wwPDB EM Validation Summary Report

Jul 8, 2026 – 04:41 PM JST

PDB ID	:	23WI / pdb_000023wi
EMDB ID	:	EMD-67081
Title	:	Subtomogram average of 70S ribosome (11x11) using CRYO ARM 300II
Authors	:	Yanagisawa, H.; Makino, F.; Eisenstein, F.; Miyata, T.; Kinoshita, M.; Kikkawa, M.; Namba, K.
Deposited on	:	2026-02-23
Resolution	:	2.60 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:

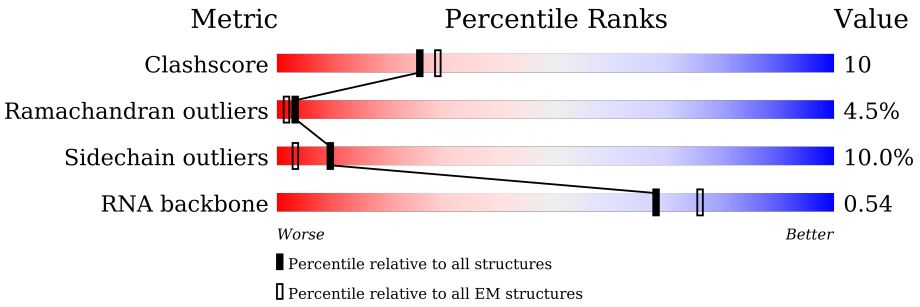
EMDB validation analysis	:	0.0.1.dev133
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.50

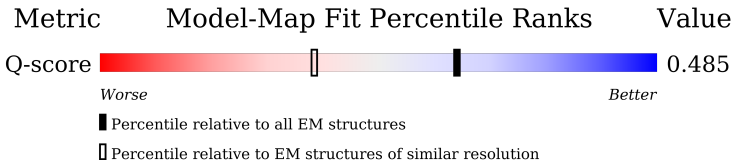
1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.60 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	12017 (2.36 - 3.36)

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

Mol	Chain	Length	Quality of chain
1	a	1539	79% 60% 32% 8%
2	b	218	100% 51% 41% 6%
3	c	206	98% 58% 36% 5%

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Mol	Chain	Length	Quality of chain
4	d	205	100% 45% 47% 8%
5	e	157	90% 59% 36%
6	f	100	100% 36% 46% 17%
7	g	151	100% 66% 28% 7%
8	h	129	93% 56% 34% 9%
9	i	127	100% 65% 28% 6%
10	j	98	99% 54% 43%
11	k	116	95% 48% 40% 9%
12	l	123	99% 62% 34%
13	m	114	100% 50% 46%
14	n	101	99% 53% 39% 7%
15	o	88	92% 53% 42%
16	p	82	98% 46% 50%
17	q	80	100% 46% 45% 9%
18	r	65	95% 66% 25% 8%
19	s	79	100% 58% 35% 6%
20	t	85	100% 53% 38% 9%
21	u	65	100% 66% 28% 6%
22	A	886	30% 60% 32% 7%
23	B	120	77% 71% 19% 10%
24	C	271	44% 68% 26% 6%
25	D	209	45% 67% 27% 5%
26	E	201	63% 66% 31%
27	F	177	100% 53% 36% 11%
28	G	176	99% 64% 28% 7%

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Mol	Chain	Length	Quality of chain
29	J	142	54% 63% 32% 5%
30	K	122	60% 54% 37% 8%
31	L	143	59% 69% 26% 5%
32	M	136	64% 71% 25%
33	N	120	36% 70% 24% 6%
34	O	116	92% 62% 33%
35	P	114	57% 68% 28%
36	Q	117	32% 80% 20%
37	R	103	67% 62% 33%
38	S	110	47% 57% 38% 5%
39	T	93	72% 68% 29%
40	U	102	82% 72% 25%
41	V	94	91% 73% 23%
42	W	75	51% 65% 29% 5%
43	X	77	56% 66% 31%
44	Y	63	90% 65% 30% 5%
45	Z	58	53% 67% 29%
46	0	56	48% 77% 21%
47	1	50	76% 68% 24% 8%
48	2	46	24% 61% 37%
49	3	64	36% 78% 17% 5%
50	4	38	68% 58% 42%
51	6	66	100% 74% 21% 5%
52	5	2014	33% 60% 33% 7%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
52	5MU	5	1939	-	-	X	-

2 Entry composition (i)

There are 57 unique types of molecules in this entry. The entry contains 141435 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 RNA (1539-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	a	1539	33029	14738	6052	10700	1539	0	0

- Molecule 2 is a protein called Small ribosomal subunit protein uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	b	218	1704	1081	305	311	7	0	0

- Molecule 3 is a protein called Small ribosomal subunit protein uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	c	206	1624	1028	305	288	3	0	0

- Molecule 4 is a protein called Small ribosomal subunit protein uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	d	205	1643	1026	315	298	4	0	0

- Molecule 5 is a protein called Small ribosomal subunit protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	e	157	1141	709	218	208	6	0	0

- Molecule 6 is a protein called Small ribosomal subunit protein bS6, non-modified isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	f	100	817	515	148	148	6	0	0

- Molecule 7 is a protein called Small ribosomal subunit protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	g	151	Total	C	N	O	S	0	0
			1181	735	227	215	4		

- Molecule 8 is a protein called Small ribosomal subunit protein uS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	h	129	Total	C	N	O	S	0	0
			979	616	173	184	6		

- Molecule 9 is a protein called Small ribosomal subunit protein uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	i	127	Total	C	N	O	S	0	0
			1022	634	206	179	3		

- Molecule 10 is a protein called Small ribosomal subunit protein uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	j	98	Total	C	N	O	S	0	0
			786	493	150	142	1		

- Molecule 11 is a protein called Small ribosomal subunit protein uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	k	116	Total	C	N	O	S	0	0
			869	535	173	158	3		

- Molecule 12 is a protein called Small ribosomal subunit protein uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	l	123	Total	C	N	O	S	0	0
			955	590	196	165	4		

- Molecule 13 is a protein called Small ribosomal subunit protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	m	114	Total	C	N	O	S	0	0
			883	546	178	156	3		

- Molecule 14 is a protein called Small ribosomal subunit protein uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	n	100	Total	C	N	O	S	0	0
			794	495	164	132	3		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
n	35	ALA	-	insertion	UNP P0AG59

- Molecule 15 is a protein called Small ribosomal subunit protein uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	o	88	Total	C	N	O	S	0	0
			714	439	144	130	1		

- Molecule 16 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	p	82	Total	C	N	O	S	0	0
			649	406	128	114	1		

- Molecule 17 is a protein called Small ribosomal subunit protein uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	q	80	Total	C	N	O	S	0	0
			648	411	121	113	3		

- Molecule 18 is a protein called Small ribosomal subunit protein bS18.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	r	65	Total	C	N	O	0	0
			504	317	96	91		

- Molecule 19 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	s	79	Total	C	N	O	S	0	0
			637	408	120	107	2		

- Molecule 20 is a protein called Small ribosomal subunit protein bS20.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	t	85	Total	C	N	O	S	0	0
			665	411	137	114	3		

- Molecule 21 is a protein called Small ribosomal subunit protein bS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	u	65	Total	C	N	O	S	0	0
			495	307	100	87	1		

- Molecule 22 is a RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	A	886	Total	C	N	O	P	0	0
			19047	8500	3532	6129	886		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	747	5MC	U	conflict	GB 2962093202

- Molecule 23 is a RNA chain called 30S ribosomal protein S.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	B	120	Total	C	N	O	P	0	0
			2572	1145	471	836	120		

- Molecule 24 is a protein called Large ribosomal subunit protein uL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	C	271	Total	C	N	O	S	0	0
			2082	1288	423	364	7		

- Molecule 25 is a protein called Large ribosomal subunit protein uL3.

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

- Molecule 26 is a protein called 50S ribosomal protein L4.

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

- Molecule 27 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	F	177	Total	C	N	O	S	0	0
			1410	899	249	256	6		

- Molecule 28 is a protein called Large ribosomal subunit protein uL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	G	176	Total	C	N	O	S	0	0
			1323	832	243	246	2		

- Molecule 29 is a protein called 50S ribosomal protein L13.

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

- Molecule 30 is a protein called Large ribosomal subunit protein uL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	K	122	Total	C	N	O	S	0	0
			938	587	180	165	6		

- Molecule 31 is a protein called Large ribosomal subunit protein uL15.

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

- Molecule 32 is a protein called 50S ribosomal protein L16.

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

- Molecule 33 is a protein called Large ribosomal subunit protein bL17.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	N	120	Total	C	N	O	S	0	0
			960	593	196	166	5		

- Molecule 34 is a protein called 50S ribosomal protein L18.

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

- Molecule 35 is a protein called 50S ribosomal protein L19.

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

- Molecule 36 is a protein called 50S ribosomal protein L20.

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

- Molecule 37 is a protein called 50S ribosomal protein L21.

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

- Molecule 38 is a protein called 50S ribosomal protein L22.

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

- Molecule 39 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	T	93	Total	C	N	O	S	0	0
			738	466	139	131	2		

- Molecule 40 is a protein called Large ribosomal subunit protein uL24.

Mol	Chain	Residues	Atoms				AltConf	Trace
40	U	102	Total 779	C 492	N 146	O 141	0	0

- Molecule 41 is a protein called 50S ribosomal protein L25.

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

- Molecule 42 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	W	75	Total 575	C 356	N 116	O 102	S 1	0	0

- Molecule 43 is a protein called 50S ribosomal protein L28.

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

- Molecule 44 is a protein called Large ribosomal subunit protein uL29.

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

- Molecule 45 is a protein called 50S ribosomal protein L30.

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

- Molecule 46 is a protein called Large ribosomal subunit protein bL32.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	0	56	Total 444	C 269	N 94	O 80	S 1	0	0

- Molecule 47 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
47	1	50	Total 409	C 263	N 75	O 71	0	0

- Molecule 48 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	2	46	Total 377	C 228	N 90	O 57	S 2	0	0

- Molecule 49 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	3	64	Total 504	C 323	N 105	O 74	S 2	0	0

- Molecule 50 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	4	38	Total 302	C 185	N 65	O 48	S 4	0	0

- Molecule 51 is a protein called Large ribosomal subunit protein bL31.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	6	66	Total 522	C 323	N 99	O 94	S 6	0	0

- Molecule 52 is a RNA chain called RNA (2014-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
52	5	2014	Total 43229	C 19288	N 7928	O 13999	P 2014	0	0

- Molecule 53 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
53	a	82	Total 82	Mg 82	0
53	n	1	Total 1	Mg 1	0
53	A	63	Total 63	Mg 63	0

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Mol	Chain	Residues	Atoms	AltConf
53	B	7	Total Mg 7 7	0
53	C	1	Total Mg 1 1	0
53	D	1	Total Mg 1 1	0
53	E	1	Total Mg 1 1	0
53	N	1	Total Mg 1 1	0
53	0	1	Total Mg 1 1	0
53	5	170	Total Mg 170 170	0

- Molecule 54 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	AltConf
54	a	1	Total Cl 1 1	0
54	5	1	Total Cl 1 1	0

- Molecule 55 is SODIUM ION (CCD ID: NA) (formula: Na).

Mol	Chain	Residues	Atoms	AltConf
55	B	1	Total Na 1 1	0
55	5	1	Total Na 1 1	0

- Molecule 56 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
56	4	1	Total Zn 1 1	0
56	6	1	Total Zn 1 1	0

- Molecule 57 is water.

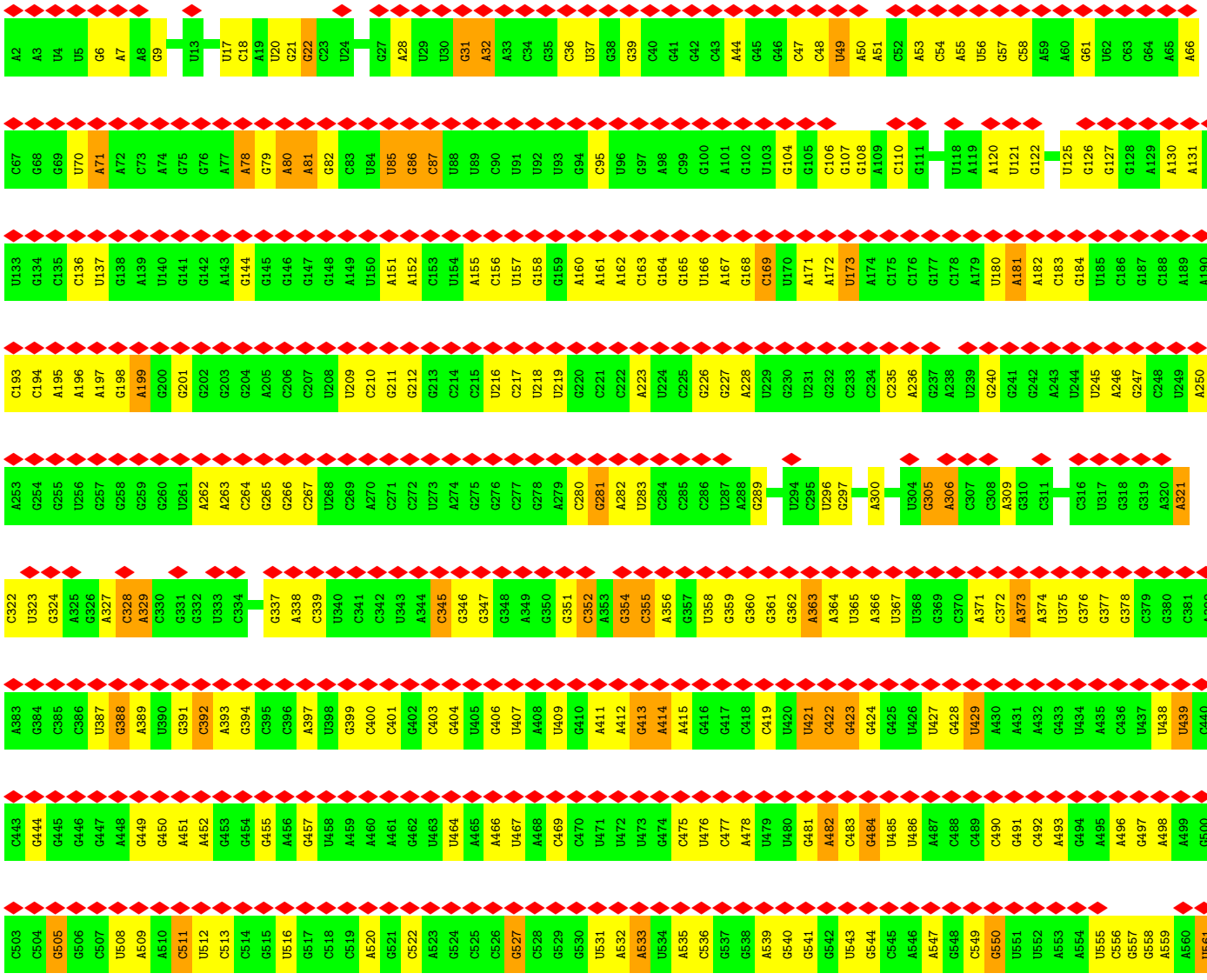
Mol	Chain	Residues	Atoms	AltConf
57	a	9	Total O 9 9	0
57	A	2	Total O 2 2	0
57	D	1	Total O 1 1	0
57	K	1	Total O 1 1	0
57	5	8	Total O 8 8	0

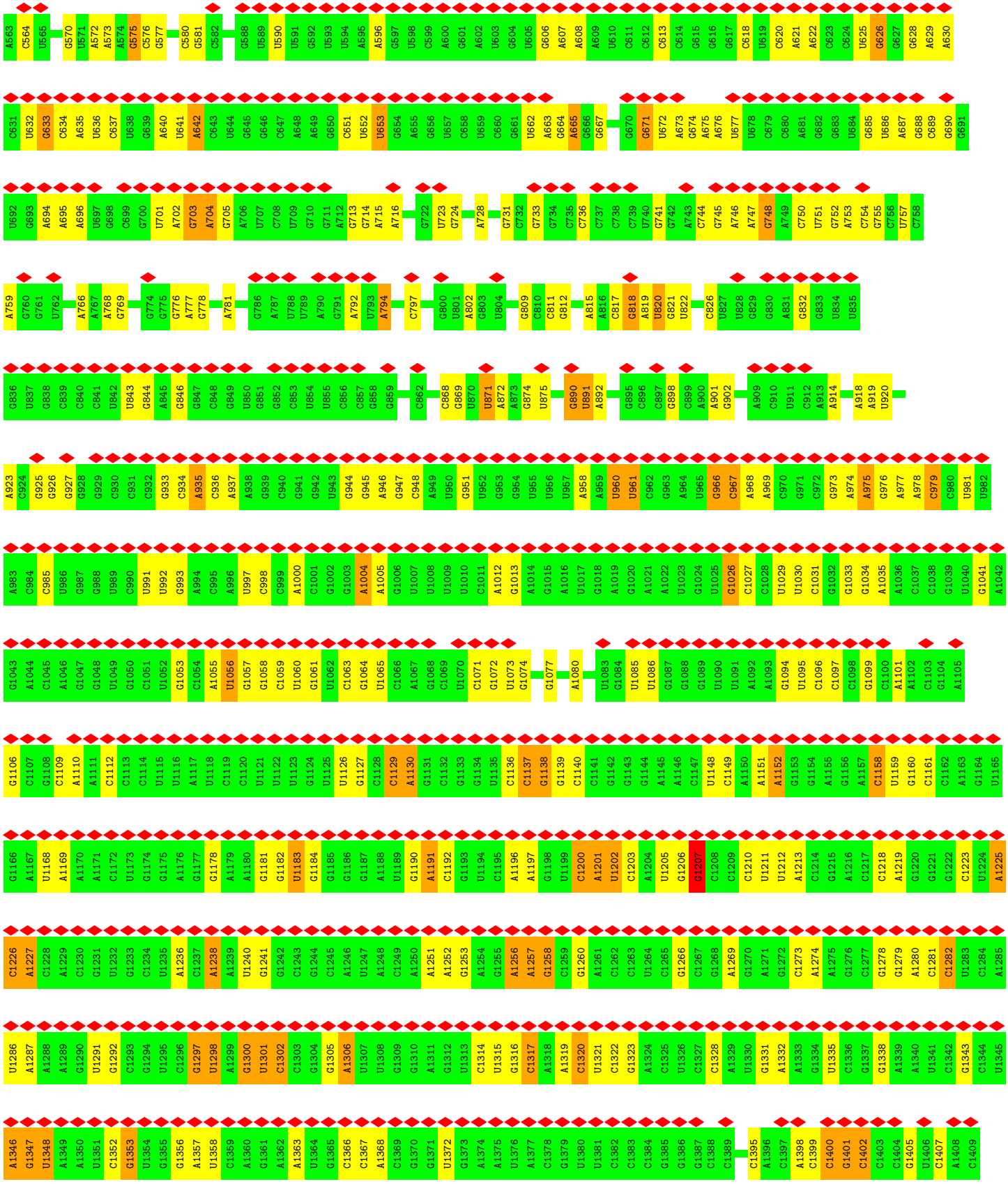
3 Residue-property plots (i)

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: RNA (1539-MER)

Chain a:




