wwPDB EM Validation Summary Report (i)

Oct 22, 2024 – 03:35 AM EDT

PDB ID	:	3GZT
EMDB ID	:	EMD-1571
Title	:	VP7 recoated rotavirus DLP
Authors	:	Chen, J.Z.; Settembre, E.C.; Harrison, S.C.; Grigorieff, N.
Deposited on	:	2009-04-07
Resolution	:	3.80 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the (i) 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 (i)) were used in the production of this report:

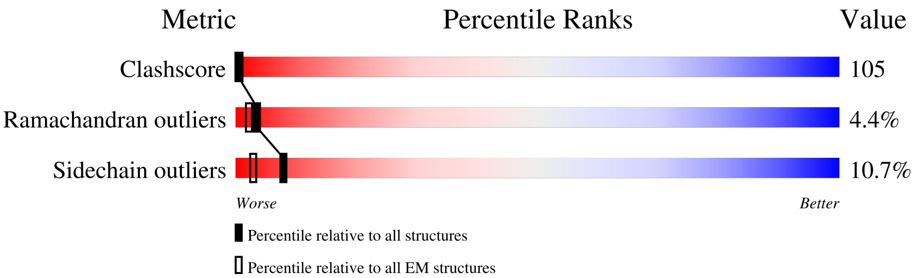
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
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 3.80 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 >=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 <=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	B	255	• 35% 48% 14% •
1	F	255	• 32% 50% 14% •
1	G	255	• 31% 50% 14% •
1	H	255	• 32% 50% 14% •
1	I	255	• 33% 50% 13% •
1	J	255	• 32% 51% 12% 5%
1	K	255	• 33% 51% 13% •
1	L	255	• 32% 51% 12% •

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Mol	Chain	Length	Quality of chain
1	M	255	• 32% 50% 14% •
1	N	255	• 31% 52% 13% •
1	O	255	• 33% 49% 14% •
1	P	255	• 32% 51% 13% •
1	Q	255	• 33% 50% 14% •
2	A	2	100% 50% 50%
2	C	2	50% 50% 50%
2	D	2	50% 50% 50%
2	E	2	50% 50% 50%
2	R	2	100% 50% 50%
2	S	2	100% 50% 50%
2	T	2	100% 50% 50%
2	U	2	50% 50% 50%
2	V	2	50% 50% 50%
2	W	2	50% 50% 50%
2	X	2	100% 50% 50%
2	Y	2	50% 50% 50%
2	Z	2	100% 50% 50%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 26537 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 Outer capsid glycoprotein VP7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	B	255	2011	1277	314	404	16	0	0
1	F	255	2011	1277	314	404	16	0	0
1	G	255	2011	1277	314	404	16	0	0
1	H	255	2011	1277	314	404	16	0	0
1	I	255	2011	1277	314	404	16	0	0
1	J	255	2011	1277	314	404	16	0	0
1	K	255	2011	1277	314	404	16	0	0
1	L	255	2011	1277	314	404	16	0	0
1	M	255	2011	1277	314	404	16	0	0
1	N	255	2011	1277	314	404	16	0	0
1	O	255	2011	1277	314	404	16	0	0
1	P	255	2011	1277	314	404	16	0	0
1	Q	255	2011	1277	314	404	16	0	0

There are 13 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	171	THR	ALA	variant	UNP P12476
F	171	THR	ALA	variant	UNP P12476
G	171	THR	ALA	variant	UNP P12476
H	171	THR	ALA	variant	UNP P12476

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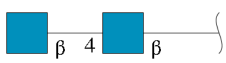
Chain	Residue	Modelled	Actual	Comment	Reference
I	171	THR	ALA	variant	UNP P12476
J	171	THR	ALA	variant	UNP P12476
K	171	THR	ALA	variant	UNP P12476
L	171	THR	ALA	variant	UNP P12476
M	171	THR	ALA	variant	UNP P12476
N	171	THR	ALA	variant	UNP P12476
O	171	THR	ALA	variant	UNP P12476
P	171	THR	ALA	variant	UNP P12476
Q	171	THR	ALA	variant	UNP P12476

- Molecule 2 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
2	A	2	Total C N O 28 16 2 10	0	0
2	C	2	Total C N O 28 16 2 10	0	0
2	D	2	Total C N O 28 16 2 10	0	0
2	E	2	Total C N O 28 16 2 10	0	0
2	R	2	Total C N O 28 16 2 10	0	0
2	S	2	Total C N O 28 16 2 10	0	0
2	T	2	Total C N O 28 16 2 10	0	0
2	U	2	Total C N O 28 16 2 10	0	0
2	V	2	Total C N O 28 16 2 10	0	0
2	W	2	Total C N O 28 16 2 10	0	0
2	X	2	Total C N O 28 16 2 10	0	0
2	Y	2	Total C N O 28 16 2 10	0	0

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

- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

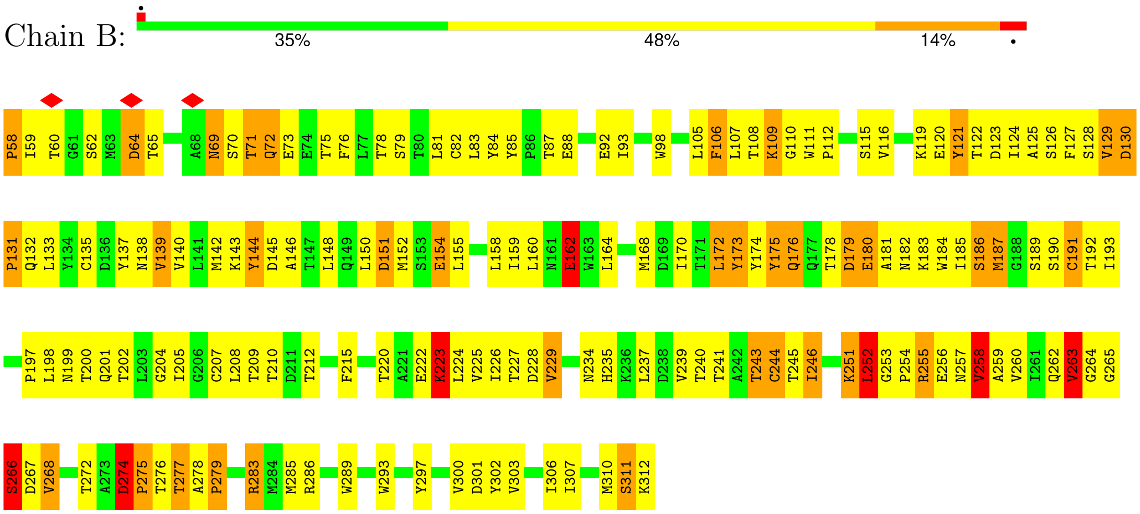
Mol	Chain	Residues	Atoms	AltConf
3	B	4	Total Ca 4 4	0
3	F	2	Total Ca 2 2	0
3	G	2	Total Ca 2 2	0
3	H	2	Total Ca 2 2	0
3	I	2	Total Ca 2 2	0
3	J	2	Total Ca 2 2	0
3	K	2	Total Ca 2 2	0
3	L	2	Total Ca 2 2	0
3	M	2	Total Ca 2 2	0
3	N	2	Total Ca 2 2	0
3	O	2	Total Ca 2 2	0
3	P	2	Total Ca 2 2	0
3	Q	3	Total Ca 3 3	0
3	X	1	Total Ca 1 1	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and 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.

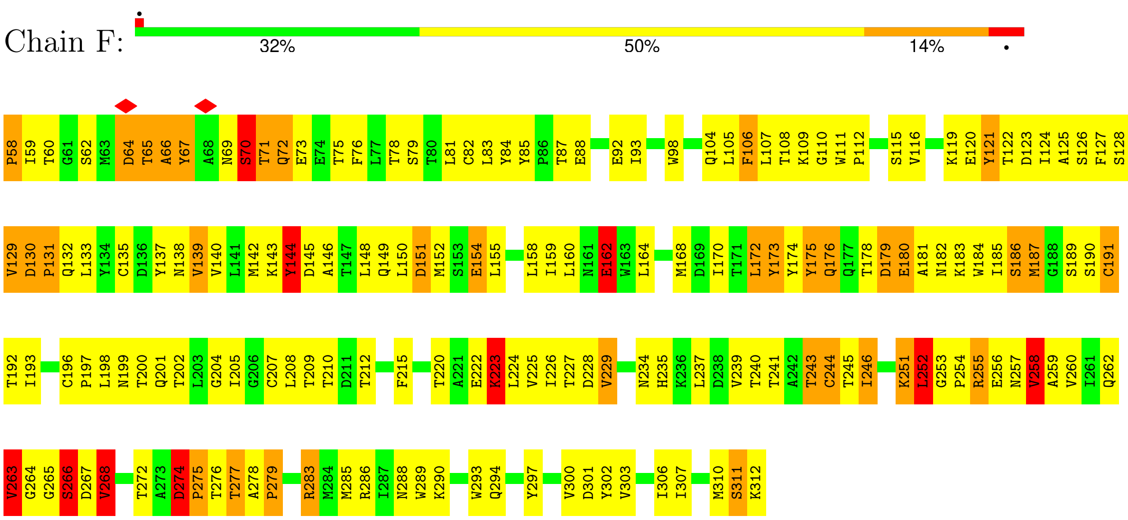
- Molecule 1: Outer capsid glycoprotein VP7

Chain B:



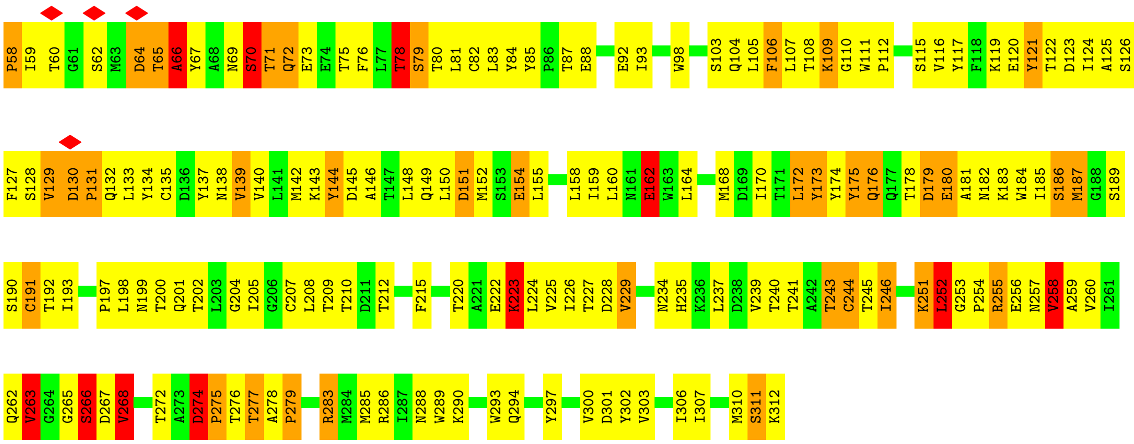
- Molecule 1: Outer capsid glycoprotein VP7

Chain F:



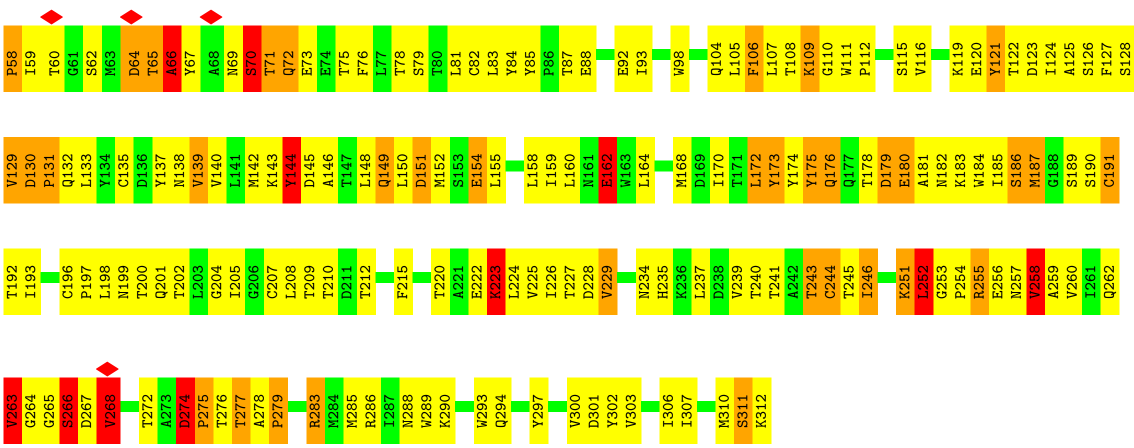
- Molecule 1: Outer capsid glycoprotein VP7

Chain G:



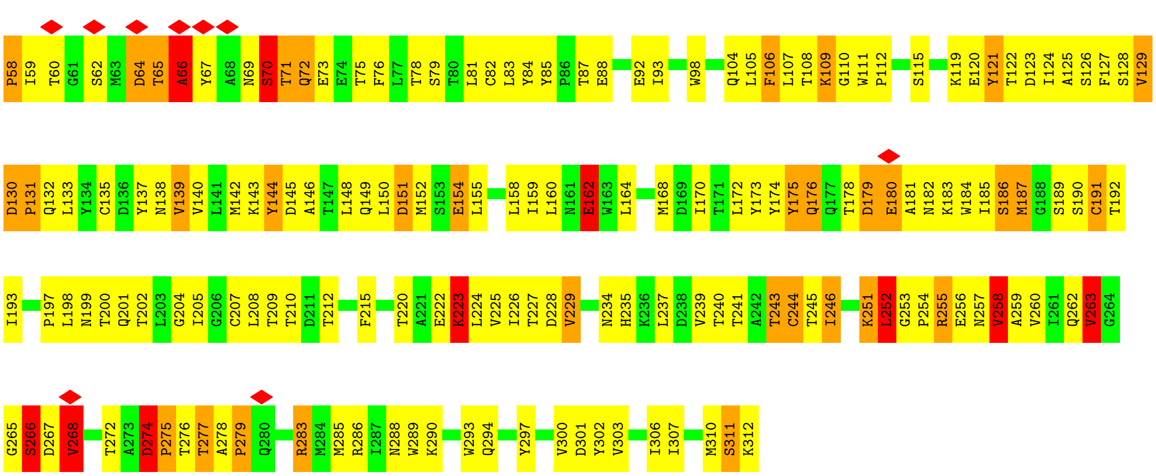
- Molecule 1: Outer capsid glycoprotein VP7

Chain H:



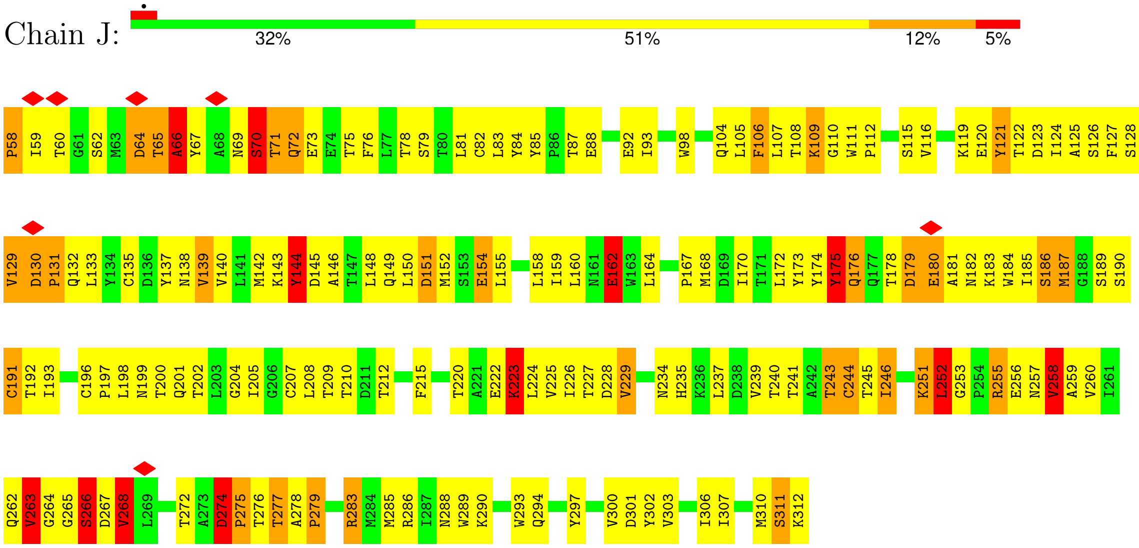
- Molecule 1: Outer capsid glycoprotein VP7

