WORLDWIDE PDB

PROTEIN DATA BANK

wwPDB EM Validation Summary Report (i)

Feb 9, 2026 – 11:49 AM EST

PDB ID	:	9Y44 / pdb_00009y44
EMDB ID	:	EMD-72470
Title	:	Structure of naked mole-rat ribosome (rotated, tRNAs, and mRNA)
Authors	:	Gutierrez-Vargas, C.; De, S.; Maji, S.; Liu, Z.; Nieb, M.; Seluanov, A.; Gorbunova, V.; Frank, J.
Deposited on	:	2025-09-02
Resolution	:	4.90 Å(reported)
Based on initial models	:	7o7y, 4v6x

The following versions of software and data (see references (i)) were used in the production of this report:

EMDB validation analysis	:	0.0.1.dev131
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.48

1   Overall quality at a glance   ⓘ

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

The reported resolution of this entry is 4.90 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.
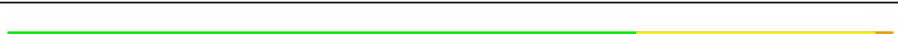
Metric	Percentile Ranks	Value
Clashscore		10
Ramachandran outliers		0.1%
Sidechain outliers		3.3%
RNA backbone		0.32

Worse   Better

▮ Percentile relative to all structures

▯ Percentile relative to all EM structures

Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.237

Worse   Better

▮ Percentile relative to all EM structures

▯ Percentile relative to EM structures of similar resolution

Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
RNA backbone	6643	2191	-
Q-score	-	25397	1274 (4.40 - 5.40)

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.
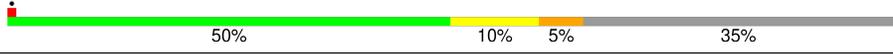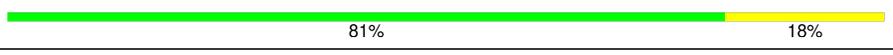
Mol	Chain	Length	Quality of chain
1	A5	1717	40% 46% 14% •
2	A7	120	62% 32% 5%
3	A8	156	44% 43% 13%

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Mol	Chain	Length	Quality of chain
4	B2	1804	42% 45% 12%
5	A6	2092	46% 43% 11%
6	A	248	80% 19%
7	n	25	52% 48%
8	B	398	75% 24%
9	C	363	73% 25%
10	D	293	75% 23%
11	E	224	69% 28%
12	F	225	74% 24%
13	G	215	77% 21%
14	H	190	75% 23%
15	I	213	71% 20% 7%
16	J	170	79% 21%
17	L	205	74% 25%
18	M	136	74% 23%
19	N	203	79% 20%
20	O	199	72% 23%
21	P	153	72% 24%
22	Q	187	69% 30%
23	S	176	71% 27%
24	T	159	76% 23%
25	U	99	74% 22%
26	V	131	68% 30%
27	X	118	76% 24%
28	Y	134	69% 29%

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Mol	Chain	Length	Quality of chain
29	Z	135	84% 15%
30	a	147	73% 27%
31	b	100	50% 10% 5% 35%
32	d	107	84% 16%
33	e	128	73% 26%
34	f	110	72% 26%
35	g	110	65% 31% 5%
36	h	121	68% 31%
37	i	102	70% 29%
38	j	86	79% 19%
39	k	69	78% 20%
40	l	50	82% 16%
41	m	51	75% 24%
42	o	105	70% 25% 6%
43	p	91	76% 23%
44	r	127	72% 25%
45	s	103	8% 69% 26% 5%
46	t	156	43% 69% 28%
47	cc	61	74% 26%
48	ff	67	73% 19%
49	gg	313	76% 23%
50	dd	55	67% 25% 7%
51	AA	214	81% 18%
52	BB	218	81% 17%
53	DD	225	84% 16%

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Mol	Chain	Length	Quality of chain
54	FF	189	79% 16%
55	KK	96	73% 24%
56	MM	124	13% 78% 21%
57	OO	134	69% 28%
58	PP	118	70% 28%
59	QQ	141	74% 23%
60	RR	132	80% 19%
61	SS	145	73% 26%
62	TT	141	80% 18%
63	UU	99	85% 14%
64	ZZ	75	80% 19%
65	bb	82	77% 21%
66	ee	49	65% 35%
67	aa	98	78% 22%
68	CC	218	74% 24%
69	EE	262	81% 19%
70	GG	228	78% 21%
71	HH	190	77% 19%
72	II	206	79% 20%
73	JJ	180	68% 30%
74	LL	149	73% 21% 5%
75	NN	149	80% 20%
76	VV	83	83% 17%
77	WW	129	83% 16%
78	XX	122	93% 7%
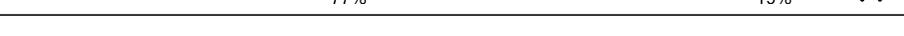
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Mol	Chain	Length	Quality of chain
79	YY	125	72% 26%
80	W	180	72% 24%
81	c	121	58% 35% 7%
82	u	100	6% 55% 36% 9%
83	Cc	76	45% 41% 11%
84	Bb	65	37% 40% 49% 11%
85	Dd	13	62% 38%

2 Entity composition ⓘ

There are 88 unique types of molecules in this entry. The entry contains 219186 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 LSU alpha rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A5	1717	Total 36275	C 16121	N 6621	O 11816	P 1717	0	0

- Molecule 2 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	A7	120	Total 2558	C 1140	N 453	O 845	P 120	0	0

- Molecule 3 is a RNA chain called 5.8S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	A8	156	Total 3317	C 1480	N 584	O 1097	P 156	0	0

- Molecule 4 is a RNA chain called 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	B2	1804	Total 37897	C 16889	N 6738	O 12466	P 1804	0	0

- Molecule 5 is a RNA chain called LSU beta rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	A6	2092	Total 43564	C 19354	N 7784	O 14334	P 2092	0	0

- Molecule 6 is a protein called Large ribosomal subunit protein uL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	A	248	Total 1648	C 1036	N 305	O 301	S 6	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	72	LYS	ARG	conflict	UNP A0A0P6J3A4
A	123	LYS	ARG	conflict	UNP A0A0P6J3A4
A	128	LYS	ARG	conflict	UNP A0A0P6J3A4
A	147	LYS	ARG	conflict	UNP A0A0P6J3A4

- Molecule 7 is a protein called 60S ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	n	25	239	145	64	27	3	0	0

- Molecule 8 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	B	398	3206	2042	605	546	13	0	0

- Molecule 9 is a protein called Large ribosomal subunit protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	C	363	2884	1815	576	479	14	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	1	ACE	-	acetylation	UNP G5AN81
C	262	ASP	GLU	conflict	UNP G5AN81
C	362	GLY	-	expression tag	UNP G5AN81
C	363	GLY	-	expression tag	UNP G5AN81

- Molecule 10 is a protein called Large ribosomal subunit protein uL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	D	293	2389	1511	437	427	14	0	0

- Molecule 11 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	E	224	Total 1789	C 1149	N 340	O 297	S 3	0	0

- Molecule 12 is a protein called 60S ribosomal protein L7.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	F	225	Total 1875	C 1205	N 358	O 303	S 9	0	0

- Molecule 13 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	G	215	Total 1741	C 1111	N 333	O 293	S 4	0	0

- Molecule 14 is a protein called 60S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	H	190	Total 1516	C 954	N 284	O 272	S 6	0	0

- Molecule 15 is a protein called 60S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	I	199	Total 1620	C 1029	N 313	O 266	S 12	0	0

- Molecule 16 is a protein called Large ribosomal subunit protein uL5.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	J	170	Total 1362	C 861	N 254	O 241	S 6	0	0

- Molecule 17 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	L	205	Total 1658	C 1037	N 346	O 271	S 4	0	0

- Molecule 18 is a protein called Large ribosomal subunit protein eL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	M	136	Total 1125	C 720	N 220	O 178	S 7	0	0

- Molecule 19 is a protein called Ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	N	203	Total 1701	C 1072	N 359	O 266	S 4	0	0

- Molecule 20 is a protein called 60S ribosomal protein L13a.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	O	199	Total 1630	C 1051	N 319	O 255	S 5	0	0

- Molecule 21 is a protein called 60S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	P	153	Total 1242	C 777	N 241	O 215	S 9	0	0

- Molecule 22 is a protein called 60S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	Q	187	Total 1512	C 946	N 313	O 249	S 4	0	0

- Molecule 23 is a protein called Large ribosomal subunit protein eL20.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	S	176	Total 1461	C 930	N 284	O 236	S 11	0	0

- Molecule 24 is a protein called Large ribosomal subunit protein eL21.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	T	159	Total 1298	C 823	N 252	O 217	S 6	0	0

- Molecule 25 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	U	99	Total 808	C 518	N 141	O 147	S 2	0	0

- Molecule 26 is a protein called Large ribosomal subunit protein uL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	V	131	Total 979	C 618	N 184	O 172	S 5	0	0

- Molecule 27 is a protein called Large ribosomal subunit protein uL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	X	118	Total 967	C 618	N 181	O 167	S 1	0	0

- Molecule 28 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	Y	134	Total 1115	C 700	N 226	O 186	S 3	0	0

- Molecule 29 is a protein called 60S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	Z	135	Total 1107	C 714	N 208	O 182	S 3	0	0

- Molecule 30 is a protein called 60S ribosomal protein L27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	a	147	Total 1163	C 734	N 239	O 186	S 4	0	0

- Molecule 31 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	b	65	Total 545	C 338	N 122	O 84	S 1	0	0

- Molecule 32 is a protein called Large ribosomal subunit protein eL31.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	d	107	Total 888	C 560	N 171	O 155	S 2	0	0

- Molecule 33 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	e	128	Total 1053	C 667	N 216	O 165	S 5	0	0

- Molecule 34 is a protein called Large ribosomal subunit protein eL33.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	f	110	Total 884	C 560	N 175	O 144	S 5	0	0

- Molecule 35 is a protein called Large ribosomal subunit protein eL34.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	g	110	Total 873	C 547	N 180	O 140	S 6	0	0

- Molecule 36 is a protein called Large ribosomal subunit protein uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	h	121	Total 1011	C 640	N 204	O 166	S 1	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
h	119	TYR	PHE	conflict	UNP G5B6W3

- Molecule 37 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	i	102	Total 830	C 520	N 176	O 129	S 5	0	0

- Molecule 38 is a protein called Ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	j	86	Total 705	C 434	N 155	O 111	S 5	0	0

- Molecule 39 is a protein called Large ribosomal subunit protein eL38.

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

- Molecule 40 is a protein called Large ribosomal subunit protein eL39.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	l	50	Total 444	C 281	N 98	O 64	S 1	0	0

- Molecule 41 is a protein called Ubiquitin-ribosomal protein eL40 fusion protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	m	51	Total 422	C 263	N 88	O 65	S 6	0	0

- Molecule 42 is a protein called 60S ribosomal protein L36a.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	o	105	Total 863	C 543	N 175	O 139	S 6	0	0

- Molecule 43 is a protein called Large ribosomal subunit protein eL43.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	p	91	Total 708	C 445	N 136	O 120	S 7	0	0

- Molecule 44 is a protein called Large ribosomal subunit protein eL28.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	r	127	Total 1015	C 630	N 209	O 170	S 6	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
r	1	ACE	-	acetylation	UNP G5BVZ2

- Molecule 45 is a protein called 60S acidic ribosomal protein P0.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	s	103	Total	C	N	O	S	0	0
			825	525	150	143	7		

- Molecule 46 is a protein called 60S ribosomal protein L12.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	t	156	Total	C	N	O	S	0	0
			1178	733	221	220	4		

- Molecule 47 is a protein called 40S ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	cc	61	Total	C	N	O	S	0	0
			479	292	95	90	2		

- Molecule 48 is a protein called Ubiquitin-ribosomal protein eS31 fusion protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	ff	67	Total	C	N	O	S	0	0
			548	346	102	93	7		

- Molecule 49 is a protein called Small ribosomal subunit protein RACK1.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	gg	313	Total	C	N	O	S	0	0
			2436	1535	424	465	12		

- Molecule 50 is a protein called Small ribosomal subunit protein uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	dd	55	Total	C	N	O	S	0	0
			459	286	94	74	5		

- Molecule 51 is a protein called Small ribosomal subunit protein uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	AA	214	Total	C	N	O	S	0	0
			1689	1074	295	312	8		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AA	1	ACE	-	acetylation	UNP A0A0P6K1L6

- Molecule 52 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	BB	218	Total	C	N	O	S	0	0
			1768	1120	320	314	14		

- Molecule 53 is a protein called Small ribosomal subunit protein uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	DD	225	Total	C	N	O	S	0	0
			1751	1116	315	313	7		

- Molecule 54 is a protein called Small ribosomal subunit protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	FF	184	Total	C	N	O	S	0	0
			1461	914	276	264	7		

- Molecule 55 is a protein called Small ribosomal subunit protein eS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	KK	96	Total	C	N	O	S	0	0
			810	530	143	131	6		

- Molecule 56 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	MM	124	Total	C	N	O	S	0	0
			958	600	170	179	9		

- Molecule 57 is a protein called 40S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	OO	134	Total	C	N	O	S	0	0
			1002	612	197	187	6		

- Molecule 58 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	PP	118	Total	C	N	O	S	0	0
			979	621	185	166	7		

- Molecule 59 is a protein called Small ribosomal subunit protein uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	QQ	141	Total	C	N	O	S	0	0
			1124	715	212	194	3		

- Molecule 60 is a protein called Small ribosomal subunit protein eS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	RR	132	Total	C	N	O	S	0	0
			1068	670	199	195	4		

- Molecule 61 is a protein called Small ribosomal subunit protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	SS	145	Total	C	N	O	S	0	0
			1193	748	241	203	1		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
SS	1	ACE	-	acetylation	UNP G5BAZ4

- Molecule 62 is a protein called Small ribosomal subunit protein eS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	TT	141	Total	C	N	O	S	0	0
			1097	687	211	196	3		

- Molecule 63 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	UU	99	Total	C	N	O	S	0	0
			790	495	151	140	4		

- Molecule 64 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	ZZ	75	Total	C	N	O	S	0	0
			598	382	111	104	1		

- Molecule 65 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	bb	82	Total	C	N	O	S	0	0
			640	402	118	113	7		

- Molecule 66 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	ee	49	Total	C	N	O	S	0	0
			398	243	90	64	1		

- Molecule 67 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	aa	98	Total	C	N	O	S	0	0
			781	486	161	129	5		

- Molecule 68 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	CC	218	Total	C	N	O	S	0	0
			1689	1095	289	296	9		

- Molecule 69 is a protein called 40S ribosomal protein S4, X isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	EE	262	Total	C	N	O	S	0	0
			2076	1324	386	358	8		

- Molecule 70 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	GG	228	Total 1848	C 1155	N 368	O 318	S 7	0	0

- Molecule 71 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	HH	184	Total 1490	C 953	N 271	O 265	S 1	0	0

- Molecule 72 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	II	206	Total 1686	C 1058	N 332	O 291	S 5	0	0

- Molecule 73 is a protein called Small ribosomal subunit protein uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	JJ	180	Total 1499	C 955	N 300	O 242	S 2	0	0

- Molecule 74 is a protein called Small ribosomal subunit protein uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	LL	141	Total 1157	C 737	N 218	O 196	S 6	0	0

- Molecule 75 is a protein called Small ribosomal subunit protein uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	NN	149	Total 1202	C 770	N 228	O 203	S 1	0	0

- Molecule 76 is a protein called 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	VV	83	Total 637	C 392	N 117	O 123	S 5	0	0

- Molecule 77 is a protein called Small ribosomal subunit protein uS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	WW	129	Total 1034	C 659	N 193	O 176	S 6	0	0

- Molecule 78 is a protein called 40S ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	XX	122	Total 810	C 510	N 150	O 147	S 3	0	0

- Molecule 79 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	YY	125	Total 1015	C 642	N 199	O 169	S 5	0	0

- Molecule 80 is a protein called Ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	W	180	Total 1508	C 933	N 328	O 238	S 9	0	0

- Molecule 81 is a protein called Large ribosomal subunit protein eL24.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	c	113	Total 921	C 575	N 190	O 153	S 3	0	0

- Molecule 82 is a protein called Large ribosomal subunit protein eL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
82	u	100	Total 775	C 491	N 136	O 141	S 7	0	0

- Molecule 83 is a RNA chain called P/E tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
83	Cc	76	Total 1623	C 723	N 295	O 529	P 76	0	0

- Molecule 84 is a RNA chain called tRNA (65-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
84	Bb	65	Total	C	N	O	P	0	0
			1409	633	258	453	65		

- Molecule 85 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
85	Dd	13	Total	C	N	O	P	0	0
			260	117	26	104	13		

- Molecule 86 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
86	A5	9	Total	Mg	0
			9	9	
86	A7	4	Total	Mg	0
			4	4	
86	A8	4	Total	Mg	0
			4	4	
86	B2	7	Total	Mg	0
			7	7	
86	A6	7	Total	Mg	0
			7	7	
86	P	1	Total	Mg	0
			1	1	
86	l	1	Total	Mg	0
			1	1	
86	BB	1	Total	Mg	0
			1	1	
86	Cc	1	Total	Mg	0
			1	1	
86	Bb	1	Total	Mg	0
			1	1	

- Molecule 87 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
87	B2	1	Total	Zn	0
			1	1	
87	g	1	Total	Zn	0
			1	1	
87	j	1	Total	Zn	0
			1	1	

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Mol	Chain	Residues	Atoms		AltConf
87	m	1	Total 1	Zn 1	0
87	o	1	Total 1	Zn 1	0
87	p	1	Total 1	Zn 1	0
87	ff	1	Total 1	Zn 1	0
87	aa	1	Total 1	Zn 1	0

- Molecule 88 is water.