A563 C564 U565 G570 U571 A572 A573 A574 G575 C576 G577 C580 G581 C582 G588 U589 U590 U591 G592 U593 U594 A595 A596 G597 U598 C599 A600 G601 A602 U603 G604 U605 G606 A607 A608 A609 U610 C611 C612 C613 C614 G615 G616 G617 C618 U619 C620 A621 A622 C623 C624 U625 G626 G627 G628 A629 A630
C631 U632 G633 C634 A635 U636 C637 U638 G639 A640 U641 A642 C643 U644 G645 G646 C647 A648 A649 G650 C651 U652 U653 G654 A655 G656 U657 C658 U659 C660 G661 U662 A663 G664 A665 G666 G667 G670 G671 U672 A673 G674 A675 A676 U677 G678 C679 C680 A681 G682 G683 U684 G685 U686 A687 G688 C689 G690 G691
U692 G693 A694 A695 A696 U697 G698 C699 G700 U701 A702 G703 A704 G705 A706 U707 C708 U709 G710 G711 A712 G713 G714 A715 A716 G722 U723 G724 A728 G731 C732 G733 G734 C735 C736 C737 C738 C739 U740 G741 G742 A743 C744 G745 A746 A747 G748 A749 C750 U751 G752 A753 C754 G755 C756 U757 C758
A759 G760 G761 U762 A766 A767 A768 G769 G774 G775 G776 A777 G778 A781 G786 A787 U788 U789 A790 G791 A792 U793 A794 C797 G800 U801 A802 G803 U804 G809 C810 C811 G812 A815 A816 C817 G818 A819 U820 G821 U822 C826 U827 U828 G829 G830 A831 G832 G833 U834 U835
G836 U837 G838 C839 C840 C841 U842 U843 G844 A845 G846 G847 C848 G849 U850 G851 G852 C853 U854 U855 C856 C857 G858 G859 C862 C868 G869 U870 U871 A872 A873 G874 U875 G890 U891 A892 G895 C896 C897 G898 C899 A900 A901 G902 A909 C910 U911 C912 A913 A914 A918 A919 U920
A923 C924 G925 G926 G927 G928 G929 C930 C931 C932 G933 C934 A935 C936 A937 A938 G939 C940 G941 G942 U943 G944 G945 A946 G947 C948 A949 U950 G951 U952 G953 G954 U955 U956 U957 A958 A959 U960 U961 C962 G963 A964 U965 G966 C967 A968 A969 C970 G971 C972 G973 A974 A975 G976 A977 A978 C979 C980 U981 U982
A983 C984 C985 U986 G987 G988 U989 C990 U991 U992 G993 A994 C995 A996 U997 C998 C999 A1000 C1001 G1002 G1003 A1004 A1005 G1006 U1007 U1008 U1009 U1010 C1011 A1012 G1013 A1014 G1015 A1016 U1017 G1018 A1019 G1020 A1021 A1022 U1023 G1024 U1025 G1026 C1027 C1028 U1029 U1030 C1031 G1032 G1033 G1034 A1035 A1036 C1037 C1038 G1039 U1040 G1041 A1042
G1043 A1044 C1045 A1046 G1047 G1048 U1049 G1050 C1051 U1052 G1053 C1054 A1055 U1056 G1057 G1058 C1059 U1060 G1061 U1062 C1063 G1064 U1065 C1066 A1067 G1068 C1069 U1070 C1071 G1072 U1073 G1074 G1077 A1080 U1083 G1084 U1085 U1086 G1087 G1088 G1089 U1090 U1091 A1092 A1093 G1094 U1095 C1096 C1097 C1098 G1099 C1100 A1101 A1102 C1103 G1104 A1105
G1106 C1107 G1108 C1109 A1110 A1111 C1112 C1113 C1114 U1115 U1116 A1117 U1118 C1119 C1120 U1121 U1122 U1123 G1124 U1125 U1126 G1127 C1128 C1129 A1130 G1131 C1132 G1133 G1134 U1135 C1136 C1137 G1138 G1139 C1140 C1141 G1142 G1143 G1144 A1145 A1146 C1147 U1148 C1149 A1150 A1151 A1152 G1153 G1154 A1155 G1156 A1157 C1158 U1159 G1160 C1161 C1162 A1163 G1164 U1165
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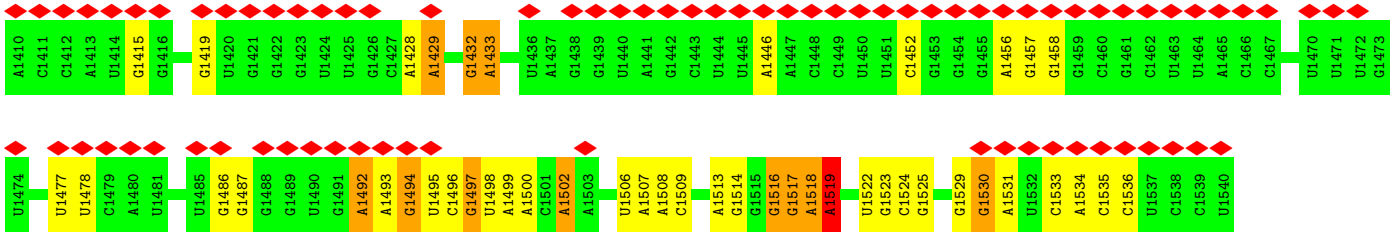
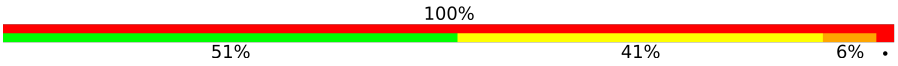
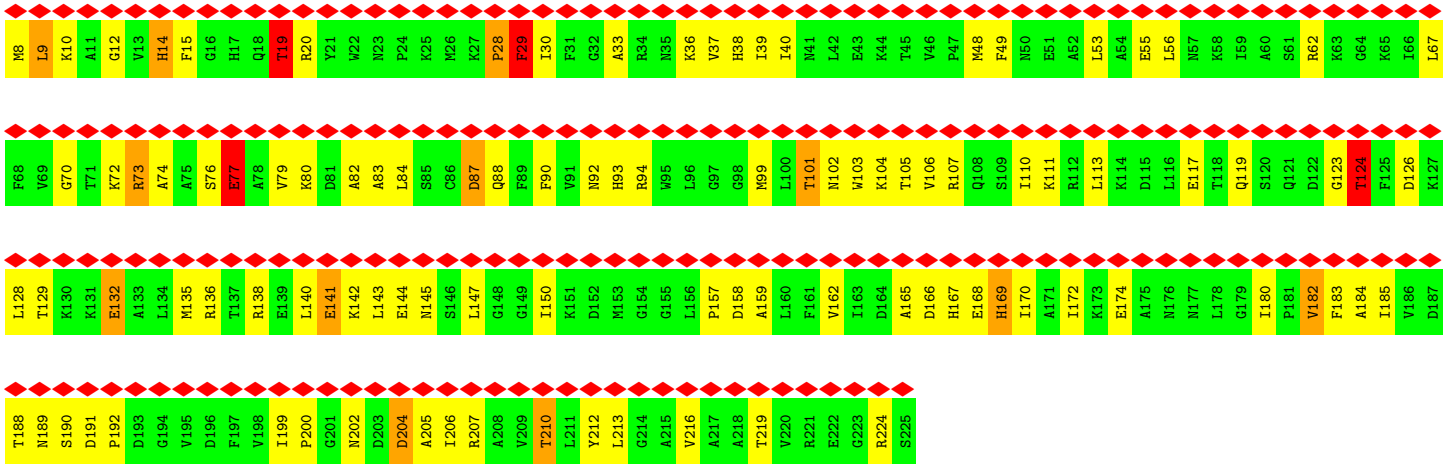


• Molecule 2: Small ribosomal subunit protein uS2

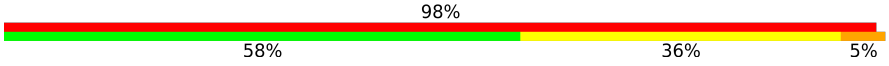
Chain b:

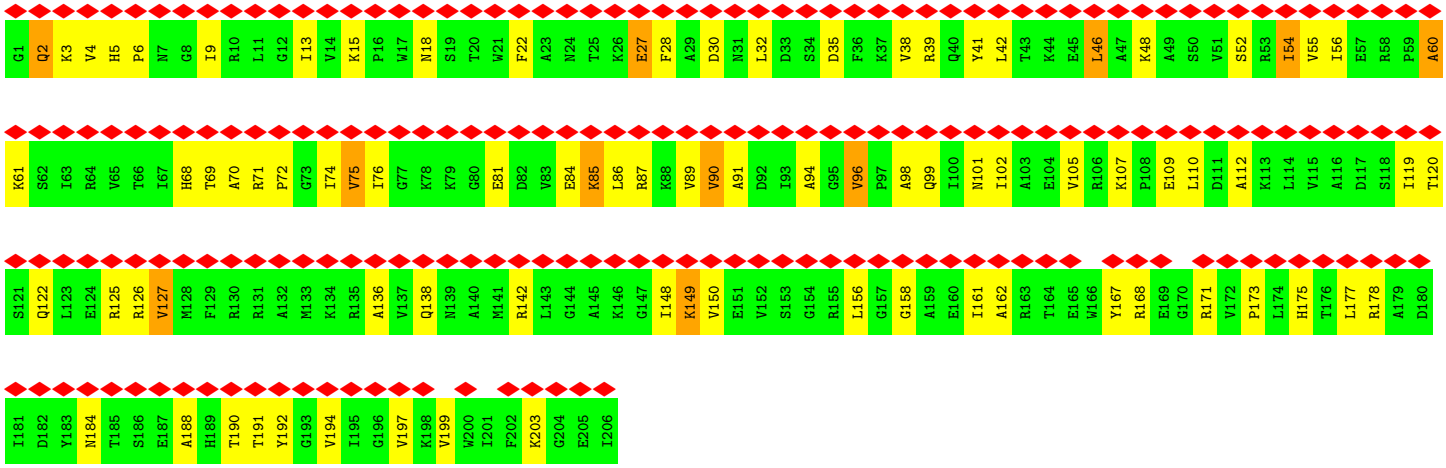




• Molecule 3: Small ribosomal subunit protein uS3

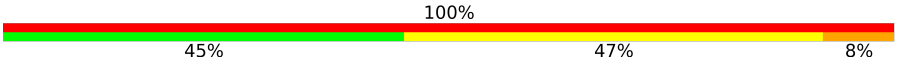
Chain c:

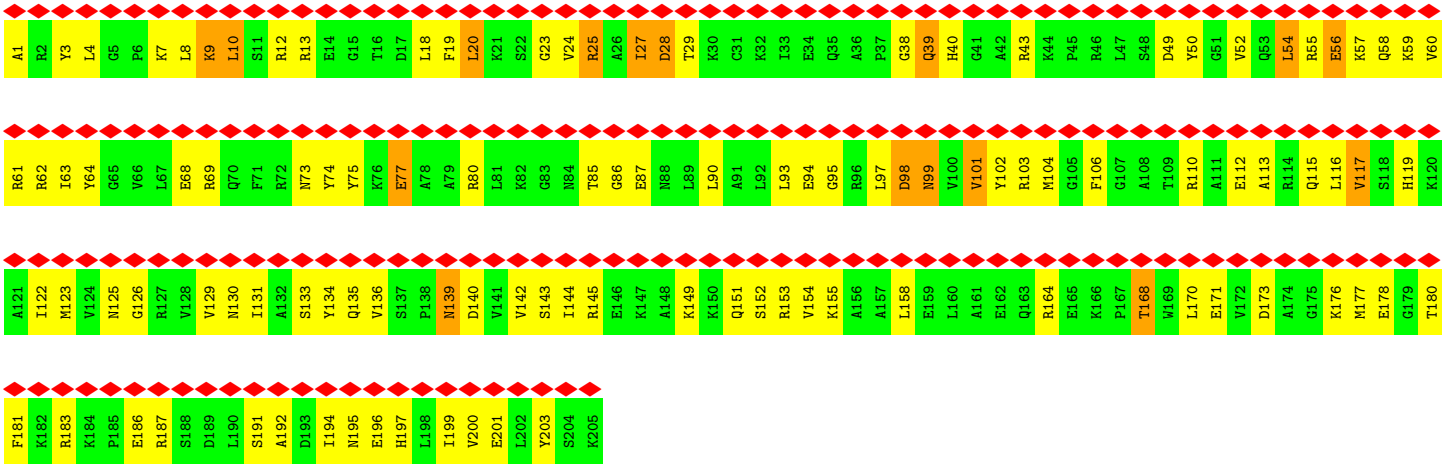




• Molecule 4: Small ribosomal subunit protein uS4

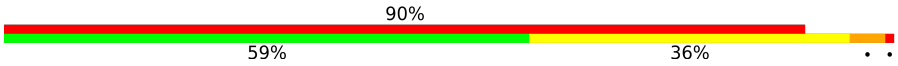
Chain d:

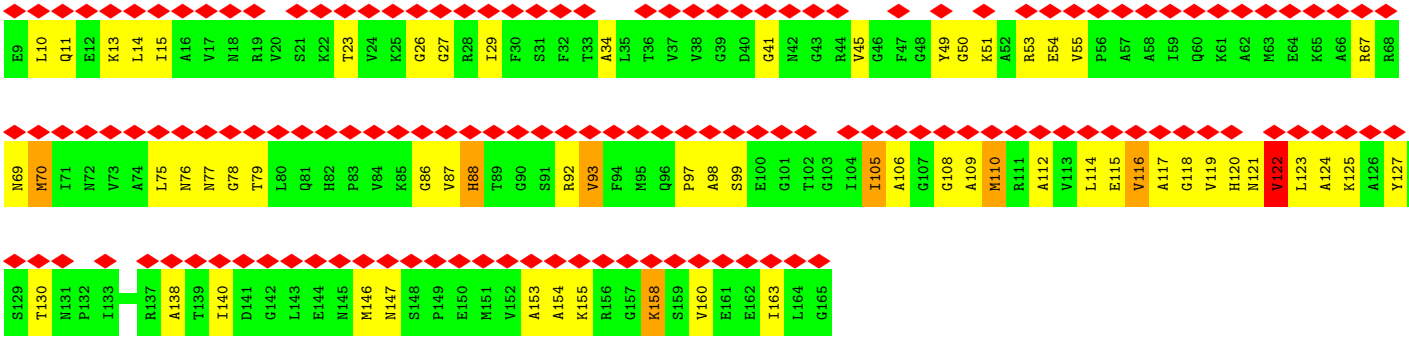




• Molecule 5: Small ribosomal subunit protein uS5

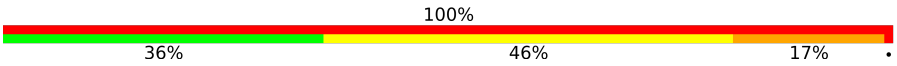
Chain e:

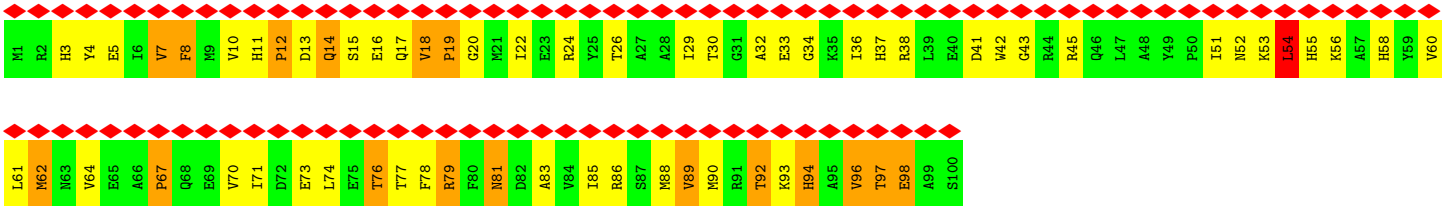




• Molecule 6: Small ribosomal subunit protein bS6, non-modified isoform

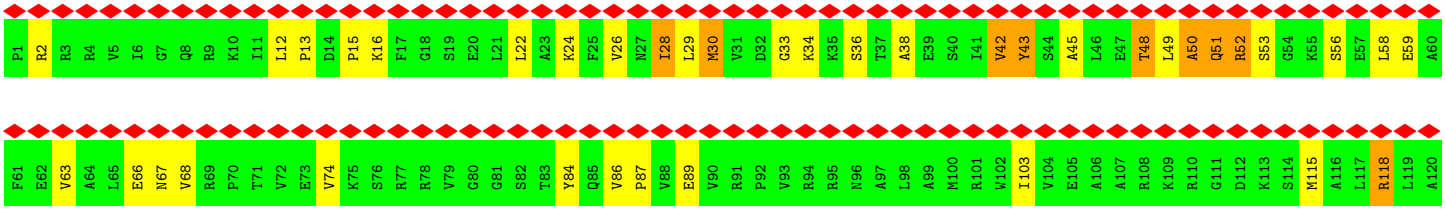
Chain f:

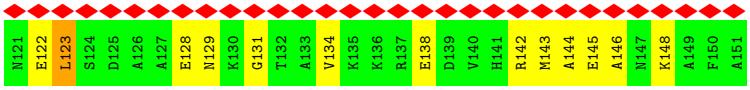




• Molecule 7: Small ribosomal subunit protein uS7

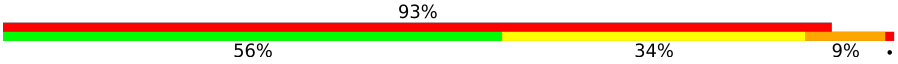
Chain g:

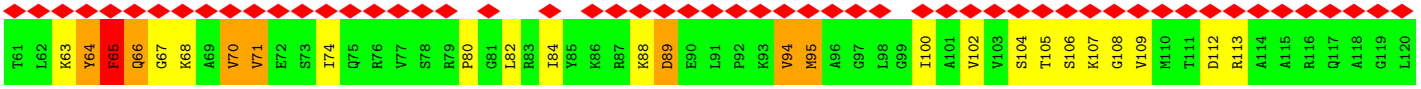


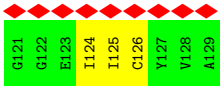


• Molecule 8: Small ribosomal subunit protein uS8

Chain h:

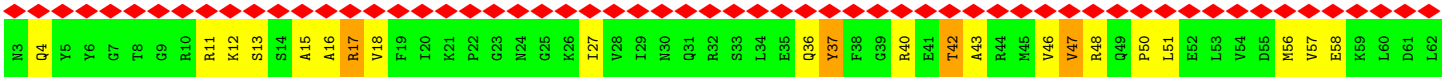


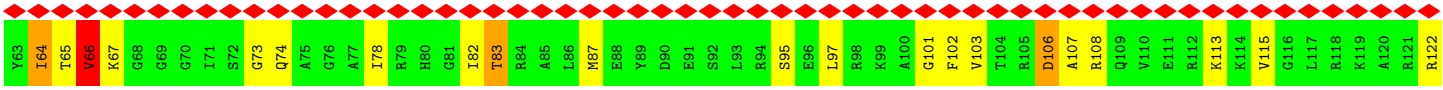


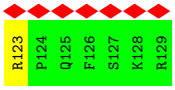


• Molecule 9: Small ribosomal subunit protein uS9

Chain i:

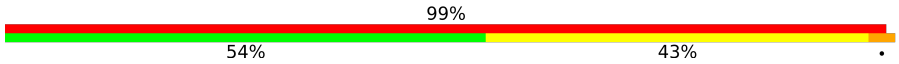


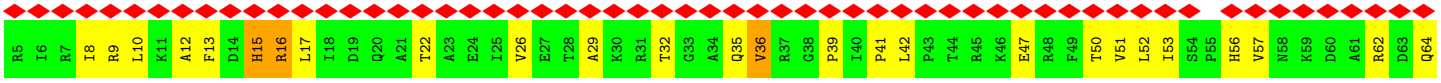


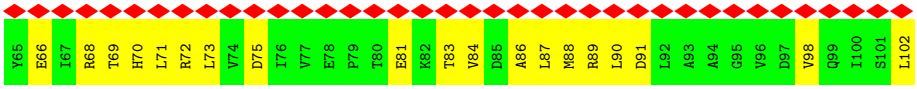


• Molecule 10: Small ribosomal subunit protein uS10

Chain j:

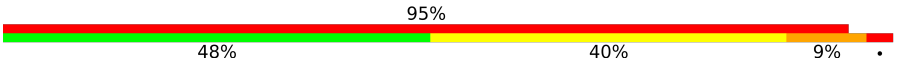


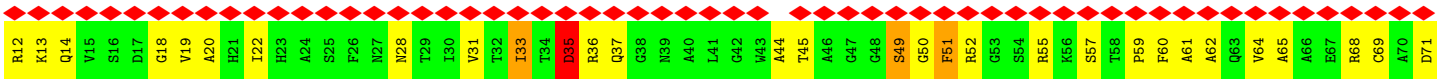


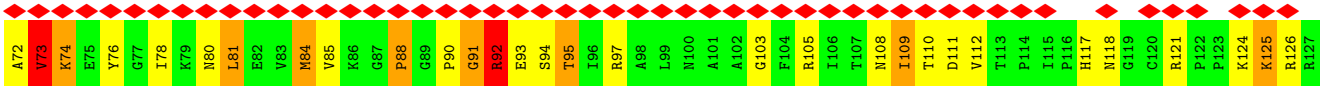


• Molecule 11: Small ribosomal subunit protein uS11

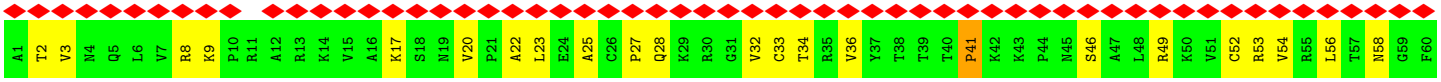
Chain k:

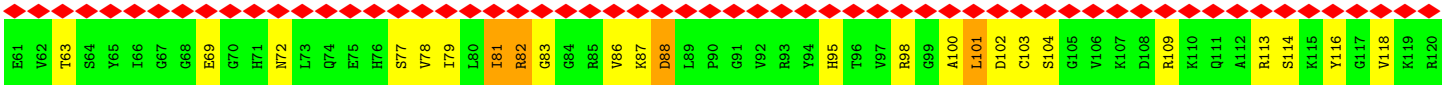




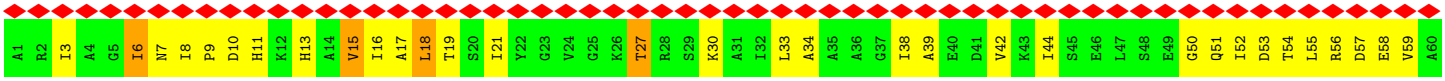


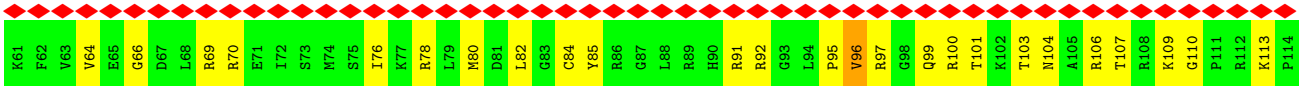
• Molecule 12: Small ribosomal subunit protein uS12



