



wwPDB X-ray Structure Validation Summary Report ⓘ

Aug 7, 2020 – 04:30 PM BST

PDB ID : 3KQ4
Title : Structure of Intrinsic Factor-Cobalamin bound to its receptor Cubilin
Authors : Andersen, C.B.F.; Madsen, M.; Moestrup, S.K.; Andersen, G.R.
Deposited on : 2009-11-17
Resolution : 3.30 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

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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 : 2.13.1
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.13.1

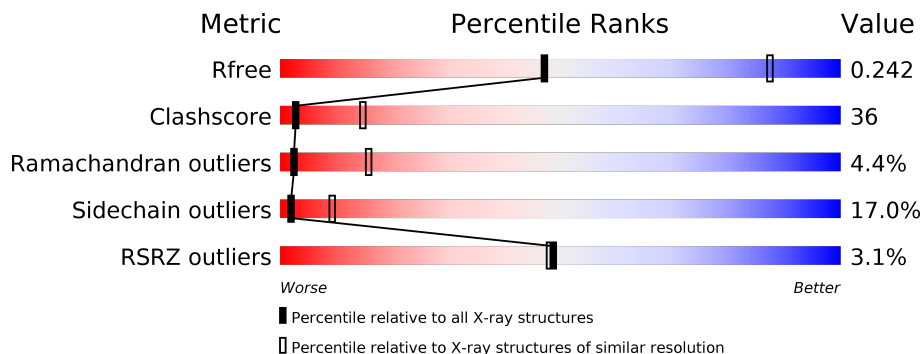
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.30 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.





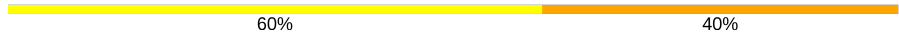

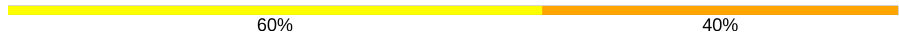




Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1149 (3.34-3.26)
Clashscore	141614	1205 (3.34-3.26)
Ramachandran outliers	138981	1183 (3.34-3.26)
Sidechain outliers	138945	1182 (3.34-3.26)
RSRZ outliers	127900	1115 (3.34-3.26)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	393	
1	C	393	
1	E	393	
2	B	457	
2	D	457	
2	F	457	

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Mol	Chain	Length	Quality of chain
3	G	5	
3	H	5	
3	J	5	
3	K	5	
3	M	5	
3	N	5	
4	I	2	
4	L	2	
4	O	2	

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
5	NAG	A	2001	X	-	X	-
5	NAG	B	2001	X	-	-	-
5	NAG	B	2008	X	-	-	-
5	NAG	B	2009	-	-	-	X
5	NAG	C	2001	X	-	X	-
5	NAG	D	2001	X	-	-	-
5	NAG	D	2008	X	-	-	-
5	NAG	D	2009	-	-	-	X
5	NAG	E	2001	X	-	X	-
5	NAG	F	2001	X	-	-	-
5	NAG	F	2008	X	-	-	-
6	B12	A	2007	X	-	X	-
6	B12	C	2007	X	-	X	-
6	B12	E	2007	X	-	X	-

2 Entry composition i

There are 7 unique types of molecules in this entry. The entry contains 20793 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 Gastric intrinsic factor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	385	2950	1870	488	573	19	3	0	0
1	C	385	2950	1870	488	573	19	3	0	0
1	E	385	2950	1870	488	573	19	3	0	0

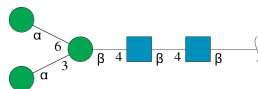
There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	91	HIS	GLN	SEE REMARK 999	UNP P27352
C	91	HIS	GLN	SEE REMARK 999	UNP P27352
E	91	HIS	GLN	SEE REMARK 999	UNP P27352

- Molecule 2 is a protein called Cubilin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	457	3638	2311	598	709	20	0	0	0
2	D	457	3638	2311	598	709	20	0	0	0
2	F	457	3638	2311	598	709	20	0	0	0

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



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	G	5	Total	C	N	O	0	0	0
			61	34	2	25			
3	H	5	Total	C	N	O	0	0	0
			61	34	2	25			
3	J	5	Total	C	N	O	0	0	0
			61	34	2	25			
3	K	5	Total	C	N	O	0	0	0
			61	34	2	25			
3	M	5	Total	C	N	O	0	0	0
			61	34	2	25			
3	N	5	Total	C	N	O	0	0	0
			61	34	2	25			

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

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆).



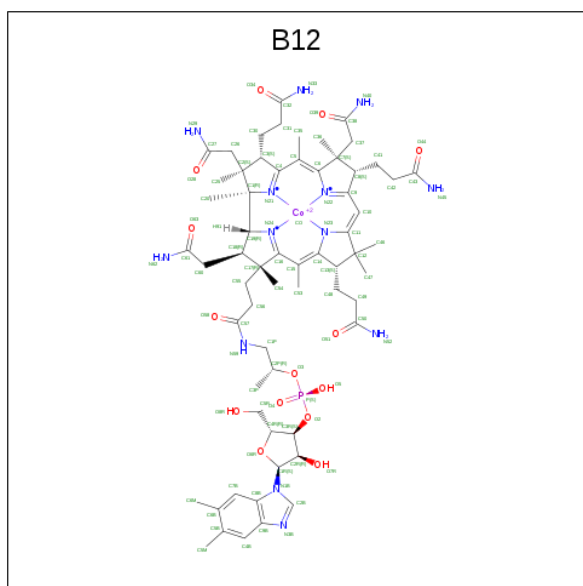
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
5	A	1	Total 14	8	1	5	0	0
5	B	1	Total 14	8	1	5	0	0
5	B	1	Total 14	8	1	5	0	0
5	B	1	Total 14	8	1	5	0	0
5	B	1	Total 14	8	1	5	0	0
5	B	1	Total 14	8	1	5	0	0
5	B	1	Total 14	8	1	5	0	0
5	B	1	Total 14	8	1	5	0	0
5	C	1	Total 14	8	1	5	0	0
5	D	1	Total 14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

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

- Molecule 6 is COBALAMIN (three-letter code: B12) (formula: $C_{62}H_{89}CoN_{13}O_{14}P$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
6	A	1	Total	C	Co	N	O	P	0	0
			91	62	1	13	14	1		
6	C	1	Total	C	Co	N	O	P	0	0
			91	62	1	13	14	1		
6	E	1	Total	C	Co	N	O	P	0	0
			91	62	1	13	14	1		

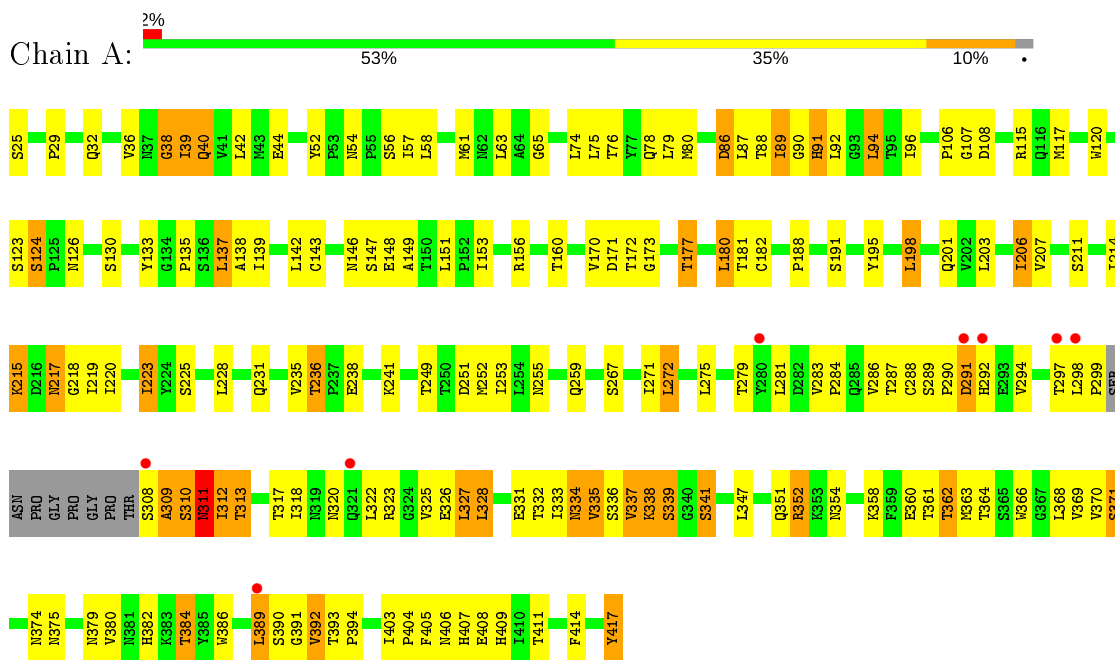
- Molecule 7 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	B	4	Total 4	Ca 4	0	0
7	D	4	Total 4	Ca 4	0	0
7	F	4	Total 4	Ca 4	0	0

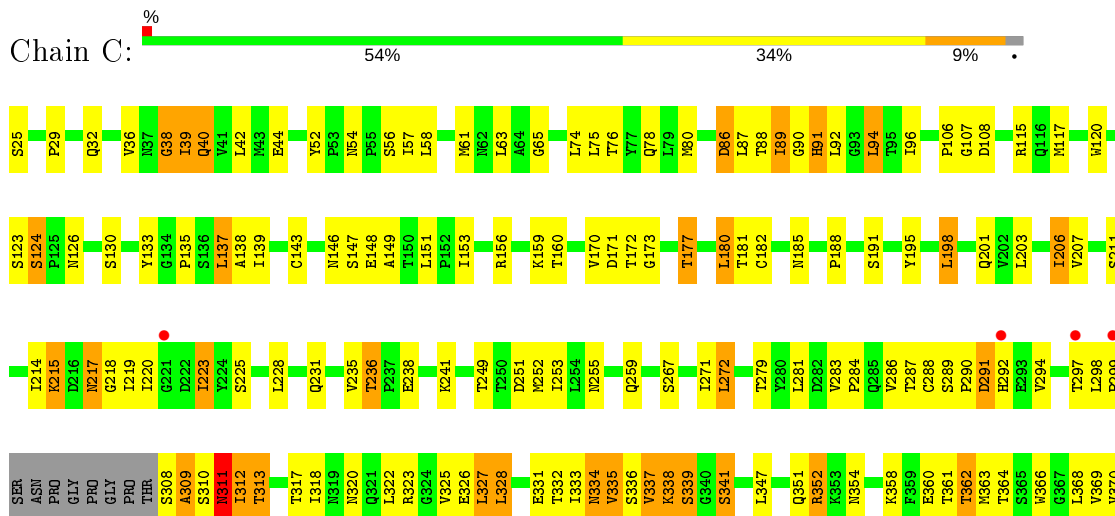
3 Residue-property plots [i](#)

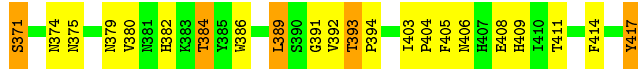
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density.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

