



wwPDB EM Validation Summary Report ⓘ

Mar 6, 2026 – 05:03 AM UTC

PDB ID : 9NVJ / pdb_00009nvj
EMDB ID : EMD-49837
Title : mjHSP16.5 34mer (+lysozyme, 75C)
Authors : Miller, A.P.; Reichow, S.L.
Deposited on : 2025-03-20
Resolution : 4.71 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 ⓘ symbol.

The types of validation reports are described at

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

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

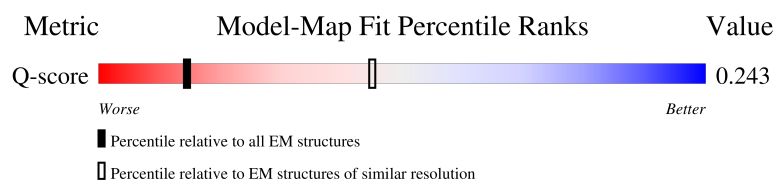
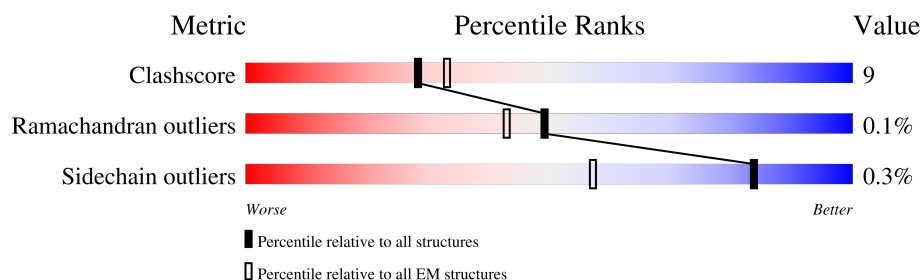
EMDB validation analysis : 0.0.1.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh &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

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 4.71 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.



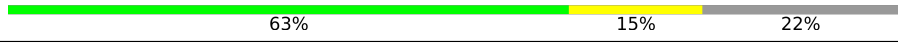
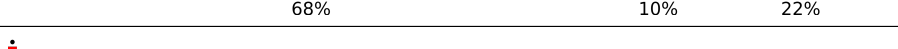
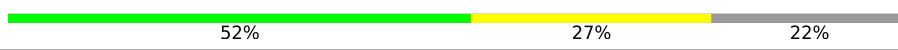
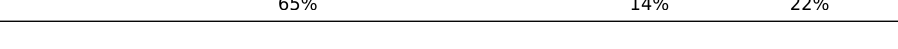
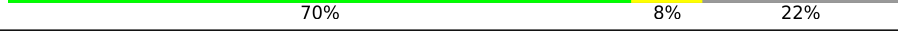
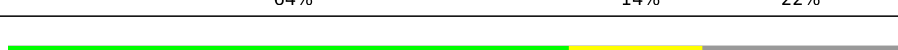
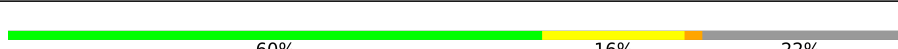
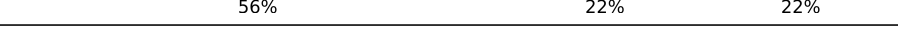
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	1656 (4.21 - 5.20)

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	F	147	
1	G	147	
1	H	147	
1	I	147	

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Mol	Chain	Length	Quality of chain
1	J	147	
1	K	147	
1	L	147	
1	M	147	
1	N	147	
1	O	147	
1	P	147	
1	Q	147	
1	R	147	
1	S	147	
1	T	147	
1	U	147	
1	V	147	
1	W	147	
1	X	147	
1	Y	147	
1	Z	147	
1	a	147	
1	b	147	
1	c	147	
1	d	147	
1	e	147	
1	f	147	
1	g	147	
1	h	147	

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Mol	Chain	Length	Quality of chain
1	i	147	 59% 19% 22%
1	j	147	 59% 20% 22%
1	k	147	 60% 18% 22%
1	l	147	 73% 5% 22%
1	m	147	 60% 17% 22%

2 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 61924 atoms, of which 31611 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 Small heat shock protein HSP16.5.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	F	115	Total	C	H	N	O	S	0	0
			1827	570	933	147	175	2		
1	G	115	Total	C	H	N	O	S	0	0
			1827	570	933	147	175	2		
1	H	115	Total	C	H	N	O	S	0	0
			1823	570	929	147	175	2		
1	I	115	Total	C	H	N	O	S	0	0
			1826	570	933	147	174	2		
1	J	104	Total	C	H	N	O	S	0	0
			1657	520	844	133	158	2		
1	K	115	Total	C	H	N	O	S	0	0
			1827	570	933	147	175	2		
1	L	115	Total	C	H	N	O	S	0	0
			1827	570	933	147	175	2		
1	M	115	Total	C	H	N	O	S	0	0
			1819	570	925	147	175	2		
1	N	115	Total	C	H	N	O	S	0	0
			1827	570	933	147	175	2		
1	O	115	Total	C	H	N	O	S	0	0
			1820	570	927	147	174	2		
1	P	115	Total	C	H	N	O	S	0	0
			1827	570	933	147	175	2		
1	Q	115	Total	C	H	N	O	S	0	0
			1827	570	933	147	175	2		
1	R	115	Total	C	H	N	O	S	0	0
			1827	570	933	147	175	2		
1	S	115	Total	C	H	N	O	S	0	0
			1827	570	933	147	175	2		
1	T	115	Total	C	H	N	O	S	0	0
			1827	570	933	147	175	2		
1	U	115	Total	C	H	N	O	S	0	0
			1827	570	933	147	175	2		
1	V	115	Total	C	H	N	O	S	0	0
			1827	570	933	147	175	2		

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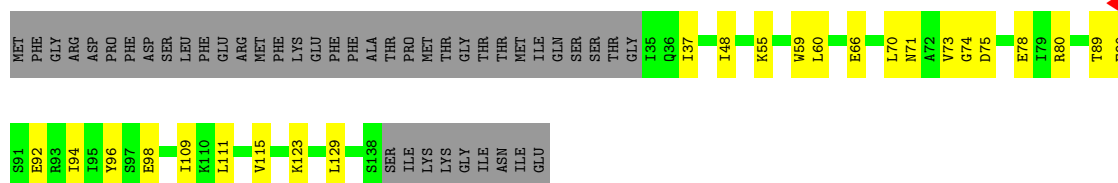
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Mol	Chain	Residues	Atoms						AltConf	Trace
1	W	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	X	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	Y	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	Z	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	a	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	b	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	c	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	d	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	e	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	f	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	g	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	h	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	i	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	j	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	k	115	Total 1823	C 570	H 929	N 147	O 175	S 2	0	0
1	l	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0
1	m	115	Total 1827	C 570	H 933	N 147	O 175	S 2	0	0



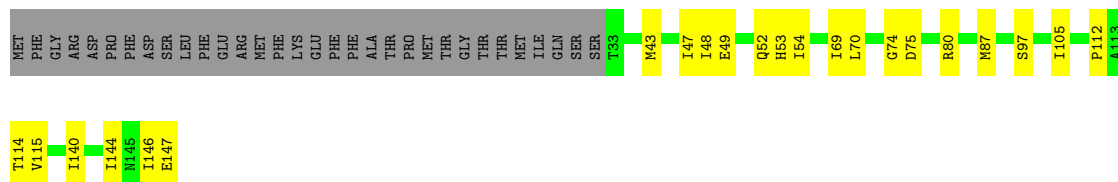
- Molecule 1: Small heat shock protein HSP16.5

Chain J:



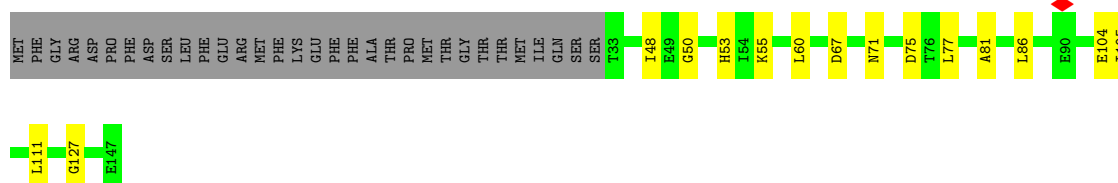
- Molecule 1: Small heat shock protein HSP16.5

Chain K:



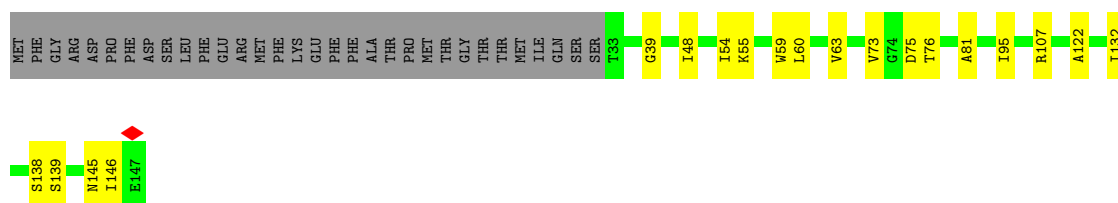
- Molecule 1: Small heat shock protein HSP16.5

Chain L:



- Molecule 1: Small heat shock protein HSP16.5

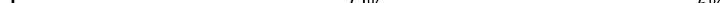
Chain M:



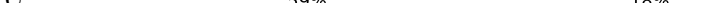
- Molecule 1: Small heat shock protein HSP16.5

Chain N:

E90		Met
R93		Phe
Y96		Gly
T99		Arg
R107		Asp
T108		Pro
P112		Phe
L133		Asp
E147		Ser
		Leu
		Phe
		Glu
		Arg
		Met
		Phe
		Lys
		Glu
		Phe
		Phe
		Ala
		Thr
		Pro
		Met
		Gly
		Thr
		Thr
		Met
		Ile
		Gln
		Ser
		Ser
		T33
		G34
		I35
		G39
		F42
		K43
		P44
		I47
		L48
		H53
		H59
		L60
		L69
		L70
		V73
		E78
		I79
		R80
		T80

- Chain T:  72% 6% 22%

Met	Phe	Gly	Arg	Asp	Pro	Phe	Asp	Ser	Leu	Phe	Glu	Arg	Met	Phe	Met	Phe	Gly	Phe	Ala	Thr	Pro	Met	Met	Thr	Gly	Thr	Thr	Met	Ile	Gln	Ser	Ser	Ser	T33	H63	H69	L60	A72	V73	G74	D75	T89	E90	L111	K123	S130	E147
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- Chain U:  59% 18% . 22%

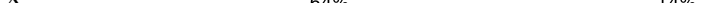
E90	E91	E92	E93	E94	E95	E96	E97	E101	L111	L129	N145	I146	E147	MET	PHE	GLY	ARG	ASP	PRO	PHE	ASP	SER	LEU	PHE	GLU	ARG	MET	PHE	LYS	GLU	PHE	PHE	ALA	THR	PRO	MET	THR	GLY	THR	THR	ILE	GLN	SER	SER	T33	M43	P44	I48	E49	G50	H53	I54	K55	A58	L70	N71	K72	V73	G74	D75	T76	L77	L86	H87	I88	T89
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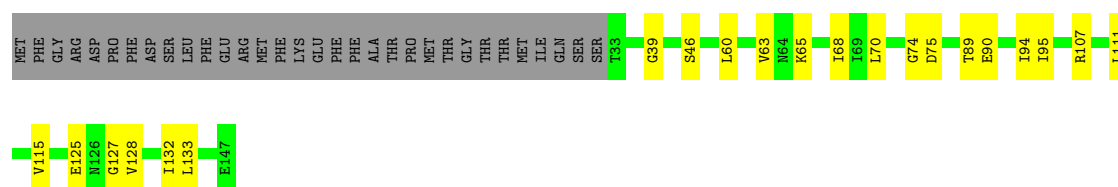
- Chain V: 66% 12% 22%

	N145	E147	MET PHE GLY ARG ASP PRO PHE ASP SER LEU PHE GLU ARG MET PHE LYS GLU PHE PHE ALA THR PRO MET THR GLY THR THR MET ILE GLN SER SER T33	I146	L70	A72	D75	I76	L77	E78	I79	Y106	L111	A122	I132
			I47		L70	A72	D75	I76	L77	E78	I79	Y106	L111	A122	I132

- Chain W:  70% 8% 22%

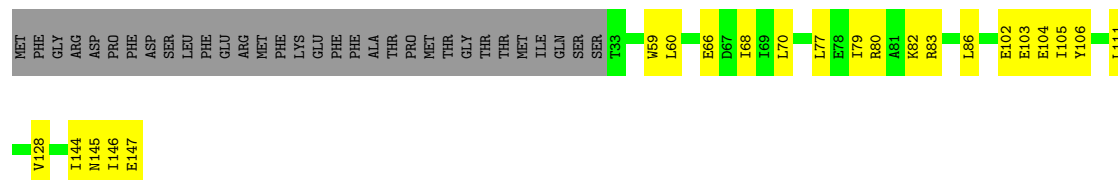
[illegible]

- Chain X:  64% 14% 22%



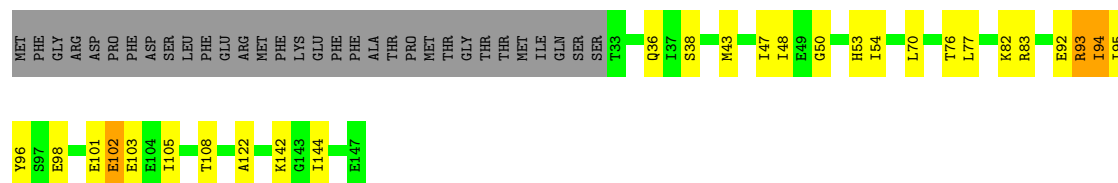
- Molecule 1: Small heat shock protein HSP16.5

Chain Y: 63% 15% 22%



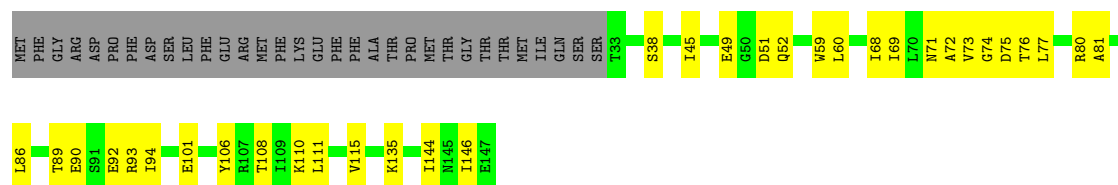
- Molecule 1: Small heat shock protein HSP16.5

Chain Z: 60% 16% 22%



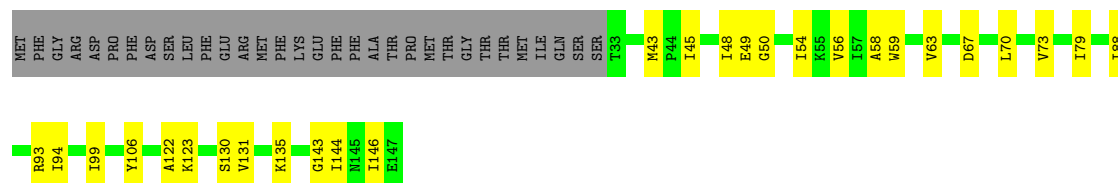
- Molecule 1: Small heat shock protein HSP16.5

Chain a: 56% 22% 22%



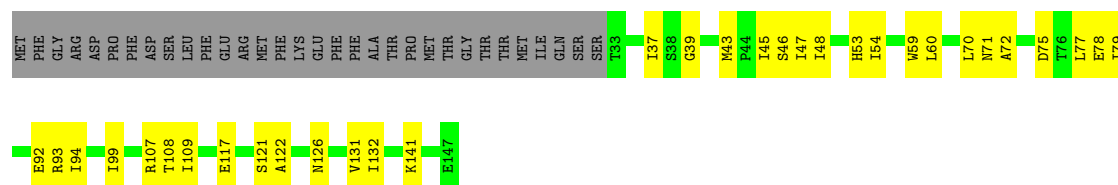
- Molecule 1: Small heat shock protein HSP16.5

Chain b: 60% 18% 22%

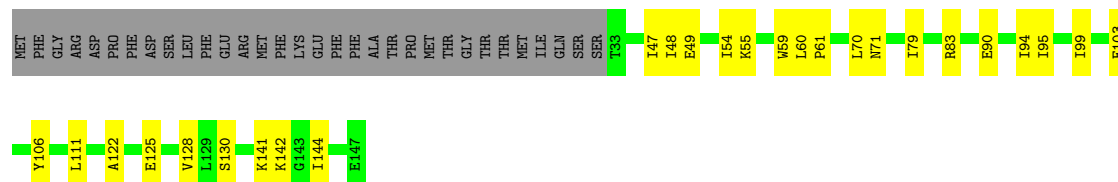


- Molecule 1: Small heat shock protein HSP16.5

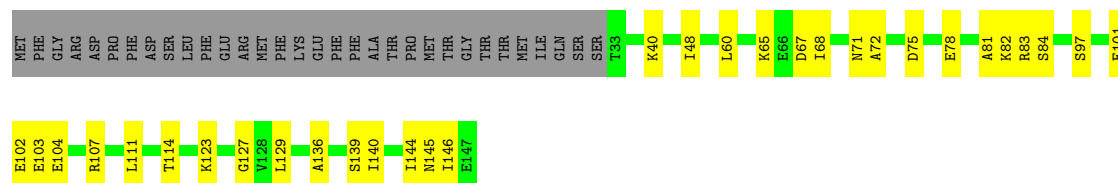
Chain c: 56% 22% 22%



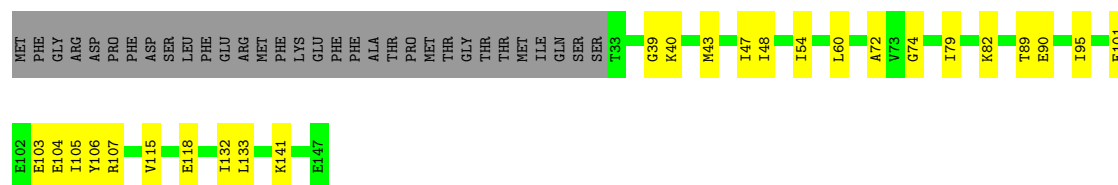
- Molecule 1: Small heat shock protein HSP16.5



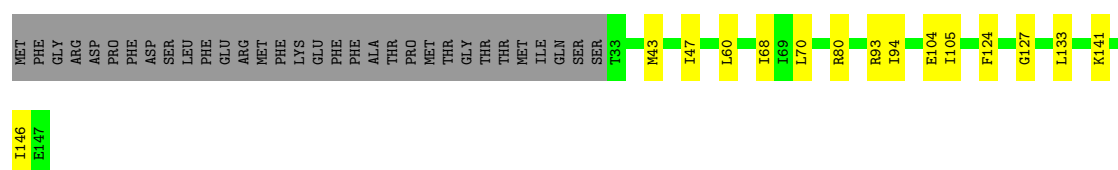
- Molecule 1: Small heat shock protein HSP16.5