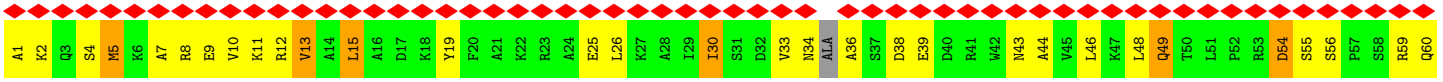


• Molecule 13: Small ribosomal subunit protein uS13

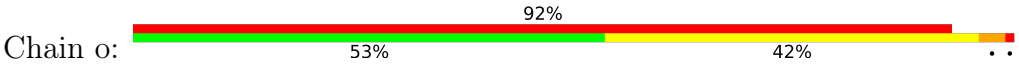


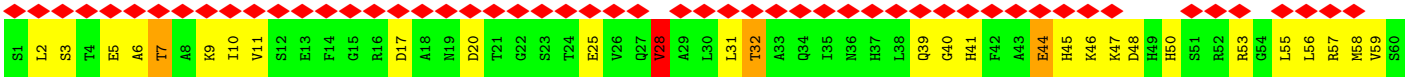


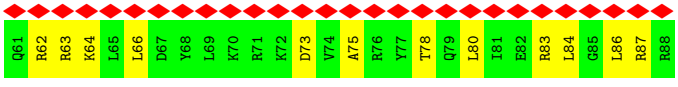
• Molecule 14: Small ribosomal subunit protein uS14



• Molecule 15: Small ribosomal subunit protein uS15

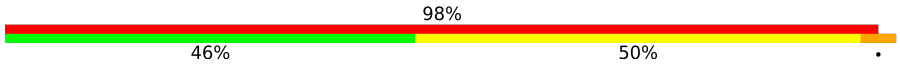


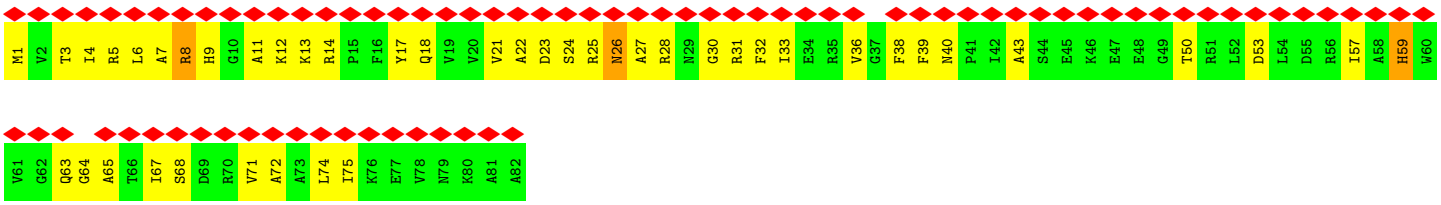




• Molecule 16: 30S ribosomal protein S16

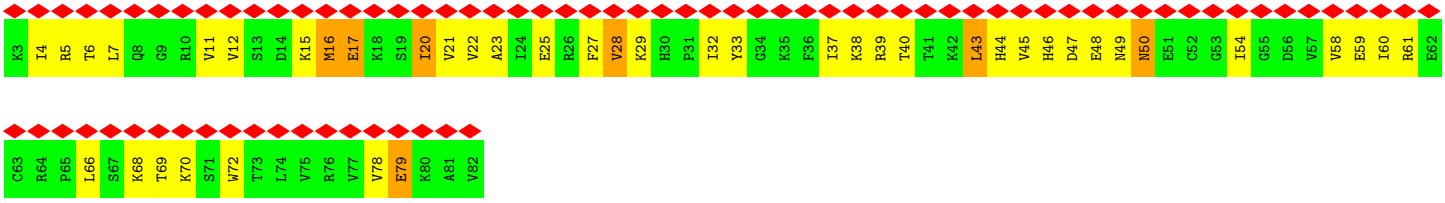
Chain p:





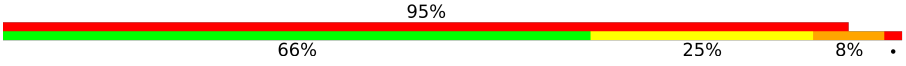
• Molecule 17: Small ribosomal subunit protein uS17

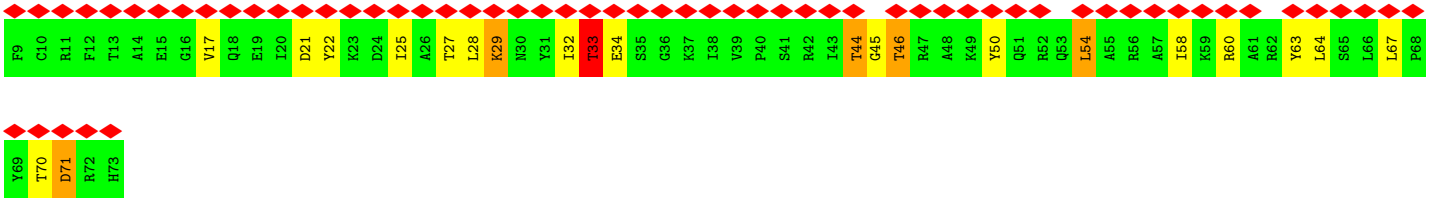
Chain q:



• Molecule 18: Small ribosomal subunit protein bS18

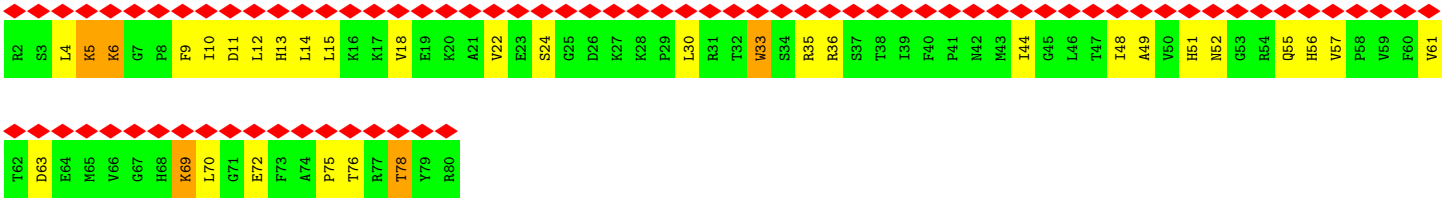
Chain r:





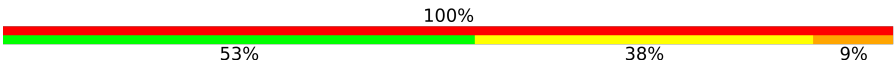
• Molecule 19: Small ribosomal subunit protein uS19

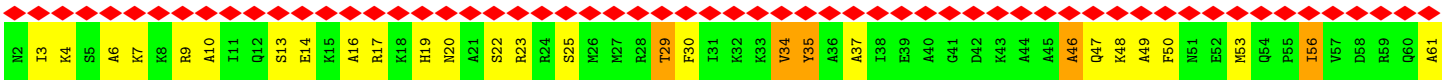
Chain s:

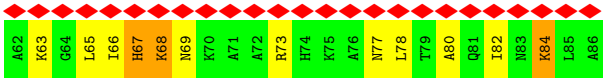


• Molecule 20: Small ribosomal subunit protein bS20

Chain t:

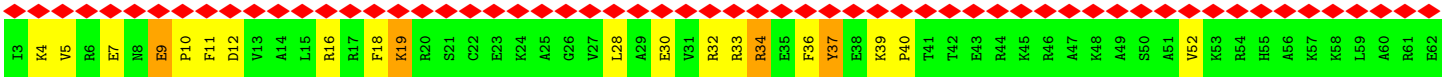


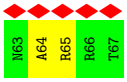




• Molecule 21: Small ribosomal subunit protein bS21

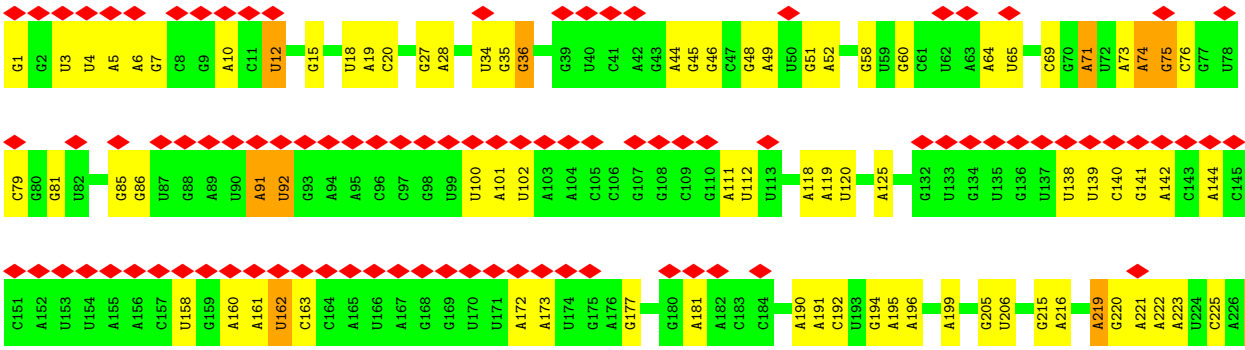
Chain u:

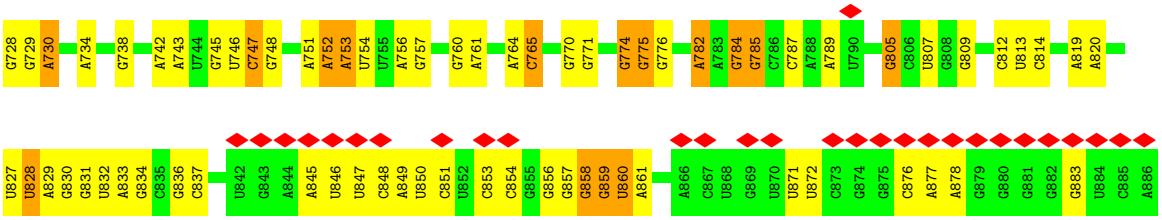




• Molecule 22: 16S rRNA

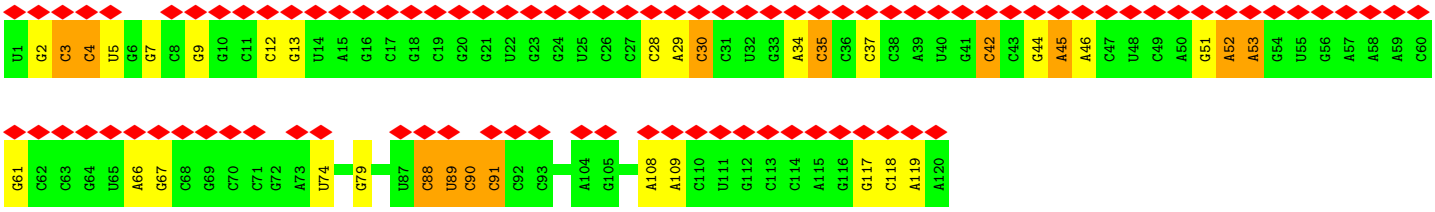
Chain A:





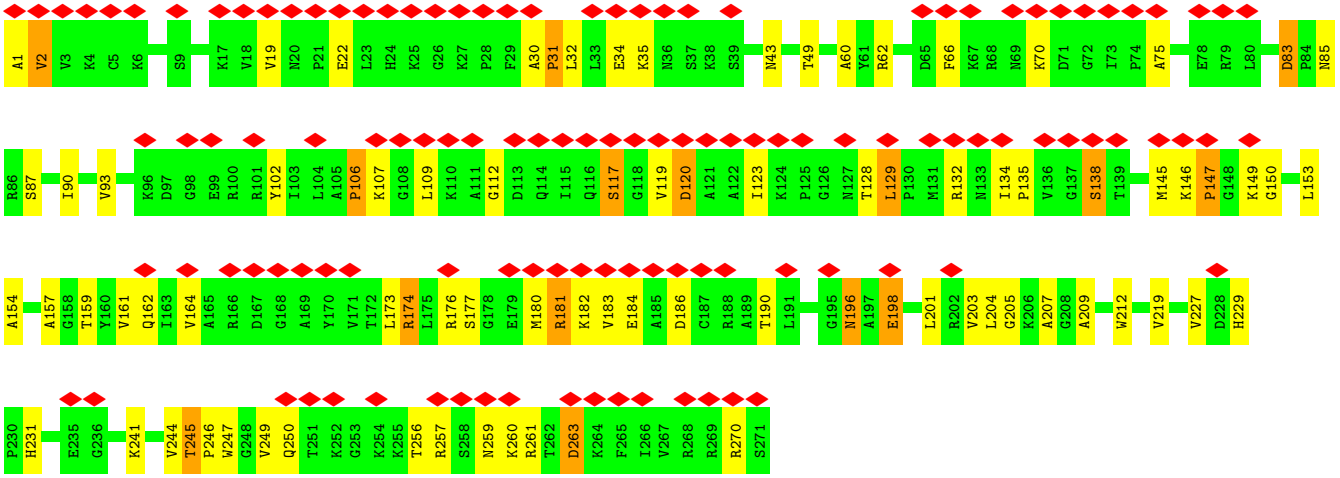
• Molecule 23: 30S ribosomal protein S

Chain B:



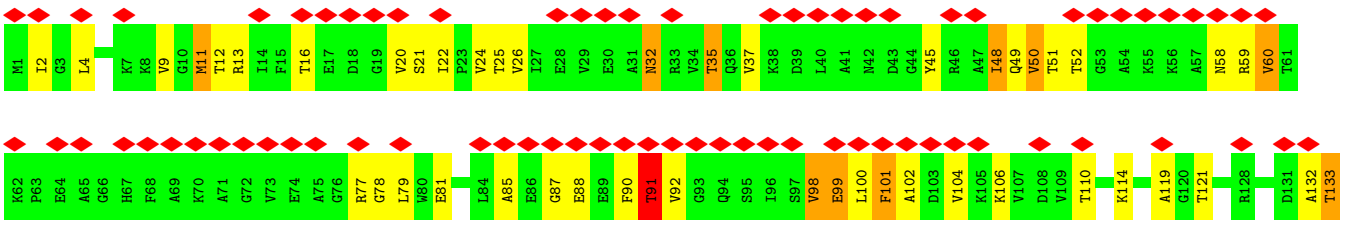
• Molecule 24: Large ribosomal subunit protein uL2

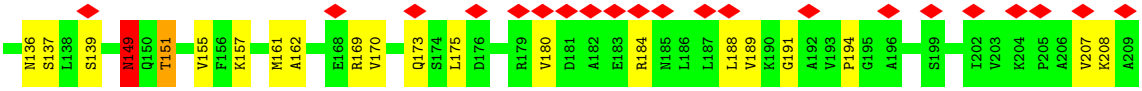
Chain C:



• Molecule 25: Large ribosomal subunit protein uL3

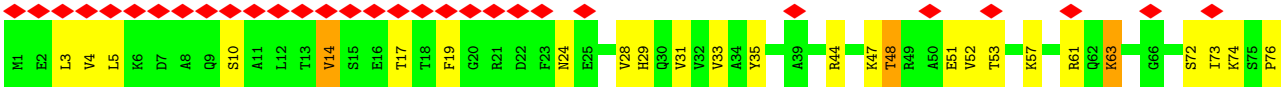
Chain D:

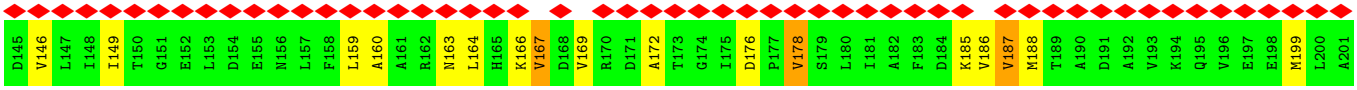




• Molecule 26: 50S ribosomal protein L4

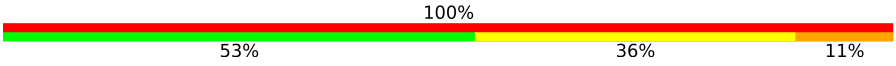
Chain E:

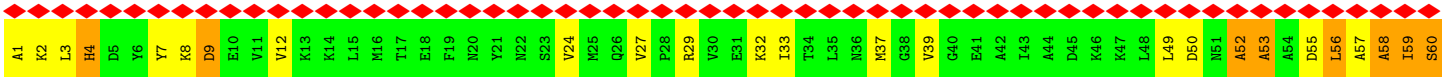


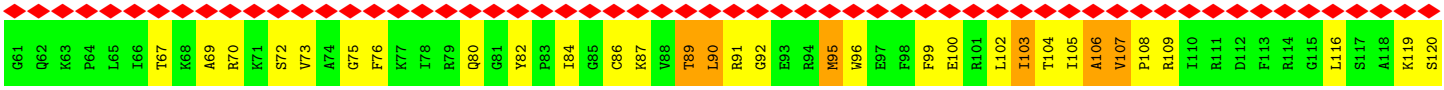


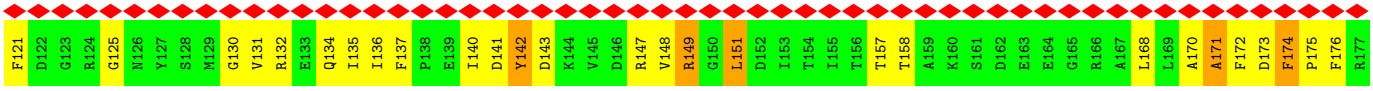
• Molecule 27: 50S ribosomal protein L5

Chain F:



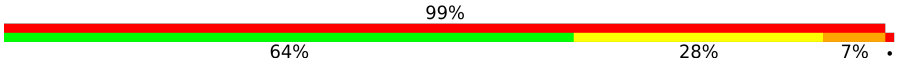


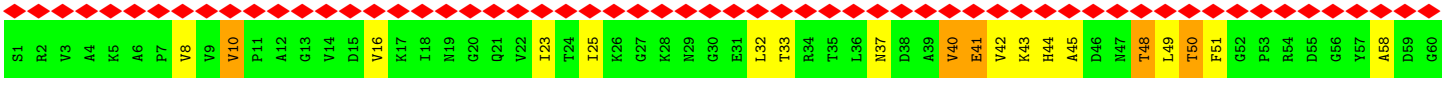


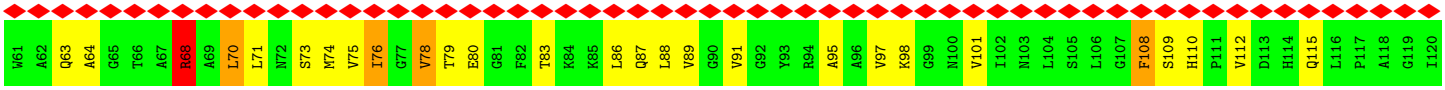


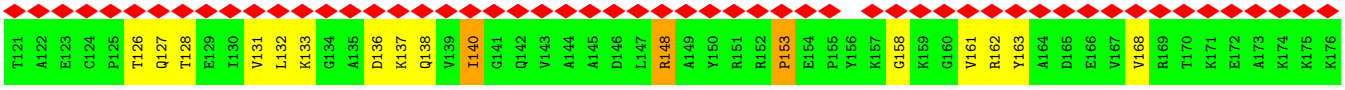
• Molecule 28: Large ribosomal subunit protein uL6

Chain G:



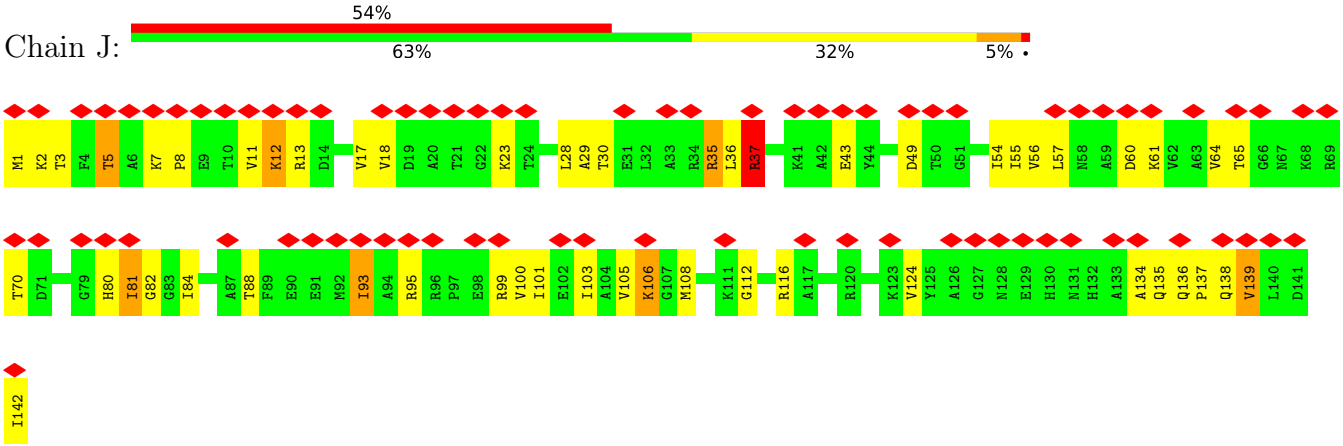






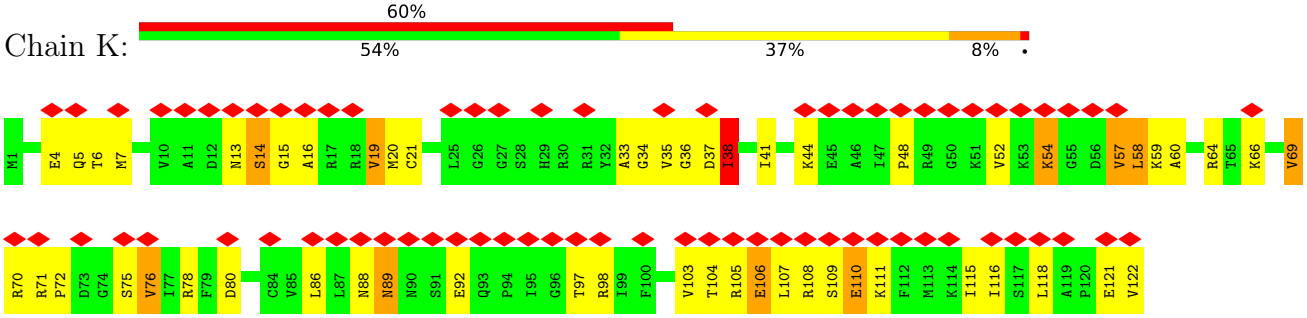
• Molecule 29: 50S ribosomal protein L13

