



wwPDB EM Validation Summary Report ⓘ

Dec 10, 2025 – 07:08 pm GMT

PDB ID : 8CMJ / pdb_00008cmj
EMDB ID : EMD-16729
Title : Translocation intermediate 4 (TI-4*) of 80S *S. cerevisiae* ribosome with eEF2
in the absence of sordarin
Authors : Milicevic, N.; Jenner, L.; Myasnikov, A.; Yusupov, M.; Yusupova, G.
Deposited on : 2023-02-20
Resolution : 3.79 Å(reported)

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

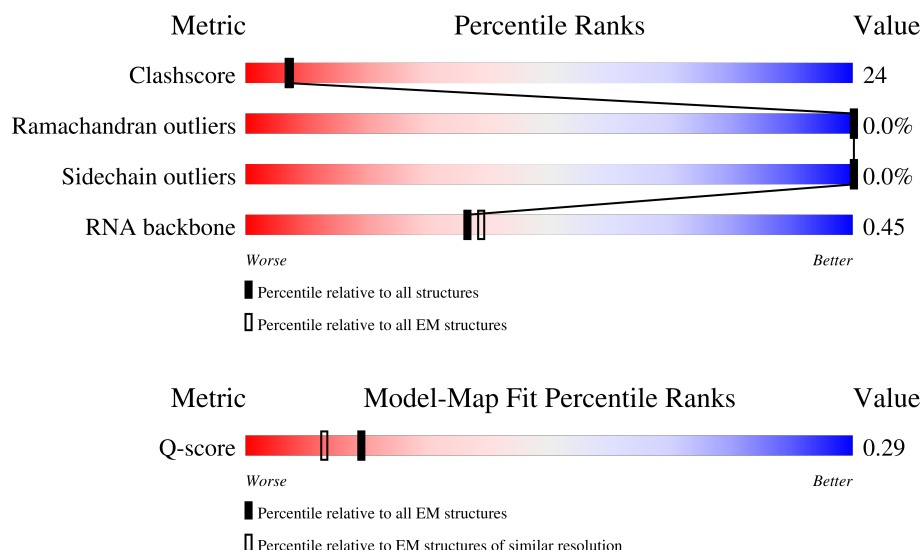
EMDB validation analysis : 0.0.1.dev129
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up 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) : 2.47

1 Overall quality at a glance i

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

The reported resolution of this entry is 3.79 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



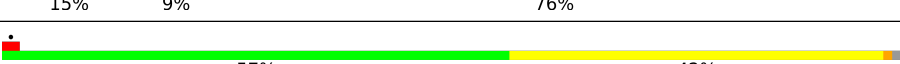
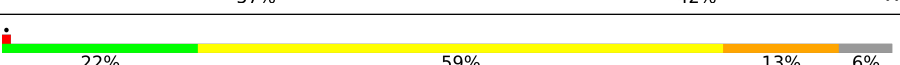
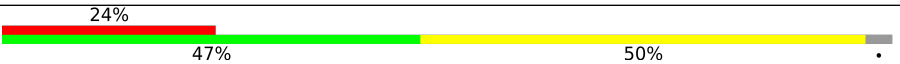
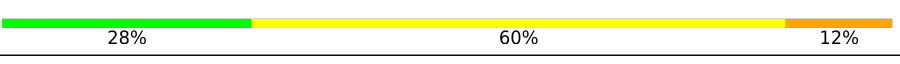
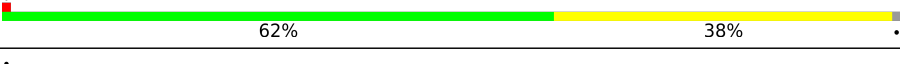
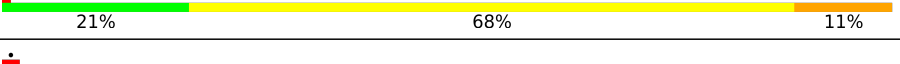
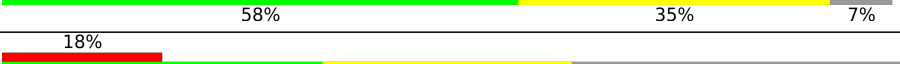
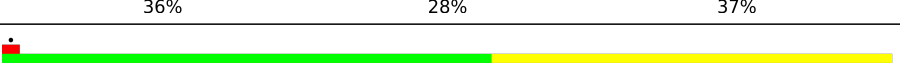
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
RNA backbone	6643	2191	-
Q-score	-	25397	10018 (3.29 - 4.29)

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

Mol	Chain	Length	Quality of chain
1	0	135	13% 51% 48% .
2	1	108	60% 32% 32% 35%
3	2	119	42% 39% 18%

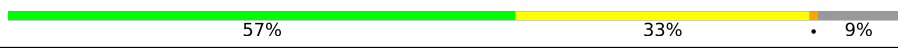
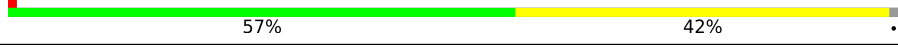
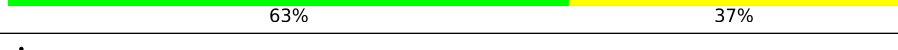
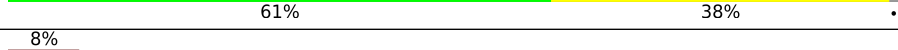
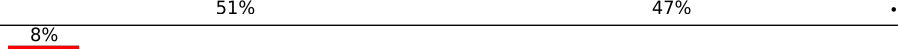
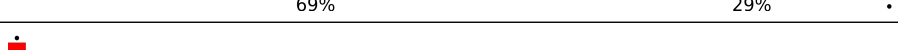
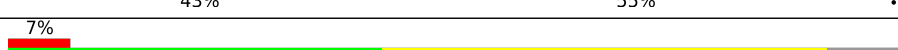
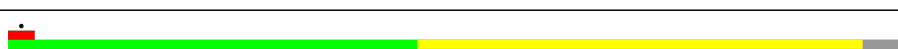
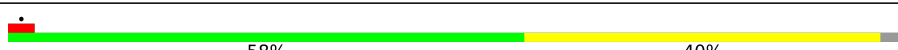
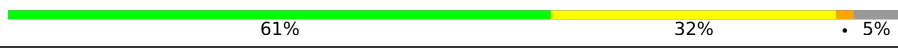
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Mol	Chain	Length	Quality of chain
4	3	82	
5	4	67	
6	5	56	
7	6	63	
8	7	319	
9	8	152	
10	A	199	
11	AA	3396	
12	Aa	842	
13	B	184	
14	BB	121	
15	C	186	
16	CC	158	
17	D	189	
18	DD	312	
19	E	172	
20	EE	254	
21	Ee	165	
22	F	160	
23	FF	387	
24	G	121	
25	GG	362	
26	H	137	
27	HH	297	
28	I	155	

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Mol	Chain	Length	Quality of chain
29	II	176	
30	J	142	
31	JJ	244	
32	K	127	
33	KK	256	
34	L	136	
35	LL	191	
36	M	149	
37	MM	221	
38	N	59	
39	NN	174	
40	O	105	
41	OO	199	
42	P	113	
43	PP	138	
44	Q	130	
45	QQ	204	
46	R	107	
47	S	121	
48	T	120	
49	U	100	
50	V	88	
51	W	78	
52	X	51	
53	Y	128	

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Mol	Chain	Length	Quality of chain
54	Z	25	
55	a	106	
56	b	92	
57	c	1800	
58	d	252	
59	e	255	
60	f	254	
61	g	240	
62	h	261	
63	i	225	
64	j	236	
65	k	190	
66	l	200	
67	m	197	
68	n	105	
69	o	156	
70	p	151	
71	q	137	
72	r	142	
73	s	143	
74	t	136	
75	u	146	
76	v	144	
77	w	121	
78	x	87	

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Mol	Chain	Length	Quality of chain
79	y	130	
80	z	145	

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
11	OMU	AA	2724	-	-	X	-
57	OMG	c	562	-	-	X	-

2 Entry composition

There are 85 unique types of molecules in this entry. The entry contains 202630 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called 40S ribosomal protein S24-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
1	0	134	Total	C	N	O	0	0
			1073	676	208	189		

- Molecule 2 is a protein called 40S ribosomal protein S25-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
2	1	70	Total	C	N	O	0	0
			563	360	104	99		

- Molecule 3 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	2	97	Total	C	N	O	S	0	0
			769	475	160	129	5		

- Molecule 4 is a protein called 40S ribosomal protein S27-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	3	81	Total	C	N	O	S	0	0
			610	382	110	113	5		

- Molecule 5 is a protein called 40S ribosomal protein S28-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	4	63	Total	C	N	O	S	0	0
			497	306	99	91	1		

- Molecule 6 is a protein called HLJ1_G0030400.mRNA.1.CDS.1.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	5	49	Total	C	N	O	S	0	0
			404	249	86	65	4		

- Molecule 7 is a protein called 40S ribosomal protein S30-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	6	53	Total	C	N	O	S	0	0
			427	269	88	69	1		

- Molecule 8 is a protein called Guanine nucleotide-binding protein subunit beta-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	7	318	Total	C	N	O	S	0	0
			2436	1541	418	469	8		

- Molecule 9 is a protein called Ubiquitin-40S ribosomal protein S31.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	8	36	Total	C	N	O	S	0	0
			276	173	54	45	4		

- Molecule 10 is a protein called 60S ribosomal protein L16-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	A	197	Total	C	N	O	S	0	0
			1555	1003	289	262	1		

- Molecule 11 is a RNA chain called 25S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	AA	3197	Total	C	N	O	P	0	0
			68429	30589	12334	22309	3197		

- Molecule 12 is a protein called Elongation factor 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	Aa	816	Total	C	N	O	S	0	0
			6368	4051	1088	1198	31		

- Molecule 13 is a protein called 60S ribosomal protein L17-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	B	154	Total	C	N	O	0	0
			1222	761	237	224		

- Molecule 14 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	BB	121	Total	C	N	O	P	0	0
			2579	1152	461	845	121		

- Molecule 15 is a protein called 60S ribosomal protein L18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	C	185	Total	C	N	O	S	0	0
			1441	908	290	241	2		

- Molecule 16 is a RNA chain called 5.8S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	CC	158	Total	C	N	O	P	0	0
			3353	1500	586	1109	158		

- Molecule 17 is a protein called 60S ribosomal protein L19-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	D	176	Total	C	N	O	0	0
			1423	875	308	240		

- Molecule 18 is a protein called 60S acidic ribosomal protein P0.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	DD	197	Total	C	N	O	S	0	0
			1531	980	266	281	4		

- Molecule 19 is a protein called 60S ribosomal protein L20-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	E	172	Total	C	N	O	S	0	0
			1445	930	267	244	4		

- Molecule 20 is a protein called 60S ribosomal protein L2-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	EE	252	Total	C	N	O	S	0	0
			1914	1191	388	334	1		

- Molecule 21 is a protein called 60S ribosomal protein L12-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	Ee	158	Total	C	N	O	S	0	0
			1196	750	216	228	2		

- Molecule 22 is a protein called 60S ribosomal protein L21-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	F	159	Total	C	N	O	S	0	0
			1276	805	246	221	4		

- Molecule 23 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	FF	386	Total	C	N	O	S	0	0
			3075	1950	584	533	8		

- Molecule 24 is a protein called 60S ribosomal protein L22-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	G	97	Total	C	N	O		0	0
			770	499	126	145			

- Molecule 25 is a protein called 60S ribosomal protein L4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	GG	361	Total	C	N	O	S	0	0
			2748	1729	522	494	3		

- Molecule 26 is a protein called 60S ribosomal protein L23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	H	129	Total	C	N	O	S	0	0
			963	607	180	169	7		

- Molecule 27 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	HH	296	Total	C	N	O	S	0	0
			2375	1501	414	458	2		

- Molecule 28 is a protein called 60S ribosomal protein L24-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	I	63	Total	C	N	O	S	0	0
			521	336	102	82	1		

- Molecule 29 is a protein called 60S ribosomal protein L6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	II	155	Total	C	N	O	S	0	0
			1230	795	221	213	1		

- Molecule 30 is a protein called 60S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	J	120	Total	C	N	O	S	0	0
			959	617	168	172	2		

- Molecule 31 is a protein called 60S ribosomal protein L7-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	JJ	222	Total	C	N	O	S	0	0
			1784	1151	324	308	1		

- Molecule 32 is a protein called 60S ribosomal protein L26-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
32	K	126	Total	C	N	O	0	0
			993	625	192	176		

- Molecule 33 is a protein called 60S ribosomal protein L8-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	KK	233	Total	C	N	O	S	0	0
			1804	1151	323	327	3		

- Molecule 34 is a protein called 60S ribosomal protein L27-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
34	L	135	Total	C	N	O	0	0
			1092	710	202	180		

- Molecule 35 is a protein called RPL9A isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	LL	191	Total	C	N	O	S	0	0
			1518	963	274	277	4		

- Molecule 36 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	M	148	Total	C	N	O	S	0	0
			1173	749	231	190	3		

- Molecule 37 is a protein called 60S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	MM	215	Total	C	N	O	S	0	0
			1743	1102	331	303	7		

- Molecule 38 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	N	58	Total	C	N	O		0	0
			462	289	100	73			

- Molecule 39 is a protein called 60S ribosomal protein L11-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	NN	169	Total	C	N	O	S	0	0
			1353	847	253	249	4		

- Molecule 40 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	O	97	Total	C	N	O	S	0	0
			742	479	124	138	1		

- Molecule 41 is a protein called 60S ribosomal protein L13-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	OO	193	Total	C	N	O		0	0
			1543	962	315	266			

- Molecule 42 is a protein called 60S ribosomal protein L31-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	P	109	Total	C	N	O	S	0	0
			883	559	167	156	1		

- Molecule 43 is a protein called 60S ribosomal protein L14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	PP	136	Total	C	N	O	S	0	0
			1053	675	199	177	2		

- Molecule 44 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	Q	127	Total	C	N	O	S	0	0
			1020	647	205	167	1		

- Molecule 45 is a protein called 60S ribosomal protein L15-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	QQ	203	Total	C	N	O	S	0	0
			1720	1077	361	281	1		

- Molecule 46 is a protein called 60S ribosomal protein L33-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	R	106	Total	C	N	O	S	0	0
			850	540	165	144	1		

- Molecule 47 is a protein called 60S ribosomal protein L34-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	S	109	Total	C	N	O	S	0	0
			861	533	175	149	4		

- Molecule 48 is a protein called 60S ribosomal protein L35-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	T	119	Total	C	N	O	S	0	0
			969	615	186	167	1		

- Molecule 49 is a protein called 60S ribosomal protein L36-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	U	99	Total	C	N	O	S	0	0
			771	481	156	132	2		

- Molecule 50 is a protein called 60S ribosomal protein L37-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	V	84	Total	C	N	O	S	0	0
			665	405	145	110	5		

- Molecule 51 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	W	77	Total	C	N	O	S	0	0
			612	391	115	106			

- Molecule 52 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	X	50	Total	C	N	O	S	0	0
			436	272	97	65	2		

- Molecule 53 is a protein called Ubiquitin-60S ribosomal protein L40.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	Y	52	Total	C	N	O	S	0	0
			417	259	86	67	5		

- Molecule 54 is a protein called 60S ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	Z	25	Total	C	N	O	S	0	0
			233	142	63	27	1		

- Molecule 55 is a protein called 60S ribosomal protein L42-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	a	102	Total	C	N	O	S	0	0
			819	514	166	134	5		

- Molecule 56 is a protein called 60S ribosomal protein L43-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	b	91	Total	C	N	O	S	0	0
			694	429	138	121	6		

- Molecule 57 is a RNA chain called 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	c	1608	Total	C	N	O	P	0	0
			34321	15360	6093	11260	1608		

- Molecule 58 is a protein called 40S ribosomal protein S0-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	d	206	Total	C	N	O	S	0	0
			1583	1017	281	283	2		

- Molecule 59 is a protein called 40S ribosomal protein S1-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	e	212	Total	C	N	O	S	0	0
			1689	1073	303	309	4		

- Molecule 60 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	f	217	Total	C	N	O	S	0	0
			1635	1047	289	297	2		

- Molecule 61 is a protein called RPS3 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	g	183	Total	C	N	O	S	0	0
			1412	893	260	253	6		

- Molecule 62 is a protein called 40S ribosomal protein S4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	h	258	Total	C	N	O	S	0	0
			2056	1308	387	358	3		

- Molecule 63 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	i	199	Total	C	N	O	S	0	0
			1572	987	290	292	3		

- Molecule 64 is a protein called 40S ribosomal protein S6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	j	219	Total	C	N	O	S	0	0
			1766	1108	341	314	3		

- Molecule 65 is a protein called 40S ribosomal protein S7-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	k	184	Total	C	N	O	S	0	0
			1481	951	265	265			

- Molecule 66 is a protein called 40S ribosomal protein S8-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	l	184	Total	C	N	O	S	0	0
			1457	906	291	258	2		

- Molecule 67 is a protein called 40S ribosomal protein S9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	m	185	Total	C	N	O	S	0	0
			1494	943	289	261	1		

- Molecule 68 is a protein called 40S ribosomal protein S10-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	n	33	Total	C	N	O	S	0	0
			300	199	46	55			

- Molecule 69 is a protein called 40S ribosomal protein S11-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	o	142	Total	C	N	O	S	0	0
			1146	735	217	191	3		

- Molecule 70 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	p	150	Total	C	N	O	S	0	0
			1192	759	224	207	2		

- Molecule 71 is a protein called 40S ribosomal protein S14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	q	127	Total	C	N	O	S	0	0
			891	545	182	163	1		

- Molecule 72 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	r	91	Total	C	N	O	S	0	0
			732	469	138	120	5		

- Molecule 73 is a protein called 40S ribosomal protein S16-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	s	136	Total	C	N	O		0	0
			1069	686	195	188			

- Molecule 74 is a protein called 40S ribosomal protein S17-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	t	121	Total	C	N	O	S	0	0
			961	599	182	178	2		

- Molecule 75 is a protein called 40S ribosomal protein S18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	u	145	Total	C	N	O	S	0	0
			1192	743	237	210	2		

- Molecule 76 is a protein called 40S ribosomal protein S19-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	v	143	Total	C	N	O	S	0	0
			1112	694	208	208	2		

- Molecule 77 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	w	100	Total	C	N	O	S	0	0
			800	509	144	146	1		

- Molecule 78 is a protein called 40S ribosomal protein S21-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	x	87	Total	C	N	O	S	0	0
			684	420	125	137	2		

- Molecule 79 is a protein called 40S ribosomal protein S22-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	y	129	Total	C	N	O	S	0	0
			1021	650	188	180	3		

- Molecule 80 is a protein called 40S ribosomal protein S23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	z	144	Total	C	N	O	S	0	0
			1121	708	220	191	2		

- Molecule 81 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
81	2	1	Total	Zn	0
			1	1	
81	5	1	Total	Zn	0
			1	1	
81	8	1	Total	Zn	0
			1	1	
81	S	1	Total	Zn	0
			1	1	
81	V	1	Total	Zn	0
			1	1	
81	Y	1	Total	Zn	0
			1	1	
81	a	1	Total	Zn	0
			1	1	
81	b	1	Total	Zn	0
			1	1	

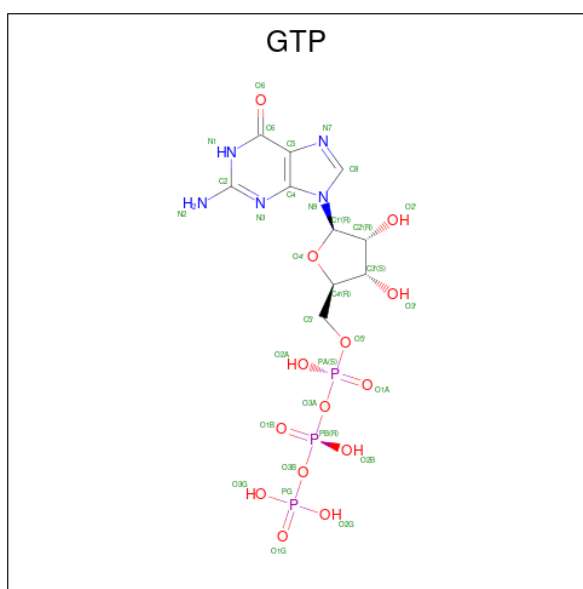
- Molecule 82 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
82	AA	119	Total	Mg	0
			119	119	
82	Aa	1	Total	Mg	0
			1	1	
82	BB	3	Total	Mg	0
			3	3	
82	CC	3	Total	Mg	0
			3	3	
82	H	1	Total	Mg	0
			1	1	
82	JJ	1	Total	Mg	0
			1	1	
82	c	25	Total	Mg	0
			25	25	

- Molecule 83 is POTASSIUM ION (CCD ID: K) (formula: K).

Mol	Chain	Residues	Atoms		AltConf
83	AA	9	Total	K	0
			9	9	
83	EE	1	Total	K	0
			1	1	

- Molecule 84 is GUANOSINE-5'-TRIPHOSPHATE (CCD ID: GTP) (formula: C₁₀H₁₆N₅O₁₄P₃).



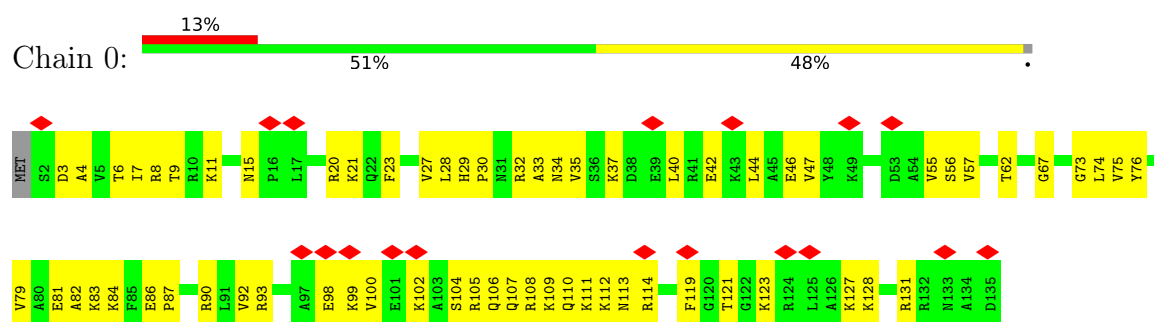
- Molecule 85 is water.

