



Full wwPDB EM Validation Report ⓘ

Mar 29, 2026 – 12:58 PM UTC

PDB ID : 8XQ3 / pdb_00008xq3
EMDB ID : EMD-38564
Title : Structure of Nipah virus Bangladesh string G protein ectodomain tetramer bound to single-domain antibody n425 at 5.87 Angstroms overall resolution
Authors : Sun, L.; Chen, Z.; Sun, Y.; Mao, Q.
Deposited on : 2024-01-04
Resolution : 5.87 Å(reported)

This is a Full wwPDB EM Validation 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/EMValidationReportHelp>
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:

EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDb archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

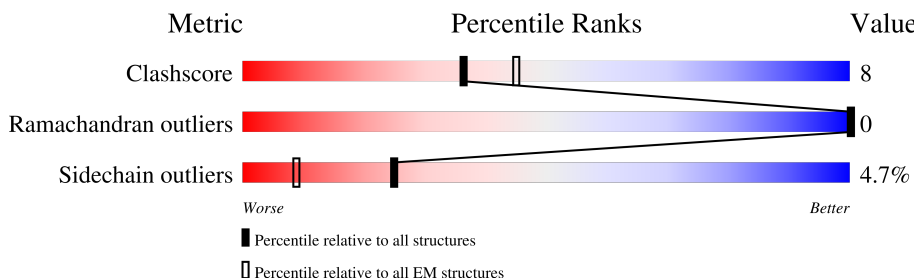
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 5.87 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)	EM structures (#Entries)
Clashscore	229148	23984
Ramachandran outliers	224038	23583
Sidechain outliers	223484	23102

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	602	19% 55% 16% 29%
1	B	602	16% 53% 17% 29%
1	C	602	14% 53% 18% 29%
1	D	602	12% 55% 15% 29%
2	E	119	37% 76% 21% .
2	F	119	13% 76% 22% .
2	G	119	25% 80% 19% .
2	H	119	26% 78% 20% .

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Mol	Chain	Length	Quality of chain
3	I	5	
3	N	5	
3	S	5	
3	X	5	
4	J	6	
4	O	6	
4	T	6	
4	Y	6	
5	K	4	
5	L	4	
5	P	4	
5	Q	4	
5	U	4	
5	V	4	
5	Z	4	
5	a	4	
6	M	5	
6	R	5	
6	W	5	
6	b	5	

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 18272 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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.

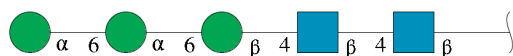
- Molecule 1 is a protein called Nipah virus Bangladesh string G protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	B	427	Total	C	N	O	S	0	0
			3376	2148	564	643	21		
1	A	427	Total	C	N	O	S	0	0
			3376	2148	564	643	21		
1	C	427	Total	C	N	O	S	0	0
			3376	2148	564	643	21		
1	D	427	Total	C	N	O	S	0	0
			3376	2148	564	643	21		

- Molecule 2 is a protein called single-domain antibody n425.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	F	119	Total	C	N	O	S	0	0
			898	562	153	179	4		
2	E	119	Total	C	N	O	S	0	0
			898	562	153	179	4		
2	G	119	Total	C	N	O	S	0	0
			898	562	153	179	4		
2	H	119	Total	C	N	O	S	0	0
			898	562	153	179	4		

- Molecule 3 is an oligosaccharide called alpha-D-mannopyranose-(1-6)-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.



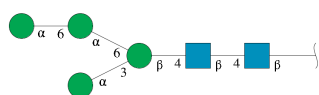
Mol	Chain	Residues	Atoms				AltConf	Trace
3	I	5	Total	C	N	O	0	0
			61	34	2	25		

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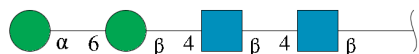
Mol	Chain	Residues	Atoms				AltConf	Trace
3	N	5	Total	C	N	O	0	0
			61	34	2	25		
3	S	5	Total	C	N	O	0	0
			61	34	2	25		
3	X	5	Total	C	N	O	0	0
			61	34	2	25		

- Molecule 4 is an oligosaccharide called alpha-D-mannopyranose-(1-6)-alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]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				AltConf	Trace
4	J	6	Total	C	N	O	0	0
			72	40	2	30		
4	O	6	Total	C	N	O	0	0
			72	40	2	30		
4	T	6	Total	C	N	O	0	0
			72	40	2	30		
4	Y	6	Total	C	N	O	0	0
			72	40	2	30		

- Molecule 5 is an oligosaccharide called 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.



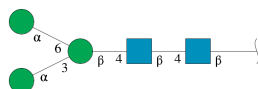
Mol	Chain	Residues	Atoms				AltConf	Trace
5	K	4	Total	C	N	O	0	0
			50	28	2	20		
5	L	4	Total	C	N	O	0	0
			50	28	2	20		
5	P	4	Total	C	N	O	0	0
			50	28	2	20		
5	Q	4	Total	C	N	O	0	0
			50	28	2	20		

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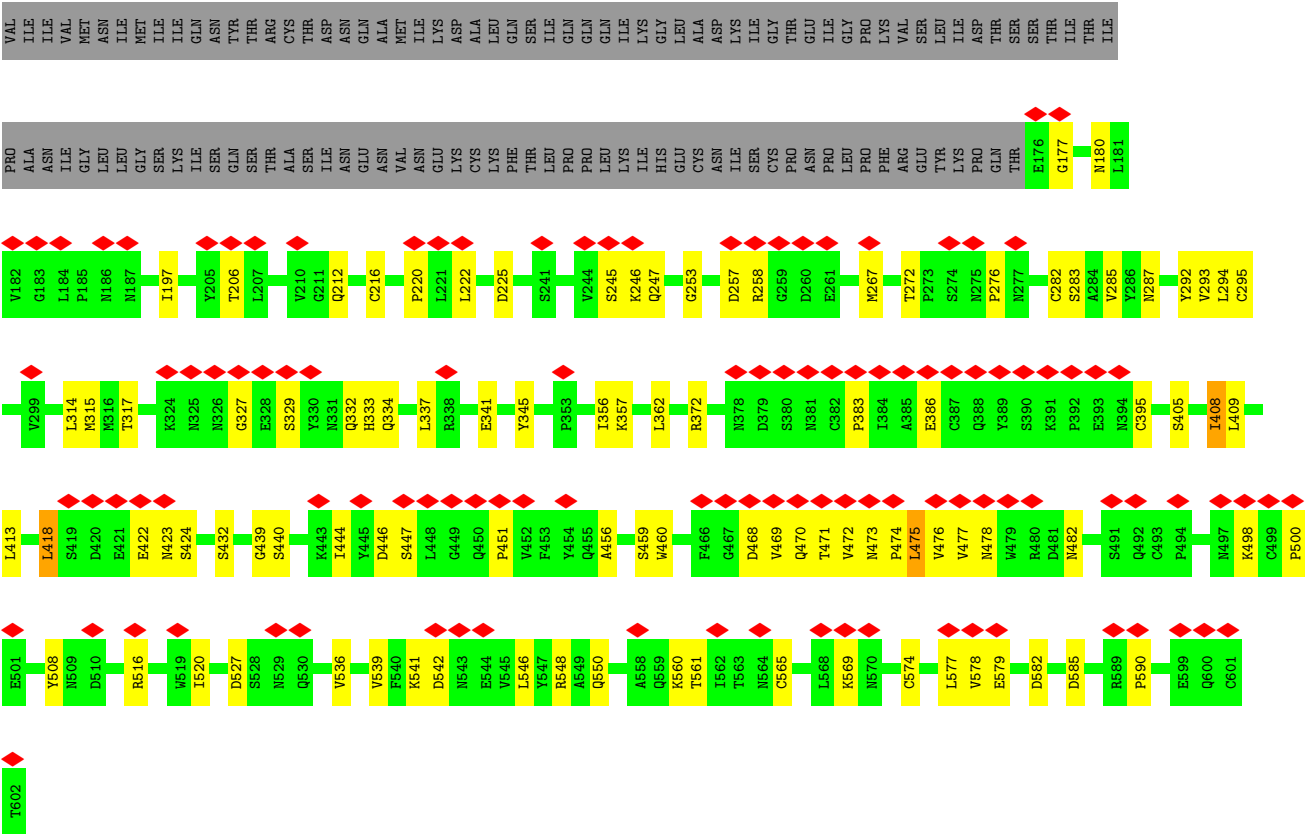
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Mol	Chain	Residues	Atoms				AltConf	Trace
5	U	4	Total	C	N	O	0	0
			50	28	2	20		
5	V	4	Total	C	N	O	0	0
			50	28	2	20		
5	Z	4	Total	C	N	O	0	0
			50	28	2	20		
5	a	4	Total	C	N	O	0	0
			50	28	2	20		

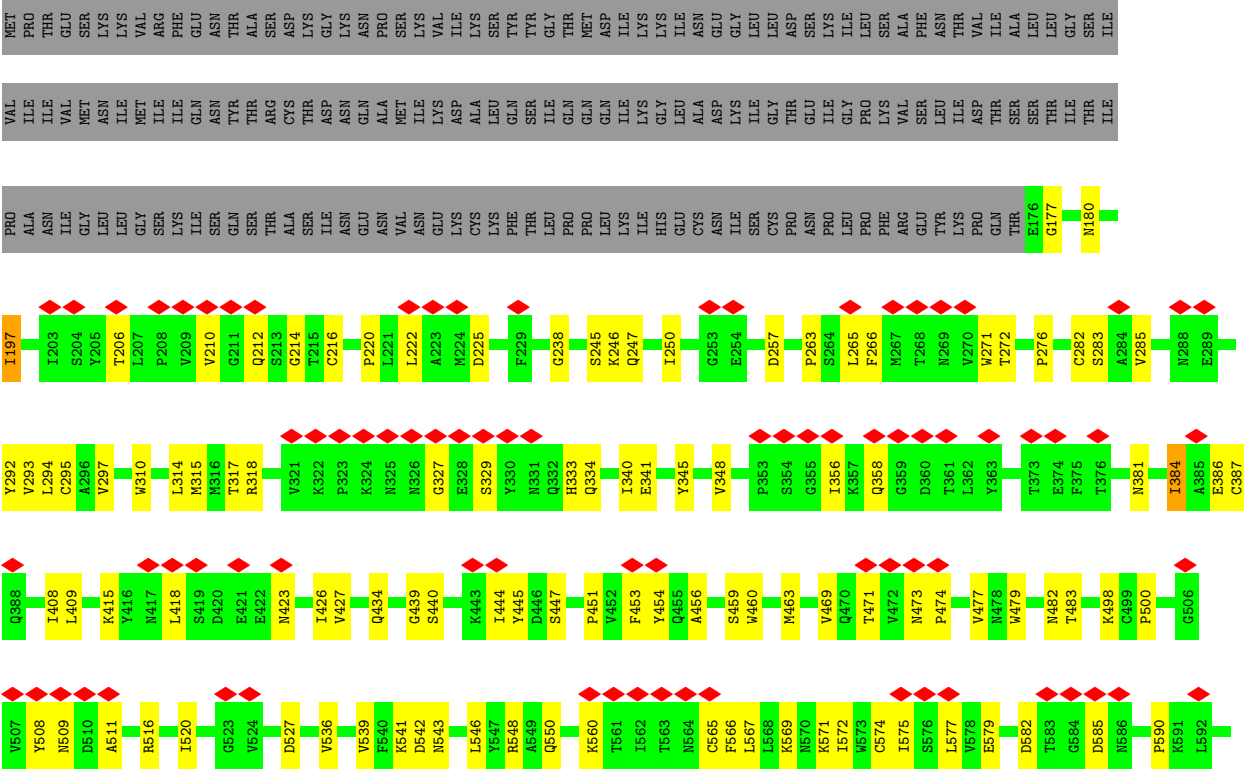
- Molecule 6 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

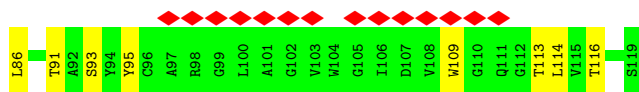


Mol	Chain	Residues	Atoms				AltConf	Trace
6	M	5	Total	C	N	O	0	0
			61	34	2	25		
6	R	5	Total	C	N	O	0	0
			61	34	2	25		
6	W	5	Total	C	N	O	0	0
			61	34	2	25		
6	b	5	Total	C	N	O	0	0
			61	34	2	25		

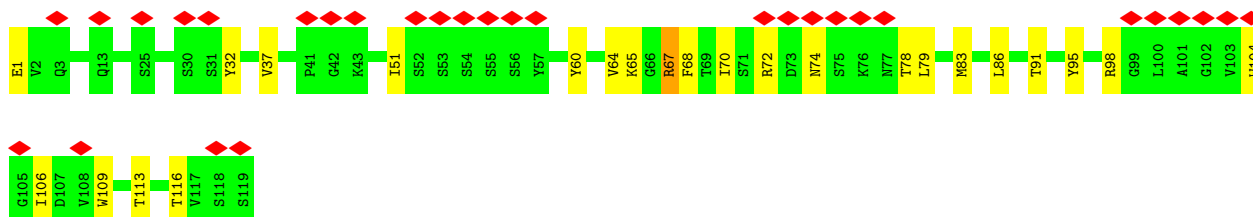
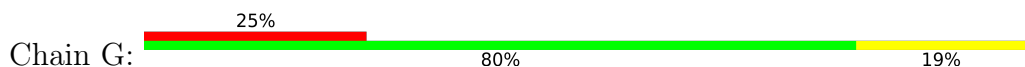


● Molecule 1: Nipah virus Bangladesh string G protein

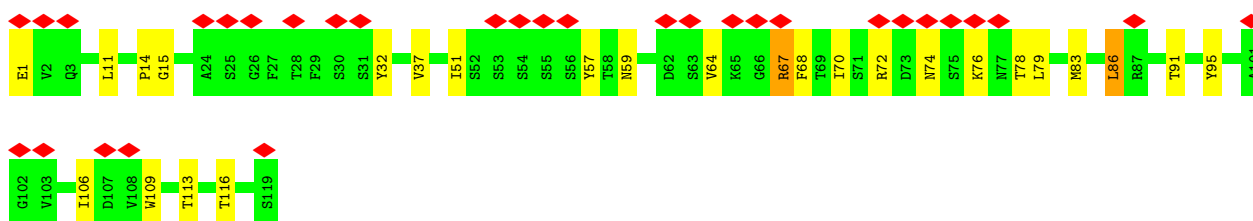
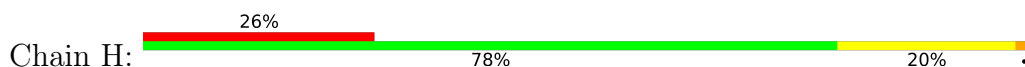




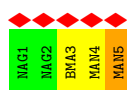
- Molecule 2: single-domain antibody n425



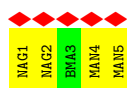
- Molecule 2: single-domain antibody n425



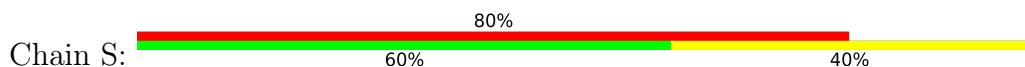
- Molecule 3: alpha-D-mannopyranose-(1-6)-alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

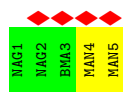


- Molecule 3: alpha-D-mannopyranose-(1-6)-alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 3: alpha-D-mannopyranose-(1-6)-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





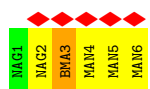
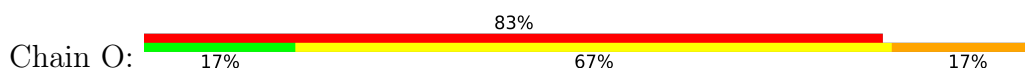
- Molecule 3: alpha-D-mannopyranose-(1-6)-alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



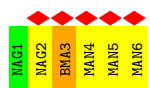
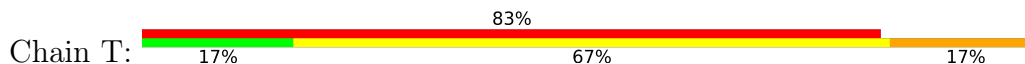
- Molecule 4: alpha-D-mannopyranose-(1-6)-alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



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

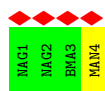
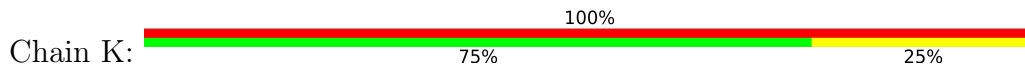


- Molecule 4: alpha-D-mannopyranose-(1-6)-alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

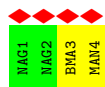




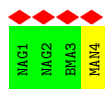
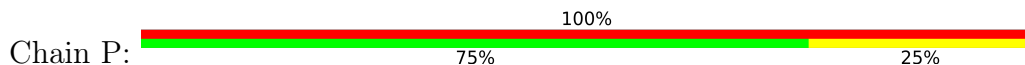
- Molecule 5: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



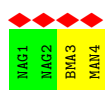
- Molecule 5: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



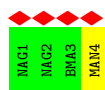
- Molecule 5: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



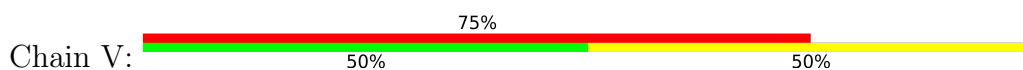
- Molecule 5: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



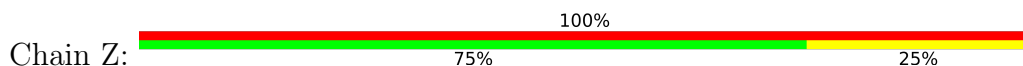
- Molecule 5: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 5: 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



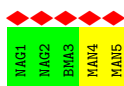
- Molecule 5: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



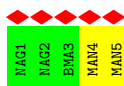
- Molecule 5: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 6: 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

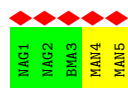


- Molecule 6: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

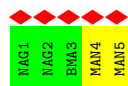


- Molecule 6: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose





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



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	362285	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	1.284	Depositor
Minimum map value	-0.002	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.038	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	298.24, 298.24, 298.24	wwPDB
Map dimensions	160, 160, 160	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.864, 1.864, 1.864	Depositor

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: MAN, BMA, NAG

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	A	0.15	0/3456	0.41	0/4699
1	B	0.15	0/3456	0.41	0/4699
1	C	0.14	0/3456	0.42	2/4699 (0.0%)
1	D	0.14	0/3456	0.42	0/4699
2	E	0.11	0/917	0.38	0/1242
2	F	0.12	0/917	0.36	0/1242
2	G	0.11	0/917	0.38	0/1242
2	H	0.11	0/917	0.36	0/1242
All	All	0.14	0/17492	0.41	2/23764 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	381	ASN	CA-C-N	5.98	128.68	120.67
1	C	381	ASN	C-N-CA	5.98	128.68	120.67

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	3376	0	3297	49	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	3376	0	3297	56	0
1	C	3376	0	3297	59	0
1	D	3376	0	3297	55	0
2	E	898	0	862	17	0
2	F	898	0	862	13	0
2	G	898	0	862	11	0
2	H	898	0	862	14	0
3	I	61	0	52	1	0
3	N	61	0	52	1	0
3	S	61	0	52	0	0
3	X	61	0	52	2	0
4	J	72	0	61	1	0
4	O	72	0	61	1	0
4	T	72	0	61	1	0
4	Y	72	0	61	1	0
5	K	50	0	43	0	0
5	L	50	0	43	0	0
5	P	50	0	43	0	0
5	Q	50	0	43	0	0
5	U	50	0	43	0	0
5	V	50	0	43	0	0
5	Z	50	0	43	0	0
5	a	50	0	43	0	0
6	M	61	0	52	0	0
6	R	61	0	52	0	0
6	W	61	0	52	0	0
6	b	61	0	52	0	0
All	All	18272	0	17640	275	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 8.