Chain J:



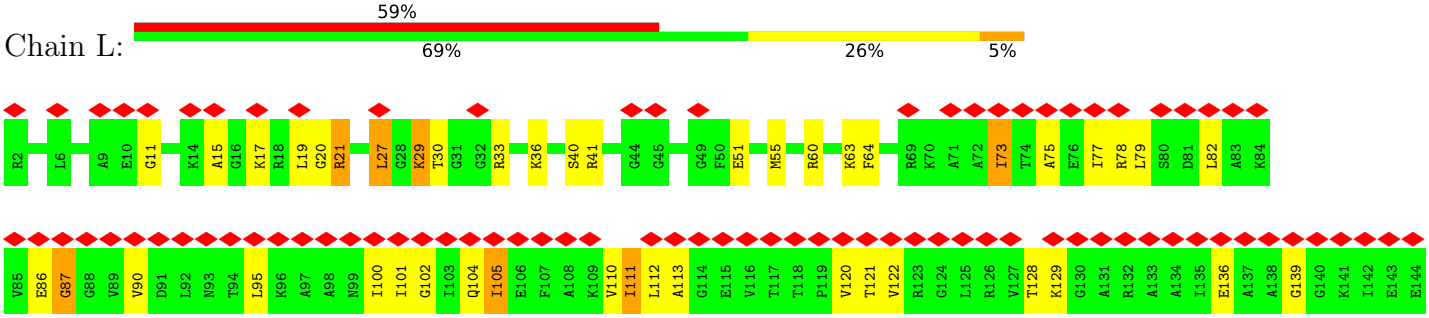
• Molecule 30: Large ribosomal subunit protein uL14

Chain K:



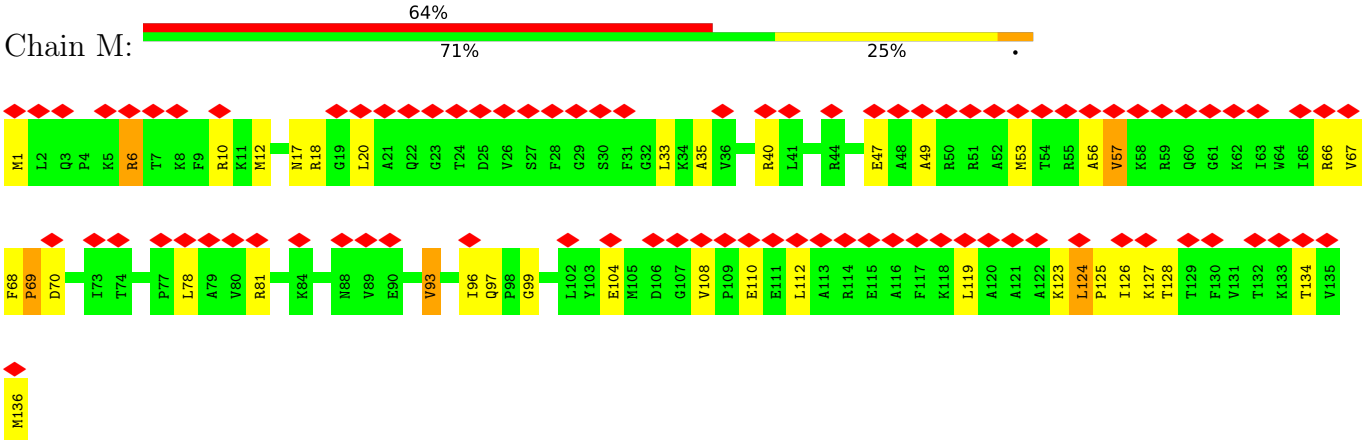
• Molecule 31: Large ribosomal subunit protein uL15

Chain L:



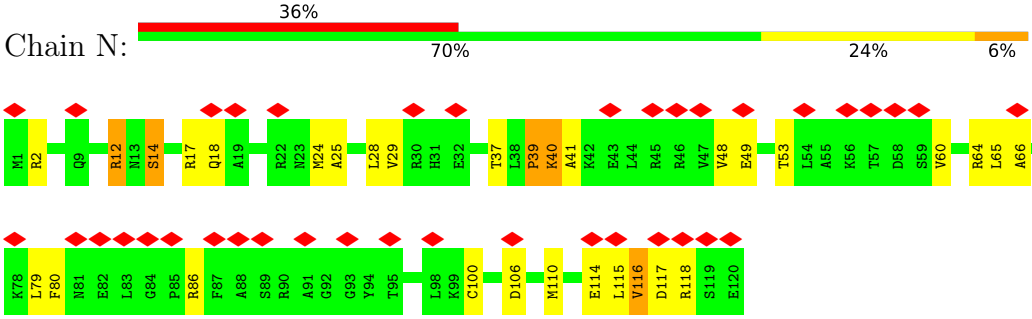
• Molecule 32: 50S ribosomal protein L16

Chain M:



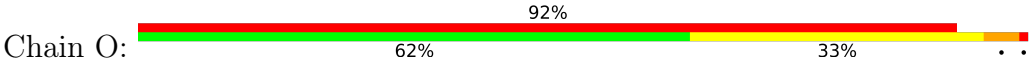
• Molecule 33: Large ribosomal subunit protein bL17

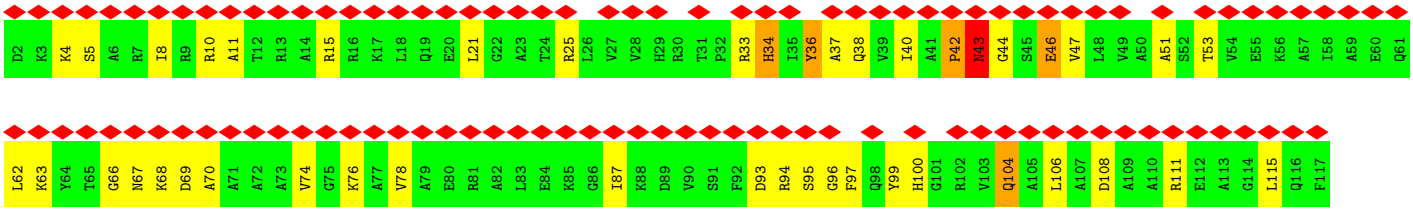
Chain N:



• Molecule 34: 50S ribosomal protein L18

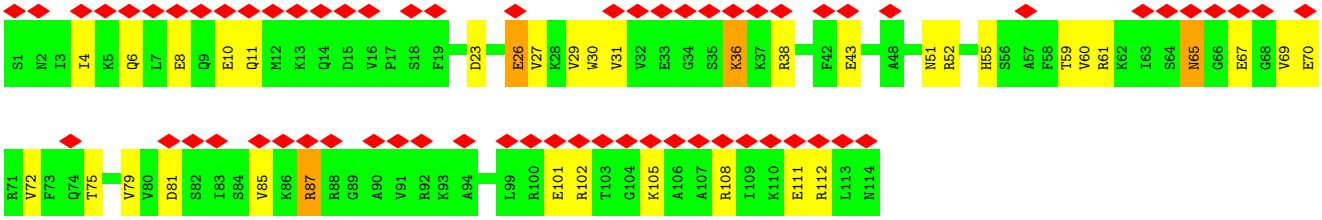
Chain O:





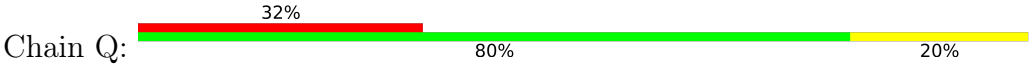
• Molecule 35: 50S ribosomal protein L19

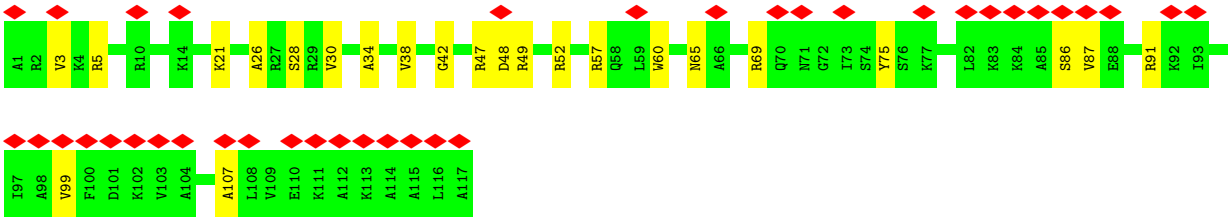
Chain P:



• Molecule 36: 50S ribosomal protein L20

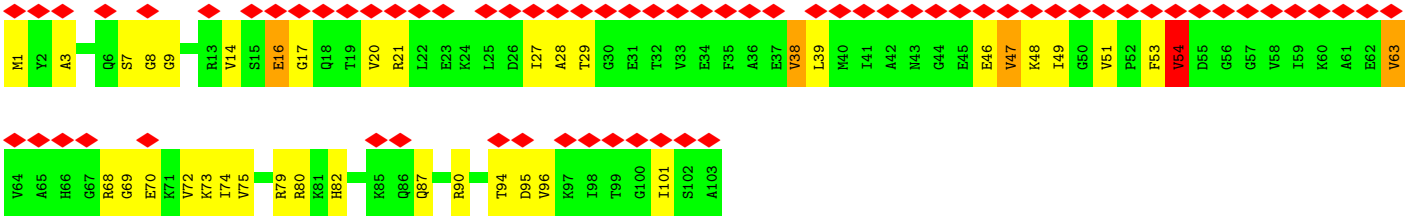
Chain Q:





• Molecule 37: 50S ribosomal protein L21

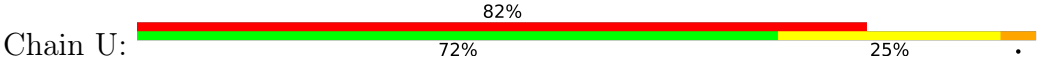
Chain R:



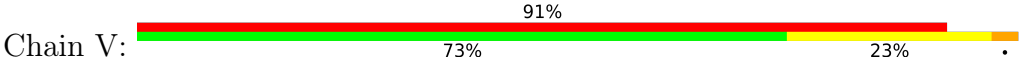
• Molecule 38: 50S ribosomal protein L22

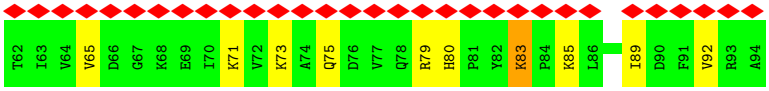
• Molecule 39: 50S ribosomal protein L23

• Molecule 40: Large ribosomal subunit protein uL24



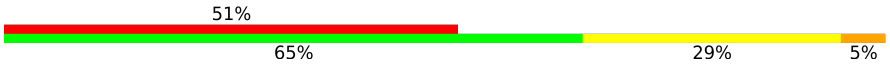
• Molecule 41: 50S ribosomal protein L25

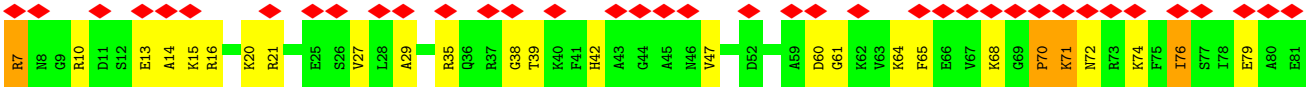




• Molecule 42: 50S ribosomal protein L27

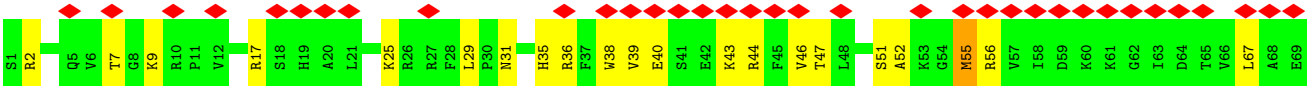
Chain W:

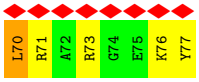




• Molecule 43: 50S ribosomal protein L28

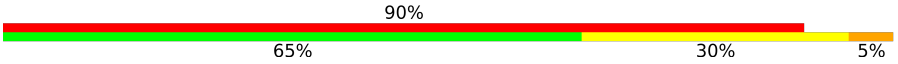
Chain X:

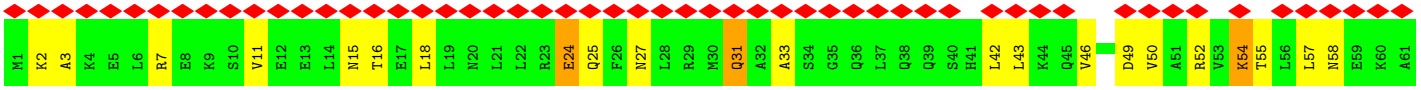




• Molecule 44: Large ribosomal subunit protein uL29

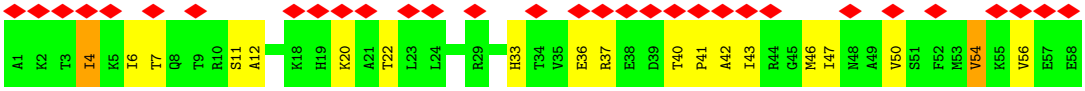
Chain Y:





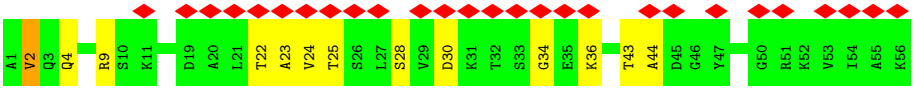
• Molecule 45: 50S ribosomal protein L30

Chain Z:



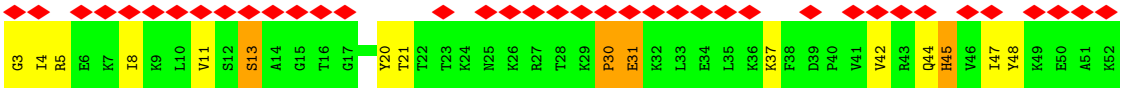
• Molecule 46: Large ribosomal subunit protein bL32

Chain 0:



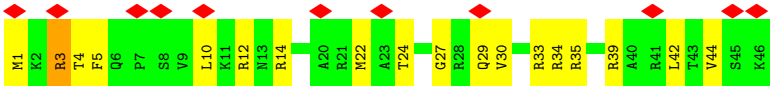
• Molecule 47: 50S ribosomal protein L33

Chain 1:



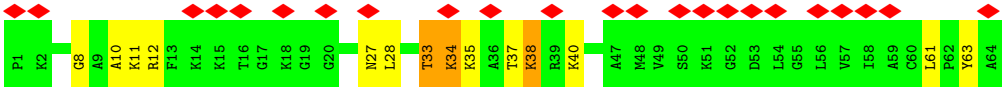
• Molecule 48: 50S ribosomal protein L34

Chain 2:



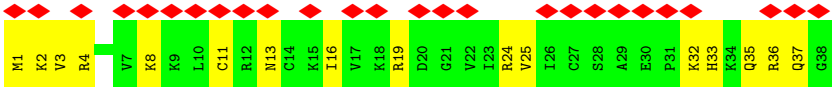
• Molecule 49: 50S ribosomal protein L35

Chain 3:



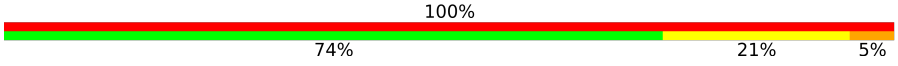
• Molecule 50: 50S ribosomal protein L36

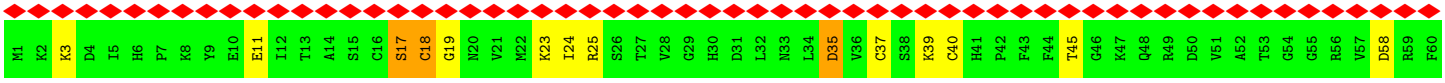
Chain 4:

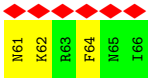


• Molecule 51: Large ribosomal subunit protein bL31

Chain 6:

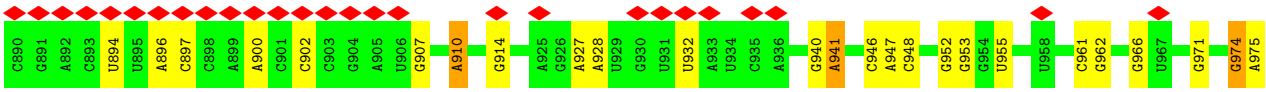


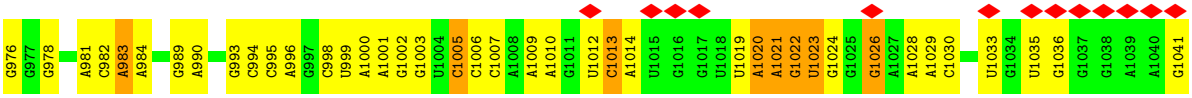


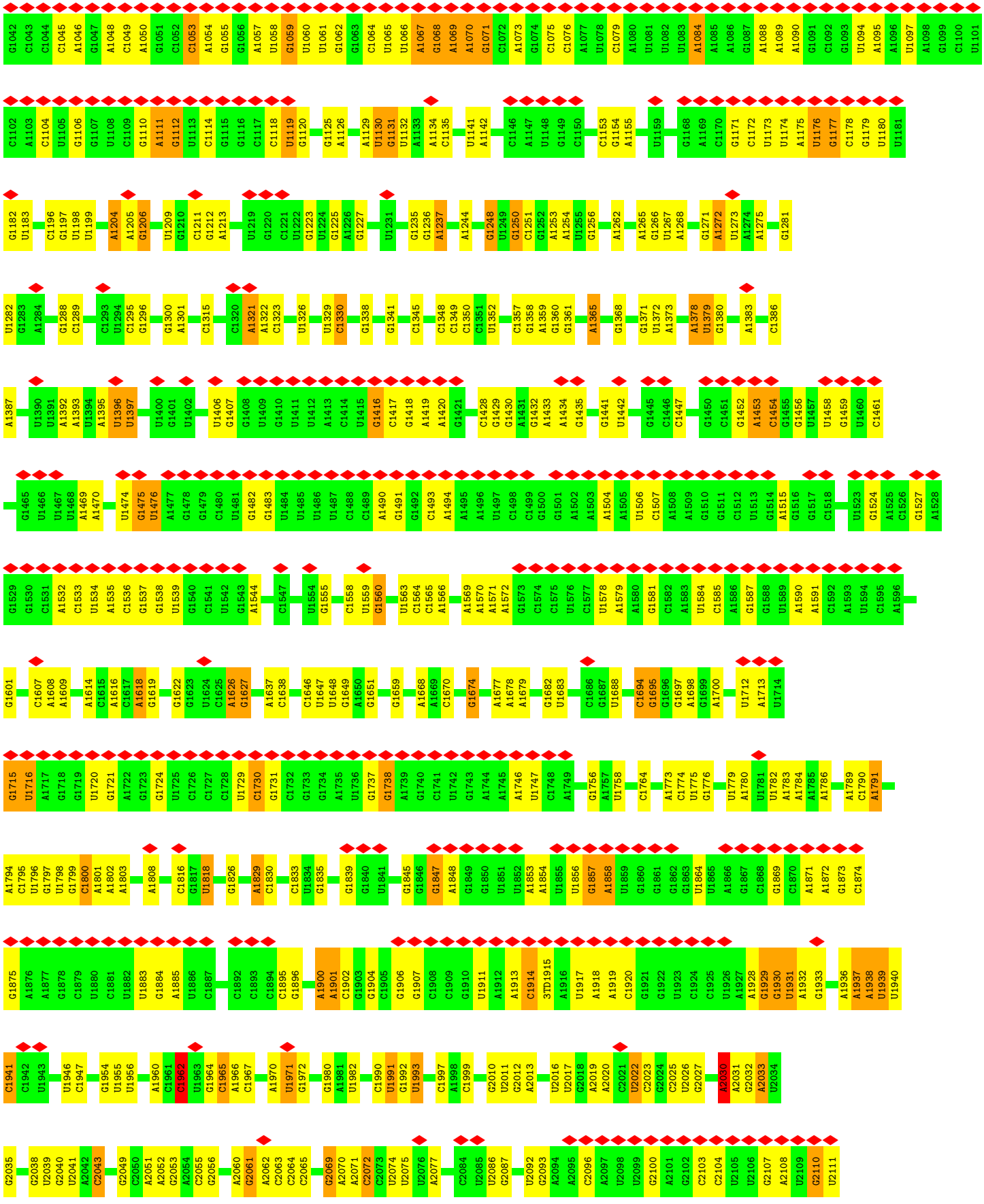


• Molecule 52: RNA (2014-MER)

