Full wwPDB EM Validation Report ⓘ

Dec 2, 2024 – 02:24 PM JST

PDB ID	:	8Z27
EMDB ID	:	EMD-39743
Title	:	The structure of TGEV RBD and dog APN complex
Authors	:	Sun, J.Q.; Niu, S.
Deposited on	:	2024-04-12
Resolution	:	2.86 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

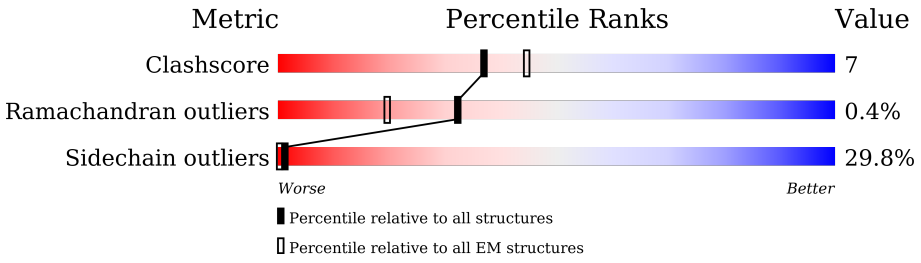
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

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 2.86 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	a	175	14%, 49%, 33%, 19%
2	b	943	72%, 24%
3	A	3	100%
4	B	2	100%, 100%
4	C	2	100%
4	E	2	100%
5	D	4	75%, 25%

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 8596 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 Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	a	142	1118	706	188	216	8	0	0

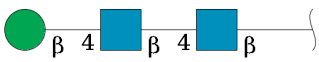
- Molecule 2 is a protein called Aminopeptidase N.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	b	905	7292	4669	1219	1381	23	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
b	976	GLY	-	expression tag	UNP P79143
b	977	GLY	-	expression tag	UNP P79143
b	978	SER	-	expression tag	UNP P79143

- 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.

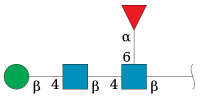


Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
3	A	3	39	22	2	15	0	0

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

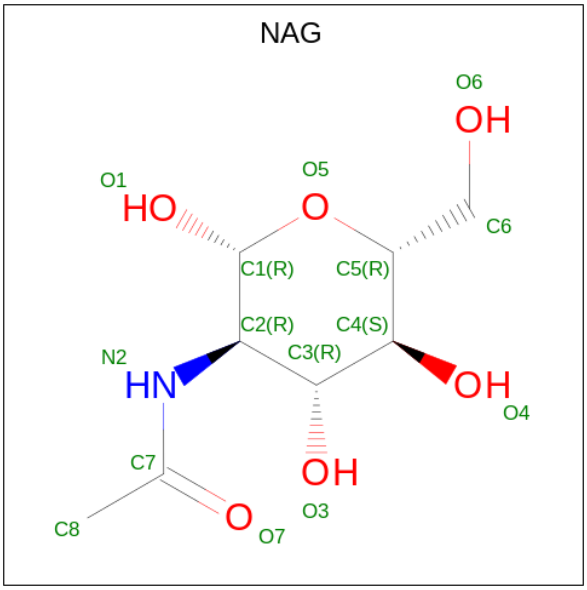
Mol	Chain	Residues	Atoms				AltConf	Trace
4	B	2	Total	C	N	O	0	0
			28	16	2	10		
4	C	2	Total	C	N	O	0	0
			28	16	2	10		
4	E	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 5 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
5	D	4	Total	C	N	O	0	0
			49	28	2	19		

- Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



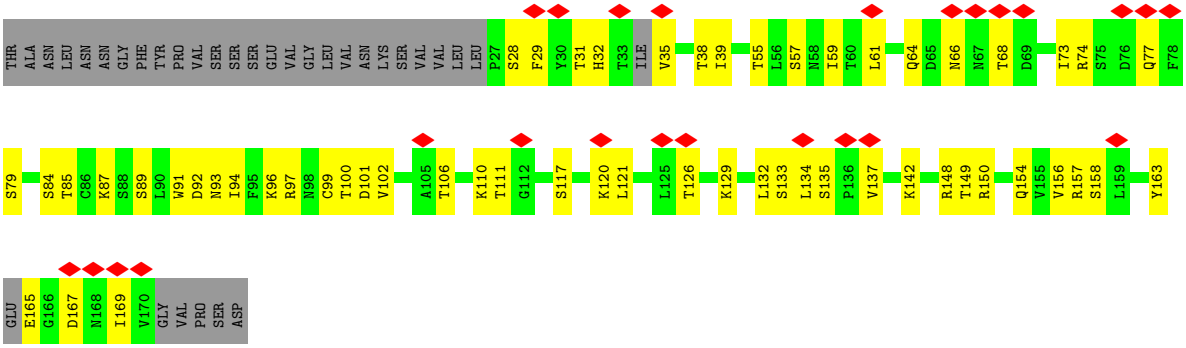
Mol	Chain	Residues	Atoms				AltConf
6	a	1	Total	C	N	O	0
			14	8	1	5	

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.

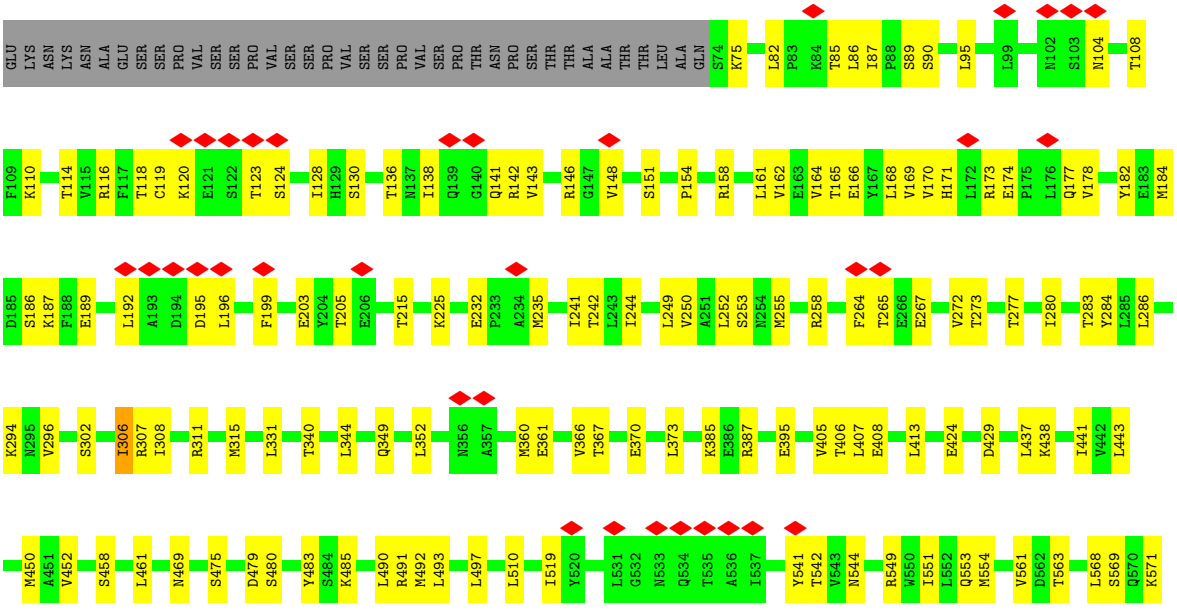
• Molecule 1: Spike glycoprotein

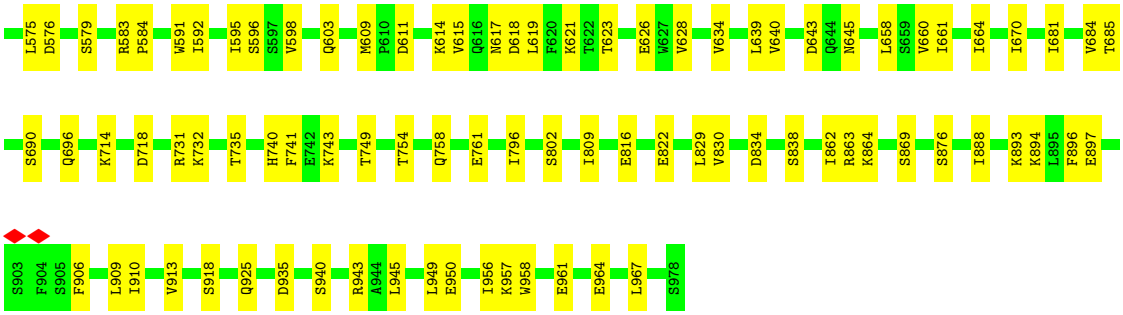
Chain a:



• Molecule 2: Aminopeptidase N

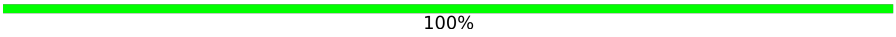
Chain b:





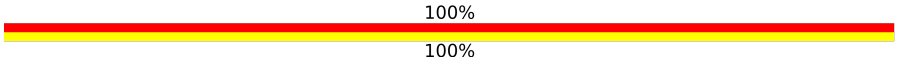
• Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain A:



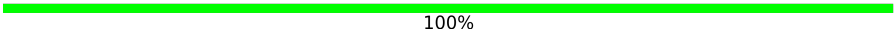
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain B:



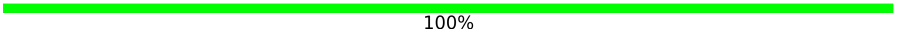
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain C:



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

Chain E:



• Molecule 5: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain D:

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	295620	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 ($e^-/Å^2$)	60	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.151	Depositor
Minimum map value	-0.370	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.026	Depositor
Recommended contour level	0.126	Depositor
Map size (Å)	276.0, 276.0, 276.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.69, 0.69, 0.69	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: NAG, FUC, BMA

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	0.40	0/1139	0.69	0/1545
2	b	0.34	0/7486	0.59	0/10210
All	All	0.34	0/8625	0.61	0/11755

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

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	1118	0	1085	0	0
2	b	7292	0	7087	0	0
3	A	39	0	34	0	0
4	B	28	0	25	0	0
4	C	28	0	25	0	0
4	E	28	0	25	0	0
5	D	49	0	43	0	0
6	a	14	0	13	0	0
All	All	8596	0	8337	0	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 7.

There are no clashes within the asymmetric unit.

