Full wwPDB EM Validation Report ⓘ

May 31, 2022 – 02:04 pm BST

PDB ID	:	7PZY
EMDB ID	:	EMD-13737
Title	:	Structure of the vacant Candida albicans 80S ribosome
Authors	:	Zgadzay, Y.; Kolosova, O.; Stetsenko, A.; Jenner, L.; Guskov, A.; Yusupova, G.; Yusupov, M.
Deposited on	:	2021-10-13
Resolution	:	2.32 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

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

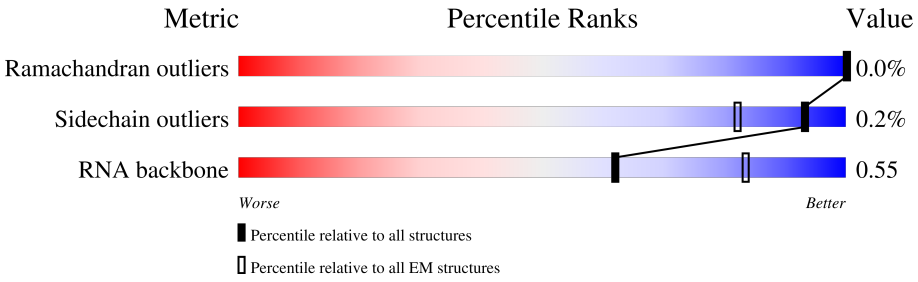
EMDB validation analysis	:	0.0.1.dev8
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.28.1

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 2.32 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	1	3359	7% 78% 17%
2	3	121	93% 7%
3	4	158	84% 16%
4	10	76	18% 16% 5% 79%
5	j	254	98%
6	k	389	99%
7	l	363	99%
8	m	298	6% 98%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
9	n	176	88% 12%
10	o	241	97%
11	p	262	6% 91% 9%
12	q	191	99%
13	r	220	95% 5%
14	s	174	10% 98%
15	t	202	6% 97%
16	u	131	99%
17	v	204	100%
18	w	200	100%
19	x	185	92% 7%
20	y	186	99%
21	z	190	14% 94% 6%
22	0	172	99%
23	2	160	99%
24	5	124	16% 82% 17%
25	6	137	96%
26	7	155	41% 59%
27	8	142	85% 15%
28	9	127	98%
29	AA	136	99%
30	AB	149	99%
31	AC	63	11% 100%
32	AD	106	91% 9%
33	AE	112	10% 97%

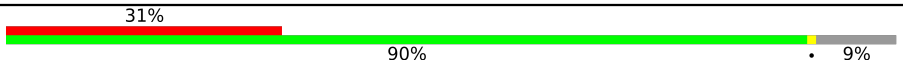
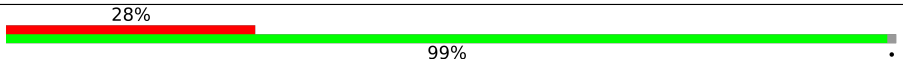
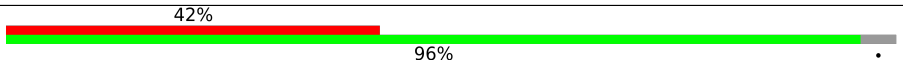
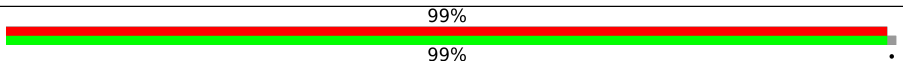
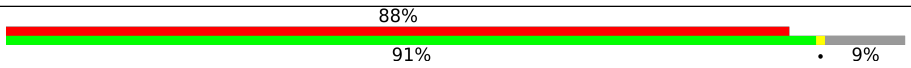
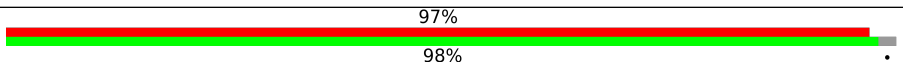
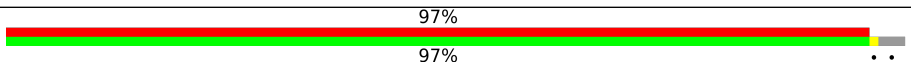
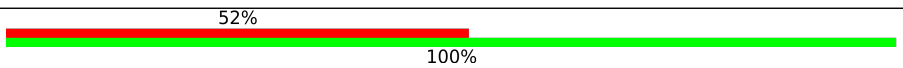
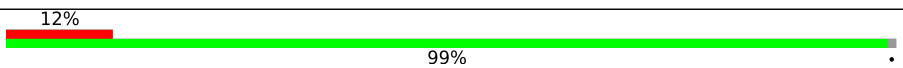
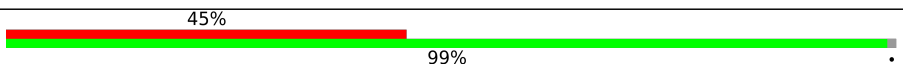
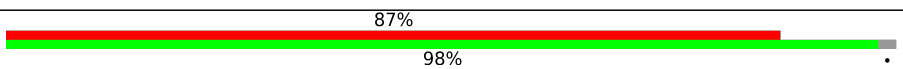
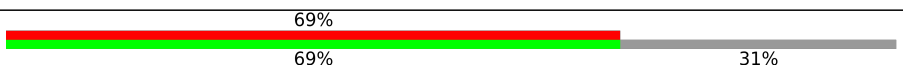
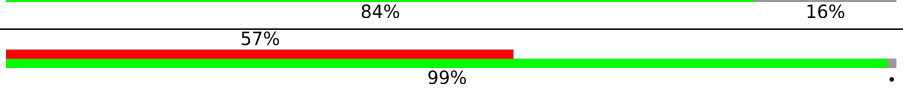
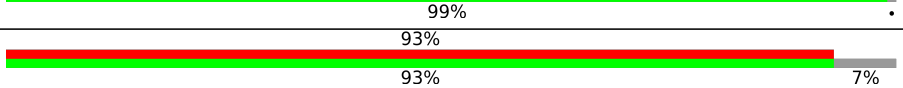
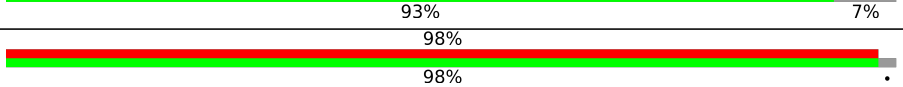
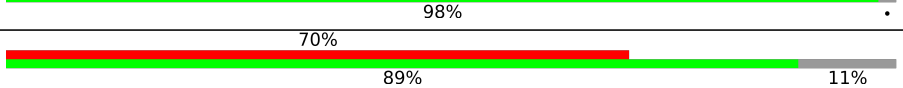
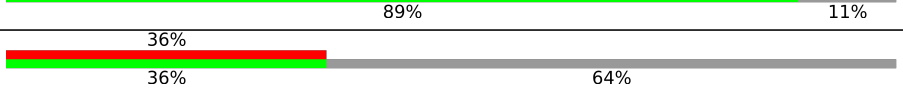
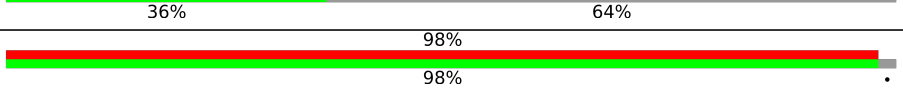
Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
34	AF	131	95% 5%
35	AG	107	99%
36	AH	122	7% 92% 8%
37	AI	120	99%
38	AJ	99	98%
39	AK	90	96%
40	AL	78	9% 99%
41	AM	51	98%
42	AN	52	100%
43	AO	25	16% 76% 24%
44	AP	106	6% 97%
45	AQ	92	99%
46	i	267	42% 42% 58%
47	A	1787	40% 71% 24% 5%
48	B	261	47% 80% 20%
49	C	256	52% 84% 16%
50	D	249	29% 87% 13%
51	E	251	88% 88% 11%
52	F	262	65% 99%
53	G	225	92% 92% 8%
54	H	236	84% 96%
55	I	186	74% 98%
56	J	206	39% 98%
57	K	189	65% 94% 6%
58	L	118	79% 78% 21%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
59	M	155	
60	N	143	
61	O	151	
62	P	132	
63	Q	142	
64	R	142	
65	S	137	
66	T	145	
67	U	145	
68	V	119	
69	W	87	
70	X	130	
71	Y	145	
72	Z	135	
73	a	105	
74	b	119	
75	c	82	
76	d	67	
77	e	56	
78	f	63	
79	g	193	
80	h	317	

2 Entry composition (i)

There are 85 unique types of molecules in this entry. The entry contains 201513 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	1	3209	68595	30642	12317	22427	3209	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	3	121	2579	1153	463	842	121	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	4	158	3353	1500	585	1110	158	0	0

- Molecule 4 is a RNA chain called Mixture of endogenous E-tRNAs.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	10	16	338	151	59	112	16	0	0

- Molecule 5 is a protein called Ribosomal 60S subunit protein L2A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	j	249	1894	1185	377	330	2	1	0

- Molecule 6 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	k	386	3084	1955	584	538	7	1	0

