



## Full wwPDB EM Validation Report ⓘ

Nov 9, 2022 – 04:44 PM EST

PDB ID : 6P5J  
EMDB ID : EMD-20256  
Title : Structure of a mammalian 80S ribosome in complex with the Israeli Acute Paralysis Virus IRES (Class 2)  
Authors : Acosta-Reyes, F.J.; Neupane, R.; Frank, J.; Fernandez, I.S.  
Deposited on : 2019-05-30  
Resolution : 3.10 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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

EMDB validation analysis : 0.0.1.dev43  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.31.2

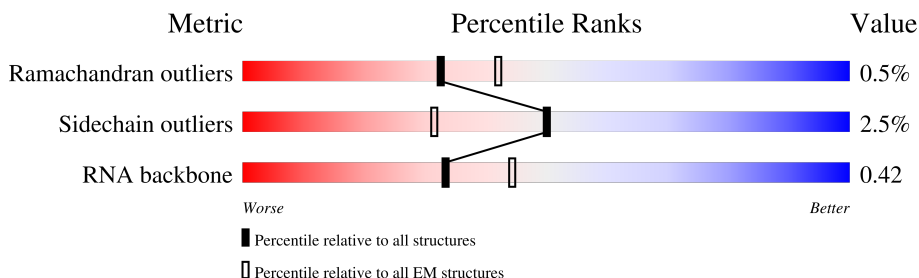
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.10 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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	2	1869	
2	B	295	
3	C	264	
4	D	255	
5	E	281	
6	F	263	
7	G	204	
8	H	249	

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Mol	Chain	Length	Quality of chain
9	I	194	
10	J	207	
11	K	194	
12	L	149	
13	M	158	
14	N	132	
15	O	151	
16	P	151	
17	Q	145	
18	R	172	
19	S	135	
20	T	152	
21	U	145	
22	V	119	
23	W	83	
24	X	130	
25	Y	143	
26	Z	134	
27	a	125	
28	b	115	
29	c	84	
30	d	69	
31	e	56	
32	f	133	
33	g	156	

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Mol	Chain	Length	Quality of chain
34	h	317	<div>85%</div> <div>97%</div> <div>..</div>
35	1	253	<div>57%</div> <div>39%</div> <div>42%</div> <div>19%</div>
36	5	3594	<div>12%</div> <div>73%</div> <div>27%</div>
37	7	119	<div>87%</div> <div>13%</div>
38	8	156	<div>6%</div> <div>75%</div> <div>22%</div> <div>.</div>
39	AA	257	<div>9%</div> <div>91%</div> <div>5%</div> <div>.</div>
40	AB	402	<div>9%</div> <div>95%</div> <div>..</div>
41	AC	392	<div>8%</div> <div>86%</div> <div>6%</div> <div>8%</div>
42	AD	297	<div>18%</div> <div>98%</div> <div>..</div>
43	AE	291	<div>18%</div> <div>73%</div> <div>.</div> <div>26%</div>
44	AF	249	<div>5%</div> <div>89%</div> <div>.</div> <div>10%</div>
45	AG	242	<div>18%</div> <div>90%</div> <div>.</div> <div>7%</div>
46	AH	192	<div>15%</div> <div>96%</div> <div>..</div>
47	AI	214	<div>12%</div> <div>94%</div> <div>..</div>
48	AJ	178	<div>43%</div> <div>94%</div> <div>..</div>
49	AL	211	<div>13%</div> <div>93%</div> <div>.</div> <div>5%</div>
50	AM	198	<div>8%</div> <div>69%</div> <div>.</div> <div>31%</div>
51	AN	204	<div>.</div> <div>98%</div> <div>.</div>
52	AO	203	<div>6%</div> <div>96%</div> <div>..</div>
53	AP	184	<div>5%</div> <div>81%</div> <div>.</div> <div>17%</div>
54	AQ	188	<div>5%</div> <div>93%</div> <div>7%</div> <div>.</div>
55	AR	196	<div>21%</div> <div>85%</div> <div>7%</div> <div>8%</div>
56	AS	176	<div>7%</div> <div>95%</div> <div>5%</div>
57	AT	160	<div>16%</div> <div>97%</div> <div>...</div>
58	AU	128	<div>26%</div> <div>71%</div> <div>6%</div> <div>23%</div>

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Mol	Chain	Length	Quality of chain
59	AV	140	
60	AW	157	
61	AX	156	
62	AY	145	
63	AZ	136	
64	Aa	148	
65	Ab	226	
66	Ac	115	
67	Ad	125	
68	Ae	135	
69	Af	110	
70	Ag	126	
71	Ah	123	
72	Ai	105	
73	Aj	97	
74	Ak	70	
75	Al	51	
76	Am	52	
77	An	25	
78	Ao	106	
79	Ap	92	
80	Ar	137	
81	AK	217	

## 2 Entry composition [i](#)

There are 81 unique types of molecules in this entry. The entry contains 215969 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	2	1697	Total	C	N	O	P	0	0
			36229	16171	6507	11855	1696		

- Molecule 2 is a protein called uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	217	Total	C	N	O	S	0	0
			1706	1085	295	317	9		

- Molecule 3 is a protein called eS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	213	Total	C	N	O	S	0	0
			1729	1098	309	308	14		

- Molecule 4 is a protein called uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	221	Total	C	N	O	S	0	0
			1712	1107	296	299	10		

- Molecule 5 is a protein called uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	228	Total	C	N	O	S	0	0
			1768	1126	318	316	8		

- Molecule 6 is a protein called eS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	262	Total	C	N	O	S	0	0
			2073	1323	384	357	9		

- Molecule 7 is a protein called uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	185	Total	C	N	O	S	0	0
			1471	921	277	266	7		

- Molecule 8 is a protein called eS6.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	237	Total	C	N	O	S	0	0
			1923	1200	387	329	7		

- Molecule 9 is a protein called eS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	185	Total	C	N	O	S	0	0
			1488	952	271	264	1		

- Molecule 10 is a protein called eS8.

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

- Molecule 11 is a protein called uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	185	Total	C	N	O	S	0	0
			1525	969	306	248	2		

- Molecule 12 is a protein called eS10.

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

- Molecule 13 is a protein called uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	143	Total	C	N	O	S	0	0
			1175	749	222	198	6		

- Molecule 14 is a protein called eS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	117	Total	C	N	O	S	0	0
			908	570	161	169	8		

- Molecule 15 is a protein called uS15.

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

- Molecule 16 is a protein called uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	136	Total	C	N	O	S	0	0
			1016	621	199	190	6		

- Molecule 17 is a protein called uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Q	119	Total	C	N	O	S	0	0
			990	630	186	167	7		

- Molecule 18 is a protein called uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	R	142	Total	C	N	O	S	0	0
			1128	717	213	195	3		

- Molecule 19 is a protein called eS17.

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

- Molecule 20 is a protein called uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	144	Total	C	N	O	S	0	0
			1190	746	241	202	1		

- Molecule 21 is a protein called eS19.



Mol	Chain	Residues	Atoms					AltConf	Trace
21	U	141	Total	C	N	O	S	0	0
			1097	688	211	195	3		

- Molecule 22 is a protein called uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	V	100	Total	C	N	O	S	0	0
			795	498	152	141	4		

- Molecule 23 is a protein called eS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	W	83	Total	C	N	O	S	0	0
			630	387	118	120	5		

- Molecule 24 is a protein called uS8.

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

- Molecule 25 is a protein called uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Y	141	Total	C	N	O	S	0	0
			1098	693	219	183	3		

- Molecule 26 is a protein called eS24.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	Z	124	Total	C	N	O	S	0	0
			1011	640	198	168	5		

- Molecule 27 is a protein called eS25.

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

- Molecule 28 is a protein called eS26.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	b	98	Total	C	N	O	S	0	0
			778	485	158	129	6		

- Molecule 29 is a protein called eS27.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	c	83	Total	C	N	O	S	0	0
			651	408	121	115	7		

- Molecule 30 is a protein called eS28.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	d	62	Total	C	N	O	S	0	0
			488	297	97	92	2		

- Molecule 31 is a protein called eS29.

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

- Molecule 32 is a protein called eS30.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	f	56	Total	C	N	O	S	0	0
			447	276	98	72	1		

- Molecule 33 is a protein called eS31.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	g	68	Total	C	N	O	S	0	0
			555	351	103	94	7		

- Molecule 34 is a protein called RACK1.

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

- Molecule 35 is a RNA chain called IAPV-IRES.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	1	205	Total	C	N	O	P	0	0
			4366	1951	775	1435	205		

- Molecule 36 is a RNA chain called 28S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	5	3594	Total	C	N	O	P	0	0
			77074	34325	14116	25039	3594		

- Molecule 37 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	7	119	Total	C	N	O	P	0	0
			2538	1132	454	834	118		

- Molecule 38 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	8	151	Total	C	N	O	P	0	0
			3208	1432	564	1062	150		

- Molecule 39 is a protein called uL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	AA	248	Total	C	N	O	S	0	0
			1895	1186	389	314	6		

- Molecule 40 is a protein called uL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	AB	394	Total	C	N	O	S	0	0
			3172	2020	597	542	13		

- Molecule 41 is a protein called uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	AC	362	Total	C	N	O	S	0	0
			2883	1812	577	480	14		

- Molecule 42 is a protein called uL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	AD	293	Total	C	N	O	S	0	0
			2391	1512	438	427	14		

- Molecule 43 is a protein called eL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	AE	216	Total	C	N	O	S	0	0
			1729	1115	329	282	3		

- Molecule 44 is a protein called uL30.

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

- Molecule 45 is a protein called eL8.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	AG	225	Total	C	N	O	S	0	0
			1819	1161	351	303	4		

- Molecule 46 is a protein called uL6.

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

- Molecule 47 is a protein called uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	AI	205	Total	C	N	O	S	0	0
			1664	1056	321	274	13		

- Molecule 48 is a protein called uL11.

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

- Molecule 49 is a protein called eL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	AL	201	Total	C	N	O	S	0	0
			1627	1020	341	262	4		

- Molecule 50 is a protein called L14e.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	AM	137	Total	C	N	O	S	0	0
			1130	722	220	181	7		

- Molecule 51 is a protein called eL15.

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

- Molecule 52 is a protein called uL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	AO	199	Total	C	N	O	S	0	0
			1631	1052	319	255	5		

- Molecule 53 is a protein called uL22.

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

- Molecule 54 is a protein called eL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	AQ	187	Total	C	N	O	S	0	0
			1526	964	306	252	4		

- Molecule 55 is a protein called eL19.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	AR	180	Total	C	N	O	S	0	0
			1503	931	324	238	10		

- Molecule 56 is a protein called eL20.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	AS	176	Total	C	N	O	S	0	0
			1457	928	283	235	11		

- Molecule 57 is a protein called eL21.

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

- Molecule 58 is a protein called eL22.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	AU	99	Total	C	N	O	S	0	0
			818	520	146	150	2		

- Molecule 59 is a protein called uL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	AV	129	Total	C	N	O	S	0	0
			969	613	182	169	5		

- Molecule 60 is a protein called eL24.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	AW	63	Total	C	N	O	S	0	0
			528	337	103	85	3		

- Molecule 61 is a protein called eL23.

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

- Molecule 62 is a protein called uL24.

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

- Molecule 63 is a protein called eL27.

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

- Molecule 64 is a protein called uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	Aa	147	Total	C	N	O	S	0	0
			1162	734	239	185	4		

- Molecule 65 is a protein called eL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	Ab	104	Total	C	N	O	S	0	0
			848	527	189	129	3		

- Molecule 66 is a protein called eL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	Ac	98	Total	C	N	O	S	0	0
			761	481	134	140	6		

- Molecule 67 is a protein called eL31.

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

- Molecule 68 is a protein called eL32.

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

- Molecule 69 is a protein called eL33.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	Af	109	Total	C	N	O	S	0	0
			876	555	174	143	4		

- Molecule 70 is a protein called eL34.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	Ag	114	Total	C	N	O	S	0	0
			906	566	187	147	6		

- Molecule 71 is a protein called eL35.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	Ah	122	Total	C	N	O	S	0	0
			1013	640	204	168	1		

- Molecule 72 is a protein called eL36.

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

- Molecule 73 is a protein called eL37.

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

- Molecule 74 is a protein called eL38.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	Ak	69	Total	C	N	O	S	0	0
			569	366	101	99	3		

- Molecule 75 is a protein called eL39.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	Al	50	Total	C	N	O	S	0	0
			447	286	96	64	1		

- Molecule 76 is a protein called eL40.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	Am	52	Total	C	N	O	S	0	0
			429	266	90	67	6		

- Molecule 77 is a protein called eL41.



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

- Molecule 78 is a protein called eL42.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	Ao	104	Total	C	N	O	S	0	0
			851	533	174	138	6		

- Molecule 79 is a protein called eL43.

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

- Molecule 80 is a protein called eL28.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	Ar	124	Total	C	N	O	S	0	0
			994	616	205	167	6		

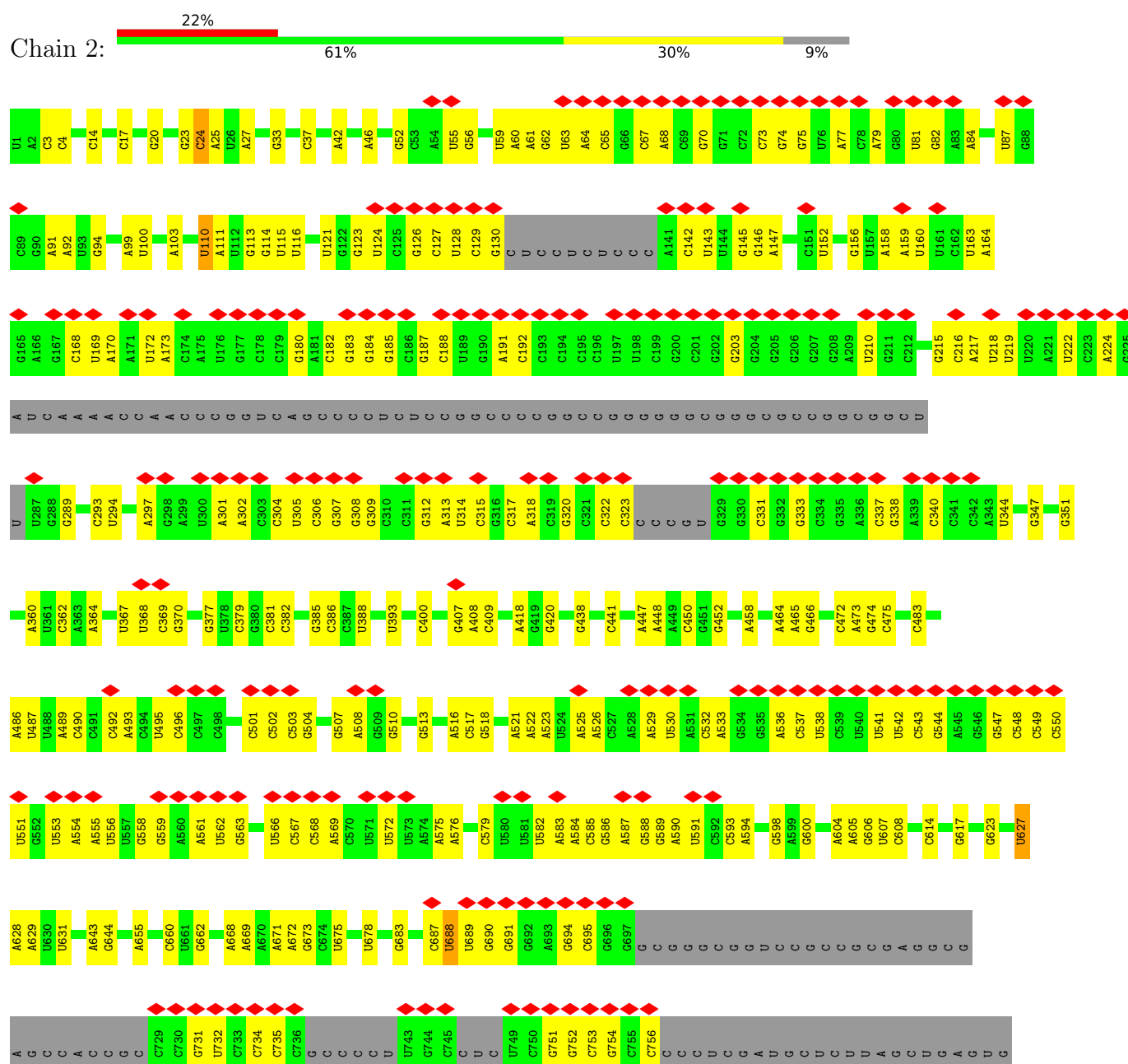
- Molecule 81 is a protein called uL1.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	AK	212	Total	C	N	O	S	0	0
			1705	1091	306	300	8		

### 3 Residue-property plots

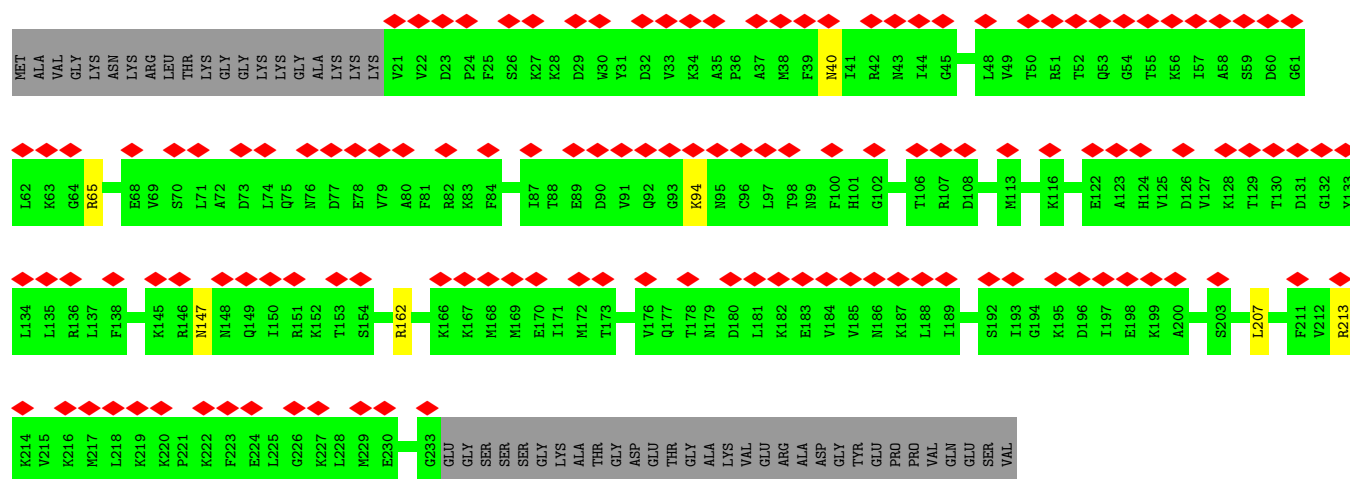
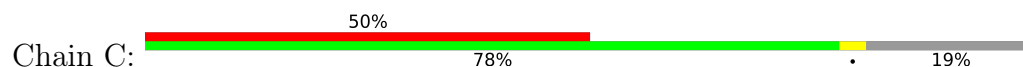
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

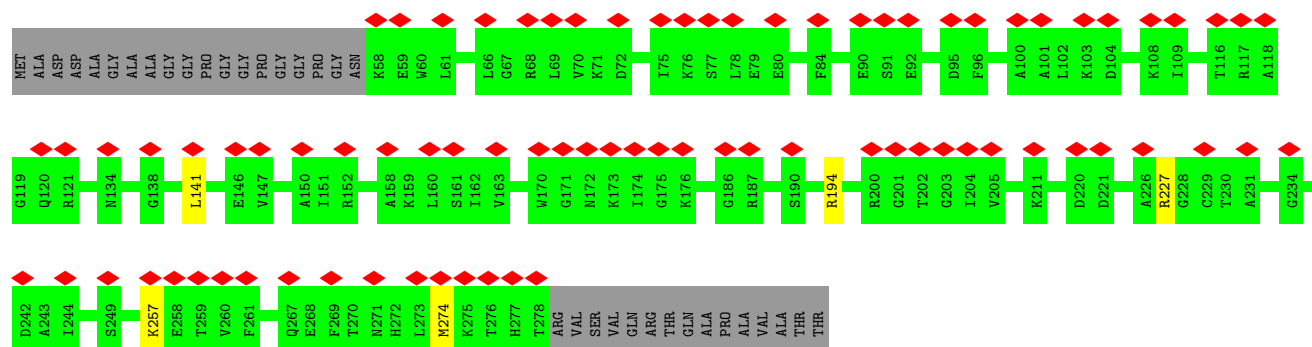
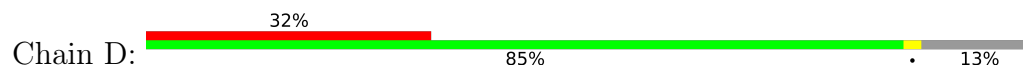




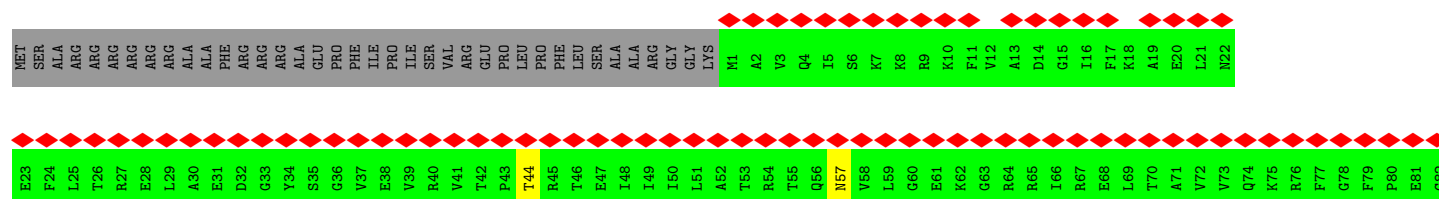
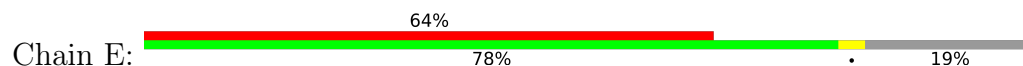
- Molecule 3: eS1