- Molecule 1: Small heat shock protein HSP16.5

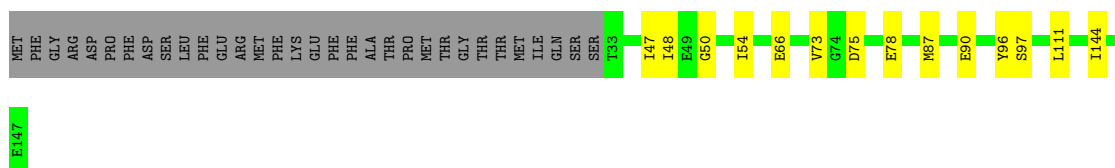


- Molecule 1: Small heat shock protein HSP16.5



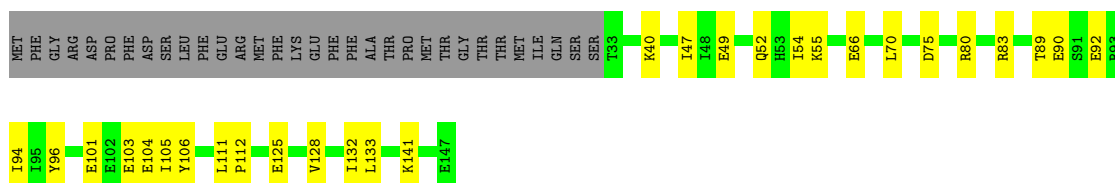
- Molecule 1: Small heat shock protein HSP16.5





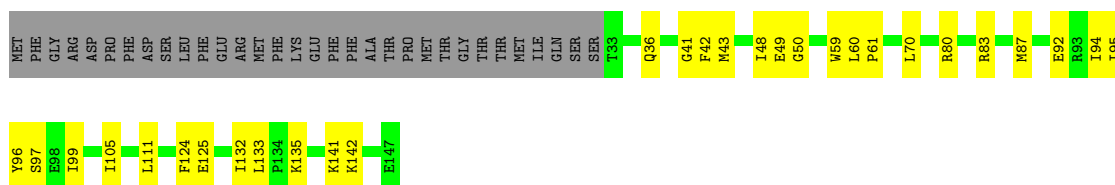
- Molecule 1: Small heat shock protein HSP16.5

Chain i: 59% 19% 22%



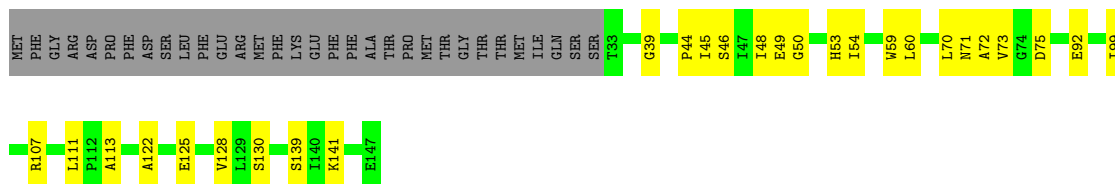
- Molecule 1: Small heat shock protein HSP16.5

Chain j: 59% 20% 22%



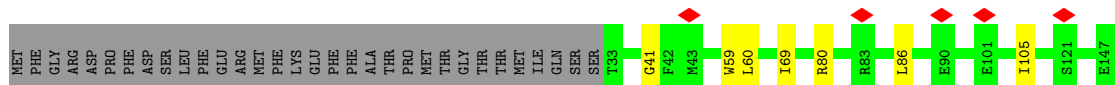
- Molecule 1: Small heat shock protein HSP16.5

Chain k: 60% 18% 22%



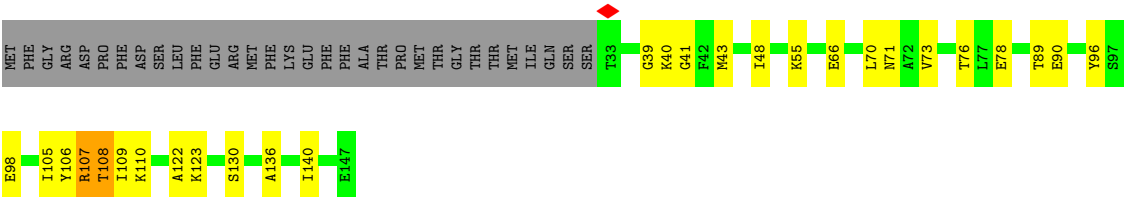
- Molecule 1: Small heat shock protein HSP16.5

Chain l: 73% 5% 22%



- Molecule 1: Small heat shock protein HSP16.5

Chain m: 60% 17% 22%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	202648	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOCONTINUUM (6k x 4k)	Depositor
Maximum map value	28.039	Depositor
Minimum map value	-17.932	Depositor
Average map value	0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	3.22	Depositor
Map size (Å)	320.0, 320.0, 320.0	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.25, 1.25, 1.25	Depositor

5 Model quality

5.1 Standard geometry

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	F	0.29	0/906	0.35	0/1221
1	G	0.14	0/906	0.29	0/1221
1	H	0.21	0/906	0.31	0/1221
1	I	0.17	0/905	0.34	0/1221
1	J	0.14	0/825	0.32	0/1115
1	K	0.16	0/906	0.30	0/1221
1	L	0.17	0/906	0.28	0/1221
1	M	0.17	0/906	0.31	0/1221
1	N	0.19	0/906	0.37	1/1221 (0.1%)
1	O	0.30	0/905	0.43	0/1221
1	P	0.27	0/906	0.37	0/1221
1	Q	0.26	0/906	0.37	0/1221
1	R	0.18	0/906	0.31	0/1221
1	S	0.23	0/906	0.33	0/1221
1	T	0.16	0/906	0.29	0/1221
1	U	0.23	0/906	0.33	0/1221
1	V	0.17	0/906	0.29	0/1221
1	W	0.16	0/906	0.36	0/1221
1	X	0.16	0/906	0.31	0/1221
1	Y	0.18	0/906	0.32	0/1221
1	Z	0.18	0/906	0.44	0/1221
1	a	0.19	0/906	0.34	0/1221
1	b	0.28	0/906	0.34	0/1221
1	c	0.29	0/906	0.35	0/1221
1	d	0.27	0/906	0.33	0/1221
1	e	0.18	0/906	0.37	0/1221
1	f	0.18	0/906	0.29	0/1221
1	g	0.17	0/906	0.30	0/1221
1	h	0.20	0/906	0.30	0/1221
1	i	0.18	0/906	0.28	0/1221
1	j	0.34	0/906	0.38	0/1221
1	k	0.29	0/906	0.35	0/1221
1	l	0.14	0/906	0.28	0/1221
1	m	0.27	0/906	0.50	0/1221

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
All	All	0.22	0/30721	0.34	1/41408 (0.0%)

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	m	0	1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	N	122	ALA	CB-CA-C	5.05	120.30	110.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	m	107	ARG	Sidechain

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	894	933	932	18	0
1	G	894	933	932	8	0
1	H	894	929	932	27	0
1	I	893	933	932	12	0
1	J	813	844	843	17	0
1	K	894	933	932	17	0
1	L	894	933	932	9	0
1	M	894	925	932	15	0
1	N	894	933	932	29	0
1	O	893	927	932	33	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	P	894	933	932	36	0
1	Q	894	933	932	34	0
1	R	894	933	932	21	0
1	S	894	933	932	17	0
1	T	894	933	932	6	0
1	U	894	933	932	27	0
1	V	894	933	932	16	0
1	W	894	933	932	11	0
1	X	894	933	932	14	0
1	Y	894	933	932	15	0
1	Z	894	933	932	22	0
1	a	894	933	932	31	0
1	b	894	933	932	24	0
1	c	894	933	932	29	0
1	d	894	933	932	29	0
1	e	894	933	932	23	0
1	f	894	933	932	23	0
1	g	894	933	932	11	0
1	h	894	933	932	12	0
1	i	894	933	932	27	0
1	j	894	933	932	37	0
1	k	894	929	932	40	0
1	l	894	933	932	4	0
1	m	894	933	932	19	0
All	All	30313	31611	31599	586	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 9.

The worst 5 of 586 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:F:115:VAL:HG21	1:F:117:GLU:OE2	1.74	0.88
1:Z:83:ARG:O	1:Z:103:GLU:HG3	1.79	0.81
1:a:75:ASP:O	1:a:111:LEU:N	2.13	0.81
1:Q:45:ILE:HD12	1:Q:57:ILE:O	1.83	0.79
1:j:43:MET:HE3	1:j:60:LEU:HD11	1.65	0.78