All (275) 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:D:318:ARG:HB3	1:D:333:HIS:HB3	1.71	0.71
1:C:315:MET:SD	1:C:334:GLN:NE2	2.67	0.66
2:E:91:THR:HG23	2:E:116:THR:HA	1.81	0.63
2:G:91:THR:HG23	2:G:116:THR:HA	1.80	0.62
1:C:197:ILE:HD13	1:C:598:PRO:HG3	1.82	0.62
2:F:91:THR:HG23	2:F:116:THR:HA	1.82	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:520:ILE:HG12	1:B:541:LYS:HG2	1.81	0.62
1:C:177:GLY:H	1:C:569:LYS:HG2	1.65	0.61
1:C:318:ARG:HB3	1:C:333:HIS:HB3	1.80	0.61
2:H:91:THR:HG23	2:H:116:THR:HA	1.81	0.61
1:A:432:SER:HB3	1:A:476:VAL:HG22	1.83	0.61
1:C:460:TRP:HB2	1:C:500:PRO:HA	1.83	0.61
1:A:520:ILE:HG12	1:A:541:LYS:HG2	1.83	0.60
1:D:471:THR:HG22	1:D:474:PRO:HD2	1.83	0.60
1:C:571:LYS:HD3	1:C:596:LYS:HE2	1.82	0.60
1:C:520:ILE:HG12	1:C:541:LYS:HG2	1.83	0.60
1:B:470:GLN:HE21	1:B:476:VAL:HG12	1.66	0.60
1:A:470:GLN:HE21	1:A:478:ASN:HB3	1.66	0.59
1:B:440:SER:HB2	1:B:456:ALA:HB3	1.84	0.59
2:E:64:VAL:HA	2:E:67:ARG:HD2	1.85	0.59
1:B:180:ASN:HD21	1:B:225:ASP:HA	1.68	0.59
2:E:68:PHE:HB3	2:E:83:MET:HA	1.84	0.58
2:H:70:ILE:HD11	2:H:79:LEU:HD11	1.85	0.58
1:A:315:MET:SD	1:A:334:GLN:NE2	2.76	0.58
1:D:473:ASN:HB2	1:D:474:PRO:HD3	1.84	0.58
2:G:70:ILE:HD11	2:G:79:LEU:HD11	1.84	0.58
1:D:363:TYR:OH	1:D:473:ASN:ND2	2.36	0.58
2:G:64:VAL:HA	2:G:67:ARG:HD2	1.85	0.58
2:G:68:PHE:HB3	2:G:83:MET:HA	1.86	0.57
1:D:520:ILE:HG12	1:D:541:LYS:HG2	1.84	0.57
1:C:340:ILE:HG12	1:C:426:ILE:HD12	1.87	0.57
1:A:460:TRP:HB2	1:A:500:PRO:HA	1.86	0.57
2:F:70:ILE:HD11	2:F:79:LEU:HD11	1.87	0.57
1:B:340:ILE:HG12	1:B:426:ILE:HD12	1.88	0.56
1:D:475:LEU:HD23	1:D:475:LEU:H	1.69	0.56
1:B:177:GLY:H	1:B:569:LYS:HG2	1.71	0.56
1:B:571:LYS:HD3	1:B:596:LYS:HE3	1.87	0.56
2:F:64:VAL:HA	2:F:67:ARG:HD2	1.87	0.56
2:H:64:VAL:HA	2:H:67:ARG:HD2	1.87	0.56
1:C:180:ASN:HD21	1:C:225:ASP:HA	1.71	0.56
1:C:483:THR:OG1	1:C:543:ASN:ND2	2.38	0.56
1:D:410:ARG:HE	1:D:431:ILE:HG22	1.71	0.56
2:F:68:PHE:HB3	2:F:83:MET:HA	1.87	0.56
1:D:247:GLN:HE21	1:D:272:THR:HG21	1.69	0.56
2:E:70:ILE:HD11	2:E:79:LEU:HD11	1.87	0.56
1:C:356:ILE:HD12	1:C:358:GLN:HE22	1.70	0.55
1:B:460:TRP:HB2	1:B:500:PRO:HA	1.87	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:282:CYS:HA	1:C:295:CYS:HA	1.89	0.55
1:B:483:THR:OG1	1:B:543:ASN:ND2	2.40	0.55
1:B:247:GLN:HE21	1:B:272:THR:HG21	1.71	0.55
1:A:282:CYS:HA	1:A:295:CYS:HA	1.88	0.55
1:C:340:ILE:HA	1:C:426:ILE:HB	1.89	0.55
1:C:247:GLN:HE21	1:C:272:THR:HG21	1.71	0.55
1:D:527:ASP:OD2	1:D:548:ARG:NH2	2.40	0.55
1:D:440:SER:HB2	1:D:456:ALA:HB3	1.89	0.55
1:A:440:SER:HB2	1:A:456:ALA:HB3	1.88	0.54
1:B:415:LYS:HB3	1:B:427:VAL:HB	1.88	0.54
1:A:177:GLY:H	1:A:569:LYS:HG2	1.73	0.54
1:B:508:TYR:HB3	1:B:560:LYS:HG3	1.89	0.54
1:A:469:VAL:HA	1:A:477:VAL:HG22	1.90	0.54
1:A:451:PRO:HG2	1:A:469:VAL:HB	1.91	0.53
1:C:447:SER:O	1:C:516:ARG:NH2	2.38	0.53
1:C:440:SER:HB2	1:C:456:ALA:HB3	1.90	0.53
1:D:214:GLY:O	1:D:238:GLY:N	2.35	0.53
1:D:282:CYS:HA	1:D:295:CYS:HA	1.91	0.53
1:B:282:CYS:HA	1:B:295:CYS:HA	1.89	0.53
1:A:332:GLN:HE22	1:A:334:GLN:HG2	1.74	0.53
1:D:340:ILE:HG12	1:D:426:ILE:HD12	1.91	0.53
1:D:445:TYR:OH	1:D:511:ALA:O	2.21	0.53
1:B:283:SER:O	1:B:294:LEU:N	2.38	0.53
1:C:314:LEU:HD12	1:C:426:ILE:HD13	1.91	0.53
1:C:451:PRO:HG2	1:C:469:VAL:HB	1.91	0.52
1:C:214:GLY:O	1:C:238:GLY:N	2.36	0.52
1:A:536:VAL:HG21	1:A:548:ARG:HH21	1.74	0.52
1:B:474:PRO:HG2	1:B:476:VAL:HG23	1.92	0.52
2:G:60:TYR:HB2	2:G:65:LYS:HD2	1.91	0.52
2:H:68:PHE:HB3	2:H:83:MET:HA	1.92	0.51
1:B:536:VAL:HG21	1:B:548:ARG:HH21	1.76	0.51
1:B:589:ARG:HE	1:B:591:LYS:HZ2	1.59	0.51
1:C:384:ILE:HA	1:C:387:CYS:HB2	1.91	0.51
1:D:314:LEU:HD12	1:D:426:ILE:HD13	1.91	0.51
2:G:51:ILE:HD13	2:G:72:ARG:HB2	1.93	0.51
2:F:47:TRP:HB3	2:F:101:ALA:HB2	1.93	0.51
1:B:287:ASN:HD22	1:B:362:LEU:HD21	1.76	0.51
1:C:283:SER:N	1:C:294:LEU:O	2.44	0.50
1:A:220:PRO:HD2	1:A:560:LYS:HD2	1.92	0.50
1:B:283:SER:N	1:B:294:LEU:O	2.44	0.50
1:D:263:PRO:HD3	1:D:568:LEU:HD22	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:186:ASN:ND2	1:D:570:ASN:O	2.44	0.50
1:D:334:GLN:O	1:D:334:GLN:NE2	2.44	0.50
1:B:413:LEU:HG	1:B:475:LEU:HD11	1.93	0.50
2:H:15:GLY:H	2:H:86:LEU:HD12	1.77	0.50
1:D:340:ILE:HA	1:D:426:ILE:HB	1.92	0.50
1:B:527:ASP:OD2	1:B:548:ARG:NH2	2.44	0.50
1:D:579:GLU:HA	1:D:590:PRO:HA	1.94	0.50
1:C:527:ASP:OD2	1:C:548:ARG:NH2	2.46	0.49
1:B:384:ILE:HA	1:B:387:CYS:HB2	1.94	0.49
1:B:482:ASN:ND2	1:B:542:ASP:O	2.45	0.49
1:A:180:ASN:HD21	1:A:225:ASP:HA	1.75	0.49
1:C:579:GLU:HA	1:C:590:PRO:HA	1.94	0.49
3:I:3:BMA:H4	3:I:5:MAN:H4	1.94	0.49
1:B:263:PRO:HD3	1:B:568:LEU:HD22	1.93	0.49
1:A:247:GLN:HE21	1:A:272:THR:HG21	1.77	0.49
1:A:257:ASP:O	2:E:32:TYR:OH	2.30	0.49
1:B:443:LYS:NZ	1:B:563:THR:O	2.46	0.49
1:B:579:GLU:HA	1:B:590:PRO:HA	1.95	0.49
1:C:536:VAL:HG21	1:C:548:ARG:HH21	1.78	0.49
1:A:471:THR:HB	1:A:474:PRO:HD2	1.95	0.49
1:C:473:ASN:HB3	1:C:474:PRO:HD3	1.94	0.49
1:D:470:GLN:NE2	1:D:476:VAL:O	2.46	0.49
1:B:285:VAL:HG12	1:B:292:TYR:HB2	1.95	0.49
1:A:287:ASN:HD22	1:A:362:LEU:HD21	1.78	0.49
2:G:37:VAL:O	2:G:95:TYR:N	2.42	0.49
1:B:220:PRO:HD2	1:B:560:LYS:HD2	1.95	0.48
2:F:31:SER:HA	2:F:53:SER:HB2	1.94	0.48
1:C:266:PHE:HE1	2:G:98:ARG:HD2	1.77	0.48
1:B:358:GLN:HE22	1:B:472:VAL:HB	1.78	0.48
1:B:362:LEU:HG	1:B:418:LEU:HD12	1.96	0.48
1:D:536:VAL:HG22	1:D:550:GLN:HG2	1.94	0.48
2:F:37:VAL:O	2:F:95:TYR:N	2.46	0.48
2:E:51:ILE:HD13	2:E:72:ARG:HB2	1.95	0.48
4:J:2:NAG:H4	4:J:3:BMA:O2	2.13	0.48
4:O:2:NAG:H4	4:O:3:BMA:O2	2.13	0.48
1:A:579:GLU:HA	1:A:590:PRO:HA	1.95	0.48
1:B:443:LYS:NZ	1:B:510:ASP:OD2	2.37	0.48
1:D:285:VAL:HG12	1:D:292:TYR:HB2	1.95	0.48
4:T:2:NAG:H4	4:T:3:BMA:O2	2.14	0.48
1:B:469:VAL:HG22	1:B:477:VAL:HG22	1.96	0.47
1:C:285:VAL:HG12	1:C:292:TYR:HB2	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:362:LEU:HG	1:D:418:LEU:HD12	1.95	0.47
2:H:72:ARG:NE	2:H:74:ASN:OD1	2.46	0.47
1:B:222:LEU:HD22	1:B:577:LEU:HB2	1.97	0.47
1:B:258:ARG:HG2	1:B:262:VAL:HB	1.96	0.47
2:F:72:ARG:NE	2:F:74:ASN:OD1	2.47	0.47
2:E:72:ARG:NE	2:E:74:ASN:OD1	2.47	0.47
2:E:93:SER:HA	2:E:114:LEU:HA	1.96	0.47
4:Y:2:NAG:H4	4:Y:3:BMA:O2	2.13	0.47
1:A:468:ASP:O	1:A:478:ASN:ND2	2.48	0.47
1:C:565:CYS:HA	1:C:574:CYS:HA	1.96	0.47
1:B:197:ILE:HD13	1:B:598:PRO:HG3	1.96	0.47
1:A:409:LEU:HB2	1:A:439:GLY:H	1.80	0.47
1:C:536:VAL:HG22	1:C:550:GLN:HG2	1.96	0.47
1:D:220:PRO:HD2	1:D:560:LYS:HD2	1.97	0.47
1:D:536:VAL:HG21	1:D:548:ARG:HH21	1.78	0.47
1:C:482:ASN:ND2	1:C:542:ASP:O	2.48	0.46
1:D:482:ASN:ND2	1:D:542:ASP:O	2.48	0.46
1:A:482:ASN:ND2	1:A:542:ASP:O	2.46	0.46
1:C:257:ASP:HA	1:C:263:PRO:HA	1.98	0.46
1:D:460:TRP:HB2	1:D:500:PRO:HA	1.96	0.46
2:E:37:VAL:O	2:E:95:TYR:N	2.49	0.46
2:E:76:LYS:NZ	2:H:14:PRO:HB2	2.30	0.46
1:B:250:ILE:HD12	1:B:271:TRP:HZ3	1.79	0.46
1:A:508:TYR:HB3	1:A:560:LYS:HG3	1.98	0.46
1:C:314:LEU:HD11	1:C:348:VAL:HG23	1.97	0.46
1:C:471:THR:HB	1:C:474:PRO:HD2	1.98	0.46
1:D:438:ILE:HG22	1:D:459:SER:HB2	1.98	0.46
1:A:473:ASN:HB2	1:A:474:PRO:HD3	1.97	0.46
1:C:283:SER:O	1:C:294:LEU:N	2.41	0.46
1:D:315:MET:HA	1:D:336:ALA:HA	1.97	0.46
1:D:446:ASP:HA	1:D:451:PRO:HA	1.98	0.46
1:C:210:VAL:HA	2:H:76:LYS:HE2	1.98	0.45
1:C:415:LYS:HB3	1:C:427:VAL:HB	1.98	0.45
1:C:222:LEU:HD22	1:C:577:LEU:HB2	1.97	0.45
1:D:483:THR:OG1	1:D:543:ASN:ND2	2.49	0.45
1:A:253:GLY:HA3	1:A:267:MET:HA	1.99	0.45
1:C:469:VAL:HG22	1:C:477:VAL:HG22	1.98	0.45
2:G:72:ARG:NE	2:G:74:ASN:OD1	2.49	0.45
2:F:50:TYR:HB3	2:F:59:ASN:HB3	1.98	0.45
1:A:283:SER:N	1:A:294:LEU:O	2.49	0.45
1:C:297:VAL:O	1:C:310:TRP:NE1	2.39	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:410:ARG:NH2	1:D:431:ILE:O	2.39	0.45
1:C:220:PRO:HD2	1:C:560:LYS:HD2	1.99	0.45
2:H:37:VAL:O	2:H:95:TYR:N	2.47	0.45
1:C:444:ILE:HB	1:C:453:PHE:HD2	1.82	0.45
1:C:508:TYR:HB3	1:C:560:LYS:HG3	1.99	0.45
1:C:245:SER:HB3	1:C:276:PRO:HB2	1.99	0.45
1:D:470:GLN:OE1	1:D:471:THR:N	2.45	0.45
1:B:459:SER:OG	1:B:460:TRP:N	2.50	0.44
1:B:245:SER:HB3	1:B:276:PRO:HB2	1.98	0.44
2:F:57:TYR:CE1	2:F:59:ASN:HB2	2.52	0.44
2:F:109:TRP:H	2:F:109:TRP:CD1	2.35	0.44
1:A:327:GLY:C	1:A:329:SER:H	2.26	0.44
1:D:245:SER:HB3	1:D:276:PRO:HB2	1.98	0.44
1:B:201:LYS:O	1:B:594:ALA:N	2.47	0.44
1:D:177:GLY:H	1:D:569:LYS:HG2	1.83	0.44
1:B:201:LYS:HB2	1:B:594:ALA:HB3	1.98	0.44
1:D:180:ASN:HD21	1:D:225:ASP:HA	1.82	0.44
2:H:57:TYR:CE1	2:H:59:ASN:HB2	2.52	0.44
2:F:51:ILE:HD13	2:F:72:ARG:HB2	1.98	0.44
1:A:536:VAL:HG22	1:A:550:GLN:HG2	1.99	0.44
1:B:351:TYR:H	1:B:366:ALA:HA	1.83	0.44
1:D:287:ASN:HD22	1:D:362:LEU:HD21	1.82	0.44
1:A:285:VAL:HG12	1:A:292:TYR:HB2	1.99	0.44
1:B:536:VAL:HG22	1:B:550:GLN:HG2	1.99	0.44
1:A:337:LEU:O	1:A:424:SER:OG	2.34	0.43
1:C:327:GLY:C	1:C:329:SER:H	2.25	0.43
1:B:536:VAL:HG11	1:B:548:ARG:HE	1.83	0.43
1:A:356:ILE:HG23	1:A:444:ILE:HG23	2.00	0.43
1:C:582:ASP:HB3	1:C:585:ASP:HB3	2.00	0.43
1:D:327:GLY:C	1:D:329:SER:H	2.26	0.43
1:D:565:CYS:HA	1:D:574:CYS:HA	2.01	0.43
1:A:413:LEU:HG	1:A:475:LEU:HD11	2.00	0.43
1:A:447:SER:O	1:A:516:ARG:NH2	2.43	0.43
1:A:245:SER:HB3	1:A:276:PRO:HB2	1.99	0.43
1:A:293:VAL:N	1:A:317:THR:O	2.43	0.43
1:D:469:VAL:HG13	1:D:477:VAL:HG22	2.00	0.43
1:B:327:GLY:C	1:B:329:SER:H	2.25	0.43
1:B:410:ARG:HE	1:B:431:ILE:HG22	1.84	0.43
1:D:459:SER:OG	1:D:460:TRP:N	2.51	0.43
1:A:582:ASP:HB3	1:A:585:ASP:HB3	2.01	0.43
1:D:222:LEU:HD22	1:D:577:LEU:HB2	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:253:GLY:HA3	1:B:267:MET:HA	2.00	0.43
1:B:414:LEU:HD22	1:B:426:ILE:HG23	2.01	0.43
1:A:459:SER:OG	1:A:460:TRP:N	2.51	0.43
1:C:539:VAL:HG12	1:C:546:LEU:HD12	2.00	0.43
1:D:283:SER:O	1:D:294:LEU:N	2.48	0.42
2:H:51:ILE:HG12	2:H:72:ARG:HB2	2.01	0.42
3:N:1:NAG:H62	3:N:2:NAG:N2	2.34	0.42
1:B:431:ILE:HG13	1:B:475:LEU:HB3	2.00	0.42
1:C:459:SER:OG	1:C:460:TRP:N	2.51	0.42
1:D:297:VAL:O	1:D:310:TRP:NE1	2.41	0.42
1:D:413:LEU:HG	1:D:475:LEU:HD13	2.00	0.42
1:B:539:VAL:HG12	1:B:546:LEU:HD12	2.01	0.42
1:A:527:ASP:OD2	1:A:548:ARG:NH2	2.51	0.42
1:C:250:ILE:HD12	1:C:271:TRP:HZ3	1.84	0.42
1:D:283:SER:N	1:D:294:LEU:O	2.50	0.42
1:D:463:MET:HE2	1:D:483:THR:HA	2.00	0.42
1:C:409:LEU:HB2	1:C:439:GLY:H	1.85	0.42
2:E:23:ALA:HA	2:E:78:THR:HA	2.00	0.42
2:E:76:LYS:HZ3	2:H:14:PRO:HB2	1.84	0.42
1:A:565:CYS:HA	1:A:574:CYS:HA	2.01	0.42
1:B:565:CYS:HA	1:B:574:CYS:HA	2.02	0.42
2:E:51:ILE:HG13	2:E:58:THR:HG22	2.01	0.42
1:A:314:LEU:HB2	1:A:337:LEU:HD23	2.02	0.42
1:D:418:LEU:HD13	1:D:418:LEU:H	1.85	0.42
1:D:508:TYR:HB3	1:D:560:LYS:HG3	2.01	0.42
2:E:10:GLY:HA3	2:E:116:THR:H	1.85	0.42
1:C:463:MET:HE2	1:C:483:THR:HA	2.01	0.41
1:B:450:GLN:HB2	1:B:516:ARG:CZ	2.50	0.41
1:C:498:LYS:HE2	1:C:498:LYS:HB2	1.93	0.41
1:A:372:ARG:HH21	1:A:405:SER:HG	1.65	0.41
1:A:408:ILE:H	1:A:408:ILE:HG13	1.79	0.41
1:C:567:LEU:HD23	1:C:572:ILE:HA	2.03	0.41
1:D:420:ASP:OD1	3:X:1:NAG:O6	2.35	0.41
2:E:109:TRP:CD1	2:E:109:TRP:H	2.38	0.41
1:B:213:SER:OG	1:B:214:GLY:N	2.54	0.41
2:H:109:TRP:CD1	2:H:109:TRP:H	2.37	0.41
1:A:362:LEU:HG	1:A:418:LEU:HD12	2.01	0.41
1:C:265:LEU:HB2	2:G:104:TRP:NE1	2.35	0.41
1:D:536:VAL:HG11	1:D:548:ARG:HE	1.85	0.41
2:E:57:TYR:CE1	2:E:59:ASN:HB2	2.55	0.41
1:C:445:TYR:OH	1:C:511:ALA:O	2.27	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:485:ILE:HG13	1:D:540:PHE:CD1	2.56	0.41
1:B:342:LYS:HE3	1:B:345:TYR:O	2.20	0.41
1:A:561:THR:HG22	1:A:578:VAL:HG13	2.03	0.41
2:H:83:MET:HE2	2:H:86:LEU:HD23	2.03	0.41
1:B:567:LEU:HD23	1:B:572:ILE:HA	2.02	0.41
2:F:61:ALA:HB3	2:F:64:VAL:HG22	2.03	0.41
1:D:450:GLN:HB2	1:D:516:ARG:CZ	2.50	0.41
2:G:109:TRP:H	2:G:109:TRP:CD1	2.39	0.41
3:X:1:NAG:H62	3:X:2:NAG:N2	2.36	0.41
1:B:409:LEU:HB2	1:B:439:GLY:H	1.85	0.41
1:C:293:VAL:N	1:C:317:THR:O	2.46	0.40
1:C:384:ILE:H	1:C:384:ILE:HG13	1.75	0.40
1:B:294:LEU:HG	1:B:350:PRO:HG3	2.03	0.40
1:A:222:LEU:HD22	1:A:577:LEU:HB2	2.03	0.40
1:A:498:LYS:HE2	1:A:498:LYS:HB2	1.96	0.40
1:A:383:PRO:HD2	1:A:395:CYS:SG	2.61	0.40
1:A:446:ASP:HA	1:A:451:PRO:HA	2.01	0.40
1:A:539:VAL:HG12	1:A:546:LEU:HD12	2.03	0.40
1:C:434:GLN:O	1:C:479:TRP:NE1	2.54	0.40
1:C:454:TYR:OH	1:C:509:ASN:O	2.30	0.40
1:C:566:PHE:HE1	1:C:575:ILE:HG13	1.85	0.40
1:D:523:GLY:HA2	1:D:563:THR:HG21	2.02	0.40
2:E:61:ALA:HB3	2:E:64:VAL:HG22	2.03	0.40

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 PDB entries followed by that with respect to all EM entries.

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	425/602 (71%)	388 (91%)	37 (9%)	0	100	100
1	B	425/602 (71%)	387 (91%)	38 (9%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	425/602 (71%)	384 (90%)	41 (10%)	0	100	100
1	D	425/602 (71%)	381 (90%)	44 (10%)	0	100	100
2	E	117/119 (98%)	105 (90%)	12 (10%)	0	100	100
2	F	117/119 (98%)	105 (90%)	12 (10%)	0	100	100
2	G	117/119 (98%)	106 (91%)	11 (9%)	0	100	100
2	H	117/119 (98%)	105 (90%)	12 (10%)	0	100	100
All	All	2168/2884 (75%)	1961 (90%)	207 (10%)	0	100	100

There are no Ramachandran outliers to report.

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 PDB entries followed by that with respect to all EM entries.

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	384/542 (71%)	367 (96%)	17 (4%)	25	46
1	B	384/542 (71%)	371 (97%)	13 (3%)	32	54
1	C	384/542 (71%)	372 (97%)	12 (3%)	35	56
1	D	384/542 (71%)	365 (95%)	19 (5%)	22	43
2	E	96/96 (100%)	90 (94%)	6 (6%)	16	37
2	F	96/96 (100%)	88 (92%)	8 (8%)	10	30
2	G	96/96 (100%)	89 (93%)	7 (7%)	13	33
2	H	96/96 (100%)	88 (92%)	8 (8%)	10	30
All	All	1920/2552 (75%)	1830 (95%)	90 (5%)	25	44

All (90) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	197	ILE
1	B	212	GLN
1	B	216	CYS
1	B	246	LYS

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Mol	Chain	Res	Type
1	B	335	PHE
1	B	345	TYR
1	B	356	ILE
1	B	386	GLU
1	B	408	ILE
1	B	418	LEU
1	B	422	GLU
1	B	471	THR
1	B	498	LYS
2	F	1	GLU
2	F	32	TYR
2	F	47	TRP
2	F	67	ARG
2	F	78	THR
2	F	86	LEU
2	F	106	ILE
2	F	113	THR
1	A	197	ILE
1	A	206	THR
1	A	212	GLN
1	A	216	CYS
1	A	246	LYS
1	A	258	ARG
1	A	333	HIS
1	A	341	GLU
1	A	345	TYR
1	A	357	LYS
1	A	386	GLU
1	A	408	ILE
1	A	418	LEU
1	A	422	GLU
1	A	423	ASN
1	A	472	VAL
1	A	475	LEU
1	C	197	ILE
1	C	206	THR
1	C	212	GLN
1	C	216	CYS
1	C	246	LYS
1	C	341	GLU
1	C	345	TYR
1	C	384	ILE

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Mol	Chain	Res	Type
1	C	386	GLU
1	C	408	ILE
1	C	418	LEU
1	C	423	ASN
1	D	197	ILE
1	D	206	THR
1	D	212	GLN
1	D	216	CYS
1	D	246	LYS
1	D	332	GLN
1	D	334	GLN
1	D	341	GLU
1	D	345	TYR
1	D	384	ILE
1	D	386	GLU
1	D	418	LEU
1	D	422	GLU
1	D	423	ASN
1	D	469	VAL
1	D	470	GLN
1	D	471	THR
1	D	475	LEU
1	D	498	LYS
2	E	1	GLU
2	E	32	TYR
2	E	67	ARG
2	E	78	THR
2	E	86	LEU
2	E	113	THR
2	G	1	GLU
2	G	32	TYR
2	G	67	ARG
2	G	78	THR
2	G	86	LEU
2	G	106	ILE
2	G	113	THR
2	H	1	GLU
2	H	11	LEU
2	H	32	TYR
2	H	67	ARG
2	H	78	THR
2	H	86	LEU

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Mol	Chain	Res	Type
2	H	106	ILE
2	H	113	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (38) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	212	GLN
1	B	247	GLN
1	B	334	GLN
1	B	339	ASN
1	B	358	GLN
1	B	470	GLN
1	B	543	ASN
2	F	13	GLN
2	F	84	ASN
1	A	212	GLN
1	A	247	GLN
1	A	281	HIS
1	A	332	GLN
1	A	455	GLN
1	A	470	GLN
1	A	478	ASN
1	A	509	ASN
1	A	586	ASN
1	C	212	GLN
1	C	247	GLN
1	C	334	GLN
1	C	358	GLN
1	C	423	ASN
1	C	455	GLN
1	C	509	ASN
1	C	543	ASN
1	D	212	GLN
1	D	247	GLN
1	D	331	ASN
1	D	334	GLN
1	D	423	ASN
1	D	455	GLN
1	D	473	ASN
1	D	478	ASN
1	D	509	ASN
1	D	543	ASN

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Mol	Chain	Res	Type
2	E	13	GLN
2	G	13	GLN

