Full wwPDB EM Validation Report ⓘ

Nov 14, 2022 – 10:47 AM EST

PDB ID	:	6XSK
EMDB ID	:	EMD-22302
Title	:	Cryo-EM Structure of Vaccine-Elicited Rhesus Antibody 789-203-3C12 in Complex with Stabilized SI06 (A/Solomon Islands/3/06) Influenza Hemagglutinin Trimer
Authors	:	Cerutti, G.; Gorman, J.; Kwong, P.D.; Shapiro, L.
Deposited on	:	2020-07-15
Resolution	:	3.85 Å(reported)
Based on initial model	:	6FYT

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:

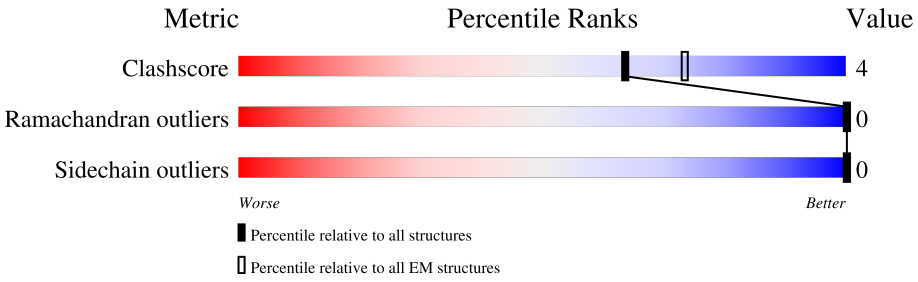
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.2

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.85 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	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	J	214	43% 7% 50%
1	K	214	44% 6% 50%
1	L	214	46% 50%
2	G	455	25% 73%
2	H	455	22% 5% 73%
2	I	455	25% 73%
3	A	343	80% 14% 6%
3	C	343	84% 10% 6%

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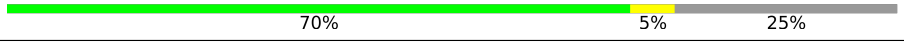
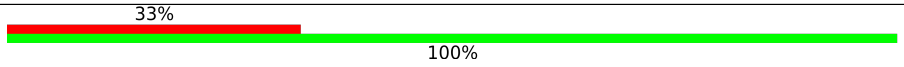
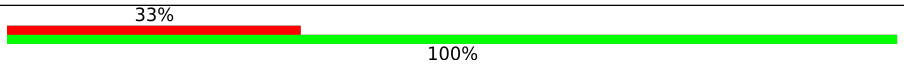
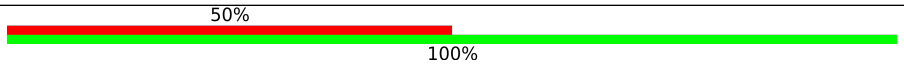
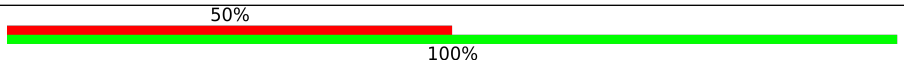
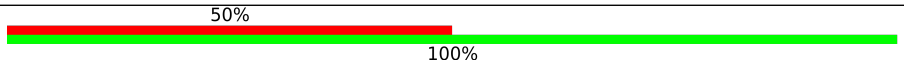
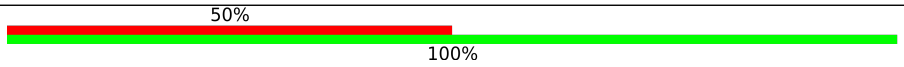
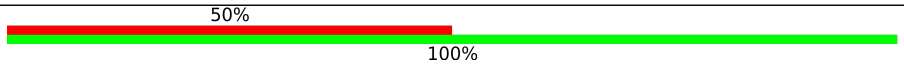
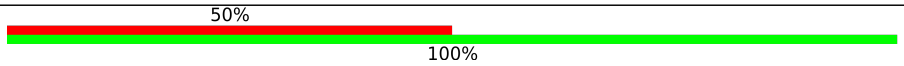
Mol	Chain	Length	Quality of chain
3	E	343	
4	B	222	
4	D	222	
4	F	222	
5	M	3	
5	Q	3	
5	T	3	
6	N	2	
6	O	2	
6	P	2	
6	R	2	
6	S	2	
6	U	2	

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 17322 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 789-203-3C12 Fab Light Chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	L	107	Total	C	N	O	S	0	0
			804	504	132	165	3		
1	J	107	Total	C	N	O	S	0	0
			804	504	132	165	3		
1	K	107	Total	C	N	O	S	0	0
			804	504	132	165	3		

- Molecule 2 is a protein called 789-203-3C12 Fab Heavy Chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	H	125	Total	C	N	O	S	0	0
			925	587	155	179	4		
2	G	125	Total	C	N	O	S	0	0
			925	587	155	179	4		
2	I	125	Total	C	N	O	S	0	0
			925	587	155	179	4		

- Molecule 3 is a protein called Hemagglutinin HA1 chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	A	322	Total	C	N	O	S	0	0
			2524	1590	439	483	12		
3	C	322	Total	C	N	O	S	0	0
			2524	1590	439	483	12		
3	E	322	Total	C	N	O	S	0	0
			2524	1590	439	483	12		

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	30	CYS	LEU	conflict	UNP A7Y8I1
C	30	CYS	LEU	conflict	UNP A7Y8I1
E	30	CYS	LEU	conflict	UNP A7Y8I1

- Molecule 4 is a protein called Hemagglutinin HA2 chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	B	167	Total	C	N	O	S	0	0
			1356	847	232	269	8		
4	D	167	Total	C	N	O	S	0	0
			1356	847	232	269	8		
4	F	167	Total	C	N	O	S	0	0
			1356	847	232	269	8		

There are 141 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	47	CYS	GLY	conflict	UNP A7Y8I1
B	177	SER	-	expression tag	UNP A7Y8I1
B	178	GLY	-	expression tag	UNP A7Y8I1
B	179	ARG	-	expression tag	UNP A7Y8I1
B	180	LEU	-	expression tag	UNP A7Y8I1
B	181	VAL	-	expression tag	UNP A7Y8I1
B	182	PRO	-	expression tag	UNP A7Y8I1
B	183	ARG	-	expression tag	UNP A7Y8I1
B	184	GLY	-	expression tag	UNP A7Y8I1
B	185	SER	-	expression tag	UNP A7Y8I1
B	186	PRO	-	expression tag	UNP A7Y8I1
B	187	GLY	-	expression tag	UNP A7Y8I1
B	188	SER	-	expression tag	UNP A7Y8I1
B	189	GLY	-	expression tag	UNP A7Y8I1
B	190	TYR	-	expression tag	UNP A7Y8I1
B	191	ILE	-	expression tag	UNP A7Y8I1
B	192	PRO	-	expression tag	UNP A7Y8I1
B	193	GLU	-	expression tag	UNP A7Y8I1
B	194	ALA	-	expression tag	UNP A7Y8I1
B	195	PRO	-	expression tag	UNP A7Y8I1
B	196	ARG	-	expression tag	UNP A7Y8I1
B	197	ASP	-	expression tag	UNP A7Y8I1
B	198	GLY	-	expression tag	UNP A7Y8I1
B	199	GLN	-	expression tag	UNP A7Y8I1
B	200	ALA	-	expression tag	UNP A7Y8I1
B	201	TYR	-	expression tag	UNP A7Y8I1
B	202	VAL	-	expression tag	UNP A7Y8I1
B	203	ARG	-	expression tag	UNP A7Y8I1
B	204	LYS	-	expression tag	UNP A7Y8I1
B	205	ASP	-	expression tag	UNP A7Y8I1
B	206	GLY	-	expression tag	UNP A7Y8I1
B	207	GLU	-	expression tag	UNP A7Y8I1

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Chain	Residue	Modelled	Actual	Comment	Reference
B	208	TRP	-	expression tag	UNP A7Y8I1
B	209	VAL	-	expression tag	UNP A7Y8I1
B	210	LEU	-	expression tag	UNP A7Y8I1
B	211	LEU	-	expression tag	UNP A7Y8I1
B	212	SER	-	expression tag	UNP A7Y8I1
B	213	THR	-	expression tag	UNP A7Y8I1
B	214	PHE	-	expression tag	UNP A7Y8I1
B	215	LEU	-	expression tag	UNP A7Y8I1
B	216	GLY	-	expression tag	UNP A7Y8I1
B	217	HIS	-	expression tag	UNP A7Y8I1
B	218	HIS	-	expression tag	UNP A7Y8I1
B	219	HIS	-	expression tag	UNP A7Y8I1
B	220	HIS	-	expression tag	UNP A7Y8I1
B	221	HIS	-	expression tag	UNP A7Y8I1
B	222	HIS	-	expression tag	UNP A7Y8I1
D	47	CYS	GLY	conflict	UNP A7Y8I1
D	177	SER	-	expression tag	UNP A7Y8I1
D	178	GLY	-	expression tag	UNP A7Y8I1
D	179	ARG	-	expression tag	UNP A7Y8I1
D	180	LEU	-	expression tag	UNP A7Y8I1
D	181	VAL	-	expression tag	UNP A7Y8I1
D	182	PRO	-	expression tag	UNP A7Y8I1
D	183	ARG	-	expression tag	UNP A7Y8I1
D	184	GLY	-	expression tag	UNP A7Y8I1
D	185	SER	-	expression tag	UNP A7Y8I1
D	186	PRO	-	expression tag	UNP A7Y8I1
D	187	GLY	-	expression tag	UNP A7Y8I1
D	188	SER	-	expression tag	UNP A7Y8I1
D	189	GLY	-	expression tag	UNP A7Y8I1
D	190	TYR	-	expression tag	UNP A7Y8I1
D	191	ILE	-	expression tag	UNP A7Y8I1
D	192	PRO	-	expression tag	UNP A7Y8I1
D	193	GLU	-	expression tag	UNP A7Y8I1
D	194	ALA	-	expression tag	UNP A7Y8I1
D	195	PRO	-	expression tag	UNP A7Y8I1
D	196	ARG	-	expression tag	UNP A7Y8I1
D	197	ASP	-	expression tag	UNP A7Y8I1
D	198	GLY	-	expression tag	UNP A7Y8I1
D	199	GLN	-	expression tag	UNP A7Y8I1
D	200	ALA	-	expression tag	UNP A7Y8I1
D	201	TYR	-	expression tag	UNP A7Y8I1
D	202	VAL	-	expression tag	UNP A7Y8I1

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Chain	Residue	Modelled	Actual	Comment	Reference
D	203	ARG	-	expression tag	UNP A7Y8I1
D	204	LYS	-	expression tag	UNP A7Y8I1
D	205	ASP	-	expression tag	UNP A7Y8I1
D	206	GLY	-	expression tag	UNP A7Y8I1
D	207	GLU	-	expression tag	UNP A7Y8I1
D	208	TRP	-	expression tag	UNP A7Y8I1
D	209	VAL	-	expression tag	UNP A7Y8I1
D	210	LEU	-	expression tag	UNP A7Y8I1
D	211	LEU	-	expression tag	UNP A7Y8I1
D	212	SER	-	expression tag	UNP A7Y8I1
D	213	THR	-	expression tag	UNP A7Y8I1
D	214	PHE	-	expression tag	UNP A7Y8I1
D	215	LEU	-	expression tag	UNP A7Y8I1
D	216	GLY	-	expression tag	UNP A7Y8I1
D	217	HIS	-	expression tag	UNP A7Y8I1
D	218	HIS	-	expression tag	UNP A7Y8I1
D	219	HIS	-	expression tag	UNP A7Y8I1
D	220	HIS	-	expression tag	UNP A7Y8I1
D	221	HIS	-	expression tag	UNP A7Y8I1
D	222	HIS	-	expression tag	UNP A7Y8I1
F	47	CYS	GLY	conflict	UNP A7Y8I1
F	177	SER	-	expression tag	UNP A7Y8I1
F	178	GLY	-	expression tag	UNP A7Y8I1
F	179	ARG	-	expression tag	UNP A7Y8I1
F	180	LEU	-	expression tag	UNP A7Y8I1
F	181	VAL	-	expression tag	UNP A7Y8I1
F	182	PRO	-	expression tag	UNP A7Y8I1
F	183	ARG	-	expression tag	UNP A7Y8I1
F	184	GLY	-	expression tag	UNP A7Y8I1
F	185	SER	-	expression tag	UNP A7Y8I1
F	186	PRO	-	expression tag	UNP A7Y8I1
F	187	GLY	-	expression tag	UNP A7Y8I1
F	188	SER	-	expression tag	UNP A7Y8I1
F	189	GLY	-	expression tag	UNP A7Y8I1
F	190	TYR	-	expression tag	UNP A7Y8I1
F	191	ILE	-	expression tag	UNP A7Y8I1
F	192	PRO	-	expression tag	UNP A7Y8I1
F	193	GLU	-	expression tag	UNP A7Y8I1
F	194	ALA	-	expression tag	UNP A7Y8I1
F	195	PRO	-	expression tag	UNP A7Y8I1
F	196	ARG	-	expression tag	UNP A7Y8I1
F	197	ASP	-	expression tag	UNP A7Y8I1

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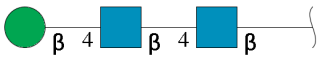
Chain	Residue	Modelled	Actual	Comment	Reference
F	198	GLY	-	expression tag	UNP A7Y8I1
F	199	GLN	-	expression tag	UNP A7Y8I1
F	200	ALA	-	expression tag	UNP A7Y8I1
F	201	TYR	-	expression tag	UNP A7Y8I1
F	202	VAL	-	expression tag	UNP A7Y8I1
F	203	ARG	-	expression tag	UNP A7Y8I1
F	204	LYS	-	expression tag	UNP A7Y8I1
F	205	ASP	-	expression tag	UNP A7Y8I1
F	206	GLY	-	expression tag	UNP A7Y8I1
F	207	GLU	-	expression tag	UNP A7Y8I1
F	208	TRP	-	expression tag	UNP A7Y8I1
F	209	VAL	-	expression tag	UNP A7Y8I1
F	210	LEU	-	expression tag	UNP A7Y8I1
F	211	LEU	-	expression tag	UNP A7Y8I1
F	212	SER	-	expression tag	UNP A7Y8I1
F	213	THR	-	expression tag	UNP A7Y8I1
F	214	PHE	-	expression tag	UNP A7Y8I1
F	215	LEU	-	expression tag	UNP A7Y8I1
F	216	GLY	-	expression tag	UNP A7Y8I1
F	217	HIS	-	expression tag	UNP A7Y8I1
F	218	HIS	-	expression tag	UNP A7Y8I1
F	219	HIS	-	expression tag	UNP A7Y8I1
F	220	HIS	-	expression tag	UNP A7Y8I1
F	221	HIS	-	expression tag	UNP A7Y8I1
F	222	HIS	-	expression tag	UNP A7Y8I1

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



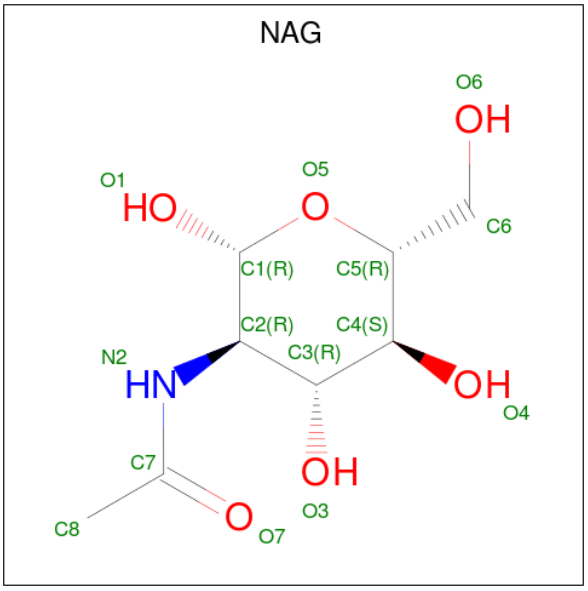
Mol	Chain	Residues	Atoms				AltConf	Trace
5	M	3	Total	C	N	O	0	0
			39	22	2	15		
5	Q	3	Total	C	N	O	0	0
			39	22	2	15		
5	T	3	Total	C	N	O	0	0
			39	22	2	15		

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

cetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	N	2	Total	C	N	O	0	0
			28	16	2	10		
6	O	2	Total	C	N	O	0	0
			28	16	2	10		
6	P	2	Total	C	N	O	0	0
			28	16	2	10		
6	R	2	Total	C	N	O	0	0
			28	16	2	10		
6	S	2	Total	C	N	O	0	0
			28	16	2	10		
6	U	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 7 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf
7	A	1	Total	C	N	O	0
			56	32	4	20	
7	A	1	Total	C	N	O	0
			56	32	4	20	

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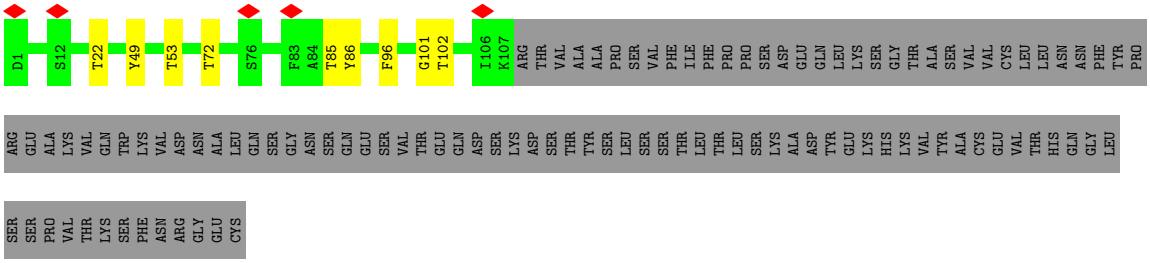
Mol	Chain	Residues	Atoms				AltConf
7	A	1	Total	C	N	O	0
			56	32	4	20	
7	A	1	Total	C	N	O	0
			56	32	4	20	
7	B	1	Total	C	N	O	0
			14	8	1	5	
7	C	1	Total	C	N	O	0
			56	32	4	20	
7	C	1	Total	C	N	O	0
			56	32	4	20	
7	C	1	Total	C	N	O	0
			56	32	4	20	
7	C	1	Total	C	N	O	0
			56	32	4	20	
7	D	1	Total	C	N	O	0
			14	8	1	5	
7	E	1	Total	C	N	O	0
			56	32	4	20	
7	E	1	Total	C	N	O	0
			56	32	4	20	
7	E	1	Total	C	N	O	0
			56	32	4	20	
7	E	1	Total	C	N	O	0
			56	32	4	20	
7	F	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.