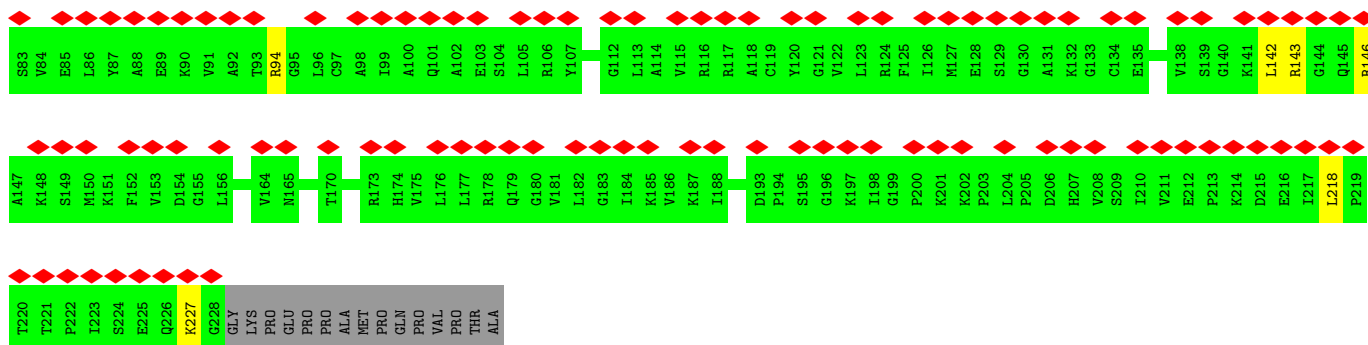


- Molecule 4: uS5

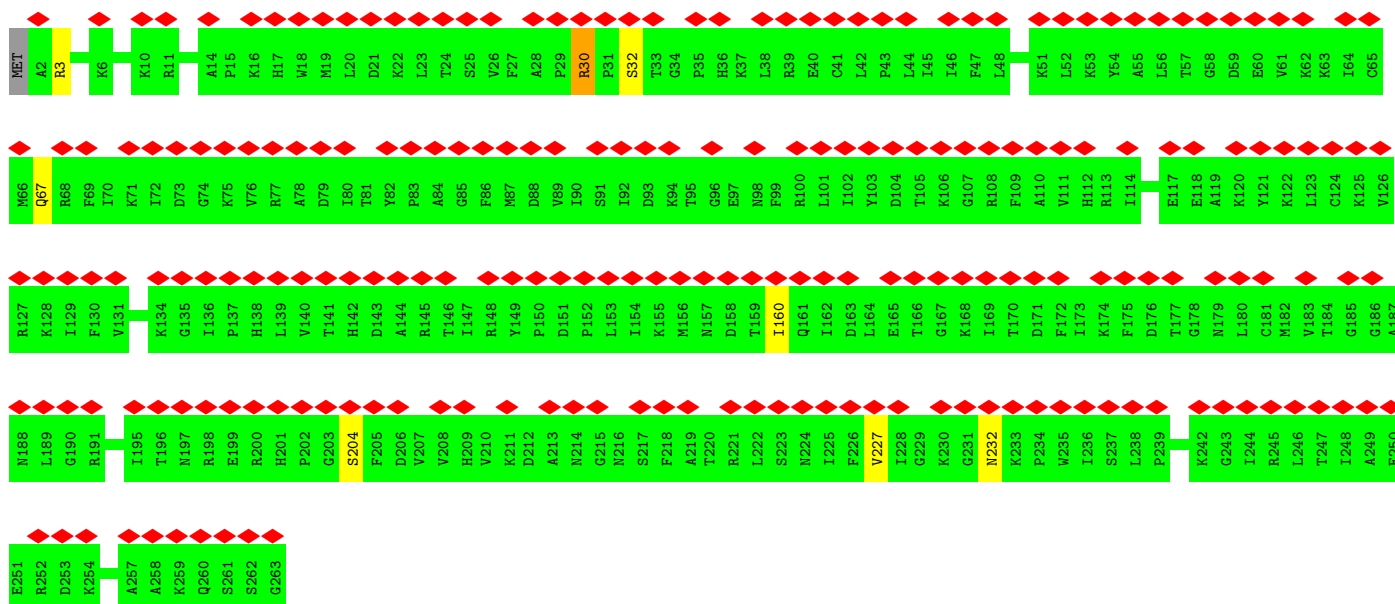


- Molecule 5: uS3

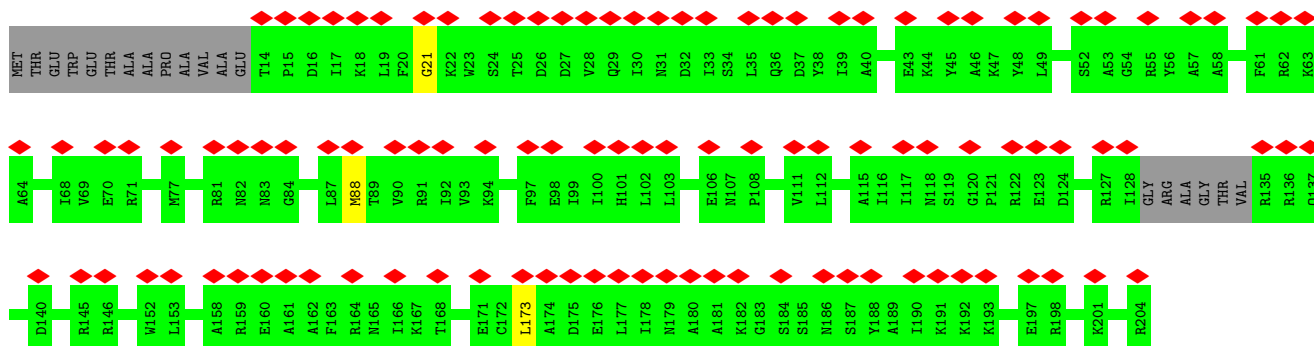




• Molecule 6: eS4

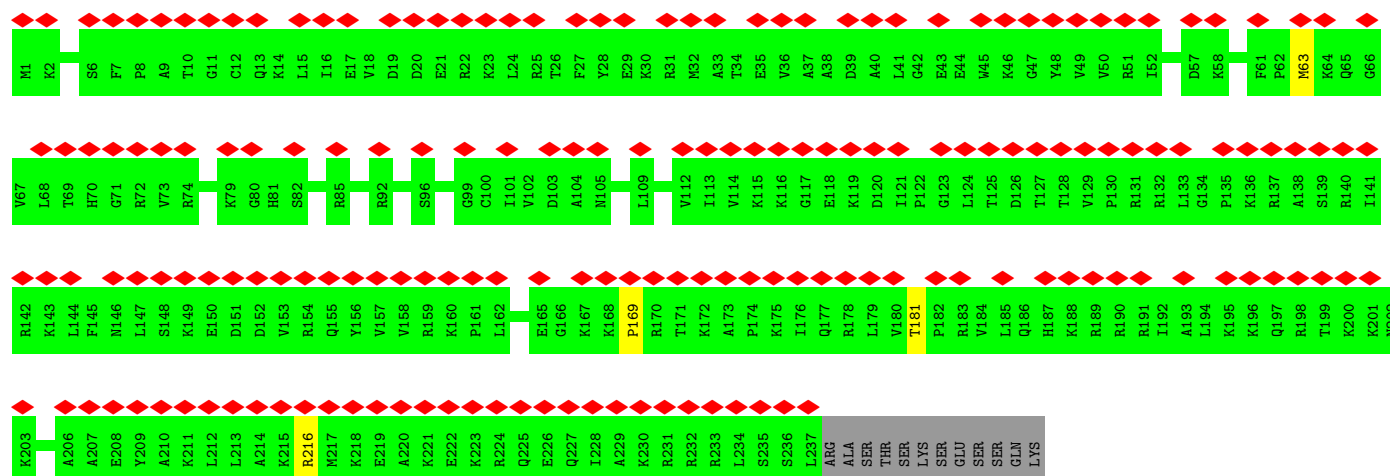


• Molecule 7: uS7

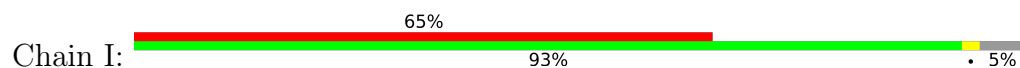


• Molecule 8: eS6

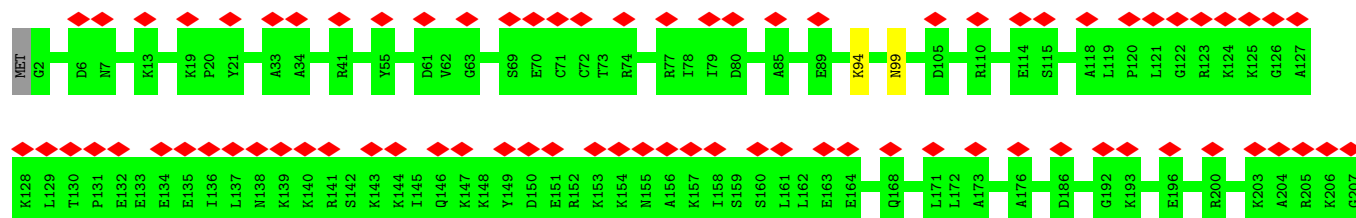




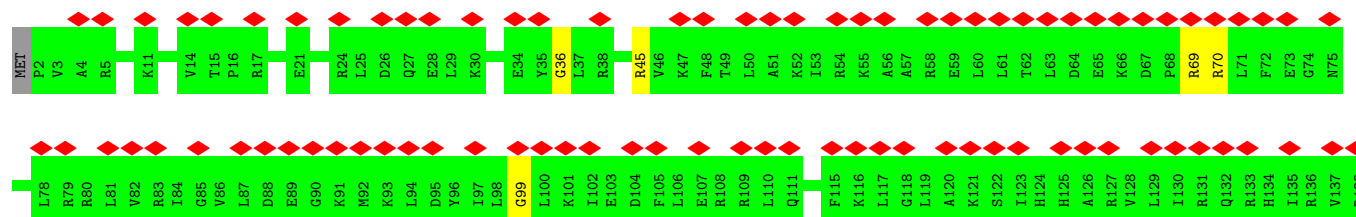
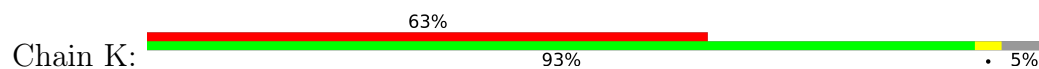
• Molecule 9: eS7

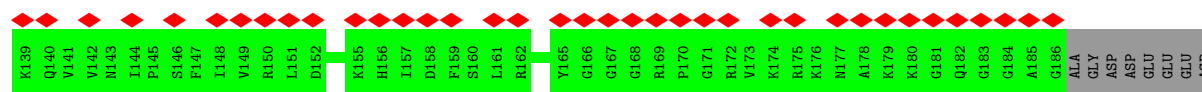


• Molecule 10: eS8

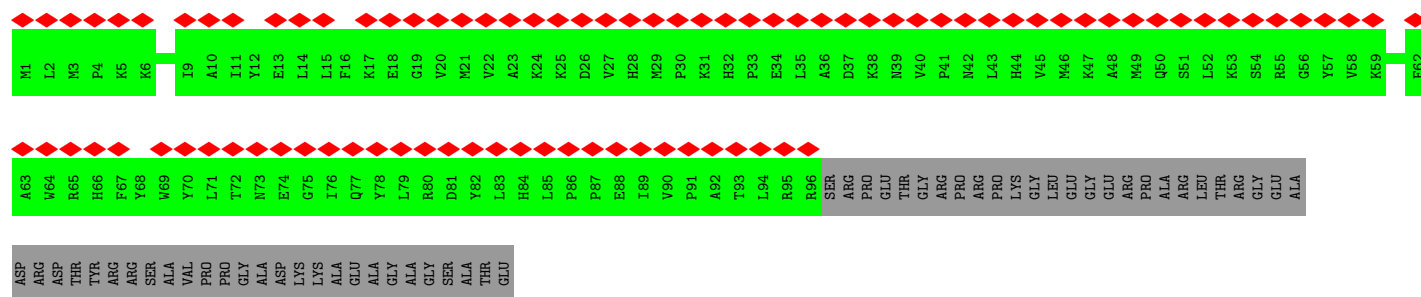


• Molecule 11: uS4

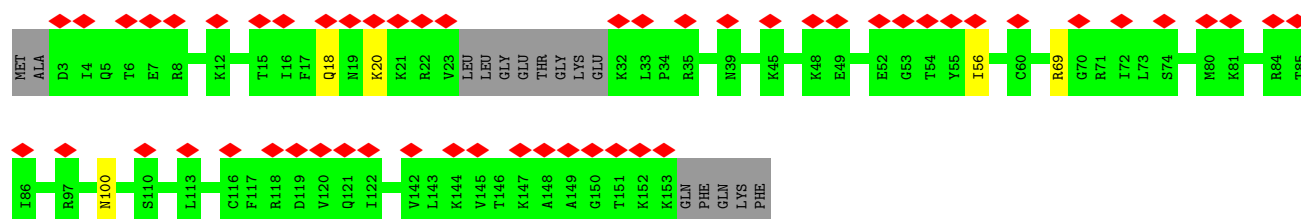




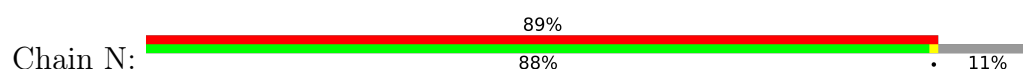
• Molecule 12: eS10



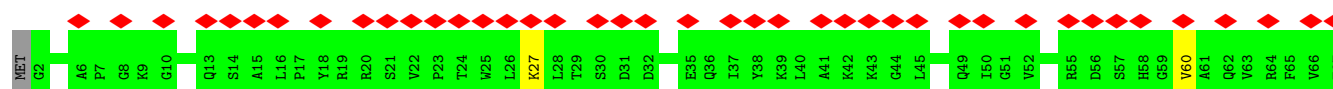
• Molecule 13: uS17

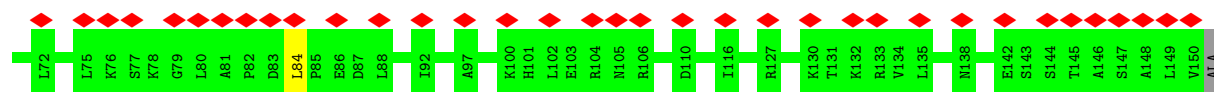


• Molecule 14: eS12

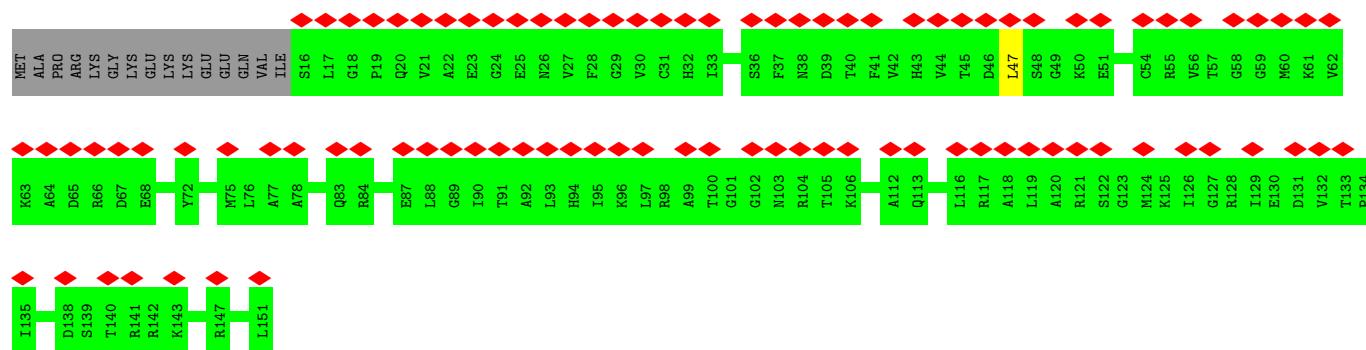
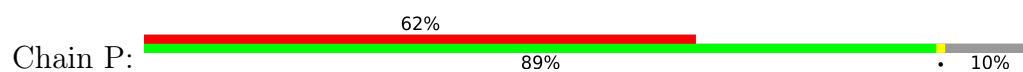


• Molecule 15: uS15

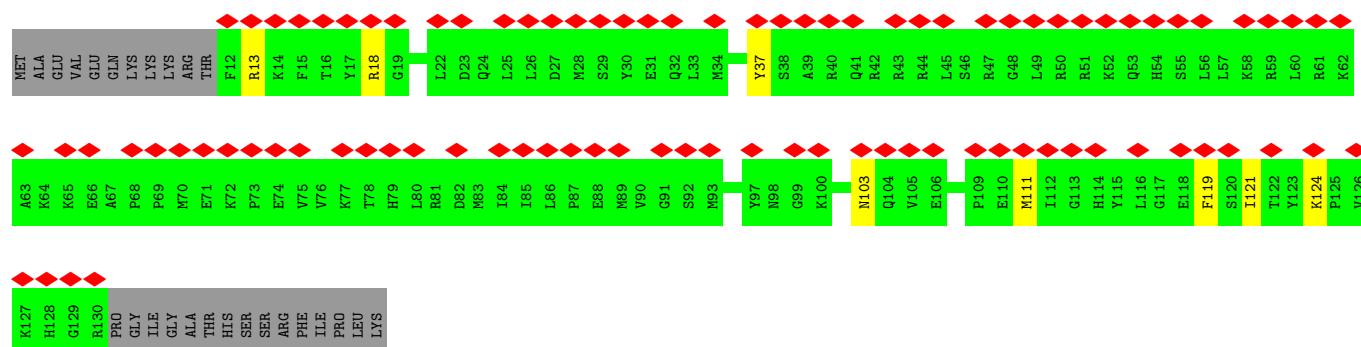
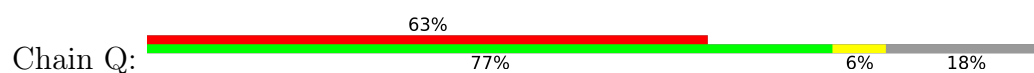




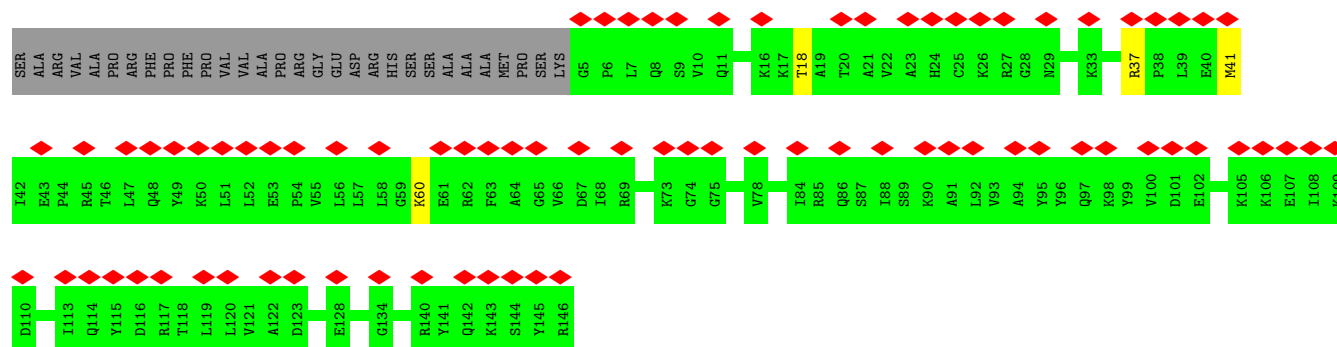
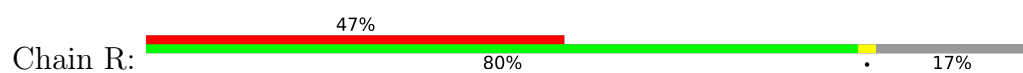
• Molecule 16: uS11



• Molecule 17: uS19



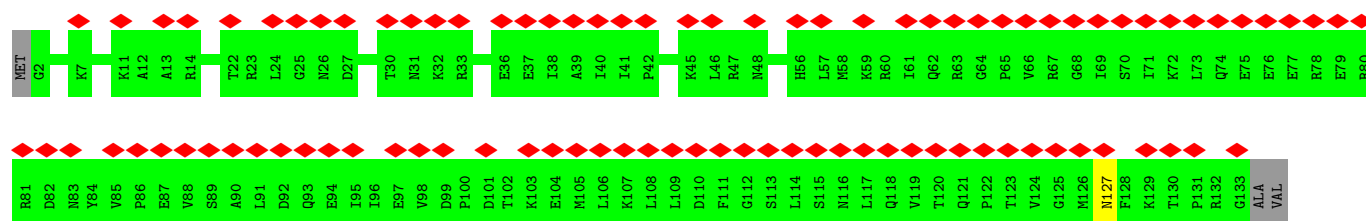
• Molecule 18: uS9



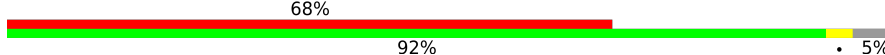
• Molecule 19: eS17

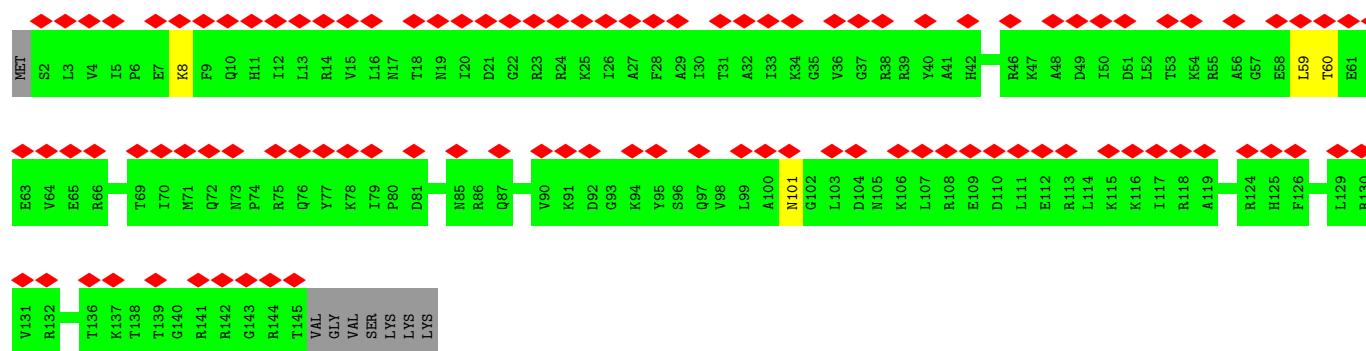


Chain S: 

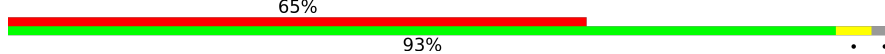


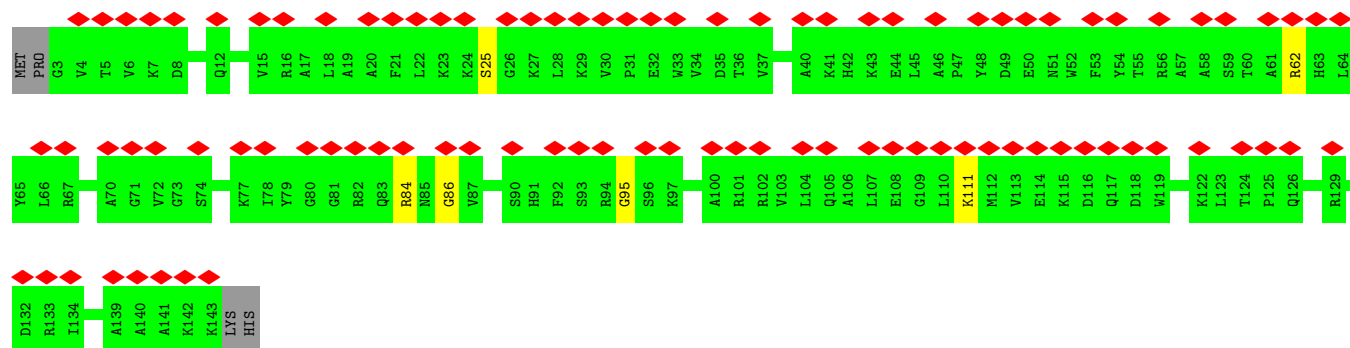
• Molecule 20: uS13

Chain T: 




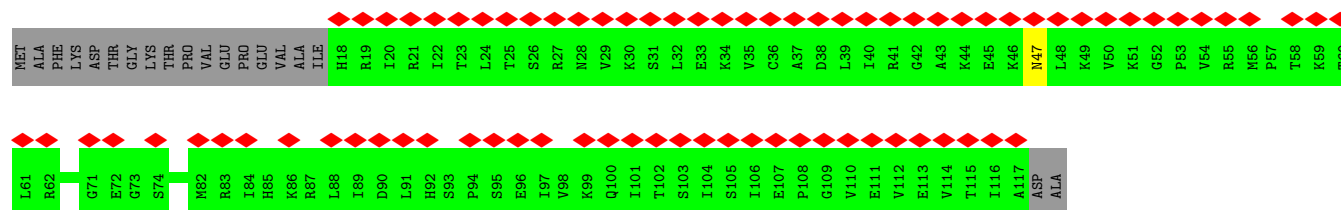
• Molecule 21: eS19

Chain U: 

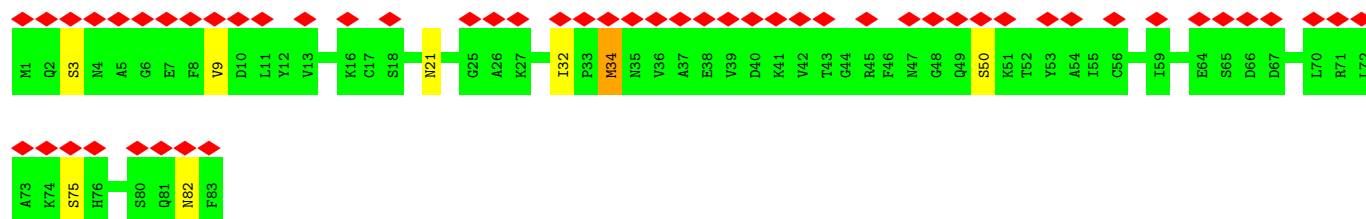
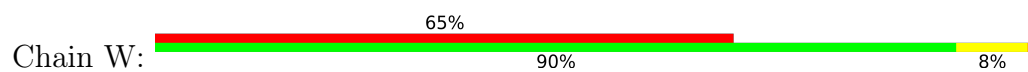


• Molecule 22: uS10

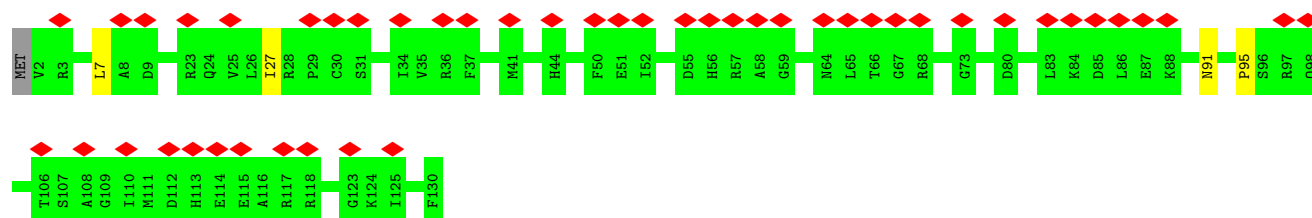
Chain V: 