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	F	113/147 (77%)	110 (97%)	3 (3%)	0	100	100
1	G	113/147 (77%)	110 (97%)	3 (3%)	0	100	100
1	H	113/147 (77%)	112 (99%)	1 (1%)	0	100	100
1	I	113/147 (77%)	108 (96%)	4 (4%)	1 (1%)	14	49
1	J	102/147 (69%)	97 (95%)	5 (5%)	0	100	100
1	K	113/147 (77%)	110 (97%)	3 (3%)	0	100	100
1	L	113/147 (77%)	112 (99%)	1 (1%)	0	100	100
1	M	113/147 (77%)	105 (93%)	8 (7%)	0	100	100
1	N	113/147 (77%)	109 (96%)	4 (4%)	0	100	100
1	O	113/147 (77%)	111 (98%)	2 (2%)	0	100	100
1	P	113/147 (77%)	111 (98%)	2 (2%)	0	100	100
1	Q	113/147 (77%)	109 (96%)	4 (4%)	0	100	100
1	R	113/147 (77%)	111 (98%)	2 (2%)	0	100	100
1	S	113/147 (77%)	111 (98%)	2 (2%)	0	100	100
1	T	113/147 (77%)	110 (97%)	3 (3%)	0	100	100
1	U	113/147 (77%)	112 (99%)	1 (1%)	0	100	100
1	V	113/147 (77%)	111 (98%)	2 (2%)	0	100	100
1	W	113/147 (77%)	101 (89%)	12 (11%)	0	100	100
1	X	113/147 (77%)	112 (99%)	1 (1%)	0	100	100
1	Y	113/147 (77%)	104 (92%)	9 (8%)	0	100	100
1	Z	113/147 (77%)	105 (93%)	6 (5%)	2 (2%)	6	33
1	a	113/147 (77%)	112 (99%)	1 (1%)	0	100	100
1	b	113/147 (77%)	109 (96%)	4 (4%)	0	100	100
1	c	113/147 (77%)	107 (95%)	6 (5%)	0	100	100
1	d	113/147 (77%)	111 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	e	113/147 (77%)	109 (96%)	3 (3%)	1 (1%)	14	49
1	f	113/147 (77%)	111 (98%)	2 (2%)	0	100	100
1	g	113/147 (77%)	110 (97%)	3 (3%)	0	100	100
1	h	113/147 (77%)	112 (99%)	1 (1%)	0	100	100
1	i	113/147 (77%)	111 (98%)	2 (2%)	0	100	100
1	j	113/147 (77%)	109 (96%)	4 (4%)	0	100	100
1	k	113/147 (77%)	109 (96%)	4 (4%)	0	100	100
1	l	113/147 (77%)	111 (98%)	2 (2%)	0	100	100
1	m	113/147 (77%)	105 (93%)	7 (6%)	1 (1%)	14	49
All	All	3831/4998 (77%)	3707 (97%)	119 (3%)	5 (0%)	49	83

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	Z	102	GLU
1	e	97	SER
1	m	108	THR
1	I	144	ILE
1	Z	93	ARG

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	F	100/129 (78%)	100 (100%)	0	100	100
1	G	100/129 (78%)	100 (100%)	0	100	100
1	H	100/129 (78%)	100 (100%)	0	100	100
1	I	100/129 (78%)	99 (99%)	1 (1%)	68	76
1	J	91/129 (70%)	91 (100%)	0	100	100
1	K	100/129 (78%)	99 (99%)	1 (1%)	68	76

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	L	100/129 (78%)	100 (100%)	0	100	100
1	M	100/129 (78%)	100 (100%)	0	100	100
1	N	100/129 (78%)	100 (100%)	0	100	100
1	O	100/129 (78%)	98 (98%)	2 (2%)	48	66
1	P	100/129 (78%)	100 (100%)	0	100	100
1	Q	100/129 (78%)	100 (100%)	0	100	100
1	R	100/129 (78%)	100 (100%)	0	100	100
1	S	100/129 (78%)	100 (100%)	0	100	100
1	T	100/129 (78%)	100 (100%)	0	100	100
1	U	100/129 (78%)	99 (99%)	1 (1%)	68	76
1	V	100/129 (78%)	100 (100%)	0	100	100
1	W	100/129 (78%)	100 (100%)	0	100	100
1	X	100/129 (78%)	99 (99%)	1 (1%)	68	76
1	Y	100/129 (78%)	99 (99%)	1 (1%)	68	76
1	Z	100/129 (78%)	98 (98%)	2 (2%)	48	66
1	a	100/129 (78%)	100 (100%)	0	100	100
1	b	100/129 (78%)	100 (100%)	0	100	100
1	c	100/129 (78%)	99 (99%)	1 (1%)	68	76
1	d	100/129 (78%)	100 (100%)	0	100	100
1	e	100/129 (78%)	100 (100%)	0	100	100
1	f	100/129 (78%)	100 (100%)	0	100	100
1	g	100/129 (78%)	100 (100%)	0	100	100
1	h	100/129 (78%)	100 (100%)	0	100	100
1	i	100/129 (78%)	100 (100%)	0	100	100
1	j	100/129 (78%)	100 (100%)	0	100	100
1	k	100/129 (78%)	100 (100%)	0	100	100
1	l	100/129 (78%)	100 (100%)	0	100	100
1	m	100/129 (78%)	100 (100%)	0	100	100
All	All	3391/4386 (77%)	3381 (100%)	10 (0%)	84	84

5 of 10 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	Z	94	ILE
1	Z	98	GLU
1	c	94	ILE
1	O	147	GLU
1	U	71	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 15 such sidechains are listed below:

Mol	Chain	Res	Type
1	Z	53	HIS
1	i	119	ASN
1	b	119	ASN
1	k	119	ASN
1	d	71	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](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

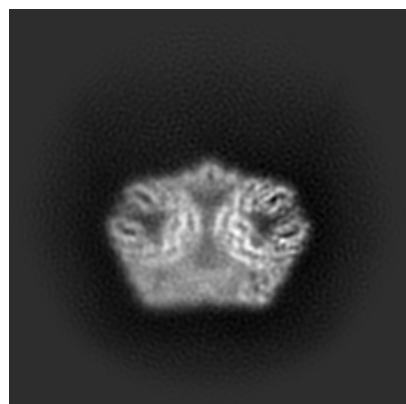
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-49837. These allow visual inspection of the internal detail of the map and identification of artifacts.

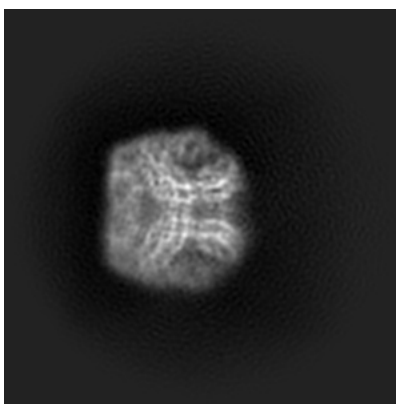
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

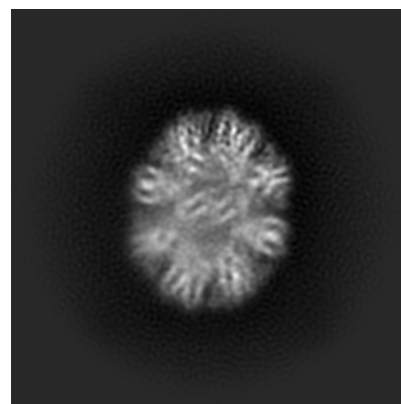
6.1.1 Primary map



X

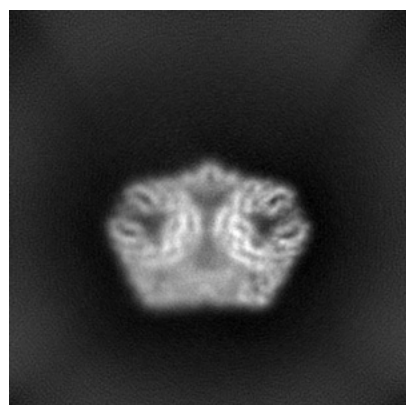


Y

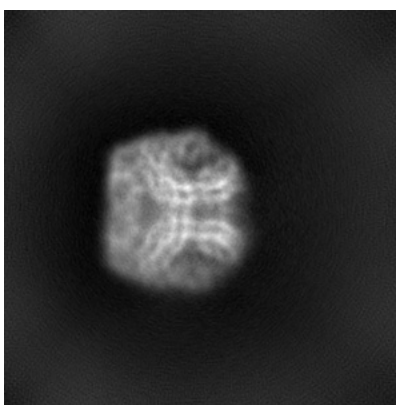


Z

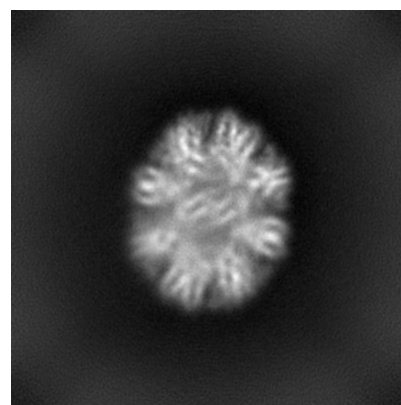
6.1.2 Raw map



X



Y

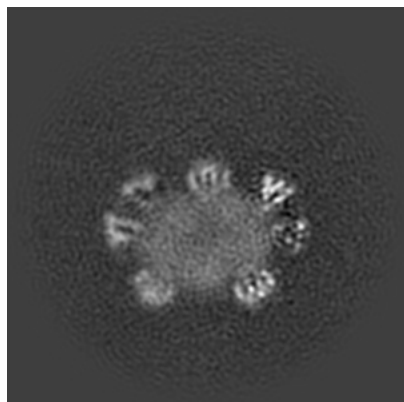


Z

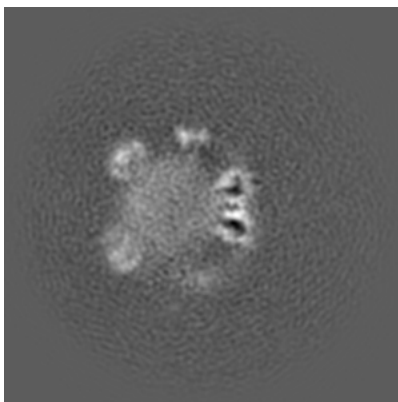
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

