



## Full wwPDB EM Validation Report ⓘ

Sep 28, 2024 – 05:54 PM EDT

PDB ID : 8DOW  
EMDB ID : EMD-27624  
Title : Cryo-EM structure of HIV-1 Env(CH848 10.17 DS.SOSIP\_DT) in complex with DH1030.1 Fab  
Authors : Gobeil, S.; Acharya, P.  
Deposited on : 2022-07-14  
Resolution : 3.69 Å (reported)  
Based on initial models : 6UM6, 8DKF

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

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

EMDB validation analysis : 0.0.1.dev113  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4.02b-467  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.39

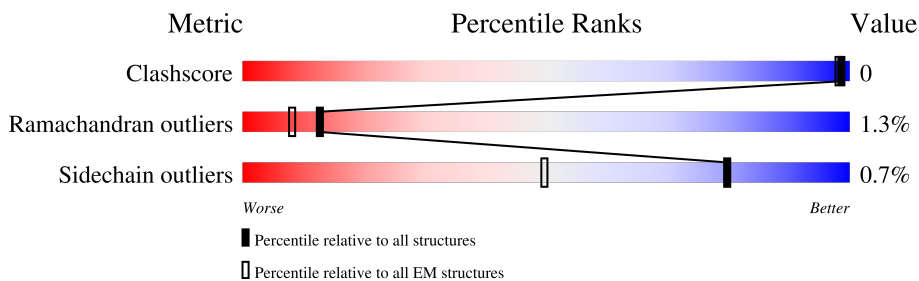
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.69 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	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	463	 5% 94% 5%
1	E	463	 5% 93% 6%
1	I	463	 5% 93% 6%
2	B	161	 6% 78% 18%
2	F	161	 6% 79% 18%
2	J	161	 6% 77% 18%
3	C	230	 12% 93% 5%
3	G	230	 13% 93% 5%

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Mol	Chain	Length	Quality of chain
3	K	230	12% 93%
4	D	219	14% 95%
4	H	219	12% 96%
4	L	219	13% 95%
5	M	2	50% 100%
5	P	2	50% 100%
5	Q	2	100%
5	R	2	50% 100%
5	T	2	50% 100%
5	U	2	100%
5	X	2	50% 100%
5	Y	2	100%
5	Z	2	50% 100%
6	N	6	17% 83%
6	S	6	17% 83%
6	W	6	100%
7	O	4	25% 75%
7	V	4	100%
7	a	4	100%
8	b	3	33% 100%

## 2 Entry composition i

There are 9 unique types of molecules in this entry. The entry contains 25053 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 Envelope glycoprotein gp120.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	462	3613	2261	625	698	29	0	0
1	E	462	3613	2261	625	698	29	0	0
1	I	462	3613	2261	625	698	29	0	0

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	31	ALA	-	expression tag	UNP A0A1W6IPB2
A	32	GLU	-	expression tag	UNP A0A1W6IPB2
A	33	ASN	-	expression tag	UNP A0A1W6IPB2
A	133	ASP	ASN	conflict	UNP A0A1W6IPB2
A	138	THR	ASN	conflict	UNP A0A1W6IPB2
A	201	CYS	VAL	conflict	UNP A0A1W6IPB2
A	433	CYS	ALA	conflict	UNP A0A1W6IPB2
A	490	LYS	GLU	conflict	UNP A0A1W6IPB2
A	492	GLU	GLN	conflict	UNP A0A1W6IPB2
A	496	VAL	ILE	conflict	UNP A0A1W6IPB2
A	500	ARG	GLY	conflict	UNP A0A1W6IPB2
A	501	CYS	ALA	conflict	UNP A0A1W6IPB2
E	31	ALA	-	expression tag	UNP A0A1W6IPB2
E	32	GLU	-	expression tag	UNP A0A1W6IPB2
E	33	ASN	-	expression tag	UNP A0A1W6IPB2
E	133	ASP	ASN	conflict	UNP A0A1W6IPB2
E	138	THR	ASN	conflict	UNP A0A1W6IPB2
E	201	CYS	VAL	conflict	UNP A0A1W6IPB2
E	433	CYS	ALA	conflict	UNP A0A1W6IPB2
E	490	LYS	GLU	conflict	UNP A0A1W6IPB2
E	492	GLU	GLN	conflict	UNP A0A1W6IPB2
E	496	VAL	ILE	conflict	UNP A0A1W6IPB2
E	500	ARG	GLY	conflict	UNP A0A1W6IPB2
E	501	CYS	ALA	conflict	UNP A0A1W6IPB2

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Chain	Residue	Modelled	Actual	Comment	Reference
I	31	ALA	-	expression tag	UNP A0A1W6IPB2
I	32	GLU	-	expression tag	UNP A0A1W6IPB2
I	33	ASN	-	expression tag	UNP A0A1W6IPB2
I	133	ASP	ASN	conflict	UNP A0A1W6IPB2
I	138	THR	ASN	conflict	UNP A0A1W6IPB2
I	201	CYS	VAL	conflict	UNP A0A1W6IPB2
I	433	CYS	ALA	conflict	UNP A0A1W6IPB2
I	490	LYS	GLU	conflict	UNP A0A1W6IPB2
I	492	GLU	GLN	conflict	UNP A0A1W6IPB2
I	496	VAL	ILE	conflict	UNP A0A1W6IPB2
I	500	ARG	GLY	conflict	UNP A0A1W6IPB2
I	501	CYS	ALA	conflict	UNP A0A1W6IPB2

- Molecule 2 is a protein called Envelope glycoprotein gp41.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	132	1034	654	178	196	6	0	0
2	F	132	1034	654	178	196	6	0	0
2	J	132	1034	654	178	196	6	0	0

There are 27 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	504	VAL	-	expression tag	UNP Q2N0S7
B	505	GLY	-	expression tag	UNP Q2N0S7
B	506	ARG	-	expression tag	UNP Q2N0S7
B	507	ARG	-	expression tag	UNP Q2N0S7
B	508	ARG	-	expression tag	UNP Q2N0S7
B	509	ARG	-	expression tag	UNP Q2N0S7
B	510	ARG	-	expression tag	UNP Q2N0S7
B	559	PRO	ILE	conflict	UNP Q2N0S7
B	605	CYS	THR	conflict	UNP Q2N0S7
F	504	VAL	-	expression tag	UNP Q2N0S7
F	505	GLY	-	expression tag	UNP Q2N0S7
F	506	ARG	-	expression tag	UNP Q2N0S7
F	507	ARG	-	expression tag	UNP Q2N0S7
F	508	ARG	-	expression tag	UNP Q2N0S7
F	509	ARG	-	expression tag	UNP Q2N0S7
F	510	ARG	-	expression tag	UNP Q2N0S7

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Chain	Residue	Modelled	Actual	Comment	Reference
F	559	PRO	ILE	conflict	UNP Q2N0S7
F	605	CYS	THR	conflict	UNP Q2N0S7
J	504	VAL	-	expression tag	UNP Q2N0S7
J	505	GLY	-	expression tag	UNP Q2N0S7
J	506	ARG	-	expression tag	UNP Q2N0S7
J	507	ARG	-	expression tag	UNP Q2N0S7
J	508	ARG	-	expression tag	UNP Q2N0S7
J	509	ARG	-	expression tag	UNP Q2N0S7
J	510	ARG	-	expression tag	UNP Q2N0S7
J	559	PRO	ILE	conflict	UNP Q2N0S7
J	605	CYS	THR	conflict	UNP Q2N0S7

- Molecule 3 is a protein called DH1030.1 Fab Heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	225	Total	C	N	O	S	0	0
			1725	1083	300	336	6		
3	G	225	Total	C	N	O	S	0	0
			1725	1083	300	336	6		
3	K	225	Total	C	N	O	S	0	0
			1725	1083	300	336	6		

- Molecule 4 is a protein called DH1030.1 Fab Light Chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	217	Total	C	N	O	S	0	0
			1676	1050	287	334	5		
4	H	217	Total	C	N	O	S	0	0
			1676	1050	287	334	5		
4	L	217	Total	C	N	O	S	0	0
			1676	1050	287	334	5		

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



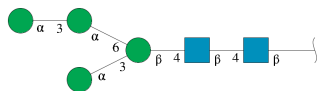
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	M	2	Total	C	N	O	0	0
			28	16	2	10		

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Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	P	2	28	16	2	10	0	0
5	Q	2	28	16	2	10	0	0
5	R	2	28	16	2	10	0	0
5	T	2	28	16	2	10	0	0
5	U	2	28	16	2	10	0	0
5	X	2	28	16	2	10	0	0
5	Y	2	28	16	2	10	0	0
5	Z	2	28	16	2	10	0	0

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



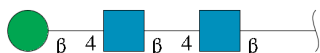
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
6	N	6	72	40	2	30	0	0
6	S	6	72	40	2	30	0	0
6	W	6	72	40	2	30	0	0

- Molecule 7 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.



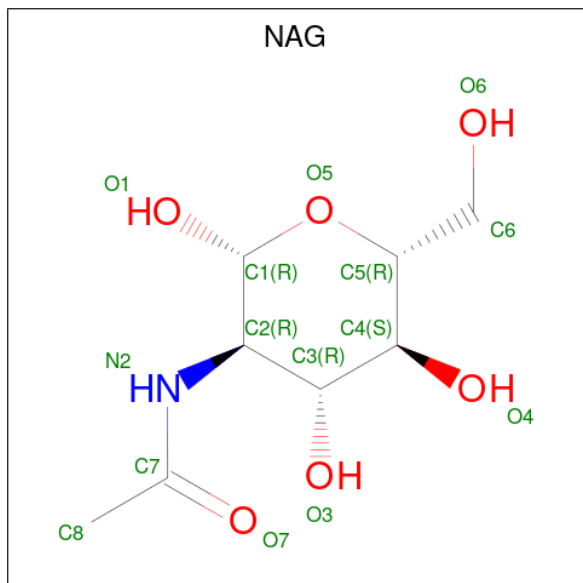
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	O	4	50	28	2	20	0	0
7	V	4	50	28	2	20	0	0
7	a	4	50	28	2	20	0	0

- Molecule 8 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
8	b	3	39	22	2	15	0	0

- Molecule 9 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C<sub>8</sub>H<sub>15</sub>NO<sub>6</sub>).



Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
9	A	1	14	8	1	5	0
9	A	1	14	8	1	5	0

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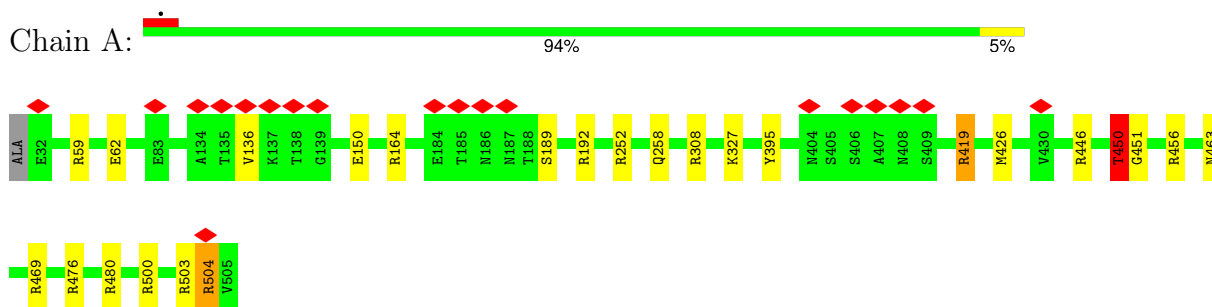
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Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
9	A	1	Total 14	8	1	5	0
9	A	1	Total 14	8	1	5	0
9	A	1	Total 14	8	1	5	0
9	A	1	Total 14	8	1	5	0
9	E	1	Total 14	8	1	5	0
9	E	1	Total 14	8	1	5	0
9	E	1	Total 14	8	1	5	0
9	E	1	Total 14	8	1	5	0
9	E	1	Total 14	8	1	5	0
9	E	1	Total 14	8	1	5	0
9	E	1	Total 14	8	1	5	0
9	I	1	Total 14	8	1	5	0
9	I	1	Total 14	8	1	5	0
9	I	1	Total 14	8	1	5	0
9	I	1	Total 14	8	1	5	0
9	I	1	Total 14	8	1	5	0
9	I	1	Total 14	8	1	5	0

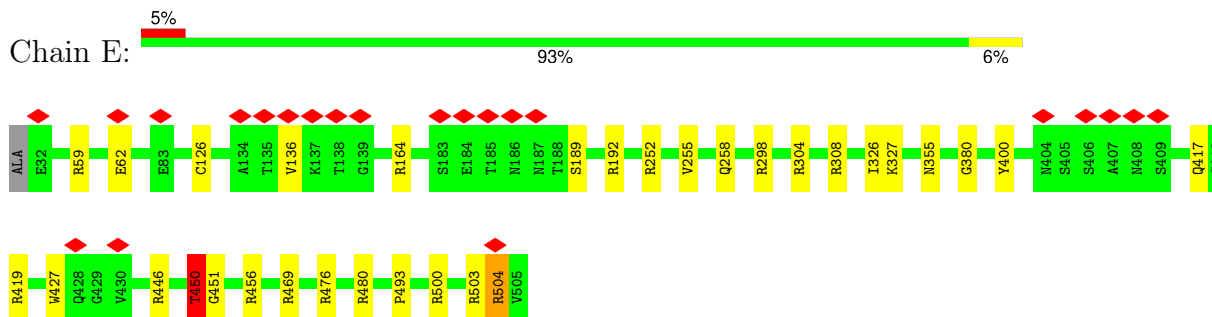
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

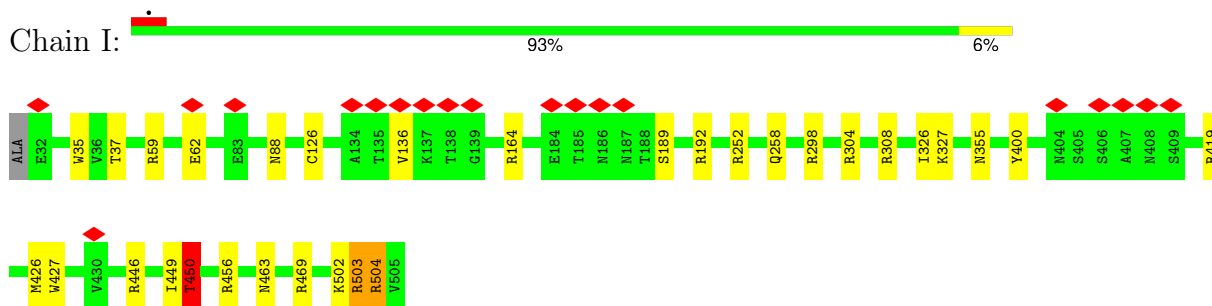
- Molecule 1: Envelope glycoprotein gp120



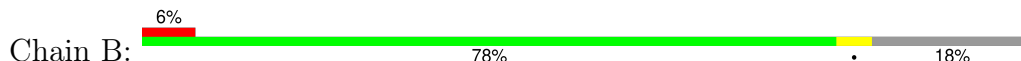
- Molecule 1: Envelope glycoprotein gp120

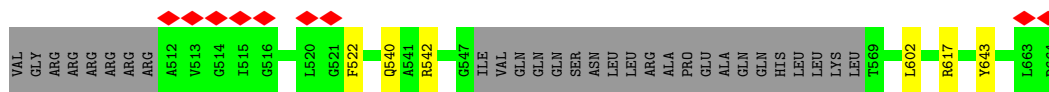


- Molecule 1: Envelope glycoprotein gp120

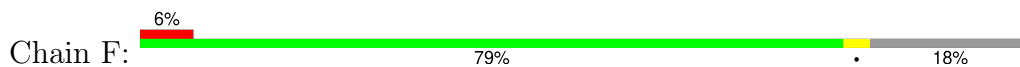


- Molecule 2: Envelope glycoprotein gp41

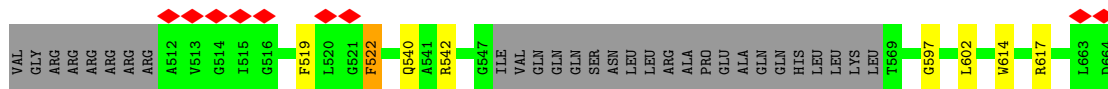
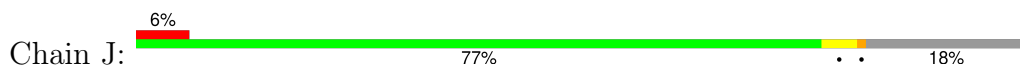




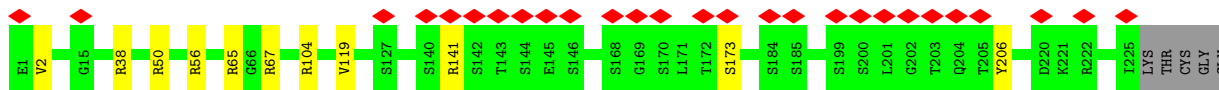
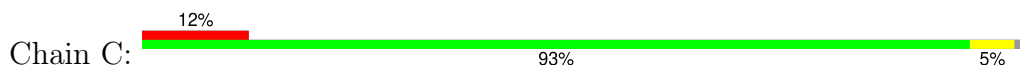
• Molecule 2: Envelope glycoprotein gp41



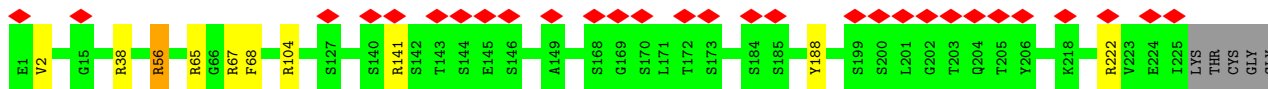
• Molecule 2: Envelope glycoprotein gp41



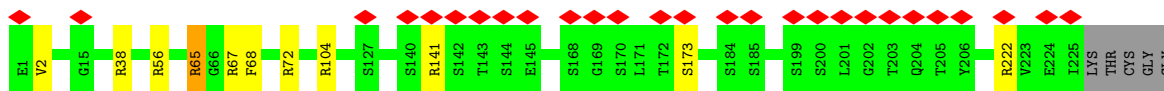
• Molecule 3: DH1030.1 Fab Heavy chain



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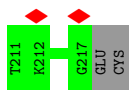


• Molecule 3: DH1030.1 Fab Heavy chain

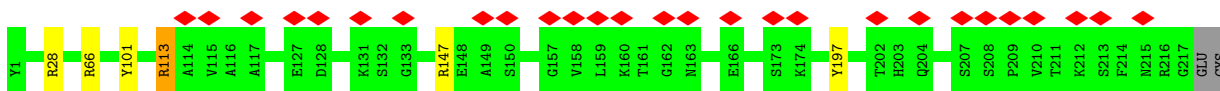


• Molecule 4: DH1030.1 Fab Light Chain

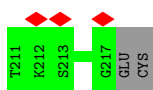




- Molecule 4: DH1030.1 Fab Light Chain



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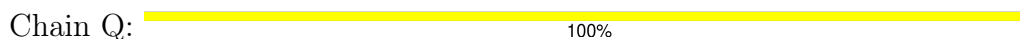
- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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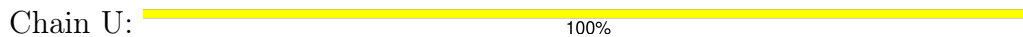
- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



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



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



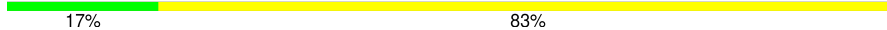
- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 5: 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)-[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

Chain N:  17% 83%

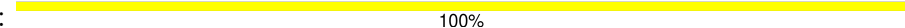
MAG1  
MAG2  
BMA3  
MAN4  
MAN5  
MAN6

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

Chain S:  17% 83%

MAG1  
MAG2  
BMA3  
MAN4  
MAN5  
MAN6

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

Chain W:  100%

MAG1  
MAG2  
BMA3  
MAN4  
MAN5  
MAN6

- Molecule 7: 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 O:  25% 75%

MAG1  
MAG2  
BMA3  
MAN4

- Molecule 7: 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 V:  100%

MAG1  
MAG2  
BMA3  
MAN4

- Molecule 7: 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 a:  100%

MAG1  
MAG2  
BMA3  
MAN4

- Molecule 8: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain b:  33% 100%



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	296846	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 ( $e^-/\text{\AA}^2$ )	54	Depositor
Minimum defocus (nm)	750	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	3.663	Depositor
Minimum map value	-0.655	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.136	Depositor
Recommended contour level	0.9	Depositor
Map size ( $\text{\AA}$ )	345.6, 345.6, 345.6	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.08, 1.08, 1.08	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	0.62	0/3690	1.04	19/5021 (0.4%)
1	E	0.62	0/3690	1.05	21/5021 (0.4%)
1	I	0.62	0/3690	1.04	14/5021 (0.3%)
2	B	0.60	0/1052	1.05	4/1427 (0.3%)
2	F	0.61	0/1052	1.08	3/1427 (0.2%)
2	J	0.61	0/1052	1.06	3/1427 (0.2%)
3	C	0.68	0/1769	1.08	8/2410 (0.3%)
3	G	0.68	0/1769	1.07	8/2410 (0.3%)
3	K	0.68	0/1769	1.08	9/2410 (0.4%)
4	D	0.67	0/1715	1.04	7/2334 (0.3%)
4	H	0.67	0/1715	1.02	5/2334 (0.2%)
4	L	0.67	0/1715	1.02	7/2334 (0.3%)
All	All	0.64	0/24678	1.05	108/33576 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	3
1	E	0	2
1	I	0	4
3	G	0	1
3	K	0	1
4	D	0	2
4	H	0	1
4	L	0	2
All	All	0	16

There are no bond length outliers.

