



wwPDB EM Validation Summary Report ⓘ

Jun 20, 2024 – 08:55 pm BST

PDB ID : 8QU1
EMDB ID : EMD-18460
Title : mt-LSU assembly intermediate in GTPBP8 knock-out cells, state 1
Authors : Valentin Gese, G.; Cipullo, M.; Rorbach, J.; Hallberg, B.M.
Deposited on : 2023-10-13
Resolution : 2.74 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.dev92
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

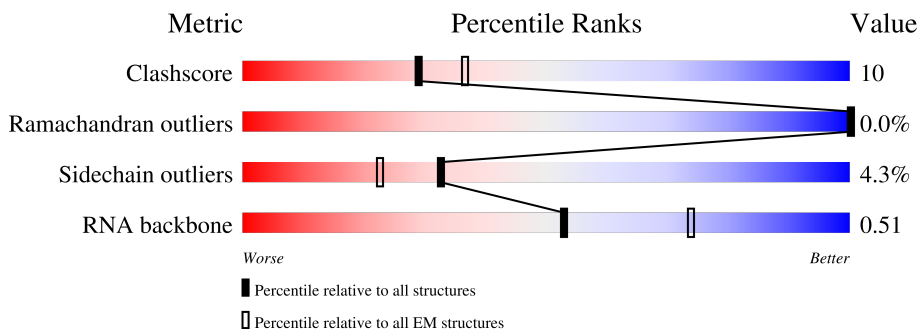
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.74 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



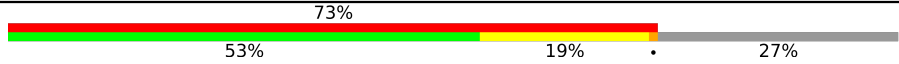

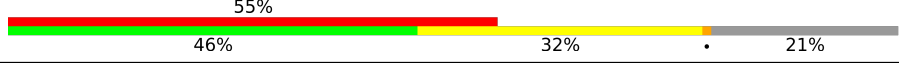

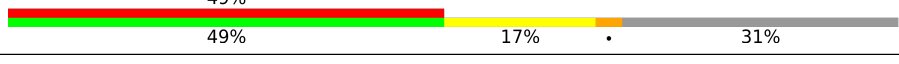

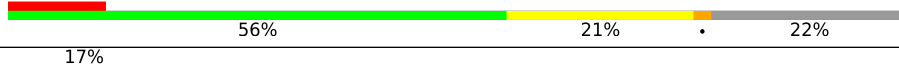
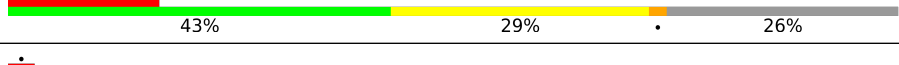
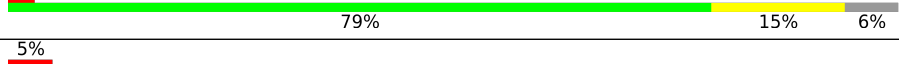


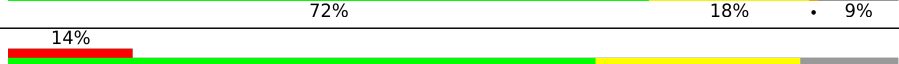

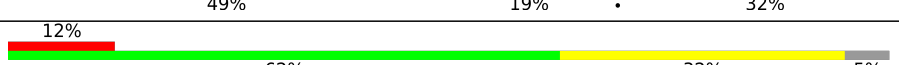

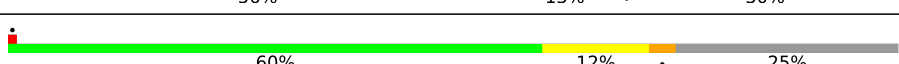
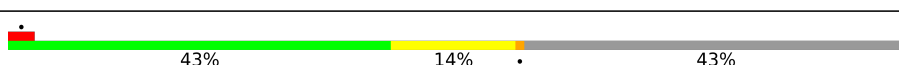




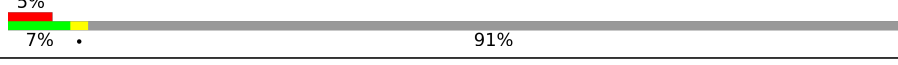

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1559	
2	B	69	
3	D	305	
4	E	348	
5	F	311	
6	H	267	
7	I	261	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
8	J	192	
9	K	178	
10	L	145	
11	M	296	
12	N	251	
13	O	175	
14	P	180	
15	Q	292	
16	R	149	
17	S	205	
18	T	206	
19	U	153	
20	V	216	
21	W	148	
22	X	256	
23	Y	250	
24	Z	161	
25	0	188	
26	1	65	
27	2	92	
28	3	188	
29	5	423	
30	6	380	

2 Entry composition [i](#)

There are 30 unique types of molecules in this entry. The entry contains 57235 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 RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	938	19916	8944	3614	6420	938	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	3107	U	UNK	variant	GB 1025814679

- Molecule 2 is a RNA chain called mitochondrial tRNAVal.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	B	56	1191	534	214	387	56	0	0

- Molecule 3 is a protein called 39S ribosomal protein L2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	175	1363	848	262	245	8	0	0

- Molecule 4 is a protein called 39S ribosomal protein L3, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	E	285	2258	1457	384	406	11	0	0

- Molecule 5 is a protein called 39S ribosomal protein L4, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	F	240	1932	1244	346	336	6	0	0

- Molecule 6 is a protein called 39S ribosomal protein L9, mitochondrial.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	H	85	Total	C	N	O	0	0
			713	457	138	118		

- Molecule 7 is a protein called 39S ribosomal protein L10, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	I	158	Total	C	N	O	S	0	0
			1283	828	235	210	10		

- Molecule 8 is a protein called 39S ribosomal protein L11, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	J	140	Total	C	N	O	S	0	0
			1061	680	192	187	2		

- Molecule 9 is a protein called 39S ribosomal protein L13, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	K	177	Total	C	N	O	S	0	0
			1451	934	259	251	7		

- Molecule 10 is a protein called 39S ribosomal protein L14, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	L	115	Total	C	N	O	S	0	0
			889	559	171	154	5		

- Molecule 11 is a protein called 39S ribosomal protein L15, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	M	256	Total	C	N	O	S	0	0
			2056	1329	358	364	5		

- Molecule 12 is a protein called 39S ribosomal protein L16, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	N	173	Total	C	N	O	S	0	0
			1412	907	255	241	9		

- Molecule 13 is a protein called 39S ribosomal protein L17, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	O	152	Total	C	N	O	S	0	0
			1245	784	239	215	7		

- Molecule 14 is a protein called 39S ribosomal protein L18, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	P	141	Total	C	N	O	S	0	0
			1148	719	221	203	5		

- Molecule 15 is a protein called 39S ribosomal protein L19, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	Q	217	Total	C	N	O	S	0	0
			1805	1159	317	320	9		

- Molecule 16 is a protein called 39S ribosomal protein L20, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	R	140	Total	C	N	O	S	0	0
			1153	732	231	186	4		

- Molecule 17 is a protein called 39S ribosomal protein L21, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	S	156	Total	C	N	O	S	0	0
			1251	806	222	219	4		

- Molecule 18 is a protein called 39S ribosomal protein L22, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	T	159	Total	C	N	O	S	0	0
			1305	835	239	224	7		

- Molecule 19 is a protein called 39S ribosomal protein L23, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	U	139	Total	C	N	O	S	0	0
			1154	734	220	197	3		

- Molecule 20 is a protein called 39S ribosomal protein L24, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	V	192	1575	1003	281	283	8	0	0

- Molecule 21 is a protein called 39S ribosomal protein L27, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	W	101	805	520	151	131	3	0	0

- Molecule 22 is a protein called 39S ribosomal protein L28, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	X	243	2035	1317	351	362	5	0	0

- Molecule 23 is a protein called 39S ribosomal protein L47, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	Y	176	1517	970	291	252	4	0	0

- Molecule 24 is a protein called 39S ribosomal protein L30, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	Z	120	978	626	183	166	3	0	0

- Molecule 25 is a protein called 39S ribosomal protein L32, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	0	108	880	545	172	157	6	0	0

- Molecule 26 is a protein called 39S ribosomal protein L33, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	1	48	400	257	76	65	2	0	0

- Molecule 27 is a protein called 39S ribosomal protein L34, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	2	38	309	193	69	46	1	0	0

- Molecule 28 is a protein called 39S ribosomal protein L35, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	3	95	831	539	162	127	3	0	0

- Molecule 29 is a protein called 39S ribosomal protein L37, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	5	371	3022	1953	524	534	11	0	0

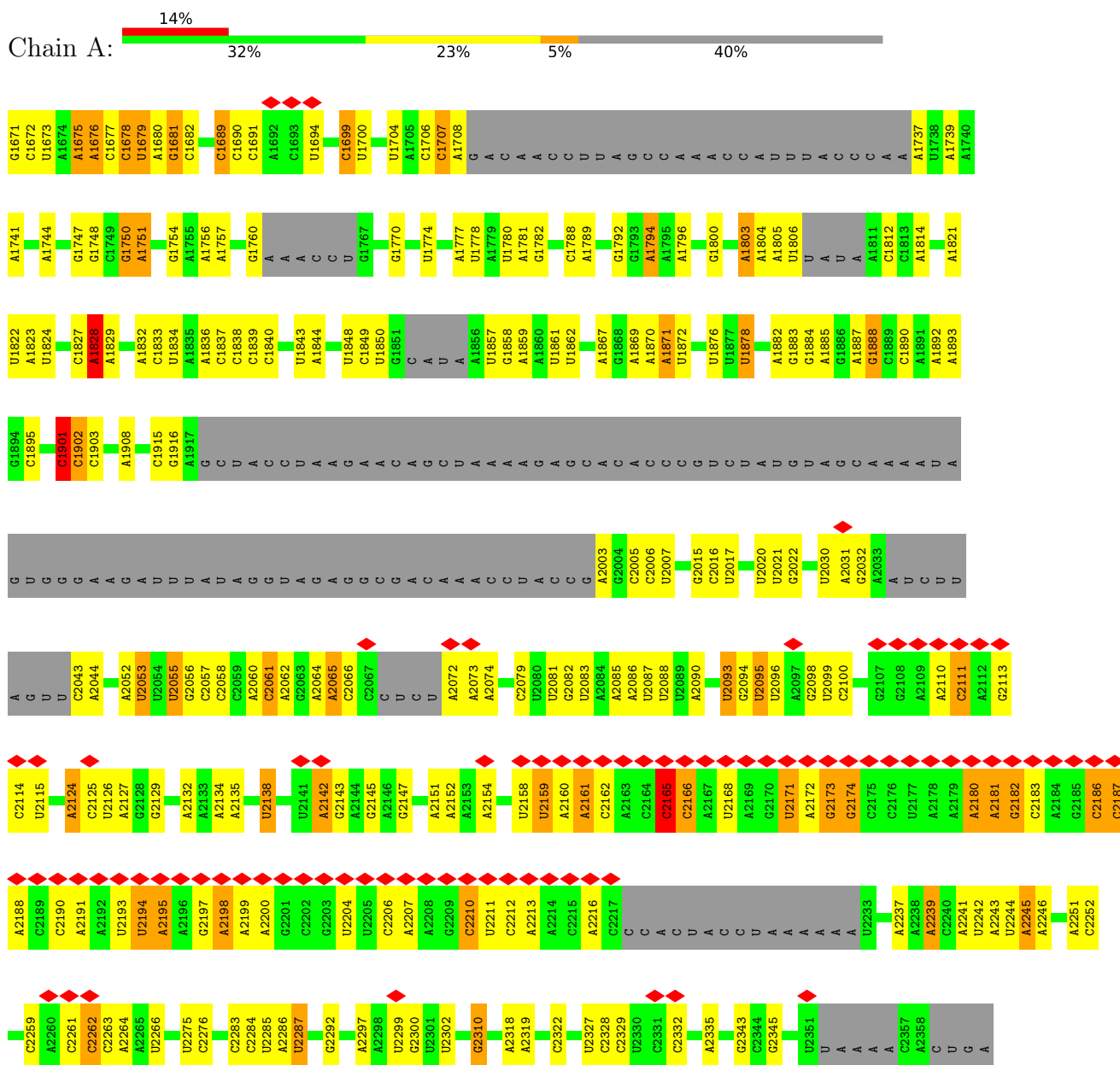
- Molecule 30 is a protein called 39S ribosomal protein L38, mitochondrial.