Chain I:



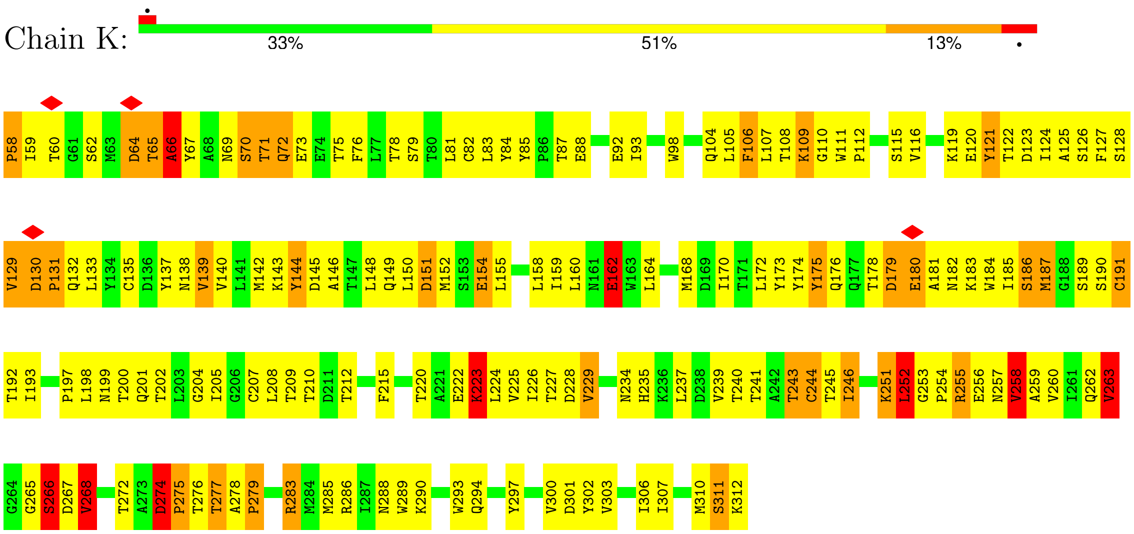
- Molecule 1: Outer capsid glycoprotein VP7

Chain J:



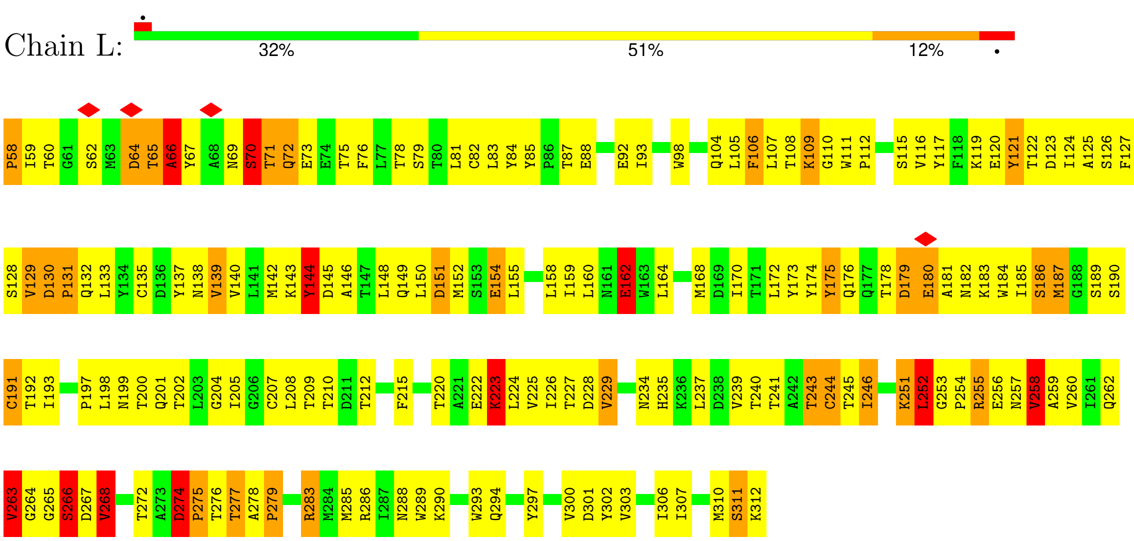
• Molecule 1: Outer capsid glycoprotein VP7

Chain K:



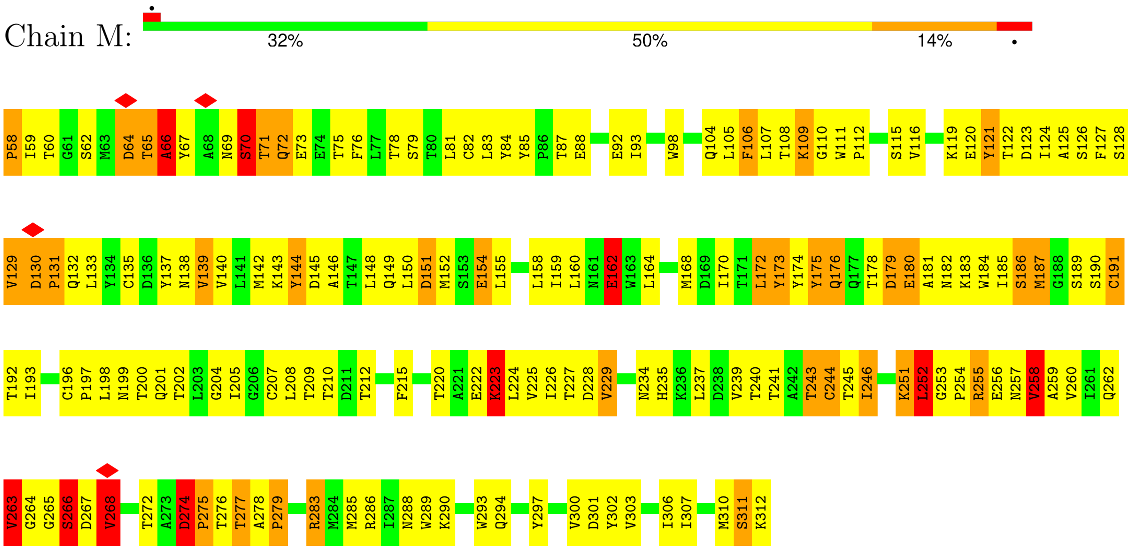
• Molecule 1: Outer capsid glycoprotein VP7

Chain L:



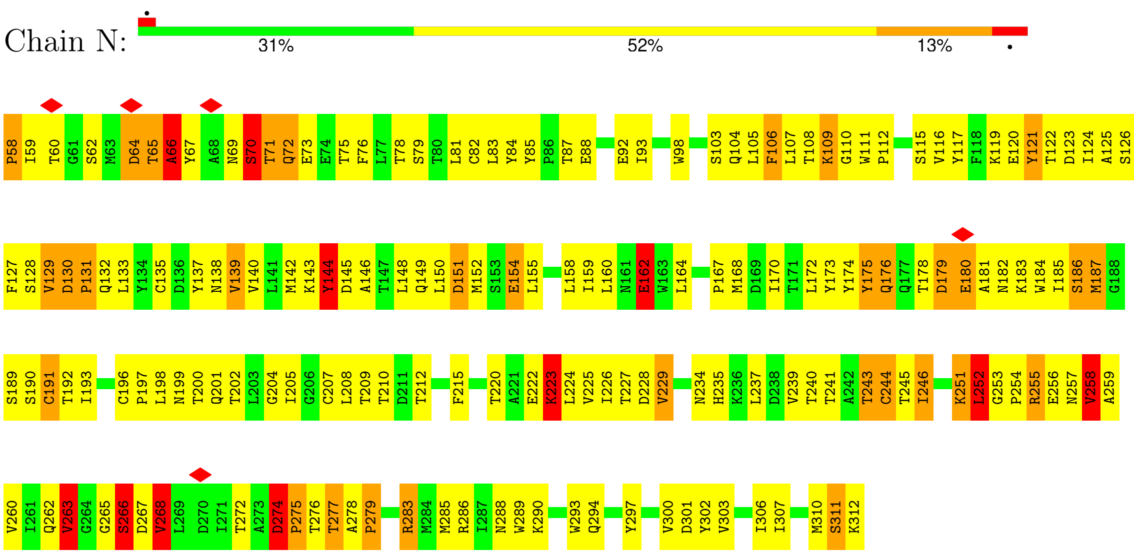
• Molecule 1: Outer capsid glycoprotein VP7

Chain M:



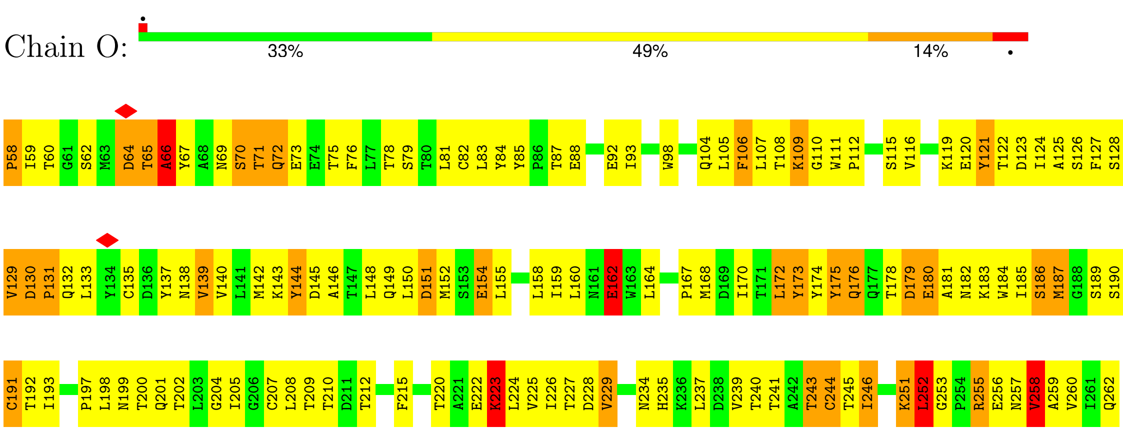
• Molecule 1: Outer capsid glycoprotein VP7

Chain N:



• Molecule 1: Outer capsid glycoprotein VP7

Chain O:



V263 G264 G265 S266 D267 V268 T272 A273 D274 P275 T276 T277 A278 P279 R283 M284 M285 R286 I287 N288 W289 K290 W293 Q294 Y297 V300 D301 Y302 V303 I306 I307 M310 S311 K312

• Molecule 1: Outer capsid glycoprotein VP7

Chain P: 32% 51% 13%

P58 I59 T60 G61 S62 M63 D64 T65 A66 Y67 A68 N69 S70 T71 Q72 E73 E74 T75 F76 L77 T78 S79 T80 L81 C82 L83 Y84 Y85 P86 T87 E88 E92 I93 W98 Q104 L105 F106 L107 T108 K109 G110 W111 P112 S115 V116 K119 E120 Y121 T122 D123 I124 A125 S126 F127 S128

V129 D130 P131 Q132 L133 Y134 C135 D136 Y137 N138 V139 V140 L141 M142 K143 Y144 D145 A146 T147 L148 Q149 L150 D151 M152 S153 E154 L155 L158 I159 L160 N161 E162 W163 L164 P167 M168 D169 I170 T171 L172 Y173 Y174 Y175 Q176 Q177 T178 D179 E180 A181 N182 K183 W184 I185 S186 M187 G188 S189 S190

C191 T192 I193 P197 L198 N199 T200 Q201 T202 L203 G204 I205 G206 C207 L208 T209 T210 D211 T212 F215 T220 A221 E222 K223 L224 V225 I226 T227 D228 V229 N234 H235 K236 L237 D238 V239 T240 T241 A242 T243 C244 T245 I246 K251 L252 G253 P254 R255 E256 N257 V258 A259 V260 I261 Q262

V263 G264 G265 S266 D267 V268 T272 A273 D274 P275 T276 T277 A278 P279 R283 M284 M285 R286 I287 N288 W289 K290 W293 Q294 Y297 V300 D301 Y302 V303 I306 I307 M310 S311 K312

• Molecule 1: Outer capsid glycoprotein VP7

Chain Q: 33% 50% 14%

P58 I59 T60 G61 S62 M63 D64 T65 A66 Y67 A68 N69 S70 T71 Q72 E73 E74 T75 F76 L77 T78 S79 T80 L81 C82 L83 Y84 Y85 P86 T87 E88 E92 I93 W98 Q104 L105 F106 L107 T108 K109 G110 W111 P112 S115 V116 K119 E120 Y121 T122 D123 I124 A125 S126 F127 S128

V129 D130 P131 Q132 L133 Y134 C135 D136 Y137 N138 V139 V140 L141 M142 K143 Y144 D145 A146 T147 L148 Q149 L150 D151 M152 S153 E154 L155 L158 I159 L160 N161 E162 W163 L164 M168 D169 I170 T171 L172 Y173 Y174 Y175 Q176 Q177 T178 D179 E180 A181 N182 K183 W184 I185 S186 M187 G188 S189 S190 C191

T192 I193 C196 P197 L198 N199 T200 Q201 T202 L203 G204 I205 G206 C207 L208 T209 T210 D211 T212 F215 T220 A221 E222 K223 L224 V225 I226 T227 D228 V229 N234 H235 K236 L237 D238 V239 T240 T241 A242 T243 C244 T245 I246 K251 L252 G253 P254 R255 E256 N257 V258 A259 V260 I261 Q262

V263 G264 G265 S266 D267 V268 L269 T272 A273 D274 P275 T276 T277 A278 P279 R283 M284 M285 R286 I287 N288 W289 K290 W293 Q294 Y297 V300 D301 Y302 V303 I306 I307 M310 S311 K312

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

Chain A: 100% 50% 50%

NAG1 NAG2

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

Chain C:

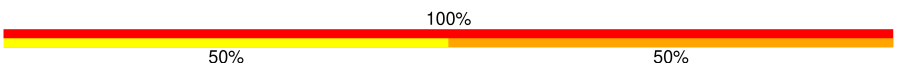

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-gluc opyranose

Chain D:

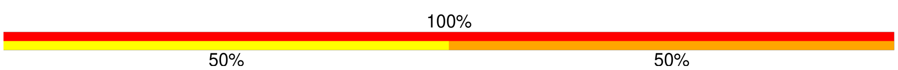

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-gluc opyranose

Chain E:

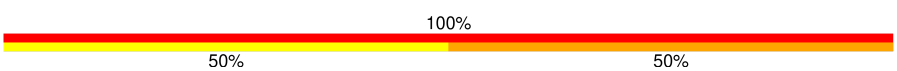

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-gluc opyranose

Chain R:


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

Chain S:


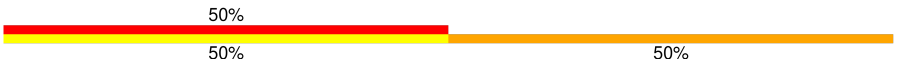
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-gluc opyranose

Chain T:


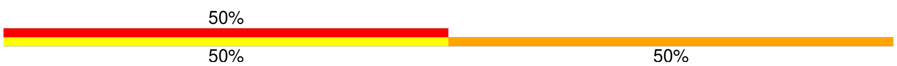
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-gluc opyranose