Mol	Chain	Residues	Atoms		AltConf
85	AA	71	Total 71	O 71	0
85	B	1	Total 1	O 1	0
85	CC	8	Total 8	O 8	0
85	F	1	Total 1	O 1	0
85	JJ	1	Total 1	O 1	0
85	R	1	Total 1	O 1	0
85	V	1	Total 1	O 1	0
85	c	18	Total 18	O 18	0

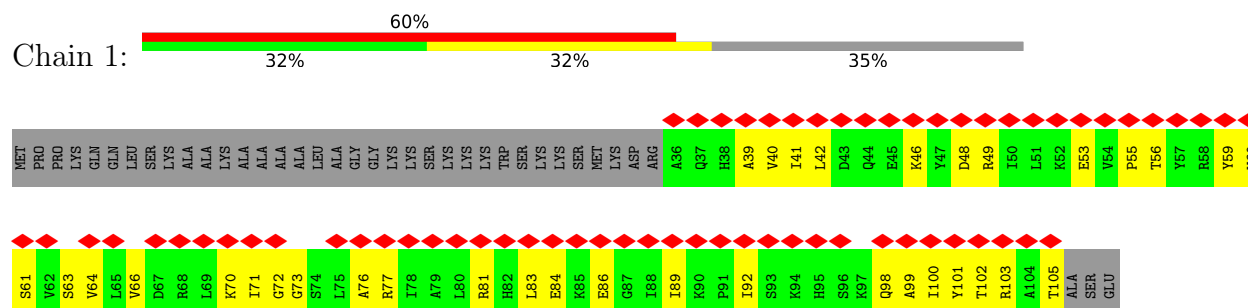
3 Residue-property plots [i](#)

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

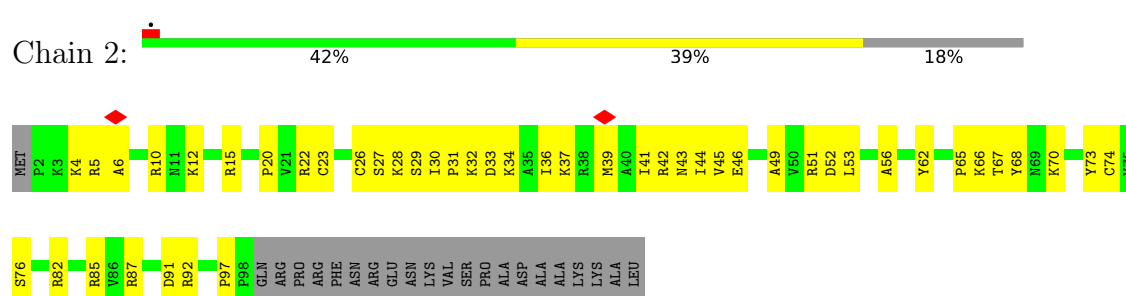
- Molecule 1: 40S ribosomal protein S24-A



- Molecule 2: 40S ribosomal protein S25-A

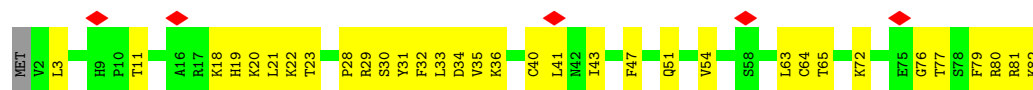


- Molecule 3: 40S ribosomal protein S26

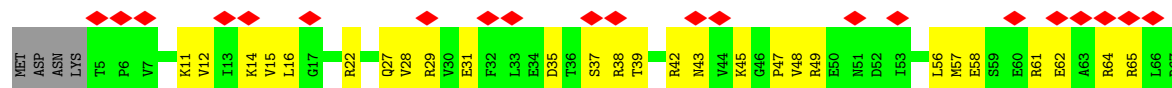


- Molecule 4: 40S ribosomal protein S27-A

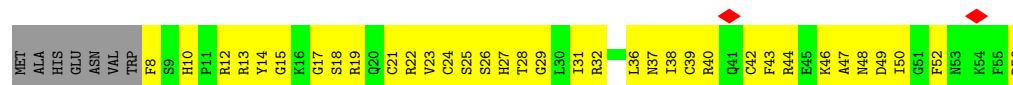




- Molecule 5: 40S ribosomal protein S28-A



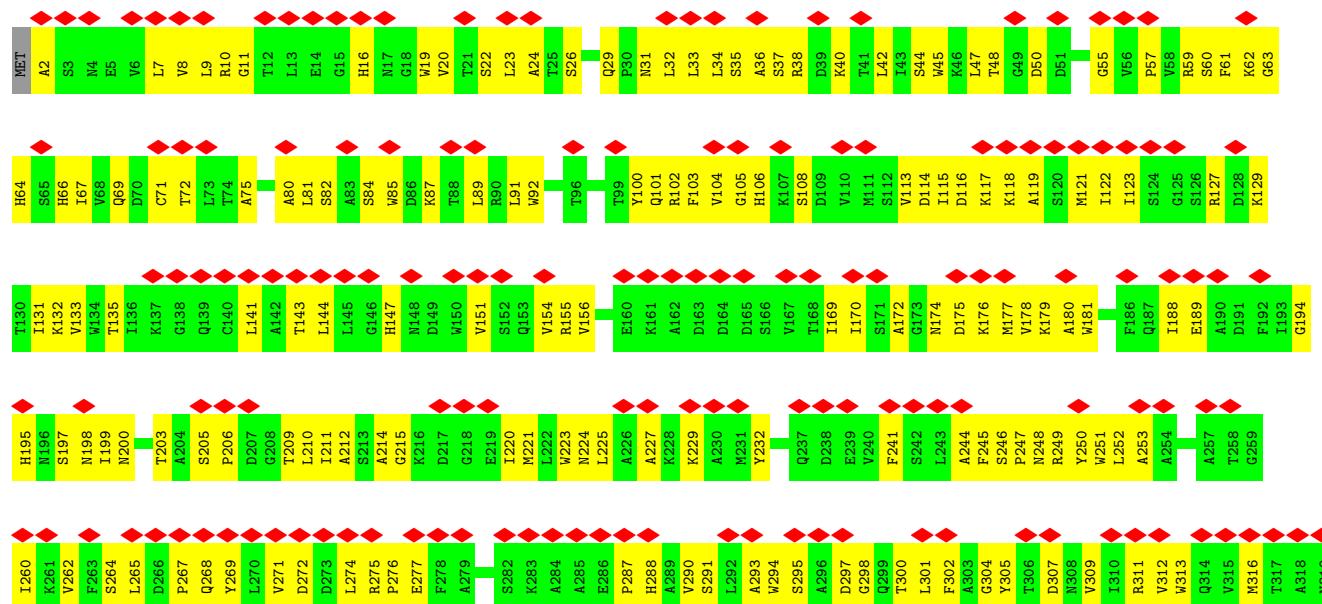
- Molecule 6: HLJ1_G0030400.mRNA.1.CDS.1



- Molecule 7: 40S ribosomal protein S30-A



- Molecule 8: Guanine nucleotide-binding protein subunit beta-like protein



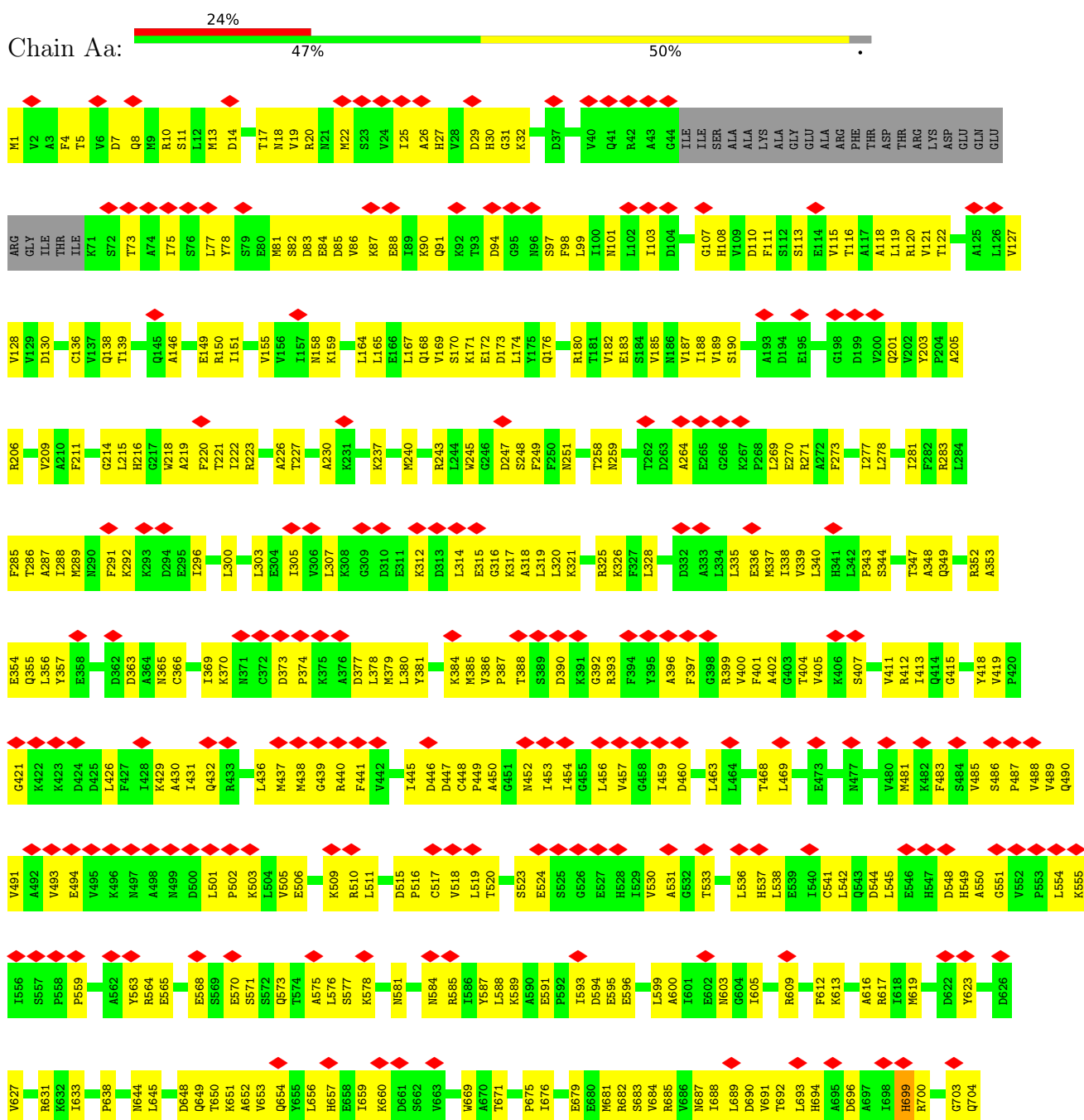
- Molecule 9: Ubiquitin-40S ribosomal protein S31

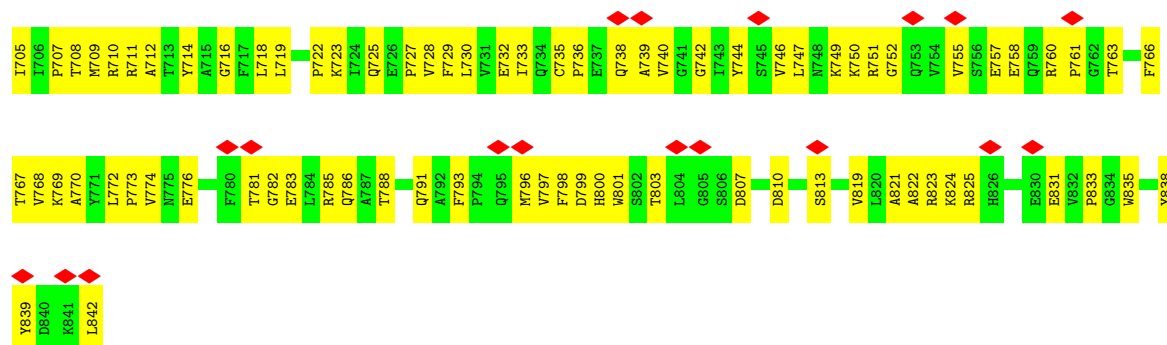




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A3160	C2339	C2407	C2470	G2530	A2593	G2659	U2724	G2787	U2854	U2921	C2984	U3047	A3114	A3160
C3181	U2408	C2409	U2410	U2532	C2594	G2660	U2725	C2788	U2855	G2922	C2985	A3048	C3115	C3181
A3183	C2411	U2411	C2472	U2533	A2596	G2662	A2727	G2790	U2856	U2923	C2986	A3049	C3116	A3183
A3184	U2412	U2413	C2473	G2534	U2597	G2663	G2728	G2791	C2857	U2924	C2987	U3050	C3117	A3184
U3185	G2414	G2415	G2474	A2535	U2598	G2664	U2729	G2792	U2858	C2925	C2988	G3052	C3118	U3185
A3186	U2416	U2417	C2475	U2536	U2599	G2665	U2730	G2793	U2859	A2926	U2989	G3053	U3119	A3186
A3187	U2418	U2419	C2476	A2537	G2602	G2666	U2731	G2794	U2860	C2927	G2990	G3054	C3120	A3187
G3189	U2420	U2421	C2477	U2538	U2604	G2667	U2732	G2795	U2861	C2928	A2991	U3055	U3121	A3189
C3190	U2422	U2423	C2478	U2539	U2605	G2668	A2733	G2796	U2862	C2929	C2992	U3056	A3122	G3189
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C3193	U2428	U2429	C2481	U2542	U2608	G2671	U2736	A2799	U2865	A2933	U2996	G3059	A3130	U3192
G3196	U2430	U2431	C2482	U2543	U2609	G2672	C2737	G2800	U2866	U2934	C2997	C3060	U3131	C3193
G3197	U2432	U2433	U2483	U2544	U2610	A2673	U2740	A2801	U2867	U2935	U2998	G3061	C3132	G3196
U3198	U2434	U2435	U2484	U2545	A2609	G2674	A2743	A2802	U2868	A2936	U2999	G3062	C3133	U3197
G3199	U2436	U2437	U2485	U2546	U2611	G2677	U2744	A2804	U2869	G2937	A3000	G3063	A3134	G3198
G3200	U2438	U2439	U2486	U2547	U2612	A2678	U2745	A2805	U2870	G2938	C3001	U3064	U3138	G3199
C3201	U2440	U2441	U2487	U2548	U2613	A2679	G2746	U2806	U2871	C2939	C3002	G3065	A3139	G3200
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U3203	U2444	U2445	U2489	U2550	G2615	U2681	U2748	U2808	U2873	A2941	C3004	C3067	A3141	G3202
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C3209	U2456	U2457	C2495	U2508	U2621	U2687	U2754	G2814	U2879	C2947	A3010	C3076	C3147	G3208
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C3217	U2466	U2467	U2500	U2513	U2626	A2692	U2759	U2819	U2884	U2952	A3017	C3084	U3152	C3213
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A3237	U2500	U2501	C2517	U2530	U2643	U2714	G2776	U2842	U2901	U2974	U3039	U3105	C3171	U3236
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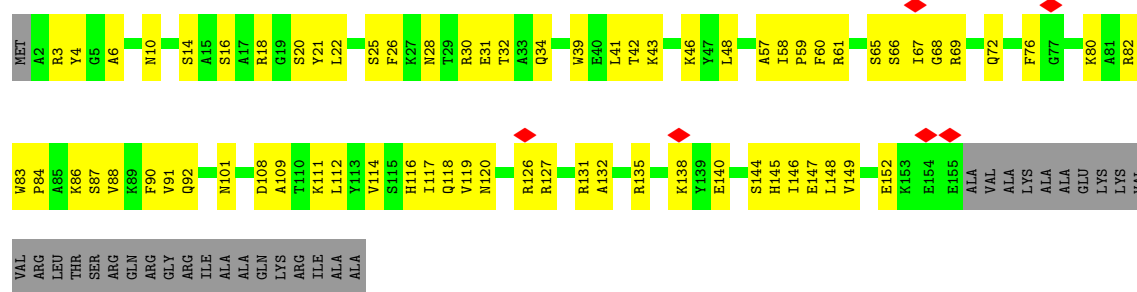
- Molecule 12: Elongation factor 2





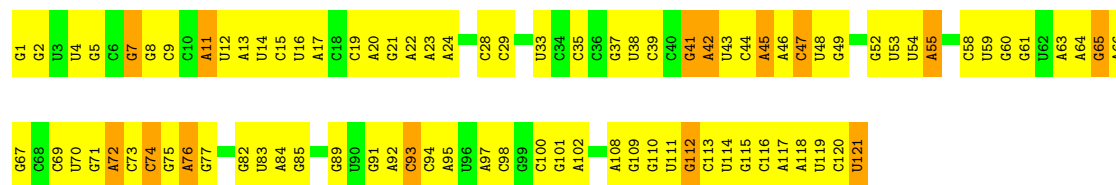
- Molecule 13: 60S ribosomal protein L17-A

Chain B: 46% 38% 16%



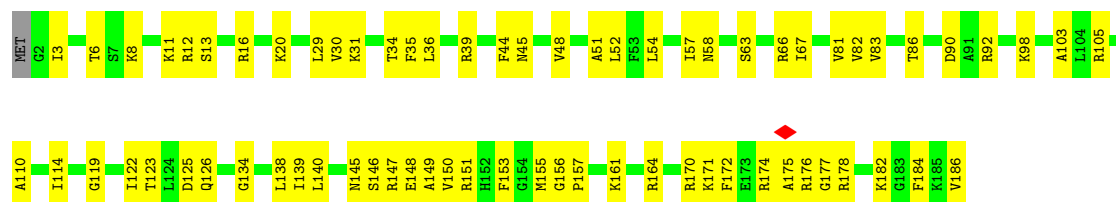
- Molecule 14: 5S ribosomal RNA

Chain BB: 28% 60% 12%



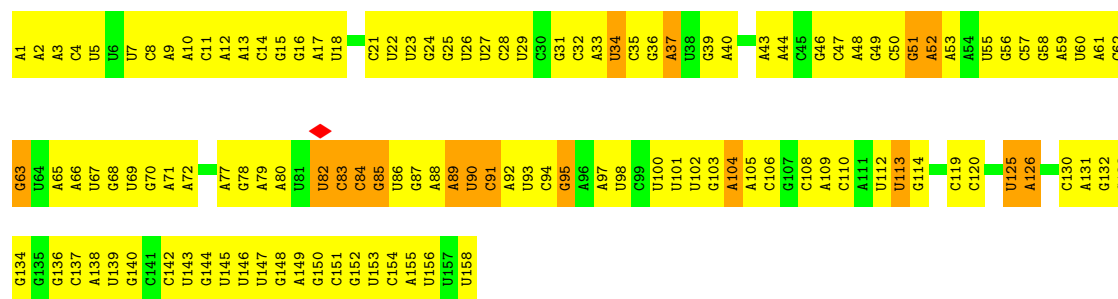
- Molecule 15: 60S ribosomal protein L18-A

Chain C: 62% 38%

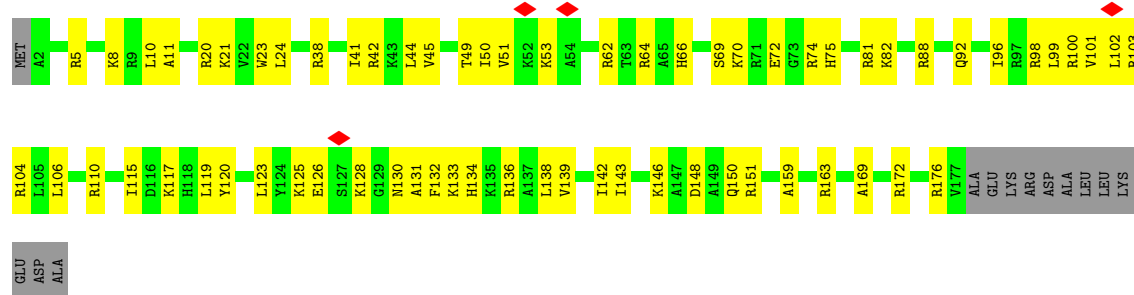


- Molecule 16: 5.8S ribosomal RNA

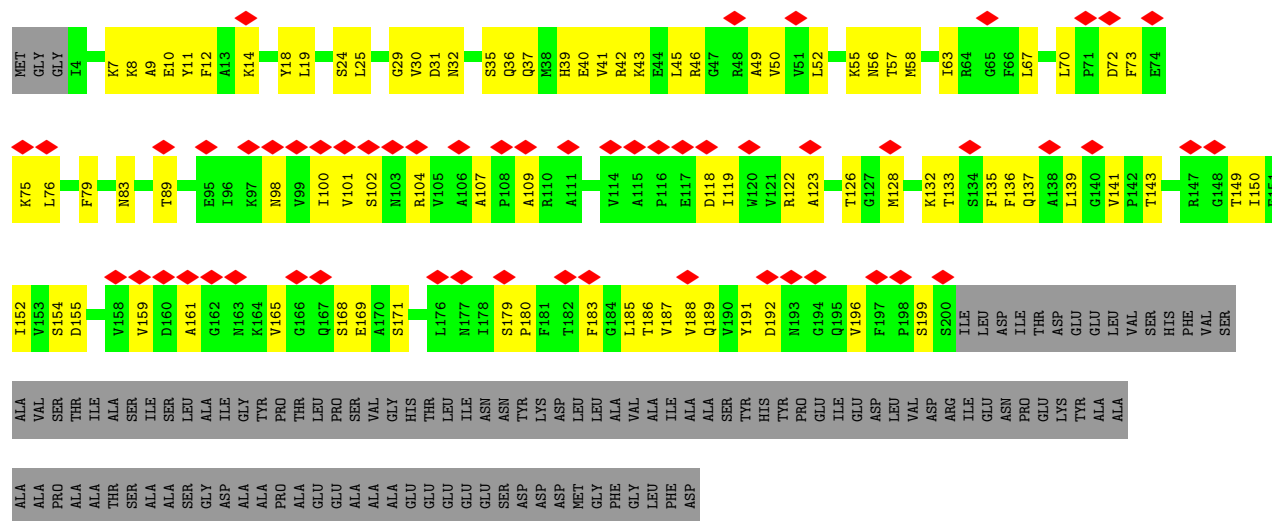
Chain CC: 21% 68% 11%



• Molecule 17: 60S ribosomal protein L19-A

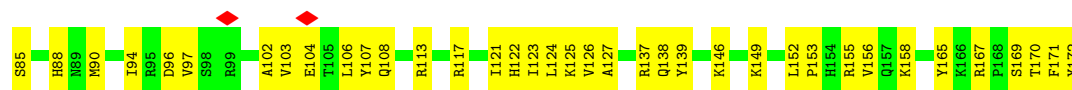


• Molecule 18: 60S acidic ribosomal protein P0

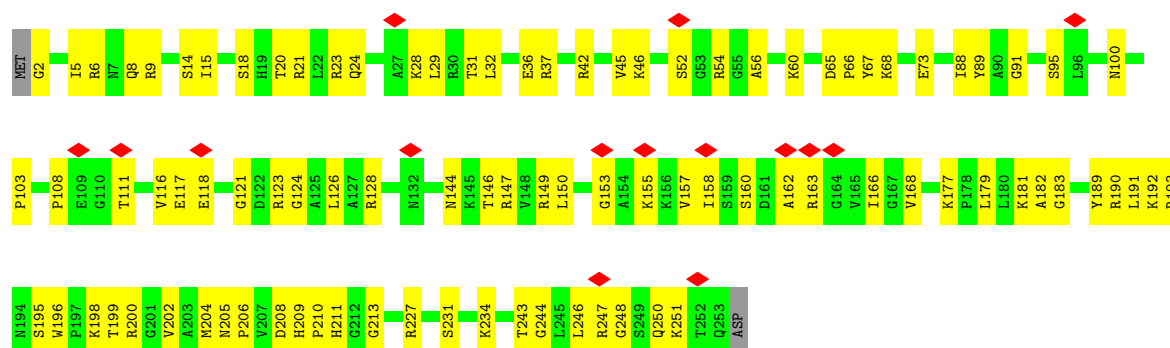


• Molecule 19: 60S ribosomal protein L20-A

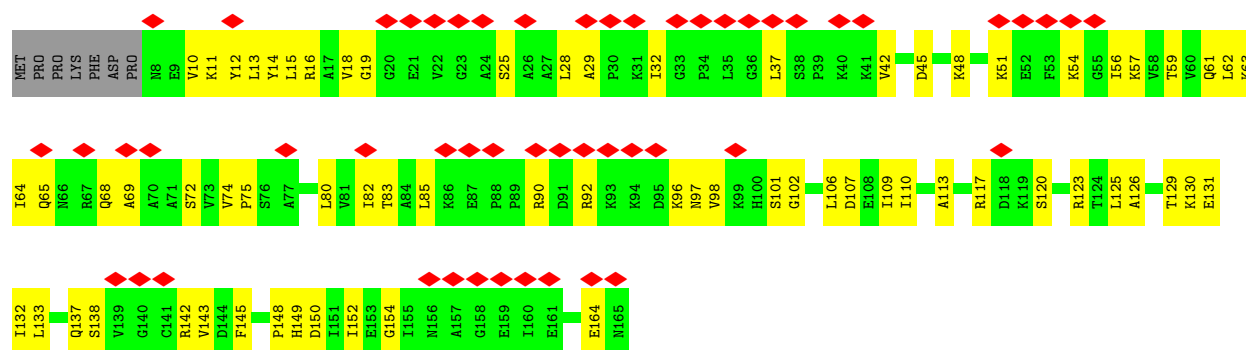




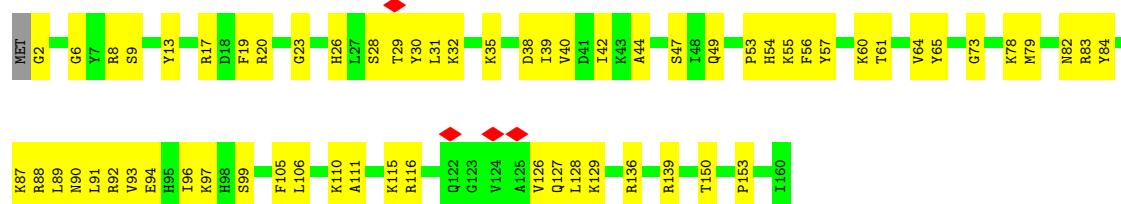
• Molecule 20: 60S ribosomal protein L2-A