Chain 5:



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C1102 A1103 C1104 U1105 G1106 G1107 U1108 C1109 G1110 A1111 G1112 U1113 C1114 G1115 G1116 C1117 C1118 U1119 G1120 G1125 A1126 A1129 U1130 G1131 U1132 A1133 A1134 C1135 U1141 A1142 C1146 A1147 U1148 G1149 C1150 C1153 G1154 A1155 U1159 G1168 A1169 C1170 G1171 C1172 U1173 U1174 A1175 U1176 G1177 C1178 G1179 U1180 U1181
G1182 U1183 C1196 G1197 U1198 U1199 A1204 A1205 G1206 U1209 G1210 C1211 G1212 A1213 U1219 G1220 C1221 U1222 G1223 U1224 G1225 A1226 G1227 U1231 G1235 G1236 A1237 A1244 G1248 U1249 G1250 C1251 G1252 A1253 A1254 U1255 G1256 A1262 A1265 G1266 U1267 A1268 G1271 A1272 U1273 A1274 A1275 G1281
U1282 G1283 A1284 G1288 C1289 C1293 U1294 C1295 G1296 G1300 A1301 C1315 C1320 A1321 A1322 C1323 U1326 U1329 C1330 G1338 G1341 C1345 C1348 C1349 C1350 C1351 U1352 C1357 G1358 A1359 G1360 G1361 A1365 G1368 G1371 U1372 A1373 A1378 U1379 G1380 A1383 C1386
A1387 U1390 U1391 A1392 A1393 U1394 A1395 U1396 U1397 U1400 G1401 U1402 U1406 G1407 G1408 U1409 G1410 U1411 U1412 A1413 C1414 U1415 G1416 C1417 G1418 A1419 A1420 G1421 C1428 G1429 G1430 A1431 G1432 A1433 A1434 G1435 G1441 U1442 G1445 C1446 C1447 G1450 C1451 G1452 A1453 C1454 G1455 G1456 U1457 U1458 G1459 U1460 C1461
G1465 U1466 U1467 U1468 A1469 A1470 U1474 G1475 U1476 A1477 G1478 G1479 C1480 U1481 G1482 G1483 U1484 U1485 U1486 U1487 C1488 C1489 A1490 G1491 G1492 C1493 A1494 A1495 A1496 U1497 C1498 C1499 G1500 G1501 A1502 A1503 A1504 A1505 U1506 C1507 A1508 U1509 G1510 G1511 C1512 U1513 G1514 A1515 G1516 G1517 C1518 U1523 G1524 A1525 C1526 G1527 A1528
G1529 G1530 C1531 A1532 C1533 U1534 A1535 C1536 G1537 G1538 U1539 G1540 C1541 U1542 G1543 A1544 C1547 U1554 G1555 C1558 U1559 G1560 U1563 C1564 C1565 A1566 A1569 A1570 A1571 A1572 G1573 C1574 C1575 U1576 C1577 U1578 A1579 A1580 G1581 C1582 A1583 U1584 C1585 A1586 G1587 G1588 U1589 A1590 A1591 C1592 A1593 U1594 C1595 A1596
G1601 C1607 A1608 A1609 A1614 C1615 A1616 C1617 A1618 G1619 G1622 G1623 U1624 C1625 A1626 G1627 A1637 C1638 C1646 U1647 U1648 G1649 A1650 G1651 G1659 A1668 A1669 C1670 G1674 A1677 A1678 A1679 G1682 U1683 C1686 G1687 U1688 C1694 G1695 G1696 G1697 A1698 G1699 A1700 U1712 A1713 U1714
G1715 U1716 A1717 G1718 G1719 U1720 G1721 A1722 G1723 G1724 U1725 C1726 C1727 C1728 U1729 C1730 G1731 C1732 G1733 G1734 A1735 U1736 G1737 G1738 A1739 G1740 C1741 U1742 G1743 A1744 A1745 A1746 U1747 C1748 A1749 G1756 A1757 U1758 C1764 A1773 C1774 U1775 G1776 U1779 A1780 U1781 U1782 A1783 A1784 A1785 A1786 A1789 C1790 A1791
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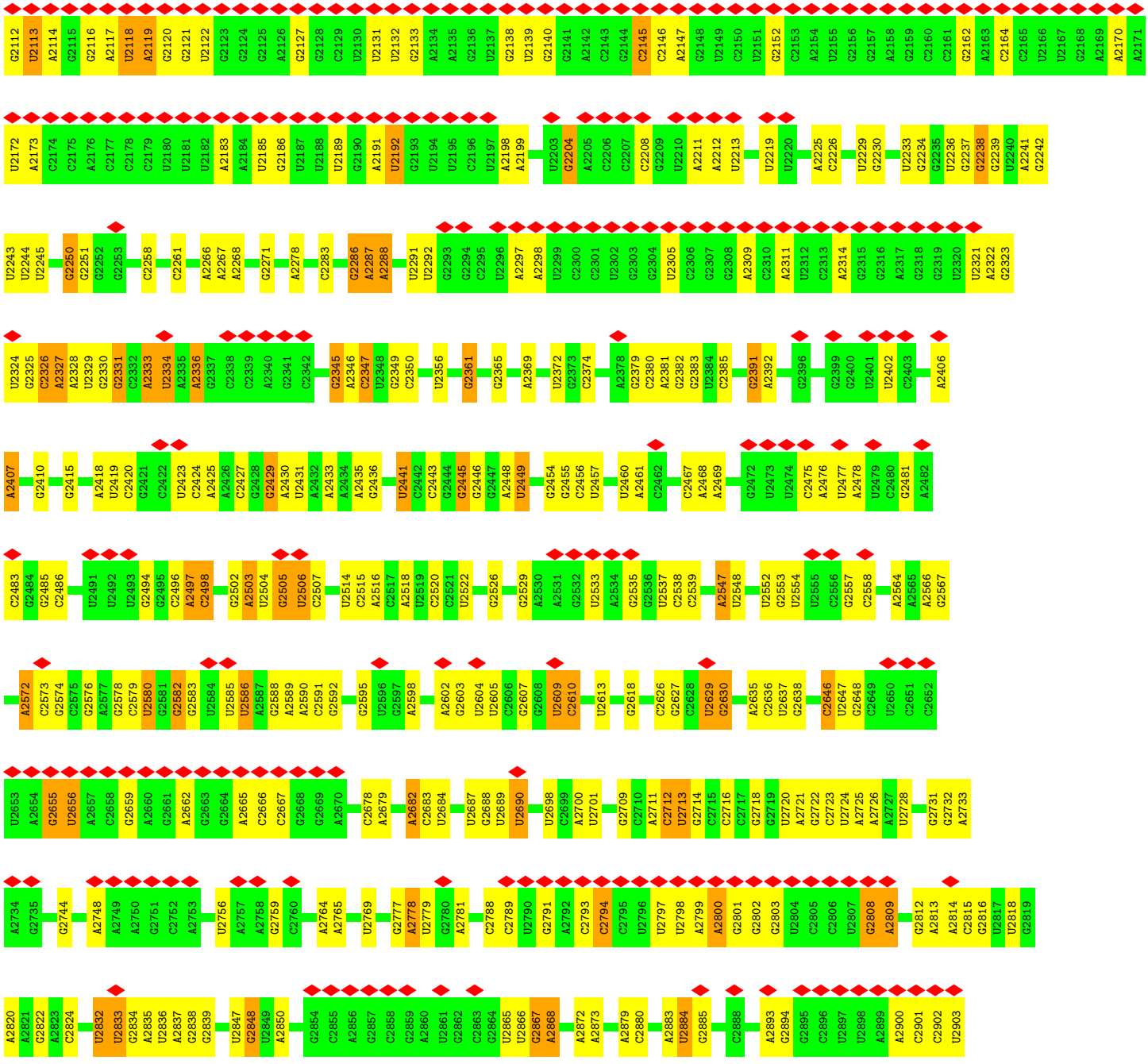
G1875 A1876 A1877 G1878 C1879 U1880 C1881 U1882 U1883 G1884 A1885 U1886 C1887 C1892 C1893 C1894 C1895 G1896 A1900 A1901 C1902 G1903 G1904 C1905 G1906 G1907 C1908 C1909 G1910 U1911 U1912 A1913 C1914 3TD1915 A1916 U1917 A1918 A1919 C1920 G1921 G1922 U1923 C1924 C1925 U1926 A1927 A1928 G1929 G1930 U1931 A1932 G1933 A1936 A1937 A1938 U1939 U1940
C1941 C1942 U1943 U1946 C1947 G1954 U1955 U1956 A1960 C1961 C1962 U1963 G1964 C1965 A1966 C1967 A1970 U1971 G1972 G1980 A1981 U1982 C1990 U1991 G1992 U1993 C1997 A1998 C1999 G2010 U2011 G2012 A2013 U2016 U2017 G2018 A2019 A2020 C2021 U2022 C2023 G2024 C2025 U2026 G2027 A2030 A2031 G2032 A2033 U2034
G2035 G2038 U2039 G2040 U2041 A2042 C2043 G2049 C2050 A2051 A2052 G2053 A2054 C2055 G2056 A2060 G2061 A2062 C2063 C2064 C2065 G2069 A2070 A2071 C2072 C2073 U2074 U2075 U2076 A2077 C2084 U2085 U2086 G2087 U2092 G2093 A2094 A2095 C2096 A2097 U2098 U2099 G2100 A2101 G2102 C2103 C2104 U2105 U2106 G2107 A2108 U2109 G2110 U2111


G2112 U2113 A2114 C2115 G2116 A2117 U2118 A2119 G2120 G2121 U2122 G2123 G2124 G2125 A2126 G2127 G2128 C2129 U2130 U2131 U2132 G2133 A2134 A2135 G2136 U2137 G2138 U2139 G2140 G2141 A2142 C2143 G2144 C2145 C2146 A2147 G2148 U2149 C2150 U2151 G2152 C2153 A2154 U2155 G2156 C2157 A2158 G2159 C2160 C2161 G2162 A2163 C2164 C2165 U2166 U2167 G2168 A2169 A2170 A2171
U2172 A2173 C2174 C2175 A2176 C2177 C2178 C2179 U2180 U2181 U2182 A2183 A2184 U2185 G2186 U2187 U2188 U2189 G2190 A2191 U2192 G2193 U2194 U2195 C2196 U2197 A2198 A2199 U2203 G2204 A2205 C2206 C2207 C2208 G2209 U2210 A2211 A2212 U2213 U2219 U2220 A2225 C2226 U2229 G2230 U2233 G2234 G2235 U2236 G2237 G2238 G2239 U2240 A2241 G2242
U2243 U2244 U2245 G2250 G2251 G2252 G2253 C2258 C2261 A2266 A2267 A2268 G2271 A2278 C2283 G2286 A2287 A2288 U2291 U2292 G2293 G2294 C2295 U2296 A2297 A2298 U2299 C2300 C2301 U2302 G2303 G2304 U2305 C2306 G2307 G2308 A2309 C2310 A2311 U2312 C2313 A2314 G2315 G2316 A2317 G2318 G2319 U2320 U2321 A2322 G2323
U2324 G2325 C2326 A2327 A2328 U2329 G2330 G2331 C2332 A2333 U2334 A2335 A2336 G2337 C2338 C2339 A2340 G2341 C2342 G2345 A2346 C2347 U2348 G2349 C2350 U2356 G2361 G2365 A2369 U2372 G2373 C2374 A2378 G2379 C2380 A2381 G2382 G2383 U2384 C2385 G2391 A2392 G2396 G2399 G2400 U2401 U2402 C2403 A2406
A2407 G2410 G2415 A2418 U2419 C2420 G2421 C2422 U2423 C2424 A2425 A2426 C2427 G2428 G2429 A2430 U2431 A2432 A2433 A2434 A2435 G2436 U2441 C2442 C2443 G2444 G2445 G2446 G2447 A2448 U2449 G2454 G2455 C2456 U2457 U2460 A2461 C2462 C2467 A2468 A2469 G2472 U2473 U2474 C2475 A2476 U2477 A2478 U2479 C2480 G2481 A2482
C2483 G2484 C2485 C2486 U2491 U2492 U2493 G2494 G2495 C2496 A2497 C2498 G2502 A2503 U2504 G2505 U2506 C2507 U2514 C2515 A2516 C2517 A2518 U2519 C2520 C2521 U2522 G2526 G2529 A2530 A2531 G2532 U2533 A2534 G2535 G2536 U2537 C2538 C2539 A2547 U2548 U2552 G2553 U2554 U2555 C2556 G2557 C2558 A2564 A2565 A2566 G2567
A2572 C2573 G2574 C2575 G2576 A2577 G2578 C2579 U2580 G2581 G2582 G2583 U2584 U2585 U2586 A2587 G2588 A2589 A2590 C2591 G2592 G2595 U2596 G2597 A2598 A2602 G2603 U2604 U2605 C2606 G2607 G2608 U2609 C2610 U2613 G2618 C2626 G2627 C2628 U2629 G2630 A2635 C2636 U2637 G2638 C2646 U2647 G2648 C2649 U2650 C2651 C2652
U2653 A2654 G2655 U2656 A2657 C2658 G2659 A2660 G2661 A2662 G2663 G2664 A2665 C2666 C2667 G2668 G2669 A2670 C2678 A2679 A2682 C2683 U2684 U2687 G2688 U2689 U2690 U2698 C2699 A2700 U2701 G2709 C2710 A2711 C2712 U2713 G2714 C2715 C2716 C2717 G2718 G2719 U2720 A2721 G2722 C2723 U2724 A2725 A2726 A2727 U2728 G2731 G2732 A2733
A2734 G2735 G2744 A2748 A2749 A2750 G2751 C2752 A2753 U2756 A2757 A2758 G2759 C2760 A2764 A2765 U2769 G2777 A2778 U2779 G2780 A2781 C2788 C2789 U2790 G2791 A2792 C2793 C2794 C2795 U2796 U2797 U2798 A2799 A2800 G2801 G2802 G2803 U2804 C2805 C2806 U2807 G2808 A2809 G2812 A2813 A2814 C2815 G2816 U2817 U2818 G2819
A2820 A2821 G2822 A2823 C2824 U2832 U2833 G2834 A2835 U2836 A2837 G2838 G2839 U2847 G2848 U2849 A2850 G2854 C2855 A2856 G2857 C2858 G2859 A2860 U2861 G2862 C2863 G2864 U2865 U2866 G2867 A2868 A2872 A2873 A2879 C2880 A2883 U2884 G2885 C2888 A2893 G2894 G2895 C2896 U2897 U2898 A2899 A2900 C2901 C2902 U2903

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SUBTOMOGRAM AVERAGING	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of subtomograms used	16677	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	JEOL CRYO ARM 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	84	Depositor
Minimum defocus (nm)	5000	Depositor
Maximum defocus (nm)	5000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.030	Depositor
Minimum map value	-0.016	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.0077	Depositor
Map size (Å)	533.27997, 533.27997, 533.27997	wwPDB
Map dimensions	528, 528, 528	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)

Bond lengths and bond angles in the following residue types are not validated in this section: 5MU, OMU, 7MG, ZN, PSU, MG, OMC, MA6, CL, 2MA, 6MZ, H2U, 3TD, 1MG, 5MC, UR3, 2MG, 4OC, NA, OMG

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	0.10	0/36701	0.27	0/57246
2	b	0.26	0/1735	0.55	0/2338
3	c	0.29	0/1651	0.56	0/2225
4	d	0.28	0/1665	0.60	0/2227
5	e	0.34	0/1154	0.52	0/1554
6	f	0.34	0/835	0.66	0/1128
7	g	0.22	0/1195	0.51	0/1602
8	h	0.33	0/989	0.58	0/1326
9	i	0.24	0/1034	0.55	0/1375
10	j	0.23	0/796	0.56	0/1077
11	k	0.31	0/885	0.57	0/1195
12	l	0.25	0/969	0.54	0/1300
13	m	0.23	0/892	0.54	0/1193
14	n	0.25	0/805	0.61	0/1071
15	o	0.34	0/722	0.63	0/964
16	p	0.27	0/659	0.63	0/884
17	q	0.25	0/657	0.59	1/881 (0.1%)
18	r	0.32	0/511	0.48	0/689
19	s	0.20	0/652	0.56	0/877
20	t	0.29	0/671	0.59	0/888
21	u	0.27	0/500	0.58	0/668
22	A	0.10	0/21270	0.28	0/33183
23	B	0.09	0/2876	0.26	0/4483
24	C	0.48	0/2121	0.56	0/2852
25	D	0.49	0/1586	0.58	0/2134
26	E	0.44	0/1571	0.58	0/2113
27	F	0.24	0/1434	0.58	0/1926
28	G	0.30	0/1343	0.61	1/1816 (0.1%)
29	J	0.44	0/1152	0.62	1/1551 (0.1%)
30	K	0.44	0/947	0.64	0/1268
31	L	0.46	0/1054	0.55	0/1403

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	M	0.44	0/1093	0.52	0/1460
33	N	0.47	0/973	0.68	2/1301 (0.2%)
34	O	0.37	0/902	0.54	0/1209
35	P	0.43	0/929	0.51	0/1242
36	Q	0.49	0/960	0.58	1/1278 (0.1%)
37	R	0.46	0/829	0.56	1/1107 (0.1%)
38	S	0.46	0/864	0.62	0/1156
39	T	0.39	0/744	0.55	0/994
40	U	0.36	0/787	0.51	0/1051
41	V	0.37	0/766	0.51	0/1025
42	W	0.48	0/582	0.60	0/769
43	X	0.43	0/635	0.46	0/848
44	Y	0.30	0/510	0.47	0/677
45	Z	0.44	0/453	0.52	0/605
46	0	0.44	0/450	0.50	0/599
47	1	0.38	0/416	0.58	0/554
48	2	0.51	0/380	0.50	0/498
49	3	0.48	0/513	0.52	0/676
50	4	0.44	0/303	0.51	0/397
51	6	0.21	0/531	0.48	0/709
52	5	0.10	0/47904	0.28	0/74727
All	All	0.21	0/152556	0.37	7/228319 (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
4	d	0	1
28	G	0	1
29	J	0	1
31	L	0	1
32	M	0	1
All	All	0	5

There are no bond length outliers.

