



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 26, 2026 – 03:49 AM UTC

PDB ID : 3KQ4 / pdb_00003kq4
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 types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

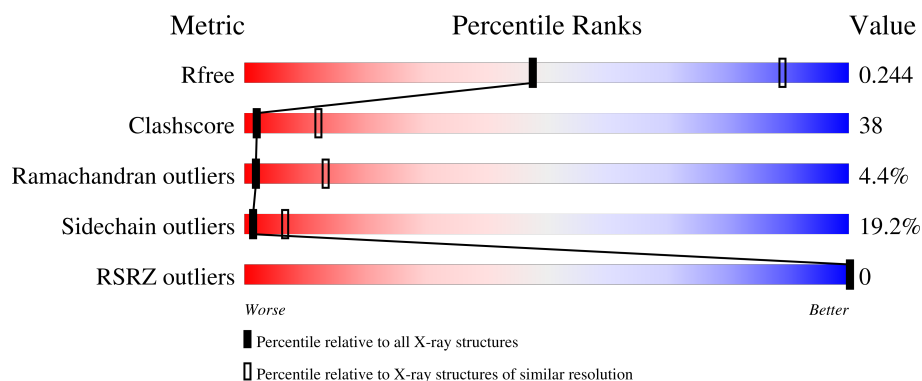
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 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.



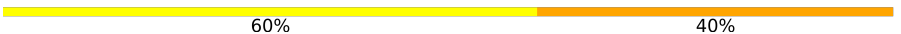
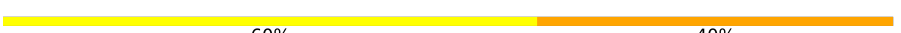
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	1169 (3.32-3.28)
Clashscore	190562	1209 (3.32-3.28)
Ramachandran outliers	187476	1188 (3.32-3.28)
Sidechain outliers	187428	1187 (3.32-3.28)
RSRZ outliers	180081	1169 (3.32-3.28)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	49% 36% 12% ..
1	C	393	50% 36% 12% ..
1	E	393	50% 36% 11% ..
2	B	457	34% 47% 17% .
2	D	457	35% 46% 18% .

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
2	F	457	
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	C	2001	X	-	X	-
5	NAG	D	2001	X	-	-	-
5	NAG	D	2008	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
1	A	385	Total	C	N	O	S	3	0	0
			2950	1870	488	573	19			
1	C	385	Total	C	N	O	S	3	0	0
			2950	1870	488	573	19			
1	E	385	Total	C	N	O	S	3	0	0
			2950	1870	488	573	19			

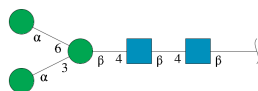
There are 3 discrepancies between the modelled and reference sequences:

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
2	B	457	Total	C	N	O	S	0	0	0
			3638	2311	598	709	20			
2	D	457	Total	C	N	O	S	0	0	0
			3638	2311	598	709	20			
2	F	457	Total	C	N	O	S	0	0	0
			3638	2311	598	709	20			

- 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 (CCD ID: NAG) (formula: C₈H₁₅NO₆).



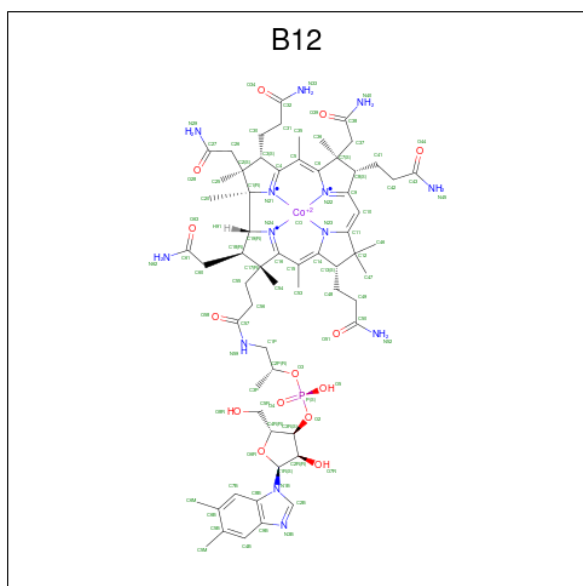
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total	C	N	O	0	0
			14	8	1	5		
5	B	1	Total	C	N	O	0	0
			14	8	1	5		
5	B	1	Total	C	N	O	0	0
			14	8	1	5		
5	B	1	Total	C	N	O	0	0
			14	8	1	5		
5	B	1	Total	C	N	O	0	0
			14	8	1	5		
5	B	1	Total	C	N	O	0	0
			14	8	1	5		
5	B	1	Total	C	N	O	0	0
			14	8	1	5		
5	C	1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

Continued on next page...

Continued from previous page...

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 (CCD ID: 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		

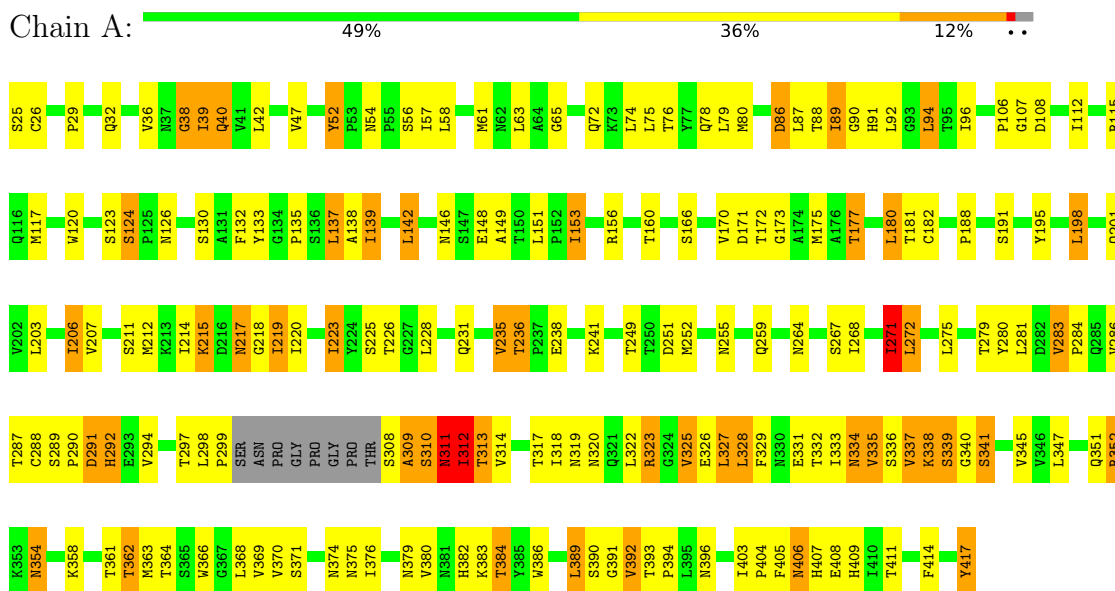
- Molecule 7 is CALCIUM ION (CCD ID: CA) (formula: Ca).

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

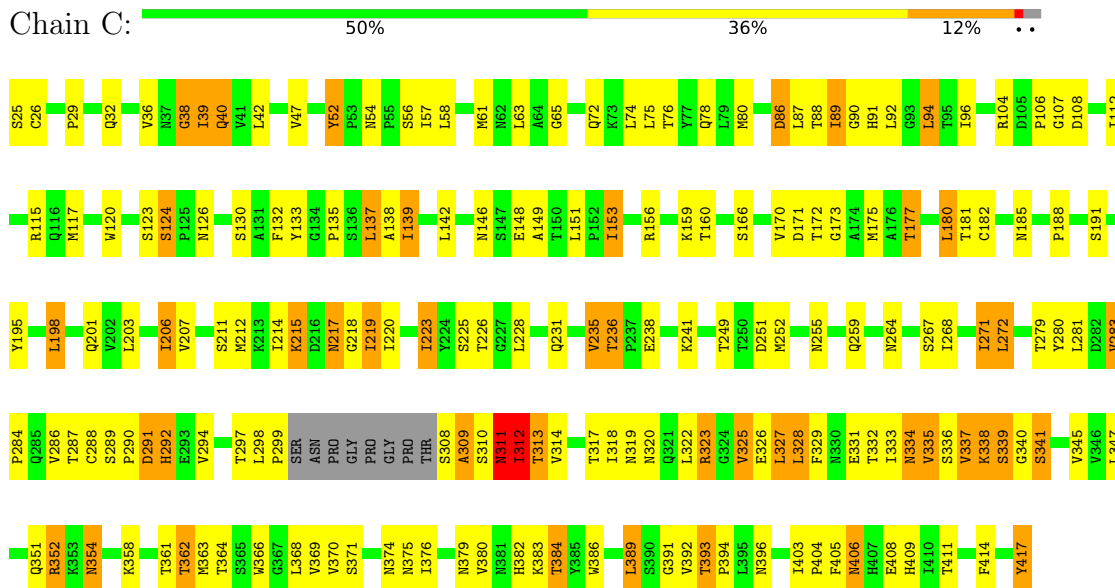
3 Residue-property plots

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.

