



# Full wwPDB X-ray Structure Validation Report ⓘ

Sep 8, 2025 – 11:55 PM JST

PDB ID : 7BYX / pdb\_00007byx  
Title : Crystal structure of exo-beta-1,3-galactanase from Phanerochaete chrysosporium Pc1,3Gal43A E208A with beta-1,3-galactotriose  
Authors : Matsuyama, K.; Ishida, T.; Kishine, N.; Fujimoto, Z.; Igarashi, K.; Kaneko, S.  
Deposited on : 2020-04-24  
Resolution : 2.30 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](mailto: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>.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : **FAILED**  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 2.0rc1  
EDS : 3.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.006 (Gargrove)  
Density-Fitness : 1.0.12  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.45.1

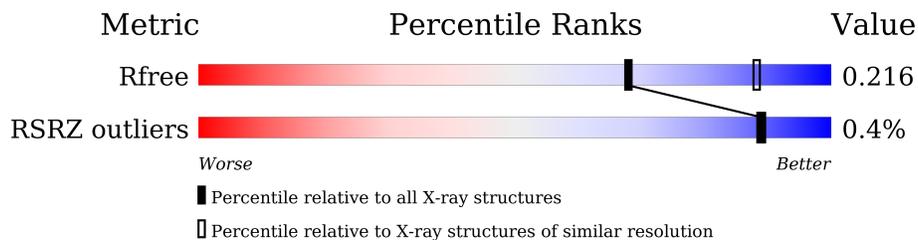
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.30 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	164625	5963 (2.30-2.30)
RSRZ outliers	164620	5963 (2.30-2.30)

MolProbity failed to run properly - the sequence quality summary graphics cannot be shown.

## 2 Entry composition i

There are 11 unique types of molecules in this entry. The entry contains 14570 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 Galactan 1,3-beta-galactosidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	427	Total 3222	C 2024	N 549	O 641	S 8	0	2	0
1	B	427	Total 3226	C 2026	N 550	O 642	S 8	0	3	0
1	C	427	Total 3224	C 2023	N 551	O 643	S 7	0	2	0
1	D	427	Total 3214	C 2017	N 549	O 641	S 7	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	208	ALA	GLU	engineered mutation	UNP Q50KB2
B	208	ALA	GLU	engineered mutation	UNP Q50KB2
C	208	ALA	GLU	engineered mutation	UNP Q50KB2
D	208	ALA	GLU	engineered mutation	UNP Q50KB2

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



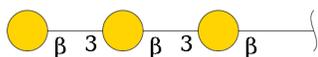
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
2	E	3	Total 39	C 22	N 2	O 15	0	0	0
2	F	3	Total 39	C 22	N 2	O 15	0	0	0
2	G	3	Total 39	C 22	N 2	O 15	0	0	0

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

- Molecule 3 is an oligosaccharide called beta-D-galactopyranose-(1-3)-beta-D-galactopyranose-(1-3)-beta-D-galactopyranose.



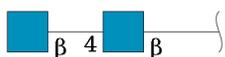
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	Trace
3	H	3	Total	C	O	0	0	0
			34	18	16			
3	L	3	Total	C	O	0	0	0
			34	18	16			
3	P	3	Total	C	O	0	0	0
			34	18	16			
3	S	3	Total	C	O	0	0	0
			34	18	16			

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



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

- Molecule 5 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
5	J	2	Total	C	N	O	0	0	0
			28	16	2	10			
5	O	2	Total	C	N	O	0	0	0
			28	16	2	10			
5	R	2	Total	C	N	O	0	0	0
			28	16	2	10			

- Molecule 6 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.

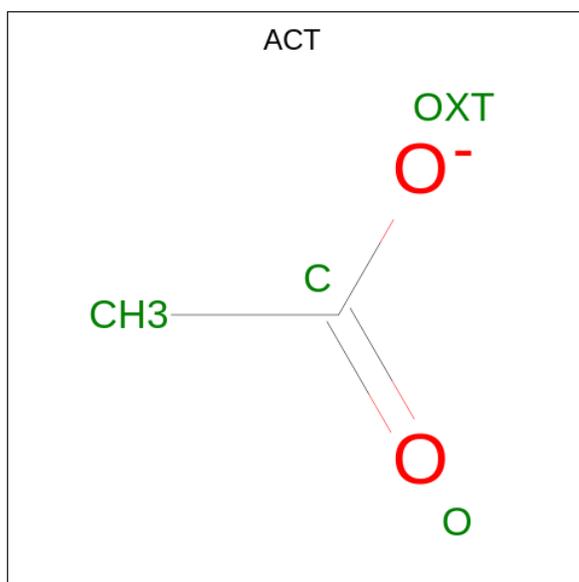


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
6	M	3	Total	C	N	O	0	0	0
			39	22	2	15			

- Molecule 7 is CALCIUM ION (CCD ID: CA) (formula: Ca).

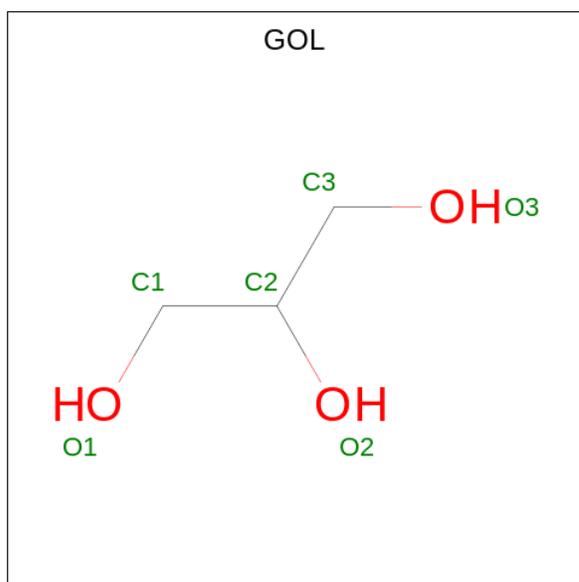
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	1	Total	Ca	0	0
			1	1		
7	B	1	Total	Ca	0	0
			1	1		
7	C	1	Total	Ca	0	0
			1	1		
7	D	1	Total	Ca	0	0
			1	1		

- Molecule 8 is ACETATE ION (CCD ID: ACT) (formula: C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	1	Total C O 4 2 2	0	0
8	A	1	Total C O 4 2 2	0	0
8	B	1	Total C O 4 2 2	0	0
8	B	1	Total C O 4 2 2	0	0
8	C	1	Total C O 4 2 2	0	0
8	C	1	Total C O 4 2 2	0	0
8	D	1	Total C O 4 2 2	0	0
8	D	1	Total C O 4 2 2	0	0
8	D	1	Total C O 4 2 2	0	0

- Molecule 9 is GLYCEROL (CCD ID: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



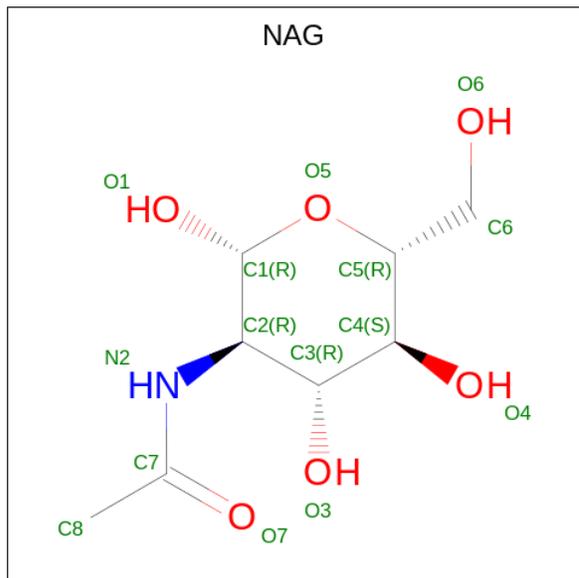
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	A	1	Total C O 6 3 3	0	0
9	A	1	Total C O 6 3 3	0	0
9	A	1	Total C O 6 3 3	0	0
9	A	1	Total C O 6 3 3	0	0
9	A	1	Total C O 6 3 3	0	0
9	A	1	Total C O 6 3 3	0	0
9	A	1	Total C O 6 3 3	0	0
9	A	1	Total C O 6 3 3	0	0
9	A	1	Total C O 6 3 3	0	0
9	B	1	Total C O 6 3 3	0	0
9	B	1	Total C O 6 3 3	0	0
9	C	1	Total C O 6 3 3	0	0
9	C	1	Total C O 6 3 3	0	0
9	C	1	Total C O 6 3 3	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	C	1	Total	C	O	0	0
			6	3	3		
9	D	1	Total	C	O	0	0
			6	3	3		
9	D	1	Total	C	O	0	0
			6	3	3		
9	D	1	Total	C	O	0	0
			6	3	3		

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



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

- Molecule 11 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
11	A	338	Total	O	0	0
			338	338		
11	B	291	Total	O	0	0
			291	291		
11	C	181	Total	O	0	0
			181	181		

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<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>		<b>ZeroOcc</b>	<b>AltConf</b>
11	D	196	Total 196	O 196	0	0

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### 3 Data and refinement statistics

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	156.74Å 156.74Å 147.71Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	31.14 – 2.30 31.14 – 2.30	Depositor EDS
% Data completeness (in resolution range)	98.8 (31.14-2.30) 98.8 (31.14-2.30)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.17	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.25 (at 2.29Å)	Xtrriage
Refinement program	PHENIX 1.16_3546, REFMAC 5.8.0158	Depositor
R, $R_{free}$	0.161 , 0.214 0.163 , 0.216	Depositor DCC
$R_{free}$ test set	4569 reflections (4.91%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	30.4	Xtrriage
Anisotropy	0.095	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.36 , 40.6	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.022 for -h,-k,l	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	14570	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	32.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 18.34% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 4 Model quality [i](#)

### 4.1 Standard geometry [i](#)

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### 4.2 Too-close contacts [i](#)

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### 4.3 Torsion angles [i](#)

#### 4.3.1 Protein backbone [i](#)

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#### 4.3.2 Protein sidechains [i](#)

MolProbity failed to run properly - this section is therefore empty.

#### 4.3.3 RNA [i](#)

MolProbity failed to run properly - this section is therefore empty.

### 4.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

### 4.5 Carbohydrates [i](#)

40 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
2	NAG	E	1	2,1	14,14,15	1.90	3 (21%)	17,19,21	1.39	1 (5%)
2	NAG	E	2	2	14,14,15	1.94	3 (21%)	17,19,21	1.42	3 (17%)
2	MAN	E	3	2	11,11,12	0.88	0	15,15,17	1.39	1 (6%)
2	NAG	F	1	2,1	14,14,15	1.84	3 (21%)	17,19,21	1.76	3 (17%)
2	NAG	F	2	2	14,14,15	1.98	4 (28%)	17,19,21	1.12	2 (11%)
2	MAN	F	3	2	11,11,12	1.18	1 (9%)	15,15,17	1.23	2 (13%)
2	NAG	G	1	2,1	14,14,15	1.65	3 (21%)	17,19,21	1.31	2 (11%)
2	NAG	G	2	2	14,14,15	1.96	3 (21%)	17,19,21	1.13	0
2	MAN	G	3	2	11,11,12	1.11	0	15,15,17	1.24	2 (13%)
3	GAL	H	1	3	12,12,12	1.38	1 (8%)	17,17,17	1.30	2 (11%)
3	GAL	H	2	3	11,11,12	1.58	2 (18%)	15,15,17	0.85	0
3	GAL	H	3	3	11,11,12	1.53	2 (18%)	15,15,17	0.96	1 (6%)
4	NAG	I	1	4,1	14,14,15	1.95	2 (14%)	17,19,21	1.73	3 (17%)
4	NDG	I	2	4	14,14,15	0.83	1 (7%)	17,19,21	1.16	2 (11%)
5	NAG	J	1	5,1	14,14,15	1.87	3 (21%)	17,19,21	1.67	3 (17%)
5	NAG	J	2	5	14,14,15	2.09	5 (35%)	17,19,21	2.27	7 (41%)
2	NAG	K	1	2,1	14,14,15	1.82	3 (21%)	17,19,21	1.93	4 (23%)
2	NAG	K	2	2	14,14,15	2.02	4 (28%)	17,19,21	0.97	1 (5%)
2	MAN	K	3	2	11,11,12	1.25	2 (18%)	15,15,17	1.11	0
3	GAL	L	1	3	12,12,12	1.29	1 (8%)	17,17,17	0.57	0
3	GAL	L	2	3	11,11,12	1.83	3 (27%)	15,15,17	1.47	2 (13%)
3	GAL	L	3	3	11,11,12	1.70	2 (18%)	15,15,17	1.02	1 (6%)
6	NAG	M	1	6,1	14,14,15	1.79	4 (28%)	17,19,21	2.57	5 (29%)
6	NAG	M	2	6	14,14,15	2.00	4 (28%)	17,19,21	1.52	3 (17%)
6	BMA	M	3	6	11,11,12	1.70	1 (9%)	15,15,17	1.72	2 (13%)
4	NAG	N	1	4,1	14,14,15	1.98	4 (28%)	17,19,21	1.50	3 (17%)
4	NDG	N	2	4	14,14,15	0.92	1 (7%)	17,19,21	1.57	2 (11%)
5	NAG	O	1	5,1	14,14,15	1.97	4 (28%)	17,19,21	1.47	3 (17%)
5	NAG	O	2	5	14,14,15	2.26	4 (28%)	17,19,21	2.85	7 (41%)
3	GAL	P	1	3	12,12,12	1.39	1 (8%)	17,17,17	0.99	1 (5%)
3	GAL	P	2	3	11,11,12	1.89	3 (27%)	15,15,17	1.15	1 (6%)
3	GAL	P	3	3	11,11,12	1.37	2 (18%)	15,15,17	1.44	1 (6%)
2	NAG	Q	1	2,1	14,14,15	2.02	5 (35%)	17,19,21	1.67	4 (23%)
2	NAG	Q	2	2	14,14,15	1.92	3 (21%)	17,19,21	1.24	2 (11%)
2	MAN	Q	3	2	11,11,12	1.07	1 (9%)	15,15,17	1.51	2 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
5	NAG	R	1	5,1	14,14,15	1.94	3 (21%)	17,19,21	1.43	2 (11%)
5	NAG	R	2	5	14,14,15	2.11	4 (28%)	17,19,21	1.29	2 (11%)
3	GAL	S	1	3	12,12,12	1.35	1 (8%)	17,17,17	1.02	2 (11%)
3	GAL	S	2	3	11,11,12	1.66	2 (18%)	15,15,17	0.74	0
3	GAL	S	3	3	11,11,12	1.76	4 (36%)	15,15,17	1.93	3 (20%)