All (108) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	542	ARG	NE-CZ-NH1	9.68	125.14	120.30
1	I	308	ARG	NE-CZ-NH1	9.52	125.06	120.30
1	A	308	ARG	NE-CZ-NH1	8.87	124.74	120.30
1	E	308	ARG	NE-CZ-NH1	8.64	124.62	120.30
1	E	500	ARG	NE-CZ-NH1	8.41	124.51	120.30
1	I	469	ARG	NE-CZ-NH1	8.26	124.43	120.30
1	A	500	ARG	NE-CZ-NH1	8.01	124.30	120.30
2	B	617	ARG	NE-CZ-NH1	7.89	124.25	120.30
1	E	469	ARG	NE-CZ-NH1	7.85	124.22	120.30
1	A	456	ARG	NE-CZ-NH1	7.71	124.16	120.30
4	L	147	ARG	NE-CZ-NH1	7.70	124.15	120.30
3	C	141	ARG	NE-CZ-NH1	7.68	124.14	120.30
3	G	56	ARG	NE-CZ-NH1	7.67	124.14	120.30
1	A	164	ARG	NE-CZ-NH1	7.64	124.12	120.30
2	F	617	ARG	NE-CZ-NH1	7.60	124.10	120.30
1	A	469	ARG	NE-CZ-NH1	7.49	124.04	120.30
4	D	113	ARG	NE-CZ-NH1	7.41	124.01	120.30
1	E	298	ARG	NE-CZ-NH1	7.38	123.99	120.30
1	A	252	ARG	NE-CZ-NH1	7.35	123.98	120.30
4	D	147	ARG	NE-CZ-NH1	7.35	123.98	120.30
2	J	542	ARG	NE-CZ-NH1	7.35	123.97	120.30
3	K	56	ARG	NE-CZ-NH1	7.32	123.96	120.30
1	E	456	ARG	NE-CZ-NH1	7.25	123.92	120.30
1	I	164	ARG	NE-CZ-NH1	7.24	123.92	120.30
2	B	542	ARG	NE-CZ-NH1	7.15	123.87	120.30
1	E	446	ARG	NE-CZ-NH1	7.13	123.87	120.30
1	E	503	ARG	NE-CZ-NH1	7.13	123.87	120.30
4	D	66	ARG	NE-CZ-NH1	7.13	123.86	120.30
1	E	419	ARG	NE-CZ-NH1	7.06	123.83	120.30
4	H	113	ARG	NE-CZ-NH1	7.03	123.82	120.30
1	E	192	ARG	NE-CZ-NH1	6.87	123.73	120.30
4	H	66	ARG	NE-CZ-NH1	6.85	123.72	120.30
3	C	56	ARG	NE-CZ-NH1	6.79	123.69	120.30
1	I	456	ARG	NE-CZ-NH1	6.77	123.69	120.30
1	I	298	ARG	NE-CZ-NH1	6.74	123.67	120.30
3	G	67	ARG	NE-CZ-NH1	6.70	123.65	120.30
4	H	101	TYR	CB-CG-CD2	-6.68	116.99	121.00
3	C	65	ARG	NE-CZ-NH1	6.66	123.63	120.30
1	I	446	ARG	NE-CZ-NH1	6.62	123.61	120.30
1	I	503	ARG	NE-CZ-NH1	6.62	123.61	120.30
4	L	51	ARG	NE-CZ-NH2	-6.54	117.03	120.30
3	K	67	ARG	NE-CZ-NH1	6.54	123.57	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	G	141	ARG	NE-CZ-NH1	6.53	123.57	120.30
4	D	51	ARG	NE-CZ-NH2	-6.53	117.04	120.30
3	K	38	ARG	NE-CZ-NH1	6.52	123.56	120.30
1	E	480	ARG	NE-CZ-NH1	6.52	123.56	120.30
1	A	192	ARG	NE-CZ-NH1	6.44	123.52	120.30
3	C	104	ARG	NE-CZ-NH1	6.41	123.50	120.30
1	I	192	ARG	NE-CZ-NH1	6.37	123.48	120.30
1	A	476	ARG	NE-CZ-NH2	-6.36	117.12	120.30
3	K	222	ARG	NE-CZ-NH1	6.33	123.46	120.30
4	L	66	ARG	NE-CZ-NH1	6.33	123.46	120.30
3	G	104	ARG	NE-CZ-NH1	6.30	123.45	120.30
3	K	65	ARG	NE-CZ-NH1	6.28	123.44	120.30
1	I	252	ARG	NE-CZ-NH1	6.27	123.44	120.30
3	G	65	ARG	NE-CZ-NH1	6.26	123.43	120.30
1	A	419	ARG	NE-CZ-NH1	6.18	123.39	120.30
1	A	503	ARG	NE-CZ-NH1	6.17	123.38	120.30
2	J	617	ARG	NE-CZ-NH1	6.15	123.38	120.30
4	D	51	ARG	NE-CZ-NH1	6.11	123.36	120.30
1	E	450	THR	N-CA-C	6.11	127.49	111.00
1	E	504	ARG	NE-CZ-NH1	6.11	123.35	120.30
3	C	67	ARG	NE-CZ-NH1	6.07	123.34	120.30
1	E	500	ARG	NE-CZ-NH2	-6.05	117.27	120.30
4	L	101	TYR	CB-CG-CD2	-6.04	117.38	121.00
4	H	147	ARG	NE-CZ-NH1	6.00	123.30	120.30
3	G	38	ARG	NE-CZ-NH1	6.00	123.30	120.30
1	E	476	ARG	NE-CZ-NH1	5.97	123.28	120.30
1	I	450	THR	N-CA-C	5.94	127.04	111.00
1	I	504	ARG	NE-CZ-NH1	5.88	123.24	120.30
1	A	446	ARG	NE-CZ-NH1	5.86	123.23	120.30
2	F	617	ARG	NE-CZ-NH2	-5.83	117.39	120.30
3	K	72	ARG	NE-CZ-NH1	5.82	123.21	120.30
3	C	38	ARG	NE-CZ-NH1	5.81	123.20	120.30
1	A	504	ARG	NE-CZ-NH1	5.79	123.19	120.30
2	J	617	ARG	NE-CZ-NH2	-5.75	117.43	120.30
1	E	476	ARG	NE-CZ-NH2	-5.74	117.43	120.30
4	L	113	ARG	NE-CZ-NH1	5.73	123.17	120.30
4	L	24	ARG	NE-CZ-NH1	5.73	123.16	120.30
4	D	24	ARG	NE-CZ-NH1	5.72	123.16	120.30
1	E	304	ARG	NE-CZ-NH1	5.68	123.14	120.30
3	G	222	ARG	NE-CZ-NH1	5.66	123.13	120.30
3	G	68	PHE	CB-CG-CD2	-5.63	116.86	120.80
1	A	500	ARG	NE-CZ-NH2	-5.51	117.54	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	K	141	ARG	NE-CZ-NH1	5.50	123.05	120.30
1	A	450	THR	N-CA-C	5.50	125.83	111.00
1	A	480	ARG	NE-CZ-NH1	5.41	123.00	120.30
1	A	476	ARG	NE-CZ-NH1	5.41	123.00	120.30
1	A	59	ARG	NE-CZ-NH1	5.37	122.99	120.30
1	E	252	ARG	NE-CZ-NH1	5.37	122.99	120.30
2	B	617	ARG	NE-CZ-NH2	-5.36	117.62	120.30
1	A	451	GLY	N-CA-C	-5.34	99.74	113.10
3	K	104	ARG	NE-CZ-NH1	5.33	122.96	120.30
1	E	59	ARG	NE-CZ-NH1	5.24	122.92	120.30
1	E	451	GLY	N-CA-C	-5.23	100.02	113.10
1	E	469	ARG	NE-CZ-NH2	-5.21	117.69	120.30
1	I	304	ARG	NE-CZ-NH1	5.19	122.89	120.30
4	L	44	ARG	NE-CZ-NH1	5.13	122.87	120.30
2	B	643	TYR	CB-CG-CD2	-5.12	117.92	121.00
1	A	469	ARG	NE-CZ-NH2	-5.11	117.74	120.30
1	E	164	ARG	NE-CZ-NH1	5.11	122.86	120.30
1	I	419	ARG	NE-CZ-NH1	5.11	122.85	120.30
3	K	68	PHE	CB-CG-CD2	-5.08	117.24	120.80
4	D	44	ARG	NE-CZ-NH1	5.07	122.84	120.30
4	H	28	ARG	NE-CZ-NH1	5.06	122.83	120.30
1	I	59	ARG	NE-CZ-NH1	5.05	122.83	120.30
3	C	50	ARG	NE-CZ-NH1	5.04	122.82	120.30
3	C	206	TYR	CB-CG-CD1	-5.01	117.99	121.00

There are no chirality outliers.

All (16) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	395	TYR	Sidechain
1	A	419	ARG	Sidechain
1	A	450	THR	Peptide
4	D	197	TYR	Sidechain
4	D	54	TYR	Sidechain
1	E	400	TYR	Sidechain
1	E	450	THR	Peptide
3	G	188	TYR	Sidechain
4	H	197	TYR	Sidechain
1	I	400	TYR	Sidechain
1	I	449	ILE	Peptide
1	I	450	THR	Peptide
1	I	503	ARG	Sidechain

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Mol	Chain	Res	Type	Group
3	K	65	ARG	Sidechain
4	L	197	TYR	Sidechain
4	L	82	ARG	Sidechain

## 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	3613	0	3522	0	0
1	E	3613	0	3522	1	0
1	I	3613	0	3521	2	0
2	B	1034	0	1014	0	0
2	F	1034	0	1014	1	0
2	J	1034	0	1014	1	0
3	C	1725	0	1668	0	0
3	G	1725	0	1668	0	0
3	K	1725	0	1668	0	0
4	D	1676	0	1628	0	0
4	H	1676	0	1628	0	0
4	L	1676	0	1628	0	0
5	M	28	0	25	0	0
5	P	28	0	25	0	0
5	Q	28	0	25	0	0
5	R	28	0	25	0	0
5	T	28	0	25	0	0
5	U	28	0	25	0	0
5	X	28	0	25	0	0
5	Y	28	0	25	0	0
5	Z	28	0	25	0	0
6	N	72	0	61	0	0
6	S	72	0	61	0	0
6	W	72	0	61	0	0
7	O	50	0	43	0	0
7	V	50	0	43	0	0
7	a	50	0	43	0	0
8	b	39	0	34	0	0
9	A	84	0	78	0	0
9	E	84	0	78	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
9	I	84	0	78	0	0
All	All	25053	0	24300	5	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 0.

All (5) 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)
2:F:519:PHE:HA	2:F:522:PHE:HA	1.97	0.46
1:E:255:VAL:HG21	1:E:427:TRP:HE1	1.82	0.44
1:I:426:MET:HG3	1:I:427:TRP:CD2	2.54	0.43
2:J:519:PHE:HA	2:J:522:PHE:HA	2.03	0.41
1:I:35:TRP:CH2	1:I:502:LYS:HE3	2.56	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	460/463 (99%)	415 (90%)	38 (8%)	7 (2%)	8	38
1	E	460/463 (99%)	416 (90%)	33 (7%)	11 (2%)	5	30
1	I	460/463 (99%)	414 (90%)	35 (8%)	11 (2%)	5	30
2	B	128/161 (80%)	114 (89%)	12 (9%)	2 (2%)	8	37
2	F	128/161 (80%)	114 (89%)	14 (11%)	0	100	100
2	J	128/161 (80%)	115 (90%)	10 (8%)	3 (2%)	5	31
3	C	223/230 (97%)	207 (93%)	14 (6%)	2 (1%)	14	47
3	G	223/230 (97%)	205 (92%)	16 (7%)	2 (1%)	14	47

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	K	223/230 (97%)	208 (93%)	13 (6%)	2 (1%)	14	47
4	D	215/219 (98%)	198 (92%)	16 (7%)	1 (0%)	25	57
4	H	215/219 (98%)	197 (92%)	18 (8%)	0	100	100
4	L	215/219 (98%)	199 (93%)	16 (7%)	0	100	100
All	All	3078/3219 (96%)	2802 (91%)	235 (8%)	41 (1%)	13	40

All (41) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	450	THR
1	A	189	SER
1	A	450	THR
1	E	327	LYS
1	I	62	GLU
1	I	327	LYS
1	I	355	ASN
1	A	62	GLU
1	A	327	LYS
2	B	522	PHE
1	E	62	GLU
1	E	189	SER
1	E	380	GLY
1	I	450	THR
1	I	463	ASN
2	J	602	LEU
3	K	173	SER
1	A	136	VAL
1	A	258	GLN
1	A	463	ASN
4	D	73	GLY
1	E	136	VAL
1	E	355	ASN
3	G	2	VAL
1	I	88	ASN
1	I	136	VAL
1	I	189	SER
1	I	258	GLN
3	K	2	VAL
2	B	602	LEU
3	C	2	VAL
3	C	173	SER

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Mol	Chain	Res	Type
1	E	126	CYS
1	E	258	GLN
1	E	493	PRO
3	G	56	ARG
1	I	126	CYS
2	J	522	PHE
1	E	326	ILE
2	J	597	GLY
1	I	326	ILE

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

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	411/411 (100%)	407 (99%)	4 (1%)	73	82
1	E	411/411 (100%)	408 (99%)	3 (1%)	81	88
1	I	411/411 (100%)	408 (99%)	3 (1%)	81	88
2	B	110/136 (81%)	109 (99%)	1 (1%)	75	84
2	F	110/136 (81%)	109 (99%)	1 (1%)	75	84
2	J	110/136 (81%)	108 (98%)	2 (2%)	54	71
3	C	192/195 (98%)	191 (100%)	1 (0%)	86	92
3	G	192/195 (98%)	192 (100%)	0	100	100
3	K	192/195 (98%)	192 (100%)	0	100	100
4	D	192/194 (99%)	191 (100%)	1 (0%)	86	92
4	H	192/194 (99%)	191 (100%)	1 (0%)	86	92
4	L	192/194 (99%)	190 (99%)	2 (1%)	73	82
All	All	2715/2808 (97%)	2696 (99%)	19 (1%)	80	88

All (19) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	150	GLU

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Mol	Chain	Res	Type
1	A	426	MET
1	A	450	THR
1	A	504	ARG
2	B	540	GLN
3	C	119	VAL
4	D	113	ARG
1	E	417	GLN
1	E	450	THR
1	E	504	ARG
2	F	540	GLN
4	H	113	ARG
1	I	37	THR
1	I	450	THR
1	I	504	ARG
2	J	540	GLN
2	J	614	TRP
4	L	77	THR
4	L	113	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

51 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
5	NAG	M	1	5,1	14,14,15	1.24	2 (14%)	17,19,21	0.95	0
5	NAG	M	2	5	14,14,15	1.33	3 (21%)	17,19,21	1.44	2 (11%)
6	NAG	N	1	6,1	14,14,15	0.83	0	17,19,21	1.02	0
6	NAG	N	2	6	14,14,15	1.15	2 (14%)	17,19,21	1.55	4 (23%)
6	BMA	N	3	6	11,11,12	1.23	1 (9%)	15,15,17	1.75	4 (26%)
6	MAN	N	4	6	11,11,12	1.13	0	15,15,17	1.70	2 (13%)
6	MAN	N	5	6	11,11,12	0.97	1 (9%)	15,15,17	1.49	2 (13%)
6	MAN	N	6	6	11,11,12	1.51	2 (18%)	15,15,17	1.39	2 (13%)
7	NAG	O	1	7,1	14,14,15	1.01	0	17,19,21	0.81	0
7	NAG	O	2	7	14,14,15	1.17	2 (14%)	17,19,21	1.17	2 (11%)
7	BMA	O	3	7	11,11,12	1.26	1 (9%)	15,15,17	1.42	3 (20%)
7	MAN	O	4	7	11,11,12	1.29	2 (18%)	15,15,17	1.08	2 (13%)
5	NAG	P	1	5,1	14,14,15	1.14	1 (7%)	17,19,21	0.77	0
5	NAG	P	2	5	14,14,15	1.31	2 (14%)	17,19,21	1.12	1 (5%)
5	NAG	Q	1	5,1	14,14,15	1.21	1 (7%)	17,19,21	0.78	0
5	NAG	Q	2	5	14,14,15	1.30	3 (21%)	17,19,21	1.18	2 (11%)
5	NAG	R	1	5,1	14,14,15	1.29	3 (21%)	17,19,21	0.80	0
5	NAG	R	2	5	14,14,15	1.35	2 (14%)	17,19,21	1.44	1 (5%)
6	NAG	S	1	6,1	14,14,15	0.85	0	17,19,21	1.04	0
6	NAG	S	2	6	14,14,15	1.07	1 (7%)	17,19,21	1.65	4 (23%)
6	BMA	S	3	6	11,11,12	1.19	1 (9%)	15,15,17	1.99	4 (26%)
6	MAN	S	4	6	11,11,12	1.42	3 (27%)	15,15,17	1.70	5 (33%)
6	MAN	S	5	6	11,11,12	1.01	1 (9%)	15,15,17	1.72	2 (13%)
6	MAN	S	6	6	11,11,12	1.53	2 (18%)	15,15,17	1.57	2 (13%)
5	NAG	T	1	5,1	14,14,15	1.15	2 (14%)	17,19,21	1.35	3 (17%)
5	NAG	T	2	5	14,14,15	1.20	2 (14%)	17,19,21	0.74	0
5	NAG	U	1	5,1	14,14,15	1.05	2 (14%)	17,19,21	0.70	0
5	NAG	U	2	5	14,14,15	1.15	1 (7%)	17,19,21	1.03	2 (11%)
7	NAG	V	1	7,1	14,14,15	1.08	1 (7%)	17,19,21	1.31	3 (17%)
7	NAG	V	2	7	14,14,15	1.23	2 (14%)	17,19,21	0.65	0
7	BMA	V	3	7	11,11,12	1.34	1 (9%)	15,15,17	1.75	3 (20%)
7	MAN	V	4	7	11,11,12	1.36	2 (18%)	15,15,17	1.17	1 (6%)
6	NAG	W	1	6,1	14,14,15	0.82	0	17,19,21	1.05	1 (5%)
6	NAG	W	2	6	14,14,15	1.15	2 (14%)	17,19,21	1.45	4 (23%)
6	BMA	W	3	6	11,11,12	1.28	1 (9%)	15,15,17	1.68	3 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
6	MAN	W	4	6	11,11,12	1.47	3 (27%)	15,15,17	1.71	5 (33%)
6	MAN	W	5	6	11,11,12	1.21	1 (9%)	15,15,17	1.67	3 (20%)
6	MAN	W	6	6	11,11,12	1.55	1 (9%)	15,15,17	1.43	4 (26%)
5	NAG	X	1	5,1	14,14,15	1.34	3 (21%)	17,19,21	0.82	0
5	NAG	X	2	5	14,14,15	1.30	2 (14%)	17,19,21	1.47	1 (5%)
5	NAG	Y	1	5,1	14,14,15	1.23	2 (14%)	17,19,21	0.72	0
5	NAG	Y	2	5	14,14,15	1.27	3 (21%)	17,19,21	0.97	1 (5%)
5	NAG	Z	1	5,1	14,14,15	1.37	3 (21%)	17,19,21	1.64	2 (11%)
5	NAG	Z	2	5	14,14,15	1.23	2 (14%)	17,19,21	1.18	3 (17%)
7	NAG	a	1	7,1	14,14,15	1.24	2 (14%)	17,19,21	1.34	2 (11%)
7	NAG	a	2	7	14,14,15	1.27	2 (14%)	17,19,21	1.15	2 (11%)
7	BMA	a	3	7	11,11,12	1.28	1 (9%)	15,15,17	0.76	0
7	MAN	a	4	7	11,11,12	1.35	2 (18%)	15,15,17	0.97	1 (6%)
8	NAG	b	1	8,1	14,14,15	1.22	1 (7%)	17,19,21	1.06	1 (5%)
8	NAG	b	2	8	14,14,15	1.34	2 (14%)	17,19,21	0.94	0
8	BMA	b	3	8	11,11,12	1.30	2 (18%)	15,15,17	0.78	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	M	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	M	2	5	-	1/6/23/26	0/1/1/1
6	NAG	N	1	6,1	-	0/6/23/26	0/1/1/1
6	NAG	N	2	6	-	0/6/23/26	0/1/1/1
6	BMA	N	3	6	-	0/2/19/22	0/1/1/1
6	MAN	N	4	6	-	0/2/19/22	0/1/1/1
6	MAN	N	5	6	-	1/2/19/22	0/1/1/1
6	MAN	N	6	6	-	0/2/19/22	0/1/1/1
7	NAG	O	1	7,1	-	0/6/23/26	0/1/1/1
7	NAG	O	2	7	-	1/6/23/26	0/1/1/1
7	BMA	O	3	7	-	0/2/19/22	0/1/1/1
7	MAN	O	4	7	-	0/2/19/22	0/1/1/1
5	NAG	P	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	P	2	5	-	3/6/23/26	0/1/1/1
5	NAG	Q	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	Q	2	5	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	R	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	R	2	5	-	1/6/23/26	0/1/1/1
6	NAG	S	1	6,1	-	0/6/23/26	0/1/1/1
6	NAG	S	2	6	-	0/6/23/26	0/1/1/1
6	BMA	S	3	6	-	0/2/19/22	0/1/1/1
6	MAN	S	4	6	-	2/2/19/22	0/1/1/1
6	MAN	S	5	6	-	1/2/19/22	0/1/1/1
6	MAN	S	6	6	-	0/2/19/22	0/1/1/1
5	NAG	T	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	T	2	5	-	1/6/23/26	0/1/1/1
5	NAG	U	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	U	2	5	-	2/6/23/26	0/1/1/1
7	NAG	V	1	7,1	-	2/6/23/26	0/1/1/1
7	NAG	V	2	7	-	0/6/23/26	0/1/1/1
7	BMA	V	3	7	-	1/2/19/22	0/1/1/1
7	MAN	V	4	7	-	0/2/19/22	0/1/1/1
6	NAG	W	1	6,1	-	0/6/23/26	0/1/1/1
6	NAG	W	2	6	-	0/6/23/26	0/1/1/1
6	BMA	W	3	6	-	0/2/19/22	0/1/1/1
6	MAN	W	4	6	-	2/2/19/22	0/1/1/1
6	MAN	W	5	6	-	1/2/19/22	0/1/1/1
6	MAN	W	6	6	-	0/2/19/22	0/1/1/1
5	NAG	X	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	X	2	5	-	1/6/23/26	0/1/1/1
5	NAG	Y	1	5,1	-	1/6/23/26	0/1/1/1
5	NAG	Y	2	5	-	2/6/23/26	0/1/1/1
5	NAG	Z	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	Z	2	5	-	2/6/23/26	0/1/1/1
7	NAG	a	1	7,1	-	4/6/23/26	0/1/1/1
7	NAG	a	2	7	-	2/6/23/26	0/1/1/1
7	BMA	a	3	7	-	2/2/19/22	0/1/1/1
7	MAN	a	4	7	-	0/2/19/22	0/1/1/1
8	NAG	b	1	8,1	-	2/6/23/26	0/1/1/1
8	NAG	b	2	8	-	2/6/23/26	0/1/1/1
8	BMA	b	3	8	-	0/2/19/22	0/1/1/1