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	136/175 (78%)	129 (95%)	6 (4%)	1 (1%)	19	36
2	b	903/943 (96%)	891 (99%)	9 (1%)	3 (0%)	37	55
All	All	1039/1118 (93%)	1020 (98%)	15 (1%)	4 (0%)	32	49

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	a	91	TRP
2	b	306	ILE
2	b	584	PRO
2	b	154	PRO

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	130/159 (82%)	74 (57%)	56 (43%)	0	0
2	b	806/840 (96%)	583 (72%)	223 (28%)	0	0
All	All	936/999 (94%)	657 (70%)	279 (30%)	1	0

All (279) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	a	28	SER
1	a	29	PHE
1	a	31	THR
1	a	32	HIS
1	a	35	VAL
1	a	38	THR
1	a	39	ILE
1	a	55	THR
1	a	57	SER
1	a	59	ILE
1	a	61	LEU
1	a	64	GLN
1	a	66	ASN
1	a	68	THR
1	a	73	ILE
1	a	74	ARG
1	a	77	GLN
1	a	79	SER
1	a	84	SER
1	a	85	THR
1	a	87	LYS
1	a	89	SER
1	a	92	ASP
1	a	93	ASN
1	a	94	ILE
1	a	96	LYS
1	a	97	ARG
1	a	99	CYS
1	a	100	THR
1	a	101	ASP
1	a	102	VAL
1	a	106	THR
1	a	110	LYS
1	a	111	THR
1	a	117	SER
1	a	120	LYS
1	a	121	LEU
1	a	126	THR
1	a	129	LYS
1	a	132	LEU
1	a	133	SER
1	a	134	LEU
1	a	135	SER

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Mol	Chain	Res	Type
1	a	137	VAL
1	a	142	LYS
1	a	148	ARG
1	a	149	THR
1	a	150	ARG
1	a	154	GLN
1	a	156	VAL
1	a	157	ARG
1	a	158	SER
1	a	163	TYR
1	a	165	GLU
1	a	167	ASP
1	a	169	ILE
2	b	75	LYS
2	b	82	LEU
2	b	85	THR
2	b	86	LEU
2	b	87	ILE
2	b	89	SER
2	b	90	SER
2	b	95	LEU
2	b	104	ASN
2	b	108	THR
2	b	110	LYS
2	b	114	THR
2	b	116	ARG
2	b	118	THR
2	b	119	CYS
2	b	120	LYS
2	b	123	THR
2	b	124	SER
2	b	128	ILE
2	b	130	SER
2	b	136	THR
2	b	138	ILE
2	b	141	GLN
2	b	142	ARG
2	b	143	VAL
2	b	146	ARG
2	b	148	VAL
2	b	151	SER
2	b	158	ARG

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Mol	Chain	Res	Type
2	b	161	LEU
2	b	162	VAL
2	b	164	VAL
2	b	165	THR
2	b	166	GLU
2	b	168	LEU
2	b	169	VAL
2	b	170	VAL
2	b	171	HIS
2	b	173	ARG
2	b	174	GLU
2	b	177	GLN
2	b	178	VAL
2	b	182	TYR
2	b	184	MET
2	b	186	SER
2	b	187	LYS
2	b	189	GLU
2	b	192	LEU
2	b	195	ASP
2	b	196	LEU
2	b	199	PHE
2	b	203	GLU
2	b	205	THR
2	b	215	THR
2	b	225	LYS
2	b	232	GLU
2	b	235	MET
2	b	241	ILE
2	b	242	THR
2	b	244	ILE
2	b	249	LEU
2	b	250	VAL
2	b	252	LEU
2	b	253	SER
2	b	255	MET
2	b	258	ARG
2	b	264	PHE
2	b	265	THR
2	b	267	GLU
2	b	272	VAL
2	b	273	THR

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Mol	Chain	Res	Type
2	b	277	THR
2	b	280	ILE
2	b	283	THR
2	b	284	TYR
2	b	286	LEU
2	b	294	LYS
2	b	296	VAL
2	b	302	SER
2	b	306	ILE
2	b	307	ARG
2	b	308	ILE
2	b	311	ARG
2	b	315	MET
2	b	331	LEU
2	b	340	THR
2	b	344	LEU
2	b	349	GLN
2	b	352	LEU
2	b	360	MET
2	b	361	GLU
2	b	366	VAL
2	b	367	THR
2	b	370	GLU
2	b	373	LEU
2	b	385	LYS
2	b	387	ARG
2	b	395	GLU
2	b	405	VAL
2	b	406	THR
2	b	407	LEU
2	b	408	GLU
2	b	413	LEU
2	b	424	GLU
2	b	429	ASP
2	b	437	LEU
2	b	438	LYS
2	b	441	ILE
2	b	443	LEU
2	b	450	MET
2	b	452	VAL
2	b	458	SER
2	b	461	LEU

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Mol	Chain	Res	Type
2	b	469	ASN
2	b	475	SER
2	b	479	ASP
2	b	480	SER
2	b	483	TYR
2	b	485	LYS
2	b	490	LEU
2	b	491	ARG
2	b	492	MET
2	b	493	LEU
2	b	497	LEU
2	b	510	LEU
2	b	519	ILE
2	b	541	TYR
2	b	542	THR
2	b	544	ASN
2	b	549	ARG
2	b	551	ILE
2	b	553	GLN
2	b	554	MET
2	b	561	VAL
2	b	563	THR
2	b	568	LEU
2	b	569	SER
2	b	571	LYS
2	b	575	LEU
2	b	576	ASP
2	b	579	SER
2	b	583	ARG
2	b	591	TRP
2	b	592	ILE
2	b	595	ILE
2	b	596	SER
2	b	598	VAL
2	b	603	GLN
2	b	609	MET
2	b	611	ASP
2	b	614	LYS
2	b	615	VAL
2	b	617	ASN
2	b	618	ASP
2	b	619	LEU

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Mol	Chain	Res	Type
2	b	621	LYS
2	b	623	THR
2	b	626	GLU
2	b	628	VAL
2	b	634	VAL
2	b	639	LEU
2	b	640	VAL
2	b	643	ASP
2	b	645	ASN
2	b	658	LEU
2	b	660	VAL
2	b	661	ILE
2	b	664	ILE
2	b	670	ILE
2	b	681	ILE
2	b	684	VAL
2	b	685	THR
2	b	690	SER
2	b	696	GLN
2	b	714	LYS
2	b	718	ASP
2	b	731	ARG
2	b	732	LYS
2	b	735	THR
2	b	740	HIS
2	b	741	PHE
2	b	743	LYS
2	b	749	THR
2	b	754	THR
2	b	758	GLN
2	b	761	GLU
2	b	796	ILE
2	b	802	SER
2	b	809	ILE
2	b	816	GLU
2	b	822	GLU
2	b	829	LEU
2	b	830	VAL
2	b	834	ASP
2	b	838	SER
2	b	862	ILE
2	b	863	ARG

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Mol	Chain	Res	Type
2	b	864	LYS
2	b	869	SER
2	b	876	SER
2	b	888	ILE
2	b	893	LYS
2	b	894	LYS
2	b	896	PHE
2	b	897	GLU
2	b	906	PHE
2	b	909	LEU
2	b	910	ILE
2	b	913	VAL
2	b	918	SER
2	b	925	GLN
2	b	935	ASP
2	b	940	SER
2	b	943	ARG
2	b	945	LEU
2	b	949	LEU
2	b	950	GLU
2	b	956	ILE
2	b	957	LYS
2	b	958	TRP
2	b	961	GLU
2	b	964	GLU
2	b	967	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	a	64	GLN
1	a	93	ASN
1	a	140	ASN
2	b	181	GLN
2	b	295	ASN
2	b	356	ASN
2	b	399	GLN
2	b	403	ASN
2	b	517	ASN
2	b	665	ASN
2	b	668	GLN
2	b	733	GLN

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Mol	Chain	Res	Type
2	b	925	GLN
2	b	975	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)

13 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	A	1	3,1	14,14,15	0.34	0	17,19,21	0.46	0
3	NAG	A	2	3	14,14,15	0.35	0	17,19,21	0.78	0
3	BMA	A	3	3	11,11,12	0.25	0	15,15,17	0.56	0
4	NAG	B	1	2,4	14,14,15	0.47	0	17,19,21	1.33	2 (11%)
4	NAG	B	2	4	14,14,15	0.35	0	17,19,21	0.87	1 (5%)
4	NAG	C	1	2,4	14,14,15	0.37	0	17,19,21	0.70	0
4	NAG	C	2	4	14,14,15	0.38	0	17,19,21	0.69	0
5	NAG	D	1	2,5	14,14,15	0.45	0	17,19,21	0.83	0
5	NAG	D	2	5	14,14,15	0.42	0	17,19,21	0.74	0
5	BMA	D	3	5	11,11,12	0.29	0	15,15,17	0.69	0
5	FUC	D	4	5	10,10,11	0.30	0	14,14,16	1.69	4 (28%)
4	NAG	E	1	2,4	14,14,15	0.38	0	17,19,21	0.68	0
4	NAG	E	2	4	14,14,15	0.35	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
3	NAG	A	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	A	2	3	-	2/6/23/26	0/1/1/1
3	BMA	A	3	3	-	0/2/19/22	0/1/1/1
4	NAG	B	1	2,4	-	2/6/23/26	0/1/1/1
4	NAG	B	2	4	-	2/6/23/26	0/1/1/1
4	NAG	C	1	2,4	-	2/6/23/26	0/1/1/1
4	NAG	C	2	4	-	4/6/23/26	0/1/1/1
5	NAG	D	1	2,5	-	2/6/23/26	0/1/1/1
5	NAG	D	2	5	-	2/6/23/26	0/1/1/1
5	BMA	D	3	5	-	2/2/19/22	0/1/1/1
5	FUC	D	4	5	-	-	0/1/1/1
4	NAG	E	1	2,4	-	4/6/23/26	0/1/1/1
4	NAG	E	2	4	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	1	NAG	O5-C1-C2	-4.08	104.84	111.29
5	D	4	FUC	O5-C1-C2	-3.27	105.73	110.77
5	D	4	FUC	O5-C5-C4	3.02	114.94	109.52
5	D	4	FUC	C6-C5-C4	-2.49	108.47	113.07
4	B	2	NAG	O5-C1-C2	-2.04	108.06	111.29
5	D	4	FUC	C1-C2-C3	-2.03	107.17	109.67
4	B	1	NAG	C3-C4-C5	2.02	113.84	110.24

There are no chirality outliers.