Mol	Chain	Residues	Atoms		AltConf
88	B2	4	Total 4	O 4	0
88	A6	1	Total 1	O 1	0
88	Cc	5	Total 5	O 5	0
88	Bb	5	Total 5	O 5	0

3 Residue-property plots ⓘ

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: LSU alpha rRNA

Chain A5:

● Molecule 2: 5S ribosomal RNA

Chain A7:

U109 G110 C111 U112 G116 G117 C118 U121
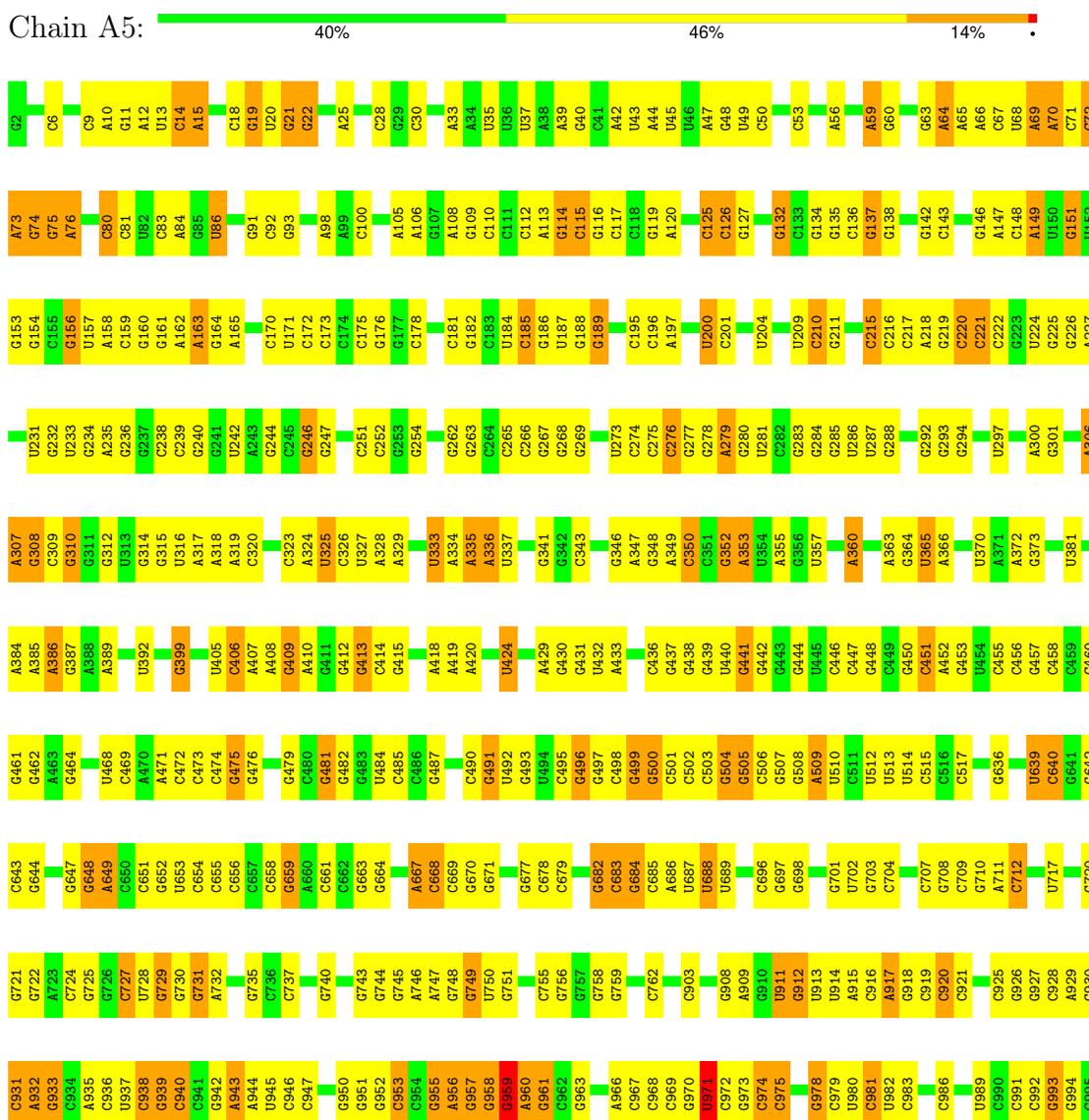
• Molecule 3: 5.8S ribosomal RNA

Chain A8:

44%   43%   13%

G2 U8 A9 G10 C11 G12 G13 U14 G15 G16 A17 U18 C19 A20 C21 U22 C23 G24 U27 C28 G29 U30 G31 C32 G33 U34 C35 U38 G39 A40 A43 A44 C47 G48 G49 C50 U51 A59 G60 A61 A62 U63 A66 U67 G68 U69 G70 A71 A72 U73 U74 G75

G79 A80 C81 A82 C83 A84 U85 U86 G87 A88 C93 G94 A95 C96 A97 C98 G102 A103 A104 C105 G106 C109 U110 U111 G112 C113 G114 G120 G121 G122 U123 A124 C125 C126 U127 C130 U136 A137 C141 G147 A148 G149 C150 G151 G154 C155 U156 U157

• Molecule 4: 18S ribosomal RNA

Chain B2:

42%   45%   12%   •

A2 C3 C4 U5 G6 G10 A11 U12 C13 C14 G23 U26 A27 U28 G29 C30 G33 A38 A39 A40 G41 A42 U43 U44 A45 A46 C49 C53 A54 U55 G56 U57 A60 A61 G62 U63 A64 C65 G66 C67 A68 U69 G70 G71 U72 C73 G74 G75 U76 A77 C78 A79

G80 U81 G82 A83 A84 A85 C86 C89 G90 U93 G94 G95 C96 U97 C98 A99 A102 A103 A104 U105 C106 A107 U110 G113 G114 U115 C116 C117 C118 U119 U120 U121 G122 C125 C126 C127 U137 C140 A141 C142 U143 U144 G145 G146 A147 U148 A149 G153 U154 G155 G156

U157 A158 A159 G160 U163 A164 G165 A166 G167 C168 U169 A170 A171 U176 G180 A181 C182 G183 G184 G185 U189 G190 A191 C192 U197 U198 C199 G202 C212 G213 U214 G215 C216 A217 A226 G227 C228 A229 A230 A231 A232 A235 A236 C237 C238 C239 G240 G241 U242 A243 A244

G282 G283 C284 U285 U286 U287 G288 G289 U290 G291 A292 C293 U294 C295 U296 A297 A302 C303 C304 U305 C306 G307 G308 G309 G312 A313 A318 C319 C322 C323 C324 G325 C326 G327 U328 G329 G330 C331 G332 G335 G338 A339 C340 A343 G344 U345 C346 A347 A348 A349 C350 G351

U354 C355 U359 C362 A363 A364 C365 U366 U367 U368 C369 G370 A371 U372 U373 G374 U375 A376 G377 U378 C379 G380 G383 U384 G385 C386 C387 A388 A389 C390 A391 A392 U393 G394 G395 U396 A397 A398 C399 C400 G403 C409 C410 G411 G412 C413 U416 C417 A418 G421 A426

U427 U428 A435 G436 G437 G438 U443 A447 A448 A449 C450 U451 G452 A465 G466 C467 G471 C472 A473 G474 C475 A484 U487 U488 A489 C490 C491 A492 A493 U494 U495 C496 C497 C498 G499 A500 C501 C502 G507 A508 G509 G510 A516 A520 A521 A522 A523 U524 A525 A526

C527 A528 A529 U530 A531 C532 A533 G534 G535 A536 C550 U551 C552 U553 G558 G559 A560 A561 U562 G563 A564 C568 A569 U570 U571 U572 U573 A574 A575 A576 U580 U581 U582 A583 A584 C585 U586 A587 G588 A589 U591 C592 C593 A594 G600 C603 A604 A605 G606 U607 C608 U609

G613 C614 G615 A616 G617 C618 A619 G623 C624 G625 G626 U627 A628 A629 U630 U631 C632 C633 A634 G635 C636 C639 A640 U641 U642 A643 G644 C645 G646 U649 A650 U651 C652 A653 A654 A655 G656 C660 U666 U667 A668 G669 A670 U671 U672 G673 U674 U675 G676 G677 U678 A679 G680 G684

C687 U688 U689 G690 G691 G692 A693 G697 G698 C699 G700 C728 C729 U730 G731 C734 C735 U736 C739 A740 U741 U742 U743 G744 U745 C746 U747 C748 U749 G752 C753 C782 G788 C791 U792 G793 G796 C797 U798 U799 U800 U804 U805 U806 G807 A808 A809 A810 A811 A812

A813 A816 A820 G821 U822 U823 C824 A825 A826 A827 G828 C829 A830 G831 G832 C833 C834 C835 G836 A837 G838 C839 C840 G841 C842 C843 U844 U845 G846 A847 G852 G855 C856 A857 A858 G859 C860 A861 A862 U863 A864 A865 G868 A869 A870 U871 A872 G873 C874 A875 C876 C877 G878 C879 G880

- Molecule 5: LSU beta rRNA

Chain A6: 46% 43% 11%

• Molecule 6: Large ribosomal subunit protein uL2

• Molecule 7: 60S ribosomal protein L41

Chain n:

52%　48%

M1 R2 A3 K4 W5 R6 K7 K8 R9 L13 K16 K19 M20 R21 Q22 K25

• Molecule 8: 60S ribosomal protein L3

Chain B:

75%　24%

S2 K5 F6 R10 H11 G12 R26 V29 P33 D36 K39 T44 A45 F46 L47 H55 I56 V57 R58 E59 V60 D61 K66 K69 V72 V73 E74 A75 V76 T77 M84 V85 T95 G98 F106 A107 D112 K115 R116 R117 K120

K124 F130 Y133 S151 K154 V162 L163 A164 H165 T166 L173 R174 Q175 K176 K177 M181 E182 I183 A191 L201 Q204 V219 V222 T223 Y228 K229 G230 V231 R234 W235 K238 H245 V251 A252 C253 I254 Q271 H276 K294

K297 L298 I299 A303 S304 T305 D306 Y307 D308 L309 K312 N315 P316 L317 G318 H322 V326 L333 K334 V338 R343 L347 R348 K349 V353 I363 K366 F367 I368 S372 H376 T381 V382 K385 K386 M389 G390 P391 R396 K399

• Molecule 9: Large ribosomal subunit protein uL4

Chain C:

73%　25%

ACE1 R5 P6 L7 L24 P25 A26 V27 F28 P31 P34 V37 H41 L44 R45 K46 R49 Q50 P51 Y52 A53 P77 T84 S87 N94 M95 M101 F102 R109 R110 W111 H112 T118 L128 A132 L133 M138 H142 R143 I144

E149 L150 P151 L152 V153 E159 L170 L171 L174 I180 K181 K182 V183 M189 R190 G194 K195 M196 R197 N198 R199 R204 R205 G206 I210 Y211 N212 I217 I218 K219 R222 N223 I224 P225 G226 L230 K234 K235 N236 I237 L240 W252 F257 L260

D261 D262 L263 W267 R268 L273 K274 M281 M284 T287 S290 S295 Q299 L302 R312 K316 N317 N321 L322 R323 I324 M325 K326 K333 R337 N338 T339 R342 K348 G363

• Molecule 10: Large ribosomal subunit protein uL18

Chain D:

75%　23%

F3 V4 K5 V6 V7 Y12 R15 Y16 Y30 Y31 A32 R33 L36 K43 M51 I52 I60 Q63 I64 A65 R68 I69 D72 M73 I74 V75 A80 L83 P84 V88 K89 V90 G91 L92 T93 N94 A97 A98 L103 L104 L105 R108 L109

R112 I118 Q138 T143 L146 L150 A151 R152 T153 S172 I173 P174 H175 R179 K197 Q202 M208 L211 E214 Y219 F223 S224 Q225 Y226 I227 K228 V231 T232 P233 M239 I247 V252 K256 M271 S272 L273 A274 Q275 K276 K277

D278 R279 Q282 A295
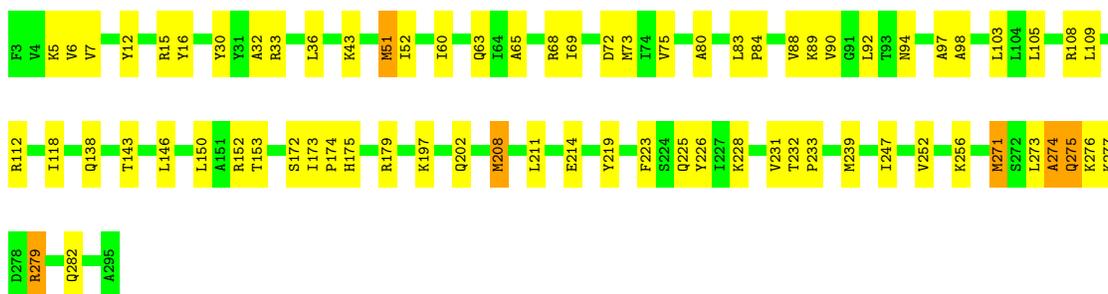
• Molecule 11: 60S ribosomal protein L6

Chain E:

69%　28%

K41 L52 V53 S60 M64 Y65 K68 A69 R73 K74 Y75 S76 K97 K103 N104 R108 V109 V110 K114 R117 Y118 T121 P125 R126 K127 L128 H131 G132 K133 F136 L143 I154 I155 L156 T157 G158 R159 H160 R161 G162 K163 R164 V165 V166

F167 L168 K169 Q170 L171 L176 T179 L184 N185 R186 R190 R191 T192 H193 Q194 K195 F196 V197 K203 P212 K213 H214 L215 T216 D217 A218 Y219 F220 K221 K222 I245 Q248 V251 V256 I260 L261 I264 Q269 L270 L274 R275 L280 T281 N282

L289 V290 F291

• Molecule 12: 60S ribosomal protein L7

Chain F: 74%   24%   •

N23 L32 R33 A37 M40 R46 K47 L48 K54 M63 M73 K76 A84 F90 V91 I92 R93 I94 I97 S101 V104 V107 L108 Q109 L110 L111 R112 L113 R114 Q115 I116 F117 N118 G119 T120 K126 M131 I134 V135 I139 A140 W141

K147 S148 V149 I153 R156 G159 K163 K164 R165 N171 I174 A175 I184 I190 V196 L207 W208 K211 S214 P215 R216 K222 T223 T224 R235 Q238 I243 N247
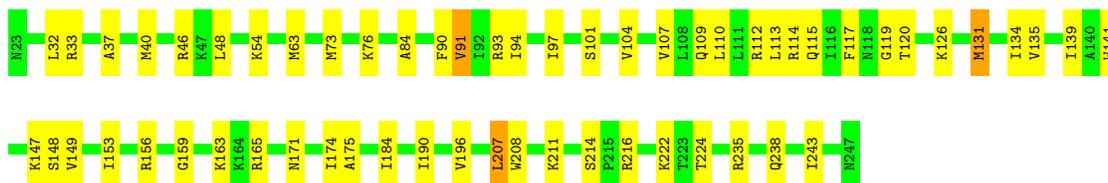
• Molecule 13: 60S ribosomal protein L7a

Chain G: 77%   21%   •

V27 V28 D50 L51 F54 V55 K56 W57 I61 R67 R73 F83 L87 T91 Q94 L95 L96 K97 L98 R103 E148 L154 V155 V156 I157 A158 V161 D162 P163 I164 E165 L166 K176 M177 C182 I183 L184 K185 G186 K187 L193 V194 H195

T198 C199 T200 T201 V202 A203 F204 K217 E220 Y230 I233 R234 R235 V241 P244 K245 K252 L253 E254 K257 E260
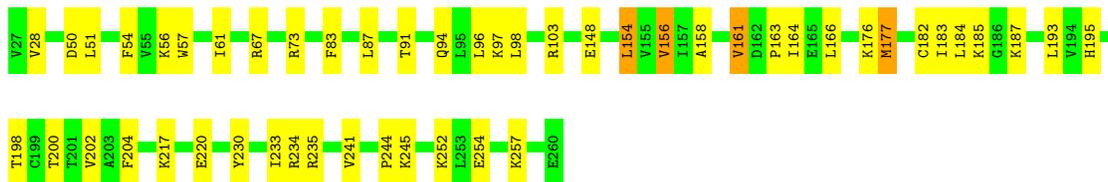
• Molecule 14: 60S ribosomal protein L9

Chain H: 75%   23%   •

M1 L5 V10 D11 I12 I18 T24 V25 R31 R36 D37 E44 L45 S46 L47 K53 R54 L55 K59 W60 N63 R64 K65 E66 V70 Q78 N79 M80 I81 K82 K91 M92 V95 V103 Q106 L111 I114 K121 R124

M128 R129 V132 S137 E143 L144 V145 L146 I151 E152 N156 T165 E183 K184 G185 T186 V187 Q188 Q189 A190
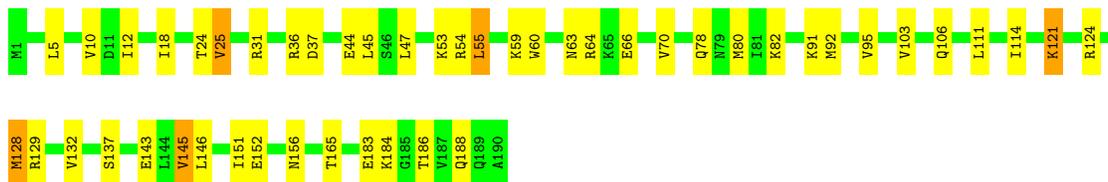
• Molecule 15: 60S ribosomal protein L10

Chain I: 71%   20%   •   7%

G2 Y9 K15 K30 I31 R32 L36 G37 R38 K39 K40 A41 K42 V43 D44 P47 L48 C49 E58 S61 S62 E63 A64 L65 A68 M76 F85 H86 I87 L91 N100 LYS MET LEU SER CYS ALA GLY ALA ASP ARG LEU GLN THR GLY M115 R116

V126 I135 M136 S137 I138 K141 L142 L152 A155 K156 P160 G161 R162 I165 K170 W171 N177 A178 M184 R189 L190 D193 V197 K198 S214

• Molecule 16: Large ribosomal subunit protein uL5

Chain J:

• Molecule 17: 60S ribosomal protein L13

Chain L:

• Molecule 18: Large ribosomal subunit protein eL14

Chain M:

• Molecule 19: Ribosomal protein L15

Chain N:
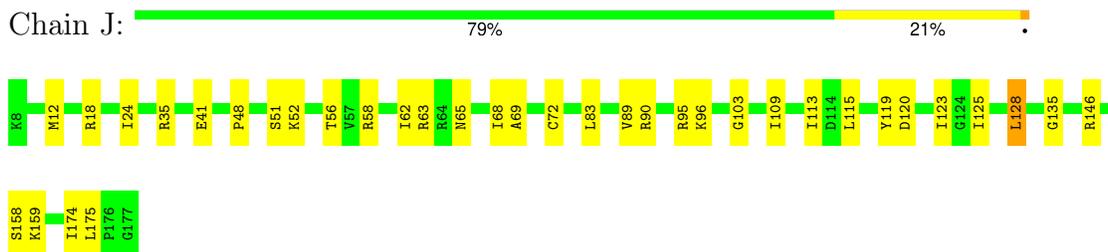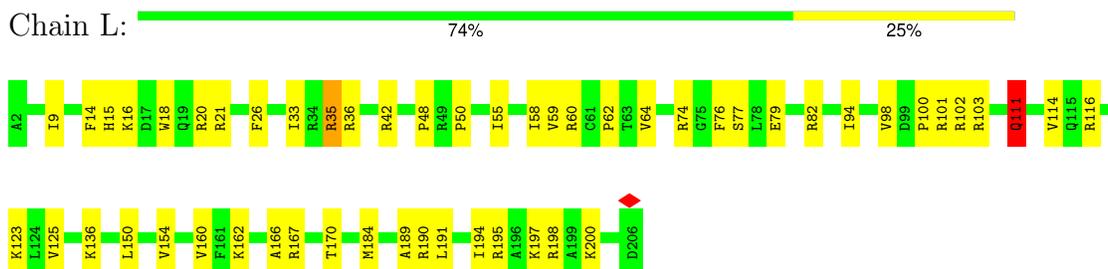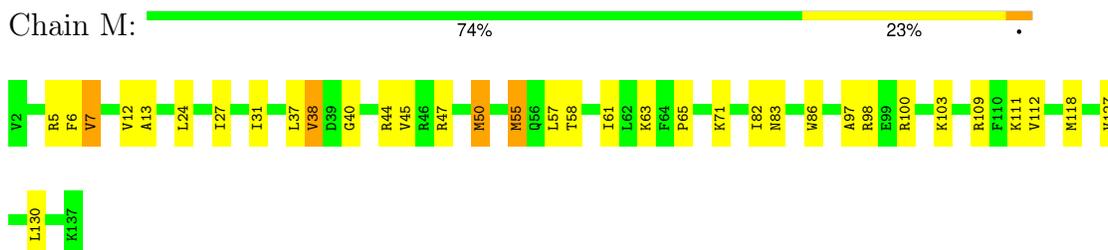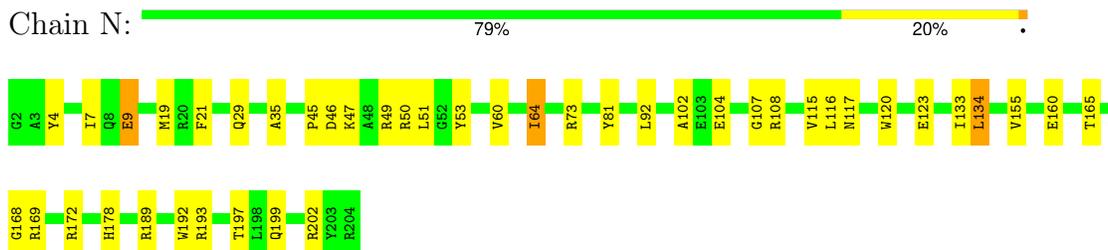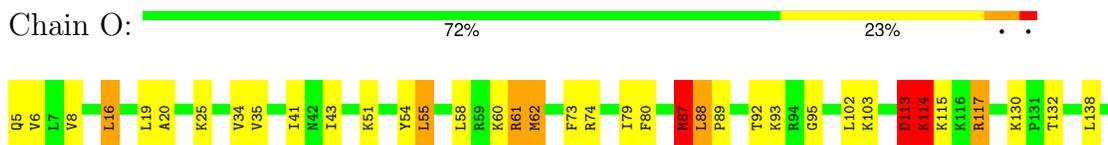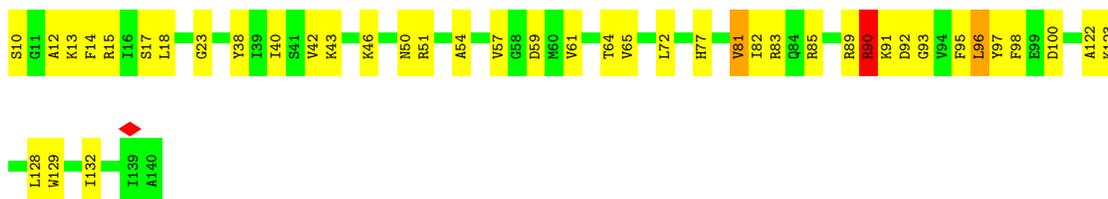
• Molecule 20: 60S ribosomal protein L13a