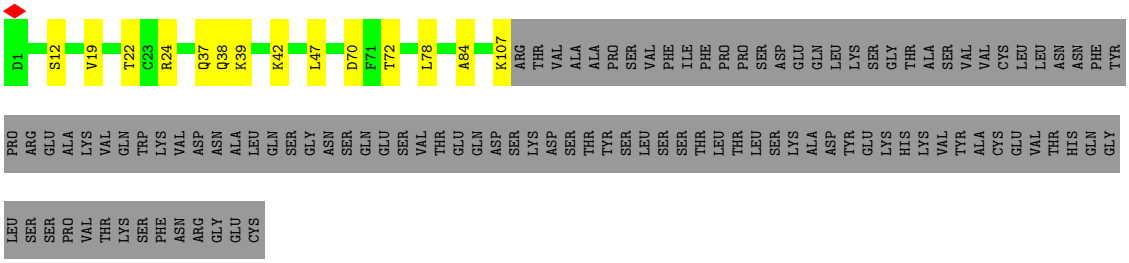
• Molecule 1: 789-203-3C12 Fab Light Chain

Chain L:



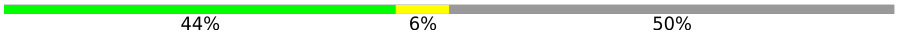
• Molecule 1: 789-203-3C12 Fab Light Chain

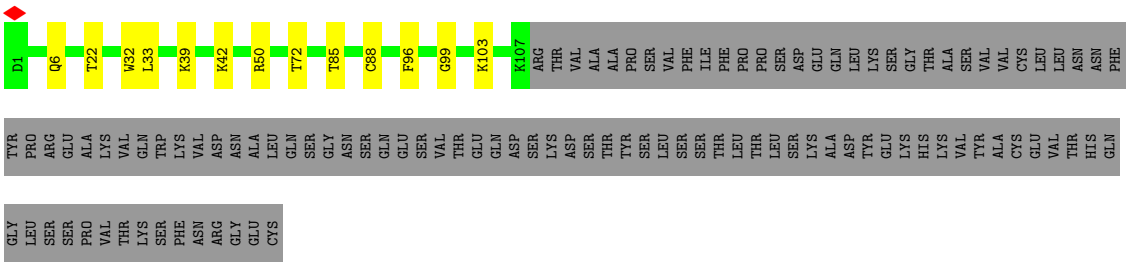
Chain J:



• Molecule 1: 789-203-3C12 Fab Light Chain

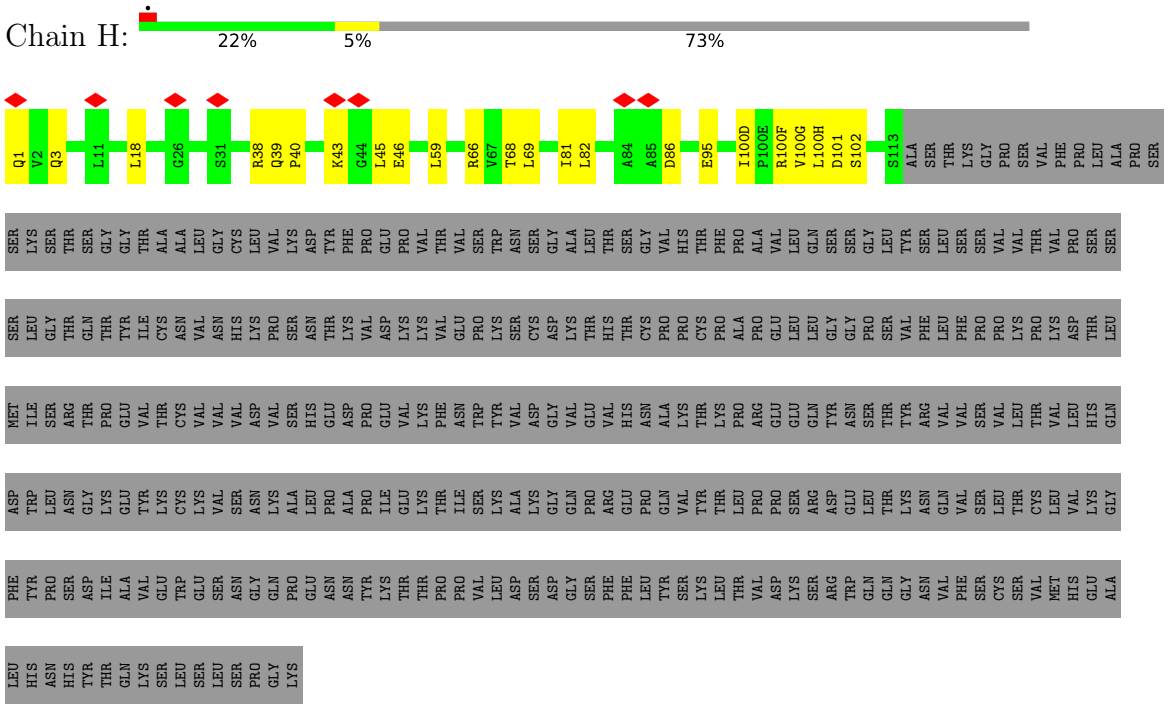
Chain K:





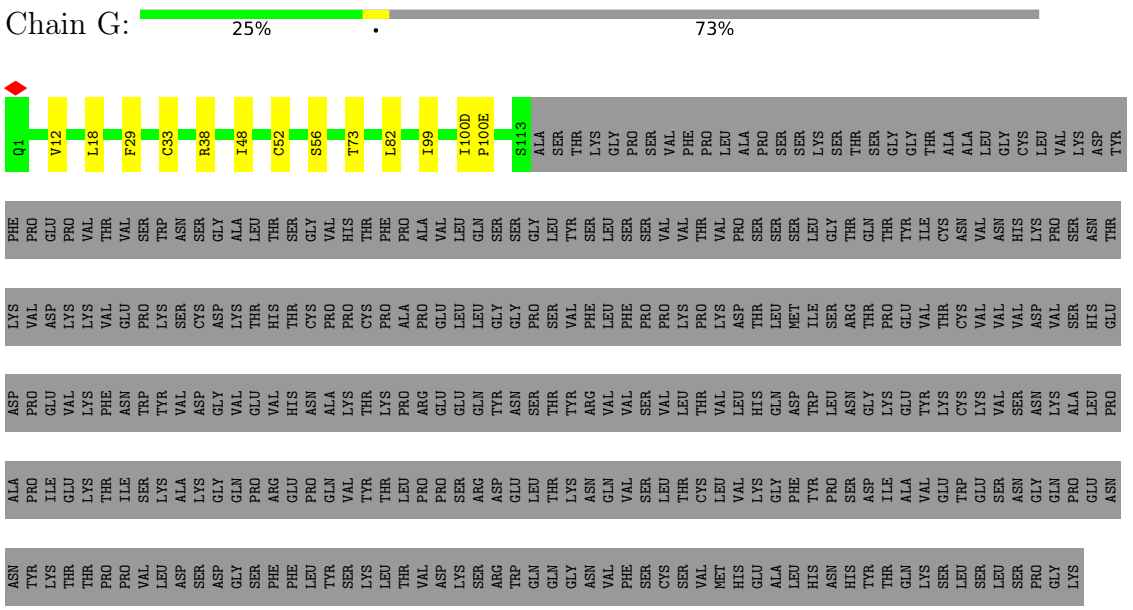
• Molecule 2: 789-203-3C12 Fab Heavy Chain

Chain H:



• Molecule 2: 789-203-3C12 Fab Heavy Chain

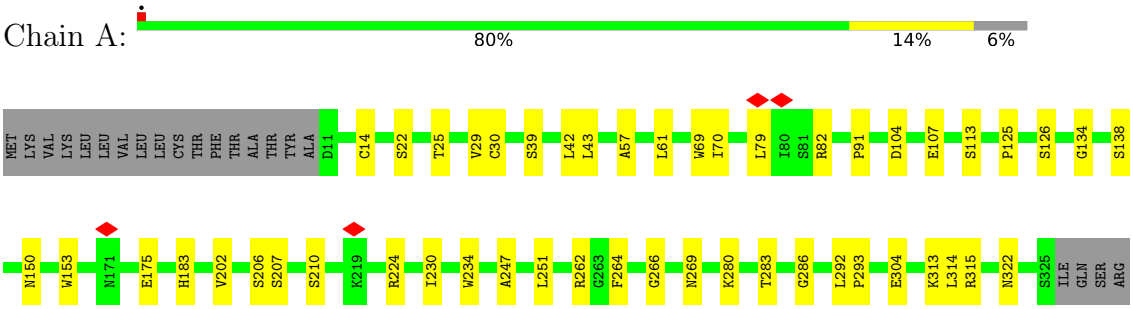
Chain G:



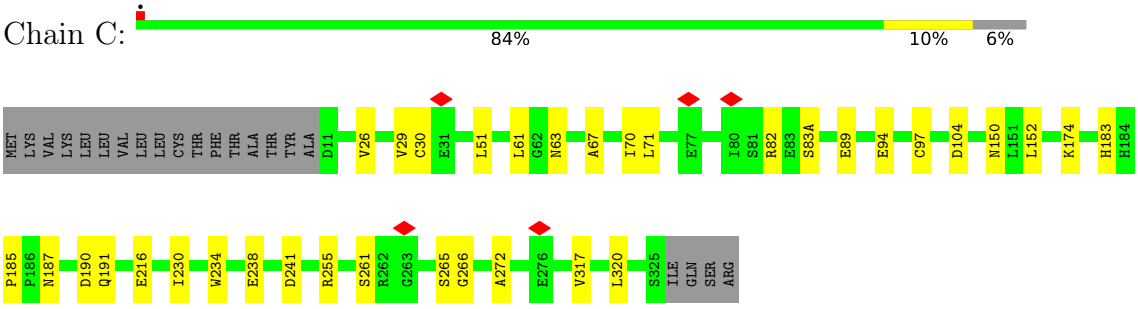
• Molecule 2: 789-203-3C12 Fab Heavy Chain

Chain I:

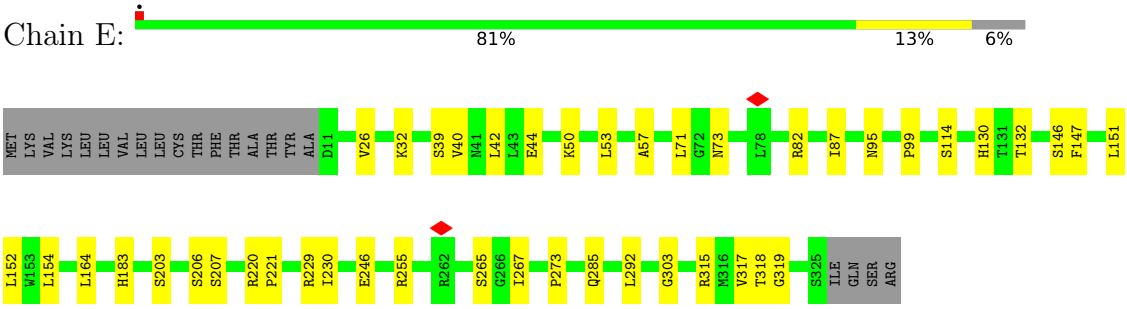
• Molecule 3: Hemagglutinin HA1 chain



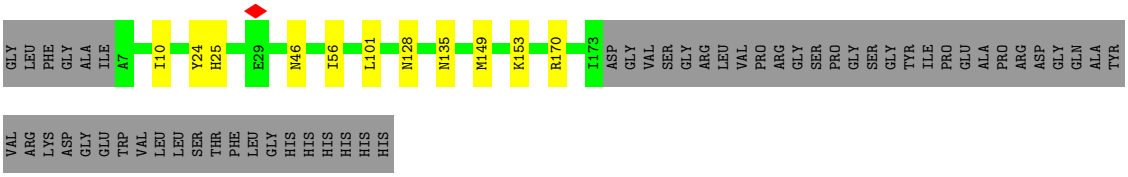
• Molecule 3: Hemagglutinin HA1 chain



• Molecule 3: Hemagglutinin HA1 chain

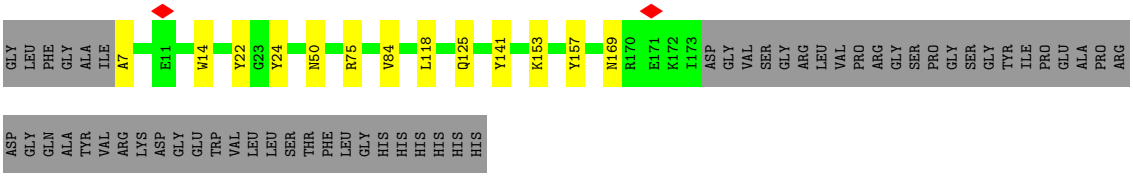


• Molecule 4: Hemagglutinin HA2 chain



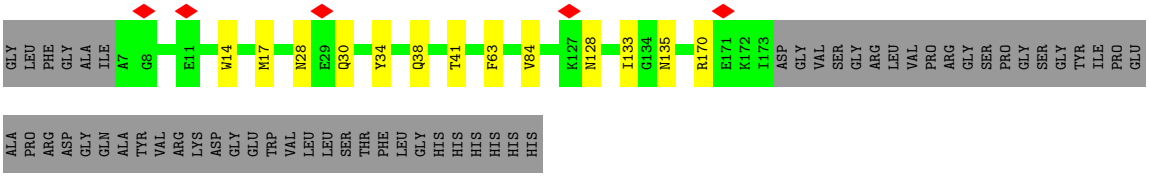
• Molecule 4: Hemagglutinin HA2 chain

Chain D:



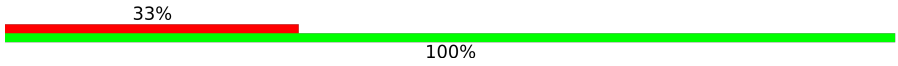
• Molecule 4: Hemagglutinin HA2 chain

Chain F:



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

Chain M:

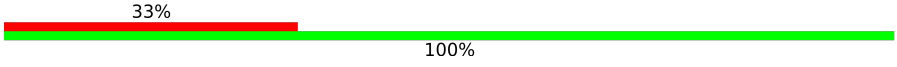


• Molecule 5: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Q:

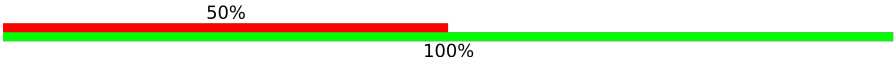
• Molecule 5: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain T:



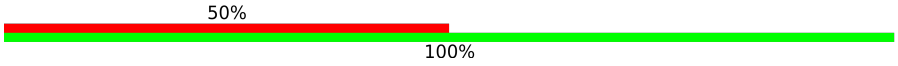
• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain N:



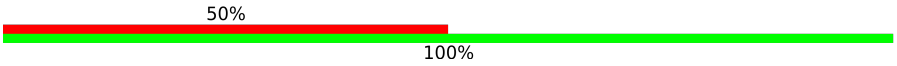
• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain O:



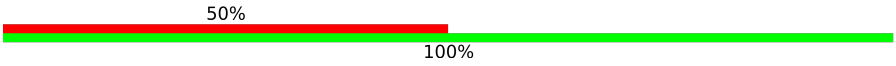
• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain P:



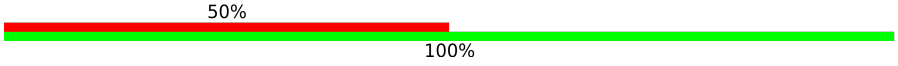
• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain R:



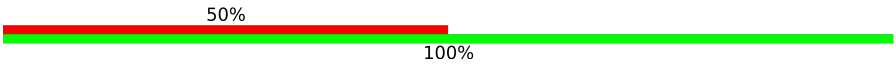
• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain S:



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

Chain U:



NAG1
NAG2

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	116041	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 ($e^-/Å^2$)	42	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.915	Depositor
Minimum map value	-0.418	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.021	Depositor
Recommended contour level	0.18	Depositor
Map size (Å)	385.2, 385.2, 385.2	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.07, 1.07, 1.07	Depositor

5 Model quality

5.1 Standard geometry

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

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	J	0.34	0/822	0.58	0/1117
1	K	0.35	0/822	0.62	0/1117
1	L	0.42	0/822	0.61	0/1117
2	G	0.44	0/945	0.61	0/1288
2	H	0.33	0/945	0.59	0/1288
2	I	0.32	0/945	0.56	0/1288
3	A	0.31	0/2590	0.50	0/3524
3	C	0.31	0/2590	0.51	0/3524
3	E	0.35	0/2590	0.54	0/3524
4	B	0.35	0/1382	0.56	0/1857
4	D	0.43	0/1382	0.60	0/1857
4	F	0.41	0/1382	0.60	0/1857
All	All	0.36	0/17217	0.56	0/23358

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	J	804	0	781	10	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	K	804	0	781	9	0
1	L	804	0	781	6	0
2	G	925	0	920	8	0
2	H	925	0	920	15	0
2	I	925	0	920	9	0
3	A	2524	0	2427	31	0
3	C	2524	0	2426	19	0
3	E	2524	0	2426	27	0
4	B	1356	0	1282	9	0
4	D	1356	0	1281	9	0
4	F	1356	0	1281	9	0
5	M	39	0	34	0	0
5	Q	39	0	34	1	0
5	T	39	0	34	0	0
6	N	28	0	25	0	0
6	O	28	0	25	0	0
6	P	28	0	25	0	0
6	R	28	0	25	0	0
6	S	28	0	25	0	0
6	U	28	0	25	0	0
7	A	56	0	52	0	0
7	B	14	0	13	0	0
7	C	56	0	52	0	0
7	D	14	0	13	0	0
7	E	56	0	52	0	0
7	F	14	0	13	0	0
All	All	17322	0	16673	147	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 (147) 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)
3:C:29:VAL:O	3:C:30:CYS:HB2	1.91	0.68
2:H:39:GLN:HB2	2:H:45:LEU:HD23	1.79	0.64
3:A:293:PRO:HD3	4:B:56:ILE:HG23	1.81	0.62
3:A:39:SER:OG	3:A:315:ARG:NH2	2.36	0.58
3:E:183:HIS:HA	3:E:230:ILE:HG22	1.86	0.58
3:A:175:GLU:OE1	3:A:262:ARG:NH2	2.37	0.57
4:D:24:TYR:HE1	4:D:118:LEU:HD21	1.69	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:66:ARG:NH2	2:I:86:ASP:OD2	2.38	0.57
1:L:96:PHE:CD1	2:H:100(F):ARG:HG3	2.39	0.57
2:G:18:LEU:HB3	2:G:82:LEU:HB3	1.87	0.57
3:A:30:CYS:SG	3:A:30:CYS:O	2.62	0.57
1:J:12:SER:HB3	1:J:107:LYS:HB2	1.87	0.57
3:C:183:HIS:HA	3:C:230:ILE:HG22	1.86	0.57
3:E:152:LEU:HD23	3:E:255:ARG:HB2	1.88	0.56
2:H:95:GLU:HB3	2:H:100(H):LEU:HG	1.86	0.56
1:K:85:THR:HG22	1:K:103:LYS:HG3	1.89	0.55
4:B:128:ASN:HB2	4:B:170:ARG:HH12	1.72	0.55
3:C:238:GLU:HG2	3:C:241:ASP:HB2	1.88	0.55
1:K:32:TRP:HZ3	2:I:100(D):ILE:HG23	1.71	0.55
3:A:183:HIS:HA	3:A:230:ILE:HG22	1.89	0.54
1:J:37:GLN:HG2	1:J:47:LEU:HD11	1.88	0.54
3:E:57:ALA:HB3	3:E:82:ARG:HH21	1.73	0.54
2:H:66:ARG:NH2	2:H:86:ASP:OD2	2.41	0.54
3:A:57:ALA:HB3	3:A:82:ARG:HH22	1.71	0.54
3:A:125:PRO:HD2	3:A:126:SER:HB3	1.88	0.54
1:L:22:THR:HG22	1:L:72:THR:HG22	1.88	0.54
4:B:10:ILE:HD11	4:B:135:ASN:HA	1.90	0.54
3:C:104:ASP:HB2	3:C:234:TRP:HE1	1.72	0.54
3:A:264:PHE:HA	4:D:75:ARG:HH21	1.74	0.53
3:A:202:VAL:HG23	3:A:247:ALA:HB2	1.89	0.53
4:F:17:MET:HG3	4:F:34:TYR:HD2	1.72	0.53
4:F:38:GLN:HA	4:F:41:THR:HG22	1.89	0.53
1:L:96:PHE:CG	2:H:100(F):ARG:HG3	2.43	0.53
2:H:95:GLU:OE1	2:H:100(F):ARG:NH2	2.41	0.53
2:G:99:ILE:HG12	2:G:100(D):ILE:HD11	1.91	0.53
2:H:1:GLN:OE1	2:H:3:GLN:NE2	2.42	0.52
3:C:67:ALA:O	3:C:71:LEU:HB2	2.09	0.52
1:J:39:LYS:HB2	1:J:42:LYS:HB2	1.91	0.52
1:K:22:THR:HG22	1:K:72:THR:HG22	1.91	0.52
3:C:70:ILE:O	3:C:150:ASN:ND2	2.42	0.52
2:I:38:ARG:HB3	2:I:48:ILE:HD11	1.91	0.51
3:A:22:SER:O	3:A:322:ASN:ND2	2.43	0.51
3:E:221:PRO:O	3:E:229:ARG:NH2	2.43	0.51
1:J:22:THR:HG22	1:J:72:THR:HG22	1.92	0.51
3:E:99:PRO:HG2	3:E:229:ARG:HG3	1.91	0.51
2:G:29:PHE:HB2	2:G:73:THR:HG23	1.92	0.51
3:A:43:LEU:HB2	3:A:314:LEU:HB2	1.92	0.51
3:C:174:LYS:HE3	3:C:261:SER:HB2	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:14:CYS:HB2	4:B:25:HIS:HB3	1.92	0.50
3:E:220:ARG:HD2	3:E:229:ARG:HD3	1.92	0.50
3:E:285:GLN:HE21	3:E:285:GLN:HA	1.76	0.50
3:A:280:LYS:HG2	3:A:304:GLU:HB2	1.93	0.50
3:C:61:LEU:HD12	3:C:89:GLU:HG3	1.92	0.50
2:G:52:CYS:HB3	2:G:56:SER:HB2	1.92	0.50
3:A:42:LEU:HA	3:A:292:LEU:HD12	1.93	0.49
3:A:29:VAL:O	3:A:30:CYS:HB3	2.12	0.49
4:D:7:ALA:HB3	4:D:14:TRP:HE1	1.77	0.49
3:E:53:LEU:HD22	3:E:57:ALA:HA	1.94	0.49
3:A:104:ASP:HB3	3:A:107:GLU:HB2	1.95	0.49
3:A:202:VAL:HG21	3:A:251:LEU:HD13	1.95	0.49
3:A:283:THR:OG1	3:A:286:GLY:O	2.27	0.49
2:G:33:CYS:HA	2:G:52:CYS:HA	1.95	0.49
3:C:51:LEU:HG	3:C:272:ALA:HB3	1.95	0.48
3:C:187:ASN:ND2	3:C:190:ASP:OD2	2.47	0.48
3:C:152:LEU:HG	3:C:255:ARG:HB2	1.94	0.48
4:D:24:TYR:HD2	4:D:153:LYS:HG2	1.79	0.48
4:D:141:TYR:O	4:D:169:ASN:ND2	2.46	0.48
2:G:12:VAL:HG11	2:G:18:LEU:HD13	1.95	0.48
3:C:63:ASN:HB3	3:C:94:GLU:HG2	1.95	0.48
3:A:61:LEU:HA	3:A:79:LEU:HD13	1.95	0.47
2:H:66:ARG:HE	2:H:82:LEU:HD11	1.79	0.47
3:E:44:GLU:CG	3:E:292:LEU:HD12	2.45	0.47
3:E:26:VAL:HG21	3:E:317:VAL:HB	1.97	0.47
3:E:203:SER:HB2	3:E:246:GLU:HB3	1.96	0.47
4:F:14:TRP:HB3	4:F:34:TYR:HE2	1.79	0.47
2:H:38:ARG:O	2:H:46:GLU:N	2.46	0.47
4:F:133:ILE:HG13	4:F:135:ASN:H	1.80	0.46
2:H:68:THR:HB	2:H:81:ILE:HB	1.97	0.46
3:C:265:SER:OG	3:C:266:GLY:N	2.49	0.46
2:H:100(D):ILE:HG23	2:H:100(G):VAL:HB	1.97	0.46
4:F:128:ASN:O	4:F:170:ARG:NH2	2.48	0.46
1:J:39:LYS:HD3	1:J:84:ALA:HB2	1.98	0.46
2:I:72:ASP:OD1	2:I:72:ASP:N	2.47	0.46
1:K:39:LYS:HB2	1:K:42:LYS:HB2	1.98	0.46
3:A:29:VAL:HB	4:B:101:LEU:HB3	1.98	0.46
3:A:134:GLY:HA3	3:A:153:TRP:HB3	1.98	0.46
4:B:46:ASN:HA	1:K:50:ARG:HH22	1.81	0.46
3:E:317:VAL:HG22	3:E:319:GLY:H	1.79	0.46
4:F:17:MET:HG3	4:F:34:TYR:CD2	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:B:24:TYR:HD2	4:B:153:LYS:HG2	1.81	0.46
3:A:206:SER:OG	3:A:207:SER:N	2.49	0.45
3:E:42:LEU:HA	3:E:292:LEU:HD22	1.98	0.45
3:E:50:LYS:HD3	3:E:273:PRO:HG2	1.97	0.45
2:I:101:ASP:OD1	2:I:101:ASP:N	2.49	0.45
3:A:91:PRO:HA	3:A:269:ASN:HD21	1.81	0.45
1:K:6:GLN:HE21	1:K:99:GLY:HA3	1.82	0.45
1:J:39:LYS:HD3	1:J:39:LYS:HA	1.86	0.45
4:B:24:TYR:CD2	4:B:153:LYS:HG2	2.52	0.45
3:C:82:ARG:NH2	3:C:83(A):SER:O	2.50	0.44
3:E:87:ILE:HB	3:E:267:ILE:HG22	1.98	0.44
3:C:97:CYS:HA	5:Q:1:NAG:H81	1.99	0.44
3:E:146:SER:OG	3:E:147:PHE:N	2.50	0.44
3:A:25:THR:OG1	3:A:313:LYS:NZ	2.51	0.44
3:C:185:PRO:HG2	3:C:191:GLN:HB2	1.98	0.44
2:I:99:ILE:HG12	2:I:100(D):ILE:HG12	1.99	0.44
1:K:88:CYS:O	1:K:99:GLY:N	2.51	0.43
4:D:84:VAL:HG21	4:F:84:VAL:HG22	2.01	0.43
3:E:44:GLU:HG3	3:E:292:LEU:HD12	2.01	0.43
2:H:59:LEU:HD11	2:H:69:LEU:HD23	2.01	0.43
3:E:114:SER:HB2	3:E:265:SER:H	1.83	0.43
3:C:320:LEU:HD21	4:D:22:TYR:HE1	1.84	0.43
1:J:78:LEU:HD13	1:J:78:LEU:HA	1.89	0.43
1:L:86:TYR:O	1:L:101:GLY:HA2	2.18	0.42
3:A:113:SER:HB2	3:A:266:GLY:HA2	2.01	0.42
3:E:132:THR:HG22	3:E:154:LEU:HD23	2.01	0.42
3:E:73:ASN:HD21	3:E:95:ASN:HB3	1.85	0.42
2:I:13:LYS:HD2	2:I:13:LYS:HA	1.88	0.42
3:E:206:SER:OG	3:E:207:SER:N	2.52	0.42
4:D:50:ASN:HD21	3:E:32:LYS:HD3	1.84	0.42
3:E:130:HIS:CE1	3:E:164:LEU:HD21	2.55	0.42
3:A:61:LEU:HD11	3:A:69:TRP:HB2	2.02	0.42
3:C:26:VAL:HG11	3:C:317:VAL:HB	2.01	0.41
1:J:24:ARG:NE	1:J:70:ASP:OD1	2.53	0.41
2:G:100(D):ILE:HA	2:G:100(E):PRO:HD3	1.96	0.41
3:A:210:SER:OG	3:C:216:GLU:OE1	2.38	0.41
3:E:71:LEU:HD12	3:E:151:LEU:HD11	2.01	0.41
3:E:39:SER:HB2	3:E:315:ARG:HH12	1.84	0.41
1:L:85:THR:HA	1:L:102:THR:O	2.20	0.41
2:I:40:PRO:HB2	2:I:43:LYS:HG2	2.02	0.41
4:B:149:MET:O	4:B:153:LYS:HG3	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:28:ASN:ND2	4:F:30:GLN:OE1	2.53	0.41
2:H:101:ASP:OD1	2:H:102:SER:N	2.53	0.41
3:A:138:SER:OG	3:A:224:ARG:NH1	2.54	0.41
4:D:125:GLN:CG	4:D:157:TYR:HB3	2.51	0.41
3:E:40:VAL:HG22	3:E:318:THR:HG23	2.02	0.41
3:E:303:GLY:HA2	4:F:63:PHE:CD1	2.55	0.41
1:K:33:LEU:HD23	1:K:33:LEU:HA	1.89	0.41
1:K:96:PHE:CD1	2:I:100(F):ARG:HG3	2.56	0.41
3:A:104:ASP:HB2	3:A:234:TRP:HE1	1.86	0.40
1:J:19:VAL:HG12	1:J:78:LEU:HD21	2.03	0.40
1:L:49:TYR:O	1:L:53:THR:OG1	2.37	0.40
2:H:18:LEU:HD23	2:H:82:LEU:HD23	2.03	0.40
2:G:38:ARG:HB3	2:G:48:ILE:HD11	2.04	0.40
2:H:40:PRO:HB2	2:H:43:LYS:HE2	2.04	0.40
3:A:70:ILE:O	3:A:150:ASN:ND2	2.51	0.40
3:A:314:LEU:HD23	3:A:314:LEU:HA	1.94	0.40
1:J:38:GLN:O	1:J:84:ALA:HB1	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	J	105/214 (49%)	99 (94%)	6 (6%)	0	100	100
1	K	105/214 (49%)	101 (96%)	4 (4%)	0	100	100
1	L	105/214 (49%)	100 (95%)	5 (5%)	0	100	100
2	G	123/455 (27%)	118 (96%)	5 (4%)	0	100	100
2	H	123/455 (27%)	122 (99%)	1 (1%)	0	100	100
2	I	123/455 (27%)	122 (99%)	1 (1%)	0	100	100
3	A	320/343 (93%)	314 (98%)	6 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	C	320/343 (93%)	314 (98%)	6 (2%)	0	100	100
3	E	320/343 (93%)	317 (99%)	3 (1%)	0	100	100
4	B	165/222 (74%)	162 (98%)	3 (2%)	0	100	100
4	D	165/222 (74%)	163 (99%)	2 (1%)	0	100	100
4	F	165/222 (74%)	162 (98%)	3 (2%)	0	100	100
All	All	2139/3702 (58%)	2094 (98%)	45 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	J	93/189 (49%)	93 (100%)	0	100	100
1	K	93/189 (49%)	93 (100%)	0	100	100
1	L	93/189 (49%)	93 (100%)	0	100	100
2	G	104/403 (26%)	104 (100%)	0	100	100
2	H	104/403 (26%)	104 (100%)	0	100	100
2	I	104/403 (26%)	104 (100%)	0	100	100
3	A	282/301 (94%)	282 (100%)	0	100	100
3	C	282/301 (94%)	282 (100%)	0	100	100
3	E	282/301 (94%)	282 (100%)	0	100	100
4	B	147/189 (78%)	147 (100%)	0	100	100
4	D	147/189 (78%)	147 (100%)	0	100	100
4	F	147/189 (78%)	147 (100%)	0	100	100
All	All	1878/3246 (58%)	1878 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
2	H	1	GLN
2	H	3	GLN
4	D	50	ASN
4	D	62	GLN
4	D	125	GLN
3	E	191	GLN
3	E	285	GLN
4	F	28	ASN
4	F	142	HIS
2	G	3	GLN
1	K	27	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

