



wwPDB EM Validation Summary Report ⓘ

Feb 13, 2024 – 11:05 PM EST

PDB ID : 3JBN
EMDB ID : EMD-6456
Title : Cryo-electron microscopy reconstruction of the Plasmodium falciparum 80S ribosome bound to P-tRNA
Authors : Sun, M.; Li, W.; Blomqvist, K.; Das, S.; Hashem, Y.; Dvorin, J.D.; Frank, J.
Deposited on : 2015-09-16
Resolution : 4.70 Å (reported)
Based on initial models : 3J79, 3J7A

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.dev70
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

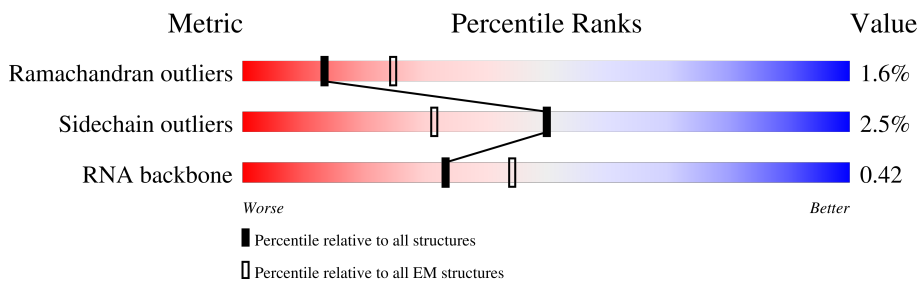
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.70 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.






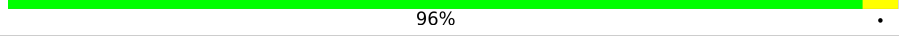



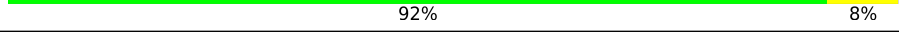
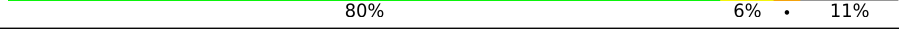

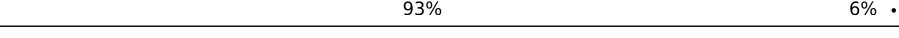
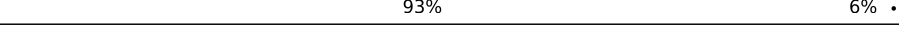

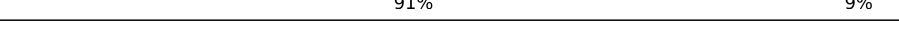

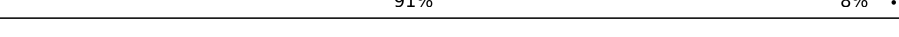
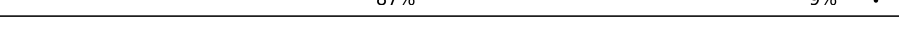

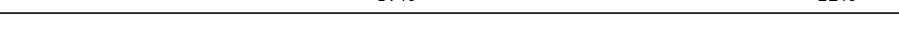




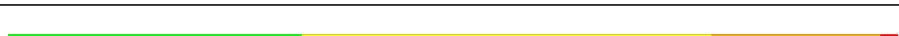

Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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 $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	A	1608	
2	7	76	
3	D	209	
4	E	185	
5	G	224	
6	I	189	
7	K	129	
8	M	138	
9	W	108	






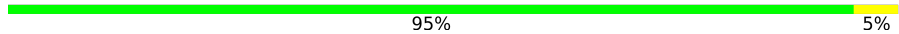
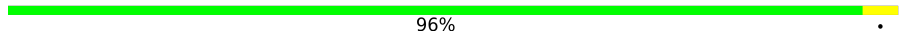








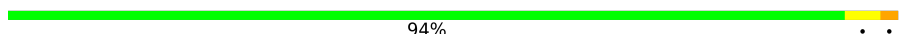

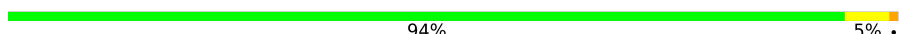





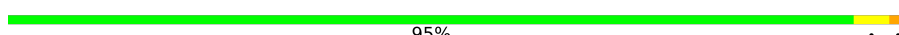

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Mol	Chain	Length	Quality of chain
10	R	114	
11	O	79	
12	Y	154	
13	Z	72	
14	1	120	
15	2	68	
16	3	95	
17	4	76	
18	5	65	
19	6	43	
20	B	210	
21	F	257	
22	H	214	
23	J	188	
24	L	214	
25	N	98	
26	P	127	
27	Q	144	
28	S	128	
29	T	48	
30	U	149	
31	V	156	
32	X	103	
33	C	195	
34	AA	3193	




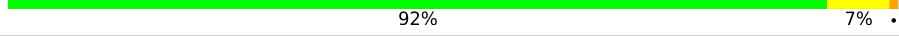
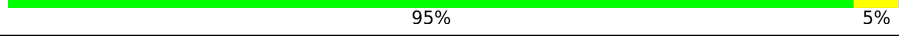
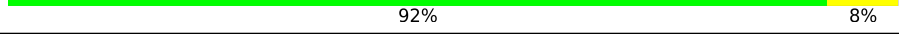

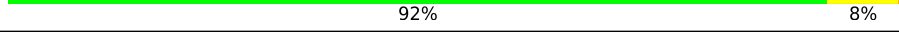
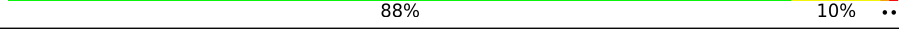
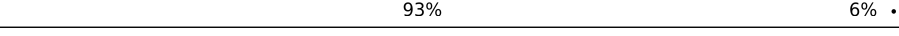

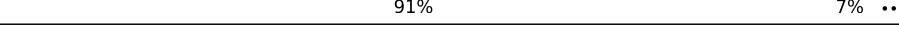

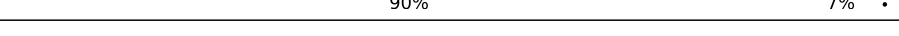
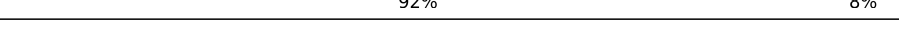

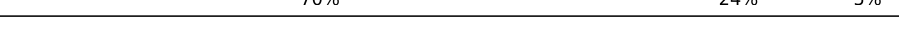
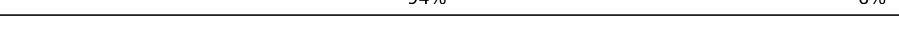
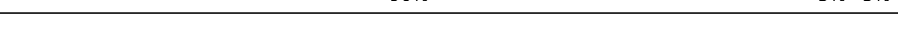
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Mol	Chain	Length	Quality of chain
35	AC	151	
36	AB	118	
37	AL	211	
38	A1	145	
39	A2	118	
40	A4	66	
41	A6	98	
42	A7	102	
43	AN	146	
44	A8	125	
45	A9	103	
46	Aa	106	
47	Ab	105	
48	Ad	76	
49	Ae	50	
50	Af	51	
51	AP	204	
52	Ah	85	
53	Ai	95	
54	AI	213	
55	AJ	244	
56	Ac	89	
57	AK	201	
58	AM	132	
59	AS	186	

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Mol	Chain	Length	Quality of chain
60	AO	147	 87% 11%
61	AQ	205	 80% 10% 8%
62	AR	289	 77% 9% 13%
63	AW	170	 92% 7%
64	AY	101	 95% 5%
65	AT	181	 92% 8%
66	AZ	121	 88% 9%
67	A3	119	 92% 8%
68	A5	223	 88% 10%
69	AD	247	 93% 6%
70	AE	380	 90% 9%
71	AF	390	 91% 7%
72	AG	159	 70% 6% 22%
73	AU	180	 90% 7%
74	AH	185	 92% 8%
75	AV	155	 89% 10%
76	Ag	37	 70% 24% 5%
77	AX	97	 94% 6%
78	A0	62	 90% 5% 5%

2 Entry composition

There are 78 unique types of molecules in this entry. The entry contains 193061 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 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	1608	34207	15346	6106	11169	1586	0	0

- Molecule 2 is a RNA chain called P-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	7	76	1620	723	295	527	75	0	0

- Molecule 3 is a protein called 40S ribosomal protein uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	157	1229	782	225	215	7	0	0

- Molecule 4 is a protein called 40S ribosomal protein uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	E	185	1515	962	290	261	2	0	0

- Molecule 5 is a protein called 40S ribosomal protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	G	224	1758	1132	307	310	9	0	0

- Molecule 6 is a protein called 40S ribosomal protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	I	180	1424	893	263	258	10	0	0

- Molecule 7 is a protein called 40S ribosomal protein uS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	K	129	1037	665	189	178	5	0	0

- Molecule 8 is a protein called 40S ribosomal protein uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	M	138	1099	704	200	194	1	0	0

- Molecule 9 is a protein called 40S ribosomal protein eS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	W	95	786	498	149	136	3	0	0

- Molecule 10 is a protein called 40S ribosomal protein eS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	R	98	747	474	123	146	4	0	0

- Molecule 11 is a protein called 40S ribosomal protein eS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	O	79	687	450	116	119	2	0	0

- Molecule 12 is a protein called 40S ribosomal protein eS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	Y	154	1267	811	239	215	2	0	0

- Molecule 13 is a protein called 40S ribosomal protein eS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	Z	72	557	346	102	105	4	0	0

- Molecule 14 is a protein called 40S ribosomal protein eS24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	1	120	986	632	189	163	2	0	0