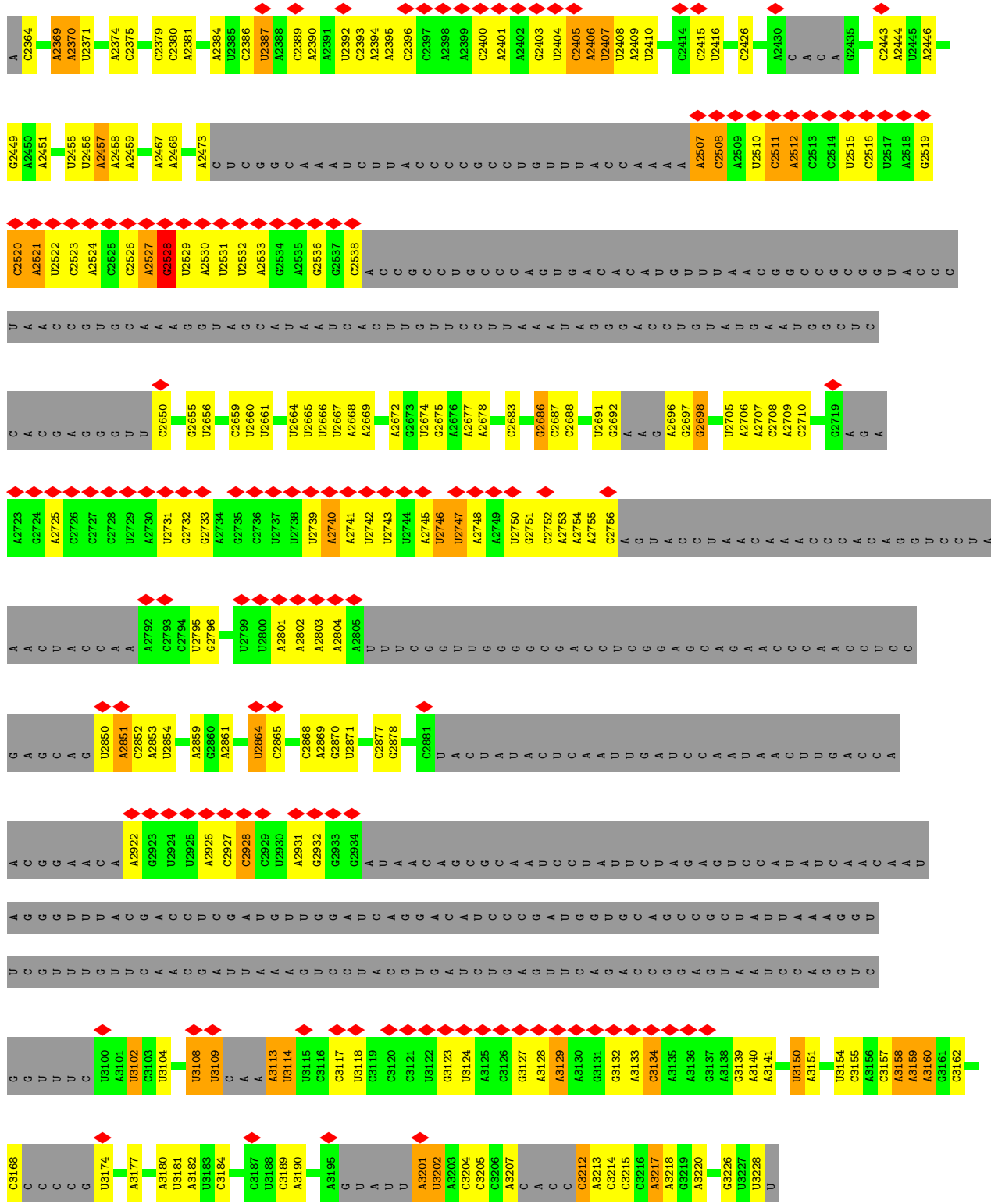
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	6	35	297	182	62	52	1	0	1

3 Residue-property plots [i](#)

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

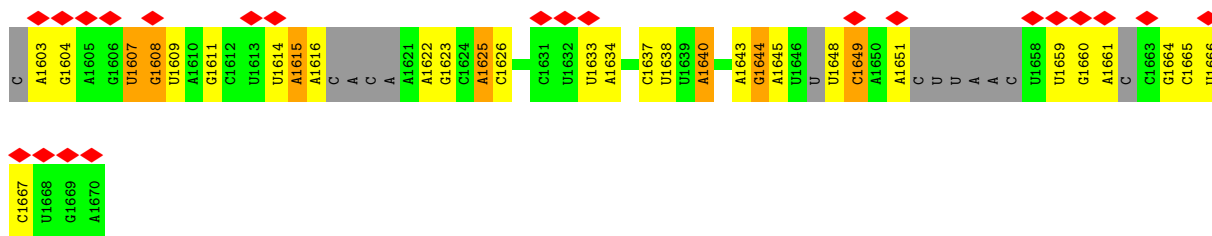
• Molecule 1: 16S ribosomal RNA



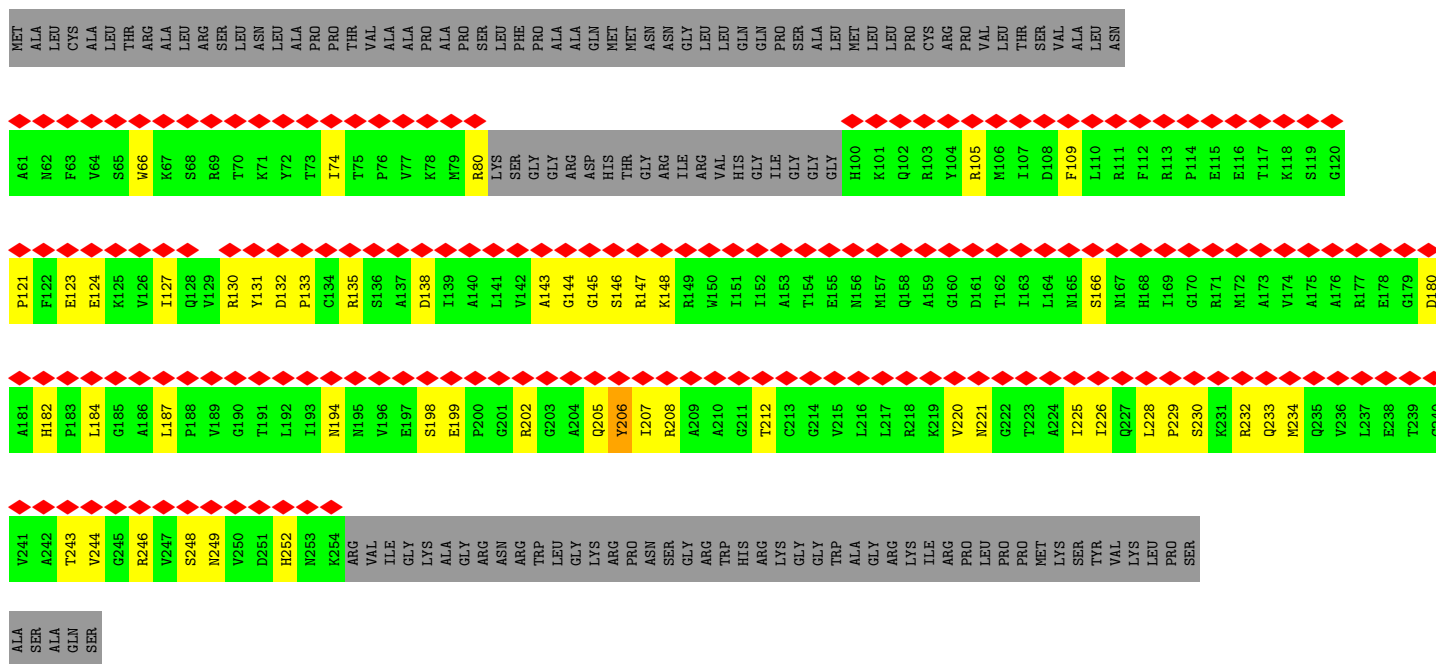


● Molecule 2: mitochondrial tRNAVal

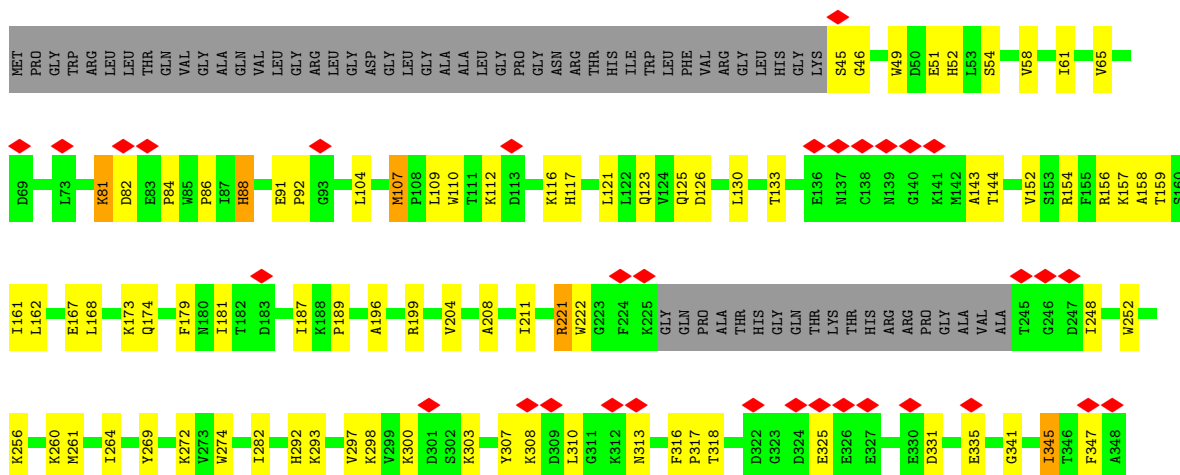




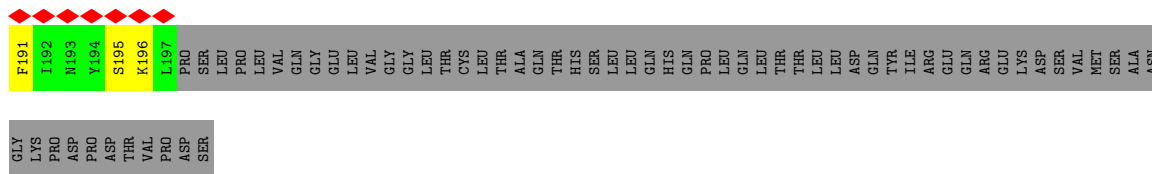
- Molecule 3: 39S ribosomal protein L2, mitochondrial



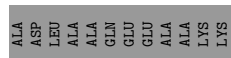
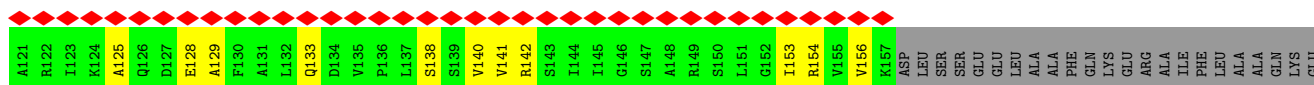
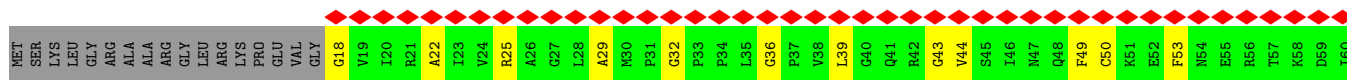
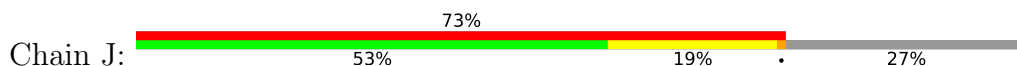
- Molecule 4: 39S ribosomal protein L3, mitochondrial



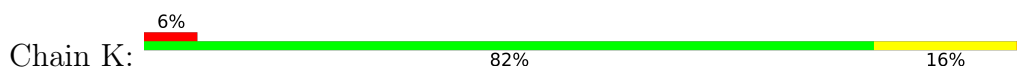
- Molecule 5: 39S ribosomal protein L4, mitochondrial



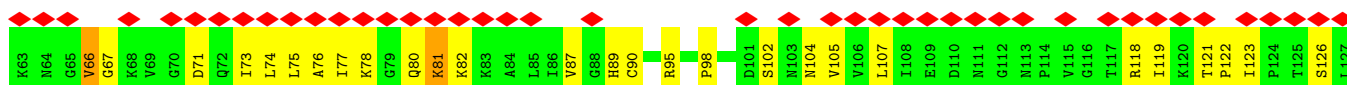
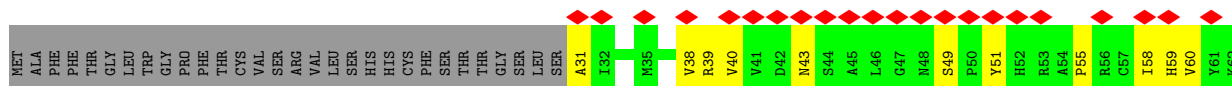
• Molecule 8: 39S ribosomal protein L11, mitochondrial



