Full wwPDB EM Validation Report

Jun 3, 2025 – 03:33 PM EDT

PDB ID	:	9BTI / pdb_00009bti
EMDB ID	:	EMD-44891
Title	:	Rhesus Fab 40591-a.01 in complex with T250.4 RnS SOSIP Env
Authors	:	Gorman, J.; Kwong, P.D.
Deposited on	:	2024-05-15
Resolution	:	4.14 Å(reported)
Based on initial model	:	6VTT

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:

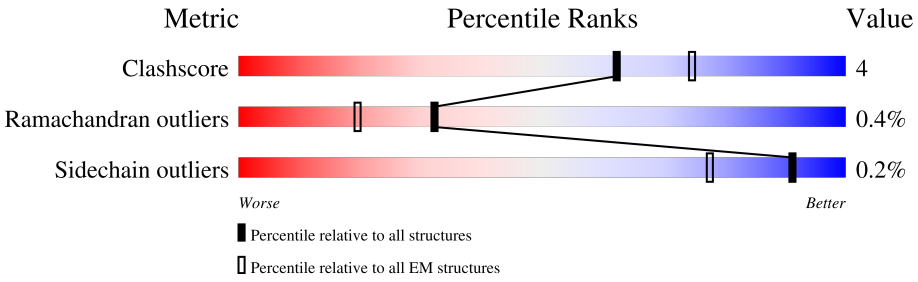
EMDB validation analysis	:	0.0.1.dev118
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 4.14 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)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	153	9% 73% 9% 18%
1	B	153	7% 74% 8% 18%
1	F	153	9% 76% 8% 15%
2	C	479	78% 12% 10%
2	G	479	80% 10% 10%
2	H	479	5% 78% 12% 10%
3	D	245	51% 46%
4	E	214	46% 50%

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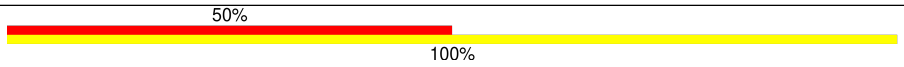
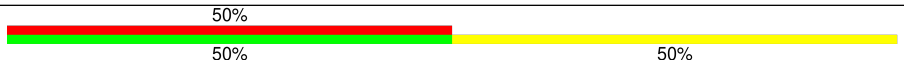
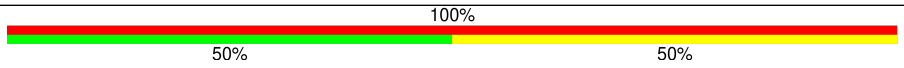
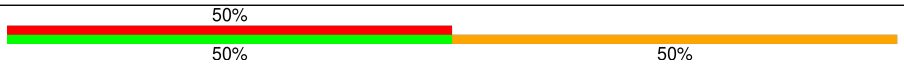
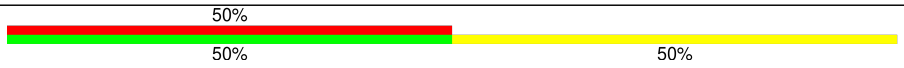
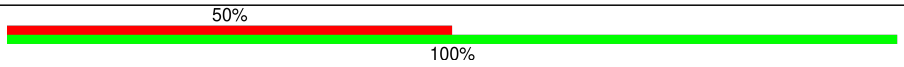
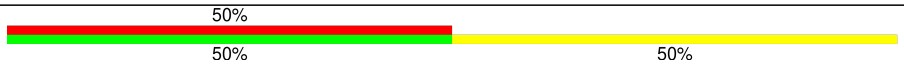
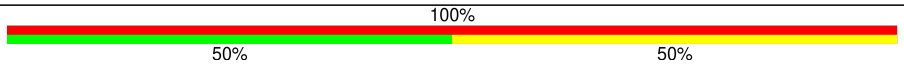
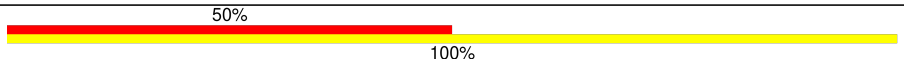
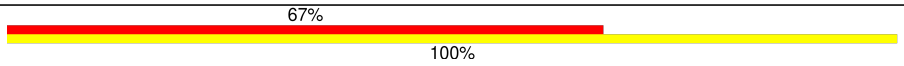
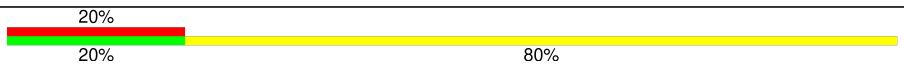
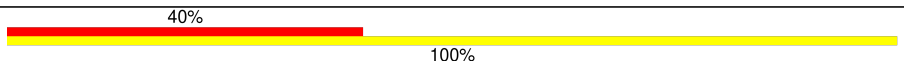
Mol	Chain	Length	Quality of chain
5	I	4	
5	R	4	
6	J	2	
6	K	2	
6	L	2	
6	M	2	
6	P	2	
6	Q	2	
6	S	2	
6	T	2	
6	U	2	
6	V	2	
6	Y	2	
6	Z	2	
6	a	2	
6	b	2	
6	c	2	
6	d	2	
6	g	2	
6	h	2	
7	N	3	
7	W	3	
7	e	3	
8	O	5	
8	X	5	

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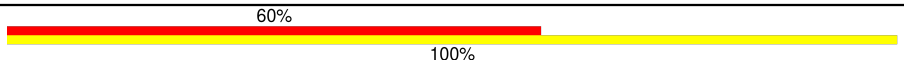
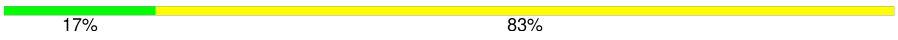
Mol	Chain	Length	Quality of chain
8	f	5	
9	i	6	

2 Entry composition (i)

There are 10 unique types of molecules in this entry. The entry contains 16447 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Envelope glycoprotein gp41.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	B	126	Total	C	N	O	S	0	0
			1026	656	174	191	5		
1	A	126	Total	C	N	O	S	0	0
			1026	656	174	191	5		
1	F	130	Total	C	N	O	S	0	0
			1050	672	178	195	5		

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	535	ASN	ILE	conflict	UNP A0A8A0W558
B	559	PRO	ILE	conflict	UNP A0A8A0W558
B	569	GLY	THR	conflict	UNP A0A8A0W558
B	573	PHE	ILE	conflict	UNP A0A8A0W558
B	588	GLU	LYS	conflict	UNP A0A8A0W558
B	589	VAL	ASP	conflict	UNP A0A8A0W558
B	605	CYS	THR	conflict	UNP A0A8A0W558
B	613	THR	SER	conflict	UNP A0A8A0W558
B	636	GLY	SER	conflict	UNP A0A8A0W558
B	648	GLU	GLN	conflict	UNP A0A8A0W558
B	651	PHE	ASN	conflict	UNP A0A8A0W558
B	655	ILE	LYS	conflict	UNP A0A8A0W558
A	535	ASN	ILE	conflict	UNP A0A8A0W558
A	559	PRO	ILE	conflict	UNP A0A8A0W558
A	569	GLY	THR	conflict	UNP A0A8A0W558
A	573	PHE	ILE	conflict	UNP A0A8A0W558
A	588	GLU	LYS	conflict	UNP A0A8A0W558
A	589	VAL	ASP	conflict	UNP A0A8A0W558
A	605	CYS	THR	conflict	UNP A0A8A0W558
A	613	THR	SER	conflict	UNP A0A8A0W558
A	636	GLY	SER	conflict	UNP A0A8A0W558
A	648	GLU	GLN	conflict	UNP A0A8A0W558
A	651	PHE	ASN	conflict	UNP A0A8A0W558
A	655	ILE	LYS	conflict	UNP A0A8A0W558

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Chain	Residue	Modelled	Actual	Comment	Reference
F	535	ASN	ILE	conflict	UNP A0A8A0W558
F	559	PRO	ILE	conflict	UNP A0A8A0W558
F	569	GLY	THR	conflict	UNP A0A8A0W558
F	573	PHE	ILE	conflict	UNP A0A8A0W558
F	588	GLU	LYS	conflict	UNP A0A8A0W558
F	589	VAL	ASP	conflict	UNP A0A8A0W558
F	605	CYS	THR	conflict	UNP A0A8A0W558
F	613	THR	SER	conflict	UNP A0A8A0W558
F	636	GLY	SER	conflict	UNP A0A8A0W558
F	648	GLU	GLN	conflict	UNP A0A8A0W558
F	651	PHE	ASN	conflict	UNP A0A8A0W558
F	655	ILE	LYS	conflict	UNP A0A8A0W558

- Molecule 2 is a protein called Envelope glycoprotein gp120.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	G	433	Total	C	N	O	S	0	0
			3430	2160	602	638	30		
2	C	433	Total	C	N	O	S	0	0
			3430	2160	602	638	30		
2	H	432	Total	C	N	O	S	0	0
			3424	2157	601	636	30		

There are 99 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	29	GLY	-	expression tag	UNP A0A8A0W558
G	30	PRO	-	expression tag	UNP A0A8A0W558
G	33	ASN	LYS	conflict	UNP A0A8A0W558
G	80	ASN	ARG	conflict	UNP A0A8A0W558
G	84	ILE	MET	conflict	UNP A0A8A0W558
G	99	ASN	SER	conflict	UNP A0A8A0W558
G	175	LEU	PHE	conflict	UNP A0A8A0W558
G	179	LEU	THR	conflict	UNP A0A8A0W558
G	182	VAL	GLU	conflict	UNP A0A8A0W558
G	201	CYS	ILE	conflict	UNP A0A8A0W558
G	204	ILE	ALA	conflict	UNP A0A8A0W558
G	236	THR	LYS	conflict	UNP A0A8A0W558
G	274	SER	VAL	conflict	UNP A0A8A0W558
G	277	ILE	THR	conflict	UNP A0A8A0W558
G	278	THR	ILE	conflict	UNP A0A8A0W558
G	302	MET	ASN	conflict	UNP A0A8A0W558

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Chain	Residue	Modelled	Actual	Comment	Reference
G	320	LEU	THR	conflict	UNP A0A8A0W558
G	329	PRO	ALA	conflict	UNP A0A8A0W558
G	350	ARG	SER	conflict	UNP A0A8A0W558
G	358	THR	LYS	conflict	UNP A0A8A0W558
G	364	SER	HIS	conflict	UNP A0A8A0W558
G	372	THR	ILE	conflict	UNP A0A8A0W558
G	377	ASN	VAL	conflict	UNP A0A8A0W558
G	419	ARG	GLU	conflict	UNP A0A8A0W558
G	423	ILE	PHE	conflict	UNP A0A8A0W558
G	433	CYS	ALA	conflict	UNP A0A8A0W558
G	448	ASN	ASP	conflict	UNP A0A8A0W558
G	460	GLY	PRO	conflict	UNP A0A8A0W558
G	501	CYS	ALA	conflict	UNP A0A8A0W558
G	509	ARG	GLU	conflict	UNP A0A8A0W558
G	510	ARG	LYS	conflict	UNP A0A8A0W558
G	512	ARG	-	expression tag	UNP A0A8A0W558
G	513	ARG	-	expression tag	UNP A0A8A0W558
C	29	GLY	-	expression tag	UNP A0A8A0W558
C	30	PRO	-	expression tag	UNP A0A8A0W558
C	33	ASN	LYS	conflict	UNP A0A8A0W558
C	80	ASN	ARG	conflict	UNP A0A8A0W558
C	84	ILE	MET	conflict	UNP A0A8A0W558
C	99	ASN	SER	conflict	UNP A0A8A0W558
C	175	LEU	PHE	conflict	UNP A0A8A0W558
C	179	LEU	THR	conflict	UNP A0A8A0W558
C	182	VAL	GLU	conflict	UNP A0A8A0W558
C	201	CYS	ILE	conflict	UNP A0A8A0W558
C	204	ILE	ALA	conflict	UNP A0A8A0W558
C	236	THR	LYS	conflict	UNP A0A8A0W558
C	274	SER	VAL	conflict	UNP A0A8A0W558
C	277	ILE	THR	conflict	UNP A0A8A0W558
C	278	THR	ILE	conflict	UNP A0A8A0W558
C	302	MET	ASN	conflict	UNP A0A8A0W558
C	320	LEU	THR	conflict	UNP A0A8A0W558
C	329	PRO	ALA	conflict	UNP A0A8A0W558
C	350	ARG	SER	conflict	UNP A0A8A0W558
C	358	THR	LYS	conflict	UNP A0A8A0W558
C	364	SER	HIS	conflict	UNP A0A8A0W558
C	372	THR	ILE	conflict	UNP A0A8A0W558
C	377	ASN	VAL	conflict	UNP A0A8A0W558
C	419	ARG	GLU	conflict	UNP A0A8A0W558
C	423	ILE	PHE	conflict	UNP A0A8A0W558

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Chain	Residue	Modelled	Actual	Comment	Reference
C	433	CYS	ALA	conflict	UNP A0A8A0W558
C	448	ASN	ASP	conflict	UNP A0A8A0W558
C	460	GLY	PRO	conflict	UNP A0A8A0W558
C	501	CYS	ALA	conflict	UNP A0A8A0W558
C	509	ARG	GLU	conflict	UNP A0A8A0W558
C	510	ARG	LYS	conflict	UNP A0A8A0W558
C	512	ARG	-	expression tag	UNP A0A8A0W558
C	513	ARG	-	expression tag	UNP A0A8A0W558
H	29	GLY	-	expression tag	UNP A0A8A0W558
H	30	PRO	-	expression tag	UNP A0A8A0W558
H	33	ASN	LYS	conflict	UNP A0A8A0W558
H	80	ASN	ARG	conflict	UNP A0A8A0W558
H	84	ILE	MET	conflict	UNP A0A8A0W558
H	99	ASN	SER	conflict	UNP A0A8A0W558
H	175	LEU	PHE	conflict	UNP A0A8A0W558
H	179	LEU	THR	conflict	UNP A0A8A0W558
H	182	VAL	GLU	conflict	UNP A0A8A0W558
H	201	CYS	ILE	conflict	UNP A0A8A0W558
H	204	ILE	ALA	conflict	UNP A0A8A0W558
H	236	THR	LYS	conflict	UNP A0A8A0W558
H	274	SER	VAL	conflict	UNP A0A8A0W558
H	277	ILE	THR	conflict	UNP A0A8A0W558
H	278	THR	ILE	conflict	UNP A0A8A0W558
H	302	MET	ASN	conflict	UNP A0A8A0W558
H	320	LEU	THR	conflict	UNP A0A8A0W558
H	329	PRO	ALA	conflict	UNP A0A8A0W558
H	350	ARG	SER	conflict	UNP A0A8A0W558
H	358	THR	LYS	conflict	UNP A0A8A0W558
H	364	SER	HIS	conflict	UNP A0A8A0W558
H	372	THR	ILE	conflict	UNP A0A8A0W558
H	377	ASN	VAL	conflict	UNP A0A8A0W558
H	419	ARG	GLU	conflict	UNP A0A8A0W558
H	423	ILE	PHE	conflict	UNP A0A8A0W558
H	433	CYS	ALA	conflict	UNP A0A8A0W558
H	448	ASN	ASP	conflict	UNP A0A8A0W558
H	460	GLY	PRO	conflict	UNP A0A8A0W558
H	501	CYS	ALA	conflict	UNP A0A8A0W558
H	509	ARG	GLU	conflict	UNP A0A8A0W558
H	510	ARG	LYS	conflict	UNP A0A8A0W558
H	512	ARG	-	expression tag	UNP A0A8A0W558
H	513	ARG	-	expression tag	UNP A0A8A0W558

- Molecule 3 is a protein called Fab 40591-a.01 heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	D	132	Total	C	N	O	S	0	0
			1022	642	176	199	5		

- Molecule 4 is a protein called Fab 40591-a.01 light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	E	107	Total	C	N	O	S	0	0
			811	508	136	164	3		

- Molecule 5 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-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	I	4	Total	C	N	O	0	0
			50	28	2	20		
5	R	4	Total	C	N	O	0	0
			50	28	2	20		

- 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	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	L	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	P	2	Total	C	N	O	0	0
			28	16	2	10		
6	Q	2	Total	C	N	O	0	0
			28	16	2	10		

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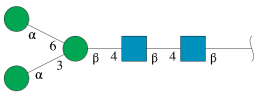
Mol	Chain	Residues	Atoms				AltConf	Trace
6	S	2	Total	C	N	O	0	0
			28	16	2	10		
6	T	2	Total	C	N	O	0	0
			28	16	2	10		
6	U	2	Total	C	N	O	0	0
			28	16	2	10		
6	V	2	Total	C	N	O	0	0
			28	16	2	10		
6	Y	2	Total	C	N	O	0	0
			28	16	2	10		
6	Z	2	Total	C	N	O	0	0
			28	16	2	10		
6	a	2	Total	C	N	O	0	0
			28	16	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	d	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		

- Molecule 7 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.

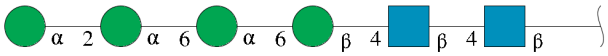
Mol	Chain	Residues	Atoms				AltConf	Trace
7	N	3	Total	C	N	O	0	0
			39	22	2	15		
7	W	3	Total	C	N	O	0	0
			39	22	2	15		
7	e	3	Total	C	N	O	0	0
			39	22	2	15		

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



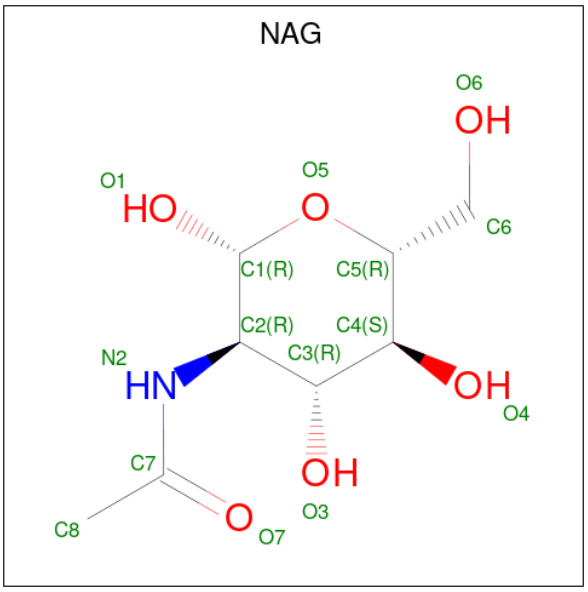
Mol	Chain	Residues	Atoms	AltConf	Trace
8	O	5	Total C N O 61 34 2 25	0	0
8	X	5	Total C N O 61 34 2 25	0	0
8	f	5	Total C N O 61 34 2 25	0	0

- Molecule 9 is an oligosaccharide called alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-6)-alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



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

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



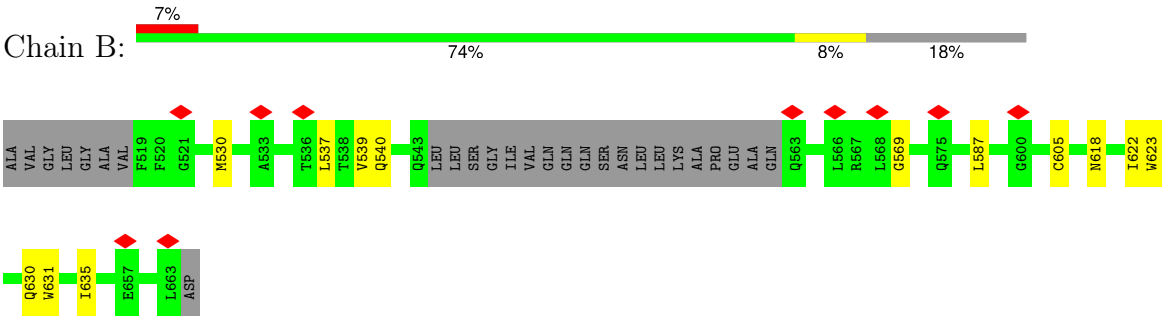
Mol	Chain	Residues	Atoms				AltConf
10	G	1	Total	C	N	O	0
			14	8	1	5	
10	G	1	Total	C	N	O	0
			14	8	1	5	
10	G	1	Total	C	N	O	0
			14	8	1	5	
10	G	1	Total	C	N	O	0
			14	8	1	5	
10	G	1	Total	C	N	O	0
			14	8	1	5	
10	G	1	Total	C	N	O	0
			14	8	1	5	
10	C	1	Total	C	N	O	0
			14	8	1	5	
10	C	1	Total	C	N	O	0
			14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

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

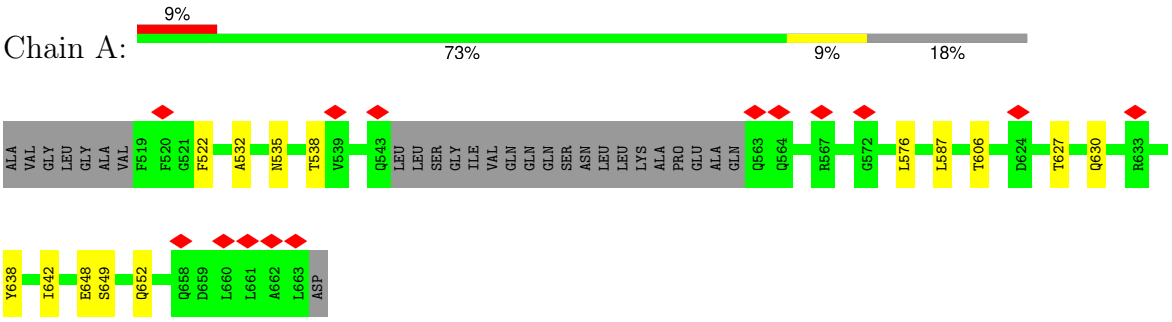
• Molecule 1: Envelope glycoprotein gp41

Chain B:



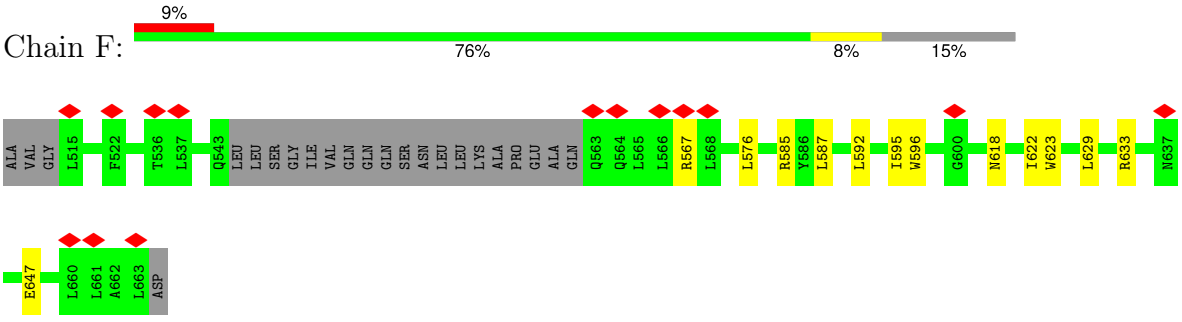
• Molecule 1: Envelope glycoprotein gp41

Chain A:



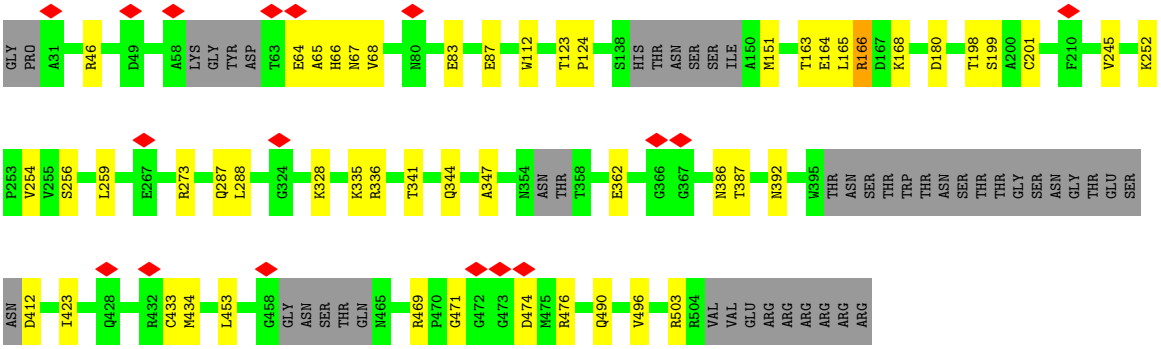
• Molecule 1: Envelope glycoprotein gp41

Chain F:



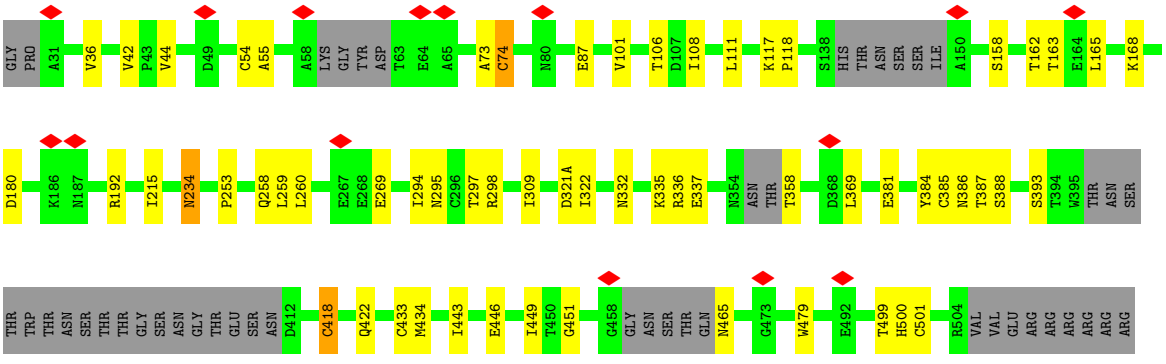
• Molecule 2: Envelope glycoprotein gp120

Chain G:



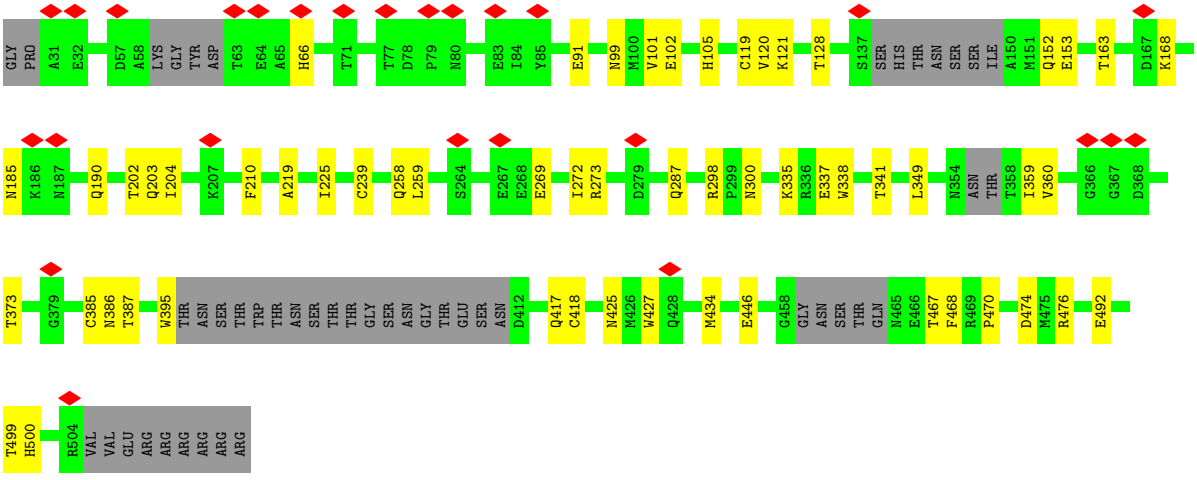
• Molecule 2: Envelope glycoprotein gp120