21 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	M	1	5,3	14,14,15	0.27	0	17,19,21	0.48	0
5	NAG	M	2	5	14,14,15	0.28	0	17,19,21	0.44	0
5	BMA	M	3	5	11,11,12	0.65	0	15,15,17	0.86	0
6	NAG	N	1	6,3	14,14,15	0.20	0	17,19,21	0.42	0
6	NAG	N	2	6	14,14,15	0.29	0	17,19,21	0.46	0
6	NAG	O	1	6,3	14,14,15	0.31	0	17,19,21	0.54	0
6	NAG	O	2	6	14,14,15	0.31	0	17,19,21	0.43	0
6	NAG	P	1	6,3	14,14,15	0.27	0	17,19,21	0.47	0
6	NAG	P	2	6	14,14,15	0.27	0	17,19,21	0.44	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
5	NAG	Q	1	5,3	14,14,15	0.36	0	17,19,21	0.66	0
5	NAG	Q	2	5	14,14,15	0.23	0	17,19,21	0.40	0
5	BMA	Q	3	5	11,11,12	0.68	0	15,15,17	0.82	0
6	NAG	R	1	6,3	14,14,15	0.28	0	17,19,21	0.55	0
6	NAG	R	2	6	14,14,15	0.28	0	17,19,21	0.44	0
6	NAG	S	1	6,3	14,14,15	0.27	0	17,19,21	0.44	0
6	NAG	S	2	6	14,14,15	0.27	0	17,19,21	0.46	0
5	NAG	T	1	5,3	14,14,15	0.28	0	17,19,21	0.52	0
5	NAG	T	2	5	14,14,15	0.24	0	17,19,21	0.42	0
5	BMA	T	3	5	11,11,12	0.68	0	15,15,17	0.80	0
6	NAG	U	1	6,3	14,14,15	0.25	0	17,19,21	0.45	0
6	NAG	U	2	6	14,14,15	0.25	0	17,19,21	0.48	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	M	1	5,3	-	0/6/23/26	0/1/1/1
5	NAG	M	2	5	-	2/6/23/26	0/1/1/1
5	BMA	M	3	5	-	1/2/19/22	0/1/1/1
6	NAG	N	1	6,3	-	0/6/23/26	0/1/1/1
6	NAG	N	2	6	-	0/6/23/26	0/1/1/1
6	NAG	O	1	6,3	-	0/6/23/26	0/1/1/1
6	NAG	O	2	6	-	0/6/23/26	0/1/1/1
6	NAG	P	1	6,3	-	2/6/23/26	0/1/1/1
6	NAG	P	2	6	-	1/6/23/26	0/1/1/1
5	NAG	Q	1	5,3	-	4/6/23/26	0/1/1/1
5	NAG	Q	2	5	-	0/6/23/26	0/1/1/1
5	BMA	Q	3	5	-	0/2/19/22	0/1/1/1
6	NAG	R	1	6,3	-	0/6/23/26	0/1/1/1
6	NAG	R	2	6	-	0/6/23/26	0/1/1/1
6	NAG	S	1	6,3	-	0/6/23/26	0/1/1/1
6	NAG	S	2	6	-	0/6/23/26	0/1/1/1
5	NAG	T	1	5,3	-	0/6/23/26	0/1/1/1
5	NAG	T	2	5	-	1/6/23/26	0/1/1/1
5	BMA	T	3	5	-	1/2/19/22	0/1/1/1
6	NAG	U	1	6,3	-	1/6/23/26	0/1/1/1
6	NAG	U	2	6	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (15) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	Q	1	NAG	O5-C5-C6-O6
5	Q	1	NAG	C4-C5-C6-O6
5	M	2	NAG	C8-C7-N2-C2
5	M	2	NAG	O7-C7-N2-C2
5	Q	1	NAG	C8-C7-N2-C2
5	Q	1	NAG	O7-C7-N2-C2
6	U	2	NAG	C8-C7-N2-C2
6	U	2	NAG	O7-C7-N2-C2
6	P	1	NAG	O5-C5-C6-O6
5	M	3	BMA	O5-C5-C6-O6
6	P	2	NAG	O5-C5-C6-O6
5	T	3	BMA	O5-C5-C6-O6
6	P	1	NAG	C4-C5-C6-O6
6	U	1	NAG	O5-C5-C6-O6
5	T	2	NAG	O5-C5-C6-O6

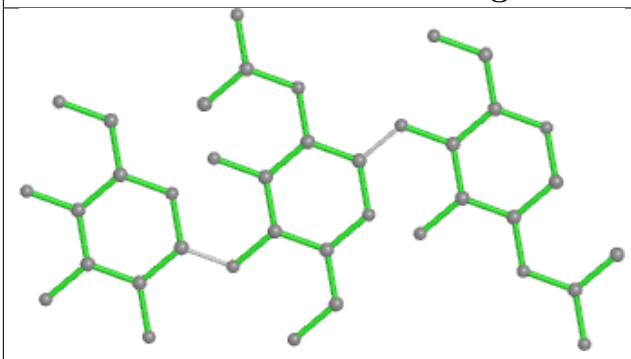
There are no ring outliers.

1 monomer is involved in 1 short contact:

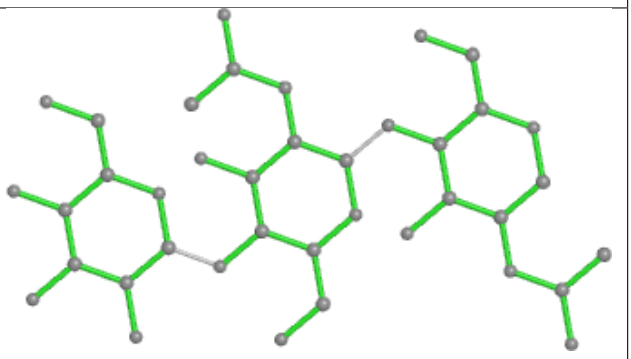
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	Q	1	NAG	1	0

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

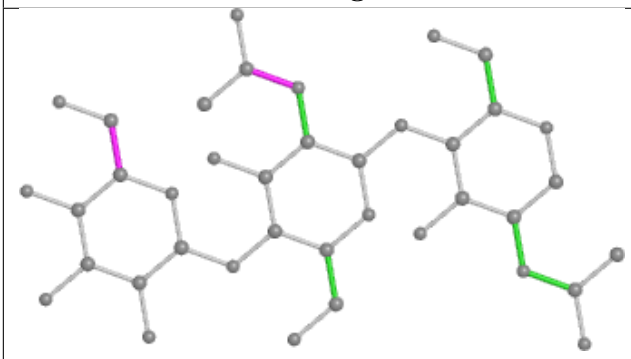
Oligosaccharide Chain M



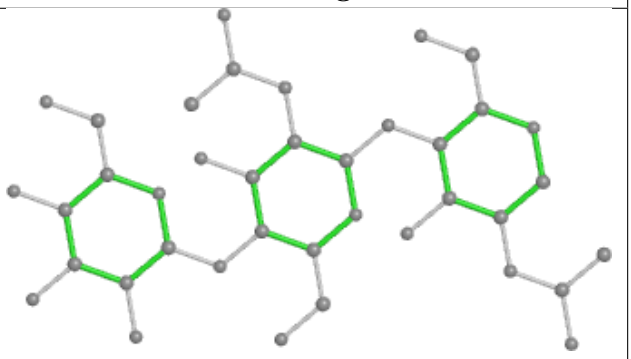
Bond lengths



Bond angles

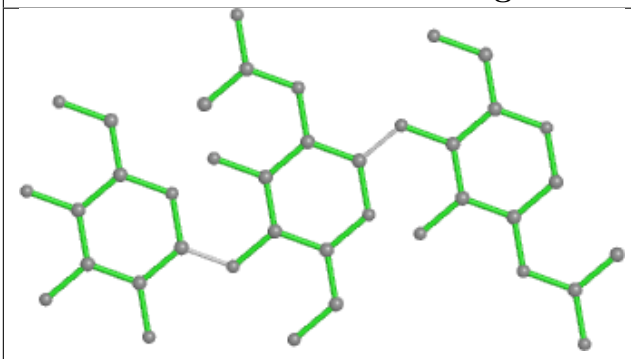


Torsions

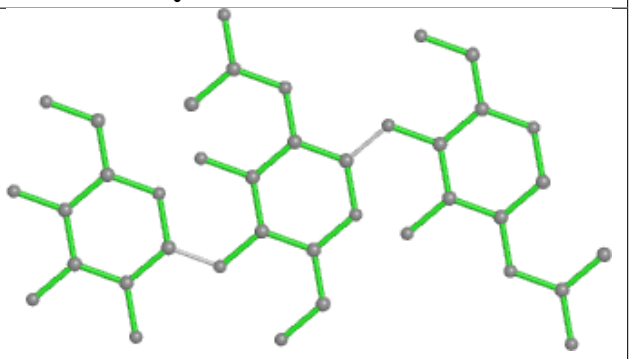


Rings

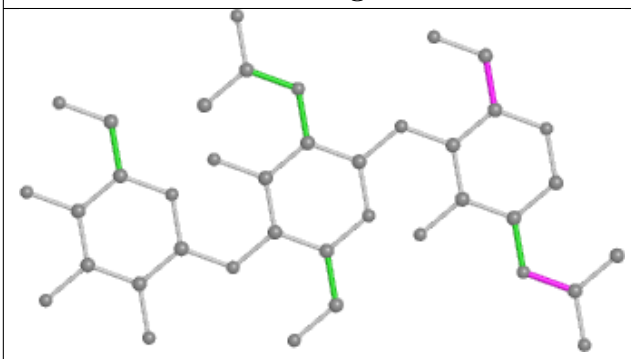
Oligosaccharide Chain Q



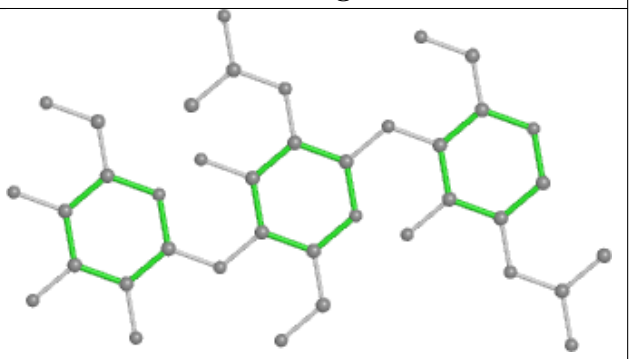
Bond lengths



Bond angles

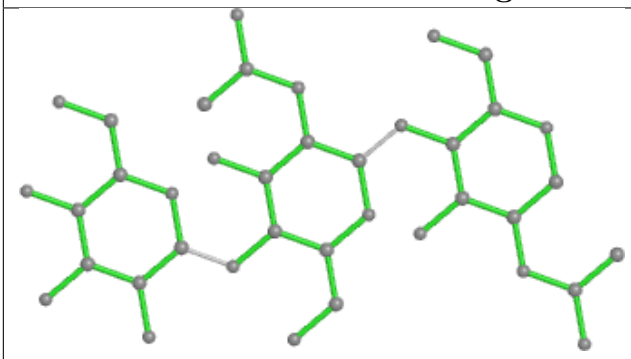


Torsions

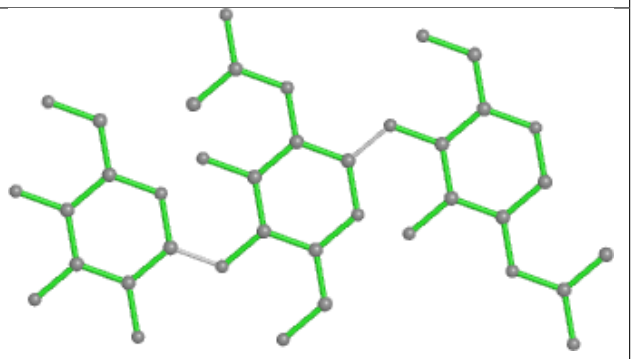


Rings

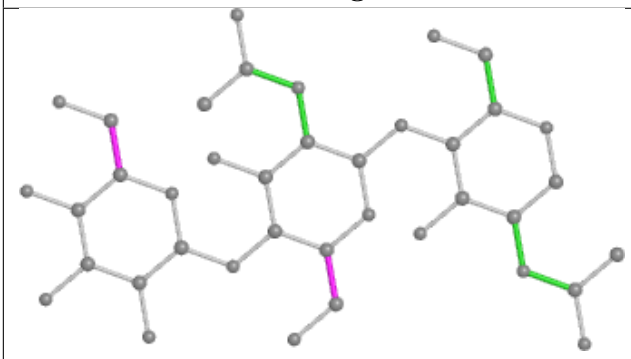
Oligosaccharide Chain T



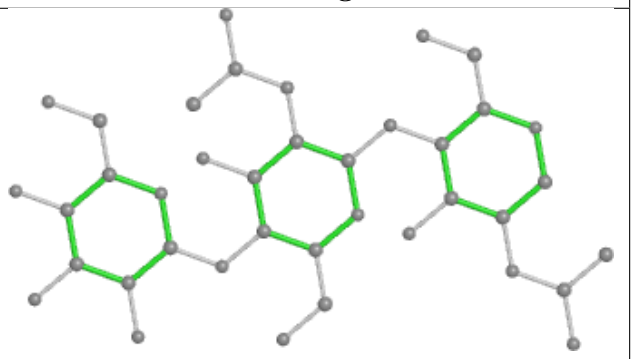
Bond lengths



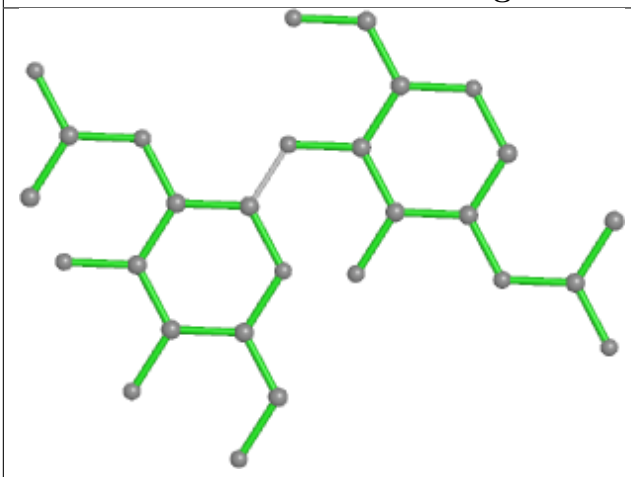
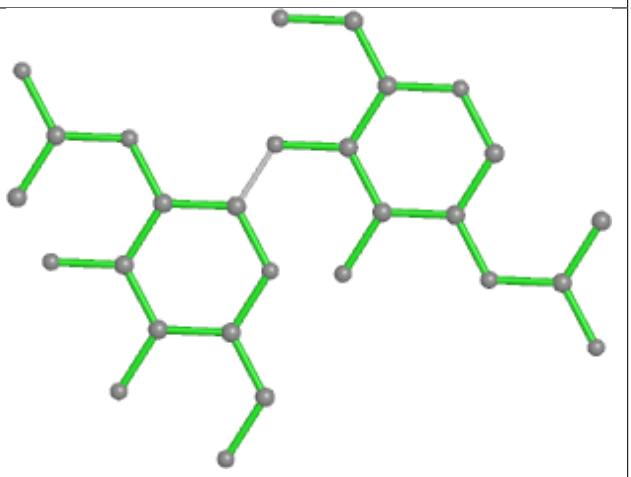
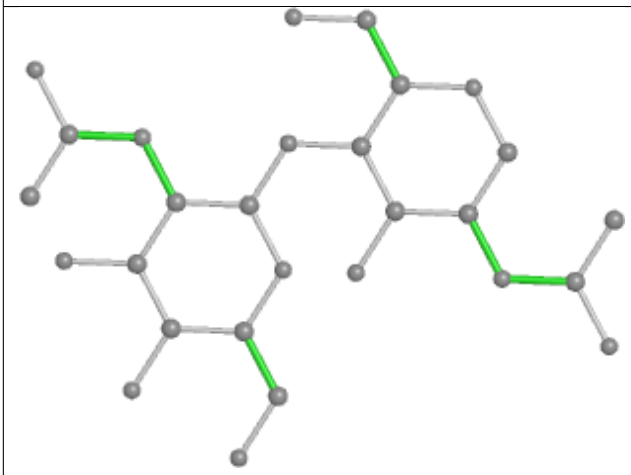
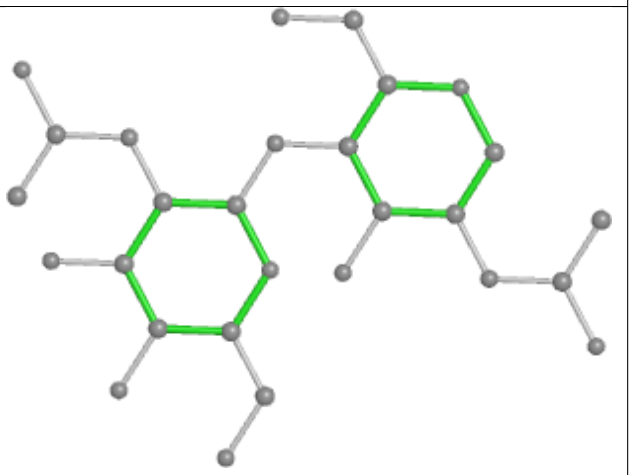
Bond angles