Chain U:

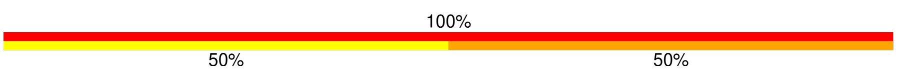

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-gluc opyranose

Chain V:


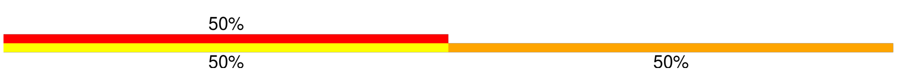
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-gluc opyranose

Chain W:


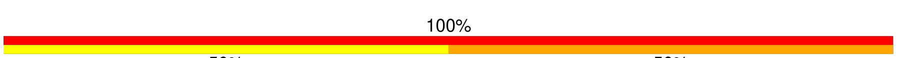
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-gluc opyranose

Chain X:


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

Chain Y:


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

Chain Z:



NAG1
NAG2

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, I	Depositor
Number of particles used	3780	Depositor
Resolution determination method	Not provided	
CTF correction method	individual particle	Depositor
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{Å}^2$)	25	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	3500	Depositor
Magnification	58168	Depositor
Image detector	GENERIC FILM	Depositor
Maximum map value	7.179	Depositor
Minimum map value	-3.263	Depositor
Average map value	0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	2	Depositor
Map size (Å)	986.4, 986.4, 986.4	wwPDB
Map dimensions	800, 800, 800	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.233, 1.233, 1.233	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: CA, 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	B	0.81	10/2053 (0.5%)	1.32	32/2806 (1.1%)
1	F	0.82	10/2053 (0.5%)	1.41	39/2806 (1.4%)
1	G	0.95	13/2053 (0.6%)	1.46	38/2806 (1.4%)
1	H	0.87	12/2053 (0.6%)	1.46	39/2806 (1.4%)
1	I	0.88	12/2053 (0.6%)	1.46	37/2806 (1.3%)
1	J	0.87	11/2053 (0.5%)	1.46	41/2806 (1.5%)
1	K	0.87	11/2053 (0.5%)	1.45	37/2806 (1.3%)
1	L	0.87	12/2053 (0.6%)	1.45	39/2806 (1.4%)
1	M	0.87	11/2053 (0.5%)	1.45	38/2806 (1.4%)
1	N	0.87	11/2053 (0.5%)	1.46	38/2806 (1.4%)
1	O	0.87	11/2053 (0.5%)	1.46	37/2806 (1.3%)
1	P	0.87	11/2053 (0.5%)	1.45	38/2806 (1.4%)
1	Q	0.87	11/2053 (0.5%)	1.45	38/2806 (1.4%)
All	All	0.87	146/26689 (0.5%)	1.44	491/36478 (1.3%)

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	B	0	3
1	F	0	3
1	G	0	5
1	H	0	4
1	I	0	4
1	J	0	4
1	K	0	4
1	L	0	4
1	M	0	4
1	N	0	4

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Mol	Chain	#Chirality outliers	#Planarity outliers
1	O	0	4
1	P	0	4
1	Q	0	4
All	All	0	51

The worst 5 of 146 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	G	79	SER	C-N	15.53	1.69	1.34
1	L	66	ALA	C-N	-14.04	1.01	1.34
1	Q	66	ALA	C-N	-14.03	1.01	1.34
1	I	66	ALA	C-N	-14.01	1.01	1.34
1	N	66	ALA	C-N	-14.01	1.01	1.34

The worst 5 of 491 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	M	66	ALA	O-C-N	-20.72	89.55	122.70
1	N	66	ALA	O-C-N	-20.71	89.57	122.70
1	G	66	ALA	O-C-N	-20.70	89.57	122.70
1	H	66	ALA	O-C-N	-20.70	89.57	122.70
1	P	66	ALA	O-C-N	-20.70	89.57	122.70

There are no chirality outliers.

5 of 51 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	130	ASP	Mainchain
1	B	162	GLU	Mainchain
1	B	58	PRO	Mainchain
1	F	130	ASP	Mainchain
1	F	58	PRO	Mainchain

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	2011	0	1955	359	0
1	F	2011	0	1952	486	0
1	G	2011	0	1949	494	0
1	H	2011	0	1951	489	0
1	I	2011	0	1951	484	0
1	J	2011	0	1950	487	0
1	K	2011	0	1951	487	0
1	L	2011	0	1950	496	0
1	M	2011	0	1951	488	0
1	N	2011	0	1951	495	0
1	O	2011	0	1951	495	0
1	P	2011	0	1951	498	0
1	Q	2011	0	1951	483	0
2	A	28	0	25	2	0
2	C	28	0	25	2	0
2	D	28	0	25	2	0
2	E	28	0	25	2	0
2	R	28	0	25	2	0
2	S	28	0	25	2	0
2	T	28	0	25	2	0
2	U	28	0	25	2	0
2	V	28	0	25	2	0
2	W	28	0	25	2	0
2	X	28	0	25	2	0
2	Y	28	0	25	2	0
2	Z	28	0	25	2	0
3	B	4	0	0	0	0
3	F	2	0	0	0	0
3	G	2	0	0	0	0
3	H	2	0	0	0	0
3	I	2	0	0	0	0
3	J	2	0	0	0	0
3	K	2	0	0	0	0
3	L	2	0	0	0	0
3	M	2	0	0	0	0
3	N	2	0	0	0	0
3	O	2	0	0	0	0
3	P	2	0	0	0	0
3	Q	3	0	0	0	0
3	X	1	0	0	0	0
All	All	26537	0	25689	5475	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 105.

The worst 5 of 5475 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:H:142:MET:HE3	1:H:152:MET:CE	1.33	1.59
1:L:142:MET:CE	1:L:152:MET:HE2	1.31	1.59
1:B:159:ILE:CG2	1:B:258:VAL:HG21	1.14	1.58
1:G:142:MET:CE	1:G:152:MET:HE2	1.31	1.58
1:H:159:ILE:CG2	1:H:258:VAL:HG21	1.14	1.58

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	B	253/255 (99%)	216 (85%)	26 (10%)	11 (4%)	2	20
1	F	253/255 (99%)	215 (85%)	26 (10%)	12 (5%)	2	18
1	G	253/255 (99%)	215 (85%)	27 (11%)	11 (4%)	2	20
1	H	253/255 (99%)	215 (85%)	26 (10%)	12 (5%)	2	18
1	I	253/255 (99%)	214 (85%)	28 (11%)	11 (4%)	2	20
1	J	253/255 (99%)	216 (85%)	26 (10%)	11 (4%)	2	20
1	K	253/255 (99%)	215 (85%)	27 (11%)	11 (4%)	2	20
1	L	253/255 (99%)	214 (85%)	28 (11%)	11 (4%)	2	20
1	M	253/255 (99%)	215 (85%)	27 (11%)	11 (4%)	2	20
1	N	253/255 (99%)	216 (85%)	26 (10%)	11 (4%)	2	20
1	O	253/255 (99%)	217 (86%)	25 (10%)	11 (4%)	2	20
1	P	253/255 (99%)	216 (85%)	26 (10%)	11 (4%)	2	20
1	Q	253/255 (99%)	215 (85%)	27 (11%)	11 (4%)	2	20
All	All	3289/3315 (99%)	2799 (85%)	345 (10%)	145 (4%)	3	20

5 of 145 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	69	ASN
1	B	71	THR
1	B	252	LEU
1	B	258	VAL
1	F	252	LEU

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	B	229/229 (100%)	205 (90%)	24 (10%)	5	23
1	F	229/229 (100%)	205 (90%)	24 (10%)	5	23
1	G	229/229 (100%)	204 (89%)	25 (11%)	5	22
1	H	229/229 (100%)	204 (89%)	25 (11%)	5	22
1	I	229/229 (100%)	204 (89%)	25 (11%)	5	22
1	J	229/229 (100%)	204 (89%)	25 (11%)	5	22
1	K	229/229 (100%)	205 (90%)	24 (10%)	5	23
1	L	229/229 (100%)	204 (89%)	25 (11%)	5	22
1	M	229/229 (100%)	204 (89%)	25 (11%)	5	22
1	N	229/229 (100%)	204 (89%)	25 (11%)	5	22
1	O	229/229 (100%)	205 (90%)	24 (10%)	5	23
1	P	229/229 (100%)	205 (90%)	24 (10%)	5	23
1	Q	229/229 (100%)	204 (89%)	25 (11%)	5	22
All	All	2977/2977 (100%)	2657 (89%)	320 (11%)	8	23

5 of 320 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	N	180	GLU
1	P	243	THR
1	N	243	THR

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Mol	Chain	Res	Type
1	O	227	THR
1	Q	144	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 83 such sidechains are listed below:

Mol	Chain	Res	Type
1	N	69	ASN
1	P	176	GLN
1	N	182	ASN
1	O	182	ASN
1	P	257	ASN

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)

26 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	NAG	A	1	2	14,14,15	0.61	0	17,19,21	1.44	2 (11%)
2	NAG	A	2	2	14,14,15	1.08	1 (7%)	17,19,21	1.74	5 (29%)
2	NAG	C	1	2	14,14,15	0.63	0	17,19,21	1.45	2 (11%)
2	NAG	C	2	2	14,14,15	1.08	1 (7%)	17,19,21	1.73	5 (29%)
2	NAG	D	1	2	14,14,15	0.62	0	17,19,21	1.44	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
2	NAG	D	2	2	14,14,15	1.08	1 (7%)	17,19,21	1.73	5 (29%)
2	NAG	E	1	2	14,14,15	0.60	0	17,19,21	1.44	2 (11%)
2	NAG	E	2	2	14,14,15	1.08	1 (7%)	17,19,21	1.73	5 (29%)
2	NAG	R	1	2	14,14,15	0.60	0	17,19,21	1.44	2 (11%)
2	NAG	R	2	2	14,14,15	1.08	1 (7%)	17,19,21	1.74	5 (29%)
2	NAG	S	1	2	14,14,15	0.60	0	17,19,21	1.43	2 (11%)
2	NAG	S	2	2	14,14,15	1.08	1 (7%)	17,19,21	1.74	5 (29%)
2	NAG	T	1	2	14,14,15	0.64	0	17,19,21	1.43	2 (11%)
2	NAG	T	2	2	14,14,15	1.06	1 (7%)	17,19,21	1.74	5 (29%)
2	NAG	U	1	2	14,14,15	0.61	0	17,19,21	1.44	2 (11%)
2	NAG	U	2	2	14,14,15	1.07	1 (7%)	17,19,21	1.74	5 (29%)
2	NAG	V	1	2	14,14,15	0.62	0	17,19,21	1.43	2 (11%)
2	NAG	V	2	2	14,14,15	1.08	1 (7%)	17,19,21	1.74	5 (29%)
2	NAG	W	1	2	14,14,15	0.62	0	17,19,21	1.44	2 (11%)
2	NAG	W	2	2	14,14,15	1.07	1 (7%)	17,19,21	1.74	5 (29%)
2	NAG	X	1	2	14,14,15	0.62	0	17,19,21	1.44	2 (11%)
2	NAG	X	2	2	14,14,15	1.08	1 (7%)	17,19,21	1.74	5 (29%)
2	NAG	Y	1	2	14,14,15	0.61	0	17,19,21	1.44	2 (11%)
2	NAG	Y	2	2	14,14,15	1.09	1 (7%)	17,19,21	1.74	5 (29%)
2	NAG	Z	1	2	14,14,15	0.60	0	17,19,21	1.43	2 (11%)
2	NAG	Z	2	2	14,14,15	1.08	1 (7%)	17,19,21	1.74	5 (29%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	A	1	2	-	0/6/23/26	0/1/1/1
2	NAG	A	2	2	-	1/6/23/26	0/1/1/1
2	NAG	C	1	2	-	0/6/23/26	0/1/1/1
2	NAG	C	2	2	-	1/6/23/26	0/1/1/1
2	NAG	D	1	2	-	0/6/23/26	0/1/1/1
2	NAG	D	2	2	-	2/6/23/26	0/1/1/1
2	NAG	E	1	2	-	0/6/23/26	0/1/1/1
2	NAG	E	2	2	-	1/6/23/26	0/1/1/1
2	NAG	R	1	2	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	R	2	2	-	1/6/23/26	0/1/1/1
2	NAG	S	1	2	-	0/6/23/26	0/1/1/1
2	NAG	S	2	2	-	1/6/23/26	0/1/1/1
2	NAG	T	1	2	-	0/6/23/26	0/1/1/1
2	NAG	T	2	2	-	1/6/23/26	0/1/1/1
2	NAG	U	1	2	-	0/6/23/26	0/1/1/1
2	NAG	U	2	2	-	1/6/23/26	0/1/1/1
2	NAG	V	1	2	-	0/6/23/26	0/1/1/1
2	NAG	V	2	2	-	1/6/23/26	0/1/1/1
2	NAG	W	1	2	-	0/6/23/26	0/1/1/1
2	NAG	W	2	2	-	1/6/23/26	0/1/1/1
2	NAG	X	1	2	-	0/6/23/26	0/1/1/1
2	NAG	X	2	2	-	1/6/23/26	0/1/1/1
2	NAG	Y	1	2	-	0/6/23/26	0/1/1/1
2	NAG	Y	2	2	-	1/6/23/26	0/1/1/1
2	NAG	Z	1	2	-	0/6/23/26	0/1/1/1
2	NAG	Z	2	2	-	1/6/23/26	0/1/1/1

The worst 5 of 13 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	X	2	NAG	C1-C2	3.05	1.56	1.52
2	C	2	NAG	C1-C2	3.04	1.56	1.52
2	R	2	NAG	C1-C2	3.02	1.56	1.52
2	V	2	NAG	C1-C2	3.00	1.56	1.52
2	Y	2	NAG	C1-C2	3.00	1.56	1.52

The worst 5 of 91 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	U	2	NAG	C2-N2-C7	3.88	128.10	122.90
2	V	2	NAG	C2-N2-C7	3.87	128.09	122.90
2	T	2	NAG	C2-N2-C7	3.87	128.09	122.90
2	Z	2	NAG	C2-N2-C7	3.87	128.09	122.90
2	C	2	NAG	C2-N2-C7	3.87	128.09	122.90

There are no chirality outliers.

5 of 14 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	2	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
2	C	2	NAG	O5-C5-C6-O6
2	D	2	NAG	O5-C5-C6-O6
2	R	2	NAG	O5-C5-C6-O6
2	S	2	NAG	O5-C5-C6-O6

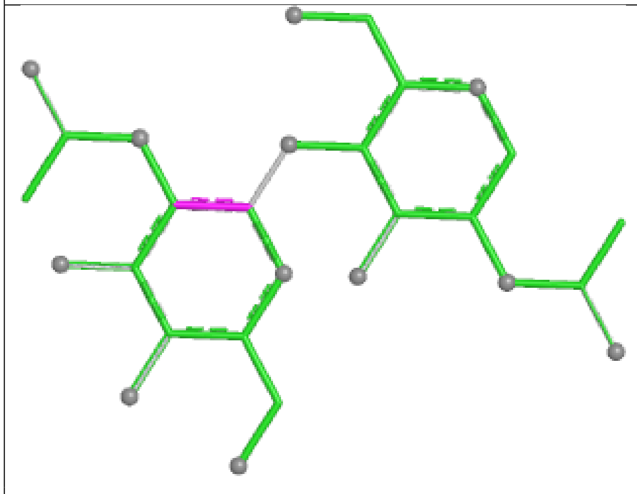
There are no ring outliers.