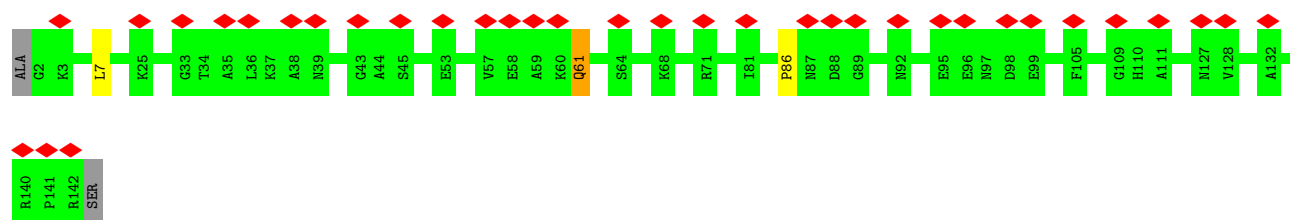
• Molecule 23: eS21



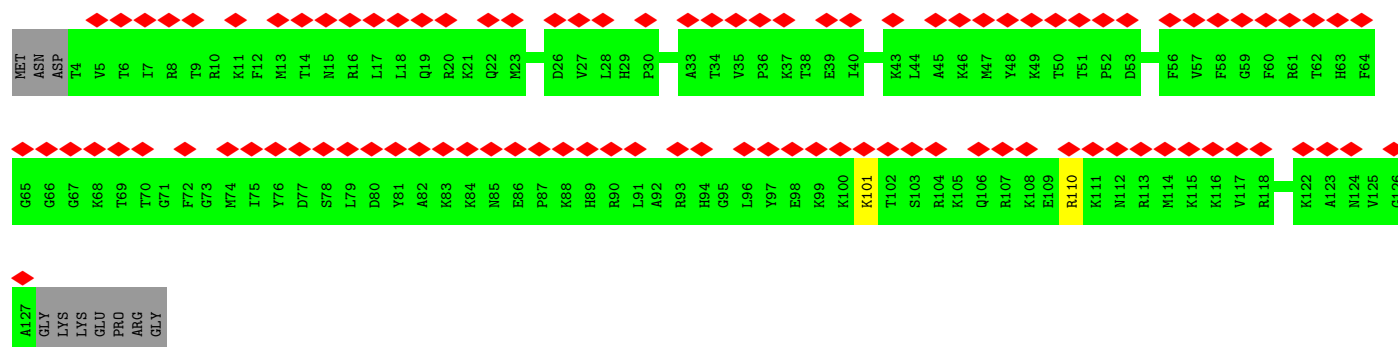
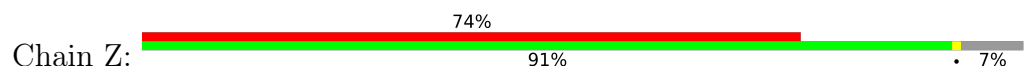
• Molecule 24: uS8



• Molecule 25: uS12

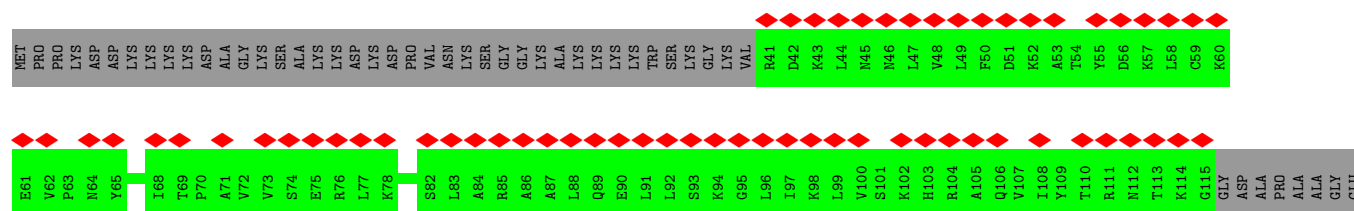


• Molecule 26: eS24

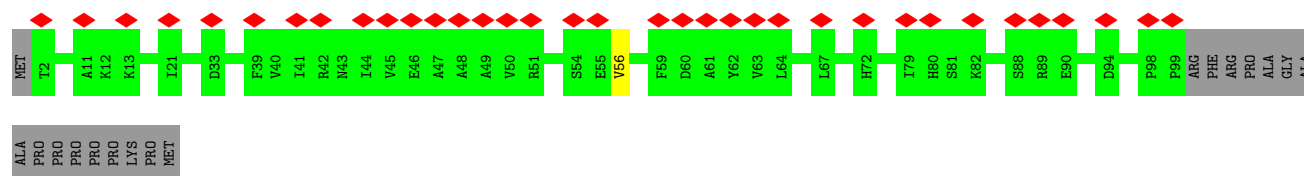
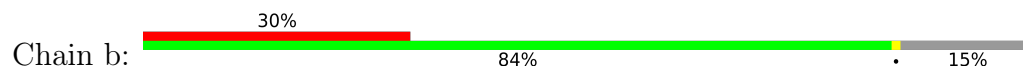


• Molecule 27: eS25

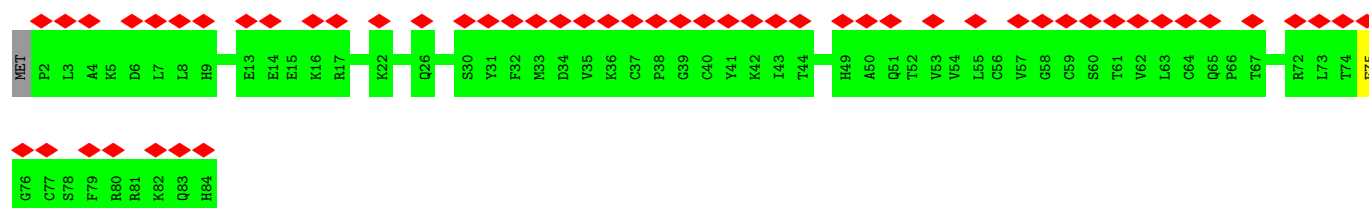




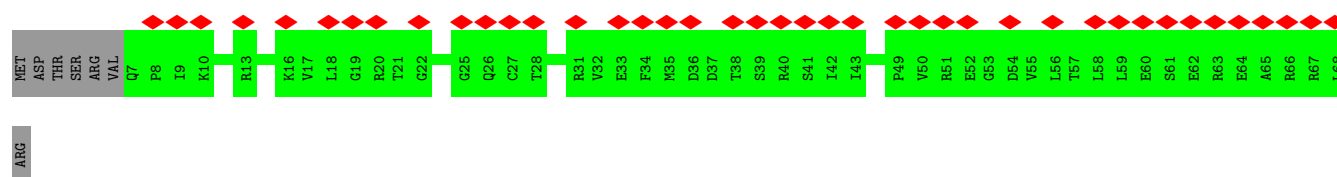
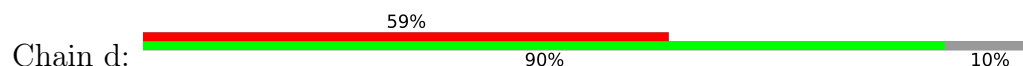
- Molecule 28: eS26



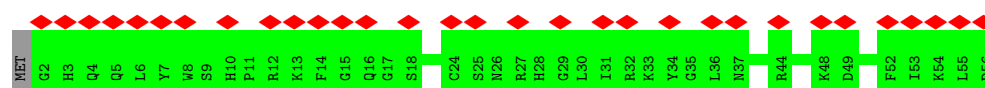
- Molecule 29: eS27



- Molecule 30: eS28

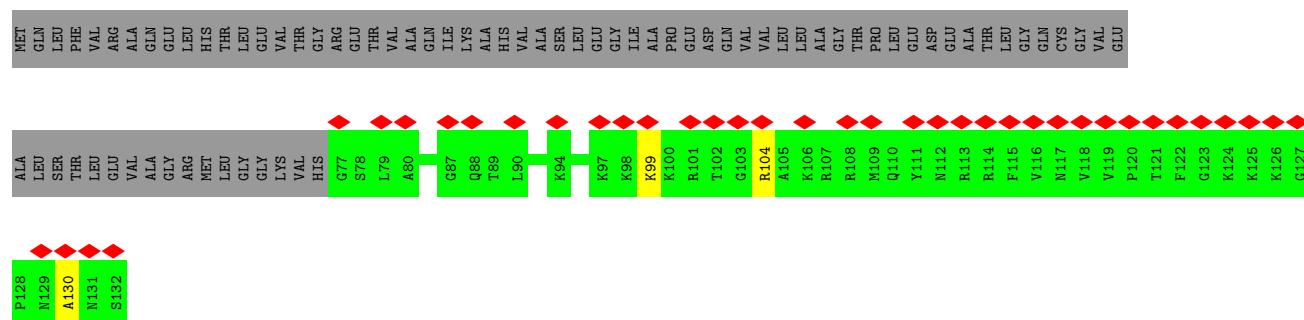


- Molecule 31: eS29

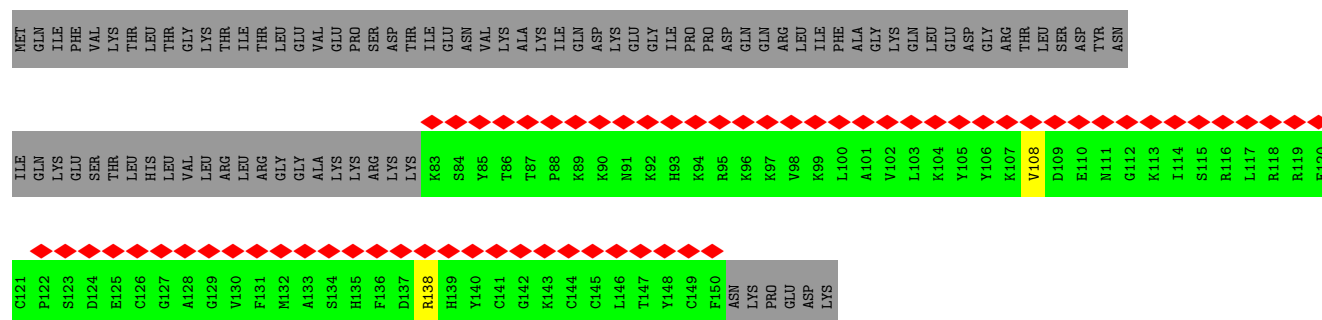
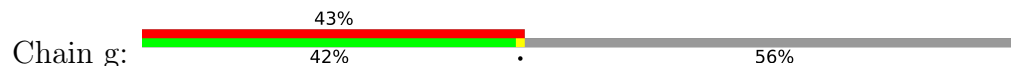


- Molecule 32: eS30

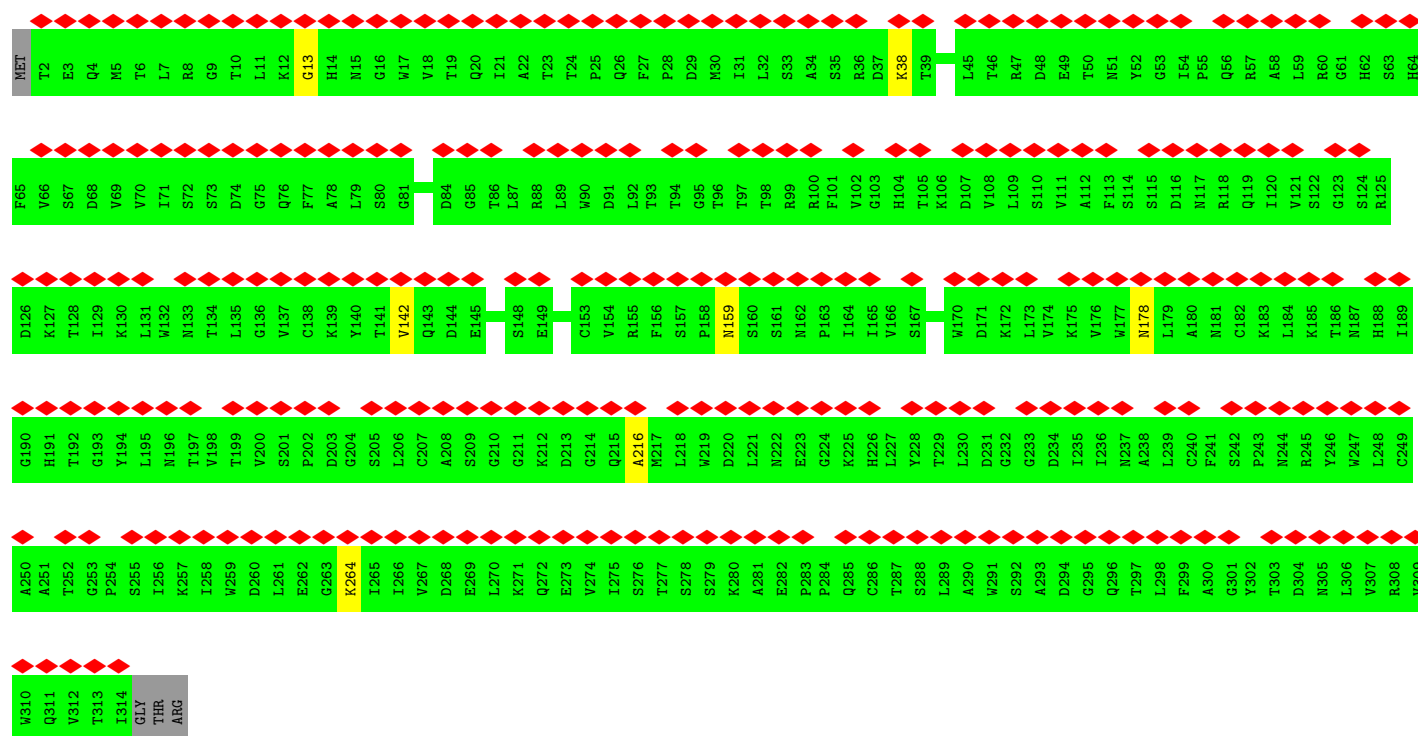
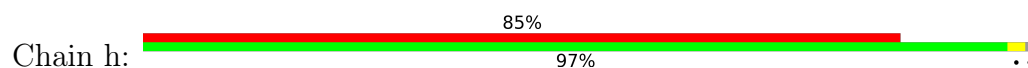




• Molecule 33: eS31

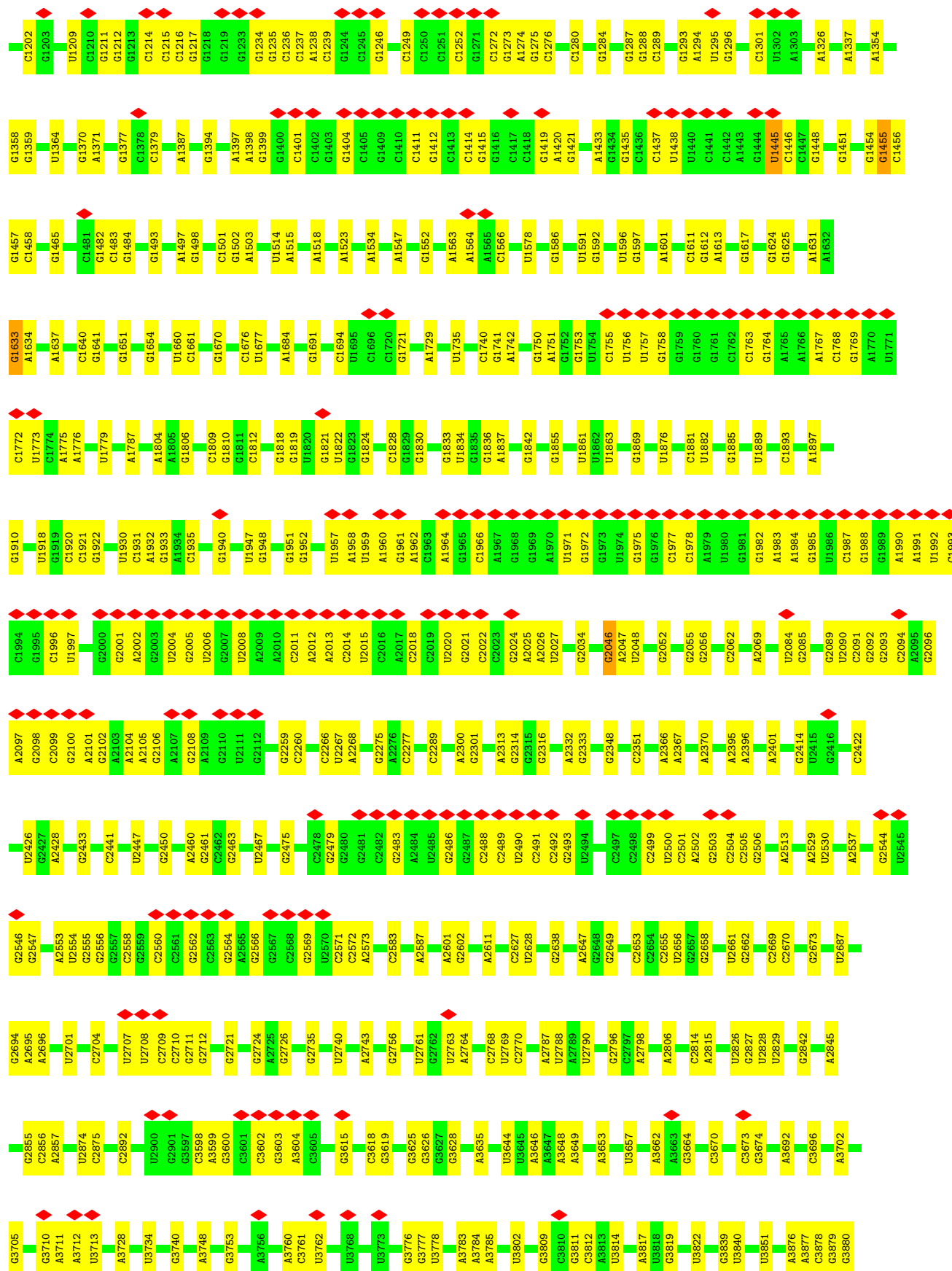


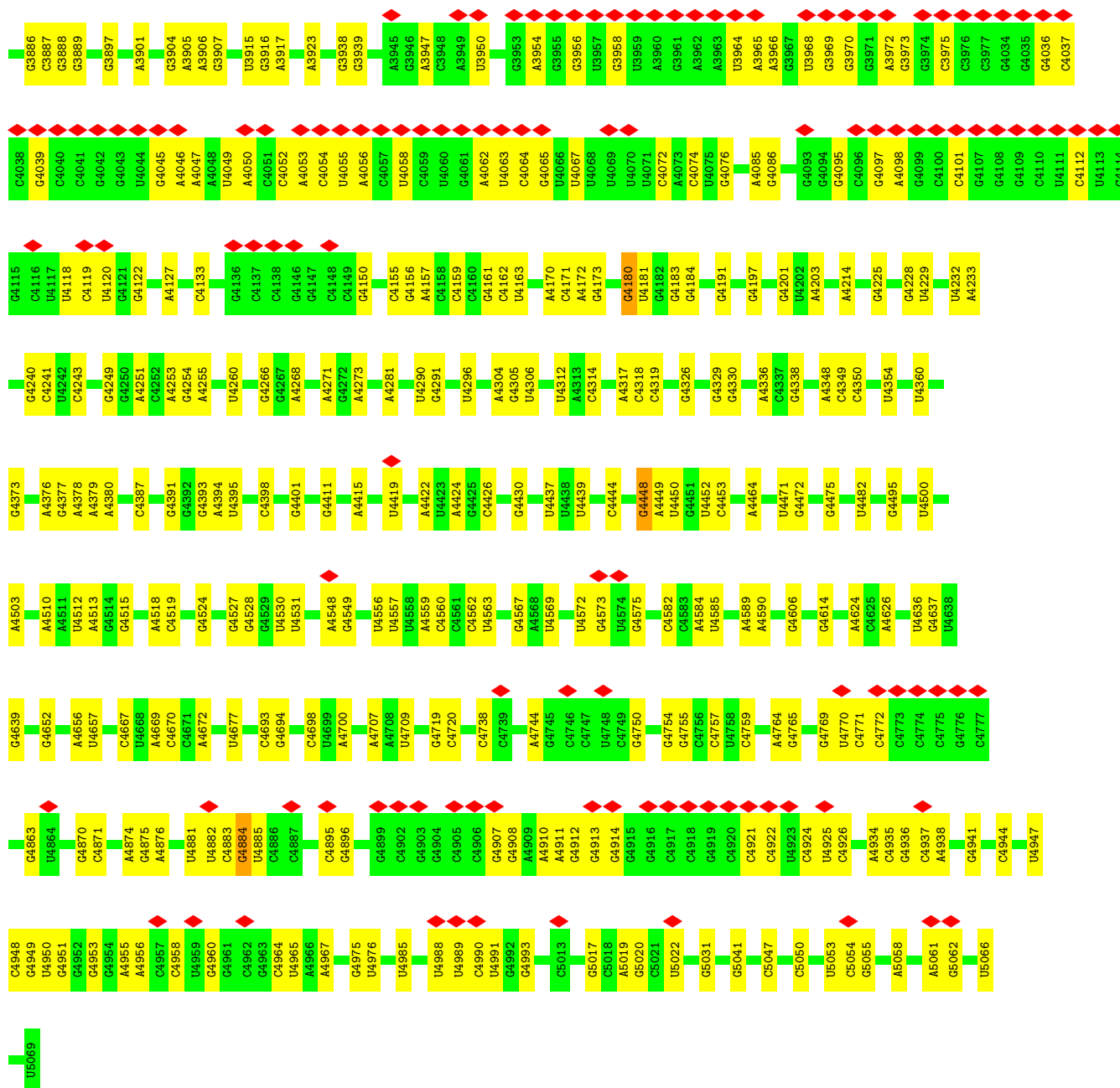
• Molecule 34: RACK1



• Molecule 35: IAPV-IRES







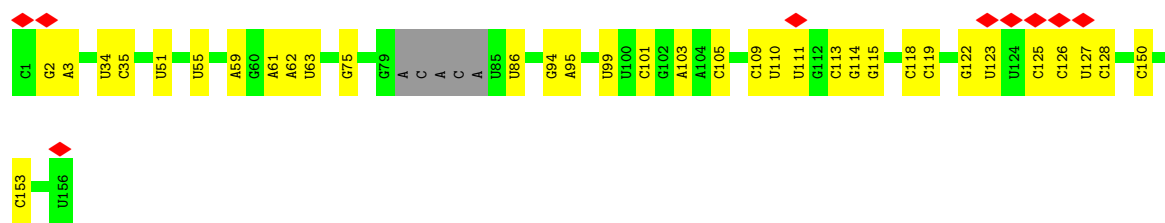
• Molecule 37: 5S rRNA

Chain 7:

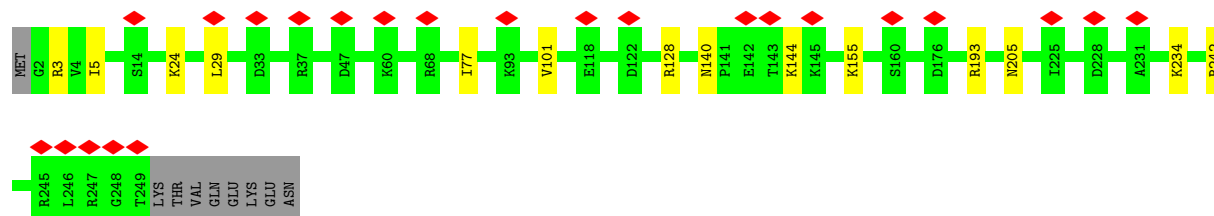
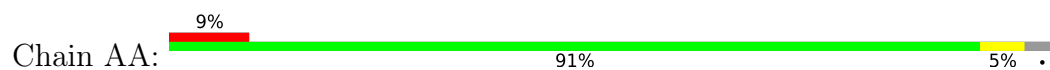


• Molecule 38: 5.8S rRNA

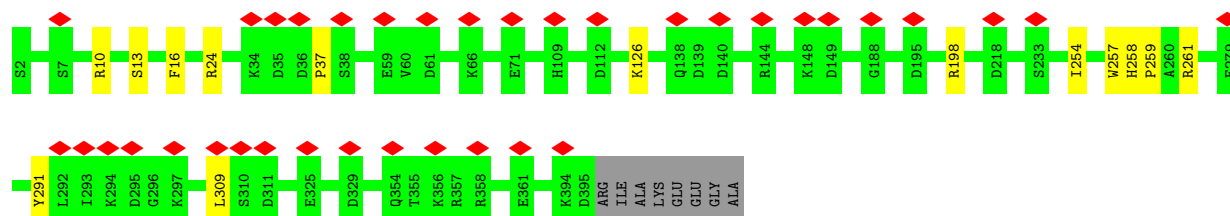




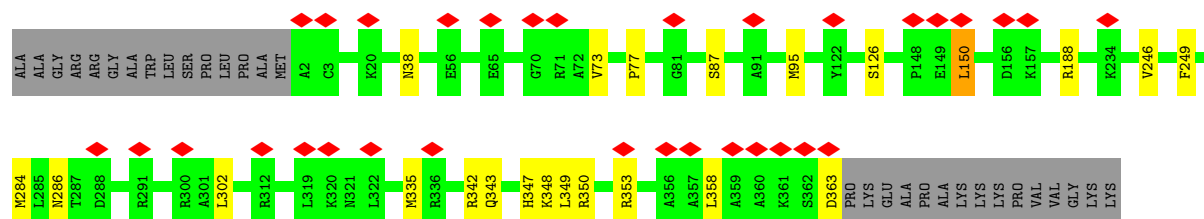
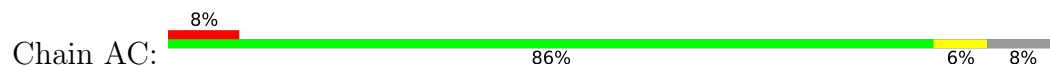
• Molecule 39: uL2



