W O R L D W I D E

wwPDB

P R O T E I N   D A T A   B A N K

wwPDB EM Validation Summary Report (i)

Dec 10, 2022 – 08:42 am GMT

PDB ID	:	5ARA
EMDB ID	:	EMD-3164
Title	:	Bovine mitochondrial ATP synthase state 1a
Authors	:	Zhou, A.; Rohou, A.; Schep, D.G.; Bason, J.V.; Montgomery, M.G.; Walker, J.E.; Grigorieff, N.; Rubinstein, J.L.
Deposited on	:	2015-09-24
Resolution	:	6.70 Å(reported)
Based on initial models	:	2CLY, 2WSS, 2XND

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 6.70 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.
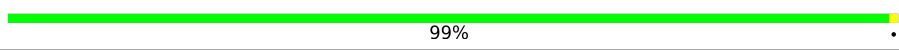
Metric	Percentile Ranks	Value
Clashscore		2
Ramachandran outliers		4.6%

Worse   *Better*

▌ Percentile relative to all structures

▯ Percentile relative to all EM structures
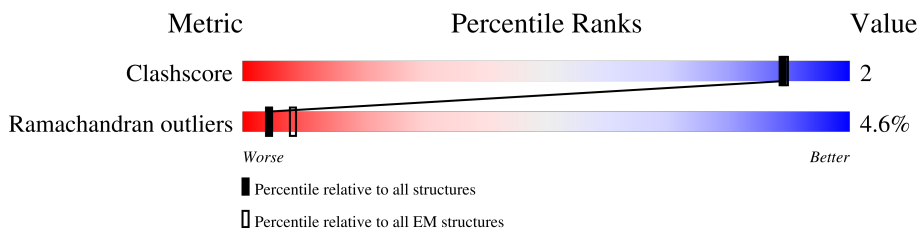
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023

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	510	90% 10%
1	B	510	85% 9% · 6%
1	C	510	85% 9% · 5%
2	D	482	87% 9% · ·
2	E	482	89% 8% ·
2	F	482	85% 11% ·
3	G	273	88% 7% · ·
4	H	146	78% 12% 10%
5	I	50	82% 10% · 6%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
6	J	72	97%
6	K	72	99%
6	L	72	100%
6	M	72	97%
6	N	72	100%
6	O	72	99%
6	P	72	99%
6	Q	72	97%
7	S	190	60% 25% 12%
8	T	174	82% 14%
9	U	124	79% 15%
10	V	77	74% 10% 14%
11	W	217	88% 11%

2   Entry composition ⓘ

There are 11 unique types of molecules in this entry. The entry contains 18544 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 ATP SYNTHASE SUBUNIT ALPHA, MITOCHONDRIAL.

Mol	Chain	Residues	Atoms				AltConf	Trace
1	A	509	Total 2035	C 1018	N 509	O 508	0	0
1	B	480	Total 1918	C 960	N 480	O 478	0	0
1	C	487	Total 1947	C 974	N 487	O 486	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	481	GLY	SER	conflict	UNP P19483
B	481	GLY	SER	conflict	UNP P19483
C	481	GLY	SER	conflict	UNP P19483

- Molecule 2 is a protein called ATP SYNTHASE SUBUNIT BETA, MITOCHONDRIAL.

Mol	Chain	Residues	Atoms				AltConf	Trace
2	D	467	Total 1867	C 934	N 467	O 466	0	0
2	E	466	Total 1863	C 932	N 466	O 465	0	0
2	F	466	Total 1863	C 932	N 466	O 465	0	0

- Molecule 3 is a protein called ATP SYNTHASE SUBUNIT GAMMA, MITOCHONDRIAL.

Mol	Chain	Residues	Atoms				AltConf	Trace
3	G	264	Total 1053	C 528	N 264	O 261	0	0

- Molecule 4 is a protein called ATP SYNTHASE SUBUNIT DELTA, MITOCHONDRIAL.

Mol	Chain	Residues	Atoms				AltConf	Trace
4	H	131	Total 523	C 262	N 131	O 130	0	0

- Molecule 5 is a protein called ATP SYNTHASE SUBUNIT EPSILON, MITOCHONDRIAL.

Mol	Chain	Residues	Atoms				AltConf	Trace
5	I	47	Total 187	C 94	N 47	O 46	0	0

- Molecule 6 is a protein called ATP SYNTHASE F(0) COMPLEX SUBUNIT C1, MITO-CHONDRIAL.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	J	72	Total 288	C 144	N 72	O 72	0	0
6	K	72	Total 288	C 144	N 72	O 72	0	0
6	L	72	Total 288	C 144	N 72	O 72	0	0
6	M	72	Total 288	C 144	N 72	O 72	0	0
6	N	72	Total 288	C 144	N 72	O 72	0	0
6	O	72	Total 288	C 144	N 72	O 72	0	0
6	P	72	Total 288	C 144	N 72	O 72	0	0
6	Q	72	Total 288	C 144	N 72	O 72	0	0

- Molecule 7 is a protein called ATP SYNTHASE SUBUNIT O, MITOCHONDRIAL.

Mol	Chain	Residues	Atoms				AltConf	Trace
7	S	168	Total 669	C 334	N 168	O 167	0	1

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
S	129	THR	ALA	conflict	UNP P13621

- Molecule 8 is a protein called ATP SYNTHASE F(0) COMPLEX SUBUNIT B1, MITO-CHONDRIAL.

Mol	Chain	Residues	Atoms				AltConf	Trace
8	T	174	Total 697	C 348	N 174	O 175	0	0

- Molecule 9 is a protein called ATP SYNTHASE SUBUNIT D, MITOCHONDRIAL.

Mol	Chain	Residues	Atoms				AltConf	Trace
9	U	122	Total 485	C 242	N 122	O 121	0	1

- Molecule 10 is a protein called ATP SYNTHASE-COUPLING FACTOR 6, MITOCHON-DRIAL.

Mol	Chain	Residues	Atoms				AltConf	Trace
10	V	66	Total 264	C 132	N 66	O 66	0	0

- Molecule 11 is a protein called ATP SYNTHASE SUBUNIT BETA, MITOCHONDRIAL.

