wwPDB EM Validation Summary Report ⓘ

Sep 25, 2025 – 05:09 PM EDT

PDB ID	:	9NLY / pdb_00009nly
EMDB ID	:	EMD-49526
Title	:	Y20S (Sec18-Sec17-Sec9-Sso1-Snc1) EDTA - Class 7
Authors	:	Khan, Y.A.; Brunger, A.T.
Deposited on	:	2025-03-03
Resolution	:	3.75 Å(reported)

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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.

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

EMDB validation analysis	:	0.0.1.dev129
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
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)	:	2.46

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 3.75 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	Percentile Ranks	Value
Clashscore		2
Ramachandran outliers		0.1%
Sidechain outliers		0.6%

Worse   *Better*

▌ Percentile relative to all structures

▯ Percentile relative to all EM structures

Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.144

Worse   *Better*

▌ Percentile relative to all EM structures

▯ Percentile relative to EM structures of similar resolution

Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	10301 (3.25 - 4.25)

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	761	65% • 33%
1	B	761	93% • 5%
1	C	761	96% • •
1	D	761	5% 94% • •

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Mol	Chain	Length	Quality of chain
1	E	761	65% 5% 30%
1	F	761	62% 36%
2	G	293	5% 88% 5% 7%
2	H	293	85% 5% 10%
2	I	293	30% 84% 7% 9%
3	J	97	56% 5% 38%
4	K	269	26% 7% 66%
5	L	222	55% 42%
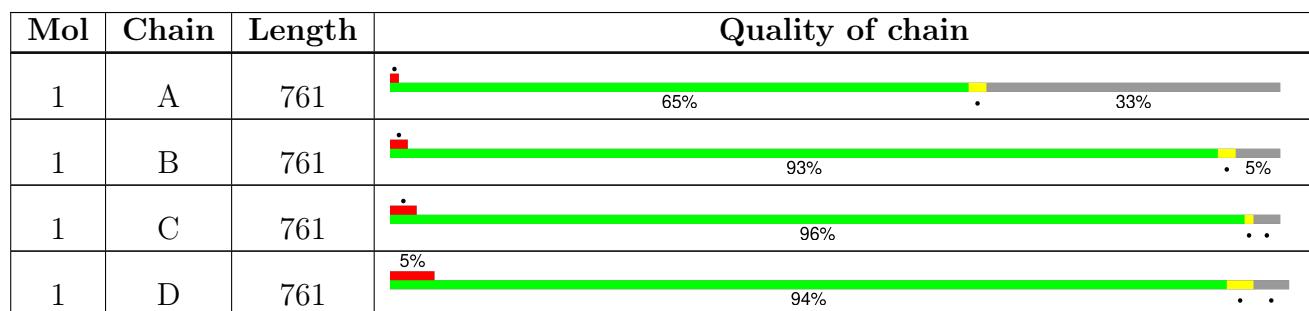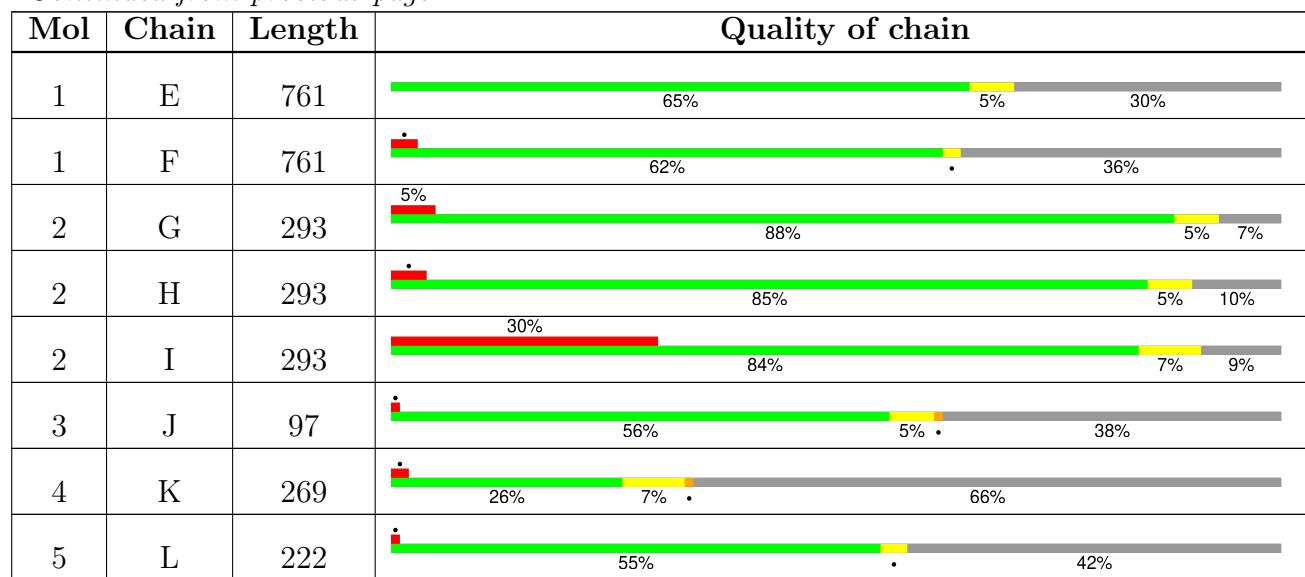
2   Entry composition ⓘ

There are 7 unique types of molecules in this entry. The entry contains 75990 atoms, of which 38060 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 Vesicular-fusion protein SEC18.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	513	Total	C	H	N	O	S	0	0
			8084	2522	4090	690	764	18		
1	B	721	Total	C	H	N	O	S	2	0
			11362	3566	5709	983	1081	23		
1	C	739	Total	C	H	N	O	S	0	0
			11611	3638	5843	1006	1101	23		
1	D	734	Total	C	H	N	O	S	0	0
			11530	3616	5796	999	1096	23		
1	E	529	Total	C	H	N	O	S	0	0
			8318	2587	4215	714	784	18		
1	F	485	Total	C	H	N	O	S	0	0
			7664	2385	3883	654	724	18		

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	expression tag	UNP P18759
A	-1	ALA	-	expression tag	UNP P18759
A	0	HIS	-	expression tag	UNP P18759
B	-2	GLY	-	expression tag	UNP P18759
B	-1	ALA	-	expression tag	UNP P18759
B	0	HIS	-	expression tag	UNP P18759
C	-2	GLY	-	expression tag	UNP P18759
C	-1	ALA	-	expression tag	UNP P18759
C	0	HIS	-	expression tag	UNP P18759
D	-2	GLY	-	expression tag	UNP P18759
D	-1	ALA	-	expression tag	UNP P18759
D	0	HIS	-	expression tag	UNP P18759
E	-2	GLY	-	expression tag	UNP P18759
E	-1	ALA	-	expression tag	UNP P18759
E	0	HIS	-	expression tag	UNP P18759
F	-2	GLY	-	expression tag	UNP P18759
F	-1	ALA	-	expression tag	UNP P18759
F	0	HIS	-	expression tag	UNP P18759

- Molecule 2 is a protein called Alpha-soluble NSF attachment protein.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	G	273	Total 4270	C 1356	H 2106	N 364	O 434	S 10	0	0
2	H	264	Total 4122	C 1312	H 2029	N 351	O 420	S 10	0	0
2	I	268	Total 4166	C 1323	H 2054	N 353	O 426	S 10	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	0	GLY	-	expression tag	UNP P32602
H	0	GLY	-	expression tag	UNP P32602
I	0	GLY	-	expression tag	UNP P32602

- Molecule 3 is a protein called Synaptobrevin homolog 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
3	J	60	Total 936	C 282	H 468	N 92	O 92	S 2	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
J	-3	GLY	-	expression tag	UNP P31109
J	-2	ALA	-	expression tag	UNP P31109
J	-1	SER	-	expression tag	UNP P31109
J	0	HIS	-	expression tag	UNP P31109

- Molecule 4 is a protein called Protein SSO1.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	K	92	Total 1423	C 437	H 706	N 129	O 149	S 2	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	-3	GLY	-	expression tag	UNP P32867
K	-2	ALA	-	expression tag	UNP P32867
K	-1	SER	-	expression tag	UNP P32867
K	0	HIS	-	expression tag	UNP P32867

- Molecule 5 is a protein called Protein transport protein SEC9.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
5	L	128	2039	611	1029	185	207	7	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
L	429	GLY	-	expression tag	UNP P40357
L	430	ALA	-	expression tag	UNP P40357
L	431	SER	-	expression tag	UNP P40357
L	432	HIS	-	expression tag	UNP P40357

- Molecule 6 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).
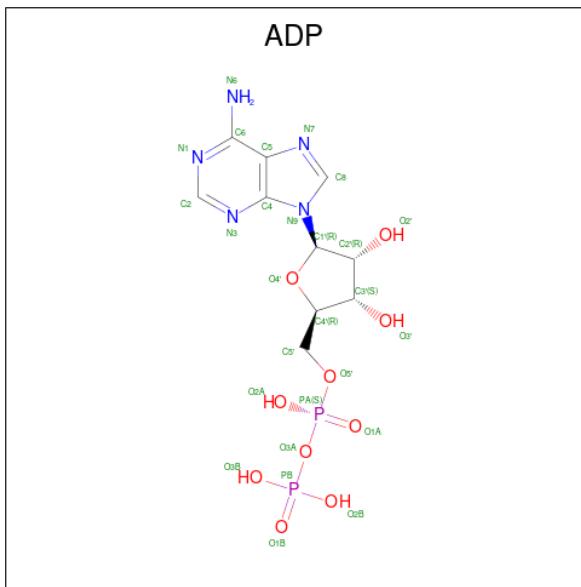
Mol	Chain	Residues	Atoms						AltConf
			Total	C	H	N	O	P	
6	A	1	39	10	12	5	10	2	0
6	E	1	39	10	12	5	10	2	0

- Molecule 7 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).