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 ⓘ

96 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	I	1	1,3	14,14,15	0.23	0	17,19,21	0.41	0
3	NAG	I	2	3	14,14,15	0.22	0	17,19,21	0.45	0
3	BMA	I	3	3	11,11,12	0.57	0	15,15,17	0.72	0
3	MAN	I	4	3	11,11,12	0.75	0	15,15,17	1.11	2 (13%)
3	MAN	I	5	3	11,11,12	0.75	0	15,15,17	1.17	2 (13%)
4	NAG	J	1	1,4	14,14,15	0.25	0	17,19,21	0.46	0
4	NAG	J	2	4	14,14,15	0.22	0	17,19,21	0.44	0
4	BMA	J	3	4	11,11,12	1.06	1 (9%)	15,15,17	1.13	2 (13%)
4	MAN	J	4	4	11,11,12	0.79	0	15,15,17	1.20	2 (13%)
4	MAN	J	5	4	11,11,12	0.76	0	15,15,17	1.12	2 (13%)
4	MAN	J	6	4	11,11,12	0.64	0	15,15,17	1.01	2 (13%)
5	NAG	K	1	1,5	14,14,15	0.31	0	17,19,21	0.52	0
5	NAG	K	2	5	14,14,15	0.25	0	17,19,21	0.42	0
5	BMA	K	3	5	11,11,12	0.58	0	15,15,17	0.69	0
5	MAN	K	4	5	11,11,12	0.75	0	15,15,17	1.14	2 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NAG	L	1	1,5	14,14,15	0.39	0	17,19,21	0.62	0
5	NAG	L	2	5	14,14,15	0.20	0	17,19,21	0.49	0
5	BMA	L	3	5	11,11,12	1.09	1 (9%)	15,15,17	1.01	1 (6%)
5	MAN	L	4	5	11,11,12	0.77	0	15,15,17	1.09	2 (13%)
6	NAG	M	1	6,1	14,14,15	0.25	0	17,19,21	0.47	0
6	NAG	M	2	6	14,14,15	0.22	0	17,19,21	0.39	0
6	BMA	M	3	6	11,11,12	0.73	0	15,15,17	0.75	0
6	MAN	M	4	6	11,11,12	0.63	0	15,15,17	0.95	2 (13%)
6	MAN	M	5	6	11,11,12	0.75	0	15,15,17	1.14	2 (13%)
3	NAG	N	1	1,3	14,14,15	0.22	0	17,19,21	0.44	0
3	NAG	N	2	3	14,14,15	0.25	0	17,19,21	0.48	0
3	BMA	N	3	3	11,11,12	0.57	0	15,15,17	0.68	0
3	MAN	N	4	3	11,11,12	0.77	0	15,15,17	1.13	2 (13%)
3	MAN	N	5	3	11,11,12	0.74	0	15,15,17	1.18	2 (13%)
4	NAG	O	1	1,4	14,14,15	0.25	0	17,19,21	0.46	0
4	NAG	O	2	4	14,14,15	0.22	0	17,19,21	0.44	0
4	BMA	O	3	4	11,11,12	1.06	1 (9%)	15,15,17	1.13	2 (13%)
4	MAN	O	4	4	11,11,12	0.79	0	15,15,17	1.20	2 (13%)
4	MAN	O	5	4	11,11,12	0.76	0	15,15,17	1.11	2 (13%)
4	MAN	O	6	4	11,11,12	0.64	0	15,15,17	1.01	2 (13%)
5	NAG	P	1	1,5	14,14,15	0.29	0	17,19,21	0.51	0
5	NAG	P	2	5	14,14,15	0.26	0	17,19,21	0.42	0
5	BMA	P	3	5	11,11,12	0.59	0	15,15,17	0.69	0
5	MAN	P	4	5	11,11,12	0.75	0	15,15,17	1.14	2 (13%)
5	NAG	Q	1	1,5	14,14,15	0.39	0	17,19,21	0.62	0
5	NAG	Q	2	5	14,14,15	0.22	0	17,19,21	0.49	0
5	BMA	Q	3	5	11,11,12	1.05	1 (9%)	15,15,17	0.96	0
5	MAN	Q	4	5	11,11,12	0.79	0	15,15,17	1.08	2 (13%)
6	NAG	R	1	6,1	14,14,15	0.26	0	17,19,21	0.47	0
6	NAG	R	2	6	14,14,15	0.22	0	17,19,21	0.39	0
6	BMA	R	3	6	11,11,12	0.74	0	15,15,17	0.75	0
6	MAN	R	4	6	11,11,12	0.63	0	15,15,17	0.95	2 (13%)
6	MAN	R	5	6	11,11,12	0.75	0	15,15,17	1.13	2 (13%)
3	NAG	S	1	1,3	14,14,15	0.22	0	17,19,21	0.43	0
3	NAG	S	2	3	14,14,15	0.24	0	17,19,21	0.46	0
3	BMA	S	3	3	11,11,12	0.57	0	15,15,17	0.68	0
3	MAN	S	4	3	11,11,12	0.77	0	15,15,17	1.15	2 (13%)
3	MAN	S	5	3	11,11,12	0.74	0	15,15,17	1.18	2 (13%)
4	NAG	T	1	1,4	14,14,15	0.24	0	17,19,21	0.45	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	NAG	T	2	4	14,14,15	0.24	0	17,19,21	0.45	0
4	BMA	T	3	4	11,11,12	1.06	1 (9%)	15,15,17	1.13	2 (13%)
4	MAN	T	4	4	11,11,12	0.79	0	15,15,17	1.19	2 (13%)
4	MAN	T	5	4	11,11,12	0.76	0	15,15,17	1.11	2 (13%)
4	MAN	T	6	4	11,11,12	0.64	0	15,15,17	1.00	2 (13%)
5	NAG	U	1	1,5	14,14,15	0.30	0	17,19,21	0.51	0
5	NAG	U	2	5	14,14,15	0.24	0	17,19,21	0.42	0
5	BMA	U	3	5	11,11,12	0.58	0	15,15,17	0.69	0
5	MAN	U	4	5	11,11,12	0.75	0	15,15,17	1.14	2 (13%)
5	NAG	V	1	1,5	14,14,15	0.40	0	17,19,21	0.62	0
5	NAG	V	2	5	14,14,15	0.21	0	17,19,21	0.49	0
5	BMA	V	3	5	11,11,12	1.10	1 (9%)	15,15,17	1.00	1 (6%)
5	MAN	V	4	5	11,11,12	0.76	0	15,15,17	1.08	2 (13%)
6	NAG	W	1	6,1	14,14,15	0.25	0	17,19,21	0.47	0
6	NAG	W	2	6	14,14,15	0.21	0	17,19,21	0.39	0
6	BMA	W	3	6	11,11,12	0.72	0	15,15,17	0.76	0
6	MAN	W	4	6	11,11,12	0.63	0	15,15,17	0.94	2 (13%)
6	MAN	W	5	6	11,11,12	0.74	0	15,15,17	1.14	2 (13%)
3	NAG	X	1	1,3	14,14,15	0.22	0	17,19,21	0.43	0
3	NAG	X	2	3	14,14,15	0.24	0	17,19,21	0.49	0
3	BMA	X	3	3	11,11,12	0.58	0	15,15,17	0.67	0
3	MAN	X	4	3	11,11,12	0.76	0	15,15,17	1.14	2 (13%)
3	MAN	X	5	3	11,11,12	0.73	0	15,15,17	1.18	2 (13%)
4	NAG	Y	1	1,4	14,14,15	0.26	0	17,19,21	0.46	0
4	NAG	Y	2	4	14,14,15	0.22	0	17,19,21	0.44	0
4	BMA	Y	3	4	11,11,12	1.06	1 (9%)	15,15,17	1.14	2 (13%)
4	MAN	Y	4	4	11,11,12	0.79	0	15,15,17	1.19	2 (13%)
4	MAN	Y	5	4	11,11,12	0.76	0	15,15,17	1.11	2 (13%)
4	MAN	Y	6	4	11,11,12	0.64	0	15,15,17	1.01	2 (13%)
5	NAG	Z	1	1,5	14,14,15	0.30	0	17,19,21	0.52	0
5	NAG	Z	2	5	14,14,15	0.24	0	17,19,21	0.43	0
5	BMA	Z	3	5	11,11,12	0.58	0	15,15,17	0.70	0
5	MAN	Z	4	5	11,11,12	0.75	0	15,15,17	1.14	2 (13%)
5	NAG	a	1	1,5	14,14,15	0.40	0	17,19,21	0.62	0
5	NAG	a	2	5	14,14,15	0.22	0	17,19,21	0.49	0
5	BMA	a	3	5	11,11,12	1.09	1 (9%)	15,15,17	1.01	2 (13%)
5	MAN	a	4	5	11,11,12	0.77	0	15,15,17	1.08	2 (13%)
6	NAG	b	1	6,1	14,14,15	0.27	0	17,19,21	0.47	0
6	NAG	b	2	6	14,14,15	0.21	0	17,19,21	0.39	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	BMA	b	3	6	11,11,12	0.73	0	15,15,17	0.76	0
6	MAN	b	4	6	11,11,12	0.63	0	15,15,17	0.94	2 (13%)
6	MAN	b	5	6	11,11,12	0.75	0	15,15,17	1.13	2 (13%)

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	I	1	1,3	-	2/6/23/26	0/1/1/1
3	NAG	I	2	3	-	2/6/23/26	0/1/1/1
3	BMA	I	3	3	-	2/2/19/22	0/1/1/1
3	MAN	I	4	3	-	2/2/19/22	1/1/1/1
3	MAN	I	5	3	-	1/2/19/22	1/1/1/1
4	NAG	J	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	J	2	4	-	2/6/23/26	0/1/1/1
4	BMA	J	3	4	-	2/2/19/22	0/1/1/1
4	MAN	J	4	4	-	2/2/19/22	1/1/1/1
4	MAN	J	5	4	-	1/2/19/22	1/1/1/1
4	MAN	J	6	4	-	0/2/19/22	0/1/1/1
5	NAG	K	1	1,5	-	1/6/23/26	0/1/1/1
5	NAG	K	2	5	-	0/6/23/26	0/1/1/1
5	BMA	K	3	5	-	0/2/19/22	0/1/1/1
5	MAN	K	4	5	-	0/2/19/22	1/1/1/1
5	NAG	L	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	L	2	5	-	1/6/23/26	0/1/1/1
5	BMA	L	3	5	-	2/2/19/22	0/1/1/1
5	MAN	L	4	5	-	0/2/19/22	1/1/1/1
6	NAG	M	1	6,1	-	1/6/23/26	0/1/1/1
6	NAG	M	2	6	-	2/6/23/26	0/1/1/1
6	BMA	M	3	6	-	1/2/19/22	0/1/1/1
6	MAN	M	4	6	-	0/2/19/22	0/1/1/1
6	MAN	M	5	6	-	0/2/19/22	1/1/1/1
3	NAG	N	1	1,3	-	2/6/23/26	0/1/1/1
3	NAG	N	2	3	-	2/6/23/26	0/1/1/1
3	BMA	N	3	3	-	2/2/19/22	0/1/1/1
3	MAN	N	4	3	-	2/2/19/22	1/1/1/1
3	MAN	N	5	3	-	1/2/19/22	1/1/1/1

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

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	W	1	6,1	-	0/6/23/26	0/1/1/1
6	NAG	W	2	6	-	2/6/23/26	0/1/1/1
6	BMA	W	3	6	-	1/2/19/22	0/1/1/1
6	MAN	W	4	6	-	0/2/19/22	0/1/1/1
6	MAN	W	5	6	-	0/2/19/22	1/1/1/1
3	NAG	X	1	1,3	-	2/6/23/26	0/1/1/1
3	NAG	X	2	3	-	2/6/23/26	0/1/1/1
3	BMA	X	3	3	-	2/2/19/22	0/1/1/1
3	MAN	X	4	3	-	2/2/19/22	1/1/1/1
3	MAN	X	5	3	-	1/2/19/22	1/1/1/1
4	NAG	Y	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	Y	2	4	-	2/6/23/26	0/1/1/1
4	BMA	Y	3	4	-	2/2/19/22	0/1/1/1
4	MAN	Y	4	4	-	2/2/19/22	1/1/1/1
4	MAN	Y	5	4	-	1/2/19/22	1/1/1/1
4	MAN	Y	6	4	-	0/2/19/22	0/1/1/1
5	NAG	Z	1	1,5	-	1/6/23/26	0/1/1/1
5	NAG	Z	2	5	-	0/6/23/26	0/1/1/1
5	BMA	Z	3	5	-	0/2/19/22	0/1/1/1
5	MAN	Z	4	5	-	0/2/19/22	1/1/1/1
5	NAG	a	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	a	2	5	-	1/6/23/26	0/1/1/1
5	BMA	a	3	5	-	2/2/19/22	0/1/1/1
5	MAN	a	4	5	-	0/2/19/22	1/1/1/1
6	NAG	b	1	6,1	-	1/6/23/26	0/1/1/1
6	NAG	b	2	6	-	2/6/23/26	0/1/1/1
6	BMA	b	3	6	-	1/2/19/22	0/1/1/1
6	MAN	b	4	6	-	0/2/19/22	0/1/1/1
6	MAN	b	5	6	-	0/2/19/22	1/1/1/1

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	T	3	BMA	C1-C2	2.66	1.58	1.52
4	O	3	BMA	C1-C2	2.66	1.58	1.52
4	Y	3	BMA	C1-C2	2.64	1.58	1.52
4	J	3	BMA	C1-C2	2.63	1.58	1.52
5	V	3	BMA	C4-C5	2.44	1.58	1.53
5	a	3	BMA	C4-C5	2.40	1.58	1.53
5	L	3	BMA	C4-C5	2.38	1.58	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	Q	3	BMA	C4-C5	2.22	1.57	1.53

All (84) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	O	4	MAN	C1-O5-C5	3.67	117.10	112.19
4	J	4	MAN	C1-O5-C5	3.66	117.10	112.19
4	T	4	MAN	C1-O5-C5	3.62	117.03	112.19
4	Y	4	MAN	C1-O5-C5	3.61	117.02	112.19
3	S	5	MAN	C1-O5-C5	3.56	116.95	112.19
3	I	5	MAN	C1-O5-C5	3.55	116.94	112.19
3	N	5	MAN	C1-O5-C5	3.54	116.94	112.19
3	X	5	MAN	C1-O5-C5	3.54	116.93	112.19
6	M	5	MAN	C1-O5-C5	3.43	116.78	112.19
6	W	5	MAN	C1-O5-C5	3.43	116.78	112.19
3	S	4	MAN	C1-O5-C5	3.42	116.78	112.19
5	K	4	MAN	C1-O5-C5	3.42	116.76	112.19
5	P	4	MAN	C1-O5-C5	3.42	116.76	112.19
5	U	4	MAN	C1-O5-C5	3.40	116.75	112.19
5	Z	4	MAN	C1-O5-C5	3.40	116.74	112.19
3	X	4	MAN	C1-O5-C5	3.38	116.72	112.19
6	R	5	MAN	C1-O5-C5	3.38	116.72	112.19
6	b	5	MAN	C1-O5-C5	3.38	116.71	112.19
3	N	4	MAN	C1-O5-C5	3.38	116.71	112.19
4	J	5	MAN	C1-O5-C5	3.30	116.61	112.19
4	O	5	MAN	C1-O5-C5	3.30	116.61	112.19
4	T	5	MAN	C1-O5-C5	3.30	116.61	112.19
3	I	4	MAN	C1-O5-C5	3.29	116.59	112.19
4	Y	5	MAN	C1-O5-C5	3.28	116.59	112.19
5	L	4	MAN	C1-O5-C5	3.19	116.47	112.19
5	Q	4	MAN	C1-O5-C5	3.16	116.42	112.19
5	a	4	MAN	C1-O5-C5	3.16	116.42	112.19
5	V	4	MAN	C1-O5-C5	3.16	116.42	112.19
4	O	3	BMA	O2-C2-C3	-2.84	104.27	110.15
4	T	3	BMA	O2-C2-C3	-2.84	104.27	110.15
4	J	3	BMA	O2-C2-C3	-2.83	104.28	110.15
4	Y	3	BMA	O2-C2-C3	-2.83	104.29	110.15
4	O	6	MAN	C1-O5-C5	2.53	115.58	112.19
4	T	6	MAN	C1-O5-C5	2.51	115.55	112.19
4	J	6	MAN	C1-O5-C5	2.51	115.55	112.19
4	Y	6	MAN	C1-O5-C5	2.50	115.54	112.19
3	X	5	MAN	O2-C2-C3	-2.24	105.50	110.15

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	R	4	MAN	C1-O5-C5	2.22	115.16	112.19
3	S	5	MAN	O2-C2-C3	-2.21	105.57	110.15
6	M	4	MAN	C1-O5-C5	2.21	115.15	112.19
3	N	5	MAN	O2-C2-C3	-2.21	105.58	110.15
6	W	4	MAN	C1-O5-C5	2.17	115.10	112.19
4	Y	3	BMA	C1-C2-C3	-2.17	106.48	109.64
6	b	4	MAN	O2-C2-C3	-2.17	105.66	110.15
4	O	6	MAN	O2-C2-C3	-2.16	105.67	110.15
4	O	4	MAN	O2-C2-C3	-2.16	105.67	110.15
4	J	3	BMA	C1-C2-C3	-2.16	106.50	109.64
3	S	4	MAN	O2-C2-C3	-2.16	105.67	110.15
3	I	5	MAN	O2-C2-C3	-2.16	105.67	110.15
3	X	4	MAN	O2-C2-C3	-2.16	105.68	110.15
6	b	4	MAN	C1-O5-C5	2.16	115.08	112.19
6	R	4	MAN	O2-C2-C3	-2.15	105.69	110.15
6	W	5	MAN	O2-C2-C3	-2.15	105.69	110.15
5	Z	4	MAN	O2-C2-C3	-2.15	105.69	110.15
6	M	4	MAN	O2-C2-C3	-2.15	105.70	110.15
6	W	4	MAN	O2-C2-C3	-2.15	105.70	110.15
4	Y	4	MAN	O2-C2-C3	-2.15	105.71	110.15
4	Y	6	MAN	O2-C2-C3	-2.14	105.71	110.15
6	b	5	MAN	O2-C2-C3	-2.14	105.71	110.15
4	Y	5	MAN	O2-C2-C3	-2.14	105.72	110.15
4	O	5	MAN	O2-C2-C3	-2.14	105.72	110.15
5	Q	4	MAN	O2-C2-C3	-2.14	105.72	110.15
5	U	4	MAN	O2-C2-C3	-2.14	105.72	110.15
4	J	6	MAN	O2-C2-C3	-2.14	105.73	110.15
4	J	5	MAN	O2-C2-C3	-2.14	105.73	110.15
5	L	4	MAN	O2-C2-C3	-2.14	105.73	110.15
4	O	3	BMA	C1-C2-C3	-2.13	106.54	109.64
4	T	5	MAN	O2-C2-C3	-2.13	105.74	110.15
3	I	4	MAN	O2-C2-C3	-2.13	105.74	110.15
4	T	6	MAN	O2-C2-C3	-2.13	105.74	110.15
5	K	4	MAN	O2-C2-C3	-2.13	105.74	110.15
4	J	4	MAN	O2-C2-C3	-2.13	105.74	110.15
5	V	4	MAN	O2-C2-C3	-2.13	105.74	110.15
5	P	4	MAN	O2-C2-C3	-2.13	105.74	110.15
4	T	4	MAN	O2-C2-C3	-2.13	105.75	110.15
6	R	5	MAN	O2-C2-C3	-2.13	105.75	110.15
5	a	4	MAN	O2-C2-C3	-2.12	105.75	110.15
3	N	4	MAN	O2-C2-C3	-2.12	105.76	110.15
6	M	5	MAN	O2-C2-C3	-2.12	105.77	110.15

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	T	3	BMA	C1-C2-C3	-2.10	106.58	109.64
5	L	3	BMA	C3-C4-C5	2.07	113.99	110.23
5	a	3	BMA	C3-C4-C5	2.05	113.95	110.23
5	V	3	BMA	C3-C4-C5	2.01	113.88	110.23
5	a	3	BMA	C2-C3-C4	2.00	114.38	110.86

There are no chirality outliers.

All (112) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	N	4	MAN	O5-C5-C6-O6
3	S	4	MAN	O5-C5-C6-O6
3	X	4	MAN	O5-C5-C6-O6
4	J	3	BMA	O5-C5-C6-O6
4	T	3	BMA	O5-C5-C6-O6
4	Y	3	BMA	O5-C5-C6-O6
4	J	1	NAG	O5-C5-C6-O6
4	Y	1	NAG	O5-C5-C6-O6
4	O	1	NAG	O5-C5-C6-O6
4	O	3	BMA	O5-C5-C6-O6
4	T	1	NAG	O5-C5-C6-O6
3	N	4	MAN	C4-C5-C6-O6
3	S	4	MAN	C4-C5-C6-O6
3	X	4	MAN	C4-C5-C6-O6
5	L	3	BMA	O5-C5-C6-O6
5	Q	3	BMA	O5-C5-C6-O6
5	V	3	BMA	O5-C5-C6-O6
5	a	3	BMA	O5-C5-C6-O6
3	I	2	NAG	O5-C5-C6-O6
3	N	2	NAG	O5-C5-C6-O6
3	N	3	BMA	O5-C5-C6-O6
3	S	2	NAG	O5-C5-C6-O6
3	X	2	NAG	O5-C5-C6-O6
3	X	3	BMA	O5-C5-C6-O6
3	I	3	BMA	O5-C5-C6-O6
3	S	3	BMA	O5-C5-C6-O6
4	T	1	NAG	C4-C5-C6-O6
4	Y	1	NAG	C4-C5-C6-O6
3	I	3	BMA	C4-C5-C6-O6
4	J	1	NAG	C4-C5-C6-O6
3	N	3	BMA	C4-C5-C6-O6
3	S	3	BMA	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	O	1	NAG	C4-C5-C6-O6
3	X	3	BMA	C4-C5-C6-O6
5	a	3	BMA	C4-C5-C6-O6
3	I	1	NAG	C8-C7-N2-C2
3	I	1	NAG	O7-C7-N2-C2
3	N	1	NAG	C8-C7-N2-C2
3	N	1	NAG	O7-C7-N2-C2
3	S	1	NAG	C8-C7-N2-C2
3	S	1	NAG	O7-C7-N2-C2
3	X	1	NAG	C8-C7-N2-C2
3	X	1	NAG	O7-C7-N2-C2
5	L	3	BMA	C4-C5-C6-O6
5	V	3	BMA	C4-C5-C6-O6
5	Q	3	BMA	C4-C5-C6-O6
4	J	3	BMA	C4-C5-C6-O6
4	O	2	NAG	C4-C5-C6-O6
4	Y	3	BMA	C4-C5-C6-O6
4	T	3	BMA	C4-C5-C6-O6
5	Q	2	NAG	O5-C5-C6-O6
4	O	3	BMA	C4-C5-C6-O6
4	Y	2	NAG	C4-C5-C6-O6
4	J	2	NAG	C4-C5-C6-O6
5	L	2	NAG	O5-C5-C6-O6
5	V	2	NAG	O5-C5-C6-O6
5	a	2	NAG	O5-C5-C6-O6
4	O	4	MAN	C4-C5-C6-O6
4	O	2	NAG	O5-C5-C6-O6
3	I	2	NAG	C4-C5-C6-O6
4	J	4	MAN	C4-C5-C6-O6
4	T	4	MAN	C4-C5-C6-O6
4	Y	4	MAN	C4-C5-C6-O6
6	R	2	NAG	C4-C5-C6-O6
4	O	4	MAN	O5-C5-C6-O6
6	W	2	NAG	C4-C5-C6-O6
4	J	4	MAN	O5-C5-C6-O6
4	T	4	MAN	O5-C5-C6-O6
4	Y	4	MAN	O5-C5-C6-O6
6	M	2	NAG	C4-C5-C6-O6
6	b	2	NAG	C4-C5-C6-O6
5	U	1	NAG	O5-C5-C6-O6
5	P	1	NAG	O5-C5-C6-O6
3	I	4	MAN	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
5	K	1	NAG	O5-C5-C6-O6
4	T	2	NAG	C4-C5-C6-O6
5	Z	1	NAG	O5-C5-C6-O6
3	X	2	NAG	C4-C5-C6-O6
4	Y	2	NAG	O5-C5-C6-O6
3	N	2	NAG	C4-C5-C6-O6
3	S	2	NAG	C4-C5-C6-O6
4	J	2	NAG	O5-C5-C6-O6
6	M	3	BMA	O5-C5-C6-O6
6	W	3	BMA	O5-C5-C6-O6
6	R	3	BMA	O5-C5-C6-O6
6	b	3	BMA	O5-C5-C6-O6
3	I	5	MAN	O5-C5-C6-O6
3	N	5	MAN	O5-C5-C6-O6
3	S	5	MAN	O5-C5-C6-O6
3	X	5	MAN	O5-C5-C6-O6
4	J	5	MAN	O5-C5-C6-O6
4	O	5	MAN	O5-C5-C6-O6
4	T	5	MAN	O5-C5-C6-O6
4	Y	5	MAN	O5-C5-C6-O6
5	V	1	NAG	O5-C5-C6-O6
5	V	1	NAG	C4-C5-C6-O6
6	R	2	NAG	O5-C5-C6-O6
6	W	2	NAG	O5-C5-C6-O6
6	M	2	NAG	O5-C5-C6-O6
4	T	2	NAG	O5-C5-C6-O6
6	b	2	NAG	O5-C5-C6-O6
3	I	4	MAN	O5-C5-C6-O6
5	Q	1	NAG	C4-C5-C6-O6
5	Q	1	NAG	O5-C5-C6-O6
5	L	1	NAG	C4-C5-C6-O6
4	T	1	NAG	C1-C2-N2-C7
6	M	1	NAG	C1-C2-N2-C7
6	b	1	NAG	C1-C2-N2-C7
5	L	1	NAG	O5-C5-C6-O6
5	a	1	NAG	C4-C5-C6-O6
5	a	1	NAG	O5-C5-C6-O6
5	Q	2	NAG	C4-C5-C6-O6