13 monomers are involved in 26 short contacts:

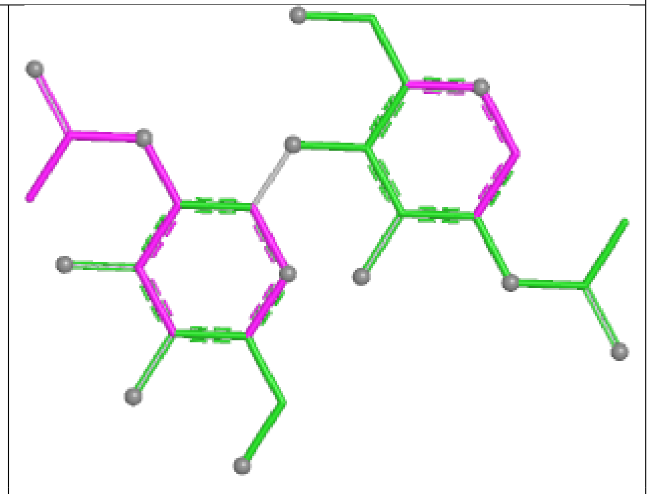
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	T	1	NAG	2	0
2	R	1	NAG	2	0
2	Y	1	NAG	2	0
2	A	1	NAG	2	0
2	X	1	NAG	2	0
2	S	1	NAG	2	0
2	C	1	NAG	2	0
2	U	1	NAG	2	0
2	W	1	NAG	2	0
2	D	1	NAG	2	0
2	E	1	NAG	2	0
2	V	1	NAG	2	0
2	Z	1	NAG	2	0