• Molecule 9: 39S ribosomal protein L13, mitochondrial

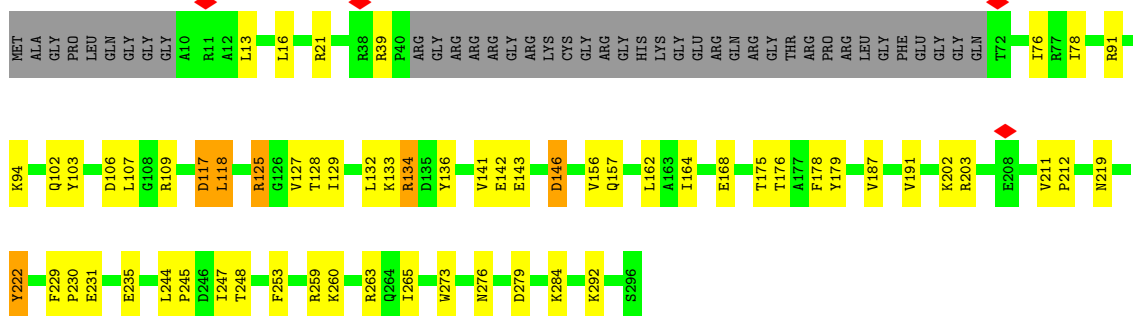


• Molecule 10: 39S ribosomal protein L14, mitochondrial



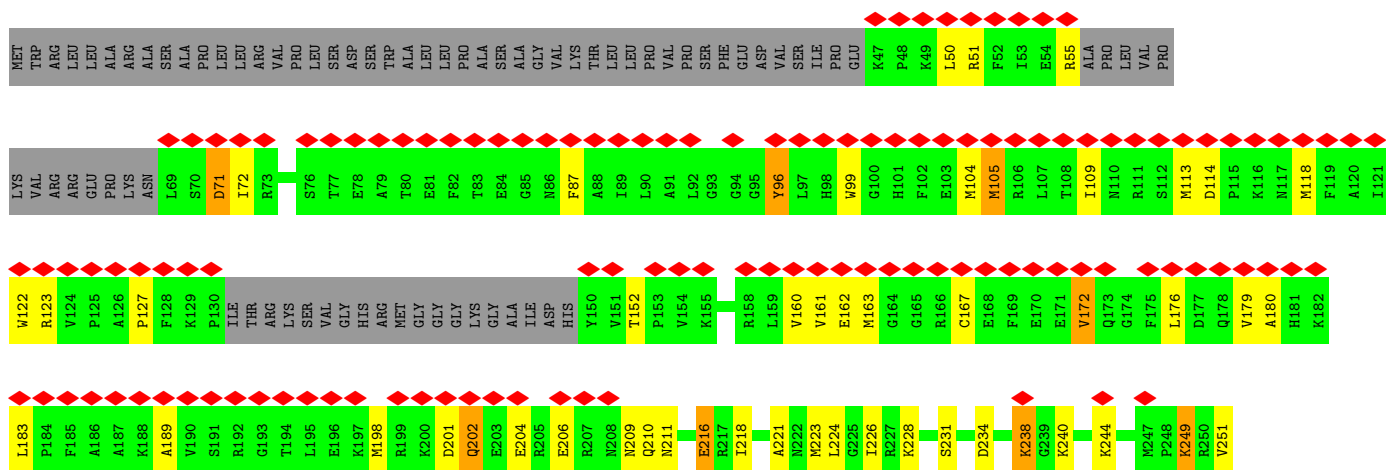
• Molecule 11: 39S ribosomal protein L15, mitochondrial

Chain M: 66% 19% 14%



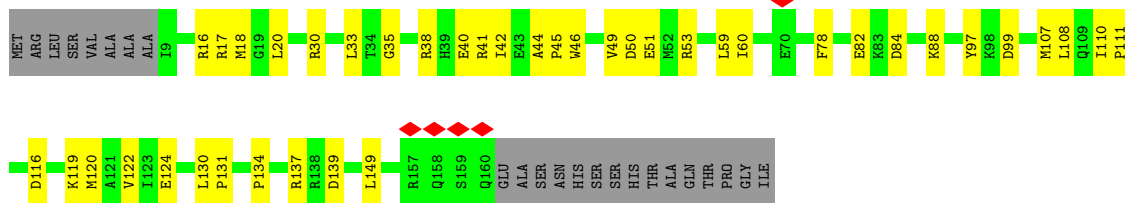
• Molecule 12: 39S ribosomal protein L16, mitochondrial

Chain N: 49% 17% 31%



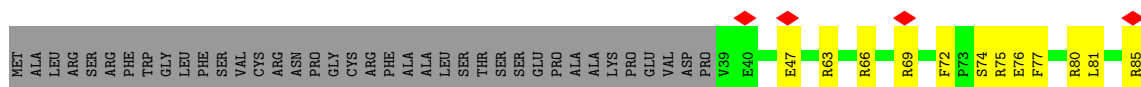
• Molecule 13: 39S ribosomal protein L17, mitochondrial

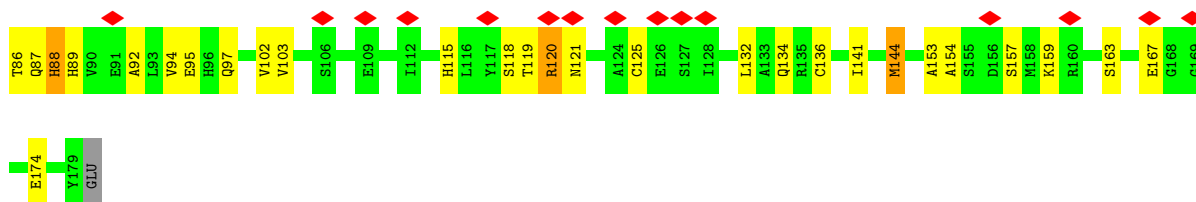
Chain O: 63% 23% 13%



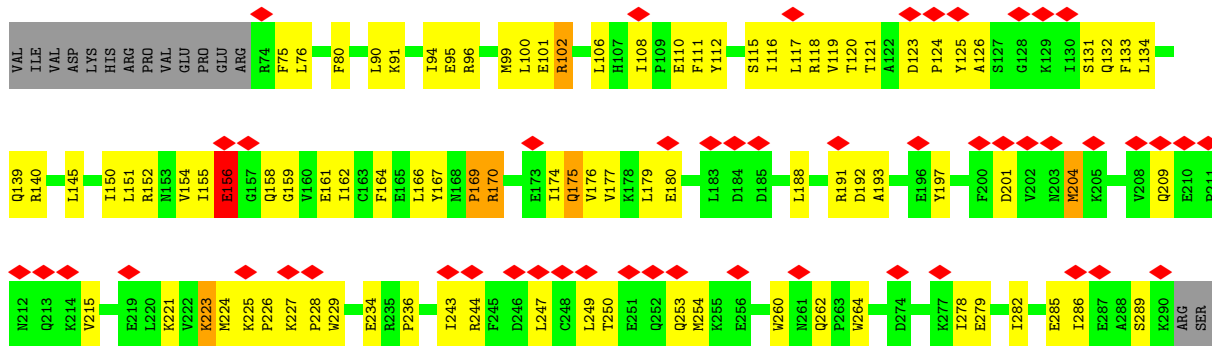
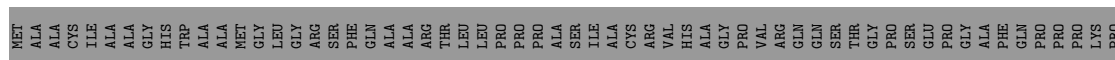
• Molecule 14: 39S ribosomal protein L18, mitochondrial

Chain P: 11% 56% 21% 22%

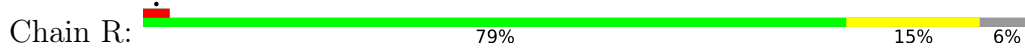




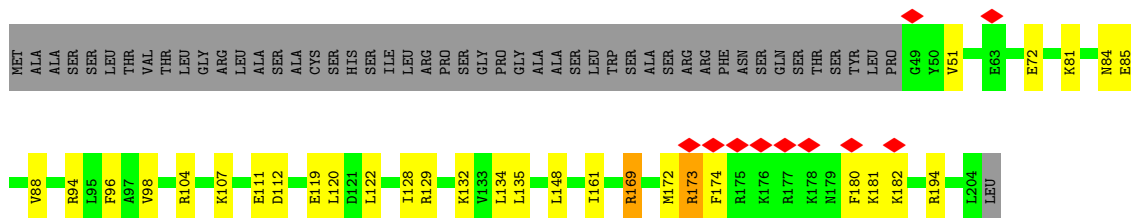
• Molecule 15: 39S ribosomal protein L19, mitochondrial



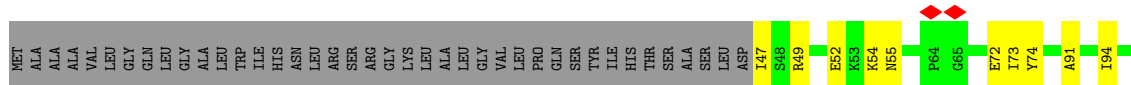
• Molecule 16: 39S ribosomal protein L20, mitochondrial



• Molecule 17: 39S ribosomal protein L21, mitochondrial

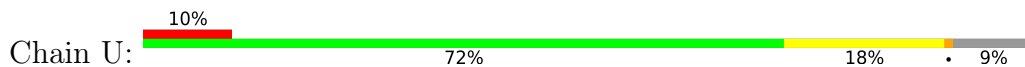


• Molecule 18: 39S ribosomal protein L22, mitochondrial

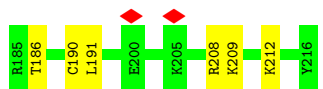
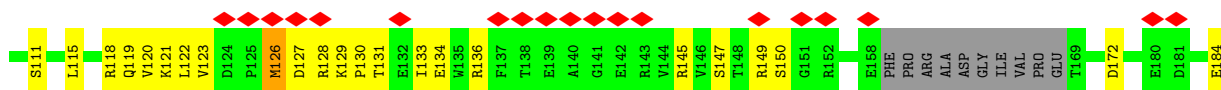
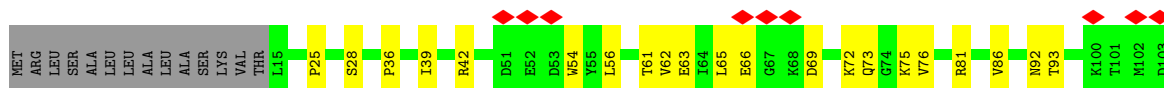




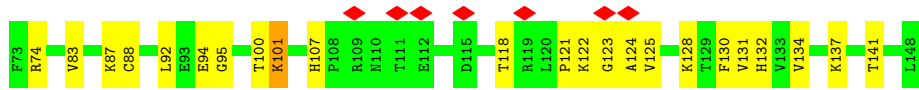
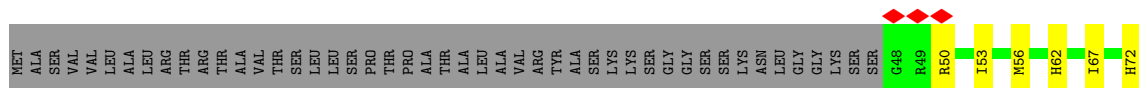
• Molecule 19: 39S ribosomal protein L23, mitochondrial



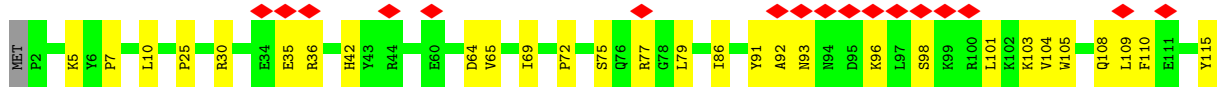
• Molecule 20: 39S ribosomal protein L24, mitochondrial

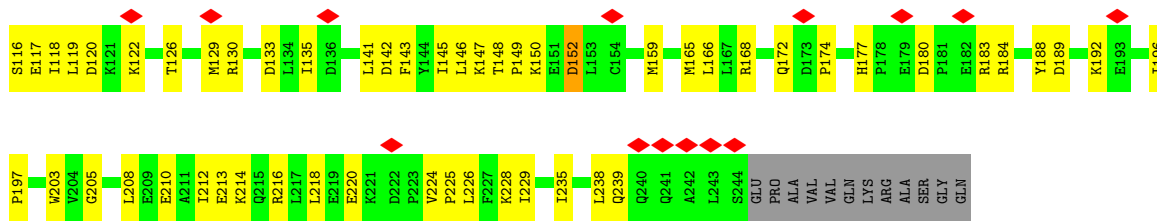


• Molecule 21: 39S ribosomal protein L27, mitochondrial

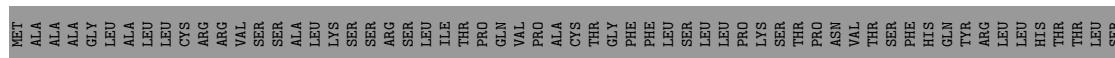


• Molecule 22: 39S ribosomal protein L28, mitochondrial

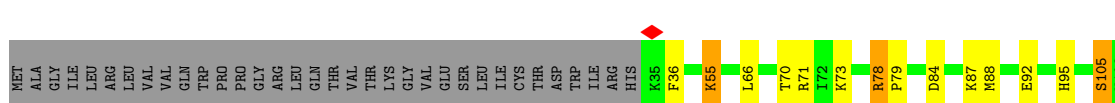




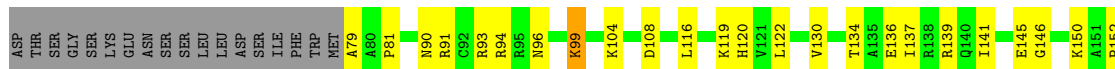
• Molecule 23: 39S ribosomal protein L47, mitochondrial