ATP
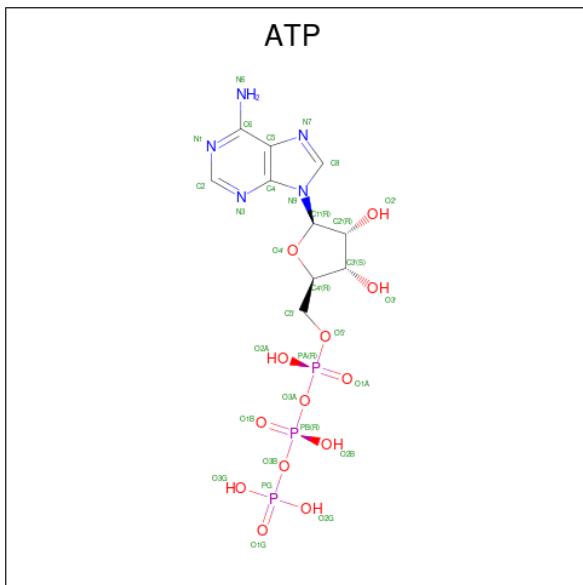
Mol	Chain	Residues	Atoms							AltConf
7	A	1	Total	C	H	N	O	P		0
			43	10	12	5	13	3		
7	B	1	Total	C	H	N	O	P		0
			43	10	12	5	13	3		
7	B	1	Total	C	H	N	O	P		0
			43	10	12	5	13	3		
7	C	1	Total	C	H	N	O	P		0
			43	10	12	5	13	3		
7	C	1	Total	C	H	N	O	P		0
			43	10	12	5	13	3		
7	D	1	Total	C	H	N	O	P		0
			43	10	12	5	13	3		
7	D	1	Total	C	H	N	O	P		0
			43	10	12	5	13	3		
7	E	1	Total	C	H	N	O	P		0
			43	10	12	5	13	3		
7	F	1	Total	C	H	N	O	P		0
			43	10	12	5	13	3		

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Vesicular-fusion protein SEC18
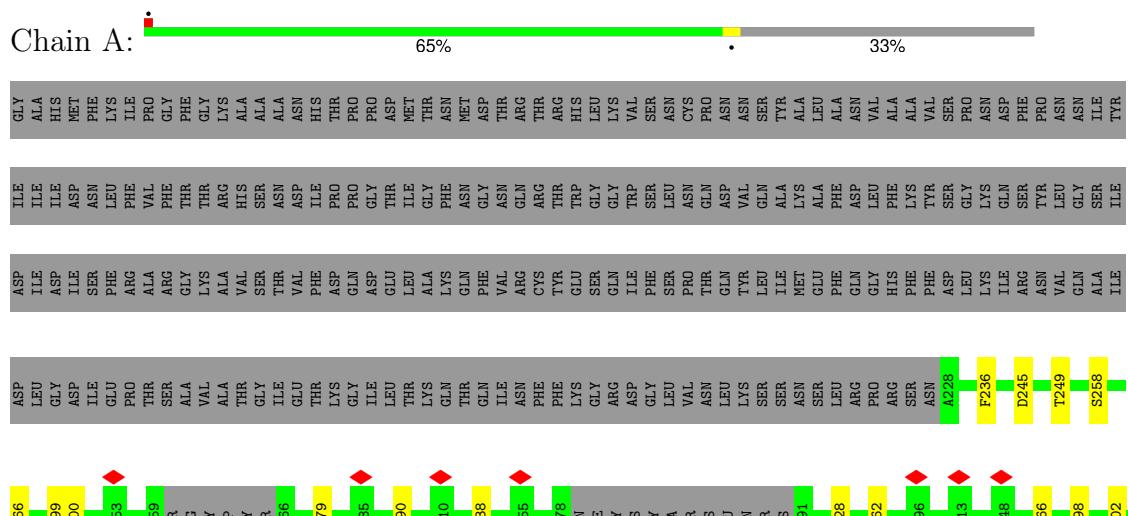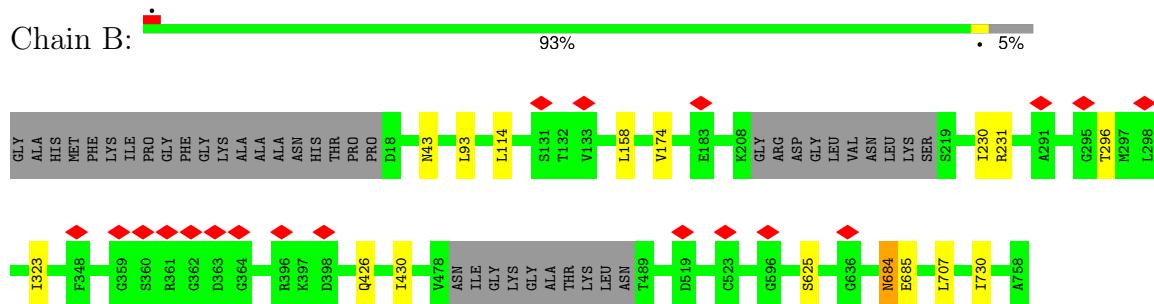
Chain A:

• Molecule 1: Vesicular-fusion protein SEC18

Chain B:

• Molecule 1: Vesicular-fusion protein SEC18

Chain C:

• Molecule 1: Vesicular-fusion protein SEC18

Chain D:

5%

94%

• Molecule 1: Vesicular-fusion protein SEC18

Chain E:

65%   5%   30%

• Molecule 1: Vesicular-fusion protein SEC18

Chain F:

62%   36%

• Molecule 2: Alpha-soluble NSF attachment protein

Chain G:

• Molecule 2: Alpha-soluble NSF attachment protein

Chain H:

• Molecule 2: Alpha-soluble NSF attachment protein

Chain I:

L222 Q223 E224 G225 Q226 S227 E228 D229 P230 N231 F232 A233 D234 S235 R236 E237 K242 I245 V248 N249 E250 G251 D252 S253 E254 Q255 L256 S257 E258 F263 D264 N265 F266 M267 R268 L269 D270 K271 L277 N278 K279 I280 S283 I284 Q285 Q286 Q287 E288 D289 D290 L291 L292
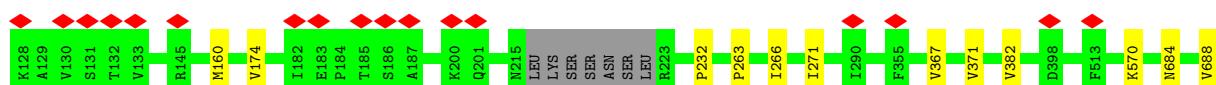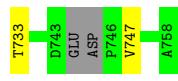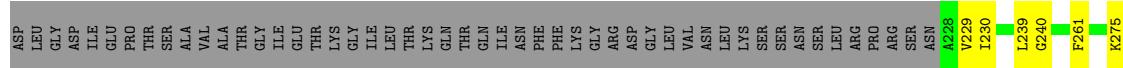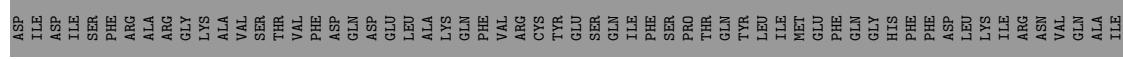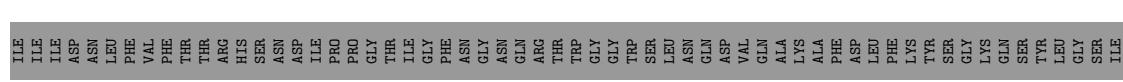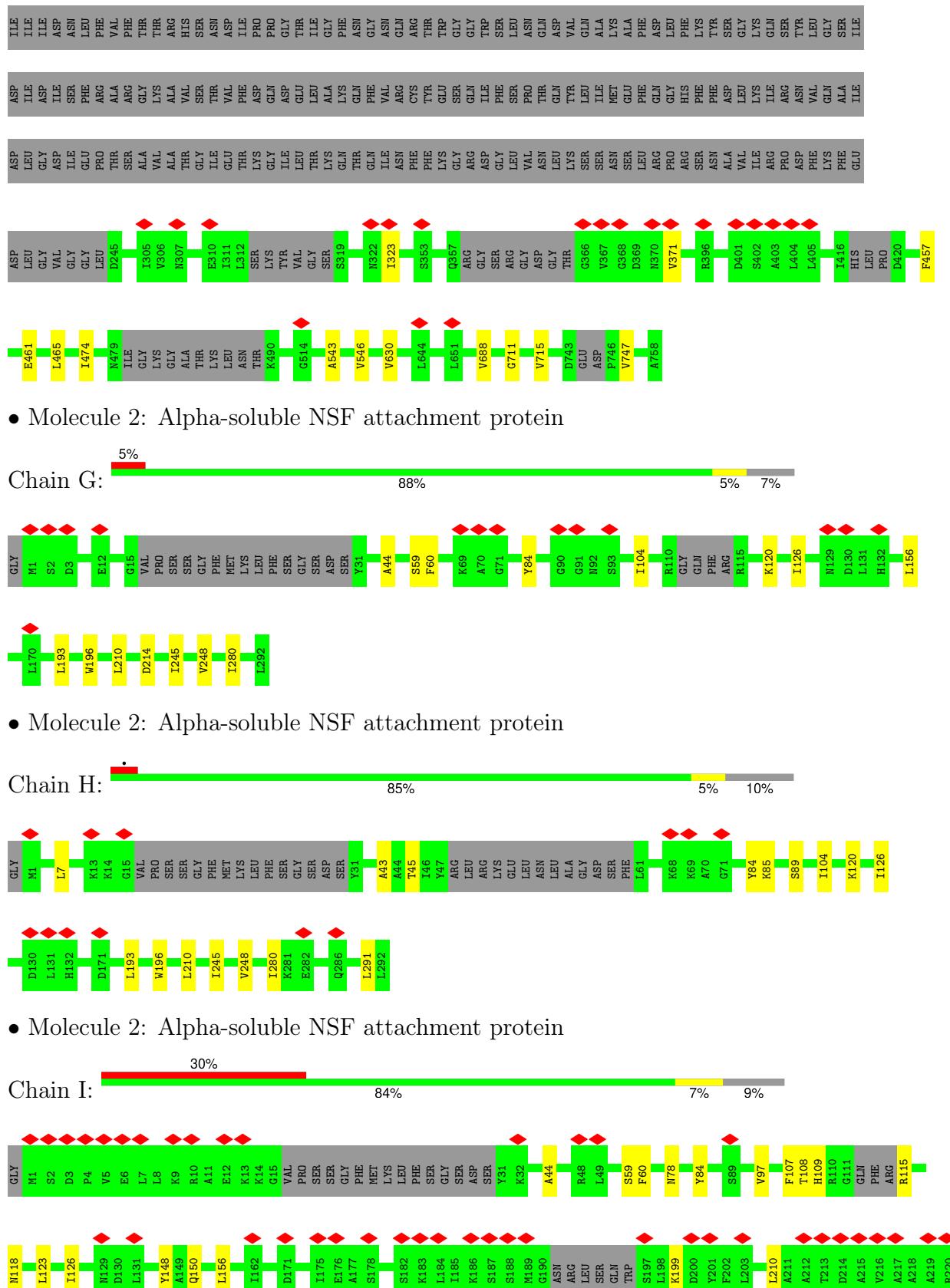
• Molecule 3: Synaptobrevin homolog 1

