



# wwPDB X-ray Structure Validation Summary Report ⓘ

Apr 1, 2025 – 11:08 pm BST

PDB ID : 5M8M / pdb\_00005m8m  
Title : Crystal structure of human tyrosinase related protein 1 in complex with kojic acid  
Authors : Lai, X.; Soler-Lopez, M.; Wichers, H.J.; Dijkstra, B.W.  
Deposited on : 2016-10-29  
Resolution : 2.65 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 : 1.8.4, CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 3.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.003 (Gargrove)  
Density-Fitness : 1.0.11  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.42

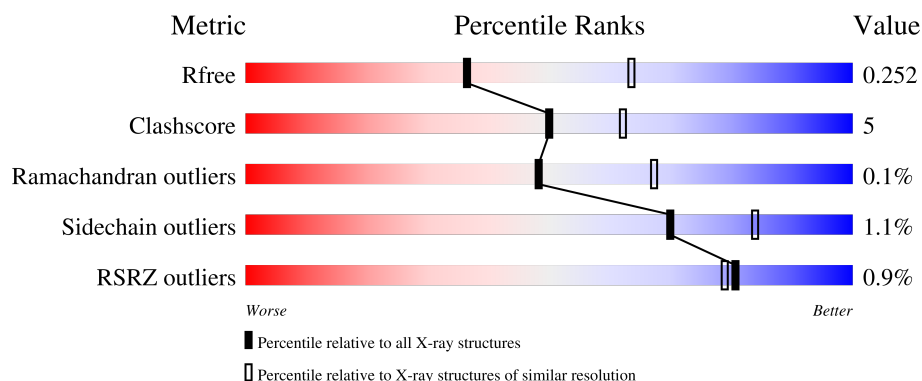
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.65 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.



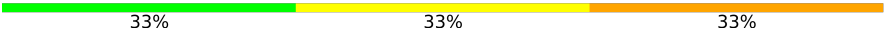

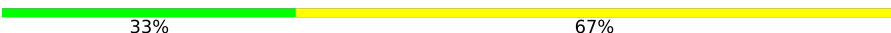
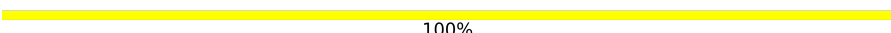
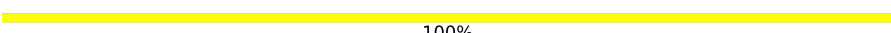
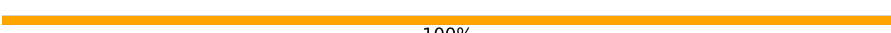





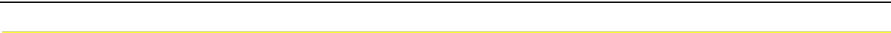

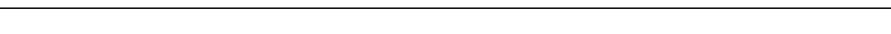




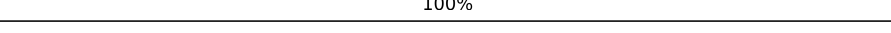
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	164625	1003 (2.66-2.66)
Clashscore	180529	1063 (2.66-2.66)
Ramachandran outliers	177936	1052 (2.66-2.66)
Sidechain outliers	177891	1052 (2.66-2.66)
RSRZ outliers	164620	1003 (2.66-2.66)

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	446	<div> <div style="width: 100%; height: 10px; background-color: red;"></div> <div style="display: flex; justify-content: space-between;"> <span>%</span> <span>89%</span> <span>10%</span> </div> </div>
1	B	446	<div> <div style="width: 100%; height: 10px; background-color: red;"></div> <div style="display: flex; justify-content: space-between;"> <span>2%</span> <span>88%</span> <span>12%</span> </div> </div>
1	C	446	<div> <div style="width: 100%; height: 10px; background-color: red;"></div> <div style="display: flex; justify-content: space-between;"> <span></span> <span>89%</span> <span>11%</span> </div> </div>
1	D	446	<div> <div style="width: 100%; height: 10px; background-color: red;"></div> <div style="display: flex; justify-content: space-between;"> <span>%</span> <span>85%</span> <span>14%</span> </div> </div>
2	E	3	<div> <div style="width: 100%; height: 10px; background-color: red;"></div> <div style="display: flex; justify-content: space-between;"> <span>33%</span> <span>33%</span> <span>33%</span> </div> </div>

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Mol	Chain	Length	Quality of chain
2	J	3	 33% 33% 33%
2	O	3	 33% 67%
2	T	3	 33% 67%
3	F	2	 100%
3	K	2	 100%
3	U	2	 100%
4	G	2	 100%
4	H	2	 50% 50%
4	I	2	 100%
4	L	2	 50% 50%
4	N	2	 50% 50%
4	Q	2	 100%
4	S	2	 50% 50%
4	V	2	 100%
4	W	2	 50% 50%
4	X	2	 50% 50%
5	M	4	 50% 50%
6	P	5	 100%
7	R	5	 40% 60%

## 2 Entry composition [i](#)

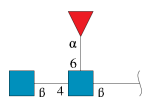
There are 11 unique types of molecules in this entry. The entry contains 15021 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 5,6-dihydroxyindole-2-carboxylic acid oxidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	446	Total	C	N	O	S	0	0	0
			3560	2233	632	672	23			
1	B	446	Total	C	N	O	S	0	0	0
			3560	2233	632	672	23			
1	C	446	Total	C	N	O	S	0	0	0
			3560	2233	632	672	23			
1	D	446	Total	C	N	O	S	0	0	0
			3560	2233	632	672	23			

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



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	E	3	Total	C	N	O	0	0	0
			38	22	2	14			
2	J	3	Total	C	N	O	0	0	0
			38	22	2	14			
2	O	3	Total	C	N	O	0	0	0
			38	22	2	14			
2	T	3	Total	C	N	O	0	0	0
			38	22	2	14			

- Molecule 3 is an oligosaccharide called alpha-L-fucopyranose-(1-6)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	F	2	Total	C	N	O	0	0	0
			24	14	1	9			
3	K	2	Total	C	N	O	0	0	0
			24	14	1	9			
3	U	2	Total	C	N	O	0	0	0
			24	14	1	9			

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



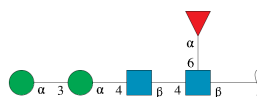
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
4	G	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	H	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	I	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	L	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	N	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	Q	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	S	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	V	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	W	2	Total	C	N	O	0	0	0
			28	16	2	10			
4	X	2	Total	C	N	O	0	0	0
			28	16	2	10			

- Molecule 5 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



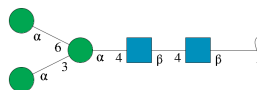
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
5	M	4	Total	C	N	O	0	0	0
			50	28	2	20			

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



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
6	P	5	Total	C	N	O	0	0	0
			60	34	2	24			

- Molecule 7 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

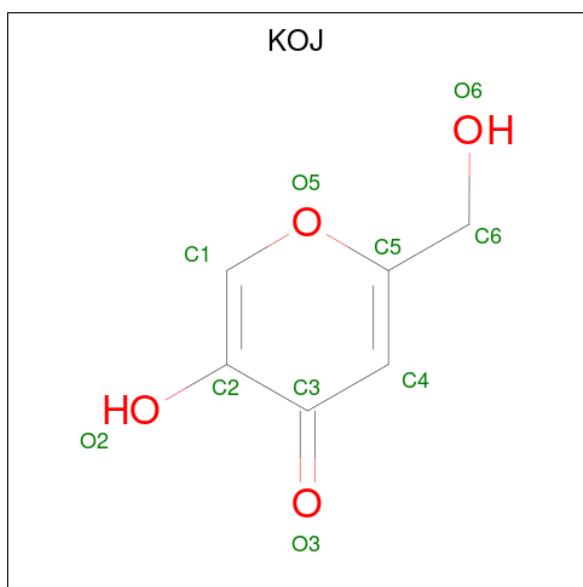


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
7	R	5	Total	C	N	O	0	0	0
			61	34	2	25			

- Molecule 8 is ZINC ION (CCD ID: ZN) (formula: Zn).

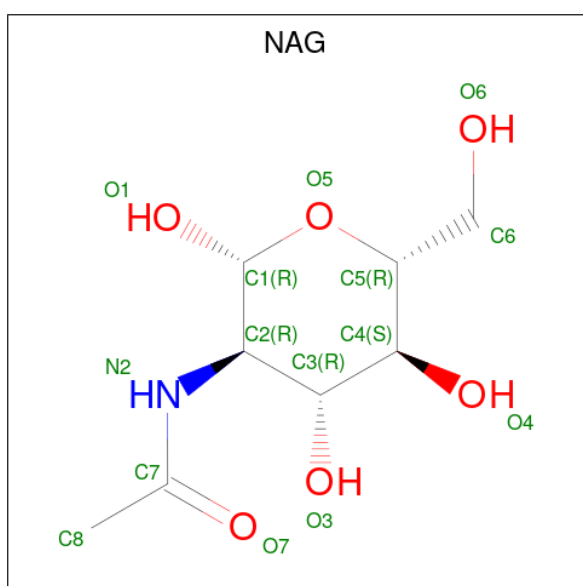
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	3	Total	Zn	0	0
			3	3		
8	B	2	Total	Zn	0	0
			2	2		
8	C	2	Total	Zn	0	0
			2	2		
8	D	2	Total	Zn	0	0
			2	2		

- Molecule 9 is 5-HYDROXY-2-(HYDROXYMETHYL)-4H-PYRAN-4-ONE (CCD ID: KOJ) (formula: C<sub>6</sub>H<sub>6</sub>O<sub>4</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	A	1	Total	C	O	0	0
			10	6	4		
9	B	1	Total	C	O	0	0
			10	6	4		
9	C	1	Total	C	O	0	0
			10	6	4		
9	D	1	Total	C	O	0	0
			10	6	4		

- 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.

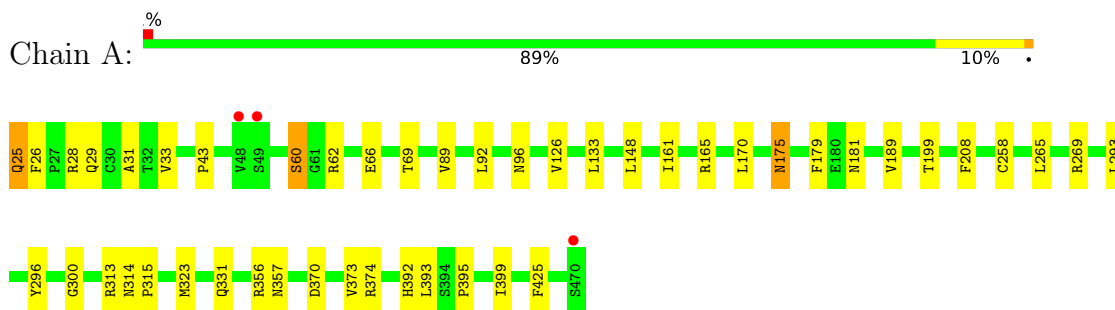
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
11	A	17	Total	O	0	0
			17	17		
11	B	7	Total	O	0	0
			7	7		
11	C	12	Total	O	0	0
			12	12		
11	D	7	Total	O	0	0
			7	7		



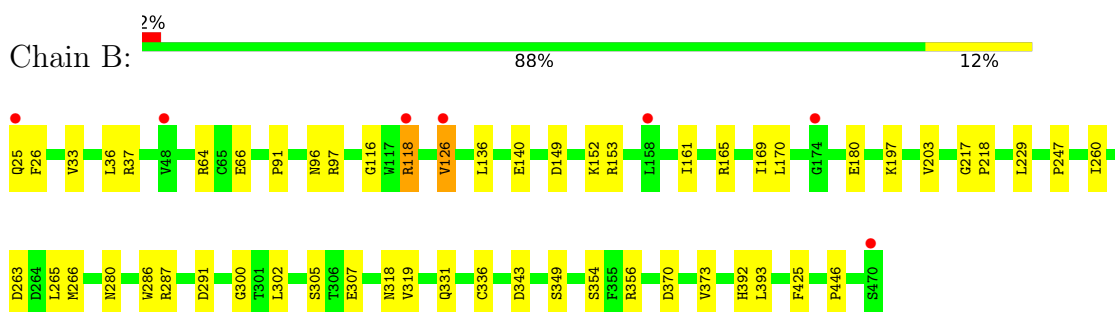
### 3 Residue-property plots [i](#)

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

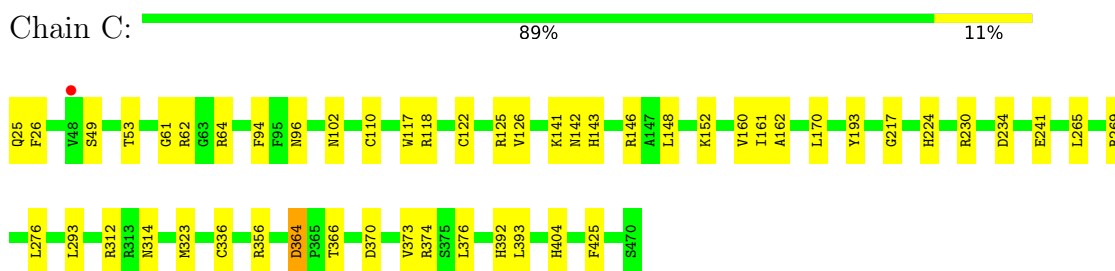
- Molecule 1: 5,6-dihydroxyindole-2-carboxylic acid oxidase



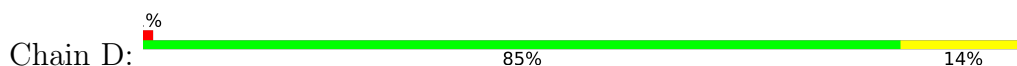
- Molecule 1: 5,6-dihydroxyindole-2-carboxylic acid oxidase

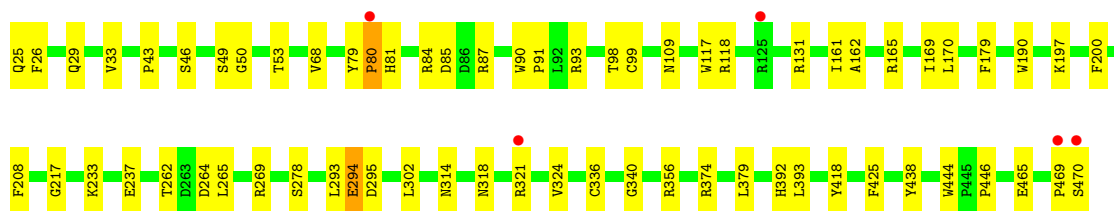


- Molecule 1: 5,6-dihydroxyindole-2-carboxylic acid oxidase



- Molecule 1: 5,6-dihydroxyindole-2-carboxylic acid oxidase





- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E: 33% 33% 33%



- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J: 33% 33% 33%



- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain O: 33% 67%



- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain T: 33% 67%



- Molecule 3: alpha-L-fucopyranose-(1-6)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F: 100%



- Molecule 3: alpha-L-fucopyranose-(1-6)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K: 100%



- Molecule 3:  $\alpha$ -L-fucopyranose-(1-6)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain U:  100%

NA01  
FUC2

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

Chain G:  100%

NA01  
NA02

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

Chain H:  50% 50%

NA01  
NA02

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

Chain I:  100%

NA01  
NA02

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

Chain L:  50% 50%

NA01  
NA02

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

Chain N:  50% 50%

NA01  
NA02

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

Chain Q:  100%

MAG1  
MAG2

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

Chain S:  50% 50%

MAG1  
MAG2

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

Chain V:  100%

MAG1  
MAG2

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

Chain W:  50% 50%

MAG1  
MAG2

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

Chain X:  50% 50%

MAG1  
MAG2

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

Chain M:  50% 50%

MAG1  
MAG2  
MAN3  
MAN4

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

Chain P:  100%

MAG1  
MAG2  
MAN3  
MAN4  
FUC5

- Molecule 7:  $\alpha$ -D-mannopyranose-(1-3)-[ $\alpha$ -D-mannopyranose-(1-6)] $\alpha$ -D-mannopyranose-(1-4)-2-acetamido-2-deoxy- $\beta$ -D-glucopyranose-(1-4)-2-acetamido-2-deoxy- $\beta$ -D-glucopyranose

Chain R:



MAG1
MAG2
MAG3
MAG4
MAG5

## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	90.25Å 141.53Å 192.13Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.00 – 2.65 49.00 – 2.65	Depositor EDS
% Data completeness (in resolution range)	99.7 (49.00-2.65) 93.0 (49.00-2.65)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.35 (at 2.65Å)	Xtriage
Refinement program	REFMAC, PHENIX	Depositor
R, $R_{free}$	0.197 , 0.249 0.205 , 0.252	Depositor DCC
$R_{free}$ test set	3534 reflections (4.91%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	42.7	Xtriage
Anisotropy	0.493	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 35.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	15021	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	39.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.06% 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: ZN, FUC, MAN, NAG, KOJ

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	0.59	0/3667	0.60	1/4998 (0.0%)
1	B	0.56	1/3667 (0.0%)	0.68	6/4998 (0.1%)
1	C	0.61	0/3667	0.61	1/4998 (0.0%)
1	D	0.55	2/3667 (0.1%)	0.59	0/4998
All	All	0.58	3/14668 (0.0%)	0.62	8/19992 (0.0%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	126	VAL	CB-CG2	7.64	1.69	1.52
1	D	46	SER	C-N	-5.86	1.23	1.34
1	D	80	PRO	N-CA	5.40	1.56	1.47

The worst 5 of 8 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	118	ARG	NE-CZ-NH2	-20.79	109.91	120.30
1	B	126	VAL	CA-CB-CG2	8.04	122.96	110.90
1	B	118	ARG	NH1-CZ-NH2	6.94	127.03	119.40
1	A	25	GLN	C-N-CA	-5.59	107.72	121.70
1	B	118	ARG	NE-CZ-NH1	5.45	123.03	120.30

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	3560	0	3326	31	0
1	B	3560	0	3326	33	0
1	C	3560	0	3326	34	0
1	D	3560	0	3323	47	0
2	E	38	0	34	1	0
2	J	38	0	34	1	0
2	O	38	0	34	2	0
2	T	38	0	33	0	0
3	F	24	0	22	0	0
3	K	24	0	22	0	0
3	U	24	0	22	1	0
4	G	28	0	25	0	0
4	H	28	0	25	1	0
4	I	28	0	25	0	0
4	L	28	0	25	0	0
4	N	28	0	25	2	0
4	Q	28	0	25	0	0
4	S	28	0	25	0	0
4	V	28	0	25	0	0
4	W	28	0	25	2	0
4	X	28	0	25	1	0
5	M	50	0	43	1	0
6	P	60	0	52	0	0
7	R	61	0	52	3	0
8	A	3	0	0	0	0
8	B	2	0	0	0	0
8	C	2	0	0	0	0
8	D	2	0	0	0	0
9	A	10	0	6	0	0
9	B	10	0	5	0	0
9	C	10	0	5	0	0
9	D	10	0	5	1	0
10	D	14	0	13	0	0
11	A	17	0	0	0	0
11	B	7	0	0	0	0
11	C	12	0	0	1	0
11	D	7	0	0	1	0
All	All	15021	0	13933	151	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 5.