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
2	NAG	E	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	E	2	2	-	0/6/23/26	0/1/1/1
2	MAN	E	3	2	-	2/2/19/22	1/1/1/1
2	NAG	F	1	2,1	-	1/6/23/26	0/1/1/1
2	NAG	F	2	2	-	2/6/23/26	0/1/1/1
2	MAN	F	3	2	-	0/2/19/22	0/1/1/1
2	NAG	G	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	G	2	2	-	2/6/23/26	0/1/1/1
2	MAN	G	3	2	-	0/2/19/22	0/1/1/1
3	GAL	H	1	3	-	2/2/22/22	0/1/1/1
3	GAL	H	2	3	-	0/2/19/22	0/1/1/1
3	GAL	H	3	3	-	0/2/19/22	0/1/1/1
4	NAG	I	1	4,1	-	2/6/23/26	0/1/1/1
4	NDG	I	2	4	-	2/6/23/26	0/1/1/1
5	NAG	J	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	J	2	5	-	4/6/23/26	0/1/1/1
2	NAG	K	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	K	2	2	-	1/6/23/26	0/1/1/1
2	MAN	K	3	2	-	0/2/19/22	0/1/1/1
3	GAL	L	1	3	-	2/2/22/22	0/1/1/1
3	GAL	L	2	3	-	0/2/19/22	0/1/1/1
3	GAL	L	3	3	-	0/2/19/22	0/1/1/1
6	NAG	M	1	6,1	-	1/6/23/26	0/1/1/1
6	NAG	M	2	6	-	2/6/23/26	0/1/1/1
6	BMA	M	3	6	-	0/2/19/22	0/1/1/1
4	NAG	N	1	4,1	-	2/6/23/26	0/1/1/1
4	NDG	N	2	4	-	4/6/23/26	0/1/1/1

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

All (102) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	O	2	NAG	O5-C1	5.08	1.51	1.43
5	R	2	NAG	O5-C1	4.81	1.51	1.43
2	Q	1	NAG	O5-C1	4.78	1.51	1.43
4	I	1	NAG	O5-C1	4.76	1.51	1.43
2	K	2	NAG	O5-C1	4.75	1.51	1.43
6	M	3	BMA	O5-C1	4.67	1.51	1.43
6	M	2	NAG	O5-C1	4.66	1.51	1.43
2	G	2	NAG	O5-C1	4.62	1.51	1.43
5	O	1	NAG	O5-C1	4.61	1.51	1.43
5	R	1	NAG	O5-C1	4.48	1.50	1.43
2	F	2	NAG	O5-C1	4.44	1.50	1.43
2	E	2	NAG	O5-C1	4.36	1.50	1.43
2	E	1	NAG	O5-C1	4.35	1.50	1.43
5	J	2	NAG	O5-C1	4.34	1.50	1.43
4	N	1	NAG	O5-C1	4.33	1.50	1.43
5	J	1	NAG	O5-C1	4.31	1.50	1.43
2	K	1	NAG	O5-C1	4.27	1.50	1.43
3	L	2	GAL	O5-C1	4.26	1.50	1.43
2	Q	2	NAG	O5-C1	4.20	1.50	1.43
3	P	2	GAL	O5-C1	4.04	1.50	1.43
2	F	2	NAG	C7-N2	4.00	1.48	1.34
3	S	3	GAL	O5-C1	3.95	1.50	1.43
2	F	1	NAG	O5-C1	3.94	1.50	1.43
5	O	2	NAG	C7-N2	3.87	1.47	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	K	2	NAG	C7-N2	3.81	1.47	1.34
3	L	3	GAL	O5-C1	3.80	1.49	1.43
2	Q	2	NAG	C7-N2	3.80	1.47	1.34
5	J	2	NAG	C7-N2	3.79	1.47	1.34
3	H	3	GAL	O5-C1	3.77	1.49	1.43
4	N	1	NAG	C7-N2	3.76	1.47	1.34
5	R	2	NAG	C7-N2	3.70	1.47	1.34
5	R	1	NAG	C7-N2	3.70	1.47	1.34
3	H	2	GAL	O5-C1	3.67	1.49	1.43
2	E	2	NAG	C7-N2	3.64	1.46	1.34
2	G	2	NAG	C7-N2	3.64	1.46	1.34
6	M	2	NAG	C7-N2	3.61	1.46	1.34
2	E	1	NAG	C7-N2	3.61	1.46	1.34
2	Q	1	NAG	C7-N2	3.59	1.46	1.34
3	S	2	GAL	O5-C1	3.58	1.49	1.43
2	G	1	NAG	O5-C1	3.51	1.49	1.43
2	K	1	NAG	C7-N2	3.48	1.46	1.34
5	O	1	NAG	C7-N2	3.48	1.46	1.34
3	P	2	GAL	C2-C3	-3.45	1.47	1.52
5	J	1	NAG	C7-N2	3.42	1.46	1.34
2	G	1	NAG	C7-N2	3.41	1.46	1.34
4	I	1	NAG	C7-N2	3.40	1.46	1.34
2	F	1	NAG	C7-N2	3.33	1.45	1.34
6	M	1	NAG	C7-N2	3.27	1.45	1.34
6	M	1	NAG	O5-C1	3.19	1.48	1.43
3	P	1	GAL	O5-C1	3.14	1.50	1.42
3	H	1	GAL	O5-C1	3.13	1.50	1.42
3	S	1	GAL	O5-C1	3.12	1.50	1.42
5	O	2	NAG	C2-N2	3.12	1.51	1.46
3	L	1	GAL	O5-C1	3.11	1.50	1.42
3	P	3	GAL	O5-C1	2.92	1.48	1.43
3	S	2	GAL	C2-C3	-2.91	1.48	1.52
5	O	2	NAG	O5-C5	2.90	1.49	1.43
3	L	3	GAL	C2-C3	-2.90	1.48	1.52
3	L	2	GAL	C2-C3	-2.87	1.48	1.52
4	N	2	NDG	C1-C2	2.75	1.56	1.52
5	J	2	NAG	O5-C5	2.74	1.49	1.43
2	K	3	MAN	C2-C3	2.72	1.56	1.52
5	R	2	NAG	O5-C5	2.60	1.48	1.43
5	R	2	NAG	C2-N2	2.60	1.50	1.46
6	M	1	NAG	O5-C5	2.54	1.48	1.43
3	H	2	GAL	C2-C3	-2.54	1.48	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	Q	2	NAG	C2-N2	2.46	1.50	1.46
2	E	1	NAG	C2-N2	2.45	1.50	1.46
2	F	1	NAG	C3-C2	-2.43	1.47	1.52
3	S	3	GAL	O3-C3	2.42	1.48	1.43
2	E	2	NAG	C2-N2	2.39	1.50	1.46
3	P	3	GAL	C2-C3	-2.36	1.49	1.52
4	I	2	NDG	C1-C2	2.35	1.55	1.52
2	G	2	NAG	O5-C5	2.33	1.48	1.43
2	K	2	NAG	O5-C5	2.33	1.48	1.43
5	R	1	NAG	C2-N2	2.31	1.50	1.46
4	N	1	NAG	C2-N2	2.29	1.50	1.46
2	Q	3	MAN	C2-C3	2.28	1.55	1.52
2	F	2	NAG	C2-N2	2.27	1.50	1.46
6	M	2	NAG	C2-N2	2.24	1.50	1.46
3	S	3	GAL	O5-C5	2.23	1.48	1.43
6	M	1	NAG	C2-N2	2.20	1.50	1.46
5	J	2	NAG	O7-C7	-2.20	1.18	1.23
5	J	2	NAG	C2-N2	2.19	1.50	1.46
4	N	1	NAG	C3-C2	-2.17	1.47	1.52
5	O	1	NAG	C2-N2	2.17	1.50	1.46
2	Q	1	NAG	O5-C5	2.16	1.47	1.43
2	K	2	NAG	C2-N2	2.15	1.50	1.46
3	P	2	GAL	O2-C2	2.14	1.47	1.43
2	F	3	MAN	C1-C2	2.12	1.57	1.52
3	H	3	GAL	C2-C3	-2.12	1.49	1.52
5	O	1	NAG	O5-C5	2.12	1.47	1.43
2	K	1	NAG	C2-N2	2.11	1.49	1.46
3	L	2	GAL	O5-C5	2.09	1.47	1.43
3	S	3	GAL	C2-C3	-2.08	1.49	1.52
6	M	2	NAG	O5-C5	2.08	1.47	1.43
2	Q	1	NAG	C3-C2	-2.08	1.48	1.52
2	G	1	NAG	O7-C7	-2.06	1.18	1.23
2	F	2	NAG	O5-C5	2.03	1.47	1.43
5	J	1	NAG	O7-C7	-2.02	1.18	1.23
2	K	3	MAN	C1-C2	2.01	1.56	1.52
2	Q	1	NAG	C2-N2	2.01	1.49	1.46

All (87) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	M	1	NAG	C1-O5-C5	-7.75	101.70	112.19
5	O	2	NAG	C2-N2-C7	6.93	132.76	122.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	O	2	NAG	C8-C7-N2	6.02	126.30	116.10
3	S	3	GAL	C1-C2-C3	5.84	116.85	109.67
5	J	2	NAG	C2-N2-C7	-5.29	115.37	122.90
2	F	1	NAG	C2-N2-C7	-5.29	115.37	122.90
4	I	1	NAG	C2-N2-C7	-5.08	115.66	122.90
6	M	3	BMA	C1-C2-C3	4.98	115.78	109.67
2	K	1	NAG	C1-O5-C5	4.59	118.41	112.19
5	O	2	NAG	C1-O5-C5	4.43	118.20	112.19
3	P	3	GAL	C1-O5-C5	-4.40	106.23	112.19
2	Q	3	MAN	C1-O5-C5	4.37	118.11	112.19
4	N	2	NDG	C1-O5-C5	4.34	118.07	112.19
6	M	1	NAG	C2-N2-C7	-4.32	116.75	122.90
2	K	1	NAG	C2-N2-C7	-4.15	117.00	122.90
2	Q	1	NAG	C2-N2-C7	-4.11	117.05	122.90
2	E	3	MAN	C1-O5-C5	3.99	117.60	112.19
6	M	2	NAG	C2-N2-C7	-3.97	117.25	122.90
5	R	1	NAG	C1-O5-C5	3.93	117.52	112.19
5	J	1	NAG	C1-O5-C5	-3.75	107.11	112.19
6	M	3	BMA	O5-C1-C2	3.46	116.11	110.77
4	N	1	NAG	C3-C4-C5	3.38	116.26	110.24
5	J	2	NAG	O5-C5-C4	3.31	118.89	110.83
4	N	2	NDG	C1-C2-N2	3.30	116.12	110.49
5	O	1	NAG	C1-C2-N2	-3.30	104.86	110.49
5	O	2	NAG	O7-C7-N2	-3.26	115.96	121.95
5	J	2	NAG	C1-O5-C5	3.22	116.56	112.19
5	J	1	NAG	O5-C5-C6	3.21	112.24	107.20
2	E	1	NAG	C2-N2-C7	-3.20	118.34	122.90
5	J	2	NAG	C3-C4-C5	3.20	115.94	110.24
5	R	2	NAG	C1-O5-C5	3.19	116.51	112.19
4	I	2	NDG	C1-O5-C5	3.15	116.46	112.19
5	O	1	NAG	C2-N2-C7	-3.05	118.56	122.90
6	M	1	NAG	C3-C4-C5	2.83	115.30	110.24
6	M	1	NAG	C8-C7-N2	2.82	120.88	116.10
2	F	1	NAG	C8-C7-N2	2.80	120.84	116.10
2	E	2	NAG	C2-N2-C7	-2.75	118.98	122.90
2	E	2	NAG	C3-C4-C5	2.69	115.03	110.24
2	Q	1	NAG	C8-C7-N2	2.65	120.59	116.10
2	F	1	NAG	O7-C7-N2	-2.64	117.10	121.95
3	H	1	GAL	O5-C5-C4	2.64	114.48	109.69
2	K	1	NAG	C1-C2-N2	-2.63	106.00	110.49
6	M	2	NAG	C8-C7-N2	2.62	120.54	116.10
5	J	2	NAG	C8-C7-N2	2.59	120.49	116.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	Q	3	MAN	O5-C1-C2	2.58	114.76	110.77
4	N	1	NAG	C8-C7-N2	2.57	120.45	116.10
4	I	1	NAG	C1-C2-N2	-2.55	106.13	110.49
2	F	3	MAN	O2-C2-C3	-2.54	105.06	110.14
5	J	1	NAG	C8-C7-N2	2.52	120.37	116.10
2	F	2	NAG	C1-C2-N2	-2.52	106.18	110.49
3	L	2	GAL	C6-C5-C4	-2.51	107.12	113.00
3	L	3	GAL	C6-C5-C4	-2.50	107.15	113.00
4	I	1	NAG	C8-C7-N2	2.49	120.31	116.10
3	S	1	GAL	O5-C5-C4	2.48	114.19	109.69
5	O	2	NAG	O5-C5-C4	2.36	116.58	110.83
3	S	3	GAL	O3-C3-C2	2.36	114.50	109.99
2	K	1	NAG	C8-C7-N2	2.34	120.06	116.10
5	O	2	NAG	O7-C7-C8	-2.32	117.74	122.06
4	N	1	NAG	C4-C3-C2	2.32	114.42	111.02
2	E	2	NAG	C8-C7-N2	2.31	120.01	116.10
2	Q	1	NAG	C1-O5-C5	2.31	115.32	112.19
3	P	1	GAL	O5-C5-C4	2.31	113.88	109.69
3	S	3	GAL	O5-C1-C2	2.30	114.32	110.77
5	O	1	NAG	C8-C7-N2	2.28	119.95	116.10
3	H	1	GAL	C1-O5-C5	2.22	117.85	113.66
3	L	2	GAL	C1-O5-C5	2.21	115.18	112.19
5	O	2	NAG	C3-C4-C5	2.19	114.14	110.24
5	R	1	NAG	C1-C2-N2	-2.17	106.78	110.49
3	H	3	GAL	C1-O5-C5	-2.17	109.26	112.19
6	M	2	NAG	O5-C1-C2	2.16	114.71	111.29
2	K	2	NAG	C2-N2-C7	-2.16	119.83	122.90
2	Q	1	NAG	C6-C5-C4	-2.15	107.96	113.00
2	F	3	MAN	C1-O5-C5	2.15	115.11	112.19
2	G	1	NAG	C1-C2-N2	-2.15	106.81	110.49
6	M	1	NAG	O7-C7-N2	-2.13	118.04	121.95
5	R	2	NAG	C8-C7-N2	2.12	119.69	116.10
2	F	2	NAG	O5-C1-C2	2.11	114.62	111.29
2	G	3	MAN	O2-C2-C3	-2.09	105.94	110.14
2	Q	2	NAG	C8-C7-N2	2.09	119.64	116.10
2	Q	2	NAG	C2-N2-C7	-2.09	119.93	122.90
3	S	1	GAL	C6-C5-C4	-2.07	108.15	113.00
5	J	2	NAG	C6-C5-C4	-2.07	108.16	113.00
2	G	3	MAN	C3-C4-C5	2.07	113.93	110.24
4	I	2	NDG	O5-C1-C2	2.06	114.55	111.29
3	P	2	GAL	C6-C5-C4	-2.06	108.18	113.00
2	G	1	NAG	O5-C5-C6	-2.05	104.00	107.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	J	2	NAG	C4-C3-C2	-2.01	108.07	111.02

There are no chirality outliers.

