Full wwPDB X-ray Structure Validation Report ⓘ

Oct 14, 2023 – 01:50 PM EDT

PDB ID	:	7JPD
Title	:	Crystal structure of the trimeric full length mature hemagglutinin from influenza A virus A/Fort Monmouth/1/1947
Authors	:	Seattle Structural Genomics Center for Infectious Disease (SSGCID)
Deposited on	:	2020-08-07
Resolution	:	2.95 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ 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:

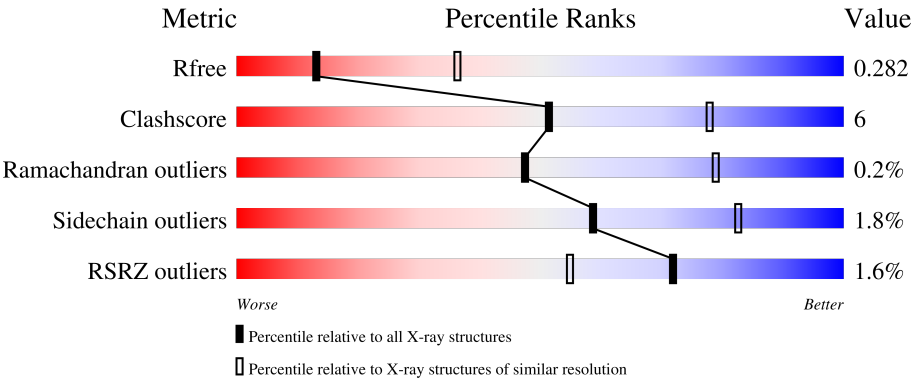
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.95 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3104 (3.00-2.92)
Clashscore	141614	3462 (3.00-2.92)
Ramachandran outliers	138981	3340 (3.00-2.92)
Sidechain outliers	138945	3343 (3.00-2.92)
RSRZ outliers	127900	2986 (3.00-2.92)

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

Mol	Chain	Length	Quality of chain
1	A	329	86% 12%
1	B	329	84% 14%
1	C	329	84% 14%
1	D	329	84% 14%
1	E	329	84% 13%

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Mol	Chain	Length	Quality of chain
1	F	329	2% 84% 13%
2	a	170	2% 92% 6%
2	b	170	3% 92% 6%
2	c	170	% 91% 6%
2	d	170	% 91% 6%
2	e	170	2% 92% 6%
2	f	170	2% 92% 6%
3	G	3	33% 67%
4	H	2	100%
4	I	2	100%
4	K	2	50% 50%
4	M	2	50% 50%
4	O	2	100%
4	Q	2	100%
5	J	5	60% 40%
5	L	5	40% 40% 20%
5	N	5	40% 60%
5	P	5	40% 60%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	NAG	M	2	-	-	-	X
5	MAN	N	4	-	-	-	X
6	NAG	B	603	-	-	-	X
6	NAG	E	602	-	-	-	X
6	NAG	F	602	-	-	-	X

2 Entry composition (i)

There are 9 unique types of molecules in this entry. The entry contains 22983 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Hemagglutinin HA1 chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	323	Total	C	N	O	S	0	0	0
			2478	1555	429	482	12			
1	B	323	Total	C	N	O	S	0	0	0
			2467	1546	427	482	12			
1	C	323	Total	C	N	O	S	0	0	0
			2478	1556	434	476	12			
1	D	323	Total	C	N	O	S	0	0	0
			2460	1544	427	477	12			
1	E	323	Total	C	N	O	S	0	0	0
			2475	1552	429	482	12			
1	F	320	Total	C	N	O	S	0	0	0
			2441	1539	424	466	12			

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	GLY	-	expression tag	UNP Q20MG8
A	2	SER	-	expression tag	UNP Q20MG8
B	1	GLY	-	expression tag	UNP Q20MG8
B	2	SER	-	expression tag	UNP Q20MG8
C	1	GLY	-	expression tag	UNP Q20MG8
C	2	SER	-	expression tag	UNP Q20MG8
D	1	GLY	-	expression tag	UNP Q20MG8
D	2	SER	-	expression tag	UNP Q20MG8
E	1	GLY	-	expression tag	UNP Q20MG8
E	2	SER	-	expression tag	UNP Q20MG8
F	1	GLY	-	expression tag	UNP Q20MG8
F	2	SER	-	expression tag	UNP Q20MG8

- Molecule 2 is a protein called Hemagglutinin HA2 chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	a	160	Total	C	N	O	S	0	0	0
			1222	767	210	238	7			
2	b	160	Total	C	N	O	S	0	0	0
			1221	765	211	239	6			
2	c	160	Total	C	N	O	S	0	0	0
			1239	774	214	244	7			
2	d	160	Total	C	N	O	S	0	0	0
			1233	772	213	241	7			
2	e	160	Total	C	N	O	S	0	0	0
			1211	760	208	237	6			
2	f	160	Total	C	N	O	S	0	0	0
			1203	757	206	233	7			

There are 30 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
a	495	PHE	-	expression tag	UNP Q20MG8
a	496	LEU	-	expression tag	UNP Q20MG8
a	497	VAL	-	expression tag	UNP Q20MG8
a	498	PRO	-	expression tag	UNP Q20MG8
a	499	ARG	-	expression tag	UNP Q20MG8
b	495	PHE	-	expression tag	UNP Q20MG8
b	496	LEU	-	expression tag	UNP Q20MG8
b	497	VAL	-	expression tag	UNP Q20MG8
b	498	PRO	-	expression tag	UNP Q20MG8
b	499	ARG	-	expression tag	UNP Q20MG8
c	495	PHE	-	expression tag	UNP Q20MG8
c	496	LEU	-	expression tag	UNP Q20MG8
c	497	VAL	-	expression tag	UNP Q20MG8
c	498	PRO	-	expression tag	UNP Q20MG8
c	499	ARG	-	expression tag	UNP Q20MG8
d	495	PHE	-	expression tag	UNP Q20MG8
d	496	LEU	-	expression tag	UNP Q20MG8
d	497	VAL	-	expression tag	UNP Q20MG8
d	498	PRO	-	expression tag	UNP Q20MG8
d	499	ARG	-	expression tag	UNP Q20MG8
e	495	PHE	-	expression tag	UNP Q20MG8
e	496	LEU	-	expression tag	UNP Q20MG8
e	497	VAL	-	expression tag	UNP Q20MG8
e	498	PRO	-	expression tag	UNP Q20MG8
e	499	ARG	-	expression tag	UNP Q20MG8
f	495	PHE	-	expression tag	UNP Q20MG8
f	496	LEU	-	expression tag	UNP Q20MG8
f	497	VAL	-	expression tag	UNP Q20MG8

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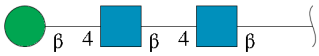
Chain	Residue	Modelled	Actual	Comment	Reference
f	498	PRO	-	expression tag	UNP Q20MG8
f	499	ARG	-	expression tag	UNP Q20MG8

- Molecule 3 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

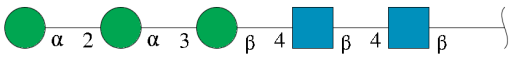


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	G	3	Total	C	N	O	0	0	0
			39	22	2	15			

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

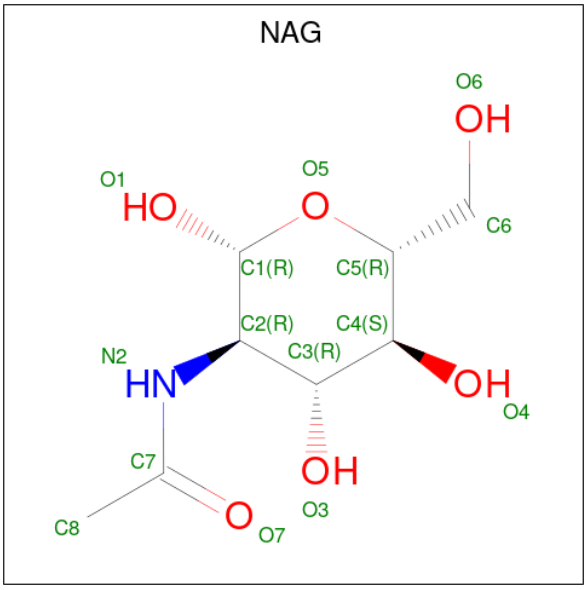
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
4	H	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	I	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	K	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	M	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	O	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	Q	2	Total	C	N	O	0	0	0
			28	16	2	10			

- Molecule 5 is an oligosaccharide called alpha-D-mannopyranose-(1-2)-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	ZeroOcc	AltConf	Trace
5	J	5	Total C N O 61 34 2 25	0	0	0
5	L	5	Total C N O 61 34 2 25	0	0	0
5	N	5	Total C N O 61 34 2 25	0	0	0
5	P	5	Total C N O 61 34 2 25	0	0	0

- Molecule 6 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	ZeroOcc	AltConf
6	A	1	Total C N O 14 8 1 5	0	0
6	B	1	Total C N O 14 8 1 5	0	0
6	B	1	Total C N O 14 8 1 5	0	0
6	B	1	Total C N O 14 8 1 5	0	0
6	C	1	Total C N O 14 8 1 5	0	0

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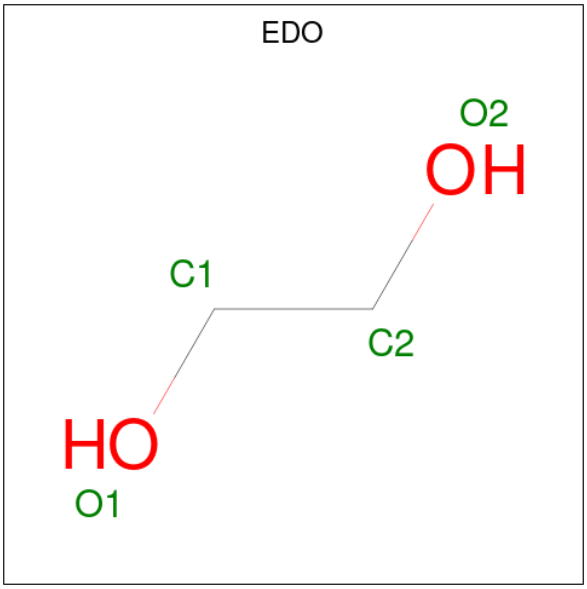
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	C	1	Total C N O 14 8 1 5	0	0
6	D	1	Total C N O 14 8 1 5	0	0
6	E	1	Total C N O 14 8 1 5	0	0
6	E	1	Total C N O 14 8 1 5	0	0
6	F	1	Total C N O 14 8 1 5	0	0
6	F	1	Total C N O 14 8 1 5	0	0

- Molecule 7 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	1	Total C O 4 2 2	0	0

- Molecule 8 is IODIDE ION (three-letter code: IOD) (formula: I).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	13	Total I 13 13	0	0
8	B	9	Total I 9 9	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	b	1	Total I 1 1	0	0
8	C	10	Total I 10 10	0	0
8	c	3	Total I 3 3	0	0
8	D	12	Total I 12 12	0	0
8	d	1	Total I 1 1	0	0
8	E	12	Total I 12 12	0	0
8	e	2	Total I 2 2	0	0
8	F	13	Total I 13 13	0	0

- Molecule 9 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	A	21	Total O 21 21	0	0
9	a	10	Total O 10 10	0	0
9	B	22	Total O 22 22	0	0
9	b	7	Total O 7 7	0	0
9	C	19	Total O 19 19	0	0
9	c	3	Total O 3 3	0	0
9	D	20	Total O 20 20	0	0
9	d	7	Total O 7 7	0	0
9	E	31	Total O 31 31	0	0
9	e	12	Total O 12 12	0	0
9	F	11	Total O 11 11	0	0

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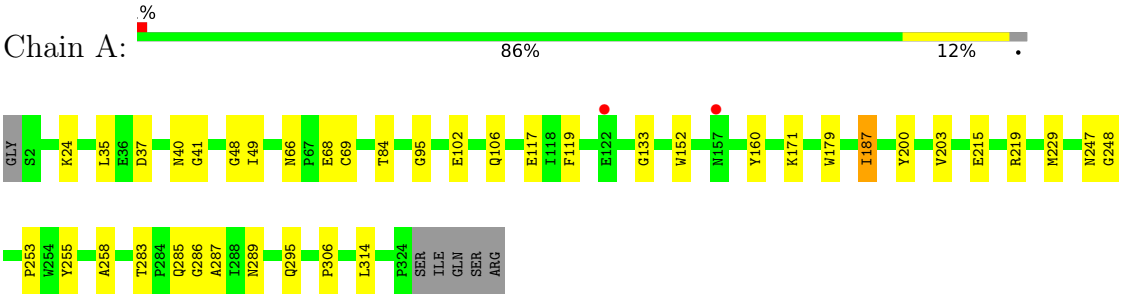
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	f	7	Total O 7 7	0	0

3 Residue-property plots (i)

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

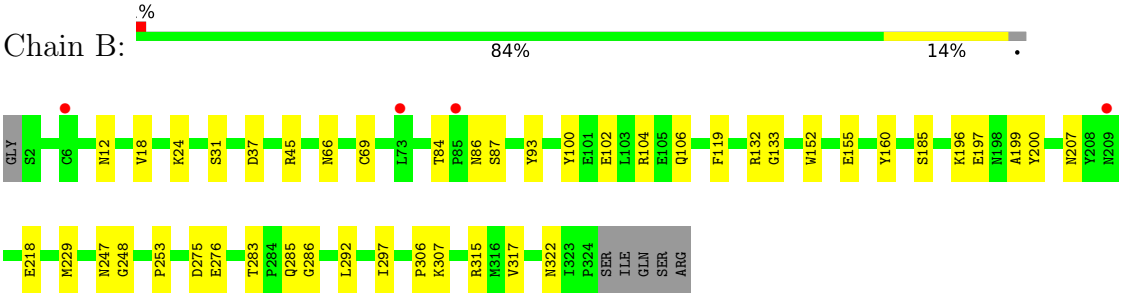
• Molecule 1: Hemagglutinin HA1 chain

Chain A:



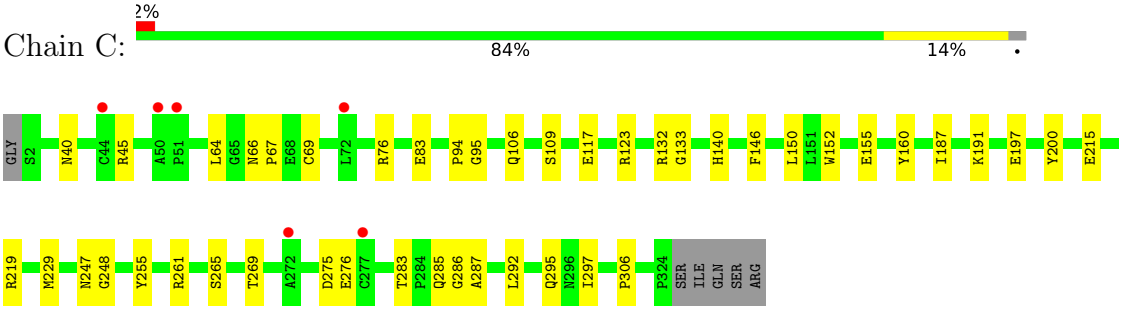
• Molecule 1: Hemagglutinin HA1 chain

Chain B:



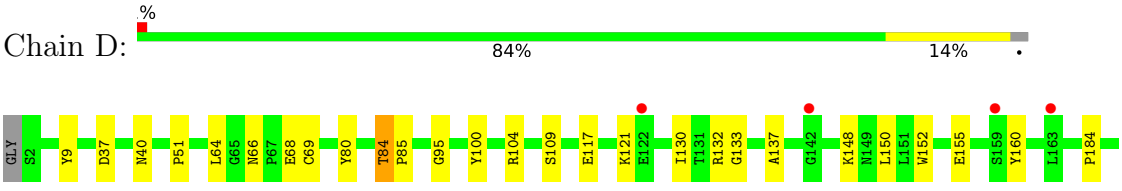
• Molecule 1: Hemagglutinin HA1 chain

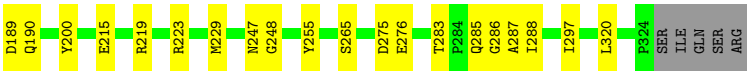
Chain C:



• Molecule 1: Hemagglutinin HA1 chain

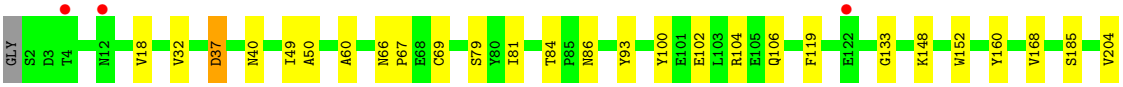
Chain D:

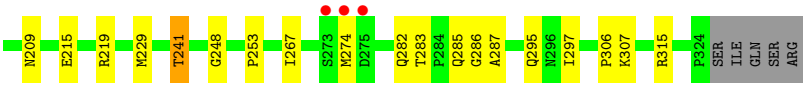




• Molecule 1: Hemagglutinin HA1 chain

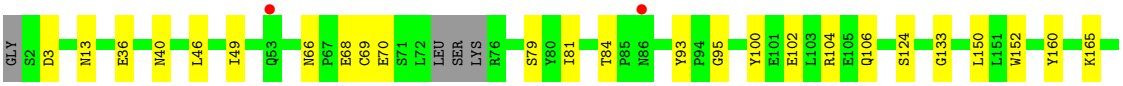
Chain E:

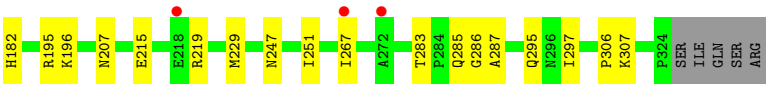




• Molecule 1: Hemagglutinin HA1 chain

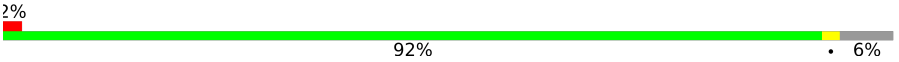
Chain F:

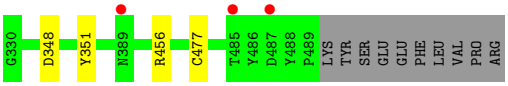




• Molecule 2: Hemagglutinin HA2 chain

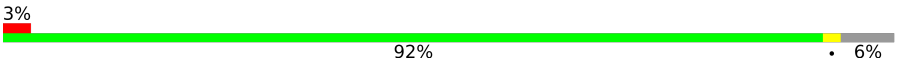
Chain a:

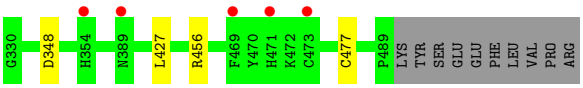




• Molecule 2: Hemagglutinin HA2 chain

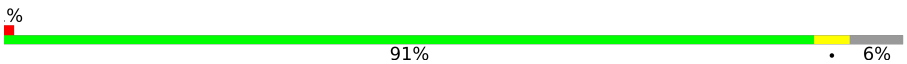
Chain b:

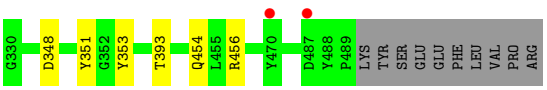




• Molecule 2: Hemagglutinin HA2 chain

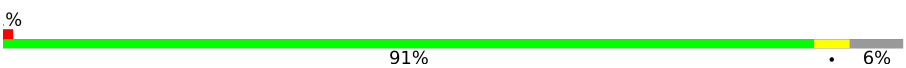
Chain c:

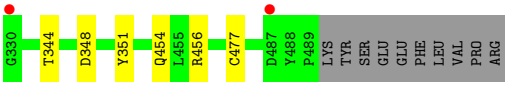




• Molecule 2: Hemagglutinin HA2 chain

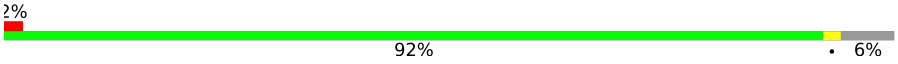
Chain d:

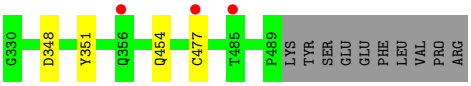




• Molecule 2: Hemagglutinin HA2 chain

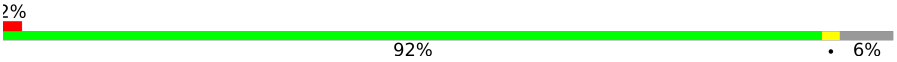
Chain e:

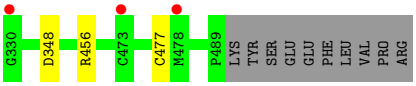




• Molecule 2: Hemagglutinin HA2 chain

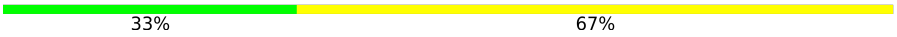
Chain f:





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

Chain G:



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

Chain H:

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

Chain I:

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

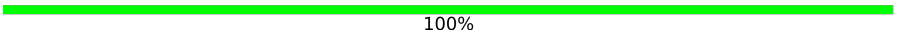
Chain K:

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

Chain M:

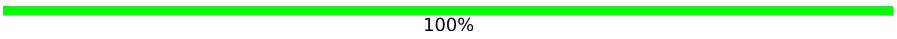
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain O:



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

Chain Q:

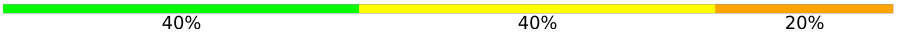


• Molecule 5: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:

• Molecule 5: alpha-D-mannopyranose-(1-2)-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 L:

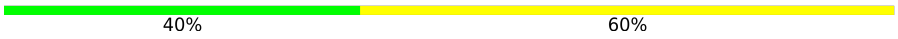


• Molecule 5: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain N:

• Molecule 5: alpha-D-mannopyranose-(1-2)-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 P:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	131.79Å 142.36Å 234.23Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.85 – 2.95 48.85 – 2.95	Depositor EDS
% Data completeness (in resolution range)	98.1 (48.85-2.95) 98.2 (48.85-2.95)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.30 (at 2.96Å)	Xtriage
Refinement program	PHENIX dev-4274	Depositor
R, R_{free}	0.254 , 0.286 0.250 , 0.282	Depositor DCC
R_{free} test set	4463 reflections (4.87%)	wwPDB-VP
Wilson B-factor (Å^2)	57.4	Xtriage
Anisotropy	0.284	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.29 , 17.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.88	EDS
Total number of atoms	22983	wwPDB-VP
Average B, all atoms (Å^2)	53.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 17.92% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	A	0.27	0/2539	0.52	0/3464
1	B	0.29	0/2528	0.56	0/3452
1	C	0.27	0/2539	0.52	0/3463
1	D	0.27	0/2521	0.54	0/3442
1	E	0.27	0/2536	0.55	0/3460
1	F	0.27	0/2501	0.53	0/3412
2	a	0.26	0/1248	0.47	0/1689
2	b	0.28	0/1246	0.49	0/1686
2	c	0.27	0/1265	0.46	0/1711
2	d	0.27	0/1259	0.49	0/1703
2	e	0.27	0/1237	0.46	0/1677
2	f	0.27	0/1229	0.45	0/1666
All	All	0.27	0/22648	0.52	0/30825

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	A	2478	0	2323	25	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	2467	0	2291	29	0
1	C	2478	0	2333	29	0
1	D	2460	0	2291	27	0
1	E	2475	0	2313	27	0
1	F	2441	0	2301	26	0
2	a	1222	0	1093	0	0
2	b	1221	0	1086	0	0
2	c	1239	0	1111	0	0
2	d	1233	0	1105	0	0
2	e	1211	0	1069	0	0
2	f	1203	0	1056	0	0
3	G	39	0	34	1	0
4	H	28	0	25	0	0
4	I	28	0	25	0	0
4	K	28	0	25	1	0
4	M	28	0	25	1	0
4	O	28	0	25	0	0
4	Q	28	0	25	0	0
5	J	61	0	52	0	0
5	L	61	0	52	1	0
5	N	61	0	52	0	0
5	P	61	0	52	1	0
6	A	14	0	13	0	0
6	B	42	0	39	0	0
6	C	28	0	26	0	0
6	D	14	0	13	0	0
6	E	28	0	26	0	0
6	F	28	0	26	0	0
7	A	4	0	6	0	0
8	A	13	0	0	0	0
8	B	9	0	0	0	0
8	C	10	0	0	4	0
8	D	12	0	0	2	0
8	E	12	0	0	0	0
8	F	13	0	0	1	0
8	b	1	0	0	0	0
8	c	3	0	0	0	0
8	d	1	0	0	0	0
8	e	2	0	0	0	0
9	A	21	0	0	1	0
9	B	22	0	0	2	0
9	C	19	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
9	D	20	0	0	0	0
9	E	31	0	0	1	0
9	F	11	0	0	0	0
9	a	10	0	0	0	0
9	b	7	0	0	0	0
9	c	3	0	0	0	0
9	d	7	0	0	0	0
9	e	12	0	0	0	0
9	f	7	0	0	0	0
All	All	22983	0	20913	162	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 6.

