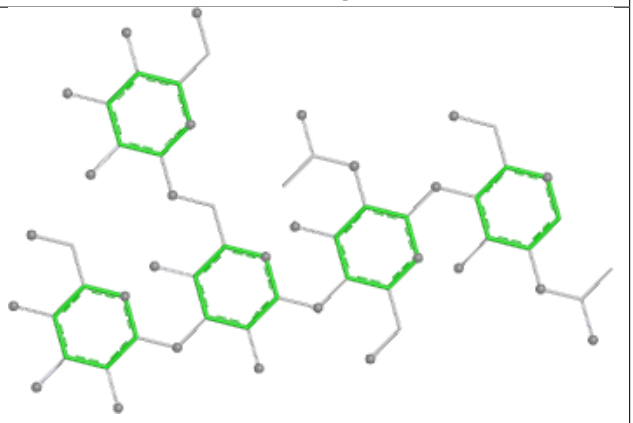
Bond lengths



Bond angles

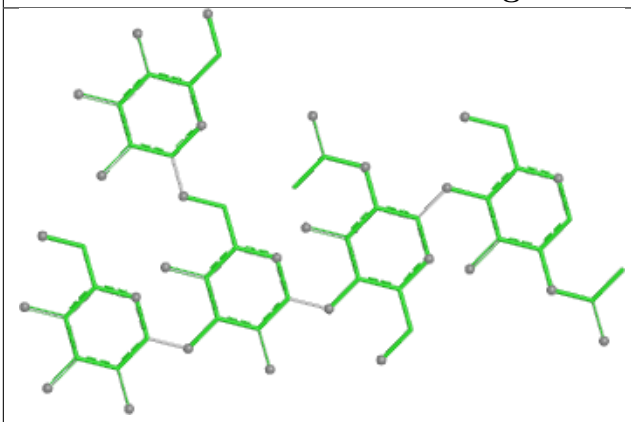


Torsions

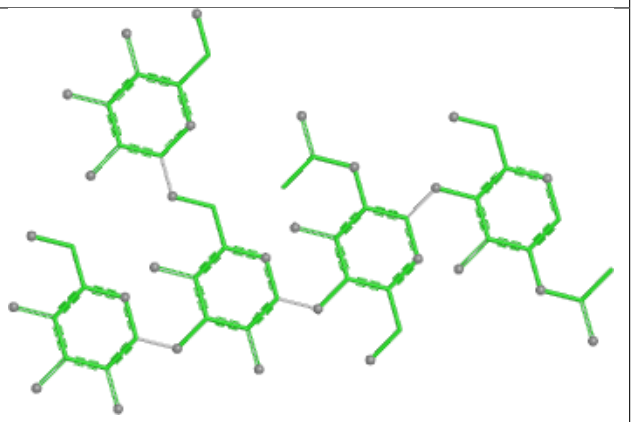


Rings

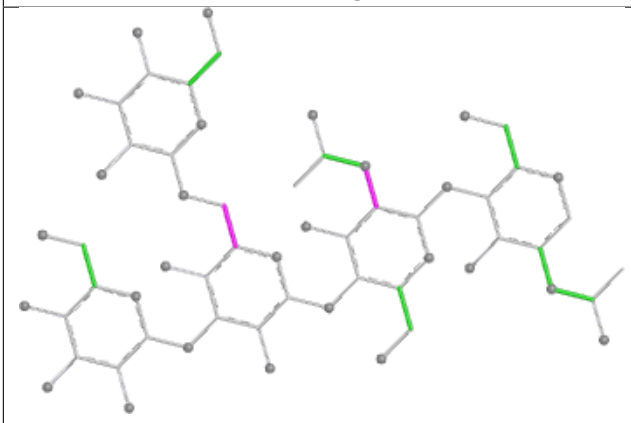
Oligosaccharide Chain l



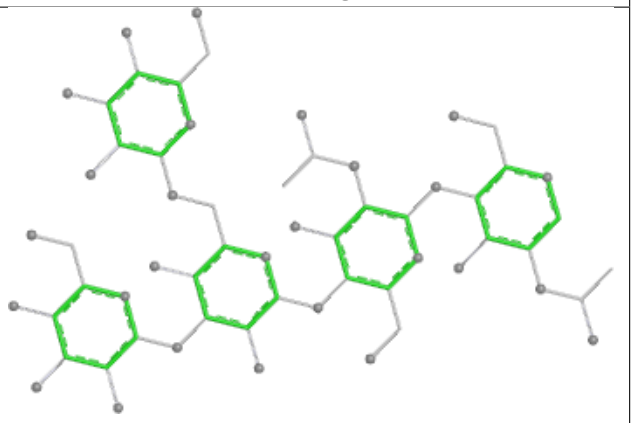
Bond lengths



Bond angles

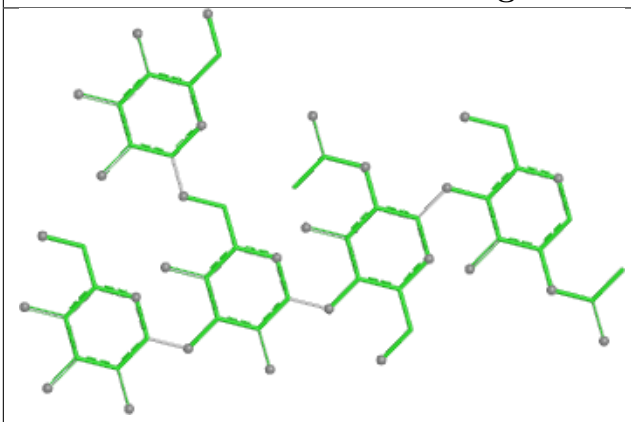


Torsions

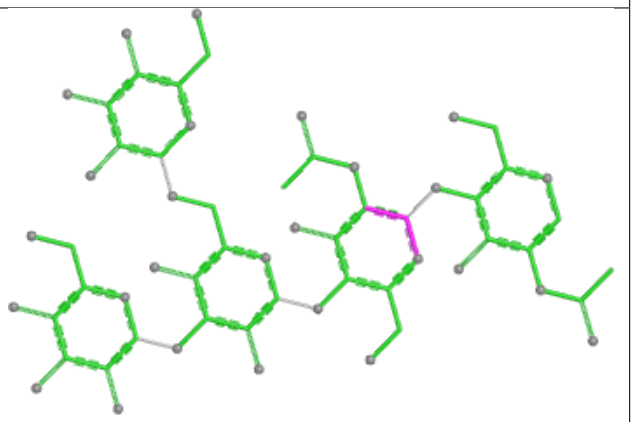


Rings

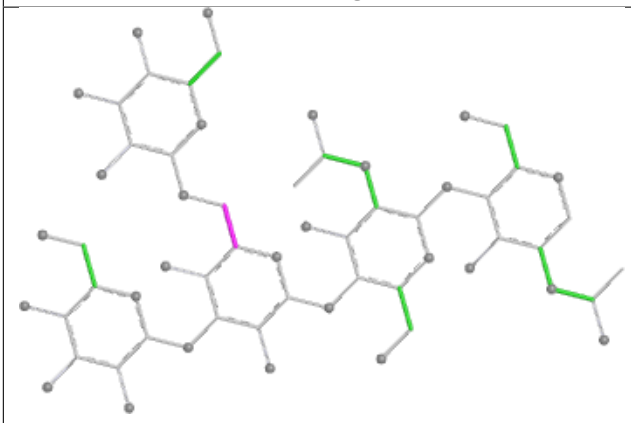
Oligosaccharide Chain S



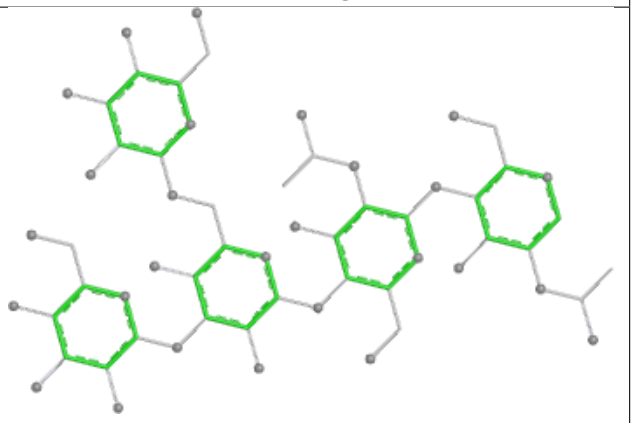
Bond lengths



Bond angles

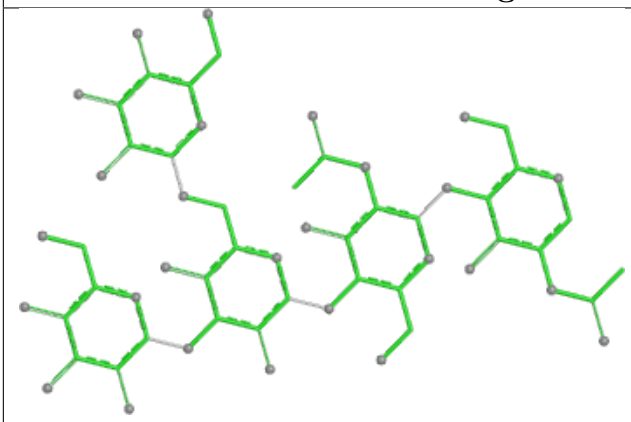


Torsions

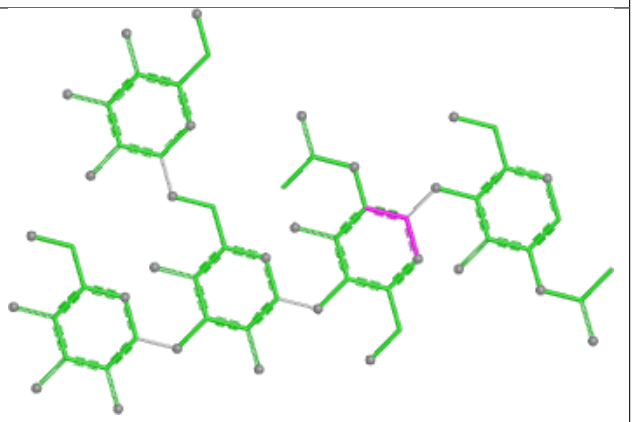


Rings

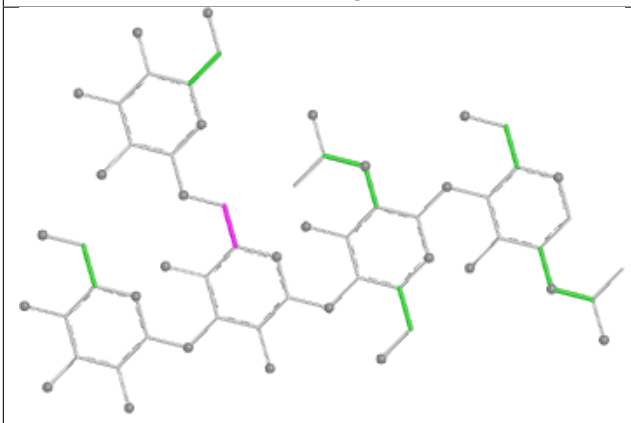
Oligosaccharide Chain d



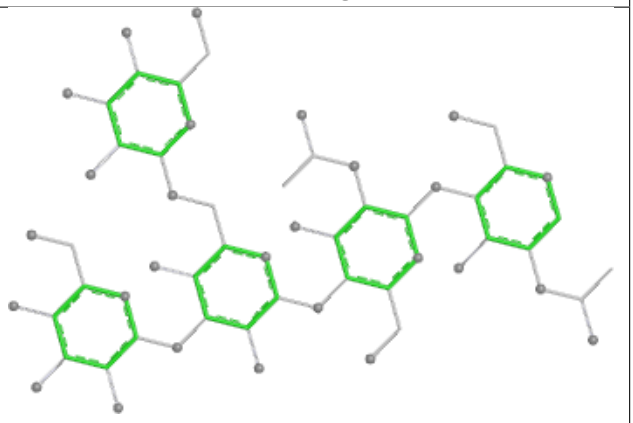
Bond lengths



Bond angles

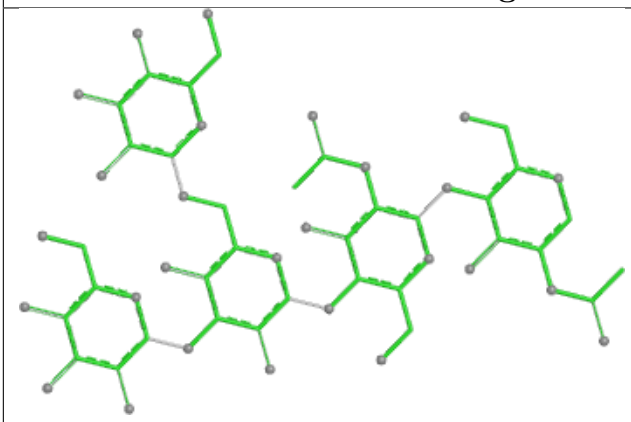


Torsions

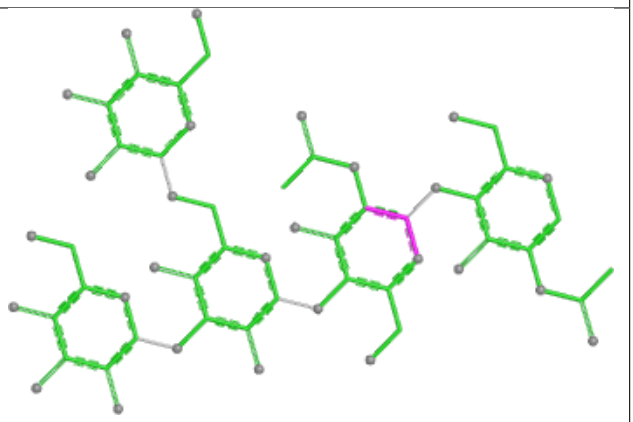


Rings

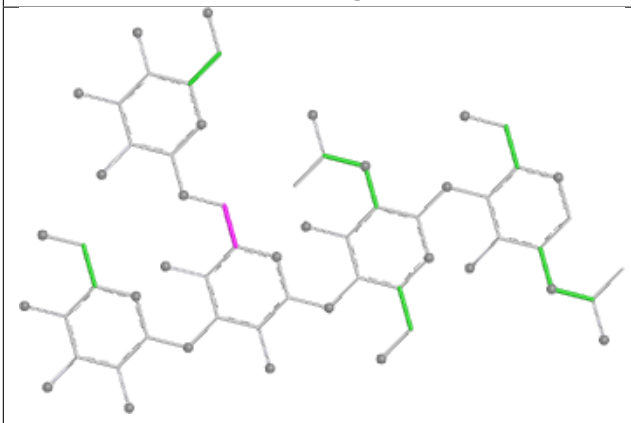
Oligosaccharide Chain o



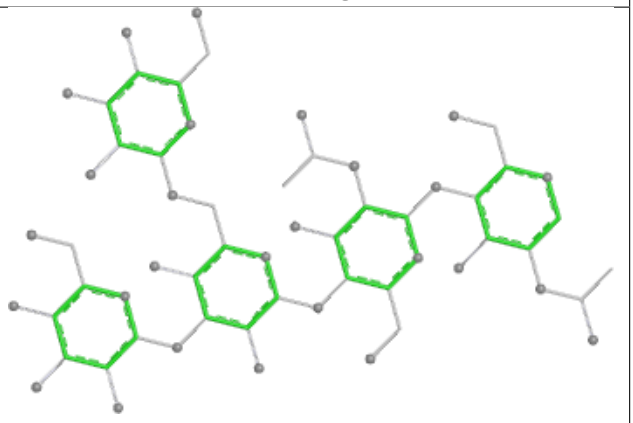
Bond lengths



Bond angles

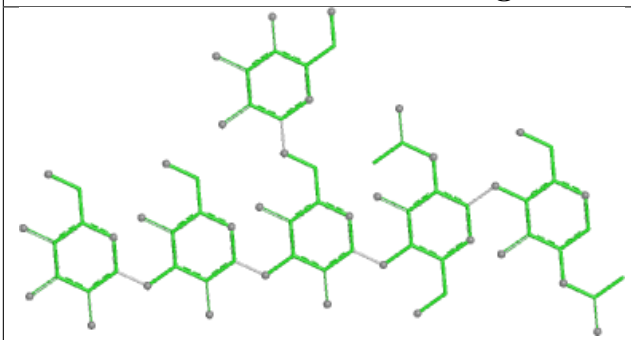


Torsions

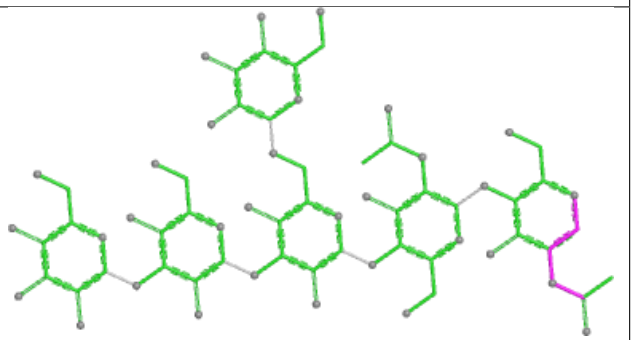


Rings

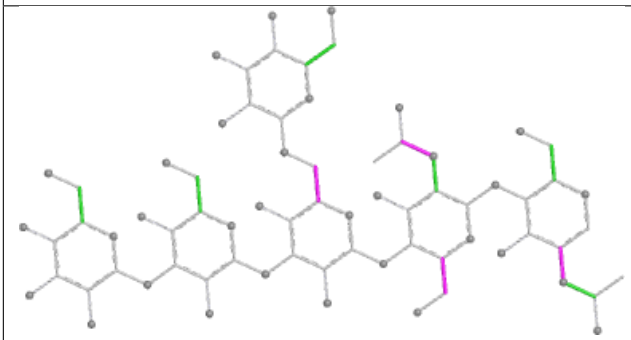
Oligosaccharide Chain T



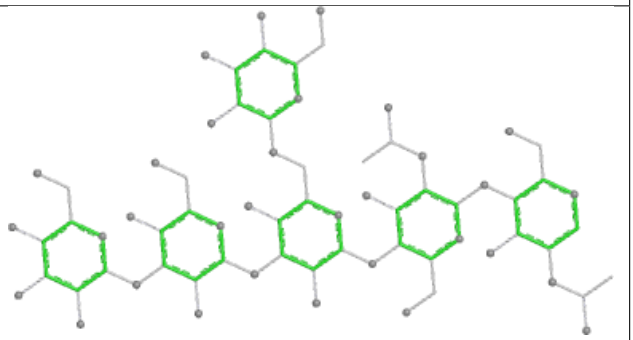
Bond lengths



Bond angles

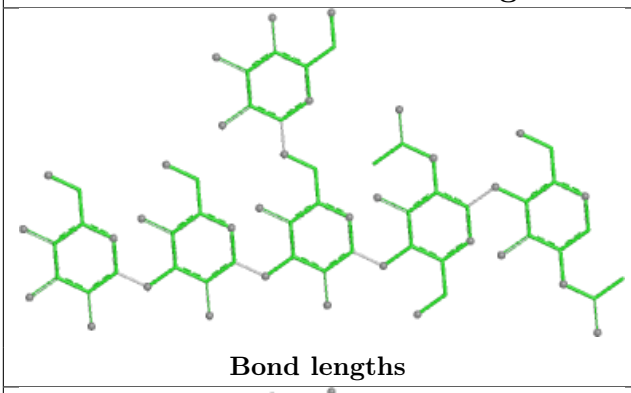


Torsions

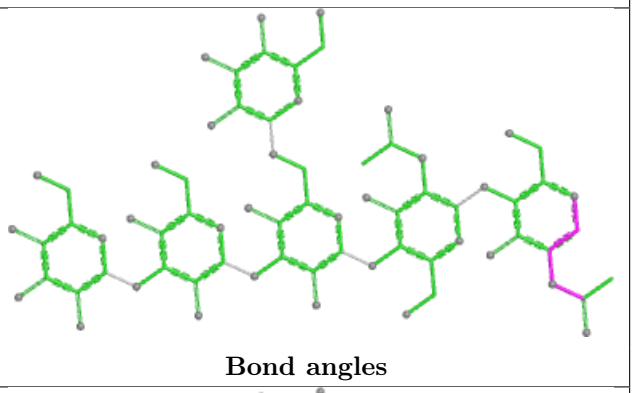


Rings

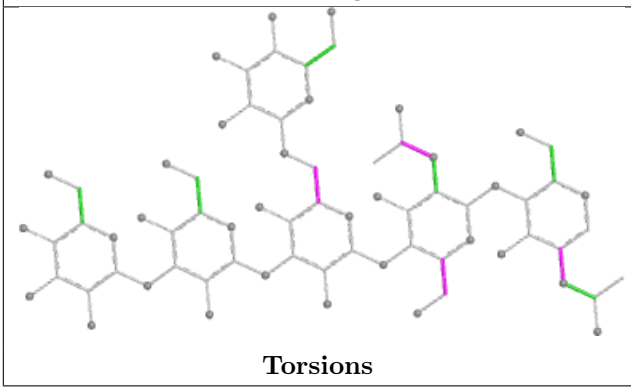
Oligosaccharide Chain e



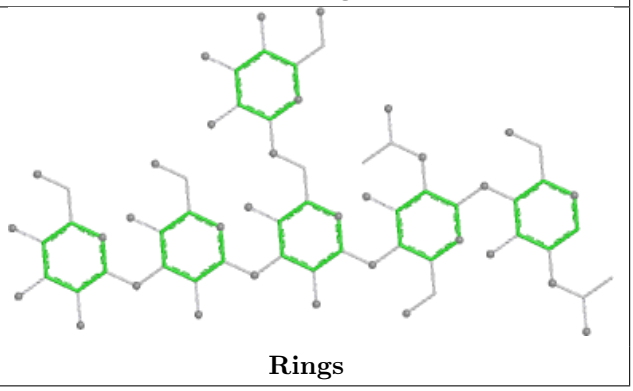
Bond lengths



Bond angles

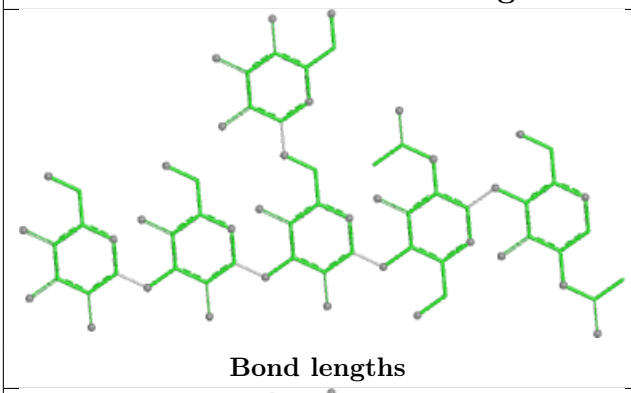


Torsions

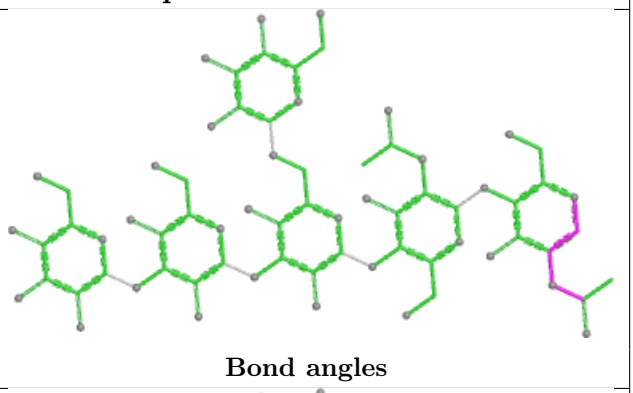


Rings

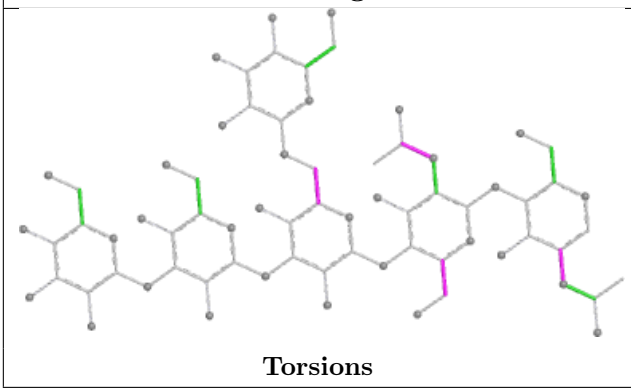
Oligosaccharide Chain p



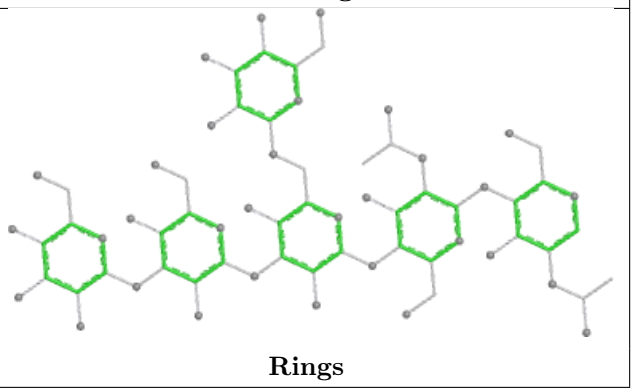
Bond lengths



Bond angles



Torsions



Rings

5.6 Ligand geometry (i)

36 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	$\#\|Z\| > 2$
10	NAG	B	703	3	14,14,15	0.31	0	17,19,21	1.53	4 (23%)
10	NAG	G	601	4	14,14,15	0.28	0	17,19,21	0.59	0
10	NAG	E	607	4	14,14,15	0.32	0	17,19,21	0.78	0
10	NAG	F	608	4	14,14,15	0.38	0	17,19,21	1.25	2 (11%)
10	NAG	E	605	4	14,14,15	0.31	0	17,19,21	0.77	0
10	NAG	E	608	4	14,14,15	0.38	0	17,19,21	1.26	2 (11%)
10	NAG	E	606	4	14,14,15	0.26	0	17,19,21	0.88	1 (5%)
10	NAG	F	602	4	14,14,15	0.35	0	17,19,21	2.19	3 (17%)
10	NAG	L	700	2	14,14,15	0.27	0	17,19,21	1.13	2 (11%)
