wwPDB EM Validation Summary Report

Sep 25, 2024 – 11:35 am BST

PDB ID	:	9FQ0
EMDB ID	:	EMD-50642
Title	:	Human NatA-NAC-MAP1 80S ribosome complex
Authors	:	Klein, M.A.; Wild, K.; Sinning, I.
Deposited on	:	2024-06-14
Resolution	:	4.67 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:

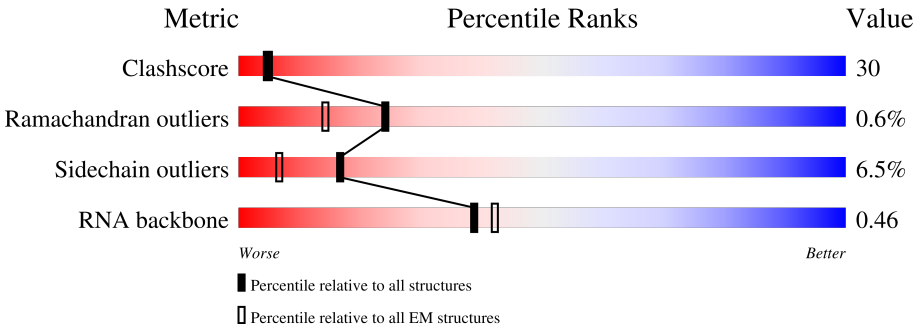
EMDB validation analysis	:	0.0.1.dev112
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.38.2

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 4.67 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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	8	58	38% 50% 12%
2	E	392	8% 49% 29% • 19%
3	D	206	33% 21% 34% • 41%
4	1	5070	• • • 94%
5	LY	145	10% 28% 55% 6% 11%
6	Lh	123	9% 91% 7% • •
7	LX	156	22% 35% 36% • 26%

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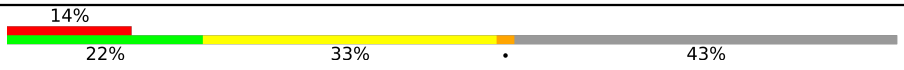
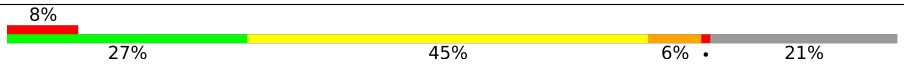
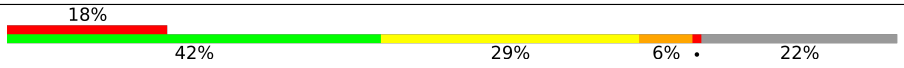
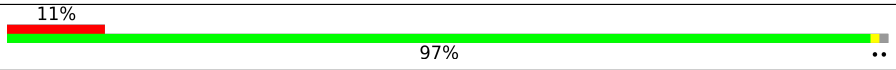
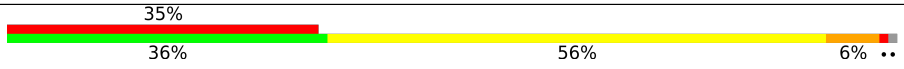
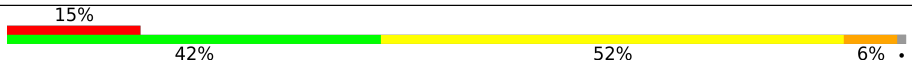
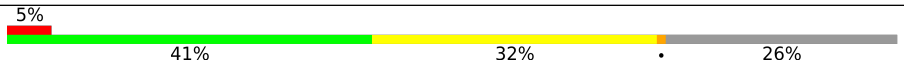
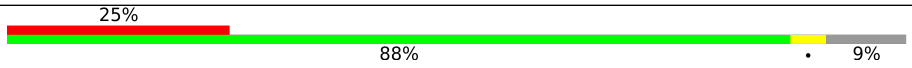
Mol	Chain	Length	Quality of chain
8	A	221	
9	LU	128	
10	LR	196	
11	Lk	70	
12	2	171	
13	B	840	
14	LC	427	
15	LE	288	
16	Lr	137	

2 Entry composition (i)

There are 17 unique types of molecules in this entry. The entry contains 31676 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 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	8	58	1237	554	224	401	58	0	0

- Molecule 2 is a protein called Methionine aminopeptidase 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	E	317	2498	1569	445	466	18	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	-5	GLY	-	expression tag	UNP P53582
E	-4	PRO	-	expression tag	UNP P53582
E	-3	GLY	-	expression tag	UNP P53582
E	-2	SER	-	expression tag	UNP P53582
E	-1	GLY	-	expression tag	UNP P53582
E	0	SER	-	expression tag	UNP P53582

- Molecule 3 is a protein called Transcription factor BTF3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	122	937	584	175	175	3	0	0

- Molecule 4 is a RNA chain called 28S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	1	298	6383	2840	1162	2083	298	0	0

- Molecule 5 is a protein called Large ribosomal subunit protein uL24.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	LY	129	Total	C	N	O	S	0	0
			1075	675	218	179	3		

- Molecule 6 is a protein called 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	Lh	122	Total	C	N	O	S	0	0
			1015	641	205	168	1		

- Molecule 7 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	LX	116	Total	C	N	O	S	0	0
			950	606	178	165	1		

- Molecule 8 is a protein called Nascent polypeptide-associated complex subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	A	125	Total	C	N	O	S	0	0
			967	602	173	188	4		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-5	GLY	-	expression tag	UNP Q13765
A	-4	PRO	-	expression tag	UNP Q13765
A	-3	GLY	-	expression tag	UNP Q13765
A	-2	SER	-	expression tag	UNP Q13765
A	-1	GLY	-	expression tag	UNP Q13765
A	0	SER	-	expression tag	UNP Q13765

- Molecule 9 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	LU	101	Total	C	N	O	S	0	0
			825	529	144	150	2		

- Molecule 10 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	LR	153	Total	C	N	O	S	0	0
			1281	799	276	197	9		

- Molecule 11 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	Lk	69	Total	C	N	O	S	0	0
			569	366	103	99	1		

- Molecule 12 is a protein called N-alpha-acetyltransferase 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	2	169	Total	C	N	O	S	0	0
			1388	869	253	256	10		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
2	0	MET	-	initiating methionine	UNP P41227
2	1	GLY	-	expression tag	UNP P41227

- Molecule 13 is a protein called N-alpha-acetyltransferase 15, NatA auxiliary subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	B	834	Total	C	N	O	S	0	0
			6881	4379	1189	1272	41		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	?	-	ALA	deletion	UNP Q9BXJ9

- Molecule 14 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	LC	365	Total	C	N	O	S	0	0
			2908	1829	580	486	13		

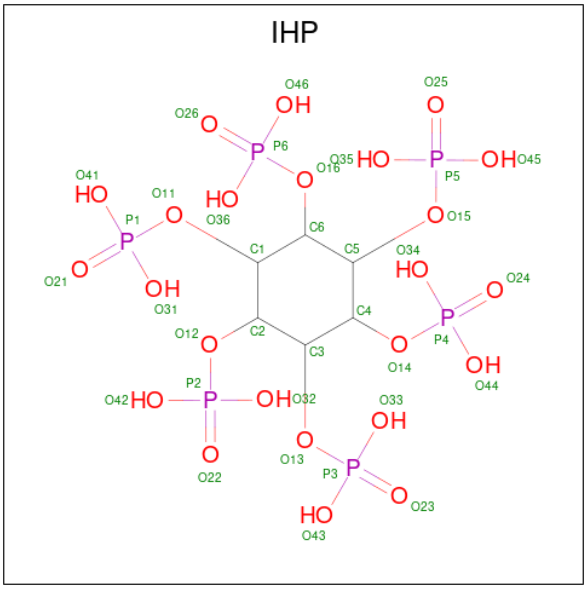
- Molecule 15 is a protein called Large ribosomal subunit protein eL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	LE	214	Total	C	N	O	S	0	0
			1724	1111	327	282	4		

- Molecule 16 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	Lr	125	Total	C	N	O	S	0	0
			1002	622	207	168	5		

- Molecule 17 is INOSITOL HEXAKISPHOSPHATE (three-letter code: IHP) (formula: $C_6H_{18}O_{24}P_6$).



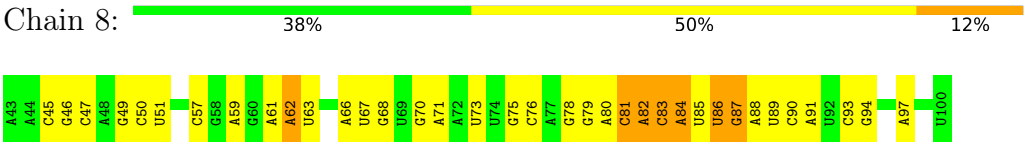
Mol	Chain	Residues	Atoms				AltConf
17	B	1	Total	C	O	P	0
			36	6	24	6	

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.

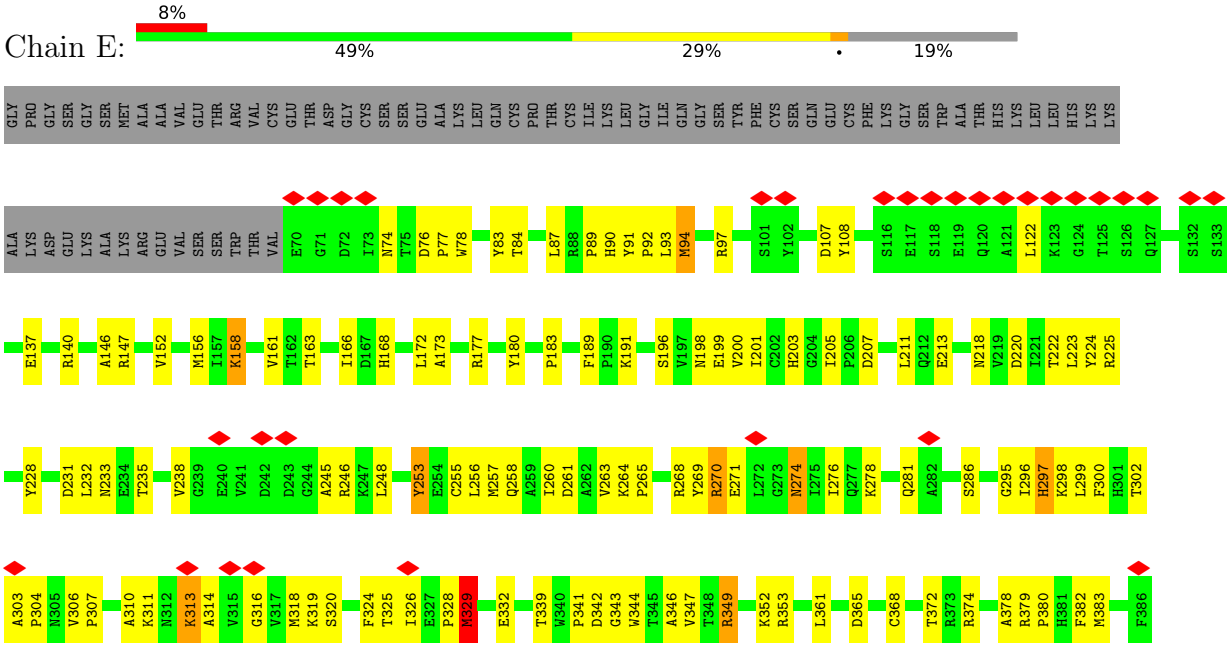
• Molecule 1: 5.8S rRNA

Chain 8:



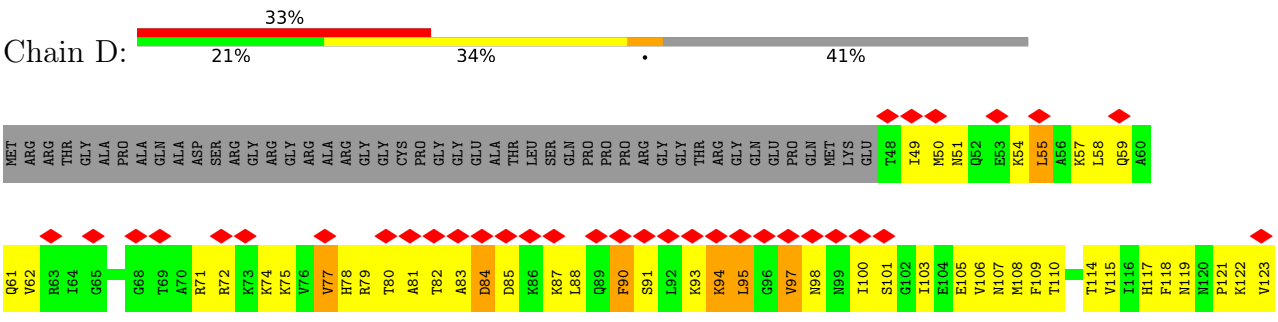
• Molecule 2: Methionine aminopeptidase 1