All (162) 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)
1:B:18:VAL:HG21	1:B:317:VAL:HG22	1.56	0.86
1:C:283:THR:HG22	1:C:285:GLN:H	1.48	0.79
1:D:283:THR:HG22	1:D:285:GLN:H	1.49	0.78
1:B:84:THR:HG22	1:B:86:ASN:H	1.49	0.76
1:E:40:ASN:HD21	1:E:287:ALA:HB3	1.51	0.75
1:E:283:THR:HG22	1:E:285:GLN:H	1.56	0.71
1:E:133:GLY:HA3	1:E:152:TRP:HB3	1.74	0.69
1:F:283:THR:HG22	1:F:285:GLN:H	1.59	0.67
1:A:283:THR:HG22	1:A:285:GLN:H	1.59	0.66
1:B:132:ARG:NH2	1:B:155:GLU:O	2.28	0.66
1:C:40:ASN:HD21	1:C:287:ALA:HB3	1.60	0.66
1:E:209:ASN:ND2	9:E:701:HOH:O	2.27	0.66
1:B:283:THR:HG22	1:B:285:GLN:H	1.61	0.65
1:E:283:THR:HB	1:E:286:GLY:O	1.96	0.65
1:A:48:GLY:O	1:B:45:ARG:NH2	2.29	0.64
1:D:283:THR:HB	1:D:286:GLY:O	1.97	0.64
1:A:40:ASN:HD21	1:A:287:ALA:HB3	1.62	0.64
1:B:31:SER:OG	1:B:315:ARG:NH1	2.32	0.62
1:A:289:ASN:ND2	9:A:701:HOH:O	2.31	0.62
1:F:182:HIS:HB2	1:F:251:ILE:HD11	1.82	0.61
1:D:137:ALA:O	1:D:223:ARG:NH1	2.32	0.60
1:F:215:GLU:O	1:F:219:ARG:NH2	2.36	0.59
1:E:84:THR:HG22	1:E:86:ASN:H	1.66	0.59
1:B:93:TYR:CD1	1:B:229:MET:HG2	2.38	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:283:THR:HB	1:C:286:GLY:O	2.02	0.59
1:C:133:GLY:HA3	1:C:152:TRP:HB3	1.84	0.59
1:E:215:GLU:O	1:E:219:ARG:NH2	2.36	0.59
1:C:109:SER:HB2	1:C:265:SER:HB3	1.84	0.58
1:F:283:THR:HB	1:F:286:GLY:O	2.03	0.58
1:A:283:THR:HB	1:A:286:GLY:O	2.04	0.58
1:C:191:LYS:HG2	8:C:608:IOD:I	2.74	0.57
1:A:200:TYR:H	1:A:247:ASN:HB2	1.70	0.57
1:A:133:GLY:HA3	1:A:152:TRP:HB3	1.85	0.57
1:D:40:ASN:HD21	1:D:287:ALA:HB3	1.69	0.57
1:B:160:TYR:O	1:B:196:LYS:NZ	2.22	0.56
1:E:100:TYR:CZ	1:E:104:ARG:HD2	2.41	0.56
1:F:160:TYR:O	1:F:196:LYS:NZ	2.35	0.56
1:E:93:TYR:CD1	1:E:229:MET:HG2	2.41	0.55
1:D:121:LYS:HG2	1:D:130:ILE:HD12	1.88	0.55
1:B:66:ASN:HB3	1:B:69:CYS:SG	2.46	0.55
1:E:18:VAL:HG12	1:E:315:ARG:HG3	1.89	0.54
1:F:40:ASN:HD21	1:F:287:ALA:HB3	1.70	0.54
1:B:133:GLY:HA3	1:B:152:TRP:HB3	1.90	0.54
1:A:66:ASN:HB3	1:A:69:CYS:SG	2.47	0.54
1:D:69:CYS:O	1:D:148:LYS:NZ	2.41	0.54
1:C:117:GLU:HG3	1:C:255:TYR:CZ	2.43	0.53
1:C:275:ASP:OD1	1:C:276:GLU:N	2.41	0.53
1:C:215:GLU:O	1:C:219:ARG:NH2	2.42	0.53
1:D:215:GLU:O	1:D:219:ARG:NH2	2.42	0.53
1:D:132:ARG:NH2	1:D:155:GLU:O	2.42	0.53
1:B:199:ALA:HA	1:B:247:ASN:HD22	1.75	0.52
1:E:49:ILE:HB	1:E:79:SER:OG	2.09	0.52
1:E:66:ASN:HB3	1:E:69:CYS:SG	2.49	0.52
1:E:168:VAL:HG22	1:E:241:THR:HG23	1.91	0.52
1:A:215:GLU:O	1:A:219:ARG:NH2	2.39	0.52
1:C:66:ASN:HB3	1:C:69:CYS:SG	2.49	0.52
1:B:100:TYR:CZ	1:B:104:ARG:HD2	2.46	0.51
8:D:613:IOD:I	4:M:1:NAG:H82	2.81	0.51
1:F:81:ILE:HB	1:F:267:ILE:HG13	1.93	0.51
1:F:46:LEU:O	1:F:79:SER:OG	2.28	0.51
1:B:24:LYS:NZ	9:B:704:HOH:O	2.41	0.51
1:D:133:GLY:HA3	1:D:152:TRP:HB3	1.93	0.51
1:E:81:ILE:HB	1:E:267:ILE:HG13	1.93	0.50
1:C:45:ARG:HH12	1:C:276:GLU:HA	1.77	0.50
1:A:117:GLU:HG3	1:A:255:TYR:CE2	2.47	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:35:LEU:HB2	1:A:314:LEU:HB2	1.95	0.49
1:F:150:LEU:HB3	1:F:251:ILE:HG22	1.94	0.49
1:C:191:LYS:HE3	1:C:197:GLU:HG3	1.95	0.49
1:F:93:TYR:CD1	1:F:229:MET:HB2	2.48	0.49
1:A:102:GLU:O	1:A:106:GLN:HG3	2.13	0.49
1:D:66:ASN:HB3	1:D:69:CYS:SG	2.52	0.49
1:E:67:PRO:HA	1:E:148:LYS:HE2	1.94	0.49
1:B:12:ASN:O	1:B:322:ASN:ND2	2.43	0.48
1:E:50:ALA:HB1	1:E:274:MET:HE1	1.94	0.48
1:A:160:TYR:CZ	1:A:248:GLY:HA2	2.48	0.48
1:F:95:GLY:HA3	1:F:229:MET:O	2.13	0.48
1:F:68:GLU:HG2	5:P:1:NAG:H82	1.94	0.48
1:E:102:GLU:O	1:E:106:GLN:HG3	2.13	0.48
1:A:49:ILE:HG23	1:B:276:GLU:HG3	1.96	0.48
1:C:106:GLN:OE1	1:C:261:ARG:NH1	2.47	0.47
1:B:102:GLU:O	1:B:106:GLN:HG3	2.14	0.47
1:B:196:LYS:HE2	1:B:247:ASN:OD1	2.14	0.47
8:C:612:IOD:I	4:K:1:NAG:H82	2.84	0.47
1:C:95:GLY:HA3	1:C:229:MET:O	2.14	0.47
1:B:185:SER:HB2	1:B:218:GLU:OE1	2.14	0.47
1:B:292:LEU:O	1:B:306:PRO:HB3	2.15	0.47
1:D:100:TYR:CZ	1:D:104:ARG:HD2	2.50	0.47
1:D:160:TYR:CZ	1:D:248:GLY:HA2	2.50	0.47
1:A:219:ARG:HG2	1:E:204:VAL:HG11	1.97	0.46
1:D:95:GLY:HA3	1:D:229:MET:O	2.15	0.46
1:B:119:PHE:CD2	1:B:253:PRO:HG2	2.51	0.46
1:E:50:ALA:HB1	1:E:274:MET:CE	2.45	0.46
1:C:94:PRO:HA	8:C:611:IOD:I	2.86	0.46
1:F:295:GLN:HG2	1:F:306:PRO:HG2	1.98	0.46
1:E:283:THR:HG21	1:E:297:ILE:HG22	1.98	0.46
1:E:307:LYS:HD2	1:E:307:LYS:N	2.31	0.46
1:B:283:THR:HB	1:B:286:GLY:O	2.15	0.46
1:D:247:ASN:OD1	8:D:604:IOD:I	3.04	0.46
1:F:49:ILE:HB	1:F:79:SER:OG	2.16	0.45
1:A:295:GLN:HG2	1:A:306:PRO:HG2	1.99	0.45
1:A:68:GLU:HG3	3:G:1:NAG:H82	1.99	0.45
1:D:84:THR:HG22	1:D:85:PRO:HD2	1.99	0.45
1:F:66:ASN:HB3	1:F:69:CYS:SG	2.56	0.45
1:D:109:SER:HB2	1:D:265:SER:HB3	1.98	0.45
1:D:68:GLU:HG3	5:L:1:NAG:H82	1.98	0.45
1:C:117:GLU:HG3	1:C:255:TYR:CE2	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:200:TYR:CD1	1:D:247:ASN:HB2	2.52	0.44
1:B:283:THR:HG22	1:B:285:GLN:N	2.31	0.44
1:C:132:ARG:NH1	1:C:155:GLU:O	2.50	0.44
1:F:100:TYR:CZ	1:F:104:ARG:HD2	2.53	0.44
1:B:87:SER:OG	9:B:701:HOH:O	2.21	0.44
1:C:160:TYR:CZ	1:C:248:GLY:HA2	2.52	0.44
1:C:200:TYR:CD1	1:C:247:ASN:HB2	2.53	0.44
1:F:124:SER:HB3	1:F:165:LYS:HE2	2.00	0.44
1:D:117:GLU:HG3	1:D:255:TYR:CE2	2.52	0.43
1:D:275:ASP:OD1	1:D:276:GLU:N	2.51	0.43
1:E:119:PHE:CD2	1:E:253:PRO:HG2	2.53	0.43
1:A:179:TRP:CE2	1:A:203:VAL:HG21	2.52	0.43
1:F:133:GLY:HA3	1:F:152:TRP:HB3	2.01	0.43
1:B:200:TYR:CD1	1:B:247:ASN:HB2	2.52	0.43
1:F:247:ASN:OD1	8:F:606:IOD:I	3.05	0.43
1:C:247:ASN:OD1	8:C:605:IOD:I	3.06	0.43
1:D:184:PRO:HG2	1:D:190:GLN:OE1	2.18	0.43
1:C:64:LEU:HD22	1:C:150:LEU:HD11	2.01	0.43
1:B:18:VAL:HG12	1:B:315:ARG:HG3	2.00	0.43
1:A:41:GLY:HA2	1:A:285:GLN:O	2.19	0.43
1:A:95:GLY:HA3	1:A:229:MET:O	2.19	0.42
1:D:64:LEU:HD22	1:D:150:LEU:HD11	2.00	0.42
1:E:160:TYR:CZ	1:E:248:GLY:HA2	2.53	0.42
1:F:70:GLU:OE1	1:F:70:GLU:N	2.52	0.42
1:F:195:ARG:HD3	1:F:195:ARG:HA	1.65	0.42
1:C:40:ASN:ND2	1:C:287:ALA:HB3	2.30	0.42
1:B:160:TYR:CZ	1:B:248:GLY:HA2	2.54	0.42
1:B:283:THR:HG21	1:B:297:ILE:HG22	2.01	0.42
1:C:283:THR:HG21	1:C:297:ILE:HG22	2.01	0.42
1:A:171:LYS:HD2	1:A:258:ALA:HB2	2.02	0.42
1:E:282:GLN:NE2	1:E:283:THR:O	2.46	0.42
1:F:307:LYS:N	1:F:307:LYS:HD2	2.35	0.42
1:A:187:ILE:HD12	1:A:187:ILE:H	1.83	0.42
1:D:51:PRO:HB3	1:D:80:TYR:CZ	2.54	0.42
1:D:117:GLU:HG3	1:D:255:TYR:CZ	2.54	0.42
1:A:40:ASN:ND2	1:A:287:ALA:HB3	2.32	0.42
1:C:187:ILE:HD11	1:C:197:GLU:HG2	2.02	0.42
1:C:67:PRO:HB2	1:C:140:HIS:HB2	2.01	0.42
1:C:83:GLU:O	1:C:269:THR:HA	2.20	0.42
1:D:9:TYR:HB2	1:D:320:LEU:HD22	2.02	0.41
1:E:37:ASP:C	1:E:297:ILE:HD11	2.39	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:295:GLN:HG2	1:E:306:PRO:HG2	2.02	0.41
1:F:13:ASN:C	1:F:13:ASN:OD1	2.59	0.41
1:F:36:GLU:HB3	1:F:295:GLN:HB3	2.03	0.41
1:C:292:LEU:O	1:C:306:PRO:HB3	2.21	0.41
1:C:67:PRO:HG3	1:C:146:PHE:O	2.21	0.41
1:B:160:TYR:HB3	1:B:196:LYS:NZ	2.36	0.41
1:A:179:TRP:NE1	1:A:203:VAL:HG21	2.36	0.41
1:B:307:LYS:HD3	1:B:307:LYS:HA	1.88	0.41
1:D:283:THR:HG22	1:D:285:GLN:N	2.27	0.41
1:E:60:ALA:HB2	1:E:100:TYR:CE1	2.56	0.41
1:A:119:PHE:CD2	1:A:253:PRO:HG2	2.56	0.40
1:F:102:GLU:O	1:F:106:GLN:HG3	2.21	0.40
1:D:288:ILE:HG21	1:D:297:ILE:HD13	2.04	0.40
1:C:295:GLN:HG2	1:C:306:PRO:HG2	2.03	0.40
1:F:283:THR:HG21	1:F:297:ILE:HG22	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	321/329 (98%)	313 (98%)	8 (2%)	0	100	100
1	B	321/329 (98%)	312 (97%)	9 (3%)	0	100	100
1	C	321/329 (98%)	313 (98%)	8 (2%)	0	100	100
1	D	321/329 (98%)	312 (97%)	9 (3%)	0	100	100
1	E	321/329 (98%)	312 (97%)	9 (3%)	0	100	100
1	F	316/329 (96%)	308 (98%)	8 (2%)	0	100	100
2	a	158/170 (93%)	152 (96%)	5 (3%)	1 (1%)	25	60
2	b	158/170 (93%)	155 (98%)	2 (1%)	1 (1%)	25	60

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	c	158/170 (93%)	154 (98%)	3 (2%)	1 (1%)	25	60
2	d	158/170 (93%)	154 (98%)	3 (2%)	1 (1%)	25	60
2	e	158/170 (93%)	153 (97%)	5 (3%)	0	100	100
2	f	158/170 (93%)	153 (97%)	4 (2%)	1 (1%)	25	60
All	All	2869/2994 (96%)	2791 (97%)	73 (2%)	5 (0%)	47	79

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	a	456	ARG
2	b	456	ARG
2	c	456	ARG
2	d	456	ARG
2	f	456	ARG

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	267/289 (92%)	263 (98%)	4 (2%)	65	85
1	B	264/289 (91%)	260 (98%)	4 (2%)	65	85
1	C	266/289 (92%)	264 (99%)	2 (1%)	81	92
1	D	262/289 (91%)	259 (99%)	3 (1%)	73	89
1	E	266/289 (92%)	262 (98%)	4 (2%)	65	85
1	F	261/289 (90%)	258 (99%)	3 (1%)	73	89
2	a	120/146 (82%)	117 (98%)	3 (2%)	47	76
2	b	119/146 (82%)	116 (98%)	3 (2%)	47	76
2	c	124/146 (85%)	119 (96%)	5 (4%)	31	64
2	d	122/146 (84%)	117 (96%)	5 (4%)	30	64
2	e	117/146 (80%)	113 (97%)	4 (3%)	37	69

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
2	f	114/146 (78%)	112 (98%)	2 (2%)	59 82
All	All	2302/2610 (88%)	2260 (98%)	42 (2%)	59 82

All (42) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	24	LYS
1	A	37	ASP
1	A	84	THR
1	A	187	ILE
2	a	348	ASP
2	a	351	TYR
2	a	477	CYS
1	B	37	ASP
1	B	197	GLU
1	B	207	ASN
1	B	275	ASP
2	b	348	ASP
2	b	427	LEU
2	b	477	CYS
1	C	76	ARG
1	C	123	ARG
2	c	348	ASP
2	c	351	TYR
2	c	353	TYR
2	c	393	THR
2	c	454	GLN
1	D	37	ASP
1	D	84	THR
1	D	189	ASP
2	d	344	THR
2	d	348	ASP
2	d	351	TYR
2	d	454	GLN
2	d	477	CYS
1	E	32	VAL
1	E	37	ASP
1	E	185	SER
1	E	241	THR
2	e	348	ASP
2	e	351	TYR
2	e	454	GLN

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Mol	Chain	Res	Type
2	e	477	CYS
1	F	3	ASP
1	F	84	THR
1	F	207	ASN
2	f	348	ASP
2	f	477	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	207	ASN
1	C	247	ASN
1	D	207	ASN
1	D	247	ASN
2	e	483	ASN
1	F	30	HIS
1	F	247	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

35 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	NAG	G	1	1,3	14,14,15	0.27	0	17,19,21	0.59	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	NAG	G	2	3	14,14,15	0.27	0	17,19,21	0.40	0
3	BMA	G	3	3	11,11,12	1.12	2 (18%)	15,15,17	0.92	0
4	NAG	H	1	4,1	14,14,15	0.24	0	17,19,21	0.54	0
4	NAG	H	2	4	14,14,15	0.34	0	17,19,21	0.35	0
4	NAG	I	1	4,1	14,14,15	0.24	0	17,19,21	0.63	0
4	NAG	I	2	4	14,14,15	0.47	0	17,19,21	0.42	0
5	NAG	J	1	5,1	14,14,15	0.30	0	17,19,21	0.62	0
5	NAG	J	2	5	14,14,15	0.22	0	17,19,21	0.46	0
5	BMA	J	3	5	11,11,12	1.00	0	15,15,17	0.77	0
5	MAN	J	4	5	11,11,12	1.22	1 (9%)	15,15,17	1.54	2 (13%)
5	MAN	J	5	5	11,11,12	1.52	2 (18%)	15,15,17	2.50	3 (20%)
4	NAG	K	1	4,1	14,14,15	0.29	0	17,19,21	0.70	1 (5%)
4	NAG	K	2	4	14,14,15	0.27	0	17,19,21	0.51	0
5	NAG	L	1	5,1	14,14,15	0.31	0	17,19,21	0.63	1 (5%)
5	NAG	L	2	5	14,14,15	0.40	0	17,19,21	0.52	0
5	BMA	L	3	5	11,11,12	0.85	0	15,15,17	0.84	0
5	MAN	L	4	5	11,11,12	1.18	2 (18%)	15,15,17	1.19	1 (6%)
5	MAN	L	5	5	11,11,12	0.92	1 (9%)	15,15,17	2.51	3 (20%)
4	NAG	M	1	4,1	14,14,15	0.24	0	17,19,21	0.56	0
4	NAG	M	2	4	14,14,15	0.23	0	17,19,21	0.42	0
5	NAG	N	1	5,1	14,14,15	0.43	0	17,19,21	0.59	0
5	NAG	N	2	5	14,14,15	0.27	0	17,19,21	0.64	0
5	BMA	N	3	5	11,11,12	0.99	1 (9%)	15,15,17	0.86	0
5	MAN	N	4	5	11,11,12	1.18	1 (9%)	15,15,17	1.17	2 (13%)
5	MAN	N	5	5	11,11,12	1.60	2 (18%)	15,15,17	2.06	4 (26%)
4	NAG	O	1	4,1	14,14,15	0.23	0	17,19,21	0.47	0
4	NAG	O	2	4	14,14,15	0.33	0	17,19,21	0.41	0
5	NAG	P	1	5,1	14,14,15	0.34	0	17,19,21	0.58	0
5	NAG	P	2	5	14,14,15	0.27	0	17,19,21	0.40	0
5	BMA	P	3	5	11,11,12	0.62	0	15,15,17	0.76	0
5	MAN	P	4	5	11,11,12	0.95	0	15,15,17	1.19	2 (13%)
5	MAN	P	5	5	11,11,12	2.32	3 (27%)	15,15,17	2.57	3 (20%)
4	NAG	Q	1	4,1	14,14,15	0.25	0	17,19,21	0.40	0
4	NAG	Q	2	4	14,14,15	0.25	0	17,19,21	0.41	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
3	NAG	G	1	1,3	-	0/6/23/26	0/1/1/1
3	NAG	G	2	3	-	0/6/23/26	0/1/1/1
3	BMA	G	3	3	-	1/2/19/22	0/1/1/1
4	NAG	H	1	4,1	-	1/6/23/26	0/1/1/1
4	NAG	H	2	4	-	2/6/23/26	0/1/1/1
4	NAG	I	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	I	2	4	-	2/6/23/26	0/1/1/1
5	NAG	J	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	J	2	5	-	1/6/23/26	0/1/1/1
5	BMA	J	3	5	-	2/2/19/22	0/1/1/1
5	MAN	J	4	5	-	0/2/19/22	0/1/1/1
5	MAN	J	5	5	-	2/2/19/22	0/1/1/1
4	NAG	K	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	K	2	4	-	4/6/23/26	0/1/1/1
5	NAG	L	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	L	2	5	-	0/6/23/26	0/1/1/1
5	BMA	L	3	5	-	0/2/19/22	0/1/1/1
5	MAN	L	4	5	-	2/2/19/22	0/1/1/1
5	MAN	L	5	5	-	0/2/19/22	0/1/1/1
4	NAG	M	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	M	2	4	-	2/6/23/26	0/1/1/1
5	NAG	N	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	N	2	5	-	2/6/23/26	0/1/1/1
5	BMA	N	3	5	-	0/2/19/22	0/1/1/1
5	MAN	N	4	5	-	2/2/19/22	0/1/1/1
5	MAN	N	5	5	-	1/2/19/22	0/1/1/1
4	NAG	O	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	O	2	4	-	2/6/23/26	0/1/1/1
5	NAG	P	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	P	2	5	-	2/6/23/26	0/1/1/1
5	BMA	P	3	5	-	0/2/19/22	0/1/1/1
5	MAN	P	4	5	-	2/2/19/22	0/1/1/1
5	MAN	P	5	5	-	0/2/19/22	0/1/1/1
4	NAG	Q	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	Q	2	4	-	2/6/23/26	0/1/1/1

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	P	5	MAN	C1-C2	4.94	1.63	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	P	5	MAN	O5-C1	4.35	1.50	1.43
5	J	5	MAN	O5-C1	-3.70	1.37	1.43
5	N	5	MAN	C1-C2	3.40	1.60	1.52
5	N	5	MAN	O5-C5	3.37	1.50	1.43
5	P	5	MAN	O5-C5	3.35	1.50	1.43
5	J	4	MAN	C1-C2	3.20	1.59	1.52
5	L	5	MAN	O5-C1	-2.48	1.39	1.43
5	J	5	MAN	C1-C2	2.30	1.57	1.52
5	N	4	MAN	O5-C1	-2.24	1.40	1.43
5	L	4	MAN	C1-C2	2.22	1.57	1.52
5	N	3	BMA	C1-C2	2.21	1.57	1.52
3	G	3	BMA	C4-C3	2.13	1.57	1.52
3	G	3	BMA	C4-C5	2.03	1.57	1.53
5	L	4	MAN	O5-C5	2.01	1.47	1.43

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	P	5	MAN	C1-O5-C5	7.46	122.30	112.19
5	L	5	MAN	O5-C1-C2	7.07	121.69	110.77
5	J	5	MAN	O5-C1-C2	6.41	120.67	110.77
5	L	5	MAN	C1-O5-C5	5.78	120.03	112.19
5	J	5	MAN	C1-O5-C5	5.68	119.89	112.19
5	N	5	MAN	C1-O5-C5	5.44	119.56	112.19
5	P	5	MAN	C1-C2-C3	5.07	115.90	109.67
5	J	4	MAN	O2-C2-C3	-4.93	100.26	110.14
5	L	4	MAN	O2-C2-C1	3.18	115.66	109.15
5	J	5	MAN	O2-C2-C3	-3.06	104.02	110.14
5	N	5	MAN	O5-C5-C6	2.94	111.82	107.20
5	N	5	MAN	C1-C2-C3	2.83	113.15	109.67
5	P	4	MAN	O2-C2-C3	-2.75	104.62	110.14
5	P	5	MAN	O5-C1-C2	2.60	114.79	110.77
5	L	5	MAN	O2-C2-C3	-2.34	105.46	110.14
5	N	4	MAN	O2-C2-C1	2.30	113.85	109.15
5	N	4	MAN	O5-C1-C2	2.20	114.17	110.77
5	J	4	MAN	C1-O5-C5	2.05	114.97	112.19
5	N	5	MAN	O2-C2-C3	-2.05	106.03	110.14
5	L	1	NAG	C1-O5-C5	2.04	114.96	112.19
5	P	4	MAN	C1-O5-C5	2.02	114.93	112.19
4	K	1	NAG	O4-C4-C3	-2.01	105.71	110.35

There are no chirality outliers.