All (28) ring outliers are listed below:

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
-----	-------	-----	------	-------

Mol	Chain	Res	Type	Atoms
5	Q	4	MAN	C1-C2-C3-C4-C5-O5
5	V	4	MAN	C1-C2-C3-C4-C5-O5
5	a	4	MAN	C1-C2-C3-C4-C5-O5
5	L	4	MAN	C1-C2-C3-C4-C5-O5
4	Y	5	MAN	C1-C2-C3-C4-C5-O5
3	I	4	MAN	C1-C2-C3-C4-C5-O5
4	O	5	MAN	C1-C2-C3-C4-C5-O5
4	T	5	MAN	C1-C2-C3-C4-C5-O5
4	J	5	MAN	C1-C2-C3-C4-C5-O5
5	Z	4	MAN	C1-C2-C3-C4-C5-O5
5	K	4	MAN	C1-C2-C3-C4-C5-O5
5	U	4	MAN	C1-C2-C3-C4-C5-O5
5	P	4	MAN	C1-C2-C3-C4-C5-O5
6	W	5	MAN	C1-C2-C3-C4-C5-O5
4	O	4	MAN	C1-C2-C3-C4-C5-O5
6	R	5	MAN	C1-C2-C3-C4-C5-O5
4	T	4	MAN	C1-C2-C3-C4-C5-O5
4	J	4	MAN	C1-C2-C3-C4-C5-O5
6	b	5	MAN	C1-C2-C3-C4-C5-O5
4	Y	4	MAN	C1-C2-C3-C4-C5-O5
6	M	5	MAN	C1-C2-C3-C4-C5-O5
3	X	4	MAN	C1-C2-C3-C4-C5-O5
3	S	4	MAN	C1-C2-C3-C4-C5-O5
3	N	4	MAN	C1-C2-C3-C4-C5-O5
3	I	5	MAN	C1-C2-C3-C4-C5-O5
3	X	5	MAN	C1-C2-C3-C4-C5-O5
3	S	5	MAN	C1-C2-C3-C4-C5-O5
3	N	5	MAN	C1-C2-C3-C4-C5-O5

14 monomers are involved in 8 short contacts:

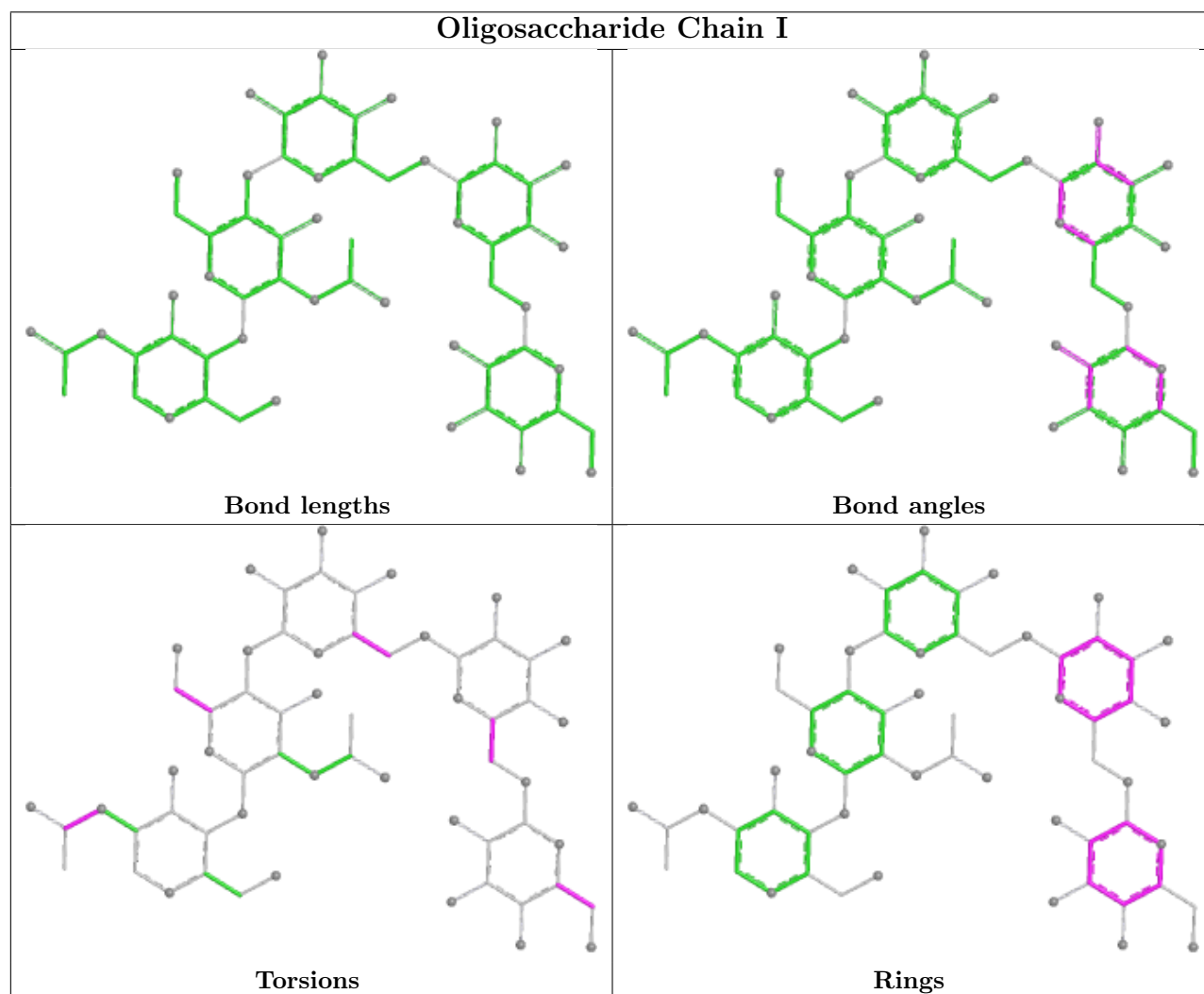
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	O	3	BMA	1	0
3	X	1	NAG	2	0
4	O	2	NAG	1	0
4	J	2	NAG	1	0
3	X	2	NAG	1	0
4	J	3	BMA	1	0
3	N	1	NAG	1	0
4	T	2	NAG	1	0
4	Y	3	BMA	1	0

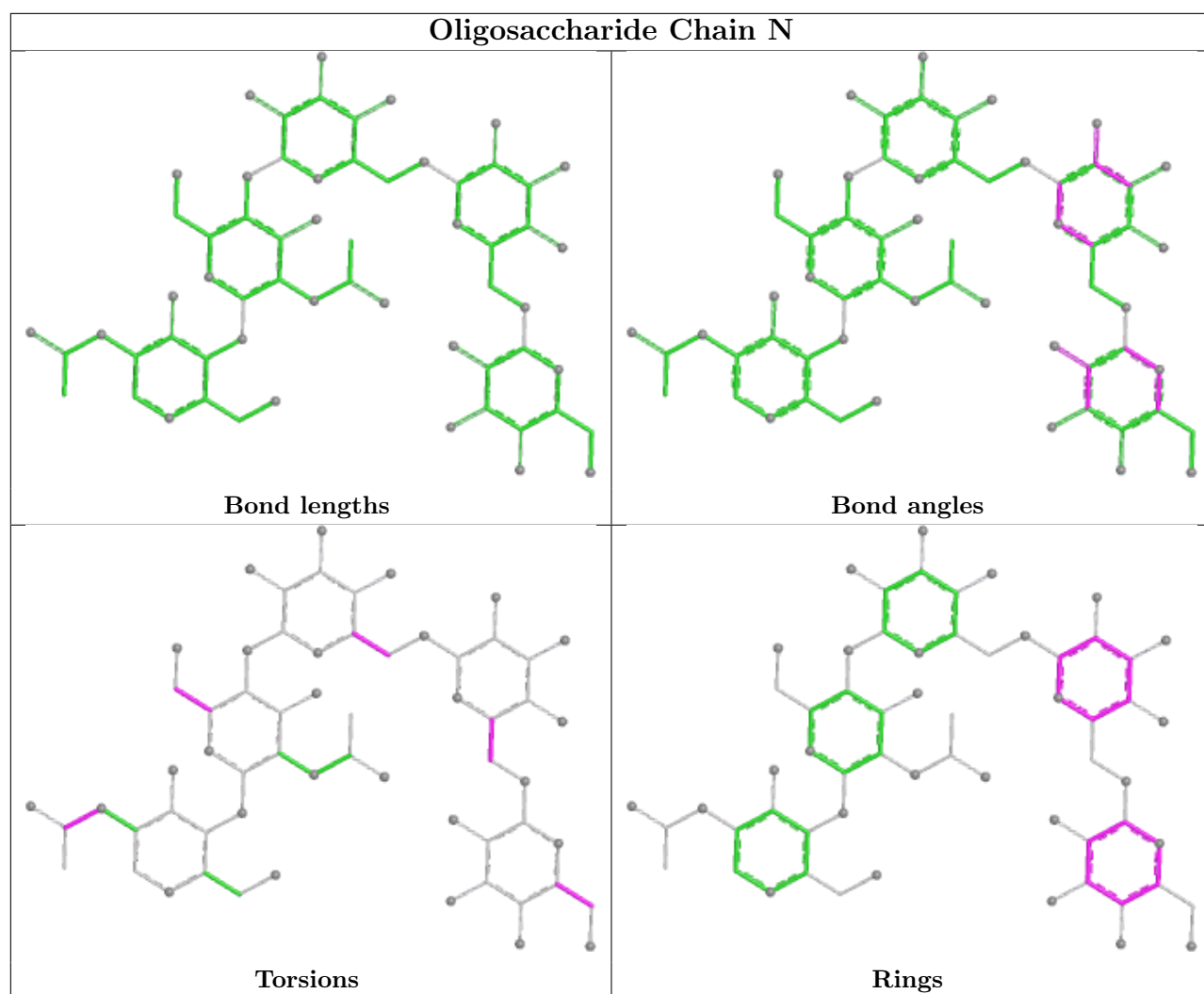
Continued on next page...

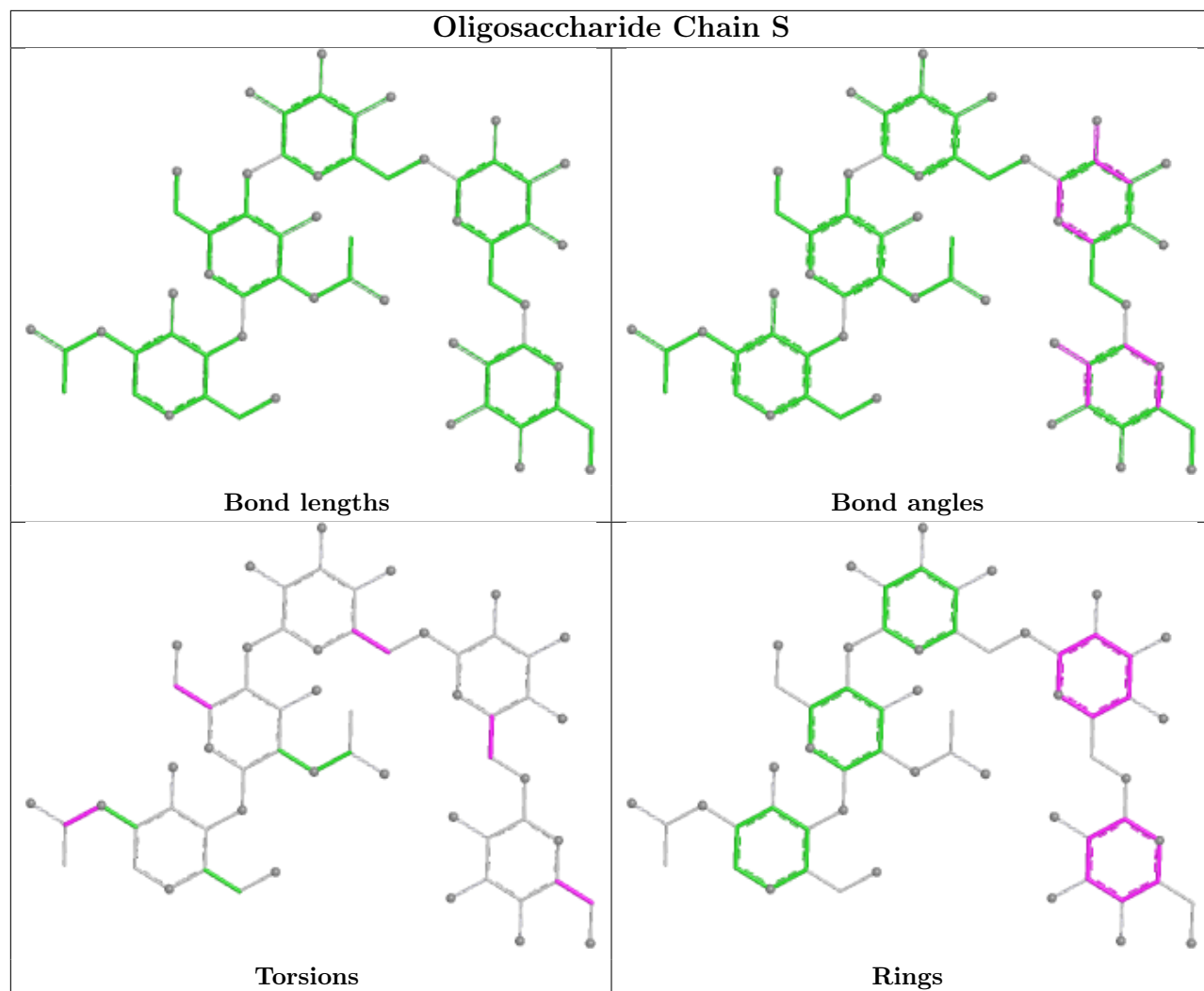
Continued from previous page...

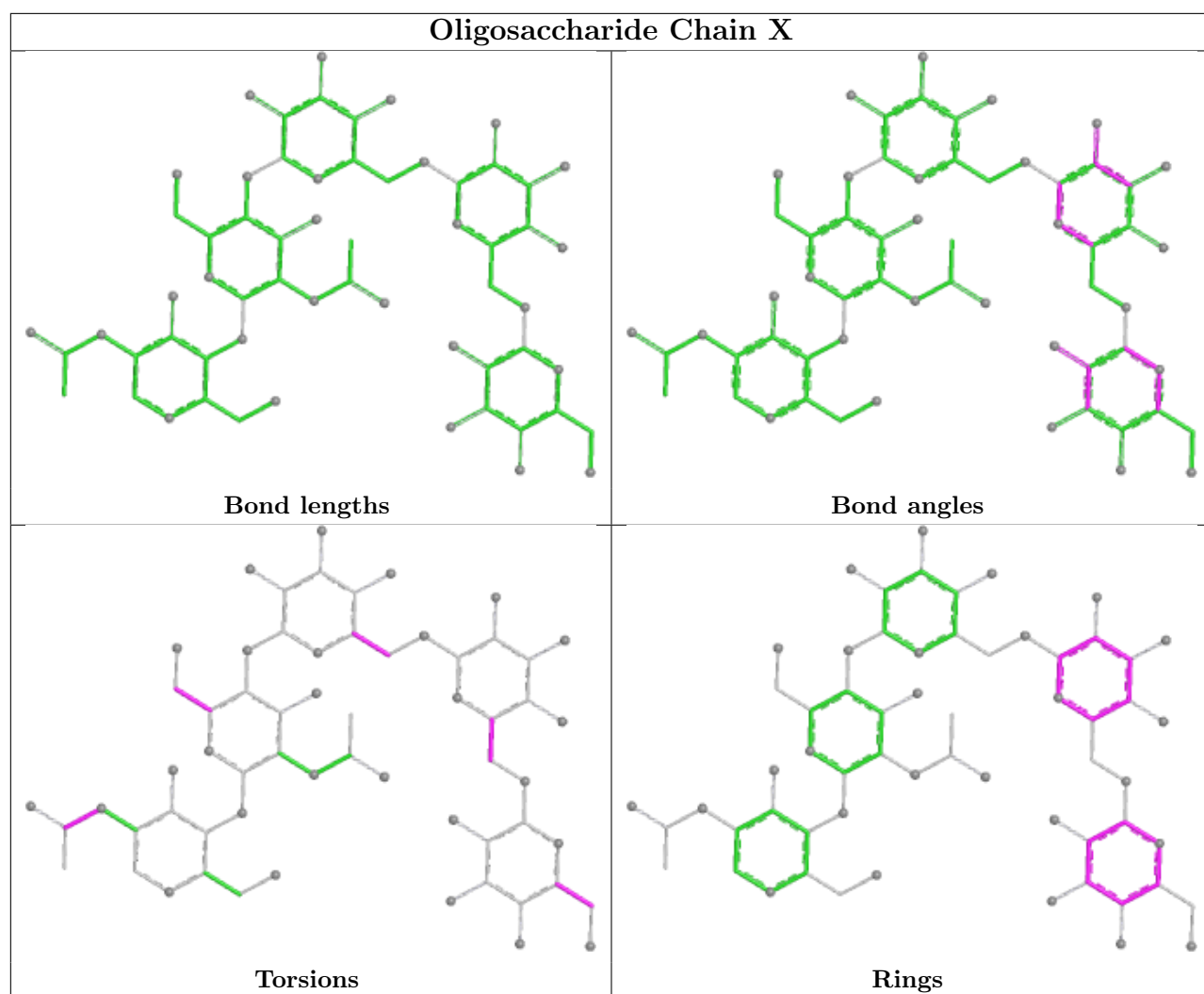
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	Y	2	NAG	1	0
4	T	3	BMA	1	0
3	N	2	NAG	1	0
3	I	3	BMA	1	0
3	I	5	MAN	1	0

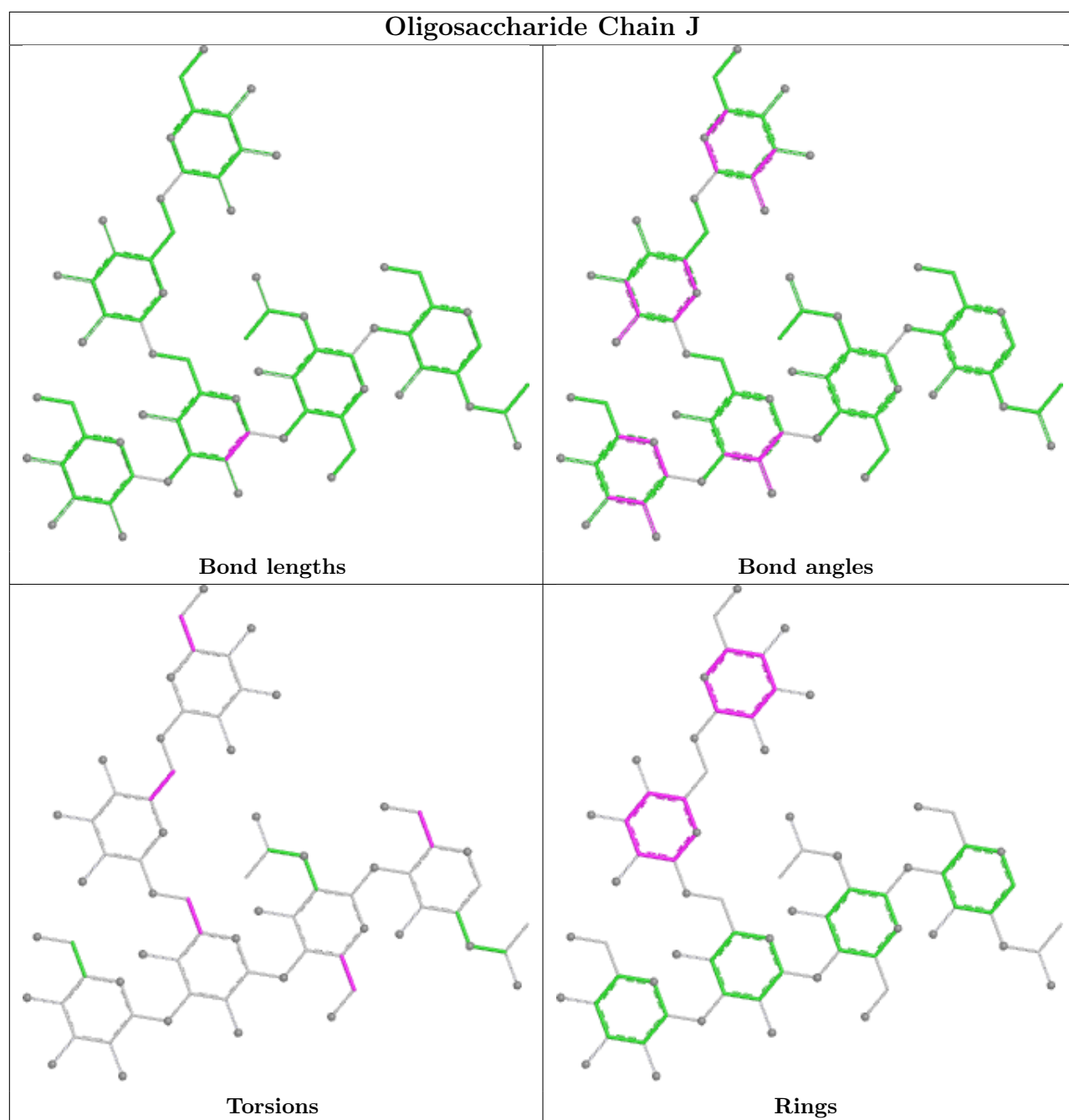
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