• Molecule 21: 60S ribosomal protein L12-A

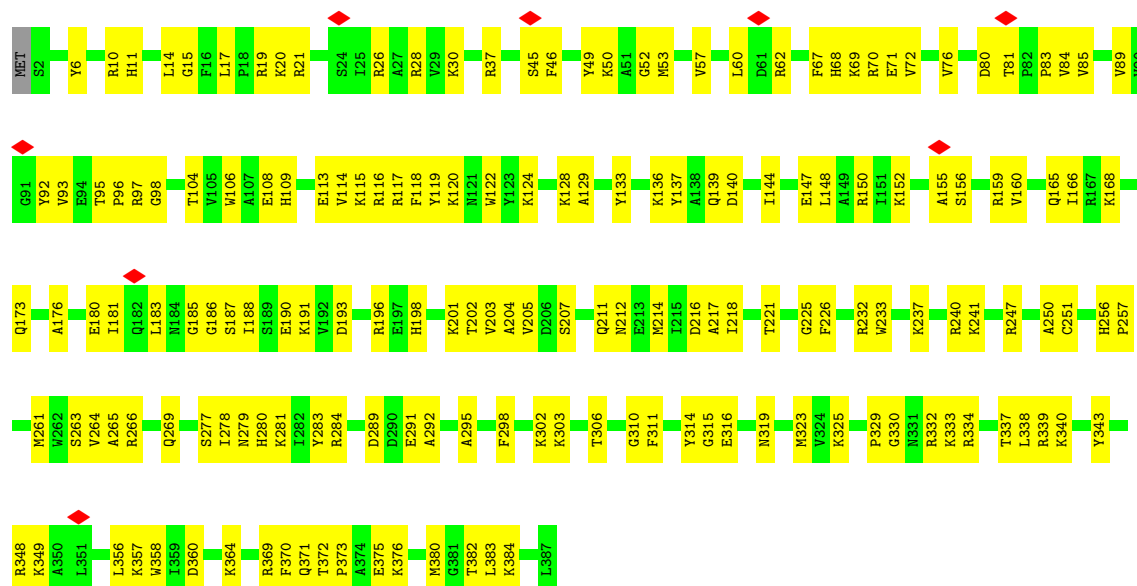


• Molecule 22: 60S ribosomal protein L21-A

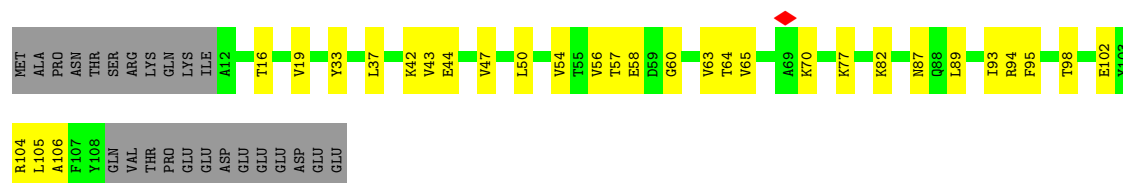


• Molecule 23: 60S ribosomal protein L3

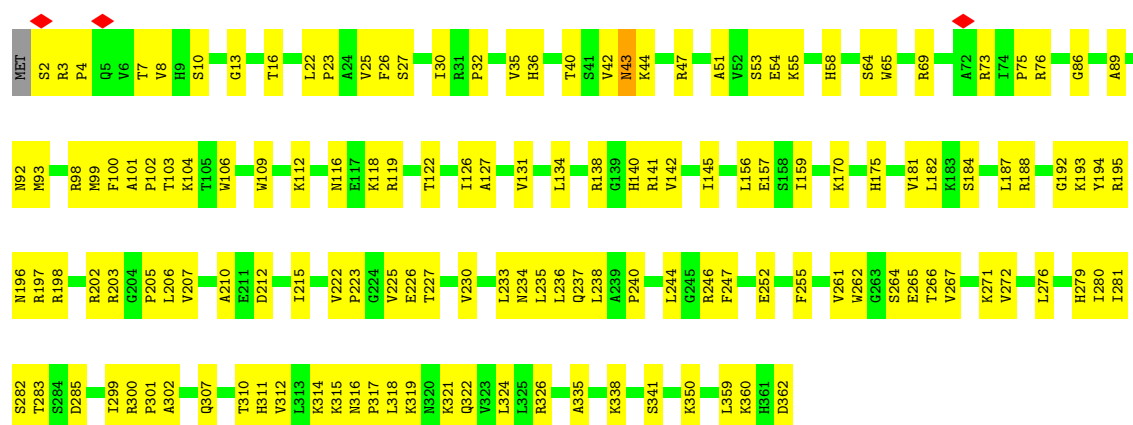




• Molecule 24: 60S ribosomal protein L22-A

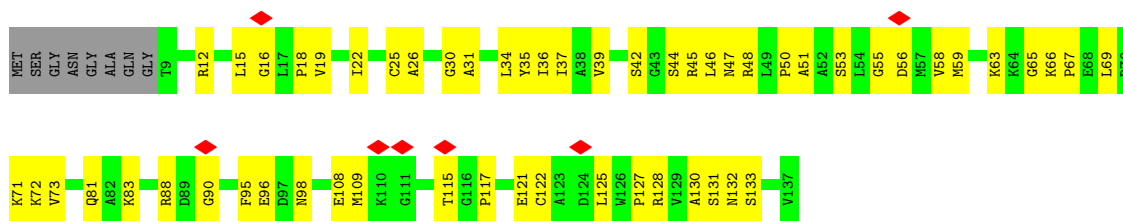


• Molecule 25: 60S ribosomal protein L4-A

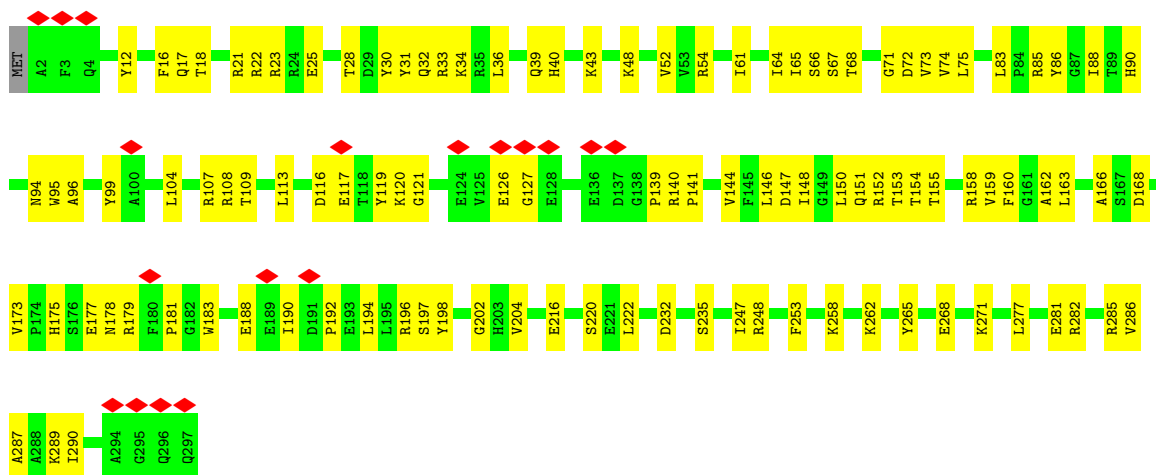


• Molecule 26: 60S ribosomal protein L23-A

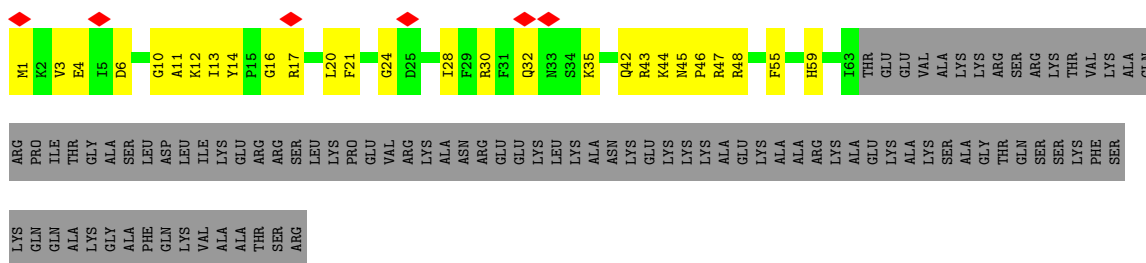




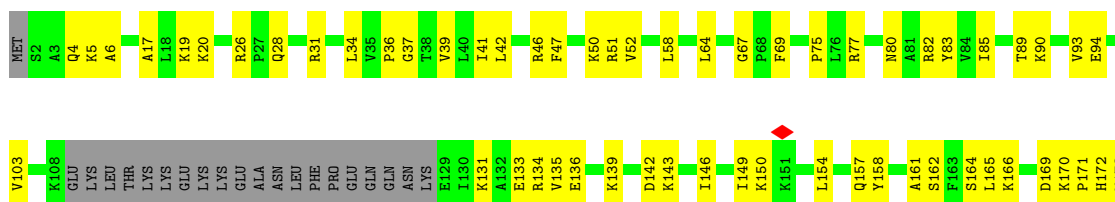
• Molecule 27: 60S ribosomal protein L5

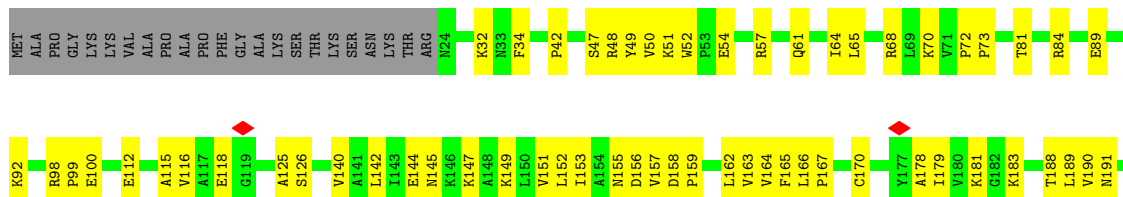


• Molecule 28: 60S ribosomal protein L24-A



• Molecule 29: 60S ribosomal protein L6-A



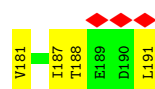
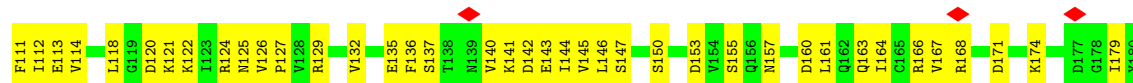




- Molecule 34: 60S ribosomal protein L27-A



- Molecule 35: RPL9A isoform 1

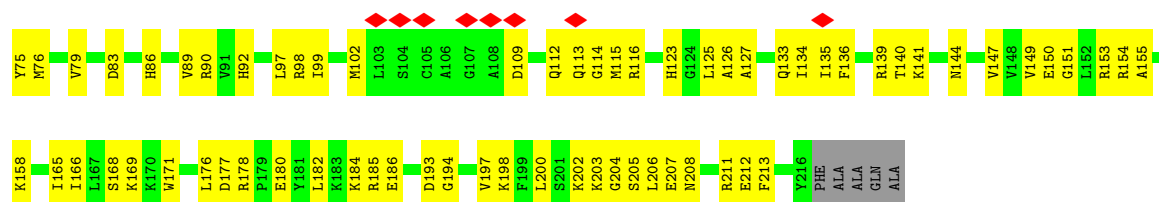


- Molecule 36: 60S ribosomal protein L28



- Molecule 37: 60S ribosomal protein L10

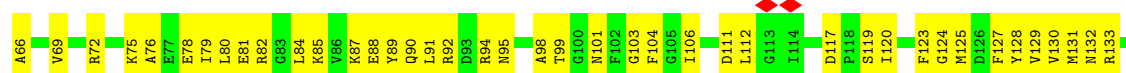




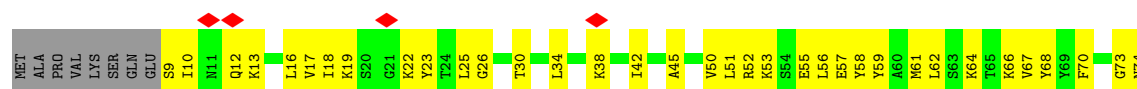
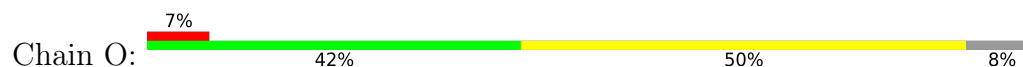
• Molecule 38: 60S ribosomal protein L29



• Molecule 39: 60S ribosomal protein L11-A



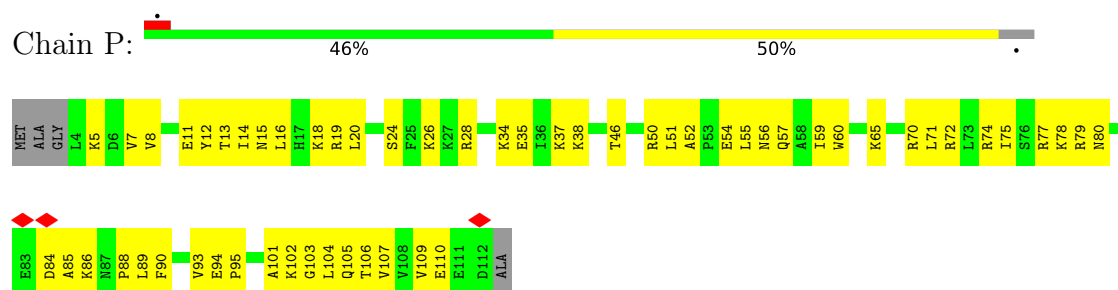
• Molecule 40: 60S ribosomal protein L30



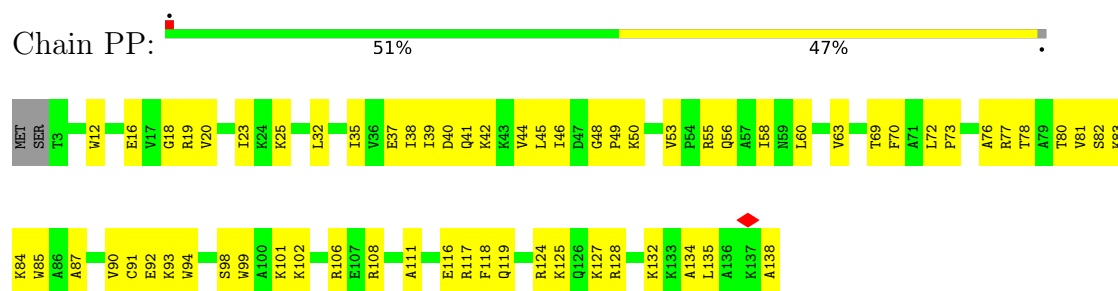
• Molecule 41: 60S ribosomal protein L13-A



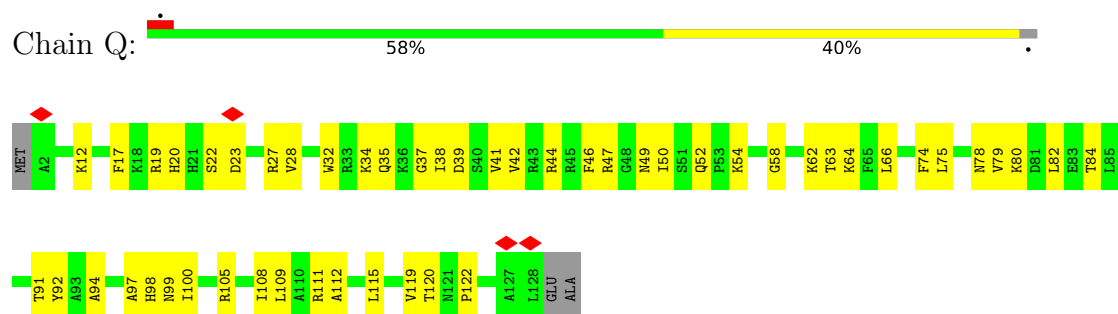
- Molecule 42: 60S ribosomal protein L31-A



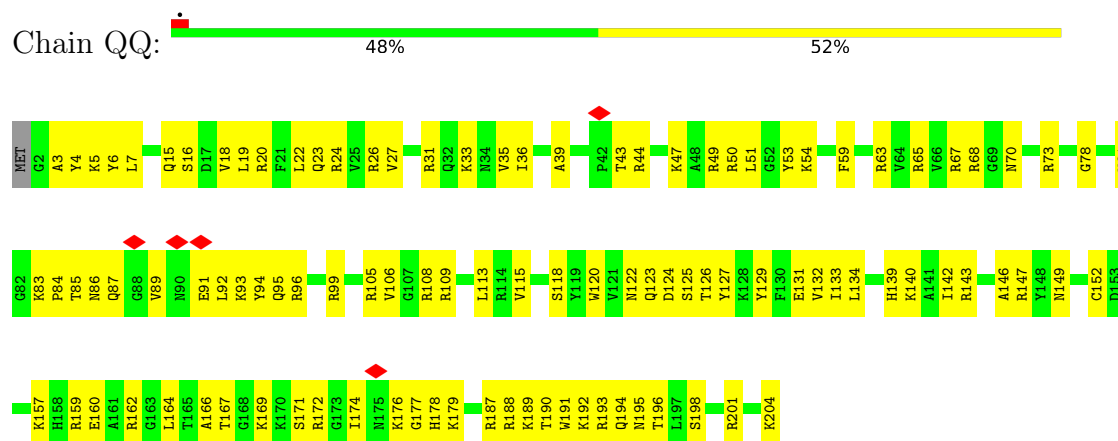
- Molecule 43: 60S ribosomal protein L14-A



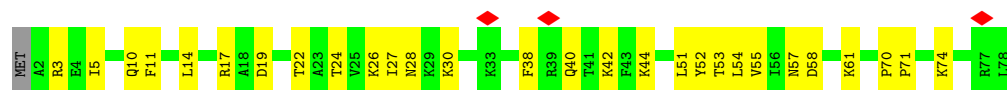
- Molecule 44: 60S ribosomal protein L32



- Molecule 45: 60S ribosomal protein L15-A



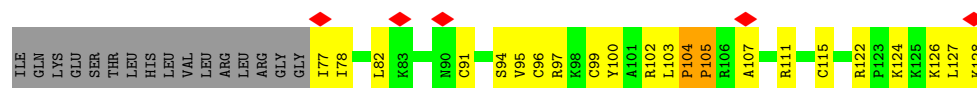
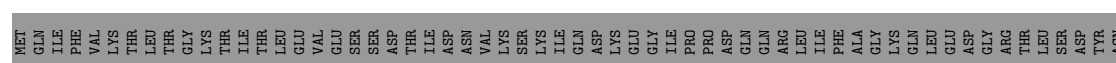
- Molecule 46: 60S ribosomal protein L33-A



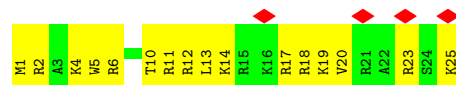
- Molecule 52: 60S ribosomal protein L39



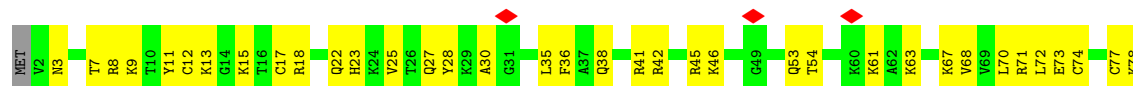
- Molecule 53: Ubiquitin-60S ribosomal protein L40



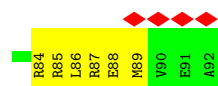
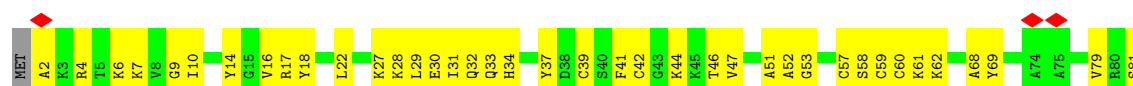
- Molecule 54: 60S ribosomal protein L41