• Molecule 1: Gastric intrinsic factor

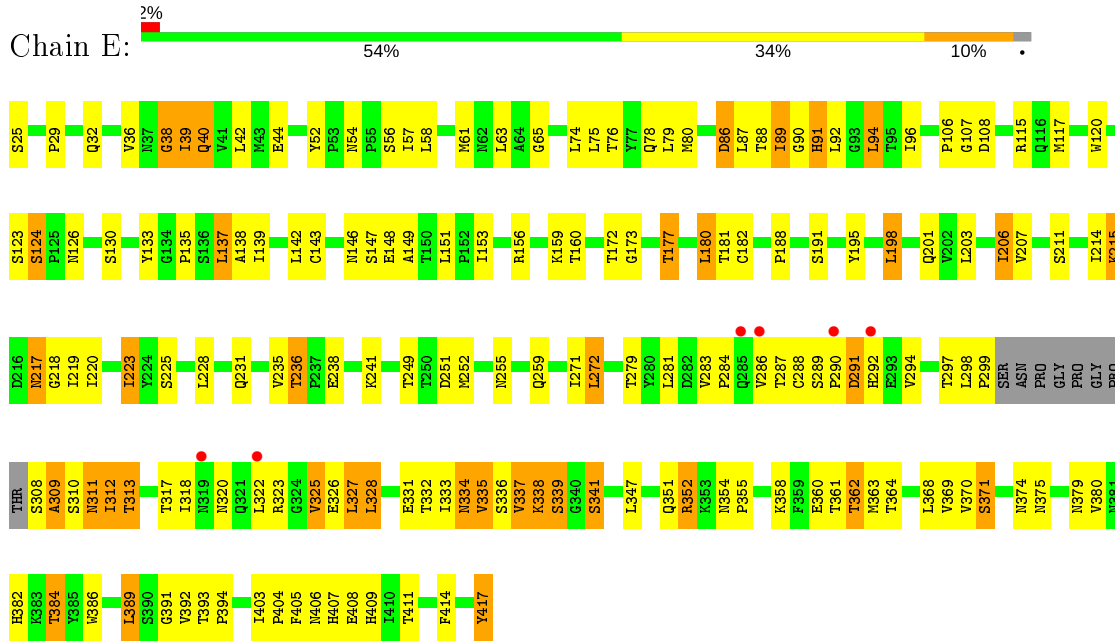


• Molecule 1: Gastric intrinsic factor

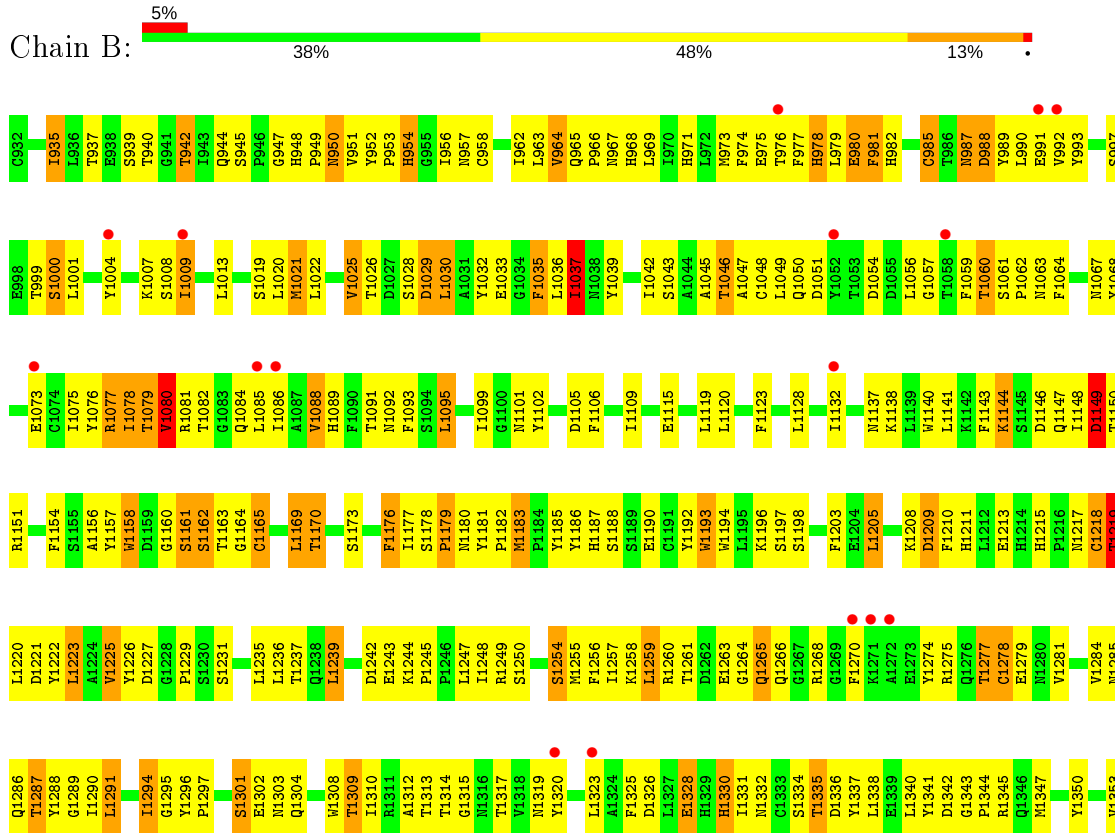


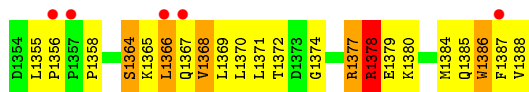


• Molecule 1: Gastric intrinsic factor

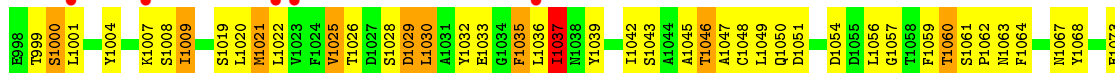


• Molecule 2: Cubilin

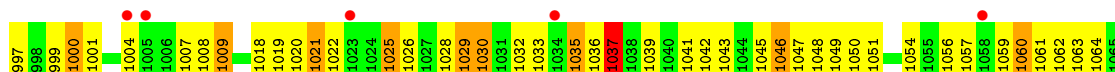


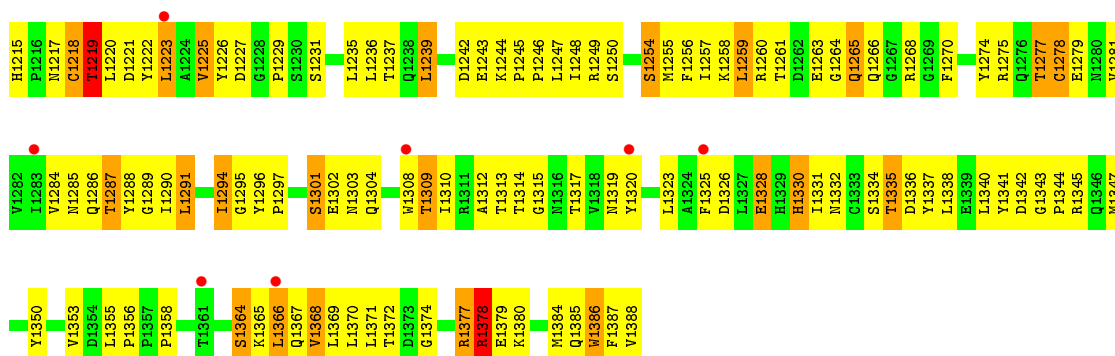


● Molecule 2: Cubilin



● Molecule 2: Cubilin





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

Chain G: 60% 40%



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

Chain H: 20% 80%



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

Chain J: 60% 40%



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

Chain K: 20% 80%



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

Chain M:  60% 40%

MAG1
MAG2
BGA3
MAN4
MAN5

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

Chain N:  20% 80%

MAG1
MAG2
BGA3
MAN4
MAN5

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

Chain I:  100%

MAG1
MAG2

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

Chain L:  100%

MAG1
MAG2

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

Chain O:  100%

MAG1
MAG2

4 Data and refinement statistics i

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	117.68Å 204.18Å 410.02Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.85 – 3.30 47.85 – 3.30	Depositor EDS
% Data completeness (in resolution range)	97.0 (47.85-3.30) 96.6 (47.85-3.30)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.71 (at 3.33Å)	Xtrriage
Refinement program	PHENIX (phenix.refine)	Depositor
R, R_{free}	0.211 , 0.242 0.207 , 0.242	Depositor DCC
R_{free} test set	1102 reflections (1.52%)	wwPDB-VP
Wilson B-factor (Å ²)	93.9	Xtrriage
Anisotropy	0.035	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 69.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	0.428 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l 0.437 for 1/2*h+1/2*k,3/2*h-1/2*k,-l	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	20793	wwPDB-VP
Average B, all atoms (Å ²)	104.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.96% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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: CA, BMA, B12, NAG, MAN

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.67	1/3007 (0.0%)	0.80	1/4090 (0.0%)
1	C	0.67	1/3007 (0.0%)	0.80	1/4090 (0.0%)
1	E	0.67	1/3007 (0.0%)	0.80	0/4090
2	B	0.55	0/3748	0.74	0/5110
2	D	0.55	0/3748	0.74	0/5110
2	F	0.55	0/3748	0.74	0/5110
All	All	0.60	3/20265 (0.0%)	0.77	2/27600 (0.0%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	360	GLU	CG-CD	5.96	1.60	1.51
1	A	360	GLU	CG-CD	5.94	1.60	1.51
1	C	360	GLU	CG-CD	5.92	1.60	1.51

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	311	ASN	CB-CA-C	5.42	121.24	110.40
1	A	311	ASN	CB-CA-C	5.12	120.65	110.40

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	2950	0	2961	150	0
1	C	2950	0	2961	149	0
1	E	2950	0	2961	147	0
2	B	3638	0	3373	308	0
2	D	3638	0	3373	305	0
2	F	3638	0	3373	309	0
3	G	61	0	52	3	0
3	H	61	0	52	5	0
3	J	61	0	52	3	0
3	K	61	0	52	5	0
3	M	61	0	52	4	0
3	N	61	0	52	5	0
4	I	28	0	25	3	0
4	L	28	0	25	3	0
4	O	28	0	25	3	0
5	A	14	0	13	7	0
5	B	84	0	78	7	0
5	C	14	0	13	8	0
5	D	84	0	78	7	0
5	E	14	0	13	7	0
5	F	84	0	78	8	0
6	A	91	0	87	29	0
6	C	91	0	87	26	0
6	E	91	0	87	25	0
7	B	4	0	0	0	0
7	D	4	0	0	0	0
7	F	4	0	0	0	0
All	All	20793	0	19923	1450	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 36.

The worst 5 of 1450 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:311:ASN:HB2	1:C:337:VAL:HA	1.19	1.18
1:A:311:ASN:HB2	1:A:337:VAL:HA	1.19	1.11
1:E:223:ILE:HD12	1:E:223:ILE:H	1.10	1.10
1:E:311:ASN:HB2	1:E:337:VAL:HA	1.19	1.08
1:A:223:ILE:H	1:A:223:ILE:HD12	1.10	1.07

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	381/393 (97%)	334 (88%)	37 (10%)	10 (3%)	5	27
1	C	381/393 (97%)	334 (88%)	37 (10%)	10 (3%)	5	27
1	E	381/393 (97%)	334 (88%)	37 (10%)	10 (3%)	5	27
2	B	455/457 (100%)	376 (83%)	52 (11%)	27 (6%)	1	10
2	D	455/457 (100%)	376 (83%)	52 (11%)	27 (6%)	1	10
2	F	455/457 (100%)	376 (83%)	52 (11%)	27 (6%)	1	10
All	All	2508/2550 (98%)	2130 (85%)	267 (11%)	111 (4%)	2	16

5 of 111 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	107	GLY
1	A	309	ALA
2	B	1105	ASP
2	B	1162	SER
2	B	1219	THR

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	337/343 (98%)	283 (84%)	54 (16%)	2	11

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	C	337/343 (98%)	283 (84%)	54 (16%)	2	11
1	E	337/343 (98%)	282 (84%)	55 (16%)	2	10
2	B	406/406 (100%)	334 (82%)	72 (18%)	2	8
2	D	406/406 (100%)	334 (82%)	72 (18%)	2	8
2	F	406/406 (100%)	335 (82%)	71 (18%)	2	8
All	All	2229/2247 (99%)	1851 (83%)	378 (17%)	2	9

5 of 378 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	352	ARG
2	D	1091	THR
2	F	1193	TRP
1	C	384	THR
2	D	980	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 33 such sidechains are listed below:

Mol	Chain	Res	Type
2	D	965	GLN
2	D	1232	ASN
2	F	1265	GLN
2	D	967	ASN
2	D	978	HIS

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](#)

36 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	NAG	G	1	1,3	14,14,15	0.78	0	17,19,21	2.64	5 (29%)
3	NAG	G	2	3	14,14,15	0.98	1 (7%)	17,19,21	2.66	10 (58%)
3	BMA	G	3	3	11,11,12	0.85	0	15,15,17	1.31	2 (13%)
3	MAN	G	4	3	11,11,12	1.30	2 (18%)	15,15,17	2.33	8 (53%)
3	MAN	G	5	3	11,11,12	1.32	2 (18%)	15,15,17	2.20	6 (40%)
3	NAG	H	1	3,2	14,14,15	0.76	0	17,19,21	3.28	10 (58%)
3	NAG	H	2	3	14,14,15	0.37	0	17,19,21	1.23	2 (11%)
3	BMA	H	3	3	11,11,12	0.62	0	15,15,17	2.37	4 (26%)
3	MAN	H	4	3	11,11,12	1.24	2 (18%)	15,15,17	3.22	11 (73%)
3	MAN	H	5	3	11,11,12	1.16	1 (9%)	15,15,17	1.96	4 (26%)
4	NAG	I	1	2,4	14,14,15	0.57	0	17,19,21	2.09	3 (17%)
4	NAG	I	2	4	14,14,15	0.95	1 (7%)	17,19,21	1.66	3 (17%)
3	NAG	J	1	1,3	14,14,15	0.79	0	17,19,21	2.64	5 (29%)
3	NAG	J	2	3	14,14,15	0.98	1 (7%)	17,19,21	2.66	10 (58%)
3	BMA	J	3	3	11,11,12	0.84	0	15,15,17	1.31	2 (13%)
3	MAN	J	4	3	11,11,12	1.30	2 (18%)	15,15,17	2.32	8 (53%)
3	MAN	J	5	3	11,11,12	1.33	2 (18%)	15,15,17	2.19	6 (40%)
3	NAG	K	1	3,2	14,14,15	0.76	0	17,19,21	3.28	10 (58%)
3	NAG	K	2	3	14,14,15	0.37	0	17,19,21	1.23	2 (11%)
3	BMA	K	3	3	11,11,12	0.62	0	15,15,17	2.37	4 (26%)
3	MAN	K	4	3	11,11,12	1.24	2 (18%)	15,15,17	3.22	11 (73%)
3	MAN	K	5	3	11,11,12	1.16	1 (9%)	15,15,17	1.95	4 (26%)
4	NAG	L	1	2,4	14,14,15	0.57	0	17,19,21	2.10	3 (17%)
4	NAG	L	2	4	14,14,15	0.95	1 (7%)	17,19,21	1.66	3 (17%)
3	NAG	M	1	1,3	14,14,15	0.78	0	17,19,21	2.64	5 (29%)
3	NAG	M	2	3	14,14,15	0.97	1 (7%)	17,19,21	2.65	10 (58%)
3	BMA	M	3	3	11,11,12	0.85	0	15,15,17	1.31	2 (13%)
3	MAN	M	4	3	11,11,12	1.30	2 (18%)	15,15,17	2.33	8 (53%)
3	MAN	M	5	3	11,11,12	1.32	2 (18%)	15,15,17	2.20	6 (40%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	NAG	N	1	3,2	14,14,15	0.76	0	17,19,21	3.28	10 (58%)
3	NAG	N	2	3	14,14,15	0.36	0	17,19,21	1.23	2 (11%)
3	BMA	N	3	3	11,11,12	0.62	0	15,15,17	2.38	4 (26%)
3	MAN	N	4	3	11,11,12	1.24	2 (18%)	15,15,17	3.22	11 (73%)
3	MAN	N	5	3	11,11,12	1.17	1 (9%)	15,15,17	1.95	4 (26%)
4	NAG	O	1	2,4	14,14,15	0.58	0	17,19,21	2.09	3 (17%)
4	NAG	O	2	4	14,14,15	0.95	1 (7%)	17,19,21	1.66	3 (17%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	G	1	1,3	-	2/6/23/26	0/1/1/1
3	NAG	G	2	3	-	4/6/23/26	0/1/1/1
3	BMA	G	3	3	-	2/2/19/22	0/1/1/1
3	MAN	G	4	3	-	0/2/19/22	0/1/1/1
3	MAN	G	5	3	-	2/2/19/22	0/1/1/1
3	NAG	H	1	3,2	-	1/6/23/26	0/1/1/1
3	NAG	H	2	3	-	4/6/23/26	0/1/1/1
3	BMA	H	3	3	-	0/2/19/22	0/1/1/1
3	MAN	H	4	3	-	1/2/19/22	0/1/1/1
3	MAN	H	5	3	-	1/2/19/22	0/1/1/1
4	NAG	I	1	2,4	-	2/6/23/26	0/1/1/1
4	NAG	I	2	4	-	2/6/23/26	0/1/1/1
3	NAG	J	1	1,3	-	2/6/23/26	0/1/1/1
3	NAG	J	2	3	-	4/6/23/26	0/1/1/1
3	BMA	J	3	3	-	2/2/19/22	0/1/1/1
3	MAN	J	4	3	-	0/2/19/22	0/1/1/1
3	MAN	J	5	3	-	2/2/19/22	0/1/1/1
3	NAG	K	1	3,2	-	1/6/23/26	0/1/1/1
3	NAG	K	2	3	-	4/6/23/26	0/1/1/1
3	BMA	K	3	3	-	0/2/19/22	0/1/1/1
3	MAN	K	4	3	-	1/2/19/22	0/1/1/1
3	MAN	K	5	3	-	1/2/19/22	0/1/1/1
4	NAG	L	1	2,4	-	2/6/23/26	0/1/1/1
4	NAG	L	2	4	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	M	1	1,3	-	2/6/23/26	0/1/1/1
3	NAG	M	2	3	-	4/6/23/26	0/1/1/1
3	BMA	M	3	3	-	2/2/19/22	0/1/1/1
3	MAN	M	4	3	-	0/2/19/22	0/1/1/1
3	MAN	M	5	3	-	2/2/19/22	0/1/1/1
3	NAG	N	1	3,2	-	1/6/23/26	0/1/1/1
3	NAG	N	2	3	-	4/6/23/26	0/1/1/1
3	BMA	N	3	3	-	0/2/19/22	0/1/1/1
3	MAN	N	4	3	-	1/2/19/22	0/1/1/1
3	MAN	N	5	3	-	1/2/19/22	0/1/1/1
4	NAG	O	1	2,4	-	2/6/23/26	0/1/1/1
4	NAG	O	2	4	-	2/6/23/26	0/1/1/1

The worst 5 of 27 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	J	5	MAN	C1-C2	3.00	1.59	1.52
3	G	5	MAN	C1-C2	2.99	1.59	1.52
3	M	5	MAN	C1-C2	2.97	1.59	1.52
3	J	2	NAG	C1-C2	2.84	1.56	1.52
3	G	2	NAG	C1-C2	2.83	1.56	1.52

The worst 5 of 204 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	K	1	NAG	C1-O5-C5	8.60	123.84	112.19
3	H	1	NAG	C1-O5-C5	8.59	123.83	112.19
3	N	1	NAG	C1-O5-C5	8.59	123.83	112.19
3	J	1	NAG	C1-O5-C5	6.98	121.65	112.19
3	G	1	NAG	C1-O5-C5	6.98	121.65	112.19

There are no chirality outliers.