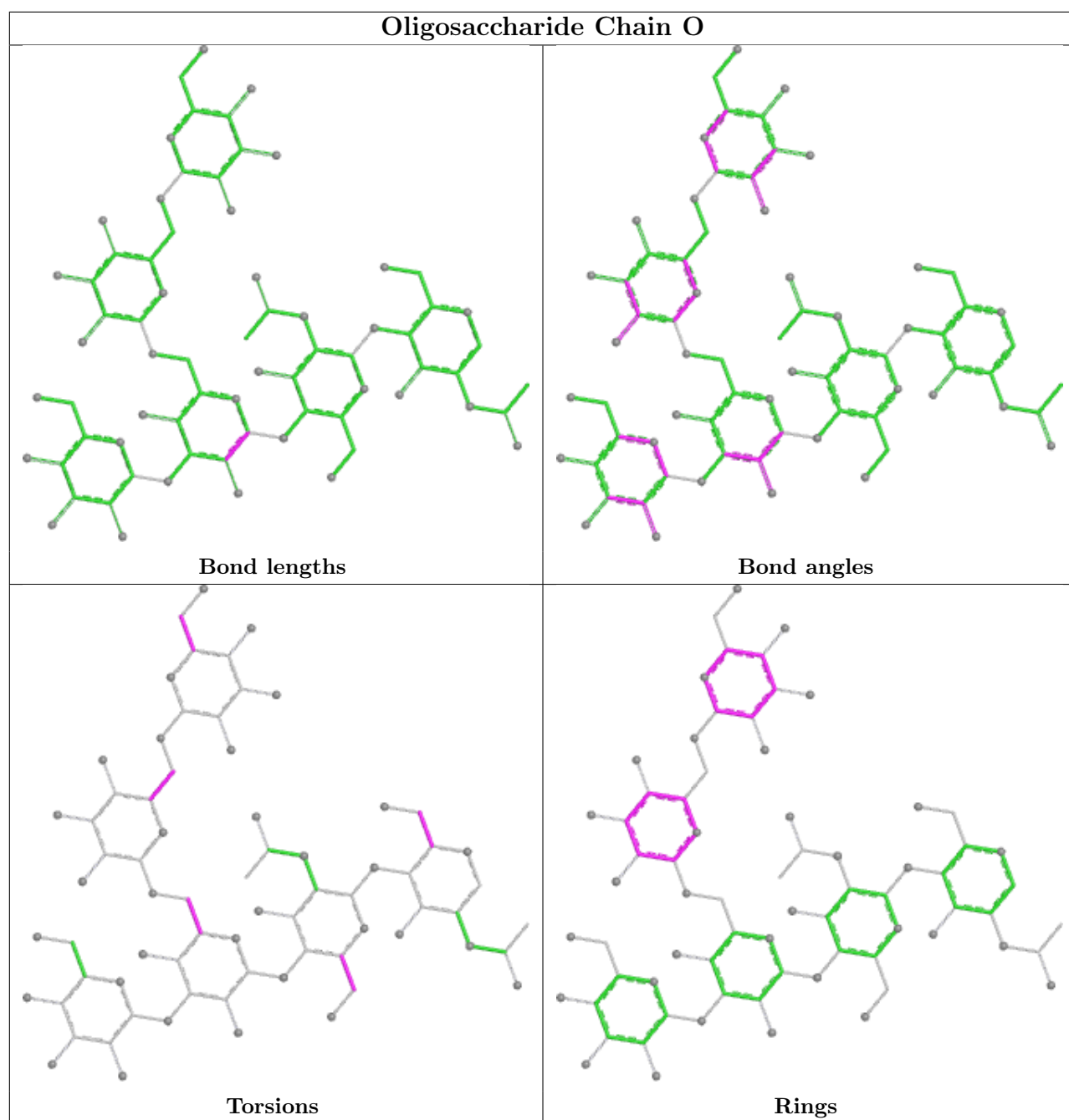


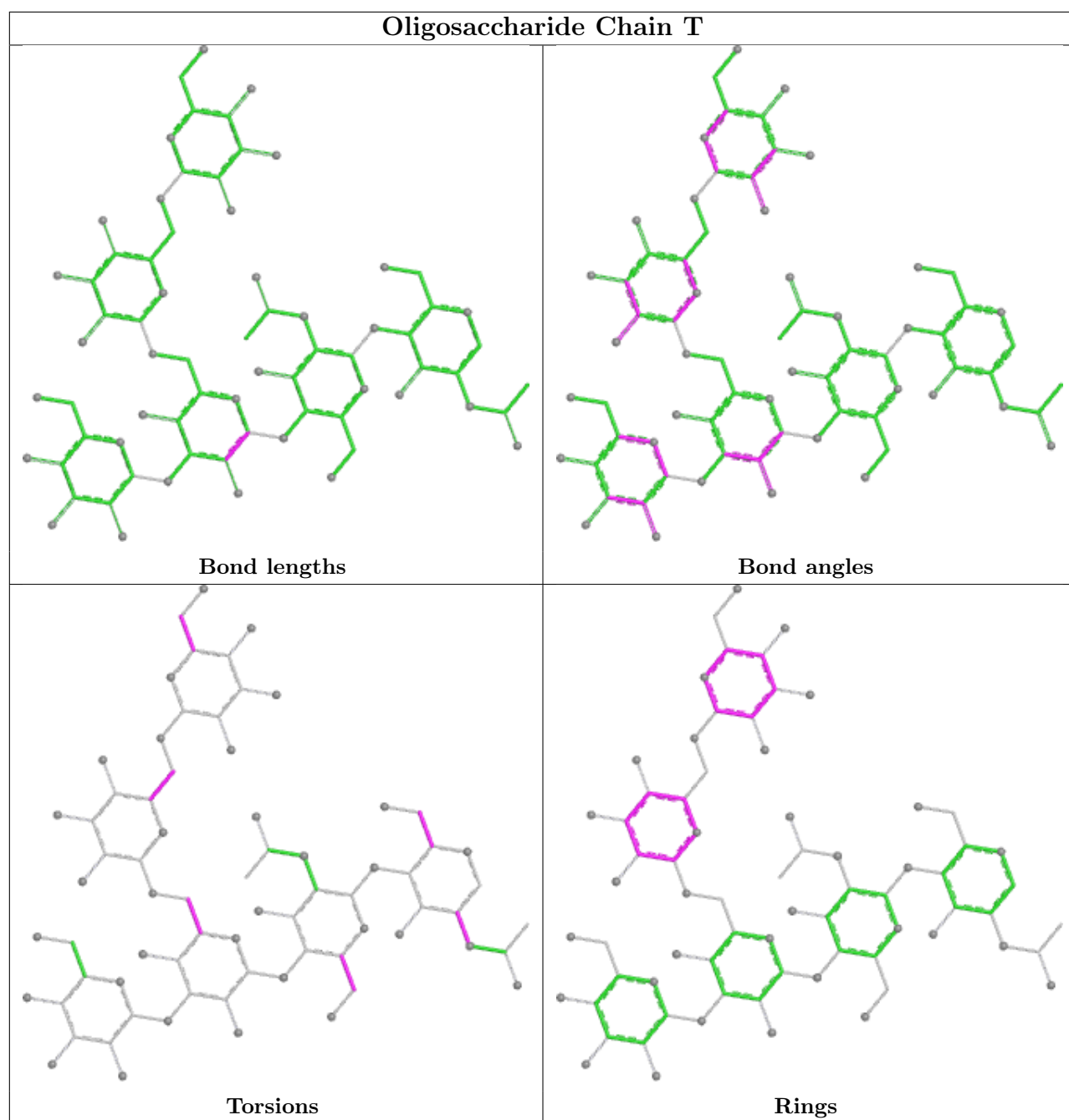


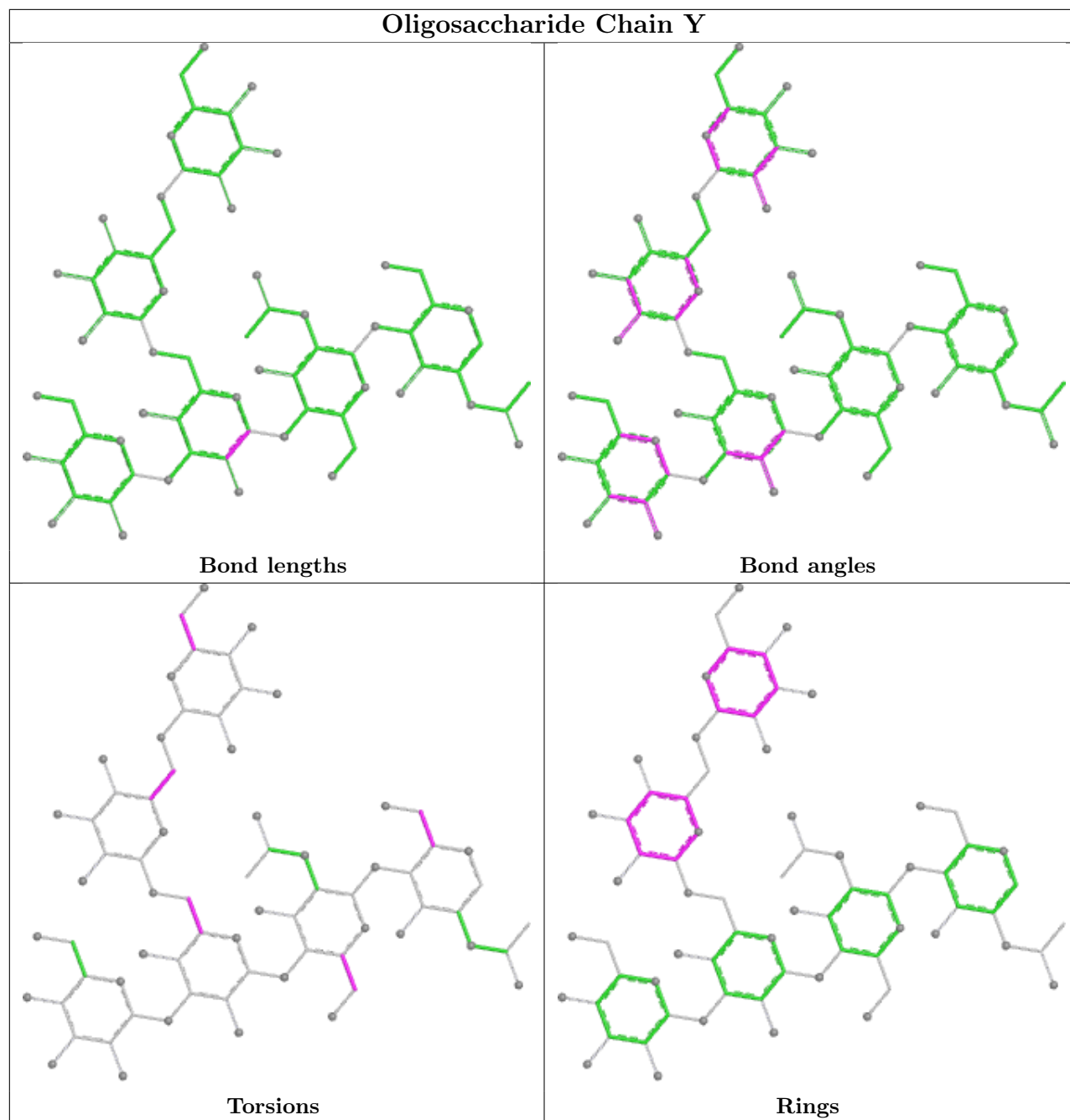


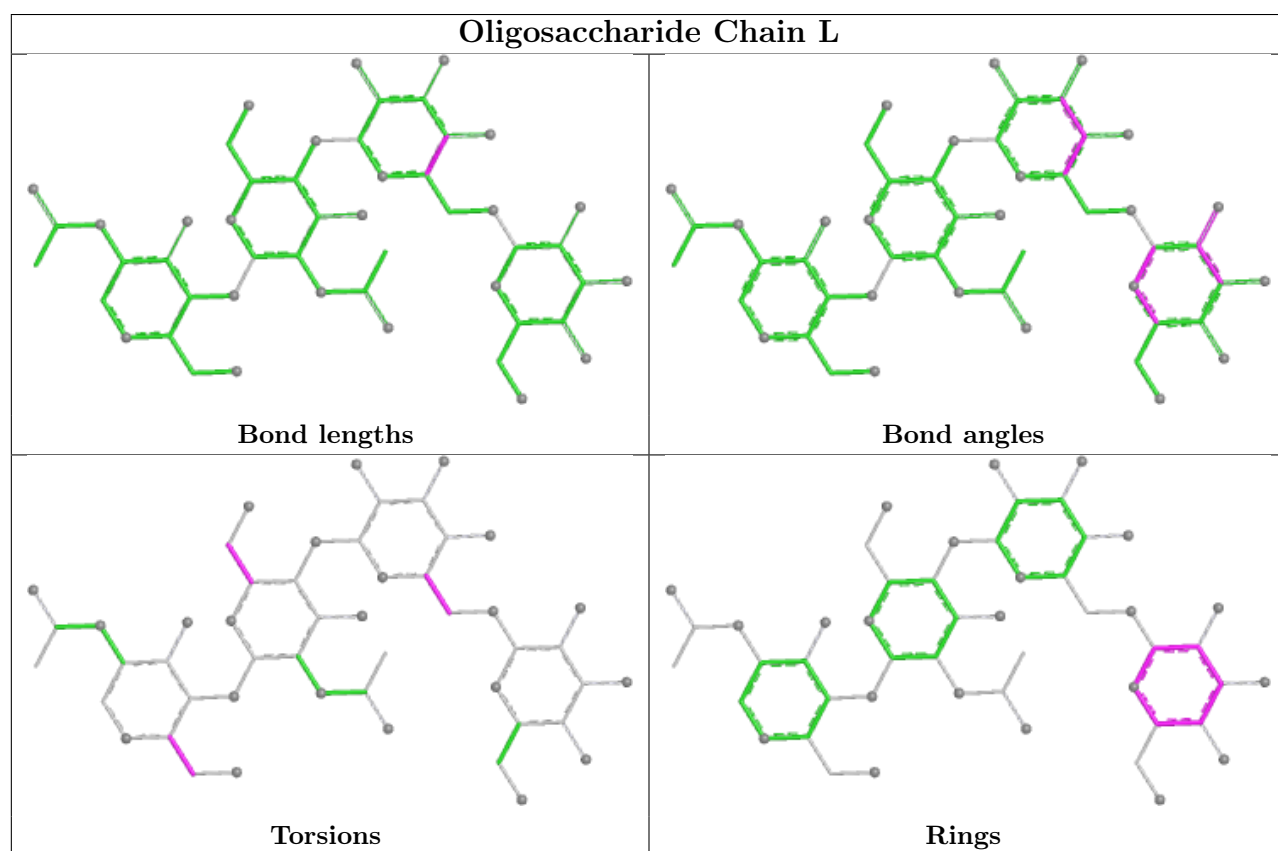
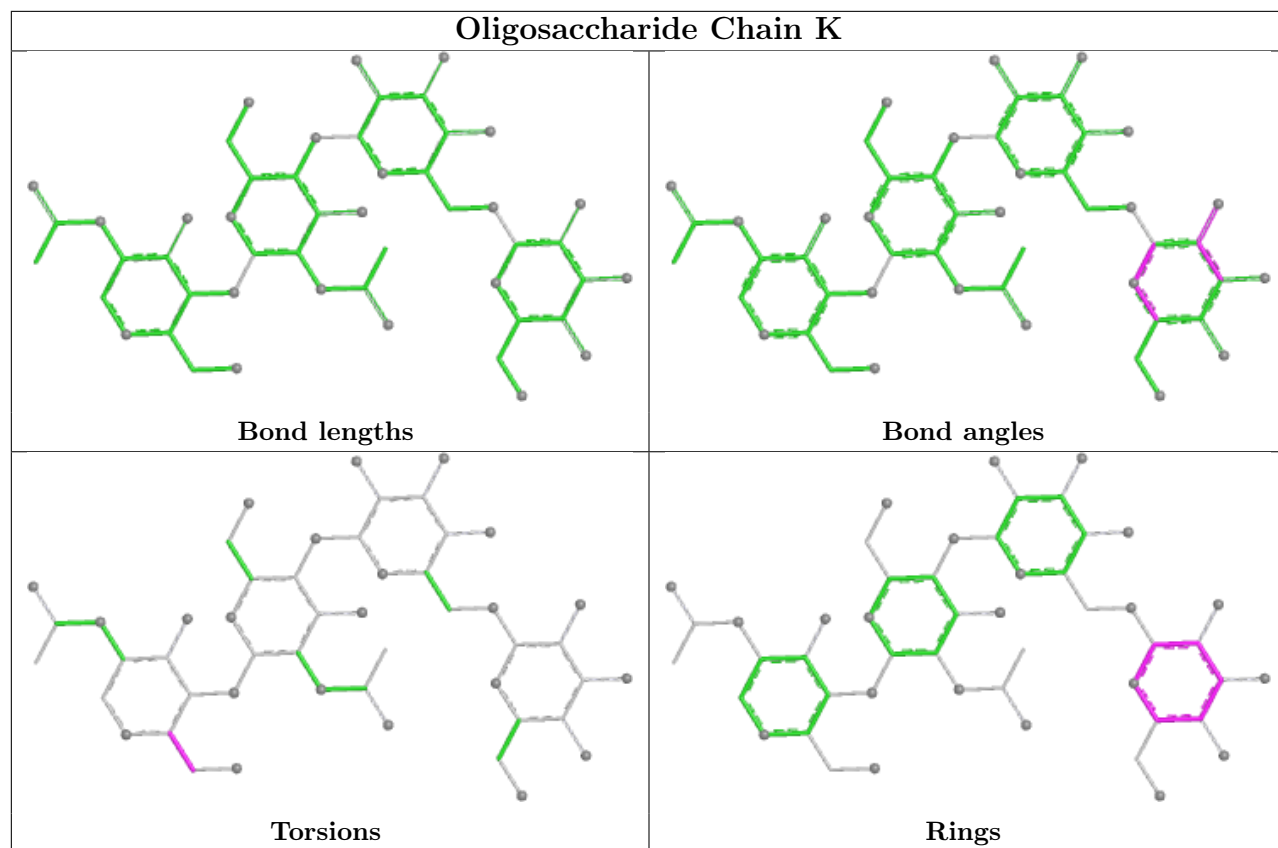


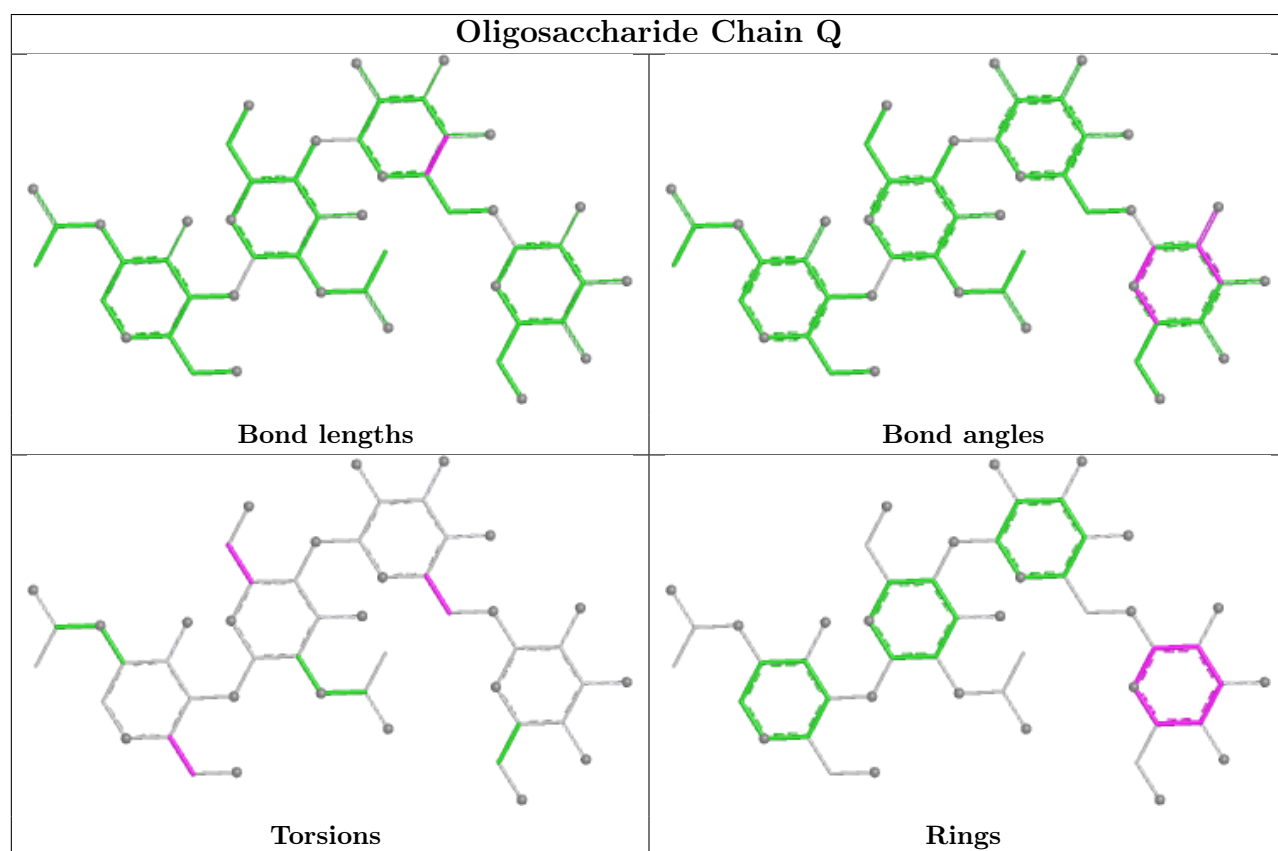
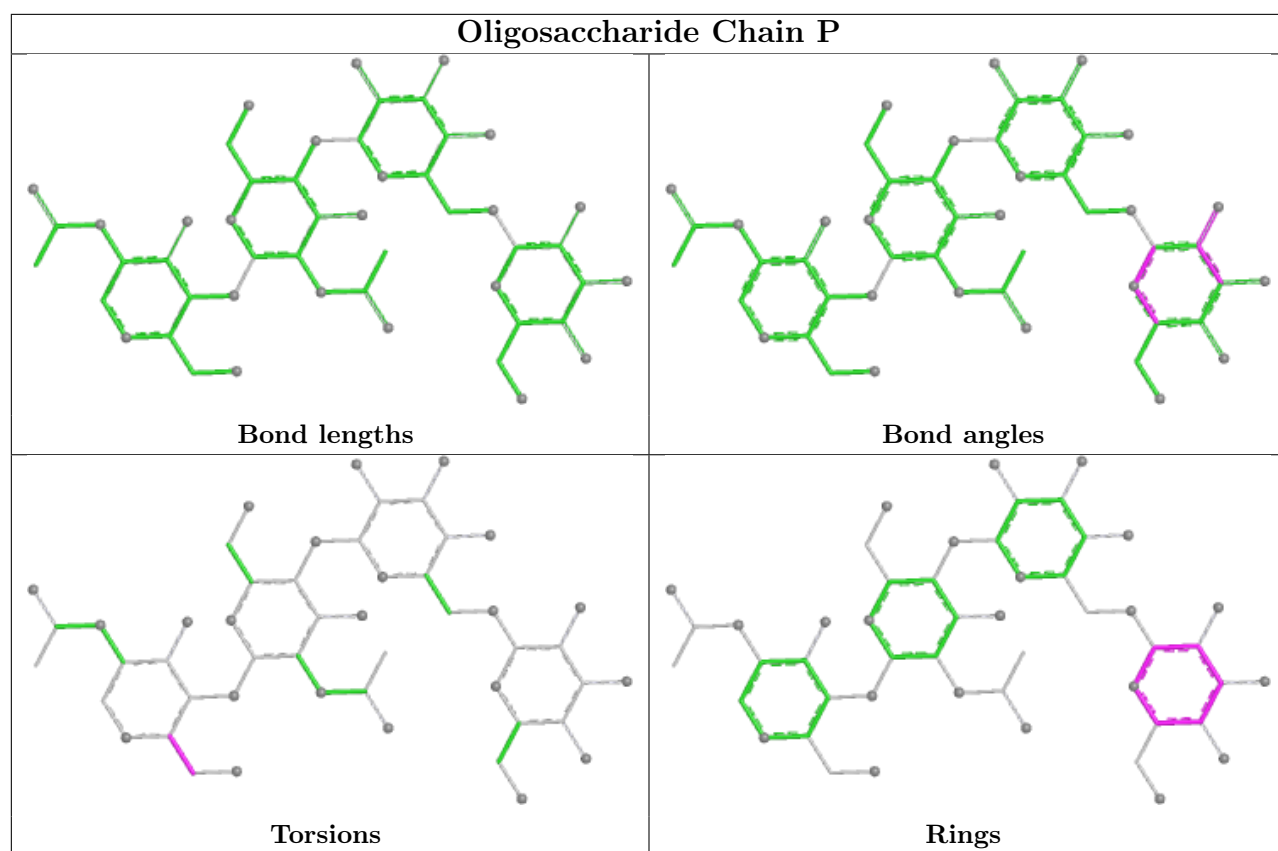


