



# wwPDB X-ray Structure Validation Summary Report ⓘ

Nov 19, 2023 – 09:30 PM JST

PDB ID : 7BYX  
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 wwPDB X-ray Structure Validation Summary 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 : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.36  
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

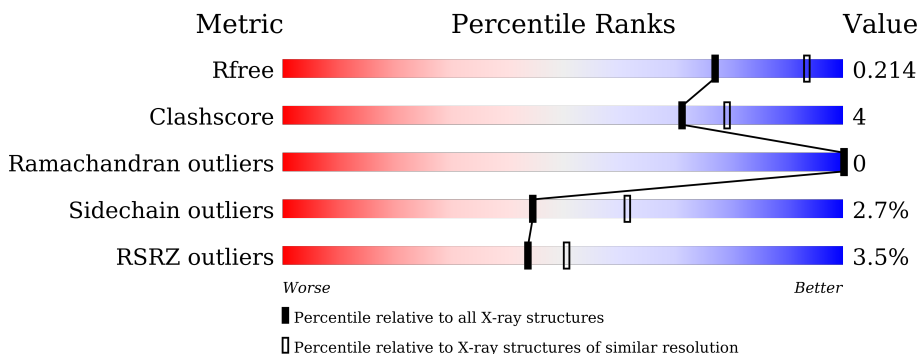
# 1 Overall quality at a glance

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))
$R_{free}$	130704	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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  $\geq 3$ , 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  $\leq 5\%$ . 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	427	91% 9%
1	B	427	92% 7%
1	C	427	7% 91% 8%
1	D	427	7% 88% 11% .
2	E	3	67% 33%
2	F	3	100%

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Mol	Chain	Length	Quality of chain
2	G	3	 100%
2	K	3	 100%
2	Q	3	 100%
3	H	3	 100%
3	L	3	 100%
3	P	3	 67% 33%
3	S	3	 67% 33%
4	I	2	 100%
4	N	2	 50% 50%
5	J	2	 100%
5	O	2	 50% 50%
5	R	2	 100%
6	M	3	 100%

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
2	MAN	F	3	-	-	-	X
2	MAN	Q	3	-	-	-	X
4	NDG	N	2	-	-	-	X
5	NAG	R	2	-	-	-	X
6	BMA	M	3	-	-	-	X
8	ACT	A	517	-	-	-	X
8	ACT	C	513	-	-	-	X
8	ACT	D	516	-	-	X	-

## 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.



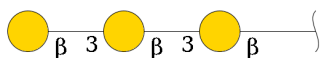
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
2	E	3	Total 39	C 22	N 2	O 15	0	0	0
2	F	3	Total 39	C 22	N 2	O 15	0	0	0
2	G	3	Total 39	C 22	N 2	O 15	0	0	0

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

- 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
			Total	C	O			
3	H	3	34	18	16	0	0	0
3	L	3	34	18	16	0	0	0
3	P	3	34	18	16	0	0	0
3	S	3	34	18	16	0	0	0

- 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
			Total	C	N	O			
4	I	2	28	16	2	10	0	0	0
4	N	2	28	16	2	10	0	0	0

- 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 (three-letter code: 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 (three-letter code: 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 (three-letter code: 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	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

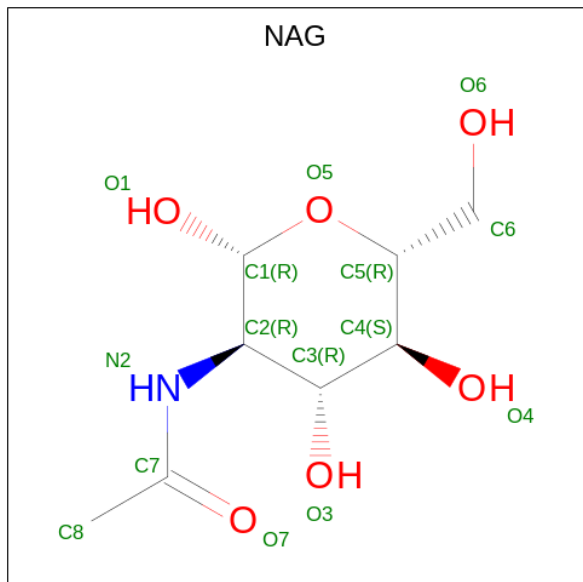
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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	C	1	Total	C	O	0	0
			6	3	3		
9	D	1	Total	C	O	0	0
			6	3	3		
9	D	1	Total	C	O	0	0
			6	3	3		
9	D	1	Total	C	O	0	0
			6	3	3		

- Molecule 10 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C<sub>8</sub>H<sub>15</sub>NO<sub>6</sub>).



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	340	Total	O	0	0
			340	340		
11	B	293	Total	O	0	0
			293	293		
11	C	179	Total	O	0	0
			179	179		

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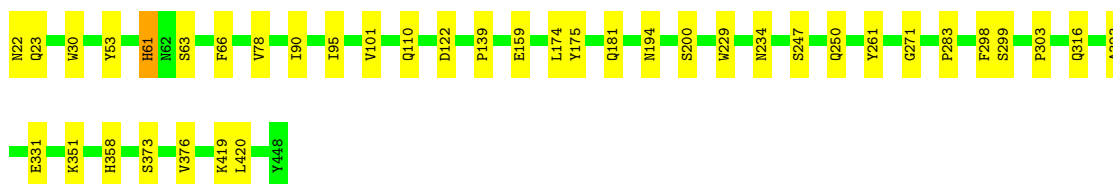
<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>		<b>ZeroOcc</b>	<b>AltConf</b>
11	D	194	Total 194	O 194	0	0

### 3 Residue-property plots

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.

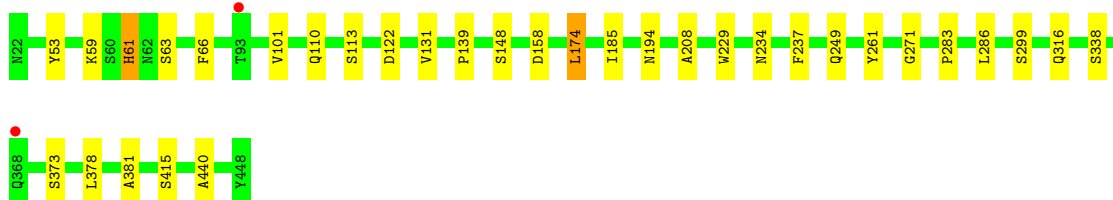
- Molecule 1: Galactan 1,3-beta-galactosidase

Chain A:  91% 9%



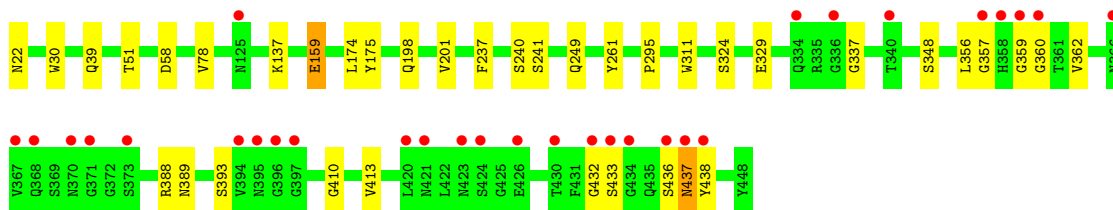
- Molecule 1: Galactan 1,3-beta-galactosidase

Chain B:  92% 7%




- Molecule 1: Galactan 1,3-beta-galactosidase

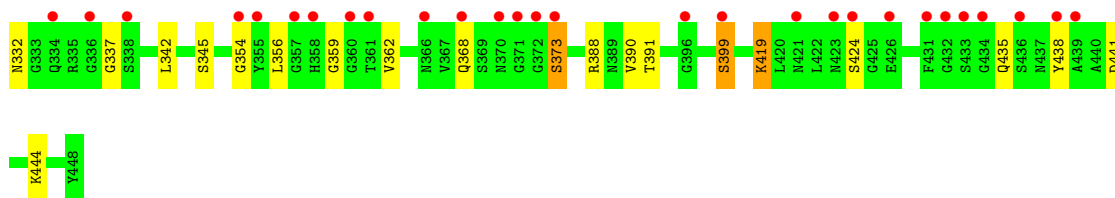
Chain C:  7% 91% 8%



- Molecule 1: Galactan 1,3-beta-galactosidase

Chain D:  7% 88% 11%





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

Chain E: 67% 33%



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

Chain F: 100%



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

Chain G: 100%



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

Chain K: 100%



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

Chain Q: 100%




- Molecule 3: beta-D-galactopyranose-(1-3)-beta-D-galactopyranose-(1-3)-beta-D-galactopyranose

Chain H: 100%

GAL1  
GAL2  
GAL3

- Molecule 3: beta-D-galactopyranose-(1-3)-beta-D-galactopyranose-(1-3)-beta-D-galactopyranose

Chain L:  100%


GAL1  
GAL2  
GAL3

- Molecule 3: beta-D-galactopyranose-(1-3)-beta-D-galactopyranose-(1-3)-beta-D-galactopyranose

Chain P:  67% 33%

GAL1  
GAL2  
GAL3

- Molecule 3: beta-D-galactopyranose-(1-3)-beta-D-galactopyranose-(1-3)-beta-D-galactopyranose

Chain S:  67% 33%


GAL1  
GAL2  
GAL3

- Molecule 4: 2-acetamido-2-deoxy-alpha-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glu copyranose

Chain I:  100%

MAG1  
NDG2

- Molecule 4: 2-acetamido-2-deoxy-alpha-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glu copyranose

Chain N:  50% 50%


MAG1  
NDG2

- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glu copyranose

Chain J:  100%

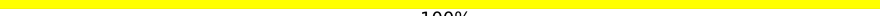
MAG1  
MAG2

- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glu copyranose

Chain O:  50% 50%

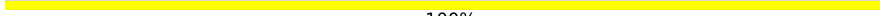
MAG1  
MAG2

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

Chain R:  100%

MAG1  
MAG2

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

Chain M:  100%

MAG1  
MAG2  
BMA3

## 4 Data and refinement statistics i

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 43.26 – 2.30	Depositor EDS
% Data completeness (in resolution range)	98.8 (31.14-2.30) 98.8 (43.26-2.30)	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 0.161 , 0.214	Depositor DCC
$R_{free}$ test set	4569 reflections (4.97%)	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> )	0.35 , 44.8	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.

## 5 Model quality [i](#)

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

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

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	0.44	0/3315	0.60	0/4523
1	B	0.43	0/3319	0.60	0/4528
1	C	0.40	0/3317	0.57	0/4526
1	D	0.39	0/3299	0.58	0/4502
All	All	0.42	0/13250	0.59	0/18079

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 [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3222	0	3024	25	0
1	B	3226	0	3026	16	0
1	C	3224	0	3019	20	0
1	D	3214	0	3011	34	1
2	E	39	0	34	0	1
2	F	39	0	34	0	0
2	G	39	0	34	0	0
2	K	39	0	34	0	0
2	Q	39	0	34	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	H	34	0	29	0	0
3	L	34	0	30	0	0
3	P	34	0	30	1	0
3	S	34	0	29	1	0
4	I	28	0	24	0	0
4	N	28	0	24	1	0
5	J	28	0	25	0	0
5	O	28	0	25	1	0
5	R	28	0	25	0	0
6	M	39	0	34	0	0
7	A	1	0	0	0	0
7	B	1	0	0	0	0
7	C	1	0	0	0	0
7	D	1	0	0	0	0
8	A	8	0	6	0	0
8	B	8	0	6	0	0
8	C	8	0	6	0	0
8	D	12	0	9	2	0
9	A	54	0	72	9	0
9	B	12	0	16	0	0
9	C	24	0	32	5	0
9	D	24	0	32	3	0
10	D	14	0	13	0	0
11	A	340	0	0	2	0
11	B	293	0	0	1	0
11	C	179	0	0	1	0
11	D	194	0	0	3	0
All	All	14570	0	12717	92	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 4.

The worst 5 of 92 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:A:271:GLY:H	9:A:524:GOL:H2	1.43	0.83
1:D:22:ASN:HD22	1:D:23:GLN:H	1.36	0.74
1:D:316:GLN:NE2	11:D:601:HOH:O	2.22	0.71
1:D:30:TRP:CE2	9:D:512:GOL:H11	2.28	0.67
1:D:342:LEU:HD11	1:D:354:GLY:HA3	1.78	0.64

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:368:GLN:OE1	2:E:3:MAN:O4[6_555]	2.17	0.03

## 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	427/427 (100%)	412 (96%)	15 (4%)	0	100	100
1	B	428/427 (100%)	414 (97%)	14 (3%)	0	100	100
1	C	427/427 (100%)	404 (95%)	23 (5%)	0	100	100
1	D	425/427 (100%)	405 (95%)	20 (5%)	0	100	100
All	All	1707/1708 (100%)	1635 (96%)	72 (4%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains [\(i\)](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	343/341 (101%)	334 (97%)	9 (3%)	46	63
1	B	343/341 (101%)	334 (97%)	9 (3%)	46	63
1	C	343/341 (101%)	332 (97%)	11 (3%)	39	54
1	D	341/341 (100%)	331 (97%)	10 (3%)	42	58

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	1370/1364 (100%)	1331 (97%)	39 (3%)	44 60

5 of 39 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	437	ASN
1	D	399	SER
1	D	22	ASN
1	D	261	TYR
1	D	424	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 9 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	368	GLN
1	D	435	GLN
1	B	264	ASN
1	B	316	GLN
1	D	22	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

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	1,4	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	1,5	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	1,4	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	1,5	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	1,5	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	3,1	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	1,4	-	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	1,5	-	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	1,4	-	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	1,5	-	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	1,5	-	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	3,1	-	0/2/19/22	0/1/1/1

The worst 5 of 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

The worst 5 of 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
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

There are no chirality outliers.