5 of 63 torsion outliers are listed below:

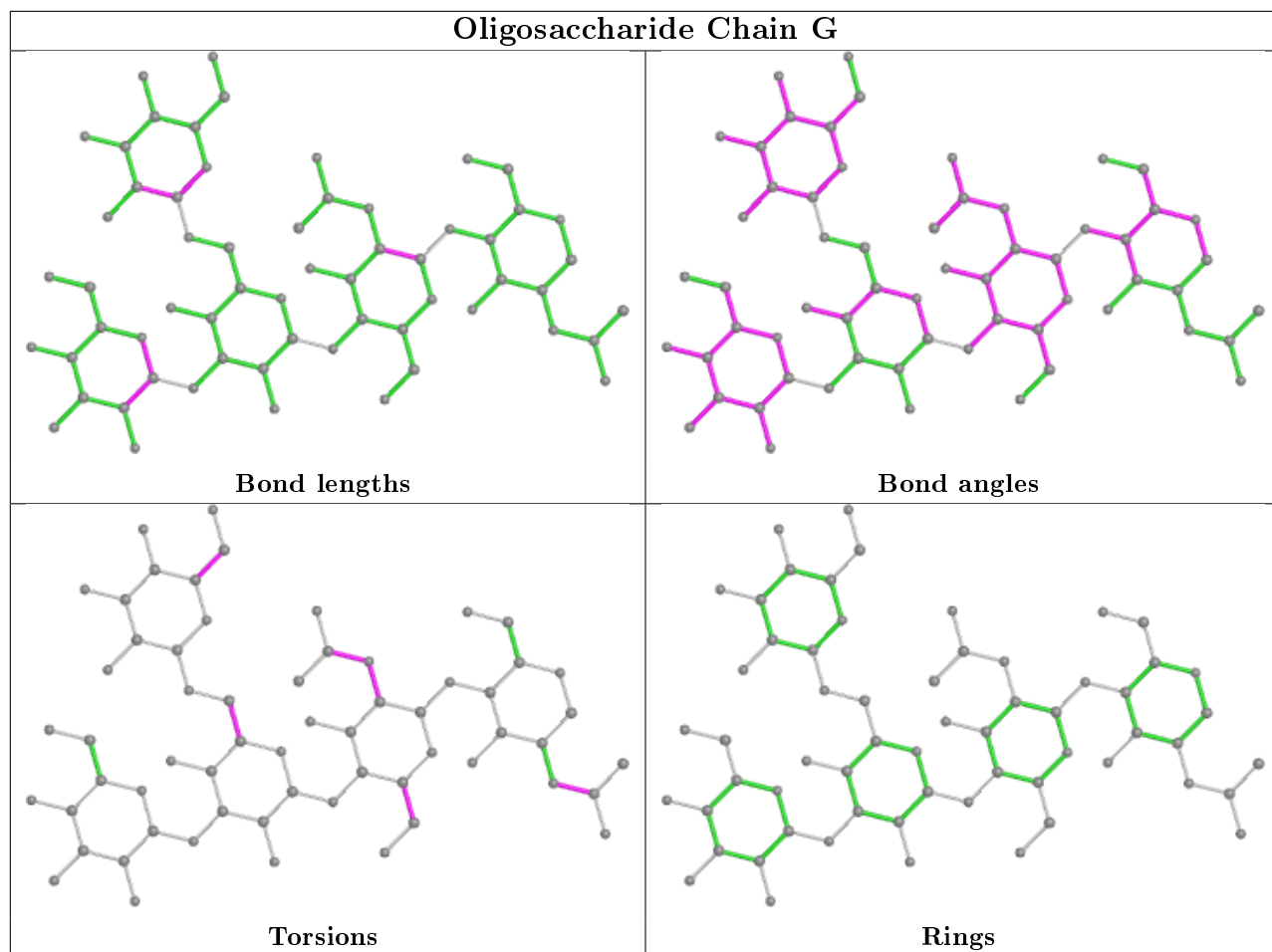
Mol	Chain	Res	Type	Atoms
4	L	1	NAG	C8-C7-N2-C2
4	L	1	NAG	O7-C7-N2-C2
3	G	2	NAG	C1-C2-N2-C7
3	G	2	NAG	C8-C7-N2-C2
3	G	2	NAG	O7-C7-N2-C2

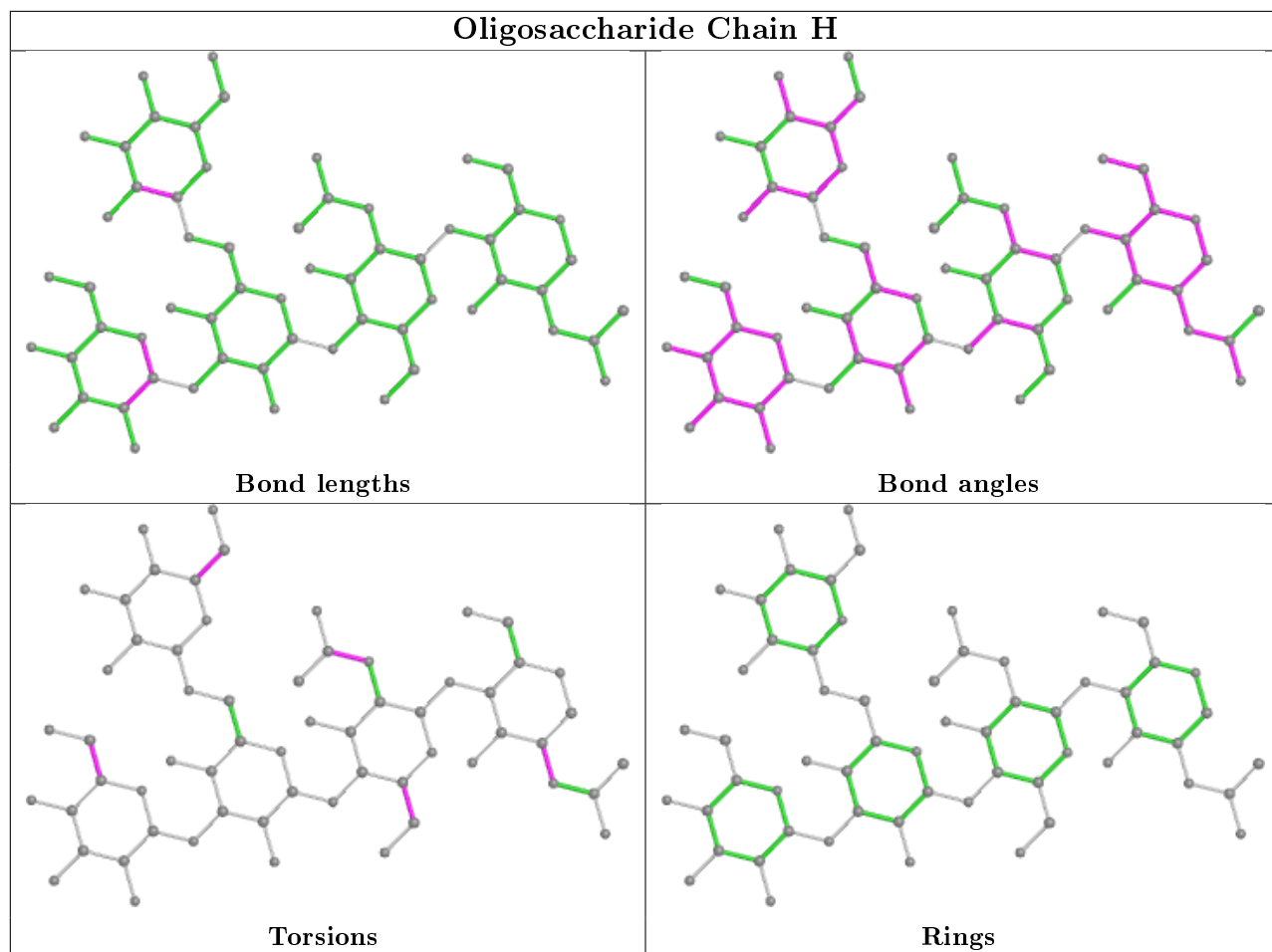
There are no ring outliers.

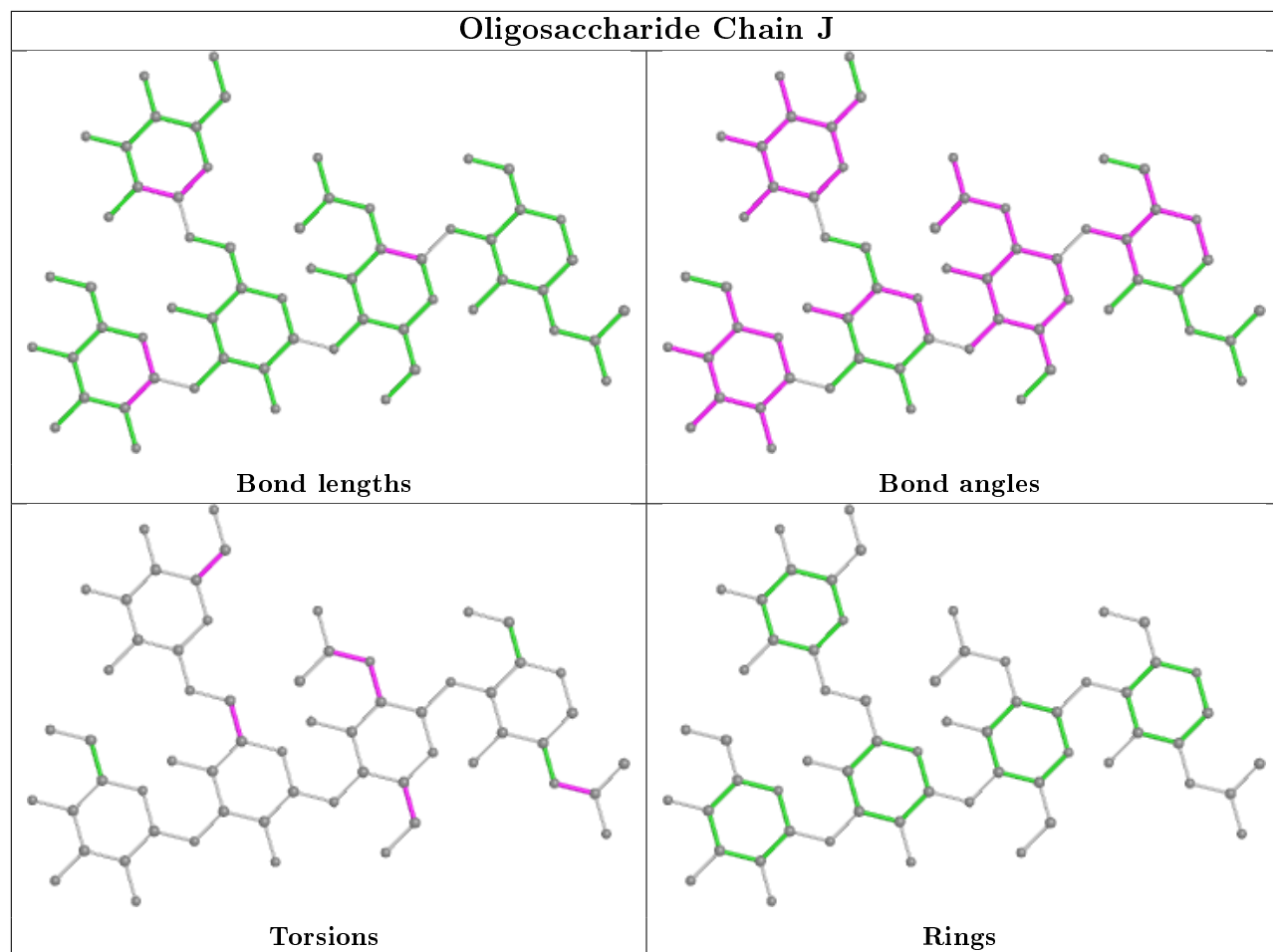
24 monomers are involved in 34 short contacts:

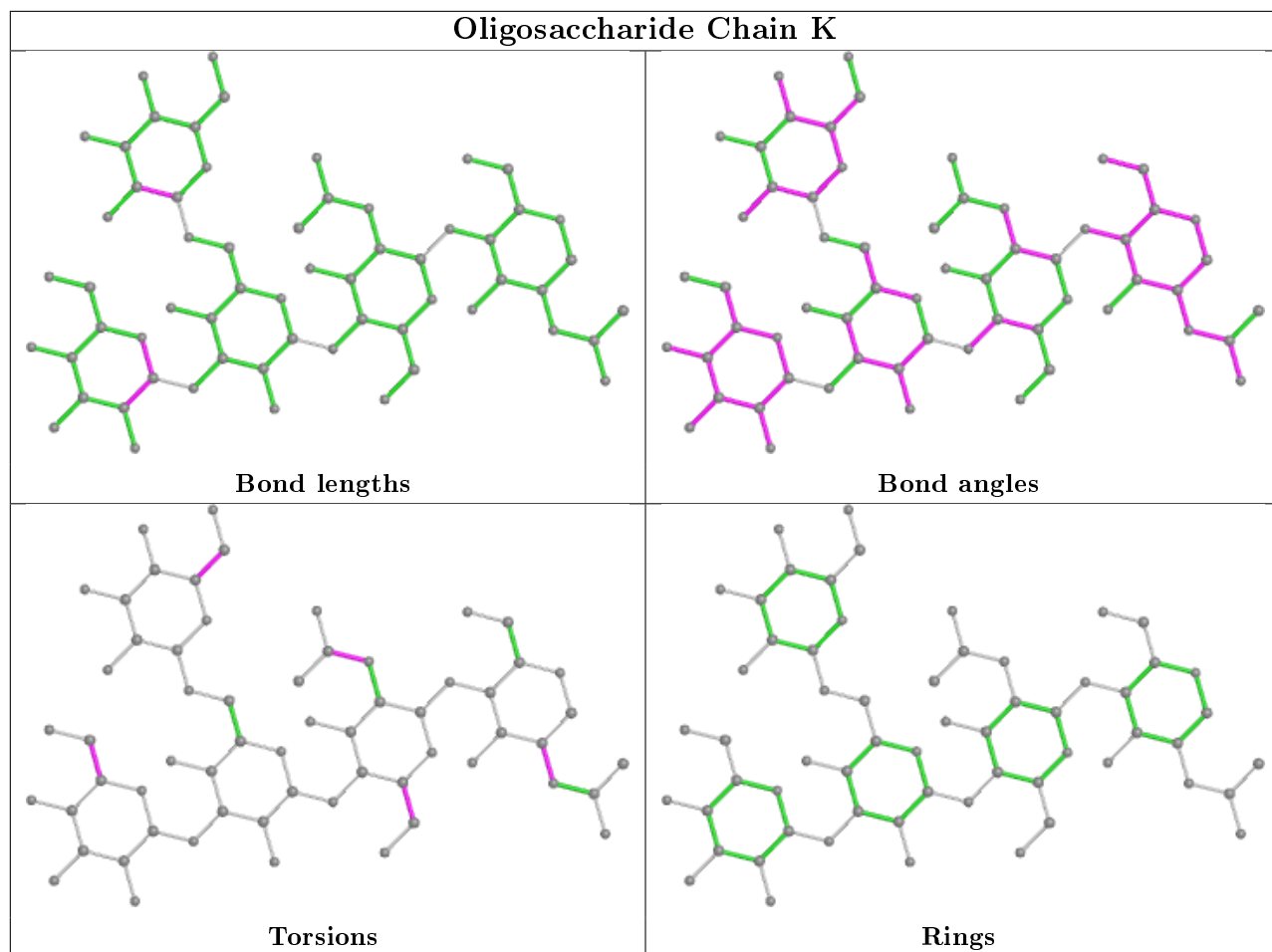
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	K	3	BMA	2	0
4	L	1	NAG	3	0
3	N	3	BMA	2	0
3	K	5	MAN	3	0
4	I	2	NAG	2	0
4	O	2	NAG	2	0
4	I	1	NAG	3	0
3	K	1	NAG	2	0
3	H	3	BMA	2	0
3	G	5	MAN	3	0
3	J	5	MAN	3	0
3	H	5	MAN	3	0
3	K	2	NAG	1	0
4	O	1	NAG	3	0
3	H	1	NAG	2	0
4	L	2	NAG	2	0
3	N	1	NAG	2	0
3	M	5	MAN	4	0
3	J	3	BMA	3	0
3	M	3	BMA	4	0
3	H	2	NAG	1	0
3	N	5	MAN	3	0
3	G	3	BMA	3	0
3	N	2	NAG	1	0

