



wwPDB EM Validation Summary Report ⓘ

Nov 4, 2024 – 08:41 PM JST

PDB ID : 8JXA
EMDB ID : EMD-36694
Title : cryo-EM structure of rat megalin bodyB
Authors : Goto, S.; Tsutsumi, A.; Lee, Y.; Hosojima, M.; Kabasawa, H.; Komochi, K.; Yun-san, L.; Nagatoshi, S.; Tsumoto, K.; Nishizawa, T.; Kikkawa, M.; Saito, A.
Deposited on : 2023-06-30
Resolution : 3.80 Å (reported)
Based on initial model : .

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We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev113
Mogul : 1.8.5 (274361), CSD as541be (2020)
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

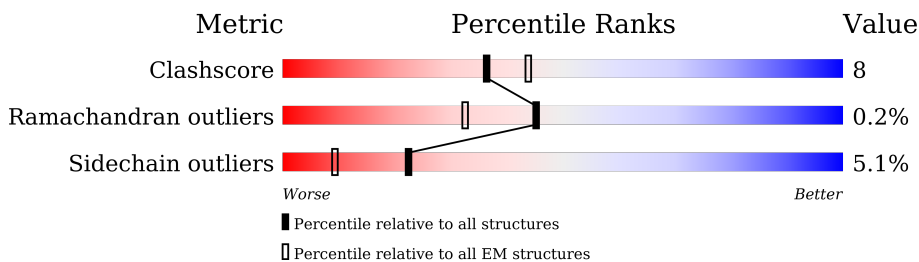
1 Overall quality at a glance

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.



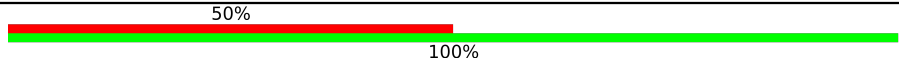
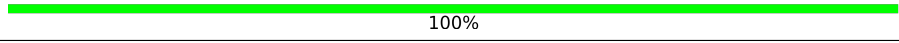
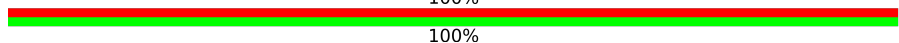

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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 $\leq 5\%$. 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	4660	
1	B	4660	
2	M	5	
3	C	3	
3	D	3	
4	E	5	
4	H	5	
4	I	5	

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Mol	Chain	Length	Quality of chain
5	F	2	 50% 100%
5	G	2	 100%
5	J	2	 100% 100%
6	K	3	 100% 100%

2 Entry composition [i](#)

There are 9 unique types of molecules in this entry. The entry contains 11889 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 LDL receptor related protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1077	Total 8455	C 5100	N 1537	O 1687	S 131	0	0
1	B	361	Total 2904	C 1844	N 493	O 549	S 18	0	0

- Molecule 2 is a protein called unclear peptide.

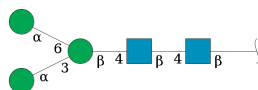
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	M	5	Total 28	C 16	N 6	O 6	0	0

- Molecule 3 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		
3	C	3	Total 39	C 22	N 2	O 15	0	0
3	D	3	Total 39	C 22	N 2	O 15	0	0

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



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

- 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
5	F	2	Total	C	N	O	0	0
			28	16	2	10		
5	G	2	Total	C	N	O	0	0
			28	16	2	10		
5	J	2	Total	C	N	O	0	0
			28	16	2	10		

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



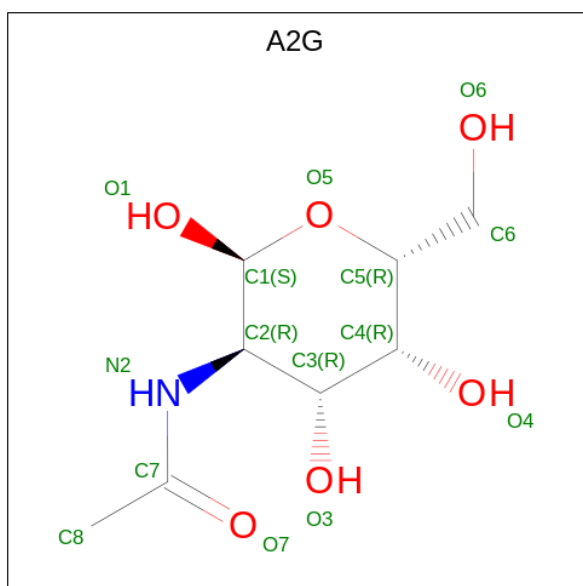
Mol	Chain	Residues	Atoms				AltConf	Trace
6	K	3	Total	C	N	O	0	0
			39	22	2	15		

- Molecule 7 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆).



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

- Molecule 8 is 2-acetamido-2-deoxy- α -D-galactopyranose (three-letter code: A2G) (formula: $C_8H_{15}NO_6$).



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

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

- Molecule 9 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		AltConf
9	A	20	Total	Ca	0
			20	20	

THR PRO GLY TYR THR ALA THR GLU ASP ALA THR PHE LEU LYS ASP THR ALA ALA ASP

• Molecule 1: LDL receptor related protein 2



MET GLU ARG ASP TYR THR ALA THR PHE LEU LYS ASP THR ALA ALA ASP

GLY CYS PRO ARG ASP TYR THR ALA THR PHE LEU LYS ASP THR ALA ALA ASP

ILE PRO SER GLU ARG ASP TYR THR ALA THR PHE LEU LYS ASP THR ALA ALA ASP

THR LEU CYS SER GLU ARG ASP TYR THR ALA THR PHE LEU LYS ASP THR ALA ALA ASP

CYS ASP GLY ARG ASP TYR THR ALA THR PHE LEU LYS ASP THR ALA ALA ASP

THR SER GLY ARG ASP TYR THR ALA THR PHE LEU LYS ASP THR ALA ALA ASP

CYS GLU ASN ARG ASP TYR THR ALA THR PHE LEU LYS ASP THR ALA ALA ASP

ASN ARG GLY MET VAL ASN VAL GLY MET VAL ASN VAL GLY MET VAL ASN VAL

TYR LEU VAL THR ASN VAL ASN VAL ASN VAL ASN VAL ASN VAL ASN VAL ASN VAL

PHE MET ASP GLY SER ASN ARG LYS ASP ASP VAL THR THR THR THR THR THR THR

PRO HIS PRO PHE GLY ILE SER LEU PHE PHE PHE PHE PHE PHE PHE PHE PHE PHE

PRO CYS SER GLY ASN GLY VAL VAL VAL VAL VAL VAL VAL VAL VAL VAL VAL VAL

ILE PRO PHE THR LEU THR GLN THR ASP MET VAL VAL VAL VAL VAL VAL VAL VAL

ARG LEU THR ASP PHE ASP MET VAL VAL VAL VAL VAL VAL VAL VAL VAL VAL VAL

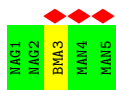
LEU SER ASP PHE ASP MET VAL VAL VAL VAL VAL VAL VAL VAL VAL VAL VAL VAL

LEU ASP ARG LYS ASP MET HIS THR THR THR THR THR THR THR THR THR THR THR

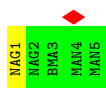
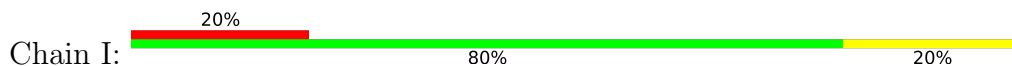
ALA TYR ASP ALA ASP GLN THR THR THR THR THR THR THR THR THR THR THR THR

PRO THR GLN CYS GLY SER LEU THR VAL VAL VAL VAL VAL VAL VAL VAL VAL VAL

M4386	L4326	R4266	Q4206	Q4145	E4081	GLN
H4387	R4327	R4267	G4207	F4146	SER	THR
G4388	Y4328	L4268	K4208	D4147	ARG	GLY
G4389	M4329	L4269	Q4209	G4148	CYS	THR
M4390	Q4330	L4270	P4210	L4149	ASN	ALA
C4391	S4331	M4271	K4211	A4150	GLY	ALA
Y4392	V4332	E4272	I4212	V4151	VAL	MET
F4393	S4333	A4273	E4213	W4153	THR	CYS
D4394	M4334	M4274	S4214	V4154	GLY	LYS
F4395	P4335	K4275	A4215	G4155	ALA	ASP
M4396	C4336	P4276	W4216	R4156	GLY	GLY
F4397	K4337	F4277	M4217	H4157	VAL	ASN
L4398	Q4338	S4278	M4218	H4158	ILE	CYS
P4399	V4339	G4279	G4219	Y4159	GLY	LYS
K4400	C4340	D4280	E4220	W4160	LYS	ASN
C4401	S4341	I4281	H4221	S4161	MET	THR
K4402	H4342	F4282	R4222	A4162	SER	ILE
C4403	L4343	E4283	S4223	A4163	THR	GLY
S4404	C4344	D4284	V4224	K4164	HIS	LYS
S4405	L4345	K4285	L4225	S4165	TVR	ASP
G4406	L4346	L4286	V4226	Q4166	GLY	GLY
Y4407	R4347	L4287	S4227	R4167	GLU	THR
S4408	P4348	W4288	E4228	I4168	ASN	GLY
G4409	G4349	V4289	M4229	A4171	ALA	ALA
E4410	G4350	A4290	L4230	Y4172	ASP	GLY
Y4411	Y4351	K4291	G4231	L4173	GLY	THR
C4412	S4352	E4292	W4232	D4174	ALA	ALA
E4413	C4353	K4293	P4233	R4175	ALA	ALA
V4414	A4354	G4294	M4234	G4176	ASN	ASP
LEU	C4355	E4295	M4235	Y4177	GLY	GLY
ARG	P4356	V4296	L4236	R4178	THR	THR
SER	Q4357	W4297	S4237	K4179	ASP	ASP
GLY	G4358	R4298	I4238	W4180	GLY	THR
ILE	S4359	Q4299	D4239	L4181	LYS	THR
PRO	D4360	M4300	Y4240	I4182	ASN	ASP
PRO	F4361	K4301	L4241	T4183	SER	GLU
GLY	V4362	F4302	M4242	T4184	CYS	GLU
THR	T4363	G4303	D4243	Q4185	VAL	ALA
THR	G4364	G4304	D4244	L4186	GLN	ALA
ALA	S4365	K4304	D4244	D4187	ASP	ALA
VAL	T4366	E4305	R4245	Q4188	ILE	CYS
LEU	V4367	M4306	V4246	W4189	ASN	GLY
LEU	Q4368	K4307	Y4247	A4190	LYS	ASP
THR	Q4369	E4308	W4248	A4191	GLN	GLU
PHE	C4369	K4309	S4249	S4127	THR	THR
VAL	D4370	V4310	D4250	G4128	SER	GLY
ILE	A4371	V4311	S4251	S4129	GLN	ASP
ILE	A4372	L4311	S4251	M4130	ARG	ASP
ILE	S4373	V4312	K4252	M4131	PHE	GLN
VAL	E4374	V4313	E4253	M4131	GLY	GLN
ALA	L4375	M4314	D4254	P4132	ALA	ASP
LEU	P4376	P4315	V4255	I4133	CYS	ALA
VAL	V4377	W4316	I4256	R4134	ASP	ILE
LEU	T4378	L4317	E4257	E4135	CYS	GLY
VAL	M4379	T4318	A4258	W4136	THR	ARG
VAL	P4380	Q4319	I4259	L4137	ARG	GLY
GLY	P4381	V4320	K4260	L4138	GLY	ASP
	F4382	R4321	Y4261	K4141	VAL	VAL
	F4383	L4322	D4262	Y4142	CYS	ASP
	R4384	F4323	G4263	L4143	THR	ASP
	C4385	H4324	T4264	M4144	ASN	ASN
	Q4325		D4265		GLU	GLU



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



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



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	101096	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	1600	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.252	Depositor
Minimum map value	-0.147	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.0434	Depositor
Map size (\AA)	366.86002, 366.86002, 366.86002	wwPDB
Map dimensions	260, 260, 260	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.411, 1.411, 1.411	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: BMA, MAN, A2G, NAG, CA

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.28	0/8659	0.54	0/11737
1	B	0.24	0/2981	0.50	0/4047
2	M	0.14	0/7	0.28	0/8
All	All	0.27	0/11647	0.53	0/15792

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	8455	0	7527	128	0
1	B	2904	0	2797	42	0
2	M	28	0	12	0	0
3	C	39	0	34	0	0
3	D	39	0	34	1	0
4	E	61	0	52	0	0
4	H	61	0	52	0	0
4	I	61	0	52	0	0
5	F	28	0	25	0	0
5	G	28	0	25	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	J	28	0	25	0	0
6	K	39	0	34	0	0
7	A	28	0	26	0	0
8	A	70	0	60	0	0
9	A	20	0	0	0	0
All	All	11889	0	10755	170	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 8.