All (38) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	O	1	NAG	O5-C5-C6-O6
4	O	2	NAG	O5-C5-C6-O6
5	N	2	NAG	O5-C5-C6-O6
5	N	2	NAG	C4-C5-C6-O6
5	N	4	MAN	C4-C5-C6-O6
5	P	4	MAN	C4-C5-C6-O6
4	I	2	NAG	O5-C5-C6-O6
5	J	3	BMA	O5-C5-C6-O6
4	O	1	NAG	C4-C5-C6-O6
4	O	2	NAG	C4-C5-C6-O6
5	L	1	NAG	O5-C5-C6-O6
5	N	4	MAN	O5-C5-C6-O6
5	P	2	NAG	O5-C5-C6-O6
5	P	4	MAN	O5-C5-C6-O6
5	J	5	MAN	O5-C5-C6-O6
5	J	3	BMA	C4-C5-C6-O6
4	K	2	NAG	O5-C5-C6-O6
4	M	2	NAG	O5-C5-C6-O6
4	M	2	NAG	C4-C5-C6-O6
5	L	1	NAG	C4-C5-C6-O6
5	L	4	MAN	O5-C5-C6-O6
4	K	2	NAG	C4-C5-C6-O6
5	P	2	NAG	C4-C5-C6-O6
4	I	2	NAG	C4-C5-C6-O6
5	J	5	MAN	C4-C5-C6-O6
5	P	1	NAG	O5-C5-C6-O6
4	H	2	NAG	C4-C5-C6-O6
3	G	3	BMA	O5-C5-C6-O6
5	L	4	MAN	C4-C5-C6-O6
4	H	2	NAG	O5-C5-C6-O6
4	Q	2	NAG	C4-C5-C6-O6
5	J	2	NAG	C4-C5-C6-O6
4	K	2	NAG	C3-C2-N2-C7
5	P	1	NAG	C4-C5-C6-O6
4	K	2	NAG	C1-C2-N2-C7
5	N	5	MAN	C4-C5-C6-O6
4	H	1	NAG	C3-C2-N2-C7
4	Q	2	NAG	O5-C5-C6-O6

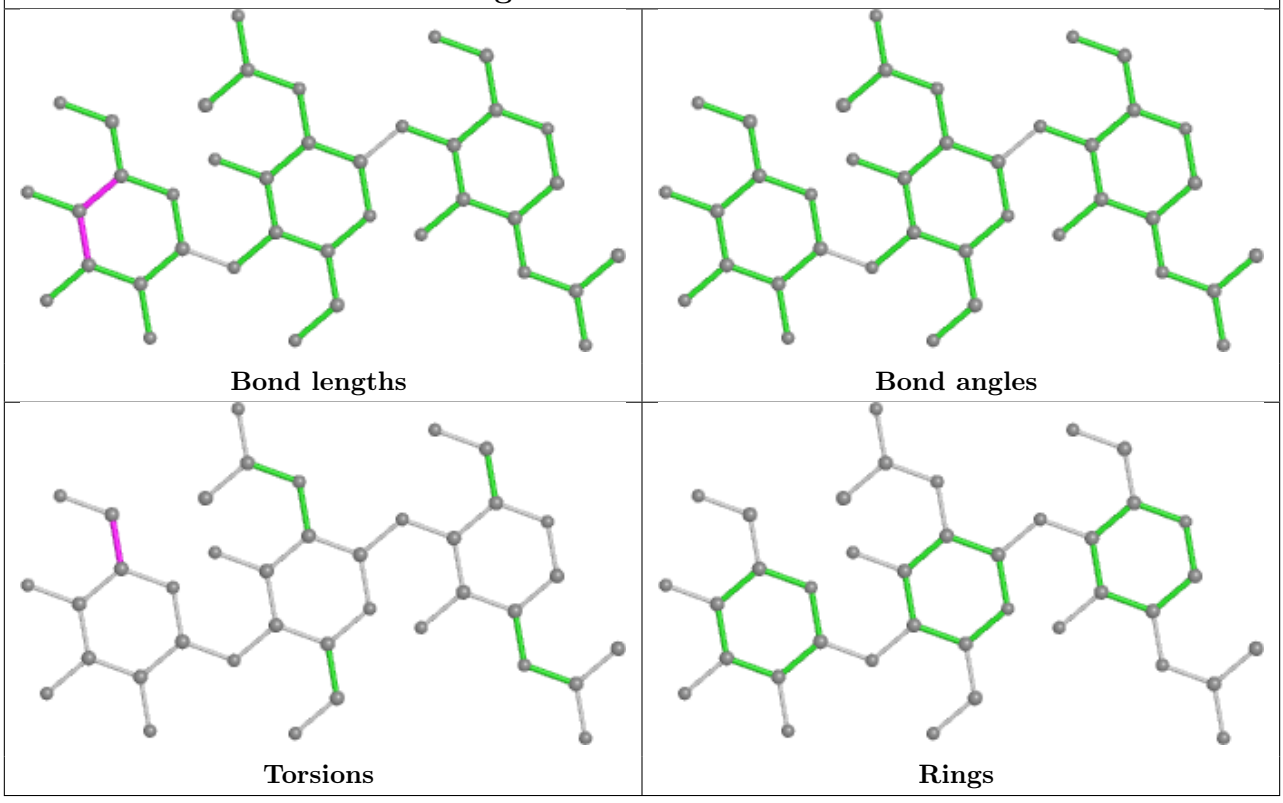
There are no ring outliers.

5 monomers are involved in 5 short contacts:

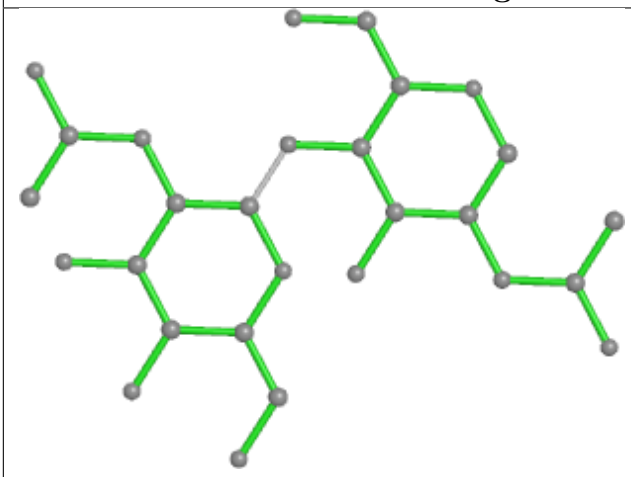
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	G	1	NAG	1	0
4	M	1	NAG	1	0
5	P	1	NAG	1	0
5	L	1	NAG	1	0
4	K	1	NAG	1	0