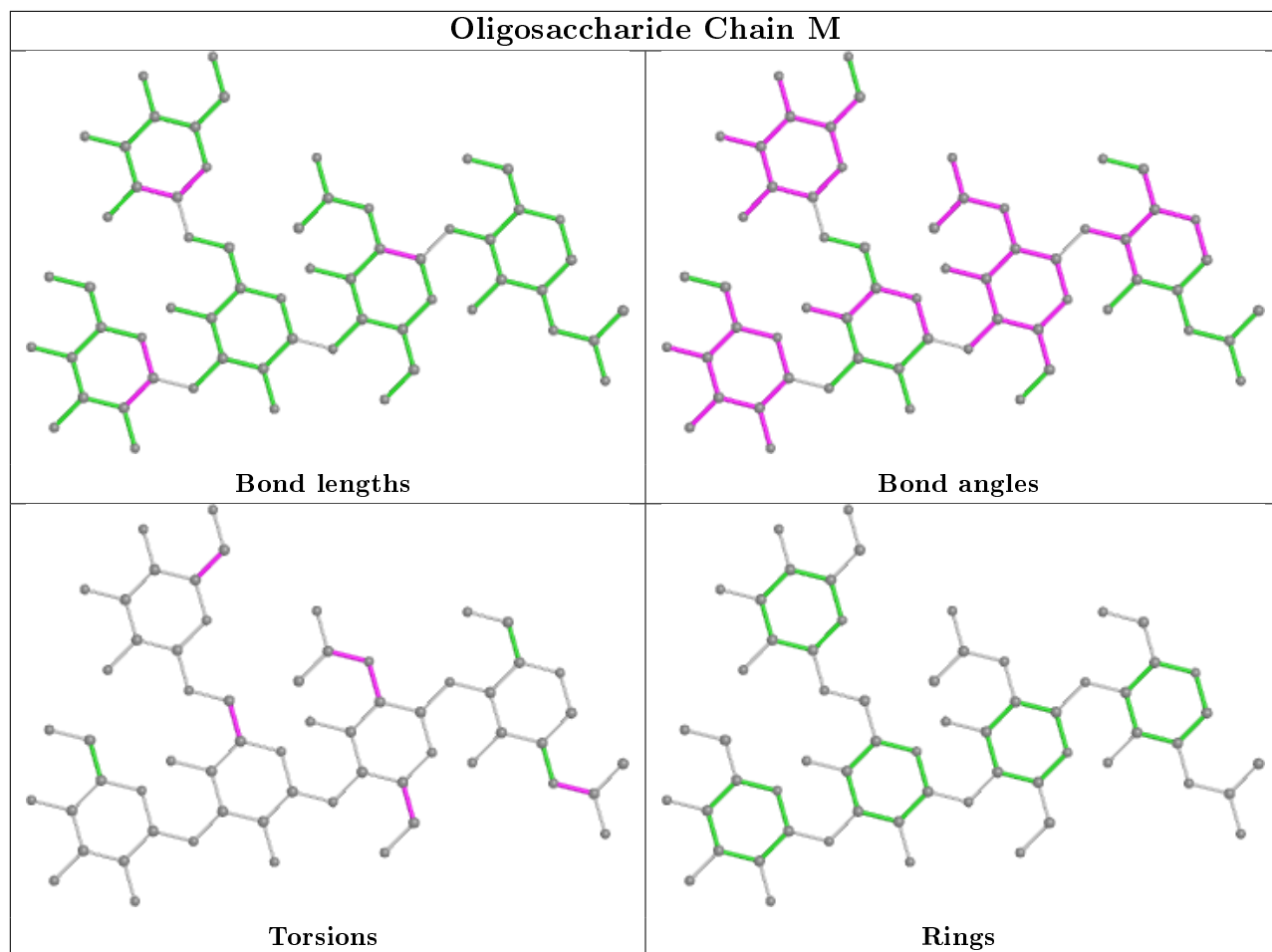
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