Chain C:



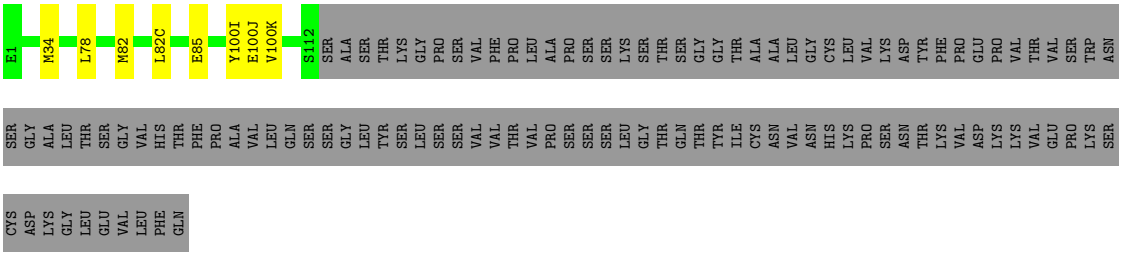
• Molecule 2: Envelope glycoprotein gp120

Chain H:



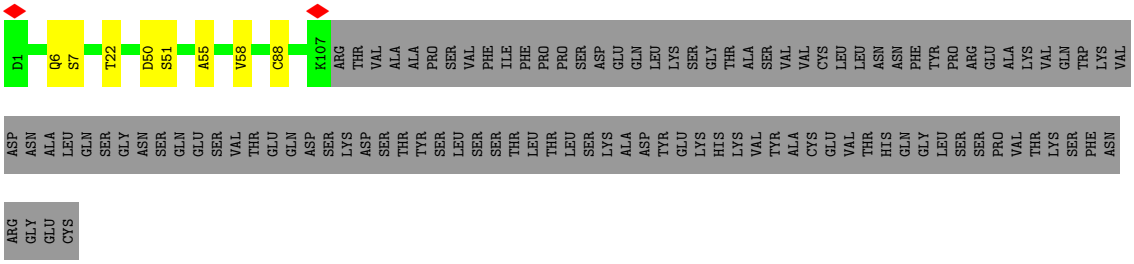
• Molecule 3: Fab 40591-a.01 heavy chain

Chain D:



• Molecule 4: Fab 40591-a.01 light chain

Chain E:



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

Chain I:

• Molecule 5: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-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

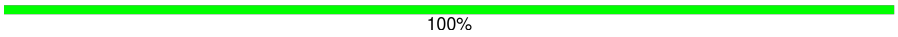
Chain J:

• 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 L:



• 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

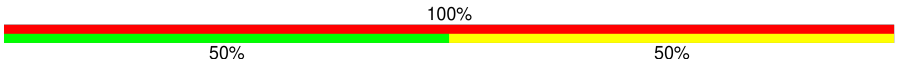
Chain P:

• 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 S:



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

Chain T:

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

Chain U:

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

Chain V:

• Molecule 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 a:

• 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 d:

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

Chain N:

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

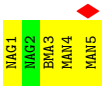
Chain W:

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

Chain e:

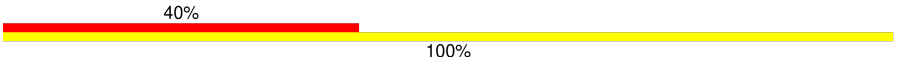
• Molecule 8: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain O:



• Molecule 8: 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 X:

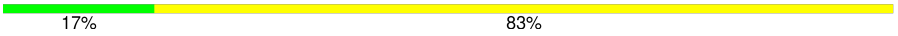


• Molecule 8: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain f:

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

Chain i:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	66103	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	56.03	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.466	Depositor
Minimum map value	-1.386	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.063	Depositor
Recommended contour level	0.5	Depositor
Map size (Å)	344.32, 344.32, 344.32	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.076, 1.076, 1.076	Depositor

5 Model quality

5.1 Standard geometry

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.12	0/1048	0.33	0/1422
1	B	0.11	0/1048	0.30	0/1422
1	F	0.12	0/1072	0.32	0/1455
2	C	0.15	0/3501	0.38	0/4745
2	G	0.15	0/3501	0.38	0/4745
2	H	0.14	0/3495	0.38	0/4737
3	D	0.17	0/1050	0.37	0/1425
4	E	0.15	0/829	0.36	0/1125
All	All	0.14	0/15544	0.37	0/21076

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
2	C	0	2
2	G	0	1
2	H	0	1
All	All	0	4

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	C	418	CYS	Peptide
2	C	501	CYS	Peptide

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Mol	Chain	Res	Type	Group
2	G	166	ARG	Sidechain
2	H	119	CYS	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1026	0	989	10	0
1	B	1026	0	989	10	0
1	F	1050	0	1017	11	0
2	C	3430	0	3362	37	0
2	G	3430	0	3362	32	0
2	H	3424	0	3357	33	0
3	D	1022	0	952	6	0
4	E	811	0	790	4	0
5	I	50	0	43	0	0
5	R	50	0	43	0	0
6	J	28	0	25	1	0
6	K	28	0	25	0	0
6	L	28	0	25	0	0
6	M	28	0	25	1	0
6	P	28	0	25	0	0
6	Q	28	0	25	0	0
6	S	28	0	25	1	0
6	T	28	0	25	0	0
6	U	28	0	25	1	0
6	V	28	0	25	0	0
6	Y	28	0	25	0	0
6	Z	28	0	25	0	0
6	a	28	0	25	0	0
6	b	28	0	25	0	0
6	c	28	0	25	0	0
6	d	28	0	25	0	0
6	g	28	0	25	0	0
6	h	28	0	25	0	0
7	N	39	0	34	0	0
7	W	39	0	34	0	0
7	e	39	0	34	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	O	61	0	52	0	0
8	X	61	0	52	0	0
8	f	61	0	52	1	0
9	i	72	0	61	1	0
10	C	84	0	78	2	0
10	G	84	0	78	0	0
10	H	84	0	78	0	0
All	All	16447	0	15907	133	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 4.

All (133) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:386:ASN:O	2:G:387:THR:OG1	2.01	0.79
2:G:151:MET:SD	2:G:328:LYS:NZ	2.65	0.69
2:H:360:VAL:HB	2:H:467:THR:HG22	1.74	0.69
2:H:120:VAL:HG12	2:H:203:GLN:NE2	2.08	0.69
1:A:606:THR:OG1	2:C:36:VAL:O	2.11	0.67
1:A:587:LEU:HD21	1:F:587:LEU:HD11	1.80	0.64
1:B:569:GLY:O	1:F:567:ARG:NH2	2.30	0.64
2:H:373:THR:OG1	2:H:385:CYS:O	2.09	0.63
2:H:101:VAL:O	2:H:105:HIS:N	2.32	0.62
2:G:87:GLU:HB2	6:J:1:NAG:H82	1.83	0.60
2:G:362:GLU:OE2	2:G:469:ARG:NH2	2.35	0.59
2:G:256:SER:OG	2:G:259:LEU:O	2.18	0.59
2:H:128:THR:O	9:i:1:NAG:H81	2.03	0.59
1:B:587:LEU:HD11	1:F:587:LEU:HD21	1.84	0.58
3:D:100(I):TYR:CD2	3:D:100(K):VAL:HG13	2.38	0.57
2:C:42:VAL:HG23	2:C:44:VAL:HG12	1.85	0.57
2:H:474:ASP:OD2	2:H:476:ARG:NH1	2.36	0.57
3:D:100(I):TYR:HD2	3:D:100(K):VAL:HG13	1.69	0.56
2:C:446:GLU:OE1	2:C:446:GLU:N	2.37	0.56
2:H:258:GLN:O	2:H:259:LEU:HD23	2.05	0.56
2:H:386:ASN:O	2:H:387:THR:OG1	2.11	0.56
2:G:112:TRP:NE1	2:G:434:MET:SD	2.78	0.56
1:A:522:PHE:HD1	1:A:538:THR:HG23	1.70	0.55
2:C:321(A):ASP:OD1	2:C:322:ILE:N	2.40	0.54
3:D:100(J):GLU:OE1	2:H:168:LYS:NZ	2.40	0.54
2:H:99:ASN:ND2	2:H:102:GLU:OE1	2.41	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:7:SER:O	4:E:22:THR:OG1	2.23	0.54
2:G:335:LYS:N	2:G:412:ASP:O	2.41	0.53
2:G:163:THR:OG1	2:G:164:GLU:OE1	2.26	0.53
2:C:385:CYS:HA	2:C:418:CYS:HB2	1.90	0.53
2:C:386:ASN:O	2:C:387:THR:OG1	2.22	0.52
1:B:631:TRP:NE1	2:G:496:VAL:O	2.41	0.52
2:G:273:ARG:NH1	2:G:287:GLN:OE1	2.42	0.52
1:B:605:CYS:O	2:G:503:ARG:NH1	2.43	0.52
2:C:163:THR:HG22	2:C:168:LYS:O	2.10	0.52
2:C:358:THR:HG1	2:C:465:ASN:N	2.08	0.52
2:H:298:ARG:HD2	2:H:300:ASN:HD22	1.75	0.51
4:E:6:GLN:NE2	4:E:88:CYS:SG	2.84	0.51
2:H:425:ASN:O	2:H:427:TRP:N	2.45	0.50
2:C:158:SER:OG	6:U:1:NAG:O6	2.24	0.50
2:G:46:ARG:O	2:G:490:GLN:N	2.42	0.50
2:C:162:THR:HG23	2:C:309:ILE:O	2.11	0.49
1:A:627:THR:OG1	1:A:630:GLN:OE1	2.29	0.49
2:C:393:SER:HB2	10:C:604:NAG:H83	1.94	0.49
2:H:121:LYS:HD2	2:H:202:THR:HG22	1.95	0.49
2:H:273:ARG:NH2	2:H:287:GLN:OE1	2.43	0.48
2:C:295:ASN:O	2:C:332:ASN:N	2.45	0.48
2:C:180:ASP:OD2	2:C:422:GLN:N	2.46	0.48
2:H:417:GLN:OE1	2:H:417:GLN:N	2.43	0.48
2:G:65:ALA:O	2:G:67:ASN:N	2.47	0.48
1:B:635:ILE:O	1:B:635:ILE:HG22	2.14	0.48
2:C:369:LEU:HD23	2:C:384:TYR:HD2	1.79	0.48
1:B:630:GLN:OE1	1:B:630:GLN:N	2.45	0.47
2:C:297:THR:OG1	2:C:443:ILE:O	2.16	0.47
1:F:622:ILE:HG23	1:F:623:TRP:N	2.28	0.47
2:G:166:ARG:O	2:G:166:ARG:HG2	2.14	0.47
2:C:258:GLN:O	2:C:259:LEU:HD12	2.13	0.47
2:C:215:ILE:HD12	2:C:253:PRO:CG	2.44	0.47
2:H:258:GLN:NE2	2:H:470:PRO:O	2.46	0.47
1:F:618:ASN:O	1:F:622:ILE:HG22	2.15	0.47
2:H:204:ILE:HD12	2:H:210:PHE:HZ	1.79	0.47
4:E:50:ASP:O	4:E:51:SER:OG	2.27	0.47
4:E:55:ALA:HB3	4:E:58:VAL:HG23	1.97	0.47
2:G:335:LYS:O	2:G:336:ARG:HB3	2.15	0.47
2:C:73:ALA:O	2:C:74:CYS:C	2.58	0.46
2:H:272:ILE:CD1	2:H:349:LEU:HD22	2.45	0.46
2:C:163:THR:HG23	2:C:165:LEU:H	1.79	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:359:ILE:O	2:H:395:TRP:N	2.49	0.46
2:G:165:LEU:HD11	2:C:192:ARG:CD	2.46	0.46
2:G:198:THR:HG23	2:G:199:SER:N	2.31	0.46
2:G:180:ASP:OD1	2:G:423:ILE:N	2.44	0.46
2:H:349:LEU:HD12	2:H:468:PHE:CZ	2.51	0.46
2:C:499:THR:HG22	2:C:500:HIS:N	2.31	0.45
1:F:585:ARG:NH2	2:H:492:GLU:OE1	2.49	0.45
1:F:595:ILE:HD11	1:F:647:GLU:HG3	1.97	0.45
1:F:629:LEU:HD23	1:F:633:ARG:HE	1.80	0.45
1:B:537:LEU:O	1:B:540:GLN:NE2	2.49	0.45
2:G:288:LEU:HD21	2:G:341:THR:HG21	1.98	0.45
2:G:453:LEU:O	2:G:471:GLY:N	2.43	0.45
1:A:638:TYR:O	1:A:642:ILE:HD12	2.17	0.45
2:G:165:LEU:HD11	2:C:192:ARG:HD2	2.00	0.44
1:A:642:ILE:HD12	1:A:642:ILE:H	1.82	0.44
2:H:385:CYS:HA	2:H:418:CYS:CB	2.48	0.44
3:D:85:GLU:OE1	3:D:85:GLU:N	2.38	0.44
2:C:258:GLN:C	2:C:259:LEU:HD12	2.42	0.44
1:F:592:LEU:HB3	1:F:596:TRP:CZ3	2.52	0.44
2:C:108:ILE:HD12	2:C:111:LEU:HD12	2.00	0.44
2:H:446:GLU:OE1	8:f:2:NAG:H81	2.17	0.44
1:A:532:ALA:HA	1:A:535:ASN:HD22	1.82	0.44
2:C:117:LYS:CG	2:C:118:PRO:HD3	2.48	0.44
2:G:474:ASP:OD2	2:G:476:ARG:NH1	2.45	0.44
2:H:185:ASN:OD1	2:H:190:GLN:NE2	2.48	0.44
2:H:204:ILE:HD11	2:H:434:MET:HB3	2.00	0.44
2:C:101:VAL:HG23	2:C:479:TRP:HB2	2.00	0.43
1:A:648:GLU:OE2	1:A:649:SER:OG	2.37	0.43
2:G:64:GLU:O	2:G:65:ALA:HB3	2.18	0.43
2:G:83:GLU:HA	2:G:245:VAL:HG22	2.01	0.43
2:G:344:GLN:O	2:G:347:ALA:N	2.51	0.43
1:A:576:LEU:HD21	1:F:576:LEU:HD23	1.98	0.43
2:H:152:GLN:O	2:H:153:GLU:HB2	2.18	0.43
2:C:234:ASN:OD1	10:C:601:NAG:N2	2.51	0.43
1:B:622:ILE:HG23	1:B:623:TRP:N	2.34	0.42
2:C:335:LYS:O	2:C:336:ARG:HB3	2.19	0.42
2:C:87:GLU:HB2	6:S:1:NAG:H82	2.00	0.42
2:H:373:THR:OG1	2:H:385:CYS:N	2.52	0.42
1:B:530:MET:HE1	1:B:622:ILE:CD1	2.50	0.42
3:D:82:MET:HE3	3:D:82(C):LEU:HD21	2.01	0.42
1:B:530:MET:HE3	1:B:622:ILE:O	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:294:ILE:HB	2:C:449:ILE:HD11	2.02	0.42
2:G:165:LEU:HD12	2:G:165:LEU:N	2.35	0.42
2:H:91:GLU:O	2:H:239:CYS:N	2.53	0.42
2:C:298:ARG:NE	2:C:381:GLU:OE1	2.44	0.42
2:C:260:LEU:HD12	2:C:451:GLY:HA3	2.01	0.42
1:A:649:SER:O	1:A:652:GLN:NE2	2.53	0.41
2:H:335:LYS:O	2:H:337:GLU:N	2.52	0.41
2:G:252:LYS:O	2:G:254:VAL:N	2.53	0.41
2:C:54:CYS:SG	2:C:55:ALA:N	2.94	0.41
2:H:338:TRP:O	2:H:341:THR:HG22	2.21	0.41
6:M:1:NAG:O3	6:M:2:NAG:O5	2.36	0.41
2:G:433:CYS:SG	2:G:434:MET:N	2.93	0.41
2:H:163:THR:HG22	2:H:168:LYS:O	2.21	0.41
2:C:386:ASN:OD1	2:C:388:SER:OG	2.31	0.41
2:G:68:VAL:HG21	2:G:112:TRP:HZ3	1.85	0.41
2:C:335:LYS:O	2:C:337:GLU:N	2.51	0.41
1:F:622:ILE:HG23	1:F:623:TRP:H	1.83	0.41
2:C:433:CYS:SG	2:C:434:MET:N	2.94	0.41
3:D:34:MET:HB3	3:D:78:LEU:HD22	2.02	0.40
2:H:219:ALA:HB2	2:H:225:ILE:HD11	2.03	0.40
2:H:499:THR:HG22	2:H:500:HIS:N	2.37	0.40
2:G:336:ARG:HG2	2:G:336:ARG:O	2.22	0.40
2:G:123:THR:N	2:G:124:PRO:HD2	2.36	0.40
2:G:201:CYS:HB3	2:G:433:CYS:HB3	1.99	0.40
2:C:106:THR:O	2:C:106:THR:HG22	2.22	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	A	122/153 (80%)	112 (92%)	10 (8%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	B	122/153 (80%)	118 (97%)	3 (2%)	1 (1%)	16 53
1	F	126/153 (82%)	119 (94%)	7 (6%)	0	100 100
2	C	421/479 (88%)	398 (94%)	21 (5%)	2 (0%)	25 62
2	G	421/479 (88%)	395 (94%)	24 (6%)	2 (0%)	25 62
2	H	420/479 (88%)	392 (93%)	26 (6%)	2 (0%)	25 62
3	D	130/245 (53%)	122 (94%)	8 (6%)	0	100 100
4	E	105/214 (49%)	98 (93%)	7 (7%)	0	100 100
All	All	1867/2355 (79%)	1754 (94%)	106 (6%)	7 (0%)	32 67

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	G	66	HIS
2	C	74	CYS
2	H	66	HIS
2	C	269	GLU
2	H	269	GLU
2	G	168	LYS
1	B	539	VAL

5.3.2 Protein sidechains (i)

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

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	108/128 (84%)	108 (100%)	0	100 100
1	B	108/128 (84%)	107 (99%)	1 (1%)	75 83
1	F	110/128 (86%)	110 (100%)	0	100 100
2	C	388/429 (90%)	387 (100%)	1 (0%)	91 92
2	G	388/429 (90%)	387 (100%)	1 (0%)	91 92
2	H	387/429 (90%)	387 (100%)	0	100 100
3	D	110/208 (53%)	110 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
4	E	92/188 (49%)	92 (100%)	0	100 100
All	All	1691/2067 (82%)	1688 (100%)	3 (0%)	91 94

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	618	ASN
2	G	392	ASN
2	C	234	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	590	GLN
2	G	315	GLN
4	E	32	ASN
4	E	89	GLN
1	A	535	ASN
1	A	591	GLN
1	A	656	ASN
2	C	249	HIS
2	C	300	ASN
2	C	374	HIS
1	F	652	GLN
1	F	653	GLN
1	F	656	ASN
2	H	66	HIS
2	H	203	GLN
2	H	425	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

74 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	I	1	2,5	14,14,15	0.74	0	17,19,21	0.83	0
5	NAG	I	2	5	14,14,15	0.72	0	17,19,21	0.93	0
5	BMA	I	3	5	11,11,12	0.81	0	15,15,17	2.44	5 (33%)
5	MAN	I	4	5	11,11,12	0.67	0	15,15,17	1.24	1 (6%)
6	NAG	J	1	2,6	14,14,15	0.69	0	17,19,21	0.83	0
6	NAG	J	2	6	14,14,15	0.68	0	17,19,21	0.82	0
6	NAG	K	1	2,6	14,14,15	0.72	0	17,19,21	0.96	1 (5%)
6	NAG	K	2	6	14,14,15	0.69	0	17,19,21	0.89	0
6	NAG	L	1	2,6	14,14,15	0.71	0	17,19,21	0.90	0
6	NAG	L	2	6	14,14,15	0.71	0	17,19,21	0.83	0
6	NAG	M	1	2,6	14,14,15	0.73	0	17,19,21	1.04	1 (5%)
6	NAG	M	2	6	14,14,15	0.70	0	17,19,21	0.96	0
7	NAG	N	1	2,7	14,14,15	0.70	0	17,19,21	0.92	1 (5%)
7	NAG	N	2	7	14,14,15	0.67	0	17,19,21	1.08	1 (5%)
7	BMA	N	3	7	11,11,12	0.90	0	15,15,17	2.23	5 (33%)
8	NAG	O	1	2,8	14,14,15	0.73	0	17,19,21	0.93	1 (5%)
8	NAG	O	2	8	14,14,15	0.69	0	17,19,21	0.82	0
8	BMA	O	3	8	11,11,12	0.86	0	15,15,17	2.53	5 (33%)
8	MAN	O	4	8	11,11,12	0.72	0	15,15,17	0.96	1 (6%)
8	MAN	O	5	8	11,11,12	0.64	0	15,15,17	1.21	1 (6%)
6	NAG	P	1	2,6	14,14,15	0.72	0	17,19,21	0.96	1 (5%)
6	NAG	P	2	6	14,14,15	0.72	0	17,19,21	0.91	1 (5%)
6	NAG	Q	1	2,6	14,14,15	0.70	0	17,19,21	0.83	1 (5%)
6	NAG	Q	2	6	14,14,15	0.70	0	17,19,21	0.88	0
5	NAG	R	1	2,5	14,14,15	0.72	0	17,19,21	1.03	1 (5%)
5	NAG	R	2	5	14,14,15	0.70	0	17,19,21	0.84	0
5	BMA	R	3	5	11,11,12	0.81	0	15,15,17	2.77	6 (40%)
5	MAN	R	4	5	11,11,12	0.68	0	15,15,17	1.26	1 (6%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
6	NAG	S	1	2,6	14,14,15	0.73	0	17,19,21	0.89	0
6	NAG	S	2	6	14,14,15	0.71	0	17,19,21	0.84	0
6	NAG	T	1	2,6	14,14,15	0.70	0	17,19,21	1.08	1 (5%)
6	NAG	T	2	6	14,14,15	0.70	0	17,19,21	0.98	0
6	NAG	U	1	2,6	14,14,15	0.71	0	17,19,21	1.05	1 (5%)
6	NAG	U	2	6	14,14,15	0.72	0	17,19,21	0.88	0
6	NAG	V	1	2,6	14,14,15	0.73	0	17,19,21	0.89	1 (5%)
6	NAG	V	2	6	14,14,15	0.69	0	17,19,21	0.85	0
7	NAG	W	1	2,7	14,14,15	0.68	0	17,19,21	0.86	0
7	NAG	W	2	7	14,14,15	0.67	0	17,19,21	1.04	1 (5%)
7	BMA	W	3	7	11,11,12	0.89	0	15,15,17	2.24	5 (33%)
8	NAG	X	1	2,8	14,14,15	0.72	0	17,19,21	0.95	1 (5%)
8	NAG	X	2	8	14,14,15	0.71	0	17,19,21	0.92	1 (5%)
8	BMA	X	3	8	11,11,12	0.79	0	15,15,17	2.86	6 (40%)
8	MAN	X	4	8	11,11,12	0.77	0	15,15,17	0.88	1 (6%)
8	MAN	X	5	8	11,11,12	0.71	0	15,15,17	0.99	1 (6%)
6	NAG	Y	1	2,6	14,14,15	0.73	0	17,19,21	1.01	1 (5%)
6	NAG	Y	2	6	14,14,15	0.71	0	17,19,21	0.88	0
6	NAG	Z	1	2,6	14,14,15	0.76	0	17,19,21	0.77	0
6	NAG	Z	2	6	14,14,15	0.71	0	17,19,21	0.85	0
6	NAG	a	1	2,6	14,14,15	0.71	0	17,19,21	0.86	1 (5%)
6	NAG	a	2	6	14,14,15	0.79	0	17,19,21	1.04	1 (5%)
6	NAG	b	1	2,6	14,14,15	0.70	0	17,19,21	1.08	1 (5%)
6	NAG	b	2	6	14,14,15	0.70	0	17,19,21	0.92	0
6	NAG	c	1	2,6	14,14,15	0.69	0	17,19,21	1.00	2 (11%)
6	NAG	c	2	6	14,14,15	0.70	0	17,19,21	0.92	0
6	NAG	d	1	2,6	14,14,15	0.69	0	17,19,21	0.99	1 (5%)
6	NAG	d	2	6	14,14,15	0.69	0	17,19,21	0.89	0
7	NAG	e	1	2,7	14,14,15	0.71	0	17,19,21	0.91	0
7	NAG	e	2	7	14,14,15	0.66	0	17,19,21	1.07	1 (5%)
7	BMA	e	3	7	11,11,12	0.88	0	15,15,17	2.26	5 (33%)
8	NAG	f	1	2,8	14,14,15	0.73	0	17,19,21	1.00	1 (5%)
8	NAG	f	2	8	14,14,15	0.71	0	17,19,21	0.95	0
8	BMA	f	3	8	11,11,12	0.92	0	15,15,17	2.78	7 (46%)
8	MAN	f	4	8	11,11,12	0.73	0	15,15,17	0.95	1 (6%)
8	MAN	f	5	8	11,11,12	0.73	0	15,15,17	0.95	1 (6%)
6	NAG	g	1	2,6	14,14,15	0.72	0	17,19,21	1.05	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
6	NAG	g	2	6	14,14,15	0.70	0	17,19,21	0.92	1 (5%)
6	NAG	h	1	2,6	14,14,15	0.70	0	17,19,21	0.80	1 (5%)
6	NAG	h	2	6	14,14,15	0.69	0	17,19,21	0.87	0
9	NAG	i	1	2,9	14,14,15	0.75	0	17,19,21	0.92	0
9	NAG	i	2	9	14,14,15	0.73	0	17,19,21	0.80	0
9	BMA	i	3	9	11,11,12	0.88	0	15,15,17	2.61	7 (46%)
9	MAN	i	4	9	11,11,12	0.77	0	15,15,17	0.97	1 (6%)
9	MAN	i	5	9	11,11,12	0.68	0	15,15,17	1.28	1 (6%)
9	MAN	i	6	9	11,11,12	0.67	0	15,15,17	1.20	1 (6%)

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	I	1	2,5	-	1/6/23/26	0/1/1/1
5	NAG	I	2	5	-	0/6/23/26	0/1/1/1
5	BMA	I	3	5	-	0/2/19/22	0/1/1/1
5	MAN	I	4	5	-	1/2/19/22	0/1/1/1
6	NAG	J	1	2,6	-	0/6/23/26	0/1/1/1
6	NAG	J	2	6	-	1/6/23/26	0/1/1/1
6	NAG	K	1	2,6	-	2/6/23/26	0/1/1/1
6	NAG	K	2	6	-	3/6/23/26	0/1/1/1
6	NAG	L	1	2,6	-	3/6/23/26	0/1/1/1
6	NAG	L	2	6	-	0/6/23/26	0/1/1/1
6	NAG	M	1	2,6	-	2/6/23/26	0/1/1/1
6	NAG	M	2	6	-	2/6/23/26	0/1/1/1
7	NAG	N	1	2,7	-	0/6/23/26	0/1/1/1
7	NAG	N	2	7	-	2/6/23/26	0/1/1/1
7	BMA	N	3	7	-	0/2/19/22	0/1/1/1
8	NAG	O	1	2,8	-	1/6/23/26	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	MAN	O	5	8	-	0/2/19/22	0/1/1/1
6	NAG	P	1	2,6	-	0/6/23/26	0/1/1/1
6	NAG	P	2	6	-	0/6/23/26	0/1/1/1
6	NAG	Q	1	2,6	-	1/6/23/26	0/1/1/1
6	NAG	Q	2	6	-	0/6/23/26	0/1/1/1

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

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	g	1	2,6	-	0/6/23/26	0/1/1/1
6	NAG	g	2	6	-	0/6/23/26	0/1/1/1
6	NAG	h	1	2,6	-	1/6/23/26	0/1/1/1
6	NAG	h	2	6	-	0/6/23/26	0/1/1/1
9	NAG	i	1	2,9	-	0/6/23/26	0/1/1/1
9	NAG	i	2	9	-	0/6/23/26	0/1/1/1
9	BMA	i	3	9	-	0/2/19/22	0/1/1/1
9	MAN	i	4	9	-	0/2/19/22	0/1/1/1
9	MAN	i	5	9	-	1/2/19/22	0/1/1/1
9	MAN	i	6	9	-	1/2/19/22	0/1/1/1

There are no bond length outliers.