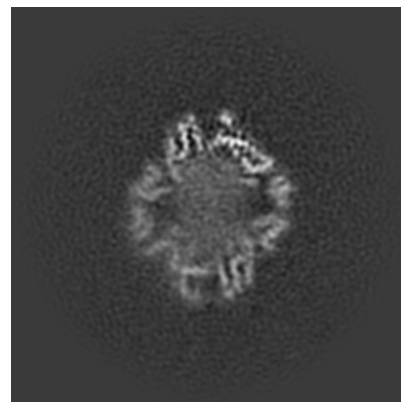
6.2.1 Primary map



X Index: 128

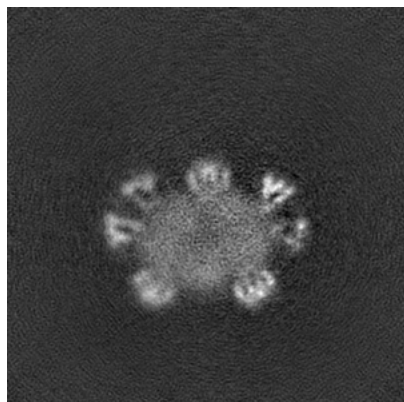


Y Index: 128

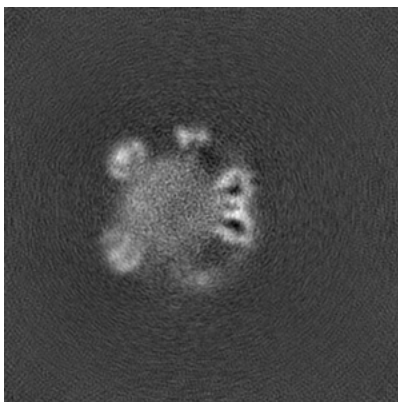


Z Index: 128

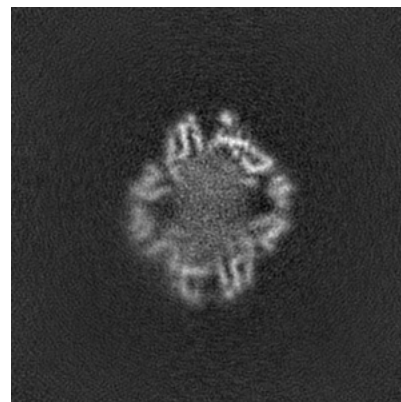
6.2.2 Raw map



X Index: 128



Y Index: 128

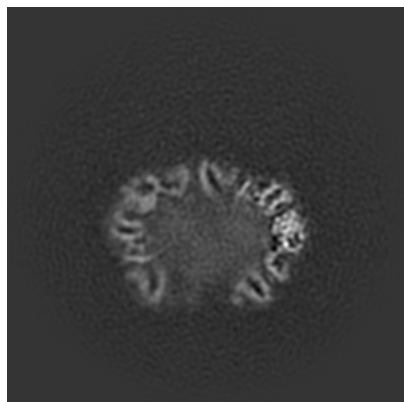


Z Index: 128

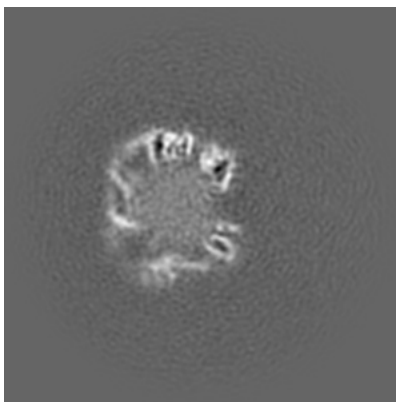
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

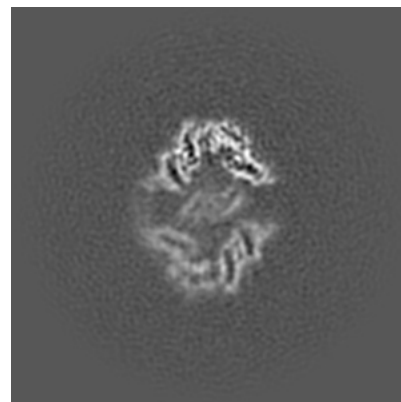
6.3.1 Primary map



X Index: 142

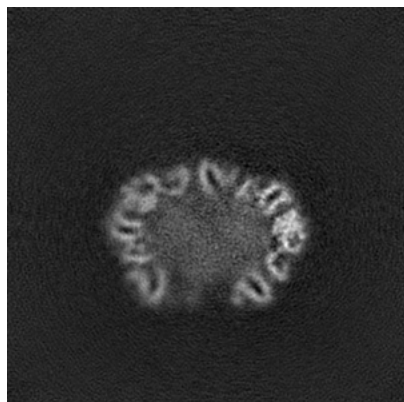


Y Index: 152

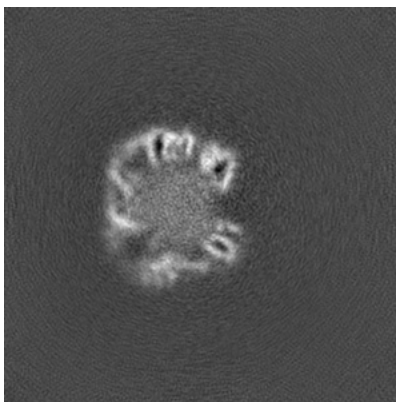


Z Index: 138

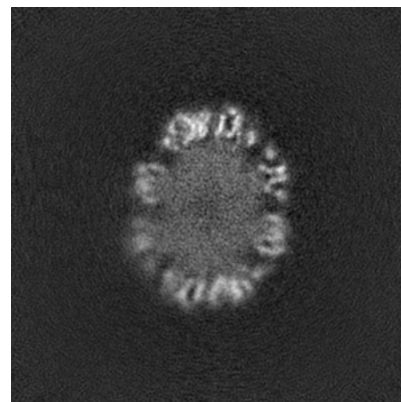
6.3.2 Raw map



X Index: 142



Y Index: 152

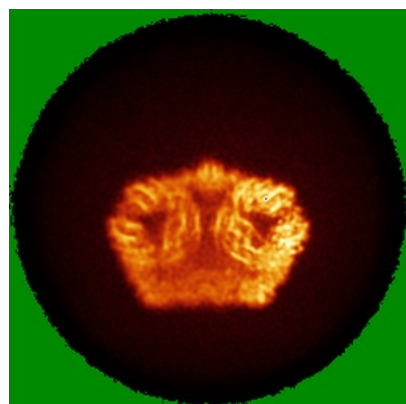


Z Index: 108

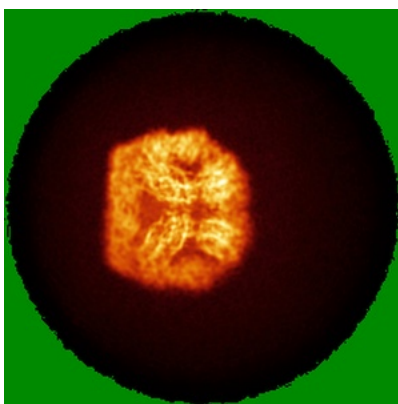
The images above show the largest variance slices of the map in three orthogonal directions.

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

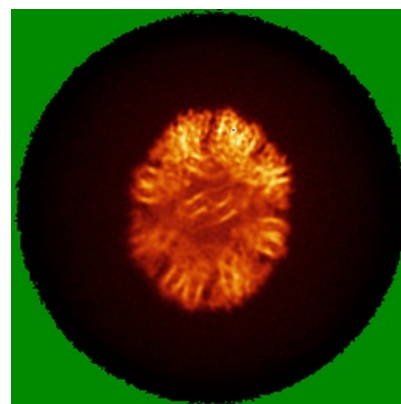
6.4.1 Primary map



X

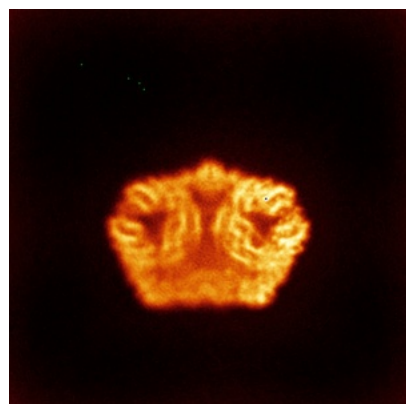


Y

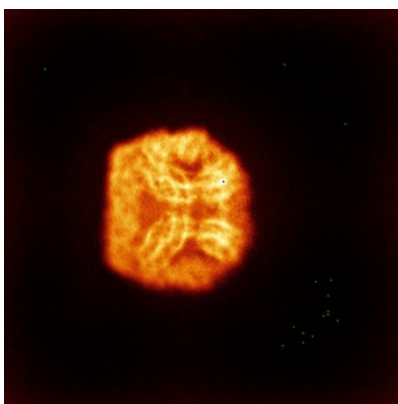


Z

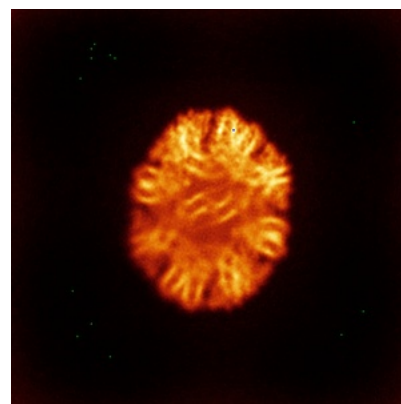
6.4.2 Raw map



X



Y

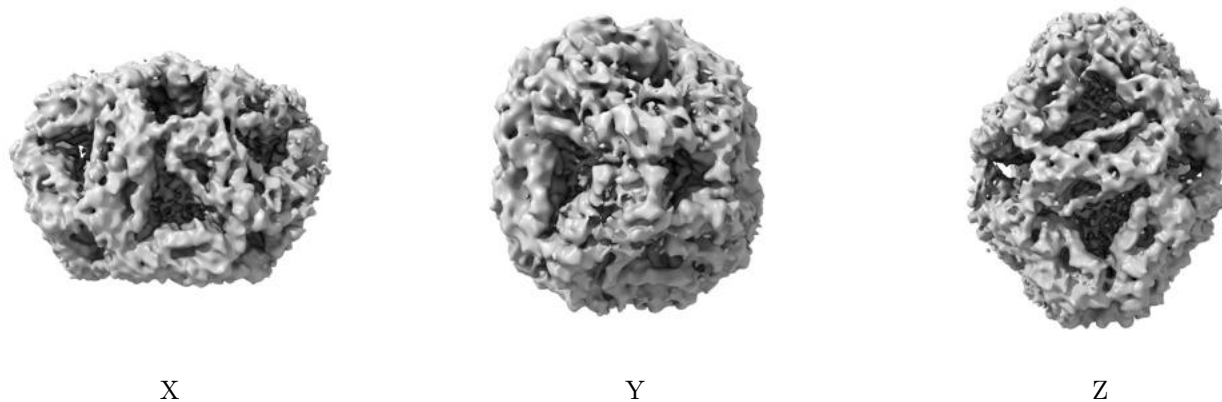


Z

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.