Mol	Chain	Residues	Atoms				AltConf	Trace
11	W	217	Total 869	C 434	N 217	O 218	0	0

3   Residue-property plots ⓘ

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

- Molecule 1: ATP SYNTHASE SUBUNIT ALPHA, MITOCHONDRIAL

Chain A:

- Molecule 1: ATP SYNTHASE SUBUNIT ALPHA, MITOCHONDRIAL

Chain B:

- Molecule 1: ATP SYNTHASE SUBUNIT ALPHA, MITOCHONDRIAL

Chain C:

- Molecule 2: ATP SYNTHASE SUBUNIT BETA, MITOCHONDRIAL

Chain D:

D210 A211 T212 K214 Q221 G273 S277 A278 V279 Q282 I304 A331 P346 A347 V348 D349 P350 L351 D352 S353 T354 S355 D394 E395 L396 P453 L473 A474 E475 GLU HIS SER

• Molecule 2: ATP SYNTHASE SUBUNIT BETA, MITOCHONDRIAL

Chain E: 89%   8%   •

ALA ALA GLN ALA SER PRO SER PRO LYS ALA GLY ALA T9 R12 V16 I17 V20 L47 H52 L53 G54 R59 D64 L69 Q73 K74 A80 R83 I84 E89 P101 A114 A118 I132 G156 D210 R244 P276 S277 A278

V279 G280 Y281 T299 K300 K301 I304 A331 Y345 G392 M393 D394 E395 L396 G429 A474 GLU HIS SER

• Molecule 2: ATP SYNTHASE SUBUNIT BETA, MITOCHONDRIAL

Chain F: 85%   11%   •

ALA ALA GLN ALA SER PRO SER PRO LYS ALA GLY ALA T9 V20 V21 D22 G28 L29 R44 T57 V58 R59 M63 D64 E67 G68 L69 R83 I84 P107 I108 K109 T110 A114 A118 V128 G159 V160 G161 H177 I206 N207 L208 K209 D210 A211

T212 Q221 Q249 D256 I275 P276 S277 A278 V279 G280 Y281 T284 T297 T298 T299 I304 Y345 P360 N361 I362 V363 G364 S365 E366 H367 Y368 R372 S397 G426 H427 L428 G429 D450 H451 G461 A474 GLU HIS SER

• Molecule 3: ATP SYNTHASE SUBUNIT GAMMA, MITOCHONDRIAL

Chain G: 88%   7%   • •

A1 R9 A50 E61 ASP LYS LYS HIS L67 G79 K87 E92 A93 L96 ALA ALA GLY K101 E102 I112 L116 H117 V131 R134 S151 E154 F155 D156 Y171 K172 I196 D197 A198 D199 V200 Y204 F250 V257 I258

D273

• Molecule 4: ATP SYNTHASE SUBUNIT DELTA, MITOCHONDRIAL

Chain H: 78%   12%   10%

ALA GLU ALA ALA ALA ALA GLN ALA PRO ALA ALA GLY PRO GLY Q15 F20 N32 P39 G43 A49 P53 V64 E68 D69 F76 V82 T83 D87 S88 S89 L93 D101 D124 L145 GLU

• Molecule 5: ATP SYNTHASE SUBUNIT EPSILON, MITOCHONDRIAL

Chain I: 82%   10%   •   6%

V1 Q6 A7 G8 L9 L26 S40 V45 K46 V47 LYS LYS GLU

• Molecule 6: ATP SYNTHASE F(0) COMPLEX SUBUNIT C1, MITOCHONDRIAL

Chain J:
97%

I2 G12 P40 Q45 F73

• Molecule 6: ATP SYNTHASE F(0) COMPLEX SUBUNIT C1, MITOCHONDRIAL

Chain K:
99%

I2 P40 F73

• Molecule 6: ATP SYNTHASE F(0) COMPLEX SUBUNIT C1, MITOCHONDRIAL

Chain L:
100%

There are no outlier residues recorded for this chain.

• Molecule 6: ATP SYNTHASE F(0) COMPLEX SUBUNIT C1, MITOCHONDRIAL

Chain M:
97%

I2 P40 I71 L72 F73
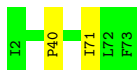
• Molecule 6: ATP SYNTHASE F(0) COMPLEX SUBUNIT C1, MITOCHONDRIAL

Chain N:
100%

There are no outlier residues recorded for this chain.

• Molecule 6: ATP SYNTHASE F(0) COMPLEX SUBUNIT C1, MITOCHONDRIAL

Chain O:
99%

I2 N39 F73

• Molecule 6: ATP SYNTHASE F(0) COMPLEX SUBUNIT C1, MITOCHONDRIAL

Chain P:
99%

I2 P40 F73

• Molecule 6: ATP SYNTHASE F(0) COMPLEX SUBUNIT C1, MITOCHONDRIAL

Chain Q:
97%

I2 P40 Q44 F73
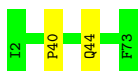
• Molecule 7: ATP SYNTHASE SUBUNIT O, MITOCHONDRIAL

Chain S:

60% 25% 12%

F1 V9 G13 G16 L46 K47 E48 P49 K61 K65 V66 K67 S68 L69 S70 D71 M72 T73 S79 P80 N92 S106 T107 M108 M109 S110 V111 H112 R113 G114 E115 V116 V120 T121 T122 A123 L126 D127 E128 T129 T132 K139 S140 F141 L142 S143 K144

G145 Q146 L150 E151 V152 K153 I154 D155 P156 S157 I158 M159 I163 V164 G167 E168 LYS TYR VAL ASP MET SER ALA LYS THR LYS ILE GLN LYS LEU SER ARG ALA MET ARG GLU ILE LEU
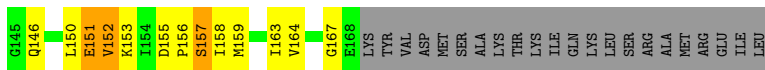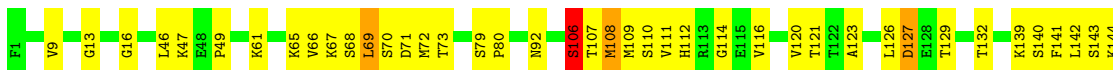
• Molecule 8: ATP SYNTHASE F(0) COMPLEX SUBUNIT B1, MITOCHONDRIAL

Chain T:

82% 14%

P1 K15 T21 P22 E23 T24 F25 K51 R88 H89 Y90 L91 F92 D93 V94 Q95 A100 E104 E109 R110 E117 K135 E136 R147 V148 I152 Q155 Q156 E159 T160 I161 A162 K163 A166 S172 K173 K174

• Molecule 9: ATP SYNTHASE SUBUNIT D, MITOCHONDRIAL

Chain U:

79% 15%

ALA GLY R3 K4 L5 A6 V13 G16 E17 I18 I19 P20 A50 A58 V78 P79 I80 P81 Q88 E92 D96 C100 A101 L104 Q112 E113 Y114 E115 R122 N123 I124
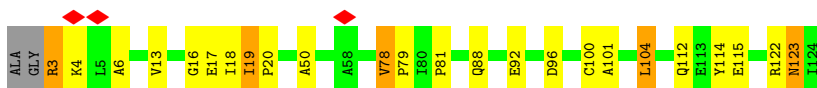
• Molecule 10: ATP SYNTHASE-COUPLING FACTOR 6, MITOCHONDRIAL

Chain V:

74% 10% 14%

PHE ASN LYS GLU L1 D2 P3 V4 S22 G23 G24 P25 V26 K42 M46 N57 P63 K64 F65 E66 VAL VAL GLU LYS PRO GLN SER
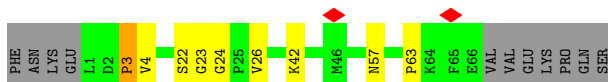
• Molecule 11: ATP SYNTHASE SUBUNIT BETA, MITOCHONDRIAL

Chain W:

88% 11%

I10 G16 F31 N35 R36 N40 Q47 S63 L85 G86 L87 L88 P89 H90 S91 F92 T96 L108 G111 K122 G132 T133 V142 S148 L149 Q152 L156 N163 G175 G176 S219 L220 Y221 L222 T226
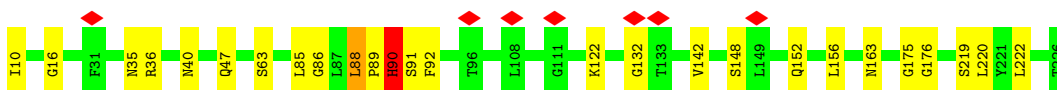
4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	20104	Depositor
Resolution determination method	Not provided	
CTF correction method	EACH PARTICLE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	60.3	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	4100	Depositor
Magnification	30487	Depositor
Image detector	GATAN K2 (4k x 4k)	Depositor
Maximum map value	0.515	Depositor
Minimum map value	-0.103	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.022	Depositor
Recommended contour level	0.13	Depositor
Map size (Å)	419.84, 419.84, 419.84	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.64, 1.64, 1.64	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	A	1.81	3/2034 (0.1%)	1.42	17/2541 (0.7%)
1	B	1.85	3/1916 (0.2%)	1.42	18/2392 (0.8%)
1	C	1.83	3/1946 (0.2%)	1.42	17/2431 (0.7%)
2	D	1.82	2/1866 (0.1%)	1.47	23/2331 (1.0%)
2	E	1.79	5/1862 (0.3%)	1.43	16/2326 (0.7%)
2	F	1.87	2/1862 (0.1%)	1.53	22/2326 (0.9%)
3	G	1.78	1/1050 (0.1%)	1.37	8/1308 (0.6%)
4	H	1.81	0/522	1.61	10/651 (1.5%)
5	I	1.63	0/186	1.40	2/231 (0.9%)
6	J	0.30	0/287	0.41	0/357
6	K	0.30	0/287	0.42	0/357
6	L	0.30	0/287	0.45	0/357
6	M	0.29	0/287	0.44	0/357
6	N	0.28	0/287	0.40	0/357
6	O	0.30	0/287	0.41	0/357
6	P	0.29	0/287	0.43	0/357
6	Q	0.30	0/287	0.44	0/357
7	S	1.63	3/668 (0.4%)	1.92	18/834 (2.2%)
8	T	1.24	6/696 (0.9%)	1.53	13/867 (1.5%)
9	U	0.87	0/484	1.37	4/604 (0.7%)
10	V	0.79	0/263	1.06	0/327
11	W	2.53	5/868 (0.6%)	1.21	6/1082 (0.6%)
All	All	1.69	33/18519 (0.2%)	1.37	174/23107 (0.8%)

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	A	0	3
1	B	0	1
1	C	0	3

Continued on next page...

Continued from previous page...

Mol	Chain	#Chirality outliers	#Planarity outliers
2	D	0	5
2	F	0	1
3	G	0	2
7	S	0	11
8	T	0	22
9	U	0	19
10	V	0	6
11	W	0	16
All	All	0	89

The worst 5 of 33 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	W	88	LEU	CA-C	62.36	3.15	1.52
11	W	88	LEU	N-CA	20.90	1.88	1.46
11	W	89	PRO	N-CA	-18.54	1.15	1.47
11	W	88	LEU	C-O	-14.20	0.96	1.23
8	T	160	THR	N-CA	9.37	1.65	1.46

The worst 5 of 174 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	S	73	THR	C-N-CA	16.48	162.91	121.70
7	S	110	SER	C-N-CA	-12.41	90.68	121.70
7	S	106	SER	CA-C-N	-12.23	90.30	117.20
11	W	89	PRO	N-CA-C	-10.49	84.82	112.10
9	U	78	VAL	CA-C-O	-9.60	99.94	120.10

There are no chirality outliers.