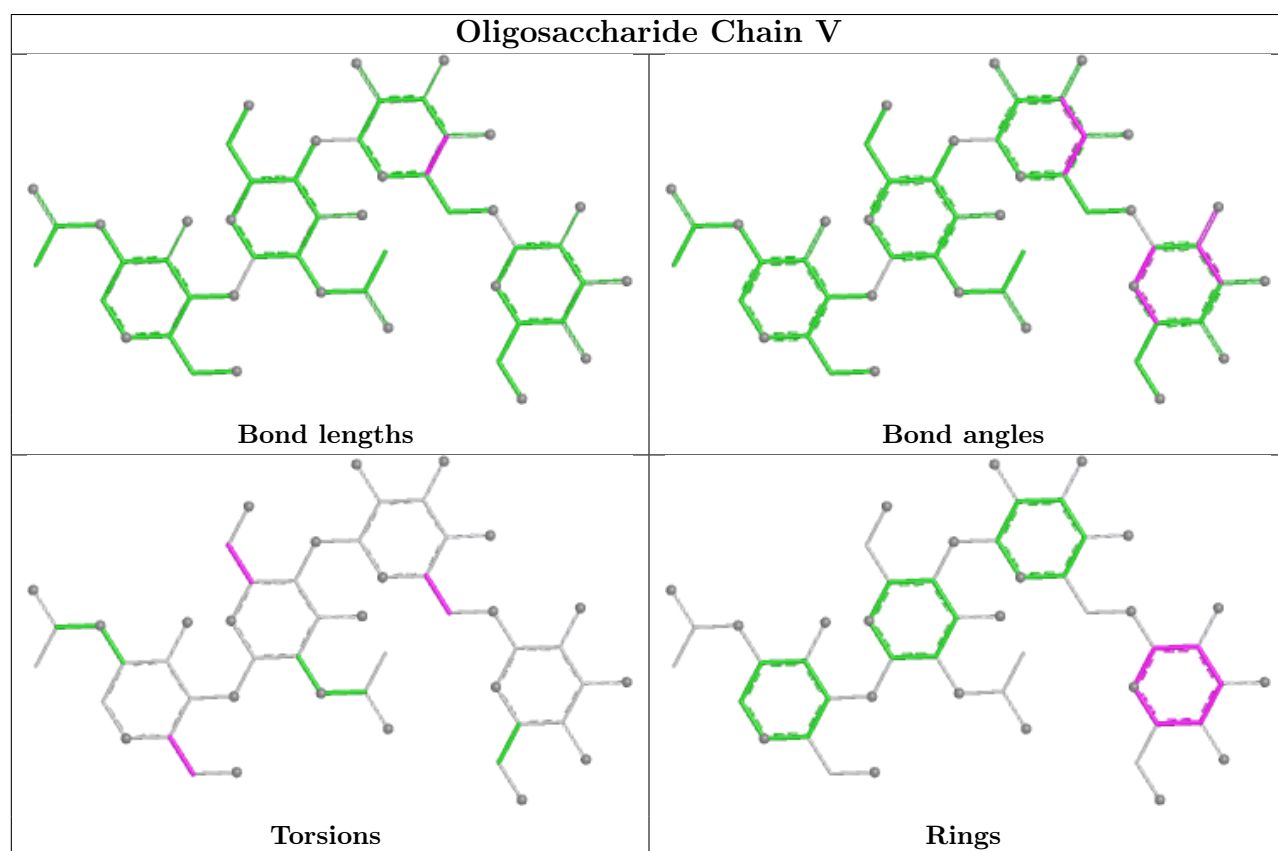
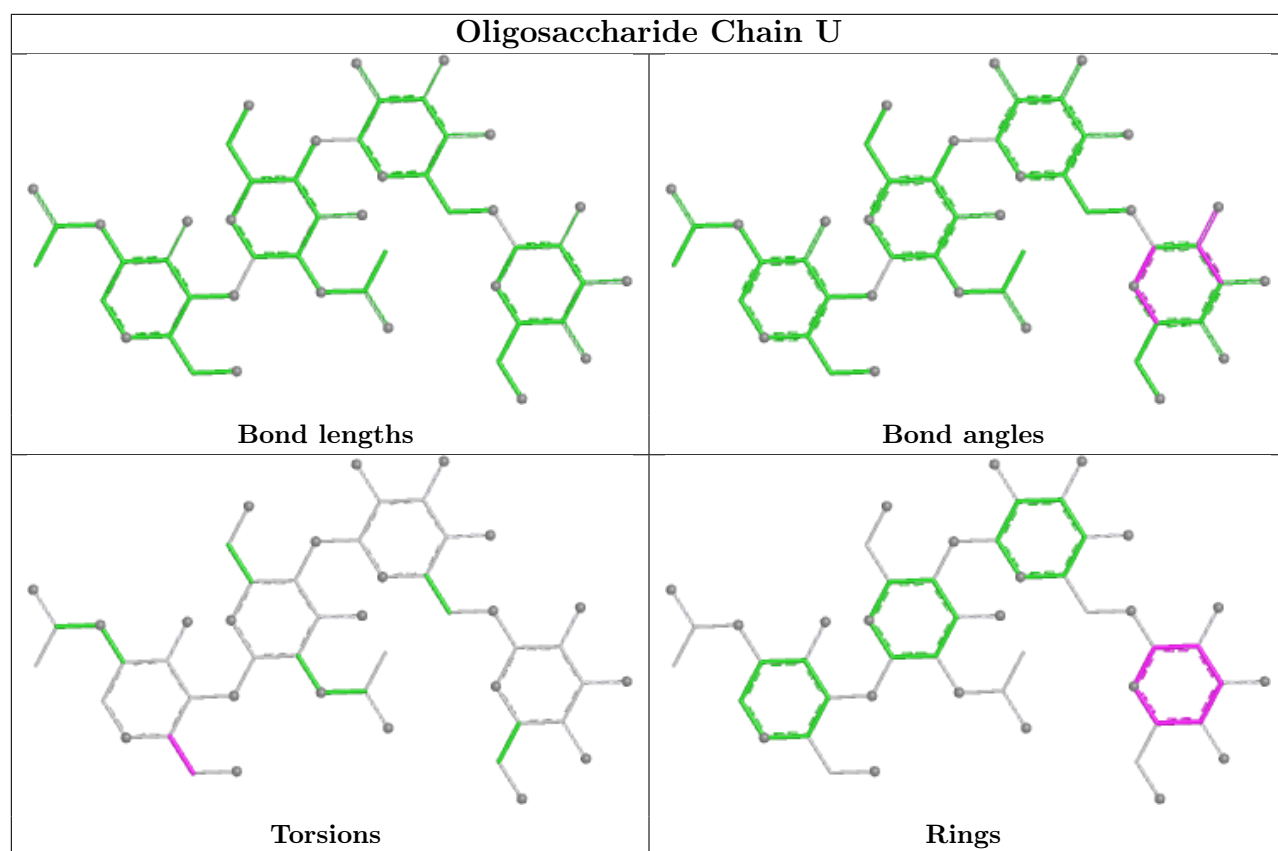


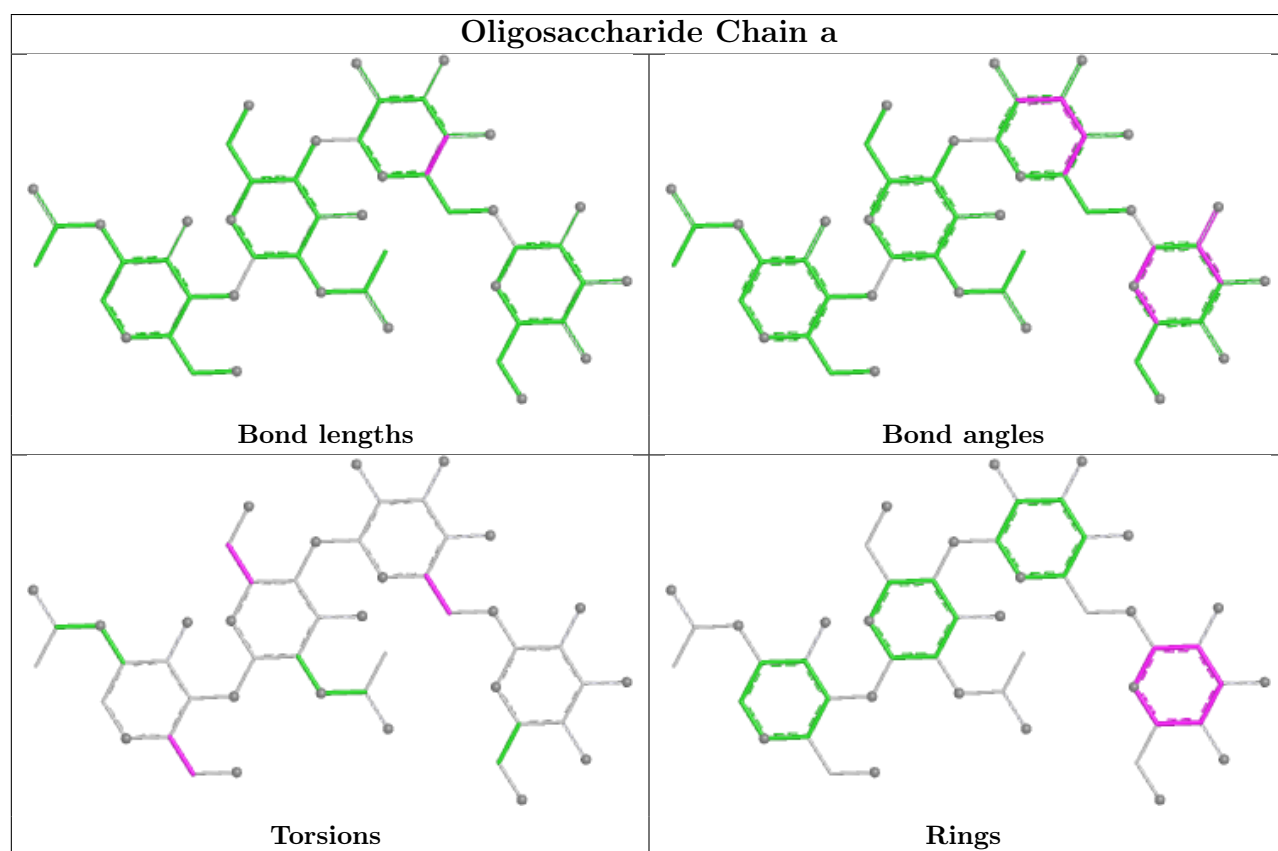
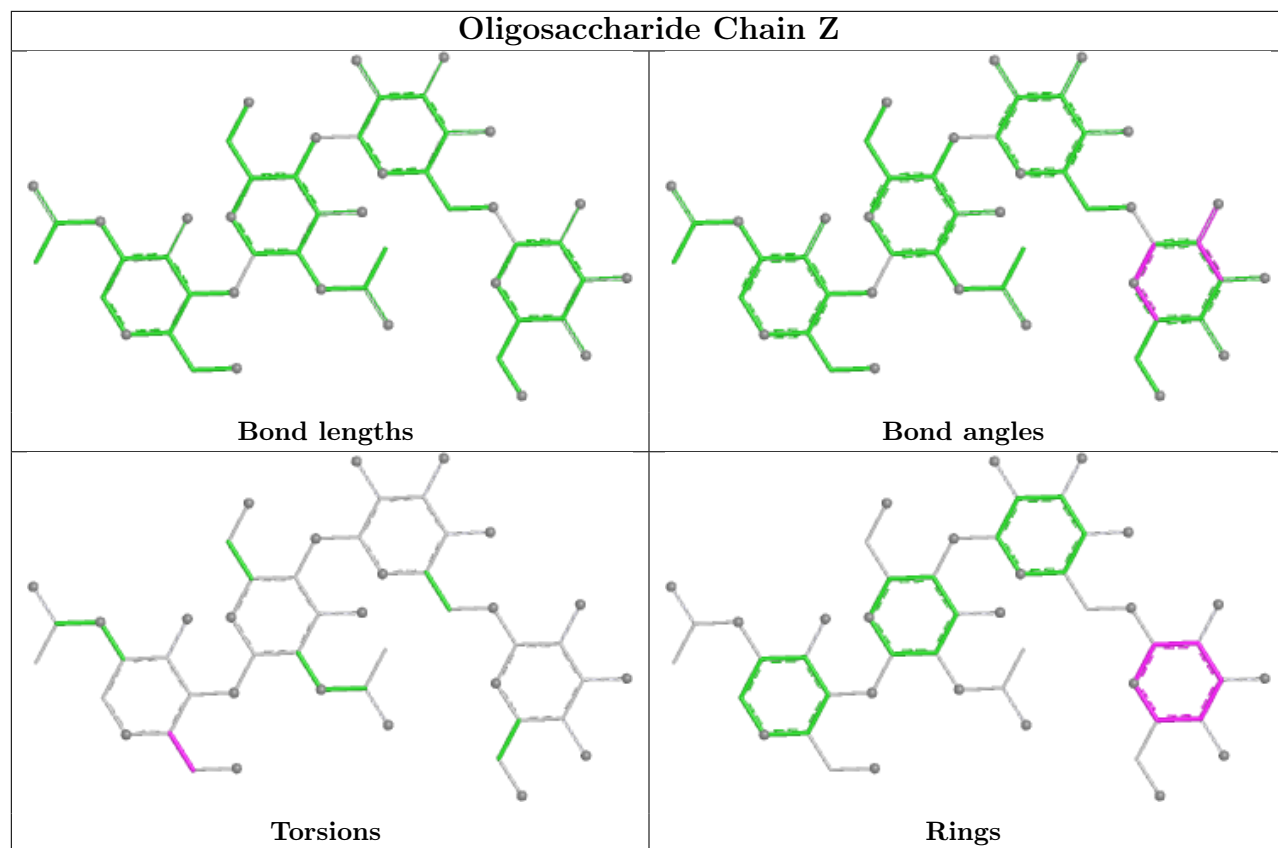