Chain O:

L141 A142 H143 E144 V145 T153 E157 K161 R169 M175 R176 L177 Q180 V185 E186 K187 K188 I189 D194 V195 L196 L201 L202 V203

• Molecule 21: 60S ribosomal protein L17

Chain P:

| 72% | 24% | • |

V2 L6 R23 V24 R30 A33 I36 M39 H40 K43 Y47 L48 K49 D50 L53 K54 K55 V58 R62 V67 W78 T79 Q80 G81 R82 W83 P84 K85 K86 L91 L92 H93 M94 L95 V113 H116 I117 Q118 V119 A122 R126 R127

R128 Y139 M140 S141 S142 P143 C144 H145 I146 E147 M148 K153 E154

• Molecule 22: 60S ribosomal protein L18

Chain Q:

| 69% | 30% | • |

G2 V3 D4 I5 K9 E17 P18 K19 I23 Y24 L27 A36 R37 R38 T39 Q45 K49 R50 M53 L61 S62 L63 M66 P73 K78 T79 A80 V81 V82 V83 V86 T87 D88 D89 V90 R91 V92 L93 L98 V105 R108 A109 I113

G118 T122 F123 D124 Q125 L126 A127 L128 K132 G135 T136 V137 L138 R143 K144 G145 R146 E147 V148 F152 G157 R172 K173 F174 E175 R178 R181 R184 N188

• Molecule 23: Large ribosomal subunit protein eL20

Chain S:

| 71% | 27% | • |

M1 R8 E9 Y10 K11 R15 P18 L27 Y28 R29 M30 R31 I32 F33 A34 V39 A40 K41 L51 G65 P72 V75 F78 G79 I80 R83 Y84 D85 M93 Y94 R95 E96 Y97 L100 T101 T102 Y110 R111 D112 M113 A119 Q125 I132

K136 C137 R138 F152 P153 L154 P155 L159 R160 H161 K164 P165 T169 K170 R171 F175 F176

• Molecule 24: Large ribosomal subunit protein eL21

Chain T:

| 76% | 23% | • |

T2 K7 T11 R12 Y13 M14 F15 S16 F19 A28 M31 R32 K36 I39 V40 D41 I42 K43 T61 V72 G73 I74 K78 Q79 I84 R88 I89 R102 D103 S104 F105 L106 K107 R108 V109 K117 K120 T124 A133 R136 N144

G145 K146 L150 L151 E152 P153 A160
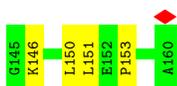
• Molecule 25: 60S ribosomal protein L22

Chain U:

| 74% | 22% | •• |

Q17 V18 L19 K20 F21 M34 F39 L43 Q44 E45 R46 I47 N55 L56 I63 E64 T71 S74 R81 Y82 L83 L86 T87 K88 K93 R97 D98 W99 L100 R101 V102 E108 L112 F115

• Molecule 26: Large ribosomal subunit protein uL14

Chain V: 68%   30%

S10 G11 A12 K13 F14 R15 I16 S17 L18 G23 Y38 I39 I40 S41 V42 K43 K46 N50 R51 A54 V57 G58 D59 M60 V61 T64 V65 L72 H77 V81 I82 R83 Q84 R85 R89 R90 K91 D92 G93 V94 F95 L96 Y97 F98 E99 D100 A122 K123

L128 W129 I132 I139 A140

• Molecule 27: Large ribosomal subunit protein uL23

Chain X: 76%   24%

K39 I40 T45 R62 K63 S64 R68 N69 K70 Y74 K78 L81 M87 I90 V97 F98 I99 V100 D101 V102 K103 A104 Q108 I109 K110 V121 N125 T126 L127 I128 R129 P130 K134 K135 A136 Y137 I156

• Molecule 28: 60S ribosomal protein L26

Chain Y: 69%   29%

M1 K2 T8 S9 D10 K13 N14 R15 K16 R17 H18 F19 N20 A21 R26 R27 K28 I29 M30 P33 E37 K41 R50 E54 V58 R59 I67 R75 K76 K77 Y78 V79 I80 E83 R84 V85 Q86 R87 N91 V95 P101 L109 D114

R115 I118 K124 S125 R126 E131 K132 G133 K134
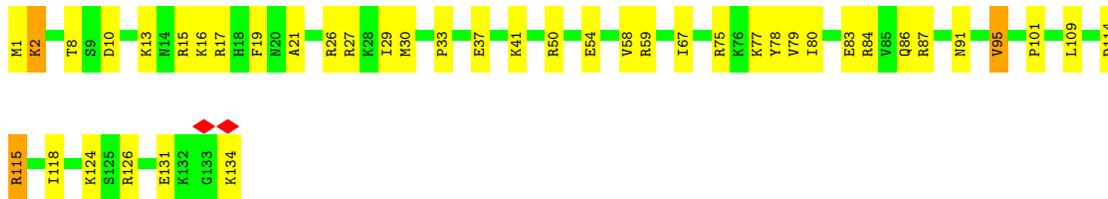
• Molecule 29: 60S ribosomal protein L27

Chain Z: 84%   15%

G2 L12 V13 L14 R21 I25 S34 P37 Y38 V43 D47 R51 R65 S70 Y77 L80 M81 D92 V95 V96 V100 L106 A110 F136
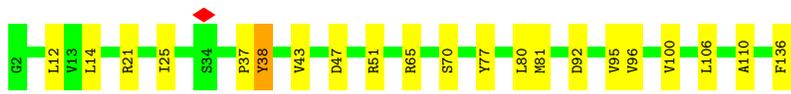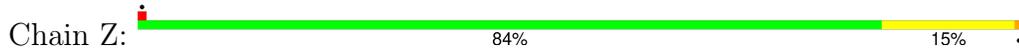
• Molecule 30: 60S ribosomal protein L27a

Chain a: 73%   27%

P2 S3 R6 K7 T8 R9 K10 L11 R26 K27 R32 M38 K47 G51 V56 L63 P71 T72 V73 N74 L75 D76 K77 E84 R87 A90 K94 A98 P99 I100 V103 V104 R105 Y108 Y109 K110 P118 K119 Q120 P121 V122 I123 V124

K125 A126 K127 F128 R132 I137 V140 A148
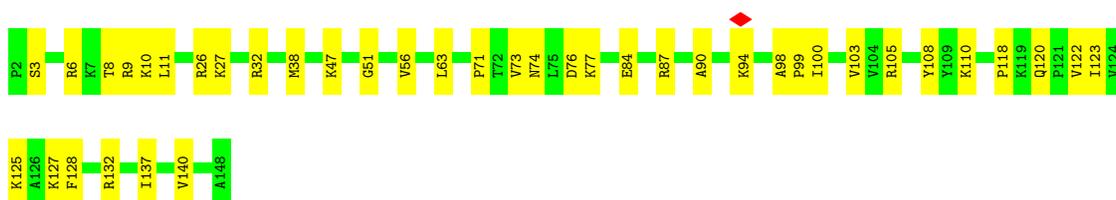
• Molecule 31: 60S ribosomal protein L29

Chain b:

50%　　　　　　　10%　5%　　　35%

A2 K15 K23 P24 R25 S31 L32 D36 F39 L40 R41 N42 M43 A46 K47 K48 H49 L54 LYS LYS MET GLN ALA ASN ASN ALA LYS ALA MET SER ALA ARG VAL ASN ARG LYS LEU ALA ARG LEU ALA TYR ILE ALA HIS PRO LYS LEU GLY LYS ARG ALA ARG

A110 R111 I112 R120 P121

• Molecule 32: Large ribosomal subunit protein eL31

Chain d:

84%　　　　　　　　16%

M18 V21 K31 R44 K47 E48 I49 R50 K51 M54 M57 G58 T59 W73 I77 R90 K91 R92 N93 Y103 T104 E124

• Molecule 33: 60S ribosomal protein L32

Chain e:

73%　　　　　　　　26%

A2 L7 V8 K9 V13 R22 Y28 V29 K30 I31 I41 V45 R48 F49 K50 M55 P56 N57 I58 G59 K67 F74 L78 K83 E84 L85 L88 C91 N92 K93 S94 Y95 I99 S104 R108 E113 R114 L118 V122

R128 L129

• Molecule 34: Large ribosomal subunit protein eL33

Chain f:

72%　　　　　　　　26%

M1 R4 K15 L18 E23 H24 T25 A26 L27 L28 Y34 A35 E38 T39 E40 L43 G44 K45 V50 Y51 K54 T57 V58 T59 P60 K63 P64 N65 K66 V69 I70 H78 G79 N80 M83 V84 R85 A86 K87 V103 S108 R109 I110

• Molecule 35: Large ribosomal subunit protein eL34

Chain g:

65%　　　　　　31%　　　5%

V2 R9 R10 L11 P26 Y34 V38 G39 G51 R52 L53 R54 G55 V59 R60 P61 K62 V63 L64 M65 R66 L67 S68 K69 T70 K71 K72 H73 V74 S75 R76 A77 Y78 S81 M82 C83 A84 K85 C86 V87 R88 I91 K92 R93 A94 I102 K105 V106 L107

Q110 A111

• Molecule 36: Large ribosomal subunit protein uL29

Chain h:

68%　　　　　　　31%

K3 I4 K5 L9 R10 K13 K14 K19 D23 V26 S29 R32 K43 L44 I47 K52 S53 I54 V57 L58 K66 L69 R70 K71 L81 R84 T88 A89 A90 M91 R94 K97 K101 L102 K103 T104 K105 K106 Q107 Q108 R109

K110 E111 R112 A120 V121 K122 A123

- Molecule 37: 60S ribosomal protein L36

Chain i: 70%   29%

A2 L3 R4 Y5 P6 M7 G10 K13 G14 H15 V21 R28 L33 T34 K35 H36 M43 I44 V47 C48 M58 L61 R68 A69 L70 K74 G78 T79 H80 I81 R82 A83 K84 R85 K86 R87 L94 M97 K103

- Molecule 38: Ribosomal protein L37

Chain j: 79%   19%

T2 G9 K10 R11 C22 G23 S24 K25 A26 Y27 H28 K31 G35 K36 C37 K54 N57 T58 M64 L67 R72 R75 H76 K87

- Molecule 39: Large ribosomal subunit protein eL38

Chain k: 78%   20%

P2 R3 K9 L13 V23 F34 K35 V36 R37 R40 Y43 T44 E54 K55 L56 K57 Q58 K70

- Molecule 40: Large ribosomal subunit protein eL39

Chain l: 82%   16%

S2 L13 K16 Q17 N20 R21 P22 I23 P24 R42 H43 W44 L51

- Molecule 41: Ubiquitin-ribosomal protein eL40 fusion protein

Chain m: 75%   24%

I77 I78 L82 R83 Q84 L85 K93 C99 R102 R106 C110 K113 K114 C115 L121 K125 K126 V127

- Molecule 42: 60S ribosomal protein L36a

Chain o: 70%   25%   6%

V2 N3 T10 H18 H21 K22 V23 K28 G29 K30 D31 S32 A35 K38 D42 S46 G47 Y48 Q51 T52 K53 P54 I55 F56 R69 L70 E71 K80 R81 M82 L83 R87 H90 R99 Q102 V103 I104 Q105 F106

• Molecule 43: Large ribosomal subunit protein eL43

Chain p:

76%   23%

A2 K6 K7 K13 R17 L22 V26 I29 E30 I31 A35 C39 C42 S59 C60 W69 K80 I83 R84 K87 E88 L89 K90 D91 Q92
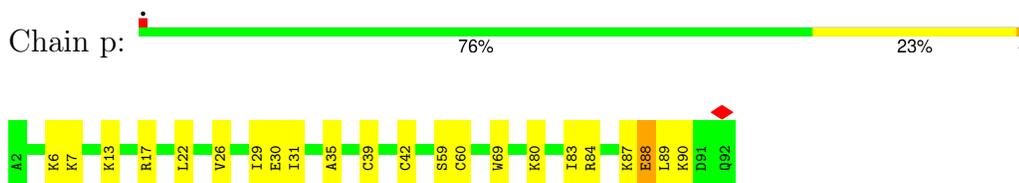
• Molecule 44: Large ribosomal subunit protein eL28

Chain r:

72%   25%

ACE1 S2 A3 H4 L5 Q6 W7 M8 I9 F16 L17 I18 N21 K22 Q23 T24 T27 N30 N31 L32 E52 V61 V62 V63 R66 G69 Q70 R71 K72 T75 R79 T80 T81 I82 A86 R87 A88 T89 M96 A110 I111 R112 S115 L118

K122 K127
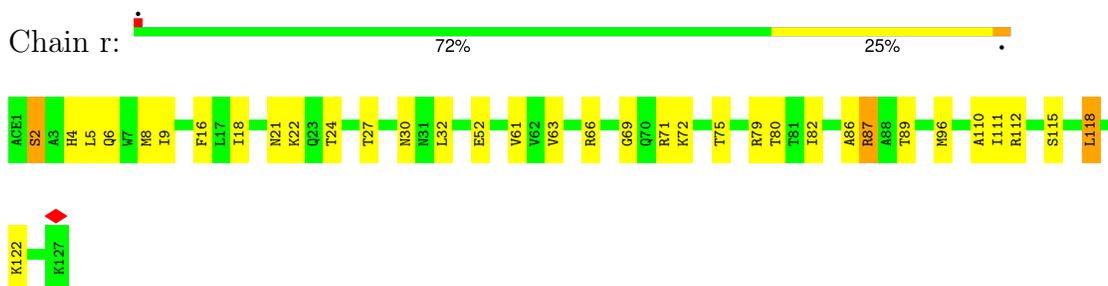
• Molecule 45: 60S acidic ribosomal protein P0

8%

Chain s:

69%   26%   5%

D5 R6 F14 I17 I18 L21 C27 V35 K38 Q39 M40 Q41 Q42 I43 R44 M45 S46 L47 R48 G49 K50 A51 L54 M55 G56 K57 M60 M61 R62 I65 R66 G67 H68 L69 L75 L79 E93 D94 L95 T96 E97 I98 R99 D100 M101 A104 N105

K106 V107
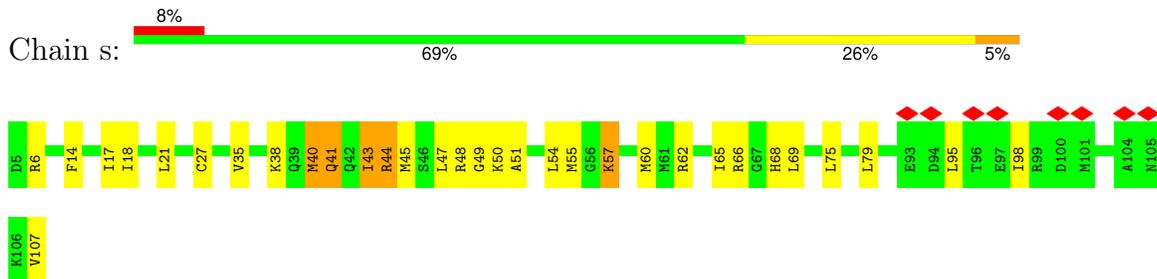
• Molecule 46: 60S ribosomal protein L12

43%

Chain t:

69%   28%

E9 I10 Y14 L15 R16 C17 T18 G19 G20 E21 V22 G23 A24 T25 S26 A27 L28 A29 P30 K31 I32 G33 P34 L35 G36 L37 S38 P39 K40 K41 V42 G43 D44 D45 I46 A47 K48 G51 D52 W53 K54 G55 L56 R57 I58 L62 T63 N66 R67 Q68 V73 V74 P75 S76

A79 L80 I81 I82 K83 A84 L85 K86 E87 P88 P89 R90 D91 R92 K93 K94 Q95 K96 N97 I98 K99 H100 S101 G102 N103 I104 T105 F106 D107 E108 I112 R119 S120 L121 A122 R123 E124 L125 S126 G127 T128 I132 L133 G134 T135 A136 Q137 S138 V139 G140 C141 N142 V143 D144 G145 R146 H147

P148 H149 D150 D153 A159 A164

• Molecule 47: 40S ribosomal protein S28

Chain cc:

74%   26%

P8 I9 K10 R13 V17 R20 T21 G22 V30 M35 R40 S41 I42 K47 G48 P49 V55 L56 T57 R66 R67 L68
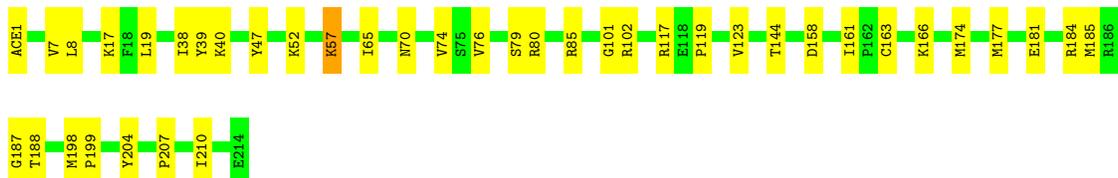
• Molecule 48: Ubiquitin-ribosomal protein eS31 fusion protein
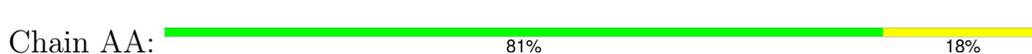
Chain ff:

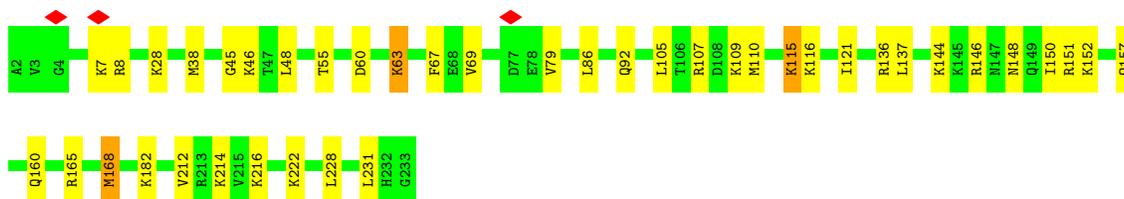• Molecule 49: Small ribosomal subunit protein RACK1

Chain gg:
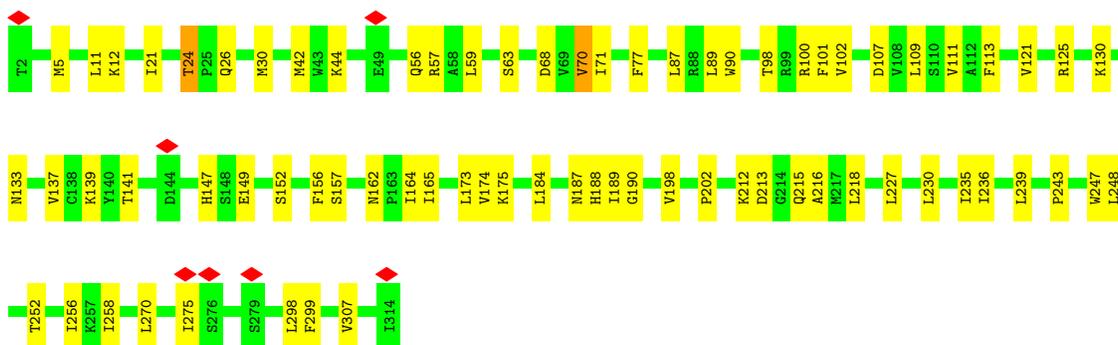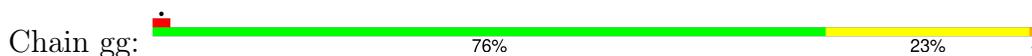
• Molecule 50: Small ribosomal subunit protein uS14

Chain dd:

• Molecule 51: Small ribosomal subunit protein uS2
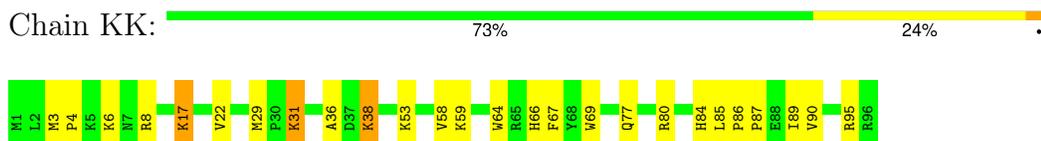
Chain AA:

• Molecule 52: 40S ribosomal protein S3a
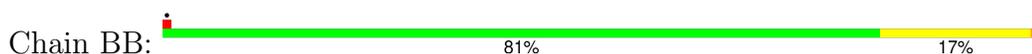
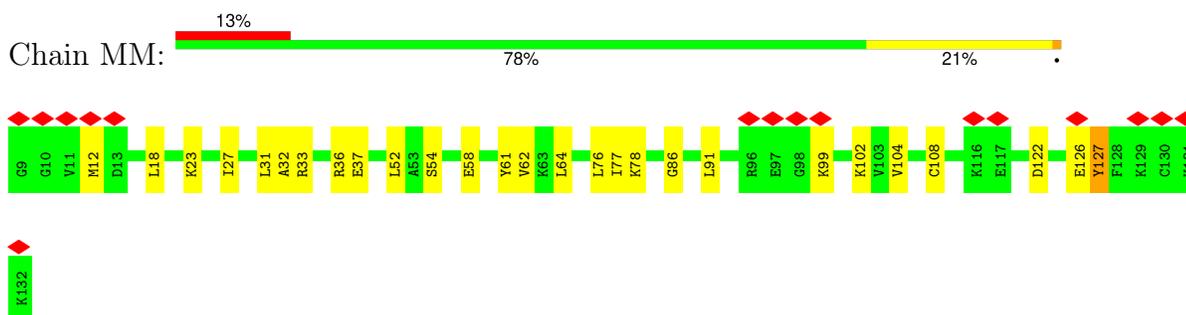Chain BB:

• Molecule 53: Small ribosomal subunit protein uS3

Chain DD:

84%　　　　　　　16%

V3 Q4 I5 R9 E20 E38 R45 I49 I50 L51 I66 L69 Q74 K75 R76 E81 E85 V91 A92 T93 L96 R106 M127 A131 E135 K141 V153 M157 I158 H159 P163 V175 L176 L177 R178 I184 P191

P213 K214 D215 E216 I217 L218 P219 T220 T221 P222 K227

• Molecule 54: Small ribosomal subunit protein uS7

Chain FF:

79%　　　　　　16%　　• • •

D16 S34 L35 K42 L49 K63 C66 M76 M77 R81 N82 K85 M88 I100 H101 L102 L103 T104 G105 E106 I117 P121 R122 E123 D124 S125 I128 G129 ARG ALA GLY THR VAL R135 R136 Q137 A138 L144 T156 G157 A158 R159 N165 I166

K167 T168 L173 I178 L196 R204
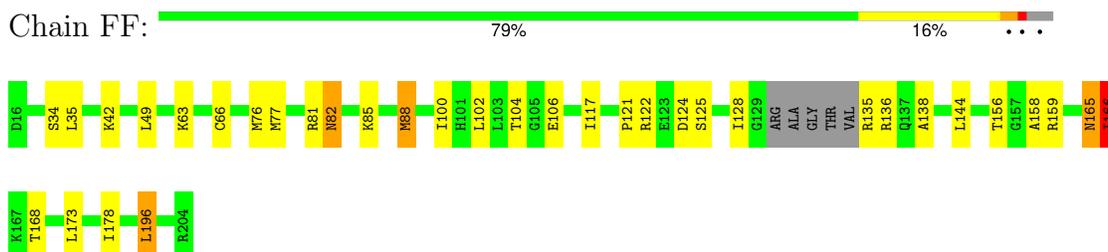
• Molecule 55: Small ribosomal subunit protein eS10

Chain KK:

73%　　　　　　　24%　　•

M1 L2 M3 P4 K5 K6 N7 R8 K17 V22 M29 P30 K31 A36 D37 K38 K53 V58 K59 W64 R65 H66 F67 Y68 W69 Q77 R80 H84 L85 P86 P87 E88 I89 V90 R95 R96

• Molecule 56: 40S ribosomal protein S12

Chain MM:

13%

78%　　　　　　21%　　•

G9 G10 V11 M12 D13 L18 K23 I27 L31 A32 R33 R36 E37 L52 A53 S54 E58 Y61 V62 K63 L64 L76 I77 K78 G86 L91 R96 E97 G98 K99 K102 V103 V104 C108 K116 E117 D122 E126 Y127 F128 K129 C130 K131

K132

• Molecule 57: 40S ribosomal protein S14

Chain OO:

69%　　　　　　　28%　　•

G18 A22 E23 G24 E25 N26 V27 V30 C31 H32 I33 F34 F41 V42 H43 V44 T45 D46 L47 K50 E51 T52 I53 T57 G58 G59 Y72 M75 A78 V81 L93 H94 I95 K96 L97 R98 A99 T100 G101 G102 N103 R104 R117 R128 I129 E130 D131 V132

T133 P134 I135 P136 R142 K143 R147 G148 R149 R150 L151
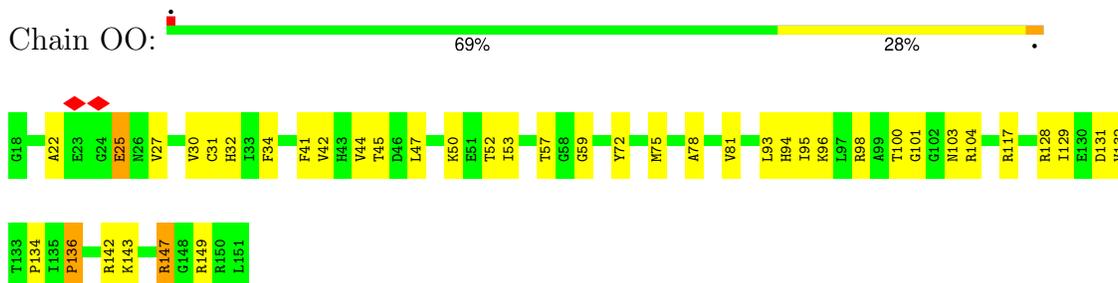
- Molecule 58: 40S ribosomal protein S15

Chain PP:

70% 28%

R13 K14 F15 L22 Y30 L33 L36 A39 R40 Q41 R42 R43 R44 R47 L56 L57 L60 R61 K62 K65 M70 T78 D82 M83 L86 P87 E88 M89 V94 N98 K108 P109 E110 M111 H114 Y115 I116 G117 E118 T122 K127

H128 G129 R130
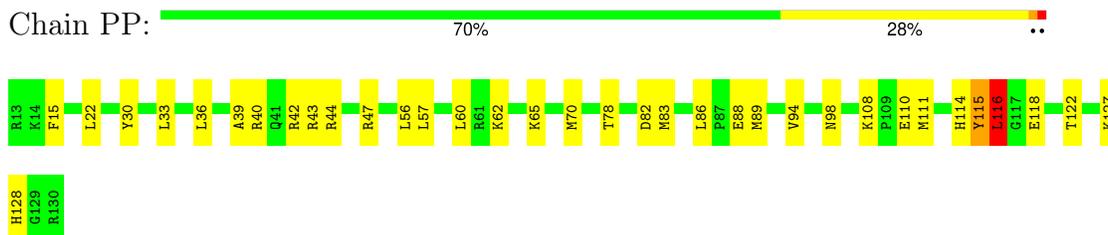
- Molecule 59: Small ribosomal subunit protein uS9

Chain QQ:

74% 23%

P6 F13 K16 V22 A23 H24 C25 K26 R27 P38 M41 P44 Q48 Y49 K50 L51 V55 K60 V66 R69 V70 K73 I81 I84 R85 Q86 K90 A91 L92 V93 Q97 E102 K105 I113 L120 R125 R126 K130

A137 R138 A139 R146
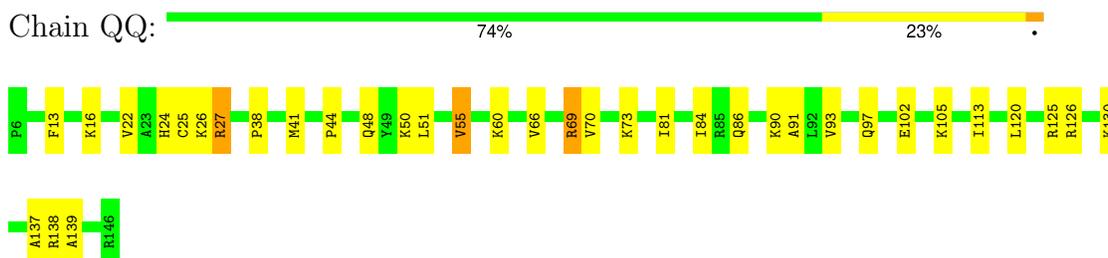
- Molecule 60: Small ribosomal subunit protein eS17

Chain RR:

80% 19%

G2 R3 V4 K10 K19 R33 V34 C35 I38 S43 V66 I69 S70 I71 R78 R81 E87 L91 I96 E97 V98 D99 P100 D101 T102 K103 E104 M105 L106 K107 L108 L109 S113 M126 P131 R132 G133
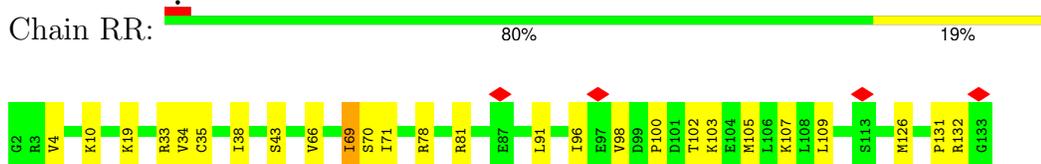
- Molecule 61: Small ribosomal subunit protein uS13

Chain SS:

73% 26%

ACE1 S2 L3 V4 I5 L13 L16 I20 D21 G22 R23 R24 K25 I26 K34 R39 L45 R46 I50 D51 L52 T53 K54 R55 A56 G57 E58 L59 E63 M71 L84 N85 R86 S96 L99 A100 N101 G102 L103 D104 L114 H120 R121 R124

L129 R130 V131 T139 R142 G143 R144 T145
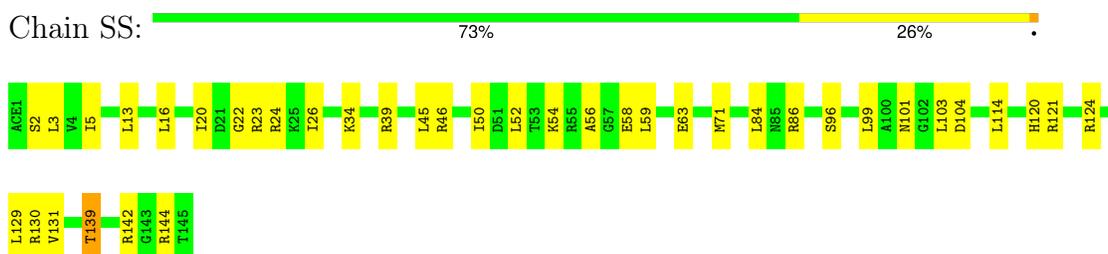
- Molecule 62: Small ribosomal subunit protein eS19

Chain TT:

80% 18%

G3 V4 T5 D8 F21 K24 D35 K43 E44 L45 R62 L66 R67 R82 N85 G86 V87 M88 P89 V103 L104 E108 V113 E114 R121 G127 Q128 R129 R133 K143
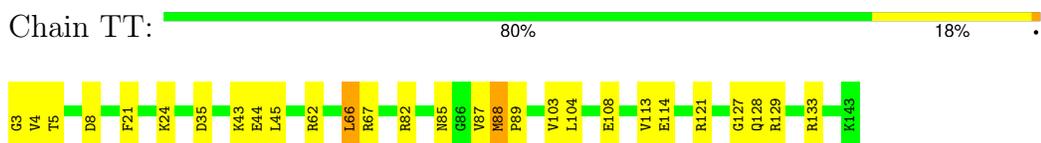
- Molecule 63: 40S ribosomal protein S20

Chain UU:

85% 14%

H18 R19 I20 K30 D38 R41 K46 N47 V50 M56 I63 E72 R79 R83 R87 L88 I89 V98 K99 Q100 I116

• Molecule 64: 40S ribosomal protein S25

Chain ZZ:

80% 19%

R41 D42 N46 L47 V48 L49 K52 Y55 K66 I79 R80 G81 S82 L83 K102 V107 T110 R111 G115

• Molecule 65: 40S ribosomal protein S27

Chain bb:

77% 21%

P2 L3 E13 K16 H19 K22 R23 L24 M33 I43 T44 T45 V46 T52 V53 V54 L55 C56 V62 L63 T74 F79 K82 Q83

• Molecule 66: 40S ribosomal protein S30

Chain ee:

65% 35%

S79 V86 Q89 T90 K95 Q96 K101 R102 T103 G104 R105 A106 K107 R108 R109 M110 N113 V117 S133

• Molecule 67: 40S ribosomal protein S26

Chain aa:

78% 22%

T2 N7 N8 G9 R10 A11 K12 R15 C23 C26 A27 R28 C29 V30 K34 K37 V45 E46 A47 A48 R51 D52 D60 V63 L67 S76 C77 R85 N86 P99
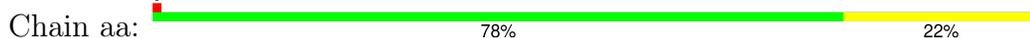
• Molecule 68: 40S ribosomal protein S2

Chain CC:

74% 24%

E59 W60 V63 T64 K65 L66 L69 K76 I81 Y82 L83 L86 P87 I88 I94 L102 K103 K114 Q115 T116 R117 A118 G119 Q120 I130 N134 V137 K142 A154 I155 I156 L157 L160 S161 I162 V163 R166 R167 P181 C182 K183 R187 C188

G189 I196 I204 V205 V209 K212 L213 L214 A217 D220 Y223 T224 T230 L233 Y248 L251 T252 P253 W256 T259 V260 F261 L273 V274 K275 T276

• Molecule 69: 40S ribosomal protein S4, X isoform

Chain EE:

81% 19%

A2 K6 K7 H8 R11 V12 K16 L23 A28 P35 L38 P43 I46 V61 I64 C65 M66 Q67 R68 V76 T81 Y82 P83 M87 I92 D93 K94 N98 F99 R100 L101 I102 Y103 D104 T105 R108 I114 K122 V131 G132

T133 P137 Y149 V156 I160 L164 M182 V183 N188 G193 R198 V208 D212 A213 N214 G215 N216 T220 I236 P239 R245 R252 D253 K254 S261 S262 G263

• Molecule 70: 40S ribosomal protein S6

Chain GG:

78%   21%

M1 F7 Q13 K14 L15 R31 M32 A38 V50 R51 I52 S53 N56 D57 K58 P62 V67 L68 T69 K79 S96 V97 C100 L106 S107 V108 L109 I113 K119 D120 I121 P122 G123 L124 T127 P130 R131 P135 K136 R137 A138 S139 R140

I141 D151 D152 V153 R154 Q155 L162 K167 R170 T171 P174 K175 R198 K201 L212 K221 I228

• Molecule 71: 40S ribosomal protein S7

Chain HH:

77%   19%

S5 E31 M32 K37 L43 N44 I45 V53 GLY GLY GLY R57 V66 L69 F72 Q76 V77 V93 F94 I95 A96 Q97 R98 L101 S108 ARG THR LYS N112 R116 S119 L122 V125 H126 D132 L133 S137 E138 I139 R143 I144 R145

V146 R152 L153 I154 K155 K160 A161 Q162 V170 V176 F187 E191 F192 Q193 L194

• Molecule 72: 40S ribosomal protein S8

Chain II:

79%   20%

G2 I3 K37 I38 I43 K54 Y55 R56 A57 L58 R59 S66 T73 R74 K75 T76 R77 V81 V82 Y83 K98 I101 T107 R110 E114 S115 H116 Y117 A118 L119 P120 L121 T130 I136 L137 R152 K153 A173 A176 S177 R178 Q181 C182

G183 G187 L190 K193 Y198 L199 R200 K201 I202 R205 K206 G207

• Molecule 73: Small ribosomal subunit protein uS4

Chain JJ:

68%   30%

P2 R5 S6 W7 E21 K22 S23 R24 Y35 G36 L37 R38 N39 K40 R41 E42 V43 V46 L50 R54 E59 L60 K66 R70 L71 F72 L78 I84 K91 M92 K93 L94 D95 Y96 I97 L100 L106 E107 R108 T112 Q113 K116 K121

H124 V128 L129 I130 R131 Q132 H133 H134 I135 R136 V141 V142 N143 I144 P145 S146 F147 F159 R162 S163 P164 P170 G171 R172 V173 K174 R175 K176 N177 G181