All (26) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	2	NAG	C8-C7-N2-C2
4	B	2	NAG	O7-C7-N2-C2
4	E	2	NAG	O5-C5-C6-O6
4	E	2	NAG	C4-C5-C6-O6
4	B	1	NAG	C4-C5-C6-O6
5	D	3	BMA	O5-C5-C6-O6
4	C	2	NAG	O5-C5-C6-O6

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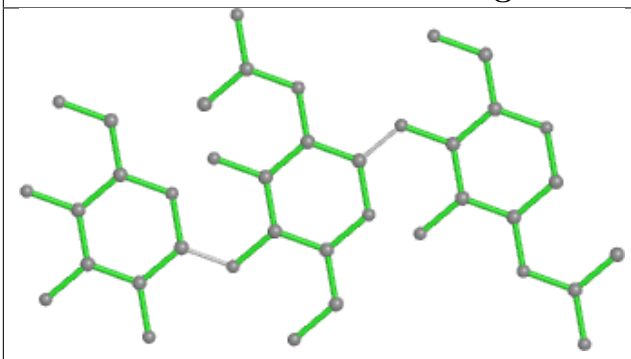
Mol	Chain	Res	Type	Atoms
4	E	1	NAG	O5-C5-C6-O6
5	D	3	BMA	C4-C5-C6-O6
3	A	2	NAG	C8-C7-N2-C2
5	D	1	NAG	C8-C7-N2-C2
4	E	1	NAG	C4-C5-C6-O6
5	D	1	NAG	O7-C7-N2-C2
4	C	2	NAG	C4-C5-C6-O6
4	B	1	NAG	O5-C5-C6-O6
3	A	2	NAG	O7-C7-N2-C2
4	C	1	NAG	C8-C7-N2-C2
3	A	1	NAG	C8-C7-N2-C2
4	E	1	NAG	C8-C7-N2-C2
3	A	1	NAG	O7-C7-N2-C2
4	C	1	NAG	O7-C7-N2-C2
4	E	1	NAG	O7-C7-N2-C2
5	D	2	NAG	C8-C7-N2-C2
4	C	2	NAG	C8-C7-N2-C2
4	C	2	NAG	O7-C7-N2-C2
5	D	2	NAG	O7-C7-N2-C2

There are no ring outliers.

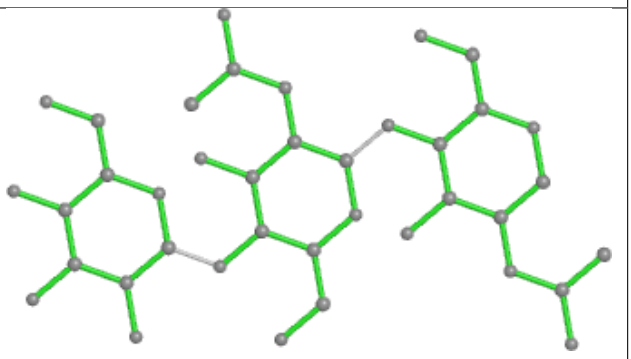
No monomer is involved in short contacts.

