wwPDB EM Validation Summary Report (i)

Apr 29, 2024 – 02:23 pm BST

PDB ID	:	4CSU
EMDB ID	:	EMD-2605
Title	:	Cryo-EM structures of the 50S ribosome subunit bound with ObgE
Authors	:	Feng, B.; Mandava, C.S.; Guo, Q.; Wang, J.; Cao, W.; Li, N.; Zhang, Y.; Zhang, Y.; Wang, Z.; Wu, J.; Sanyal, S.; Lei, J.; Gao, N.
Deposited on	:	2014-03-10
Resolution	:	5.50 Å(reported)
Based on initial model	:	3OFC

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 (i) 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 (i)) were used in the production of this report:

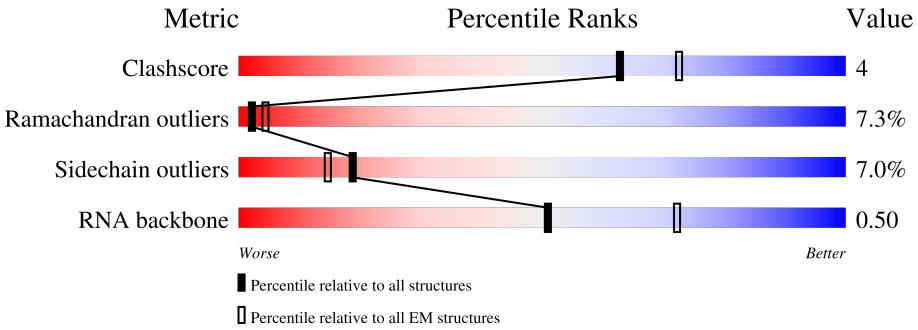
EMDB validation analysis	:	0.0.1.dev92
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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 5.50 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 <=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	0	77	56% 32% 9%
2	1	63	71% 24% 5%
3	2	58	72% 24%
4	3	56	11% 57% 34% 7%
5	4	54	17% 72% 19% 6%
6	5	234	91% 77% 21%
7	6	46	54% 30% 11%

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Mol	Chain	Length	Quality of chain
8	7	64	58% 28% 11%
9	8	38	71% 24% 5%
10	9	390	22% 45% 25% 10% 6% 14%
11	A	118	28% 57% 13%
12	B	2903	31% 45% 25%
13	C	272	64% 29% 7%
14	D	209	67% 26% 5%
15	E	201	63% 30% 6%
16	F	178	68% 24% 7%
17	G	176	69% 25% 6%
18	H	149	64% 60% 30% 10%
19	I	141	6% 35% 11% 51%
20	J	142	61% 30% 8%
21	K	123	59% 29% 10%
22	L	143	69% 25%
23	M	136	65% 27% 7%
24	N	127	54% 31% 8% 5%
25	O	116	66% 27% 7%
26	P	114	66% 25% 7%
27	Q	117	60% 32% 7%
28	R	103	66% 25% 8%
29	S	110	60% 26% 10%
30	T	100	55% 30% 8% 6%
31	U	103	71% 18% 9%
32	W	94	77% 18% 5%

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Mol	Chain	Length	Quality of chain
33	Y	84	

2 Entry composition (i)

There are 33 unique types of molecules in this entry. The entry contains 94625 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called 50S RIBOSOMAL PROTEIN L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	0	77	Total	C	N	O	S	0	0
			625	388	129	106	2		

- Molecule 2 is a protein called 50S RIBOSOMAL PROTEIN L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	1	63	Total	C	N	O	S	0	0
			509	313	99	95	2		

- Molecule 3 is a protein called 50S RIBOSOMAL PROTEIN L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	2	58	Total	C	N	O	S	0	0
			449	281	87	79	2		

- Molecule 4 is a protein called 50S RIBOSOMAL PROTEIN L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	3	56	Total	C	N	O	S	0	0
			444	269	94	80	1		

- Molecule 5 is a protein called 50S RIBOSOMAL PROTEIN L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
5	4	51	Total	C	N	O	0	1
			410	263	76	71		

- Molecule 6 is a protein called 50S RIBOSOMAL PROTEIN L1.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	5	234	Total	C	N	O	S	0	0
			1733	1081	315	330	7		

- Molecule 7 is a protein called 50S RIBOSOMAL PROTEIN L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	6	46	Total	C	N	O	S	0	0
			377	228	90	57	2		

- Molecule 8 is a protein called 50S RIBOSOMAL PROTEIN L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	7	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 9 is a protein called 50S RIBOSOMAL PROTEIN L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	8	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

- Molecule 10 is a protein called GTPASE OBGE/CGTA.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	9	334	Total	C	N	O	S	0	1
			2541	1596	448	485	12		

- Molecule 11 is a RNA chain called 5S RRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	A	115	Total	C	N	O	P	0	0
			2455	1097	451	795	112		

- Molecule 12 is a RNA chain called 23S RRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	B	2903	Total	C	N	O	P	0	0
			62317	27801	11467	20147	2902		

- Molecule 13 is a protein called 50S RIBOSOMAL PROTEIN L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	C	272	Total	C	N	O	S	0	1
			2083	1288	424	364	7		

- Molecule 14 is a protein called 50S RIBOSOMAL PROTEIN L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	D	209	Total	C	N	O	S	0	0
			1565	979	288	294	4		

- Molecule 15 is a protein called 50S RIBOSOMAL PROTEIN L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	E	201	Total	C	N	O	S	0	0
			1552	974	283	290	5		

- Molecule 16 is a protein called 50S RIBOSOMAL PROTEIN L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	F	178	Total	C	N	O	S	0	0
			1420	905	251	258	6		

- Molecule 17 is a protein called 50S RIBOSOMAL PROTEIN L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	G	176	Total	C	N	O	S	0	1
			1317	827	243	245	2		

- Molecule 18 is a protein called 50S RIBOSOMAL PROTEIN L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	H	149	Total	C	N	O	S	0	0
			1111	699	197	214	1		

- Molecule 19 is a protein called 50S RIBOSOMAL PROTEIN L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	I	69	Total	C	N	O	S	0	0
			495	303	90	99	3		

- Molecule 20 is a protein called 50S RIBOSOMAL PROTEIN L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	J	142	Total	C	N	O	S	0	0
			1129	714	212	199	4		

- Molecule 21 is a protein called 50S RIBOSOMAL PROTEIN L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	K	122	Total	C	N	O	S	0	1
			932	582	180	164	6		

- Molecule 22 is a protein called 50S RIBOSOMAL PROTEIN L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	L	143	Total	C	N	O	S	0	0
			1045	649	206	189	1		

- Molecule 23 is a protein called 50S RIBOSOMAL PROTEIN L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	M	136	Total	C	N	O	S	0	0
			1074	686	205	177	6		

- Molecule 24 is a protein called 50S RIBOSOMAL PROTEIN L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	N	121	Total	C	N	O	S	0	1
			961	593	197	166	5		

- Molecule 25 is a protein called 50S RIBOSOMAL PROTEIN L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
25	O	116	Total	C	N	O	0	0
			892	552	178	162		

- Molecule 26 is a protein called 50S RIBOSOMAL PROTEIN L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	P	114	Total	C	N	O	S	0	0
			917	574	179	163	1		

- Molecule 27 is a protein called 50S RIBOSOMAL PROTEIN L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
27	Q	117	Total	C	N	O	0	0
			947	604	192	151		

- Molecule 28 is a protein called 50S RIBOSOMAL PROTEIN L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	R	103	Total 816	C 516	N 153	O 145	S 2	0	0

- Molecule 29 is a protein called 50S RIBOSOMAL PROTEIN L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	S	110	Total 857	C 532	N 166	O 156	S 3	0	0

- Molecule 30 is a protein called 50S RIBOSOMAL PROTEIN L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	T	94	Total 739	C 466	N 140	O 131	S 2	0	1

- Molecule 31 is a protein called 50S RIBOSOMAL PROTEIN L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	U	102	Total 758	C 479	N 143	O 136	0	3

- Molecule 32 is a protein called 50S RIBOSOMAL PROTEIN L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	W	94	Total 753	C 479	N 137	O 134	S 3	0	0

- Molecule 33 is a protein called 50S RIBOSOMAL PROTEIN L27.

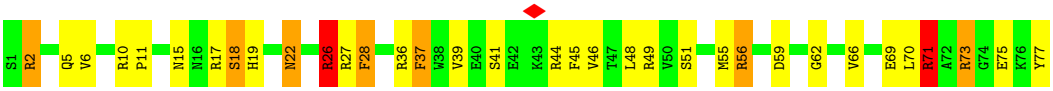
Mol	Chain	Residues	Atoms					AltConf	Trace
33	Y	79	Total 596	C 367	N 120	O 108	S 1	0	0

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.

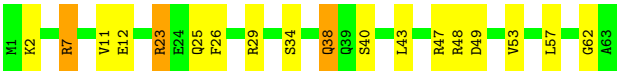
• Molecule 1: 50S RIBOSOMAL PROTEIN L28

Chain 0:



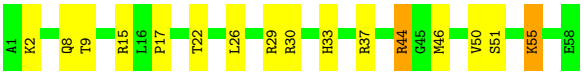
• Molecule 2: 50S RIBOSOMAL PROTEIN L29

Chain 1:



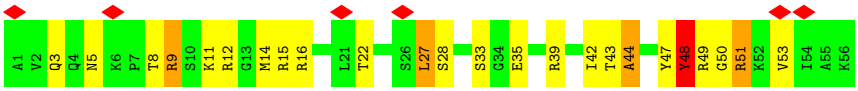
• Molecule 3: 50S RIBOSOMAL PROTEIN L30

Chain 2:



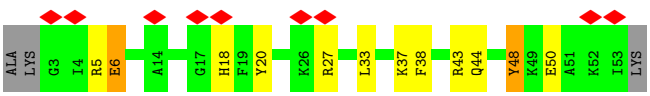
• Molecule 4: 50S RIBOSOMAL PROTEIN L32

Chain 3:



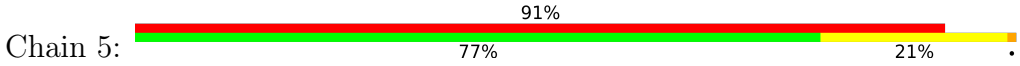
• Molecule 5: 50S RIBOSOMAL PROTEIN L33

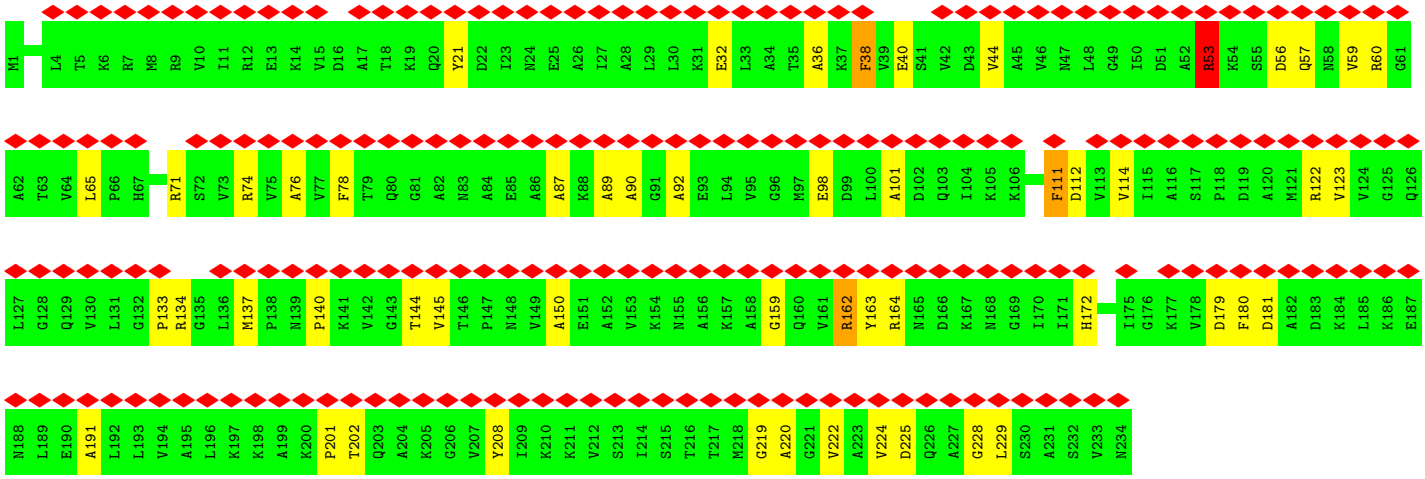
Chain 4:



• Molecule 6: 50S RIBOSOMAL PROTEIN L1

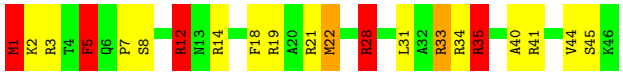
Chain 5:





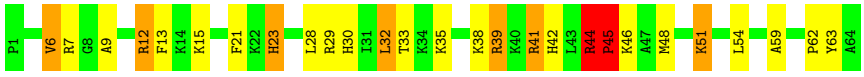
• Molecule 7: 50S RIBOSOMAL PROTEIN L34

Chain 6:



• Molecule 8: 50S RIBOSOMAL PROTEIN L35

Chain 7:

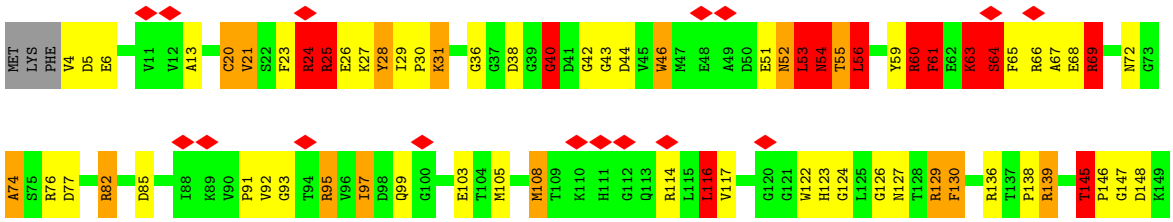


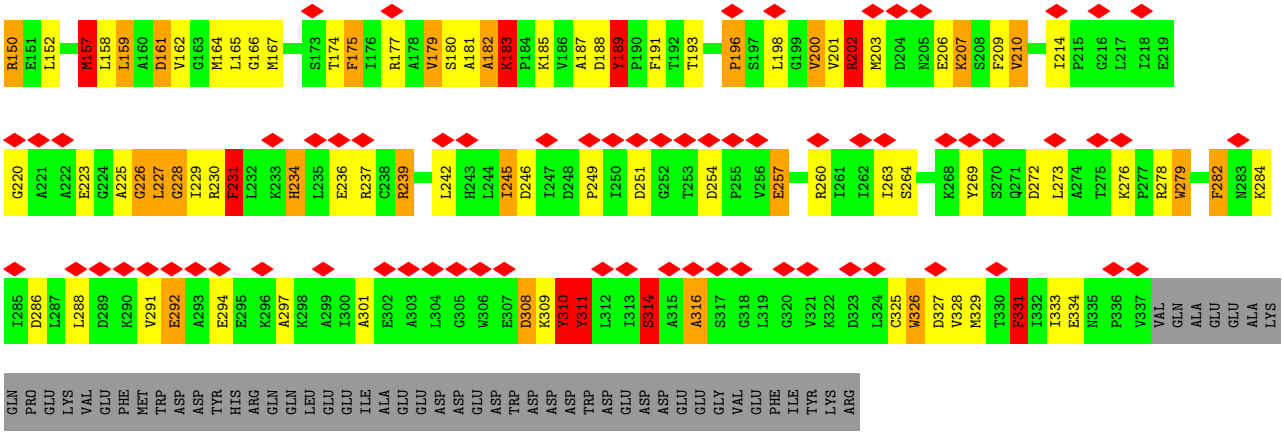
• Molecule 9: 50S RIBOSOMAL PROTEIN L36

Chain 8:

• Molecule 10: GTPASE OBGE/CGTA

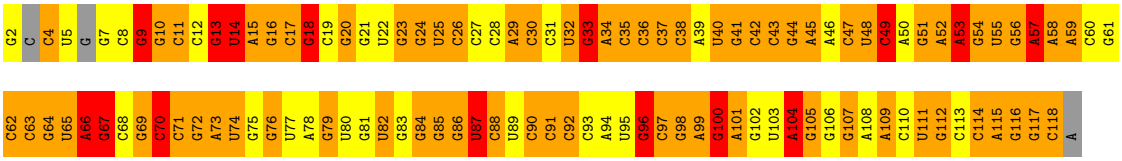
Chain 9:





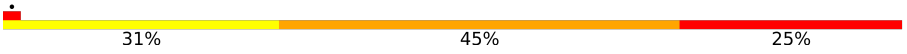
• Molecule 11: 5S RRNA

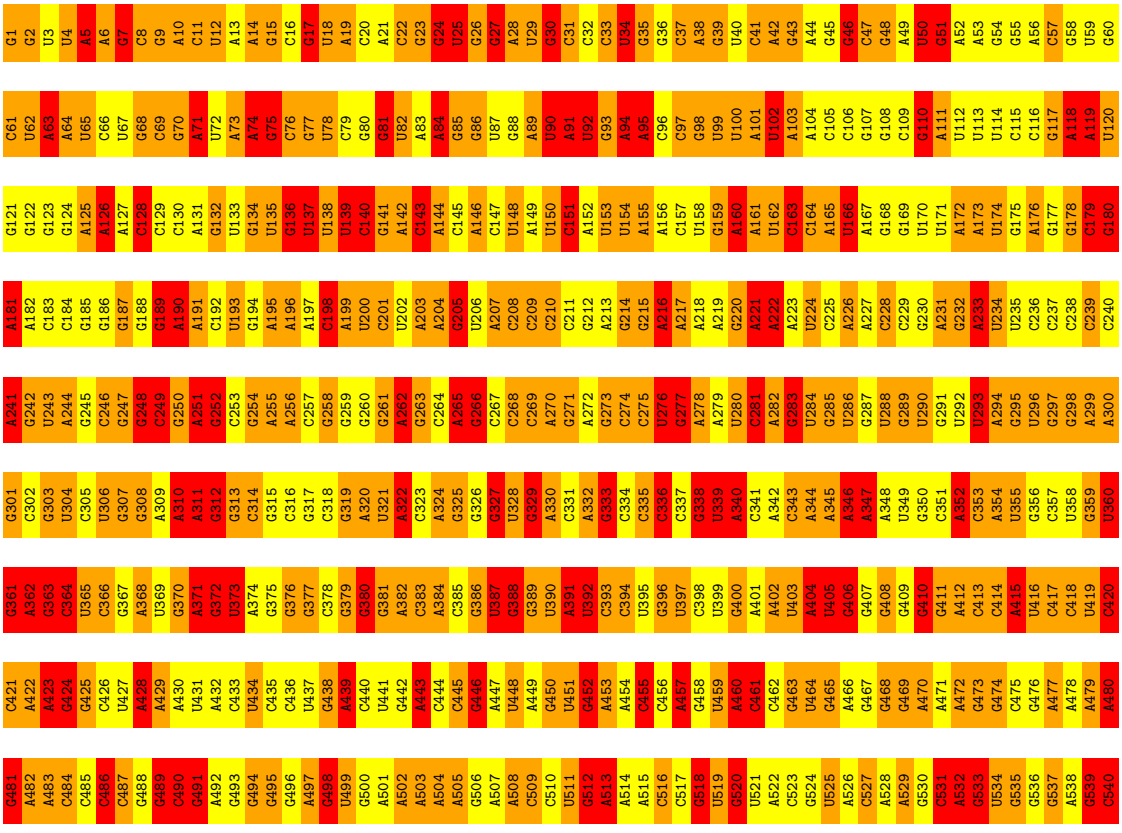
Chain A:

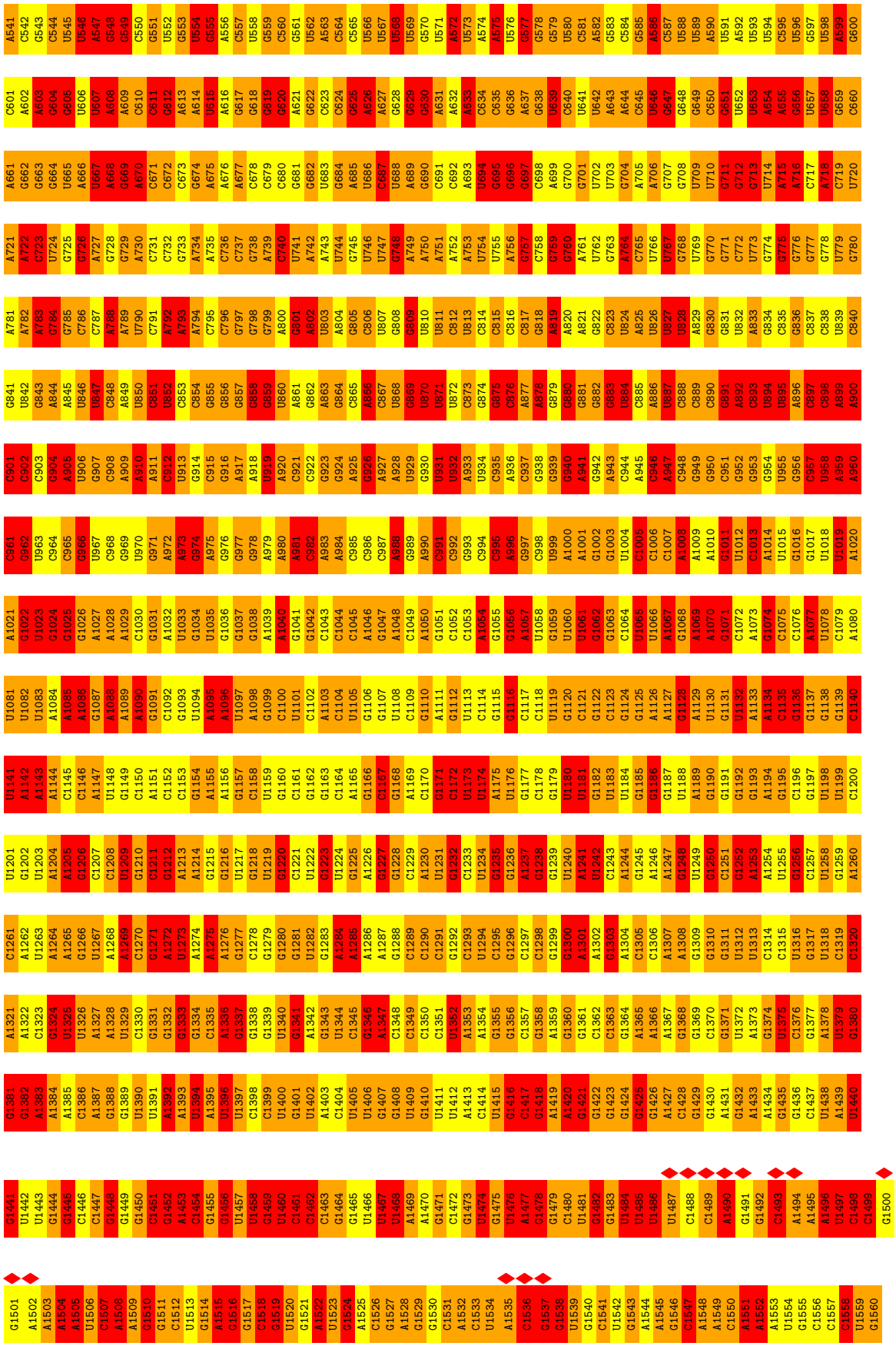


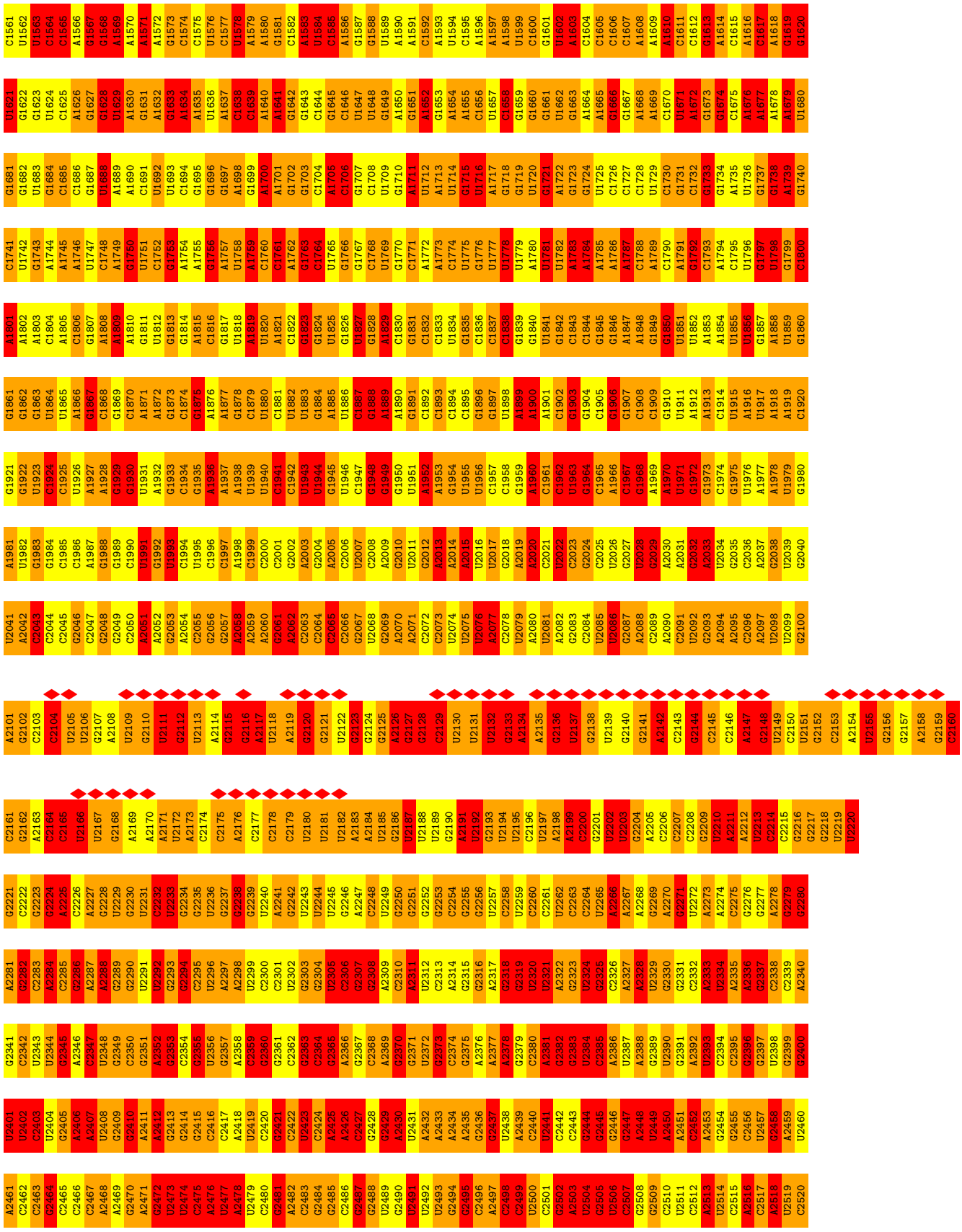
• Molecule 12: 23S RRNA

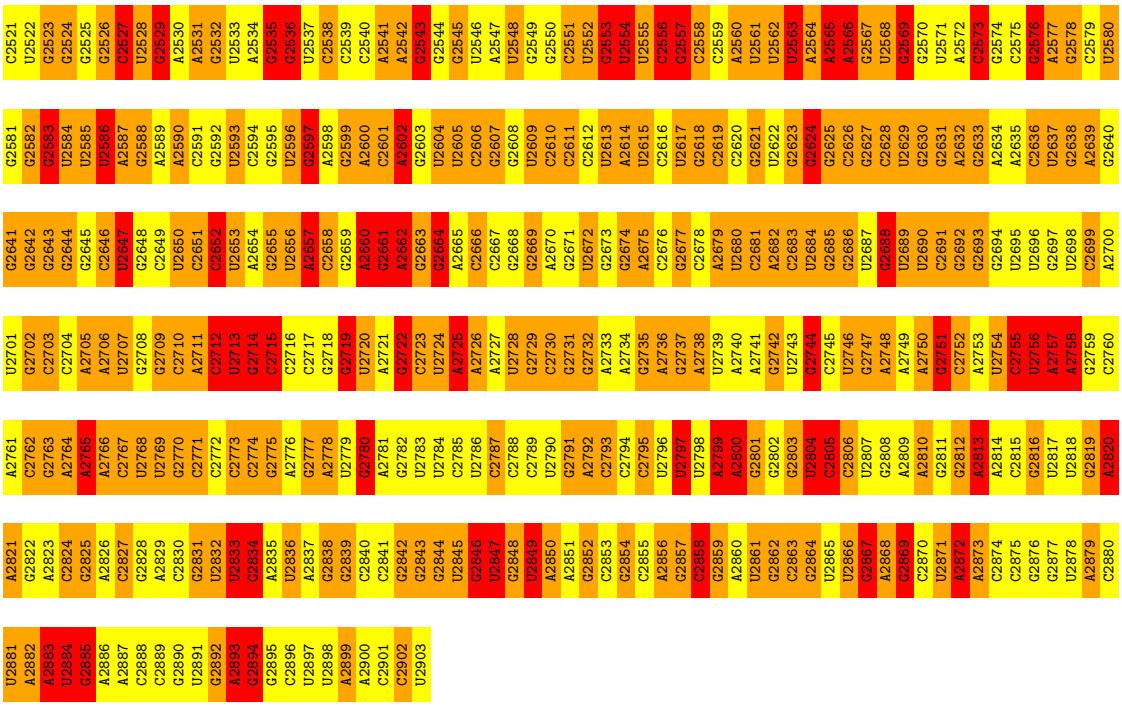
Chain B:





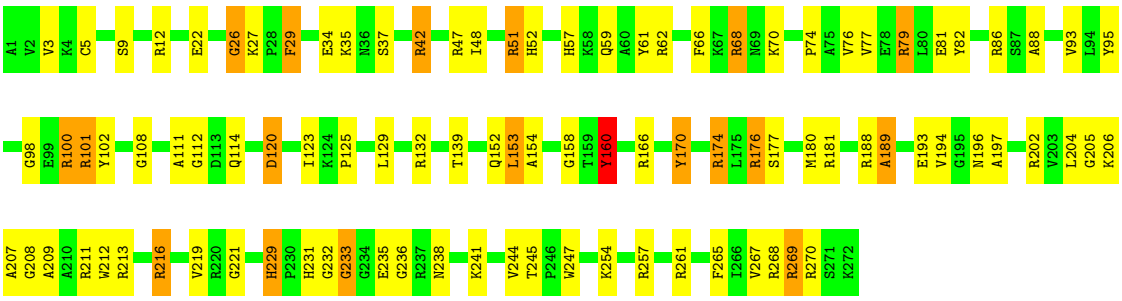






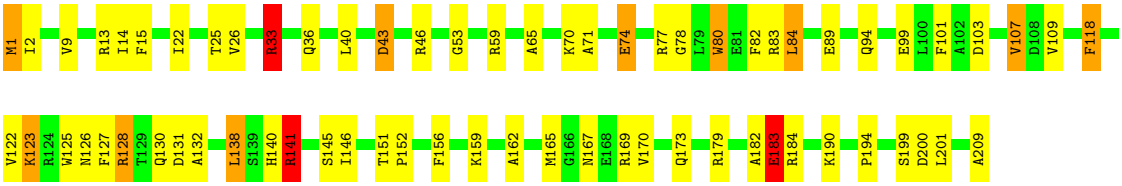
• Molecule 13: 50S RIBOSOMAL PROTEIN L2

Chain C:



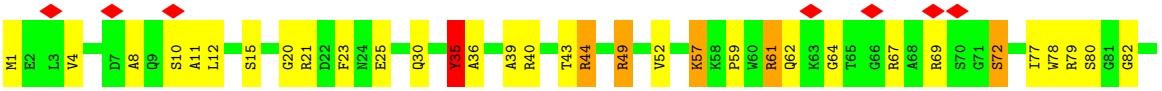
• Molecule 14: 50S RIBOSOMAL PROTEIN L3

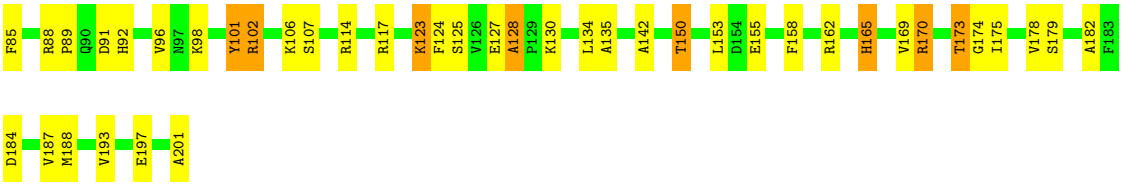
Chain D:



• Molecule 15: 50S RIBOSOMAL PROTEIN L4

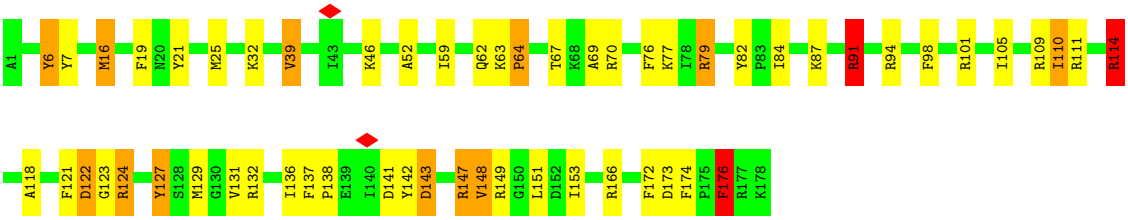
Chain E:





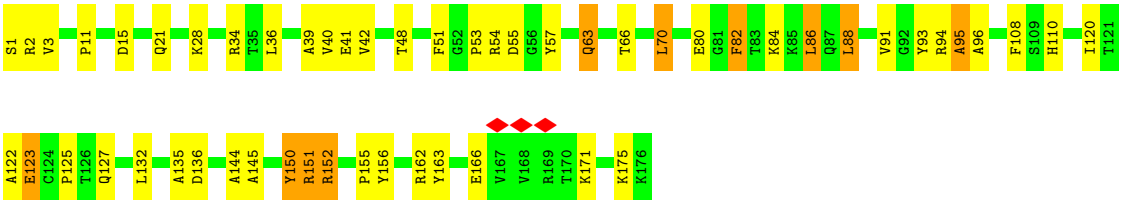
• Molecule 16: 50S RIBOSOMAL PROTEIN L5

Chain F:



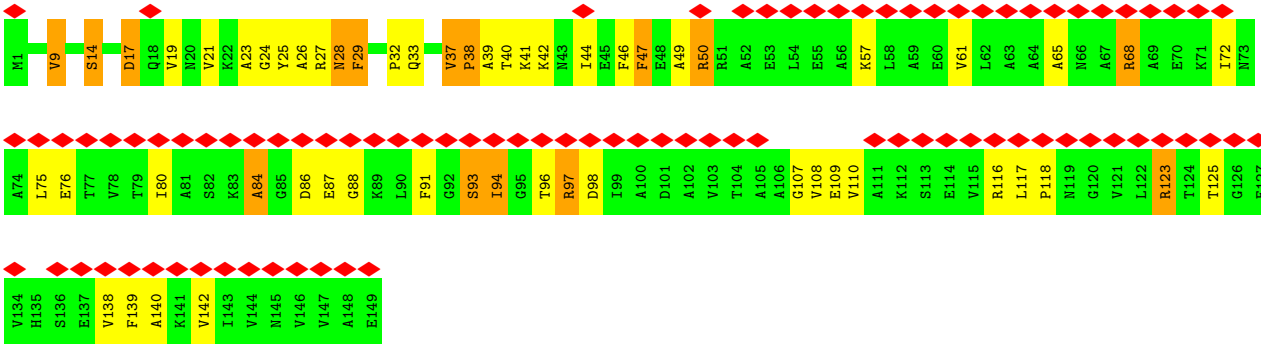
• Molecule 17: 50S RIBOSOMAL PROTEIN L6

Chain G:



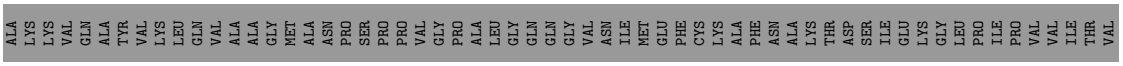
• Molecule 18: 50S RIBOSOMAL PROTEIN L9

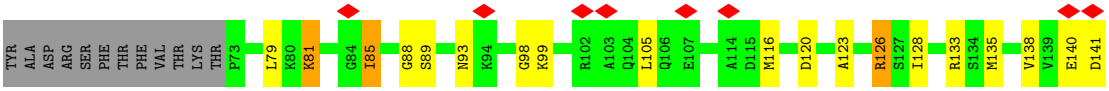
Chain H:



• Molecule 19: 50S RIBOSOMAL PROTEIN L11

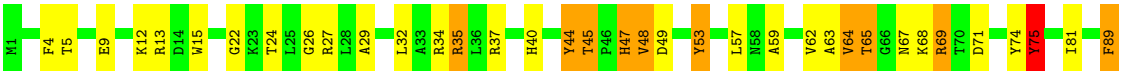
Chain I:





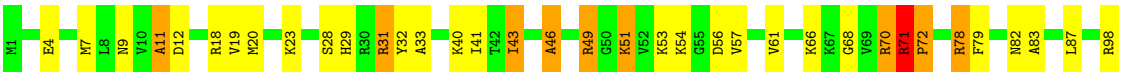
• Molecule 20: 50S RIBOSOMAL PROTEIN L13

Chain J:



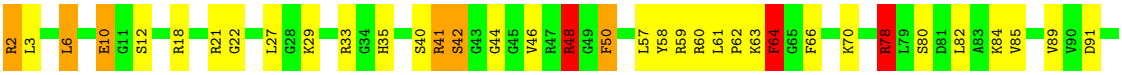
• Molecule 21: 50S RIBOSOMAL PROTEIN L14

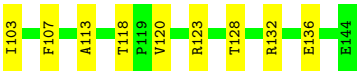
Chain K:



• Molecule 22: 50S RIBOSOMAL PROTEIN L15

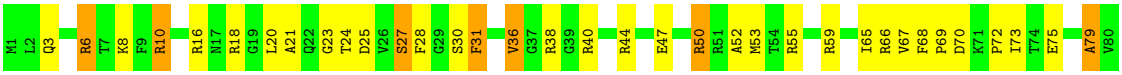
Chain L:





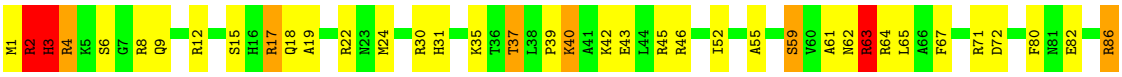
• Molecule 23: 50S RIBOSOMAL PROTEIN L16

Chain M:



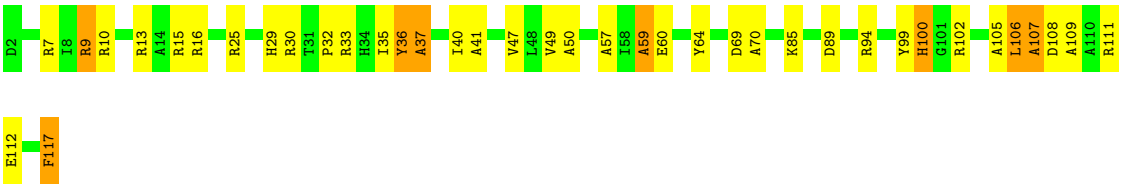
• Molecule 24: 50S RIBOSOMAL PROTEIN L17

Chain N:



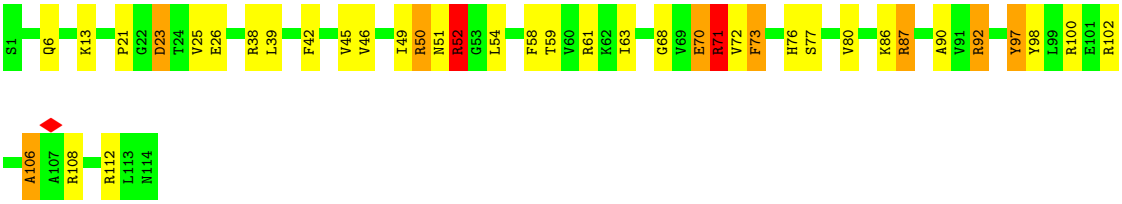
• Molecule 25: 50S RIBOSOMAL PROTEIN L18

Chain O:



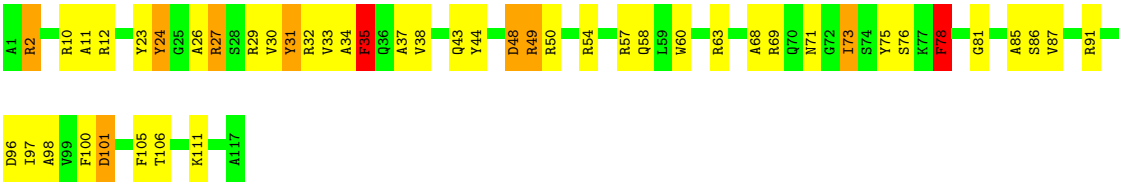
• Molecule 26: 50S RIBOSOMAL PROTEIN L19

Chain P:



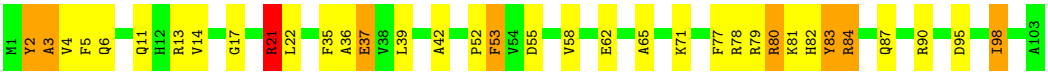
• Molecule 27: 50S RIBOSOMAL PROTEIN L20

Chain Q:



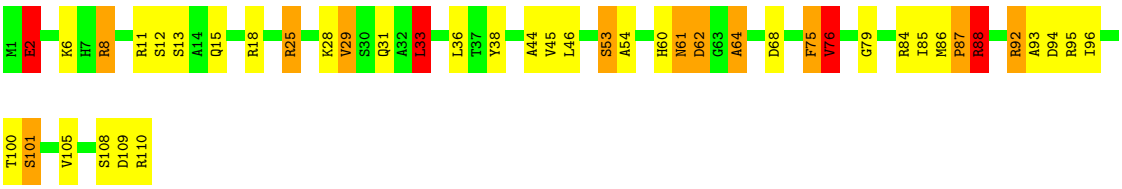
• Molecule 28: 50S RIBOSOMAL PROTEIN L21

Chain R:



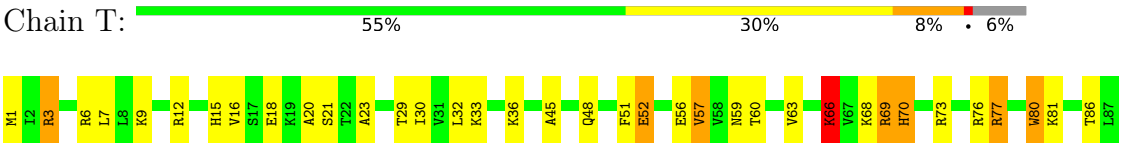
• Molecule 29: 50S RIBOSOMAL PROTEIN L22

Chain S:



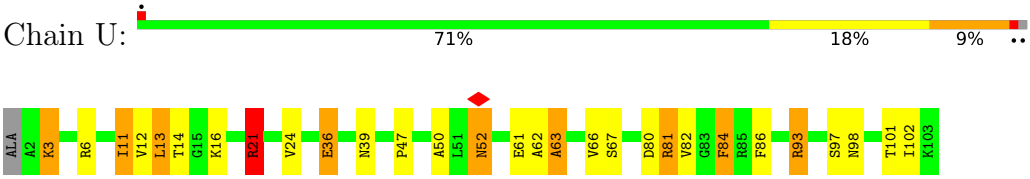
• Molecule 30: 50S RIBOSOMAL PROTEIN L23

Chain T:



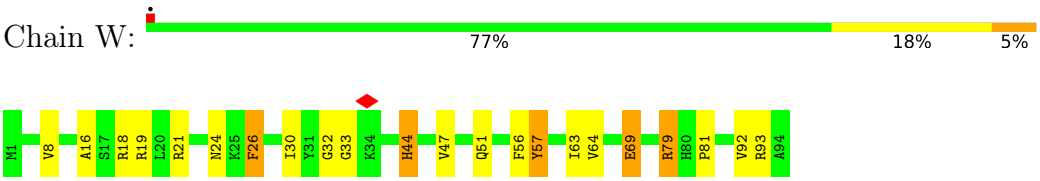
• Molecule 31: 50S RIBOSOMAL PROTEIN L24

Chain U:



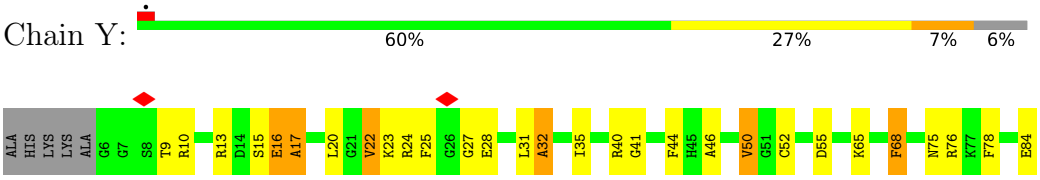
• Molecule 32: 50S RIBOSOMAL PROTEIN L25

Chain W:



• Molecule 33: 50S RIBOSOMAL PROTEIN L27

Chain Y:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	102814	Depositor
Resolution determination method	Not provided	
CTF correction method	INDIVIDUAL PARTICLES	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	20	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	59000	Depositor
Image detector	FEI EAGLE (4k x 4k)	Depositor
Maximum map value	0.191	Depositor
Minimum map value	-0.046	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.016	Depositor
Recommended contour level	0.045	Depositor
Map size (Å)	384.0, 384.0, 384.0	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.5, 1.5, 1.5	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	0	1.91	12/635 (1.9%)	2.26	26/848 (3.1%)
2	1	1.71	3/510 (0.6%)	1.90	8/677 (1.2%)
3	2	1.85	8/453 (1.8%)	1.91	10/605 (1.7%)
4	3	1.79	6/450 (1.3%)	2.16	16/599 (2.7%)
5	4	1.66	1/417 (0.2%)	1.93	5/556 (0.9%)
6	5	1.69	15/1748 (0.9%)	1.91	38/2355 (1.6%)
7	6	1.86	6/380 (1.6%)	2.24	15/498 (3.0%)
8	7	1.76	6/513 (1.2%)	1.99	14/676 (2.1%)
9	8	1.77	4/303 (1.3%)	1.84	3/397 (0.8%)
10	9	1.75	31/2584 (1.2%)	2.10	81/3487 (2.3%)
11	A	3.31	347/2744 (12.6%)	3.75	664/4276 (15.5%)
12	B	3.41	9451/69796 (13.5%)	3.79	16403/108888 (15.1%)
13	C	1.82	28/2122 (1.3%)	2.15	58/2854 (2.0%)
14	D	1.74	16/1586 (1.0%)	1.95	36/2134 (1.7%)
15	E	1.77	16/1571 (1.0%)	2.04	50/2113 (2.4%)
16	F	1.79	13/1444 (0.9%)	2.00	35/1937 (1.8%)
17	G	1.72	7/1336 (0.5%)	1.90	26/1805 (1.4%)
18	H	1.80	17/1122 (1.5%)	2.05	42/1515 (2.8%)
19	I	1.61	4/497 (0.8%)	1.98	9/662 (1.4%)
20	J	1.74	7/1152 (0.6%)	2.02	42/1551 (2.7%)
21	K	1.77	10/941 (1.1%)	2.00	29/1260 (2.3%)
22	L	1.81	17/1054 (1.6%)	2.02	32/1403 (2.3%)
23	M	1.84	20/1093 (1.8%)	1.97	26/1460 (1.8%)
24	N	1.80	11/974 (1.1%)	2.02	28/1303 (2.1%)
25	O	1.79	9/902 (1.0%)	2.02	28/1209 (2.3%)
26	P	1.77	9/929 (1.0%)	2.06	24/1242 (1.9%)
27	Q	1.81	11/960 (1.1%)	2.20	45/1278 (3.5%)
28	R	1.78	9/829 (1.1%)	2.04	24/1107 (2.2%)
29	S	1.83	13/864 (1.5%)	2.05	31/1156 (2.7%)
30	T	1.69	4/745 (0.5%)	2.01	22/996 (2.2%)
31	U	1.71	5/764 (0.7%)	1.86	11/1019 (1.1%)
32	W	1.76	8/766 (1.0%)	1.92	13/1025 (1.3%)
33	Y	1.76	5/603 (0.8%)	2.03	15/797 (1.9%)
All	All	3.02	10129/102787 (9.9%)	3.41	17909/153688 (11.7%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	0	0	2
2	1	0	2
3	2	0	1
4	3	0	2
5	4	0	2
6	5	0	3
7	6	0	6
8	7	0	3
9	8	0	1
10	9	0	27
11	A	0	55
12	B	0	1482
13	C	0	9
14	D	0	4
15	E	0	5
16	F	0	6
17	G	0	4
18	H	0	2
20	J	0	6
21	K	0	7
22	L	0	2
23	M	0	7
24	N	0	7
25	O	0	5
26	P	0	3
27	Q	0	4
28	R	0	5
29	S	0	3
30	T	0	2
31	U	0	2
32	W	0	3
33	Y	0	3
All	All	0	1675

The worst 5 of 10129 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
12	B	2225	A	N7-C5	-20.53	1.26	1.39
12	B	2105	U	C2-N3	19.07	1.51	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
12	B	1853	A	N7-C5	-18.25	1.28	1.39
12	B	548	G	N7-C5	-17.75	1.28	1.39
12	B	1501	G	C6-N1	17.64	1.51	1.39

The worst 5 of 17909 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
12	B	751	A	N1-C6-N6	26.85	134.71	118.60
12	B	370	G	N1-C6-O6	26.32	135.69	119.90
12	B	928	A	N1-C6-N6	24.76	133.45	118.60
12	B	2360	G	N1-C6-O6	24.64	134.69	119.90
12	B	668	A	N1-C6-N6	24.57	133.34	118.60

There are no chirality outliers.

5 of 1675 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	0	37	PHE	Sidechain
1	0	56	ARG	Sidechain
2	1	23	ARG	Sidechain
2	1	7	ARG	Sidechain
3	2	44	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	0	625	0	655	4	0
2	1	509	0	543	1	0
3	2	449	0	491	0	0
4	3	444	0	461	3	0
5	4	410	0	440	2	0
6	5	1733	0	1824	6	0
7	6	377	0	418	3	0
8	7	504	0	574	8	0
9	8	302	0	343	1	0
10	9	2541	0	2555	66	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
11	A	2455	0	1253	15	0
12	B	62317	0	31306	522	0
13	C	2083	0	2157	14	0
14	D	1565	0	1616	9	0
15	E	1552	0	1619	6	0
16	F	1420	0	1460	8	0
17	G	1317	0	1364	7	0
18	H	1111	0	1148	2	0
19	I	495	0	525	4	0
20	J	1129	0	1162	7	0
21	K	932	0	1003	9	0
22	L	1045	0	1117	8	0
23	M	1074	0	1157	7	0
24	N	961	0	1000	8	0
25	O	892	0	923	3	0
26	P	917	0	965	13	0
27	Q	947	0	1022	4	0
28	R	816	0	839	5	0
29	S	857	0	922	9	0
30	T	739	0	807	7	0
31	U	758	0	807	8	0
32	W	753	0	780	1	0
33	Y	596	0	610	5	0
All	All	94625	0	63866	702	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 4.

The worst 5 of 702 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)
12:B:1481:U:H3	12:B:1511:G:H21	1.23	0.85
12:B:2267:A:H61	12:B:2271:G:H1	1.25	0.79
30:T:20:ALA:H	30:T:23:ALA:HB3	1.50	0.75
10:9:279:TRP:CG	10:9:328:VAL:HG13	2.21	0.75
12:B:2507:C:H41	12:B:2576:G:H22	1.35	0.74

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
1	0	75/77 (97%)	61 (81%)	10 (13%)	4 (5%)	2 19
2	1	61/63 (97%)	50 (82%)	8 (13%)	3 (5%)	2 20
3	2	56/58 (97%)	50 (89%)	5 (9%)	1 (2%)	8 40
4	3	54/56 (96%)	43 (80%)	4 (7%)	7 (13%)	0 5
5	4	49/54 (91%)	43 (88%)	4 (8%)	2 (4%)	3 22
6	5	232/234 (99%)	197 (85%)	25 (11%)	10 (4%)	2 22
7	6	44/46 (96%)	33 (75%)	8 (18%)	3 (7%)	1 15
8	7	62/64 (97%)	47 (76%)	10 (16%)	5 (8%)	1 12
9	8	36/38 (95%)	27 (75%)	7 (19%)	2 (6%)	2 18
10	9	332/390 (85%)	261 (79%)	43 (13%)	28 (8%)	1 11
13	C	270/272 (99%)	216 (80%)	31 (12%)	23 (8%)	1 11
14	D	207/209 (99%)	160 (77%)	34 (16%)	13 (6%)	1 16
15	E	199/201 (99%)	163 (82%)	16 (8%)	20 (10%)	0 9
16	F	176/178 (99%)	135 (77%)	22 (12%)	19 (11%)	0 8
17	G	172/176 (98%)	126 (73%)	31 (18%)	15 (9%)	1 11
18	H	147/149 (99%)	112 (76%)	21 (14%)	14 (10%)	0 10
19	I	67/141 (48%)	65 (97%)	0	2 (3%)	4 28
20	J	140/142 (99%)	108 (77%)	20 (14%)	12 (9%)	1 11
21	K	120/123 (98%)	98 (82%)	16 (13%)	6 (5%)	2 20
22	L	141/143 (99%)	115 (82%)	17 (12%)	9 (6%)	1 16
23	M	134/136 (98%)	112 (84%)	16 (12%)	6 (4%)	2 22
24	N	119/127 (94%)	94 (79%)	17 (14%)	8 (7%)	1 15
25	O	114/116 (98%)	88 (77%)	20 (18%)	6 (5%)	2 19
26	P	112/114 (98%)	84 (75%)	19 (17%)	9 (8%)	1 12
27	Q	115/117 (98%)	95 (83%)	12 (10%)	8 (7%)	1 14

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
28	R	101/103 (98%)	83 (82%)	14 (14%)	4 (4%)	3 23
29	S	108/110 (98%)	87 (81%)	11 (10%)	10 (9%)	0 10
30	T	92/100 (92%)	68 (74%)	16 (17%)	8 (9%)	1 11
31	U	96/103 (93%)	73 (76%)	15 (16%)	8 (8%)	1 12
32	W	92/94 (98%)	78 (85%)	11 (12%)	3 (3%)	4 26
33	Y	77/84 (92%)	54 (70%)	15 (20%)	8 (10%)	0 8
All	All	3800/4018 (95%)	3026 (80%)	498 (13%)	276 (7%)	2 13