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

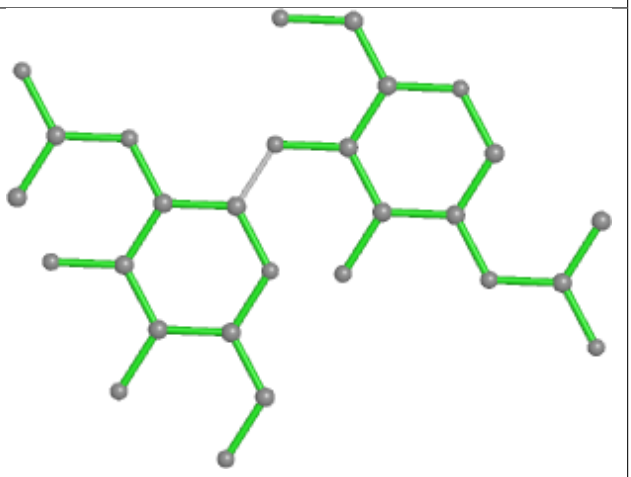
Oligosaccharide Chain G



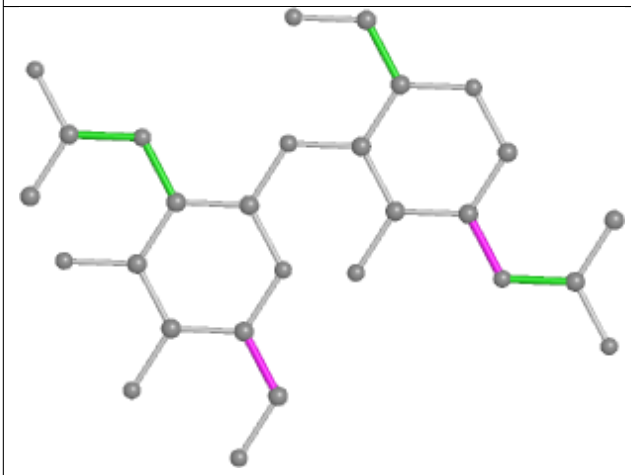
Oligosaccharide Chain H



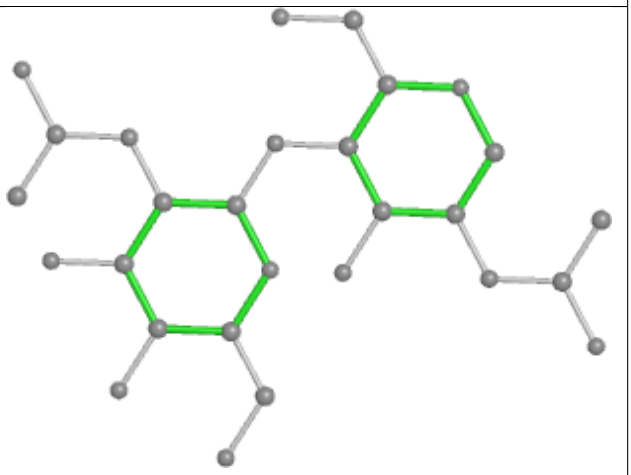
Bond lengths



Bond angles

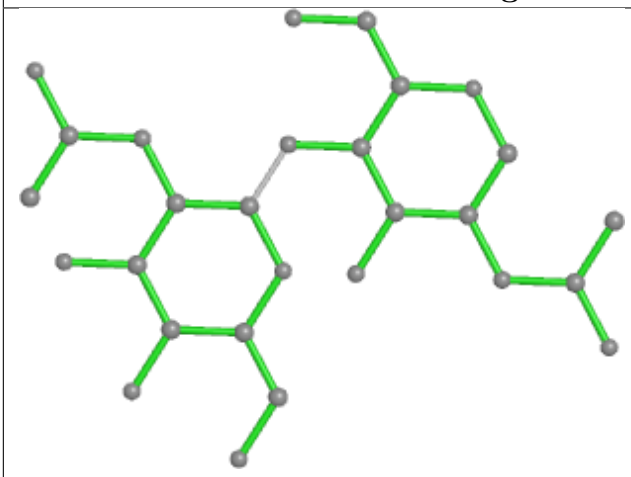


Torsions

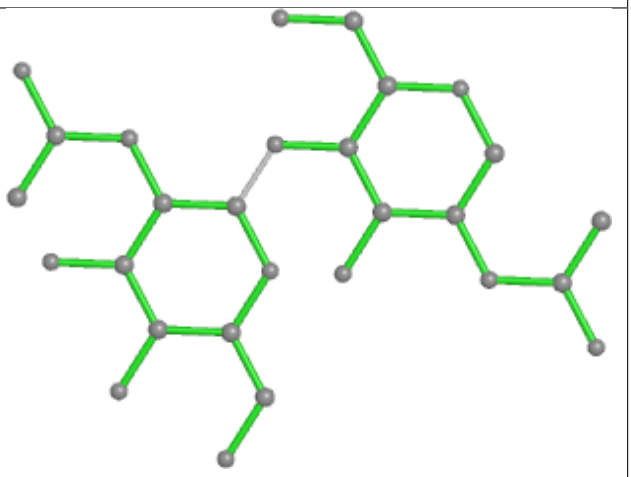


Rings

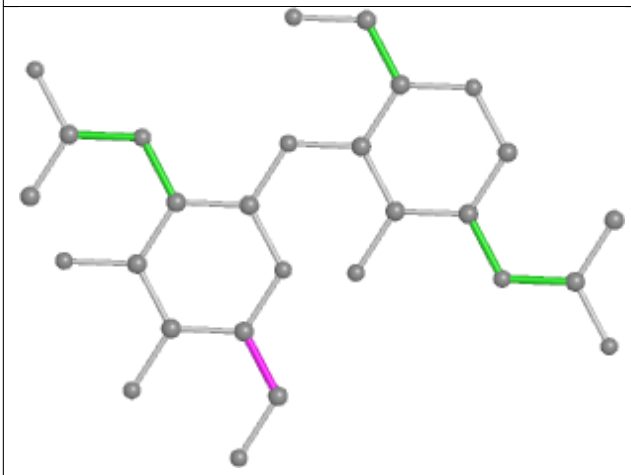
Oligosaccharide Chain I



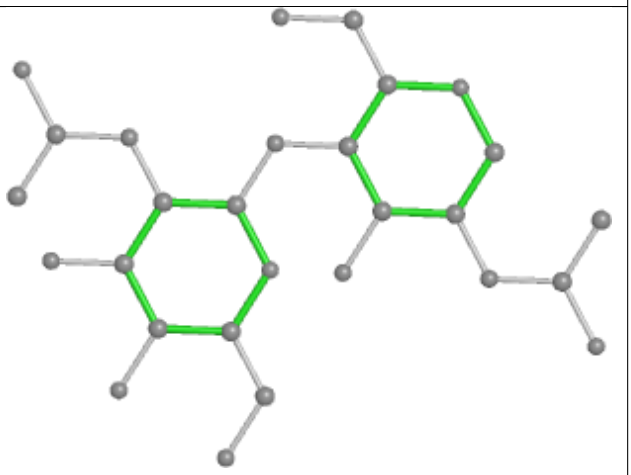
Bond lengths



Bond angles

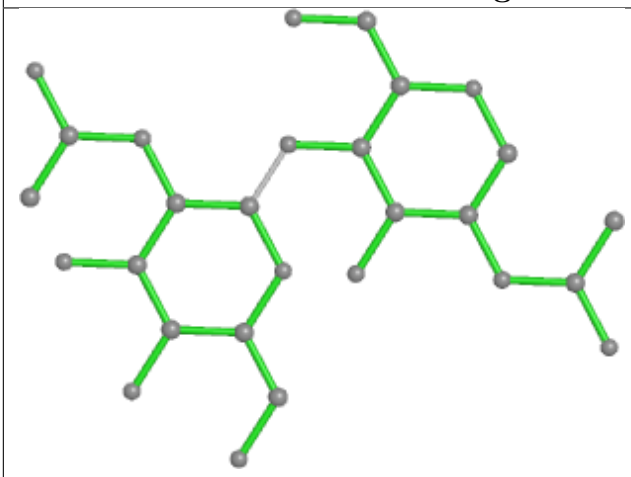


Torsions

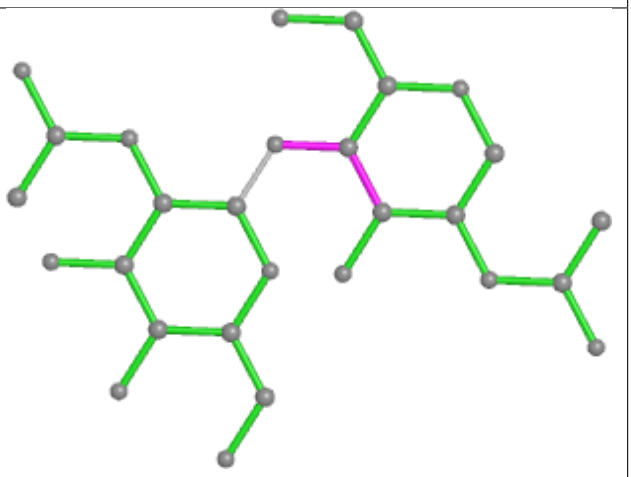


Rings

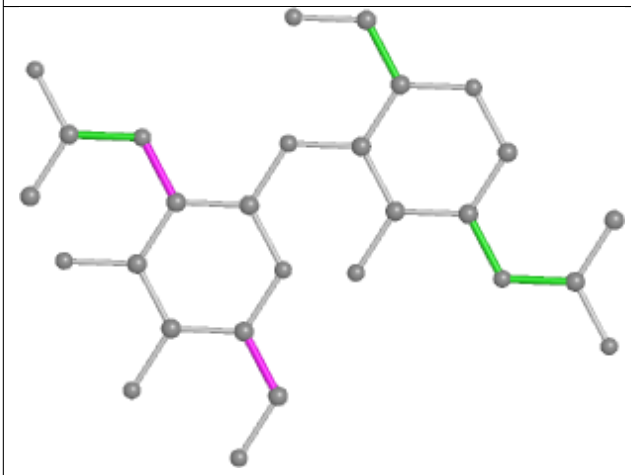
Oligosaccharide Chain K



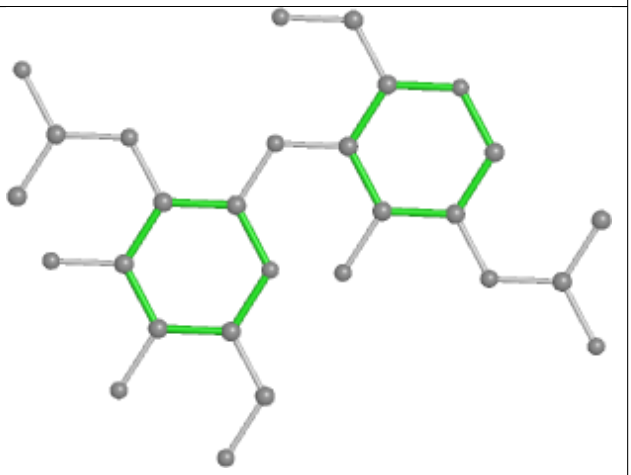
Bond lengths



Bond angles

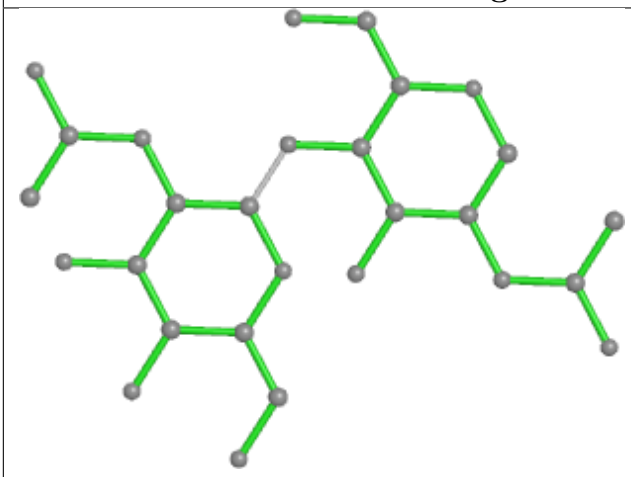


Torsions

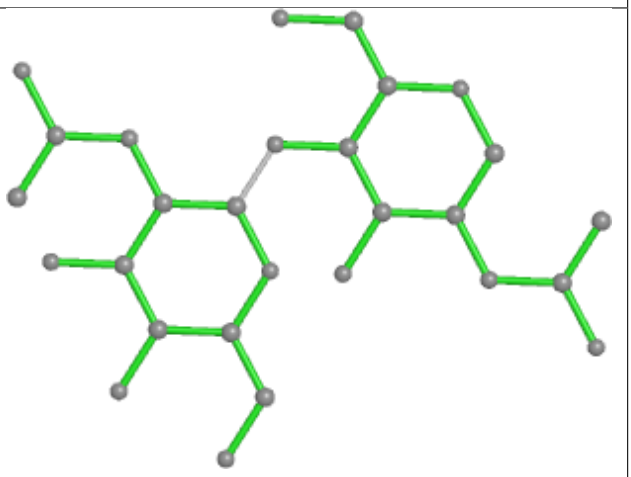


Rings

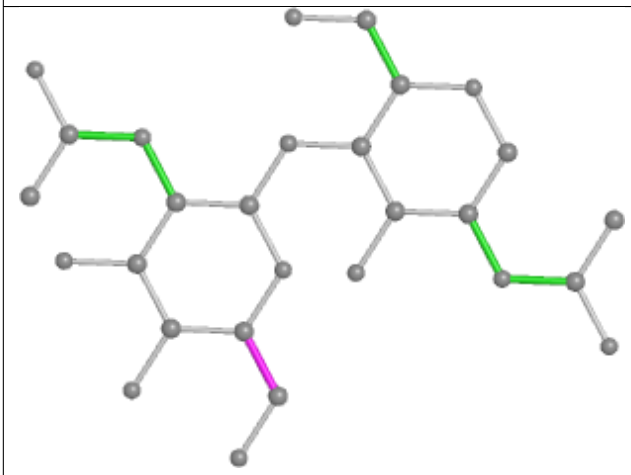
Oligosaccharide Chain M



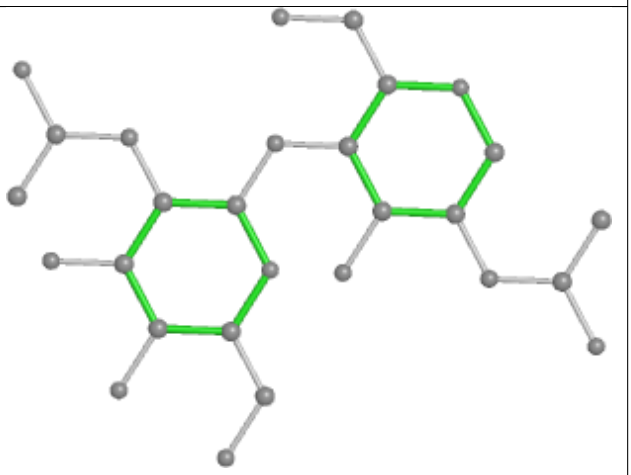
Bond lengths



Bond angles

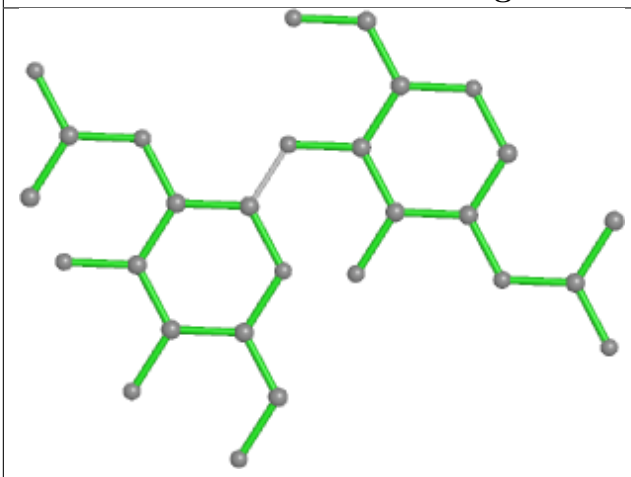


Torsions

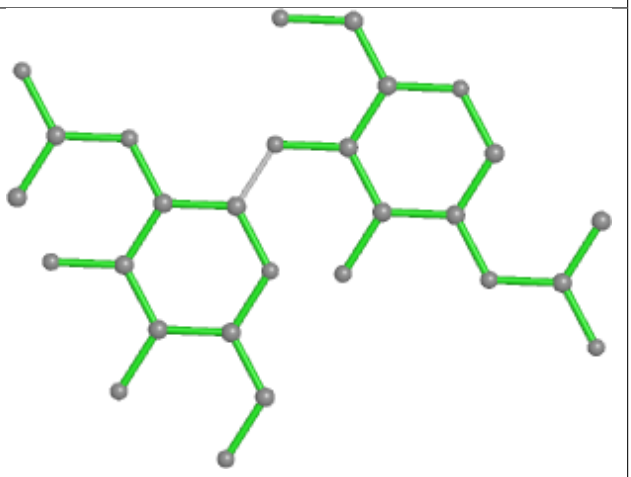


Rings

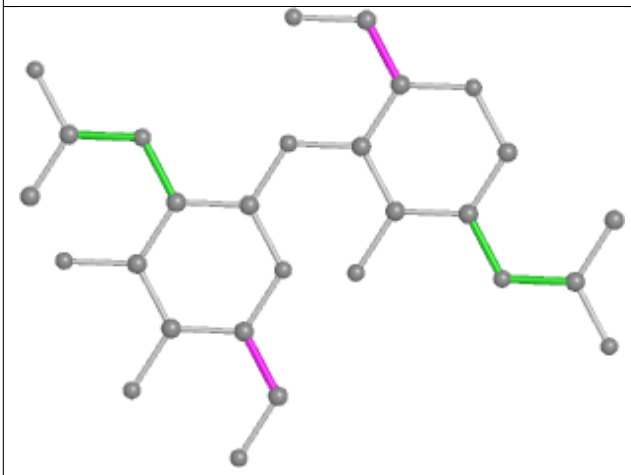
Oligosaccharide Chain O



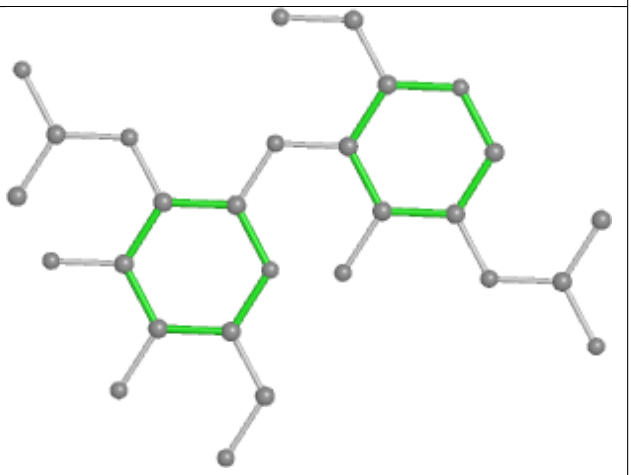
Bond lengths



Bond angles

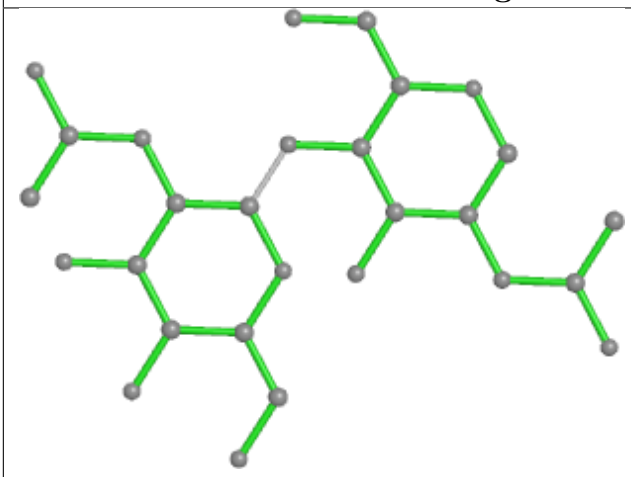


Torsions

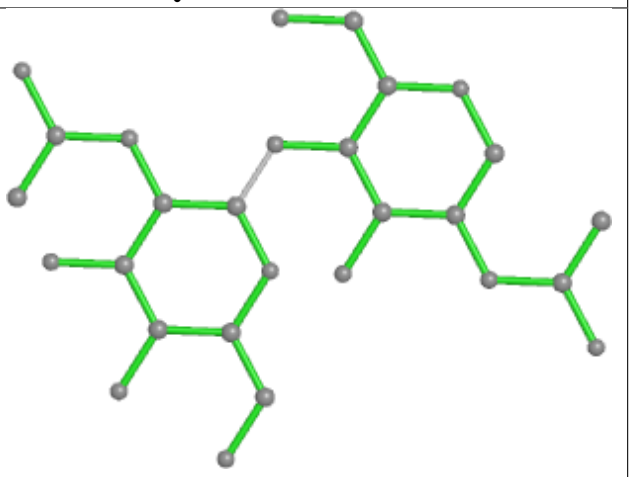


Rings

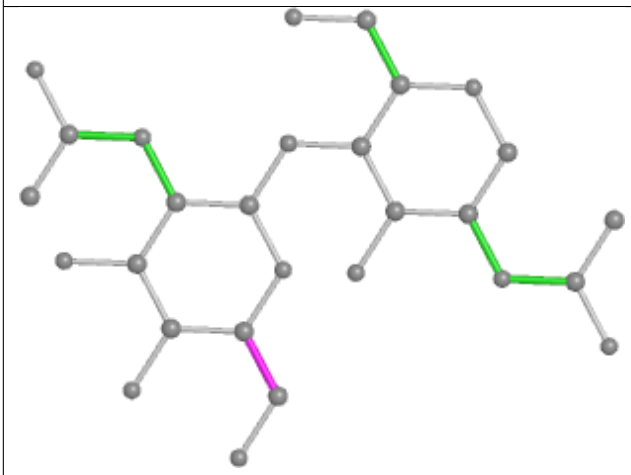
Oligosaccharide Chain Q



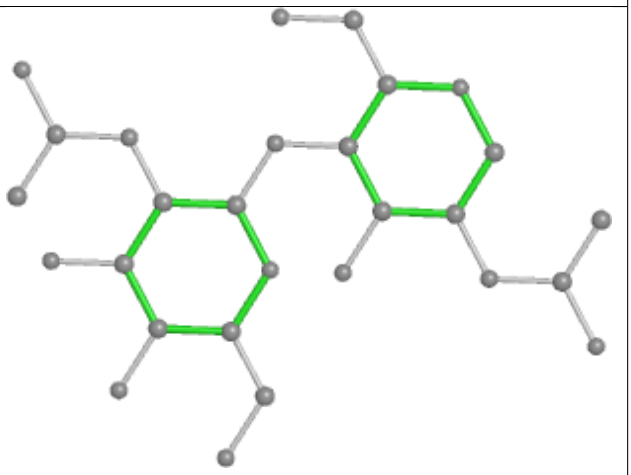
Bond lengths



Bond angles

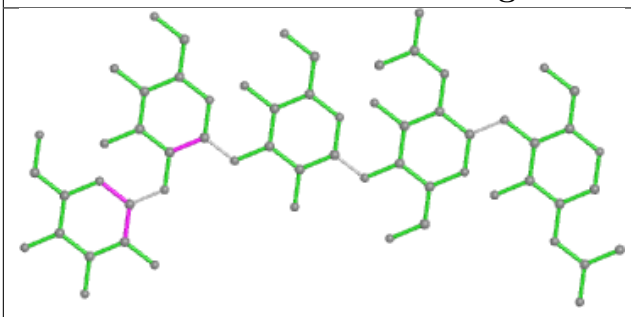


Torsions

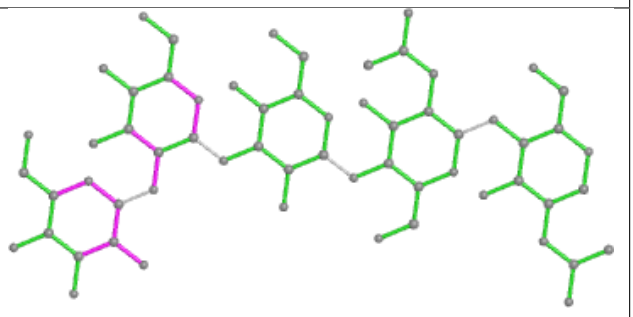


Rings

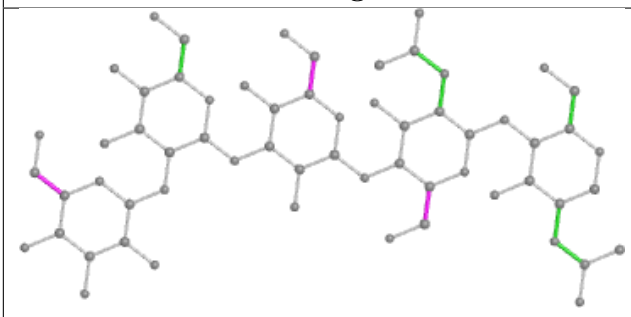
Oligosaccharide Chain J



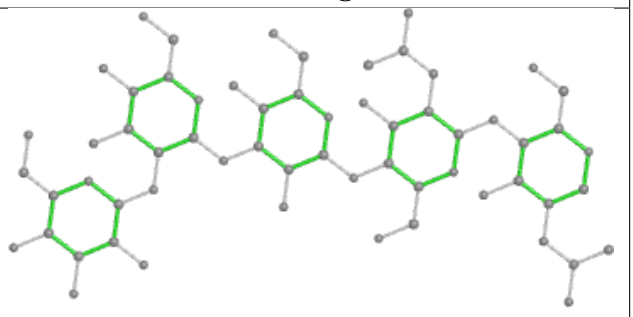
Bond lengths



Bond angles

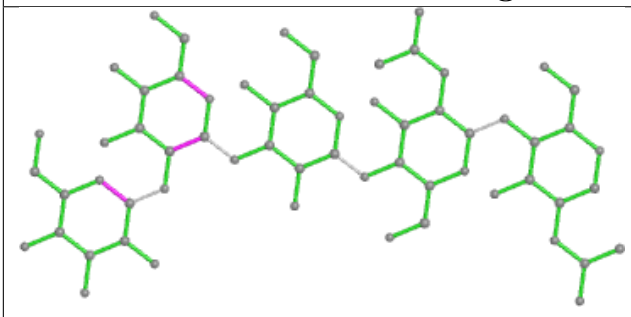


Torsions

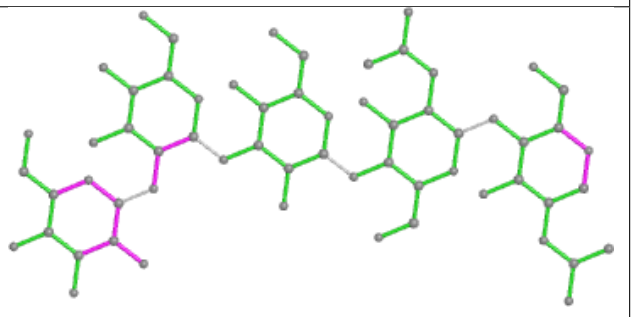


Rings

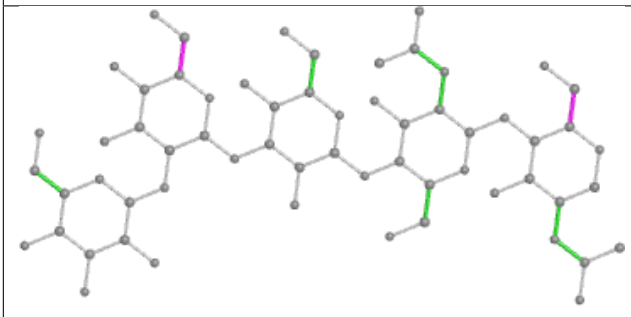
Oligosaccharide Chain L



Bond lengths



Bond angles



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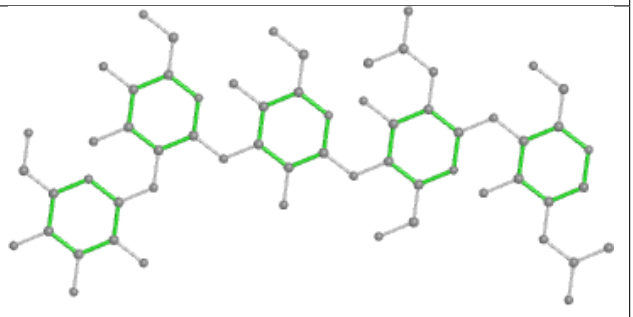
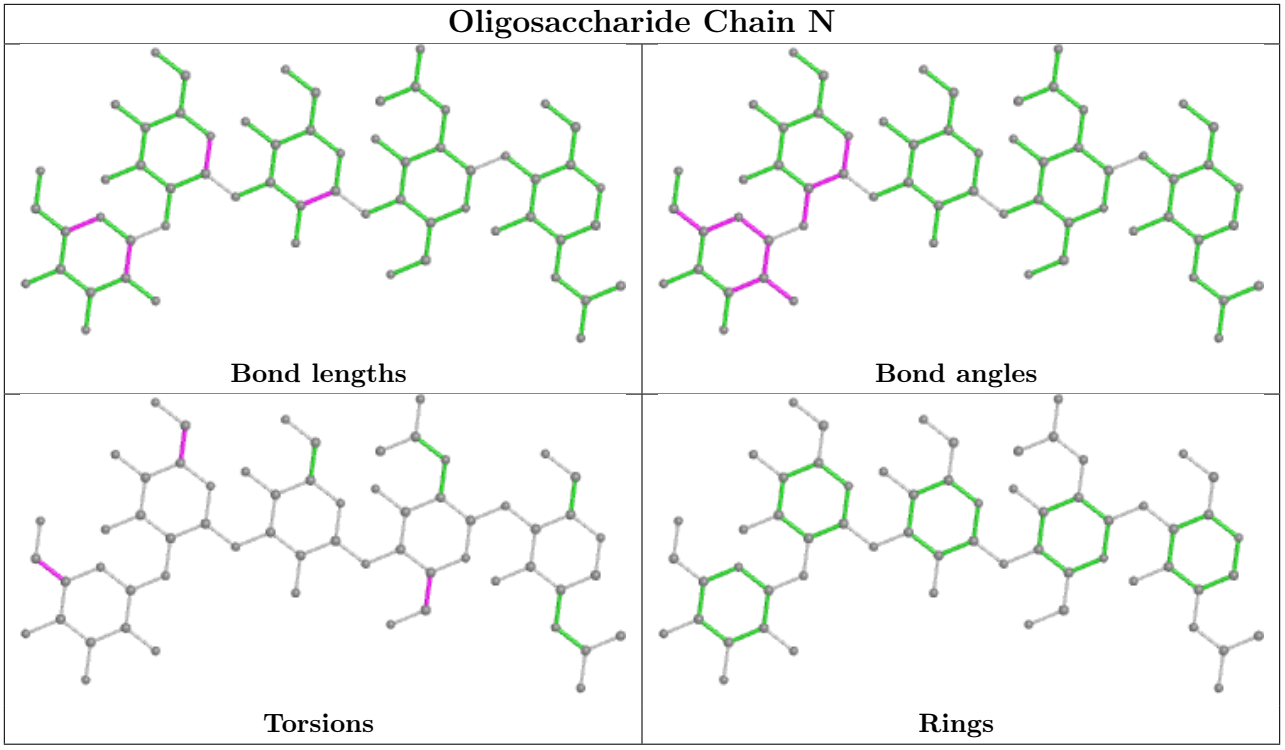
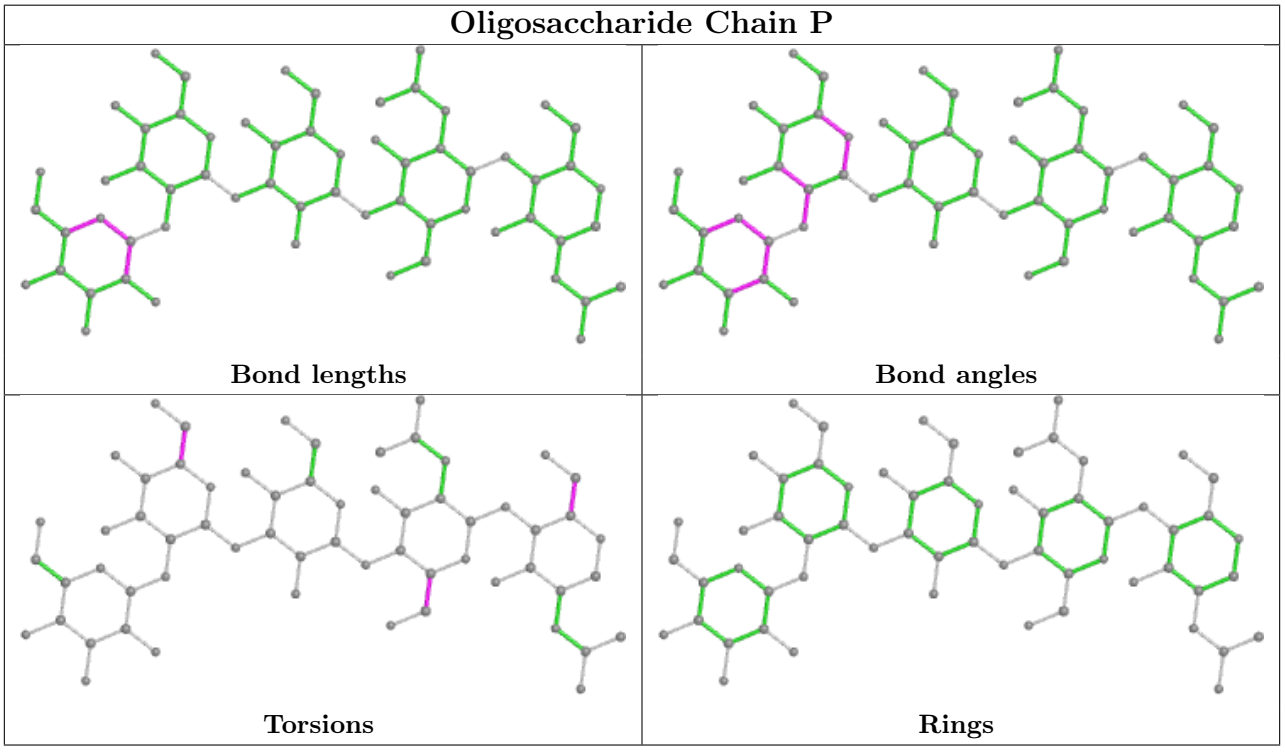


Rings





5.6 Ligand geometry (i)

Of 88 ligands modelled in this entry, 76 are monoatomic - leaving 12 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
6	NAG	B	602	1	14,14,15	0.47	0	17,19,21	0.44	0
6	NAG	B	601	1	14,14,15	0.47	0	17,19,21	0.40	0
6	NAG	C	602	1	14,14,15	0.33	0	17,19,21	0.60	0
6	NAG	F	601	1	14,14,15	0.41	0	17,19,21	0.54	0
7	EDO	A	602	-	3,3,3	0.48	0	2,2,2	0.31	0
6	NAG	E	602	1	14,14,15	0.26	0	17,19,21	0.34	0
6	NAG	C	601	1	14,14,15	0.44	0	17,19,21	0.57	0
6	NAG	B	603	1	14,14,15	0.41	0	17,19,21	0.50	0
6	NAG	D	601	1	14,14,15	0.44	0	17,19,21	0.53	0
6	NAG	E	601	1	14,14,15	0.36	0	17,19,21	0.47	0
6	NAG	A	601	1	14,14,15	0.55	0	17,19,21	0.71	1 (5%)
6	NAG	F	602	1	14,14,15	0.32	0	17,19,21	0.36	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
6	NAG	B	602	1	-	0/6/23/26	0/1/1/1
6	NAG	B	601	1	-	2/6/23/26	0/1/1/1
6	NAG	C	602	1	-	4/6/23/26	0/1/1/1
6	NAG	F	601	1	-	2/6/23/26	0/1/1/1
7	EDO	A	602	-	-	0/1/1/1	-
6	NAG	E	602	1	-	1/6/23/26	0/1/1/1
6	NAG	C	601	1	-	4/6/23/26	0/1/1/1
6	NAG	B	603	1	-	0/6/23/26	0/1/1/1
6	NAG	D	601	1	-	1/6/23/26	0/1/1/1
6	NAG	E	601	1	-	1/6/23/26	0/1/1/1
6	NAG	A	601	1	-	3/6/23/26	0/1/1/1
6	NAG	F	602	1	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	601	NAG	C1-O5-C5	2.32	115.33	112.19

There are no chirality outliers.