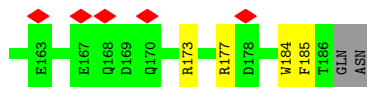
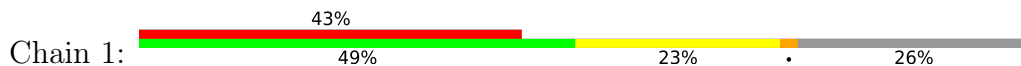
• Molecule 24: 39S ribosomal protein L30, mitochondrial

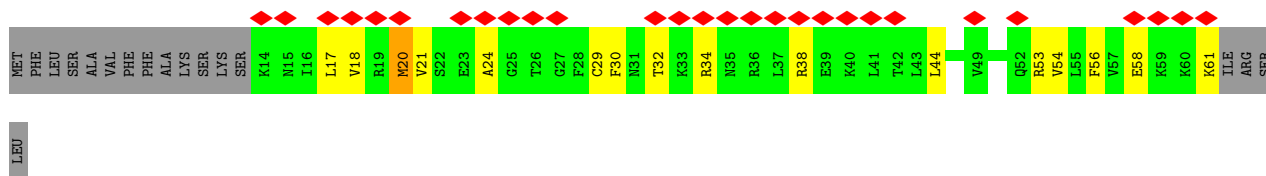


• Molecule 25: 39S ribosomal protein L32, mitochondrial

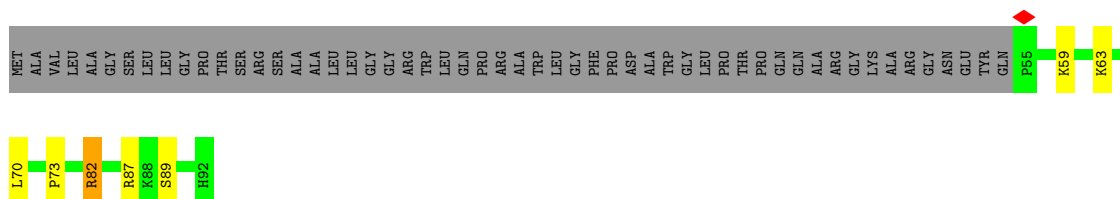


• Molecule 26: 39S ribosomal protein L33, mitochondrial

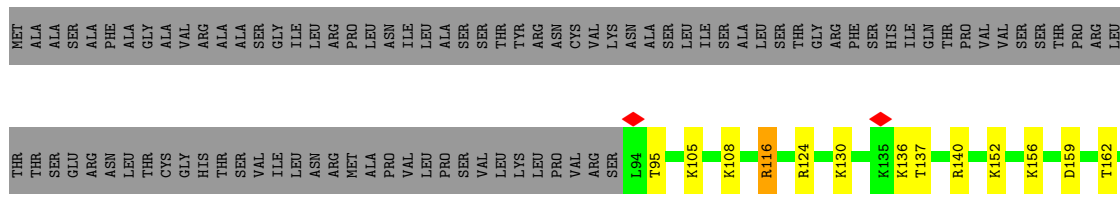
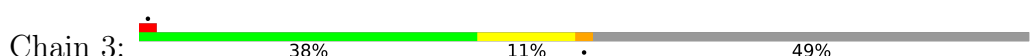




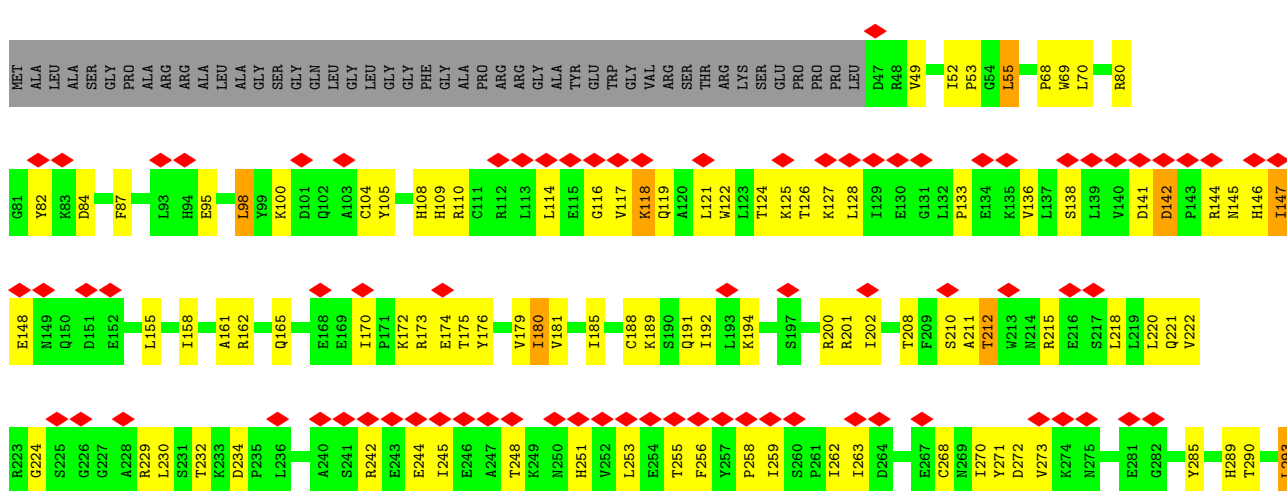
• Molecule 27: 39S ribosomal protein L34, mitochondrial

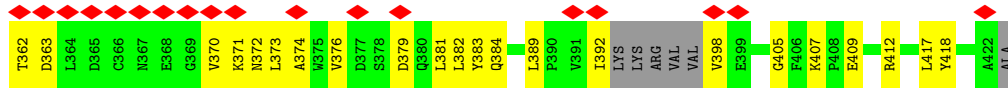
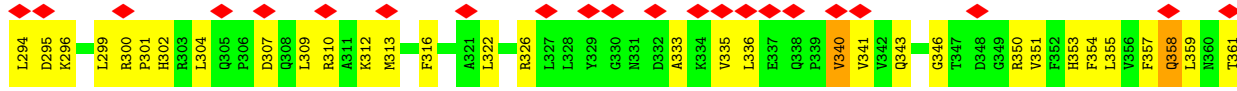


• Molecule 28: 39S ribosomal protein L35, mitochondrial

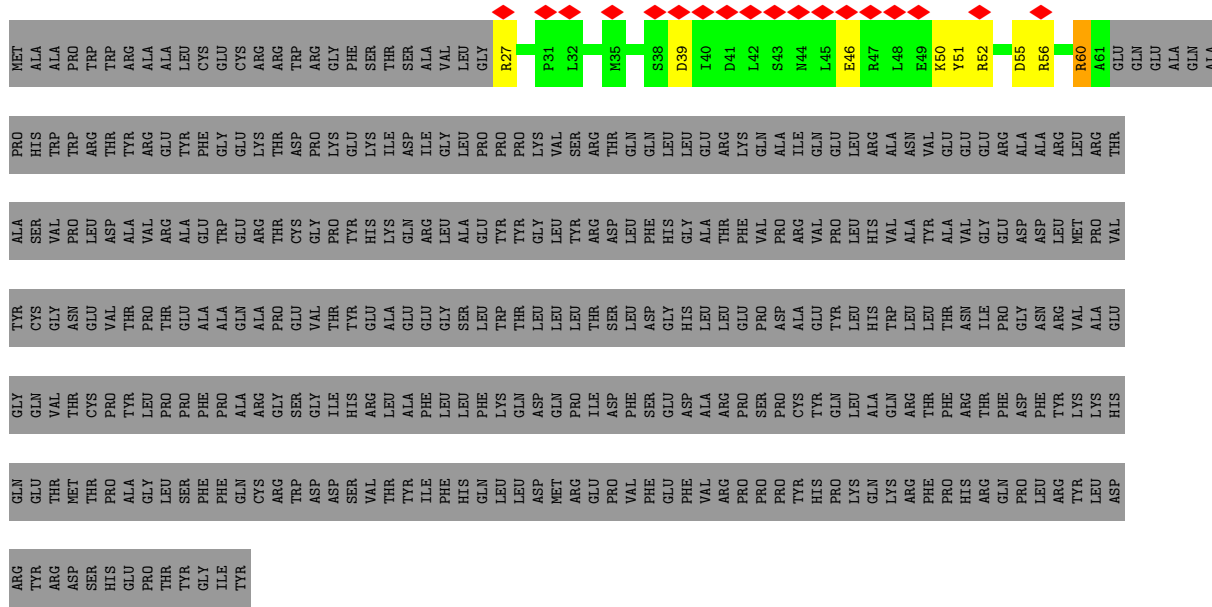


• Molecule 29: 39S ribosomal protein L37, mitochondrial





• Molecule 30: 39S ribosomal protein L38, mitochondrial



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	41197	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 ($e^-/\text{\AA}^2$)	48	Depositor
Minimum defocus (nm)	200	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	2.126	Depositor
Minimum map value	-0.839	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.053	Depositor
Recommended contour level	0.3	Depositor
Map size (Å)	606.0, 606.0, 606.0	wwPDB
Map dimensions	600, 600, 600	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.01, 1.01, 1.01	Depositor

5 Model quality i

5.1 Standard geometry i

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	0.70	1/22270 (0.0%)	1.02	34/34610 (0.1%)
2	B	0.41	0/1328	0.75	0/2056
3	D	0.33	0/1385	0.61	0/1867
4	E	0.33	0/2322	0.51	0/3148
5	F	0.49	0/1986	0.64	0/2701
6	H	0.30	0/726	0.53	0/974
7	I	0.30	0/1308	0.59	0/1761
8	J	0.27	0/1077	0.52	0/1452
9	K	0.42	0/1495	0.57	0/2029
10	L	0.28	0/904	0.48	0/1218
11	M	0.42	0/2106	0.61	1/2855 (0.0%)
12	N	0.29	0/1448	0.46	0/1945
13	O	0.43	0/1269	0.59	0/1708
14	P	0.32	0/1173	0.52	0/1588
15	Q	0.31	0/1846	0.55	0/2487
16	R	0.55	0/1174	0.78	2/1572 (0.1%)
17	S	0.47	0/1276	0.66	0/1729
18	T	0.49	0/1335	0.64	2/1796 (0.1%)
19	U	0.42	0/1183	0.65	0/1600
20	V	0.34	0/1616	0.54	0/2189
21	W	0.38	0/827	0.52	0/1118
22	X	0.31	0/2090	0.51	0/2825
23	Y	0.41	0/1552	0.56	1/2079 (0.0%)
24	Z	0.42	0/1003	0.58	0/1354
25	0	0.42	0/895	0.60	1/1201 (0.1%)
26	1	0.27	0/405	0.59	0/539
27	2	0.50	0/314	0.70	1/416 (0.2%)
28	3	0.46	0/852	0.63	0/1136
29	5	0.29	0/3110	0.53	0/4237
30	6	0.32	0/303	0.55	0/406
All	All	0.52	1/60578 (0.0%)	0.79	42/86596 (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
5	F	0	1
8	J	0	1
9	K	0	1
11	M	0	1
17	S	0	1
18	T	0	1
All	All	0	6

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	2696	A	P-OP2	5.21	1.57	1.49

The worst 5 of 42 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	2527	A	OP2-P-O3'	-12.09	78.60	105.20
1	A	1885	A	O5'-P-OP2	-11.67	95.20	105.70
1	A	1901	C	O5'-P-OP1	-10.97	95.83	105.70
1	A	1682	C	O5'-P-OP1	-10.91	95.88	105.70
1	A	2528	G	O5'-P-OP2	-9.68	96.99	105.70

There are no chirality outliers.

5 of 6 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
5	F	281	ARG	Sidechain
8	J	69	LYS	Peptide
9	K	119	ARG	Sidechain
11	M	125	ARG	Sidechain
17	S	169	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	A	19916	0	10138	301	0
2	B	1191	0	607	22	0
3	D	1363	0	1393	89	0
4	E	2258	0	2264	55	0
5	F	1932	0	1961	52	0
6	H	713	0	764	26	0
7	I	1283	0	1370	20	0
8	J	1061	0	1141	22	0
9	K	1451	0	1448	20	0
10	L	889	0	941	35	0
11	M	2056	0	2120	39	0
12	N	1412	0	1418	34	0
13	O	1245	0	1283	31	0
14	P	1148	0	1148	27	0
15	Q	1805	0	1841	69	0
16	R	1153	0	1214	13	0
17	S	1251	0	1322	21	0
18	T	1305	0	1352	27	0
19	U	1154	0	1154	21	0
20	V	1575	0	1583	28	0
21	W	805	0	829	25	0
22	X	2035	0	2054	63	0
23	Y	1517	0	1561	25	0
24	Z	978	0	1030	16	0
25	0	880	0	906	23	0
26	1	400	0	435	7	0
27	2	309	0	344	8	0
28	3	831	0	883	17	0
29	5	3022	0	3007	112	0
30	6	297	0	297	17	0
All	All	57235	0	47808	1066	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 10.