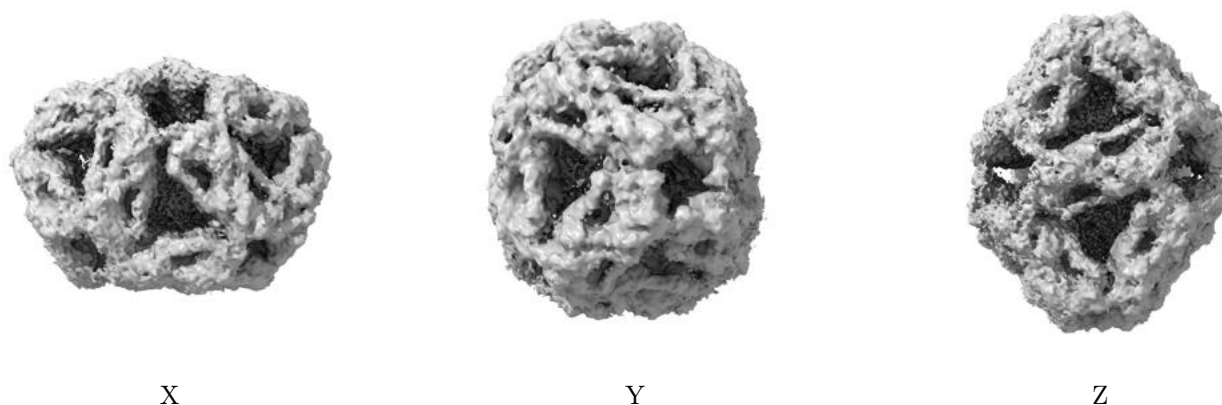
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 3.22. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

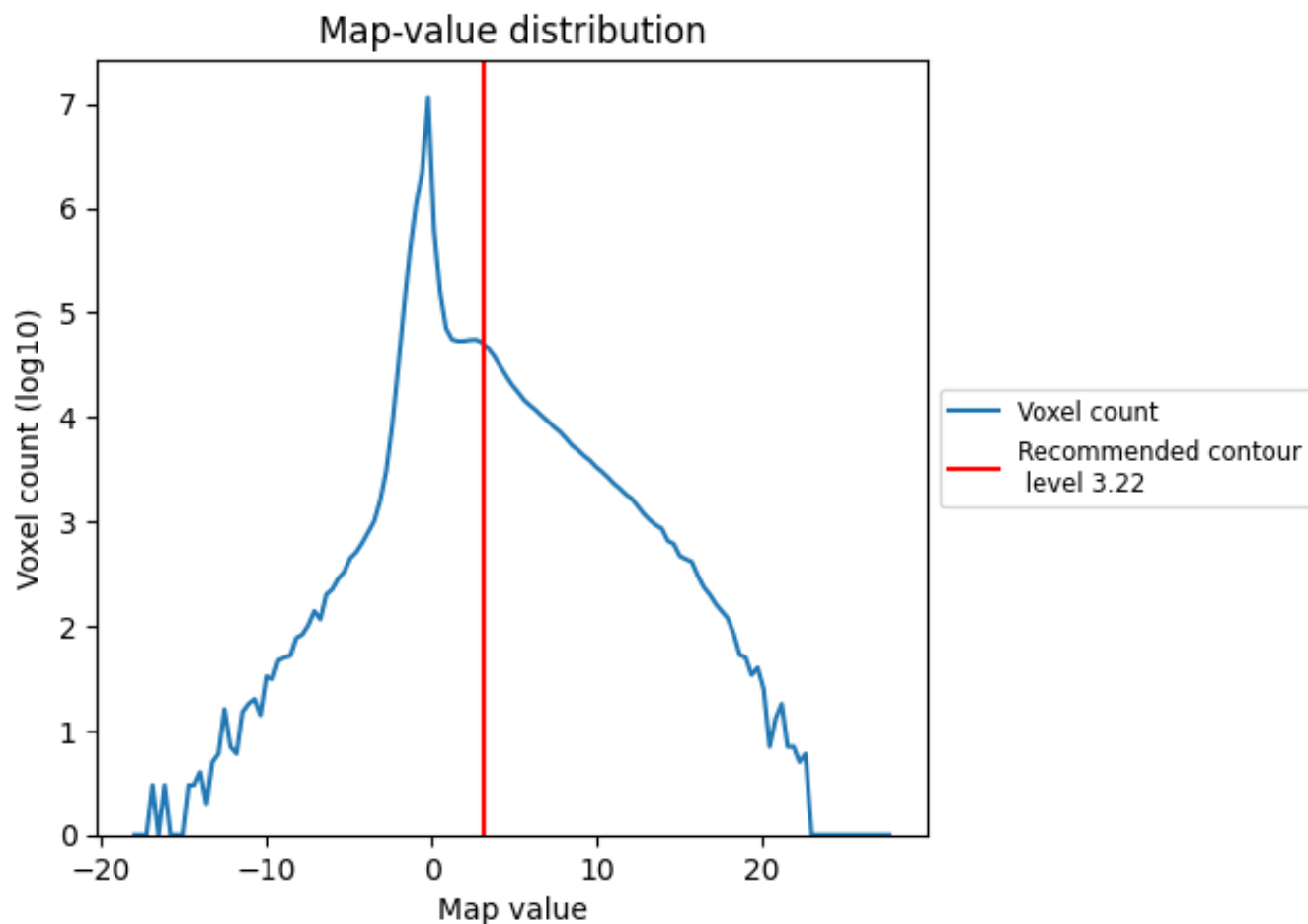
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

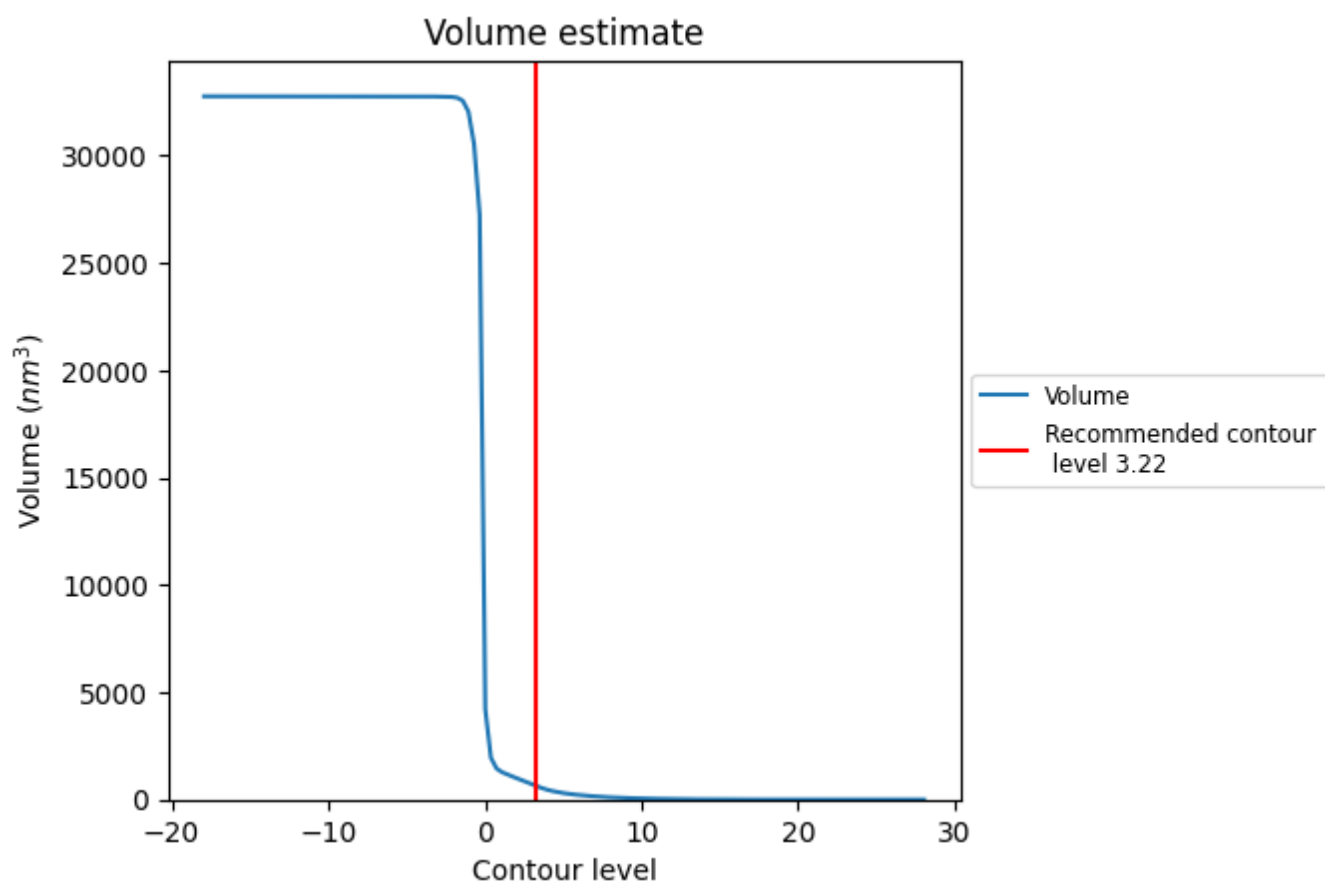
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