The worst 5 of 151 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:C:118:ARG:NE	1:C:126:VAL:HG11	1.89	0.86
1:D:80:PRO:HG2	1:D:81:HIS:ND1	1.96	0.79
1:B:203:VAL:HB	1:C:241:GLU:HG2	1.66	0.77
1:B:64:ARG:NH2	1:B:66:GLU:OE2	2.17	0.76
7:R:2:NAG:H3	7:R:2:NAG:H82	1.68	0.75

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

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

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	444/446 (100%)	421 (95%)	23 (5%)	0	100	100
1	B	444/446 (100%)	420 (95%)	24 (5%)	0	100	100
1	C	444/446 (100%)	422 (95%)	21 (5%)	1 (0%)	44	61
1	D	444/446 (100%)	420 (95%)	24 (5%)	0	100	100
All	All	1776/1784 (100%)	1683 (95%)	92 (5%)	1 (0%)	48	67

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	376	LEU

### 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	395/395 (100%)	390 (99%)	5 (1%)	65	80
1	B	395/395 (100%)	391 (99%)	4 (1%)	73	85
1	C	395/395 (100%)	392 (99%)	3 (1%)	79	89
1	D	395/395 (100%)	390 (99%)	5 (1%)	65	80
All	All	1580/1580 (100%)	1563 (99%)	17 (1%)	70	84

5 of 17 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	336	CYS
1	D	438	TYR
1	B	349	SER
1	B	425	PHE
1	C	193	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	175	ASN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates ⓘ

52 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	1.03	1 (7%)	17,19,21	0.63	0
2	NAG	E	2	2	14,14,15	0.57	0	17,19,21	0.55	0
2	FUC	E	3	2	10,10,11	0.97	0	14,14,16	1.51	3 (21%)
3	NAG	F	1	1,3	14,14,15	1.53	2 (14%)	17,19,21	0.98	1 (5%)
3	FUC	F	2	3	10,10,11	1.40	1 (10%)	14,14,16	1.53	3 (21%)
4	NAG	G	1	4,1	14,14,15	0.37	0	17,19,21	0.62	0
4	NAG	G	2	4	14,14,15	0.25	0	17,19,21	0.34	0
4	NAG	H	1	4,1	14,14,15	0.55	0	17,19,21	0.81	1 (5%)
4	NAG	H	2	4	14,14,15	1.58	2 (14%)	17,19,21	1.48	3 (17%)
4	NAG	I	1	4,1	14,14,15	0.51	0	17,19,21	0.52	0
4	NAG	I	2	4	14,14,15	0.36	0	17,19,21	0.38	0
2	NAG	J	1	2,1	14,14,15	0.61	1 (7%)	17,19,21	0.59	0
2	NAG	J	2	2	14,14,15	0.52	0	17,19,21	0.45	0
2	FUC	J	3	2	10,10,11	0.68	0	14,14,16	1.44	2 (14%)
3	NAG	K	1	1,3	14,14,15	1.76	3 (21%)	17,19,21	1.17	2 (11%)
3	FUC	K	2	3	10,10,11	1.20	1 (10%)	14,14,16	1.36	3 (21%)
4	NAG	L	1	4,1	14,14,15	0.61	0	17,19,21	0.74	1 (5%)
4	NAG	L	2	4	14,14,15	0.35	0	17,19,21	0.52	0
5	NAG	M	1	5,1	14,14,15	0.43	0	17,19,21	0.88	1 (5%)
5	NAG	M	2	5	14,14,15	0.86	1 (7%)	17,19,21	1.45	4 (23%)
5	MAN	M	3	5	11,11,12	2.03	4 (36%)	15,15,17	2.01	4 (26%)
5	MAN	M	4	5	11,11,12	1.33	2 (18%)	15,15,17	1.59	4 (26%)
4	NAG	N	1	4,1	14,14,15	0.55	0	17,19,21	0.75	1 (5%)
4	NAG	N	2	4	14,14,15	0.56	0	17,19,21	0.43	0
2	NAG	O	1	2,1	14,14,15	0.65	1 (7%)	17,19,21	0.65	0
2	NAG	O	2	2	14,14,15	0.45	0	17,19,21	0.42	0
2	FUC	O	3	2	10,10,11	0.73	0	14,14,16	1.53	3 (21%)
6	NAG	P	1	1,6	14,14,15	0.75	1 (7%)	17,19,21	0.74	0
6	NAG	P	2	6	14,14,15	1.26	1 (7%)	17,19,21	0.81	0
6	MAN	P	3	6	11,11,12	1.04	2 (18%)	15,15,17	1.82	3 (20%)
6	MAN	P	4	6	11,11,12	1.15	0	15,15,17	2.49	4 (26%)
6	FUC	P	5	6	10,10,11	1.58	2 (20%)	14,14,16	1.87	3 (21%)
4	NAG	Q	1	4,1	14,14,15	0.21	0	17,19,21	0.88	1 (5%)
4	NAG	Q	2	4	14,14,15	1.10	1 (7%)	17,19,21	0.80	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
7	NAG	R	1	1,7	14,14,15	0.35	0	17,19,21	0.92	2 (11%)
7	NAG	R	2	7	14,14,15	1.21	2 (14%)	17,19,21	1.84	3 (17%)
7	MAN	R	3	7	11,11,12	1.56	2 (18%)	15,15,17	1.98	5 (33%)
7	MAN	R	4	7	11,11,12	1.24	1 (9%)	15,15,17	1.84	3 (20%)
7	MAN	R	5	7	11,11,12	1.15	1 (9%)	15,15,17	1.73	3 (20%)
4	NAG	S	1	4,1	14,14,15	0.80	1 (7%)	17,19,21	0.46	0
4	NAG	S	2	4	14,14,15	0.55	0	17,19,21	0.48	0
2	NAG	T	1	2,1	14,14,15	0.62	1 (7%)	17,19,21	0.44	0
2	NAG	T	2	2	14,14,15	0.64	0	17,19,21	0.45	0
2	FUC	T	3	2,1	10,10,11	1.18	0	14,14,16	1.46	3 (21%)
3	NAG	U	1	1,3	14,14,15	1.21	2 (14%)	17,19,21	0.99	2 (11%)
3	FUC	U	2	3	10,10,11	1.63	2 (20%)	14,14,16	1.70	4 (28%)
4	NAG	V	1	4,1	14,14,15	0.48	0	17,19,21	0.43	0
4	NAG	V	2	4	14,14,15	0.26	0	17,19,21	0.76	0
4	NAG	W	1	4,1	14,14,15	0.28	0	17,19,21	0.68	0
4	NAG	W	2	4	14,14,15	1.40	2 (14%)	17,19,21	1.50	3 (17%)
4	NAG	X	1	4,1	14,14,15	0.38	0	17,19,21	0.51	0
4	NAG	X	2	4	14,14,15	0.29	0	17,19,21	0.43	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
2	NAG	E	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	E	2	2	-	2/6/23/26	0/1/1/1
2	FUC	E	3	2	-	-	0/1/1/1
3	NAG	F	1	1,3	-	2/6/23/26	0/1/1/1
3	FUC	F	2	3	-	-	0/1/1/1
4	NAG	G	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	G	2	4	-	2/6/23/26	0/1/1/1
4	NAG	H	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	H	2	4	-	2/6/23/26	0/1/1/1
4	NAG	I	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	I	2	4	-	2/6/23/26	0/1/1/1
2	NAG	J	1	2,1	-	4/6/23/26	0/1/1/1
2	NAG	J	2	2	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	FUC	J	3	2	-	-	0/1/1/1
3	NAG	K	1	1,3	-	2/6/23/26	0/1/1/1
3	FUC	K	2	3	-	-	0/1/1/1
4	NAG	L	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	L	2	4	-	2/6/23/26	0/1/1/1
5	NAG	M	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	M	2	5	-	2/6/23/26	0/1/1/1
5	MAN	M	3	5	-	2/2/19/22	1/1/1/1
5	MAN	M	4	5	-	2/2/19/22	1/1/1/1
4	NAG	N	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	N	2	4	-	2/6/23/26	0/1/1/1
2	NAG	O	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	O	2	2	-	2/6/23/26	0/1/1/1
2	FUC	O	3	2	-	-	0/1/1/1
6	NAG	P	1	1,6	-	2/6/23/26	0/1/1/1
6	NAG	P	2	6	-	2/6/23/26	0/1/1/1
6	MAN	P	3	6	-	2/2/19/22	1/1/1/1
6	MAN	P	4	6	-	1/2/19/22	0/1/1/1
6	FUC	P	5	6	-	-	0/1/1/1
4	NAG	Q	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	Q	2	4	-	2/6/23/26	0/1/1/1
7	NAG	R	1	1,7	-	4/6/23/26	0/1/1/1
7	NAG	R	2	7	-	5/6/23/26	0/1/1/1
7	MAN	R	3	7	-	2/2/19/22	1/1/1/1
7	MAN	R	4	7	-	2/2/19/22	0/1/1/1
7	MAN	R	5	7	-	1/2/19/22	0/1/1/1
4	NAG	S	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	S	2	4	-	0/6/23/26	0/1/1/1
2	NAG	T	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	T	2	2	-	0/6/23/26	0/1/1/1
2	FUC	T	3	2,1	-	-	0/1/1/1
3	NAG	U	1	1,3	-	3/6/23/26	0/1/1/1
3	FUC	U	2	3	-	-	0/1/1/1
4	NAG	V	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	V	2	4	-	2/6/23/26	0/1/1/1
4	NAG	W	1	4,1	-	4/6/23/26	0/1/1/1
4	NAG	W	2	4	-	3/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	X	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	X	2	4	-	2/6/23/26	0/1/1/1

The worst 5 of 40 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	K	1	NAG	O5-C1	-5.59	1.34	1.43
3	F	1	NAG	O5-C1	-4.84	1.36	1.43
5	M	3	MAN	C2-C3	-4.72	1.45	1.52
4	H	2	NAG	C1-C2	4.62	1.59	1.52
6	P	2	NAG	O5-C1	-4.31	1.36	1.43

The worst 5 of 76 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	P	4	MAN	C1-O5-C5	7.06	121.75	112.19
7	R	2	NAG	C2-N2-C7	4.82	129.77	122.90
7	R	3	MAN	O2-C2-C3	-4.75	100.62	110.14
7	R	4	MAN	C1-O5-C5	4.56	118.38	112.19
5	M	3	MAN	C1-O5-C5	4.38	118.13	112.19

There are no chirality outliers.

5 of 77 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	R	2	NAG	C1-C2-N2-C7
2	J	2	NAG	O5-C5-C6-O6
4	W	1	NAG	O5-C5-C6-O6
5	M	4	MAN	O5-C5-C6-O6
6	P	3	MAN	C4-C5-C6-O6

All (4) ring outliers are listed below:

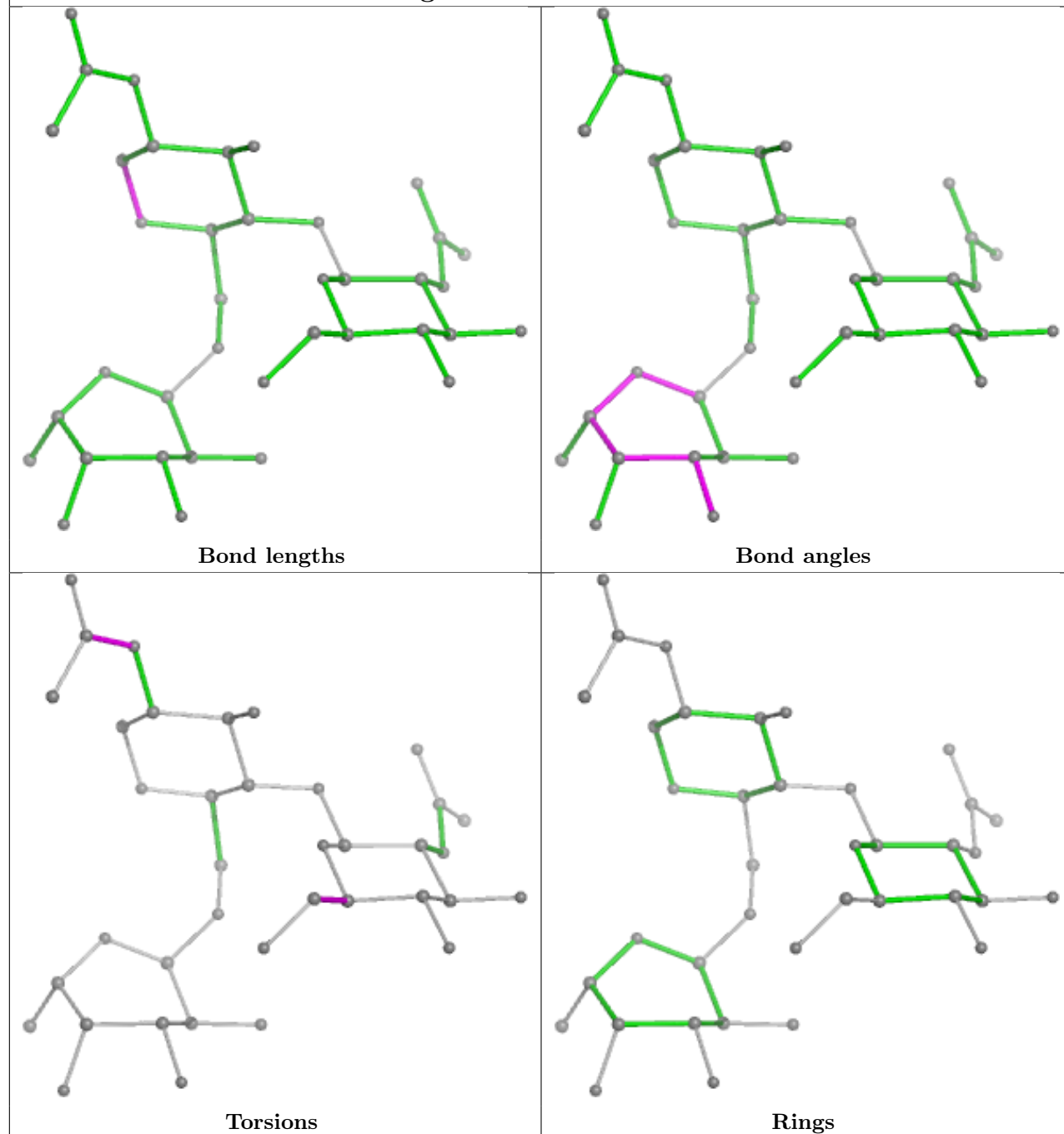
Mol	Chain	Res	Type	Atoms
5	M	3	MAN	C1-C2-C3-C4-C5-O5
6	P	3	MAN	C1-C2-C3-C4-C5-O5
7	R	3	MAN	C1-C2-C3-C4-C5-O5
5	M	4	MAN	C1-C2-C3-C4-C5-O5

15 monomers are involved in 15 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	R	3	MAN	1	0
2	E	1	NAG	1	0
2	J	1	NAG	1	0
2	O	3	FUC	1	0
4	W	2	NAG	2	0
7	R	2	NAG	2	0
5	M	2	NAG	1	0
4	H	2	NAG	1	0
3	U	2	FUC	1	0
4	X	1	NAG	1	0
4	N	1	NAG	2	0
5	M	3	MAN	1	0
7	R	5	MAN	1	0
2	O	1	NAG	1	0
3	U	1	NAG	1	0

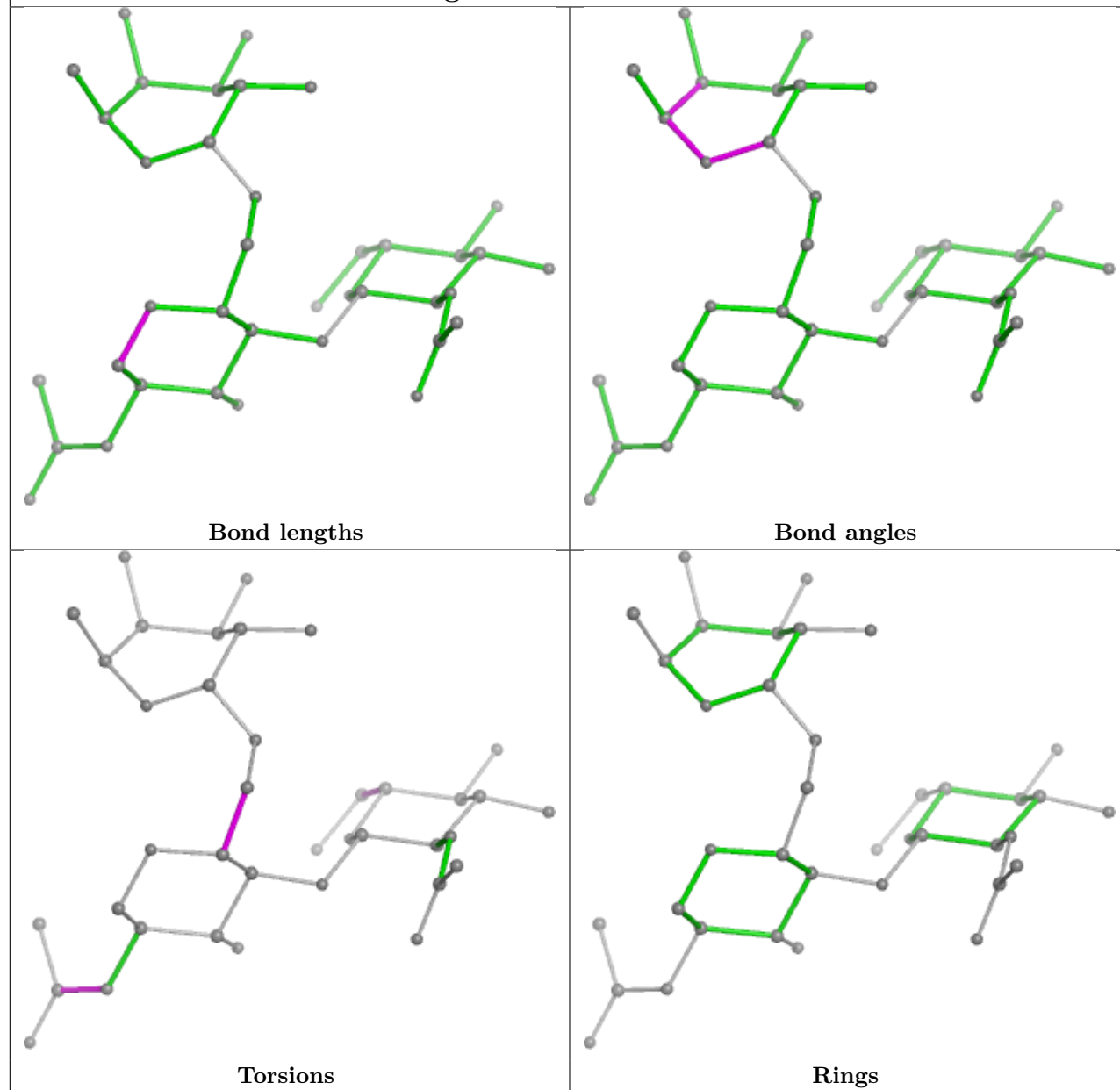
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