All (84) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	W	6	MAN	O5-C5	3.29	1.49	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	R	2	NAG	O5-C5	3.16	1.49	1.43
5	M	2	NAG	O5-C5	3.11	1.49	1.43
7	a	2	NAG	O5-C5	3.05	1.49	1.43
5	Q	2	NAG	O5-C5	2.95	1.49	1.43
5	X	2	NAG	O5-C5	2.95	1.49	1.43
7	V	4	MAN	O5-C5	2.94	1.49	1.43
6	S	6	MAN	O5-C5	2.89	1.49	1.43
6	W	5	MAN	O5-C5	2.85	1.49	1.43
7	a	4	MAN	O5-C5	2.84	1.49	1.43
8	b	2	NAG	O5-C5	2.84	1.49	1.43
7	V	2	NAG	O5-C5	2.81	1.48	1.43
5	P	2	NAG	O5-C5	2.80	1.48	1.43
6	N	6	MAN	O5-C5	2.77	1.48	1.43
6	W	2	NAG	O5-C5	2.75	1.48	1.43
6	N	2	NAG	O5-C5	2.73	1.48	1.43
6	S	6	MAN	C2-C3	2.73	1.56	1.52
8	b	3	BMA	O5-C5	2.72	1.48	1.43
5	Y	2	NAG	O5-C5	2.70	1.48	1.43
7	a	3	BMA	O5-C5	2.66	1.48	1.43
7	V	3	BMA	O5-C5	2.62	1.48	1.43
5	Y	1	NAG	O5-C5	2.61	1.48	1.43
7	a	1	NAG	O5-C5	2.60	1.48	1.43
7	O	4	MAN	O5-C5	2.56	1.48	1.43
6	W	4	MAN	O5-C5	2.55	1.48	1.43
5	X	1	NAG	O5-C5	2.55	1.48	1.43
7	O	2	NAG	O5-C5	2.55	1.48	1.43
5	Z	2	NAG	O5-C5	2.52	1.48	1.43
6	N	5	MAN	O5-C5	2.51	1.48	1.43
5	T	1	NAG	O5-C5	2.44	1.48	1.43
7	O	3	BMA	O5-C5	2.43	1.48	1.43
6	N	6	MAN	C2-C3	2.39	1.56	1.52
6	W	3	BMA	O3-C3	2.39	1.48	1.43
5	M	1	NAG	O5-C5	2.38	1.48	1.43
5	P	1	NAG	O5-C5	2.38	1.48	1.43
5	X	1	NAG	C1-C2	2.37	1.55	1.52
5	Q	1	NAG	O5-C5	2.37	1.48	1.43
5	Z	1	NAG	C1-C2	2.36	1.55	1.52
8	b	1	NAG	O5-C5	2.36	1.48	1.43
6	S	2	NAG	O5-C5	2.35	1.48	1.43
6	S	5	MAN	O5-C5	2.35	1.48	1.43
5	R	1	NAG	C1-C2	2.35	1.55	1.52
6	N	3	BMA	O3-C3	2.34	1.48	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	a	4	MAN	O5-C1	2.33	1.47	1.43
5	Z	1	NAG	O5-C5	2.31	1.47	1.43
6	S	4	MAN	O5-C5	2.29	1.47	1.43
6	S	4	MAN	C2-C3	2.28	1.56	1.52
5	Y	1	NAG	O4-C4	2.28	1.48	1.43
5	U	2	NAG	O5-C5	2.28	1.47	1.43
5	P	2	NAG	O5-C1	2.27	1.47	1.43
6	W	4	MAN	C2-C3	2.27	1.56	1.52
7	V	2	NAG	O4-C4	2.27	1.48	1.43
5	Z	1	NAG	O4-C4	2.26	1.48	1.43
8	b	2	NAG	O4-C4	2.25	1.48	1.43
5	R	2	NAG	C1-C2	2.24	1.55	1.52
6	S	4	MAN	O3-C3	2.23	1.48	1.43
7	O	2	NAG	O4-C4	2.23	1.48	1.43
7	a	2	NAG	O4-C4	2.21	1.48	1.43
5	R	1	NAG	O5-C5	2.18	1.47	1.43
6	W	2	NAG	O5-C1	2.18	1.47	1.43
6	W	4	MAN	O3-C3	2.18	1.48	1.43
5	T	1	NAG	O4-C4	2.18	1.48	1.43
7	O	4	MAN	O5-C1	2.18	1.47	1.43
7	V	4	MAN	O5-C1	2.17	1.47	1.43
5	R	1	NAG	O4-C4	2.17	1.48	1.43
5	X	2	NAG	C1-C2	2.16	1.55	1.52
6	S	3	BMA	O3-C3	2.13	1.48	1.43
5	Q	2	NAG	C1-C2	2.13	1.55	1.52
5	Z	2	NAG	C1-C2	2.13	1.55	1.52
5	T	2	NAG	O5-C5	2.12	1.47	1.43
5	U	1	NAG	O5-C5	2.11	1.47	1.43
5	X	1	NAG	O4-C4	2.11	1.48	1.43
5	T	2	NAG	C1-C2	2.10	1.55	1.52
6	N	2	NAG	O5-C1	2.10	1.47	1.43
5	M	2	NAG	C1-C2	2.09	1.55	1.52
5	Y	2	NAG	C1-C2	2.09	1.55	1.52
7	a	1	NAG	C1-C2	2.08	1.55	1.52
5	Y	2	NAG	O5-C1	2.07	1.47	1.43
5	U	1	NAG	O4-C4	2.06	1.48	1.43
5	M	2	NAG	O5-C1	2.05	1.47	1.43
8	b	3	BMA	O5-C1	2.04	1.47	1.43
5	M	1	NAG	O4-C4	2.04	1.48	1.43
7	V	1	NAG	O5-C5	2.04	1.47	1.43
5	Q	2	NAG	O5-C1	2.03	1.47	1.43

All (89) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	Z	1	NAG	O5-C1-C2	5.65	120.03	111.29
5	X	2	NAG	O5-C1-C2	5.48	119.78	111.29
5	R	2	NAG	O5-C1-C2	5.35	119.58	111.29
6	S	3	BMA	C1-C2-C3	-5.04	102.30	109.64
5	M	2	NAG	O5-C1-C2	4.99	119.01	111.29
7	V	3	BMA	O5-C1-C2	4.75	122.13	110.79
6	S	5	MAN	C1-O5-C5	4.62	118.37	112.19
6	N	4	MAN	O3-C3-C2	-4.62	100.64	110.05
6	W	5	MAN	C1-O5-C5	4.48	118.19	112.19
7	V	4	MAN	C1-O5-C5	4.14	117.74	112.19
6	S	6	MAN	C1-O5-C5	3.87	117.37	112.19
6	N	3	BMA	O5-C1-C2	3.71	119.65	110.79
6	N	5	MAN	C1-O5-C5	3.71	117.16	112.19
6	N	2	NAG	C4-C3-C2	-3.66	105.65	111.02
6	W	3	BMA	C1-C2-C3	-3.57	104.45	109.64
6	S	2	NAG	C4-C3-C2	-3.55	105.81	111.02
7	a	1	NAG	C1-O5-C5	3.52	116.90	112.19
6	S	3	BMA	O5-C1-C2	3.46	119.05	110.79
6	W	2	NAG	C4-C3-C2	-3.38	106.07	111.02
6	N	6	MAN	C1-O5-C5	3.26	116.55	112.19
6	N	4	MAN	C1-C2-C3	3.25	114.37	109.64
6	W	4	MAN	C1-O5-C5	3.23	116.52	112.19
6	N	5	MAN	O5-C1-C2	3.19	118.39	110.79
5	T	1	NAG	C4-C3-C2	3.15	115.64	111.02
7	V	1	NAG	C1-C2-N2	3.12	115.34	110.43
6	W	4	MAN	O3-C3-C2	-3.11	103.70	110.05
6	W	6	MAN	C1-O5-C5	3.10	116.34	112.19
5	P	2	NAG	C1-O5-C5	3.10	116.34	112.19
6	S	4	MAN	C1-O5-C5	3.10	116.34	112.19
7	a	4	MAN	C1-O5-C5	3.08	116.31	112.19
6	S	4	MAN	C1-C2-C3	3.07	114.11	109.64
7	O	3	BMA	O5-C1-C2	2.97	117.88	110.79
7	a	2	NAG	O5-C1-C2	-2.95	106.73	111.29
6	N	2	NAG	C1-O5-C5	2.91	116.08	112.19
6	W	5	MAN	O5-C1-C2	2.82	117.51	110.79
6	S	2	NAG	C1-O5-C5	2.76	115.89	112.19
6	W	3	BMA	O5-C1-C2	2.74	117.33	110.79
6	S	2	NAG	O4-C4-C5	2.70	115.96	109.32
6	S	3	BMA	O3-C3-C4	2.67	116.67	110.38
6	W	4	MAN	C1-C2-C3	2.65	113.50	109.64
6	S	4	MAN	C3-C4-C5	2.65	115.03	110.23
6	S	6	MAN	O5-C1-C2	2.64	117.10	110.79
6	N	3	BMA	C1-C2-C3	-2.63	105.82	109.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	N	6	MAN	O5-C1-C2	2.62	117.03	110.79
6	N	3	BMA	C1-O5-C5	2.57	115.63	112.19
7	O	2	NAG	O5-C1-C2	-2.57	107.32	111.29
7	O	3	BMA	C1-O5-C5	2.56	115.61	112.19
7	V	3	BMA	O2-C2-C1	2.55	115.07	109.22
6	W	2	NAG	O4-C4-C5	2.55	115.61	109.32
6	S	5	MAN	O5-C1-C2	2.53	116.82	110.79
7	V	1	NAG	O5-C1-C2	-2.49	107.44	111.29
6	W	3	BMA	O3-C3-C4	2.47	116.19	110.38
7	O	2	NAG	C1-O5-C5	2.46	115.48	112.19
6	W	6	MAN	O5-C1-C2	2.45	116.64	110.79
5	Q	2	NAG	C1-O5-C5	2.45	115.47	112.19
6	W	2	NAG	O5-C5-C4	-2.44	104.89	110.83
7	O	4	MAN	C1-C2-C3	2.44	113.19	109.64
6	S	3	BMA	O2-C2-C1	2.42	114.77	109.22
6	W	4	MAN	O5-C1-C2	2.40	116.51	110.79
6	N	3	BMA	O2-C2-C1	2.39	114.70	109.22
5	Y	2	NAG	C1-O5-C5	2.36	115.35	112.19
5	Z	2	NAG	C1-O5-C5	2.35	115.33	112.19
8	b	1	NAG	O5-C1-C2	-2.34	107.67	111.29
5	U	2	NAG	C1-O5-C5	2.33	115.31	112.19
6	N	2	NAG	O4-C4-C5	2.32	115.05	109.32
7	a	1	NAG	C1-C2-N2	2.30	114.05	110.43
5	Z	1	NAG	O5-C5-C4	-2.28	105.27	110.83
6	W	1	NAG	O4-C4-C3	-2.26	105.06	110.38
5	T	1	NAG	C1-C2-N2	-2.25	106.88	110.43
6	S	2	NAG	O5-C5-C4	-2.24	105.37	110.83
5	Z	2	NAG	C1-C2-N2	2.21	113.92	110.43
6	W	2	NAG	C1-O5-C5	2.19	115.13	112.19
7	O	3	BMA	O2-C2-C1	2.19	114.23	109.22
6	S	4	MAN	O3-C3-C2	-2.18	105.61	110.05
6	W	4	MAN	C3-C4-C5	2.15	114.14	110.23
7	a	2	NAG	C1-O5-C5	2.13	115.04	112.19
7	V	3	BMA	C1-C2-C3	-2.13	106.55	109.64
6	W	6	MAN	O2-C2-C3	-2.10	105.80	110.15
5	Z	2	NAG	C2-N2-C7	2.10	125.71	122.90
5	M	2	NAG	O4-C4-C3	-2.09	105.46	110.38
5	T	1	NAG	O4-C4-C3	-2.06	105.51	110.38
6	W	5	MAN	O4-C4-C3	-2.06	105.52	110.38
6	N	2	NAG	O5-C5-C4	-2.05	105.83	110.83
6	S	4	MAN	O5-C1-C2	2.05	115.68	110.79
6	W	6	MAN	C1-C2-C3	2.05	112.63	109.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	V	1	NAG	C2-N2-C7	2.03	125.62	122.90
5	U	2	NAG	O5-C1-C2	-2.02	108.16	111.29
7	O	4	MAN	C1-O5-C5	2.01	114.88	112.19
5	Q	2	NAG	C1-C2-N2	2.00	113.59	110.43

There are no chirality outliers.

All (41) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	Z	2	NAG	C1-C2-N2-C7
7	V	1	NAG	C1-C2-N2-C7
7	a	3	BMA	O5-C5-C6-O6
6	S	4	MAN	O5-C5-C6-O6
6	S	4	MAN	C4-C5-C6-O6
5	Z	2	NAG	O5-C5-C6-O6
6	S	5	MAN	O5-C5-C6-O6
6	W	5	MAN	O5-C5-C6-O6
7	O	2	NAG	O5-C5-C6-O6
7	V	3	BMA	O5-C5-C6-O6
7	a	1	NAG	C4-C5-C6-O6
5	P	2	NAG	O5-C5-C6-O6
6	N	5	MAN	O5-C5-C6-O6
5	T	2	NAG	O5-C5-C6-O6
6	W	4	MAN	O5-C5-C6-O6
6	W	4	MAN	C4-C5-C6-O6
5	Q	2	NAG	C1-C2-N2-C7
5	U	2	NAG	C1-C2-N2-C7
5	Y	2	NAG	C1-C2-N2-C7
5	Z	1	NAG	C1-C2-N2-C7
7	a	1	NAG	C1-C2-N2-C7
7	a	2	NAG	C1-C2-N2-C7
5	P	2	NAG	C3-C2-N2-C7
5	Y	2	NAG	C3-C2-N2-C7
5	Z	1	NAG	C3-C2-N2-C7
8	b	2	NAG	C3-C2-N2-C7
7	a	1	NAG	O5-C5-C6-O6
5	M	2	NAG	C1-C2-N2-C7
5	P	2	NAG	C1-C2-N2-C7
5	R	2	NAG	C1-C2-N2-C7
5	X	2	NAG	C1-C2-N2-C7
8	b	1	NAG	C1-C2-N2-C7
8	b	2	NAG	C1-C2-N2-C7

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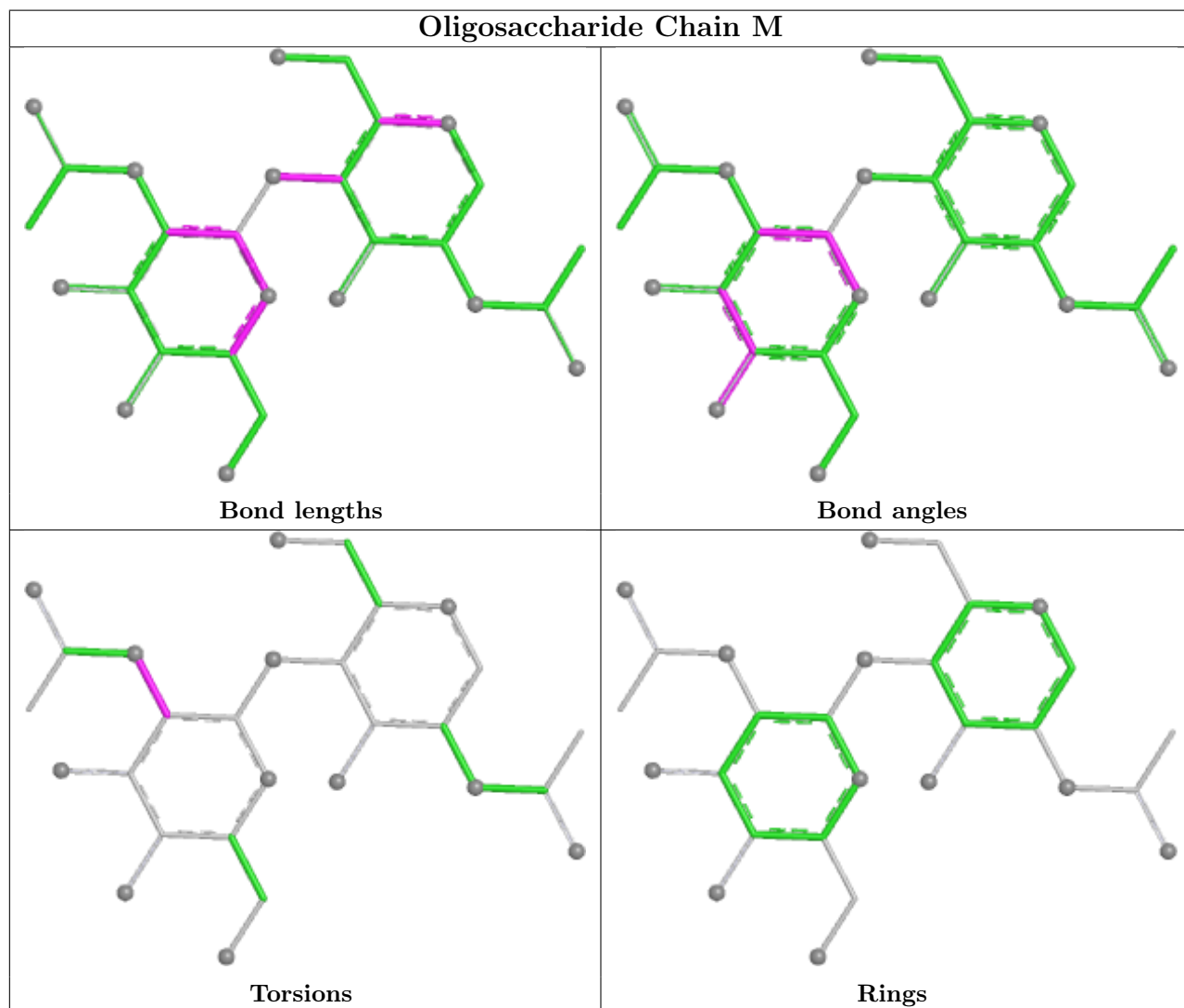
Continued from previous page...

