wwPDB EM Validation Summary Report

Jan 30, 2023 – 04:54 PM EST

PDB ID	:	4V6S
EMDB ID	:	EMD-5360
Title	:	Structural characterization of mRNA-tRNA translocation intermediates (class 3 of the six classes)
Authors	:	Agirrezabala, X.; Liao, H.; Schreiner, E.; Fu, J.; Ortiz-Meoz, R.F.; Schulten, K.; Green, R.; Frank, J.
Deposited on	:	2011-12-09
Resolution	:	13.10 Å(reported)
Based on initial model	:	2I2V

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:

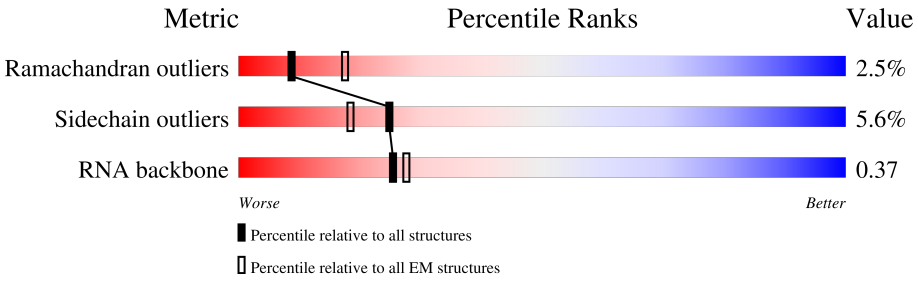
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.32.1

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 13.10 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)
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	AA	120	37% 48% 15%
2	AB	2904	34% 54% 12%
3	AC	234	85% 14%
4	AD	272	73% 24%
5	AE	209	78% 18%
6	AF	201	77% 20%
7	AG	178	72% 25%
8	AH	176	75% 22%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
9	AI	149	19% 81% 16%
10	AJ	164	12% 78% 18%
11	AK	141	85% 13%
12	AL	142	75% 21%
13	AM	123	76% 20%
14	AN	144	86% 11%
15	AO	136	79% 17%
16	AP	127	78% 19%
17	AQ	117	75% 20% 5%
18	AR	114	76% 18% 5%
19	AS	117	70% 29%
20	AT	103	73% 23%
21	AU	110	75% 22%
22	AV	100	74% 25%
23	AW	103	81% 19%
24	AX	94	71% 27%
25	AY	84	73% 24%
26	AZ	77	60% 36%
27	A0	63	79% 14% 6%
28	A1	58	74% 19% 7%
29	A2	70	6% 81% 16%
30	A3	56	77% 18%
31	A4	54	80% 17%
32	A5	46	61% 39%
33	A6	64	83% 12% 5%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
34	A7	38	68% 29%
35	BA	1542	33% 54% 13%
36	BB	47	26% 23% 47% 30%
37	BC	77	38% 53% 9%
38	BD	240	7% 82% 15%
39	BE	232	76% 20%
40	BF	205	78% 20%
41	BG	166	80% 17%
42	BH	135	72% 25%
43	BI	178	76% 21%
44	BJ	129	77% 19%
45	BK	129	78% 17% 5%
46	BL	103	75% 19% 6%
47	BM	128	5% 80% 17%
48	BN	123	72% 24%
49	BO	117	78% 18%
50	BP	100	75% 22%
51	BQ	88	82% 15%
52	BR	82	65% 34%
53	BS	83	75% 20% 5%
54	BT	74	74% 20% 5%
55	BU	91	70% 27%
56	BV	86	86% 13%
57	BW	70	66% 27% 6%

2 Entry composition (i)

There are 57 unique types of molecules in this entry. The entry contains 150700 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 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	AA	120	2566	1144	468	835	119	0	0

- Molecule 2 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	AB	2904	62351	27824	11469	20155	2903	0	0

- Molecule 3 is a protein called 50S ribosomal protein L1.

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

- Molecule 4 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	AD	272	2092	1294	425	366	7	0	0

- Molecule 5 is a protein called 50S ribosomal protein L3.

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

- Molecule 6 is a protein called 50S ribosomal protein L4.

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

- Molecule 7 is a protein called 50S ribosomal protein L5.

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

- Molecule 8 is a protein called 50S ribosomal protein L6.

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

- Molecule 9 is a protein called 50S ribosomal protein L9.

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

- Molecule 10 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	AJ	164	Total	C	N	O	S	0	0
			1233	776	220	231	6		

- Molecule 11 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	AK	141	Total	C	N	O	S	0	0
			1032	651	179	196	6		

- Molecule 12 is a protein called 50S ribosomal protein L13.

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

- Molecule 13 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	AM	123	Total	C	N	O	S	0	0
			947	593	181	167	6		

- Molecule 14 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	AN	144	Total	C	N	O	S	0	0
			1053	654	207	190	2		

- Molecule 15 is a protein called 50S ribosomal protein L16.

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

- Molecule 16 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	AP	127	Total	C	N	O	S	0	0
			1008	621	204	178	5		

- Molecule 17 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	AQ	117	Total	C	N	O	S	0	0
			900	557	179	163	1		

- Molecule 18 is a protein called 50S ribosomal protein L19.

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

- Molecule 19 is a protein called 50S ribosomal protein L20.

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

- Molecule 20 is a protein called 50S ribosomal protein L21.

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

- Molecule 21 is a protein called 50S ribosomal protein L22.

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

- Molecule 22 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	AV	100	Total	C	N	O	S	0	0
			787	496	146	143	2		

- Molecule 23 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
23	AW	103	Total	C	N	O	0	0
			789	498	148	143		

- Molecule 24 is a protein called 50S ribosomal protein L25.

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

- Molecule 25 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	AY	84	Total	C	N	O	S	0	0
			634	391	129	113	1		

- Molecule 26 is a protein called 50S ribosomal protein L28.

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

- Molecule 27 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	A0	63	Total	C	N	O	S	0	0
			509	313	99	95	2		

- Molecule 28 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	A1	58	Total	C	N	O	S	0	0
			449	281	87	79	2		

- Molecule 29 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	A2	70	Total	C	N	O	S	0	0
			549	339	104	100	6		

- Molecule 30 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	A3	56	Total	C	N	O	S	0	0
			444	269	94	80	1		

- Molecule 31 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	A4	54	Total	C	N	O	0	0
			441	284	81	76		

- Molecule 32 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	A5	46	Total	C	N	O	S	0	0
			377	228	90	57	2		

- Molecule 33 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	A6	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 34 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	A7	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

- Molecule 35 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	BA	1542	Total	C	N	O	P	0	0
			33089	14767	6064	10717	1541		

- Molecule 36 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	BB	47	Total	C	N	O	P	0	0
			993	445	167	335	46		

- Molecule 37 is a RNA chain called P site tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
37	BC	77	Total	C	N	O	P	S	0	0
			1641	734	297	533	76	1		

- Molecule 38 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	BD	240	Total	C	N	O	S	0	0
			1872	1180	332	352	8		

- Molecule 39 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	BE	232	Total	C	N	O	S	0	0
			1822	1149	346	323	4		

- Molecule 40 is a protein called 30S ribosomal protein S4.

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

- Molecule 41 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	BG	166	Total	C	N	O	S	0	0
			1225	761	232	226	6		

- Molecule 42 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	BH	135	Total	C	N	O	S	0	0
			1101	677	198	219	7		

- Molecule 43 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	BI	178	Total	C	N	O	S	0	0
			1400	874	269	253	4		

- Molecule 44 is a protein called 30S ribosomal protein S8.

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

- Molecule 45 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	BK	129	Total	C	N	O	S	0	0
			1036	642	208	183	3		

- Molecule 46 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	BL	103	Total	C	N	O	S	0	0
			825	514	158	151	2		

- Molecule 47 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	BM	128	Total	C	N	O	S	0	0
			965	595	196	171	3		

- Molecule 48 is a protein called 30S ribosomal protein S12.

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

- Molecule 49 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	BO	117	Total	C	N	O	S	0	0
			910	564	183	160	3		

- Molecule 50 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	BP	100	Total	C	N	O	S	0	0
			805	499	164	139	3		

- Molecule 51 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	BQ	88	Total	C	N	O	S	0	0
			716	440	146	129	1		

- Molecule 52 is a protein called 30S ribosomal protein S16.

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

- Molecule 53 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	BS	83	Total	C	N	O	S	0	0
			672	425	124	120	3		

- Molecule 54 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	BT	74	Total	C	N	O	S	0	0
			626	395	123	107	1		

- Molecule 55 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	BU	91	Total	C	N	O	S	0	0
			727	464	139	122	2		

- Molecule 56 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	BV	86	Total	C	N	O	S	0	0
			670	414	138	115	3		

- Molecule 57 is a protein called 30S ribosomal protein S21.

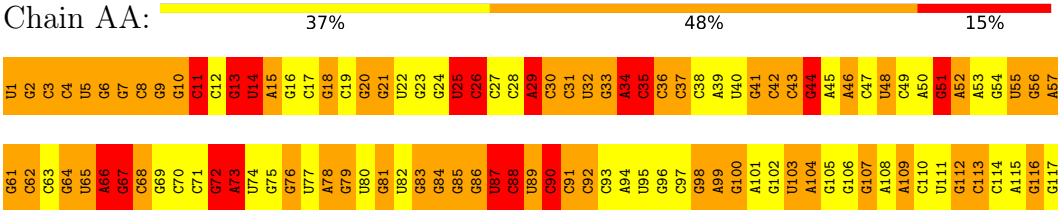
Mol	Chain	Residues	Atoms					AltConf	Trace
57	BW	70	Total	C	N	O	S	0	0
			590	366	125	98	1		

3 Residue-property plots (i)

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

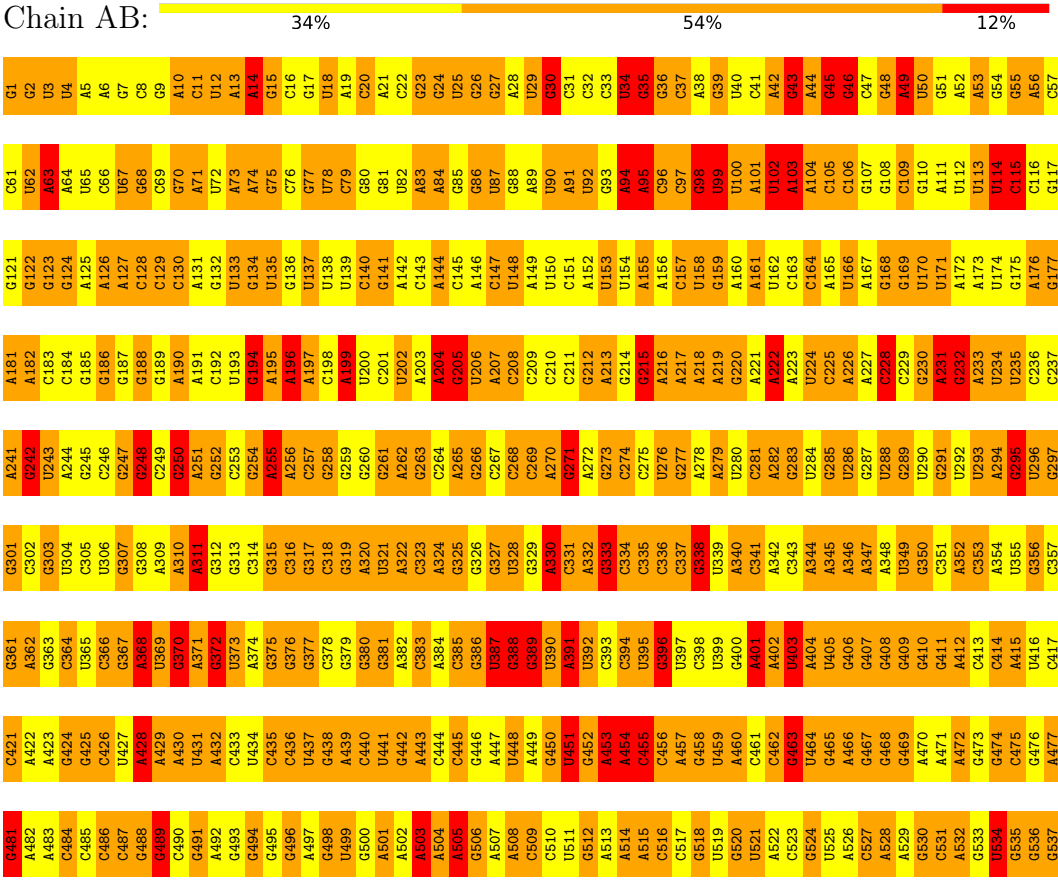
- Molecule 1: 5S ribosomal RNA

Chain AA:



- Molecule 2: 23S ribosomal RNA

Chain AB:



A541 C542 G543 C544 U545 U546 A547 G548 G549 C550 G551 U552 G553 U554 G555 A556 C557 U558 G559 C560 G561 U562 A563 C564 C565 U566 U567 U568 U569 G570 U571 A572 U573 A574 A575 U576 G577 G578 G579 U580 C581 A582 G583 C584 G585 A586 C587 U588 U589 A590 U591 A592 U593 U594 C595 U596 G597 U598 A599 G600

C601 A602 A603 G604 G605 U606 U607 A608 A609 C610 C611 G612 A613 A614 U615 A616 G617 G618 G619 G620 A621 G622 C623 C624 G625 A626 A627 G628 G629 G630 A631 A632 A633 C634 C635 G636 A637 G638 G639 C640 U641 U642 A643 A644 C645 U646 G647 G648 G649 C650 G651 U652 U653 A654 A655 G656 U657 U658 G659 C660

A661 G662 G663 G664 U665 A666 U667 A668 G669 A670 C671 C672 C673 G674 A675 A676 A677 C678 C679 C680 G681 G682 U683 G684 A685 U686 C687 U688 A689 G690 C691 C692 A693 U694 G695 G696 G697 C698 A699 G700 G701 U702 U703 G704 A705 A706 G707 G708 U709 U710 G711 G712 G713 U714 A715 A716 C717 A718 C719 U720

A721 A722 C723 U724 G725 G726 A727 G728 G729 A730 C731 C732 G733 A734 A735 C736 C737 G738 A739 C740 U741 A742 A743 U744 G745 U746 U747 G748 A749 A750 A751 A752 A753 U754 U755 A756 G757 C758 G759 G760 A761 U762 G763 A764 C765 U766 U767 G768 U769 G770 G771 C772 U773 G774 G775 C776 G777 G778 U779 G780

A781 A782 A783 G784 G785 C786 C787 A788 A789 U790 C791 A792 A793 A794 C795 C796 G797 G798 G799 A800 G801 A802 U803 A804 G805 C806 U807 G808 G809 U810 U811 C812 U813 C814 C815 C816 C817 G818 A819 A820 A821 G822 C823 U824 A825 U826 U827 U828 A829 G830 G831 U832 A833 G834 C835 G836 C837 C838 U839 C840

G841 U842 G843 A844 A845 U846 U847 C848 A849 U850 C851 U852 C853 C854 G855 G856 G857 G858 G859 U860 A861 G862 A863 G864 C865 A866 C867 U868 G869 U870 U871 U872 C873 G874 G875 C876 A877 A878 G879 G880 G881 G882 G883 U884 C885 A886 U887 C888 C889 C890 G891 A892 C893 U894 U895 A896 C897 C898 A899 A900

C901 C902 C903 G904 A905 U906 G907 C908 A909 A910 A911 C912 U913 G914 C915 G916 A917 A918 U919 A920 C921 C922 G923 G924 A925 G926 A927 A928 U929 G930 U931 U932 A933 U934 C935 A936 C937 G938 G939 G940 A941 G942 A943 C944 A945 C946 A947 C948 G949 G950 C951 G952 G953 G954 U955 G956 C957 U958 A959 A960

C961 G962 U963 C964 C965 G966 U967 C968 G969 U970 G971 A972 A973 G974 A975 G976 G977 G978 A979 A980 A981 C982 A983 A984 C985 C986 C987 A988 G989 A990 C991 C992 G993 C994 C995 A996 G997 C998 U999 A1000 A1001 G1002 G1003 U1004 C1005 C1006 C1007 A1008 A1009 A1010 G1011 U1012 C1013 A1014 U1015 G1016 G1017 U1018 U1019 A1020

A1021 G1022 U1023 G1024 G1025 G1026 A1027 A1028 A1029 C1030 G1031 A1032 U1033 G1034 U1035 G1036 G1037 G1038 A1039 A1040 G1041 G1042 C1043 C1044 C1045 A1046 G1047 A1048 C1049 A1050 G1051 C1052 C1053 A1054 G1055 G1056 A1057 U1058 G1059 U1060 U1061 G1062 G1063 C1064 U1065 U1066 A1067 G1068 A1069 A1070 G1071 C1072 A1073 G1074 C1075 C1076 A1077 U1078 C1079 A1080