5 of 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

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Mol	Chain	Res	Type	Atoms
3	S	1	GAL	O5-C5-C6-O6

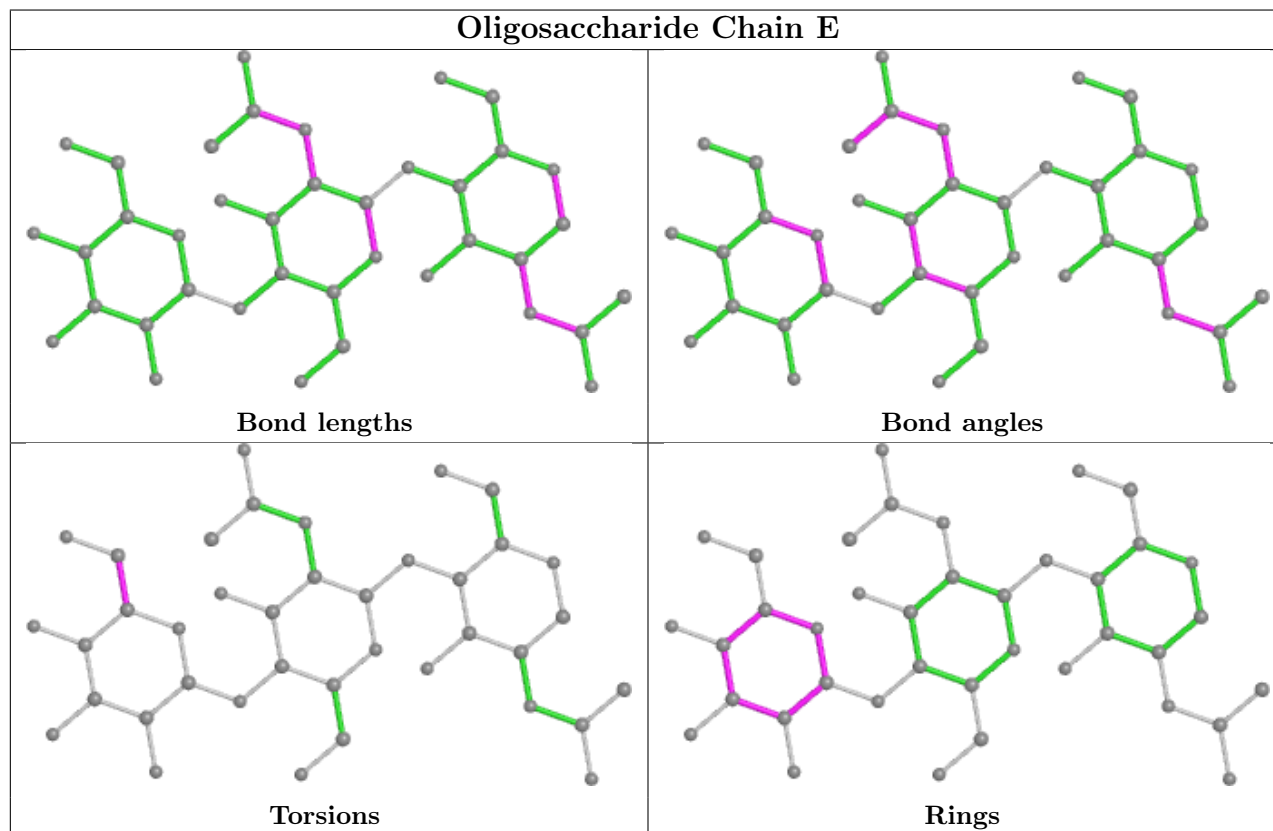
All (2) ring outliers are listed below:

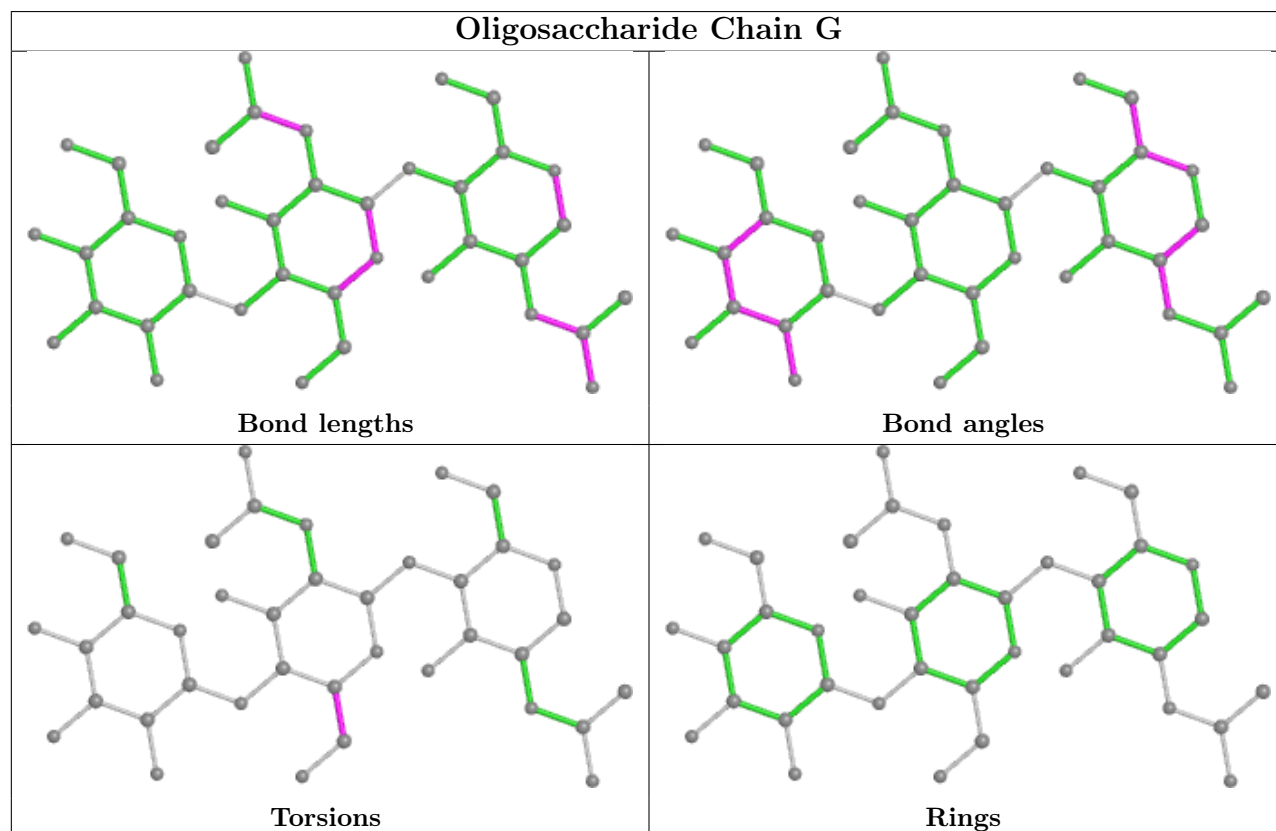
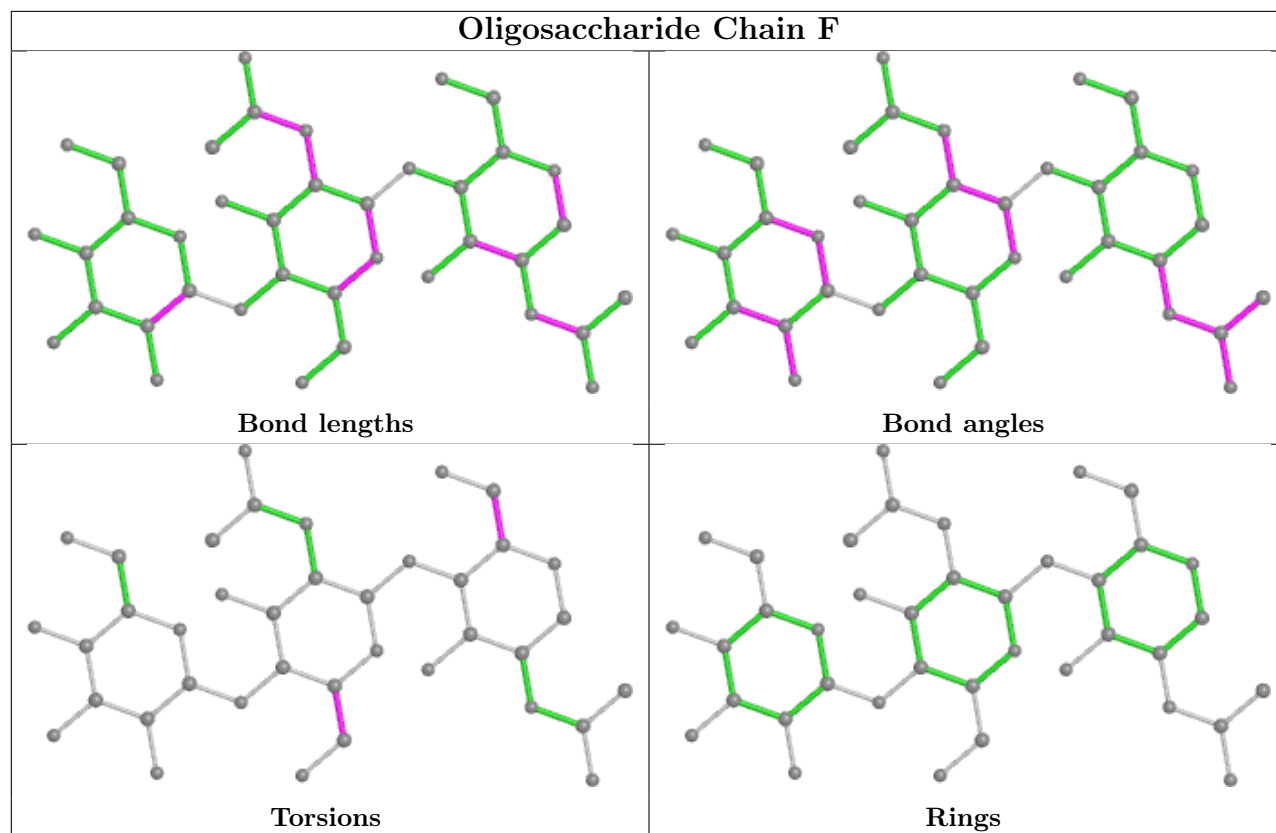
Mol	Chain	Res	Type	Atoms
2	Q	3	MAN	C1-C2-C3-C4-C5-O5
2	E	3	MAN	C1-C2-C3-C4-C5-O5

5 monomers are involved in 5 short contacts:

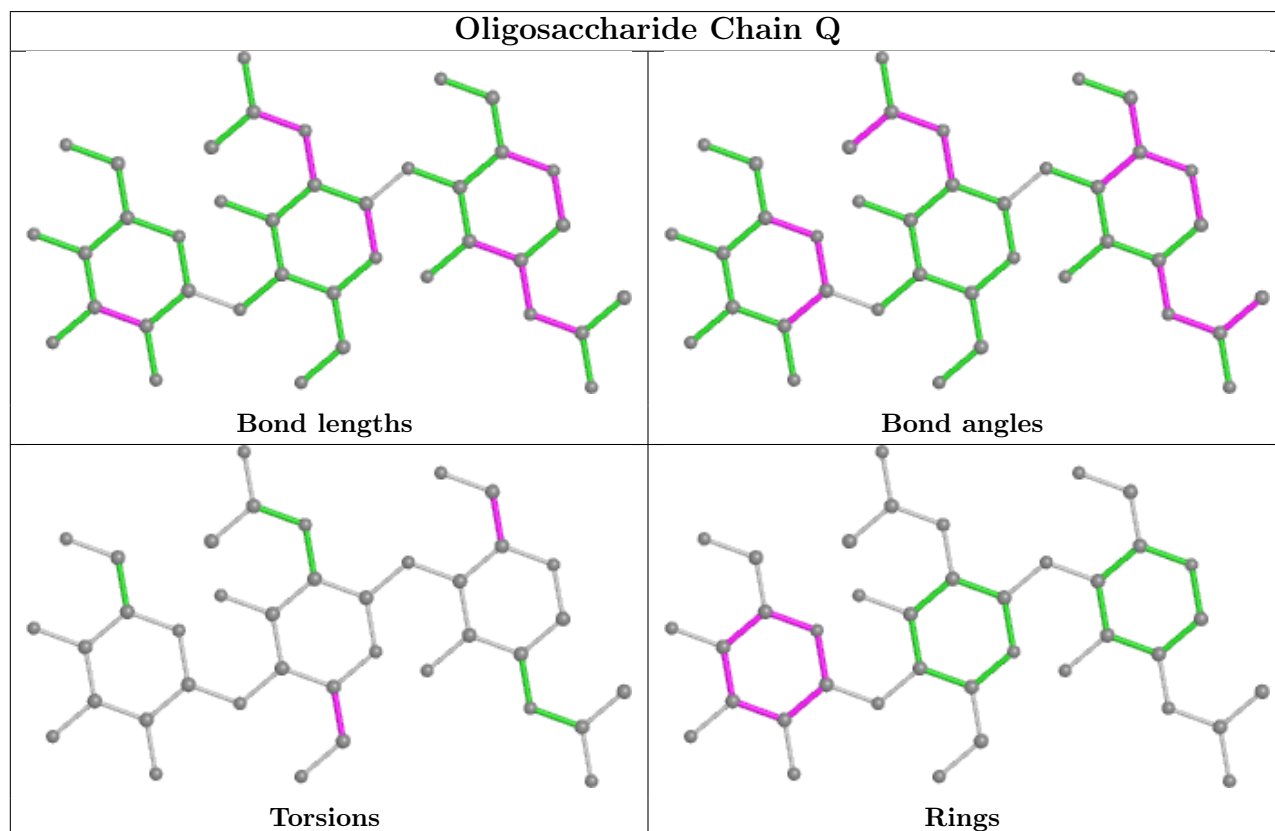
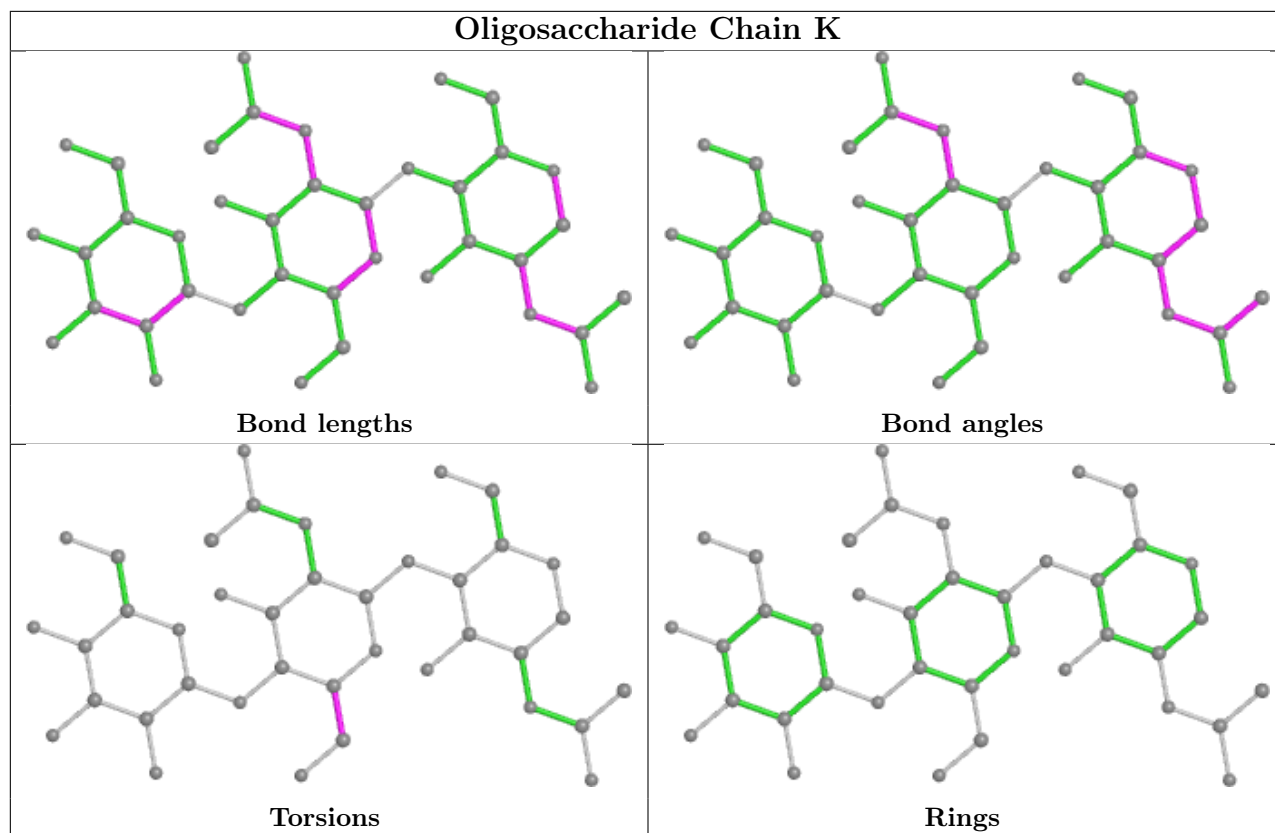
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	S	3	GAL	1	0
5	O	1	NAG	1	0
3	P	1	GAL	1	0
4	N	2	NDG	1	0
2	E	3	MAN	0	1

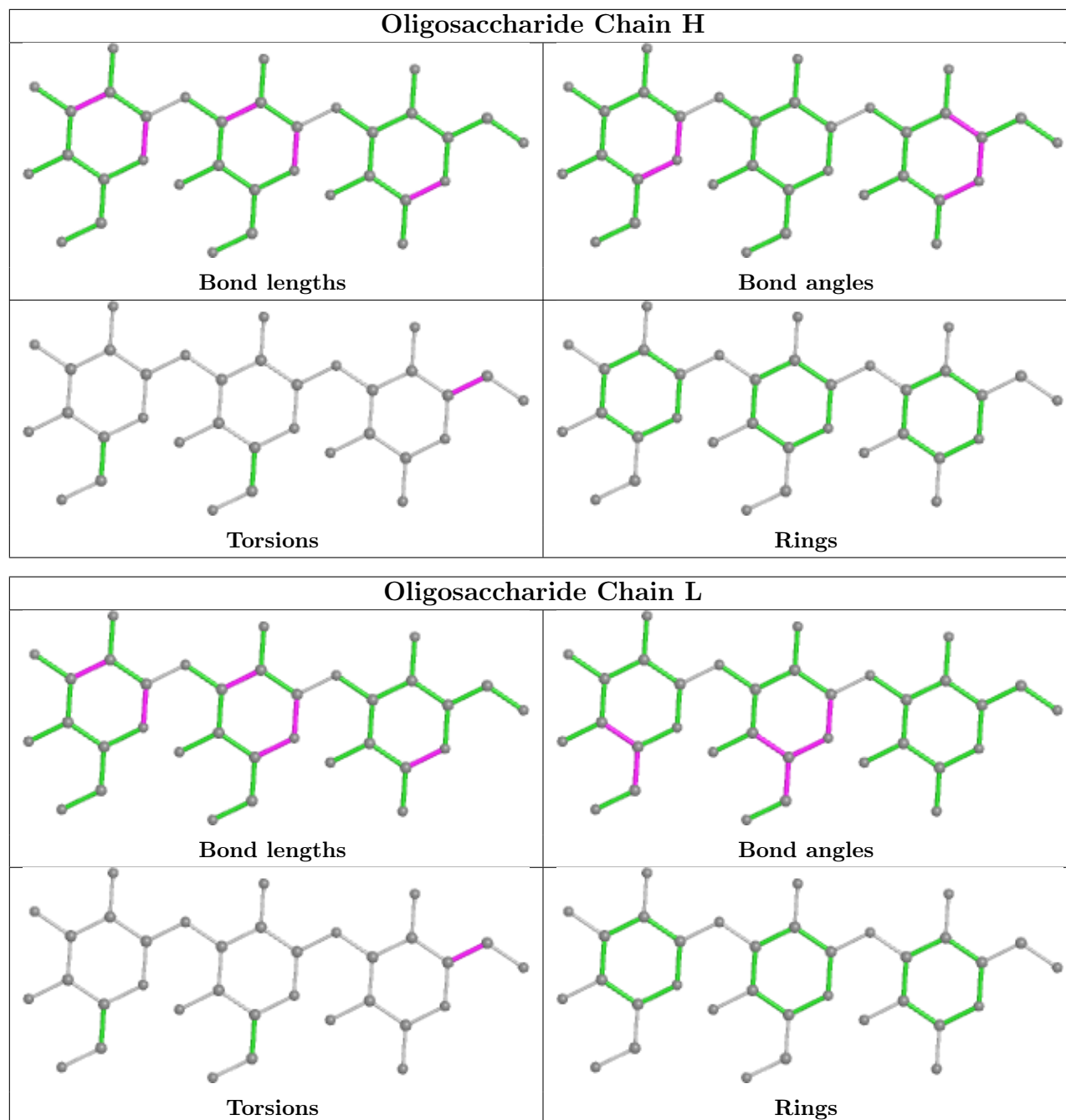
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