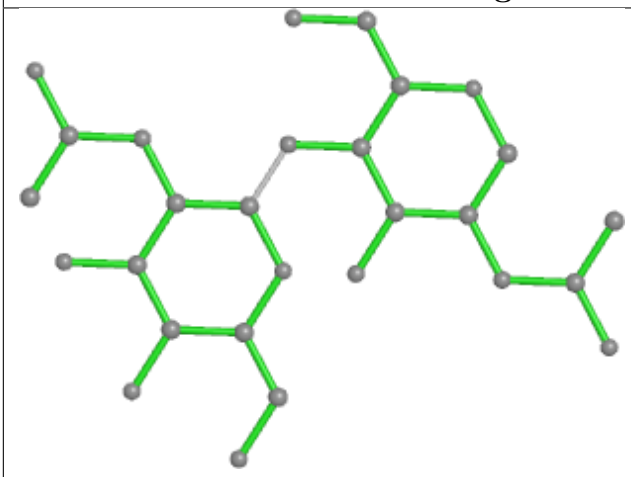
Torsions



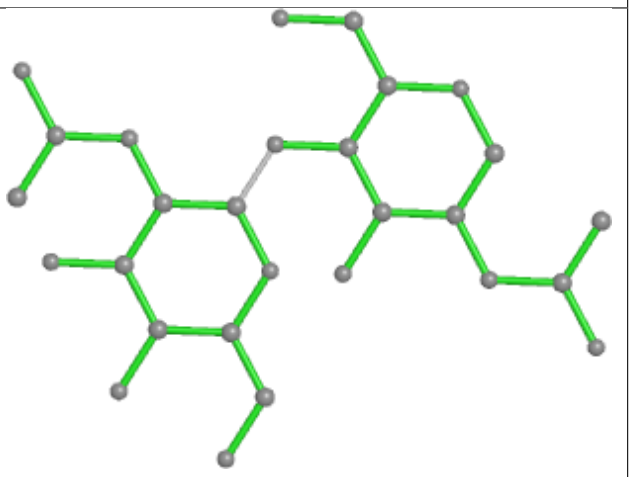
Rings

Oligosaccharide Chain N	
	
Bond lengths	**Bond angles**
	
Torsions	**Rings**

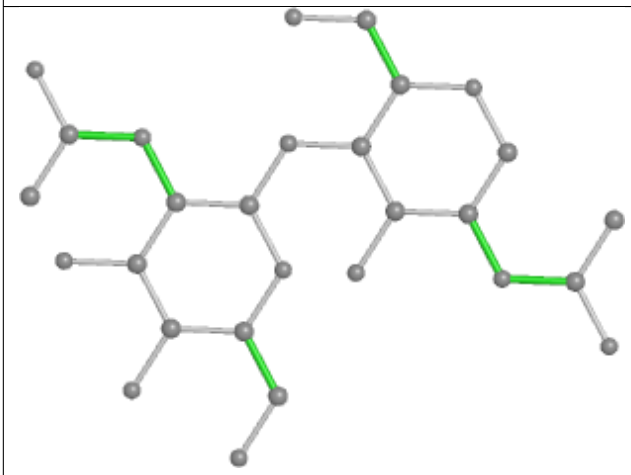
Oligosaccharide Chain O



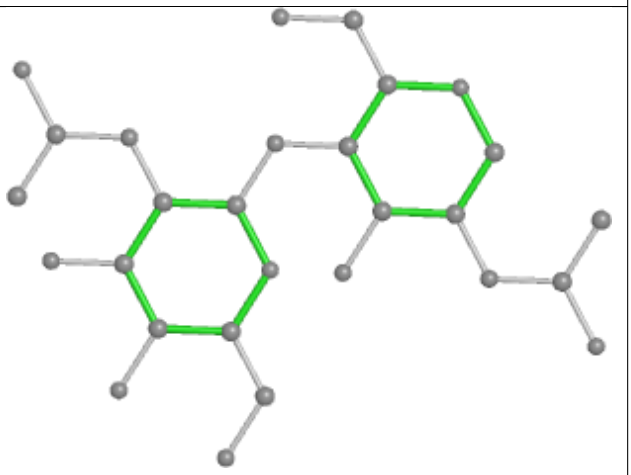
Bond lengths



Bond angles

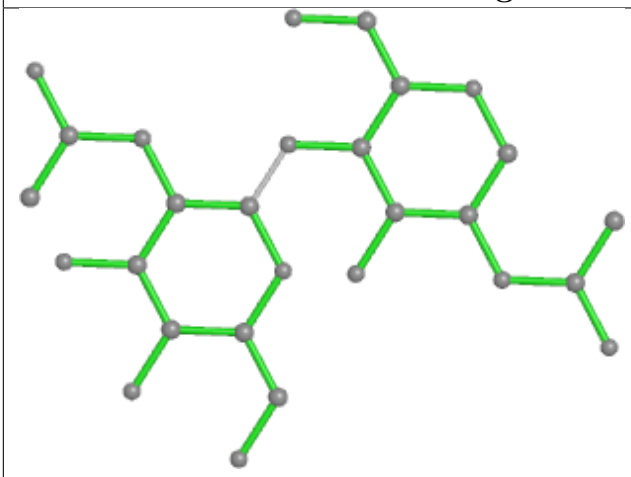


Torsions

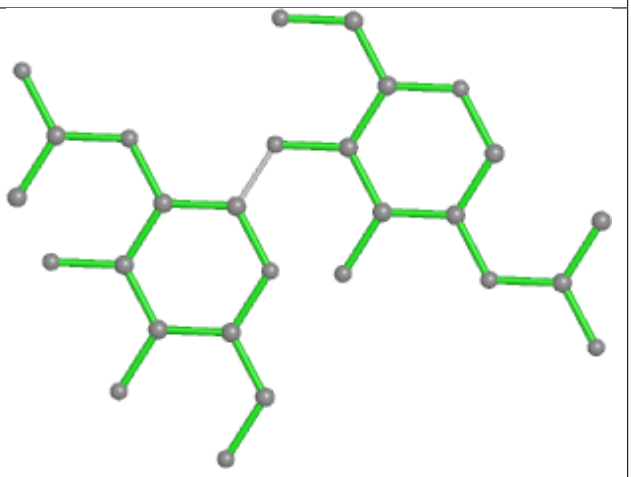


Rings

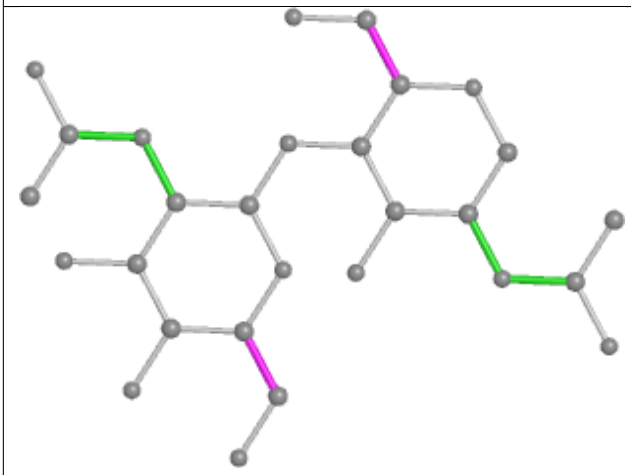
Oligosaccharide Chain P



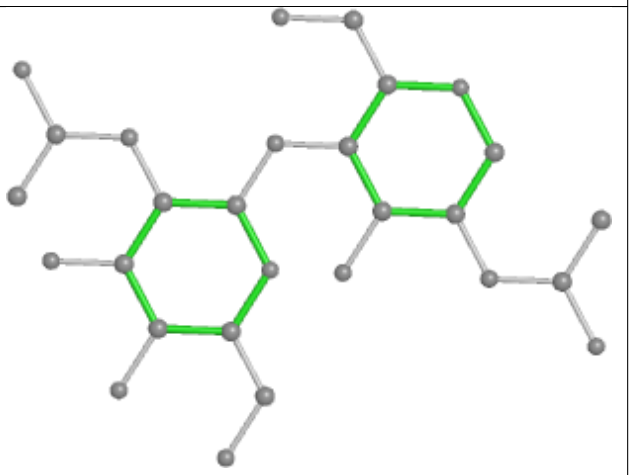
Bond lengths



Bond angles

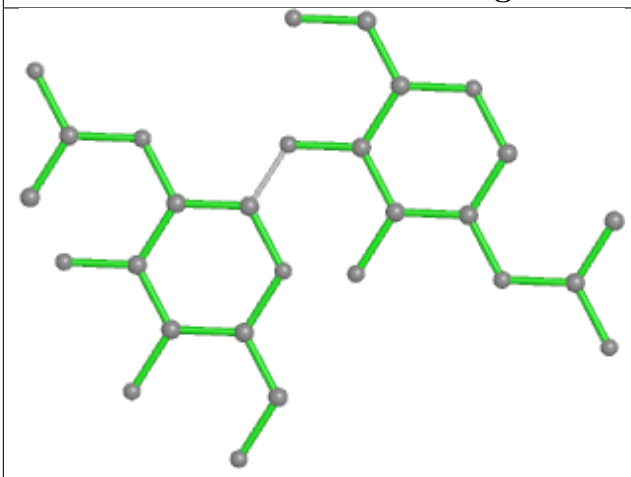


Torsions

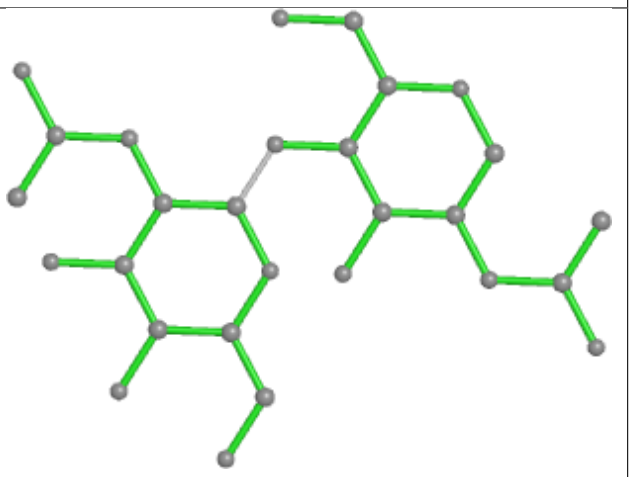


Rings

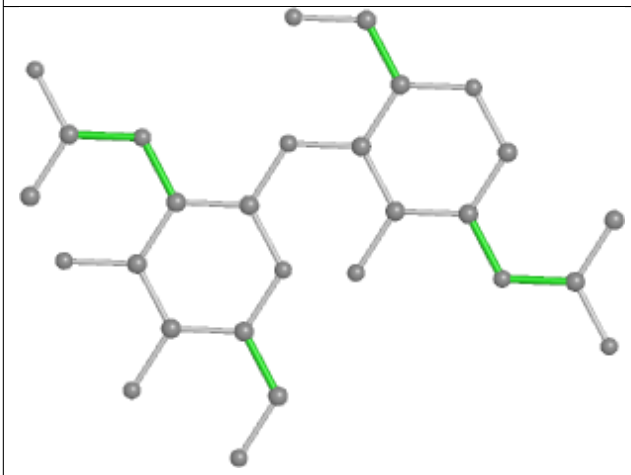
Oligosaccharide Chain R



Bond lengths



Bond angles



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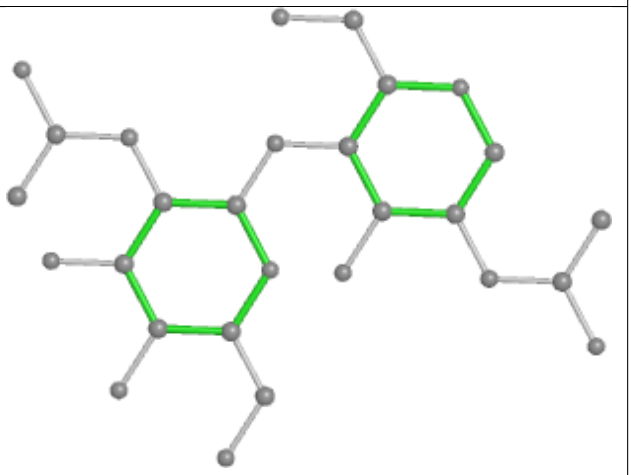
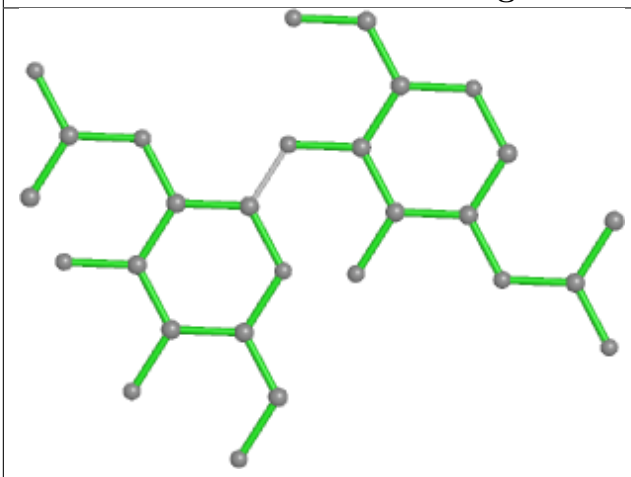
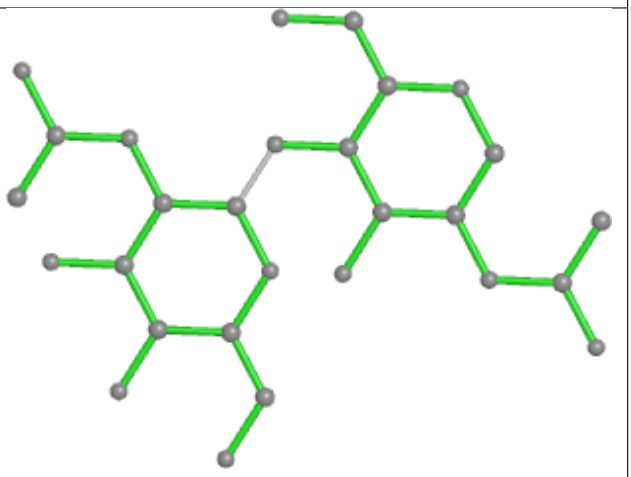


Rings

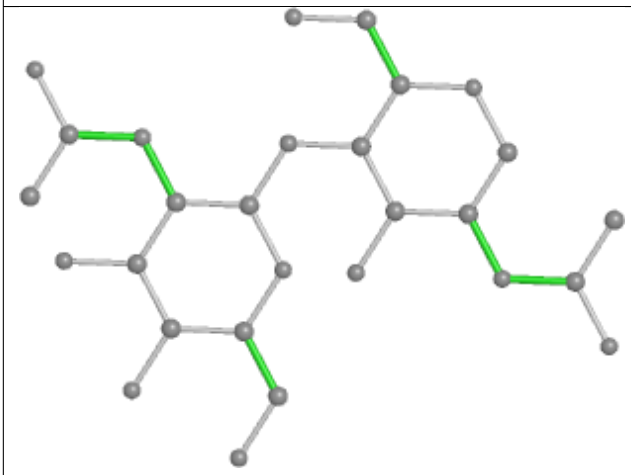
Oligosaccharide Chain S



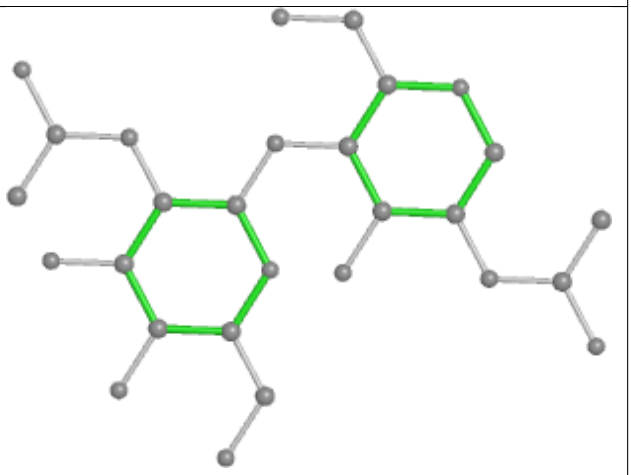
Bond lengths



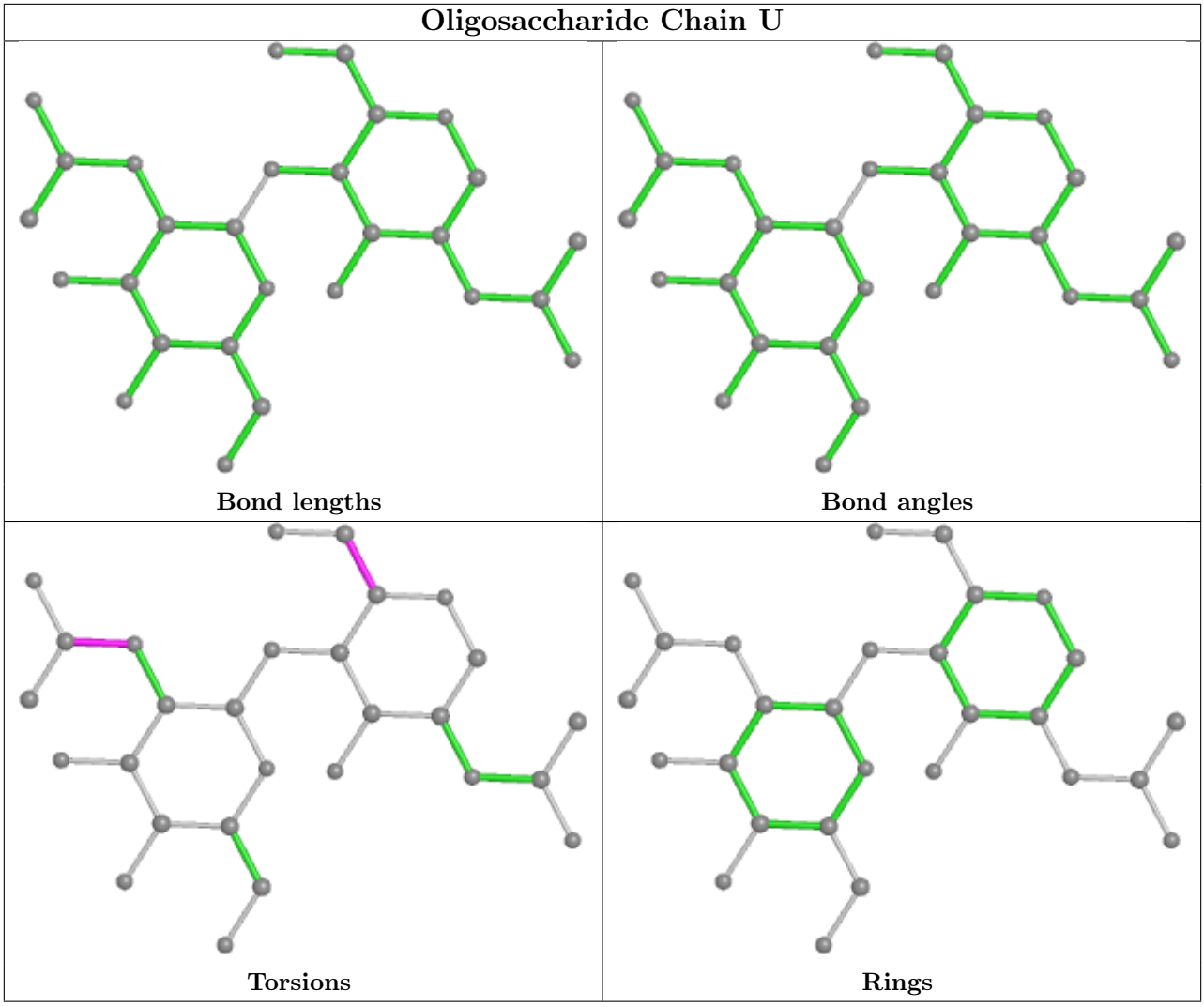
Bond angles



Torsions



Rings



5.6 Ligand geometry (i)

15 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	$\#\|Z\| > 2$
7	NAG	A	402	3	14,14,15	0.29	0	17,19,21	0.48	0
7	NAG	C	401	3	14,14,15	0.27	0	17,19,21	0.46	0
7	NAG	E	401	3	14,14,15	0.29	0	17,19,21	0.75	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
7	NAG	F	501	4	14,14,15	0.30	0	17,19,21	0.68	1 (5%)
7	NAG	C	402	3	14,14,15	0.28	0	17,19,21	0.50	0
7	NAG	A	404	3	14,14,15	0.31	0	17,19,21	0.56	0
7	NAG	C	403	3	14,14,15	0.29	0	17,19,21	0.46	0
7	NAG	E	404	3	14,14,15	0.30	0	17,19,21	0.71	0
7	NAG	A	401	3	14,14,15	0.27	0	17,19,21	0.51	0
7	NAG	D	501	4	14,14,15	0.25	0	17,19,21	0.46	0
7	NAG	B	501	4	14,14,15	0.25	0	17,19,21	0.45	0
7	NAG	E	402	3	14,14,15	0.28	0	17,19,21	0.47	0
7	NAG	A	403	3	14,14,15	0.25	0	17,19,21	0.45	0
7	NAG	C	404	3	14,14,15	0.27	0	17,19,21	0.47	0
7	NAG	E	403	3	14,14,15	0.67	0	17,19,21	1.97	2 (11%)