- Molecule 7 is a protein called Ribosomal 60S subunit protein L4B.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	l	361	Total	C	N	O	S	0	0
			2751	1729	529	490	3		

- Molecule 8 is a protein called Ribosomal 60S subunit protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	m	292	Total	C	N	O	S	0	0
			2394	1526	416	450	2		

- Molecule 9 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms				AltConf	Trace
9	n	155	Total	C	N	O	1	0
			1237	794	226	217		

- Molecule 10 is a protein called Ribosomal 60S subunit protein L7A.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	o	234	Total	C	N	O	S	1	0
			1893	1213	348	331	1		

- Molecule 11 is a protein called 60S ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	p	238	Total	C	N	O	S	0	0
			1839	1175	327	334	3		

- Molecule 12 is a protein called Ribosomal 60S subunit protein L9B.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	q	190	Total	C	N	O	S	0	0
			1519	958	276	281	4		

- Molecule 13 is a protein called Ribosomal 60S subunit protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	r	208	Total	C	N	O	S	0	0
			1689	1069	322	291	7		

- Molecule 14 is a protein called Ribosomal 60S subunit protein L11B.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	s	172	Total	C	N	O	S	1	0
			1385	864	262	255	4		

- Molecule 15 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	t	200	Total	C	N	O	0	0
			1610	1009	318	283		

- Molecule 16 is a protein called Ribosomal 60S subunit protein L14B.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	u	130	Total	C	N	O	S	0	0
			1029	660	193	175	1		

- Molecule 17 is a protein called Ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	v	203	Total	C	N	O	S	0	0
			1713	1075	356	280	2		

- Molecule 18 is a protein called Ribosomal 60S subunit protein L16A.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	w	199	Total	C	N	O	S	0	0
			1590	1025	294	269	2		

- Molecule 19 is a protein called Ribosomal 60S subunit protein L17B.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	x	172	Total	C	N	O	0	0
			1375	850	279	246		

- Molecule 20 is a protein called Ribosomal 60S subunit protein L18A.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	y	185	Total	C	N	O	3	0
			1478	930	302	246		

- Molecule 21 is a protein called Ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	z	179	Total	C	N	O	S	1	0
			1462	904	311	244	3		

- Molecule 22 is a protein called 60S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	0	171	Total	C	N	O	S	2	0
			1442	933	262	244	3		

- Molecule 23 is a protein called Ribosomal 60S subunit protein L21A.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	2	159	Total	C	N	O	S	2	0
			1276	807	244	223	2		

- Molecule 24 is a protein called Ribosomal 60S subunit protein L22B.

Mol	Chain	Residues	Atoms				AltConf	Trace
24	5	103	Total	C	N	O	2	0
			848	553	139	156		

- Molecule 25 is a protein called Ribosomal 60S subunit protein L23B.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	6	131	Total	C	N	O	S	1	0
			986	621	186	171	8		

- Molecule 26 is a protein called Ribosomal 60S subunit protein L24A.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	7	63	Total	C	N	O	S	0	0
			524	334	103	86	1		

- Molecule 27 is a protein called Ribosomal 60S subunit protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	8	121	Total	C	N	O	S	0	0
			974	622	175	176	1		

- Molecule 28 is a protein called Ribosomal 60S subunit protein L26B.

Mol	Chain	Residues	Atoms				AltConf	Trace
28	9	126	Total	C	N	O	0	0
			989	618	190	181		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
29	AA	135	Total	C	N	O	S	0	0
			1087	705	197	183	2		

- Molecule 30 is a protein called Ribosomal 60S subunit protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	AB	148	Total	C	N	O	S	0	0
			1170	741	231	197	1		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
31	AC	63	Total	C	N	O	S	1	0
			509	317	109	82	1		

- Molecule 32 is a protein called Ribosomal 60S subunit protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	AD	96	Total	C	N	O	S	0	0
			729	469	121	137	2		

- Molecule 33 is a protein called Ribosomal 60S subunit protein L31B.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	AE	109	Total	C	N	O	S	0	0
			889	562	167	158	2		

- Molecule 34 is a protein called Ribosomal 60S subunit protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	AF	125	Total	C	N	O	S	1	0
			1015	649	197	168	1		

- Molecule 35 is a protein called Ribosomal 60S subunit protein L33A.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	AG	106	Total	C	N	O	S	3	0
			867	558	166	142	1		

- Molecule 36 is a protein called Ribosomal 60S subunit protein L34B.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	AH	112	Total	C	N	O	S	4	0
			913	567	188	154	4		

- Molecule 37 is a protein called Ribosomal 60S subunit protein L35A.

Mol	Chain	Residues	Atoms				AltConf	Trace
37	AI	119	Total	C	N	O	1	0
			990	629	195	166		

- Molecule 38 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	AJ	98	Total	C	N	O	S	1	0
			772	481	158	131	2		

- Molecule 39 is a protein called Ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	AK	86	Total	C	N	O	S	0	0
			677	413	148	110	6		

- Molecule 40 is a protein called Ribosomal 60S subunit protein L38.

Mol	Chain	Residues	Atoms				AltConf	Trace
40	AL	77	Total	C	N	O	1	0
			623	398	116	109		

- Molecule 41 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms				AltConf	Trace
41	AM	50	Total	C	N	O	1	0
			446	280	100	66		

- Molecule 42 is a protein called Rpl40bp.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	AN	52	Total	C	N	O	S	1	0
			427	265	89	67	6		

- Molecule 43 is a protein called 60S ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	AO	25	Total	C	N	O	S	0	0
			236	144	63	28	1		

- Molecule 44 is a protein called Ribosomal 60S subunit protein L42A.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	AP	103	Total	C	N	O	S	2	0
			843	533	168	137	5		

- Molecule 45 is a protein called Ribosomal 60S subunit protein L43A.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	AQ	91	Total	C	N	O	S	0	0
			698	430	140	124	4		

- Molecule 46 is a protein called HABP4_PAI-RBP1 domain-containing protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
46	i	113	Total	C	N	O	0	0
			853	512	155	186		

- Molecule 47 is a RNA chain called 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	A	1692	Total	C	N	O	P	0	0
			36083	16130	6412	11849	1692		

- Molecule 48 is a protein called 40S ribosomal protein S0.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	B	208	Total	C	N	O	S	0	0
			1627	1041	284	297	5		

- Molecule 49 is a protein called 40S ribosomal protein S1.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	C	214	Total	C	N	O	S	0	0
			1724	1094	313	313	4		

- Molecule 50 is a protein called Ribosomal 40S subunit protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	D	216	Total	C	N	O	S	0	0
			1620	1033	287	295	5		

- Molecule 51 is a protein called Ribosomal 40S subunit protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	E	223	Total	C	N	O	S	0	0
			1707	1087	311	305	4		

- Molecule 52 is a protein called 40S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	F	260	Total	C	N	O	S	0	0
			2055	1306	386	358	5		

- Molecule 53 is a protein called Ribosomal 40S subunit protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	G	206	Total	C	N	O	S	0	0
			1614	1008	301	301	4		

- Molecule 54 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	H	226	Total	C	N	O	S	0	0
			1820	1133	351	330	6		

- Molecule 55 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms				AltConf	Trace
55	I	182	Total	C	N	O	0	0
			1466	939	264	263		

- Molecule 56 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	J	203	Total	C	N	O	S	0	0
			1579	973	322	283	1		

- Molecule 57 is a protein called Ribosomal 40S subunit protein S9B.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	K	178	Total	C	N	O	S	0	0
			1453	918	286	248	1		

- Molecule 58 is a protein called Ribosomal 40S subunit protein S10A.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	L	93	Total	C	N	O	S	0	0
			783	511	129	142	1		

- Molecule 59 is a protein called Ribosomal 40S subunit protein S11A.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	M	141	Total	C	N	O	S	0	0
			1129	722	212	192	3		

- Molecule 60 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	N	116	Total	C	N	O	S	0	0
			885	550	158	172	5		

- Molecule 61 is a protein called Ribosomal 40S subunit protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	O	150	Total	C	N	O	S	0	0
			1187	757	219	210	1		

- Molecule 62 is a protein called Ribosomal 40S subunit protein S14B.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	P	127	Total	C	N	O	S	0	0
			942	579	186	174	3		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
P	119	IAS	ASP	conflict	UNP A0A1D8PDT3

- Molecule 63 is a protein called Ribosomal 40S subunit protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	Q	118	Total	C	N	O	S	0	0
			935	598	169	162	6		

- Molecule 64 is a protein called Ribosomal 40S subunit protein S16A.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	R	140	Total	C	N	O	S	0	0
			1091	700	198	192	1		

- Molecule 65 is a protein called Ribosomal 40S subunit protein S17B.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	S	125	Total	C	N	O	S	0	0
			1002	631	184	186	1		

- Molecule 66 is a protein called Ribosomal 40S subunit protein S18B.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	T	142	Total	C	N	O	S	0	0
			1169	733	228	205	3		

- Molecule 67 is a protein called Ribosomal 40S subunit protein S19A.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	U	141	Total	C	N	O	S	0	0
			1100	689	210	200	1		

- Molecule 68 is a protein called Ribosomal 40S subunit protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	V	100	Total	C	N	O	S	0	0
			790	499	146	143	2		