• Molecule 74: Small ribosomal subunit protein uS17

Chain LL:

73%   21%   5%

D3 R8 A9 Y10 T15 Q18 V23 LEU LEU GLY GLU THR GLY LYS GLU K32 L33 Y37 K59 C60 P61 F62 T63 I68 M80 K81 M82 I86 R89 H94 E103 K104 R105 H106 V111 H112 L113 C116 F117 R118 I122 T127 V128

P133 L134 T137 V138 R139 F140 N141 K144 T151

- Molecule 75: Small ribosomal subunit protein uS15

Chain NN: 80%   20%

G2 R3 M4 H5 K9 Y18 K27 D32 I37 L40 K43 G44 L45 T46 I53 Q62 F65 K70 I71 L72 R73 I74 L75 K76 K94 K100 R104 M105 R106 L117 R127 K130 T131 K132 R133 P136 V150

- Molecule 76: 40S ribosomal protein S21

Chain VV: 83%   17%

M1 V13 P14 R15 K16 C17 S18 I24 D40 K41 R45 T52 I59 M62 S65 V79 F83

- Molecule 77: Small ribosomal subunit protein uS8

Chain WW: 83%   16% •

V2 L11 K22 V25 L26 I27 R28 I52 R57 K60 I61 N70 G73 V74 V81 P95 V103 T106 E115 T121 G122 G123 L126 F129 F130

- Molecule 78: 40S ribosomal protein S23

Chain XX: 93%   7%

G2 R5 R8 H23 E58 L74 I75 K76 V85 L131 K135

- Molecule 79: 40S ribosomal protein S24

Chain YY: 72%   26% •

T4 I7 R8 T9 R10 K11 F12 N15 R20 K21 Q22 M23 D26 V27 G31 T38 E39 I40 R41 Y48 T51 V57 R61 T62 K68 T69 I75 Y76 K84 P87 R90 L91 Y97 E98 K99 S103 R104 K108 G128

- Molecule 80: Ribosomal protein L19

Chain W: 72%   24% • •

S2 M3 L4 R5 L6 Q7 K8 R9 L24 E28 R38 Q39 Q40 I41 R42 K43 L44 I45 K46 L49 R52 R60 R64 K65 N66 T67 L68 A69 R70 R71 R74 H75 M76 G77 I78 G79 K80 T84 E91 M96 R100 R104 L105 L106 R107 R110
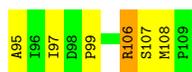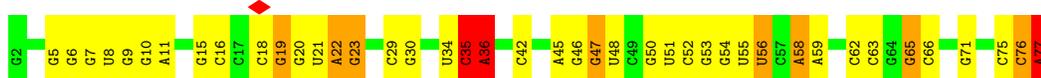
• Molecule 81: Large ribosomal subunit protein eL24

Chain c:

• Molecule 82: Large ribosomal subunit protein eL30

Chain u:

• Molecule 83: P/E tRNA

Chain Cc:

• Molecule 84: tRNA (65-MER)

Chain Bb:

• Molecule 85: mRNA

Chain Dd:
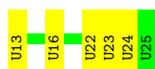
4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	48893	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	40	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.060	Depositor
Minimum map value	-0.019	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.009	Depositor
Map size (Å)	459.8, 459.8, 459.8	wwPDB
Map dimensions	440, 440, 440	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.045, 1.045, 1.045	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: M3L, V5N, MLZ, NMM, HIC, ACE, MG, ZN, YYG

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	A5	1.44	46/40529 (0.1%)	0.59	60/63155 (0.1%)
2	A7	0.23	0/2857	0.41	0/4452
3	A8	0.26	0/3704	0.51	1/5770 (0.0%)
4	B2	1.59	56/42333 (0.1%)	0.53	32/65918 (0.0%)
5	A6	1.39	49/48645 (0.1%)	0.53	39/75740 (0.1%)
6	A	0.28	0/1684	0.72	2/2307 (0.1%)
7	n	0.42	0/240	1.21	2/305 (0.7%)
8	B	0.26	0/3261	0.65	1/4364 (0.0%)
9	C	0.46	2/2936 (0.1%)	0.82	10/3941 (0.3%)
10	D	0.34	1/2435 (0.0%)	0.80	10/3261 (0.3%)
11	E	4.78	12/1823 (0.7%)	1.15	16/2445 (0.7%)
12	F	0.31	0/1911	0.85	5/2549 (0.2%)
13	G	0.25	0/1772	0.63	2/2387 (0.1%)
14	H	2.77	1/1535 (0.1%)	0.73	2/2063 (0.1%)
15	I	0.25	0/1658	0.68	2/2214 (0.1%)
16	J	0.27	0/1385	0.69	0/1852
17	L	0.31	0/1689	0.75	1/2261 (0.0%)
18	M	0.34	0/1146	0.90	8/1531 (0.5%)
19	N	0.32	0/1746	0.68	2/2338 (0.1%)
20	O	1.21	5/1661 (0.3%)	1.39	12/2219 (0.5%)
21	P	3.01	6/1268 (0.5%)	0.93	9/1700 (0.5%)
22	Q	0.31	0/1537	0.86	6/2052 (0.3%)
23	S	0.29	0/1501	0.73	2/2013 (0.1%)
24	T	0.29	0/1326	0.79	1/1770 (0.1%)
25	U	0.33	0/822	0.92	9/1103 (0.8%)
26	V	0.36	0/993	0.96	2/1332 (0.2%)
27	X	0.25	0/984	0.67	0/1323
28	Y	0.30	0/1132	0.78	1/1504 (0.1%)
29	Z	0.29	0/1130	0.78	4/1507 (0.3%)
30	a	0.30	0/1179	0.77	3/1572 (0.2%)
31	b	3.07	4/544 (0.7%)	1.73	11/717 (1.5%)
32	d	0.30	0/903	0.79	1/1216 (0.1%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	e	0.30	0/1071	0.83	2/1429 (0.1%)
34	f	0.42	0/903	0.92	4/1208 (0.3%)
35	g	1.64	3/883 (0.3%)	1.46	6/1177 (0.5%)
36	h	0.23	0/1019	0.70	0/1344
37	i	0.39	0/841	1.05	7/1112 (0.6%)
38	j	0.36	0/720	0.82	2/952 (0.2%)
39	k	0.32	0/575	0.81	3/761 (0.4%)
40	l	0.29	0/454	0.82	0/599
41	m	0.40	0/416	1.06	1/553 (0.2%)
42	o	0.39	0/866	0.90	3/1141 (0.3%)
43	p	0.34	0/718	0.96	3/953 (0.3%)
44	r	0.30	0/1028	0.88	4/1377 (0.3%)
45	s	4.01	4/837 (0.5%)	1.46	9/1121 (0.8%)
46	t	0.42	1/1193 (0.1%)	0.83	5/1609 (0.3%)
47	cc	0.29	0/481	0.67	1/643 (0.2%)
48	ff	0.62	2/560 (0.4%)	1.16	10/745 (1.3%)
49	gg	0.24	0/2493	0.66	3/3394 (0.1%)
50	dd	0.71	2/470 (0.4%)	1.38	10/623 (1.6%)
51	AA	0.27	0/1724	0.69	3/2343 (0.1%)
52	BB	2.57	1/1794 (0.1%)	0.77	5/2396 (0.2%)
53	DD	0.25	0/1779	0.64	2/2395 (0.1%)
54	FF	3.00	3/1481 (0.2%)	1.16	10/1988 (0.5%)
55	KK	0.37	0/834	0.91	4/1125 (0.4%)
56	MM	0.34	0/968	0.80	3/1296 (0.2%)
57	OO	0.30	0/1015	0.79	2/1361 (0.1%)
58	PP	1.45	2/997 (0.2%)	1.30	6/1330 (0.5%)
59	QQ	0.21	0/1142	0.59	0/1528
60	RR	0.29	0/1082	0.80	1/1452 (0.1%)
61	SS	0.30	0/1209	0.71	2/1620 (0.1%)
62	TT	0.29	0/1102	0.73	4/1476 (0.3%)
63	UU	0.23	0/800	0.63	1/1074 (0.1%)
64	ZZ	0.41	0/604	0.71	1/810 (0.1%)
65	bb	0.25	0/653	0.68	4/876 (0.5%)
66	ee	0.29	0/399	0.82	0/520
67	aa	0.23	0/794	0.59	0/1065
68	CC	1.18	2/1725 (0.1%)	1.02	6/2332 (0.3%)
69	EE	0.24	0/2118	0.59	1/2849 (0.0%)
70	GG	0.33	1/1870 (0.1%)	0.62	1/2489 (0.0%)
71	HH	0.23	0/1509	0.59	3/2016 (0.1%)
72	II	1.01	2/1715 (0.1%)	1.01	5/2287 (0.2%)
73	JJ	0.30	0/1524	0.75	5/2035 (0.2%)
74	LL	0.29	0/1177	0.76	1/1575 (0.1%)
75	NN	0.20	0/1226	0.53	0/1649

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
76	VV	0.27	0/644	0.73	2/862 (0.2%)
77	WW	0.31	0/1051	0.76	2/1406 (0.1%)
78	XX	0.24	0/819	0.69	2/1115 (0.2%)
79	YY	1.50	3/1032 (0.3%)	1.00	8/1371 (0.6%)
80	W	1.14	3/1524 (0.2%)	1.38	9/2013 (0.4%)
81	c	0.36	0/935	0.99	4/1241 (0.3%)
82	u	3.42	1/786 (0.1%)	1.33	8/1055 (0.8%)
83	Cc	1.75	6/1812 (0.3%)	1.13	12/2821 (0.4%)
84	Bb	2.65	1/1531 (0.1%)	0.50	2/2380 (0.1%)
85	Dd	0.19	0/285	0.35	0/438
All	All	1.37	219/235457 (0.1%)	0.68	448/346211 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
6	A	0	2
7	n	0	1
8	B	0	2
9	C	0	2
10	D	0	1
11	E	0	1
17	L	0	1
20	O	0	1
22	Q	0	1
23	S	0	1
26	V	0	1
28	Y	0	1
29	Z	0	1
32	d	0	1
36	h	0	1
41	m	0	1
42	o	0	2
44	r	0	1
45	s	0	2
46	t	0	1
48	ff	0	4
53	DD	0	1
54	FF	0	1
56	MM	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
57	OO	0	2
62	TT	0	1
68	CC	0	1
73	JJ	0	1
76	VV	0	1
80	W	0	1
81	c	0	1
82	u	0	2
All	All	0	42

The worst 5 of 219 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	E	104	ASN	CA-CB	113.02	3.18	1.53
52	BB	115	LYS	CB-CG	108.20	4.77	1.52
14	H	121	LYS	CG-CD	107.94	4.76	1.52
54	FF	82	ASN	CB-CG	107.34	4.20	1.52
11	E	127	LYS	CG-CD	106.23	4.71	1.52

The worst 5 of 448 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
83	Cc	77	A	N3-C4-C5	-36.20	18.21	126.80
83	Cc	77	A	C6-N1-C2	-34.66	14.62	118.60
20	O	113	ASP	CA-C-N	33.00	167.57	121.71
20	O	113	ASP	C-N-CA	33.00	167.57	121.71
80	W	74	ARG	CA-C-N	29.73	164.17	122.85

There are no chirality outliers.

5 of 42 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
6	A	176	ASP	Peptide
6	A	96	LEU	Peptide
8	B	130	PHE	Peptide
8	B	73	VAL	Peptide
7	n	1	MET	Peptide

5.2　Too-close contacts ⓘ

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	A5	36275	0	18295	660	0
2	A7	2558	0	1294	20	0
3	A8	3317	0	1681	37	0
4	B2	37897	0	19056	706	0
5	A6	43564	0	21782	714	0
6	A	1648	0	1474	31	0
7	n	239	0	289	6	0
8	B	3206	0	3353	68	0
9	C	2884	0	3055	80	0
10	D	2389	0	2423	46	0
11	E	1789	0	1942	123	0
12	F	1875	0	1995	37	0
13	G	1741	0	1861	31	0
14	H	1516	0	1597	35	0
15	I	1620	0	1663	32	0
16	J	1362	0	1399	24	0
17	L	1658	0	1766	44	0
18	M	1125	0	1198	22	0
19	N	1701	0	1749	32	0
20	O	1630	0	1776	71	0
21	P	1242	0	1274	47	0
22	Q	1512	0	1629	40	0
23	S	1461	0	1502	35	0
24	T	1298	0	1366	24	0
25	U	808	0	831	13	0
26	V	979	0	1039	36	0
27	X	967	0	1040	20	0
28	Y	1115	0	1205	34	0
29	Z	1107	0	1182	12	0
30	a	1163	0	1202	31	0
31	b	545	0	578	39	0
32	d	888	0	930	11	0
33	e	1053	0	1147	17	0
34	f	884	0	924	17	0
35	g	873	0	963	47	0
36	h	1011	0	1150	31	0
37	i	830	0	916	18	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
38	j	705	0	737	13	0
39	k	569	0	637	8	0
40	l	444	0	483	7	0
41	m	422	0	457	7	0
42	o	863	0	927	27	0
43	p	708	0	756	15	0
44	r	1015	0	1085	22	0
45	s	825	0	865	52	0
46	t	1178	0	1235	31	0
47	cc	479	0	507	13	0
48	ff	548	0	552	15	0
49	gg	2436	0	2393	40	0
50	dd	459	0	449	18	0
51	AA	1689	0	1691	25	0
52	BB	1768	0	1846	37	0
53	DD	1751	0	1846	24	0
54	FF	1461	0	1511	52	0
55	KK	810	0	836	18	0
56	MM	958	0	993	15	0
57	OO	1002	0	1023	25	0
58	PP	979	0	1028	42	0
59	QQ	1124	0	1193	26	0
60	RR	1068	0	1121	22	0
61	SS	1193	0	1253	27	0
62	TT	1097	0	1123	14	0
63	UU	790	0	857	8	0
64	ZZ	598	0	656	13	0
65	bb	640	0	665	13	0
66	ee	398	0	443	14	0
67	aa	781	0	828	14	0
68	CC	1689	0	1778	58	0
69	EE	2076	0	2177	28	0
70	GG	1848	0	1999	52	0
71	HH	1490	0	1582	20	0
72	II	1686	0	1771	39	0
73	JJ	1499	0	1618	42	0
74	LL	1157	0	1223	21	0
75	NN	1202	0	1289	20	0
76	VV	637	0	631	7	0
77	WW	1034	0	1080	14	0
78	XX	810	0	711	3	0
79	YY	1015	0	1086	44	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
80	W	1508	0	1663	50	0
81	c	921	0	965	39	0
82	u	775	0	810	41	0
83	Cc	1623	0	827	69	0
84	Bb	1409	0	721	31	0
85	Dd	260	0	131	3	0
86	A5	9	0	0	0	0
86	A6	7	0	0	0	0
86	A7	4	0	0	0	0
86	A8	4	0	0	0	0
86	B2	7	0	0	0	0
86	BB	1	0	0	0	0
86	Bb	1	0	0	0	0
86	Cc	1	0	0	0	0
86	P	1	0	0	0	0
86	l	1	0	0	0	0
87	B2	1	0	0	0	0
87	aa	1	0	0	0	0
87	ff	1	0	0	0	0
87	g	1	0	0	0	0
87	j	1	0	0	0	0
87	m	1	0	0	0	0
87	o	1	0	0	0	0
87	p	1	0	0	0	0
88	A6	1	0	0	0	0
88	B2	4	0	0	0	0
88	Bb	5	0	0	0	0
88	Cc	5	0	0	0	0
All	All	219186	0	160584	3551	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 10.

The worst 5 of 3551 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A5:1972:G:C5	1:A5:1972:G:C6	1.86	1.62
5:A6:4613:C:N1	5:A6:4613:C:C6	1.68	1.60
4:B2:1869:A:C2	4:B2:1869:A:N1	1.68	1.60
5:A6:4613:C:C4	5:A6:4613:C:N3	1.70	1.59
4:B2:1869:A:C4	4:B2:1869:A:N3	1.68	1.58

There are no symmetry-related clashes.

5.3　Torsion angles ⓘ

5.3.1　Protein backbone ⓘ

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	
6	A	246/248 (99%)	229 (93%)	16 (6%)	1 (0%)	30	68
7	n	23/25 (92%)	23 (100%)	0	0	100	100
8	B	395/398 (99%)	369 (93%)	26 (7%)	0	100	100
9	C	359/363 (99%)	341 (95%)	18 (5%)	0	100	100
10	D	291/293 (99%)	271 (93%)	20 (7%)	0	100	100
11	E	218/224 (97%)	199 (91%)	19 (9%)	0	100	100
12	F	223/225 (99%)	210 (94%)	13 (6%)	0	100	100
13	G	211/215 (98%)	204 (97%)	7 (3%)	0	100	100
14	H	188/190 (99%)	182 (97%)	6 (3%)	0	100	100
15	I	195/213 (92%)	182 (93%)	13 (7%)	0	100	100
16	J	168/170 (99%)	161 (96%)	7 (4%)	0	100	100
17	L	203/205 (99%)	194 (96%)	9 (4%)	0	100	100
18	M	134/136 (98%)	128 (96%)	6 (4%)	0	100	100
19	N	201/203 (99%)	193 (96%)	8 (4%)	0	100	100
20	O	195/199 (98%)	188 (96%)	7 (4%)	0	100	100
21	P	151/153 (99%)	148 (98%)	3 (2%)	0	100	100
22	Q	185/187 (99%)	179 (97%)	6 (3%)	0	100	100
23	S	174/176 (99%)	161 (92%)	12 (7%)	1 (1%)	22	59
24	T	157/159 (99%)	148 (94%)	9 (6%)	0	100	100
25	U	97/99 (98%)	94 (97%)	3 (3%)	0	100	100
26	V	129/131 (98%)	114 (88%)	15 (12%)	0	100	100
27	X	116/118 (98%)	108 (93%)	8 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
28	Y	132/134 (98%)	127 (96%)	5 (4%)	0	100	100
29	Z	133/135 (98%)	124 (93%)	9 (7%)	0	100	100
30	a	144/147 (98%)	136 (94%)	8 (6%)	0	100	100
31	b	60/100 (60%)	56 (93%)	4 (7%)	0	100	100
32	d	105/107 (98%)	100 (95%)	5 (5%)	0	100	100
33	e	126/128 (98%)	120 (95%)	6 (5%)	0	100	100
34	f	108/110 (98%)	95 (88%)	13 (12%)	0	100	100
35	g	108/110 (98%)	103 (95%)	4 (4%)	1 (1%)	14	50
36	h	119/121 (98%)	116 (98%)	3 (2%)	0	100	100
37	i	100/102 (98%)	99 (99%)	1 (1%)	0	100	100
38	j	84/86 (98%)	73 (87%)	11 (13%)	0	100	100
39	k	67/69 (97%)	67 (100%)	0	0	100	100
40	l	48/50 (96%)	47 (98%)	1 (2%)	0	100	100
41	m	48/51 (94%)	44 (92%)	4 (8%)	0	100	100
42	o	102/105 (97%)	90 (88%)	11 (11%)	1 (1%)	13	48
43	p	89/91 (98%)	85 (96%)	4 (4%)	0	100	100
44	r	125/127 (98%)	112 (90%)	13 (10%)	0	100	100
45	s	101/103 (98%)	89 (88%)	12 (12%)	0	100	100
46	t	154/156 (99%)	135 (88%)	19 (12%)	0	100	100
47	cc	59/61 (97%)	54 (92%)	5 (8%)	0	100	100
48	ff	65/67 (97%)	56 (86%)	8 (12%)	1 (2%)	8	39
49	gg	311/313 (99%)	292 (94%)	19 (6%)	0	100	100
50	dd	53/55 (96%)	46 (87%)	7 (13%)	0	100	100
51	AA	212/214 (99%)	201 (95%)	11 (5%)	0	100	100
52	BB	214/218 (98%)	202 (94%)	12 (6%)	0	100	100
53	DD	223/225 (99%)	213 (96%)	10 (4%)	0	100	100
54	FF	180/189 (95%)	174 (97%)	6 (3%)	0	100	100
55	KK	94/96 (98%)	88 (94%)	6 (6%)	0	100	100
56	MM	122/124 (98%)	110 (90%)	12 (10%)	0	100	100
57	OO	132/134 (98%)	123 (93%)	9 (7%)	0	100	100
58	PP	116/118 (98%)	111 (96%)	5 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
59	QQ	139/141 (99%)	131 (94%)	8 (6%)	0	100	100
60	RR	130/132 (98%)	125 (96%)	5 (4%)	0	100	100
61	SS	143/145 (99%)	134 (94%)	8 (6%)	1 (1%)	19	56
62	TT	138/141 (98%)	134 (97%)	4 (3%)	0	100	100
63	UU	97/99 (98%)	93 (96%)	4 (4%)	0	100	100
64	ZZ	73/75 (97%)	71 (97%)	2 (3%)	0	100	100
65	bb	80/82 (98%)	77 (96%)	3 (4%)	0	100	100
66	ee	45/49 (92%)	45 (100%)	0	0	100	100
67	aa	96/98 (98%)	90 (94%)	6 (6%)	0	100	100
68	CC	216/218 (99%)	203 (94%)	13 (6%)	0	100	100
69	EE	260/262 (99%)	248 (95%)	12 (5%)	0	100	100
70	GG	224/228 (98%)	215 (96%)	9 (4%)	0	100	100
71	HH	174/190 (92%)	168 (97%)	6 (3%)	0	100	100
72	II	204/206 (99%)	194 (95%)	10 (5%)	0	100	100
73	JJ	178/180 (99%)	166 (93%)	11 (6%)	1 (1%)	22	59
74	LL	137/149 (92%)	126 (92%)	11 (8%)	0	100	100
75	NN	147/149 (99%)	144 (98%)	3 (2%)	0	100	100
76	VV	81/83 (98%)	79 (98%)	2 (2%)	0	100	100
77	WW	127/129 (98%)	118 (93%)	9 (7%)	0	100	100
78	XX	114/122 (93%)	108 (95%)	6 (5%)	0	100	100
79	YY	123/125 (98%)	118 (96%)	5 (4%)	0	100	100
80	W	178/180 (99%)	165 (93%)	11 (6%)	2 (1%)	12	46
81	c	109/121 (90%)	93 (85%)	16 (15%)	0	100	100
82	u	98/100 (98%)	77 (79%)	21 (21%)	0	100	100
All	All	11304/11580 (98%)	10636 (94%)	659 (6%)	9 (0%)	50	83