The worst 5 of 170 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:B:4179:LYS:HA	1:B:4357:GLN:HB2	1.66	0.76
1:B:4086:ILE:HG22	1:B:4107:VAL:HG12	1.74	0.70
1:A:3238:ARG:NH1	1:A:3464:GLN:O	2.26	0.69
1:A:3092:MET:SD	1:A:3092:MET:N	2.67	0.66
1:B:4129:SER:O	1:B:4130:ASN:ND2	2.28	0.66

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	1073/4660 (23%)	984 (92%)	87 (8%)	2 (0%)	44 74
1	B	359/4660 (8%)	332 (92%)	26 (7%)	1 (0%)	37 69
2	M	1/5 (20%)	1 (100%)	0	0	100 100
All	All	1433/9325 (15%)	1317 (92%)	113 (8%)	3 (0%)	45 74

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	3315	ASP
1	B	4414	VAL
1	A	3305	HIS

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	965/4089 (24%)	923 (96%)	42 (4%)	24	48
1	B	320/4089 (8%)	297 (93%)	23 (7%)	12	36
2	M	1/1 (100%)	1 (100%)	0	100	100
All	All	1286/8179 (16%)	1221 (95%)	65 (5%)	22	45

5 of 65 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	4246	VAL
1	B	4279	LEU
1	A	3505	ARG
1	A	3468	SER
1	B	4311	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 8 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	4387	HIS
1	B	4145	GLN
1	A	3714	GLN
1	A	3679	ASN
1	A	3782	GLN

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](#)

30 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	NAG	C	1	1,3	14,14,15	0.33	0	17,19,21	0.51	0
3	NAG	C	2	3	14,14,15	0.29	0	17,19,21	0.65	0
3	BMA	C	3	3	11,11,12	0.26	0	15,15,17	0.74	0
3	NAG	D	1	1,3	14,14,15	0.33	0	17,19,21	0.89	1 (5%)
3	NAG	D	2	3	14,14,15	0.32	0	17,19,21	0.89	0
3	BMA	D	3	3	11,11,12	0.23	0	15,15,17	0.64	0
4	NAG	E	1	1,4	14,14,15	0.31	0	17,19,21	0.67	0
4	NAG	E	2	4	14,14,15	0.31	0	17,19,21	0.72	0
4	BMA	E	3	4	11,11,12	0.28	0	15,15,17	1.03	1 (6%)
4	MAN	E	4	4	11,11,12	0.25	0	15,15,17	0.77	0
4	MAN	E	5	4	11,11,12	0.21	0	15,15,17	0.75	0
5	NAG	F	1	5,1	14,14,15	0.26	0	17,19,21	0.73	0
5	NAG	F	2	5	14,14,15	0.30	0	17,19,21	0.57	0
5	NAG	G	1	5,1	14,14,15	0.30	0	17,19,21	0.56	0
5	NAG	G	2	5	14,14,15	0.31	0	17,19,21	0.57	0
4	NAG	H	1	1,4	14,14,15	0.31	0	17,19,21	0.92	0
4	NAG	H	2	4	14,14,15	0.32	0	17,19,21	0.61	0
4	BMA	H	3	4	11,11,12	0.25	0	15,15,17	0.89	1 (6%)
4	MAN	H	4	4	11,11,12	0.22	0	15,15,17	0.69	0
4	MAN	H	5	4	11,11,12	0.22	0	15,15,17	0.72	0
4	NAG	I	1	1,4	14,14,15	0.34	0	17,19,21	0.82	1 (5%)
4	NAG	I	2	4	14,14,15	0.29	0	17,19,21	0.72	0
4	BMA	I	3	4	11,11,12	0.23	0	15,15,17	0.85	0
4	MAN	I	4	4	11,11,12	0.24	0	15,15,17	0.68	0
4	MAN	I	5	4	11,11,12	0.23	0	15,15,17	0.65	0
5	NAG	J	1	5	14,14,15	0.28	0	17,19,21	0.50	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NAG	J	2	5	14,14,15	0.31	0	17,19,21	0.73	0
6	NAG	K	1	6	14,14,15	0.27	0	17,19,21	0.57	0
6	NAG	K	2	6	14,14,15	0.31	0	17,19,21	0.65	0
6	BMA	K	3	6	11,11,12	0.23	0	15,15,17	0.74	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. '-' means no outliers of that kind were identified.

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

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	E	3	BMA	C1-C2-C3	2.49	112.72	109.67
4	I	1	NAG	C1-O5-C5	2.47	115.54	112.19
4	H	3	BMA	C1-O5-C5	2.33	115.34	112.19
3	D	1	NAG	C2-N2-C7	-2.12	119.88	122.90

There are no chirality outliers.

5 of 17 torsion outliers are listed below:

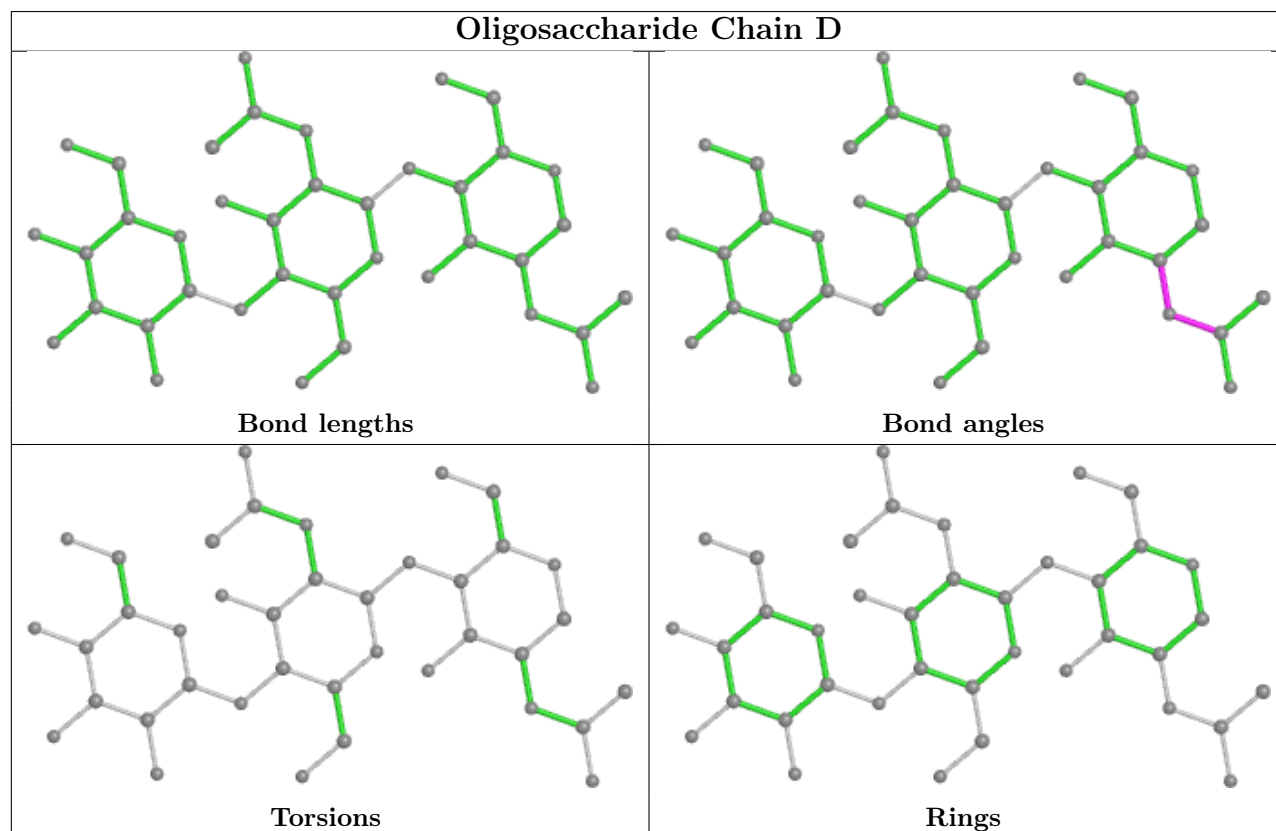
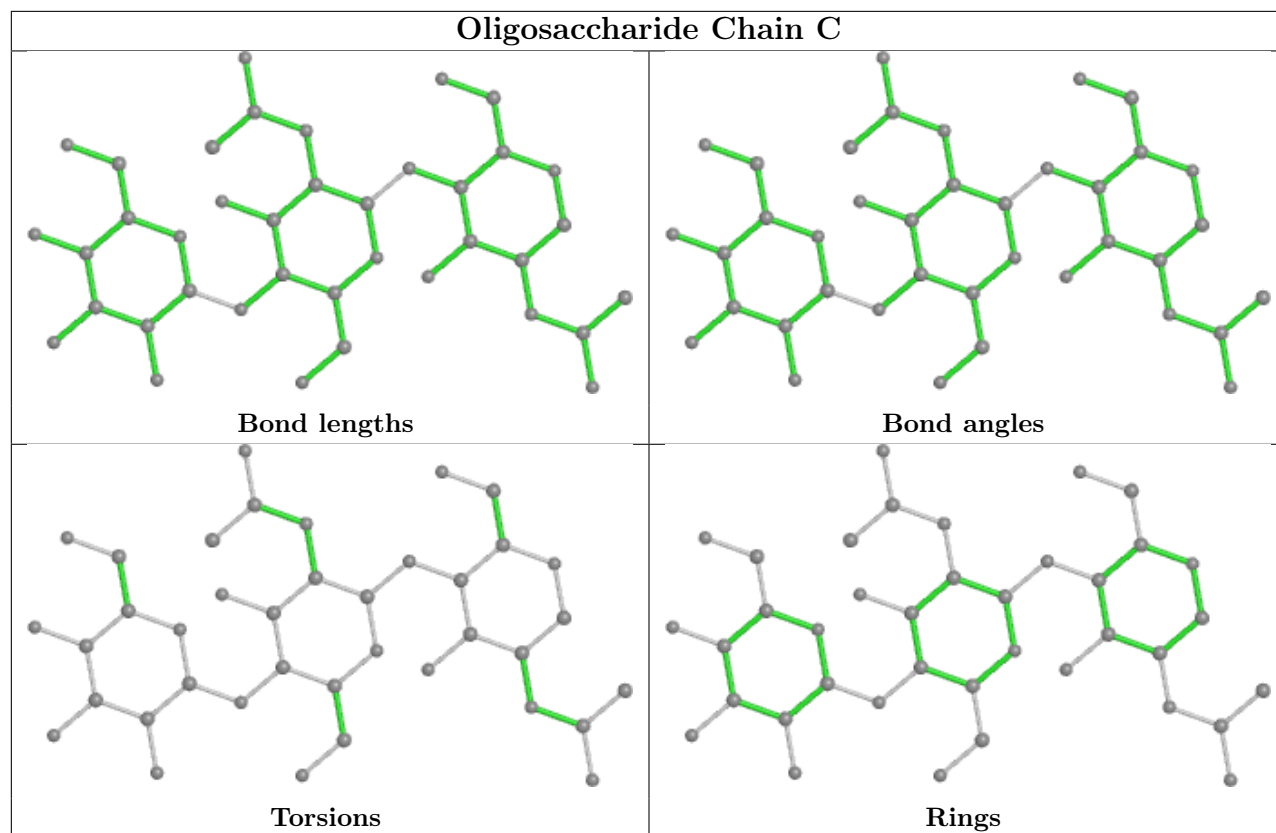
Mol	Chain	Res	Type	Atoms
4	I	1	NAG	C8-C7-N2-C2
4	H	1	NAG	C1-C2-N2-C7
4	I	1	NAG	O7-C7-N2-C2
5	G	1	NAG	C8-C7-N2-C2
5	G	1	NAG	O7-C7-N2-C2