The worst 5 of 1066 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:A:2521:A:N6	3:D:202:ARG:O	1.65	1.27
3:D:143:ALA:O	29:5:259:ILE:HD11	1.36	1.22
1:A:2015:G:N2	1:A:2931:A:O2'	1.79	1.14
1:A:2528:G:OP1	3:D:109:PHE:HE2	1.32	1.11

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2528:G:OP1	3:D:109:PHE:CE2	2.06	1.08

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	D	171/305 (56%)	162 (95%)	9 (5%)	0	100	100
4	E	281/348 (81%)	270 (96%)	11 (4%)	0	100	100
5	F	236/311 (76%)	224 (95%)	12 (5%)	0	100	100
6	H	81/267 (30%)	76 (94%)	5 (6%)	0	100	100
7	I	154/261 (59%)	142 (92%)	12 (8%)	0	100	100
8	J	138/192 (72%)	122 (88%)	16 (12%)	0	100	100
9	K	175/178 (98%)	170 (97%)	5 (3%)	0	100	100
10	L	113/145 (78%)	104 (92%)	9 (8%)	0	100	100
11	M	252/296 (85%)	245 (97%)	7 (3%)	0	100	100
12	N	167/251 (66%)	164 (98%)	3 (2%)	0	100	100
13	O	150/175 (86%)	146 (97%)	4 (3%)	0	100	100
14	P	139/180 (77%)	135 (97%)	4 (3%)	0	100	100
15	Q	215/292 (74%)	206 (96%)	7 (3%)	2 (1%)	17	32
16	R	138/149 (93%)	135 (98%)	3 (2%)	0	100	100
17	S	154/205 (75%)	149 (97%)	5 (3%)	0	100	100
18	T	155/206 (75%)	153 (99%)	2 (1%)	0	100	100
19	U	135/153 (88%)	130 (96%)	5 (4%)	0	100	100
20	V	188/216 (87%)	179 (95%)	9 (5%)	0	100	100
21	W	99/148 (67%)	96 (97%)	3 (3%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
22	X	241/256 (94%)	234 (97%)	7 (3%)	0	100	100
23	Y	174/250 (70%)	169 (97%)	5 (3%)	0	100	100
24	Z	118/161 (73%)	113 (96%)	5 (4%)	0	100	100
25	0	106/188 (56%)	105 (99%)	1 (1%)	0	100	100
26	1	46/65 (71%)	45 (98%)	1 (2%)	0	100	100
27	2	36/92 (39%)	36 (100%)	0	0	100	100
28	3	93/188 (50%)	91 (98%)	2 (2%)	0	100	100
29	5	367/423 (87%)	348 (95%)	19 (5%)	0	100	100
30	6	33/380 (9%)	31 (94%)	2 (6%)	0	100	100
All	All	4355/6281 (69%)	4180 (96%)	173 (4%)	2 (0%)	100	100

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
15	Q	156	GLU
15	Q	228	PRO

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	D	145/245 (59%)	143 (99%)	2 (1%)	67	80
4	E	246/290 (85%)	235 (96%)	11 (4%)	27	47
5	F	210/262 (80%)	199 (95%)	11 (5%)	23	39
6	H	78/228 (34%)	74 (95%)	4 (5%)	24	41
7	I	145/232 (62%)	144 (99%)	1 (1%)	84	90
8	J	113/150 (75%)	113 (100%)	0	100	100
9	K	155/156 (99%)	151 (97%)	4 (3%)	46	66
10	L	98/124 (79%)	94 (96%)	4 (4%)	30	50
11	M	223/249 (90%)	211 (95%)	12 (5%)	22	38

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
12	N	147/211 (70%)	134 (91%)	13 (9%)	10	18
13	O	133/150 (89%)	130 (98%)	3 (2%)	50	70
14	P	123/155 (79%)	116 (94%)	7 (6%)	20	36
15	Q	199/256 (78%)	188 (94%)	11 (6%)	21	37
16	R	118/126 (94%)	115 (98%)	3 (2%)	47	67
17	S	141/180 (78%)	133 (94%)	8 (6%)	20	36
18	T	141/176 (80%)	140 (99%)	1 (1%)	84	90
19	U	124/135 (92%)	121 (98%)	3 (2%)	49	68
20	V	172/191 (90%)	164 (95%)	8 (5%)	26	45
21	W	83/119 (70%)	81 (98%)	2 (2%)	49	68
22	X	219/229 (96%)	215 (98%)	4 (2%)	59	75
23	Y	159/223 (71%)	148 (93%)	11 (7%)	15	27
24	Z	111/147 (76%)	105 (95%)	6 (5%)	22	38
25	0	97/164 (59%)	93 (96%)	4 (4%)	30	50
26	1	45/60 (75%)	40 (89%)	5 (11%)	6	10
27	2	34/72 (47%)	34 (100%)	0	100	100
28	3	88/166 (53%)	83 (94%)	5 (6%)	20	36
29	5	333/368 (90%)	311 (93%)	22 (7%)	16	29
30	6	33/332 (10%)	30 (91%)	3 (9%)	9	17
All	All	3913/5396 (72%)	3745 (96%)	168 (4%)	33	48

5 of 168 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
23	Y	123	ARG
29	5	55	LEU
23	Y	175	ARG
25	0	104	LYS
29	5	147	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:

Mol	Chain	Res	Type
16	R	89	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
22	X	93	ASN
29	5	302	HIS
23	Y	99	HIS
11	M	84	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	917/1559 (58%)	213 (23%)	13 (1%)
2	B	51/69 (73%)	12 (23%)	1 (1%)
All	All	968/1628 (59%)	225 (23%)	14 (1%)

5 of 225 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	1676	A
1	A	1677	C
1	A	1678	C
1	A	1679	U
1	A	1681	G

5 of 14 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	2457	A
1	A	2507	A
2	B	1607	U
1	A	3159	A
1	A	3201	A

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 monosaccharides 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.

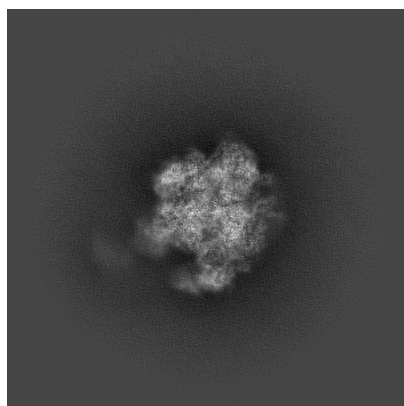
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-18460. These allow visual inspection of the internal detail of the map and identification of artifacts.

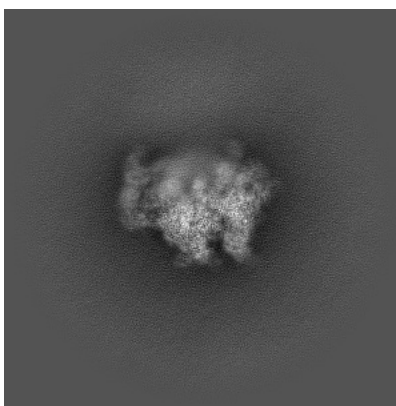
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

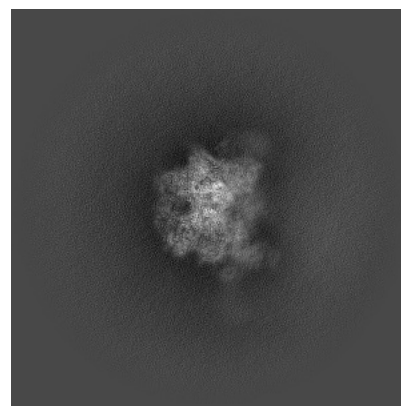
6.1.1 Primary map



X

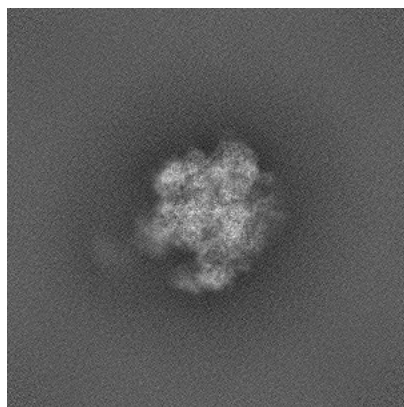


Y

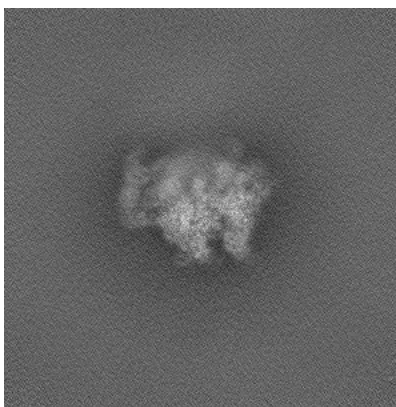


Z

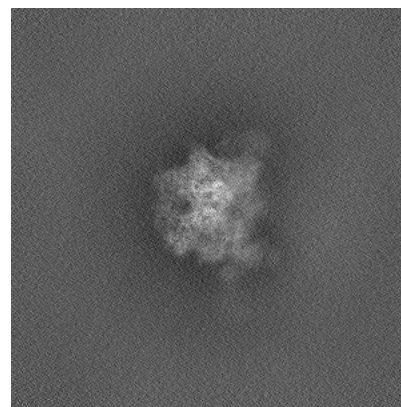
6.1.2 Raw map



X



Y

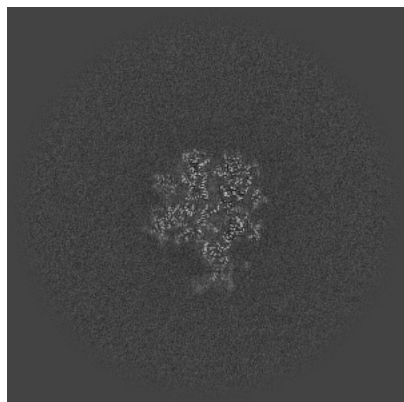


Z

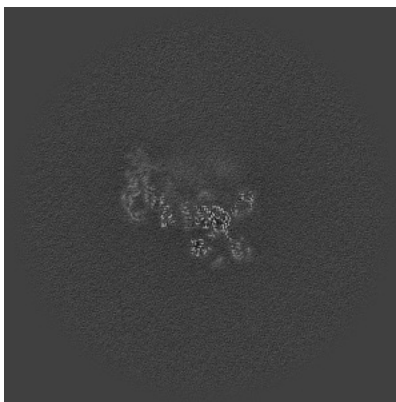
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

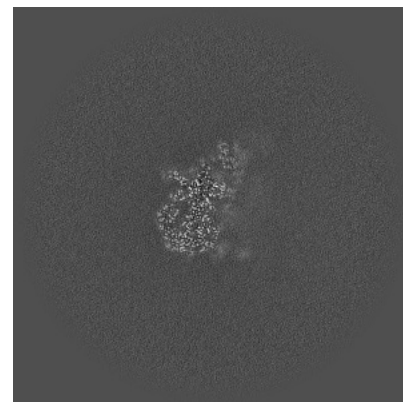
6.2.1 Primary map



X Index: 300

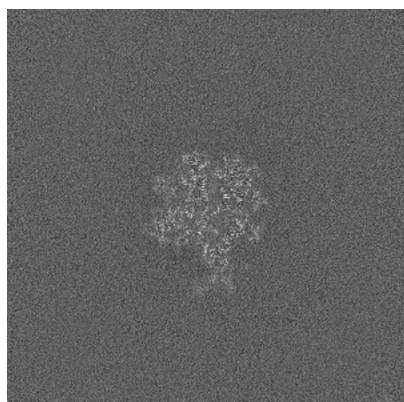


Y Index: 300

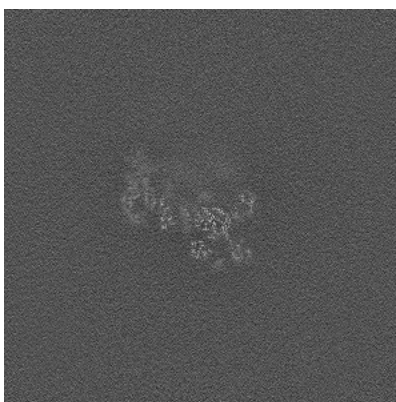


Z Index: 300

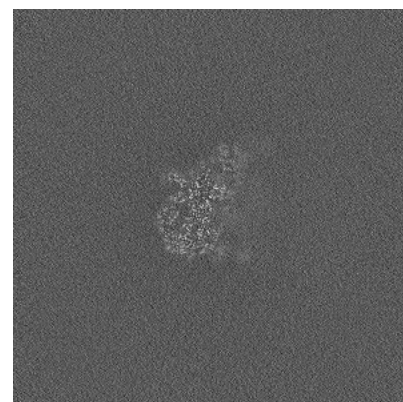
6.2.2 Raw map



X Index: 300



Y Index: 300

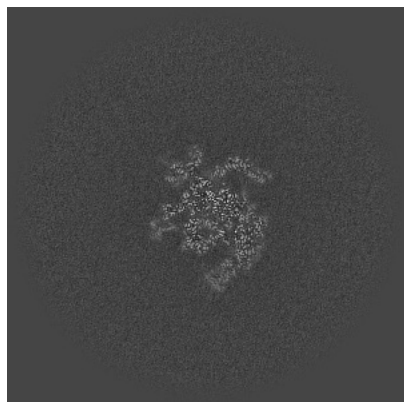


Z Index: 300

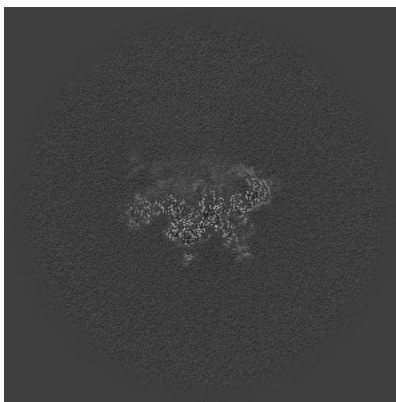
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