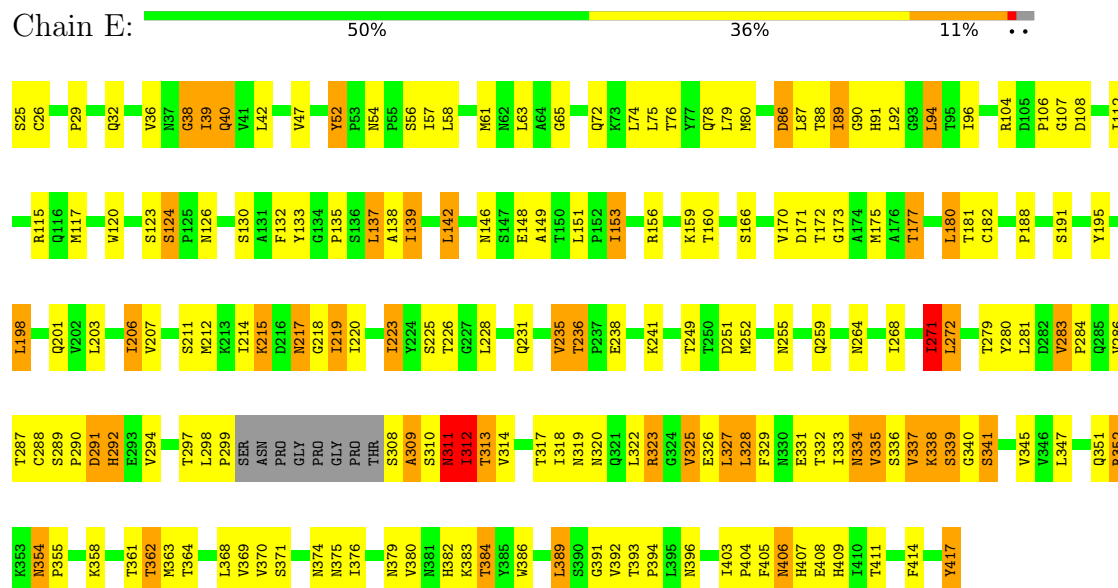
• Molecule 1: Gastric intrinsic factor



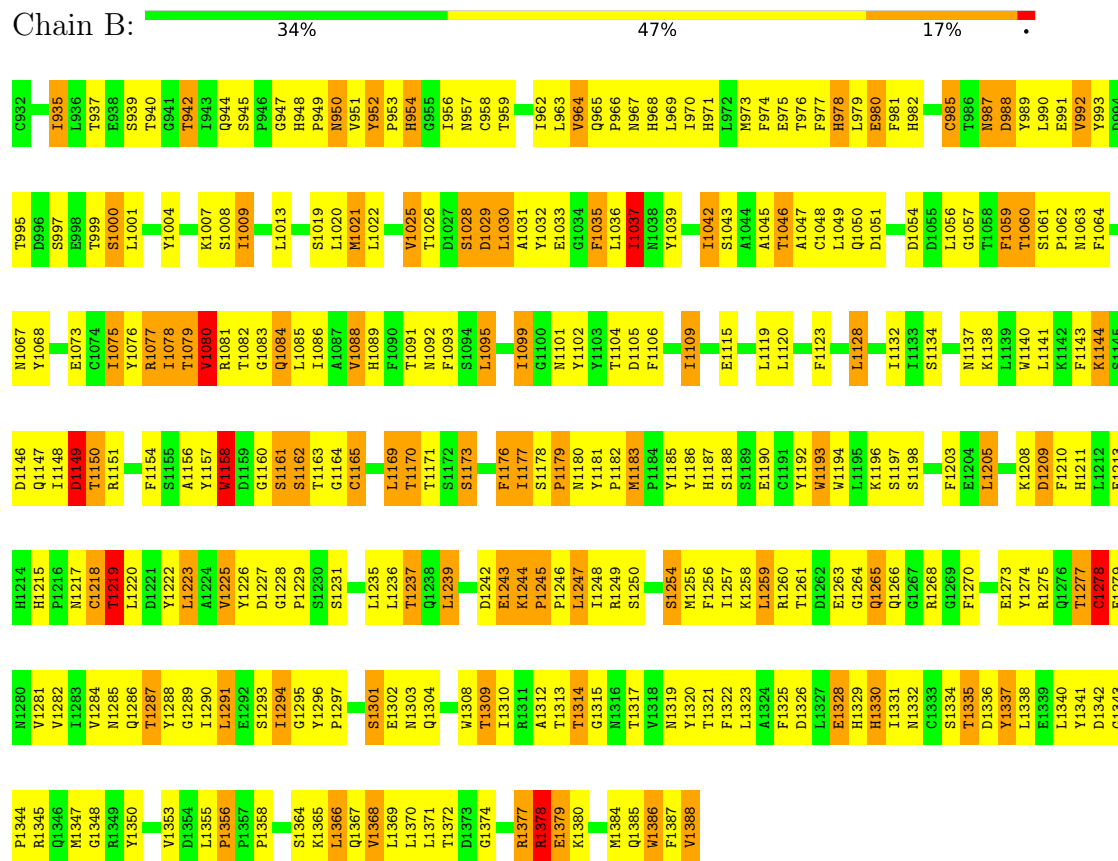
• Molecule 1: Gastric intrinsic factor



- Molecule 1: Gastric intrinsic factor

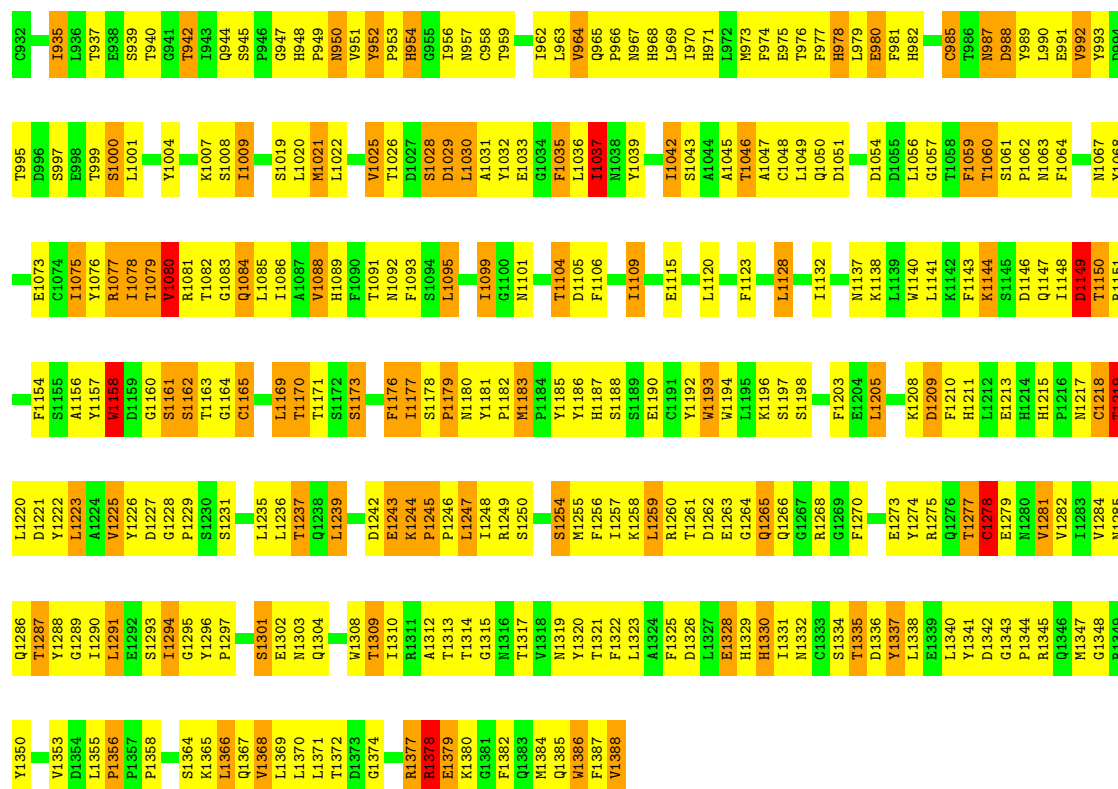


- Molecule 2: Cubilin



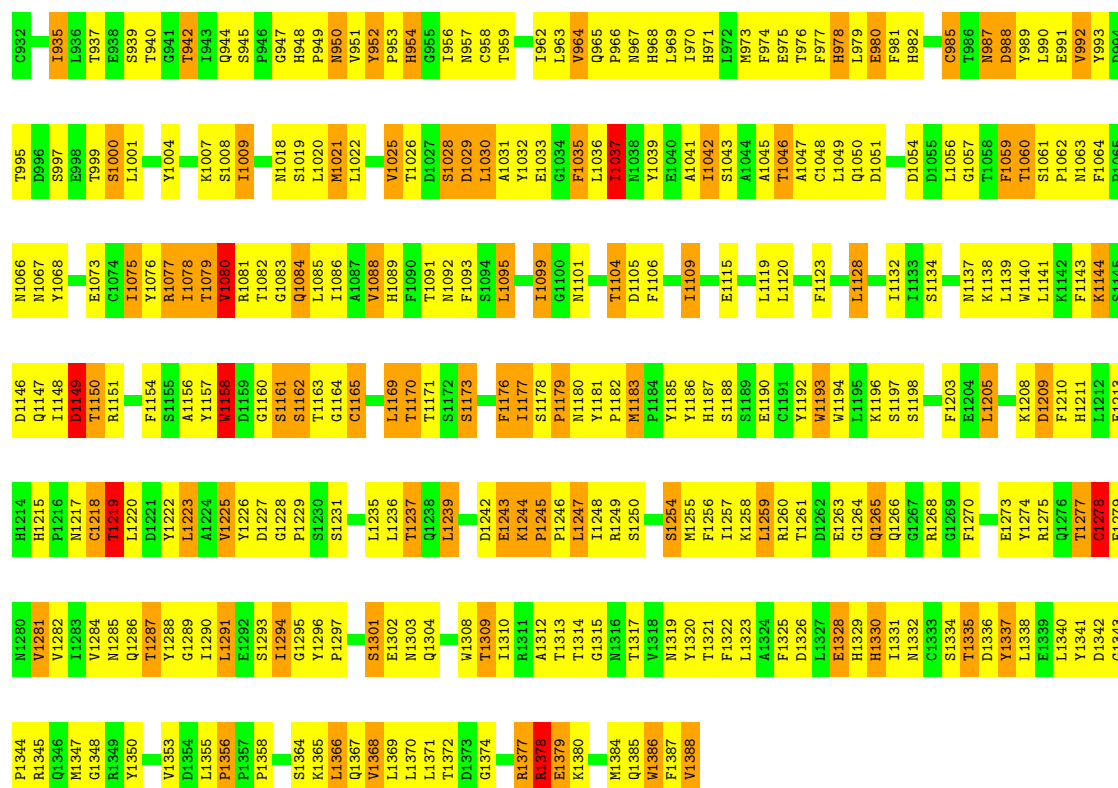
- Molecule 2: Cubilin





• Molecule 2: Cubilin

Chain F: 34% 47% 18%



● 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%

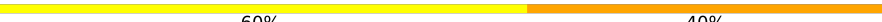
MAG1
MAG2
BMA3
MAN4
MAN5

● 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 H:  20% 80%

MAG1
MAG2
BMA3
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 J:  60% 40%

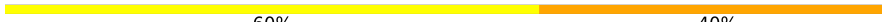
MAG1
MAG2
BMA3
MAN4
MAN5

● 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 K:  20% 80%

MAG1
MAG2
BMA3
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 M:  60% 40%

MAG1
MAG2
BMA3
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%



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

Chain I:  100%



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

Chain L:  100%



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

Chain O:  100%



4 Data and refinement statistics

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)	Xtriage
Refinement program	PHENIX (phenix.refine)	Depositor
R, R_{free}	0.211 , 0.242 0.207 , 0.244	Depositor DCC
R_{free} test set	1102 reflections (1.52%)	wwPDB-VP
Wilson B-factor (Å ²)	93.9	Xtriage
Anisotropy	0.035	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 82.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
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	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	20793	wwPDB-VP
Average B, all atoms (Å ²)	104.0	wwPDB-VP

Xtriage'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: NAG, BMA, B12, MAN, CA

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	0.88	1/3007 (0.0%)	1.18	22/4090 (0.5%)
1	C	0.88	1/3007 (0.0%)	1.19	22/4090 (0.5%)
1	E	0.88	2/3007 (0.1%)	1.18	22/4090 (0.5%)
2	B	0.68	0/3748	1.11	27/5110 (0.5%)
2	D	0.68	0/3748	1.11	27/5110 (0.5%)
2	F	0.68	0/3748	1.11	27/5110 (0.5%)
All	All	0.78	4/20265 (0.0%)	1.14	147/27600 (0.5%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	153	ILE	CA-CB	-5.15	1.48	1.54
1	A	153	ILE	CA-CB	-5.13	1.48	1.54
1	C	153	ILE	CA-CB	-5.10	1.48	1.54
1	E	271	ILE	CA-CB	-5.09	1.48	1.54

The worst 5 of 147 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	271	ILE	CB-CA-C	-9.58	102.63	111.06
1	C	271	ILE	CB-CA-C	-9.54	102.67	111.06
2	B	1356	PRO	CA-C-N	9.08	126.29	119.66
2	B	1356	PRO	C-N-CA	9.08	126.29	119.66
2	F	1356	PRO	CA-C-N	9.08	126.29	119.66

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2950	0	2961	165	0
1	C	2950	0	2961	163	0
1	E	2950	0	2961	167	0
2	B	3638	0	3373	326	0
2	D	3638	0	3373	321	0
2	F	3638	0	3373	327	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	2	0
4	L	28	0	25	2	0
4	O	28	0	25	2	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	1548	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 38.

The worst 5 of 1548 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:HD12	1:A:223:ILE:H	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%)	4	23
1	C	381/393 (97%)	334 (88%)	37 (10%)	10 (3%)	4	23
1	E	381/393 (97%)	334 (88%)	37 (10%)	10 (3%)	4	23
2	B	455/457 (100%)	376 (83%)	52 (11%)	27 (6%)	1	9
2	D	455/457 (100%)	376 (83%)	52 (11%)	27 (6%)	1	9
2	F	455/457 (100%)	376 (83%)	52 (11%)	27 (6%)	1	9
All	All	2508/2550 (98%)	2130 (85%)	267 (11%)	111 (4%)	2	13

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 ⓘ

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%)	276 (82%)	61 (18%)	2	8
1	C	337/343 (98%)	276 (82%)	61 (18%)	2	8
1	E	337/343 (98%)	276 (82%)	61 (18%)	2	8
2	B	406/406 (100%)	324 (80%)	82 (20%)	1	6
2	D	406/406 (100%)	324 (80%)	82 (20%)	1	6
2	F	406/406 (100%)	324 (80%)	82 (20%)	1	6
All	All	2229/2247 (99%)	1800 (81%)	429 (19%)	1	7

5 of 429 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	D	1050	GLN
1	E	25	SER
2	F	1219	THR
2	D	1080	VAL
2	D	1237	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 49 such sidechains are listed below:

Mol	Chain	Res	Type
2	D	1265	GLN
1	E	292	HIS
2	D	1266	GLN
1	E	72	GLN
2	F	954	HIS

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 ⓘ

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	3,1	14,14,15	0.78	0	17,19,21	2.58	5 (29%)
3	NAG	G	2	3	14,14,15	1.03	1 (7%)	17,19,21	2.73	10 (58%)
3	BMA	G	3	3	11,11,12	0.82	0	15,15,17	1.30	2 (13%)
3	MAN	G	4	3	11,11,12	1.26	2 (18%)	15,15,17	2.12	7 (46%)
3	MAN	G	5	3	11,11,12	1.28	2 (18%)	15,15,17	2.03	6 (40%)
3	NAG	H	1	2,3	14,14,15	0.79	1 (7%)	17,19,21	3.28	9 (52%)
3	NAG	H	2	3	14,14,15	0.36	0	17,19,21	1.26	2 (11%)
3	BMA	H	3	3	11,11,12	0.61	0	15,15,17	2.05	4 (26%)
3	MAN	H	4	3	11,11,12	1.20	2 (18%)	15,15,17	2.98	11 (73%)
3	MAN	H	5	3	11,11,12	1.13	1 (9%)	15,15,17	1.82	4 (26%)
4	NAG	I	1	4,2	14,14,15	0.55	0	17,19,21	2.16	3 (17%)
4	NAG	I	2	4	14,14,15	0.98	1 (7%)	17,19,21	1.69	3 (17%)
3	NAG	J	1	3,1	14,14,15	0.79	0	17,19,21	2.58	5 (29%)
3	NAG	J	2	3	14,14,15	1.04	1 (7%)	17,19,21	2.73	10 (58%)
3	BMA	J	3	3	11,11,12	0.82	0	15,15,17	1.30	2 (13%)
3	MAN	J	4	3	11,11,12	1.26	2 (18%)	15,15,17	2.12	7 (46%)
3	MAN	J	5	3	11,11,12	1.28	2 (18%)	15,15,17	2.02	6 (40%)
3	NAG	K	1	2,3	14,14,15	0.79	1 (7%)	17,19,21	3.28	9 (52%)
3	NAG	K	2	3	14,14,15	0.36	0	17,19,21	1.25	2 (11%)
3	BMA	K	3	3	11,11,12	0.61	0	15,15,17	2.05	4 (26%)
3	MAN	K	4	3	11,11,12	1.20	2 (18%)	15,15,17	2.97	11 (73%)
3	MAN	K	5	3	11,11,12	1.13	1 (9%)	15,15,17	1.82	4 (26%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	NAG	L	1	4,2	14,14,15	0.55	0	17,19,21	2.16	3 (17%)
4	NAG	L	2	4	14,14,15	0.98	1 (7%)	17,19,21	1.69	3 (17%)
3	NAG	M	1	3,1	14,14,15	0.79	1 (7%)	17,19,21	2.58	5 (29%)
3	NAG	M	2	3	14,14,15	1.02	1 (7%)	17,19,21	2.73	10 (58%)
3	BMA	M	3	3	11,11,12	0.82	0	15,15,17	1.30	2 (13%)
3	MAN	M	4	3	11,11,12	1.26	2 (18%)	15,15,17	2.12	7 (46%)
3	MAN	M	5	3	11,11,12	1.27	2 (18%)	15,15,17	2.03	6 (40%)
3	NAG	N	1	2,3	14,14,15	0.79	1 (7%)	17,19,21	3.28	9 (52%)
3	NAG	N	2	3	14,14,15	0.36	0	17,19,21	1.26	2 (11%)
3	BMA	N	3	3	11,11,12	0.60	0	15,15,17	2.06	4 (26%)
3	MAN	N	4	3	11,11,12	1.21	2 (18%)	15,15,17	2.97	11 (73%)
3	MAN	N	5	3	11,11,12	1.13	1 (9%)	15,15,17	1.82	4 (26%)
4	NAG	O	1	4,2	14,14,15	0.56	0	17,19,21	2.16	3 (17%)
4	NAG	O	2	4	14,14,15	0.98	1 (7%)	17,19,21	1.69	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	3,1	-	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	2,3	-	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	4,2	-	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	3,1	-	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

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	MAN	J	5	3	-	2/2/19/22	0/1/1/1
3	NAG	K	1	2,3	-	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	4,2	-	2/6/23/26	0/1/1/1
4	NAG	L	2	4	-	2/6/23/26	0/1/1/1
3	NAG	M	1	3,1	-	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	2,3	-	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	4,2	-	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 31 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	J	2	NAG	C1-C2	3.11	1.56	1.52
3	G	2	NAG	C1-C2	3.10	1.56	1.52
3	M	2	NAG	C1-C2	3.06	1.56	1.52
3	J	5	MAN	C1-C2	2.87	1.59	1.52
3	G	5	MAN	C1-C2	2.86	1.59	1.52

The worst 5 of 198 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	K	1	NAG	C1-O5-C5	8.70	123.84	112.19
3	H	1	NAG	C1-O5-C5	8.69	123.83	112.19
3	N	1	NAG	C1-O5-C5	8.68	123.83	112.19
3	J	1	NAG	C1-O5-C5	7.06	121.65	112.19
3	G	1	NAG	C1-O5-C5	7.06	121.65	112.19

There are no chirality outliers.