10	NAG	G	602	4	14,14,15	0.34	0	17,19,21	2.18	3 (17%)
10	NAG	F	603	4	14,14,15	0.29	0	17,19,21	0.73	0
10	NAG	G	605	4	14,14,15	0.31	0	17,19,21	0.77	0
10	NAG	N	700	2	14,14,15	0.26	0	17,19,21	1.12	2 (11%)
10	NAG	F	604	4	14,14,15	0.29	0	17,19,21	0.84	0
10	NAG	G	607	4	14,14,15	0.31	0	17,19,21	0.78	0
10	NAG	E	602	4	14,14,15	0.35	0	17,19,21	2.19	3 (17%)
10	NAG	K	700	2	14,14,15	0.27	0	17,19,21	1.12	2 (11%)
10	NAG	G	608	4	14,14,15	0.38	0	17,19,21	1.26	2 (11%)
10	NAG	F	601	4	14,14,15	0.28	0	17,19,21	0.59	0
10	NAG	G	603	4	14,14,15	0.29	0	17,19,21	0.74	0
10	NAG	A	703	3	14,14,15	0.31	0	17,19,21	1.52	4 (23%)
10	NAG	G	606	4	14,14,15	0.25	0	17,19,21	0.88	1 (5%)
10	NAG	B	701	3	14,14,15	0.29	0	17,19,21	0.74	0
10	NAG	E	604	4	14,14,15	0.27	0	17,19,21	0.84	0
10	NAG	B	702	3	14,14,15	0.45	0	17,19,21	1.74	3 (17%)
10	NAG	F	606	4	14,14,15	0.26	0	17,19,21	0.88	1 (5%)
10	NAG	C	702	3	14,14,15	0.46	0	17,19,21	1.74	2 (11%)
10	NAG	C	703	3	14,14,15	0.31	0	17,19,21	1.53	4 (23%)
10	NAG	F	607	4	14,14,15	0.31	0	17,19,21	0.79	0
10	NAG	F	605	4	14,14,15	0.31	0	17,19,21	0.78	0
10	NAG	E	601	4	14,14,15	0.29	0	17,19,21	0.60	0
10	NAG	A	701	3	14,14,15	0.30	0	17,19,21	0.74	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
10	NAG	A	702	3	14,14,15	0.46	0	17,19,21	1.74	3 (17%)
10	NAG	E	603	4	14,14,15	0.29	0	17,19,21	0.74	0
10	NAG	G	604	4	14,14,15	0.27	0	17,19,21	0.84	0
10	NAG	C	701	3	14,14,15	0.31	0	17,19,21	0.73	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
10	NAG	B	703	3	-	0/6/23/26	0/1/1/1
10	NAG	G	601	4	-	0/6/23/26	0/1/1/1
10	NAG	E	607	4	-	0/6/23/26	0/1/1/1
10	NAG	F	608	4	-	2/6/23/26	0/1/1/1
10	NAG	E	605	4	-	2/6/23/26	0/1/1/1
10	NAG	E	608	4	-	2/6/23/26	0/1/1/1
10	NAG	E	606	4	-	4/6/23/26	0/1/1/1
10	NAG	F	602	4	1/1/5/7	5/6/23/26	0/1/1/1
10	NAG	L	700	2	-	2/6/23/26	0/1/1/1
10	NAG	G	602	4	1/1/5/7	5/6/23/26	0/1/1/1
10	NAG	F	603	4	-	1/6/23/26	0/1/1/1
10	NAG	G	605	4	-	2/6/23/26	0/1/1/1
10	NAG	N	700	2	-	2/6/23/26	0/1/1/1
10	NAG	F	604	4	-	4/6/23/26	0/1/1/1
10	NAG	G	607	4	-	0/6/23/26	0/1/1/1
10	NAG	E	602	4	1/1/5/7	5/6/23/26	0/1/1/1
10	NAG	K	700	2	-	2/6/23/26	0/1/1/1
10	NAG	G	608	4	-	2/6/23/26	0/1/1/1
10	NAG	F	601	4	-	0/6/23/26	0/1/1/1
10	NAG	G	603	4	-	1/6/23/26	0/1/1/1
10	NAG	A	703	3	-	0/6/23/26	0/1/1/1
10	NAG	G	606	4	-	4/6/23/26	0/1/1/1
10	NAG	B	701	3	-	0/6/23/26	0/1/1/1
10	NAG	E	604	4	-	4/6/23/26	0/1/1/1
10	NAG	B	702	3	-	0/6/23/26	0/1/1/1
10	NAG	F	606	4	-	4/6/23/26	0/1/1/1