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

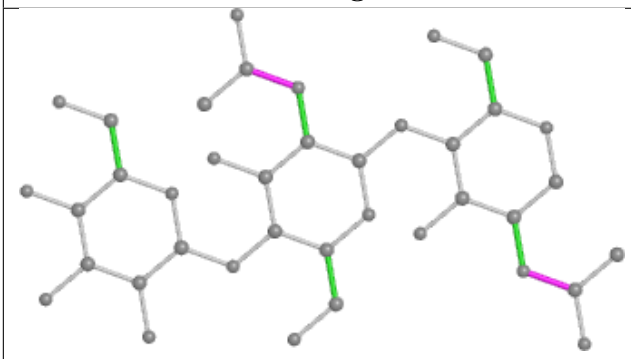
Oligosaccharide Chain A



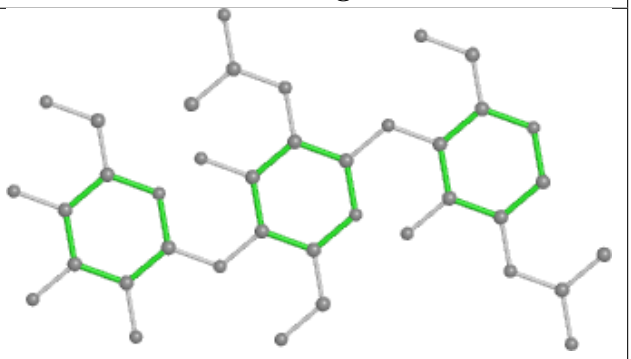
Bond lengths



Bond angles

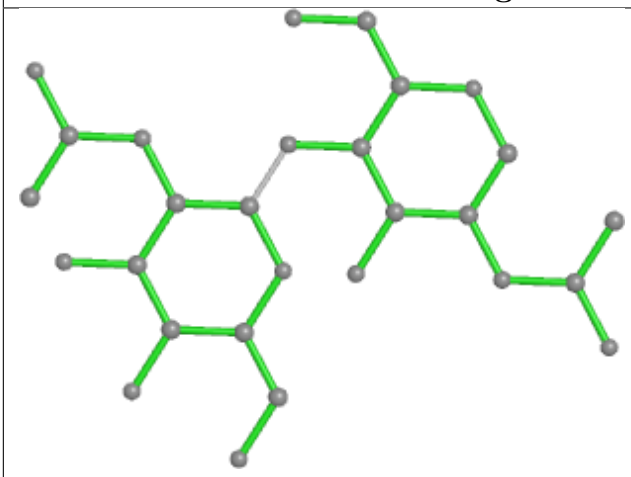


Torsions

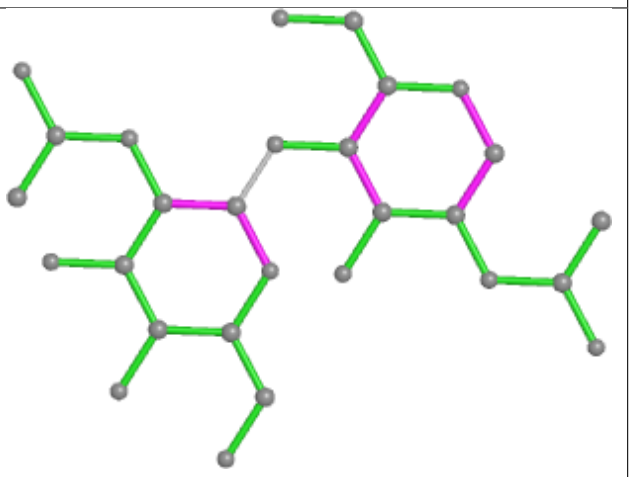


Rings

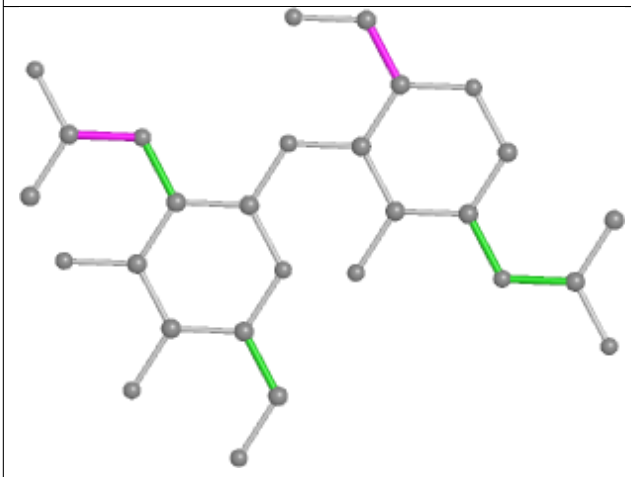
Oligosaccharide Chain B



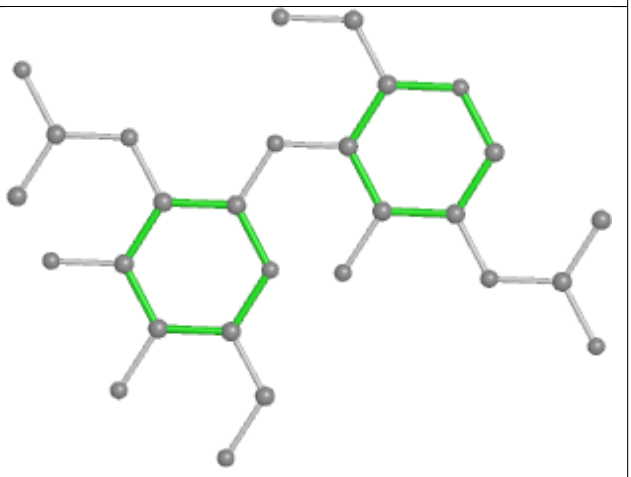
Bond lengths



Bond angles

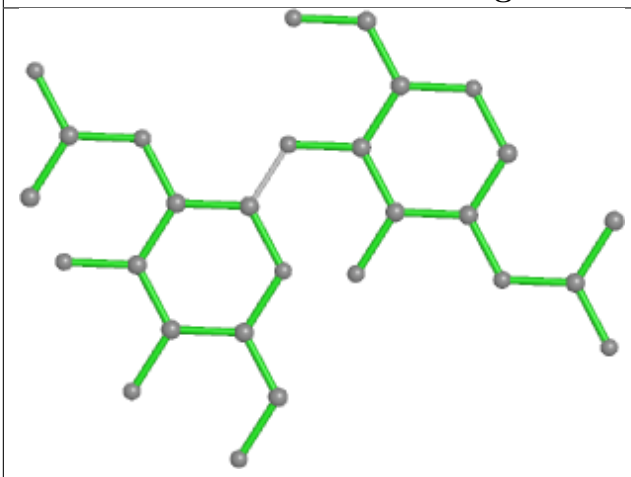


Torsions

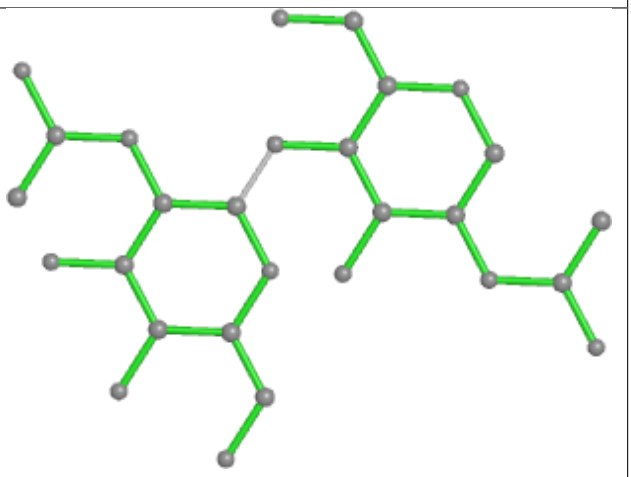


Rings

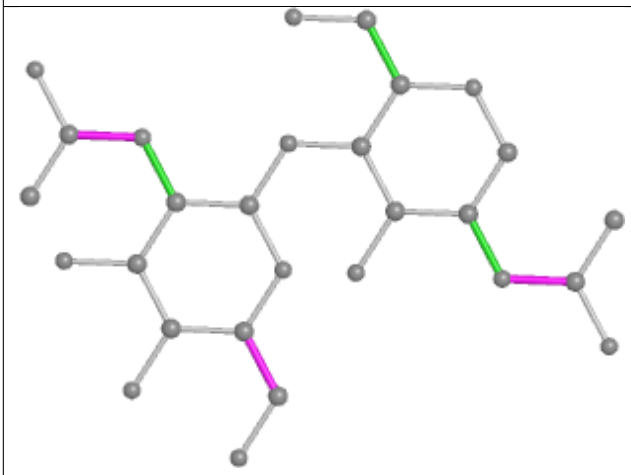
Oligosaccharide Chain C



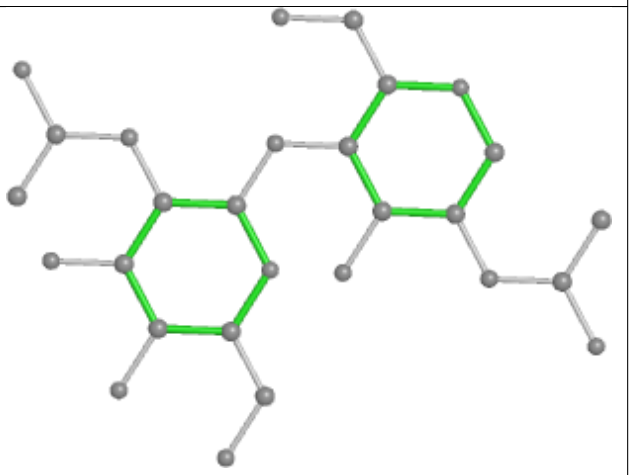
Bond lengths



Bond angles

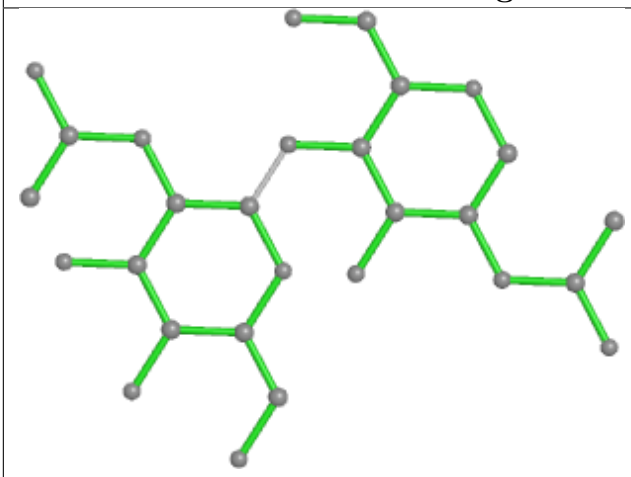


Torsions

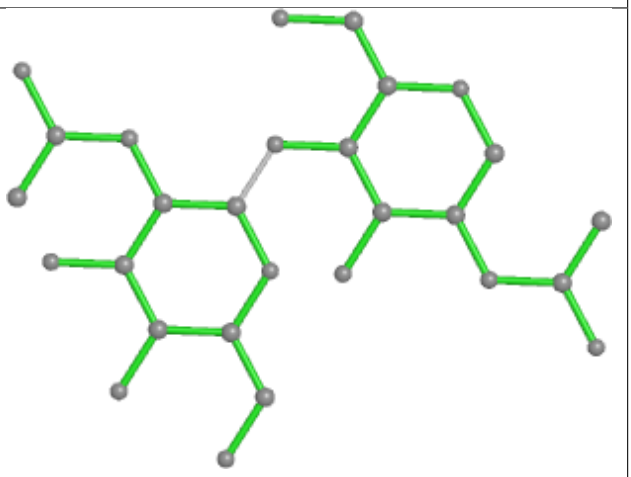


Rings

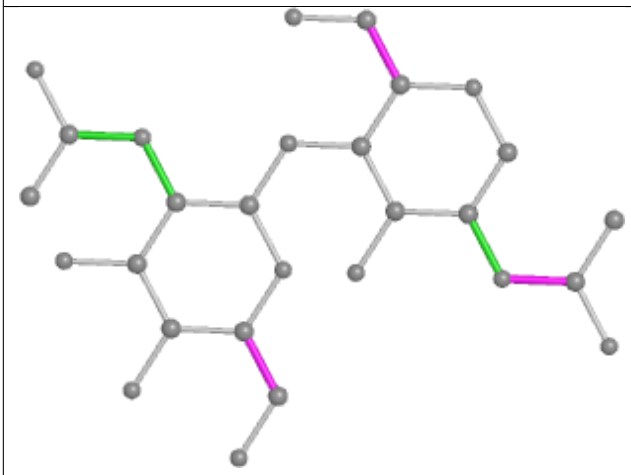
Oligosaccharide Chain E



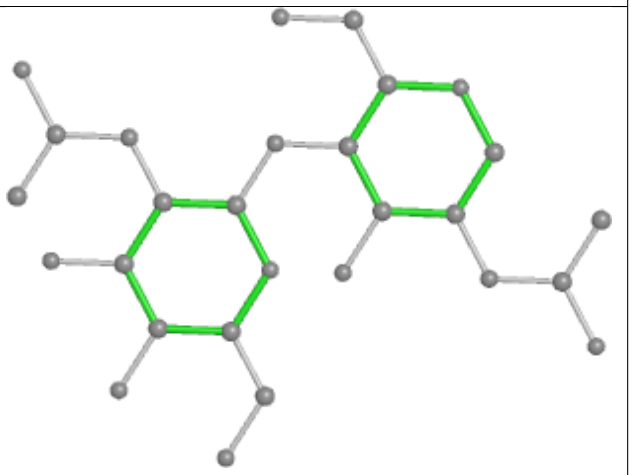
Bond lengths



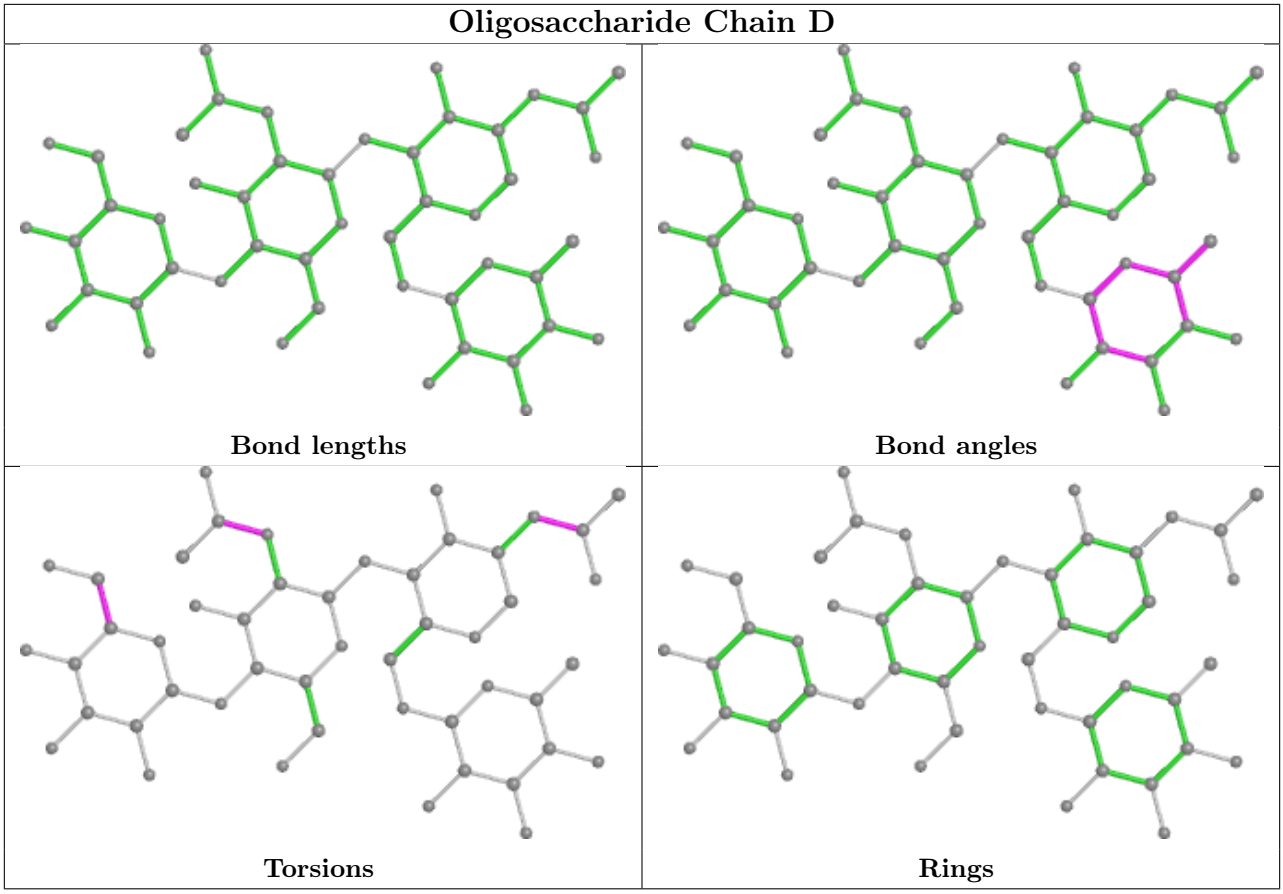
Bond angles



Torsions



Rings



5.6 Ligand geometry (i)

1 ligand is 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	$\#\|Z\| > 2$
6	NAG	a	201	1	14,14,15	0.34	0	17,19,21	0.82	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
6	NAG	a	201	1	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	a	201	NAG	C8-C7-N2-C2
6	a	201	NAG	O7-C7-N2-C2

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.