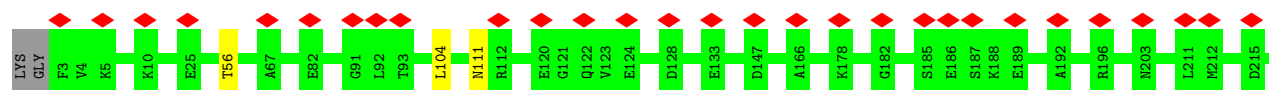
• Molecule 40: uL3



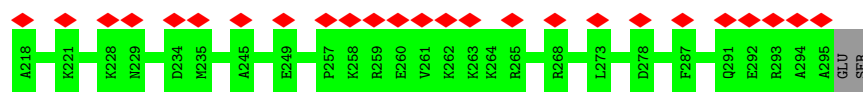
• Molecule 41: uL4



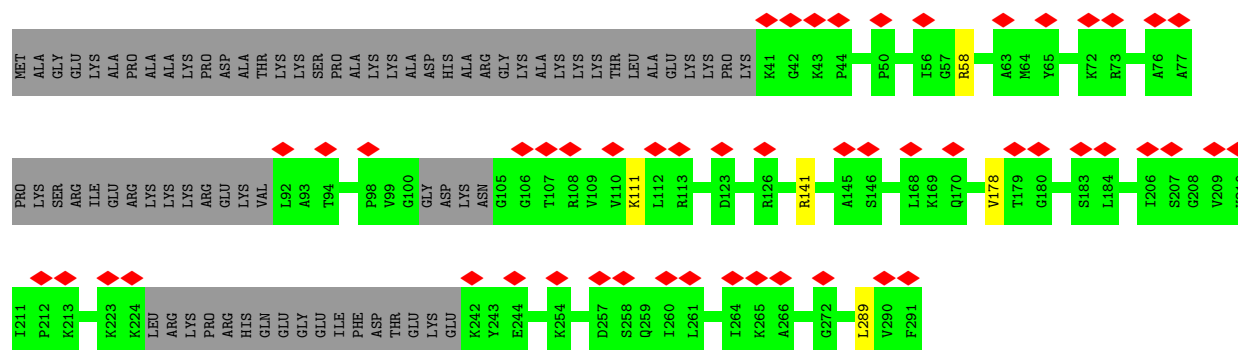
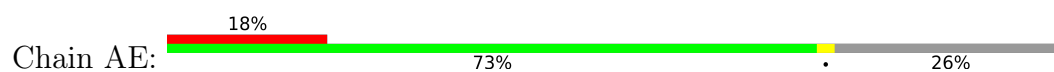
• Molecule 42: uL18



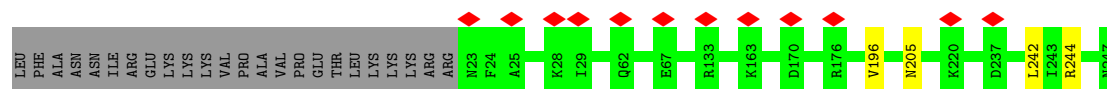
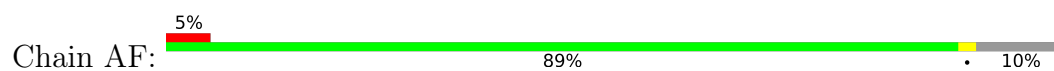




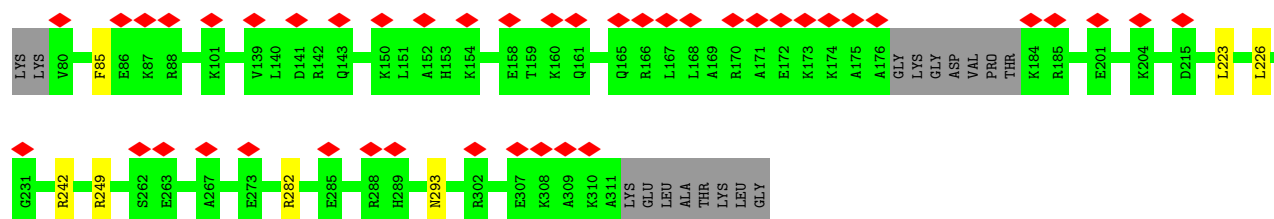
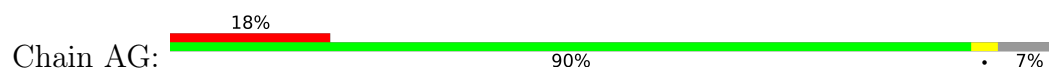
• Molecule 43: eL6



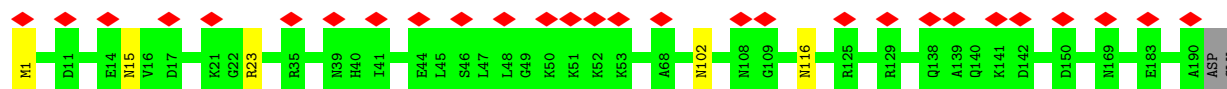
• Molecule 44: uL30



• Molecule 45: eL8



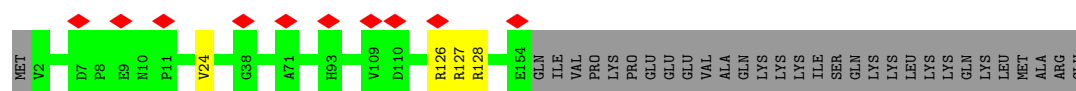
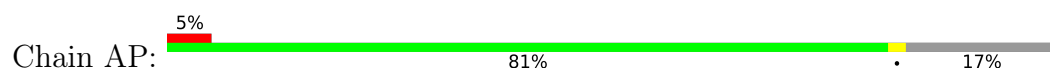
• Molecule 46: uL6



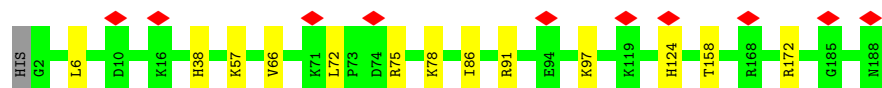
• Molecule 47: uL16



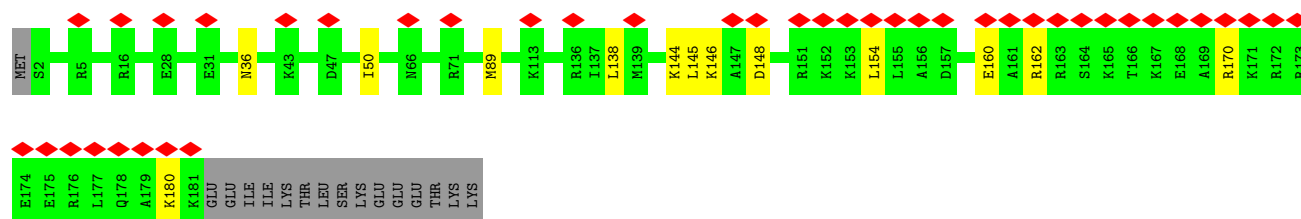
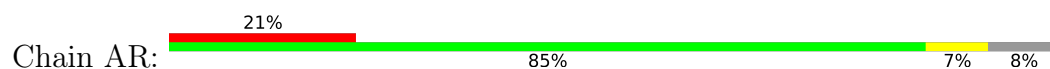




• Molecule 54: eL18



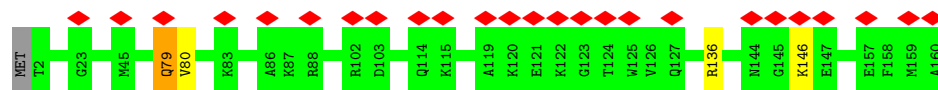
• Molecule 55: eL19



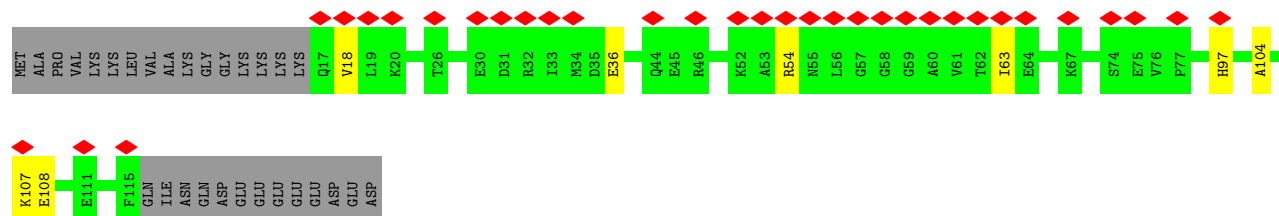
• Molecule 56: eL20



• Molecule 57: eL21




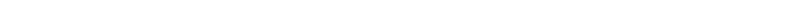
• Molecule 58: eL22





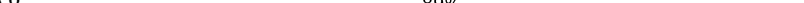
Chain Ab: 

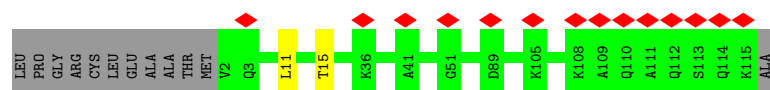
Chain Ac:  20% 84% 15%

Chain Ad: 

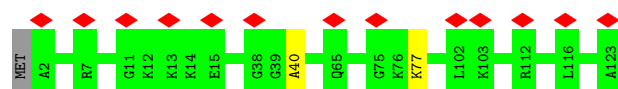
Chain Ae:  6% 93% 5%

Chain Af:  8% 94% 5%

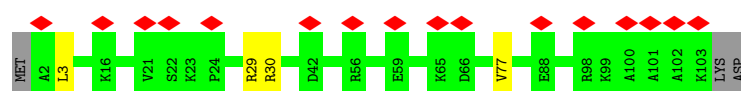
Chain Ag:  11% 89% 10%



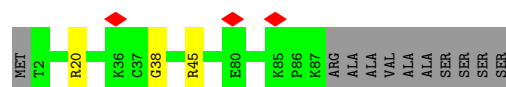
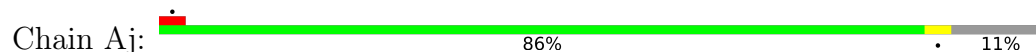
• Molecule 71: eL35



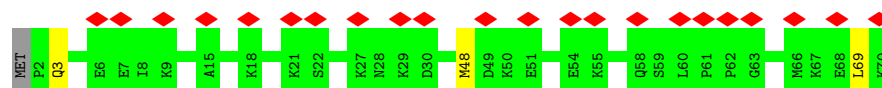
• Molecule 72: eL36



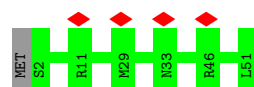
• Molecule 73: eL37



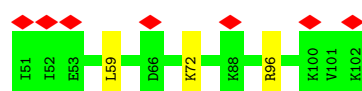
• Molecule 74: eL38



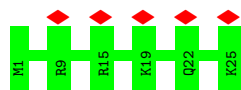
• Molecule 75: eL39



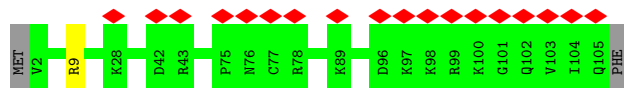
• Molecule 76: eL40



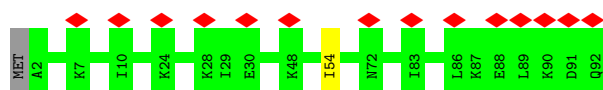
• Molecule 77: eL41



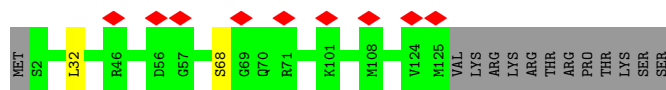
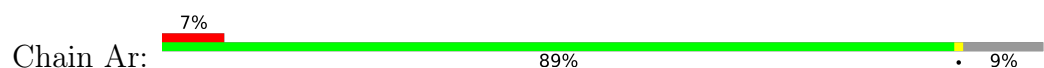
## • Molecule 78: eL42



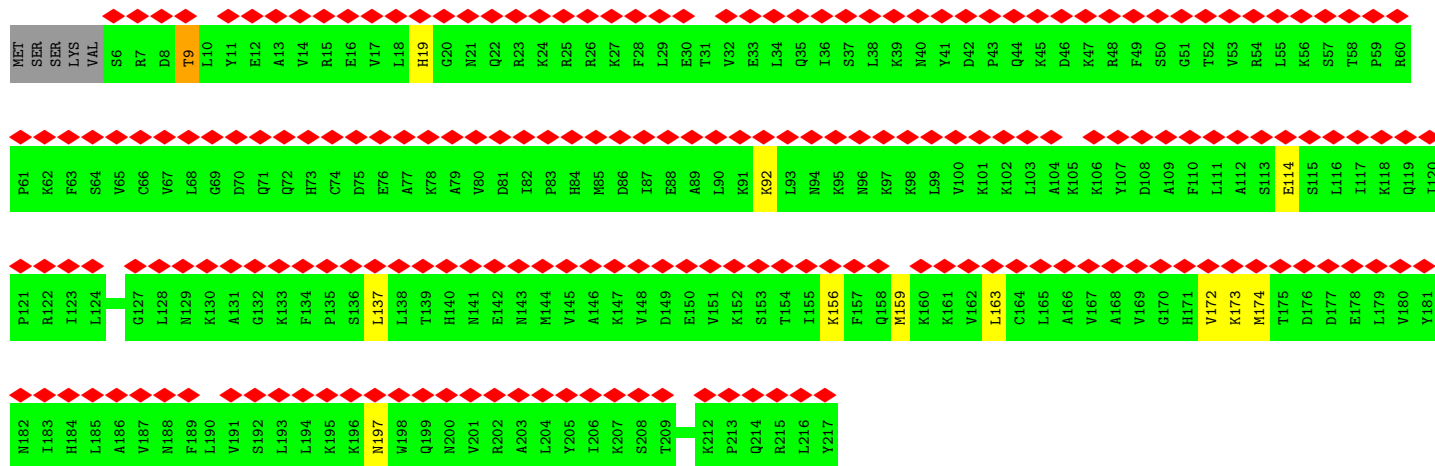
## • Molecule 79: eL43



## • Molecule 80: eL28



## • Molecule 81: uL1



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	40701	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	42.09	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	31000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.207	Depositor
Minimum map value	-0.124	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.008	Depositor
Recommended contour level	0.032	Depositor
Map size (Å)	443.88, 443.88, 443.88	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.233, 1.233, 1.233	Depositor



## 5 Model quality ⓘ

### 5.1 Standard geometry ⓘ

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	2	0.21	0/40510	0.69	6/63132 (0.0%)
2	B	0.67	0/1744	0.77	0/2371
3	C	0.68	0/1756	0.80	0/2350
4	D	0.68	0/1748	0.80	0/2362
5	E	0.69	0/1796	0.80	0/2417
6	F	0.68	0/2115	0.82	0/2843
7	G	0.69	0/1492	0.79	0/2005
8	H	0.68	0/1946	0.85	0/2590
9	I	0.69	0/1510	0.78	0/2022
10	J	0.67	0/1715	0.80	0/2287
11	K	0.68	0/1550	0.82	0/2069
12	L	0.66	0/834	0.77	0/1125
13	M	0.67	0/1195	0.81	0/1597
14	N	0.71	0/918	0.79	0/1233
15	O	0.68	0/1226	0.78	0/1649
16	P	0.70	0/1029	0.83	0/1380
17	Q	0.67	0/1009	0.82	1/1346 (0.1%)
18	R	0.69	0/1146	0.82	0/1534
19	S	0.69	0/1082	0.78	0/1452
20	T	0.68	0/1208	0.81	0/1618
21	U	0.70	0/1115	0.80	0/1493
22	V	0.69	0/805	0.79	0/1081
23	W	0.71	0/638	0.81	0/855
24	X	0.68	0/1051	0.80	0/1406
25	Y	0.69	0/1116	0.83	0/1490
26	Z	0.68	0/1028	0.82	0/1366
27	a	0.69	0/604	0.81	0/810
28	b	0.67	0/791	0.81	0/1062
29	c	0.68	0/665	0.79	0/891
30	d	0.69	0/490	0.82	0/656
31	e	0.68	0/470	0.82	0/623
32	f	0.69	0/451	0.85	0/592
33	g	0.68	0/567	0.80	0/753
34	h	0.69	0/2493	0.80	0/3394

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
35	1	0.23	0/4881	0.71	0/7604
36	5	0.21	1/86215 (0.0%)	0.68	9/134459 (0.0%)
37	7	0.20	0/2836	0.66	0/4421
38	8	0.20	0/3581	0.68	0/5577
39	AA	0.67	0/1933	0.84	0/2592
40	AB	0.66	0/3240	0.80	0/4339
41	AC	0.66	0/2937	0.79	0/3946
42	AD	0.67	0/2437	0.79	0/3264
43	AE	0.67	0/1762	0.81	0/2362
44	AF	0.66	0/1911	0.78	0/2549
45	AG	0.67	0/1850	0.80	0/2491
46	AH	0.69	0/1535	0.82	0/2063
47	AI	0.66	0/1702	0.79	0/2272
48	AJ	0.68	0/1385	0.80	0/1852
49	AL	0.66	0/1658	0.84	0/2219
50	AM	0.66	0/1150	0.80	0/1534
51	AN	0.65	0/1746	0.82	0/2338
52	AO	0.66	0/1663	0.80	0/2223
53	AP	0.66	0/1268	0.79	0/1700
54	AQ	0.66	0/1557	0.80	0/2086
55	AR	0.67	0/1519	0.84	0/2006
56	AS	0.65	0/1498	0.79	0/2012
57	AT	0.65	0/1326	0.80	0/1770
58	AU	0.67	0/832	0.76	0/1116
59	AV	0.69	0/983	0.81	0/1319
60	AW	0.66	0/541	0.79	0/720
61	AX	0.66	0/984	0.77	0/1323
62	AY	0.67	0/1132	0.82	0/1504
63	AZ	0.66	0/1130	0.80	0/1507
64	Aa	0.66	0/1191	0.81	0/1590
65	Ab	0.67	0/861	0.81	0/1138
66	Ac	0.70	0/771	0.77	0/1034
67	Ad	0.66	0/903	0.82	0/1216
68	Ae	0.66	0/1071	0.80	0/1429
69	Af	0.65	0/895	0.81	0/1198
70	Ag	0.68	0/916	0.84	0/1220
71	Ah	0.68	0/1021	0.80	0/1348
72	Ai	0.67	0/841	0.81	0/1112
73	Aj	0.65	0/720	0.85	0/952
74	Ak	0.67	0/575	0.78	0/759
75	Al	0.64	0/459	0.81	0/608
76	Am	0.65	0/435	0.80	0/575
77	An	0.64	0/240	0.86	0/305

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
78	Ao	0.66	0/864	0.81	0/1140
79	Ap	0.69	0/718	0.83	0/953
80	Ar	0.68	0/1010	0.83	0/1354
81	AK	0.69	0/1733	0.82	0/2324
All	All	0.46	1/232229 (0.0%)	0.73	16/341277 (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
5	E	0	1
6	F	0	2
17	Q	0	1
24	X	0	1
25	Y	0	1
40	AB	0	4
41	AC	0	2
49	AL	0	1
53	AP	0	1
55	AR	0	1
57	AT	0	1
60	AW	0	1
69	Af	0	1
80	Ar	0	1
81	AK	0	2
All	All	0	21

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
36	5	5019	A	O3'-P	-5.11	1.55	1.61

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	1432	U	C2'-C3'-O3'	6.29	123.77	113.70
17	Q	119	PHE	CB-CA-C	5.79	121.98	110.40
36	5	4180	G	C2'-C3'-O3'	5.73	122.86	113.70
1	2	55	U	N1-C1'-C2'	5.71	121.43	114.00
36	5	2046	G	C2'-C3'-O3'	5.68	122.78	113.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	2	627	U	C2'-C3'-O3'	5.67	122.77	113.70
1	2	24	C	C2'-C3'-O3'	5.49	122.49	113.70
36	5	1455	G	C2'-C3'-O3'	5.40	122.34	113.70
36	5	504	G	C2'-C3'-O3'	5.40	122.34	113.70
36	5	928	A	C2'-C3'-O3'	5.36	122.28	113.70
36	5	1633	G	C4'-C3'-O3'	5.30	123.59	113.00
1	2	110	U	C2'-C3'-O3'	5.24	122.08	113.70
36	5	4448	G	C4'-C3'-O3'	5.17	123.34	113.00
1	2	688	U	C2'-C3'-O3'	5.15	121.94	113.70
36	5	4884	G	C2'-C3'-O3'	5.07	121.82	113.70
36	5	1445	U	C2'-C3'-O3'	5.03	121.74	113.70

There are no chirality outliers.

All (21) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
40	AB	16	PHE	Peptide
40	AB	257	TRP	Peptide
40	AB	258	HIS	Peptide
40	AB	259	PRO	Peptide
41	AC	150	LEU	Peptide
41	AC	73	VAL	Peptide
81	AK	114	GLU	Peptide
81	AK	197	ASN	Peptide
49	AL	63	THR	Peptide
53	AP	126	ARG	Peptide
55	AR	180	LYS	Peptide
57	AT	79	GLN	Peptide
60	AW	14	TYR	Peptide
69	Af	106	TYR	Peptide
80	Ar	32	LEU	Peptide
5	E	142	LEU	Peptide
6	F	30	ARG	Peptide
6	F	32	SER	Peptide
17	Q	111	MET	Peptide
24	X	27	ILE	Peptide
25	Y	61	GLN	Peptide

## 5.2 Too-close contacts

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

## 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	
2	B	215/295 (73%)	194 (90%)	21 (10%)	0	100	100
3	C	211/264 (80%)	180 (85%)	31 (15%)	0	100	100
4	D	219/255 (86%)	197 (90%)	21 (10%)	1 (0%)	29	64
5	E	226/281 (80%)	201 (89%)	24 (11%)	1 (0%)	34	69
6	F	260/263 (99%)	224 (86%)	34 (13%)	2 (1%)	19	54
7	G	181/204 (89%)	163 (90%)	17 (9%)	1 (1%)	25	59
8	H	235/249 (94%)	207 (88%)	27 (12%)	1 (0%)	34	69
9	I	181/194 (93%)	156 (86%)	22 (12%)	3 (2%)	9	36
10	J	204/207 (99%)	182 (89%)	21 (10%)	1 (0%)	29	64
11	K	183/194 (94%)	159 (87%)	22 (12%)	2 (1%)	14	46
12	L	94/149 (63%)	84 (89%)	10 (11%)	0	100	100
13	M	139/158 (88%)	118 (85%)	19 (14%)	2 (1%)	11	40
14	N	115/132 (87%)	94 (82%)	21 (18%)	0	100	100
15	O	147/151 (97%)	134 (91%)	13 (9%)	0	100	100
16	P	134/151 (89%)	121 (90%)	13 (10%)	0	100	100
17	Q	117/145 (81%)	100 (86%)	16 (14%)	1 (1%)	17	52
18	R	140/172 (81%)	123 (88%)	17 (12%)	0	100	100
19	S	130/135 (96%)	111 (85%)	19 (15%)	0	100	100
20	T	142/152 (93%)	132 (93%)	10 (7%)	0	100	100
21	U	139/145 (96%)	121 (87%)	13 (9%)	5 (4%)	3	20
22	V	98/119 (82%)	91 (93%)	7 (7%)	0	100	100
23	W	81/83 (98%)	76 (94%)	4 (5%)	1 (1%)	13	44
24	X	127/130 (98%)	117 (92%)	9 (7%)	1 (1%)	19	54
25	Y	139/143 (97%)	129 (93%)	8 (6%)	2 (1%)	11	40
26	Z	122/134 (91%)	101 (83%)	21 (17%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
27	a	73/125 (58%)	64 (88%)	9 (12%)	0	100	100
28	b	96/115 (84%)	88 (92%)	8 (8%)	0	100	100
29	c	81/84 (96%)	71 (88%)	9 (11%)	1 (1%)	13	44
30	d	60/69 (87%)	56 (93%)	4 (7%)	0	100	100
31	e	53/56 (95%)	48 (91%)	5 (9%)	0	100	100
32	f	54/133 (41%)	43 (80%)	10 (18%)	1 (2%)	8	33
33	g	66/156 (42%)	60 (91%)	6 (9%)	0	100	100
34	h	311/317 (98%)	256 (82%)	52 (17%)	3 (1%)	15	49
39	AA	246/257 (96%)	223 (91%)	22 (9%)	1 (0%)	34	69
40	AB	392/402 (98%)	356 (91%)	34 (9%)	2 (0%)	29	64
41	AC	360/392 (92%)	334 (93%)	21 (6%)	5 (1%)	11	40
42	AD	291/297 (98%)	273 (94%)	18 (6%)	0	100	100
43	AE	208/291 (72%)	186 (89%)	22 (11%)	0	100	100
44	AF	223/249 (90%)	210 (94%)	12 (5%)	1 (0%)	34	69
45	AG	221/242 (91%)	204 (92%)	16 (7%)	1 (0%)	29	64
46	AH	188/192 (98%)	173 (92%)	15 (8%)	0	100	100
47	AI	201/214 (94%)	184 (92%)	17 (8%)	0	100	100
48	AJ	168/178 (94%)	156 (93%)	11 (6%)	1 (1%)	25	59
49	AL	199/211 (94%)	187 (94%)	11 (6%)	1 (0%)	29	64
50	AM	133/198 (67%)	118 (89%)	14 (10%)	1 (1%)	19	54
51	AN	201/204 (98%)	186 (92%)	15 (8%)	0	100	100
52	AO	197/203 (97%)	188 (95%)	8 (4%)	1 (0%)	29	64
53	AP	151/184 (82%)	138 (91%)	13 (9%)	0	100	100
54	AQ	185/188 (98%)	173 (94%)	12 (6%)	0	100	100
55	AR	178/196 (91%)	170 (96%)	8 (4%)	0	100	100
56	AS	174/176 (99%)	159 (91%)	13 (8%)	2 (1%)	14	46
57	AT	157/160 (98%)	134 (85%)	21 (13%)	2 (1%)	12	42
58	AU	97/128 (76%)	78 (80%)	18 (19%)	1 (1%)	15	49
59	AV	127/140 (91%)	114 (90%)	12 (9%)	1 (1%)	19	54
60	AW	61/157 (39%)	57 (93%)	4 (7%)	0	100	100
61	AX	116/156 (74%)	114 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
62	AY	132/145 (91%)	122 (92%)	10 (8%)	0	100	100
63	AZ	133/136 (98%)	120 (90%)	12 (9%)	1 (1%)	19	54
64	Aa	145/148 (98%)	133 (92%)	12 (8%)	0	100	100
65	Ab	100/226 (44%)	88 (88%)	10 (10%)	2 (2%)	7	31
66	Ac	96/115 (84%)	89 (93%)	7 (7%)	0	100	100
67	Ad	105/125 (84%)	93 (89%)	10 (10%)	2 (2%)	8	33
68	Ae	126/135 (93%)	118 (94%)	7 (6%)	1 (1%)	19	54
69	Af	107/110 (97%)	98 (92%)	8 (8%)	1 (1%)	17	52
70	Ag	112/126 (89%)	107 (96%)	5 (4%)	0	100	100
71	Ah	120/123 (98%)	118 (98%)	1 (1%)	1 (1%)	19	54
72	Ai	100/105 (95%)	95 (95%)	5 (5%)	0	100	100
73	Aj	84/97 (87%)	75 (89%)	8 (10%)	1 (1%)	13	44
74	Ak	67/70 (96%)	61 (91%)	6 (9%)	0	100	100
75	Al	48/51 (94%)	44 (92%)	4 (8%)	0	100	100
76	Am	50/52 (96%)	46 (92%)	4 (8%)	0	100	100
77	An	23/25 (92%)	22 (96%)	1 (4%)	0	100	100
78	Ao	102/106 (96%)	97 (95%)	5 (5%)	0	100	100
79	Ap	89/92 (97%)	79 (89%)	10 (11%)	0	100	100
80	Ar	122/137 (89%)	109 (89%)	12 (10%)	1 (1%)	19	54
81	AK	210/217 (97%)	160 (76%)	48 (23%)	2 (1%)	15	49
All	All	11318/12916 (88%)	10190 (90%)	1067 (9%)	61 (0%)	32	64