All (45) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	O	2	NAG	C3-C2-N2-C7
5	R	2	NAG	O5-C5-C6-O6
3	H	1	GAL	O5-C5-C6-O6
3	P	2	GAL	O5-C5-C6-O6
3	S	1	GAL	O5-C5-C6-O6
4	N	2	NDG	O5-C5-C6-O6
4	N	1	NAG	O5-C5-C6-O6
5	J	2	NAG	O5-C5-C6-O6
3	S	1	GAL	C4-C5-C6-O6
5	J	1	NAG	O5-C5-C6-O6
3	H	1	GAL	C4-C5-C6-O6
5	R	2	NAG	C4-C5-C6-O6
2	Q	1	NAG	O5-C5-C6-O6
4	N	1	NAG	C4-C5-C6-O6
5	J	2	NAG	C4-C5-C6-O6
4	N	2	NDG	C4-C5-C6-O6
3	L	1	GAL	O5-C5-C6-O6
4	N	2	NDG	C8-C7-N2-C2
4	N	2	NDG	O7-C7-N2-C2
5	J	2	NAG	C8-C7-N2-C2
5	J	2	NAG	O7-C7-N2-C2
5	O	2	NAG	C8-C7-N2-C2
5	O	2	NAG	O7-C7-N2-C2
2	F	2	NAG	O5-C5-C6-O6
5	J	1	NAG	C4-C5-C6-O6
3	P	2	GAL	C4-C5-C6-O6
2	Q	1	NAG	C4-C5-C6-O6
3	L	1	GAL	C4-C5-C6-O6
4	I	1	NAG	O5-C5-C6-O6
2	K	2	NAG	O5-C5-C6-O6
4	I	2	NDG	O5-C5-C6-O6
2	Q	2	NAG	C4-C5-C6-O6
2	E	3	MAN	C4-C5-C6-O6
4	I	1	NAG	C4-C5-C6-O6
2	F	2	NAG	C4-C5-C6-O6
5	O	2	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
2	Q	2	NAG	O5-C5-C6-O6
2	G	2	NAG	O5-C5-C6-O6
2	G	2	NAG	C4-C5-C6-O6
6	M	1	NAG	C4-C5-C6-O6
6	M	2	NAG	C4-C5-C6-O6
6	M	2	NAG	O5-C5-C6-O6
2	E	3	MAN	O5-C5-C6-O6
4	I	2	NDG	C4-C5-C6-O6
2	F	1	NAG	C4-C5-C6-O6

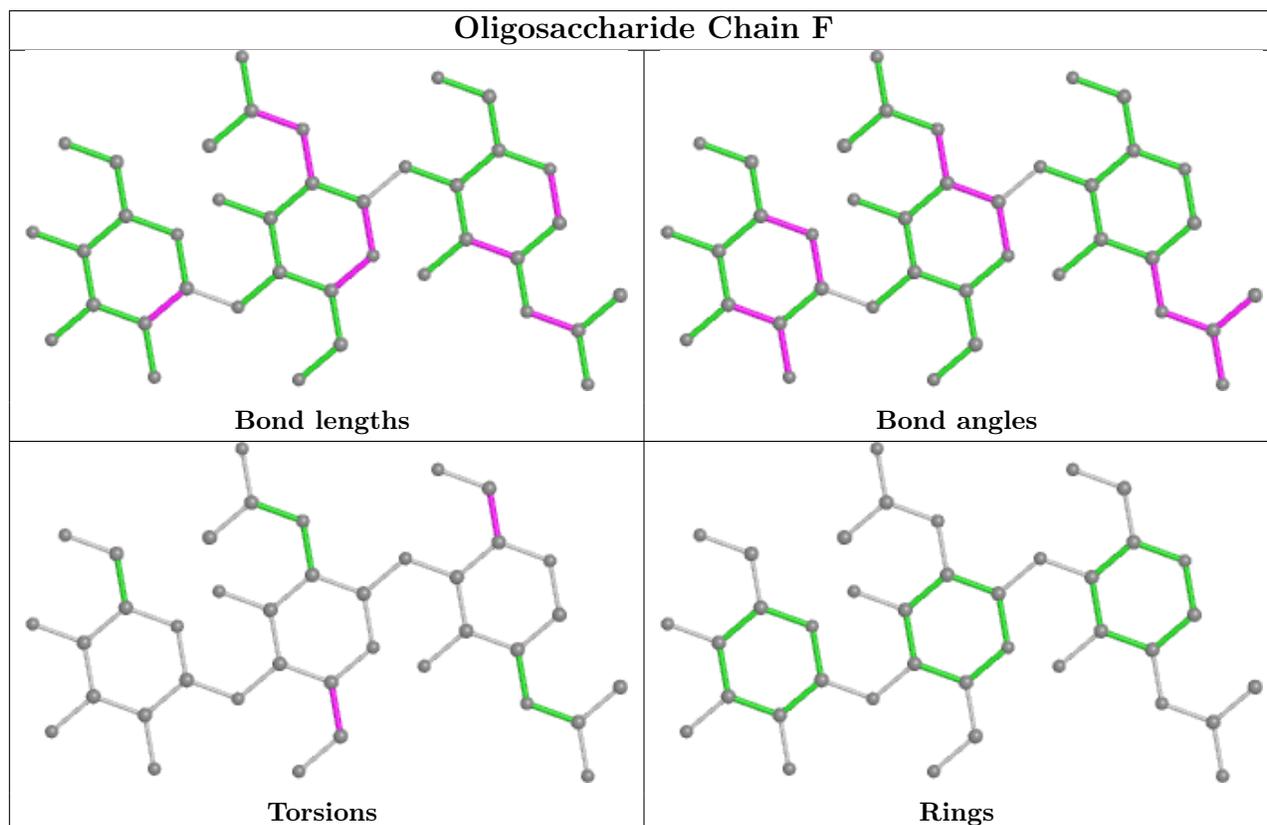
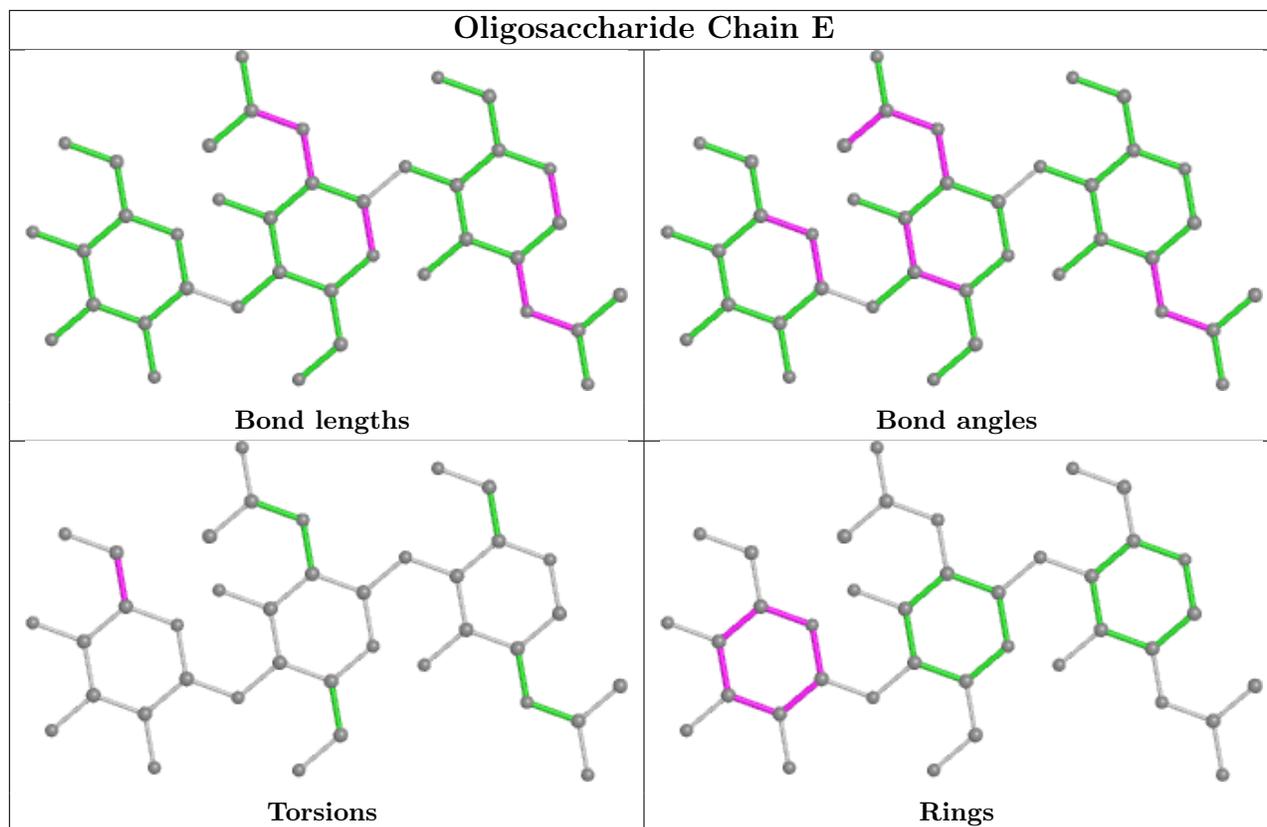
All (2) ring outliers are listed below:

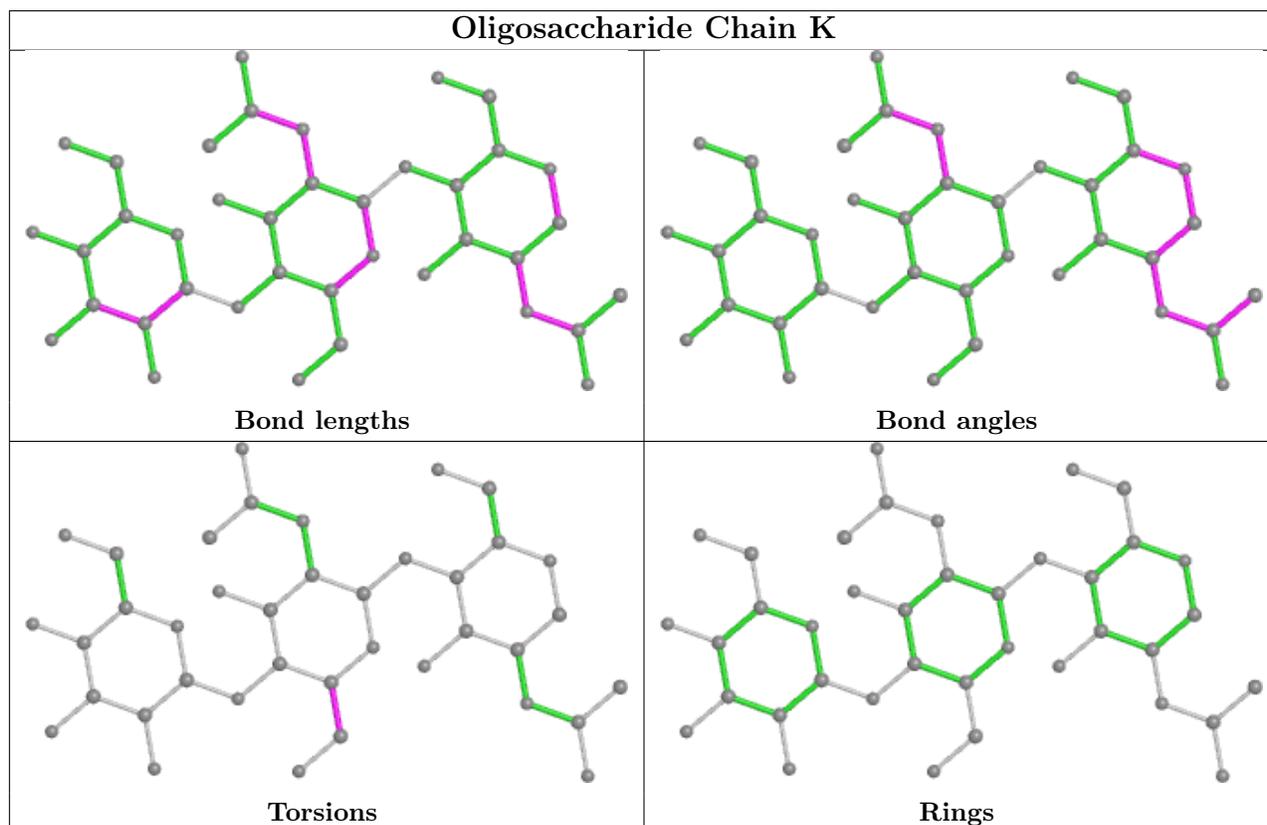
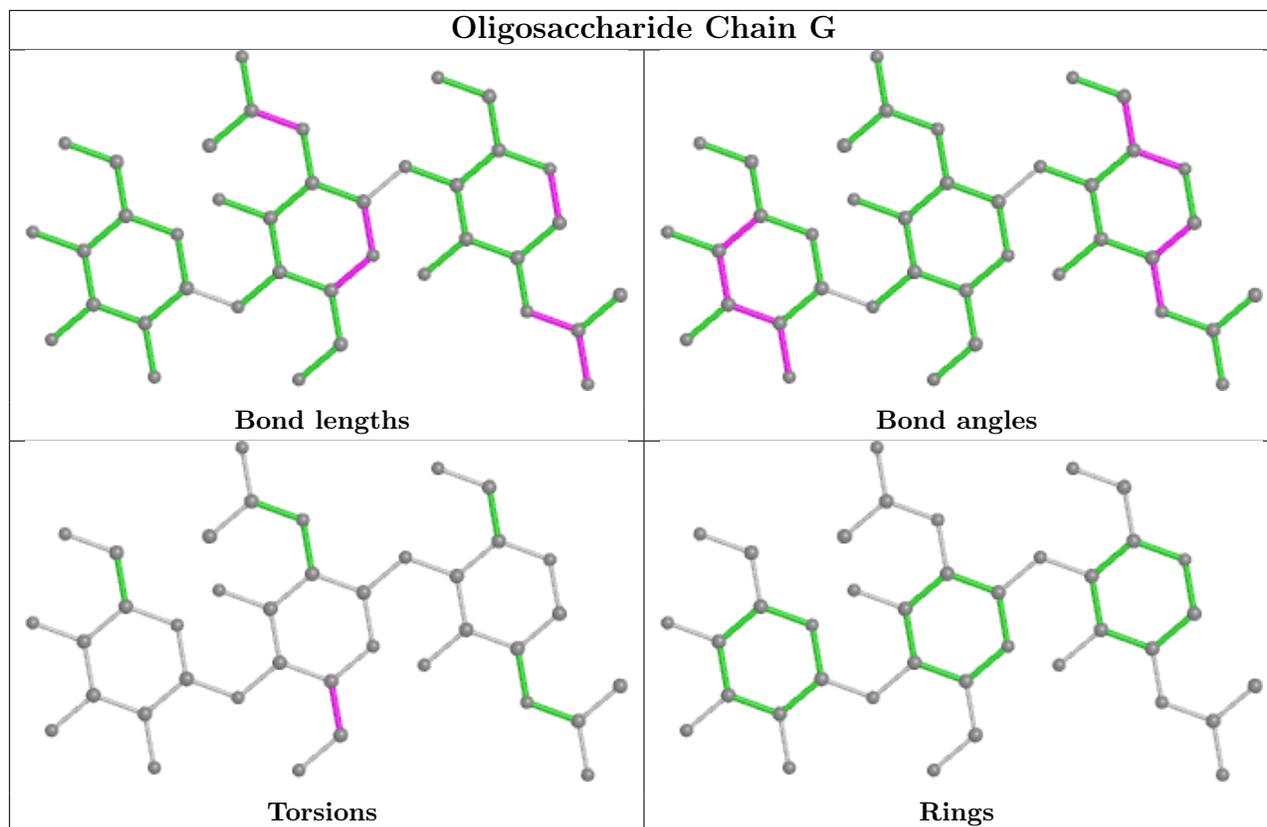
Mol	Chain	Res	Type	Atoms
2	Q	3	MAN	C1-C2-C3-C4-C5-O5
2	E	3	MAN	C1-C2-C3-C4-C5-O5