5 of 89 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	437	ALA	Peptide,Mainchain
1	A	485	THR	Mainchain
1	B	46	ASN	Mainchain
1	C	173	THR	Mainchain
1	C	336	ALA	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2035	0	589	5	0
1	B	1918	0	553	7	0
1	C	1947	0	563	7	0
2	D	1867	0	533	4	0
2	E	1863	0	532	4	0
2	F	1863	0	532	8	0
3	G	1053	0	283	0	0
4	H	523	0	140	1	0
5	I	187	0	53	1	0
6	J	288	0	92	0	0
6	K	288	0	92	0	0
6	L	288	0	92	0	0
6	M	288	0	92	0	0
6	N	288	0	92	0	0
6	O	288	0	92	0	0
6	P	288	0	92	0	0
6	Q	288	0	92	0	0
7	S	669	0	178	8	0
8	T	697	0	182	1	0
9	U	485	0	118	0	0
10	V	264	0	71	0	0
11	W	869	0	226	4	0
All	All	18544	0	5289	43	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 43 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)
11:W:88:LEU:N	11:W:88:LEU:CA	1.88	1.36
7:S:164:VAL:CA	7:S:167:GLY:O	2.28	0.80
2:F:84:ILE:H	2:F:114:ALA:H	1.42	0.68
1:B:49:ALA:H	2:F:69:LEU:H	1.43	0.67
1:A:49:ALA:H	2:E:69:LEU:N	2.00	0.59

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	507/510 (99%)	445 (88%)	35 (7%)	27 (5%)	2	19
1	B	476/510 (93%)	423 (89%)	30 (6%)	23 (5%)	2	21
1	C	485/510 (95%)	434 (90%)	28 (6%)	23 (5%)	2	21
2	D	465/482 (96%)	415 (89%)	30 (6%)	20 (4%)	2	22
2	E	464/482 (96%)	418 (90%)	34 (7%)	12 (3%)	5	31
2	F	464/482 (96%)	412 (89%)	32 (7%)	20 (4%)	2	22
3	G	258/273 (94%)	195 (76%)	43 (17%)	20 (8%)	1	13
4	H	129/146 (88%)	114 (88%)	10 (8%)	5 (4%)	3	23
5	I	45/50 (90%)	35 (78%)	7 (16%)	3 (7%)	1	15
6	J	70/72 (97%)	62 (89%)	6 (9%)	2 (3%)	4	29
6	K	70/72 (97%)	64 (91%)	5 (7%)	1 (1%)	11	46
6	L	70/72 (97%)	57 (81%)	13 (19%)	0	100	100
6	M	70/72 (97%)	64 (91%)	4 (6%)	2 (3%)	4	29
6	N	70/72 (97%)	61 (87%)	9 (13%)	0	100	100
6	O	70/72 (97%)	64 (91%)	5 (7%)	1 (1%)	11	46
6	P	70/72 (97%)	64 (91%)	5 (7%)	1 (1%)	11	46
6	Q	70/72 (97%)	61 (87%)	7 (10%)	2 (3%)	4	29
7	S	166/190 (87%)	110 (66%)	30 (18%)	26 (16%)	0	3
8	T	172/174 (99%)	154 (90%)	14 (8%)	4 (2%)	6	34
9	U	120/124 (97%)	95 (79%)	16 (13%)	9 (8%)	1	13
10	V	64/77 (83%)	51 (80%)	9 (14%)	4 (6%)	1	17
11	W	215/217 (99%)	192 (89%)	19 (9%)	4 (2%)	8	38
All	All	4590/4803 (96%)	3990 (87%)	391 (8%)	209 (5%)	4	21

5 of 209 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	5	THR
1	A	13	GLU
1	A	14	GLU
1	A	20	ASP
1	A	24	ASP

5.3.2   Protein sidechains ⓘ

There are no protein residues with a non-rotameric sidechain to report in this entry.

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 monosaccharides in this entry.

5.6   Ligand geometry ⓘ

There are no ligands in this entry.

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-3164. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1   Orthogonal projections ⓘ

6.1.1   Primary map

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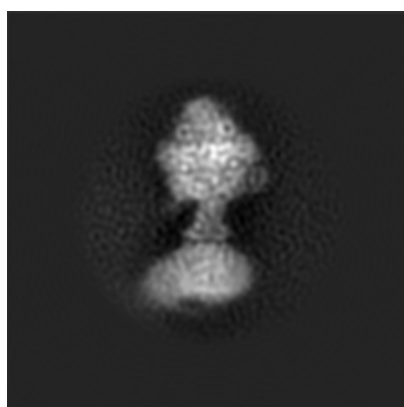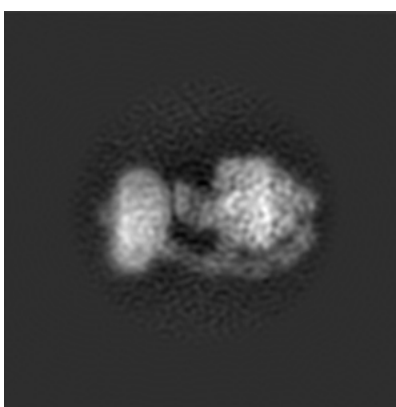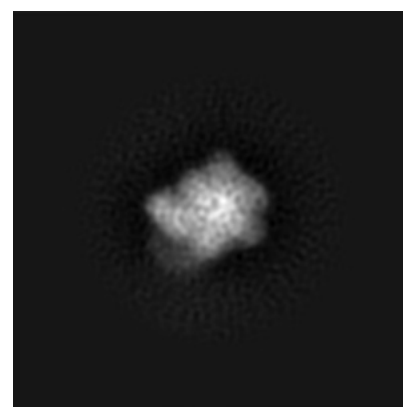
The images above show the map projected in three orthogonal directions.