All (89) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
8	X	3	BMA	C1-O5-C5	8.96	124.20	112.19
8	f	3	BMA	C1-O5-C5	8.20	123.17	112.19
5	R	3	BMA	C1-O5-C5	8.14	123.09	112.19
8	O	3	BMA	C1-O5-C5	7.18	121.81	112.19
5	I	3	BMA	C1-O5-C5	6.86	121.38	112.19
9	i	3	BMA	C1-O5-C5	6.43	120.81	112.19
7	e	3	BMA	C1-O5-C5	5.35	119.36	112.19
7	W	3	BMA	C1-O5-C5	5.11	119.03	112.19
7	N	3	BMA	C1-O5-C5	4.78	118.59	112.19
7	N	3	BMA	C3-C4-C5	4.31	118.04	110.23
7	W	3	BMA	C3-C4-C5	4.31	118.04	110.23
7	e	3	BMA	C3-C4-C5	4.28	117.98	110.23
9	i	3	BMA	C3-C4-C5	4.25	117.93	110.23
5	R	3	BMA	C3-C4-C5	4.19	117.83	110.23
5	I	3	BMA	C3-C4-C5	4.12	117.71	110.23
9	i	3	BMA	C2-C3-C4	3.96	117.83	110.86
5	R	4	MAN	C1-O5-C5	3.80	117.28	112.19
8	O	5	MAN	C1-O5-C5	3.73	117.18	112.19
7	N	3	BMA	C2-C3-C4	3.64	117.27	110.86
5	I	4	MAN	C1-O5-C5	3.60	117.01	112.19
8	f	3	BMA	C3-C4-C5	3.49	116.56	110.23
7	W	3	BMA	C2-C3-C4	3.36	116.77	110.86
8	O	3	BMA	O3-C3-C4	3.35	118.27	110.38
8	O	3	BMA	C3-C4-C5	3.30	116.21	110.23
7	e	3	BMA	C2-C3-C4	3.29	116.65	110.86
9	i	6	MAN	C1-O5-C5	3.28	116.58	112.19
8	X	3	BMA	O3-C3-C4	3.14	117.77	110.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	i	5	MAN	C1-O5-C5	3.12	116.36	112.19
8	X	3	BMA	C3-C4-C5	2.83	115.36	110.23
8	f	3	BMA	O4-C4-C3	-2.77	103.85	110.38
5	R	1	NAG	O5-C1-C2	-2.75	107.03	111.29
8	f	3	BMA	O3-C3-C4	2.70	116.73	110.38
8	O	3	BMA	O4-C4-C3	-2.66	104.11	110.38
5	R	3	BMA	O5-C5-C4	2.64	117.26	110.83
6	P	1	NAG	O5-C1-C2	-2.64	107.21	111.29
5	R	3	BMA	O4-C4-C3	-2.63	104.17	110.38
5	I	3	BMA	O4-C4-C3	-2.63	104.18	110.38
6	U	1	NAG	O5-C1-C2	-2.62	107.23	111.29
5	R	3	BMA	C2-C3-C4	2.60	115.43	110.86
8	X	3	BMA	O4-C4-C3	-2.59	104.28	110.38
7	N	3	BMA	O4-C4-C3	-2.58	104.29	110.38
9	i	3	BMA	O4-C4-C3	-2.58	104.29	110.38
7	W	3	BMA	O4-C4-C3	-2.56	104.34	110.38
6	M	1	NAG	O5-C1-C2	-2.56	107.34	111.29
8	X	3	BMA	O5-C5-C4	2.55	117.02	110.83
7	e	3	BMA	O4-C4-C3	-2.54	104.38	110.38
8	O	4	MAN	C1-O5-C5	2.53	115.57	112.19
8	f	4	MAN	C1-O5-C5	2.52	115.57	112.19
9	i	3	BMA	O3-C3-C2	-2.49	104.97	110.05
6	Y	1	NAG	O5-C1-C2	-2.47	107.46	111.29
8	X	1	NAG	C1-O5-C5	2.47	115.50	112.19
8	f	3	BMA	O5-C5-C4	2.47	116.82	110.83
8	X	5	MAN	C1-O5-C5	2.43	115.44	112.19
6	T	1	NAG	C2-N2-C7	2.42	126.15	122.90
9	i	4	MAN	C1-O5-C5	2.42	115.43	112.19
6	a	2	NAG	C1-O5-C5	2.42	115.43	112.19
8	X	2	NAG	O5-C1-C2	-2.41	107.56	111.29
5	I	3	BMA	O5-C5-C4	2.40	116.66	110.83
6	g	1	NAG	C1-O5-C5	2.39	115.38	112.19
6	d	1	NAG	O5-C1-C2	-2.35	107.65	111.29
8	f	3	BMA	C2-C3-C4	2.34	114.97	110.86
8	f	5	MAN	C1-O5-C5	2.32	115.30	112.19
6	b	1	NAG	O5-C1-C2	-2.31	107.72	111.29
7	N	2	NAG	O4-C4-C3	-2.29	104.97	110.38
9	i	3	BMA	C1-C2-C3	2.27	112.95	109.64
6	c	1	NAG	C2-N2-C7	2.27	125.94	122.90
7	N	3	BMA	O3-C3-C2	-2.27	105.43	110.05
6	V	1	NAG	O5-C1-C2	-2.22	107.86	111.29
6	a	1	NAG	O5-C1-C2	-2.21	107.86	111.29

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	K	1	NAG	O5-C1-C2	-2.21	107.87	111.29
8	f	3	BMA	O2-C2-C3	2.20	114.72	110.15
7	W	2	NAG	O4-C4-C3	-2.20	105.18	110.38
6	c	1	NAG	O5-C1-C2	-2.16	107.95	111.29
5	R	3	BMA	O3-C3-C2	-2.15	105.67	110.05
8	O	3	BMA	O5-C5-C4	2.13	116.02	110.83
7	W	3	BMA	O3-C3-C2	-2.13	105.71	110.05
6	Q	1	NAG	O5-C1-C2	-2.13	108.00	111.29
7	e	3	BMA	O3-C3-C2	-2.12	105.73	110.05
7	e	2	NAG	O4-C4-C3	-2.11	105.39	110.38
8	X	4	MAN	C1-O5-C5	2.10	115.00	112.19
6	g	2	NAG	O5-C1-C2	-2.08	108.07	111.29
5	I	3	BMA	C2-C3-C4	2.06	114.49	110.86
9	i	3	BMA	O5-C5-C4	2.06	115.84	110.83
6	P	2	NAG	C1-O5-C5	2.04	114.92	112.19
8	O	1	NAG	C1-O5-C5	2.04	114.92	112.19
8	f	1	NAG	O4-C4-C3	-2.03	105.60	110.38
7	N	1	NAG	O5-C1-C2	-2.02	108.16	111.29
6	h	1	NAG	O5-C1-C2	-2.02	108.16	111.29
8	X	3	BMA	O2-C2-C3	2.01	114.31	110.15

There are no chirality outliers.

All (56) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	K	1	NAG	C1-C2-N2-C7
6	M	1	NAG	C1-C2-N2-C7
6	T	1	NAG	C1-C2-N2-C7
6	T	2	NAG	C1-C2-N2-C7
6	c	1	NAG	C1-C2-N2-C7
6	d	1	NAG	C1-C2-N2-C7
8	O	3	BMA	O5-C5-C6-O6
8	O	3	BMA	C4-C5-C6-O6
6	Z	1	NAG	O5-C5-C6-O6
6	Z	1	NAG	C4-C5-C6-O6
8	f	1	NAG	O5-C5-C6-O6
6	Q	1	NAG	O5-C5-C6-O6
6	S	2	NAG	O5-C5-C6-O6
6	T	2	NAG	O5-C5-C6-O6
8	O	1	NAG	O5-C5-C6-O6
9	i	6	MAN	O5-C5-C6-O6
5	R	4	MAN	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
6	K	2	NAG	O5-C5-C6-O6
6	a	2	NAG	O5-C5-C6-O6
8	X	1	NAG	O5-C5-C6-O6
8	X	2	NAG	O5-C5-C6-O6
6	b	2	NAG	O5-C5-C6-O6
6	J	2	NAG	O5-C5-C6-O6
6	L	1	NAG	O5-C5-C6-O6
9	i	5	MAN	O5-C5-C6-O6
5	I	4	MAN	O5-C5-C6-O6
6	c	1	NAG	O5-C5-C6-O6
6	h	1	NAG	O5-C5-C6-O6
6	K	2	NAG	C1-C2-N2-C7
6	b	1	NAG	C1-C2-N2-C7
6	b	2	NAG	C1-C2-N2-C7
6	d	2	NAG	C1-C2-N2-C7
7	N	2	NAG	C1-C2-N2-C7
7	W	2	NAG	C1-C2-N2-C7
6	U	1	NAG	C4-C5-C6-O6
6	K	1	NAG	C3-C2-N2-C7
6	L	1	NAG	C3-C2-N2-C7
6	M	2	NAG	C3-C2-N2-C7
6	U	1	NAG	C3-C2-N2-C7
7	e	2	NAG	C3-C2-N2-C7
5	I	1	NAG	C1-C2-N2-C7
6	L	1	NAG	C1-C2-N2-C7
6	M	2	NAG	C1-C2-N2-C7
6	U	1	NAG	C1-C2-N2-C7
7	e	1	NAG	C1-C2-N2-C7
7	e	2	NAG	C1-C2-N2-C7
6	K	2	NAG	C3-C2-N2-C7
6	M	1	NAG	C3-C2-N2-C7
6	T	2	NAG	C3-C2-N2-C7
6	b	1	NAG	C3-C2-N2-C7
6	b	2	NAG	C3-C2-N2-C7
6	c	1	NAG	C3-C2-N2-C7
6	d	1	NAG	C3-C2-N2-C7
6	d	2	NAG	C3-C2-N2-C7
7	N	2	NAG	C3-C2-N2-C7
7	W	2	NAG	C3-C2-N2-C7

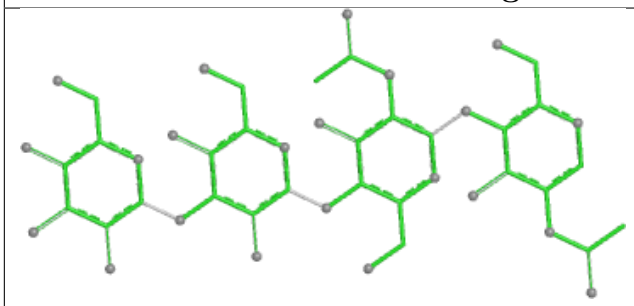
There are no ring outliers.

7 monomers are involved in 6 short contacts:

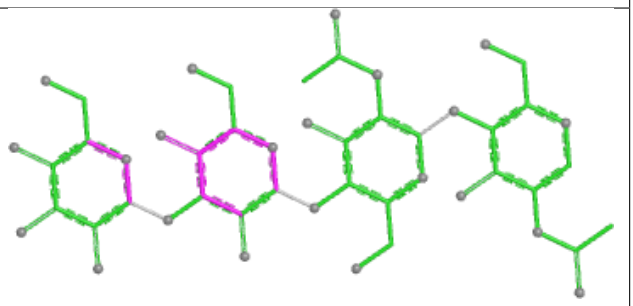
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	M	1	NAG	1	0
6	U	1	NAG	1	0
8	f	2	NAG	1	0
6	J	1	NAG	1	0
9	i	1	NAG	1	0
6	S	1	NAG	1	0
6	M	2	NAG	1	0

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

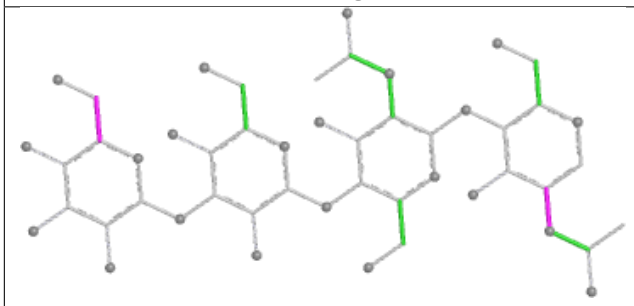
Oligosaccharide Chain I



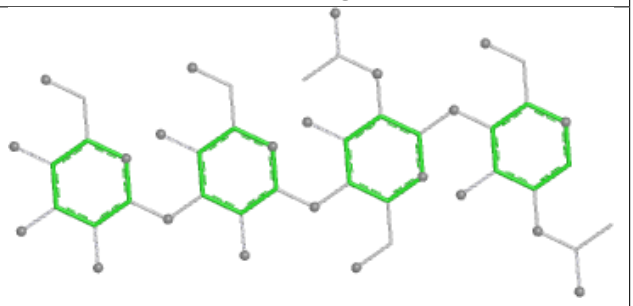
Bond lengths



Bond angles

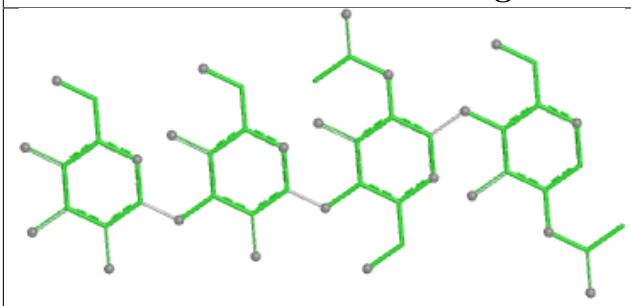


Torsions

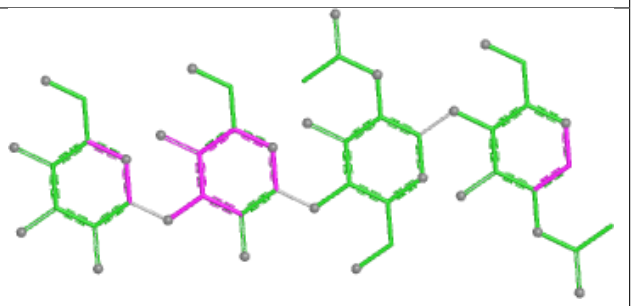


Rings

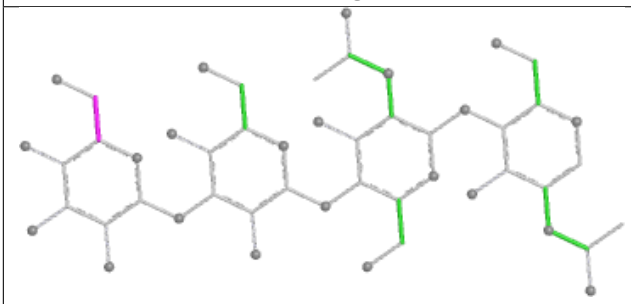
Oligosaccharide Chain R



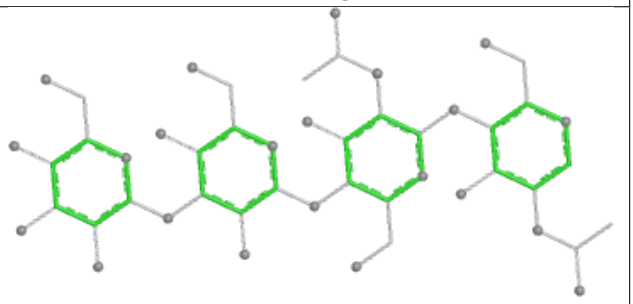
Bond lengths



Bond angles

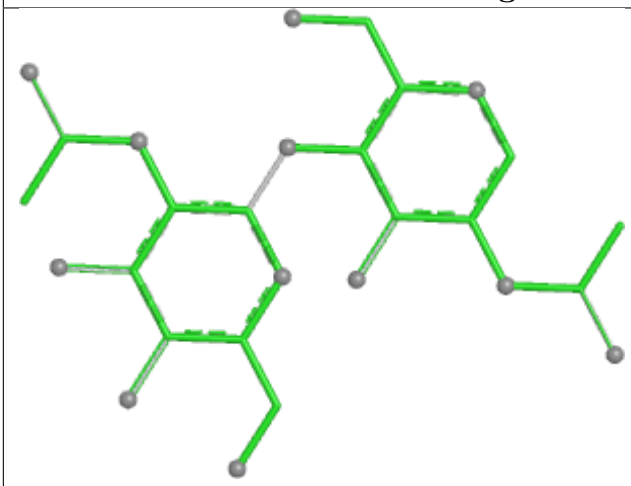


Torsions

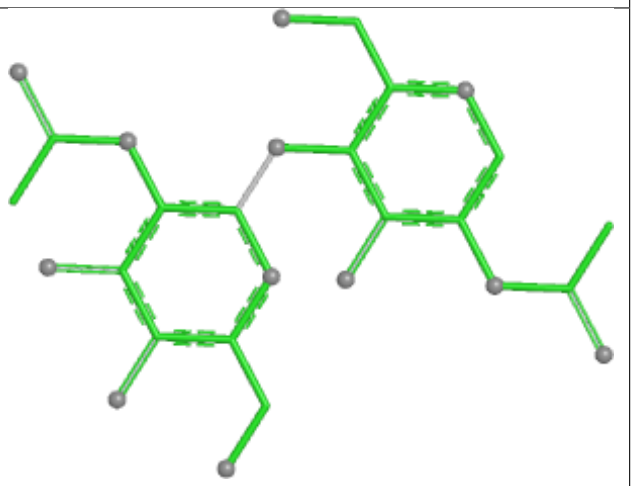


Rings

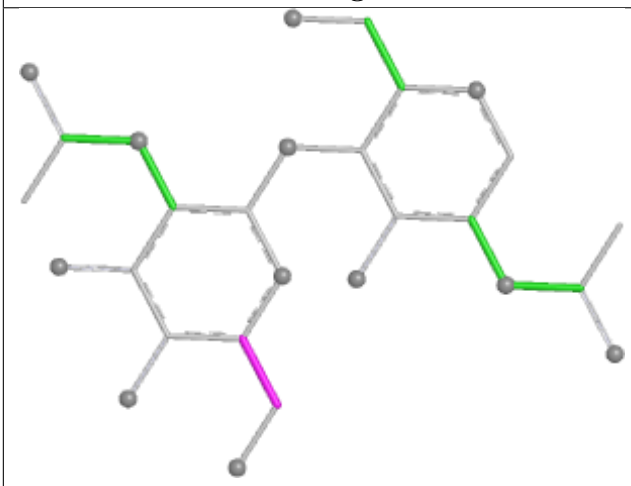
Oligosaccharide Chain J



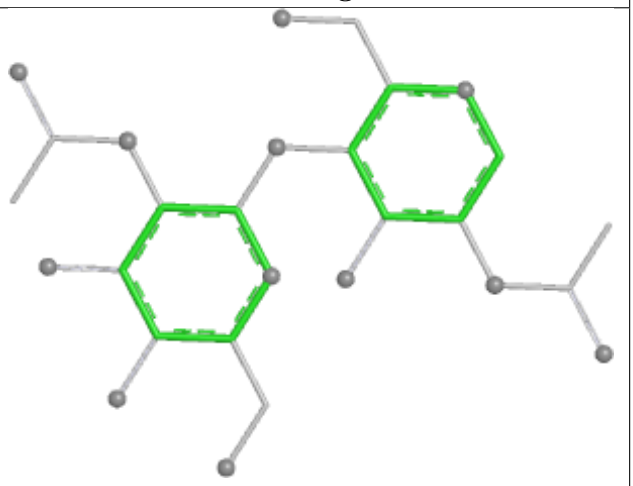
Bond lengths



Bond angles

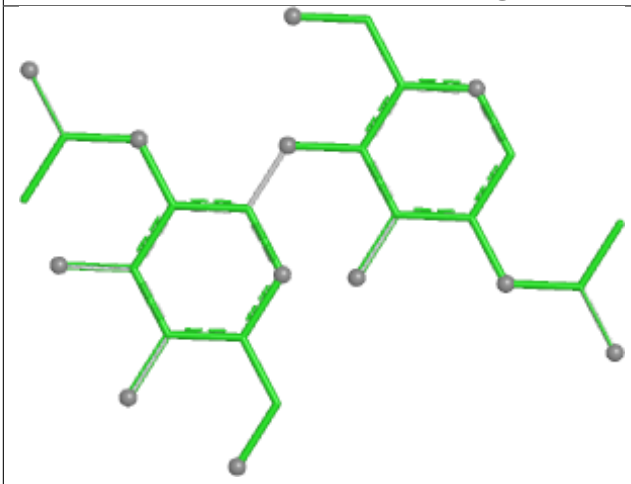


Torsions

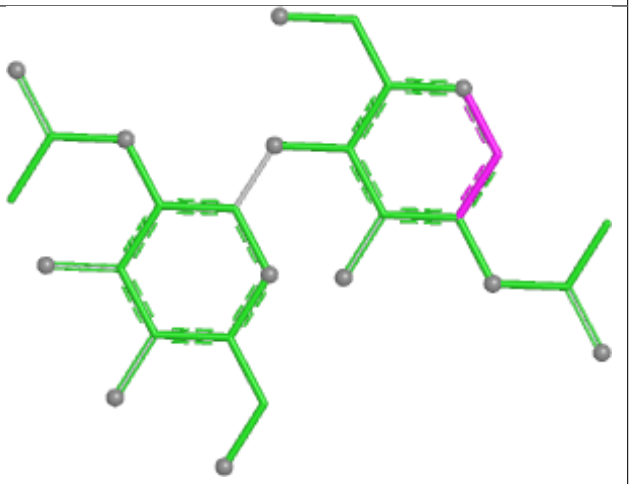


Rings

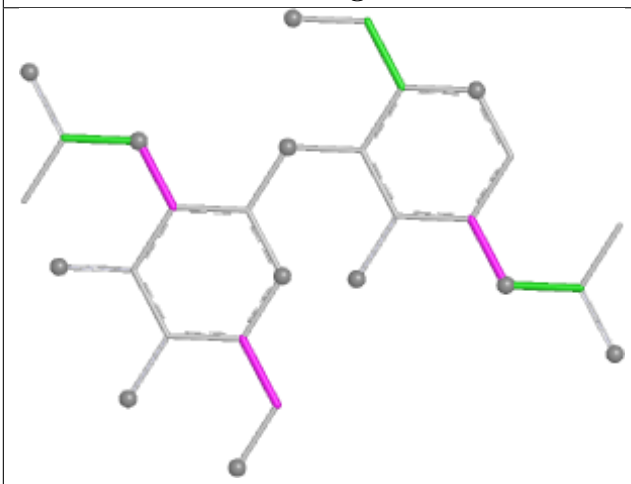
Oligosaccharide Chain K



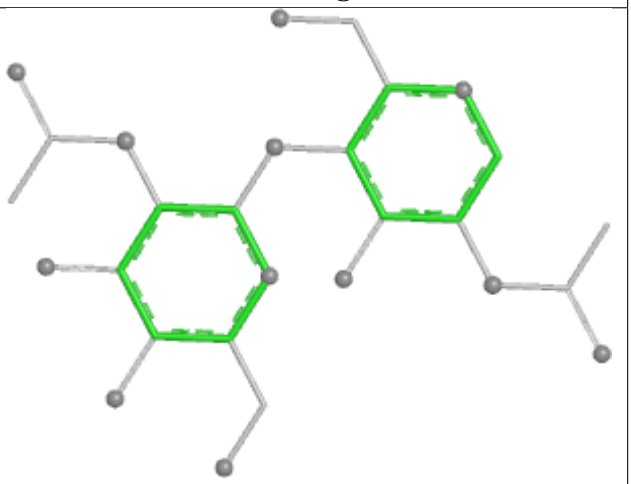
Bond lengths



Bond angles

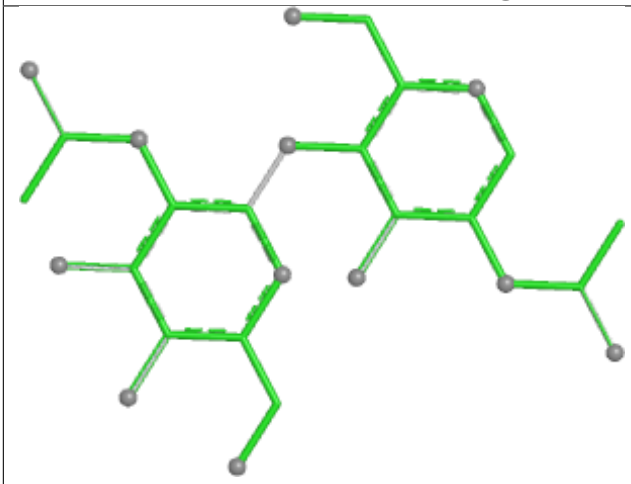


Torsions

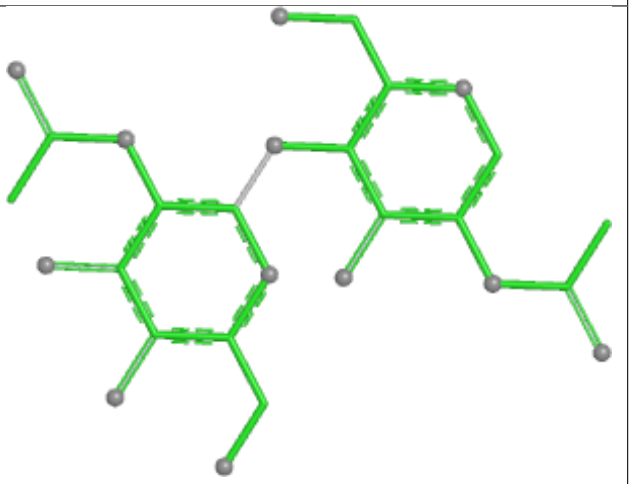


Rings

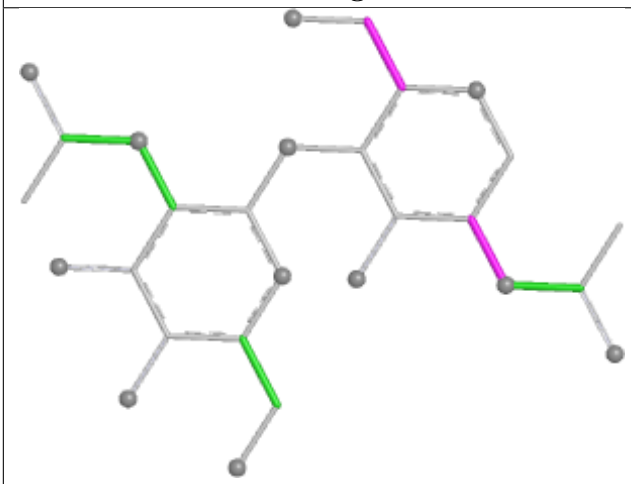
Oligosaccharide Chain L



Bond lengths



Bond angles



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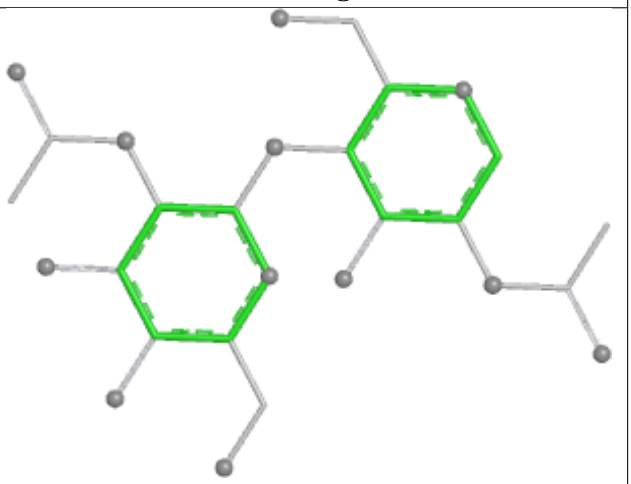
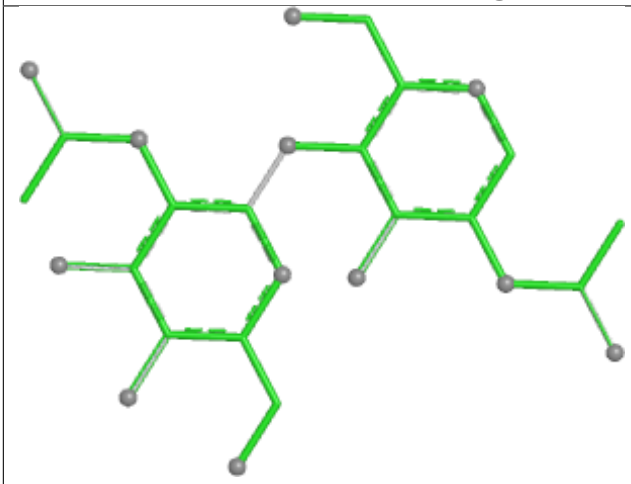