## Oligosaccharide Chain E

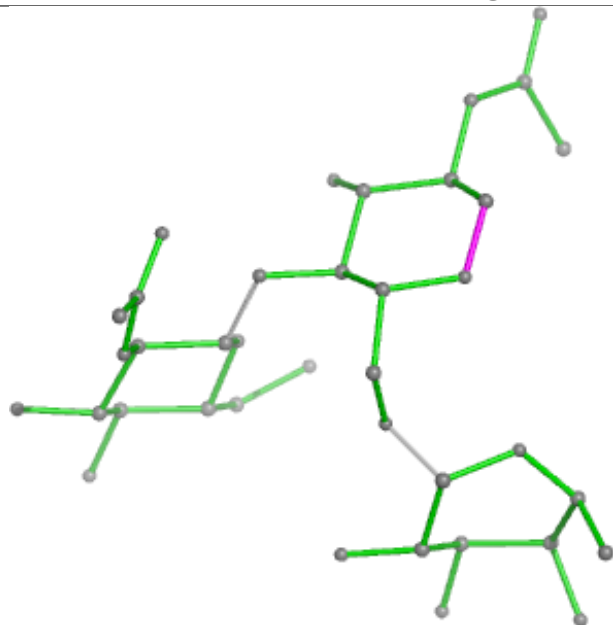




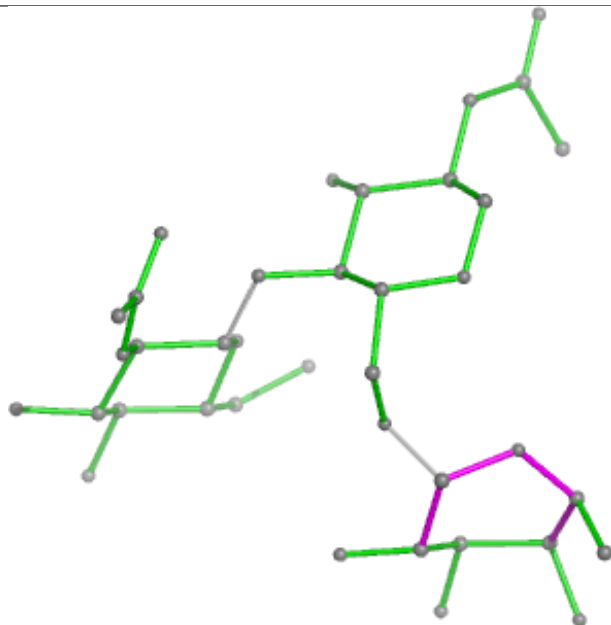
## Oligosaccharide Chain J



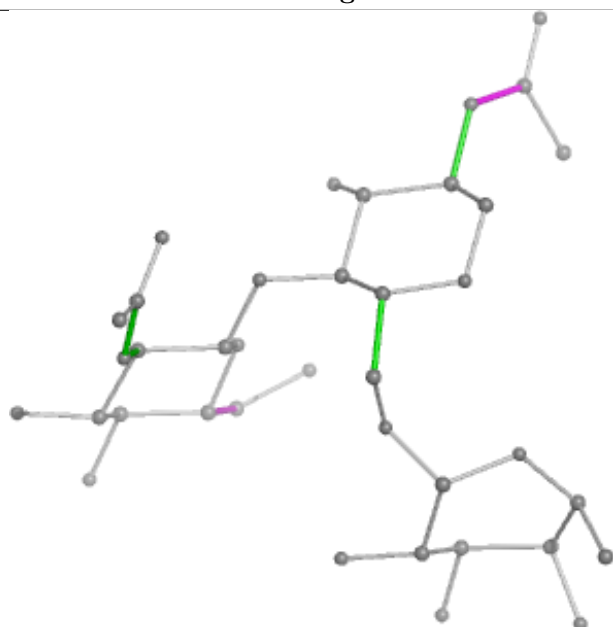
## Oligosaccharide Chain O



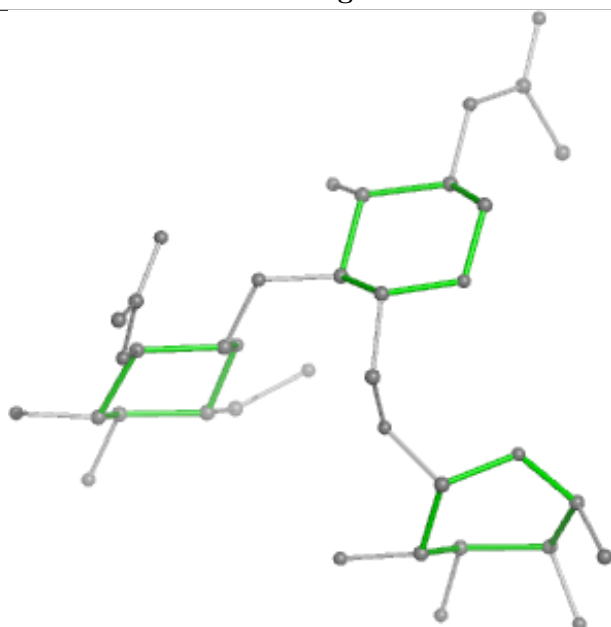
Bond lengths



Bond angles

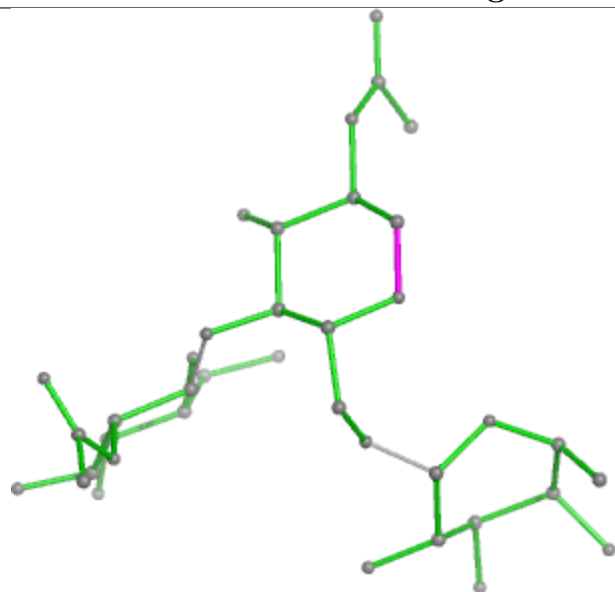


Torsions

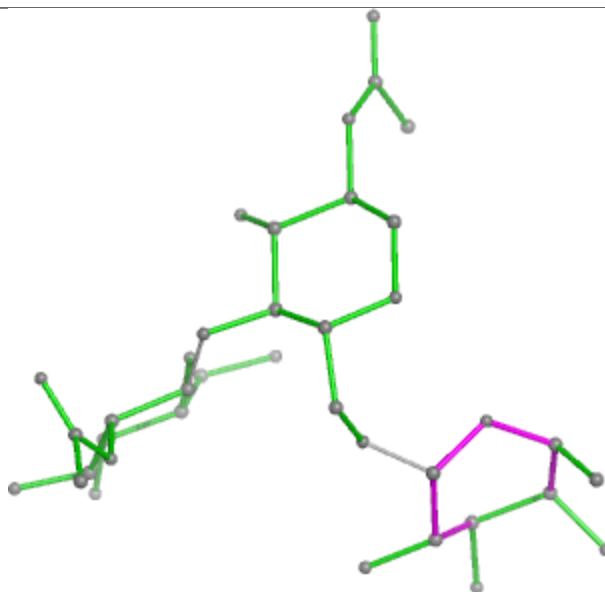


Rings

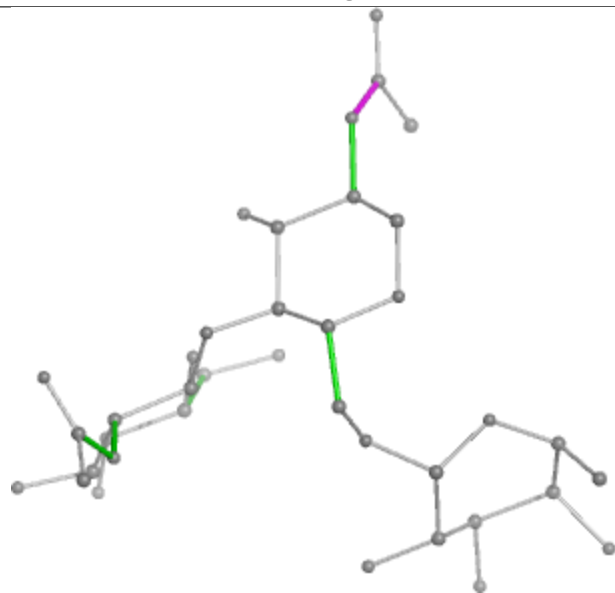
## Oligosaccharide Chain T



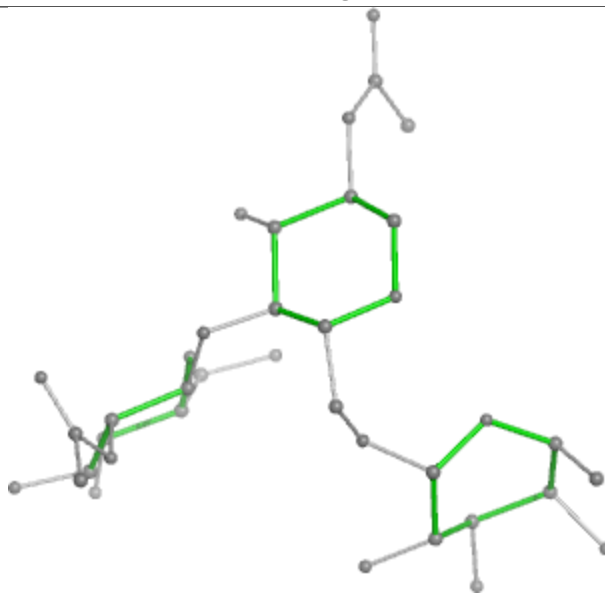
Bond lengths



Bond angles

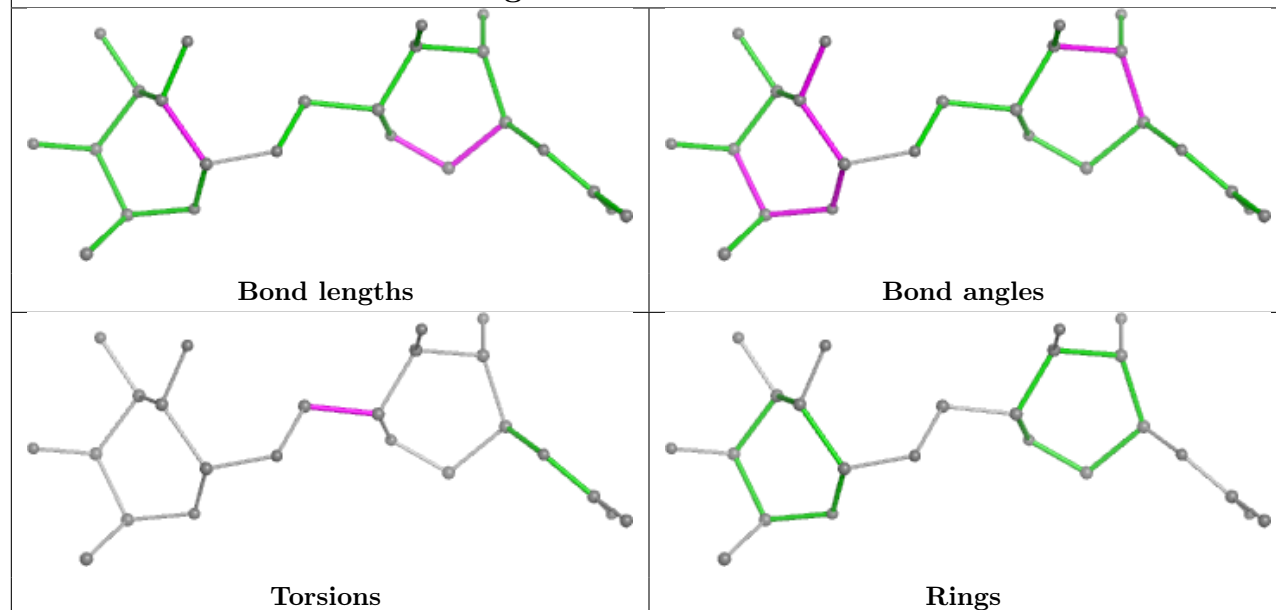


Torsions

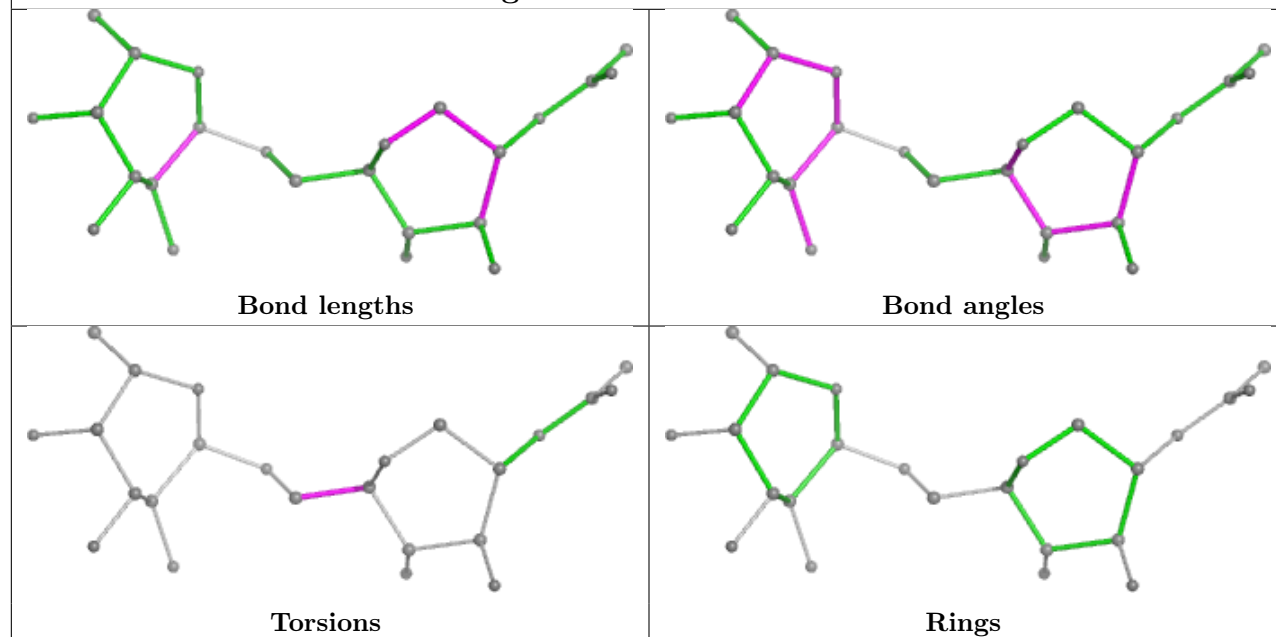


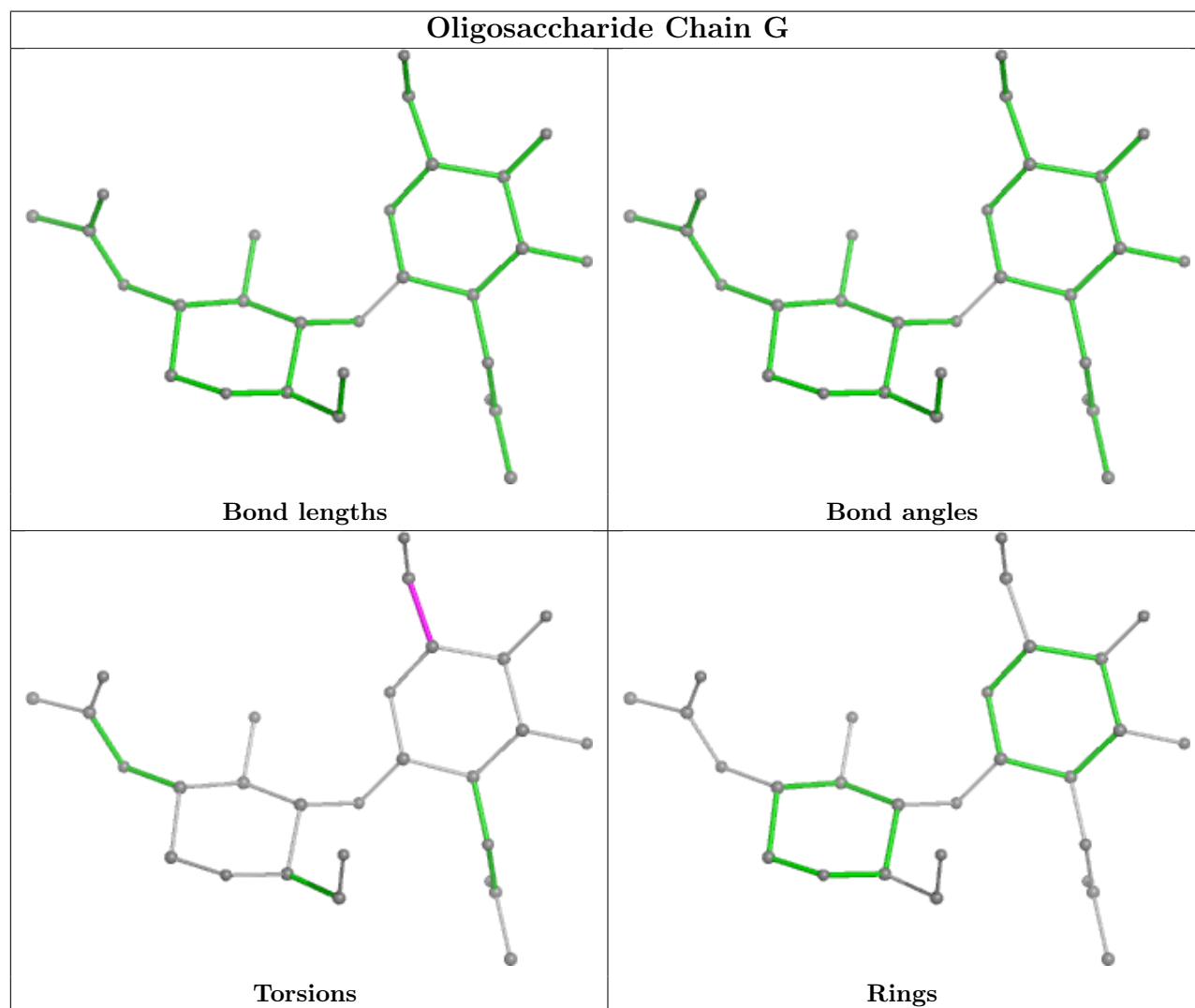
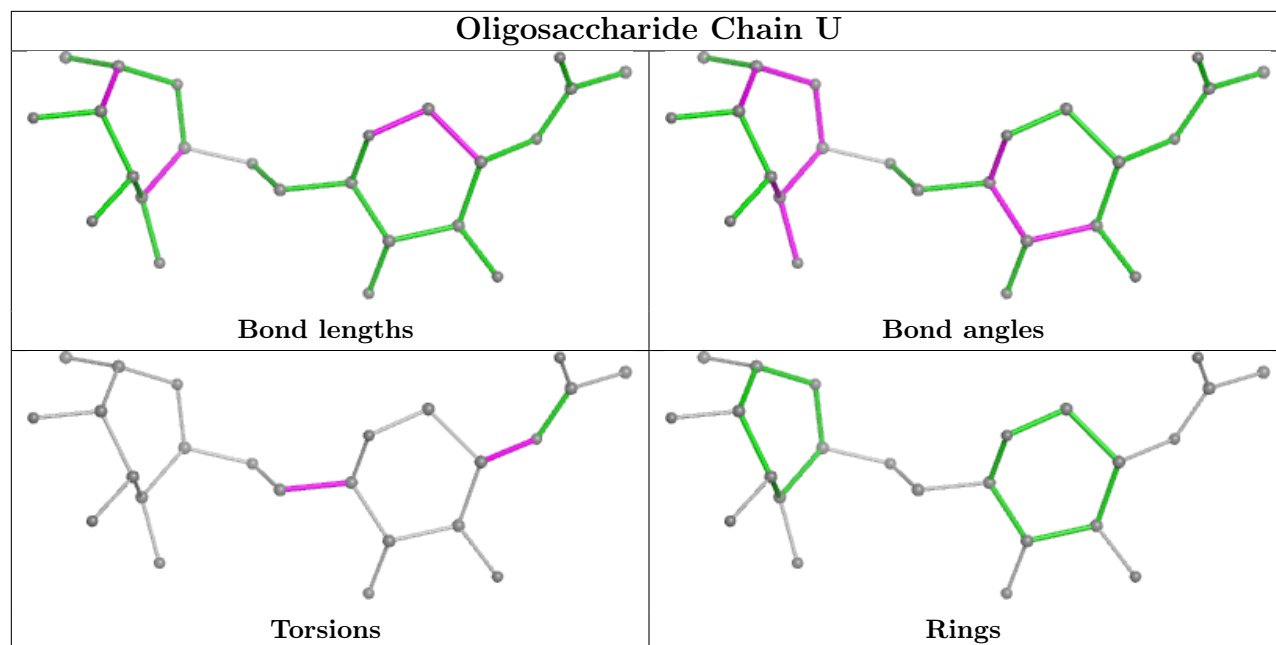
Rings