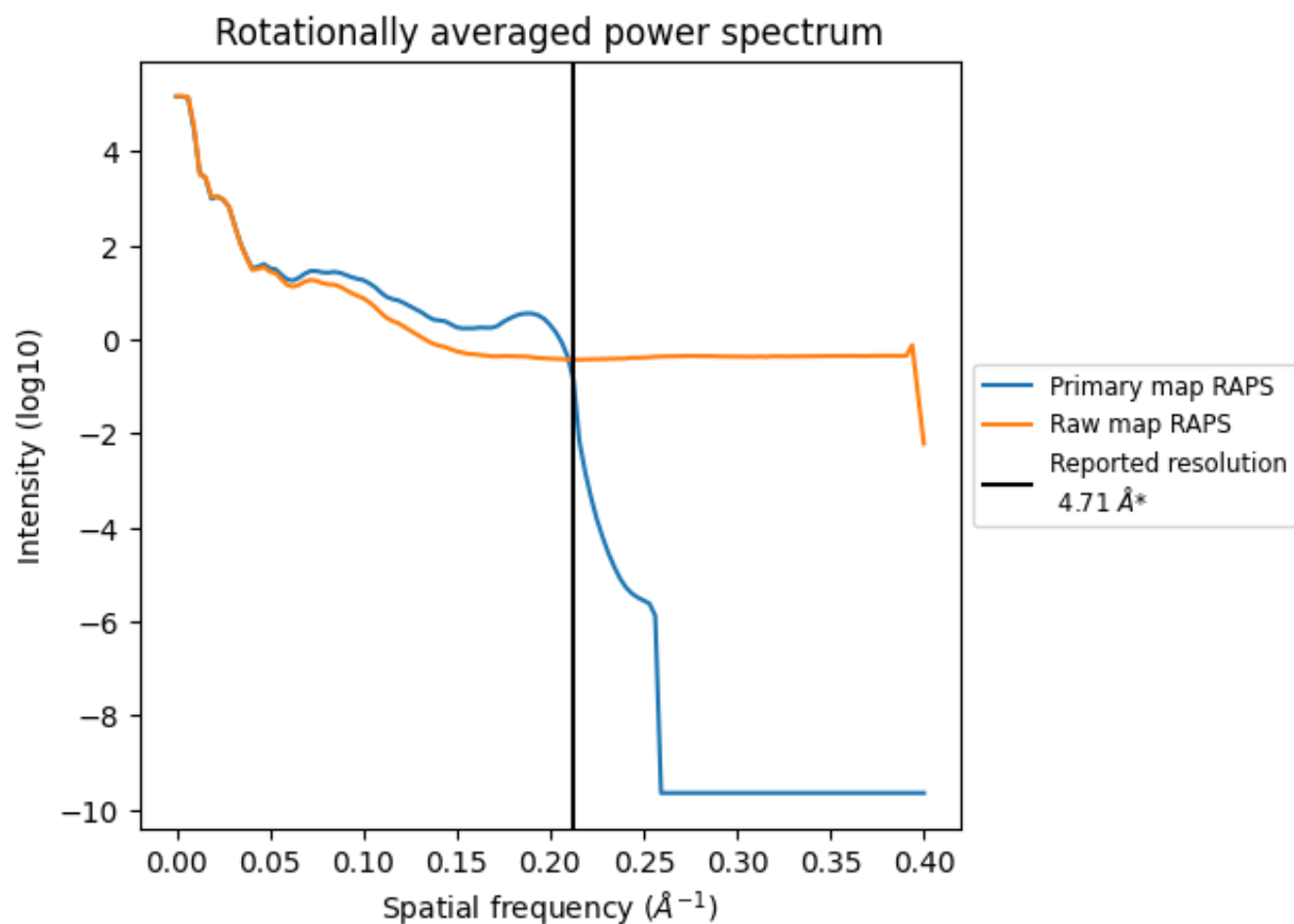
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 646 nm³; this corresponds to an approximate mass of 584 kDa.

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

7.3 Rotationally averaged power spectrum ⓘ

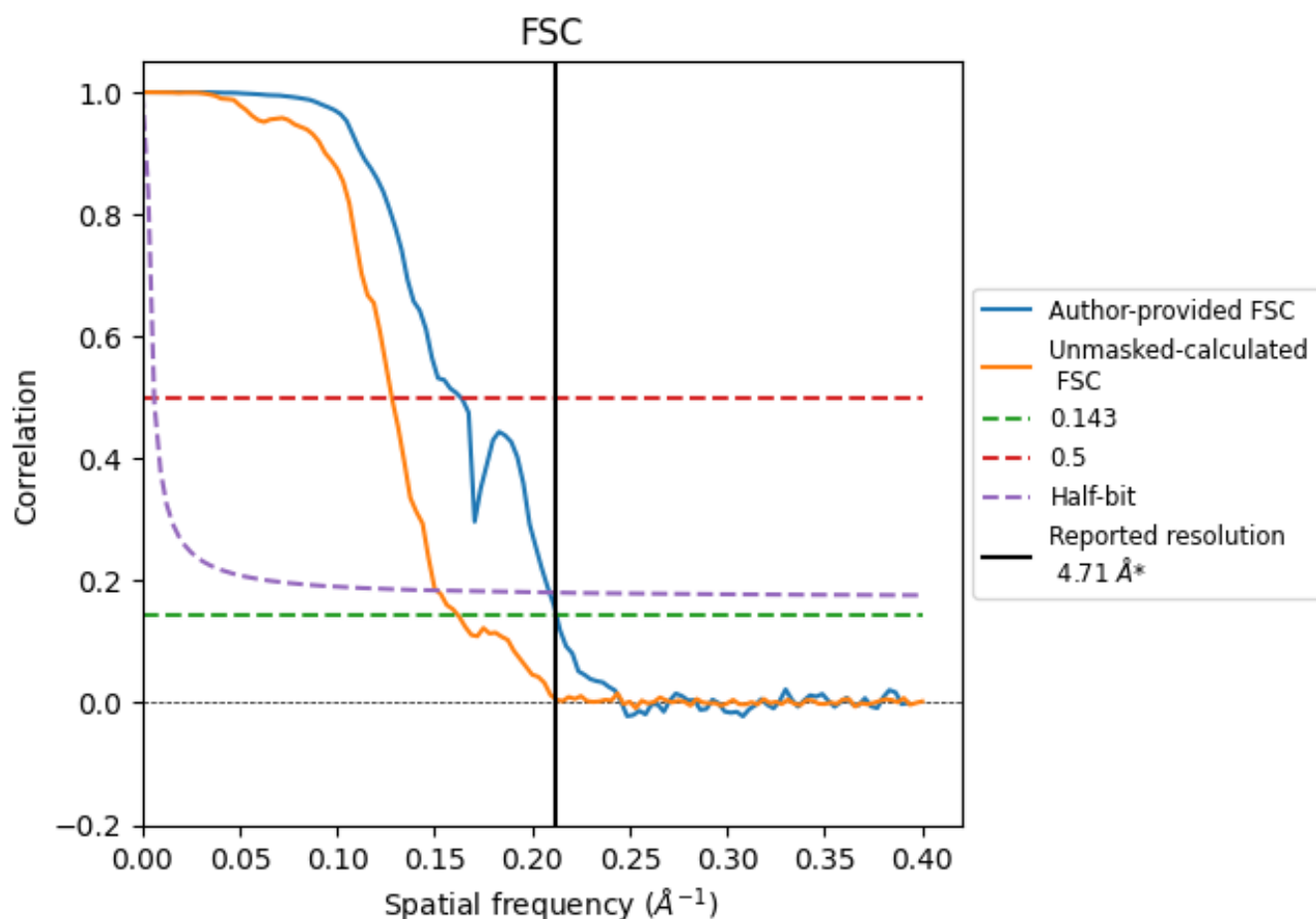


*Reported resolution corresponds to spatial frequency of 0.212 Å⁻¹

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 $0.212 \text{ \AA}^{-1}$

8.2 Resolution estimates [i](#)

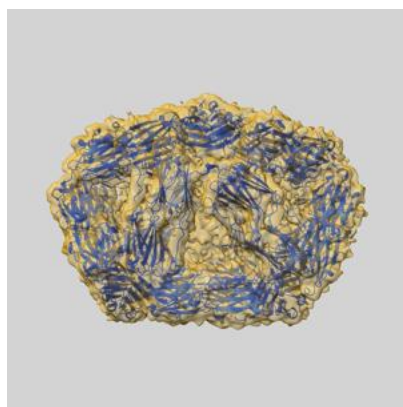
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.71	-	-
Author-provided FSC curve	4.71	6.12	4.79
Unmasked-calculated*	6.17	7.81	6.62

*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 6.17 differs from the reported value 4.71 by more than 10 %

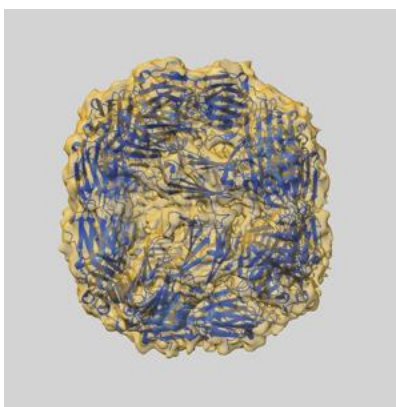
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-49837 and PDB model 9NVJ. Per-residue inclusion information can be found in [section 3](#) on [page 7](#).