5 of 63 torsion outliers are listed below:

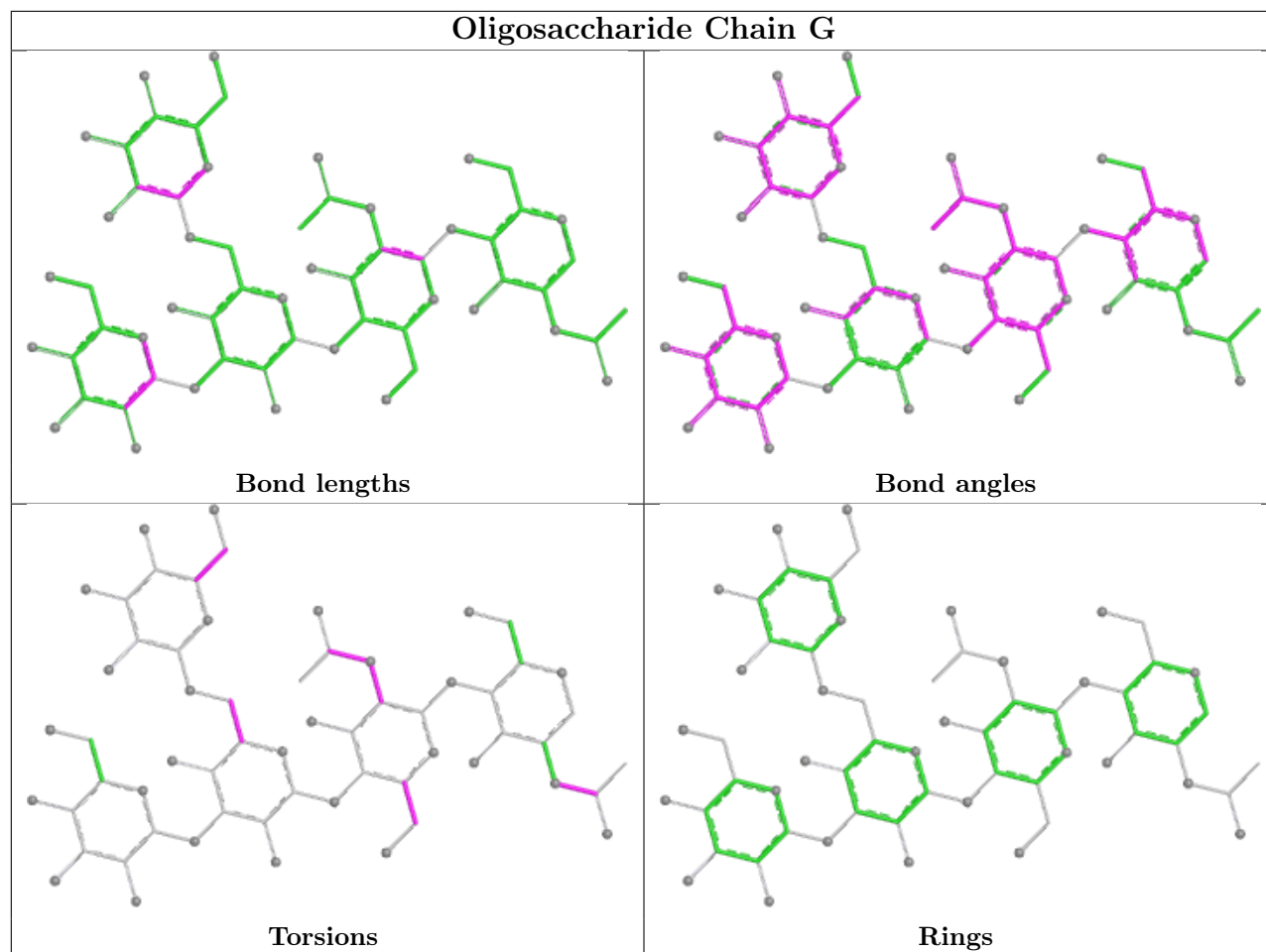
Mol	Chain	Res	Type	Atoms
3	G	2	NAG	C1-C2-N2-C7
3	G	2	NAG	C8-C7-N2-C2
3	G	2	NAG	O7-C7-N2-C2
3	H	1	NAG	C1-C2-N2-C7
3	H	2	NAG	C8-C7-N2-C2

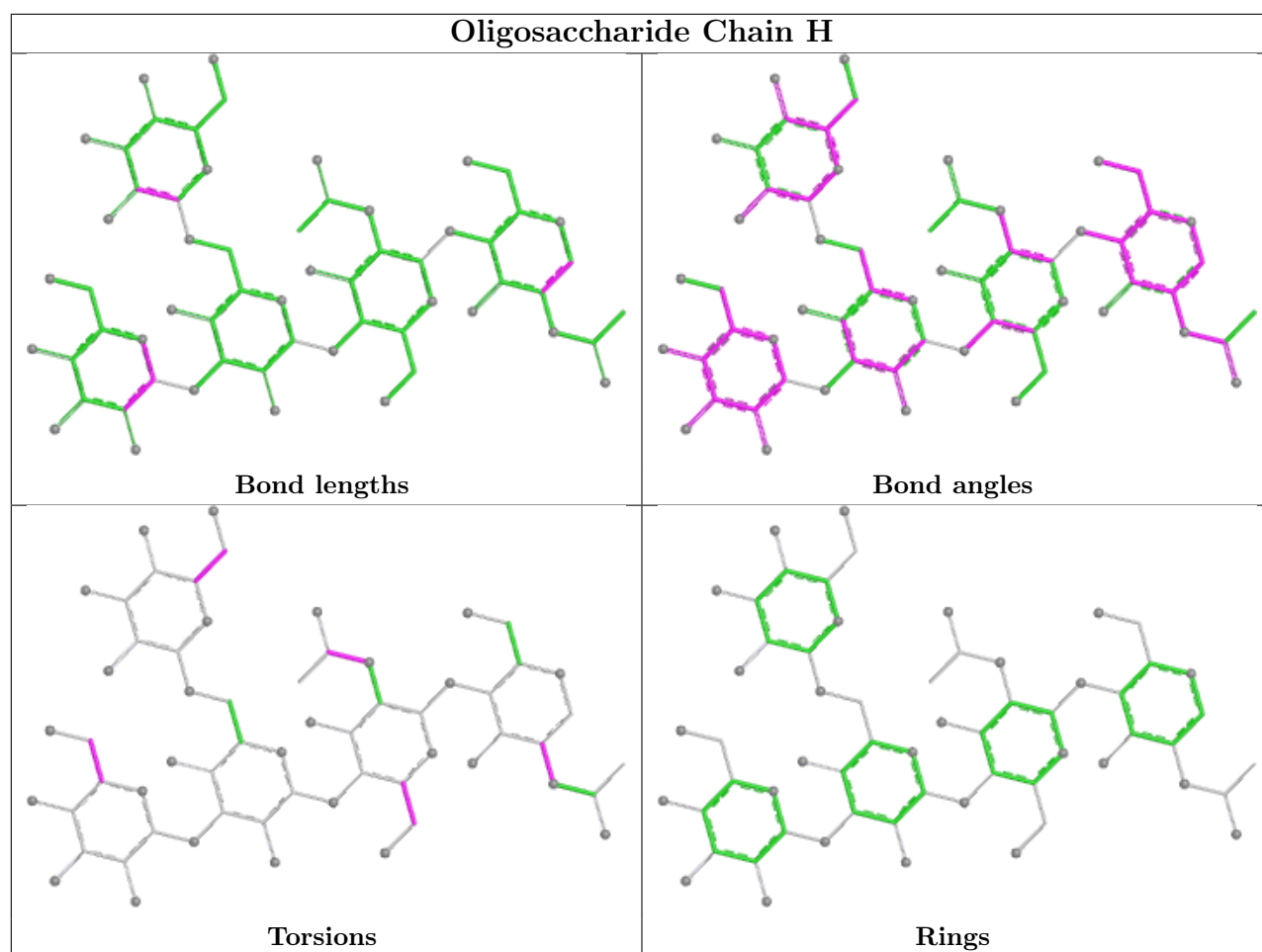
There are no ring outliers.

24 monomers are involved in 31 short contacts:

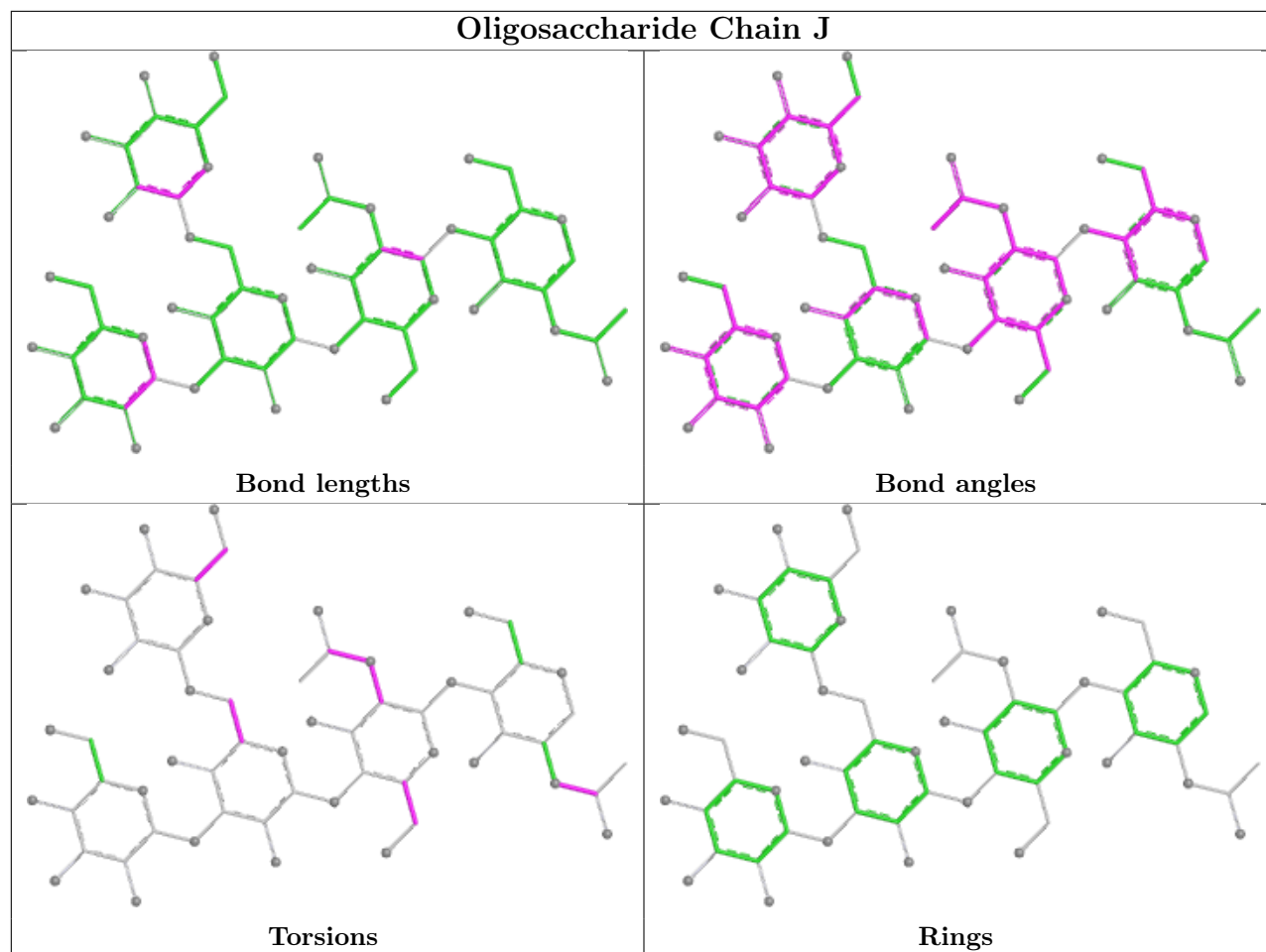
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	G	3	BMA	3	0
3	N	2	NAG	1	0
3	H	5	MAN	3	0
3	M	3	BMA	4	0
3	H	2	NAG	1	0
3	J	3	BMA	3	0
3	K	5	MAN	3	0
4	L	2	NAG	1	0
4	O	2	NAG	1	0
3	K	3	BMA	2	0
3	G	5	MAN	3	0
3	K	1	NAG	2	0
3	H	1	NAG	2	0
3	M	5	MAN	4	0
3	N	3	BMA	2	0
3	N	5	MAN	3	0
3	J	5	MAN	3	0
3	K	2	NAG	1	0
4	I	2	NAG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

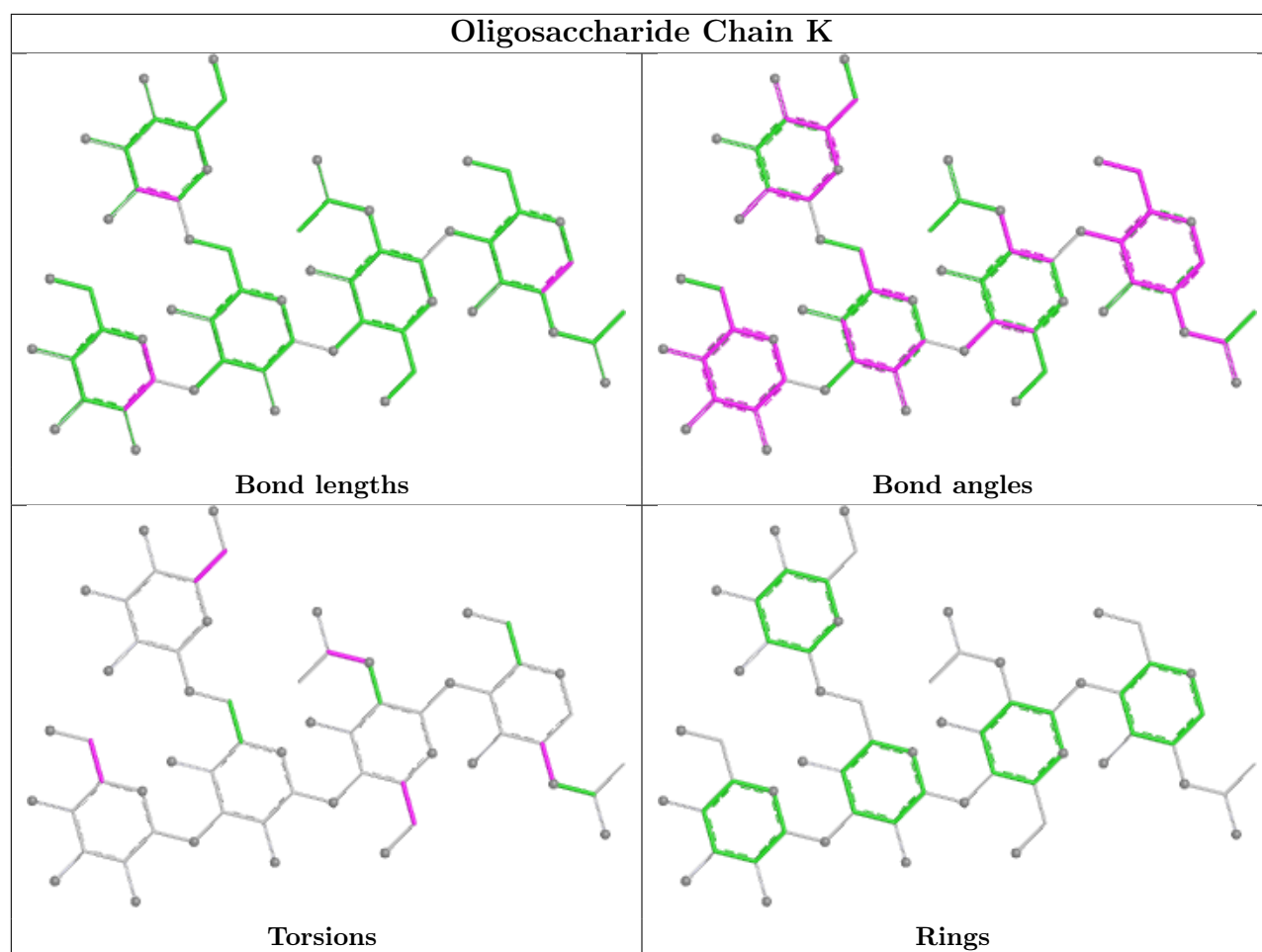
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