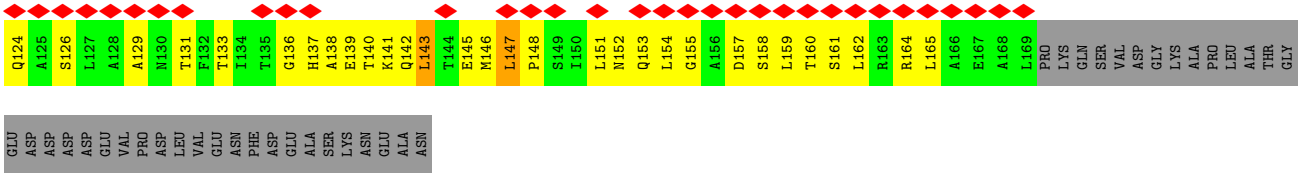
Chain E:



• Molecule 3: Transcription factor BTF3

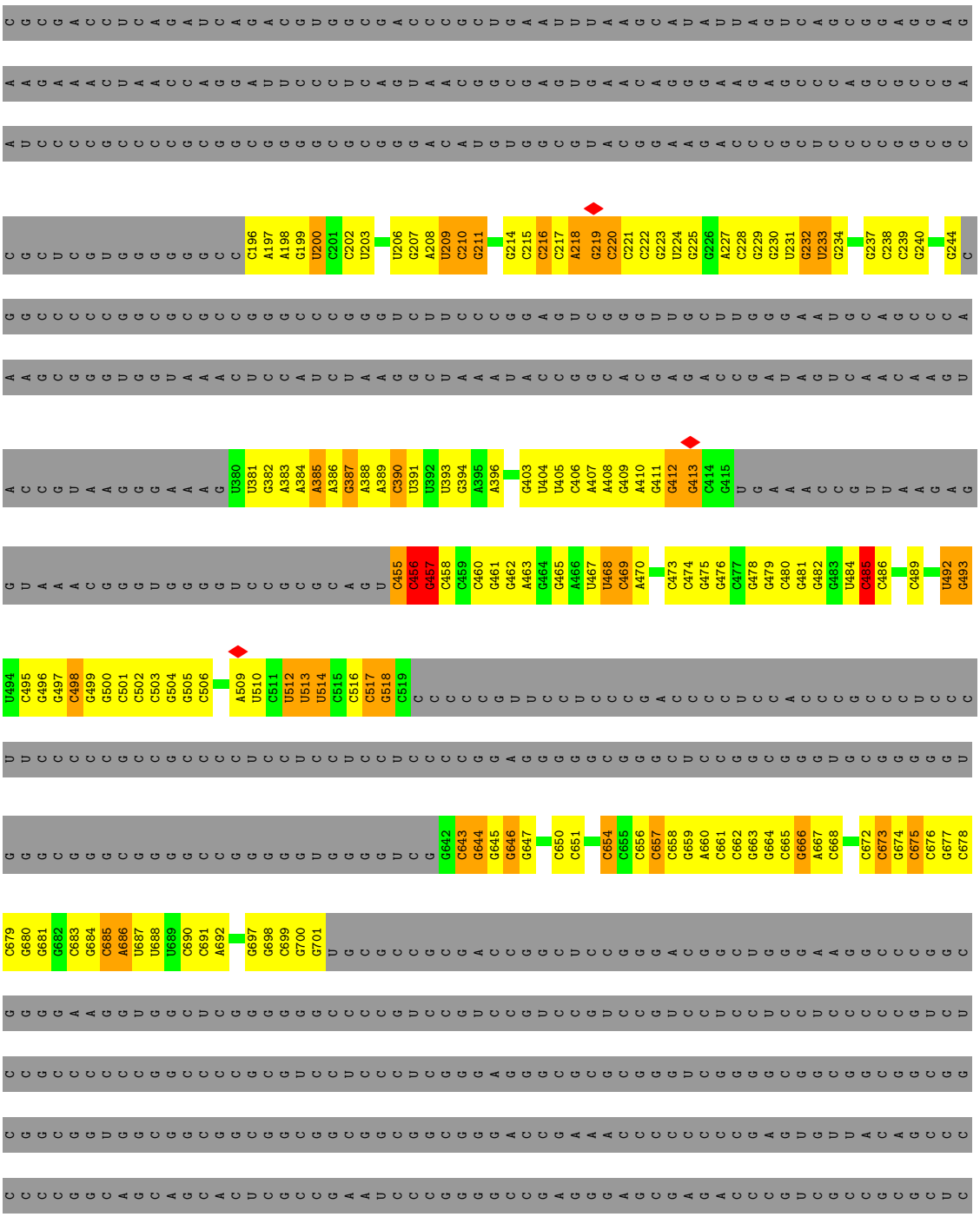
Chain D:

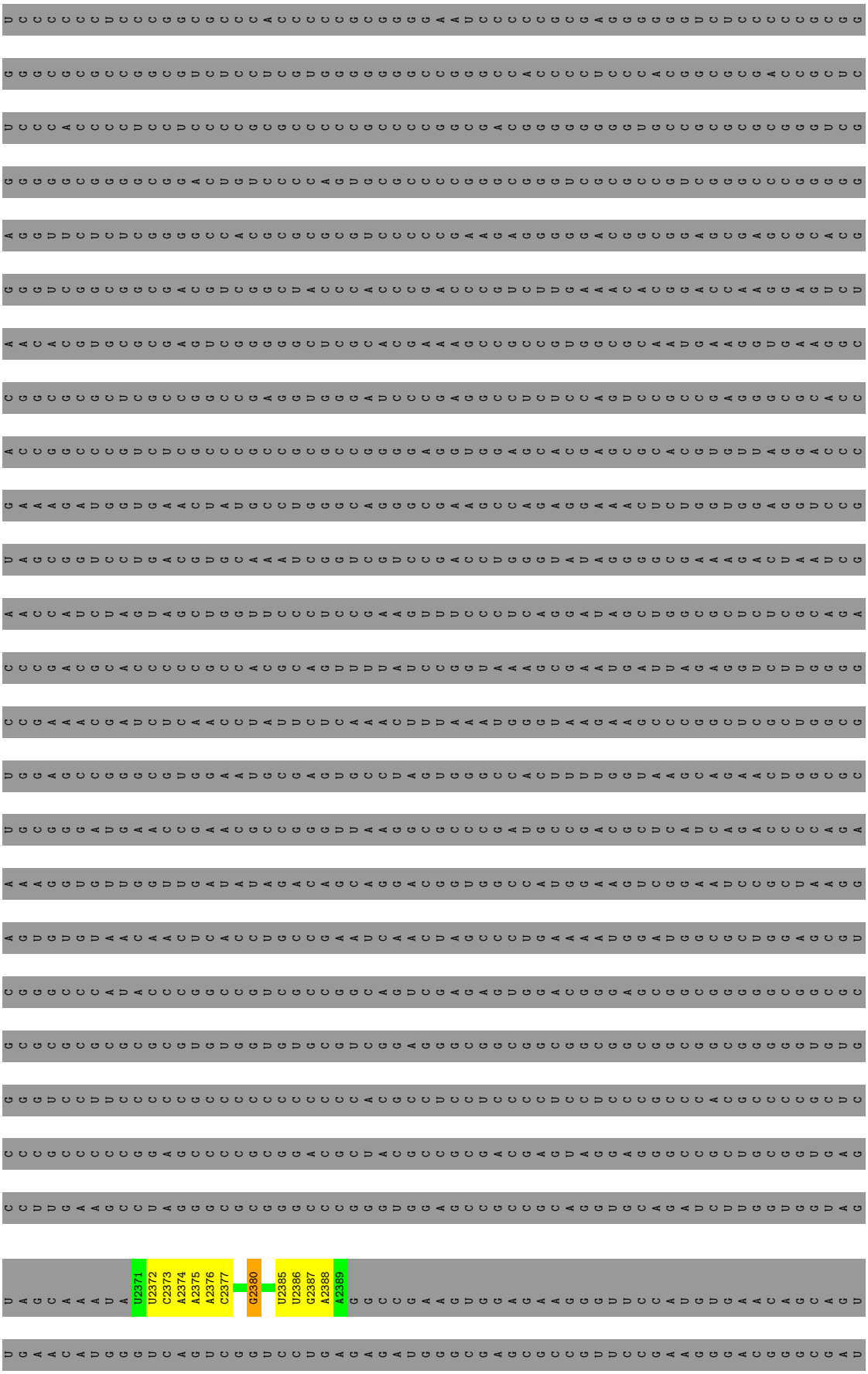


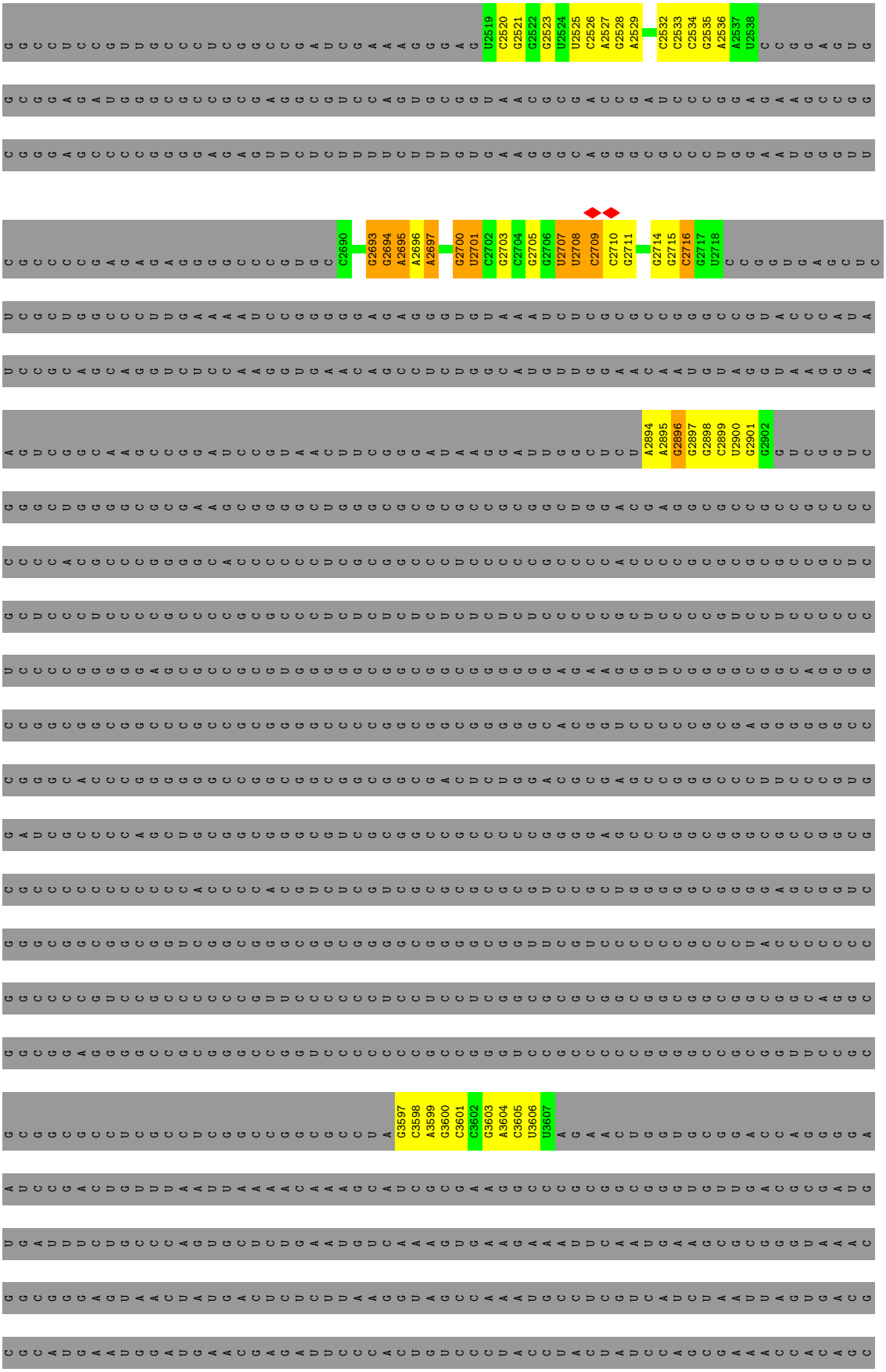


• Molecule 4: 28S rRNA

Chain 1: 94%




U2371
U2372
C2373
A2374
A2375
A2376
C2377
G2380
U2385
U2386
G2387
A2388
A2389


U2519
C2520
G2521
G2522
G2523
U2524
U2525
C2526
A2527
G2528
A2529
C2532
C2533
C2534
G2535
A2536
A2537
U2538
C2690
G2693
G2694
A2695
A2696
A2697
G2700
U2701
C2702
G2703
C2704
G2705
G2706
U2707
U2708
C2709
C2710
G2711
G2714
G2715
C2716
G2717
U2718
A2894
A2895
G2896
G2897
G2898
C2899
U2900
G2901
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G3603
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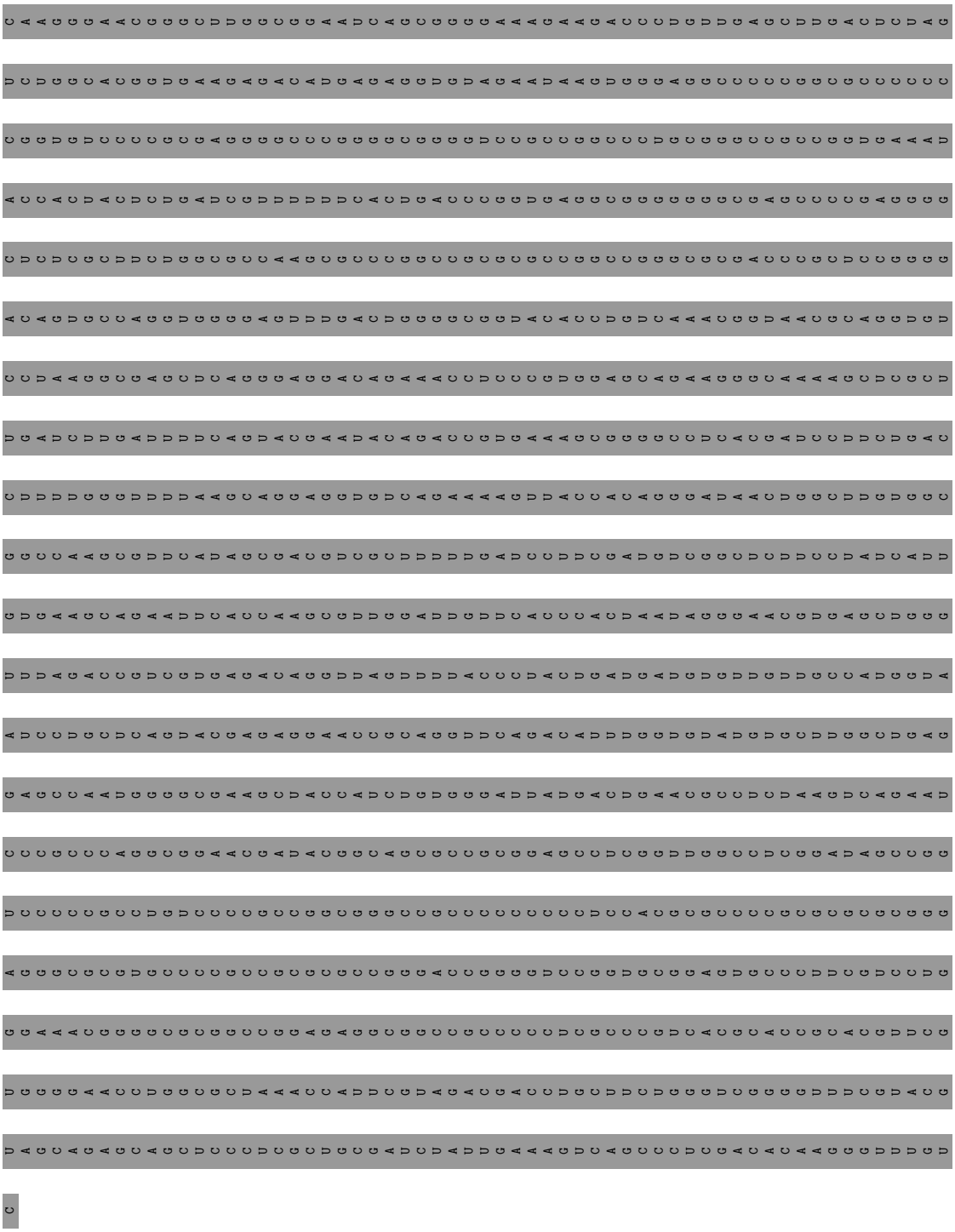
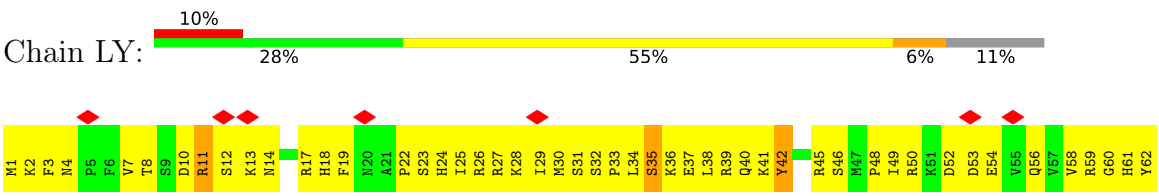
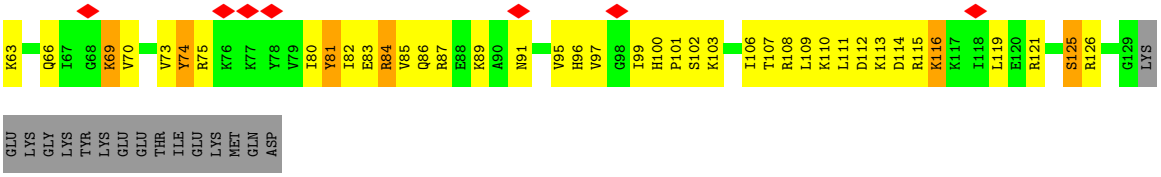
C3605
U3606
U3607



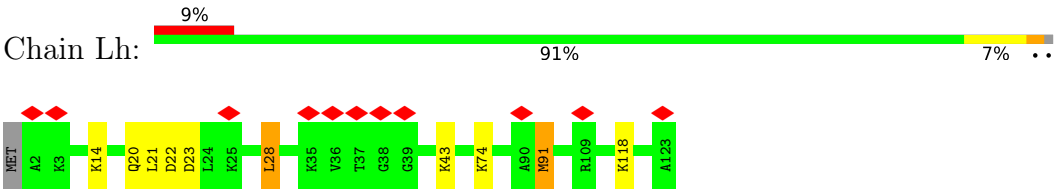
• Molecule 5: Large ribosomal subunit protein uL24

Chain LY:

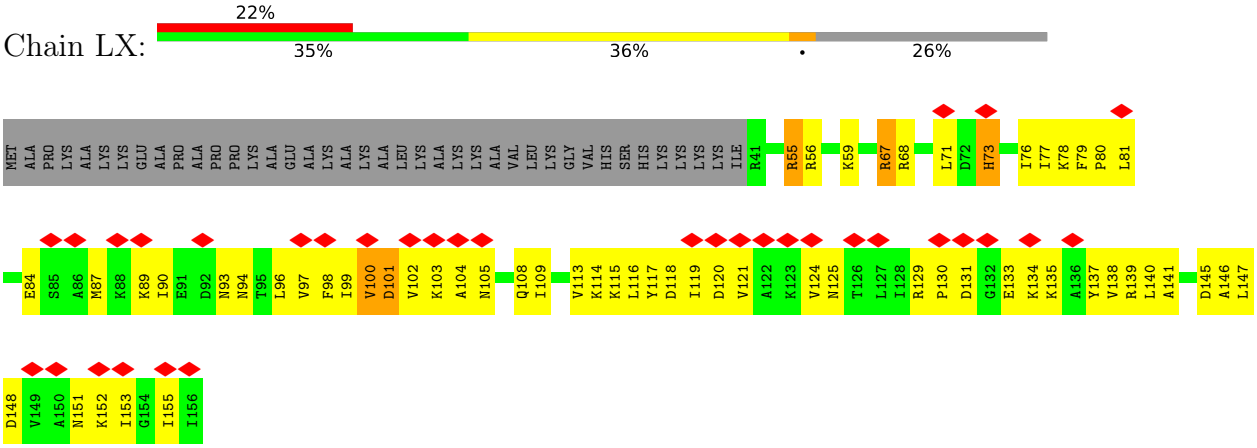




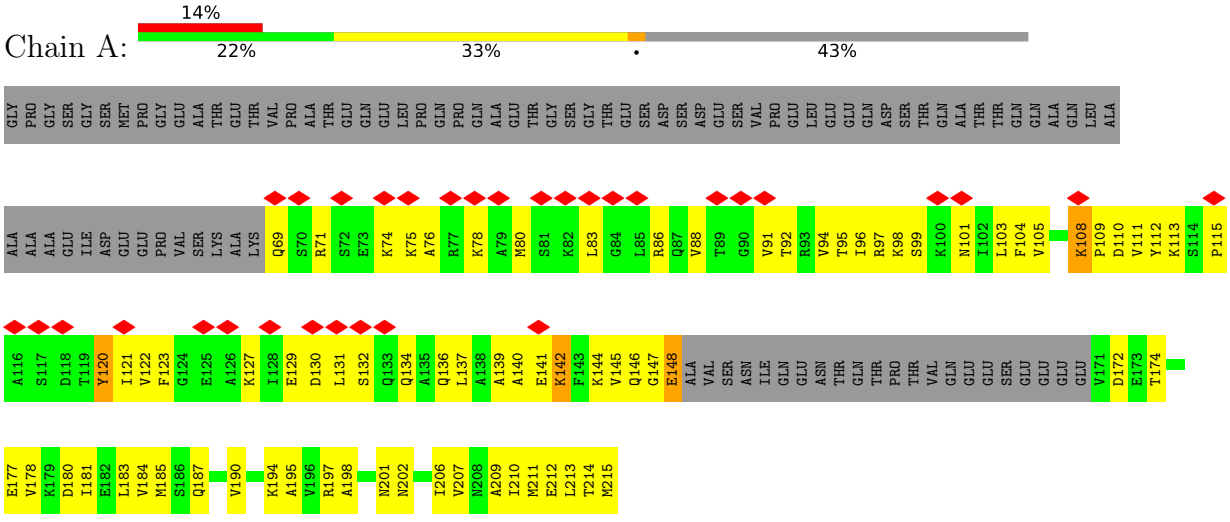
• Molecule 6: 60S ribosomal protein L35



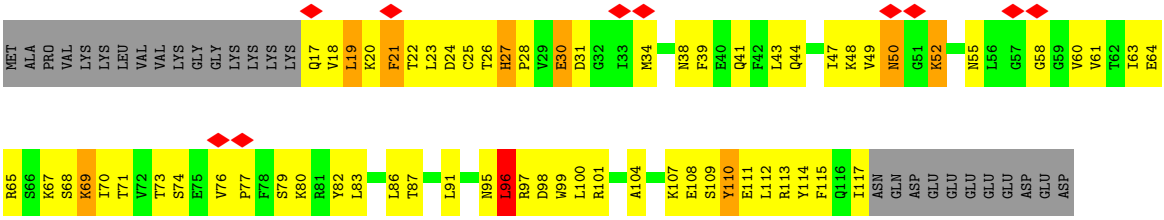
• Molecule 7: 60S ribosomal protein L23a



• Molecule 8: Nascent polypeptide-associated complex subunit alpha

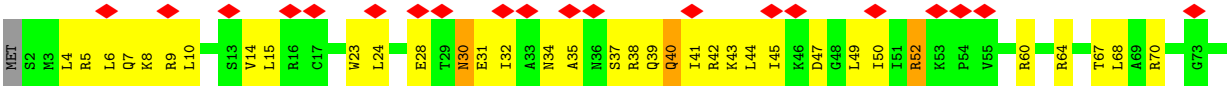


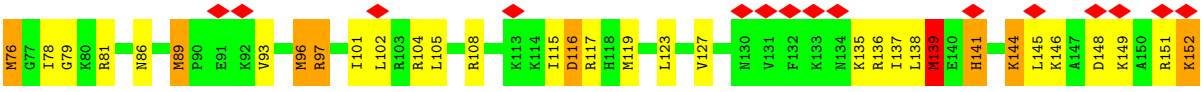
• Molecule 9: 60S ribosomal protein L22

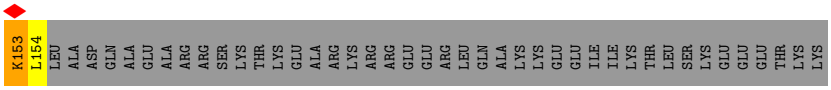


• Molecule 10: 60S ribosomal protein L19

Chain LR:

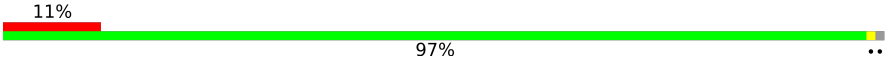


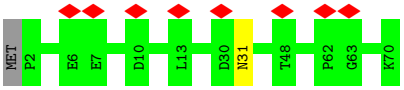




• Molecule 11: 60S ribosomal protein L38

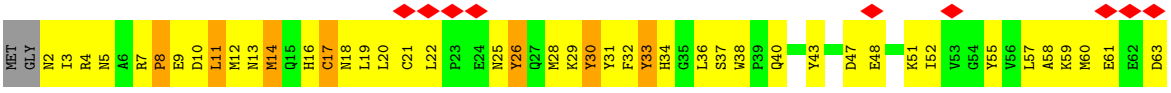
Chain Lk:

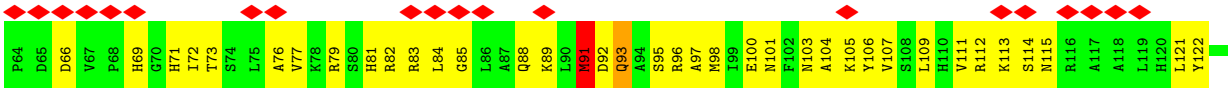


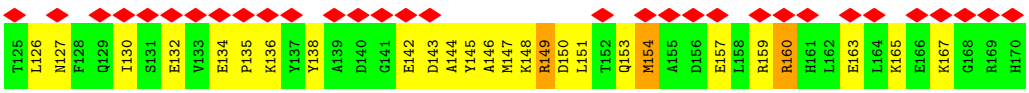


• Molecule 12: N-alpha-acetyltransferase 10

Chain 2:

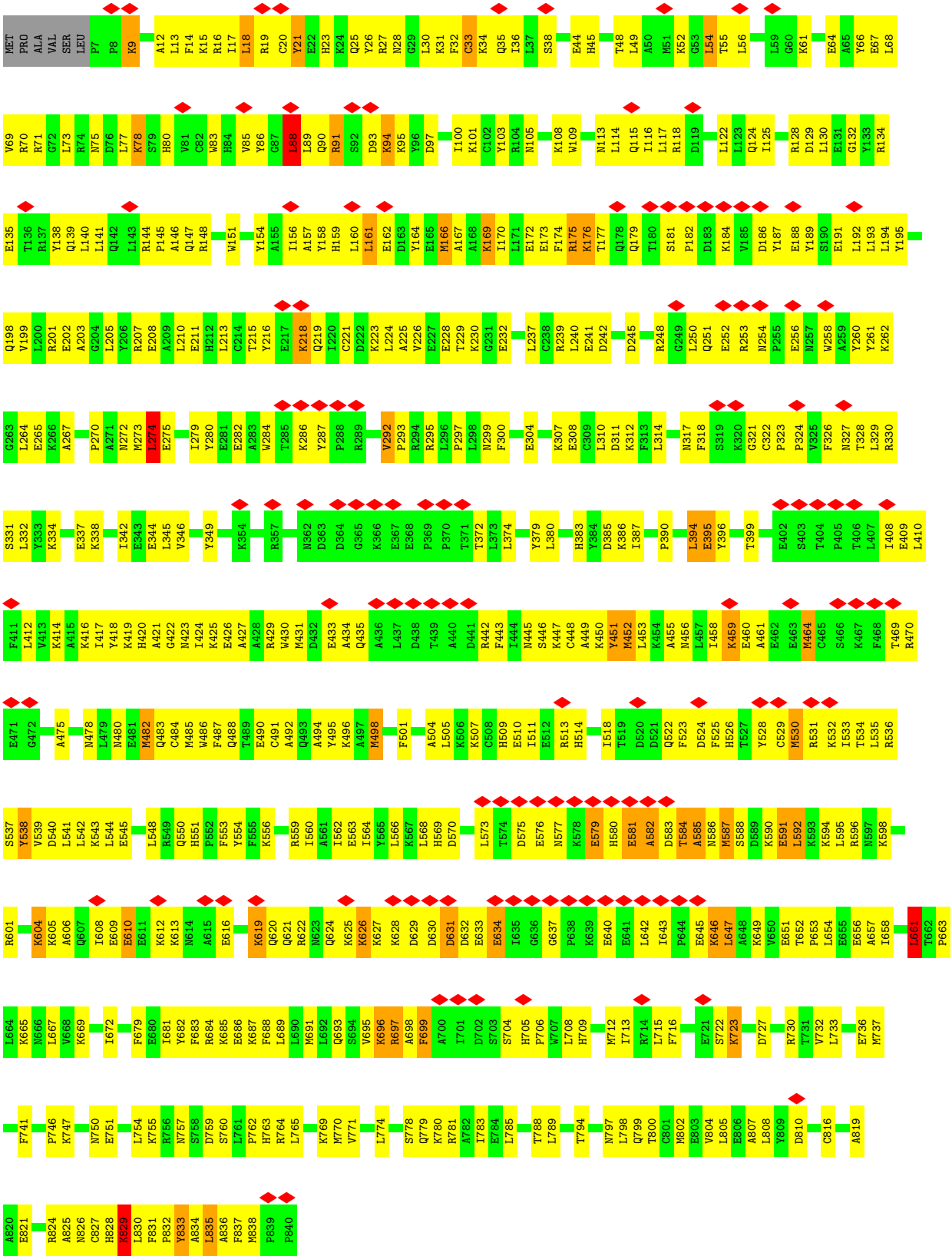






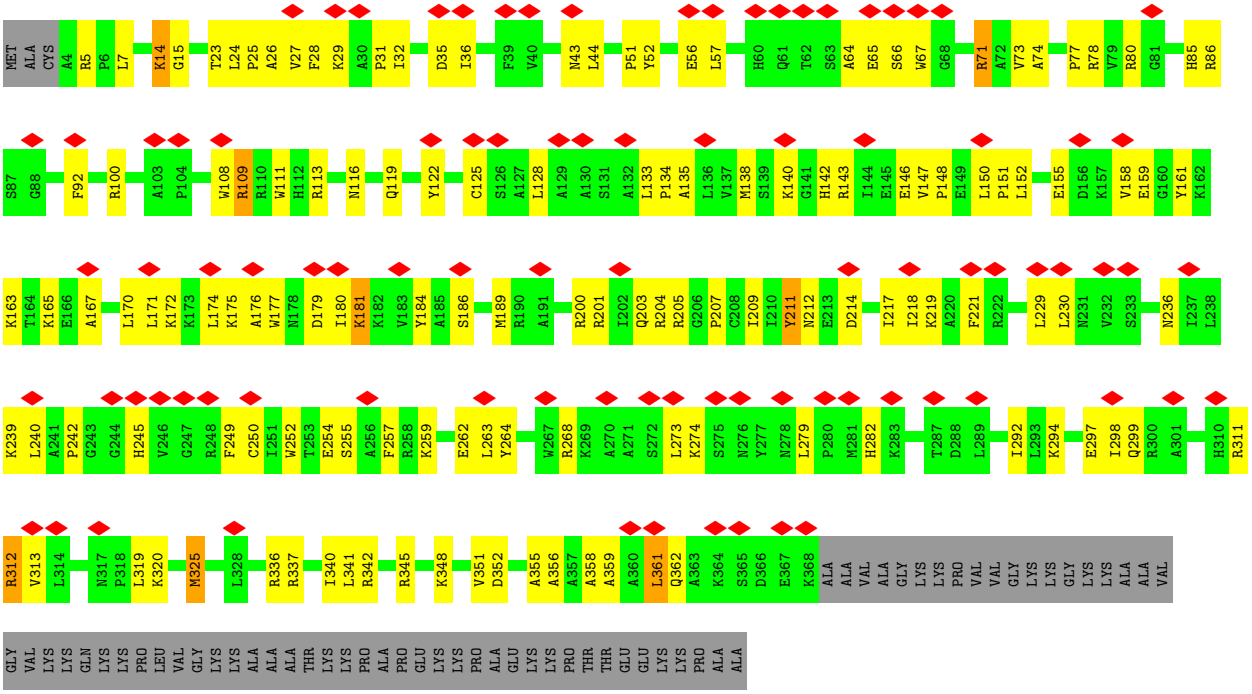
• Molecule 13: N-alpha-acetyltransferase 15, NatA auxiliary subunit

Chain B:



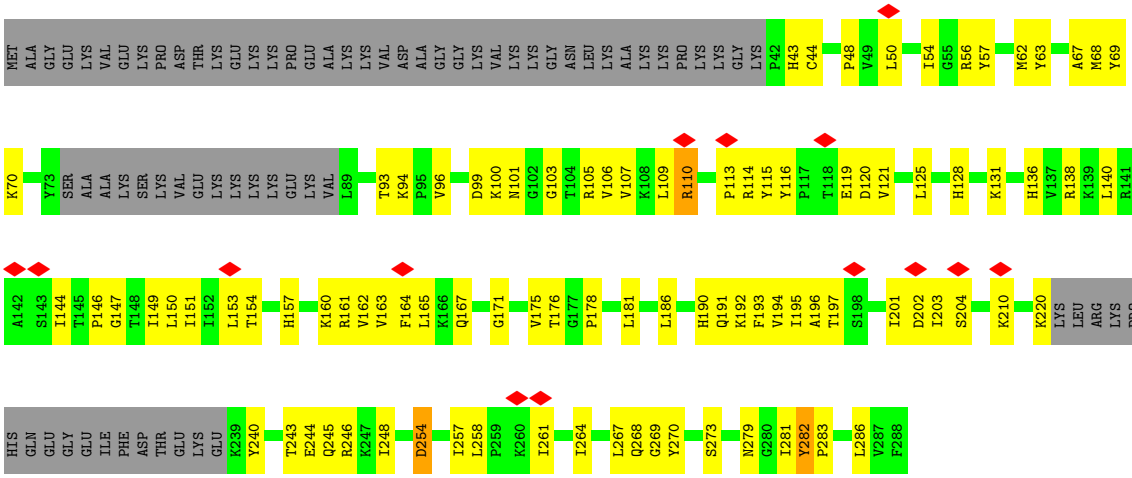
• Molecule 14: 60S ribosomal protein L4

Chain LC:



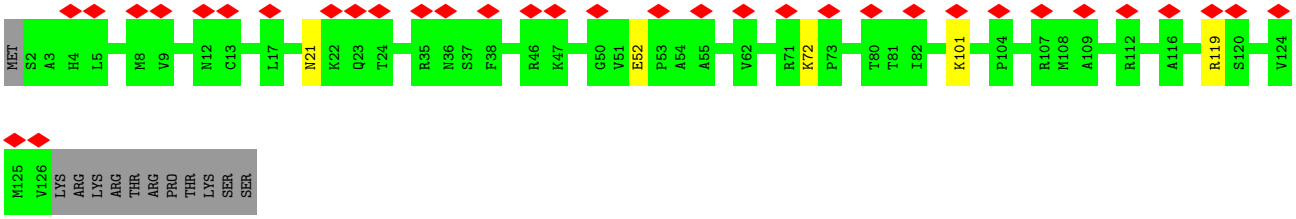
• Molecule 15: Large ribosomal subunit protein eL6

Chain LE:



• Molecule 16: 60S ribosomal protein L28

Chain Lr:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	24116	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS GLACIOS	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/Å^2$)	53.97	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	1700	Depositor
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	2.318	Depositor
Minimum map value	-1.051	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.092	Depositor
Recommended contour level	0.4	Depositor
Map size (Å)	782.72003, 782.72003, 782.72003	wwPDB
Map dimensions	640, 640, 640	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.223, 1.223, 1.223	Depositor

5 Model quality

5.1 Standard geometry

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

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	8	0.34	0/1384	0.82	0/2154
2	E	0.29	0/2562	0.59	2/3479 (0.1%)
3	D	0.40	0/945	0.85	2/1269 (0.2%)
4	1	0.38	0/7128	0.91	6/11100 (0.1%)
5	LY	0.34	0/1092	0.83	1/1454 (0.1%)
6	Lh	0.33	0/1023	0.81	3/1351 (0.2%)
7	LX	0.35	0/967	0.80	0/1301
8	A	0.32	0/972	0.73	0/1300
9	LU	0.33	0/839	0.84	2/1126 (0.2%)
10	LR	0.30	0/1297	0.85	2/1716 (0.1%)
11	Lk	0.33	0/575	0.75	0/761
12	2	0.32	0/1418	0.69	1/1909 (0.1%)
13	B	0.34	0/7019	0.71	12/9441 (0.1%)
14	LC	0.30	0/2962	0.70	1/3977 (0.0%)
15	LE	0.31	0/1758	0.69	0/2359
16	Lr	0.29	0/1017	0.70	0/1364
All	All	0.34	0/32958	0.78	32/46061 (0.1%)

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
3	D	0	2
13	B	0	1
All	All	0	3

There are no bond length outliers.