Rings

Oligosaccharide Chain M



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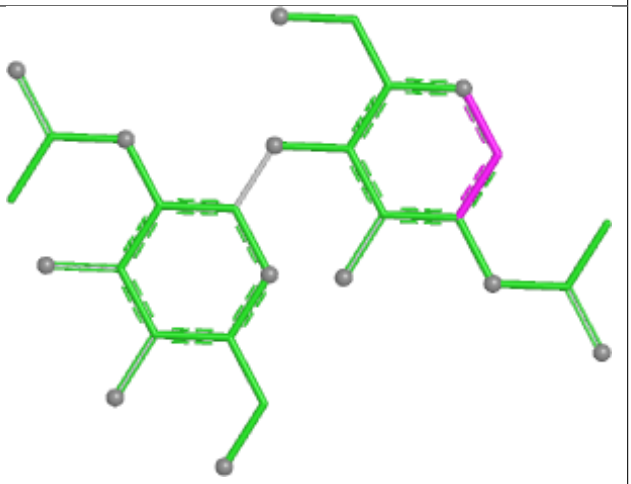
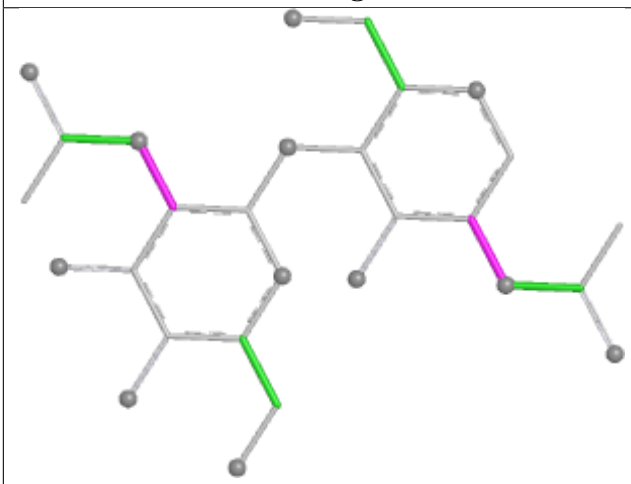


Bond angles



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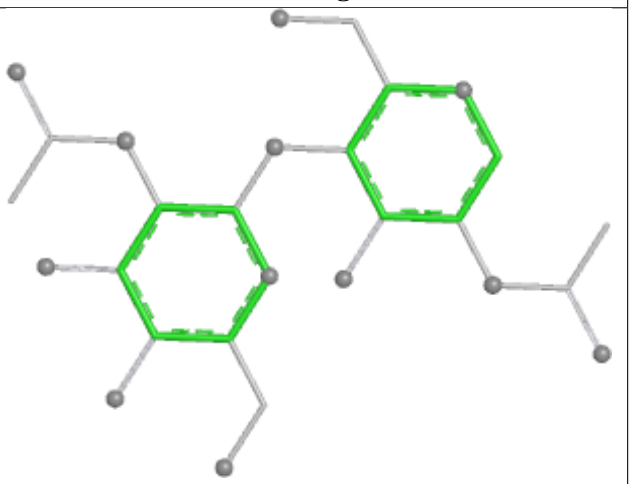
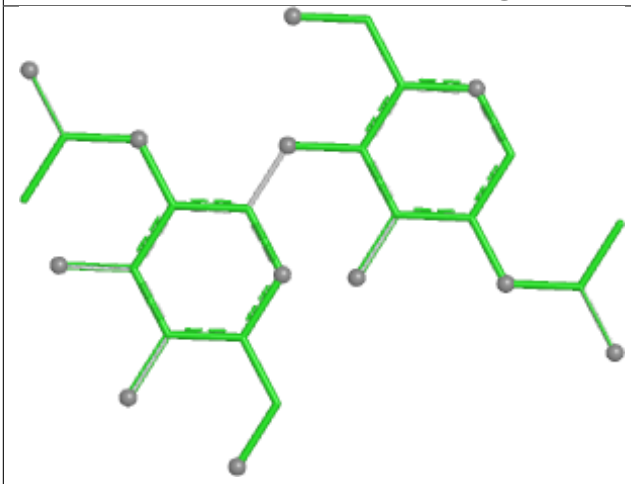


Rings

Oligosaccharide Chain P



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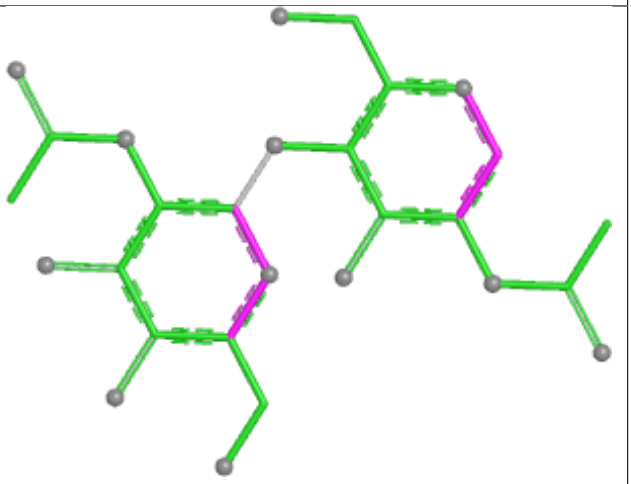

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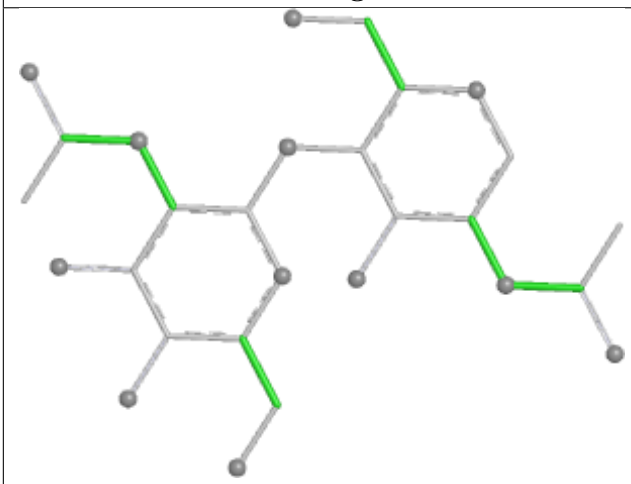

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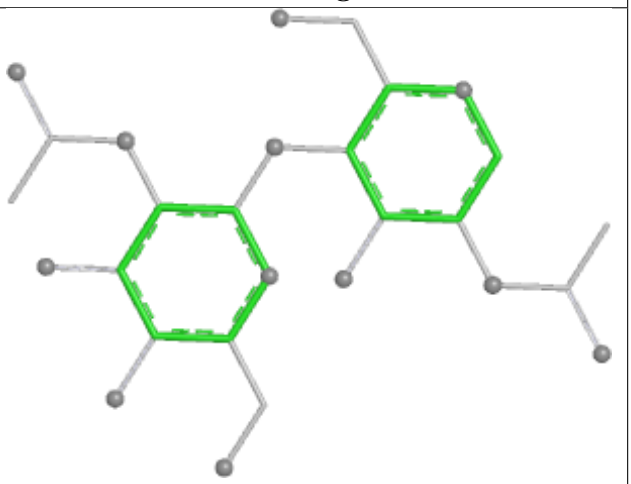
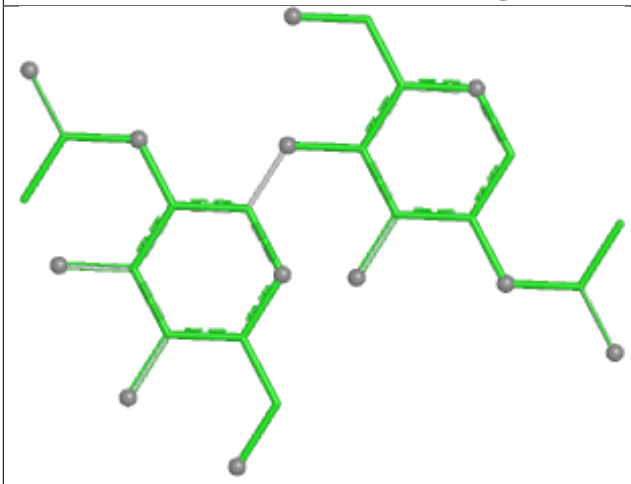


Rings

Oligosaccharide Chain Q



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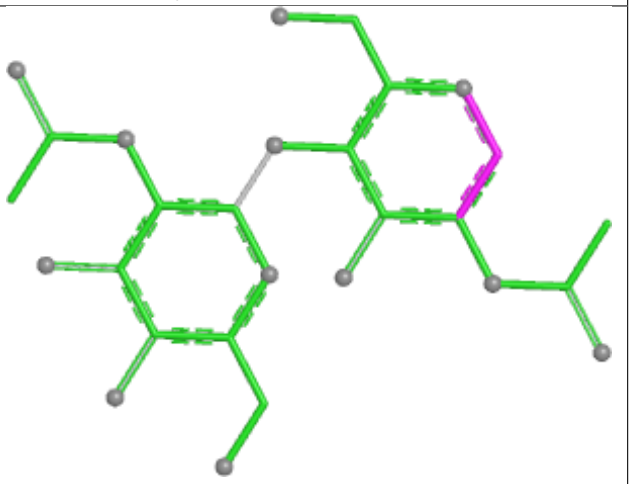
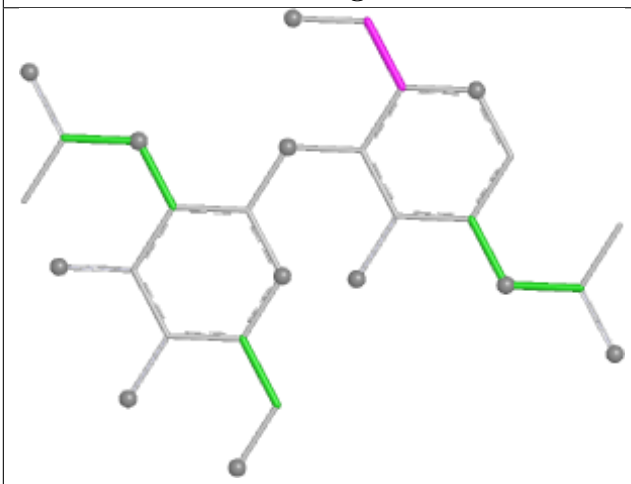


Bond angles



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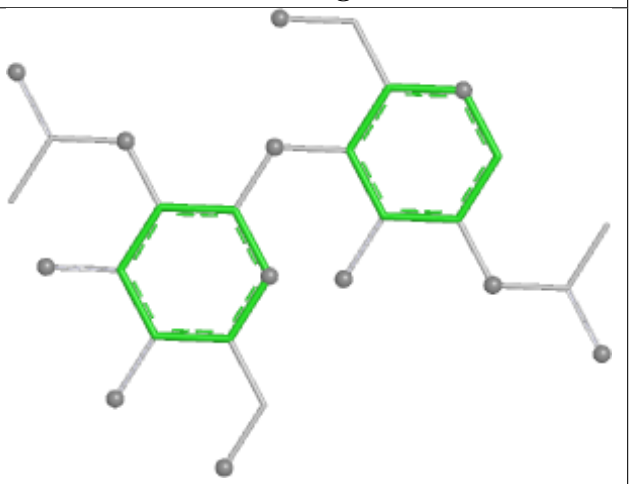
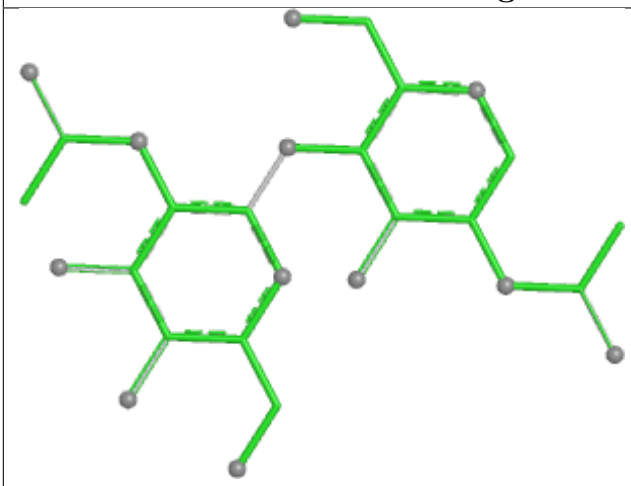


Rings

Oligosaccharide Chain S



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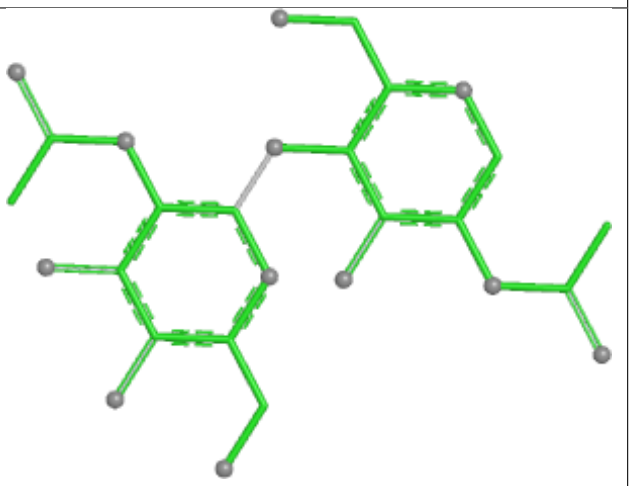
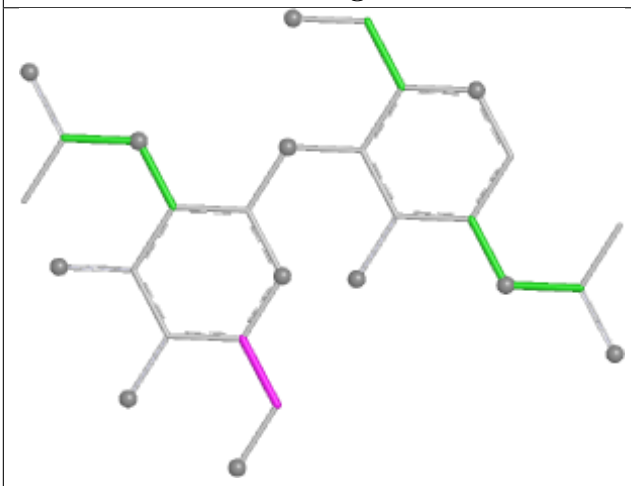


Bond angles



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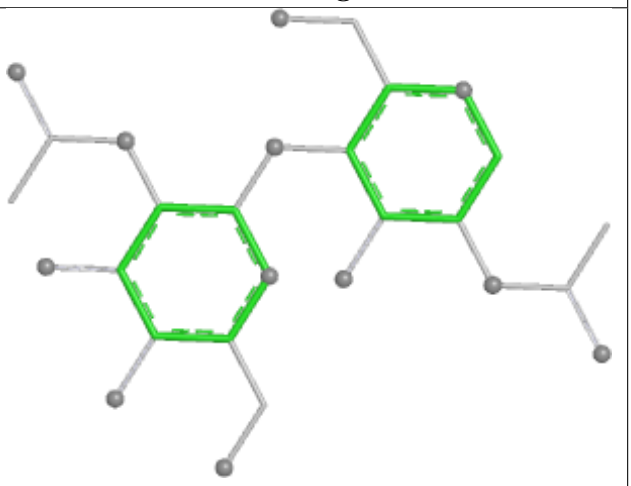
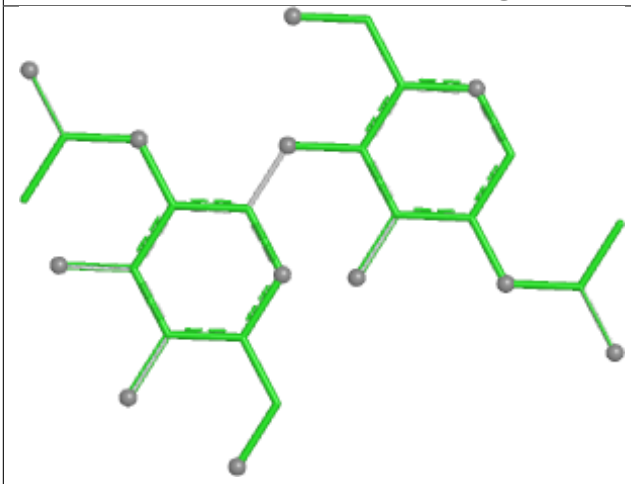


Rings

Oligosaccharide Chain T



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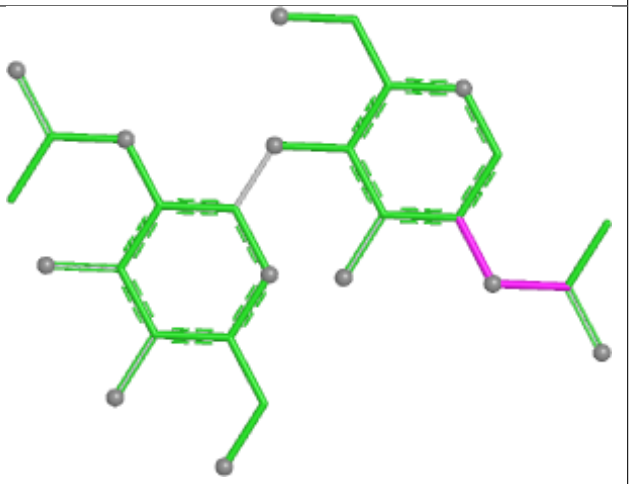
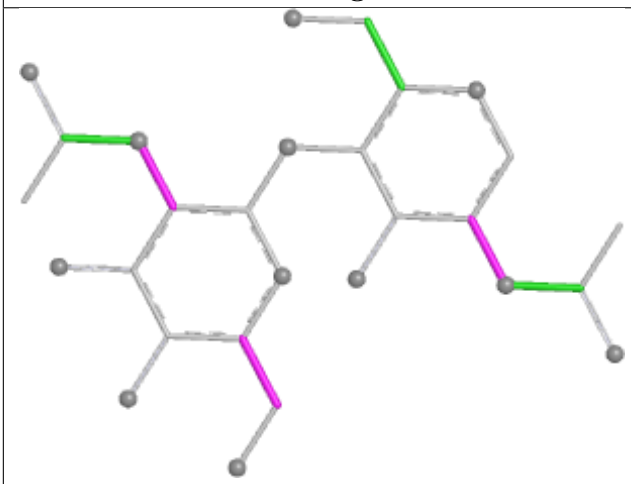


Bond angles



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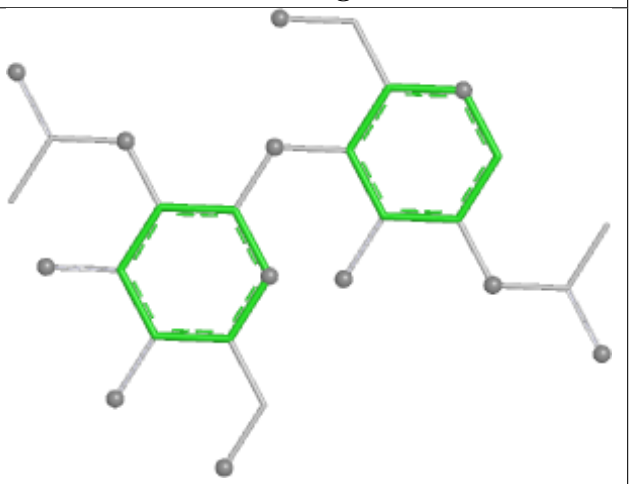
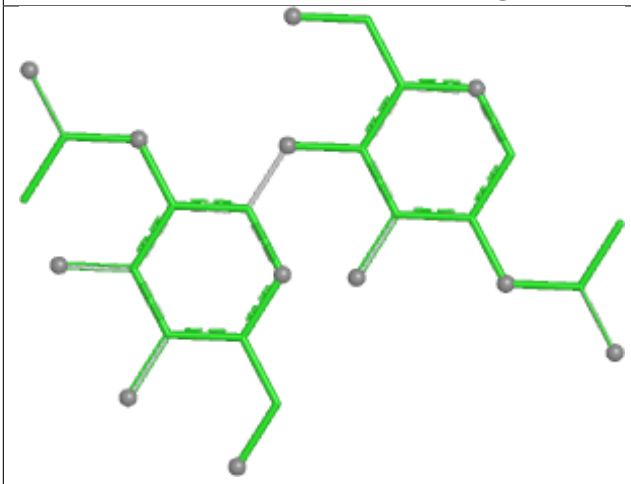


Rings

Oligosaccharide Chain U



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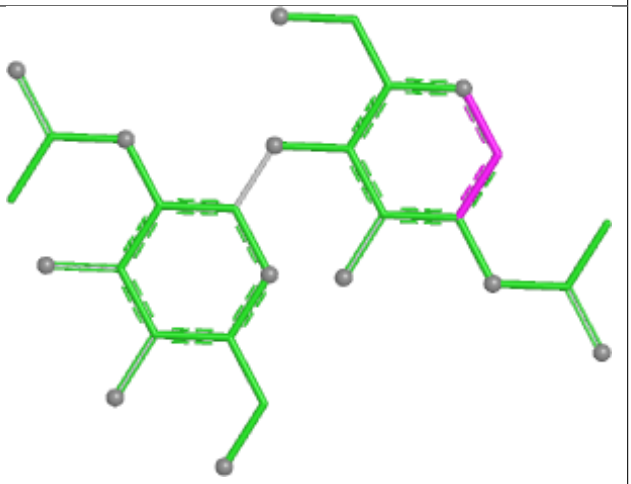
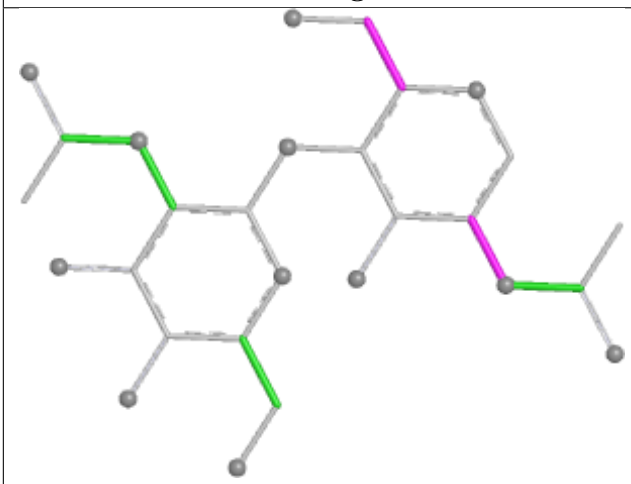