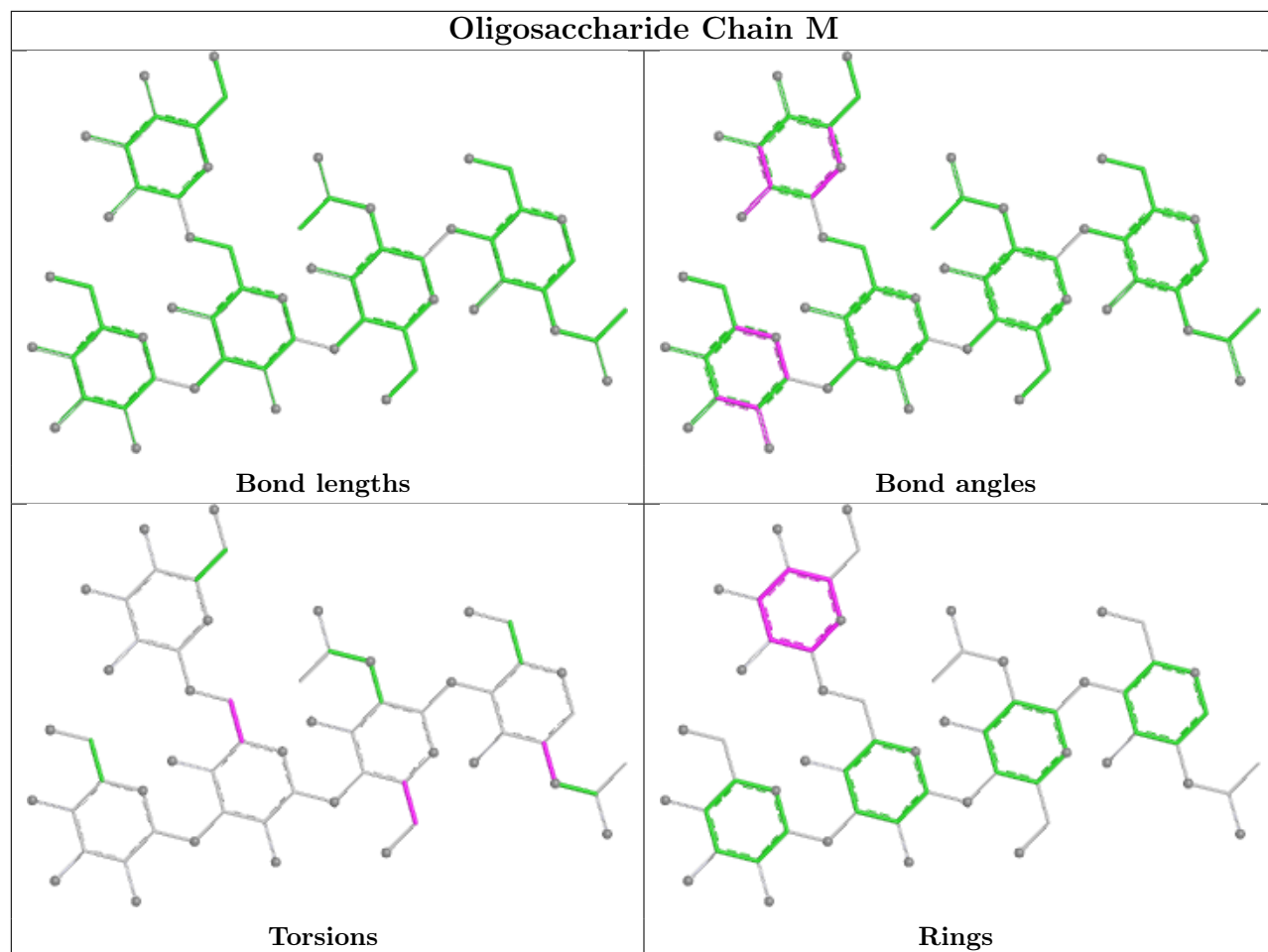


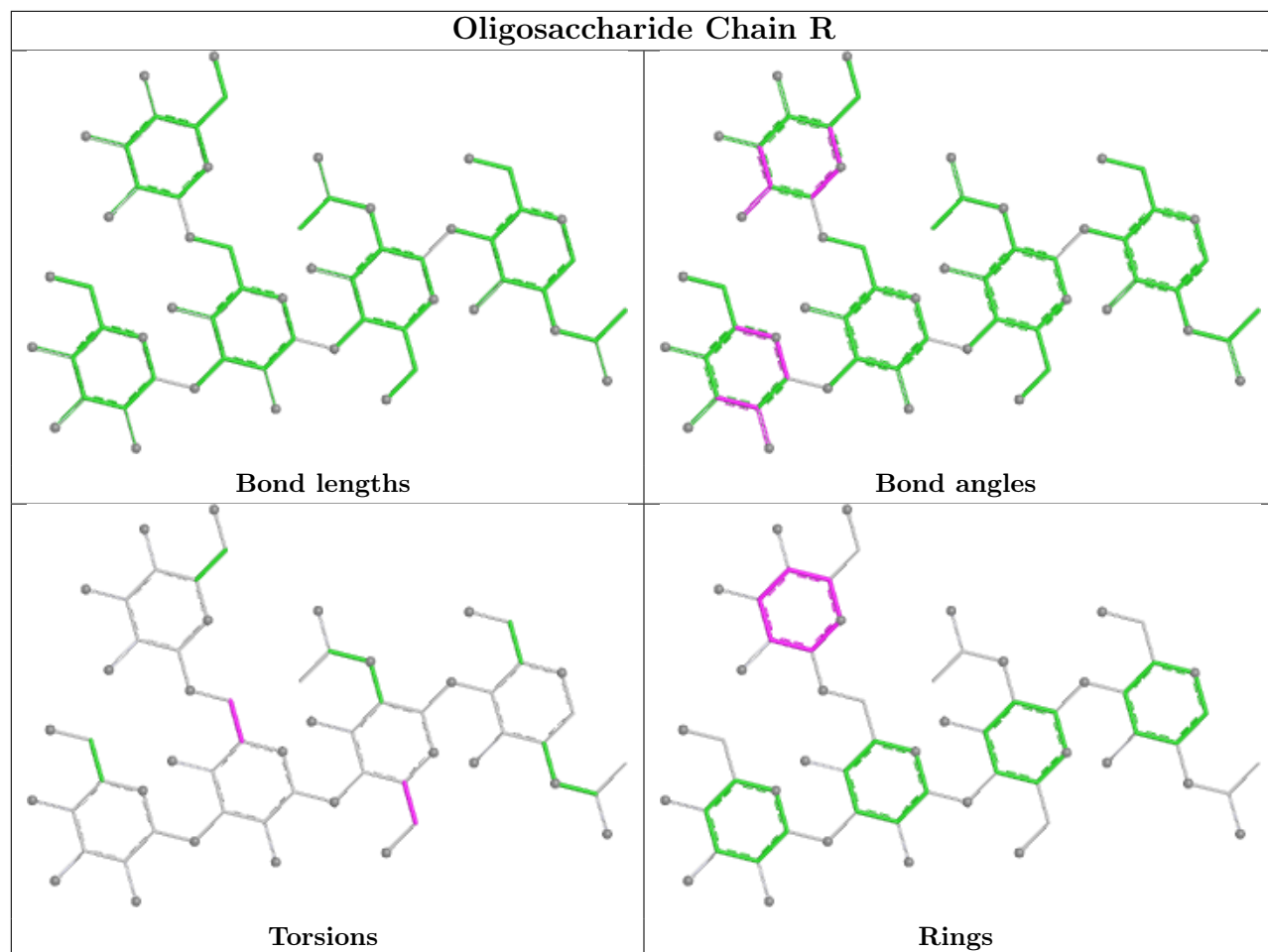


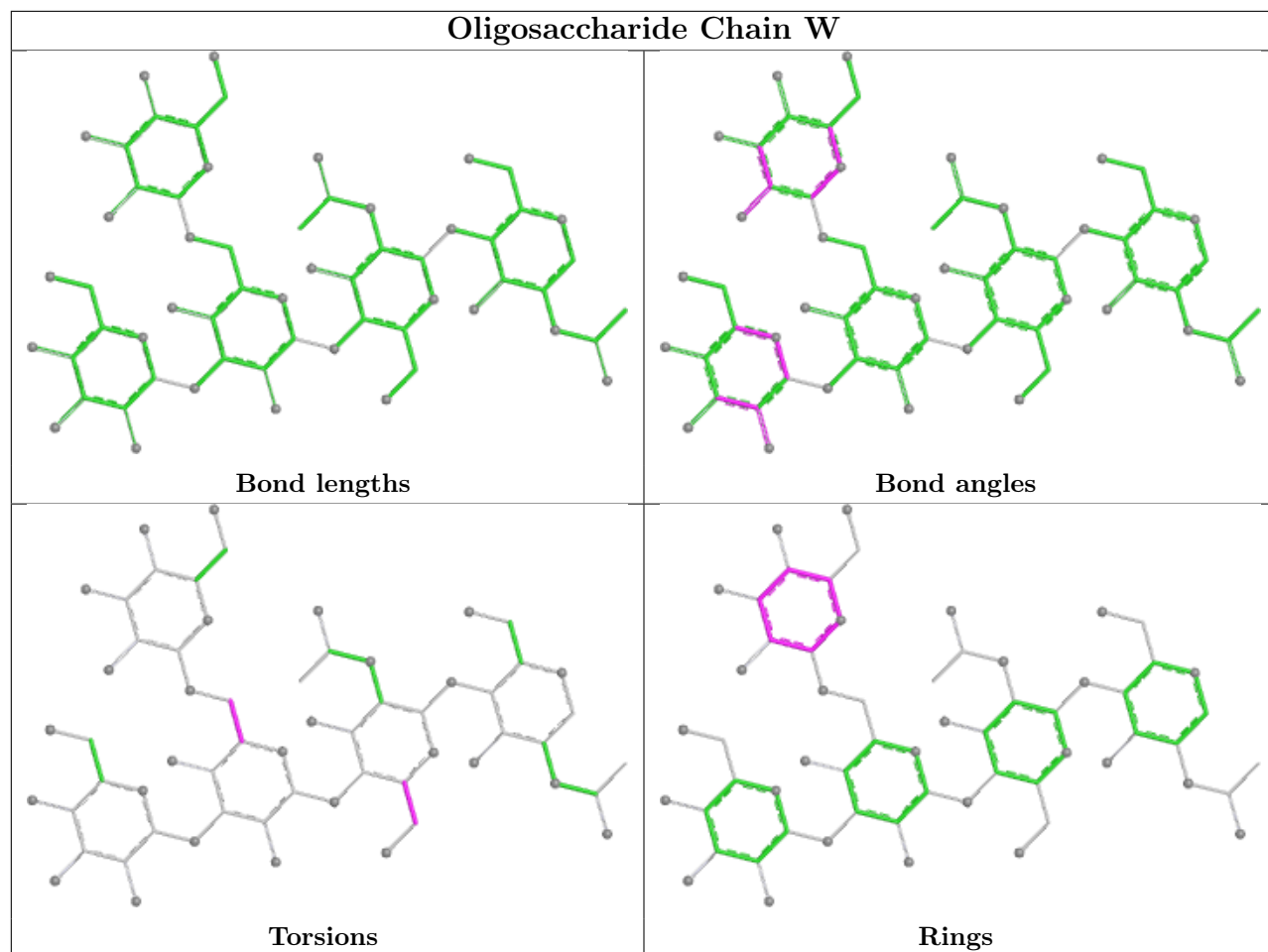


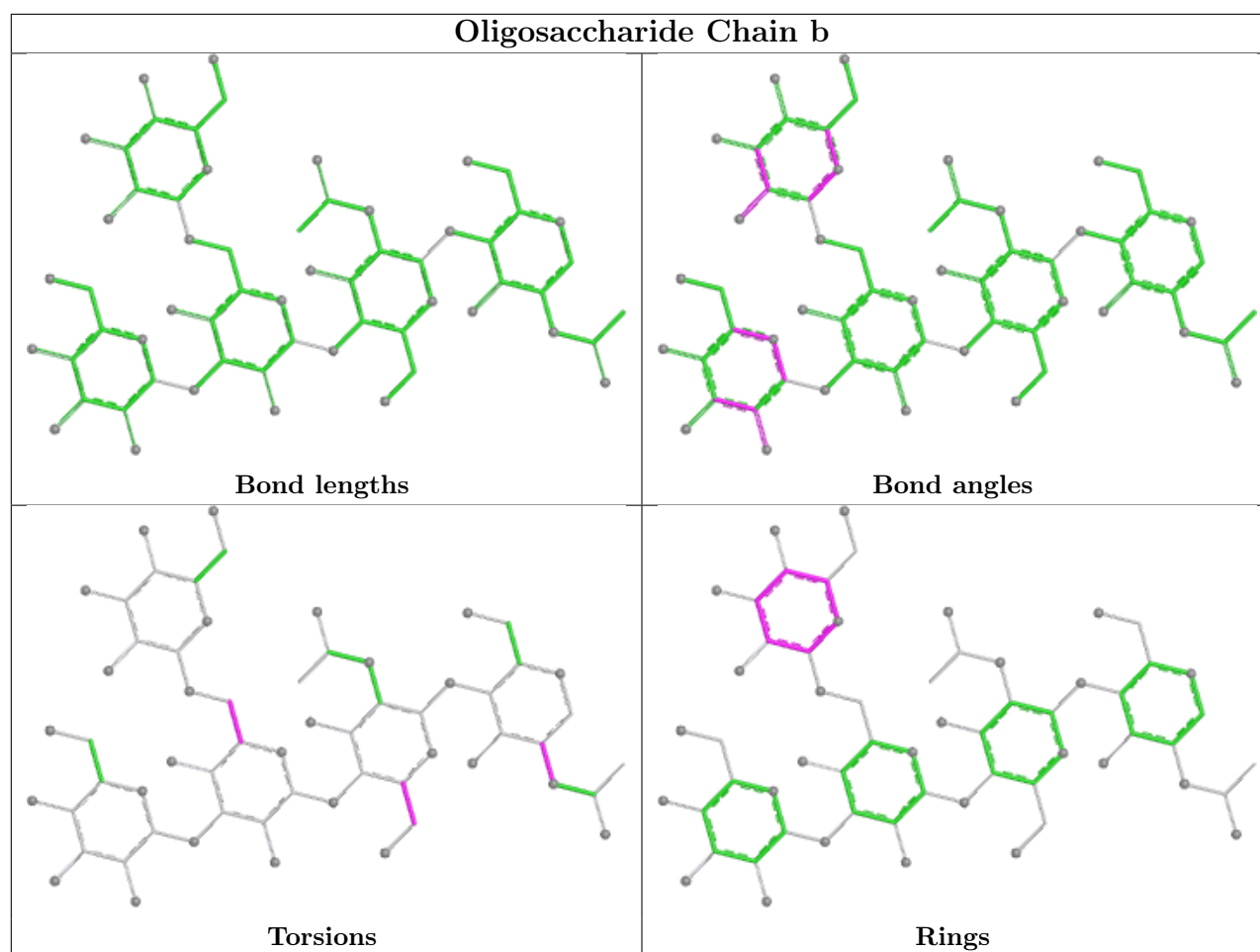












5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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.

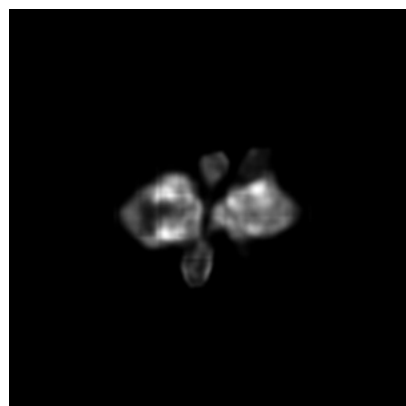
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-38564. These allow visual inspection of the internal detail of the map and identification of artifacts.

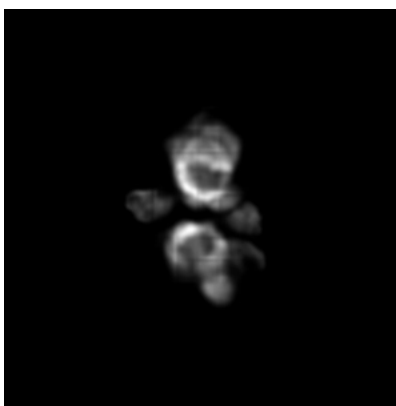
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

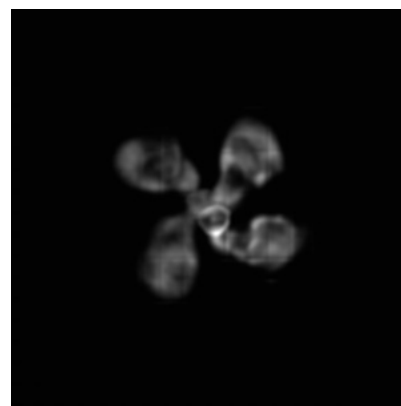
6.1.1 Primary map



X

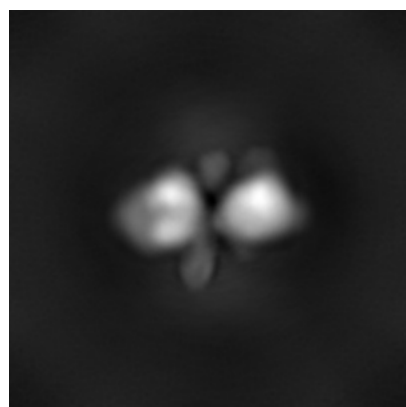


Y

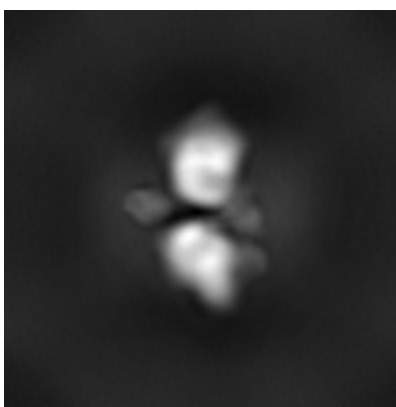


Z

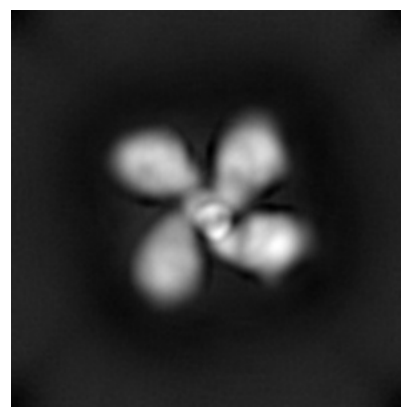
6.1.2 Raw map



X



Y

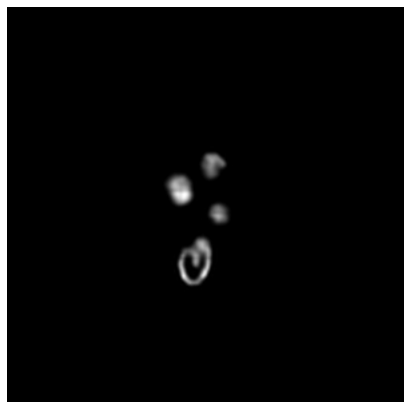


Z

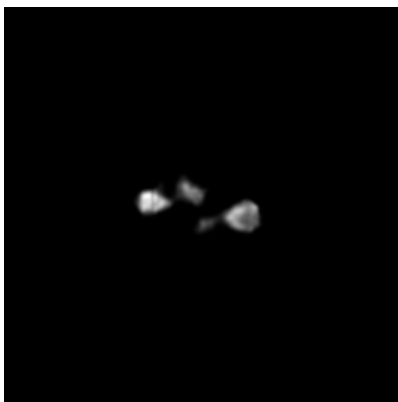
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

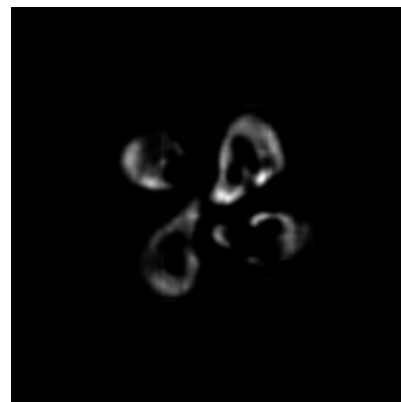
6.2.1 Primary map



X Index: 80

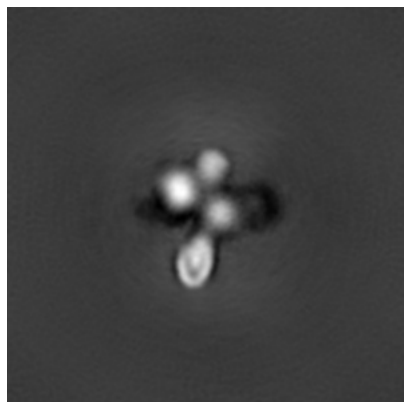


Y Index: 80

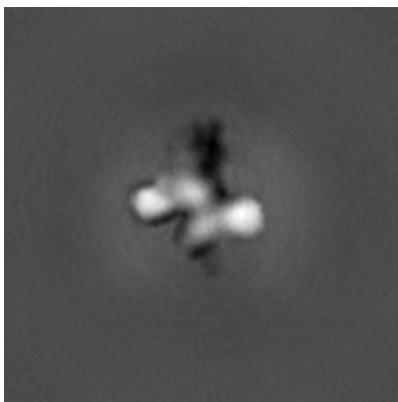


Z Index: 80

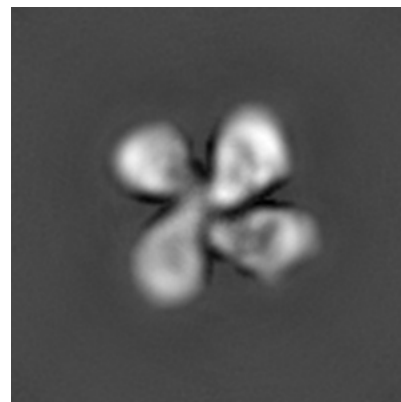
6.2.2 Raw map



X Index: 80



Y Index: 80

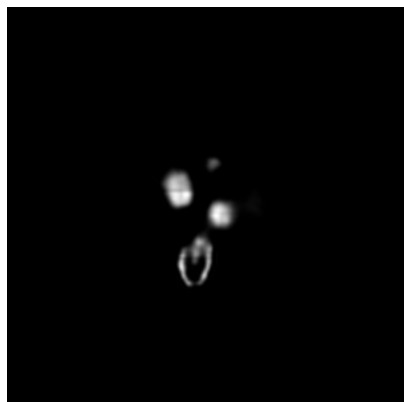


Z Index: 80

The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

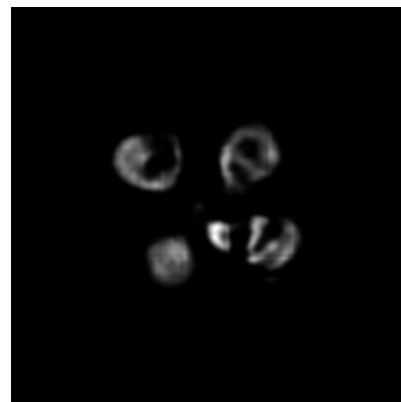
6.3.1 Primary map



X Index: 82

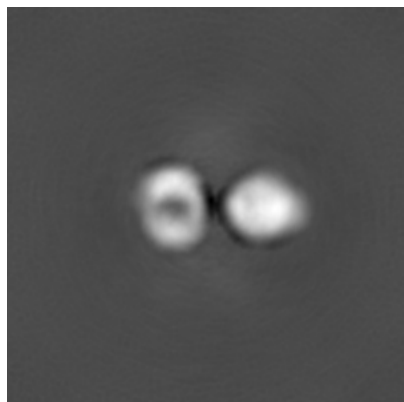


Y Index: 63

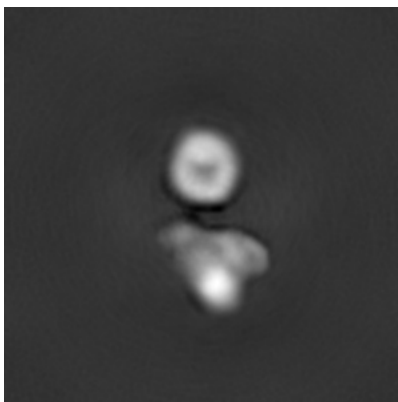


Z Index: 85

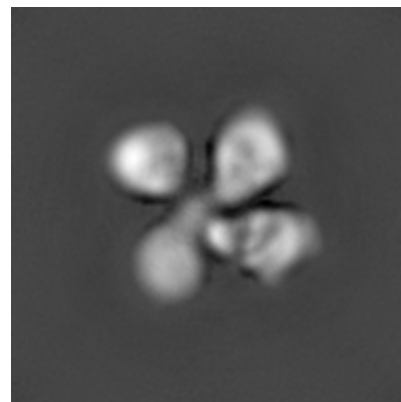
6.3.2 Raw map



X Index: 100



Y Index: 100

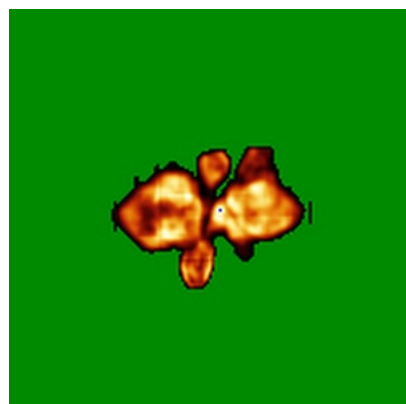


Z Index: 83

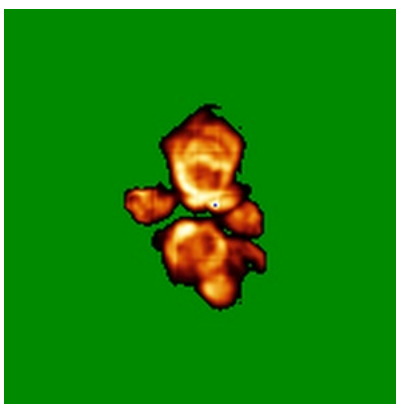
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

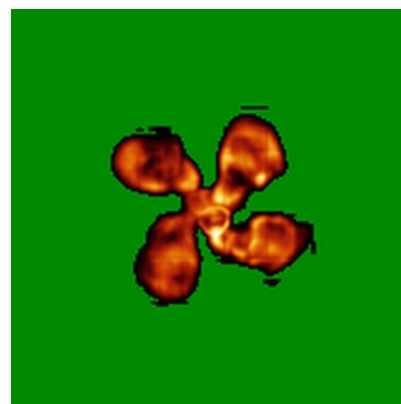
6.4.1 Primary map



X

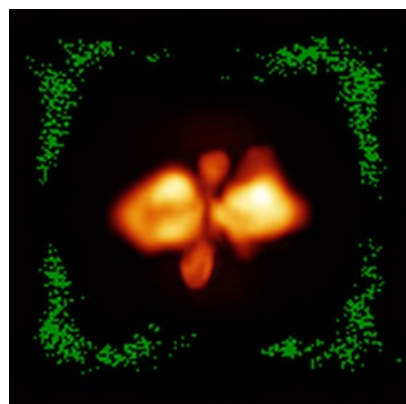


Y

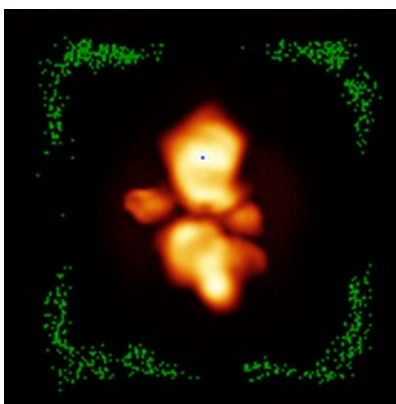


Z

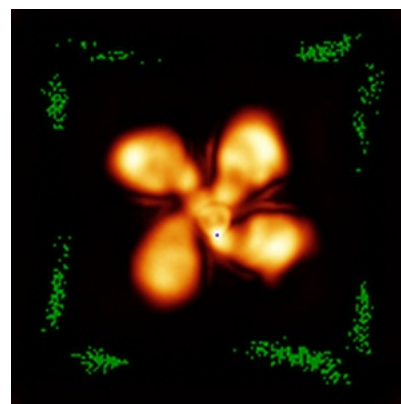
6.4.2 Raw map



X



Y

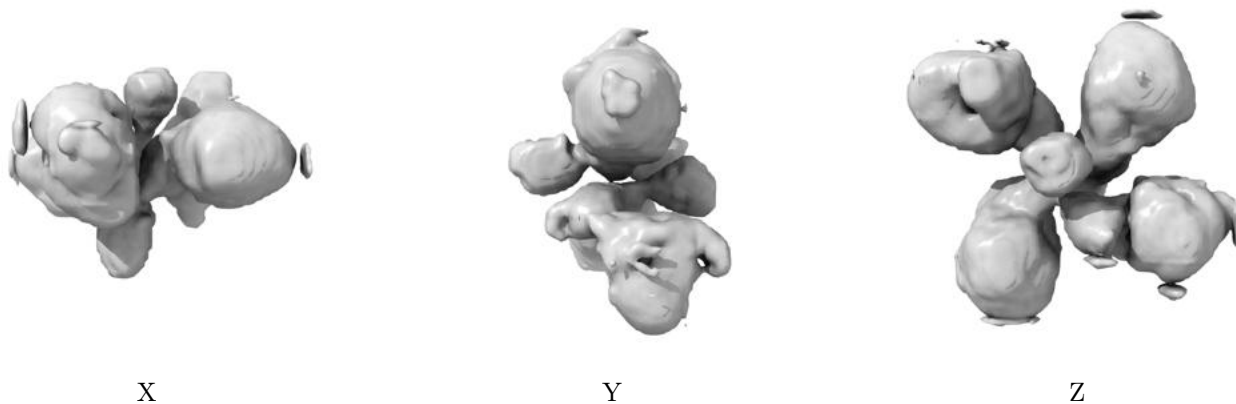


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

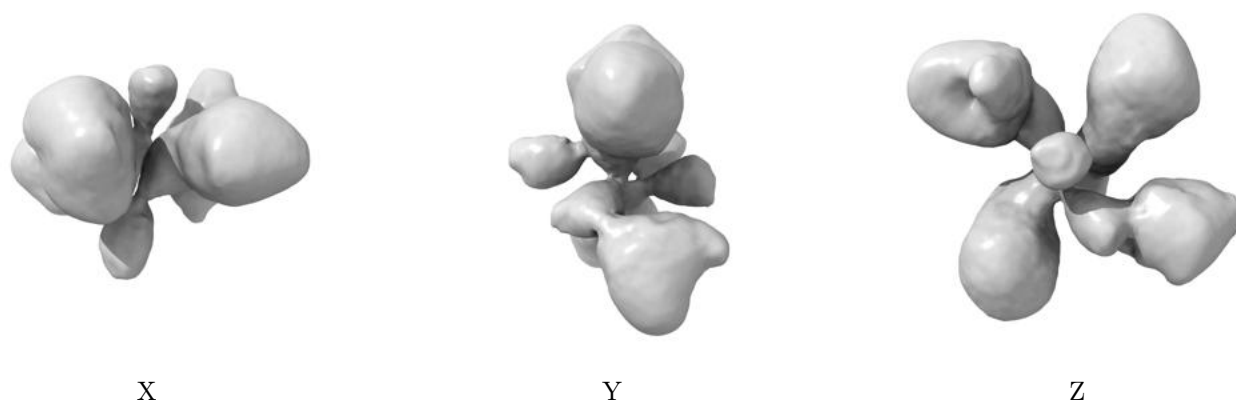
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