6.2   Central slices ⓘ
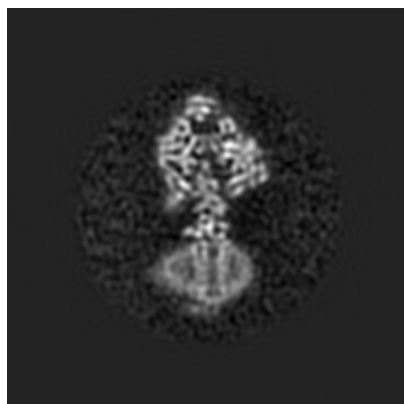
6.2.1   Primary map
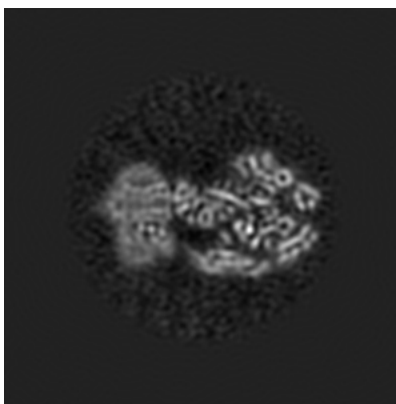
X Index: 128	Y Index: 128	Z Index: 128
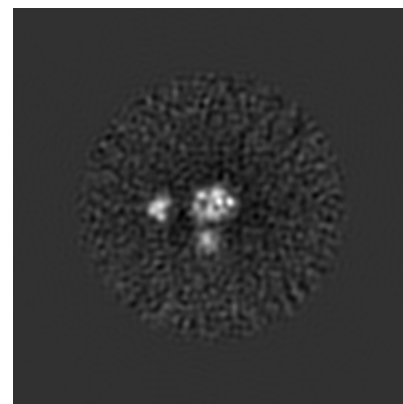
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ
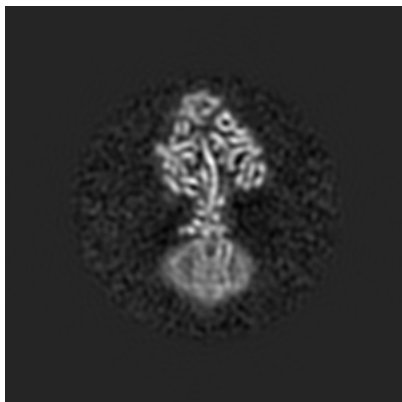
6.3.1 Primary map
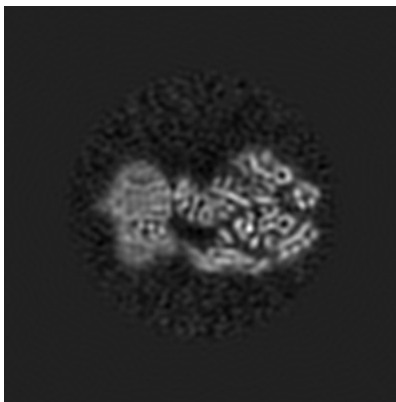
| X Index: 133 | Y Index: 127 | Z Index: 167 |
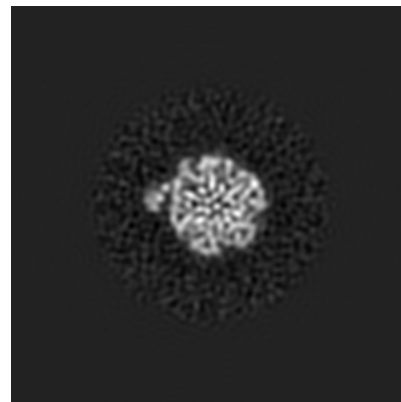
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views ⓘ

6.4.1 Primary map

| X | Y | Z |
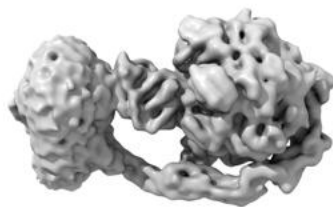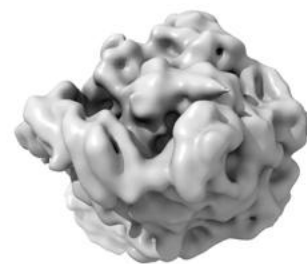
The images above show the 3D surface view of the map at the recommended contour level 0.13. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