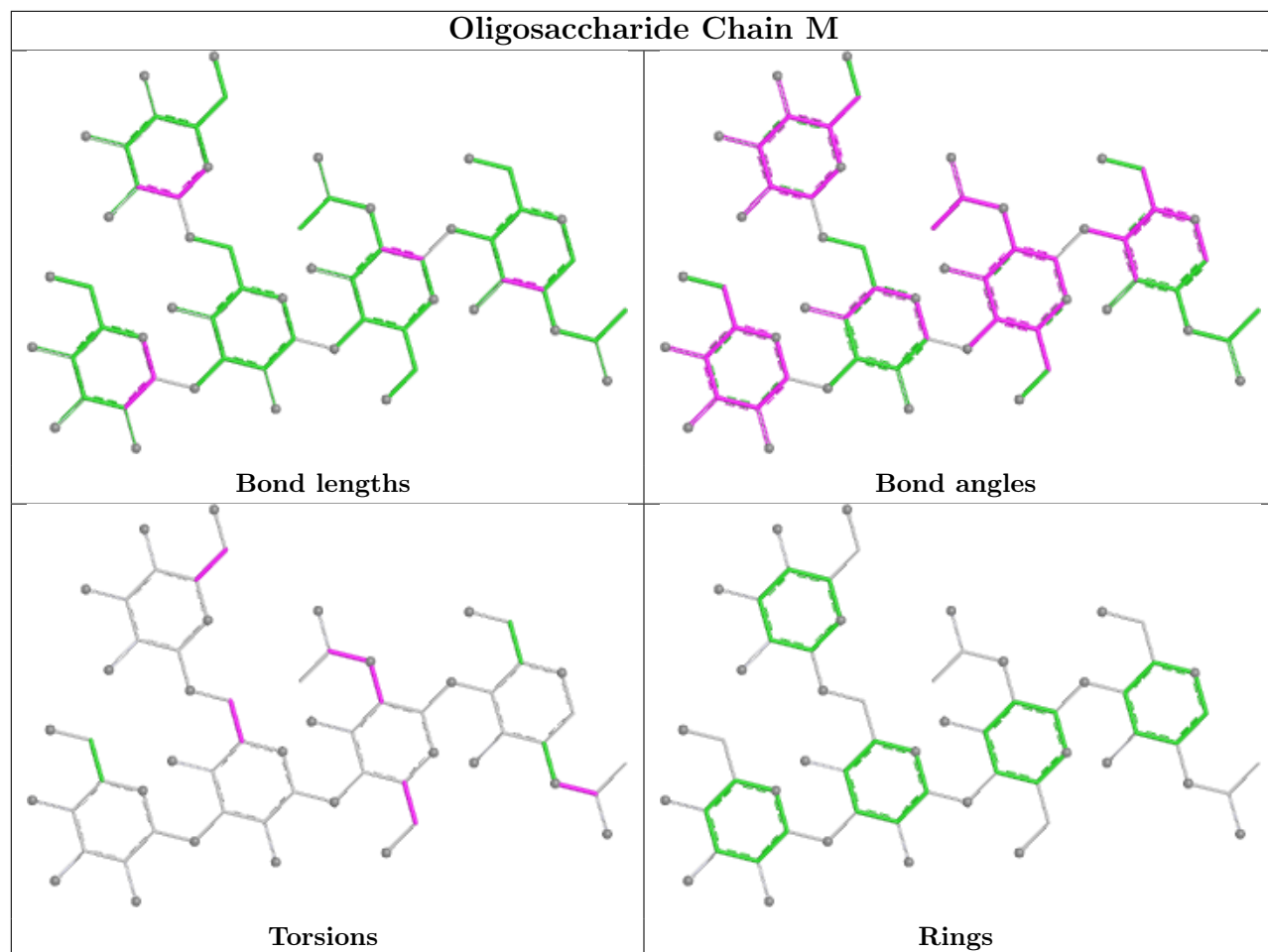


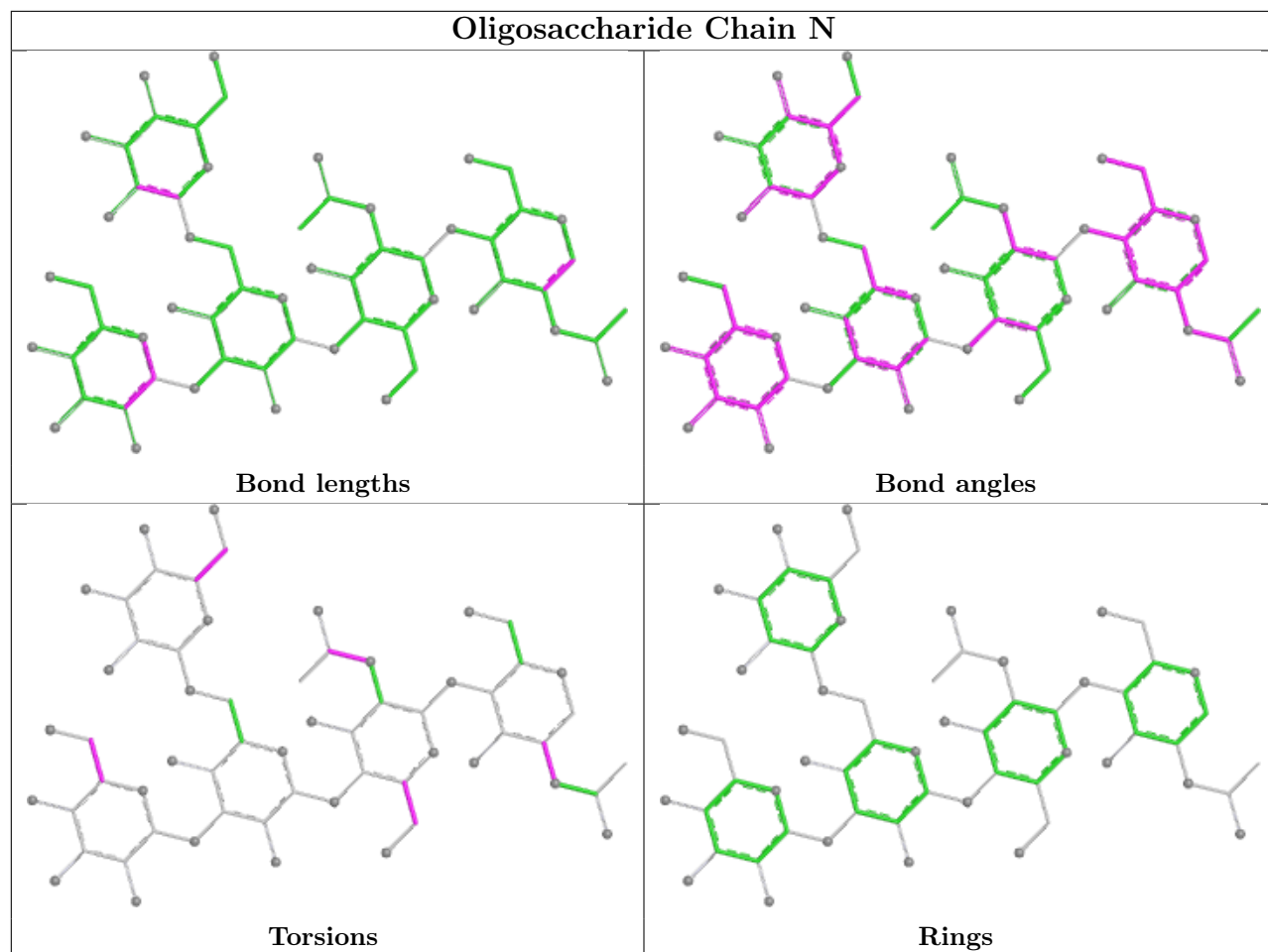


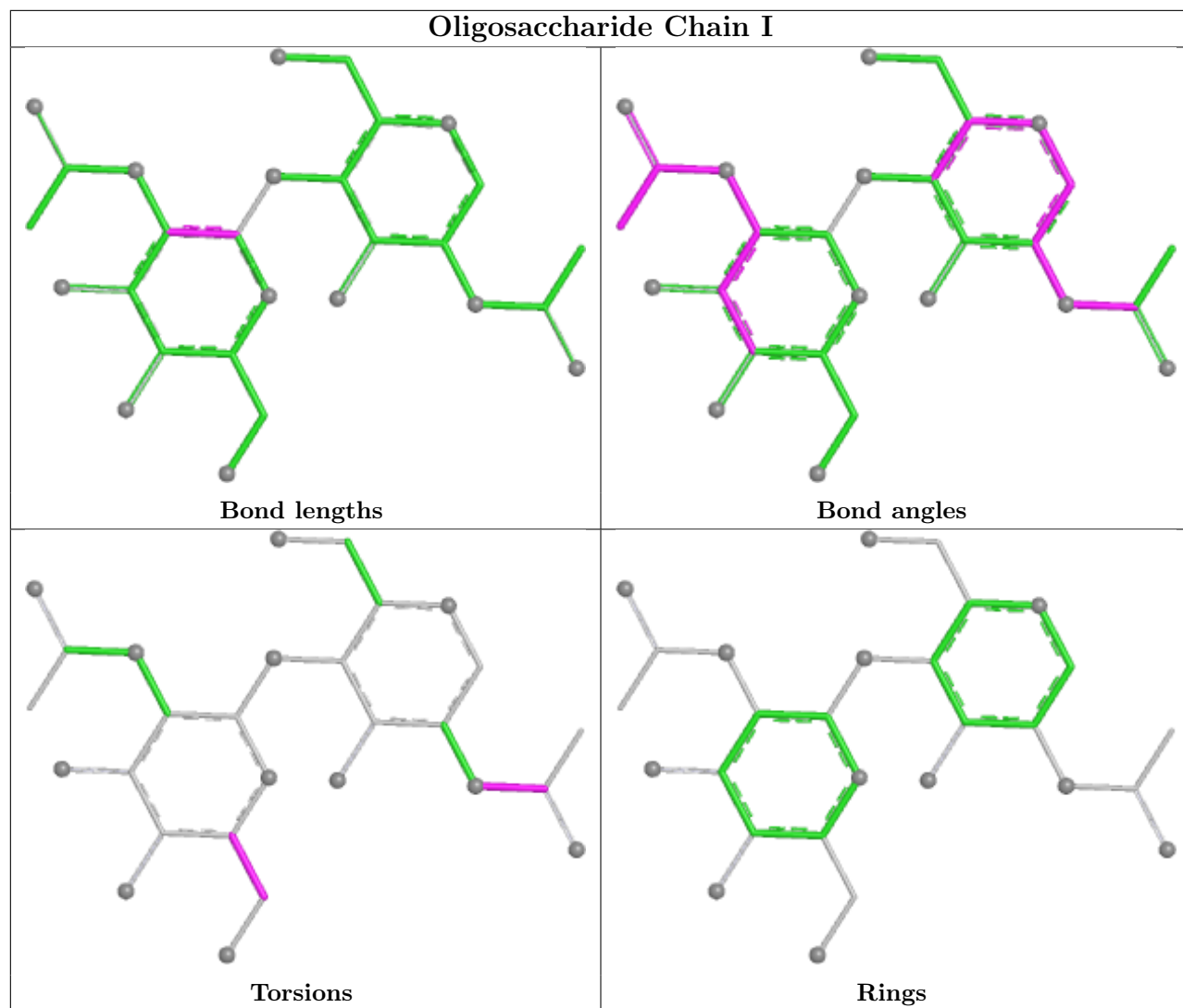
Oligosaccharide Chain J

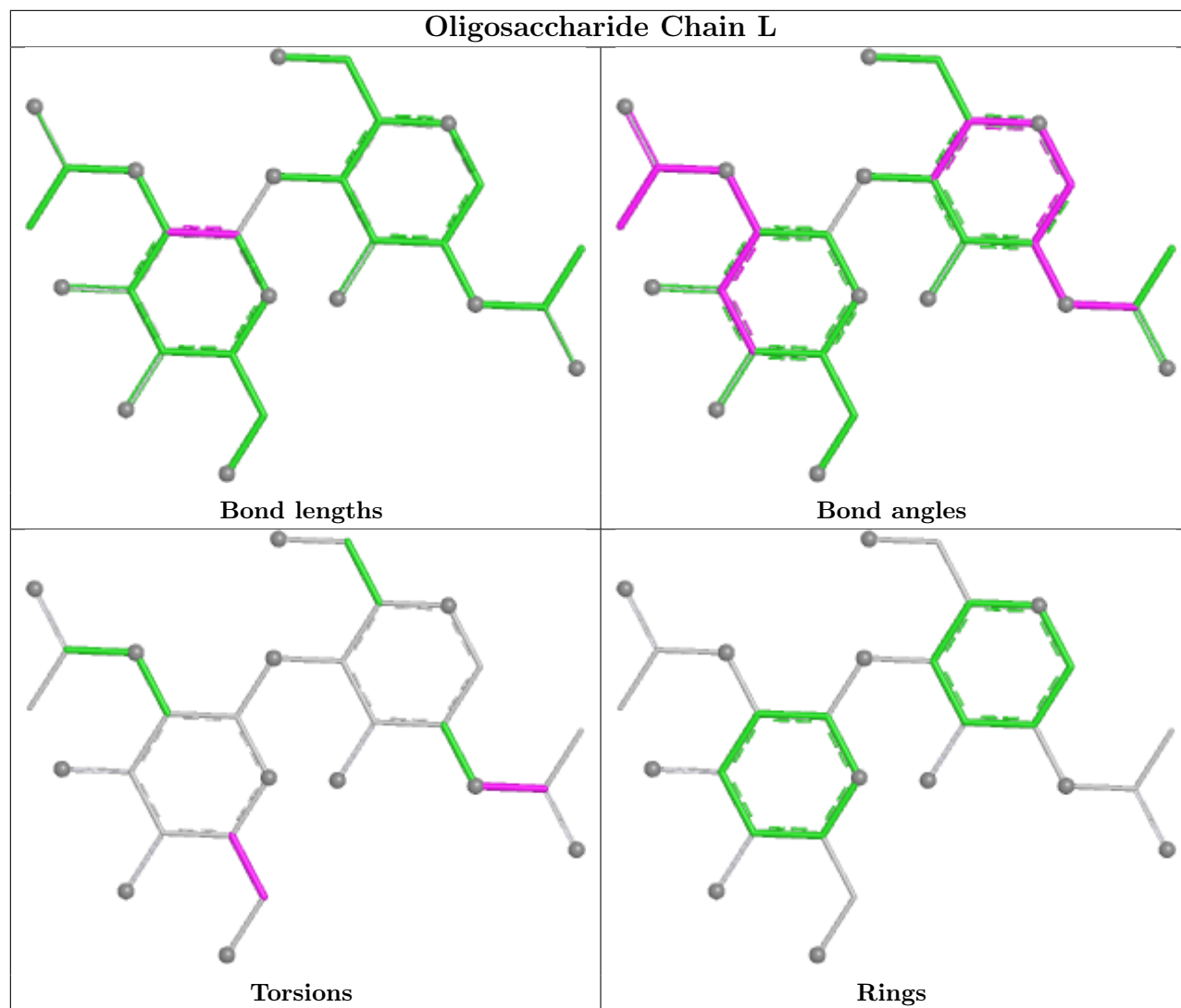


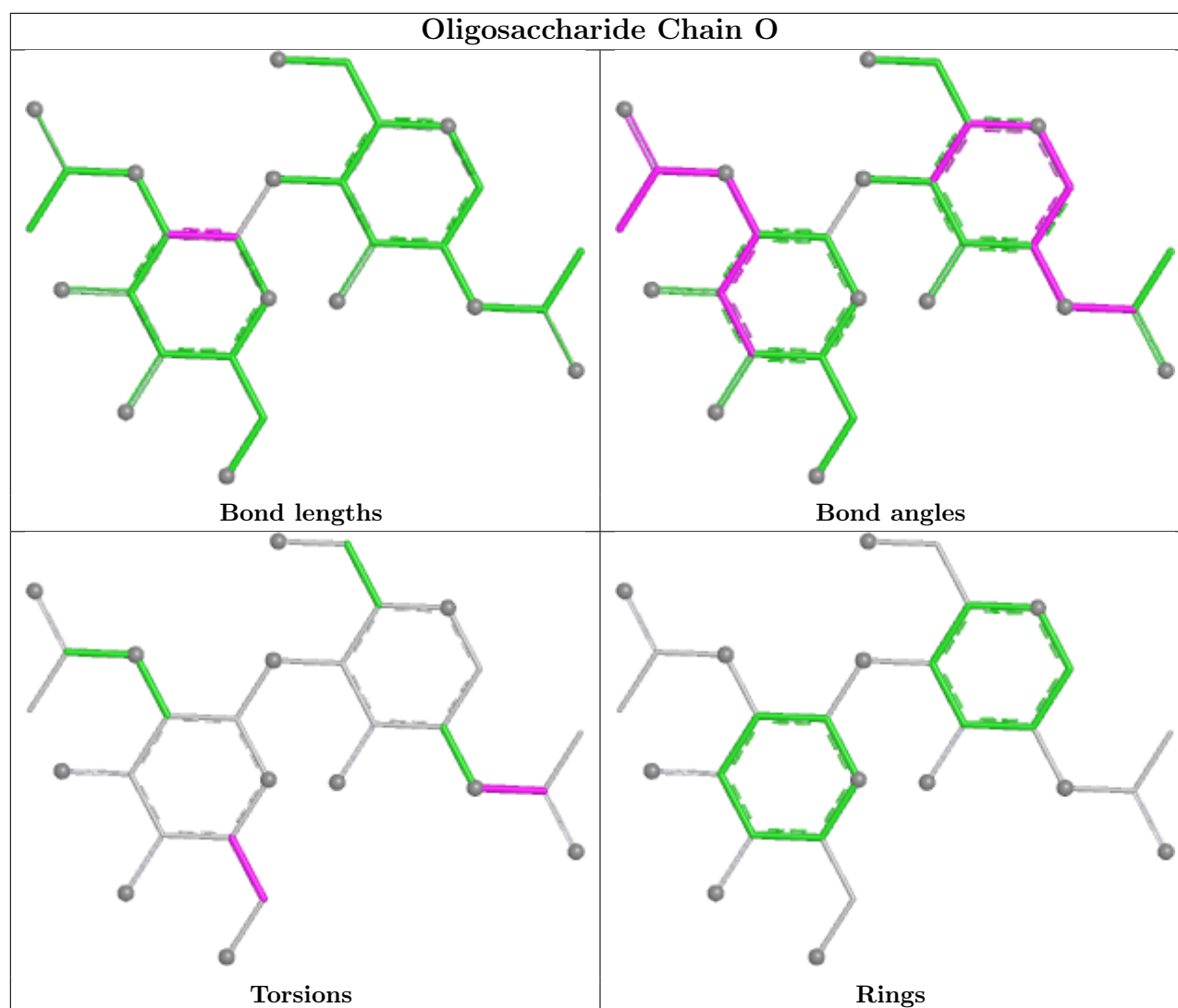












5.6 Ligand geometry [i](#)

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	$\# Z > 2$
6	B12	A	2007	-	94,101,101	1.60	12 (12%)	149,166,166	2.53	42 (28%)
5	NAG	D	2013	2	14,14,15	0.63	0	17,19,21	1.99	5 (29%)
5	NAG	D	2007	2	14,14,15	0.54	0	17,19,21	1.09	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NAG	B	2007	2	14,14,15	0.56	0	17,19,21	1.08	2 (11%)
5	NAG	B	2009	2	14,14,15	0.48	0	17,19,21	0.97	1 (5%)
5	NAG	A	2001	1	14,14,15	1.15	2 (14%)	17,19,21	2.44	7 (41%)
5	NAG	B	2008	2	14,14,15	0.60	0	17,19,21	1.13	2 (11%)
5	NAG	B	2012	2	14,14,15	0.66	0	17,19,21	2.19	3 (17%)
5	NAG	F	2008	2	14,14,15	0.59	0	17,19,21	1.13	2 (11%)
6	B12	C	2007	-	94,101,101	1.60	13 (13%)	149,166,166	2.54	41 (27%)
6	B12	E	2007	-	94,101,101	1.60	12 (12%)	149,166,166	2.53	42 (28%)
5	NAG	F	2007	2	14,14,15	0.56	0	17,19,21	1.09	2 (11%)
5	NAG	D	2001	2	14,14,15	0.97	1 (7%)	17,19,21	1.91	4 (23%)
5	NAG	B	2001	2	14,14,15	0.98	1 (7%)	17,19,21	1.90	4 (23%)
5	NAG	F	2001	2	14,14,15	0.99	1 (7%)	17,19,21	1.90	4 (23%)
5	NAG	F	2009	2	14,14,15	0.48	0	17,19,21	0.97	1 (5%)
5	NAG	D	2009	2	14,14,15	0.48	0	17,19,21	0.97	1 (5%)
5	NAG	F	2013	2	14,14,15	0.67	1 (7%)	17,19,21	1.78	4 (23%)
5	NAG	B	2013	2	14,14,15	0.68	0	17,19,21	1.93	4 (23%)
5	NAG	F	2012	2	14,14,15	0.58	0	17,19,21	2.04	5 (29%)
5	NAG	D	2008	2	14,14,15	0.59	0	17,19,21	1.14	2 (11%)
5	NAG	C	2001	1	14,14,15	1.14	2 (14%)	17,19,21	2.45	7 (41%)
5	NAG	E	2001	1	14,14,15	1.16	2 (14%)	17,19,21	2.47	7 (41%)
5	NAG	D	2012	2	14,14,15	0.60	0	17,19,21	1.70	4 (23%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	B12	A	2007	-	1/1/36/38	11/56/223/223	0/3/11/11
5	NAG	D	2013	2	-	3/6/23/26	0/1/1/1