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
7	NAG	A	402	3	-	1/6/23/26	0/1/1/1
7	NAG	C	401	3	-	1/6/23/26	0/1/1/1
7	NAG	E	401	3	-	3/6/23/26	0/1/1/1
7	NAG	F	501	4	-	3/6/23/26	0/1/1/1
7	NAG	C	402	3	-	2/6/23/26	0/1/1/1
7	NAG	A	404	3	-	1/6/23/26	0/1/1/1
7	NAG	C	403	3	-	1/6/23/26	0/1/1/1
7	NAG	E	404	3	-	2/6/23/26	0/1/1/1
7	NAG	A	401	3	-	0/6/23/26	0/1/1/1
7	NAG	D	501	4	-	2/6/23/26	0/1/1/1
7	NAG	B	501	4	-	2/6/23/26	0/1/1/1
7	NAG	E	402	3	-	0/6/23/26	0/1/1/1
7	NAG	A	403	3	-	0/6/23/26	0/1/1/1
7	NAG	C	404	3	-	0/6/23/26	0/1/1/1
7	NAG	E	403	3	-	3/6/23/26	0/1/1/1

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	E	403	NAG	C2-N2-C7	6.87	132.69	122.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	E	403	NAG	C1-C2-N2	3.25	116.04	110.49
7	F	501	NAG	C1-O5-C5	2.01	114.92	112.19

There are no chirality outliers.

All (21) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	E	401	NAG	O7-C7-N2-C2
7	E	401	NAG	C8-C7-N2-C2
7	C	402	NAG	O5-C5-C6-O6
7	E	404	NAG	C8-C7-N2-C2
7	C	402	NAG	C4-C5-C6-O6
7	E	404	NAG	O7-C7-N2-C2
7	E	403	NAG	C8-C7-N2-C2
7	E	403	NAG	O7-C7-N2-C2
7	F	501	NAG	C8-C7-N2-C2
7	E	401	NAG	C1-C2-N2-C7
7	B	501	NAG	O5-C5-C6-O6
7	B	501	NAG	C4-C5-C6-O6
7	F	501	NAG	O7-C7-N2-C2
7	A	404	NAG	O5-C5-C6-O6
7	D	501	NAG	C4-C5-C6-O6
7	D	501	NAG	O5-C5-C6-O6
7	A	402	NAG	O5-C5-C6-O6
7	F	501	NAG	O5-C5-C6-O6
7	C	401	NAG	C4-C5-C6-O6
7	C	403	NAG	C4-C5-C6-O6
7	E	403	NAG	C3-C2-N2-C7

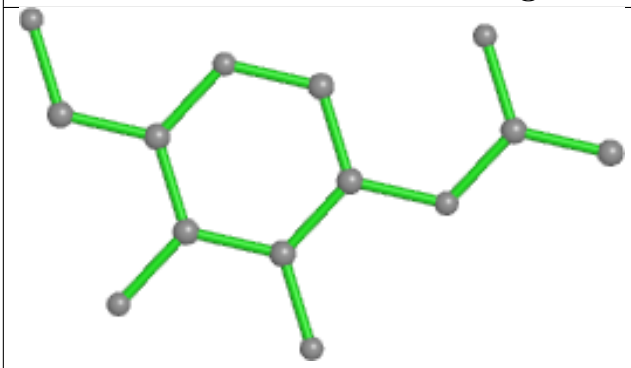
There are no ring outliers.

No monomer is involved in short contacts.

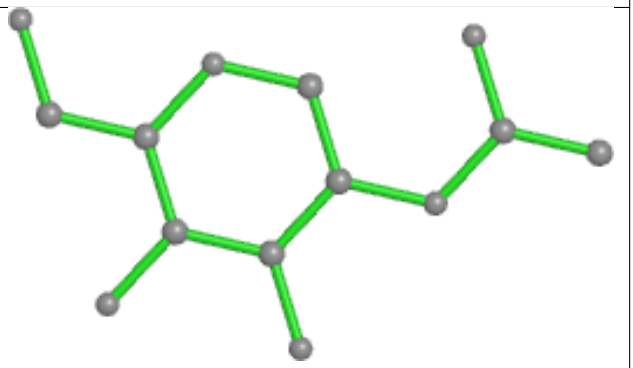
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier.

The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

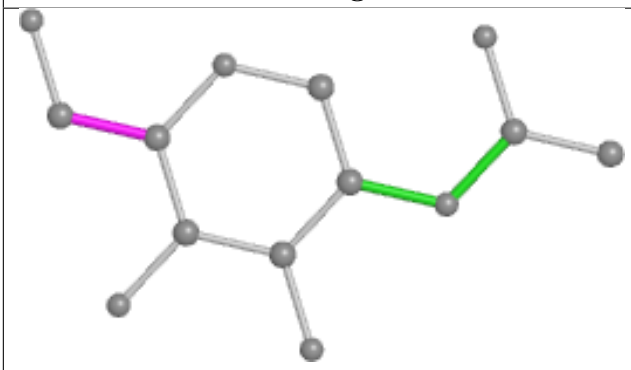
Ligand NAG A 402



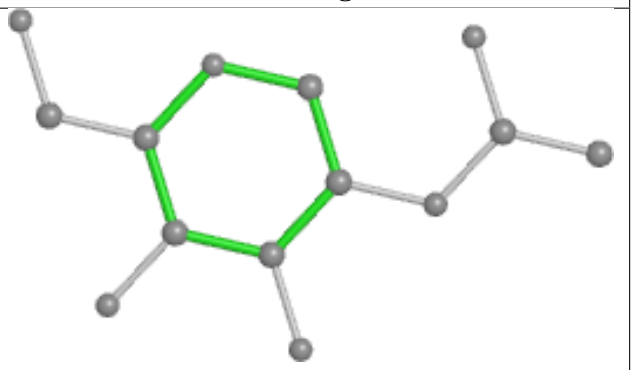
Bond lengths



Bond angles

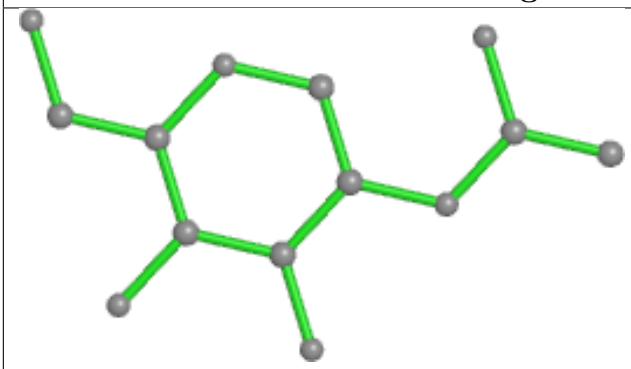


Torsions



Rings

Ligand NAG C 401



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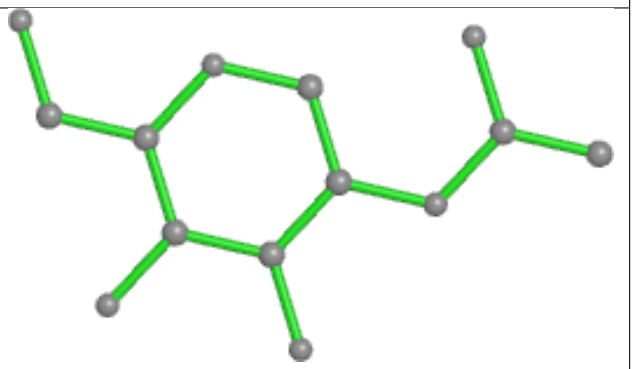

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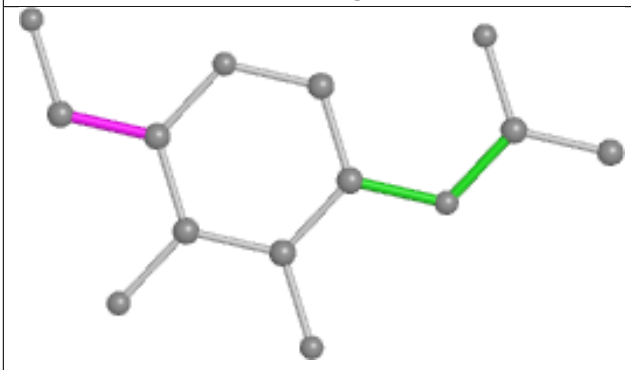

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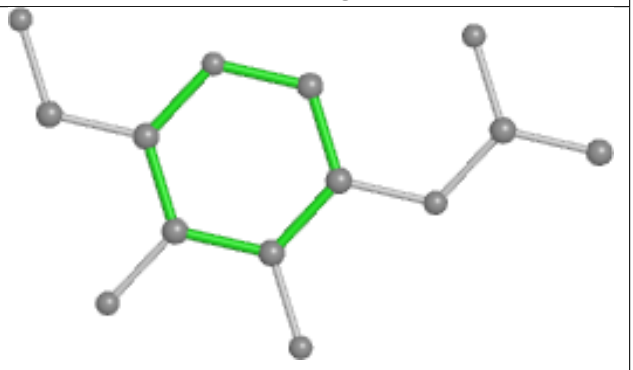
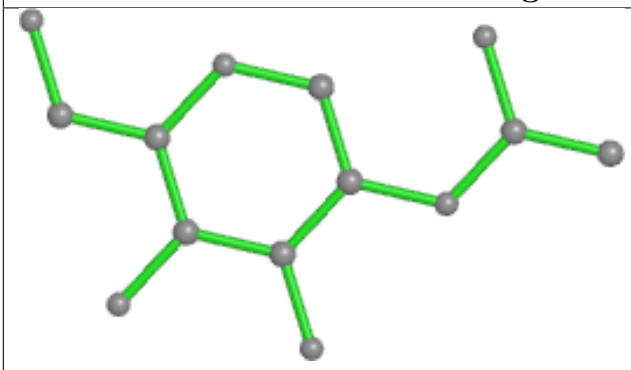


Rings

Ligand NAG E 401



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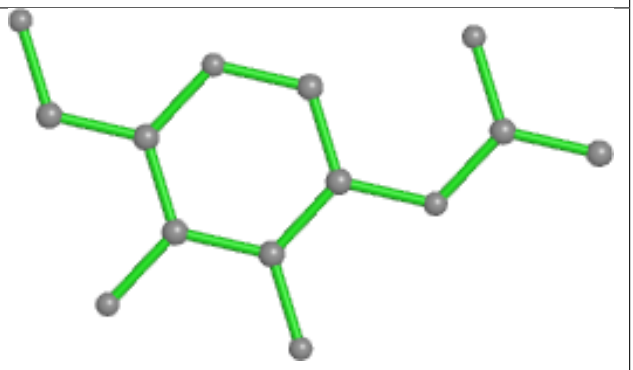

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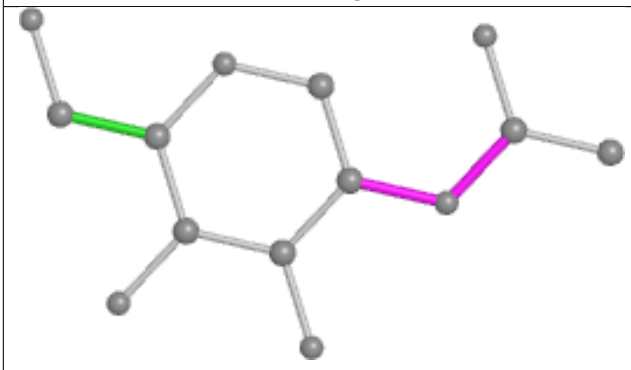

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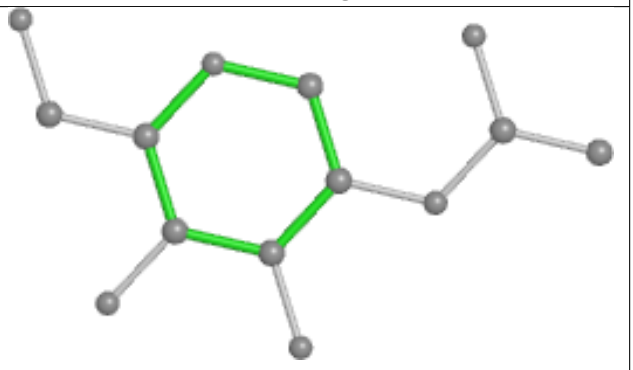
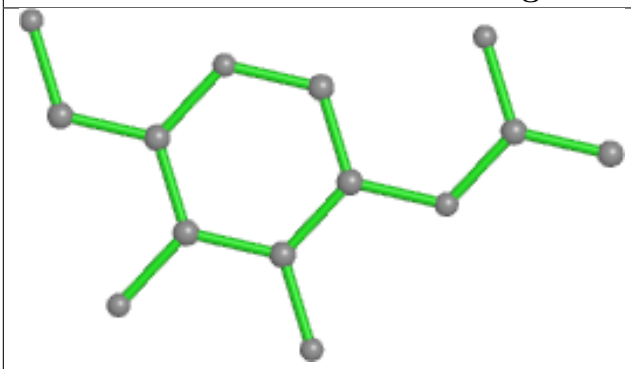


Rings

Ligand NAG F 501



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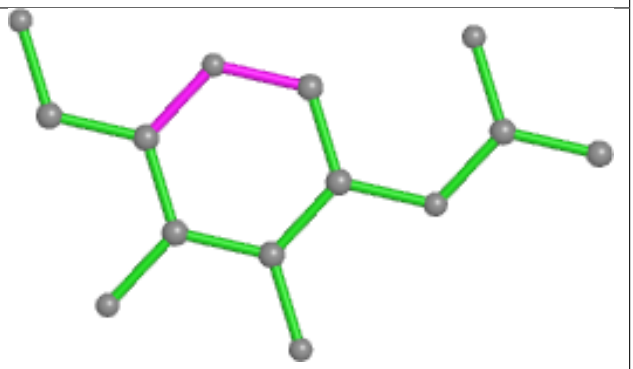
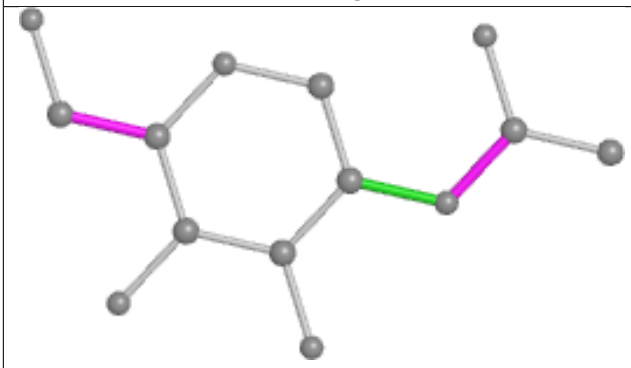


Bond angles



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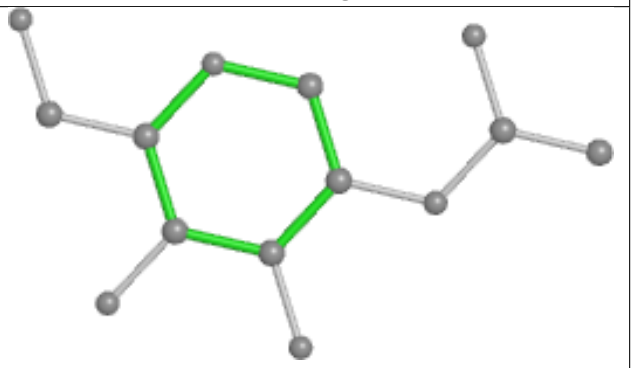
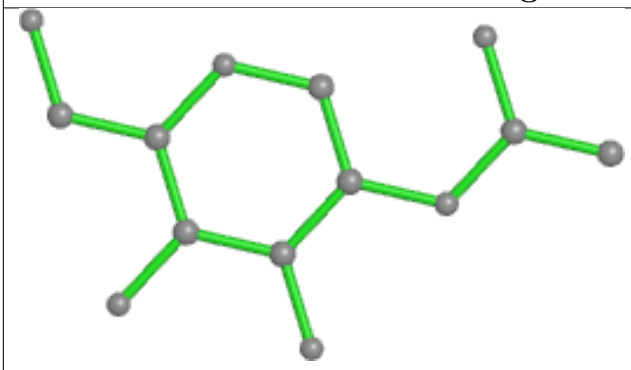
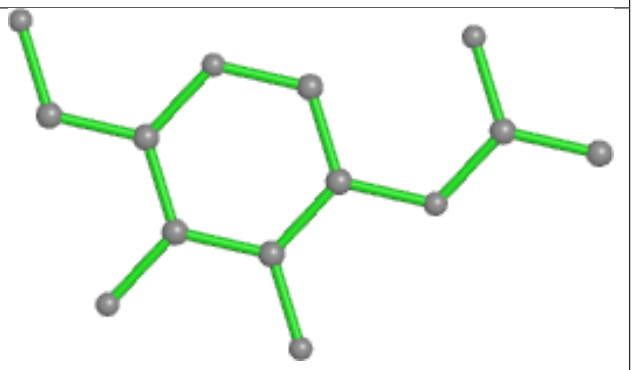


Rings

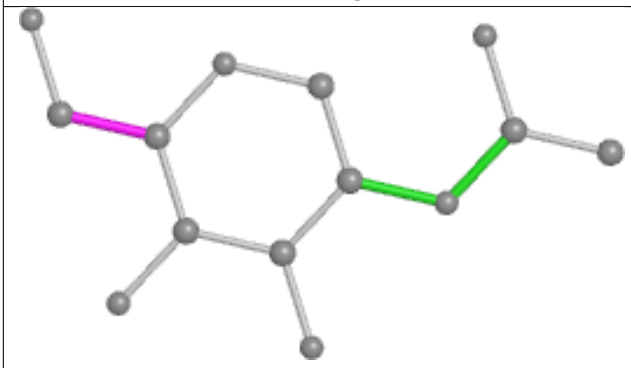
Ligand NAG C 402



Bond lengths



Bond angles



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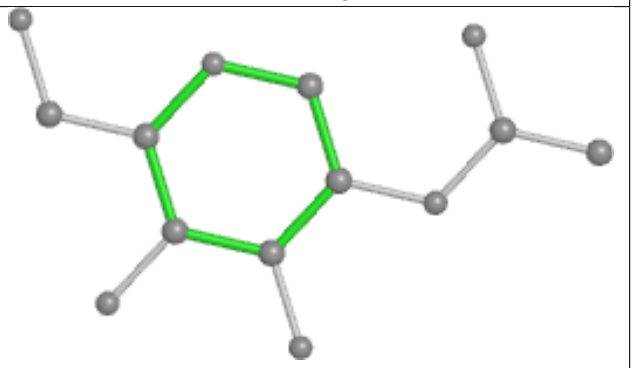
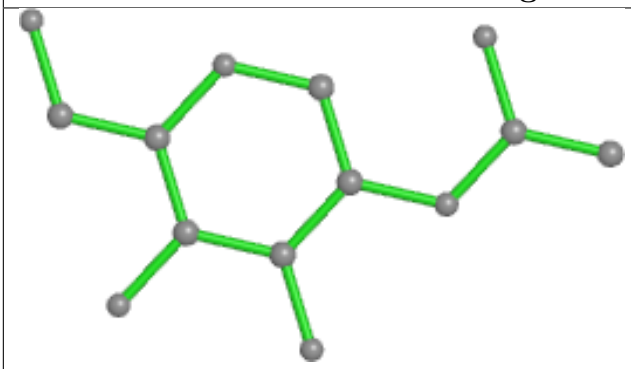
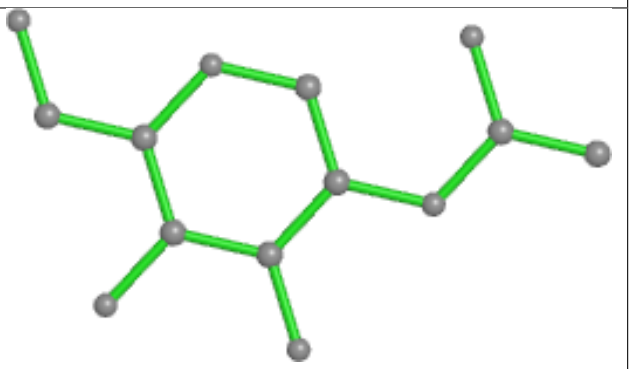
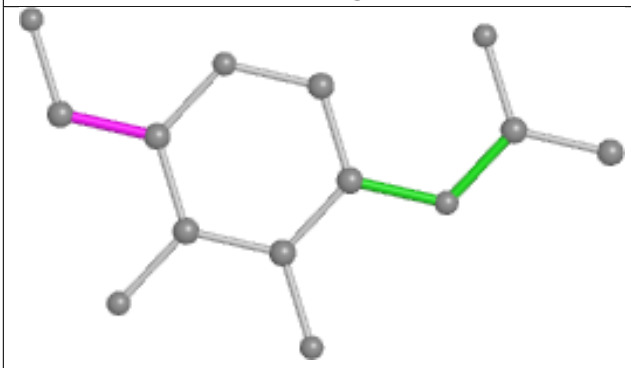
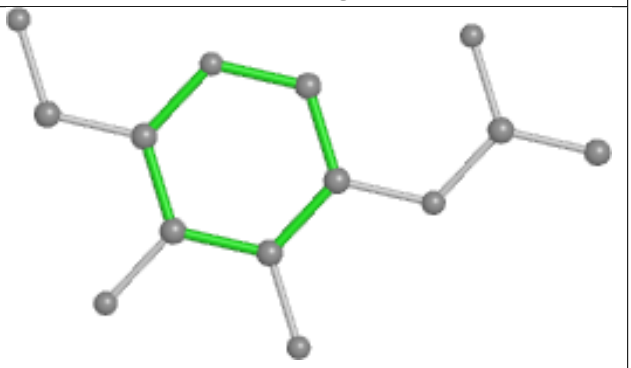