The worst 5 of 7 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
36	Q	21	LYS	CD-CE-NZ	7.57	136.11	111.90
33	N	14	SER	CA-C-N	6.32	131.38	120.58

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
33	N	14	SER	C-N-CA	6.32	131.38	120.58
29	J	37	ARG	CA-CB-CG	5.54	125.18	114.10
37	R	47	VAL	CG1-CB-CG2	-5.28	99.19	110.80

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
28	G	148	ARG	Sidechain
29	J	37	ARG	Sidechain
31	L	21	ARG	Sidechain
32	M	18	ARG	Sidechain
4	d	181	PHE	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	a	33029	0	16645	422	0
2	b	1704	0	1732	76	0
3	c	1624	0	1699	62	0
4	d	1643	0	1710	99	0
5	e	1141	0	1170	37	0
6	f	817	0	808	56	0
7	g	1181	0	1240	36	0
8	h	979	0	1034	35	0
9	i	1022	0	1070	35	0
10	j	786	0	828	39	0
11	k	869	0	878	48	0
12	l	955	0	1019	38	0
13	m	883	0	944	42	0
14	n	794	0	835	36	0
15	o	714	0	737	23	0
16	p	649	0	666	37	0
17	q	648	0	691	40	0
18	r	504	0	502	22	0
19	s	637	0	665	25	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
20	t	665	0	714	31	0
21	u	495	0	486	22	0
22	A	19047	0	9577	226	0
23	B	2572	0	1302	21	0
24	C	2082	0	2157	53	0
25	D	1565	0	1616	47	0
26	E	1552	0	1619	36	0
27	F	1410	0	1447	66	0
28	G	1323	0	1374	35	0
29	J	1129	0	1162	30	0
30	K	938	0	1012	38	0
31	L	1045	0	1117	29	0
32	M	1074	0	1157	22	0
33	N	960	0	1000	26	0
34	O	892	0	923	34	0
35	P	917	0	965	25	0
36	Q	947	0	1022	17	0
37	R	816	0	839	29	0
38	S	857	0	922	28	0
39	T	738	0	807	15	0
40	U	779	0	834	20	0
41	V	753	0	780	17	0
42	W	575	0	592	17	0
43	X	625	0	655	17	0
44	Y	509	0	543	12	0
45	Z	449	0	491	16	0
46	0	444	0	461	7	0
47	1	409	0	440	10	0
48	2	377	0	418	13	0
49	3	504	0	574	12	0
50	4	302	0	340	11	0
51	6	522	0	520	14	0
52	5	43229	0	21767	463	0
53	0	1	0	0	0	0
53	5	170	0	0	0	0
53	A	63	0	0	0	0
53	B	7	0	0	0	0
53	C	1	0	0	0	0
53	D	1	0	0	0	0
53	E	1	0	0	0	0
53	N	1	0	0	0	0
53	a	82	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
53	n	1	0	0	0	0
54	5	1	0	0	0	0
54	a	1	0	0	0	0
55	5	1	0	0	0	0
55	B	1	0	0	0	0
56	4	1	0	0	0	0
56	6	1	0	0	0	0
57	5	8	0	0	2	0
57	A	2	0	0	1	0
57	D	1	0	0	0	0
57	K	1	0	0	1	0
57	a	9	0	0	3	0
All	All	141435	0	94506	2382	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 2382 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)
52:5:1939:5MU:C4	52:5:1939:5MU:C5	1.83	1.63
52:5:1939:5MU:C6	52:5:1939:5MU:N1	1.68	1.57
11:k:124:LYS:O	21:u:34:ARG:NH1	1.86	1.09
22:A:858:G:O2'	52:5:2268:A:O2'	1.75	1.02
27:F:92:GLY:H	27:F:95:MET:HE2	1.27	0.99

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	b	216/218 (99%)	176 (82%)	29 (13%)	11 (5%)	1 2
3	c	204/206 (99%)	175 (86%)	22 (11%)	7 (3%)	3 4
4	d	203/205 (99%)	157 (77%)	35 (17%)	11 (5%)	1 1
5	e	155/157 (99%)	123 (79%)	19 (12%)	13 (8%)	0 0
6	f	98/100 (98%)	69 (70%)	17 (17%)	12 (12%)	0 0
7	g	149/151 (99%)	123 (83%)	18 (12%)	8 (5%)	1 1
8	h	127/129 (98%)	102 (80%)	16 (13%)	9 (7%)	1 1
9	i	125/127 (98%)	86 (69%)	32 (26%)	7 (6%)	1 1
10	j	96/98 (98%)	77 (80%)	11 (12%)	8 (8%)	0 0
11	k	114/116 (98%)	86 (75%)	17 (15%)	11 (10%)	0 0
12	l	121/123 (98%)	88 (73%)	28 (23%)	5 (4%)	2 3
13	m	112/114 (98%)	93 (83%)	16 (14%)	3 (3%)	4 7
14	n	96/101 (95%)	74 (77%)	17 (18%)	5 (5%)	1 2
15	o	86/88 (98%)	70 (81%)	12 (14%)	4 (5%)	2 2
16	p	80/82 (98%)	58 (72%)	20 (25%)	2 (2%)	4 8
17	q	78/80 (98%)	59 (76%)	14 (18%)	5 (6%)	1 1
18	r	63/65 (97%)	53 (84%)	6 (10%)	4 (6%)	1 1
19	s	77/79 (98%)	57 (74%)	16 (21%)	4 (5%)	1 2
20	t	83/85 (98%)	73 (88%)	5 (6%)	5 (6%)	1 1
21	u	63/65 (97%)	44 (70%)	16 (25%)	3 (5%)	2 2
24	C	269/271 (99%)	221 (82%)	38 (14%)	10 (4%)	2 3
25	D	207/209 (99%)	178 (86%)	21 (10%)	8 (4%)	2 3
26	E	199/201 (99%)	167 (84%)	28 (14%)	4 (2%)	6 12
27	F	175/177 (99%)	128 (73%)	30 (17%)	17 (10%)	0 0
28	G	174/176 (99%)	145 (83%)	22 (13%)	7 (4%)	2 3
29	J	140/142 (99%)	126 (90%)	8 (6%)	6 (4%)	2 2
30	K	120/122 (98%)	100 (83%)	14 (12%)	6 (5%)	1 2
31	L	141/143 (99%)	114 (81%)	17 (12%)	10 (7%)	1 1
32	M	134/136 (98%)	118 (88%)	14 (10%)	2 (2%)	8 18
33	N	118/120 (98%)	101 (86%)	12 (10%)	5 (4%)	2 3
34	O	114/116 (98%)	101 (89%)	8 (7%)	5 (4%)	2 2
35	P	112/114 (98%)	99 (88%)	12 (11%)	1 (1%)	14 30

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
36	Q	115/117 (98%)	111 (96%)	3 (3%)	1 (1%)	14 30
37	R	101/103 (98%)	81 (80%)	15 (15%)	5 (5%)	1 2
38	S	108/110 (98%)	93 (86%)	11 (10%)	4 (4%)	2 3
39	T	91/93 (98%)	80 (88%)	9 (10%)	2 (2%)	5 10
40	U	100/102 (98%)	86 (86%)	10 (10%)	4 (4%)	2 3
41	V	92/94 (98%)	86 (94%)	6 (6%)	0	100 100
42	W	73/75 (97%)	68 (93%)	3 (4%)	2 (3%)	4 7
43	X	75/77 (97%)	67 (89%)	8 (11%)	0	100 100
44	Y	61/63 (97%)	53 (87%)	6 (10%)	2 (3%)	3 5
45	Z	56/58 (97%)	53 (95%)	3 (5%)	0	100 100
46	0	54/56 (96%)	48 (89%)	4 (7%)	2 (4%)	2 3
47	1	48/50 (96%)	40 (83%)	6 (12%)	2 (4%)	2 3
48	2	44/46 (96%)	42 (96%)	2 (4%)	0	100 100
49	3	62/64 (97%)	54 (87%)	6 (10%)	2 (3%)	3 5
50	4	36/38 (95%)	31 (86%)	5 (14%)	0	100 100
51	6	64/66 (97%)	46 (72%)	17 (27%)	1 (2%)	7 16
All	All	5429/5528 (98%)	4480 (82%)	704 (13%)	245 (4%)	3 2

5 of 245 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	b	14	HIS
2	b	73	ARG
2	b	87	ASP
2	b	124	THR
4	d	74	TYR

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	b	180/180 (100%)	160 (89%)	20 (11%)	6 12
3	c	170/170 (100%)	157 (92%)	13 (8%)	12 27
4	d	172/172 (100%)	158 (92%)	14 (8%)	11 24
5	e	114/119 (96%)	104 (91%)	10 (9%)	9 21
6	f	87/87 (100%)	71 (82%)	16 (18%)	1 3
7	g	124/124 (100%)	118 (95%)	6 (5%)	23 47
8	h	104/104 (100%)	81 (78%)	23 (22%)	1 2
9	i	105/105 (100%)	98 (93%)	7 (7%)	15 33
10	j	86/86 (100%)	81 (94%)	5 (6%)	18 39
11	k	89/89 (100%)	75 (84%)	14 (16%)	2 4
12	l	103/103 (100%)	98 (95%)	5 (5%)	22 47
13	m	92/92 (100%)	79 (86%)	13 (14%)	3 6
14	n	79/83 (95%)	69 (87%)	10 (13%)	4 9
15	o	76/76 (100%)	64 (84%)	12 (16%)	2 4
16	p	65/65 (100%)	61 (94%)	4 (6%)	16 36
17	q	74/74 (100%)	68 (92%)	6 (8%)	11 24
18	r	48/56 (86%)	41 (85%)	7 (15%)	3 6
19	s	70/70 (100%)	63 (90%)	7 (10%)	7 16
20	t	65/65 (100%)	57 (88%)	8 (12%)	4 9
21	u	44/55 (80%)	40 (91%)	4 (9%)	9 19
24	C	216/216 (100%)	198 (92%)	18 (8%)	10 23
25	D	164/164 (100%)	147 (90%)	17 (10%)	7 14
26	E	165/165 (100%)	147 (89%)	18 (11%)	6 13
27	F	148/148 (100%)	135 (91%)	13 (9%)	9 21
28	G	137/137 (100%)	116 (85%)	21 (15%)	3 5
29	J	116/116 (100%)	99 (85%)	17 (15%)	3 6
30	K	103/103 (100%)	86 (84%)	17 (16%)	2 4
31	L	102/102 (100%)	95 (93%)	7 (7%)	14 32
32	M	109/109 (100%)	97 (89%)	12 (11%)	6 13
33	N	100/100 (100%)	94 (94%)	6 (6%)	17 37
34	O	86/86 (100%)	78 (91%)	8 (9%)	8 18
35	P	99/99 (100%)	87 (88%)	12 (12%)	5 10

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
36	Q	89/89 (100%)	86 (97%)	3 (3%)	32 60
37	R	84/84 (100%)	78 (93%)	6 (7%)	13 31
38	S	93/93 (100%)	85 (91%)	8 (9%)	10 22
39	T	80/80 (100%)	69 (86%)	11 (14%)	3 7
40	U	83/83 (100%)	76 (92%)	7 (8%)	10 23
41	V	78/78 (100%)	71 (91%)	7 (9%)	9 20
42	W	57/57 (100%)	50 (88%)	7 (12%)	4 9
43	X	67/67 (100%)	62 (92%)	5 (8%)	12 28
44	Y	55/55 (100%)	50 (91%)	5 (9%)	9 19
45	Z	48/48 (100%)	46 (96%)	2 (4%)	26 52
46	0	47/47 (100%)	44 (94%)	3 (6%)	16 35
47	1	45/45 (100%)	40 (89%)	5 (11%)	6 12
48	2	38/38 (100%)	35 (92%)	3 (8%)	11 26
49	3	51/51 (100%)	49 (96%)	2 (4%)	28 55
50	4	34/34 (100%)	33 (97%)	1 (3%)	37 65
51	6	59/59 (100%)	56 (95%)	3 (5%)	21 45
All	All	4500/4528 (99%)	4052 (90%)	448 (10%)	9 16

5 of 448 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
25	D	91	THR
49	3	38	LYS
28	G	131	VAL
47	1	45	HIS
40	U	36	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 88 such sidechains are listed below:

Mol	Chain	Res	Type
28	G	29	ASN
36	Q	36	GLN
29	J	128	ASN
32	M	22	GLN
37	R	11	GLN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	a	1538/1539 (99%)	241 (15%)	0
22	A	885/886 (99%)	145 (16%)	19 (2%)
23	B	119/120 (99%)	15 (12%)	4 (3%)
52	5	2013/2014 (99%)	326 (16%)	28 (1%)
All	All	4555/4559 (99%)	727 (15%)	51 (1%)

5 of 727 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	a	6	G
1	a	7	A
1	a	9	G
1	a	22	G
1	a	31	G

5 of 51 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
52	5	1130	U
52	5	1900	A
52	5	2867	G
52	5	1378	A
52	5	1626	A

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

35 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
52	OMG	5	2251	52	23,26,27	2.46	8 (34%)	33,38,41	2.47	10 (30%)
52	7MG	5	2069	52,22	22,26,27	4.43	10 (45%)	29,39,42	2.01	9 (31%)
1	2MG	a	1207	1	23,26,27	2.87	8 (34%)	32,38,41	2.65	11 (34%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
22	5MC	A	747	22	18,22,23	3.94	7 (38%)	26,32,35	1.04	2 (7%)
52	PSU	5	1917	52	18,21,22	1.11	1 (5%)	22,30,33	1.84	5 (22%)
52	H2U	5	2449	52	18,21,22	3.17	4 (22%)	21,30,33	2.06	5 (23%)
1	2MG	a	966	1	23,26,27	2.87	8 (34%)	32,38,41	2.72	11 (34%)
52	OMU	5	2552	52	19,22,23	3.55	8 (42%)	26,31,34	1.72	5 (19%)
52	5MC	5	1962	52	18,22,23	3.97	7 (38%)	26,32,35	1.05	2 (7%)
52	5MU	5	1939	52	19,22,23	8.24	7 (36%)	28,32,35	4.36	9 (32%)
52	PSU	5	2604	52	18,21,22	1.09	1 (5%)	22,30,33	1.93	5 (22%)
52	2MG	5	2445	52	23,26,27	2.76	9 (39%)	32,38,41	2.51	12 (37%)
52	6MZ	5	1618	52	22,25,26	2.20	4 (18%)	30,36,39	2.39	11 (36%)
52	6MZ	5	2030	52,22	22,25,26	2.17	4 (18%)	30,36,39	2.48	11 (36%)
52	PSU	5	2580	52	18,21,22	1.11	1 (5%)	22,30,33	1.95	6 (27%)
1	5MC	a	967	1	18,22,23	3.96	7 (38%)	26,32,35	1.01	2 (7%)
52	PSU	5	955	52	18,21,22	1.10	1 (5%)	22,30,33	1.94	5 (22%)
52	2MA	5	2503	52,53	22,25,26	1.45	4 (18%)	33,37,40	4.16	11 (33%)
1	MA6	a	1519	1	23,26,27	1.15	3 (13%)	34,38,41	3.19	13 (38%)
52	2MG	5	1835	52	23,26,27	2.83	9 (39%)	32,38,41	2.61	12 (37%)
52	PSU	5	1911	52	18,21,22	1.09	1 (5%)	22,30,33	1.81	5 (22%)
1	4OC	a	1402	1	20,23,24	3.28	7 (35%)	26,32,35	0.86	1 (3%)
22	1MG	A	745	22	22,26,27	2.96	6 (27%)	33,39,42	1.66	6 (18%)
52	3TD	5	1915	52	18,22,23	4.27	7 (38%)	22,32,35	1.61	2 (9%)
1	2MG	a	1516	1	23,26,27	2.79	9 (39%)	32,38,41	2.64	13 (40%)
52	PSU	5	2504	52	18,21,22	1.11	1 (5%)	22,30,33	1.85	5 (22%)
52	PSU	5	2605	52	18,21,22	1.10	1 (5%)	22,30,33	1.90	5 (22%)
1	MA6	a	1518	1	23,26,27	1.13	2 (8%)	34,38,41	3.06	12 (35%)
1	UR3	a	1498	1	19,22,23	2.90	8 (42%)	26,32,35	1.33	3 (11%)
52	OMC	5	2498	52,53	19,22,23	2.83	7 (36%)	26,31,34	0.73	0
1	5MC	a	1407	1	18,22,23	3.96	7 (38%)	26,32,35	0.99	1 (3%)
1	PSU	a	516	1,53	18,21,22	1.12	1 (5%)	22,30,33	1.86	6 (27%)
22	PSU	A	746	22,53	18,21,22	1.16	1 (5%)	22,30,33	1.73	4 (18%)
1	7MG	a	527	1	22,26,27	4.43	9 (40%)	29,39,42	1.95	8 (27%)
52	PSU	5	2457	52	18,21,22	1.09	1 (5%)	22,30,33	1.96	6 (27%)

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
52	OMG	5	2251	52	-	0/9/27/28	0/3/3/3
52	7MG	5	2069	52,22	-	1/7/37/38	0/3/3/3
1	2MG	a	1207	1	-	2/9/27/28	0/3/3/3
22	5MC	A	747	22	-	1/7/25/26	0/2/2/2
52	PSU	5	1917	52	-	2/7/25/26	0/2/2/2
52	H2U	5	2449	52	-	0/7/38/39	0/2/2/2
1	2MG	a	966	1	-	1/9/27/28	0/3/3/3
52	OMU	5	2552	52	-	2/9/27/28	0/2/2/2
52	5MC	5	1962	52	-	1/7/25/26	0/2/2/2
52	5MU	5	1939	52	-	0/7/25/26	0/2/2/2
52	PSU	5	2604	52	-	0/7/25/26	0/2/2/2
52	2MG	5	2445	52	-	2/9/27/28	0/3/3/3
52	6MZ	5	1618	52	-	0/9/27/28	0/3/3/3
52	6MZ	5	2030	52,22	-	2/9/27/28	0/3/3/3
52	PSU	5	2580	52	-	0/7/25/26	0/2/2/2
1	5MC	a	967	1	-	0/7/25/26	0/2/2/2
52	PSU	5	955	52	-	0/7/25/26	0/2/2/2
52	2MA	5	2503	52,53	-	2/7/25/26	0/3/3/3
1	MA6	a	1519	1	-	0/11/29/30	0/3/3/3
52	2MG	5	1835	52	-	0/9/27/28	0/3/3/3
52	PSU	5	1911	52	-	0/7/25/26	0/2/2/2
1	4OC	a	1402	1	-	2/9/29/30	0/2/2/2
22	1MG	A	745	22	-	0/7/25/26	0/3/3/3
52	3TD	5	1915	52	-	4/7/25/26	0/2/2/2
1	2MG	a	1516	1	-	0/9/27/28	0/3/3/3
52	PSU	5	2504	52	-	0/7/25/26	0/2/2/2
52	PSU	5	2605	52	-	0/7/25/26	0/2/2/2
1	MA6	a	1518	1	-	2/11/29/30	0/3/3/3
1	UR3	a	1498	1	-	2/7/25/26	0/2/2/2
52	OMC	5	2498	52,53	-	0/9/27/28	0/2/2/2
1	5MC	a	1407	1	-	0/7/25/26	0/2/2/2
1	PSU	a	516	1,53	-	0/7/25/26	0/2/2/2
22	PSU	A	746	22,53	-	1/7/25/26	0/2/2/2
1	7MG	a	527	1	-	0/7/37/38	0/3/3/3
52	PSU	5	2457	52	-	0/7/25/26	0/2/2/2

The worst 5 of 179 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
52	5	1939	5MU	C4-C5	23.58	1.83	1.44
52	5	1939	5MU	C6-N1	17.82	1.68	1.38
1	a	527	7MG	C8-N9	16.22	1.55	1.46
52	5	2069	7MG	C8-N9	16.13	1.55	1.46
52	5	1939	5MU	C4-N3	-14.78	1.11	1.38

The worst 5 of 234 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
52	5	1939	5MU	C5M-C5-C6	-13.72	104.52	122.85
52	5	1939	5MU	C5-C4-N3	12.67	126.13	115.31
52	5	2503	2MA	N6-C6-N1	-12.64	99.17	117.03
1	a	1519	MA6	N1-C6-N6	-10.31	105.81	117.08
1	a	1518	MA6	N1-C6-N6	-9.84	106.33	117.08

There are no chirality outliers.

5 of 27 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	a	1207	2MG	O4'-C4'-C5'-O5'
1	a	1207	2MG	C3'-C4'-C5'-O5'
1	a	1498	UR3	O4'-C1'-N1-C2
52	5	1915	3TD	C2'-C1'-C5-C4
52	5	1915	3TD	O4'-C1'-C5-C4

There are no ring outliers.

15 monomers are involved in 26 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	a	1207	2MG	1	0
52	5	2449	H2U	1	0
52	5	1962	5MC	1	0
52	5	1939	5MU	7	0
52	5	2445	2MG	1	0
52	5	1618	6MZ	1	0
52	5	2030	6MZ	2	0
52	5	2580	PSU	1	0
1	a	967	5MC	1	0
1	a	1519	MA6	2	0
1	a	1402	4OC	1	0
1	a	1516	2MG	1	0
1	a	1518	MA6	5	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
52	5	2498	OMC	1	0
1	a	527	7MG	1	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 334 ligands modelled in this entry, 334 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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.

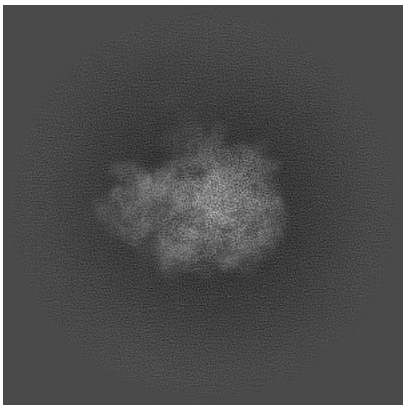
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-67081. These allow visual inspection of the internal detail of the map and identification of artifacts.