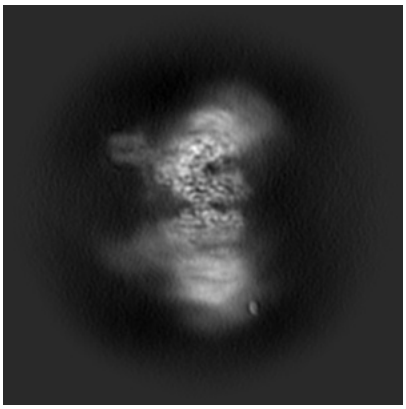
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-39743. These allow visual inspection of the internal detail of the map and identification of artifacts.

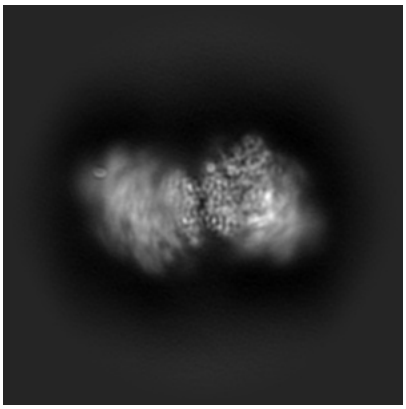
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

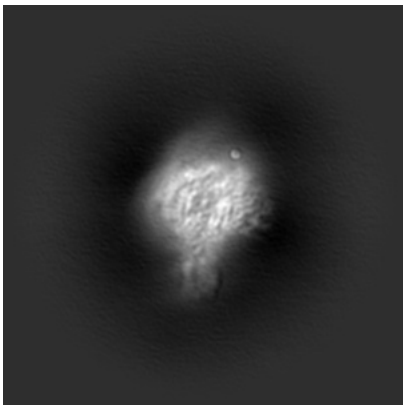
6.1.1 Primary map



X

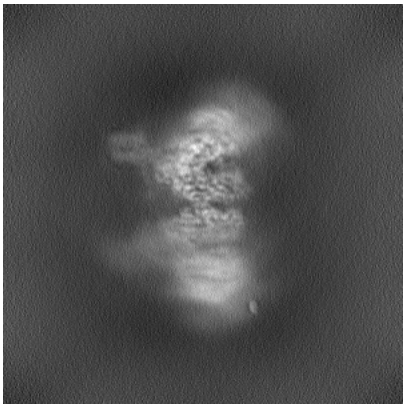


Y

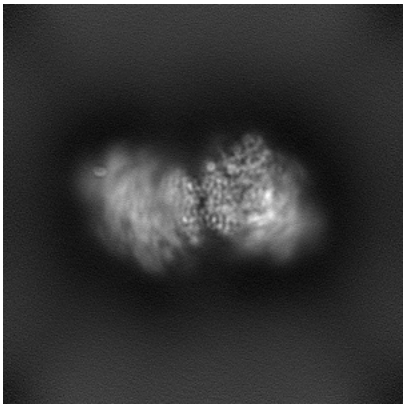


Z

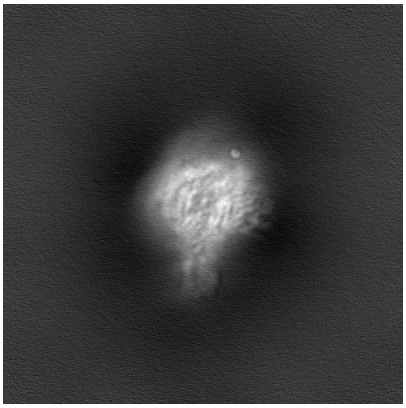
6.1.2 Raw map



X



Y

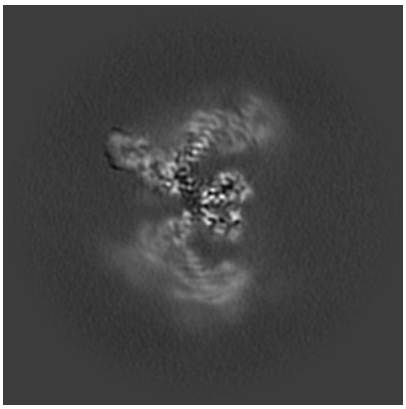


Z

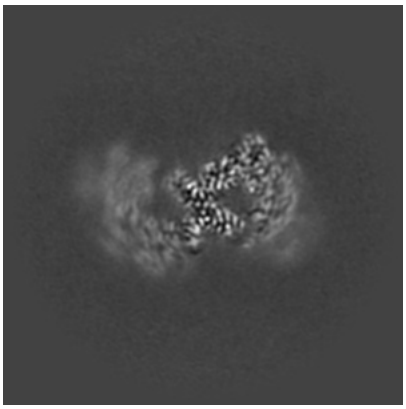
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

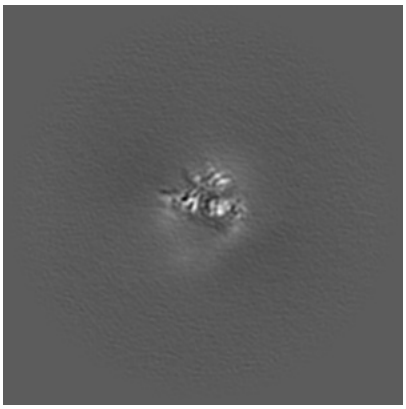
6.2.1 Primary map



X Index: 200

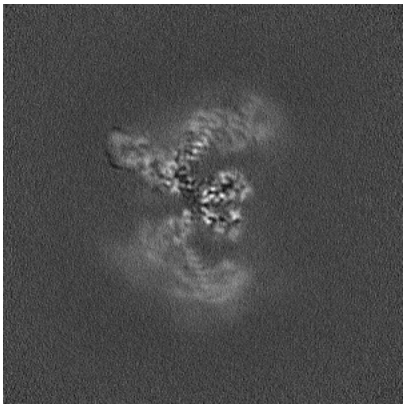


Y Index: 200

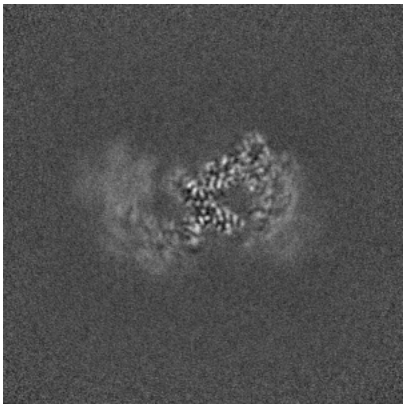


Z Index: 200

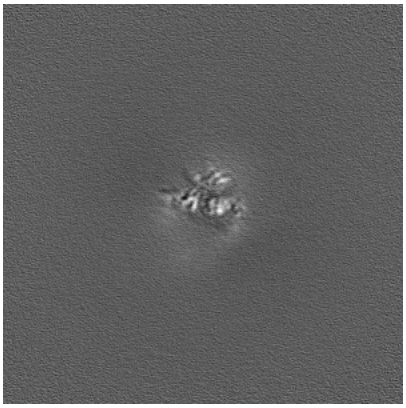
6.2.2 Raw map



X Index: 200



Y Index: 200

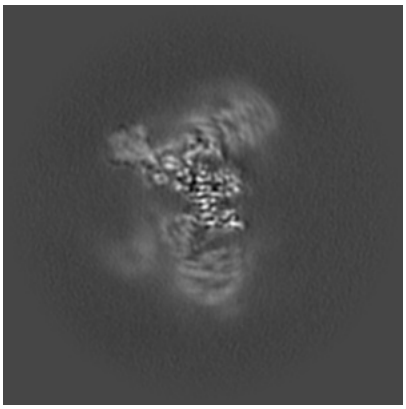


Z Index: 200

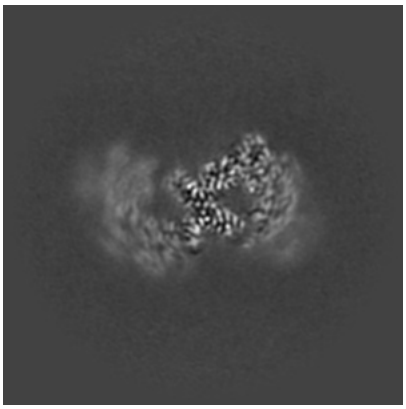
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

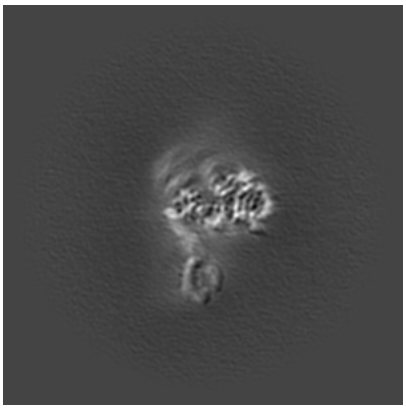
6.3.1 Primary map



X Index: 185

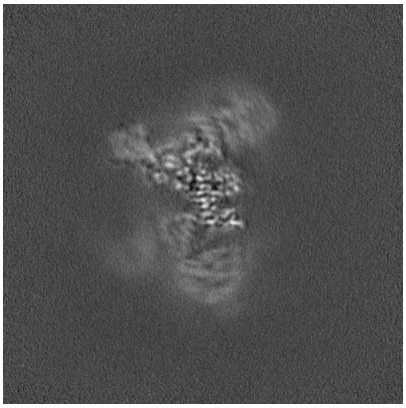


Y Index: 200

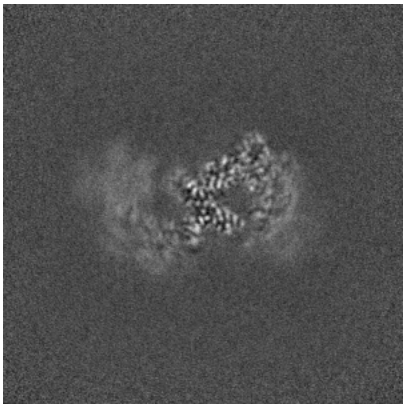


Z Index: 256

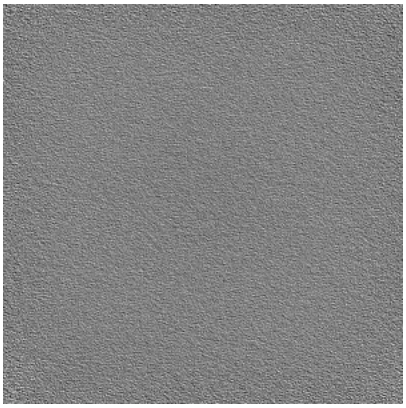
6.3.2 Raw map



X Index: 185



Y Index: 200

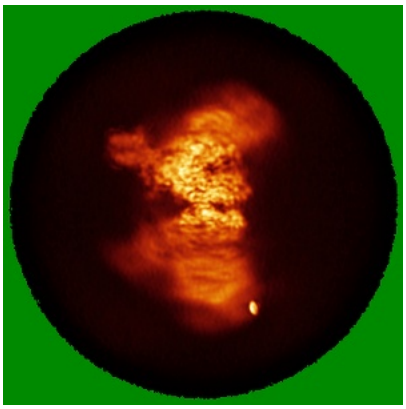


Z Index: 0

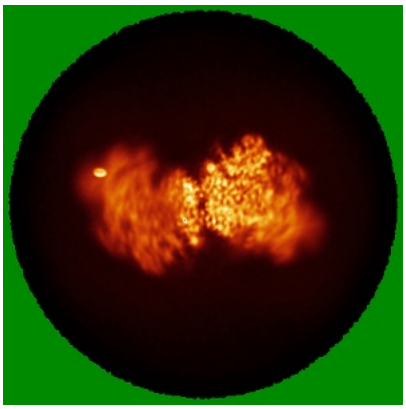
The images above show the largest variance slices of the map in three orthogonal directions.