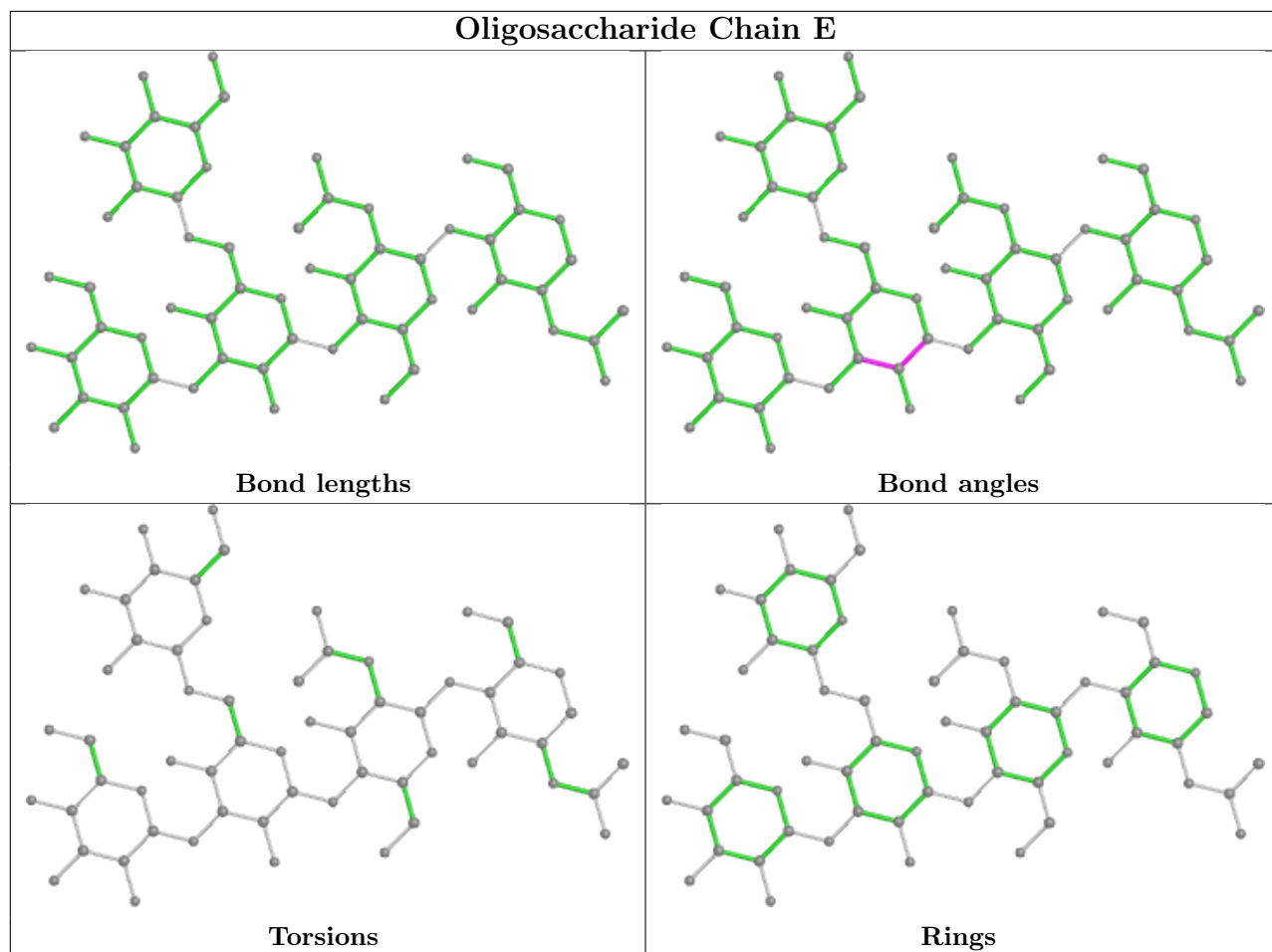
There are no ring outliers.

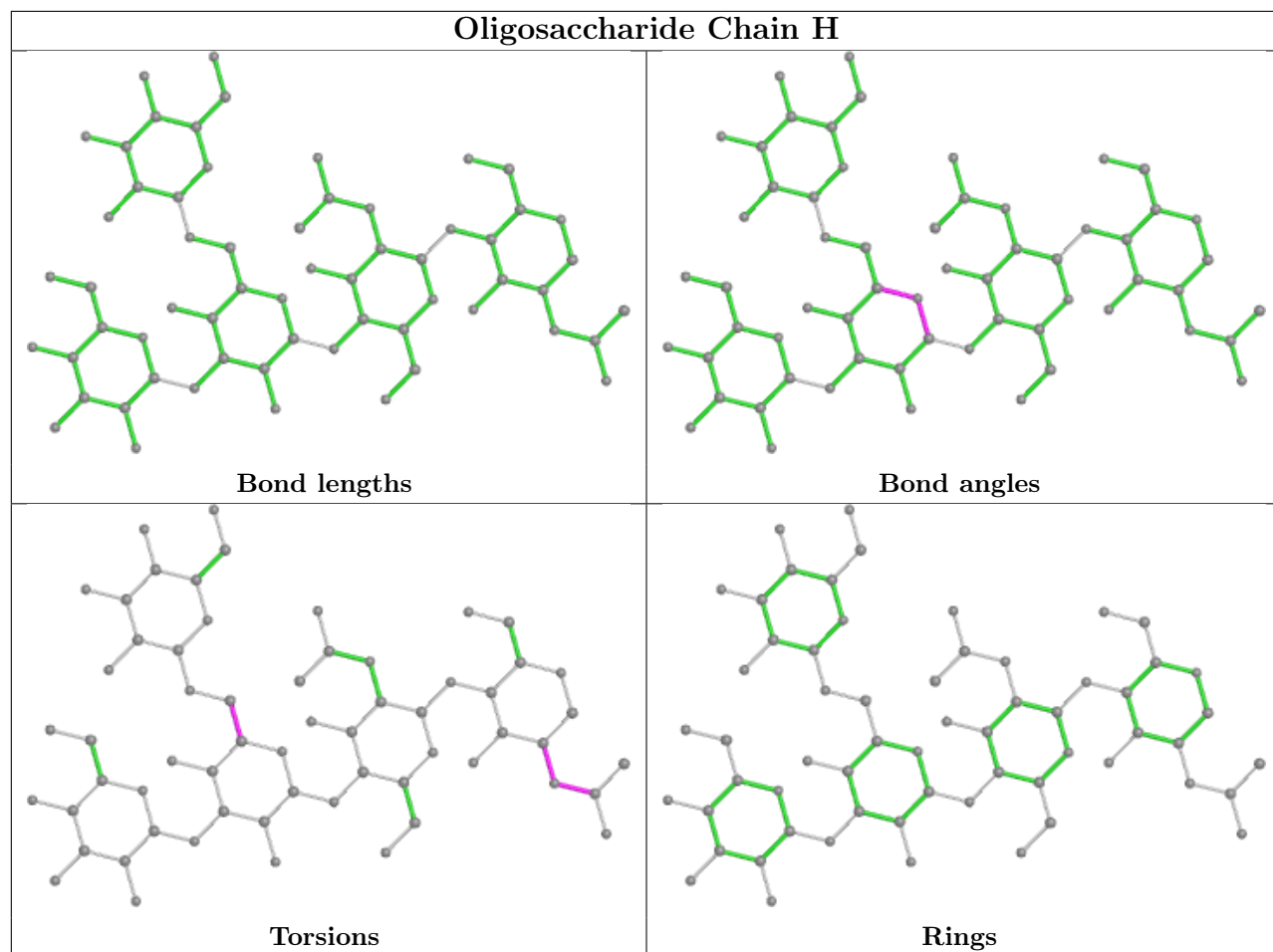
2 monomers are involved in 1 short contact:

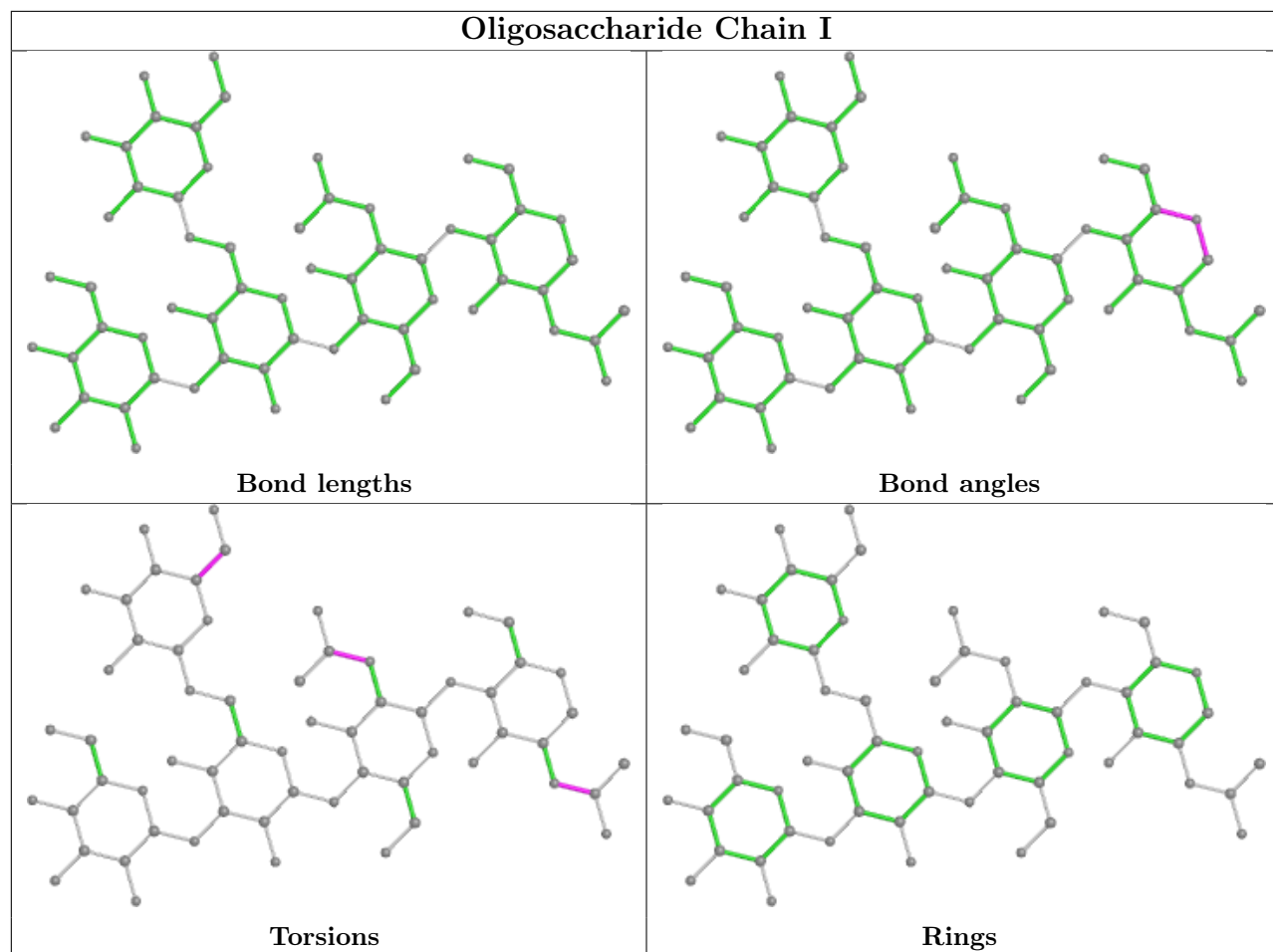
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	2	NAG	1	0
3	D	1	NAG	1	0