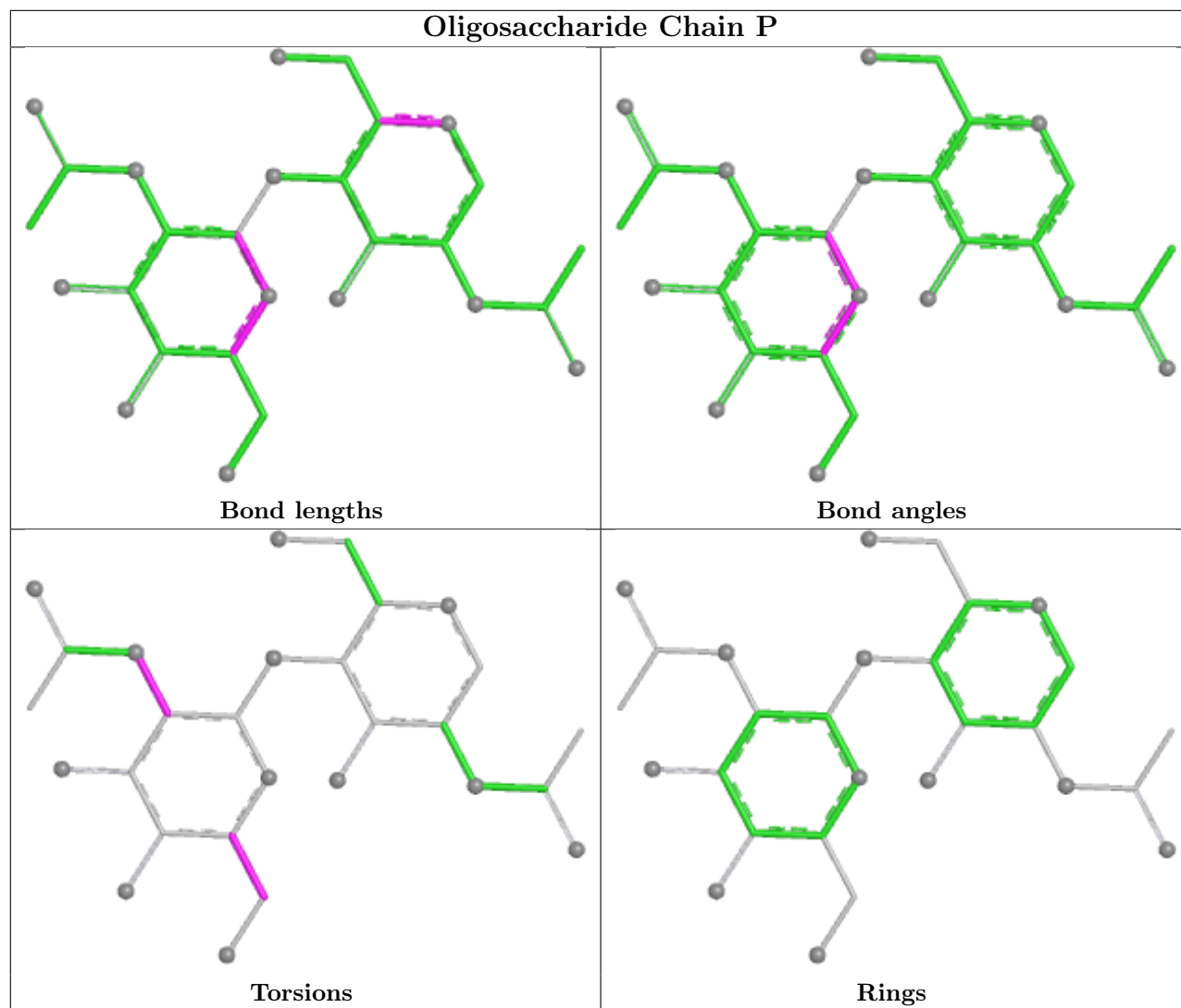
Mol	Chain	Res	Type	Atoms
5	Y	1	NAG	C4-C5-C6-O6
5	Q	2	NAG	C3-C2-N2-C7
5	U	2	NAG	C3-C2-N2-C7
7	V	1	NAG	C3-C2-N2-C7
7	a	1	NAG	C3-C2-N2-C7
7	a	2	NAG	C3-C2-N2-C7
8	b	1	NAG	C3-C2-N2-C7
7	a	3	BMA	C4-C5-C6-O6

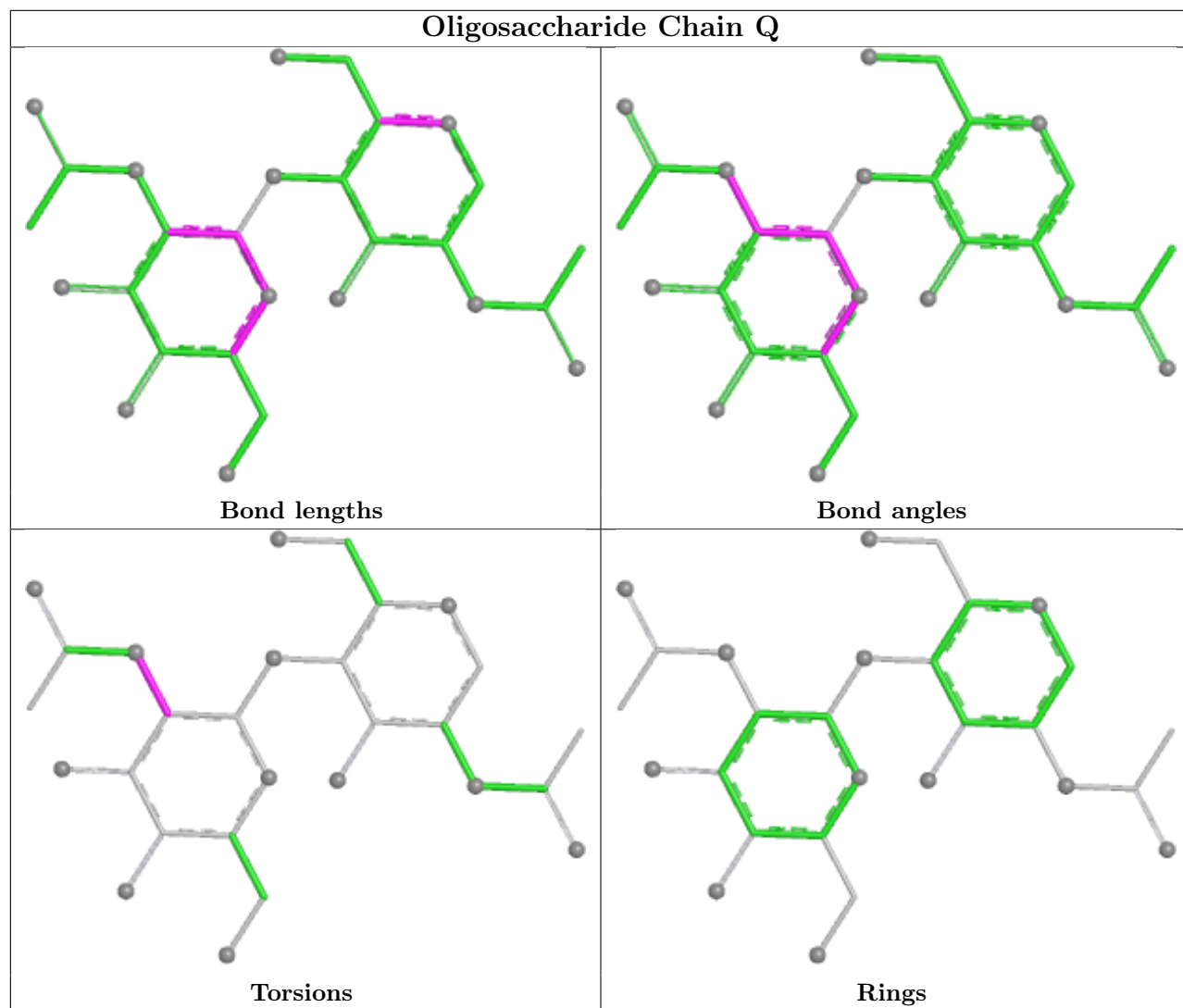
There are no ring outliers.

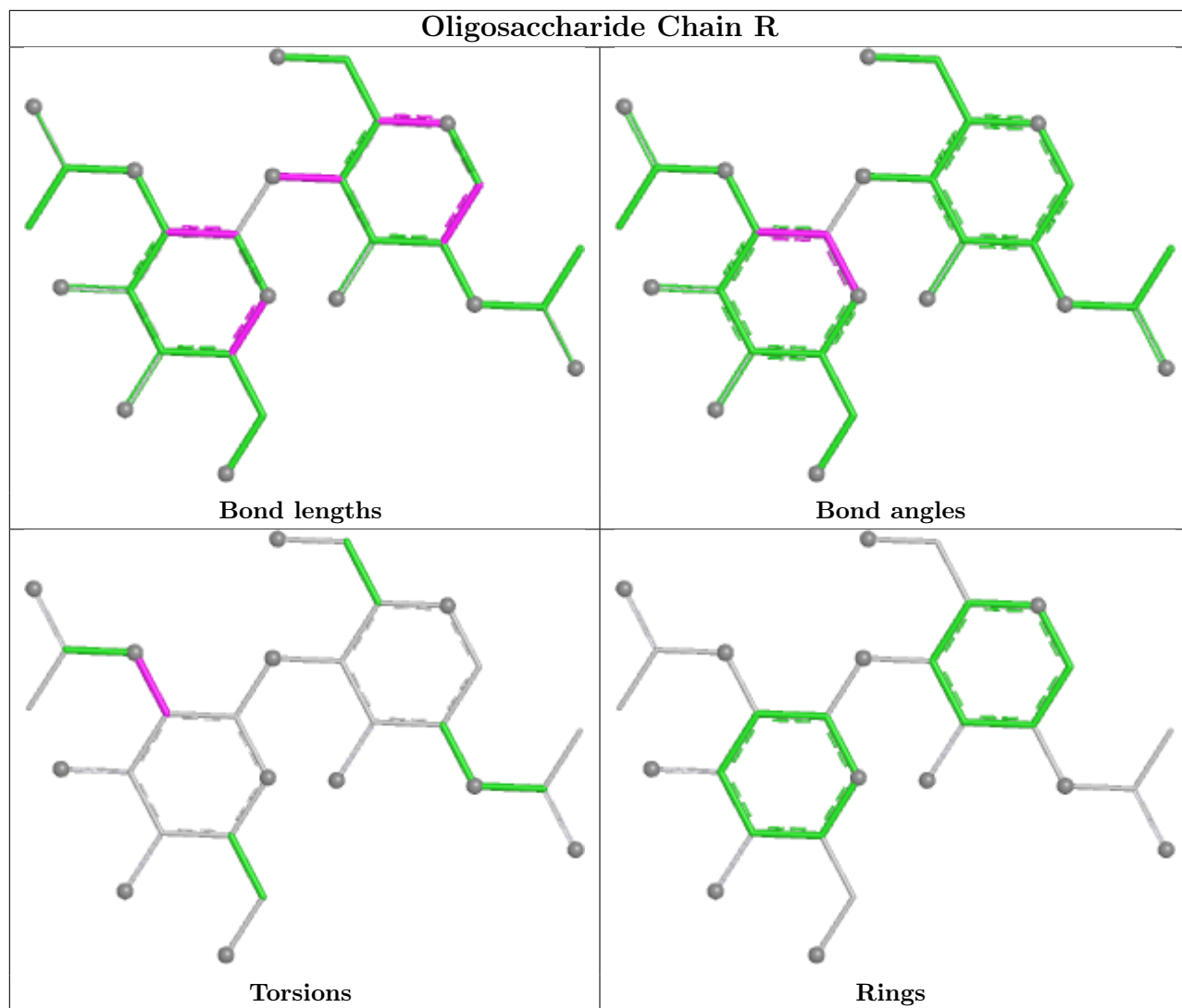
No monomer is involved in short contacts.

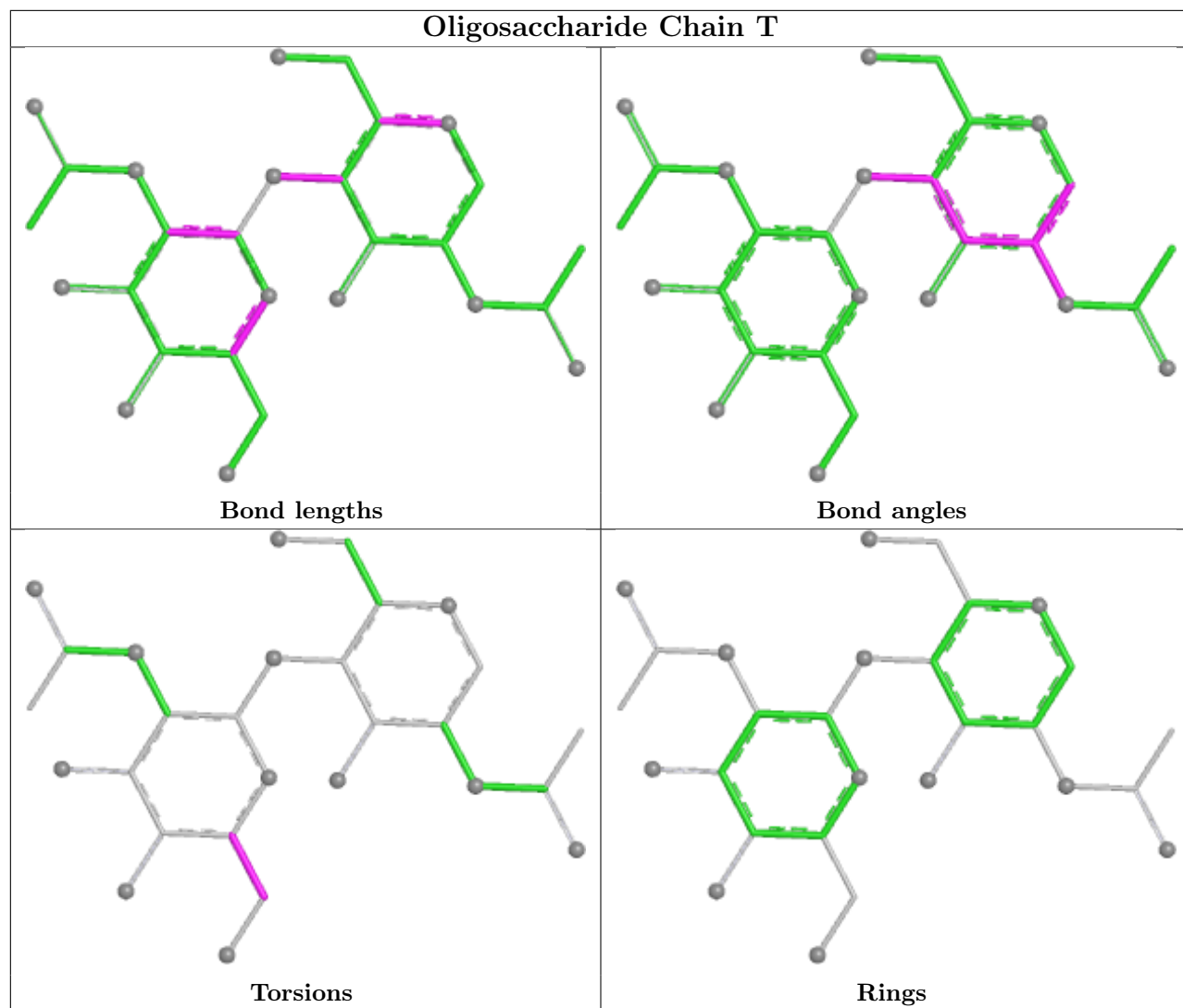
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