The worst 5 of 32 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
13	B	835	LEU	CA-CB-CG	12.15	143.24	115.30
6	Lh	21	LEU	CA-CB-CG	9.02	136.05	115.30
4	1	485	C	C2-N1-C1'	8.59	128.25	118.80
9	LU	96	LEU	CA-CB-CG	8.51	134.88	115.30
13	B	394	LEU	CA-CB-CG	8.43	134.68	115.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
13	B	833	TYR	Mainchain
3	D	147	LEU	Peptide
3	D	77	VAL	Mainchain

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	8	1237	0	625	34	0
2	E	2498	0	2425	104	0
3	D	937	0	989	129	0
4	1	6383	0	3239	270	0
5	LY	1075	0	1157	133	0
6	Lh	1015	0	1148	0	0
7	LX	950	0	1016	68	0
8	A	967	0	1017	92	0
9	LU	825	0	850	74	0
10	LR	1281	0	1418	94	0
11	Lk	569	0	637	0	0
12	2	1388	0	1356	131	0
13	B	6881	0	6924	538	0
14	LC	2908	0	3082	112	0
15	LE	1724	0	1874	75	0
16	Lr	1002	0	1068	0	0
17	B	36	0	6	1	0
All	All	31676	0	28831	1625	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 30.

The worst 5 of 1625 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)
13:B:425:LYS:HG2	13:B:835:LEU:HD21	1.22	1.19
1:8:97:A:H5"	7:LX:68:ARG:HH22	1.21	1.04
7:LX:94:ASN:HD21	7:LX:145:ASP:HA	1.21	1.02
3:D:79:ARG:HG3	4:1:2707:U:H2'	1.43	1.01
13:B:194:LEU:HB3	13:B:536:ARG:HD3	1.45	0.97

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
2	E	315/392 (80%)	301 (96%)	13 (4%)	1 (0%)	37 72
3	D	120/206 (58%)	104 (87%)	12 (10%)	4 (3%)	3 21
5	LY	127/145 (88%)	121 (95%)	6 (5%)	0	100 100
6	Lh	120/123 (98%)	117 (98%)	3 (2%)	0	100 100
7	LX	114/156 (73%)	112 (98%)	2 (2%)	0	100 100
8	A	121/221 (55%)	116 (96%)	3 (2%)	2 (2%)	7 36
9	LU	99/128 (77%)	94 (95%)	5 (5%)	0	100 100
10	LR	151/196 (77%)	150 (99%)	1 (1%)	0	100 100
11	Lk	67/70 (96%)	66 (98%)	1 (2%)	0	100 100
12	2	167/171 (98%)	161 (96%)	5 (3%)	1 (1%)	22 59
13	B	832/840 (99%)	779 (94%)	43 (5%)	10 (1%)	11 43
14	LC	363/427 (85%)	346 (95%)	17 (5%)	0	100 100
15	LE	208/288 (72%)	195 (94%)	13 (6%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
16	Lr	123/137 (90%)	116 (94%)	7 (6%)	0	100 100
All	All	2927/3500 (84%)	2778 (95%)	131 (4%)	18 (1%)	24 59

5 of 18 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	A	132	SER
13	B	579	GLU
2	E	297	HIS
3	D	84	ASP
3	D	97	VAL

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
2	E	271/333 (81%)	260 (96%)	11 (4%)	26 48
3	D	102/165 (62%)	99 (97%)	3 (3%)	37 57
5	LY	120/135 (89%)	110 (92%)	10 (8%)	9 28
6	Lh	109/110 (99%)	100 (92%)	9 (8%)	9 28
7	LX	104/133 (78%)	97 (93%)	7 (7%)	13 34
8	A	107/186 (58%)	101 (94%)	6 (6%)	17 39
9	LU	91/115 (79%)	81 (89%)	10 (11%)	5 18
10	LR	137/175 (78%)	123 (90%)	14 (10%)	6 20
11	Lk	64/65 (98%)	63 (98%)	1 (2%)	58 74
12	2	148/149 (99%)	131 (88%)	17 (12%)	4 17
13	B	744/749 (99%)	692 (93%)	52 (7%)	12 32
14	LC	304/348 (87%)	291 (96%)	13 (4%)	25 47
15	LE	190/252 (75%)	180 (95%)	10 (5%)	19 41
16	Lr	109/121 (90%)	104 (95%)	5 (5%)	23 45
All	All	2600/3036 (86%)	2432 (94%)	168 (6%)	17 35

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

Mol	Chain	Res	Type
13	B	482	MET
14	LC	109	ARG
13	B	575	ASP
13	B	646	LYS
14	LC	312	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 31 such sidechains are listed below:

Mol	Chain	Res	Type
12	2	71	HIS
13	B	828	HIS
13	B	105	ASN
15	LE	190	HIS
13	B	750	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	8	57/58 (98%)	13 (22%)	3 (5%)
4	1	289/5070 (5%)	73 (25%)	4 (1%)
All	All	346/5128 (6%)	86 (24%)	7 (2%)

5 of 86 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	8	51	U
1	8	59	A
1	8	62	A
1	8	63	U
1	8	80	A

5 of 7 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
4	1	385	A
4	1	685	C
4	1	2896	G
4	1	2707	U
1	8	84	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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

1 ligand is modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
17	IHP	B	901	-	36,36,36	0.78	0	54,60,60	0.51	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
17	IHP	B	901	-	-	7/30/54/54	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 7 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
17	B	901	IHP	C1-C6-O16-P6
17	B	901	IHP	C5-C6-O16-P6
17	B	901	IHP	C5-O15-P5-O35
17	B	901	IHP	C2-O12-P2-O42

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Mol	Chain	Res	Type	Atoms
17	B	901	IHP	C5-C4-O14-P4

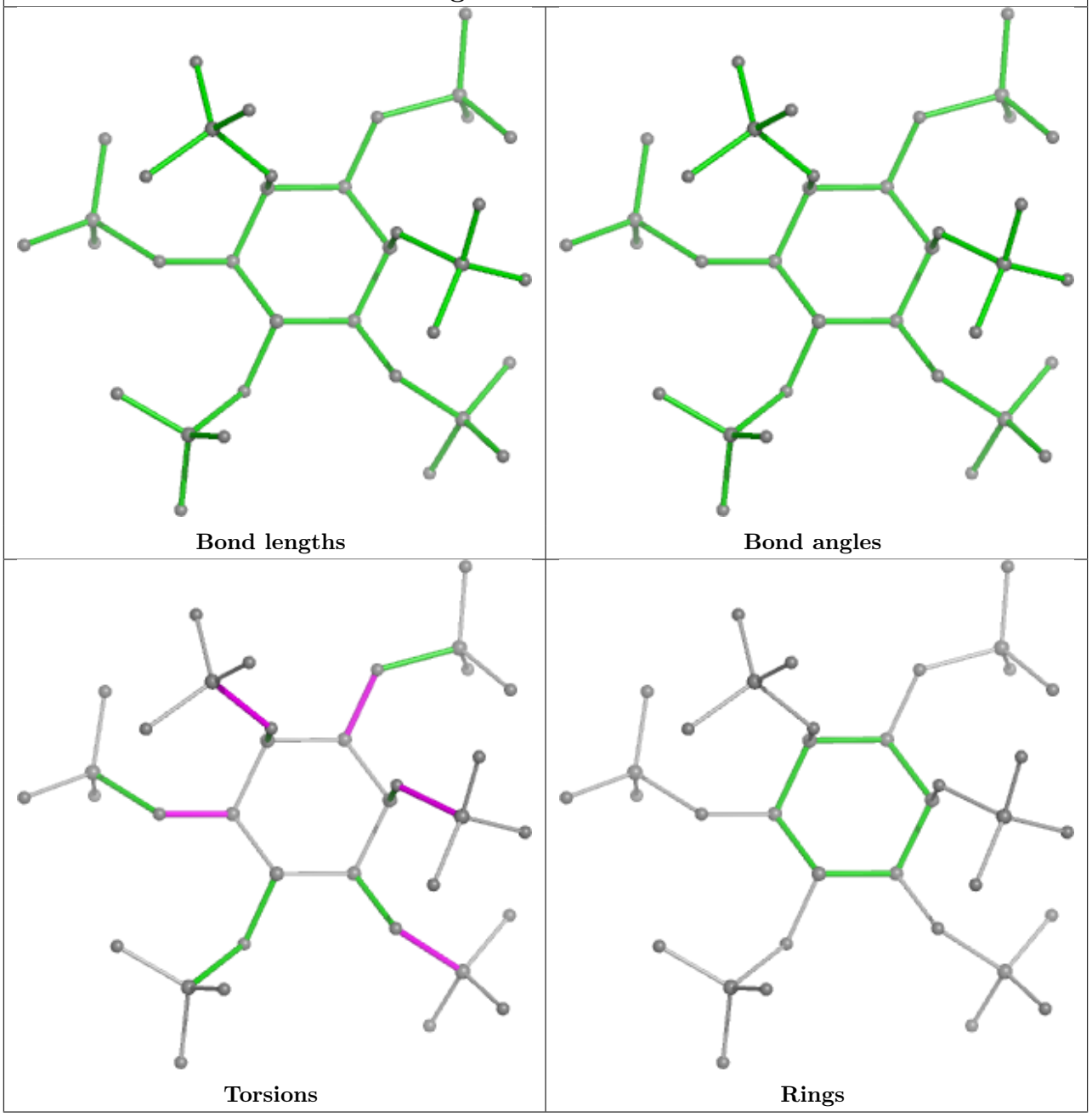
There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
17	B	901	IHP	1	0

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 IHP B 901



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

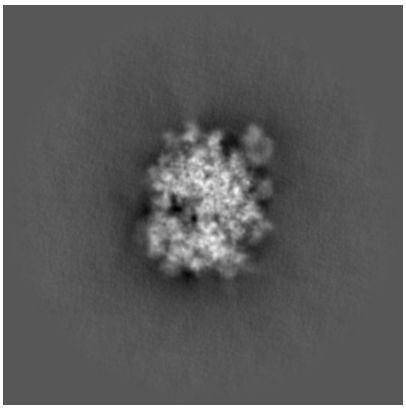
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-50642. These allow visual inspection of the internal detail of the map and identification of artifacts.

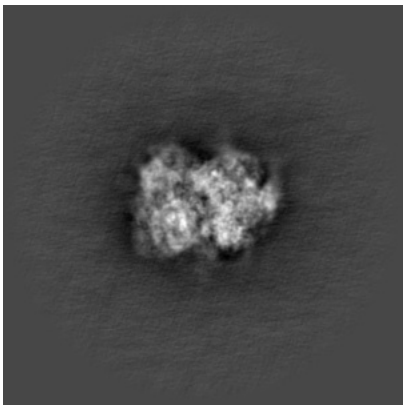
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

6.1.1 Primary map



X



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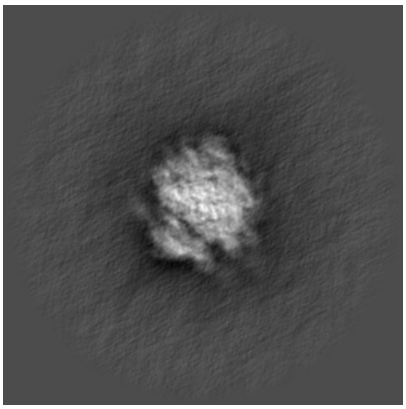
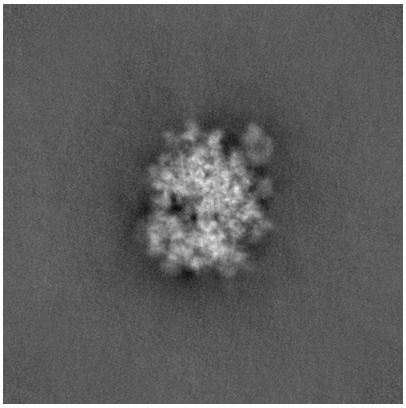
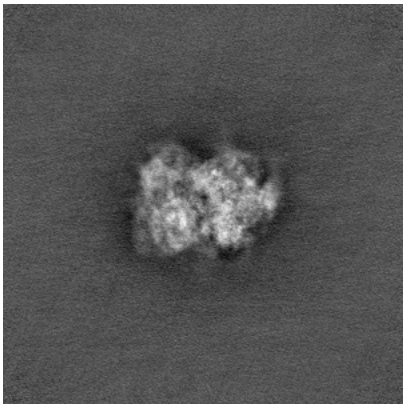