- Molecule 55: 60S ribosomal protein L42-A



- Molecule 56: 60S ribosomal protein L43-A



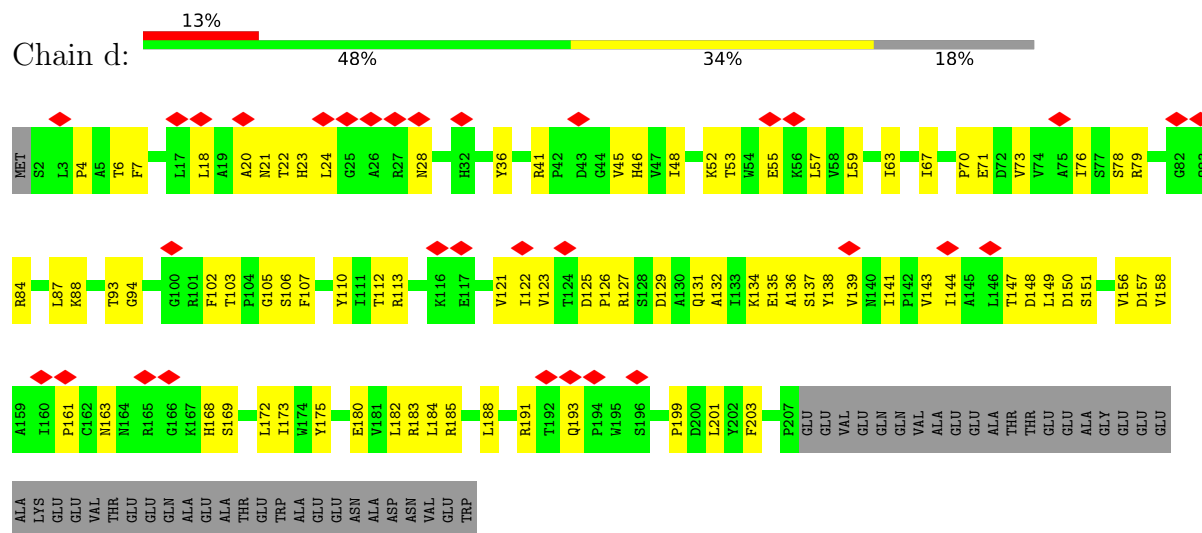
Chain c: 16% 53% 19% 11%



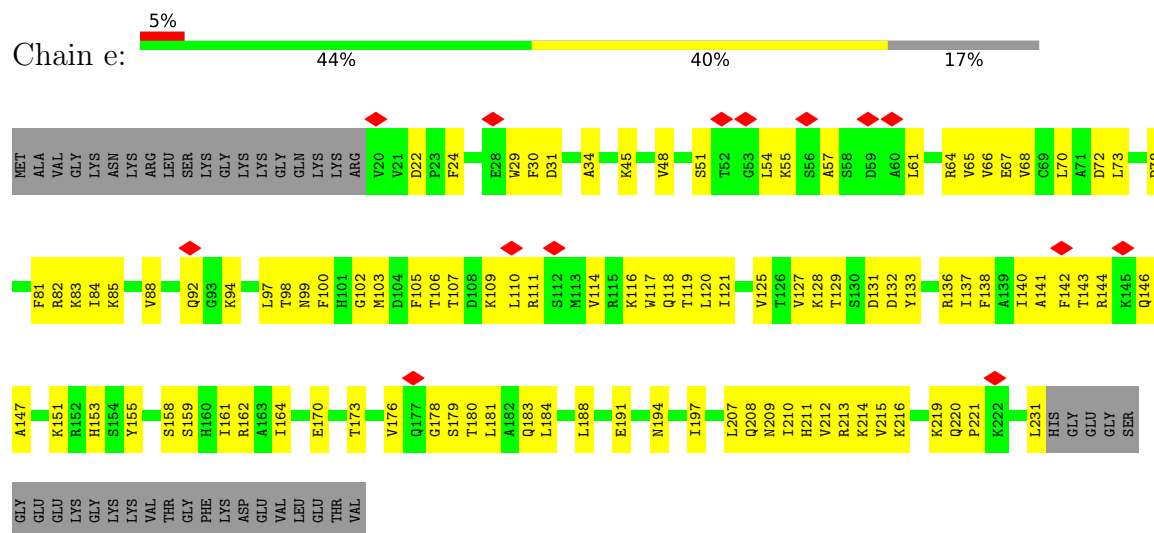
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C	G1643	U1581	G1455	U1392	C1332	U1269	C1209	G1150	G1083	U1018	C956	U894
C	G1644	U1582	G1456	C1393	C1333	G1270	C1210	G1150	G1083	A1019	G957	G895
A	G1645	A1583	C1457	G1394	U1334	G1271	A1211	A1151	A1084	U1020	U958	U896
U	G1646	U1584	C1458	U1335	U1335	G1272	G1212	A1152	G1085	C1022	U959	C937
C	G1647	G1521	C1459	A1336	A1336	G1273	G1213	G1153	A1086	U1021	U960	A898
U	A1584	G1522	A1460	A1337	A1337	C1274	U1214	G1154	A1087	A1026	U961	G899
C	A1586	A1525	C1461	U1398	C1338	A1275	C1215	G1155	A1088	A1027	C962	A900
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G	G1588	G1527	G1463	A1400	U1340	G1277	A1217	C1157	G1090	U1029	U964	G902
U1723	G1589	U1528	G1464	A1401	A1341	C1278	G1218	C1158	A1091	A1030	U965	U903
G1715	C1591	C1529	G1465	A1402	U1342	C1279	A1219	C1159	A1092	U1031	A966	G904
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G1720	G1534	G1534	C1470	U1407	U1347	U1287	A1224	G1164	U1097	A1036	A971	U909
A1721	U1535	U1535	A1471	G1408	A1348	G1288	U1225	G1165	U1098	C1037	G972	C910
A1722	A1597	G1536	C1472	G1409	U1349	U1289	A1226	A1166	U1099	U1038	A973	U911
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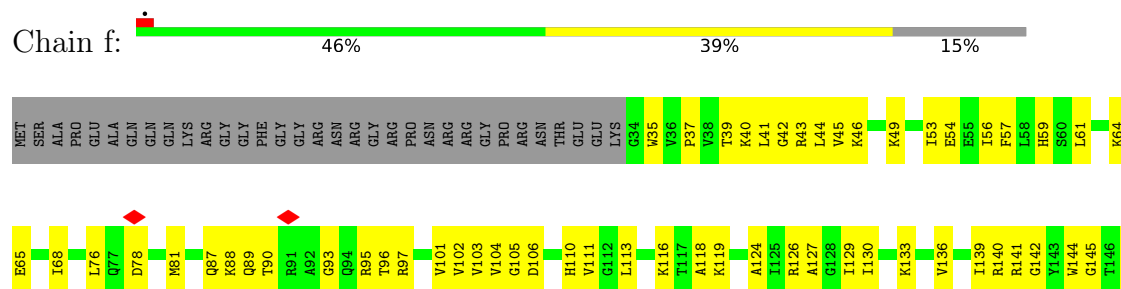
• Molecule 58: 40S ribosomal protein S0-A

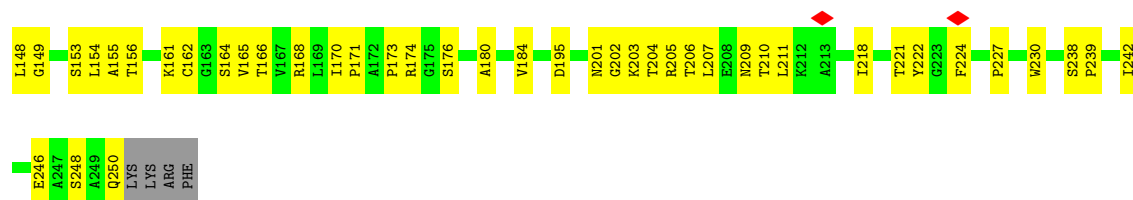


• Molecule 59: 40S ribosomal protein S1-A

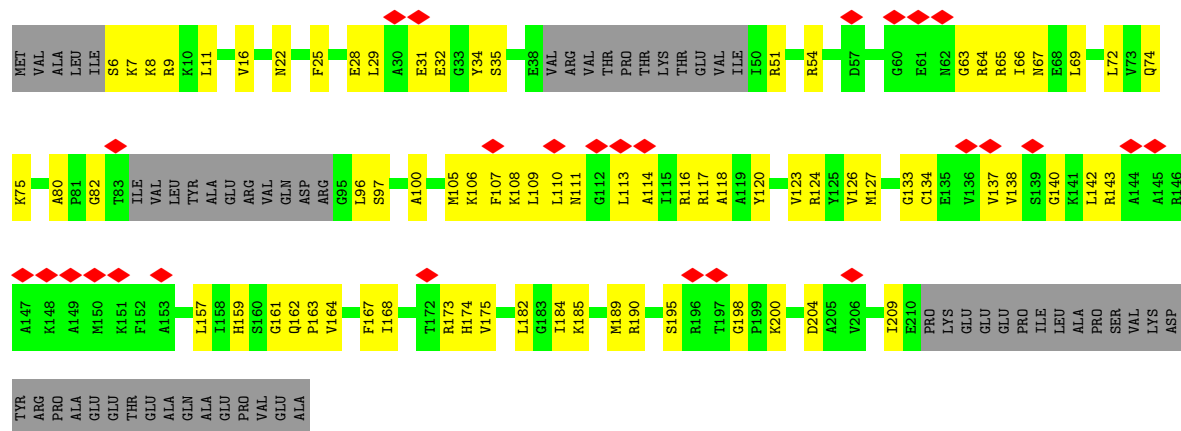
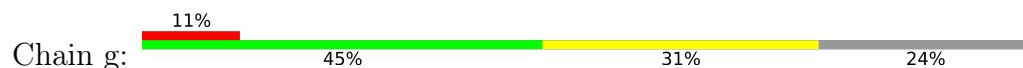


• Molecule 60: 40S ribosomal protein S2

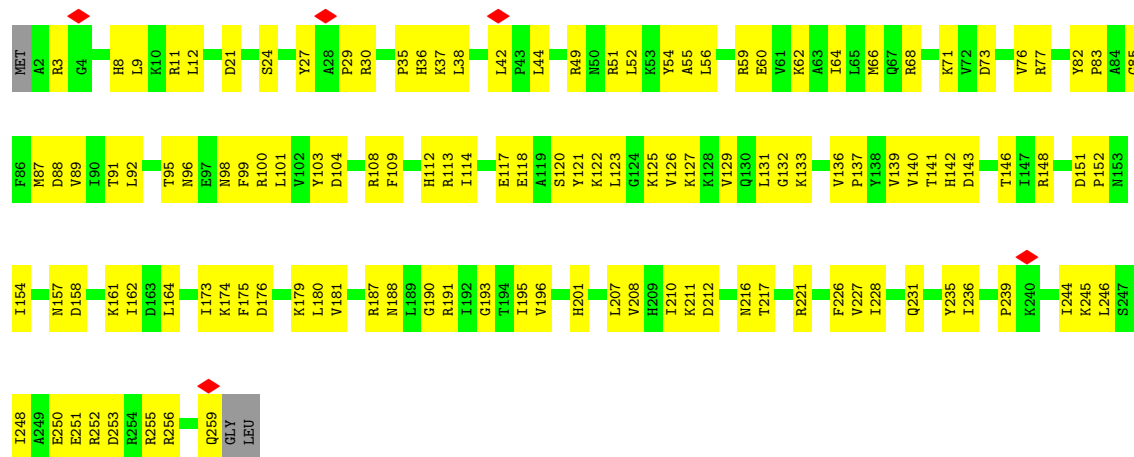




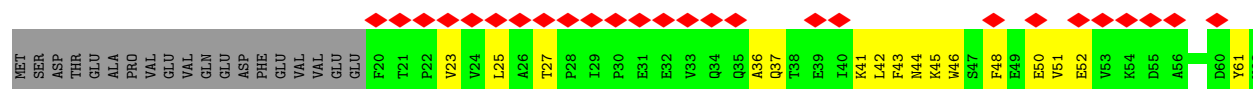
• Molecule 61: RPS3 isoform 1

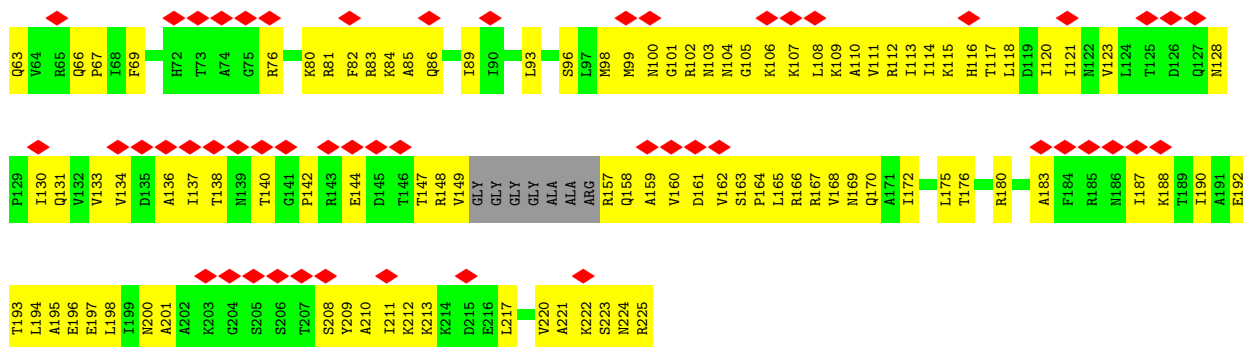


• Molecule 62: 40S ribosomal protein S4-A

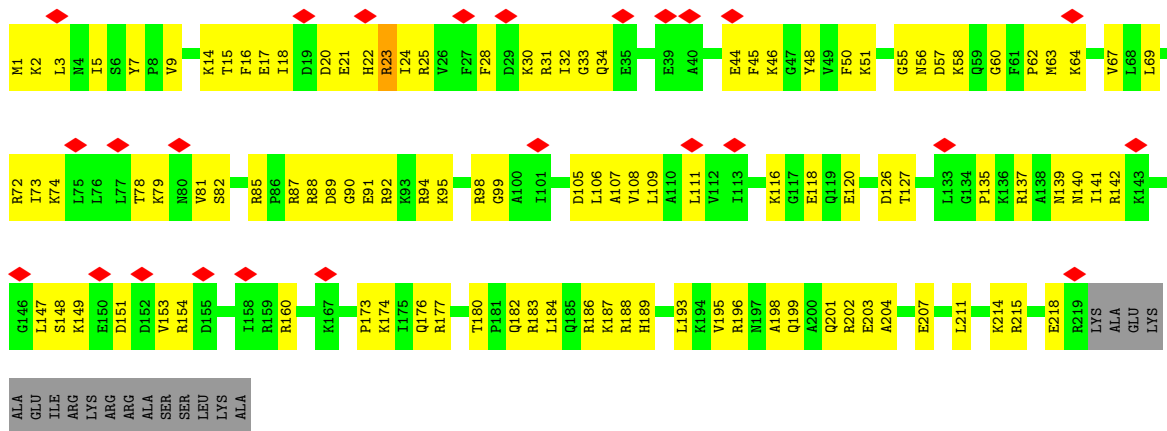


• Molecule 63: 40S ribosomal protein S5

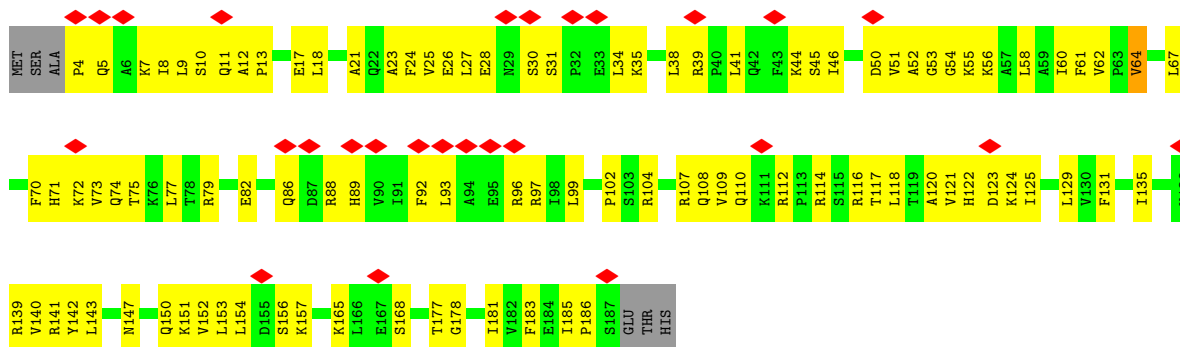
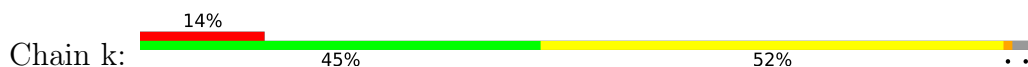




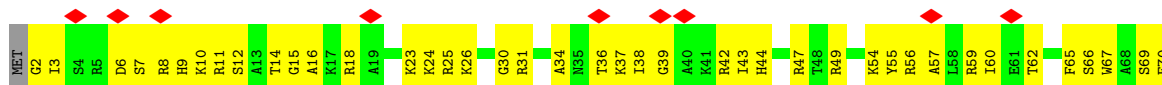
• Molecule 64: 40S ribosomal protein S6-A

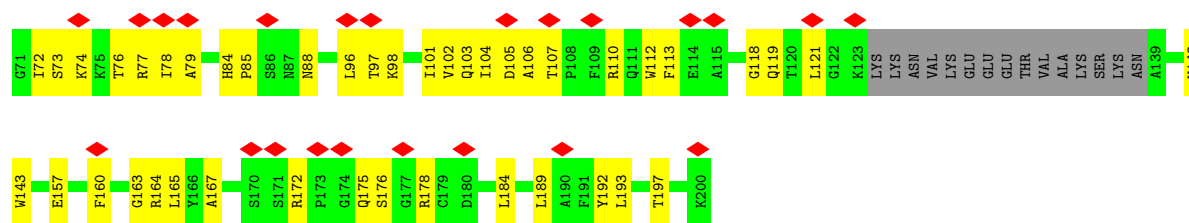


• Molecule 65: 40S ribosomal protein S7-A



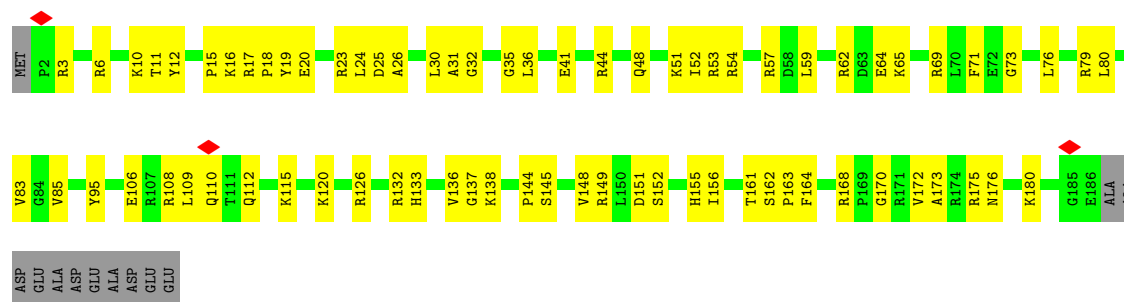
• Molecule 66: 40S ribosomal protein S8-B





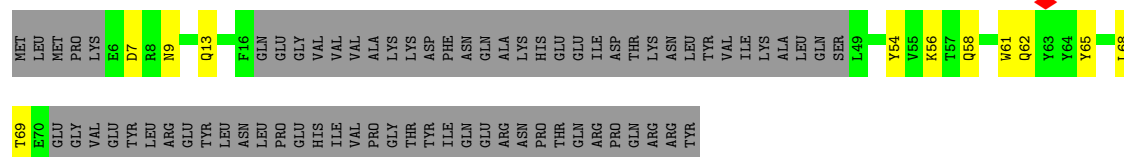
- Molecule 67: 40S ribosomal protein S9-A

Chain m: 57% 37% 6%



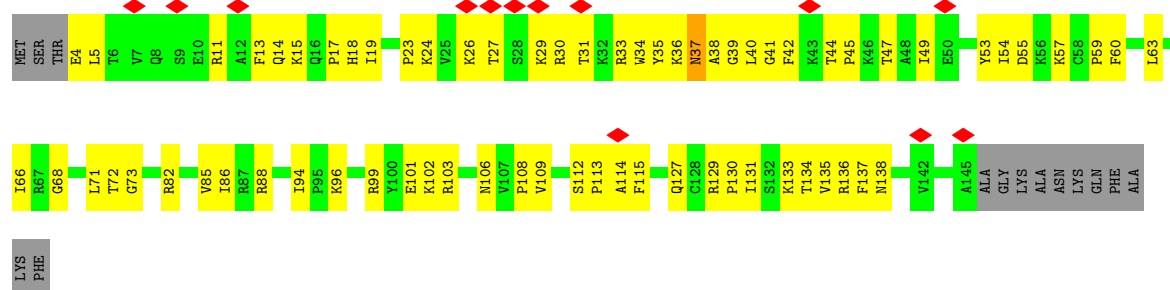
- Molecule 68: 40S ribosomal protein S10-A

Chain n: 21% 10% 69%



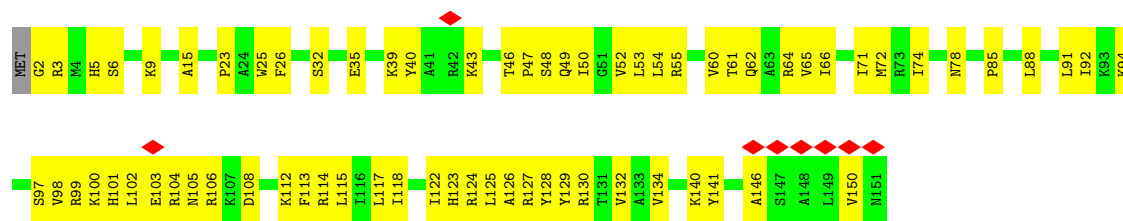
- Molecule 69: 40S ribosomal protein S11-A

Chain o: 8% 47% 44% 9%

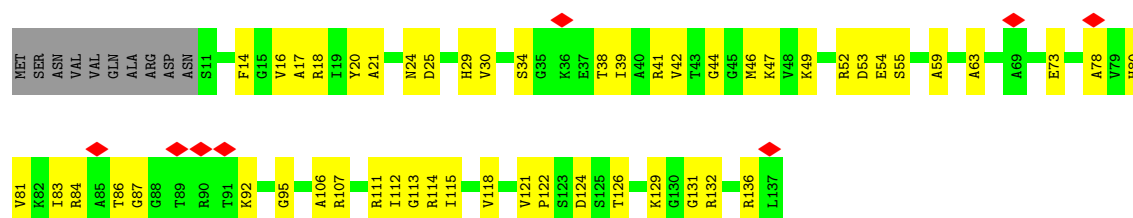


- Molecule 70: 40S ribosomal protein S13

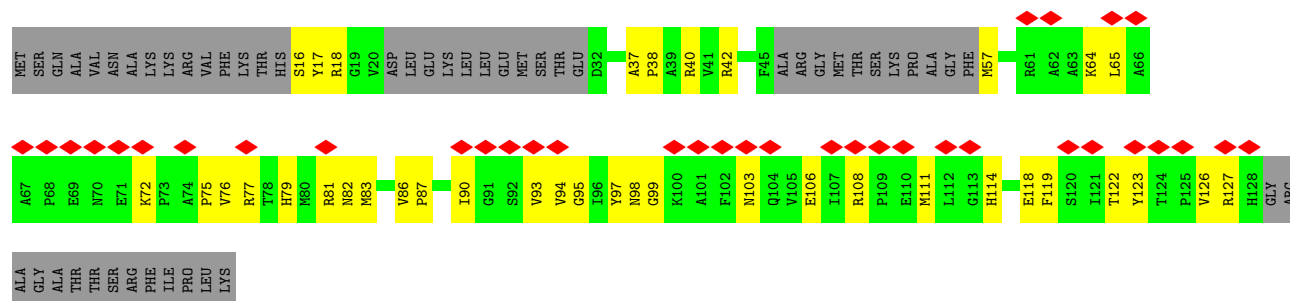
Chain p: 5% 53% 46%



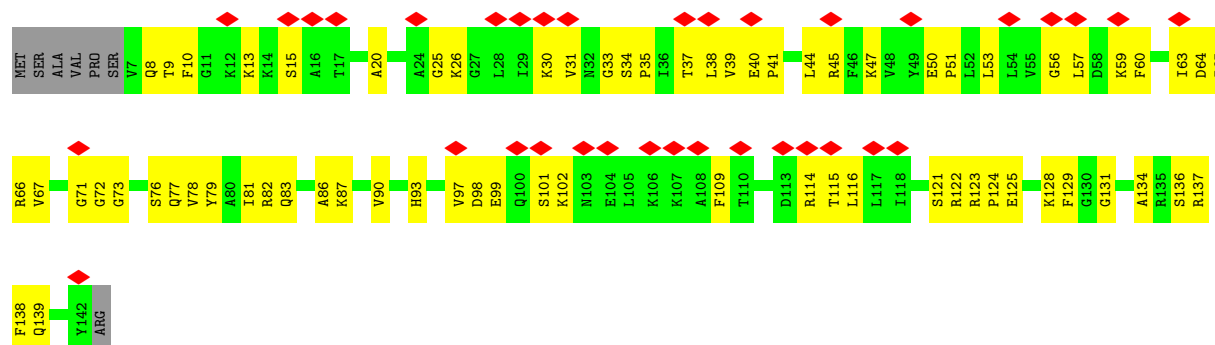
• Molecule 71: 40S ribosomal protein S14-A