10	NAG	C	702	3	-	0/6/23/26	0/1/1/1
10	NAG	C	703	3	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
10	NAG	F	607	4	-	0/6/23/26	0/1/1/1
10	NAG	F	605	4	-	2/6/23/26	0/1/1/1
10	NAG	E	601	4	-	0/6/23/26	0/1/1/1
10	NAG	A	701	3	-	0/6/23/26	0/1/1/1
10	NAG	A	702	3	-	0/6/23/26	0/1/1/1
10	NAG	E	603	4	-	1/6/23/26	0/1/1/1
10	NAG	G	604	4	-	4/6/23/26	0/1/1/1
10	NAG	C	701	3	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (44) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
10	F	602	NAG	C2-N2-C7	7.15	132.48	122.90
10	G	602	NAG	C2-N2-C7	7.14	132.47	122.90
10	E	602	NAG	C2-N2-C7	7.13	132.46	122.90
10	C	702	NAG	C1-O5-C5	5.05	118.95	112.19
10	A	702	NAG	C1-O5-C5	5.03	118.93	112.19
10	B	702	NAG	C1-O5-C5	5.02	118.91	112.19
10	B	703	NAG	C1-O5-C5	3.60	117.01	112.19
10	A	703	NAG	C1-O5-C5	3.55	116.94	112.19
10	C	703	NAG	C1-O5-C5	3.55	116.94	112.19
10	G	602	NAG	C8-C7-N2	3.44	121.82	116.12
10	F	602	NAG	C8-C7-N2	3.43	121.81	116.12
10	E	602	NAG	C8-C7-N2	3.42	121.80	116.12
10	A	702	NAG	C6-C5-C4	-2.89	105.94	113.02
10	E	608	NAG	C1-O5-C5	-2.87	108.34	112.19
10	G	608	NAG	C1-O5-C5	-2.86	108.35	112.19
10	C	702	NAG	C6-C5-C4	-2.85	106.02	113.02
10	B	702	NAG	C6-C5-C4	-2.85	106.02	113.02
10	F	608	NAG	C1-O5-C5	-2.84	108.39	112.19
10	C	703	NAG	C6-C5-C4	-2.81	106.12	113.02
10	E	608	NAG	C2-N2-C7	-2.79	119.16	122.90
10	G	608	NAG	C2-N2-C7	-2.79	119.16	122.90
10	A	703	NAG	C6-C5-C4	-2.78	106.19	113.02
10	B	703	NAG	C6-C5-C4	-2.78	106.19	113.02
10	F	608	NAG	C2-N2-C7	-2.75	119.21	122.90
10	A	703	NAG	C2-N2-C7	-2.60	119.42	122.90
10	B	703	NAG	C2-N2-C7	-2.57	119.45	122.90
10	C	703	NAG	C2-N2-C7	-2.57	119.46	122.90
10	L	700	NAG	C2-N2-C7	2.49	126.24	122.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
10	K	700	NAG	C2-N2-C7	2.47	126.21	122.90
10	N	700	NAG	C2-N2-C7	2.45	126.19	122.90
10	B	703	NAG	C4-C3-C2	-2.36	107.56	111.02
10	A	703	NAG	C4-C3-C2	-2.35	107.58	111.02
10	C	703	NAG	C4-C3-C2	-2.34	107.58	111.02
10	E	602	NAG	C1-C2-N2	2.22	113.93	110.43
10	F	602	NAG	C1-C2-N2	2.22	113.93	110.43
10	G	602	NAG	C1-C2-N2	2.20	113.91	110.43
10	N	700	NAG	C4-C3-C2	-2.19	107.80	111.02
10	L	700	NAG	C4-C3-C2	-2.17	107.84	111.02
10	K	700	NAG	C4-C3-C2	-2.15	107.86	111.02
10	G	606	NAG	C2-N2-C7	2.08	125.69	122.90
10	F	606	NAG	C2-N2-C7	2.04	125.63	122.90
10	B	702	NAG	O5-C1-C2	-2.03	108.15	111.29
10	E	606	NAG	C2-N2-C7	2.02	125.61	122.90
10	A	702	NAG	C4-C3-C2	-2.01	108.07	111.02