Rings

Ligand NAG A 404	
 Bond lengths	 Bond angles
 Torsions	 Rings

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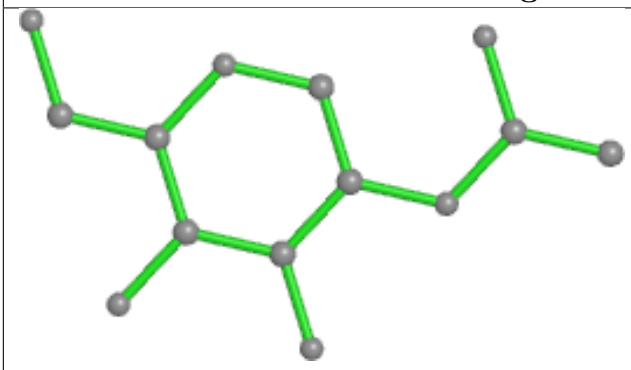
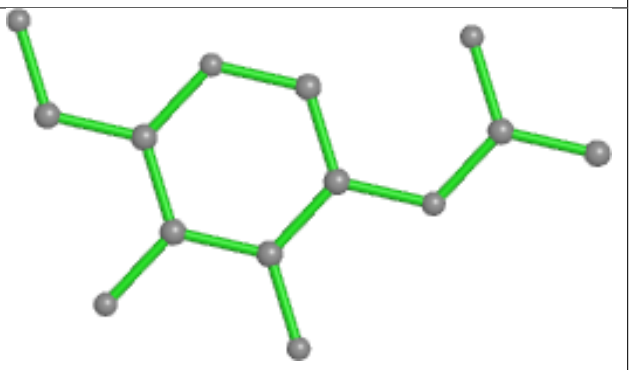
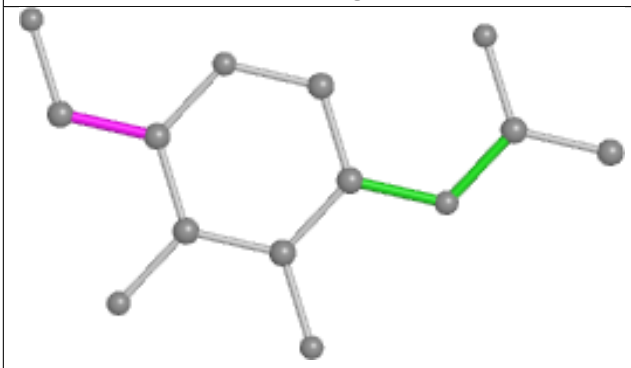
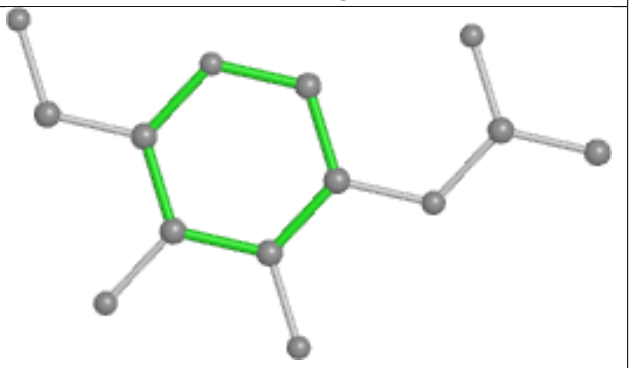
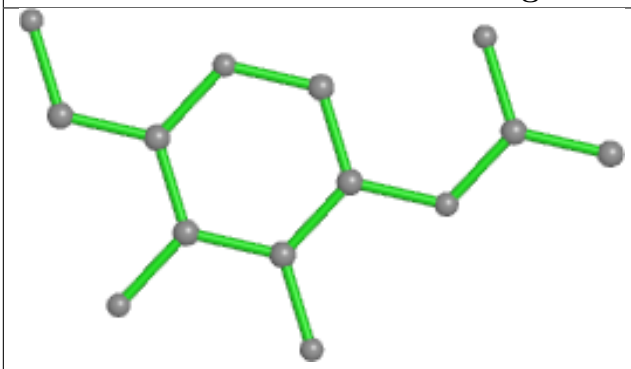
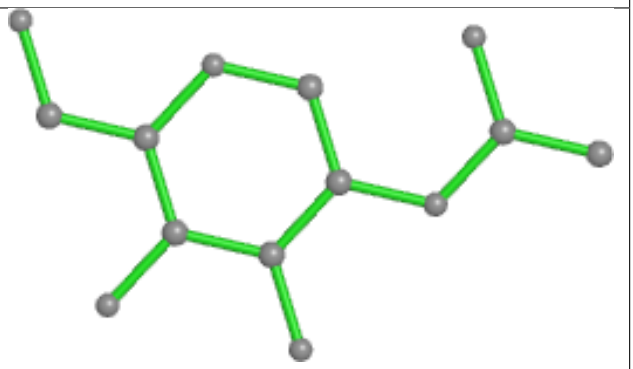
 Bond lengths	 Bond angles
 Torsions	 Rings

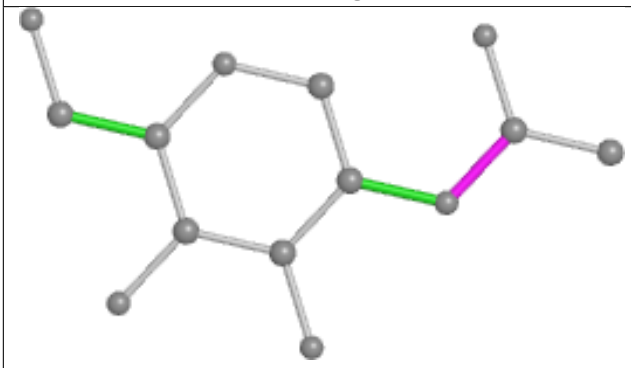
Ligand NAG E 404



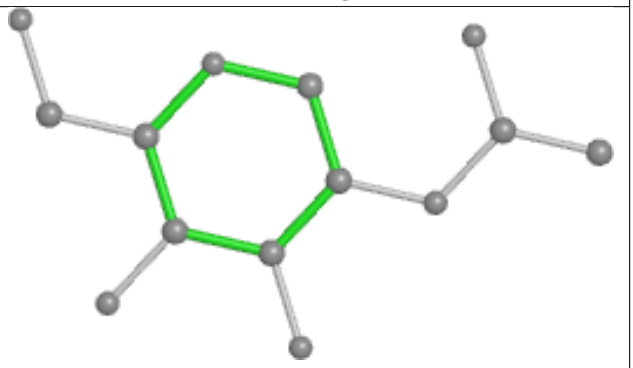
Bond lengths



Bond angles

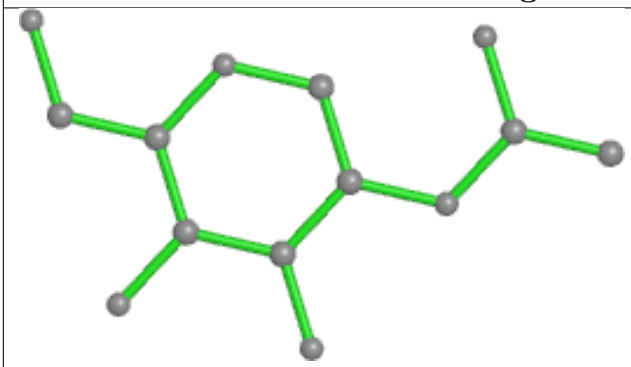


Torsions

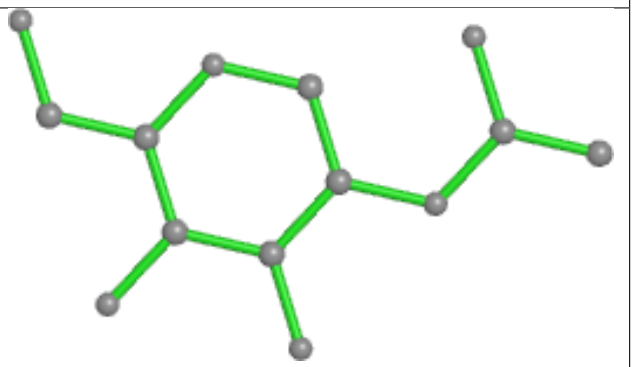


Rings

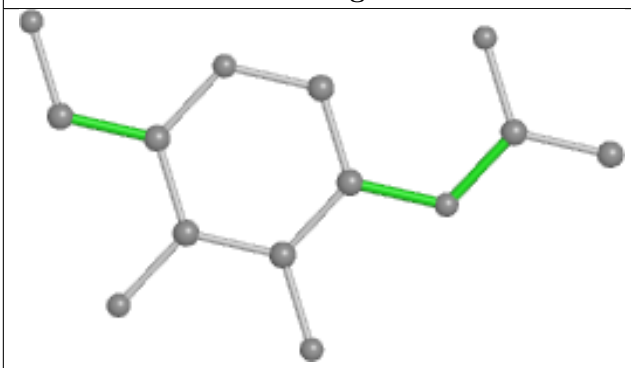
Ligand NAG A 401



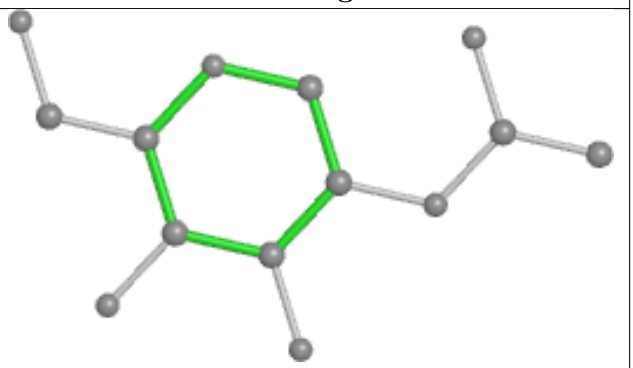
Bond lengths



Bond angles

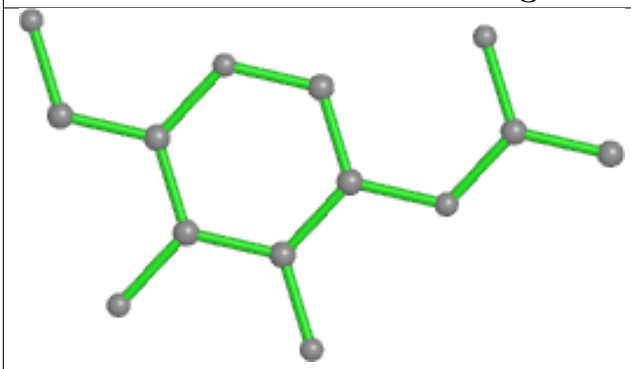


Torsions

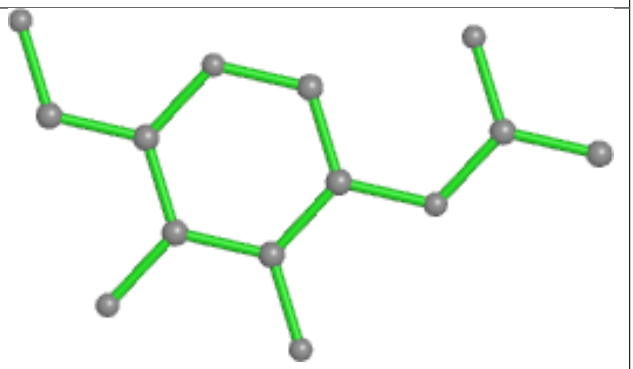


Rings

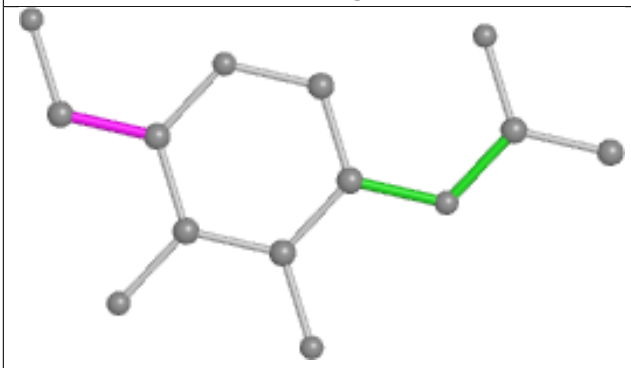
Ligand NAG D 501



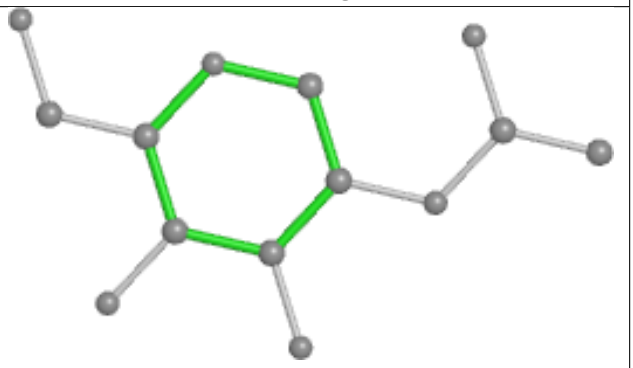
Bond lengths



Bond angles

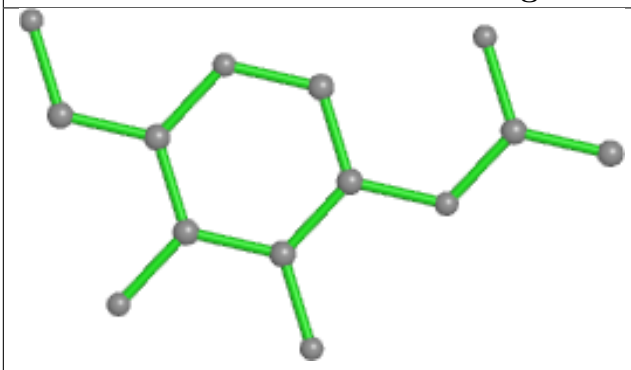


Torsions

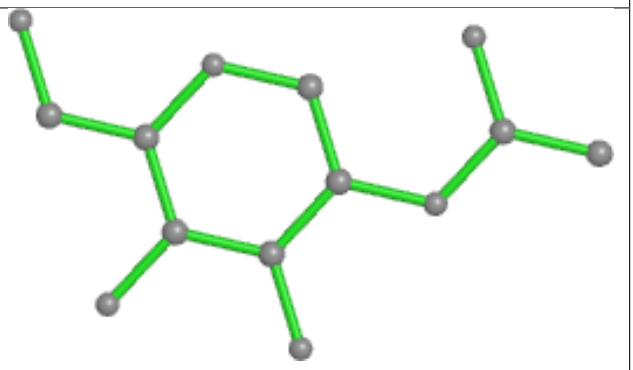


Rings

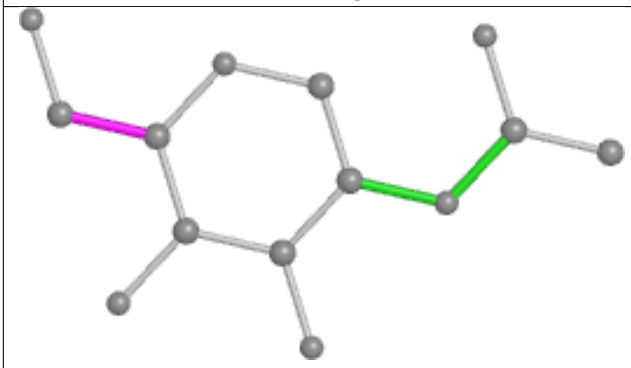
Ligand NAG B 501



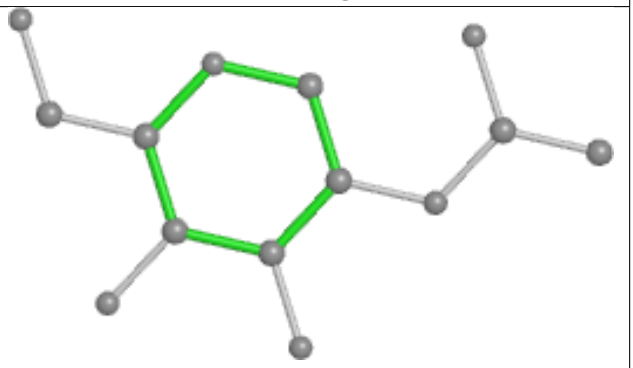
Bond lengths



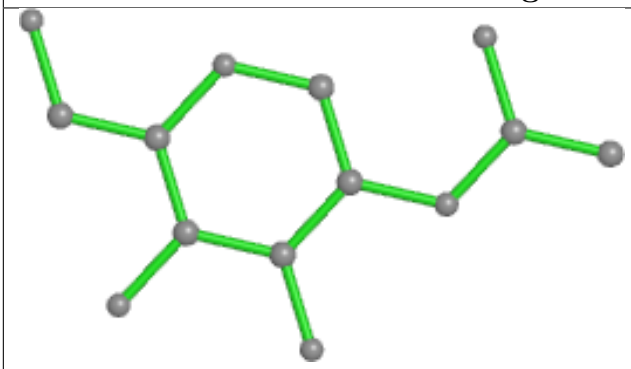
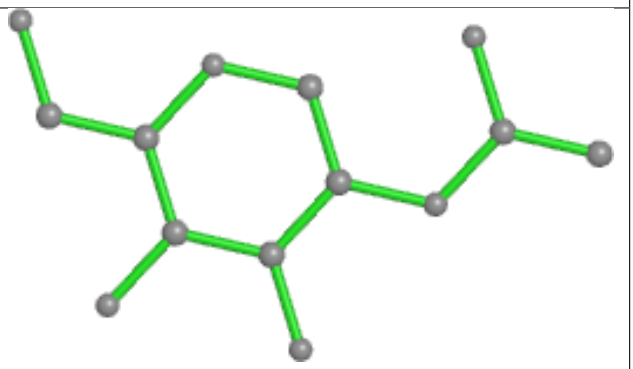
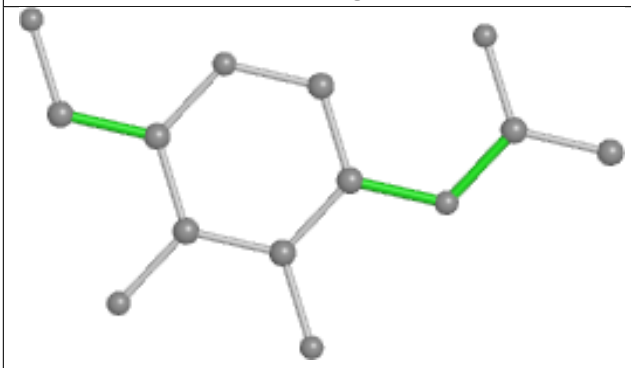
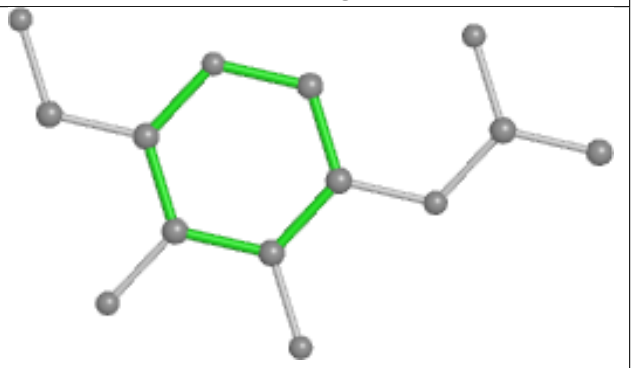
Bond angles