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

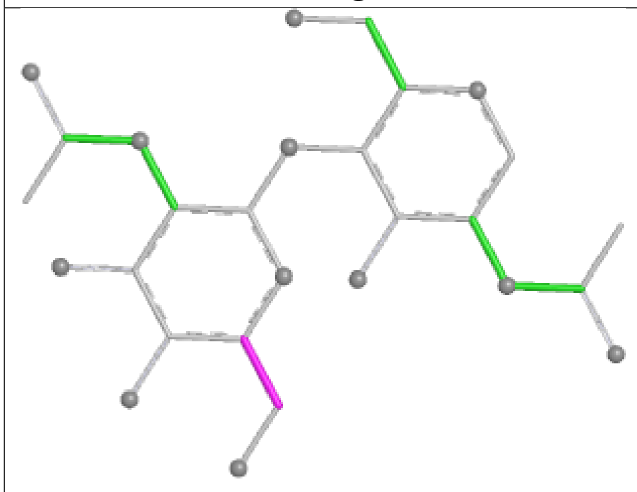
Oligosaccharide Chain A



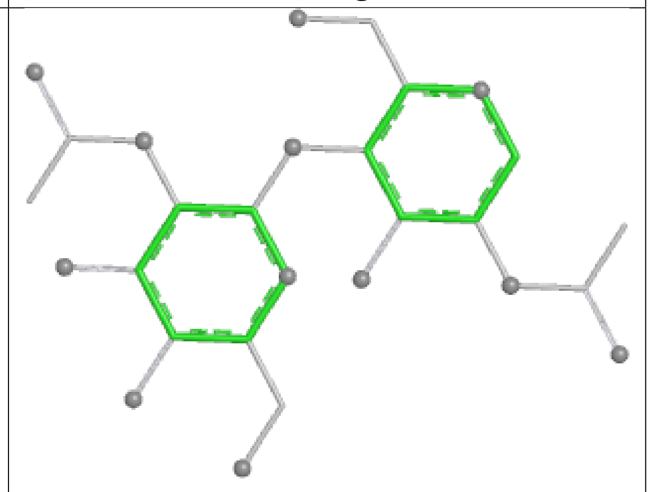
Bond lengths



Bond angles

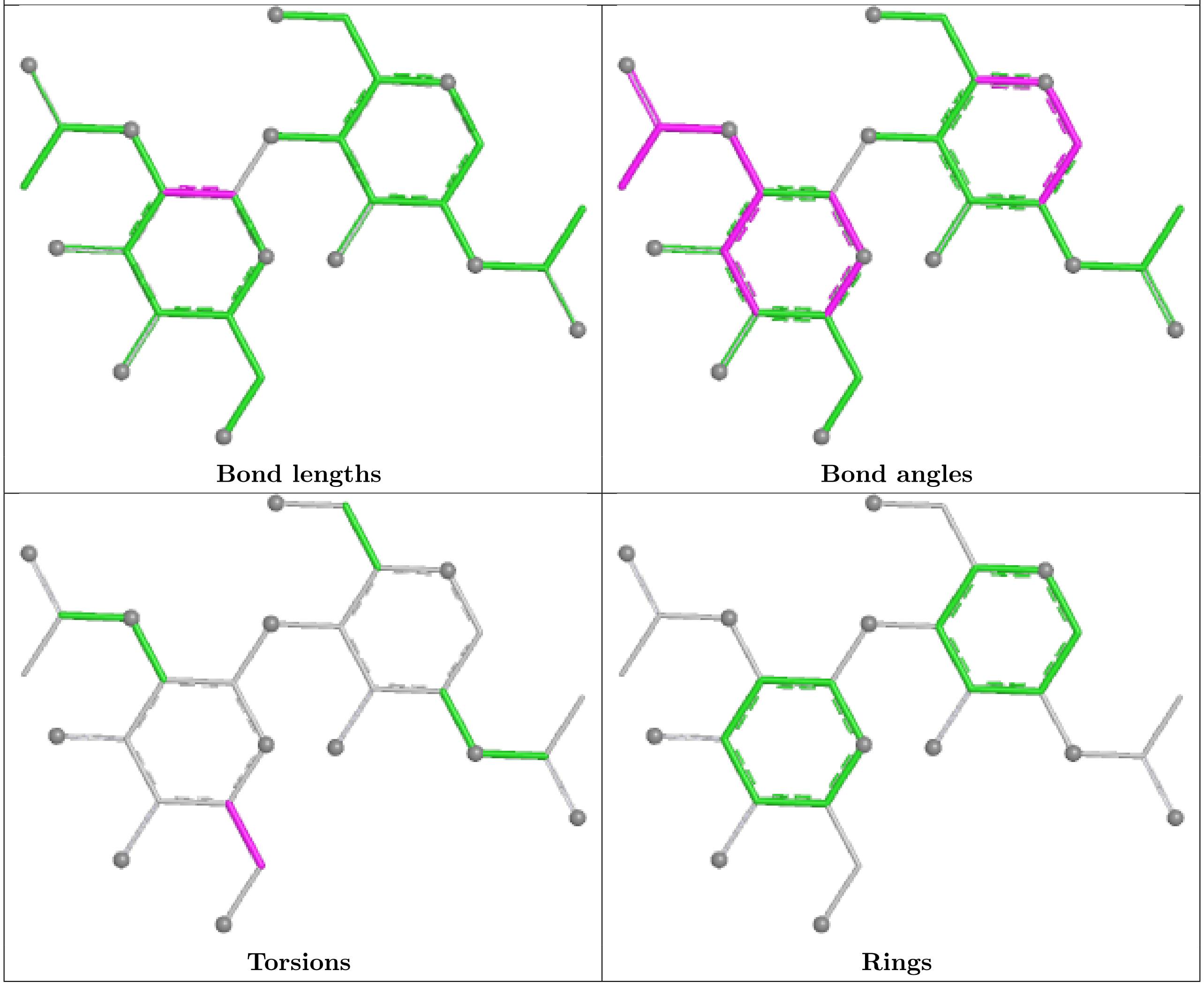


Torsions

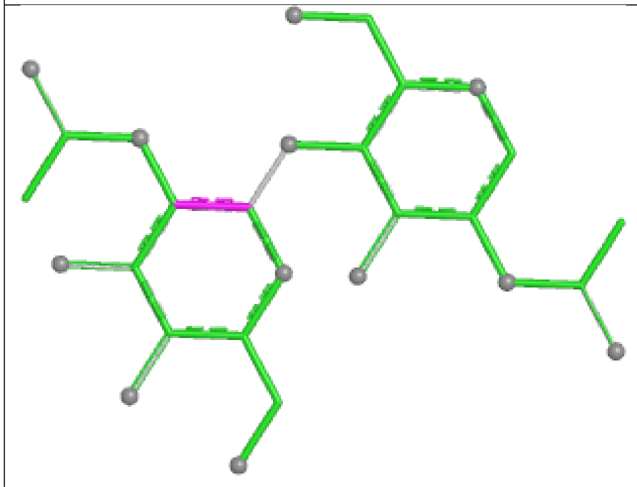


Rings

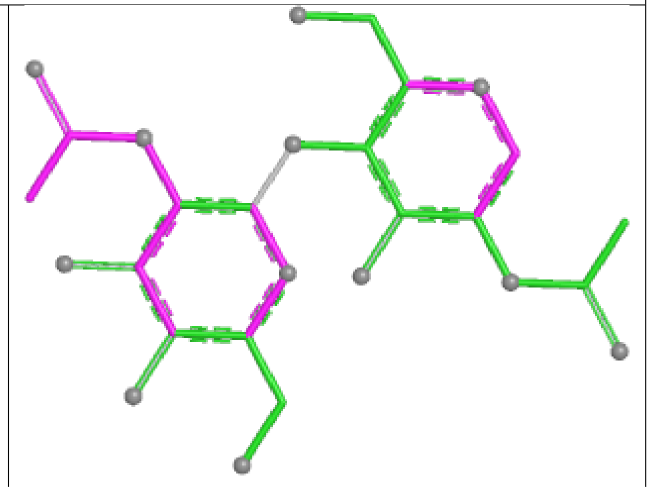
Oligosaccharide Chain C



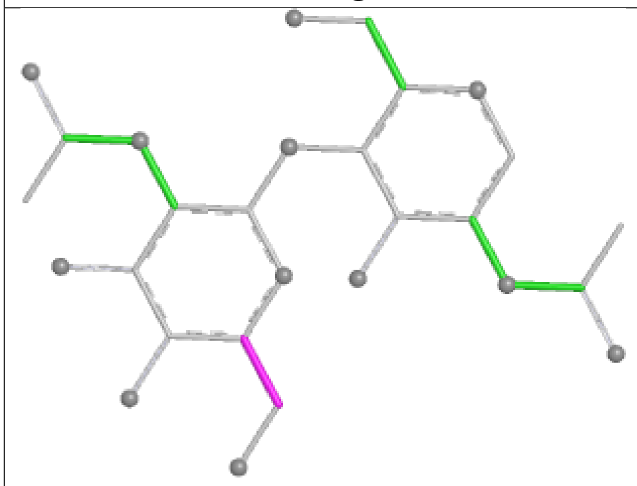
Oligosaccharide Chain D



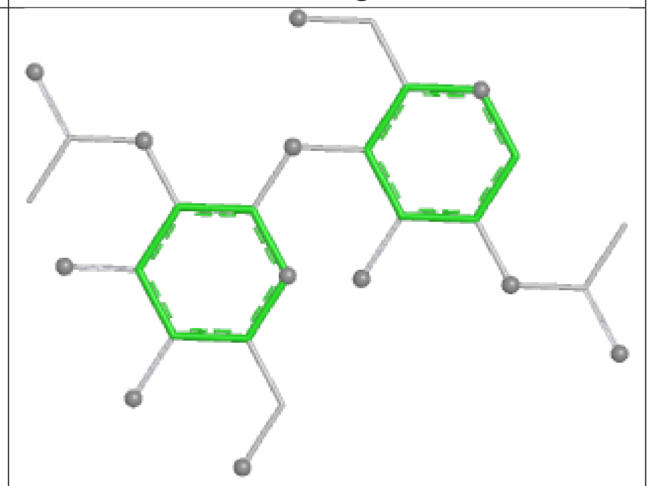
Bond lengths



Bond angles

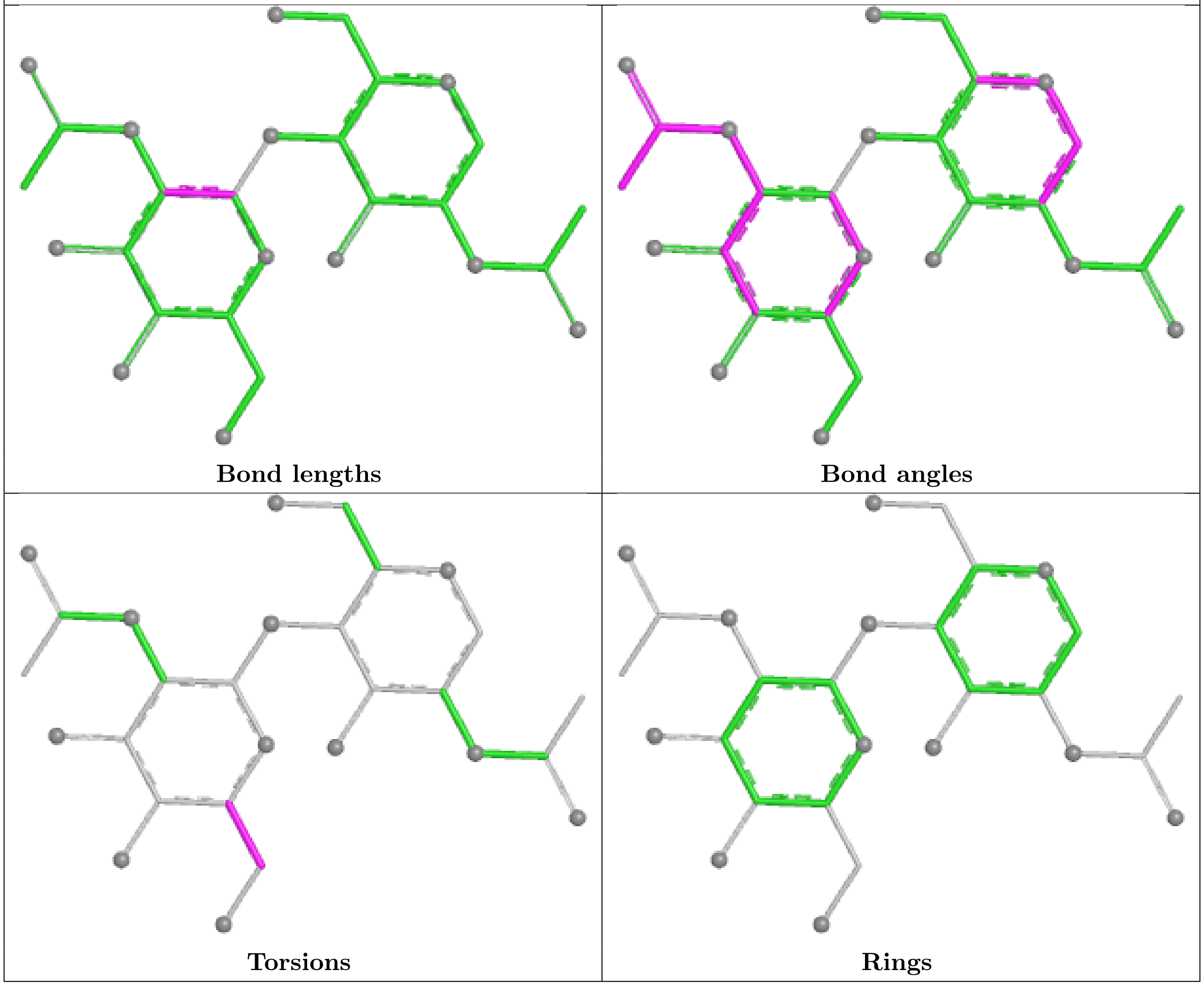


Torsions



Rings

Oligosaccharide Chain E



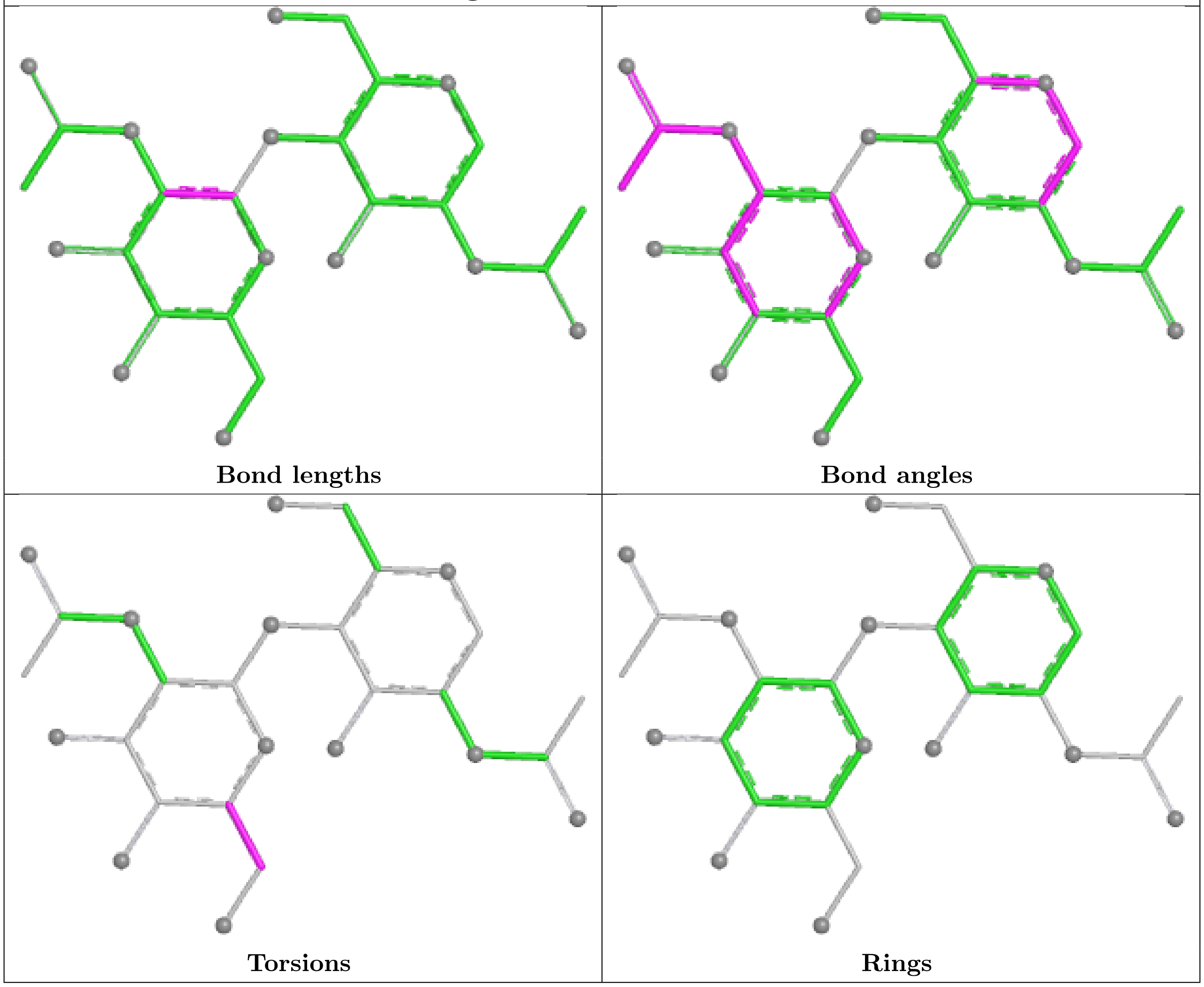
Bond lengths

Bond angles

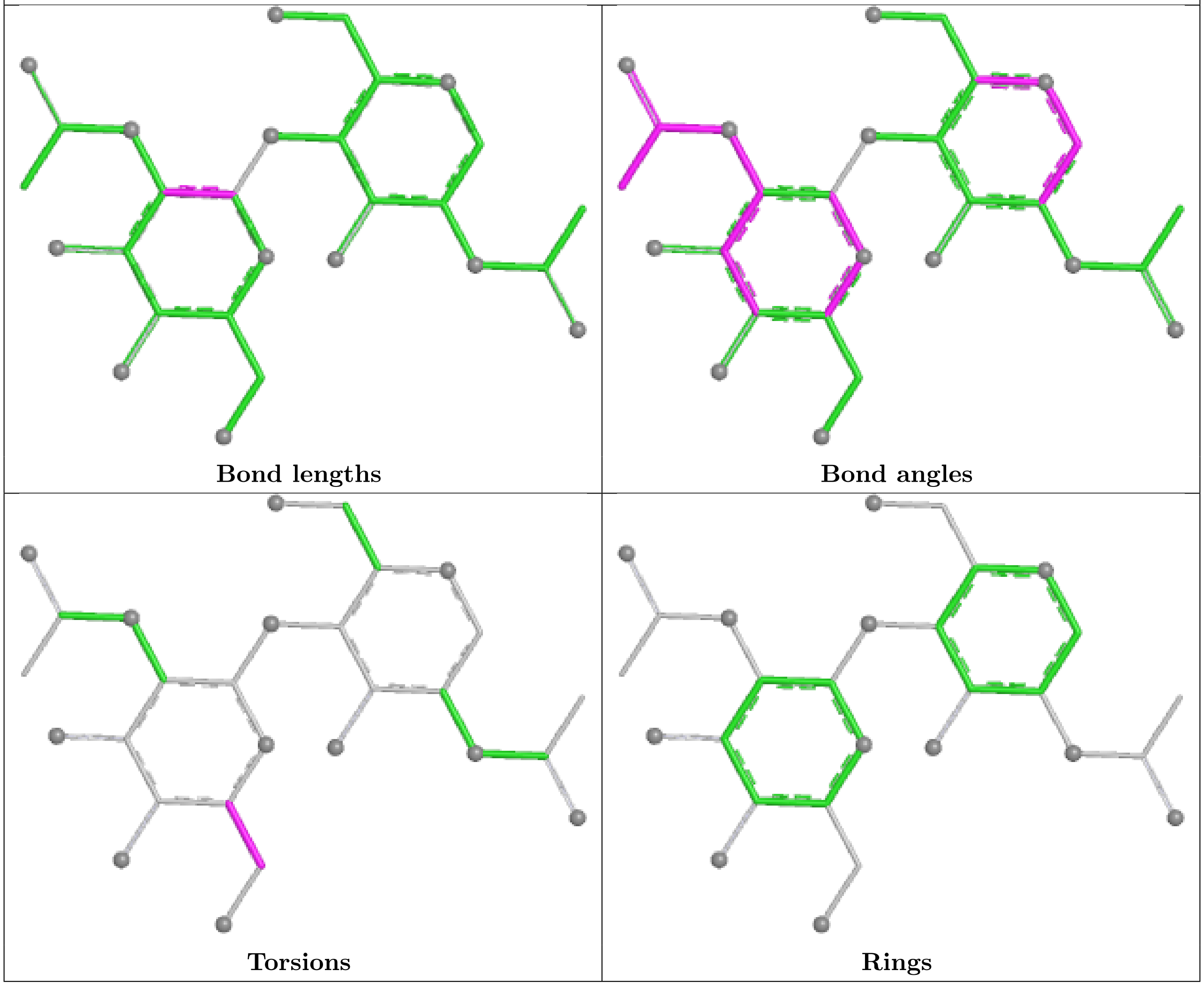
Torsions

Rings

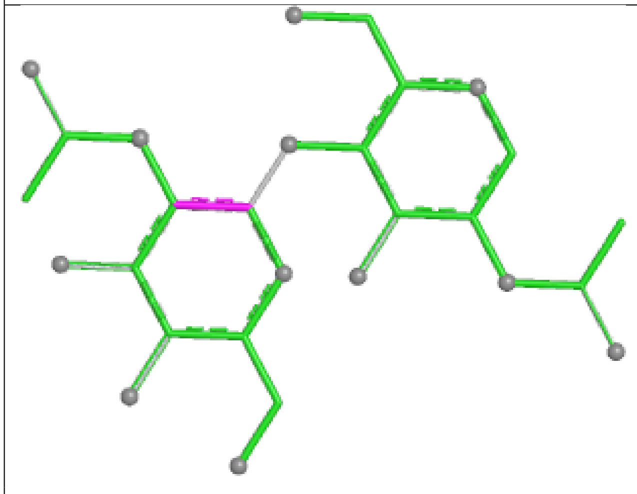
Oligosaccharide Chain R



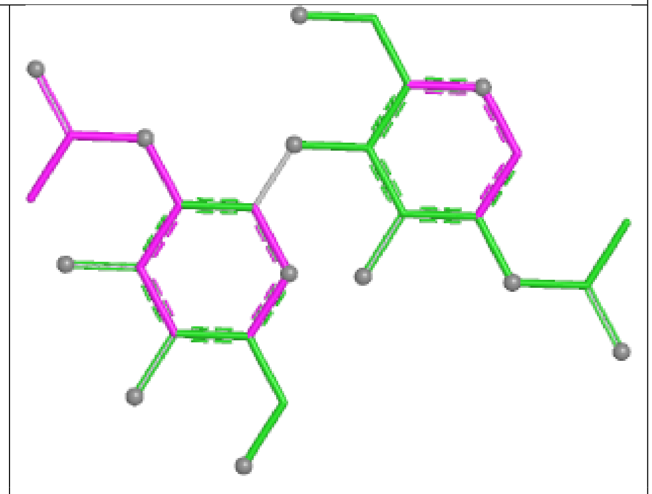
Oligosaccharide Chain S



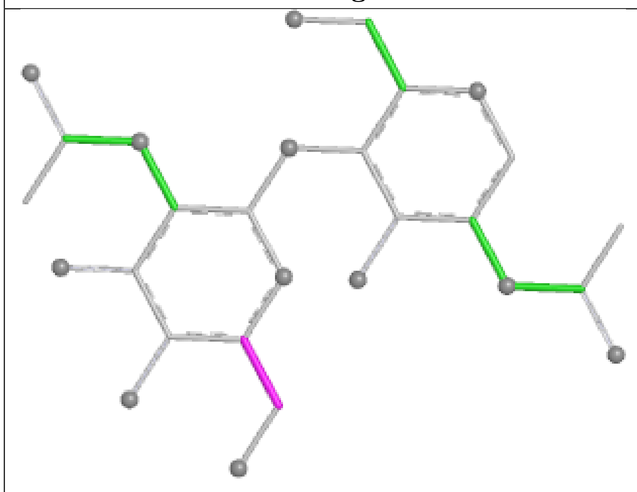
Oligosaccharide Chain T



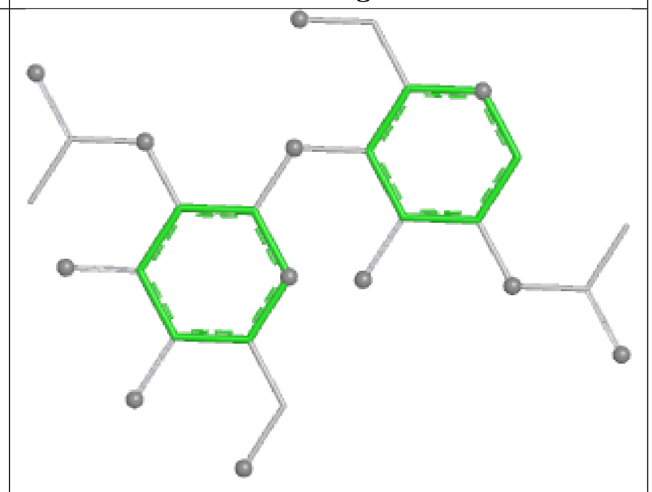
Bond lengths



Bond angles

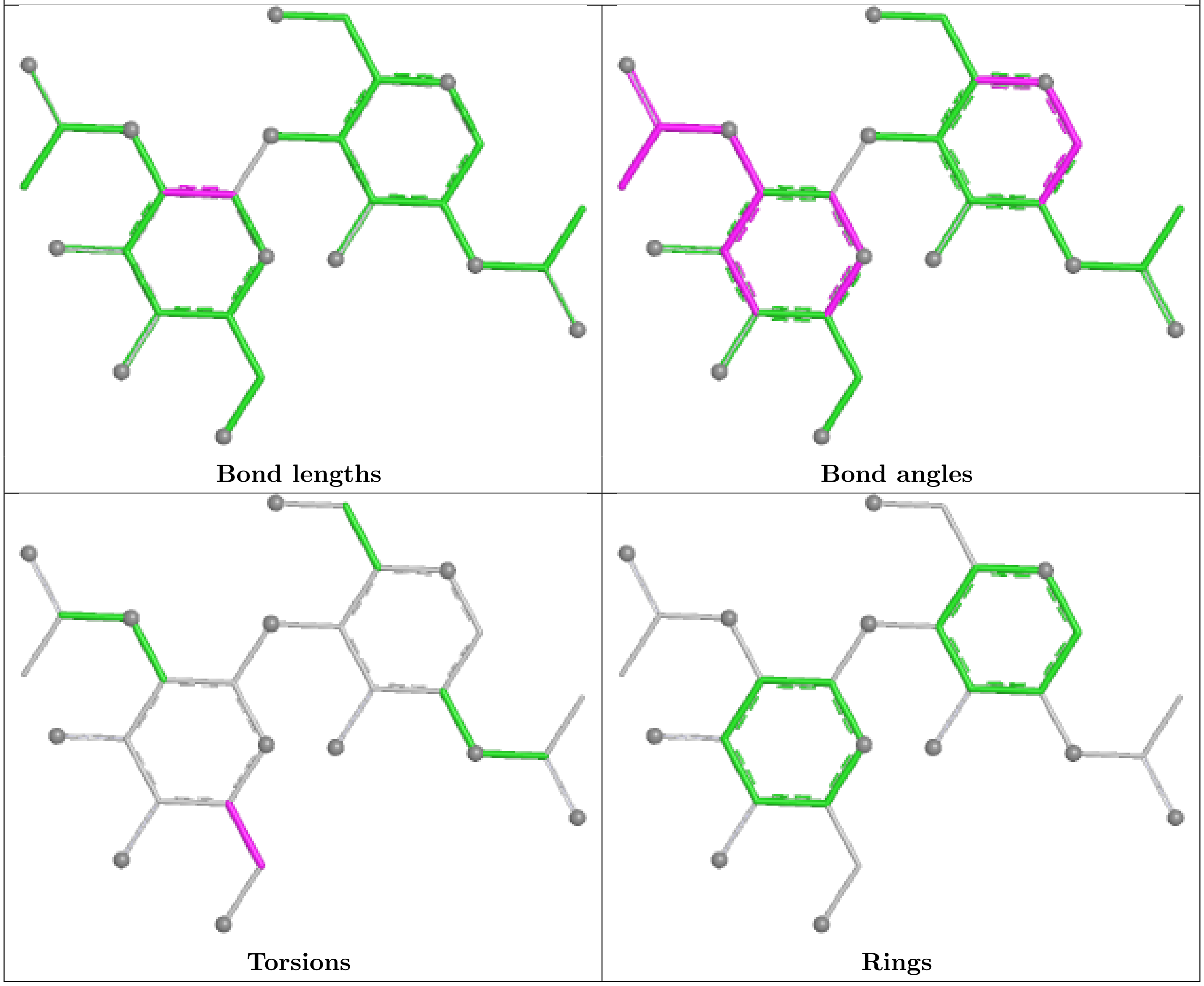


Torsions

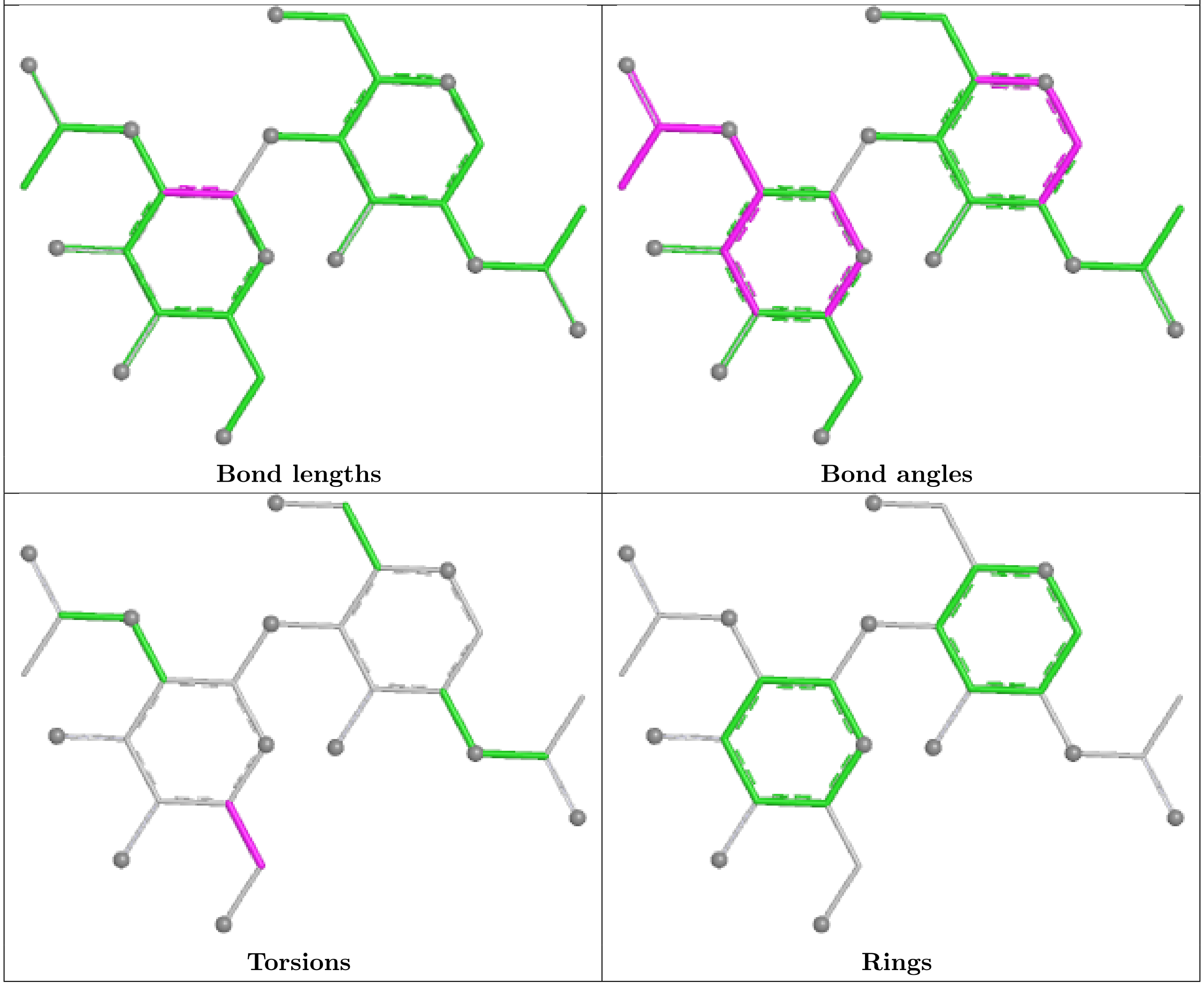


Rings