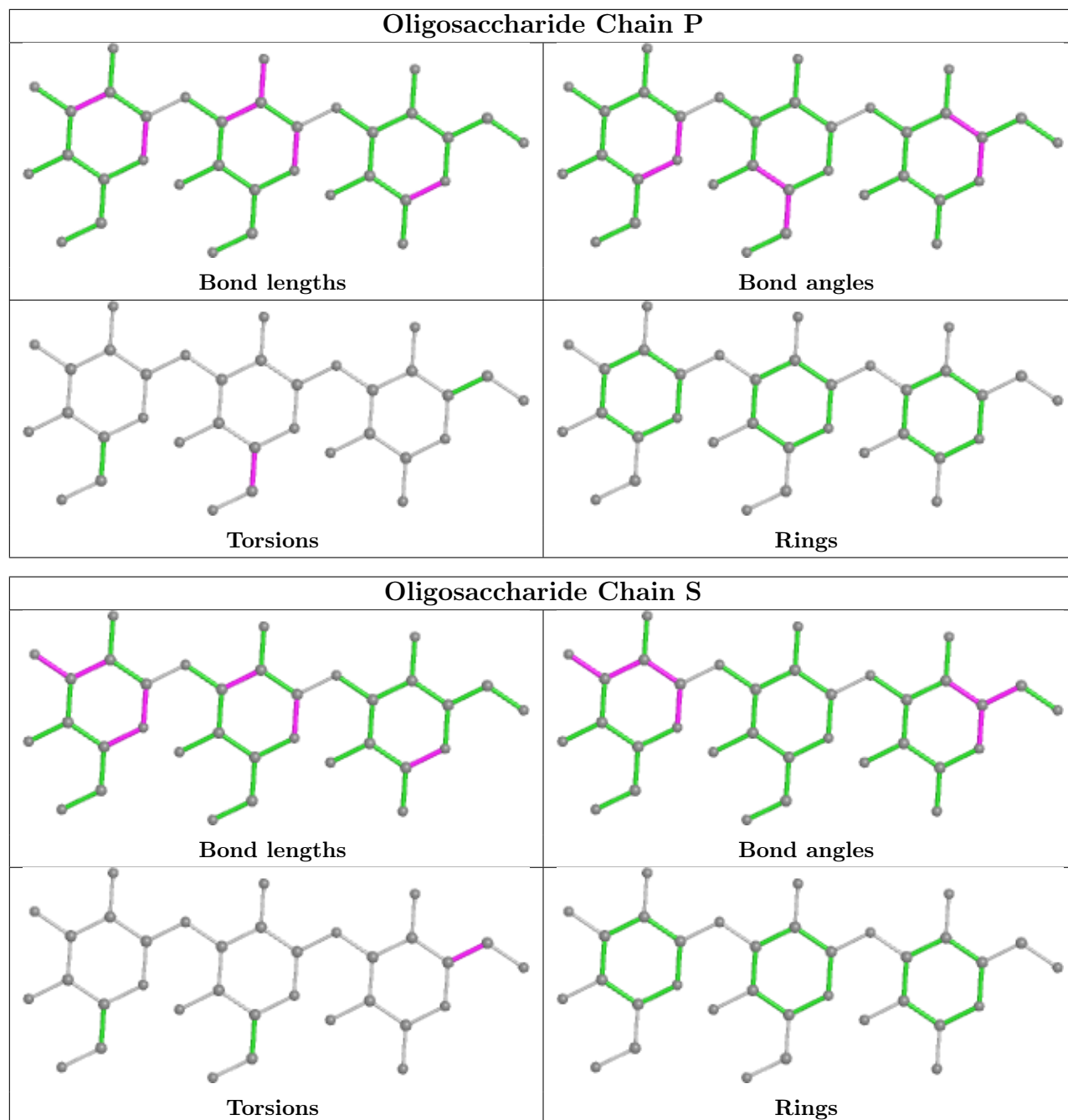


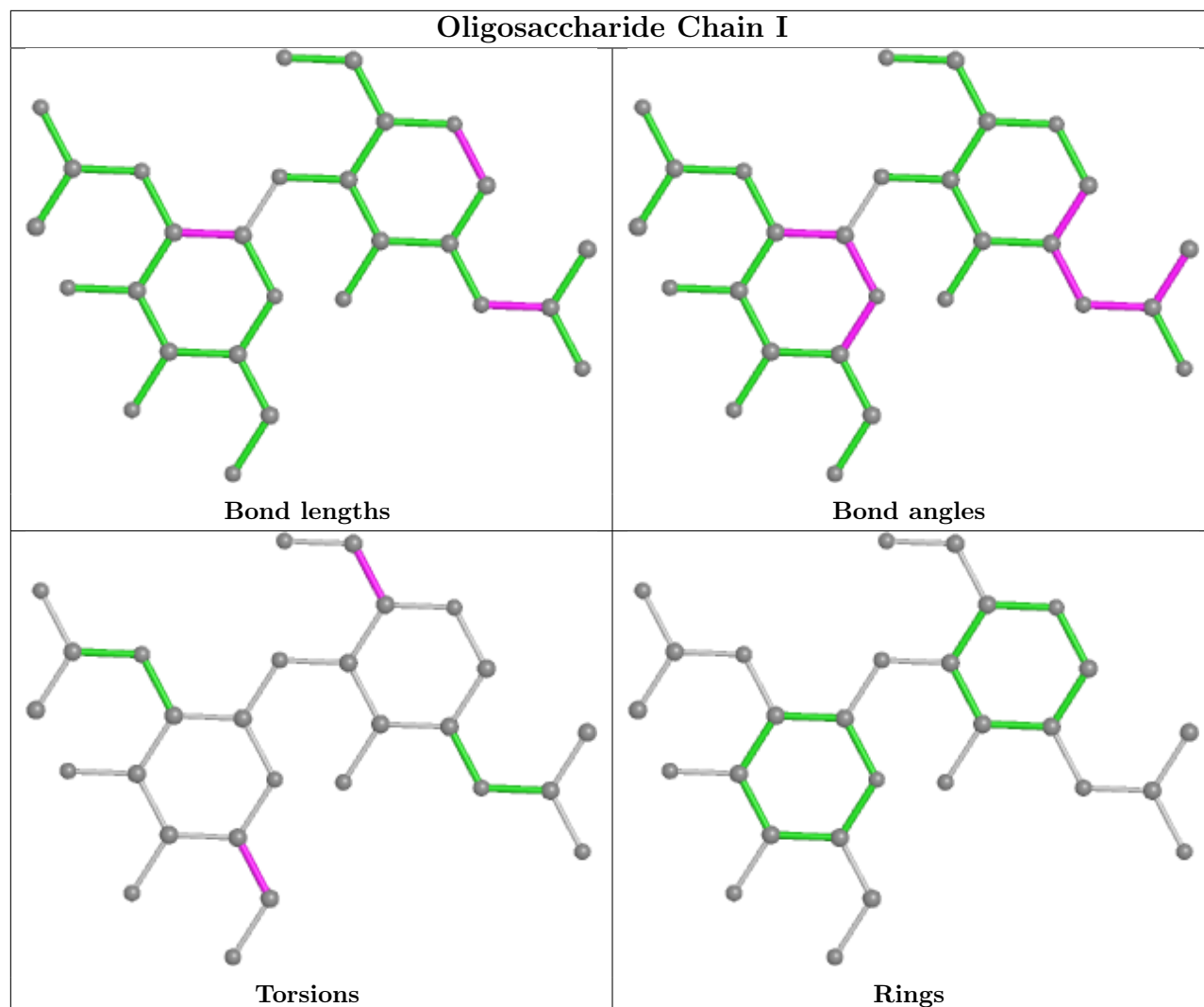


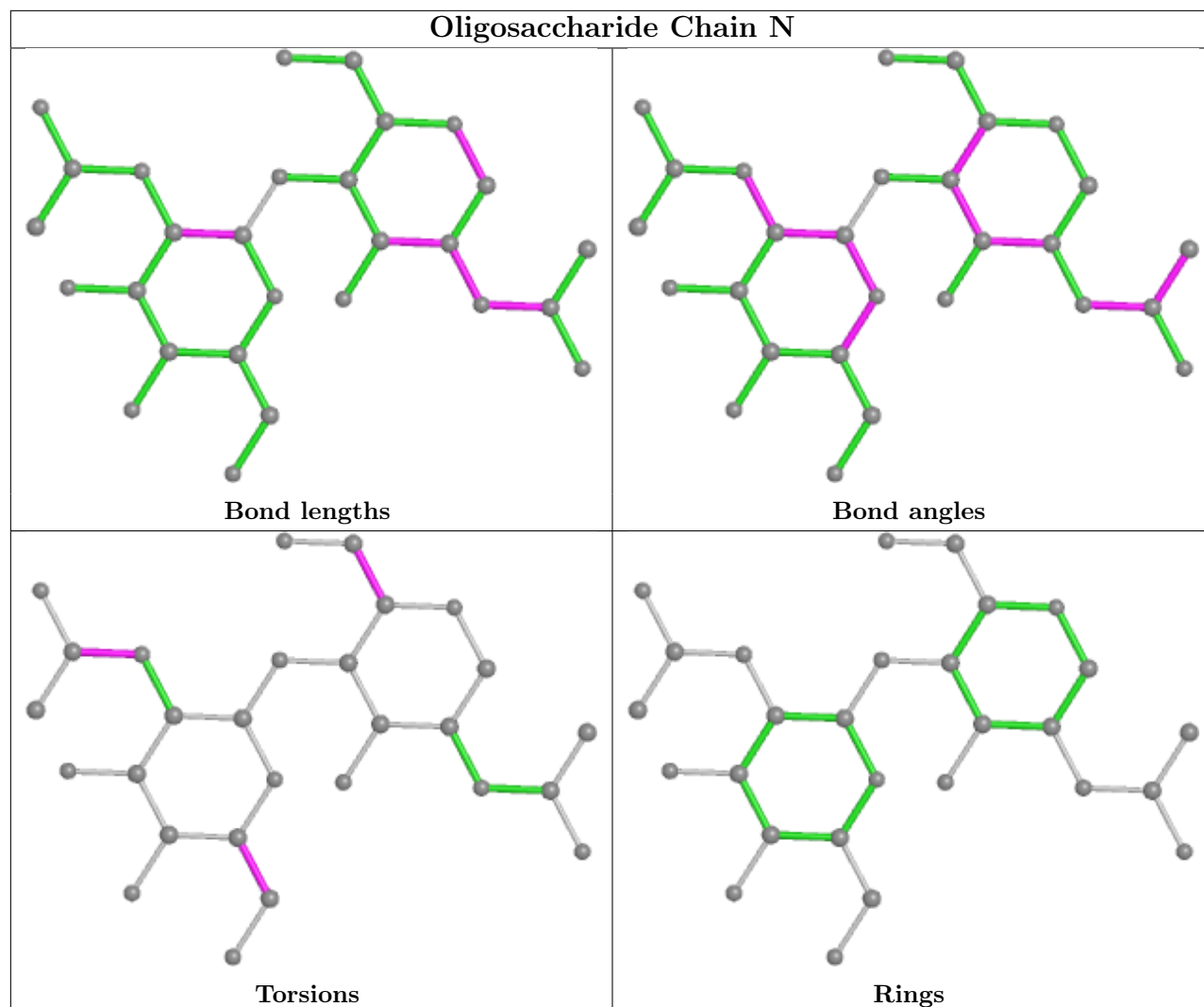


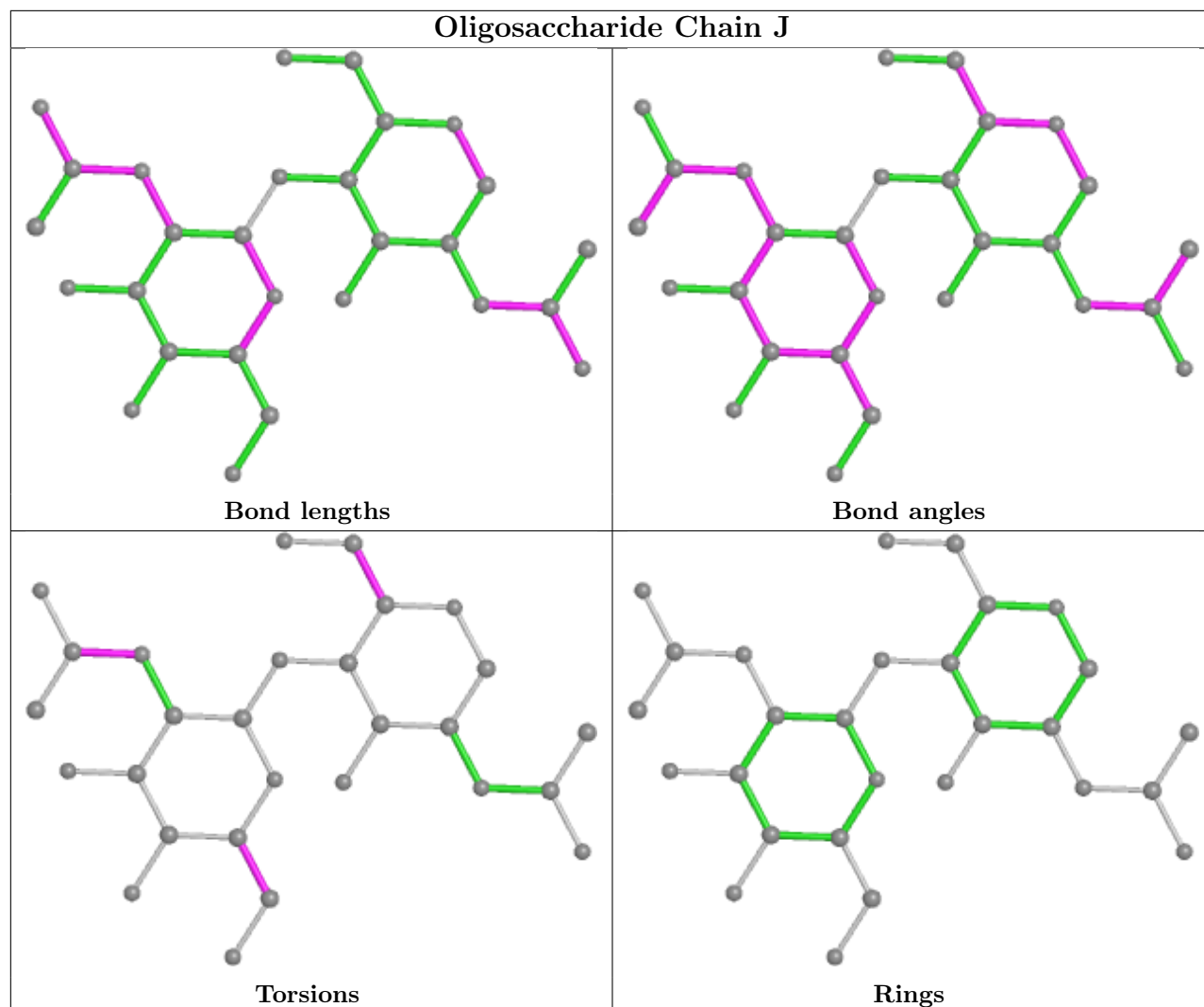


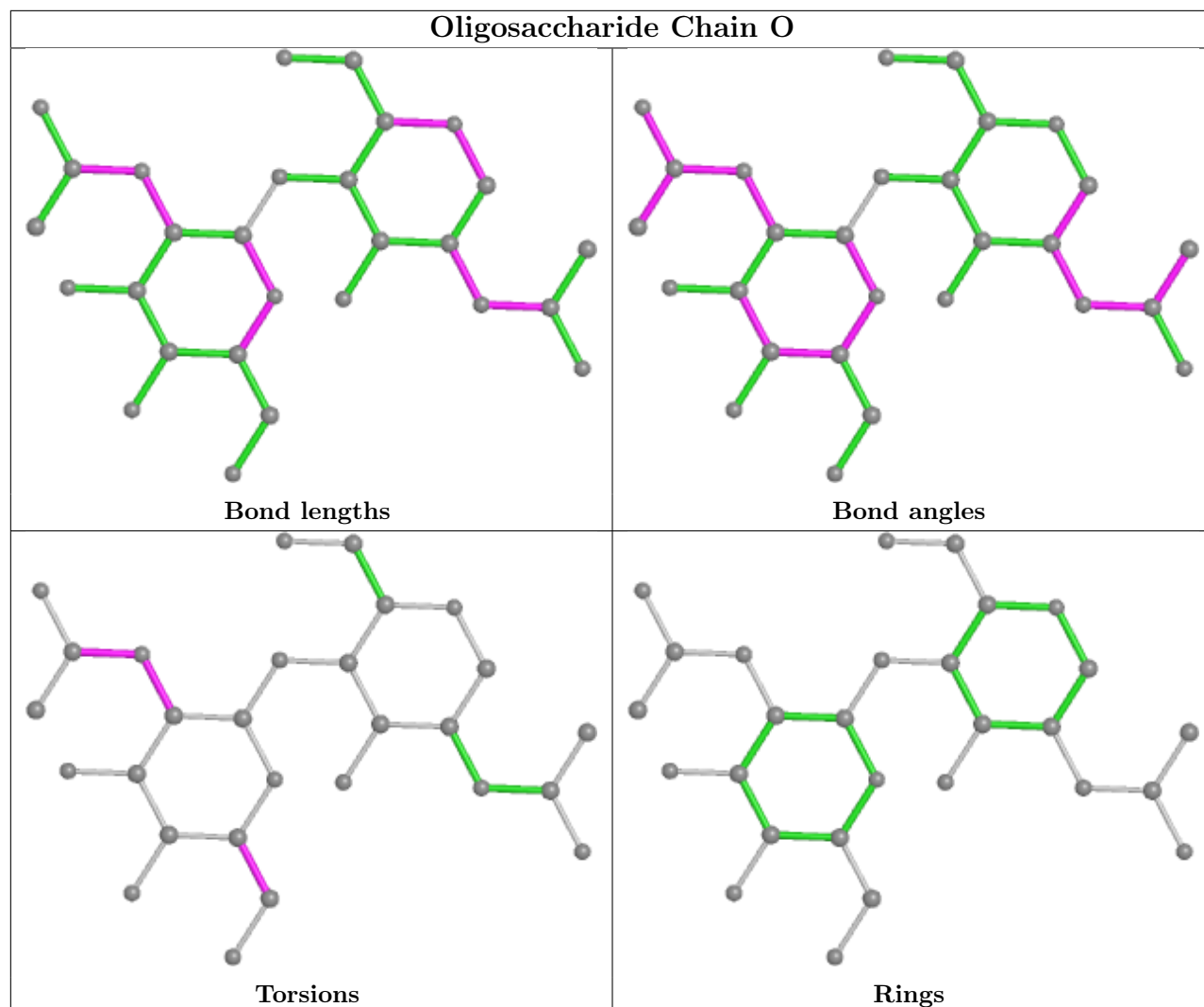


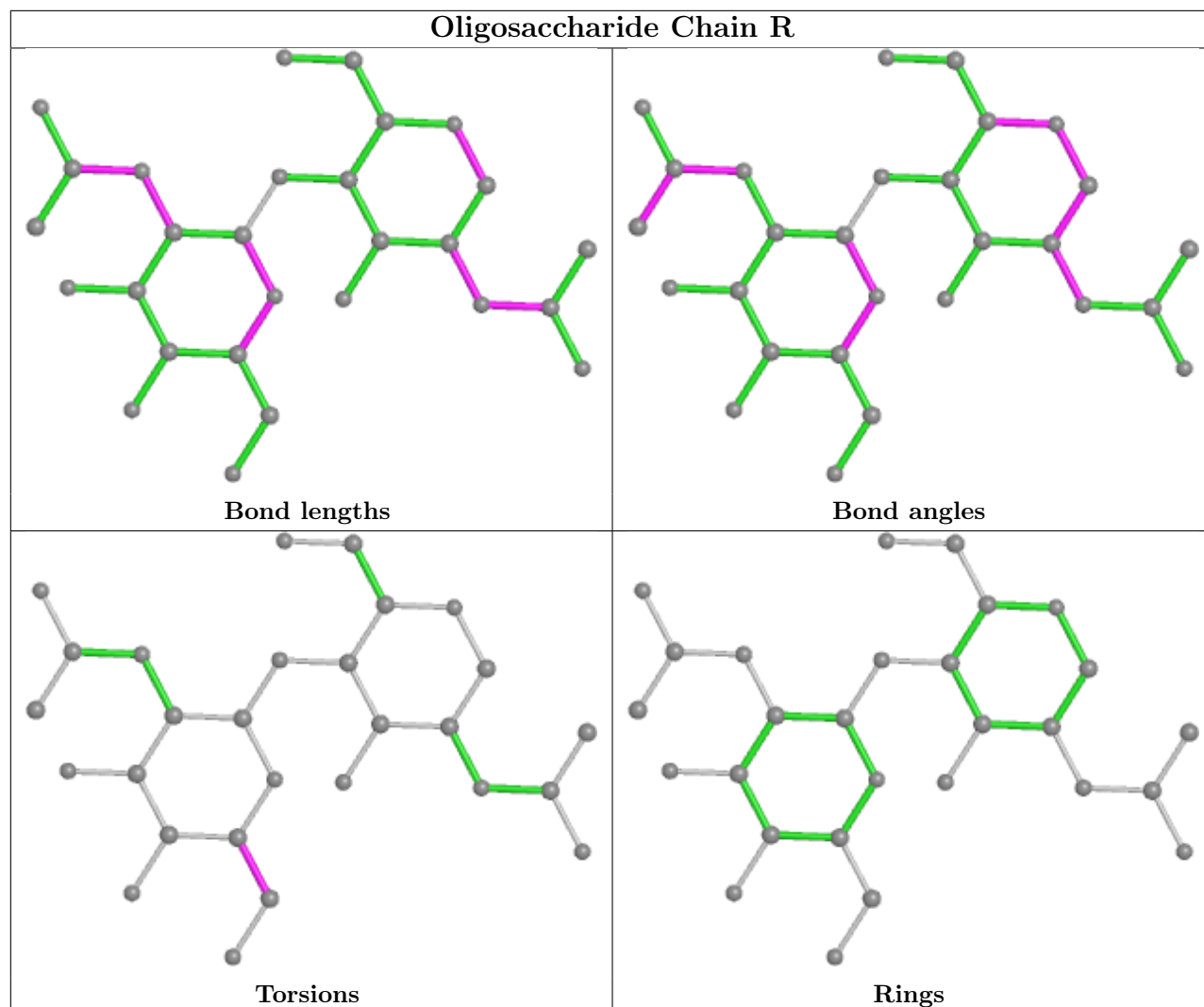




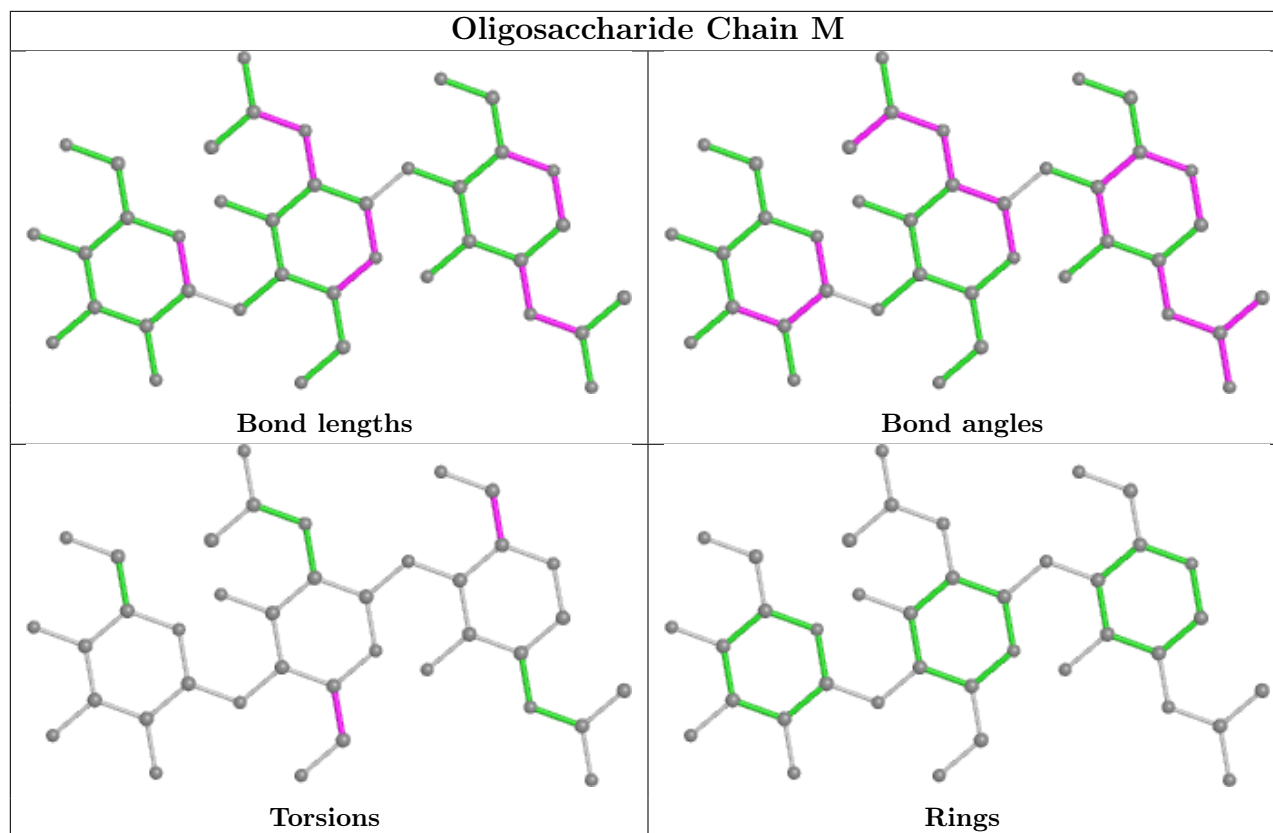












## 5.6 Ligand geometry [i](#)

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	516	-	5,5,5	1.05	0	5,5,5	1.07	1 (20%)
9	GOL	A	519	-	5,5,5	0.92	0	5,5,5	0.88	0
8	ACT	C	513	-	3,3,3	1.06	0	3,3,3	0.68	0
9	GOL	C	514	-	5,5,5	1.10	0	5,5,5	0.77	0
10	NAG	D	504	1	14,14,15	2.06	3 (21%)	17,19,21	1.48	3 (17%)
9	GOL	A	515	-	5,5,5	1.08	0	5,5,5	0.98	0
8	ACT	A	514	-	3,3,3	0.96	0	3,3,3	1.04	0
9	GOL	A	521	-	5,5,5	0.91	0	5,5,5	0.98	0
9	GOL	C	516	-	5,5,5	1.17	1 (20%)	5,5,5	0.99	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
8	ACT	B	512	-	3,3,3	1.00	0	3,3,3	0.99	0
9	GOL	D	513	-	5,5,5	0.78	0	5,5,5	0.94	0
8	ACT	D	516	-	3,3,3	0.86	0	3,3,3	0.58	0
8	ACT	B	515	-	3,3,3	1.02	0	3,3,3	0.91	0
9	GOL	C	517	-	5,5,5	0.92	0	5,5,5	0.97	0
9	GOL	D	511	-	5,5,5	1.00	1 (20%)	5,5,5	1.24	0
9	GOL	A	522	-	5,5,5	0.94	0	5,5,5	1.01	0
9	GOL	A	523	-	5,5,5	1.00	0	5,5,5	0.84	0
8	ACT	C	515	-	3,3,3	0.90	0	3,3,3	0.98	0
9	GOL	D	512	-	5,5,5	1.30	1 (20%)	5,5,5	1.30	1 (20%)
8	ACT	D	517	-	3,3,3	0.99	0	3,3,3	0.91	0
8	ACT	A	517	-	3,3,3	0.99	0	3,3,3	0.84	0
9	GOL	D	515	-	5,5,5	0.86	0	5,5,5	1.02	0
9	GOL	B	513	-	5,5,5	0.94	0	5,5,5	1.07	0