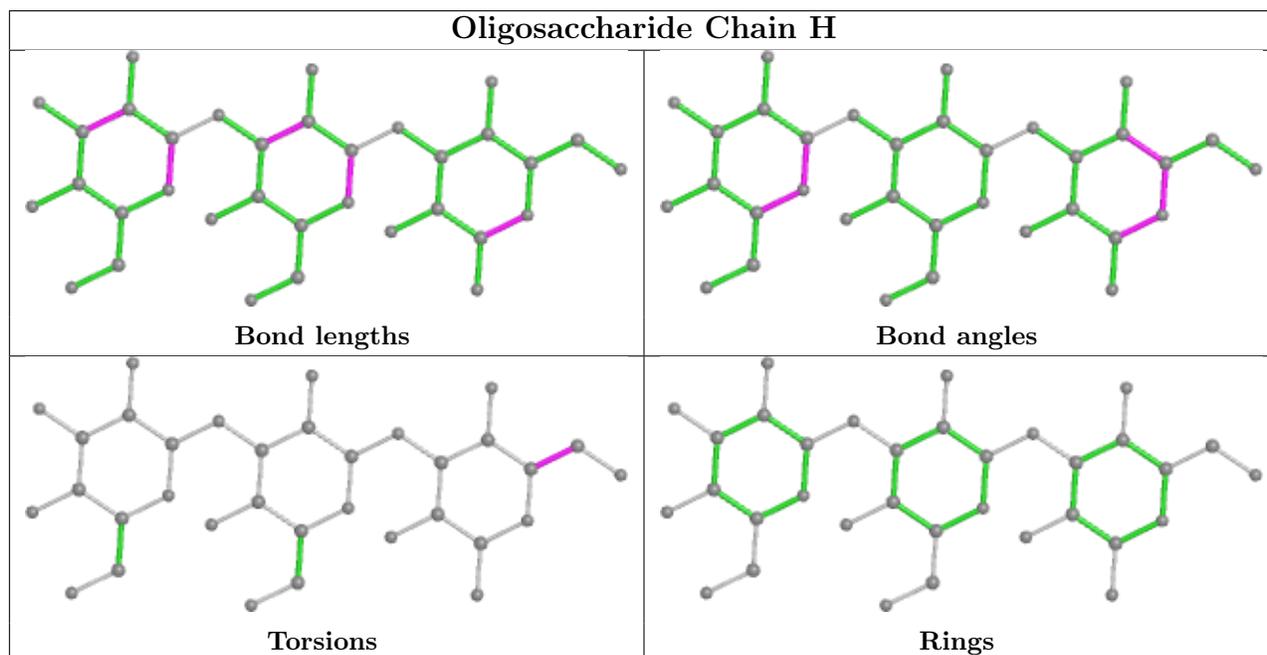
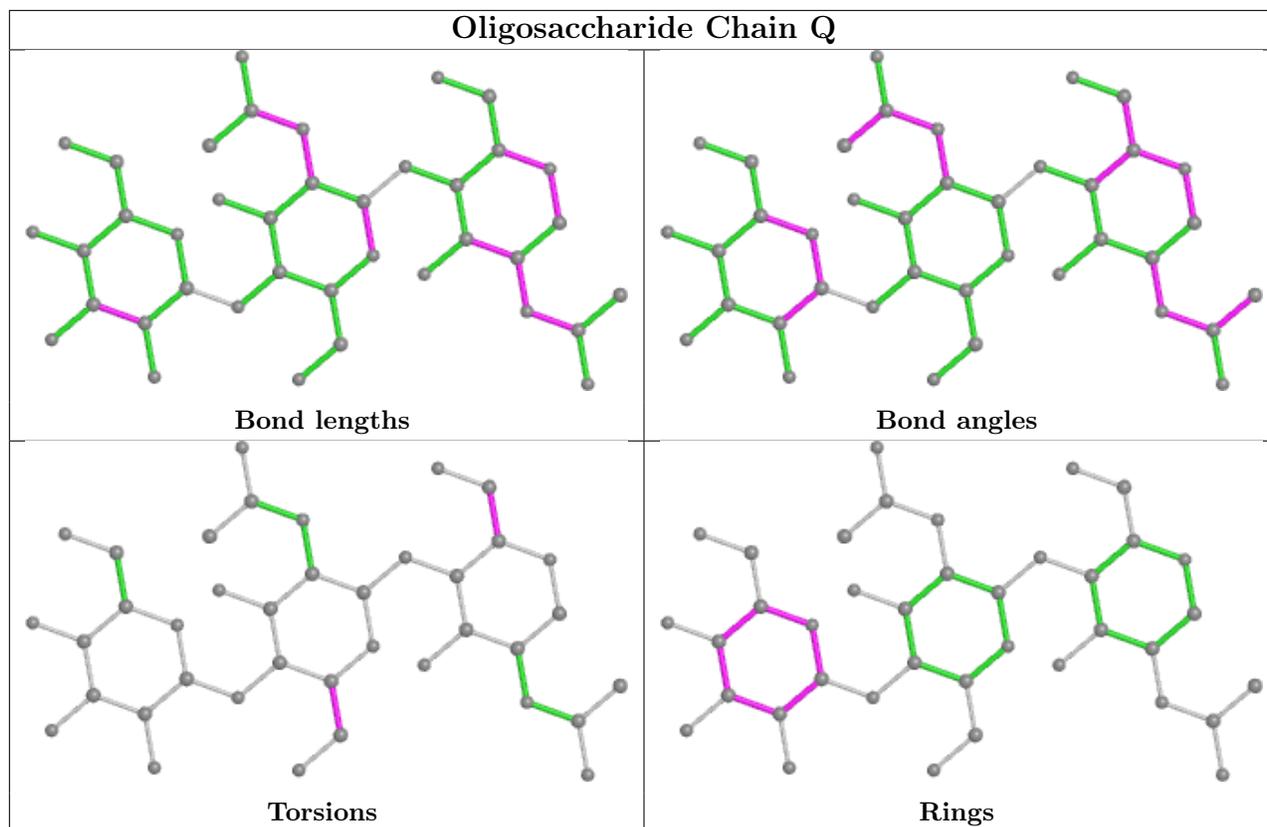
1 monomer is involved in 1 short contact:

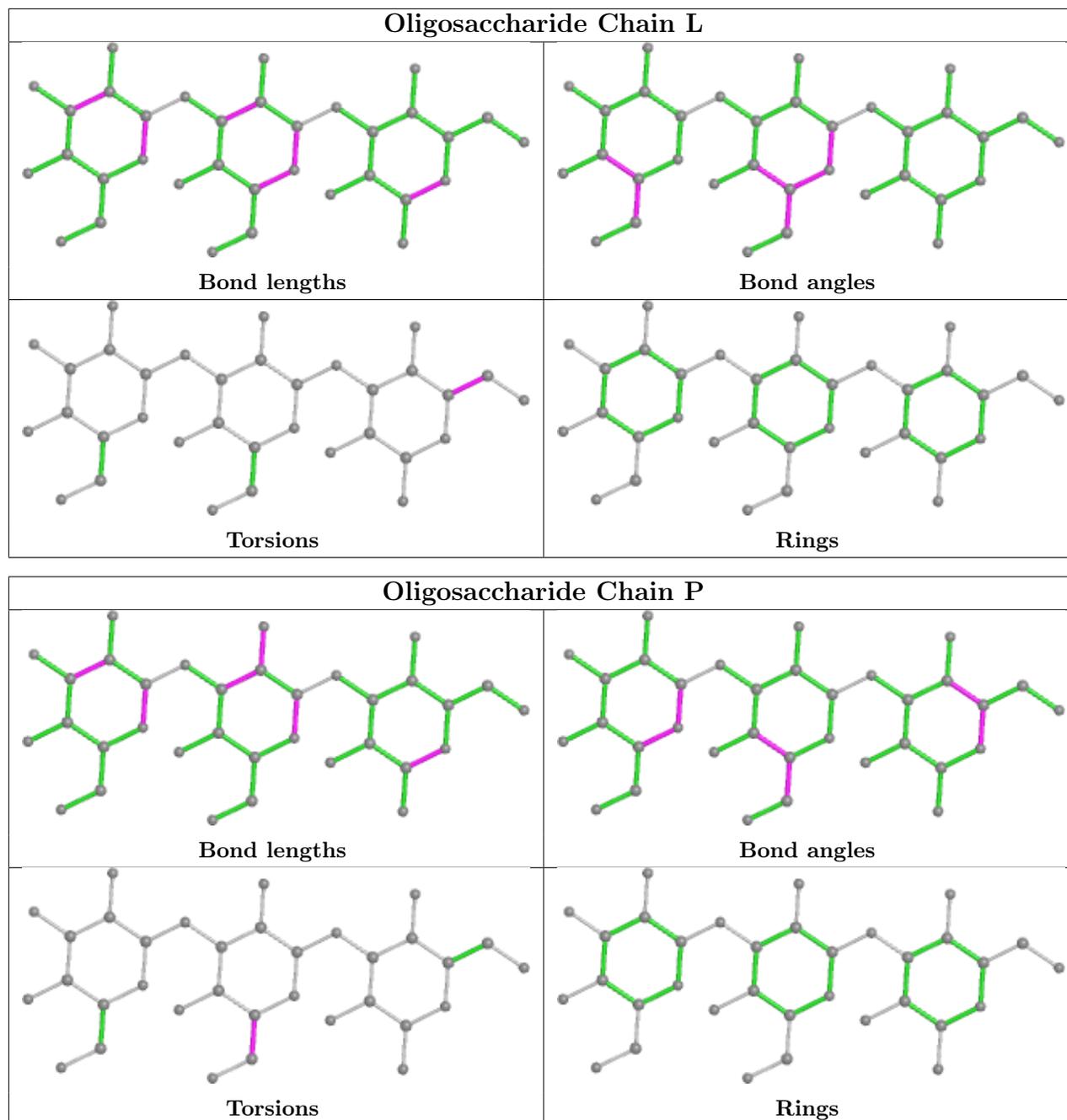
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	E	3	MAN	0	1

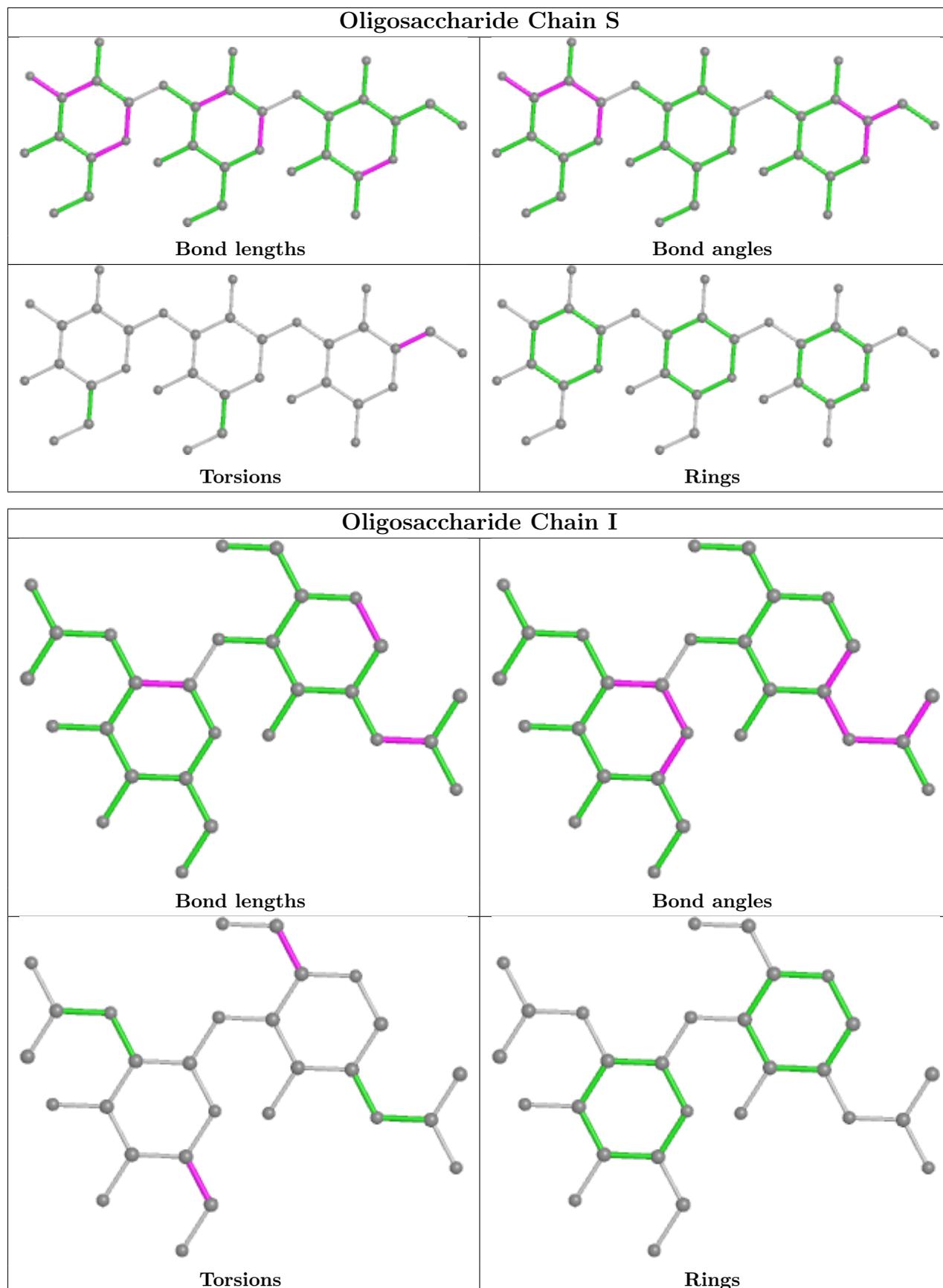
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