- Molecule 69 is a protein called 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	W	87	Total 676	C 415	N 126	O 133	S 2	0	0

- Molecule 70 is a protein called 40S ribosomal protein S22-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	X	129	Total 1032	C 655	N 191	O 183	S 3	0	0

- Molecule 71 is a protein called Ribosomal 40S subunit protein S23B.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	Y	143	Total 1110	C 701	N 219	O 188	S 2	0	0

- Molecule 72 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms				AltConf	Trace
72	Z	132	Total 1072	C 670	N 216	O 186	0	0

- Molecule 73 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms				AltConf	Trace
73	a	72	Total 578	C 369	N 103	O 106	0	0

- Molecule 74 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	b	100	Total 799	C 494	N 169	O 130	S 6	0	0

- Molecule 75 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	c	81	Total 614	C 383	N 110	O 114	S 7	0	0

- Molecule 76 is a protein called Ribosomal 40S subunit protein S28B.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	d	62	Total	C	N	O	S	0	0
			487	299	98	88	2		

- Molecule 77 is a protein called Ribosomal 40S subunit protein S29A.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	e	55	Total	C	N	O	S	0	0
			454	281	94	75	4		

- Molecule 78 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	f	56	Total	C	N	O	S	0	0
			444	278	89	75	2		

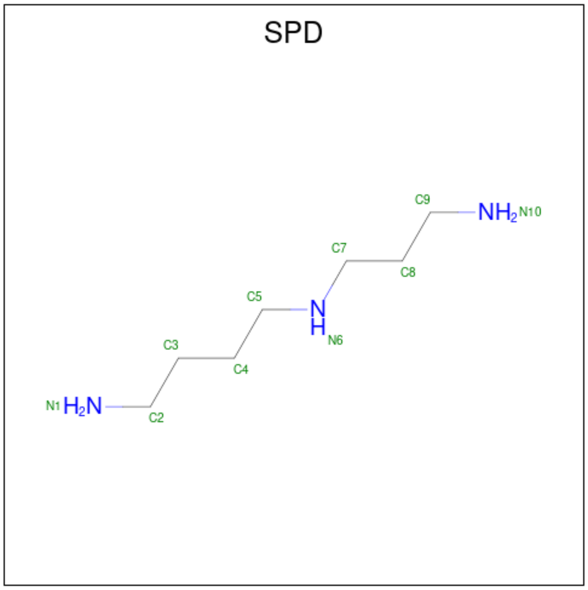
- Molecule 79 is a protein called Ubiquitin-ribosomal 40S subunit protein S31 fusion protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	g	70	Total	C	N	O	S	0	0
			574	362	113	93	6		

- Molecule 80 is a protein called Guanine nucleotide-binding protein subunit beta-like protein.

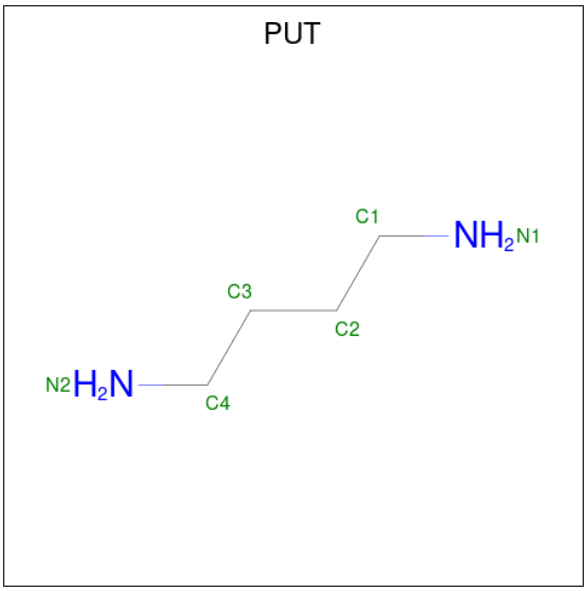
Mol	Chain	Residues	Atoms					AltConf	Trace
80	h	311	Total	C	N	O	S	0	0
			2398	1519	412	462	5		

- Molecule 81 is SPERMIDINE (three-letter code: SPD) (formula: $C_7H_{19}N_3$).



Mol	Chain	Residues	Atoms	AltConf
81	1	1	Total C N 100 70 30	0
81	1	1	Total C N 100 70 30	0
81	1	1	Total C N 100 70 30	0
81	1	1	Total C N 100 70 30	0
81	1	1	Total C N 100 70 30	0
81	1	1	Total C N 100 70 30	0
81	1	1	Total C N 100 70 30	0
81	1	1	Total C N 100 70 30	0
81	1	1	Total C N 100 70 30	0
81	1	1	Total C N 100 70 30	0

- Molecule 82 is 1,4-DIAMINOBUTANE (three-letter code: PUT) (formula: $C_4H_{12}N_2$).



Mol	Chain	Residues	Atoms	AltConf
82	1	1	Total C N 6 4 2	0
82	4	1	Total C N 6 4 2	0

- Molecule 83 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	AltConf
83	1	296	Total Mg 296 296	0
83	4	1	Total Mg 1 1	0
83	j	1	Total Mg 1 1	0
83	k	1	Total Mg 1 1	0
83	o	1	Total Mg 1 1	0
83	r	1	Total Mg 1 1	0
83	x	1	Total Mg 1 1	0
83	2	1	Total Mg 1 1	0
83	AC	1	Total Mg 1 1	0
83	AF	1	Total Mg 1 1	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms	AltConf
83	AH	1	Total Mg 1 1	0
83	AK	1	Total Mg 1 1	0
83	AP	1	Total Mg 1 1	0
83	A	133	Total Mg 133 133	0
83	F	1	Total Mg 1 1	0
83	U	1	Total Mg 1 1	0

- Molecule 84 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
84	AK	1	Total Zn 1 1	0
84	AN	1	Total Zn 1 1	0
84	AP	1	Total Zn 1 1	0
84	AQ	1	Total Zn 1 1	0
84	b	1	Total Zn 1 1	0
84	c	1	Total Zn 1 1	0
84	e	1	Total Zn 1 1	0
84	g	1	Total Zn 1 1	0

- Molecule 85 is water.

Mol	Chain	Residues	Atoms	AltConf
85	1	1019	Total O 1019 1019	0
85	3	8	Total O 8 8	0
85	4	39	Total O 39 39	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms	AltConf
85	j	16	Total O 16 16	0
85	k	38	Total O 38 38	0
85	l	20	Total O 20 20	0
85	m	1	Total O 1 1	0
85	n	1	Total O 1 1	0
85	o	11	Total O 11 11	0
85	p	1	Total O 1 1	0
85	r	1	Total O 1 1	0
85	t	7	Total O 7 7	0
85	v	24	Total O 24 24	0
85	w	10	Total O 10 10	0
85	x	14	Total O 14 14	0
85	y	6	Total O 6 6	0
85	z	3	Total O 3 3	0
85	0	4	Total O 4 4	0
85	2	1	Total O 1 1	0
85	6	3	Total O 3 3	0
85	7	3	Total O 3 3	0
85	8	4	Total O 4 4	0
85	AA	1	Total O 1 1	0
85	AB	12	Total O 12 12	0

Continued on next page...

Continued from previous page...