Chain J:

56%   5% •   38%

GLY ALA SER HIS MET SER SER THR PRO PHE ASP PRO TYR ALA LEU LEU SER GLU HIS ASP GLU ARG PRO GLN ASN VAL GLN SER LYS S27 V40 M43 R44 I47 E55 R56 A84 M85 W86 TYR LYS ASP LEU LYS MET LYS

• Molecule 4: Protein SSO1

Chain K:

26%   7% •   66%

GLY ALA SER HIS MET SER TYR ASN ASN PRO TYR GLN LEU GLU THR PRO PHE GLU LEU SER TYR GLU LEU ASP GLU GLY SER SER ALA ILE GLY ALA GLU GLY HIS ASP PHE VAL GLY PHE MET ASN LYS ILE LEU SER GLN ILE ASN ARG ASP LEU ASP LYS TYR ASP HIS THR ILE ASN GLN

VAL ASP SER LEU HIS LYS ARG LEU LEU THR GLU VAL ASN GLU GLU GLN ALA SER HIS LEU ARG HIS SER LEU ASP ASN PHE VAL ALA GLN THR ASP LEU GLN PHE LYS LEU LYS ASN GLU ILE LYS SER ALA GLN ARG ASP GLY ILE HIS ASP THR ASN LYS GLN GLN ALA GLN ALA GLU

ASN SER ARG GLN ARG PHE LEU LYS LEU ILE GLN ASP TYR ARG ILE VAL ASP SER ASN TYR LYS GLU ASN ASN LYS GLU GLN ALA LYS ARG GLN GLN MET THR ILE ILE GLN PRO GLU ALA THR GLU ASP ASP GLU VAL ALA ALA ILE SER D166 V167 G168 G169 Q170 Q171 I172 F173 S174 L177

L178 R182 R183 G184 E185 A186 K187 T188 A189 L190 A191 E192 V193 H197 L213 F214 N215 D216 M217 E218 E219 I222 A252 S255 A256 R257 LYS ALA ARG LYS ASN LYS ILE ARG

• Molecule 5: Protein transport protein SEC9

Chain L:

55%   •   42%

GLY ALA SER HIS I433 K434 F435 E455 R456 ALA G458 M459 N460 H467 N473 E495 L496 K497 K498 L499 ASN ARG SER ILE LEU ALA VAL HIS VAL SER ASN PRO PHE ASN SER LYS ARG ARG ARG GLU ARG GLU GLU GLN LEU LYS ASN ARG LYS ILE GLU GLU LYS LEU MET

ARG GLU GLN THR SER GLN GLN LEU SER GLN SER THR GLN ARG ILE GLU GLY ALA MET ASN ALA ASN ASN ILE SER GLU VAL ARG GLU ARG TYR GLN ARG LYS ASN VAL LEU GLU LYS ALA LYS ARG TYR GLN PHE GLU ASN ASP GLU GLU ASP GLU ASP E589 M611 I638 I650

4   Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	69608	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{Å}^2$)	50	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.024	Depositor
Minimum map value	-0.012	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.00258	Depositor
Map size (Å)	322.224, 322.224, 322.224	wwPDB
Map dimensions	294, 294, 294	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.096, 1.096, 1.096	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: ATP, ADP

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	0.27	0/4049	0.46	0/5459
1	B	0.26	0/5753	0.44	0/7765
1	C	0.27	0/5860	0.44	0/7909
1	D	0.26	0/5826	0.45	0/7865
1	E	0.27	0/4159	0.47	0/5605
1	F	0.24	0/3827	0.44	0/5153
2	G	0.24	0/2195	0.43	0/2944
2	H	0.29	0/2124	0.49	0/2849
2	I	0.29	0/2140	0.51	0/2867
3	J	0.42	0/470	0.85	0/628
4	K	0.40	0/720	0.75	0/967
5	L	0.40	0/1010	0.66	0/1345
All	All	0.27	0/38133	0.47	0/51356

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	3994	4090	4090	9	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	5653	5709	5695	8	0
1	C	5768	5843	5843	6	0
1	D	5734	5796	5796	12	0
1	E	4103	4215	4215	25	0
1	F	3781	3883	3882	10	0
2	G	2164	2106	2106	16	0
2	H	2093	2029	2029	18	0
2	I	2112	2054	2055	34	0
3	J	468	468	470	11	0
4	K	717	706	708	12	0
5	L	1010	1029	1028	20	0
6	A	27	12	12	0	0
6	E	27	12	12	0	0
7	A	31	12	12	0	0
7	B	62	24	24	0	0
7	C	62	24	24	0	0
7	D	62	24	24	0	0
7	E	31	12	12	0	0
7	F	31	12	12	0	0
All	All	37930	38060	38049	139	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 2.

The worst 5 of 139 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:210:LEU:HD23	2:H:280:ILE:HD13	1.66	0.78
2:I:199:LYS:HZ1	3:J:44:ARG:NH1	1.84	0.76
2:G:210:LEU:HD23	2:G:280:ILE:HD13	1.68	0.75
2:I:156:LEU:HG	3:J:55:GLU:CD	2.11	0.75
2:I:199:LYS:NZ	3:J:44:ARG:NH1	2.35	0.75

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	A	507/761 (67%)	480 (95%)	26 (5%)	1 (0%)	44	73
1	B	717/761 (94%)	693 (97%)	23 (3%)	1 (0%)	48	79
1	C	735/761 (97%)	702 (96%)	33 (4%)	0	100	100
1	D	730/761 (96%)	699 (96%)	31 (4%)	0	100	100
1	E	525/761 (69%)	494 (94%)	30 (6%)	1 (0%)	44	73
1	F	473/761 (62%)	461 (98%)	12 (2%)	0	100	100
2	G	267/293 (91%)	267 (100%)	0	0	100	100
2	H	258/293 (88%)	258 (100%)	0	0	100	100
2	I	260/293 (89%)	260 (100%)	0	0	100	100
3	J	58/97 (60%)	58 (100%)	0	0	100	100
4	K	90/269 (34%)	81 (90%)	8 (9%)	1 (1%)	12	43
5	L	122/222 (55%)	122 (100%)	0	0	100	100
All	All	4742/6033 (79%)	4575 (96%)	163 (3%)	4 (0%)	50	79

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	515	ILE
4	K	190	LEU
1	B	625	SER
1	A	745	ASP