9	GOL	A	518	-	5,5,5	1.30	1 (20%)	5,5,5	1.11	0
9	GOL	A	520	-	5,5,5	1.31	0	5,5,5	0.77	0
8	ACT	D	514	-	3,3,3	1.07	0	3,3,3	1.24	0
9	GOL	C	512	-	5,5,5	1.17	0	5,5,5	0.87	0
9	GOL	B	514	-	5,5,5	1.19	0	5,5,5	0.84	0
9	GOL	A	524	-	5,5,5	1.03	0	5,5,5	0.92	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
9	GOL	A	516	-	-	0/4/4/4	-
9	GOL	A	519	-	-	0/4/4/4	-
9	GOL	C	514	-	-	2/4/4/4	-
10	NAG	D	504	1	-	2/6/23/26	0/1/1/1
9	GOL	A	515	-	-	3/4/4/4	-
9	GOL	A	521	-	-	3/4/4/4	-
9	GOL	C	516	-	-	2/4/4/4	-
9	GOL	D	513	-	-	3/4/4/4	-
9	GOL	C	517	-	-	2/4/4/4	-
9	GOL	D	511	-	-	2/4/4/4	-
9	GOL	A	522	-	-	2/4/4/4	-
9	GOL	A	523	-	-	0/4/4/4	-
9	GOL	D	512	-	-	2/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	GOL	D	515	-	-	0/4/4/4	-
9	GOL	B	513	-	-	1/4/4/4	-
9	GOL	A	518	-	-	4/4/4/4	-
9	GOL	A	520	-	-	4/4/4/4	-
9	GOL	C	512	-	-	3/4/4/4	-
9	GOL	B	514	-	-	2/4/4/4	-
9	GOL	A	524	-	-	2/4/4/4	-

The worst 5 of 7 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	D	504	NAG	O5-C1	4.71	1.51	1.43
10	D	504	NAG	C7-N2	3.86	1.47	1.34
10	D	504	NAG	C2-N2	2.80	1.51	1.46
9	D	512	GOL	C1-C2	2.17	1.60	1.51
9	A	518	GOL	C1-C2	2.03	1.60	1.51

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	D	504	NAG	C8-C7-N2	3.14	121.42	116.10
10	D	504	NAG	C1-C2-N2	-2.65	105.97	110.49
9	D	512	GOL	C3-C2-C1	-2.44	102.20	111.70
10	D	504	NAG	O5-C1-C2	2.35	114.99	111.29
9	A	516	GOL	C3-C2-C1	-2.09	103.58	111.70

There are no chirality outliers.