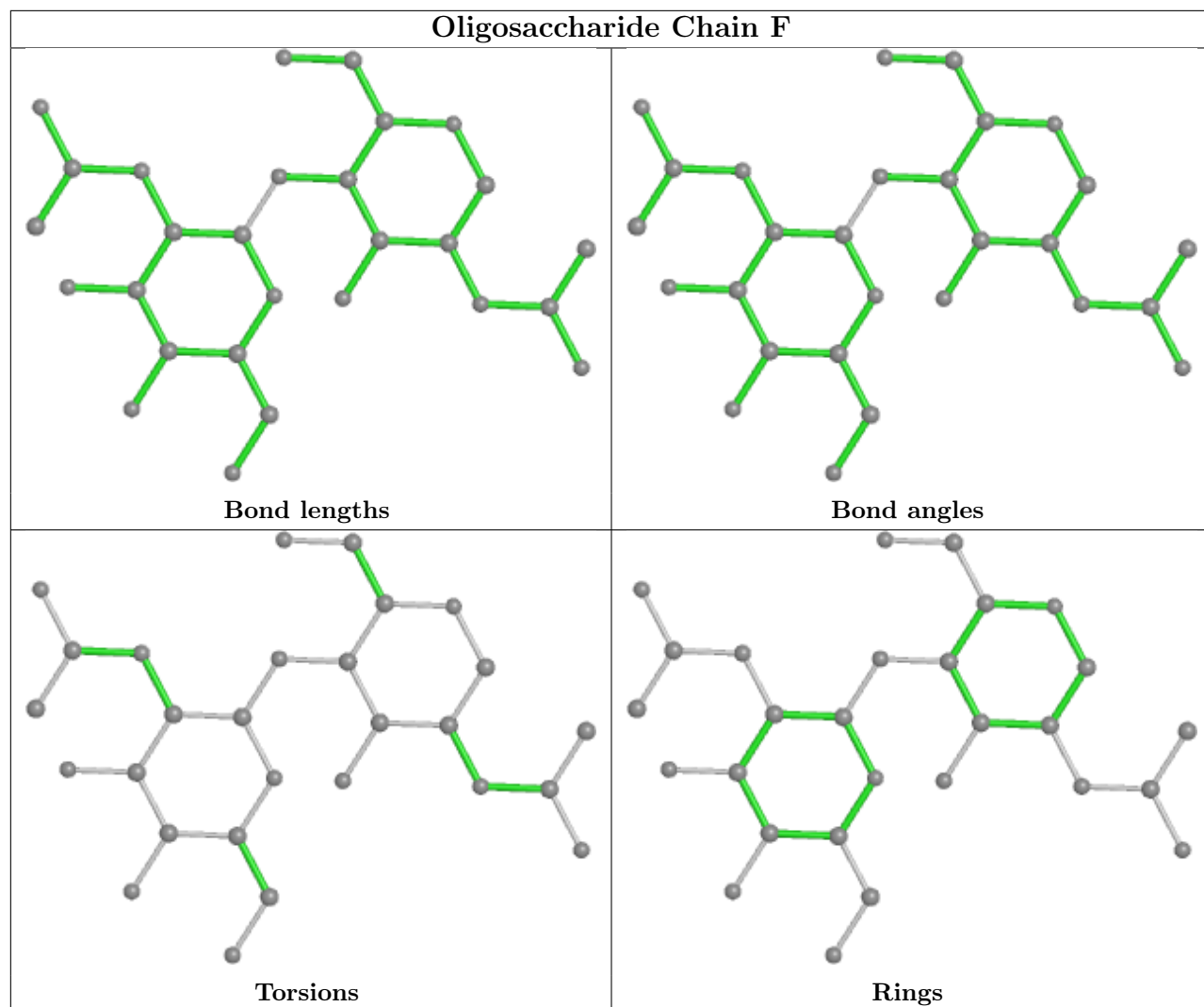
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