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	A	446/656 (68%)	445 (100%)	1 (0%)	92	95
1	B	630/656 (96%)	627 (100%)	3 (0%)	86	92
1	C	641/656 (98%)	641 (100%)	0	100	100
1	D	636/656 (97%)	631 (99%)	5 (1%)	79	85
1	E	457/656 (70%)	456 (100%)	1 (0%)	92	95
1	F	424/656 (65%)	424 (100%)	0	100	100
2	G	229/245 (94%)	229 (100%)	0	100	100
2	H	221/245 (90%)	221 (100%)	0	100	100
2	I	223/245 (91%)	223 (100%)	0	100	100
3	J	48/82 (58%)	47 (98%)	1 (2%)	48	68
4	K	77/234 (33%)	65 (84%)	12 (16%)	2	14
5	L	115/201 (57%)	114 (99%)	1 (1%)	75	84
All	All	4147/5188 (80%)	4123 (99%)	24 (1%)	82	90

5 of 24 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	K	174	SER
4	K	182	ARG
4	K	178	LEU
4	K	183	ARG
1	D	124	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 30 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	699	ASN
4	K	181	ASN
1	E	645	GLN
5	L	474	ASN
2	I	255	GLN

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

11 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
7	ATP	C	801	-	28,33,33	0.92	1 (3%)	34,52,52	0.79	1 (2%)
7	ATP	D	801	-	28,33,33	1.49	2 (7%)	34,52,52	0.92	2 (5%)
7	ATP	D	802	-	28,33,33	0.84	1 (3%)	34,52,52	0.81	1 (2%)
7	ATP	F	801	-	28,33,33	0.96	1 (3%)	34,52,52	0.82	1 (2%)
7	ATP	A	802	-	28,33,33	1.15	2 (7%)	34,52,52	1.15	2 (5%)
7	ATP	B	802	-	28,33,33	1.14	2 (7%)	34,52,52	0.91	2 (5%)
7	ATP	C	802	-	28,33,33	1.26	2 (7%)	34,52,52	0.82	1 (2%)
6	ADP	A	801	-	24,29,29	0.86	0	29,45,45	1.34	3 (10%)
7	ATP	E	802	-	28,33,33	0.97	1 (3%)	34,52,52	0.77	1 (2%)
7	ATP	B	801	-	28,33,33	1.33	2 (7%)	34,52,52	0.94	2 (5%)
6	ADP	E	801	-	24,29,29	0.89	1 (4%)	29,45,45	1.23	3 (10%)

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
7	ATP	C	801	-	-	3/18/38/38	0/3/3/3

Continued on next page...

WORLDWIDE
wwPDB
PROTEIN DATA BANK

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	ATP	D	801	-	-	6/18/38/38	0/3/3/3
7	ATP	D	802	-	-	10/18/38/38	0/3/3/3
7	ATP	F	801	-	-	7/18/38/38	0/3/3/3
7	ATP	A	802	-	-	5/18/38/38	0/3/3/3
7	ATP	B	802	-	-	4/18/38/38	0/3/3/3
7	ATP	C	802	-	-	1/18/38/38	0/3/3/3
6	ADP	A	801	-	-	5/12/32/32	0/3/3/3
7	ATP	E	802	-	-	2/18/38/38	0/3/3/3
7	ATP	B	801	-	-	3/18/38/38	0/3/3/3
6	ADP	E	801	-	-	2/12/32/32	0/3/3/3

The worst 5 of 15 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	D	801	ATP	PB-O3B	-6.37	1.52	1.59
7	B	801	ATP	PB-O3B	-4.78	1.54	1.59
7	C	802	ATP	PA-O3A	-4.38	1.54	1.59
7	B	802	ATP	PA-O3A	-3.80	1.55	1.59
7	A	802	ATP	PB-O3B	-3.62	1.55	1.59

The worst 5 of 19 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	A	802	ATP	C4'-O4'-C1'	-5.04	105.31	109.92
6	E	801	ADP	N3-C2-N1	-3.96	123.30	128.67
6	A	801	ADP	N3-C2-N1	-3.93	123.33	128.67
7	B	801	ATP	O3A-PB-O1B	2.56	118.40	110.70
7	B	802	ATP	C4'-O4'-C1'	-2.55	107.59	109.92

There are no chirality outliers.

5 of 48 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	E	801	ADP	O4'-C4'-C5'-O5'
6	E	801	ADP	C3'-C4'-C5'-O5'
7	A	802	ATP	C5'-O5'-PA-O2A
7	A	802	ATP	C5'-O5'-PA-O3A
7	A	802	ATP	O4'-C4'-C5'-O5'

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 all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand ATP C 801

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP D 801

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP D 802

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP F 801

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP A 802

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP B 802

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP C 802

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP A 801

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP E 802

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP B 801

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP E 801

Bond lengths

Bond angles

Torsions

Rings

5.7   Other polymers ⓘ

There are no such residues in this entry.

5.8   Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-49526. 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 ⓘ
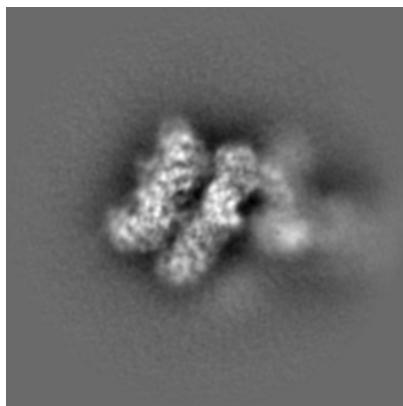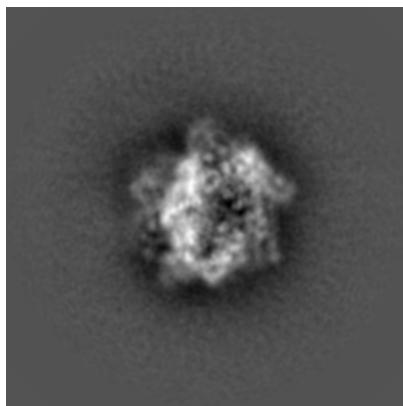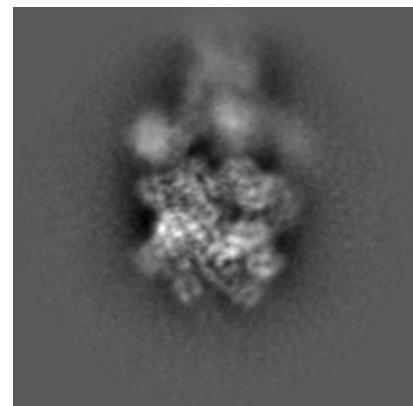
6.1.1 Primary map

X   Y   Z

6.1.2 Raw map

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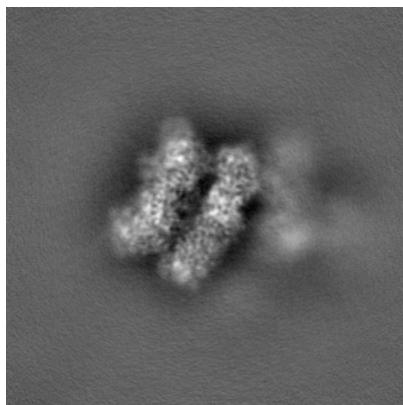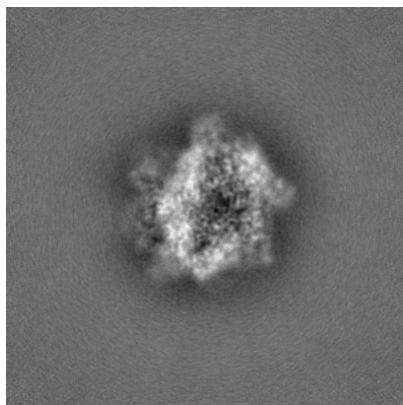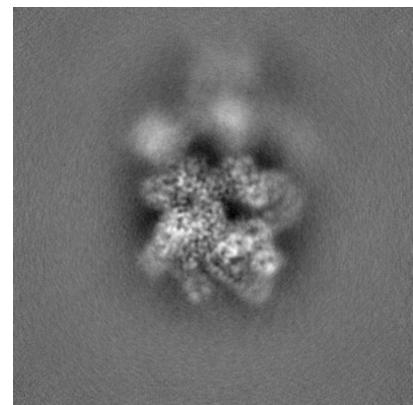
The images above show the map projected in three orthogonal directions.