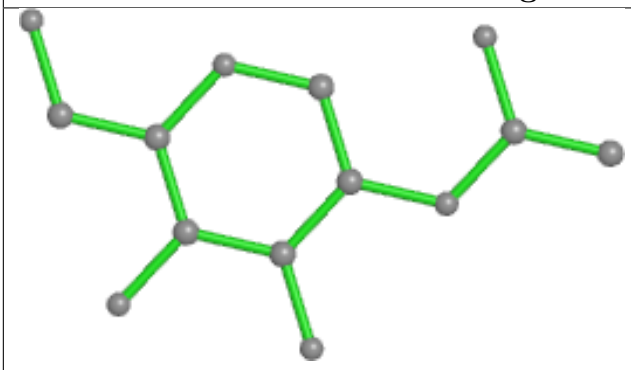
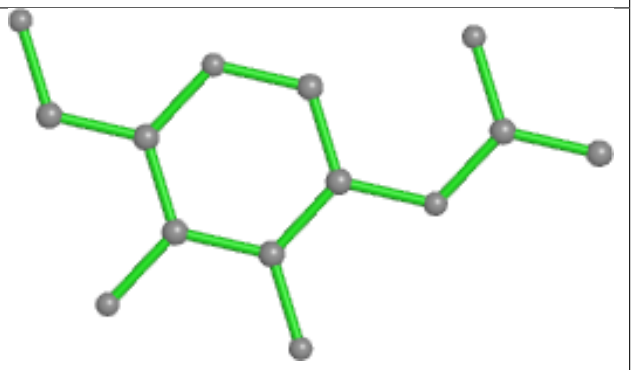
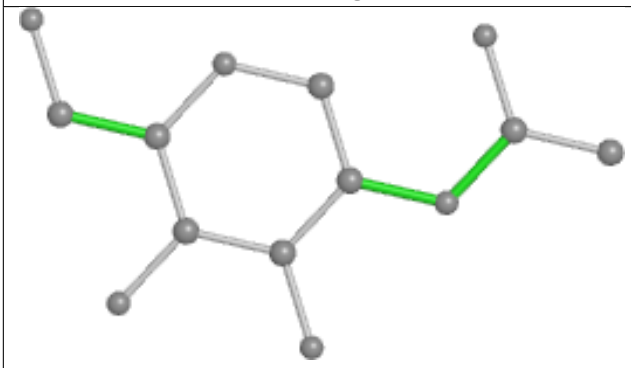
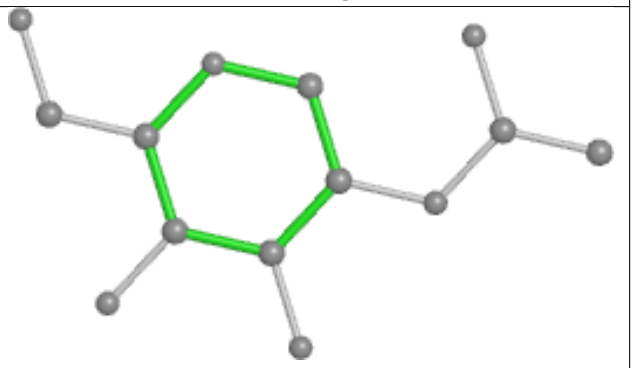


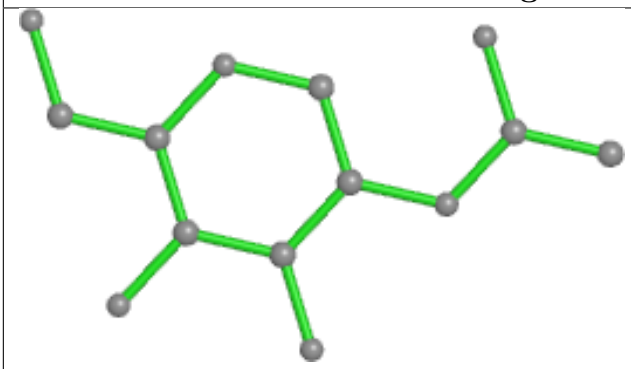
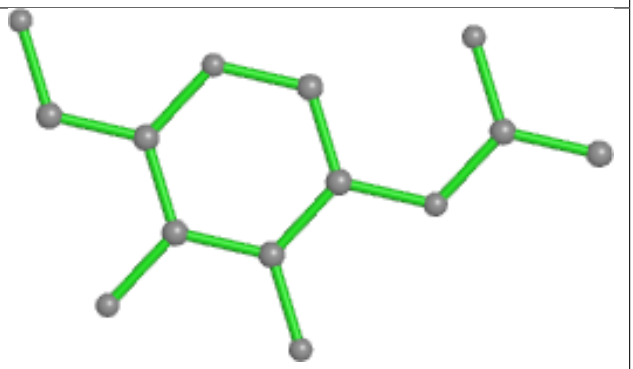
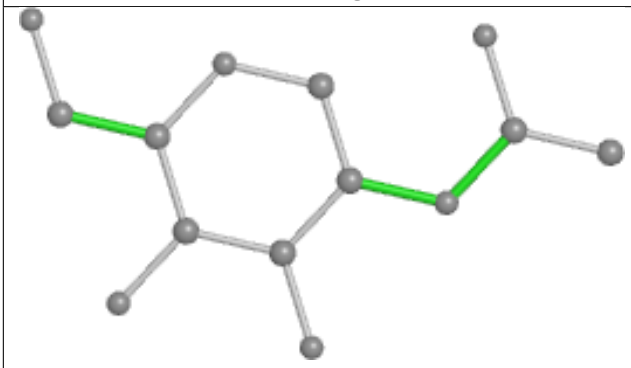
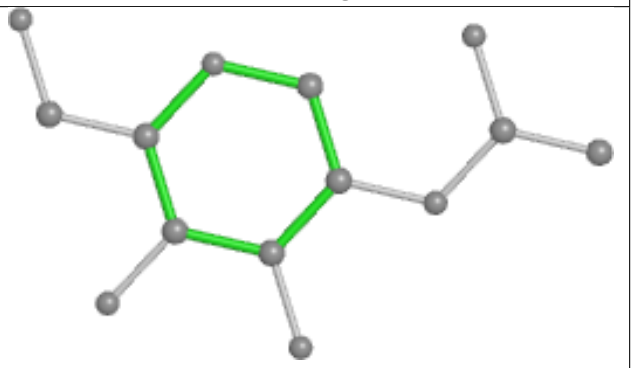
Torsions

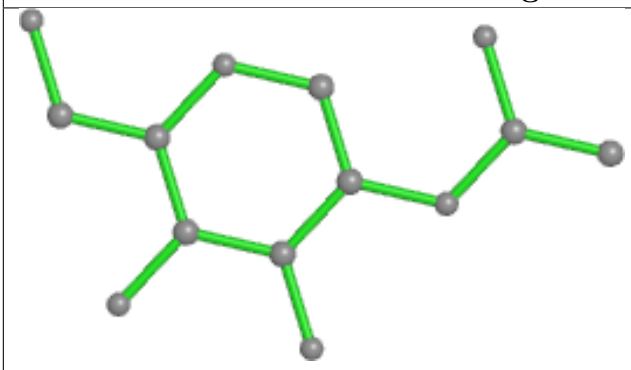
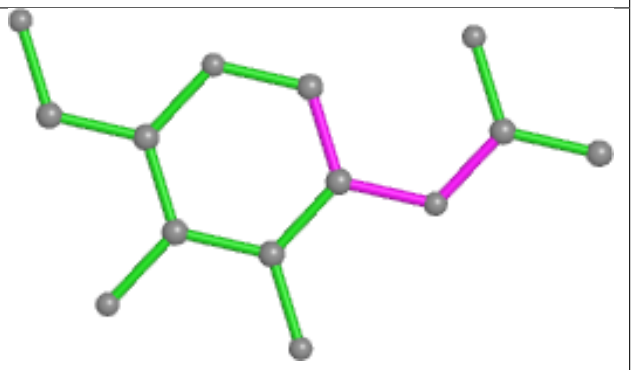
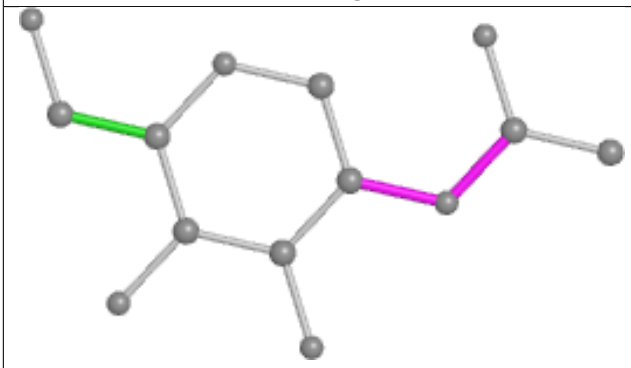
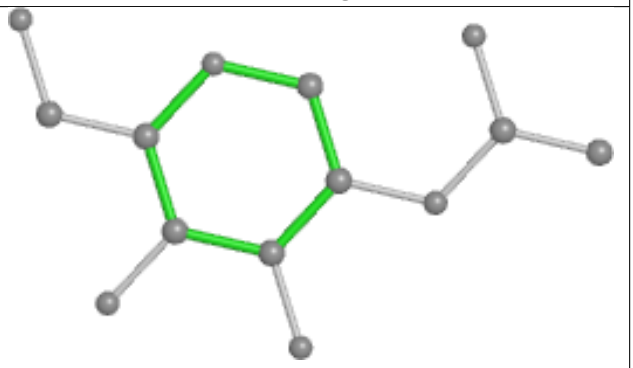


Rings

Ligand NAG E 402	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG A 403	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG C 404	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG E 403	
 Bond lengths	 Bond angles
 Torsions	 Rings

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.

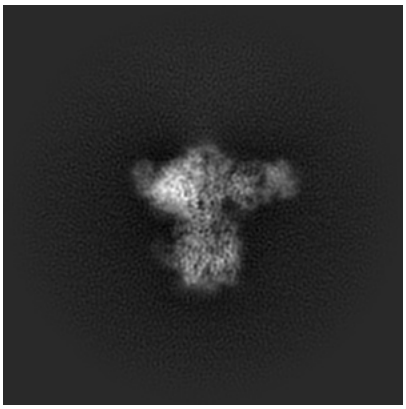
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-22302. These allow visual inspection of the internal detail of the map and identification of artifacts.

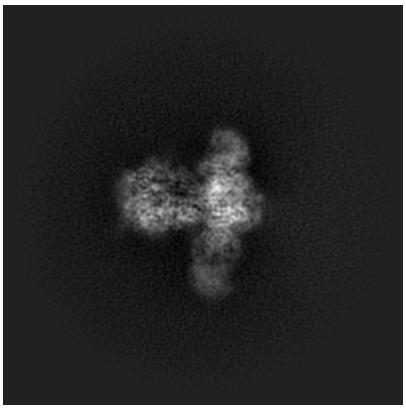
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

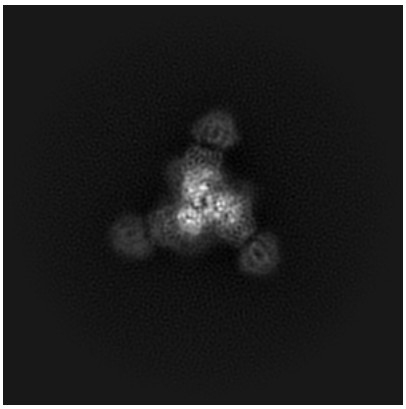
6.1.1 Primary map



X

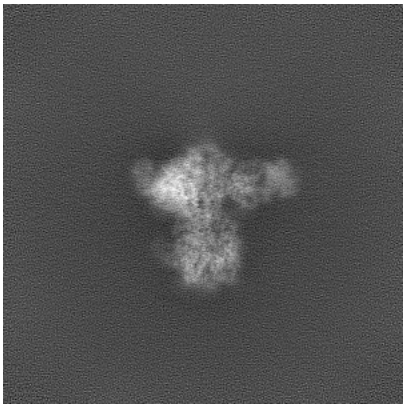


Y

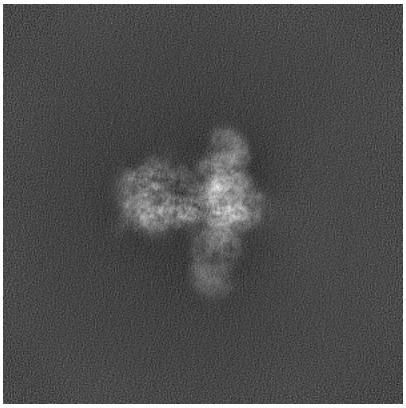


Z

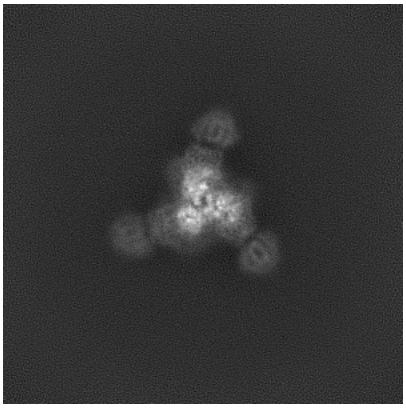
6.1.2 Raw map



X



Y

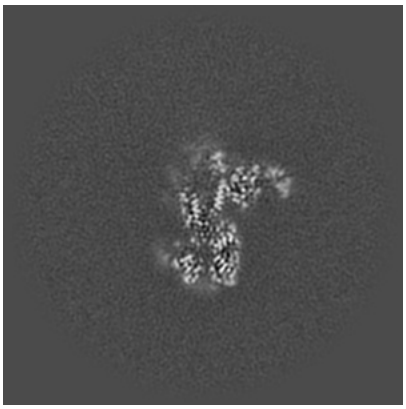


Z

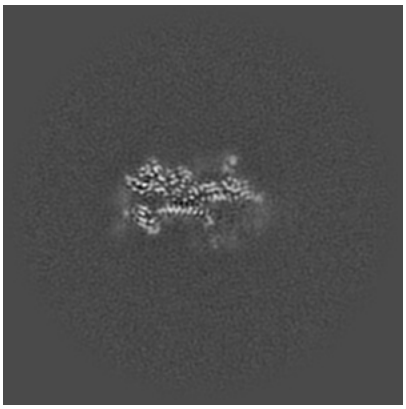
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

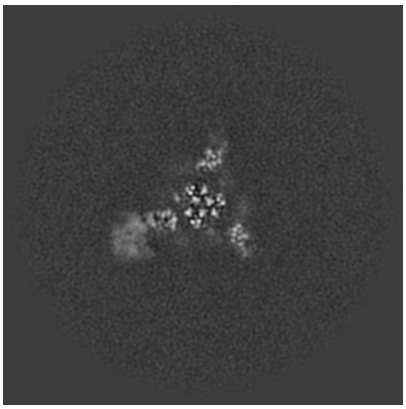
6.2.1 Primary map



X Index: 180

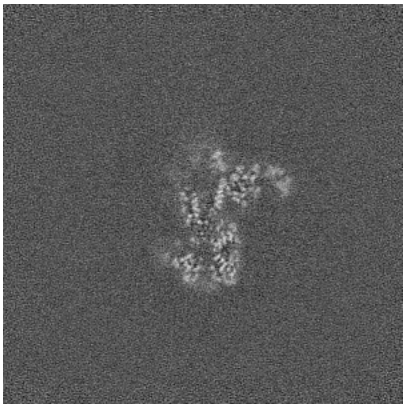


Y Index: 180

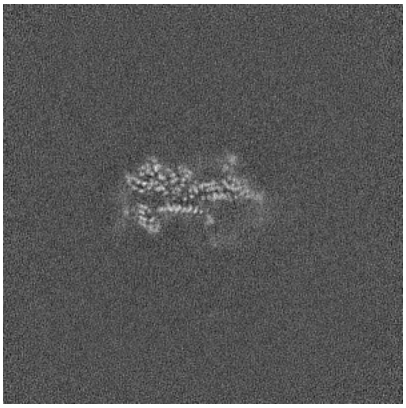


Z Index: 180

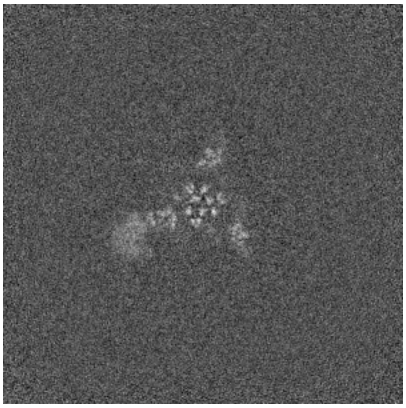
6.2.2 Raw map



X Index: 180



Y Index: 180



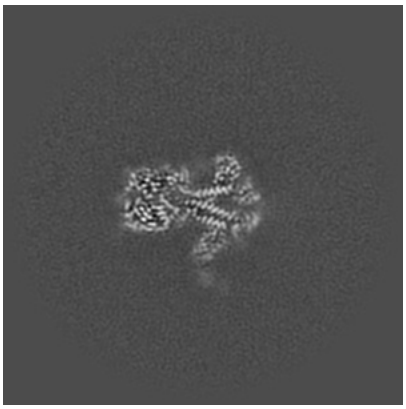
Z Index: 180

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

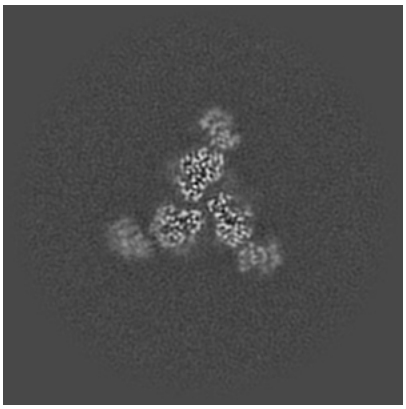
6.3 Largest variance slices (i)

6.3.1 Primary map

X Index: 175

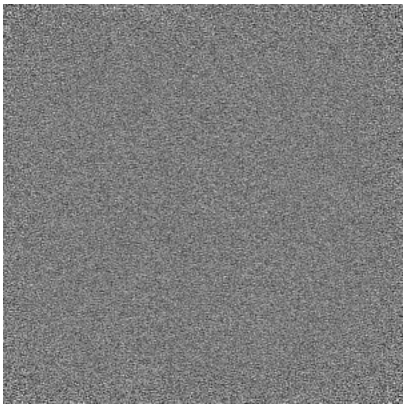


Y Index: 171

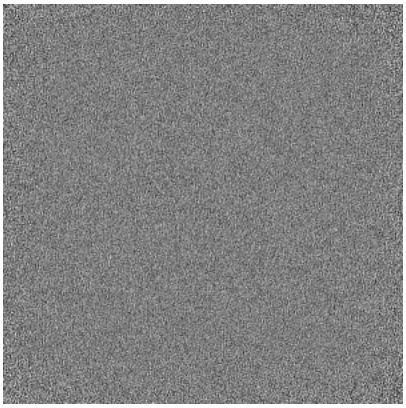


Z Index: 193

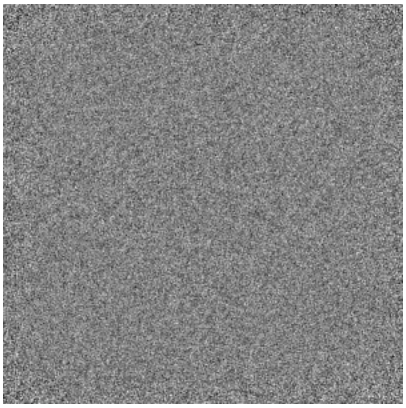
6.3.2 Raw map



X Index: 0



Y Index: 0



Z Index: 359

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.18. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 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.