5	NAG	D	2007	2	-	2/6/23/26	0/1/1/1
5	NAG	B	2007	2	-	2/6/23/26	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	5/6/23/26	0/1/1/1
5	NAG	B	2008	2	1/1/5/7	5/6/23/26	0/1/1/1
5	NAG	F	2008	2	1/1/5/7	5/6/23/26	0/1/1/1

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	B	2012	2	-	4/6/23/26	0/1/1/1
6	B12	C	2007	-	1/1/36/38	11/56/223/223	0/3/11/11
6	B12	E	2007	-	1/1/36/38	11/56/223/223	0/3/11/11
5	NAG	F	2007	2	-	2/6/23/26	0/1/1/1
5	NAG	D	2001	2	1/1/5/7	5/6/23/26	0/1/1/1
5	NAG	B	2001	2	1/1/5/7	5/6/23/26	0/1/1/1
5	NAG	F	2001	2	1/1/5/7	5/6/23/26	0/1/1/1
5	NAG	F	2009	2	-	0/6/23/26	0/1/1/1
5	NAG	D	2009	2	-	0/6/23/26	0/1/1/1
5	NAG	F	2013	2	-	3/6/23/26	0/1/1/1
5	NAG	B	2013	2	-	3/6/23/26	0/1/1/1
5	NAG	F	2012	2	-	4/6/23/26	0/1/1/1
5	NAG	D	2008	2	1/1/5/7	5/6/23/26	0/1/1/1
5	NAG	C	2001	1	1/1/5/7	5/6/23/26	0/1/1/1
5	NAG	E	2001	1	1/1/5/7	5/6/23/26	0/1/1/1
5	NAG	D	2012	2	-	4/6/23/26	0/1/1/1

The worst 5 of 47 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	2007	B12	C19-N24	-7.06	1.40	1.49
6	C	2007	B12	C19-N24	-7.04	1.40	1.49
6	E	2007	B12	C19-N24	-7.04	1.40	1.49
6	A	2007	B12	C8B-C9B	4.54	1.47	1.40
6	E	2007	B12	C8B-C9B	4.53	1.47	1.40

The worst 5 of 198 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	E	2007	B12	C1-C19-N24	9.11	116.38	106.25
6	A	2007	B12	C1-C19-N24	9.09	116.36	106.25
6	C	2007	B12	C1-C19-N24	9.08	116.35	106.25
6	C	2007	B12	C13-C12-C11	-7.77	92.29	100.97
6	C	2007	B12	C47-C12-C46	7.76	122.26	109.41

5 of 12 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
5	A	2001	NAG	C1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atom
5	B	2001	NAG	C1
5	B	2008	NAG	C1
5	C	2001	NAG	C1
5	D	2001	NAG	C1

5 of 105 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	2001	NAG	C8-C7-N2-C2
5	A	2001	NAG	O7-C7-N2-C2
5	B	2001	NAG	C3-C2-N2-C7
5	B	2001	NAG	C8-C7-N2-C2
5	B	2001	NAG	O7-C7-N2-C2

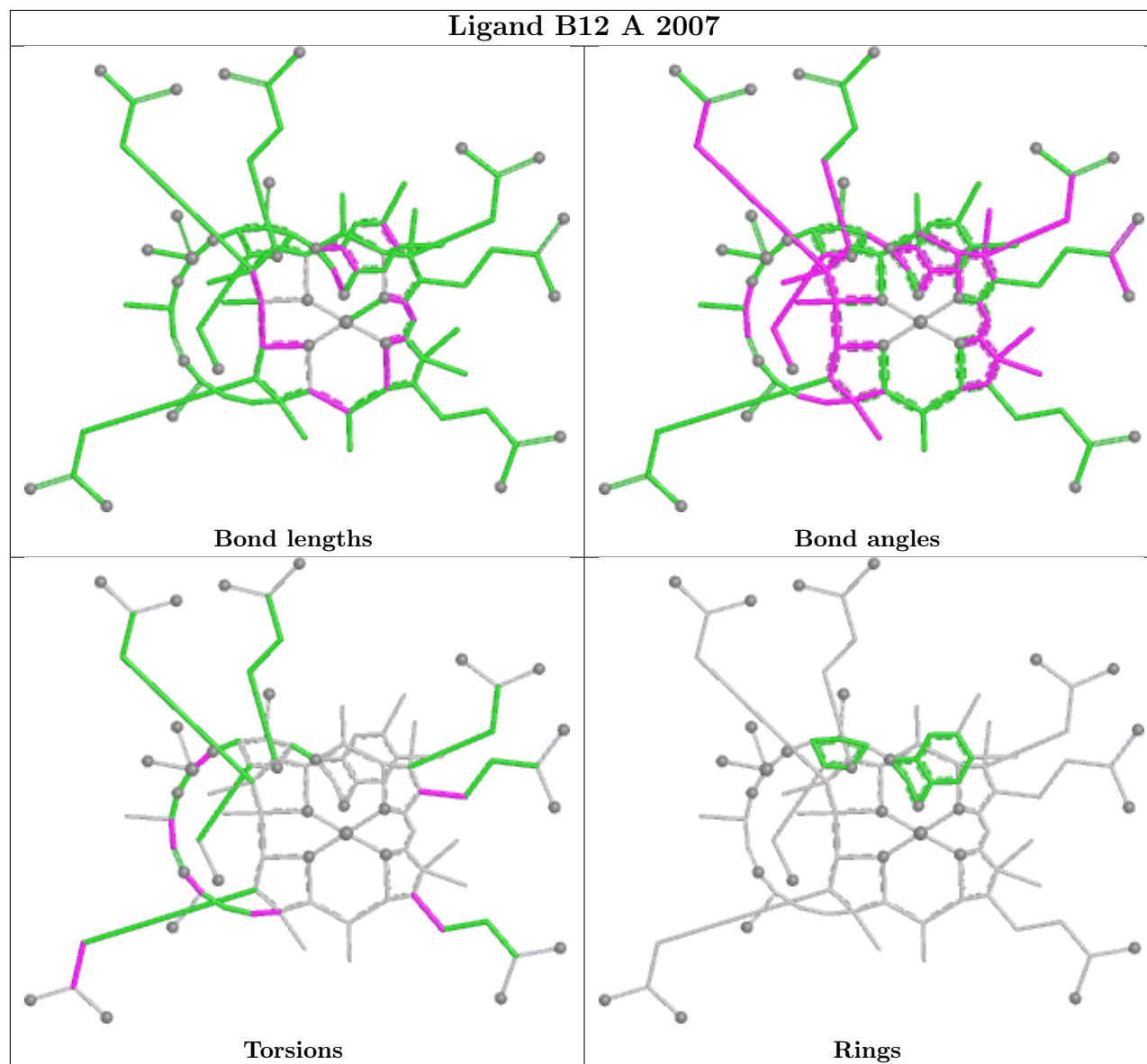
There are no ring outliers.