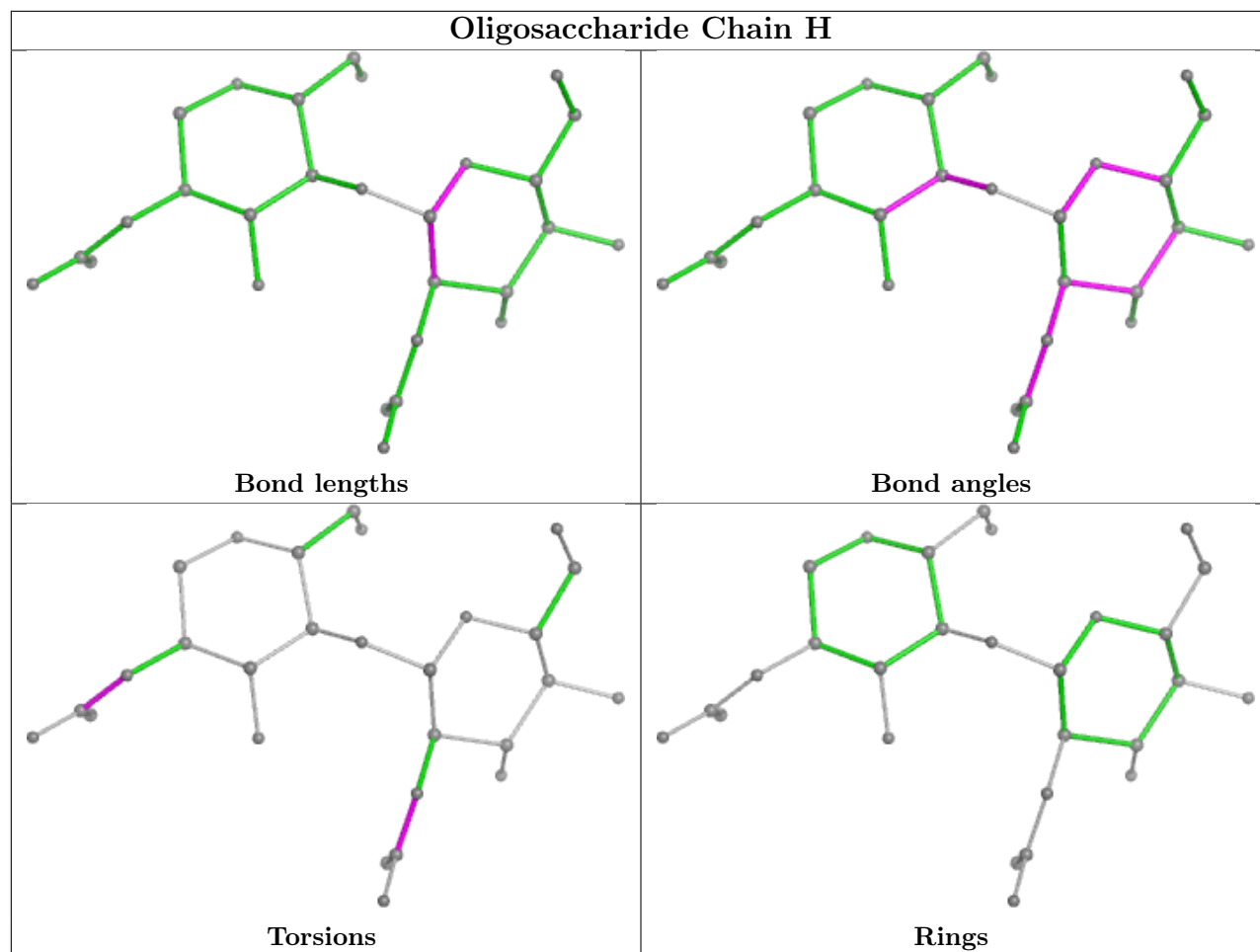
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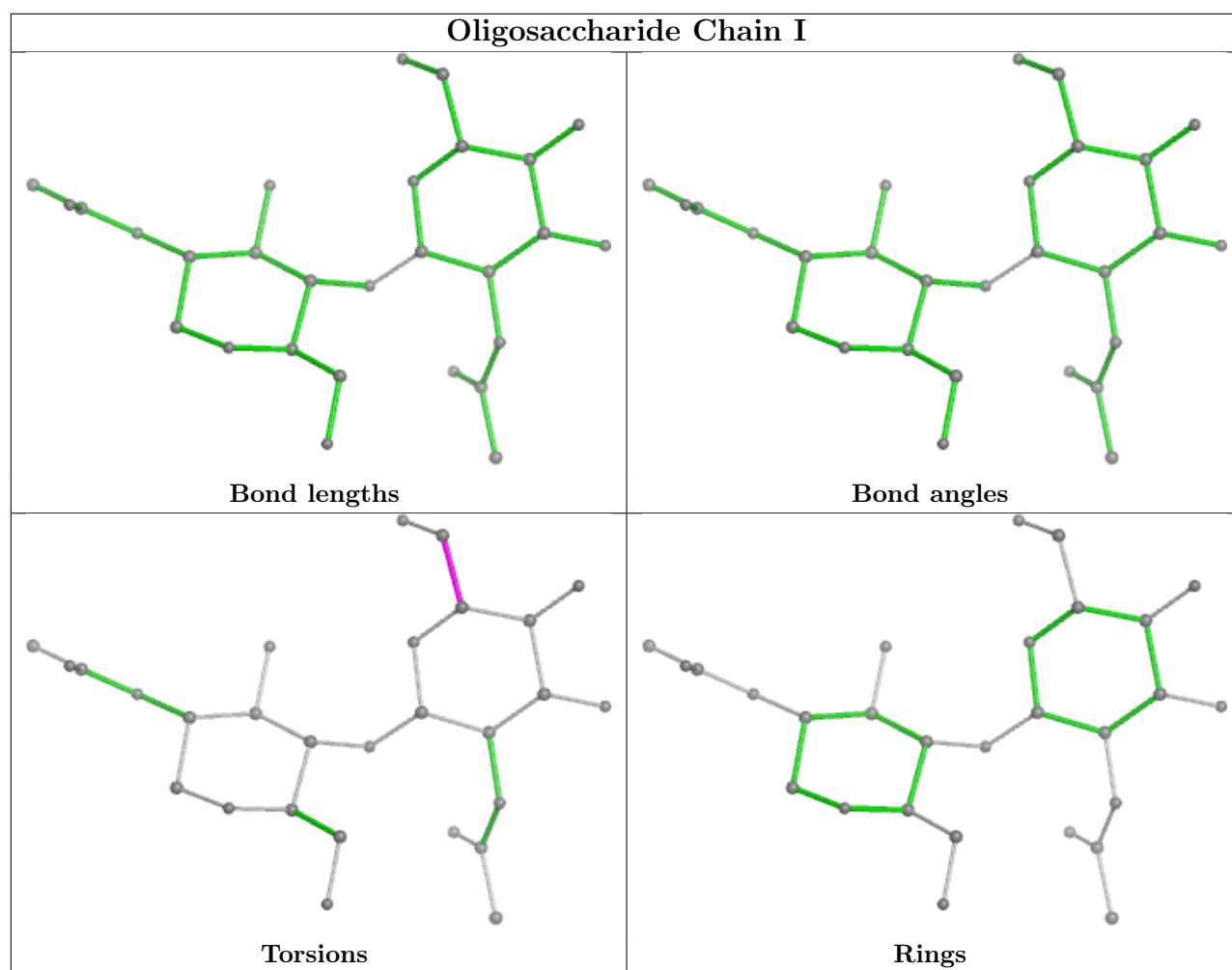