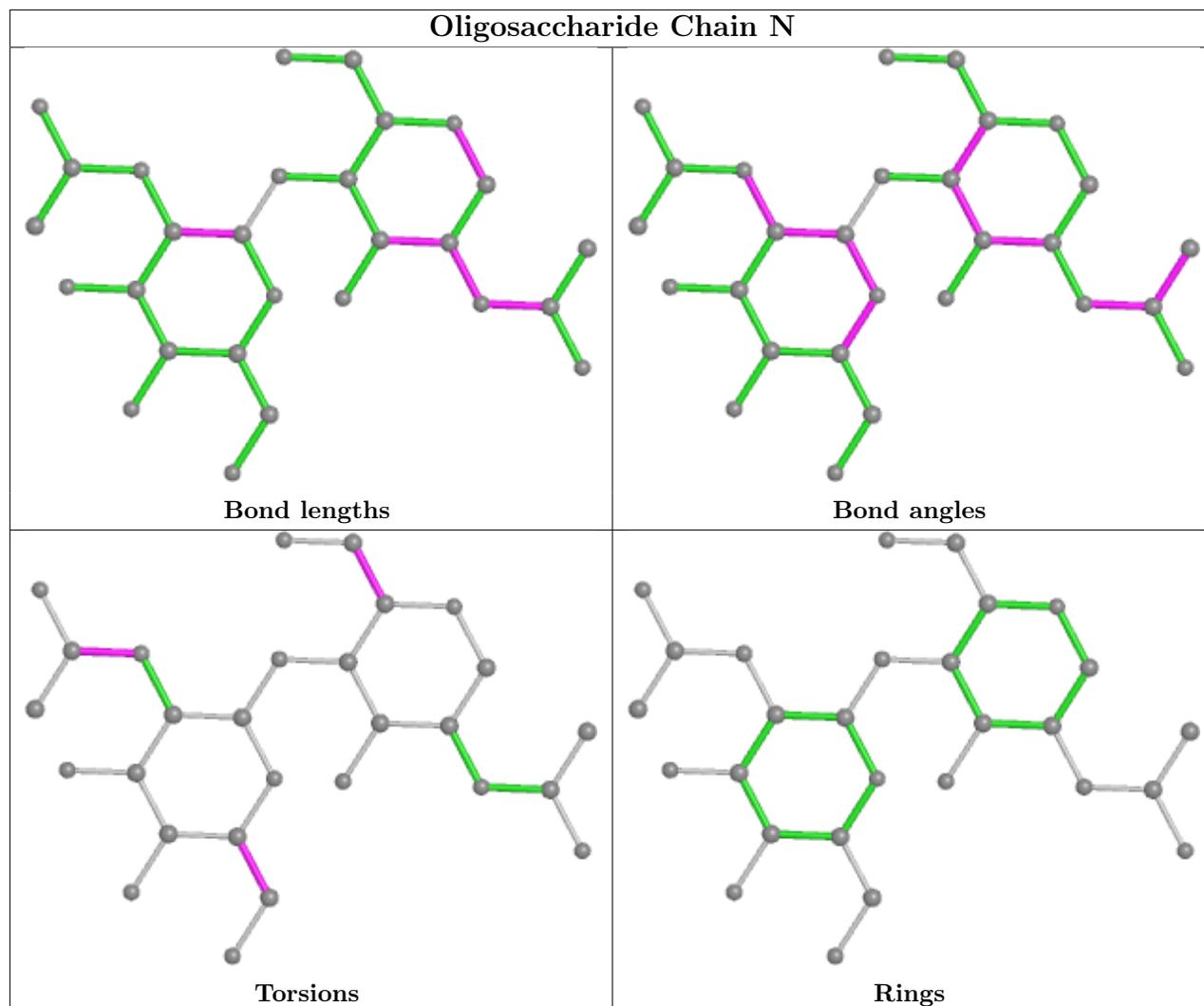


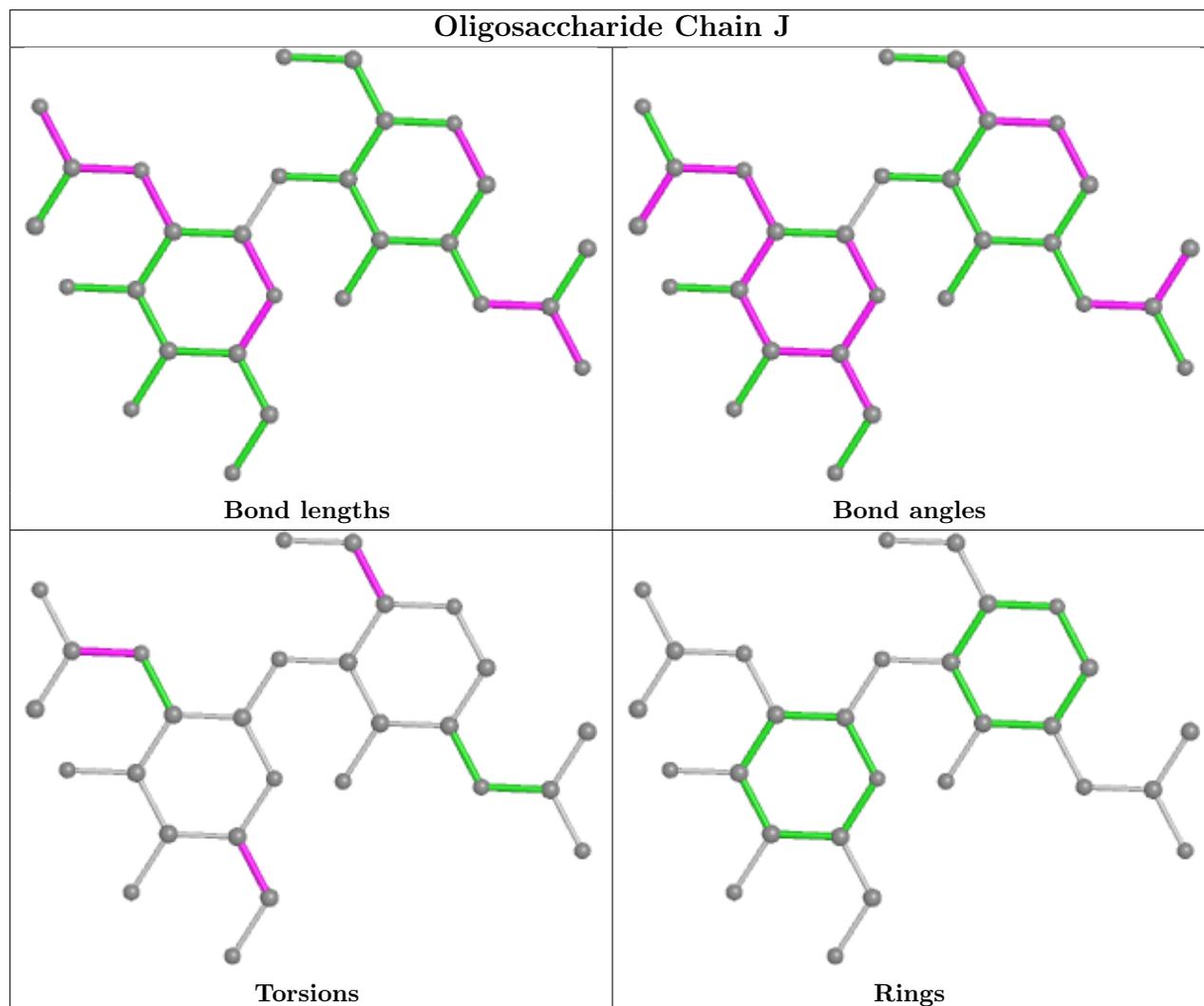


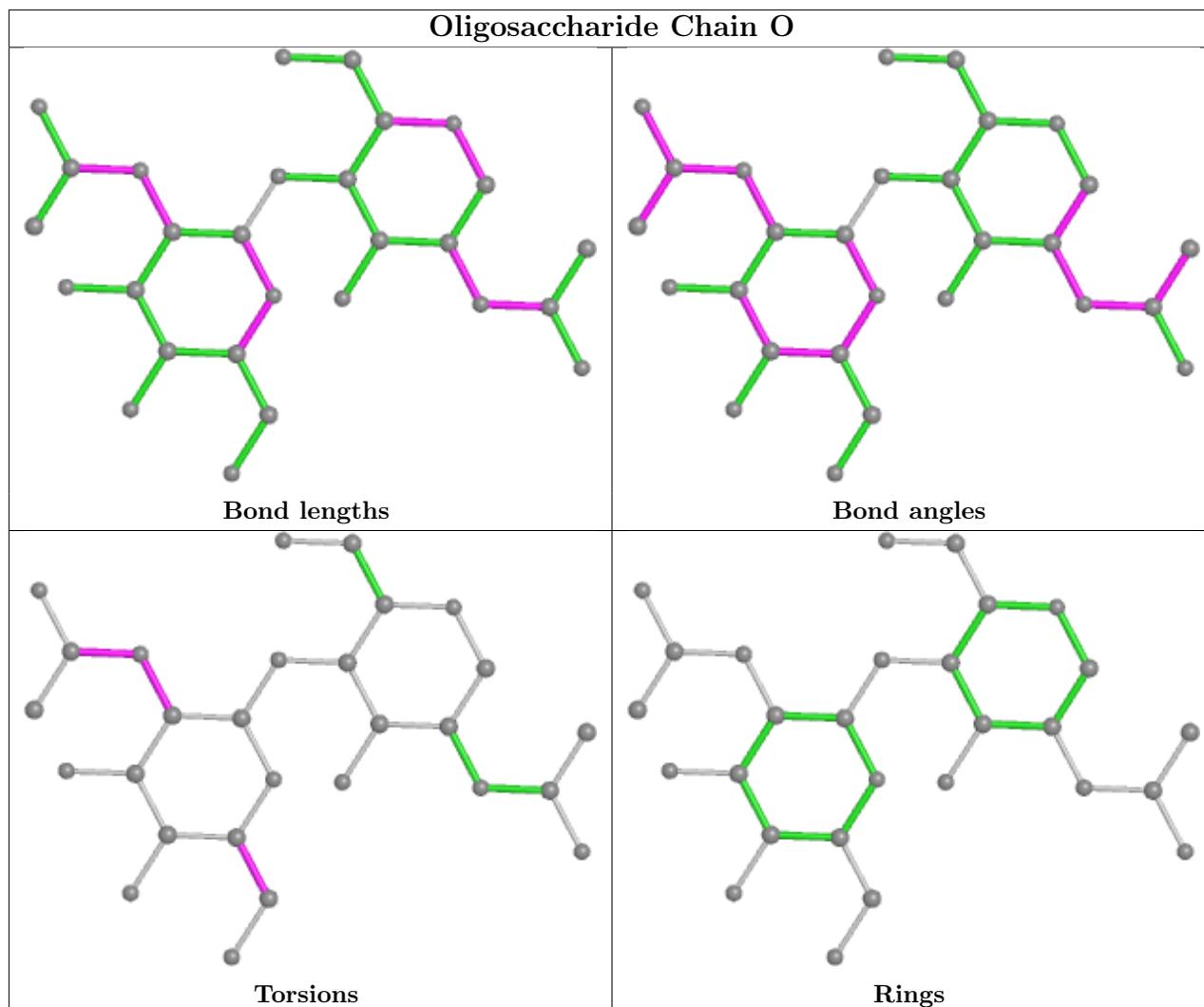


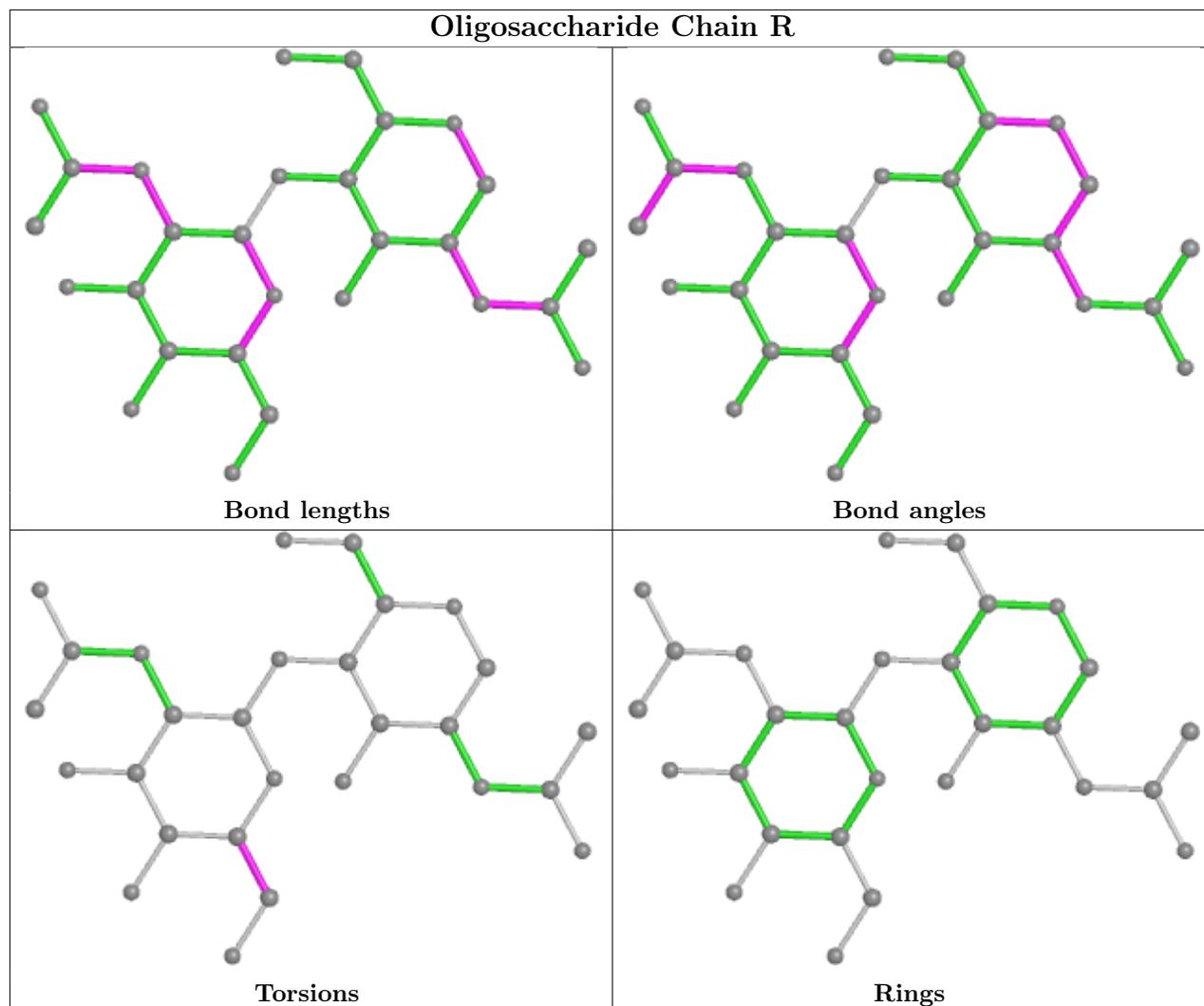


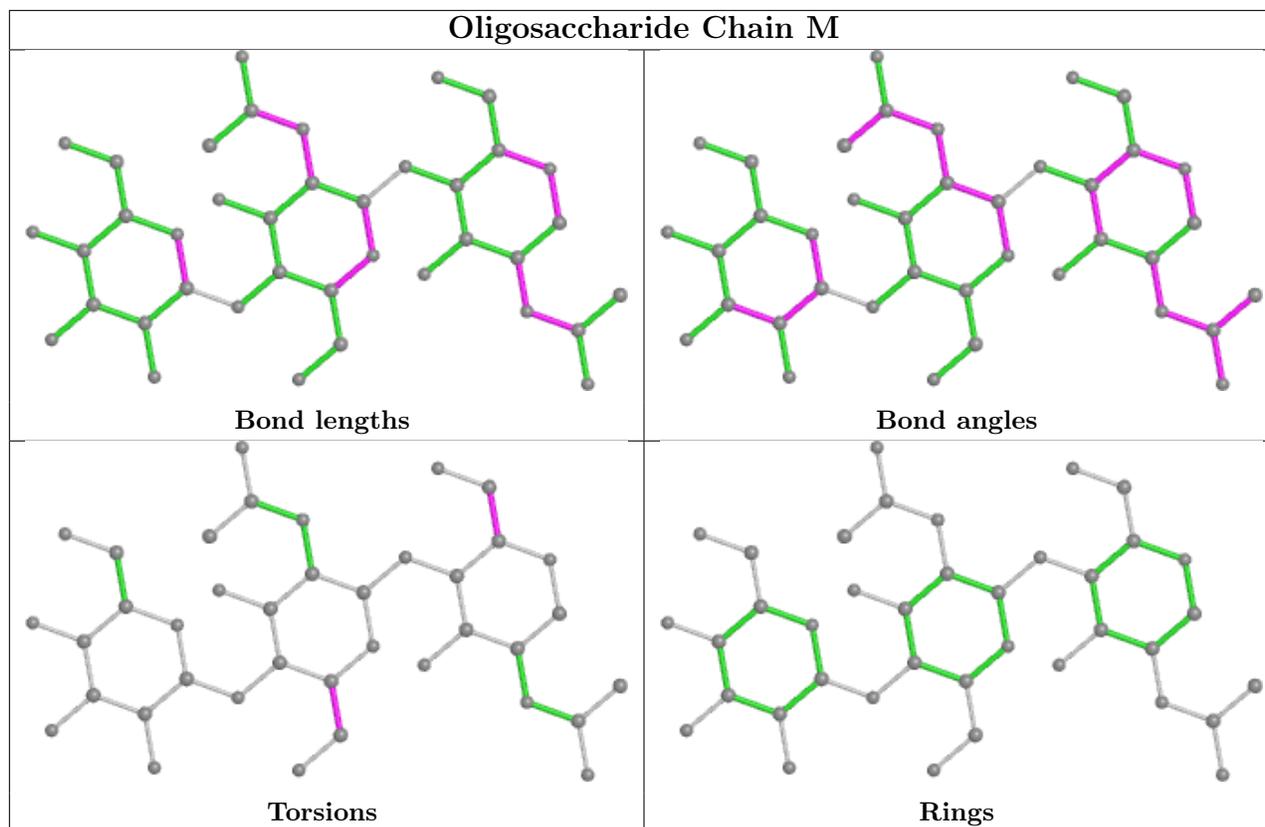












## 4.6 Ligand geometry [i](#)

Of 33 ligands modelled in this entry, 4 are monoatomic - leaving 29 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	$\# Z  > 2$
9	GOL	A	507	-	5,5,5	0.92	0	5,5,5	0.88	0
9	GOL	C	502	-	5,5,5	1.17	0	5,5,5	0.87	0
9	GOL	A	506	-	5,5,5	1.30	1 (20%)	5,5,5	1.11	0
9	GOL	D	505	-	5,5,5	0.78	0	5,5,5	0.94	0
9	GOL	C	506	-	5,5,5	1.17	1 (20%)	5,5,5	0.99	0
9	GOL	A	511	-	5,5,5	1.00	0	5,5,5	0.84	0
8	ACT	D	509	-	3,3,3	0.99	0	3,3,3	0.91	0
8	ACT	A	502	-	3,3,3	0.96	0	3,3,3	1.04	0
9	GOL	A	508	-	5,5,5	1.31	0	5,5,5	0.77	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
9	GOL	A	503	-	5,5,5	1.08	0	5,5,5	0.98	0
9	GOL	D	503	-	5,5,5	1.00	1 (20%)	5,5,5	1.24	0
9	GOL	B	503	-	5,5,5	0.94	0	5,5,5	1.07	0
9	GOL	A	510	-	5,5,5	0.94	0	5,5,5	1.01	0
8	ACT	B	505	-	3,3,3	1.02	0	3,3,3	0.91	0
9	GOL	A	512	-	5,5,5	1.03	0	5,5,5	0.92	0
8	ACT	C	503	-	3,3,3	1.06	0	3,3,3	0.68	0
8	ACT	D	506	-	3,3,3	1.07	0	3,3,3	1.24	0
9	GOL	A	509	-	5,5,5	0.91	0	5,5,5	0.98	0
9	GOL	D	507	-	5,5,5	0.86	0	5,5,5	1.02	0
8	ACT	B	502	-	3,3,3	1.00	0	3,3,3	0.99	0
9	GOL	C	504	-	5,5,5	1.10	0	5,5,5	0.77	0
10	NAG	D	501	1	14,14,15	2.06	3 (21%)	17,19,21	1.48	3 (17%)
9	GOL	B	504	-	5,5,5	1.19	0	5,5,5	0.84	0
9	GOL	C	507	-	5,5,5	0.92	0	5,5,5	0.97	0
8	ACT	A	505	-	3,3,3	0.99	0	3,3,3	0.84	0
8	ACT	C	505	-	3,3,3	0.90	0	3,3,3	0.98	0
9	GOL	A	504	-	5,5,5	1.05	0	5,5,5	1.07	1 (20%)
9	GOL	D	504	-	5,5,5	1.30	1 (20%)	5,5,5	1.30	1 (20%)
8	ACT	D	508	-	3,3,3	0.86	0	3,3,3	0.58	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. <sup>1,2</sup> means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	GOL	A	507	-	-	0/4/4/4	-
9	GOL	C	502	-	-	3/4/4/4	-
9	GOL	A	506	-	-	4/4/4/4	-
9	GOL	D	505	-	-	3/4/4/4	-
9	GOL	C	506	-	-	2/4/4/4	-
9	GOL	A	511	-	-	0/4/4/4	-
9	GOL	A	508	-	-	4/4/4/4	-
9	GOL	A	503	-	-	3/4/4/4	-
9	GOL	D	503	-	-	2/4/4/4	-
9	GOL	B	503	-	-	1/4/4/4	-
9	GOL	A	510	-	-	2/4/4/4	-
9	GOL	A	512	-	-	2/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	GOL	A	509	-	-	3/4/4/4	-
9	GOL	D	507	-	-	0/4/4/4	-
9	GOL	C	504	-	-	2/4/4/4	-
10	NAG	D	501	1	-	2/6/23/26	0/1/1/1
9	GOL	B	504	-	-	2/4/4/4	-
9	GOL	C	507	-	-	2/4/4/4	-
9	GOL	D	504	-	-	2/4/4/4	-
9	GOL	A	504	-	-	0/4/4/4	-

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	D	501	NAG	O5-C1	4.71	1.51	1.43
10	D	501	NAG	C7-N2	3.86	1.47	1.34
10	D	501	NAG	C2-N2	2.80	1.51	1.46
9	D	504	GOL	C1-C2	2.17	1.60	1.51
9	A	506	GOL	C1-C2	2.03	1.60	1.51
9	C	506	GOL	C3-C2	2.01	1.60	1.51
9	D	503	GOL	C3-C2	2.00	1.60	1.51

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	D	501	NAG	C8-C7-N2	3.14	121.42	116.10
10	D	501	NAG	C1-C2-N2	-2.65	105.97	110.49
9	D	504	GOL	C3-C2-C1	-2.44	102.20	111.70
10	D	501	NAG	O5-C1-C2	2.35	114.99	111.29
9	A	504	GOL	C3-C2-C1	-2.09	103.58	111.70

There are no chirality outliers.

All (39) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	A	506	GOL	C1-C2-C3-O3
9	A	508	GOL	O1-C1-C2-O2
9	A	508	GOL	O1-C1-C2-C3
9	A	508	GOL	C1-C2-C3-O3
9	A	508	GOL	O2-C2-C3-O3
9	A	509	GOL	C1-C2-C3-O3
9	A	510	GOL	O1-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
9	C	502	GOL	O1-C1-C2-C3
9	C	504	GOL	C1-C2-C3-O3
9	C	506	GOL	O1-C1-C2-O2
9	C	506	GOL	O1-C1-C2-C3
9	C	507	GOL	C1-C2-C3-O3
9	D	505	GOL	O1-C1-C2-C3
10	D	501	NAG	C8-C7-N2-C2
10	D	501	NAG	O7-C7-N2-C2
9	A	506	GOL	O2-C2-C3-O3