All (61) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	E	143	ARG
10	J	94	LYS
25	Y	61	GLN
41	AC	150	LEU
49	AL	63	THR
57	AT	79	GLN
57	AT	80	VAL
59	AV	17	SER
6	F	30	ARG
17	Q	18	ARG

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Mol	Chain	Res	Type
21	U	111	LYS
34	h	264	LYS
39	AA	234	LYS
40	AB	291	TYR
41	AC	126	SER
58	AU	104	ALA
67	Ad	58	GLY
81	AK	19	HIS
4	D	257	LYS
13	M	100	ASN
21	U	86	GLY
23	W	34	MET
24	X	95	PRO
32	f	130	ALA
34	h	216	ALA
48	AJ	146	ARG
65	Ab	29	TYR
80	Ar	68	SER
11	K	36	GLY
11	K	99	GLY
21	U	25	SER
29	c	75	GLU
65	Ab	25	ARG
68	Ae	127	ALA
73	Aj	38	GLY
6	F	204	SER
13	M	18	GLN
21	U	84	ARG
41	AC	77	PRO
41	AC	87	SER
41	AC	249	PHE
63	AZ	91	LEU
71	Ah	40	ALA
81	AK	9	THR
7	G	21	GLY
9	I	88	SER
40	AB	37	PRO
44	AF	196	VAL
45	AG	85	PHE
8	H	169	PRO
25	Y	86	PRO
56	AS	155	PRO

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Mol	Chain	Res	Type
21	U	95	GLY
34	h	13	GLY
69	Af	106	TYR
50	AM	7	VAL
67	Ad	20	VAL
9	I	54	GLY
9	I	8	ILE
56	AS	165	PRO
52	AO	111	PRO

### 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	
2	B	180/245 (74%)	177 (98%)	3 (2%)	60	83
3	C	194/231 (84%)	187 (96%)	7 (4%)	35	67
4	D	186/205 (91%)	182 (98%)	4 (2%)	52	78
5	E	190/232 (82%)	184 (97%)	6 (3%)	39	69
6	F	223/225 (99%)	218 (98%)	5 (2%)	52	78
7	G	158/170 (93%)	156 (99%)	2 (1%)	69	87
8	H	207/218 (95%)	204 (99%)	3 (1%)	67	86
9	I	165/174 (95%)	164 (99%)	1 (1%)	86	94
10	J	178/179 (99%)	177 (99%)	1 (1%)	86	94
11	K	161/168 (96%)	158 (98%)	3 (2%)	57	81
12	L	87/125 (70%)	87 (100%)	0	100	100
13	M	130/142 (92%)	127 (98%)	3 (2%)	50	77
14	N	99/108 (92%)	98 (99%)	1 (1%)	76	90
15	O	130/131 (99%)	127 (98%)	3 (2%)	50	77
16	P	106/119 (89%)	105 (99%)	1 (1%)	78	91
17	Q	108/130 (83%)	103 (95%)	5 (5%)	27	59
18	R	117/140 (84%)	113 (97%)	4 (3%)	37	69

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
19	S	119/121 (98%)	118 (99%)	1 (1%)	81	92
20	T	125/132 (95%)	121 (97%)	4 (3%)	39	69
21	U	111/116 (96%)	110 (99%)	1 (1%)	78	91
22	V	92/107 (86%)	91 (99%)	1 (1%)	73	89
23	W	68/68 (100%)	60 (88%)	8 (12%)	5	21
24	X	112/113 (99%)	110 (98%)	2 (2%)	59	82
25	Y	113/114 (99%)	112 (99%)	1 (1%)	78	91
26	Z	107/115 (93%)	105 (98%)	2 (2%)	57	81
27	a	66/103 (64%)	66 (100%)	0	100	100
28	b	86/99 (87%)	85 (99%)	1 (1%)	71	88
29	c	75/76 (99%)	75 (100%)	0	100	100
30	d	55/62 (89%)	55 (100%)	0	100	100
31	e	48/49 (98%)	48 (100%)	0	100	100
32	f	46/106 (43%)	44 (96%)	2 (4%)	29	62
33	g	61/140 (44%)	59 (97%)	2 (3%)	38	69
34	h	272/275 (99%)	268 (98%)	4 (2%)	65	85
39	AA	189/199 (95%)	176 (93%)	13 (7%)	15	45
40	AB	342/347 (99%)	334 (98%)	8 (2%)	50	77
41	AC	302/323 (94%)	285 (94%)	17 (6%)	21	52
42	AD	247/250 (99%)	244 (99%)	3 (1%)	71	88
43	AE	190/251 (76%)	185 (97%)	5 (3%)	46	74
44	AF	196/218 (90%)	193 (98%)	3 (2%)	65	85
45	AG	194/208 (93%)	188 (97%)	6 (3%)	40	70
46	AH	169/171 (99%)	164 (97%)	5 (3%)	41	71
47	AI	175/181 (97%)	172 (98%)	3 (2%)	60	83
48	AJ	143/149 (96%)	141 (99%)	2 (1%)	67	86
49	AL	167/176 (95%)	164 (98%)	3 (2%)	59	82
50	AM	116/151 (77%)	116 (100%)	0	100	100
51	AN	171/172 (99%)	168 (98%)	3 (2%)	59	82
52	AO	171/173 (99%)	167 (98%)	4 (2%)	50	77
53	AP	134/163 (82%)	131 (98%)	3 (2%)	52	78

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
54	AQ	166/167 (99%)	153 (92%)	13 (8%)	12	40
55	AR	159/175 (91%)	147 (92%)	12 (8%)	13	42
56	AS	155/155 (100%)	148 (96%)	7 (4%)	27	60
57	AT	139/140 (99%)	137 (99%)	2 (1%)	67	86
58	AU	91/116 (78%)	84 (92%)	7 (8%)	13	41
59	AV	100/107 (94%)	97 (97%)	3 (3%)	41	71
60	AW	55/126 (44%)	55 (100%)	0	100	100
61	AX	106/134 (79%)	106 (100%)	0	100	100
62	AY	124/135 (92%)	119 (96%)	5 (4%)	31	65
63	AZ	117/118 (99%)	117 (100%)	0	100	100
64	Aa	119/120 (99%)	115 (97%)	4 (3%)	37	69
65	Ab	84/172 (49%)	81 (96%)	3 (4%)	35	67
66	Ac	84/98 (86%)	83 (99%)	1 (1%)	71	88
67	Ad	98/110 (89%)	94 (96%)	4 (4%)	30	64
68	Ae	114/121 (94%)	113 (99%)	1 (1%)	78	91
69	Af	88/89 (99%)	83 (94%)	5 (6%)	20	52
70	Ag	98/106 (92%)	96 (98%)	2 (2%)	55	80
71	Ah	109/110 (99%)	108 (99%)	1 (1%)	78	91
72	Ai	86/89 (97%)	82 (95%)	4 (5%)	26	59
73	Aj	73/80 (91%)	71 (97%)	2 (3%)	44	74
74	Ak	64/65 (98%)	61 (95%)	3 (5%)	26	59
75	Al	47/48 (98%)	47 (100%)	0	100	100
76	Am	48/48 (100%)	45 (94%)	3 (6%)	18	48
77	An	24/24 (100%)	24 (100%)	0	100	100
78	Ao	92/94 (98%)	91 (99%)	1 (1%)	73	89
79	Ap	74/75 (99%)	73 (99%)	1 (1%)	67	86
80	Ar	108/121 (89%)	108 (100%)	0	100	100
81	AK	190/196 (97%)	181 (95%)	9 (5%)	26	59
All	All	9893/11009 (90%)	9641 (98%)	252 (2%)	50	75

All (252) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	50	ASN
2	B	111	GLN
2	B	135	MET
3	C	40	ASN
3	C	65	ARG
3	C	94	LYS
3	C	147	ASN
3	C	162	ARG
3	C	207	LEU
3	C	213	ARG
4	D	141	LEU
4	D	194	ARG
4	D	227	ARG
4	D	274	MET
5	E	44	THR
5	E	57	ASN
5	E	94	ARG
5	E	146	ARG
5	E	218	LEU
5	E	227	LYS
6	F	3	ARG
6	F	67	GLN
6	F	160	ILE
6	F	227	VAL
6	F	232	ASN
7	G	88	MET
7	G	173	LEU
8	H	63	MET
8	H	181	THR
8	H	216	ARG
9	I	36	LEU
10	J	99	ASN
11	K	45	ARG
11	K	69	ARG
11	K	70	ARG
13	M	20	LYS
13	M	56	ILE
13	M	69	ARG
14	N	22	LEU
15	O	27	LYS
15	O	60	VAL
15	O	84	LEU
16	P	47	LEU

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Mol	Chain	Res	Type
17	Q	13	ARG
17	Q	37	TYR
17	Q	103	ASN
17	Q	121	ILE
17	Q	124	LYS
18	R	18	THR
18	R	37	ARG
18	R	41	MET
18	R	60	LYS
19	S	127	ASN
20	T	8	LYS
20	T	59	LEU
20	T	60	THR
20	T	101	ASN
21	U	62	ARG
22	V	47	ASN
23	W	3	SER
23	W	9	VAL
23	W	21	ASN
23	W	32	ILE
23	W	34	MET
23	W	50	SER
23	W	75	SER
23	W	82	ASN
24	X	7	LEU
24	X	91	ASN
25	Y	7	LEU
26	Z	101	LYS
26	Z	110	ARG
28	b	56	VAL
32	f	99	LYS
32	f	104	ARG
33	g	108	VAL
33	g	138	ARG
34	h	38	LYS
34	h	142	VAL
34	h	159	ASN
34	h	178	ASN
39	AA	3	ARG
39	AA	5	ILE
39	AA	24	LYS
39	AA	29	LEU

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Mol	Chain	Res	Type
39	AA	77	ILE
39	AA	101	VAL
39	AA	128	ARG
39	AA	140	ASN
39	AA	144	LYS
39	AA	155	LYS
39	AA	193	ARG
39	AA	205	ASN
39	AA	242	ARG
40	AB	10	ARG
40	AB	13	SER
40	AB	24	ARG
40	AB	126	LYS
40	AB	198	ARG
40	AB	254	ILE
40	AB	261	ARG
40	AB	309	LEU
41	AC	38	ASN
41	AC	95	MET
41	AC	188	ARG
41	AC	246	VAL
41	AC	284	MET
41	AC	286	ASN
41	AC	302	LEU
41	AC	335	MET
41	AC	342	ARG
41	AC	343	GLN
41	AC	347	HIS
41	AC	348	LYS
41	AC	349	LEU
41	AC	350	ARG
41	AC	353	ARG
41	AC	358	LEU
41	AC	363	ASP
42	AD	56	THR
42	AD	104	LEU
42	AD	111	ASN
43	AE	58	ARG
43	AE	111	LYS
43	AE	141	ARG
43	AE	178	VAL
43	AE	289	LEU

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Mol	Chain	Res	Type
44	AF	205	ASN
44	AF	242	LEU
44	AF	244	ARG
45	AG	223	LEU
45	AG	226	LEU
45	AG	242	ARG
45	AG	249	ARG
45	AG	282	ARG
45	AG	293	ASN
46	AH	1	MET
46	AH	15	ASN
46	AH	23	ARG
46	AH	102	ASN
46	AH	116	ASN
47	AI	3	ARG
47	AI	36	LEU
47	AI	100	ASN
48	AJ	16	ARG
48	AJ	75	ARG
49	AL	67	HIS
49	AL	162	LYS
49	AL	194	ILE
51	AN	50	ARG
51	AN	64	ILE
51	AN	204	ARG
52	AO	36	VAL
52	AO	108	ILE
52	AO	117	ARG
52	AO	145	VAL
53	AP	24	VAL
53	AP	127	ARG
53	AP	128	ARG
54	AQ	6	LEU
54	AQ	38	HIS
54	AQ	57	LYS
54	AQ	66	VAL
54	AQ	72	LEU
54	AQ	75	ARG
54	AQ	78	LYS
54	AQ	86	ILE
54	AQ	91	ARG
54	AQ	97	LYS

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Mol	Chain	Res	Type
54	AQ	124	HIS
54	AQ	158	THR
54	AQ	172	ARG
55	AR	36	ASN
55	AR	50	ILE
55	AR	89	MET
55	AR	138	LEU
55	AR	144	LYS
55	AR	145	LEU
55	AR	146	LYS
55	AR	148	ASP
55	AR	154	LEU
55	AR	160	GLU
55	AR	162	ARG
55	AR	170	ARG
56	AS	15	ARG
56	AS	49	LEU
56	AS	96	GLU
56	AS	120	ARG
56	AS	132	MET
56	AS	136	ARG
56	AS	149	ARG
57	AT	136	ARG
57	AT	146	LYS
58	AU	18	VAL
58	AU	36	GLU
58	AU	54	ARG
58	AU	63	ILE
58	AU	97	HIS
58	AU	107	LYS
58	AU	108	GLU
59	AV	15	ARG
59	AV	48	ARG
59	AV	60	MET
62	AY	2	LYS
62	AY	72	GLN
62	AY	79	VAL
62	AY	87	ARG
62	AY	104	VAL
64	Aa	4	ARG
64	Aa	44	ASN
64	Aa	56	VAL

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Mol	Chain	Res	Type
64	Aa	132	ARG
65	Ab	9	THR
65	Ab	50	ASN
65	Ab	60	ASN
66	Ac	90	ARG
67	Ad	18	ASN
67	Ad	23	ARG
67	Ad	31	LYS
67	Ad	83	ARG
68	Ae	78	LEU
69	Af	16	ARG
69	Af	76	ARG
69	Af	80	ASN
69	Af	84	VAL
69	Af	103	VAL
70	Ag	11	LEU
70	Ag	15	THR
71	Ah	77	LYS
72	Ai	3	LEU
72	Ai	29	ARG
72	Ai	30	ARG
72	Ai	77	VAL
73	Aj	20	ARG
73	Aj	45	ARG
74	Ak	3	GLN
74	Ak	48	MET
74	Ak	69	LEU
76	Am	59	LEU
76	Am	72	LYS
76	Am	96	ARG
78	Ao	9	ARG
79	Ap	54	ILE
81	AK	9	THR
81	AK	92	LYS
81	AK	137	LEU
81	AK	156	LYS
81	AK	159	MET
81	AK	163	LEU
81	AK	172	VAL
81	AK	173	LYS
81	AK	174	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (99)

such sidechains are listed below:

Mol	Chain	Res	Type
3	C	40	ASN
3	C	147	ASN
3	C	157	GLN
4	D	235	ASN
5	E	145	GLN
6	F	67	GLN
6	F	232	ASN
9	I	126	HIS
10	J	99	ASN
10	J	165	GLN
11	K	154	GLN
12	L	7	ASN
12	L	84	HIS
13	M	19	ASN
13	M	83	GLN
13	M	100	ASN
15	O	36	GLN
15	O	105	ASN
17	Q	41	GLN
17	Q	98	ASN
17	Q	103	ASN
17	Q	128	HIS
18	R	11	GLN
18	R	80	GLN
18	R	86	GLN
19	S	127	ASN
20	T	17	ASN
21	U	85	ASN
23	W	21	ASN
23	W	35	ASN
23	W	82	ASN
24	X	16	ASN
24	X	90	GLN
24	X	91	ASN
24	X	113	HIS
27	a	64	ASN
28	b	19	GLN
29	c	26	GLN
32	f	112	ASN
34	h	133	ASN
34	h	159	ASN
34	h	178	ASN

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Mol	Chain	Res	Type
39	AA	140	ASN
39	AA	205	ASN
40	AB	271	GLN
40	AB	354	GLN
41	AC	50	GLN
41	AC	61	GLN
41	AC	223	ASN
41	AC	286	ASN
41	AC	310	HIS
41	AC	329	ASN
41	AC	338	ASN
41	AC	343	GLN
42	AD	9	ASN
42	AD	138	GLN
42	AD	202	GLN
42	AD	282	GLN
43	AE	253	GLN
44	AF	79	ASN
44	AF	205	ASN
45	AG	99	GLN
46	AH	8	GLN
46	AH	15	ASN
46	AH	42	ASN
46	AH	78	GLN
46	AH	102	ASN
46	AH	116	ASN
47	AI	95	HIS
47	AI	100	ASN
47	AI	144	ASN
49	AL	19	GLN
50	AM	48	GLN
50	AM	83	ASN
51	AN	32	GLN
51	AN	87	HIS
52	AO	5	GLN
53	AP	97	ASN
54	AQ	124	HIS
54	AQ	125	GLN
56	AS	77	ASN
57	AT	49	GLN
59	AV	27	ASN
59	AV	50	ASN

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Mol	Chain	Res	Type
60	AW	50	ASN
61	AX	93	ASN
61	AX	105	ASN
61	AX	107	HIS
61	AX	111	GLN
61	AX	125	ASN
62	AY	14	ASN
62	AY	56	GLN
62	AY	65	GLN
64	Aa	85	GLN
67	Ad	18	ASN
69	Af	80	ASN
71	Ah	96	ASN
78	Ao	45	GLN
80	Ar	21	ASN

### 5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	2	1686/1869 (90%)	547 (32%)	37 (2%)
35	1	204/253 (80%)	105 (51%)	10 (4%)
36	5	3569/3594 (99%)	959 (26%)	64 (1%)
37	7	118/119 (99%)	16 (13%)	0
38	8	149/156 (95%)	33 (22%)	3 (2%)
All	All	5726/5991 (95%)	1660 (28%)	114 (1%)

All (1660) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	2	3	C
1	2	4	C
1	2	14	C
1	2	17	C
1	2	20	G
1	2	23	G
1	2	25	A
1	2	27	A
1	2	33	G
1	2	37	C
1	2	42	A
1	2	46	A

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Mol	Chain	Res	Type
1	2	52	G
1	2	56	G
1	2	59	U
1	2	60	A
1	2	61	A
1	2	62	G
1	2	63	U
1	2	64	A
1	2	65	C
1	2	67	C
1	2	68	A
1	2	70	G
1	2	73	C
1	2	74	G
1	2	75	G
1	2	77	A
1	2	79	A
1	2	81	U
1	2	82	G
1	2	84	A
1	2	87	U
1	2	91	A
1	2	92	A
1	2	94	G
1	2	99	A
1	2	100	U
1	2	103	A
1	2	110	U
1	2	111	A
1	2	113	G
1	2	114	G
1	2	115	U
1	2	116	U
1	2	121	U
1	2	123	G
1	2	124	U
1	2	126	G
1	2	127	C
1	2	128	U
1	2	129	C
1	2	130	G
1	2	142	C

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Mol	Chain	Res	Type
1	2	143	U
1	2	145	G
1	2	146	G
1	2	147	A
1	2	152	U
1	2	156	G
1	2	158	A
1	2	159	A
1	2	160	U
1	2	163	U
1	2	164	A
1	2	168	C
1	2	169	U
1	2	170	A
1	2	172	U
1	2	173	A
1	2	180	G
1	2	182	C
1	2	183	G
1	2	184	G
1	2	185	G
1	2	187	G
1	2	188	C
1	2	191	A
1	2	192	C
1	2	203	G
1	2	210	U
1	2	215	G
1	2	216	C
1	2	217	A
1	2	218	U
1	2	219	U
1	2	222	U
1	2	224	A
1	2	289	G
1	2	293	C
1	2	294	U
1	2	297	A
1	2	301	A
1	2	302	A
1	2	304	C
1	2	305	U

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Mol	Chain	Res	Type
1	2	306	C
1	2	307	G
1	2	308	G
1	2	309	G
1	2	312	G
1	2	313	A
1	2	314	U
1	2	315	C
1	2	317	C
1	2	318	A
1	2	320	G
1	2	322	C
1	2	323	C
1	2	331	C
1	2	333	G
1	2	337	C
1	2	338	G
1	2	340	C
1	2	344	U
1	2	347	G
1	2	351	G
1	2	360	A
1	2	362	C
1	2	364	A
1	2	367	U
1	2	368	U
1	2	369	C
1	2	370	G
1	2	377	G
1	2	379	C
1	2	381	C
1	2	382	C
1	2	385	G
1	2	386	C
1	2	388	U
1	2	400	C
1	2	407	G
1	2	408	A
1	2	409	C
1	2	418	A
1	2	420	G
1	2	438	G

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Mol	Chain	Res	Type
1	2	441	C
1	2	447	A
1	2	448	A
1	2	450	C
1	2	452	G
1	2	458	A
1	2	464	A
1	2	465	A
1	2	466	G
1	2	472	C
1	2	473	A
1	2	474	G
1	2	475	C
1	2	483	C
1	2	486	A
1	2	487	U
1	2	489	A
1	2	490	C
1	2	492	C
1	2	493	A
1	2	495	U
1	2	496	C
1	2	501	C
1	2	502	C
1	2	503	C
1	2	504	G
1	2	507	G
1	2	508	A
1	2	510	G
1	2	513	G
1	2	516	A
1	2	517	C
1	2	518	G
1	2	521	A
1	2	522	A
1	2	523	A
1	2	525	A
1	2	526	A
1	2	529	A
1	2	530	U
1	2	532	C
1	2	533	A

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Mol	Chain	Res	Type
1	2	536	A
1	2	537	C
1	2	538	U
1	2	541	U
1	2	542	U
1	2	543	C
1	2	544	G
1	2	547	G
1	2	548	C
1	2	549	C
1	2	550	C
1	2	551	U
1	2	553	U
1	2	554	A
1	2	555	A
1	2	556	U
1	2	558	G
1	2	559	G
1	2	561	A
1	2	562	U
1	2	563	G
1	2	566	U
1	2	567	C
1	2	568	C
1	2	569	A
1	2	572	U
1	2	575	A
1	2	576	A
1	2	579	C
1	2	582	U
1	2	583	A
1	2	584	A
1	2	585	C
1	2	586	G
1	2	587	A
1	2	588	G
1	2	589	G
1	2	590	A
1	2	591	U
1	2	593	C
1	2	594	A
1	2	598	G

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Mol	Chain	Res	Type
1	2	600	G
1	2	604	A
1	2	605	A
1	2	606	G
1	2	607	U
1	2	608	C
1	2	614	C
1	2	617	G
1	2	623	G
1	2	627	U
1	2	628	A
1	2	629	A
1	2	631	U
1	2	643	A
1	2	644	G
1	2	655	A
1	2	660	C
1	2	662	G
1	2	668	A
1	2	669	A
1	2	671	A
1	2	672	A
1	2	673	G
1	2	675	U
1	2	678	U
1	2	683	G
1	2	687	C
1	2	688	U
1	2	689	U
1	2	690	G
1	2	691	G
1	2	694	G
1	2	695	C
1	2	731	G
1	2	732	U
1	2	734	C
1	2	735	C
1	2	751	G
1	2	752	G
1	2	753	C
1	2	754	G
1	2	756	C

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Mol	Chain	Res	Type
1	2	791	C
1	2	793	G
1	2	798	G
1	2	799	U
1	2	811	A
1	2	812	A
1	2	817	G
1	2	821	G
1	2	822	U
1	2	823	U
1	2	828	G
1	2	829	C
1	2	830	A
1	2	831	G
1	2	845	G
1	2	847	A
1	2	852	G
1	2	857	U
1	2	866	U
1	2	867	G
1	2	869	A
1	2	870	A
1	2	871	U
1	2	872	A
1	2	873	G
1	2	874	G
1	2	875	A
1	2	878	G
1	2	881	G
1	2	884	C
1	2	887	U
1	2	888	U
1	2	890	U
1	2	891	G
1	2	893	U
1	2	894	G
1	2	898	U
1	2	900	C
1	2	901	G
1	2	908	A
1	2	909	G
1	2	913	A

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Mol	Chain	Res	Type
1	2	914	U
1	2	917	U
1	2	918	U
1	2	920	A
1	2	923	G
1	2	930	C
1	2	933	G
1	2	936	G
1	2	941	C
1	2	943	U
1	2	952	G
1	2	954	U
1	2	955	A
1	2	956	G
1	2	963	A
1	2	970	G
1	2	971	G
1	2	978	G
1	2	990	A
1	2	991	G
1	2	992	A
1	2	993	G
1	2	999	G
1	2	1002	U
1	2	1017	U
1	2	1023	A
1	2	1027	A
1	2	1030	A
1	2	1045	U
1	2	1055	A
1	2	1061	U
1	2	1067	C
1	2	1077	A
1	2	1082	A
1	2	1083	A
1	2	1085	C
1	2	1100	A
1	2	1110	G
1	2	1115	U
1	2	1116	C
1	2	1117	C
1	2	1118	C