All (3) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
10	F	602	NAG	C4
10	G	602	NAG	C4
10	E	602	NAG	C4

All (60) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	F	608	NAG	C4-C5-C6-O6
10	G	608	NAG	C4-C5-C6-O6
10	E	608	NAG	C4-C5-C6-O6
10	F	602	NAG	C8-C7-N2-C2
10	F	602	NAG	O7-C7-N2-C2
10	G	602	NAG	C8-C7-N2-C2
10	G	602	NAG	O7-C7-N2-C2
10	E	602	NAG	C8-C7-N2-C2
10	E	602	NAG	O7-C7-N2-C2
10	F	608	NAG	O5-C5-C6-O6
10	G	608	NAG	O5-C5-C6-O6
10	E	608	NAG	O5-C5-C6-O6
10	F	604	NAG	O5-C5-C6-O6
10	G	604	NAG	O5-C5-C6-O6
10	E	604	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
10	E	602	NAG	O5-C5-C6-O6
10	F	602	NAG	O5-C5-C6-O6
10	G	602	NAG	O5-C5-C6-O6
10	F	603	NAG	O5-C5-C6-O6
10	G	603	NAG	O5-C5-C6-O6
10	E	603	NAG	O5-C5-C6-O6
10	L	700	NAG	C1-C2-N2-C7
10	K	700	NAG	C1-C2-N2-C7
10	N	700	NAG	C1-C2-N2-C7
10	F	604	NAG	C1-C2-N2-C7
10	F	606	NAG	C1-C2-N2-C7
10	G	604	NAG	C1-C2-N2-C7
10	G	606	NAG	C1-C2-N2-C7
10	E	604	NAG	C1-C2-N2-C7
10	E	606	NAG	C1-C2-N2-C7
10	F	605	NAG	C4-C5-C6-O6
10	G	605	NAG	C4-C5-C6-O6
10	E	605	NAG	C4-C5-C6-O6
10	F	602	NAG	C3-C2-N2-C7
10	G	602	NAG	C3-C2-N2-C7
10	E	602	NAG	C3-C2-N2-C7
10	G	606	NAG	C4-C5-C6-O6
10	F	606	NAG	C4-C5-C6-O6
10	E	606	NAG	C4-C5-C6-O6
10	G	605	NAG	O5-C5-C6-O6
10	E	605	NAG	O5-C5-C6-O6
10	F	605	NAG	O5-C5-C6-O6
10	F	606	NAG	O5-C5-C6-O6
10	G	606	NAG	O5-C5-C6-O6
10	E	606	NAG	O5-C5-C6-O6
10	F	602	NAG	C1-C2-N2-C7
10	G	602	NAG	C1-C2-N2-C7
10	E	602	NAG	C1-C2-N2-C7
10	G	604	NAG	C4-C5-C6-O6
10	E	604	NAG	C4-C5-C6-O6
10	F	604	NAG	C4-C5-C6-O6
10	L	700	NAG	C3-C2-N2-C7
10	K	700	NAG	C3-C2-N2-C7
10	N	700	NAG	C3-C2-N2-C7
10	F	604	NAG	C3-C2-N2-C7
10	F	606	NAG	C3-C2-N2-C7
10	G	604	NAG	C3-C2-N2-C7

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Mol	Chain	Res	Type	Atoms
10	G	606	NAG	C3-C2-N2-C7
10	E	604	NAG	C3-C2-N2-C7
10	E	606	NAG	C3-C2-N2-C7

There are no ring outliers.

3 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	E	605	NAG	1	0
10	G	605	NAG	1	0
10	F	605	NAG	1	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

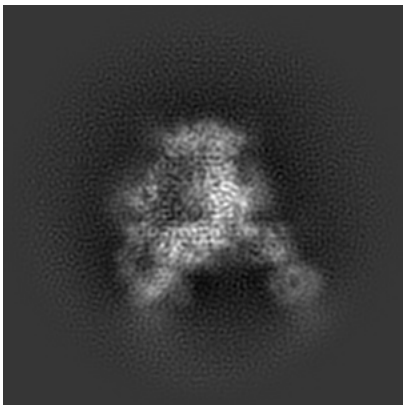
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-72972. These allow visual inspection of the internal detail of the map and identification of artifacts.

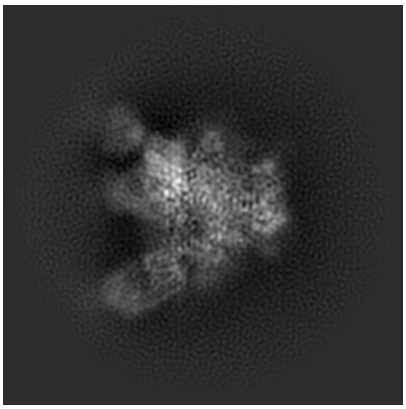
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

