wwPDB EM Validation Summary Report ⓘ

Dec 28, 2024 – 10:39 AM EST

PDB ID	:	6WOO
EMDB ID	:	EMD-21859
Title	:	CryoEM structure of yeast 80S ribosome with Met-tRNAiMet, eIF5B, and GDP
Authors	:	Wang, J.; Wang, J.; Puglisi, J.; Fernandez, I.S.
Deposited on	:	2020-04-25
Resolution	:	2.90 Å(reported)
Based on initial model	:	4V8Y

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

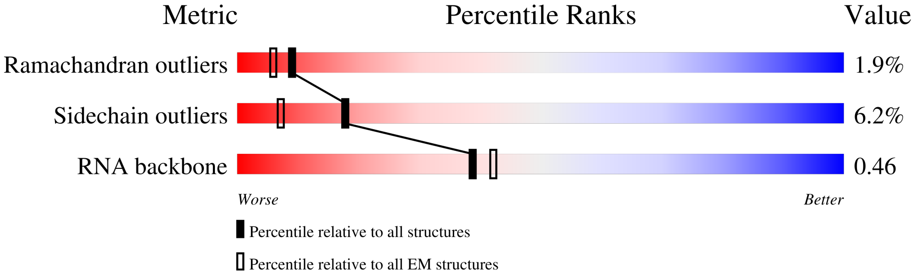
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

1 Overall quality at a glance (i)

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

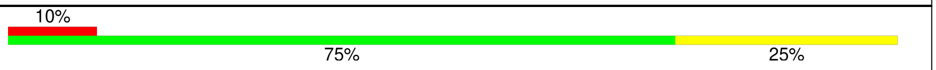
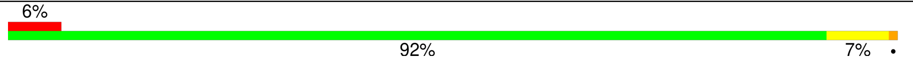
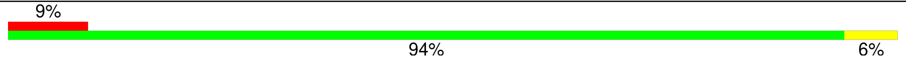
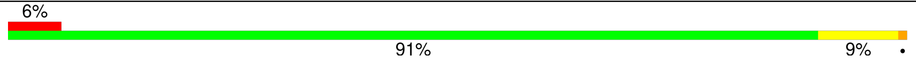
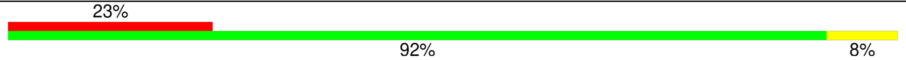
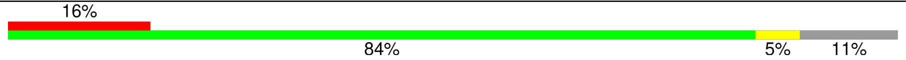
The reported resolution of this entry is 2.90 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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

Mol	Chain	Length	Quality of chain
1	5	3271	
2	7	121	
3	8	157	
4	A	249	
5	B	384	
6	C	359	
7	D	295	
8	E	175	

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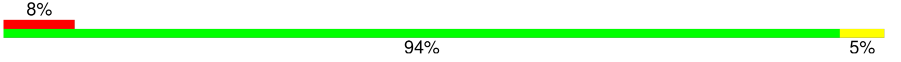
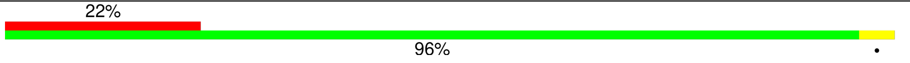
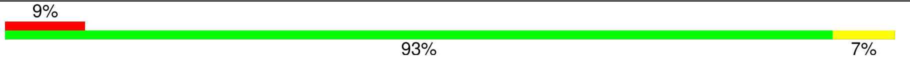
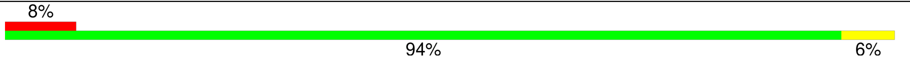
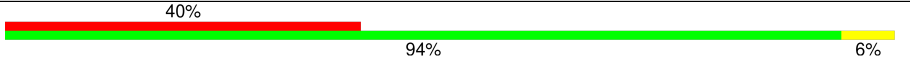
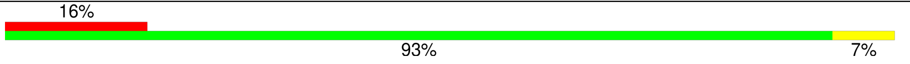
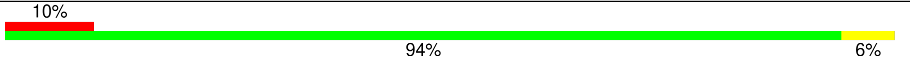
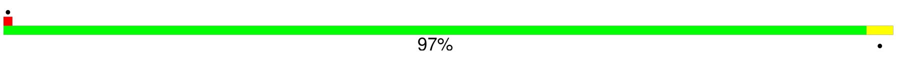
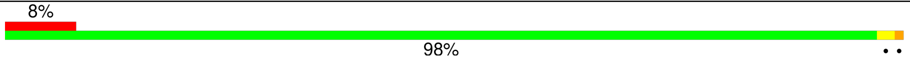
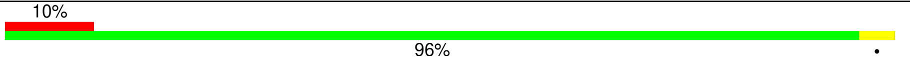
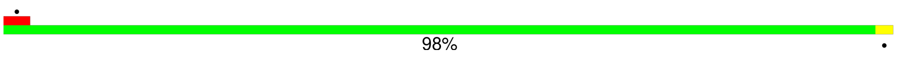
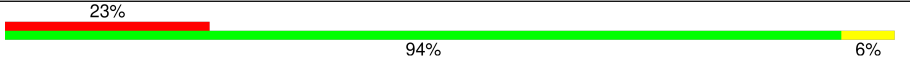
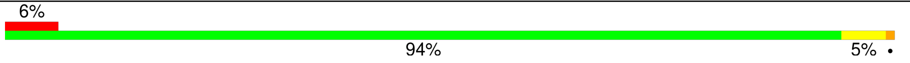
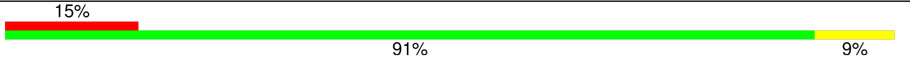
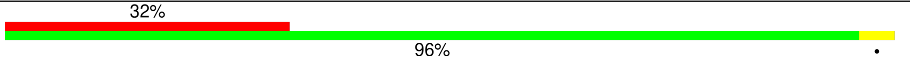
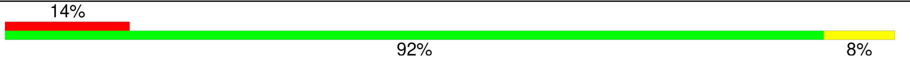
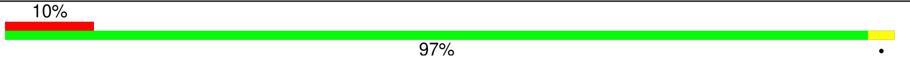
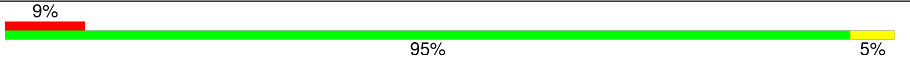
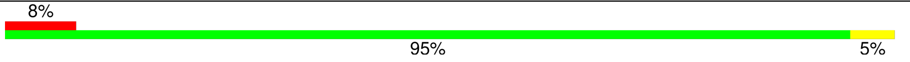
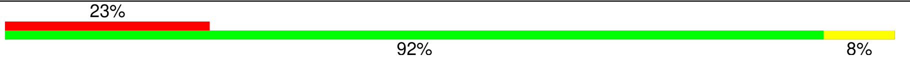
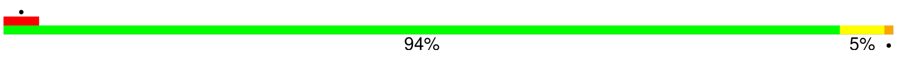
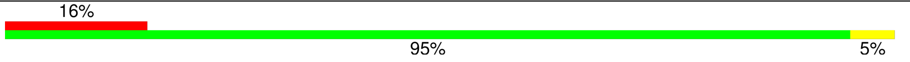
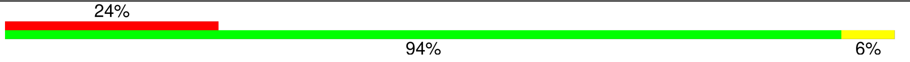
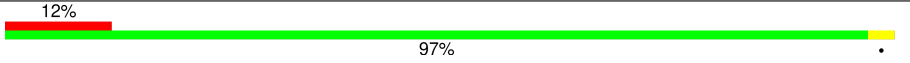
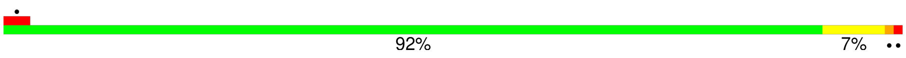
Mol	Chain	Length	Quality of chain
9	F	222	
10	G	233	
11	H	191	
12	I	216	
13	J	168	
14	L	198	
15	M	136	
16	N	202	
17	O	197	
18	P	180	
19	Q	184	
20	R	188	
21	S	169	
22	T	158	
23	U	100	
24	V	132	
25	W	62	
26	X	121	
27	Y	125	
28	Z	134	
29	a	147	
30	b	57	
31	c	97	
32	d	106	
33	e	122	

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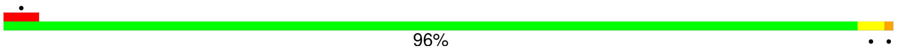
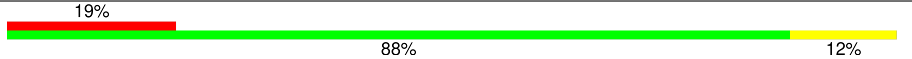
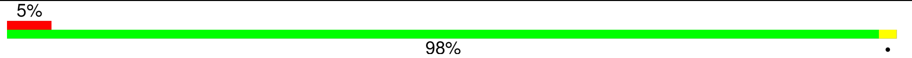
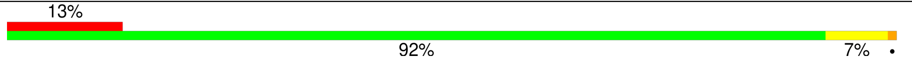
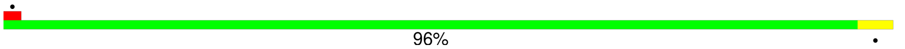
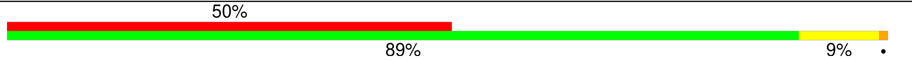
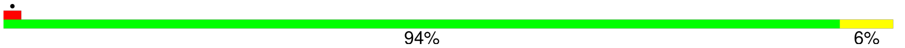
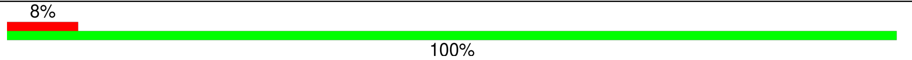
Mol	Chain	Length	Quality of chain
34	f	105	
35	g	121	
36	h	116	
37	i	98	
38	j	85	
39	k	76	
40	l	49	
41	m	51	
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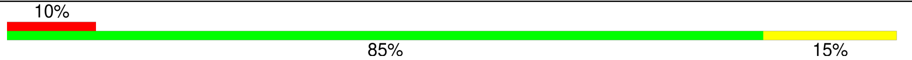
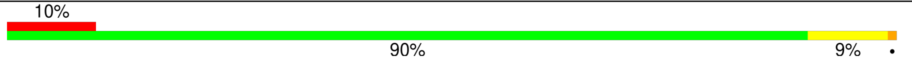
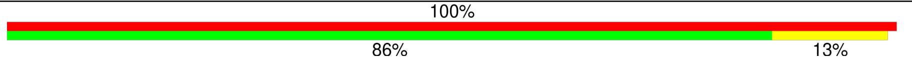
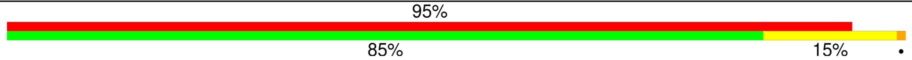
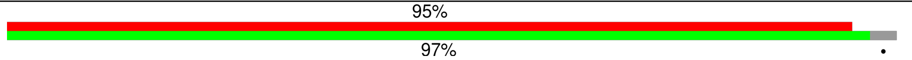
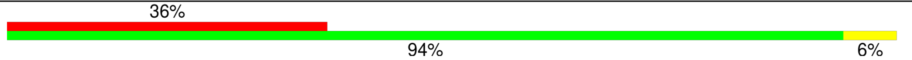
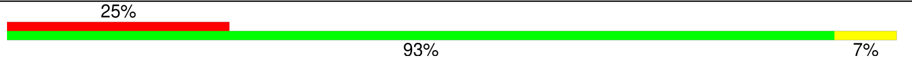
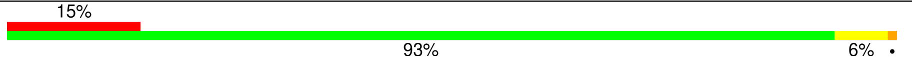
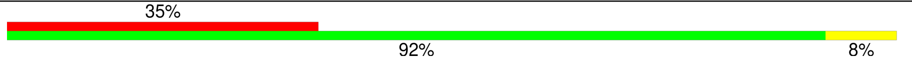
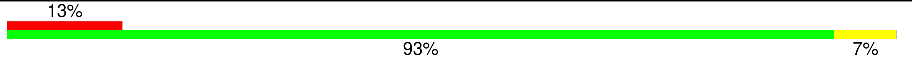
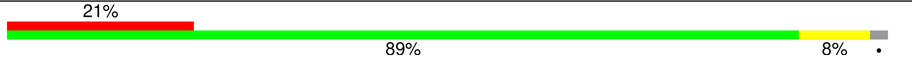
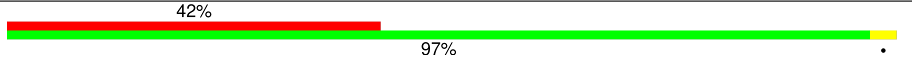
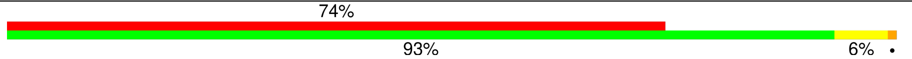
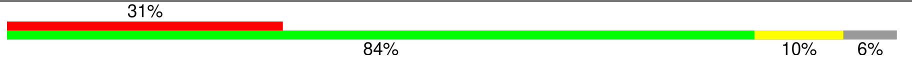
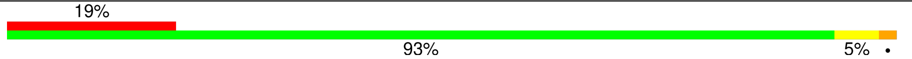
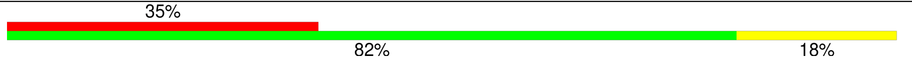
43	o	101	
44	p	87	
45	q	217	
46	r	195	
47	K	152	
48	AA	206	
49	BB	214	
50	CC	217	
51	DD	223	
52	EE	257	
53	FF	206	
54	GG	226	
55	HH	184	
56	II	199	
57	JJ	182	
58	KK	96	

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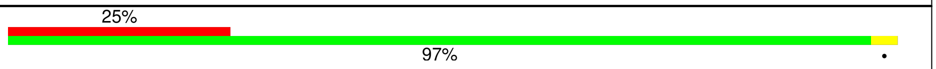
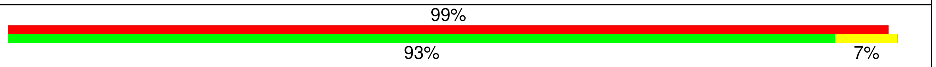
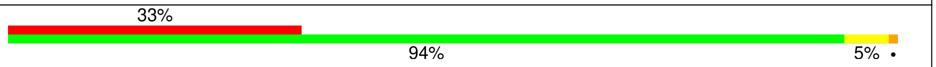
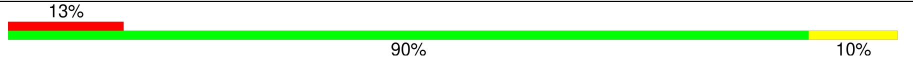
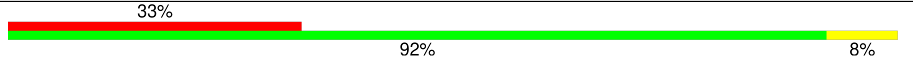
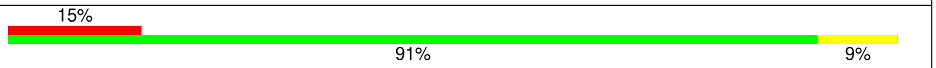
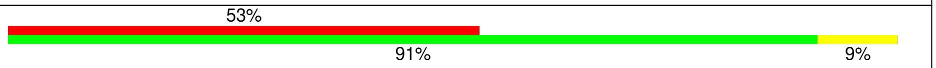
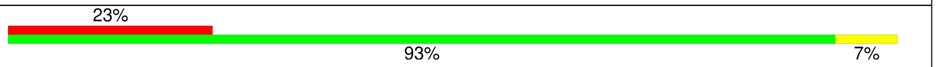
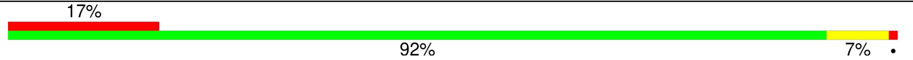
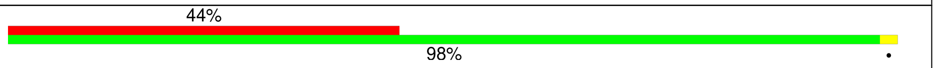
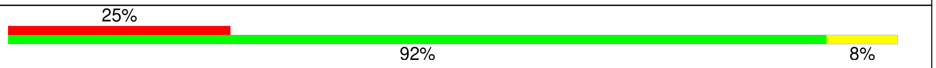
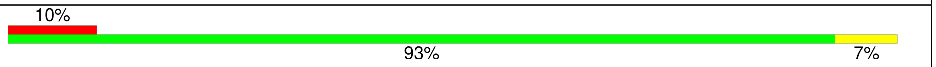
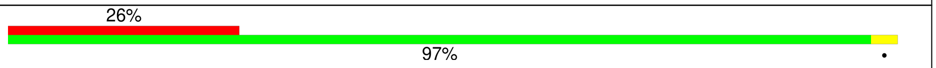
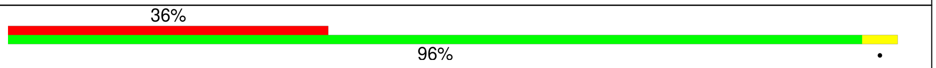
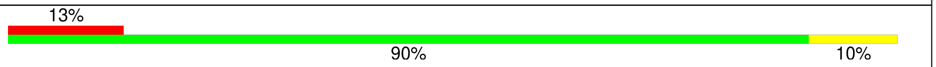
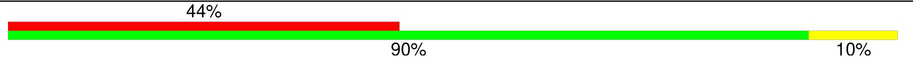
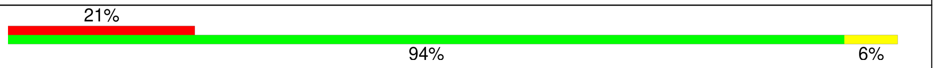
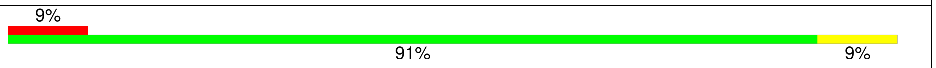
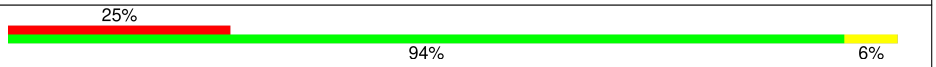
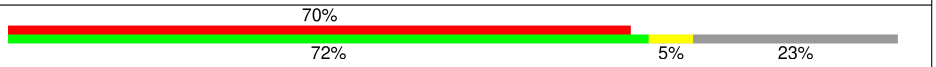
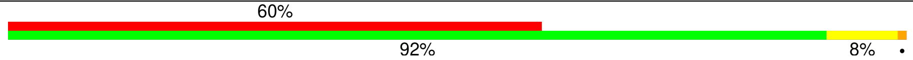
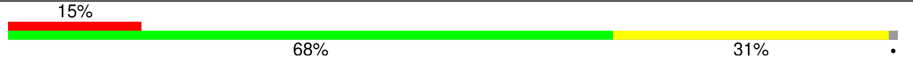
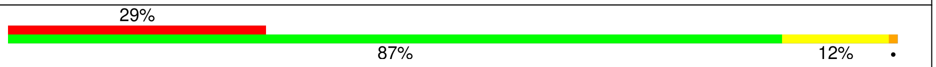
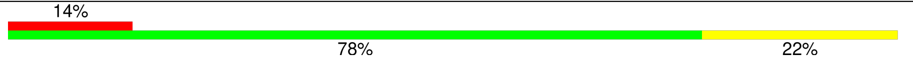
Mol	Chain	Length	Quality of chain
59	LL	145	
60	MM	124	
61	NN	150	
62	OO	127	
63	PP	103	
64	QQ	141	
65	RR	123	
66	SS	136	
67	TT	143	
68	UU	106	
69	VV	87	
70	WW	129	
71	XX	144	
72	YY	134	
73	ZZ	70	
74	aa	97	
75	bb	81	
76	cc	63	
77	dd	53	
78	ee	53	
79	ff	57	
80	gg	318	
81	2	1796	
82	1	600	
83	3	76	

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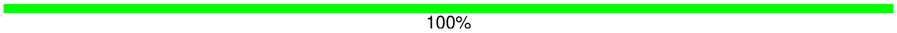
Mol	Chain	Length	Quality of chain
84	4	6	

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
87	U6A	3	101	-	X	-	-

2 Entry composition

There are 88 unique types of molecules in this entry. The entry contains 211119 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 25S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	5	3271	69936	31236	12597	22832	3271	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	7	121	2579	1152	461	845	121	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	8	157	3333	1491	584	1101	157	0	0

- Molecule 4 is a protein called uL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	A	249	1893	1178	384	330	1	0	0

- Molecule 5 is a protein called uL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	B	384	3065	1946	582	529	8	0	0

- Molecule 6 is a protein called uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	C	359	2735	1723	520	489	3	0	0

- Molecule 7 is a protein called uL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	D	295	Total 2370	C 1498	N 413	O 457	S 2	0	0

- Molecule 8 is a protein called eL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	E	156	Total 1239	C 800	N 222	O 216	S 1	0	0

- Molecule 9 is a protein called uL30.

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

- Molecule 10 is a protein called eL8.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	G	233	Total 1809	C 1154	N 324	O 328	S 3	0	0

- Molecule 11 is a protein called uL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	H	191	Total 1524	C 966	N 274	O 280	S 4	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	191	GLU	-	insertion	UNP P51401

- Molecule 12 is a protein called uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	I	216	Total 1750	C 1109	N 331	O 303	S 7	0	0

- Molecule 13 is a protein called uL5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	J	168	1344	841	251	248	4	0	0

- Molecule 14 is a protein called eL13.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
14	L	198	1584	988	323	273	0	0

- Molecule 15 is a protein called eL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	M	136	1054	675	199	178	2	0	0

- Molecule 16 is a protein called eL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	N	202	1711	1071	359	280	1	0	0

- Molecule 17 is a protein called uL13.