6.2   Central slices   ⓘ
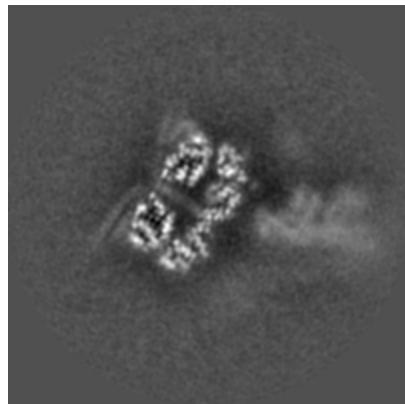
6.2.1   Primary map
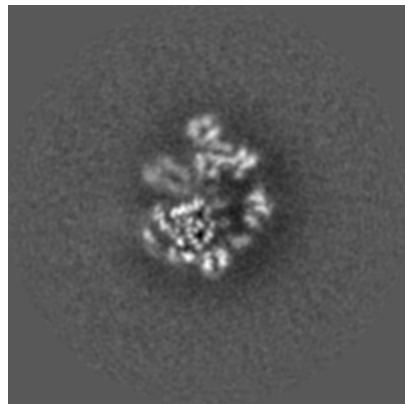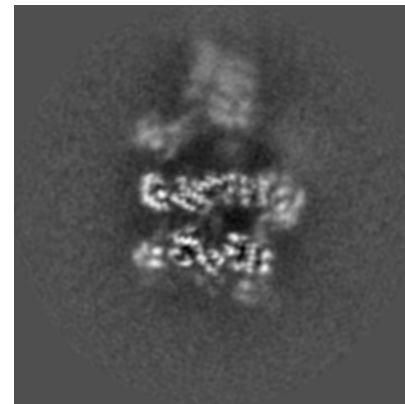
| X Index: 147 | Y Index: 147 | Z Index: 147 |

6.2.2   Raw map
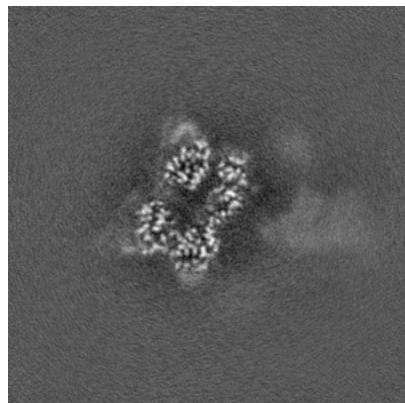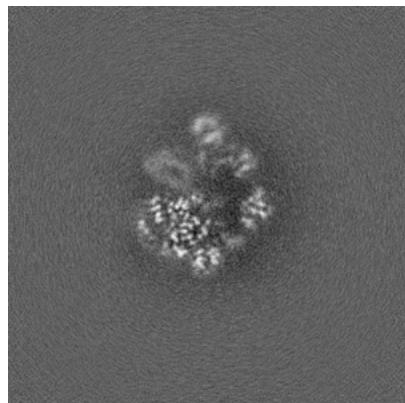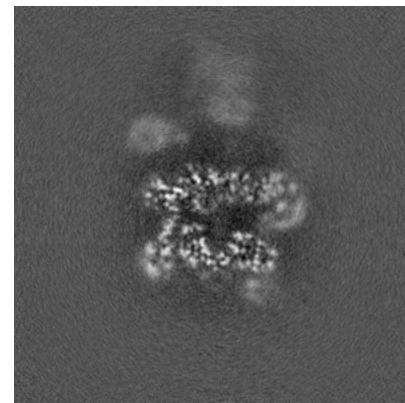
| X Index: 147 | Y Index: 147 | Z Index: 147 |

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
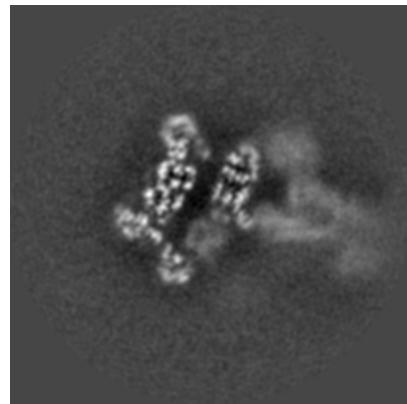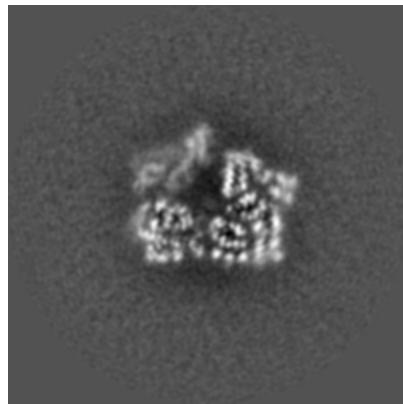
| X Index: 161 | Y Index: 131 | Z Index: 136 |
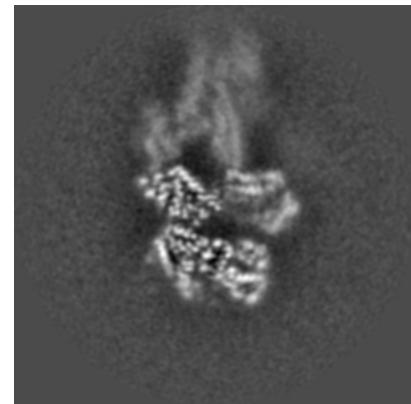
6.3.2 Raw map
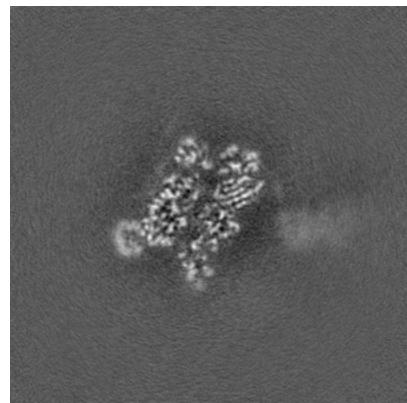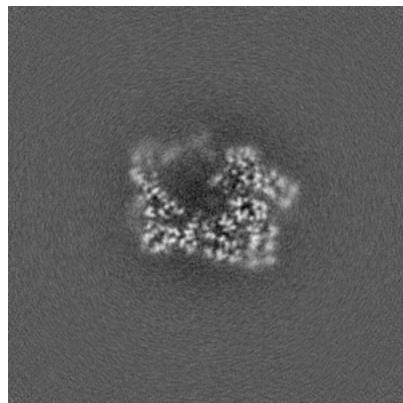
| X Index: 132 | Y Index: 128 | Z Index: 154 |
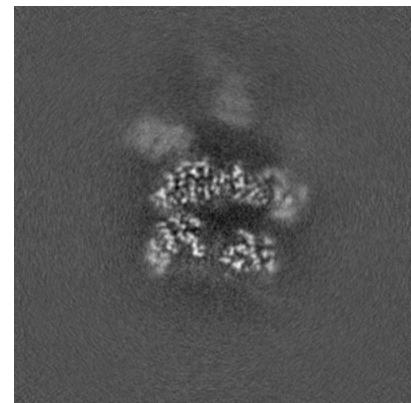
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map
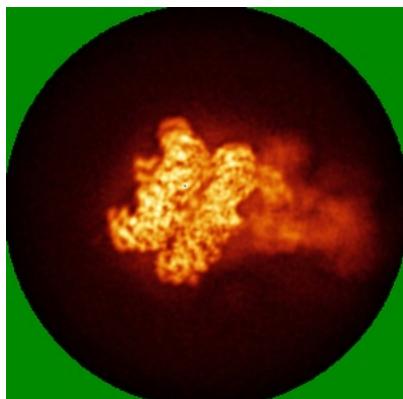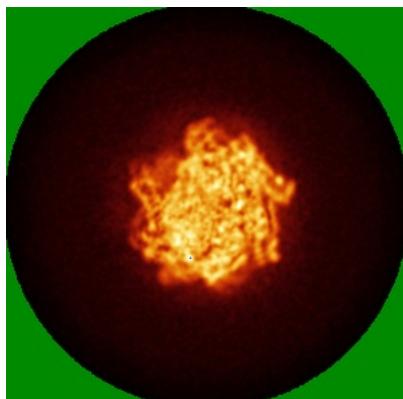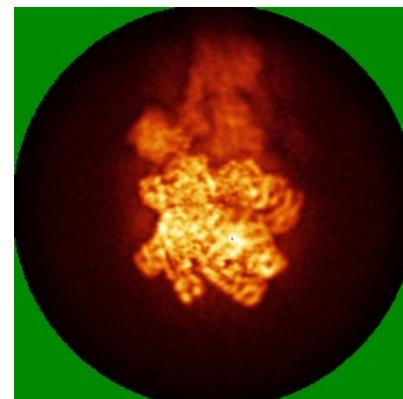
| X | Y | Z |

6.4.2 Raw map

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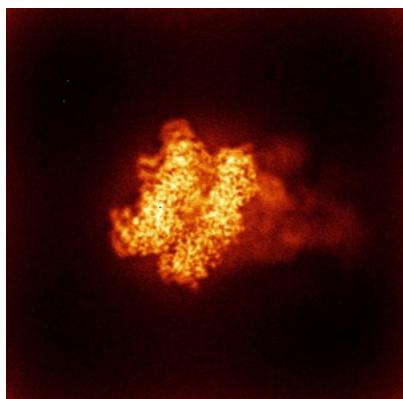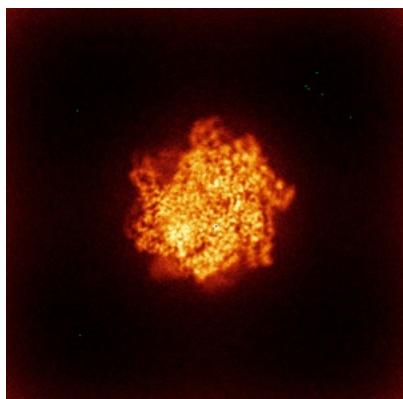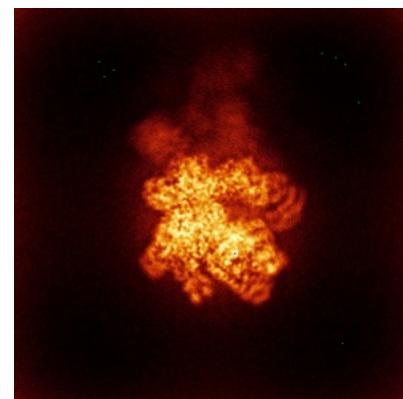
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