5 of 9 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
23	S	169	THR
42	o	54	PRO
48	ff	133	ALA
35	g	68	SER
61	SS	2	SER

5.3.2 Protein sidechains ⓘ

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	
6	A	136/190 (72%)	126 (93%)	10 (7%)	11	31
7	n	24/24 (100%)	23 (96%)	1 (4%)	25	47
8	B	344/344 (100%)	327 (95%)	17 (5%)	21	42
9	C	301/301 (100%)	290 (96%)	11 (4%)	29	50
10	D	247/247 (100%)	241 (98%)	6 (2%)	44	63
11	E	197/197 (100%)	191 (97%)	6 (3%)	36	56
12	F	196/196 (100%)	188 (96%)	8 (4%)	26	48
13	G	187/187 (100%)	181 (97%)	6 (3%)	34	54
14	H	169/169 (100%)	160 (95%)	9 (5%)	19	41
15	I	170/180 (94%)	164 (96%)	6 (4%)	31	52
16	J	143/143 (100%)	138 (96%)	5 (4%)	31	52
17	L	170/170 (100%)	162 (95%)	8 (5%)	22	44
18	M	116/116 (100%)	113 (97%)	3 (3%)	41	60
19	N	171/171 (100%)	166 (97%)	5 (3%)	37	57
20	O	171/171 (100%)	162 (95%)	9 (5%)	19	41
21	P	134/134 (100%)	133 (99%)	1 (1%)	81	87
22	Q	164/164 (100%)	162 (99%)	2 (1%)	67	79
23	S	157/157 (100%)	152 (97%)	5 (3%)	34	54
24	T	139/139 (100%)	132 (95%)	7 (5%)	20	42
25	U	89/89 (100%)	84 (94%)	5 (6%)	17	39
26	V	101/101 (100%)	94 (93%)	7 (7%)	13	34
27	X	106/106 (100%)	106 (100%)	0	100	100
28	Y	124/124 (100%)	122 (98%)	2 (2%)	58	74
29	Z	117/117 (100%)	116 (99%)	1 (1%)	75	83
30	a	118/118 (100%)	118 (100%)	0	100	100
31	b	56/82 (68%)	53 (95%)	3 (5%)	18	40

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
32	d	98/98 (100%)	98 (100%)	0	100	100
33	e	114/114 (100%)	104 (91%)	10 (9%)	8	26
34	f	89/89 (100%)	84 (94%)	5 (6%)	17	39
35	g	94/94 (100%)	88 (94%)	6 (6%)	14	36
36	h	109/109 (100%)	106 (97%)	3 (3%)	38	58
37	i	86/86 (100%)	81 (94%)	5 (6%)	17	38
38	j	73/73 (100%)	70 (96%)	3 (4%)	26	48
39	k	64/64 (100%)	63 (98%)	1 (2%)	58	74
40	l	47/47 (100%)	46 (98%)	1 (2%)	48	67
41	m	46/46 (100%)	44 (96%)	2 (4%)	25	47
42	o	92/92 (100%)	89 (97%)	3 (3%)	33	53
43	p	74/74 (100%)	73 (99%)	1 (1%)	62	76
44	r	110/110 (100%)	105 (96%)	5 (4%)	23	45
45	s	90/90 (100%)	88 (98%)	2 (2%)	47	65
46	t	128/128 (100%)	124 (97%)	4 (3%)	35	55
47	cc	54/54 (100%)	54 (100%)	0	100	100
48	ff	60/60 (100%)	59 (98%)	1 (2%)	56	72
49	gg	272/272 (100%)	265 (97%)	7 (3%)	41	60
50	dd	48/48 (100%)	46 (96%)	2 (4%)	25	47
51	AA	179/179 (100%)	175 (98%)	4 (2%)	47	65
52	BB	197/197 (100%)	191 (97%)	6 (3%)	36	56
53	DD	189/189 (100%)	187 (99%)	2 (1%)	70	80
54	FF	156/159 (98%)	154 (99%)	2 (1%)	65	77
55	KK	87/87 (100%)	86 (99%)	1 (1%)	70	80
56	MM	104/104 (100%)	100 (96%)	4 (4%)	28	49
57	OO	104/104 (100%)	101 (97%)	3 (3%)	37	57
58	PP	107/107 (100%)	103 (96%)	4 (4%)	29	50
59	QQ	117/117 (100%)	113 (97%)	4 (3%)	32	52
60	RR	119/119 (100%)	117 (98%)	2 (2%)	56	72
61	SS	125/125 (100%)	122 (98%)	3 (2%)	44	63
62	TT	110/110 (100%)	105 (96%)	5 (4%)	23	45

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
63	UU	92/92 (100%)	89 (97%)	3 (3%)	33	53
64	ZZ	66/66 (100%)	65 (98%)	1 (2%)	60	75
65	bb	74/74 (100%)	74 (100%)	0	100	100
66	ee	41/41 (100%)	40 (98%)	1 (2%)	44	63
67	aa	85/85 (100%)	80 (94%)	5 (6%)	16	38
68	CC	183/183 (100%)	175 (96%)	8 (4%)	24	46
69	EE	224/224 (100%)	215 (96%)	9 (4%)	27	48
70	GG	199/199 (100%)	192 (96%)	7 (4%)	31	52
71	HH	167/170 (98%)	161 (96%)	6 (4%)	30	51
72	II	178/178 (100%)	176 (99%)	2 (1%)	70	80
73	JJ	160/160 (100%)	157 (98%)	3 (2%)	52	70
74	LL	128/134 (96%)	125 (98%)	3 (2%)	45	64
75	NN	130/130 (100%)	124 (95%)	6 (5%)	23	45
76	VV	68/68 (100%)	66 (97%)	2 (3%)	37	57
77	WW	112/112 (100%)	109 (97%)	3 (3%)	40	59
78	XX	65/98 (66%)	63 (97%)	2 (3%)	35	55
79	YY	107/107 (100%)	100 (94%)	7 (6%)	14	36
80	W	159/159 (100%)	153 (96%)	6 (4%)	28	49
81	c	92/100 (92%)	88 (96%)	4 (4%)	25	47
82	u	85/85 (100%)	81 (95%)	4 (5%)	22	44
All	All	9804/9947 (99%)	9478 (97%)	326 (3%)	35	53

5 of 326 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
59	QQ	55	VAL
73	JJ	94	LEU
61	SS	139	THR
68	CC	224	THR
77	WW	81	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 106 such sidechains are listed below:

Mol	Chain	Res	Type
49	gg	296	GLN
57	OO	79	GLN
78	XX	16	HIS
51	AA	141	ASN
54	FF	65	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A5	1665/1717 (96%)	698 (41%)	66 (3%)
2	A7	119/120 (99%)	30 (25%)	0
3	A8	155/156 (99%)	66 (42%)	4 (2%)
4	B2	1754/1804 (97%)	686 (39%)	43 (2%)
5	A6	1994/2092 (95%)	737 (36%)	44 (2%)
83	Cc	75/76 (98%)	31 (41%)	0
84	Bb	62/65 (95%)	28 (45%)	0
85	Dd	12/13 (92%)	3 (25%)	0
All	All	5836/6043 (96%)	2279 (39%)	157 (2%)

5 of 2279 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A5	6	C
1	A5	9	C
1	A5	12	A
1	A5	13	U
1	A5	14	C

5 of 157 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
5	A6	2266	C
5	A6	4629	U
5	A6	2395	A
5	A6	3799	A
5	A6	4946	U

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

7 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	#$|Z| > 2$
62	NMM	TT	67	62	8,11,12	0.67	0	7,12,14	2.15	2 (28%)
31	MLZ	b	5	31	8,9,10	0.80	0	4,9,11	0.67	0
42	MLZ	o	53	42	8,9,10	1.35	1 (12%)	4,9,11	0.88	0
84	YYG	Bb	37	85,86,84	30,42,43	1.30	4 (13%)	32,62,65	1.96	5 (15%)
41	M3L	m	98	41	10,11,12	0.41	0	9,14,16	0.28	0
8	HIC	B	245	8	8,11,12	1.13	1 (12%)	5,14,16	0.81	0
30	V5N	a	39	30	4,11,12	0.81	0	5,14,16	1.11	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
62	NMM	TT	67	62	-	2/9/11/13	-
31	MLZ	b	5	31	-	1/7/8/10	-
42	MLZ	o	53	42	-	3/7/8/10	-
84	YYG	Bb	37	85,86,84	-	8/20/42/43	0/3/4/4
41	M3L	m	98	41	-	1/9/10/12	-
8	HIC	B	245	8	-	2/5/6/8	0/1/1/1
30	V5N	a	39	30	-	3/5/10/12	0/1/1/1

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
84	Bb	37	YYG	C8-N7	-3.89	1.28	1.34
42	o	53	MLZ	O-C	3.70	1.34	1.20
84	Bb	37	YYG	C12-N1	3.27	1.42	1.36
84	Bb	37	YYG	C2-N2	-3.23	1.29	1.35
8	B	245	HIC	CE1-ND1	-2.31	1.31	1.34

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

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
84	Bb	37	YYG	C3-N3-C4	7.33	127.84	116.76
62	TT	67	NMM	NE-CZ-NH2	-4.84	115.05	119.48
84	Bb	37	YYG	C3-N3-C2	-4.41	116.02	120.09
84	Bb	37	YYG	C13-C12-N1	3.44	128.74	122.55
84	Bb	37	YYG	C11-C12-N1	-3.18	104.74	106.53

There are no chirality outliers.

5 of 20 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
42	o	53	MLZ	N-CA-CB-CG
42	o	53	MLZ	C-CA-CB-CG
42	o	53	MLZ	CD-CE-NZ-CM
62	TT	67	NMM	C-CA-CB-CG
62	TT	67	NMM	N-CA-CB-CG

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
84	Bb	37	YYG	2	0
8	B	245	HIC	1	0

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 44 ligands modelled in this entry, 44 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7   Other polymers ⓘ

There are no such residues in this entry.

5.8   Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A5	11
5	A6	5
4	B2	4
78	XX	3
11	E	2
84	Bb	2
71	HH	2
20	O	2
52	BB	1
66	ee	1
13	G	1
70	GG	1
83	Cc	1
9	C	1
80	W	1
45	s	1
68	CC	1
35	g	1
58	PP	1
72	II	1

The worst 5 of 43 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	BB	8:ARG	C	23:ASP	N	19.98
1	E	78:ALA	C	90:LYS	N	19.53
1	A5	1249:C	O3'	1261:G	P	17.69
1	A6	3295:G	O3'	3571:C	P	16.69
1	A5	1703:C	O3'	1720:C	P	16.31

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-72470. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections ⓘ
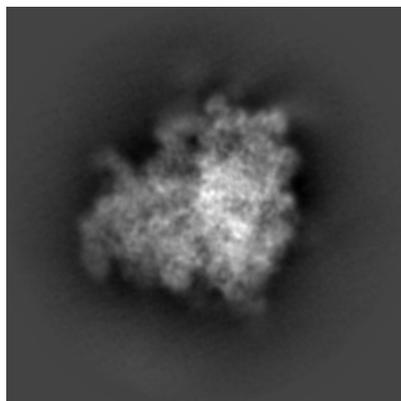
6.1.1 Primary map

X
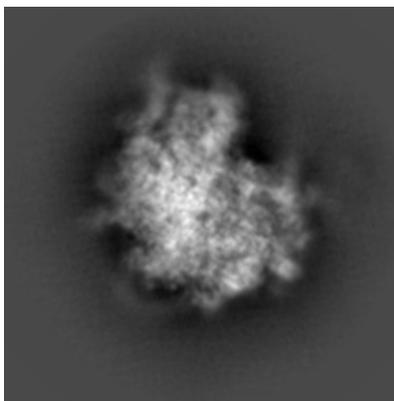
Y
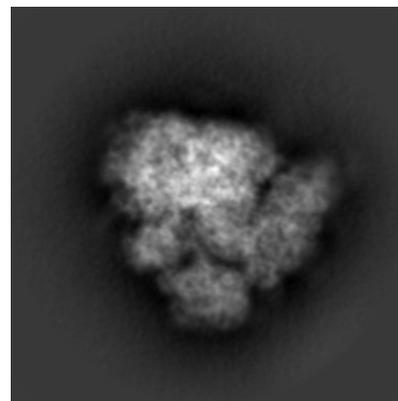
Z

6.1.2 Raw map

X

Y

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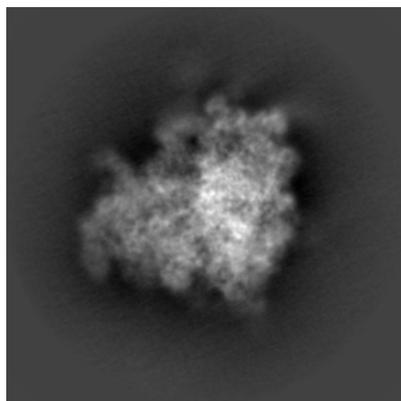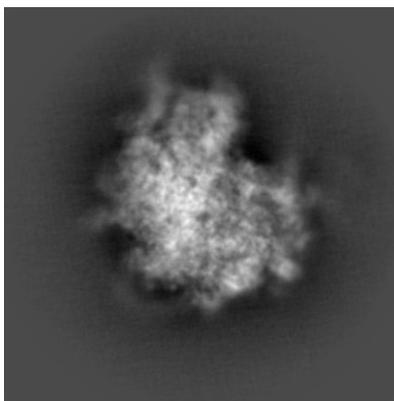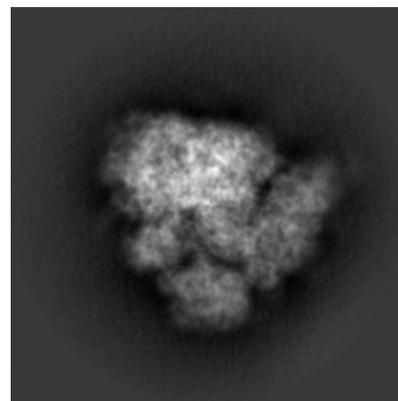
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
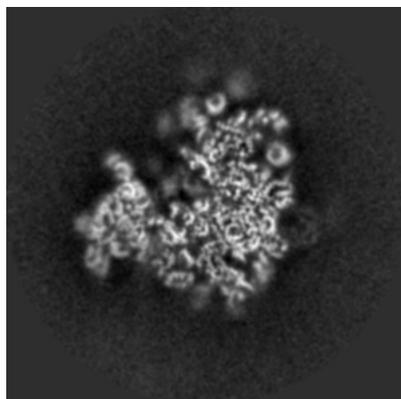
6.2.1 Primary map
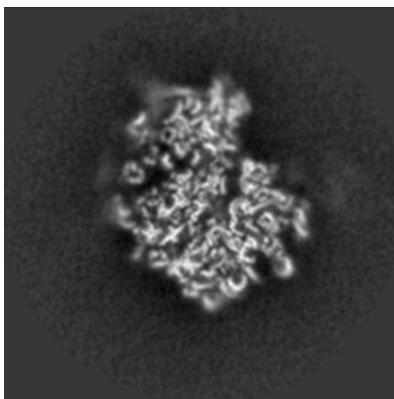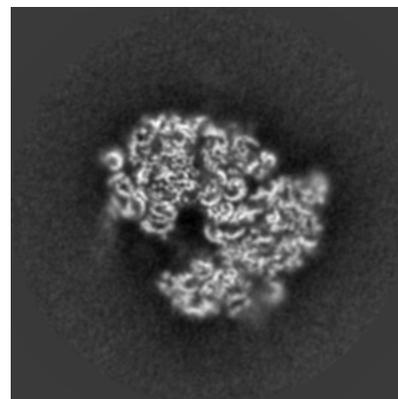
X Index: 220   Y Index: 220   Z Index: 220