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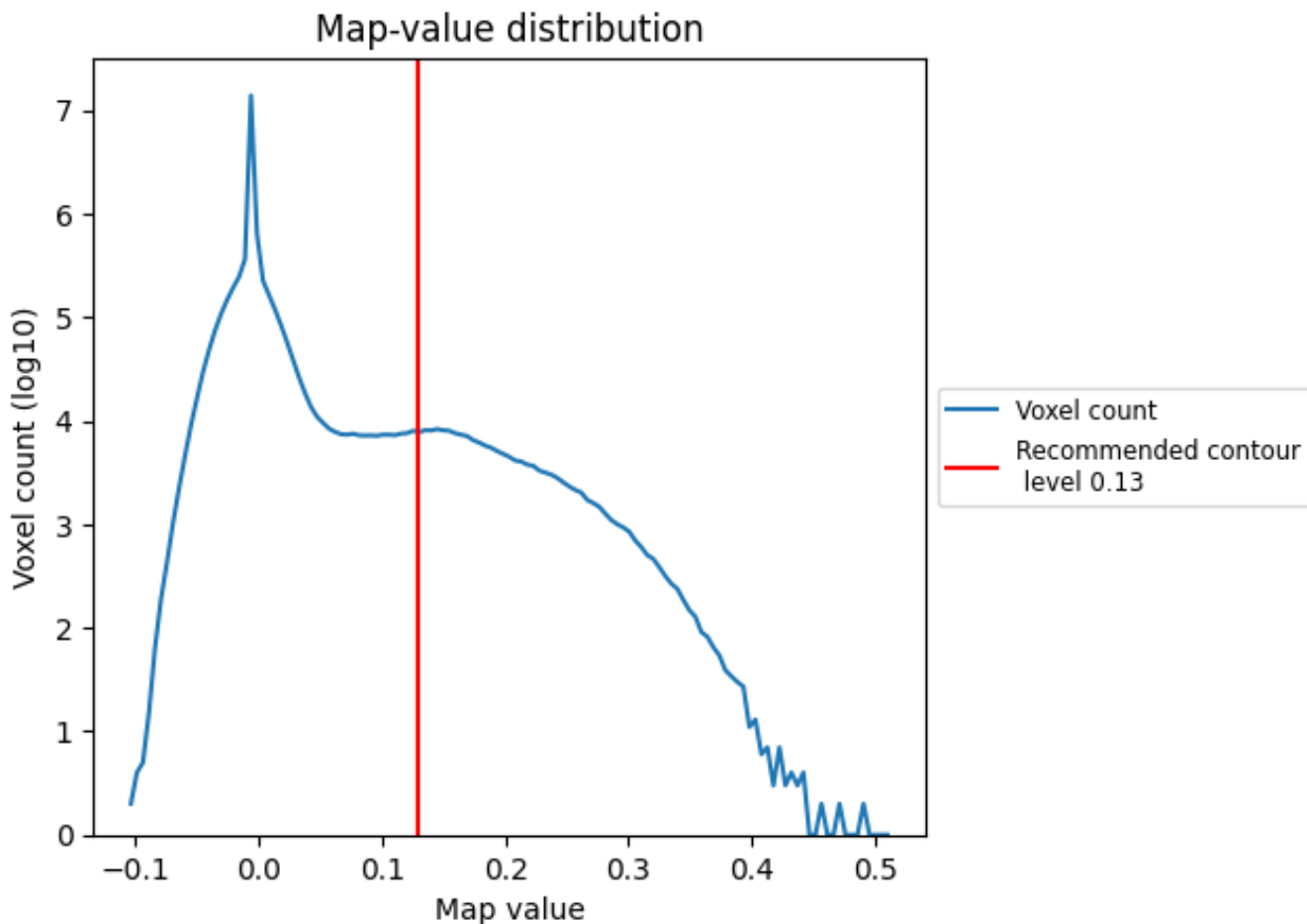
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
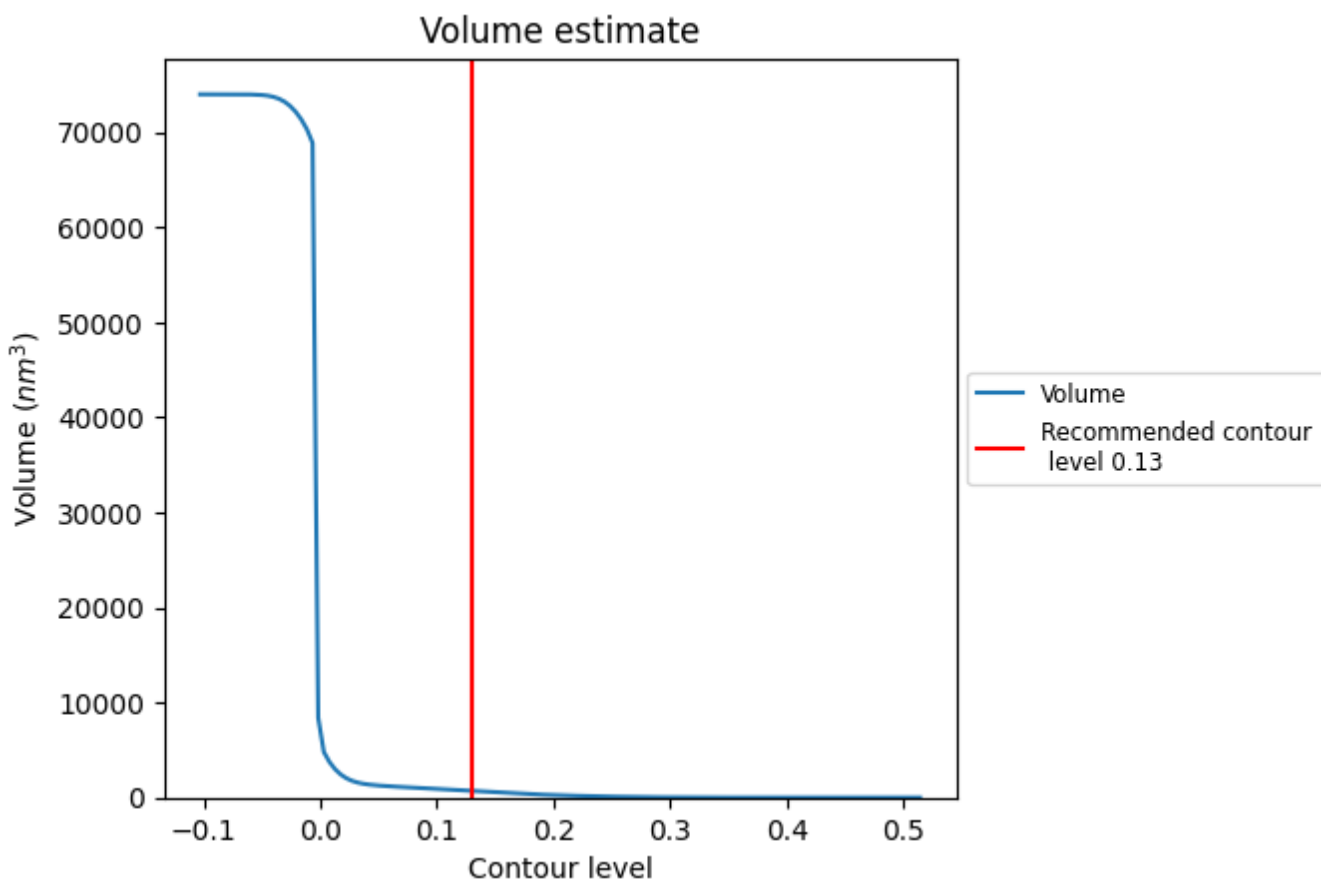
The volume at the recommended contour level is 709 nm^3; this corresponds to an approximate mass of 640 kDa.