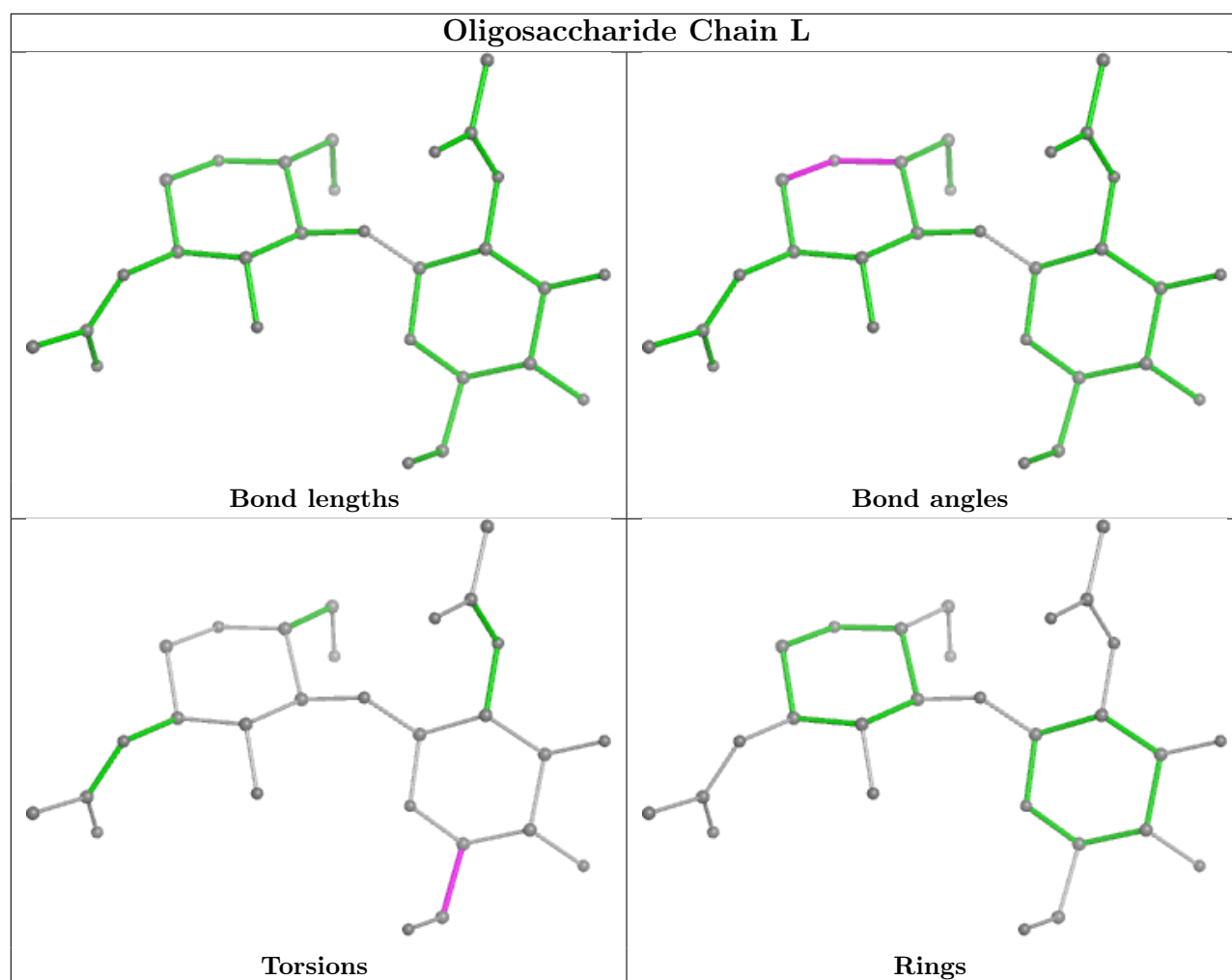
## Oligosaccharide Chain K



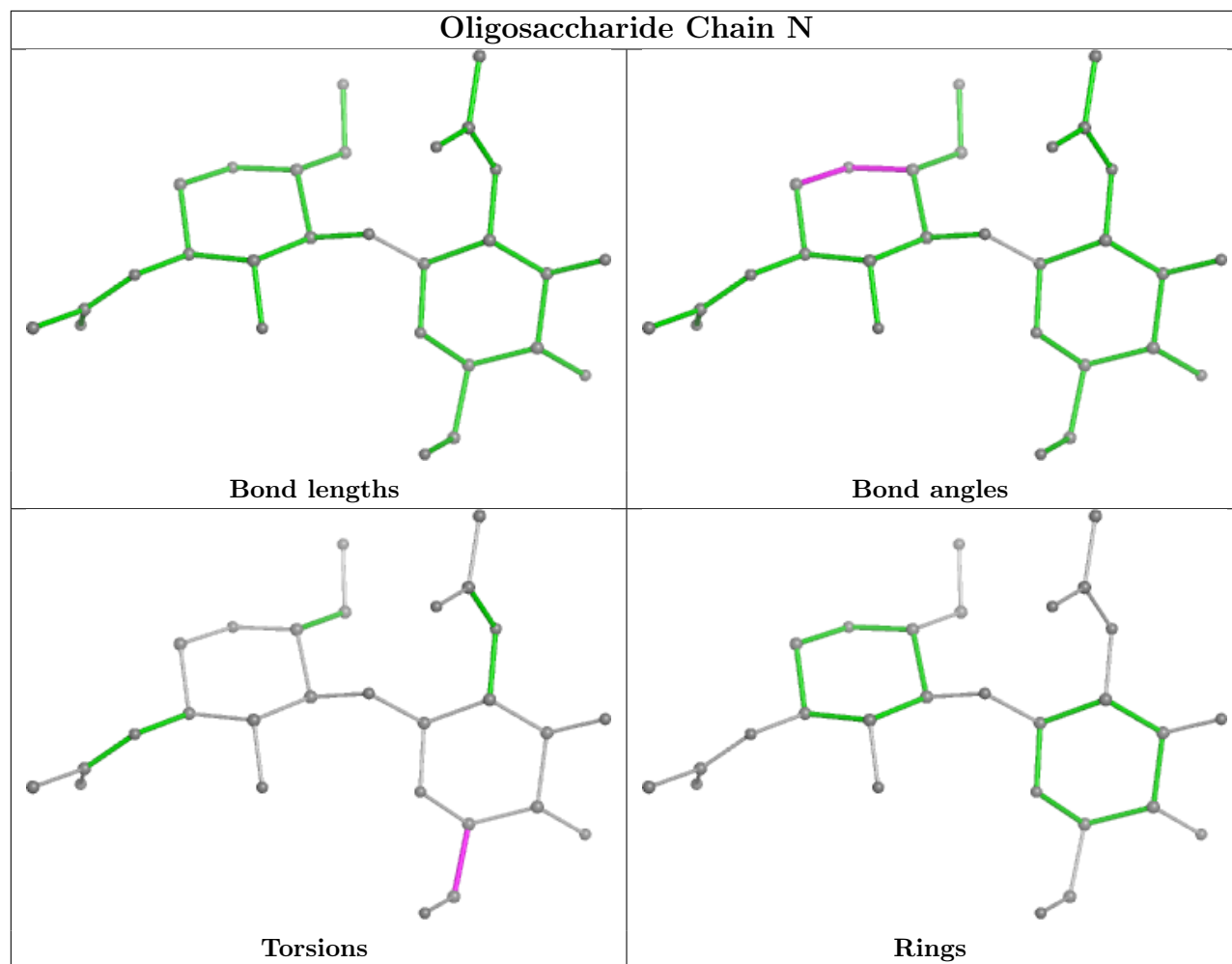


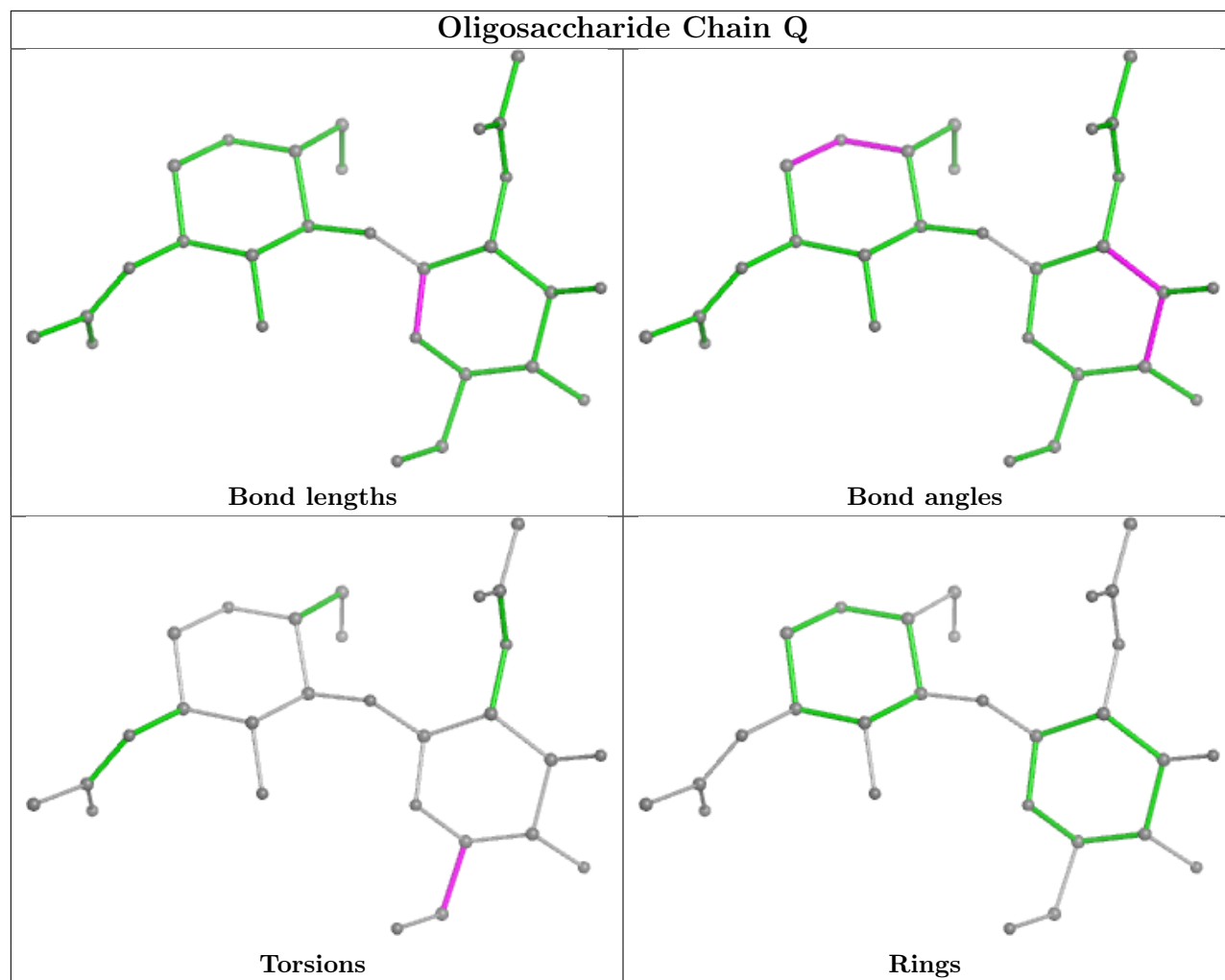


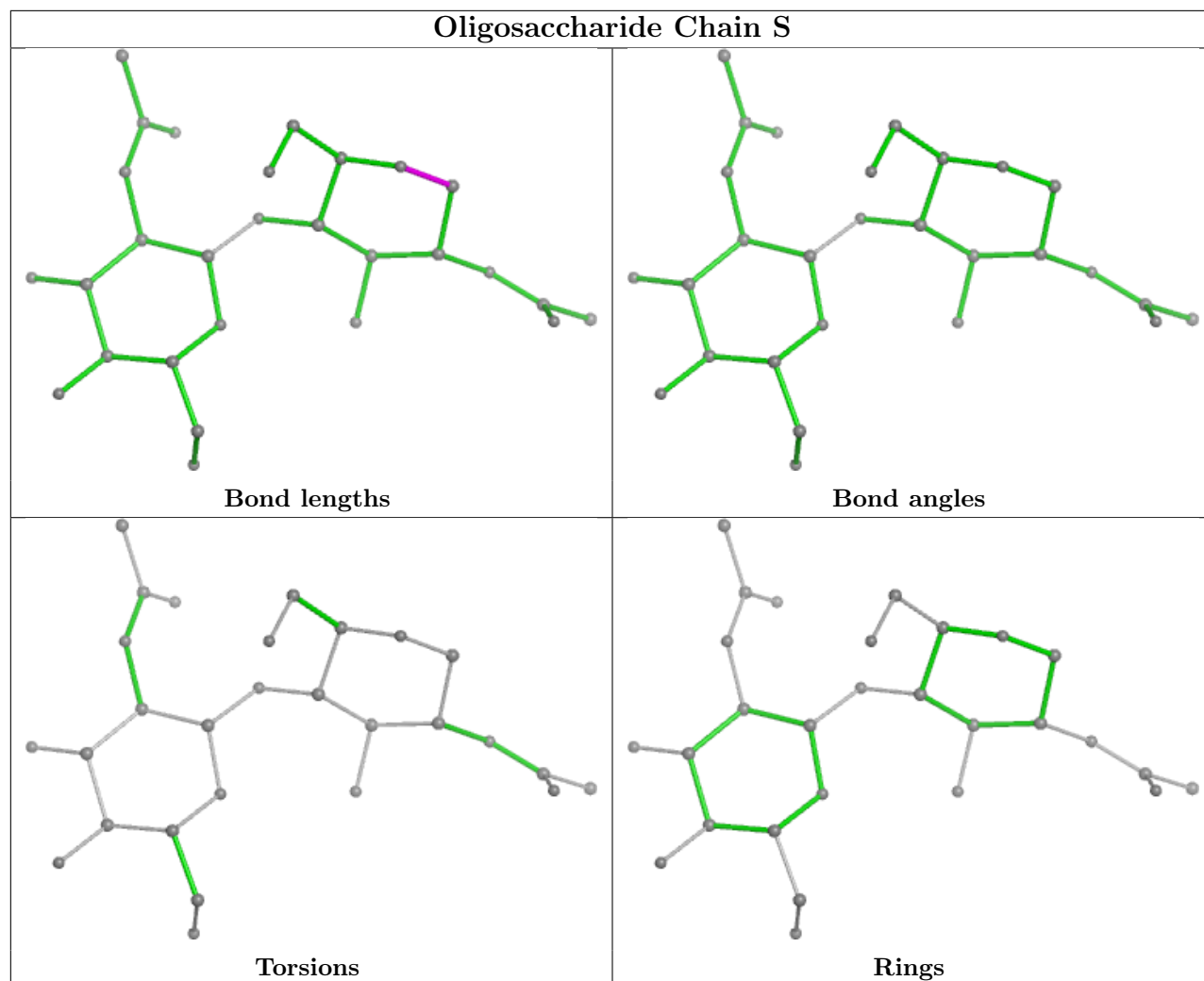


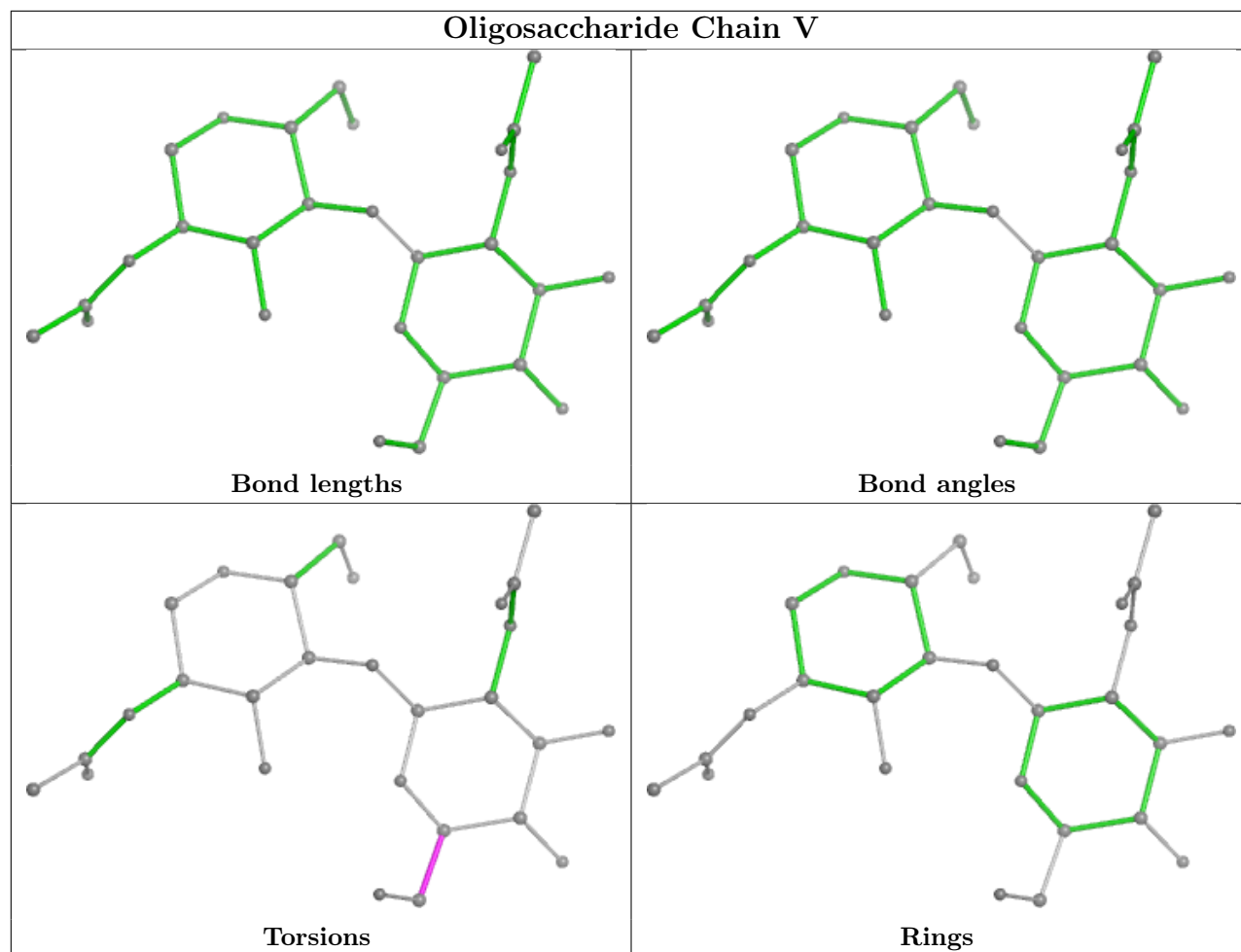




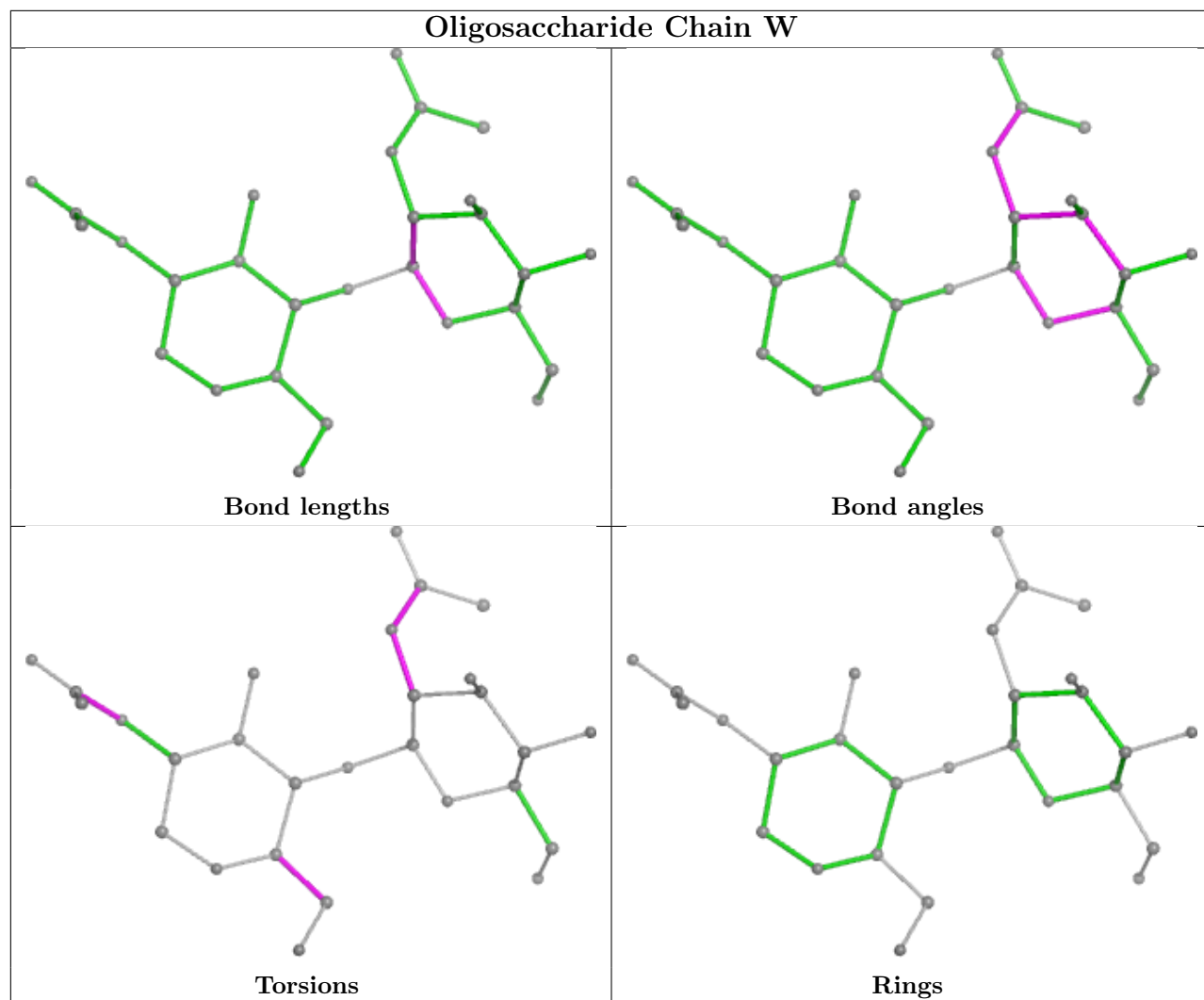


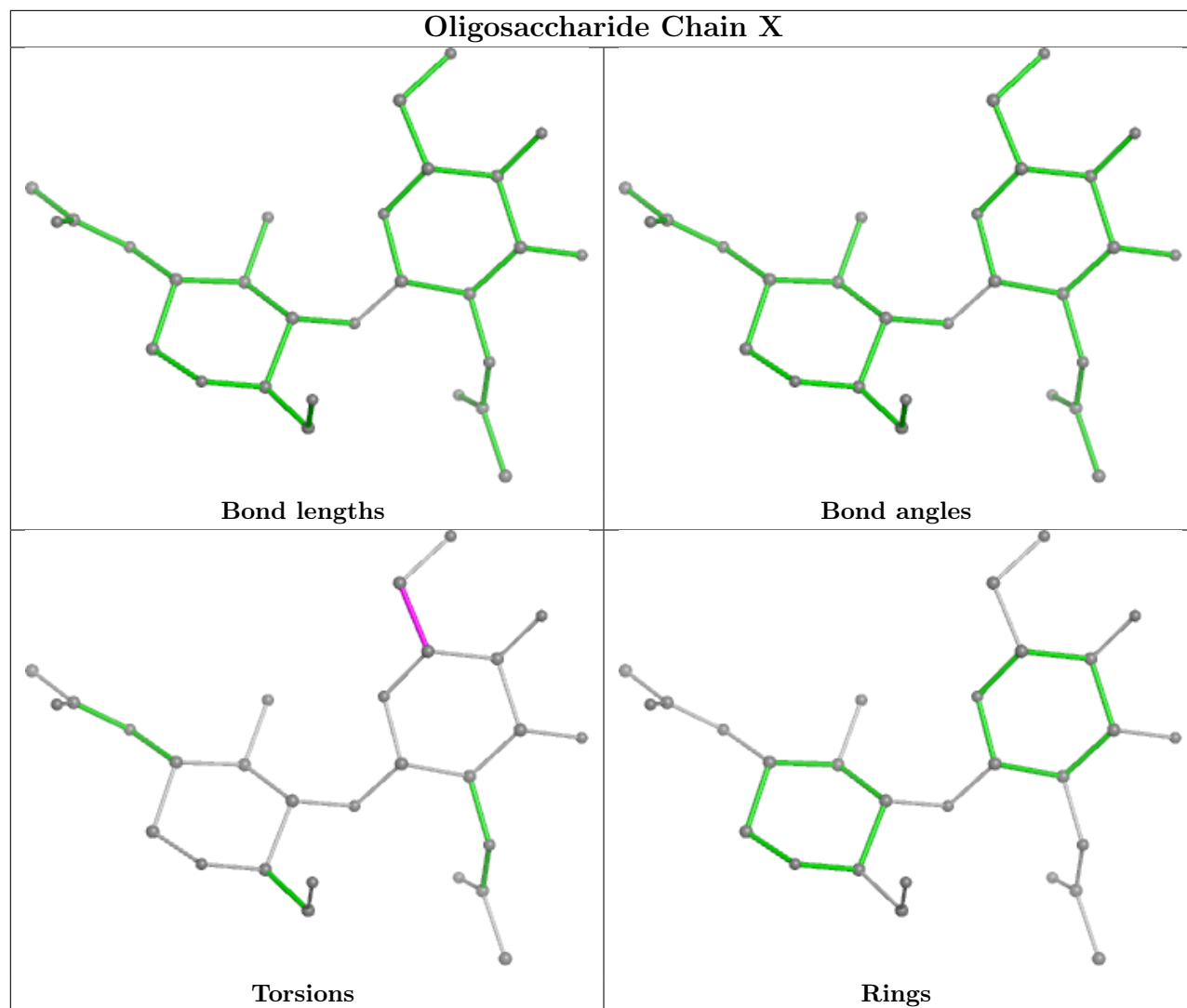


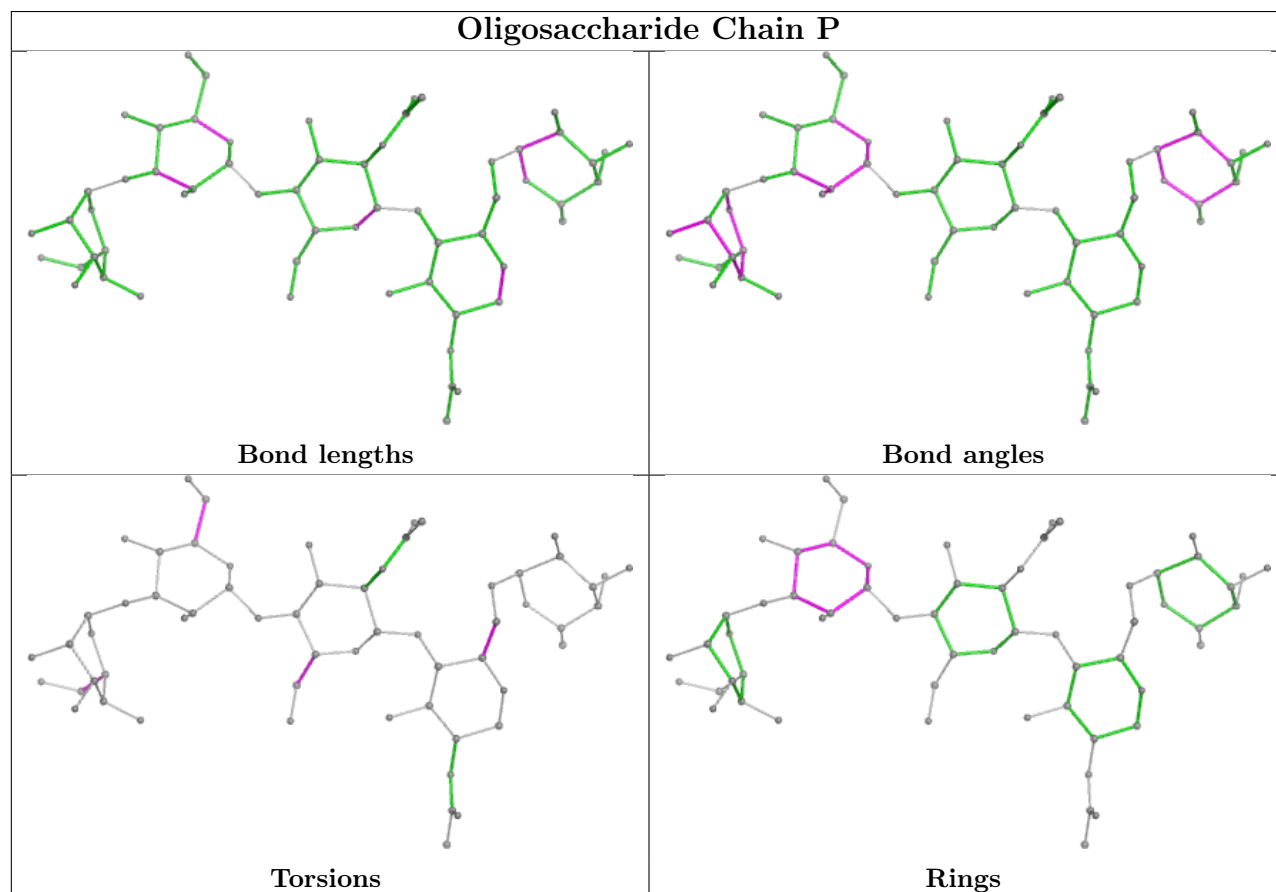
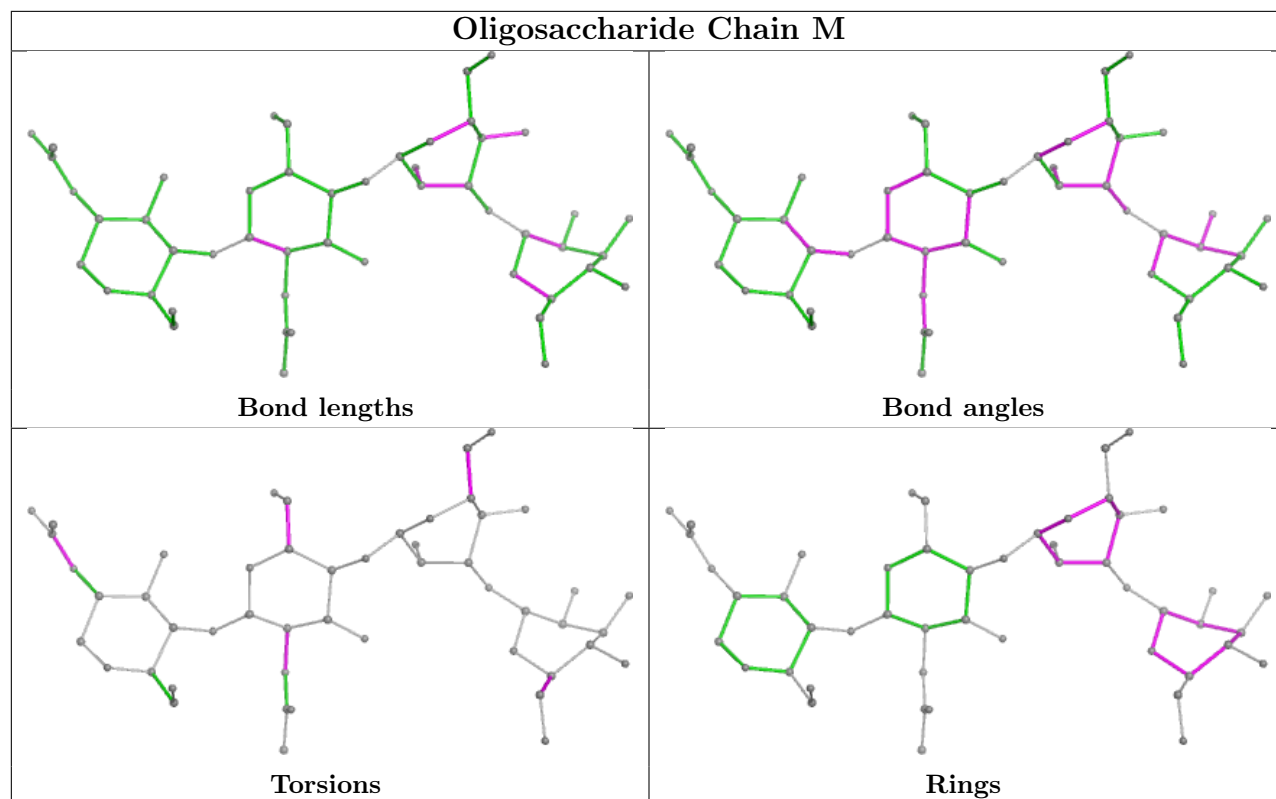


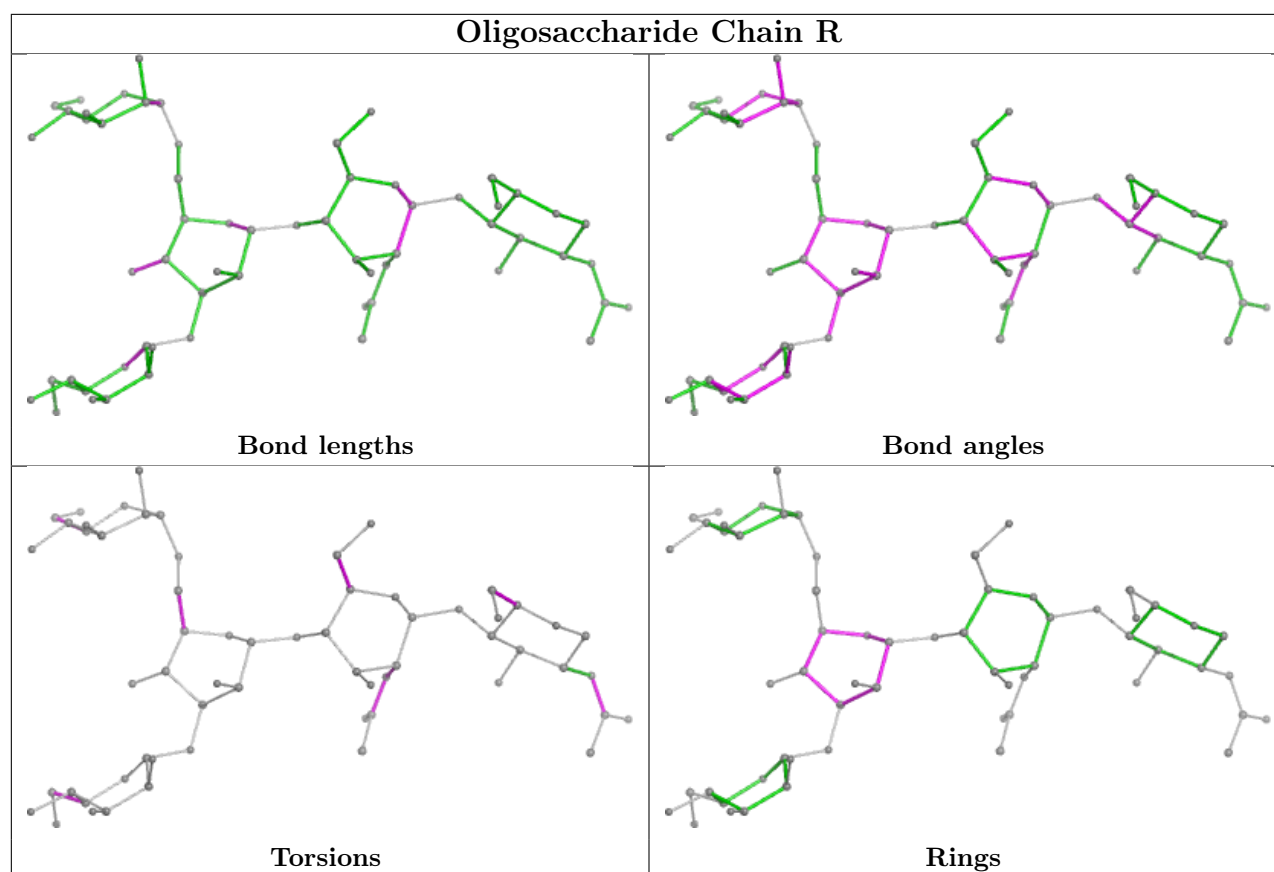


## Oligosaccharide Chain W









## 5.6 Ligand geometry [i](#)

Of 14 ligands modelled in this entry, 9 are monoatomic - leaving 5 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	$\# Z  > 2$
10	NAG	D	504	1	14,14,15	0.75	1 (7%)	17,19,21	0.68	0
9	KOJ	C	520	-	8,10,10	1.06	1 (12%)	6,13,13	0.65	0
9	KOJ	A	514	-	8,10,10	3.72	4 (50%)	6,13,13	1.92	3 (50%)
9	KOJ	B	516	-	8,10,10	1.00	0	6,13,13	1.03	0
9	KOJ	D	515	-	8,10,10	1.06	0	6,13,13	1.87	1 (16%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the



Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns.  
'-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
10	NAG	D	504	1	-	4/6/23/26	0/1/1/1
9	KOJ	C	520	-	-	0/1/2/2	0/1/1/1
9	KOJ	A	514	-	-	0/1/2/2	0/1/1/1
9	KOJ	B	516	-	-	0/1/2/2	0/1/1/1
9	KOJ	D	515	-	-	1/1/2/2	0/1/1/1

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	A	514	KOJ	O5-C5	8.20	1.46	1.35
9	A	514	KOJ	C4-C3	4.35	1.46	1.37
9	A	514	KOJ	O3-C3	-3.61	1.17	1.23
9	A	514	KOJ	C4-C5	-2.99	1.30	1.35
10	D	504	NAG	O5-C1	2.43	1.47	1.43

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	A	514	KOJ	O6-C6-C5	-3.12	105.23	112.10
9	D	515	KOJ	O6-C6-C5	-3.12	105.23	112.10
9	A	514	KOJ	O2-C2-C3	-2.47	115.06	119.81
9	A	514	KOJ	C2-C3-C4	2.12	121.66	118.56

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	D	504	NAG	O5-C5-C6-O6
9	D	515	KOJ	C4-C5-C6-O6
10	D	504	NAG	C4-C5-C6-O6
10	D	504	NAG	C3-C2-N2-C7
10	D	504	NAG	C1-C2-N2-C7

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	D	515	KOJ	1	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 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	446/446 (100%)	-0.52	3 (0%) 84 82	19, 33, 50, 97	0
1	B	446/446 (100%)	-0.25	7 (1%) 70 68	21, 37, 63, 96	0
1	C	446/446 (100%)	-0.37	1 (0%) 92 92	19, 35, 56, 76	0