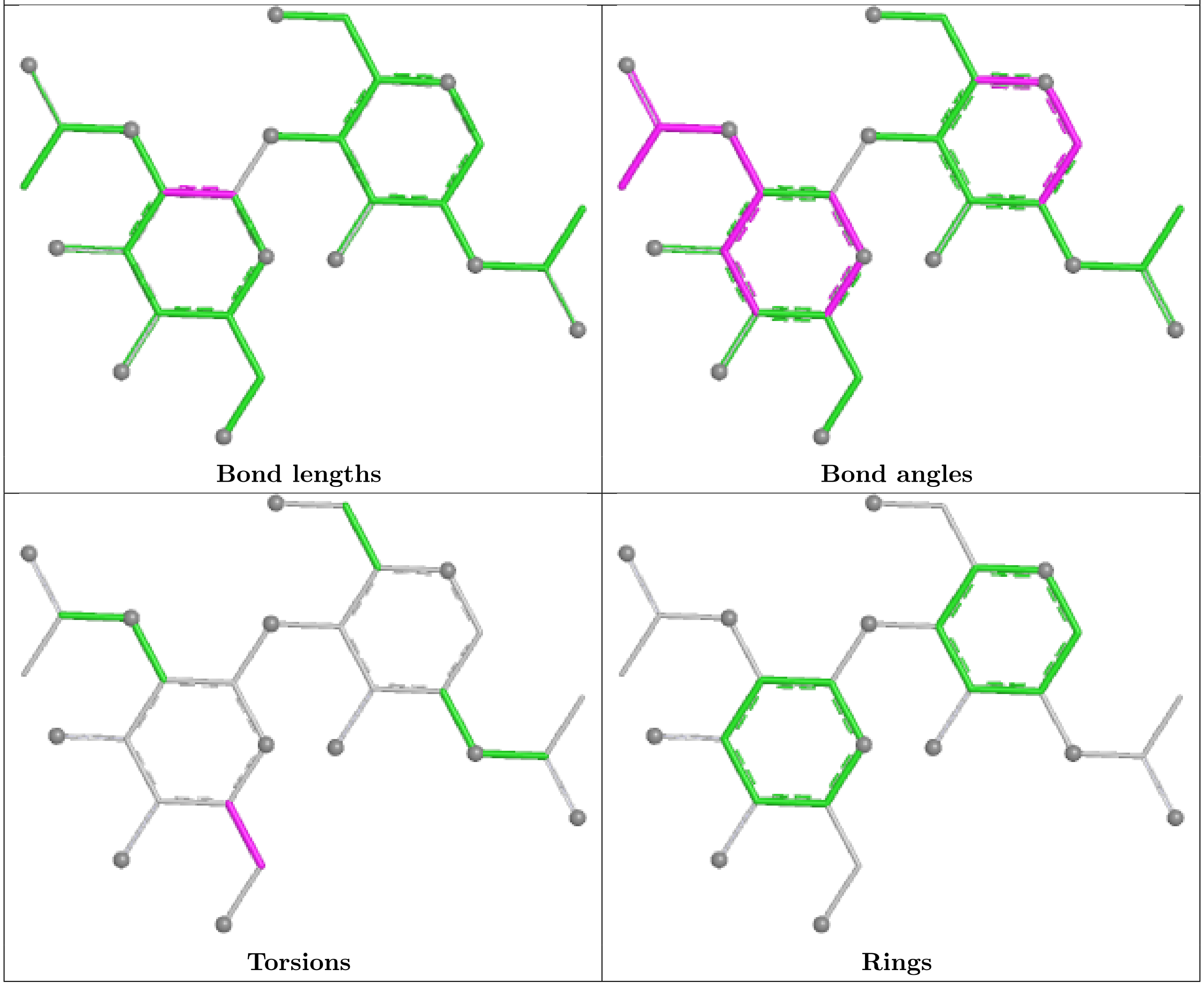
Oligosaccharide Chain U	



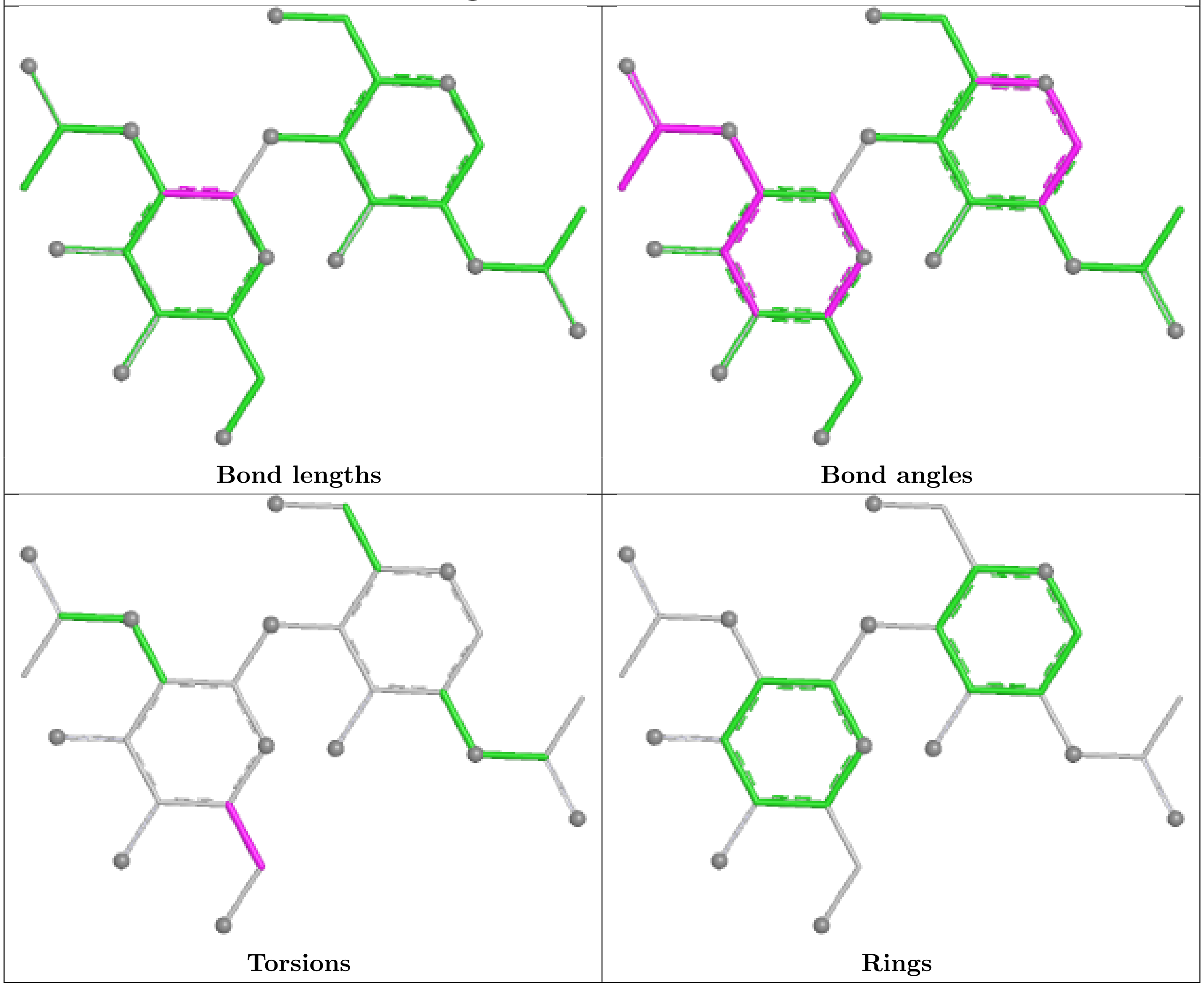
Oligosaccharide Chain V



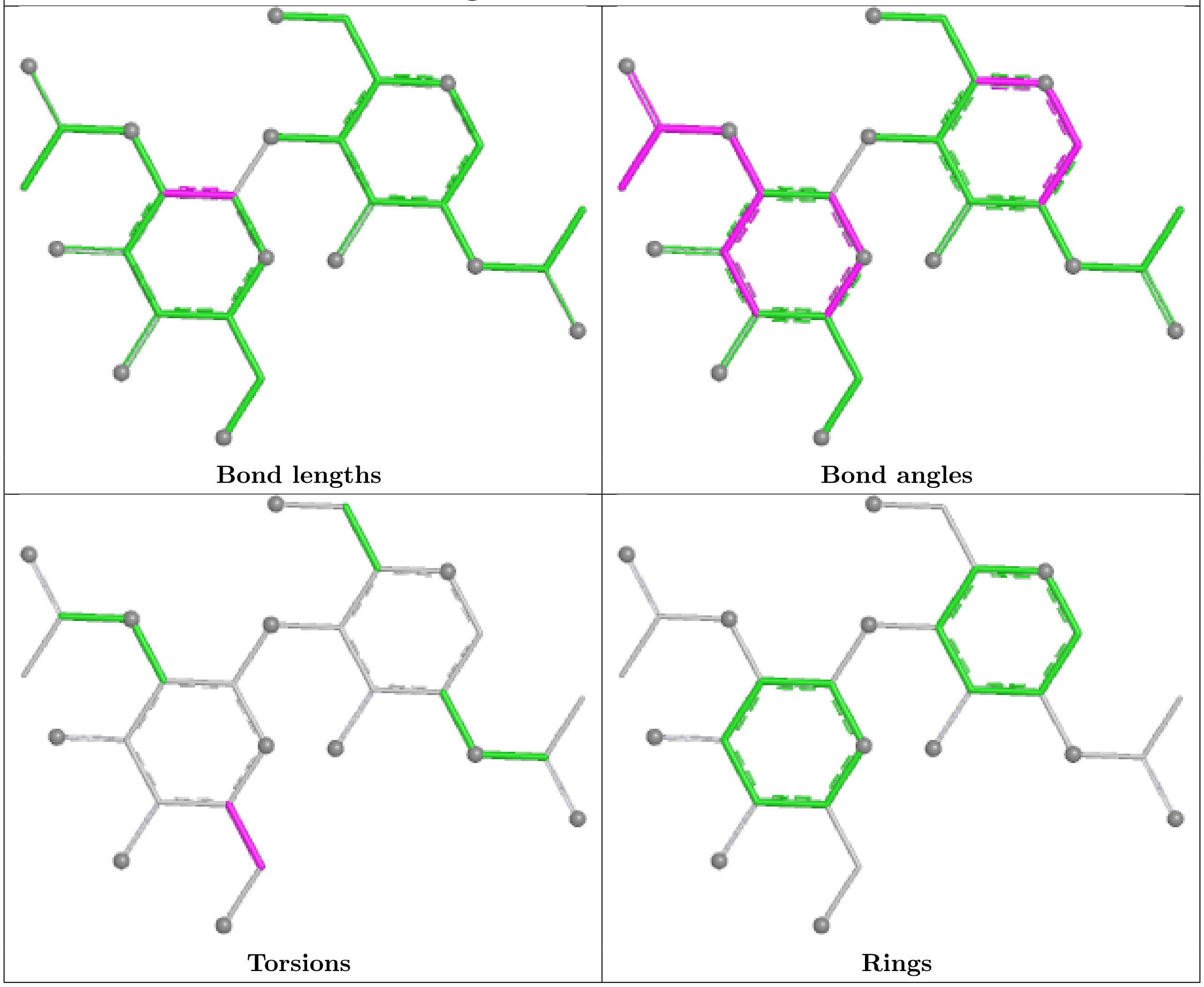
Oligosaccharide Chain W



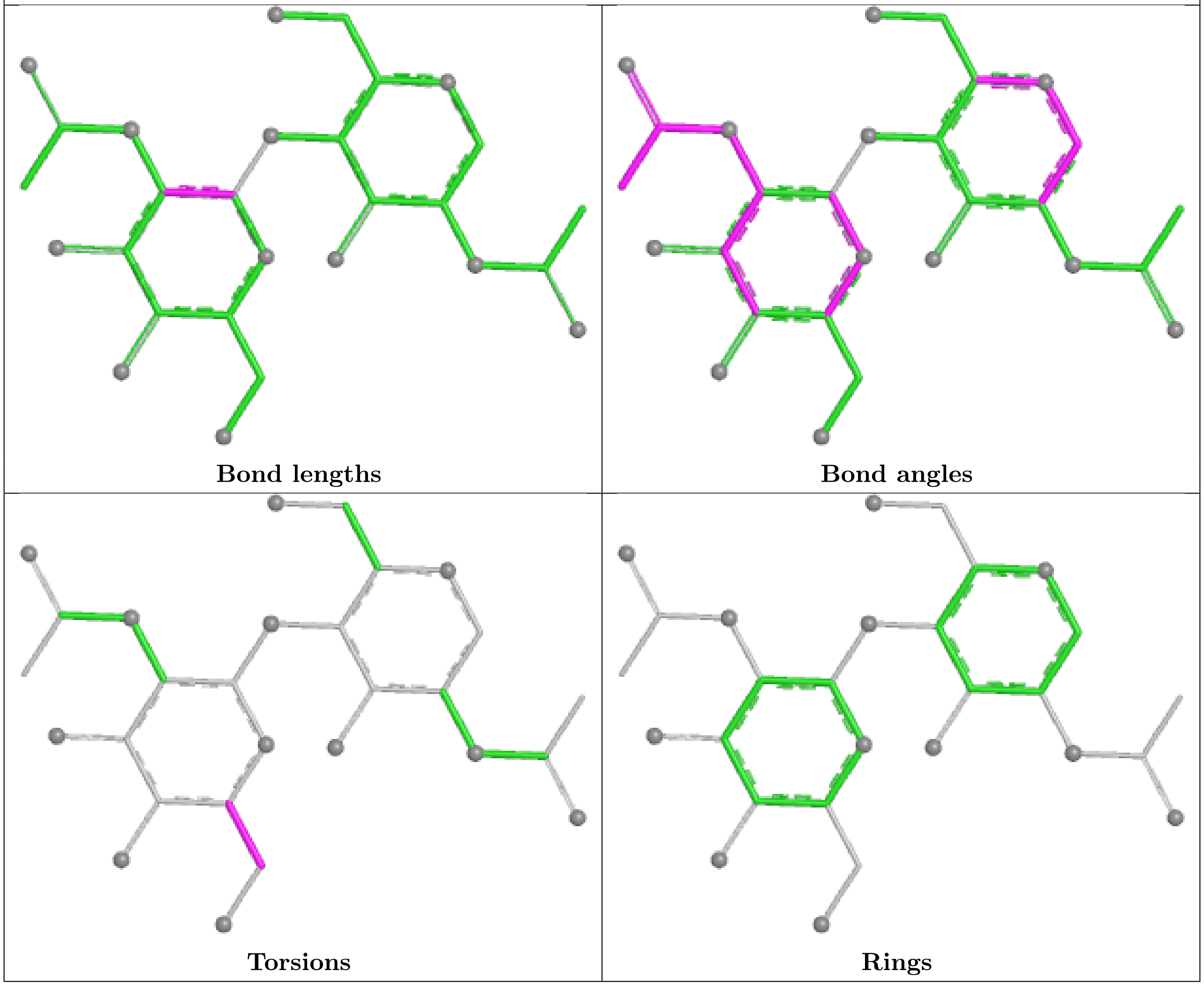
Oligosaccharide Chain X



Oligosaccharide Chain Y



Oligosaccharide Chain Z



5.6 Ligand geometry (i)

Of 30 ligands modelled in this entry, 30 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

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

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	G	3
1	H	1
1	I	1
1	J	1
1	K	1
1	L	1
1	M	1
1	N	1
1	O	1
1	P	1
1	Q	1

The worst 5 of 13 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	G	79:SER	C	80:THR	N	1.69
1	G	78:THR	C	79:SER	N	1.14
1	G	66:ALA	C	67:TYR	N	1.01
1	H	66:ALA	C	67:TYR	N	1.01
1	I	66:ALA	C	67:TYR	N	1.01

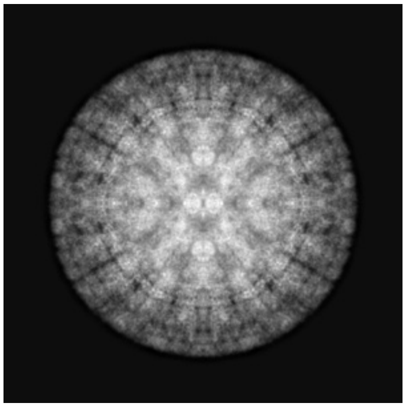
6 Map visualisation (i)

This section contains visualisations of the EMDB entry EMD-1571. These allow visual inspection of the internal detail of the map and identification of artifacts.

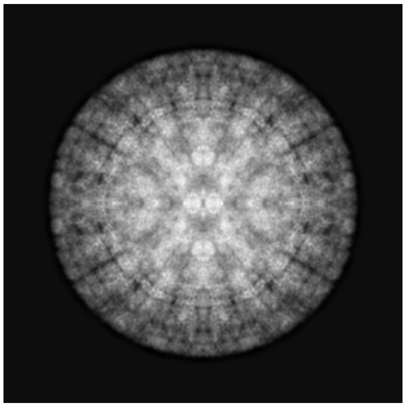