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Mol	Chain	Res	Type
1	2	1121	G
1	2	1125	C
1	2	1126	G
1	2	1133	A
1	2	1138	C
1	2	1139	C
1	2	1141	G
1	2	1144	A
1	2	1148	A
1	2	1149	A
1	2	1150	A
1	2	1153	C
1	2	1154	U
1	2	1155	U
1	2	1195	A
1	2	1203	G
1	2	1207	G
1	2	1210	G
1	2	1212	G
1	2	1215	C
1	2	1221	G
1	2	1224	G
1	2	1230	C
1	2	1235	G
1	2	1240	A
1	2	1242	U
1	2	1243	U
1	2	1251	A
1	2	1253	A
1	2	1254	C
1	2	1256	G
1	2	1257	G
1	2	1259	A
1	2	1260	A
1	2	1261	C
1	2	1273	C
1	2	1274	G
1	2	1275	G
1	2	1282	A
1	2	1285	G
1	2	1286	G
1	2	1287	A

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Mol	Chain	Res	Type
1	2	1292	C
1	2	1294	G
1	2	1298	G
1	2	1299	A
1	2	1300	U
1	2	1301	A
1	2	1302	G
1	2	1303	C
1	2	1304	U
1	2	1307	U
1	2	1311	C
1	2	1313	A
1	2	1314	U
1	2	1315	U
1	2	1316	C
1	2	1318	G
1	2	1320	G
1	2	1327	G
1	2	1330	G
1	2	1342	U
1	2	1354	G
1	2	1364	U
1	2	1371	U
1	2	1372	U
1	2	1377	U
1	2	1378	A
1	2	1379	A
1	2	1392	U
1	2	1396	A
1	2	1397	U
1	2	1401	A
1	2	1402	A
1	2	1403	C
1	2	1404	U
1	2	1409	A
1	2	1413	G
1	2	1425	G
1	2	1428	G
1	2	1429	G
1	2	1432	U
1	2	1438	A
1	2	1444	U

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Mol	Chain	Res	Type
1	2	1449	G
1	2	1452	A
1	2	1453	C
1	2	1454	A
1	2	1457	U
1	2	1462	U
1	2	1463	U
1	2	1464	C
1	2	1466	G
1	2	1475	G
1	2	1476	A
1	2	1479	G
1	2	1480	A
1	2	1489	A
1	2	1490	G
1	2	1494	U
1	2	1495	G
1	2	1498	A
1	2	1502	C
1	2	1510	G
1	2	1512	C
1	2	1520	G
1	2	1521	C
1	2	1522	A
1	2	1523	C
1	2	1533	A
1	2	1535	U
1	2	1536	G
1	2	1542	C
1	2	1548	G
1	2	1552	G
1	2	1553	C
1	2	1554	C
1	2	1555	U
1	2	1556	A
1	2	1560	U
1	2	1564	C
1	2	1567	G
1	2	1570	G
1	2	1580	A
1	2	1581	C
1	2	1585	U

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Mol	Chain	Res	Type
1	2	1586	U
1	2	1588	A
1	2	1599	U
1	2	1600	G
1	2	1601	A
1	2	1602	U
1	2	1604	G
1	2	1606	G
1	2	1611	G
1	2	1612	G
1	2	1614	A
1	2	1618	C
1	2	1619	A
1	2	1621	U
1	2	1623	A
1	2	1628	C
1	2	1632	G
1	2	1637	A
1	2	1638	G
1	2	1647	A
1	2	1648	G
1	2	1654	G
1	2	1656	G
1	2	1664	A
1	2	1665	G
1	2	1671	G
1	2	1679	A
1	2	1680	G
1	2	1683	C
1	2	1686	G
1	2	1695	A
1	2	1700	C
1	2	1702	G
1	2	1710	C
1	2	1713	C
1	2	1715	A
1	2	1721	U
1	2	1722	G
1	2	1726	G
1	2	1737	G
1	2	1744	G
1	2	1746	U

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Mol	Chain	Res	Type
1	2	1750	C
1	2	1753	C
1	2	1756	C
1	2	1759	G
1	2	1761	U
1	2	1773	C
1	2	1774	C
1	2	1775	U
1	2	1778	C
1	2	1781	A
1	2	1782	G
1	2	1783	C
1	2	1785	C
1	2	1795	G
1	2	1813	A
1	2	1819	A
1	2	1823	A
1	2	1824	A
1	2	1829	G
1	2	1831	A
1	2	1836	G
1	2	1838	U
1	2	1849	G
1	2	1851	A
1	2	1852	C
1	2	1861	G
1	2	1862	G
1	2	1863	A
1	2	1865	C
1	2	1867	U
1	2	1869	A
35	1	6418	U
35	1	6423	C
35	1	6424	U
35	1	6425	A
35	1	6426	U
35	1	6427	G
35	1	6428	G
35	1	6429	U
35	1	6431	A
35	1	6435	A
35	1	6442	G

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Mol	Chain	Res	Type
35	1	6444	G
35	1	6445	G
35	1	6447	A
35	1	6448	A
35	1	6449	U
35	1	6450	U
35	1	6451	U
35	1	6455	A
35	1	6456	U
35	1	6457	A
35	1	6458	A
35	1	6462	C
35	1	6464	G
35	1	6470	A
35	1	6473	C
35	1	6476	A
35	1	6482	A
35	1	6484	G
35	1	6485	G
35	1	6486	U
35	1	6487	C
35	1	6488	G
35	1	6492	U
35	1	6493	G
35	1	6494	C
35	1	6499	U
35	1	6501	U
35	1	6502	A
35	1	6506	U
35	1	6507	G
35	1	6511	A
35	1	6512	G
35	1	6513	C
35	1	6514	C
35	1	6515	U
35	1	6516	C
35	1	6517	G
35	1	6518	G
35	1	6519	U
35	1	6522	C
35	1	6523	A
35	1	6525	C

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Mol	Chain	Res	Type
35	1	6526	C
35	1	6527	C
35	1	6528	C
35	1	6529	A
35	1	6530	C
35	1	6531	C
35	1	6533	A
35	1	6534	A
35	1	6535	U
35	1	6536	C
35	1	6537	C
35	1	6541	A
35	1	6542	U
35	1	6543	U
35	1	6544	G
35	1	6545	G
35	1	6546	A
35	1	6547	U
35	1	6549	G
35	1	6552	A
35	1	6555	G
35	1	6557	U
35	1	6561	C
35	1	6562	U
35	1	6566	C
35	1	6567	A
35	1	6568	G
35	1	6576	A
35	1	6580	G
35	1	6585	G
35	1	6586	U
35	1	6587	A
35	1	6588	A
35	1	6589	C
35	1	6590	A
35	1	6591	C
35	1	6598	C
35	1	6599	G
35	1	6601	U
35	1	6603	C
35	1	6604	G
35	1	6605	A

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Mol	Chain	Res	Type
35	1	6606	A
35	1	6607	A
35	1	6608	U
35	1	6609	A
35	1	6610	C
35	1	6612	A
35	1	6613	U
35	1	6615	C
35	1	6619	G
35	1	6620	C
36	5	9	C
36	5	10	A
36	5	12	A
36	5	13	U
36	5	16	G
36	5	17	A
36	5	25	A
36	5	30	C
36	5	35	U
36	5	39	A
36	5	42	A
36	5	43	U
36	5	48	G
36	5	49	U
36	5	56	A
36	5	58	G
36	5	59	A
36	5	64	A
36	5	65	A
36	5	66	A
36	5	70	A
36	5	72	C
36	5	73	A
36	5	75	G
36	5	84	A
36	5	91	G
36	5	104	G
36	5	108	A
36	5	109	G
36	5	110	C
36	5	119	G
36	5	120	A

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Mol	Chain	Res	Type
36	5	122	U
36	5	126	C
36	5	131	C
36	5	132	G
36	5	133	C
36	5	134	G
36	5	135	G
36	5	136	C
36	5	140	G
36	5	142	G
36	5	143	C
36	5	148	A
36	5	159	C
36	5	160	G
36	5	167	C
36	5	170	C
36	5	171	U
36	5	172	C
36	5	173	C
36	5	180	C
36	5	181	C
36	5	182	G
36	5	195	C
36	5	197	A
36	5	200	U
36	5	204	U
36	5	209	U
36	5	210	C
36	5	216	C
36	5	217	C
36	5	218	A
36	5	219	G
36	5	220	C
36	5	224	U
36	5	225	G
36	5	233	U
36	5	234	G
36	5	250	C
36	5	253	G
36	5	254	G
36	5	255	C
36	5	256	G

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Mol	Chain	Res	Type
36	5	257	C
36	5	258	G
36	5	260	C
36	5	265	C
36	5	266	C
36	5	273	U
36	5	276	C
36	5	280	G
36	5	281	U
36	5	296	A
36	5	297	U
36	5	306	A
36	5	315	G
36	5	316	U
36	5	321	U
36	5	322	C
36	5	334	A
36	5	340	C
36	5	357	U
36	5	360	A
36	5	361	C
36	5	363	A
36	5	386	A
36	5	387	G
36	5	396	A
36	5	397	G
36	5	401	G
36	5	409	G
36	5	410	A
36	5	412	G
36	5	418	A
36	5	433	A
36	5	440	U
36	5	449	C
36	5	450	G
36	5	452	A
36	5	453	G
36	5	454	U
36	5	464	G
36	5	467	U
36	5	468	U
36	5	469	C

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Mol	Chain	Res	Type
36	5	473	C
36	5	481	G
36	5	482	G
36	5	484	U
36	5	485	C
36	5	492	U
36	5	493	G
36	5	495	C
36	5	496	G
36	5	498	C
36	5	499	G
36	5	505	G
36	5	506	C
36	5	510	U
36	5	517	C
36	5	520	U
36	5	639	U
36	5	640	C
36	5	646	G
36	5	658	C
36	5	663	G
36	5	666	G
36	5	668	C
36	5	669	C
36	5	670	G
36	5	673	C
36	5	685	C
36	5	686	A
36	5	688	U
36	5	696	C
36	5	697	G
36	5	704	C
36	5	708	G
36	5	719	C
36	5	722	G
36	5	731	G
36	5	737	C
36	5	738	C
36	5	739	G
36	5	740	G
36	5	741	C
36	5	743	G

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Mol	Chain	Res	Type
36	5	747	A
36	5	749	G
36	5	751	G
36	5	754	C
36	5	756	G
36	5	758	G
36	5	759	G
36	5	905	C
36	5	906	C
36	5	911	G
36	5	912	U
36	5	913	U
36	5	914	A
36	5	916	A
36	5	917	G
36	5	922	C
36	5	923	C
36	5	925	G
36	5	928	A
36	5	929	G
36	5	931	A
36	5	932	G
36	5	933	C
36	5	934	A
36	5	935	G
36	5	936	C
36	5	941	C
36	5	943	A
36	5	945	U
36	5	959	G
36	5	960	A
36	5	961	G
36	5	962	C
36	5	963	G
36	5	965	G
36	5	966	A
36	5	967	C
36	5	968	C
36	5	970	G
36	5	971	U
36	5	972	G
36	5	973	U

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Mol	Chain	Res	Type
36	5	974	C
36	5	979	C
36	5	981	C
36	5	984	U
36	5	986	C
36	5	991	U
36	5	1068	G
36	5	1070	G
36	5	1072	C
36	5	1075	G
36	5	1077	C
36	5	1079	C
36	5	1080	C
36	5	1093	C
36	5	1096	C
36	5	1098	G
36	5	1170	G
36	5	1171	G
36	5	1173	G
36	5	1176	C
36	5	1184	A
36	5	1188	C
36	5	1189	G
36	5	1193	C
36	5	1194	G
36	5	1195	G
36	5	1202	C
36	5	1209	U
36	5	1211	G
36	5	1212	G
36	5	1214	C
36	5	1215	C
36	5	1216	C
36	5	1217	G
36	5	1234	G
36	5	1235	G
36	5	1236	C
36	5	1237	C
36	5	1238	A
36	5	1239	C
36	5	1246	G
36	5	1249	C

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Mol	Chain	Res	Type
36	5	1252	C
36	5	1272	C
36	5	1273	G
36	5	1274	A
36	5	1275	G
36	5	1276	C
36	5	1280	C
36	5	1284	G
36	5	1287	G
36	5	1288	G
36	5	1289	C
36	5	1293	G
36	5	1294	A
36	5	1295	U
36	5	1296	G
36	5	1301	C
36	5	1326	A
36	5	1337	A
36	5	1354	A
36	5	1358	G
36	5	1359	G
36	5	1364	U
36	5	1370	G
36	5	1371	A
36	5	1377	G
36	5	1379	C
36	5	1387	A
36	5	1394	G
36	5	1397	A
36	5	1398	A
36	5	1399	G
36	5	1401	C
36	5	1404	G
36	5	1412	G
36	5	1414	C
36	5	1415	G
36	5	1419	G
36	5	1420	A
36	5	1421	G
36	5	1433	A
36	5	1435	G
36	5	1437	C

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Mol	Chain	Res	Type
36	5	1438	U
36	5	1445	U
36	5	1446	C
36	5	1448	G
36	5	1451	G
36	5	1454	G
36	5	1455	G
36	5	1456	C
36	5	1457	G
36	5	1458	C
36	5	1465	G
36	5	1482	G
36	5	1483	C
36	5	1484	G
36	5	1493	G
36	5	1497	A
36	5	1498	G
36	5	1501	C
36	5	1502	G
36	5	1503	A
36	5	1514	U
36	5	1515	A
36	5	1518	A
36	5	1523	A
36	5	1534	A
36	5	1547	A
36	5	1563	A
36	5	1564	A
36	5	1566	C
36	5	1578	U
36	5	1586	G
36	5	1591	U
36	5	1592	G
36	5	1596	U
36	5	1597	G
36	5	1601	A
36	5	1611	C
36	5	1612	G
36	5	1613	A
36	5	1617	G
36	5	1624	G
36	5	1625	G

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Mol	Chain	Res	Type
36	5	1631	A
36	5	1633	G
36	5	1634	A
36	5	1637	A
36	5	1640	C
36	5	1641	G
36	5	1651	G
36	5	1654	G
36	5	1660	U
36	5	1661	C
36	5	1670	G
36	5	1676	C
36	5	1677	U
36	5	1684	A
36	5	1691	G
36	5	1694	C
36	5	1721	G
36	5	1729	A
36	5	1735	U
36	5	1740	C
36	5	1741	G
36	5	1742	A
36	5	1750	G
36	5	1751	A
36	5	1753	G
36	5	1755	C
36	5	1756	U
36	5	1757	U
36	5	1758	G
36	5	1763	C
36	5	1764	G
36	5	1767	A
36	5	1768	C
36	5	1769	G
36	5	1772	C
36	5	1773	U
36	5	1775	A
36	5	1776	A
36	5	1779	U
36	5	1787	A
36	5	1804	A
36	5	1806	G

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Mol	Chain	Res	Type
36	5	1809	C
36	5	1810	G
36	5	1812	C
36	5	1818	G
36	5	1819	G
36	5	1821	G
36	5	1822	U
36	5	1824	G
36	5	1828	C
36	5	1830	G
36	5	1833	G
36	5	1834	U
36	5	1836	G
36	5	1837	A
36	5	1842	G
36	5	1855	G
36	5	1861	U
36	5	1863	U
36	5	1869	G
36	5	1876	U
36	5	1881	C
36	5	1882	U
36	5	1885	G
36	5	1889	U
36	5	1893	C
36	5	1897	A
36	5	1910	G
36	5	1918	U
36	5	1920	C
36	5	1921	C
36	5	1922	G
36	5	1930	U
36	5	1931	C
36	5	1932	A
36	5	1933	G
36	5	1935	C
36	5	1940	G
36	5	1948	G
36	5	1951	G
36	5	1952	G
36	5	1957	U
36	5	1958	A

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Mol	Chain	Res	Type
36	5	1959	U
36	5	1960	A
36	5	1961	G
36	5	1962	A
36	5	1964	A
36	5	1966	C
36	5	1971	U
36	5	1972	G
36	5	1975	G
36	5	1977	C
36	5	1978	C
36	5	1982	G
36	5	1983	A
36	5	1984	A
36	5	1985	G
36	5	1987	C
36	5	1988	G
36	5	1990	A
36	5	1991	A
36	5	1992	U
36	5	1993	C
36	5	1996	C
36	5	1997	U
36	5	2001	G
36	5	2002	A
36	5	2004	U
36	5	2005	G
36	5	2006	U
36	5	2008	U
36	5	2011	C
36	5	2012	A
36	5	2013	A
36	5	2014	C
36	5	2015	U
36	5	2018	C
36	5	2020	U
36	5	2021	G
36	5	2022	C
36	5	2024	G
36	5	2025	A
36	5	2026	A
36	5	2027	U

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Mol	Chain	Res	Type
36	5	2034	G
36	5	2046	G
36	5	2047	A
36	5	2048	U
36	5	2052	G
36	5	2055	G
36	5	2056	G
36	5	2062	C
36	5	2069	A
36	5	2084	U
36	5	2085	G
36	5	2089	G
36	5	2090	U
36	5	2091	C
36	5	2092	G
36	5	2093	G
36	5	2094	C
36	5	2096	G
36	5	2097	A
36	5	2098	G
36	5	2099	C
36	5	2100	G
36	5	2101	A
36	5	2102	G
36	5	2104	A
36	5	2105	A
36	5	2106	G
36	5	2108	G
36	5	2259	G
36	5	2260	C
36	5	2266	C
36	5	2267	U
36	5	2268	A
36	5	2275	G
36	5	2277	C
36	5	2289	C
36	5	2300	A
36	5	2301	G
36	5	2313	A
36	5	2314	G
36	5	2316	G
36	5	2332	A

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Mol	Chain	Res	Type
36	5	2333	G
36	5	2348	G
36	5	2351	C
36	5	2366	A
36	5	2367	A
36	5	2370	A
36	5	2395	A
36	5	2396	A
36	5	2401	A
36	5	2414	G
36	5	2422	C
36	5	2426	U
36	5	2433	G
36	5	2441	C
36	5	2447	U
36	5	2450	G
36	5	2460	A
36	5	2461	G
36	5	2463	G
36	5	2475	G
36	5	2479	G
36	5	2483	G
36	5	2486	G
36	5	2488	C
36	5	2489	C
36	5	2490	U
36	5	2491	C
36	5	2492	C
36	5	2493	G
36	5	2499	C
36	5	2500	U
36	5	2501	C
36	5	2503	G
36	5	2504	C
36	5	2505	C
36	5	2506	G
36	5	2513	A
36	5	2529	A
36	5	2530	U
36	5	2537	A
36	5	2544	G
36	5	2546	G

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Mol	Chain	Res	Type
36	5	2547	G
36	5	2553	A
36	5	2554	U
36	5	2555	G
36	5	2556	G
36	5	2558	C
36	5	2560	C
36	5	2562	G
36	5	2564	G
36	5	2566	G
36	5	2569	G
36	5	2571	C
36	5	2572	C
36	5	2573	A
36	5	2583	C
36	5	2587	A
36	5	2601	A
36	5	2602	G
36	5	2611	A
36	5	2627	C
36	5	2628	U
36	5	2638	G
36	5	2647	A
36	5	2649	G
36	5	2653	C
36	5	2655	C
36	5	2656	U
36	5	2658	G
36	5	2661	U
36	5	2662	G
36	5	2669	C
36	5	2670	C
36	5	2673	G
36	5	2687	U
36	5	2694	G
36	5	2695	A
36	5	2696	A
36	5	2701	U
36	5	2704	C
36	5	2707	U
36	5	2708	U
36	5	2709	C

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Mol	Chain	Res	Type
36	5	2710	C
36	5	2711	G
36	5	2712	G
36	5	2721	G
36	5	2724	G
36	5	2726	G
36	5	2735	G
36	5	2740	U
36	5	2743	A
36	5	2756	G
36	5	2761	U
36	5	2763	U
36	5	2764	A
36	5	2768	C
36	5	2769	U
36	5	2770	C
36	5	2787	A
36	5	2788	U
36	5	2790	U
36	5	2796	G
36	5	2798	A
36	5	2806	A
36	5	2814	C
36	5	2815	A
36	5	2826	U
36	5	2827	G
36	5	2828	U
36	5	2829	U
36	5	2842	G
36	5	2845	A
36	5	2855	G
36	5	2856	C
36	5	2857	A
36	5	2874	U
36	5	2875	C
36	5	2892	C
36	5	3598	C
36	5	3599	A
36	5	3600	G
36	5	3602	C
36	5	3603	G
36	5	3604	A

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Mol	Chain	Res	Type
36	5	3615	G
36	5	3618	C
36	5	3619	G
36	5	3625	G
36	5	3626	G
36	5	3628	G
36	5	3635	A
36	5	3644	U
36	5	3646	A
36	5	3648	A
36	5	3649	A
36	5	3653	A
36	5	3657	U
36	5	3662	A
36	5	3664	G
36	5	3670	C
36	5	3673	C
36	5	3674	G
36	5	3692	A
36	5	3696	C
36	5	3702	A
36	5	3705	G
36	5	3710	G
36	5	3711	A
36	5	3712	A
36	5	3713	U
36	5	3728	A
36	5	3734	U
36	5	3740	G
36	5	3748	A
36	5	3753	G
36	5	3760	A
36	5	3761	C
36	5	3762	U
36	5	3776	G
36	5	3777	G
36	5	3778	U
36	5	3783	A
36	5	3784	A
36	5	3785	A
36	5	3802	U
36	5	3809	G

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Mol	Chain	Res	Type
36	5	3811	G
36	5	3812	C
36	5	3814	U
36	5	3817	A
36	5	3819	G
36	5	3822	U
36	5	3839	G
36	5	3840	U
36	5	3851	U
36	5	3876	A
36	5	3877	A
36	5	3878	C
36	5	3879	G
36	5	3880	G
36	5	3886	G
36	5	3887	C
36	5	3889	G
36	5	3897	G
36	5	3901	A
36	5	3905	A
36	5	3906	A
36	5	3907	G
36	5	3915	U
36	5	3916	G
36	5	3917	A
36	5	3923	A
36	5	3938	G
36	5	3939	G
36	5	3947	A
36	5	3950	U
36	5	3954	A
36	5	3956	G
36	5	3958	G
36	5	3964	U
36	5	3965	A
36	5	3966	A
36	5	3968	U
36	5	3969	G
36	5	3970	G
36	5	3972	A
36	5	3973	G
36	5	3975	C

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Mol	Chain	Res	Type
36	5	4036	G
36	5	4037	C
36	5	4039	G
36	5	4045	G
36	5	4046	A
36	5	4047	A
36	5	4049	U
36	5	4050	A
36	5	4052	C
36	5	4053	A
36	5	4055	U
36	5	4056	A
36	5	4058	U
36	5	4062	A
36	5	4063	U
36	5	4064	C
36	5	4065	G
36	5	4067	U
36	5	4072	C
36	5	4074	C
36	5	4076	G
36	5	4085	A
36	5	4086	G
36	5	4095	G
36	5	4097	G
36	5	4098	A
36	5	4101	C
36	5	4112	C
36	5	4118	U
36	5	4119	C
36	5	4120	U
36	5	4122	G
36	5	4127	A
36	5	4133	C
36	5	4150	G
36	5	4155	C
36	5	4156	G
36	5	4157	A
36	5	4159	C
36	5	4161	G
36	5	4162	C
36	5	4163	U

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Mol	Chain	Res	Type
36	5	4170	A
36	5	4171	C
36	5	4172	A
36	5	4173	G
36	5	4181	U
36	5	4183	G
36	5	4184	G
36	5	4191	G
36	5	4197	G
36	5	4201	G
36	5	4203	A
36	5	4214	A
36	5	4225	G
36	5	4228	G
36	5	4229	U
36	5	4233	A
36	5	4240	G
36	5	4241	C
36	5	4243	C
36	5	4249	G
36	5	4251	A
36	5	4254	G
36	5	4255	A
36	5	4260	U
36	5	4266	G
36	5	4268	A
36	5	4271	A
36	5	4273	A
36	5	4281	A
36	5	4290	U
36	5	4291	G
36	5	4296	U
36	5	4304	A
36	5	4305	G
36	5	4306	U
36	5	4312	U
36	5	4314	C
36	5	4317	A
36	5	4318	C
36	5	4319	C
36	5	4326	G
36	5	4329	G

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Mol	Chain	Res	Type
36	5	4330	G
36	5	4336	A
36	5	4338	G
36	5	4348	A
36	5	4349	C
36	5	4350	C
36	5	4354	U
36	5	4360	U
36	5	4373	G
36	5	4376	A
36	5	4377	G
36	5	4378	A
36	5	4379	A
36	5	4380	A
36	5	4387	C
36	5	4391	G
36	5	4393	G
36	5	4394	A
36	5	4395	U
36	5	4398	C
36	5	4401	G
36	5	4411	G
36	5	4415	A
36	5	4419	U
36	5	4422	A
36	5	4424	A
36	5	4426	C
36	5	4430	G
36	5	4437	U
36	5	4439	U
36	5	4444	C
36	5	4448	G
36	5	4449	A
36	5	4450	U
36	5	4452	U
36	5	4453	C
36	5	4464	A
36	5	4471	U
36	5	4472	G
36	5	4475	G
36	5	4482	U
36	5	4495	G