U1081 U1082 U1083 A1084 A1085 A1086 G1087 A1088 A1089 A1090 G1091 C1092 G1093 U1094 A1095 A1096 U1097 A1098 G1099 C1100 U1101 C1102 A1103 C1104 U1105 G1106 G1107 U1108 C1109 G1110 A1111 G1112 U1113 C1114 G1115 G1116 C1117 C1118 U1119 G1120 C1121 C1122 C1123 G1124 G1125 A1126 A1127 G1128 A1129 U1130 G1131 U1132 A1133 A1134 C1135 G1136 G1137 G1138 G1139 C1140

U1141 A1142 A1143 A1144 C1145 C1146 A1147 U1148 G1149 C1150 A1151 C1152 C1153 G1154 A1155 A1156 G1157 C1158 U1159 G1160 C1161 G1162 G1163 C1164 A1165 G1166 C1167 G1168 A1169 C1170 G1171 C1172 U1173 U1174 A1175 U1176 G1177 C1178 G1179 U1180 U1181 G1182 U1183 U1184 G1185 G1186 G1187 U1188 A1189 G1190 G1191 G1192 G1193 A1194 G1195 C1196 G1197 U1198 U1199 C1200

U1201 G1202 U1203 A1204 A1205 G1206 C1207 C1208 U1209 G1210 C1211 G1212 A1213 A1214 G1215 G1216 U1217 G1218 U1219 G1220 C1221 U1222 G1223 U1224 G1225 A1226 G1227 G1228 C1229 A1230 U1231 G1232 C1233 U1234 G1235 G1236 A1237 G1238 G1239 U1240 A1241 U1242 C1243 A1244 G1245 A1246 A1247 G1248 U1249 G1250 C1251 G1252 A1253 A1254 U1255 G1256 C1257 U1258 G1259 A1260

C1261 A1262 U1263 A1264 A1265 G1266 U1267 A1268 A1269 C1270 G1271 A1272 U1273 A1274 A1275 A1276 G1277 C1278 G1279 G1280 G1281 U1282 G1283 A1284 A1285 A1286 A1287 G1288 C1289 C1290 C1291 G1292 C1293 U1294 C1295 G1296 C1297 C1298 G1299 G1300 A1301 A1302 G1303 A1304 C1305 C1306 A1307 A1308 G1309 G1310 G1311 U1312 U1313 C1314 C1315 U1316 G1317 U1318 C1319 C1320

A1321 A1322 C1323 G1324 U1325 U1326 A1327 A1328 U1329 C1330 G1331 G1332 G1333 G1334 C1335 A1336 G1337 G1338 G1339 U1340 G1341 A1342 G1343 U1344 C1345 G1346 A1347 C1348 C1349 C1350 C1351 U1352 A1353 A1354 G1355 G1356 C1357 G1358 A1359 G1360 G1361 C1362 C1363 G1364 A1365 A1366 A1367 G1368 G1369 C1370 G1371 U1372 A1373 G1374 U1375 C1376 G1377 A1378 U1379 G1380

G1381 G1382 A1383 A1384 A1385 C1386 A1387 G1388 G1389 U1390 U1391 A1392 A1393 U1394 A1395 U1396 U1397 C1398 C1399 U1400 G1401 U1402 A1403 C1404 U1405 U1406 G1407 G1408 U1409 G1410 U1411 U1412 A1413 C1414 U1415 G1416 C1417 G1418 A1419 A1420 G1421 G1422 G1423 G1424 G1425 G1426 A1427 C1428 G1429 G1430 A1431 A1432 A1433 G1434 G1435 G1436 C1437 U1438 A1439 U1440

G1441 U1442 U1443 G1444 G1445 C1446 C1447 G1448 G1449 G1450 C1451 G1452 A1453 C1454 G1455 G1456 U1457 U1458 G1459 U1460 C1461 C1462 C1463 G1464 G1465 U1466 U1467 U1468 A1469 A1470 G1471 C1472 G1473 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 A1509 G1510 G1511 C1512 U1513 G1514 A1515 G1516 G1517 C1518 G1519 U1520 G1521 A1522 U1523 G1524 A1525 C1526 G1527 A1528 G1529 G1530 C1531 A1532 C1533 U1534 A1535 C1536 G1537 G1538 U1539 G1540 C1541 U1542 G1543 A1544 A1545 G1546 C1547 A1548 A1549 C1550 A1551 A1552 A1553 U1554 G1555 C1556 C1557 C1558 U1559 G1560

C1561 U1562 U1563 C1564 C1565 A1566 G1567 G1568 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 A1597 A1598 U1599 C1600 G1601 U1602 A1603 C1604 C1605 C1606 C1607 A1608 A1609 A1610 C1611 C1612 G1613 A1614 C1615 A1616 C1617 A1618 G1619 G1620

U1621 G1622 G1623 U1624 C1625 A1626 G1627 G1628 U1629 A1630 G1631 A1632 G1633 A1634 A1635 U1636 A1637 C1638 C1639 A1640 A1641 G1642 G1643 C1644 G1645 C1646 U1647 U1648 G1649 A1650 G1651 A1652 G1653 A1654 A1655 C1656 U1657 C1658 G1659 G1660 G1661 U1662 G1663 A1664 A1665 G1666 G1667 A1668 A1669 C1670 U1671 A1672 G1673 G1674 C1675 A1676 A1677 A1678 A1679 U1680

G1681 G1682 U1683 G1684 C1685 C1686 G1687 U1688 A1689 A1690 C1691 U1692 U1693 C1694 G1695 G1696 G1697 A1698 G1699 A1700 A1701 G1702 G1703 C1704 A1705 C1706 G1707 C1708 U1709 G1710 A1711 U1712 A1713 U1714 G1715 U1716 A1717 G1718 G1719 U1720 G1721 A1722 G1723 G1724 U1725 C1726 C1727 G1728 U1729 C1730 G1731 C1732 G1733 G1734 A1735 U1736 G1737 G1738 A1739 G1740

C1741 U1742 G1743 A1744 A1745 A1746 U1747 C1748 A1749 G1750 U1751 C1752 G1753 A1754 A1755 G1756 A1757 U1758 A1759 C1760 C1761 A1762 G1763 C1764 U1765 G1766 G1767 C1768 U1769 G1770 C1771 A1772 A1773 C1774 U1775 G1776 U1777 U1778 U1779 A1780 U1781 U1782 A1783 A1784 A1785 A1786 A1787 C1788 A1789 C1790 A1791 G1792 C1793 A1794 C1795 U1796 G1797 U1798 G1799 C1800

A1801 A1802 A1803 C1804 A1805 C1806 G1807 A1808 A1809 A1810 G1811 U1812 G1813 G1814 A1815 C1816 G1817 U1818 A1819 U1820 A1821 C1822 G1823 G1824 U1825 G1826 U1827 G1828 A1829 C1830 G1831 C1832 C1833 U1834 G1835 C1836 C1837 C1838 G1839 G1840 U1841 G1842 C1843 C1844 G1845 G1846 A1847 A1848 G1849 G1850 U1851 C1852 A1853 A1854 U1855 U1856 G1857 A1858 U1859 G1860

G1861 G1862 G1863 U1864 U1865 A1866 G1867 C1868 G1869 C1870 A1871 A1872 G1873 C1874 G1875 A1876 A1877 G1878 C1879 U1880 C1881 U1882 U1883 G1884 A1885 U1886 C1887 G1888 A1889 A1890 G1891 C1892 C1893 C1894 C1895 G1896 G1897 U1898 A1899 A1900 A1901 C1902 G1903 G1904 C1905 G1906 G1907 C1908 C1909 G1910 U1911 A1912 A1913 C1914 3TD1915 A1916 U1917 A1918 A1919 C1920

G1921 G1922 U1923 C1924 C1925 U1926 A1927 A1928 G1929 G1930 U1931 A1932 G1933 C1934 G1935 A1936 A1937 A1938 U1939 U1940 C1941 C1942 U1943 U1944 G1945 U1946 C1947 G1948 G1949 G1950 U1951 A1952 A1953 G1954 U1955 C1956 C1957 C1958 G1959 A1960 C1961 C1962 U1963 G1964 C1965 A1966 C1967 G1968 A1969 A1970 U1971 G1972 G1973 C1974 G1975 U1976 A1977 A1978 U1979 G1980

A1981 U1982 G1983 G1984 C1985 C1986 A1987 G1988 G1989 C1990 U1991 G1992 U1993 C1994 U1995 C1996 C1997 A1998 C1999 C2000 C2001 G2002 A2003 G2004 A2005 C2006 U2007 C2008 A2009 G2010 U2011 G2012 A2013 A2014 A2015 U2016 U2017 G2018 A2019 A2020 C2021 U2022 C2023 G2024 C2025 U2026 G2027 U2028 G2029 A2030 A2031 G2032 A2033 U2034 G2035 C2036 A2037 G2038 U2039 G2040

U2041 A2042 C2043 C2044 C2045 G2046 C2047 G2048 G2049 C2050 A2051 A2052 G2053 A2054 C2055 G2056 G2057 A2058 A2059 A2060 G2061 A2062 C2063 C2064 C2065 C2066 G2067 U2068 G2069 A2070 A2071 C2072 C2073 U2074 U2075 U2076 A2077 C2078 U2079 A2080 U2081 A2082 G2083 C2084 U2085 U2086 G2087 A2088 C2089 A2090 C2091 U2092 G2093 A2094 A2095 C2096 A2097 U2098 U2099 G2100

A2101 G2102 C2103 C2104 U2105 U2106 G2107 A2108 U2109 G2110 U2111 G2112 U2113 A2114 G2115 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 G2157 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 C2200 G2201 U2202 U2203 G2204 A2205 C2206 C2207 C2208 G2209 U2210 A2211 A2212 U2213 C2214 C2215 G2216 G2217 G2218 U2219 U2220

G2221 C2222 G2223 G2224 A2225 C2226 A2227 G2228 U2229 G2230 U2231 C2232 U2233 G2234 G2235 G2236 G2237 G2238 G2239 U2240 A2241 G2242 U2243 U2244 U2245 G2246 A2247 C2248 U2249 G2250 G2251 C2252 G2253 C2254 G2255 G2256 U2257 C2258 G2259 G2260 C2261 U2262 C2263 C2264 U2265 A2266 A2267 A2268 G2269 A2270 G2271 U2272 A2273 A2274 C2275 G2276 G2277 A2278 G2279 G2280

A2281 G2282 C2283 A2284 C2285 G2286 A2287 A2288 G2289 G2290 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

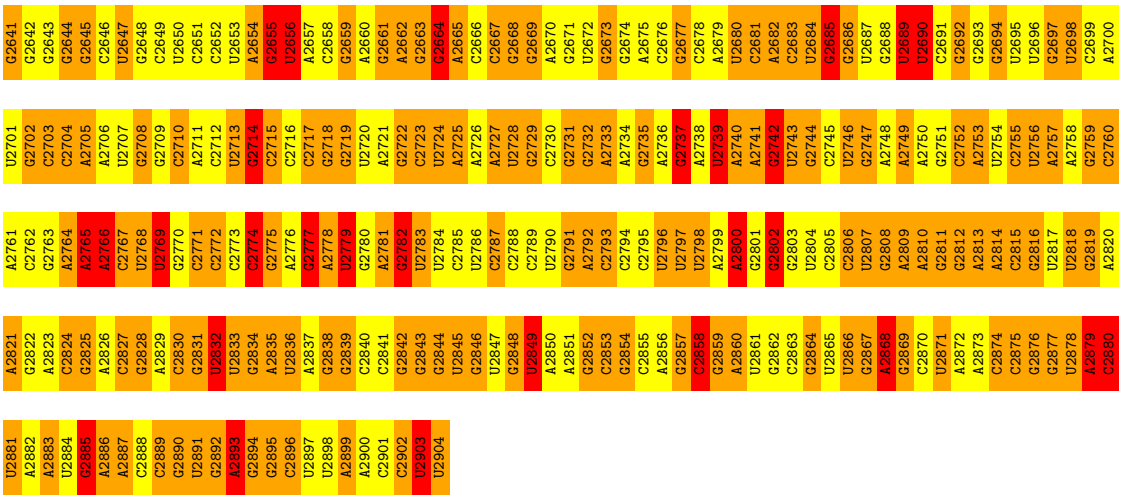
G2341 C2342 U2343 U2344 G2345 A2346 C2347 U2348 G2349 C2350 G2351 A2352 G2353 C2354 G2355 U2356 G2357 A2358 C2359 G2360 G2361 C2362 G2363 C2364 G2365 A2366 G2367 C2368 A2369 G2370 G2371 U2372 G2373 C2374 G2375 A2376 A2377 A2378 G2379 C2380 A2381 G2382 G2383 U2384 C2385 A2386 U2387 A2388 G2389 U2390 G2391 A2392 U2393 C2394 C2395 G2396 G2397 U2398 G2399 G2400

U2401 U2402 C2403 U2404 G2405 A2406 A2407 U2408 G2409 G2410 A2411 A2412 G2413 G2414 C2415 C2416 C2417 A2418 U2419 C2420 G2421 C2422 U2423 C2424 A2425 A2426 C2427 G2428 G2429 A2430 U2431 A2432 A2433 A2434 A2435 G2436 G2437 U2438 A2439 C2440 U2441 C2442 C2443 G2444 G2445 G2446 G2447 A2448 U2449 A2450 A2451 C2452 A2453 G2454 G2455 C2456 U2457 G2458 A2459 U2460

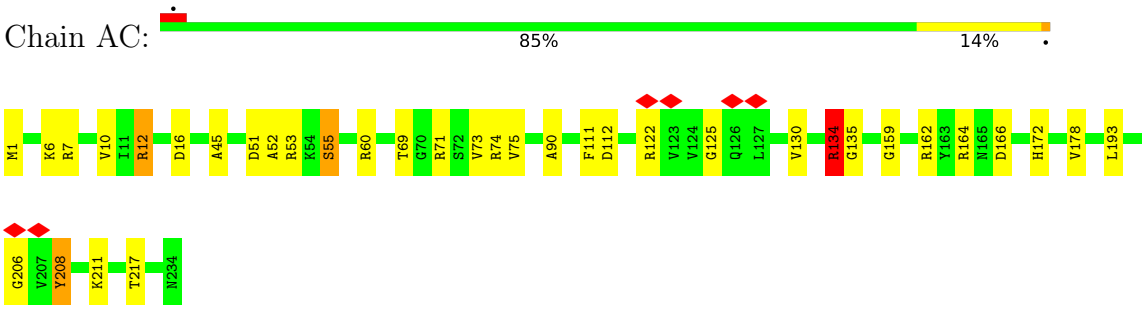
A2461 C2462 C2463 G2464 C2465 C2466 C2467 A2468 A2469 G2470 A2471 G2472 U2473 U2474 C2475 A2476 U2477 A2478 U2479 C2480 G2481 A2482 C2483 G2484 G2485 G2486 G2487 G2488 U2489 G2490 U2491 U2492 U2493 G2494 G2495 C2496 A2497 C2498 C2499 U2500 C2501 G2502 A2503 U2504 G2505 U2506 C2507 G2508 G2509 C2510 U2511 C2512 A2513 U2514 C2515 A2516 C2517 A2518 U2519 C2520

C2521 U2522 G2523 G2524 G2525 C2526 C2527 U2528 G2529 A2530 A2531 G2532 U2533 A2534 G2535 G2536 U2537 C2538 C2539 C2540 A2541 A2542 G2543 G2544 G2545 U2546 A2547 U2548 G2549 G2550 C2551 U2552 G2553 U2554 U2555 C2556 G2557 C2558 C2559 A2560 U2561 U2562 U2563 A2564 A2565 A2566 G2567 U2568 G2569 G2570 U2571 A2572 C2573 G2574 C2575 G2576 A2577 G2578 C2579 U2580

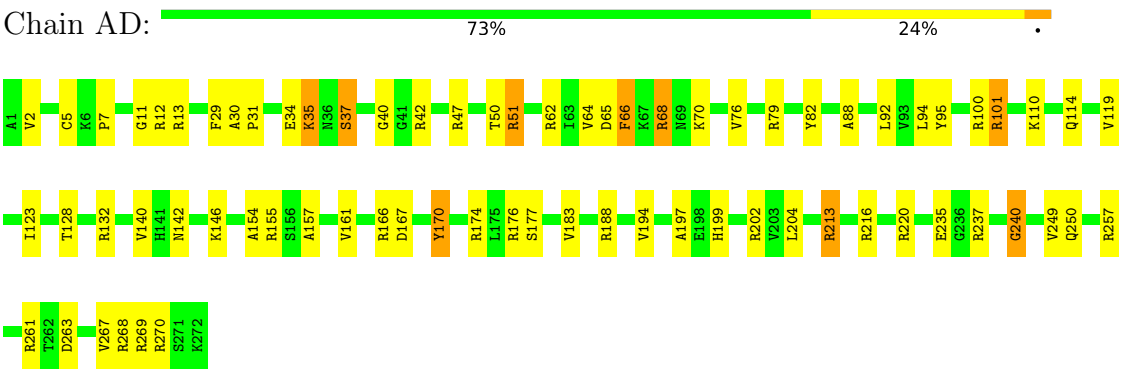
G2581 G2582 G2583 U2584 U2585 U2586 A2587 G2588 A2589 A2590 C2591 G2592 U2593 C2594 G2595 U2596 G2597 A2598 G2599 A2600 C2601 A2602 G2603 U2604 U2605 C2606 G2607 G2608 U2609 C2610 C2611 C2612 U2613 A2614 U2615 C2616 U2617 G2618 C2619 C2620 G2621 U2622 G2623 G2624 C2625 C2626 G2627 C2628 U2629 G2630 A2631 A2632 G2633 A2634 A2635 C2636 U2637 G2638 A2639 G2640