6.2.2 Raw map
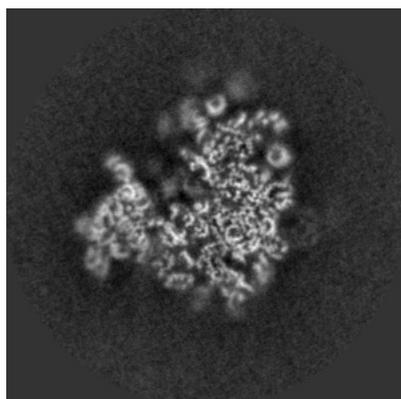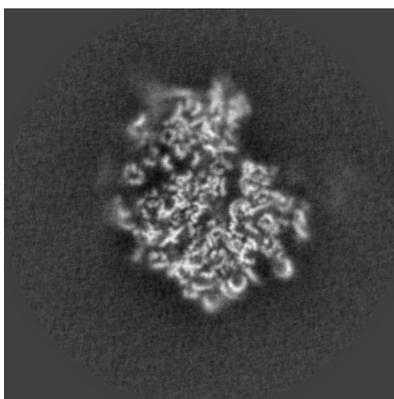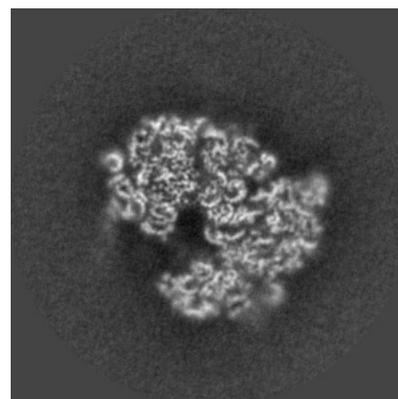
X Index: 220   Y Index: 220   Z Index: 220

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

6.3   Largest variance slices ⓘ

6.3.1   Primary map
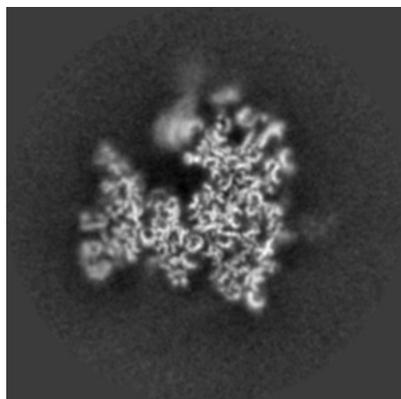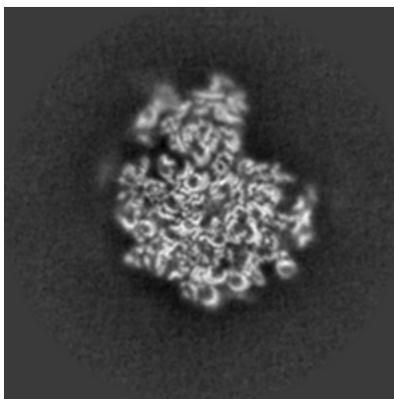
X Index: 237   Y Index: 228   Z Index: 229
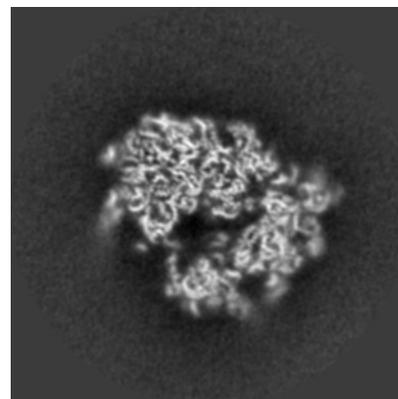
6.3.2   Raw map
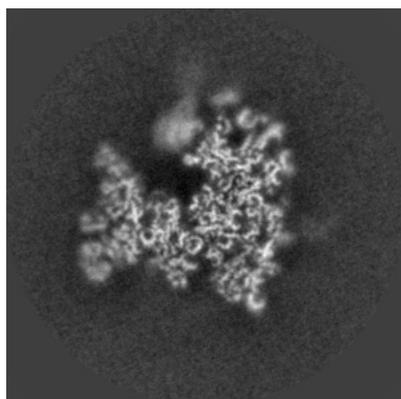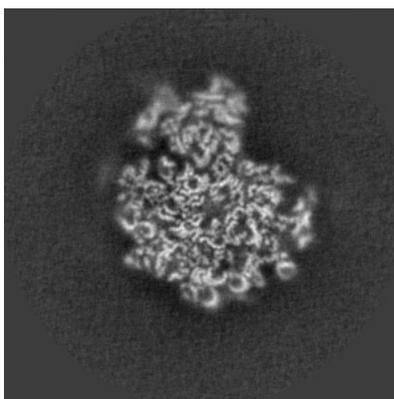
X Index: 238   Y Index: 228   Z Index: 229
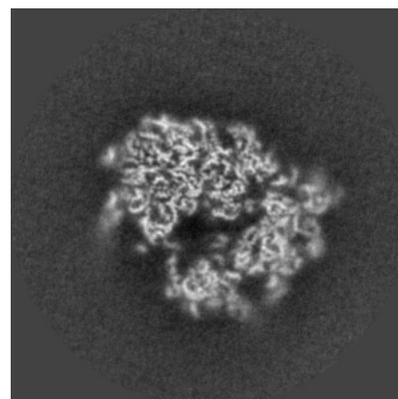
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map
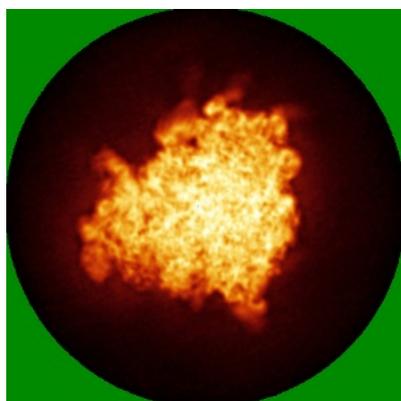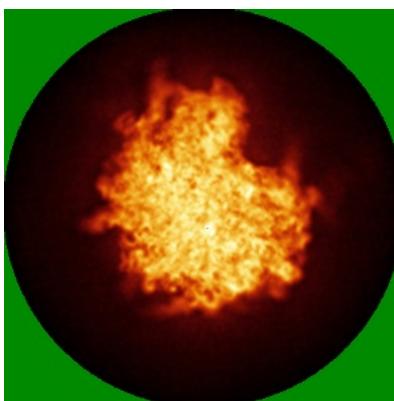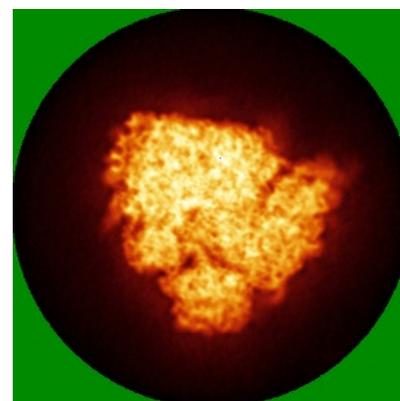
| X | Y | Z |

6.4.2 Raw map

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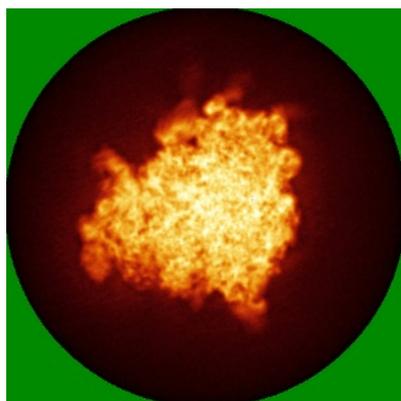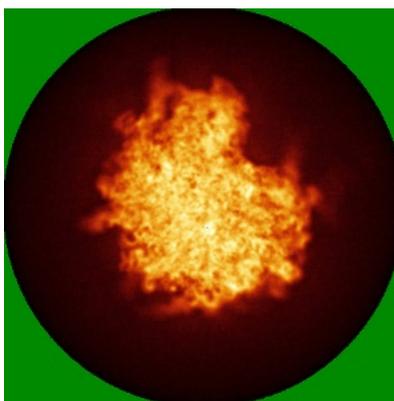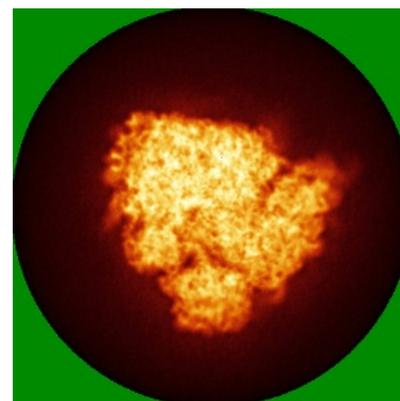
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

X   Y   Z
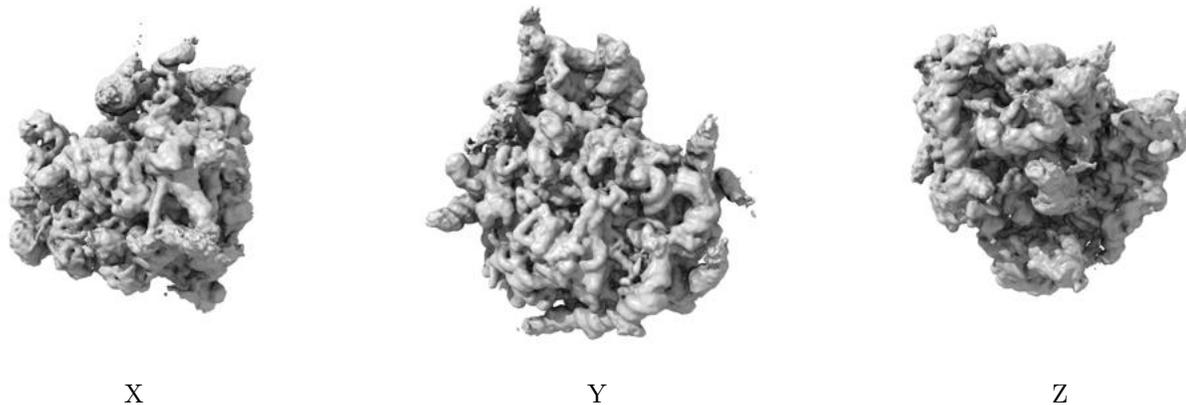
The images above show the 3D surface view of the map at the recommended contour level 0.009. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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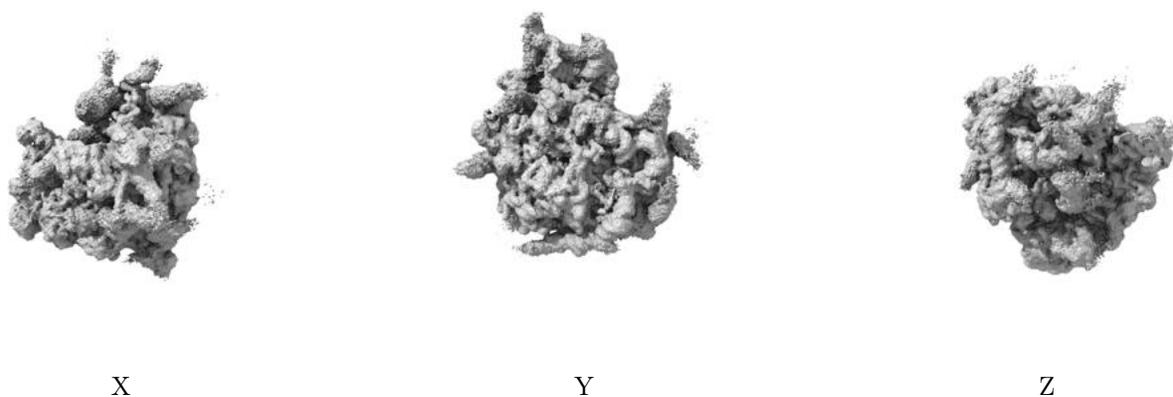
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation ⓘ

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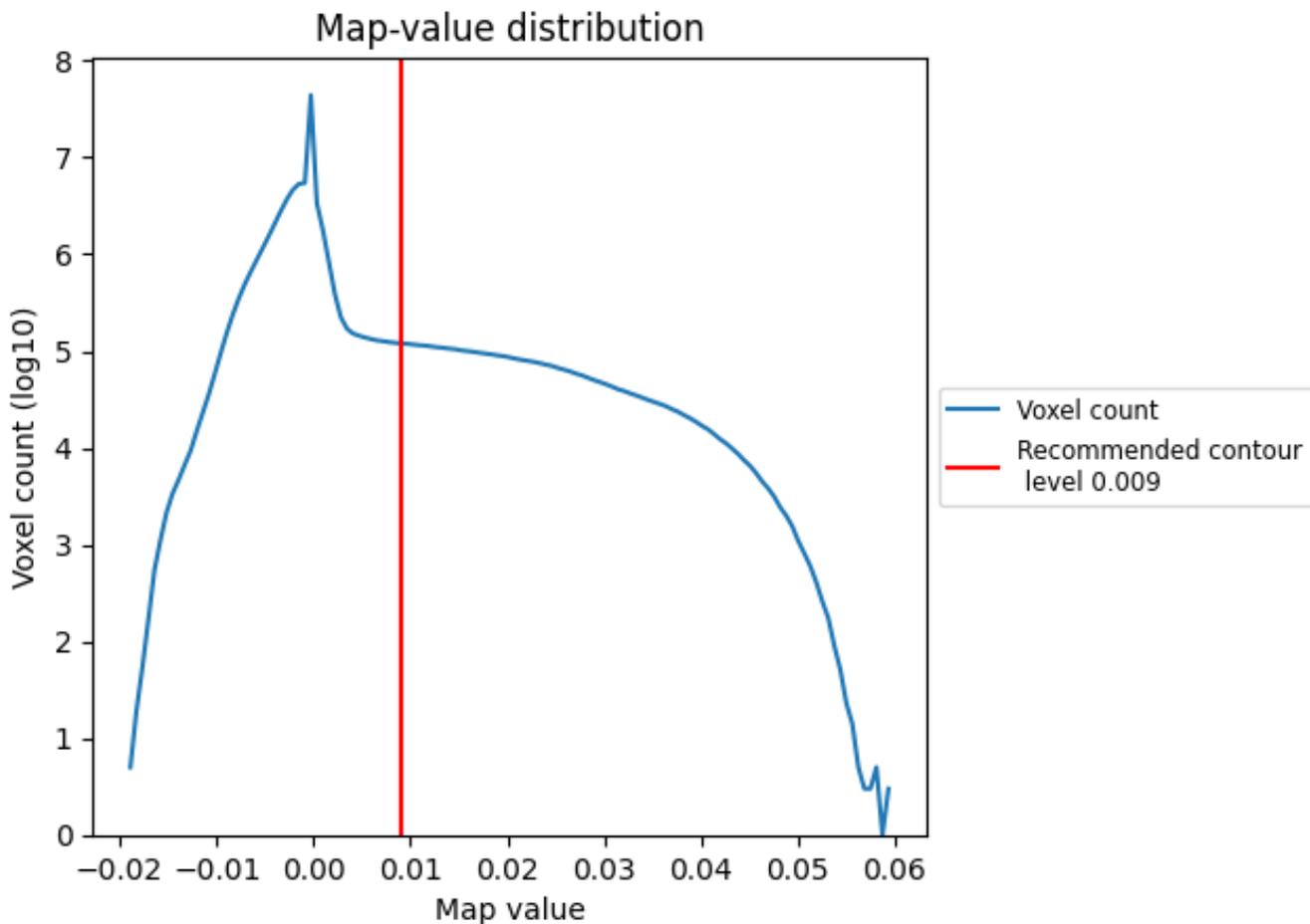
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2　Volume estimate ⓘ
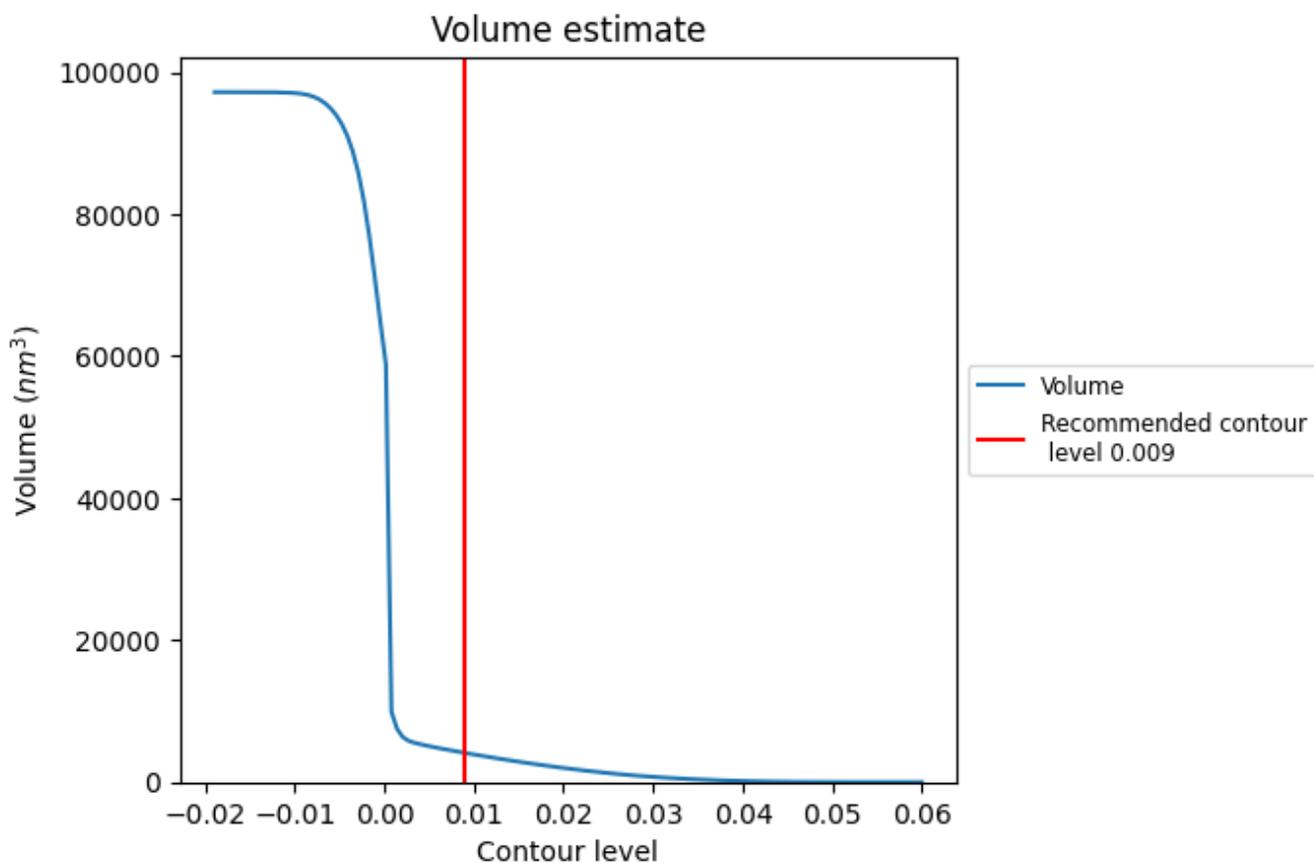
The volume at the recommended contour level is 4107 nm^3; this corresponds to an approximate mass of 3710 kDa.