Bond angles



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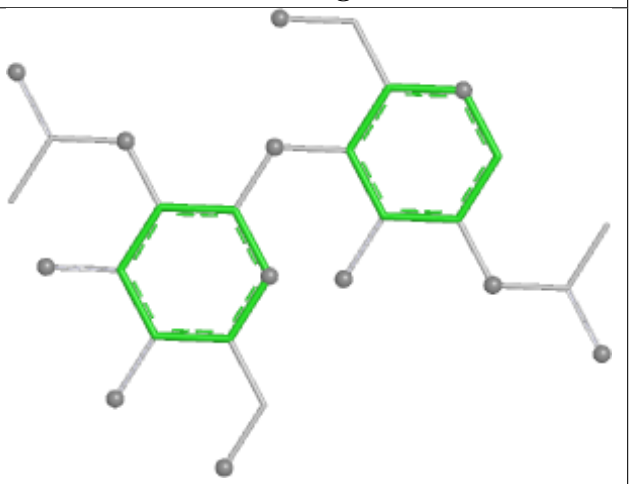
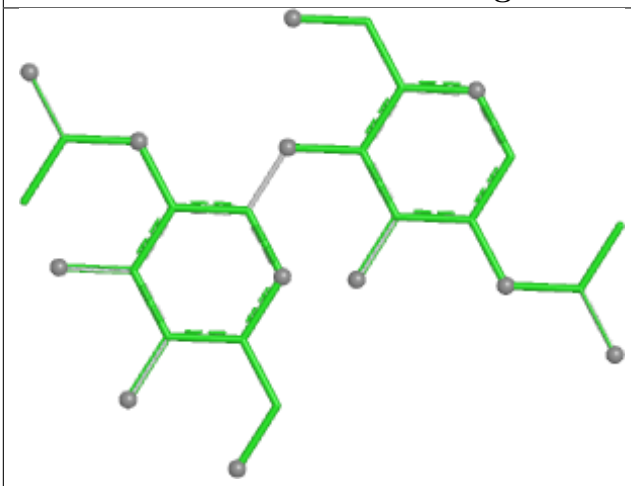


Rings

Oligosaccharide Chain V



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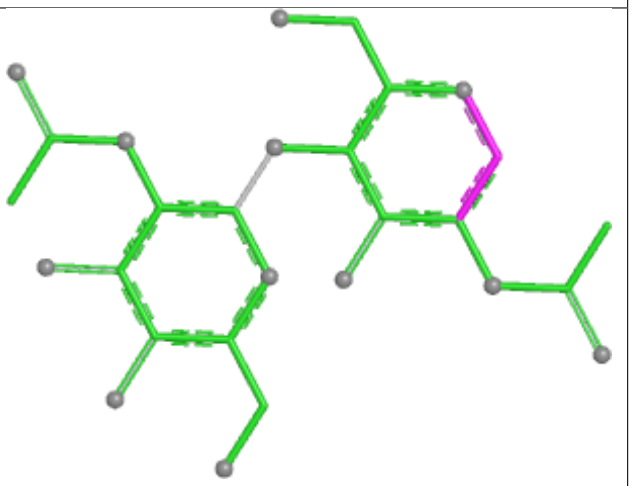
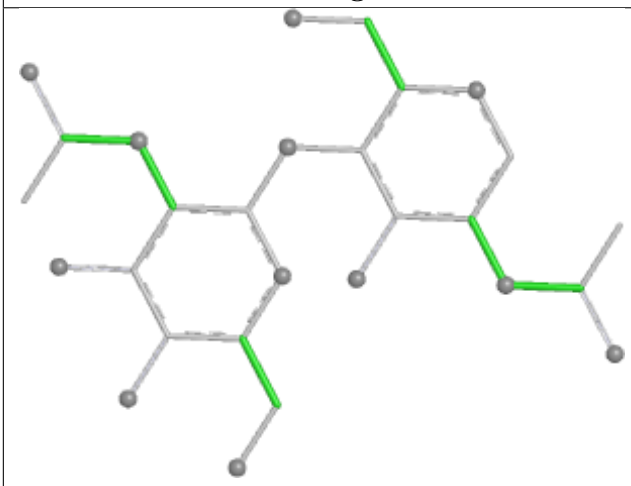


Bond angles



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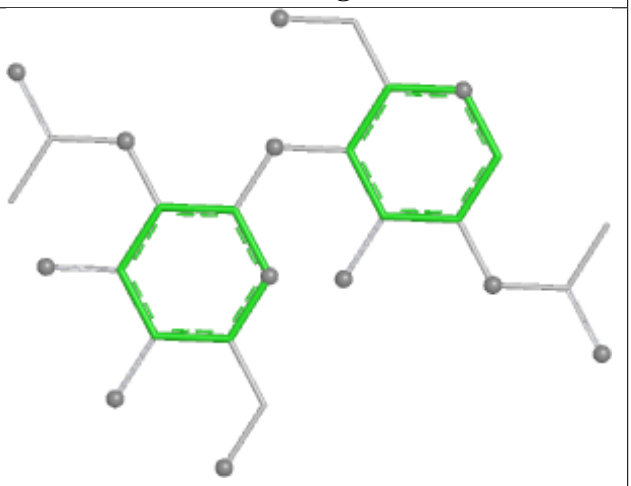
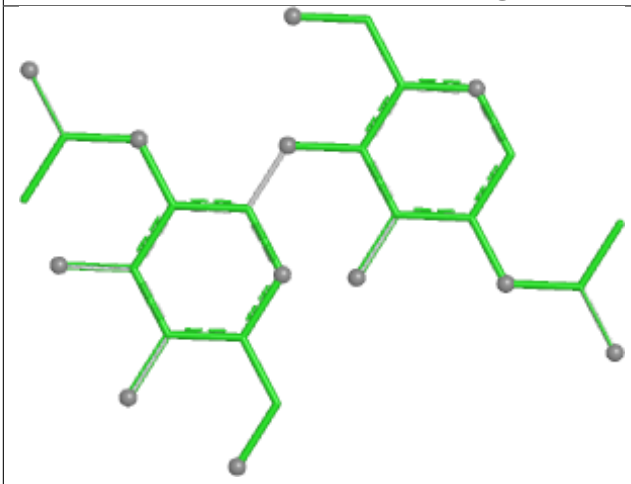
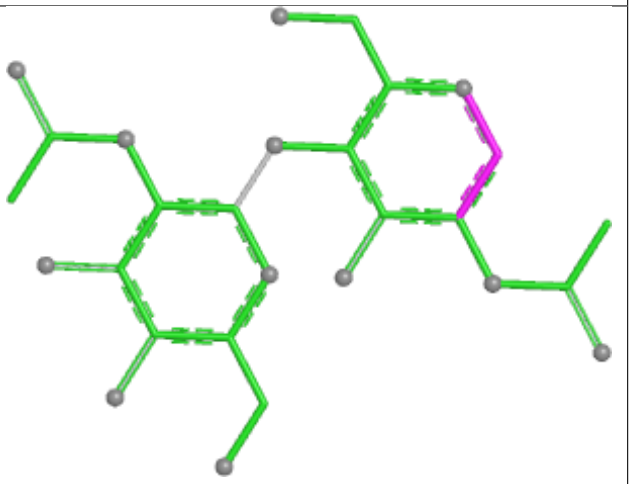


Rings

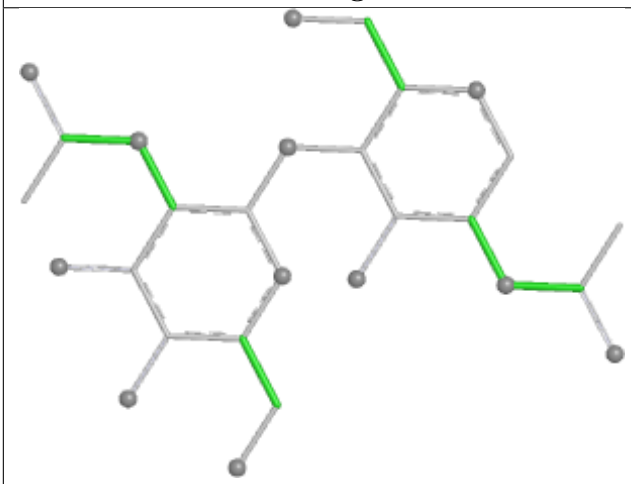
Oligosaccharide Chain Y



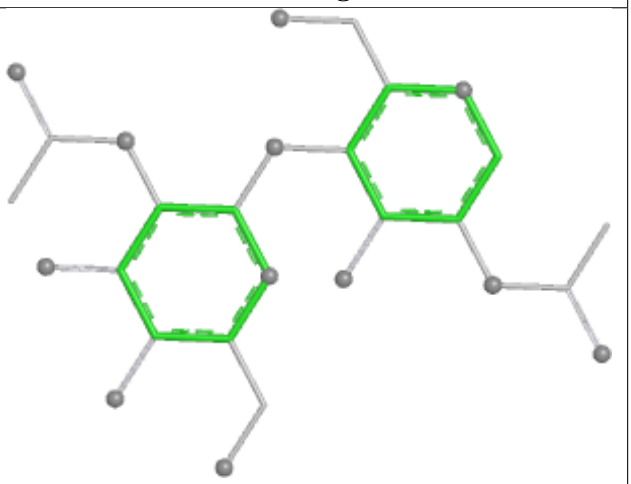
Bond lengths



Bond angles

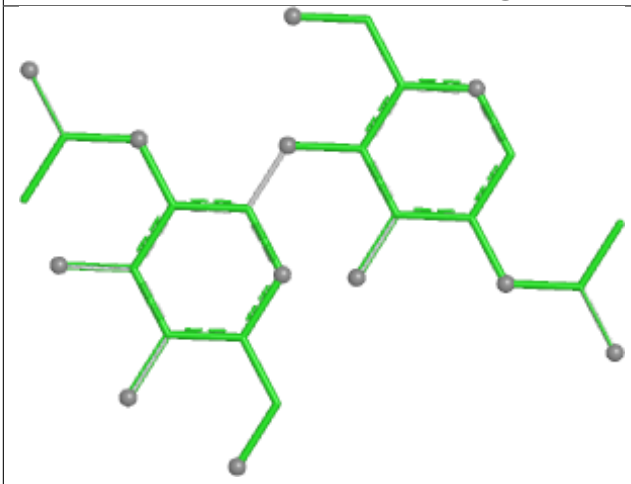


Torsions



Rings

Oligosaccharide Chain Z



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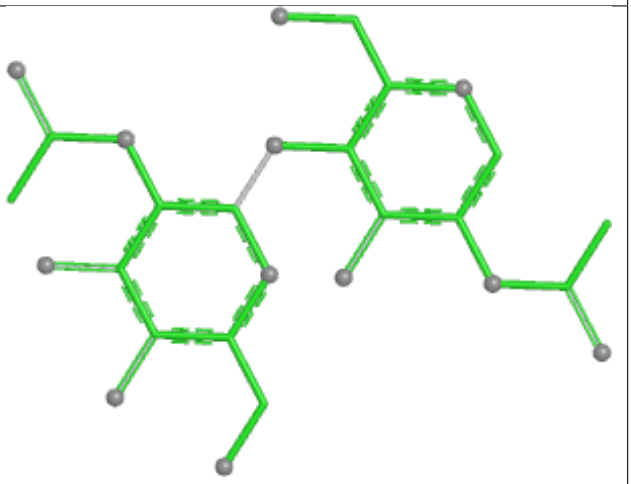
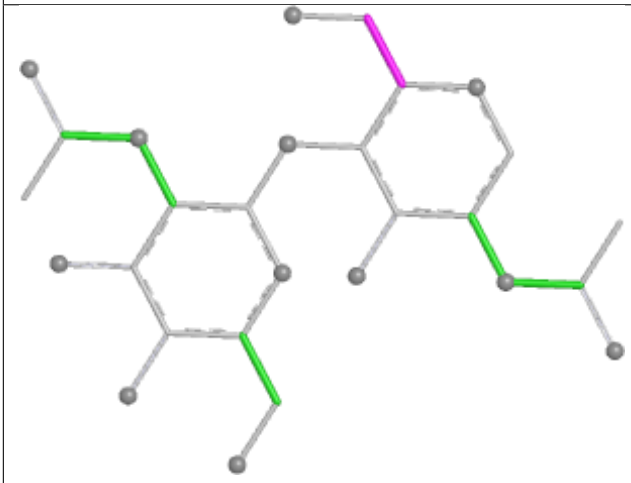


Bond angles



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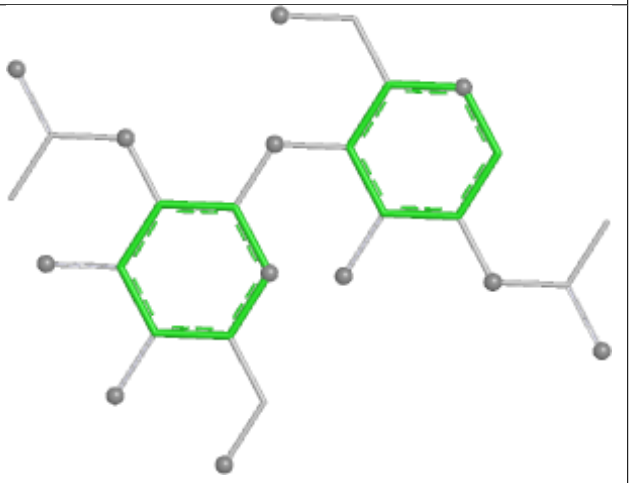
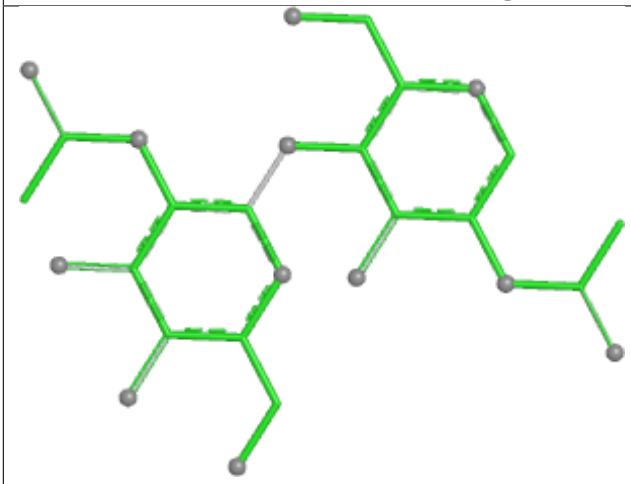


Rings

Oligosaccharide Chain a



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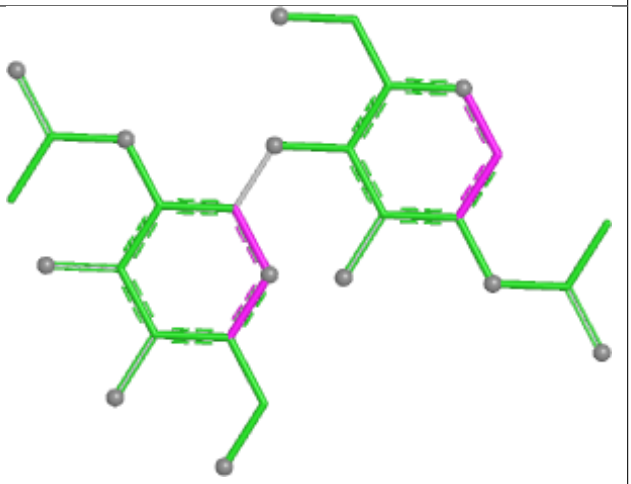
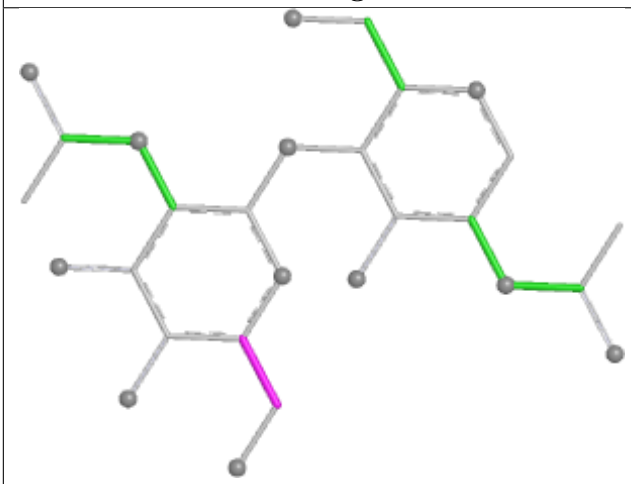


Bond angles



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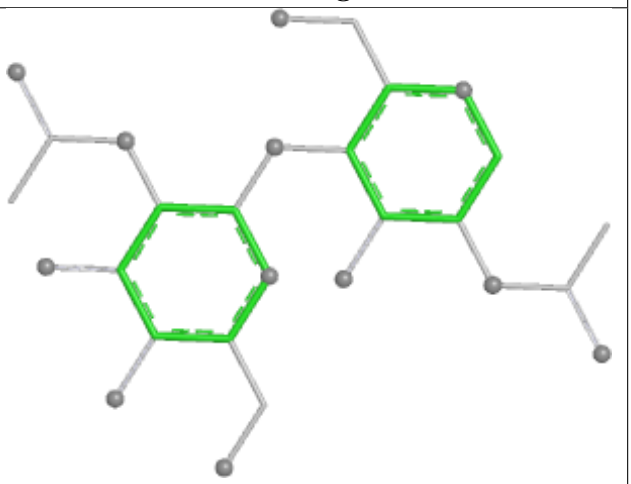
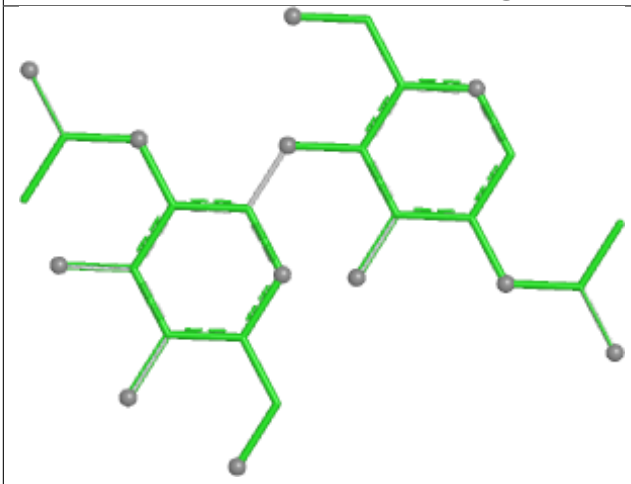


Rings

Oligosaccharide Chain b



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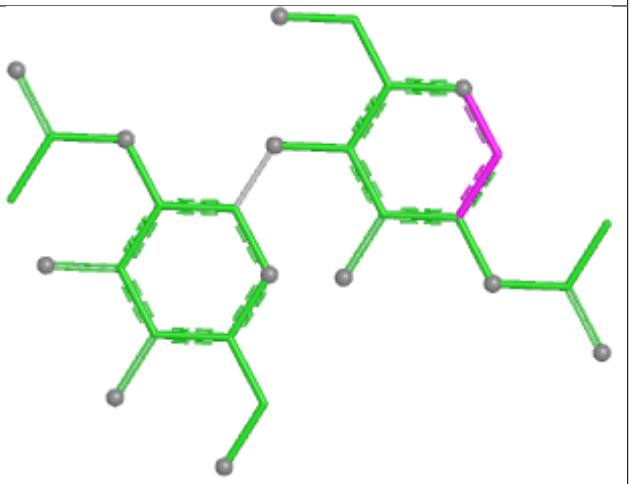
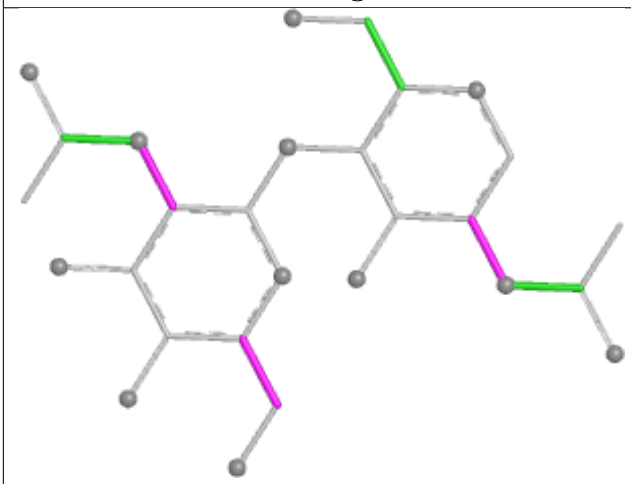
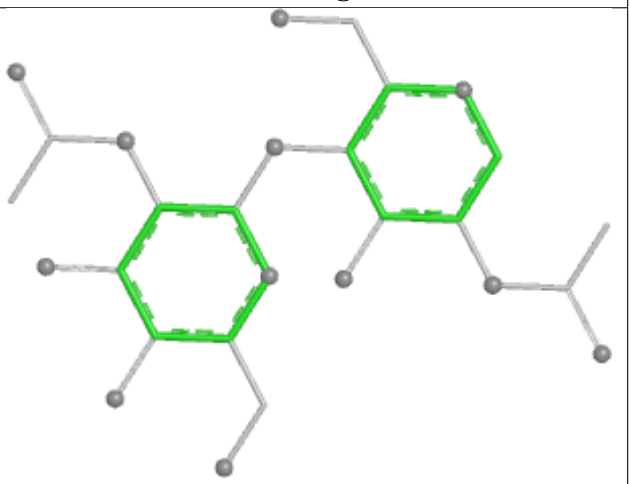