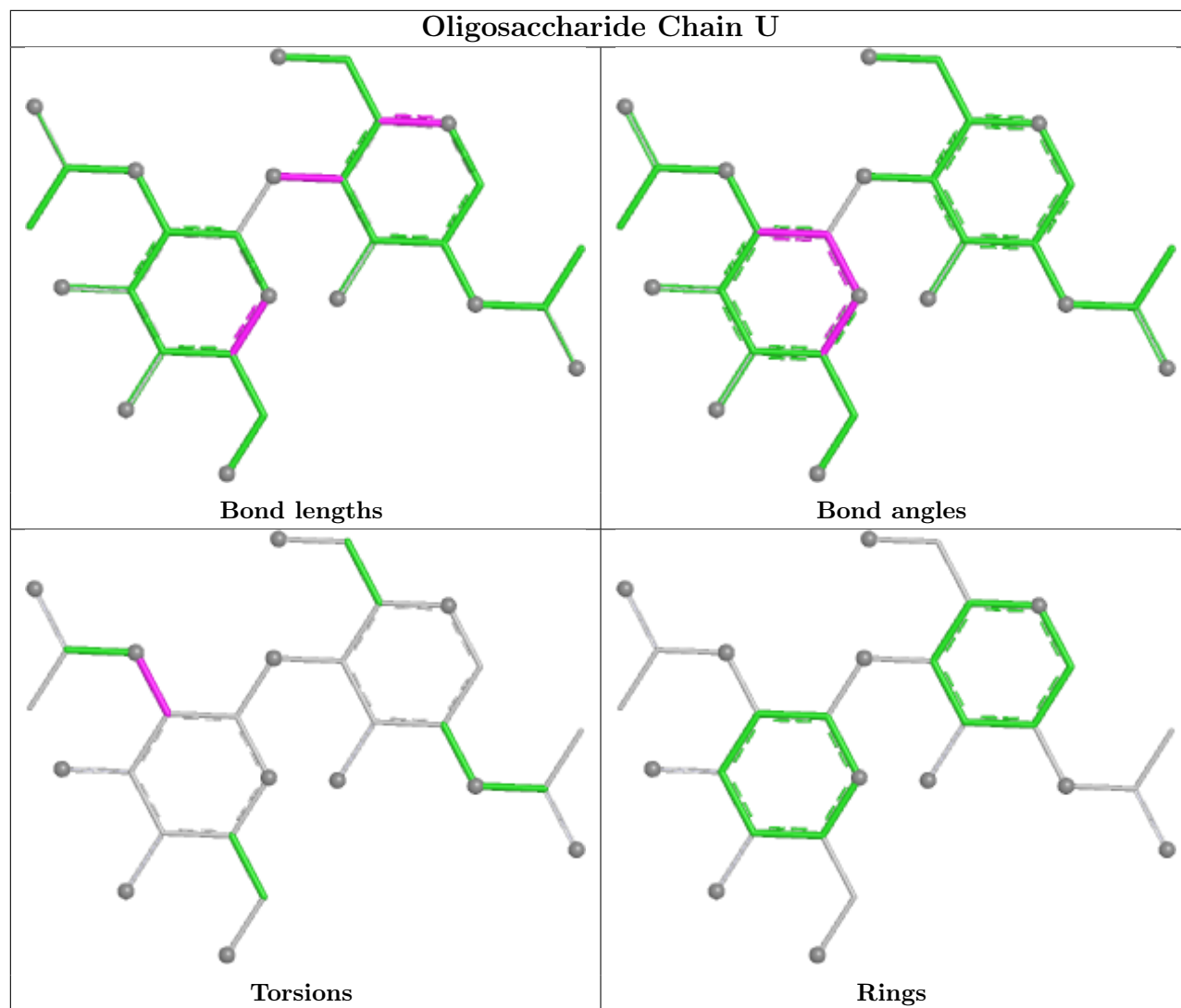


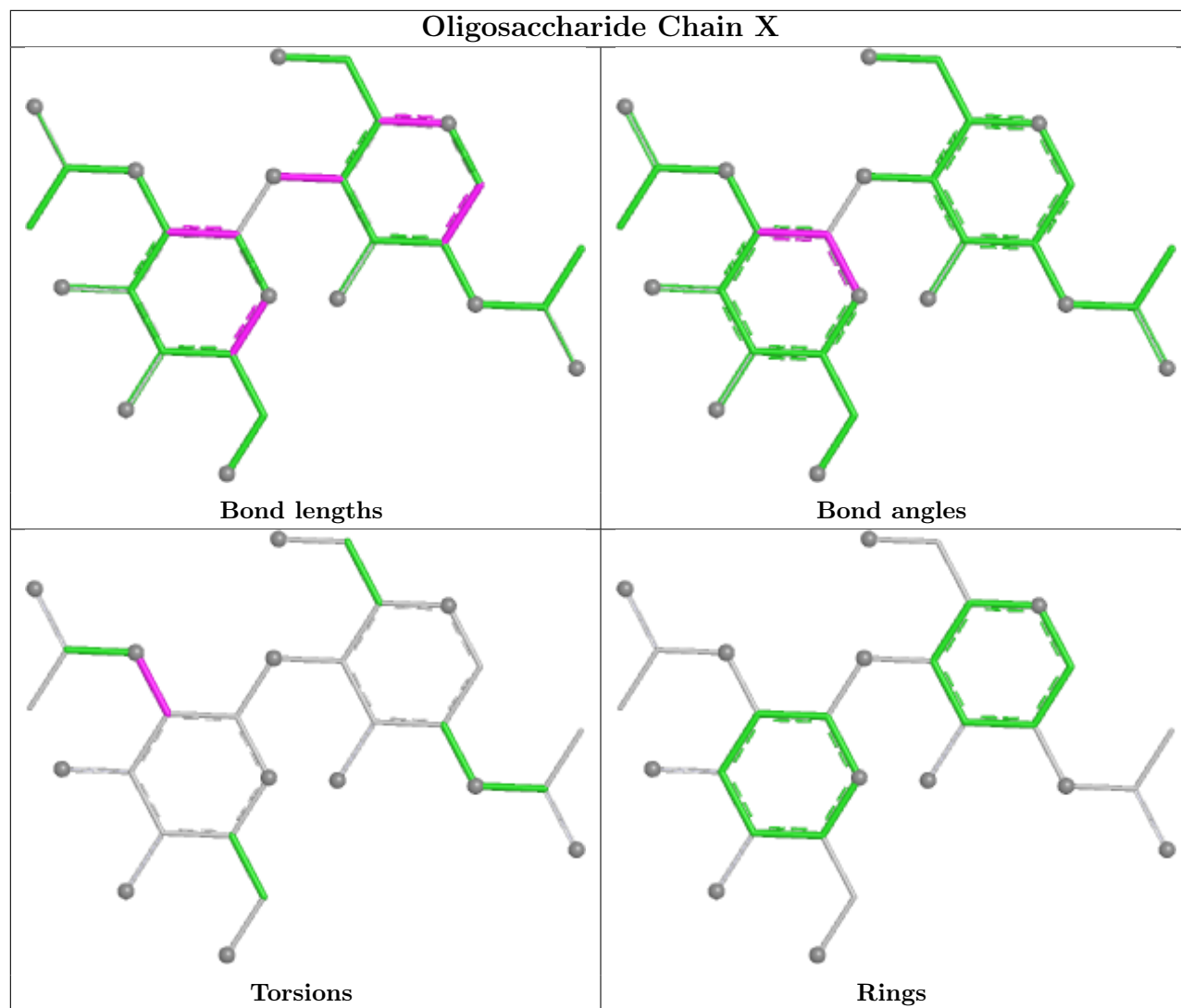




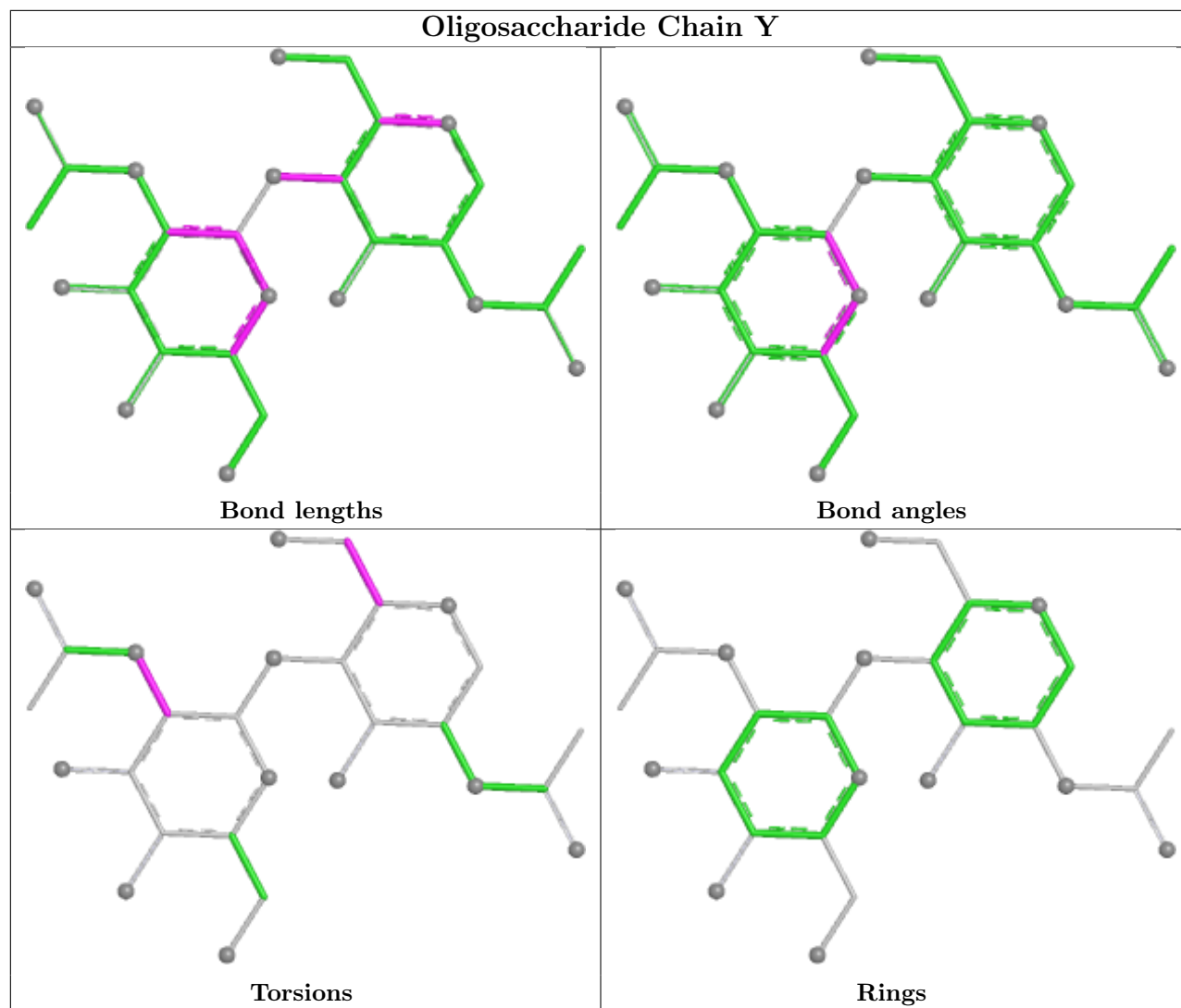


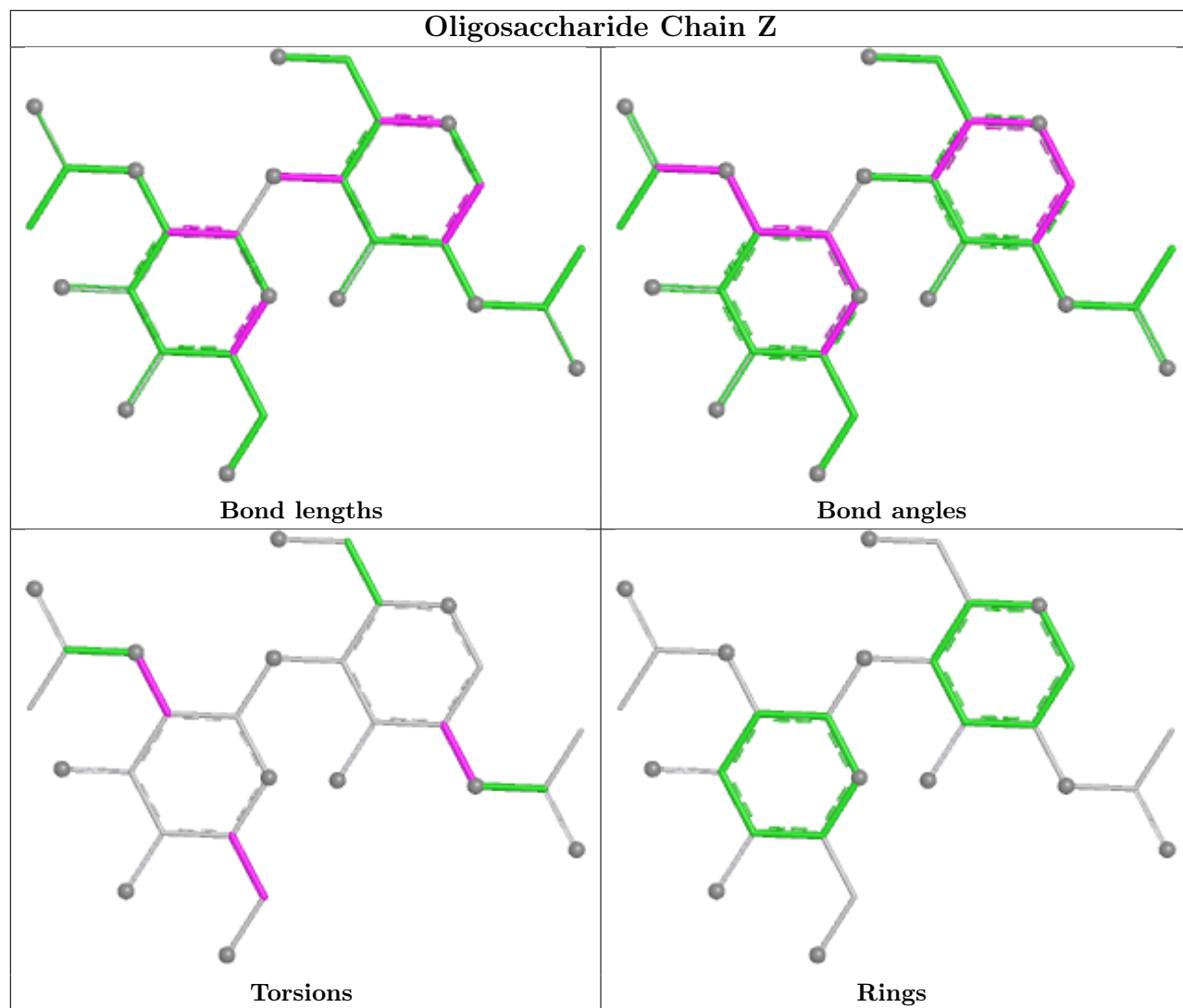


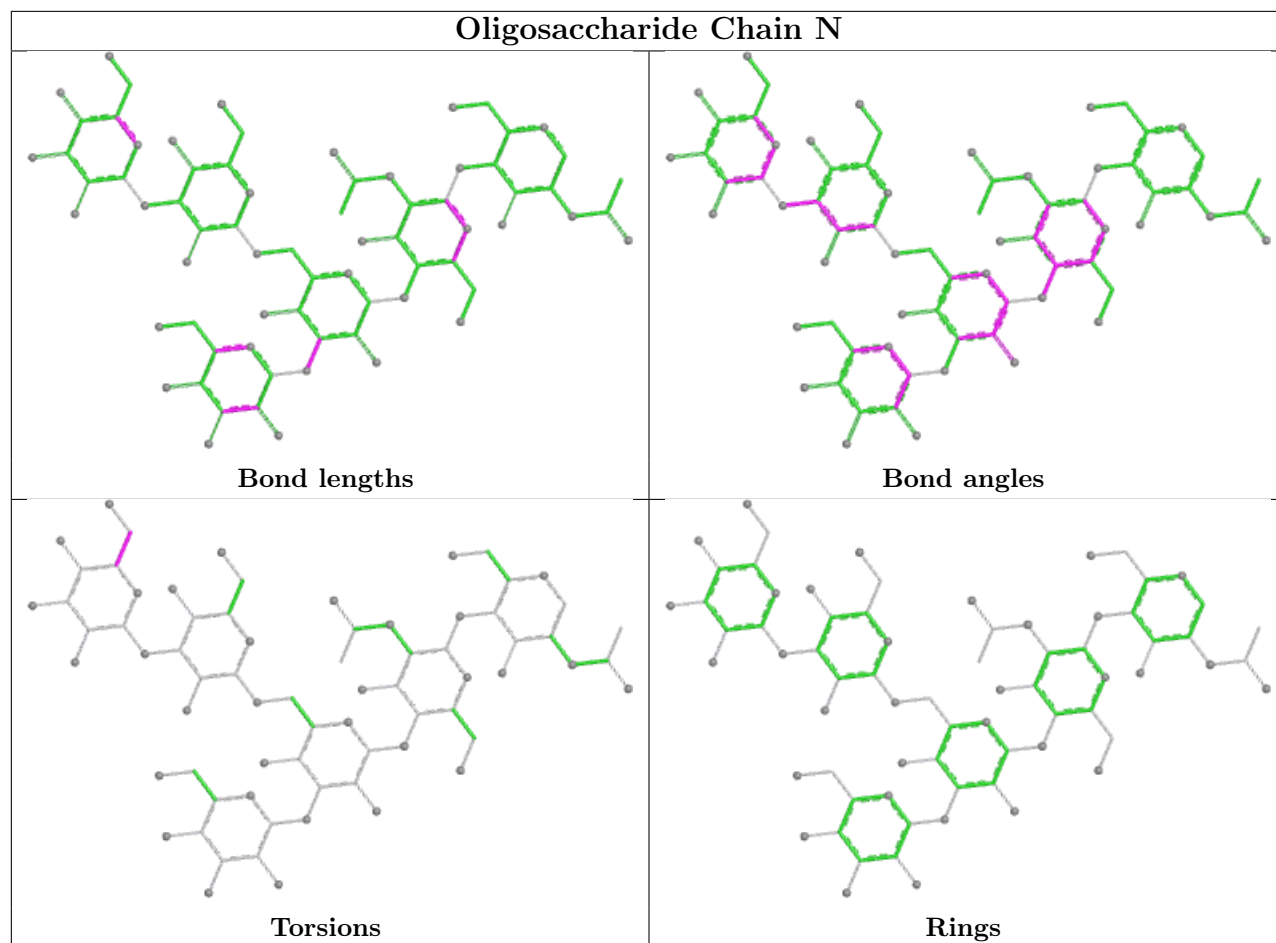


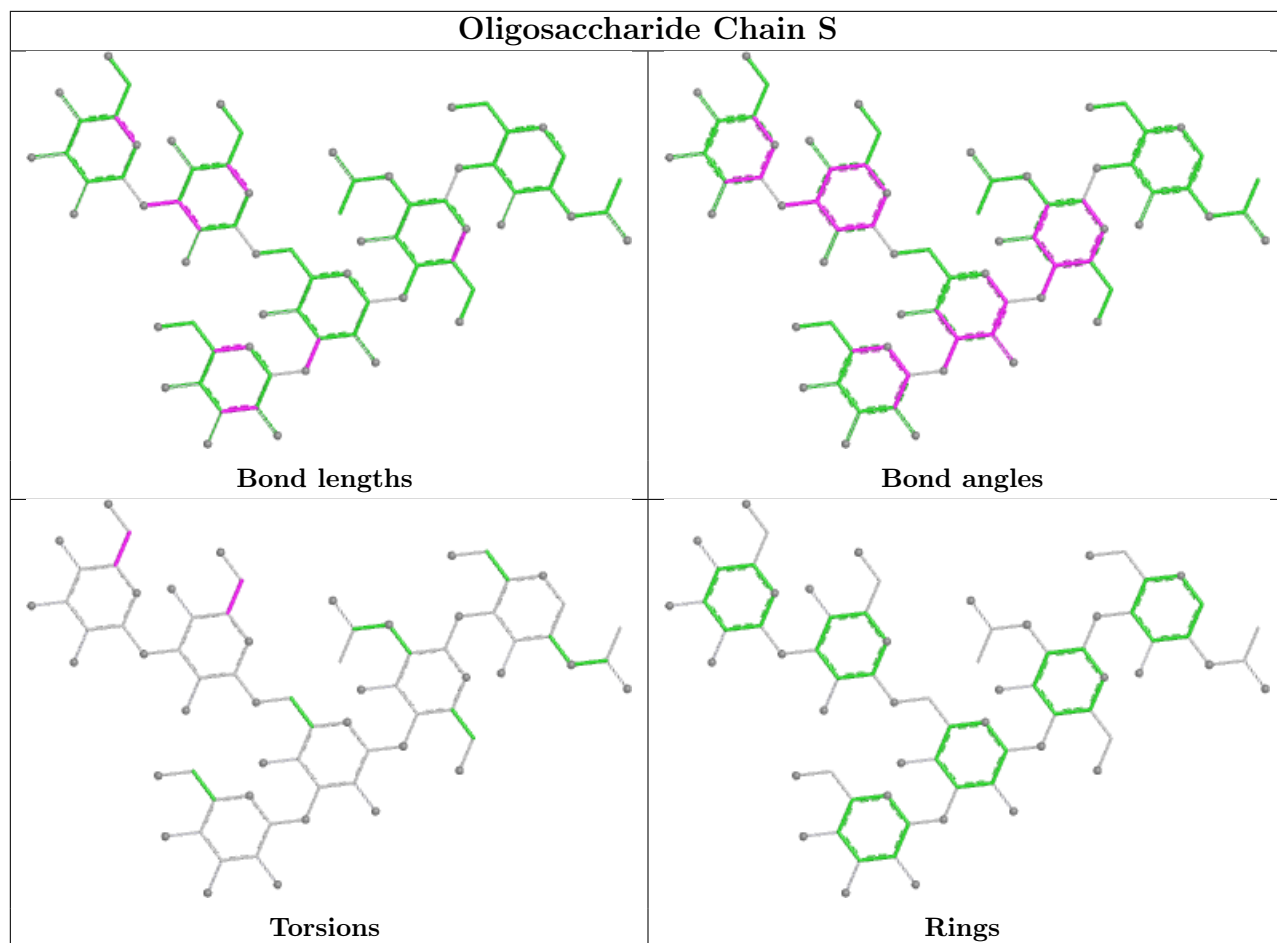


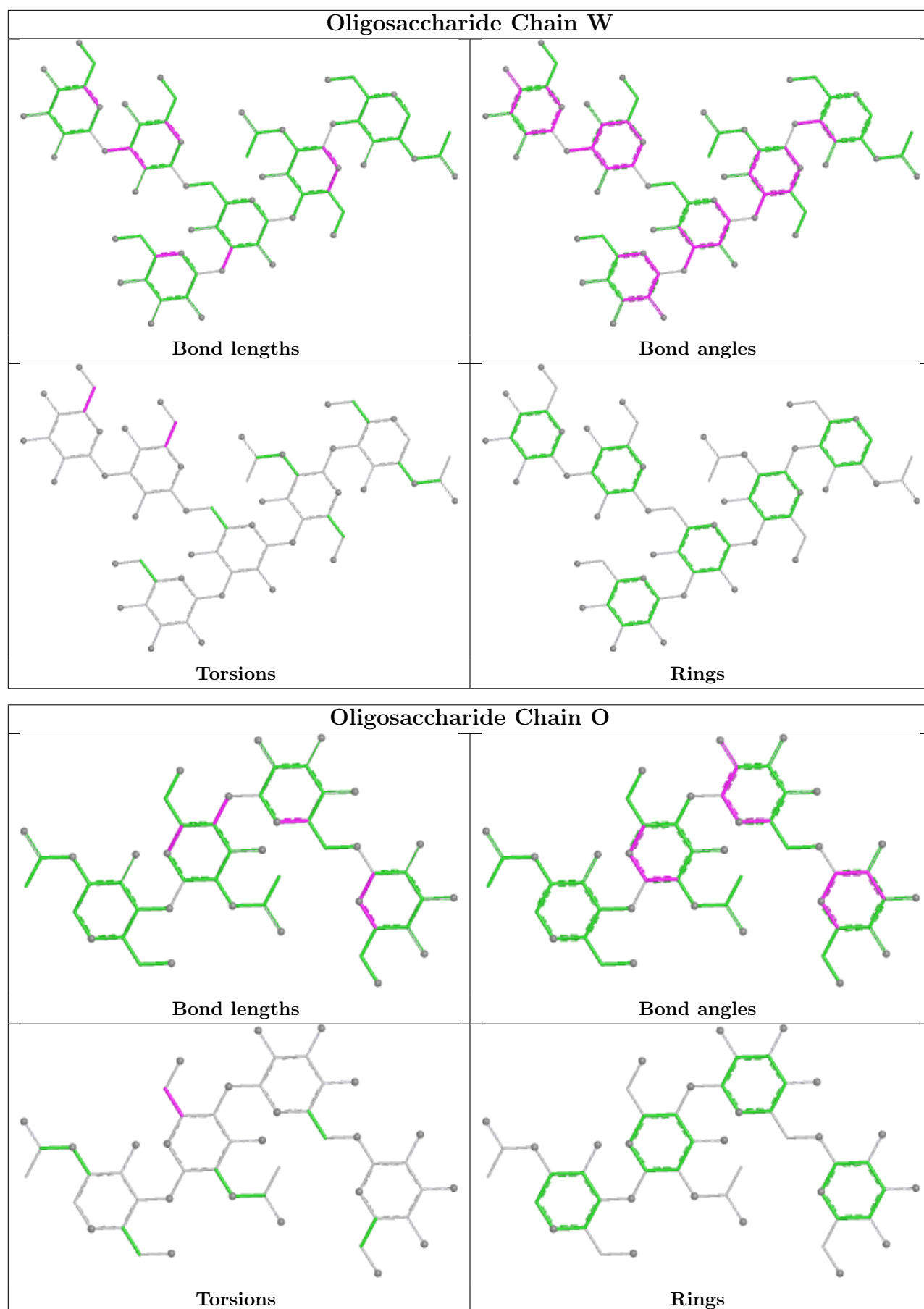


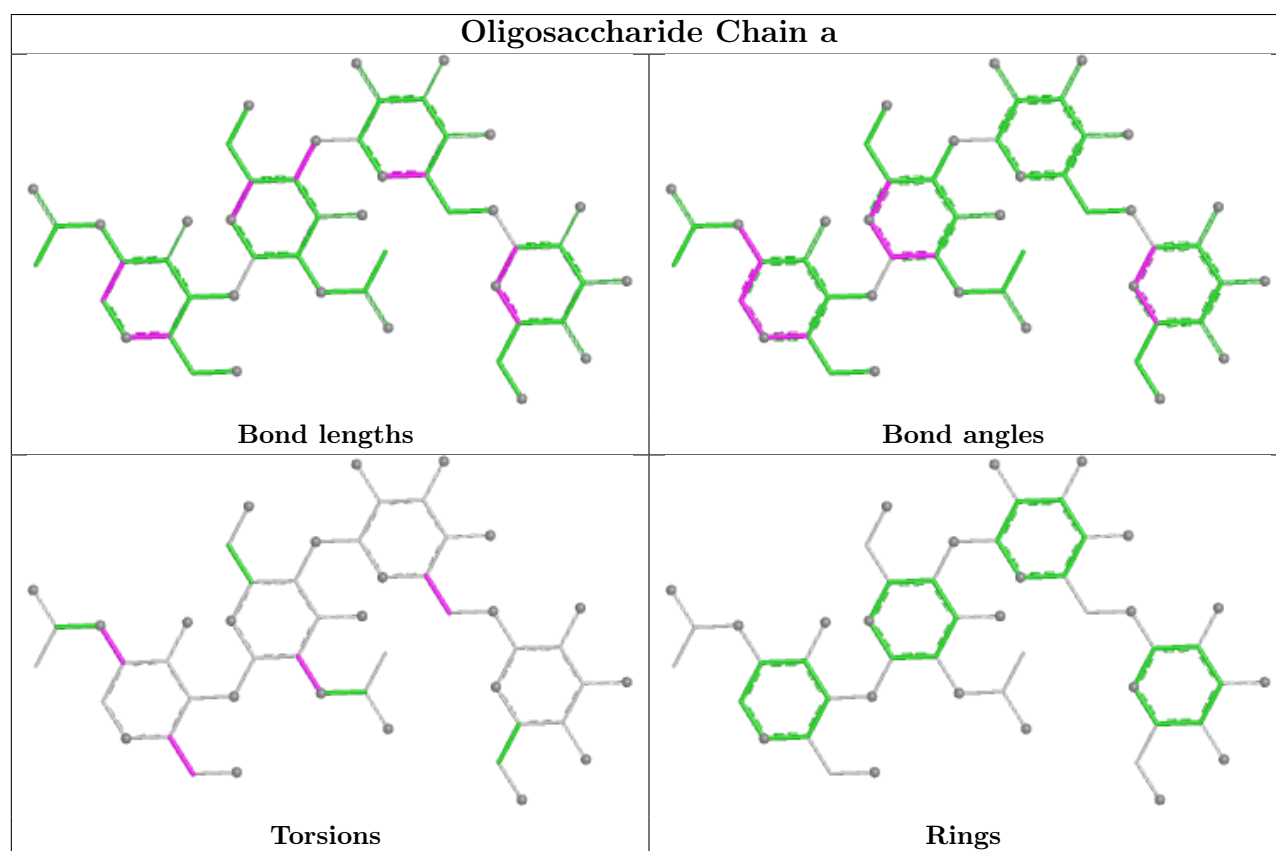
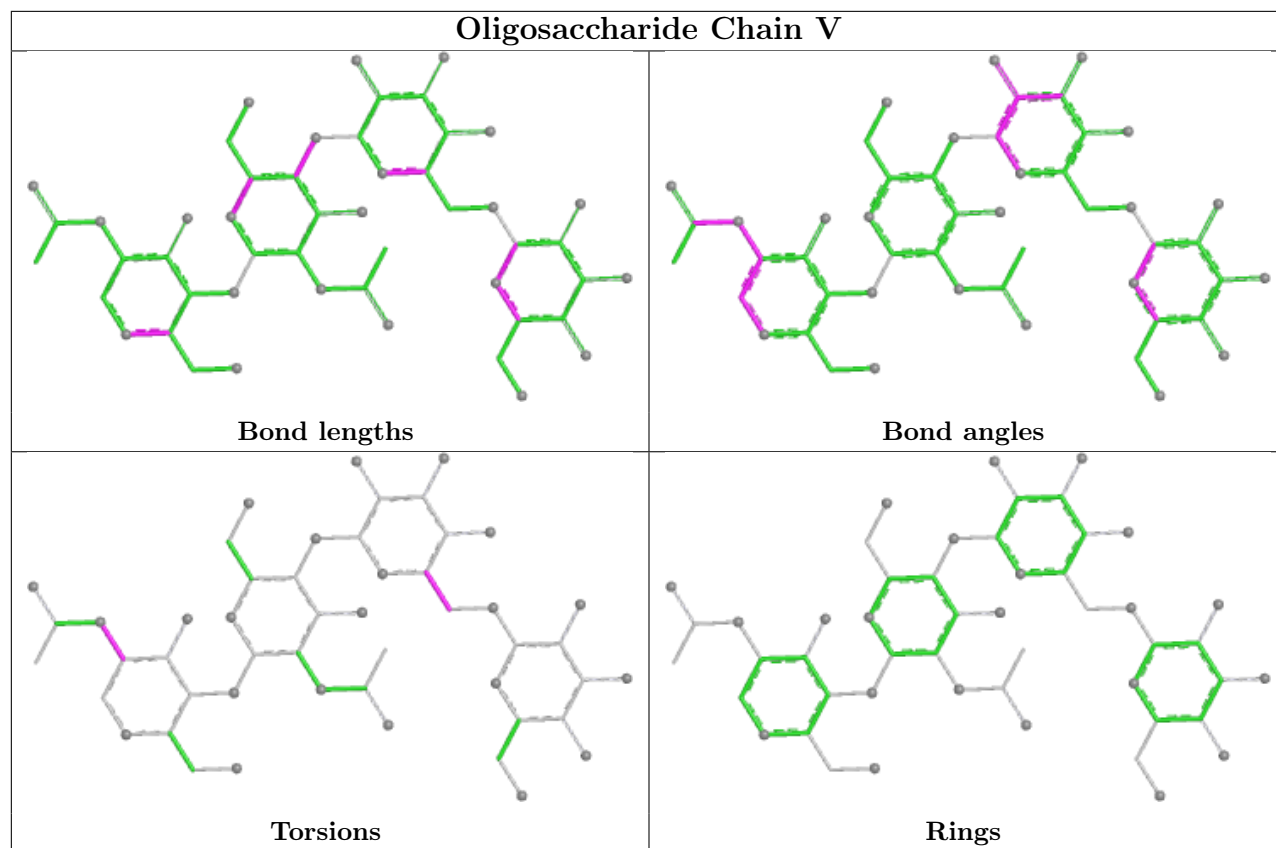


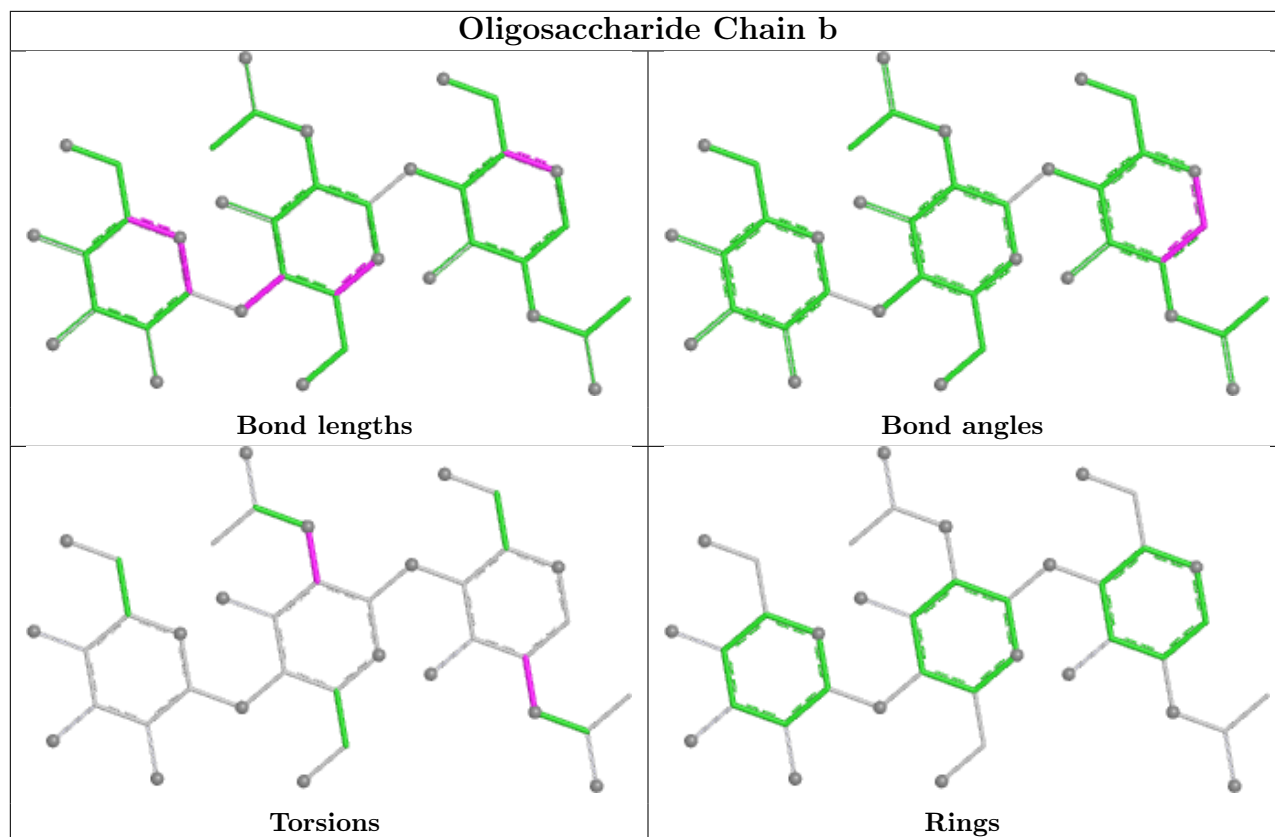












## 5.6 Ligand geometry [i](#)

18 ligands 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
9	NAG	A	604	1	14,14,15	1.22	2 (14%)	17,19,21	0.69	0
9	NAG	A	601	1	14,14,15	1.08	1 (7%)	17,19,21	0.72	0
9	NAG	E	605	1	14,14,15	1.10	1 (7%)	17,19,21	0.79	0
9	NAG	I	601	1	14,14,15	1.30	3 (21%)	17,19,21	0.89	1 (5%)
9	NAG	I	606	1	14,14,15	1.08	1 (7%)	17,19,21	0.90	1 (5%)
9	NAG	I	604	1	14,14,15	1.16	1 (7%)	17,19,21	0.55	0
9	NAG	A	602	1	14,14,15	1.17	2 (14%)	17,19,21	0.84	0
9	NAG	E	603	1	14,14,15	1.34	2 (14%)	17,19,21	0.77	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
9	NAG	I	602	1	14,14,15	1.03	1 (7%)	17,19,21	0.76	0
9	NAG	E	602	1	14,14,15	1.24	2 (14%)	17,19,21	1.17	1 (5%)
9	NAG	A	605	1	14,14,15	1.22	1 (7%)	17,19,21	0.85	1 (5%)
9	NAG	E	601	1	14,14,15	1.11	1 (7%)	17,19,21	0.75	1 (5%)
9	NAG	E	604	1	14,14,15	1.15	1 (7%)	17,19,21	0.69	0
9	NAG	A	603	1	14,14,15	1.17	1 (7%)	17,19,21	1.18	1 (5%)
9	NAG	A	606	1	14,14,15	1.19	2 (14%)	17,19,21	0.87	1 (5%)
9	NAG	E	606	1	14,14,15	1.16	2 (14%)	17,19,21	0.75	0
9	NAG	I	603	1	14,14,15	1.17	1 (7%)	17,19,21	0.78	1 (5%)
9	NAG	I	605	1	14,14,15	1.25	2 (14%)	17,19,21	1.42	1 (5%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	NAG	A	604	1	-	0/6/23/26	0/1/1/1
9	NAG	A	601	1	-	1/6/23/26	0/1/1/1
9	NAG	E	605	1	-	1/6/23/26	0/1/1/1
9	NAG	I	601	1	-	0/6/23/26	0/1/1/1
9	NAG	I	606	1	-	0/6/23/26	0/1/1/1
9	NAG	I	604	1	-	0/6/23/26	0/1/1/1
9	NAG	A	602	1	-	0/6/23/26	0/1/1/1
9	NAG	E	603	1	-	2/6/23/26	0/1/1/1
9	NAG	I	602	1	-	1/6/23/26	0/1/1/1
9	NAG	E	602	1	-	1/6/23/26	0/1/1/1
9	NAG	A	605	1	-	2/6/23/26	0/1/1/1
9	NAG	E	601	1	-	0/6/23/26	0/1/1/1
9	NAG	E	604	1	-	1/6/23/26	0/1/1/1
9	NAG	A	603	1	-	1/6/23/26	0/1/1/1
9	NAG	A	606	1	-	0/6/23/26	0/1/1/1
9	NAG	E	606	1	-	0/6/23/26	0/1/1/1
9	NAG	I	603	1	-	1/6/23/26	0/1/1/1