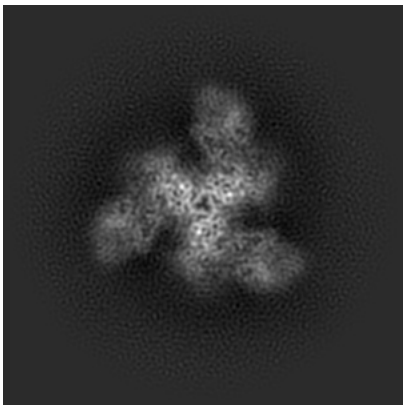
6.1.1 Primary map



X

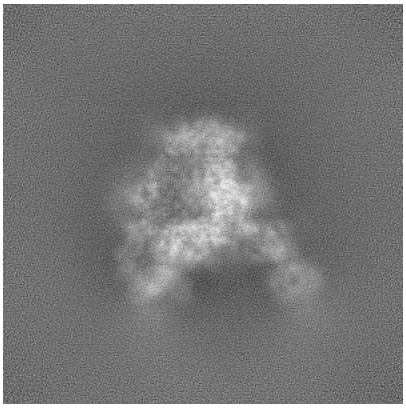


Y

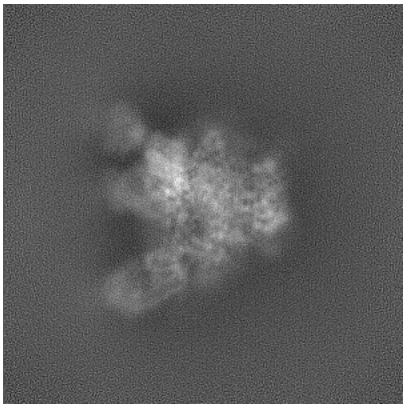


Z

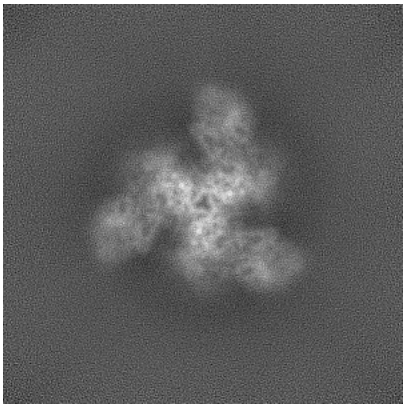
6.1.2 Raw map



X



Y

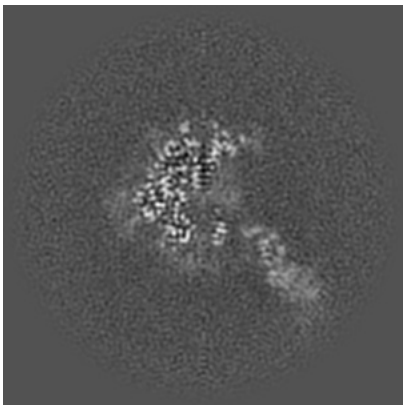


Z

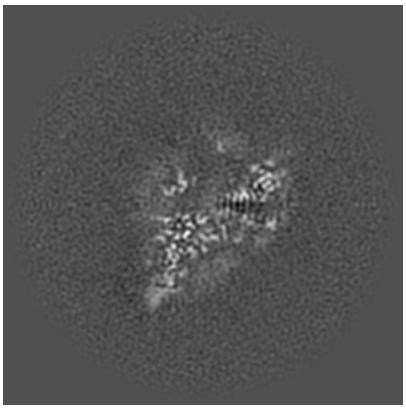
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

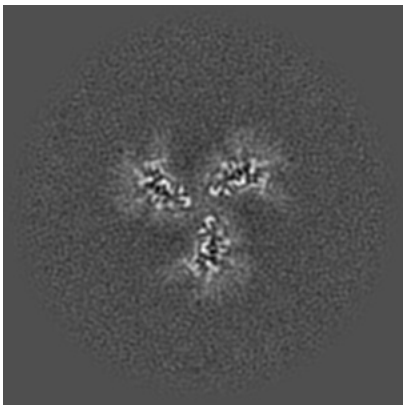
6.2.1 Primary map



X Index: 180

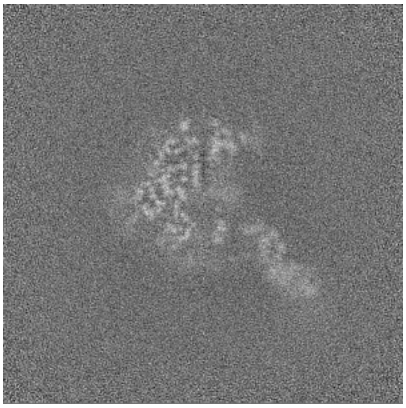


Y Index: 180

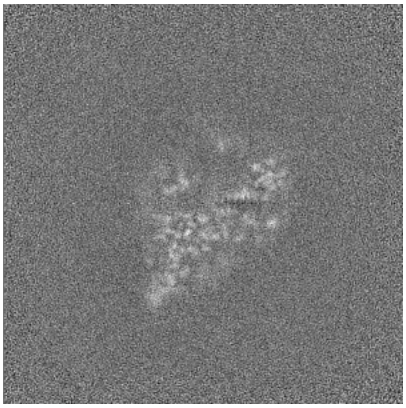


Z Index: 180

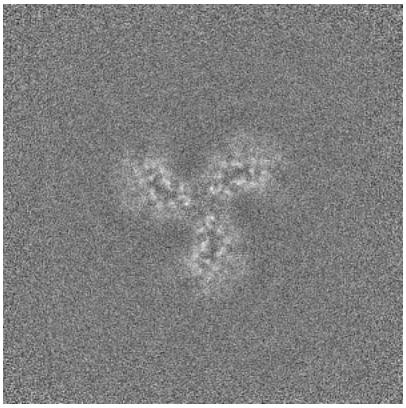
6.2.2 Raw map



X Index: 180



Y Index: 180

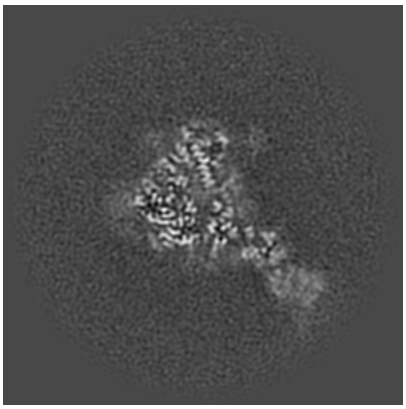


Z Index: 180

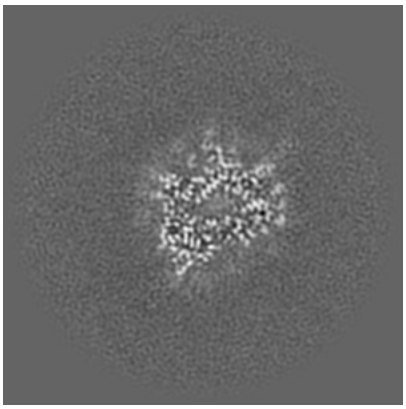
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

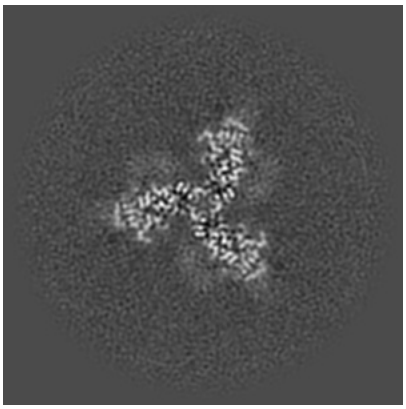
6.3.1 Primary map



X Index: 187

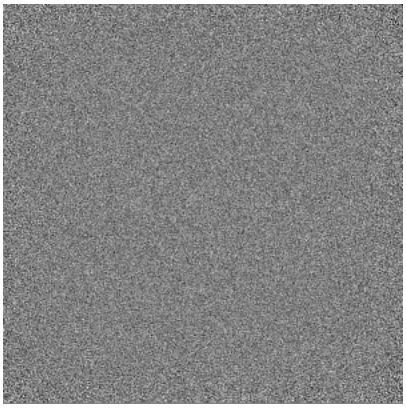


Y Index: 190

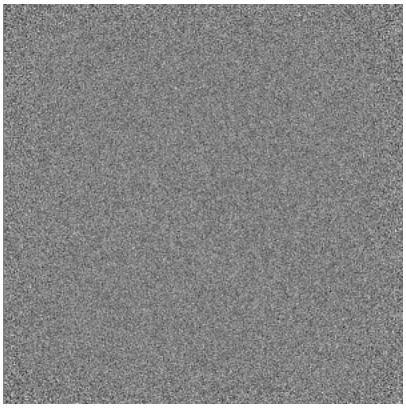


Z Index: 153

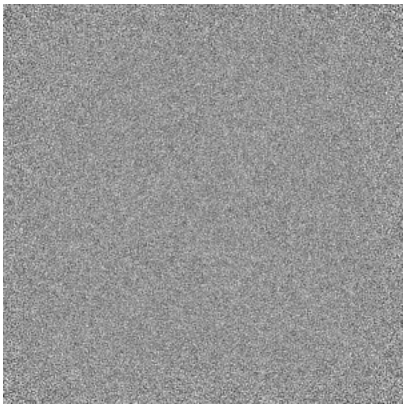
6.3.2 Raw map



X Index: 0



Y Index: 0

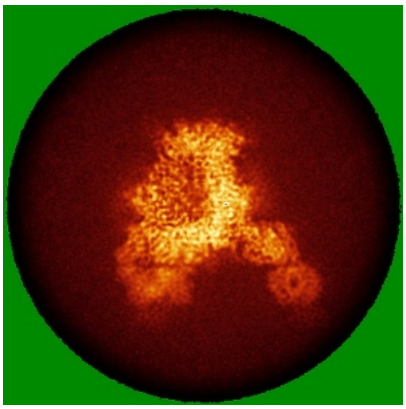


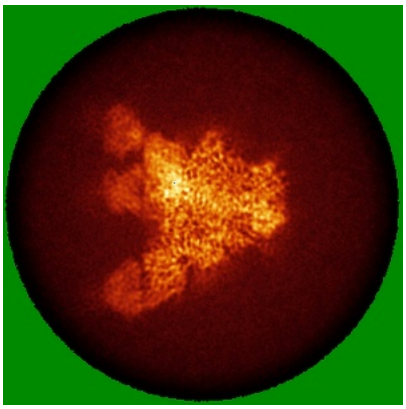
Z Index: 1

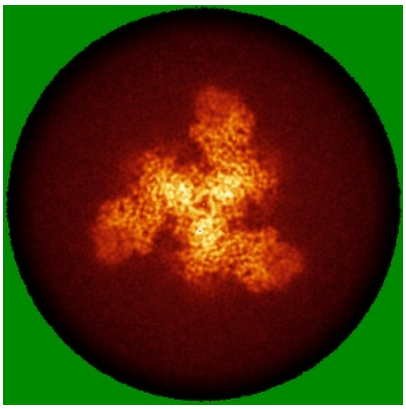
The images above show the largest variance slices of the map in three orthogonal directions.