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

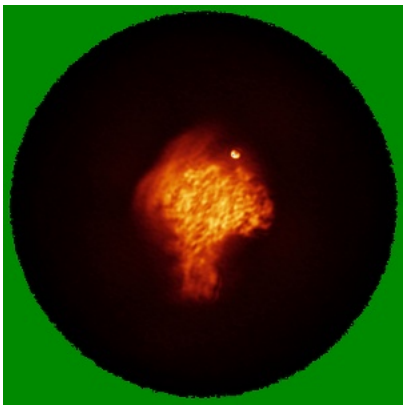
6.4.1 Primary map



X

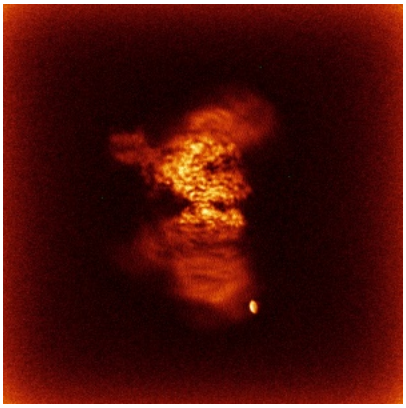


Y

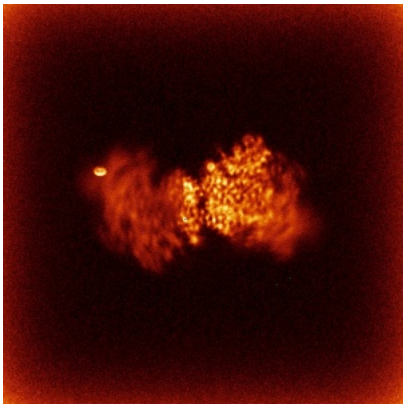


Z

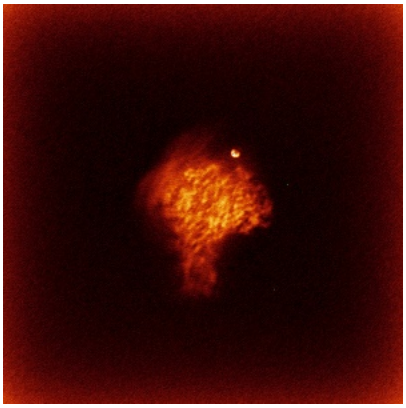
6.4.2 Raw map



X



Y

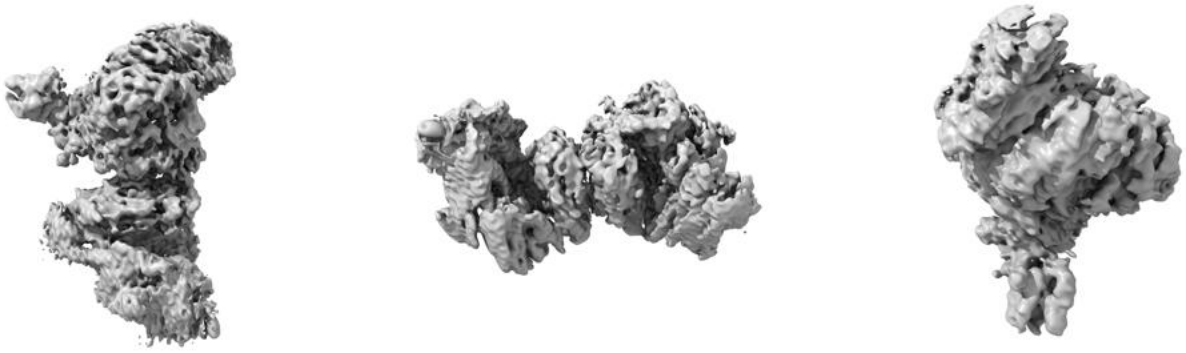


Z

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)

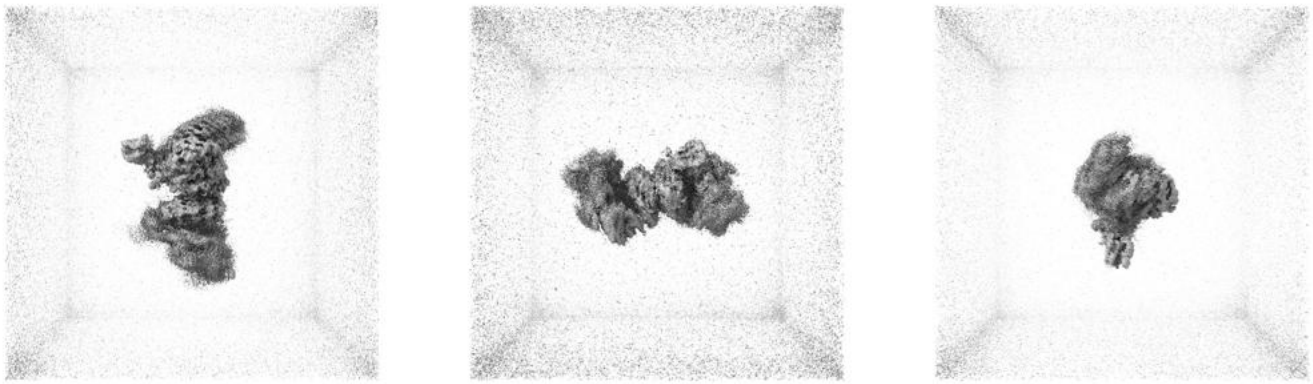
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.126. 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



X Y Z

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.

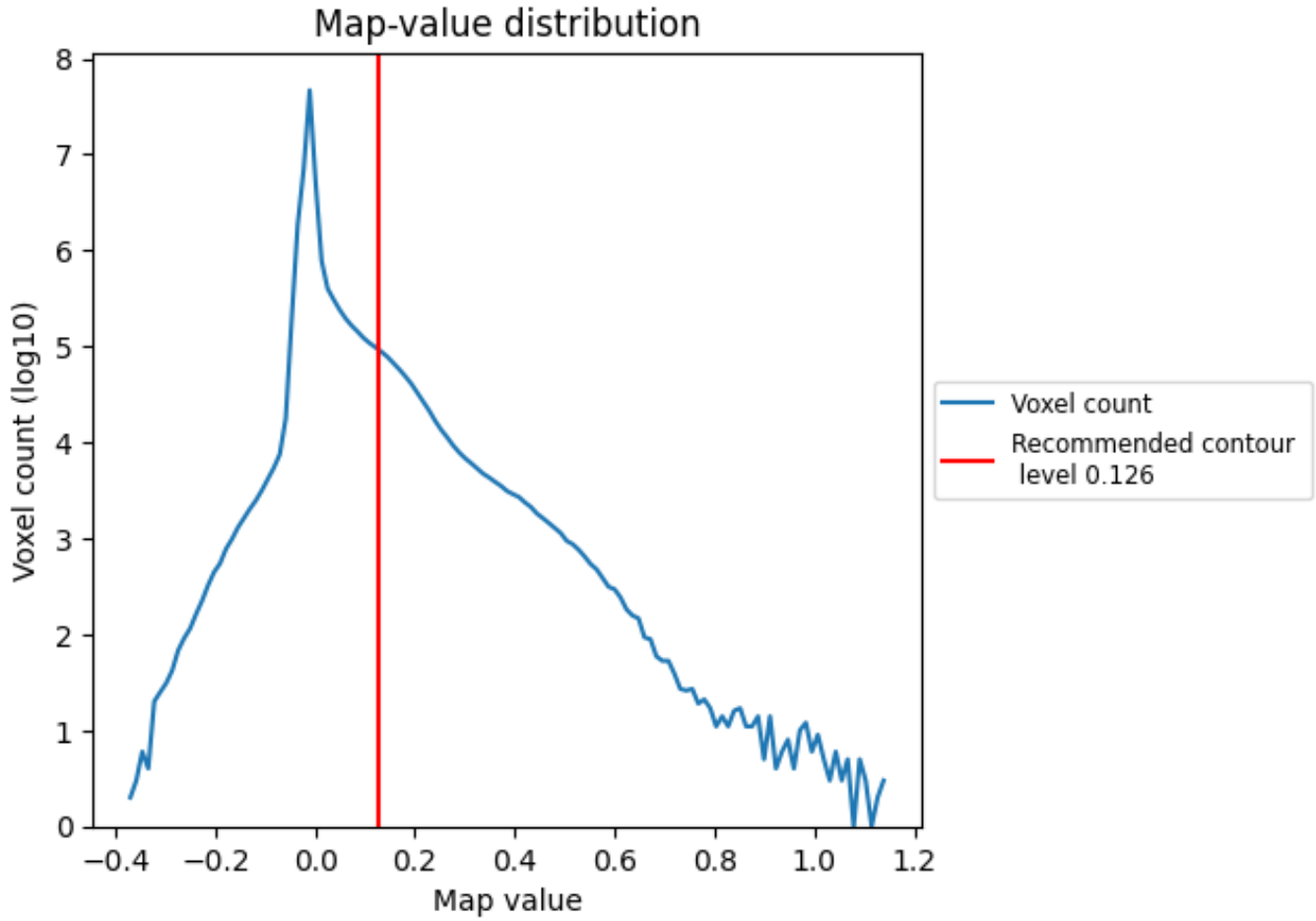
6.6 Mask visualisation (i)