9	NAG	I	605	1	-	1/6/23/26	0/1/1/1

All (27) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	I	605	NAG	O5-C5	2.92	1.49	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	E	603	NAG	O5-C5	2.91	1.49	1.43
9	I	601	NAG	O5-C5	2.82	1.48	1.43
9	A	605	NAG	O5-C5	2.76	1.48	1.43
9	E	604	NAG	O5-C5	2.71	1.48	1.43
9	E	602	NAG	O5-C5	2.67	1.48	1.43
9	A	602	NAG	O5-C5	2.61	1.48	1.43
9	I	603	NAG	O5-C5	2.58	1.48	1.43
9	A	603	NAG	O5-C5	2.57	1.48	1.43
9	I	606	NAG	O5-C5	2.50	1.48	1.43
9	E	601	NAG	O5-C5	2.50	1.48	1.43
9	I	604	NAG	O5-C5	2.48	1.48	1.43
9	A	604	NAG	O5-C5	2.46	1.48	1.43
9	E	606	NAG	O5-C5	2.45	1.48	1.43
9	A	606	NAG	O5-C5	2.30	1.47	1.43
9	E	603	NAG	C1-C2	2.27	1.55	1.52
9	A	604	NAG	C1-C2	2.23	1.55	1.52
9	A	602	NAG	C1-C2	2.22	1.55	1.52
9	A	606	NAG	C1-C2	2.19	1.55	1.52
9	E	605	NAG	O5-C5	2.19	1.47	1.43
9	I	601	NAG	C1-C2	2.18	1.55	1.52
9	A	601	NAG	O5-C5	2.15	1.47	1.43
9	I	601	NAG	O5-C1	2.13	1.47	1.43
9	E	602	NAG	C1-C2	2.07	1.55	1.52
9	E	606	NAG	C1-C2	2.05	1.55	1.52
9	I	605	NAG	O5-C1	2.01	1.47	1.43
9	I	602	NAG	O5-C5	2.00	1.47	1.43

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	I	605	NAG	C1-O5-C5	4.73	118.52	112.19
9	E	602	NAG	C1-O5-C5	3.97	117.50	112.19
9	A	603	NAG	C1-O5-C5	3.67	117.10	112.19
9	A	605	NAG	C1-O5-C5	2.73	115.85	112.19
9	I	601	NAG	C1-O5-C5	2.70	115.81	112.19
9	A	606	NAG	C1-O5-C5	2.69	115.79	112.19
9	E	603	NAG	C1-O5-C5	2.27	115.23	112.19
9	I	603	NAG	C1-O5-C5	2.24	115.19	112.19
9	I	606	NAG	C1-O5-C5	2.22	115.16	112.19
9	E	601	NAG	C1-O5-C5	2.15	115.07	112.19

There are no chirality outliers.

All (12) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	E	604	NAG	O5-C5-C6-O6
9	A	605	NAG	O5-C5-C6-O6
9	I	605	NAG	O5-C5-C6-O6
9	A	603	NAG	O5-C5-C6-O6
9	E	605	NAG	O5-C5-C6-O6
9	I	603	NAG	O5-C5-C6-O6
9	A	601	NAG	O5-C5-C6-O6
9	E	602	NAG	O5-C5-C6-O6
9	I	602	NAG	O5-C5-C6-O6
9	E	603	NAG	C4-C5-C6-O6
9	E	603	NAG	O5-C5-C6-O6
9	A	605	NAG	C1-C2-N2-C7

There are no ring outliers.

No monomer is involved in short contacts.

## 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.

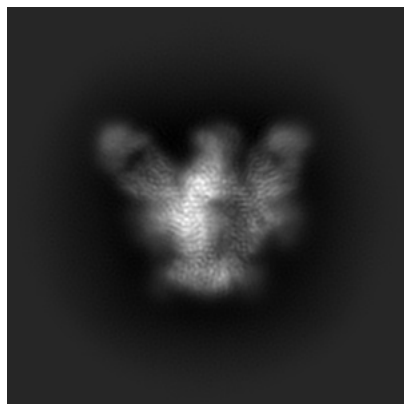
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-27624. These allow visual inspection of the internal detail of the map and identification of artifacts.