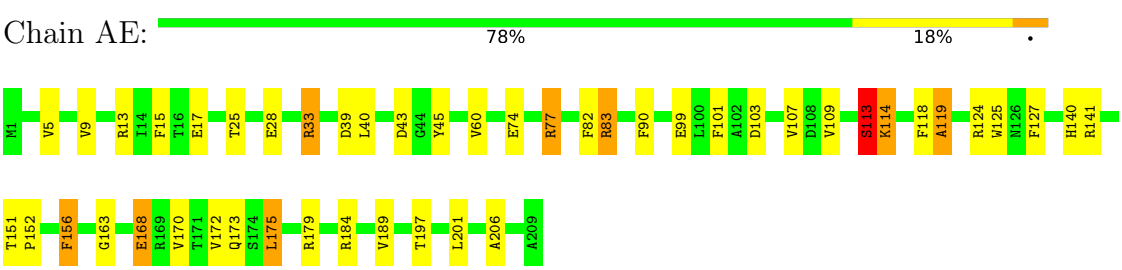
• Molecule 3: 50S ribosomal protein L1



• Molecule 4: 50S ribosomal protein L2

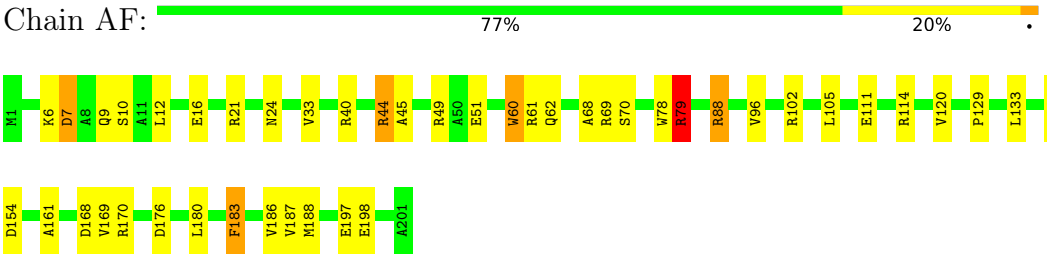


• Molecule 5: 50S ribosomal protein L3



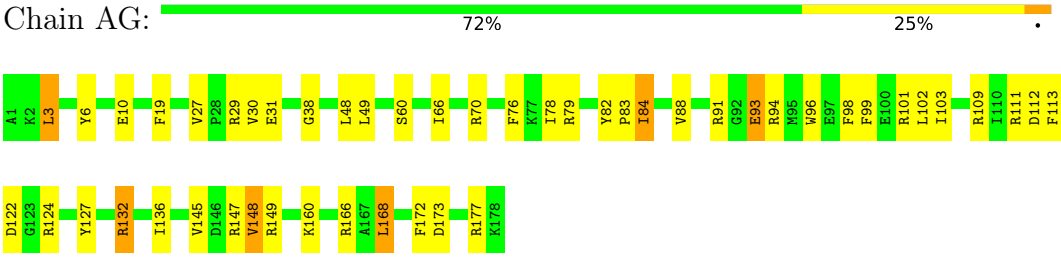
• Molecule 6: 50S ribosomal protein L4

Chain AF:



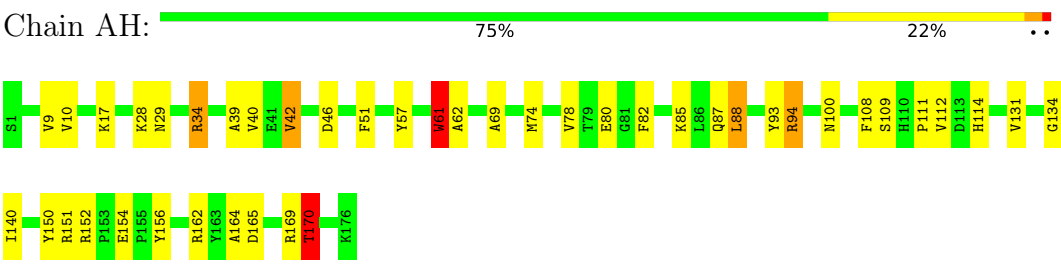
• Molecule 7: 50S ribosomal protein L5

Chain AG:



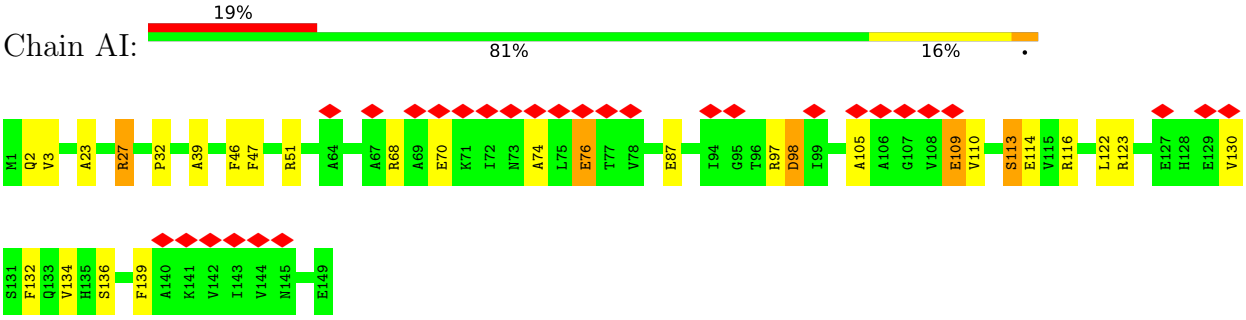
• Molecule 8: 50S ribosomal protein L6

Chain AH:



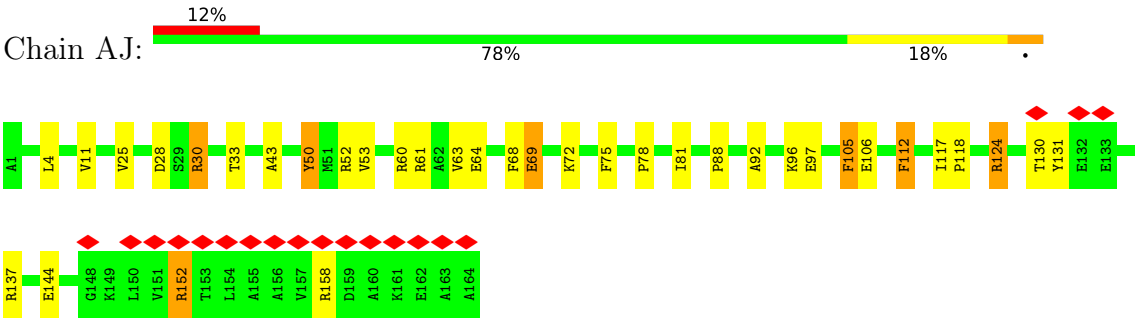
• Molecule 9: 50S ribosomal protein L9

Chain AI:



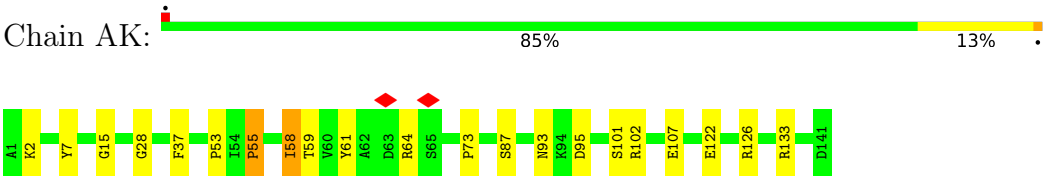
• Molecule 10: 50S ribosomal protein L10

Chain AJ:



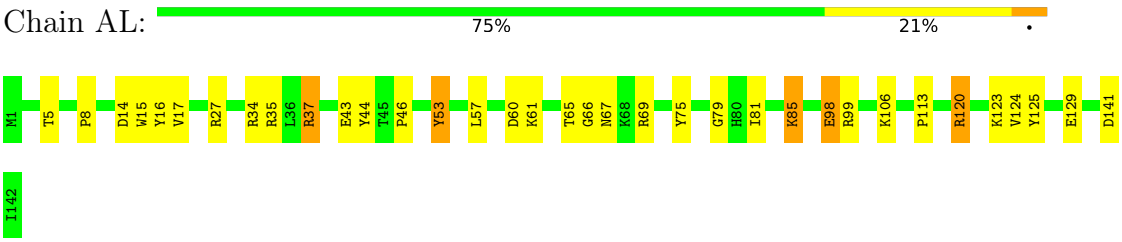
• Molecule 11: 50S ribosomal protein L11

Chain AK:



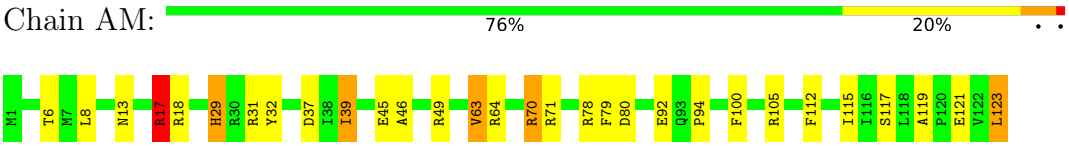
• Molecule 12: 50S ribosomal protein L13

Chain AL:



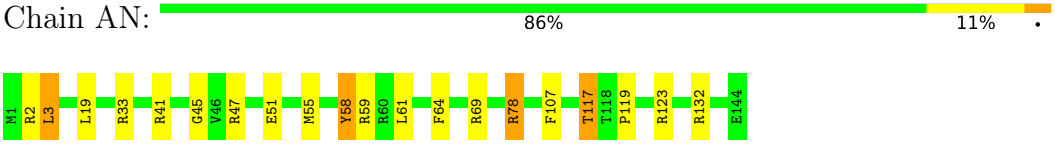
• Molecule 13: 50S ribosomal protein L14

Chain AM:



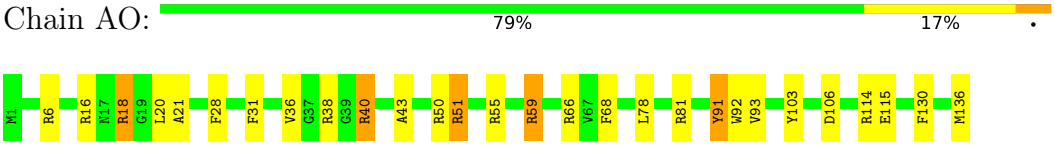
• Molecule 14: 50S ribosomal protein L15

Chain AN:



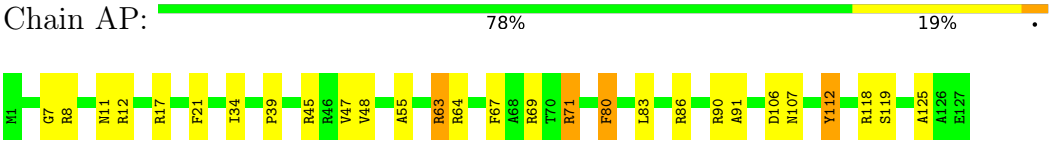
• Molecule 15: 50S ribosomal protein L16

Chain AO:



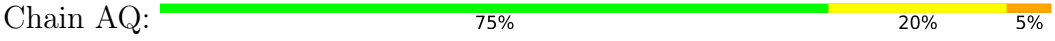
• Molecule 16: 50S ribosomal protein L17

Chain AP:

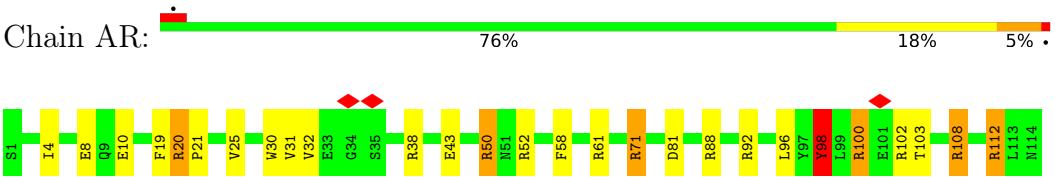


• Molecule 17: 50S ribosomal protein L18

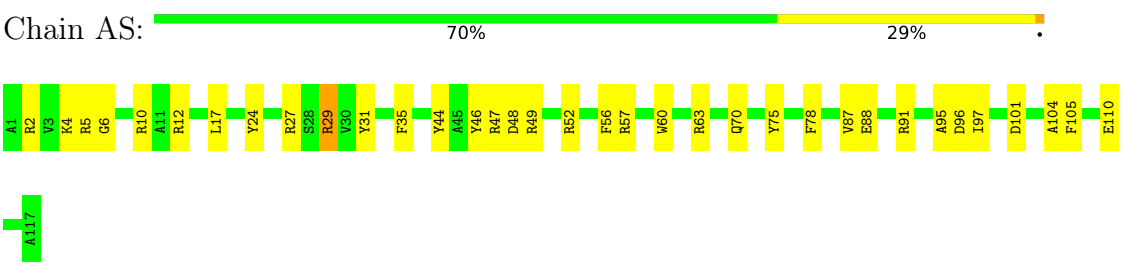
Chain AQ:



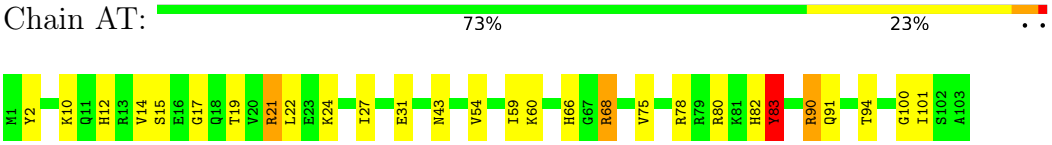
• Molecule 18: 50S ribosomal protein L19



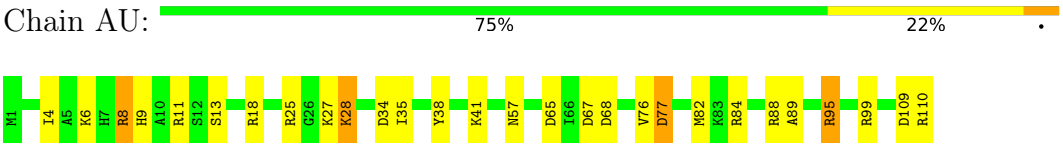
• Molecule 19: 50S ribosomal protein L20



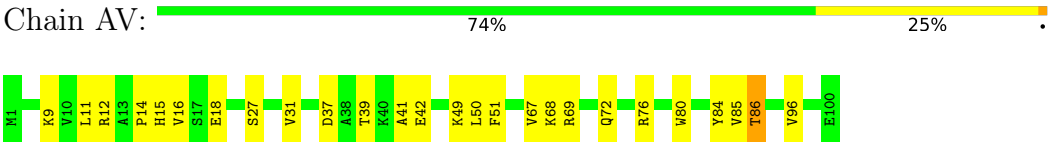
• Molecule 20: 50S ribosomal protein L21



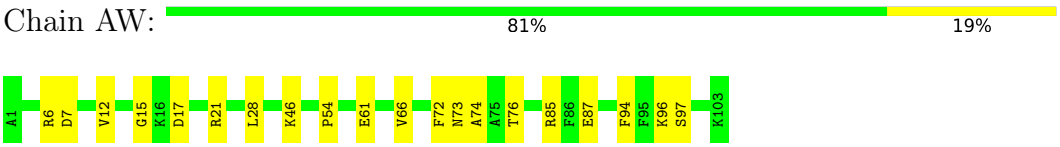
• Molecule 21: 50S ribosomal protein L22



• Molecule 22: 50S ribosomal protein L23

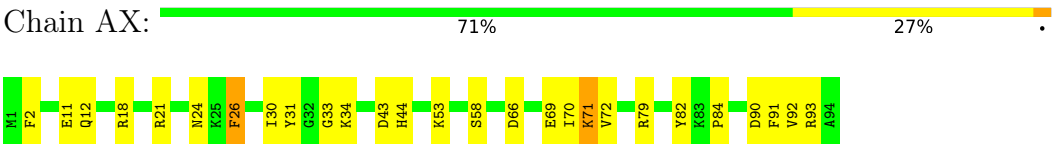


• Molecule 23: 50S ribosomal protein L24



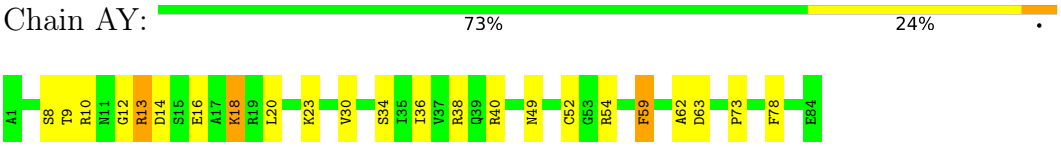
• Molecule 24: 50S ribosomal protein L25