• Molecule 72: 40S ribosomal protein S15

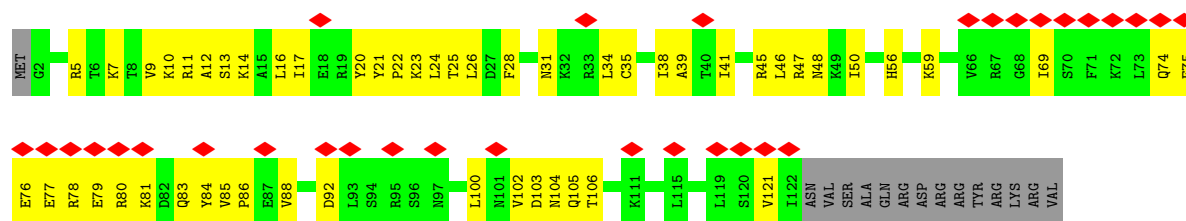


• Molecule 73: 40S ribosomal protein S16-A

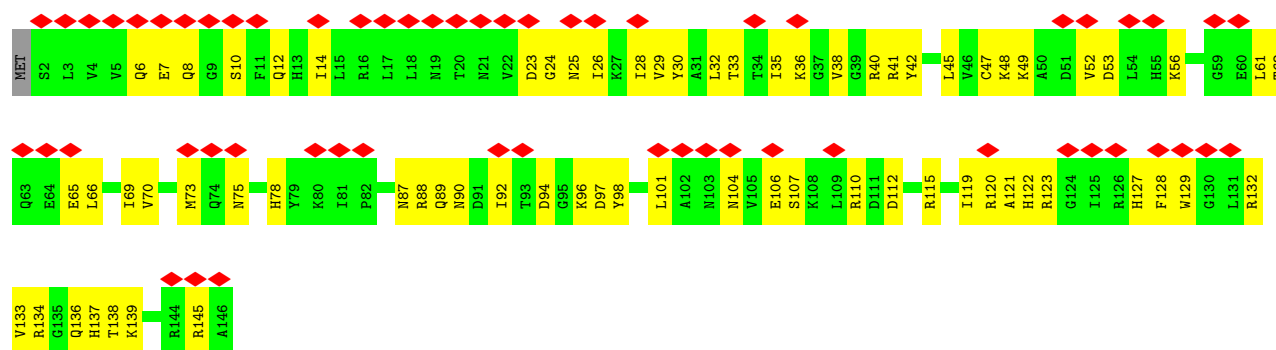
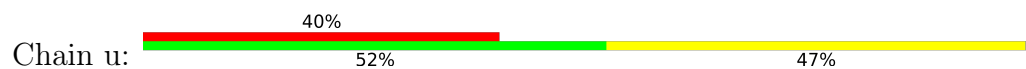


• Molecule 74: 40S ribosomal protein S17-A

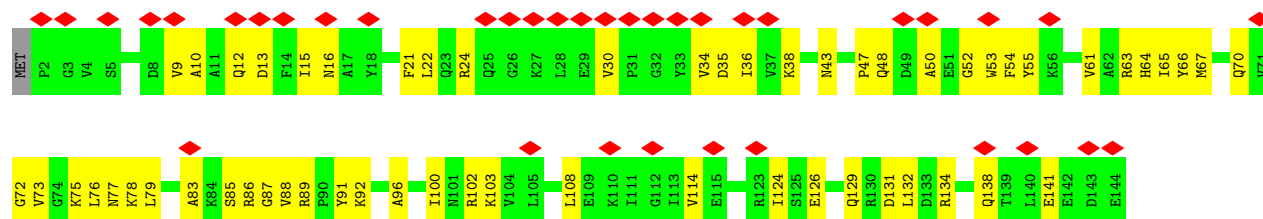




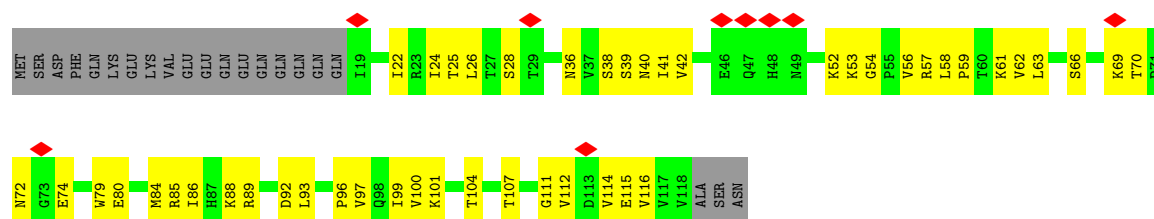
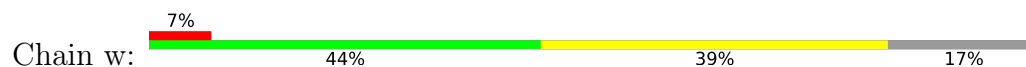
• Molecule 75: 40S ribosomal protein S18-A



• Molecule 76: 40S ribosomal protein S19-A



• Molecule 77: 40S ribosomal protein S20

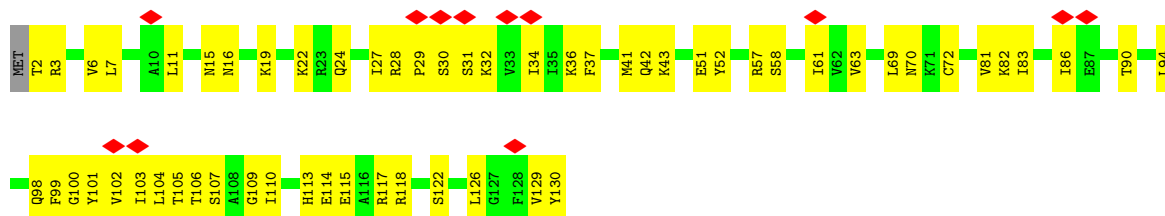


• Molecule 78: 40S ribosomal protein S21-A

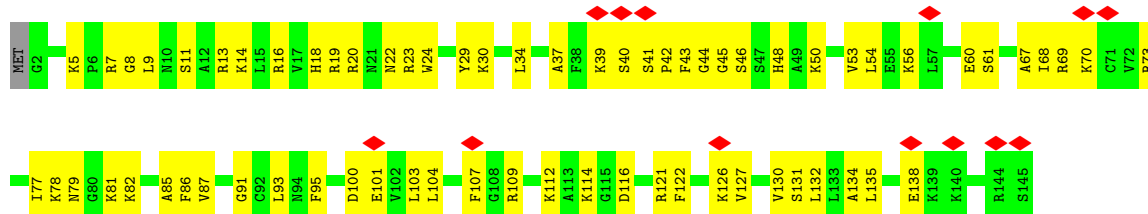




- Molecule 79: 40S ribosomal protein S22-A



- Molecule 80: 40S ribosomal protein S23-A



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	38558	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	40	Depositor
Minimum defocus (nm)	400	Depositor
Maximum defocus (nm)	1000	Depositor
Magnification	165000	Depositor
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	1.659	Depositor
Minimum map value	-0.906	Depositor
Average map value	0.004	Depositor
Map value standard deviation	0.044	Depositor
Recommended contour level	0.2	Depositor
Map size ($\text{\AA}$)	638.88, 638.88, 638.88	wwPDB
Map dimensions	440, 440, 440	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	1.452, 1.452, 1.452	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: MA6, G7M, ZN, A2M, K, OMG, UR3, OMU, GTP, MG, B8N, OMC, 1MA, 4AC, 5MC, DDE

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	0	0.18	0/1087	0.44	0/1449
2	1	0.19	0/571	0.57	0/768
3	2	0.20	0/782	0.44	0/1047
4	3	0.19	0/620	0.46	0/838
5	4	0.16	0/499	0.37	0/670
6	5	0.16	0/412	0.37	0/544
7	6	0.60	2/433 (0.5%)	1.14	6/575 (1.0%)
8	7	0.33	1/2489 (0.0%)	0.65	4/3389 (0.1%)
9	8	0.18	0/279	0.54	0/369
10	A	0.22	0/1585	0.39	0/2128
11	AA	0.21	2/75545 (0.0%)	0.30	0/117782
12	Aa	0.17	0/6470	0.41	0/8759
13	B	0.24	0/1245	0.42	0/1676
14	BB	0.19	0/2883	0.29	0/4491
15	C	0.18	0/1465	0.38	0/1965
16	CC	0.20	0/3746	0.29	0/5832
17	D	0.20	0/1440	0.40	0/1921
18	DD	0.15	0/1558	0.37	0/2107
19	E	0.23	0/1481	0.44	0/1990
20	EE	0.21	0/1948	0.41	0/2617
21	Ee	0.17	0/1210	0.47	0/1627
22	F	0.19	0/1300	0.38	0/1743
23	FF	0.20	0/3146	0.37	0/4228
24	G	0.17	0/786	0.40	0/1065
25	GG	0.20	0/2800	0.36	0/3790
26	H	0.21	0/978	0.41	0/1316
27	HH	0.18	0/2425	0.36	0/3271
28	I	0.22	0/533	0.43	0/707
29	II	0.20	0/1251	0.39	0/1682
30	J	0.19	0/974	0.39	0/1314
31	JJ	0.24	0/1821	0.44	2/2451 (0.1%)
32	K	0.19	0/1004	0.36	0/1341

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	KK	0.16	0/1836	0.33	0/2481
34	L	0.19	0/1118	0.40	0/1497
35	LL	0.22	0/1539	0.40	0/2073
36	M	0.18	0/1204	0.38	0/1612
37	MM	0.19	0/1779	0.36	0/2386
38	N	0.17	0/473	0.39	0/629
39	NN	0.18	0/1374	0.44	0/1842
40	O	0.22	0/750	0.46	0/1008
41	OO	0.18	0/1568	0.39	0/2106
42	P	0.21	0/897	0.44	0/1205
43	PP	0.19	0/1068	0.35	0/1438
44	Q	0.19	0/1041	0.34	0/1394
45	QQ	0.18	0/1757	0.35	0/2354
46	R	0.24	0/868	0.43	0/1168
47	S	0.20	0/871	0.39	0/1164
48	T	0.18	0/978	0.35	0/1301
49	U	0.18	0/778	0.40	0/1034
50	V	0.21	0/680	0.51	0/901
51	W	0.18	0/618	0.39	0/826
52	X	0.23	0/443	0.50	0/588
53	Y	0.21	0/423	0.55	0/562
54	Z	0.24	0/234	0.62	0/300
55	a	0.18	0/831	0.48	0/1097
56	b	0.21	0/701	0.44	0/934
57	c	0.20	2/37760 (0.0%)	0.38	23/58811 (0.0%)
58	d	0.18	0/1623	0.43	0/2222
59	e	0.21	0/1714	0.48	0/2308
60	f	0.20	0/1665	0.45	0/2263
61	g	0.18	0/1429	0.44	0/1913
62	h	0.20	0/2097	0.44	0/2823
63	i	0.19	0/1591	0.47	0/2151
64	j	0.18	0/1790	0.45	0/2393
65	k	0.19	0/1506	0.51	0/2028
66	l	0.22	0/1482	0.49	0/1980
67	m	0.18	0/1519	0.38	0/2035
68	n	0.20	0/309	0.38	0/416
69	o	0.20	0/1172	0.43	0/1580
70	p	0.21	0/1215	0.44	0/1638
71	q	0.18	0/901	0.47	1/1217 (0.1%)
72	r	0.19	0/747	0.51	0/1002
73	s	0.21	0/1088	0.54	0/1459
74	t	0.18	0/971	0.47	0/1303
75	u	0.17	0/1211	0.45	0/1628

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
76	v	0.15	0/1130	0.41	0/1517
77	w	0.16	0/810	0.47	0/1095
78	x	0.20	0/693	0.46	0/935
79	y	0.21	0/1038	0.44	0/1395
80	z	0.20	0/1139	0.45	0/1518
All	All	0.20	7/215195 (0.0%)	0.38	36/314982 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
7	6	0	1
31	JJ	0	2
34	L	0	1
50	V	0	1
53	Y	0	1
64	j	0	1
65	k	0	1
69	o	0	1
73	s	0	1
All	All	0	10

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

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	7	287	PRO	CG-CD	-13.15	1.06	1.50
7	6	19	PRO	CG-CD	-8.02	1.23	1.50
57	c	619	A2M	O3'-P	5.23	1.61	1.56
57	c	541	A2M	O3'-P	5.21	1.61	1.56
7	6	18	THR	N-CA	-5.07	1.40	1.46

The worst 5 of 36 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	7	287	PRO	N-CD-CG	-18.44	75.55	103.20
7	6	18	THR	N-CA-CB	-13.11	92.55	110.77
8	7	287	PRO	CA-CB-CG	-12.41	80.92	104.50
7	6	19	PRO	N-CD-CG	-10.68	87.18	103.20
57	c	1591	C	C4'-C3'-O3'	-9.81	94.68	109.40

There are no chirality outliers.

5 of 10 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
7	6	17	GLN	Mainchain
31	JJ	158	LYS	Peptide
31	JJ	232	ARG	Peptide
34	L	102	GLU	Peptide
50	V	64	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	0	1073	0	1132	68	0
2	1	563	0	603	29	0
3	2	769	0	815	47	0
4	3	610	0	633	38	0
5	4	497	0	535	28	0
6	5	404	0	398	33	0
7	6	427	0	476	39	0
8	7	2436	0	2386	146	0
9	8	276	0	289	11	0
10	A	1555	0	1659	79	0
11	AA	68429	0	34442	2642	0
12	Aa	6368	0	6435	358	0
13	B	1222	0	1231	71	0
14	BB	2579	0	1304	107	0
15	C	1441	0	1543	70	0
16	CC	3353	0	1695	137	0
17	D	1423	0	1510	66	0
18	DD	1531	0	1571	72	0
19	E	1445	0	1487	73	0
20	EE	1914	0	1981	88	0
21	Ee	1196	0	1257	69	0
22	F	1276	0	1323	70	0
23	FF	3075	0	3142	169	0
24	G	770	0	780	23	0
25	GG	2748	0	2859	142	0
26	H	963	0	1015	54	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
27	HH	2375	0	2325	95	0
28	I	521	0	551	28	0
29	II	1230	0	1320	61	0
30	J	959	0	1023	46	0
31	JJ	1784	0	1862	85	0
32	K	993	0	1081	53	0
33	KK	1804	0	1877	62	0
34	L	1092	0	1155	43	0
35	LL	1518	0	1587	66	0
36	M	1173	0	1215	60	0
37	MM	1743	0	1785	95	0
38	N	462	0	491	20	0
39	NN	1353	0	1383	98	0
40	O	742	0	797	53	0
41	OO	1543	0	1608	65	0
42	P	883	0	918	49	0
43	PP	1053	0	1149	54	0
44	Q	1020	0	1090	37	0
45	QQ	1720	0	1779	107	0
46	R	850	0	880	38	0
47	S	861	0	918	53	0
48	T	969	0	1078	39	0
49	U	771	0	849	40	0
50	V	665	0	668	35	0
51	W	612	0	682	26	0
52	X	436	0	475	28	0
53	Y	417	0	455	27	0
54	Z	233	0	284	28	0
55	a	819	0	886	63	0
56	b	694	0	734	40	0
57	c	34321	0	17287	1679	0
58	d	1583	0	1578	77	0
59	e	1689	0	1763	105	0
60	f	1635	0	1723	90	0
61	g	1412	0	1473	63	0
62	h	2056	0	2140	134	0
63	i	1572	0	1639	119	0
64	j	1766	0	1859	103	0
65	k	1481	0	1572	89	0
66	l	1457	0	1488	102	0
67	m	1494	0	1573	66	0
68	n	300	0	279	14	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
69	o	1146	0	1213	71	0
70	p	1192	0	1255	69	0
71	q	891	0	883	53	0
72	r	732	0	760	53	0
73	s	1069	0	1127	72	0
74	t	961	0	999	55	0
75	u	1192	0	1222	67	0
76	v	1112	0	1124	58	0
77	w	800	0	869	40	0
78	x	684	0	672	32	0
79	y	1021	0	1060	56	0
80	z	1121	0	1196	73	0
81	2	1	0	0	0	0
81	5	1	0	0	0	0
81	8	1	0	0	0	0
81	S	1	0	0	0	0
81	V	1	0	0	0	0
81	Y	1	0	0	0	0
81	a	1	0	0	0	0
81	b	1	0	0	0	0
82	AA	119	0	0	0	0
82	Aa	1	0	0	0	0
82	BB	3	0	0	0	0
82	CC	3	0	0	0	0
82	H	1	0	0	0	0
82	JJ	1	0	0	0	0
82	c	25	0	0	0	0
83	AA	9	0	0	0	0
83	EE	1	0	0	0	0
84	Aa	32	0	12	7	0
85	AA	71	0	0	1	0
85	B	1	0	0	0	0
85	CC	8	0	0	0	0
85	F	1	0	0	0	0
85	JJ	1	0	0	0	0
85	R	1	0	0	0	0
85	V	1	0	0	0	0
85	c	18	0	0	0	0
All	All	202630	0	152172	8200	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 24.

The worst 5 of 8200 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)
11:AA:1237:G:N1	11:AA:1251:A:C2	2.01	1.28
57:c:1550:A:N6	57:c:1562:G:H21	1.32	1.28
57:c:1550:A:H62	57:c:1562:G:N2	1.31	1.28
6:5:21:CYS:SG	6:5:39:CYS:N	2.12	1.21
57:c:1541:G:N2	57:c:1570:A:H62	1.36	1.20

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	0	132/135 (98%)	126 (96%)	6 (4%)	0	100	100
2	1	68/108 (63%)	61 (90%)	7 (10%)	0	100	100
3	2	95/119 (80%)	90 (95%)	5 (5%)	0	100	100
4	3	79/82 (96%)	73 (92%)	6 (8%)	0	100	100
5	4	61/67 (91%)	59 (97%)	2 (3%)	0	100	100
6	5	47/56 (84%)	45 (96%)	2 (4%)	0	100	100
7	6	51/63 (81%)	48 (94%)	3 (6%)	0	100	100
8	7	316/319 (99%)	298 (94%)	18 (6%)	0	100	100
9	8	32/152 (21%)	19 (59%)	13 (41%)	0	100	100
10	A	195/199 (98%)	193 (99%)	2 (1%)	0	100	100
12	Aa	811/842 (96%)	794 (98%)	17 (2%)	0	100	100
13	B	152/184 (83%)	152 (100%)	0	0	100	100
15	C	183/186 (98%)	182 (100%)	1 (0%)	0	100	100
17	D	174/189 (92%)	170 (98%)	4 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
18	DD	195/312 (62%)	192 (98%)	3 (2%)	0	100	100
19	E	170/172 (99%)	166 (98%)	4 (2%)	0	100	100
20	EE	250/254 (98%)	248 (99%)	2 (1%)	0	100	100
21	Ee	156/165 (94%)	148 (95%)	8 (5%)	0	100	100
22	F	157/160 (98%)	155 (99%)	2 (1%)	0	100	100
23	FF	384/387 (99%)	373 (97%)	11 (3%)	0	100	100
24	G	95/121 (78%)	95 (100%)	0	0	100	100
25	GG	359/362 (99%)	350 (98%)	9 (2%)	0	100	100
26	H	127/137 (93%)	127 (100%)	0	0	100	100
27	HH	294/297 (99%)	285 (97%)	9 (3%)	0	100	100
28	I	61/155 (39%)	61 (100%)	0	0	100	100
29	II	151/176 (86%)	150 (99%)	1 (1%)	0	100	100
30	J	118/142 (83%)	114 (97%)	4 (3%)	0	100	100
31	JJ	220/244 (90%)	212 (96%)	7 (3%)	1 (0%)	25	58
32	K	124/127 (98%)	123 (99%)	1 (1%)	0	100	100
33	KK	231/256 (90%)	226 (98%)	5 (2%)	0	100	100
34	L	133/136 (98%)	129 (97%)	3 (2%)	1 (1%)	16	49
35	LL	189/191 (99%)	184 (97%)	5 (3%)	0	100	100
36	M	146/149 (98%)	141 (97%)	5 (3%)	0	100	100
37	MM	213/221 (96%)	207 (97%)	6 (3%)	0	100	100
38	N	56/59 (95%)	54 (96%)	2 (4%)	0	100	100
39	NN	167/174 (96%)	159 (95%)	8 (5%)	0	100	100
40	O	95/105 (90%)	95 (100%)	0	0	100	100
41	OO	191/199 (96%)	180 (94%)	10 (5%)	1 (0%)	25	58
42	P	107/113 (95%)	105 (98%)	2 (2%)	0	100	100
43	PP	134/138 (97%)	131 (98%)	3 (2%)	0	100	100
44	Q	125/130 (96%)	123 (98%)	2 (2%)	0	100	100
45	QQ	201/204 (98%)	196 (98%)	5 (2%)	0	100	100
46	R	104/107 (97%)	103 (99%)	1 (1%)	0	100	100
47	S	107/121 (88%)	107 (100%)	0	0	100	100
48	T	117/120 (98%)	115 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
49	U	97/100 (97%)	91 (94%)	6 (6%)	0	100	100
50	V	82/88 (93%)	79 (96%)	2 (2%)	1 (1%)	11	40
51	W	75/78 (96%)	72 (96%)	3 (4%)	0	100	100
52	X	48/51 (94%)	47 (98%)	1 (2%)	0	100	100
53	Y	50/128 (39%)	47 (94%)	2 (4%)	1 (2%)	6	32
54	Z	23/25 (92%)	23 (100%)	0	0	100	100
55	a	100/106 (94%)	97 (97%)	3 (3%)	0	100	100
56	b	89/92 (97%)	88 (99%)	1 (1%)	0	100	100
58	d	204/252 (81%)	193 (95%)	11 (5%)	0	100	100
59	e	210/255 (82%)	196 (93%)	14 (7%)	0	100	100
60	f	215/254 (85%)	201 (94%)	14 (6%)	0	100	100
61	g	177/240 (74%)	170 (96%)	7 (4%)	0	100	100
62	h	256/261 (98%)	244 (95%)	12 (5%)	0	100	100
63	i	195/225 (87%)	186 (95%)	9 (5%)	0	100	100
64	j	217/236 (92%)	217 (100%)	0	0	100	100
65	k	182/190 (96%)	172 (94%)	10 (6%)	0	100	100
66	l	180/200 (90%)	169 (94%)	11 (6%)	0	100	100
67	m	183/197 (93%)	175 (96%)	8 (4%)	0	100	100
68	n	29/105 (28%)	29 (100%)	0	0	100	100
69	o	140/156 (90%)	133 (95%)	7 (5%)	0	100	100
70	p	148/151 (98%)	145 (98%)	3 (2%)	0	100	100
71	q	125/137 (91%)	119 (95%)	6 (5%)	0	100	100
72	r	85/142 (60%)	80 (94%)	5 (6%)	0	100	100
73	s	134/143 (94%)	126 (94%)	8 (6%)	0	100	100
74	t	119/136 (88%)	114 (96%)	5 (4%)	0	100	100
75	u	143/146 (98%)	134 (94%)	9 (6%)	0	100	100
76	v	141/144 (98%)	137 (97%)	4 (3%)	0	100	100
77	w	98/121 (81%)	98 (100%)	0	0	100	100
78	x	85/87 (98%)	81 (95%)	4 (5%)	0	100	100
79	y	127/130 (98%)	125 (98%)	2 (2%)	0	100	100
80	z	142/145 (98%)	132 (93%)	10 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	11672/13056 (89%)	11284 (97%)	383 (3%)	5 (0%)	100	100