5 of 276 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	0	73	ARG
3	2	9	THR
4	3	3	GLN
6	5	40	GLU
10	9	54	ASN

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
1	0	67/67 (100%)	60 (90%)	7 (10%)	7 26
2	1	55/55 (100%)	51 (93%)	4 (7%)	14 40
3	2	48/48 (100%)	46 (96%)	2 (4%)	30 54
4	3	47/47 (100%)	44 (94%)	3 (6%)	17 44
5	4	45/48 (94%)	43 (96%)	2 (4%)	28 53
6	5	181/181 (100%)	179 (99%)	2 (1%)	73 84
7	6	38/38 (100%)	35 (92%)	3 (8%)	12 38
8	7	51/51 (100%)	45 (88%)	6 (12%)	5 21
9	8	34/34 (100%)	31 (91%)	3 (9%)	10 33
10	9	268/321 (84%)	231 (86%)	37 (14%)	3 18

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
13	C	216/217 (100%)	208 (96%)	8 (4%)	34 58
14	D	164/164 (100%)	146 (89%)	18 (11%)	6 24
15	E	165/165 (100%)	156 (94%)	9 (6%)	21 48
16	F	149/149 (100%)	143 (96%)	6 (4%)	31 56
17	G	136/137 (99%)	128 (94%)	8 (6%)	19 46
18	H	114/114 (100%)	105 (92%)	9 (8%)	12 38
19	I	51/109 (47%)	46 (90%)	5 (10%)	8 28
20	J	116/116 (100%)	108 (93%)	8 (7%)	15 42
21	K	102/104 (98%)	95 (93%)	7 (7%)	15 42
22	L	102/102 (100%)	95 (93%)	7 (7%)	15 42
23	M	109/109 (100%)	98 (90%)	11 (10%)	7 27
24	N	100/103 (97%)	93 (93%)	7 (7%)	15 41
25	O	86/86 (100%)	82 (95%)	4 (5%)	26 52
26	P	99/99 (100%)	94 (95%)	5 (5%)	24 50
27	Q	89/89 (100%)	84 (94%)	5 (6%)	21 47
28	R	84/84 (100%)	79 (94%)	5 (6%)	19 46
29	S	93/93 (100%)	89 (96%)	4 (4%)	29 54
30	T	80/84 (95%)	72 (90%)	8 (10%)	7 27
31	U	81/84 (96%)	76 (94%)	5 (6%)	18 45
32	W	78/78 (100%)	74 (95%)	4 (5%)	24 50
33	Y	59/62 (95%)	54 (92%)	5 (8%)	10 35
All	All	3107/3238 (96%)	2890 (93%)	217 (7%)	19 41

5 of 217 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
17	G	88	LEU
21	K	61	VAL
30	T	48	GLN
18	H	19	VAL
19	I	105	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 44 such sidechains are listed below:

Mol	Chain	Res	Type
21	K	29	HIS
25	O	34	HIS
22	L	38	GLN
24	N	3	HIS
27	Q	58	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
11	A	112/118 (94%)	21 (18%)	3 (2%)
12	B	2902/2903 (99%)	540 (18%)	96 (3%)
All	All	3014/3021 (99%)	561 (18%)	99 (3%)

5 of 561 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
11	A	9	G
11	A	13	G
11	A	14	U
11	A	16	G
11	A	26	C

5 of 99 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
12	B	1786	A
12	B	2133	G
12	B	1847	A
12	B	2051	A
12	B	2158	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.

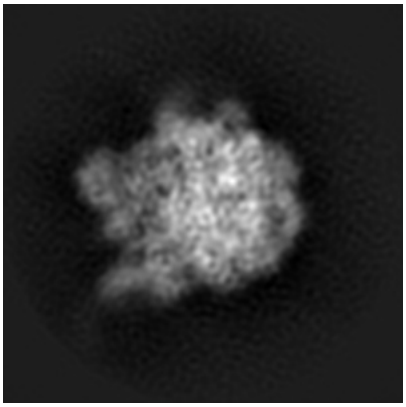
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-2605. These allow visual inspection of the internal detail of the map and identification of artifacts.

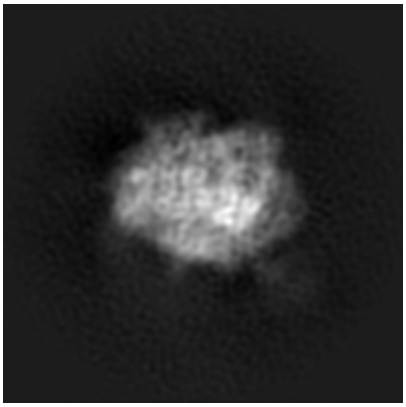
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

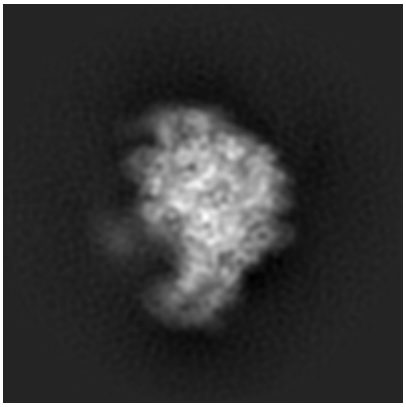
6.1.1 Primary map



X



Y

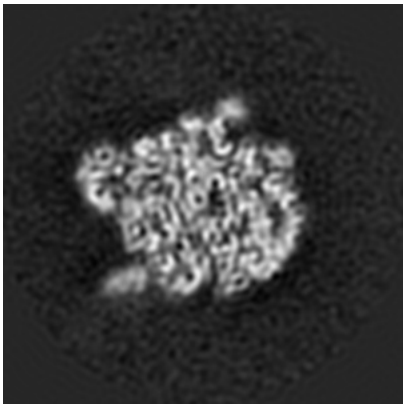


Z

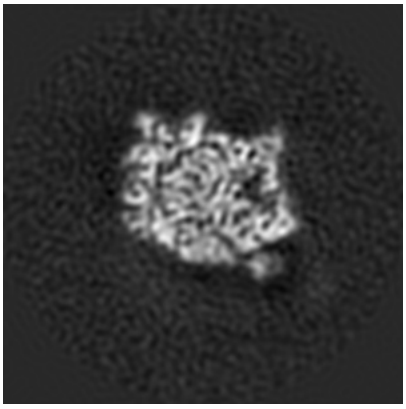
The images above show the map projected in three orthogonal directions.

6.2 Central slices

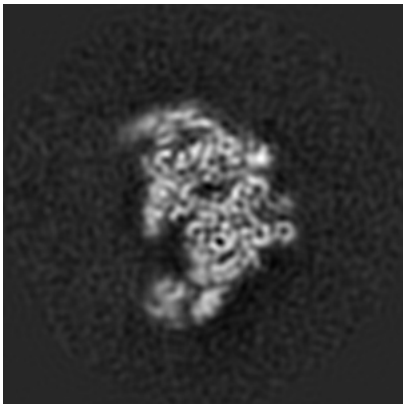
6.2.1 Primary map



X Index: 128



Y Index: 128

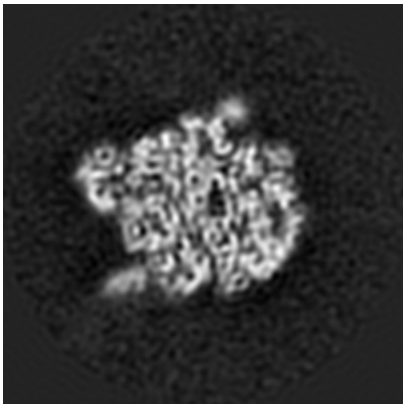


Z Index: 128

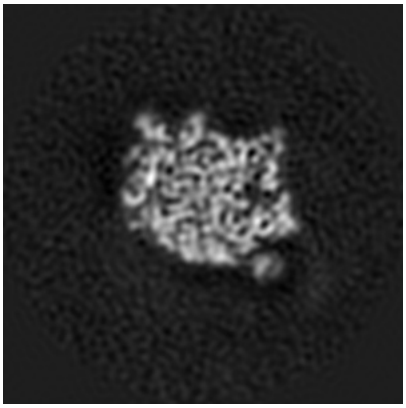
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

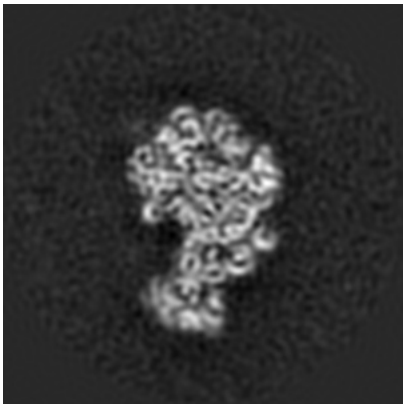
6.3.1 Primary map



X Index: 129



Y Index: 126

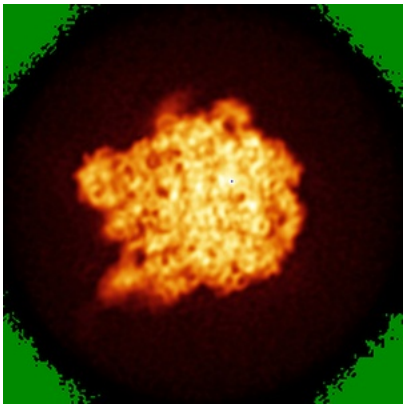


Z Index: 143

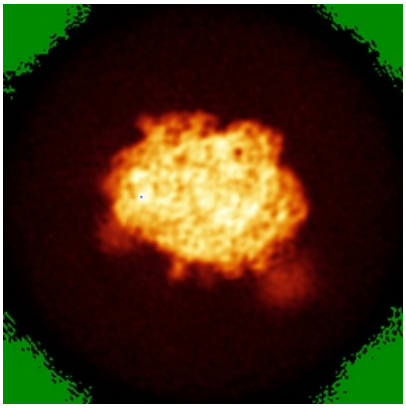
The images above show the largest variance slices of the map in three orthogonal directions.