5 of 39 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	A	518	GOL	C1-C2-C3-O3
9	A	520	GOL	O1-C1-C2-O2
9	A	520	GOL	O1-C1-C2-C3
9	A	520	GOL	C1-C2-C3-O3
9	A	520	GOL	O2-C2-C3-O3

There are no ring outliers.

10 monomers are involved in 19 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	A	516	GOL	1	0
9	C	514	GOL	2	0
9	A	515	GOL	3	0
9	A	521	GOL	1	0
9	C	516	GOL	2	0
8	D	516	ACT	2	0
9	C	517	GOL	1	0
9	D	512	GOL	3	0
9	A	520	GOL	1	0
9	A	524	GOL	3	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

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

### 6.1 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%)	-0.46	0 100 100	16, 25, 35, 61	0
1	B	427/427 (100%)	-0.41	2 (0%) 91 94	17, 27, 39, 50	0
1	C	427/427 (100%)	0.06	30 (7%) 16 21	19, 35, 60, 68	0
1	D	427/427 (100%)	0.05	28 (6%) 18 23	19, 34, 61, 71	0
All	All	1708/1708 (100%)	-0.19	60 (3%) 44 51	16, 30, 55, 71	0

The worst 5 of 60 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	424	SER	5.3
1	D	396	GLY	5.0
1	D	358	HIS	4.9
1	D	371	GLY	4.8
1	D	357	GLY	4.1

### 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<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
2	MAN	F	3	11/12	0.58	0.46	78,88,92,92	0
4	NDG	N	2	14/15	0.63	0.62	82,88,94,102	0

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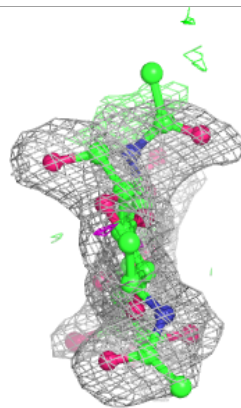
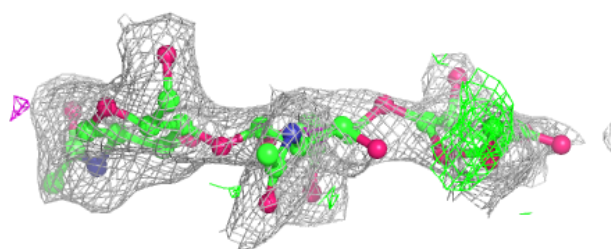
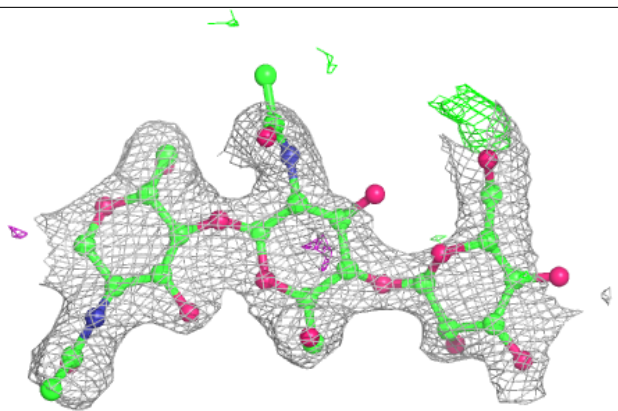
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
2	MAN	Q	3	11/12	0.65	0.43	72,86,89,91	0
2	MAN	E	3	11/12	0.65	0.38	68,78,80,83	0
5	NAG	R	2	14/15	0.66	0.45	63,82,90,94	0
6	BMA	M	3	11/12	0.75	0.46	88,91,94,96	0
2	MAN	G	3	11/12	0.76	0.38	71,79,84,87	0
2	MAN	K	3	11/12	0.77	0.29	76,80,86,86	0
5	NAG	O	2	14/15	0.78	0.35	69,79,88,89	0
2	NAG	E	2	14/15	0.79	0.38	63,71,77,81	0
6	NAG	M	2	14/15	0.80	0.28	59,72,82,89	0
4	NDG	I	2	14/15	0.81	0.45	56,70,77,77	0
2	NAG	Q	2	14/15	0.81	0.26	57,65,77,78	0
3	GAL	S	3	11/12	0.84	0.20	53,60,66,67	0
5	NAG	J	2	14/15	0.84	0.38	51,60,69,70	0
2	NAG	F	2	14/15	0.85	0.29	41,56,71,79	0
4	NAG	N	1	14/15	0.85	0.24	45,60,75,78	0
3	GAL	S	1	12/12	0.86	0.28	57,63,67,72	0
2	NAG	E	1	14/15	0.87	0.21	44,49,56,66	0
5	NAG	O	1	14/15	0.89	0.23	50,56,69,73	0
2	NAG	G	2	14/15	0.90	0.24	38,49,62,73	0
3	GAL	S	2	11/12	0.92	0.13	49,57,60,63	0
5	NAG	R	1	14/15	0.92	0.25	45,53,61,65	0
3	GAL	P	3	11/12	0.92	0.12	42,50,52,53	0
4	NAG	I	1	14/15	0.92	0.17	47,53,61,62	0
3	GAL	P	1	12/12	0.92	0.18	54,58,63,70	0
3	GAL	P	2	11/12	0.93	0.19	45,51,57,83	0
3	GAL	H	1	12/12	0.93	0.18	27,37,54,58	0
6	NAG	M	1	14/15	0.93	0.22	41,52,57,59	0
3	GAL	L	1	12/12	0.93	0.12	27,35,44,45	0
2	NAG	K	1	14/15	0.93	0.13	29,32,42,42	0
2	NAG	K	2	14/15	0.94	0.20	38,49,59,67	0
2	NAG	Q	1	14/15	0.94	0.18	42,48,51,56	0
5	NAG	J	1	14/15	0.95	0.18	34,45,58,59	0
2	NAG	F	1	14/15	0.95	0.13	32,39,48,55	0
2	NAG	G	1	14/15	0.95	0.10	26,33,36,37	0
3	GAL	H	2	11/12	0.96	0.10	20,26,31,37	0
3	GAL	H	3	11/12	0.96	0.10	23,26,30,34	0
3	GAL	L	2	11/12	0.97	0.11	25,27,31,33	0
3	GAL	L	3	11/12	0.98	0.08	22,27,30,37	0

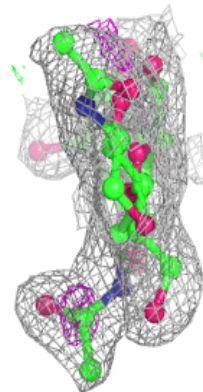
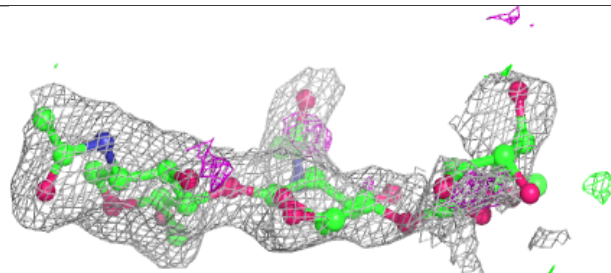
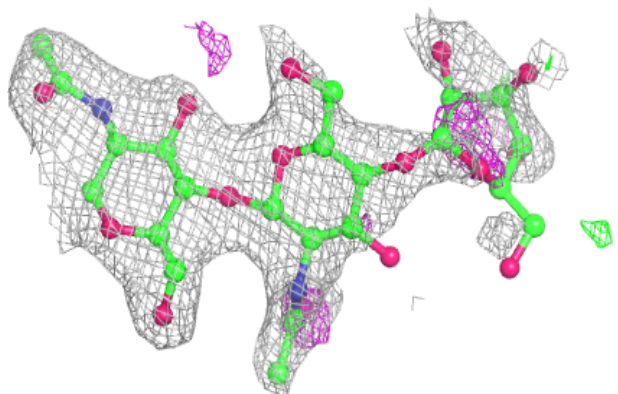
The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

**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:**

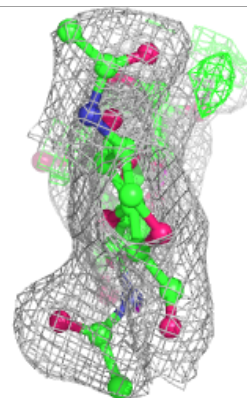
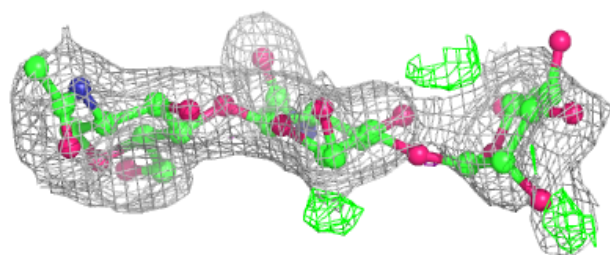
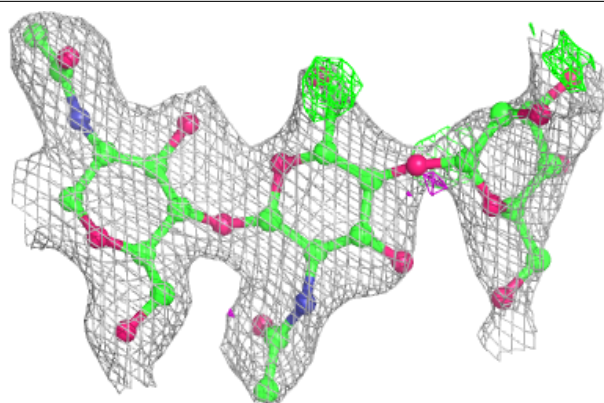
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



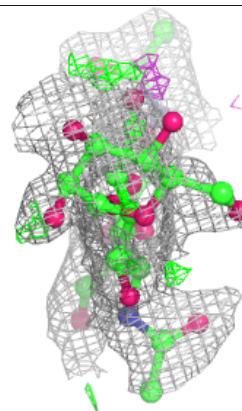
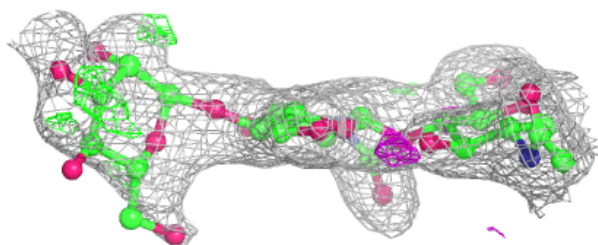
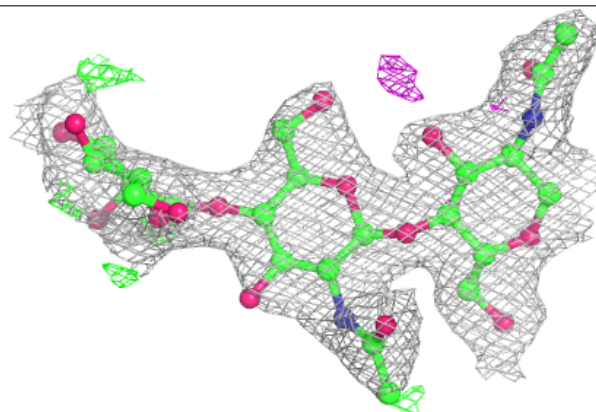


**Electron density around Chain G:**

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

**Electron density around Chain K:**

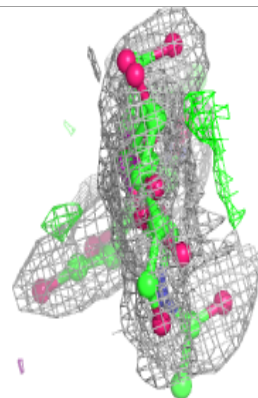
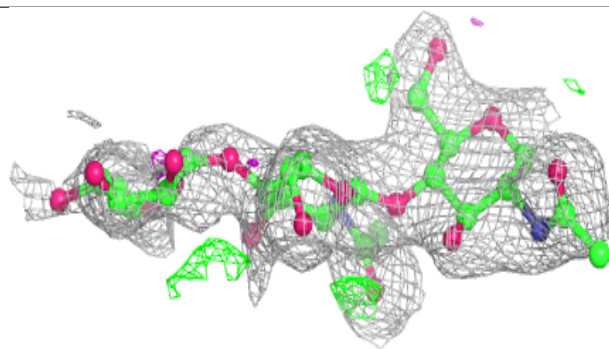
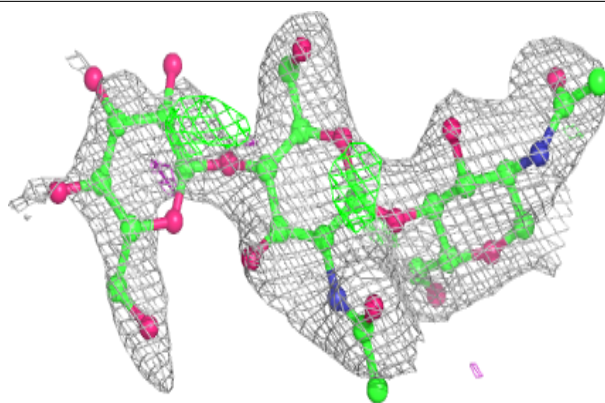
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