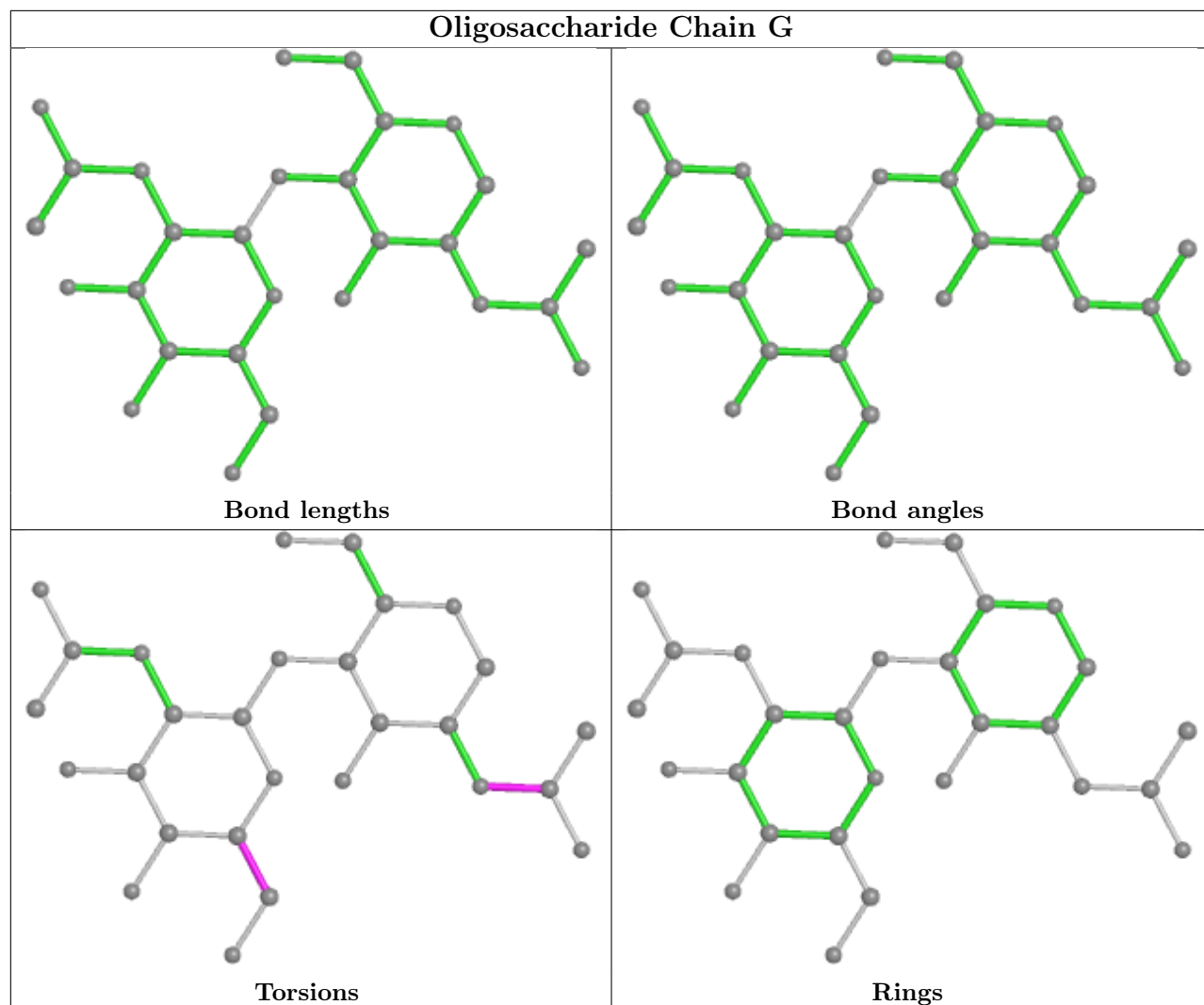


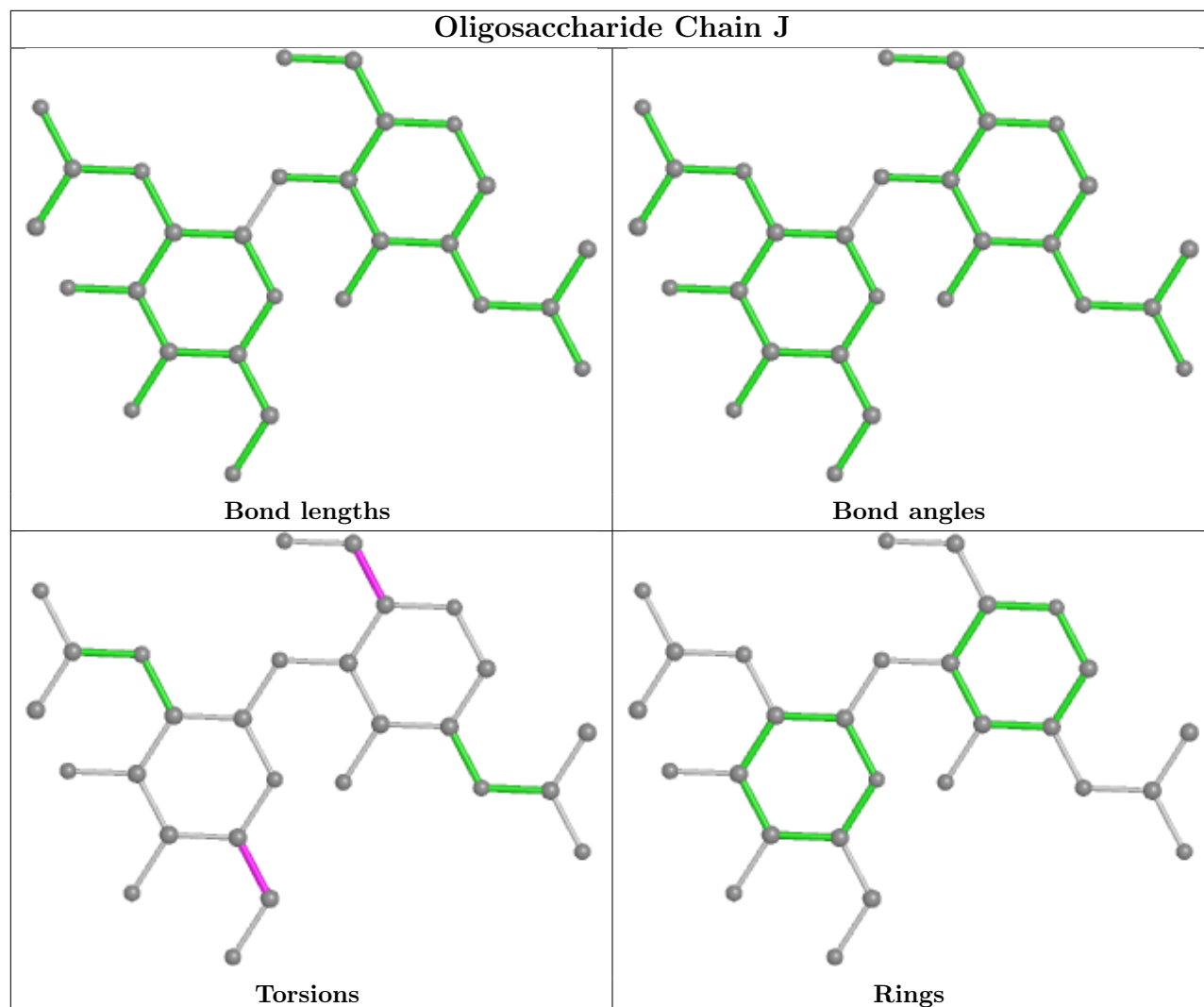


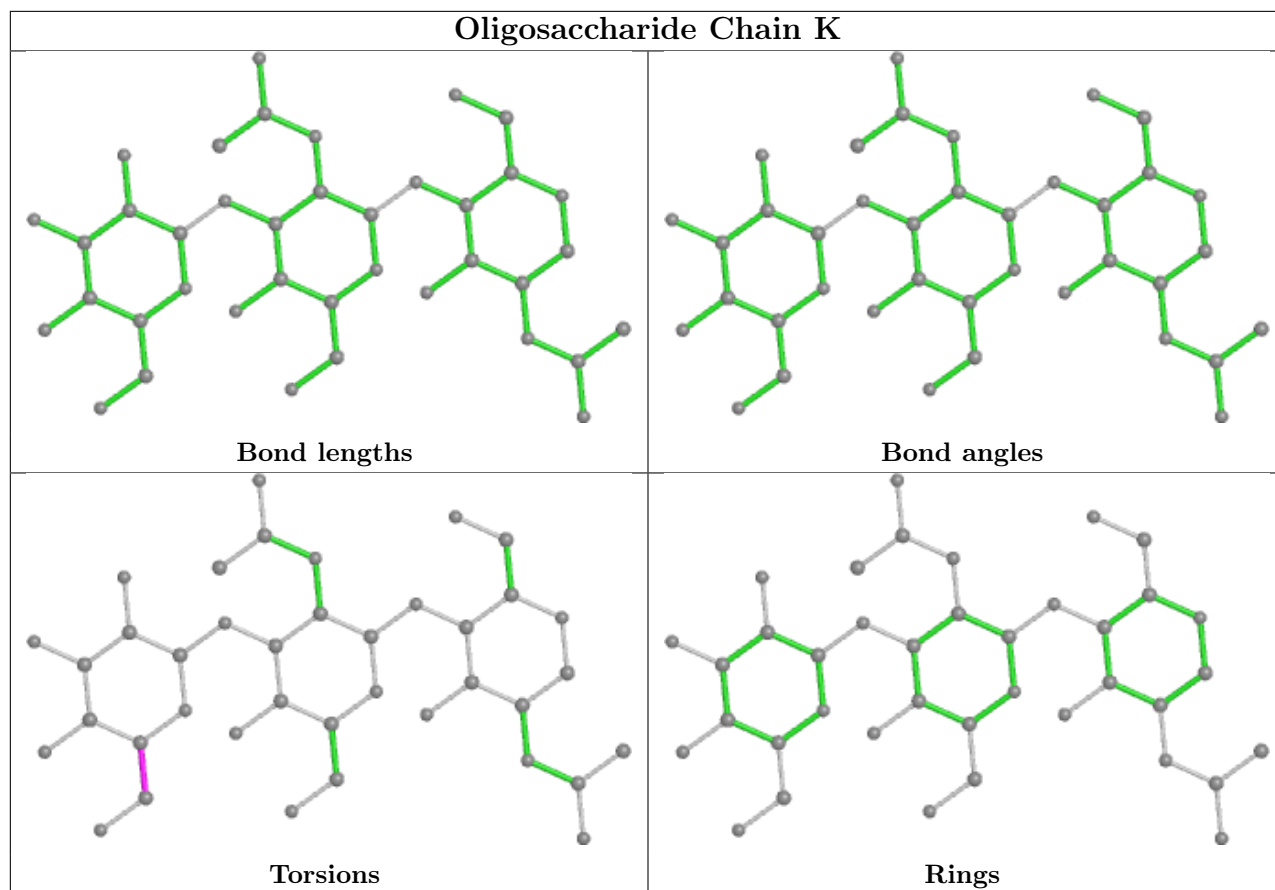












5.6 Ligand geometry [i](#)

Of 27 ligands modelled in this entry, 20 are monoatomic - leaving 7 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
8	A2G	A	4703	1	14,14,15	0.40	0	17,19,21	0.69	0
7	NAG	A	4702	1	14,14,15	0.26	0	17,19,21	0.65	0
8	A2G	A	4704	1	14,14,15	0.40	0	17,19,21	0.67	0
8	A2G	A	4705	1	14,14,15	0.41	0	17,19,21	0.53	0
8	A2G	A	4706	1	14,14,15	0.39	0	17,19,21	0.61	0
8	A2G	A	4707	1	14,14,15	0.39	0	17,19,21	0.57	0
7	NAG	A	4701	1	14,14,15	0.30	0	17,19,21	0.60	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. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
8	A2G	A	4703	1	-	0/6/23/26	0/1/1/1
7	NAG	A	4702	1	-	3/6/23/26	0/1/1/1
8	A2G	A	4704	1	-	0/6/23/26	0/1/1/1
8	A2G	A	4705	1	-	2/6/23/26	0/1/1/1
8	A2G	A	4706	1	-	0/6/23/26	0/1/1/1
8	A2G	A	4707	1	-	1/6/23/26	0/1/1/1
7	NAG	A	4701	1	-	1/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 7 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	A	4702	NAG	C8-C7-N2-C2
7	A	4702	NAG	O7-C7-N2-C2
7	A	4702	NAG	C1-C2-N2-C7
8	A	4705	A2G	C1-C2-N2-C7
8	A	4707	A2G	O5-C5-C6-O6

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.

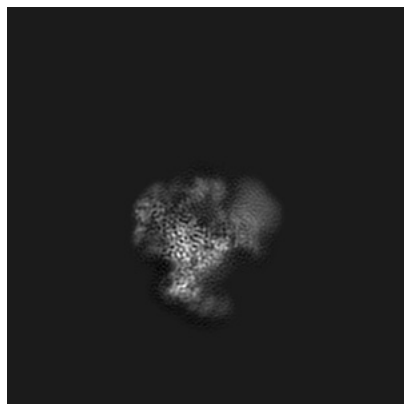
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-36694. These allow visual inspection of the internal detail of the map and identification of artifacts.

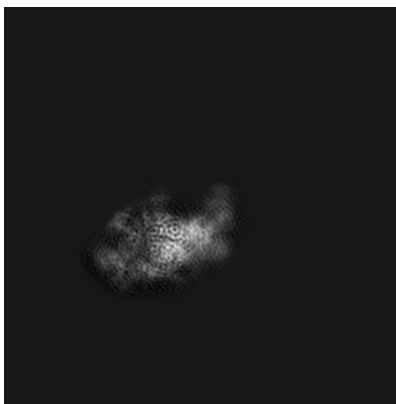
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

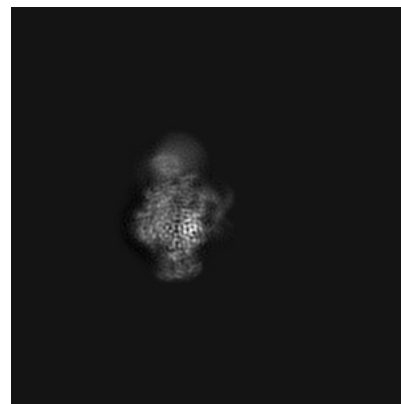
6.1.1 Primary map



X

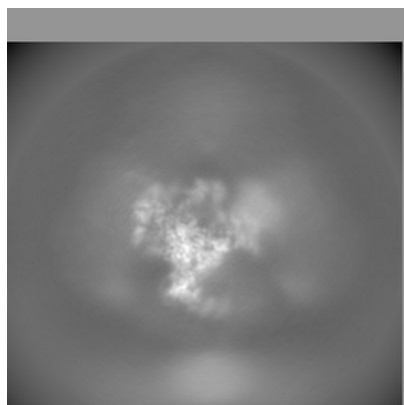


Y

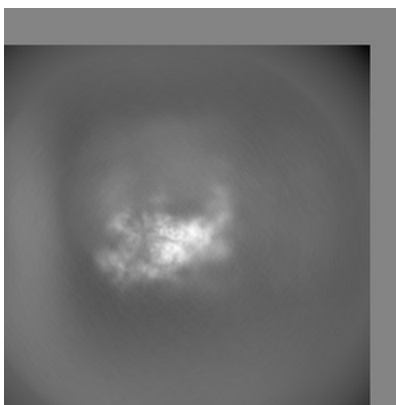


Z

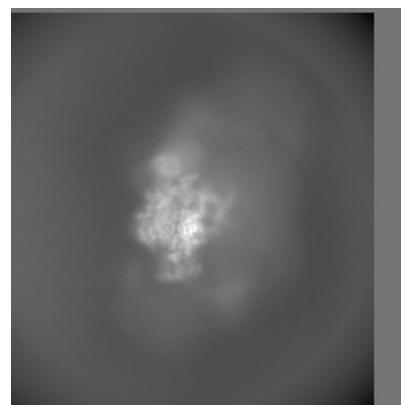
6.1.2 Raw map



X



Y

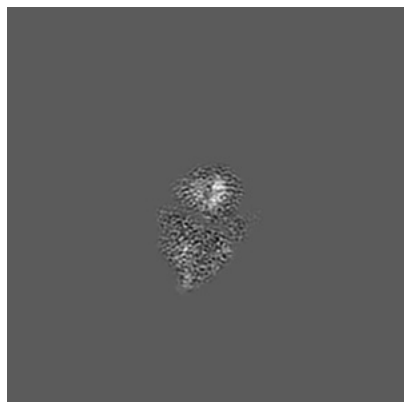


Z

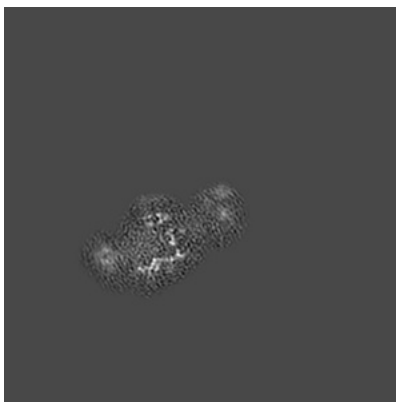
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

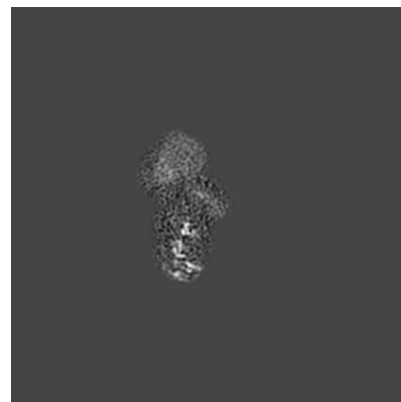
6.2.1 Primary map



X Index: 130

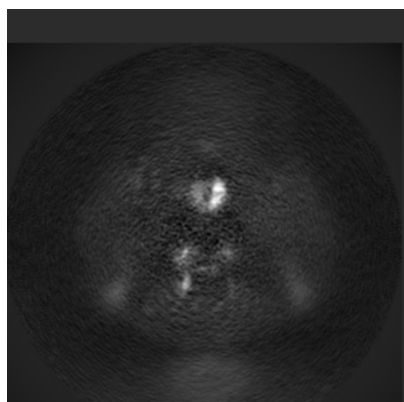


Y Index: 130

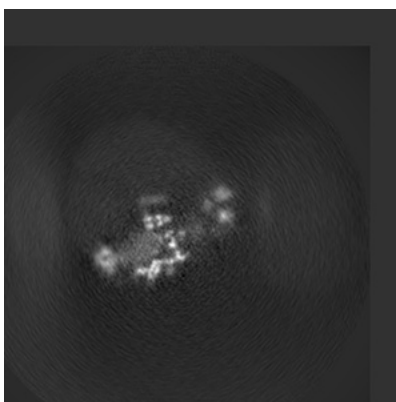


Z Index: 130

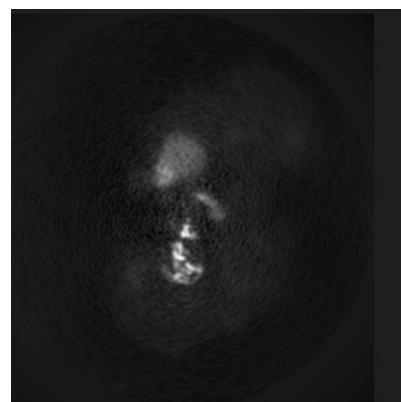
6.2.2 Raw map



X Index: 130



Y Index: 130

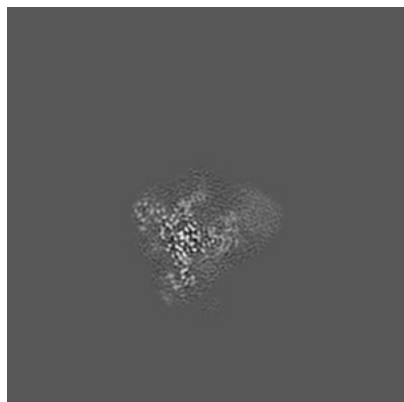


Z Index: 130

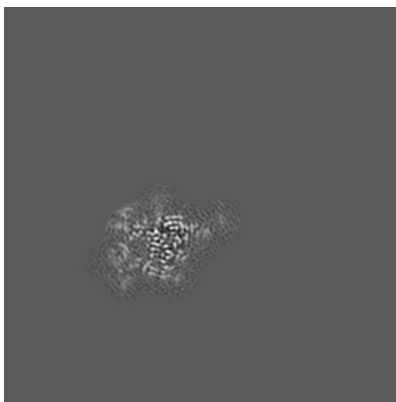
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