Bond angles

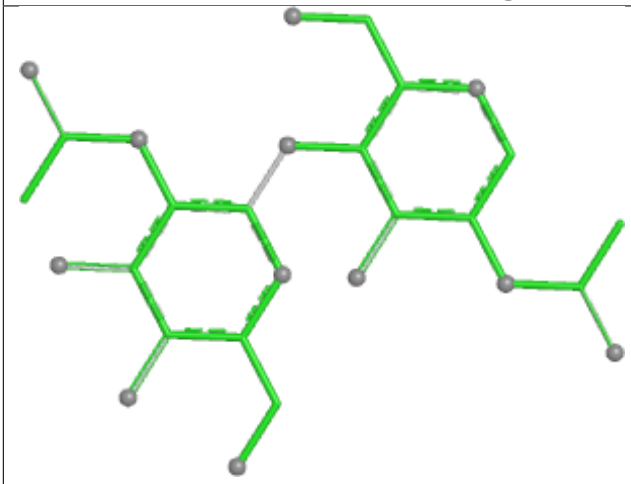


Torsions

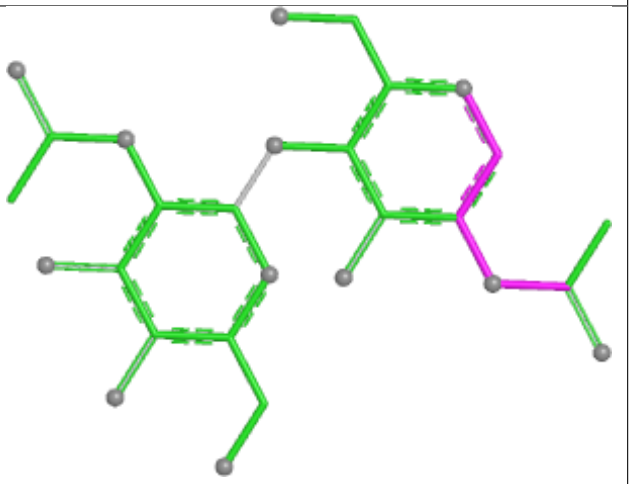


Rings

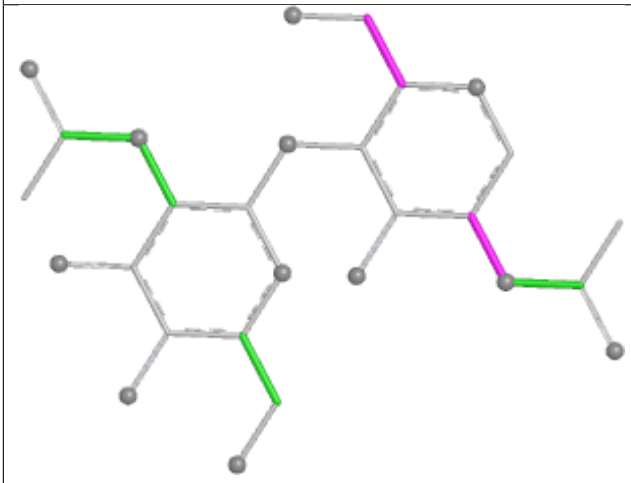
Oligosaccharide Chain c



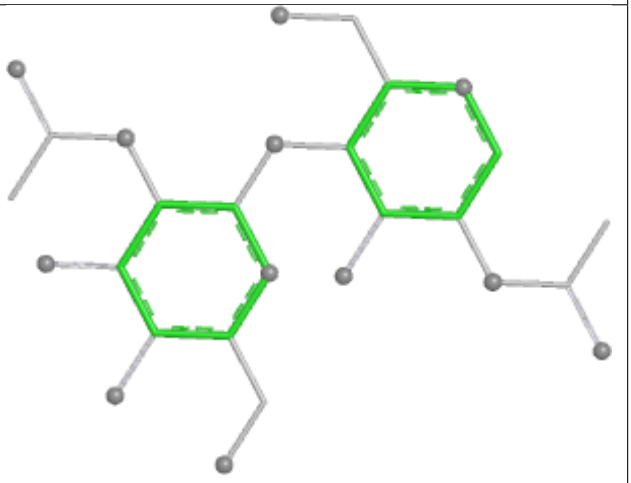
Bond lengths



Bond angles

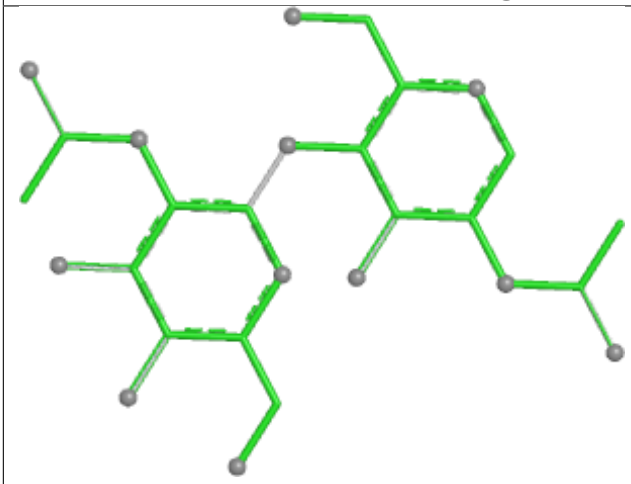


Torsions

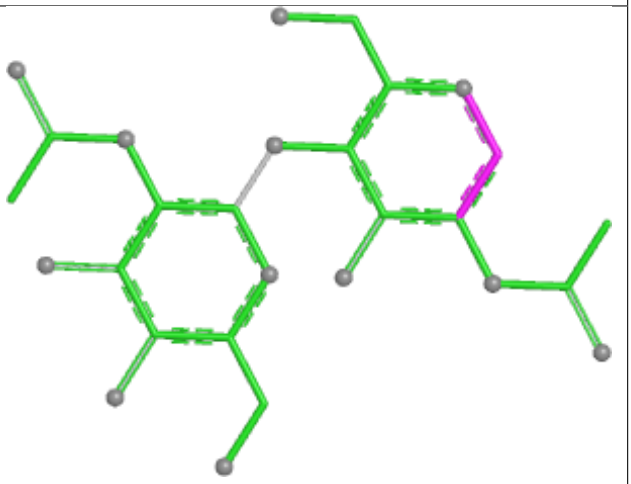


Rings

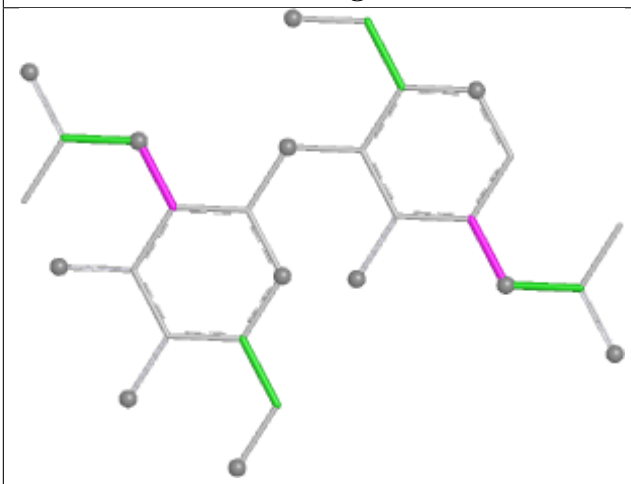
Oligosaccharide Chain d



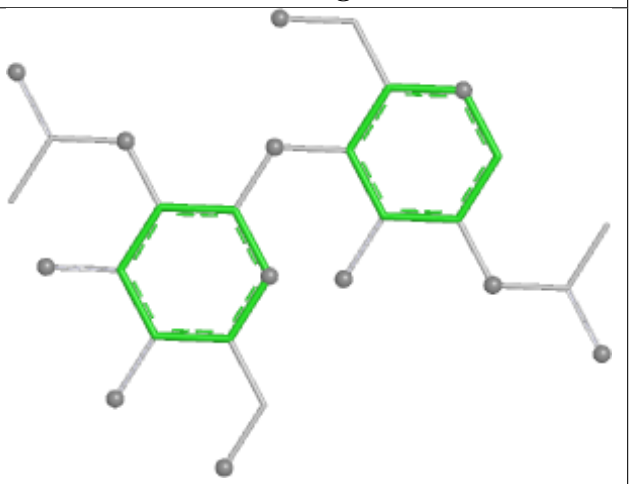
Bond lengths



Bond angles

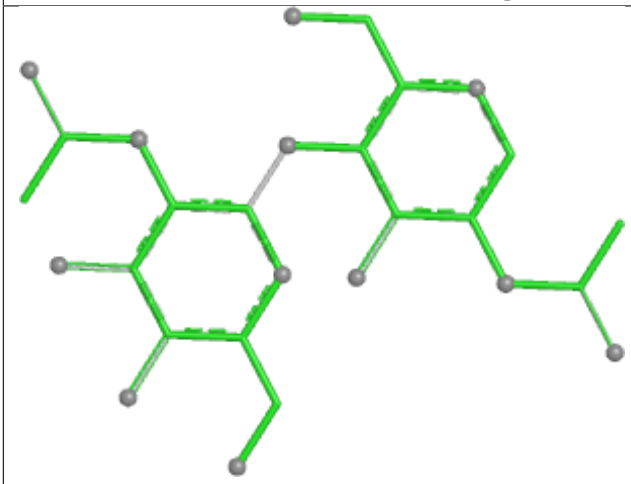


Torsions

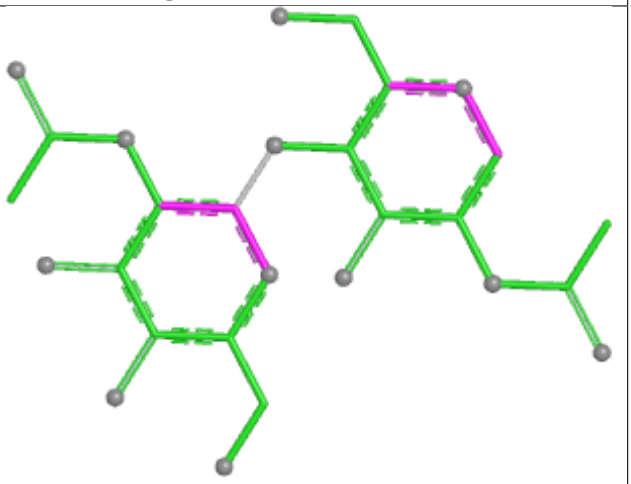


Rings

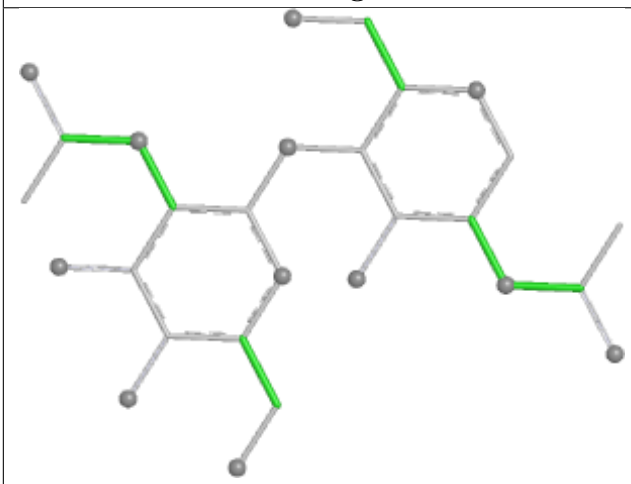
Oligosaccharide Chain g



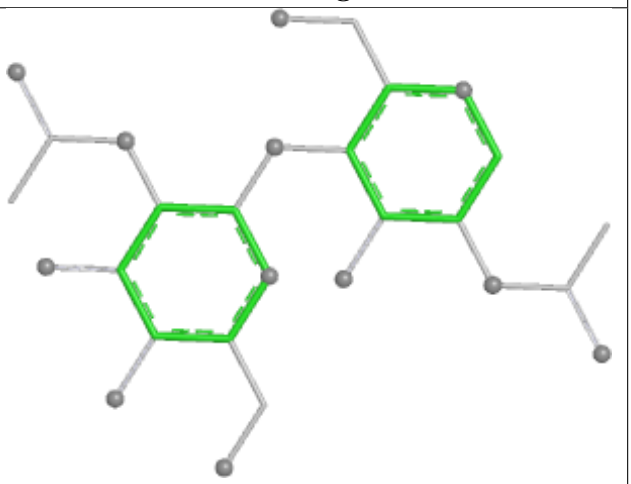
Bond lengths



Bond angles

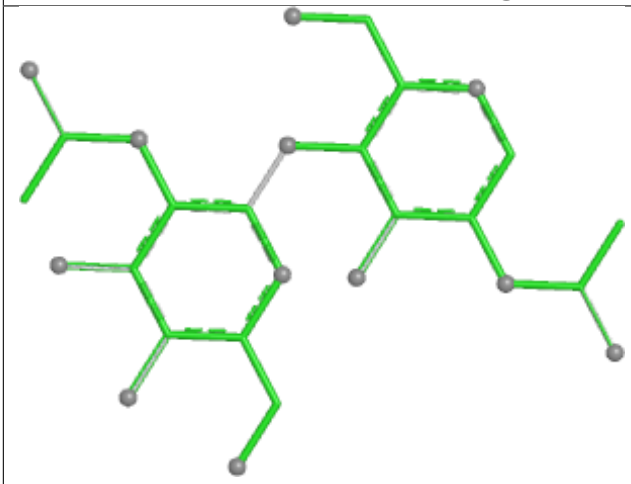


Torsions

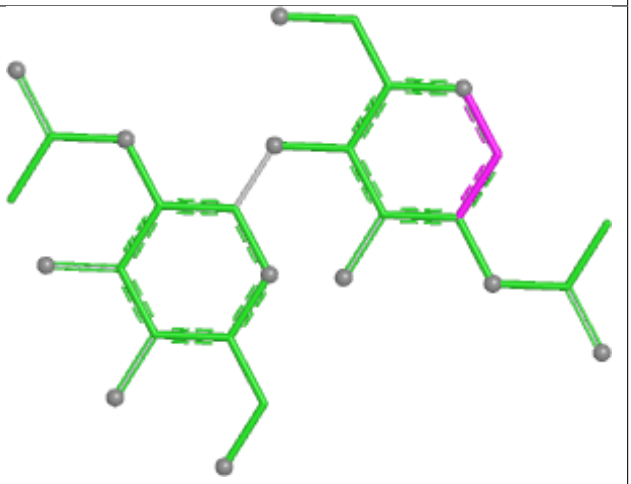


Rings

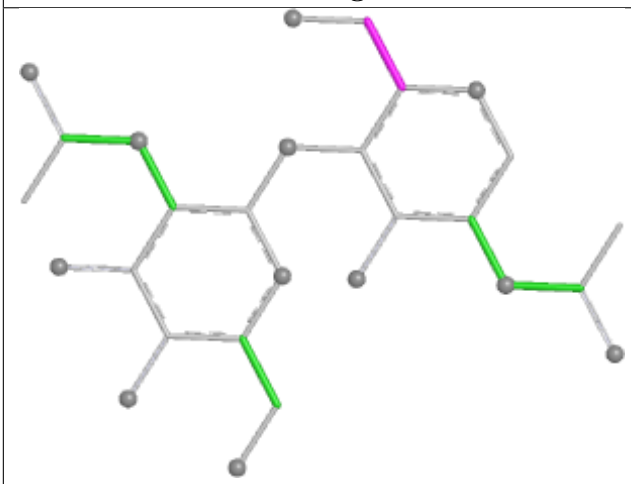
Oligosaccharide Chain h



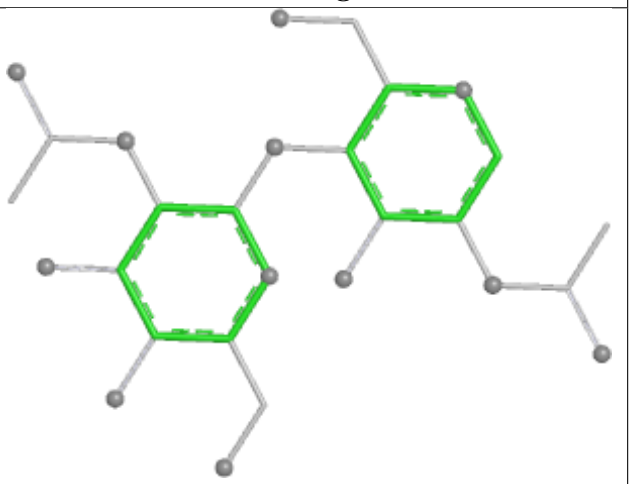
Bond lengths



Bond angles

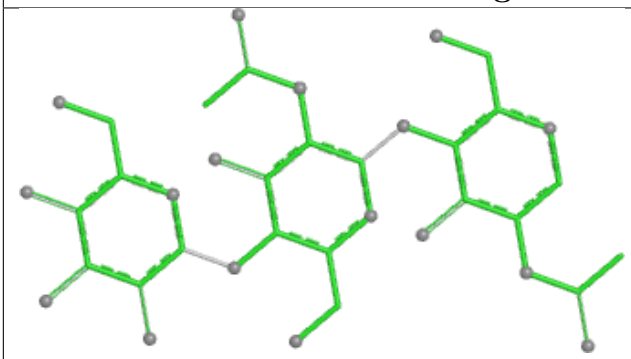


Torsions

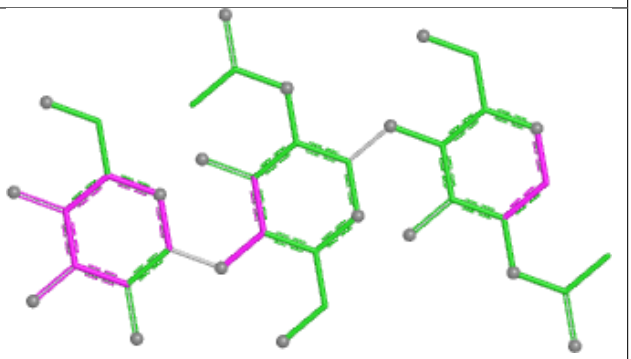


Rings

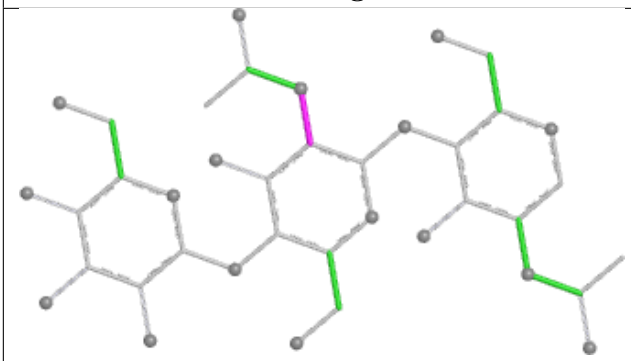
Oligosaccharide Chain N



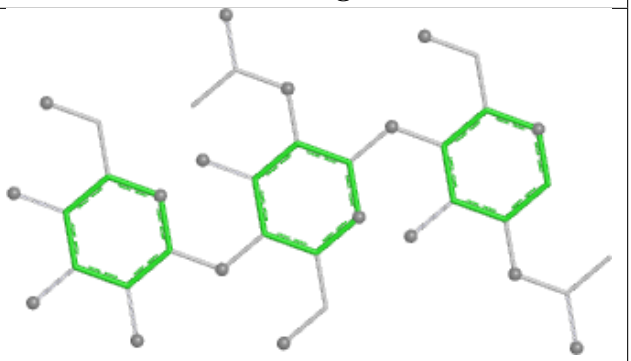
Bond lengths



Bond angles

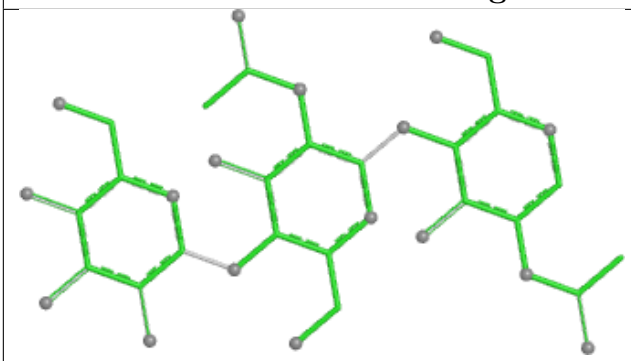


Torsions

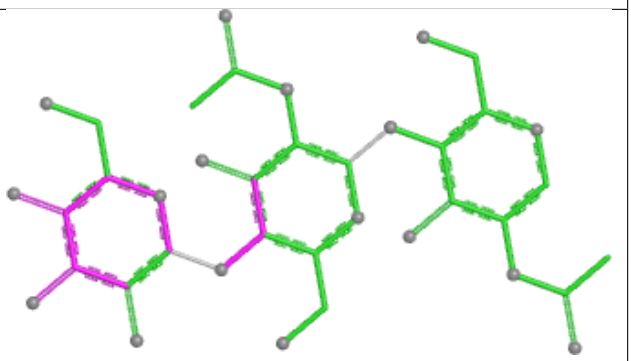


Rings

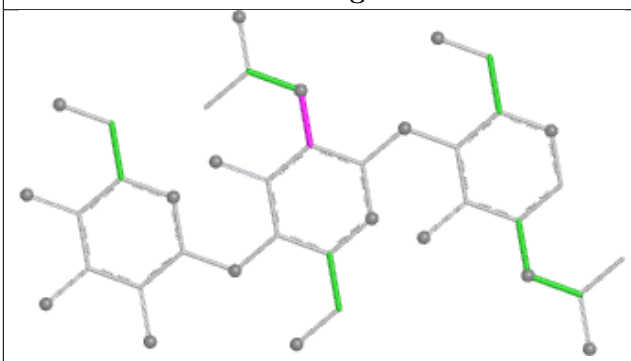
Oligosaccharide Chain W



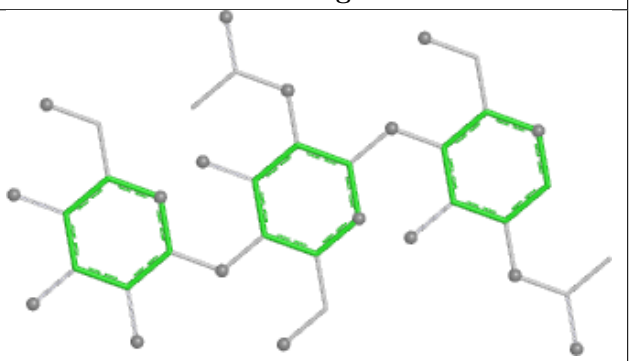
Bond lengths



Bond angles

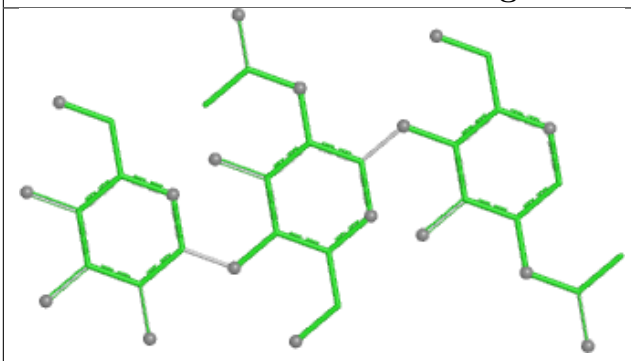


Torsions

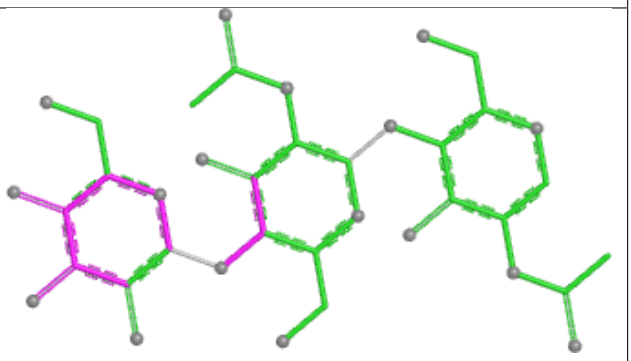


Rings

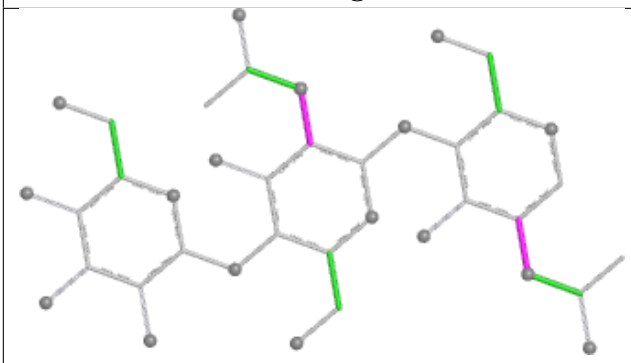
Oligosaccharide Chain e



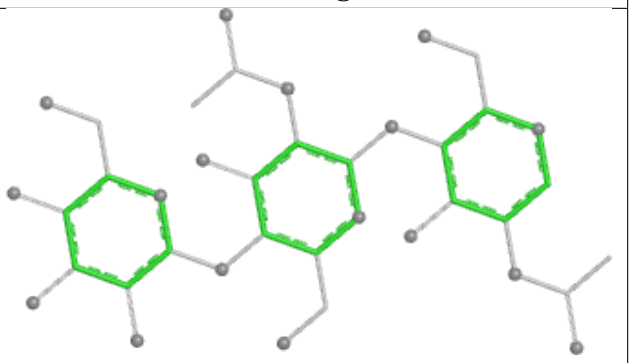
Bond lengths



Bond angles

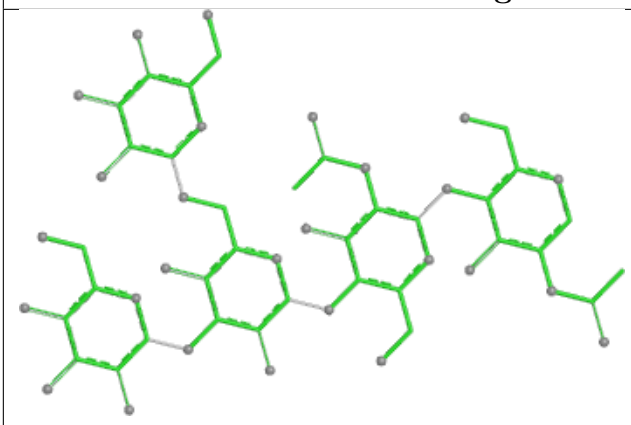


Torsions

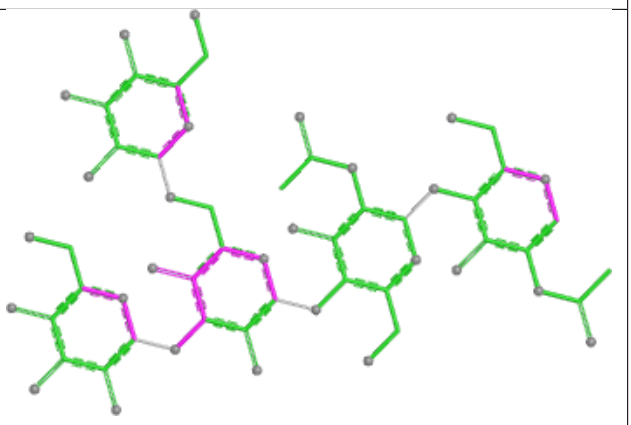


Rings

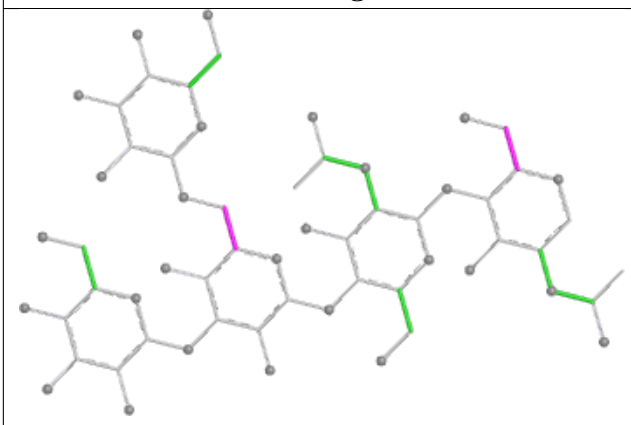
Oligosaccharide Chain O



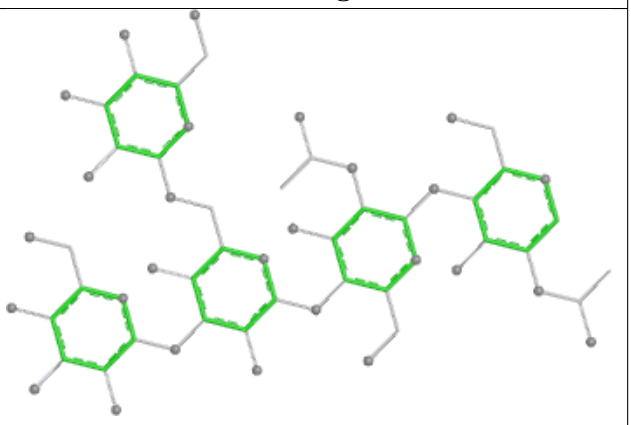
Bond lengths



Bond angles

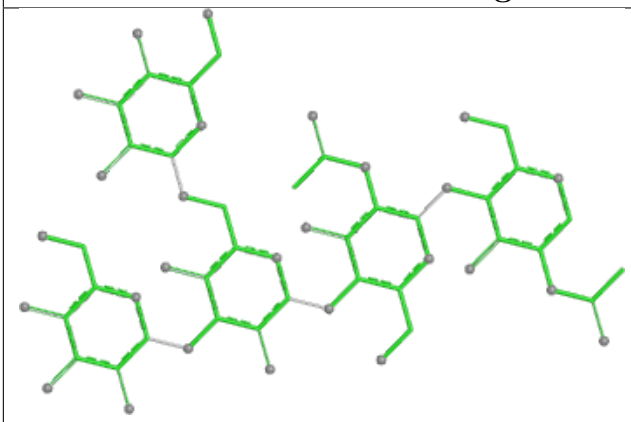


Torsions

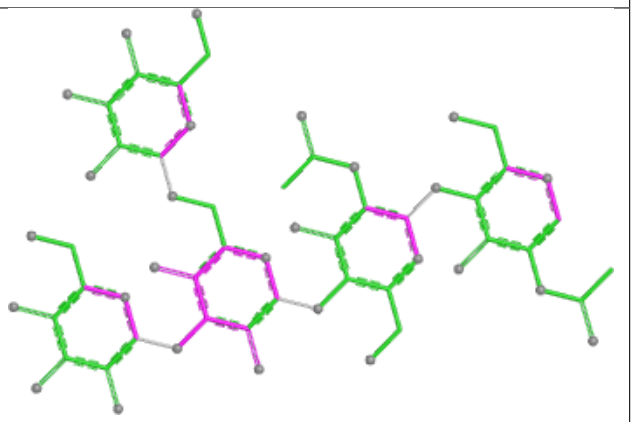


Rings

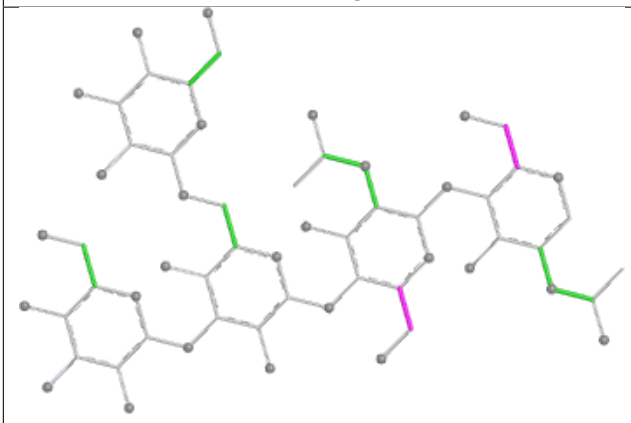
Oligosaccharide Chain X



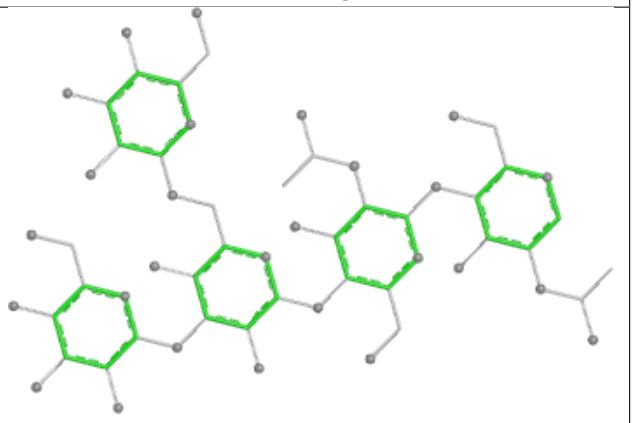
Bond lengths



Bond angles

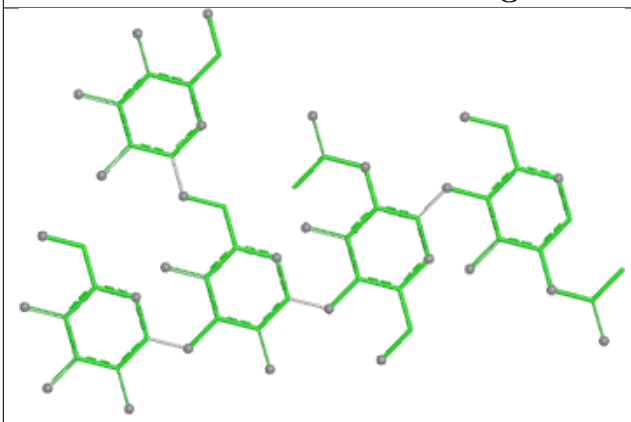


Torsions

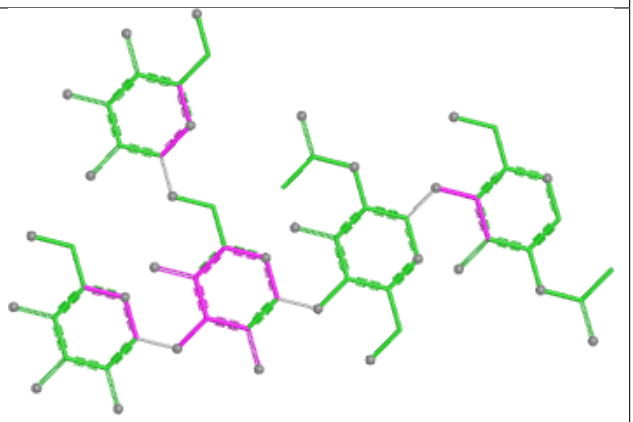


Rings

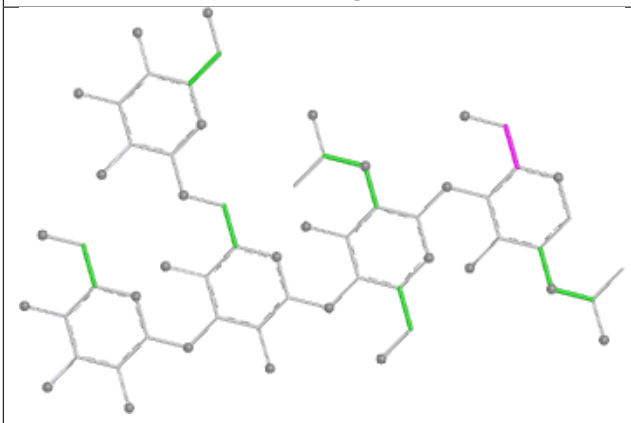
Oligosaccharide Chain f



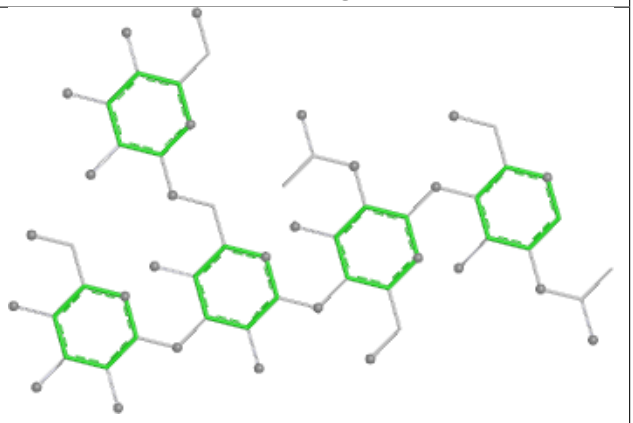
Bond lengths



Bond angles

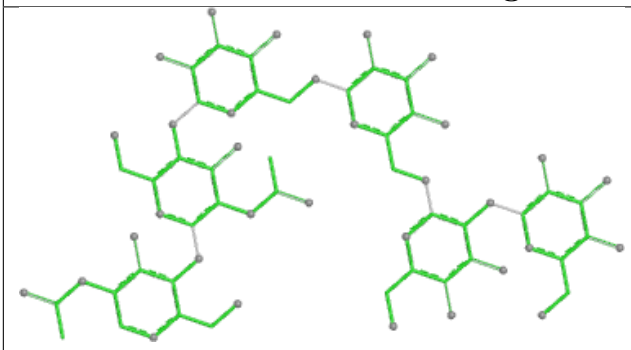


Torsions

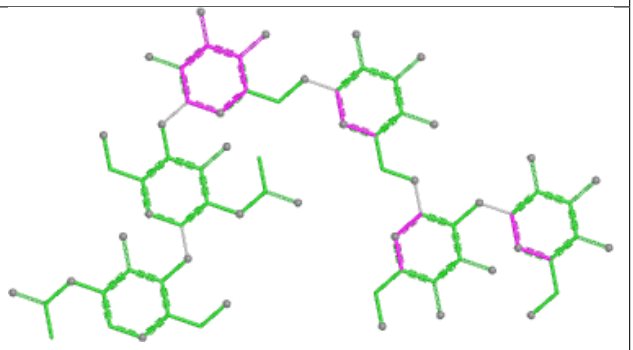


Rings

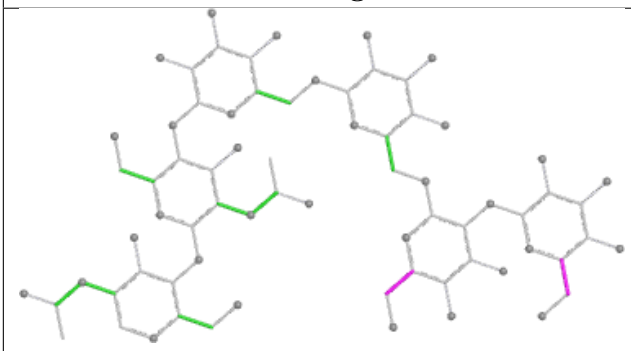
Oligosaccharide Chain i



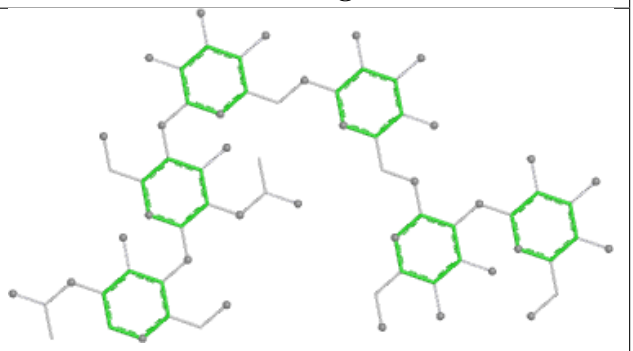
Bond lengths



Bond angles



Torsions



Rings

5.6 Ligand geometry (i)

18 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	H	603	2	14,14,15	0.71	0	17,19,21	0.91	0
10	NAG	G	605	2	14,14,15	0.73	0	17,19,21	0.86	0
10	NAG	C	601	2	14,14,15	0.78	0	17,19,21	1.20	1 (5%)
10	NAG	C	603	2	14,14,15	0.70	0	17,19,21	0.78	0
10	NAG	C	604	2	14,14,15	0.70	0	17,19,21	0.83	1 (5%)
10	NAG	G	602	2	14,14,15	0.72	0	17,19,21	0.79	0
10	NAG	H	604	2	14,14,15	0.75	0	17,19,21	0.83	0
10	NAG	C	605	2	14,14,15	0.75	0	17,19,21	0.90	0
10	NAG	H	606	2	14,14,15	0.70	0	17,19,21	1.55	4 (23%)
10	NAG	H	605	2	14,14,15	0.72	0	17,19,21	0.82	0
10	NAG	G	601	2	14,14,15	0.77	0	17,19,21	1.09	2 (11%)
10	NAG	H	601	2	14,14,15	0.70	0	17,19,21	0.91	0
10	NAG	C	606	2	14,14,15	0.71	0	17,19,21	1.44	4 (23%)
10	NAG	G	604	2	14,14,15	0.75	0	17,19,21	0.87	0
10	NAG	G	603	2	14,14,15	0.77	0	17,19,21	0.89	0
10	NAG	G	606	2	14,14,15	0.69	0	17,19,21	0.89	0
10	NAG	C	602	2	14,14,15	0.74	0	17,19,21	0.92	0
10	NAG	H	602	2	14,14,15	0.71	0	17,19,21	0.82	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	H	603	2	-	1/6/23/26	0/1/1/1
10	NAG	G	605	2	-	0/6/23/26	0/1/1/1
10	NAG	C	601	2	-	1/6/23/26	0/1/1/1