1	D	446/446 (100%)	-0.05	5 (1%) 77 75	23, 43, 68, 104	0
All	All	1784/1784 (100%)	-0.30	16 (0%) 81 79	19, 36, 62, 104	0

The worst 5 of 16 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	48	VAL	5.1
1	D	80	PRO	3.8
1	D	470	SER	3.4
1	B	118	ARG	3.3
1	B	48	VAL	3.2

### 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
4	NAG	W	2	14/15	0.46	0.23	94,99,103,105	0
4	NAG	H	2	14/15	0.68	0.18	64,81,91,92	0

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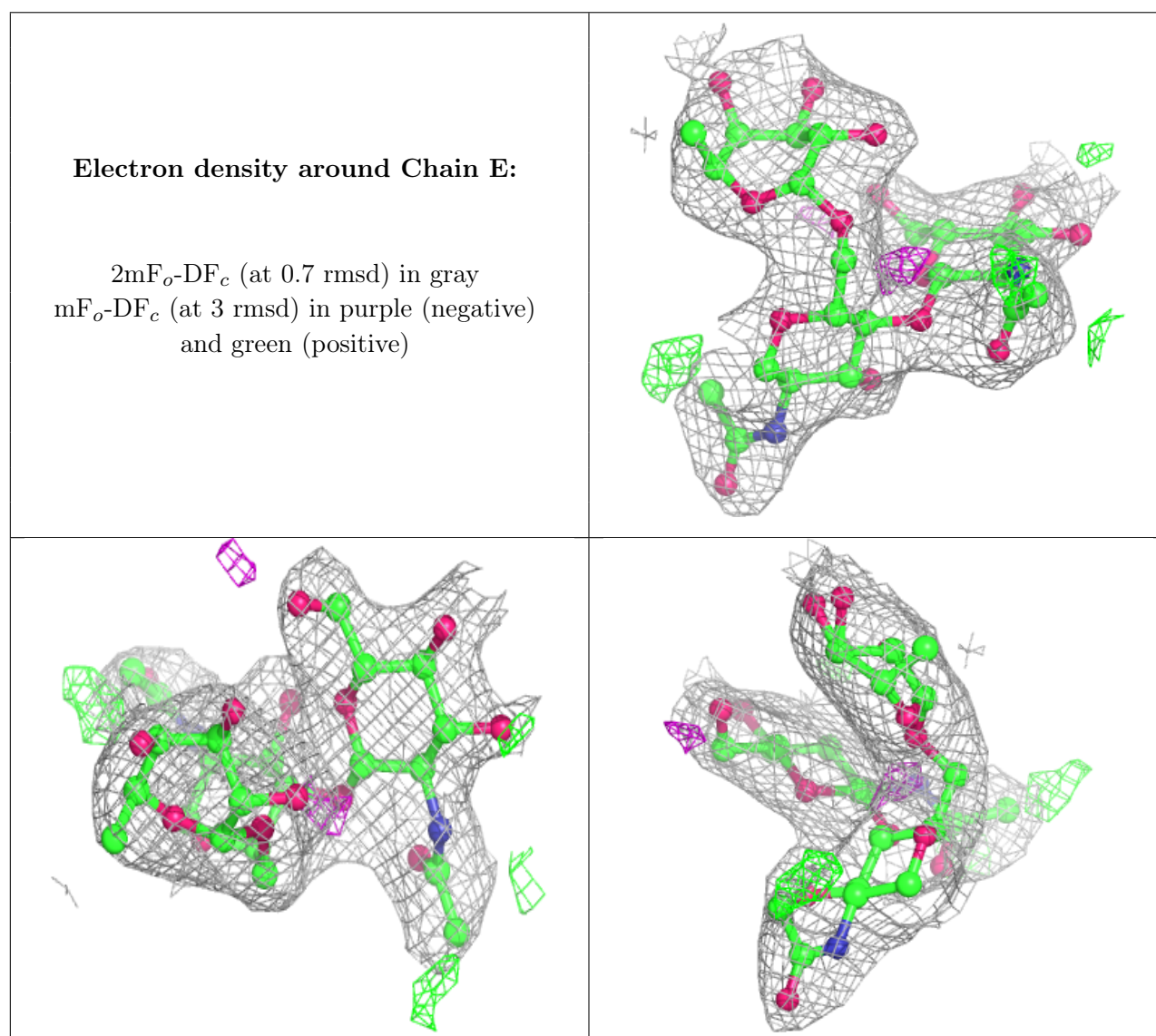
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	NAG	K	1	14/15	0.68	0.13	53,66,69,74	0
3	FUC	F	2	10/11	0.71	0.15	62,70,73,73	0
4	NAG	H	1	14/15	0.71	0.16	46,53,74,80	0
4	NAG	X	2	14/15	0.71	0.16	72,75,81,84	0
3	NAG	U	1	14/15	0.72	0.14	49,61,67,69	0
2	NAG	E	2	14/15	0.73	0.14	52,57,64,68	0
4	NAG	V	2	14/15	0.73	0.14	58,72,78,80	0
5	MAN	M	4	11/12	0.73	0.18	55,57,66,70	0
3	NAG	F	1	14/15	0.74	0.14	47,63,69,72	0
2	NAG	T	2	14/15	0.76	0.14	60,70,80,84	0
4	NAG	W	1	14/15	0.77	0.16	68,73,90,92	0
6	MAN	P	4	11/12	0.77	0.14	63,64,70,70	0
2	NAG	J	2	14/15	0.78	0.14	61,73,77,81	0
3	FUC	U	2	10/11	0.78	0.14	54,66,76,81	0
4	NAG	N	2	14/15	0.78	0.14	55,64,71,71	0
2	NAG	T	1	14/15	0.79	0.14	54,59,68,69	0
2	FUC	J	3	10/11	0.79	0.14	53,65,70,72	0
7	NAG	R	2	14/15	0.79	0.20	47,51,58,69	0
7	MAN	R	4	11/12	0.79	0.15	45,53,70,74	0
4	NAG	I	2	14/15	0.80	0.13	50,65,77,83	0
4	NAG	S	2	14/15	0.80	0.14	54,66,73,77	0
2	FUC	T	3	10/11	0.81	0.14	59,72,80,84	0
2	NAG	O	1	14/15	0.81	0.11	49,53,61,63	0
6	MAN	P	3	11/12	0.81	0.12	57,62,66,70	0
5	MAN	M	3	11/12	0.82	0.12	33,41,47,49	0
2	NAG	O	2	14/15	0.82	0.12	52,64,70,74	0
2	NAG	E	1	14/15	0.83	0.11	39,48,54,57	0
2	FUC	O	3	10/11	0.85	0.12	45,53,59,63	0
4	NAG	L	1	14/15	0.85	0.11	34,39,46,49	0
5	NAG	M	2	14/15	0.85	0.12	36,44,51,51	0
3	FUC	K	2	10/11	0.86	0.11	58,71,78,81	0
4	NAG	G	2	14/15	0.86	0.09	43,56,63,68	0
2	NAG	J	1	14/15	0.86	0.11	52,59,66,74	0
7	MAN	R	3	11/12	0.86	0.11	47,49,55,55	0
6	NAG	P	2	14/15	0.86	0.12	53,61,67,74	0
4	NAG	L	2	14/15	0.87	0.10	42,49,58,60	0
4	NAG	Q	2	14/15	0.87	0.12	42,49,57,63	0
4	NAG	X	1	14/15	0.88	0.10	46,58,61,69	0
4	NAG	N	1	14/15	0.88	0.11	35,45,56,63	0
6	FUC	P	5	10/11	0.88	0.11	43,52,55,56	0
7	NAG	R	1	14/15	0.89	0.10	33,39,45,47	0
4	NAG	V	1	14/15	0.89	0.09	47,51,57,69	0