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

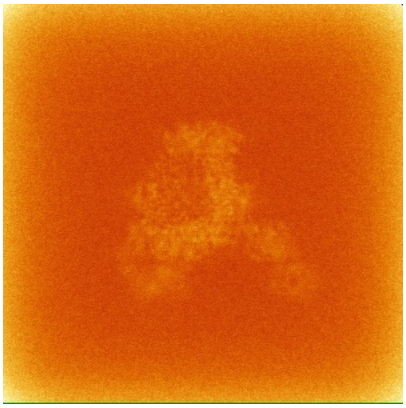
6.4.1 Primary map

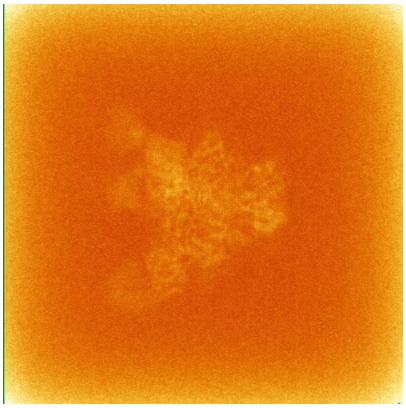

X

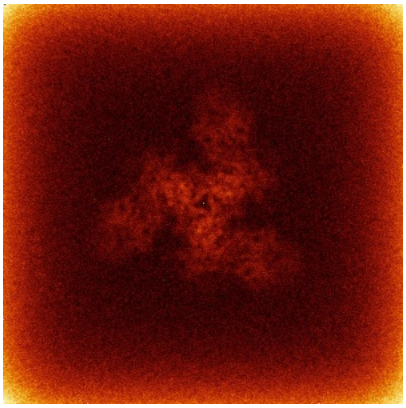

Y


Z

6.4.2 Raw map


X

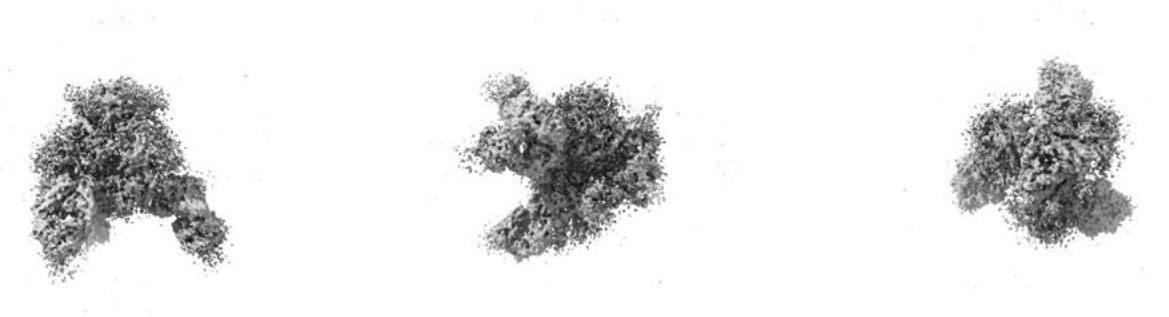

Y


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)

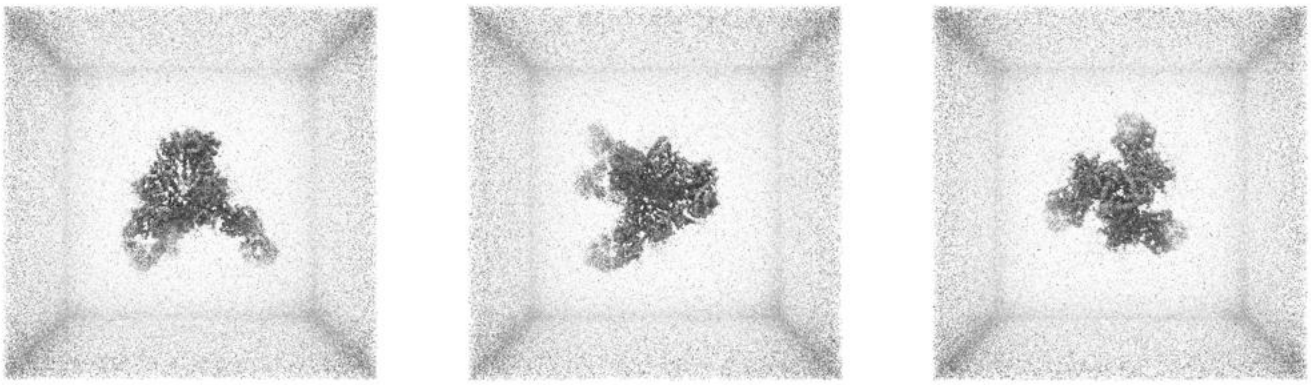
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.0272. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

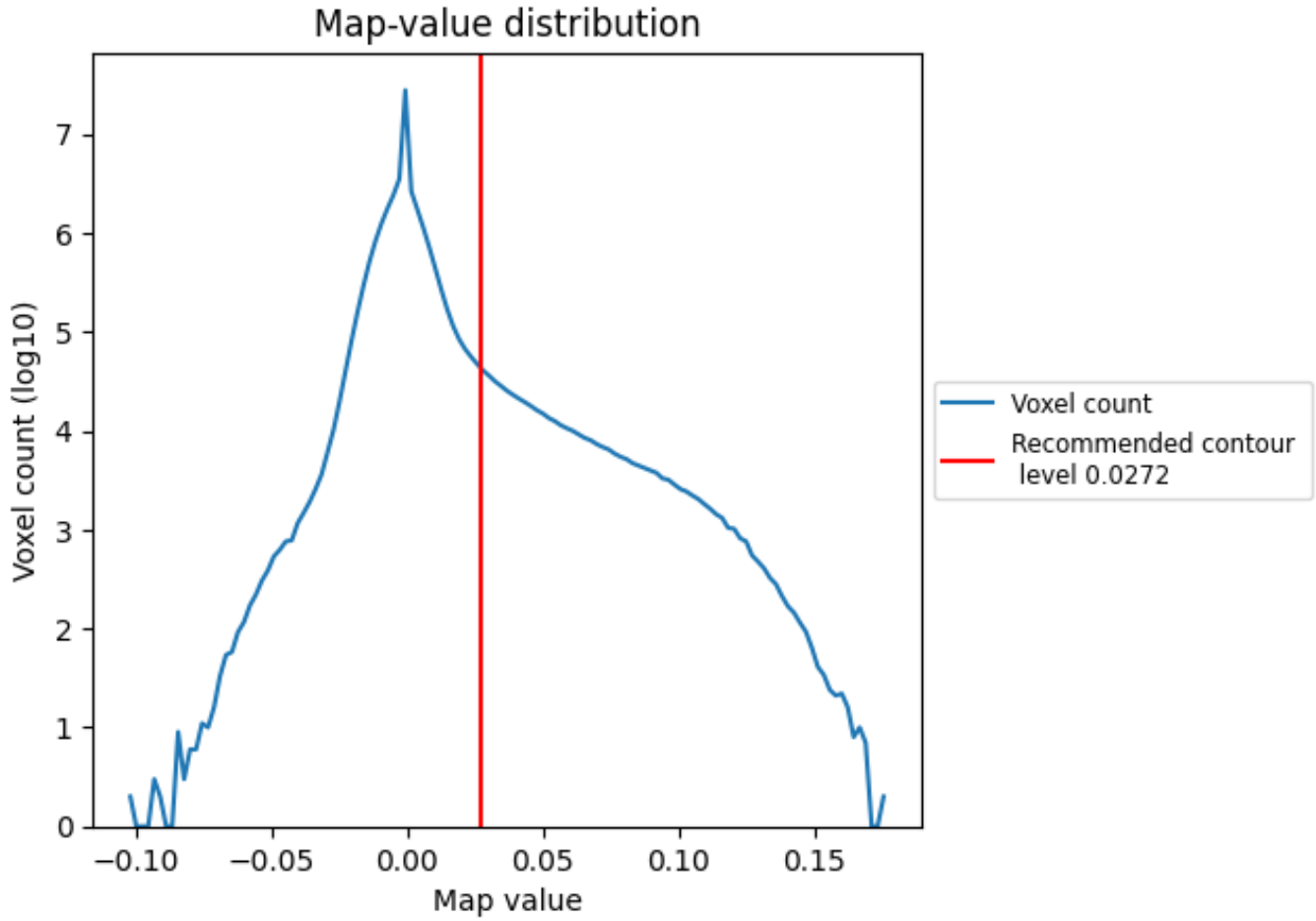
6.6 Mask visualisation (i)