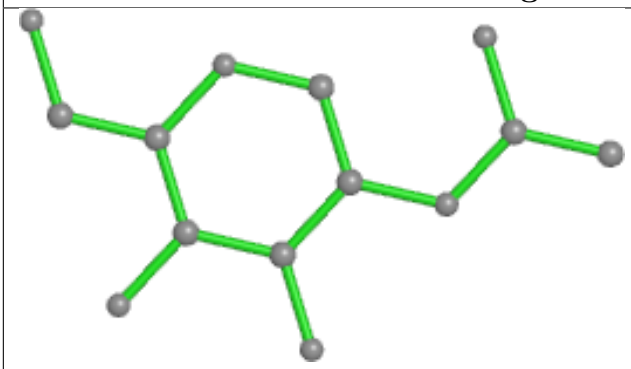
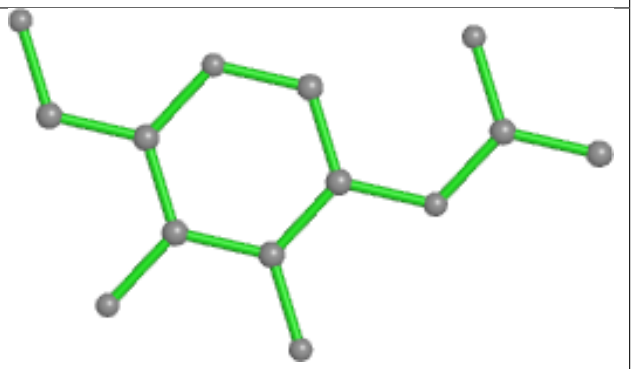
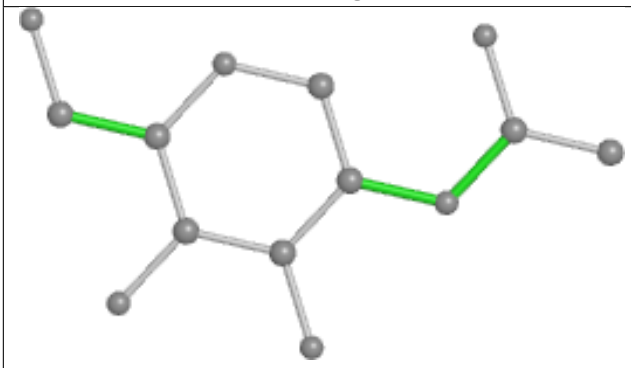
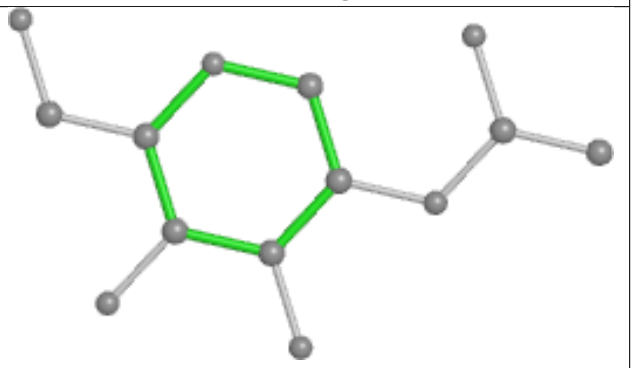
All (20) torsion outliers are listed below:

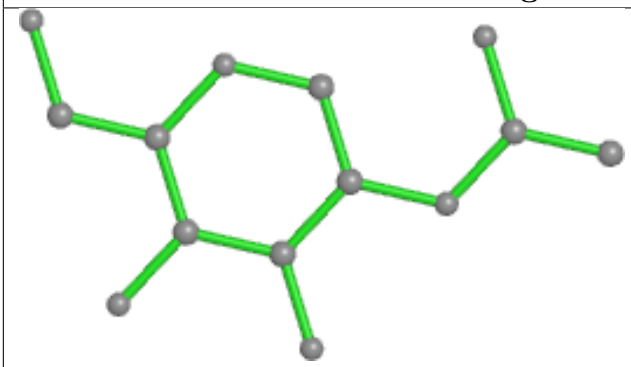
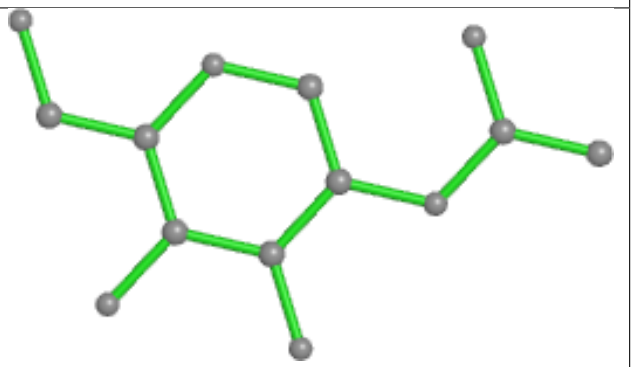
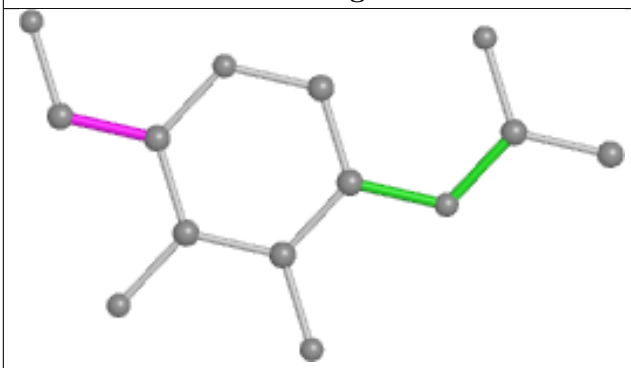
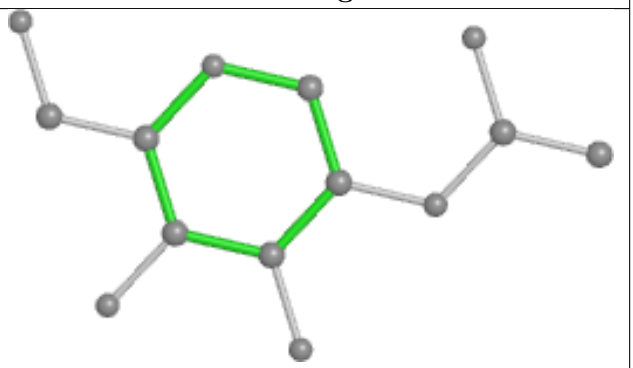
Mol	Chain	Res	Type	Atoms
6	F	601	NAG	O5-C5-C6-O6
6	C	601	NAG	O5-C5-C6-O6
6	F	602	NAG	O5-C5-C6-O6
6	C	601	NAG	C4-C5-C6-O6
6	B	601	NAG	O5-C5-C6-O6
6	F	601	NAG	C4-C5-C6-O6
6	A	601	NAG	C1-C2-N2-C7
6	B	601	NAG	C4-C5-C6-O6
6	F	602	NAG	C4-C5-C6-O6
6	C	602	NAG	O5-C5-C6-O6
6	C	602	NAG	C4-C5-C6-O6
6	C	601	NAG	C1-C2-N2-C7
6	A	601	NAG	O5-C5-C6-O6
6	E	601	NAG	O5-C5-C6-O6
6	E	602	NAG	O5-C5-C6-O6
6	C	601	NAG	C3-C2-N2-C7
6	C	602	NAG	C3-C2-N2-C7
6	D	601	NAG	O5-C5-C6-O6
6	C	602	NAG	C1-C2-N2-C7
6	A	601	NAG	C3-C2-N2-C7

There are no ring outliers.

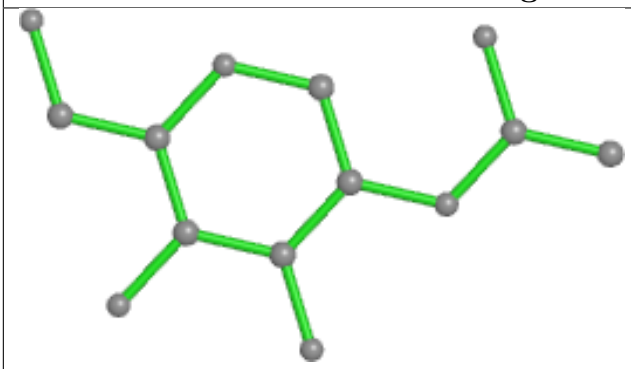
No monomer is involved in short contacts.

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.

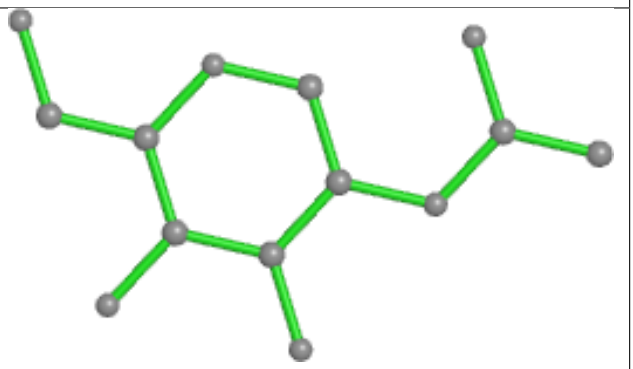
Ligand NAG B 602	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG B 601	
 Bond lengths	 Bond angles
 Torsions	 Rings

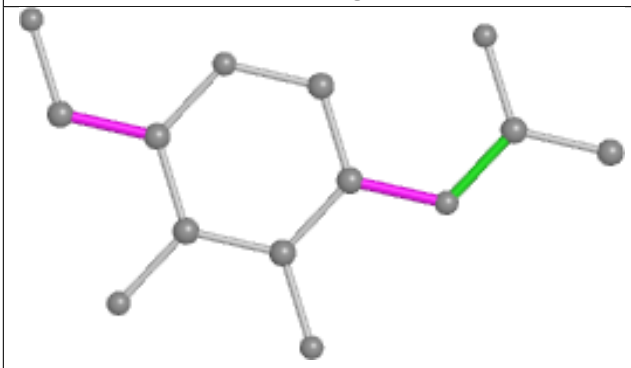
Ligand NAG C 602



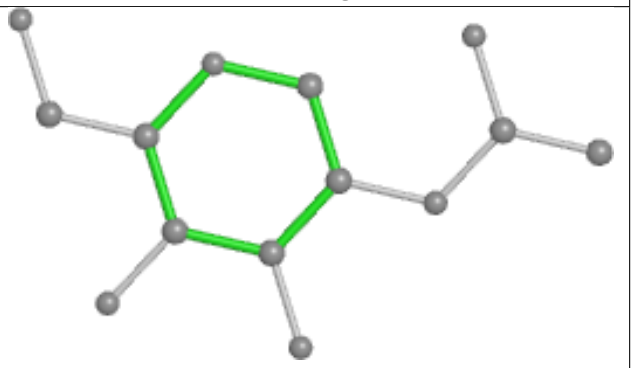
Bond lengths



Bond angles

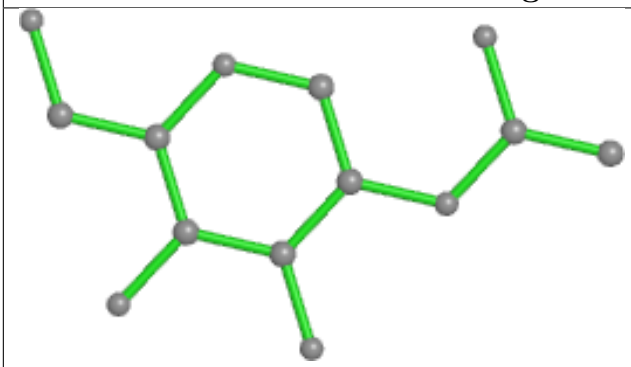


Torsions

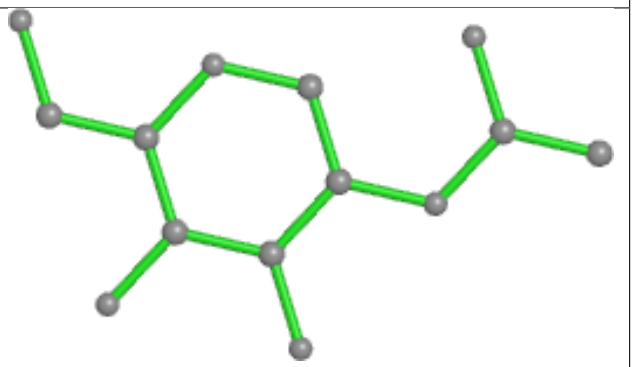


Rings

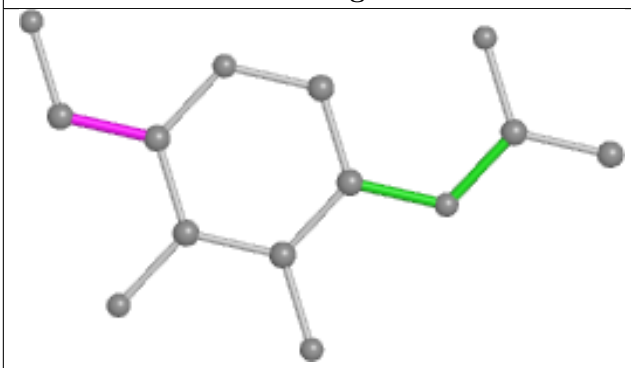
Ligand NAG F 601



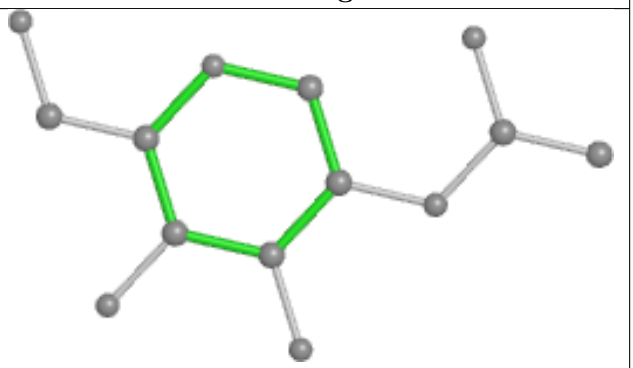
Bond lengths



Bond angles

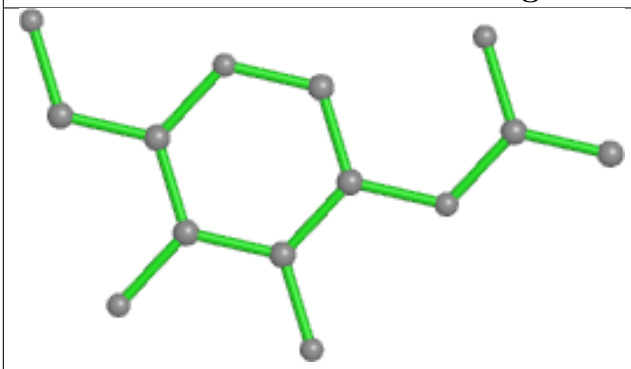


Torsions

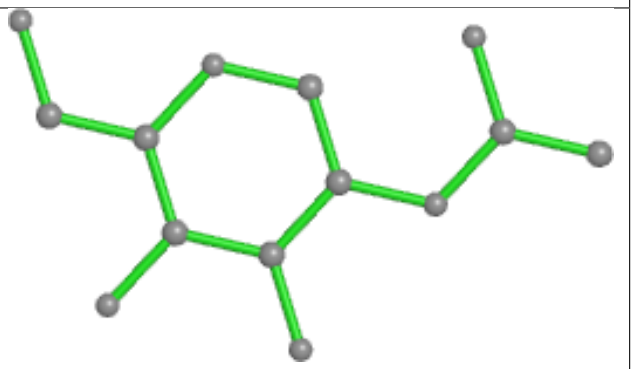


Rings

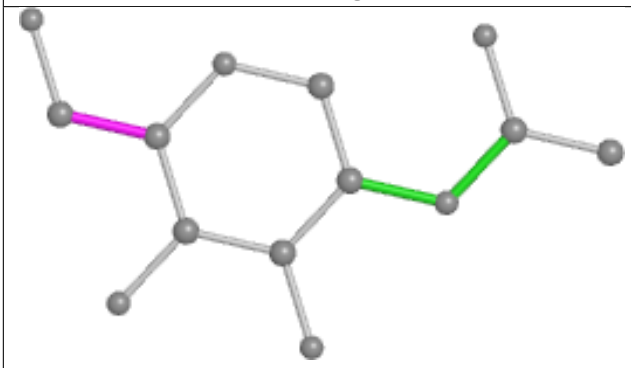
Ligand NAG E 602



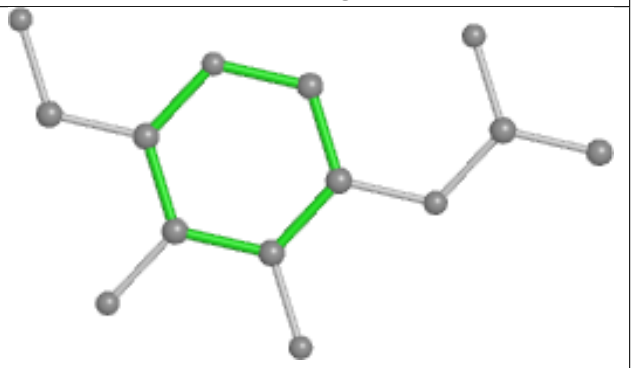
Bond lengths



Bond angles

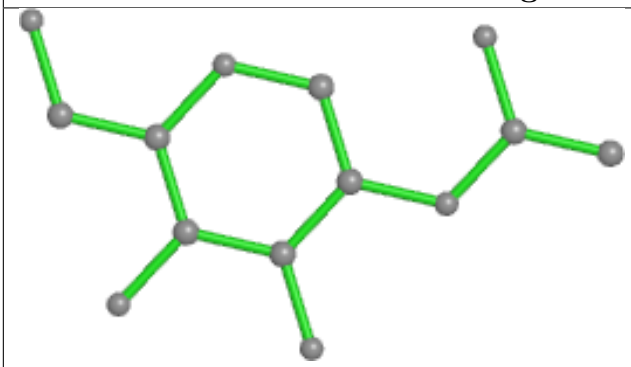


Torsions

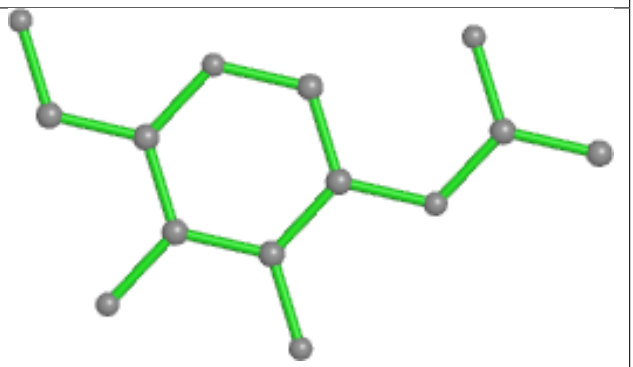


Rings

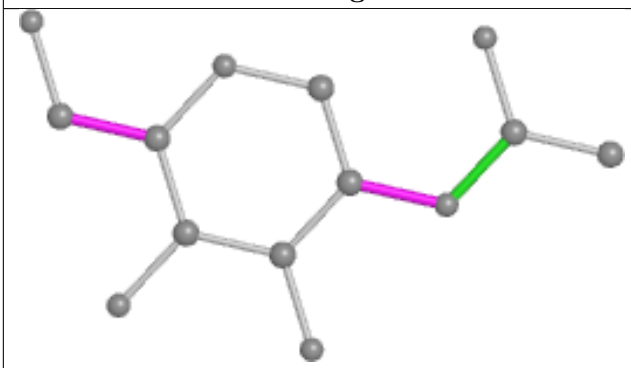
Ligand NAG C 601



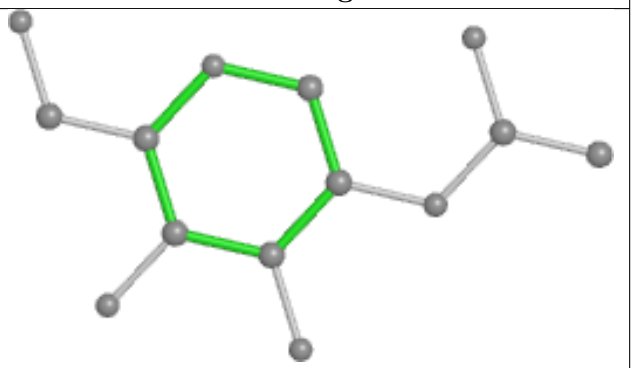
Bond lengths



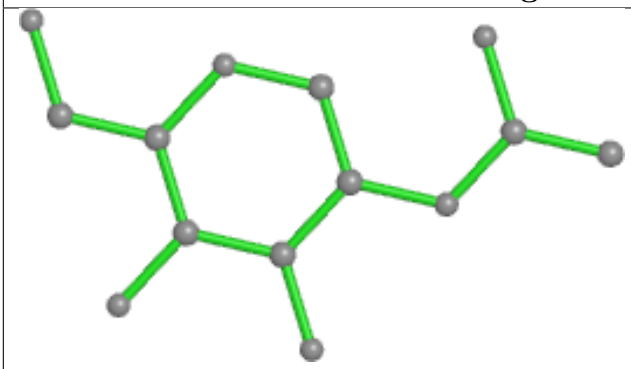
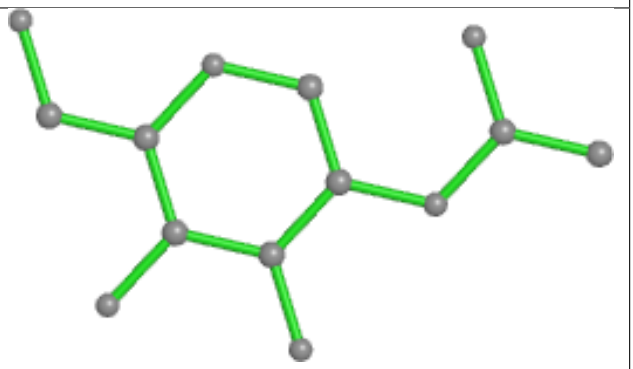
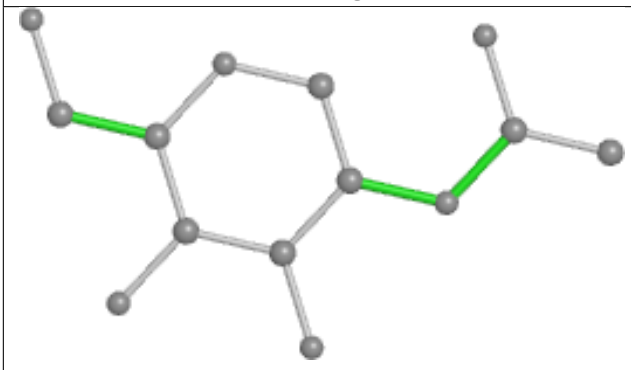
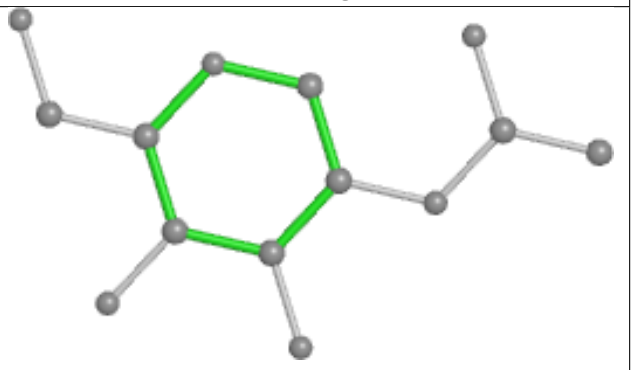
Bond angles

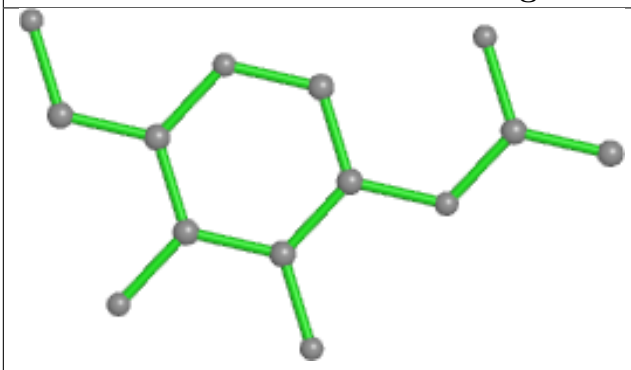
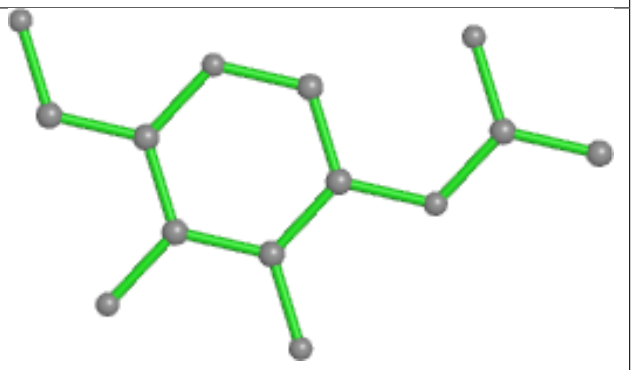
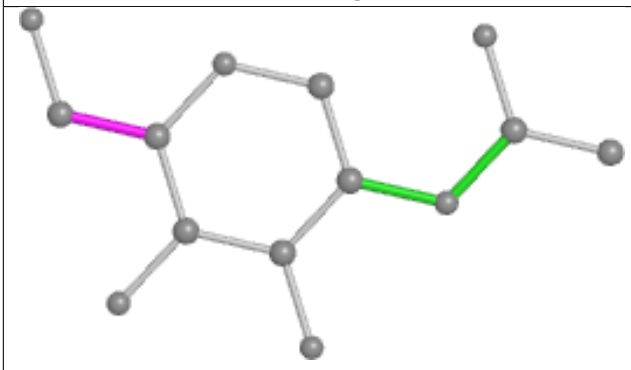
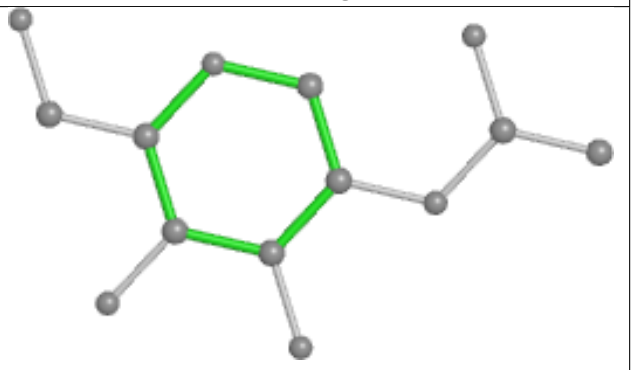