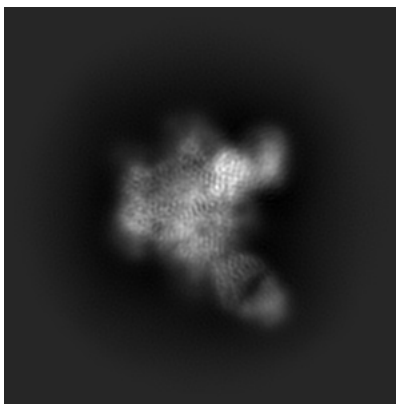
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

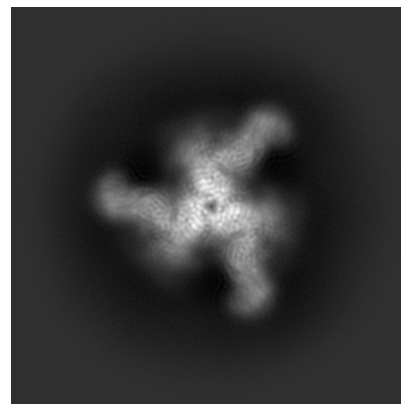
#### 6.1.1 Primary map



X

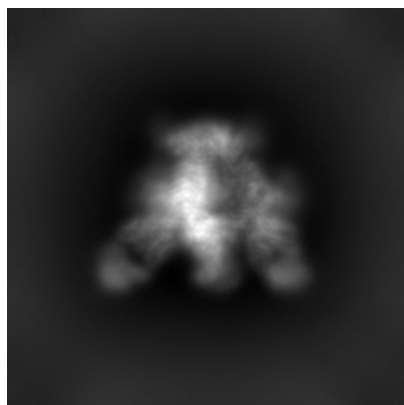


Y

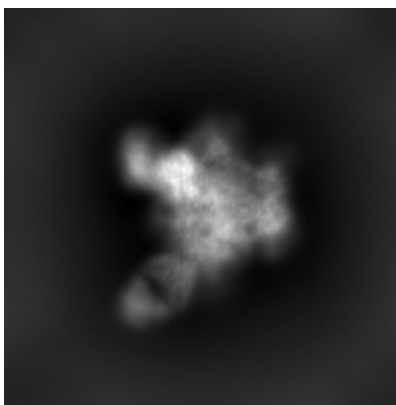


Z

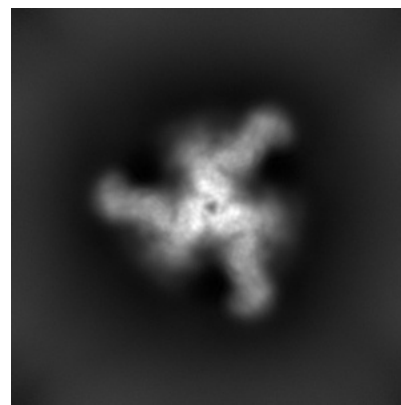
#### 6.1.2 Raw map



X



Y

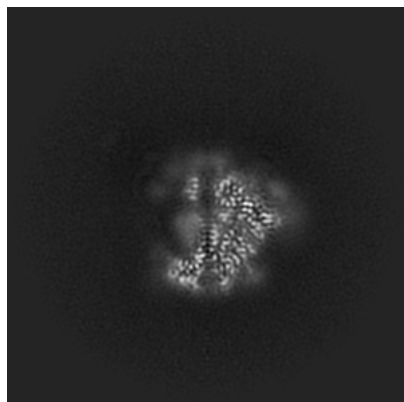


Z

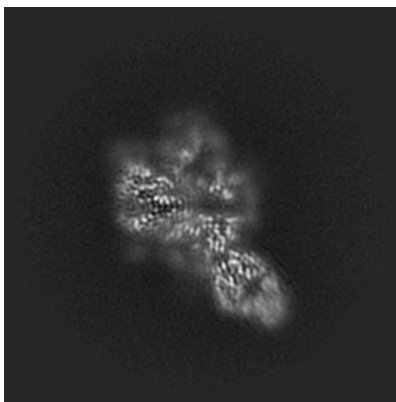
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

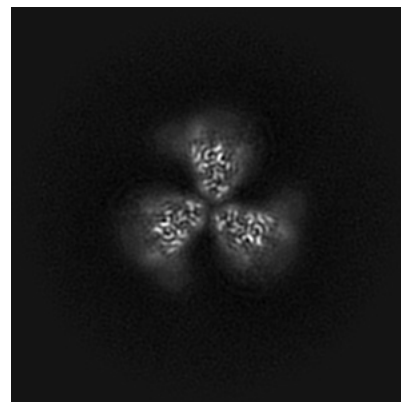
### 6.2.1 Primary map



X Index: 160

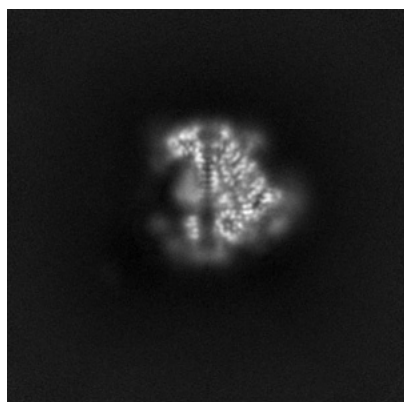


Y Index: 160

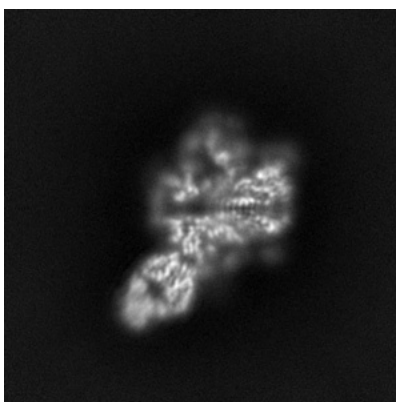


Z Index: 160

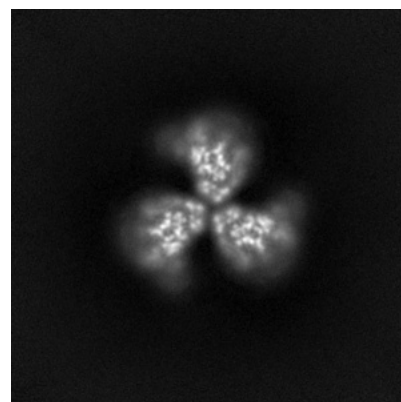
### 6.2.2 Raw map



X Index: 160



Y Index: 160

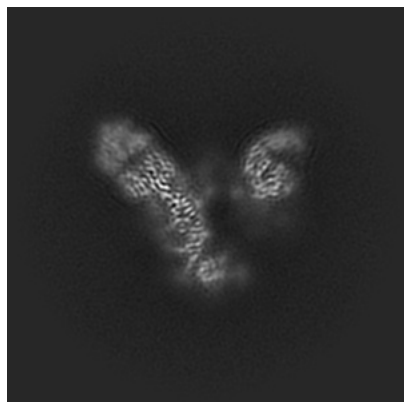


Z Index: 160

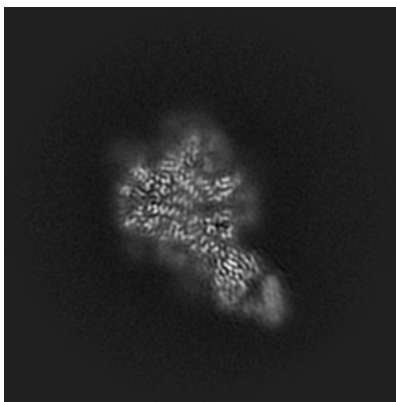
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

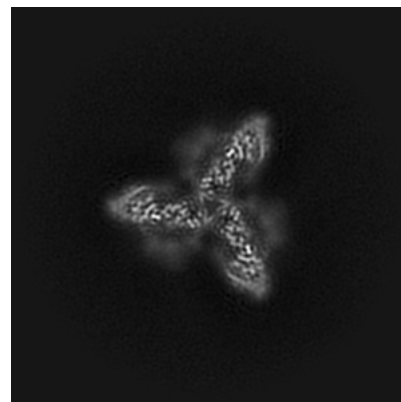
### 6.3.1 Primary map



X Index: 189

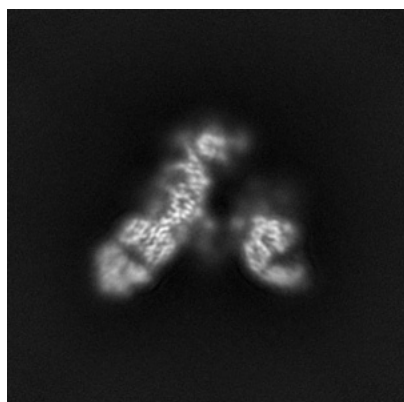


Y Index: 155

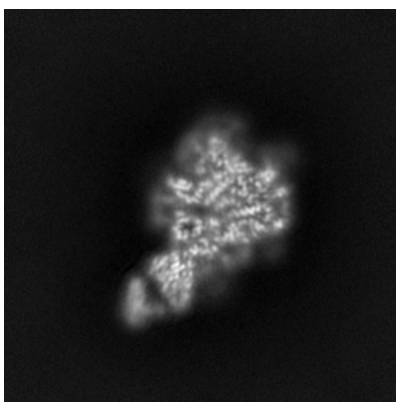


Z Index: 175

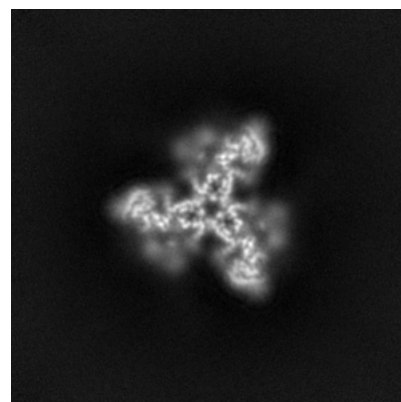
### 6.3.2 Raw map



X Index: 189



Y Index: 154

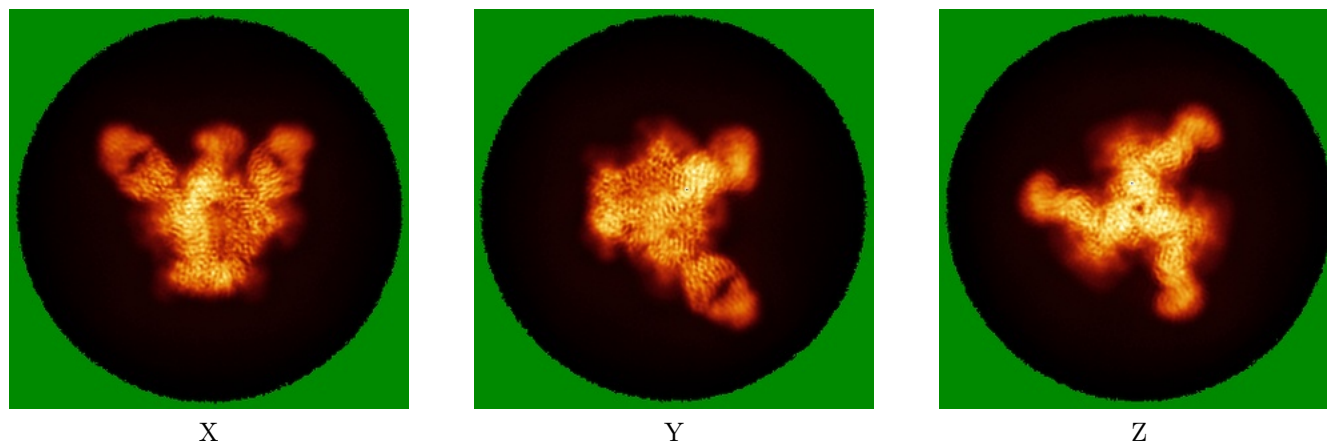


Z Index: 148

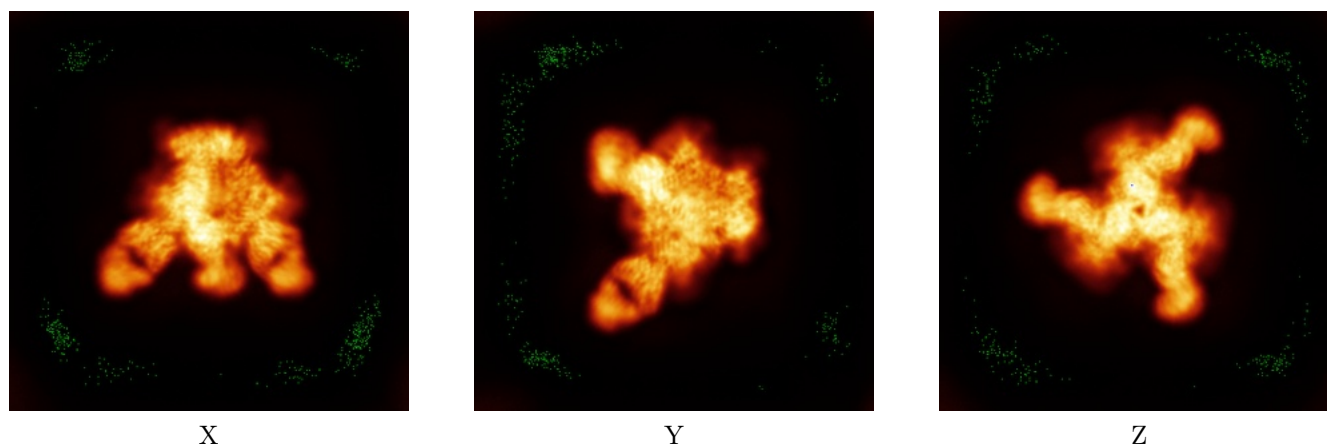
The images above show the largest variance slices of the map in three orthogonal directions.

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

### 6.4.1 Primary map



### 6.4.2 Raw map



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.

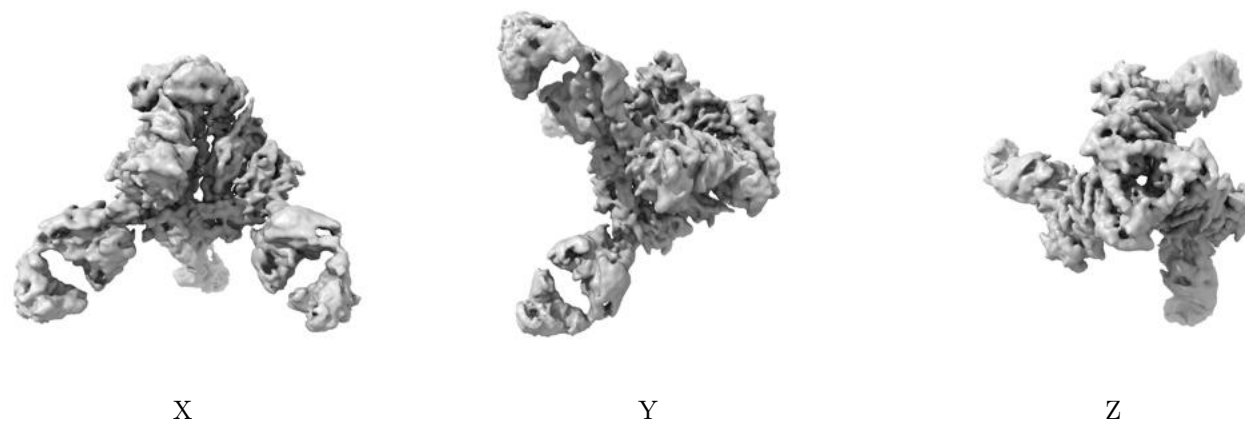
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.9. 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.

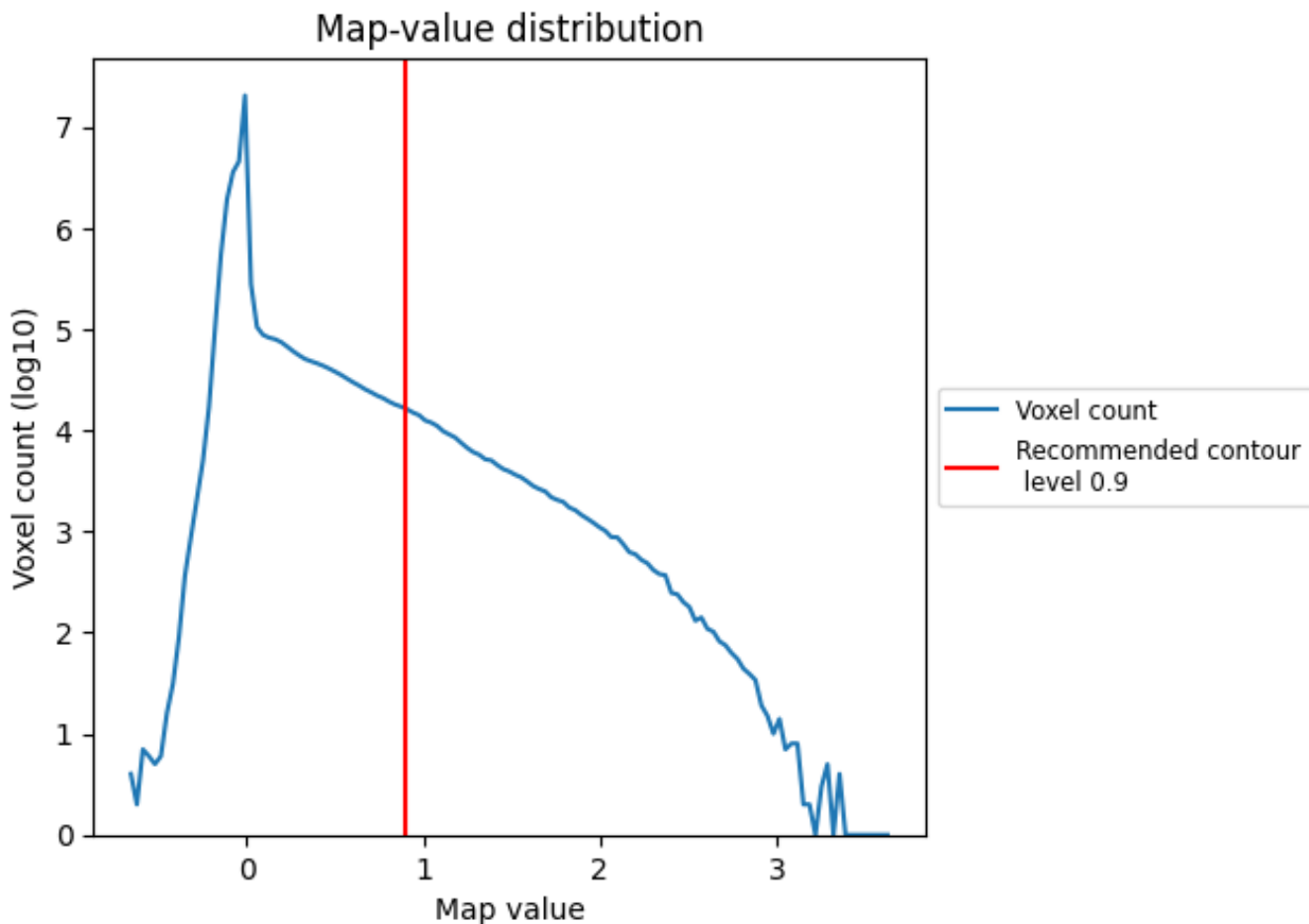
## 6.6 Mask visualisation [i](#)

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.