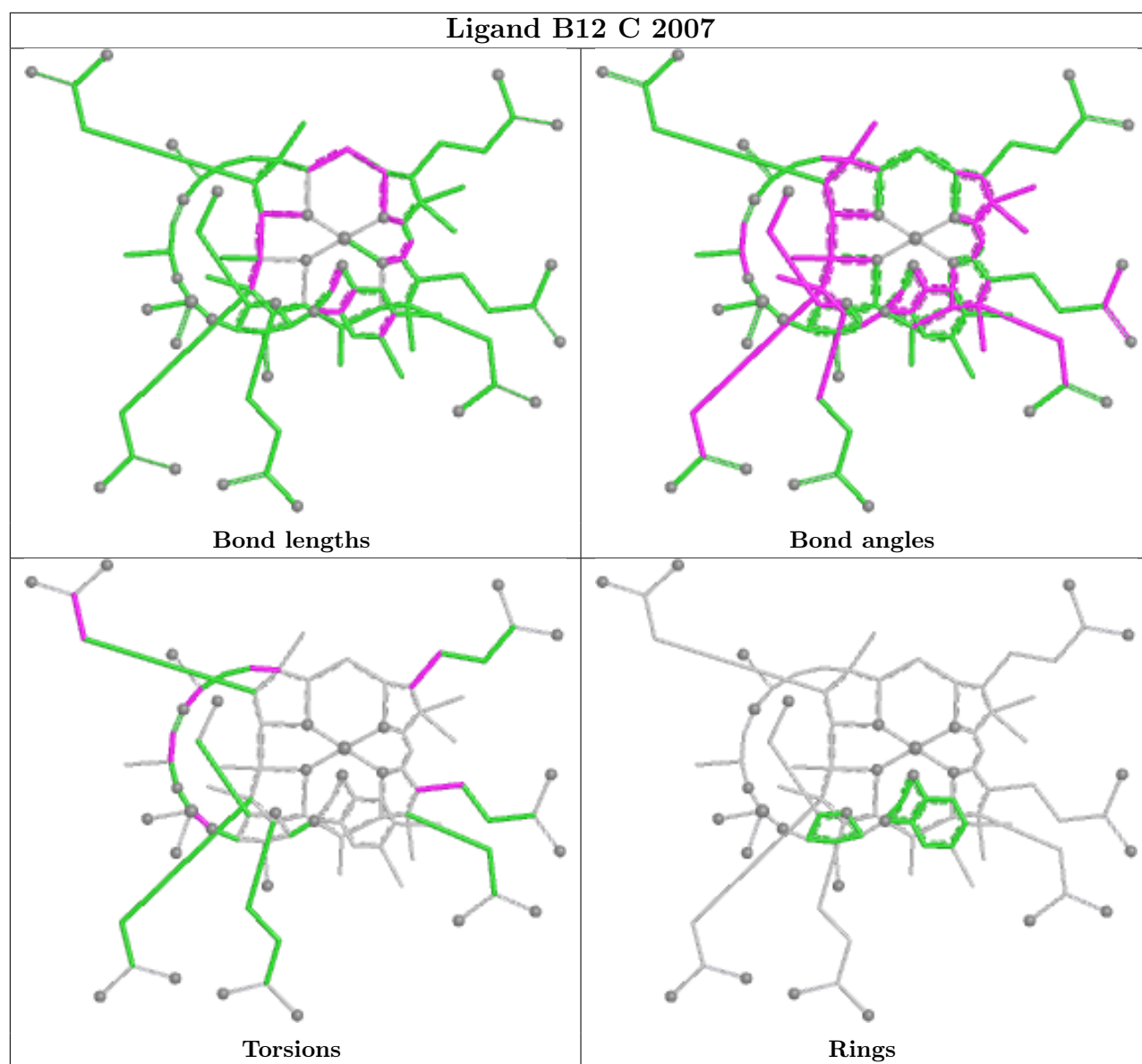
18 monomers are involved in 124 short contacts:

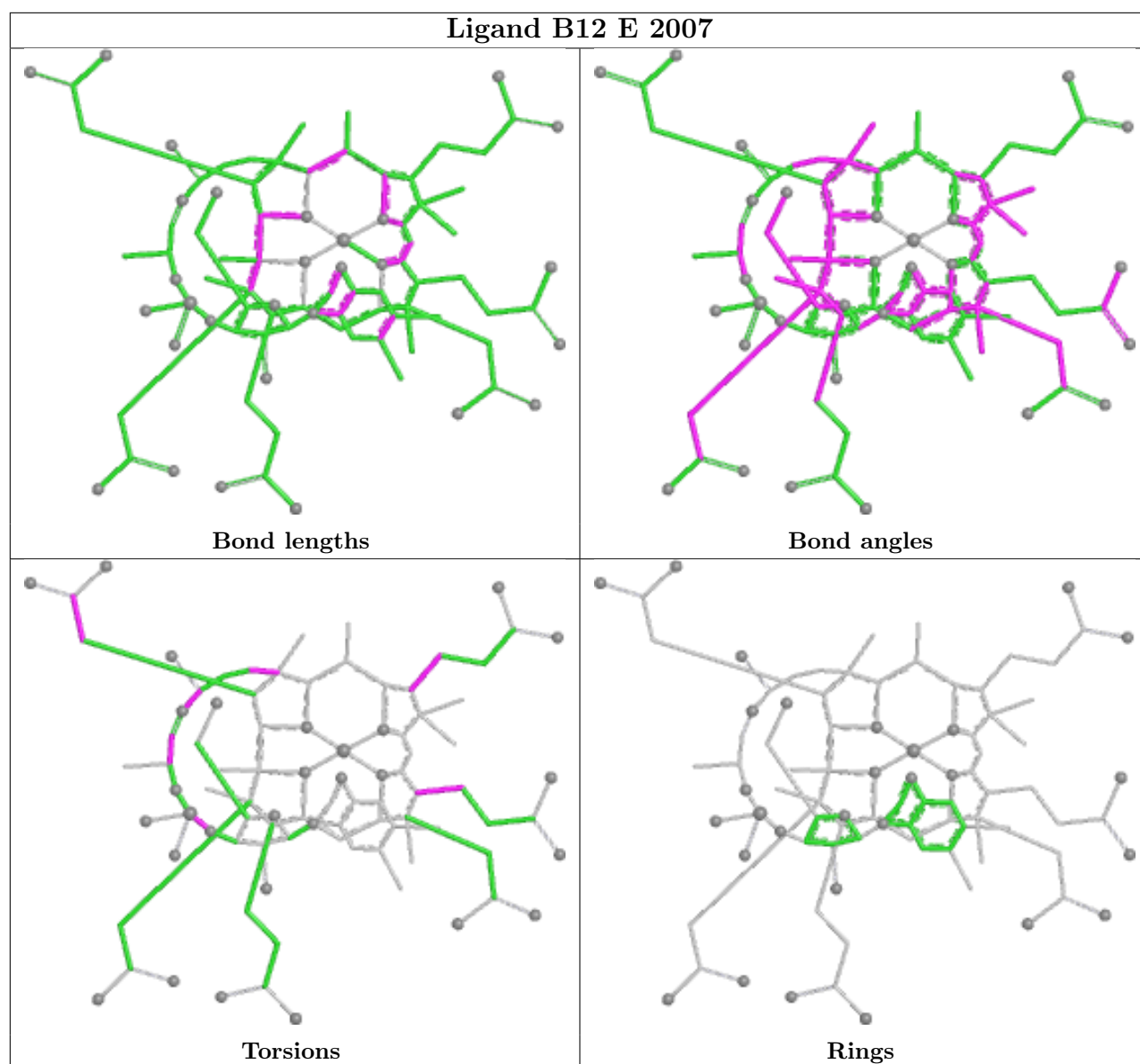
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	2007	B12	29	0
5	D	2013	NAG	2	0
5	B	2009	NAG	2	0
5	A	2001	NAG	7	0
5	B	2008	NAG	2	0
5	F	2008	NAG	2	0
6	C	2007	B12	26	0
6	E	2007	B12	25	0
5	D	2001	NAG	1	0
5	B	2001	NAG	1	0
5	F	2001	NAG	1	0
5	F	2009	NAG	3	0
5	D	2009	NAG	2	0
5	F	2013	NAG	2	0
5	B	2013	NAG	2	0
5	D	2008	NAG	2	0
5	C	2001	NAG	8	0
5	E	2001	NAG	7	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%)	-1.22	0 100 100	47, 77, 133, 281	1 (0%)
1	C	385/393 (97%)	-1.23	0 100 100	47, 76, 139, 284	1 (0%)
1	E	385/393 (97%)	-1.19	0 100 100	50, 77, 140, 256	1 (0%)
2	B	457/457 (100%)	-1.02	0 100 100	59, 111, 172, 219	0
2	D	457/457 (100%)	-1.02	0 100 100	59, 110, 176, 228	0
2	F	457/457 (100%)	-1.07	0 100 100	61, 111, 178, 259	0
All	All	2526/2550 (99%)	-1.12	0 100 100	47, 95, 170, 284	3 (0%)

There are no RSRZ outliers to report.

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(Å ²)	Q<0.9
3	NAG	N	2	14/15	0.93	0.09	163,175,188,193	0
3	MAN	M	5	11/12	0.94	0.11	181,190,197,200	0
3	MAN	K	4	11/12	0.95	0.06	172,185,203,208	0
3	MAN	K	5	11/12	0.95	0.07	190,201,222,227	0
3	MAN	J	4	11/12	0.95	0.07	160,166,178,180	0
3	MAN	J	5	11/12	0.95	0.09	196,201,205,206	0

Continued on next page...

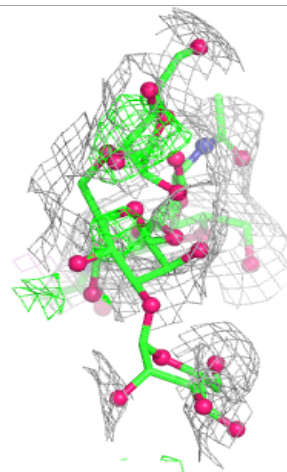
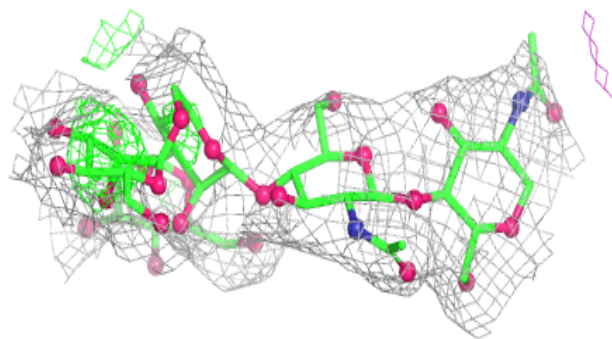
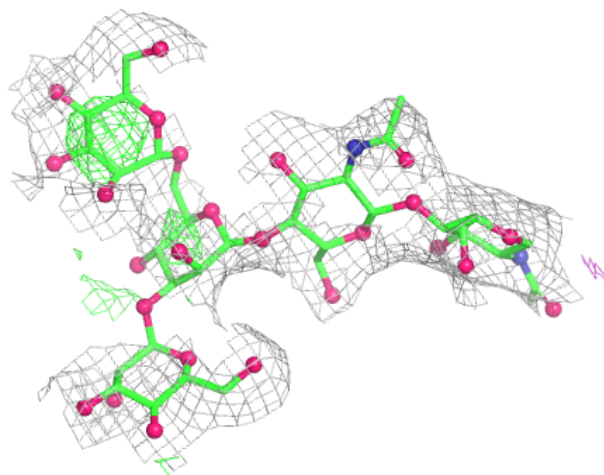
Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	MAN	G	4	11/12	0.96	0.06	162,165,175,180	0
3	MAN	G	5	11/12	0.96	0.07	190,195,201,202	0
3	BMA	K	3	11/12	0.96	0.05	167,179,190,190	0
3	NAG	H	2	14/15	0.96	0.07	159,171,180,183	0
3	BMA	H	3	11/12	0.96	0.05	167,178,184,188	0
3	MAN	H	4	11/12	0.96	0.06	181,194,208,211	0
3	MAN	H	5	11/12	0.96	0.08	184,197,219,223	0
3	MAN	N	4	11/12	0.96	0.05	188,194,206,206	0
3	MAN	N	5	11/12	0.96	0.06	192,201,209,213	0
4	NAG	I	2	14/15	0.96	0.05	150,155,171,178	0
3	NAG	M	2	14/15	0.97	0.14	89,97,107,109	0
3	BMA	N	3	11/12	0.97	0.06	173,182,191,193	0
3	BMA	M	3	11/12	0.97	0.05	129,131,147,153	0
3	MAN	M	4	11/12	0.97	0.06	169,175,195,202	0
3	NAG	K	2	14/15	0.97	0.09	151,172,184,186	0
4	NAG	L	2	14/15	0.97	0.06	163,170,176,178	0
3	NAG	G	2	14/15	0.98	0.10	90,95,103,104	0
3	NAG	M	1	14/15	0.98	0.18	53,78,96,106	0
3	BMA	G	3	11/12	0.98	0.05	128,134,138,144	0
3	NAG	J	1	14/15	0.98	0.15	59,75,86,91	0
3	NAG	J	2	14/15	0.98	0.10	89,98,103,104	0
3	BMA	J	3	11/12	0.98	0.06	138,144,154,155	0
4	NAG	O	1	14/15	0.98	0.06	119,136,140,142	0
4	NAG	O	2	14/15	0.98	0.05	160,167,171,175	0
4	NAG	I	1	14/15	0.99	0.05	121,132,136,139	0
3	NAG	H	1	14/15	0.99	0.04	113,122,130,135	0
4	NAG	L	1	14/15	0.99	0.07	125,138,141,143	0
3	NAG	G	1	14/15	0.99	0.12	58,73,97,103	0
3	NAG	K	1	14/15	0.99	0.04	107,122,135,136	0
3	NAG	N	1	14/15	0.99	0.04	119,123,127,130	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.