Torsions

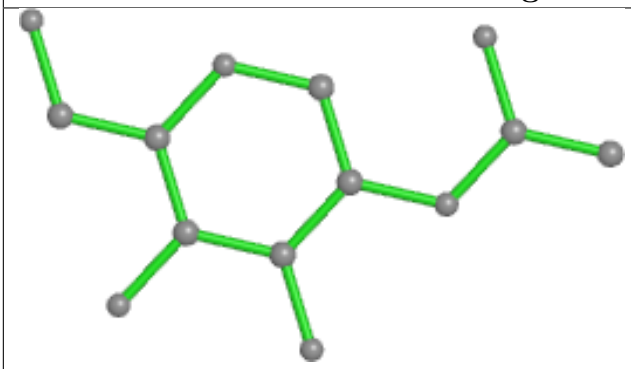


Rings

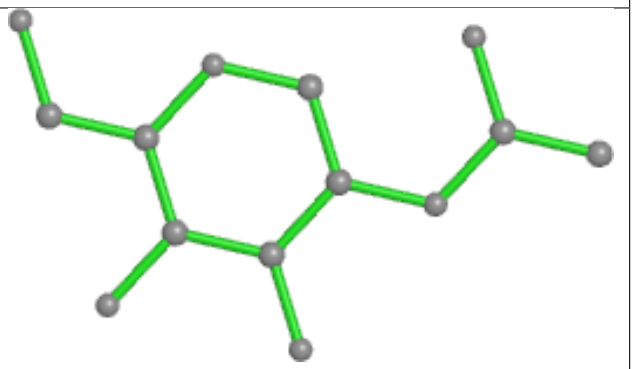
Ligand NAG B 603	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG D 601	
 Bond lengths	 Bond angles
 Torsions	 Rings

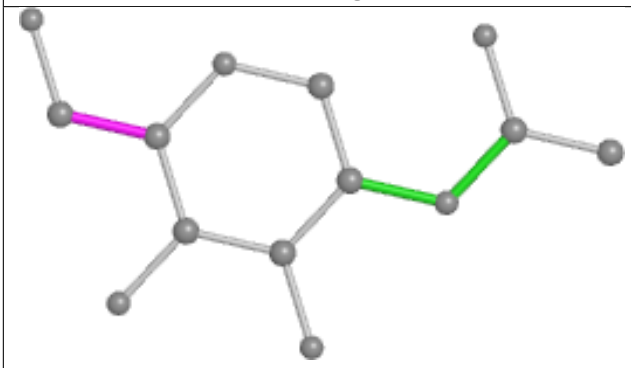
Ligand NAG E 601



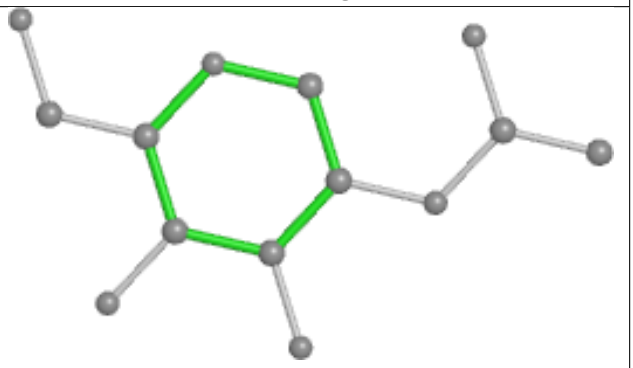
Bond lengths



Bond angles

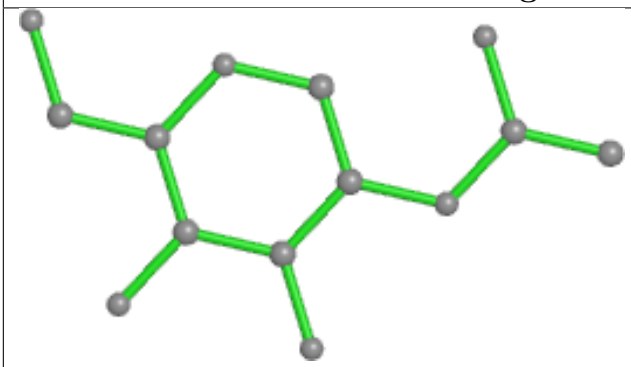


Torsions

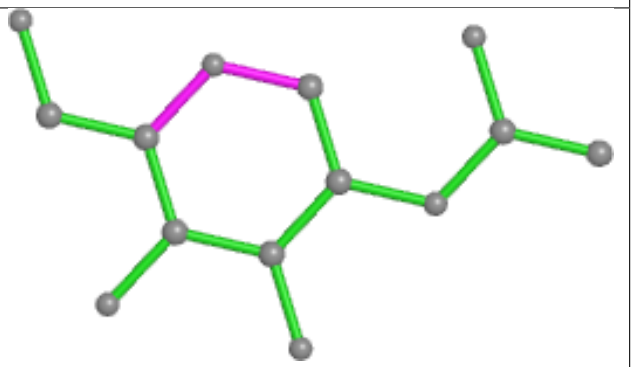


Rings

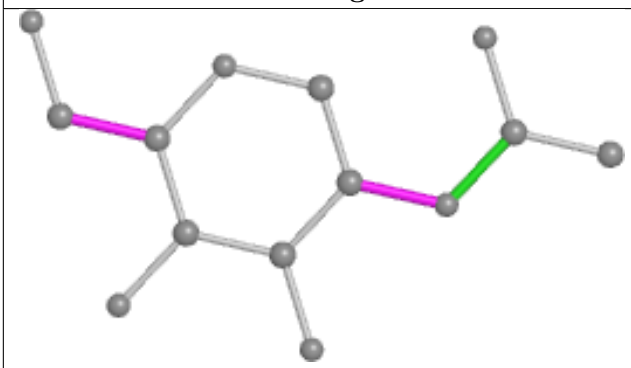
Ligand NAG A 601



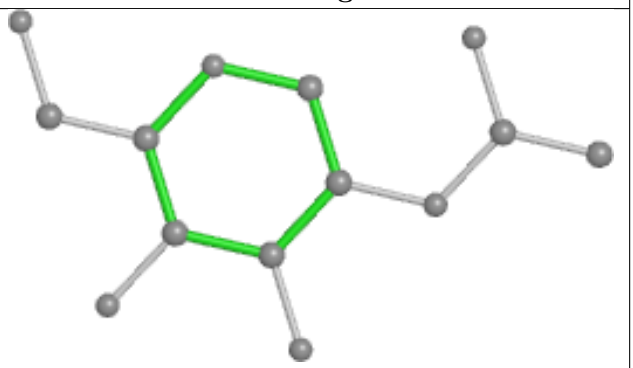
Bond lengths



Bond angles

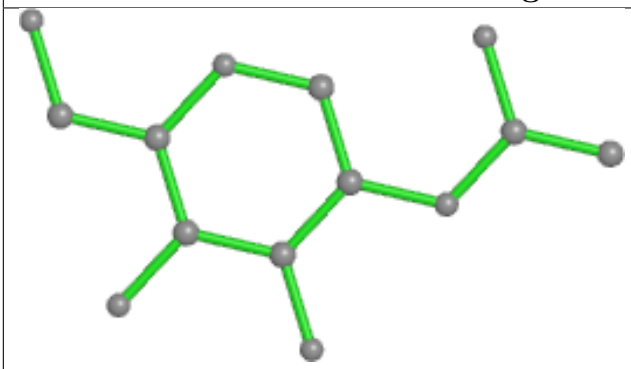


Torsions

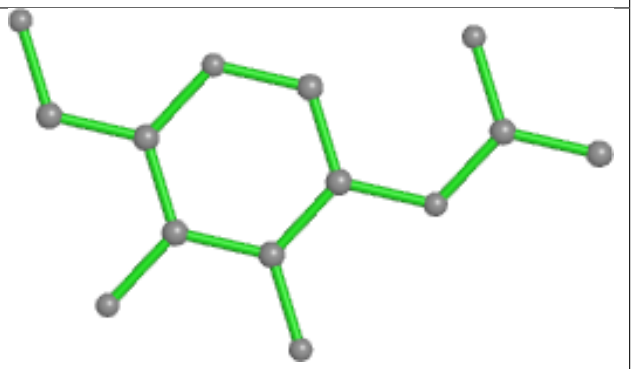


Rings

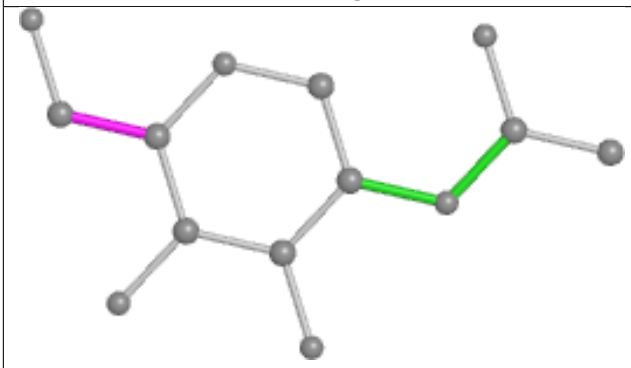
Ligand NAG F 602



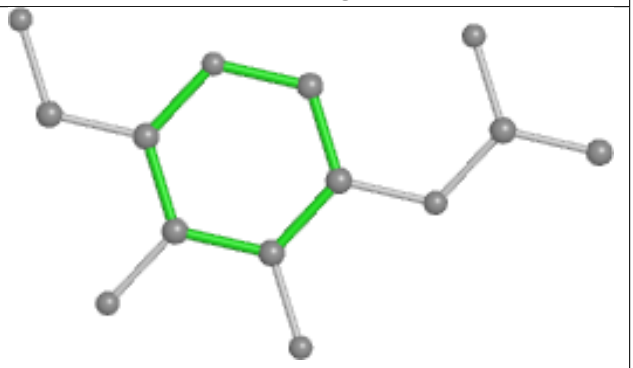
Bond lengths



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 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	323/329 (98%)	0.14	2 (0%)	89	78	31, 49, 77, 99	0
1	B	323/329 (98%)	0.10	4 (1%)	79	63	29, 46, 72, 92	0
1	C	323/329 (98%)	0.16	6 (1%)	66	49	32, 48, 68, 98	0
1	D	323/329 (98%)	0.09	4 (1%)	79	63	32, 50, 79, 107	0
1	E	323/329 (98%)	0.12	6 (1%)	66	49	34, 50, 83, 111	0
1	F	320/329 (97%)	0.19	5 (1%)	72	55	36, 54, 78, 107	0
2	a	160/170 (94%)	0.25	3 (1%)	66	49	34, 56, 85, 96	0
2	b	160/170 (94%)	0.31	5 (3%)	49	32	37, 62, 90, 113	0
2	c	160/170 (94%)	0.20	2 (1%)	77	61	35, 51, 71, 104	0
2	d	160/170 (94%)	0.20	2 (1%)	77	61	34, 49, 71, 110	0
2	e	160/170 (94%)	0.31	3 (1%)	66	49	36, 57, 92, 100	0
2	f	160/170 (94%)	0.25	3 (1%)	66	49	36, 61, 92, 107	0
All	All	2895/2994 (96%)	0.17	45 (1%)	72	55	29, 51, 84, 113	0

All (45) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	a	487	ASP	4.8
1	C	277	CYS	3.1
2	f	473	CYS	3.1
1	C	51	PRO	3.1
2	c	470	TYR	3.0
1	A	157	ASN	3.0
2	e	356	GLN	2.9
1	E	273	SER	2.8
2	c	487	ASP	2.8
1	E	274	MET	2.8
1	E	12	ASN	2.7

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Mol	Chain	Res	Type	RSRZ
1	F	218	GLU	2.7
1	B	85	PRO	2.7
1	D	159	SER	2.7
2	d	330	GLY	2.6
1	F	267	ILE	2.6
2	b	471	HIS	2.6
1	F	53	GLN	2.5
1	C	72	LEU	2.5
1	C	272	ALA	2.5
2	d	487	ASP	2.4
1	C	50	ALA	2.4
2	b	389	ASN	2.4
1	B	73	LEU	2.4
2	f	330	GLY	2.4
2	b	469	PHE	2.3
2	b	354	HIS	2.2
1	E	122	GLU	2.2
1	F	86	ASN	2.2
1	C	44	CYS	2.2
1	E	4	THR	2.2
1	B	6	CYS	2.1
1	D	122	GLU	2.1
1	F	272	ALA	2.1
2	f	478	MET	2.1
1	D	142	GLY	2.1
2	e	485	THR	2.1
1	B	209	ASN	2.1
2	e	477	CYS	2.1
2	a	389	ASN	2.1
2	b	473	CYS	2.0
1	D	163	LEU	2.0
1	A	122	GLU	2.0
1	E	275	ASP	2.0
2	a	485	THR	2.0

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

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

6.3 Carbohydrates (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

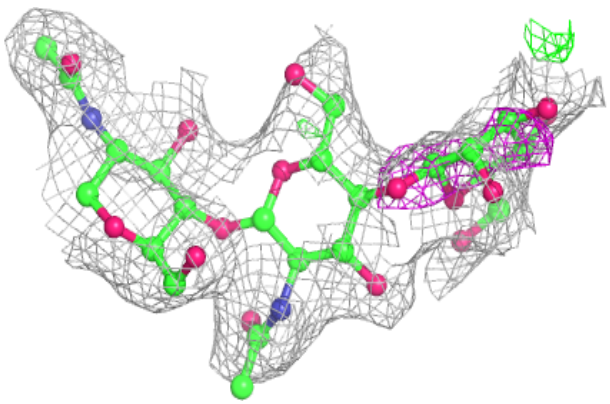
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
5	MAN	N	5	11/12	0.44	0.34	83,87,88,89	0
3	BMA	G	3	11/12	0.58	0.37	65,66,67,68	0
5	MAN	P	5	11/12	0.70	0.30	63,73,75,75	0
4	NAG	M	2	14/15	0.72	0.44	56,58,59,60	0
5	MAN	L	4	11/12	0.72	0.39	56,56,57,58	0
5	BMA	J	3	11/12	0.73	0.27	61,63,66,69	0
5	BMA	L	3	11/12	0.74	0.31	55,56,57,57	0
5	MAN	J	4	11/12	0.75	0.38	67,69,72,74	0
5	MAN	P	4	11/12	0.77	0.39	77,79,82,82	0
4	NAG	Q	2	14/15	0.78	0.33	64,64,65,66	0
5	BMA	N	3	11/12	0.78	0.38	71,75,79,80	0
5	MAN	N	4	11/12	0.78	0.41	82,85,86,86	0
4	NAG	K	2	14/15	0.79	0.31	50,52,52,53	0
4	NAG	I	2	14/15	0.80	0.28	53,54,55,55	0
5	NAG	P	2	14/15	0.80	0.40	62,63,67,69	0
4	NAG	O	2	14/15	0.81	0.33	63,65,66,66	0
4	NAG	H	1	14/15	0.82	0.22	56,59,61,63	0
5	BMA	P	3	11/12	0.83	0.26	70,72,74,76	0
4	NAG	H	2	14/15	0.83	0.38	63,64,66,67	0
5	MAN	L	5	11/12	0.83	0.37	50,54,56,56	0
5	NAG	N	2	14/15	0.84	0.24	58,60,65,68	0
5	MAN	J	5	11/12	0.84	0.30	58,60,65,66	0
3	NAG	G	2	14/15	0.85	0.27	58,60,62,64	0
4	NAG	O	1	14/15	0.85	0.25	61,63,65,65	0
5	NAG	L	2	14/15	0.86	0.18	50,52,53,54	0
4	NAG	M	1	14/15	0.87	0.24	55,57,59,61	0
5	NAG	J	2	14/15	0.89	0.23	52,53,57,58	0
4	NAG	Q	1	14/15	0.91	0.24	58,61,62,63	0
3	NAG	G	1	14/15	0.91	0.18	53,55,58,59	0
5	NAG	L	1	14/15	0.91	0.15	52,54,57,57	0
4	NAG	K	1	14/15	0.92	0.20	48,49,51,52	0
5	NAG	P	1	14/15	0.92	0.17	56,59,61,63	0
5	NAG	J	1	14/15	0.93	0.15	48,50,52,52	0
5	NAG	N	1	14/15	0.94	0.16	53,55,57,58	0
4	NAG	I	1	14/15	0.94	0.14	52,54,56,56	0

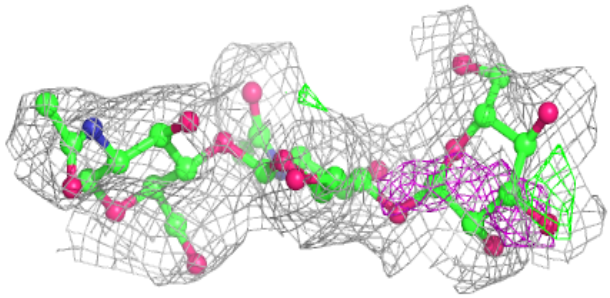
The following is a graphical depiction of the model fit to experimental electron density for oligosac-

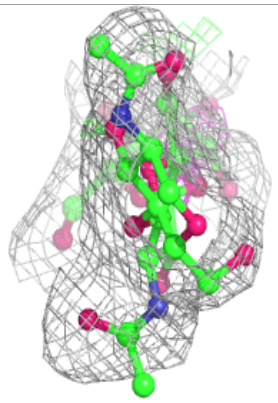
charide. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around Chain G:

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

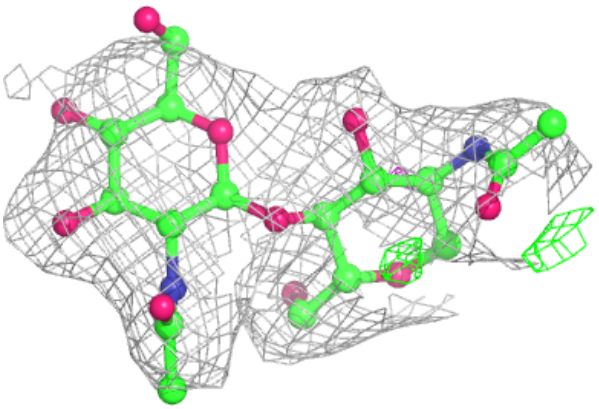


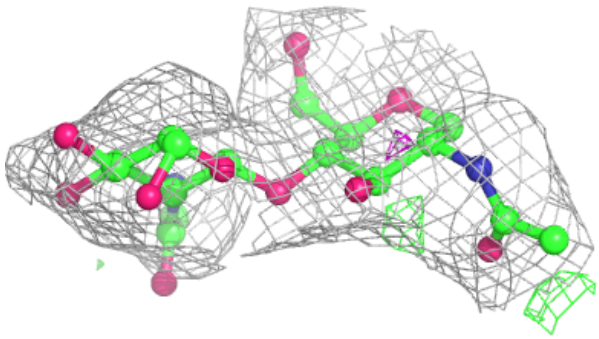


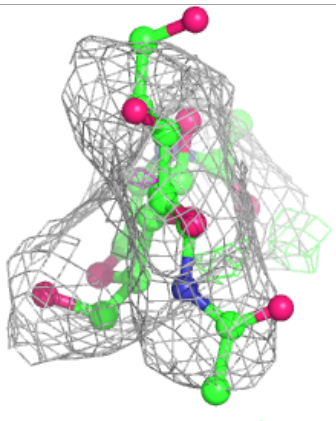


Electron density around Chain H:

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

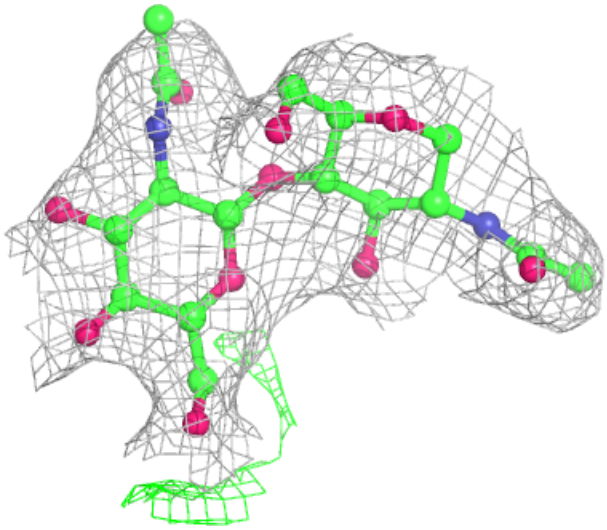


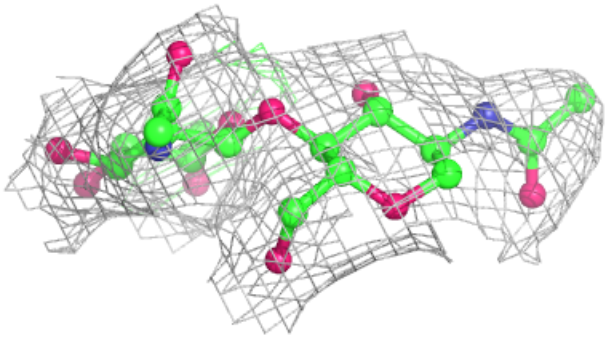




Electron density around Chain I:

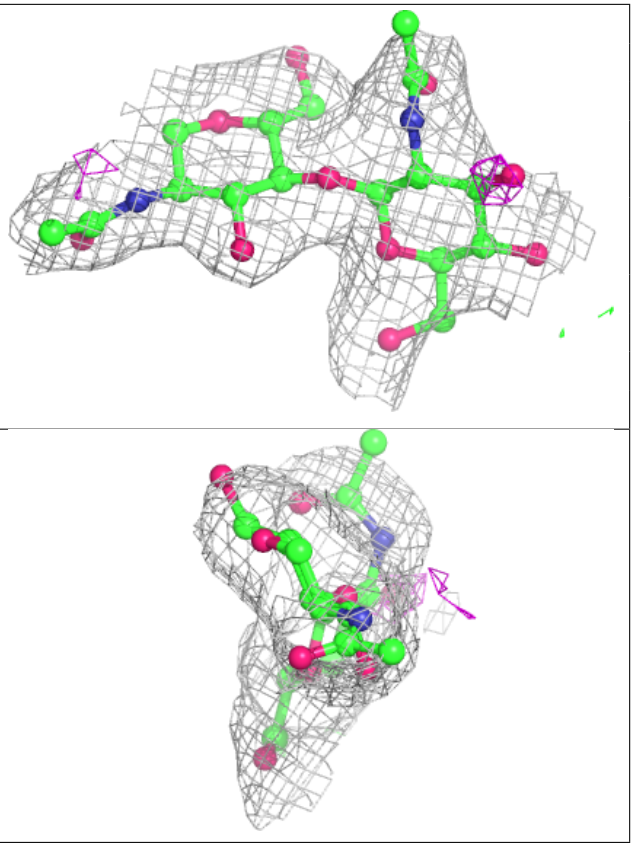
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)