10	NAG	C	603	2	-	1/6/23/26	0/1/1/1
10	NAG	C	604	2	-	1/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
10	NAG	G	602	2	-	0/6/23/26	0/1/1/1
10	NAG	H	604	2	-	1/6/23/26	0/1/1/1
10	NAG	C	605	2	-	0/6/23/26	0/1/1/1
10	NAG	H	606	2	-	2/6/23/26	0/1/1/1
10	NAG	H	605	2	-	0/6/23/26	0/1/1/1
10	NAG	G	601	2	-	1/6/23/26	0/1/1/1
10	NAG	H	601	2	-	1/6/23/26	0/1/1/1
10	NAG	C	606	2	-	2/6/23/26	0/1/1/1
10	NAG	G	604	2	-	1/6/23/26	0/1/1/1
10	NAG	G	603	2	-	1/6/23/26	0/1/1/1
10	NAG	G	606	2	-	3/6/23/26	0/1/1/1
10	NAG	C	602	2	-	0/6/23/26	0/1/1/1
10	NAG	H	602	2	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
10	C	601	NAG	C1-O5-C5	3.89	117.40	112.19
10	H	606	NAG	C2-N2-C7	3.58	127.69	122.90
10	C	606	NAG	C2-N2-C7	2.75	126.58	122.90
10	C	606	NAG	C1-O5-C5	2.74	115.86	112.19
10	C	606	NAG	O5-C1-C2	-2.63	107.23	111.29
10	G	601	NAG	C1-O5-C5	2.62	115.70	112.19
10	H	606	NAG	C1-C2-N2	2.62	114.56	110.43
10	H	606	NAG	O5-C1-C2	-2.59	107.28	111.29
10	C	606	NAG	C1-C2-N2	2.49	114.36	110.43
10	C	604	NAG	O5-C1-C2	-2.08	108.08	111.29
10	H	606	NAG	C1-O5-C5	2.07	114.95	112.19
10	G	601	NAG	O5-C1-C2	-2.04	108.13	111.29

There are no chirality outliers.

All (16) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	C	606	NAG	C1-C2-N2-C7
10	H	606	NAG	C1-C2-N2-C7
10	C	601	NAG	O5-C5-C6-O6
10	C	606	NAG	O5-C5-C6-O6
10	H	603	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
10	H	606	NAG	O5-C5-C6-O6
10	H	601	NAG	O5-C5-C6-O6
10	G	606	NAG	O5-C5-C6-O6
10	C	603	NAG	O5-C5-C6-O6
10	C	604	NAG	O5-C5-C6-O6
10	G	604	NAG	O5-C5-C6-O6
10	G	601	NAG	O5-C5-C6-O6
10	G	603	NAG	O5-C5-C6-O6
10	H	604	NAG	O5-C5-C6-O6
10	G	606	NAG	C1-C2-N2-C7
10	G	606	NAG	C3-C2-N2-C7

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	C	601	NAG	1	0
10	C	604	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.

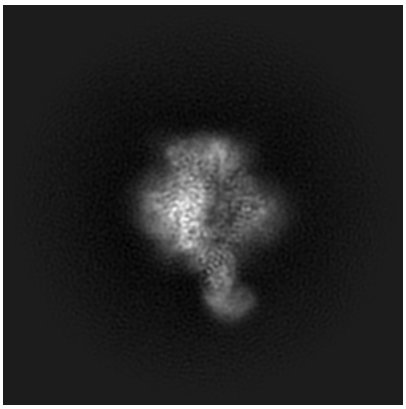
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-44891. These allow visual inspection of the internal detail of the map and identification of artifacts.

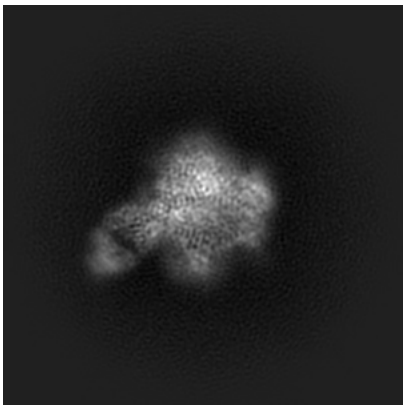
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

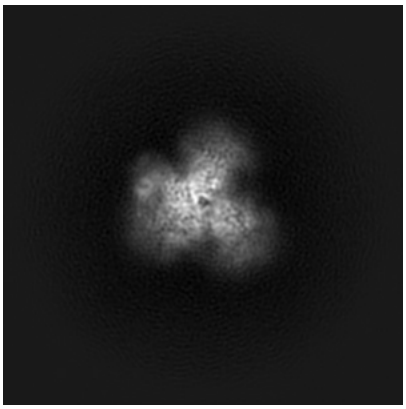
6.1.1 Primary map



X

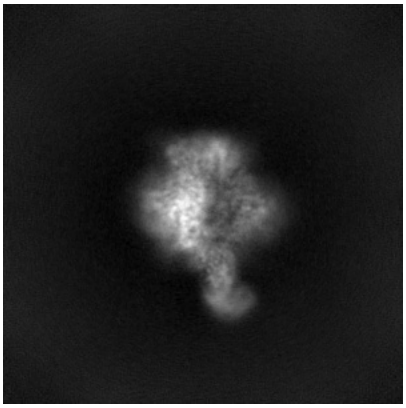


Y

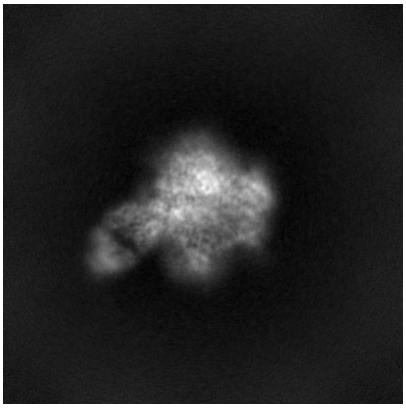


Z

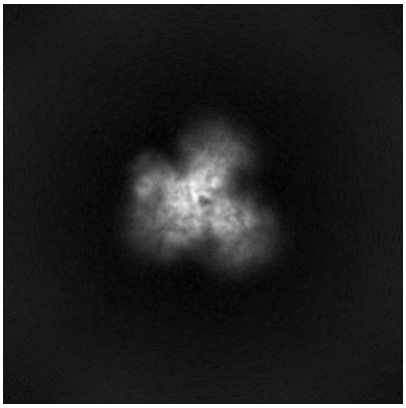
6.1.2 Raw map



X



Y

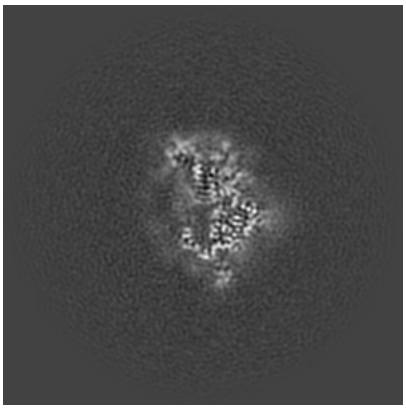


Z

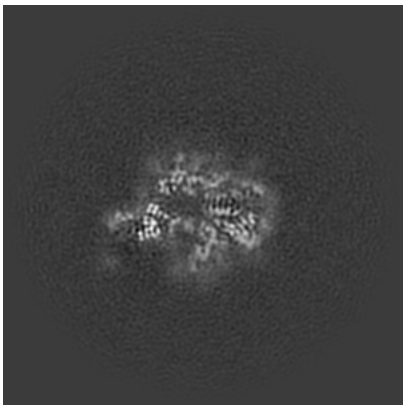
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

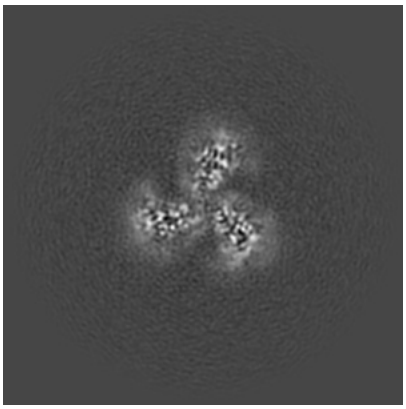
6.2.1 Primary map



X Index: 160

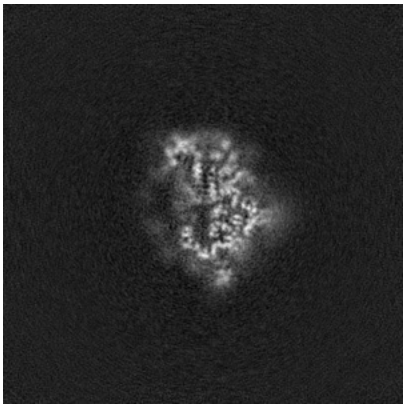


Y Index: 160

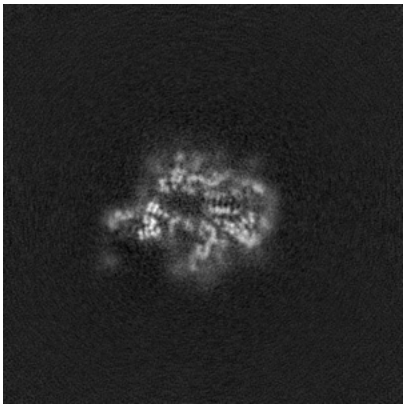


Z Index: 160

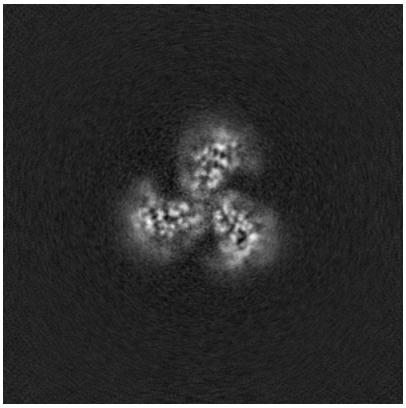
6.2.2 Raw map



X Index: 160



Y Index: 160

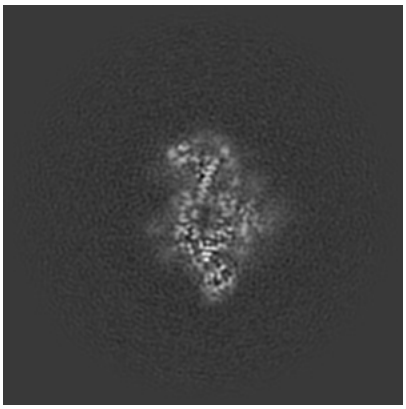


Z Index: 160

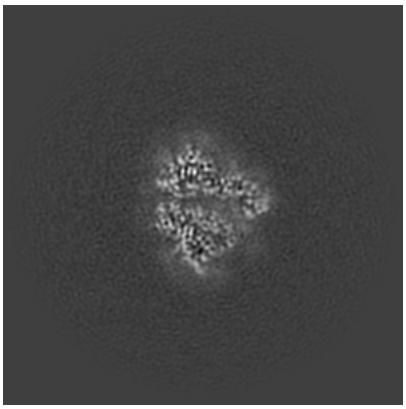
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

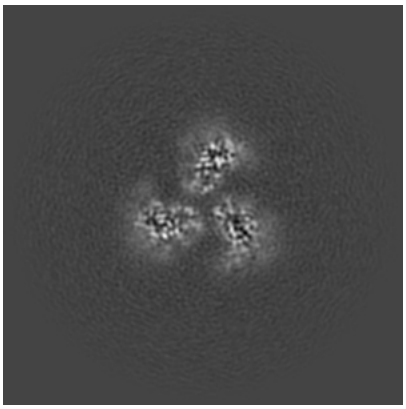
6.3.1 Primary map



X Index: 154

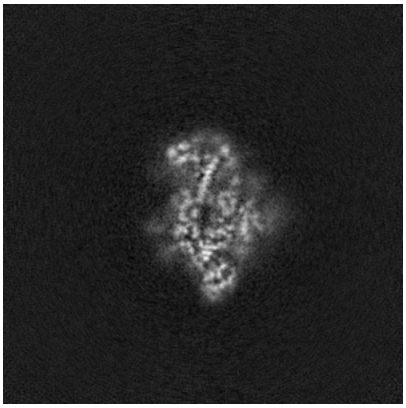


Y Index: 144

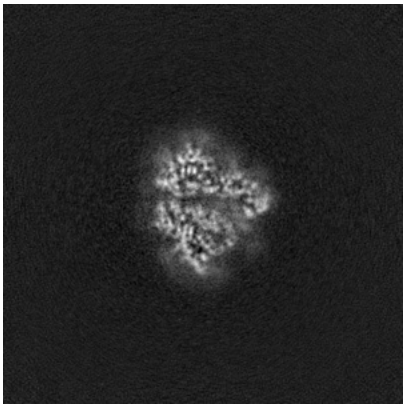


Z Index: 156

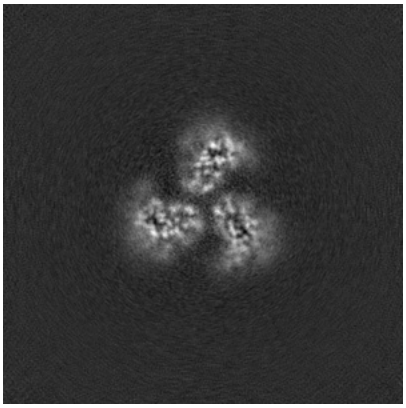
6.3.2 Raw map



X Index: 154



Y Index: 144

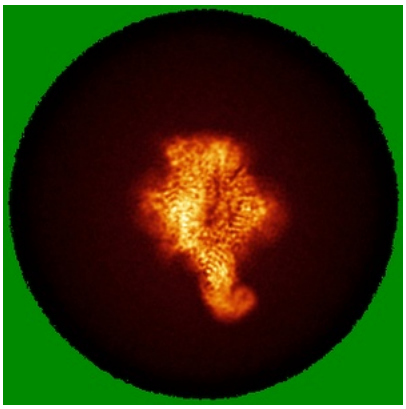


Z Index: 156

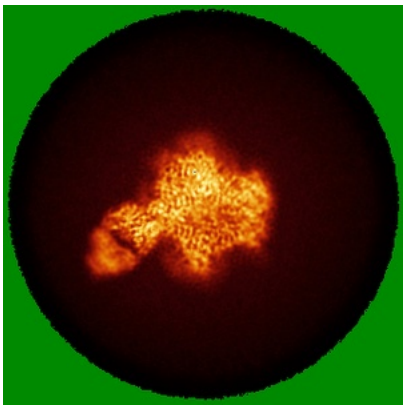
The images above show the largest variance slices of the map in three orthogonal directions.

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

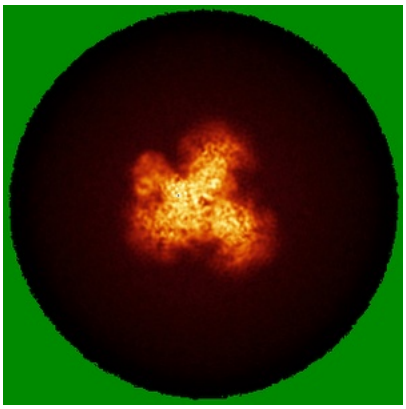
6.4.1 Primary map



X

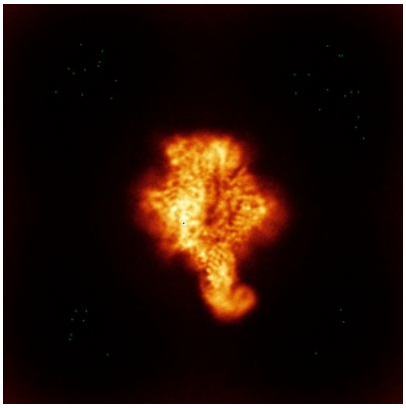


Y

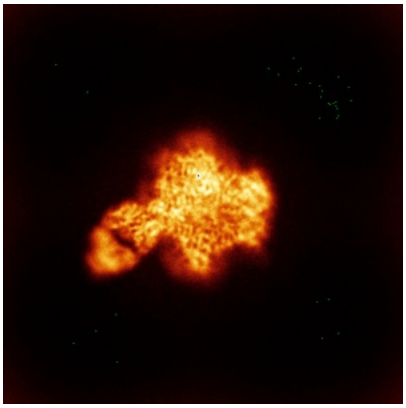


Z

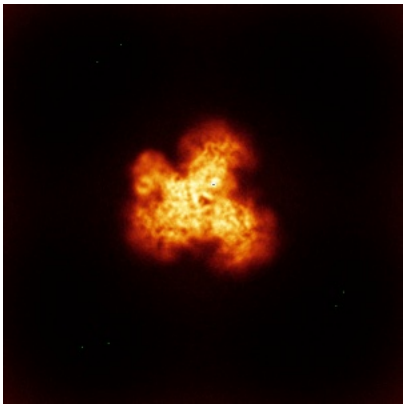
6.4.2 Raw map



X



Y

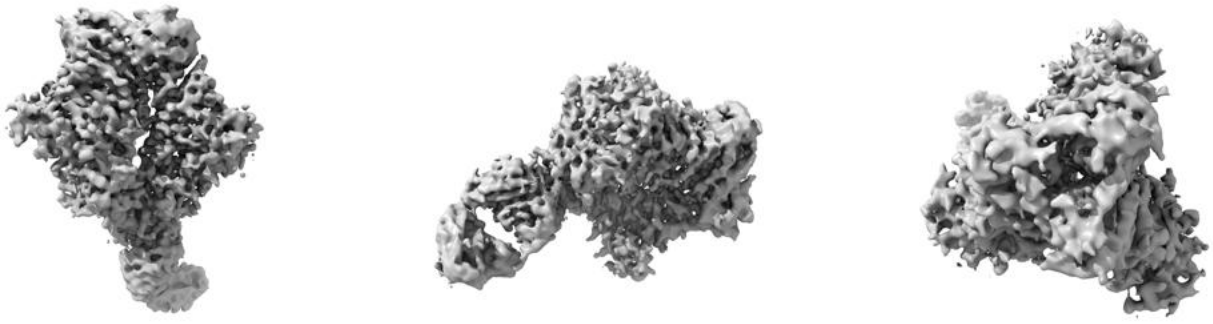


Z

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 0.5. 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.