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

7 Map analysis

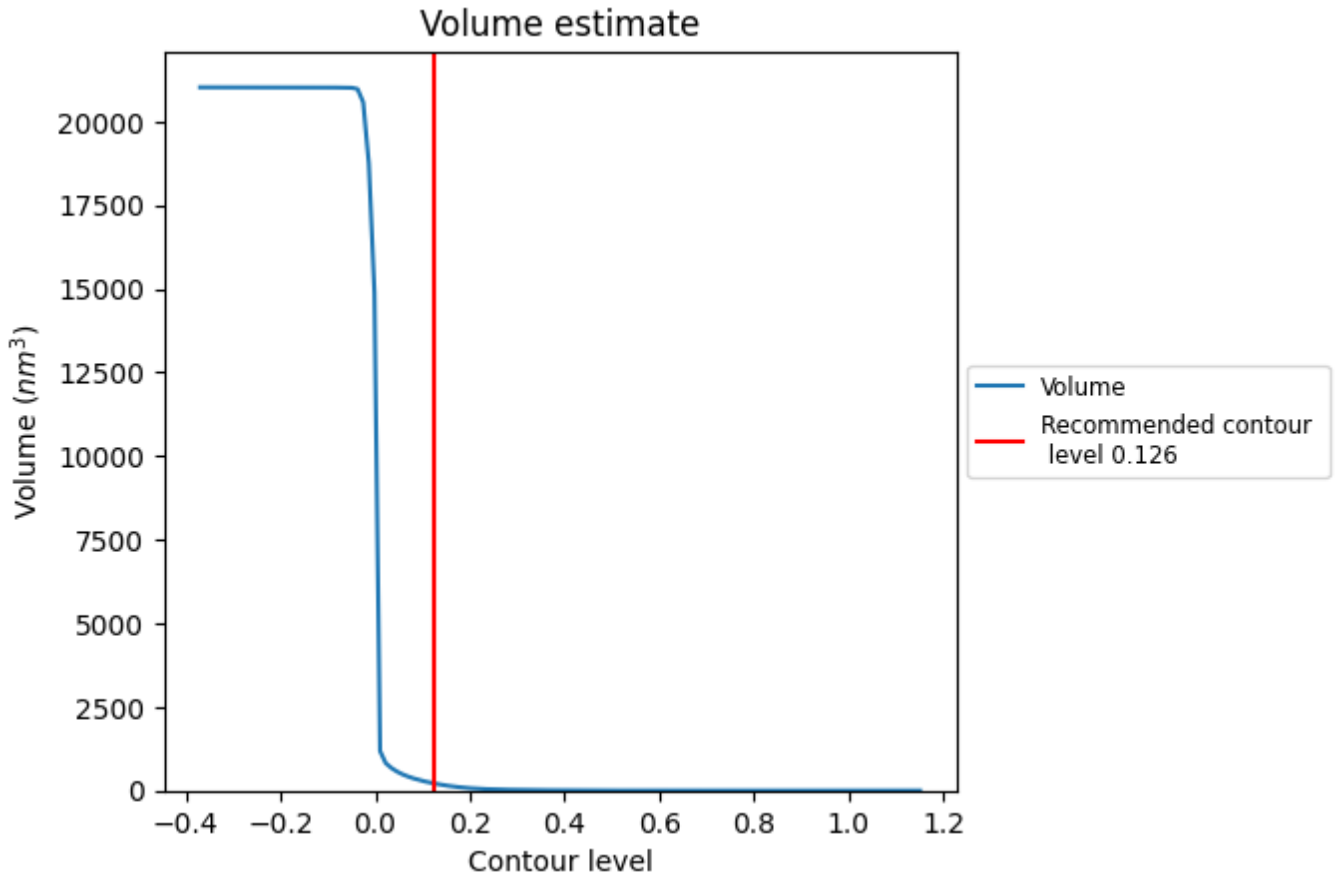
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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.

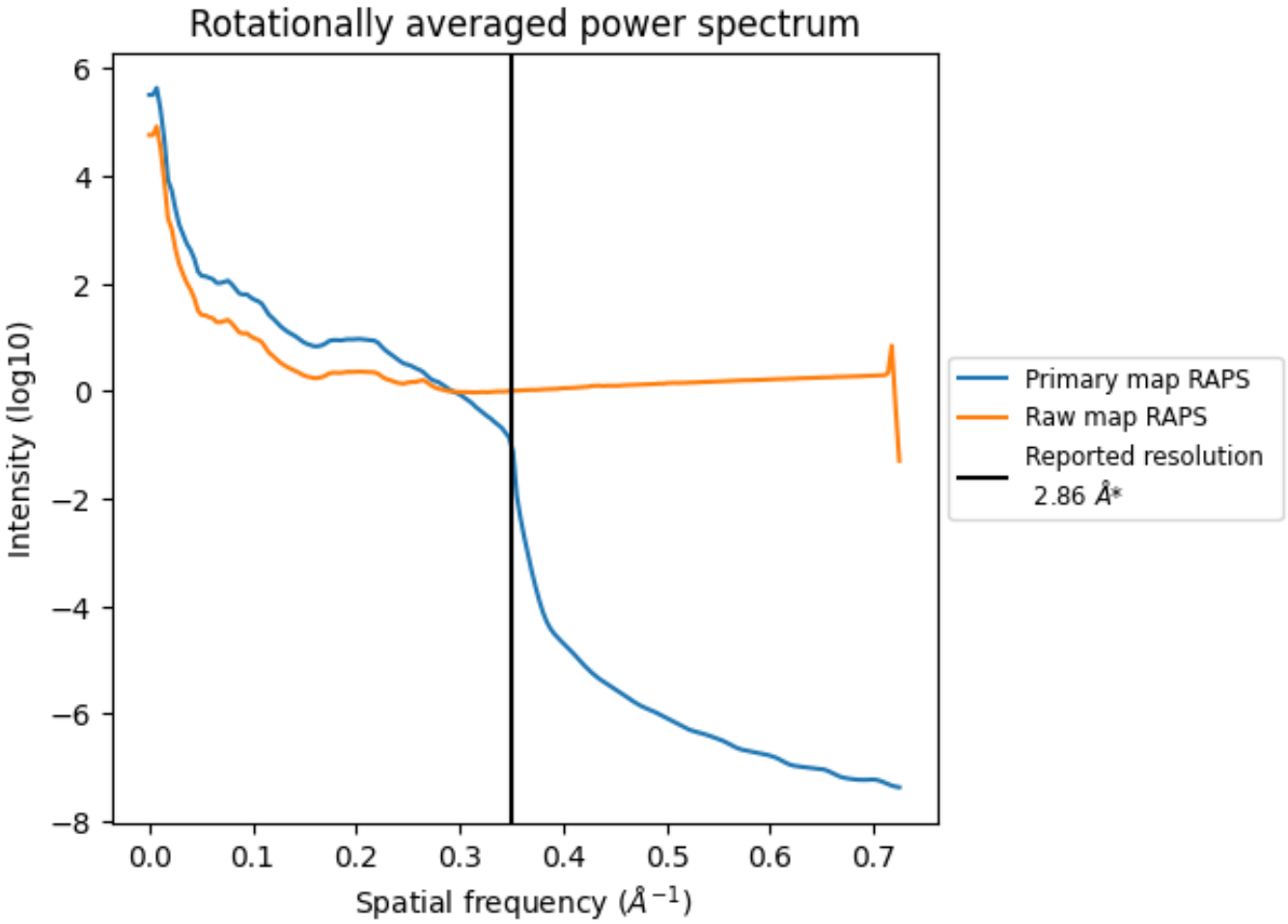
7.2 Volume estimate (i)



The volume at the recommended contour level is 210 nm^3; this corresponds to an approximate mass of 189 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)