- Molecule 15 is a protein called 40S ribosomal protein eS25.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
15	2	41	321	208	56	57	0	0

- Molecule 16 is a protein called 40S ribosomal protein eS26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	3	95	782	478	169	129	6	0	0

- Molecule 17 is a protein called 40S ribosomal protein eS27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	4	76	586	368	102	107	9	0	0

- Molecule 18 is a protein called 40S ribosomal protein eS28.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
18	5	58	458	285	93	80	0	0

- Molecule 19 is a protein called 40S ribosomal protein eS30.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
19	6	43	346	213	75	58	0	0

- Molecule 20 is a protein called 40S ribosomal protein eS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	B	210	1714	1097	301	304	12	0	0

- Molecule 21 is a protein called 40S ribosomal protein eS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	F	257	Total	C	N	O	S	0	0
			2062	1320	377	357	8		

- Molecule 22 is a protein called 40S ribosomal protein eS6.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	H	204	Total	C	N	O	S	0	0
			1648	1045	313	284	6		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	158	ILE	-	insertion	UNP Q8IDR9
H	195	ASP	GLU	conflict	UNP Q8IDR9

- Molecule 23 is a protein called 40S ribosomal protein eS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	J	188	Total	C	N	O	S	0	0
			1529	982	264	279	4		

- Molecule 24 is a protein called 40S ribosomal protein eS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	L	171	Total	C	N	O	S	0	0
			1383	872	264	243	4		

- Molecule 25 is a protein called 40S ribosomal protein uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	N	98	Total	C	N	O	S	0	0
			772	484	135	148	5		

- Molecule 26 is a protein called 40S ribosomal protein uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	P	127	Total	C	N	O	S	0	0
			954	591	184	176	3		

- Molecule 27 is a protein called 40S ribosomal protein uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	Q	144	Total	C	N	O	S	0	0
			1129	712	222	193	2		

- Molecule 28 is a protein called 40S ribosomal protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	S	128	Total	C	N	O	S	0	0
			1047	657	205	181	4		

- Molecule 29 is a protein called 40S ribosomal protein uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	T	48	Total	C	N	O	S	0	0
			405	252	85	64	4		

- Molecule 30 is a protein called 40S ribosomal protein uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	U	149	Total	C	N	O	S	0	0
			1202	769	220	210	3		

- Molecule 31 is a protein called 40S ribosomal protein uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	V	146	Total	C	N	O	S	0	0
			1206	772	227	200	7		

- Molecule 32 is a protein called 40S ribosomal protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	X	96	Total	C	N	O	S	0	0
			777	497	137	139	4		

- Molecule 33 is a protein called 40S ribosomal protein uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	C	195	Total	C	N	O	S	0	0
			1539	990	266	274	9		

- Molecule 34 is a RNA chain called 28S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
34	AA	3193	67884	30446	12054	22223	3161	0	0

- Molecule 35 is a RNA chain called 5.8S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
35	AC	151	3215	1444	589	1034	148	0	0

- Molecule 36 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
36	AB	118	2522	1128	461	816	117	0	0

- Molecule 37 is a protein called 60S ribosomal protein eL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	AL	211	1757	1116	346	291	4	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AL	19	HIS	ARG	conflict	UNP Q8IAX6
AL	20	ARG	HIS	conflict	UNP Q8IAX6
AL	201	CYS	ARG	conflict	UNP Q8IAX6

- Molecule 38 is a protein called 60S ribosomal protein eL27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	A1	140	1134	736	204	191	3	0	0

- Molecule 39 is a protein called 60S ribosomal protein eL28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	A2	104	831	529	151	148	3	0	0

- Molecule 40 is a protein called 60S ribosomal protein eL29.

Mol	Chain	Residues	Atoms				AltConf	Trace	
			Total	C	N	O			S
40	A4	66	555	347	116	90	2	0	0

- Molecule 41 is a protein called 60S ribosomal protein eL30.

Mol	Chain	Residues	Atoms				AltConf	Trace	
			Total	C	N	O			S
41	A6	98	741	462	132	140	7	0	0

- Molecule 42 is a protein called 60S ribosomal protein eL31.

Mol	Chain	Residues	Atoms				AltConf	Trace	
			Total	C	N	O			S
42	A7	96	794	508	151	130	5	0	0

- Molecule 43 is a protein called 60S ribosomal protein eL14.

Mol	Chain	Residues	Atoms				AltConf	Trace	
			Total	C	N	O			S
43	AN	146	1202	781	210	205	6	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AN	?	-	LYS	deletion	UNP Q8ILE8

- Molecule 44 is a protein called 60S ribosomal protein eL32.

Mol	Chain	Residues	Atoms				AltConf	Trace	
			Total	C	N	O			S
44	A8	125	1037	660	206	164	7	0	0

- Molecule 45 is a protein called 60S ribosomal protein eL33.

Mol	Chain	Residues	Atoms				AltConf	Trace	
			Total	C	N	O			S
45	A9	103	845	543	163	136	3	0	0

- Molecule 46 is a protein called 60S ribosomal protein eL34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	Aa	106	859	530	184	139	6	0	0

- Molecule 47 is a protein called 60S ribosomal protein eL36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	Ab	95	757	477	150	130		0	0

- Molecule 48 is a protein called 60S ribosomal protein eL38.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	Ad	72	604	395	107	100	2	0	0

- Molecule 49 is a protein called 60S ribosomal protein eL39.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	Ae	43	388	243	92	52	1	0	0

- Molecule 50 is a protein called 60S ribosomal protein eL40.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	Af	51	414	255	87	67	5	0	0

- Molecule 51 is a protein called 60S ribosomal protein eL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	AP	204	1697	1075	351	267	4	0	0

- Molecule 52 is a protein called 60S ribosomal protein eL43.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	Ah	85	659	417	127	108	7	0	0

- Molecule 53 is a protein called 60S ribosomal protein eL44.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	Ai	95	Total	C	N	O	S	0	0
			779	490	152	128	9		

- Molecule 54 is a protein called 60S ribosomal protein eL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	AI	207	Total	C	N	O	S	0	0
			1685	1096	298	286	5		

- Molecule 55 is a protein called 60S ribosomal protein eL8.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	AJ	222	Total	C	N	O	S	0	0
			1813	1174	323	309	7		

- Molecule 56 is a protein called 60S ribosomal protein eL37.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	Ac	89	Total	C	N	O	S	0	0
			710	441	150	114	5		

- Molecule 57 is a protein called 60S ribosomal protein uL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	AK	201	Total	C	N	O	S	0	0
			1660	1064	311	277	8		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AK	109	ALA	TYR	conflict	UNP Q8IJZ7

- Molecule 58 is a protein called 60S ribosomal protein uL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	AM	132	Total	C	N	O	S	0	0
			996	631	179	178	8		

- Molecule 59 is a protein called 60S ribosomal protein eL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	AS	186	1503	958	299	241	5	0	0

- Molecule 60 is a protein called 60S ribosomal protein uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
60	AO	147	1172	747	232	189	4	0	0

- Molecule 61 is a protein called 60S ribosomal protein uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	AQ	189	1545	984	291	262	8	0	0

- Molecule 62 is a protein called 60S ribosomal protein uL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
62	AR	252	2050	1300	385	359	6	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AR	?	-	LYS	deletion	UNP Q8ILL3

- Molecule 63 is a protein called 60S ribosomal protein uL22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	AW	170	1319	824	266	222	7	0	0

- Molecule 64 is a protein called 60S ribosomal protein uL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	AY	101	797	502	144	145	6	0	0

- Molecule 65 is a protein called 60S ribosomal protein eL19.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	AT	181	Total	C	N	O	S	0	0
			1509	952	309	244	4		

- Molecule 66 is a protein called 60S ribosomal protein uL24.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	AZ	121	Total	C	N	O	S	0	0
			1001	626	206	166	3		

- Molecule 67 is a protein called 60S ribosomal protein uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	A3	119	Total	C	N	O	S	0	0
			995	635	194	164	2		

- Molecule 68 is a protein called 60S ribosomal protein uL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	A5	223	Total	C	N	O	S	0	0
			1879	1211	357	306	5		

- Molecule 69 is a protein called 60S ribosomal protein uL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	AD	247	Total	C	N	O	S	0	0
			1867	1166	374	318	9		

- Molecule 70 is a protein called 60S ribosomal protein uL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	AE	380	Total	C	N	O	S	0	0
			3062	1948	575	522	17		

- Molecule 71 is a protein called 60S ribosomal protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	AF	390	Total	C	N	O	S	0	0
			3095	1962	594	528	11		

- Molecule 72 is a protein called 60S ribosomal protein uL5.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	AG	124	Total	C	N	O	S	0	0
			1011	636	197	172	6		

- Molecule 73 is a protein called 60S ribosomal protein eL20.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	AU	180	Total	C	N	O	S	0	0
			1497	946	289	255	7		

- Molecule 74 is a protein called 60S ribosomal protein uL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	AH	185	Total	C	N	O	S	0	0
			1476	950	264	256	6		

- Molecule 75 is a protein called 60S ribosomal protein eL21.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	AV	155	Total	C	N	O	S	0	0
			1276	814	241	215	6		

- Molecule 76 is a protein called 60S ribosomal protein eL41.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	Ag	37	Total	C	N	O	S	0	0
			343	210	86	45	2		

- Molecule 77 is a protein called 60S ribosomal protein eL22.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	AX	97	Total	C	N	O	S	0	0
			825	548	135	140	2		