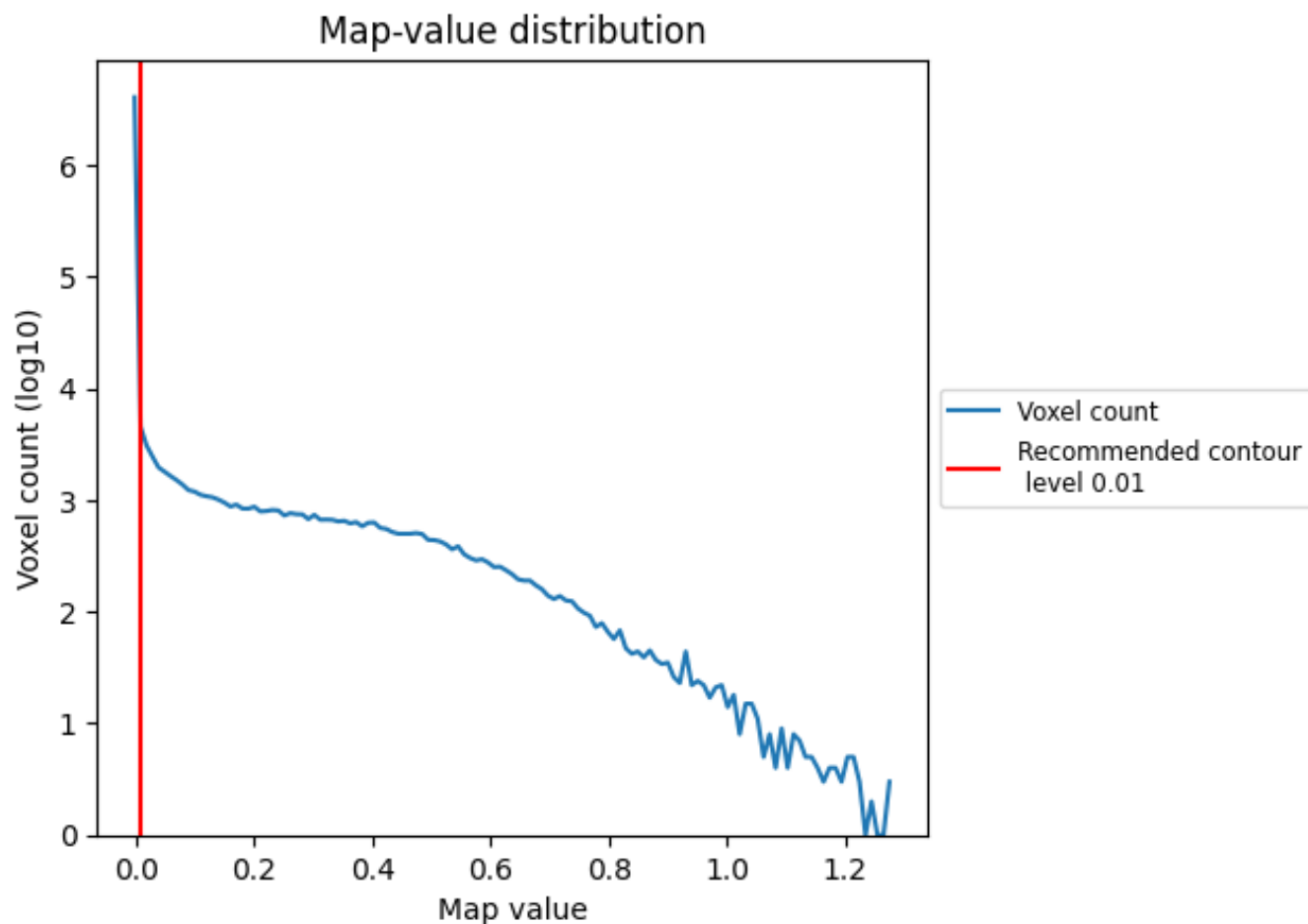
6.6 Mask visualisation [i](#)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis [i](#)

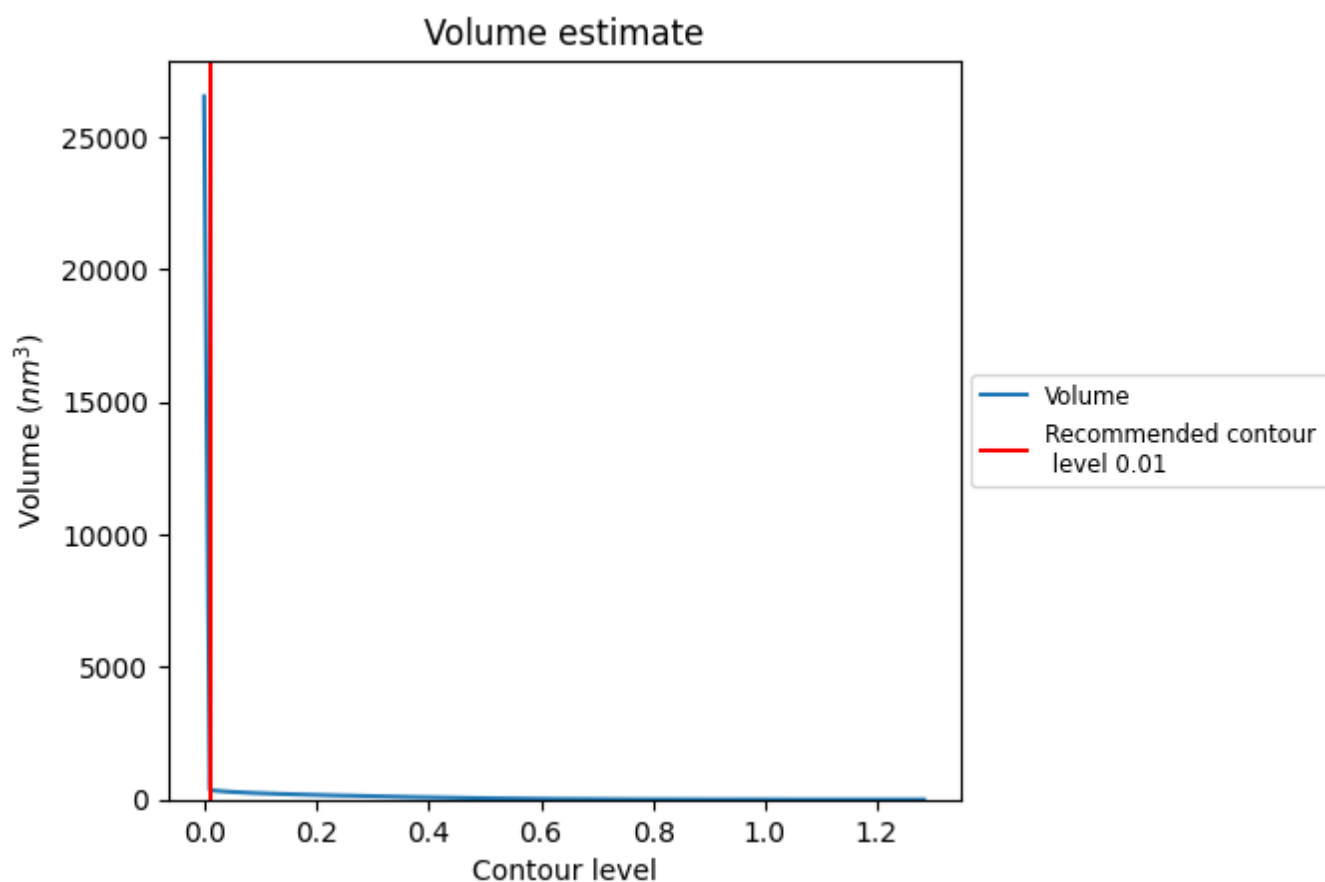
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

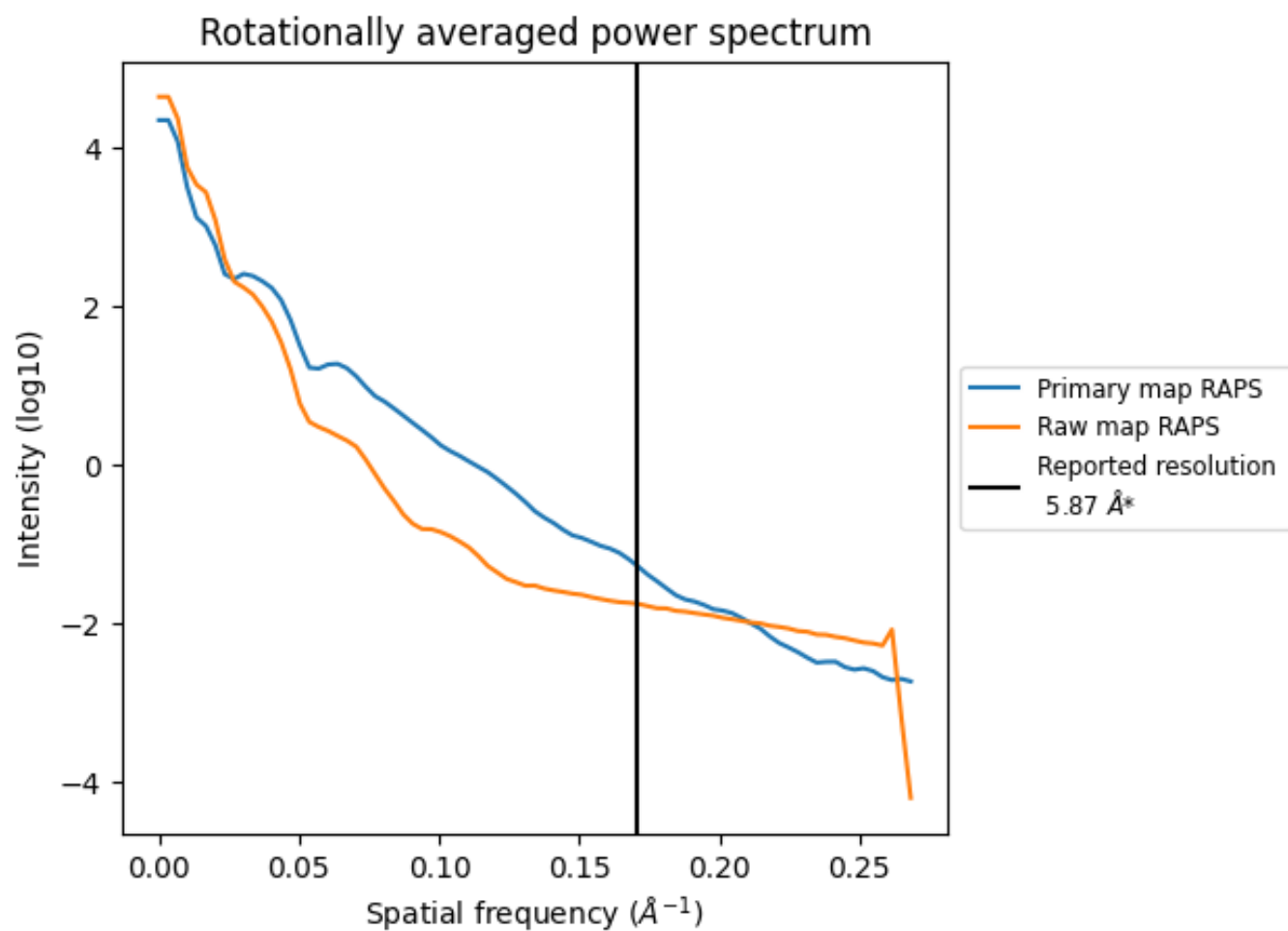
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 360 nm^3 ; this corresponds to an approximate mass of 325 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

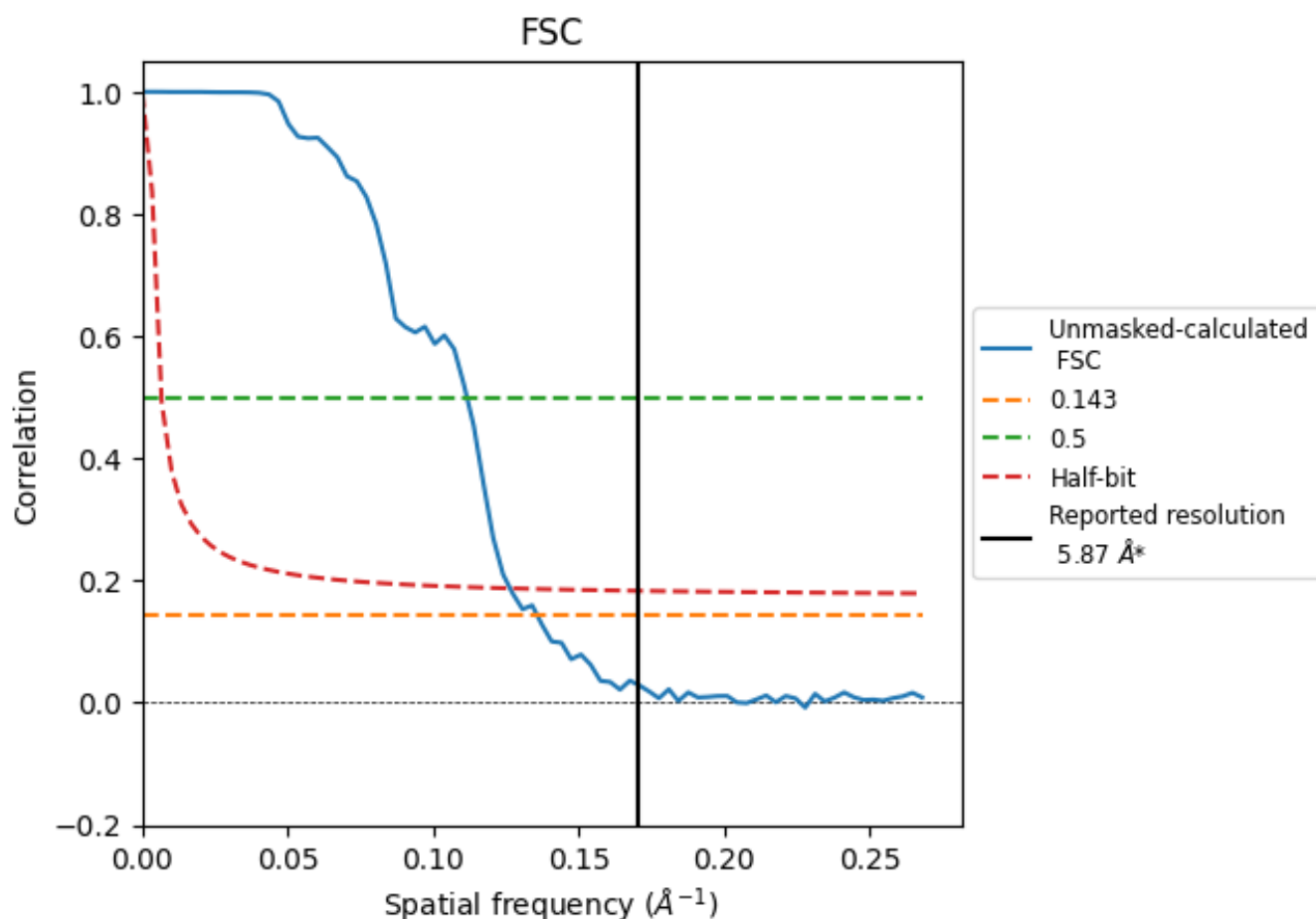


*Reported resolution corresponds to spatial frequency of 0.170 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of $0.170 \text{ \AA}^{-1}$

8.2 Resolution estimates [i](#)

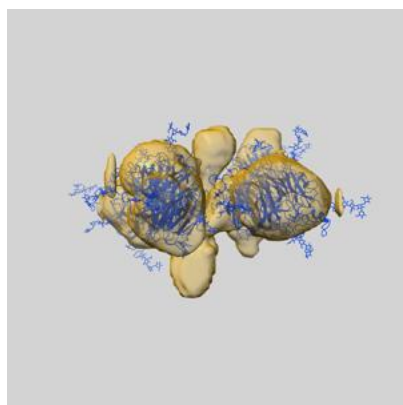
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	5.87	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	7.36	8.95	7.91

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 7.36 differs from the reported value 5.87 by more than 10 %

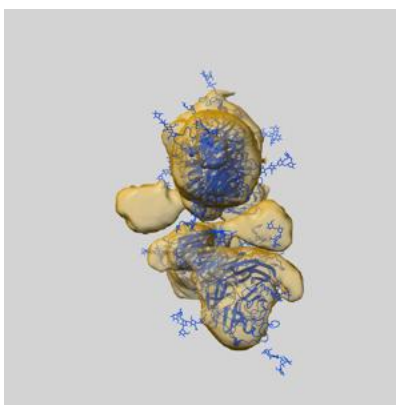
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-38564 and PDB model 8XQ3. Per-residue inclusion information can be found in section [3](#) on page [7](#).

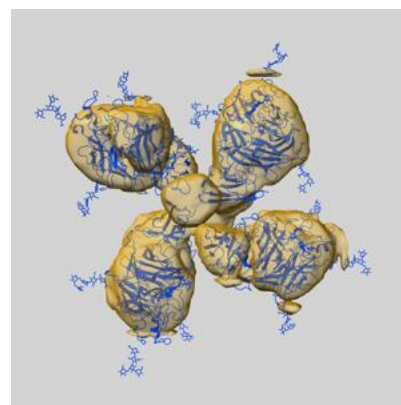
9.1 Map-model overlay [i](#)



X



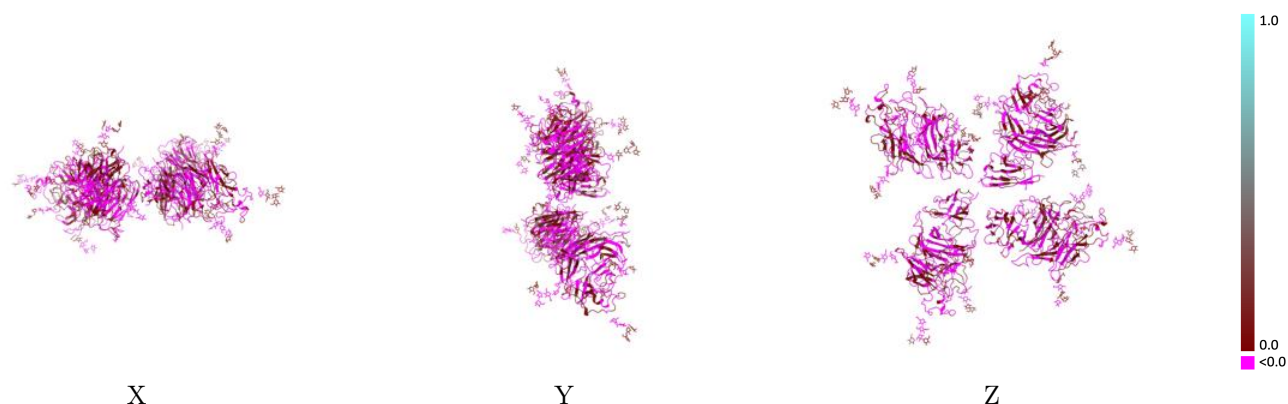
Y



Z

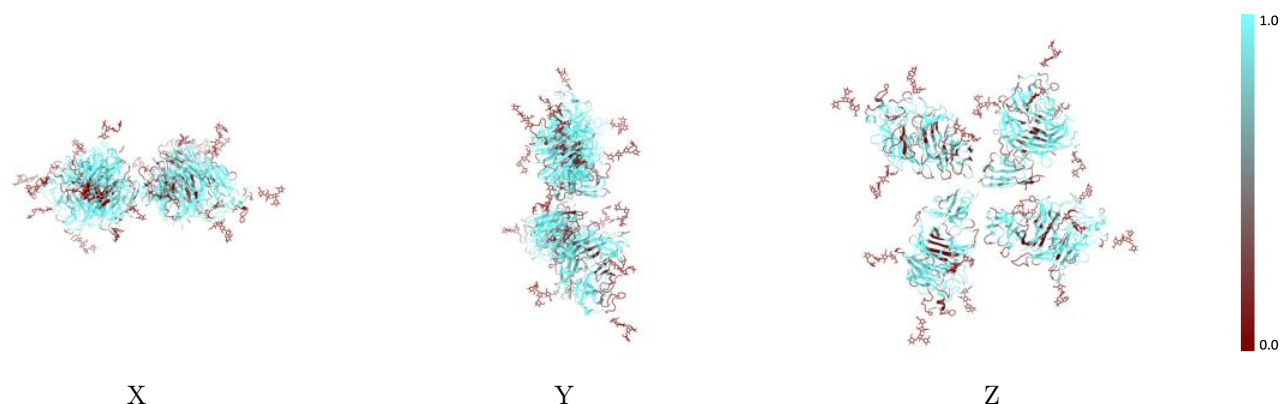
The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



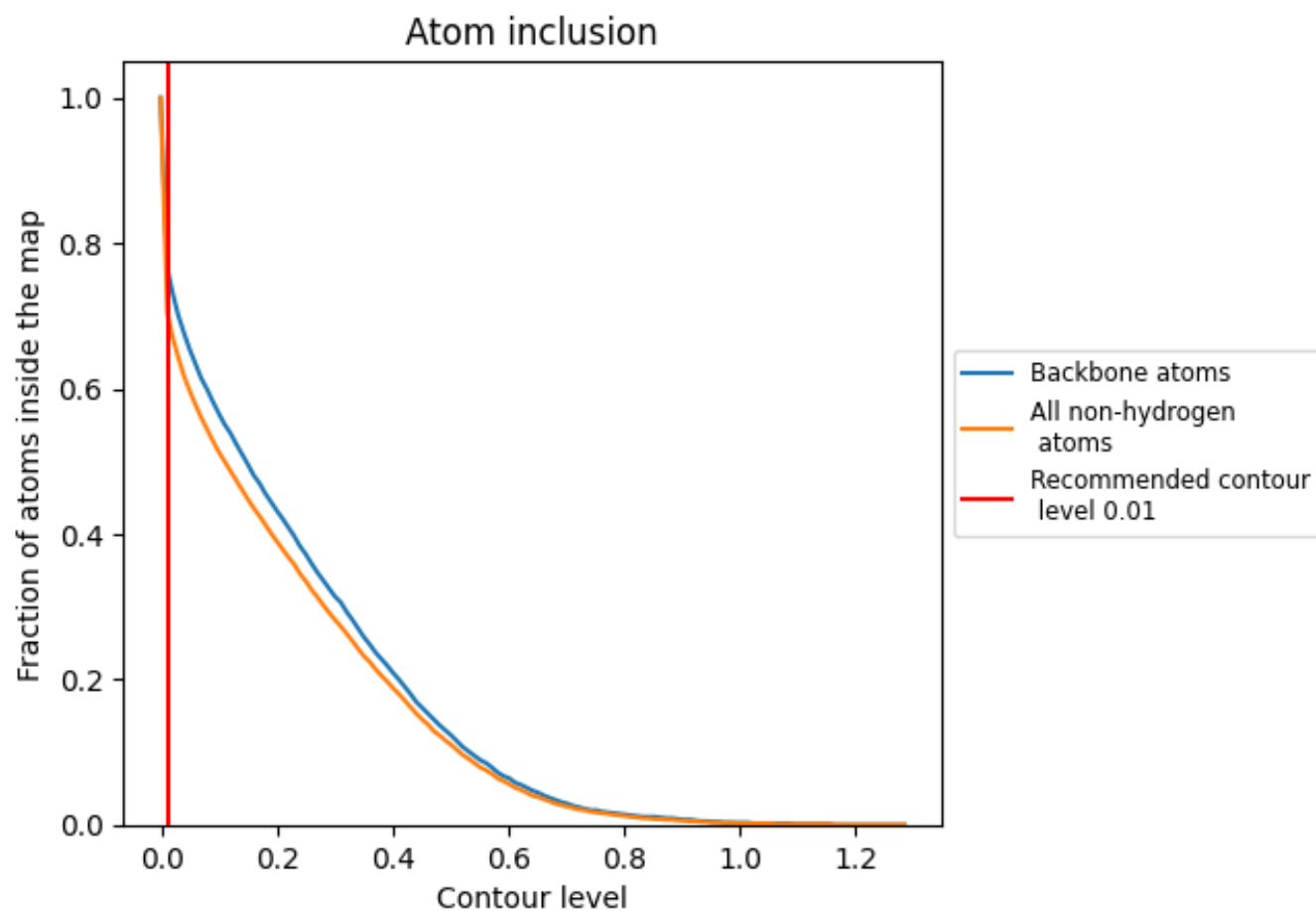
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.01).

9.4 Atom inclusion [i](#)



At the recommended contour level, 76% of all backbone atoms, 70% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7040	 -0.0120
A	 0.7110	 -0.0230
B	 0.7570	 -0.0100
C	 0.7700	 -0.0010
D	 0.8060	 -0.0040
E	 0.6070	 -0.0130
F	 0.8330	 -0.0170
G	 0.7030	 -0.0170
H	 0.7020	 -0.0360
I	 0.0000	 -0.0170
J	 0.0000	 -0.0130
K	 0.0000	 -0.0790
L	 0.0000	 -0.0300
M	 0.0000	 -0.0010
N	 0.0000	 -0.0530
O	 0.0970	 -0.0840
P	 0.0000	 0.0550
Q	 0.0000	 0.0230
R	 0.0000	 0.0200
S	 0.1640	 -0.0110
T	 0.1810	 -0.0290
U	 0.0000	 -0.0960
V	 0.1800	 -0.1670
W	 0.0160	 0.0290
X	 0.0160	 0.0750
Y	 0.0000	 -0.0150
Z	 0.0000	 0.1030
a	 0.0000	 -0.0490
b	 0.0000	 0.0050