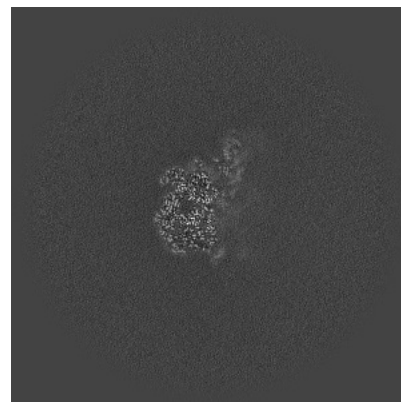
6.3.1 Primary map



X Index: 283

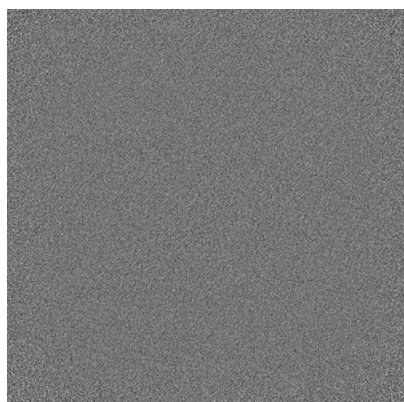


Y Index: 327

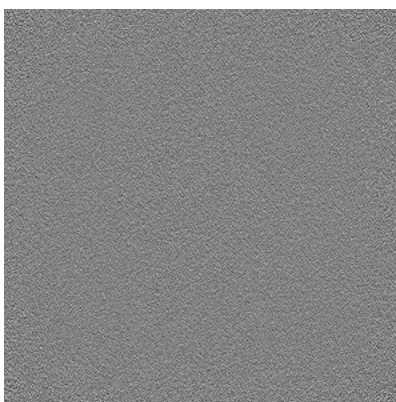


Z Index: 294

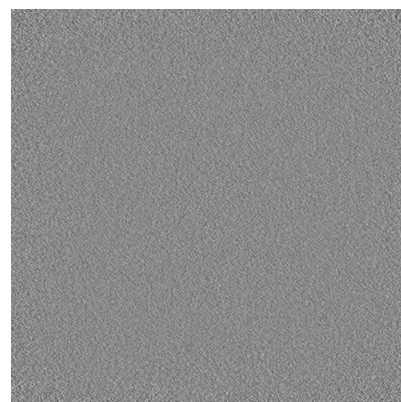
6.3.2 Raw map



X Index: 0



Y Index: 0

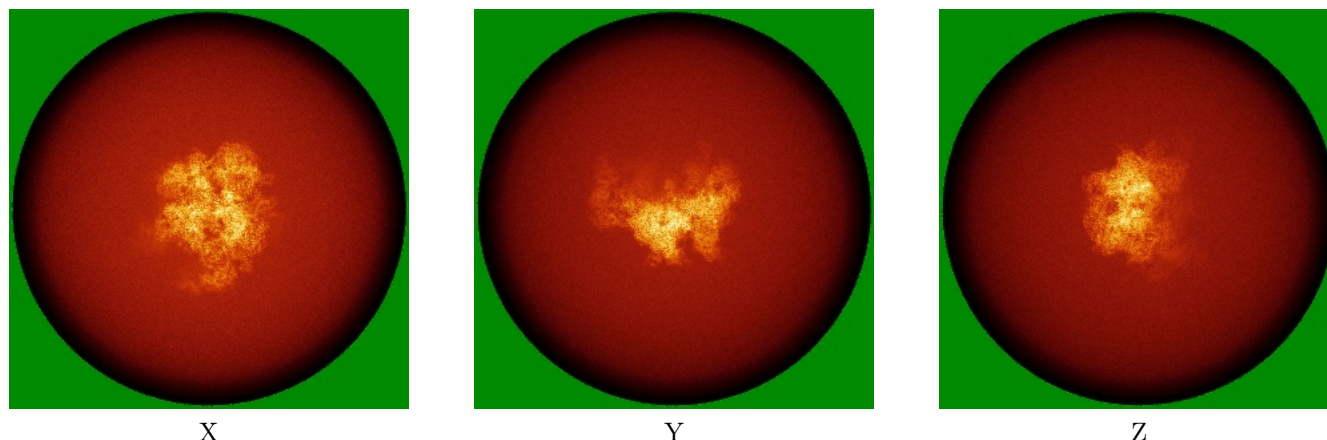


Z Index: 0

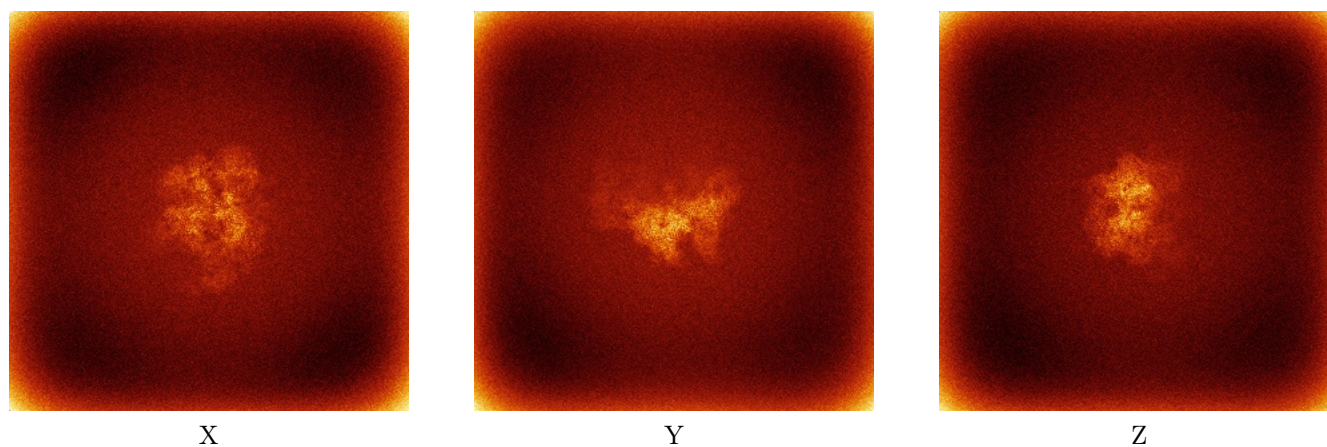
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map



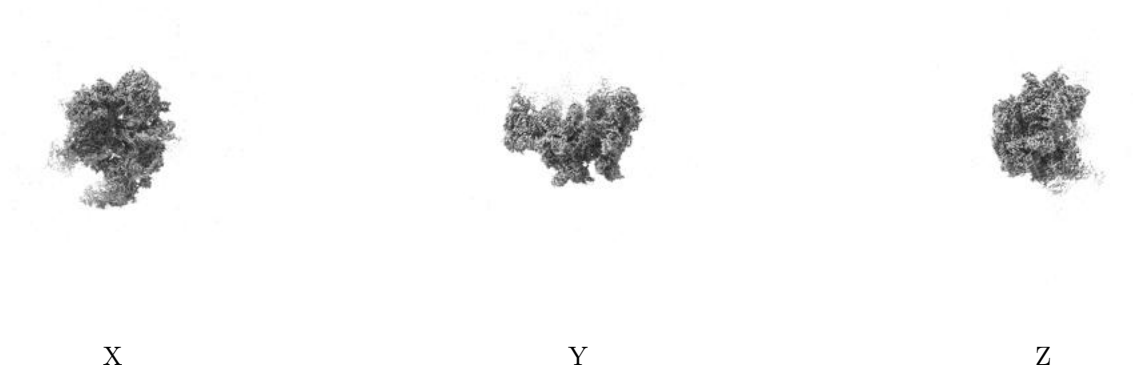
6.4.2 Raw map



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

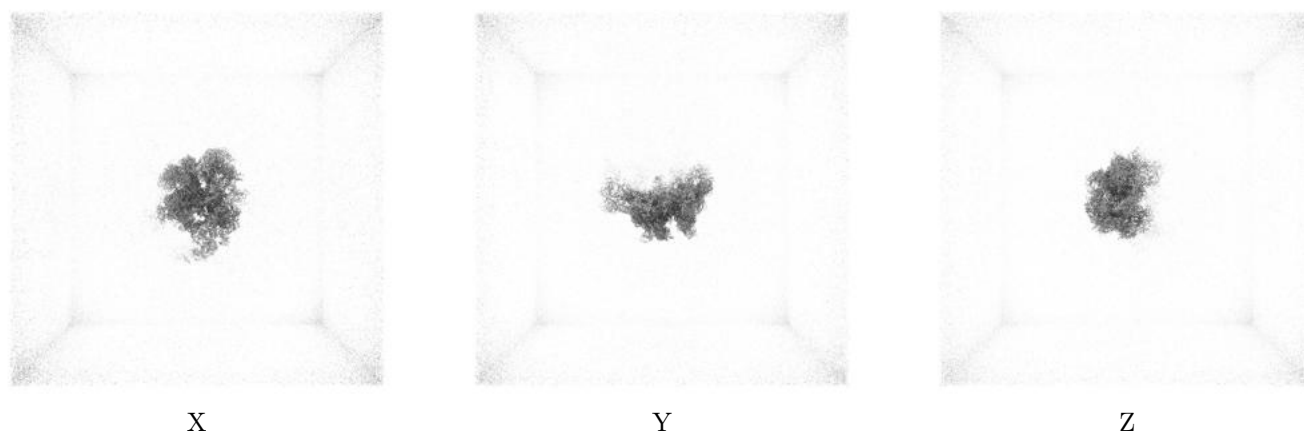
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.3. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

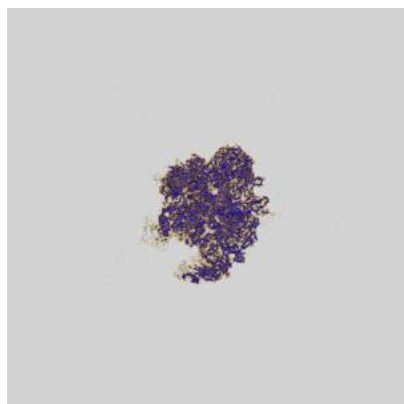
6.6 Mask visualisation [i](#)

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

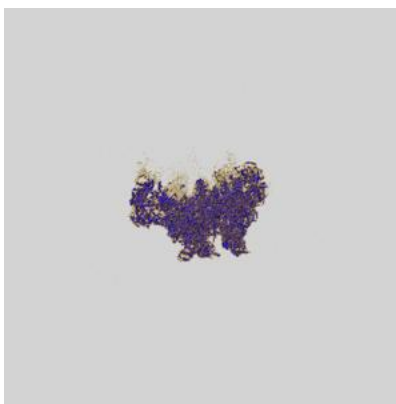
A mask typically either:

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

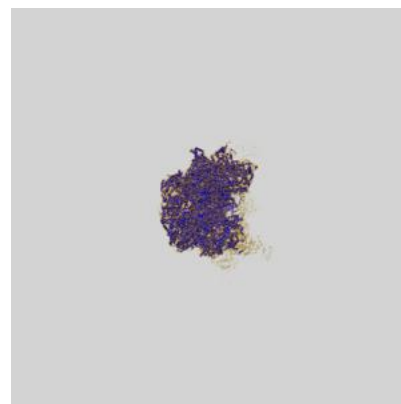
6.6.1 emd_18460_msk_1.map [i](#)