Chain AX:



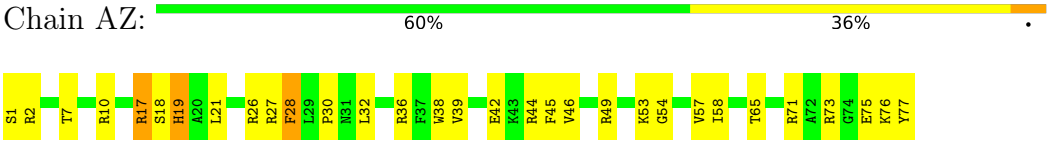
• Molecule 25: 50S ribosomal protein L27

Chain AY:



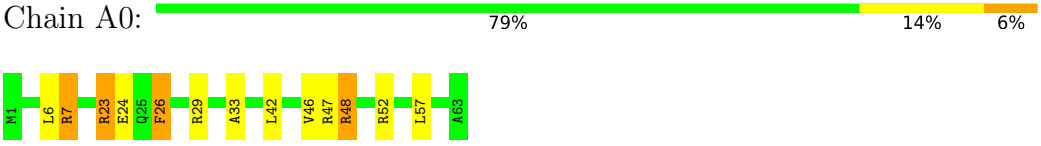
• Molecule 26: 50S ribosomal protein L28

Chain AZ:



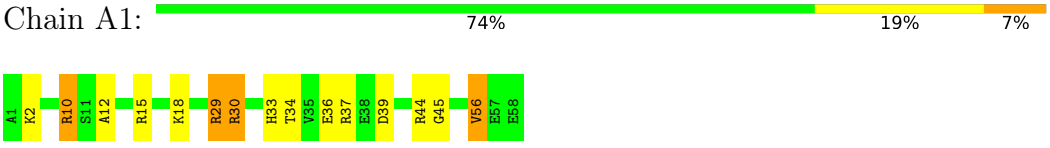
• Molecule 27: 50S ribosomal protein L29

Chain A0:



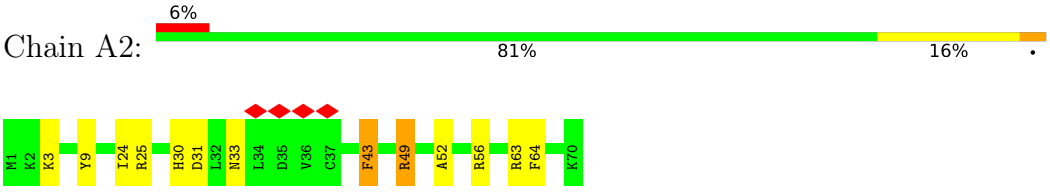
• Molecule 28: 50S ribosomal protein L30

Chain A1:



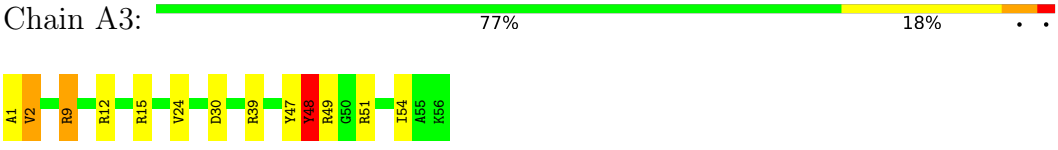
• Molecule 29: 50S ribosomal protein L31

Chain A2:



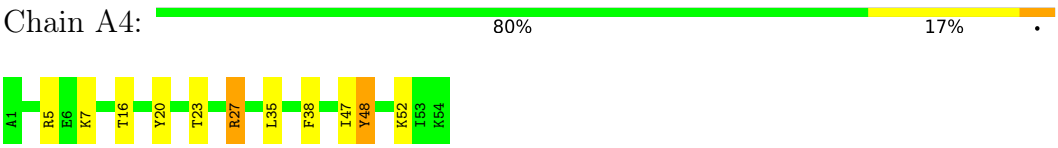
• Molecule 30: 50S ribosomal protein L32

Chain A3:



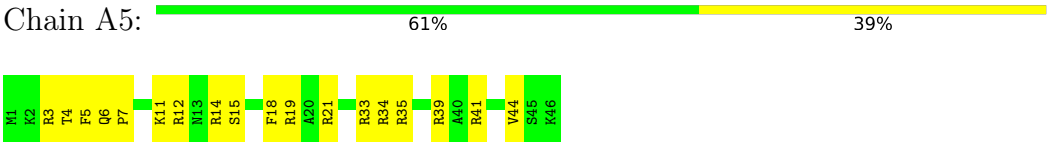
• Molecule 31: 50S ribosomal protein L33

Chain A4:



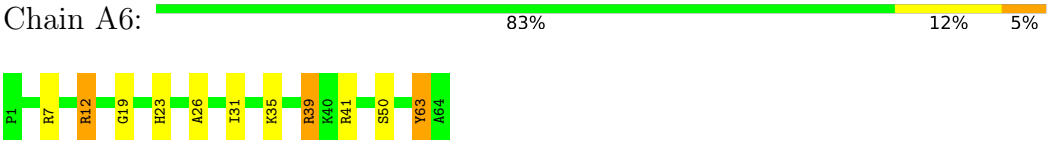
• Molecule 32: 50S ribosomal protein L34

Chain A5:



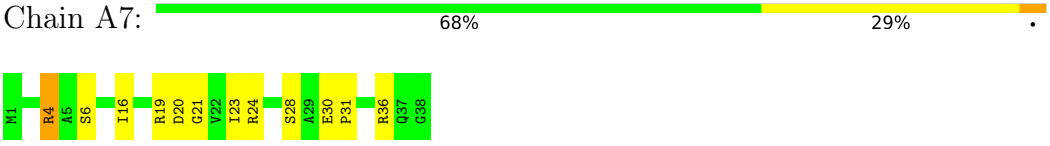
• Molecule 33: 50S ribosomal protein L35

Chain A6:



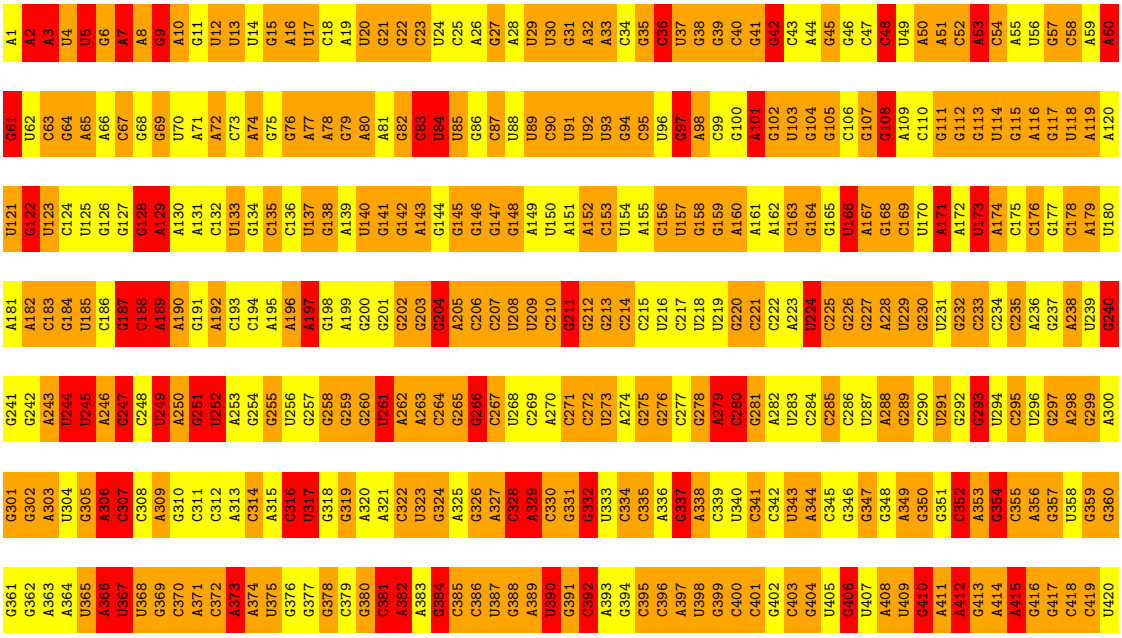
• Molecule 34: 50S ribosomal protein L36

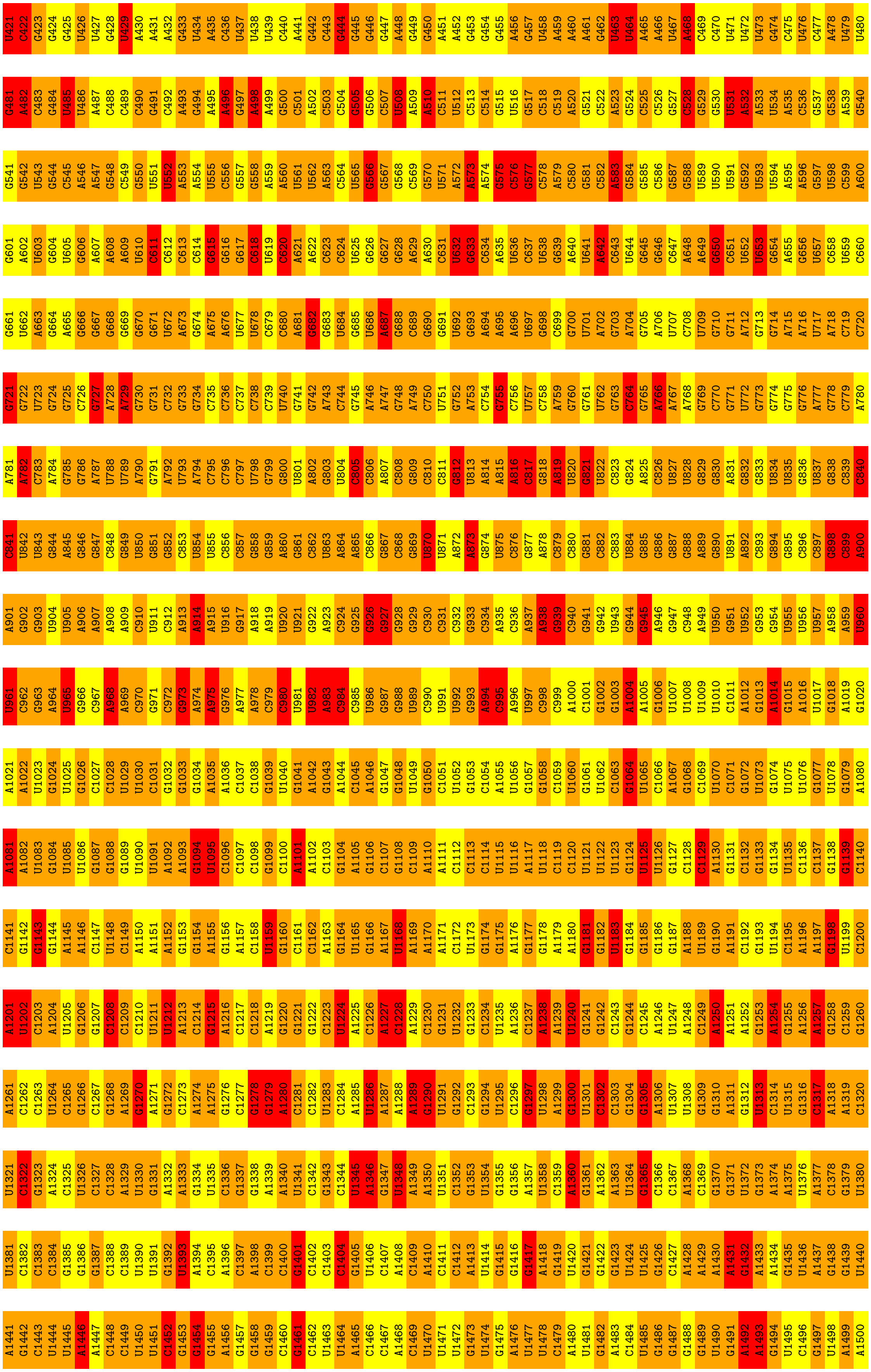
Chain A7:



• Molecule 35: 16S ribosomal RNA

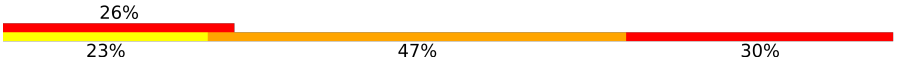
Chain BA:

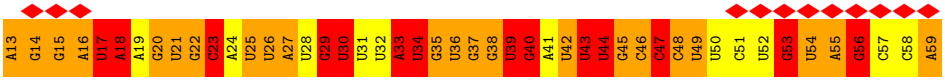




• Molecule 36: mRNA

Chain BB:



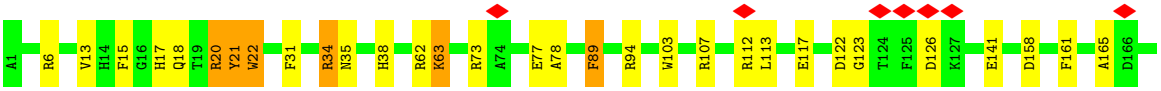


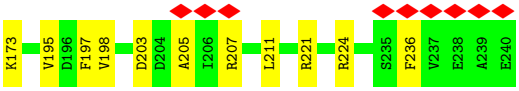
• Molecule 37: P site tRNA

Chain BC:

• Molecule 38: 30S ribosomal protein S2

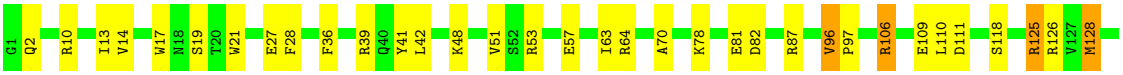
Chain BD:

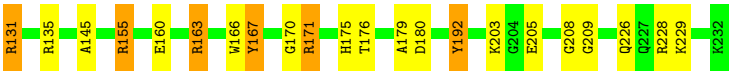




• Molecule 39: 30S ribosomal protein S3

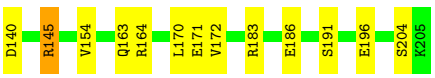
Chain BE:





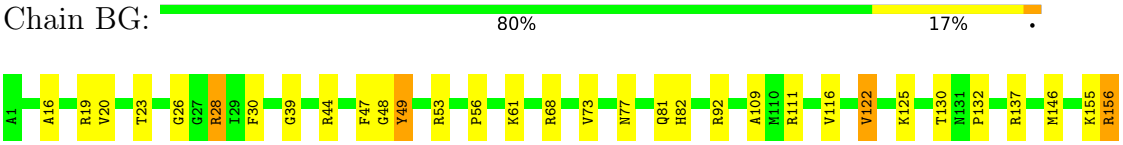
• Molecule 40: 30S ribosomal protein S4

Chain BF:



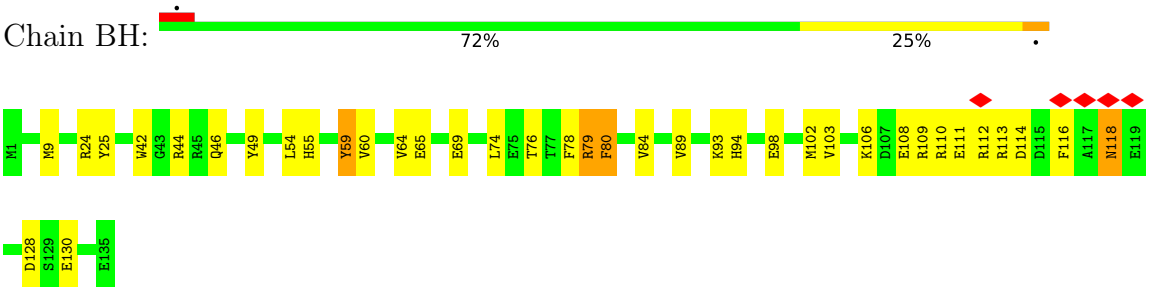
• Molecule 41: 30S ribosomal protein S5

Chain BG:



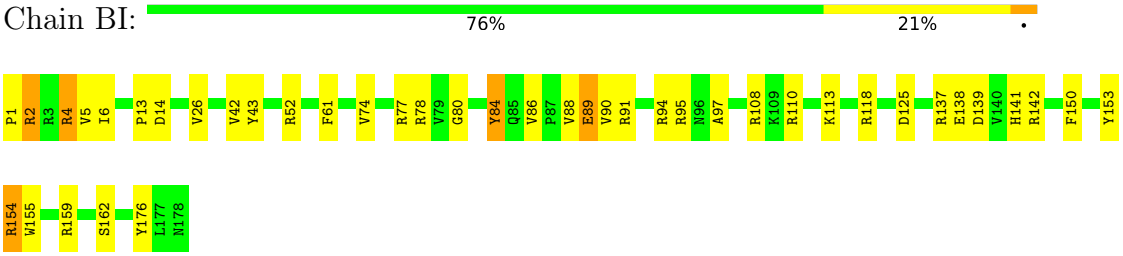
• Molecule 42: 30S ribosomal protein S6

Chain BH:



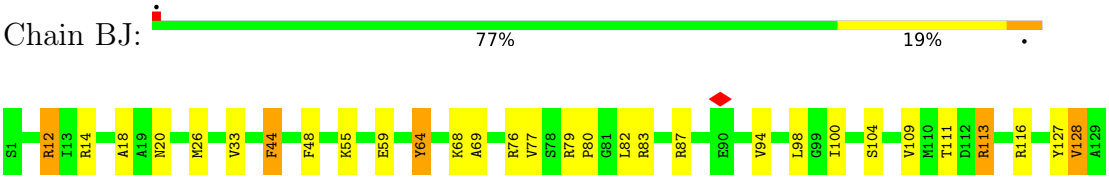
• Molecule 43: 30S ribosomal protein S7

Chain BI:



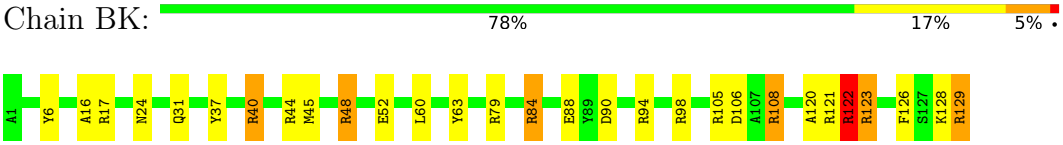
• Molecule 44: 30S ribosomal protein S8

Chain BJ:



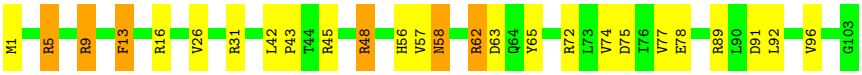
• Molecule 45: 30S ribosomal protein S9

Chain BK:

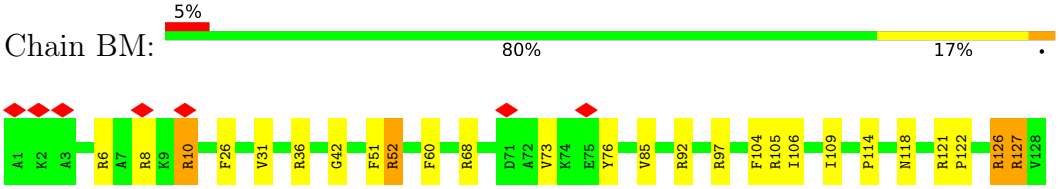


• Molecule 46: 30S ribosomal protein S10

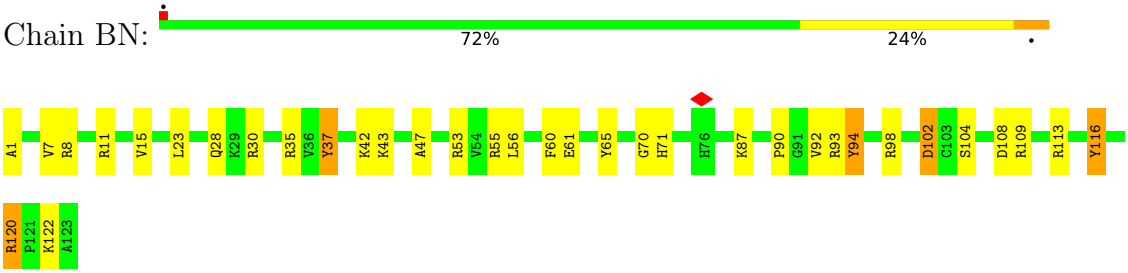
Chain BL:



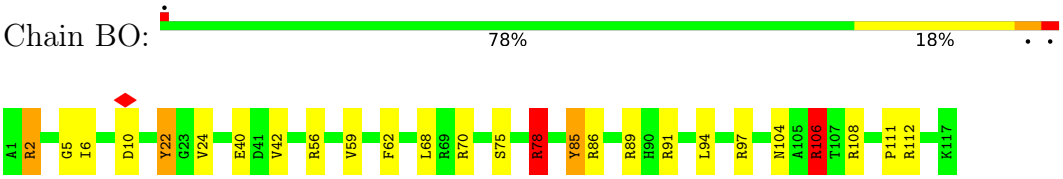
• Molecule 47: 30S ribosomal protein S11



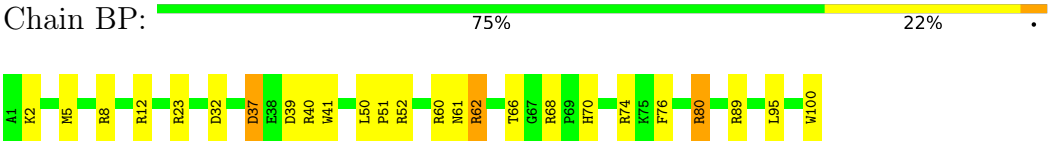
• Molecule 48: 30S ribosomal protein S12



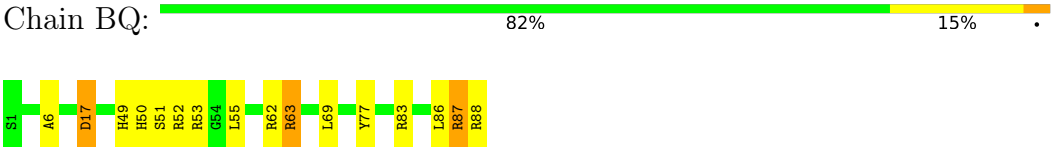
• Molecule 49: 30S ribosomal protein S13



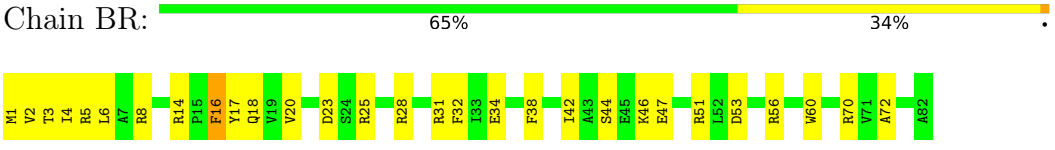
• Molecule 50: 30S ribosomal protein S14



• Molecule 51: 30S ribosomal protein S15

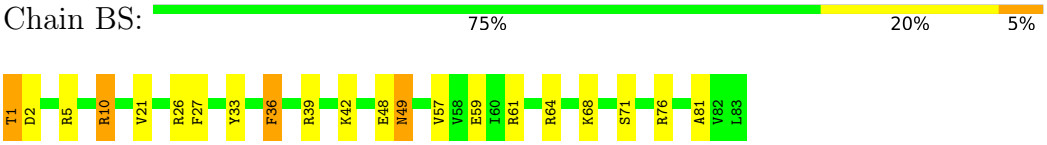


• Molecule 52: 30S ribosomal protein S16



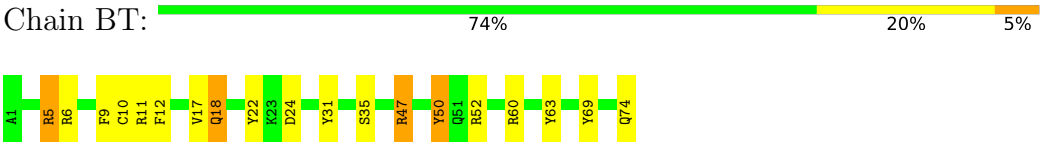
• Molecule 53: 30S ribosomal protein S17

Chain BS:



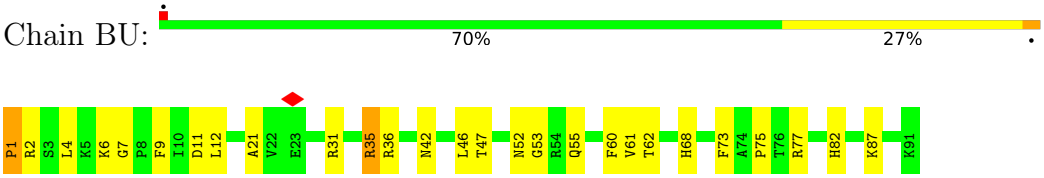
• Molecule 54: 30S ribosomal protein S18

Chain BT:



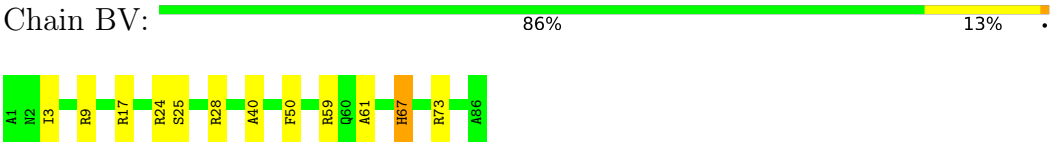
• Molecule 55: 30S ribosomal protein S19

Chain BU:



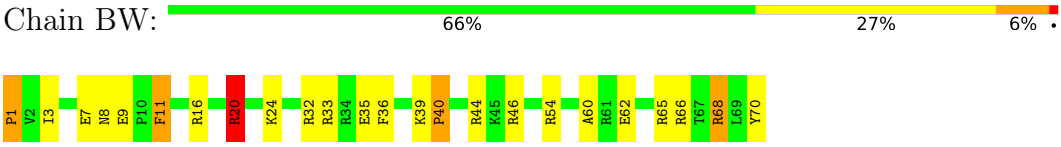
• Molecule 56: 30S ribosomal protein S20

Chain BV:



• Molecule 57: 30S ribosomal protein S21

Chain BW:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	21000	Depositor
Resolution determination method	FSC 0.5 CUT-OFF	Depositor
CTF correction method	Volumes were CTF-corrected in defocus groups	Depositor
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	25	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	58269	Depositor
Image detector	TVIPS TEMCAM-F415 (4k x 4k)	Depositor
Maximum map value	1.443	Depositor
Minimum map value	-0.456	Depositor
Average map value	0.028	Depositor
Map value standard deviation	0.182	Depositor
Recommended contour level	0.1	Depositor
Map size (Å)	375.0, 375.0, 375.0	wwPDB
Map dimensions	250, 250, 250	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)

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

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	AA	3.07	298/2869 (10.4%)	3.56	669/4474 (15.0%)
2	AB	3.08	7422/69257 (10.7%)	3.52	15483/108040 (14.3%)
3	AC	1.42	3/1748 (0.2%)	1.86	30/2355 (1.3%)
4	AD	1.56	11/2131 (0.5%)	2.03	60/2863 (2.1%)
5	AE	1.49	5/1586 (0.3%)	1.92	39/2134 (1.8%)
6	AF	1.52	7/1571 (0.4%)	1.92	42/2113 (2.0%)
7	AG	1.53	3/1444 (0.2%)	2.02	45/1937 (2.3%)
8	AH	1.53	6/1343 (0.4%)	1.96	35/1816 (1.9%)
9	AI	1.45	3/1122 (0.3%)	1.94	25/1515 (1.7%)
10	AJ	1.52	5/1247 (0.4%)	1.94	27/1679 (1.6%)
11	AK	1.44	5/1046 (0.5%)	1.86	18/1410 (1.3%)
12	AL	1.50	6/1152 (0.5%)	2.08	30/1551 (1.9%)
13	AM	1.53	5/956 (0.5%)	1.95	25/1279 (2.0%)
14	AN	1.52	5/1062 (0.5%)	1.89	20/1413 (1.4%)
15	AO	1.49	3/1093 (0.3%)	2.07	38/1460 (2.6%)
16	AP	1.48	5/1021 (0.5%)	2.09	28/1364 (2.1%)
17	AQ	1.57	4/910 (0.4%)	1.90	27/1219 (2.2%)
18	AR	1.54	2/929 (0.2%)	1.95	26/1242 (2.1%)
19	AS	1.52	6/960 (0.6%)	2.20	39/1278 (3.1%)
20	AT	1.60	5/829 (0.6%)	1.89	18/1107 (1.6%)
21	AU	1.49	1/864 (0.1%)	1.96	21/1156 (1.8%)
22	AV	1.54	3/794 (0.4%)	1.90	17/1060 (1.6%)
23	AW	1.44	2/797 (0.3%)	1.90	13/1062 (1.2%)
24	AX	1.49	5/766 (0.7%)	1.79	15/1025 (1.5%)
25	AY	1.48	2/642 (0.3%)	1.92	14/848 (1.7%)
26	AZ	1.50	3/635 (0.5%)	2.21	25/848 (2.9%)
27	A0	1.37	1/510 (0.2%)	1.90	12/677 (1.8%)
28	A1	1.52	2/453 (0.4%)	2.11	13/605 (2.1%)
29	A2	1.55	3/559 (0.5%)	1.96	12/745 (1.6%)
30	A3	1.49	1/450 (0.2%)	2.05	15/599 (2.5%)
31	A4	1.46	1/448 (0.2%)	1.82	7/594 (1.2%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	A5	1.53	1/380 (0.3%)	2.15	14/498 (2.8%)
33	A6	1.55	4/513 (0.8%)	1.80	7/676 (1.0%)
34	A7	1.57	2/303 (0.7%)	1.98	6/397 (1.5%)
35	BA	3.07	3871/36769 (10.5%)	3.53	8462/57354 (14.8%)
36	BB	3.23	131/1108 (11.8%)	3.61	262/1724 (15.2%)
37	BC	3.09	176/1721 (10.2%)	3.61	392/2683 (14.6%)
38	BD	1.43	2/1904 (0.1%)	1.86	32/2565 (1.2%)
39	BE	1.55	11/1852 (0.6%)	1.94	38/2490 (1.5%)
40	BF	1.51	8/1665 (0.5%)	1.96	51/2227 (2.3%)
41	BG	1.54	5/1239 (0.4%)	2.01	27/1664 (1.6%)
42	BH	1.50	3/1121 (0.3%)	1.92	27/1509 (1.8%)
43	BI	1.54	5/1422 (0.4%)	2.05	48/1908 (2.5%)
44	BJ	1.49	3/989 (0.3%)	2.00	23/1326 (1.7%)
45	BK	1.55	5/1048 (0.5%)	2.08	34/1394 (2.4%)
46	BL	1.47	1/835 (0.1%)	2.19	25/1127 (2.2%)
47	BM	1.52	7/982 (0.7%)	2.02	28/1323 (2.1%)
48	BN	1.52	4/969 (0.4%)	2.10	39/1300 (3.0%)
49	BO	1.51	8/919 (0.9%)	1.98	30/1226 (2.4%)
50	BP	1.53	1/817 (0.1%)	2.02	23/1088 (2.1%)
51	BQ	1.43	1/724 (0.1%)	1.93	16/966 (1.7%)
52	BR	1.53	2/659 (0.3%)	2.14	25/884 (2.8%)
53	BS	1.55	6/681 (0.9%)	1.99	18/913 (2.0%)
54	BT	1.60	6/637 (0.9%)	2.07	18/851 (2.1%)
55	BU	1.53	3/744 (0.4%)	1.84	16/995 (1.6%)
56	BV	1.39	1/676 (0.1%)	1.86	14/895 (1.6%)
57	BW	1.46	5/598 (0.8%)	2.19	23/792 (2.9%)
All	All	2.69	12105/162469 (7.5%)	3.17	26586/242243 (11.0%)

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
1	AA	0	69
2	AB	0	1654
3	AC	0	3
4	AD	0	11
5	AE	0	7
6	AF	0	2
7	AG	0	1
8	AH	0	2

Continued on next page...

Continued from previous page...

Mol	Chain	#Chirality outliers	#Planarity outliers
9	AI	0	3
10	AJ	0	8
11	AK	0	1
12	AL	0	3
13	AM	0	3
14	AN	0	2
15	AO	0	3
16	AP	0	5
17	AQ	0	4
18	AR	0	6
19	AS	0	3
20	AT	0	5
21	AU	0	5
22	AV	0	1
24	AX	0	5
25	AY	0	4
26	AZ	0	2
27	A0	0	4
28	A1	0	4
29	A2	0	3
30	A3	0	1
31	A4	0	2
32	A5	0	2
33	A6	0	2
34	A7	0	2
35	BA	0	882
36	BB	0	30
37	BC	0	41
38	BD	0	4
39	BE	0	9
40	BF	0	3
41	BG	0	3
42	BH	0	9
43	BI	0	3
44	BJ	0	7
45	BK	0	5
46	BL	0	2
47	BM	0	1
48	BN	0	6
49	BO	0	4
50	BP	0	1
51	BQ	0	2

Continued on next page...

Continued from previous page...