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 ⓘ
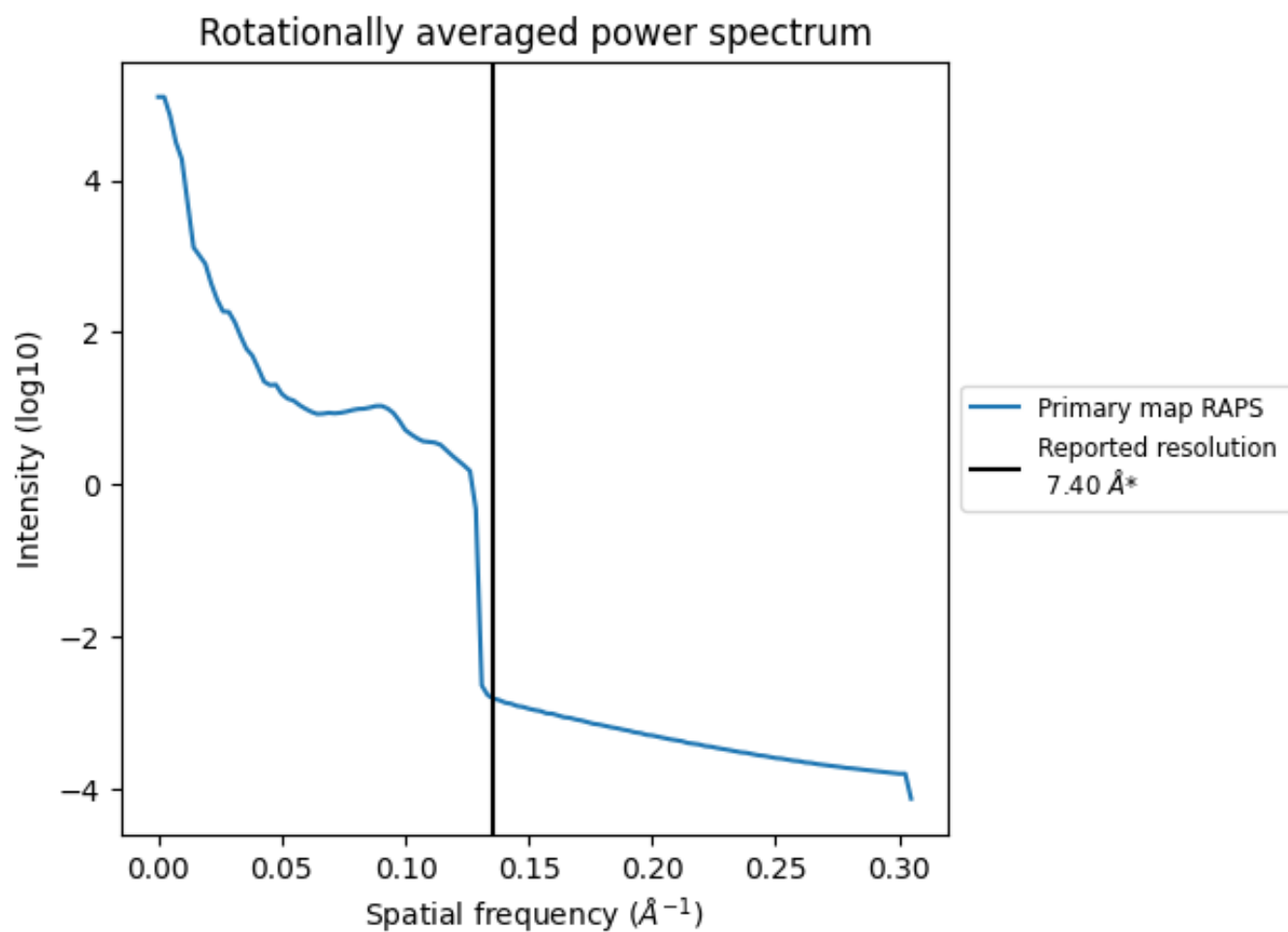
*Reported resolution corresponds to spatial frequency of 0.135 Å^{-1}

8 Fourier-Shell correlation (i)

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

9   Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-3164 and PDB model 5ARA. Per-residue inclusion information can be found in section 3 on page 7.

9.1   Map-model overlay ⓘ

X   Y   Z
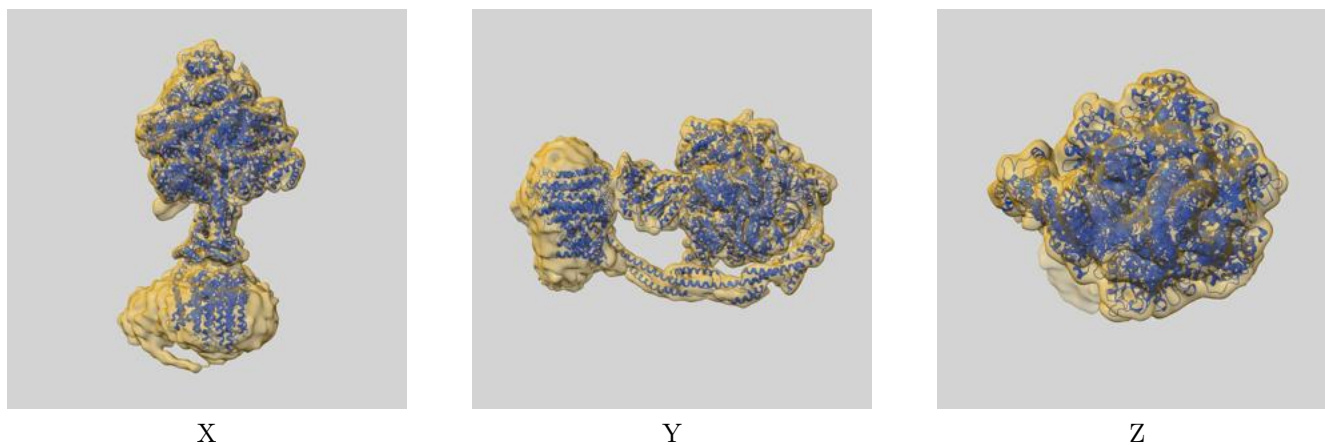
The images above show the 3D surface view of the map at the recommended contour level 0.13 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model ⓘ

X   Y   Z
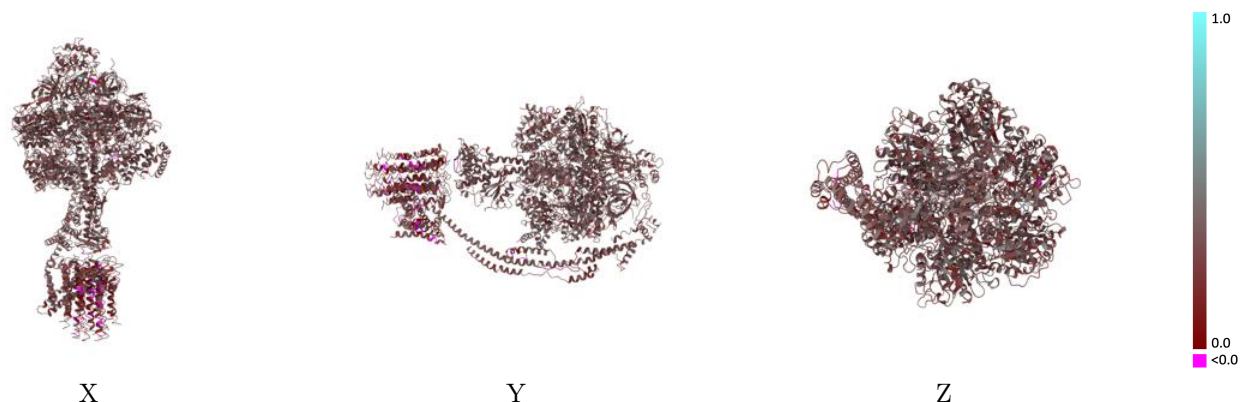
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
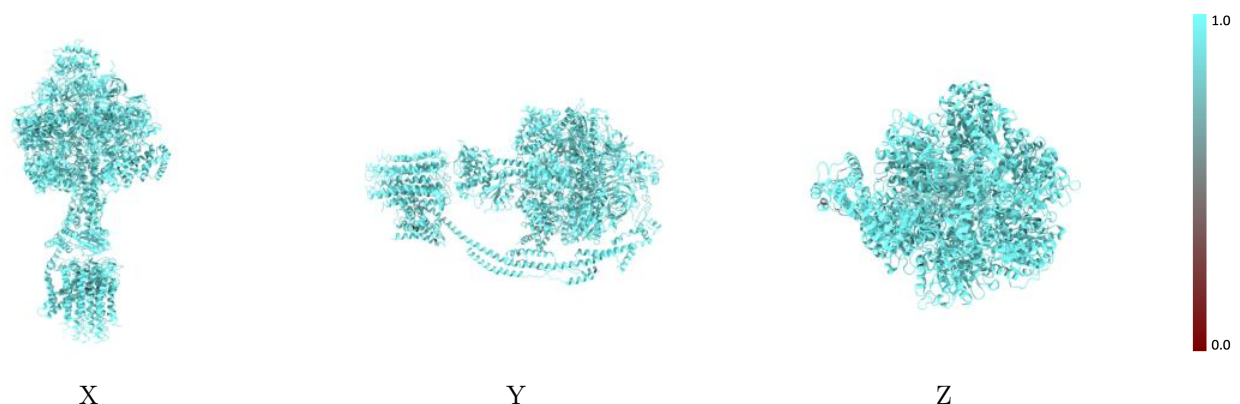
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.13).