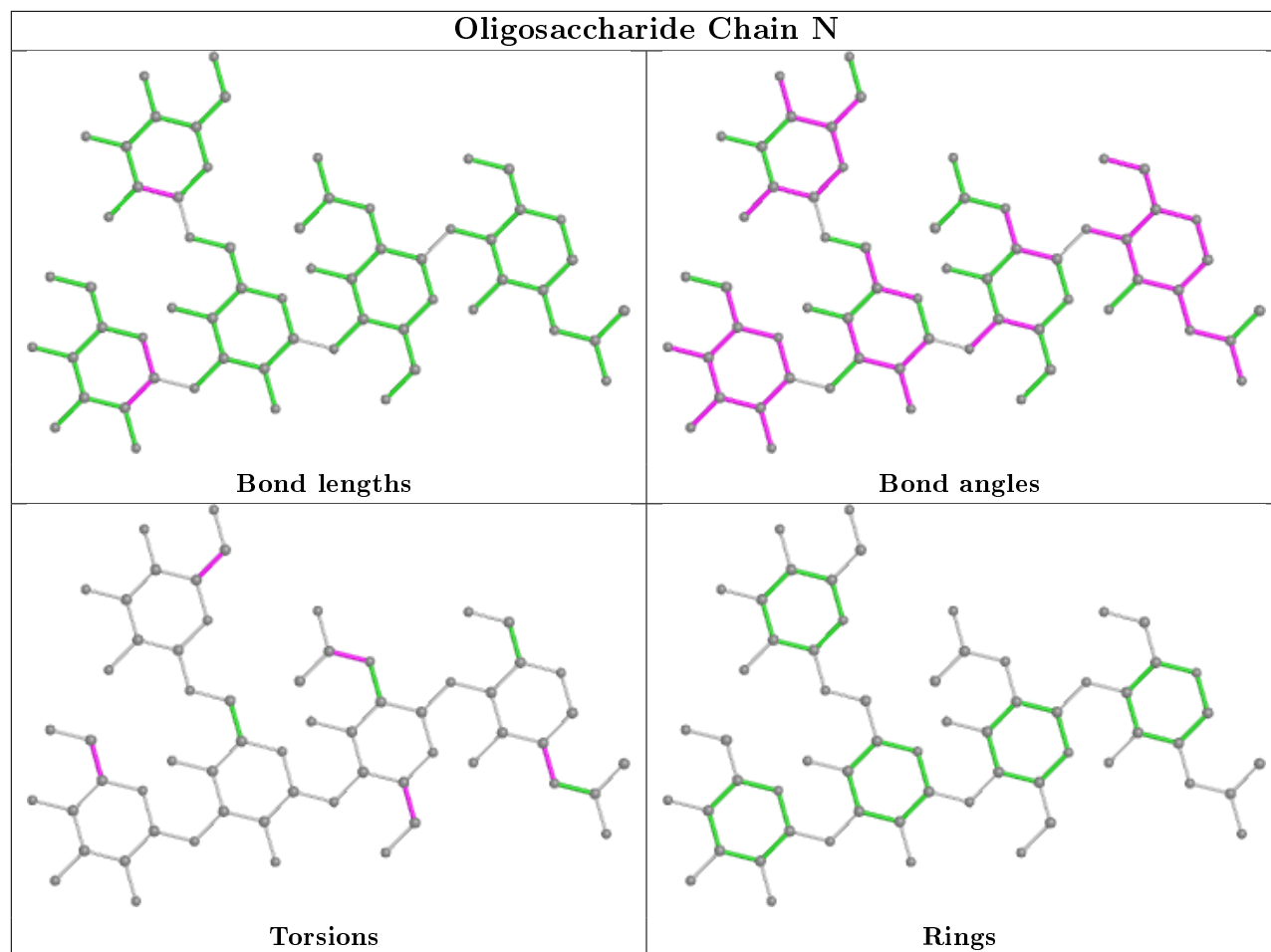


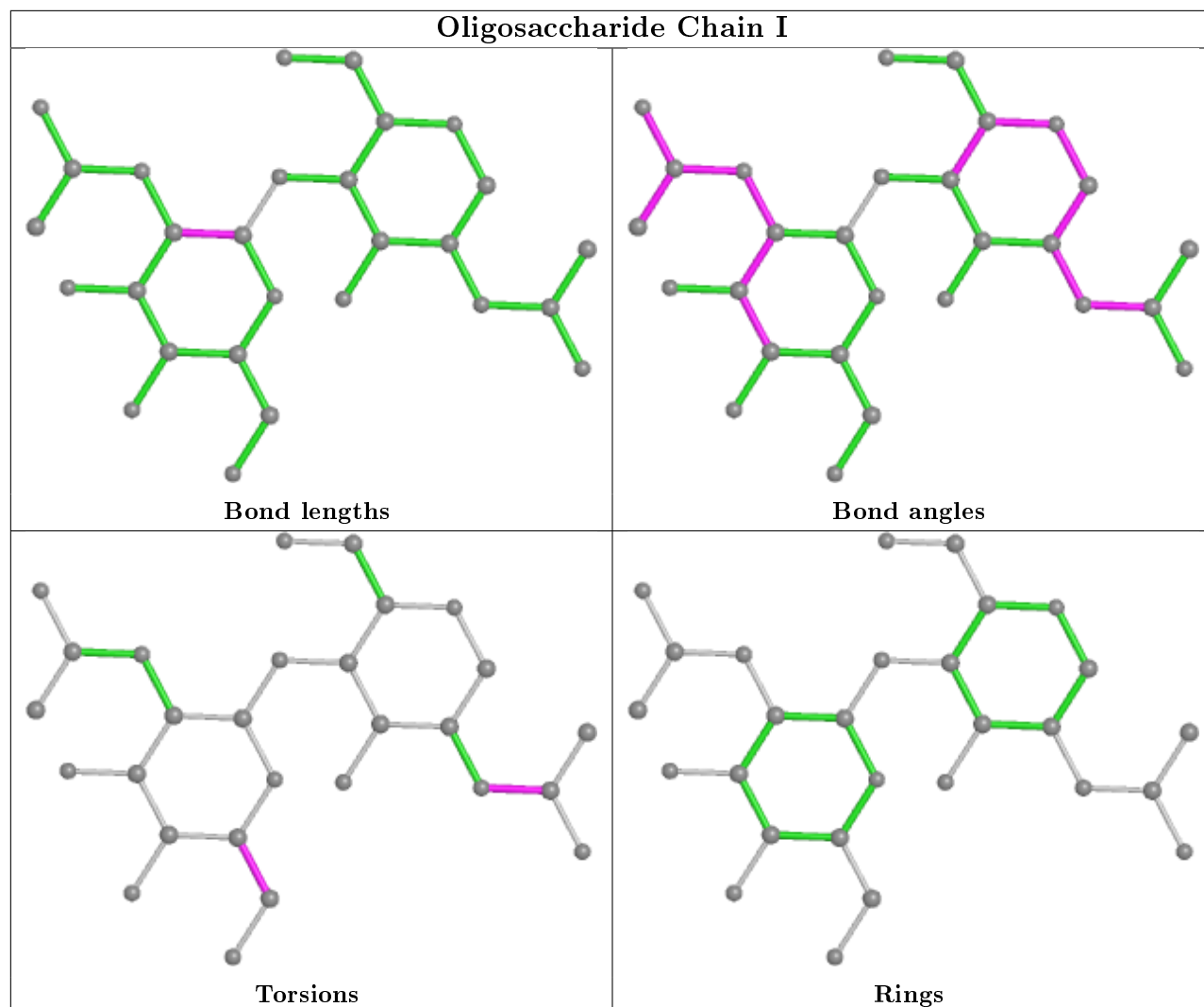


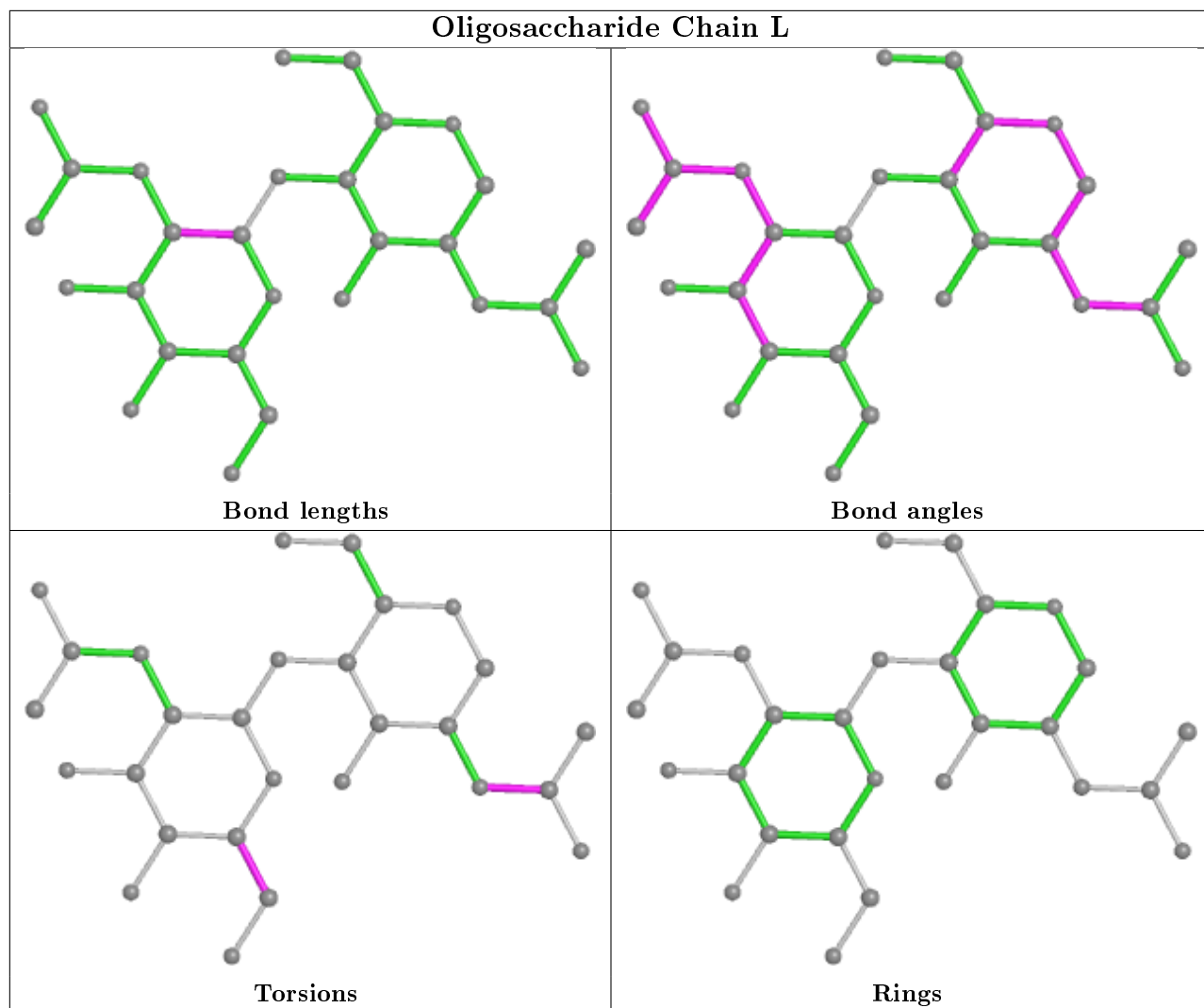


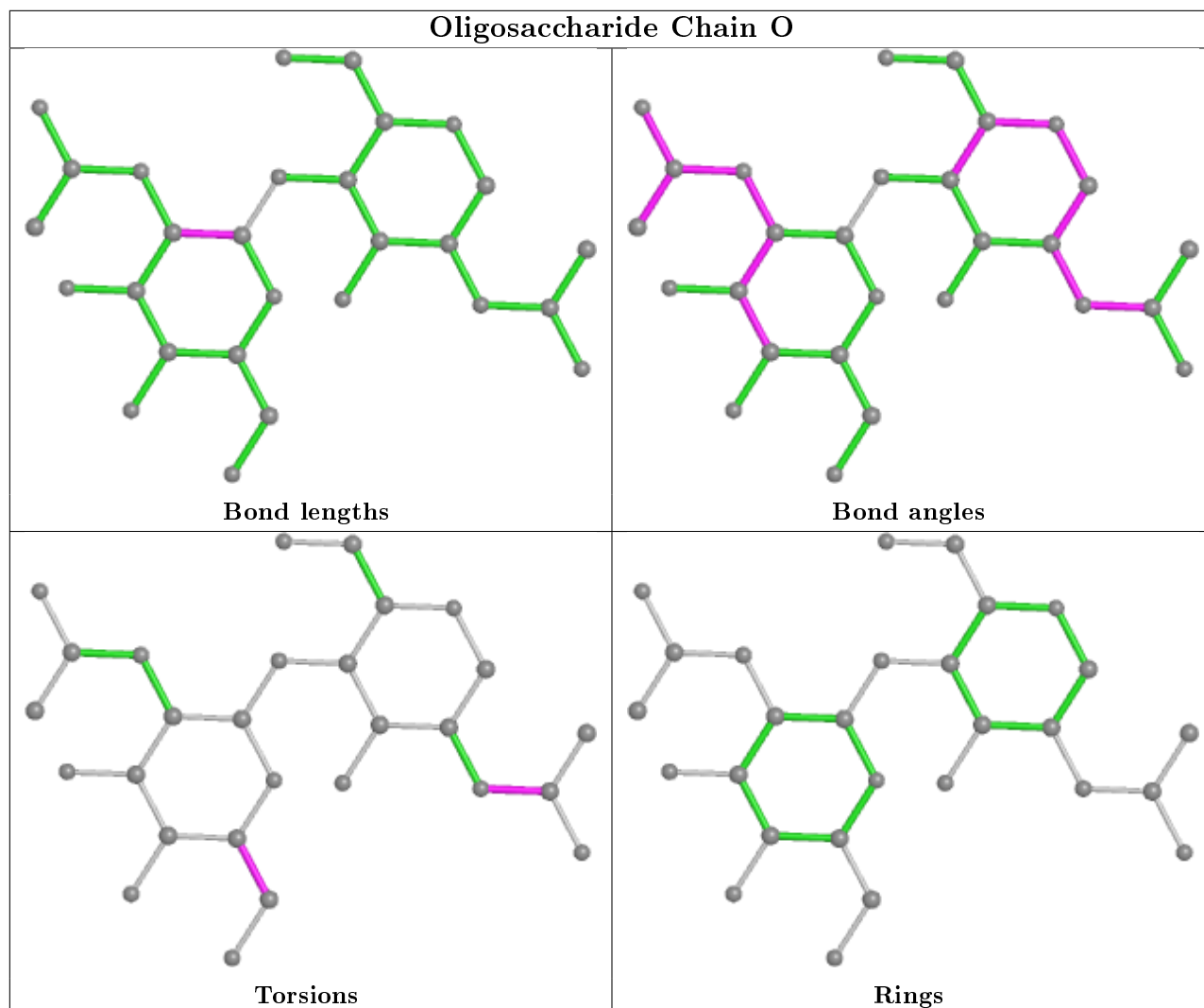












5.6 Ligand geometry [i](#)

Of 36 ligands modelled in this entry, 12 are monoatomic - leaving 24 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	$\# Z > 2$
5	NAG	F	2009	2	14,14,15	0.49	0	17,19,21	1.02	1 (5%)
5	NAG	F	2012	2	14,14,15	0.59	0	17,19,21	2.05	6 (35%)
5	NAG	D	2012	2	14,14,15	0.61	0	17,19,21	1.70	4 (23%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NAG	D	2013	2	14,14,15	0.62	0	17,19,21	2.07	5 (29%)
5	NAG	B	2007	2	14,14,15	0.54	0	17,19,21	1.12	3 (17%)
5	NAG	B	2008	2	14,14,15	0.58	0	17,19,21	1.12	2 (11%)
5	NAG	B	2001	2	14,14,15	0.94	1 (7%)	17,19,21	1.89	5 (29%)
6	B12	A	2007	-	80,101,101	1.23	7 (8%)	101,166,166	2.36	25 (24%)
5	NAG	B	2013	2	14,14,15	0.66	0	17,19,21	2.01	4 (23%)
5	NAG	F	2013	2	14,14,15	0.64	0	17,19,21	1.86	4 (23%)
5	NAG	E	2001	1	14,14,15	1.11	2 (14%)	17,19,21	2.39	7 (41%)
5	NAG	D	2009	2	14,14,15	0.49	0	17,19,21	1.02	1 (5%)
6	B12	E	2007	-	80,101,101	1.23	7 (8%)	101,166,166	2.36	26 (25%)
5	NAG	F	2008	2	14,14,15	0.57	0	17,19,21	1.12	2 (11%)
6	B12	C	2007	-	80,101,101	1.24	7 (8%)	101,166,166	2.36	25 (24%)
5	NAG	F	2001	2	14,14,15	0.96	1 (7%)	17,19,21	1.90	5 (29%)
5	NAG	D	2001	2	14,14,15	0.93	1 (7%)	17,19,21	1.90	5 (29%)
5	NAG	D	2008	2	14,14,15	0.57	0	17,19,21	1.13	2 (11%)
5	NAG	B	2012	2	14,14,15	0.65	0	17,19,21	2.19	3 (17%)
5	NAG	B	2009	2	14,14,15	0.49	0	17,19,21	1.02	1 (5%)
5	NAG	A	2001	1	14,14,15	1.10	2 (14%)	17,19,21	2.36	7 (41%)
5	NAG	D	2007	2	14,14,15	0.53	0	17,19,21	1.12	3 (17%)
5	NAG	F	2007	2	14,14,15	0.54	0	17,19,21	1.12	3 (17%)
5	NAG	C	2001	1	14,14,15	1.09	1 (7%)	17,19,21	2.37	7 (41%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	F	2009	2	-	0/6/23/26	0/1/1/1
5	NAG	F	2012	2	-	4/6/23/26	0/1/1/1
5	NAG	D	2012	2	-	4/6/23/26	0/1/1/1
5	NAG	D	2013	2	-	3/6/23/26	0/1/1/1
5	NAG	B	2007	2	-	2/6/23/26	0/1/1/1
5	NAG	B	2008	2	1/1/5/7	5/6/23/26	0/1/1/1
5	NAG	B	2001	2	1/1/5/7	5/6/23/26	0/1/1/1
6	B12	A	2007	-	1/1/36/38	10/51/223/223	0/3/11/11

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	B	2013	2	-	3/6/23/26	0/1/1/1
5	NAG	F	2013	2	-	3/6/23/26	0/1/1/1
5	NAG	E	2001	1	1/1/5/7	6/6/23/26	0/1/1/1
5	NAG	D	2009	2	-	0/6/23/26	0/1/1/1
6	B12	E	2007	-	1/1/36/38	10/51/223/223	0/3/11/11
5	NAG	F	2008	2	1/1/5/7	5/6/23/26	0/1/1/1
6	B12	C	2007	-	1/1/36/38	10/51/223/223	0/3/11/11
5	NAG	F	2001	2	1/1/5/7	5/6/23/26	0/1/1/1
5	NAG	D	2001	2	1/1/5/7	5/6/23/26	0/1/1/1
5	NAG	D	2008	2	1/1/5/7	5/6/23/26	0/1/1/1
5	NAG	B	2012	2	-	4/6/23/26	0/1/1/1
5	NAG	B	2009	2	-	0/6/23/26	0/1/1/1
5	NAG	A	2001	1	1/1/5/7	6/6/23/26	0/1/1/1
5	NAG	D	2007	2	-	2/6/23/26	0/1/1/1
5	NAG	F	2007	2	-	2/6/23/26	0/1/1/1
5	NAG	C	2001	1	1/1/5/7	6/6/23/26	0/1/1/1

The worst 5 of 29 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	E	2007	B12	C11-C10	-4.72	1.33	1.40
6	A	2007	B12	C11-C10	-4.71	1.33	1.40
6	C	2007	B12	C11-C10	-4.70	1.33	1.40
6	C	2007	B12	C2-C3	-4.09	1.51	1.58
6	A	2007	B12	C2-C3	-4.08	1.51	1.58

The worst 5 of 156 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	E	2007	B12	C1-C19-N24	9.01	116.38	106.24
6	A	2007	B12	C1-C19-N24	8.99	116.36	106.24
6	C	2007	B12	C1-C19-N24	8.99	116.35	106.24
6	C	2007	B12	C20-C1-C19	-6.61	102.98	109.36
6	C	2007	B12	C12-C11-C10	-6.61	113.43	124.64

5 of 12 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
5	B	2008	NAG	C1

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Mol	Chain	Res	Type	Atom
5	B	2001	NAG	C1
6	A	2007	B12	C19
5	E	2001	NAG	C1
6	E	2007	B12	C19

5 of 105 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	F	2012	NAG	O7-C7-N2-C2
5	D	2012	NAG	C8-C7-N2-C2
5	D	2012	NAG	O7-C7-N2-C2
5	D	2013	NAG	C8-C7-N2-C2
5	D	2013	NAG	O7-C7-N2-C2

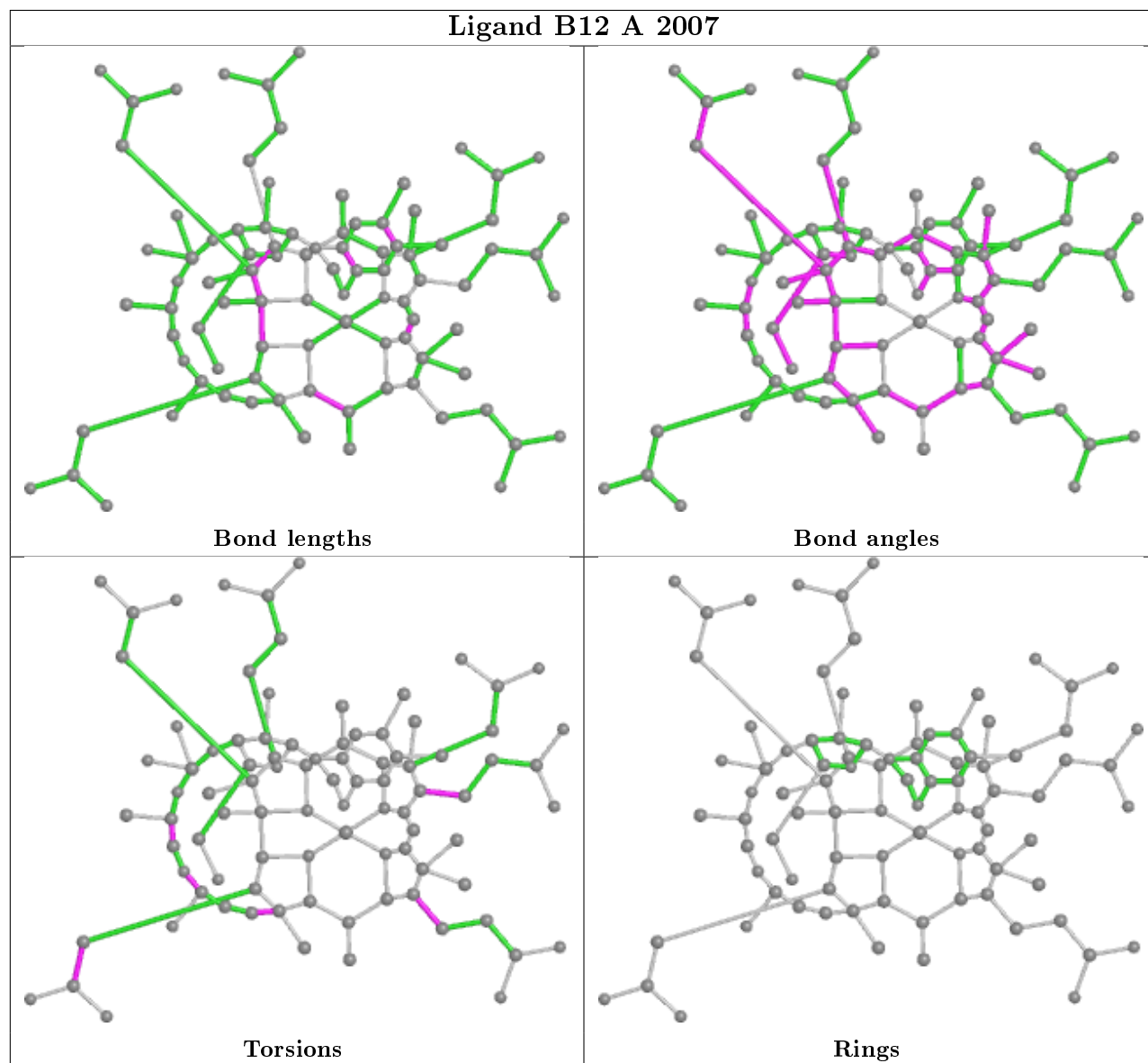
There are no ring outliers.