Mol	Chain	#Chirality outliers	#Planarity outliers
52	BR	0	2
53	BS	0	1
54	BT	0	2
55	BU	0	4
57	BW	0	4
All	All	0	2857

The worst 5 of 12105 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	AB	504	A	N3-C4	18.22	1.45	1.34
2	AB	2682	A	N3-C4	18.21	1.45	1.34
2	AB	744	U	C2-N3	17.97	1.50	1.37
35	BA	1484	C	N1-C6	16.21	1.46	1.37
2	AB	2829	A	P-O5'	15.96	1.75	1.59

The worst 5 of 26586 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
12	AL	120	ARG	NE-CZ-NH2	24.50	132.55	120.30
2	AB	1193	G	C8-N9-C4	-23.95	96.82	106.40
35	BA	581	G	N9-C4-C5	22.36	114.35	105.40
46	BL	45	ARG	NE-CZ-NH1	21.76	131.18	120.30
44	BJ	116	ARG	NE-CZ-NH2	-21.74	109.43	120.30

There are no chirality outliers.

5 of 2857 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	AA	1	U	Sidechain
1	AA	2	G	Sidechain
1	AA	3	C	Sidechain
1	AA	4	C	Sidechain
1	AA	5	U	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	AA	2566	0	1299	0	0
2	AB	62351	0	31248	0	0
3	AC	1733	0	1824	0	0
4	AD	2092	0	2170	0	0
5	AE	1565	0	1616	0	0
6	AF	1552	0	1619	0	0
7	AG	1420	0	1460	0	0
8	AH	1323	0	1374	0	0
9	AI	1111	0	1148	0	0
10	AJ	1233	0	1283	0	0
11	AK	1032	0	1088	0	0
12	AL	1129	0	1162	0	0
13	AM	947	0	1023	0	0
14	AN	1053	0	1129	0	0
15	AO	1074	0	1157	0	0
16	AP	1008	0	1045	0	0
17	AQ	900	0	935	0	0
18	AR	917	0	965	0	0
19	AS	947	0	1022	0	0
20	AT	816	0	839	0	0
21	AU	857	0	922	0	0
22	AV	787	0	846	0	0
23	AW	789	0	847	0	0
24	AX	753	0	780	0	0
25	AY	634	0	656	0	0
26	AZ	625	0	655	0	0
27	A0	509	0	543	0	0
28	A1	449	0	491	0	0
29	A2	549	0	552	0	0
30	A3	444	0	461	0	0
31	A4	441	0	485	0	0
32	A5	377	0	418	0	0
33	A6	504	0	574	0	0
34	A7	302	0	343	0	0
35	BA	33089	0	16599	0	0
36	BB	993	0	501	0	0
37	BC	1641	0	841	0	0
38	BD	1872	0	1885	0	0
39	BE	1822	0	1913	0	0
40	BF	1643	0	1710	0	0
41	BG	1225	0	1273	0	0
42	BH	1101	0	1050	0	0
43	BI	1400	0	1449	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
44	BJ	979	0	1034	0	0
45	BK	1036	0	1084	0	0
46	BL	825	0	865	0	0
47	BM	965	0	997	0	0
48	BN	955	0	1019	0	0
49	BO	910	0	981	0	0
50	BP	805	0	847	0	0
51	BQ	716	0	742	0	0
52	BR	649	0	666	0	0
53	BS	672	0	716	0	0
54	BT	626	0	651	0	0
55	BU	727	0	769	0	0
56	BV	670	0	722	0	0
57	BW	590	0	631	0	0
All	All	150700	0	102924	0	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). Clashscore could not be calculated for this entry.

There are no clashes within the asymmetric unit.

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
3	AC	232/234 (99%)	215 (93%)	12 (5%)	5 (2%)	6 35
4	AD	270/272 (99%)	237 (88%)	24 (9%)	9 (3%)	4 26
5	AE	207/209 (99%)	175 (84%)	24 (12%)	8 (4%)	3 23
6	AF	199/201 (99%)	173 (87%)	16 (8%)	10 (5%)	2 20
7	AG	176/178 (99%)	151 (86%)	15 (8%)	10 (6%)	1 18
8	AH	174/176 (99%)	159 (91%)	11 (6%)	4 (2%)	6 34

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	AI	147/149 (99%)	131 (89%)	12 (8%)	4 (3%)	5	31
10	AJ	162/164 (99%)	155 (96%)	6 (4%)	1 (1%)	25	66
11	AK	139/141 (99%)	134 (96%)	4 (3%)	1 (1%)	22	63
12	AL	140/142 (99%)	120 (86%)	15 (11%)	5 (4%)	3	25
13	AM	121/123 (98%)	105 (87%)	12 (10%)	4 (3%)	4	26
14	AN	142/144 (99%)	125 (88%)	14 (10%)	3 (2%)	7	36
15	AO	134/136 (98%)	124 (92%)	8 (6%)	2 (2%)	10	46
16	AP	125/127 (98%)	115 (92%)	9 (7%)	1 (1%)	19	60
17	AQ	115/117 (98%)	110 (96%)	5 (4%)	0	100	100
18	AR	112/114 (98%)	97 (87%)	13 (12%)	2 (2%)	8	40
19	AS	115/117 (98%)	108 (94%)	3 (3%)	4 (4%)	3	25
20	AT	101/103 (98%)	89 (88%)	9 (9%)	3 (3%)	4	28
21	AU	108/110 (98%)	99 (92%)	5 (5%)	4 (4%)	3	24
22	AV	98/100 (98%)	77 (79%)	18 (18%)	3 (3%)	4	27
23	AW	101/103 (98%)	89 (88%)	9 (9%)	3 (3%)	4	28
24	AX	92/94 (98%)	84 (91%)	7 (8%)	1 (1%)	14	52
25	AY	82/84 (98%)	64 (78%)	14 (17%)	4 (5%)	2	20
26	AZ	75/77 (97%)	68 (91%)	4 (5%)	3 (4%)	3	23
27	A0	61/63 (97%)	56 (92%)	4 (7%)	1 (2%)	9	44
28	A1	56/58 (97%)	54 (96%)	2 (4%)	0	100	100
29	A2	68/70 (97%)	64 (94%)	3 (4%)	1 (2%)	10	46
30	A3	54/56 (96%)	48 (89%)	4 (7%)	2 (4%)	3	24
31	A4	52/54 (96%)	49 (94%)	1 (2%)	2 (4%)	3	24
32	A5	44/46 (96%)	40 (91%)	2 (4%)	2 (4%)	2	22
33	A6	62/64 (97%)	58 (94%)	3 (5%)	1 (2%)	9	44
34	A7	36/38 (95%)	29 (81%)	4 (11%)	3 (8%)	1	12
38	BD	238/240 (99%)	218 (92%)	14 (6%)	6 (2%)	5	32
39	BE	230/232 (99%)	217 (94%)	9 (4%)	4 (2%)	9	42
40	BF	203/205 (99%)	186 (92%)	13 (6%)	4 (2%)	7	38
41	BG	164/166 (99%)	150 (92%)	12 (7%)	2 (1%)	13	50
42	BH	133/135 (98%)	123 (92%)	9 (7%)	1 (1%)	19	60

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
43	BI	176/178 (99%)	168 (96%)	5 (3%)	3 (2%)	9 42
44	BJ	127/129 (98%)	119 (94%)	7 (6%)	1 (1%)	19 60
45	BK	127/129 (98%)	114 (90%)	10 (8%)	3 (2%)	6 33
46	BL	101/103 (98%)	91 (90%)	4 (4%)	6 (6%)	1 17
47	BM	126/128 (98%)	109 (86%)	15 (12%)	2 (2%)	9 44
48	BN	121/123 (98%)	103 (85%)	16 (13%)	2 (2%)	9 42
49	BO	115/117 (98%)	109 (95%)	5 (4%)	1 (1%)	17 57
50	BP	98/100 (98%)	85 (87%)	6 (6%)	7 (7%)	1 14
51	BQ	86/88 (98%)	81 (94%)	4 (5%)	1 (1%)	13 50
52	BR	80/82 (98%)	76 (95%)	4 (5%)	0	100 100
53	BS	81/83 (98%)	73 (90%)	7 (9%)	1 (1%)	13 50
54	BT	72/74 (97%)	62 (86%)	7 (10%)	3 (4%)	3 22
55	BU	89/91 (98%)	82 (92%)	6 (7%)	1 (1%)	14 52
56	BV	84/86 (98%)	79 (94%)	4 (5%)	1 (1%)	13 50
57	BW	68/70 (97%)	61 (90%)	4 (6%)	3 (4%)	2 22
All	All	6319/6423 (98%)	5708 (90%)	453 (7%)	158 (2%)	9 32

5 of 158 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	AD	94	LEU
6	AF	62	GLN
6	AF	188	MET
7	AG	136	ILE
9	AI	3	VAL

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
3	AC	181/181 (100%)	176 (97%)	5 (3%)	43 65

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
4	AD	217/217 (100%)	205 (94%)	12 (6%)	21 47
5	AE	164/164 (100%)	152 (93%)	12 (7%)	14 39
6	AF	165/165 (100%)	160 (97%)	5 (3%)	41 63
7	AG	149/149 (100%)	140 (94%)	9 (6%)	19 44
8	AH	137/137 (100%)	123 (90%)	14 (10%)	7 25
9	AI	114/114 (100%)	109 (96%)	5 (4%)	28 53
10	AJ	122/122 (100%)	115 (94%)	7 (6%)	20 45
11	AK	109/109 (100%)	104 (95%)	5 (5%)	27 52
12	AL	116/116 (100%)	107 (92%)	9 (8%)	12 36
13	AM	104/104 (100%)	98 (94%)	6 (6%)	20 45
14	AN	103/103 (100%)	102 (99%)	1 (1%)	76 86
15	AO	109/109 (100%)	101 (93%)	8 (7%)	14 39
16	AP	103/103 (100%)	99 (96%)	4 (4%)	32 56
17	AQ	87/87 (100%)	79 (91%)	8 (9%)	9 29
18	AR	99/99 (100%)	94 (95%)	5 (5%)	24 48
19	AS	89/89 (100%)	86 (97%)	3 (3%)	37 60
20	AT	84/84 (100%)	78 (93%)	6 (7%)	14 39
21	AU	93/93 (100%)	88 (95%)	5 (5%)	22 47
22	AV	84/84 (100%)	78 (93%)	6 (7%)	14 39
23	AW	84/84 (100%)	80 (95%)	4 (5%)	25 51
24	AX	78/78 (100%)	73 (94%)	5 (6%)	17 42
25	AY	62/62 (100%)	57 (92%)	5 (8%)	11 35
26	AZ	67/67 (100%)	60 (90%)	7 (10%)	7 24
27	A0	55/55 (100%)	52 (94%)	3 (6%)	21 47
28	A1	48/48 (100%)	42 (88%)	6 (12%)	4 19
29	A2	62/62 (100%)	61 (98%)	1 (2%)	62 79
30	A3	47/47 (100%)	45 (96%)	2 (4%)	29 53
31	A4	48/48 (100%)	44 (92%)	4 (8%)	11 34
32	A5	38/38 (100%)	35 (92%)	3 (8%)	12 35
33	A6	51/51 (100%)	50 (98%)	1 (2%)	55 74
34	A7	34/34 (100%)	33 (97%)	1 (3%)	42 64

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
38	BD	198/198 (100%)	188 (95%)	10 (5%)	24 48
39	BE	189/189 (100%)	174 (92%)	15 (8%)	12 35
40	BF	172/172 (100%)	168 (98%)	4 (2%)	50 70
41	BG	125/125 (100%)	118 (94%)	7 (6%)	21 46
42	BH	116/116 (100%)	107 (92%)	9 (8%)	12 36
43	BI	146/146 (100%)	139 (95%)	7 (5%)	25 51
44	BJ	104/104 (100%)	99 (95%)	5 (5%)	25 51
45	BK	106/106 (100%)	100 (94%)	6 (6%)	20 45
46	BL	90/90 (100%)	83 (92%)	7 (8%)	12 36
47	BM	98/98 (100%)	96 (98%)	2 (2%)	55 74
48	BN	103/103 (100%)	99 (96%)	4 (4%)	32 56
49	BO	95/95 (100%)	89 (94%)	6 (6%)	18 43
50	BP	83/83 (100%)	79 (95%)	4 (5%)	25 51
51	BQ	76/76 (100%)	75 (99%)	1 (1%)	69 81
52	BR	65/65 (100%)	57 (88%)	8 (12%)	4 19
53	BS	77/77 (100%)	72 (94%)	5 (6%)	17 42
54	BT	64/64 (100%)	61 (95%)	3 (5%)	26 51
55	BU	78/78 (100%)	69 (88%)	9 (12%)	5 21
56	BV	65/65 (100%)	65 (100%)	0	100 100
57	BW	60/60 (100%)	55 (92%)	5 (8%)	11 34
All	All	5213/5213 (100%)	4919 (94%)	294 (6%)	25 46

5 of 294 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
44	BJ	68	LYS
55	BU	47	THR
45	BK	88	GLU
50	BP	66	THR
15	AO	136	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	AA	119/120 (99%)	18 (15%)	13 (10%)
2	AB	2898/2904 (99%)	527 (18%)	180 (6%)
35	BA	1538/1542 (99%)	294 (19%)	112 (7%)
36	BB	46/47 (97%)	15 (32%)	6 (13%)
37	BC	76/77 (98%)	14 (18%)	1 (1%)
All	All	4677/4690 (99%)	868 (18%)	312 (6%)

5 of 868 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	AA	9	G
1	AA	13	G
1	AA	14	U
1	AA	25	U
1	AA	26	C

5 of 312 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
35	BA	552	U
35	BA	1302	C
35	BA	681	A
35	BA	944	G
35	BA	1465	A

5.4 Non-standard residues in protein, DNA, RNA chains (i)

40 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	$\#\|Z\| > 2$
37	OMC	BC	33	37	19,22,23	1.24	3 (15%)	26,31,34	1.38	5 (19%)
35	MA6	BA	1519	35	19,26,27	1.46	4 (21%)	18,38,41	2.25	5 (27%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	PSU	AB	746	2	18,21,22	2.04	5 (27%)	22,30,33	2.03	6 (27%)
2	2MA	AB	2503	2	17,25,26	1.22	2 (11%)	17,37,40	1.78	3 (17%)
35	5MC	BA	967	35	18,22,23	1.05	1 (5%)	26,32,35	1.33	4 (15%)
35	2MG	BA	1516	35	18,26,27	1.64	4 (22%)	16,38,41	1.47	3 (18%)
2	PSU	AB	955	2	18,21,22	1.90	3 (16%)	22,30,33	1.56	4 (18%)
2	PSU	AB	2457	2	18,21,22	1.56	3 (16%)	22,30,33	2.33	5 (22%)
2	3TD	AB	1915	2	18,22,23	1.38	3 (16%)	22,32,35	2.17	7 (31%)
2	OMG	AB	2251	2	18,26,27	1.71	5 (27%)	19,38,41	1.37	1 (5%)
2	OMU	AB	2552	2	19,22,23	0.82	1 (5%)	26,31,34	1.36	3 (11%)
35	PSU	BA	516	35	18,21,22	1.67	4 (22%)	22,30,33	2.34	4 (18%)
2	5MC	AB	1962	2	18,22,23	1.31	2 (11%)	26,32,35	1.51	6 (23%)
2	CH	AB	2575	2	16,21,22	1.64	2 (12%)	20,30,33	1.55	4 (20%)
35	5MC	BA	1407	35	18,22,23	1.58	3 (16%)	26,32,35	1.49	6 (23%)
37	H2U	BC	21	37	18,21,22	1.65	6 (33%)	21,30,33	2.23	9 (42%)
2	OMC	AB	2498	2	19,22,23	1.30	5 (26%)	26,31,34	1.57	6 (23%)
2	2MG	AB	1835	2	18,26,27	1.79	4 (22%)	16,38,41	1.83	3 (18%)
2	7MG	AB	2069	2	22,26,27	4.67	4 (18%)	29,39,42	1.64	5 (17%)
35	UR3	BA	1498	35	19,22,23	1.23	3 (15%)	26,32,35	1.91	7 (26%)
35	4OC	BA	1402	35	20,23,24	1.24	4 (20%)	26,32,35	1.97	8 (30%)
37	5MU	BC	55	37	19,22,23	1.01	1 (5%)	28,32,35	1.97	8 (28%)
2	5MU	AB	747	2	19,22,23	1.52	3 (15%)	28,32,35	2.79	17 (60%)
2	PSU	AB	2504	2	18,21,22	1.71	3 (16%)	22,30,33	2.17	5 (22%)
35	2MG	BA	966	35	18,26,27	1.87	6 (33%)	16,38,41	1.50	4 (25%)
2	PSU	AB	1911	2	18,21,22	2.38	8 (44%)	22,30,33	1.33	4 (18%)
2	6MZ	AB	2030	2	18,25,26	1.85	3 (16%)	16,36,39	1.95	3 (18%)
35	2MG	BA	1207	35	18,26,27	1.59	4 (22%)	16,38,41	1.44	2 (12%)
2	PSU	AB	2605	2	18,21,22	1.79	3 (16%)	22,30,33	1.92	7 (31%)
2	H2U	AB	2449	2	18,21,22	1.23	1 (5%)	21,30,33	2.82	9 (42%)
2	6MZ	AB	1618	2	18,25,26	1.81	6 (33%)	16,36,39	1.60	4 (25%)
35	MA6	BA	1518	35	19,26,27	1.51	2 (10%)	18,38,41	1.32	3 (16%)
37	4SU	BC	8	37	18,21,22	1.95	6 (33%)	26,30,33	1.77	7 (26%)
2	5MU	AB	1939	2	19,22,23	1.35	2 (10%)	28,32,35	2.31	9 (32%)
37	PSU	BC	56	37	18,21,22	2.23	5 (27%)	22,30,33	1.22	1 (4%)
2	PSU	AB	2580	2	18,21,22	1.85	5 (27%)	22,30,33	1.48	4 (18%)
2	PSU	AB	1917	2	18,21,22	1.39	4 (22%)	22,30,33	1.82	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	2MG	AB	2445	2	18,26,27	1.77	4 (22%)	16,38,41	1.76	4 (25%)
2	1MG	AB	745	2	18,26,27	2.01	9 (50%)	19,39,42	1.89	6 (31%)
35	7MG	BA	527	35	22,26,27	3.39	7 (31%)	29,39,42	1.61	2 (6%)