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
31	JJ	159	GLN
50	V	65	ARG
34	L	102	GLU
53	Y	105	PRO
41	OO	63	VAL

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	
1	0	112/113 (99%)	112 (100%)	0	100	100
2	1	61/89 (68%)	61 (100%)	0	100	100
3	2	83/101 (82%)	83 (100%)	0	100	100
4	3	70/71 (99%)	70 (100%)	0	100	100
5	4	56/60 (93%)	56 (100%)	0	100	100
6	5	43/49 (88%)	43 (100%)	0	100	100
7	6	46/54 (85%)	46 (100%)	0	100	100
8	7	259/262 (99%)	259 (100%)	0	100	100
9	8	30/135 (22%)	30 (100%)	0	100	100
10	A	160/162 (99%)	159 (99%)	1 (1%)	84	88
12	Aa	694/714 (97%)	694 (100%)	0	100	100
13	B	125/146 (86%)	125 (100%)	0	100	100
15	C	150/151 (99%)	150 (100%)	0	100	100
17	D	143/154 (93%)	143 (100%)	0	100	100
18	DD	167/254 (66%)	167 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
19	E	156/156 (100%)	156 (100%)	0	100	100
20	EE	193/196 (98%)	193 (100%)	0	100	100
21	Ee	129/136 (95%)	129 (100%)	0	100	100
22	F	136/137 (99%)	136 (100%)	0	100	100
23	FF	320/323 (99%)	319 (100%)	1 (0%)	91	92
24	G	84/107 (78%)	84 (100%)	0	100	100
25	GG	288/289 (100%)	287 (100%)	1 (0%)	91	92
26	H	101/105 (96%)	101 (100%)	0	100	100
27	HH	244/245 (100%)	244 (100%)	0	100	100
28	I	55/129 (43%)	55 (100%)	0	100	100
29	II	133/153 (87%)	133 (100%)	0	100	100
30	J	104/118 (88%)	104 (100%)	0	100	100
31	JJ	186/205 (91%)	186 (100%)	0	100	100
32	K	109/110 (99%)	109 (100%)	0	100	100
33	KK	187/208 (90%)	187 (100%)	0	100	100
34	L	115/116 (99%)	115 (100%)	0	100	100
35	LL	171/171 (100%)	171 (100%)	0	100	100
36	M	118/119 (99%)	118 (100%)	0	100	100
37	MM	184/187 (98%)	184 (100%)	0	100	100
38	N	46/47 (98%)	46 (100%)	0	100	100
39	NN	147/150 (98%)	147 (100%)	0	100	100
40	O	81/88 (92%)	81 (100%)	0	100	100
41	OO	154/159 (97%)	154 (100%)	0	100	100
42	P	94/97 (97%)	94 (100%)	0	100	100
43	PP	107/109 (98%)	107 (100%)	0	100	100
44	Q	109/111 (98%)	109 (100%)	0	100	100
45	QQ	175/176 (99%)	175 (100%)	0	100	100
46	R	90/91 (99%)	90 (100%)	0	100	100
47	S	94/103 (91%)	94 (100%)	0	100	100
48	T	104/105 (99%)	103 (99%)	1 (1%)	73	80
49	U	81/82 (99%)	81 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
50	V	69/71 (97%)	69 (100%)	0	100	100
51	W	68/69 (99%)	68 (100%)	0	100	100
52	X	45/46 (98%)	45 (100%)	0	100	100
53	Y	47/116 (40%)	47 (100%)	0	100	100
54	Z	23/23 (100%)	23 (100%)	0	100	100
55	a	87/91 (96%)	87 (100%)	0	100	100
56	b	71/72 (99%)	71 (100%)	0	100	100
58	d	165/210 (79%)	165 (100%)	0	100	100
59	e	189/224 (84%)	189 (100%)	0	100	100
60	f	176/205 (86%)	176 (100%)	0	100	100
61	g	145/195 (74%)	145 (100%)	0	100	100
62	h	220/222 (99%)	220 (100%)	0	100	100
63	i	172/191 (90%)	172 (100%)	0	100	100
64	j	188/201 (94%)	188 (100%)	0	100	100
65	k	165/170 (97%)	165 (100%)	0	100	100
66	l	146/161 (91%)	146 (100%)	0	100	100
67	m	158/166 (95%)	158 (100%)	0	100	100
68	n	32/98 (33%)	32 (100%)	0	100	100
69	o	127/137 (93%)	127 (100%)	0	100	100
70	p	127/128 (99%)	127 (100%)	0	100	100
71	q	81/105 (77%)	81 (100%)	0	100	100
72	r	77/118 (65%)	77 (100%)	0	100	100
73	s	113/119 (95%)	113 (100%)	0	100	100
74	t	105/124 (85%)	105 (100%)	0	100	100
75	u	128/129 (99%)	128 (100%)	0	100	100
76	v	115/116 (99%)	115 (100%)	0	100	100
77	w	94/114 (82%)	94 (100%)	0	100	100
78	x	74/74 (100%)	74 (100%)	0	100	100
79	y	110/111 (99%)	110 (100%)	0	100	100
80	z	119/120 (99%)	119 (100%)	0	100	100
All	All	9930/10969 (90%)	9926 (100%)	4 (0%)	100	100

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
10	A	14	HIS
23	FF	104	THR
25	GG	43	ASN
48	T	108	GLN

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

Mol	Chain	Res	Type
41	OO	28	GLN
49	U	12	ASN
76	v	16	ASN
42	P	17	HIS
46	R	26	ASN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
11	AA	3193/3396 (94%)	636 (19%)	21 (0%)
14	BB	120/121 (99%)	18 (15%)	1 (0%)
16	CC	157/158 (99%)	28 (17%)	1 (0%)
57	c	1598/1800 (88%)	472 (29%)	0
All	All	5068/5475 (92%)	1154 (22%)	23 (0%)

5 of 1154 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
11	AA	4	U
11	AA	6	A
11	AA	12	A
11	AA	14	U
11	AA	26	A

5 of 23 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
11	AA	2490	C
11	AA	2570	U
11	AA	2501	U
11	AA	2971	A

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Mol	Chain	Res	Type
11	AA	1348	U

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

67 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
57	OMG	c	1271	57	18,26,27	1.14	2 (11%)	19,38,41	0.79	0
11	OMG	AA	908	11	18,26,27	1.20	2 (11%)	19,38,41	0.83	1 (5%)
11	A2M	AA	1449	11,82	18,25,26	3.63	8 (44%)	18,36,39	3.42	4 (22%)
11	OMG	AA	1450	11	18,26,27	1.14	2 (11%)	19,38,41	0.80	1 (5%)
11	A2M	AA	2946	11,82	18,25,26	3.62	8 (44%)	18,36,39	3.31	4 (22%)
11	OMU	AA	2347	11	19,22,23	3.00	8 (42%)	26,31,34	1.75	4 (15%)
57	A2M	c	541	57	18,25,26	3.62	8 (44%)	18,36,39	3.29	4 (22%)
57	OMG	c	562	57	18,26,27	1.24	2 (11%)	19,38,41	0.80	0
11	5MC	AA	2278	11,82	18,22,23	0.59	0	26,32,35	0.67	0
11	OMG	AA	2793	11	18,26,27	1.21	2 (11%)	19,38,41	0.76	1 (5%)
11	OMU	AA	2921	11	19,22,23	3.00	8 (42%)	26,31,34	1.71	5 (19%)
11	OMC	AA	2948	11	19,22,23	0.61	0	26,31,34	1.03	2 (7%)
11	OMG	AA	2619	11	18,26,27	1.16	2 (11%)	19,38,41	0.82	1 (5%)
11	OMC	AA	2959	11	19,22,23	0.55	0	26,31,34	0.68	0
57	A2M	c	619	57,82	18,25,26	3.69	9 (50%)	18,36,39	3.39	4 (22%)
11	OMG	AA	805	11	18,26,27	1.16	2 (11%)	19,38,41	0.83	1 (5%)
11	OMG	AA	2815	11	18,26,27	1.15	2 (11%)	19,38,41	0.88	1 (5%)
57	B8N	c	1191	57	24,29,30	3.07	8 (33%)	29,42,45	1.72	5 (17%)
57	A2M	c	974	57	18,25,26	3.62	8 (44%)	18,36,39	3.43	4 (22%)
11	A2M	AA	649	11	18,25,26	3.62	8 (44%)	18,36,39	3.33	4 (22%)
11	UR3	AA	2634	11	19,22,23	2.76	7 (36%)	26,32,35	1.25	1 (3%)
12	DDE	Aa	699	12	14,20,21	1.02	1 (7%)	14,28,30	1.17	2 (14%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
57	OMC	c	1639	57,82	19,22,23	0.56	0	26,31,34	0.67	0
57	OMG	c	1126	57	18,26,27	1.20	2 (11%)	19,38,41	0.77	1 (5%)
11	OMU	AA	1888	11	19,22,23	3.03	8 (42%)	26,31,34	1.72	5 (19%)
57	OMU	c	578	57	19,22,23	3.06	8 (42%)	26,31,34	1.69	5 (19%)
57	OMC	c	1007	57	19,22,23	0.55	0	26,31,34	0.70	0
11	A2M	AA	2640	11	18,25,26	3.58	8 (44%)	18,36,39	3.42	4 (22%)
11	A2M	AA	2256	11	18,25,26	3.58	8 (44%)	18,36,39	3.57	5 (27%)
11	OMG	AA	2791	11	18,26,27	1.19	2 (11%)	19,38,41	0.83	1 (5%)
57	OMC	c	414	57	19,22,23	0.62	0	26,31,34	1.08	2 (7%)
11	A2M	AA	817	11,82	18,25,26	3.63	8 (44%)	18,36,39	3.55	4 (22%)
57	A2M	c	796	57	18,25,26	3.64	8 (44%)	18,36,39	3.39	3 (16%)
11	OMC	AA	650	11	19,22,23	0.55	0	26,31,34	0.80	1 (3%)
57	A2M	c	436	57	18,25,26	3.61	8 (44%)	18,36,39	3.37	4 (22%)
57	4AC	c	1280	57	21,24,25	3.54	10 (47%)	29,34,37	1.77	7 (24%)
57	OMG	c	1428	57	18,26,27	1.14	2 (11%)	19,38,41	0.82	1 (5%)
57	OMG	c	1572	57	18,26,27	1.17	2 (11%)	19,38,41	0.87	1 (5%)
11	A2M	AA	807	11	18,25,26	3.61	8 (44%)	18,36,39	3.36	4 (22%)
11	1MA	AA	645	11,82	16,25,26	0.92	2 (12%)	18,37,40	1.03	1 (5%)
57	MA6	c	1782	57	18,26,27	1.03	2 (11%)	19,38,41	3.50	2 (10%)
11	OMU	AA	2417	11	19,22,23	2.99	8 (42%)	26,31,34	1.72	5 (19%)
57	G7M	c	1575	57	20,26,27	2.46	7 (35%)	17,39,42	1.15	1 (5%)
11	OMC	AA	2197	11,83	19,22,23	0.54	0	26,31,34	0.66	0
11	A2M	AA	2281	11	18,25,26	3.69	9 (50%)	18,36,39	3.41	4 (22%)
11	OMC	AA	2337	11	19,22,23	0.60	0	26,31,34	0.80	1 (3%)
57	A2M	c	420	57	18,25,26	3.60	8 (44%)	18,36,39	3.41	3 (16%)
57	OMU	c	1269	57	19,22,23	3.12	8 (42%)	26,31,34	1.67	5 (19%)
57	4AC	c	1773	57	21,24,25	3.47	10 (47%)	29,34,37	1.61	5 (17%)
11	A2M	AA	2280	11	18,25,26	3.63	8 (44%)	18,36,39	3.34	4 (22%)
11	A2M	AA	1133	11,82	18,25,26	3.64	8 (44%)	18,36,39	3.32	3 (16%)
11	OMU	AA	2421	11	19,22,23	3.02	8 (42%)	26,31,34	1.70	5 (19%)
11	OMU	AA	2724	11	19,22,23	3.02	8 (42%)	26,31,34	1.75	5 (19%)
11	OMG	AA	2288	11	18,26,27	1.18	2 (11%)	19,38,41	0.79	1 (5%)
11	A2M	AA	876	11	18,25,26	3.62	9 (50%)	18,36,39	3.40	4 (22%)
11	OMU	AA	898	11	19,22,23	3.04	8 (42%)	26,31,34	1.72	5 (19%)
11	OMG	AA	2922	11	18,26,27	1.15	2 (11%)	19,38,41	0.87	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
11	1MA	AA	2142	11,82	16,25,26	0.95	2 (12%)	18,37,40	1.10	2 (11%)
11	OMC	AA	1437	11,82	19,22,23	0.62	0	26,31,34	1.34	2 (7%)
11	OMU	AA	2729	11	19,22,23	3.01	8 (42%)	26,31,34	1.74	4 (15%)
57	A2M	c	100	57,82	18,25,26	3.63	8 (44%)	18,36,39	3.31	3 (16%)
11	5MC	AA	2870	11,83	18,22,23	0.65	0	26,32,35	0.59	0
11	A2M	AA	2220	11	18,25,26	3.59	8 (44%)	18,36,39	3.45	4 (22%)
57	MA6	c	1781	57	18,26,27	1.05	2 (11%)	19,38,41	3.46	2 (10%)
11	OMG	AA	867	11,83	18,26,27	1.16	2 (11%)	19,38,41	0.90	2 (10%)
11	OMC	AA	663	11	19,22,23	0.57	0	26,31,34	0.70	0
57	A2M	c	28	57	18,25,26	3.62	9 (50%)	18,36,39	3.36	4 (22%)

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
57	OMG	c	1271	57	-	1/5/27/28	0/3/3/3
11	OMG	AA	908	11	-	3/5/27/28	0/3/3/3
11	A2M	AA	1449	11,82	-	0/5/27/28	0/3/3/3
11	OMG	AA	1450	11	-	3/5/27/28	0/3/3/3
11	A2M	AA	2946	11,82	-	3/5/27/28	0/3/3/3
11	OMU	AA	2347	11	-	1/9/27/28	0/2/2/2
57	A2M	c	541	57	-	3/5/27/28	0/3/3/3
57	OMG	c	562	57	-	2/5/27/28	0/3/3/3
11	5MC	AA	2278	11,82	-	2/7/25/26	0/2/2/2
11	OMG	AA	2793	11	-	1/5/27/28	0/3/3/3
11	OMU	AA	2921	11	-	1/9/27/28	0/2/2/2
11	OMC	AA	2948	11	-	4/9/27/28	0/2/2/2
11	OMG	AA	2619	11	-	0/5/27/28	0/3/3/3
11	OMC	AA	2959	11	-	1/9/27/28	0/2/2/2
57	A2M	c	619	57,82	-	2/5/27/28	0/3/3/3
11	OMG	AA	805	11	-	1/5/27/28	0/3/3/3
11	OMG	AA	2815	11	-	1/5/27/28	0/3/3/3
57	B8N	c	1191	57	-	7/16/34/35	0/2/2/2
57	A2M	c	974	57	-	0/5/27/28	0/3/3/3
11	A2M	AA	649	11	-	1/5/27/28	0/3/3/3
11	UR3	AA	2634	11	-	0/7/25/26	0/2/2/2
12	DDE	Aa	699	12	-	12/20/21/23	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
57	OMC	c	1639	57,82	-	0/9/27/28	0/2/2/2
57	OMG	c	1126	57	-	1/5/27/28	0/3/3/3
11	OMU	AA	1888	11	-	0/9/27/28	0/2/2/2
57	OMU	c	578	57	-	0/9/27/28	0/2/2/2
57	OMC	c	1007	57	-	0/9/27/28	0/2/2/2
11	A2M	AA	2640	11	-	1/5/27/28	0/3/3/3
11	A2M	AA	2256	11	-	3/5/27/28	0/3/3/3
11	OMG	AA	2791	11	-	0/5/27/28	0/3/3/3
57	OMC	c	414	57	-	3/9/27/28	0/2/2/2
11	A2M	AA	817	11,82	-	2/5/27/28	0/3/3/3
57	A2M	c	796	57	-	1/5/27/28	0/3/3/3
11	OMC	AA	650	11	-	1/9/27/28	0/2/2/2
57	A2M	c	436	57	-	0/5/27/28	0/3/3/3
57	4AC	c	1280	57	-	6/11/29/30	0/2/2/2
57	OMG	c	1428	57	-	3/5/27/28	0/3/3/3
57	OMG	c	1572	57	-	3/5/27/28	0/3/3/3
11	A2M	AA	807	11	-	4/5/27/28	0/3/3/3
11	1MA	AA	645	11,82	-	2/3/25/26	0/3/3/3
57	MA6	c	1782	57	-	1/7/29/30	0/3/3/3
11	OMU	AA	2417	11	-	0/9/27/28	0/2/2/2
57	G7M	c	1575	57	-	2/3/25/26	0/3/3/3
11	OMC	AA	2197	11,83	-	2/9/27/28	0/2/2/2
11	A2M	AA	2281	11	-	3/5/27/28	0/3/3/3
11	OMC	AA	2337	11	-	3/9/27/28	0/2/2/2
57	A2M	c	420	57	-	3/5/27/28	0/3/3/3
57	OMU	c	1269	57	-	5/9/27/28	0/2/2/2
57	4AC	c	1773	57	-	3/11/29/30	0/2/2/2
11	A2M	AA	2280	11	-	2/5/27/28	0/3/3/3
11	A2M	AA	1133	11,82	-	0/5/27/28	0/3/3/3
11	OMU	AA	2421	11	-	1/9/27/28	0/2/2/2
11	OMU	AA	2724	11	-	1/9/27/28	0/2/2/2
11	OMG	AA	2288	11	-	0/5/27/28	0/3/3/3
11	A2M	AA	876	11	-	0/5/27/28	0/3/3/3
11	OMU	AA	898	11	-	2/9/27/28	0/2/2/2
11	OMG	AA	2922	11	-	2/5/27/28	0/3/3/3
11	1MA	AA	2142	11,82	-	0/3/25/26	0/3/3/3
11	OMC	AA	1437	11,82	-	5/9/27/28	0/2/2/2
11	OMU	AA	2729	11	-	1/9/27/28	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
57	A2M	c	100	57,82	-	0/5/27/28	0/3/3/3
11	5MC	AA	2870	11,83	-	5/7/25/26	0/2/2/2
11	A2M	AA	2220	11	-	1/5/27/28	0/3/3/3
57	MA6	c	1781	57	-	0/7/29/30	0/3/3/3
11	OMG	AA	867	11,83	-	0/5/27/28	0/3/3/3
11	OMC	AA	663	11	-	1/9/27/28	0/2/2/2
57	A2M	c	28	57	-	3/5/27/28	0/3/3/3

The worst 5 of 325 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
57	c	28	A2M	C3'-C4'	-9.16	1.29	1.53
11	AA	1133	A2M	C3'-C4'	-8.99	1.30	1.53
11	AA	1449	A2M	C3'-C4'	-8.99	1.30	1.53
57	c	619	A2M	C3'-C4'	-8.95	1.30	1.53
57	c	974	A2M	C3'-C4'	-8.94	1.30	1.53

The worst 5 of 175 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
57	c	1782	MA6	N1-C6-N6	-14.09	102.23	117.06
57	c	1781	MA6	N1-C6-N6	-13.88	102.45	117.06
11	AA	817	A2M	C5-C6-N6	11.00	137.07	120.35
11	AA	2256	A2M	C5-C6-N6	10.75	136.68	120.35
11	AA	1449	A2M	C5-C6-N6	10.72	136.64	120.35

There are no chirality outliers.

5 of 125 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
11	AA	649	A2M	C1'-C2'-O2'-CM'
11	AA	663	OMC	C1'-C2'-O2'-CM2
11	AA	805	OMG	C1'-C2'-O2'-CM2
11	AA	807	A2M	C1'-C2'-O2'-CM'
11	AA	898	OMU	C1'-C2'-O2'-CM2

There are no ring outliers.

58 monomers are involved in 129 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
57	c	1271	OMG	3	0

Continued on next page...

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
11	AA	908	OMG	3	0
11	AA	1449	A2M	1	0
11	AA	2946	A2M	1	0
11	AA	2347	OMU	2	0
57	c	541	A2M	4	0
57	c	562	OMG	11	0
11	AA	2793	OMG	1	0
11	AA	2921	OMU	2	0
11	AA	2948	OMC	3	0
11	AA	2959	OMC	1	0
11	AA	805	OMG	2	0
11	AA	2815	OMG	3	0
57	c	974	A2M	2	0
11	AA	649	A2M	2	0
11	AA	2634	UR3	3	0
12	Aa	699	DDE	3	0
57	c	1639	OMC	1	0
57	c	1126	OMG	1	0
11	AA	1888	OMU	1	0
57	c	578	OMU	2	0
11	AA	2640	A2M	4	0
11	AA	2256	A2M	3	0
11	AA	2791	OMG	1	0
57	c	414	OMC	2	0
11	AA	817	A2M	2	0
57	c	796	A2M	2	0
11	AA	650	OMC	2	0
57	c	436	A2M	1	0
57	c	1280	4AC	1	0
57	c	1428	OMG	3	0
57	c	1572	OMG	1	0
11	AA	807	A2M	1	0
11	AA	645	1MA	2	0
57	c	1782	MA6	1	0
11	AA	2417	OMU	4	0
57	c	1575	G7M	2	0
11	AA	2197	OMC	1	0
11	AA	2281	A2M	1	0
11	AA	2337	OMC	1	0
57	c	420	A2M	2	0
57	c	1269	OMU	2	0
57	c	1773	4AC	4	0

Continued on next page...

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
11	AA	2280	A2M	1	0
11	AA	1133	A2M	1	0
11	AA	2421	OMU	2	0
11	AA	2724	OMU	8	0
11	AA	2288	OMG	2	0
11	AA	876	A2M	3	0
11	AA	898	OMU	2	0
11	AA	2922	OMG	1	0
11	AA	2729	OMU	3	0
57	c	100	A2M	1	0
11	AA	2870	5MC	1	0
11	AA	2220	A2M	4	0
57	c	1781	MA6	3	0
11	AA	663	OMC	3	0
57	c	28	A2M	1	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 172 ligands modelled in this entry, 171 are monoatomic - leaving 1 for Mogul analysis.