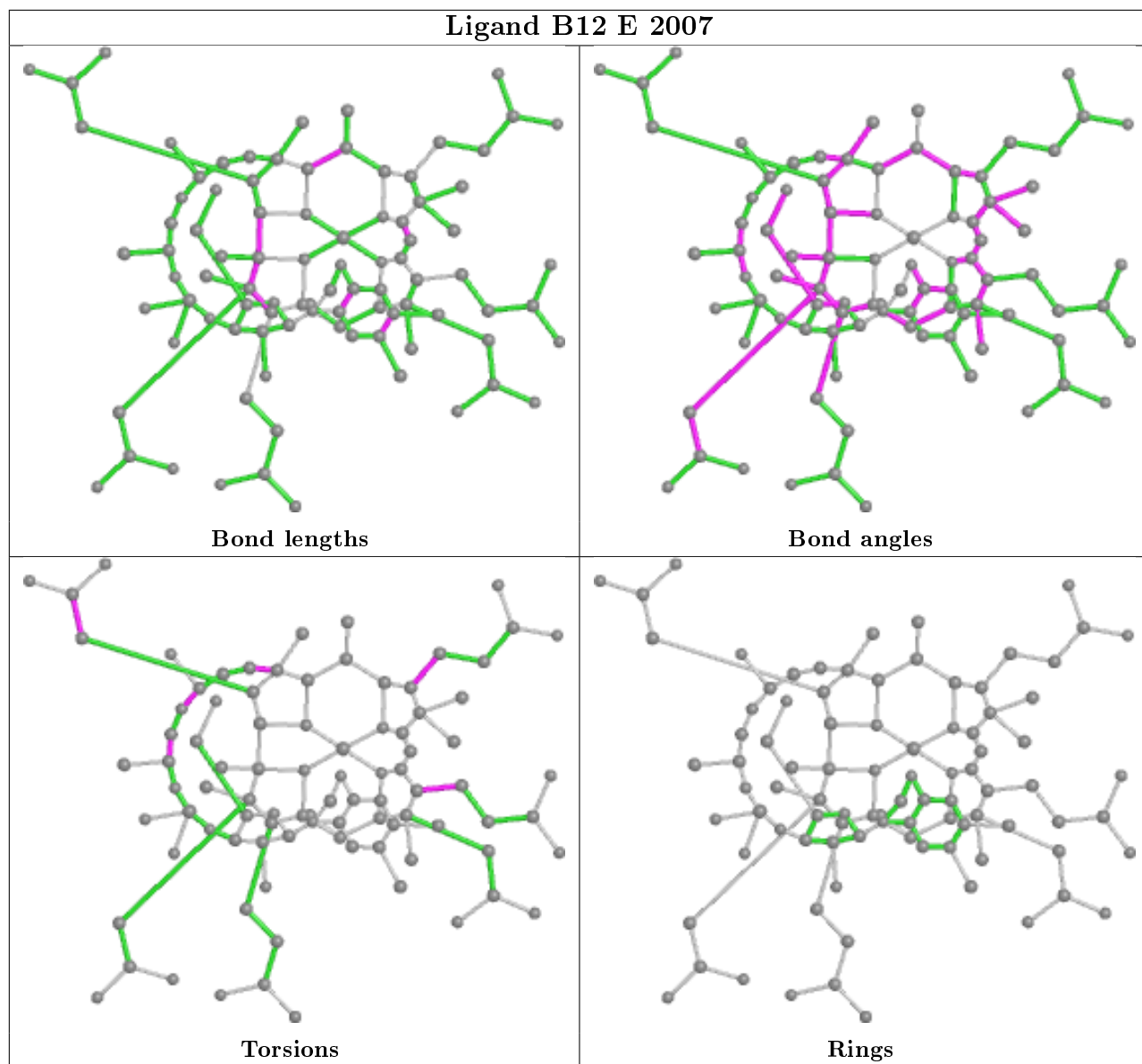
18 monomers are involved in 124 short contacts:

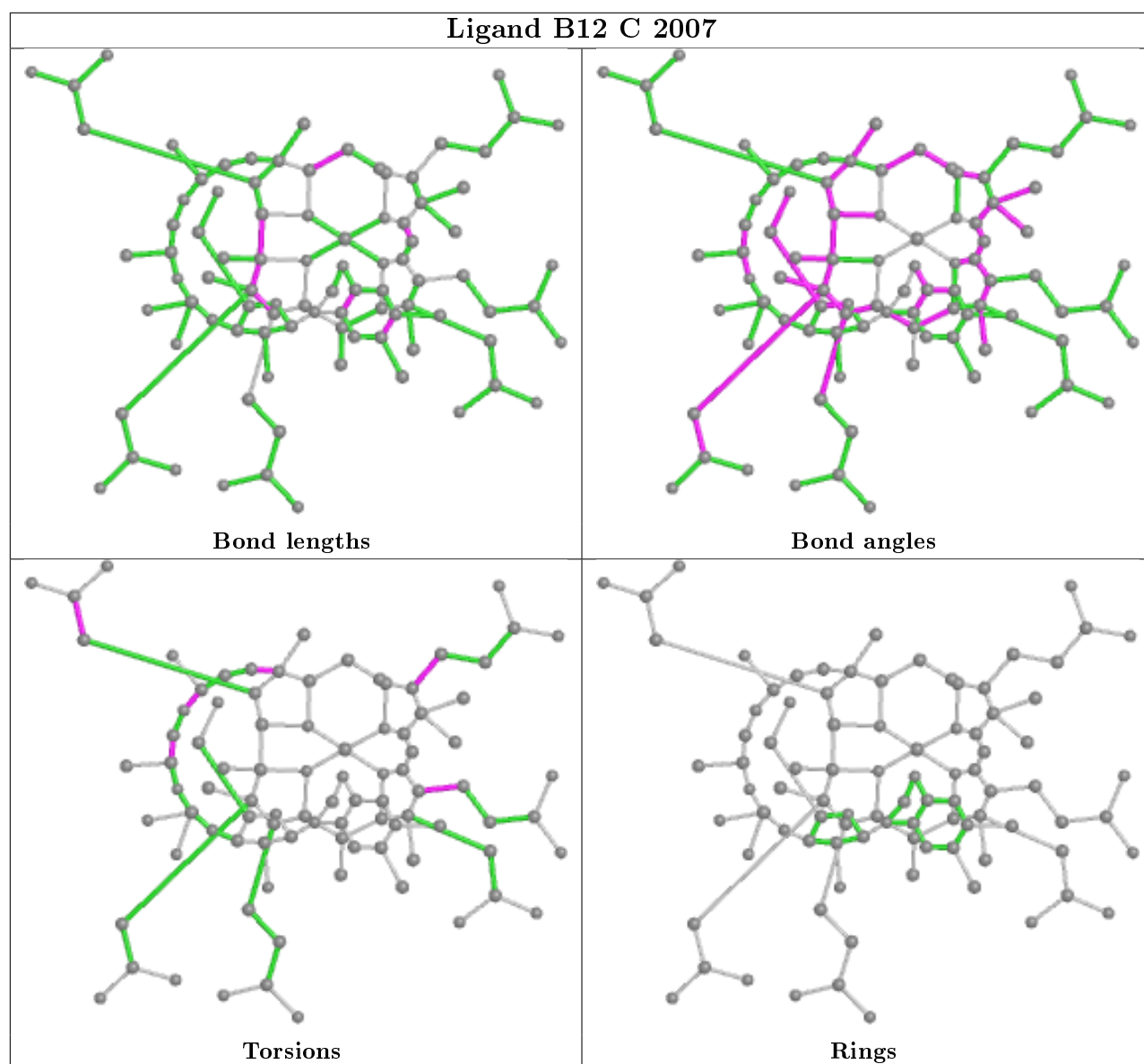
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	F	2009	NAG	3	0
5	D	2013	NAG	2	0
5	B	2008	NAG	2	0
5	B	2001	NAG	1	0
6	A	2007	B12	29	0
5	B	2013	NAG	2	0
5	F	2013	NAG	2	0
5	E	2001	NAG	7	0
5	D	2009	NAG	2	0
6	E	2007	B12	25	0
5	F	2008	NAG	2	0
6	C	2007	B12	26	0
5	F	2001	NAG	1	0
5	D	2001	NAG	1	0
5	D	2008	NAG	2	0
5	B	2009	NAG	2	0
5	A	2001	NAG	7	0
5	C	2001	NAG	8	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier.

Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.







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, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	385/393 (97%)	0.24	8 (2%) 63 62	47, 77, 133, 281	1 (0%)
1	C	385/393 (97%)	0.15	4 (1%) 82 82	47, 76, 139, 284	1 (0%)
1	E	385/393 (97%)	0.24	6 (1%) 72 70	50, 77, 140, 256	1 (0%)
2	B	457/457 (100%)	0.28	21 (4%) 32 30	59, 111, 172, 219	0
2	D	457/457 (100%)	0.22	18 (3%) 39 37	59, 110, 176, 228	0
2	F	457/457 (100%)	0.32	21 (4%) 32 30	61, 111, 178, 259	0
All	All	2526/2550 (99%)	0.25	78 (3%) 49 48	47, 95, 170, 284	3 (0%)

The worst 5 of 78 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	292	HIS	13.3
1	A	308	SER	7.1
1	C	299	PRO	5.1
1	E	292	HIS	4.7
2	F	983	TYR	4.5

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](#)

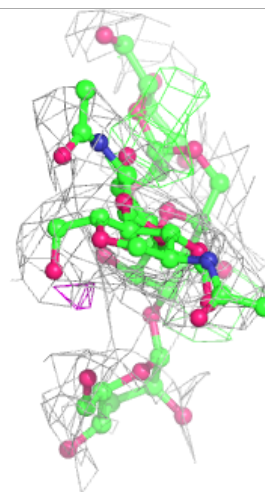
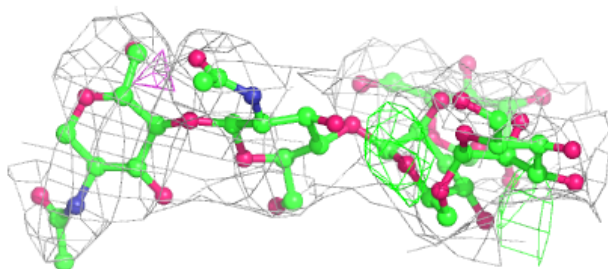
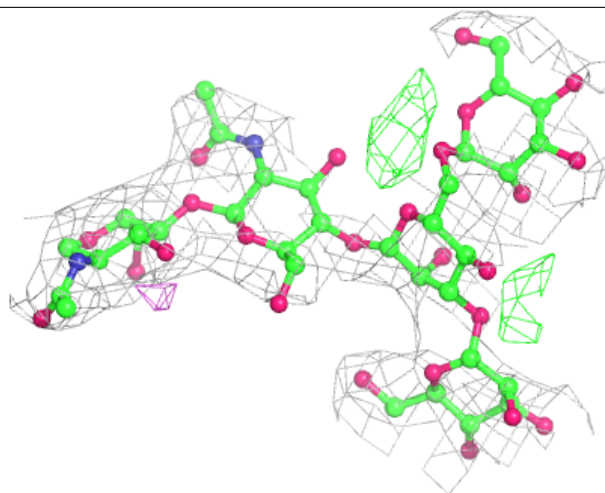
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q< 0.9’ lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	BMA	N	3	11/12	0.52	0.17	173,182,191,193	0
3	BMA	G	3	11/12	0.57	0.21	128,134,138,144	0
3	MAN	G	4	11/12	0.59	0.24	162,165,175,180	0
3	MAN	N	5	11/12	0.63	0.21	192,201,209,213	0
3	MAN	J	4	11/12	0.64	0.26	160,166,178,180	0
3	MAN	J	5	11/12	0.67	0.22	196,201,205,206	0
3	NAG	N	1	14/15	0.68	0.24	119,123,127,130	0
3	MAN	H	4	11/12	0.68	0.24	181,194,208,211	0
3	MAN	N	4	11/12	0.69	0.24	188,194,206,206	0
3	MAN	K	5	11/12	0.69	0.20	190,201,222,227	0
3	MAN	M	5	11/12	0.70	0.21	181,190,197,200	0
3	MAN	G	5	11/12	0.72	0.23	190,195,201,202	0
3	NAG	H	1	14/15	0.73	0.21	113,122,130,135	0
3	MAN	H	5	11/12	0.75	0.22	184,197,219,223	0
3	BMA	M	3	11/12	0.76	0.19	129,131,147,153	0
4	NAG	O	2	14/15	0.77	0.25	160,167,171,175	0
4	NAG	L	2	14/15	0.78	0.25	163,170,176,178	0
3	NAG	K	1	14/15	0.79	0.20	107,122,135,136	0
3	NAG	H	2	14/15	0.79	0.20	159,171,180,183	0
4	NAG	I	2	14/15	0.81	0.19	150,155,171,178	0
3	NAG	K	2	14/15	0.82	0.18	151,172,184,186	0
3	BMA	K	3	11/12	0.82	0.12	167,179,190,190	0
3	MAN	K	4	11/12	0.83	0.15	172,185,203,208	0
3	BMA	J	3	11/12	0.83	0.15	138,144,154,155	0
3	BMA	H	3	11/12	0.83	0.10	167,178,184,188	0
3	NAG	N	2	14/15	0.83	0.20	163,175,188,193	0
4	NAG	I	1	14/15	0.86	0.23	121,132,136,139	0
4	NAG	O	1	14/15	0.88	0.23	119,136,140,142	0
4	NAG	L	1	14/15	0.89	0.19	125,138,141,143	0
3	MAN	M	4	11/12	0.89	0.17	169,175,195,202	0
3	NAG	M	2	14/15	0.91	0.21	89,97,107,109	0
3	NAG	G	2	14/15	0.92	0.24	90,95,103,104	0
3	NAG	J	2	14/15	0.94	0.20	89,98,103,104	0
3	NAG	M	1	14/15	0.95	0.22	53,78,96,106	0
3	NAG	J	1	14/15	0.95	0.23	59,75,86,91	0
3	NAG	G	1	14/15	0.96	0.26	58,73,97,103	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.