X



Y

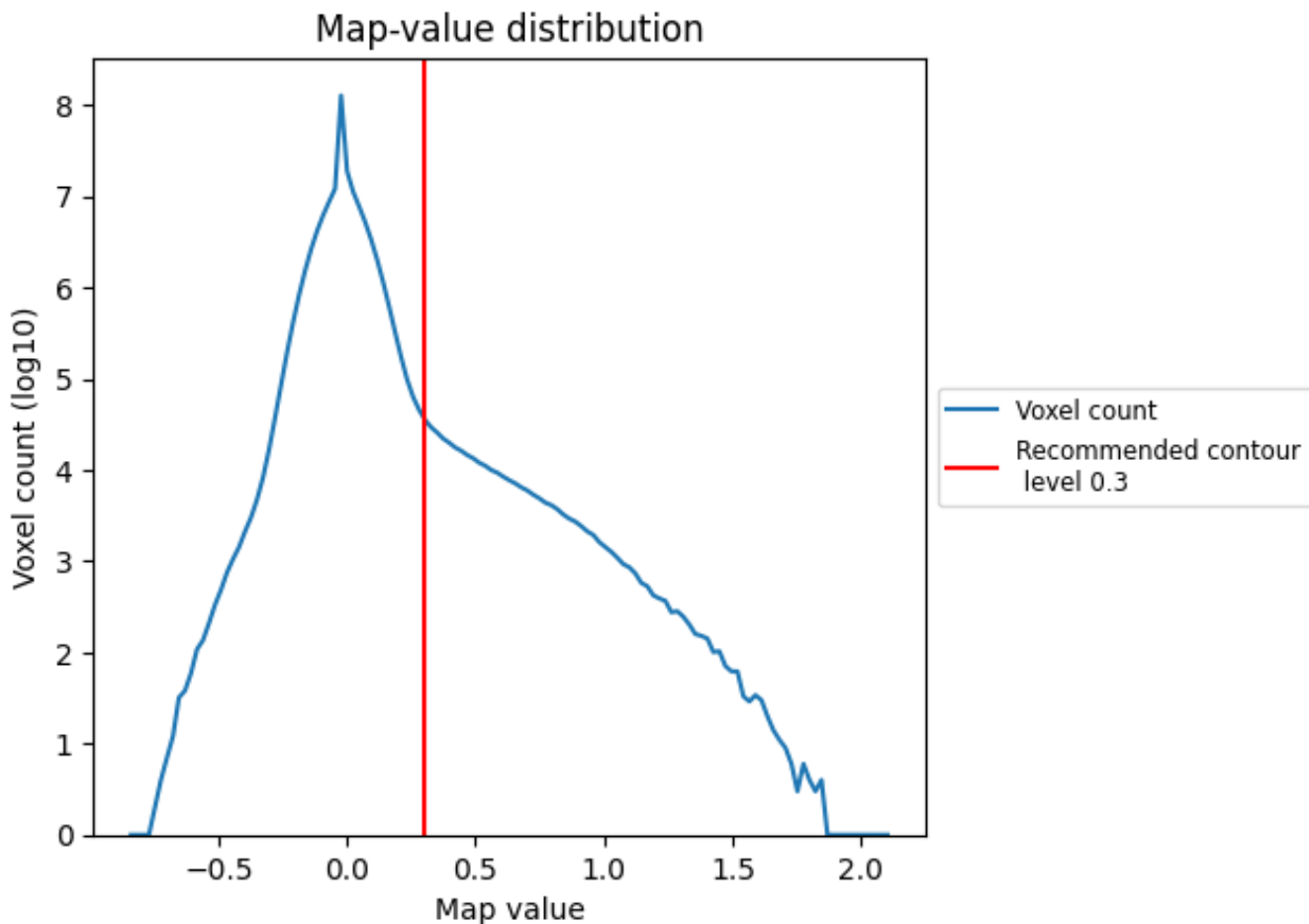


Z

7 Map analysis [i](#)

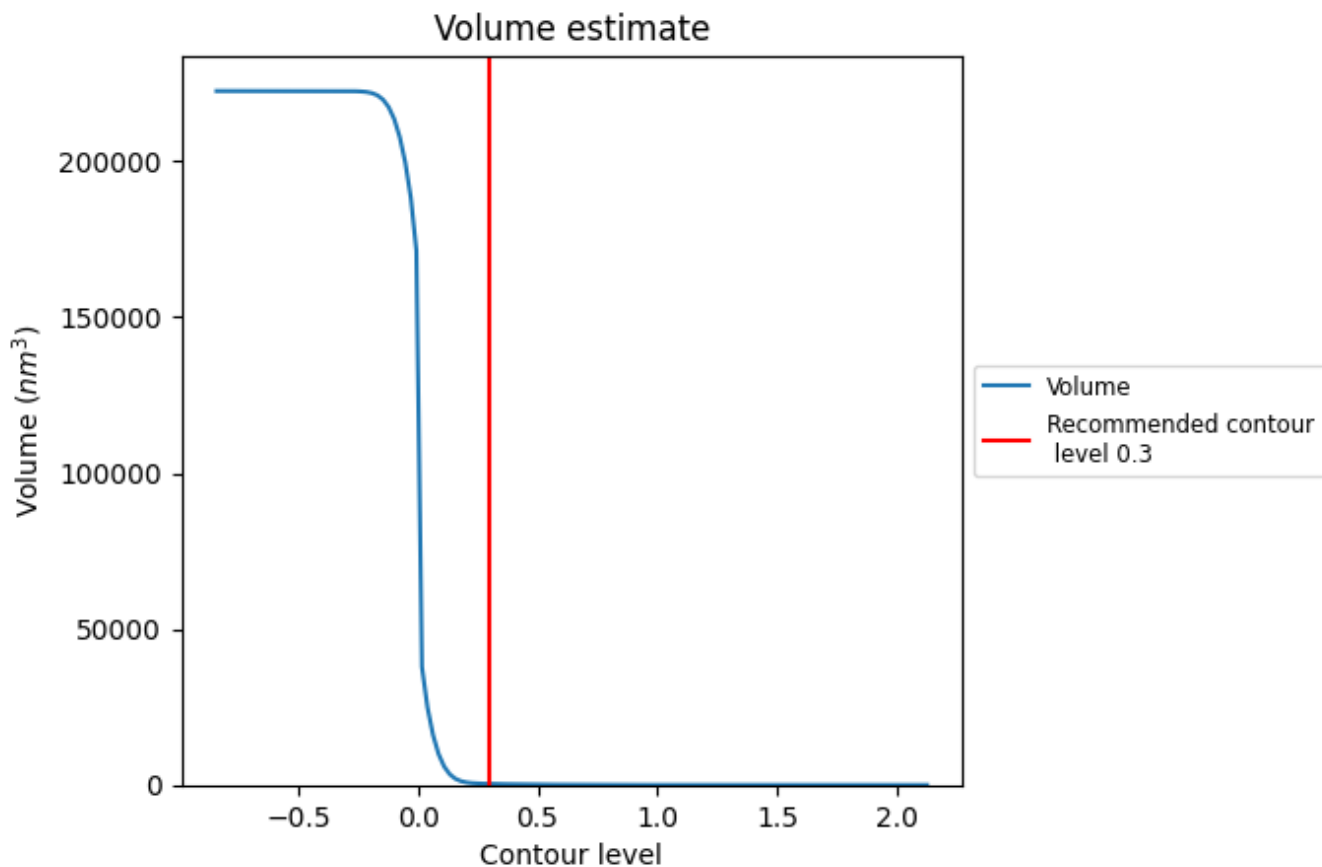
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

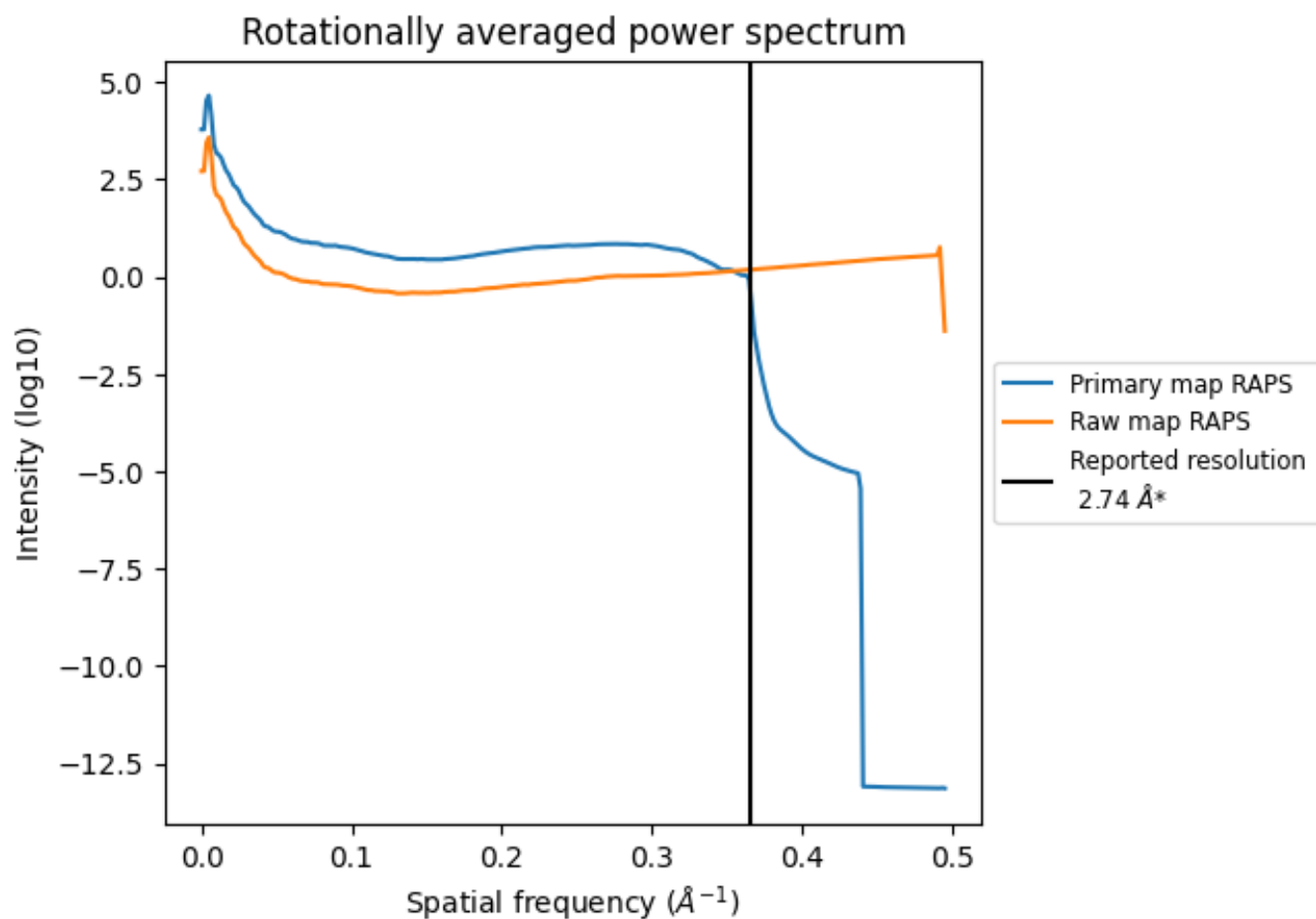
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 342 nm^3 ; this corresponds to an approximate mass of 309 kDa.