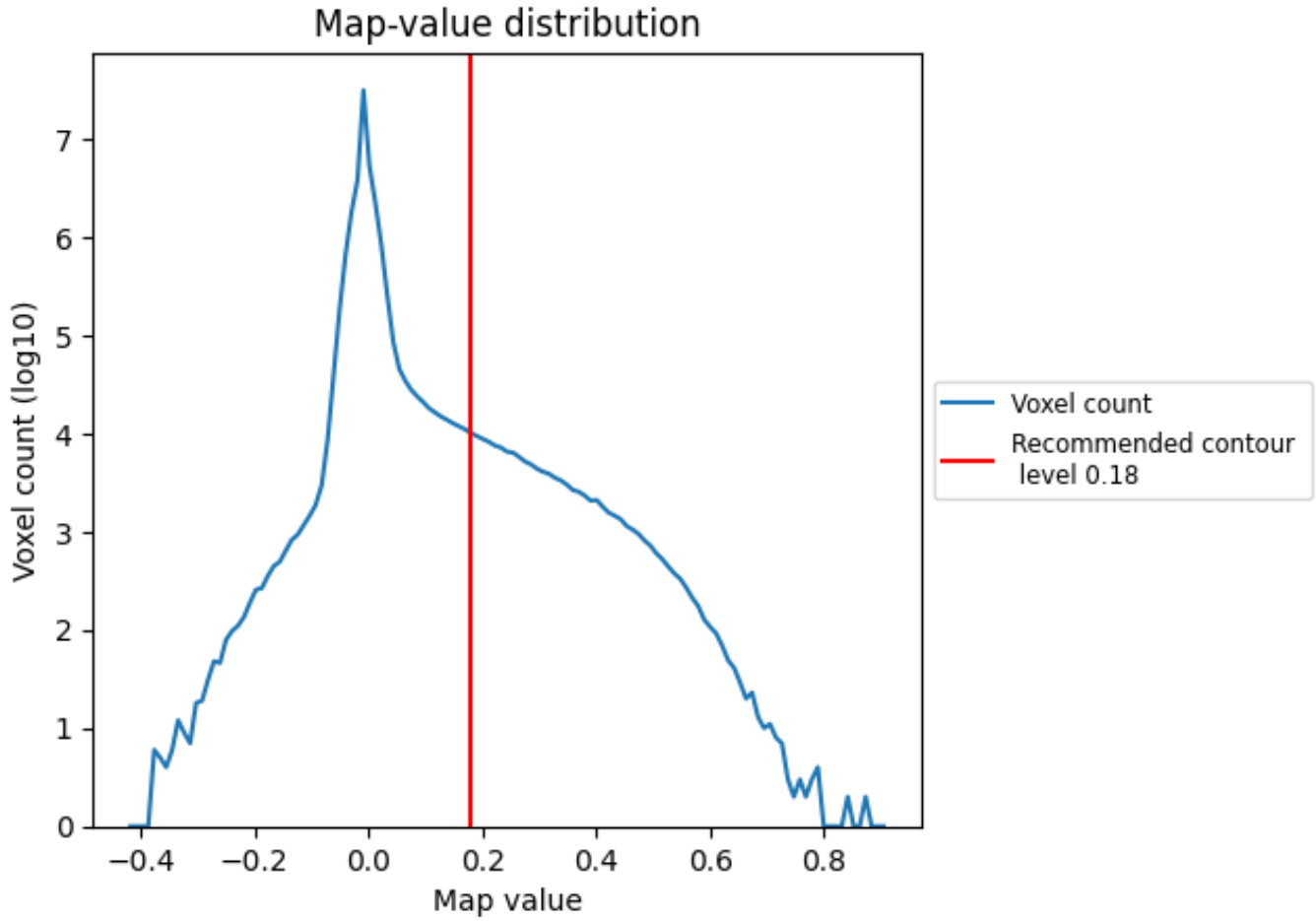
6.5 Mask visualisation (i)

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

7 Map analysis

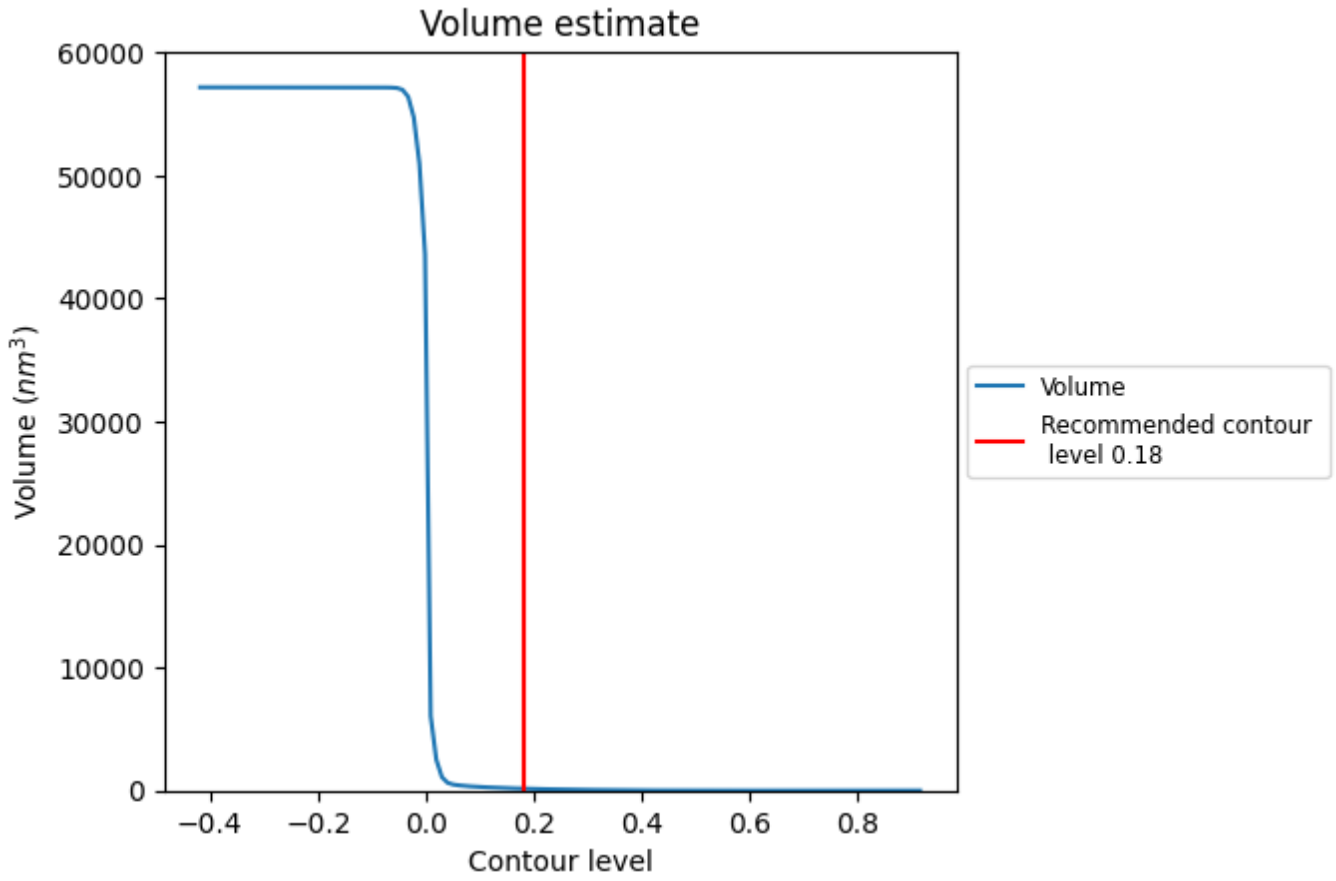
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

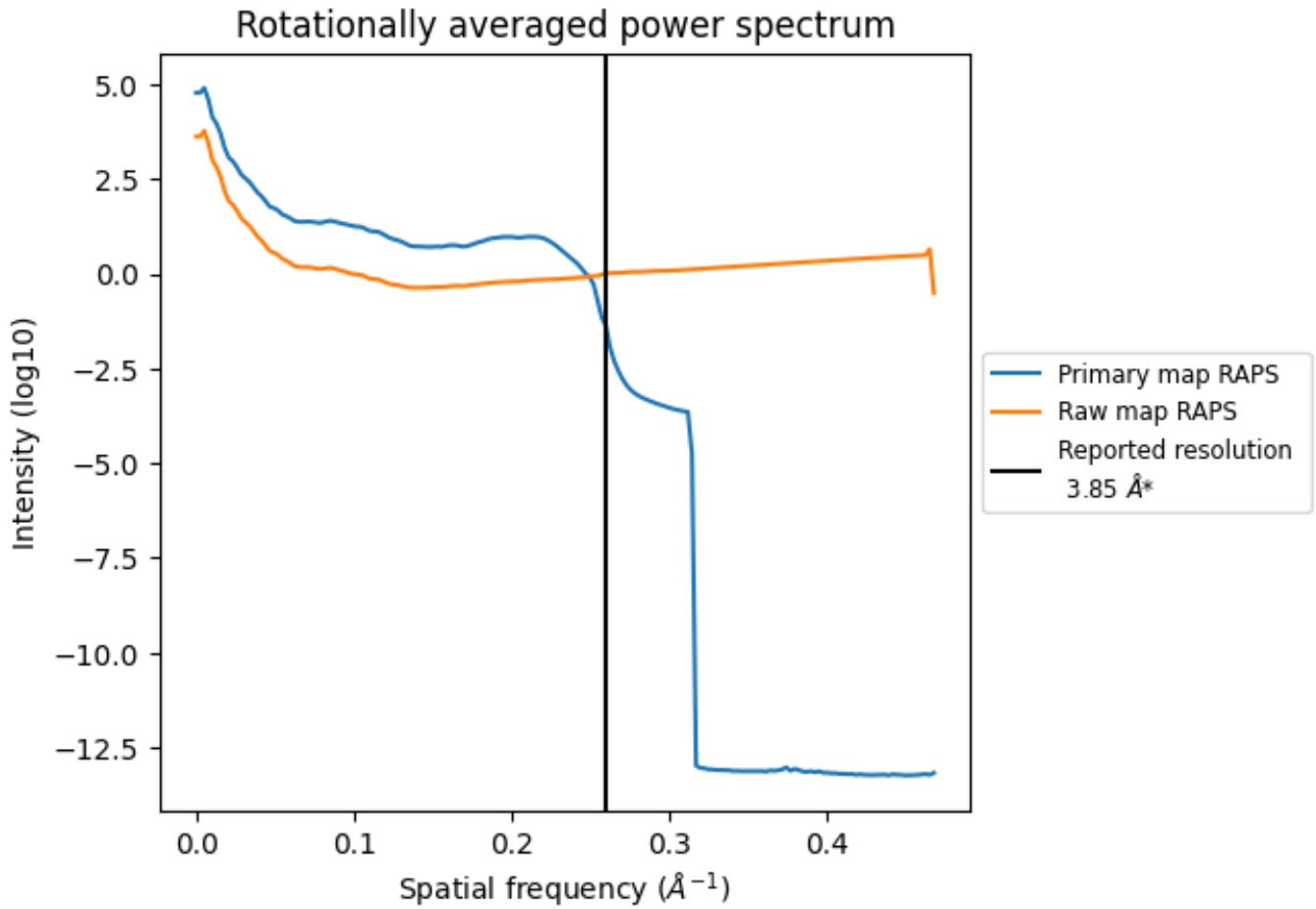
7.2 Volume estimate



The volume at the recommended contour level is 157 nm^3; this corresponds to an approximate mass of 142 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)

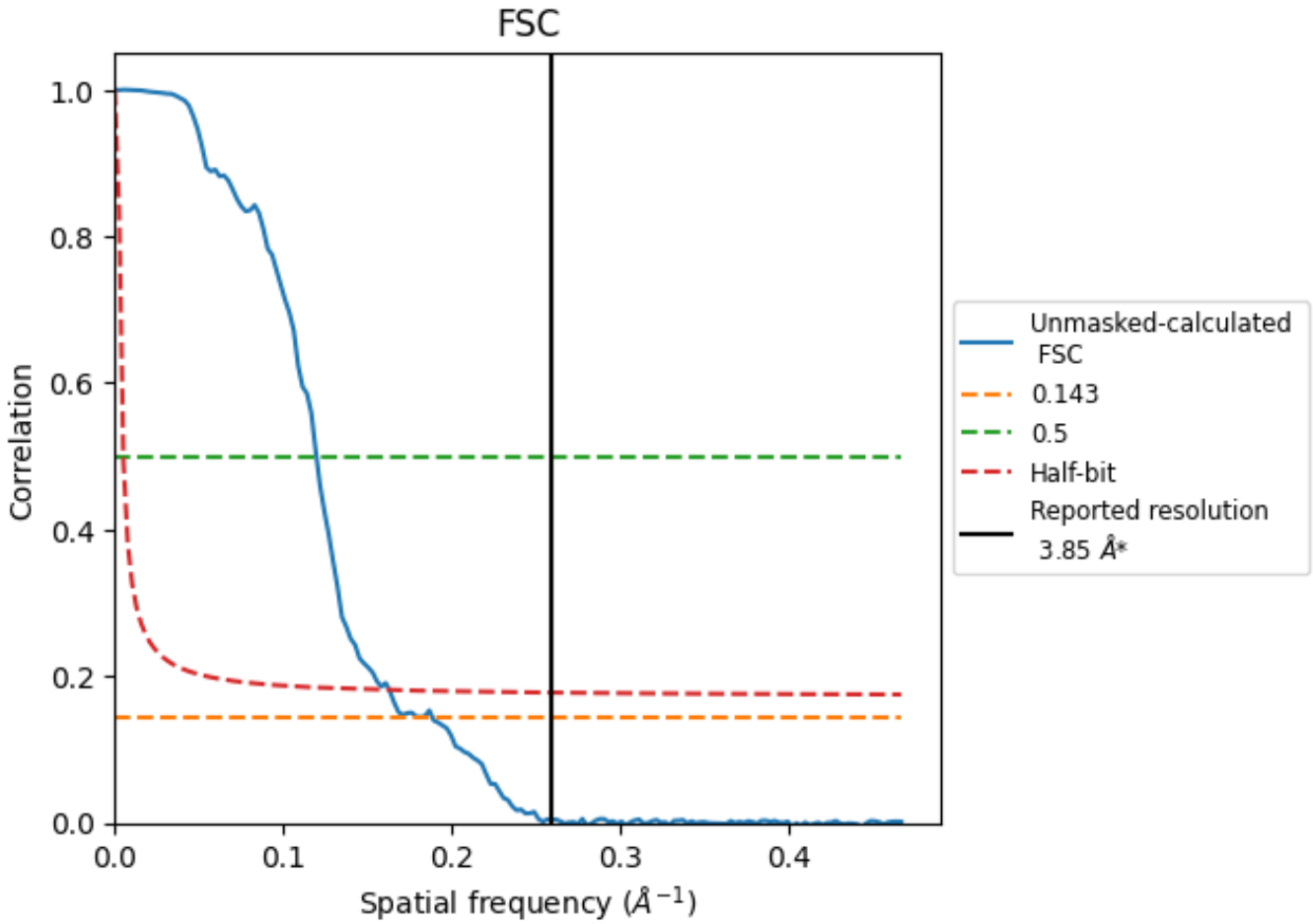


*Reported resolution corresponds to spatial frequency of 0.260 $Å^{-1}$

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 0.260 Å^{-1}

8.2 Resolution estimates (i)

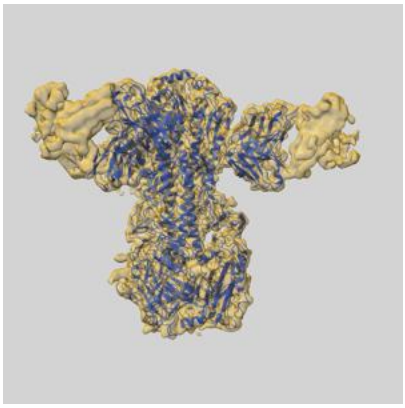
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.85	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	5.30	8.35	6.13

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 5.30 differs from the reported value 3.85 by more than 10 %

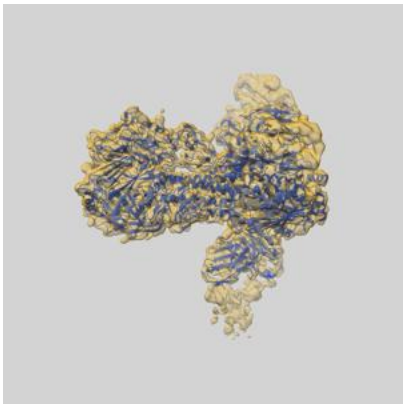
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-22302 and PDB model 6XSK. Per-residue inclusion information can be found in section 3 on page 11.

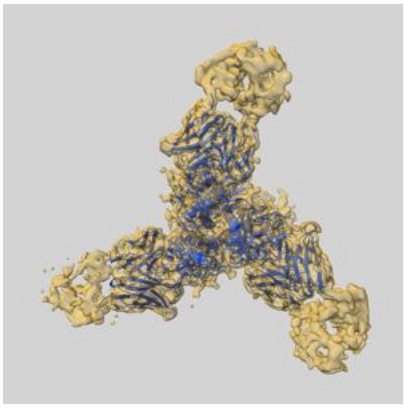
9.1 Map-model overlay



X



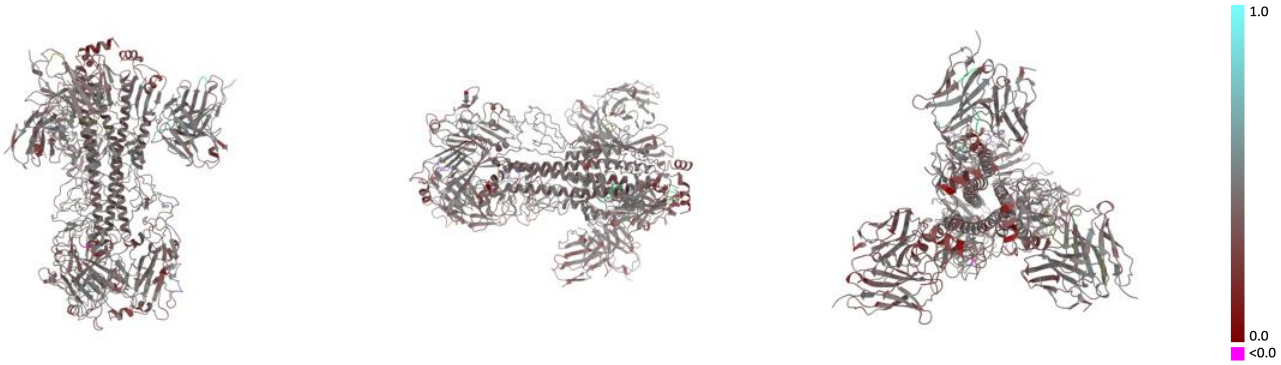
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.18 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.

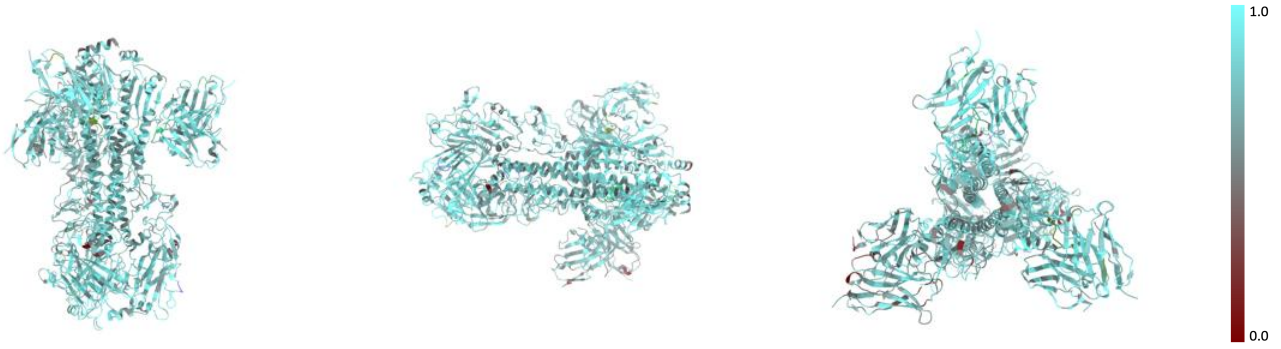
9.2 Q-score mapped to coordinate model (i)



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.

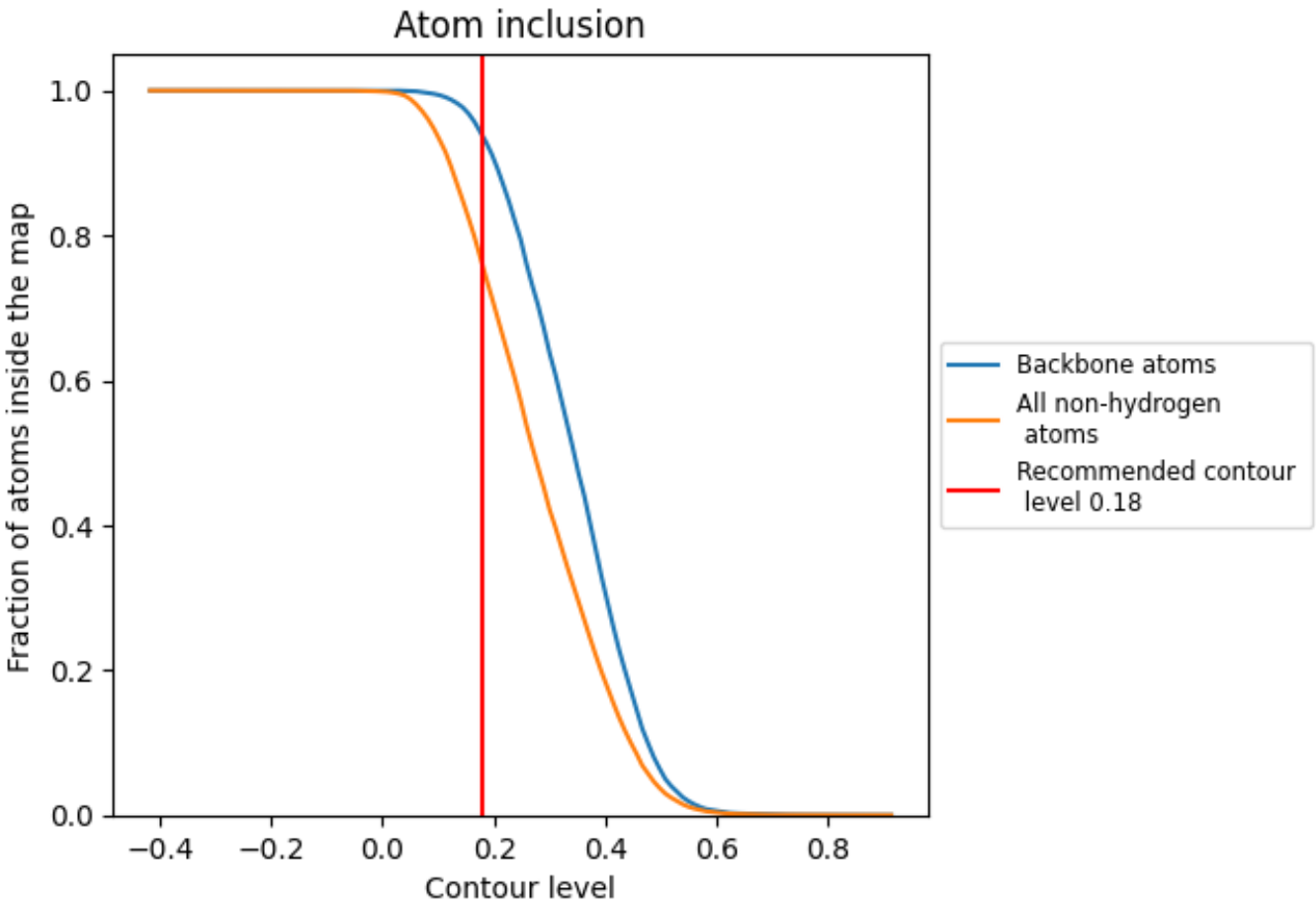
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.18).

9.4 Atom inclusion (i)



At the recommended contour level, 94% of all backbone atoms, 76% 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 (0.18) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7580	0.4060
A	0.7743	0.4100
B	0.7674	0.3960
C	0.7794	0.4150
D	0.7556	0.3940
E	0.7735	0.4140
F	0.7267	0.3750
G	0.7745	0.4300
H	0.6887	0.3810
I	0.7943	0.4270
J	0.7705	0.4120
K	0.8045	0.4350
L	0.6974	0.3770
M	0.5641	0.3950
N	0.3571	0.3620
O	0.3929	0.3340
P	0.3214	0.3360
Q	0.6667	0.3910
R	0.3214	0.3610
S	0.3214	0.4330
T	0.5897	0.3840
U	0.4286	0.3700