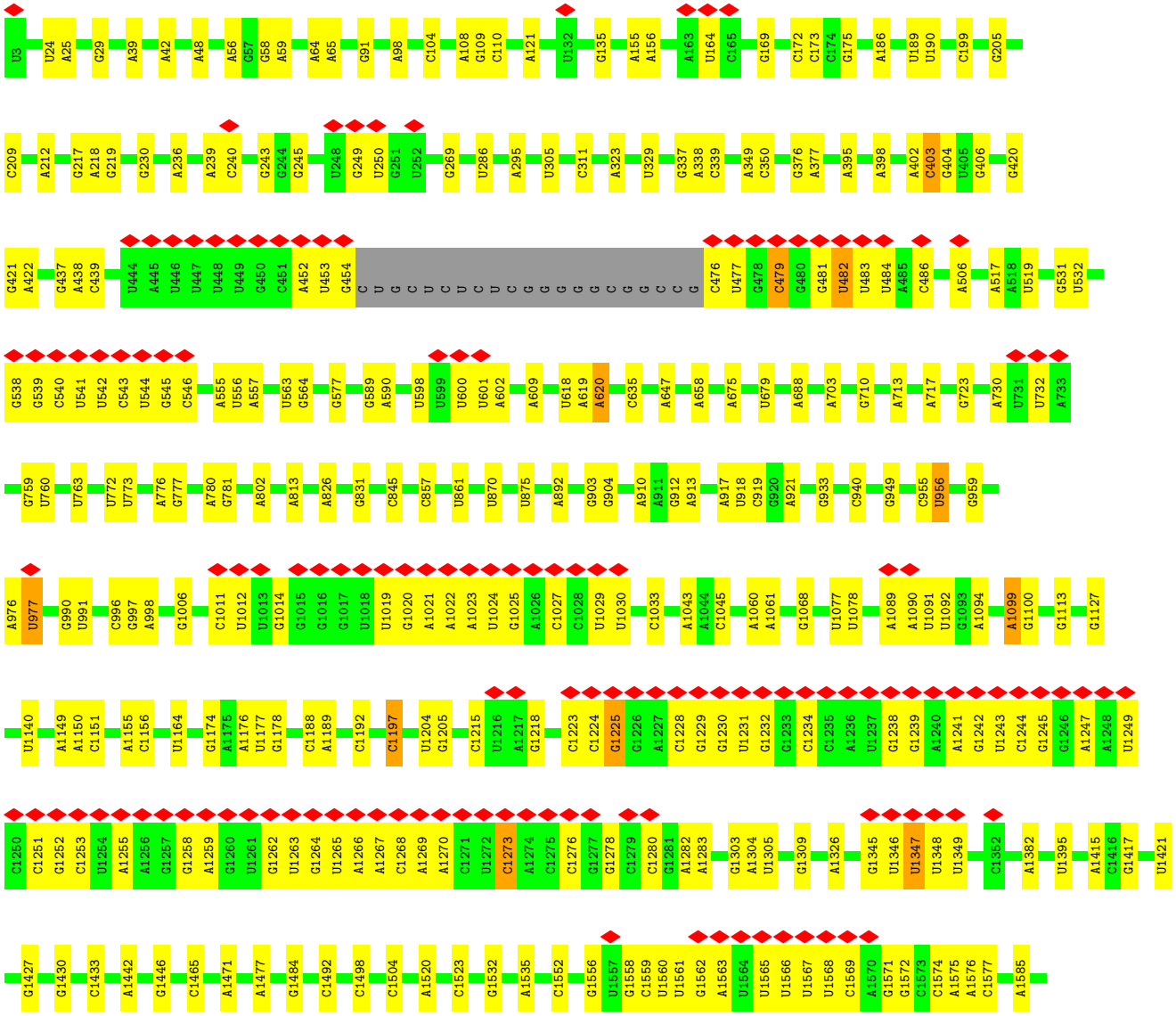
Mol	Chain	Residues	Atoms	AltConf
85	AC	6	Total O 6 6	0
85	AE	3	Total O 3 3	0
85	AF	16	Total O 16 16	0
85	AG	10	Total O 10 10	0
85	AH	11	Total O 11 11	0
85	AI	4	Total O 4 4	0
85	AK	16	Total O 16 16	0
85	AM	3	Total O 3 3	0
85	AP	2	Total O 2 2	0
85	AQ	3	Total O 3 3	0
85	A	38	Total O 38 38	0
85	G	1	Total O 1 1	0
85	O	1	Total O 1 1	0

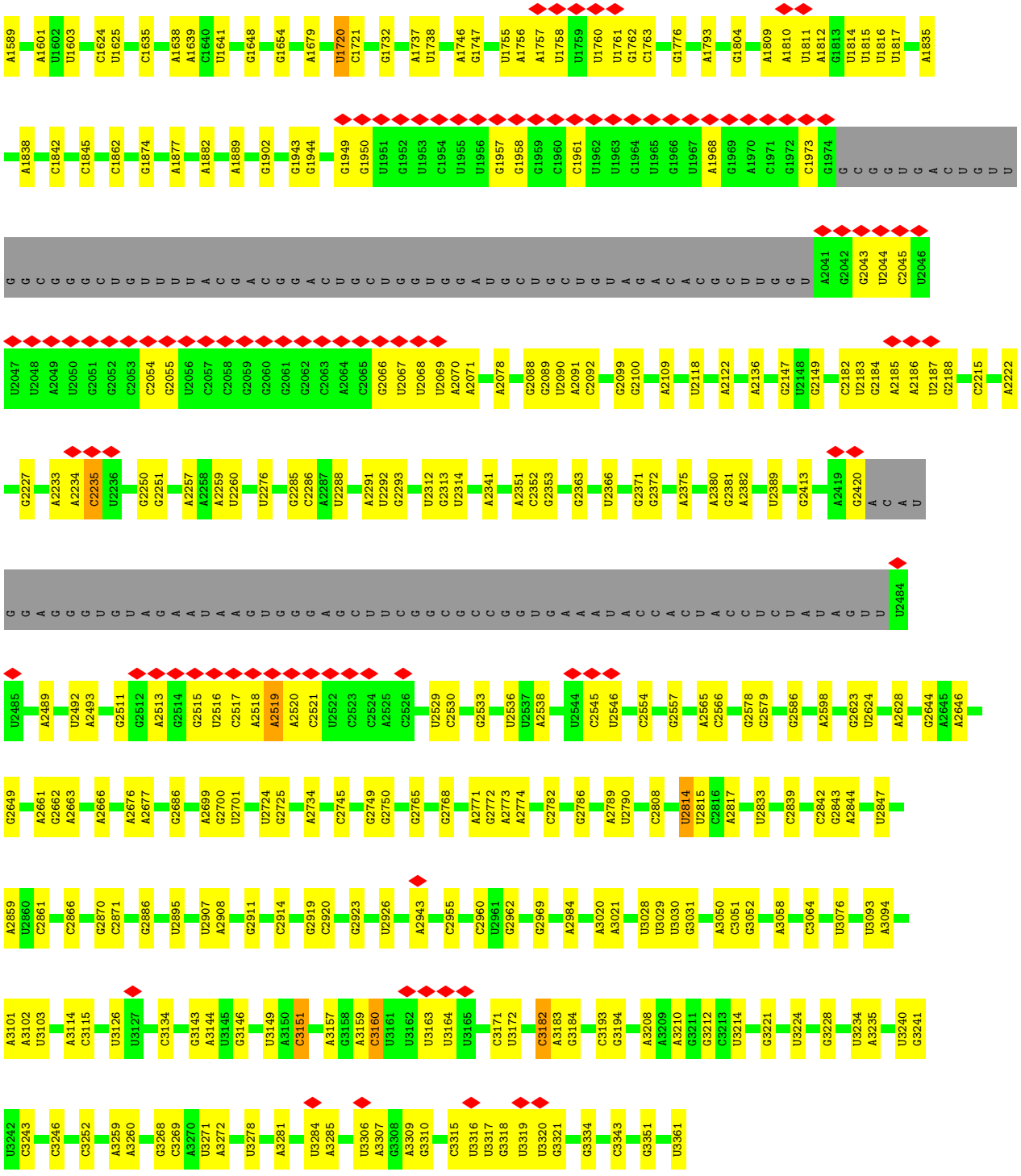
3 Residue-property plots (i)

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

- Molecule 1: 25S ribosomal RNA

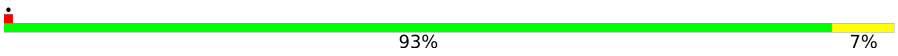
Chain 1:

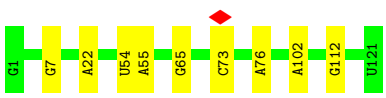




• Molecule 2: 5S ribosomal RNA

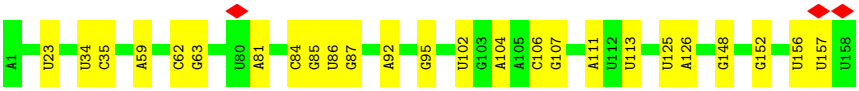
Chain 3:





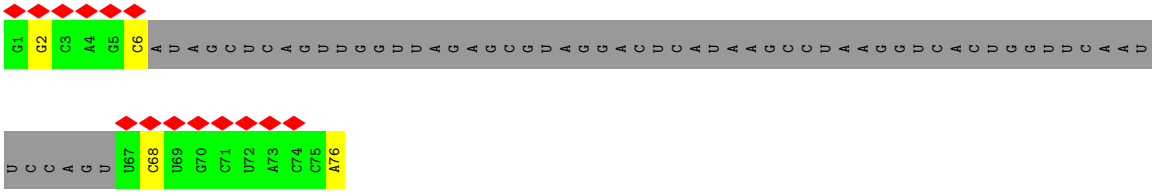
• Molecule 3: 5.8S ribosomal RNA

Chain 4:



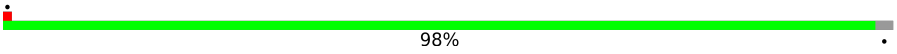
• Molecule 4: Mixture of endogenous E-tRNAs

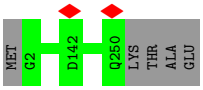
Chain 10:



• Molecule 5: Ribosomal 60S subunit protein L2A

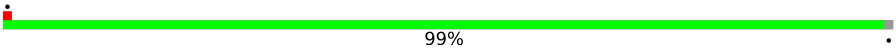
Chain j:

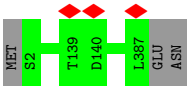




• Molecule 6: 60S ribosomal protein L3

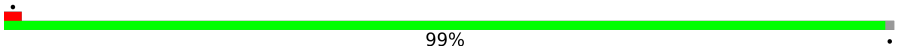
Chain k:

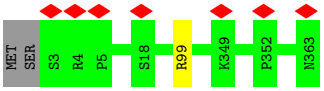




• Molecule 7: Ribosomal 60S subunit protein L4B

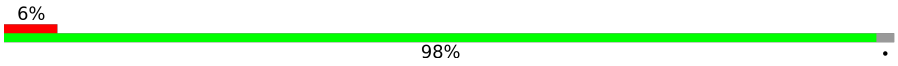
Chain l:

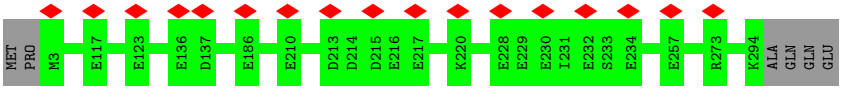




• Molecule 8: Ribosomal 60S subunit protein L5

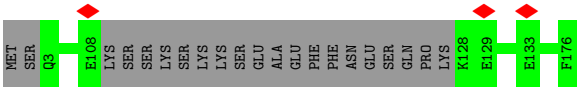
Chain m:





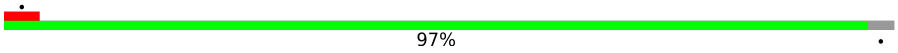
• Molecule 9: 60S ribosomal protein L6

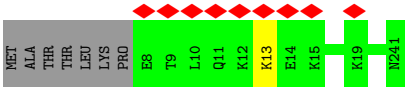
Chain n:



• Molecule 10: Ribosomal 60S subunit protein L7A

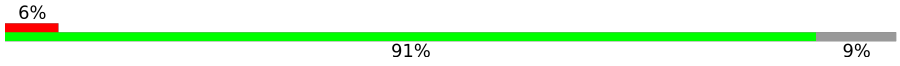
Chain o:

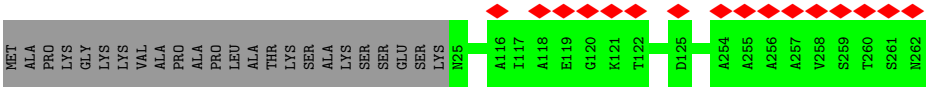




• Molecule 11: 60S ribosomal protein L8

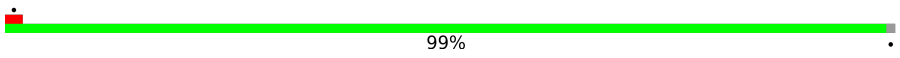
Chain p:

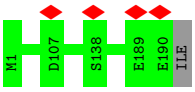




• Molecule 12: Ribosomal 60S subunit protein L9B

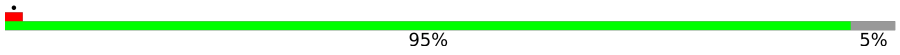
Chain q:

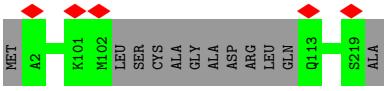




• Molecule 13: Ribosomal 60S subunit protein L10

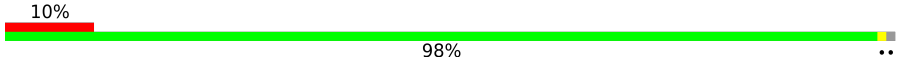
Chain r:

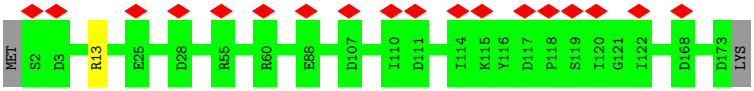




• Molecule 14: Ribosomal 60S subunit protein L11B

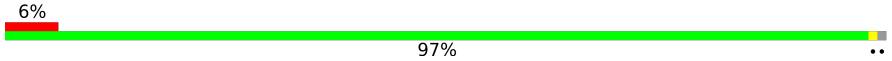
Chain s:

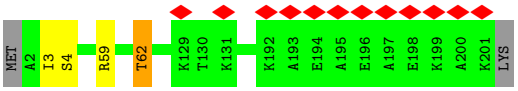




• Molecule 15: 60S ribosomal protein L13

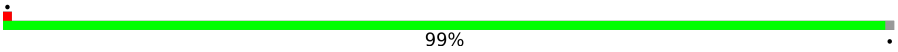
Chain t:





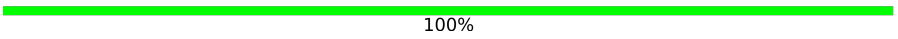
• Molecule 16: Ribosomal 60S subunit protein L14B

Chain u:



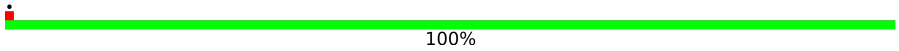
• Molecule 17: Ribosomal protein L15

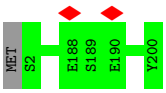
Chain v:



• Molecule 18: Ribosomal 60S subunit protein L16A

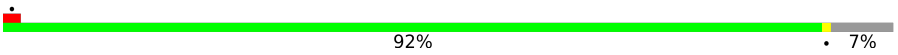
Chain w:

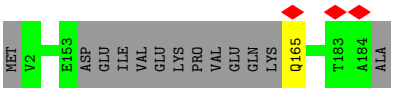




• Molecule 19: Ribosomal 60S subunit protein L17B

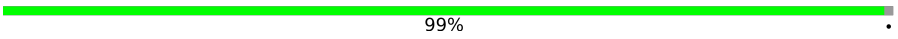
Chain x:





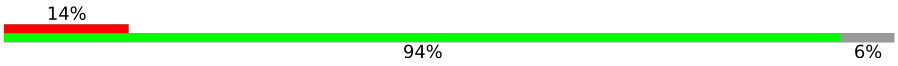
• Molecule 20: Ribosomal 60S subunit protein L18A

Chain y:



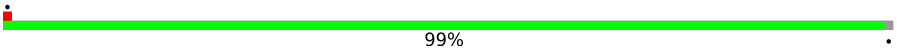
• Molecule 21: Ribosomal protein L19

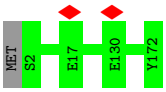
Chain z:



• Molecule 22: 60S ribosomal protein L20

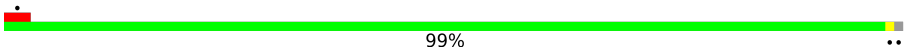
Chain 0:

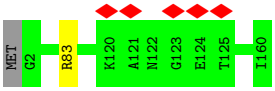




• Molecule 23: Ribosomal 60S subunit protein L21A

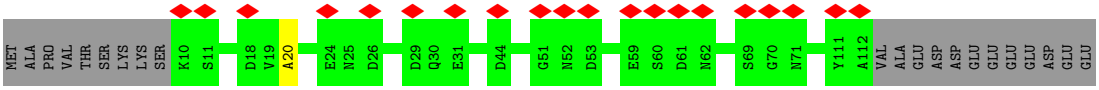
Chain 2:





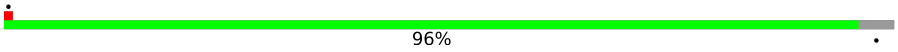
• Molecule 24: Ribosomal 60S subunit protein L22B

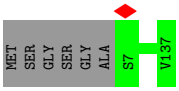
Chain 5:



• Molecule 25: Ribosomal 60S subunit protein L23B

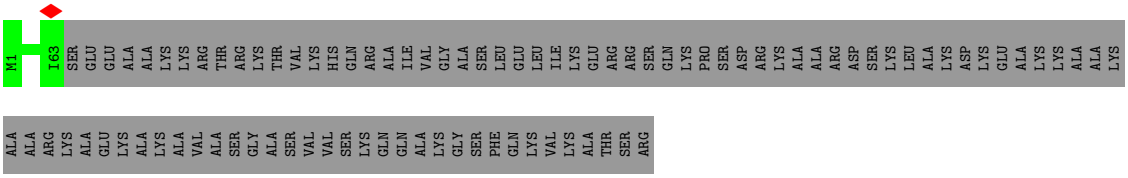
Chain 6:





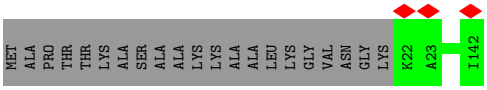
• Molecule 26: Ribosomal 60S subunit protein L24A

Chain 7:



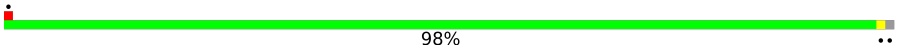
• Molecule 27: Ribosomal 60S subunit protein L25

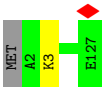
Chain 8:



• Molecule 28: Ribosomal 60S subunit protein L26B

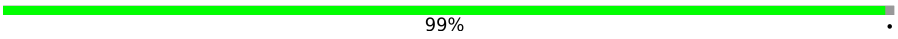
Chain 9:





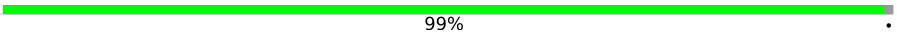
• Molecule 29: 60S ribosomal protein L27

Chain AA:



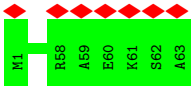
• Molecule 30: Ribosomal 60S subunit protein L28

Chain AB:



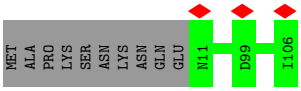
• Molecule 31: 60S ribosomal protein L29

Chain AC:



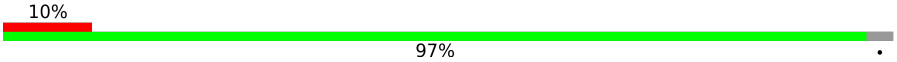
• Molecule 32: Ribosomal 60S subunit protein L30

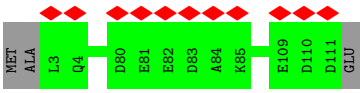
Chain AD:



• Molecule 33: Ribosomal 60S subunit protein L31B

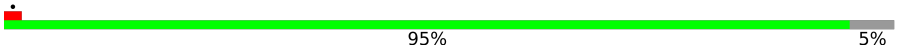
Chain AE:

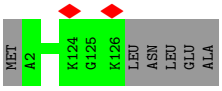




• Molecule 34: Ribosomal 60S subunit protein L32

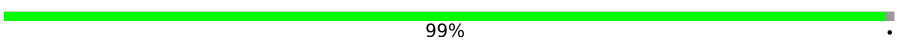
Chain AF:





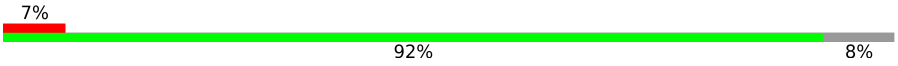
• Molecule 35: Ribosomal 60S subunit protein L33A

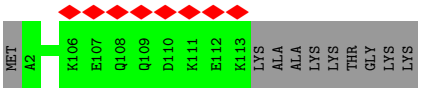
Chain AG:



• Molecule 36: Ribosomal 60S subunit protein L34B

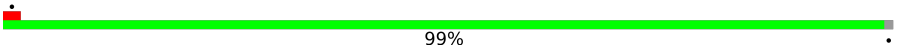
Chain AH:

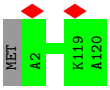




• Molecule 37: Ribosomal 60S subunit protein L35A

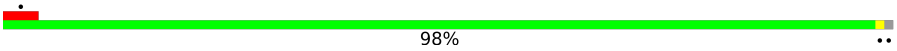
Chain AI:

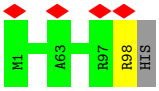




• Molecule 38: 60S ribosomal protein L36

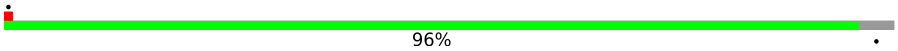
Chain AJ:

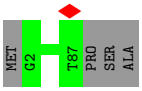




• Molecule 39: Ribosomal protein L37

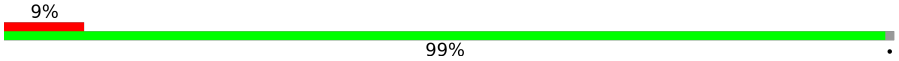
Chain AK:

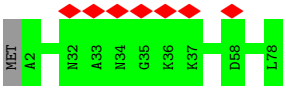




• Molecule 40: Ribosomal 60S subunit protein L38

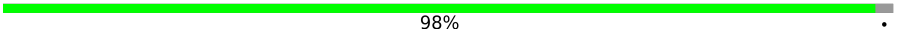
Chain AL:





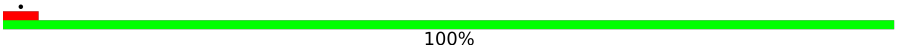
• Molecule 41: 60S ribosomal protein L39

Chain AM:



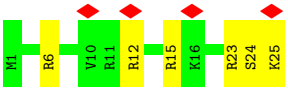
• Molecule 42: Rpl40bp

Chain AN:



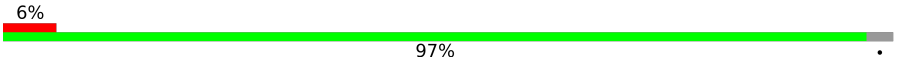
• Molecule 43: 60S ribosomal protein L41

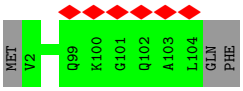
Chain AO:



• Molecule 44: Ribosomal 60S subunit protein L42A

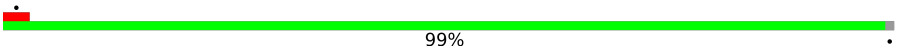
Chain AP:

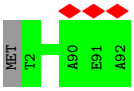




• Molecule 45: Ribosomal 60S subunit protein L43A

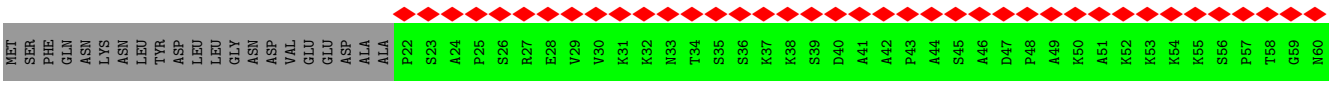
Chain AQ:

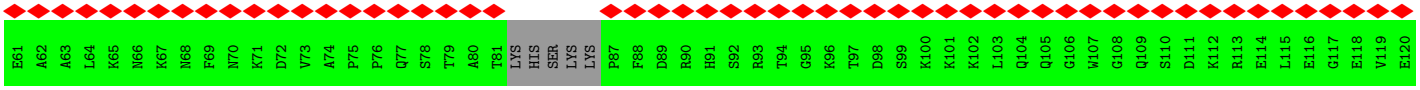


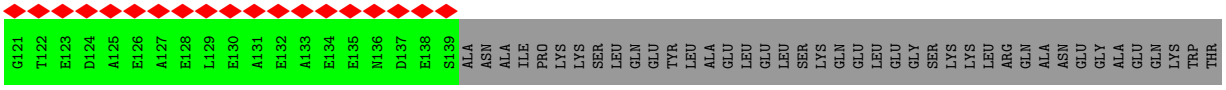


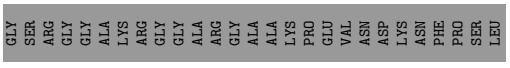
• Molecule 46: HABP4_PAI-RBP1 domain-containing protein

Chain i:



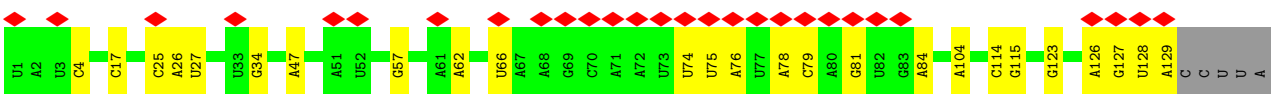


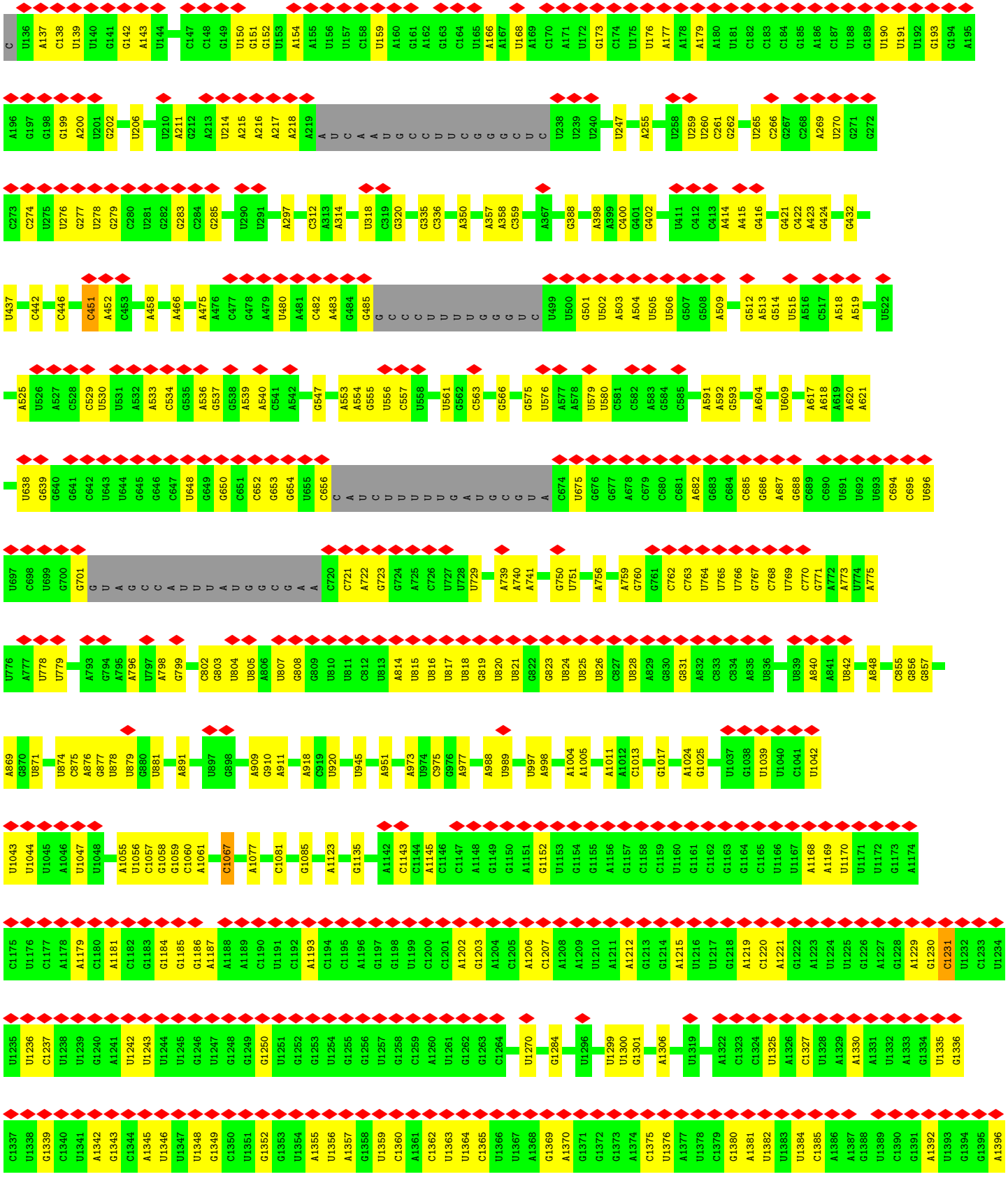


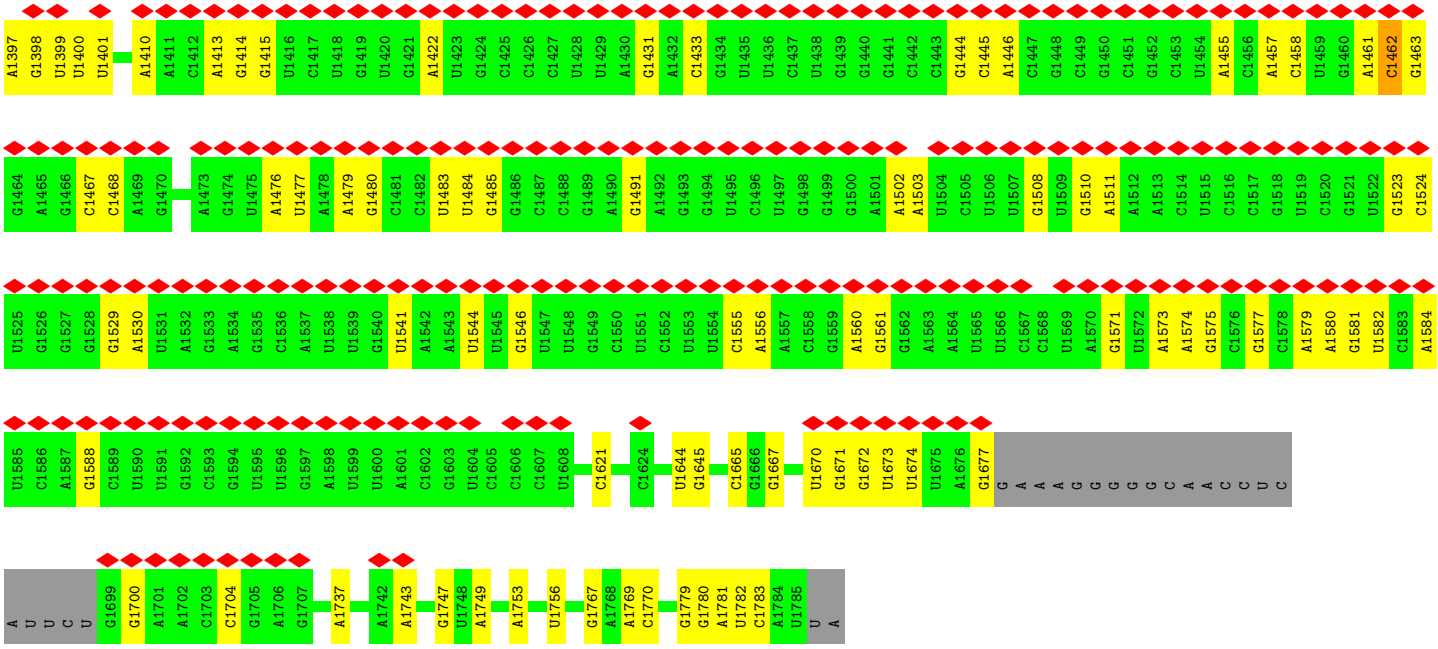


• Molecule 47: 18S ribosomal RNA

Chain A:

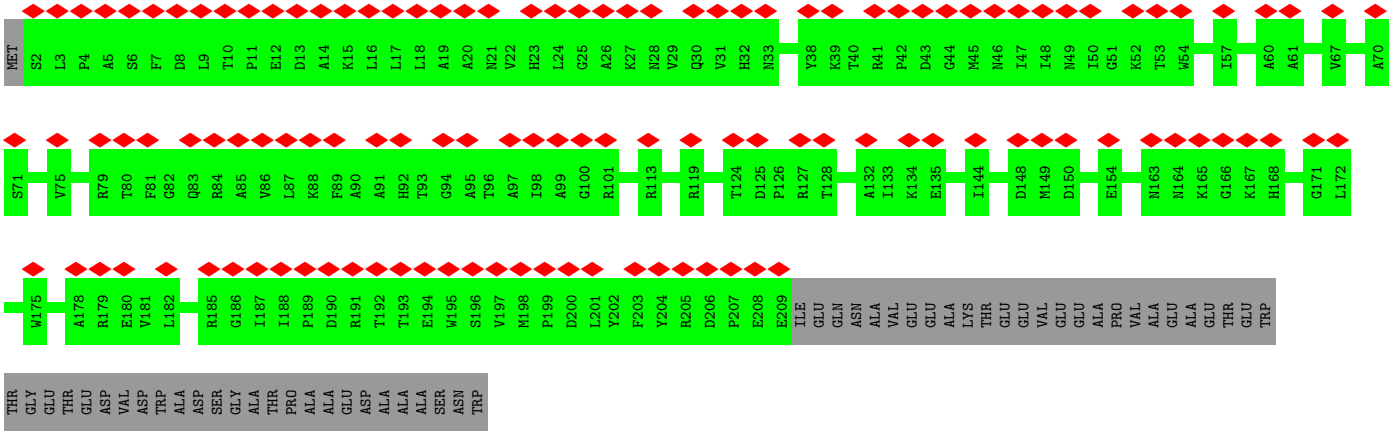



C U136 A137 C138 U139 U140 G141 G142 A143 U144 C147 C148 G149 U150 G151 G152 U153 A154 A155 U156 U157 C158 U159 A160 G161 A162 G163 C164 U165 A166 A167 U168 A169 C170 A171 U172 G173 C174 U175 U176 A177 A178 A179 A180 U181 C182 C183 C184 G185 A186 C187 U188 G189 U190 U191 U192 G193 G194 A195
A196 G197 G198 G199 A200 U201 G202 U206 U210 A211 G212 A213 U214 A215 A216 A217 A218 A219 A U C A A U G C C C U U U C G G G C U C U238 U239 U240 U247 A255 U258 U259 U260 C261 G262 U265 C266 G267 C268 A269 U270 G271 G272
C273 C274 U275 U276 G277 U278 C279 C280 U281 G282 G283 C284 G285 U290 U291 A297 C312 A313 A314 U318 C319 G320 G335 C336 A350 A357 A358 C359 A367 G388 A398 A399 C400 G401 G402 U411 C412 C413 A414 A415 G416 G421 C422 A423 G424 G432
U437 C442 C446 C451 A452 C453 A458 A466 A475 A476 C477 G478 A479 U480 A481 C482 A483 G484 G485 G C C C C U U U U G G G U C U499 U500 G501 U502 A503 A504 U505 U506 G507 G508 A509 G512 A513 G514 U515 A516 C517 A518 A519 U522
A525 U526 A527 C528 C529 U530 U531 A532 A533 C534 G535 A536 G537 G538 A539 A540 C541 A542 G547 A553 A554 G555 U556 C557 U558 U561 G562 C563 G566 G575 U576 A577 A578 U579 U580 C581 C582 A583 G584 C585 A591 A592 G593 A604 U609 A617 A618 A619 A620 A621
U638 G639 G640 G641 C642 U643 U644 G645 G646 C647 U648 G649 G650 C651 C652 G653 G654 U655 C656 C A U C U U U U U U G A U G C G U A C674 U675 G676 G677 A678 C679 C680 C681 A682 G683 C684 C685 G686 A687 G688 C689 C690 U691 U692 U693 C694 C695 U696
U697 C698 U699 G700 G701 G U A G C C A U U U A U G G C G A A C720 C721 A722 G723 G724 A725 C726 U727 U728 U729 A739 A740 A741 G750 U751 A756 A759 G760 G761 C762 C763 U764 U765 U766 G767 C768 U769 C770 C771 A772 A773 U774 A775
U776 A777 U778 U779 A793 G794 A795 A796 U797 A798 G799 C802 G803 U804 U805 A806 U807 G808 G809 U810 U811 C812 U813 A814 U815 U816 U817 U818 G819 U820 U821 G822 G823 U824 U825 U826 C827 U828 A829 G830 G831 A832 C833 C834 A835 U836 U839 A840 A841 U842 A848 C855 G856 G857
A869 G870 U871 U874 C875 A876 G877 U878 U879 G880 U881 A891 U897 G898 A909 G910 A911 A918 C919 U920 U945 A951 A973 U974 C975 G976 A977 A988 U989 U997 A998 A1004 A1005 A1011 A1012 C1013 G1017 A1024 C1025 U1037 G1038 U1039 U1040 C1041 U1042
U1043 U1044 U1045 A1046 U1047 U1048 A1055 U1056 C1057 G1058 G1059 C1060 A1061 C1067 A1077 C1081 G1085 A1123 G1135 A1142 C1143 C1144 A1145 C1146 C1147 A1148 G1149 G1150 A1151 G1152 U1153 G1154 G1155 A1156 G1157 C1158 C1159 U1160 G1161 C1162 G1163 G1164 C1165 U1166 U1167 A1168 A1169 U1170 U1171 U1172 G1173 A1174
C1175 U1176 C1177 A1178 A1179 C1180 A1181 C1182 G1183 G1184 G1185 G1186 A1187 A1188 A1189 C1190 U1191 C1192 A1193 C1194 C1195 A1196 G1197 G1198 U1199 C1200 C1201 A1202 G1203 A1204 C1205 A1206 C1207 A1208 A1209 U1210 A1211 A1212 G1213 G1214 A1215 U1216 U1217 G1218 A1219 C1220 A1221 G1222 A1223 U1224 U1225 G1226 A1227 G1228 A1229 G1230 C1231 U1232 C1233 U1234
U1235 U1236 C1237 U1238 U1239 G1240 A1241 U1242 U1243 U1244 U1245 G1246 U1247 G1248 G1249 G1250 U1251 G1252 G1253 U1254 G1255 G1256 U1257 G1258 C1259 A1260 U1261 G1262 G1263 C1264 U1270 G1284 U1296 U1299 U1300 G1301 A1306 U1319 A1322 C1323 C1324 U1325 A1326 C1327 U1328 A1329 A1330 A1331 U1332 A1333 G1334 U1335 G1336
C1337 U1338 G1339 C1340 U1341 A1342 G1343 C1344 A1345 U1346 U1347 U1348 G1349 C1350 U1351 G1352 G1353 U1354 A1355 U1356 A1357 G1358 U1359 C1360 A1361 C1362 U1363 U1364 C1365 U1366 U1367 A1368 G1369 A1370 G1371 G1372 G1373 A1374 C1375 U1376 A1377 U1378 C1379 G1380 A1381 U1382 U1383 U1384 C1385 A1386 A1387 U1388 U1389 C1390 G1391 A1392 U1393 G1394 G1395 A1396