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
84	GTP	Aa	901	82	26,34,34	0.99	1 (3%)	32,54,54	1.59	5 (15%)

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
84	GTP	Aa	901	82	-	3/18/38/38	0/3/3/3

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
84	Aa	901	GTP	C6-N1	-2.97	1.33	1.37

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
84	Aa	901	GTP	PB-O3B-PG	-4.43	117.61	132.83
84	Aa	901	GTP	PA-O3A-PB	-4.25	118.25	132.83
84	Aa	901	GTP	C3'-C2'-C1'	3.25	105.86	100.98
84	Aa	901	GTP	C5-C6-N1	2.17	117.79	113.95
84	Aa	901	GTP	C8-N7-C5	2.09	106.97	102.99

There are no chirality outliers.

All (3) torsion outliers are listed below:

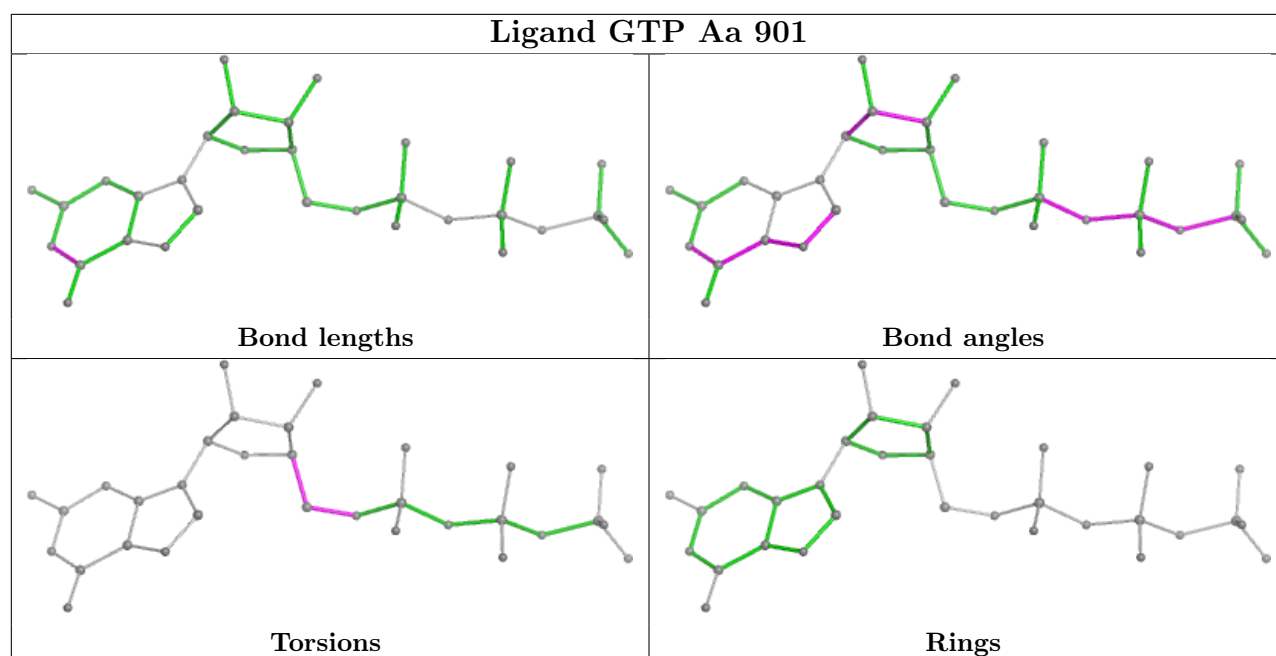
Mol	Chain	Res	Type	Atoms
84	Aa	901	GTP	O4'-C4'-C5'-O5'
84	Aa	901	GTP	C3'-C4'-C5'-O5'
84	Aa	901	GTP	C4'-C5'-O5'-PA

There are no ring outliers.

1 monomer is involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
84	Aa	901	GTP	7	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

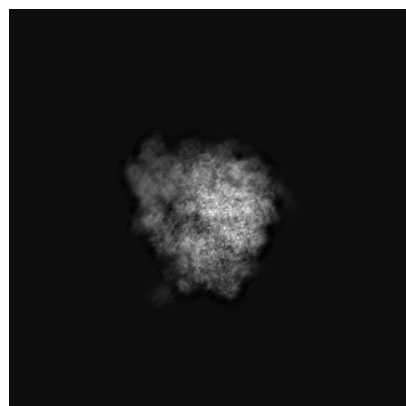
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-16729. These allow visual inspection of the internal detail of the map and identification of artifacts.

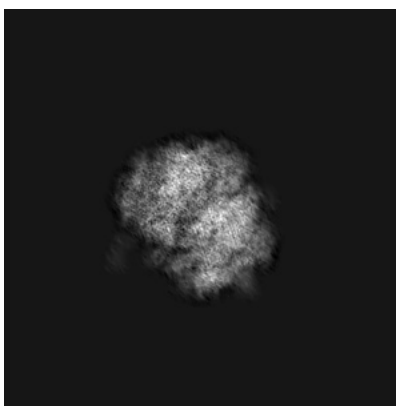
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

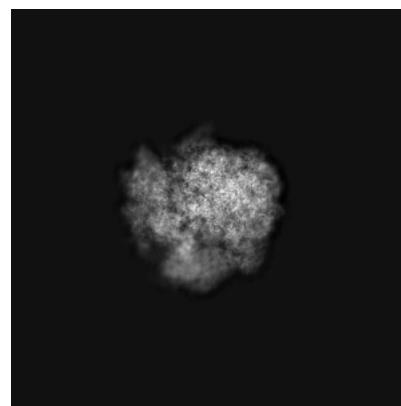
6.1.1 Primary map



X

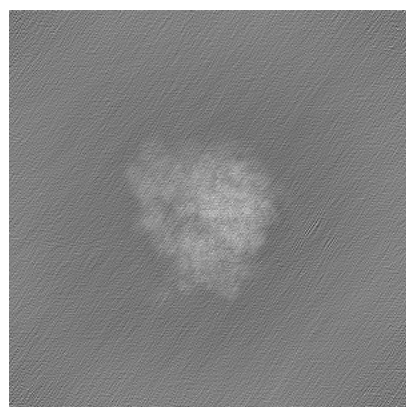


Y

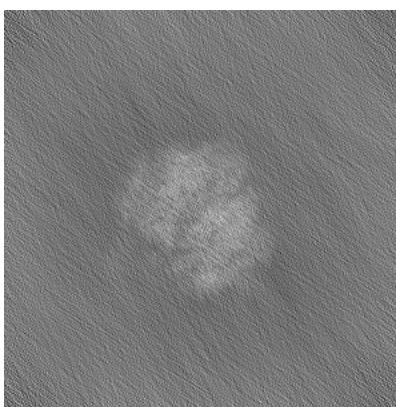


Z

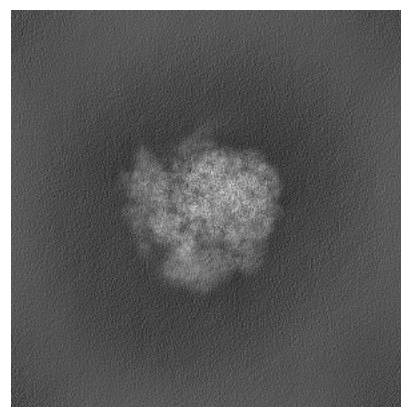
6.1.2 Raw map



X



Y

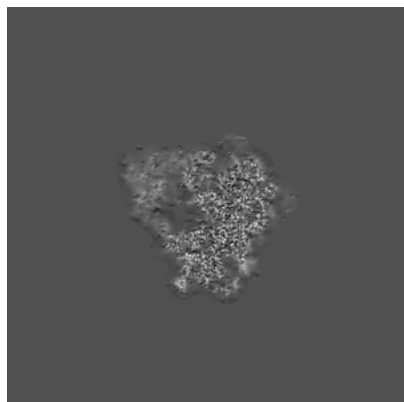


Z

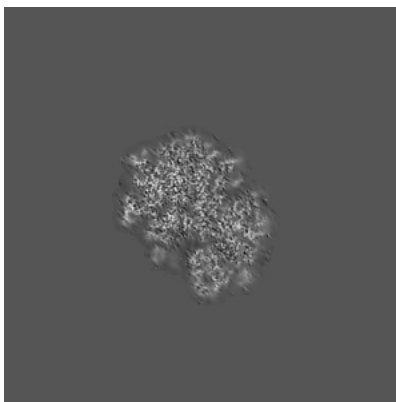
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 220

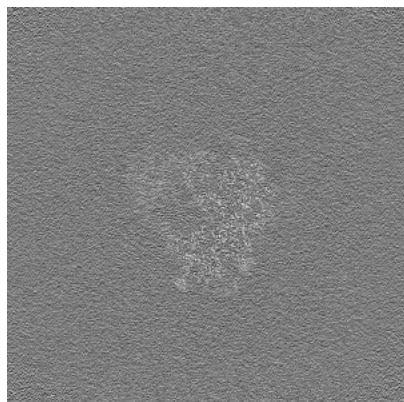


Y Index: 220

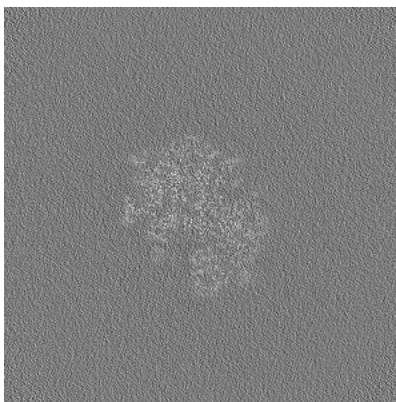


Z Index: 220

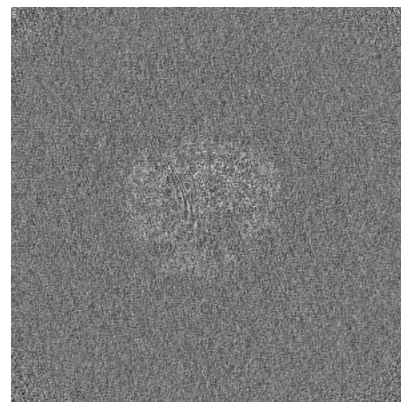
6.2.2 Raw map



X Index: 220



Y Index: 220

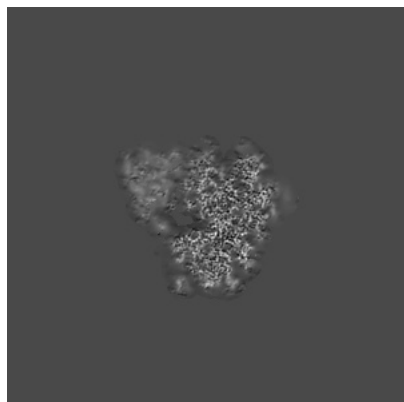


Z Index: 220

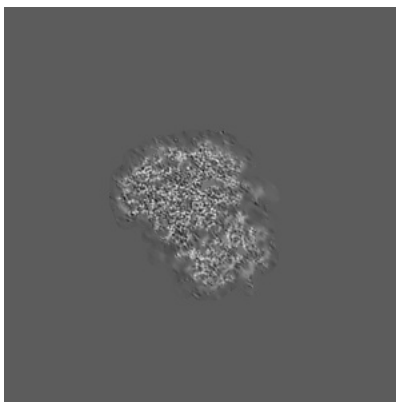
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

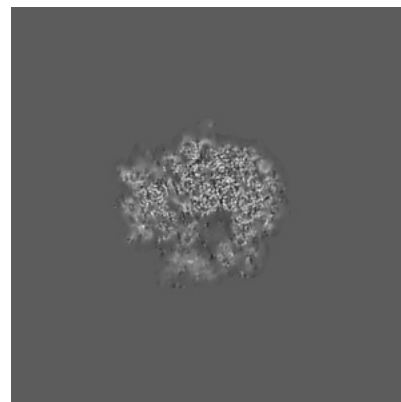
6.3.1 Primary map



X Index: 214

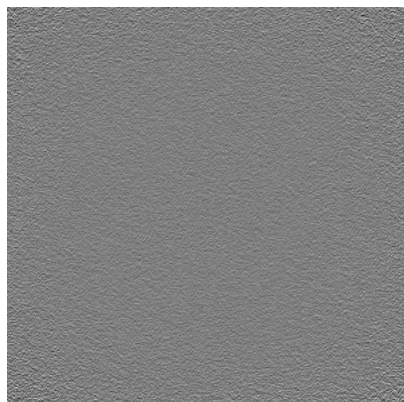


Y Index: 230

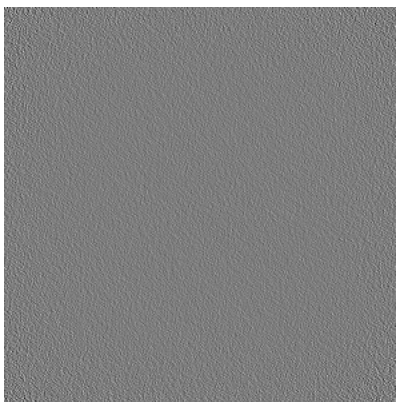


Z Index: 216

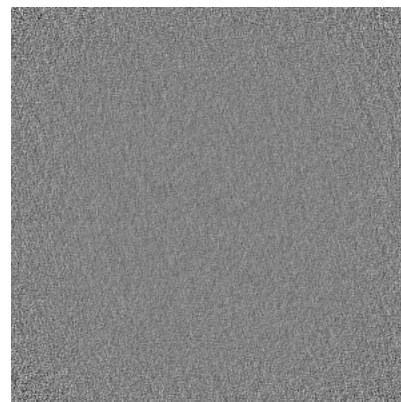
6.3.2 Raw map



X Index: 0



Y Index: 0

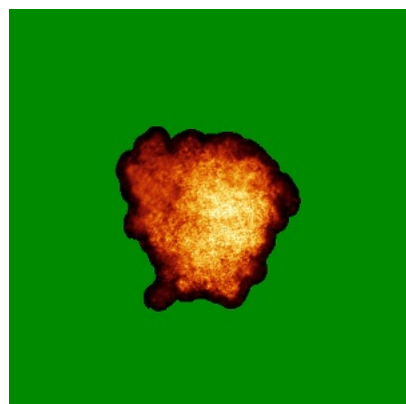


Z Index: 0

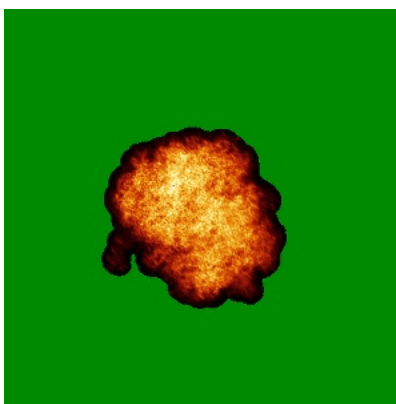
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

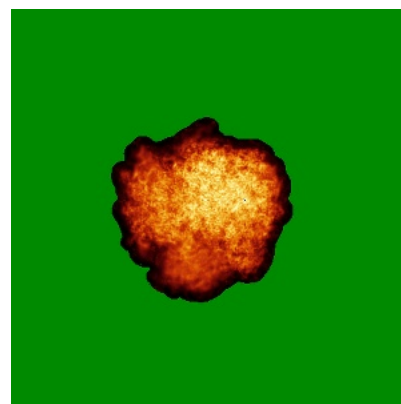
6.4.1 Primary map



X

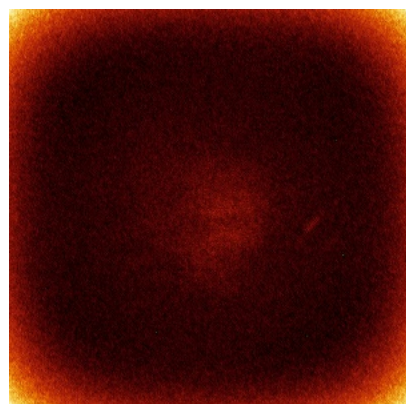


Y

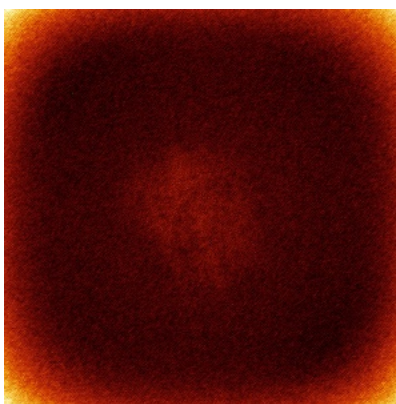


Z

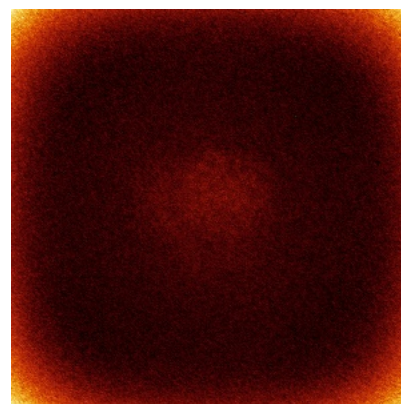
6.4.2 Raw map



X



Y



Z

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

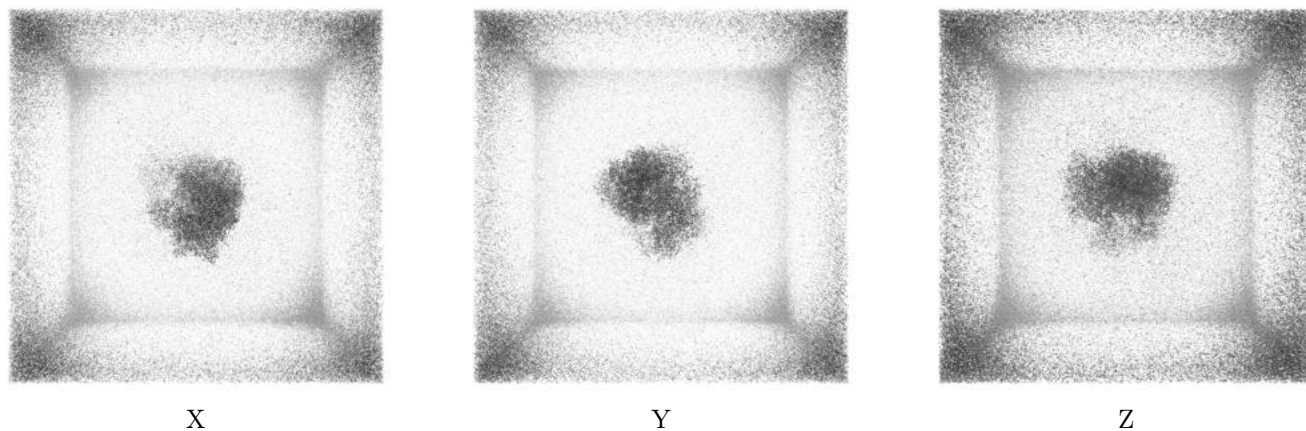
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.2. 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



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.

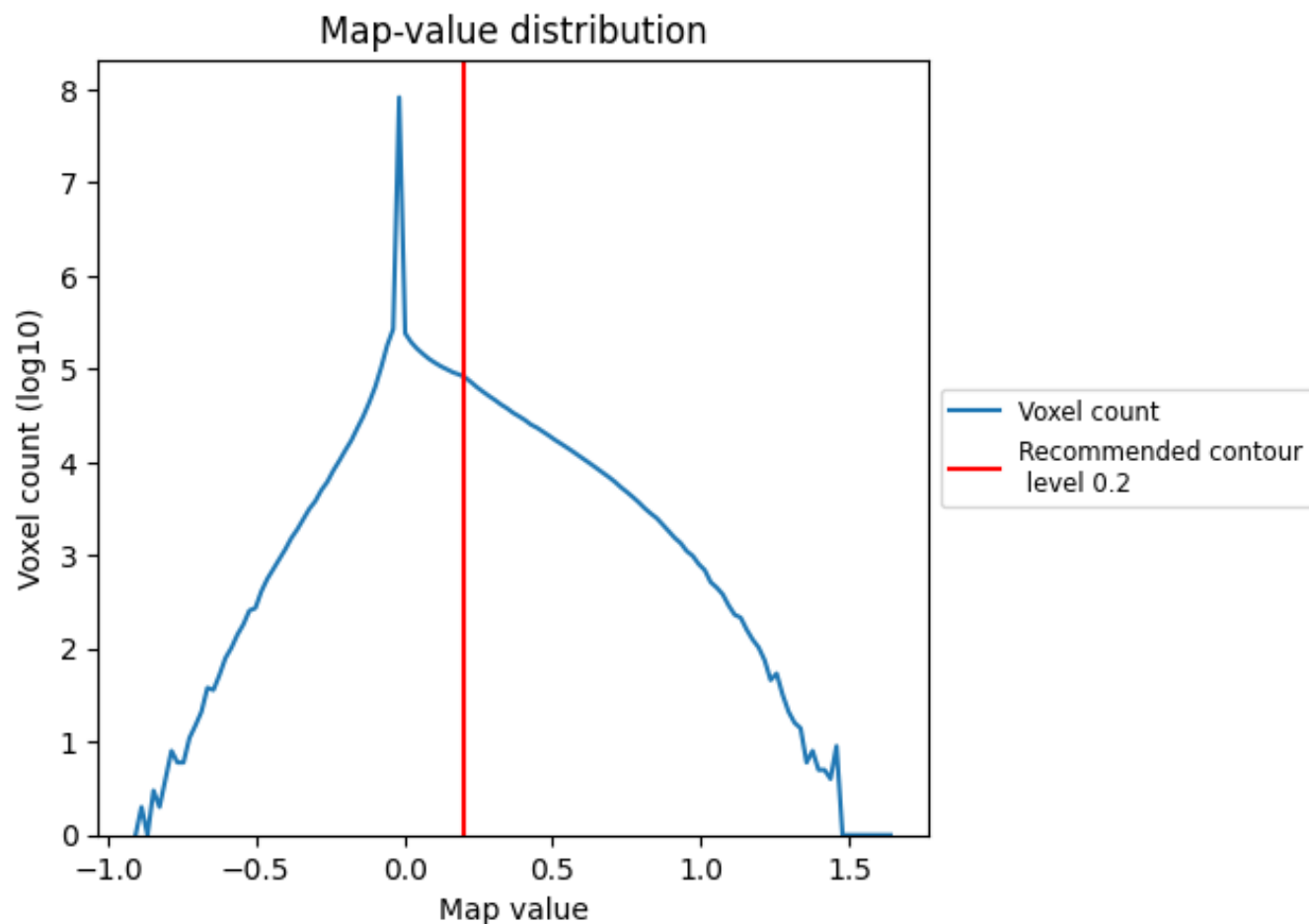
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