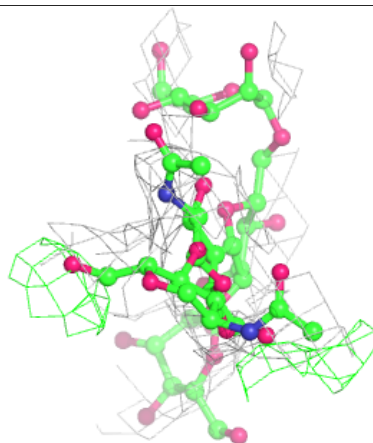
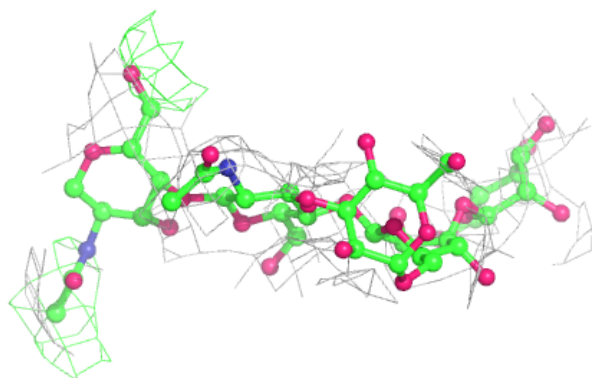
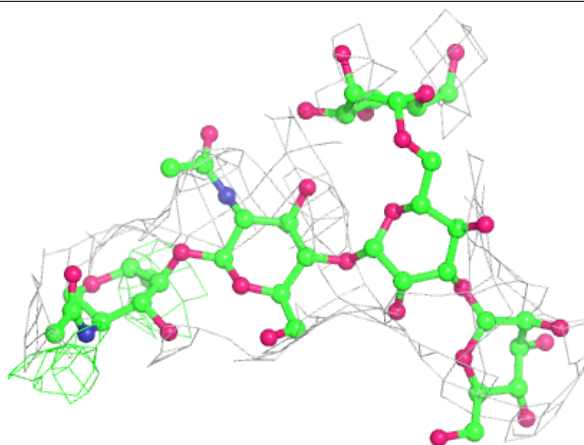
Electron density around Chain G:

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



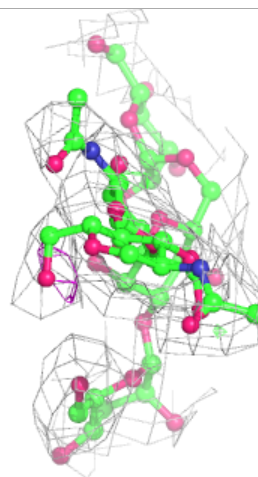
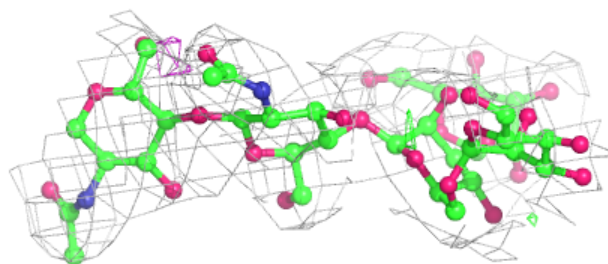
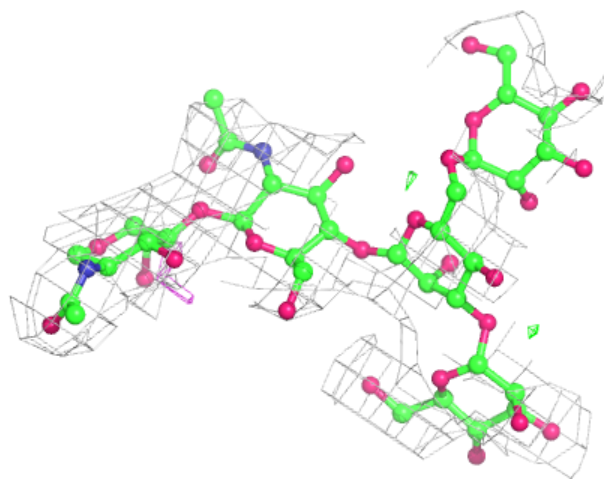
Electron density around Chain H:

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



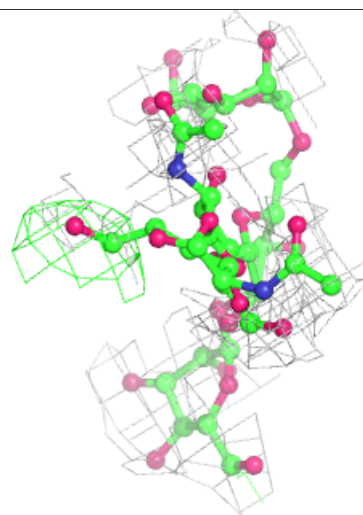
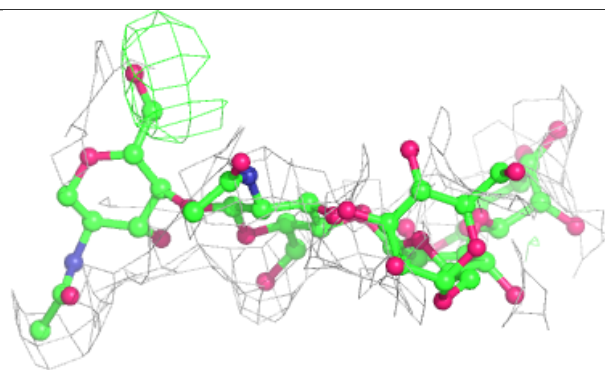
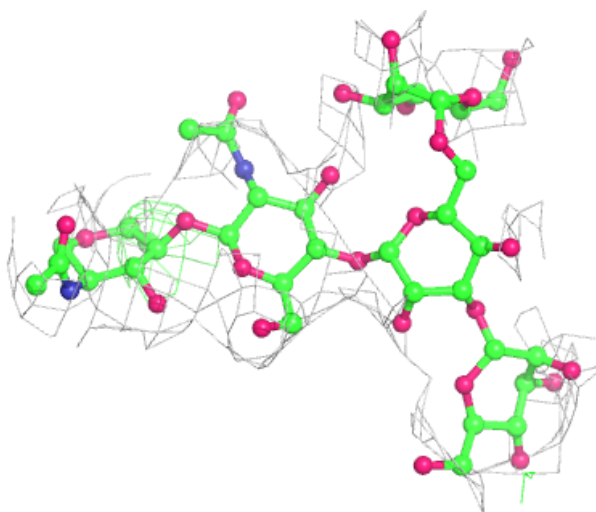
Electron density around Chain J:

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



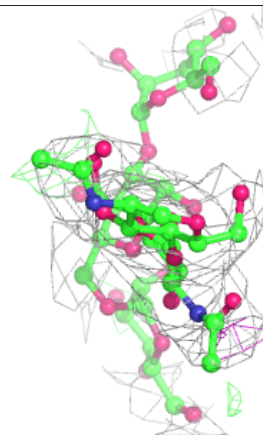
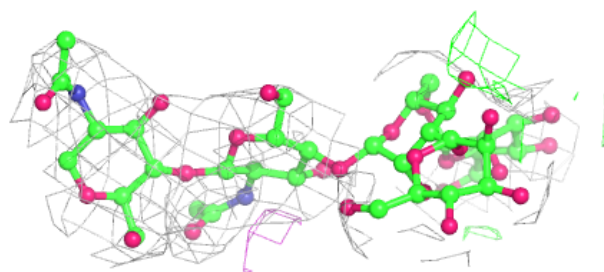
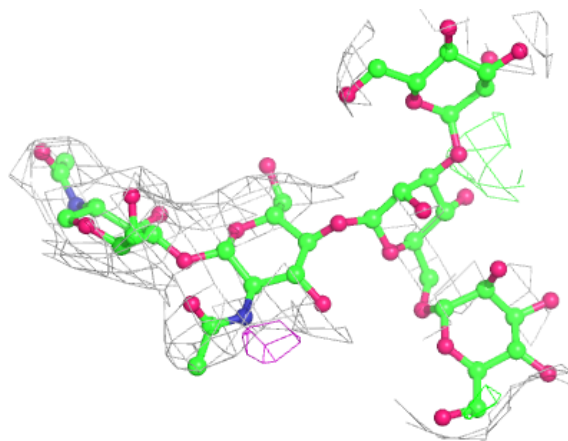
Electron density around Chain K:

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and green (positive)



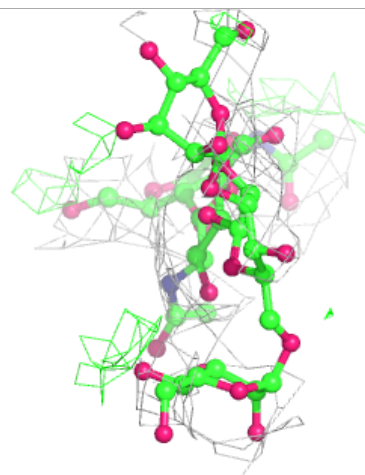
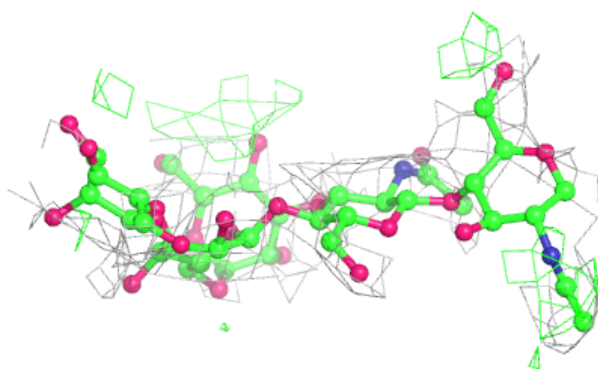
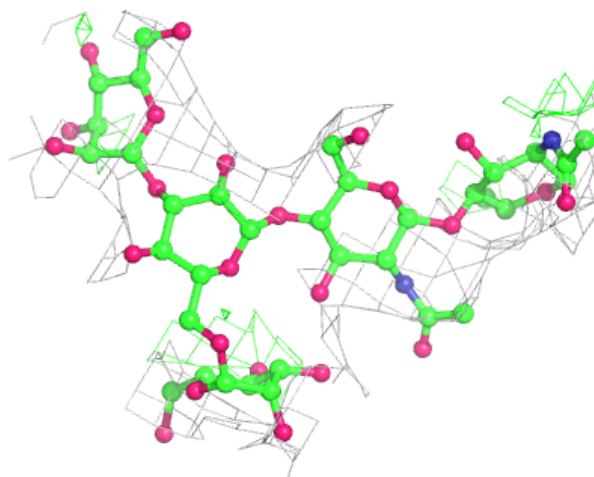
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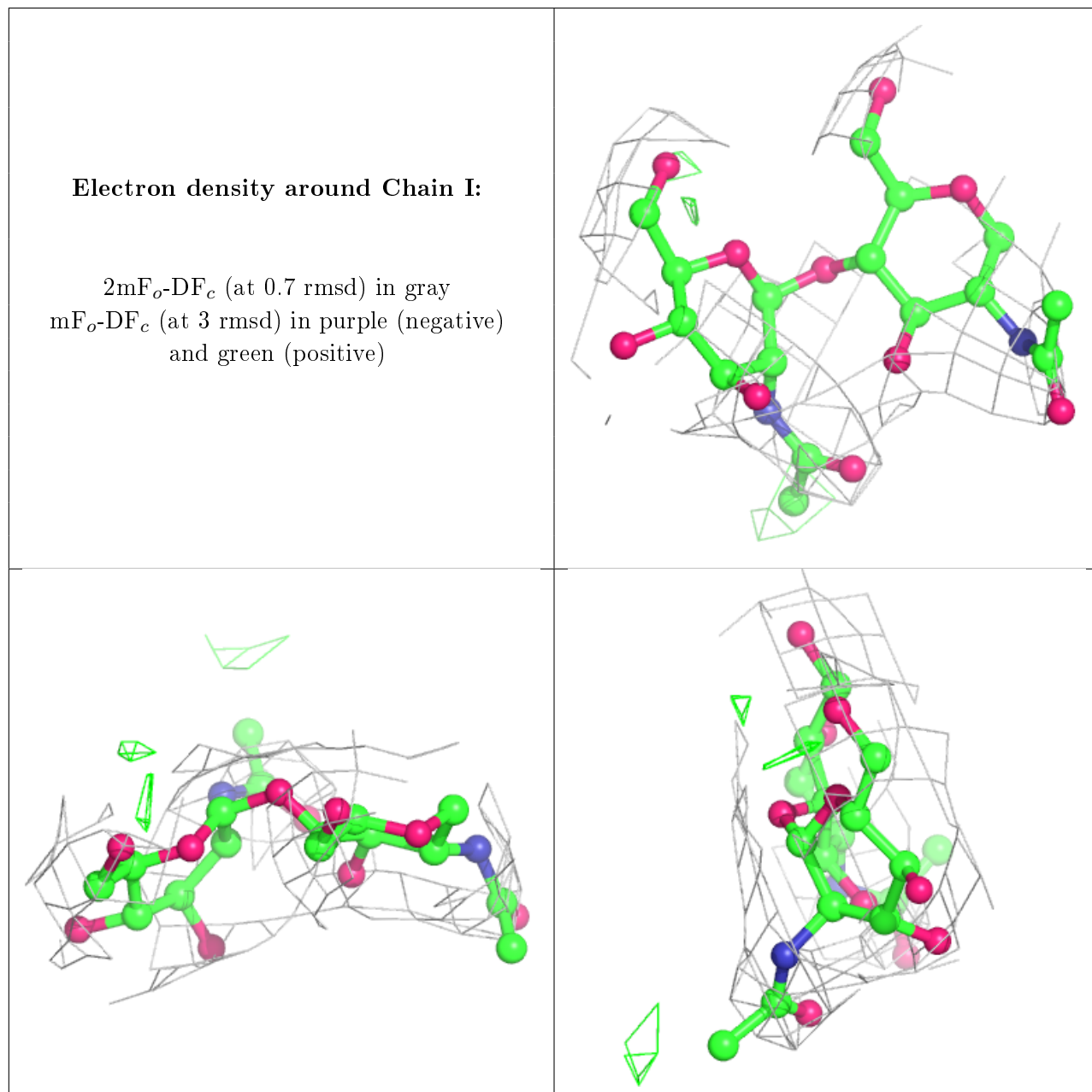
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around Chain N:

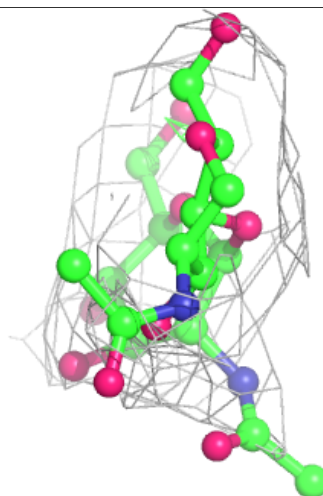
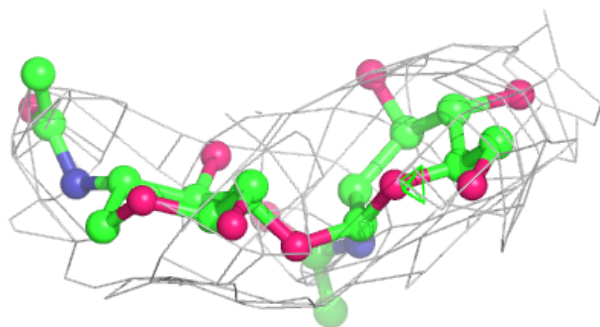
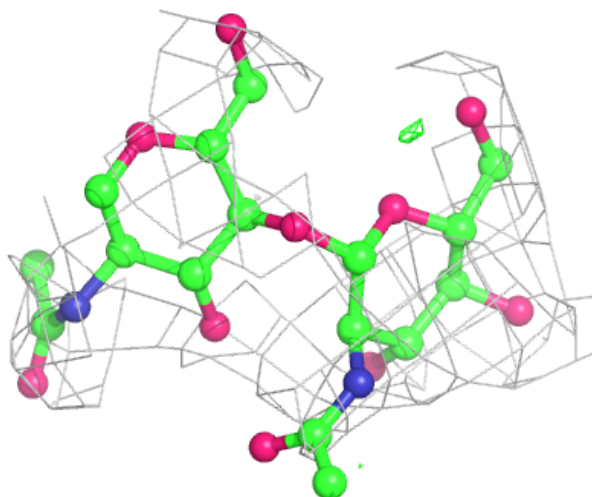
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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