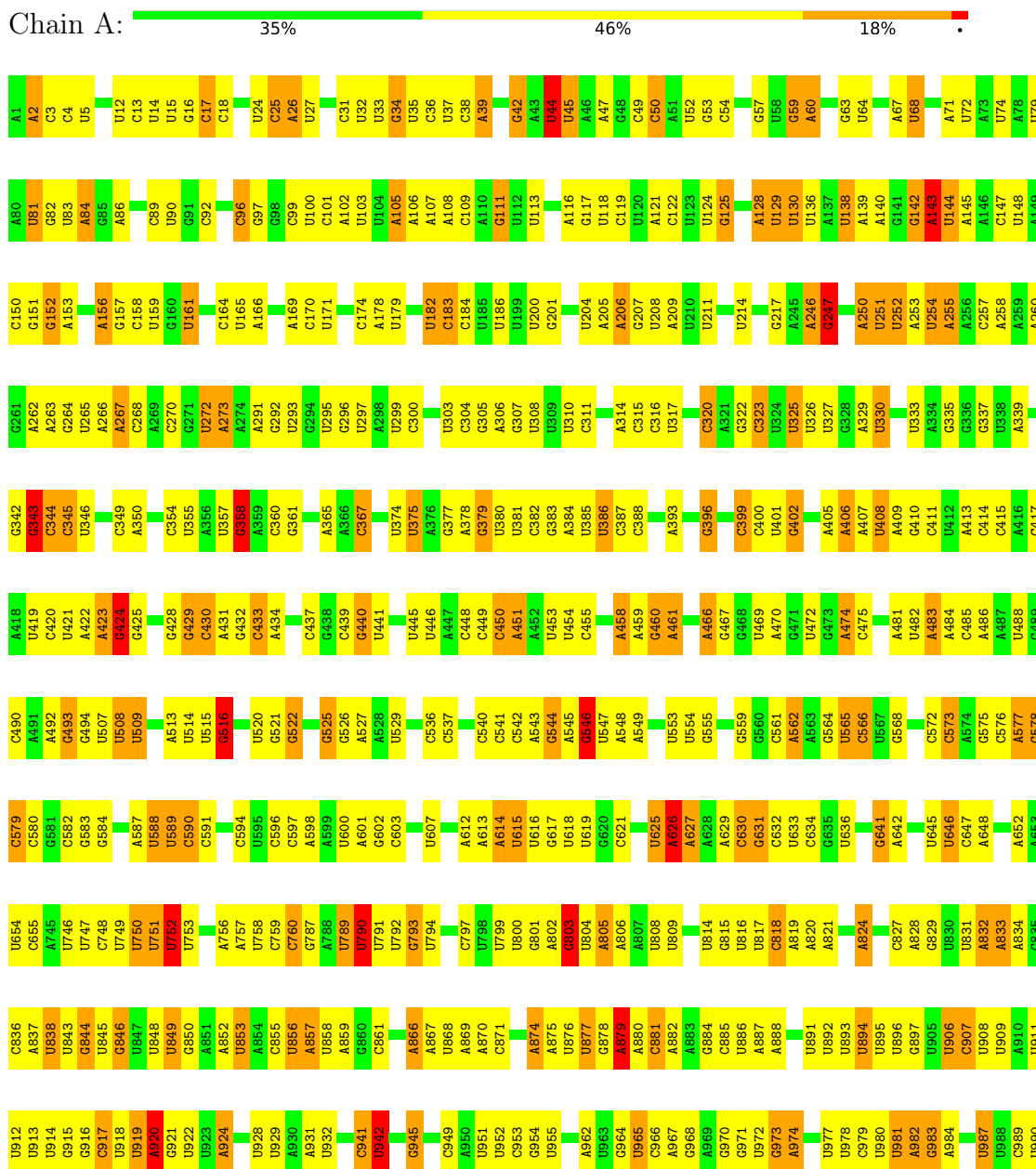
- Molecule 78 is a protein called 60S ribosomal protein eL24.

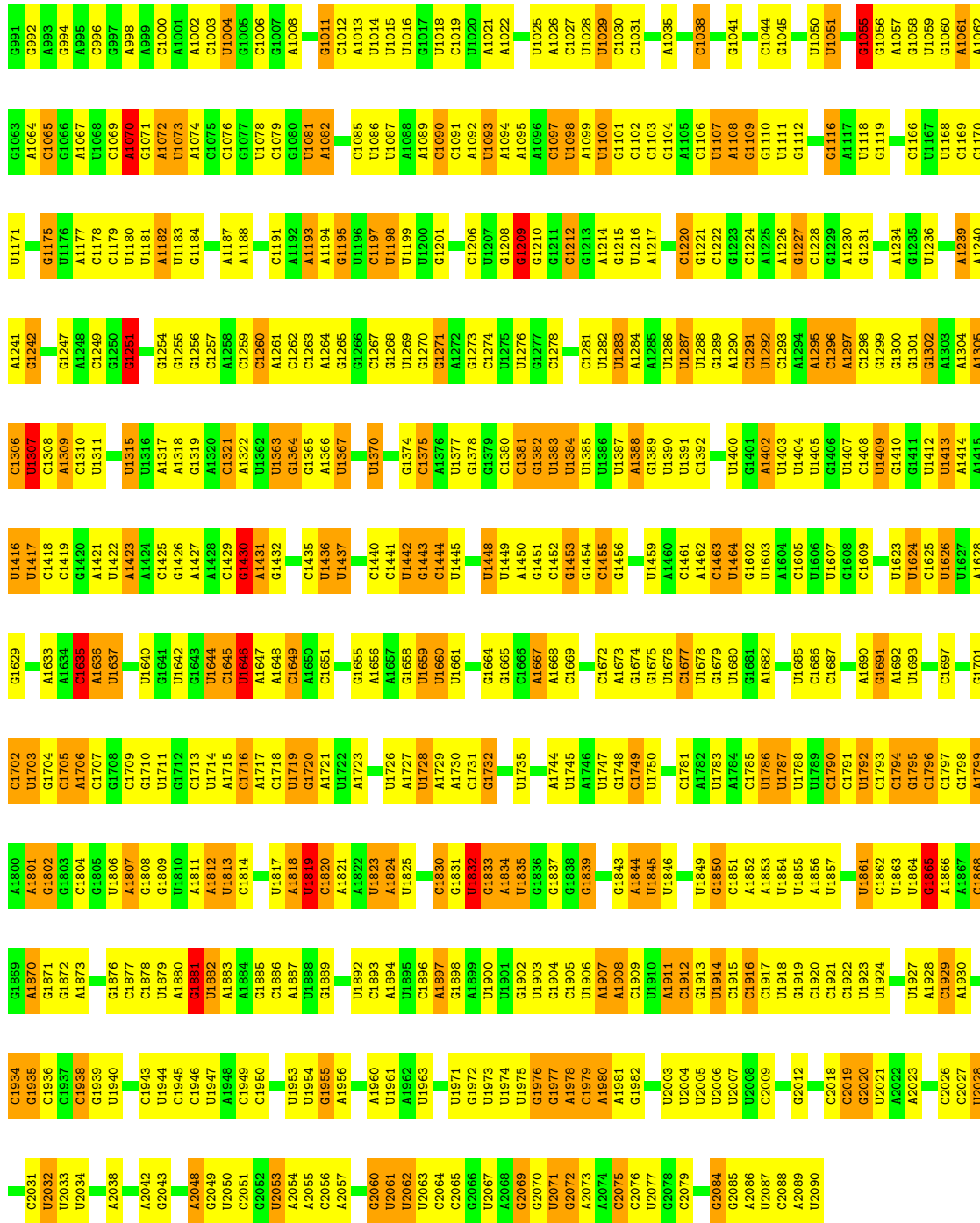
Mol	Chain	Residues	Atoms					AltConf	Trace
78	A0	62	Total	C	N	O	S	0	0
			522	336	97	88	1		

3 Residue-property plots i

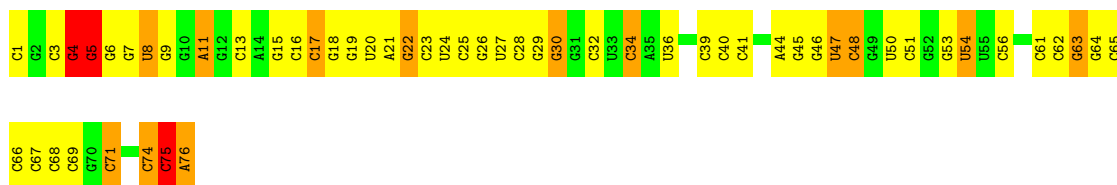
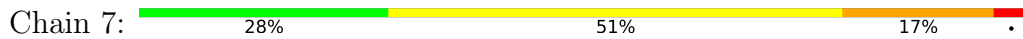
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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: 18S ribosomal RNA