Z

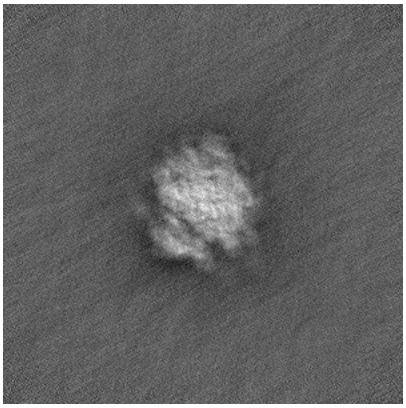
6.1.2 Raw map



X



Y

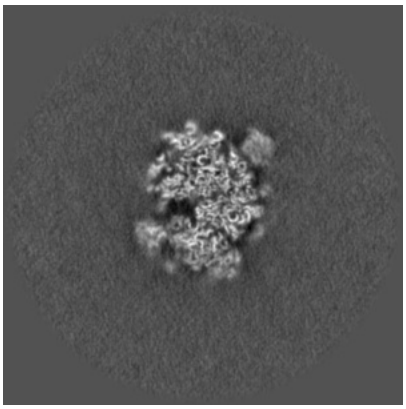


Z

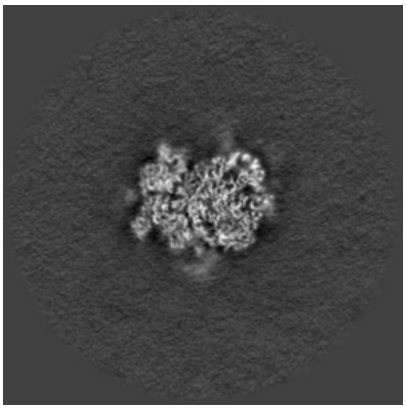
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

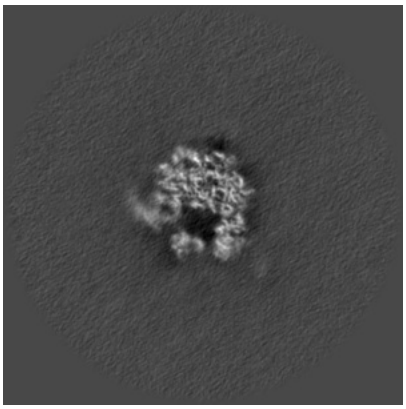
6.2.1 Primary map



X Index: 320

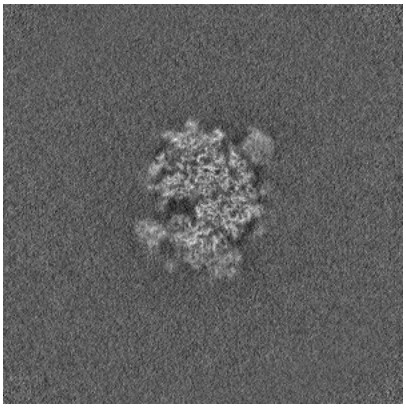


Y Index: 320

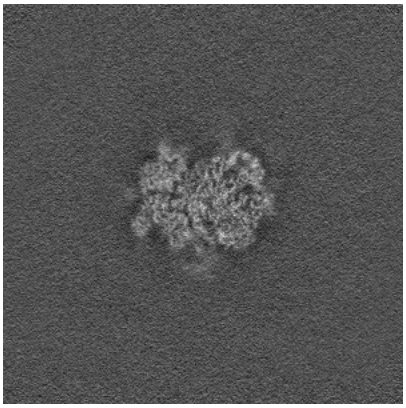


Z Index: 320

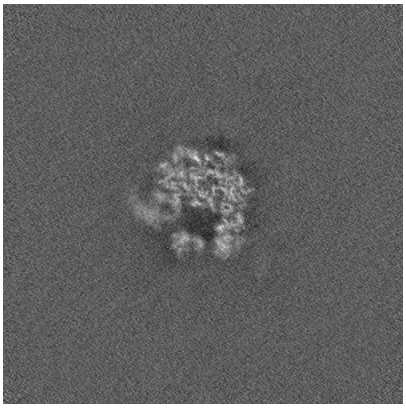
6.2.2 Raw map



X Index: 320



Y Index: 320

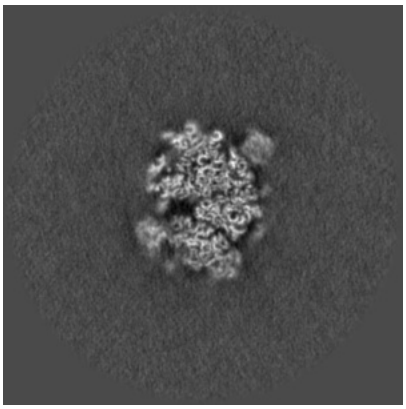


Z Index: 320

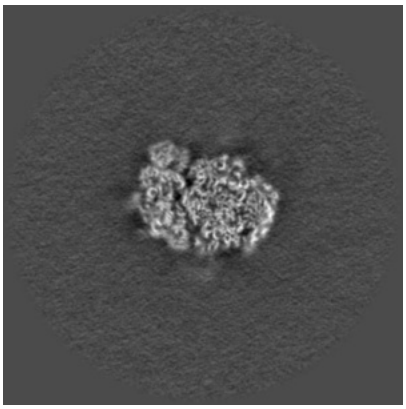
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

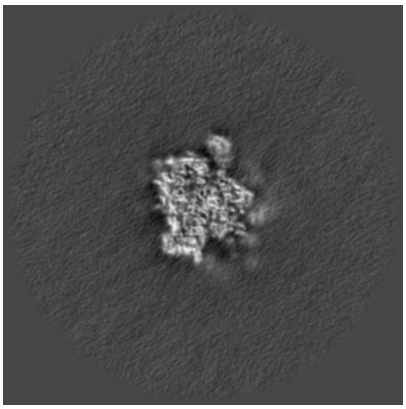
6.3.1 Primary map



X Index: 318

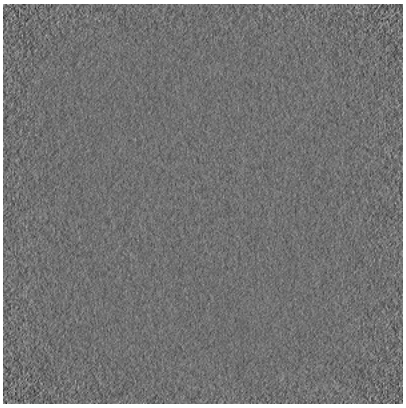


Y Index: 336

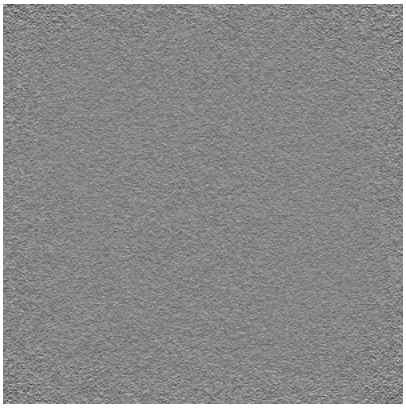


Z Index: 355

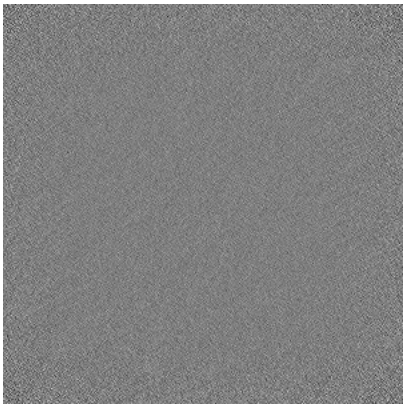
6.3.2 Raw map



X Index: 0



Y Index: 0

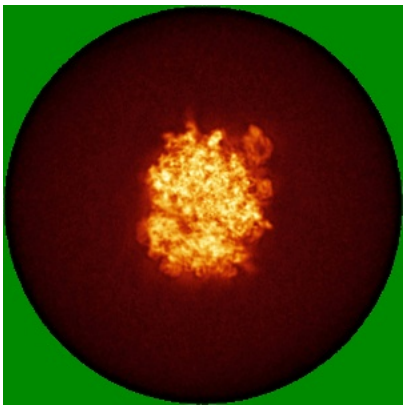


Z Index: 639

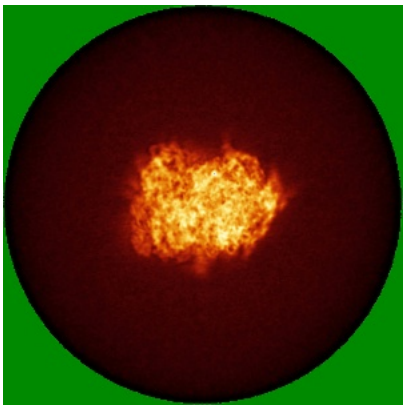
The images above show the largest variance slices of the map in three orthogonal directions.

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

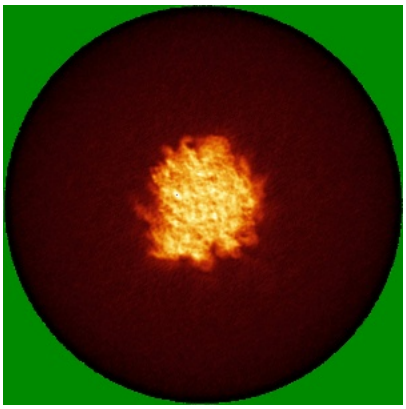
6.4.1 Primary map



X

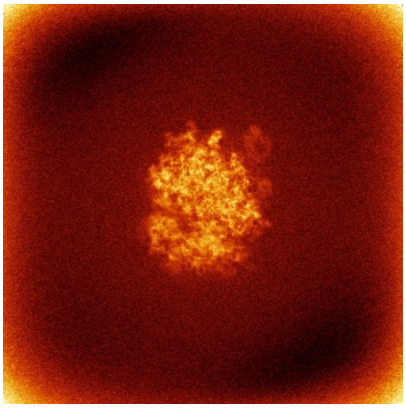


Y

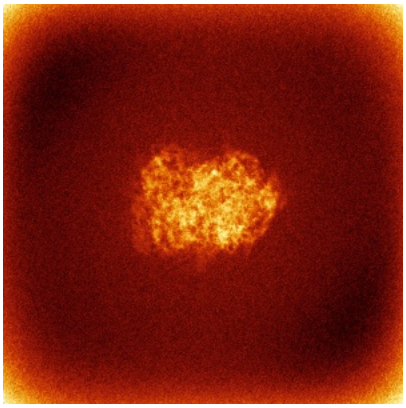


Z

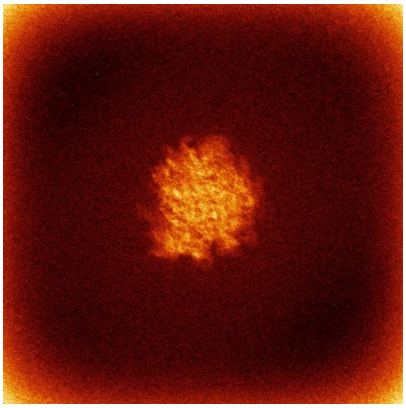
6.4.2 Raw map



X



Y

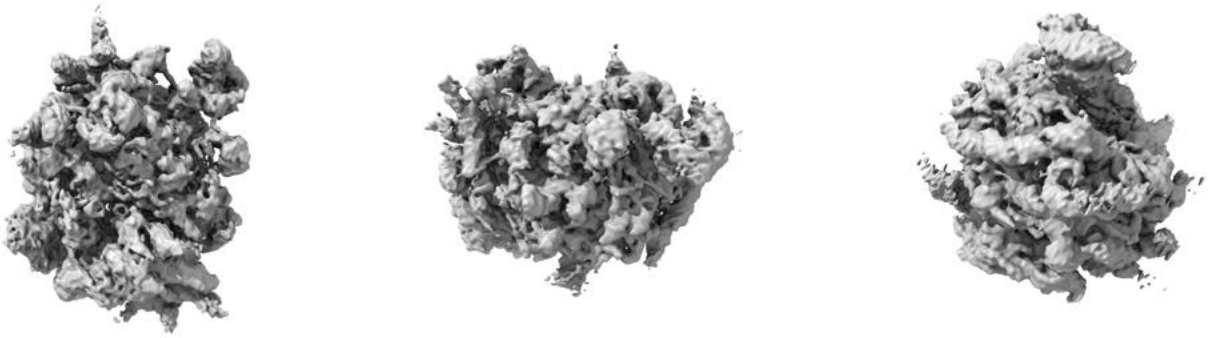


Z

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

6.5 Orthogonal surface views (i)

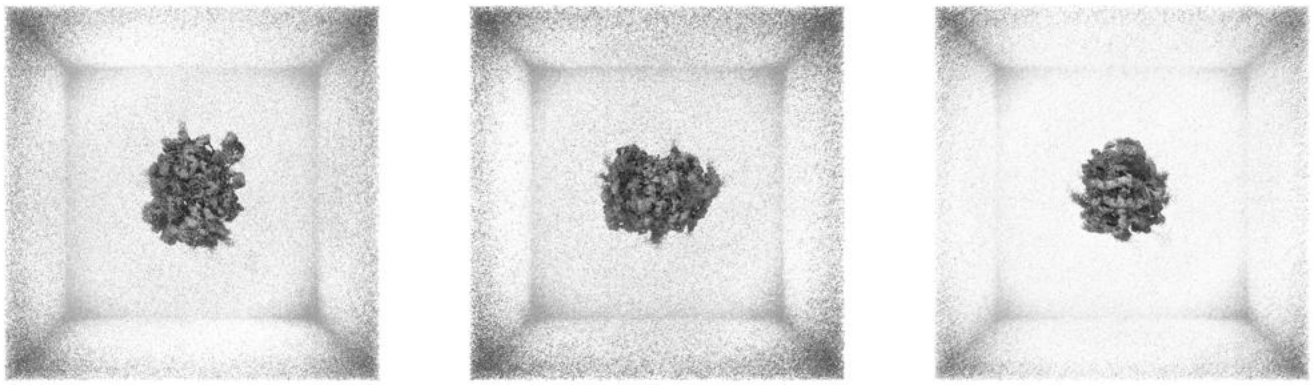
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.4. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