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
37	OMC	BC	33	37	-	0/9/27/28	0/2/2/2
35	MA6	BA	1519	35	-	0/7/29/30	0/3/3/3
2	PSU	AB	746	2	-	1/7/25/26	0/2/2/2
2	2MA	AB	2503	2	-	0/3/25/26	0/3/3/3
35	5MC	BA	967	35	-	1/7/25/26	0/2/2/2
35	2MG	BA	1516	35	-	0/5/27/28	0/3/3/3
2	PSU	AB	955	2	-	0/7/25/26	0/2/2/2
2	PSU	AB	2457	2	-	0/7/25/26	0/2/2/2
2	3TD	AB	1915	2	-	0/7/25/26	0/2/2/2
2	OMG	AB	2251	2	-	0/5/27/28	0/3/3/3
2	OMU	AB	2552	2	-	1/9/27/28	0/2/2/2
35	PSU	BA	516	35	-	1/7/25/26	0/2/2/2
2	5MC	AB	1962	2	-	0/7/25/26	0/2/2/2
2	CH	AB	2575	2	-	0/5/25/26	0/2/2/2
35	5MC	BA	1407	35	-	0/7/25/26	0/2/2/2
37	H2U	BC	21	37	-	0/7/38/39	0/2/2/2
2	OMC	AB	2498	2	-	0/9/27/28	0/2/2/2
2	2MG	AB	1835	2	-	0/5/27/28	0/3/3/3
2	7MG	AB	2069	2	-	0/7/37/38	0/3/3/3
35	UR3	BA	1498	35	-	0/7/25/26	0/2/2/2
35	4OC	BA	1402	35	-	0/9/29/30	0/2/2/2
37	5MU	BC	55	37	-	0/7/25/26	0/2/2/2
2	5MU	AB	747	2	-	0/7/25/26	0/2/2/2
2	PSU	AB	2504	2	-	2/7/25/26	0/2/2/2
35	2MG	BA	966	35	-	0/5/27/28	0/3/3/3
2	PSU	AB	1911	2	-	2/7/25/26	0/2/2/2
2	6MZ	AB	2030	2	-	0/5/27/28	0/3/3/3
35	2MG	BA	1207	35	-	0/5/27/28	0/3/3/3
2	PSU	AB	2605	2	-	0/7/25/26	0/2/2/2
2	H2U	AB	2449	2	-	0/7/38/39	0/2/2/2
2	6MZ	AB	1618	2	-	1/5/27/28	0/3/3/3

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
35	MA6	BA	1518	35	-	0/7/29/30	0/3/3/3
37	4SU	BC	8	37	-	0/7/25/26	0/2/2/2
2	5MU	AB	1939	2	-	0/7/25/26	0/2/2/2
37	PSU	BC	56	37	-	0/7/25/26	0/2/2/2
2	PSU	AB	2580	2	-	3/7/25/26	0/2/2/2
2	PSU	AB	1917	2	-	3/7/25/26	0/2/2/2
2	2MG	AB	2445	2	-	0/5/27/28	0/3/3/3
2	1MG	AB	745	2	-	0/3/25/26	0/3/3/3
35	7MG	BA	527	35	-	1/7/37/38	0/3/3/3

The worst 5 of 153 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	AB	2069	7MG	C8-N9	-20.69	1.34	1.46
35	BA	527	7MG	C8-N9	-14.00	1.38	1.46
2	AB	2030	6MZ	C6-N1	5.79	1.42	1.34
2	AB	1911	PSU	C2'-C1'	-5.36	1.46	1.53
2	AB	955	PSU	C2'-C1'	-5.26	1.46	1.53

The worst 5 of 208 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	AB	2457	PSU	C6-C5-C4	7.75	123.62	118.20
35	BA	516	PSU	C3'-C2'-C1'	7.65	110.55	101.64
2	AB	2449	H2U	O2-C2-N1	-7.16	114.12	123.11
2	AB	1939	5MU	C5M-C5-C4	6.70	126.14	118.77
2	AB	2504	PSU	C6-C5-C4	6.64	122.84	118.20

There are no chirality outliers.

5 of 16 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	AB	746	PSU	C2'-C1'-C5-C4
2	AB	2552	OMU	C1'-C2'-O2'-CM2
2	AB	1917	PSU	O4'-C4'-C5'-O5'
2	AB	1917	PSU	C3'-C4'-C5'-O5'
35	BA	527	7MG	C4'-C5'-O5'-P

There are no ring outliers.

No monomer is involved in short contacts.

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)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
2	AB	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	AB	2831:G	O3'	2832:U	P	1.76

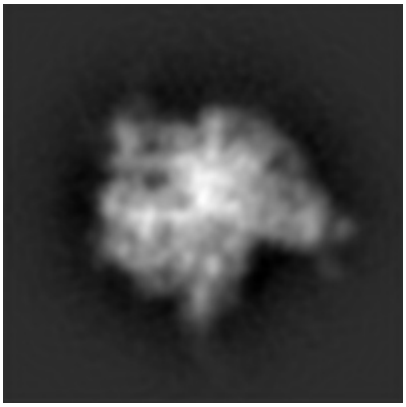
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-5360. These allow visual inspection of the internal detail of the map and identification of artifacts.

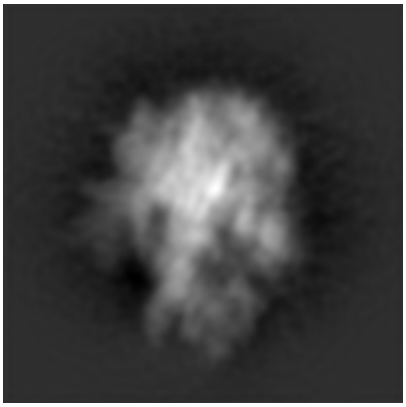
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

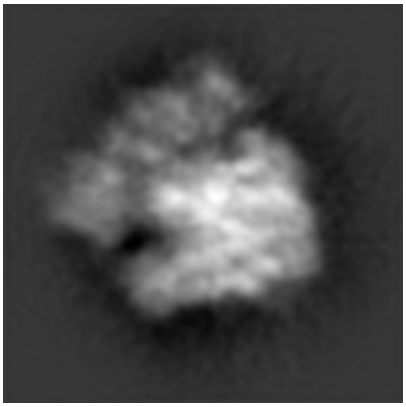
6.1.1 Primary map



X



Y

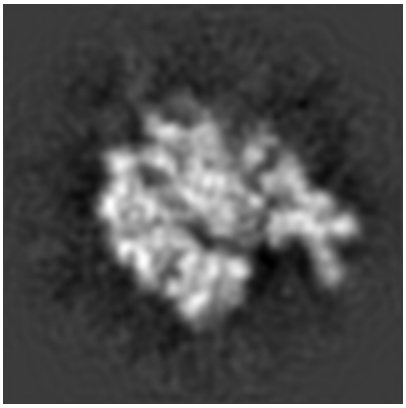


Z

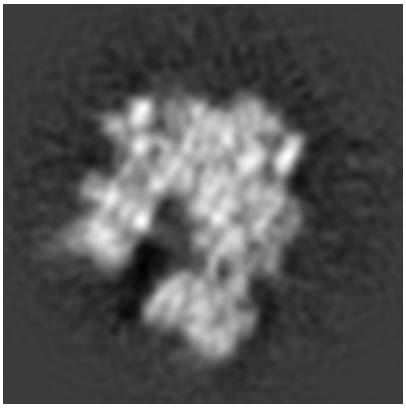
The images above show the map projected in three orthogonal directions.

6.2 Central slices

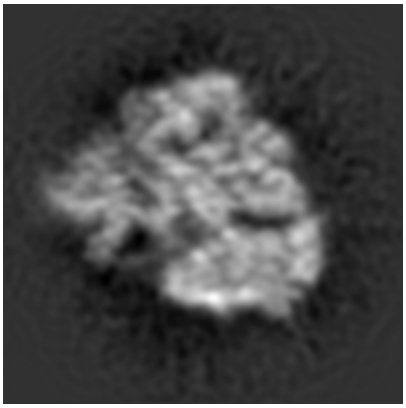
6.2.1 Primary map



X Index: 125



Y Index: 125

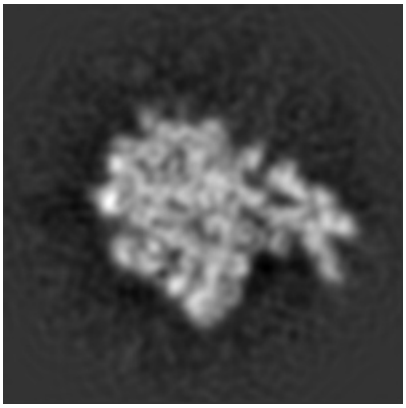


Z Index: 125

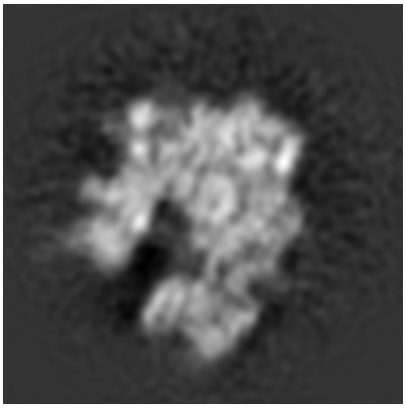
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

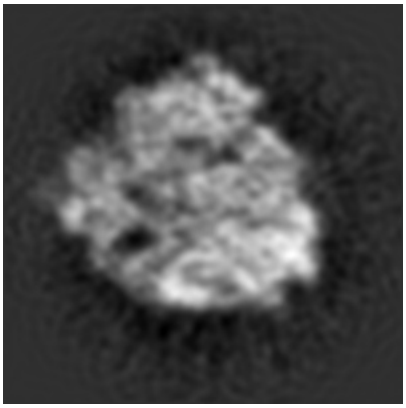
6.3.1 Primary map



X Index: 131



Y Index: 128

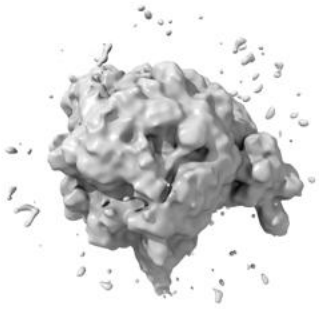


Z Index: 118

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

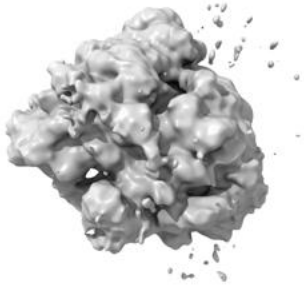
6.4 Orthogonal surface views (i)

6.4.1 Primary map



X

Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.1. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

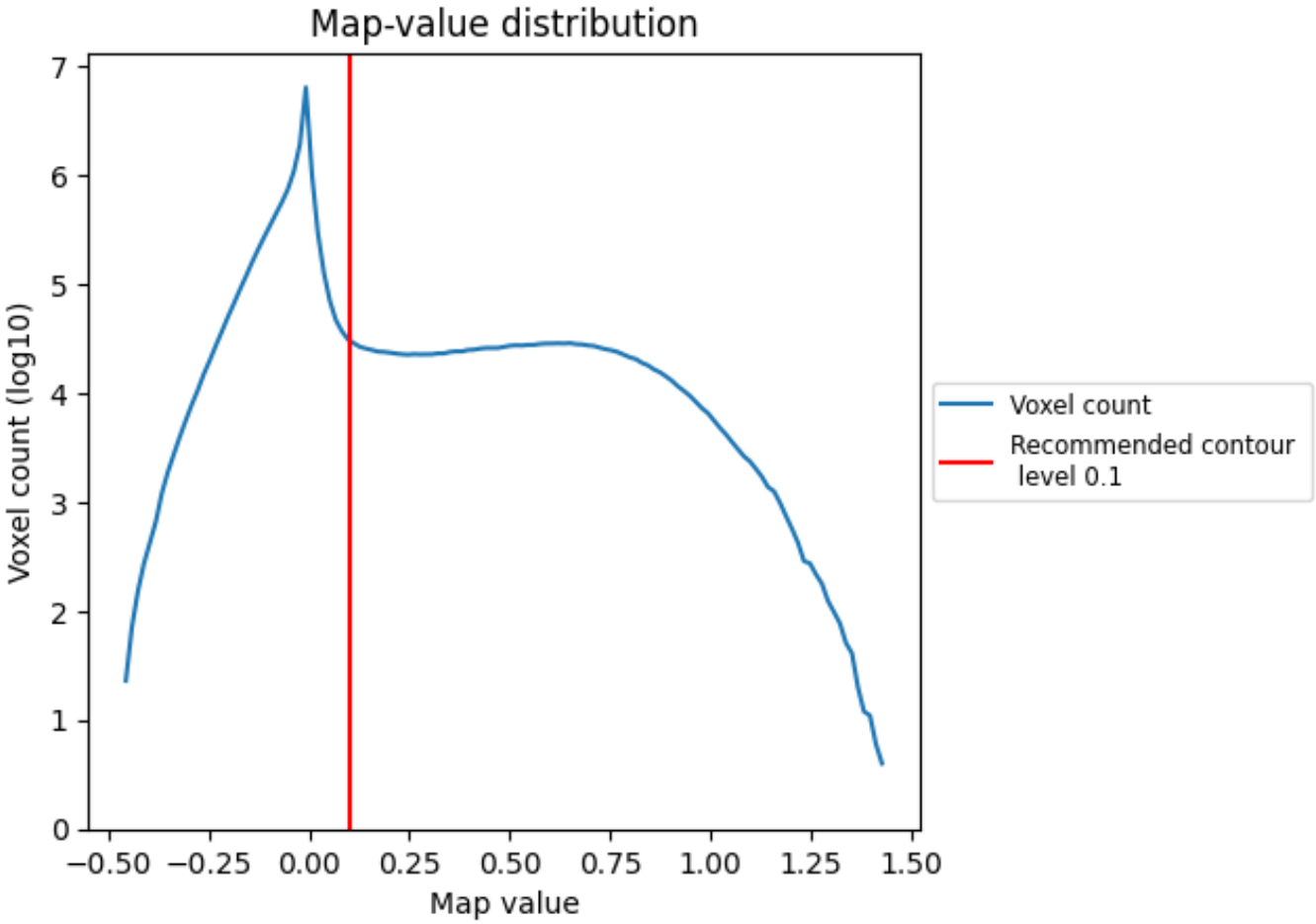
6.5 Mask visualisation (i)