9	A	510	GOL	O1-C1-C2-O2
9	C	507	GOL	O2-C2-C3-O3
9	A	503	GOL	C1-C2-C3-O3
9	A	506	GOL	O1-C1-C2-C3
9	B	504	GOL	O1-C1-C2-C3
9	C	502	GOL	C1-C2-C3-O3
9	D	503	GOL	O1-C1-C2-C3
9	A	506	GOL	O1-C1-C2-O2
9	A	509	GOL	O2-C2-C3-O3
9	C	504	GOL	O2-C2-C3-O3
9	D	505	GOL	O1-C1-C2-O2
9	A	503	GOL	O2-C2-C3-O3
9	C	502	GOL	O1-C1-C2-O2
9	B	504	GOL	O1-C1-C2-O2
9	D	505	GOL	O2-C2-C3-O3
9	D	503	GOL	O1-C1-C2-O2
9	A	503	GOL	O1-C1-C2-C3
9	A	512	GOL	O1-C1-C2-C3
9	D	504	GOL	O1-C1-C2-C3
9	A	509	GOL	O1-C1-C2-O2
9	A	512	GOL	O1-C1-C2-O2
9	B	503	GOL	O1-C1-C2-O2
9	D	504	GOL	O1-C1-C2-O2

There are no ring outliers.

No monomer is involved in short contacts.

#### 4.7 Other polymers [i](#)

There are no such residues in this entry.

## 4.8 Polymer linkage issues

There are no chain breaks in this entry.

## 5 Fit of model and data [i](#)

### 5.1 Protein, DNA and RNA chains [i](#)

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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	427/427 (100%)	-0.79	0 <a href="#">100</a> <a href="#">100</a>	13, 25, 35, 61	2 (0%)
1	B	427/427 (100%)	-0.68	0 <a href="#">100</a> <a href="#">100</a>	15, 27, 39, 50	3 (0%)
1	C	427/427 (100%)	-0.27	3 (0%) <a href="#">84</a> <a href="#">84</a>	19, 34, 60, 68	2 (0%)
1	D	427/427 (100%)	-0.28	4 (0%) <a href="#">81</a> <a href="#">81</a>	19, 34, 61, 71	0
All	All	1708/1708 (100%)	-0.51	7 (0%) <a href="#">89</a> <a href="#">89</a>	13, 30, 55, 71	7 (0%)

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	357	GLY	2.6
1	C	359	GLY	2.3
1	C	389	ASN	2.3
1	D	22	ASN	2.3
1	D	353	VAL	2.2
1	C	357	GLY	2.1
1	D	436	SER	2.0

### 5.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

### 5.3 Carbohydrates [i](#)

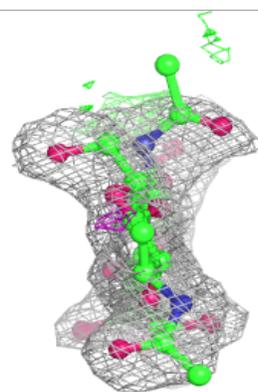
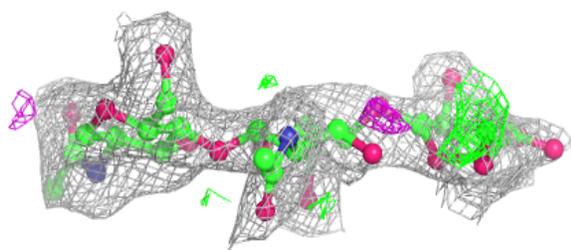
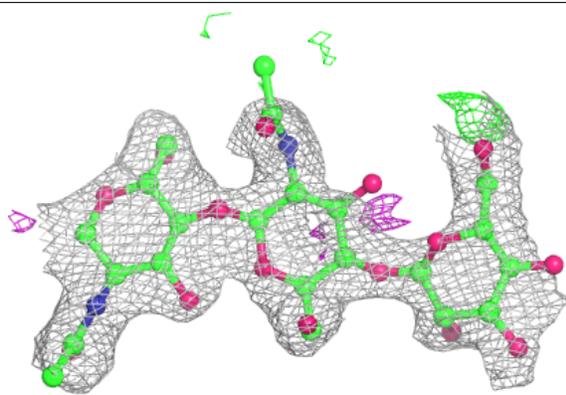
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
4	NDG	N	2	14/15	0.36	0.21	82,88,94,102	0
6	BMA	M	3	11/12	0.45	0.14	88,91,94,96	0
2	MAN	F	3	11/12	0.47	0.17	78,88,92,92	0
2	MAN	Q	3	11/12	0.52	0.14	72,86,89,91	0
2	MAN	G	3	11/12	0.54	0.14	71,79,84,87	0
2	MAN	K	3	11/12	0.58	0.15	76,80,86,86	0
2	MAN	E	3	11/12	0.58	0.14	68,78,80,83	0
5	NAG	R	2	14/15	0.59	0.16	63,82,90,94	0
4	NDG	I	2	14/15	0.64	0.17	56,70,77,77	0
5	NAG	O	2	14/15	0.69	0.14	69,79,88,89	0
5	NAG	J	2	14/15	0.70	0.15	51,60,69,70	0
2	NAG	E	2	14/15	0.75	0.15	63,71,77,81	0
6	NAG	M	2	14/15	0.81	0.11	59,72,82,89	0
4	NAG	N	1	14/15	0.81	0.12	45,60,75,78	0
2	NAG	Q	2	14/15	0.82	0.11	57,65,77,78	0
2	NAG	G	2	14/15	0.84	0.11	38,49,62,73	0
5	NAG	O	1	14/15	0.84	0.11	50,56,69,73	0
2	NAG	F	2	14/15	0.84	0.13	41,56,71,79	0
3	GAL	P	1	12/12	0.86	0.10	54,58,63,70	0
3	GAL	S	1	12/12	0.86	0.12	57,63,67,72	0
3	GAL	S	3	11/12	0.86	0.12	53,60,66,67	0
2	NAG	E	1	14/15	0.86	0.11	44,49,56,66	0
2	NAG	K	2	14/15	0.88	0.09	38,49,59,67	0
3	GAL	P	2	11/12	0.89	0.13	45,51,57,83	0
6	NAG	M	1	14/15	0.89	0.10	41,52,57,59	0
3	GAL	S	2	11/12	0.89	0.12	49,57,60,63	0
5	NAG	J	1	14/15	0.89	0.09	34,45,58,59	0
3	GAL	P	3	11/12	0.90	0.10	42,50,52,53	0
5	NAG	R	1	14/15	0.90	0.08	45,53,61,65	0
2	NAG	F	1	14/15	0.90	0.08	32,39,48,55	0
2	NAG	Q	1	14/15	0.91	0.08	42,48,51,56	0
3	GAL	H	1	12/12	0.92	0.09	27,37,54,58	0
4	NAG	I	1	14/15	0.92	0.09	47,53,61,62	0
2	NAG	K	1	14/15	0.94	0.07	29,32,42,42	0
3	GAL	L	2	11/12	0.95	0.07	25,27,31,33	0
2	NAG	G	1	14/15	0.96	0.06	26,33,36,37	0
3	GAL	H	2	11/12	0.96	0.07	20,26,31,37	0
3	GAL	H	3	11/12	0.96	0.06	23,26,30,34	0
3	GAL	L	1	12/12	0.96	0.07	27,35,44,45	0
3	GAL	L	3	11/12	0.97	0.05	22,27,30,37	0