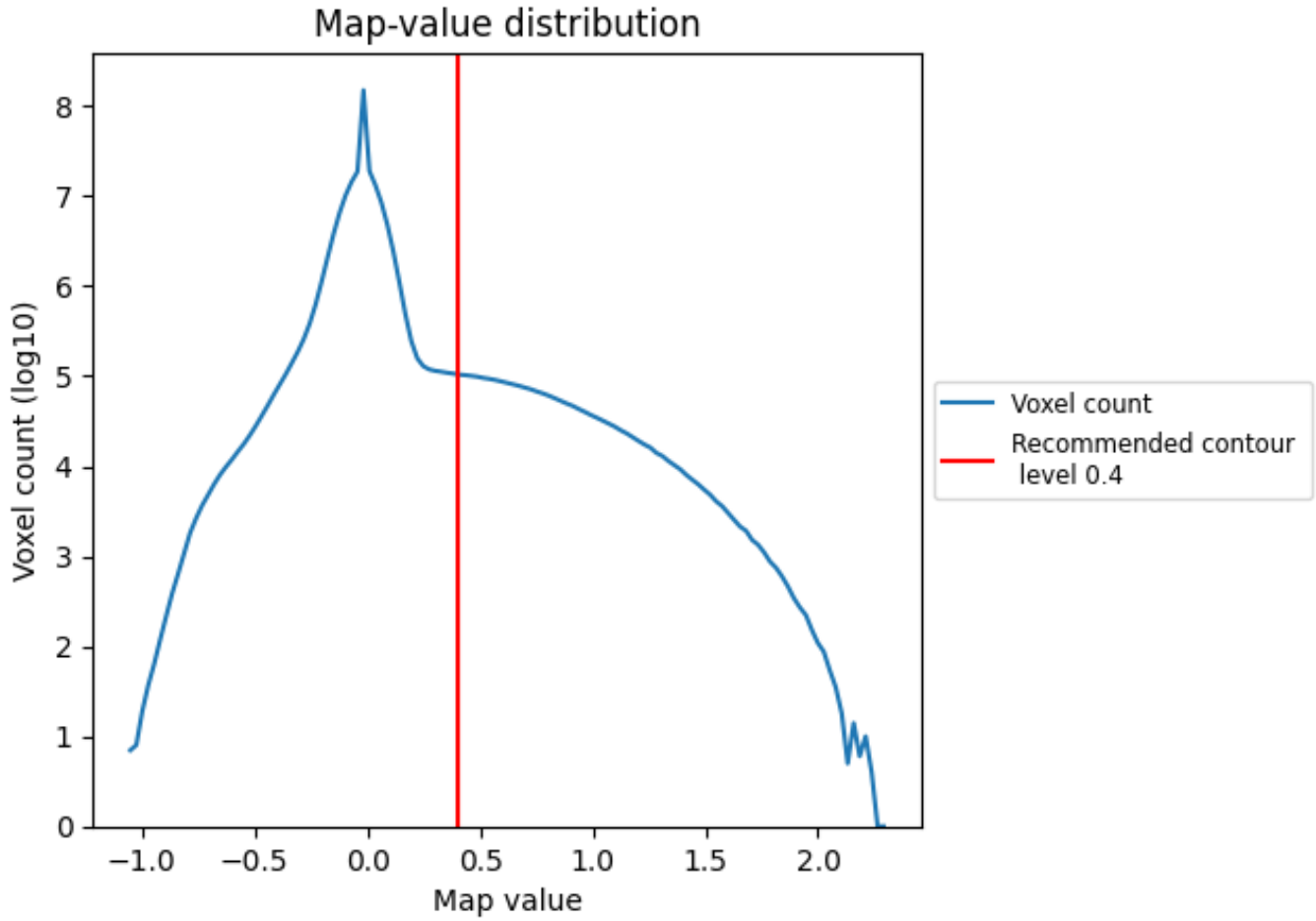
6.6 Mask visualisation (i)

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

7 Map analysis

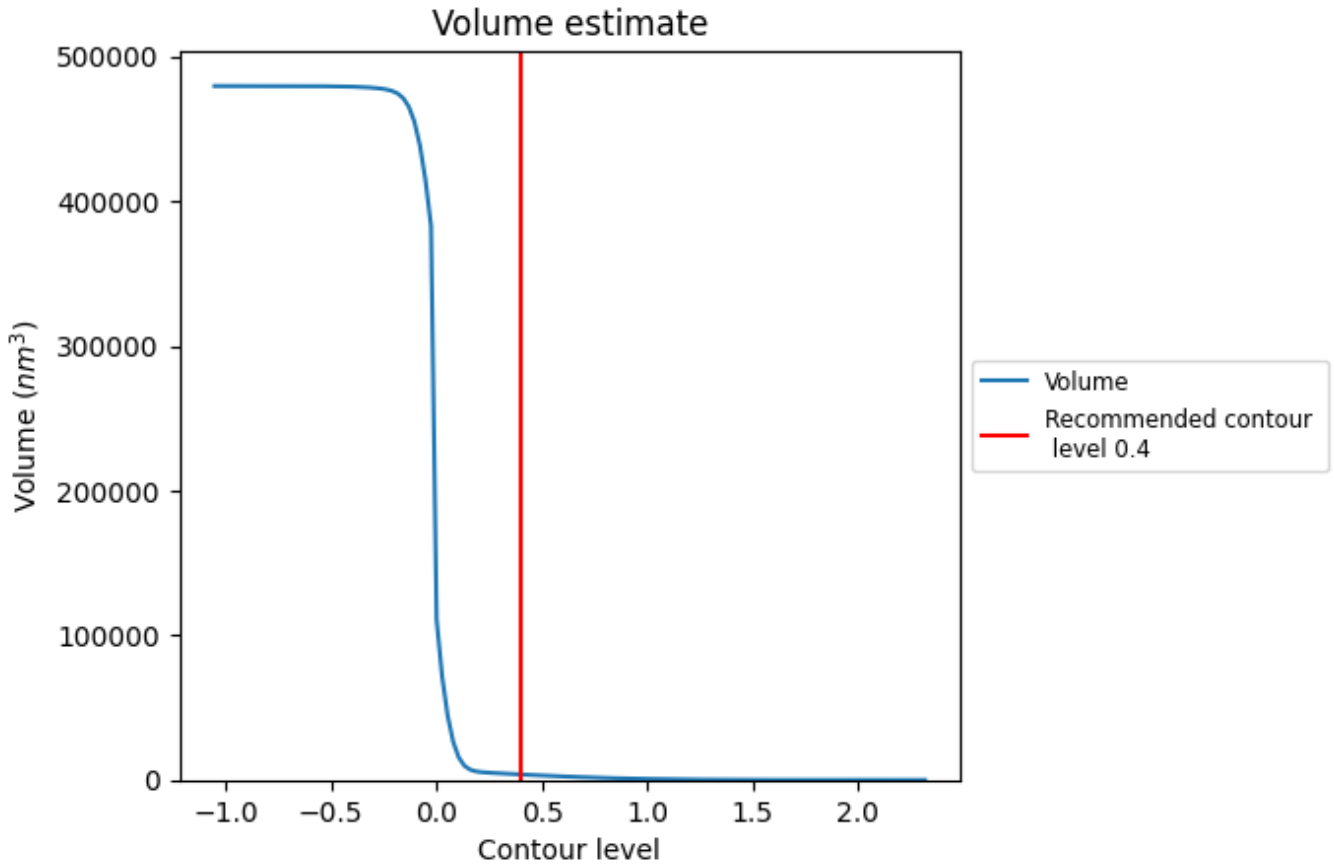
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

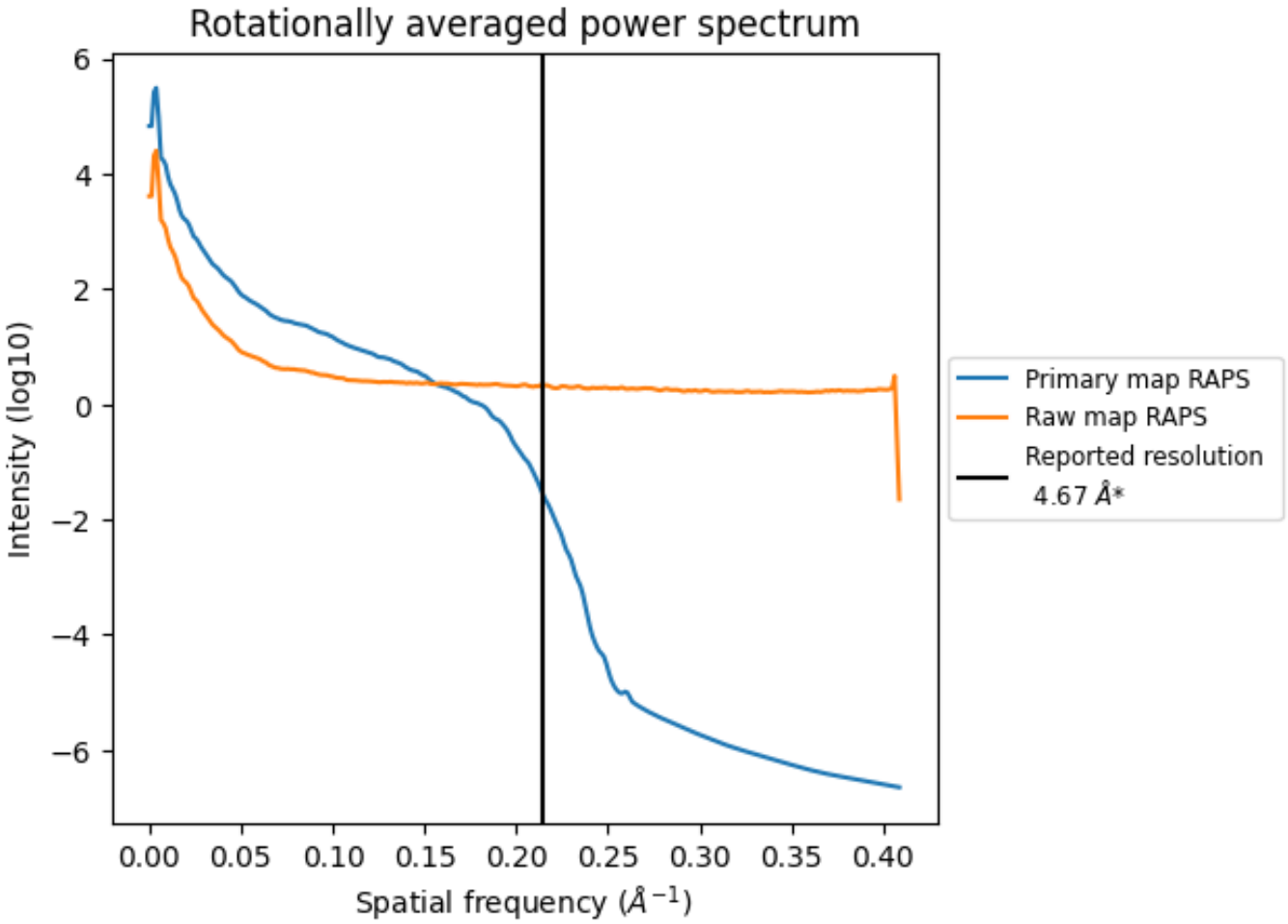
7.2 Volume estimate (i)



The volume at the recommended contour level is 3801 nm^3; this corresponds to an approximate mass of 3433 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)