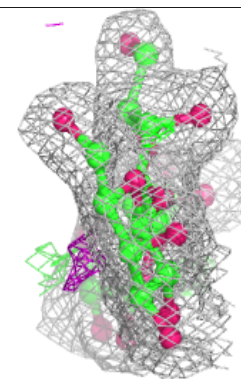
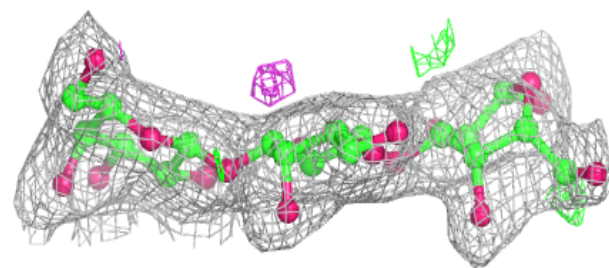
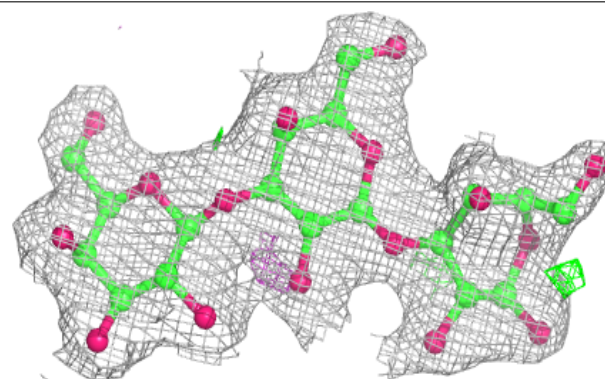


**Electron density around Chain Q:**

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

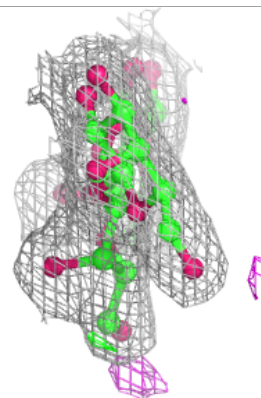
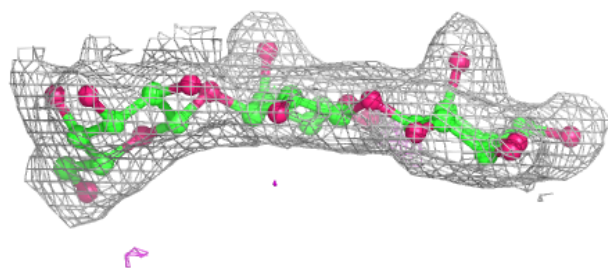
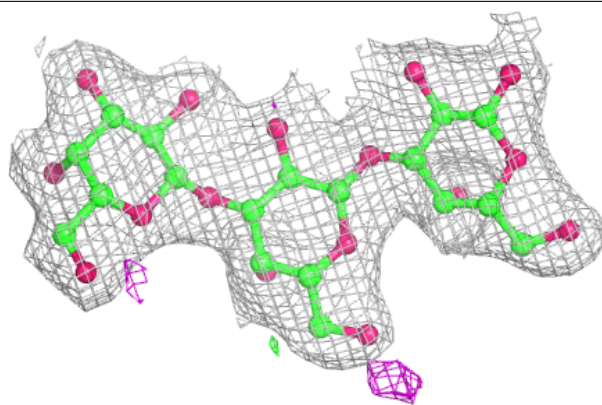
**Electron density around Chain H:**

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

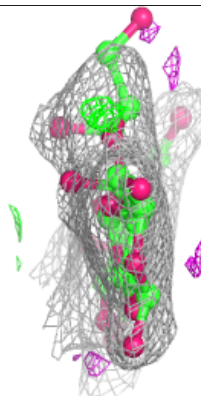
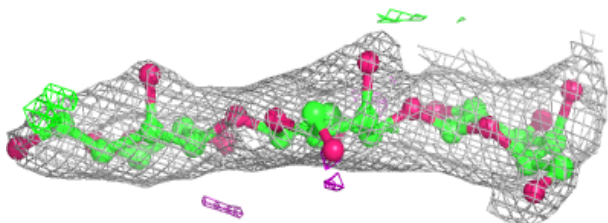
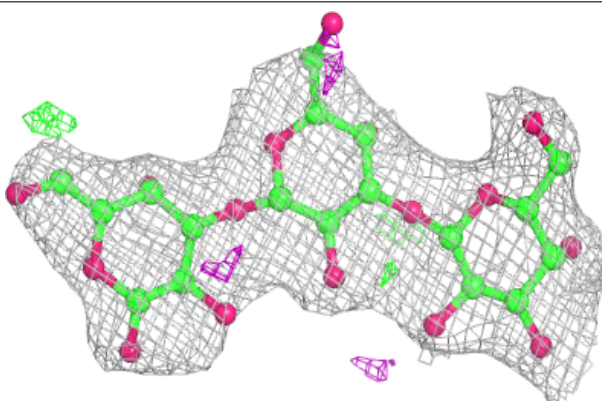


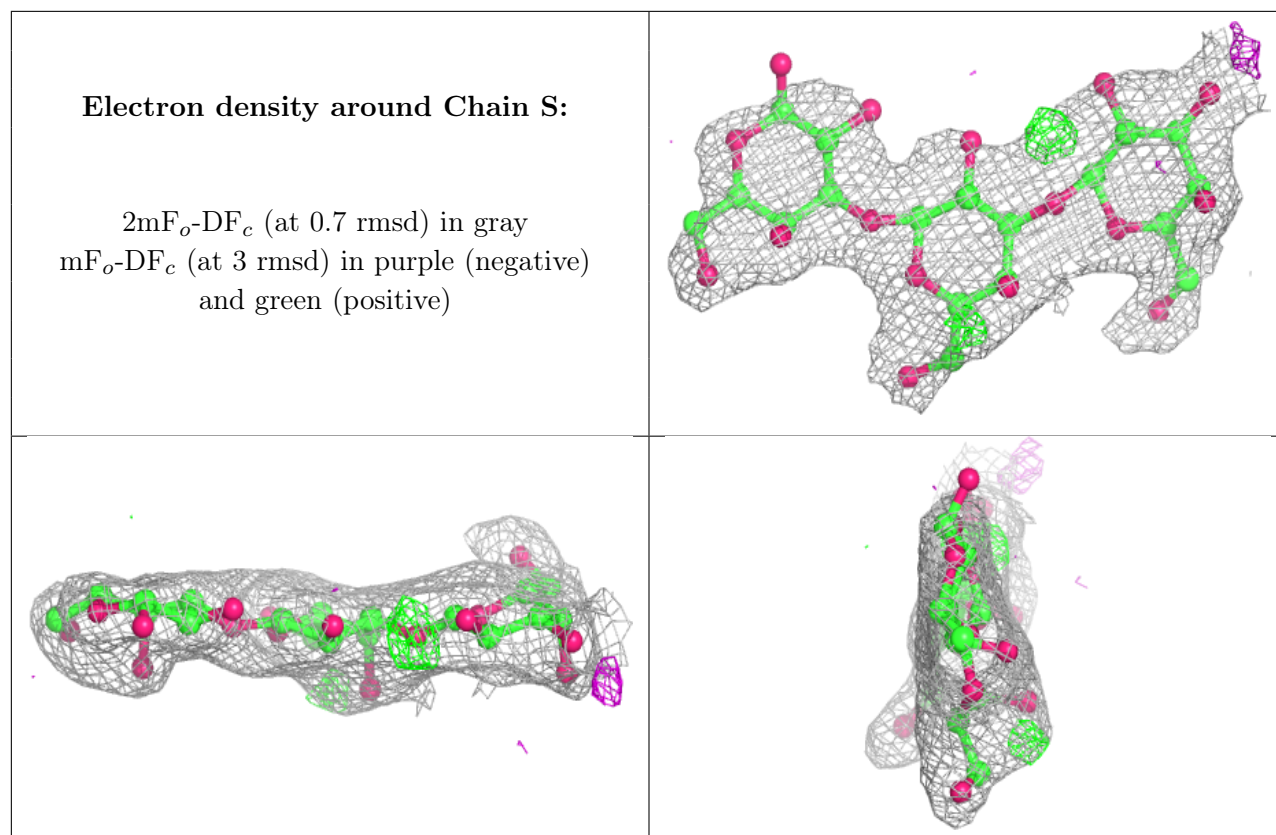
**Electron density around Chain L:**

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

**Electron density around Chain P:**

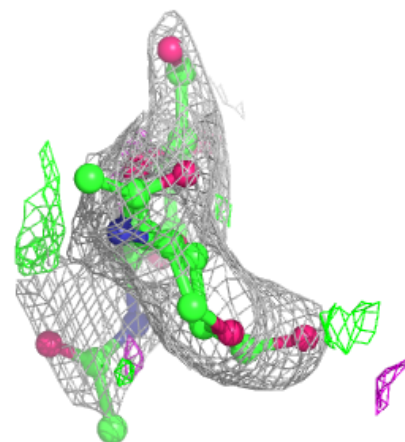
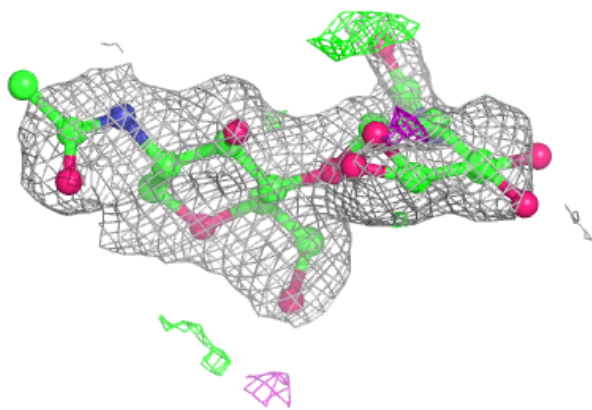
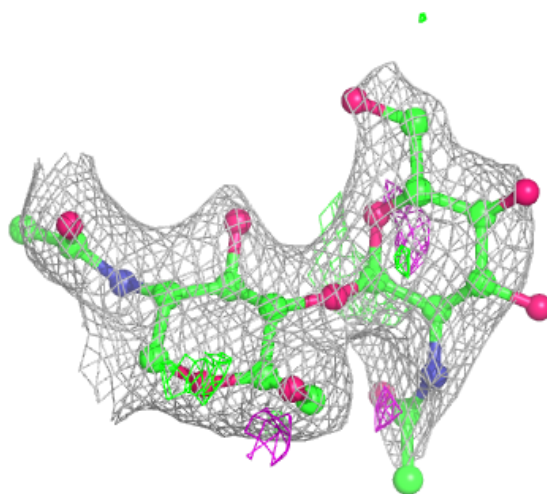
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





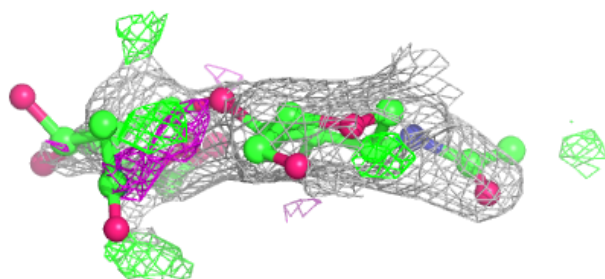
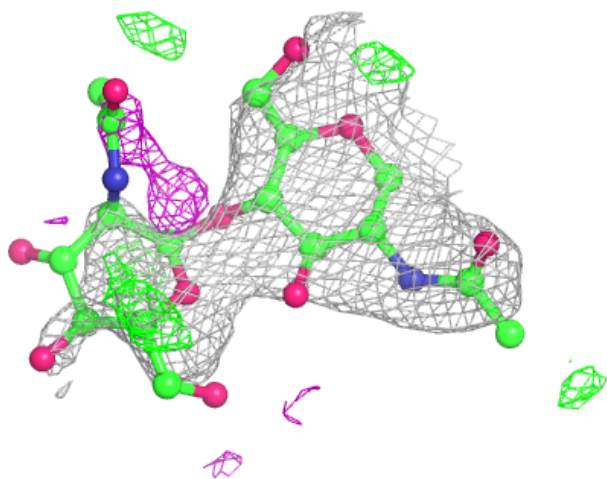
**Electron density around Chain I:**