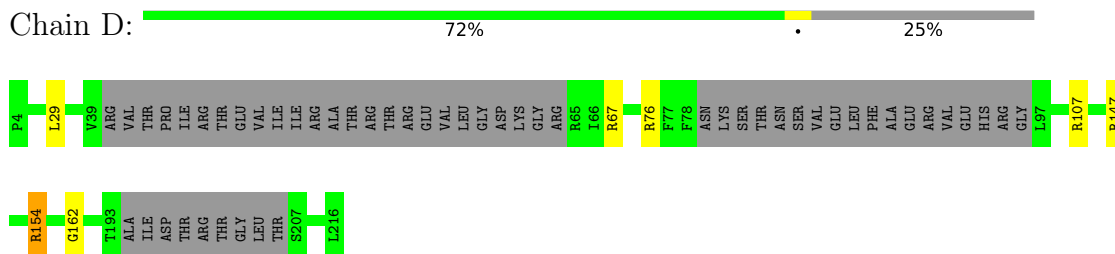




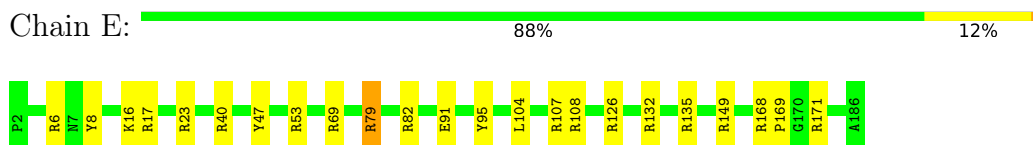
• Molecule 2: P-tRNA



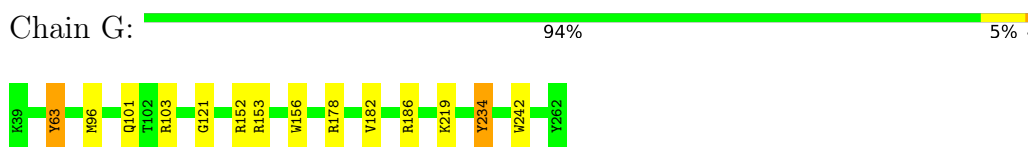
- Molecule 3: 40S ribosomal protein uS3



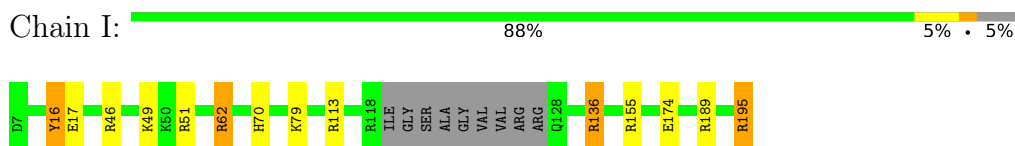
- Molecule 4: 40S ribosomal protein uS4



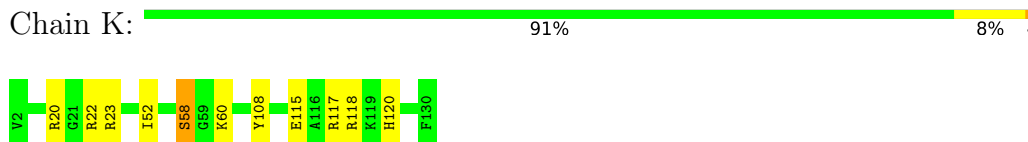
- Molecule 5: 40S ribosomal protein uS5



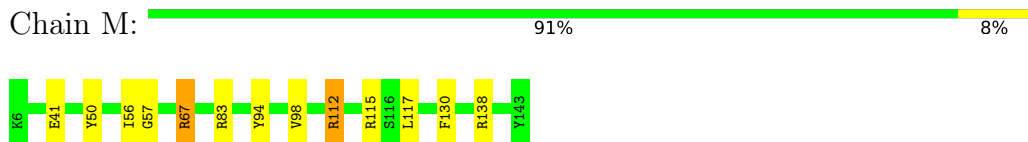
- Molecule 6: 40S ribosomal protein uS7



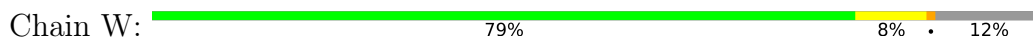
- Molecule 7: 40S ribosomal protein uS8



- Molecule 8: 40S ribosomal protein uS9

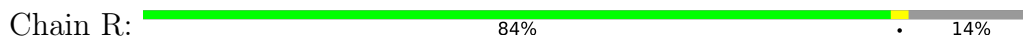


- Molecule 9: 40S ribosomal protein eS17





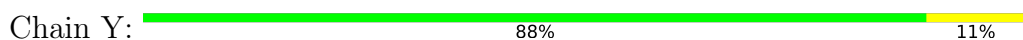
- Molecule 10: 40S ribosomal protein eS12



- Molecule 11: 40S ribosomal protein eS10



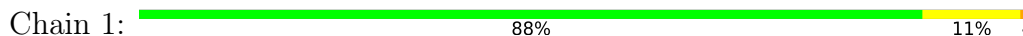
- Molecule 12: 40S ribosomal protein eS19



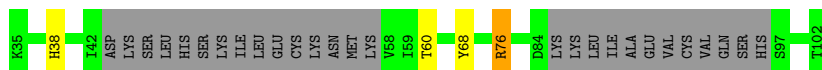
- Molecule 13: 40S ribosomal protein eS21



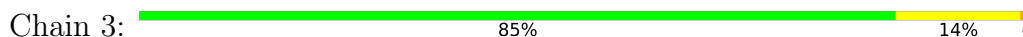
- Molecule 14: 40S ribosomal protein eS24



- Molecule 15: 40S ribosomal protein eS25



- Molecule 16: 40S ribosomal protein eS26

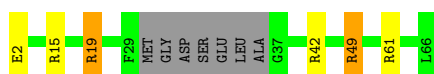
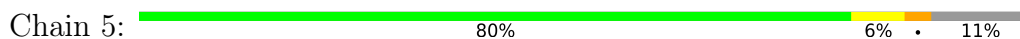




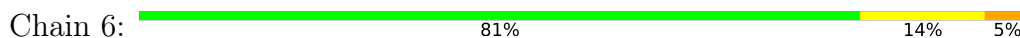
- Molecule 17: 40S ribosomal protein eS27



- Molecule 18: 40S ribosomal protein eS28



- Molecule 19: 40S ribosomal protein eS30



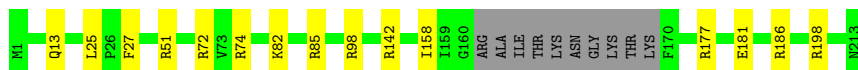
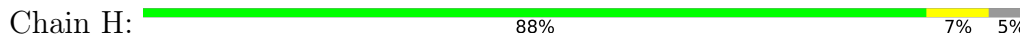
- Molecule 20: 40S ribosomal protein eS1



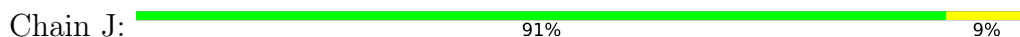
- Molecule 21: 40S ribosomal protein eS4



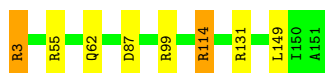
- Molecule 22: 40S ribosomal protein eS6




- Molecule 23: 40S ribosomal protein eS7



Chain U:  95%




• Molecule 31: 40S ribosomal protein uS17

Chain V:  84%



• Molecule 32: 40S ribosomal protein uS19

Chain X:  83%




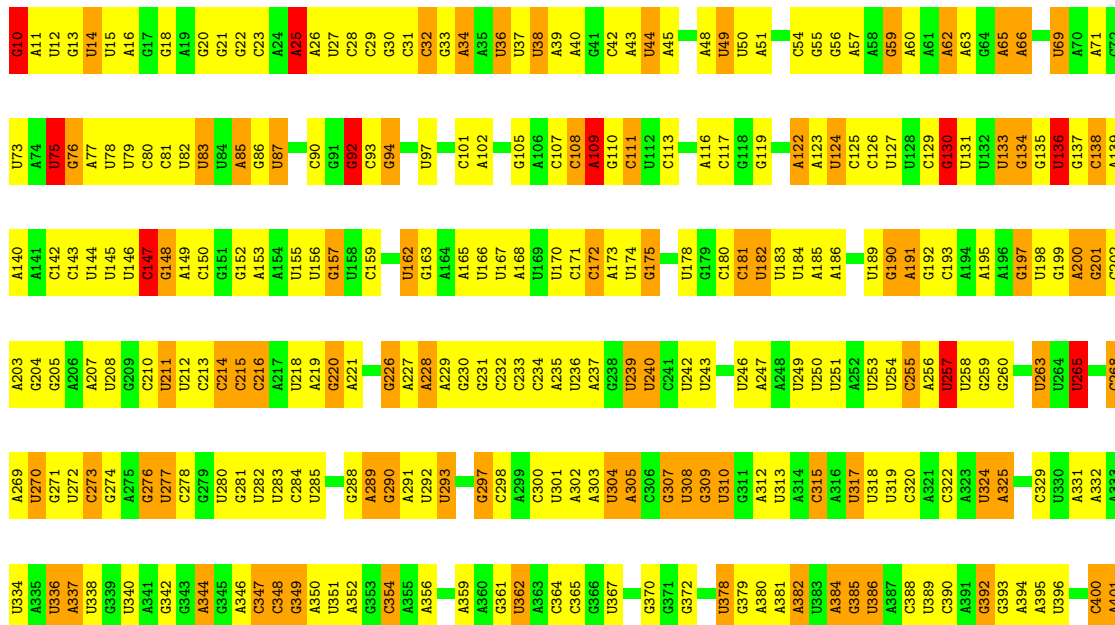
• Molecule 33: 40S ribosomal protein uS2