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

7 Map analysis

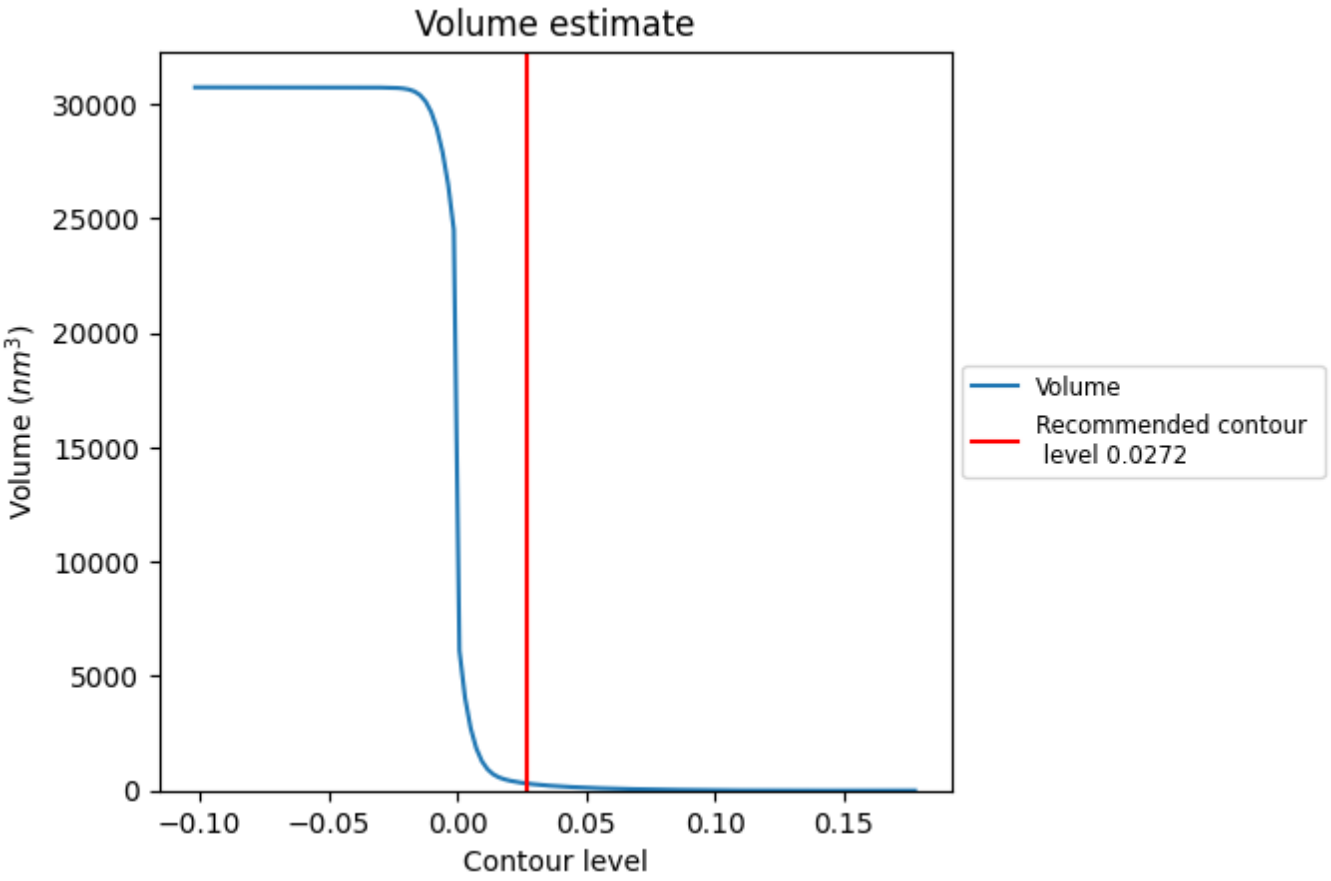
This section contains the results of statistical analysis of the map.

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.

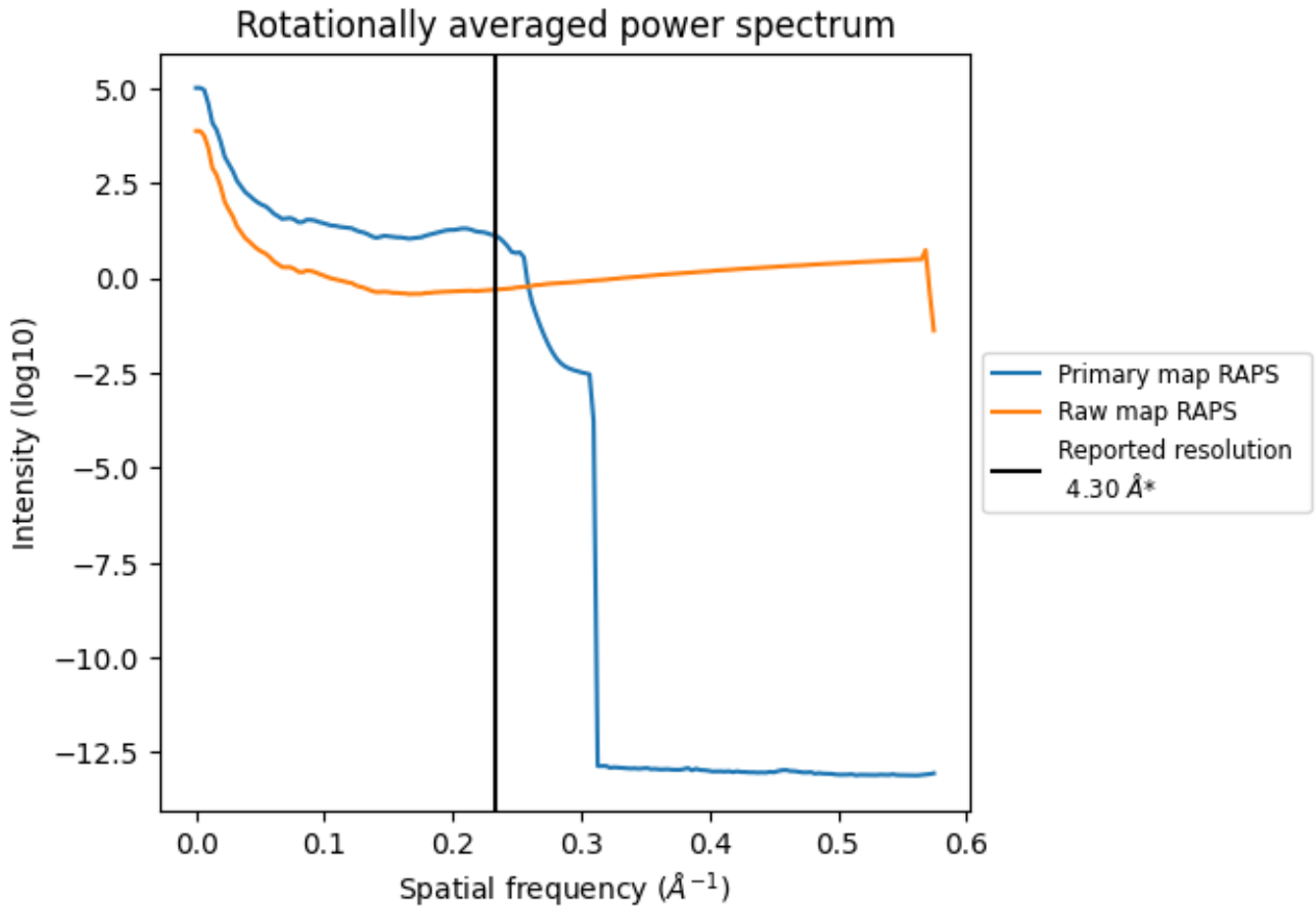
7.2 Volume estimate



The volume at the recommended contour level is 307 nm^3; this corresponds to an approximate mass of 277 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)

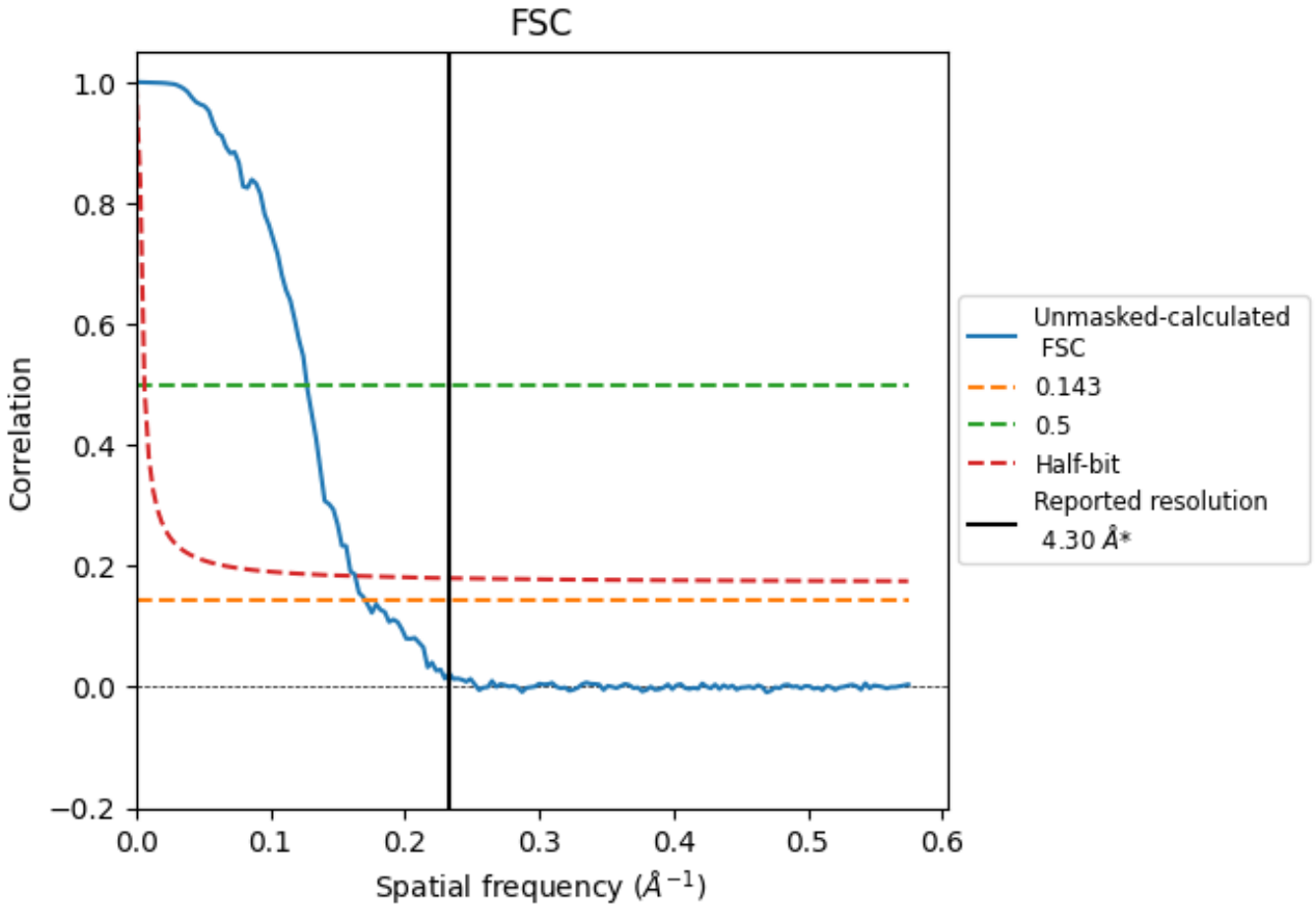


*Reported resolution corresponds to spatial frequency of 0.233 $Å^{-1}$

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.233 Å^{-1}

8.2 Resolution estimates (i)

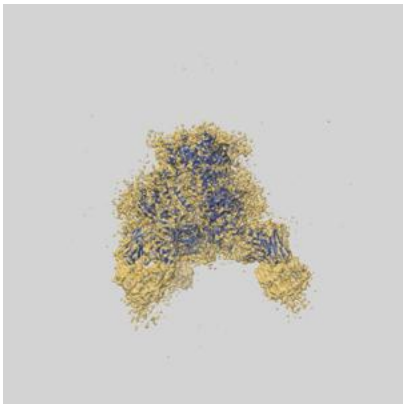
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.30	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	5.86	7.86	6.13

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 5.86 differs from the reported value 4.3 by more than 10 %

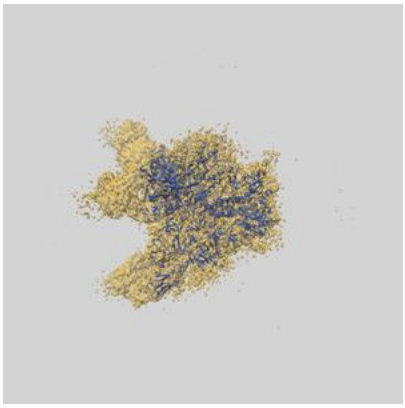
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-72972 and PDB model 9YHS. Per-residue inclusion information can be found in section 3 on page 14.