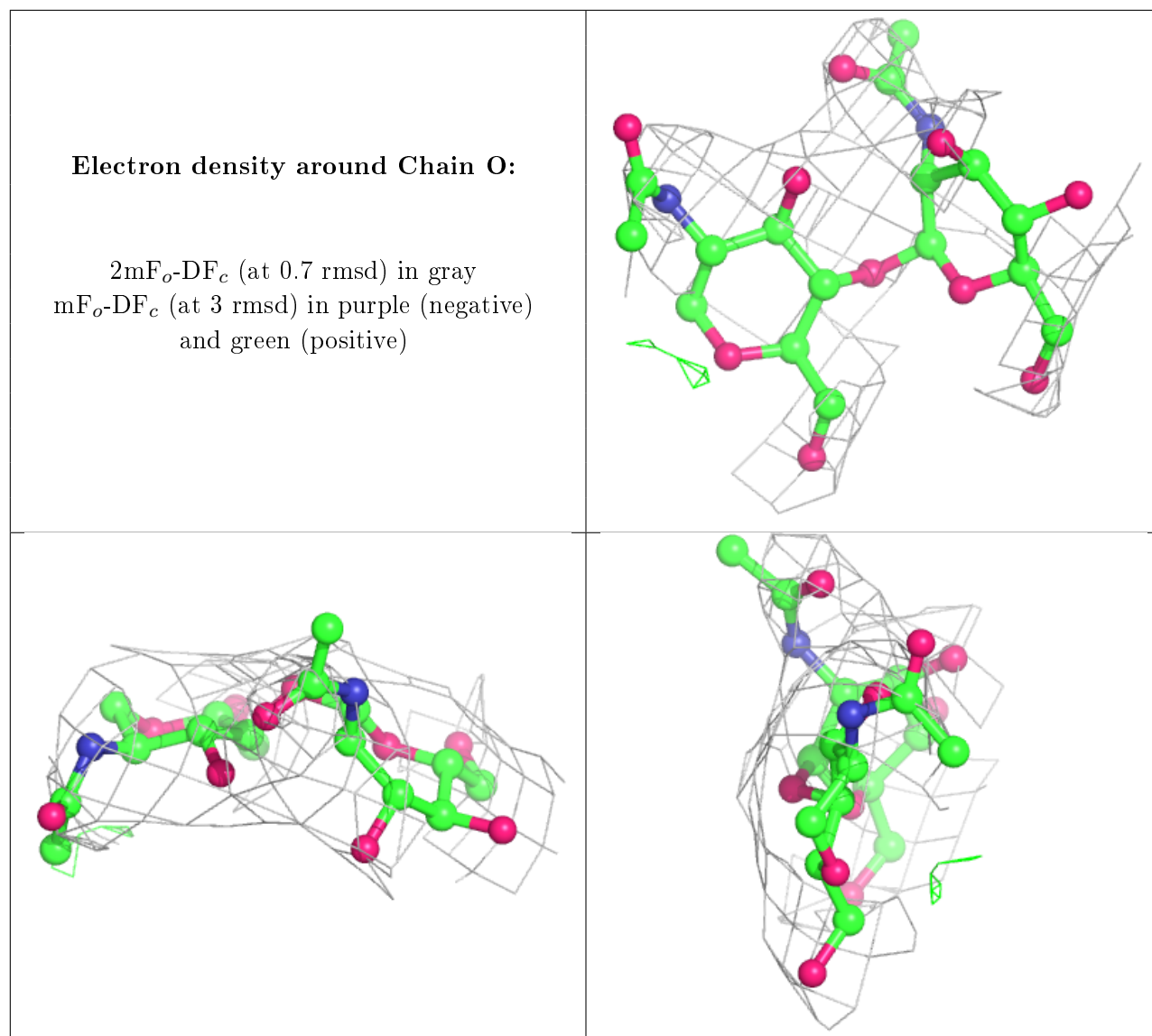




Electron density around Chain L:

$2mF_o-DF_c$ (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, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q < 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
5	NAG	F	2001	14/15	0.37	0.29	192,198,201,203	0
5	NAG	F	2008	14/15	0.47	0.28	190,198,203,205	0
5	NAG	B	2008	14/15	0.48	0.33	196,198,198,199	0
5	NAG	F	2013	14/15	0.59	0.29	162,176,180,183	0
5	NAG	F	2012	14/15	0.69	0.22	139,157,192,194	0
5	NAG	D	2001	14/15	0.69	0.19	187,191,196,197	0

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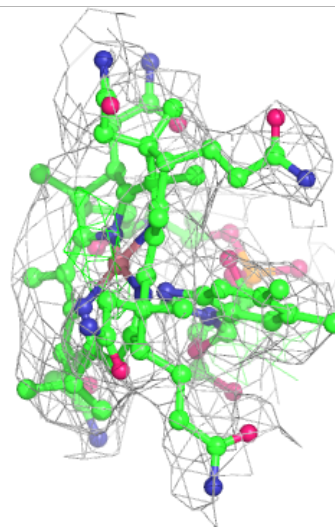
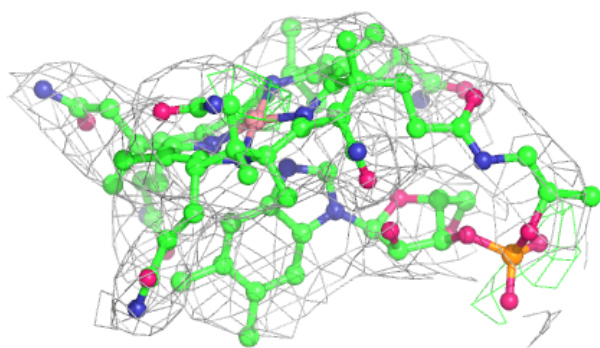
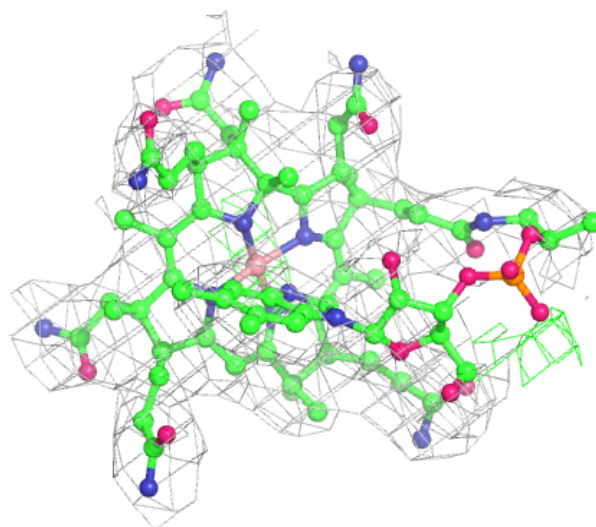
Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
5	NAG	D	2008	14/15	0.69	0.20	196,203,209,210	0
5	NAG	B	2012	14/15	0.71	0.21	146,163,198,200	0
5	NAG	F	2007	14/15	0.72	0.31	151,172,188,195	0
5	NAG	F	2009	14/15	0.73	0.35	185,189,191,192	0
5	NAG	D	2009	14/15	0.73	0.41	188,192,195,195	0
5	NAG	D	2013	14/15	0.76	0.20	168,182,187,189	0
7	CA	F	2014	1/1	0.77	0.06	151,151,151,151	0
5	NAG	B	2009	14/15	0.78	0.45	185,193,199,199	0
5	NAG	B	2007	14/15	0.78	0.26	149,179,202,211	0
5	NAG	D	2012	14/15	0.80	0.25	145,163,197,200	0
7	CA	B	2014	1/1	0.81	0.14	140,140,140,140	0
5	NAG	B	2013	14/15	0.83	0.17	157,169,174,176	0
5	NAG	B	2001	14/15	0.84	0.20	195,202,205,206	0
5	NAG	C	2001	14/15	0.86	0.28	45,49,52,54	14
5	NAG	E	2001	14/15	0.88	0.29	50,55,60,61	14
5	NAG	A	2001	14/15	0.89	0.32	50,54,57,60	14
5	NAG	D	2007	14/15	0.90	0.13	166,193,216,223	0
7	CA	F	2016	1/1	0.93	0.10	144,144,144,144	0
7	CA	D	2014	1/1	0.93	0.10	163,163,163,163	0
7	CA	F	2017	1/1	0.94	0.22	80,80,80,80	0
6	B12	A	2007	91/91	0.95	0.29	45,64,92,100	0
7	CA	B	2016	1/1	0.96	0.12	147,147,147,147	0
7	CA	B	2017	1/1	0.96	0.14	82,82,82,82	0
6	B12	E	2007	91/91	0.96	0.29	40,66,91,95	0
7	CA	D	2015	1/1	0.97	0.23	60,60,60,60	0
6	B12	C	2007	91/91	0.97	0.28	46,65,81,88	0
7	CA	D	2017	1/1	0.97	0.22	79,79,79,79	0
7	CA	D	2016	1/1	0.98	0.10	139,139,139,139	0
7	CA	F	2015	1/1	0.98	0.15	58,58,58,58	0
7	CA	B	2015	1/1	0.99	0.19	54,54,54,54	0

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

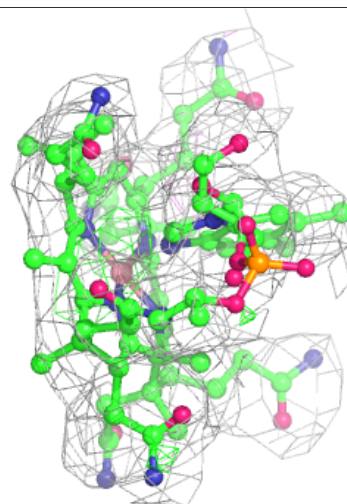
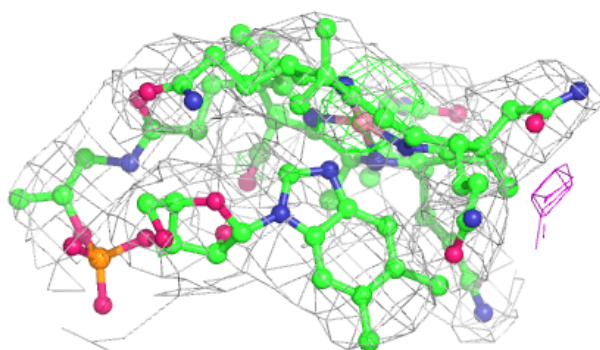
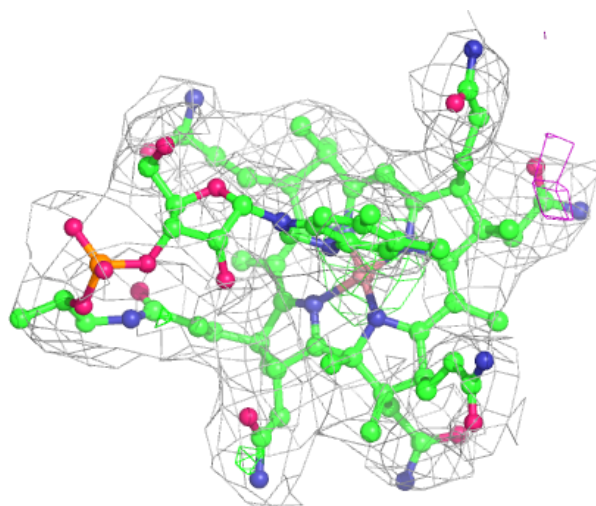
Electron density around B12 A 2007:

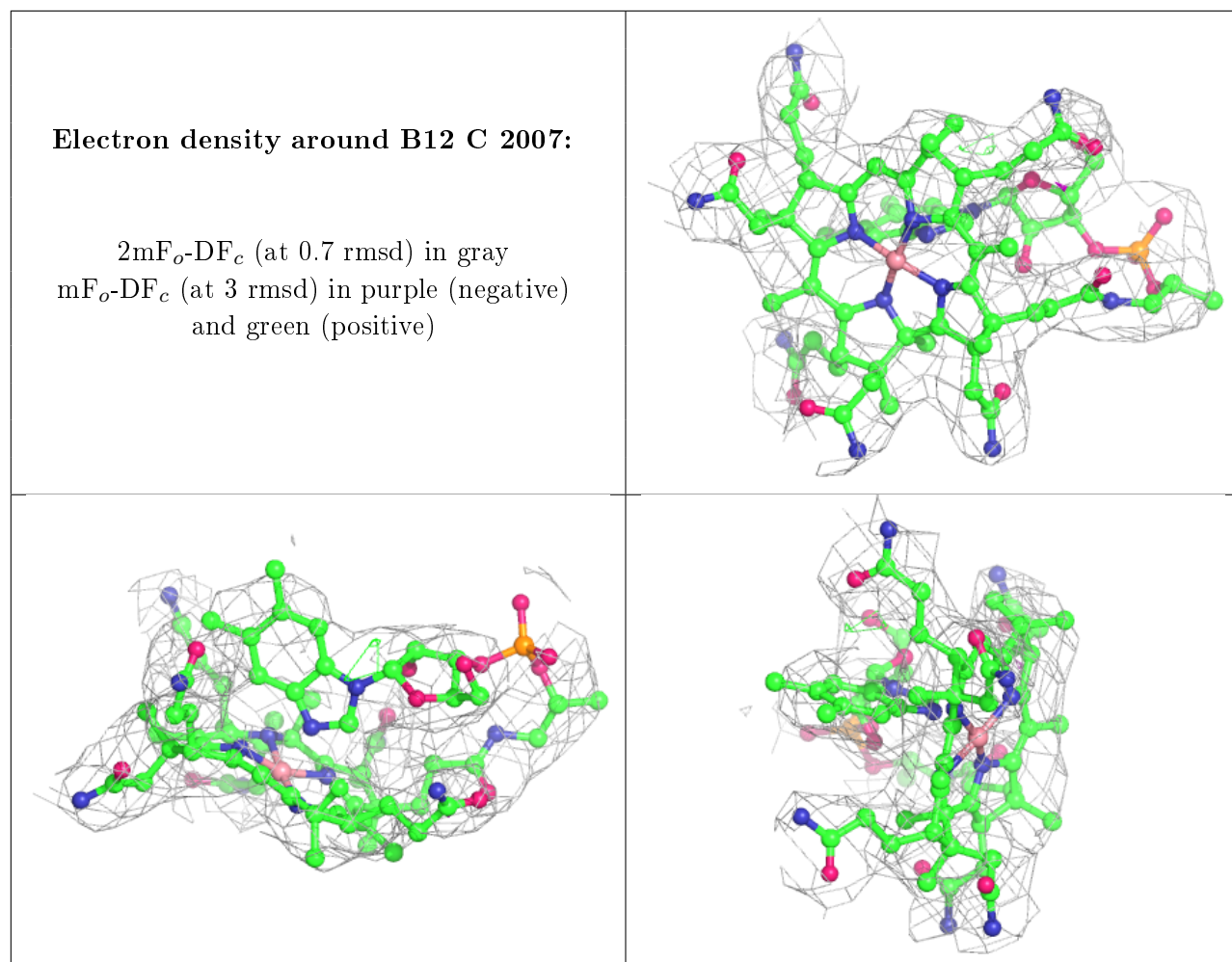
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around B12 E 2007:

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





6.5 Other polymers [i](#)

There are no such residues in this entry.