9.4   Atom inclusion ⓘ
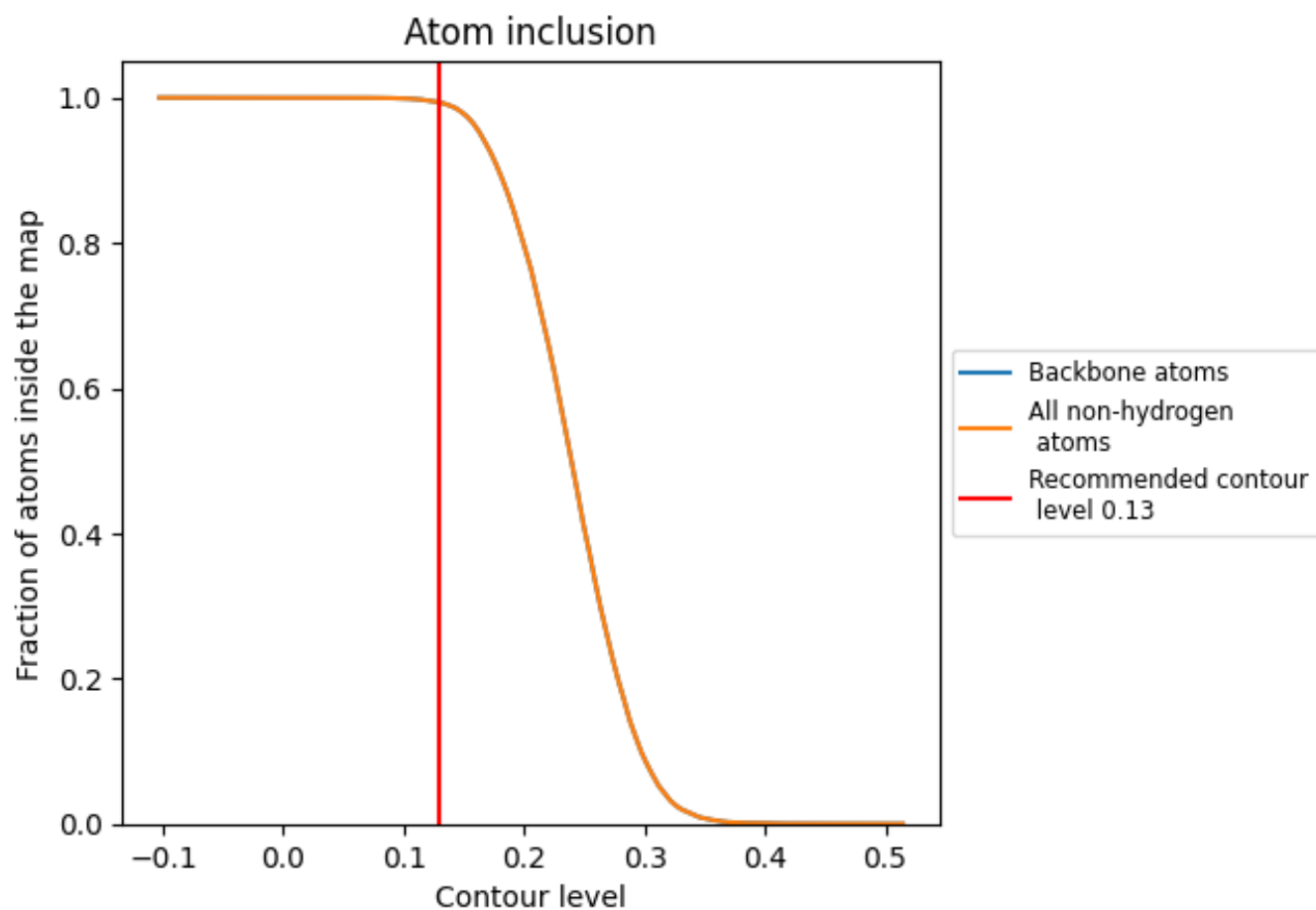
At the recommended contour level, 99% of all backbone atoms, 99% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.13) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9935	0.2900
A	0.9985	0.3130
B	0.9990	0.3170
C	0.9974	0.3120
D	0.9995	0.3150
E	0.9995	0.3040
F	0.9995	0.3170
G	0.9981	0.3140
H	0.9924	0.3080
I	1.0000	0.3140
J	0.9757	0.1810
K	1.0000	0.2320
L	0.9896	0.2040
M	1.0000	0.2230
N	0.9826	0.2050
O	1.0000	0.1800
P	0.9896	0.2050
Q	0.9965	0.2050
S	0.9985	0.3020
T	0.9986	0.3040
U	0.9567	0.2450
V	0.9508	0.2360
W	0.9459	0.2000

1.0

0.0
<0.0