Chain C:  94%

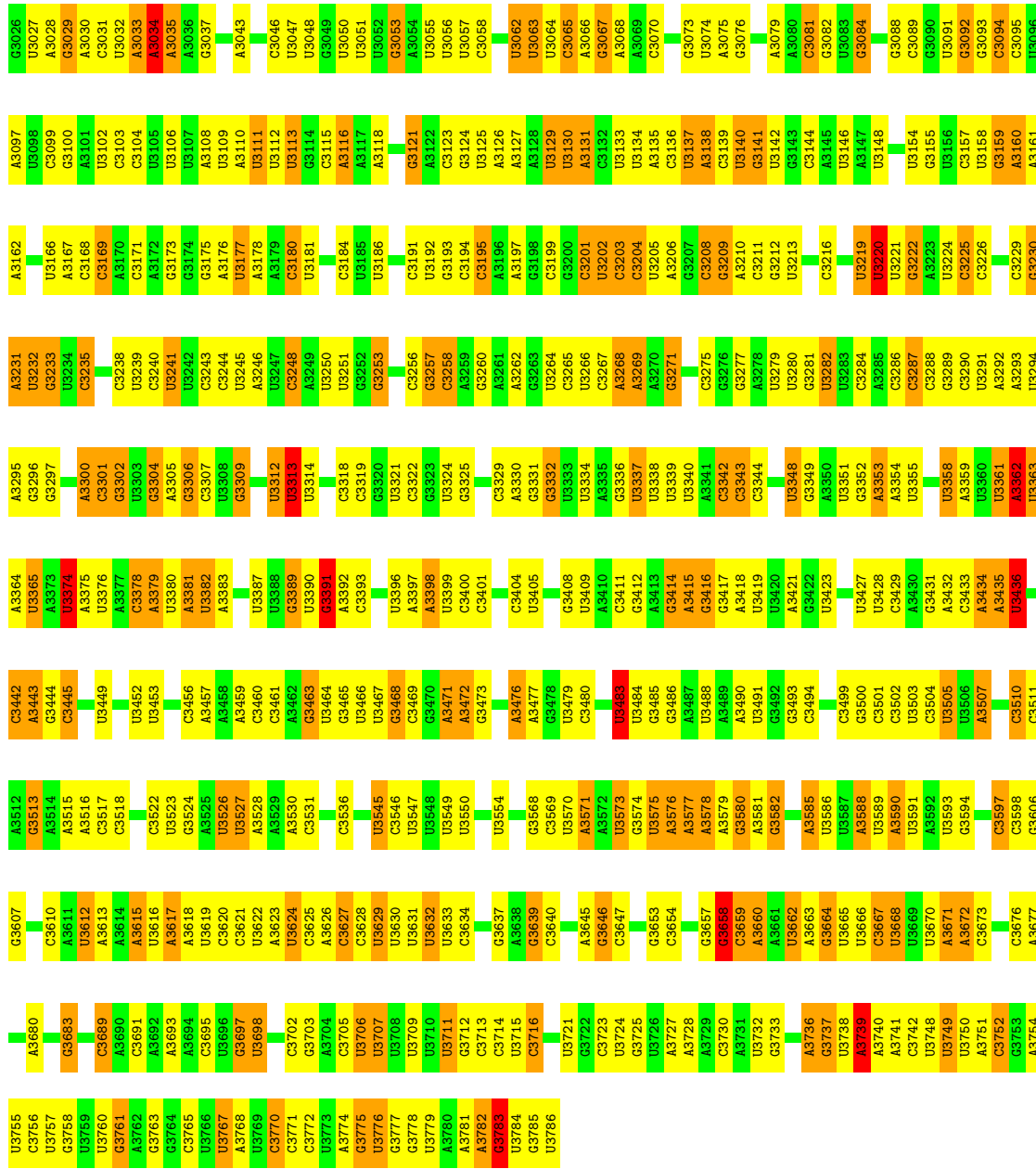


• Molecule 34: 28S ribosomal RNA

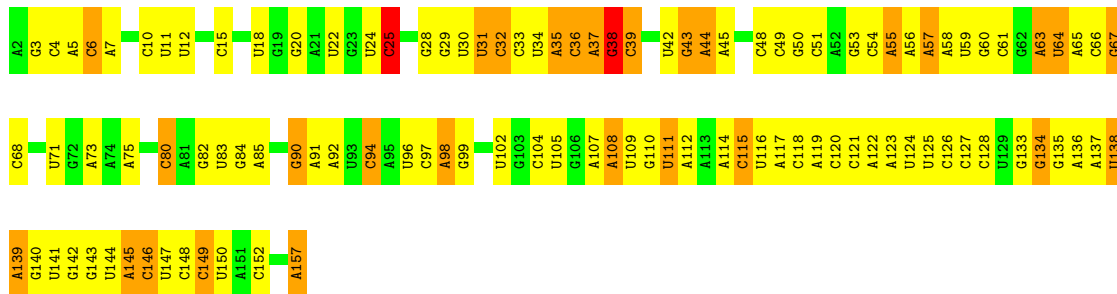
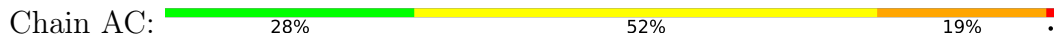
Chain AA:  33% 46% 19%



A2954	C1573
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G2957	U1645
G2958	U1646
G2959	U1647
G2960	U1648
G2961	U1649
G2962	U1650
G2963	C1651
G2964	C1652
G2965	C1653
G2966	C1654
G2967	C1655
G2968	C1656
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G2989	C1677
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G2995	C1683
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G2997	C1685
G2998	C1686
G2999	C1687
G3000	C1688
G3001	C1689
G3002	C1690
G3003	C1691
G3004	C1692
G3005	C1693
G3006	C1694
G3007	C1695
G3008	C1696
G3009	C1697
G3010	C1698
G3011	C1699
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G3352	C2040
G3353	C2041
G3354	C2042
G3355	C2043
G3356	C2044
G3357	C2045
G3358	C2046
G3359	C2047
G3360	C2048
G3361	C2049
G3362	C2050
G3363	C2051
G3364	C2052
G3365	C2053
G3366	C2054
G3367	C2055
G3368	C2056
G3369	C2057
G3370	C2058
G3371	C2059
G3372	C2060
G3373	C2061
G3374	C2062
G3375	C2063
G3376	C2064
G3377	C2065
G3378	C2066
G3379	C2067
G3380	C2068
G3381	C2069
G3382	C2070
G3383	C2071
G3384	C2072
G3385	C2073
G3386	C2074
G3387	C2075
G3388	C2076
G3389	C2077
G3390	C2078
G3391	C2079
G3392	C2080
G3393	C2081
G3394	C2082
G3395	C2083
G3396	C2084
G3397	C2085
G3398	C2086
G3399	C2087
G3400	C2088
G3401	C2089
G3402	C2090
G3403	C2091
G3404	C2092
G3405	C2093
G3406	C2094
G3407	C2095
G3408	C2096
G3409	C2097
G3410	C2098
G3411	C2099
G3412	C2100
G3413	C2101
G3414	C2102
G3415	C2103
G3416	C2104
G3417	C2105
G3418	C2106
G3419	C2107
G3420	C2108
G3421	C2109
G3422	C2110
G3423	C2111
G3424	C2112
G3425	C2113
G3426	C2114
G3427	C2115
G3428	C2116
G3429	C2117
G3430	C2118
G3431	C2119
G3432	C2120
G3433	C2121
G3434	C2122
G3435	C2123
G3436	C2124
G3437	C2125
G3438	C2126
G3439	C2127
G3440	C2128
G3441	C2129
G3442	C2130
G3443	C2131
G3444	C2132
G3445	C2133
G3446	C2134
G3447	C2135
G3448	C2136
G3449	C2137
G3450	C2138
G3451	C2139
G3452	C2140
G3453	C2141
G3454	C2142
G3455	C2143
G3456	C2144
G3457	C2145
G3458	C2146
G3459	C2147
G3460	C2148
G3461	C2149
G3462	C2150
G3463	C2151
G3464	C2152
G3465	C2153
G3466	C2154
G3467	C2155
G3468	C2156
G3469	C2157
G3470	C2158
G3471	C2159
G3472	C2160
G3473	C2161
G3474	C2162
G3475	C2163
G3476	C2164
G3477	C2165
G3478	C2166
G3479	C2167
G3480	C2168
G3481	C2169
G3482	C2170
G3483	C2171
G3484	C2172
G	

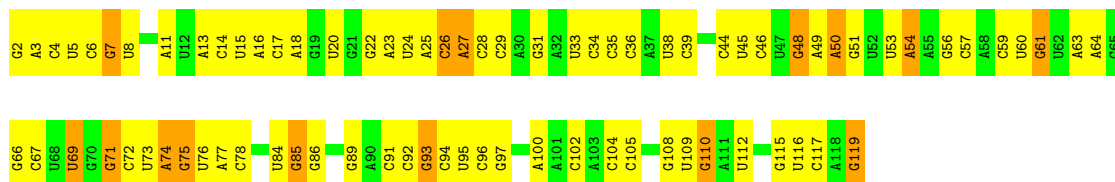


● Molecule 35: 5.8S ribosomal RNA



- Molecule 36: 5S ribosomal RNA

Chain AB:  32% 55% 13%



- Molecule 37: 60S ribosomal protein eL13

Chain AL:  91% 7% .




- Molecule 38: 60S ribosomal protein eL27

Chain A1:  90% 6% .



- Molecule 39: 60S ribosomal protein eL28

Chain A2:  82% 6% 12%



- Molecule 40: 60S ribosomal protein eL29

Chain A4:  95% 5%




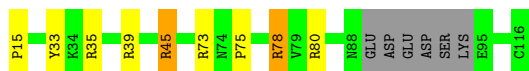
- Molecule 41: 60S ribosomal protein eL30

Chain A6:  96% .