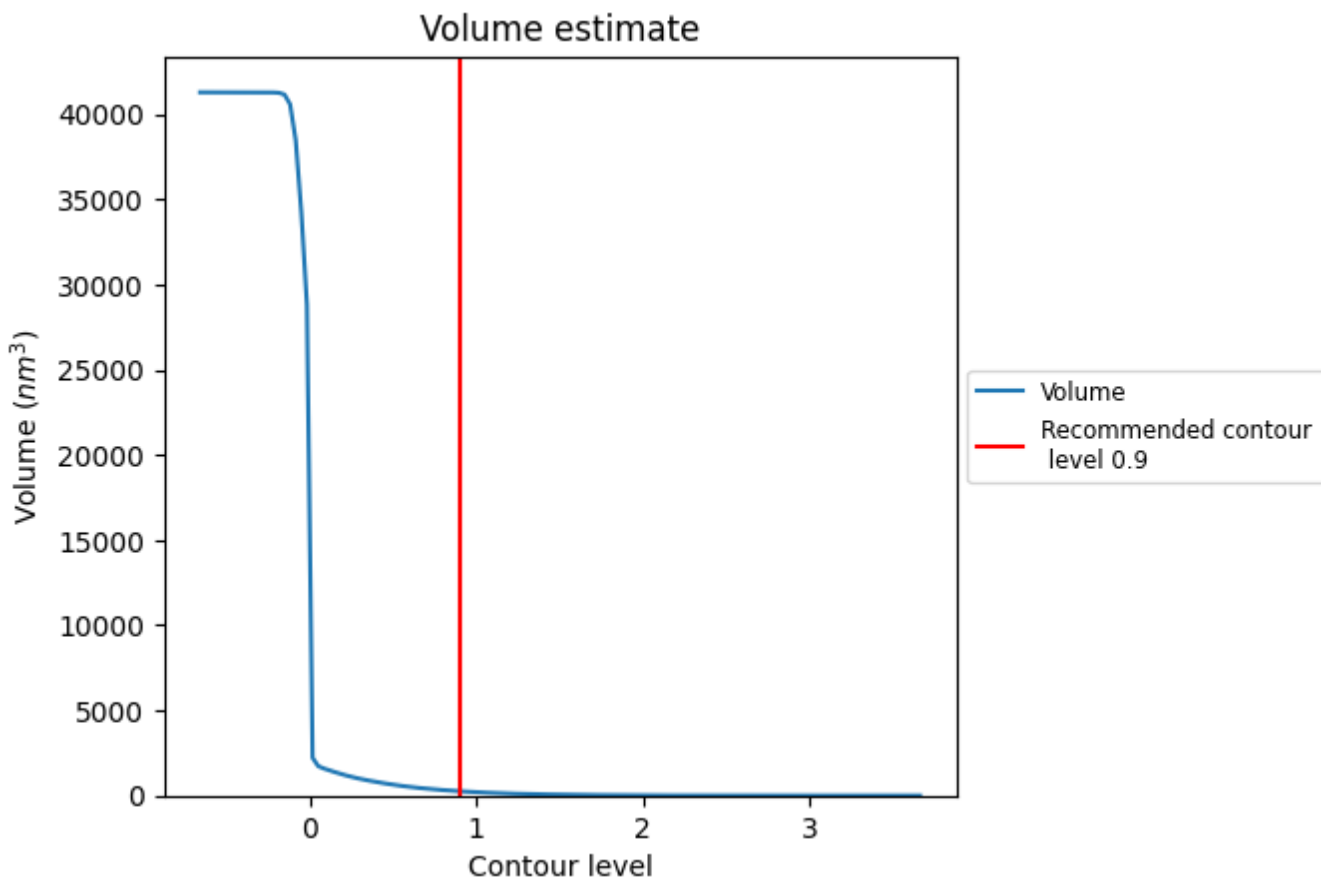
### 7.1 Map-value distribution [i](#)



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.



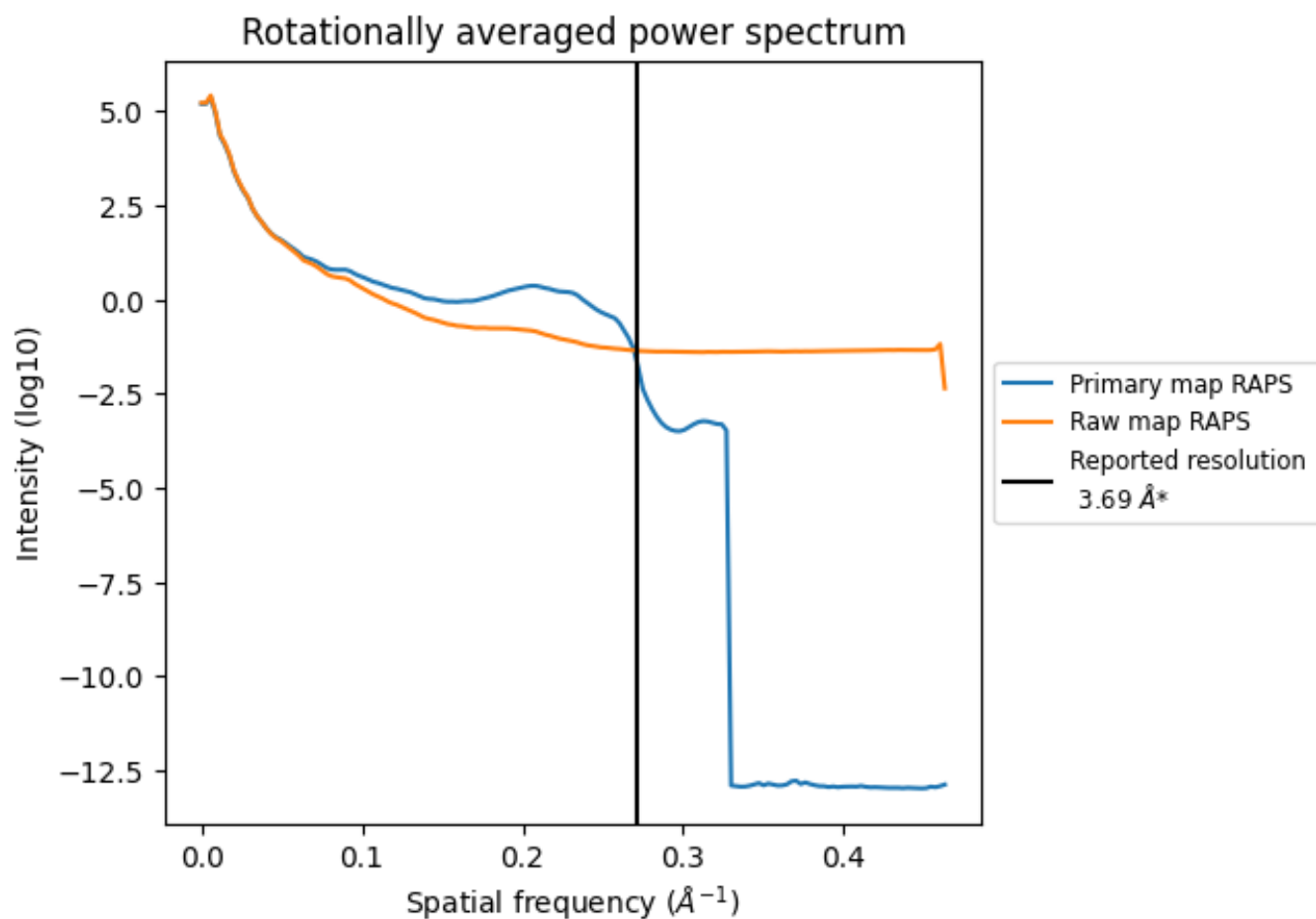
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 255  $\text{nm}^3$ ; this corresponds to an approximate mass of 231 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 [i](#)

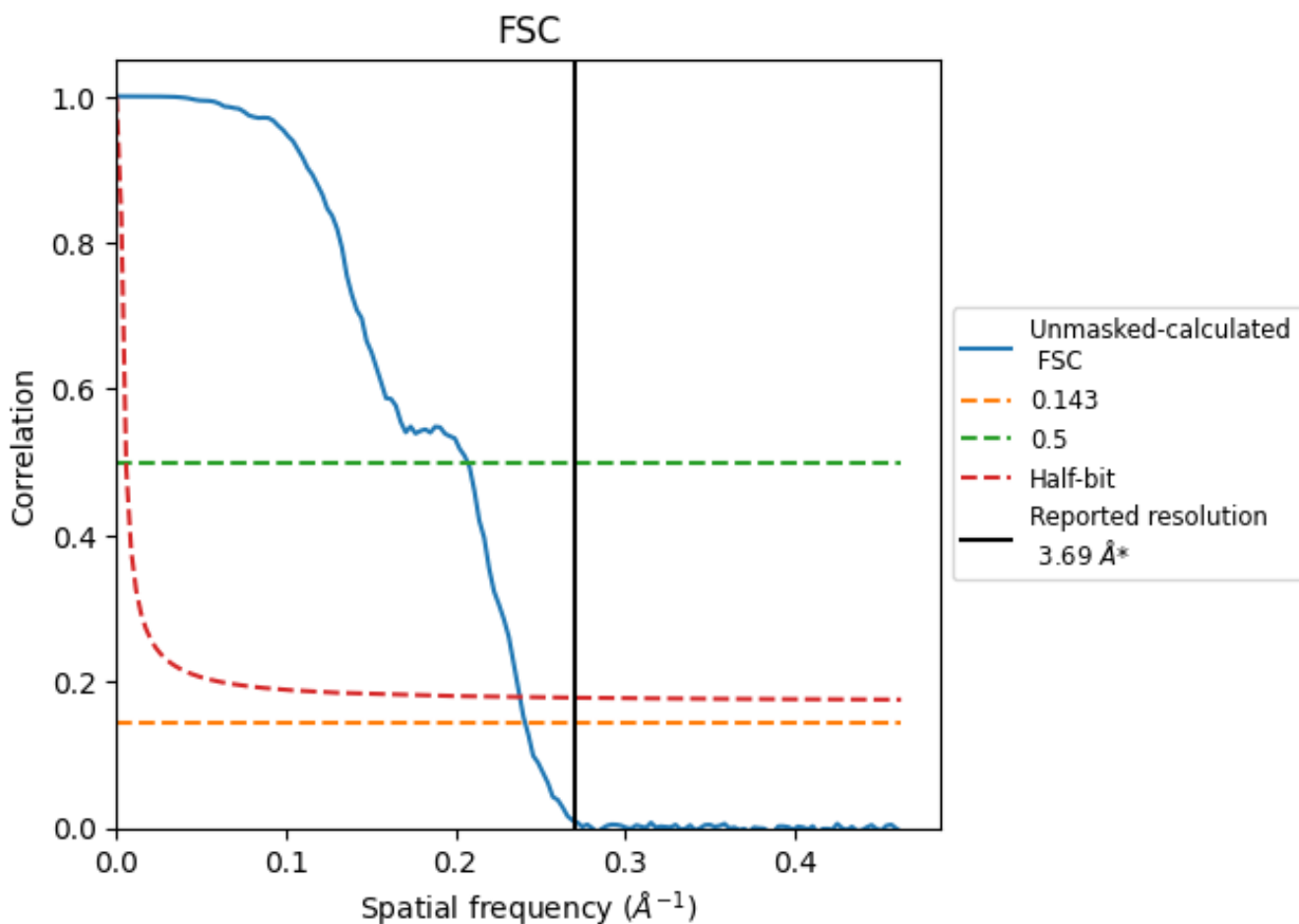


\*Reported resolution corresponds to spatial frequency of 0.271 Å<sup>-1</sup>

## 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 0.271 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

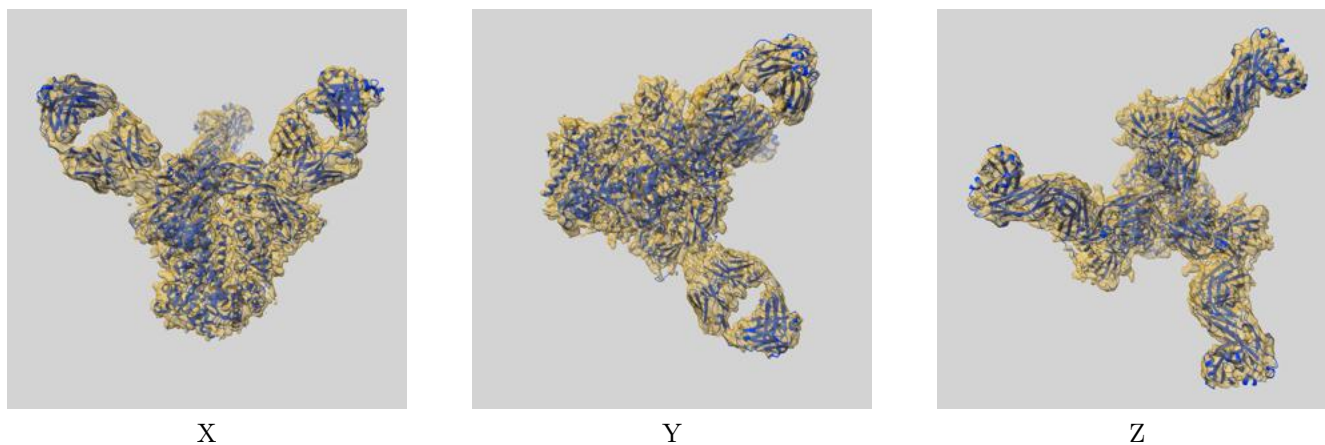
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.69	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.15	4.83	4.20

\*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 4.15 differs from the reported value 3.69 by more than 10 %

## 9 Map-model fit [i](#)

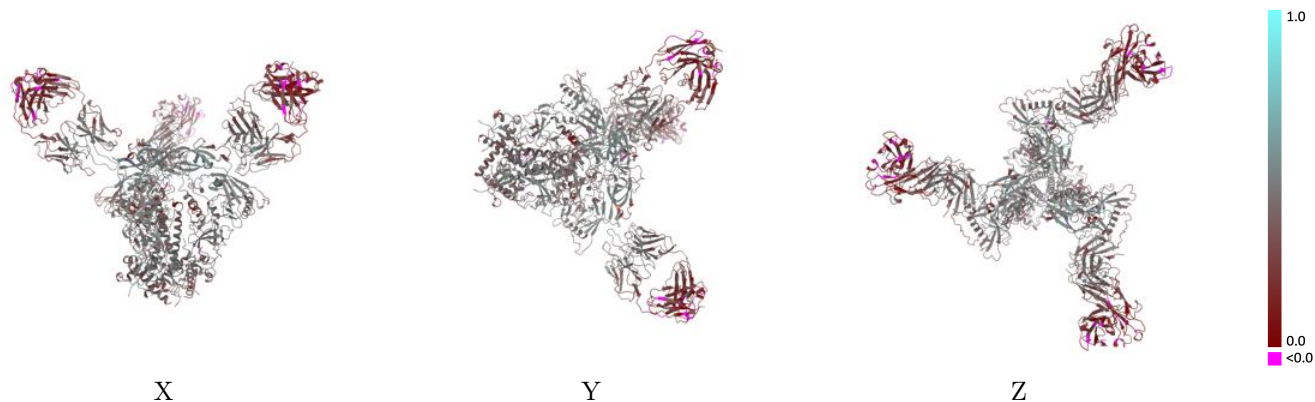
This section contains information regarding the fit between EMDB map EMD-27624 and PDB model 8DOW. Per-residue inclusion information can be found in section 3 on page 10.

### 9.1 Map-model overlay [i](#)



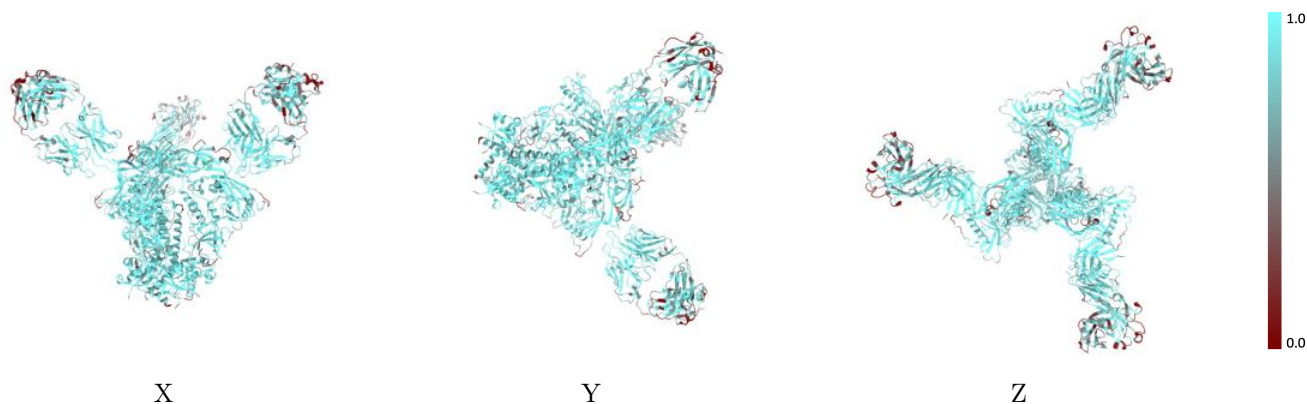
The images above show the 3D surface view of the map at the recommended contour level 0.9 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



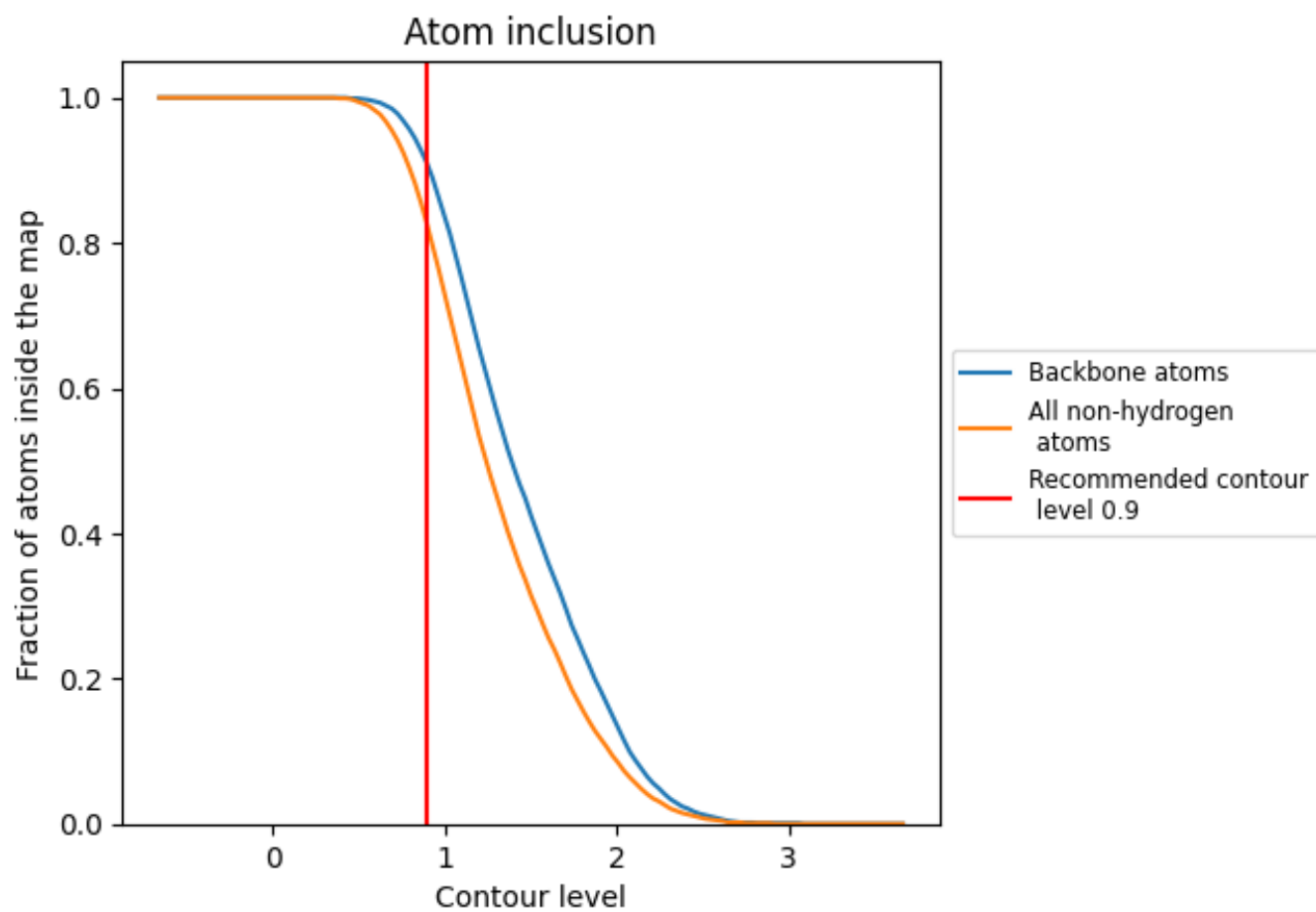
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.9).



























































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 91% of all backbone atoms, 82% 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 (0.9) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8250	 0.3870
A	 0.8740	 0.4400
B	 0.8510	 0.4110
C	 0.7920	 0.3450
D	 0.7460	 0.2930
E	 0.8690	 0.4400
F	 0.8580	 0.4120
G	 0.7910	 0.3450
H	 0.7490	 0.2930
I	 0.8690	 0.4420
J	 0.8550	 0.4090
K	 0.7920	 0.3440
L	 0.7450	 0.2910
M	 0.5000	 0.4330
N	 0.9580	 0.4190
O	 0.8200	 0.4790
P	 0.5710	 0.3810
Q	 0.6430	 0.4820
R	 0.5710	 0.4190
S	 0.9310	 0.4170
T	 0.5710	 0.4240
U	 0.6790	 0.4760
V	 0.8400	 0.4830
W	 0.9580	 0.4260
X	 0.5710	 0.4260
Y	 0.6790	 0.4500
Z	 0.6070	 0.3600
a	 0.8200	 0.4520
b	 0.4620	 0.4660