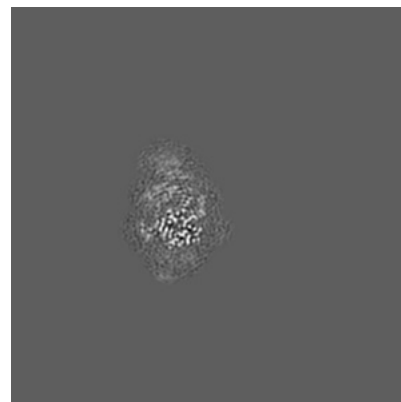
6.3.1 Primary map



X Index: 113

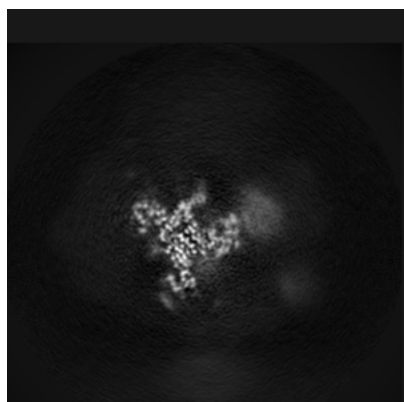


Y Index: 115

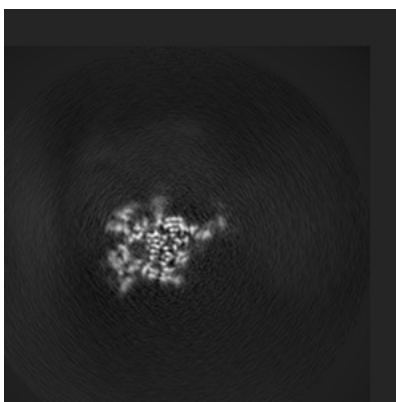


Z Index: 106

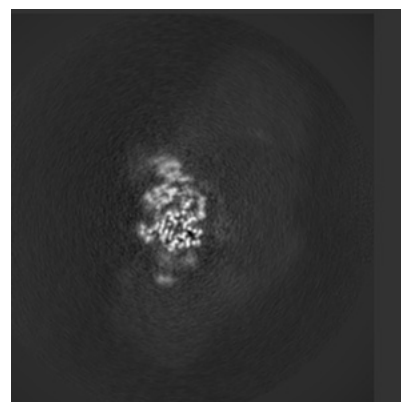
6.3.2 Raw map



X Index: 113



Y Index: 115

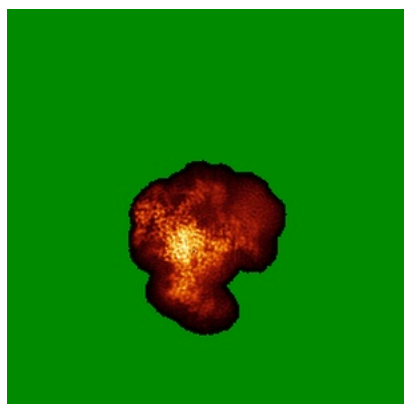


Z Index: 106

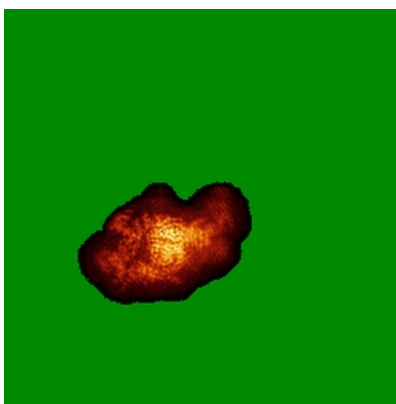
The images above show the largest variance slices of the map in three orthogonal directions.

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

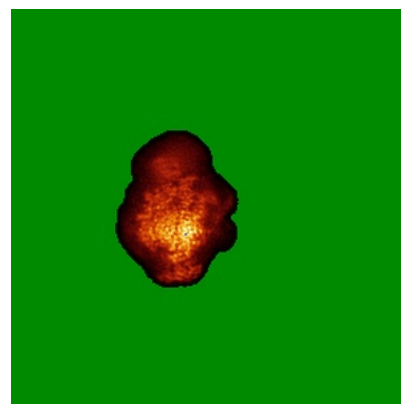
6.4.1 Primary map



X

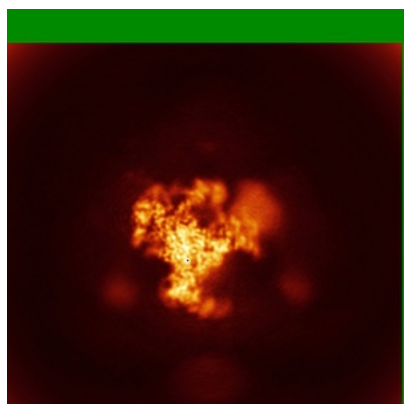


Y

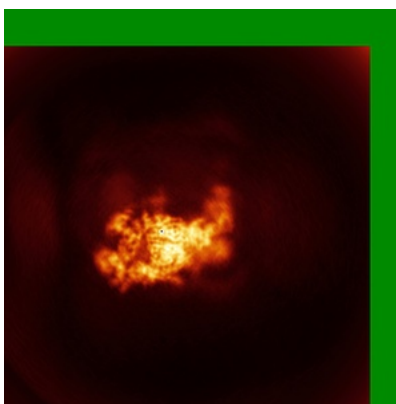


Z

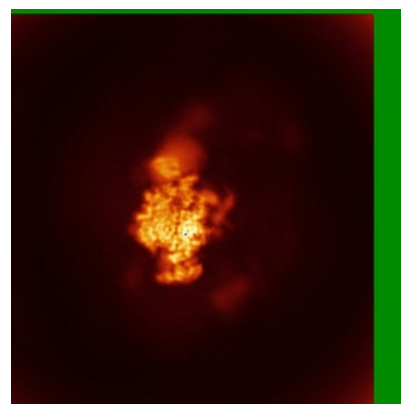
6.4.2 Raw map



X



Y



Z

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

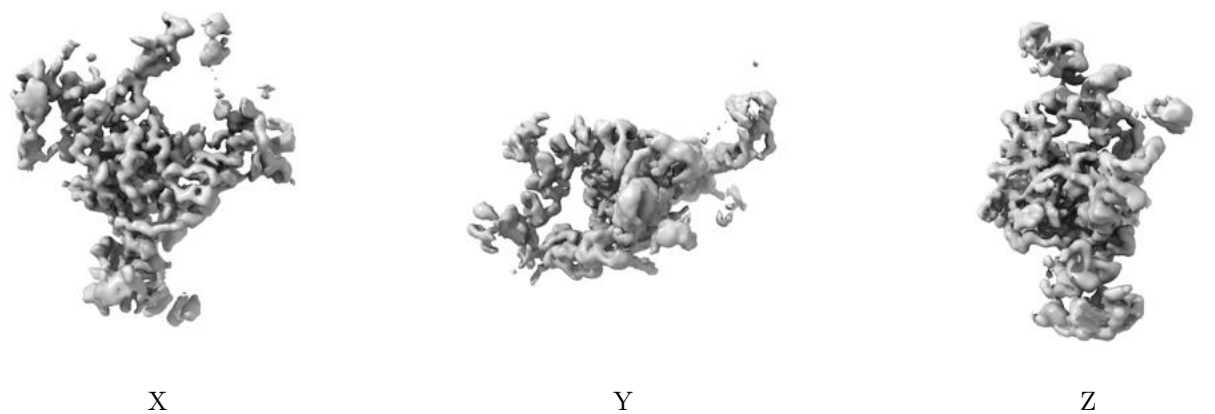
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0434. 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.

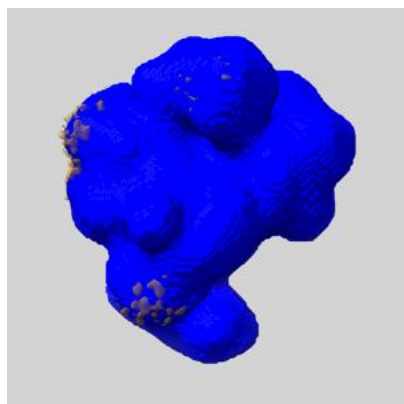
6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

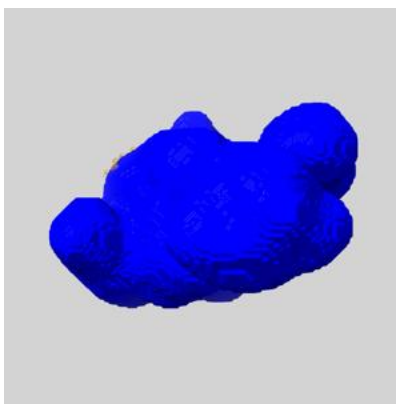
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

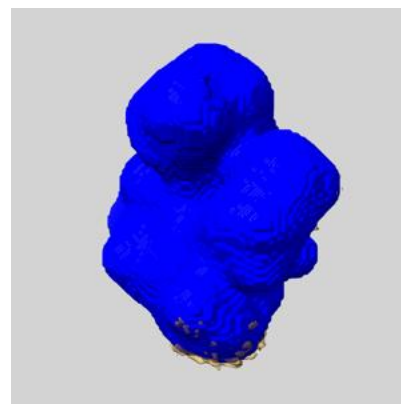
6.6.1 emd_36694_msk_1.map [i](#)