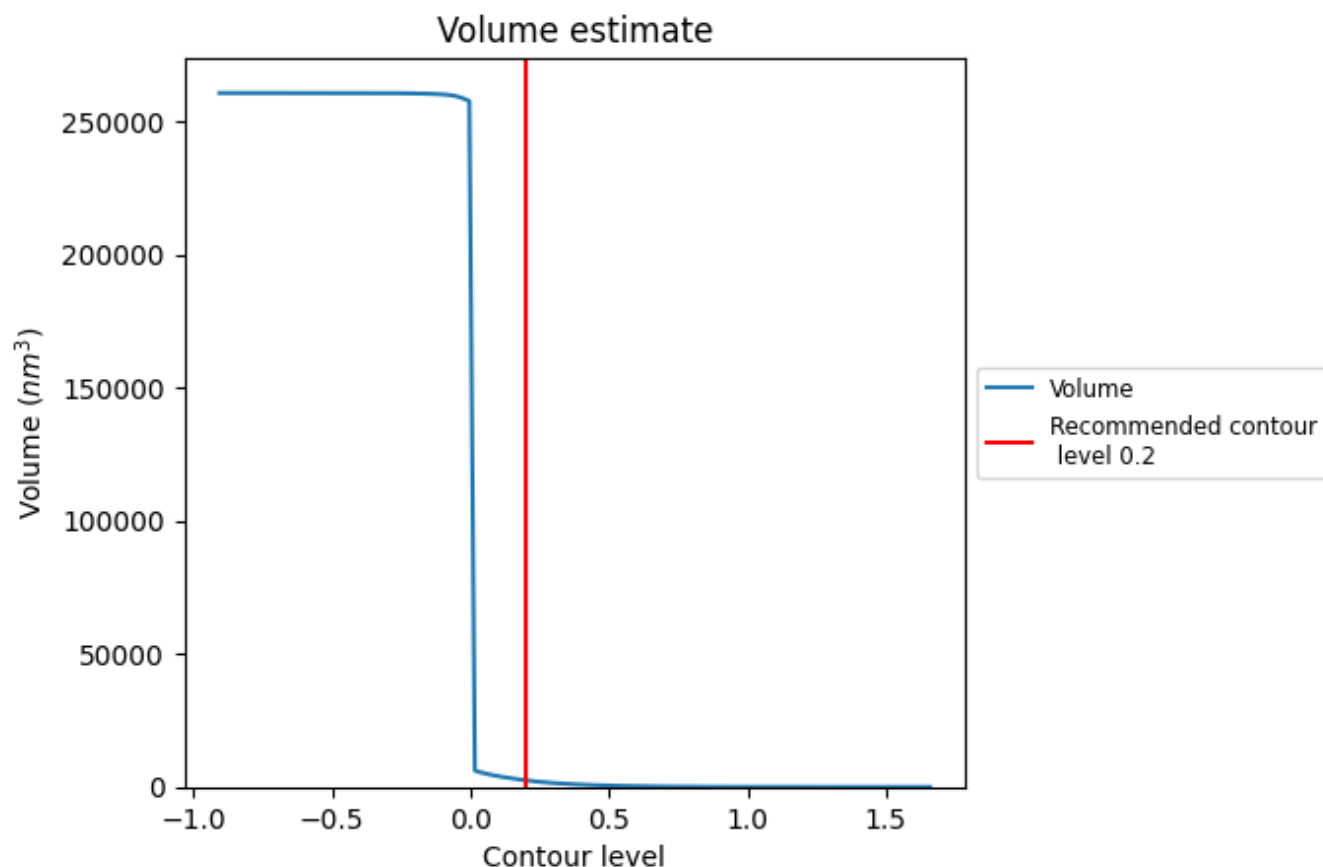
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

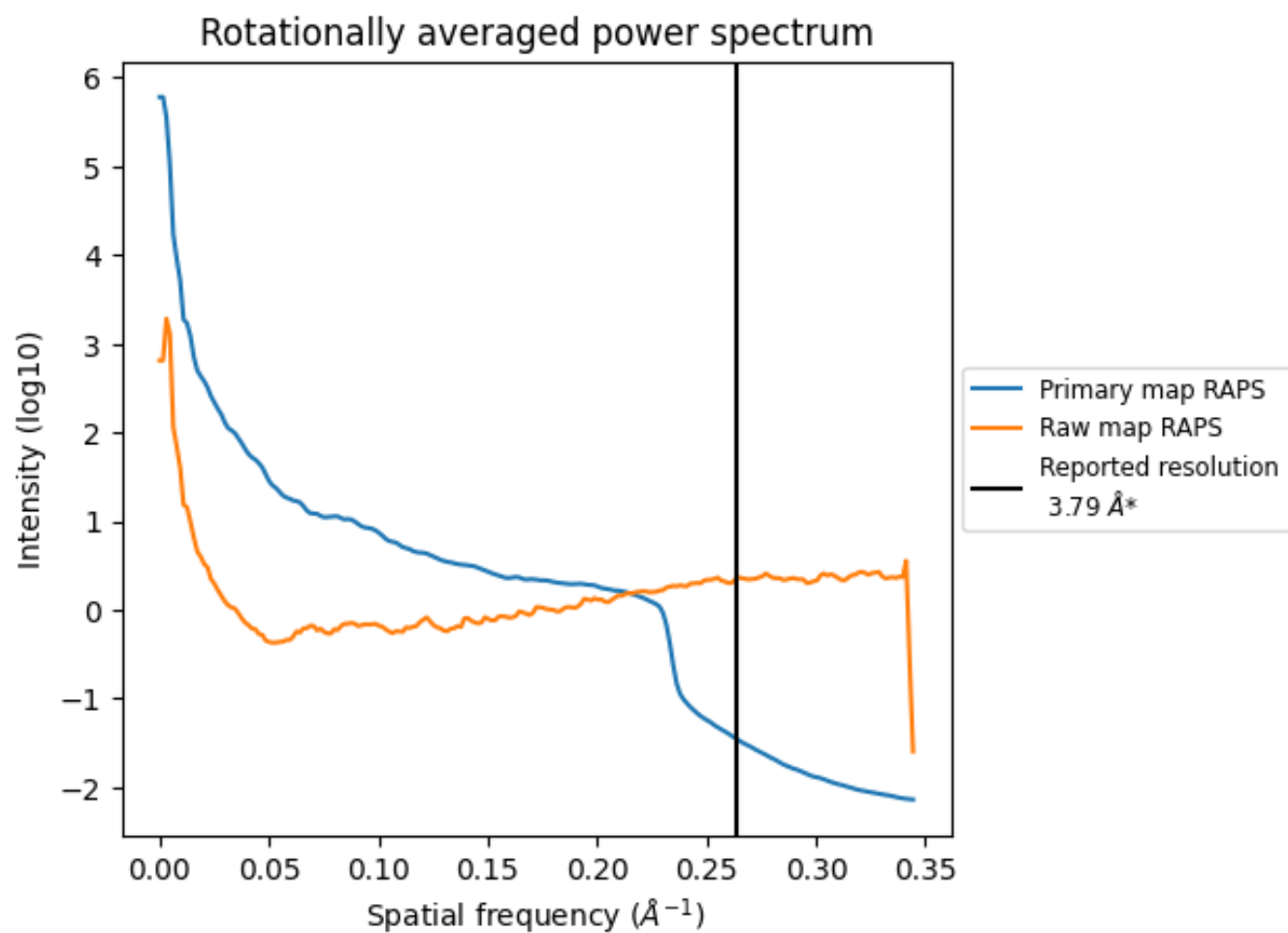
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 2503 nm^3 ; this corresponds to an approximate mass of 2261 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 ⓘ

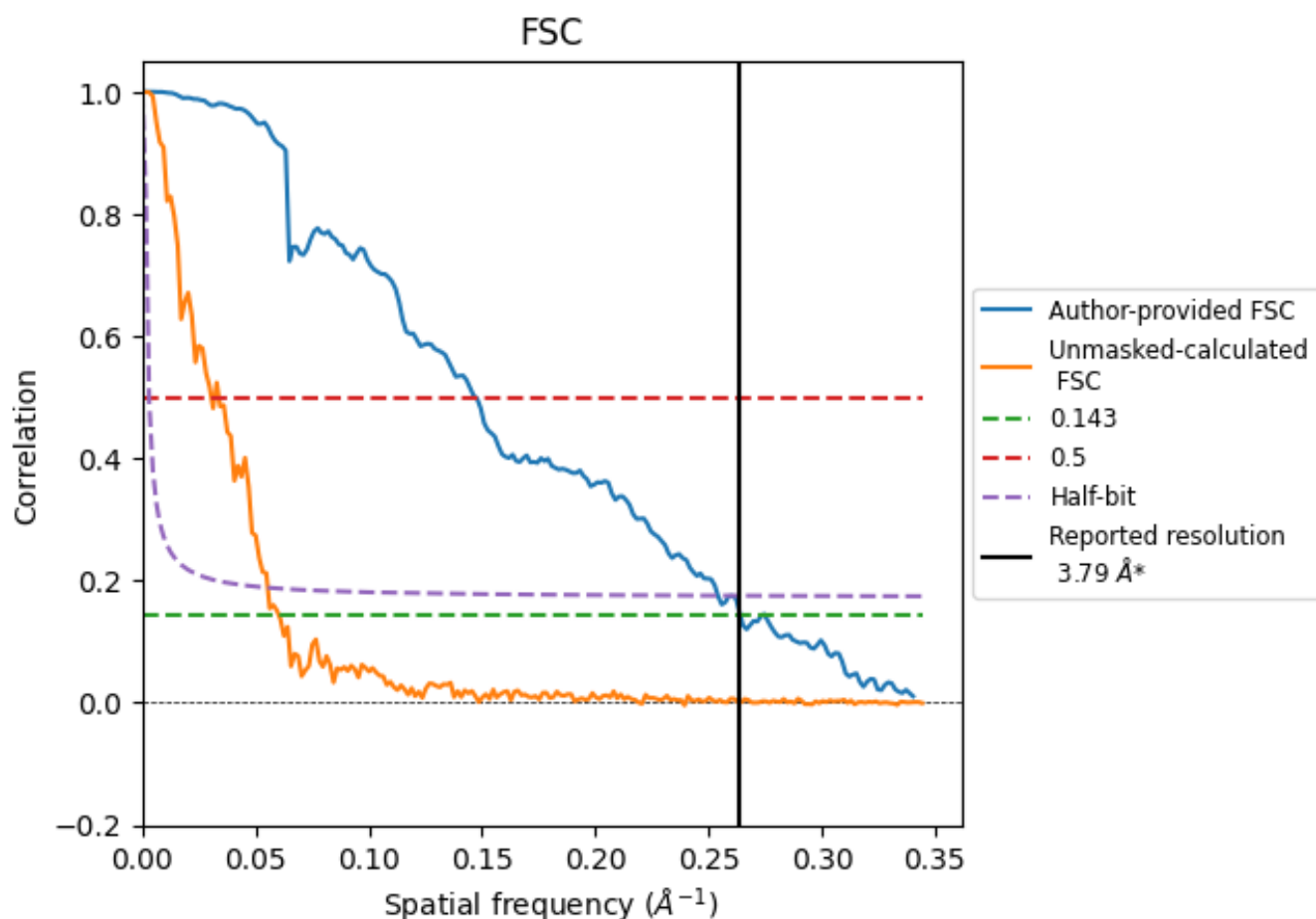


*Reported resolution corresponds to spatial frequency of 0.264 $\text{\AA}^{-1}$

8 Fourier-Shell correlation [i](#)

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 [i](#)



*Reported resolution corresponds to spatial frequency of 0.264 Å⁻¹

8.2 Resolution estimates [i](#)

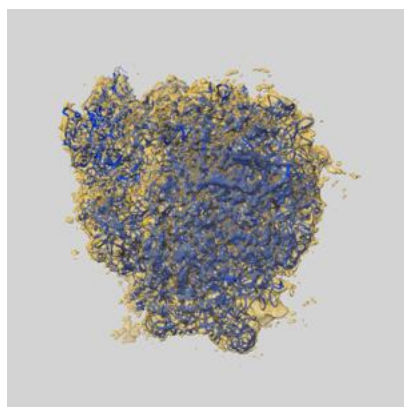
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.79	-	-
Author-provided FSC curve	3.79	6.79	3.93
Unmasked-calculated*	16.58	32.79	18.05

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 16.58 differs from the reported value 3.79 by more than 10 %

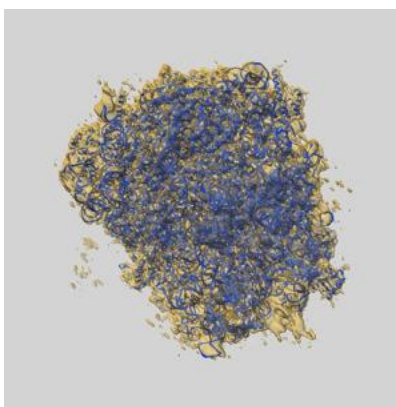
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-16729 and PDB model 8CMJ. Per-residue inclusion information can be found in section 3 on page 21.

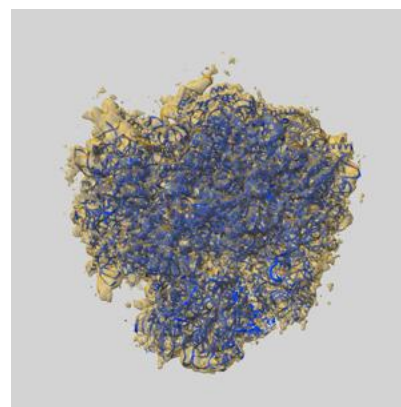
9.1 Map-model overlay [i](#)



X



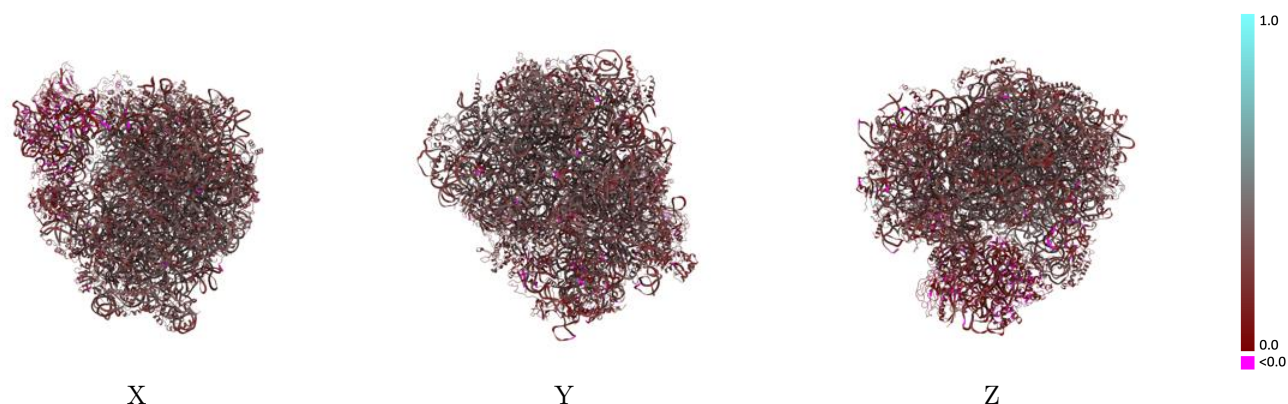
Y



Z

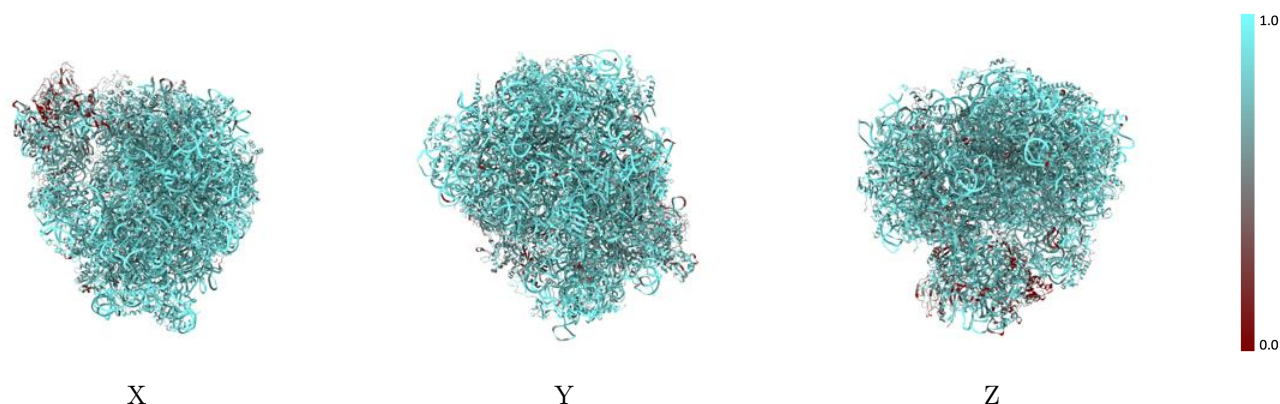
The images above show the 3D surface view of the map at the recommended contour level 0.2 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



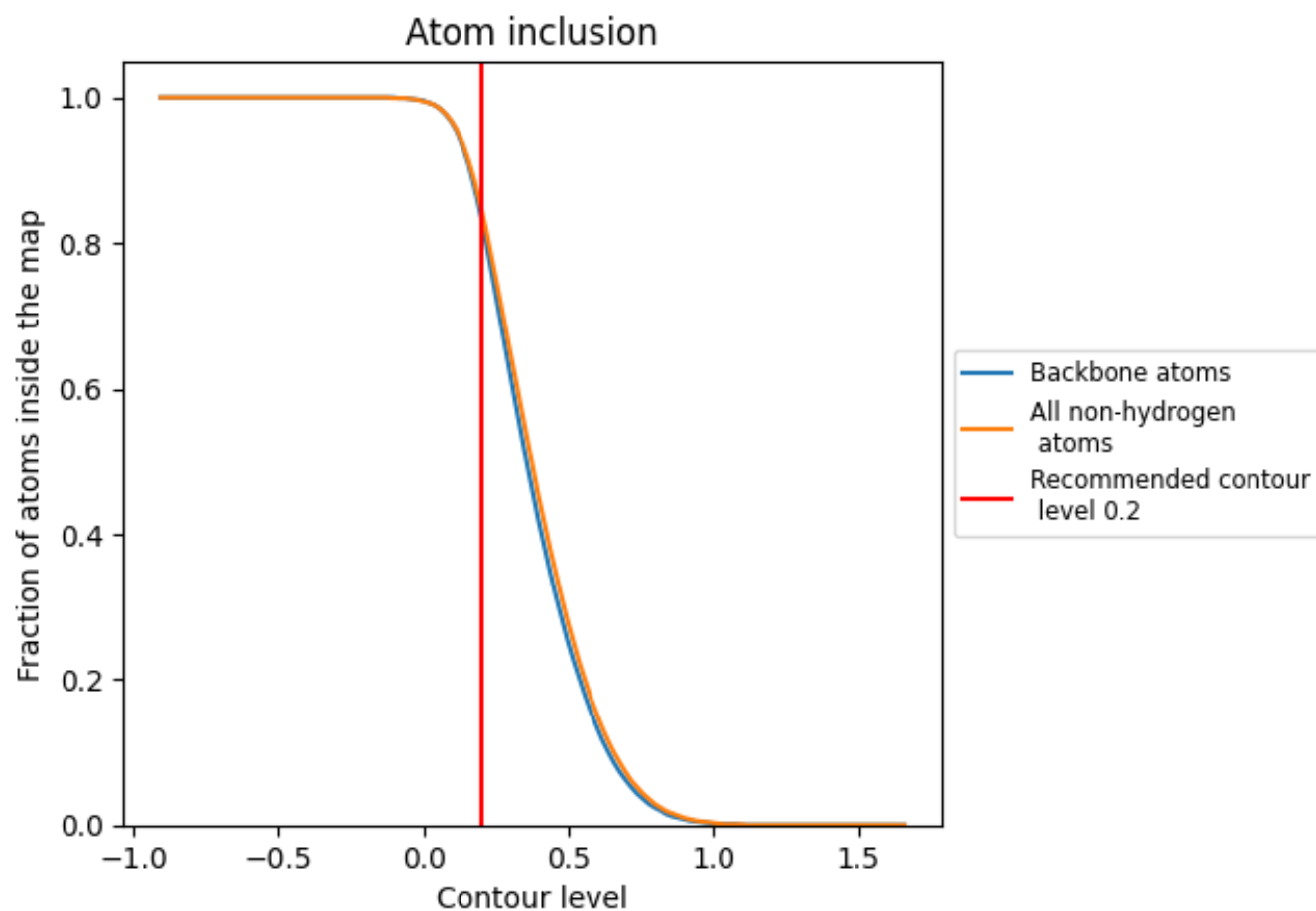
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



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 (0.2).

9.4 Atom inclusion [i](#)



At the recommended contour level, 84% of all backbone atoms, 85% 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 (0.2) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8480	 0.2900
0	 0.7450	 0.2500
1	 0.0510	 0.0910
2	 0.8390	 0.3270
3	 0.7820	 0.2570
4	 0.5600	 0.1500
5	 0.9150	 0.1740
6	 0.8470	 0.2580
7	 0.4470	 0.1480
8	 0.5110	 0.1560
A	 0.8380	 0.3320
AA	 0.9300	 0.3220
Aa	 0.6130	 0.2200
B	 0.8350	 0.3460
BB	 0.9730	 0.3180
C	 0.8510	 0.3340
CC	 0.9650	 0.3420
D	 0.8250	 0.3270
DD	 0.5870	 0.2330
E	 0.8420	 0.3340
EE	 0.7580	 0.3230
Ee	 0.5350	 0.1950
F	 0.8620	 0.3300
FF	 0.8330	 0.3250
G	 0.8370	 0.2670
GG	 0.8600	 0.3380
H	 0.7560	 0.3570
HH	 0.8040	 0.2650
I	 0.7520	 0.3140
II	 0.8680	 0.3250
J	 0.8470	 0.3380
JJ	 0.8680	 0.3410
K	 0.8570	 0.3280
KK	 0.8380	 0.2840
L	 0.8520	 0.2830



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Chain	Atom inclusion	Q-score
LL	 0.7520	 0.2990
M	 0.8580	 0.3280
MM	 0.8000	 0.3190
N	 0.7850	 0.2990
NN	 0.8190	 0.2470
O	 0.7520	 0.2950
OO	 0.8550	 0.2980
P	 0.8220	 0.3320
PP	 0.8500	 0.3310
Q	 0.8560	 0.3480
QQ	 0.8450	 0.2980
R	 0.8850	 0.3380
S	 0.8780	 0.3460
T	 0.8710	 0.2960
U	 0.8360	 0.2770
V	 0.9090	 0.3420
W	 0.7800	 0.2880
X	 0.8510	 0.3390
Y	 0.7330	 0.2920
Z	 0.6930	 0.2920
a	 0.7760	 0.2710
b	 0.7340	 0.3100
c	 0.9160	 0.2670
d	 0.6900	 0.2470
e	 0.7530	 0.2620
f	 0.8370	 0.3010
g	 0.7630	 0.2070
h	 0.8170	 0.2710
i	 0.5210	 0.1250
j	 0.7570	 0.2060
k	 0.6680	 0.2520
l	 0.6870	 0.2300
m	 0.8620	 0.2960
n	 0.8690	 0.2260
o	 0.7520	 0.2930
p	 0.7770	 0.2830
q	 0.8260	 0.2950
r	 0.5480	 0.1400
s	 0.6360	 0.1740
t	 0.6280	 0.2250
u	 0.5220	 0.1490
v	 0.6450	 0.1410

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Chain	Atom inclusion	Q-score
w	 0.8000	 0.2000
x	 0.8520	 0.3030
y	 0.7520	 0.2820
z	 0.7380	 0.3130