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

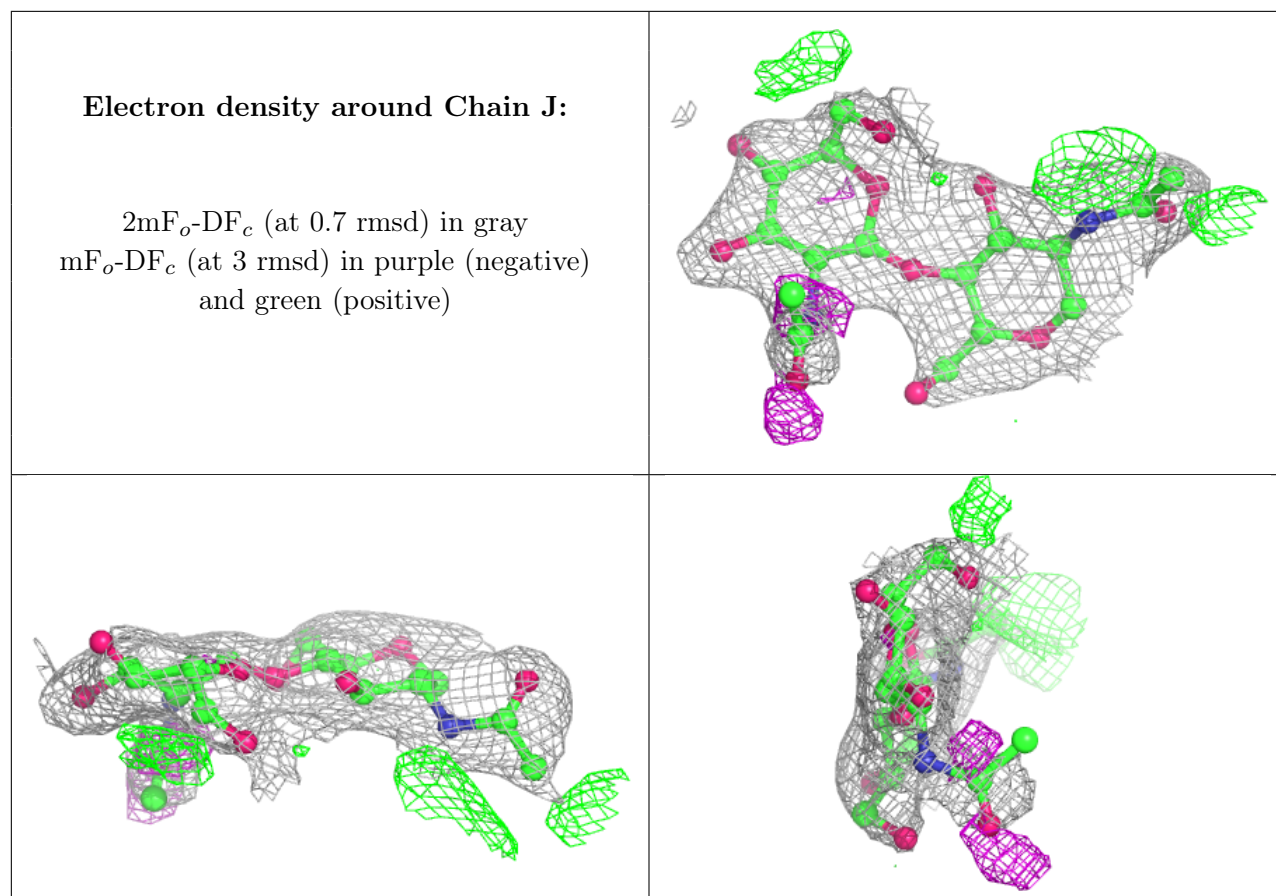


**Electron density around Chain N:**

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

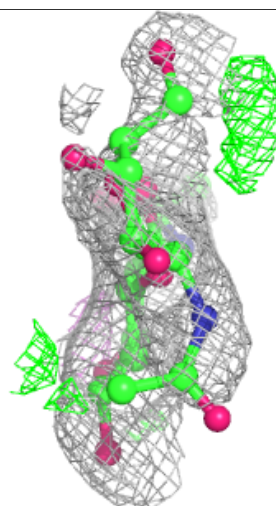
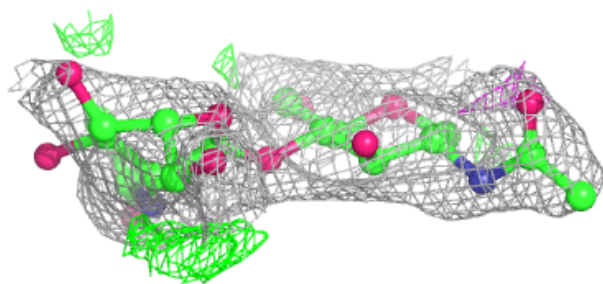
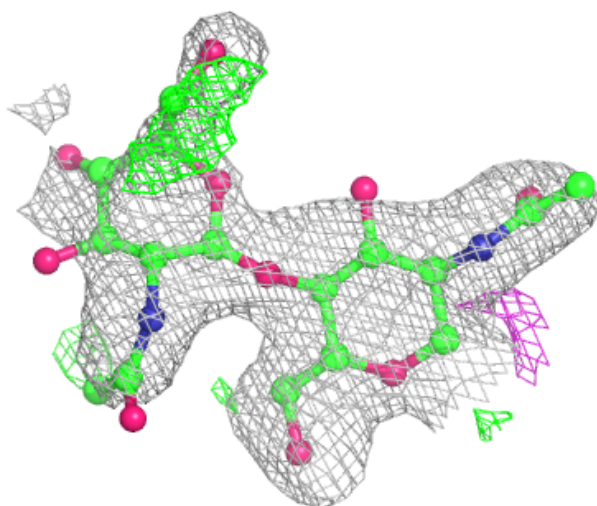






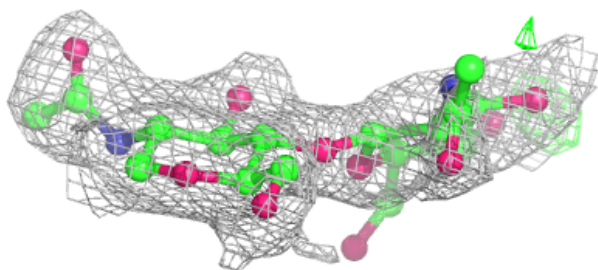
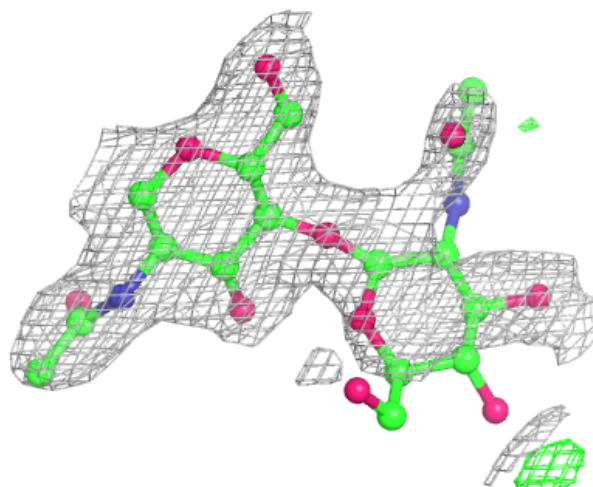
**Electron density around Chain O:**

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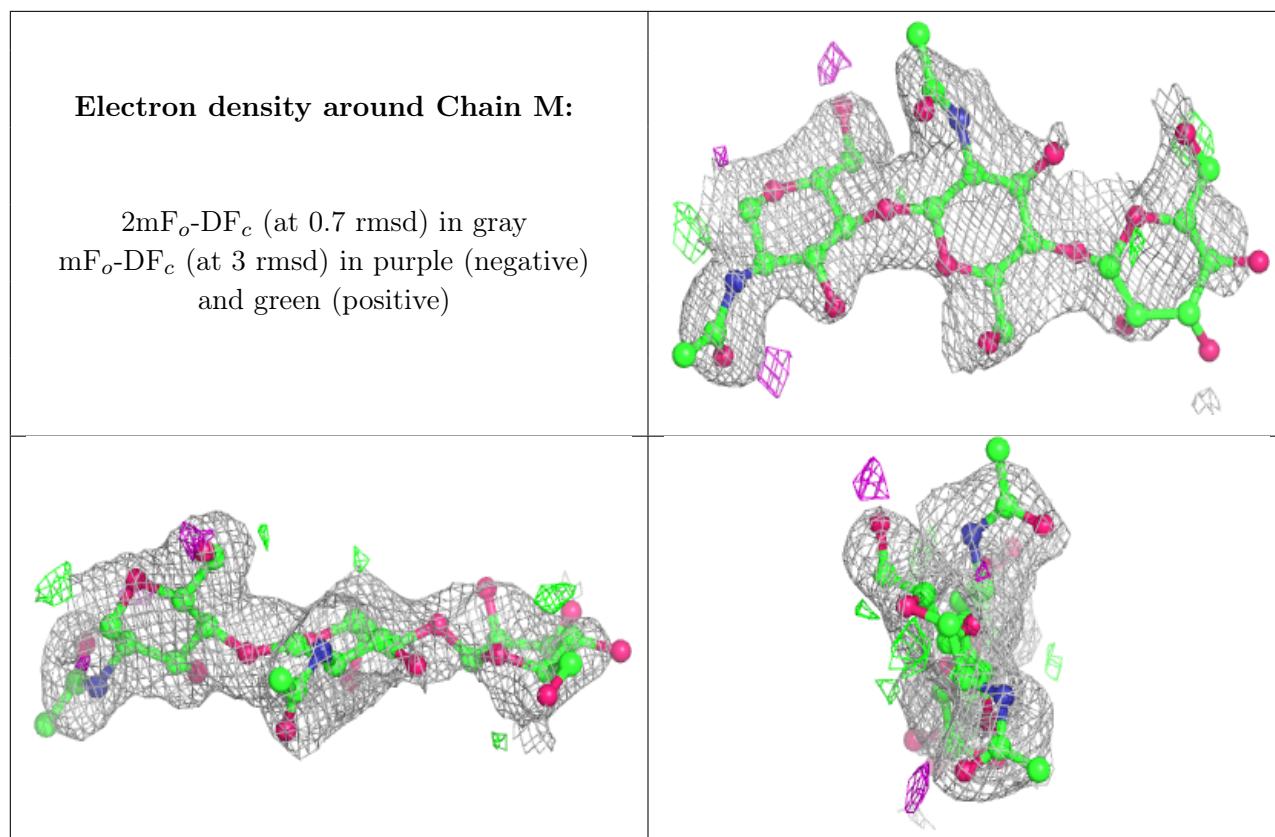


**Electron density around Chain R:**

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







## 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<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
9	GOL	C	517	6/6	0.54	0.37	58,62,63,64	0
9	GOL	A	521	6/6	0.67	0.34	50,55,61,63	0
8	ACT	A	517	4/4	0.72	0.43	49,55,57,60	0
8	ACT	D	517	4/4	0.72	0.24	37,47,54,55	0
9	GOL	D	515	6/6	0.73	0.30	50,59,63,64	0
9	GOL	D	511	6/6	0.74	0.35	45,48,52,53	0
8	ACT	C	515	4/4	0.76	0.17	48,49,55,61	0
9	GOL	A	520	6/6	0.76	0.31	39,45,58,63	0
9	GOL	A	518	6/6	0.77	0.27	39,47,56,57	0
9	GOL	A	519	6/6	0.77	0.28	54,64,67,68	0
9	GOL	C	512	6/6	0.77	0.34	40,45,47,55	0
8	ACT	C	513	4/4	0.80	0.46	48,50,54,63	0
9	GOL	A	523	6/6	0.80	0.34	39,48,55,55	0
9	GOL	A	524	6/6	0.81	0.30	43,49,58,61	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
8	ACT	B	512	4/4	0.81	0.36	25,36,45,65	0
9	GOL	D	513	6/6	0.81	0.18	45,50,55,58	0
9	GOL	C	516	6/6	0.81	0.26	42,44,47,48	0
10	NAG	D	504	14/15	0.81	0.32	55,63,71,75	0
9	GOL	D	512	6/6	0.83	0.23	29,37,42,46	0
8	ACT	D	514	4/4	0.85	0.29	23,29,30,42	0
9	GOL	A	522	6/6	0.85	0.38	48,51,52,55	0
8	ACT	A	514	4/4	0.87	0.20	37,44,52,70	0
9	GOL	C	514	6/6	0.88	0.28	40,41,45,50	0
9	GOL	A	516	6/6	0.88	0.23	33,39,42,45	0
8	ACT	B	515	4/4	0.89	0.15	36,42,46,51	0
8	ACT	D	516	4/4	0.89	0.18	40,45,47,51	0
9	GOL	B	513	6/6	0.90	0.16	32,36,39,45	0
9	GOL	B	514	6/6	0.91	0.13	38,42,44,45	0
9	GOL	A	515	6/6	0.93	0.21	27,38,38,39	0
7	CA	D	507	1/1	0.98	0.05	42,42,42,42	0
7	CA	C	508	1/1	0.99	0.06	40,40,40,40	0
7	CA	B	508	1/1	1.00	0.09	20,20,20,20	0
7	CA	A	510	1/1	1.00	0.10	18,18,18,18	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.