- Molecule 42: 60S ribosomal protein eL31

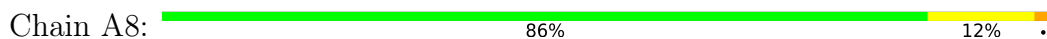
Chain A7:  85% 7% 6%



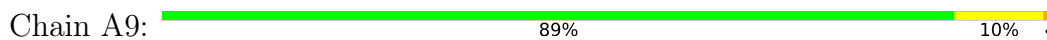
- Molecule 43: 60S ribosomal protein eL14



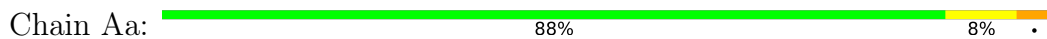
- Molecule 44: 60S ribosomal protein eL32



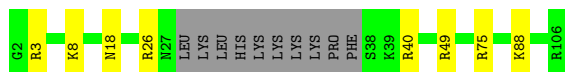
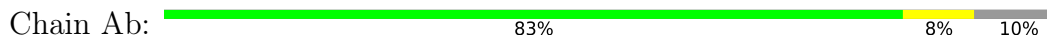
- Molecule 45: 60S ribosomal protein eL33



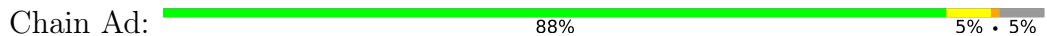
- Molecule 46: 60S ribosomal protein eL34



- Molecule 47: 60S ribosomal protein eL36

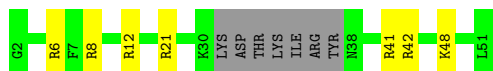


- Molecule 48: 60S ribosomal protein eL38

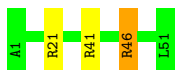


- Molecule 49: 60S ribosomal protein eL39

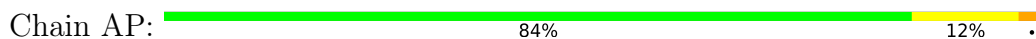




- Molecule 50: 60S ribosomal protein eL40



- Molecule 51: 60S ribosomal protein eL15



- Molecule 52: 60S ribosomal protein eL43



- Molecule 53: 60S ribosomal protein eL44




- Molecule 54: 60S ribosomal protein eL6



- Molecule 55: 60S ribosomal protein eL8



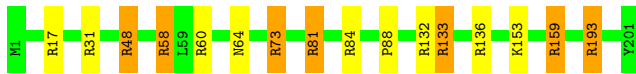
- Molecule 56: 60S ribosomal protein eL37

Chain Ac:  87% 10%



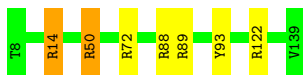
- Molecule 57: 60S ribosomal protein uL13

Chain AK:  92%




- Molecule 58: 60S ribosomal protein uL14

Chain AM:  95%




- Molecule 59: 60S ribosomal protein eL18

Chain AS:  88% 9%




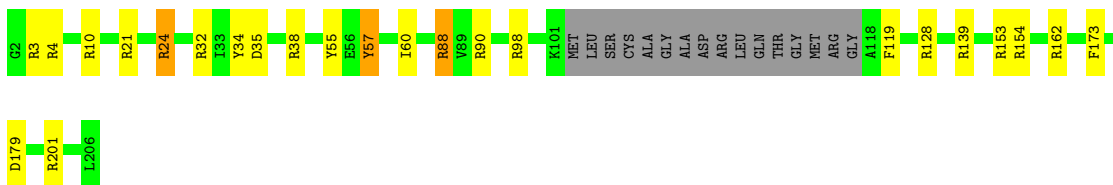
- Molecule 60: 60S ribosomal protein uL15

Chain AO:  87% 11%




- Molecule 61: 60S ribosomal protein uL16

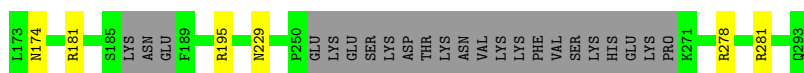
Chain AQ:  80% 10% 8%



- Molecule 62: 60S ribosomal protein uL18

Chain AR:  77% 9% 13%





- Molecule 63: 60S ribosomal protein uL22

Chain AW: 92% 7%



- Molecule 64: 60S ribosomal protein uL23

Chain AY: 95% 5%



- Molecule 65: 60S ribosomal protein eL19

Chain AT: 92% 8%



- Molecule 66: 60S ribosomal protein uL24

Chain AZ: 88% 9%



- Molecule 67: 60S ribosomal protein uL29

Chain A3: 92% 8%



- Molecule 68: 60S ribosomal protein uL30

Chain A5: 88% 10%



- Molecule 69: 60S ribosomal protein uL2

Chain AD: 93% 6%



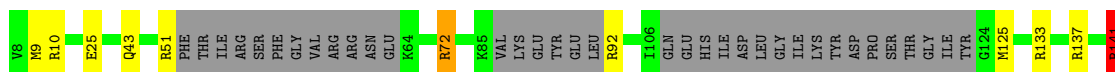
- Molecule 70: 60S ribosomal protein uL3



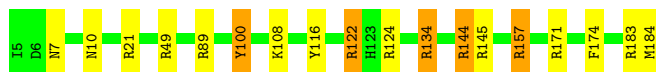
- Molecule 71: 60S ribosomal protein uL4



- Molecule 72: 60S ribosomal protein uL5




- Molecule 73: 60S ribosomal protein eL20

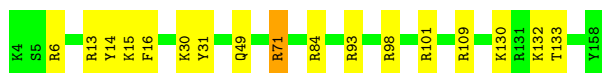


- Molecule 74: 60S ribosomal protein uL6



- Molecule 75: 60S ribosomal protein eL21

Chain AV:  89% 10%



- Molecule 76: 60S ribosomal protein eL41

Chain Ag:  70% 24% 5%



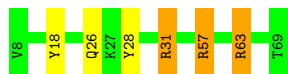
- Molecule 77: 60S ribosomal protein eL22

Chain AX:  94% 6%



- Molecule 78: 60S ribosomal protein eL24

Chain A0:  90% 5% 5%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	14696	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	Each micrograph	Depositor
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	25	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	3500	Depositor
Magnification	30120	Depositor
Image detector	GATAN K2 (4k x 4k)	Depositor

5 Model quality i

5.1 Standard geometry i

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	1.10	4/38275 (0.0%)	1.54	870/59596 (1.5%)
2	7	1.12	0/1810	1.64	62/2821 (2.2%)
3	D	0.76	0/1241	1.05	5/1652 (0.3%)
4	E	0.72	0/1539	1.14	14/2055 (0.7%)
5	G	0.70	0/1800	1.03	10/2429 (0.4%)
6	I	0.71	0/1443	1.10	12/1936 (0.6%)
7	K	0.72	0/1054	1.09	4/1411 (0.3%)
8	M	0.72	0/1114	1.12	8/1487 (0.5%)
9	W	0.72	0/793	1.14	5/1053 (0.5%)
10	R	0.75	0/755	0.94	0/1013
11	O	0.74	0/706	1.02	4/950 (0.4%)
12	Y	0.71	0/1295	1.15	10/1742 (0.6%)
13	Z	0.70	0/565	0.99	2/758 (0.3%)
14	1	0.72	0/999	1.17	9/1321 (0.7%)
15	2	0.76	0/324	1.01	3/435 (0.7%)
16	3	0.75	0/794	1.32	14/1055 (1.3%)
17	4	0.66	0/597	1.01	2/801 (0.2%)
18	5	0.78	0/459	1.24	5/606 (0.8%)
19	6	0.75	0/349	1.21	5/458 (1.1%)
20	B	0.67	0/1738	1.11	8/2321 (0.3%)
21	F	0.68	0/2098	1.11	18/2819 (0.6%)
22	H	0.69	0/1665	1.09	11/2210 (0.5%)
23	J	0.69	0/1545	1.07	8/2064 (0.4%)
24	L	0.73	0/1407	1.18	12/1879 (0.6%)
25	N	0.68	0/780	1.17	5/1053 (0.5%)
26	P	0.70	0/966	1.26	14/1295 (1.1%)
27	Q	0.72	0/1149	1.19	13/1532 (0.8%)
28	S	0.65	0/1063	1.17	10/1425 (0.7%)
29	T	0.76	0/412	1.13	3/544 (0.6%)
30	U	0.70	0/1223	1.03	6/1634 (0.4%)
31	V	0.74	0/1233	1.06	8/1645 (0.5%)
32	X	0.71	0/788	1.17	7/1050 (0.7%)
33	C	0.68	0/1570	1.04	4/2129 (0.2%)
34	AA	1.11	8/75947 (0.0%)	1.54	1829/118255 (1.5%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
35	AC	1.13	0/3599	1.55	91/5603 (1.6%)
36	AB	1.11	2/2823 (0.1%)	1.50	67/4400 (1.5%)
37	AL	0.70	0/1789	1.16	13/2381 (0.5%)
38	A1	0.71	0/1151	1.02	5/1531 (0.3%)
39	A2	0.73	0/840	0.97	1/1114 (0.1%)
40	A4	0.67	0/564	0.99	0/737
41	A6	0.71	0/749	0.98	1/1001 (0.1%)
42	A7	0.72	0/806	1.20	9/1073 (0.8%)
43	AN	0.70	0/1218	1.04	3/1621 (0.2%)
44	A8	0.71	0/1054	1.25	11/1399 (0.8%)
45	A9	0.72	0/865	1.24	12/1160 (1.0%)
46	Aa	0.70	0/872	1.24	12/1161 (1.0%)
47	Ab	0.72	0/763	1.11	4/1008 (0.4%)
48	Ad	0.72	0/612	1.14	5/812 (0.6%)
49	Ae	0.81	0/396	1.27	4/521 (0.8%)
50	Af	0.71	0/419	1.06	2/556 (0.4%)
51	AP	0.72	0/1735	1.24	26/2320 (1.1%)
52	Ah	0.69	0/668	1.10	2/887 (0.2%)
53	Ai	0.69	0/789	1.14	8/1032 (0.8%)
54	AI	0.68	0/1708	1.01	5/2274 (0.2%)
55	AJ	0.68	0/1840	1.02	6/2456 (0.2%)
56	Ac	0.74	0/723	1.24	9/951 (0.9%)
57	AK	0.70	0/1690	1.11	12/2260 (0.5%)
58	AM	0.69	0/1012	1.12	9/1363 (0.7%)
59	AS	0.71	0/1531	1.24	25/2040 (1.2%)
60	AO	0.70	0/1199	1.13	11/1597 (0.7%)
61	AQ	0.75	0/1580	1.21	20/2113 (0.9%)
62	AR	0.72	0/2079	1.15	19/2777 (0.7%)
63	AW	0.71	0/1244	1.18	14/1663 (0.8%)
64	AY	0.66	0/806	1.03	4/1074 (0.4%)
65	AT	0.70	0/1525	1.09	12/2016 (0.6%)
66	AZ	0.71	0/1013	1.20	12/1339 (0.9%)
67	A3	0.70	0/1005	1.09	9/1329 (0.7%)
68	A5	0.72	0/1917	1.15	21/2562 (0.8%)
69	AD	0.68	0/1902	1.17	18/2544 (0.7%)
70	AE	0.70	0/3130	1.14	23/4195 (0.5%)
71	AF	0.70	0/3145	1.10	23/4205 (0.5%)
72	AG	0.76	0/1021	1.14	9/1349 (0.7%)
73	AU	0.73	0/1527	1.18	13/2043 (0.6%)
74	AH	0.67	0/1501	1.14	11/2025 (0.5%)
75	AV	0.69	0/1301	1.18	12/1732 (0.7%)
76	Ag	0.80	0/348	1.54	10/448 (2.2%)
77	AX	0.72	0/842	1.10	8/1125 (0.7%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
78	A0	0.79	0/534	1.19	5/711 (0.7%)
All	All	0.96	14/207331 (0.0%)	1.40	3596/303942 (1.2%)