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

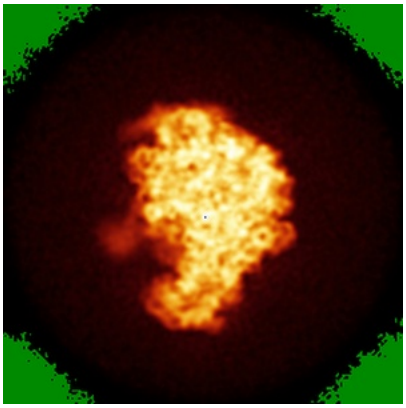
6.4.1 Primary map



X



Y

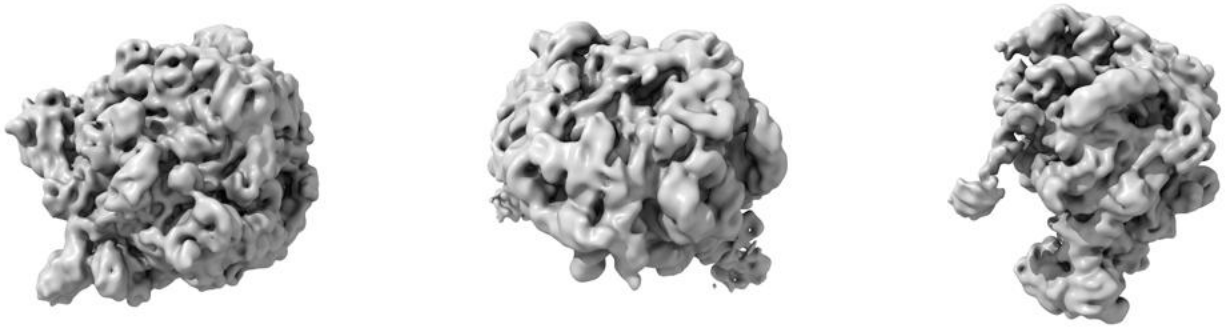


Z

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 0.045. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

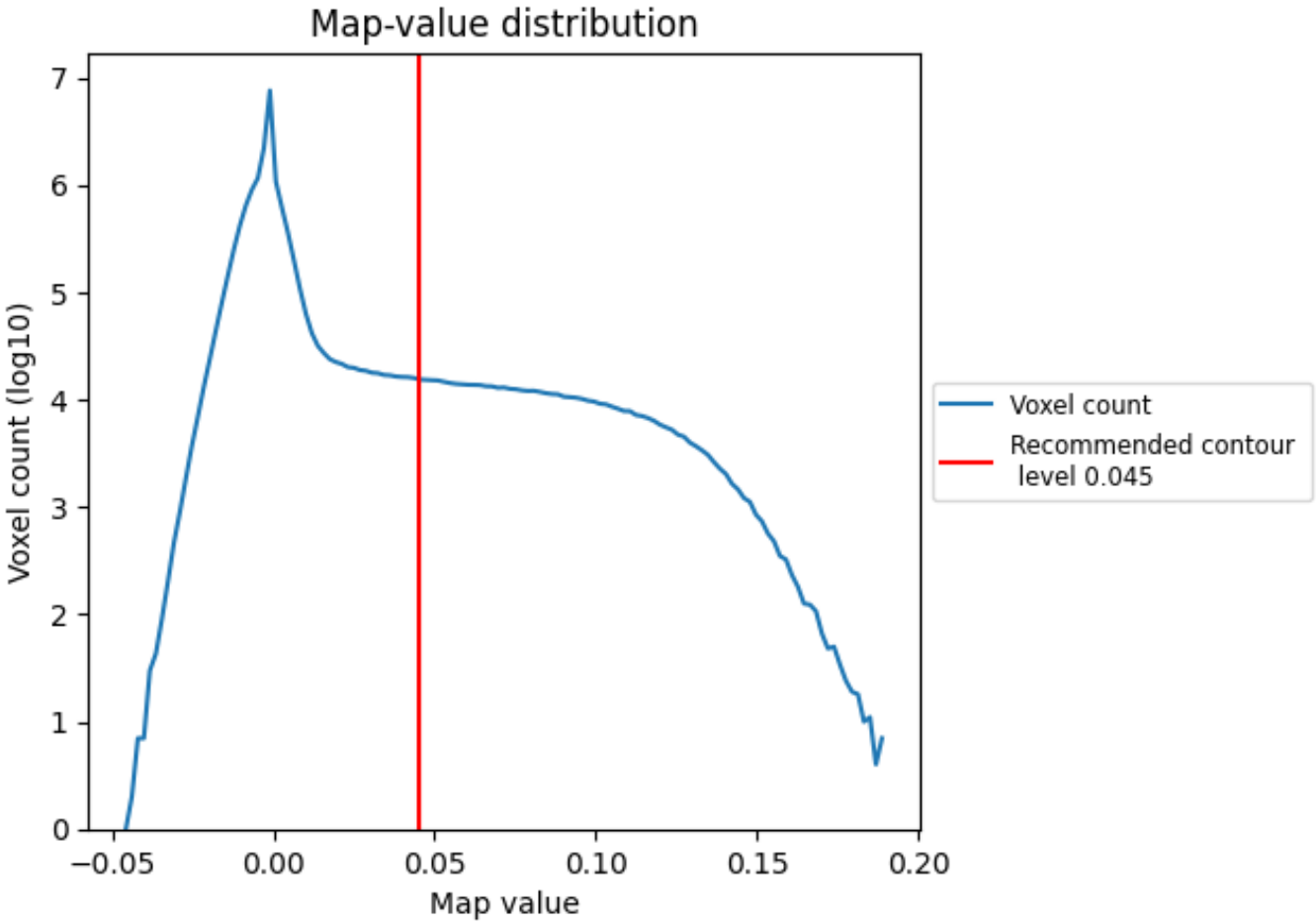
6.6 Mask visualisation (i)

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

7 Map analysis

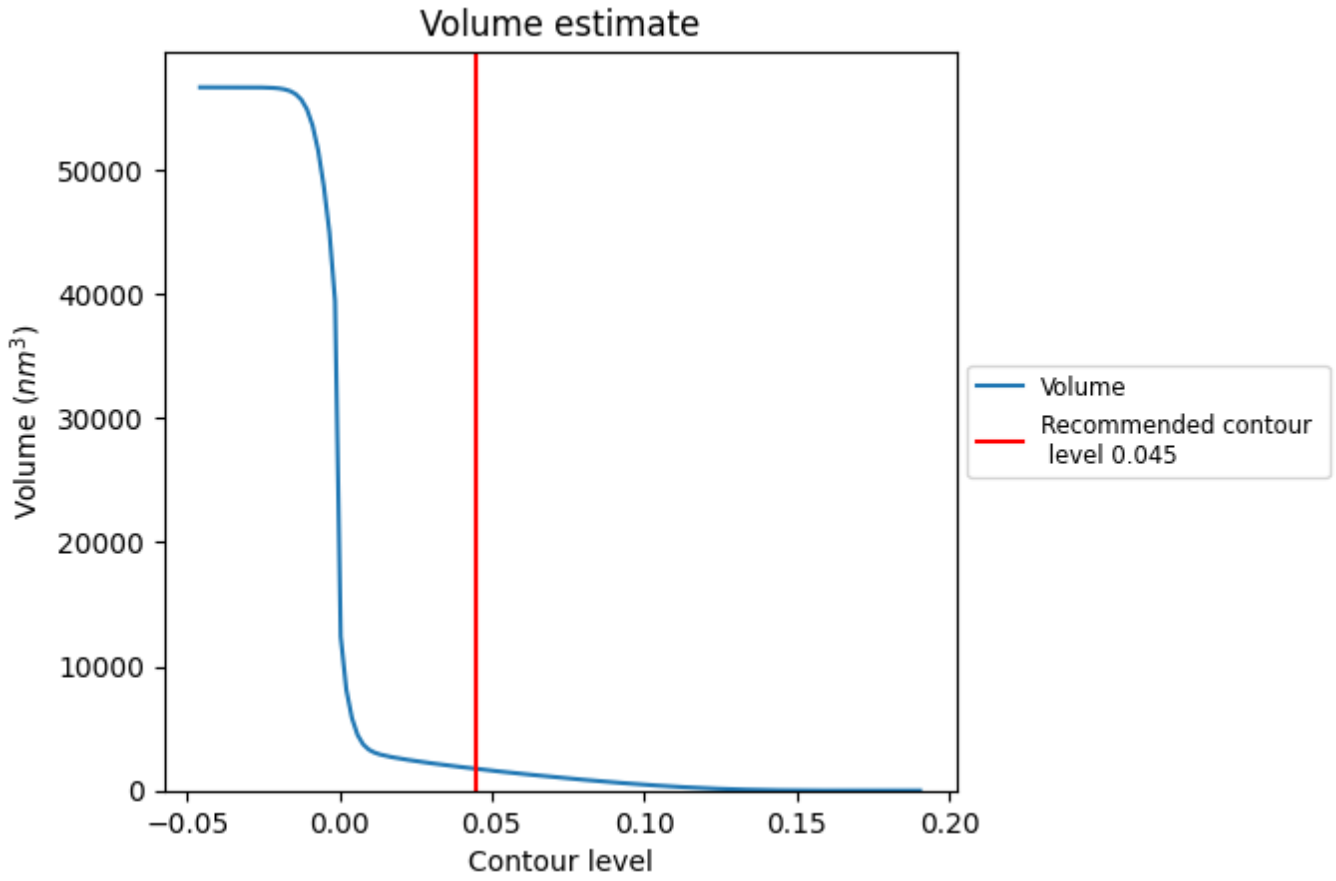
This section contains the results of statistical analysis of the map.

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.

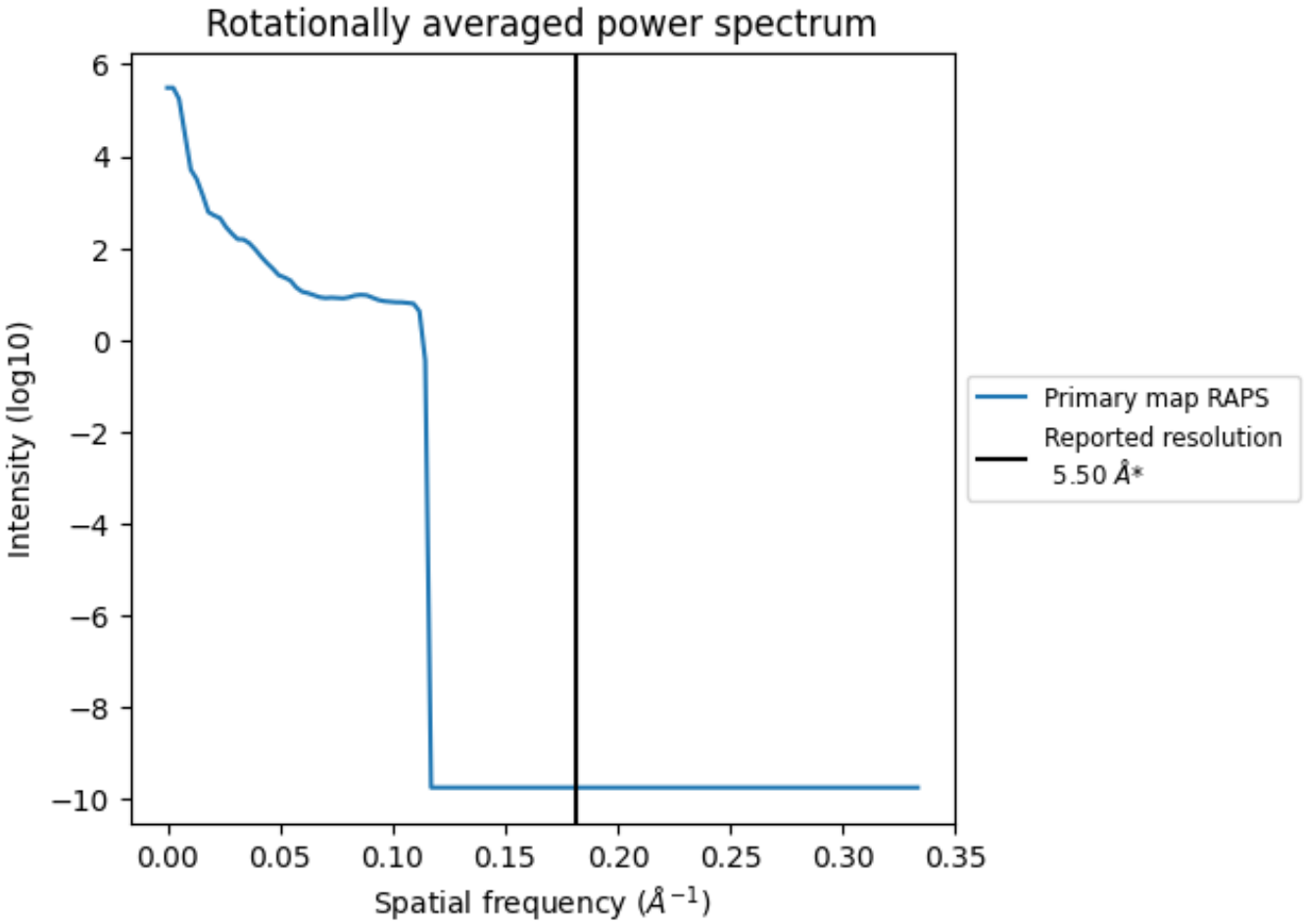
7.2 Volume estimate (i)