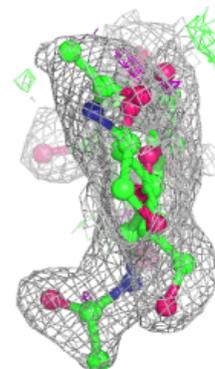
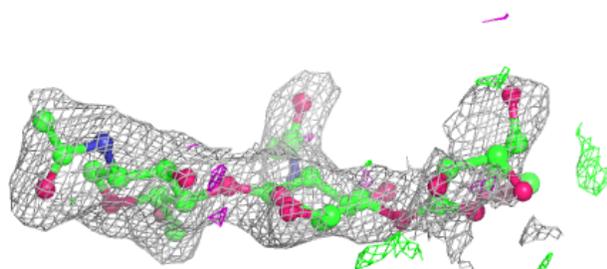
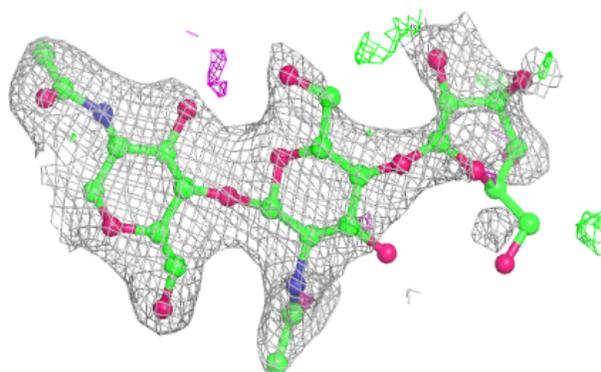
The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

**Electron density around Chain E:**

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

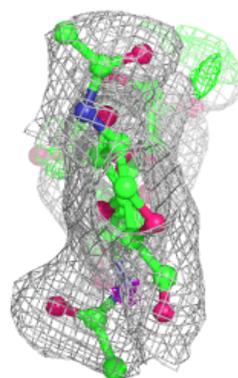
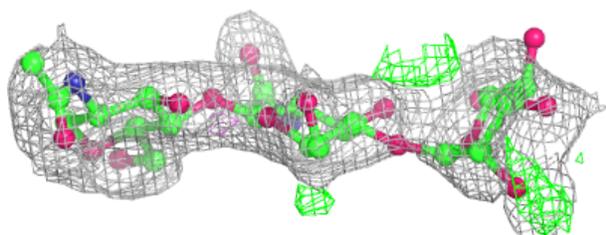
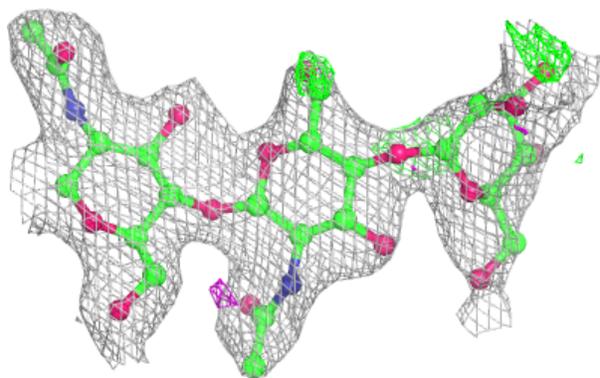
**Electron density around Chain F:**

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

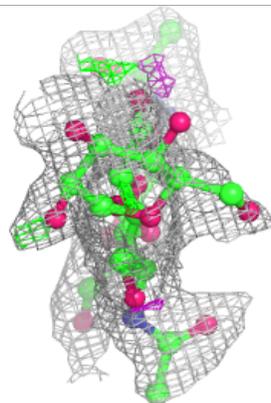
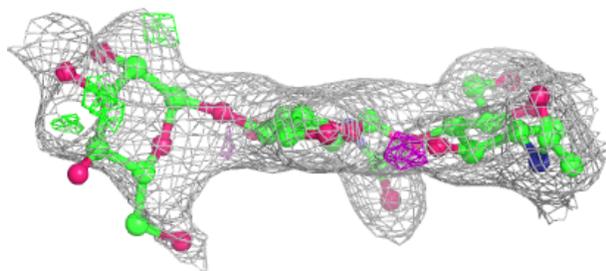
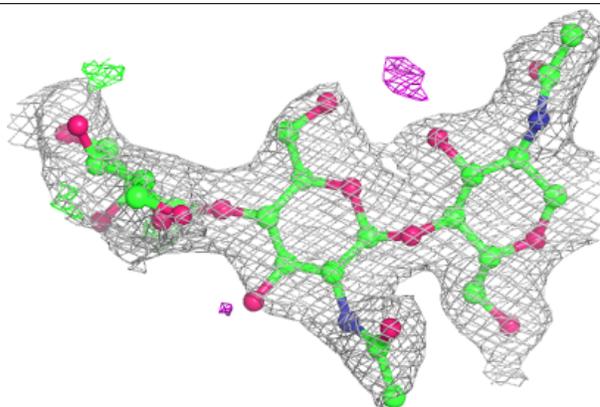


**Electron density around Chain G:**

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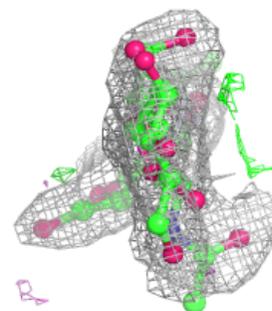
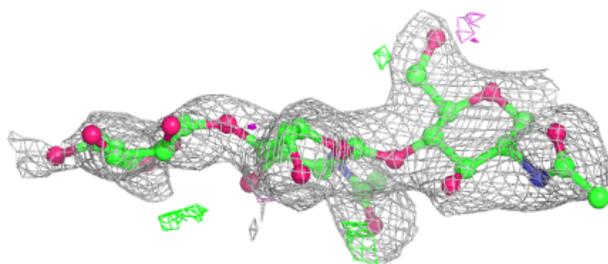
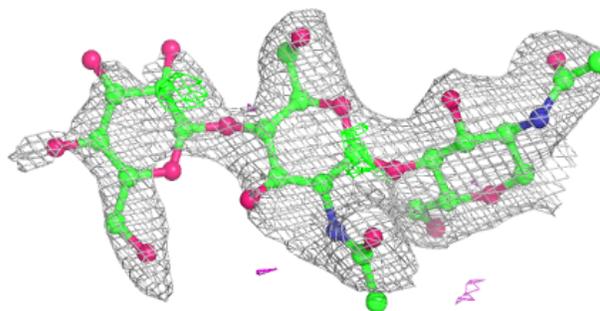
**Electron density around Chain K:**

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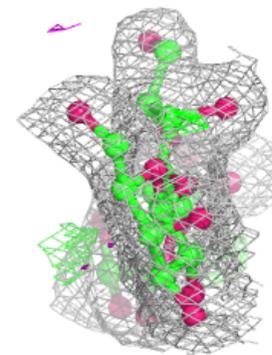
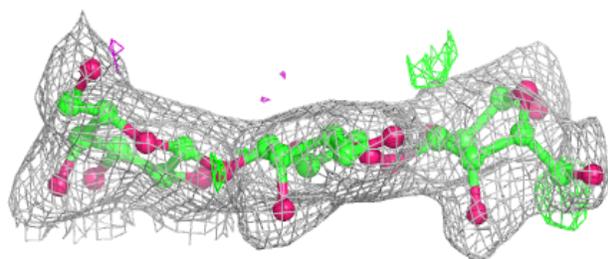
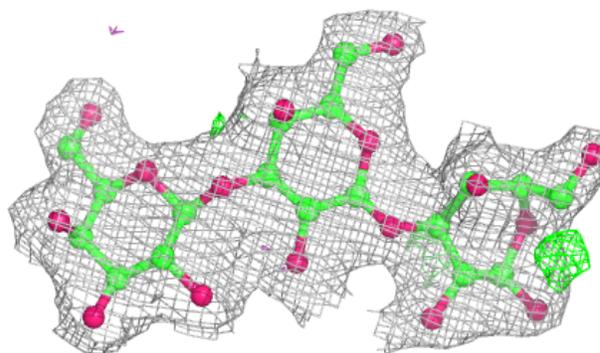


**Electron density around Chain Q:**

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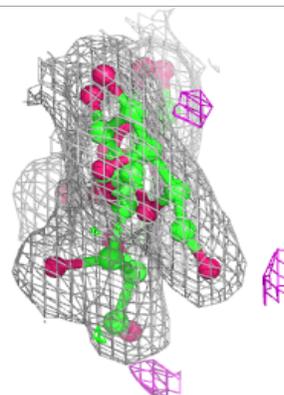
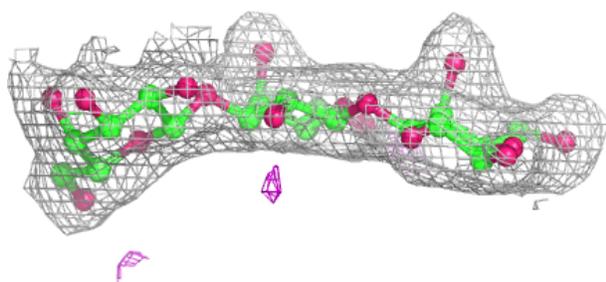
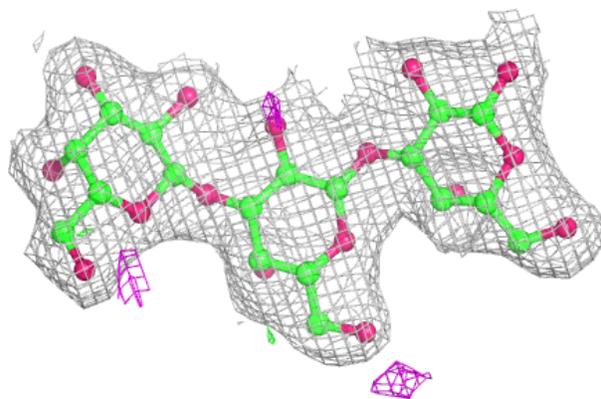
**Electron density around Chain H:**

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and green (positive)

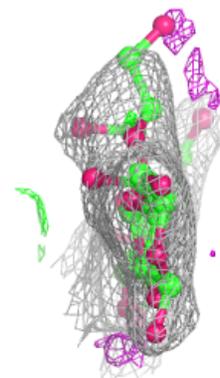
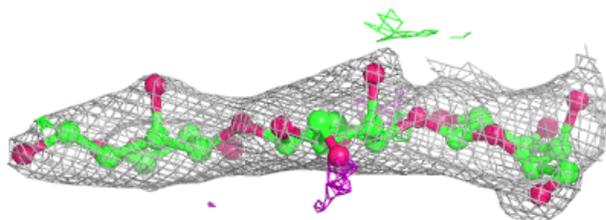
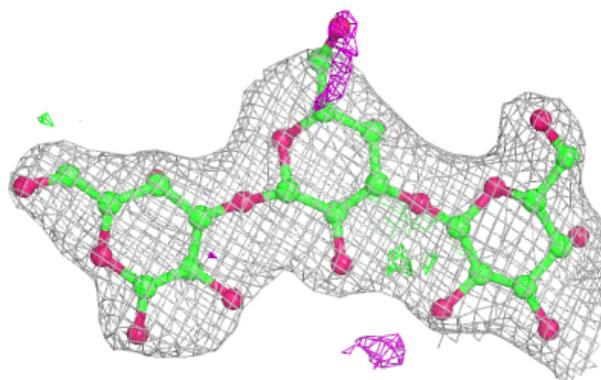


**Electron density around Chain L:**

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and green (positive)

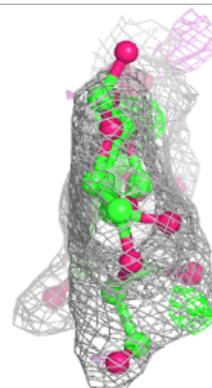
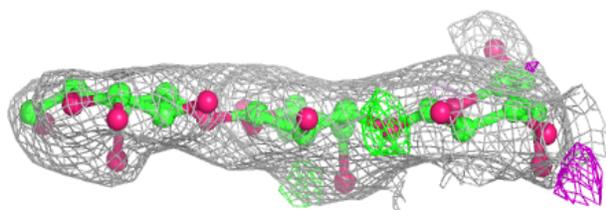
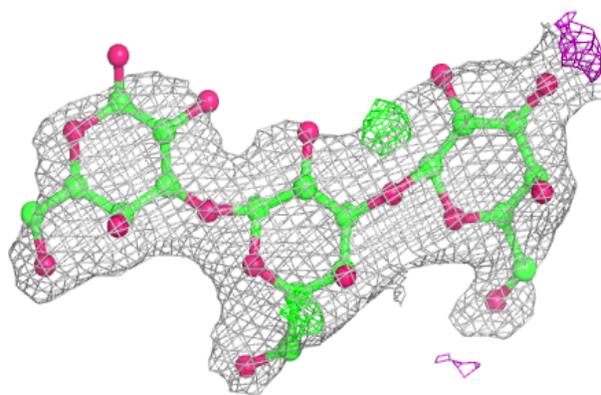
**Electron density around Chain P:**

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

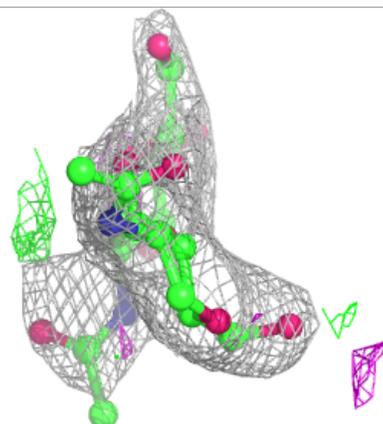
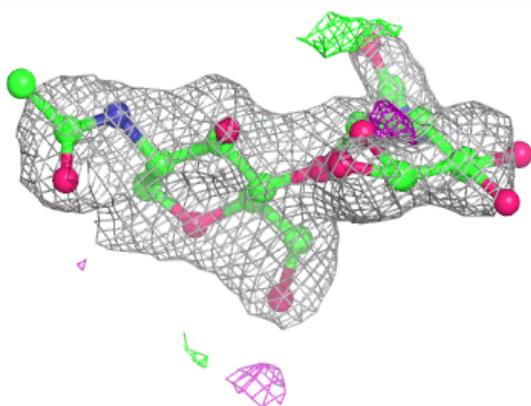
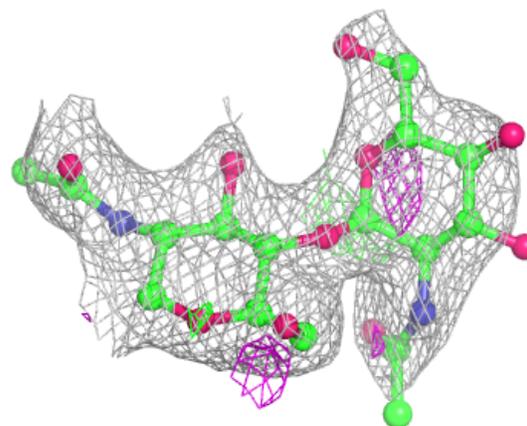