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	A	0	127
2	7	0	8
4	E	0	7
5	G	0	1
6	I	0	2
7	K	0	3
8	M	0	3
9	W	0	2
12	Y	0	3
14	1	0	3
15	2	0	1
16	3	0	3
18	5	0	2
19	6	0	3
20	B	1	5
21	F	0	3
22	H	0	2
23	J	0	4
24	L	0	4
25	N	0	1
26	P	0	3
27	Q	0	3
28	S	0	1
29	T	0	5
30	U	0	1
31	V	0	4
32	X	0	3
33	C	0	2
34	AA	1	304
35	AC	0	10
36	AB	0	9
37	AL	0	6
38	A1	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
40	A4	0	1
41	A6	0	1
42	A7	0	3
43	AN	0	5
44	A8	0	4
45	A9	0	2
46	Aa	0	3
47	Ab	0	1
48	Ad	0	1
49	Ae	0	2
50	Af	0	2
51	AP	0	7
52	Ah	0	1
53	Ai	0	1
54	AI	0	4
55	AJ	0	2
56	Ac	0	4
57	AK	0	7
58	AM	0	3
59	AS	0	7
60	AO	0	3
61	AQ	0	6
62	AR	0	4
63	AW	0	4
64	AY	0	1
65	AT	0	4
66	AZ	0	5
67	A3	0	1
68	A5	0	5
69	AD	0	1
70	AE	0	7
71	AF	0	10
72	AG	0	3
73	AU	0	5
75	AV	0	3
76	Ag	0	2
78	A0	0	4
All	All	2	668

The worst 5 of 14 bond length outliers are listed below:

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
36	AB	28	C	P-O5'	-6.19	1.53	1.59
1	A	1819	U	C5'-C4'	5.69	1.58	1.51
36	AB	5	U	O3'-P	-5.30	1.54	1.61
1	A	1853	A	P-O5'	-5.29	1.54	1.59
34	AA	211	U	N1-C2	-5.23	1.33	1.38

The worst 5 of 3596 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1659	U	P-O3'-C3'	16.14	139.06	119.70
1	A	981	U	P-O3'-C3'	15.61	138.43	119.70
34	AA	811	A	P-O3'-C3'	15.26	138.02	119.70
1	A	1865	G	P-O3'-C3'	13.78	136.24	119.70
1	A	1912	C	P-O3'-C3'	13.59	136.01	119.70

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
20	B	225	ILE	CB
34	AA	3018	A	C3'

5 of 668 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	129	U	Sidechain
1	A	143	A	Sidechain
1	A	39	A	Sidechain
1	A	44	U	Sidechain
1	A	84	A	Sidechain

5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	D	149/209 (71%)	144 (97%)	3 (2%)	2 (1%)	12	48
4	E	183/185 (99%)	175 (96%)	6 (3%)	2 (1%)	14	52
5	G	222/224 (99%)	206 (93%)	14 (6%)	2 (1%)	17	56
6	I	176/189 (93%)	161 (92%)	12 (7%)	3 (2%)	9	43
7	K	127/129 (98%)	118 (93%)	7 (6%)	2 (2%)	9	45
8	M	136/138 (99%)	127 (93%)	5 (4%)	4 (3%)	4	32
9	W	91/108 (84%)	84 (92%)	6 (7%)	1 (1%)	14	52
10	R	92/114 (81%)	80 (87%)	10 (11%)	2 (2%)	6	37
11	O	77/79 (98%)	67 (87%)	4 (5%)	6 (8%)	1	15
12	Y	152/154 (99%)	137 (90%)	11 (7%)	4 (3%)	5	34
13	Z	70/72 (97%)	65 (93%)	4 (6%)	1 (1%)	11	47
14	1	118/120 (98%)	111 (94%)	4 (3%)	3 (2%)	5	35
15	2	35/68 (52%)	31 (89%)	3 (9%)	1 (3%)	4	32
16	3	93/95 (98%)	81 (87%)	11 (12%)	1 (1%)	14	52
17	4	74/76 (97%)	65 (88%)	7 (10%)	2 (3%)	5	34
18	5	54/65 (83%)	53 (98%)	1 (2%)	0	100	100
19	6	41/43 (95%)	35 (85%)	5 (12%)	1 (2%)	6	35
20	B	208/210 (99%)	186 (89%)	19 (9%)	3 (1%)	11	47
21	F	255/257 (99%)	238 (93%)	13 (5%)	4 (2%)	9	45
22	H	200/214 (94%)	191 (96%)	8 (4%)	1 (0%)	29	68
23	J	186/188 (99%)	176 (95%)	5 (3%)	5 (3%)	5	34
24	L	165/214 (77%)	147 (89%)	14 (8%)	4 (2%)	6	35
25	N	96/98 (98%)	91 (95%)	3 (3%)	2 (2%)	7	38
26	P	125/127 (98%)	114 (91%)	8 (6%)	3 (2%)	6	35
27	Q	142/144 (99%)	130 (92%)	7 (5%)	5 (4%)	3	28

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
28	S	126/128 (98%)	108 (86%)	14 (11%)	4 (3%)	4	30
29	T	46/48 (96%)	44 (96%)	2 (4%)	0	100	100
30	U	147/149 (99%)	142 (97%)	4 (3%)	1 (1%)	22	62
31	V	142/156 (91%)	129 (91%)	10 (7%)	3 (2%)	7	38
32	X	92/103 (89%)	78 (85%)	10 (11%)	4 (4%)	2	25
33	C	193/195 (99%)	181 (94%)	9 (5%)	3 (2%)	9	45
37	AL	209/211 (99%)	190 (91%)	16 (8%)	3 (1%)	11	47
38	A1	136/145 (94%)	127 (93%)	7 (5%)	2 (2%)	10	46
39	A2	96/118 (81%)	89 (93%)	5 (5%)	2 (2%)	7	38
40	A4	64/66 (97%)	58 (91%)	4 (6%)	2 (3%)	4	30
41	A6	96/98 (98%)	93 (97%)	3 (3%)	0	100	100
42	A7	92/102 (90%)	89 (97%)	3 (3%)	0	100	100
43	AN	144/146 (99%)	140 (97%)	2 (1%)	2 (1%)	11	47
44	A8	123/125 (98%)	114 (93%)	8 (6%)	1 (1%)	19	60
45	A9	101/103 (98%)	92 (91%)	9 (9%)	0	100	100
46	Aa	104/106 (98%)	99 (95%)	5 (5%)	0	100	100
47	Ab	91/105 (87%)	85 (93%)	5 (6%)	1 (1%)	14	52
48	Ad	68/76 (90%)	68 (100%)	0	0	100	100
49	Ae	39/50 (78%)	39 (100%)	0	0	100	100
50	Af	49/51 (96%)	46 (94%)	3 (6%)	0	100	100
51	AP	202/204 (99%)	183 (91%)	14 (7%)	5 (2%)	5	35
52	Ah	83/85 (98%)	76 (92%)	5 (6%)	2 (2%)	6	35
53	Ai	93/95 (98%)	87 (94%)	5 (5%)	1 (1%)	14	52
54	AI	203/213 (95%)	187 (92%)	14 (7%)	2 (1%)	15	54
55	AJ	216/244 (88%)	196 (91%)	13 (6%)	7 (3%)	4	30
56	Ac	87/89 (98%)	74 (85%)	12 (14%)	1 (1%)	14	52
57	AK	199/201 (99%)	191 (96%)	6 (3%)	2 (1%)	15	54
58	AM	130/132 (98%)	121 (93%)	9 (7%)	0	100	100
59	AS	184/186 (99%)	171 (93%)	12 (6%)	1 (0%)	29	68
60	AO	145/147 (99%)	132 (91%)	10 (7%)	3 (2%)	7	38
61	AQ	185/205 (90%)	170 (92%)	12 (6%)	3 (2%)	9	45