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 ⓘ
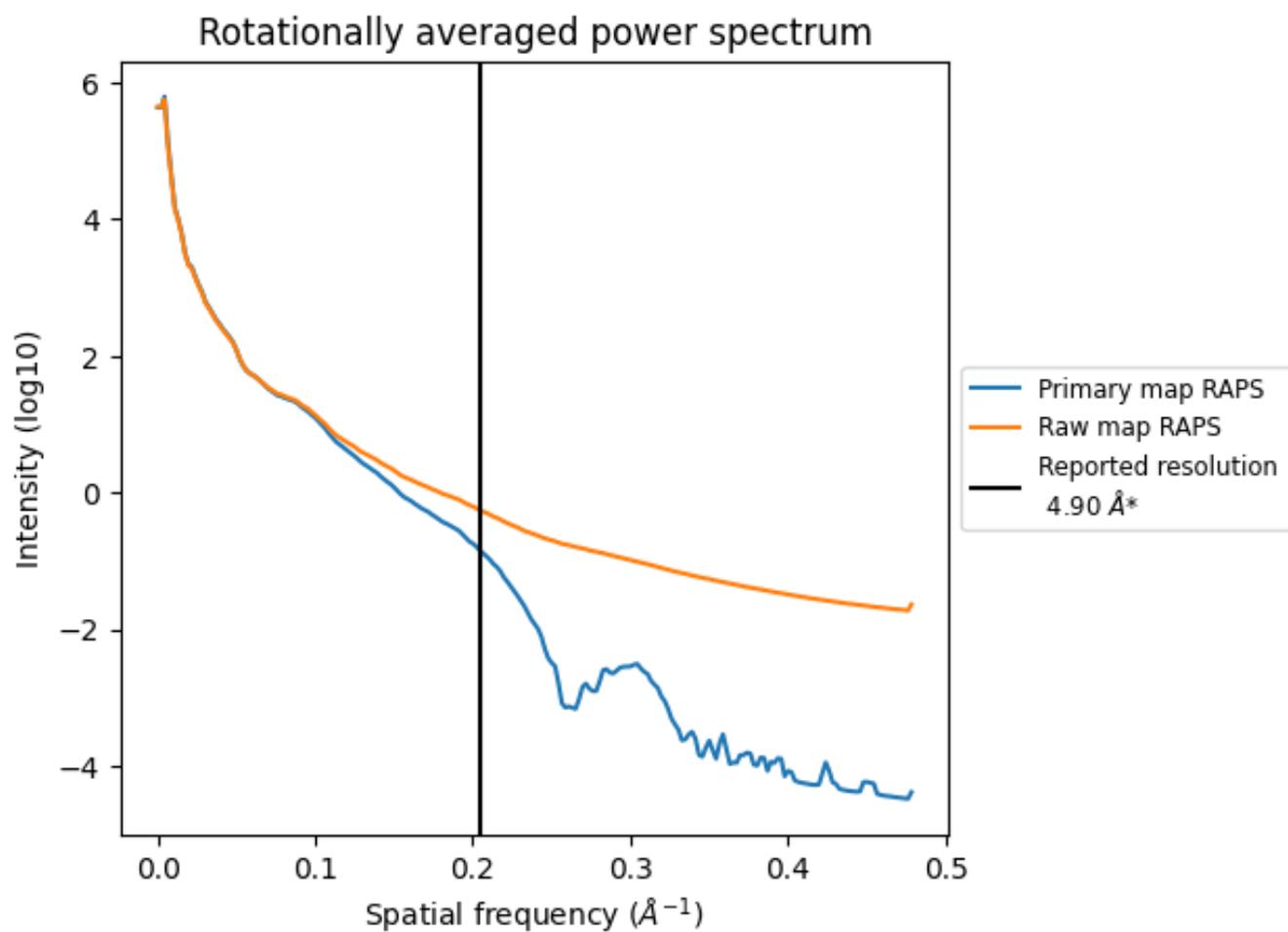
*Reported resolution corresponds to spatial frequency of 0.204 Å^{-1}

8 Fourier-Shell correlation ⓘ

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC ⓘ
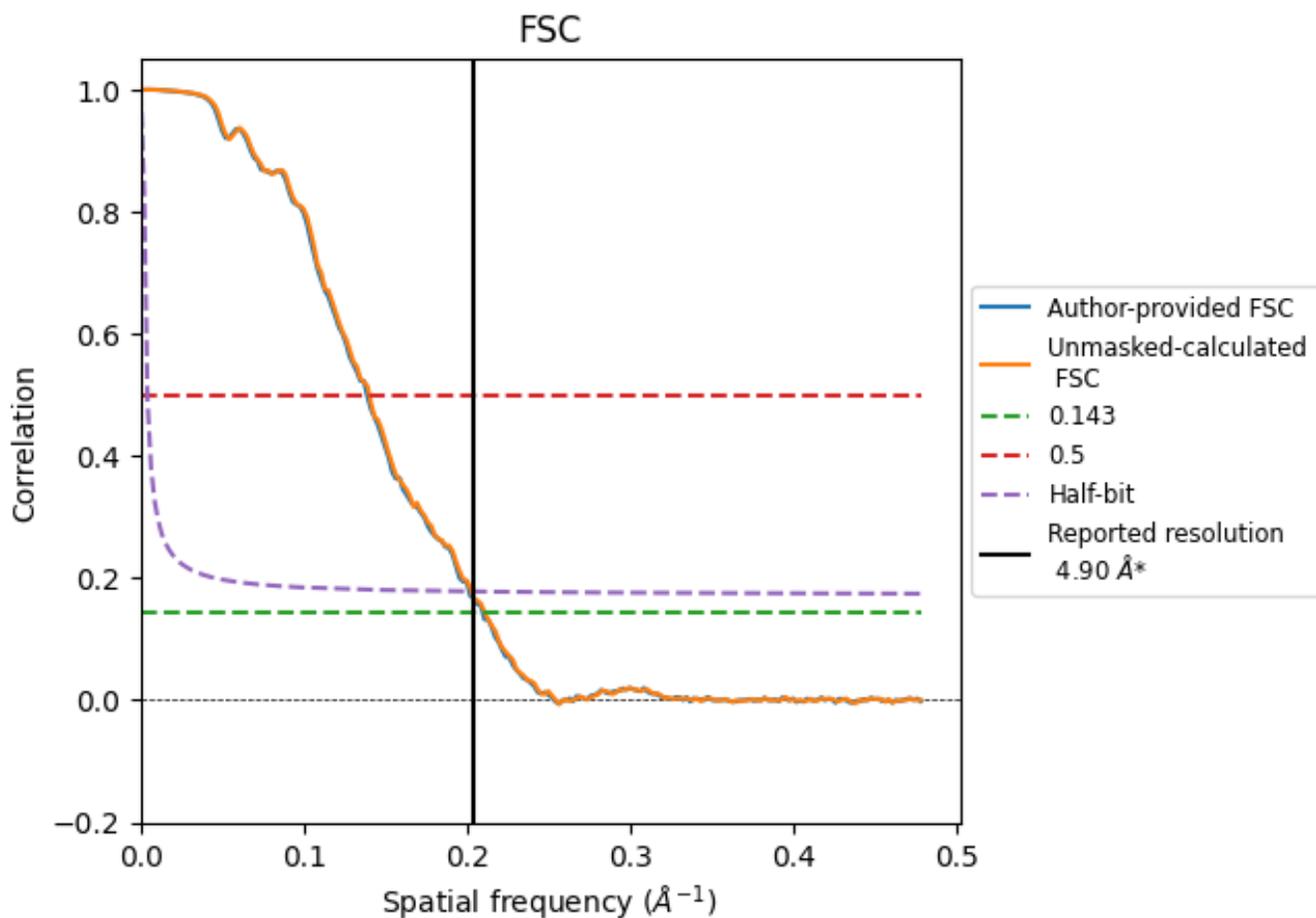
*Reported resolution corresponds to spatial frequency of 0.204 Å^{-1}

8.2   Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.90	-	-
Author-provided FSC curve	4.76	7.20	4.96
Unmasked-calculated*	4.74	7.13	4.93

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-72470 and PDB model 9Y44. Per-residue inclusion information can be found in section 3 on page 22.

## 9.1 Map-model overlay ⓘ

| X | Y | Z |
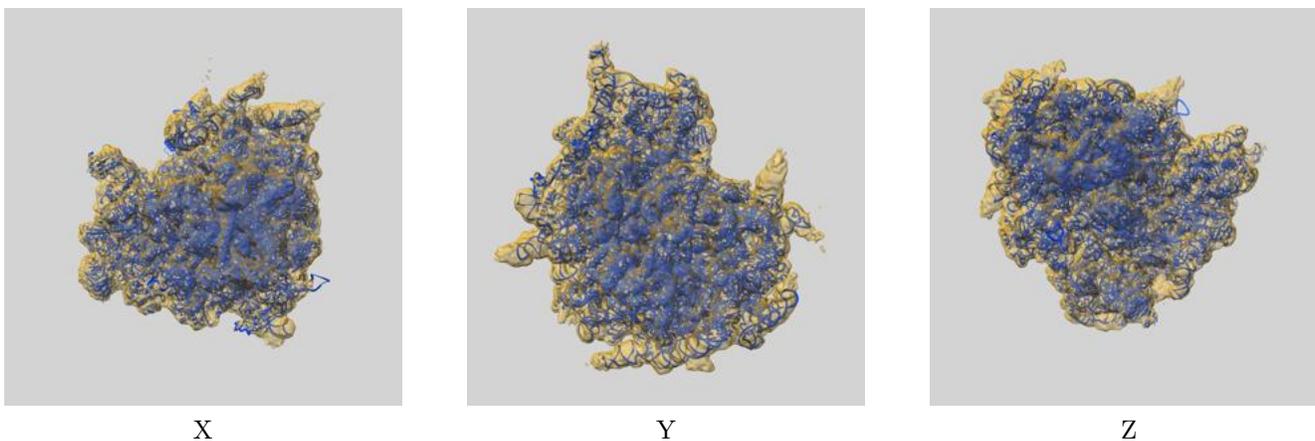
The images above show the 3D surface view of the map at the recommended contour level 0.009 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model ⓘ
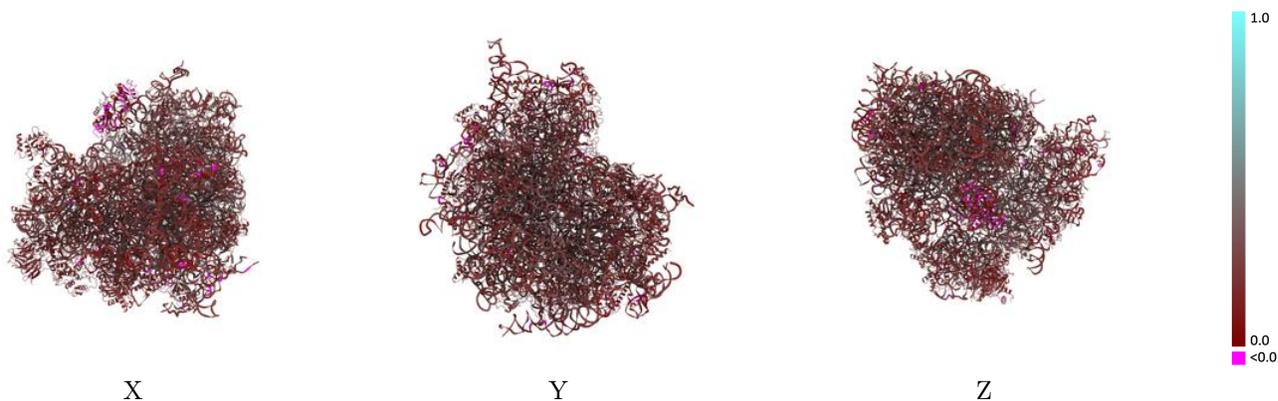
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 ⓘ
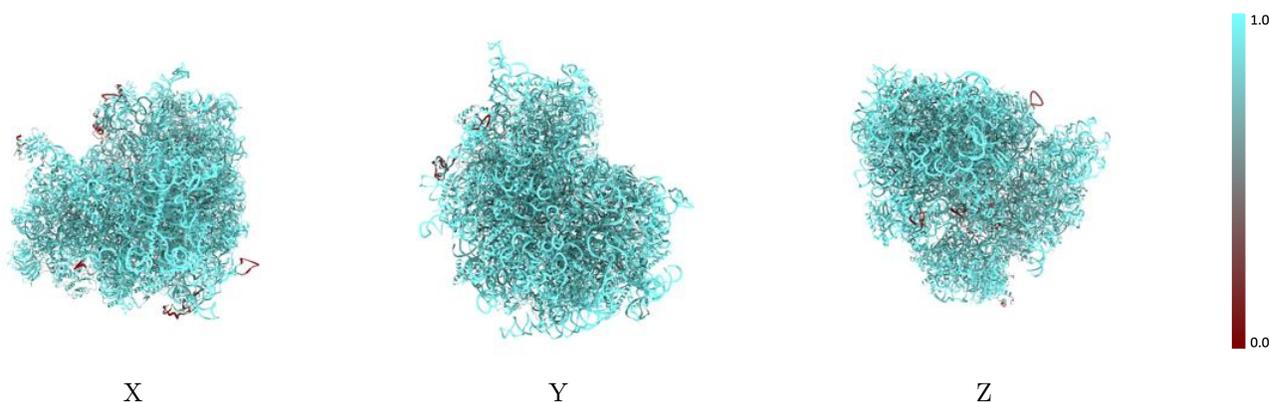
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.009).

9.4   Atom inclusion ⓘ
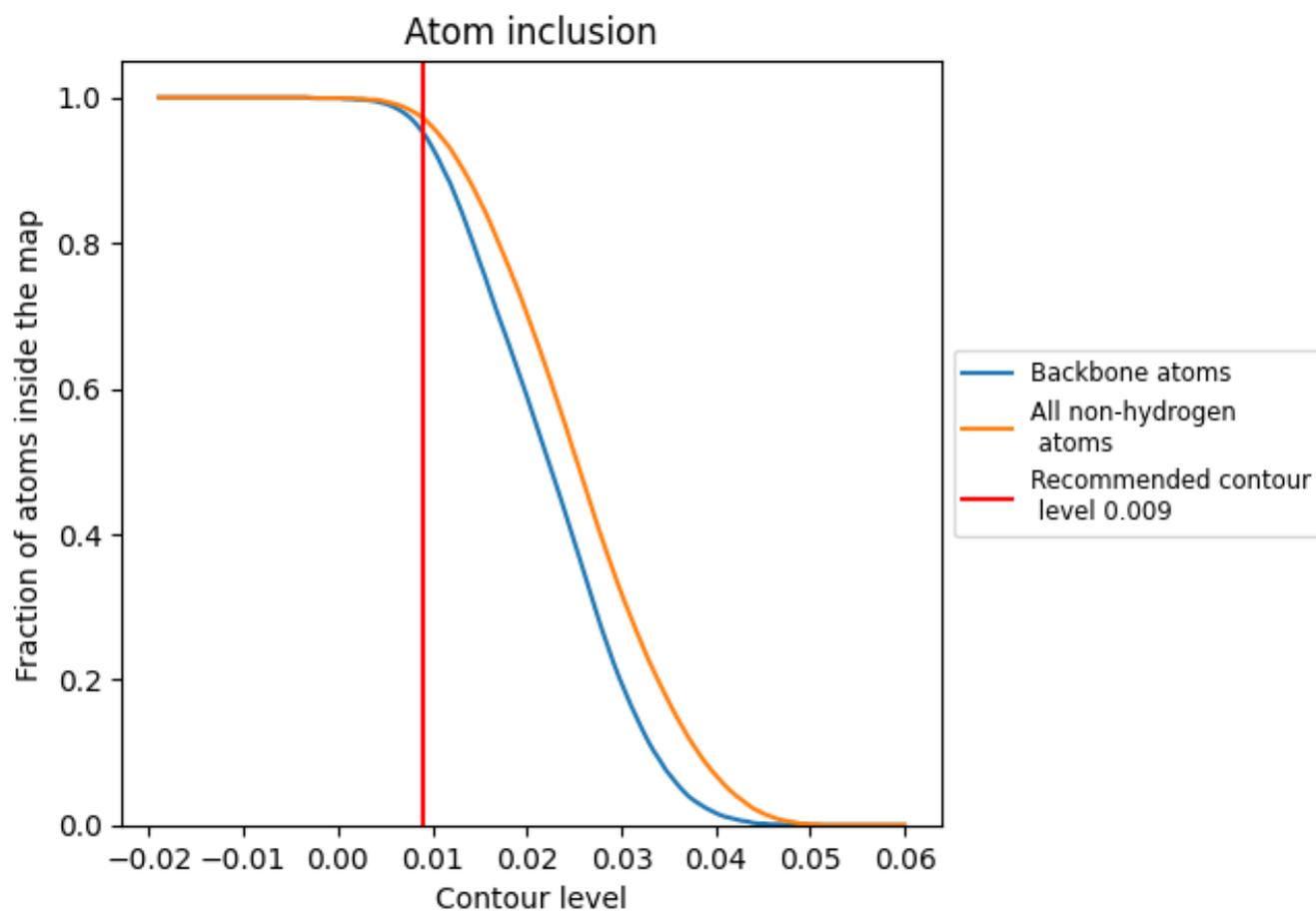
At the recommended contour level, 95% of all backbone atoms, 97% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.009) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9720	0.2370
A	0.9490	0.2730
A5	0.9930	0.2540
A6	0.9920	0.2700
A7	1.0000	0.2790
A8	0.9990	0.2670
AA	0.9320	0.2090
B	0.9660	0.2300
B2	0.9940	0.2480
BB	0.9510	0.2150
Bb	0.5620	0.1610
C	0.9600	0.2360
CC	0.9350	0.2280
Cc	0.9770	0.2290
D	0.9860	0.2060
DD	0.9020	0.1990
Dd	0.9580	0.2620
E	0.9770	0.2270
EE	0.9750	0.1960
F	0.9470	0.2270
FF	0.9590	0.1900
G	0.9660	0.2180
GG	0.9810	0.1850
H	0.9580	0.2280
HH	0.9100	0.2060
I	0.9540	0.2460
II	0.9690	0.1920
J	0.9750	0.2090
JJ	0.9700	0.1750
KK	0.9700	0.1860
L	0.9690	0.2390
LL	0.9490	0.2350
M	0.9860	0.2330
MM	0.7970	0.1590
N	0.9640	0.2210

1.0

0.0
<0.0

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W O R L D W I D E
wwPDB
PROTEIN DATA BANK

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Chain	Atom inclusion	Q-score
NN	0.9300	0.2110
O	0.9460	0.2180
OO	0.9530	0.2140
P	0.9710	0.2310
PP	0.9890	0.1950
Q	0.9400	0.2400
QQ	0.9840	0.1700
RR	0.8800	0.1880
S	0.9830	0.2330
SS	0.9740	0.1880
T	0.9570	0.2500
TT	0.9910	0.1800
U	0.9870	0.2190
UU	0.9550	0.1890
V	0.9230	0.2160
VV	0.9450	0.2120
W	0.9630	0.1970
WW	0.9220	0.2210
X	0.9770	0.2330
XX	0.9840	0.2630
Y	0.9810	0.2200
YY	0.9860	0.1750
Z	0.9740	0.2160
ZZ	0.9610	0.1800
a	0.9550	0.2400
aa	0.9720	0.2340
b	0.9730	0.1950
bb	0.9600	0.2280
c	0.9440	0.1620
cc	0.9390	0.2200
d	0.9770	0.2350
dd	0.9680	0.1510
e	0.9450	0.2420
ee	0.9970	0.1770
f	0.9570	0.2220
ff	0.9380	0.1540
g	0.9760	0.2230
gg	0.9610	0.1820
h	0.9790	0.2110
i	0.9560	0.2200
j	0.9690	0.1990
k	0.9430	0.2130

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Chain	Atom inclusion	Q-score
l	0.9740	0.2180
m	0.9760	0.2310
n	0.8900	0.1680
o	0.9180	0.2120
p	0.9060	0.2200
r	0.9620	0.2560
s	0.9010	0.0860
t	0.5540	0.0650
u	0.8550	0.1450