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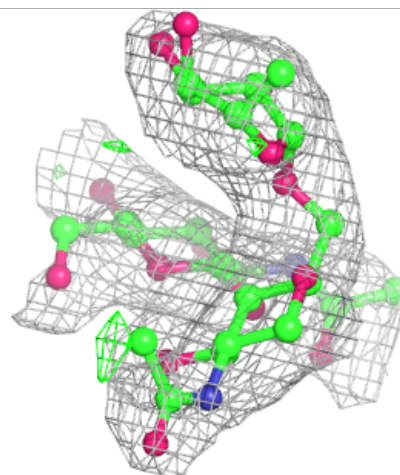
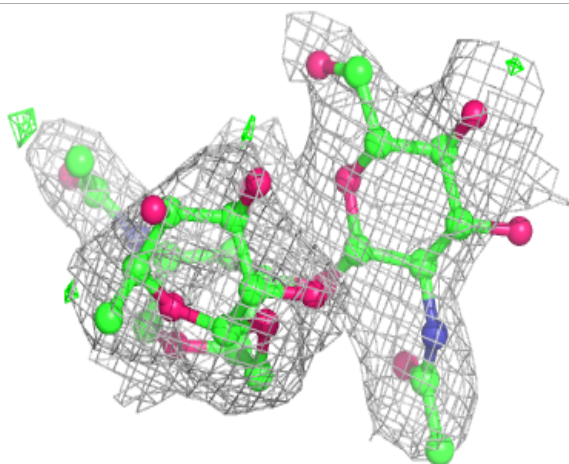
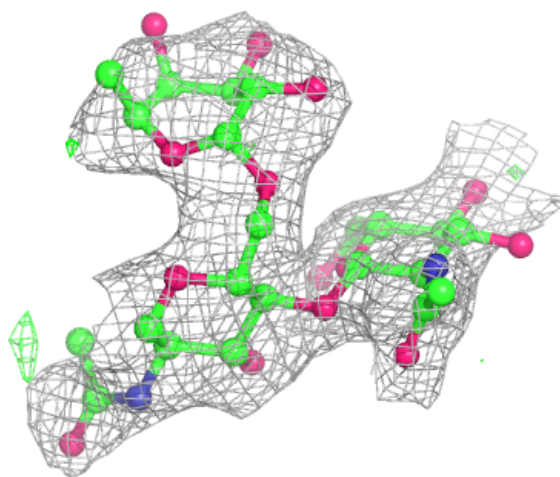
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
7	MAN	R	5	11/12	0.89	0.11	46,54,58,62	0
6	NAG	P	1	14/15	0.91	0.10	35,44,54,57	0
2	FUC	E	3	10/11	0.91	0.09	38,43,47,56	0
4	NAG	I	1	14/15	0.92	0.08	38,45,50,54	0
4	NAG	S	1	14/15	0.92	0.08	37,47,57,58	0
5	NAG	M	1	14/15	0.93	0.09	31,35,42,42	0
4	NAG	Q	1	14/15	0.93	0.07	30,37,42,42	0
4	NAG	G	1	14/15	0.95	0.07	36,41,47,50	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 J:**

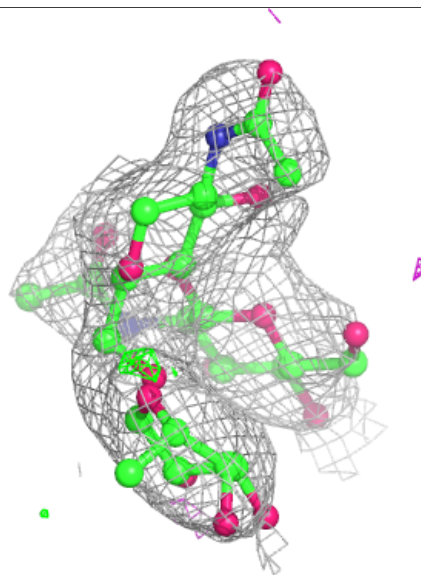
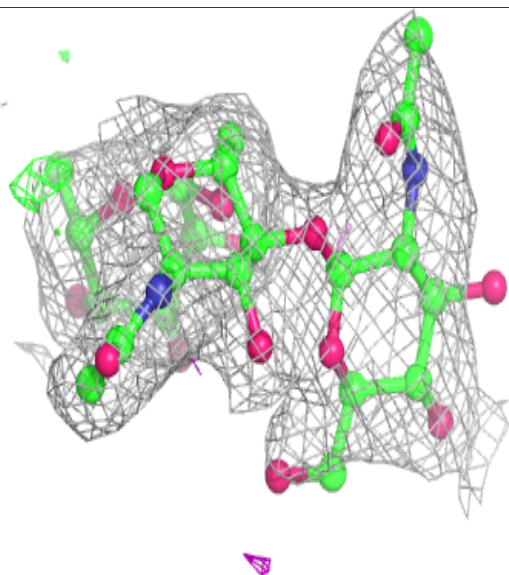
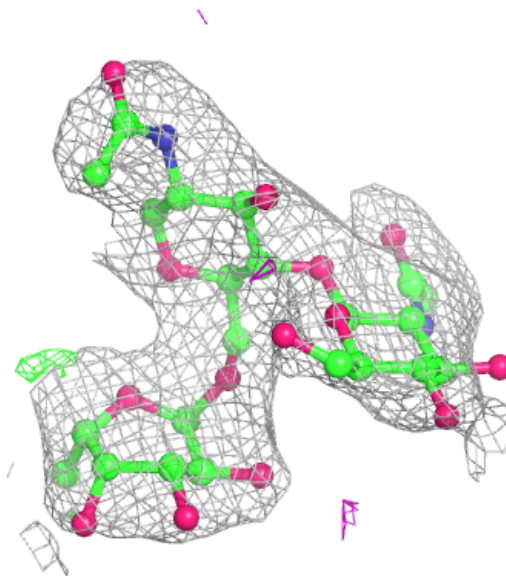
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





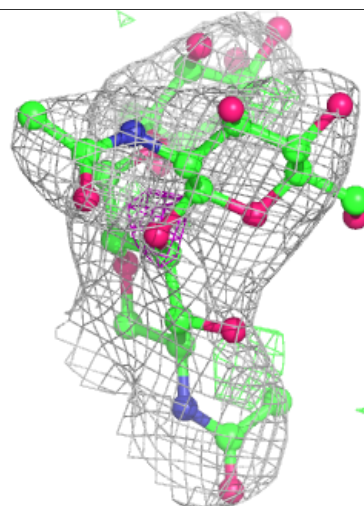
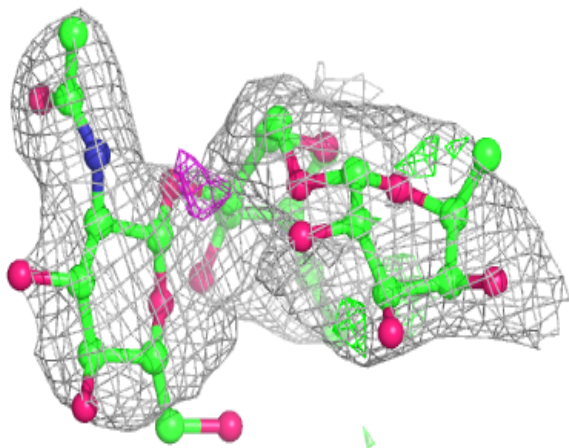
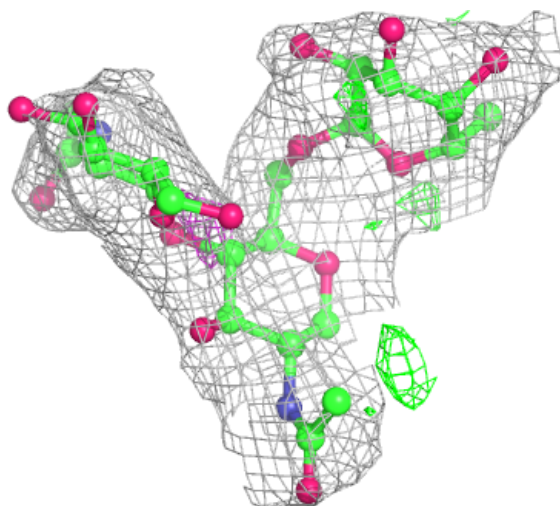
**Electron density around Chain O:**

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and green (positive)



**Electron density around Chain T:**

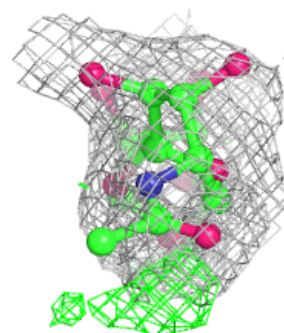
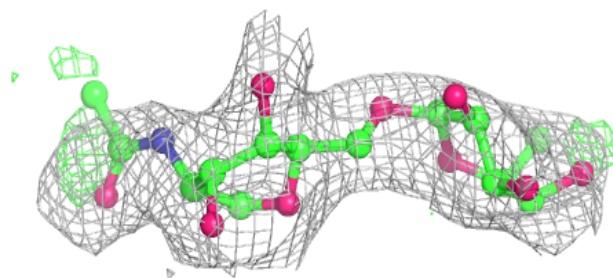
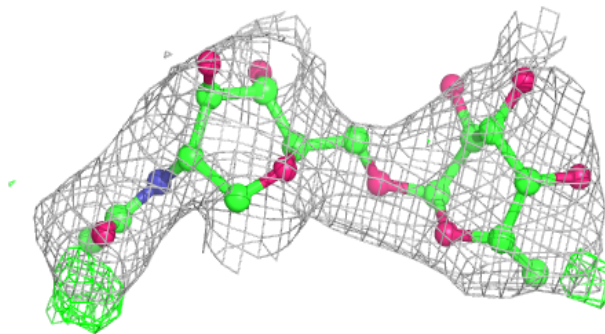
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and green (positive)



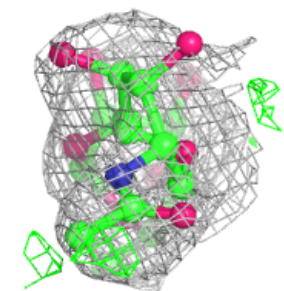
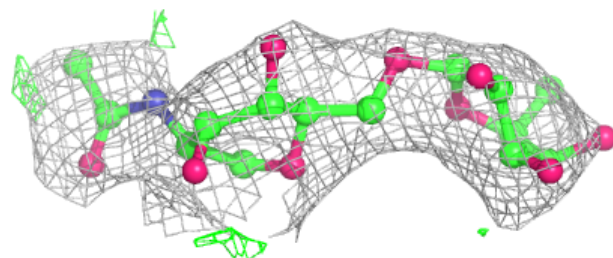
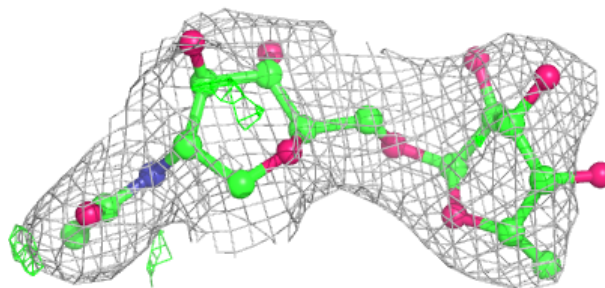


**Electron density around Chain F:**

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and green (positive)

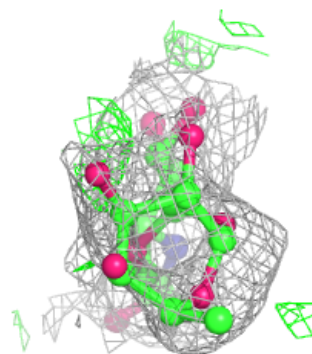
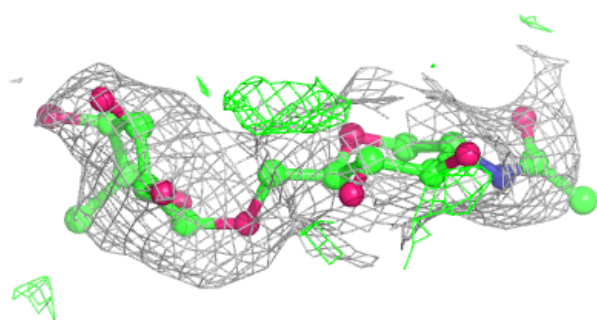
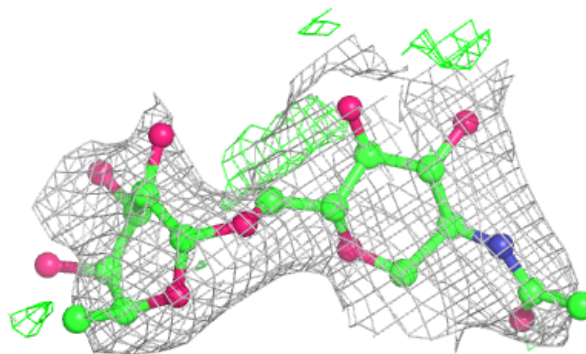
**Electron density around Chain K:**

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and green (positive)



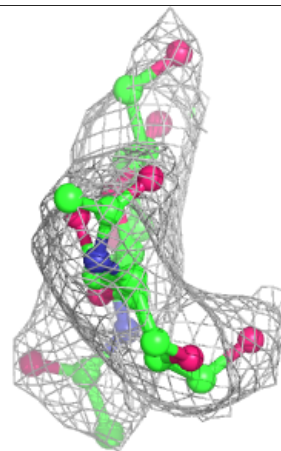
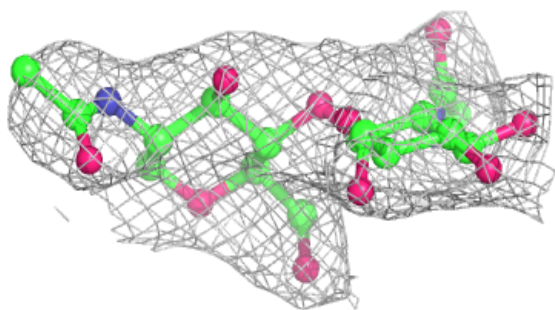
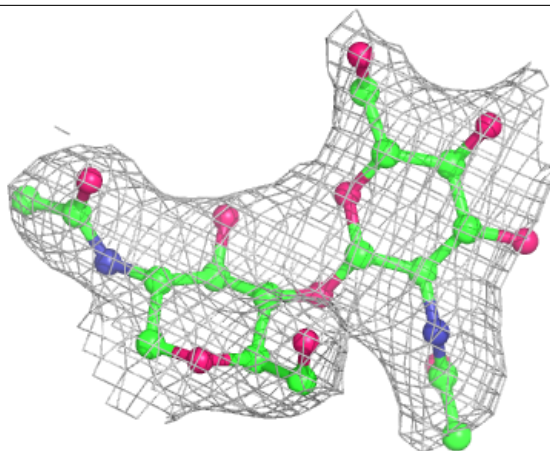
**Electron density around Chain U:**

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and green (positive)



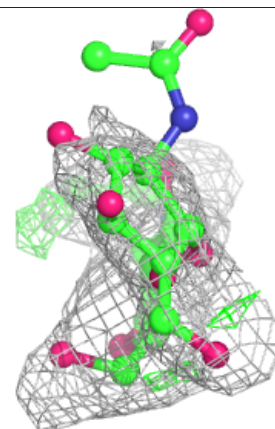
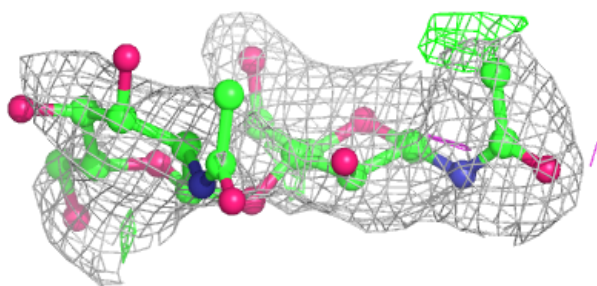
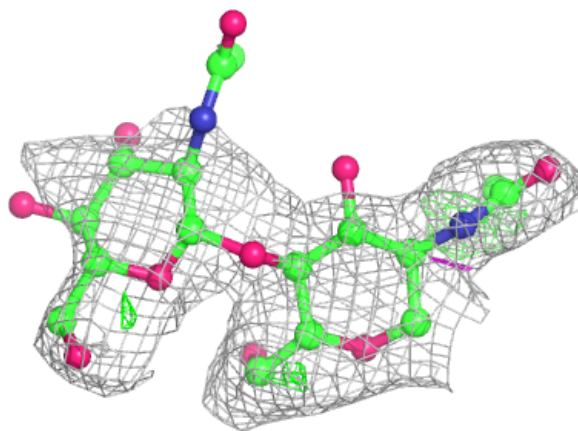
**Electron density around Chain G:**

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and green (positive)

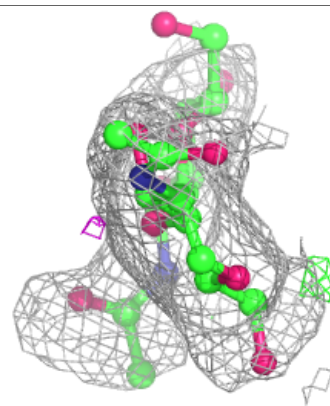
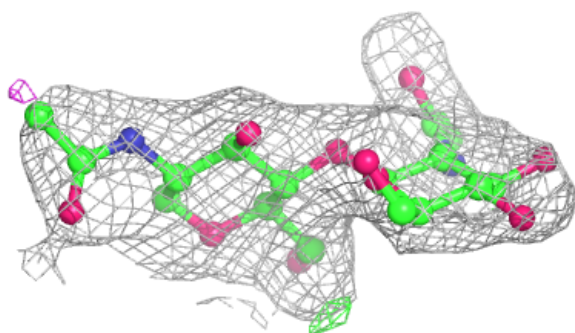
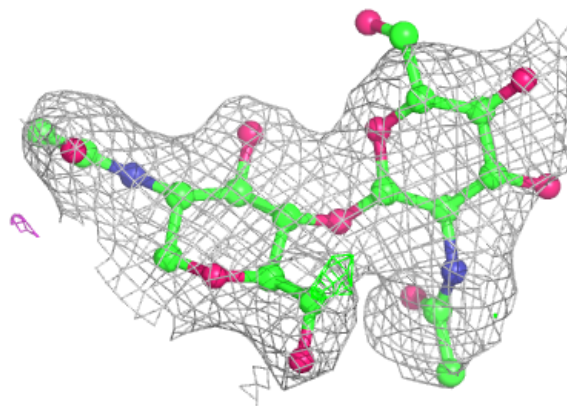


**Electron density around Chain H:**

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and green (positive)

**Electron density around Chain I:**

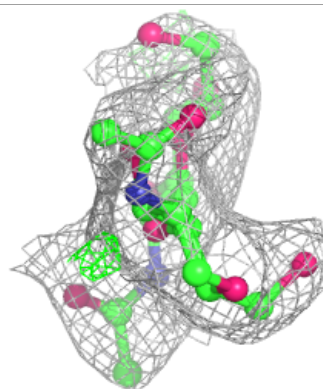
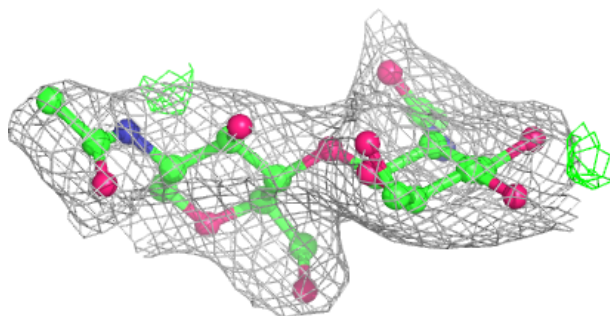
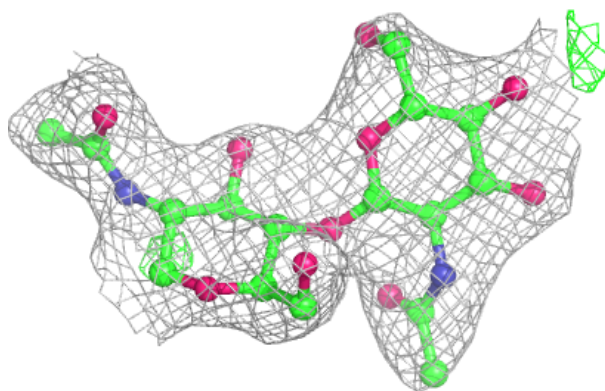
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and green (positive)