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 0.00258. 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 |
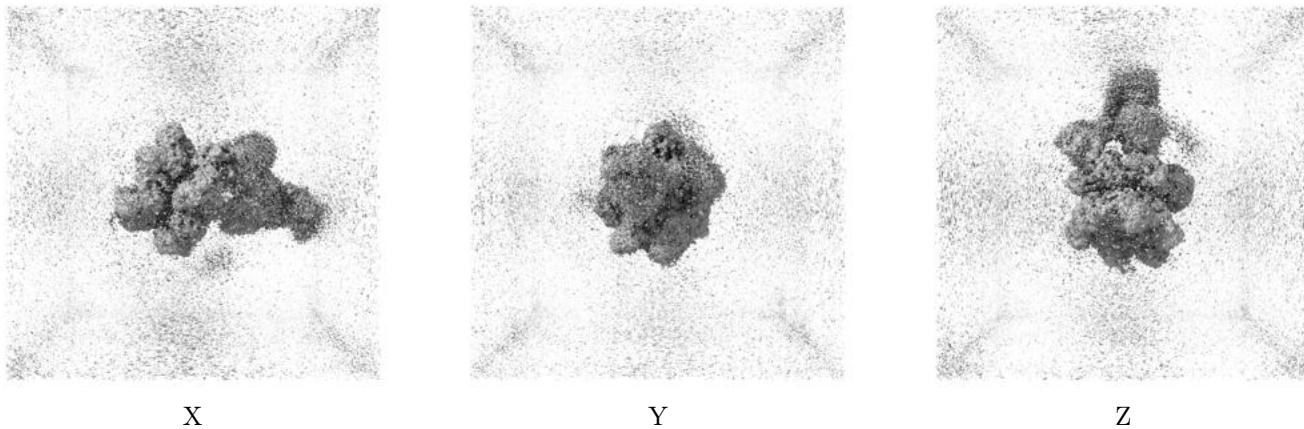
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

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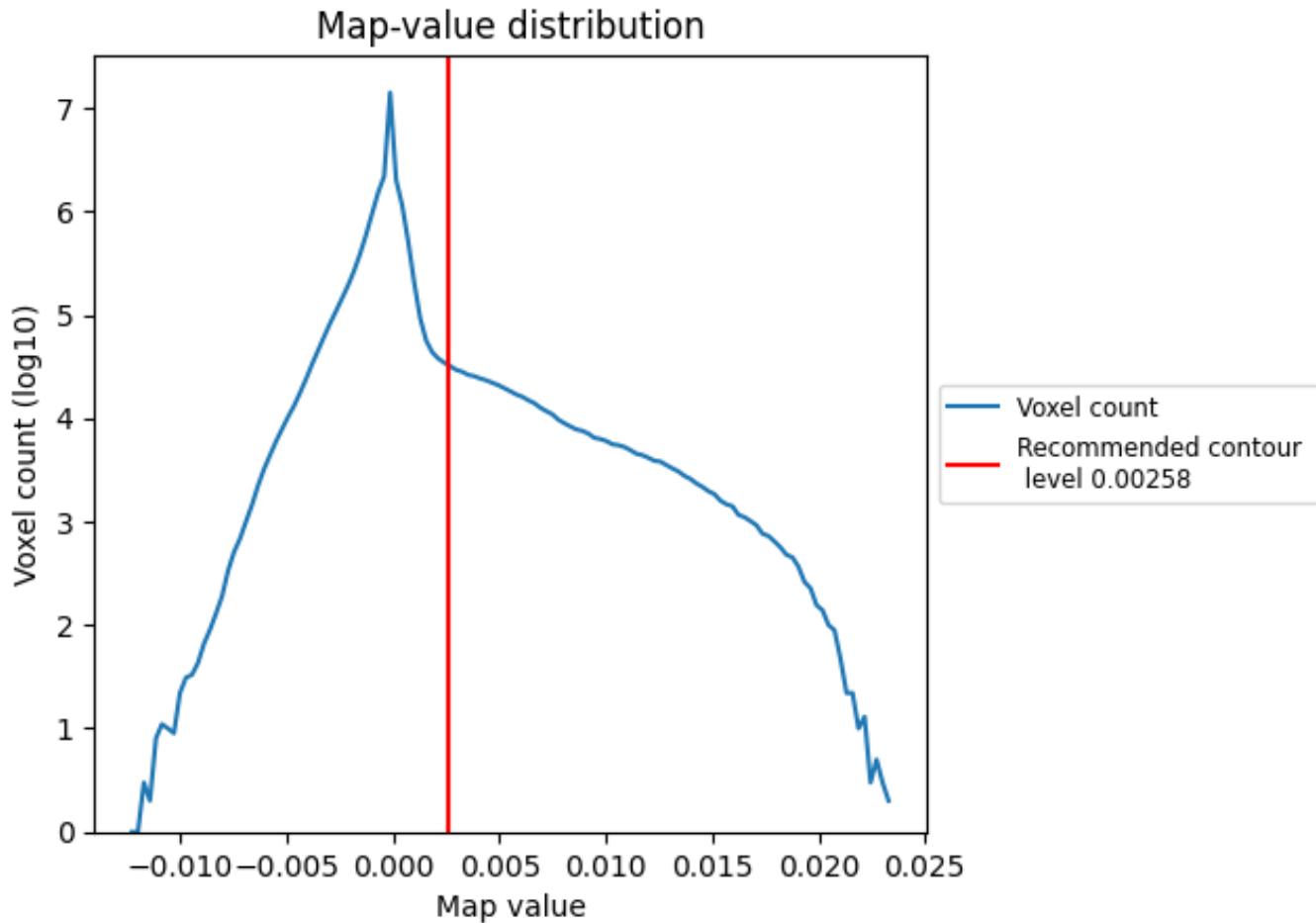
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2   Volume estimate ⓘ
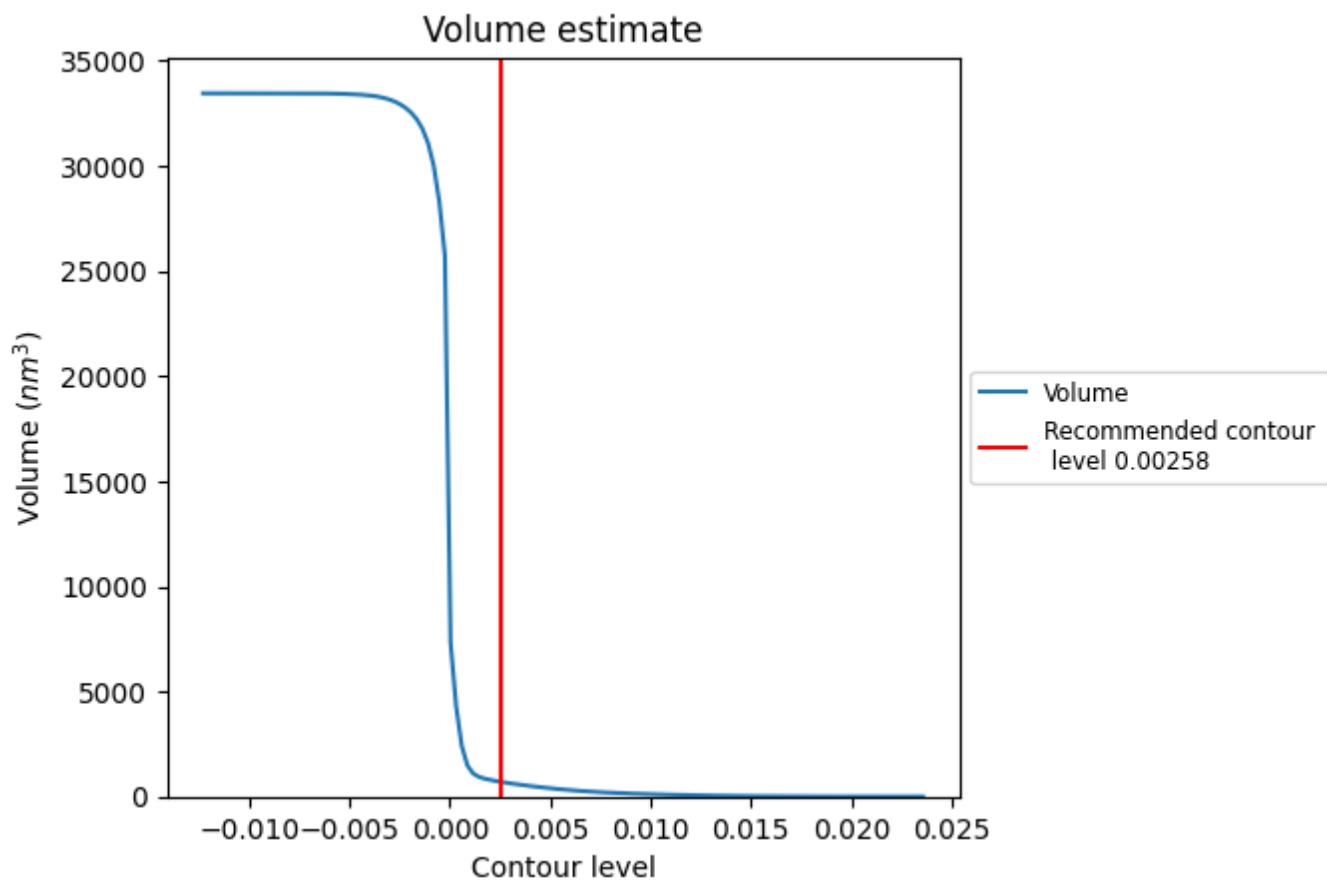
The volume at the recommended contour level is 693 nm^3; this corresponds to an approximate mass of 626 kDa.