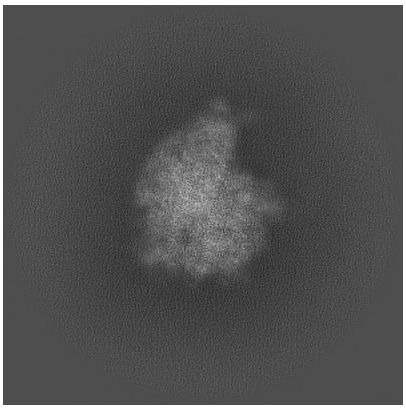
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

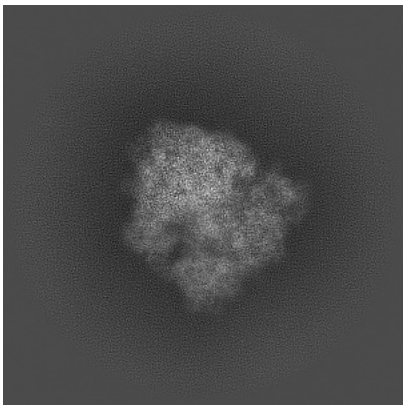
6.1.1 Primary map



X

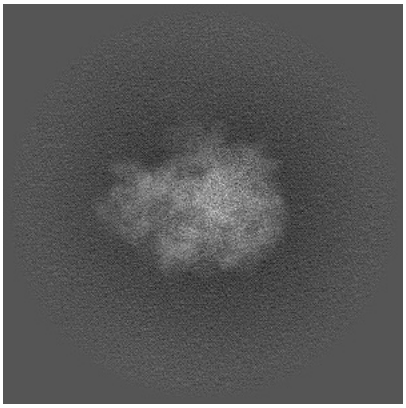


Y

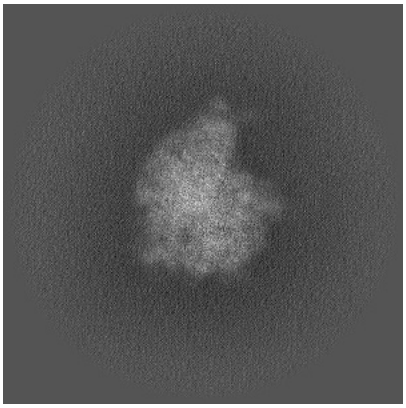


Z

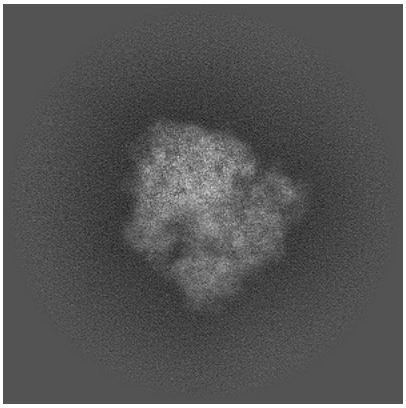
6.1.2 Raw map



X



Y

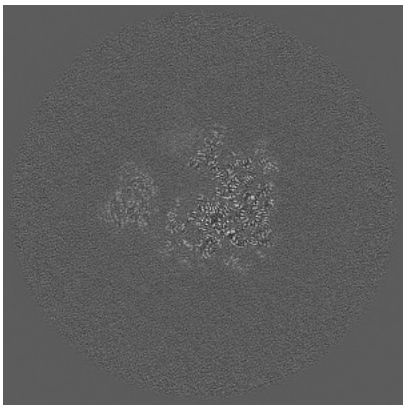


Z

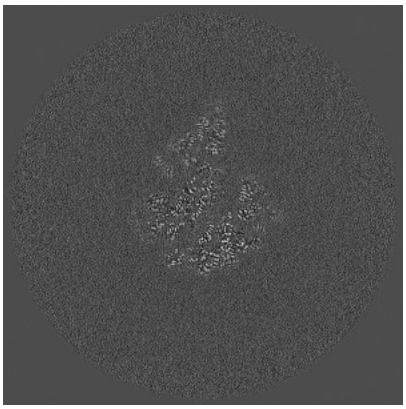
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

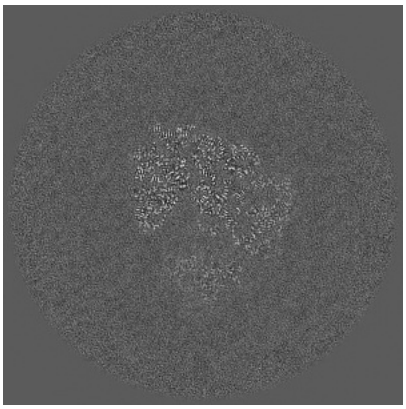
6.2.1 Primary map



X Index: 264

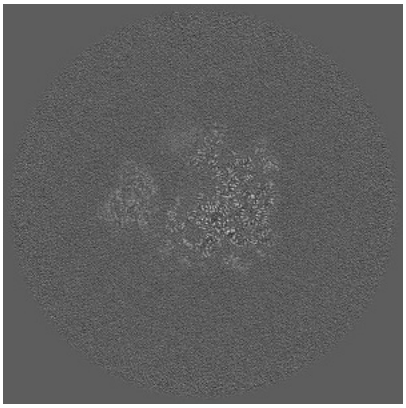


Y Index: 264

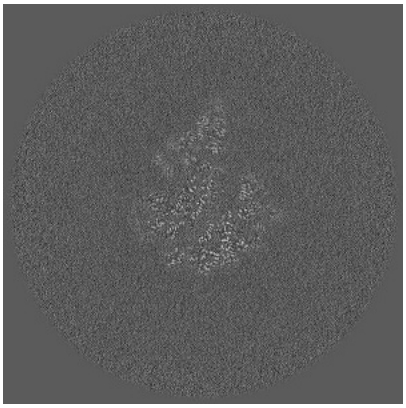


Z Index: 264

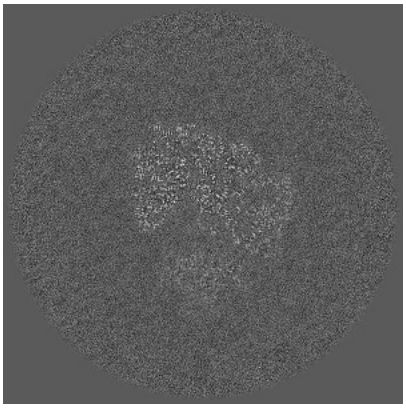
6.2.2 Raw map



X Index: 264



Y Index: 264

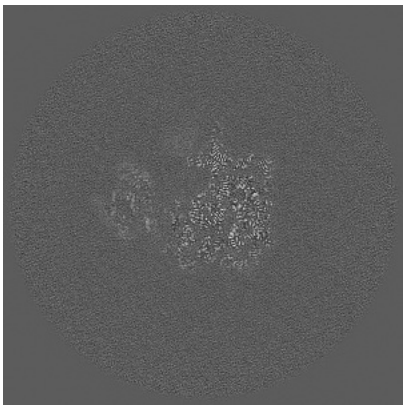


Z Index: 264

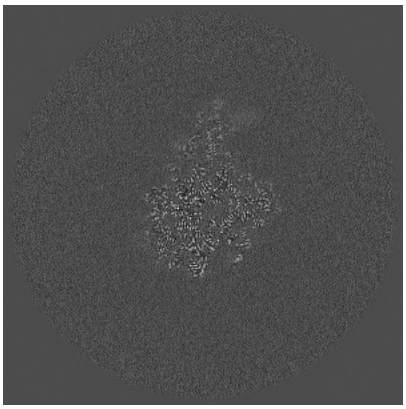
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

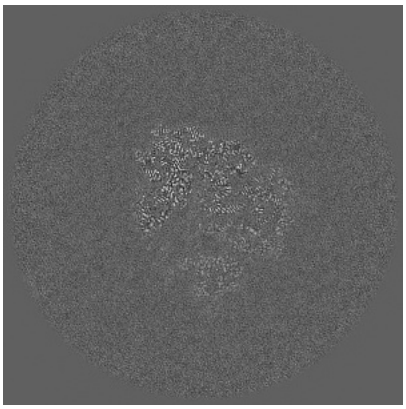
6.3.1 Primary map



X Index: 270

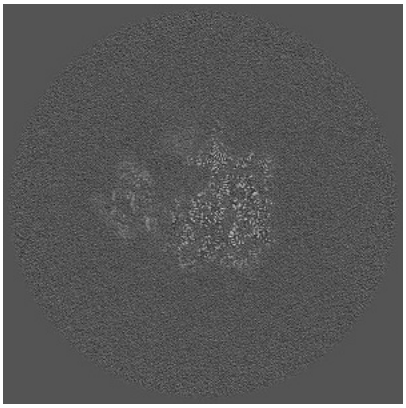


Y Index: 276

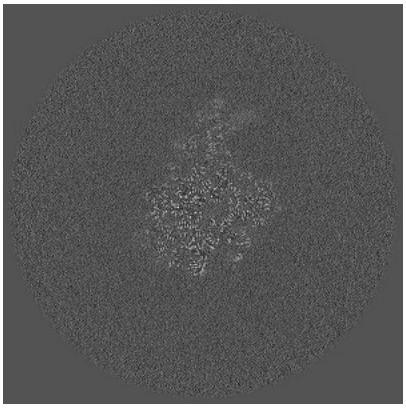


Z Index: 270

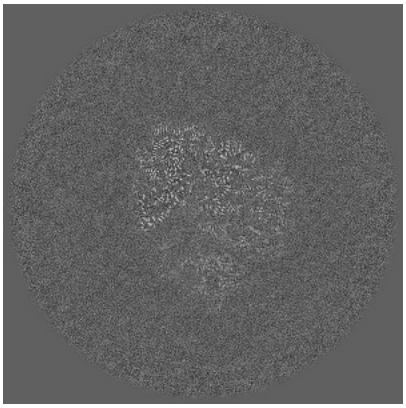
6.3.2 Raw map



X Index: 270



Y Index: 276

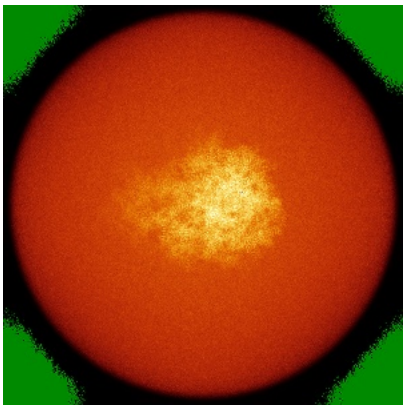


Z Index: 269

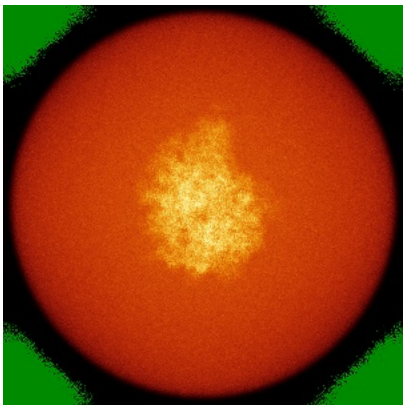
The images above show the largest variance slices of the map in three orthogonal directions.

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

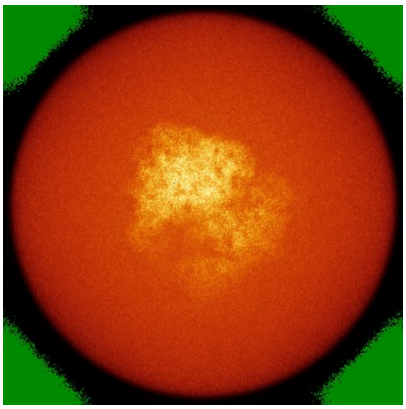
6.4.1 Primary map



X

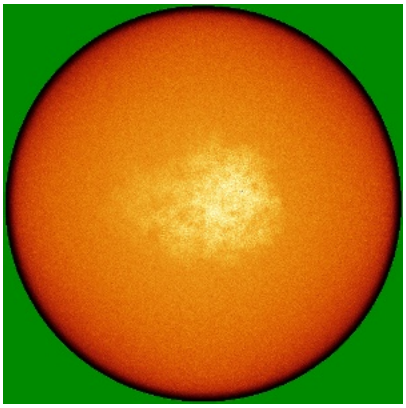


Y

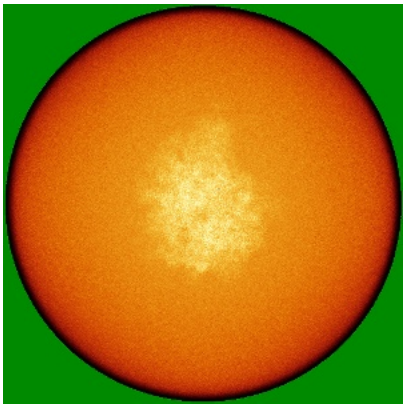


Z

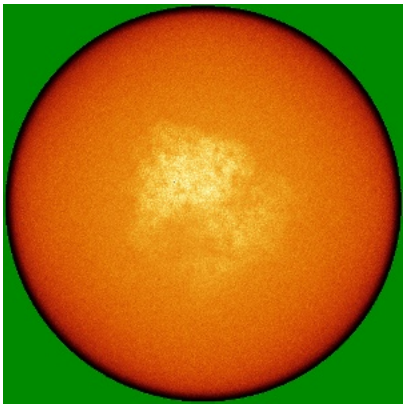
6.4.2 Raw map



X



Y

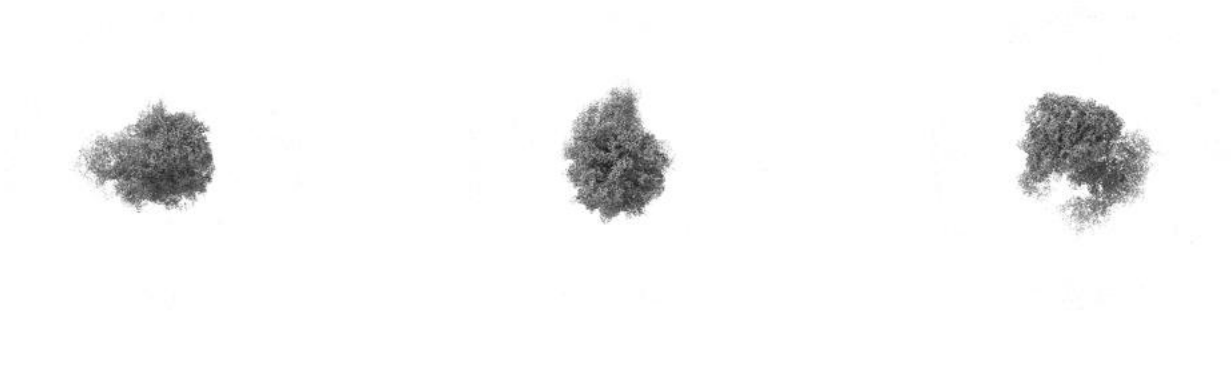


Z

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)

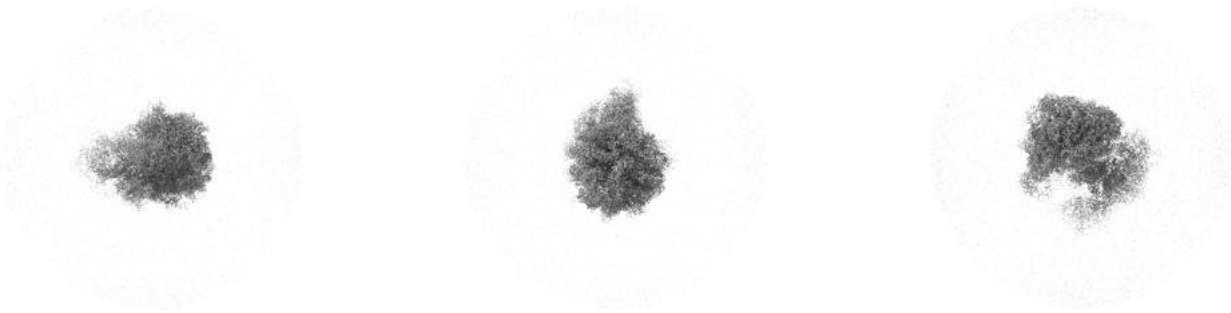
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.0077. 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.

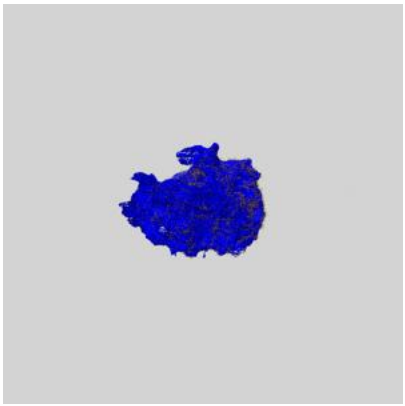
6.6 Mask visualisation

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

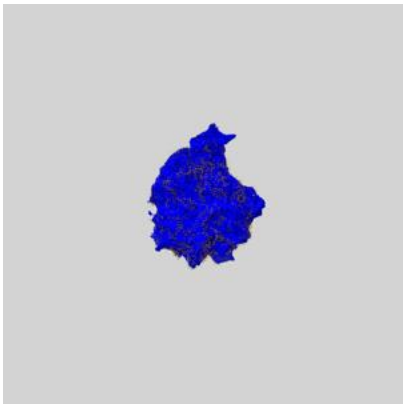
A mask typically either:

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

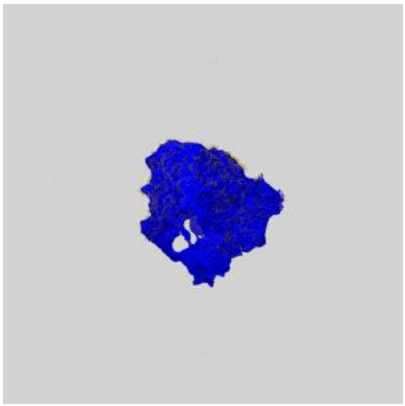
6.6.1 emd_67081_msk_1.map



X



Y

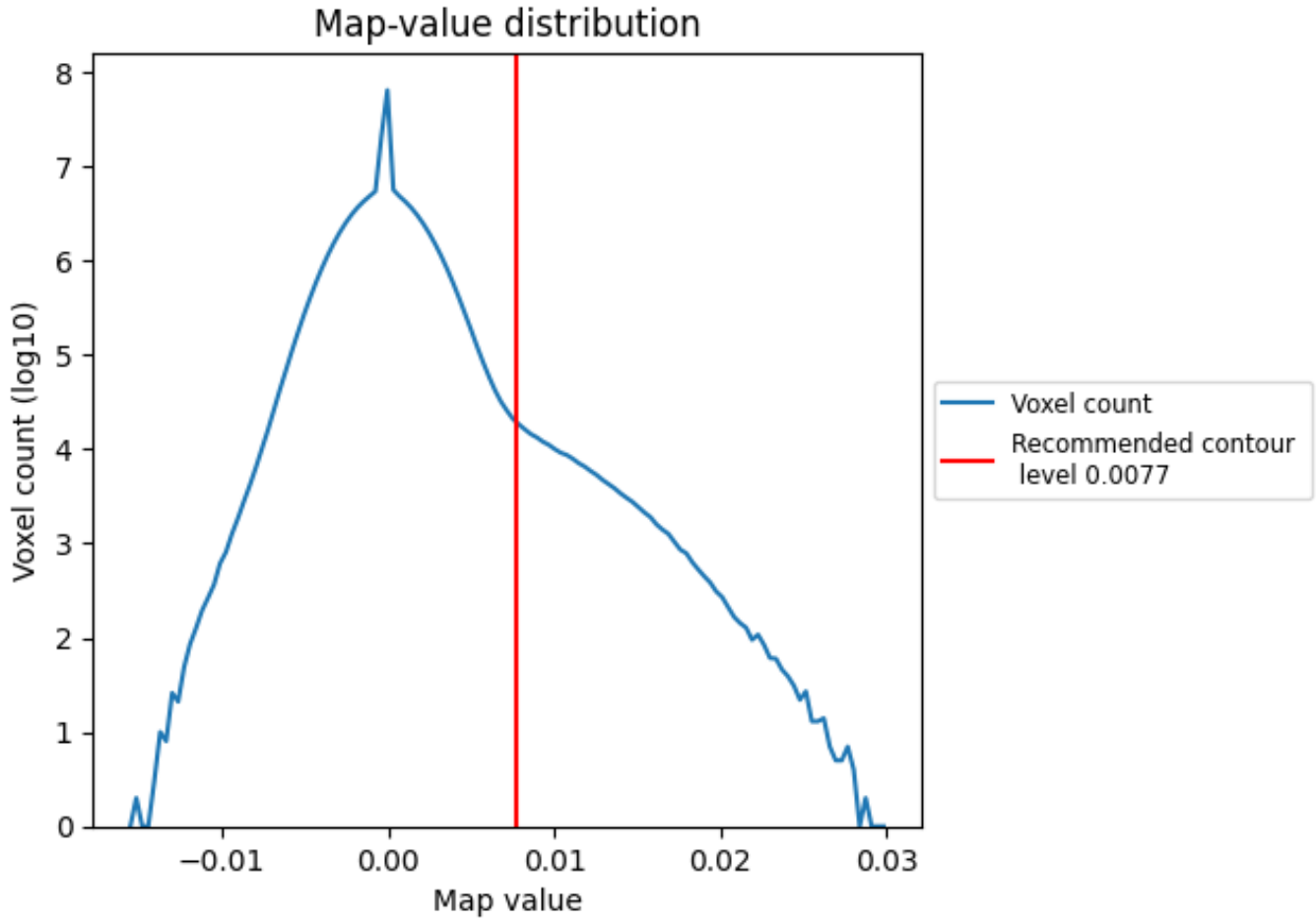


Z

7 Map analysis

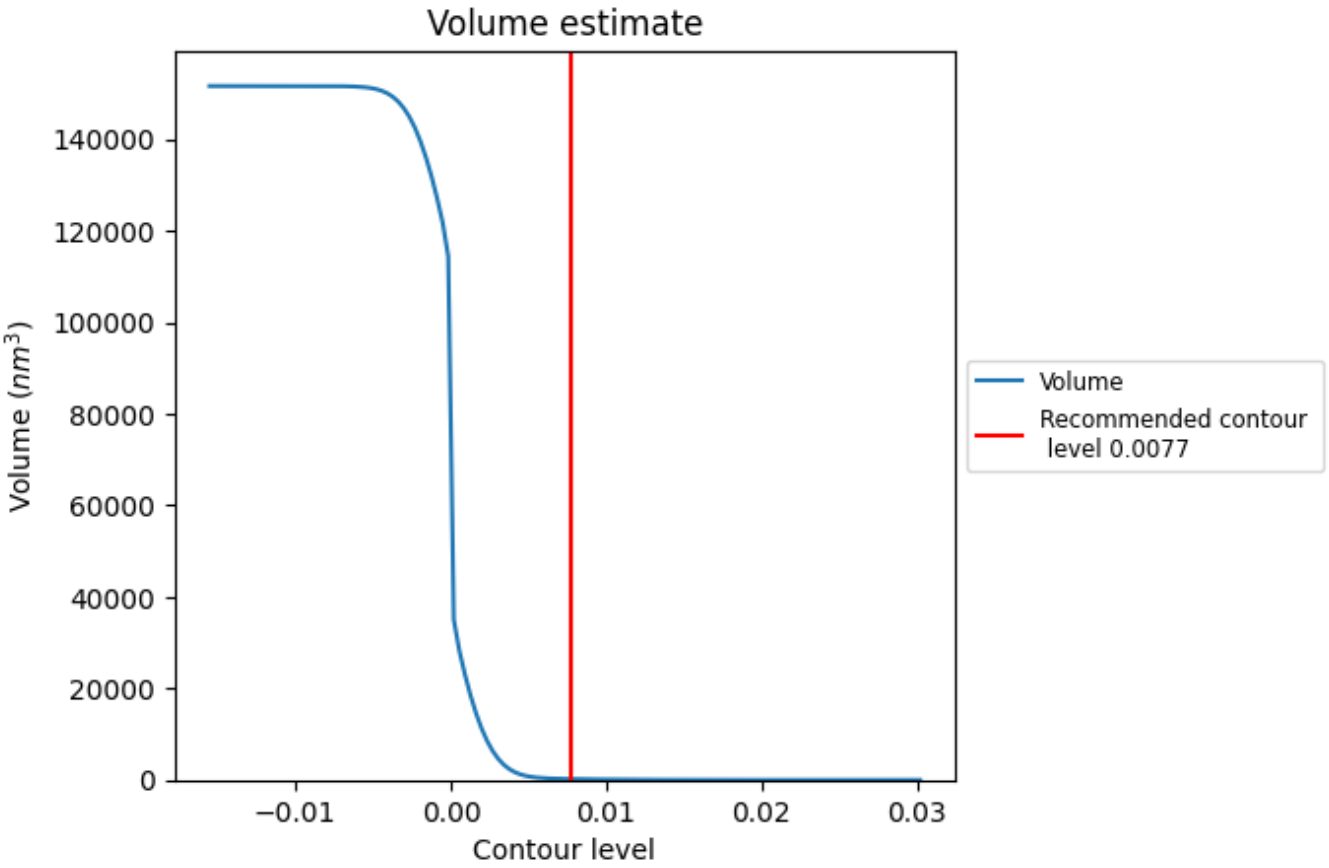
This section contains the results of statistical analysis of the map.