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

- Molecule 18 is a protein called uL22.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
18	P	180	1427	887	284	256	0	0

- Molecule 19 is a protein called eL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	Q	184	1437	906	289	240	2	0	0

- Molecule 20 is a protein called eL19.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
20	R	188	1521	935	326	260	0	0

- Molecule 21 is a protein called eL20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	S	169	1422	916	262	241	3	0	0

- Molecule 22 is a protein called eL21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	T	158	1268	799	245	220	4	0	0

- Molecule 23 is a protein called eL22.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
23	U	100	796	516	131	149	0	0

- Molecule 24 is a protein called uL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	V	132	978	614	184	173	7	0	0

- Molecule 25 is a protein called eL24.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
25	W	62	513	331	101	81	0	0

- Molecule 26 is a protein called uL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	X	121	968	623	170	173	2	0	0

- Molecule 27 is a protein called uL24.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
27	Y	125	988	622	191	175	0	0

- Molecule 28 is a protein called eL27.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
28	Z	134	1087	707	201	179	0	0

- Molecule 29 is a protein called uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	a	147	1168	746	230	189	3	0	0

- Molecule 30 is a protein called eL29.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
30	b	57	457	286	99	72	0	0

- Molecule 31 is a protein called eL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	c	97	743	479	124	139	1	0	0

- Molecule 32 is a protein called eL31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	d	106	865	550	165	149	1	0	0

- Molecule 33 is a protein called eL32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	e	122	988	626	200	161	1	0	0

- Molecule 34 is a protein called eL33.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	f	105	842	534	164	143	1	0	0

- Molecule 35 is a protein called eL34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	g	121	954	592	194	164	4	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
g	122	LYS	-	insertion	UNP P87262

- Molecule 36 is a protein called uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	h	116	950	603	182	164	1	0	0

- Molecule 37 is a protein called eL36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	i	98	764	477	155	130	2	0	0

- Molecule 38 is a protein called eL37.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	j	85	673	410	147	111	5	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
j	84	LYS	-	insertion	UNP P49166
j	85	ALA	-	insertion	UNP P49166
j	86	GLN	-	insertion	UNP P49166

- Molecule 39 is a protein called eL38.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
39	k	76	607	388	114	105	0	0

- Molecule 40 is a protein called eL39.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	l	49	428	266	96	64	2	0	0

- Molecule 41 is a protein called eL40.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	m	51	409	253	85	66	5	0	0

- Molecule 42 is a protein called eL41.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	n	23	218	133	60	24	1	0	0

- Molecule 43 is a protein called eL42.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	o	101	814	511	165	133	5	0	0

- Molecule 44 is a protein called eL43.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	p	87	668	413	134	115	6	0	0

- Molecule 45 is a protein called uL1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	q	217	1718	1097	299	312	10	0	0

- Molecule 46 is a protein called uL10.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	r	195	Total	C	N	O	S	0	0
			1512	968	261	279	4		

- Molecule 47 is a protein called L10.

Mol	Chain	Residues	Atoms				AltConf	Trace
47	K	147	Total	C	N	O	0	0
			735	441	147	147		

- Molecule 48 is a protein called uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	AA	206	Total	C	N	O	S	0	0
			1615	1037	286	290	2		

- Molecule 49 is a protein called eS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	BB	214	Total	C	N	O	S	0	0
			1716	1086	314	312	4		

- Molecule 50 is a protein called uS5.

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

- Molecule 51 is a protein called uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	DD	223	Total	C	N	O	S	0	0
			1734	1101	313	314	6		

- Molecule 52 is a protein called eS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	EE	257	Total	C	N	O	S	0	0
			2047	1303	385	356	3		

- Molecule 53 is a protein called uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	FF	201	Total 1588	C 996	N 295	O 294	S 3	0	0

- Molecule 54 is a protein called eS6.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	GG	226	Total 1820	C 1142	N 350	O 325	S 3	0	0

- Molecule 55 is a protein called eS7.

Mol	Chain	Residues	Atoms				AltConf	Trace
55	HH	184	Total 1481	C 951	N 265	O 265	0	0

- Molecule 56 is a protein called eS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	II	187	Total 1480	C 919	N 296	O 263	S 2	0	0

- Molecule 57 is a protein called uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	JJ	182	Total 1477	C 933	N 288	O 255	S 1	0	0

- Molecule 58 is a protein called eS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	KK	96	Total 818	C 530	N 133	O 153	S 2	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
KK	89	ALA	GLY	conflict	UNP Q08745

- Molecule 59 is a protein called uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	LL	145	1166	746	220	197	3	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
LL	146	THR	-	insertion	UNP P0CX47

- Molecule 60 is a protein called eS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
60	MM	124	934	587	165	180	2	0	0

- Molecule 61 is a protein called uS15.

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

- Molecule 62 is a protein called uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
62	OO	127	941	578	186	174	3	0	0

- Molecule 63 is a protein called uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	PP	103	814	520	149	138	7	0	0

- Molecule 64 is a protein called uS19.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
64	QQ	141	1105	708	203	194	0	0

- Molecule 65 is a protein called eS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	RR	123	Total	C	N	O	S	0	0
			989	619	186	182	2		

- Molecule 66 is a protein called uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	SS	136	Total	C	N	O	S	0	0
			1121	700	223	196	2		

- Molecule 67 is a protein called eS19.

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

- Molecule 68 is a protein called uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	UU	106	Total	C	N	O	S	0	0
			847	535	154	157	1		

- Molecule 69 is a protein called eS21.

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

- Molecule 70 is a protein called uS8.

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

- Molecule 71 is a protein called uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	XX	144	Total	C	N	O	S	0	0
			1123	710	220	190	3		

- Molecule 72 is a protein called eS24.

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

- Molecule 73 is a protein called eS25.

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

- Molecule 74 is a protein called eS26.

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

- Molecule 75 is a protein called eS27.

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

- Molecule 76 is a protein called eS28.

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

- Molecule 77 is a protein called uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	dd	53	Total 443	C 275	N 92	O 72	S 4	0	0

- Molecule 78 is a protein called eS30.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	ee	53	Total 426	C 268	N 88	O 69	S 1	0	0

- Molecule 79 is a protein called eS31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
79	ff	44	344	216	68	56	4	0	0

- Molecule 80 is a protein called RACK1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
80	gg	318	2444	1546	419	471	8	0	0

- Molecule 81 is a RNA chain called 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
81	2	1780	37790	16890	6651	12469	1780	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
2	677	A	G	conflict	GB 1329886537
2	678	U	A	conflict	GB 1329886537

- Molecule 82 is a protein called eIF5B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
82	1	600	4704	2989	801	893	21	0	0

- Molecule 83 is a RNA chain called Met-tRNA-iMet.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
83	3	76	1630	726	302	526	76	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
3	17	G	-	insertion	GB 176433

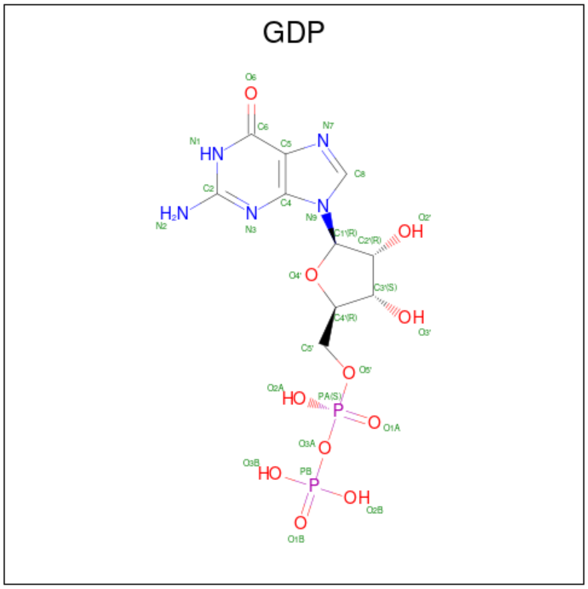
- Molecule 84 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
84	4	6	131	59	27	39	6	0	0

- Molecule 85 is ZINC ION (three-letter code: ZN) (formula: Zn).

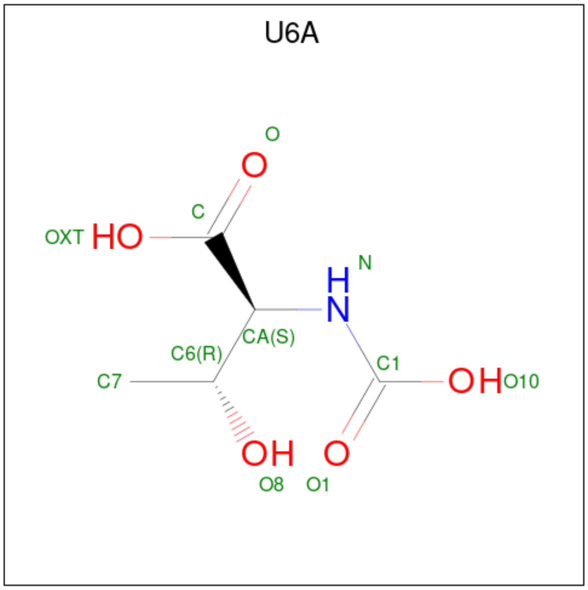
Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
85	j	1	1	1	0
85	m	1	1	1	0
85	o	1	1	1	0
85	aa	1	1	1	0
85	bb	1	1	1	0
85	ff	1	1	1	0

- Molecule 86 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: $C_{10}H_{15}N_5O_{11}P_2$).



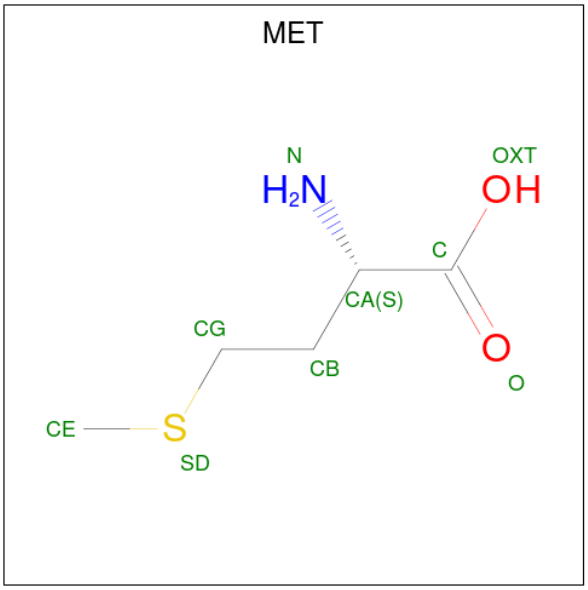
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
86	1	1	28	10	5	11	2	0

- Molecule 87 is N-carboxy-L-threonine (three-letter code: U6A) (formula: $C_5H_9NO_5$).



Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
87	3	1	10	5	1	4	0

- Molecule 88 is METHIONINE (three-letter code: MET) (formula: $C_5H_{11}NO_2S$).



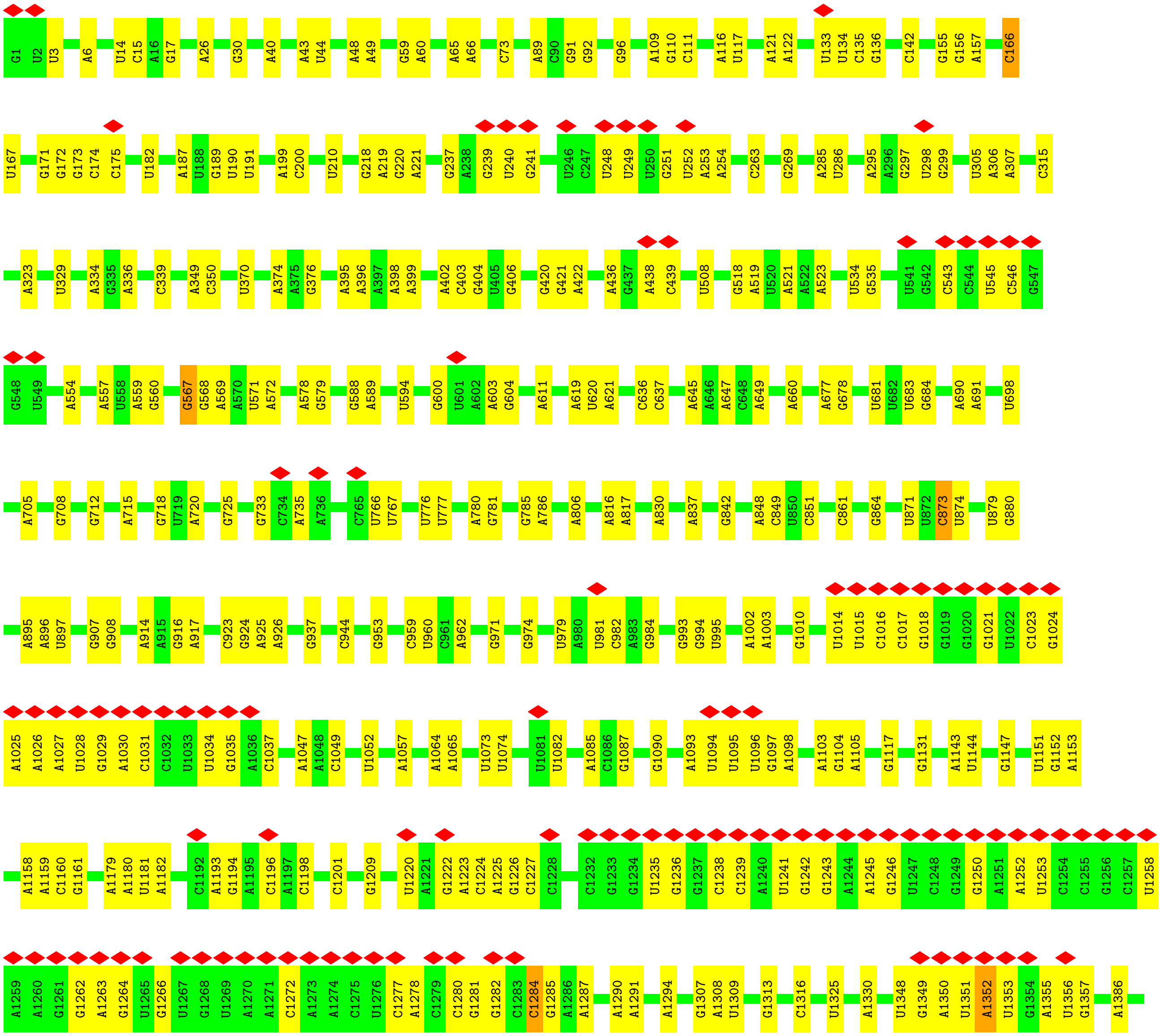
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	S	
88	3	1	8	5	1	1	1	0

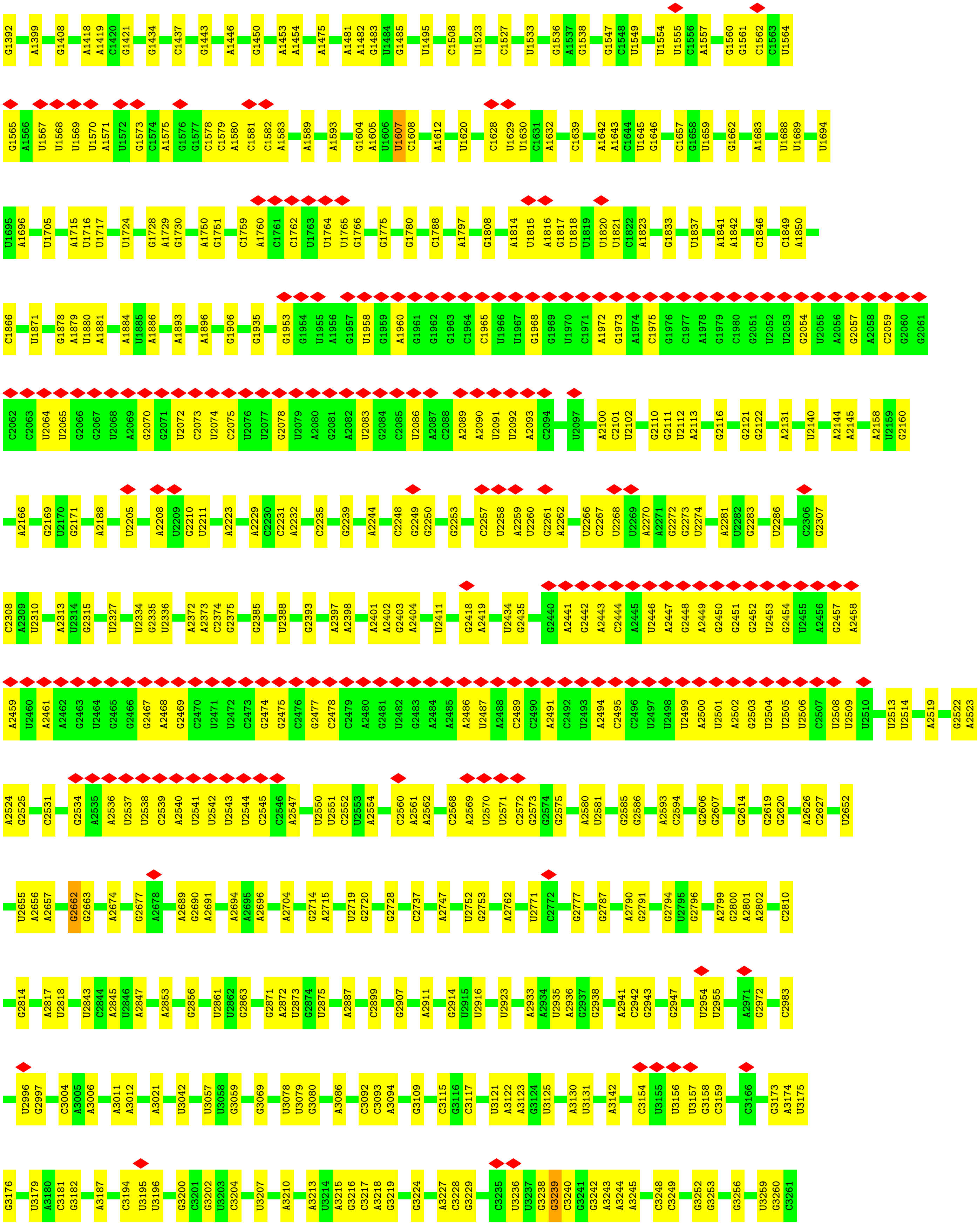
3 Residue-property plots ⓘ

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

- Molecule 1: 25S ribosomal RNA

Chain 5:

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G1434
C1437
G1443
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G1450
A1453
A1454
A1475
A1481
A1482
G1483
U1484
G1485
U1495
C1508
U1523
C1527
U1533
G1536
A1537
G1538
G1547
C1548
U1549
U1554
U1555
C1556
A1557
G1560
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C1562
C1563
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G1565
A1566
U1567
U1568
U1569
U1570
A1571
U1572
G1573
C1574
A1575
G1576
G1577
C1578
C1579
A1580
C1581
C1582
A1583
A1589
A1593
G1604
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U1606
U1607
C1608
A1612
U1620
C1628
U1629
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C1644
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A1715
U1716
U1717
U1724
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G1730
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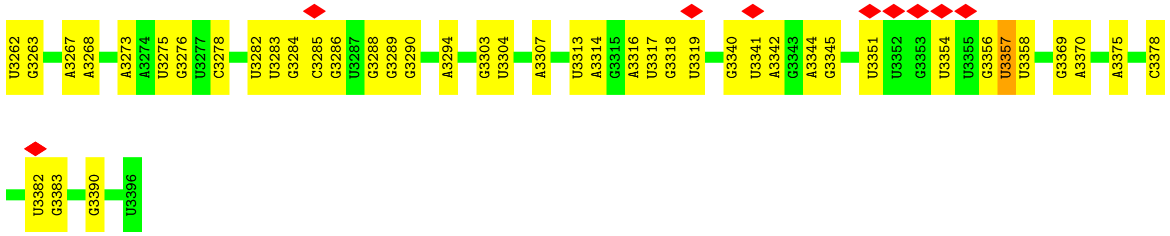
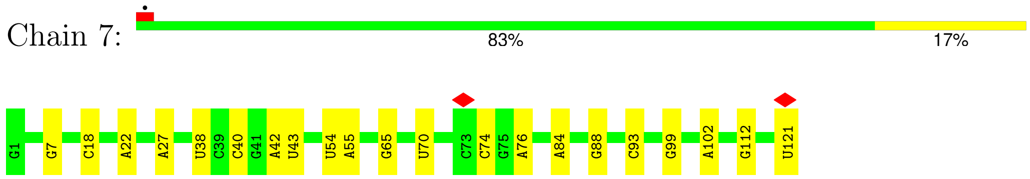
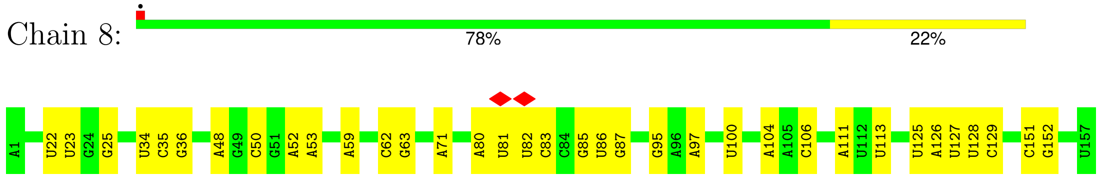


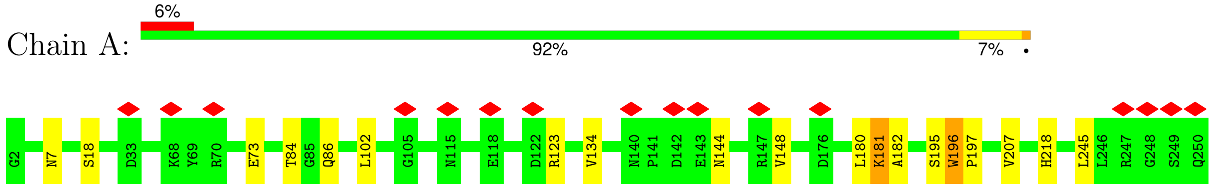
- Molecule 2: 5S ribosomal RNA



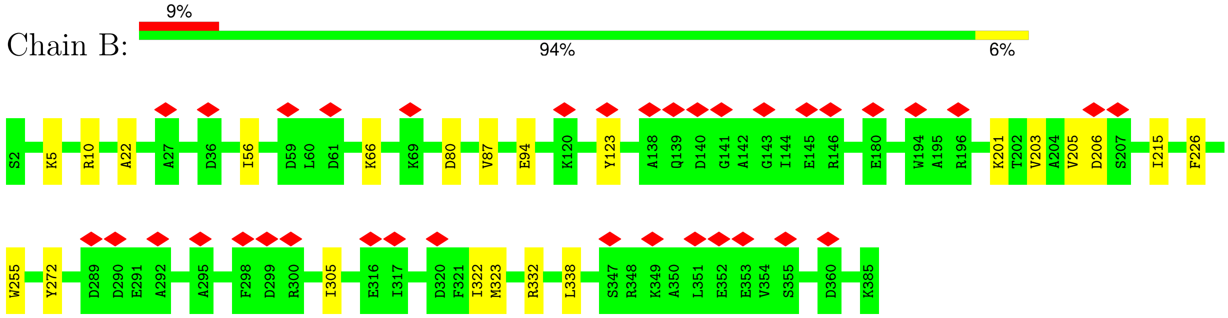
- Molecule 3: 5.8S ribosomal rRNA



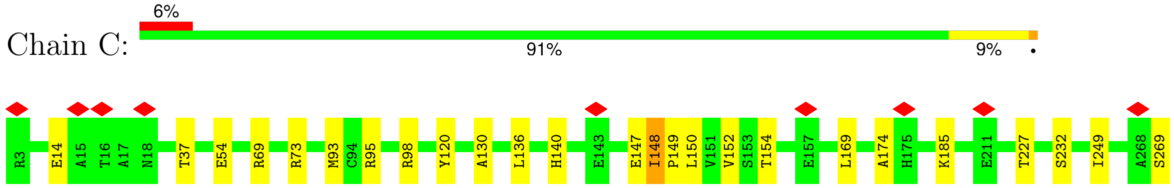
- Molecule 4: uL2

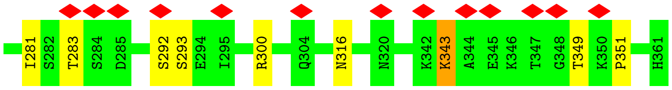


- Molecule 5: uL3



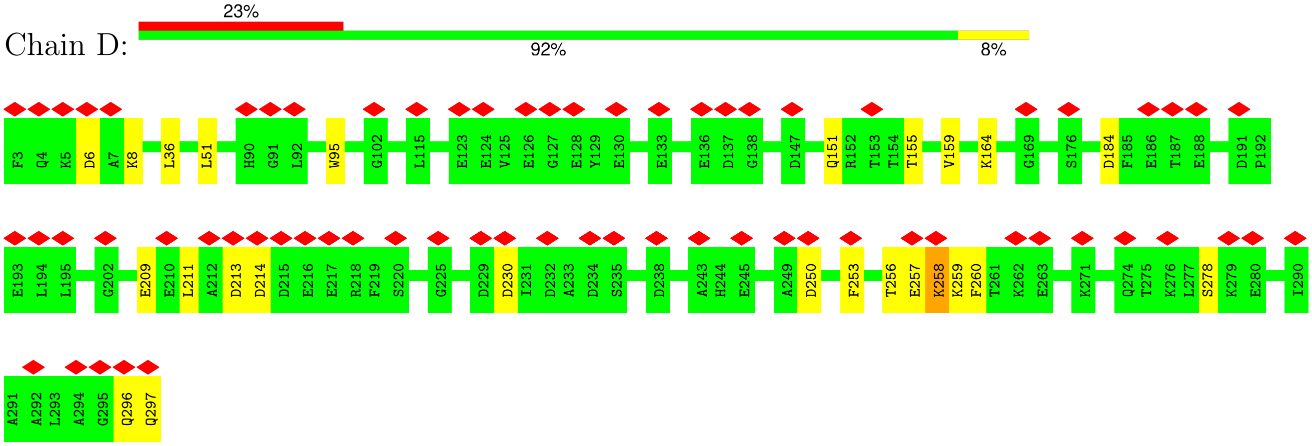
- Molecule 6: uL4





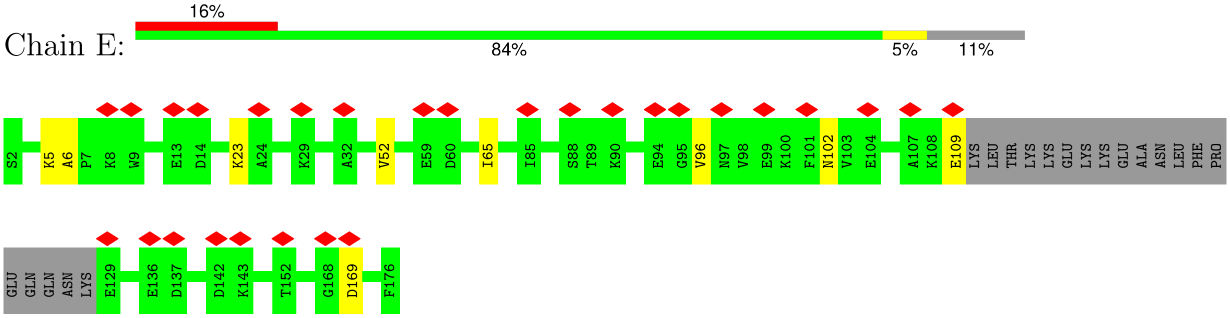
- Molecule 7: uL18

Chain D:



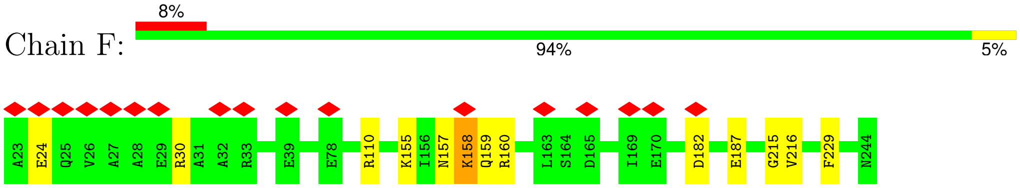
- Molecule 8: eL6

Chain E:



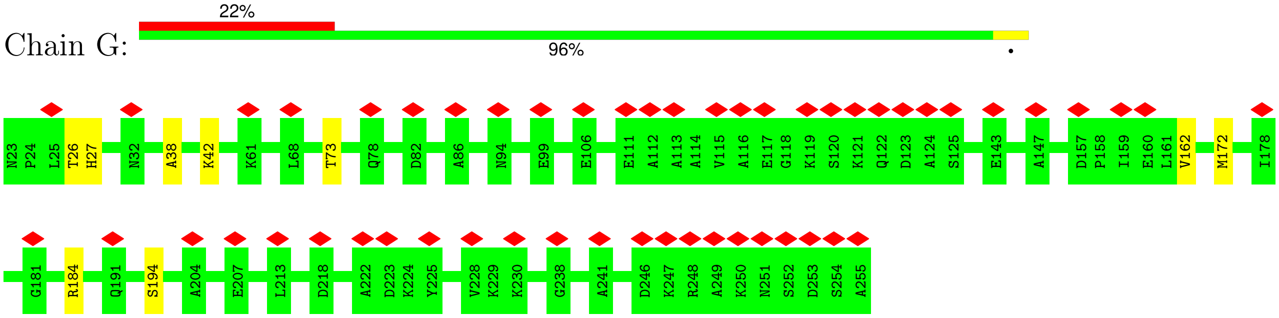
- Molecule 9: uL30

Chain F:

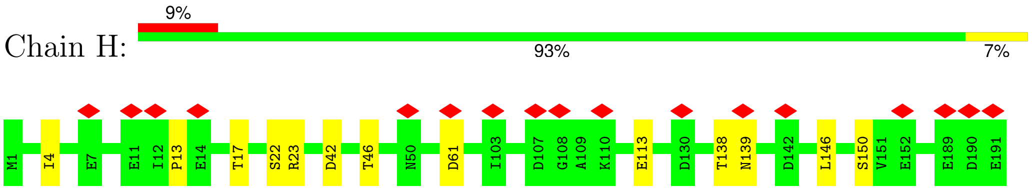


- Molecule 10: eL8

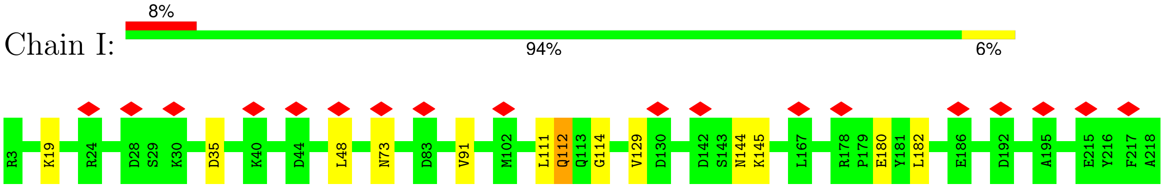
Chain G:



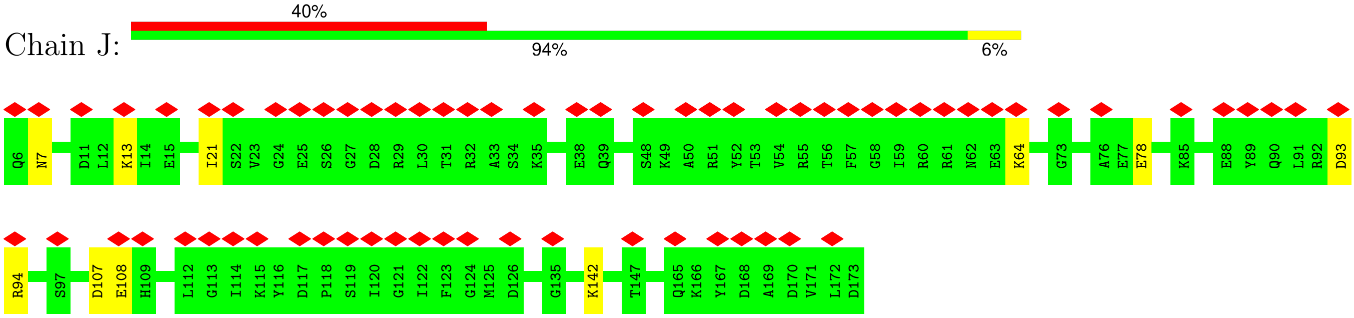
- Molecule 11: uL6



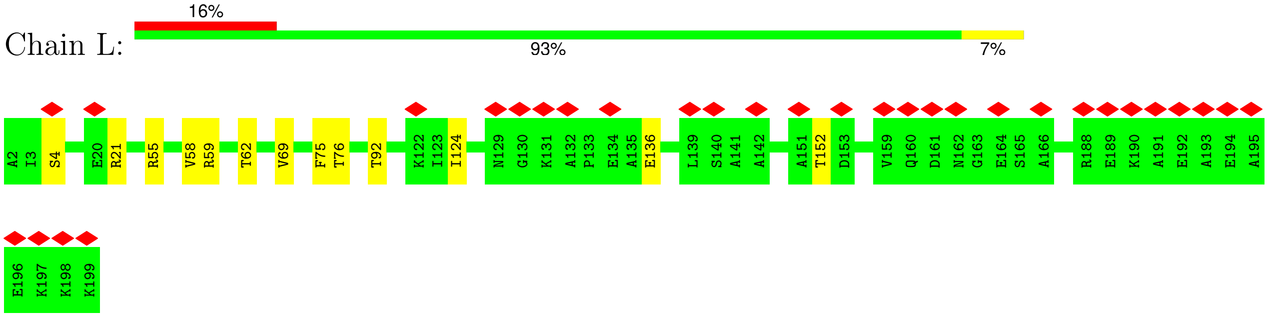
- Molecule 12: uL16



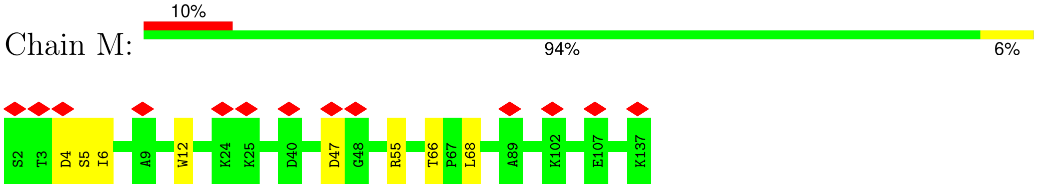
- Molecule 13: uL5



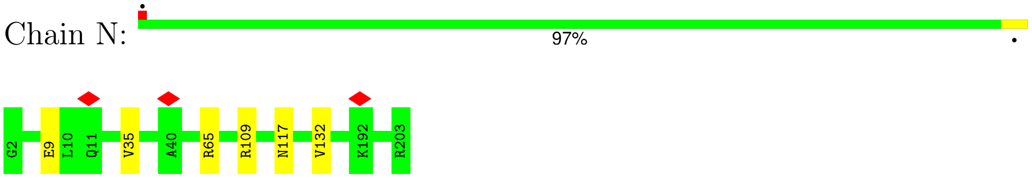
- Molecule 14: eL13



- Molecule 15: eL14

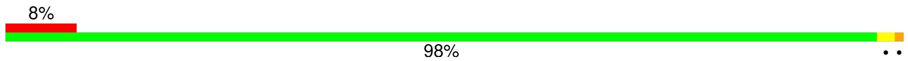


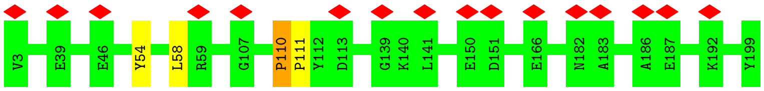
- Molecule 16: eL15



- Molecule 17: uL13

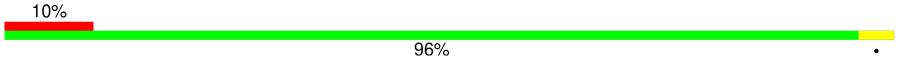
Chain O:

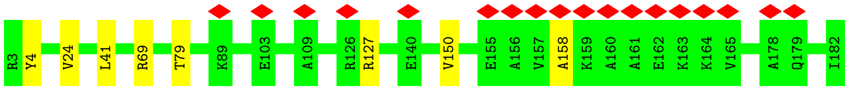




- Molecule 18: uL22

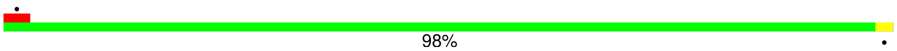
Chain P:

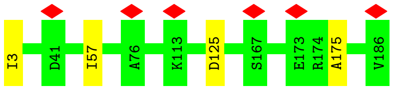




- Molecule 19: eL18

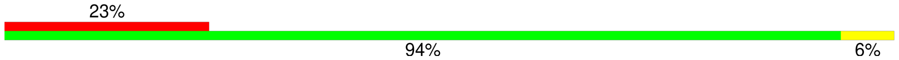
Chain Q:

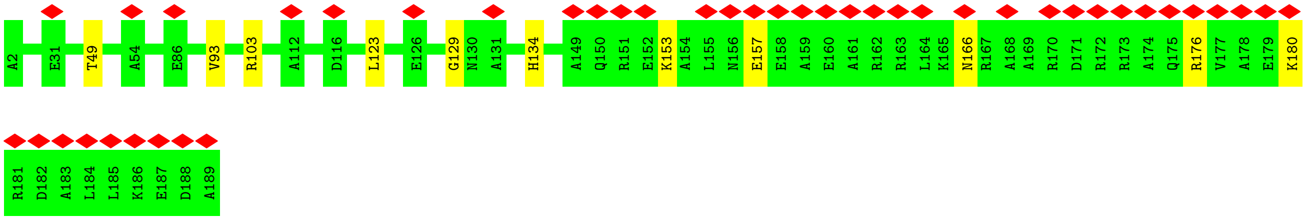




- Molecule 20: eL19

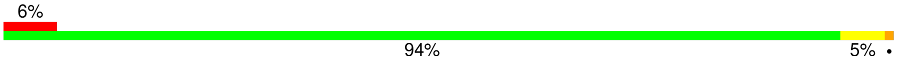
Chain R:

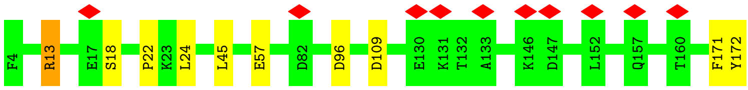




- Molecule 21: eL20

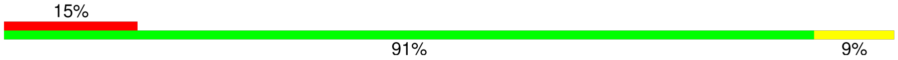
Chain S:

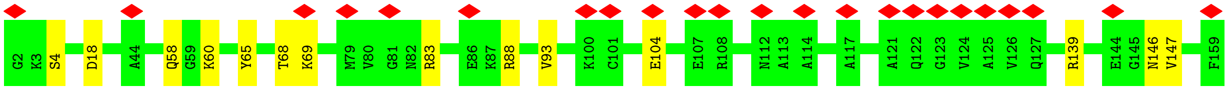




- Molecule 22: eL21

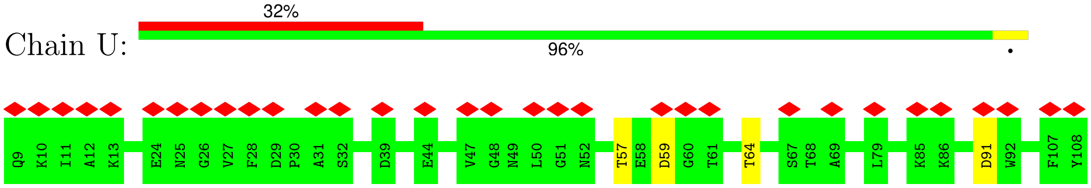
Chain T:





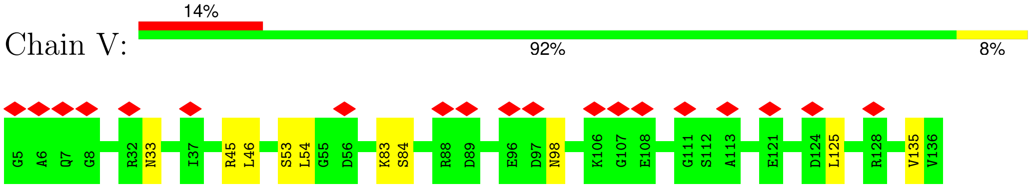
- Molecule 23: eL22

Chain U:



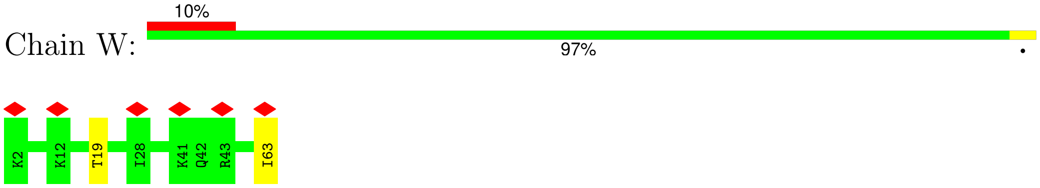
- Molecule 24: uL14

Chain V:



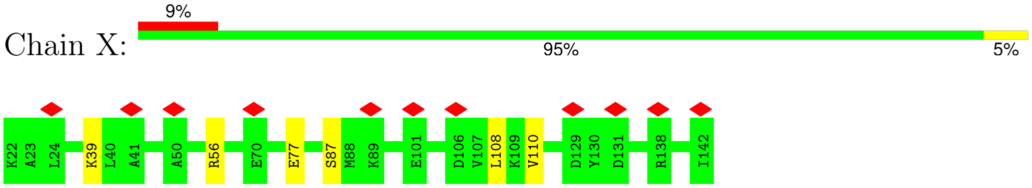
- Molecule 25: eL24

Chain W:



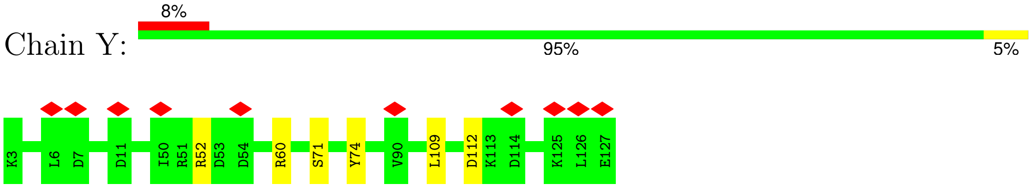
- Molecule 26: uL23

Chain X:



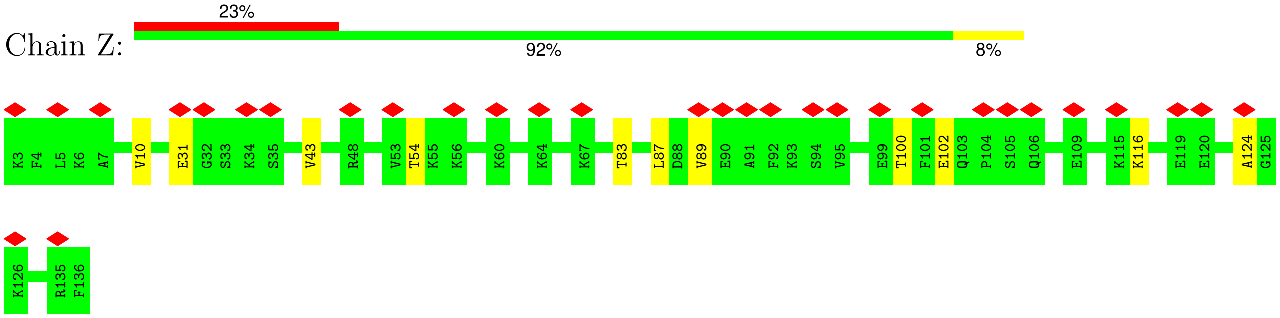
- Molecule 27: uL24

Chain Y:



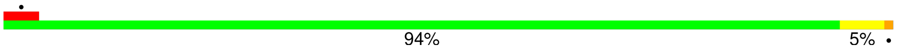
- Molecule 28: eL27

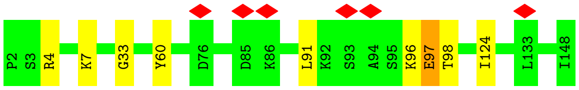
Chain Z:



- Molecule 29: uL15

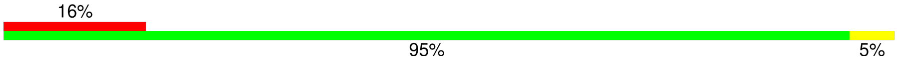
Chain a:

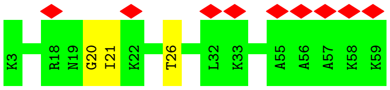




- Molecule 30: eL29

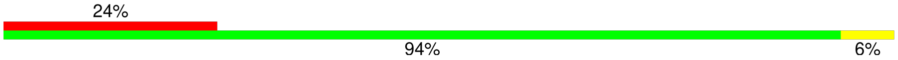
Chain b:

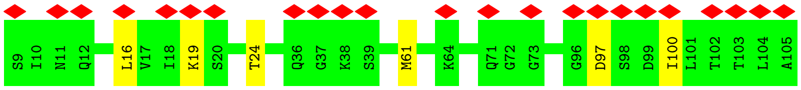




- Molecule 31: eL30

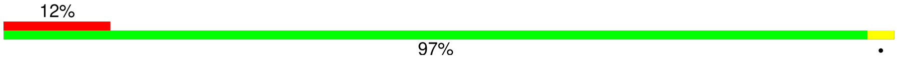
Chain c:

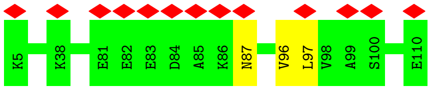




- Molecule 32: eL31

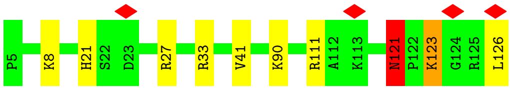
Chain d:





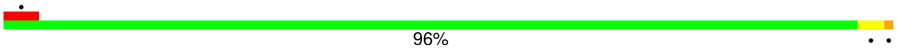
- Molecule 33: eL32

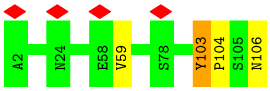
Chain e:



- Molecule 34: eL33

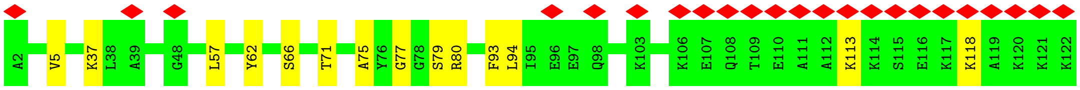
Chain f:





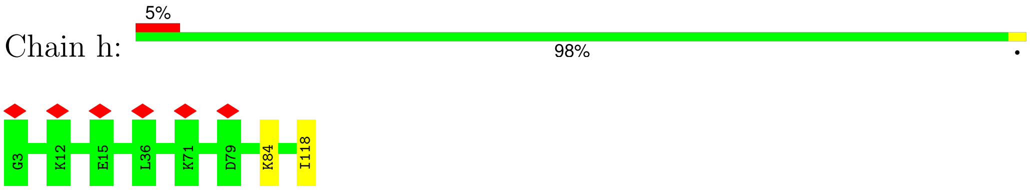
- Molecule 35: eL34

Chain g:



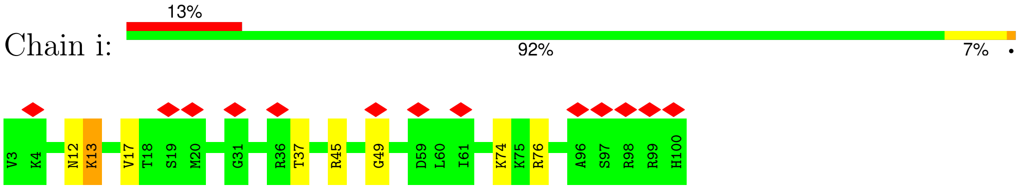
- Molecule 36: uL29

Chain h:



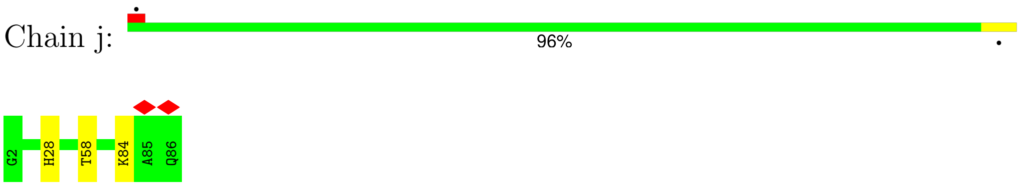
- Molecule 37: eL36

Chain i:



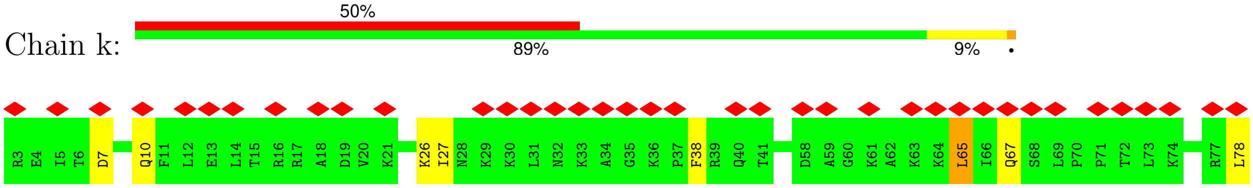
- Molecule 38: eL37

Chain j:



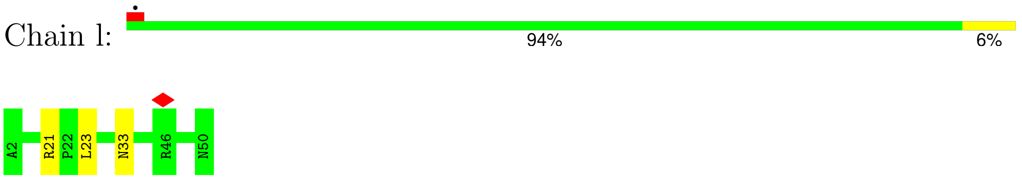
- Molecule 39: eL38

Chain k:



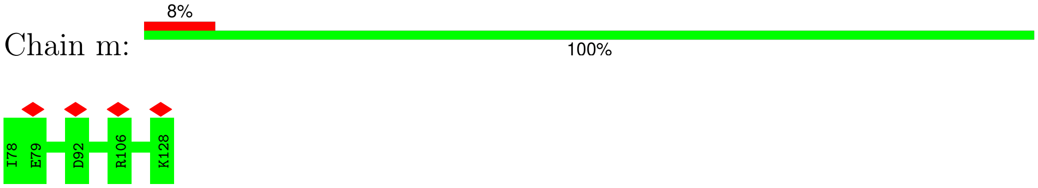
- Molecule 40: eL39

Chain l:



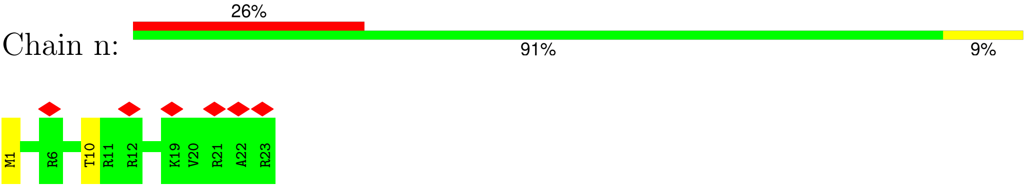
- Molecule 41: eL40

Chain m:

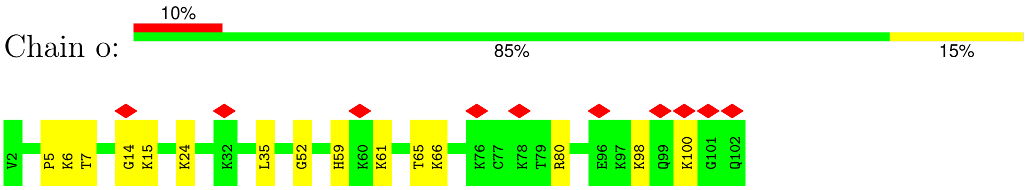


- Molecule 42: eL41

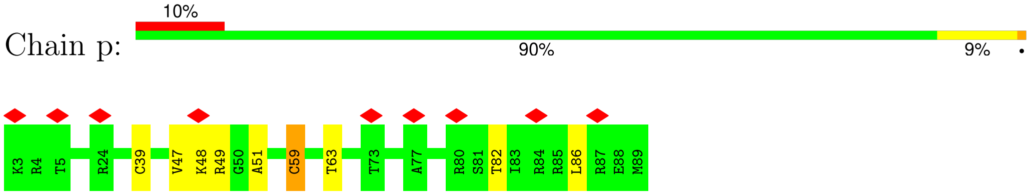
Chain n:



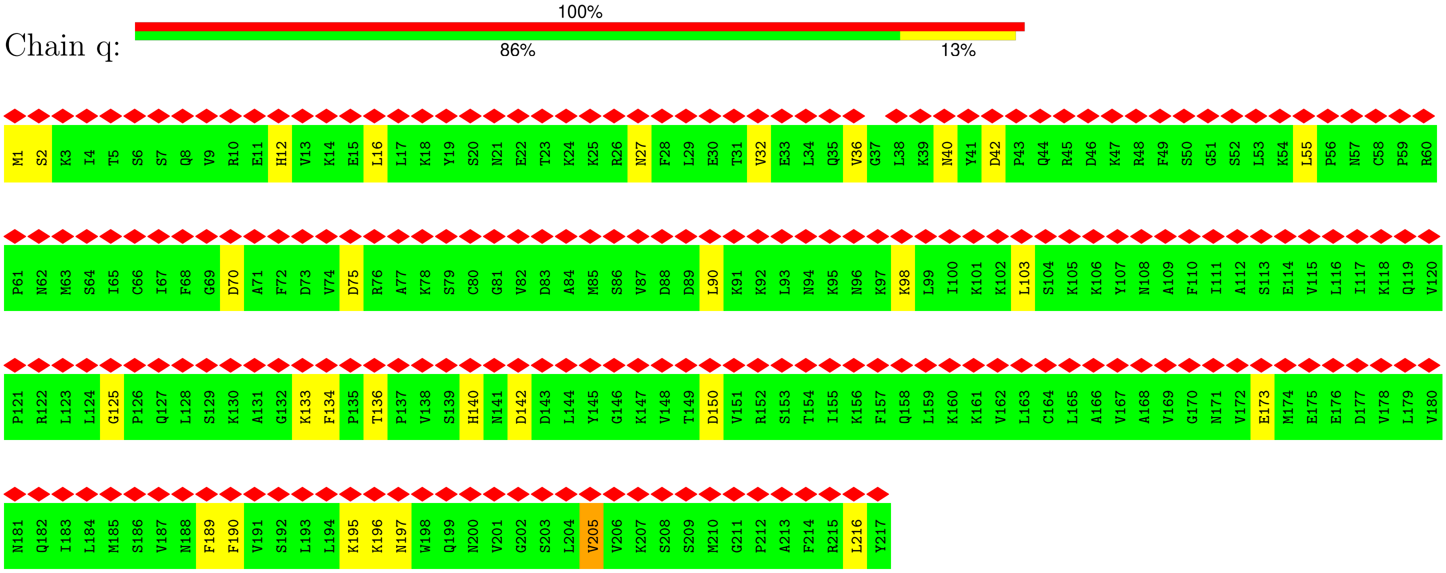
- Molecule 43: eL42



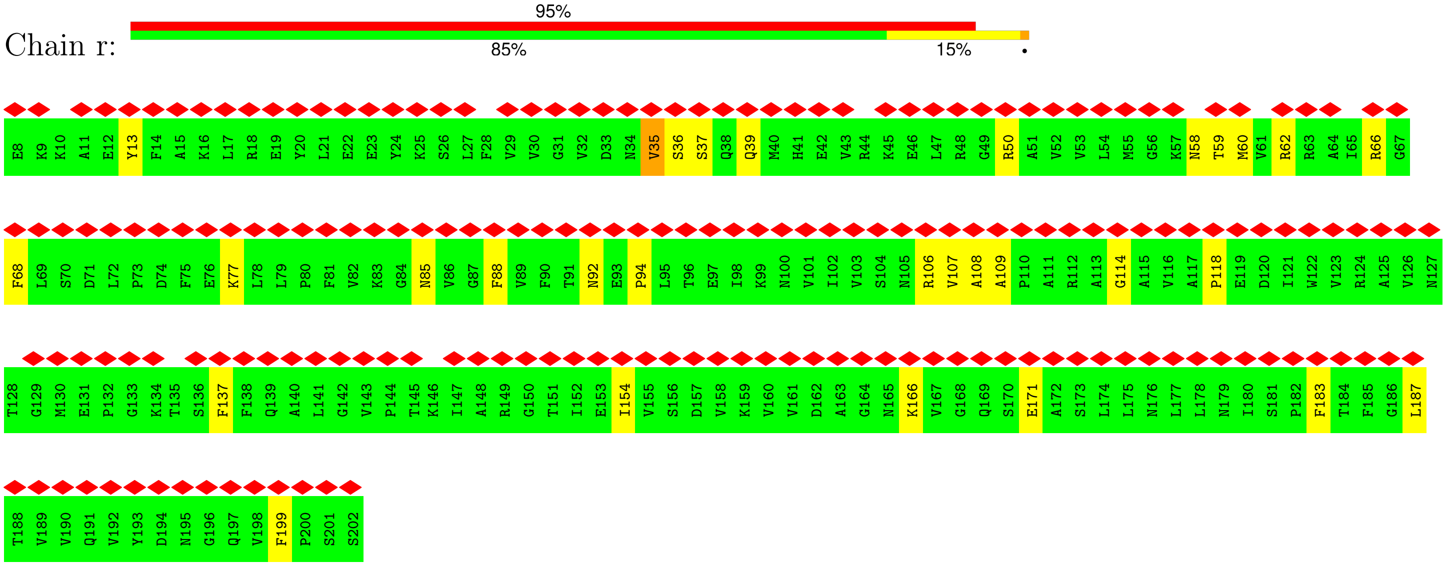
- Molecule 44: eL43



- Molecule 45: uL1

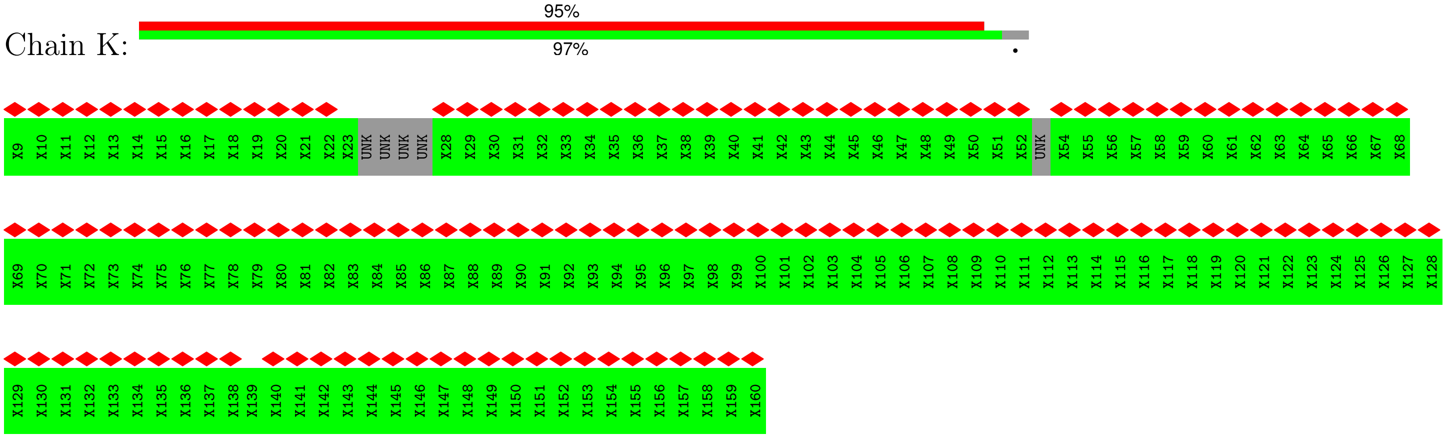


- Molecule 46: uL10



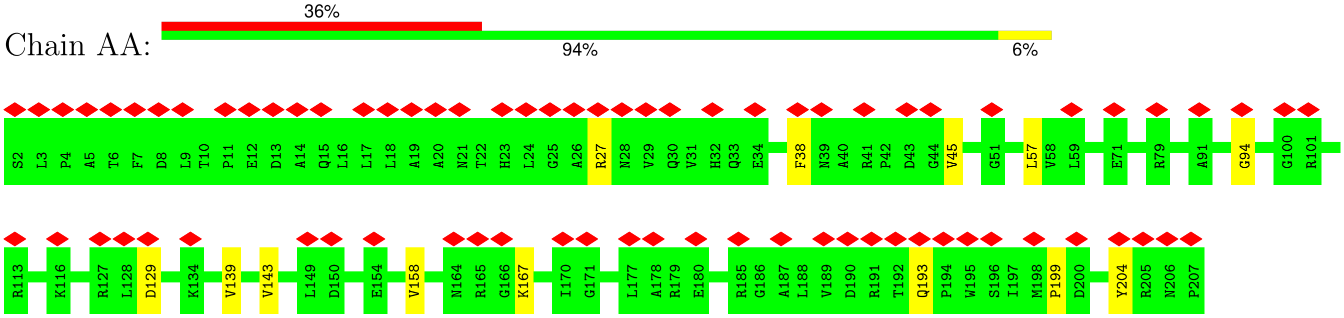
- Molecule 47: L10

Chain K:



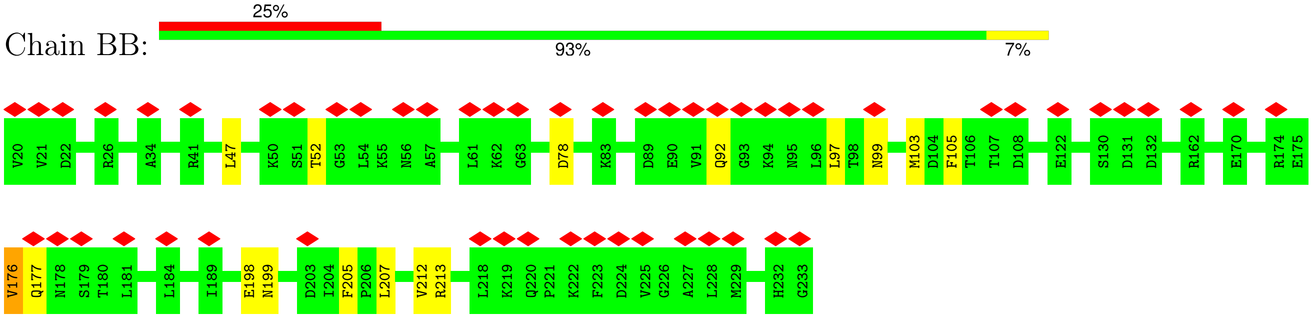
- Molecule 48: uS2

Chain AA:



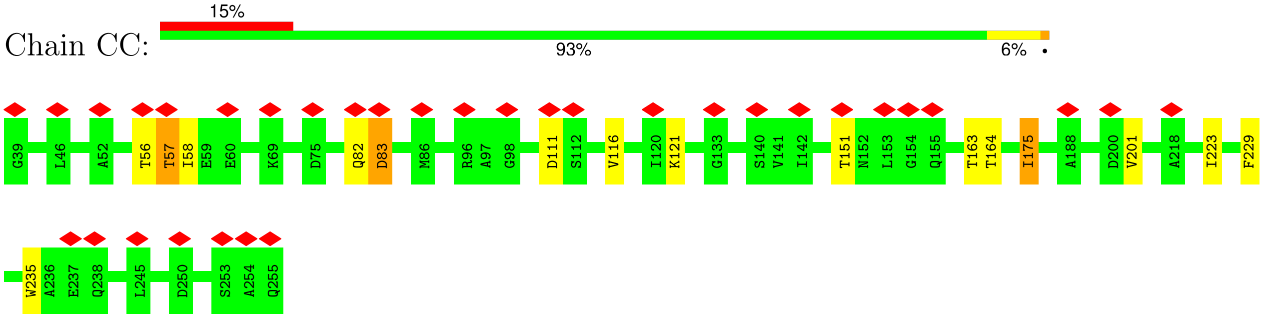
- Molecule 49: eS1

Chain BB:



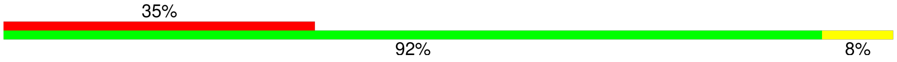
- Molecule 50: uS5

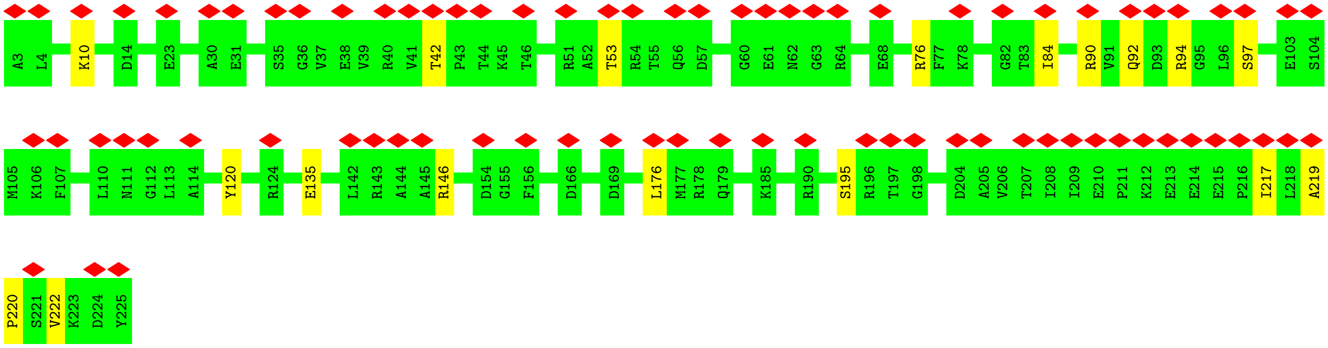
Chain CC:



- Molecule 51: uS3

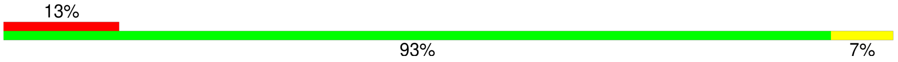
Chain DD:

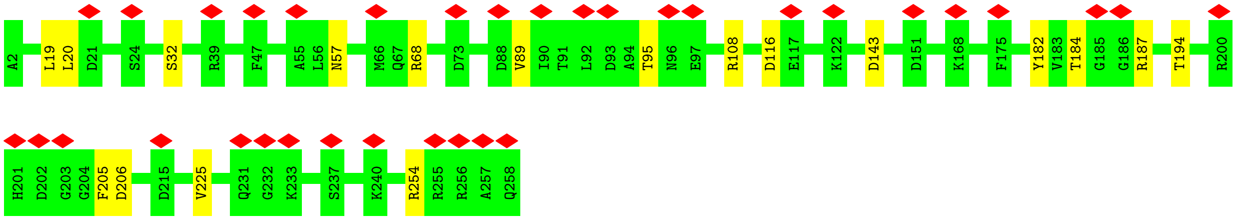




- Molecule 52: eS4

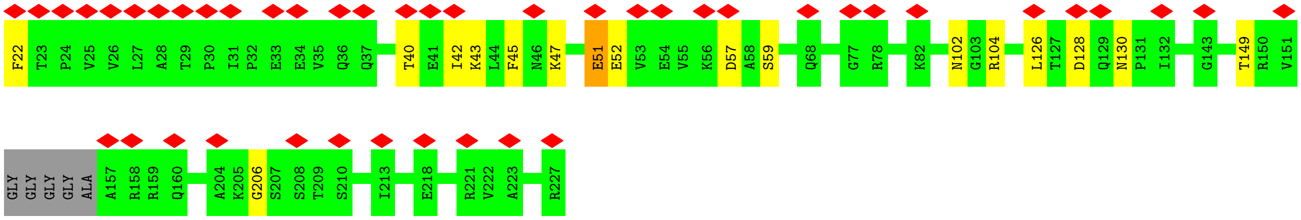
Chain EE:





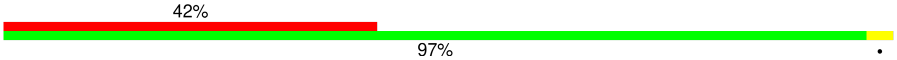
- Molecule 53: uS7

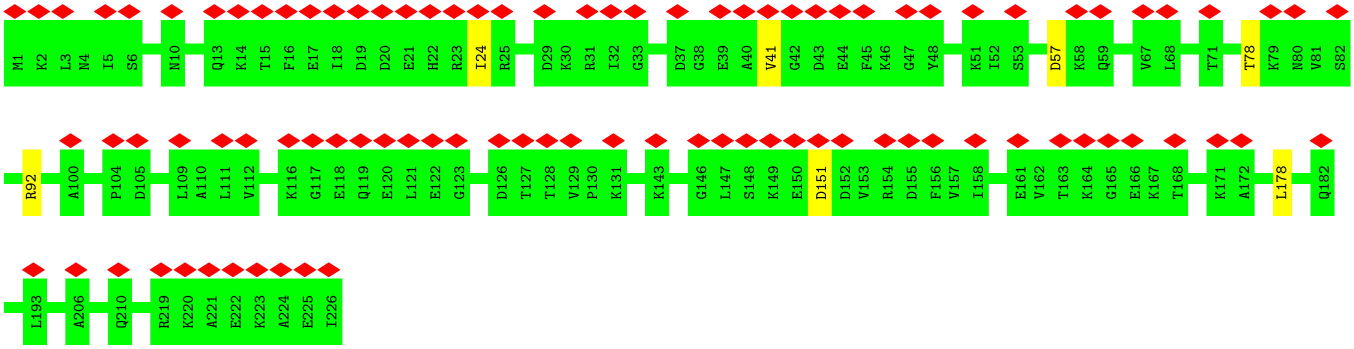
Chain FF:



- Molecule 54: eS6

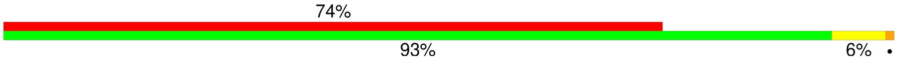
Chain GG:

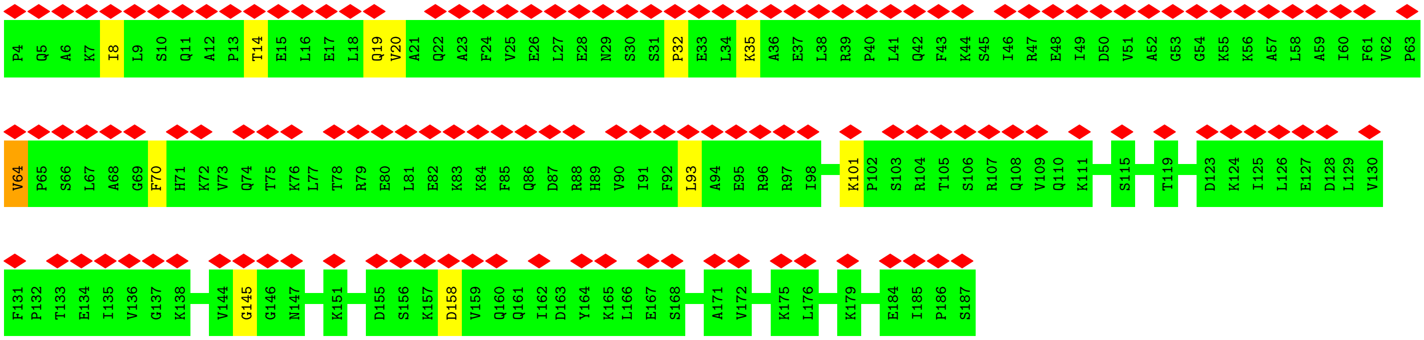




- Molecule 55: eS7

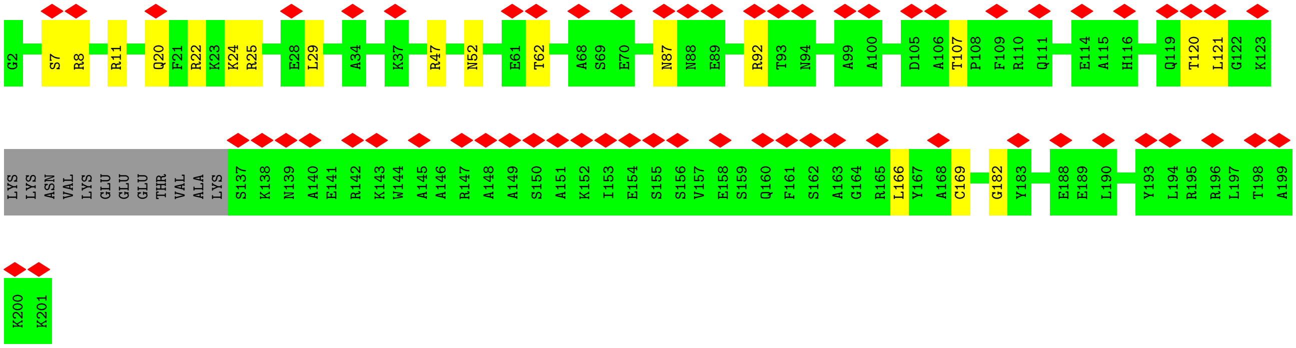
Chain HH:





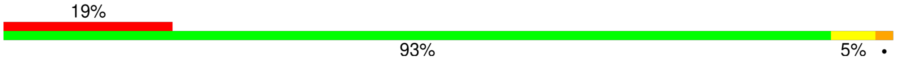
- Molecule 56: eS8

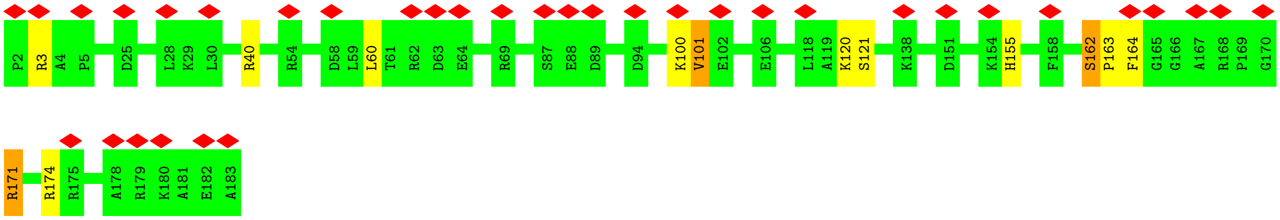
Chain II:



- Molecule 57: uS4

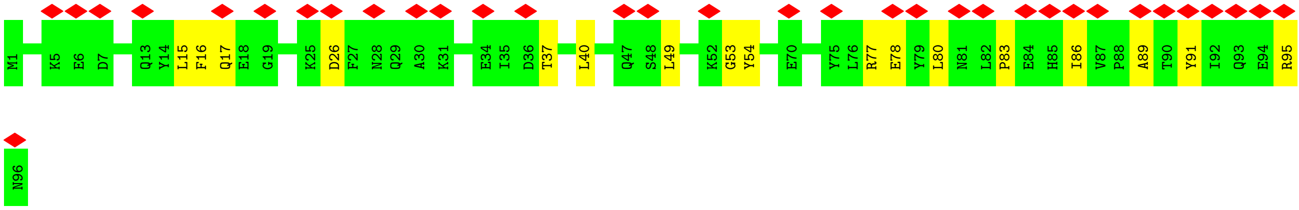
Chain JJ:





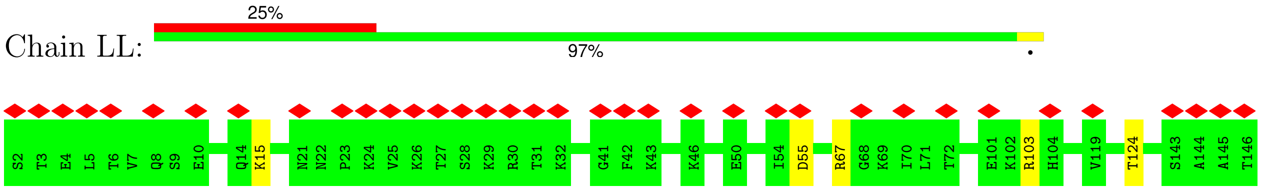
- Molecule 58: eS10

Chain KK:



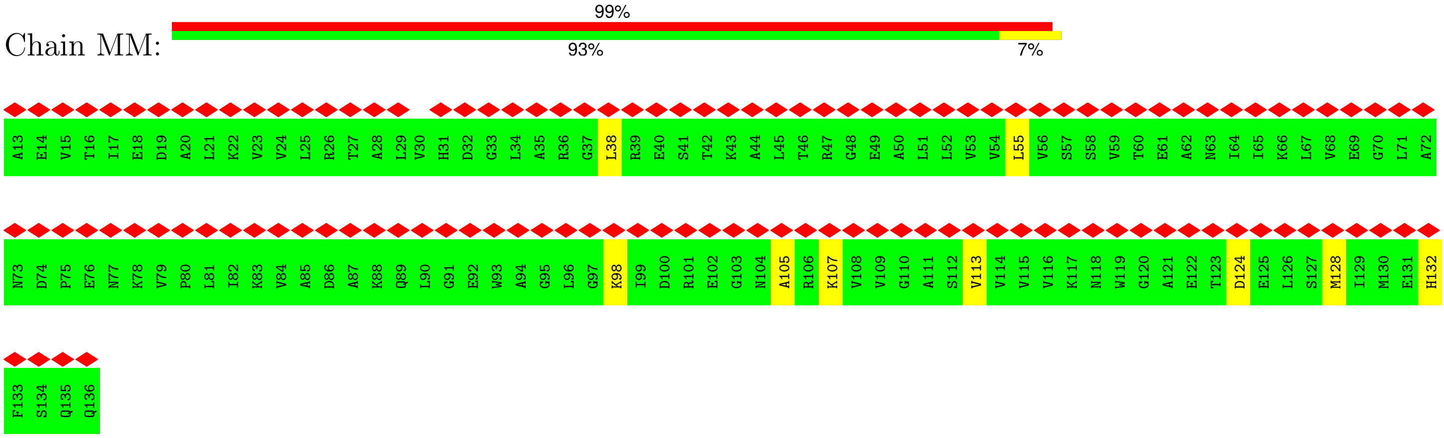
- Molecule 59: uS17

Chain LL:



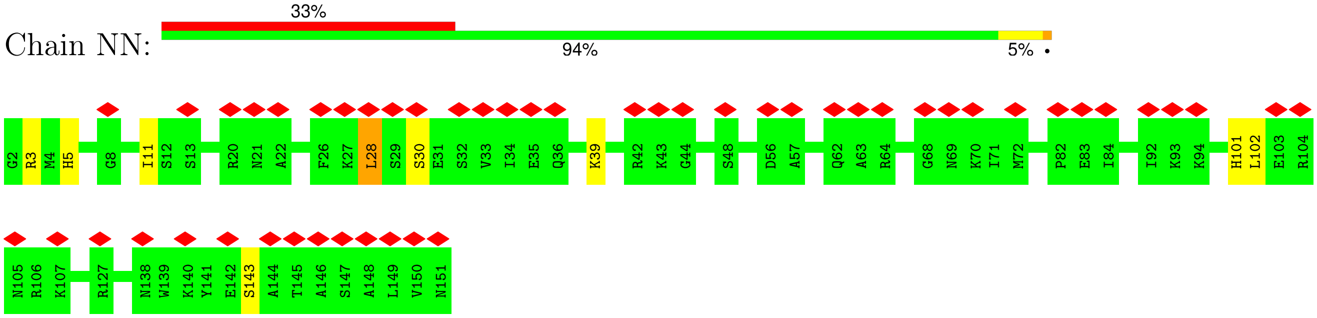
- Molecule 60: eS12

Chain MM:



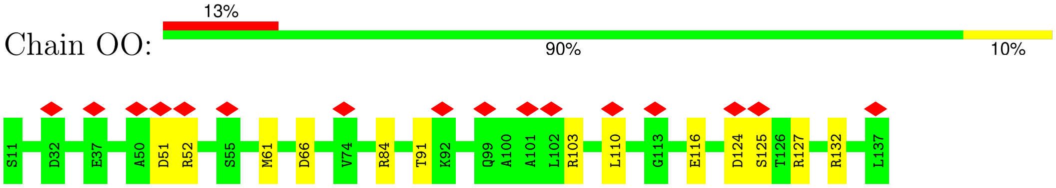
- Molecule 61: uS15

Chain NN:



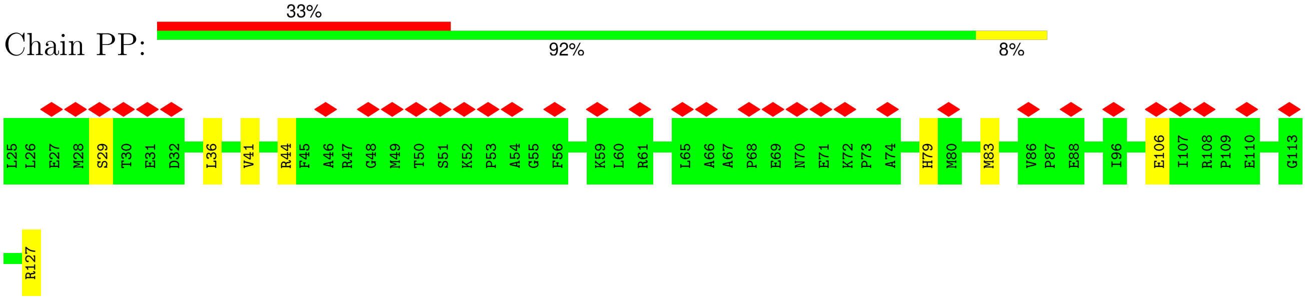
- Molecule 62: uS11

Chain OO:



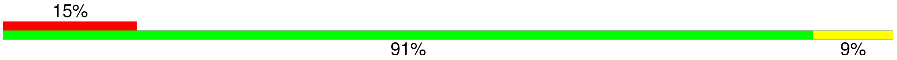
- Molecule 63: uS19

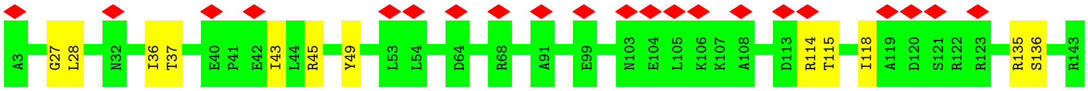
Chain PP:



- Molecule 64: uS19

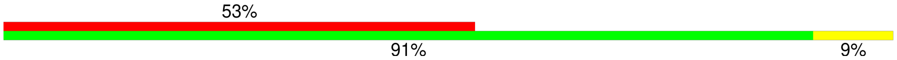
Chain QQ:

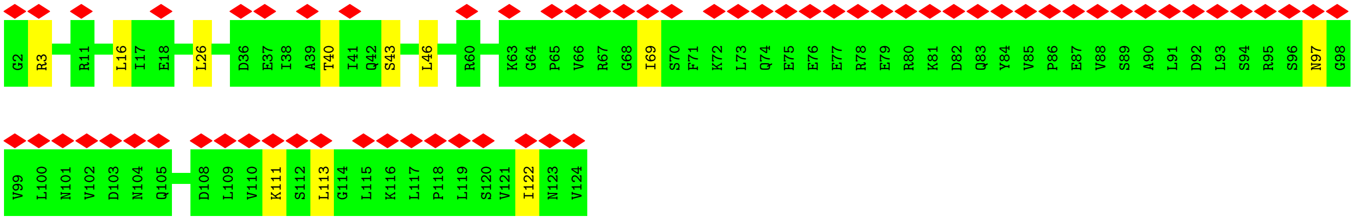




- Molecule 65: eS17

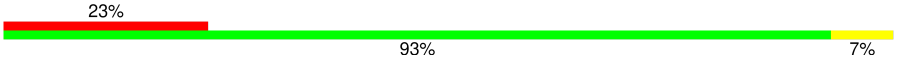
Chain RR:

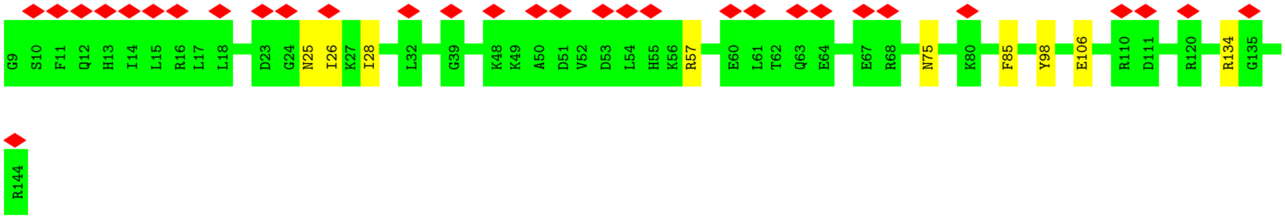




- Molecule 66: uS13

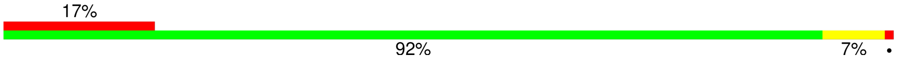
Chain SS:

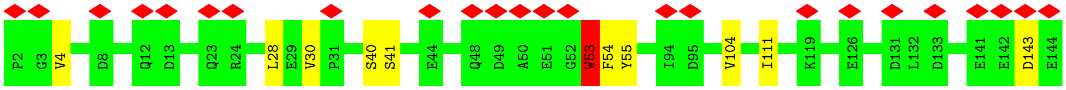




- Molecule 67: eS19

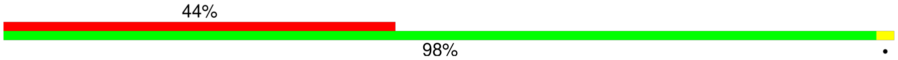
Chain TT:

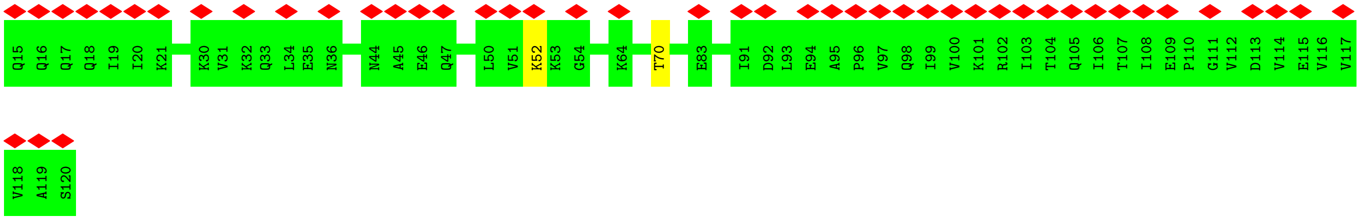




- Molecule 68: uS10

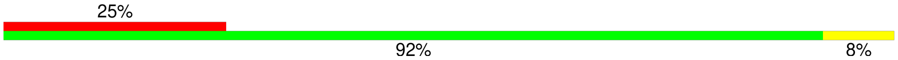
Chain UU:

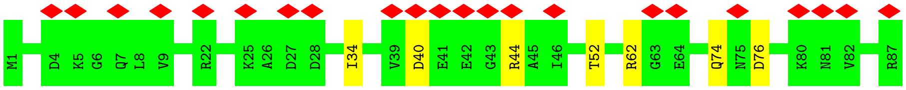




- Molecule 69: eS21

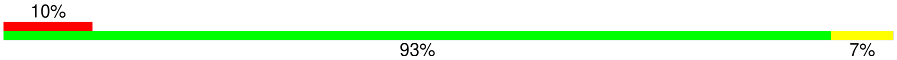
Chain VV:

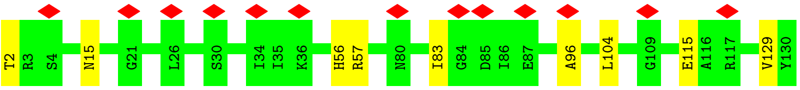




- Molecule 70: uS8

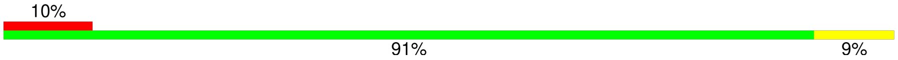
Chain WW:

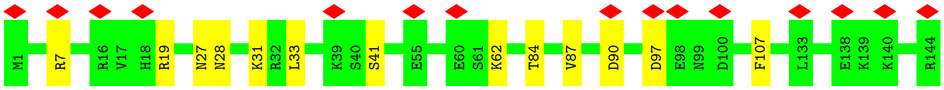




- Molecule 71: uS12

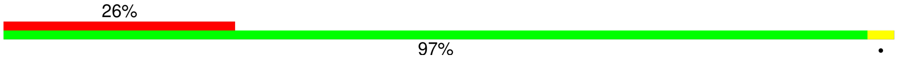
Chain XX:

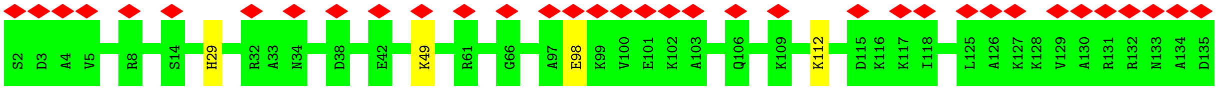




- Molecule 72: eS24

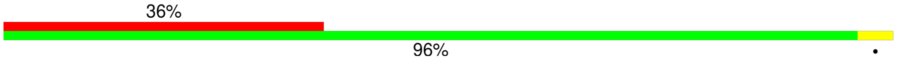
Chain YY:

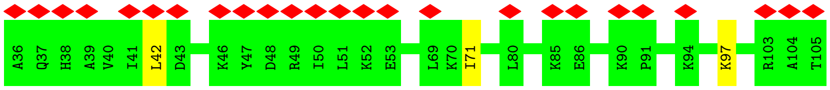




- Molecule 73: eS25

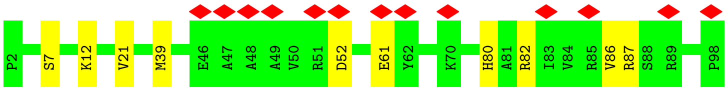
Chain ZZ:





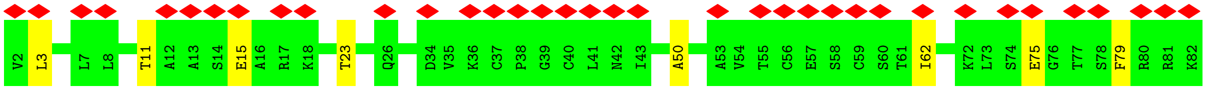
- Molecule 74: eS26

Chain aa:



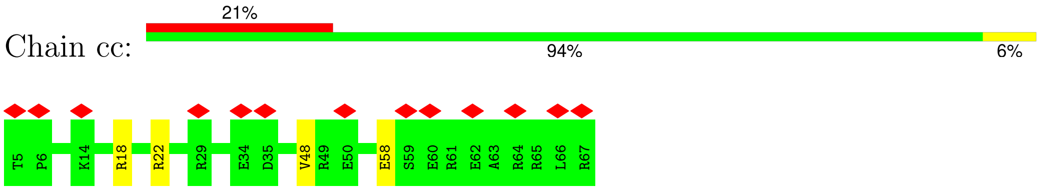
- Molecule 75: eS27

Chain bb:



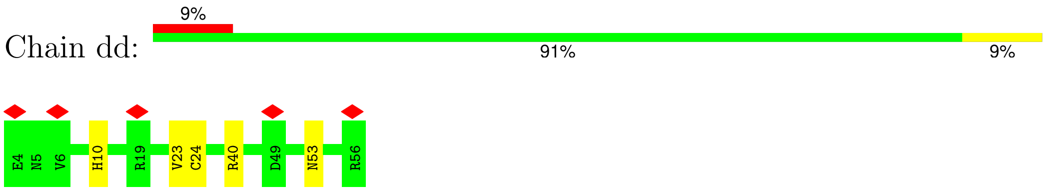
- Molecule 76: eS28

Chain cc:



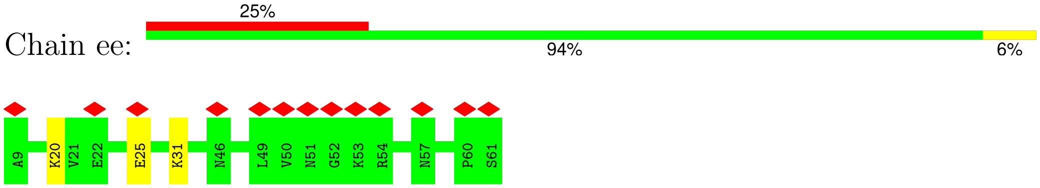
- Molecule 77: uS14

Chain dd:



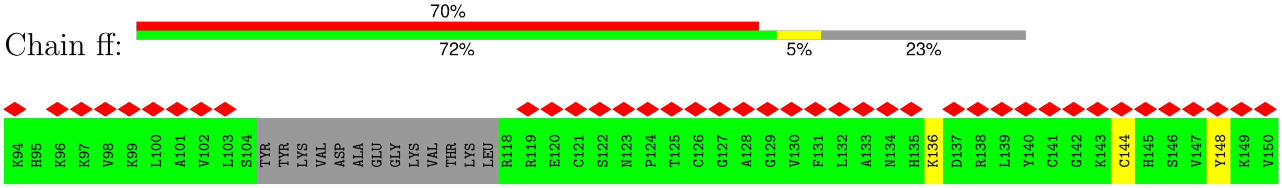
- Molecule 78: eS30

Chain ee:



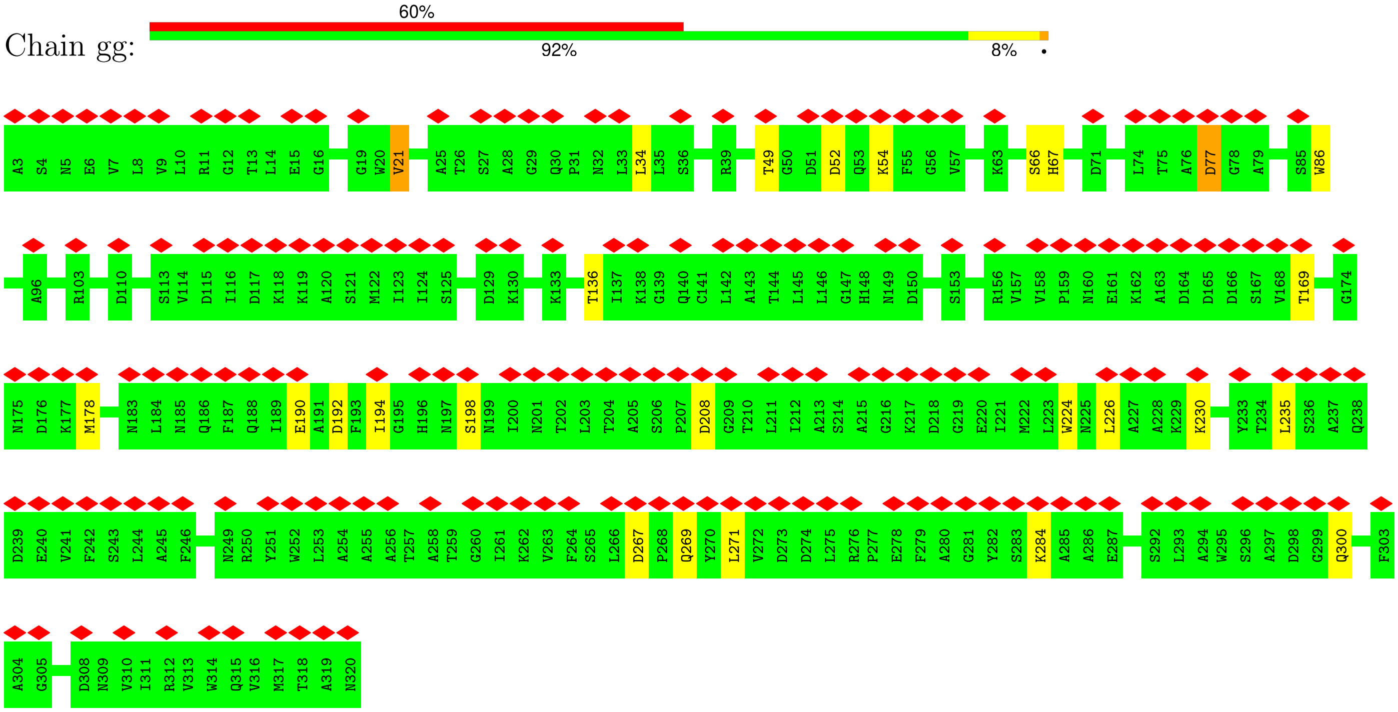
- Molecule 79: eS31

Chain ff:

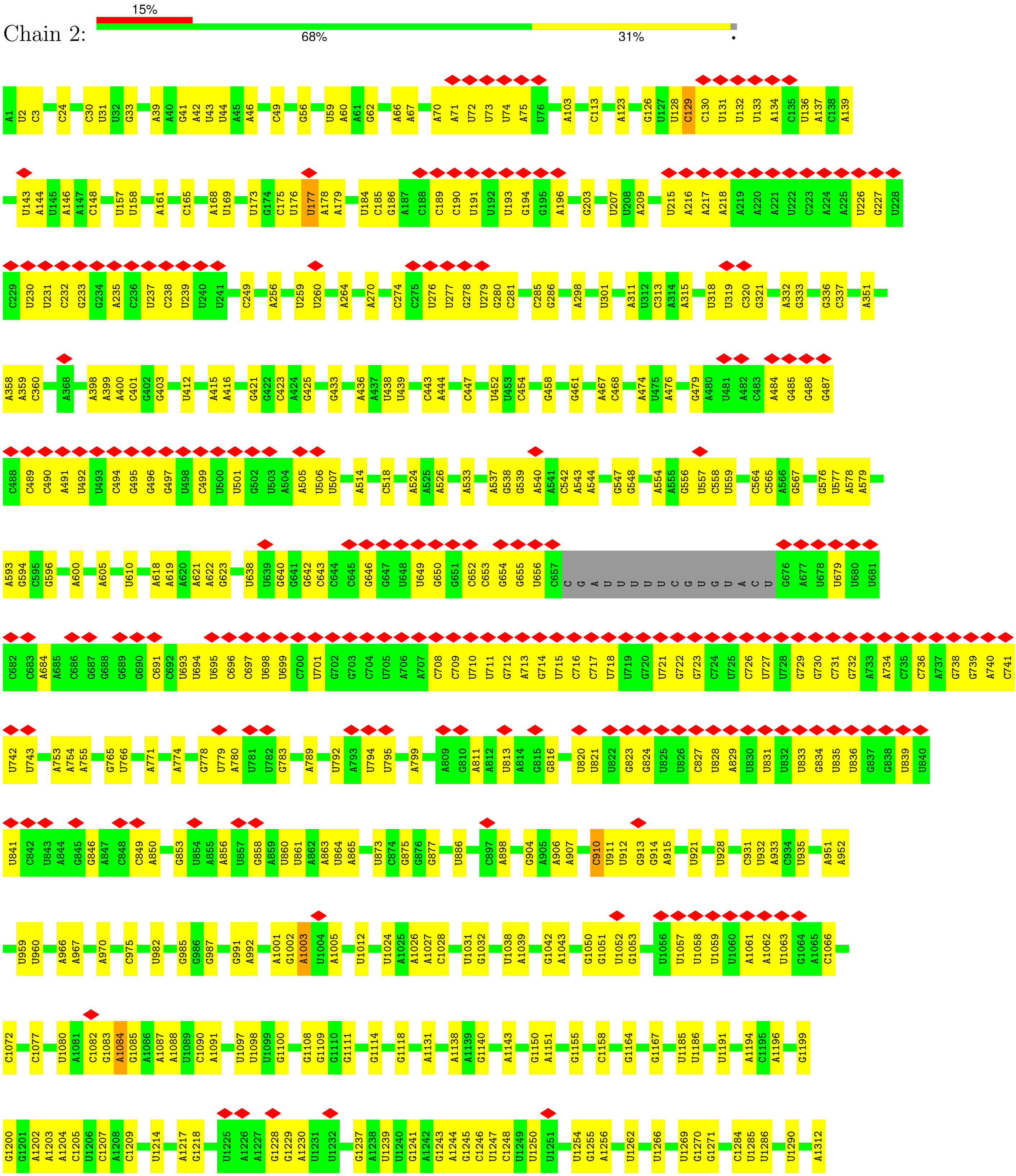


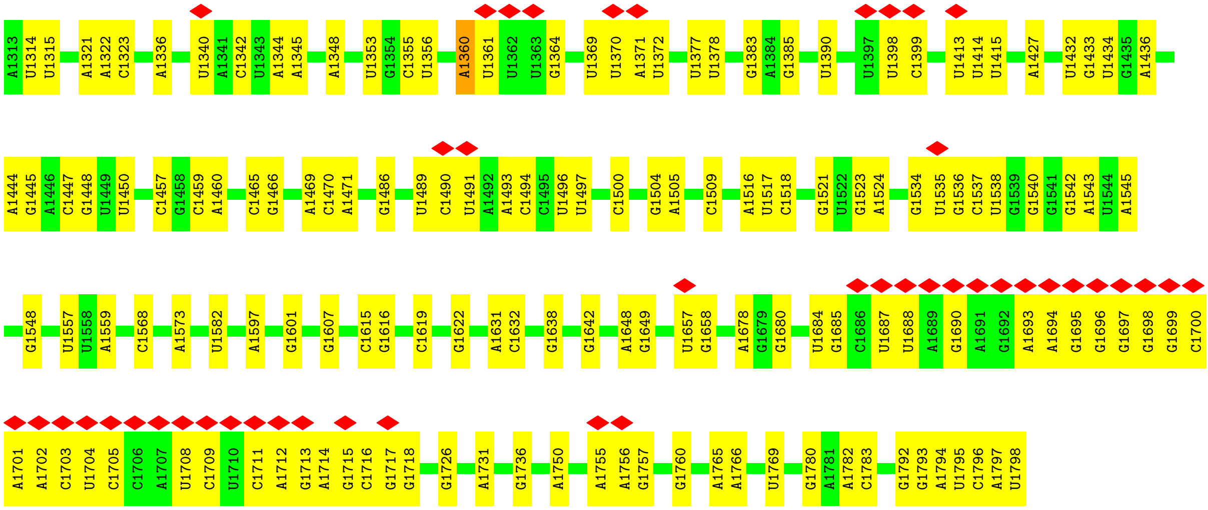
- Molecule 80: RACK1

Chain gg:

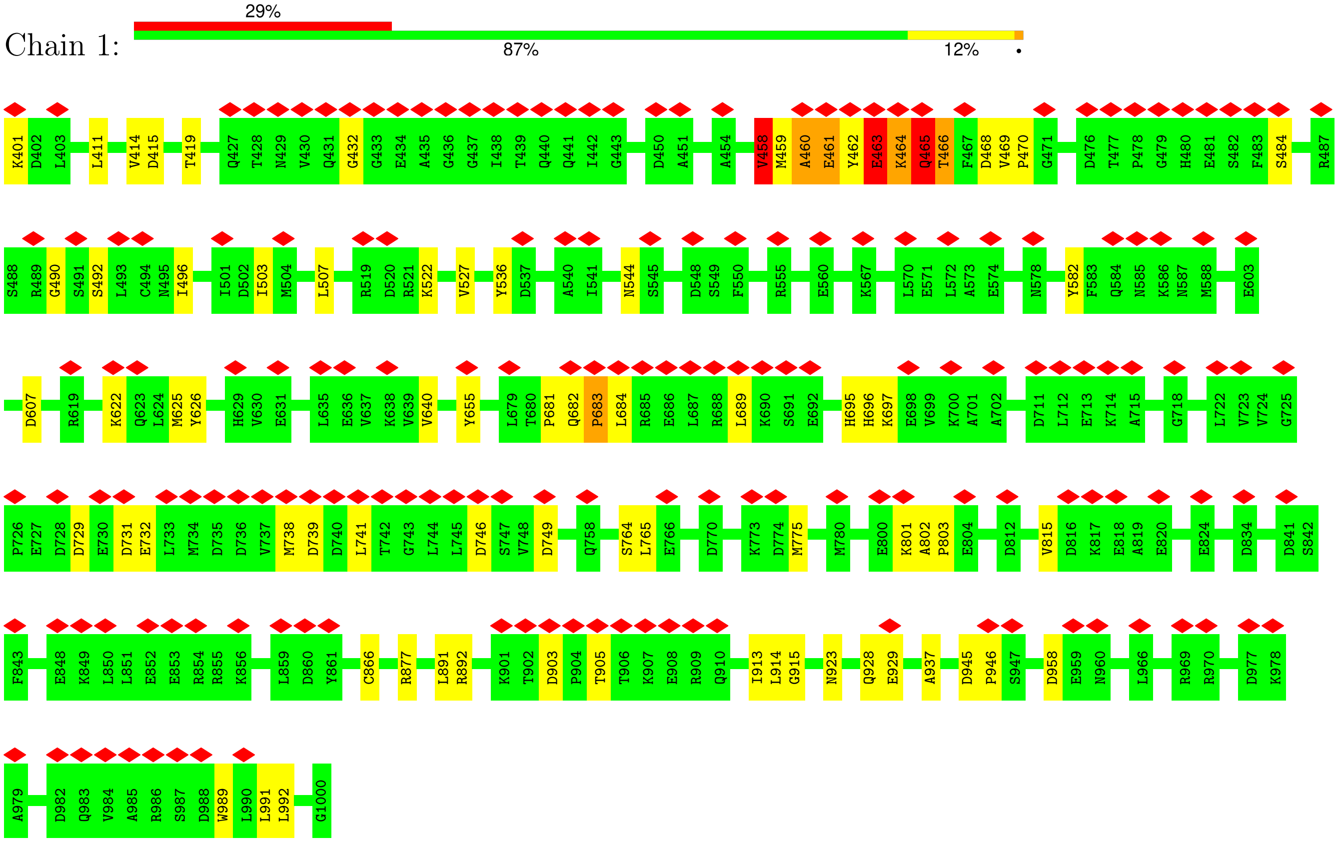


- Molecule 81: 18S ribosomal RNA

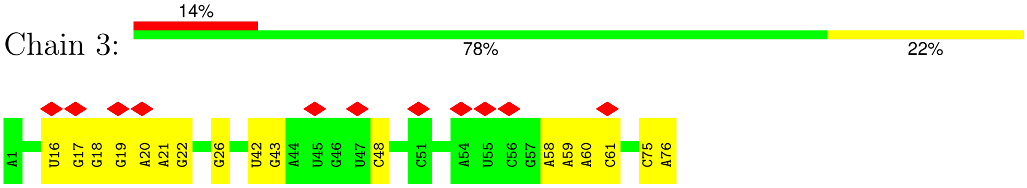




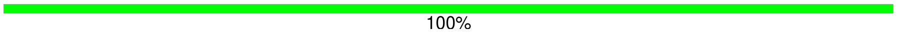
- Molecule 82: eIF5B



- Molecule 83: Met-tRNA-iMet



- Molecule 84: mRNA

Chain 4: 

There are no outlier residues recorded for this chain.

4 Experimental information

Property	**Value**	**Source**
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	107000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\mathrm{\AA}^2)$	60	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.258	Depositor
Minimum map value	-0.092	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.010	Depositor
Recommended contour level	0.042	Depositor
Map size (Å)	424.8, 424.8, 424.8	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.416, 1.416, 1.416	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: U6A, GDP, ZN

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	5	0.27	0/78264	0.70	10/121981 (0.0%)
2	7	0.24	0/2883	0.68	0/4491
3	8	0.26	0/3724	0.69	0/5798
4	A	0.66	0/1927	0.84	0/2589
5	B	0.65	0/3136	0.83	0/4217
6	C	0.66	0/2787	0.84	1/3773 (0.0%)
7	D	0.67	0/2420	0.80	0/3264
8	E	0.67	0/1260	0.80	0/1694
9	F	0.65	0/1821	0.81	0/2451
10	G	0.67	0/1841	0.79	0/2486
11	H	0.67	0/1545	0.82	0/2081
12	I	0.65	0/1787	0.81	0/2397
13	J	0.68	0/1365	0.82	0/1831
14	L	0.65	0/1609	0.86	0/2158
15	M	0.67	0/1069	0.83	0/1439
16	N	0.62	0/1748	0.82	0/2343
17	O	0.65	0/1585	0.80	0/2128
18	P	0.66	0/1450	0.84	0/1947
19	Q	0.65	0/1461	0.82	0/1960
20	R	0.67	0/1538	0.84	0/2050
21	S	0.63	0/1457	0.81	0/1958
22	T	0.66	0/1292	0.82	0/1732
23	U	0.68	0/812	0.80	0/1099
24	V	0.67	0/993	0.83	0/1335
25	W	0.65	0/525	0.81	0/697
26	X	0.65	0/983	0.78	0/1325
27	Y	0.67	0/999	0.82	0/1334
28	Z	0.66	0/1113	0.82	0/1490
29	a	0.63	0/1199	0.82	0/1605
30	b	0.64	0/468	0.82	0/622
31	c	0.70	0/751	0.79	0/1008
32	d	0.66	0/879	0.80	0/1179

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	e	0.66	0/1009	0.85	1/1349 (0.1%)
34	f	0.64	0/860	0.82	0/1157
35	g	0.67	0/964	0.86	0/1282
36	h	0.66	0/959	0.82	0/1276
37	i	0.68	0/770	0.86	0/1021
38	j	0.65	0/688	0.88	0/912
39	k	0.69	1/613 (0.2%)	0.87	0/819
40	l	0.63	0/435	0.80	0/577
41	m	0.64	0/415	0.82	0/551
42	n	0.64	0/219	0.95	0/281
43	o	0.63	0/826	0.84	0/1090
44	p	0.70	0/675	0.86	0/898
45	q	0.71	0/1744	0.84	0/2339
46	r	0.71	0/1538	0.86	0/2079
48	AA	0.66	0/1656	0.81	0/2266
49	BB	0.68	0/1742	0.81	0/2346
50	CC	0.68	0/1665	0.81	1/2263 (0.0%)
51	DD	0.69	0/1759	0.83	0/2368
52	EE	0.66	0/2088	0.82	0/2811
53	FF	0.68	0/1607	0.82	0/2172
54	GG	0.67	0/1844	0.83	0/2464
55	HH	0.68	0/1506	0.83	0/2028
56	II	0.67	0/1505	0.87	0/2010
57	JJ	0.67	0/1502	0.83	0/2013
58	KK	0.66	0/838	0.79	0/1133
59	LL	0.66	0/1192	0.82	0/1608
60	MM	0.74	0/942	0.85	0/1274
61	NN	0.68	0/1215	0.81	0/1638
62	OO	0.69	0/952	0.87	0/1279
63	PP	0.67	0/831	0.81	0/1117
64	QQ	0.67	0/1125	0.83	0/1510
65	RR	0.69	0/998	0.84	0/1337
66	SS	0.67	0/1140	0.84	0/1532
67	TT	0.68	0/1130	0.82	0/1517
68	UU	0.69	0/857	0.82	0/1158
69	VV	0.69	0/693	0.84	0/935
70	WW	0.67	0/1038	0.84	0/1395
71	XX	0.66	0/1141	0.82	0/1520
72	YY	0.68	0/1087	0.83	0/1449
73	ZZ	0.69	0/571	0.82	0/768
74	aa	0.66	0/782	0.87	0/1047
75	bb	0.70	0/620	0.83	0/838
76	cc	0.68	0/499	0.87	0/670

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
77	dd	0.66	0/453	0.85	0/602
78	ee	0.65	0/433	0.81	0/576
79	ff	0.69	0/349	0.88	0/463
80	gg	0.68	0/2495	0.81	0/3392
81	2	0.25	0/42249	0.69	6/65802 (0.0%)
82	1	0.96	30/4776 (0.6%)	0.93	12/6454 (0.2%)
83	3	0.21	0/1823	0.67	0/2842
84	4	0.23	0/147	0.61	0/227
All	All	0.49	31/225656 (0.0%)	0.75	31/330917 (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
4	A	0	1
6	C	0	2
7	D	0	1
9	F	0	2
11	H	0	1
13	J	0	1
17	O	0	1
21	S	0	1
30	b	0	1
33	e	0	1
34	f	0	1
37	i	0	1
39	k	0	1
44	p	0	2
46	r	0	3
49	BB	0	1
50	CC	0	1
51	DD	0	1
52	EE	0	1
53	FF	0	2
54	GG	0	1
55	HH	0	1
56	II	0	3
57	JJ	0	1
58	KK	0	1
59	LL	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
64	QQ	0	2
66	SS	0	1
67	TT	0	1
71	XX	0	2
72	YY	0	1
82	1	0	7
All	All	0	48

The worst 5 of 31 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
82	1	463	GLU	CD-OE1	-13.34	1.10	1.25
82	1	458	VAL	CA-C	-10.00	1.26	1.52
82	1	461	GLU	C-O	-9.97	1.04	1.23
82	1	459	MET	CA-CB	-9.84	1.32	1.53
82	1	462	TYR	CB-CG	-9.81	1.36	1.51

The worst 5 of 31 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
82	1	458	VAL	CG1-CB-CG2	-9.46	95.76	110.90
82	1	464	LYS	N-CA-C	9.16	135.74	111.00
82	1	463	GLU	CB-CA-C	-9.05	92.30	110.40
82	1	461	GLU	N-CA-CB	-8.50	95.31	110.60
1	5	1607	U	C2'-C3'-O3'	8.22	127.58	109.50

There are no chirality outliers.

5 of 48 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	A	196	TRP	Peptide
6	C	148	ILE	Peptide
6	C	349	THR	Peptide
7	D	258	LYS	Peptide
9	F	157	ASN	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	
4	A	247/249 (99%)	223 (90%)	17 (7%)	7 (3%)	4	16
5	B	382/384 (100%)	325 (85%)	54 (14%)	3 (1%)	16	45
6	C	357/359 (99%)	287 (80%)	54 (15%)	16 (4%)	2	8
7	D	293/295 (99%)	266 (91%)	24 (8%)	3 (1%)	13	40
8	E	152/175 (87%)	142 (93%)	8 (5%)	2 (1%)	10	33
9	F	220/222 (99%)	194 (88%)	22 (10%)	4 (2%)	7	25
10	G	231/233 (99%)	210 (91%)	19 (8%)	2 (1%)	14	43
11	H	189/191 (99%)	165 (87%)	21 (11%)	3 (2%)	8	28
12	I	214/216 (99%)	191 (89%)	18 (8%)	5 (2%)	5	20
13	J	166/168 (99%)	149 (90%)	16 (10%)	1 (1%)	22	52
14	L	196/198 (99%)	173 (88%)	19 (10%)	4 (2%)	6	23
15	M	134/136 (98%)	118 (88%)	14 (10%)	2 (2%)	8	29
16	N	200/202 (99%)	183 (92%)	16 (8%)	1 (0%)	25	56
17	O	195/197 (99%)	184 (94%)	9 (5%)	2 (1%)	13	40
18	P	178/180 (99%)	158 (89%)	18 (10%)	2 (1%)	12	37
19	Q	182/184 (99%)	169 (93%)	12 (7%)	1 (0%)	25	56
20	R	186/188 (99%)	174 (94%)	11 (6%)	1 (0%)	25	56
21	S	167/169 (99%)	152 (91%)	12 (7%)	3 (2%)	7	25
22	T	156/158 (99%)	141 (90%)	13 (8%)	2 (1%)	10	33
23	U	98/100 (98%)	89 (91%)	9 (9%)	0	100	100
24	V	130/132 (98%)	115 (88%)	13 (10%)	2 (2%)	8	29
25	W	60/62 (97%)	54 (90%)	6 (10%)	0	100	100
26	X	119/121 (98%)	108 (91%)	10 (8%)	1 (1%)	16	45
27	Y	123/125 (98%)	111 (90%)	12 (10%)	0	100	100
28	Z	132/134 (98%)	114 (86%)	16 (12%)	2 (2%)	8	29

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
29	a	145/147 (99%)	122 (84%)	19 (13%)	4 (3%)	4	16
30	b	55/57 (96%)	46 (84%)	7 (13%)	2 (4%)	3	12
31	c	95/97 (98%)	91 (96%)	4 (4%)	0	100	100
32	d	104/106 (98%)	99 (95%)	5 (5%)	0	100	100
33	e	120/122 (98%)	110 (92%)	8 (7%)	2 (2%)	7	27
34	f	103/105 (98%)	92 (89%)	9 (9%)	2 (2%)	6	24
35	g	119/121 (98%)	106 (89%)	10 (8%)	3 (2%)	4	18
36	h	114/116 (98%)	108 (95%)	5 (4%)	1 (1%)	14	43
37	i	94/98 (96%)	79 (84%)	13 (14%)	2 (2%)	5	22
38	j	83/85 (98%)	75 (90%)	8 (10%)	0	100	100
39	k	74/76 (97%)	64 (86%)	10 (14%)	0	100	100
40	l	47/49 (96%)	39 (83%)	7 (15%)	1 (2%)	5	22
41	m	49/51 (96%)	46 (94%)	3 (6%)	0	100	100
42	n	21/23 (91%)	19 (90%)	2 (10%)	0	100	100
43	o	99/101 (98%)	79 (80%)	12 (12%)	8 (8%)	1	2
44	p	85/87 (98%)	70 (82%)	12 (14%)	3 (4%)	3	12
45	q	213/217 (98%)	163 (76%)	45 (21%)	5 (2%)	5	20
46	r	191/195 (98%)	144 (75%)	41 (22%)	6 (3%)	3	14
48	AA	204/206 (99%)	166 (81%)	31 (15%)	7 (3%)	3	13
49	BB	212/214 (99%)	187 (88%)	23 (11%)	2 (1%)	14	43
50	CC	215/217 (99%)	188 (87%)	21 (10%)	6 (3%)	4	16
51	DD	221/223 (99%)	189 (86%)	26 (12%)	6 (3%)	4	17
52	EE	255/257 (99%)	217 (85%)	33 (13%)	5 (2%)	6	23
53	FF	197/206 (96%)	155 (79%)	36 (18%)	6 (3%)	3	15
54	GG	224/226 (99%)	201 (90%)	22 (10%)	1 (0%)	30	60
55	HH	182/184 (99%)	157 (86%)	22 (12%)	3 (2%)	8	28
56	II	183/199 (92%)	153 (84%)	25 (14%)	5 (3%)	4	17
57	JJ	180/182 (99%)	156 (87%)	17 (9%)	7 (4%)	2	10
58	KK	94/96 (98%)	81 (86%)	10 (11%)	3 (3%)	3	13
59	LL	143/145 (99%)	127 (89%)	15 (10%)	1 (1%)	19	49
60	MM	122/124 (98%)	85 (70%)	34 (28%)	3 (2%)	4	18

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
61	NN	148/150 (99%)	137 (93%)	7 (5%)	4 (3%)	4	17
62	OO	125/127 (98%)	106 (85%)	16 (13%)	3 (2%)	5	19
63	PP	101/103 (98%)	88 (87%)	12 (12%)	1 (1%)	13	40
64	QQ	139/141 (99%)	126 (91%)	11 (8%)	2 (1%)	9	31
65	RR	119/123 (97%)	99 (83%)	19 (16%)	1 (1%)	16	45
66	SS	134/136 (98%)	116 (87%)	17 (13%)	1 (1%)	19	49
67	TT	141/143 (99%)	128 (91%)	10 (7%)	3 (2%)	5	22
68	UU	104/106 (98%)	94 (90%)	10 (10%)	0	100	100
69	VV	85/87 (98%)	71 (84%)	14 (16%)	0	100	100
70	WW	127/129 (98%)	114 (90%)	10 (8%)	3 (2%)	5	19
71	XX	142/144 (99%)	125 (88%)	14 (10%)	3 (2%)	5	22
72	YY	132/134 (98%)	119 (90%)	12 (9%)	1 (1%)	16	45
73	ZZ	68/70 (97%)	59 (87%)	8 (12%)	1 (2%)	8	29
74	aa	95/97 (98%)	76 (80%)	14 (15%)	5 (5%)	1	5
75	bb	79/81 (98%)	63 (80%)	15 (19%)	1 (1%)	10	33
76	cc	61/63 (97%)	54 (88%)	7 (12%)	0	100	100
77	dd	51/53 (96%)	49 (96%)	2 (4%)	0	100	100
78	ee	51/53 (96%)	44 (86%)	7 (14%)	0	100	100
79	ff	40/57 (70%)	20 (50%)	19 (48%)	1 (2%)	4	18
80	gg	312/318 (98%)	265 (85%)	43 (14%)	4 (1%)	10	33
82	1	598/600 (100%)	476 (80%)	94 (16%)	28 (5%)	2	7
All	All	11802/12025 (98%)	10238 (87%)	1339 (11%)	225 (2%)	9	24

5 of 225 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	A	181	LYS
4	A	196	TRP
6	C	54	GLU
6	C	148	ILE
6	C	316	ASN

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	
4	A	191/191 (100%)	178 (93%)	13 (7%)	13	38
5	B	320/320 (100%)	301 (94%)	19 (6%)	16	45
6	C	286/286 (100%)	269 (94%)	17 (6%)	16	45
7	D	244/244 (100%)	222 (91%)	22 (9%)	8	25
8	E	134/152 (88%)	127 (95%)	7 (5%)	19	50
9	F	186/186 (100%)	178 (96%)	8 (4%)	25	57
10	G	189/191 (99%)	182 (96%)	7 (4%)	29	64
11	H	172/172 (100%)	163 (95%)	9 (5%)	19	50
12	I	184/185 (100%)	175 (95%)	9 (5%)	21	53
13	J	146/146 (100%)	138 (94%)	8 (6%)	18	48
14	L	158/158 (100%)	149 (94%)	9 (6%)	17	47
15	M	108/108 (100%)	102 (94%)	6 (6%)	17	47
16	N	174/174 (100%)	169 (97%)	5 (3%)	37	72
17	O	160/160 (100%)	158 (99%)	2 (1%)	65	88
18	P	145/145 (100%)	139 (96%)	6 (4%)	26	60
19	Q	150/150 (100%)	147 (98%)	3 (2%)	50	79
20	R	153/153 (100%)	143 (94%)	10 (6%)	14	40
21	S	154/154 (100%)	147 (96%)	7 (4%)	23	56
22	T	135/135 (100%)	123 (91%)	12 (9%)	8	26
23	U	87/87 (100%)	83 (95%)	4 (5%)	23	55
24	V	101/101 (100%)	93 (92%)	8 (8%)	10	30
25	W	54/54 (100%)	52 (96%)	2 (4%)	29	64
26	X	105/105 (100%)	100 (95%)	5 (5%)	21	54
27	Y	109/109 (100%)	103 (94%)	6 (6%)	18	48
28	Z	115/115 (100%)	106 (92%)	9 (8%)	10	31
29	a	118/118 (100%)	112 (95%)	6 (5%)	20	51

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
30	b	46/46 (100%)	46 (100%)	0	100	100
31	c	81/81 (100%)	75 (93%)	6 (7%)	11	34
32	d	93/93 (100%)	90 (97%)	3 (3%)	34	69
33	e	106/106 (100%)	97 (92%)	9 (8%)	8	27
34	f	89/89 (100%)	87 (98%)	2 (2%)	47	78
35	g	103/103 (100%)	92 (89%)	11 (11%)	5	17
36	h	103/103 (100%)	102 (99%)	1 (1%)	73	91
37	i	80/80 (100%)	74 (92%)	6 (8%)	11	33
38	j	69/69 (100%)	66 (96%)	3 (4%)	25	57
39	k	68/68 (100%)	61 (90%)	7 (10%)	6	19
40	l	44/44 (100%)	42 (96%)	2 (4%)	23	56
41	m	46/46 (100%)	46 (100%)	0	100	100
42	n	21/21 (100%)	19 (90%)	2 (10%)	7	22
43	o	87/87 (100%)	80 (92%)	7 (8%)	10	30
44	p	69/69 (100%)	64 (93%)	5 (7%)	12	35
45	q	198/198 (100%)	172 (87%)	26 (13%)	3	10
46	r	165/165 (100%)	143 (87%)	22 (13%)	3	10
48	AA	173/173 (100%)	167 (96%)	6 (4%)	31	66
49	BB	192/192 (100%)	178 (93%)	14 (7%)	11	34
50	CC	176/176 (100%)	165 (94%)	11 (6%)	15	42
51	DD	182/182 (100%)	171 (94%)	11 (6%)	16	44
52	EE	219/219 (100%)	207 (94%)	12 (6%)	18	48
53	FF	173/173 (100%)	163 (94%)	10 (6%)	17	46
54	GG	193/193 (100%)	188 (97%)	5 (3%)	41	74
55	HH	165/165 (100%)	156 (94%)	9 (6%)	18	48
56	II	149/160 (93%)	138 (93%)	11 (7%)	11	34
57	JJ	156/156 (100%)	148 (95%)	8 (5%)	20	51
58	KK	89/89 (100%)	76 (85%)	13 (15%)	2	8
59	LL	130/130 (100%)	127 (98%)	3 (2%)	45	77
60	MM	100/100 (100%)	94 (94%)	6 (6%)	16	44
61	NN	127/127 (100%)	121 (95%)	6 (5%)	22	55

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
62	OO	96/96 (100%)	86 (90%)	10 (10%)	5	18
63	PP	86/86 (100%)	79 (92%)	7 (8%)	9	29
64	QQ	117/117 (100%)	109 (93%)	8 (7%)	13	38
65	RR	112/112 (100%)	102 (91%)	10 (9%)	8	26
66	SS	120/120 (100%)	113 (94%)	7 (6%)	17	46
67	TT	115/115 (100%)	106 (92%)	9 (8%)	10	31
68	UU	99/99 (100%)	97 (98%)	2 (2%)	50	79
69	VV	74/74 (100%)	67 (90%)	7 (10%)	7	22
70	WW	110/110 (100%)	104 (94%)	6 (6%)	18	48
71	XX	119/119 (100%)	111 (93%)	8 (7%)	13	39
72	YY	112/112 (100%)	110 (98%)	2 (2%)	54	82
73	ZZ	61/61 (100%)	59 (97%)	2 (3%)	33	68
74	aa	83/83 (100%)	78 (94%)	5 (6%)	16	44
75	bb	70/70 (100%)	63 (90%)	7 (10%)	6	20
76	cc	56/56 (100%)	52 (93%)	4 (7%)	12	36
77	dd	47/47 (100%)	42 (89%)	5 (11%)	5	18
78	ee	46/46 (100%)	43 (94%)	3 (6%)	14	40
79	ff	38/49 (78%)	36 (95%)	2 (5%)	19	49
80	gg	261/261 (100%)	237 (91%)	24 (9%)	7	24
82	1	524/524 (100%)	479 (91%)	45 (9%)	8	27
All	All	10116/10159 (100%)	9487 (94%)	629 (6%)	18	43

5 of 629 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
62	OO	125	SER
80	gg	194	ILE
64	QQ	43	ILE
62	OO	124	ASP
70	WW	115	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 122 such sidechains are listed below:

Mol	Chain	Res	Type
33	e	31	ASN
73	ZZ	95	HIS
48	AA	83	GLN
72	YY	110	GLN
82	1	569	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	5	3250/3271 (99%)	786 (24%)	76 (2%)
2	7	120/121 (99%)	21 (17%)	0
3	8	156/157 (99%)	34 (21%)	2 (1%)
81	2	1767/1796 (98%)	554 (31%)	32 (1%)
83	3	75/76 (98%)	17 (22%)	0
84	4	5/6 (83%)	0	0
All	All	5373/5427 (99%)	1412 (26%)	110 (2%)

5 of 1412 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	5	3	U
1	5	6	A
1	5	14	U
1	5	15	C
1	5	17	G

5 of 110 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	5	2941	A
1	5	3289	G
81	2	1755	A
81	2	1344	A
1	5	3057	U

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 9 ligands modelled in this entry, 6 are monoatomic - leaving 3 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
87	U6A	3	101	83	9,9,10	1.69	2 (22%)	10,11,13	2.60	1 (10%)
88	MET	3	102	83	6,7,8	0.48	0	2,7,9	1.44	0
86	GDP	1	1101	-	25,30,30	0.96	1 (4%)	30,47,47	1.24	2 (6%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
87	U6A	3	101	83	-	10/11/11/12	-
88	MET	3	102	83	-	1/5/6/8	-
86	GDP	1	1101	-	-	3/12/32/32	0/3/3/3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
87	3	101	U6A	O1-C1	3.32	1.36	1.22
87	3	101	U6A	CA-N	2.80	1.49	1.45
86	1	1101	GDP	C6-N1	-2.30	1.34	1.37

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
87	3	101	U6A	O1-C1-N	7.63	145.02	125.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
86	1	1101	GDP	C8-N7-C5	3.33	108.22	102.55
86	1	1101	GDP	C5-C6-N1	2.16	118.18	114.07

There are no chirality outliers.