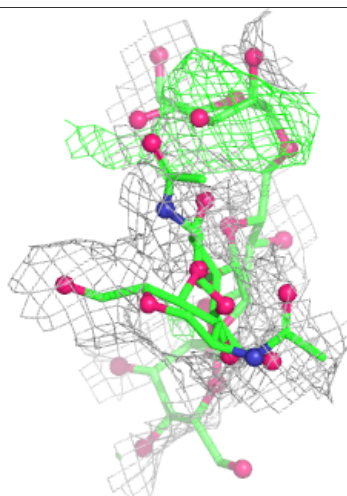
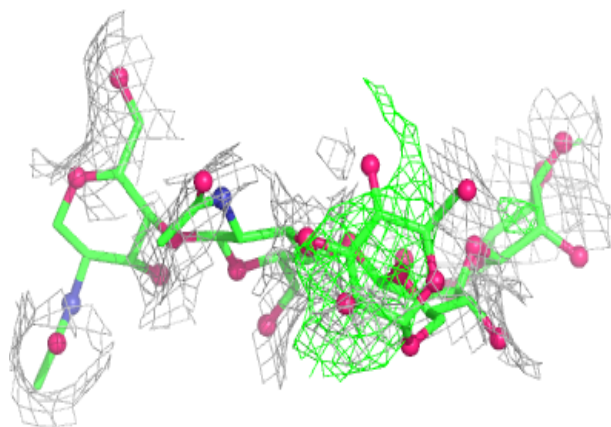
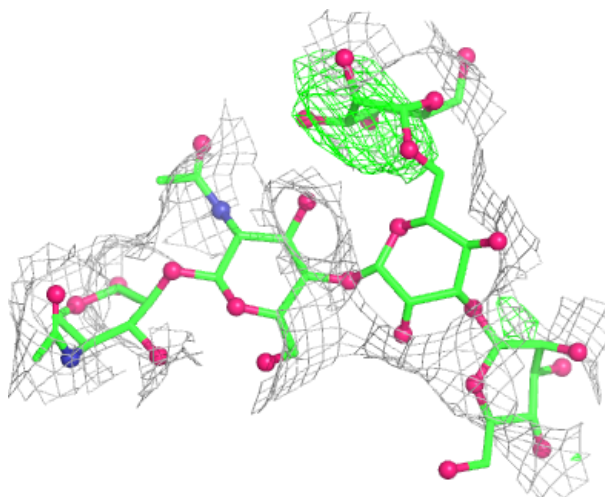
Electron density around Chain G:

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



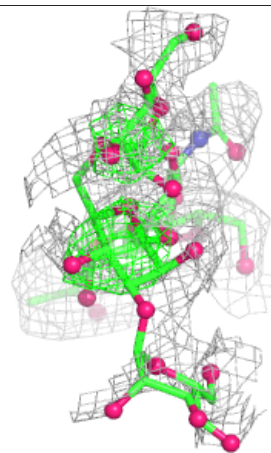
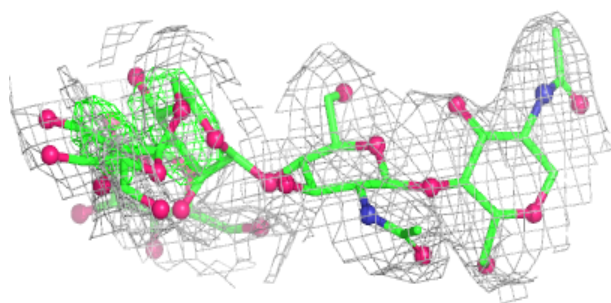
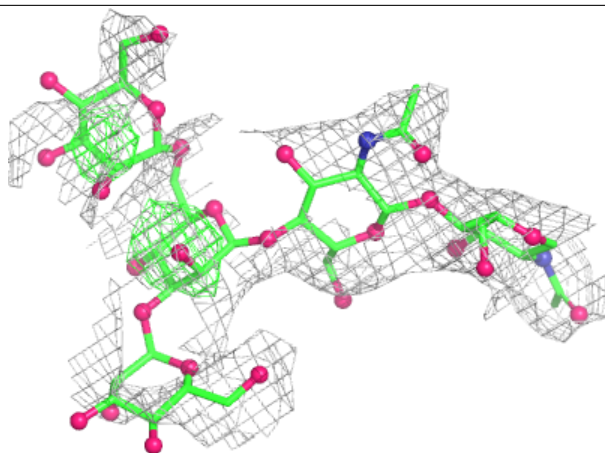
Electron density around Chain H:

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



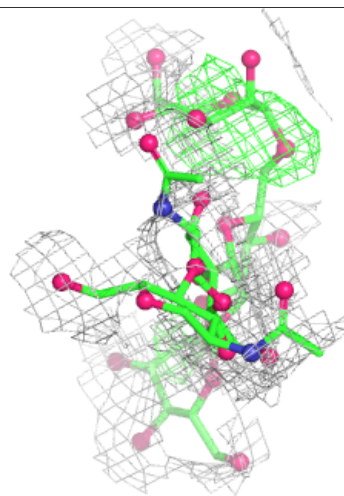
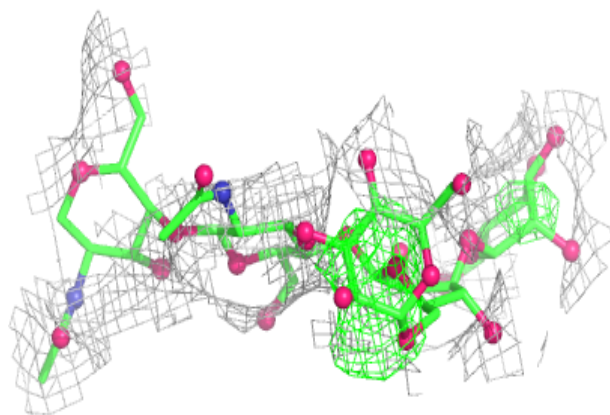
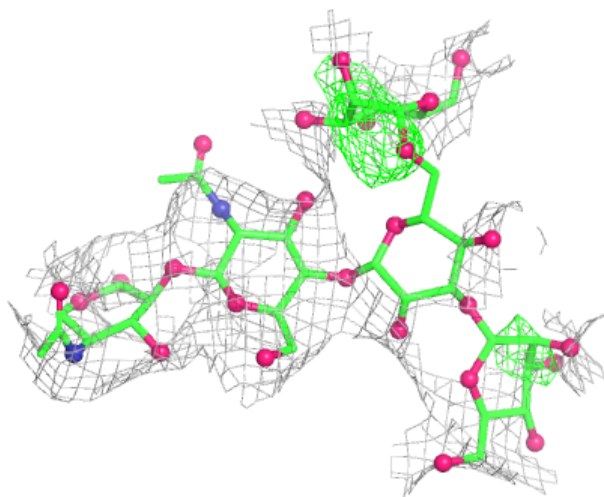
Electron density around Chain J:

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



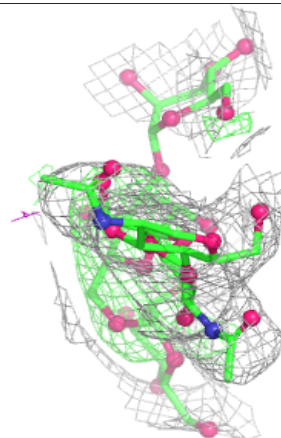
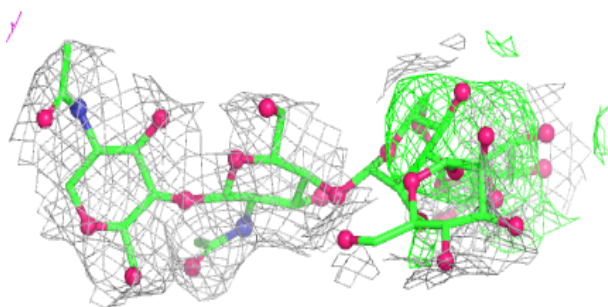
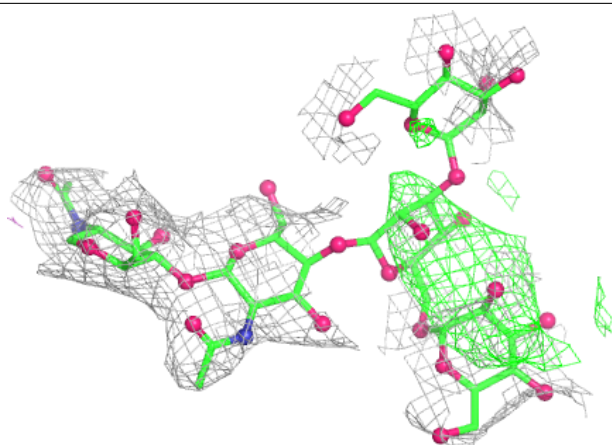
Electron density around Chain K:

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



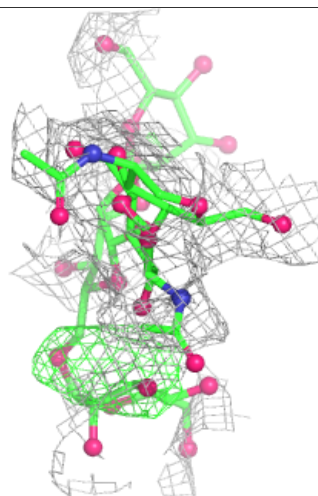
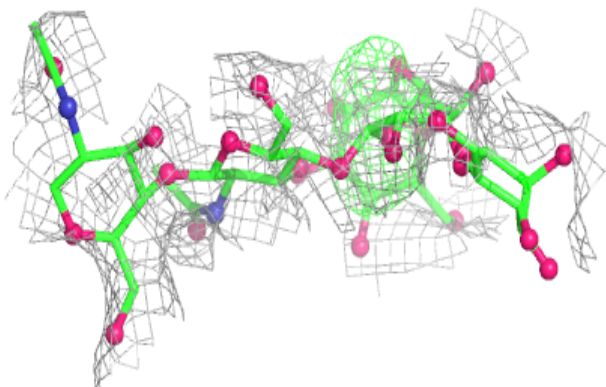
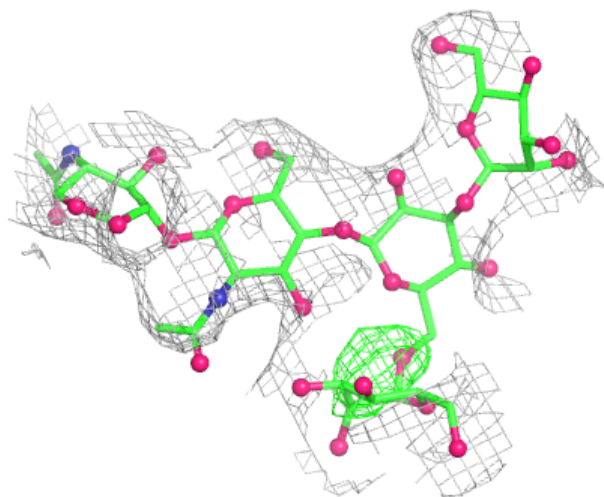
Electron density around Chain M:

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



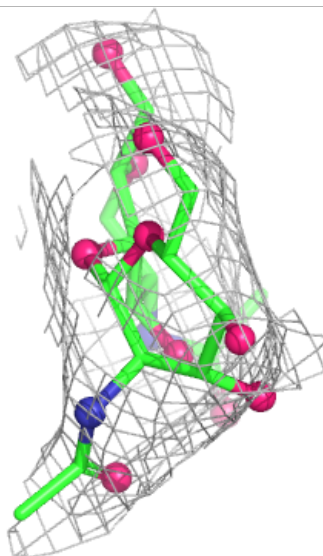
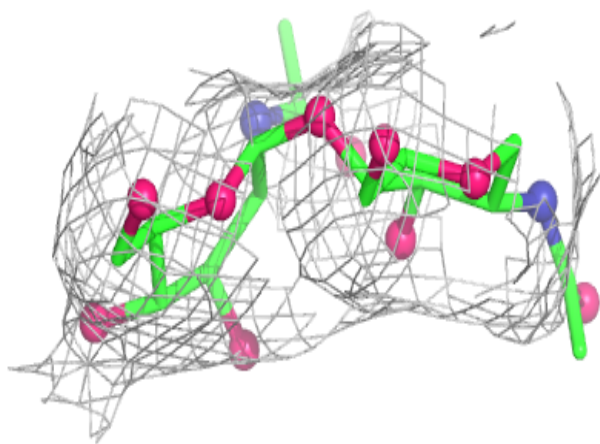
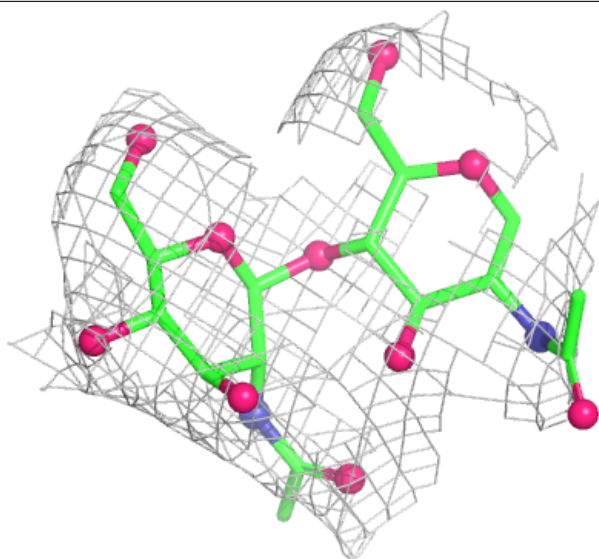
Electron density around Chain N:

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



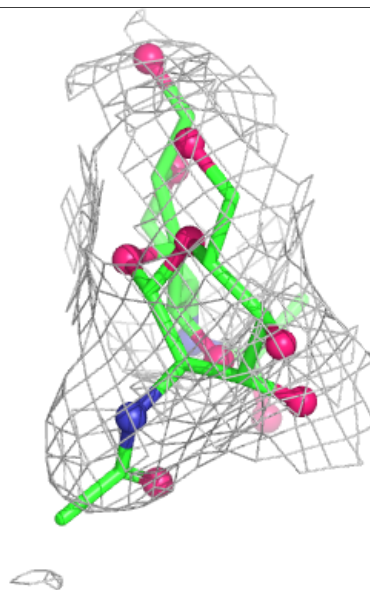
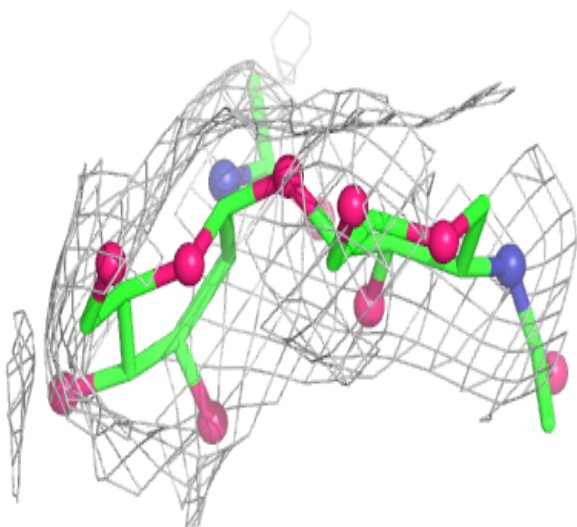
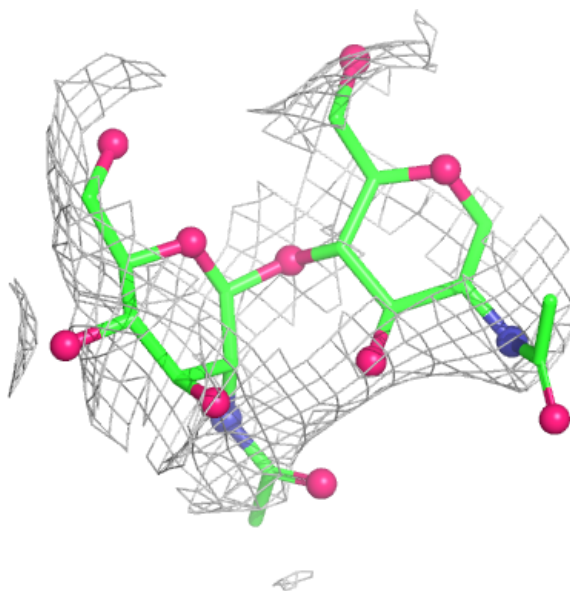
Electron density around Chain I:

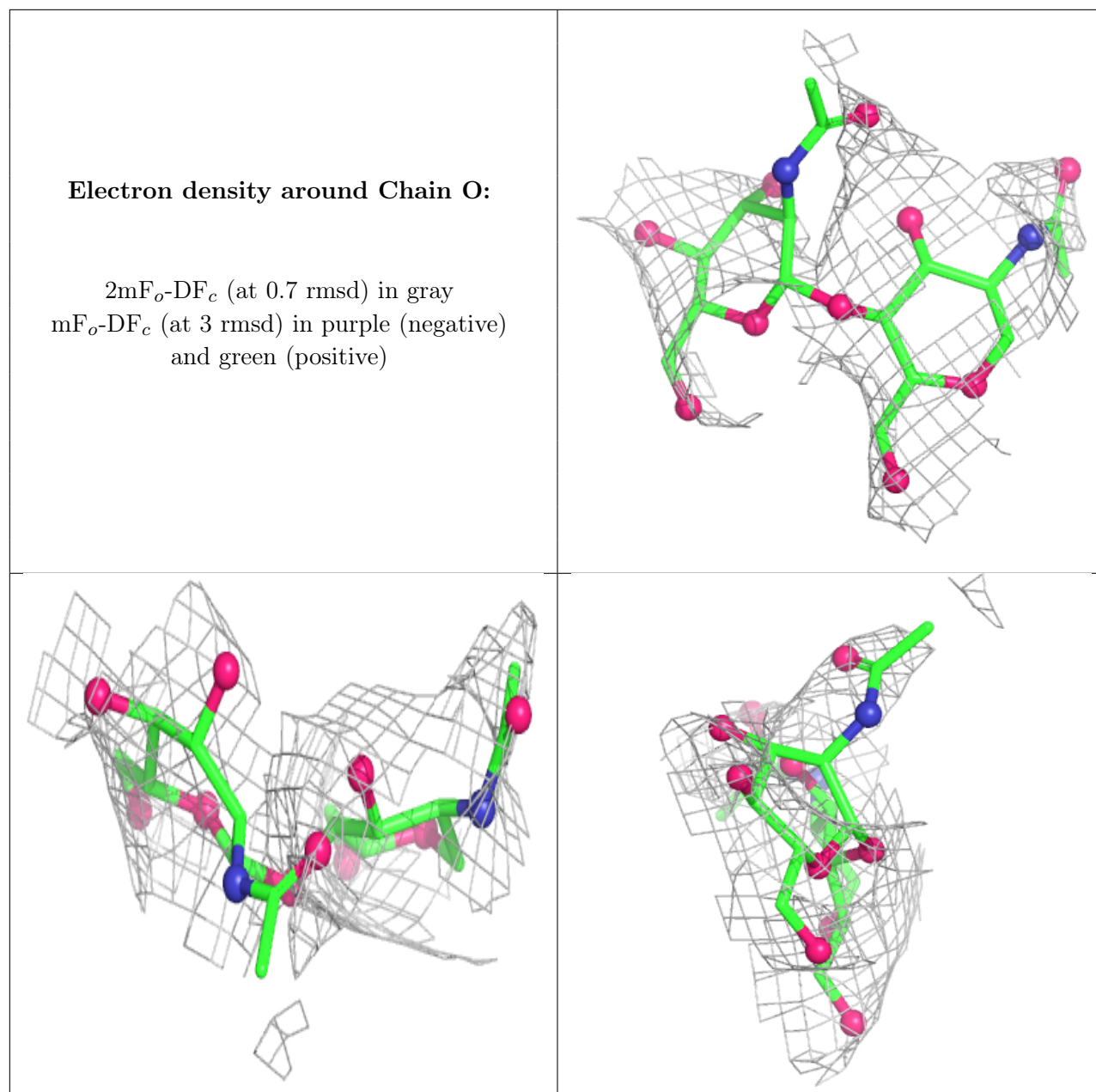
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around Chain 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	B	2009	14/15	0.91	0.08	185,193,199,199	0
5	NAG	D	2001	14/15	0.92	0.07	187,191,196,197	0
5	NAG	D	2008	14/15	0.93	0.09	196,203,209,210	0

Continued on next page...

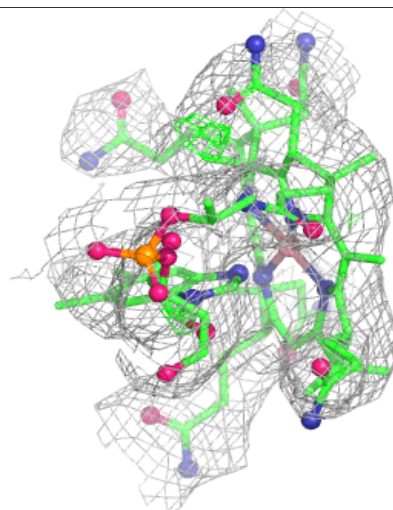
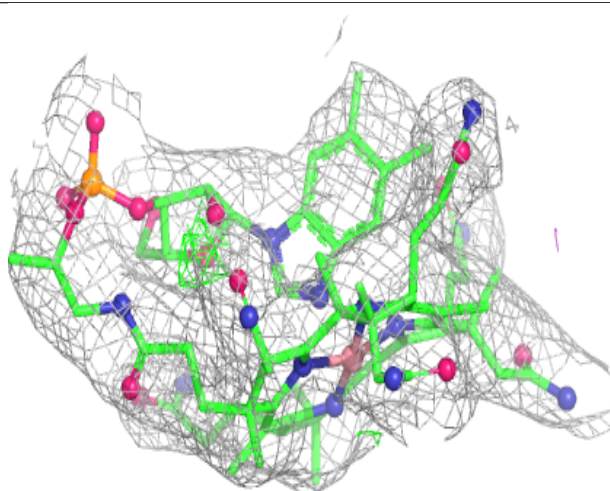
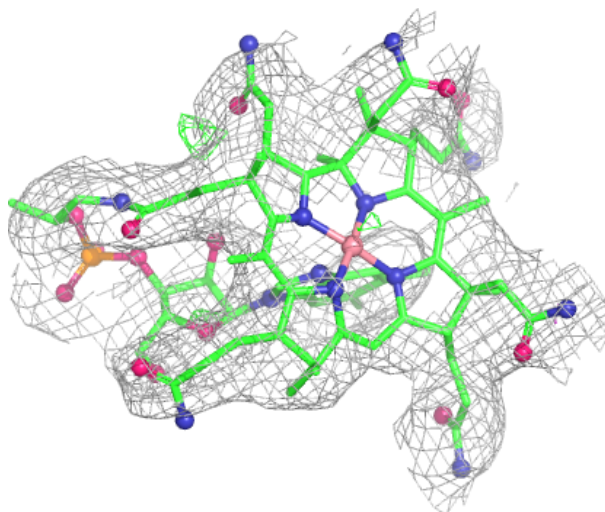
Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
5	NAG	F	2009	14/15	0.93	0.06	185,189,191,192	0
5	NAG	B	2001	14/15	0.94	0.09	195,202,205,206	0
5	NAG	F	2001	14/15	0.95	0.08	192,198,201,203	0
5	NAG	B	2008	14/15	0.95	0.08	196,198,198,199	0
5	NAG	F	2012	14/15	0.95	0.08	139,157,192,194	0
5	NAG	E	2001	14/15	0.96	0.16	50,55,60,61	14
5	NAG	D	2007	14/15	0.96	0.08	166,193,216,223	0
5	NAG	F	2008	14/15	0.96	0.05	190,198,203,205	0
5	NAG	D	2009	14/15	0.96	0.06	188,192,195,195	0
5	NAG	D	2012	14/15	0.96	0.08	145,163,197,200	0
5	NAG	A	2001	14/15	0.97	0.15	50,54,57,60	14
5	NAG	F	2007	14/15	0.97	0.09	151,172,188,195	0
5	NAG	B	2012	14/15	0.97	0.07	146,163,198,200	0
5	NAG	D	2013	14/15	0.97	0.05	168,182,187,189	0
5	NAG	C	2001	14/15	0.97	0.14	45,49,52,54	14
5	NAG	F	2013	14/15	0.97	0.07	162,176,180,183	0
5	NAG	B	2007	14/15	0.98	0.08	149,179,202,211	0
5	NAG	B	2013	14/15	0.98	0.05	157,169,174,176	0
7	CA	B	2014	1/1	0.98	0.04	140,140,140,140	0
7	CA	D	2014	1/1	0.98	0.04	163,163,163,163	0
7	CA	B	2017	1/1	0.99	0.04	82,82,82,82	0
7	CA	B	2016	1/1	0.99	0.03	147,147,147,147	0
7	CA	D	2016	1/1	0.99	0.04	139,139,139,139	0
7	CA	D	2017	1/1	0.99	0.02	79,79,79,79	0
7	CA	F	2014	1/1	0.99	0.03	151,151,151,151	0
7	CA	F	2016	1/1	0.99	0.04	144,144,144,144	0
7	CA	F	2017	1/1	0.99	0.05	80,80,80,80	0
7	CA	B	2015	1/1	1.00	0.02	54,54,54,54	0
6	B12	C	2007	91/91	1.00	0.04	46,65,81,88	0
6	B12	E	2007	91/91	1.00	0.04	40,66,91,95	0
7	CA	F	2015	1/1	1.00	0.03	58,58,58,58	0
6	B12	A	2007	91/91	1.00	0.04	45,64,92,100	0
7	CA	D	2015	1/1	1.00	0.02	60,60,60,60	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.

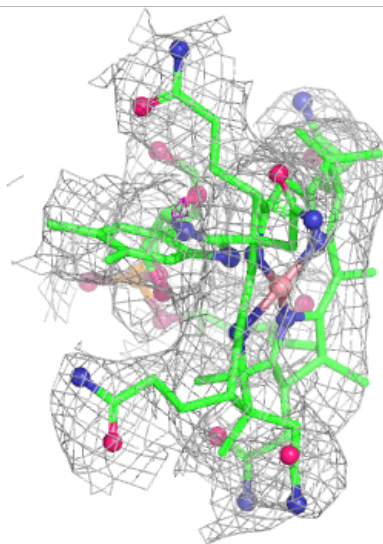
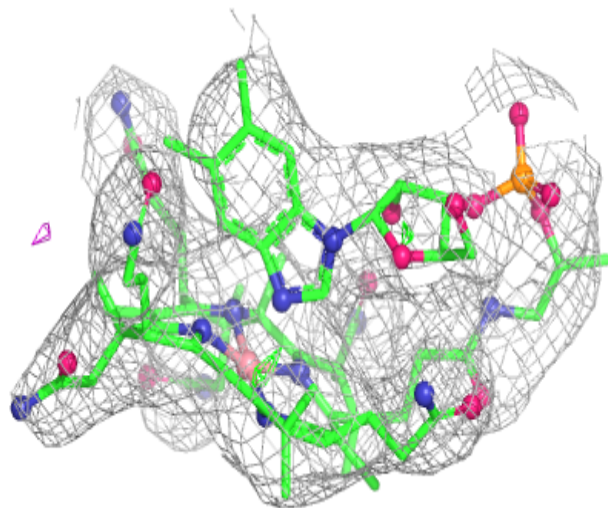
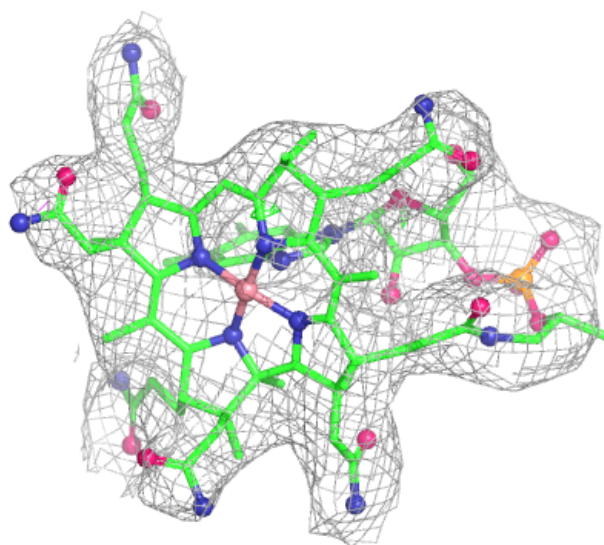
Electron density around B12 C 2007:

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



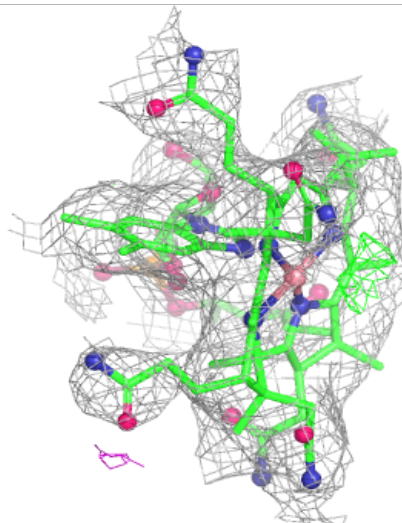
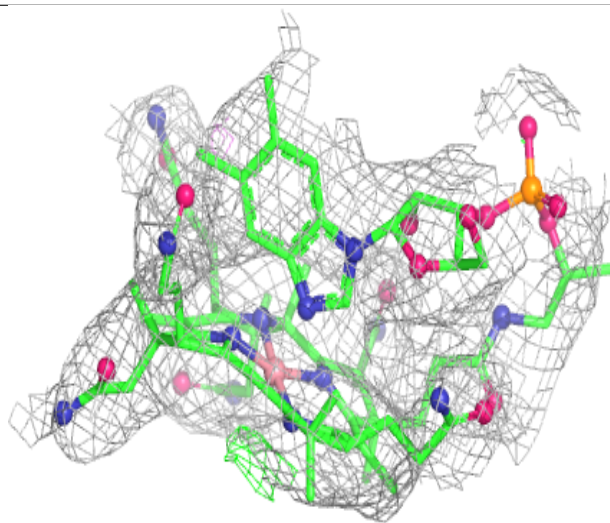
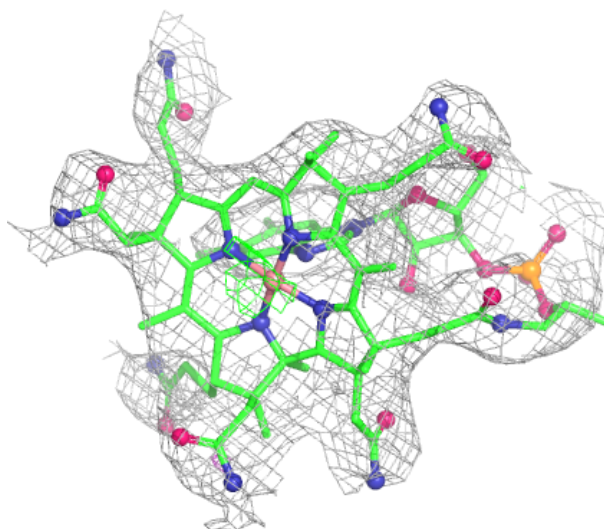
Electron density around B12 E 2007:

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



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)



6.5 Other polymers [i](#)

There are no such residues in this entry.