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.

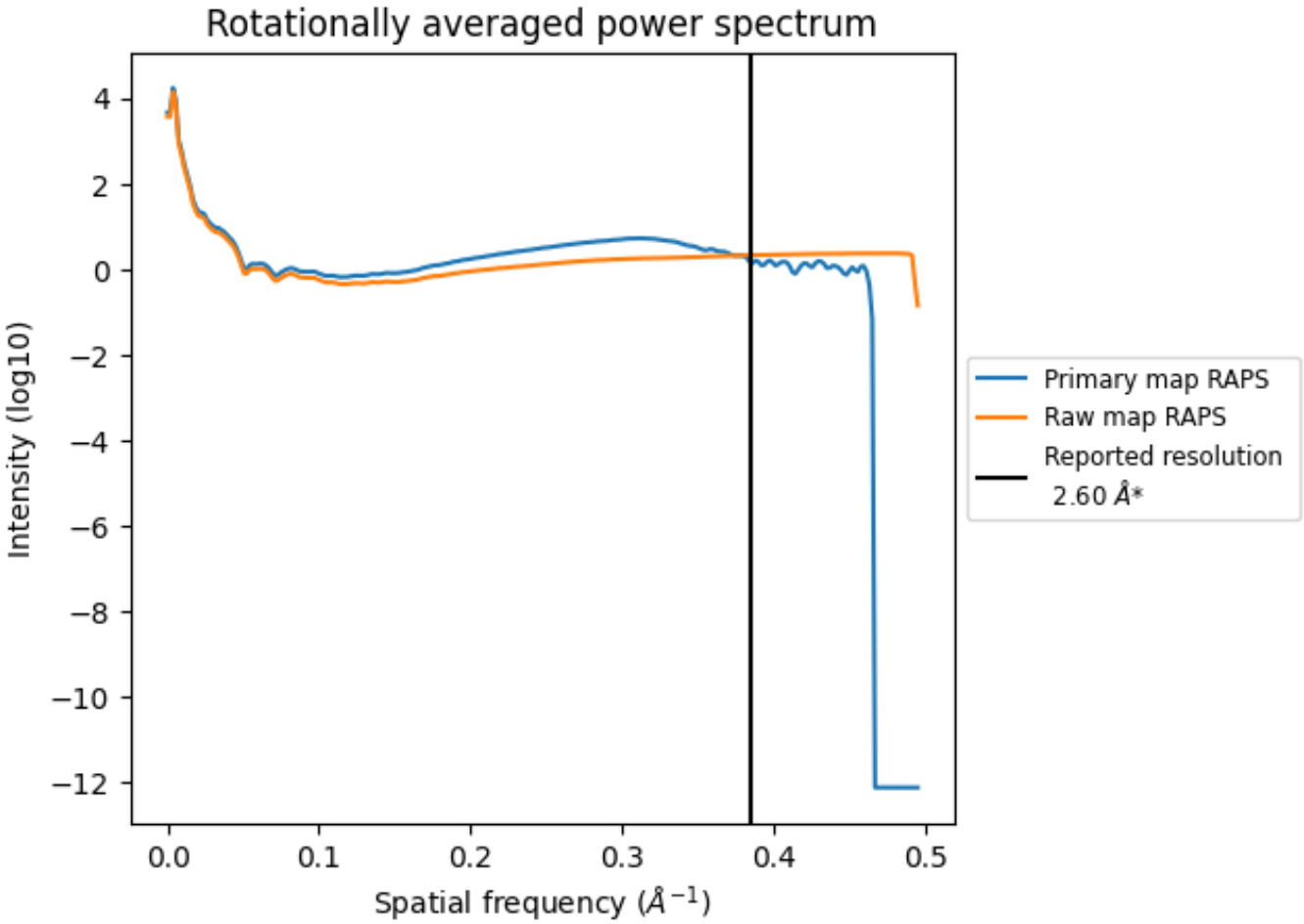
7.2 Volume estimate (i)



The volume at the recommended contour level is 202 nm^3; this corresponds to an approximate mass of 182 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)

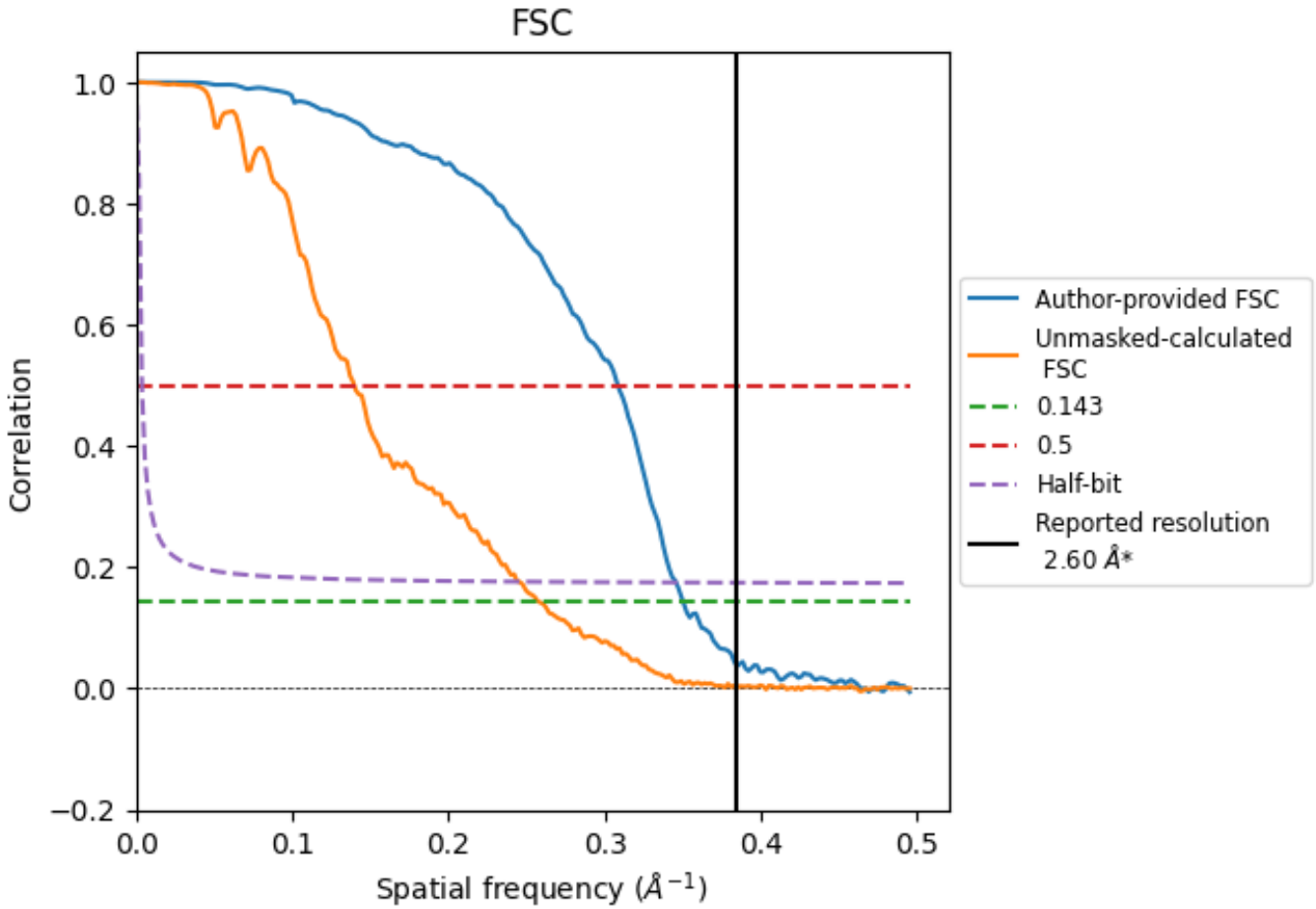


*Reported resolution corresponds to spatial frequency of 0.385 Å^{-1}

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 0.385 Å^{-1}

8.2 Resolution estimates (i)

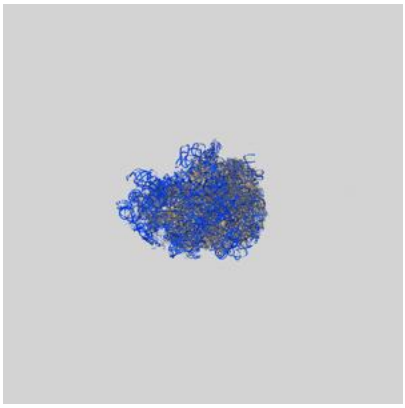
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.60	-	-
Author-provided FSC curve	2.86	3.24	2.89
Unmasked-calculated*	3.88	7.16	4.08

*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 3.88 differs from the reported value 2.6 by more than 10 %

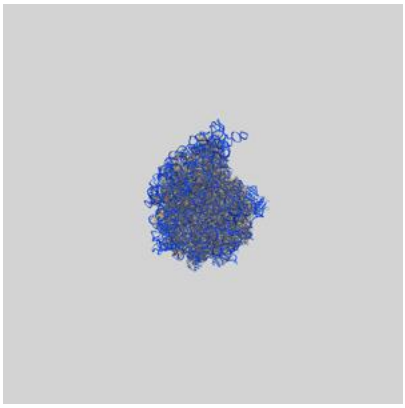
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-67081 and PDB model 23WI. Per-residue inclusion information can be found in section 3 on page 16.

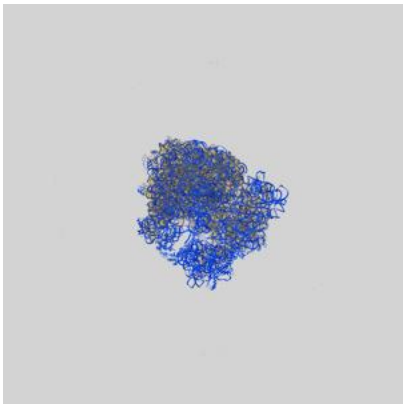
9.1 Map-model overlay



X



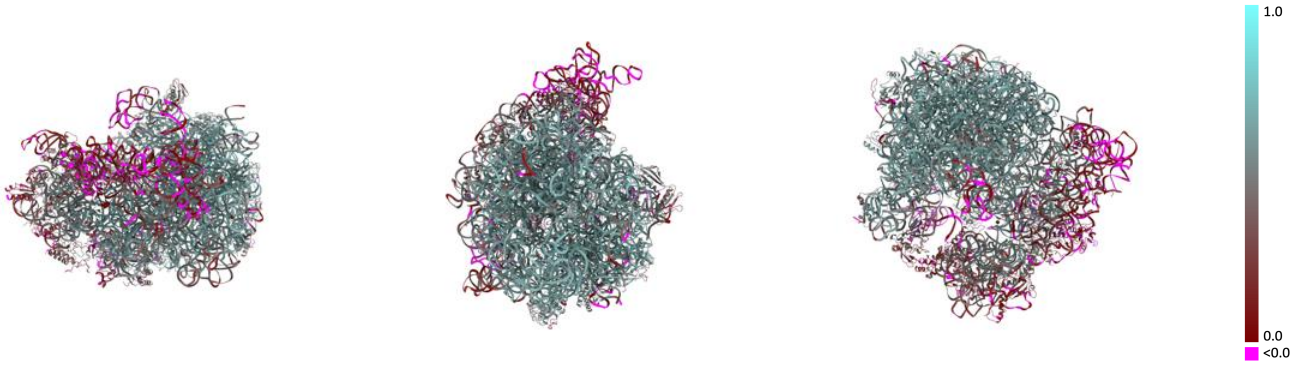
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0077 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.

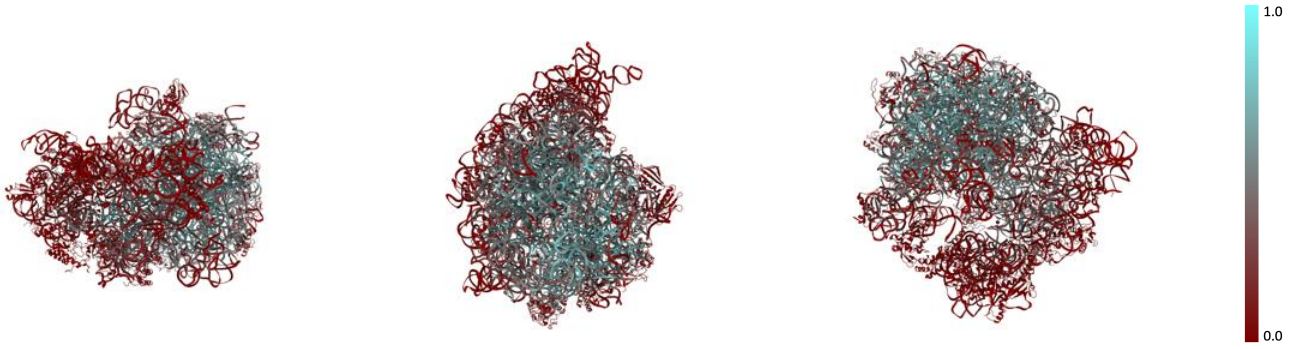
9.2 Q-score mapped to coordinate model (i)



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.

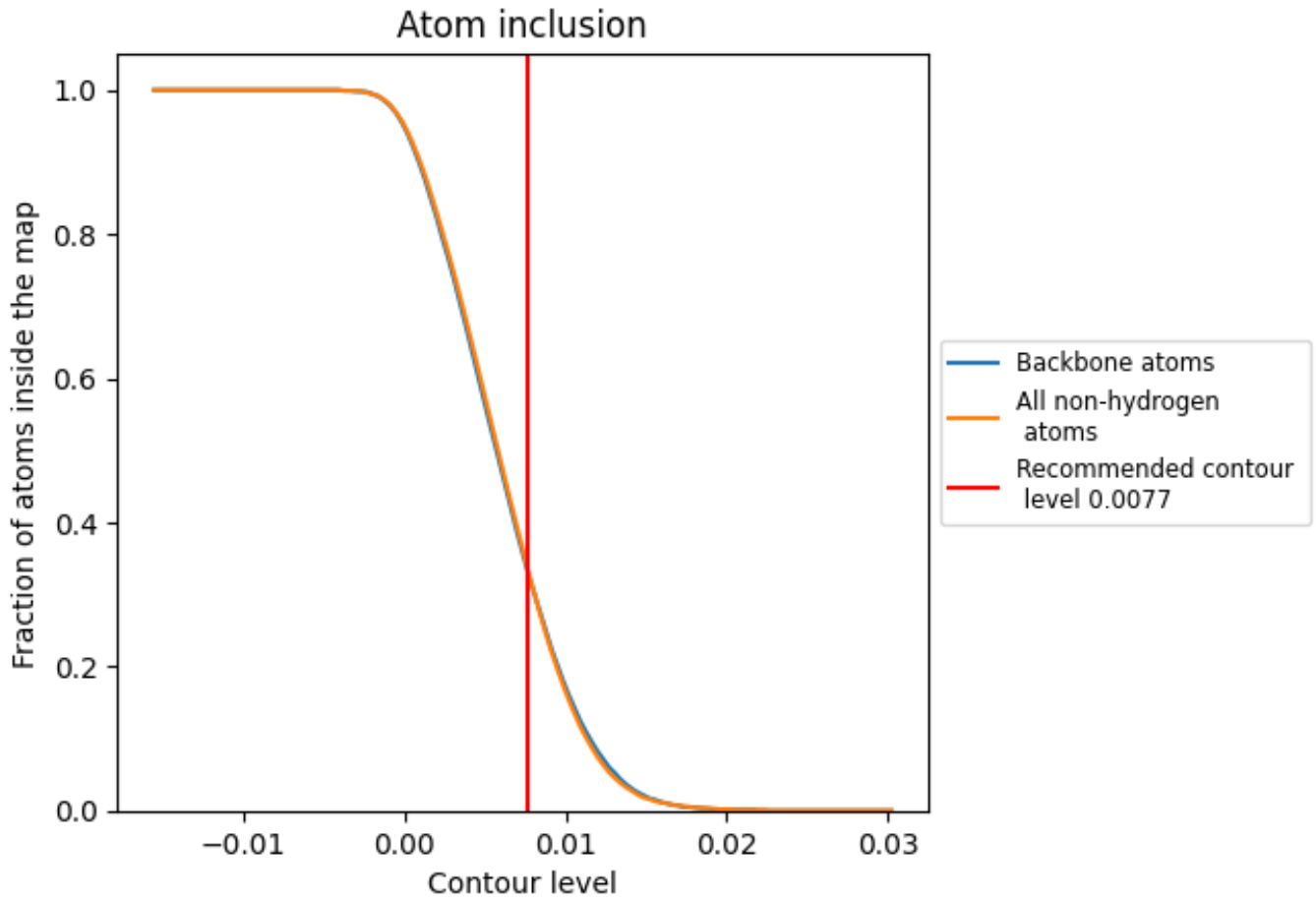
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.0077).

9.4 Atom inclusion (i)



At the recommended contour level, 33% of all backbone atoms, 33% 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 (0.0077) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.3300	0.4850
0	0.4710	0.5850
1	0.2540	0.5180
2	0.5750	0.6330
3	0.5250	0.6210
4	0.3210	0.5770
5	0.4770	0.5510
6	0.0000	0.1630
A	0.5130	0.5860
B	0.2410	0.5220
C	0.4480	0.6090
D	0.4300	0.6010
E	0.3110	0.5450
F	0.0110	0.3070
G	0.0560	0.4260
J	0.3980	0.5980
K	0.3430	0.5800
L	0.3610	0.5750
M	0.3390	0.5830
N	0.4850	0.6150
O	0.1630	0.5170
P	0.3370	0.5570
Q	0.5380	0.6380
R	0.3340	0.5320
S	0.4010	0.5730
T	0.2850	0.5190
U	0.1980	0.5080
V	0.1900	0.5290
W	0.4100	0.6060
X	0.3790	0.5740
Y	0.1310	0.4430
Z	0.3570	0.5860
a	0.2070	0.3990
b	0.0110	0.3020
c	0.0550	0.3980

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Chain	Atom inclusion	Q-score
d	0.0190	0.0900
e	0.1570	0.4970
f	0.0540	0.3960
g	0.0010	0.1740
h	0.1600	0.5120
i	0.0110	0.2470
j	0.0250	0.2690
k	0.0820	0.4290
l	0.0510	0.1700
m	0.0040	0.2730
n	0.0250	0.3640
o	0.1460	0.4570
p	0.0480	0.0790
q	0.0410	0.2800
r	0.1420	0.4810
s	0.0020	0.2630
t	0.0370	0.1700
u	0.0150	0.2100