X



Y

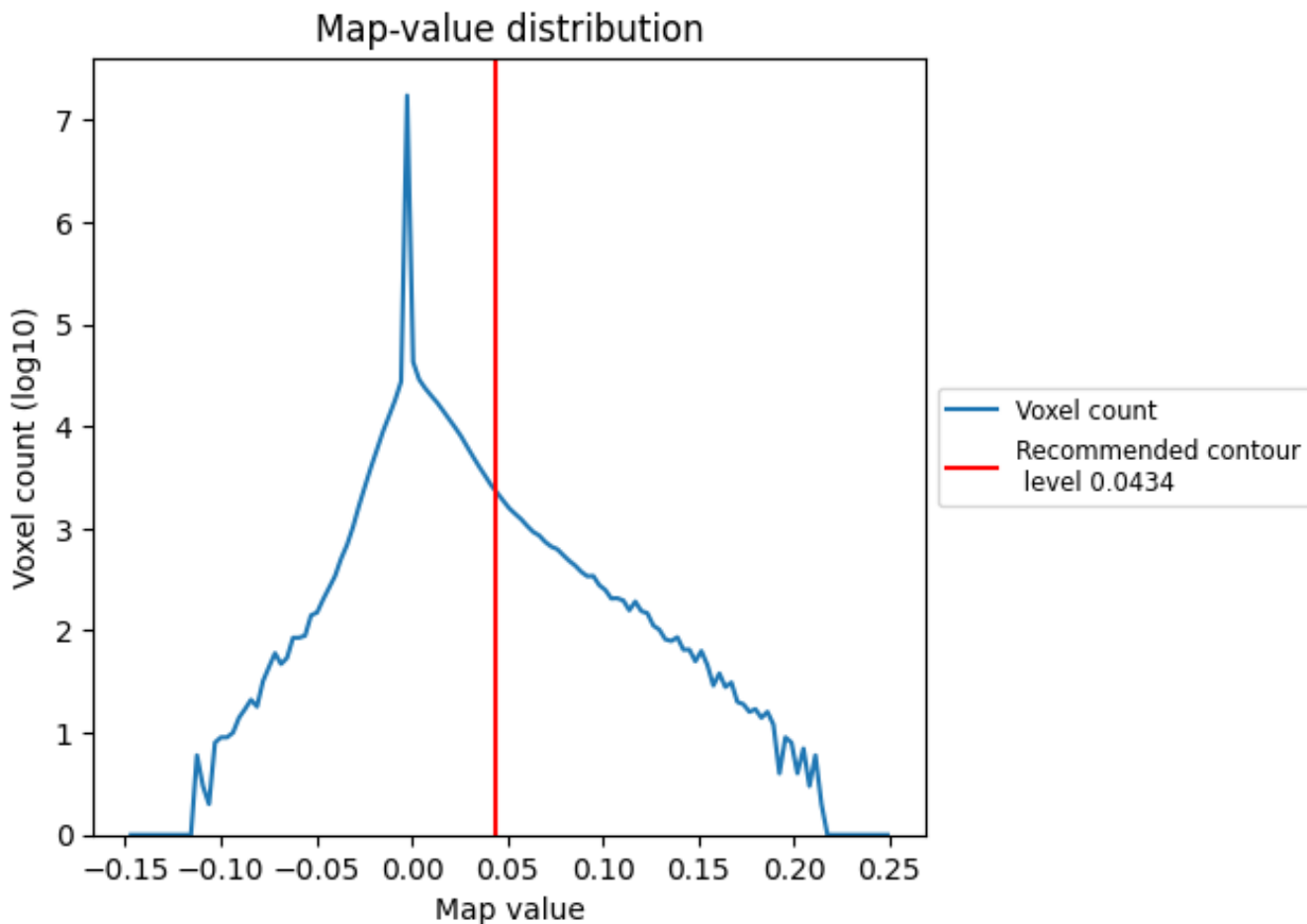


Z

7 Map analysis [i](#)

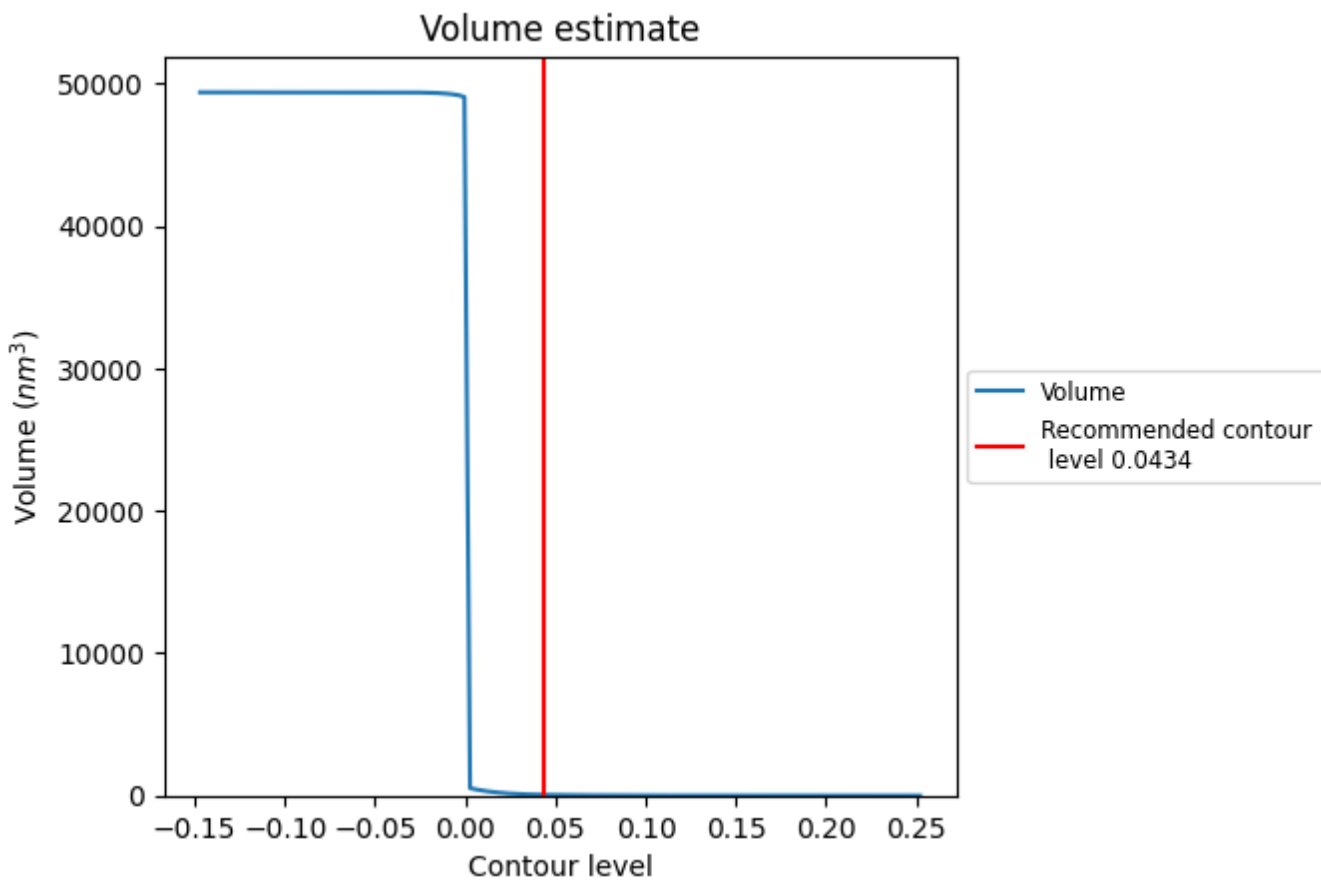
This section contains the results of statistical analysis of the map.

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.

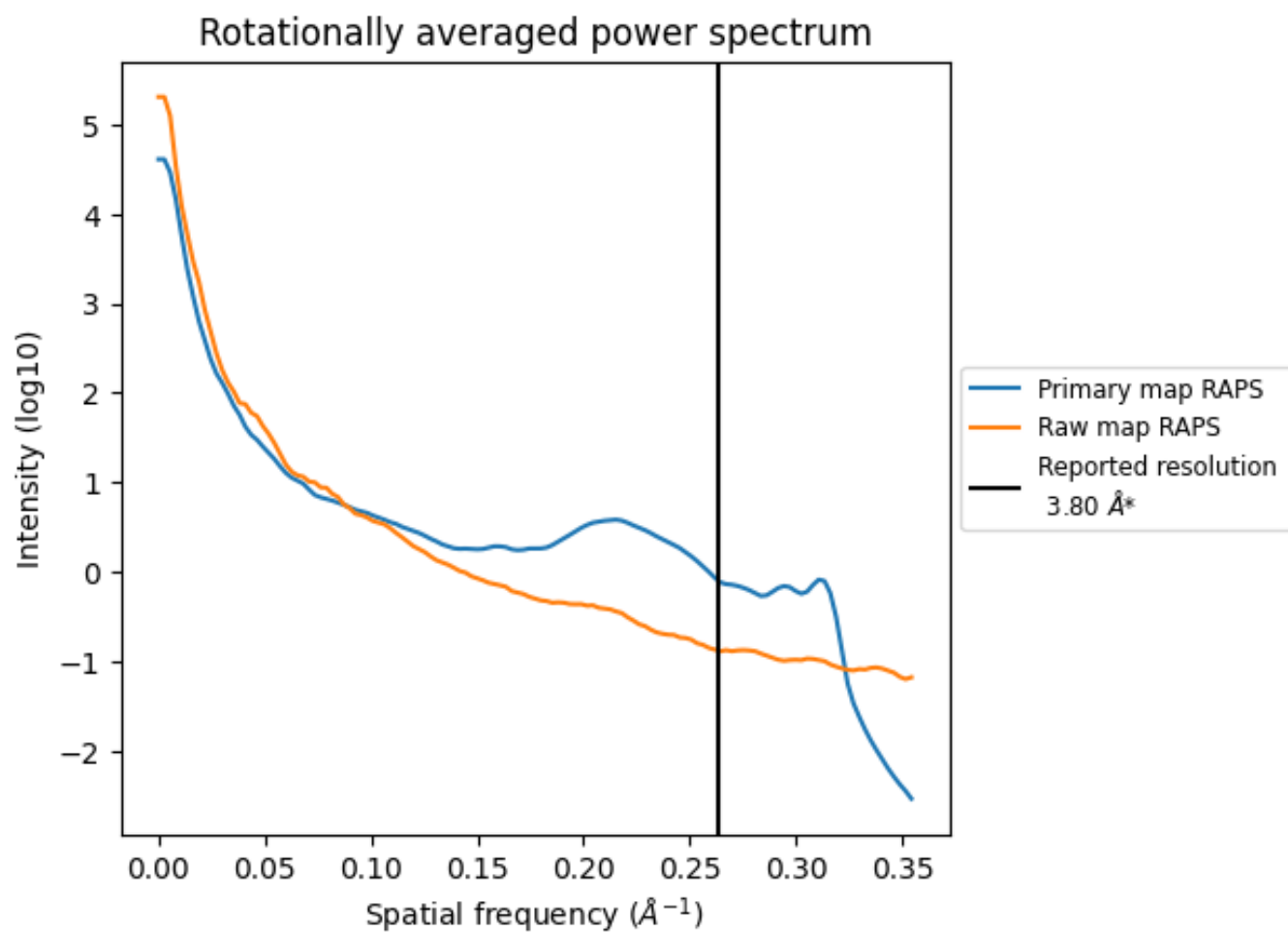
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 55 nm³; this corresponds to an approximate mass of 49 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