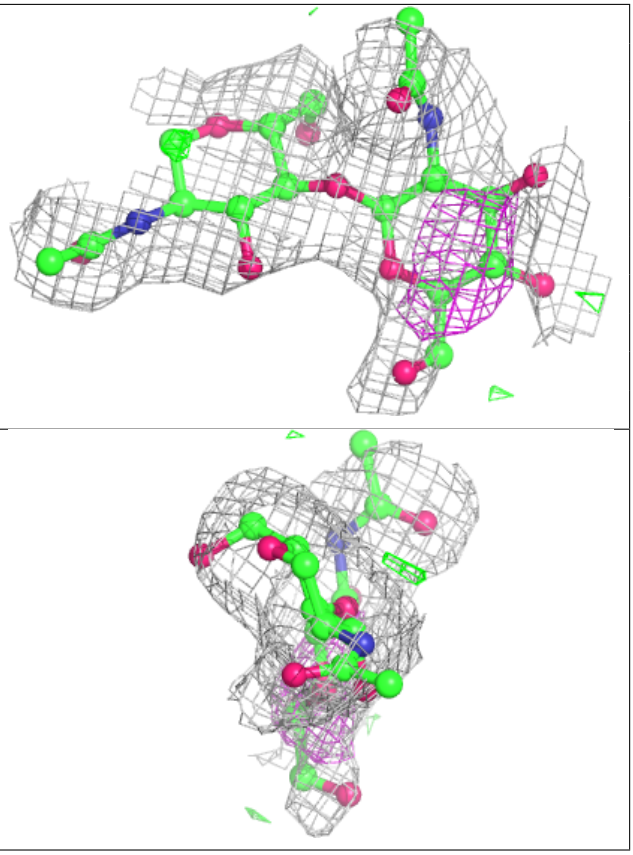
Electron density around Chain K:

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



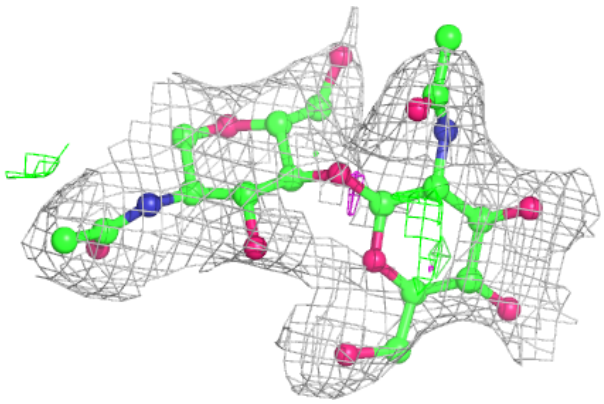
Electron density around Chain M:

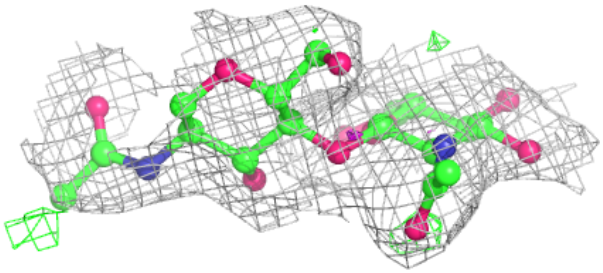
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

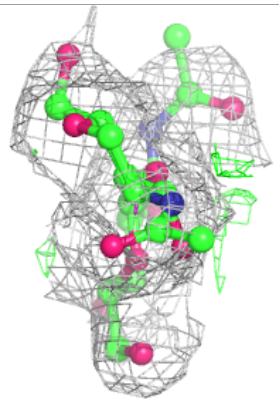


Electron density around Chain O:

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

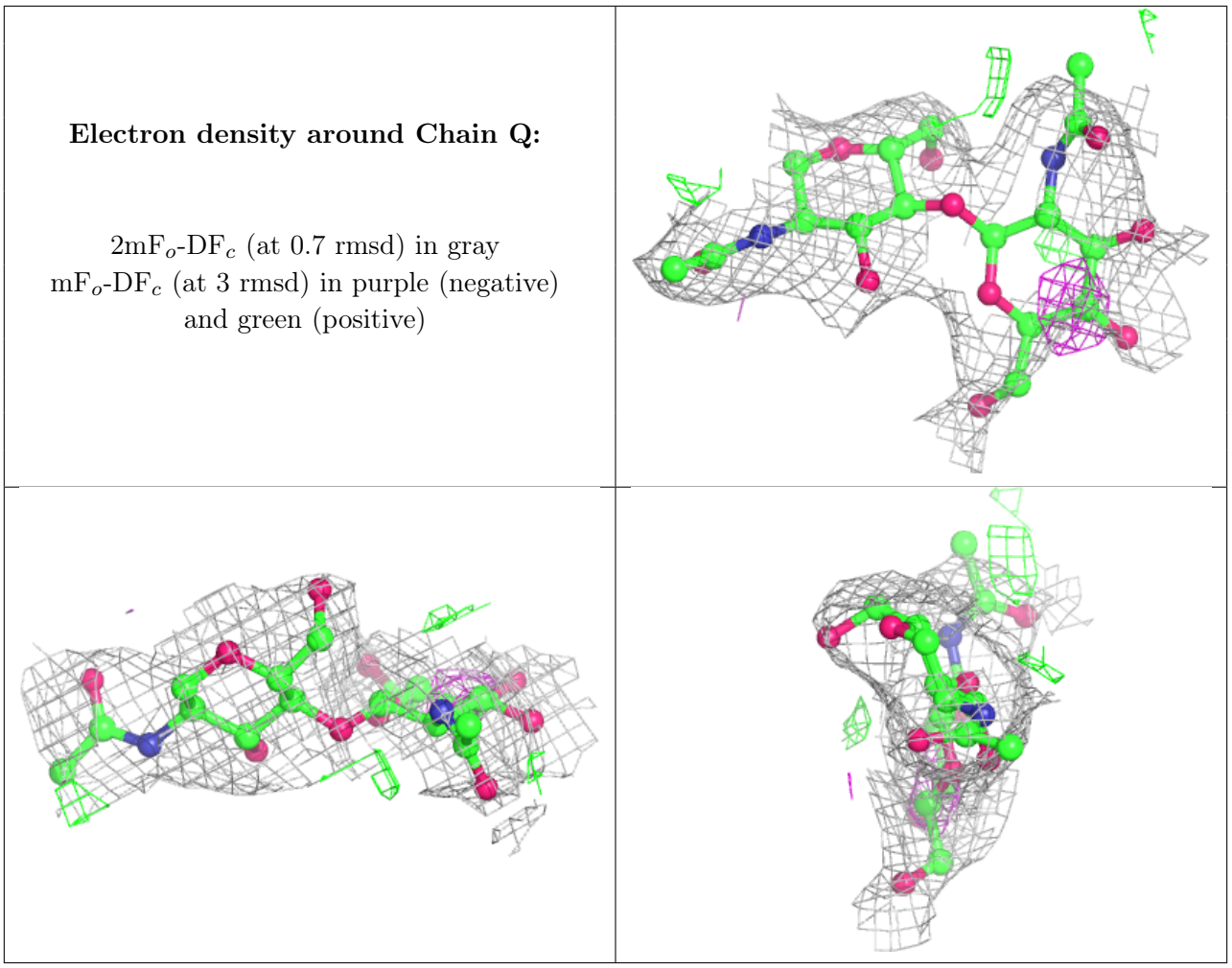






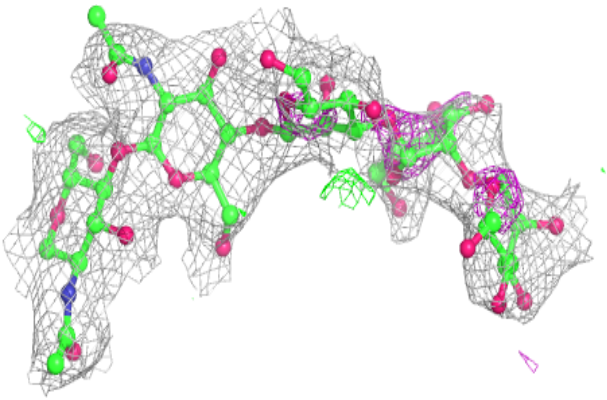
Electron density around Chain Q:

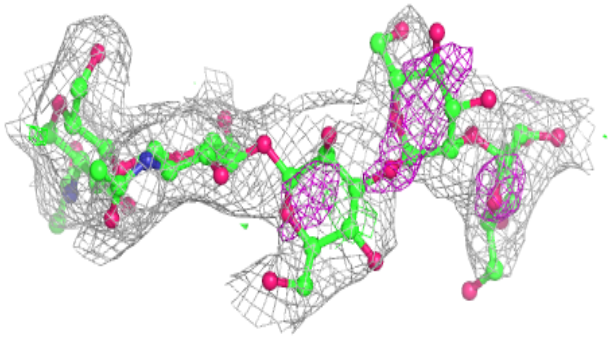
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

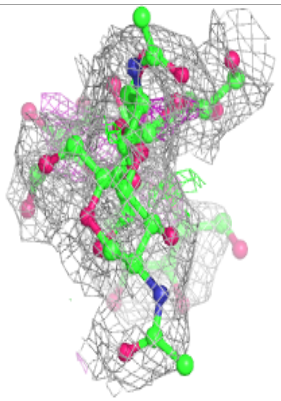


Electron density around Chain J:

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

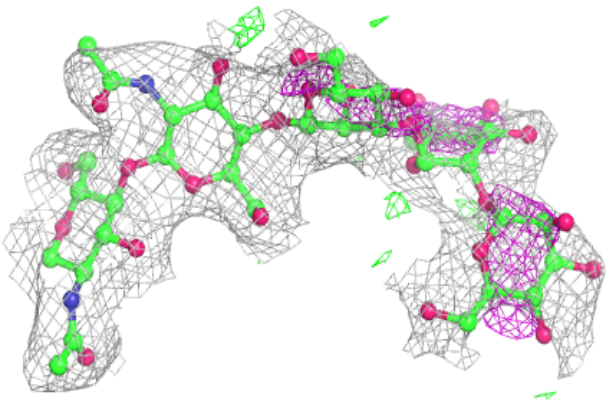


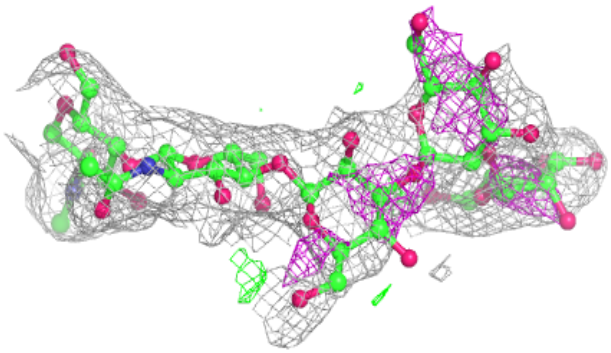


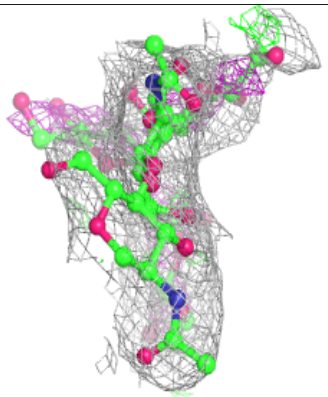


Electron density around Chain L:

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

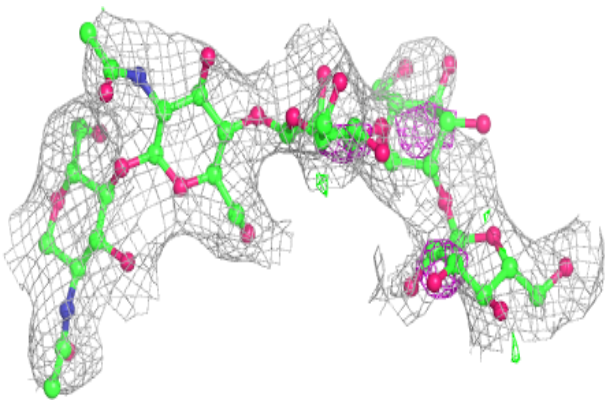


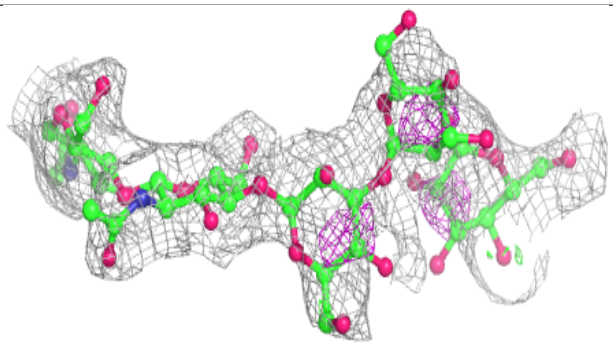


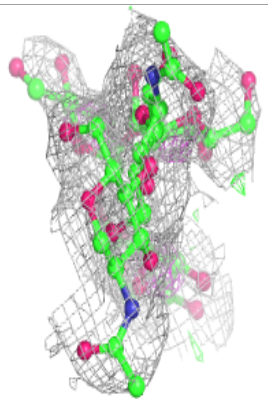


Electron density around Chain N:

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

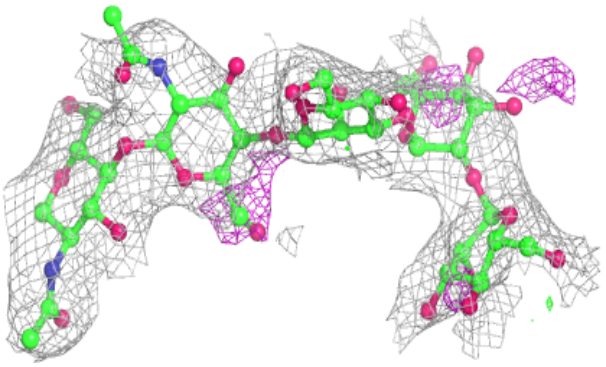


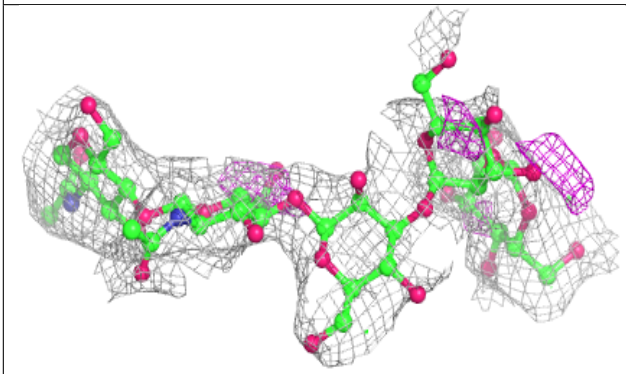


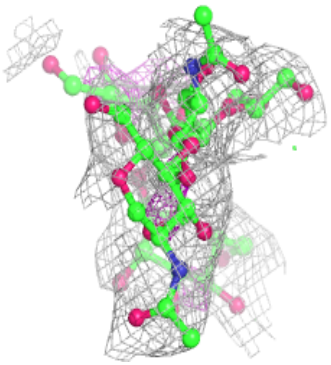


Electron density around Chain P:

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







6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
8	IOD	e	502	1/1	0.48	0.15	174,174,174,174	0
6	NAG	B	601	14/15	0.50	0.31	68,70,71,71	0
8	IOD	E	605	1/1	0.62	0.24	142,142,142,142	1
6	NAG	F	602	14/15	0.67	0.41	81,84,84,84	0
6	NAG	C	601	14/15	0.68	0.32	55,57,59,59	0
6	NAG	E	601	14/15	0.70	0.37	62,63,64,64	0
6	NAG	A	601	14/15	0.70	0.26	87,89,91,91	0
6	NAG	E	602	14/15	0.73	0.51	68,70,72,74	0
6	NAG	D	601	14/15	0.75	0.33	55,57,58,61	0
6	NAG	F	601	14/15	0.78	0.34	54,56,58,58	0
8	IOD	D	606	1/1	0.80	0.16	104,104,104,104	0
6	NAG	B	603	14/15	0.80	0.44	72,73,74,75	0
8	IOD	A	608	1/1	0.80	0.18	150,150,150,150	0
8	IOD	b	501	1/1	0.81	0.14	141,141,141,141	1
7	EDO	A	602	4/4	0.82	0.25	50,51,51,52	0
6	NAG	C	602	14/15	0.83	0.21	51,52,53,53	0
8	IOD	F	610	1/1	0.84	0.17	67,67,67,67	1
8	IOD	F	607	1/1	0.85	0.26	131,131,131,131	1
8	IOD	C	612	1/1	0.87	0.10	81,81,81,81	1
6	NAG	B	602	14/15	0.87	0.25	50,51,52,53	0
8	IOD	B	606	1/1	0.88	0.09	81,81,81,81	1
8	IOD	A	614	1/1	0.88	0.22	98,98,98,98	1
8	IOD	E	609	1/1	0.91	0.12	54,54,54,54	1
8	IOD	E	613	1/1	0.91	0.06	59,59,59,59	1
8	IOD	E	614	1/1	0.91	0.10	64,64,64,64	1
8	IOD	A	607	1/1	0.91	0.14	61,61,61,61	1
8	IOD	D	610	1/1	0.91	0.14	97,97,97,97	1
8	IOD	A	610	1/1	0.91	0.08	43,43,43,43	1
8	IOD	F	611	1/1	0.91	0.16	102,102,102,102	1
8	IOD	C	607	1/1	0.92	0.10	68,68,68,68	1
8	IOD	D	605	1/1	0.92	0.06	99,99,99,99	1
8	IOD	C	611	1/1	0.92	0.09	43,43,43,43	1
8	IOD	B	610	1/1	0.93	0.09	53,53,53,53	1
8	IOD	A	606	1/1	0.93	0.06	81,81,81,81	1
8	IOD	c	503	1/1	0.94	0.24	44,44,44,44	1
8	IOD	D	603	1/1	0.94	0.10	51,51,51,51	1
8	IOD	F	606	1/1	0.94	0.07	48,48,48,48	1

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
8	IOD	E	608	1/1	0.94	0.06	55,55,55,55	1
8	IOD	F	608	1/1	0.94	0.06	67,67,67,67	1
8	IOD	B	605	1/1	0.94	0.06	59,59,59,59	1
8	IOD	B	612	1/1	0.94	0.08	80,80,80,80	1
8	IOD	e	501	1/1	0.95	0.07	70,70,70,70	1
8	IOD	A	612	1/1	0.95	0.05	52,52,52,52	1
8	IOD	F	604	1/1	0.95	0.21	82,82,82,82	0
8	IOD	B	608	1/1	0.95	0.09	41,41,41,41	1
8	IOD	D	607	1/1	0.95	0.07	58,58,58,58	1
8	IOD	E	612	1/1	0.95	0.07	58,58,58,58	1
8	IOD	D	609	1/1	0.95	0.08	98,98,98,98	1
8	IOD	D	604	1/1	0.95	0.09	48,48,48,48	1
8	IOD	F	614	1/1	0.95	0.12	141,141,141,141	1
8	IOD	D	611	1/1	0.96	0.06	44,44,44,44	1
8	IOD	D	613	1/1	0.96	0.11	80,80,80,80	1
8	IOD	A	615	1/1	0.96	0.08	50,50,50,50	1
8	IOD	E	606	1/1	0.96	0.06	49,49,49,49	1
8	IOD	A	613	1/1	0.96	0.21	127,127,127,127	1
8	IOD	F	613	1/1	0.96	0.05	95,95,95,95	1
8	IOD	A	611	1/1	0.96	0.11	57,57,57,57	1
8	IOD	F	615	1/1	0.96	0.06	60,60,60,60	1
8	IOD	E	607	1/1	0.97	0.05	50,50,50,50	1
8	IOD	C	604	1/1	0.97	0.15	46,46,46,46	1
8	IOD	C	606	1/1	0.97	0.05	63,63,63,63	1
8	IOD	A	609	1/1	0.97	0.09	46,46,46,46	1
8	IOD	C	608	1/1	0.97	0.07	51,51,51,51	1
8	IOD	E	603	1/1	0.97	0.10	48,48,48,48	1
8	IOD	A	605	1/1	0.97	0.10	53,53,53,53	1
8	IOD	B	609	1/1	0.97	0.13	54,54,54,54	1
8	IOD	F	603	1/1	0.97	0.09	64,64,64,64	1
8	IOD	C	610	1/1	0.98	0.04	47,47,47,47	1
8	IOD	F	605	1/1	0.98	0.09	50,50,50,50	1
8	IOD	C	603	1/1	0.98	0.04	54,54,54,54	1
8	IOD	E	610	1/1	0.98	0.07	51,51,51,51	1
8	IOD	B	607	1/1	0.98	0.04	75,75,75,75	0
8	IOD	c	501	1/1	0.98	0.15	52,52,52,52	1
8	IOD	E	604	1/1	0.98	0.09	43,43,43,43	1
8	IOD	C	605	1/1	0.98	0.05	38,38,38,38	1
8	IOD	D	608	1/1	0.98	0.10	48,48,48,48	1
8	IOD	D	602	1/1	0.98	0.06	57,57,57,57	1
8	IOD	A	604	1/1	0.99	0.06	47,47,47,47	1
8	IOD	d	501	1/1	0.99	0.10	42,42,42,42	1

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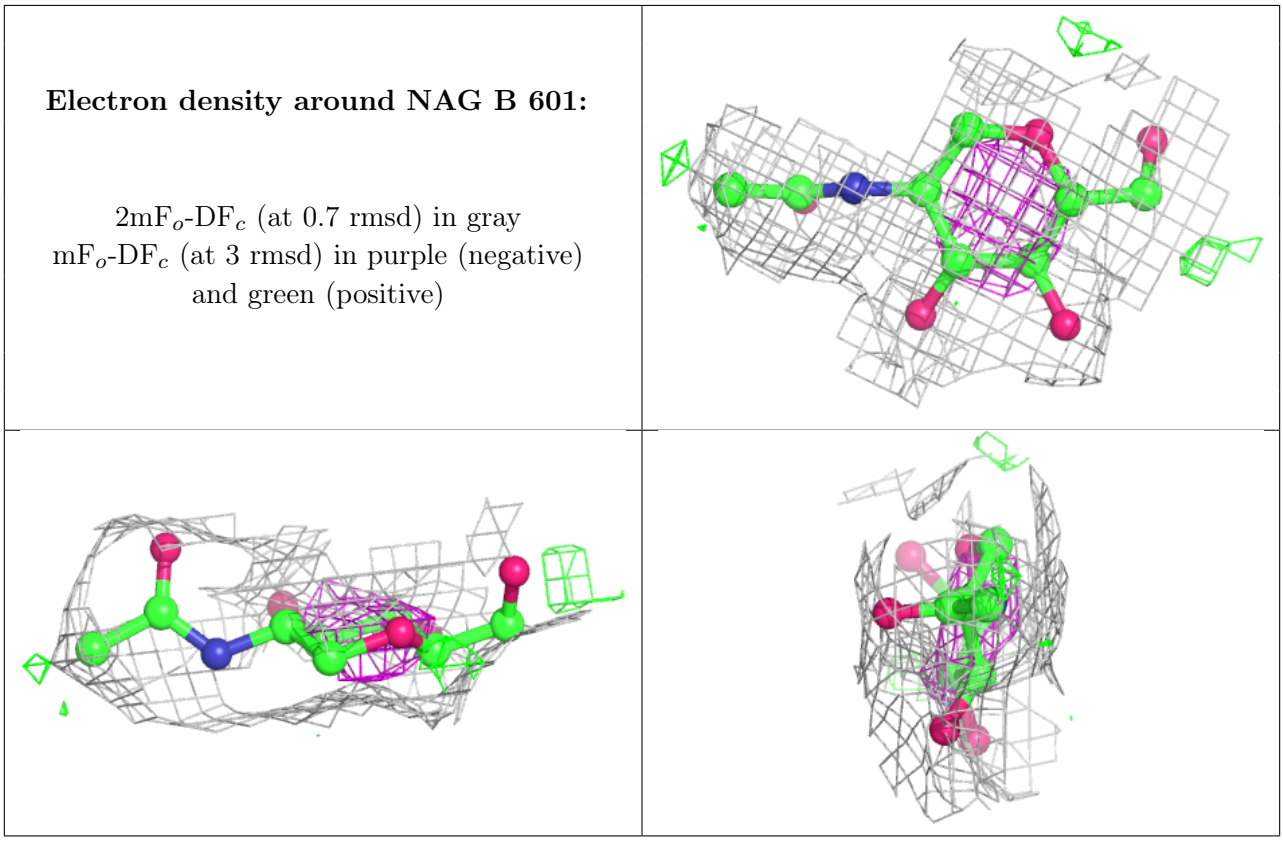
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
8	IOD	F	609	1/1	0.99	0.04	57,57,57,57	1
8	IOD	A	603	1/1	0.99	0.11	45,45,45,45	1
8	IOD	B	604	1/1	0.99	0.09	40,40,40,40	1
8	IOD	F	612	1/1	0.99	0.14	36,36,36,36	1
8	IOD	E	611	1/1	0.99	0.14	42,42,42,42	1
8	IOD	B	611	1/1	0.99	0.10	33,33,33,33	1
8	IOD	C	609	1/1	0.99	0.09	39,39,39,39	1
8	IOD	D	612	1/1	1.00	0.09	33,33,33,33	1
8	IOD	c	502	1/1	1.00	0.27	88,88,88,88	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