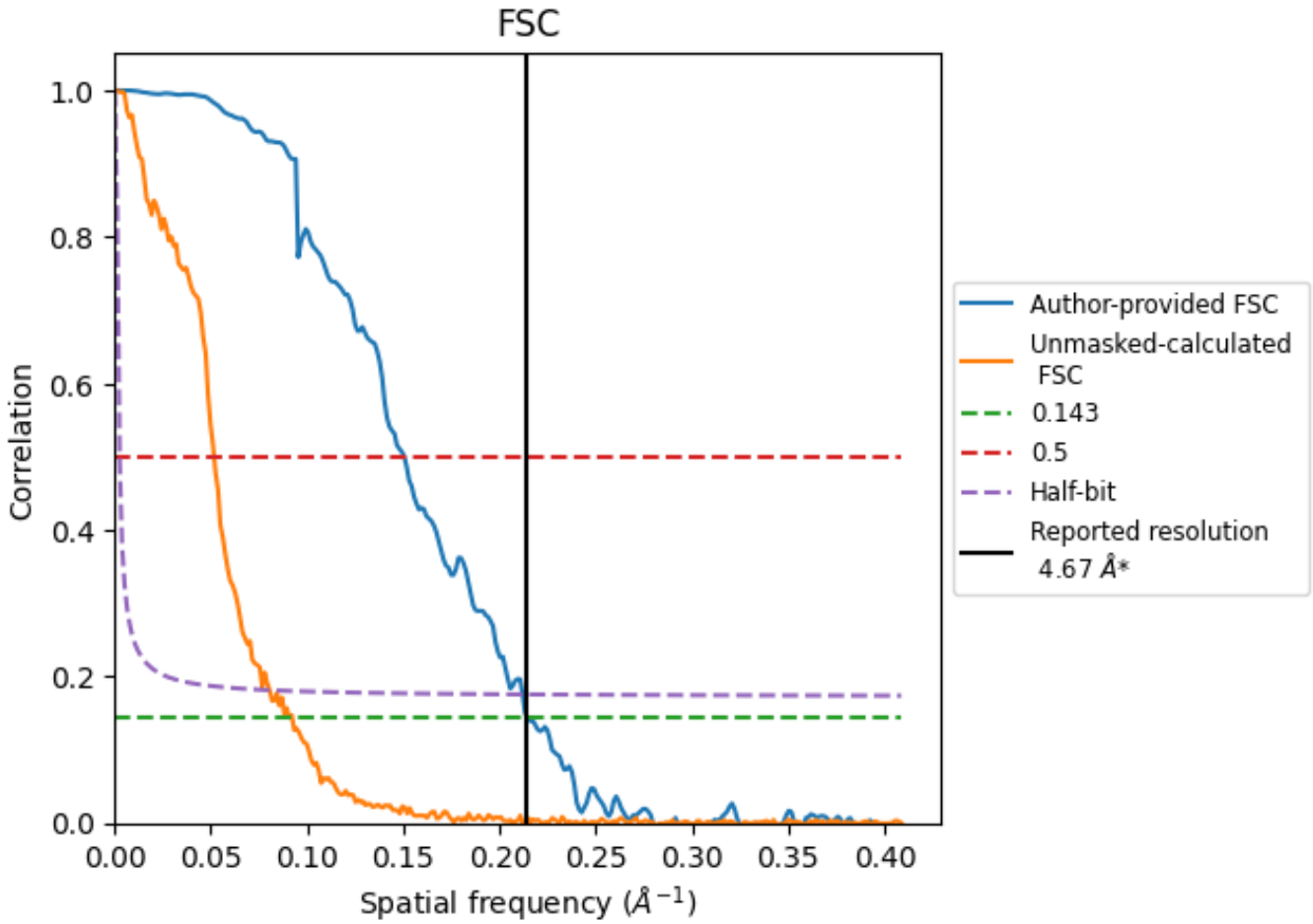


*Reported resolution corresponds to spatial frequency of 0.214 Å^{-1}

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 0.214 Å^{-1}

8.2 Resolution estimates (i)

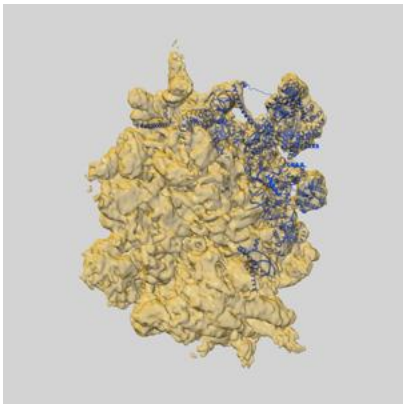
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.67	-	-
Author-provided FSC curve	4.67	6.65	4.72
Unmasked-calculated*	10.85	19.38	12.42

*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 10.85 differs from the reported value 4.67 by more than 10 %

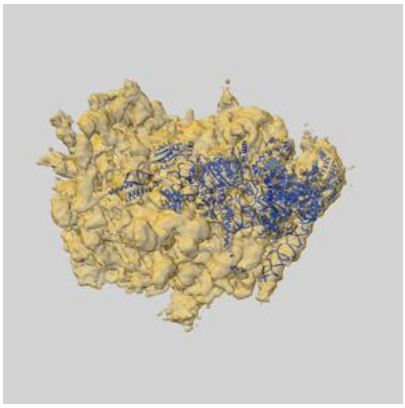
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-50642 and PDB model 9FQ0. Per-residue inclusion information can be found in section 3 on page 8.

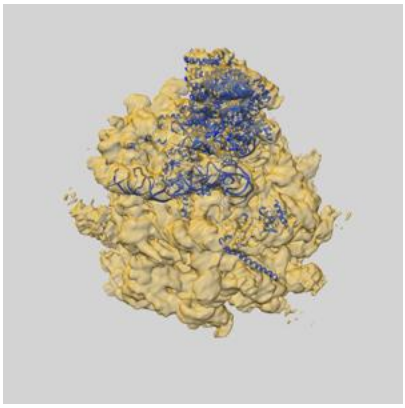
9.1 Map-model overlay



X



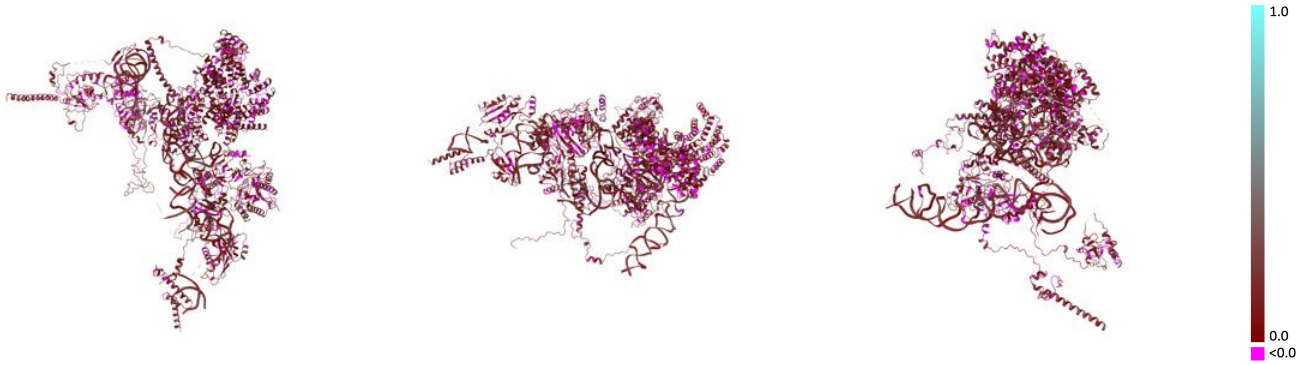
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.4 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.

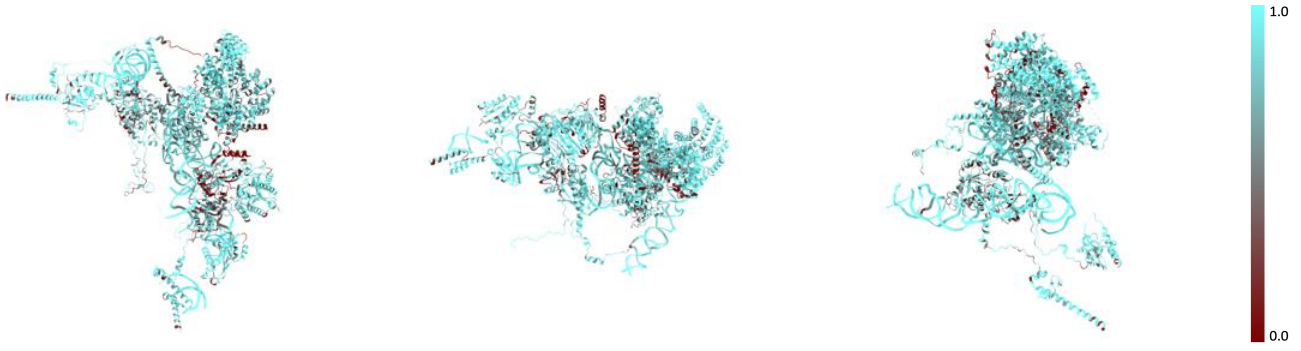
9.2 Q-score mapped to coordinate model



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.

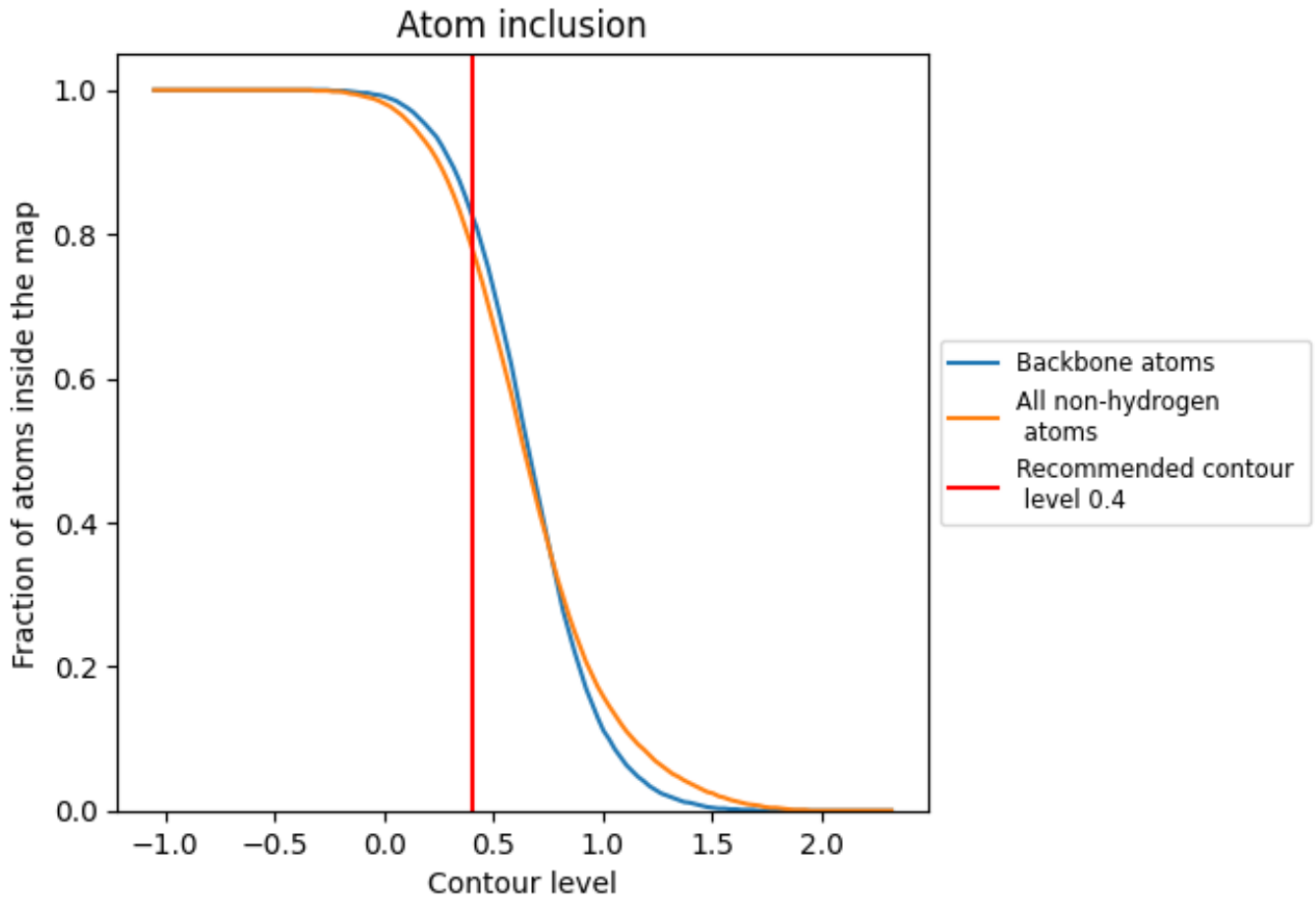
9.3 Atom inclusion mapped to coordinate model



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 (0.4).

9.4 Atom inclusion (i)



At the recommended contour level, 83% of all backbone atoms, 78% 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 (0.4) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7820	0.1270
1	0.9280	0.1720
2	0.5980	0.0950
8	0.9200	0.1910
A	0.6490	0.1250
B	0.7710	0.1000
D	0.4140	0.1000
E	0.8370	0.1380
LC	0.6750	0.1290
LE	0.8580	0.1300
LR	0.6760	0.1340
LU	0.8230	0.1220
LX	0.6390	0.1120
LY	0.8070	0.1080
Lh	0.8040	0.1350
Lk	0.8400	0.1150
Lr	0.6400	0.0050