5 of 14 torsion outliers are listed below:

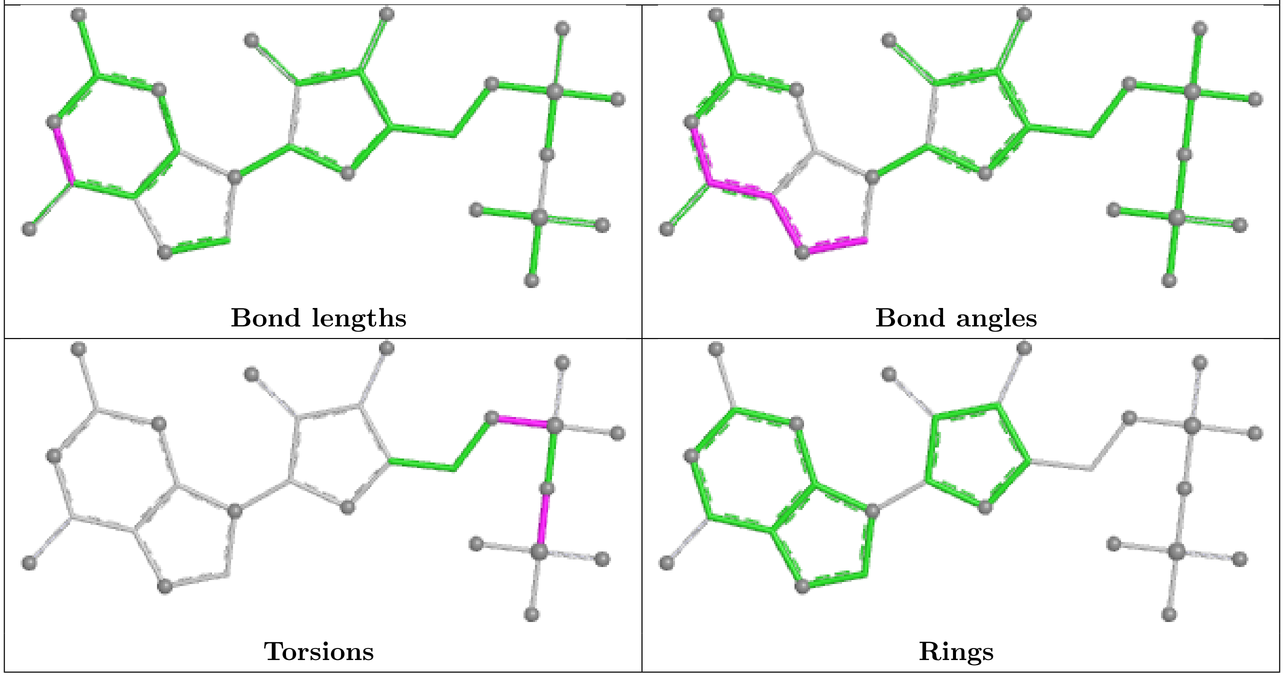
Mol	Chain	Res	Type	Atoms
86	1	1101	GDP	PA-O3A-PB-O2B
86	1	1101	GDP	C5'-O5'-PA-O1A
87	3	101	U6A	O1-C1-N-CA
87	3	101	U6A	C7-C6-CA-C
87	3	101	U6A	O8-C6-CA-C

There are no ring outliers.

No monomer is involved in short contacts.

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

Ligand GDP 1 1101



Bond lengths

Bond angles

Torsions

Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	5	18
81	2	11
80	gg	2
45	q	1
37	i	1
65	RR	1
46	r	1

The worst 5 of 35 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	5	1980:C	O3’	2051:G	P	18.54
1	5	2083:U	O3’	2084:G	P	11.15
1	5	1954:G	O3’	1955:U	P	7.40
1	5	439:C	O3’	495:G	P	7.21
1	2	856:A	O3’	857:U	P	7.17

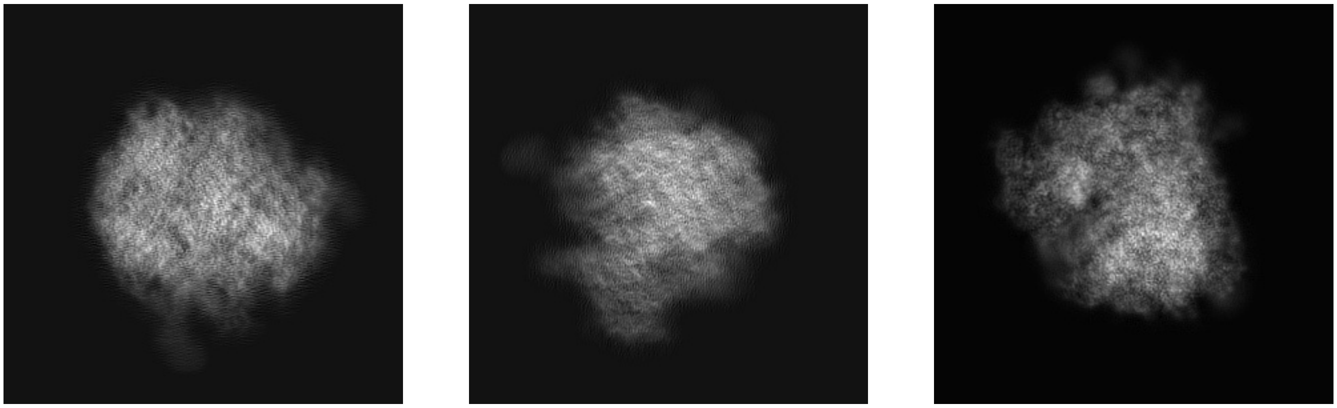
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-21859. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

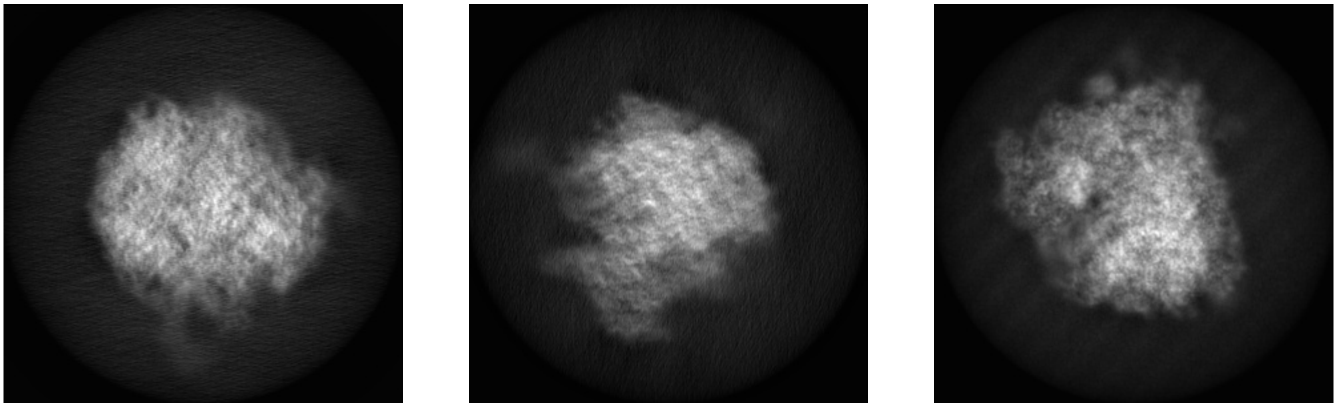
6.1 Orthogonal projections

6.1.1 Primary map



X Y Z

6.1.2 Raw map

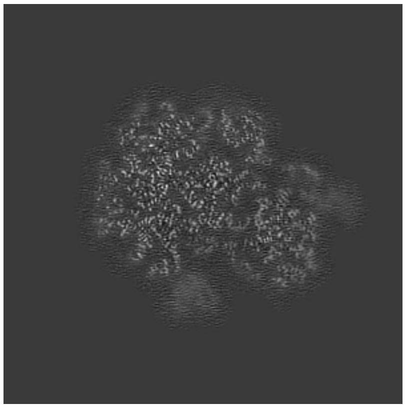


X Y Z

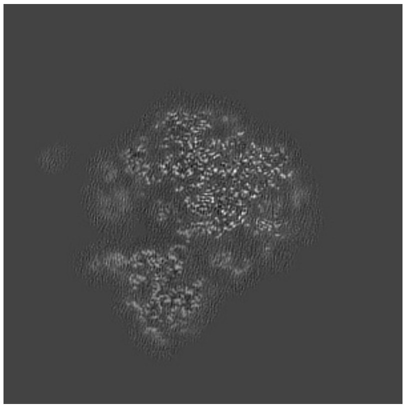
The images above show the map projected in three orthogonal directions.

6.2 Central slices

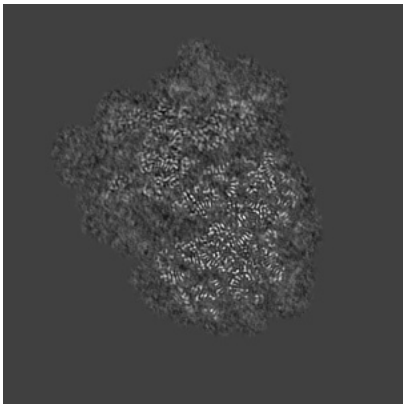
6.2.1 Primary map



X Index: 150

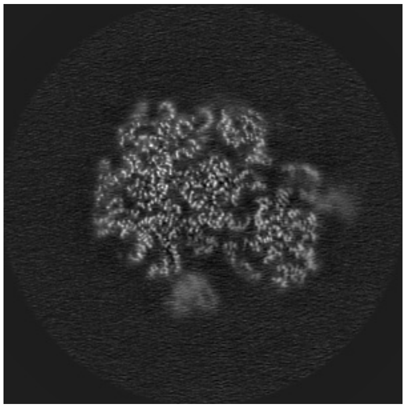


Y Index: 150

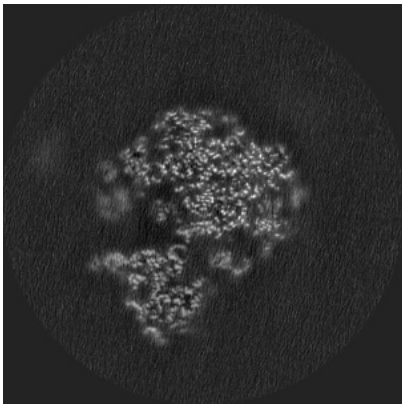


Z Index: 150

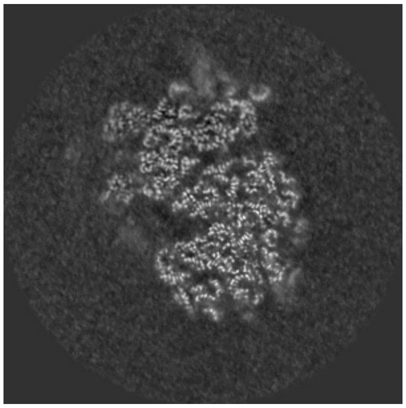
6.2.2 Raw map



X Index: 150



Y Index: 150

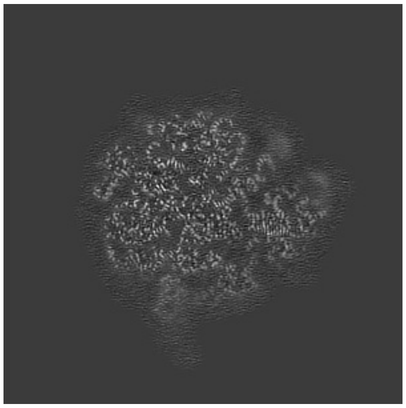


Z Index: 150

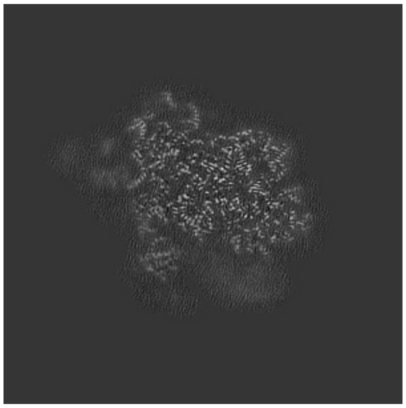
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices

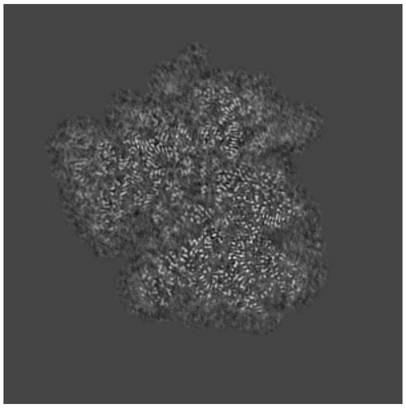
6.3.1 Primary map



X Index: 172

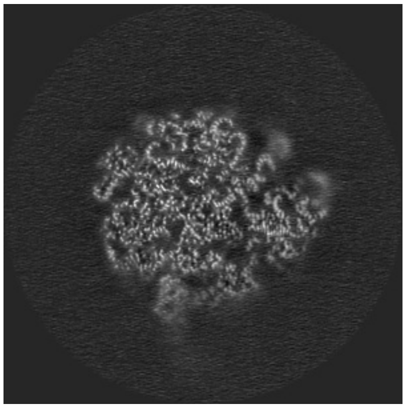


Y Index: 117

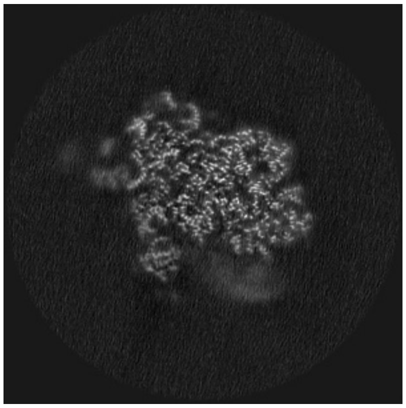


Z Index: 132

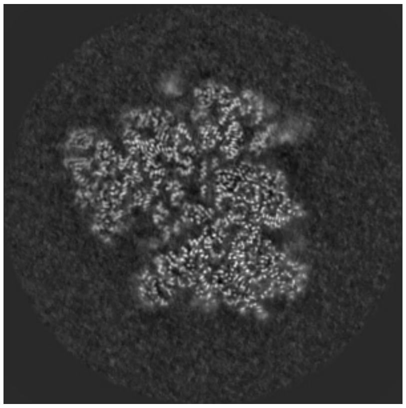
6.3.2 Raw map



X Index: 172



Y Index: 117

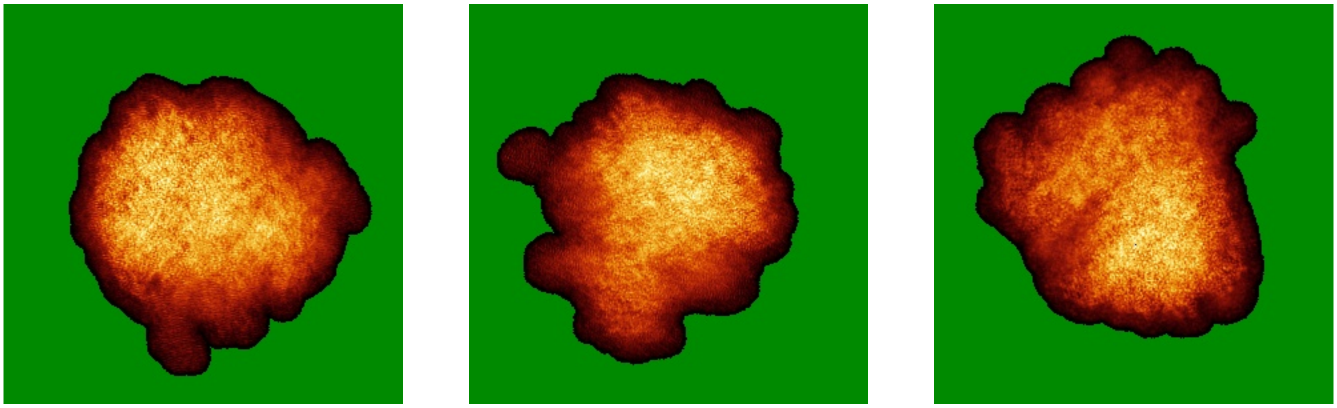


Z Index: 132

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

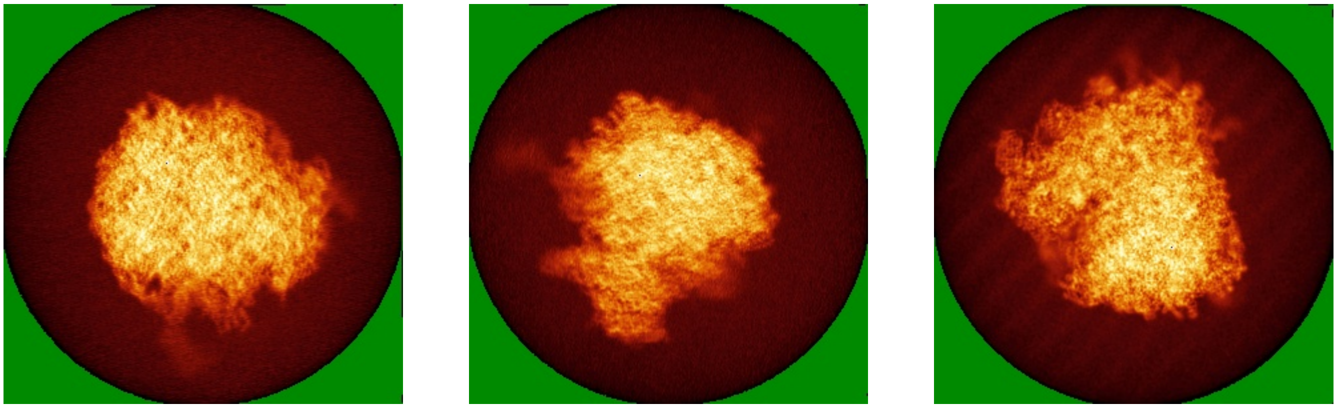
6.4 Orthogonal standard-deviation projections (False-color)

6.4.1 Primary map



X Y Z

6.4.2 Raw map



X Y Z

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

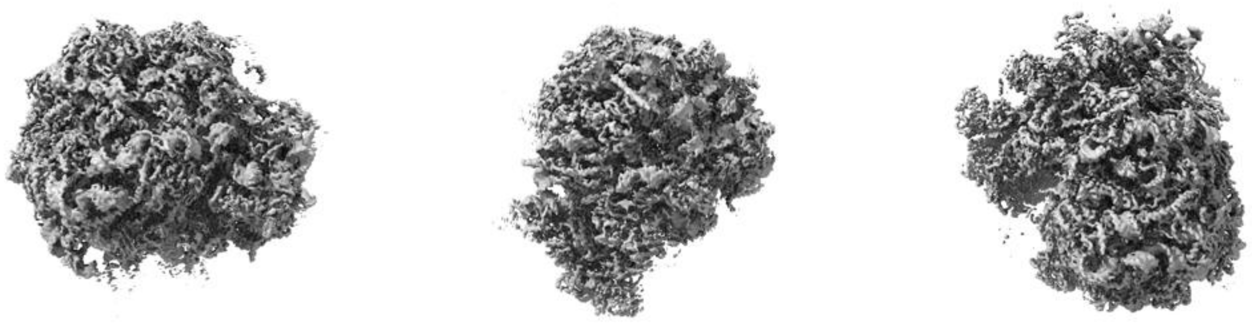
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.042. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

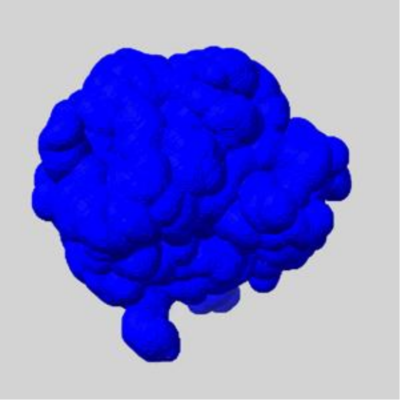
6.6 Mask visualisation ⓘ

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

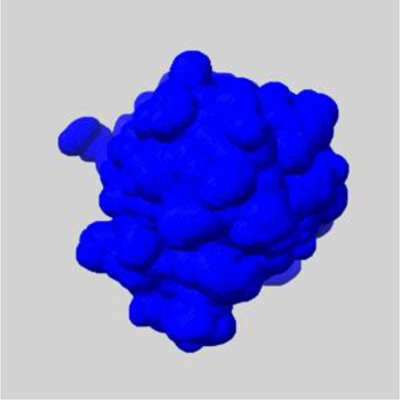
A mask typically either:

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

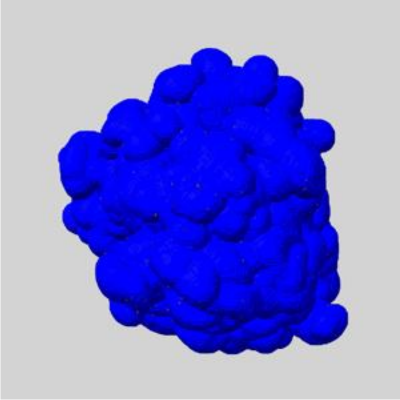
6.6.1 emd_21859_msk_1.map ⓘ



X



Y

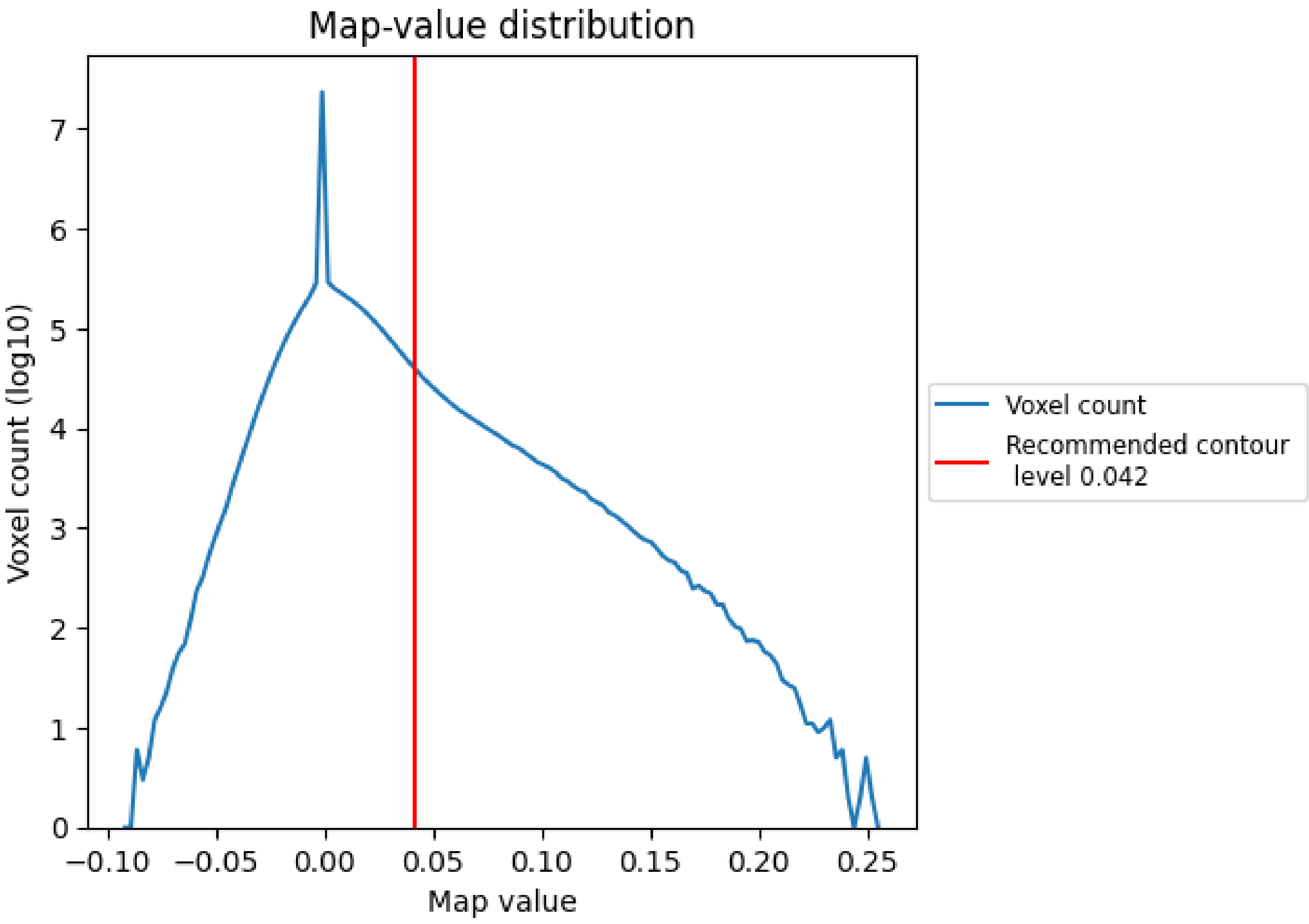


Z

7 Map analysis ⓘ

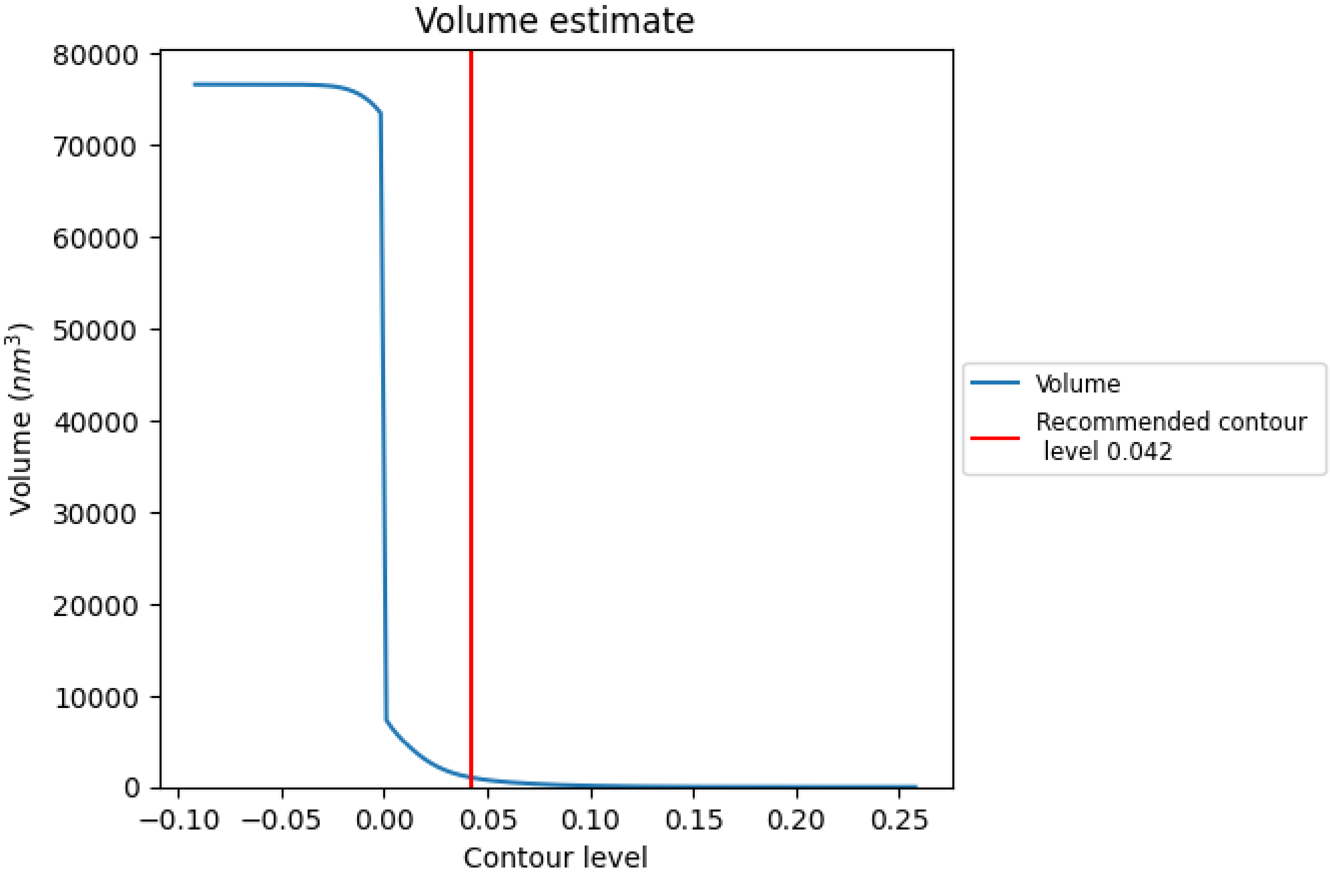
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution ⓘ



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

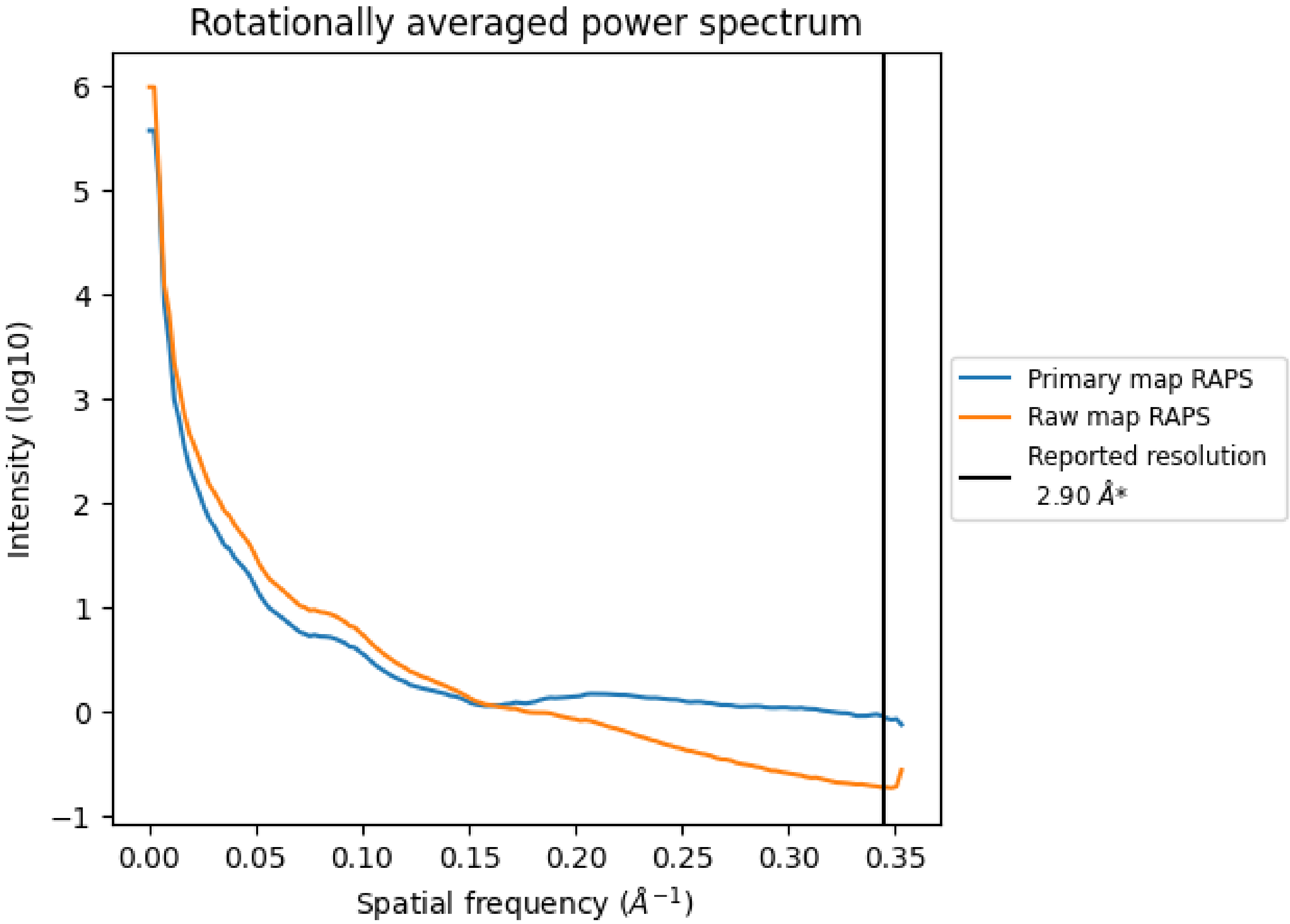
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 1033 nm^3; this corresponds to an approximate mass of 933 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 ⓘ

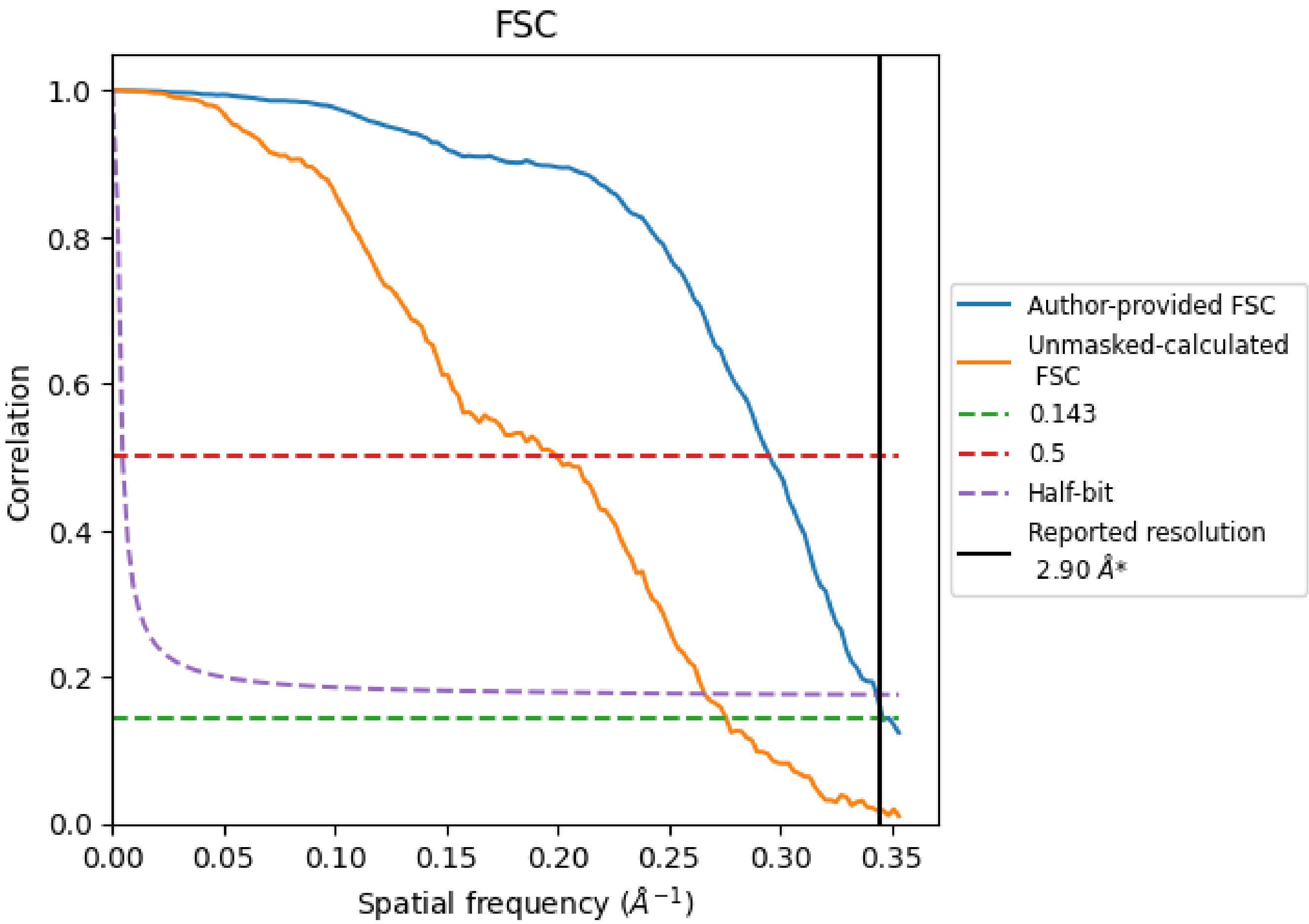


*Reported resolution corresponds to spatial frequency of 0.345 $Å^{-1}$

8 Fourier-Shell correlation ⓘ

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

8.1 FSC ⓘ



*Reported resolution corresponds to spatial frequency of 0.345 $Å^{-1}$

8.2 Resolution estimates

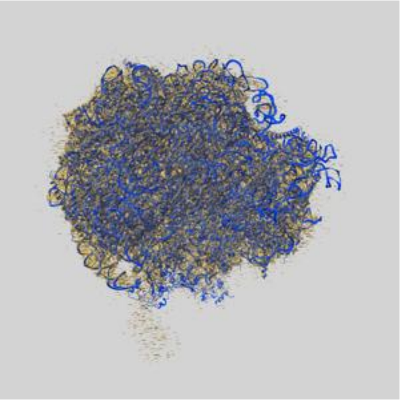
Resolution estimate (Å)	**Estimation criterion (FSC cut-off)**		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	2.89	3.39	2.91
Unmasked-calculated*	3.63	5.02	3.76

*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 3.63 differs from the reported value 2.9 by more than 10 %

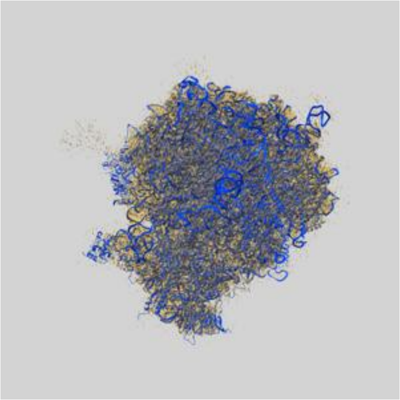
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-21859 and PDB model 6WOO. Per-residue inclusion information can be found in section 3 on page 22.

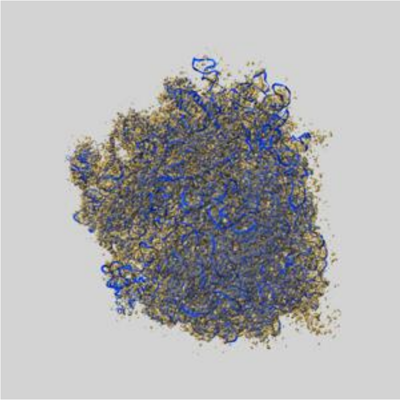
9.1 Map-model overlay



X



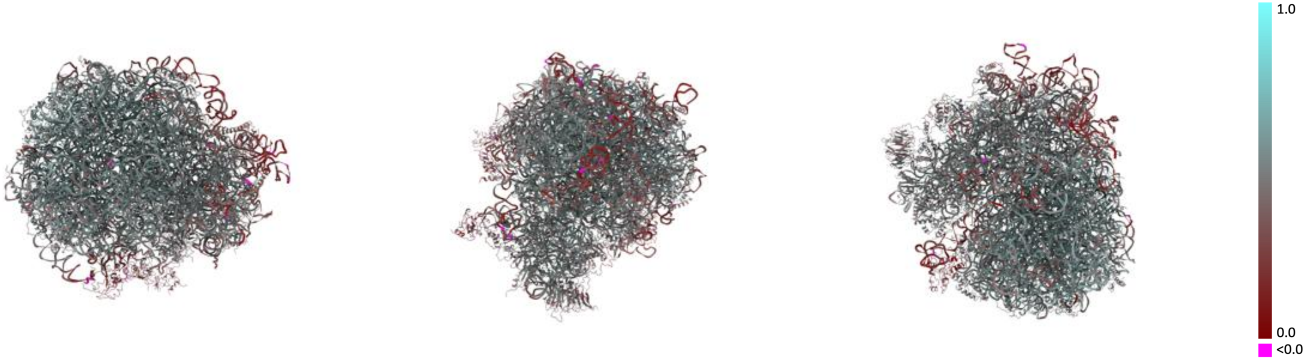
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.042 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

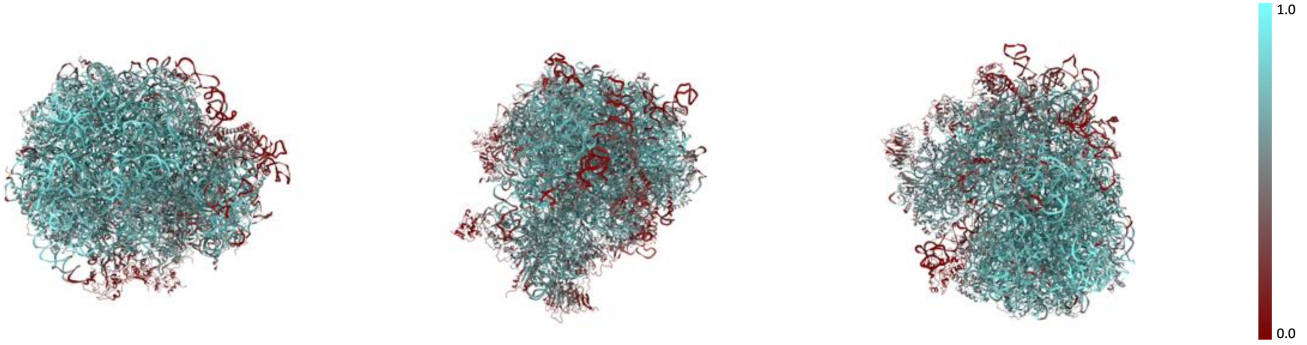
9.2 Q-score mapped to coordinate model



X Y Z

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

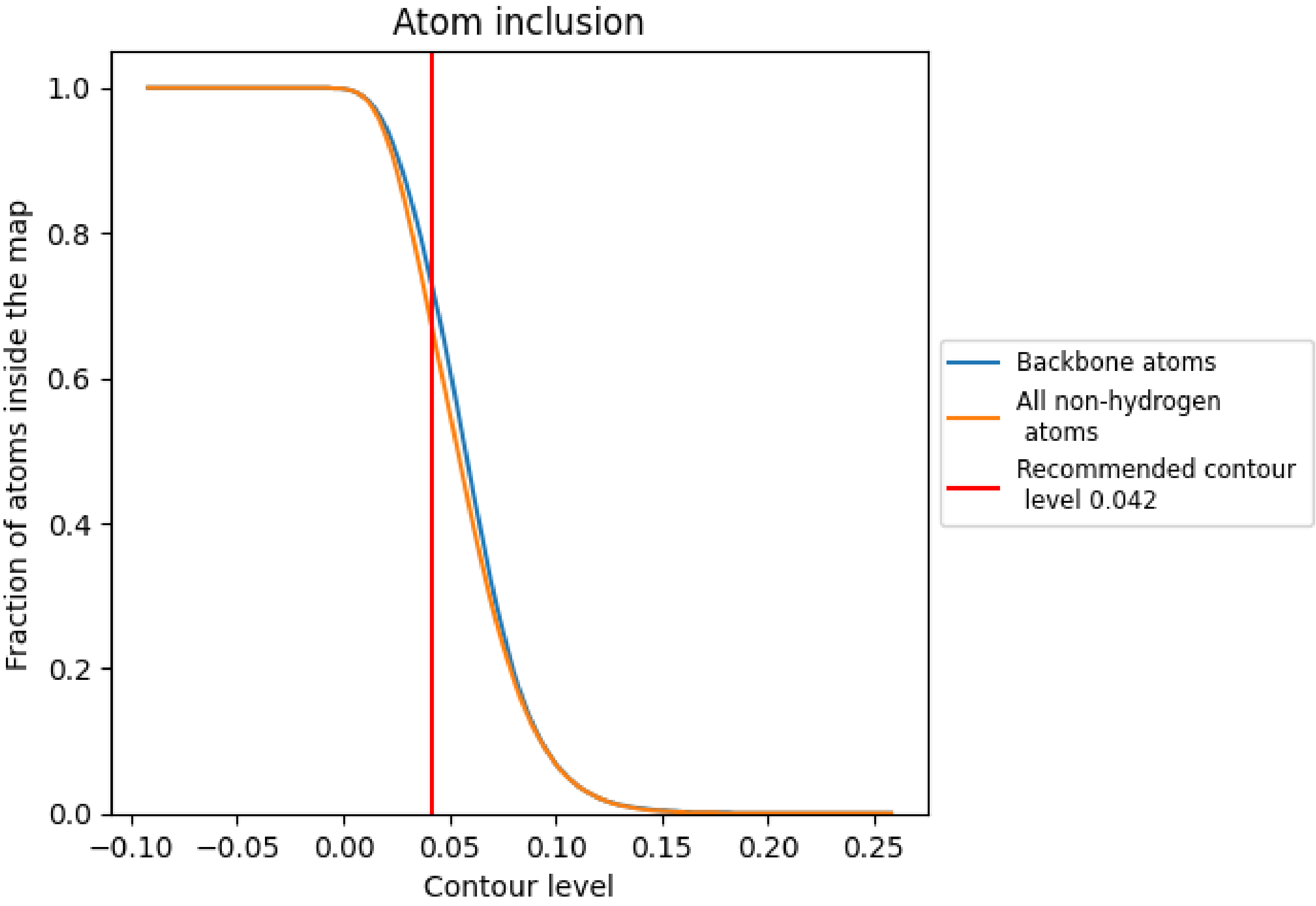
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.042).

9.4 Atom inclusion ⓘ



At the recommended contour level, 72% of all backbone atoms, 67% 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 (0.042) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6670	0.4870
1	0.5100	0.4650
2	0.7060	0.4640
3	0.6180	0.4540
4	0.8170	0.5400
5	0.7780	0.5030
7	0.8310	0.5330
8	0.8590	0.5460
A	0.7070	0.5420
AA	0.4640	0.4490
B	0.6680	0.5200
BB	0.5380	0.4660
C	0.7030	0.5290
CC	0.5750	0.4890
D	0.5690	0.4800
DD	0.4780	0.4570
E	0.6100	0.4800
EE	0.6250	0.5100
F	0.6770	0.5210
FF	0.5530	0.4630
G	0.5660	0.4780
GG	0.4580	0.4370
H	0.6370	0.5020
HH	0.2820	0.4220
I	0.6610	0.5220
II	0.5190	0.4780
J	0.4790	0.4670
JJ	0.6030	0.4770
K	0.0530	0.2380
KK	0.4480	0.4130
L	0.6680	0.5220
LL	0.5460	0.4990
M	0.6290	0.5010
MM	0.0540	0.2660
N	0.7630	0.5580

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Chain	Atom inclusion	Q-score
NN	0.5070	0.4820
O	0.6800	0.5310
OO	0.6100	0.4860
P	0.6890	0.5270
PP	0.5440	0.4390
Q	0.7210	0.5410
QQ	0.5830	0.4990
R	0.5730	0.4900
RR	0.4140	0.4480
S	0.6740	0.5260
SS	0.5680	0.4960
T	0.6450	0.5250
TT	0.5740	0.4920
U	0.4850	0.4440
UU	0.4310	0.4500
V	0.6590	0.5440
VV	0.5060	0.4740
W	0.6400	0.5310
WW	0.6100	0.5140
X	0.6390	0.5150
XX	0.6380	0.5260
Y	0.6740	0.5300
YY	0.5110	0.4650
Z	0.5630	0.4800
ZZ	0.5010	0.4620
a	0.7640	0.5600
aa	0.6530	0.4900
b	0.6290	0.5090
bb	0.4340	0.4650
c	0.5530	0.4570
cc	0.5430	0.4810
d	0.6260	0.5090
dd	0.6700	0.5000
e	0.7180	0.5390
ee	0.5340	0.4690
f	0.7230	0.5520
ff	0.1370	0.3230
g	0.5840	0.4980
gg	0.3410	0.4240
h	0.6540	0.5170
i	0.6220	0.4850
j	0.7760	0.5620

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Chain	Atom inclusion	Q-score
k	0.4500	0.4400
l	0.7300	0.5520
m	0.6770	0.5280
n	0.6400	0.5120
o	0.6680	0.5240
p	0.6440	0.5060
q	0.0230	0.2450
r	0.0940	0.2690