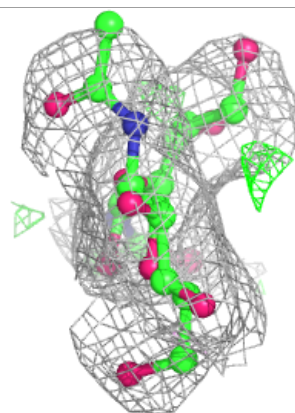
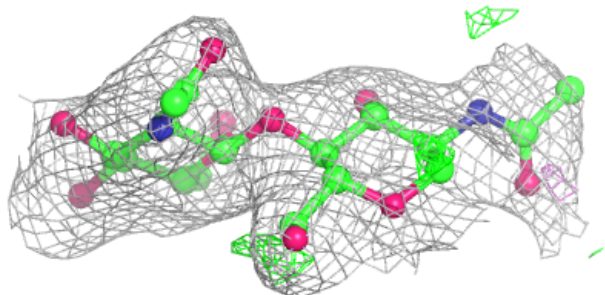
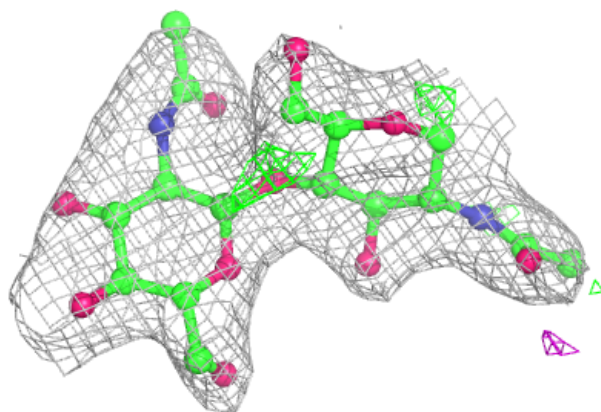


**Electron density around Chain L:**

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and green (positive)

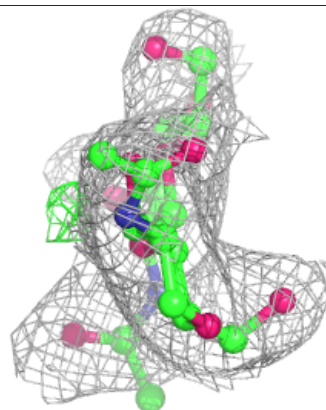
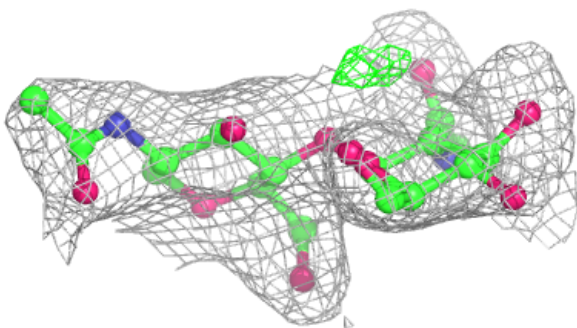
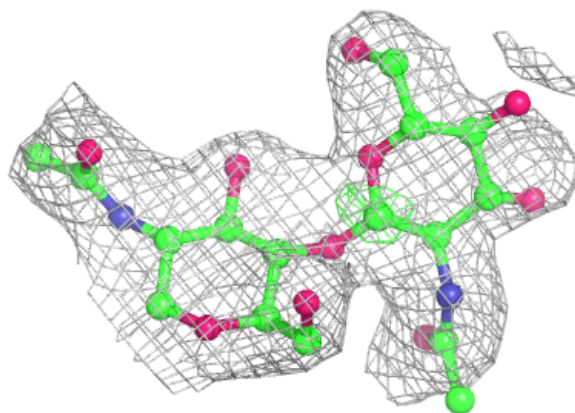
**Electron density around Chain N:**

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



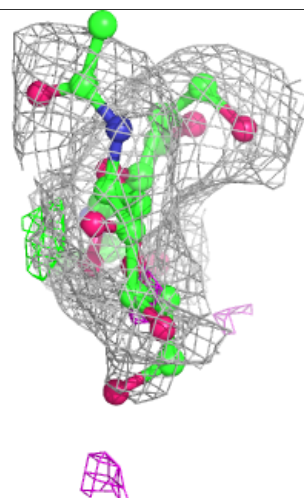
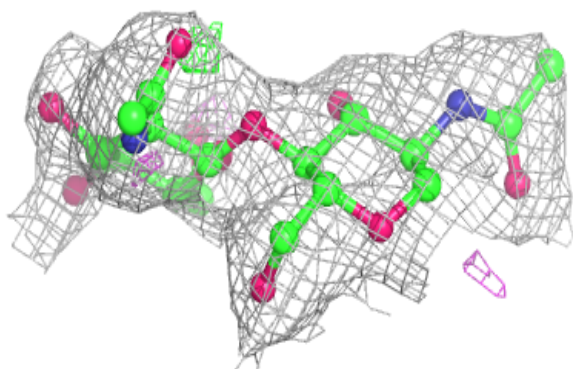
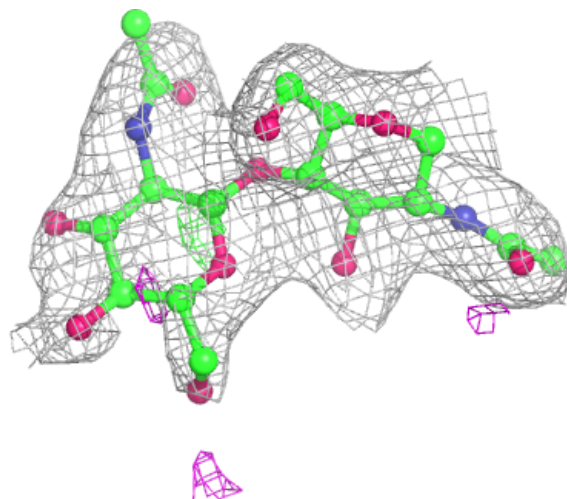
**Electron density around Chain Q:**

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



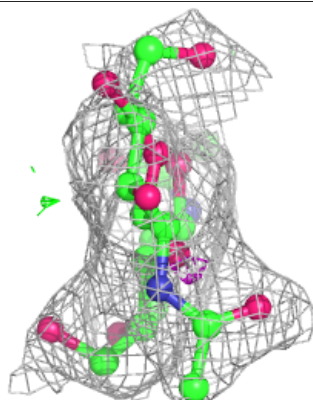
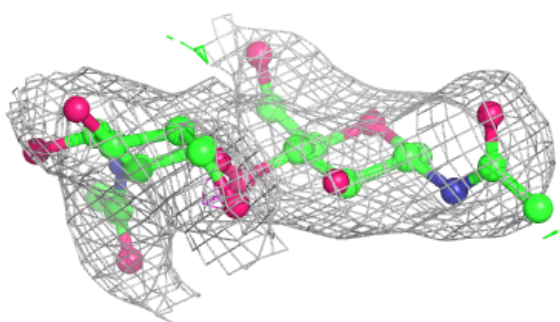
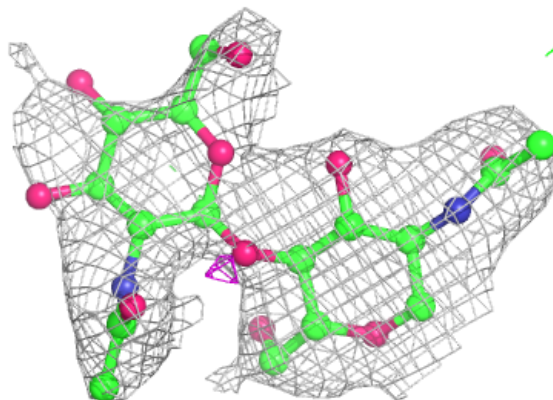
**Electron density around Chain S:**

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



**Electron density around Chain V:**

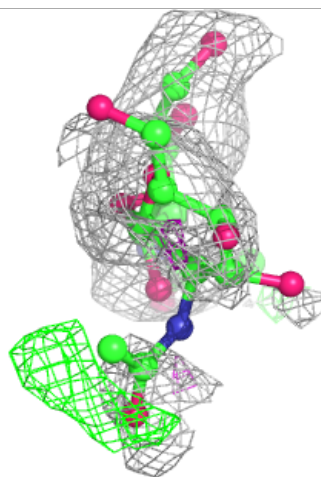
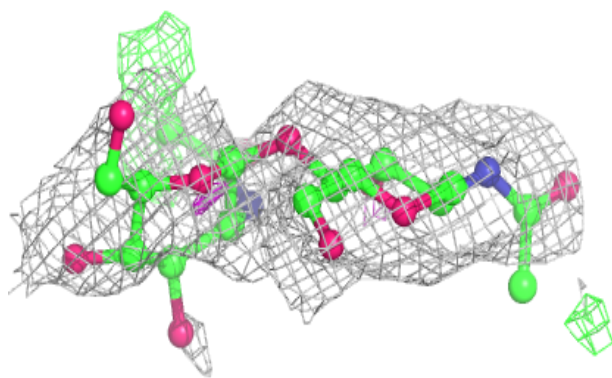
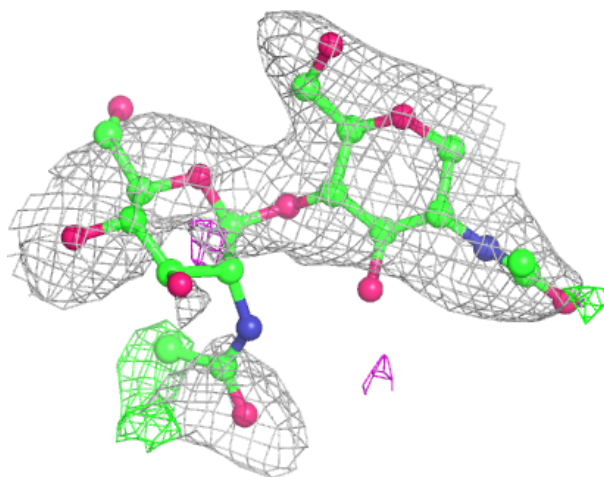
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





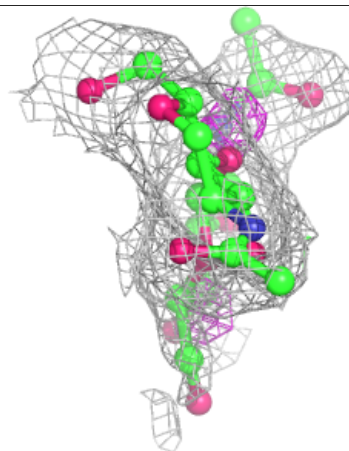
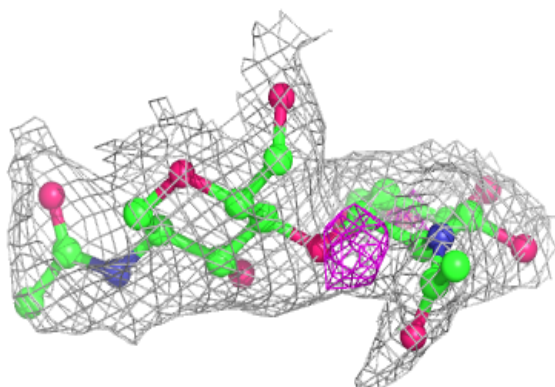
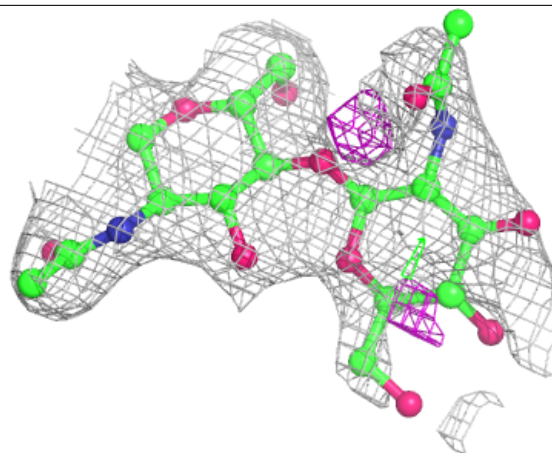
**Electron density around Chain W:**

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

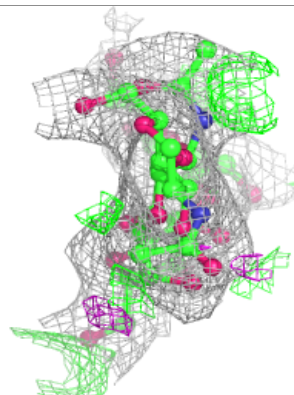
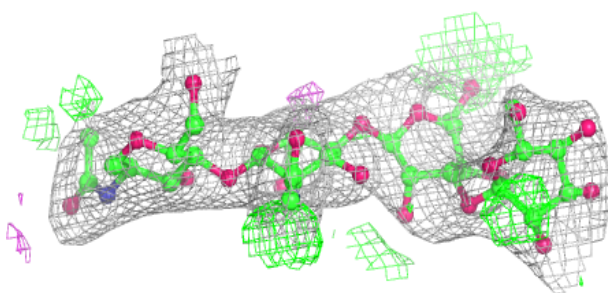
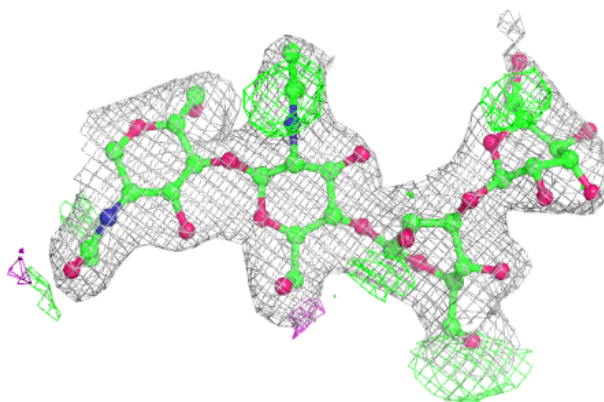


**Electron density around Chain X:**

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

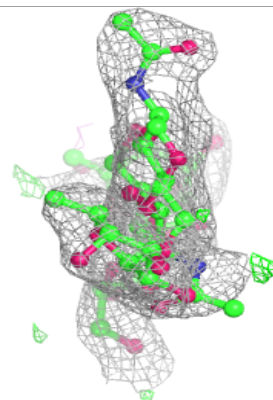
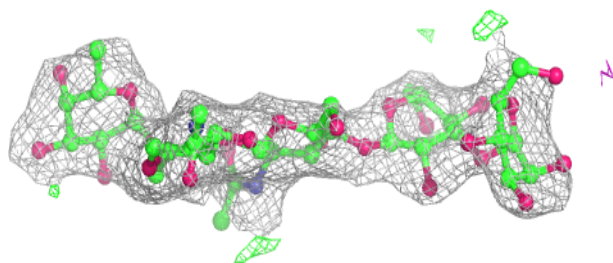
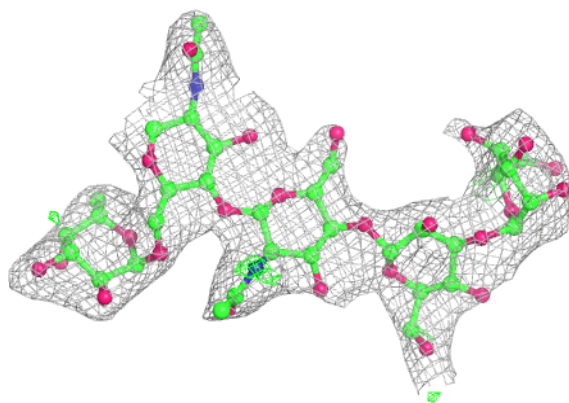
**Electron density around Chain M:**

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

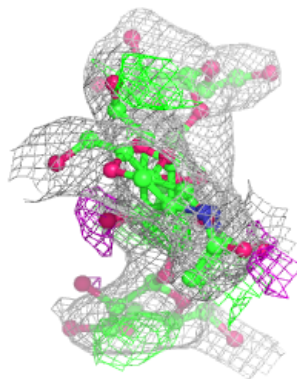
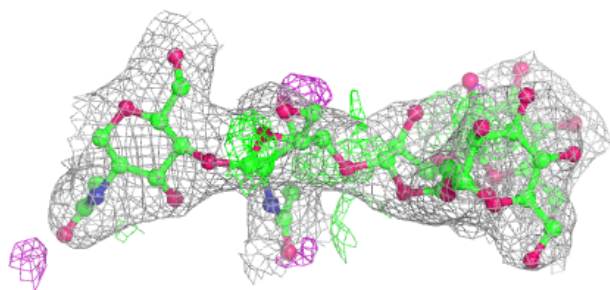
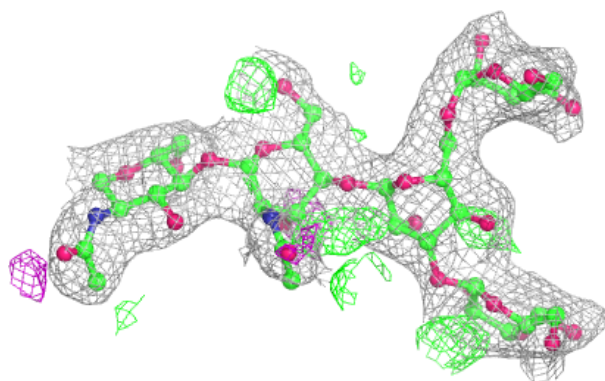


**Electron density around Chain P:**

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

**Electron density around Chain 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
10	NAG	D	504	14/15	0.71	0.17	50,61,71,76	0
9	KOJ	D	515	10/10	0.85	0.14	52,58,60,64	0
9	KOJ	B	516	10/10	0.88	0.13	29,37,42,45	0
9	KOJ	C	520	10/10	0.89	0.13	35,41,44,44	0
9	KOJ	A	514	10/10	0.93	0.10	32,38,45,46	0
8	ZN	A	515	1/1	0.97	0.10	95,95,95,95	0
8	ZN	D	513	1/1	0.98	0.04	50,50,50,50	0
8	ZN	A	512	1/1	0.98	0.03	40,40,40,40	0
8	ZN	D	514	1/1	0.99	0.04	39,39,39,39	0
8	ZN	B	514	1/1	0.99	0.04	40,40,40,40	0
8	ZN	B	515	1/1	0.99	0.03	27,27,27,27	0
8	ZN	C	518	1/1	0.99	0.05	37,37,37,37	0
8	ZN	C	519	1/1	0.99	0.07	39,39,39,39	0
8	ZN	A	513	1/1	0.99	0.04	28,28,28,28	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.