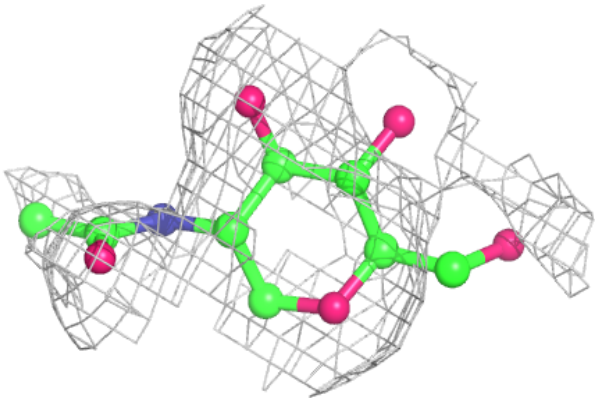
Electron density around NAG B 601:

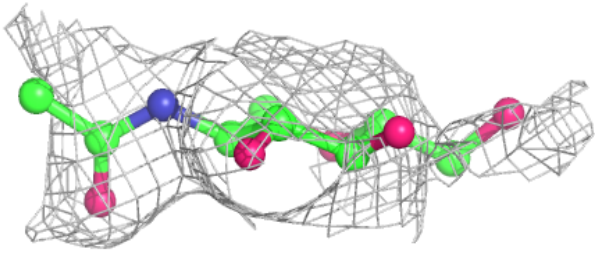
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

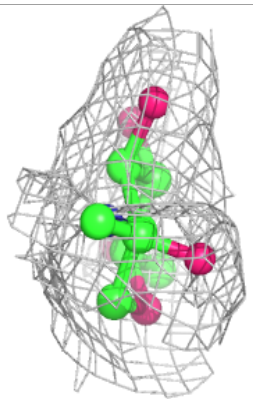


Electron density around NAG F 602:

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

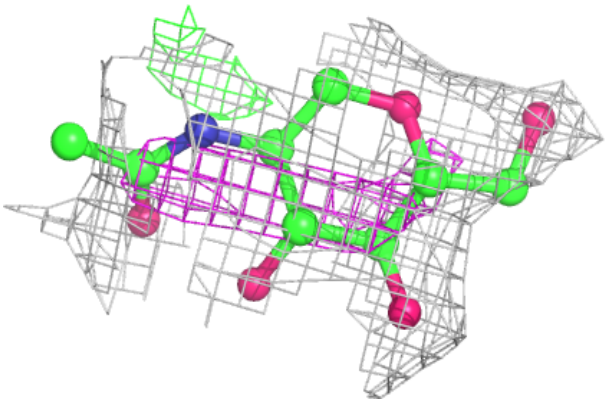


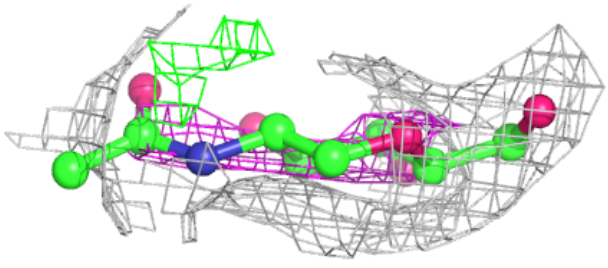


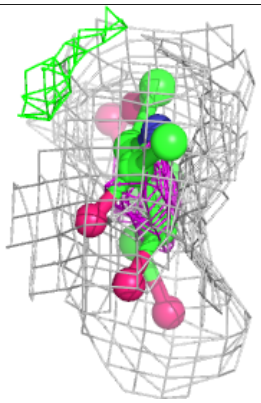


Electron density around NAG C 601:

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

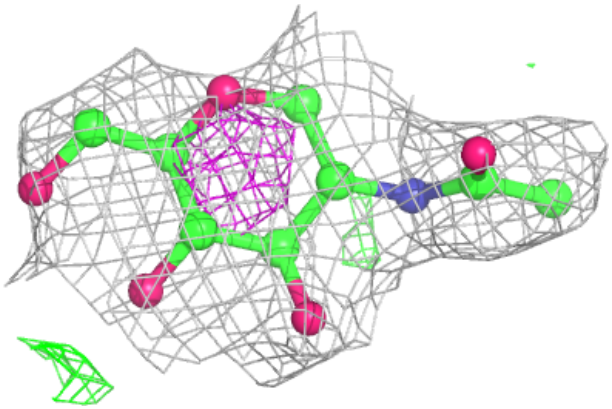


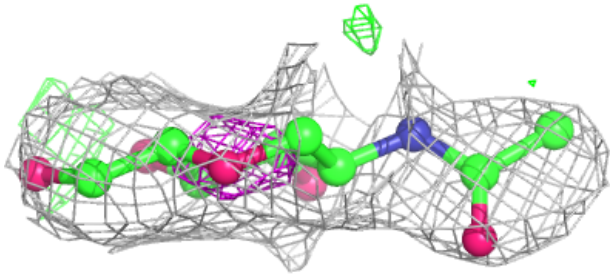


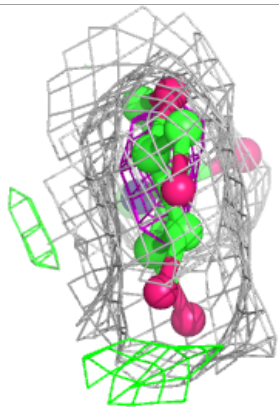


Electron density around NAG E 601:

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

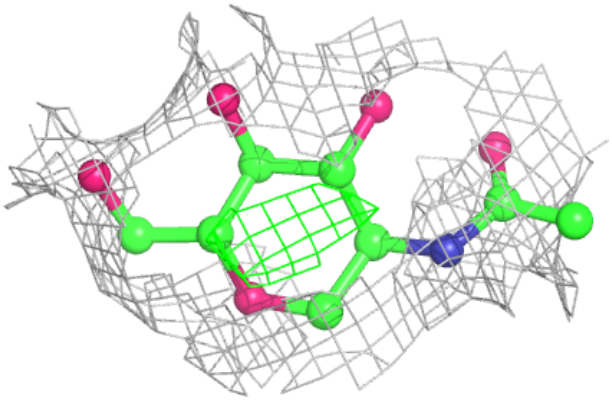


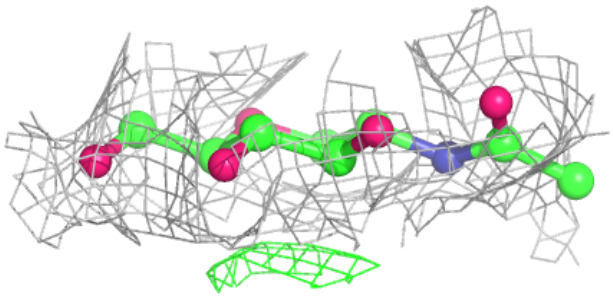


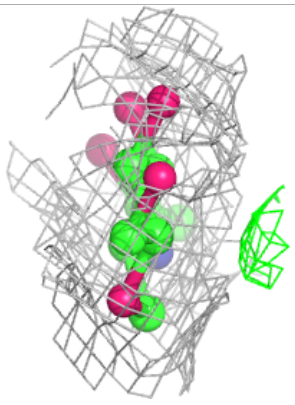


Electron density around NAG A 601:

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

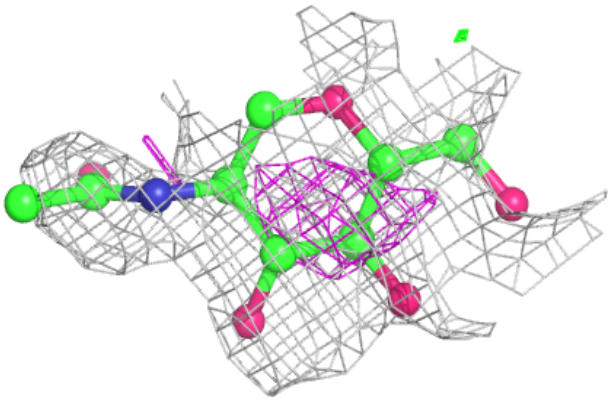


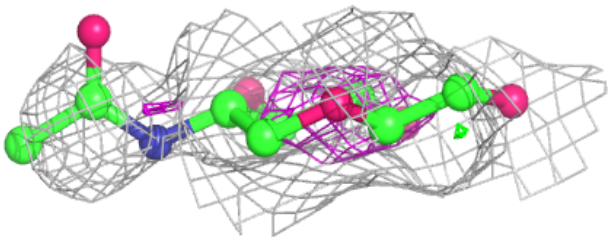


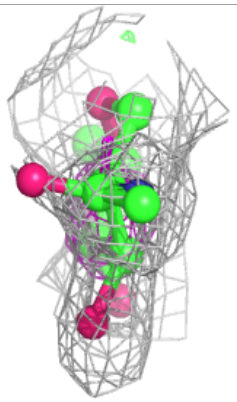


Electron density around NAG E 602:

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

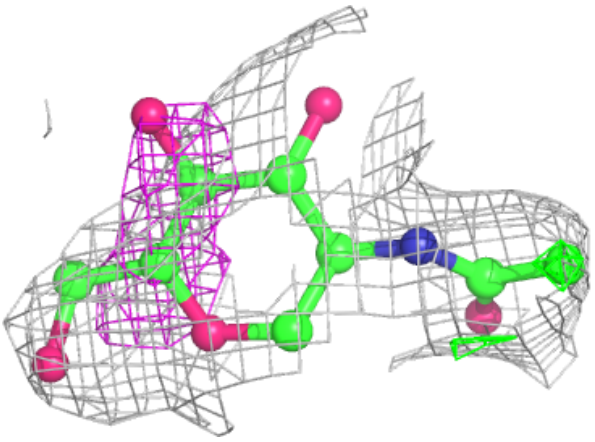


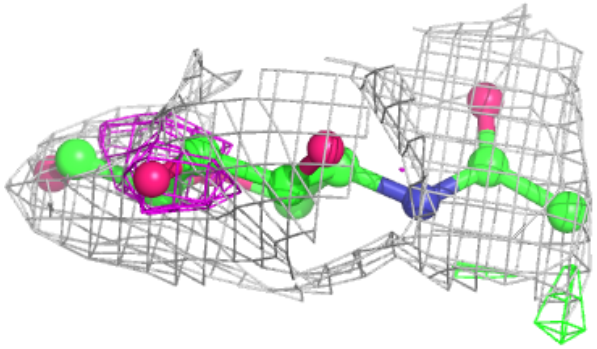


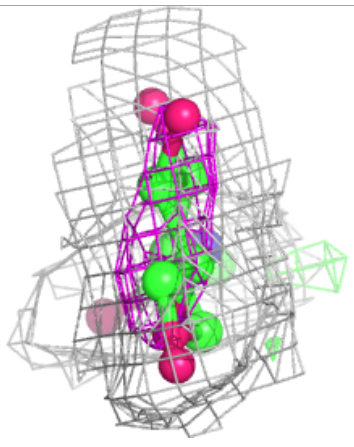


Electron density around NAG D 601:

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

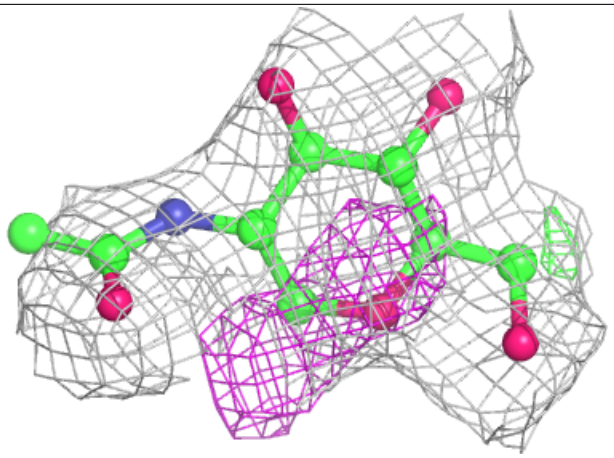


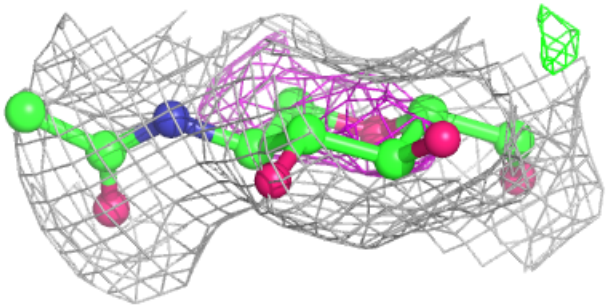


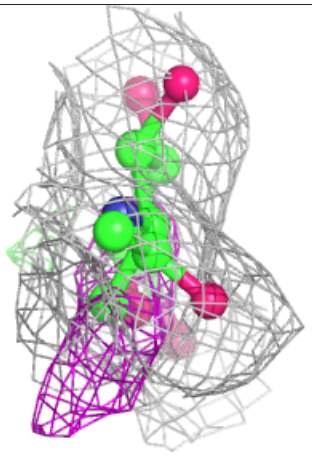


Electron density around NAG F 601:

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

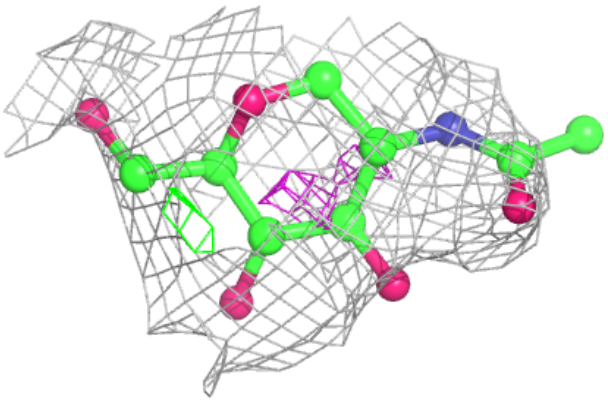


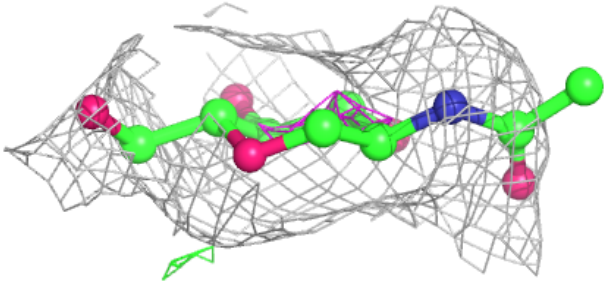


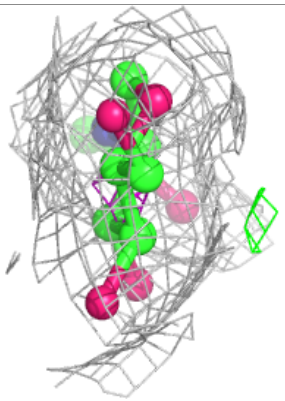


Electron density around NAG B 603:

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

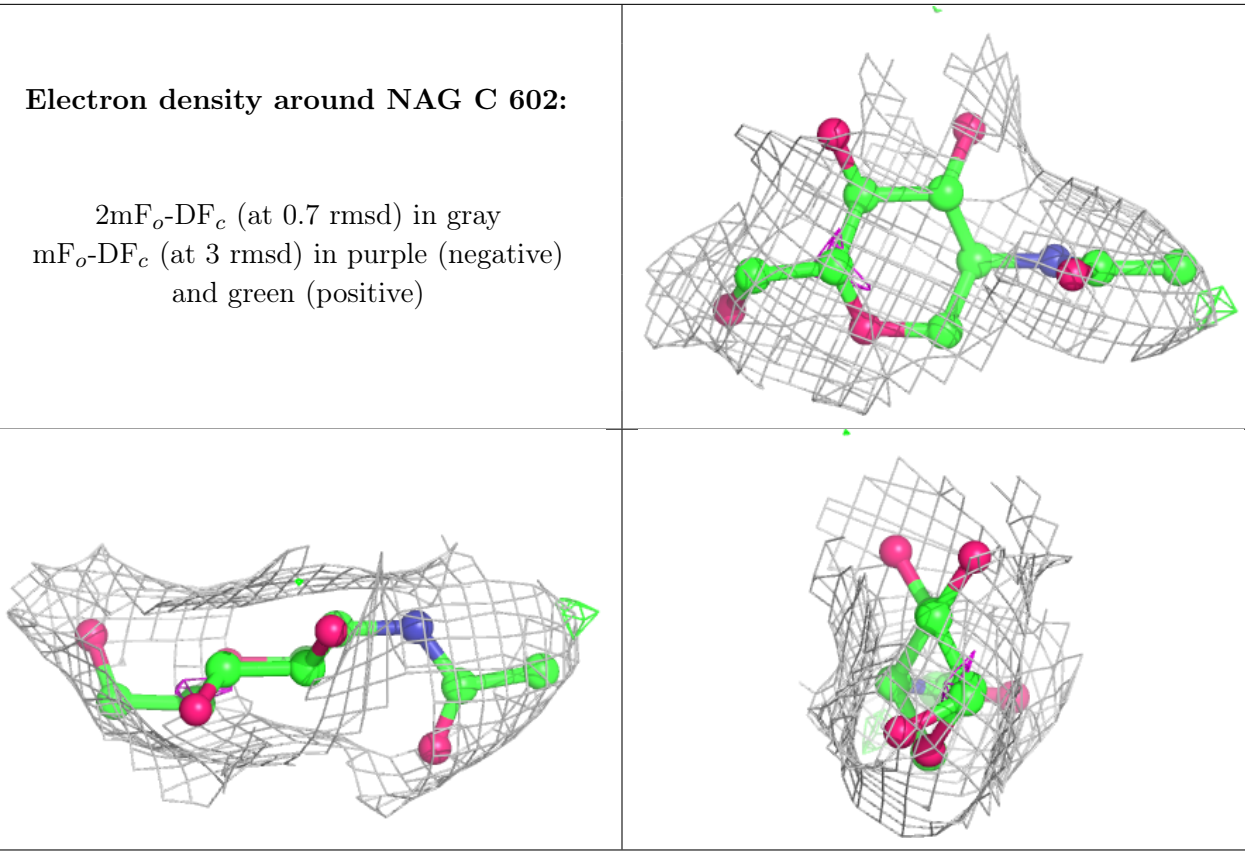






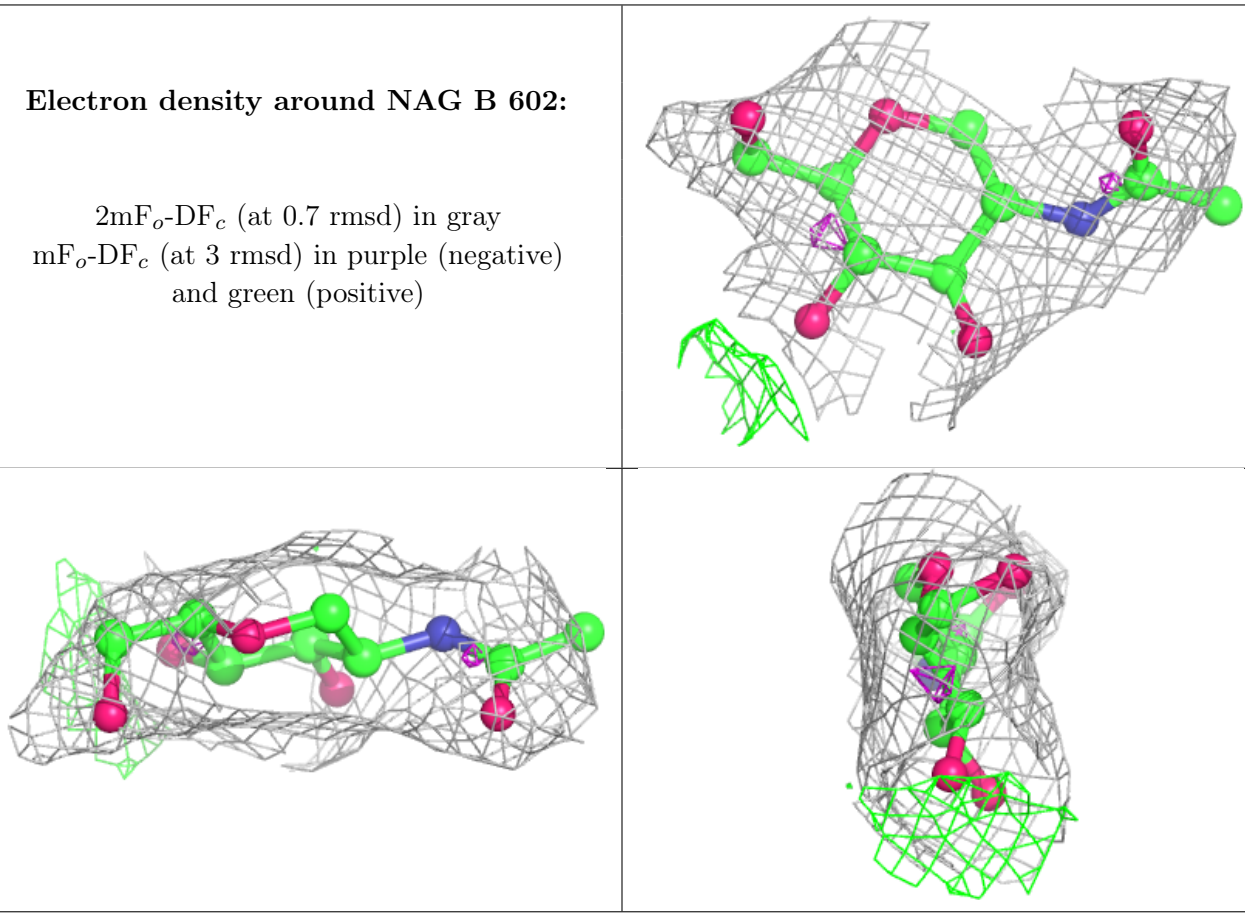
Electron density around NAG C 602:

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



Electron density around NAG B 602:

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



6.5 Other polymers (i)

There are no such residues in this entry.