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Mol	Chain	Res	Type
36	5	4500	U
36	5	4503	A
36	5	4510	A
36	5	4512	U
36	5	4513	A
36	5	4515	G
36	5	4518	A
36	5	4519	C
36	5	4524	G
36	5	4528	G
36	5	4530	U
36	5	4531	U
36	5	4548	A
36	5	4549	G
36	5	4556	U
36	5	4557	U
36	5	4559	A
36	5	4560	C
36	5	4562	C
36	5	4563	U
36	5	4567	G
36	5	4569	U
36	5	4573	G
36	5	4575	G
36	5	4582	C
36	5	4584	A
36	5	4585	U
36	5	4589	A
36	5	4590	A
36	5	4606	G
36	5	4614	G
36	5	4624	A
36	5	4636	U
36	5	4637	G
36	5	4639	G
36	5	4652	G
36	5	4656	A
36	5	4657	U
36	5	4667	C
36	5	4669	A
36	5	4670	C
36	5	4672	A

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Mol	Chain	Res	Type
36	5	4677	U
36	5	4693	C
36	5	4694	G
36	5	4698	C
36	5	4700	A
36	5	4707	A
36	5	4709	U
36	5	4719	G
36	5	4720	C
36	5	4738	C
36	5	4744	A
36	5	4750	G
36	5	4754	G
36	5	4755	G
36	5	4757	C
36	5	4759	C
36	5	4764	A
36	5	4765	G
36	5	4769	G
36	5	4770	U
36	5	4771	C
36	5	4772	C
36	5	4863	G
36	5	4870	G
36	5	4871	C
36	5	4874	A
36	5	4875	G
36	5	4876	A
36	5	4881	U
36	5	4882	U
36	5	4883	C
36	5	4885	U
36	5	4895	C
36	5	4896	G
36	5	4907	G
36	5	4908	G
36	5	4910	A
36	5	4911	A
36	5	4912	G
36	5	4913	G
36	5	4914	G
36	5	4921	C

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Mol	Chain	Res	Type
36	5	4922	C
36	5	4924	C
36	5	4926	C
36	5	4934	A
36	5	4935	C
36	5	4936	G
36	5	4937	C
36	5	4938	A
36	5	4941	G
36	5	4944	C
36	5	4947	U
36	5	4948	C
36	5	4949	G
36	5	4950	U
36	5	4951	G
36	5	4953	G
36	5	4955	A
36	5	4956	A
36	5	4958	C
36	5	4960	G
36	5	4964	C
36	5	4965	U
36	5	4967	A
36	5	4975	G
36	5	4976	U
36	5	4985	U
36	5	4988	U
36	5	4989	U
36	5	4990	C
36	5	4991	U
36	5	4993	G
36	5	5017	G
36	5	5020	G
36	5	5022	U
36	5	5031	G
36	5	5041	G
36	5	5047	C
36	5	5050	C
36	5	5053	U
36	5	5054	C
36	5	5055	G
36	5	5058	A

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Mol	Chain	Res	Type
36	5	5061	A
36	5	5062	G
36	5	5066	U
37	7	7	G
37	7	10	C
37	7	22	A
37	7	25	G
37	7	31	G
37	7	38	U
37	7	41	G
37	7	53	U
37	7	54	A
37	7	55	A
37	7	63	C
37	7	64	G
37	7	100	A
37	7	102	U
37	7	110	G
37	7	116	G
38	8	2	G
38	8	3	A
38	8	34	U
38	8	35	C
38	8	55	U
38	8	59	A
38	8	61	A
38	8	62	A
38	8	63	U
38	8	75	G
38	8	86	U
38	8	94	G
38	8	95	A
38	8	99	U
38	8	101	C
38	8	103	A
38	8	105	C
38	8	109	C
38	8	110	U
38	8	111	U
38	8	113	C
38	8	114	G
38	8	115	G

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Mol	Chain	Res	Type
38	8	118	C
38	8	119	C
38	8	122	G
38	8	123	U
38	8	125	C
38	8	126	C
38	8	127	U
38	8	128	C
38	8	150	C
38	8	153	C

All (114) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	2	3	C
1	2	24	C
1	2	110	U
1	2	114	G
1	2	393	U
1	2	448	A
1	2	465	A
1	2	487	U
1	2	503	C
1	2	532	C
1	2	554	A
1	2	561	A
1	2	627	U
1	2	688	U
1	2	870	A
1	2	873	G
1	2	874	G
1	2	908	A
1	2	912	C
1	2	1061	U
1	2	1137	U
1	2	1153	C
1	2	1165	G
1	2	1298	G
1	2	1395	C
1	2	1432	U
1	2	1581	C
1	2	1622	U

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Mol	Chain	Res	Type
1	2	1637	A
1	2	1664	A
1	2	1679	A
1	2	1685	U
1	2	1743	G
1	2	1744	G
1	2	1823	A
1	2	1837	G
1	2	1862	G
35	1	6425	A
35	1	6484	G
35	1	6493	G
35	1	6506	U
35	1	6543	U
35	1	6551	A
35	1	6554	A
35	1	6589	C
35	1	6605	A
35	1	6609	A
36	5	48	G
36	5	125	C
36	5	159	C
36	5	170	C
36	5	217	C
36	5	266	C
36	5	275	C
36	5	308	G
36	5	315	G
36	5	340	C
36	5	385	A
36	5	417	G
36	5	449	C
36	5	504	G
36	5	738	C
36	5	928	A
36	5	933	C
36	5	934	A
36	5	955	G
36	5	972	G
36	5	973	U
36	5	1236	C
36	5	1370	G

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Mol	Chain	Res	Type
36	5	1411	C
36	5	1445	U
36	5	1455	G
36	5	1552	G
36	5	1633	G
36	5	1654	G
36	5	1740	C
36	5	1741	G
36	5	1947	U
36	5	2046	G
36	5	2089	G
36	5	2093	G
36	5	2096	G
36	5	2259	G
36	5	2428	A
36	5	2467	U
36	5	2502	A
36	5	2530	U
36	5	2661	U
36	5	2695	A
36	5	2709	C
36	5	3603	G
36	5	3625	G
36	5	3876	A
36	5	3888	G
36	5	3904	G
36	5	3938	G
36	5	4054	C
36	5	4119	C
36	5	4170	A
36	5	4180	G
36	5	4232	U
36	5	4253	A
36	5	4448	G
36	5	4527	G
36	5	4572	U
36	5	4626	A
36	5	4719	G
36	5	4884	G
36	5	4925	U
36	5	4936	G
38	8	2	G

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Mol	Chain	Res	Type
38	8	51	U
38	8	126	C

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
36	5	25

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	5	2113:G	O3'	2258:C	P	41.95
1	5	1252:C	O3'	1271:G	P	38.04
1	5	1405:C	O3'	1409:G	P	20.69
1	5	4138:C	O3'	4146:G	P	19.42
1	5	1219:G	O3'	1233:G	P	19.04
1	5	991:U	O3'	1064:G	P	18.46
1	5	1696:C	O3'	1720:C	P	18.46
1	5	523:C	O3'	638:G	P	17.63
1	5	4101:C	O3'	4107:G	P	16.76
1	5	3977:C	O3'	4034:G	P	16.74

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	5	760:G	O3'	903:C	P	15.93
1	5	2901:G	O3'	3597:G	P	13.87
1	5	1364:U	O3'	1368:A	P	13.85
1	5	5022:U	O3'	5028:G	P	13.85
1	5	4777:C	O3'	4859:C	P	13.73
1	5	1180:C	O3'	1183:C	P	11.96
1	5	4729:A	O3'	4735:G	P	10.61
1	5	512:U	O3'	515:C	P	9.14
1	5	500:G	O3'	504:G	P	8.93
1	5	182:G	O3'	189:G	P	8.86
1	5	4740:G	O3'	4743:G	P	7.51
1	5	1239:C	O3'	1244:G	P	5.58
1	5	1438:U	O3'	1440:U	P	4.52
1	5	4899:G	O3'	4902:C	P	4.27
1	5	1100:U	O3'	1168:G	P	3.37



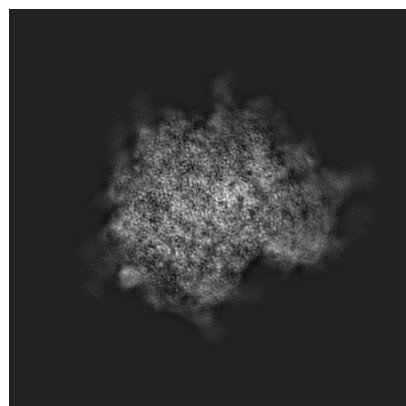
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-20256. These allow visual inspection of the internal detail of the map and identification of artifacts.

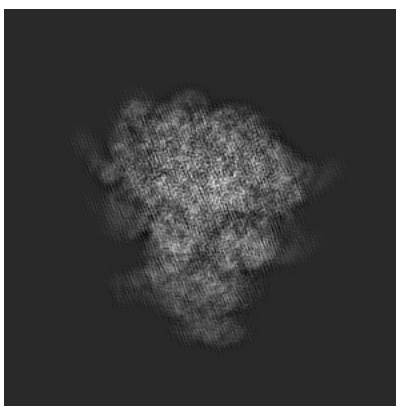
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

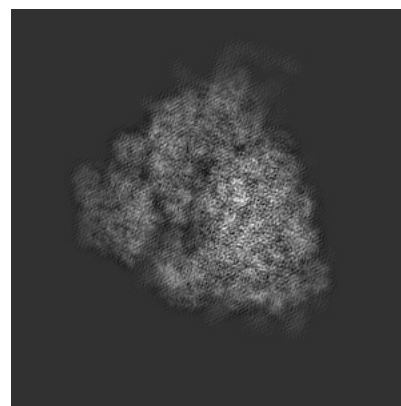
#### 6.1.1 Primary map



X

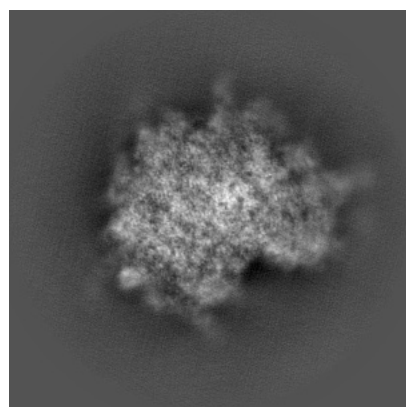


Y

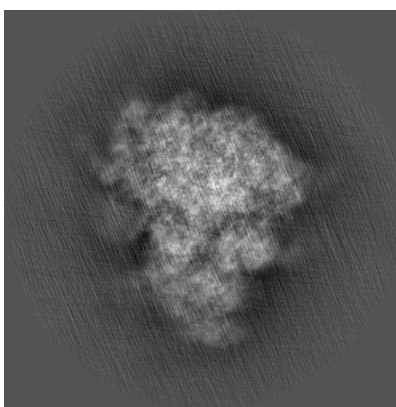


Z

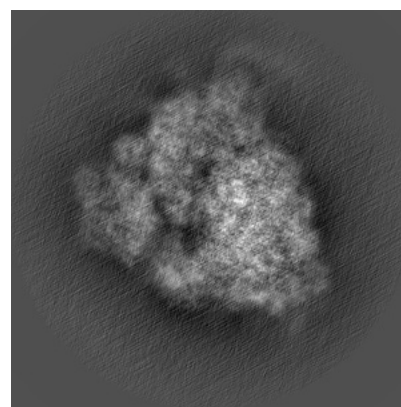
#### 6.1.2 Raw map



X



Y

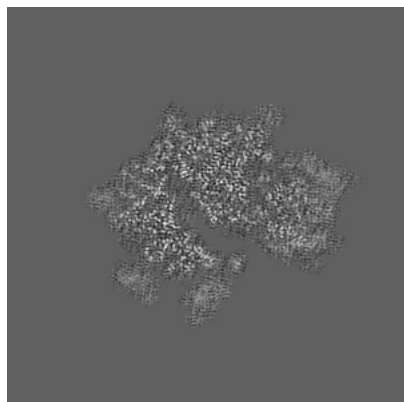


Z

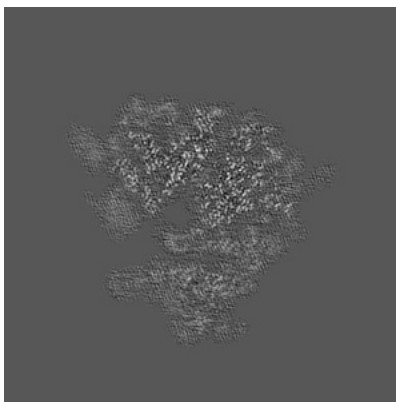
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

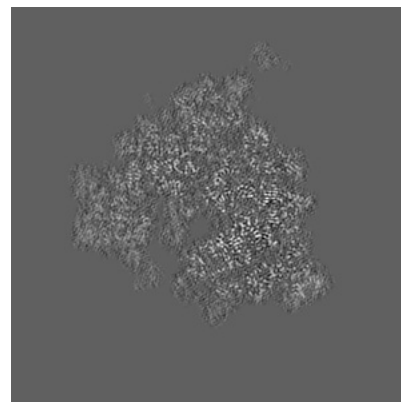
### 6.2.1 Primary map



X Index: 180

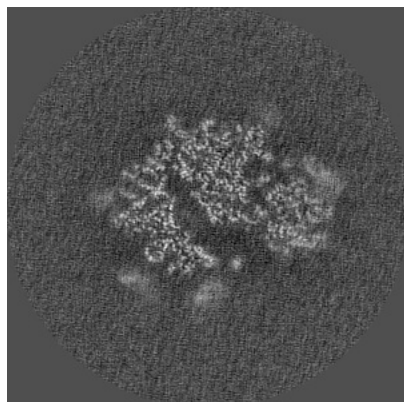


Y Index: 180

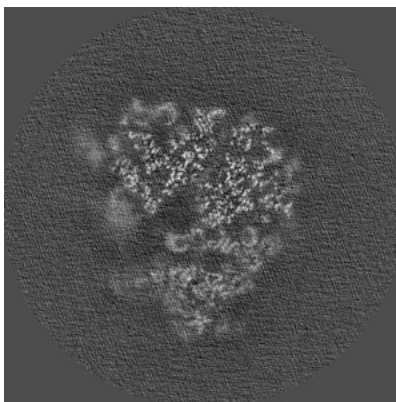


Z Index: 180

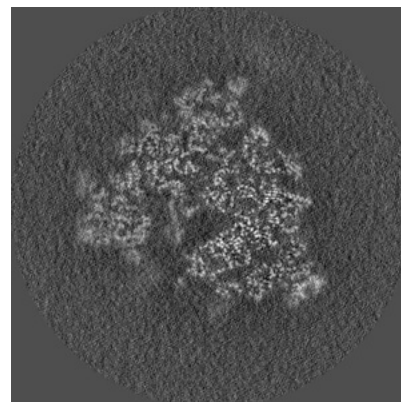
### 6.2.2 Raw map



X Index: 180



Y Index: 180

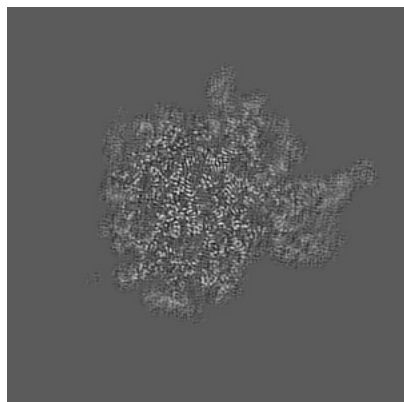


Z Index: 180

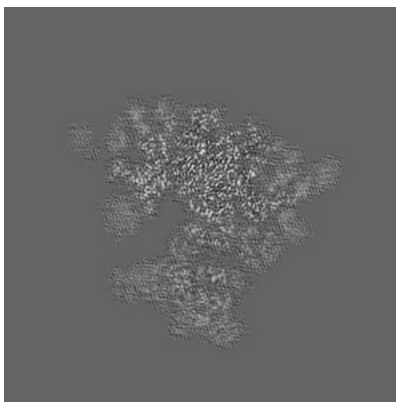
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

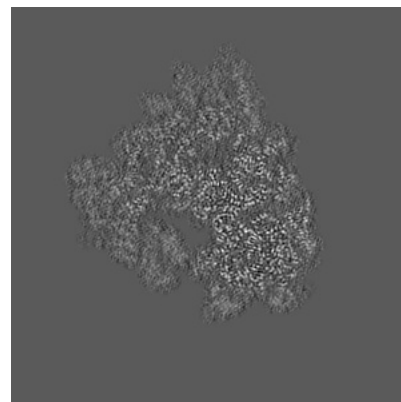
### 6.3.1 Primary map



X Index: 206

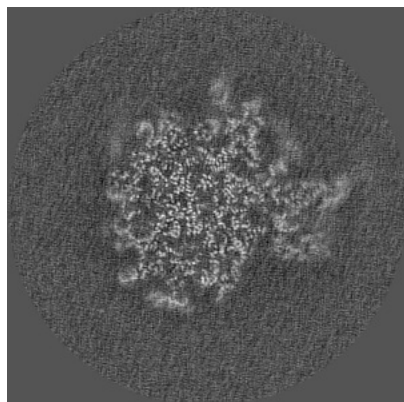


Y Index: 188

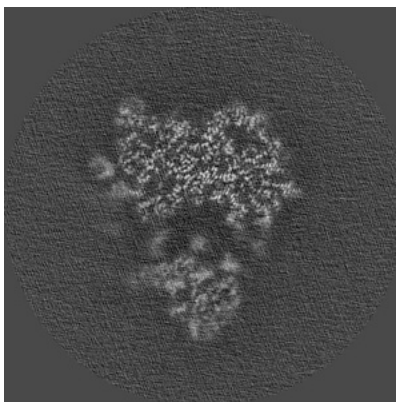


Z Index: 195

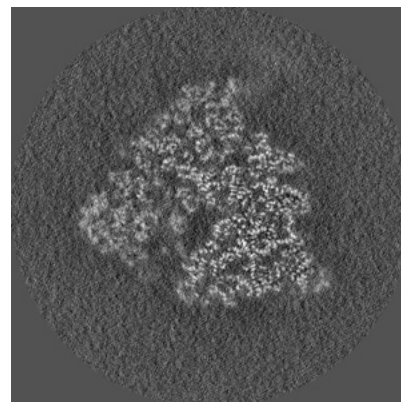
### 6.3.2 Raw map



X Index: 206



Y Index: 163

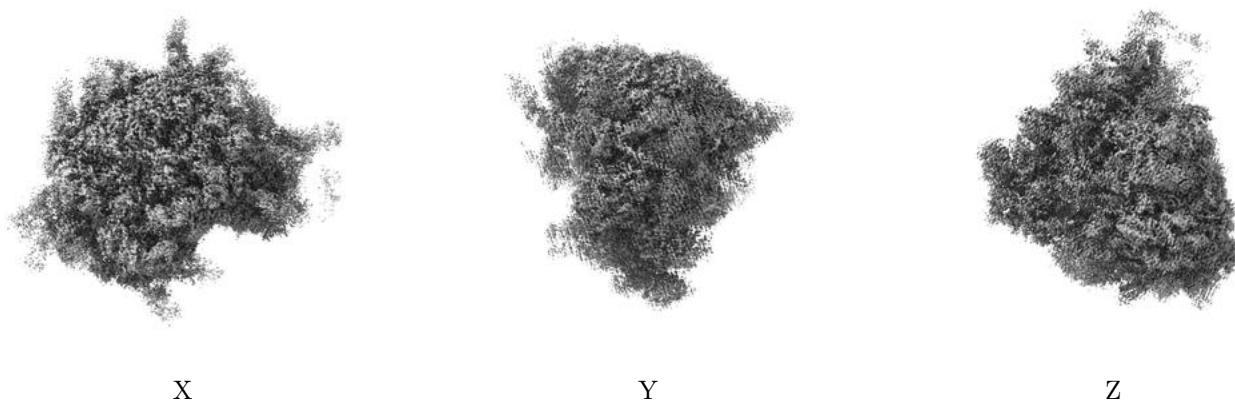


Z Index: 173

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

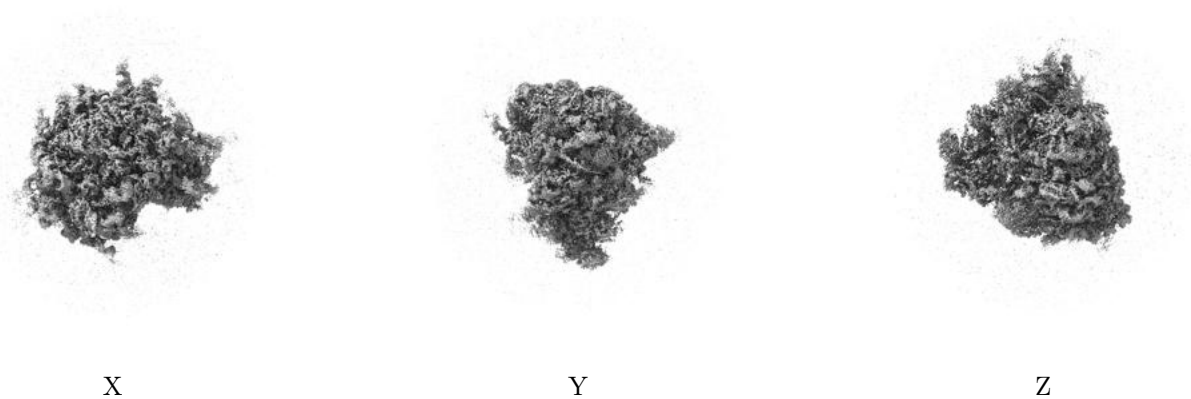
## 6.4 Orthogonal surface views [i](#)

### 6.4.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.032. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.4.2 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.

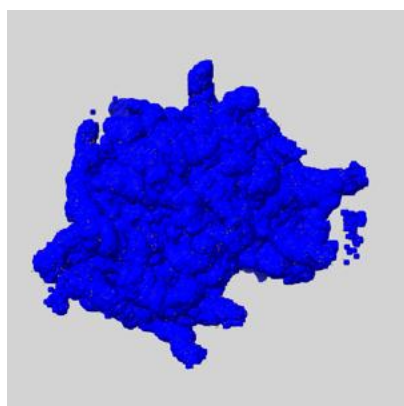
## 6.5 Mask visualisation [i](#)

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

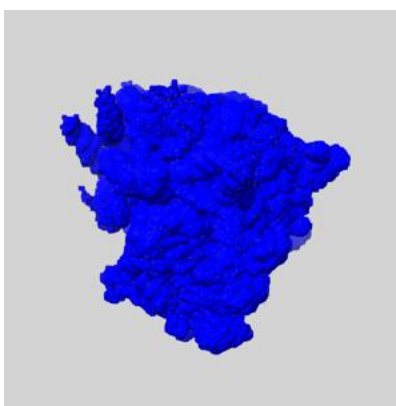
A mask typically either:

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

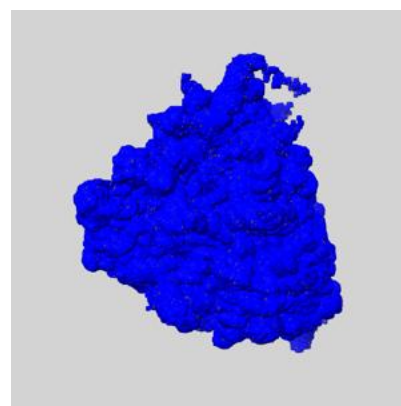
### 6.5.1 emd\_20256\_msk\_1.map [i](#)