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections (i)

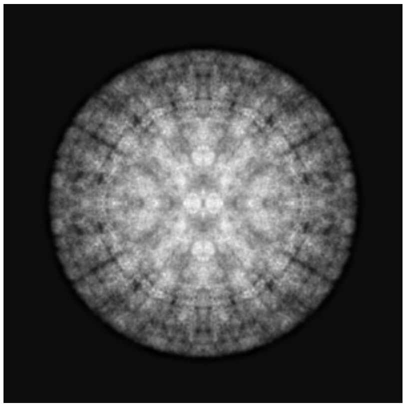
6.1.1 Primary map



X



Y

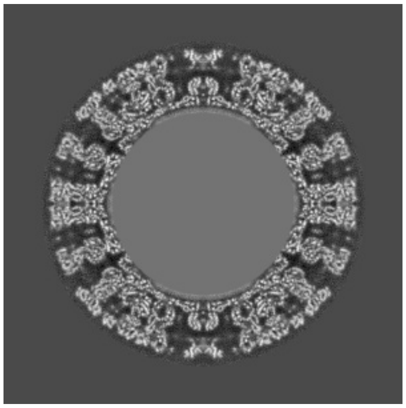


Z

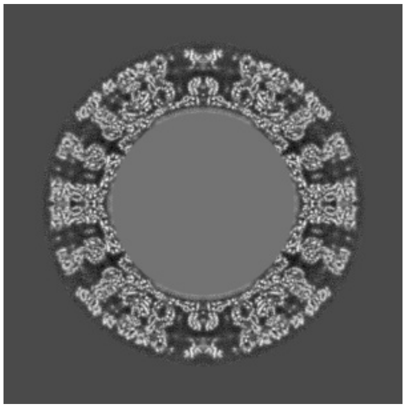
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

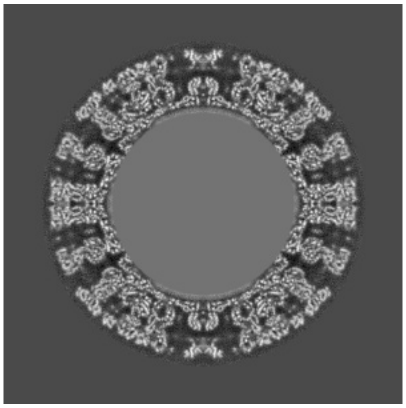
6.2.1 Primary map



X Index: 400



Y Index: 400

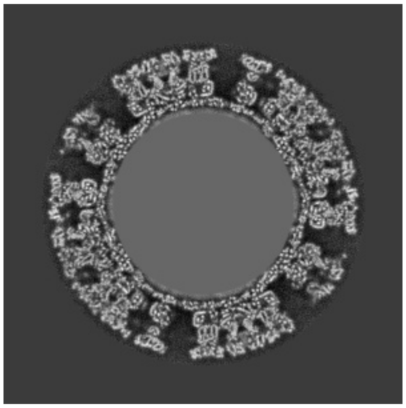


Z Index: 400

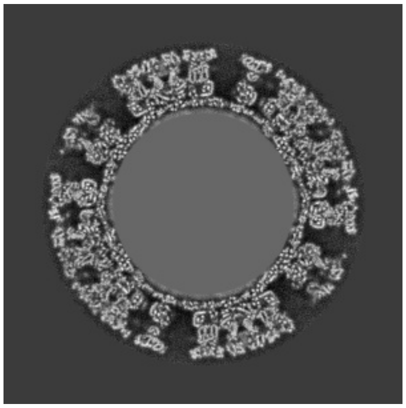
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

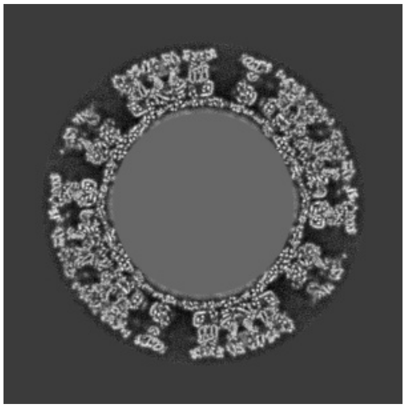
6.3.1 Primary map



X Index: 383



Y Index: 383

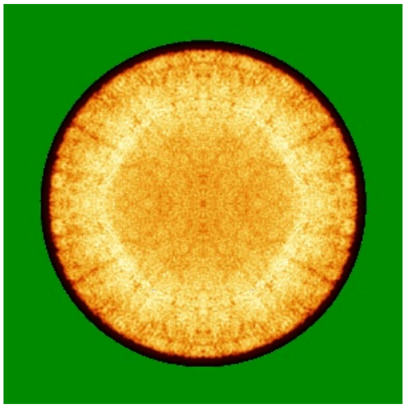


Z Index: 383

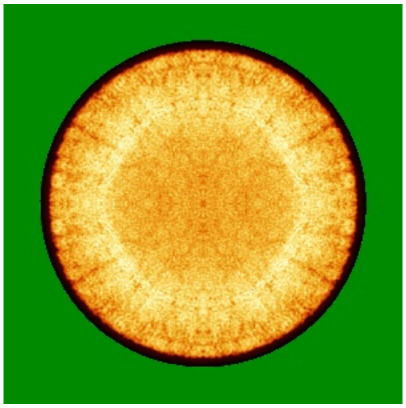
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

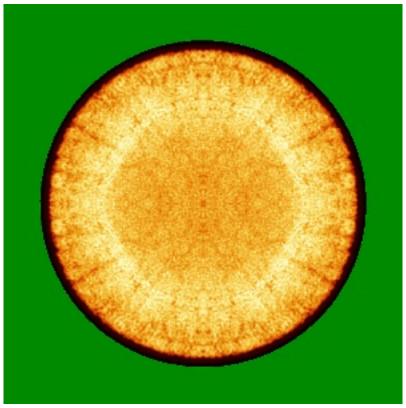
6.4.1 Primary map



X



Y

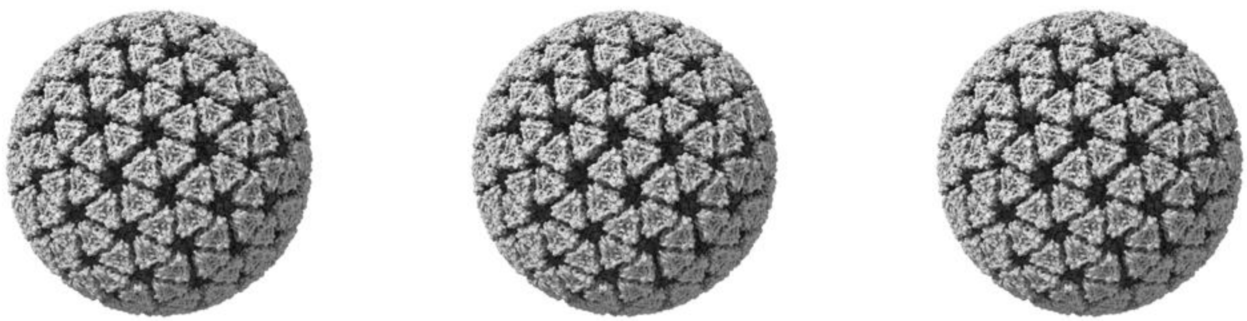


Z

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



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 2.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

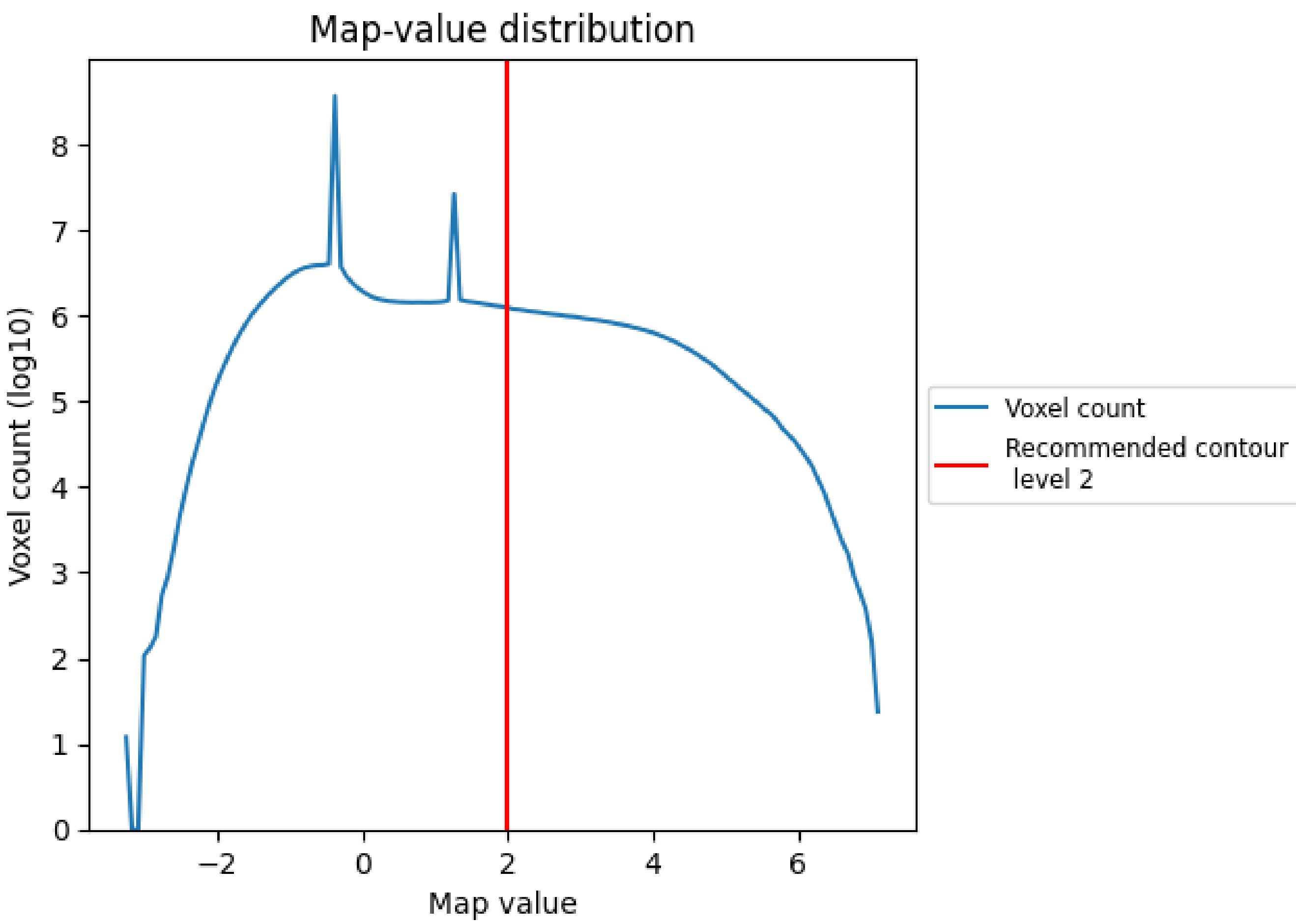
6.6 Mask visualisation (i)