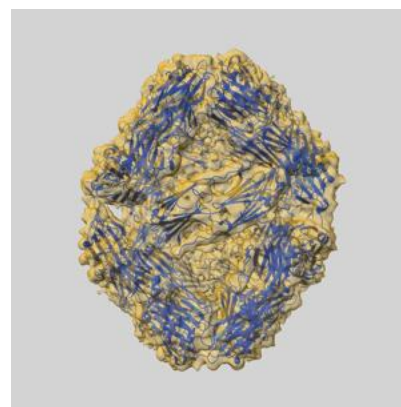
9.1 Map-model overlay [i](#)



X



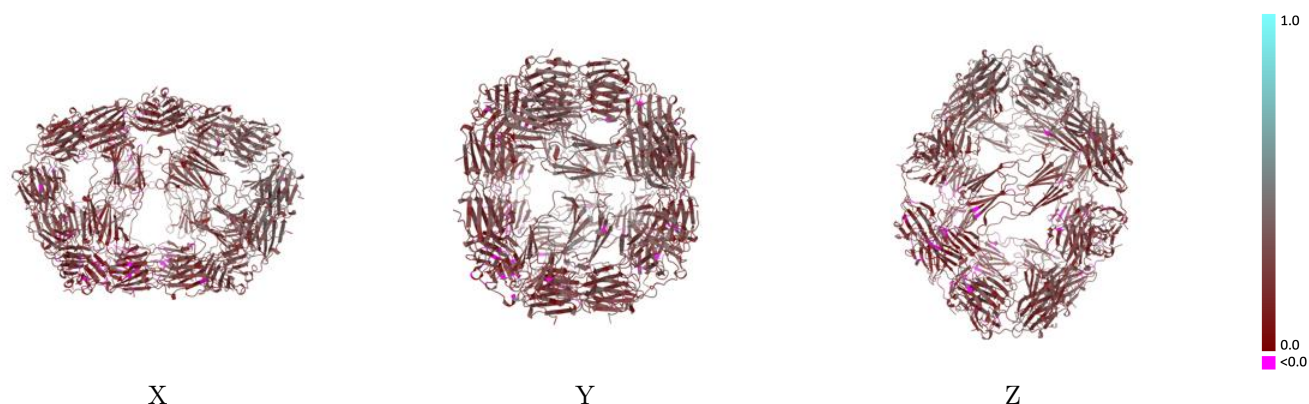
Y



Z

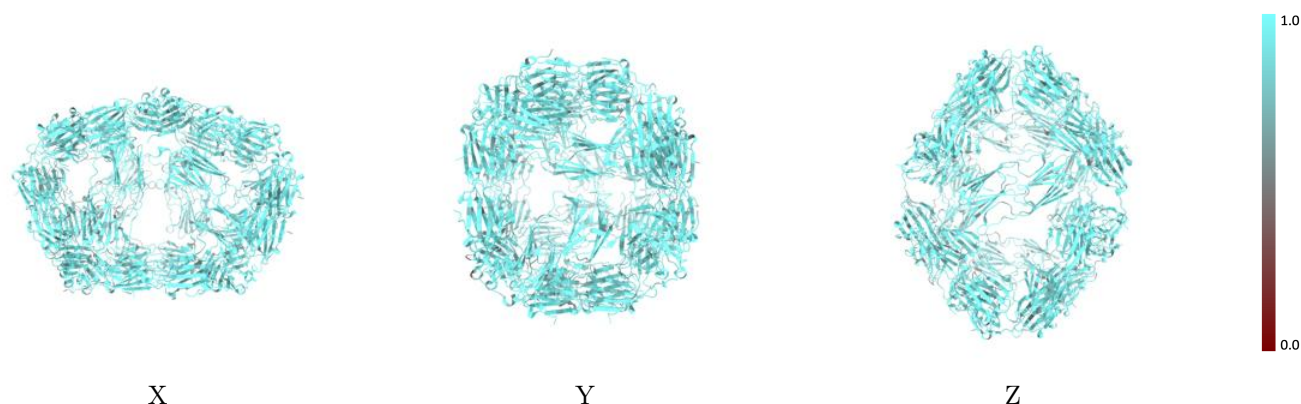
The images above show the 3D surface view of the map at the recommended contour level 3.22 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



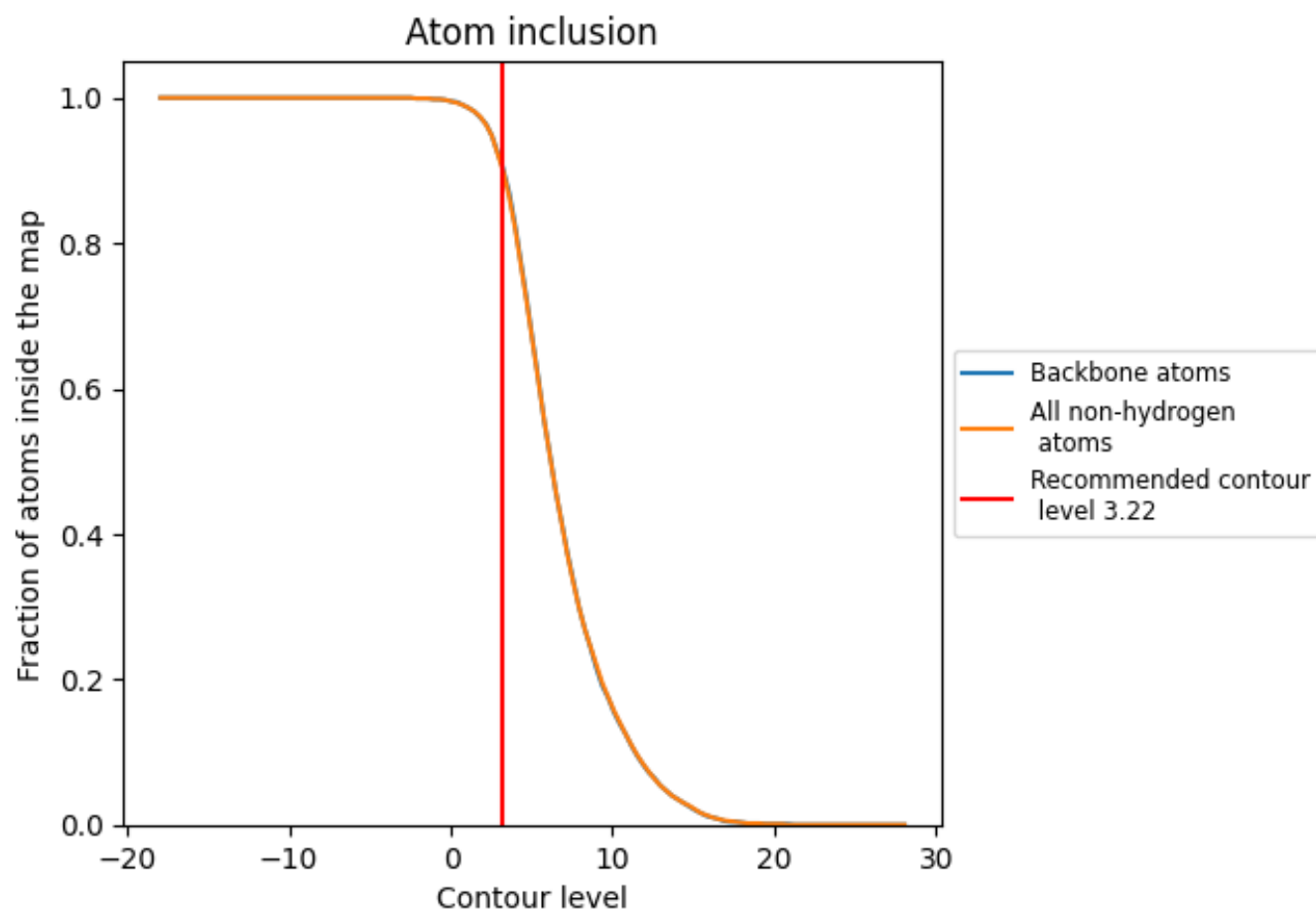
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (3.22).

9.4 Atom inclusion [i](#)



At the recommended contour level, 90% of all backbone atoms, 90% 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 (3.22) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9010	 0.2430
F	 0.9230	 0.3230
G	 0.8900	 0.1550
H	 0.9240	 0.2570
I	 0.9080	 0.1910
J	 0.9010	 0.1740
K	 0.8840	 0.2160
L	 0.8990	 0.2270
M	 0.8990	 0.1880
N	 0.9140	 0.2250
O	 0.9330	 0.2740
P	 0.9200	 0.2920
Q	 0.9090	 0.2690
R	 0.8830	 0.2110
S	 0.9090	 0.2980
T	 0.8620	 0.1640
U	 0.9200	 0.2550
V	 0.9150	 0.2260
W	 0.8730	 0.1700
X	 0.8990	 0.1960
Y	 0.8870	 0.2180
Z	 0.8920	 0.2170
a	 0.8950	 0.2270
b	 0.9330	 0.3280
c	 0.9320	 0.3400
d	 0.9070	 0.2960
e	 0.9200	 0.2450
f	 0.9060	 0.2430
g	 0.9250	 0.2590
h	 0.9000	 0.2620
i	 0.9140	 0.2490
j	 0.9320	 0.3520
k	 0.9270	 0.3260
l	 0.7980	 0.1450
m	 0.8610	 0.2220