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 ⓘ
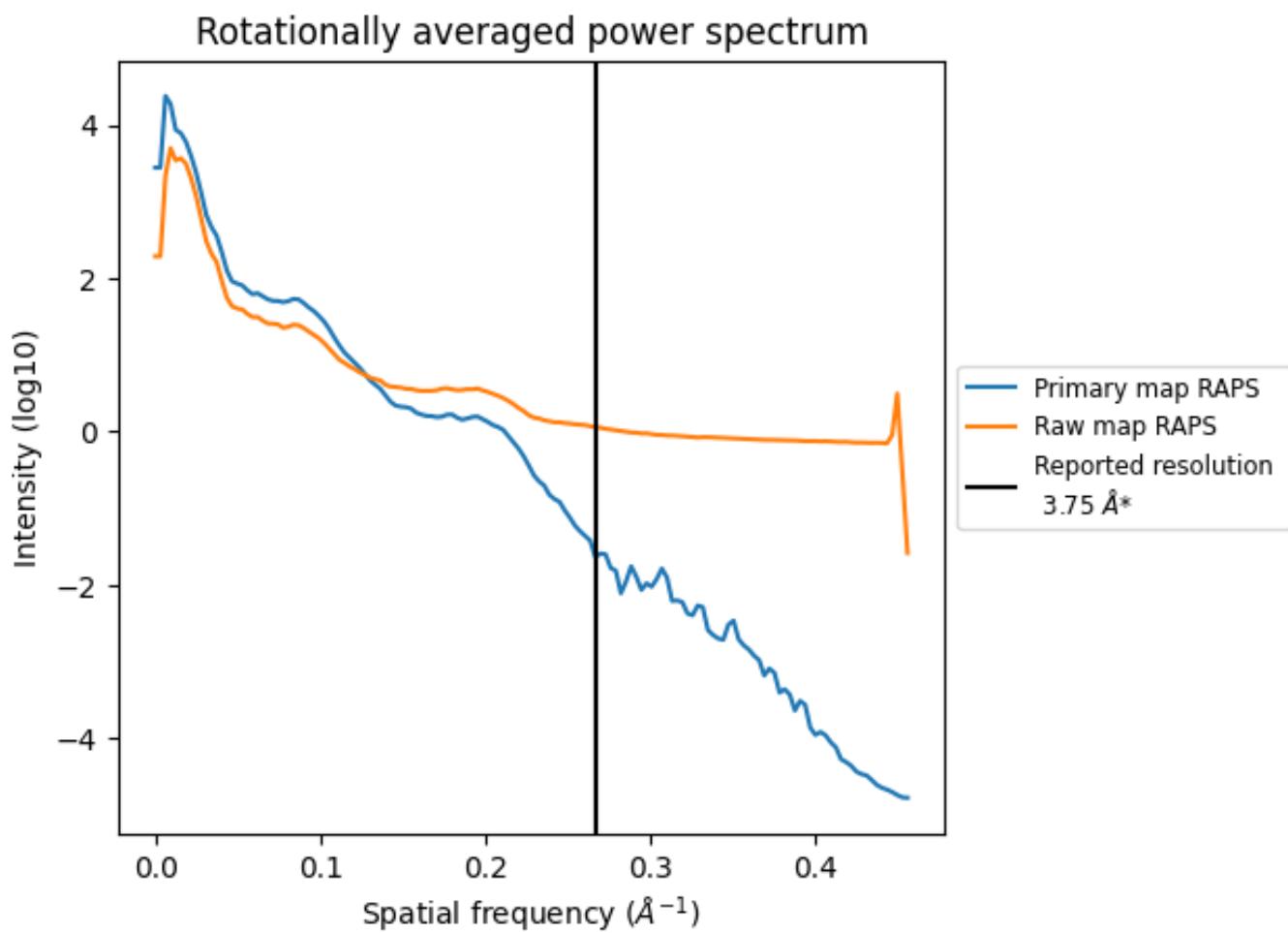
*Reported resolution corresponds to spatial frequency of 0.267 Å^{-1}

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 ⓘ
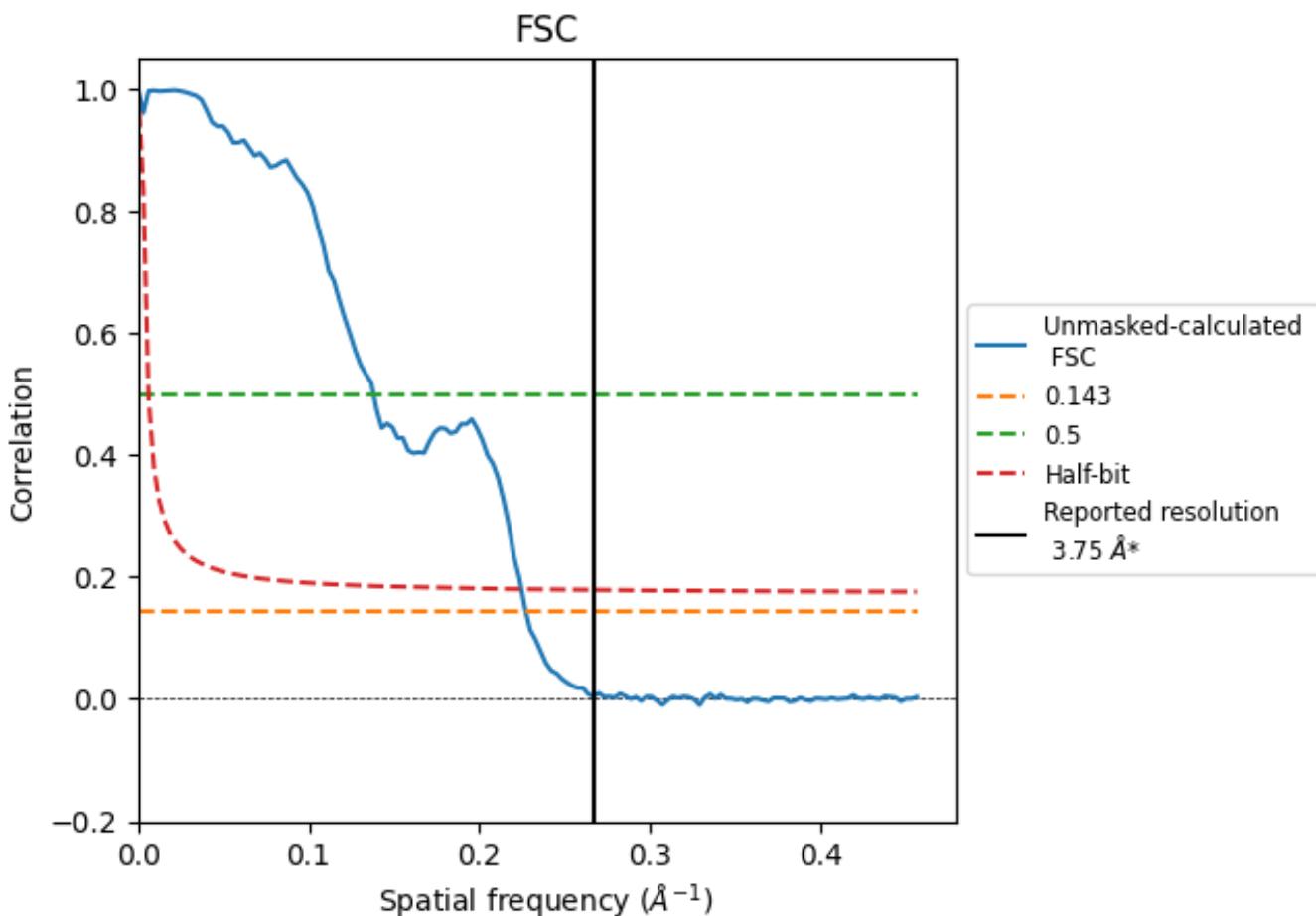
*Reported resolution corresponds to spatial frequency of 0.267 Å^{-1}

8.2   Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.75	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.40	7.25	4.45

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.40 differs from the reported value 3.75 by more than 10 %

9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-49526 and PDB model 9NLY. Per-residue inclusion information can be found in section 3 on page 8.