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

7 Map analysis (i)

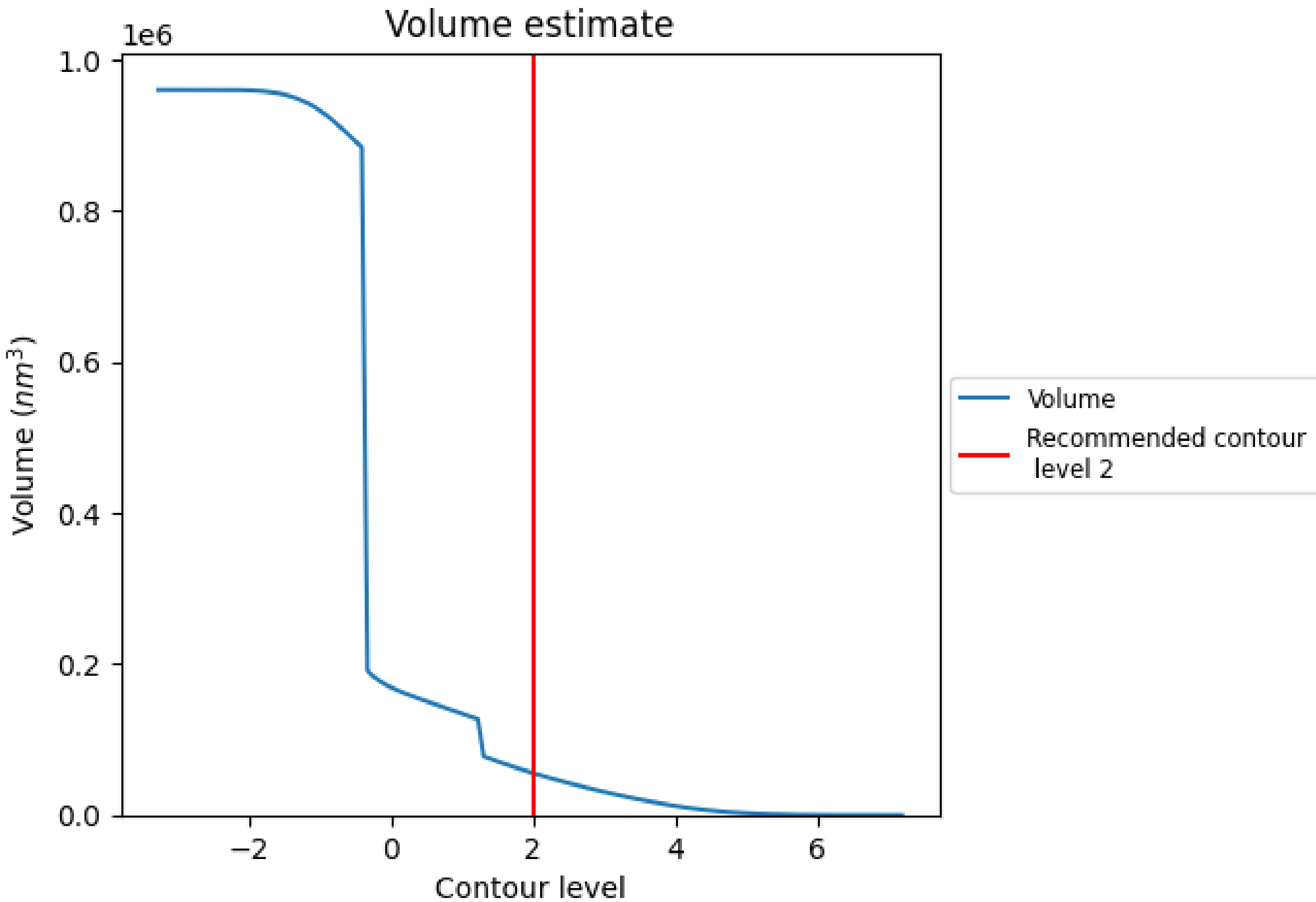
This section contains the results of statistical analysis of the map.

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.

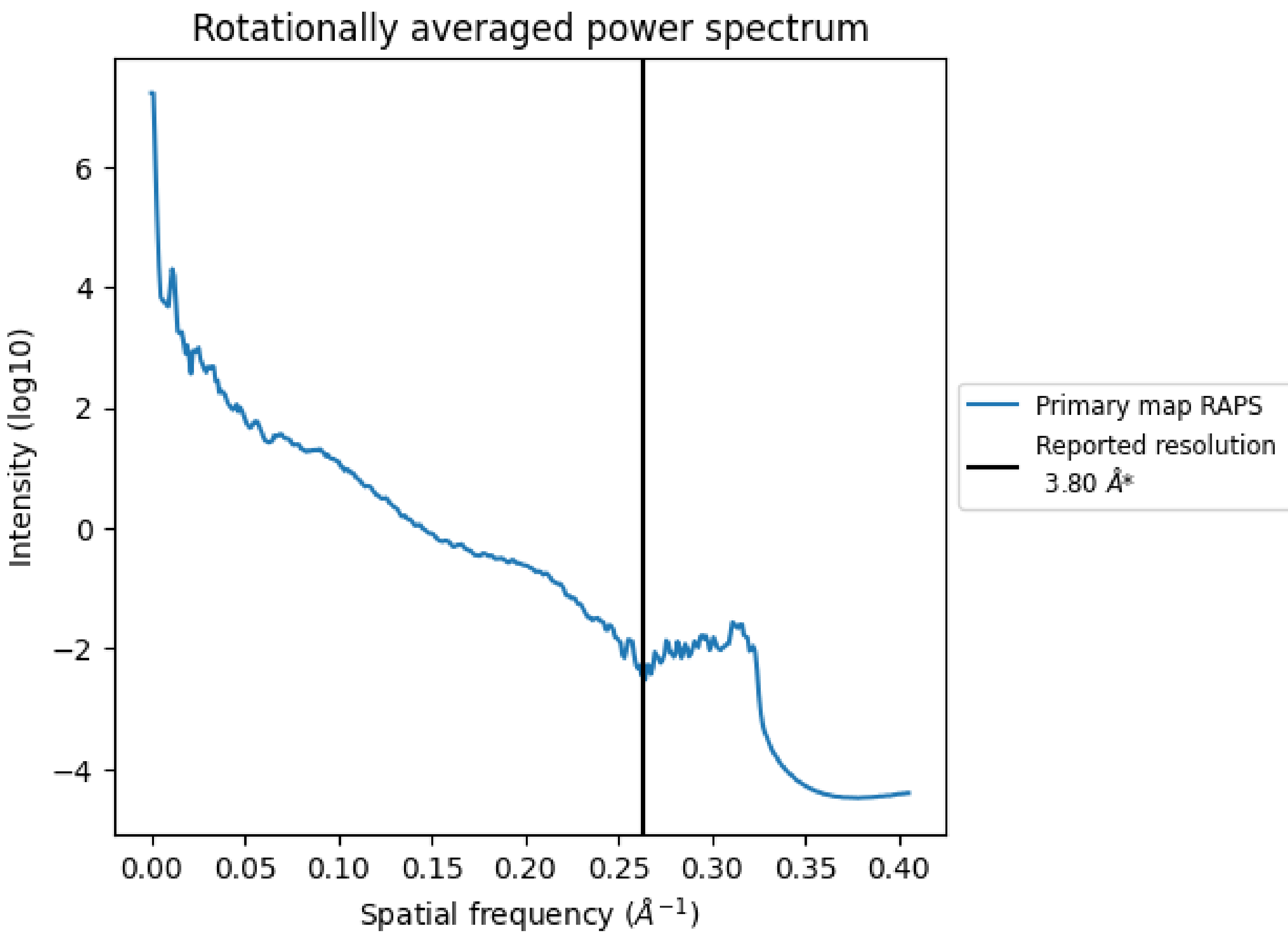
7.2 Volume estimate (i)



The volume at the recommended contour level is 55668 nm^3; this corresponds to an approximate mass of 50287 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 0.263 Å^{-1}

8 Fourier-Shell correlation (i)

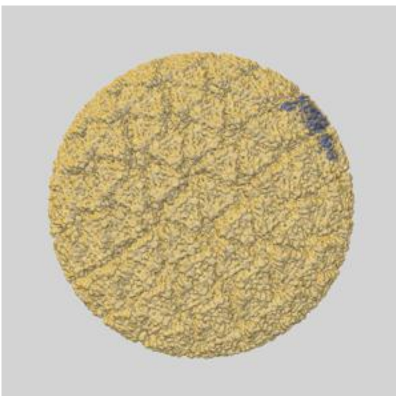
This section was not generated. No FSC curve or half-maps provided.

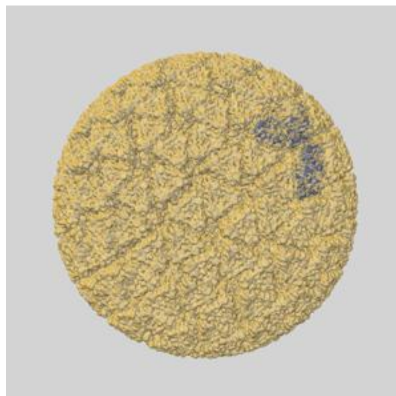
9 Map-model fit (i)

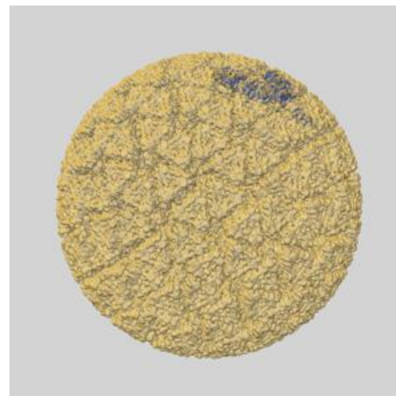
This section contains information regarding the fit between EMDB map EMD-1571 and PDB model 3GZT. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlays

9.1.1 Map-model overlay (i)


X


Y


Z

9.1.2 Map-model assembly overlay (i)


X


Y


Z

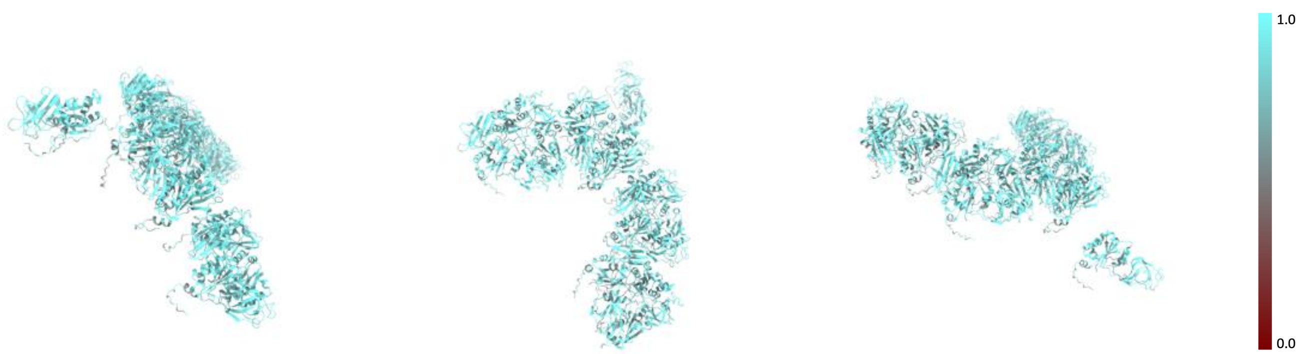
The images above show the 3D surface view of the map at the recommended contour level 2.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)

X Y Z

The images above show the model with each residue coloured according 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.

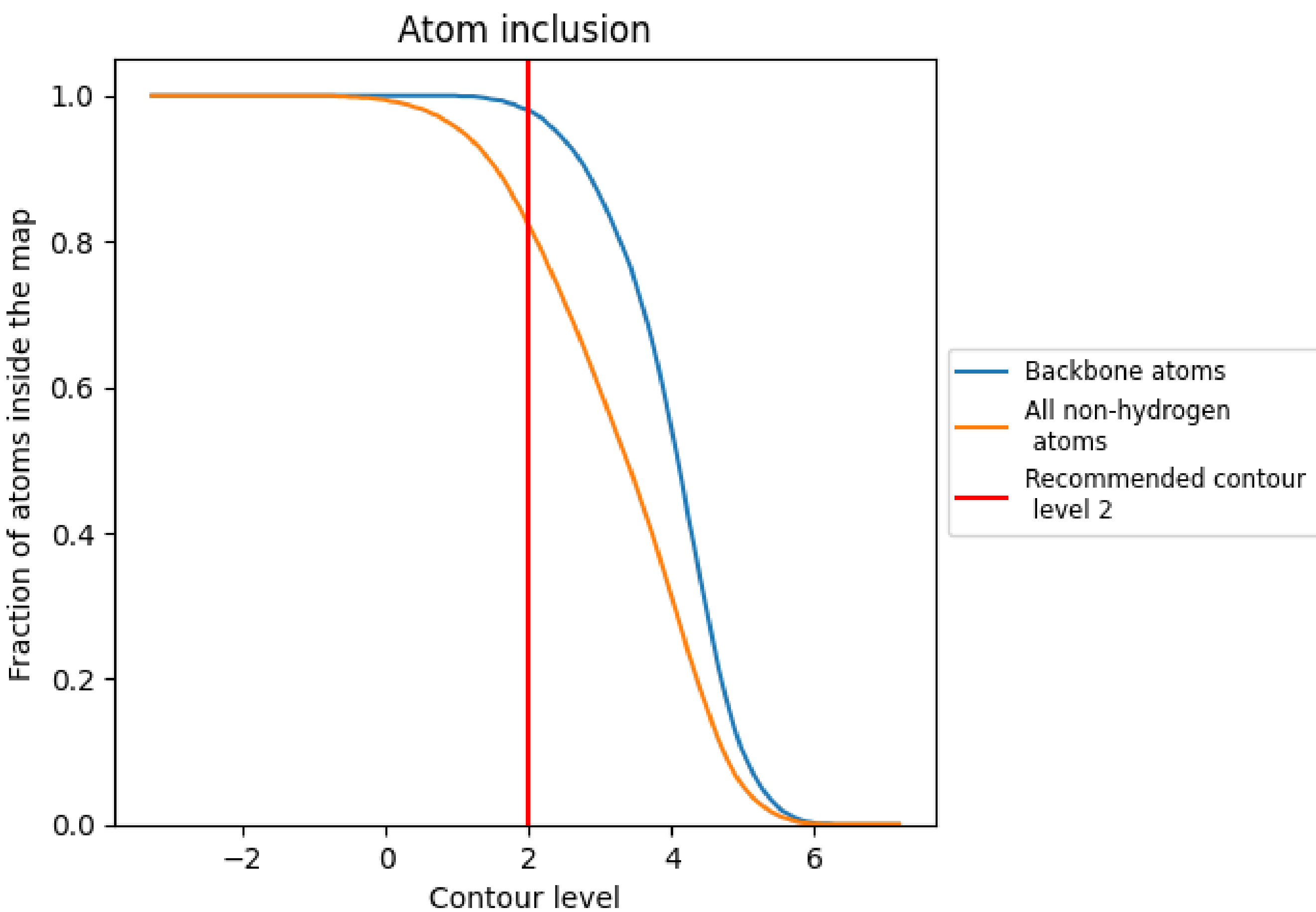
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

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 (2).

9.4 Atom inclusion (i)



At the recommended contour level, 98% of all backbone atoms, 82% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (2) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8230	0.2300
A	0.1070	0.3140
B	0.8260	0.2120
C	0.2140	0.2390
D	0.2500	0.2620
E	0.2500	0.2520
F	0.8550	0.2290
G	0.8420	0.2360
H	0.8440	0.2320
I	0.7980	0.2260
J	0.8040	0.2280
K	0.8050	0.2340
L	0.8340	0.2220
M	0.8560	0.2280
N	0.8390	0.2350
O	0.8420	0.2330
P	0.8390	0.2340
Q	0.8340	0.2340
R	0.0360	0.1640
S	0.1430	0.2570
T	0.1790	0.1960
U	0.2140	0.2180
V	0.2860	0.2410
W	0.2500	0.3320
X	0.1720	0.1760
Y	0.2500	0.2380
Z	0.1790	0.3550