X



Y

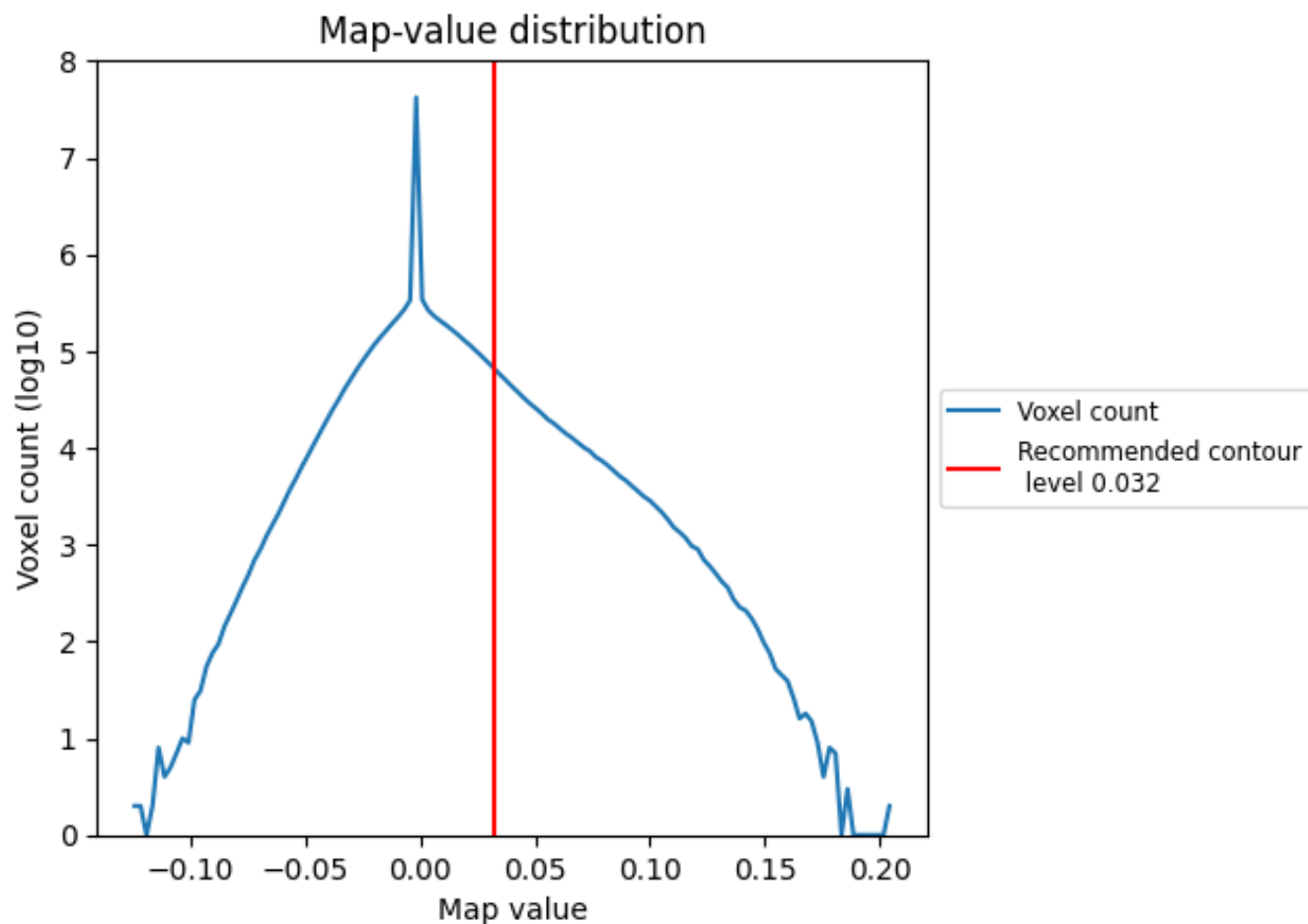


Z

## 7 Map analysis [i](#)

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

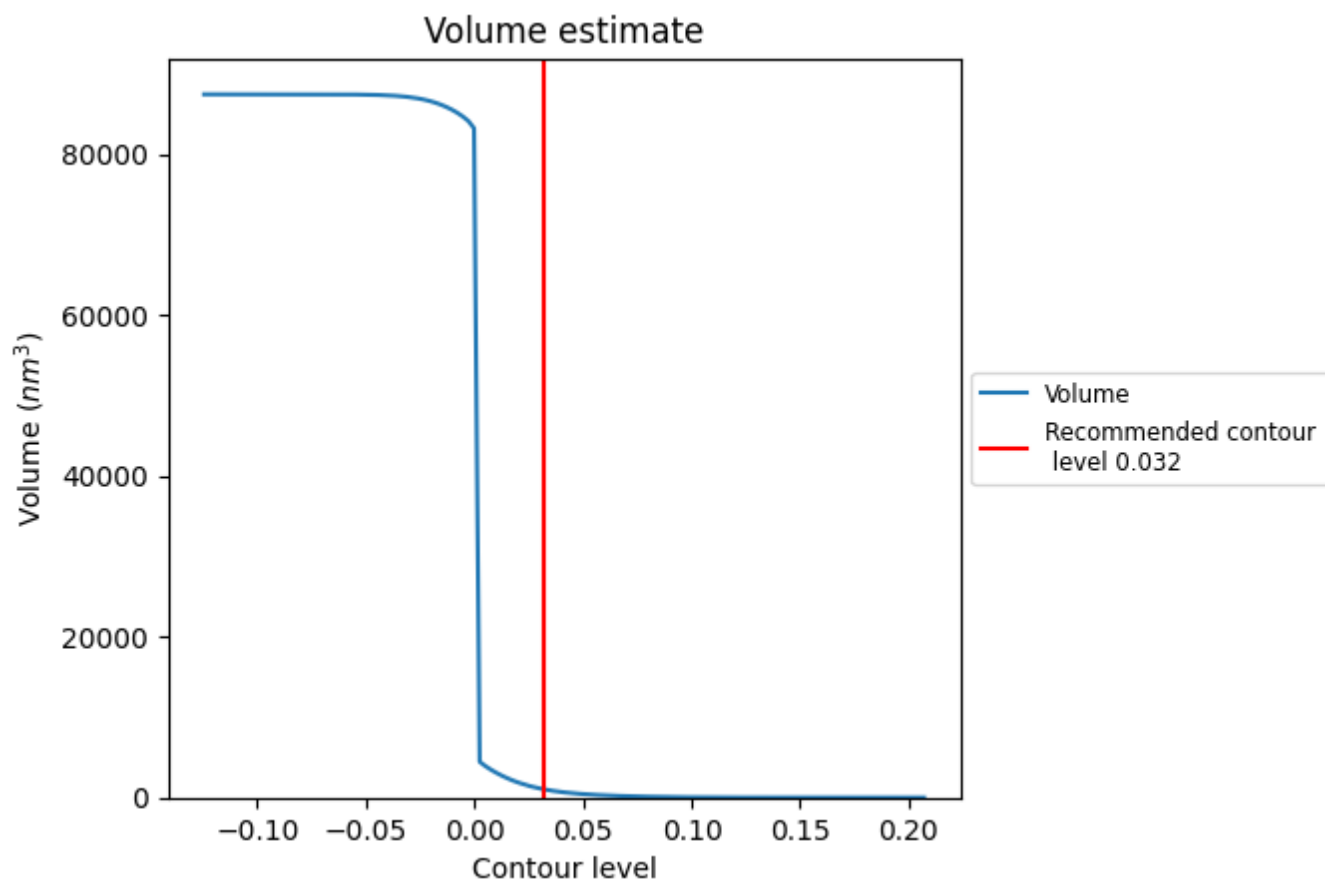
### 7.1 Map-value distribution [i](#)



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.



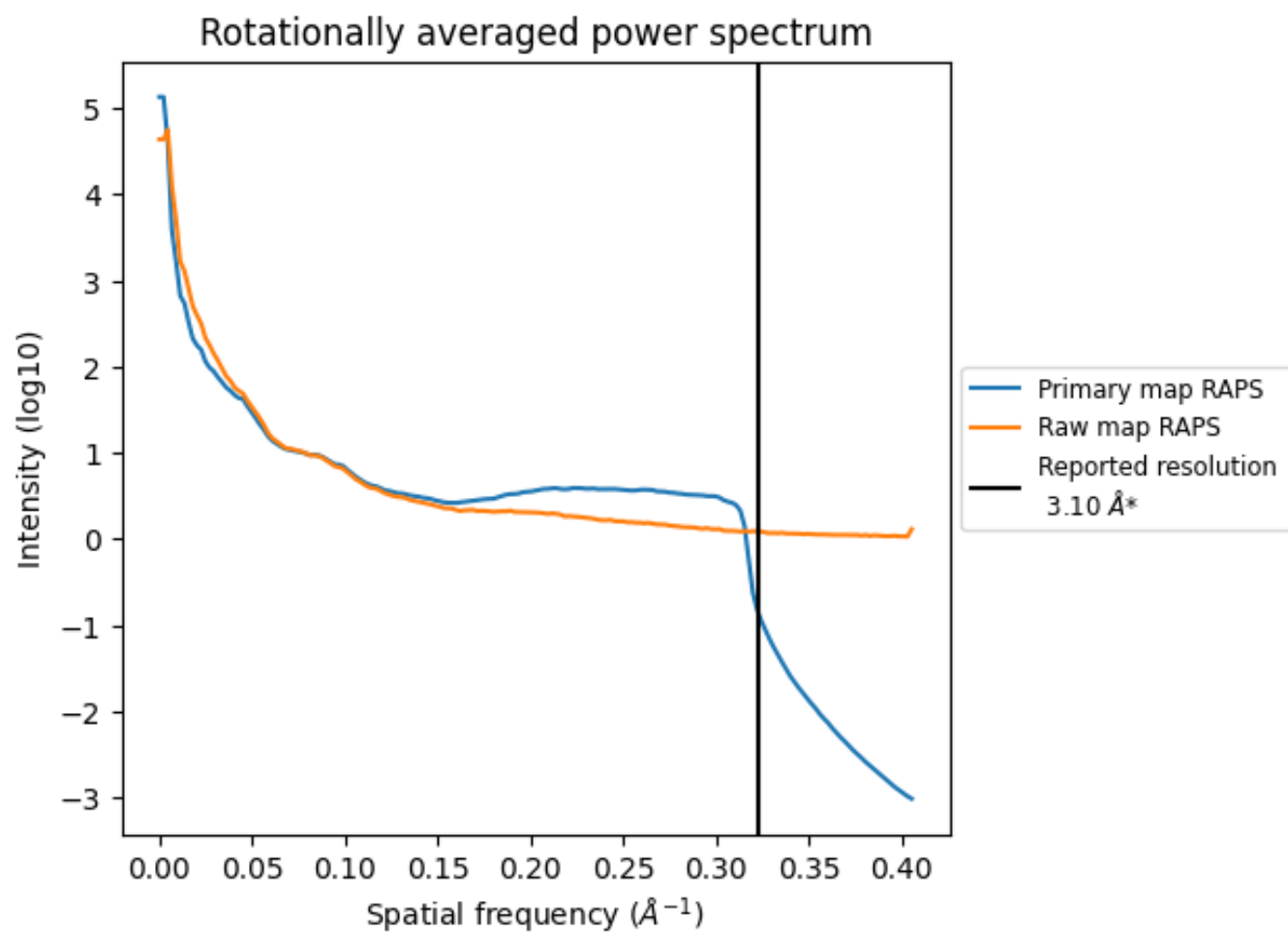
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1031 nm<sup>3</sup>; this corresponds to an approximate mass of 931 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 ⓘ



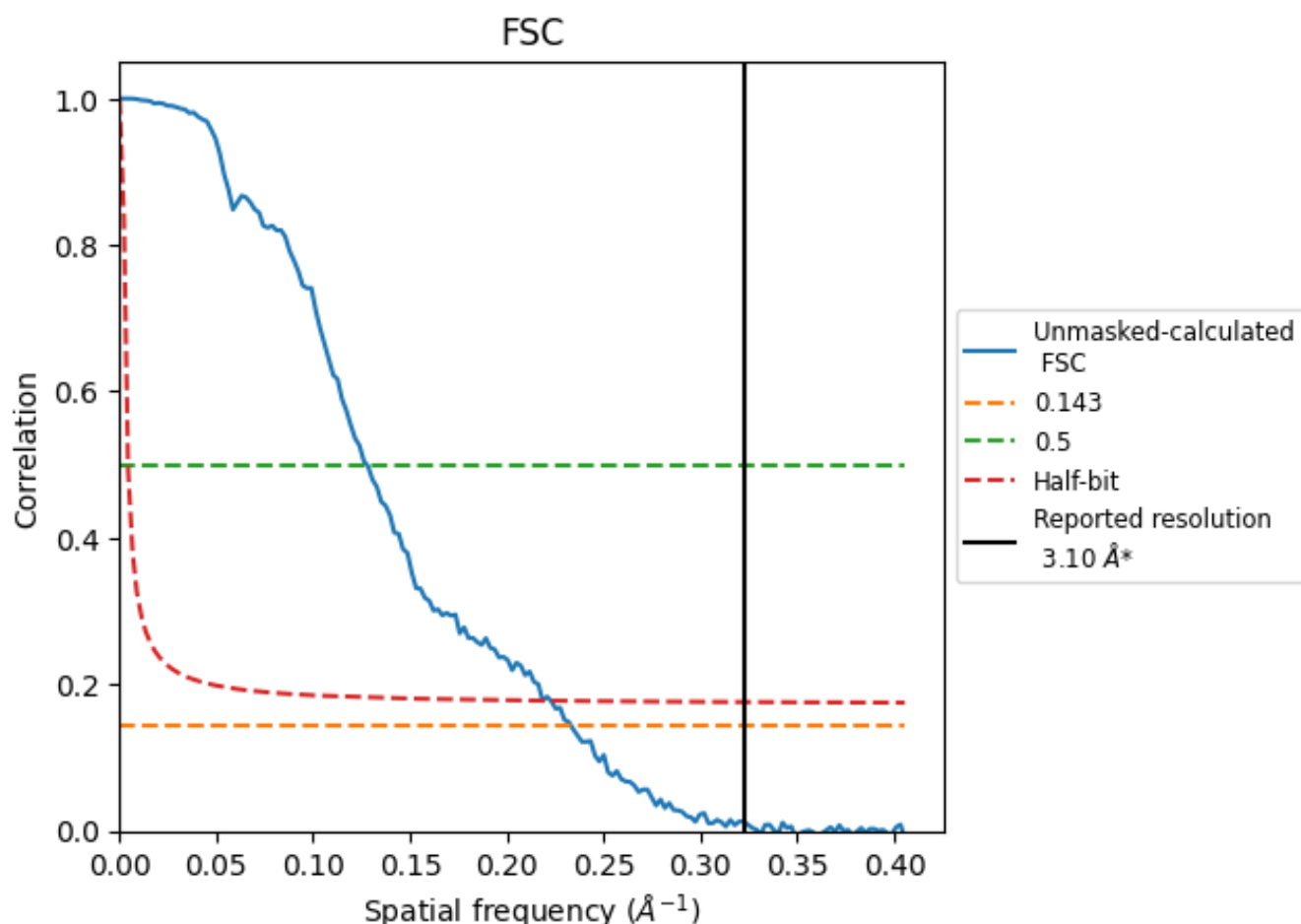
\*Reported resolution corresponds to spatial frequency of 0.323 Å<sup>-1</sup>



## 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 0.323  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

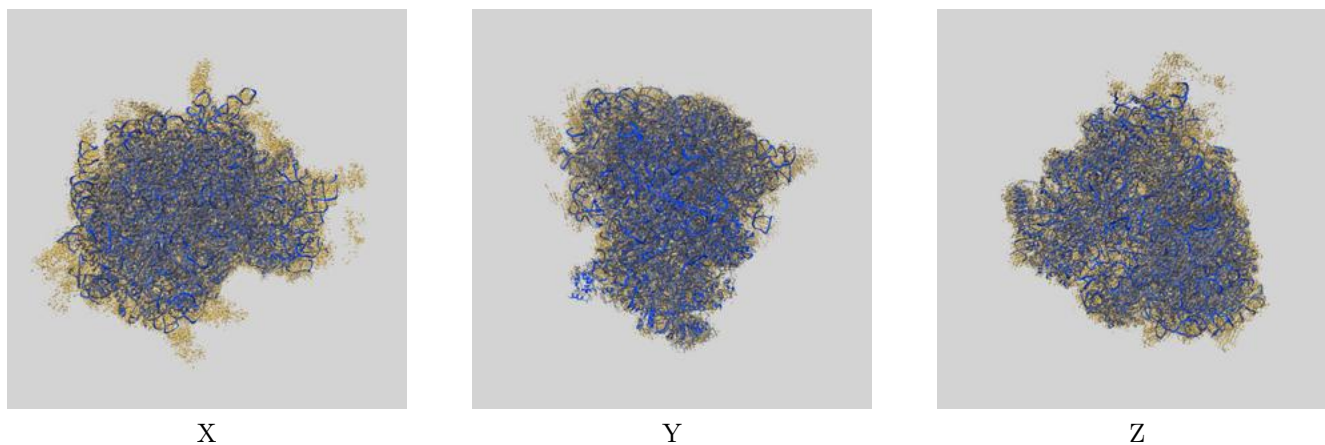
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.29	7.84	4.58

\*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 4.29 differs from the reported value 3.1 by more than 10 %

## 9 Map-model fit [i](#)

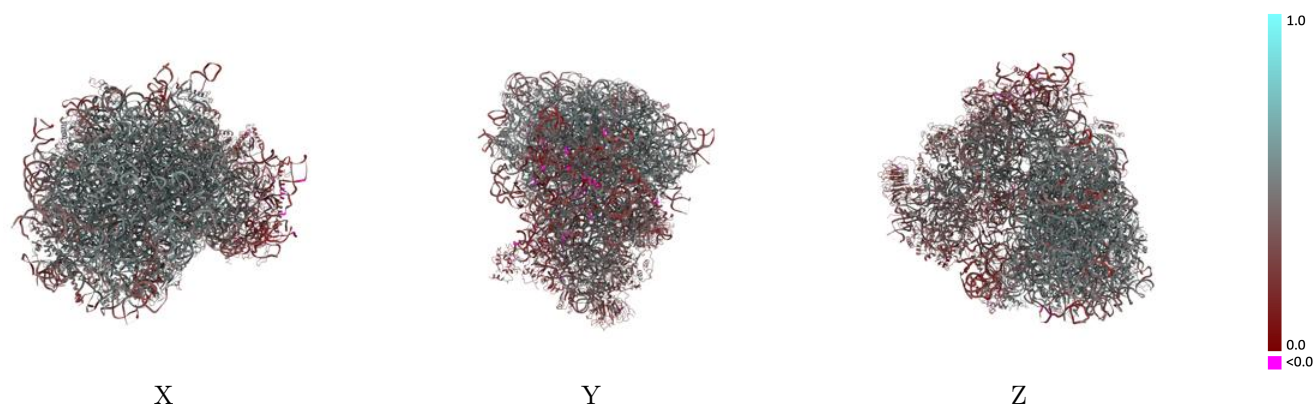
This section contains information regarding the fit between EMDB map EMD-20256 and PDB model 6P5J. Per-residue inclusion information can be found in [section 3](#) on [page 18](#).

### 9.1 Map-model overlay [i](#)



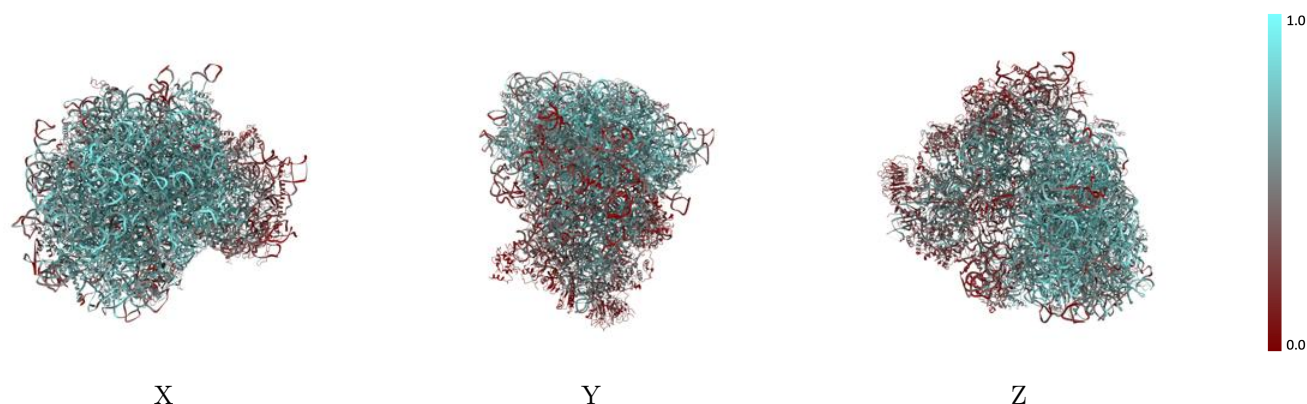
The images above show the 3D surface view of the map at the recommended contour level 0.032 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



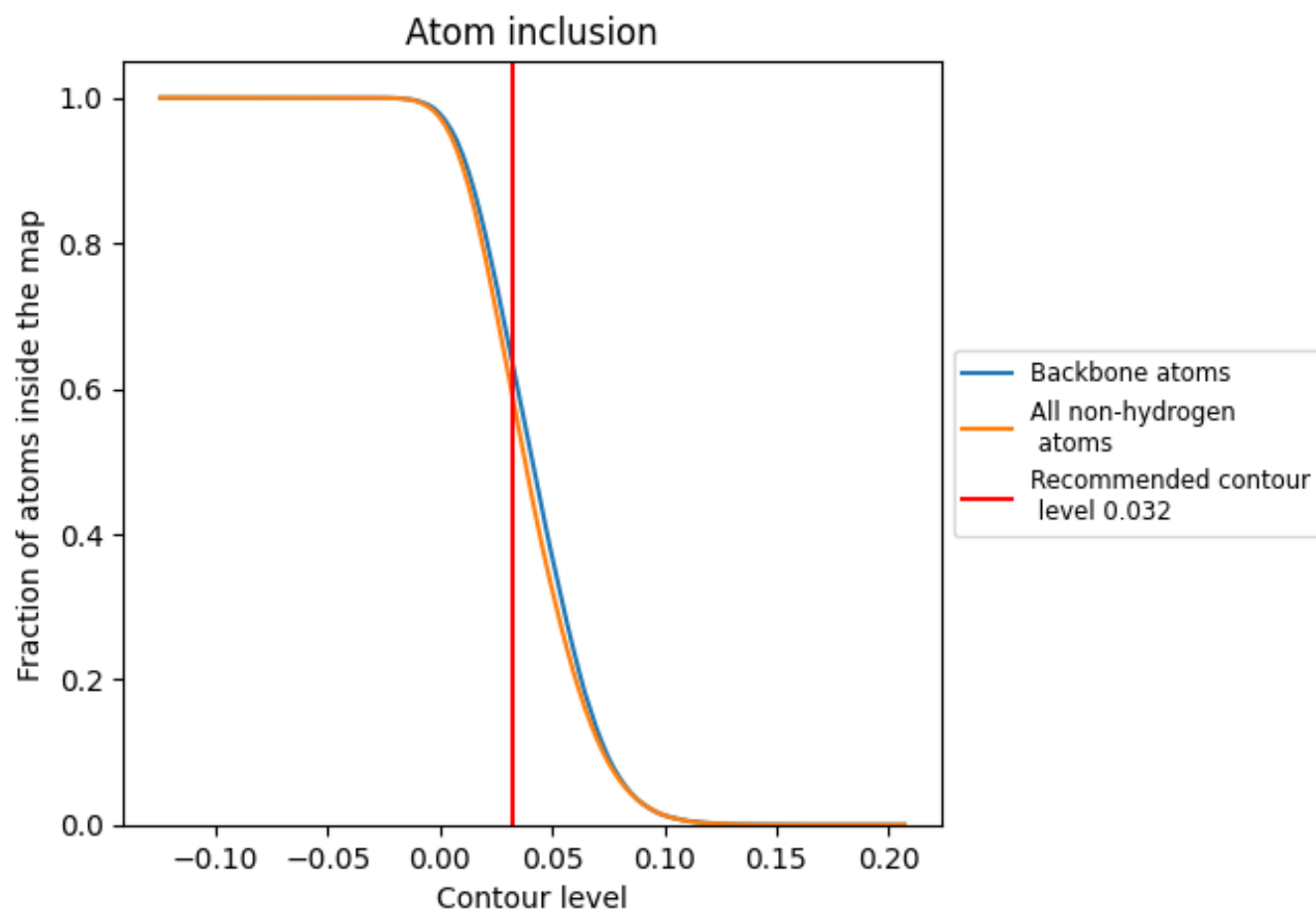
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.032).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 64% of all backbone atoms, 60% 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 (0.032) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5950	 0.4340
1	 0.3204	 0.2790
2	 0.5762	 0.3940
5	 0.7268	 0.4780
7	 0.8128	 0.5090
8	 0.7746	 0.5070
AA	 0.6763	 0.5120
AB	 0.6589	 0.4990
AC	 0.6760	 0.4980
AD	 0.5834	 0.4520
AE	 0.5742	 0.4540
AF	 0.6830	 0.5120
AG	 0.5745	 0.4490
AH	 0.6123	 0.4660
AI	 0.6351	 0.4980
AJ	 0.4315	 0.3980
AK	 0.1275	 0.2260
AL	 0.6350	 0.4770
AM	 0.6447	 0.4850
AN	 0.7352	 0.5230
AO	 0.6806	 0.5150
AP	 0.6816	 0.5130
AQ	 0.6832	 0.4980
AR	 0.5771	 0.4480
AS	 0.6800	 0.5000
AT	 0.6144	 0.4800
AU	 0.4825	 0.3780
AV	 0.6367	 0.5120
AW	 0.5914	 0.4970
AX	 0.6213	 0.4760
AY	 0.6549	 0.4970
AZ	 0.5676	 0.4550
Aa	 0.7154	 0.5190
Ab	 0.4798	 0.4490
Ac	 0.5618	 0.4460













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Chain	Atom inclusion	Q-score
Ad	 0.6138	 0.4680
Ae	 0.7070	 0.5280
Af	 0.7019	 0.5300
Ag	 0.6053	 0.4840
Ah	 0.6078	 0.4770
Ai	 0.5817	 0.4400
Aj	 0.7247	 0.5190
Ak	 0.5045	 0.4230
Al	 0.6581	 0.4950
Am	 0.6434	 0.4940
An	 0.5917	 0.4770
Ao	 0.5915	 0.4930
Ap	 0.6221	 0.4880
Ar	 0.6635	 0.4910
B	 0.4028	 0.3790
C	 0.3314	 0.3420
D	 0.4661	 0.4040
E	 0.2475	 0.3120
F	 0.2223	 0.2170
G	 0.3771	 0.3620
H	 0.2690	 0.2690
I	 0.2676	 0.3310
J	 0.4370	 0.3880
K	 0.3133	 0.2830
L	 0.1848	 0.2700
M	 0.4667	 0.4090
N	 0.0391	 0.2190
O	 0.4022	 0.3920
P	 0.3414	 0.3570
Q	 0.2610	 0.2740
R	 0.3645	 0.3700
S	 0.2909	 0.3460
T	 0.2672	 0.3060
U	 0.3346	 0.3300
V	 0.2274	 0.3290
W	 0.3653	 0.3800
X	 0.4861	 0.4330
Y	 0.5341	 0.4510
Z	 0.2345	 0.2400
a	 0.2539	 0.2700
b	 0.4740	 0.4380
c	 0.3380	 0.3720

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Chain	Atom inclusion	Q-score
d	 0.3085	 0.3610
e	 0.3628	 0.3520
f	 0.3070	 0.3100
g	 0.0426	 0.2350
h	 0.2079	 0.2770