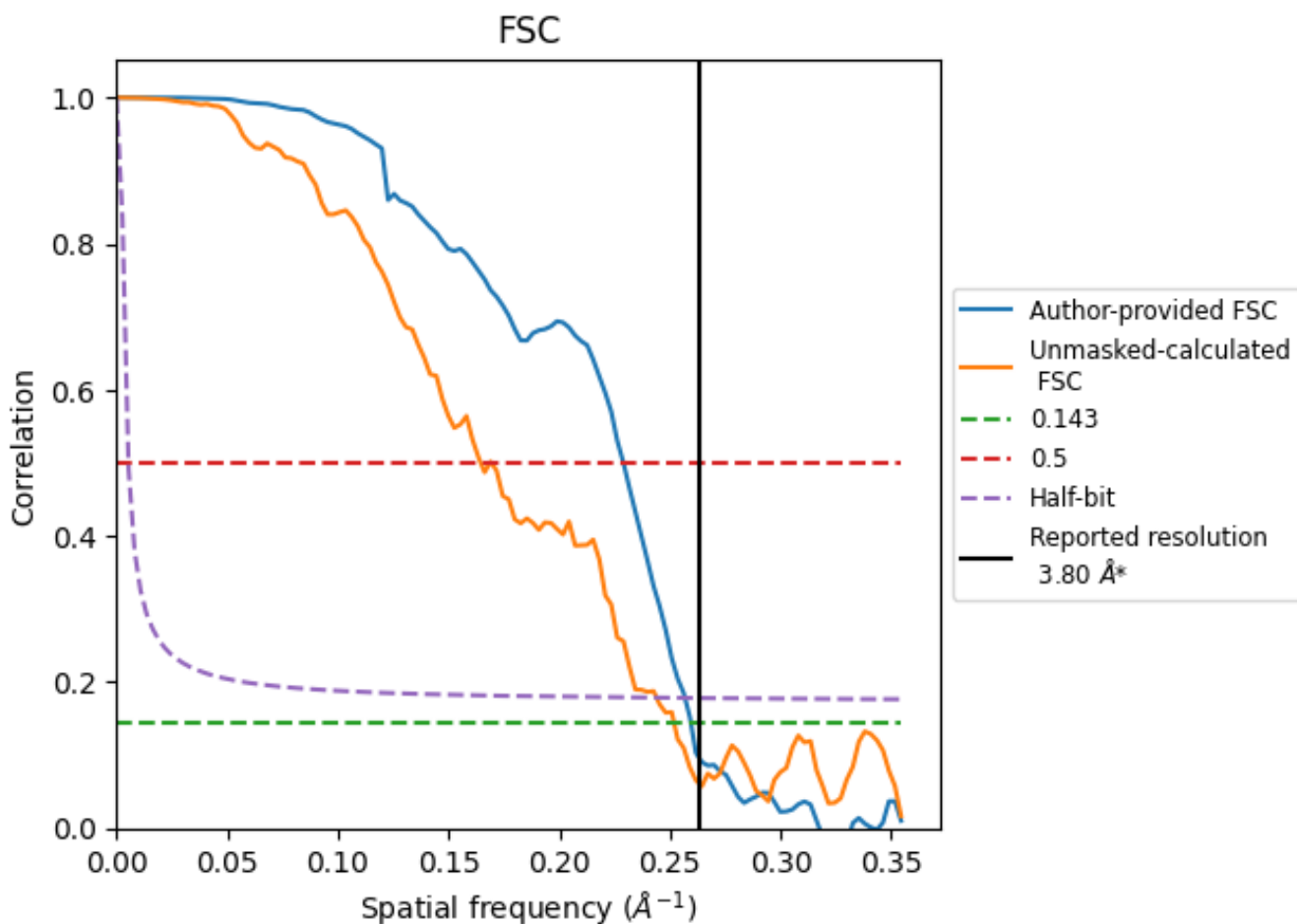


*Reported resolution corresponds to spatial frequency of 0.263 Å⁻¹

8 Fourier-Shell correlation [i](#)

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 0.263 Å⁻¹

8.2 Resolution estimates [i](#)

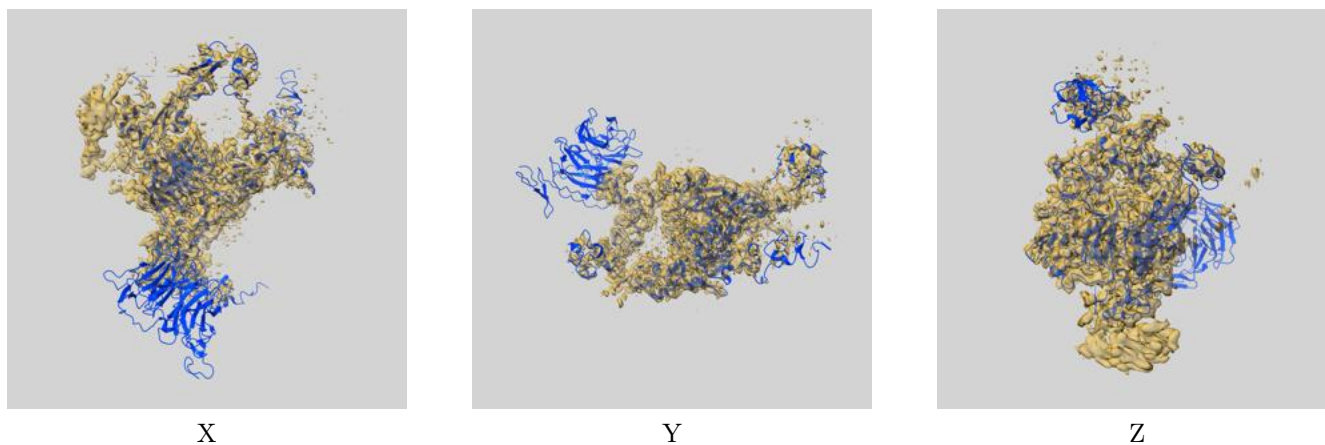
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.80	-	-
Author-provided FSC curve	3.86	4.37	3.89
Unmasked-calculated*	3.97	6.08	4.10

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

9 Map-model fit [i](#)

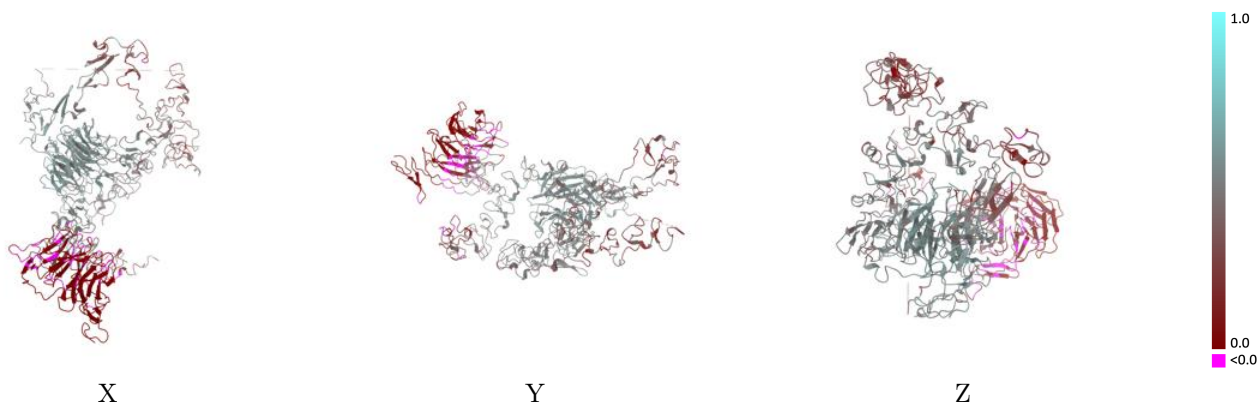
This section contains information regarding the fit between EMDB map EMD-36694 and PDB model 8JXA. Per-residue inclusion information can be found in section 3 on page 8.

9.1 Map-model overlay [i](#)



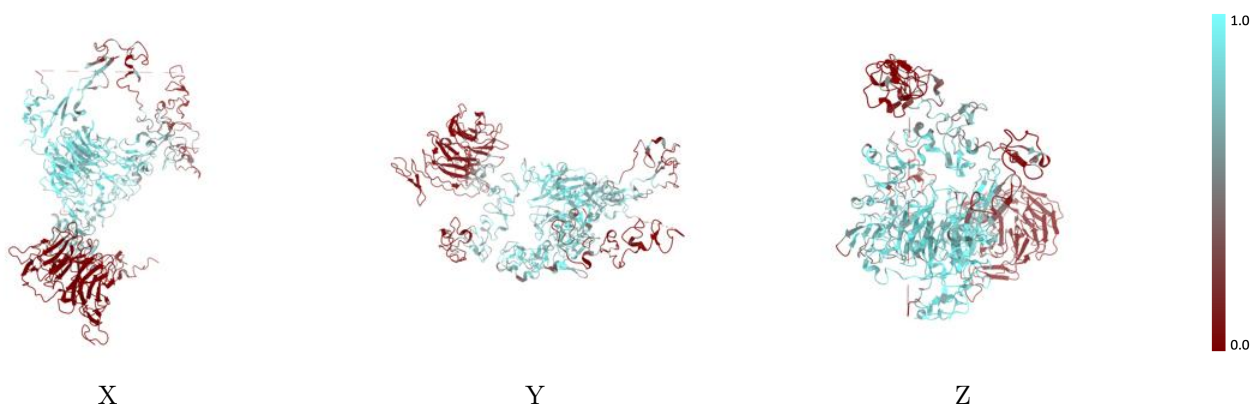
The images above show the 3D surface view of the map at the recommended contour level 0.0434 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



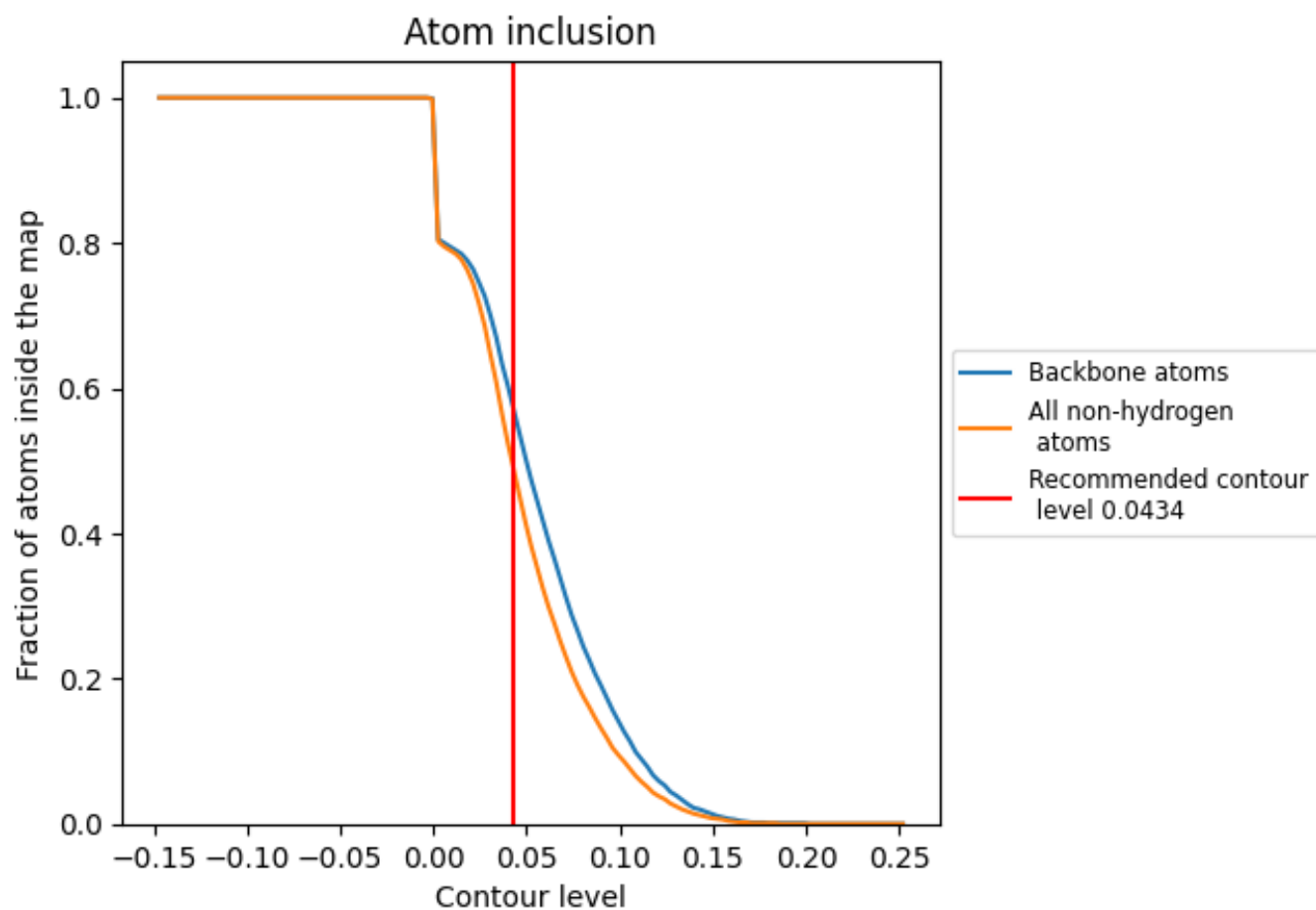
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0434).

9.4 Atom inclusion [i](#)



At the recommended contour level, 57% of all backbone atoms, 48% 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 (0.0434) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.4850	0.3510
A	0.6310	0.4470
B	0.0620	0.0640
C	0.2560	0.3670
D	0.6150	0.4640
E	0.5250	0.4390
F	0.3210	0.4710
G	0.6430	0.5270
H	0.3930	0.3770
I	0.5570	0.4580
J	0.0000	0.0000
K	0.0000	0.0000
M	0.8930	0.5560