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
62	AR	244/289 (84%)	224 (92%)	13 (5%)	7 (3%)	4	32
63	AW	149/170 (88%)	135 (91%)	12 (8%)	2 (1%)	12	48
64	AY	99/101 (98%)	97 (98%)	2 (2%)	0	100	100
65	AT	179/181 (99%)	173 (97%)	5 (3%)	1 (1%)	25	65
66	AZ	119/121 (98%)	113 (95%)	5 (4%)	1 (1%)	19	60
67	A3	117/119 (98%)	108 (92%)	9 (8%)	0	100	100
68	A5	221/223 (99%)	201 (91%)	15 (7%)	5 (2%)	6	36
69	AD	245/247 (99%)	230 (94%)	14 (6%)	1 (0%)	34	72
70	AE	378/380 (100%)	346 (92%)	26 (7%)	6 (2%)	9	45
71	AF	388/390 (100%)	363 (94%)	21 (5%)	4 (1%)	15	54
72	AG	116/159 (73%)	107 (92%)	6 (5%)	3 (3%)	5	34
73	AU	178/180 (99%)	167 (94%)	9 (5%)	2 (1%)	14	52
74	AH	183/185 (99%)	168 (92%)	12 (7%)	3 (2%)	9	45
75	AV	153/155 (99%)	141 (92%)	9 (6%)	3 (2%)	7	40
76	Ag	35/37 (95%)	29 (83%)	5 (14%)	1 (3%)	4	32
77	AX	95/97 (98%)	90 (95%)	4 (4%)	1 (1%)	14	52
78	A0	60/62 (97%)	57 (95%)	2 (3%)	1 (2%)	9	43
All	All	10111/10698 (94%)	9361 (93%)	590 (6%)	160 (2%)	13	45

5 of 160 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
7	K	120	HIS
8	M	41	GLU
9	W	4	VAL
10	R	42	ILE
12	Y	55	LYS

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	D	132/177 (75%)	129 (98%)	3 (2%)	50	70
4	E	161/164 (98%)	159 (99%)	2 (1%)	71	84
5	G	191/191 (100%)	185 (97%)	6 (3%)	40	62
6	I	154/160 (96%)	150 (97%)	4 (3%)	46	67
7	K	115/115 (100%)	112 (97%)	3 (3%)	46	67
8	M	116/116 (100%)	114 (98%)	2 (2%)	60	78
9	W	86/99 (87%)	83 (96%)	3 (4%)	36	60
10	R	83/97 (86%)	83 (100%)	0	100	100
11	O	76/76 (100%)	74 (97%)	2 (3%)	46	67
12	Y	137/137 (100%)	131 (96%)	6 (4%)	28	54
13	Z	60/60 (100%)	60 (100%)	0	100	100
14	1	104/104 (100%)	102 (98%)	2 (2%)	57	75
15	2	35/61 (57%)	34 (97%)	1 (3%)	42	64
16	3	87/87 (100%)	87 (100%)	0	100	100
17	4	70/70 (100%)	67 (96%)	3 (4%)	29	54
18	5	47/52 (90%)	45 (96%)	2 (4%)	29	54
19	6	36/36 (100%)	35 (97%)	1 (3%)	43	65
20	B	195/195 (100%)	192 (98%)	3 (2%)	65	80
21	F	233/233 (100%)	230 (99%)	3 (1%)	69	82
22	H	182/190 (96%)	178 (98%)	4 (2%)	52	71
23	J	177/177 (100%)	176 (99%)	1 (1%)	86	92
24	L	151/190 (80%)	148 (98%)	3 (2%)	55	73
25	N	91/91 (100%)	88 (97%)	3 (3%)	38	61
26	P	99/99 (100%)	95 (96%)	4 (4%)	31	56
27	Q	120/120 (100%)	117 (98%)	3 (2%)	47	68
28	S	114/114 (100%)	108 (95%)	6 (5%)	22	49
29	T	43/43 (100%)	41 (95%)	2 (5%)	26	52
30	U	132/132 (100%)	129 (98%)	3 (2%)	50	70
31	V	131/140 (94%)	127 (97%)	4 (3%)	40	62
32	X	88/94 (94%)	87 (99%)	1 (1%)	73	85
33	C	167/167 (100%)	164 (98%)	3 (2%)	59	77
37	AL	190/190 (100%)	187 (98%)	3 (2%)	62	79

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
38	A1	127/131 (97%)	124 (98%)	3 (2%)	49	69
39	A2	97/109 (89%)	93 (96%)	4 (4%)	30	56
40	A4	60/60 (100%)	60 (100%)	0	100	100
41	A6	83/83 (100%)	81 (98%)	2 (2%)	49	69
42	A7	90/96 (94%)	89 (99%)	1 (1%)	73	85
43	AN	135/135 (100%)	131 (97%)	4 (3%)	41	63
44	A8	114/114 (100%)	109 (96%)	5 (4%)	28	54
45	A9	90/90 (100%)	89 (99%)	1 (1%)	73	85
46	Aa	89/89 (100%)	84 (94%)	5 (6%)	21	48
47	Ab	82/92 (89%)	80 (98%)	2 (2%)	49	69
48	Ad	69/73 (94%)	68 (99%)	1 (1%)	67	81
49	Ae	40/47 (85%)	38 (95%)	2 (5%)	24	51
50	Af	45/45 (100%)	44 (98%)	1 (2%)	52	71
51	AP	179/179 (100%)	173 (97%)	6 (3%)	37	61
52	Ah	70/70 (100%)	69 (99%)	1 (1%)	67	81
53	Ai	87/87 (100%)	83 (95%)	4 (5%)	27	53
54	AI	189/195 (97%)	186 (98%)	3 (2%)	62	79
55	AJ	204/224 (91%)	199 (98%)	5 (2%)	47	68
56	Ac	74/74 (100%)	71 (96%)	3 (4%)	30	56
57	AK	181/181 (100%)	178 (98%)	3 (2%)	60	78
58	AM	106/106 (100%)	105 (99%)	1 (1%)	78	88
59	AS	158/158 (100%)	156 (99%)	2 (1%)	69	82
60	AO	121/121 (100%)	113 (93%)	8 (7%)	16	43
61	AQ	165/176 (94%)	161 (98%)	4 (2%)	49	69
62	AR	215/250 (86%)	208 (97%)	7 (3%)	38	61
63	AW	128/128 (100%)	127 (99%)	1 (1%)	81	89
64	AY	90/90 (100%)	88 (98%)	2 (2%)	52	71
65	AT	162/162 (100%)	162 (100%)	0	100	100
66	AZ	111/111 (100%)	110 (99%)	1 (1%)	78	88
67	A3	110/110 (100%)	107 (97%)	3 (3%)	44	66
68	A5	201/201 (100%)	195 (97%)	6 (3%)	41	63

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
69	AD	191/191 (100%)	184 (96%)	7 (4%)	34	59
70	AE	335/335 (100%)	325 (97%)	10 (3%)	41	63
71	AF	336/336 (100%)	323 (96%)	13 (4%)	32	57
72	AG	110/142 (78%)	108 (98%)	2 (2%)	59	77
73	AU	162/162 (100%)	156 (96%)	6 (4%)	34	59
74	AH	168/168 (100%)	163 (97%)	5 (3%)	41	63
75	AV	140/140 (100%)	136 (97%)	4 (3%)	42	64
76	Ag	34/34 (100%)	33 (97%)	1 (3%)	42	64
77	AX	92/92 (100%)	92 (100%)	0	100	100
78	A0	53/53 (100%)	52 (98%)	1 (2%)	57	75
All	All	9096/9417 (97%)	8870 (98%)	226 (2%)	50	68

5 of 226 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
49	Ae	48	LYS
75	AV	15	LYS
59	AS	18	HIS
74	AH	131	VAL
71	AF	140	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 32 such sidechains are listed below:

Mol	Chain	Res	Type
70	AE	310	HIS
72	AG	20	ASN
44	A8	107	GLN
40	A4	17	HIS
73	AU	114	GLN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	1586/1608 (98%)	481 (30%)	89 (5%)
2	7	75/76 (98%)	13 (17%)	2 (2%)
34	AA	3168/3193 (99%)	979 (30%)	187 (5%)

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
35	AC	148/151 (98%)	50 (33%)	9 (6%)
36	AB	117/118 (99%)	27 (23%)	1 (0%)
All	All	5094/5146 (98%)	1550 (30%)	288 (5%)

5 of 1550 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	3	C
1	A	5	U
1	A	17	C
1	A	25	C
1	A	26	A

5 of 288 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
34	AA	2966	C
35	AC	145	A
34	AA	3137	U
34	AA	3576	A
34	AA	138	C

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

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

The following chains have linkage breaks:

Mol	Chain	Number of breaks
63	AW	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	AW	154:ASN	C	197:UNK	N	33.92

6 Map visualisation

This section contains visualisations of the EMDB entry EMD-6456. 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

This section was not generated.

6.2 Central slices

This section was not generated.

6.3 Largest variance slices

This section was not generated.

6.4 Orthogonal standard-deviation projections (False-color)

This section was not generated.

6.5 Orthogonal surface views

This section was not generated.

6.6 Mask visualisation

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

This section was not generated.

7.2 Volume estimate versus contour level

This section was not generated.

7.3 Rotationally averaged power spectrum

This section was not generated. The rotationally averaged power spectrum had issues being displayed.

8 Fourier-Shell correlation

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

9 Map-model fit

This section was not generated.