9.1 Map-model overlay (i)
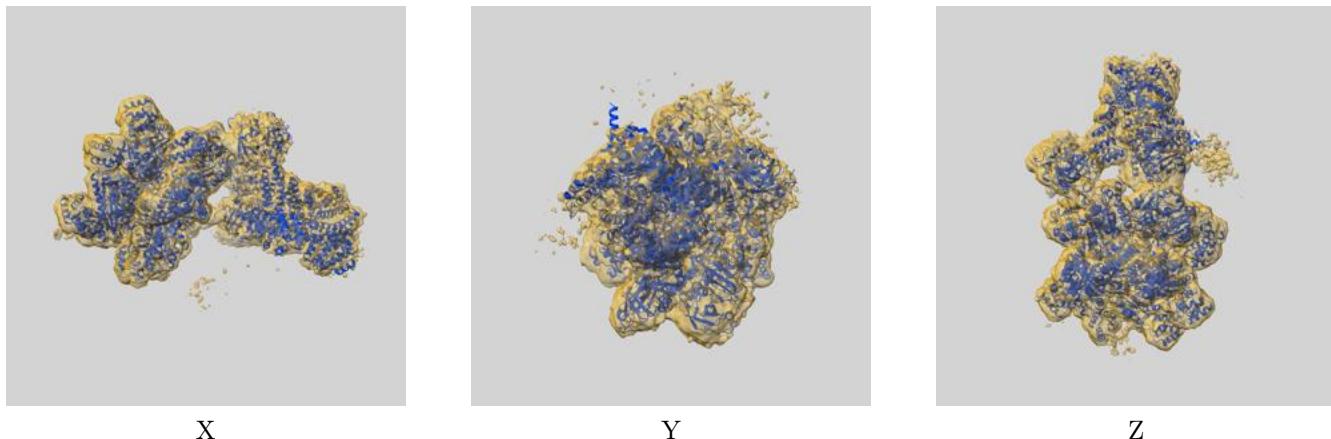
| X | Y | Z |

The images above show the 3D surface view of the map at the recommended contour level 0.00258 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 ⓘ

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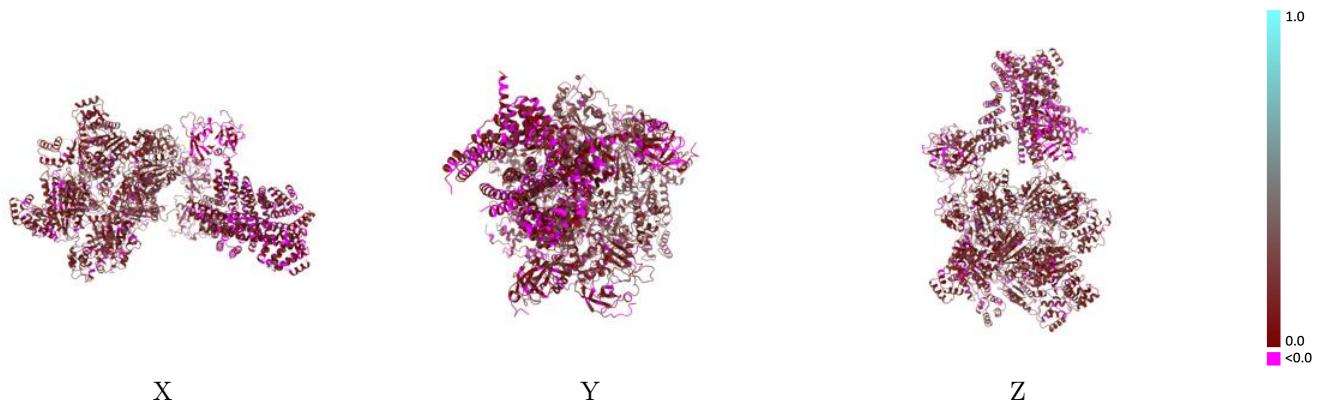
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

X　　　　　　　　　　Y　　　　　　　　　　Z
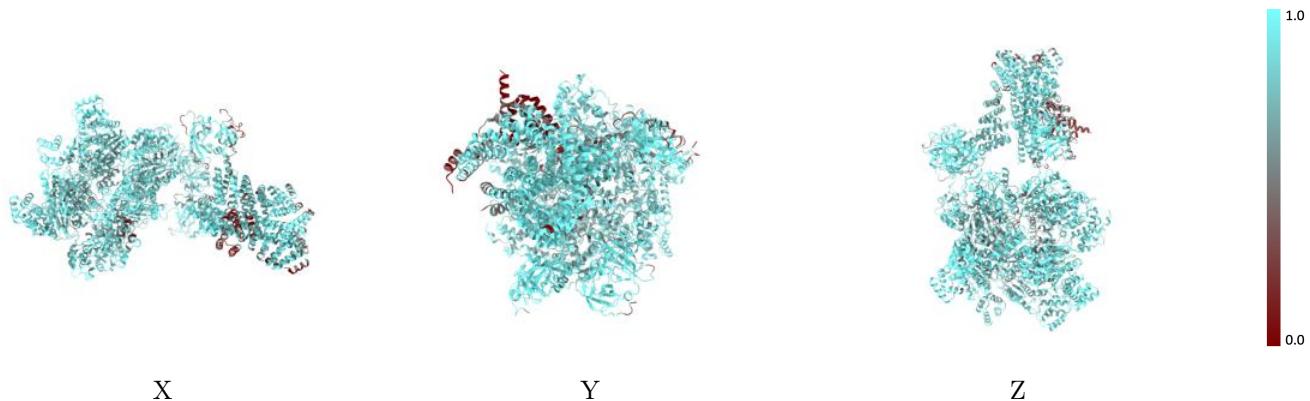
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.00258).

9.4 Atom inclusion ⓘ
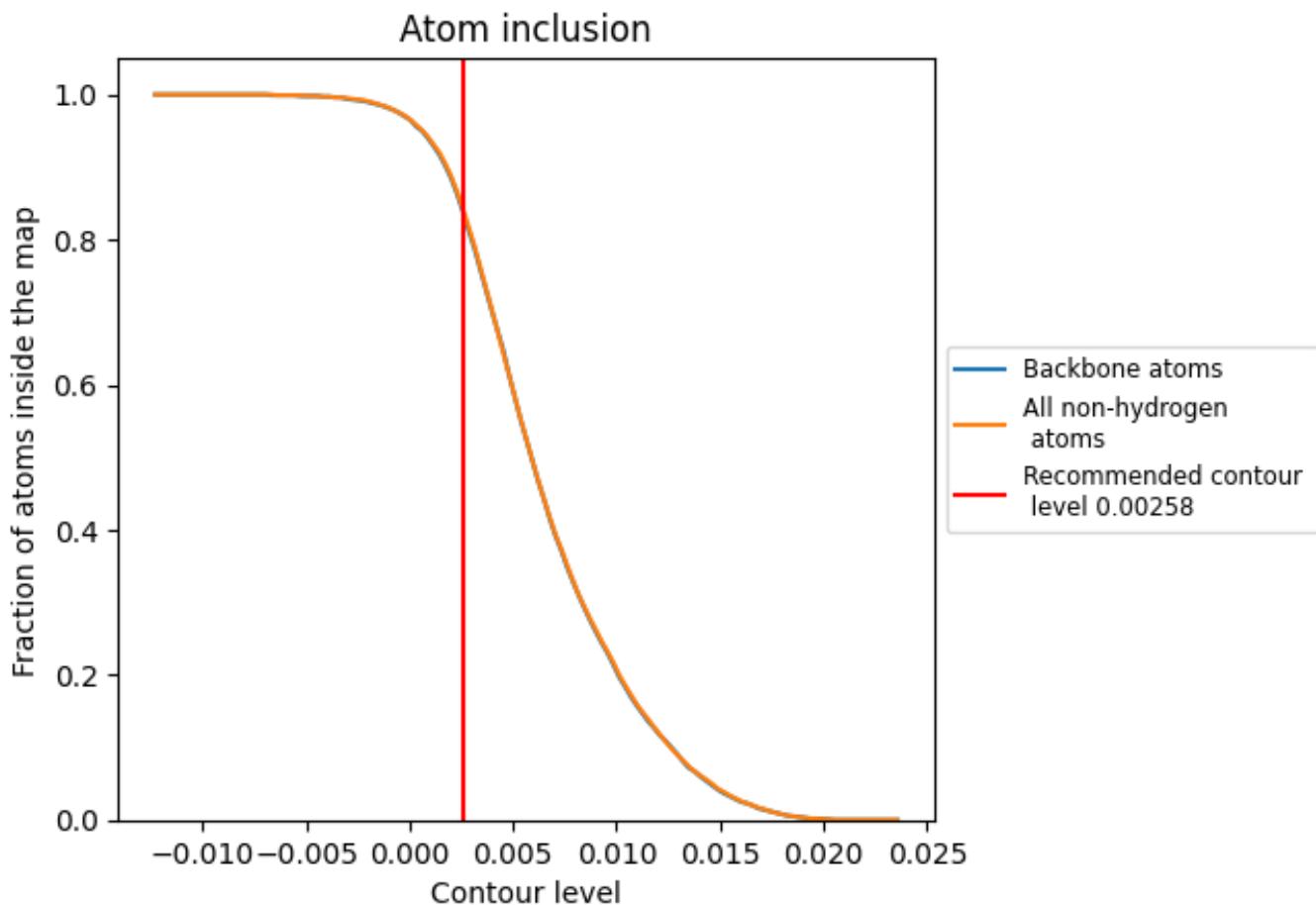
At the recommended contour level, 84% of all backbone atoms, 84% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.00258) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8430	0.1440
A	0.8500	0.1590
B	0.8520	0.1340
C	0.8640	0.1600
D	0.8480	0.1570
E	0.8850	0.1910
F	0.8380	0.1630
G	0.8790	0.1010
H	0.8930	0.0950
I	0.5690	0.0600
J	0.9630	0.1070
K	0.8750	0.1150
L	0.9270	0.1130

1.0

0.0
<0.0