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

7 Map analysis

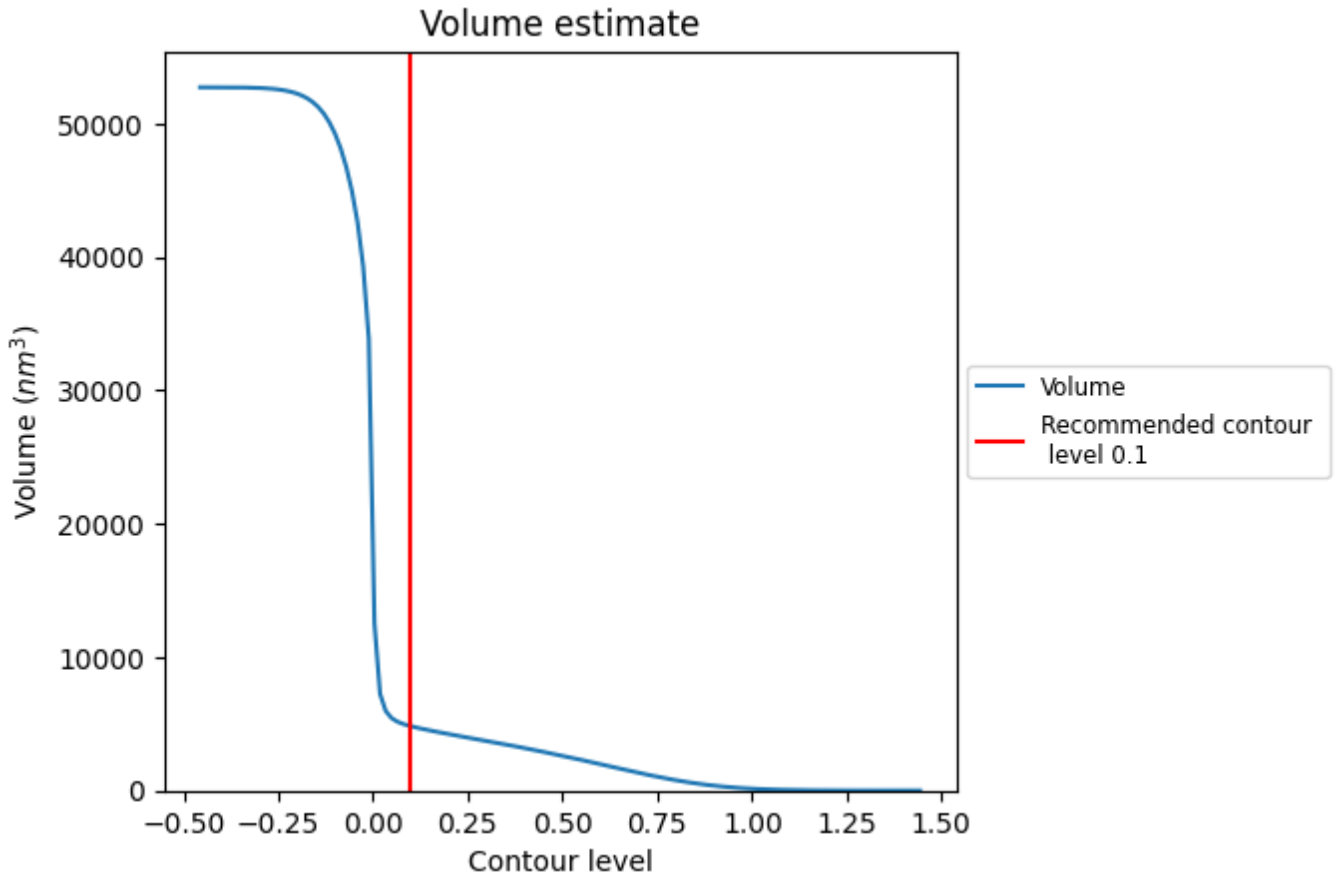
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

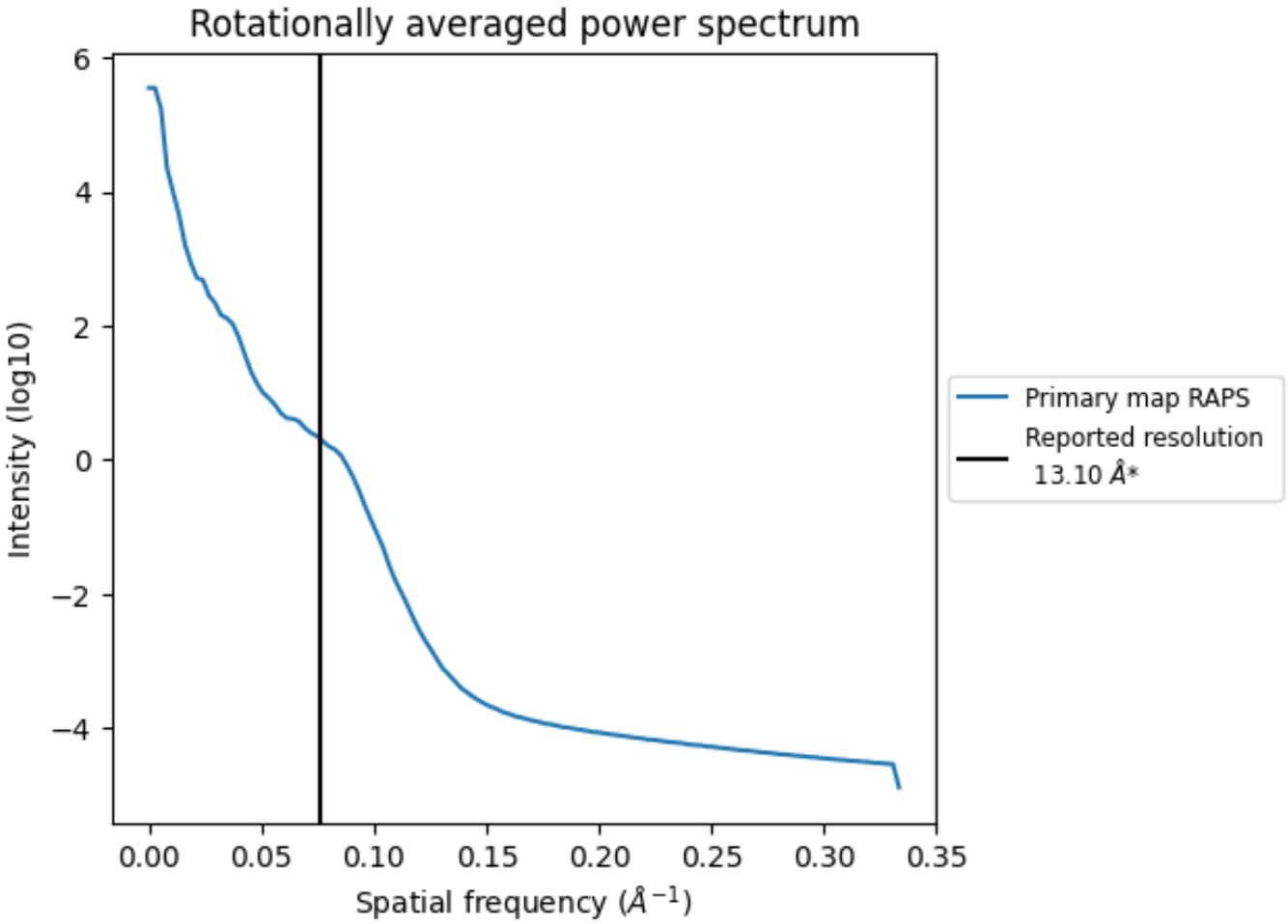
7.2 Volume estimate (i)



The volume at the recommended contour level is 4825 nm^3; this corresponds to an approximate mass of 4359 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 0.076 Å^{-1}

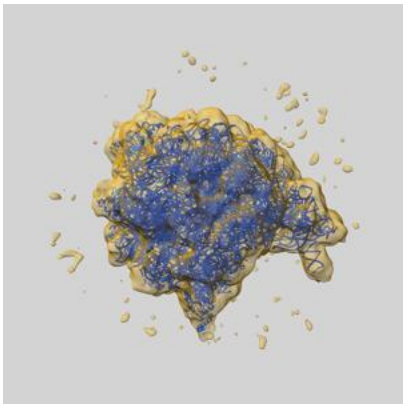
8 Fourier-Shell correlation (i)

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

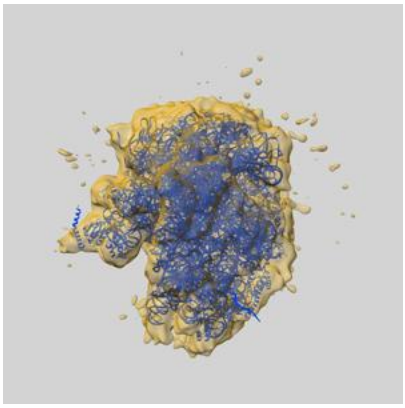
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-5360 and PDB model 4V6S. Per-residue inclusion information can be found in section 3 on page 14.

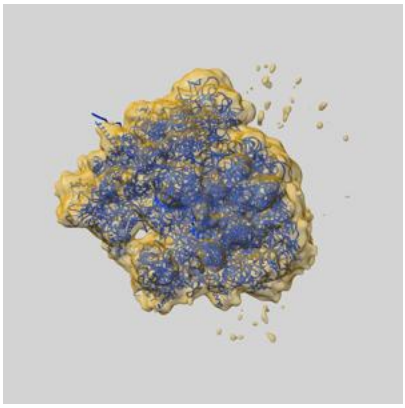
9.1 Map-model overlay



X



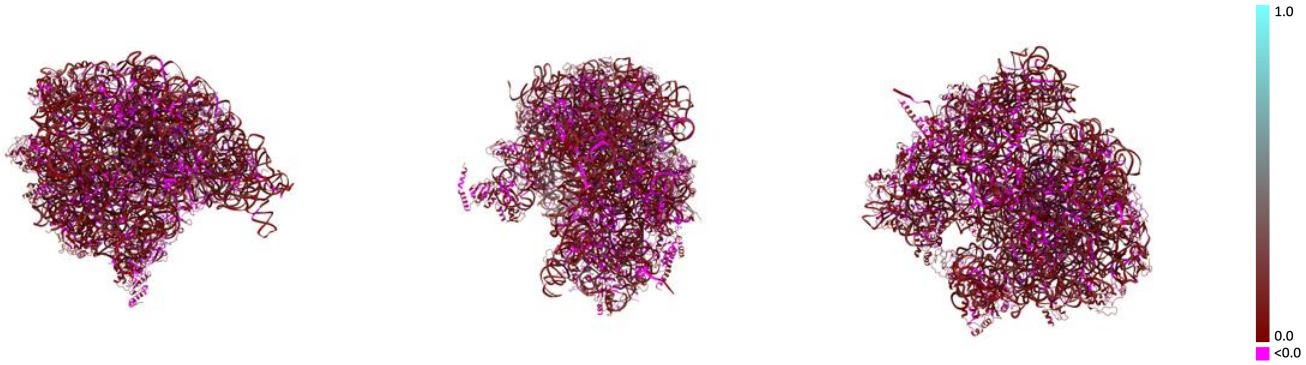
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.1 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.

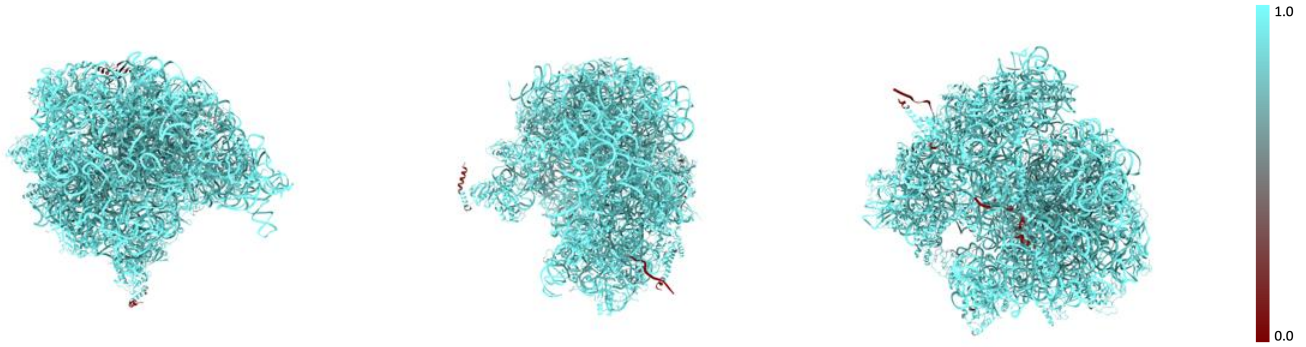
9.2 Q-score mapped to coordinate model



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.

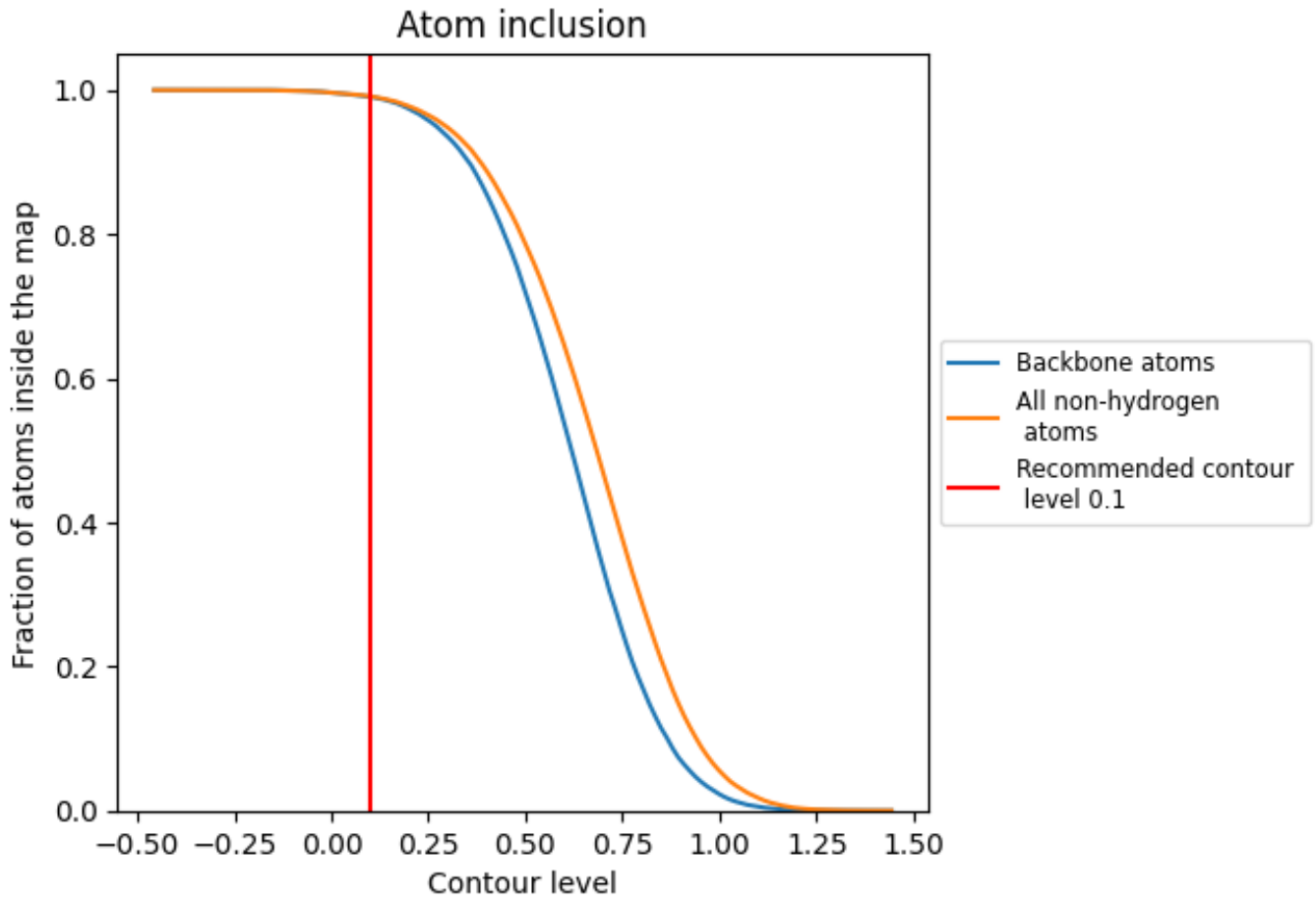
9.3 Atom inclusion mapped to coordinate model



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 (0.1).

9.4 Atom inclusion (i)



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

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.1) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9912	0.0680
A0	1.0000	0.0510
A1	0.9954	0.0290
A2	0.9108	0.0270
A3	1.0000	0.0260
A4	1.0000	0.0490
A5	1.0000	-0.0180
A6	1.0000	-0.0250
A7	1.0000	0.0160
AA	0.9996	0.0850
AB	0.9991	0.0850
AC	0.9614	0.0370
AD	1.0000	0.0210
AE	0.9961	0.0150
AF	0.9974	0.0470
AG	0.9978	0.0730
AH	0.9992	0.0210
AI	0.7901	0.0300
AJ	0.8698	0.0350
AK	0.9795	0.0440
AL	0.9991	0.0250
AM	0.9902	0.0340
AN	0.9941	0.0100
AO	1.0000	0.0310
AP	1.0000	0.0080
AQ	0.9931	0.0550
AR	0.9786	0.0230
AS	0.9978	0.0170
AT	1.0000	0.0470
AU	1.0000	0.0140
AV	1.0000	0.0310
AW	1.0000	0.0770
AX	1.0000	0.0740
AY	0.9984	0.0080
AZ	1.0000	0.0600

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
BA	0.9992	0.0840
BB	0.7341	-0.0130
BC	1.0000	0.0980
BD	0.9093	0.0220
BE	0.9983	0.0640
BF	1.0000	0.0460
BG	0.9967	0.0420
BH	0.9618	0.0290
BI	0.9926	0.0680
BJ	0.9729	0.0280
BK	0.9879	0.0480
BL	1.0000	0.0400
BM	0.9369	0.0550
BN	0.9772	0.0330
BO	0.9715	0.0480
BP	1.0000	0.0270
BQ	1.0000	0.0410
BR	1.0000	0.0480
BS	1.0000	0.0660
BT	1.0000	0.0540
BU	0.9817	0.0270
BV	1.0000	0.0460
BW	0.9964	0.0570