**Electron density around Chain S:**

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

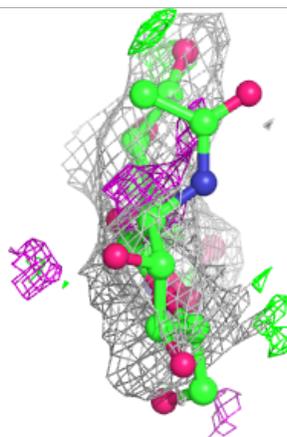
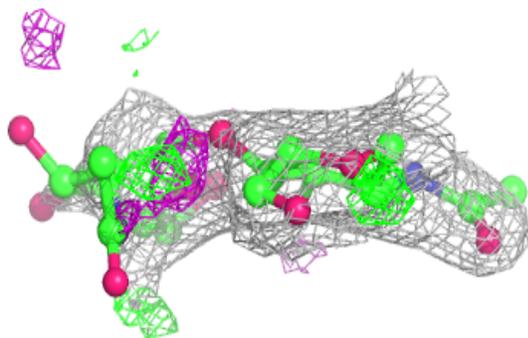
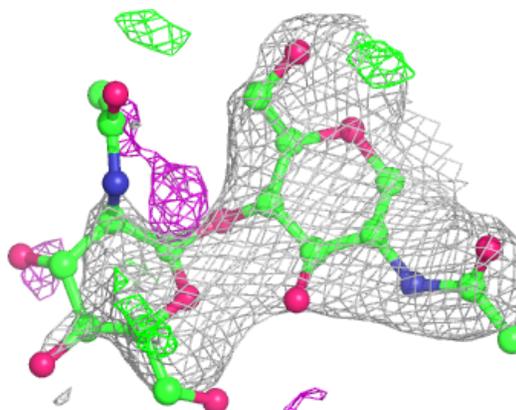
**Electron density around Chain I:**

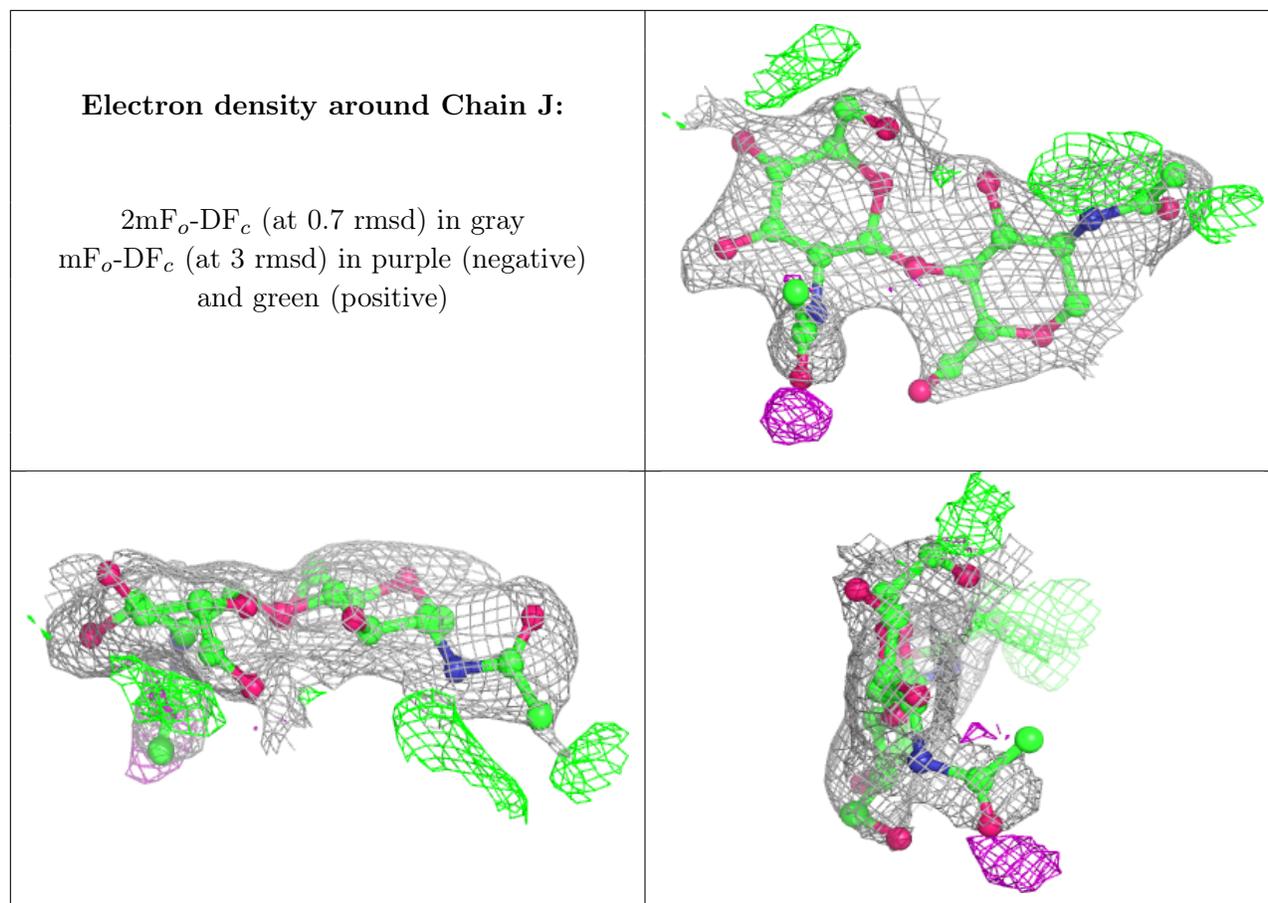
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



**Electron density around Chain N:**

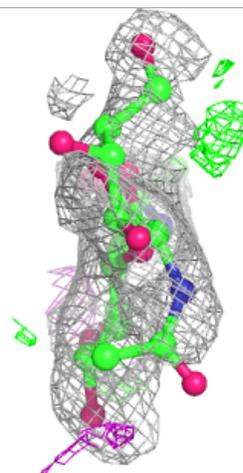
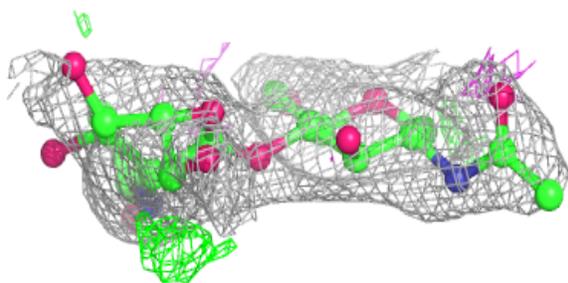
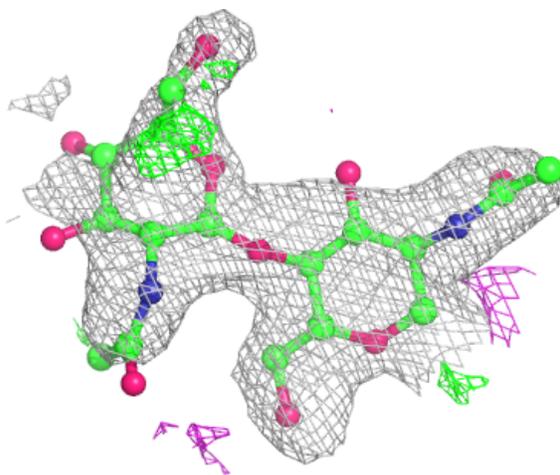
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





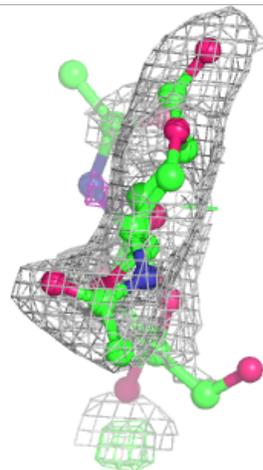
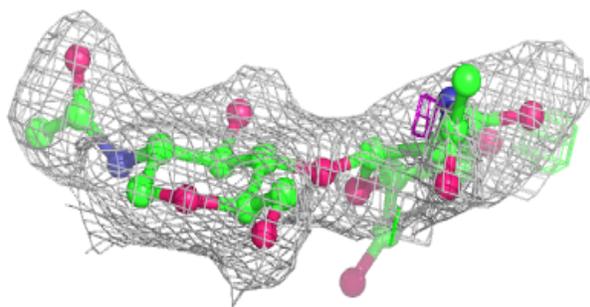
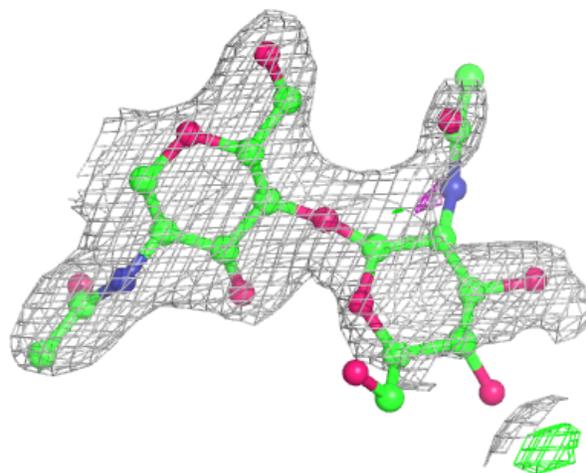
**Electron density around Chain O:**

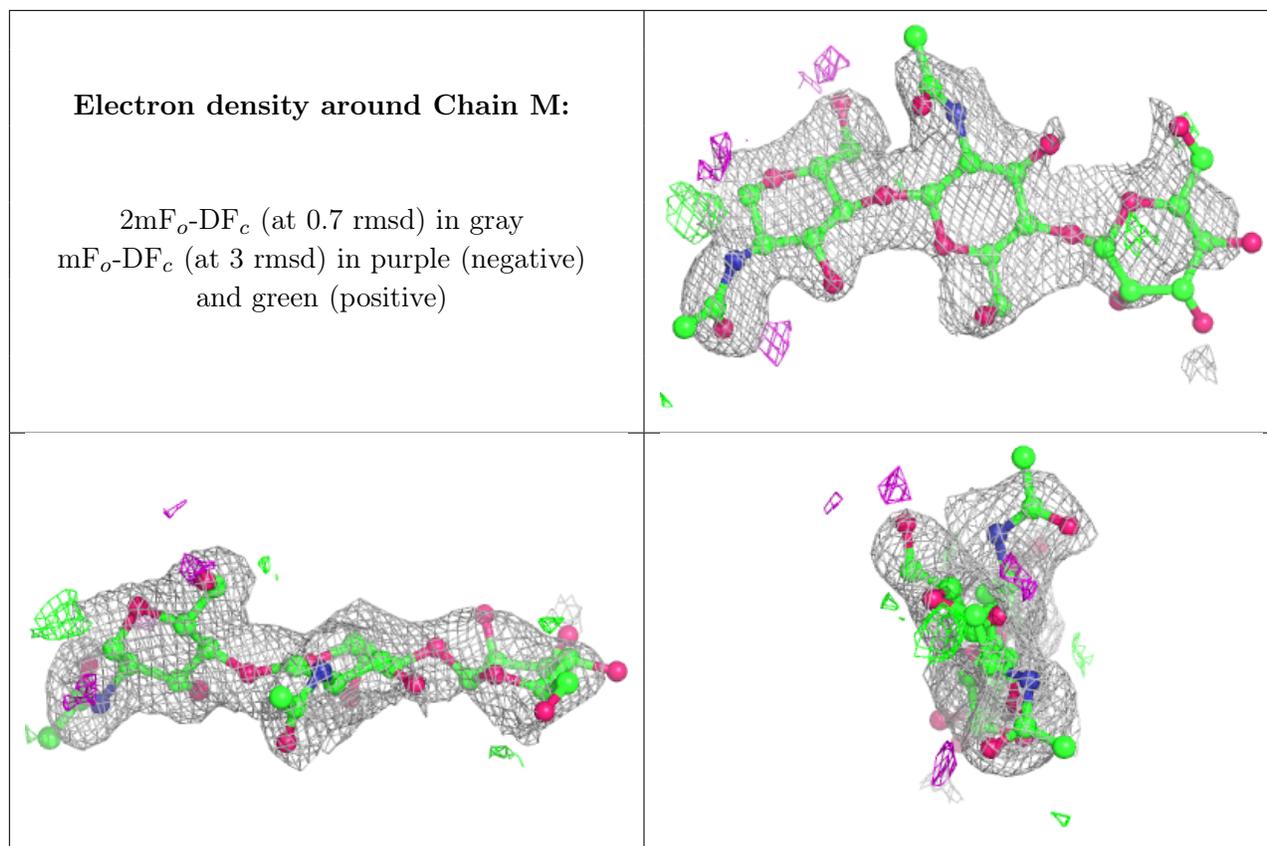
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



**Electron density around Chain R:**

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





## 5.4 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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
8	ACT	A	505	4/4	0.64	0.19	49,55,57,60	0
8	ACT	C	503	4/4	0.68	0.27	48,50,54,63	0
9	GOL	A	507	6/6	0.68	0.16	54,64,67,68	0
9	GOL	D	507	6/6	0.69	0.21	50,59,63,64	0
9	GOL	C	507	6/6	0.70	0.20	58,62,63,64	0
9	GOL	A	509	6/6	0.72	0.20	50,55,61,63	0
9	GOL	D	503	6/6	0.73	0.20	45,48,52,53	0
10	NAG	D	501	14/15	0.73	0.13	55,63,71,75	0
8	ACT	C	505	4/4	0.74	0.17	48,49,55,61	0
8	ACT	D	509	4/4	0.74	0.15	37,47,54,55	0
9	GOL	A	512	6/6	0.78	0.20	43,49,58,61	0
9	GOL	A	506	6/6	0.79	0.15	39,47,56,57	0
8	ACT	A	502	4/4	0.79	0.20	37,44,52,70	0
9	GOL	A	510	6/6	0.80	0.17	48,51,52,55	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
9	GOL	C	502	6/6	0.81	0.16	40,45,47,55	0
9	GOL	D	505	6/6	0.83	0.13	45,50,55,58	0
8	ACT	D	506	4/4	0.83	0.13	23,29,30,42	0
8	ACT	B	505	4/4	0.83	0.17	36,42,46,51	0
9	GOL	A	511	6/6	0.84	0.16	39,48,55,55	0
9	GOL	A	508	6/6	0.84	0.16	39,45,58,63	0
9	GOL	D	504	6/6	0.85	0.16	29,37,42,46	0
8	ACT	B	502	4/4	0.86	0.22	25,36,45,65	0
9	GOL	A	504	6/6	0.86	0.18	33,39,42,45	0
9	GOL	C	506	6/6	0.86	0.17	42,44,47,48	0
8	ACT	D	508	4/4	0.87	0.14	40,45,47,51	0
9	GOL	B	503	6/6	0.89	0.11	32,36,39,45	0
9	GOL	C	504	6/6	0.90	0.14	40,41,45,50	0
9	GOL	B	504	6/6	0.91	0.12	38,42,44,45	0
9	GOL	A	503	6/6	0.91	0.15	27,38,38,39	0
7	CA	D	502	1/1	0.99	0.02	42,42,42,42	0
7	CA	C	501	1/1	0.99	0.02	40,40,40,40	0
7	CA	B	501	1/1	1.00	0.01	20,20,20,20	0
7	CA	A	501	1/1	1.00	0.01	18,18,18,18	0

## 5.5 Other polymers [i](#)

There are no such residues in this entry.