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

7.3 Rotationally averaged power spectrum [i](#)

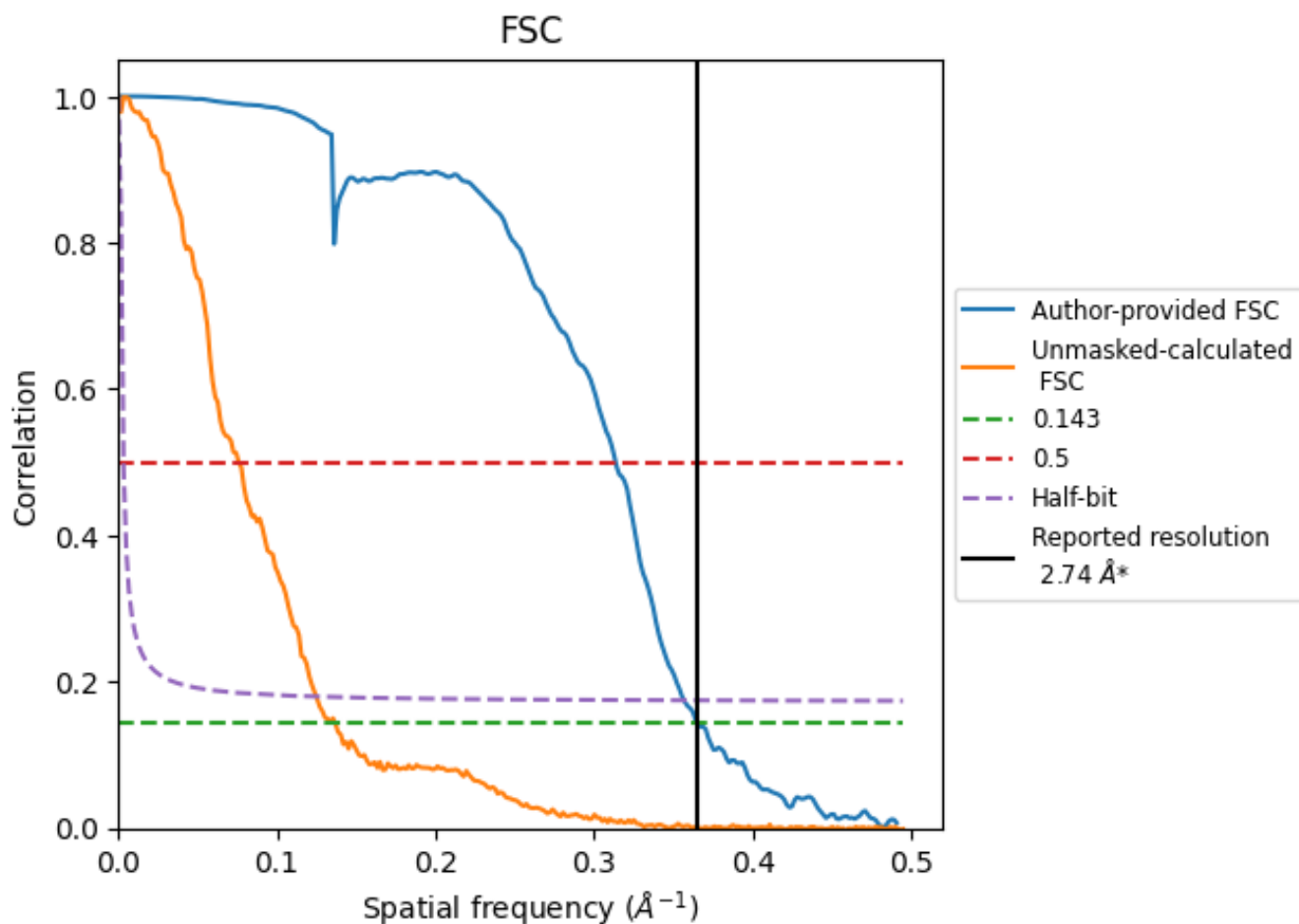


*Reported resolution corresponds to spatial frequency of 0.365 Å⁻¹

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 0.365 Å⁻¹

8.2 Resolution estimates [i](#)

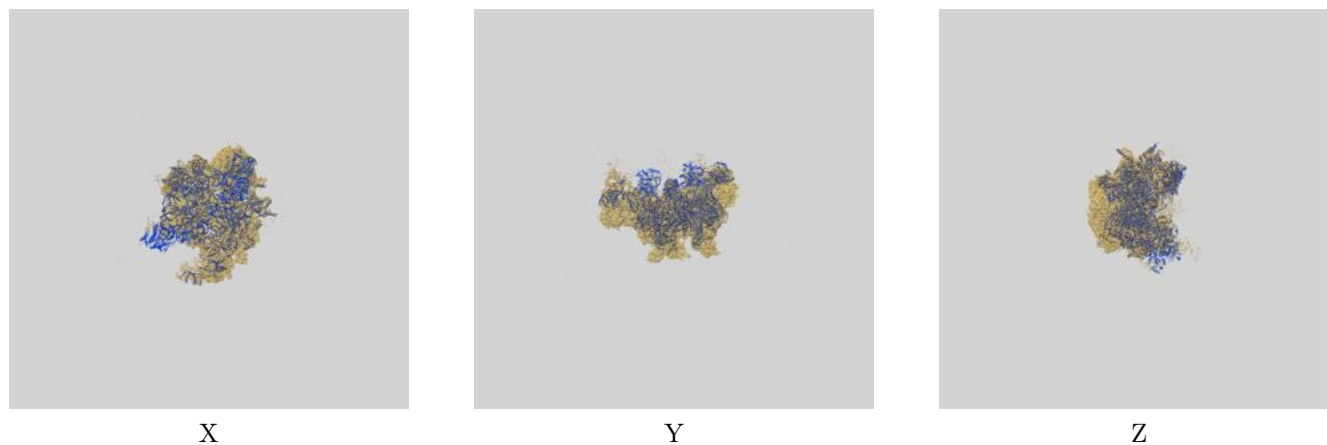
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.74	-	-
Author-provided FSC curve	2.74	3.19	2.80
Unmasked-calculated*	7.32	13.18	8.01

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 7.32 differs from the reported value 2.74 by more than 10 %

9 Map-model fit [i](#)

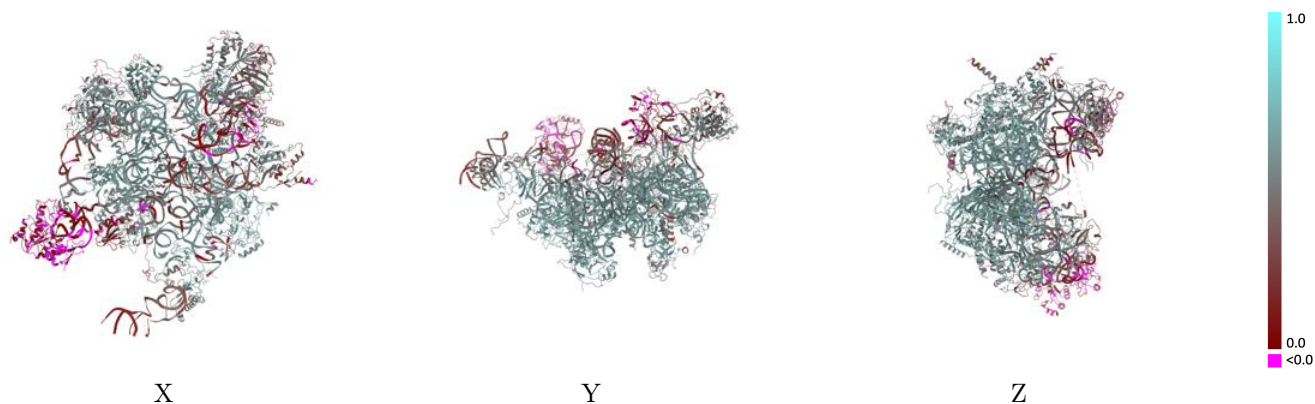
This section contains information regarding the fit between EMDB map EMD-18460 and PDB model 8QU1. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlay [i](#)



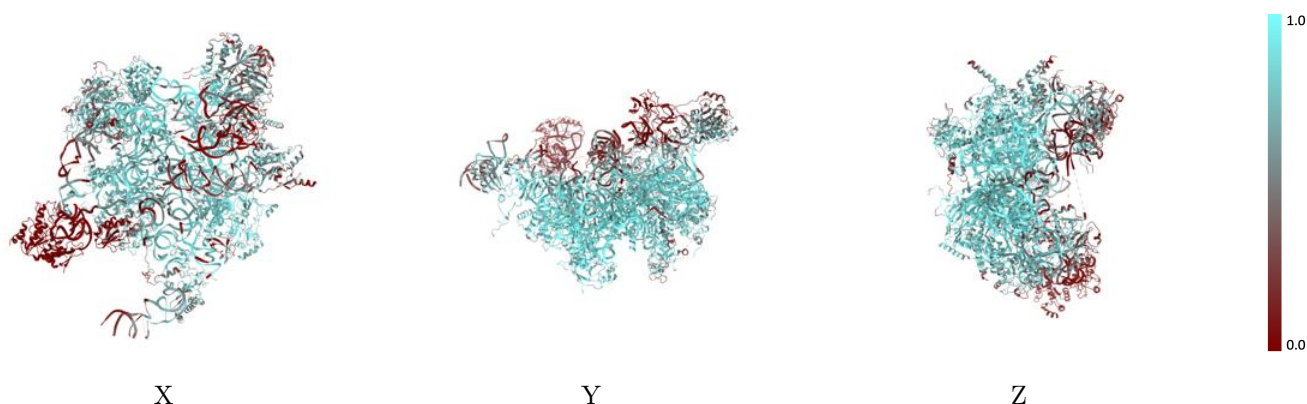
The images above show the 3D surface view of the map at the recommended contour level 0.3 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



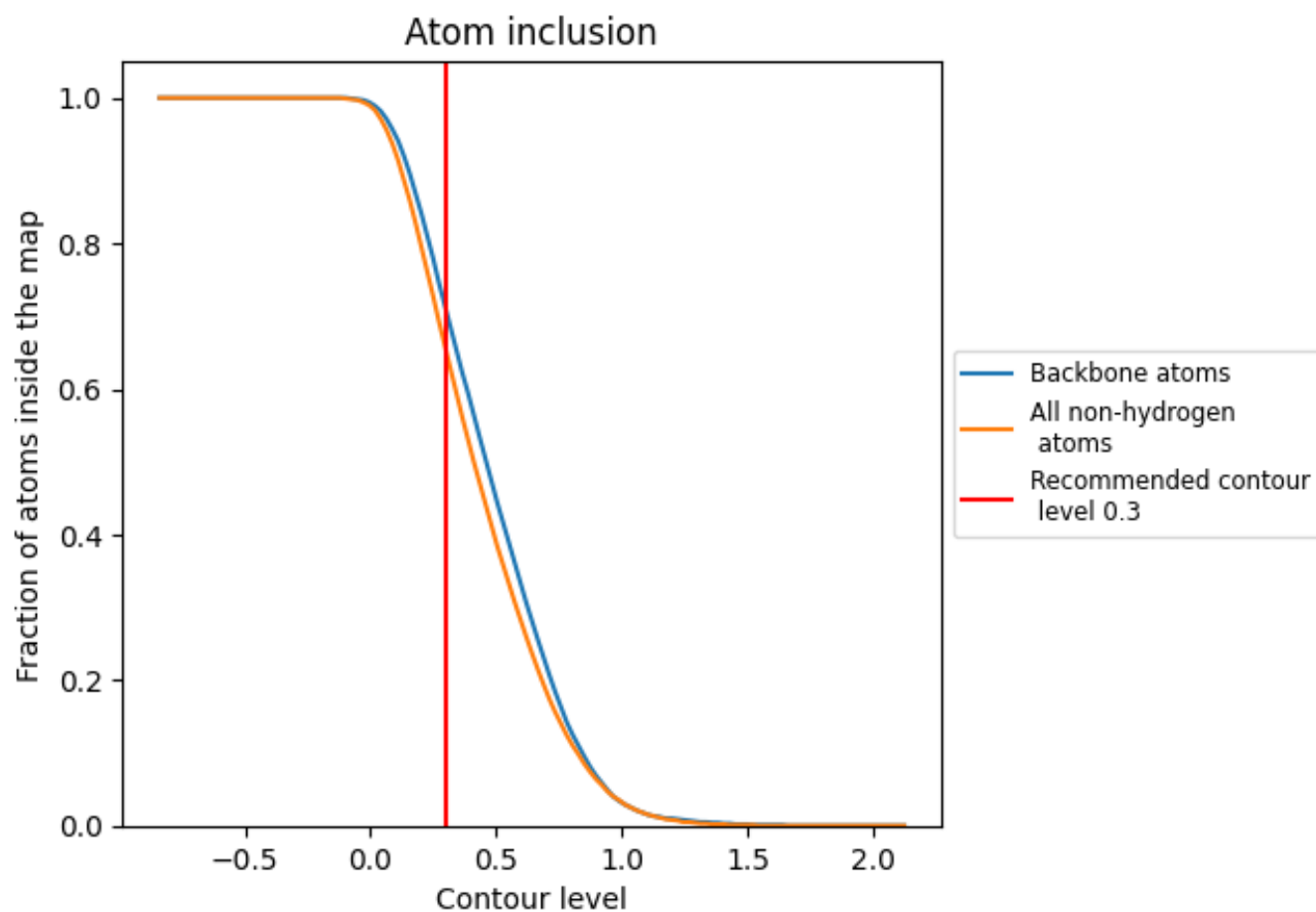
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.3).































































9.4 Atom inclusion [i](#)



At the recommended contour level, 71% of all backbone atoms, 65% 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 (0.3) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6540	 0.4790
0	 0.7840	 0.5710
1	 0.3570	 0.3550
2	 0.8550	 0.6220
3	 0.8670	 0.6100
5	 0.5440	 0.4530
6	 0.3910	 0.4050
A	 0.7090	 0.4820
B	 0.4830	 0.2760
D	 0.0230	 0.1330
E	 0.6900	 0.5340
F	 0.8660	 0.6080
H	 0.4500	 0.3940
I	 0.0920	 0.1150
J	 0.0020	 0.0200
K	 0.8170	 0.5860
L	 0.3230	 0.3590
M	 0.8370	 0.5920
N	 0.2480	 0.3090
O	 0.8220	 0.5870
P	 0.6560	 0.5160
Q	 0.5850	 0.4850
R	 0.8670	 0.6070
S	 0.7910	 0.5730
T	 0.8210	 0.5980
U	 0.7890	 0.5650
V	 0.6770	 0.5280
W	 0.7390	 0.5600
X	 0.6670	 0.5110
Y	 0.8120	 0.5820
Z	 0.8350	 0.5910