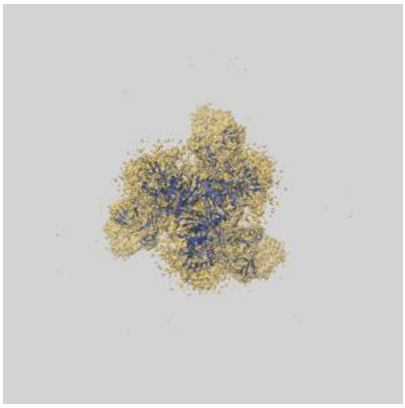
9.1 Map-model overlay



X



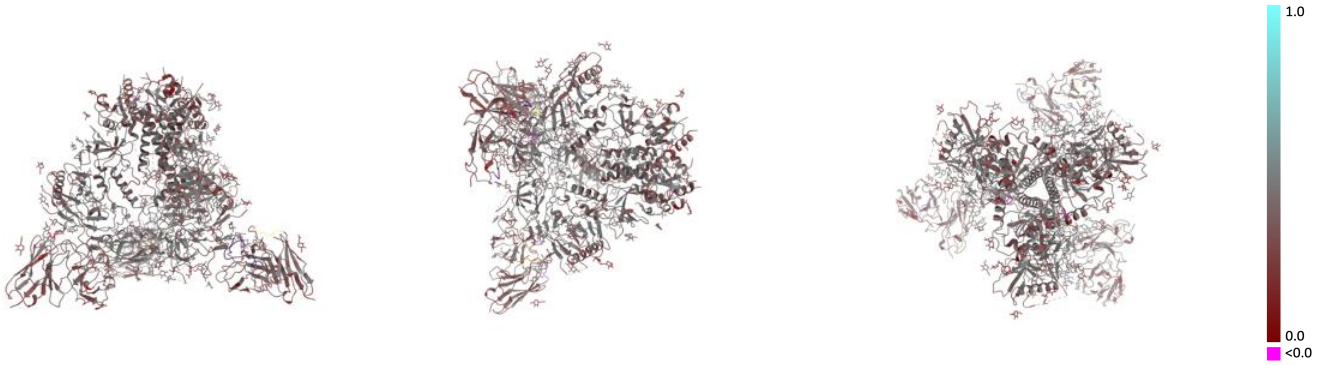
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0272 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.

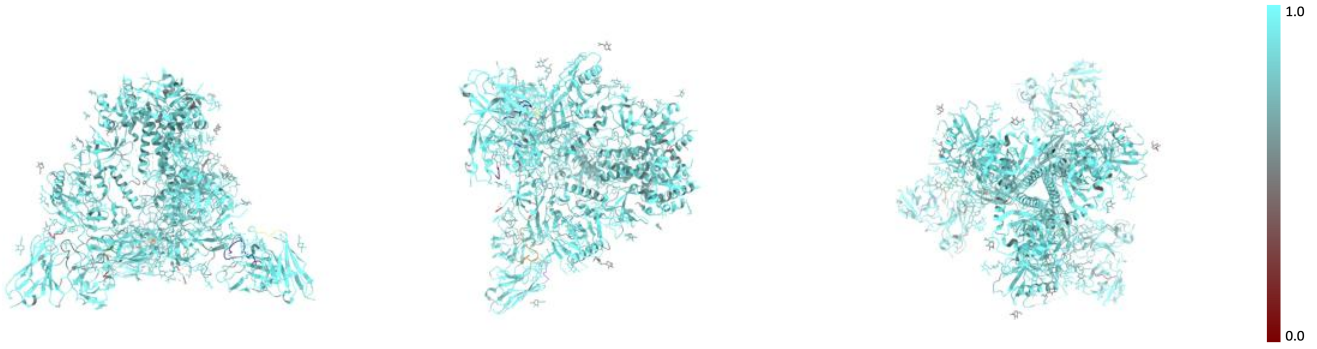
9.2 Q-score mapped to coordinate model (i)



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.

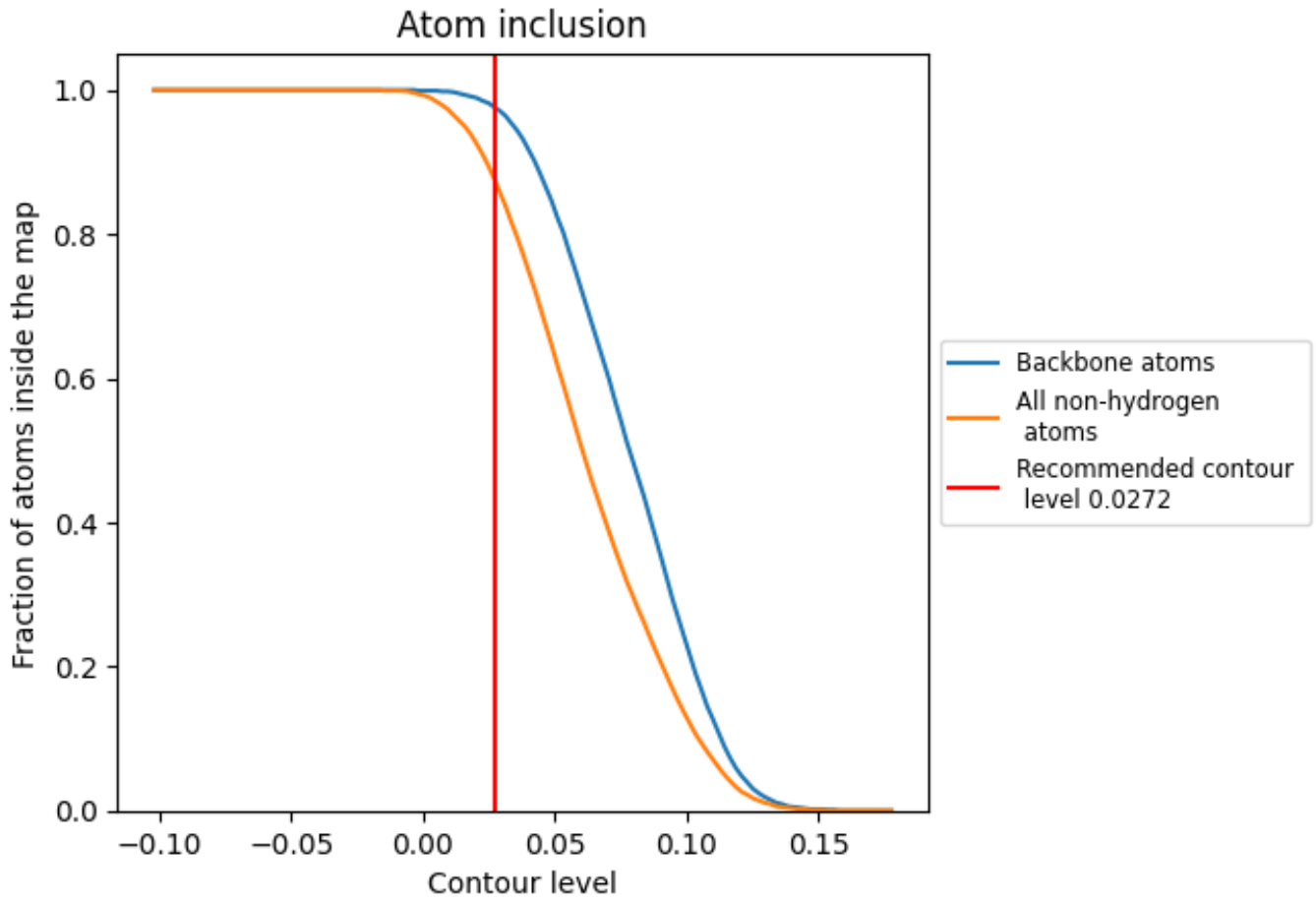
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.0272).

9.4 Atom inclusion (i)



At the recommended contour level, 98% of all backbone atoms, 88% 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 (0.0272) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8760	0.3890
A	0.8690	0.3760
B	0.8600	0.3690
C	0.8740	0.3750
D	0.8970	0.4460
E	0.8740	0.4110
F	0.8730	0.4070
G	0.8820	0.4200
H	0.8680	0.3440
I	0.7860	0.3650
J	0.8730	0.3510
K	0.8950	0.3510
L	0.8940	0.3540
M	0.8740	0.3520
N	0.8880	0.3380
O	0.8210	0.3610
P	0.8850	0.4340
Q	0.8570	0.3500
R	0.7860	0.3670
S	0.9020	0.4650
T	0.9310	0.4070
U	0.8930	0.4050
V	0.6430	0.3030
W	0.7860	0.3710
X	0.9230	0.4650
Y	0.8570	0.3960
Z	0.8210	0.3930
a	0.8850	0.4380
b	0.8210	0.3760
c	0.8210	0.3760
d	0.9180	0.4610
e	0.9440	0.4330
f	0.9290	0.4300
g	0.7860	0.3180
h	0.8570	0.3560

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Chain	Atom inclusion	Q-score
i	0.8970	0.4280
j	0.8570	0.3300
k	0.8210	0.3910
l	0.9020	0.4230
m	0.8570	0.3690
n	0.7860	0.3700
o	0.9020	0.4380
p	0.9440	0.4070
q	0.8570	0.4450
r	0.7860	0.3100
s	0.8570	0.3770