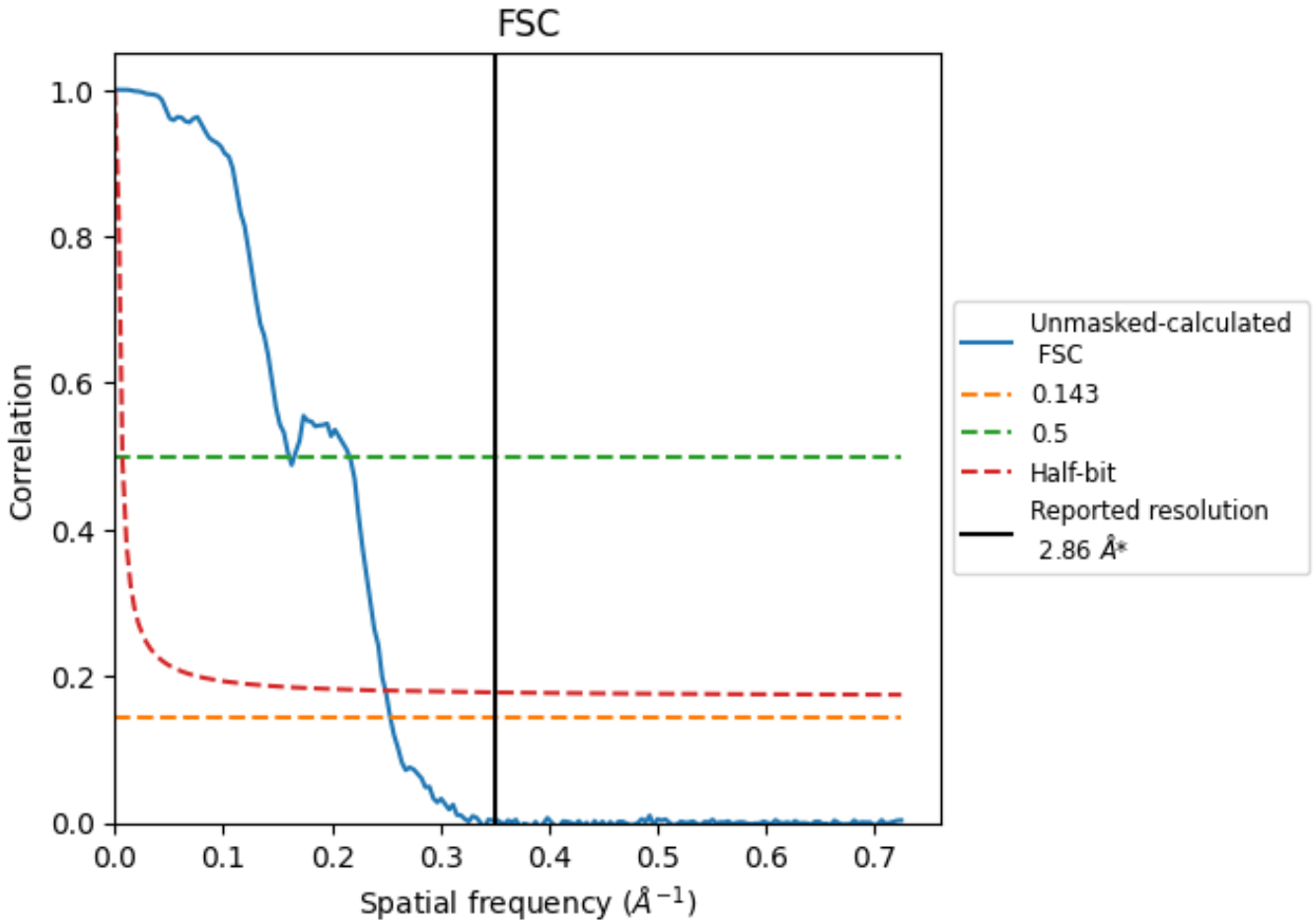


*Reported resolution corresponds to spatial frequency of 0.350 Å^{-1}

8 Fourier-Shell correlation

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



*Reported resolution corresponds to spatial frequency of 0.350 Å^{-1}

8.2 Resolution estimates (i)

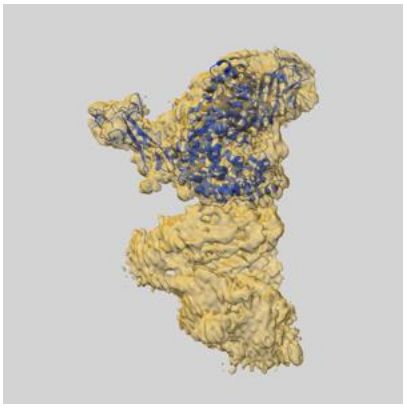
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.86	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.94	6.23	4.01

*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 3.94 differs from the reported value 2.86 by more than 10 %

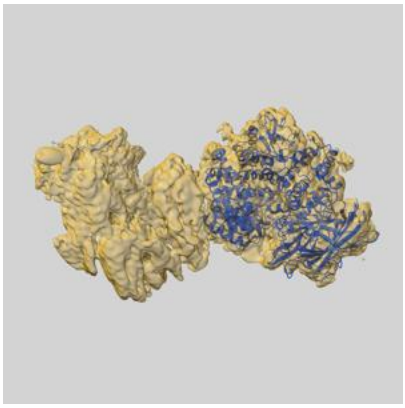
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-39743 and PDB model 8Z27. Per-residue inclusion information can be found in section 3 on page 6.

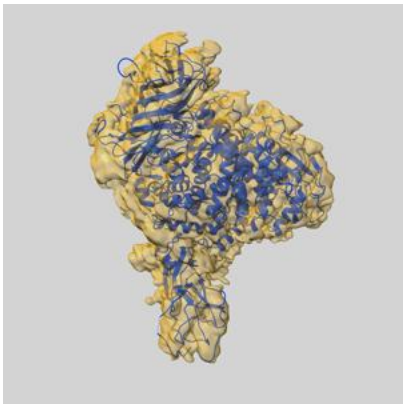
9.1 Map-model overlay



X



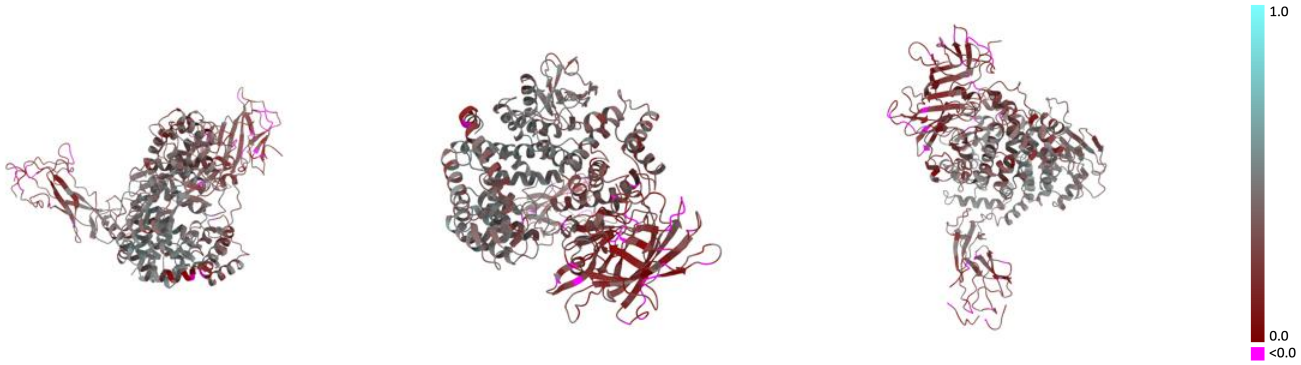
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.126 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.

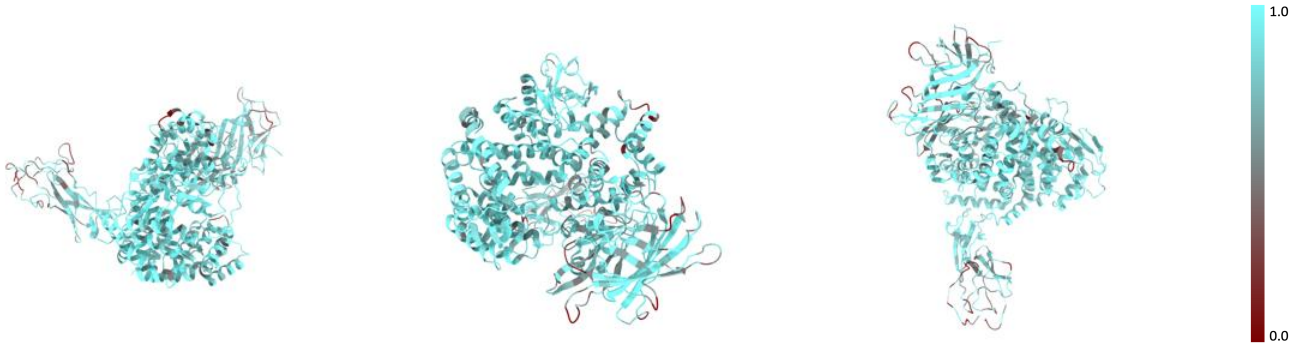
9.2 Q-score mapped to coordinate model (i)



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.

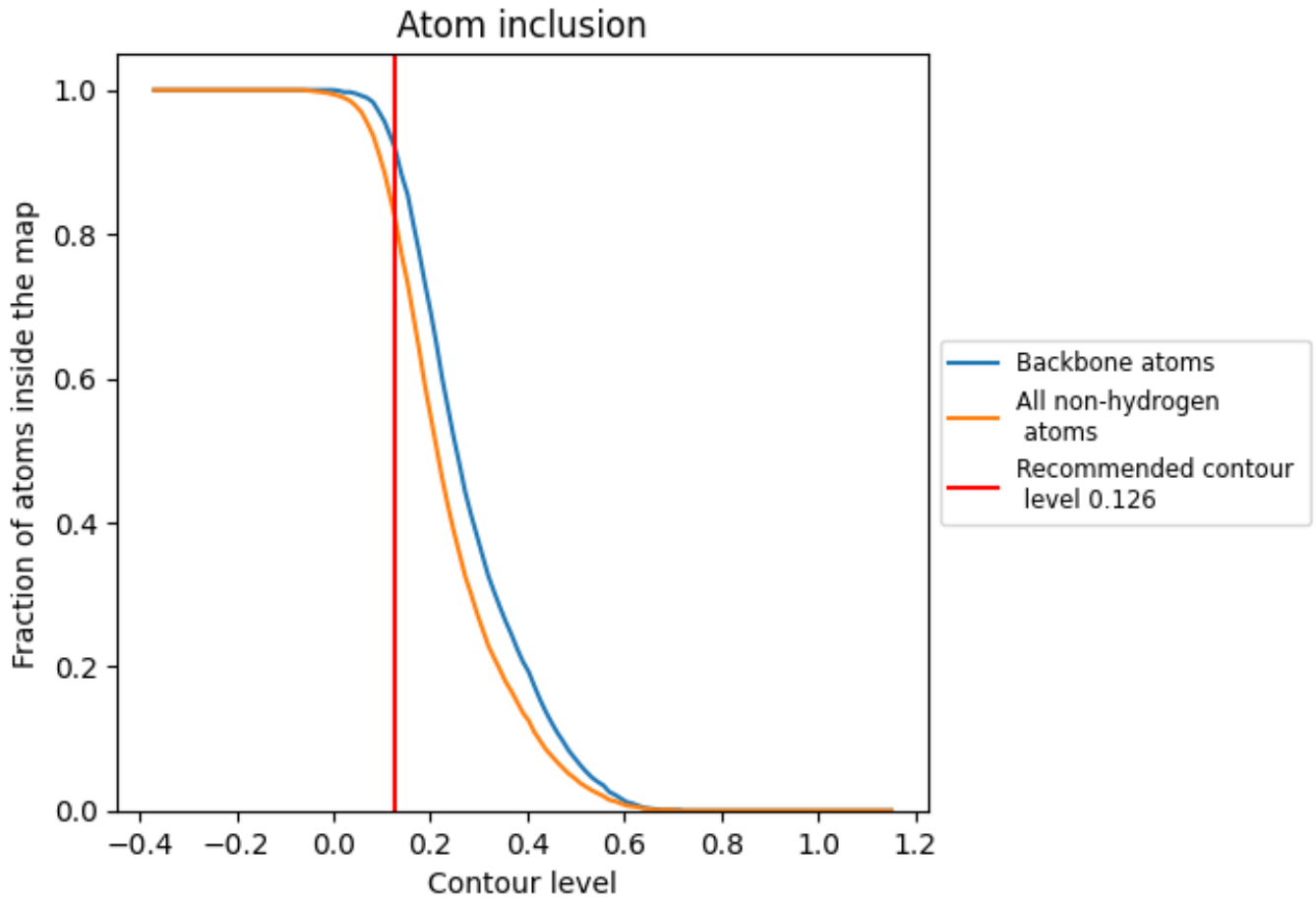
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.126).

9.4 Atom inclusion (i)



At the recommended contour level, 92% 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 (0.126) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8250	0.3210
A	0.8720	0.1050
B	0.3570	0.0310
C	0.9640	0.4500
D	0.9390	0.3960
E	0.7860	0.4310
a	0.6920	0.2340
b	0.8460	0.3360