The volume at the recommended contour level is 1748 nm^3; this corresponds to an approximate mass of 1579 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 0.182 Å^{-1}

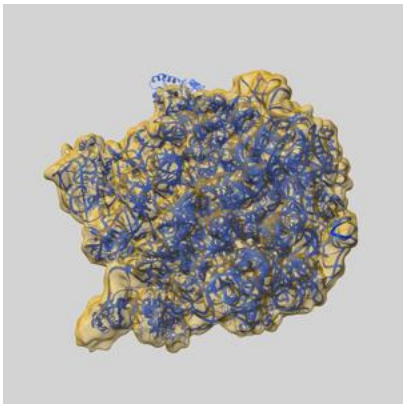
8 Fourier-Shell correlation (i)

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

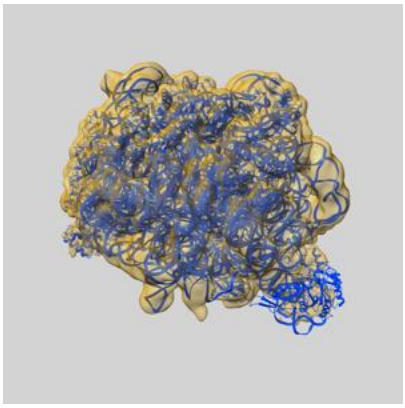
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-2605 and PDB model 4CSU. Per-residue inclusion information can be found in section 3 on page 10.

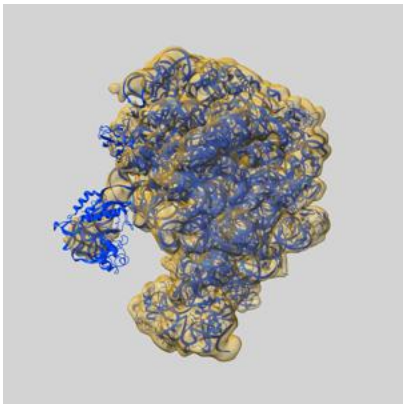
9.1 Map-model overlay



X



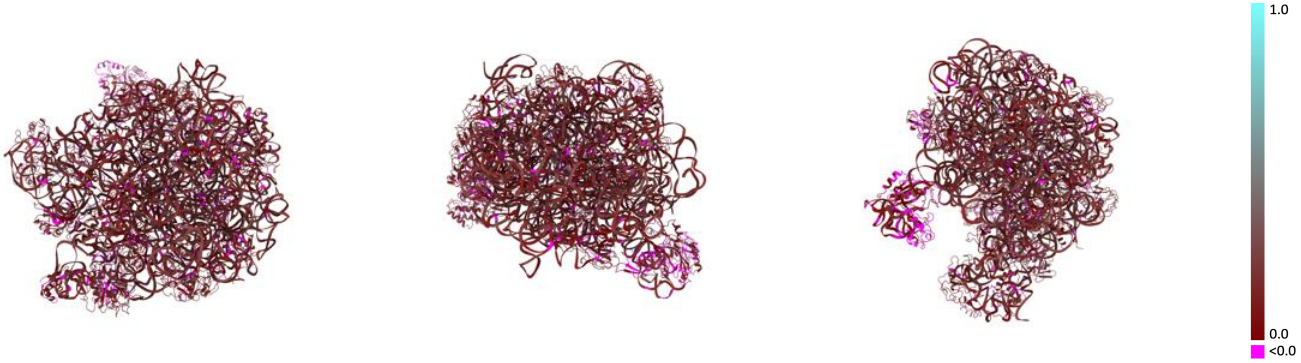
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.045 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.

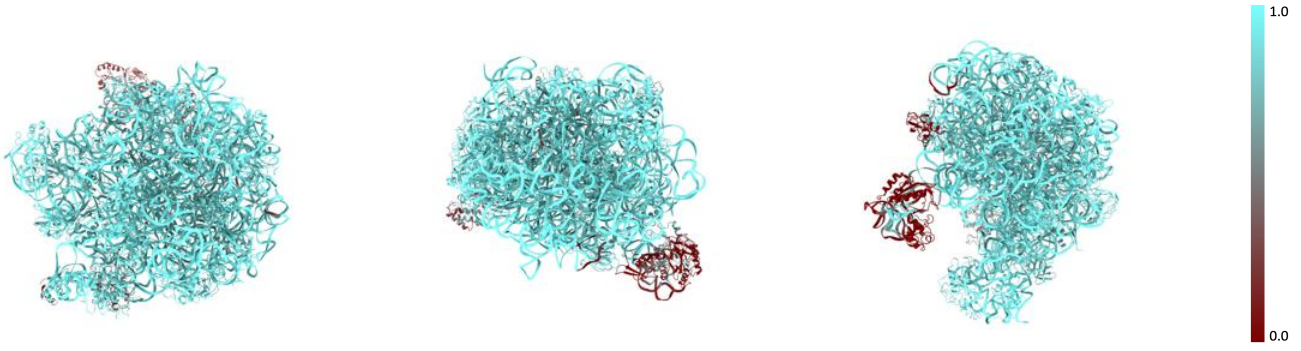
9.2 Q-score mapped to coordinate model



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.

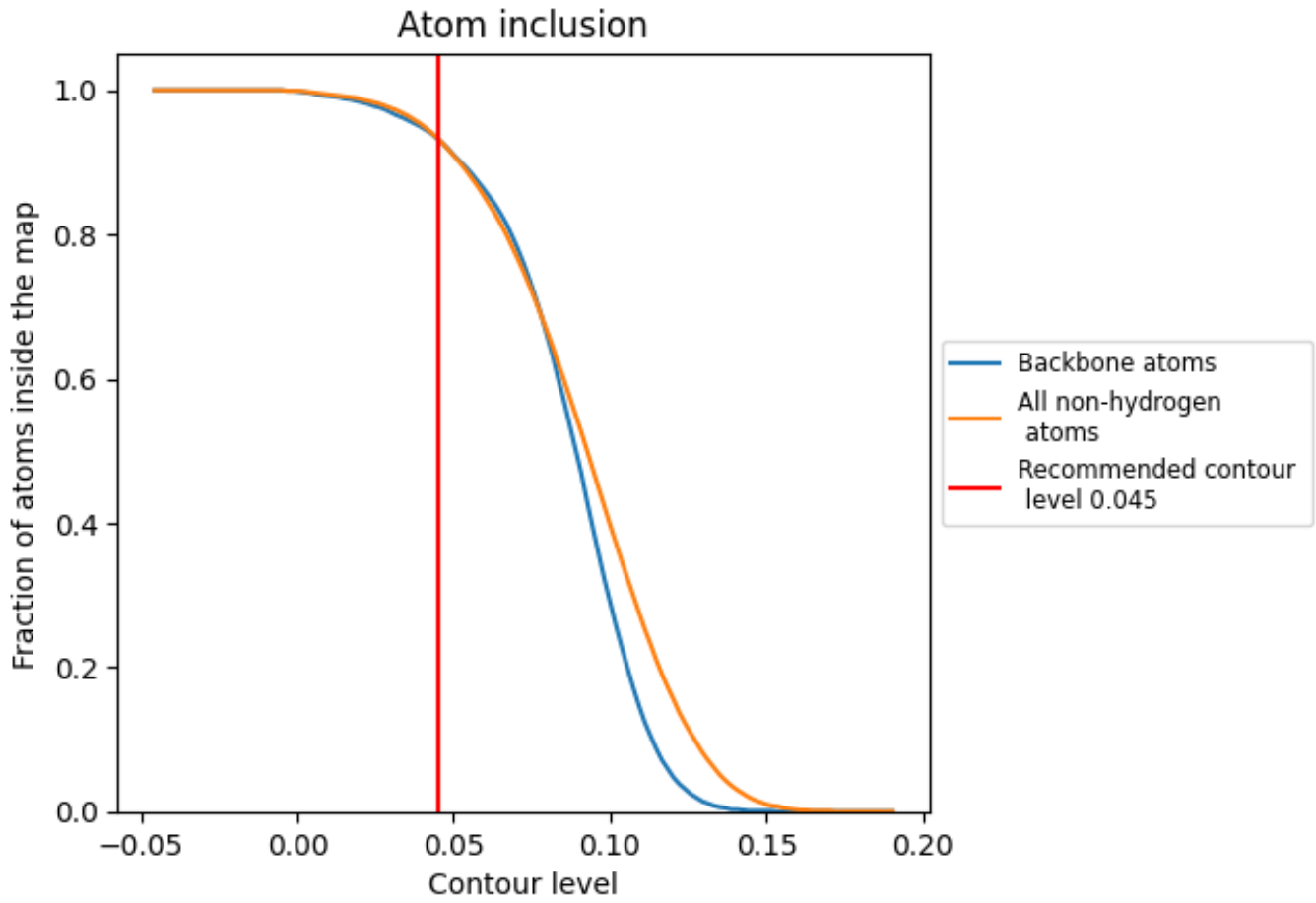
9.3 Atom inclusion mapped to coordinate model



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 (0.045).

9.4 Atom inclusion (i)



At the recommended contour level, 93% of all backbone atoms, 93% 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 (0.045) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9330	0.1580
0	0.9020	0.1240
1	0.9860	0.1510
2	0.9150	0.1450
3	0.8510	0.0740
4	0.7790	0.0940
5	0.0840	0.0310
6	0.9350	0.1170
7	0.9330	0.1150
8	0.9730	0.0750
9	0.6850	0.1020
A	0.9980	0.1940
B	0.9730	0.1770
C	0.9440	0.1260
D	0.9600	0.1280
E	0.9070	0.1380
F	0.9530	0.1170
G	0.9250	0.1390
H	0.3160	0.0780
I	0.8100	0.0820
J	0.9560	0.1520
K	0.9610	0.1330
L	0.9490	0.1220
M	0.9600	0.1390
N	0.9320	0.1200
O	0.9820	0.1260
P	0.9460	0.1390
Q	0.9390	0.1150
R	0.9440	0.1360
S	0.9220	0.1300
T	0.9540	0.1280
U	0.9560	0.1220
W	0.9250	0.1430
Y	0.9240	0.0970