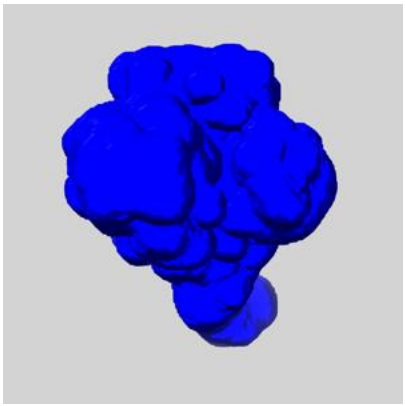
6.6 Mask visualisation (i)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

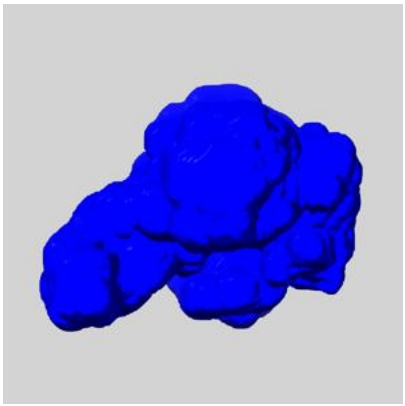
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

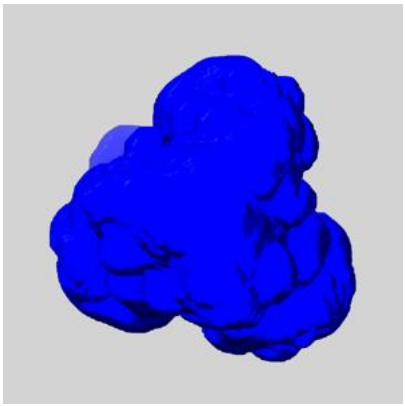
6.6.1 emd_44891_msk_1.map (i)



X



Y

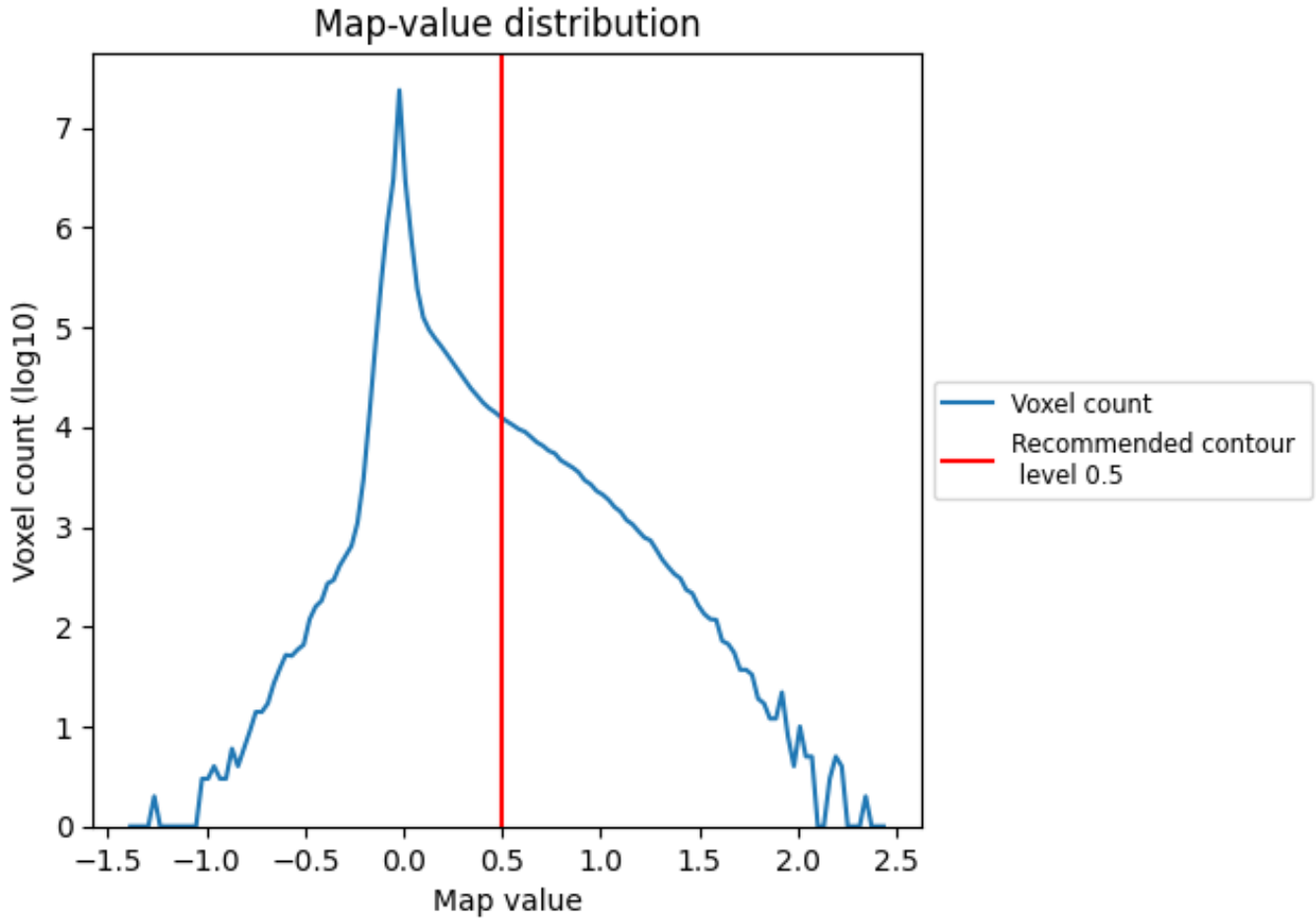


Z

7 Map analysis

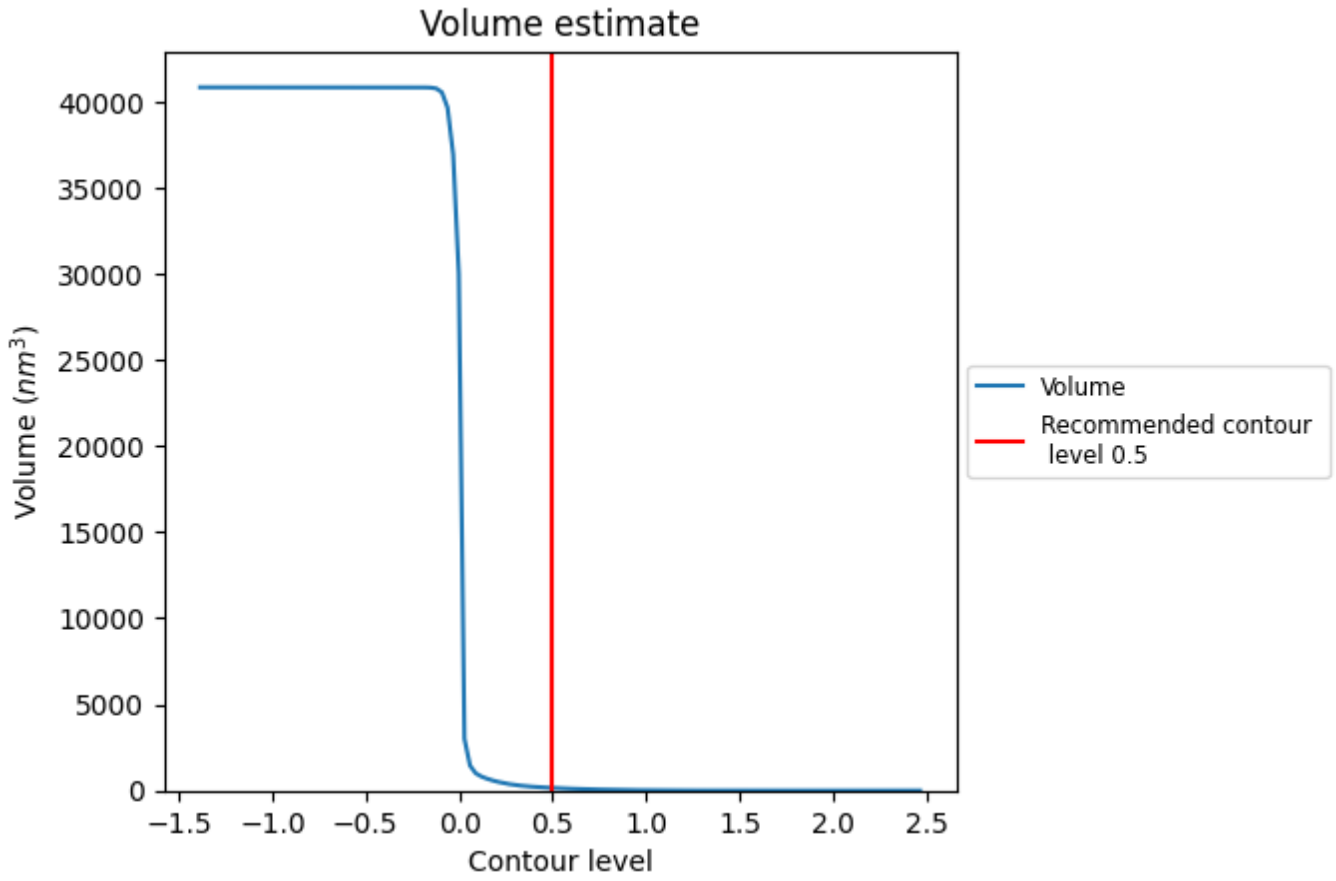
This section contains the results of statistical analysis of the map.

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.

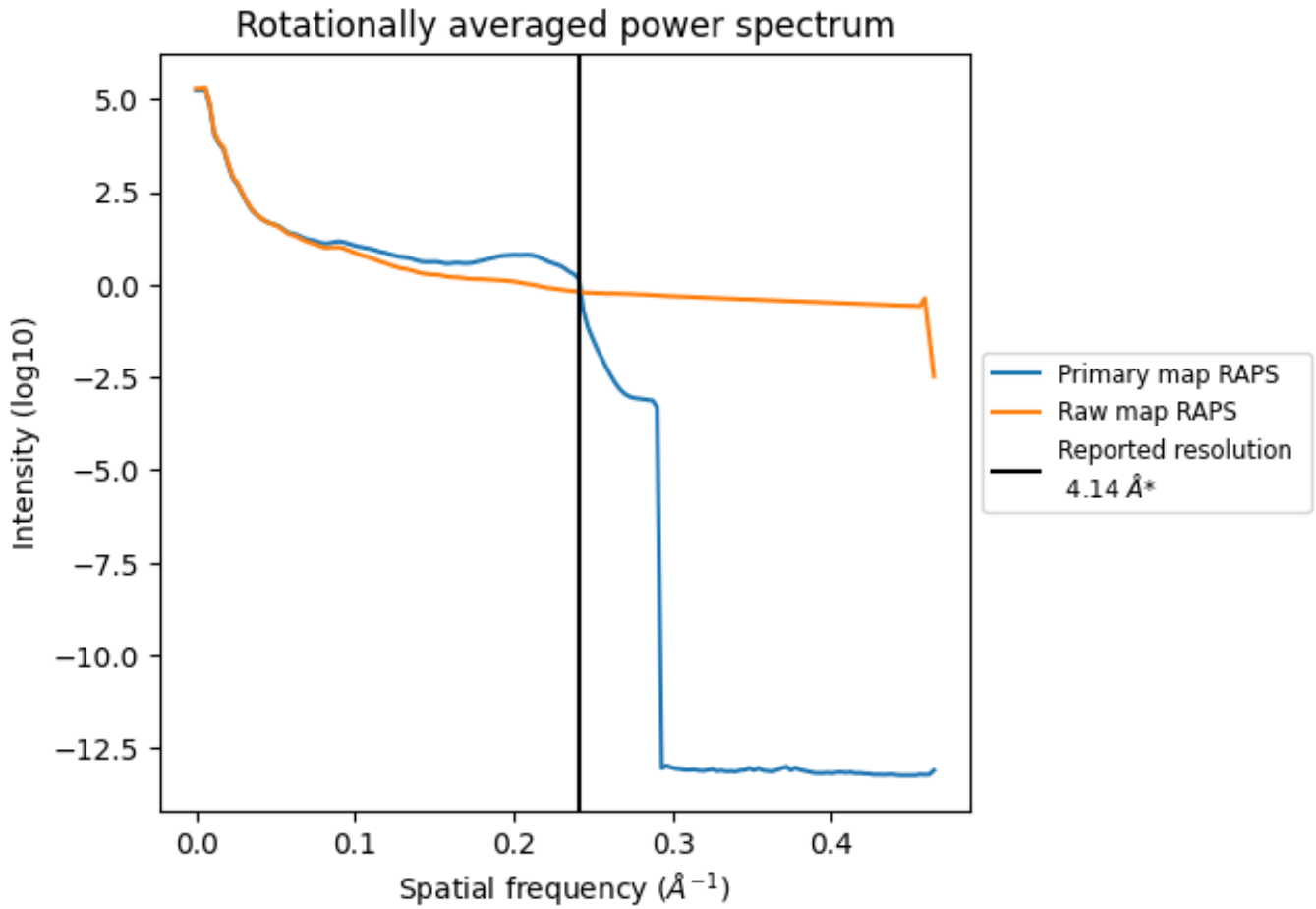
7.2 Volume estimate



The volume at the recommended contour level is 153 nm^3; this corresponds to an approximate mass of 138 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)

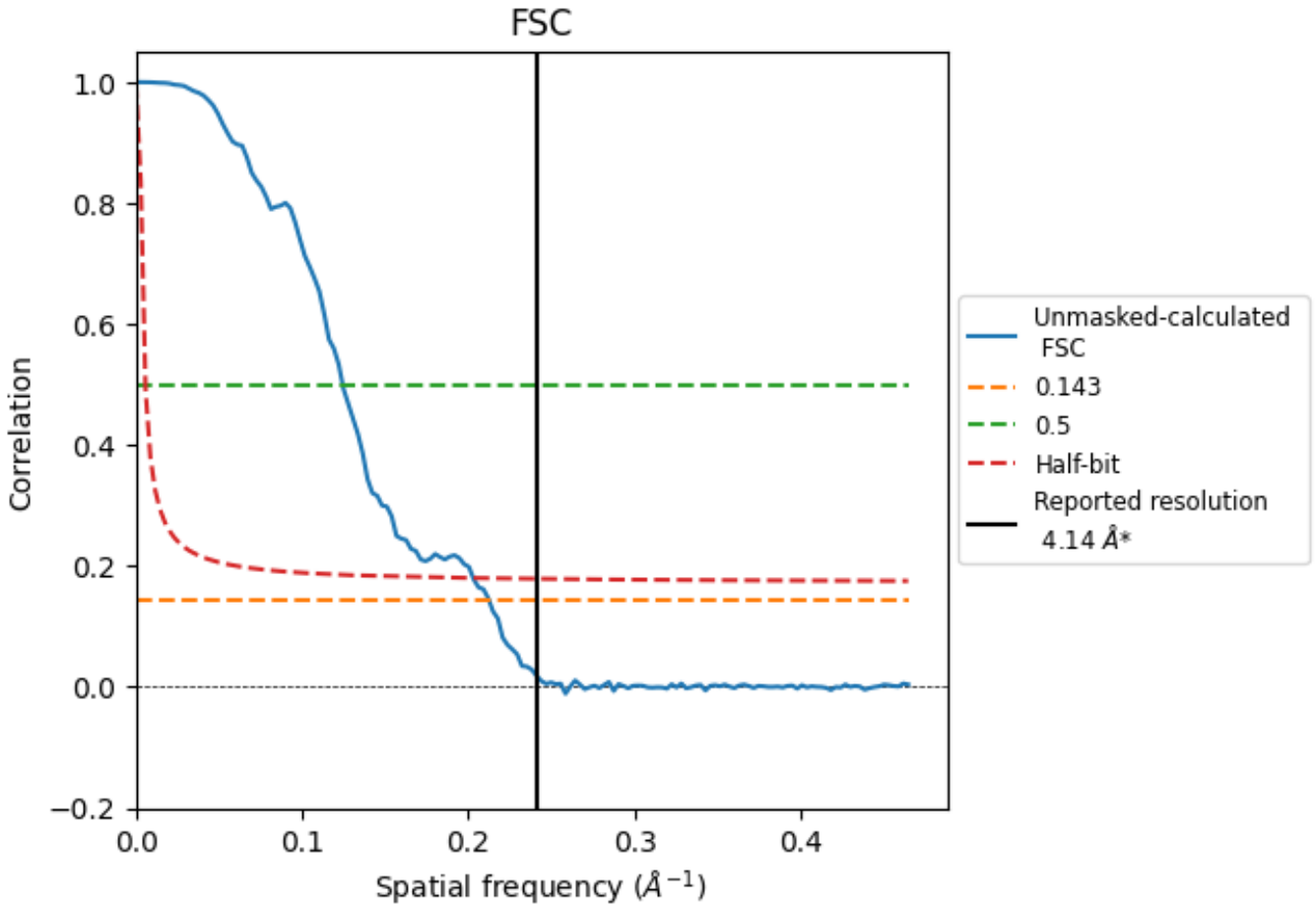


*Reported resolution corresponds to spatial frequency of 0.242 Å^{-1}

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 0.242 Å^{-1}

8.2 Resolution estimates (i)

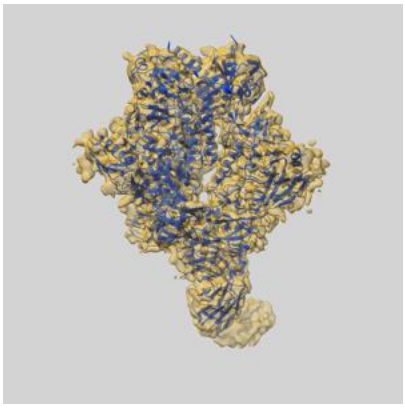
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.14	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.71	8.04	4.93

*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 4.71 differs from the reported value 4.14 by more than 10 %

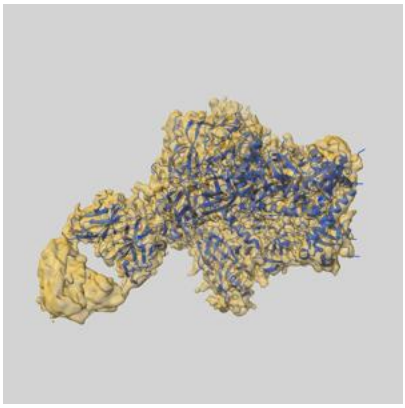
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-44891 and PDB model 9BTI. Per-residue inclusion information can be found in section 3 on page 13.

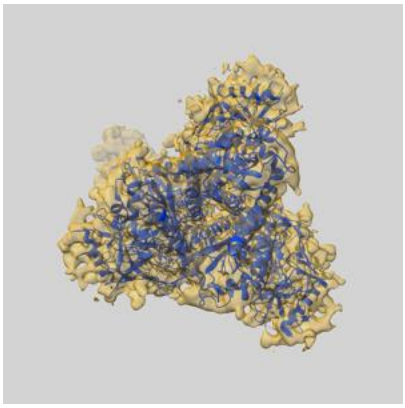
9.1 Map-model overlay



X



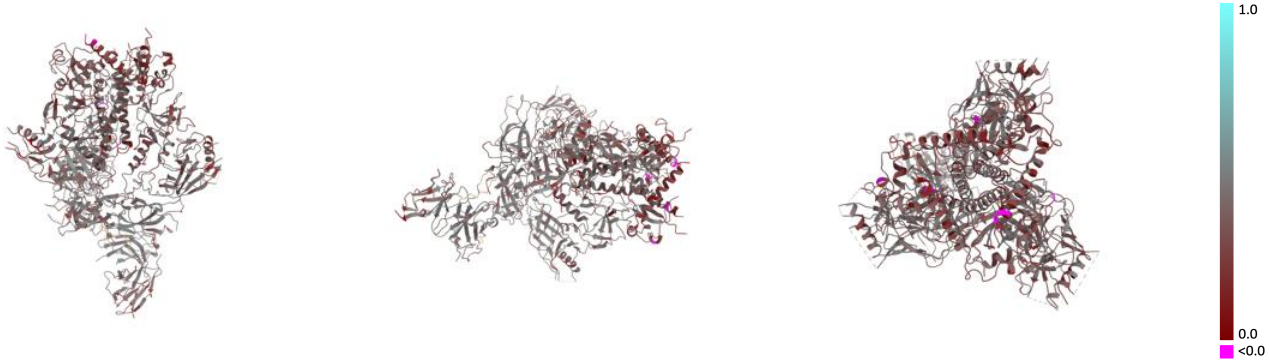
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.5 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.

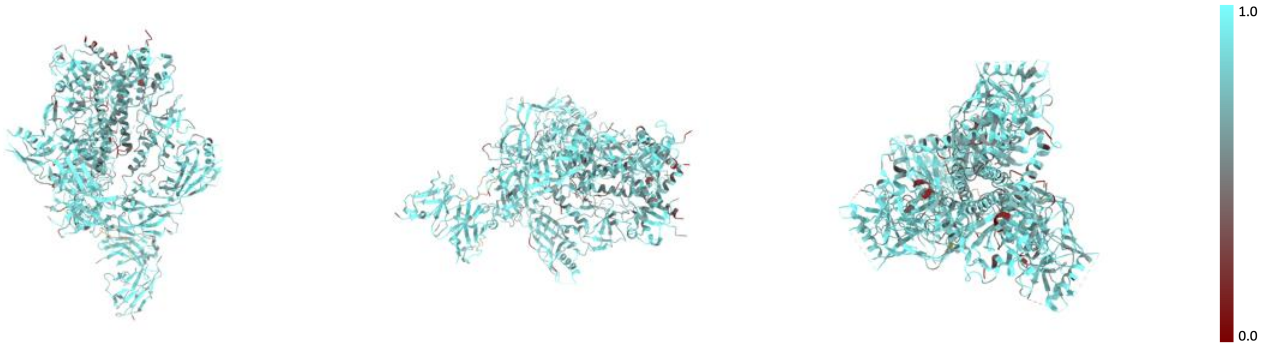
9.2 Q-score mapped to coordinate model (i)



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.

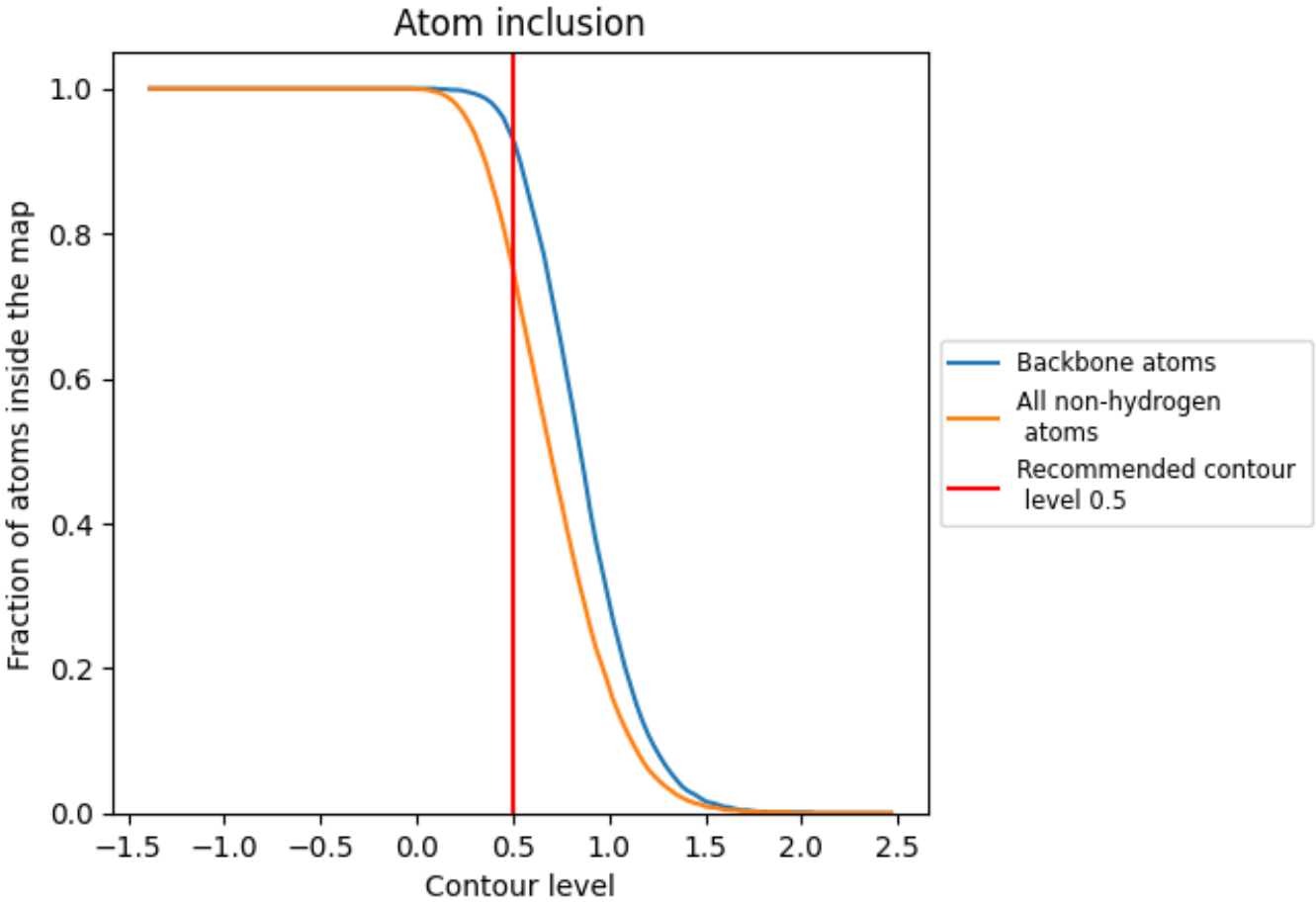
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.5).

9.4 Atom inclusion (i)



At the recommended contour level, 93% of all backbone atoms, 75% 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 (0.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7520	0.3680
A	0.7160	0.3210
B	0.7340	0.3140
C	0.7710	0.3760
D	0.8530	0.4310
E	0.8040	0.3810
F	0.6970	0.2880
G	0.7910	0.3930
H	0.7660	0.3780
I	0.7600	0.4100
J	0.2140	0.3150
K	0.5710	0.4250
L	0.5710	0.3370
M	0.6070	0.3820
N	0.4360	0.3940
O	0.6890	0.4510
P	0.3210	0.3640
Q	0.3570	0.3030
R	0.1800	0.1680
S	0.1790	0.2740
T	0.3930	0.2770
U	0.5710	0.3250
V	0.7140	0.4140
W	0.3590	0.1830
X	0.6230	0.3870
Y	0.5360	0.3510
Z	0.3930	0.3900
a	0.1070	0.1530
b	0.4290	0.2710
c	0.0000	0.1460
d	0.6790	0.3820
e	0.3330	0.2460
f	0.3770	0.3160
g	0.4640	0.3730
h	0.3570	0.3710
i	0.6390	0.3800