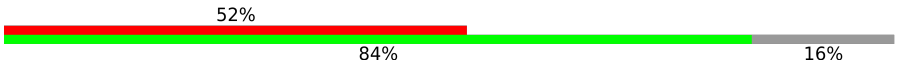
• Molecule 48: 40S ribosomal protein S0

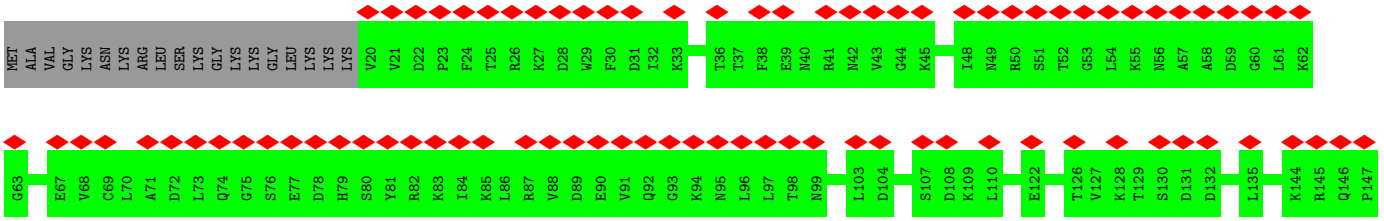
Chain B:

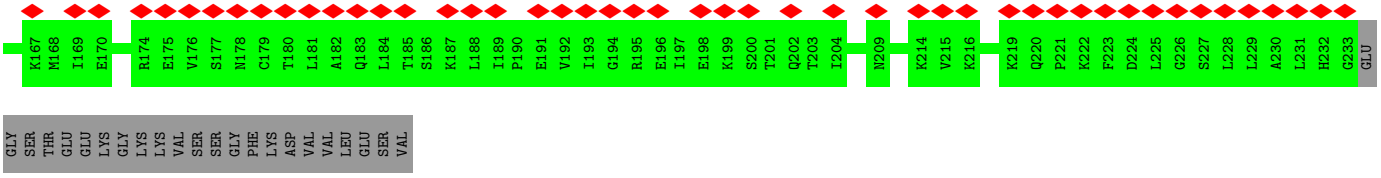


• Molecule 49: 40S ribosomal protein S1

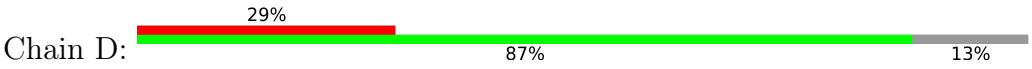
Chain C:

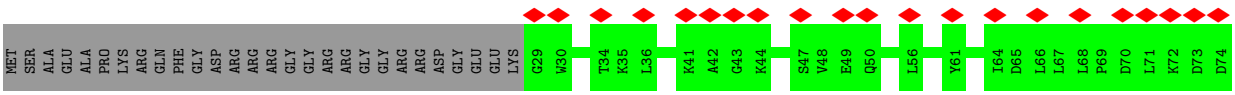


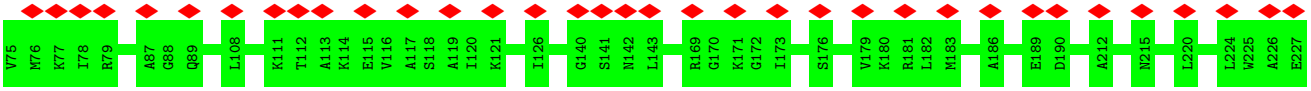


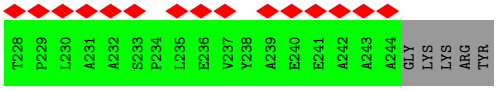


• Molecule 50: Ribosomal 40S subunit protein S2

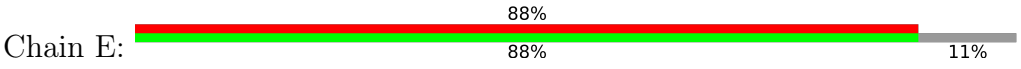


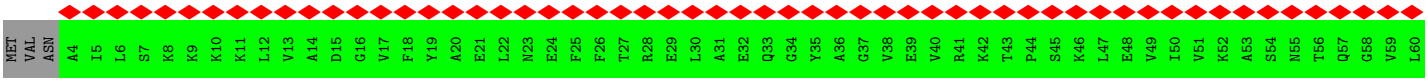


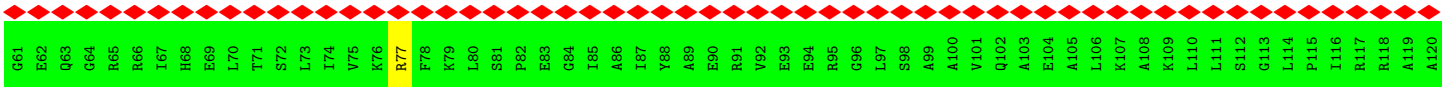


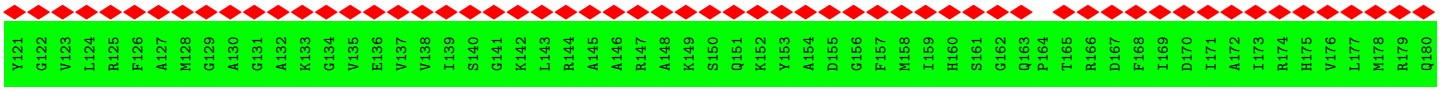


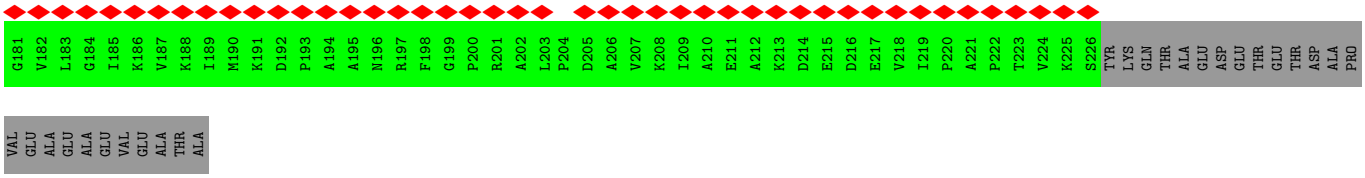
• Molecule 51: Ribosomal 40S subunit protein S3



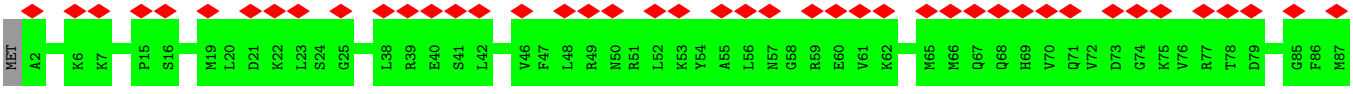


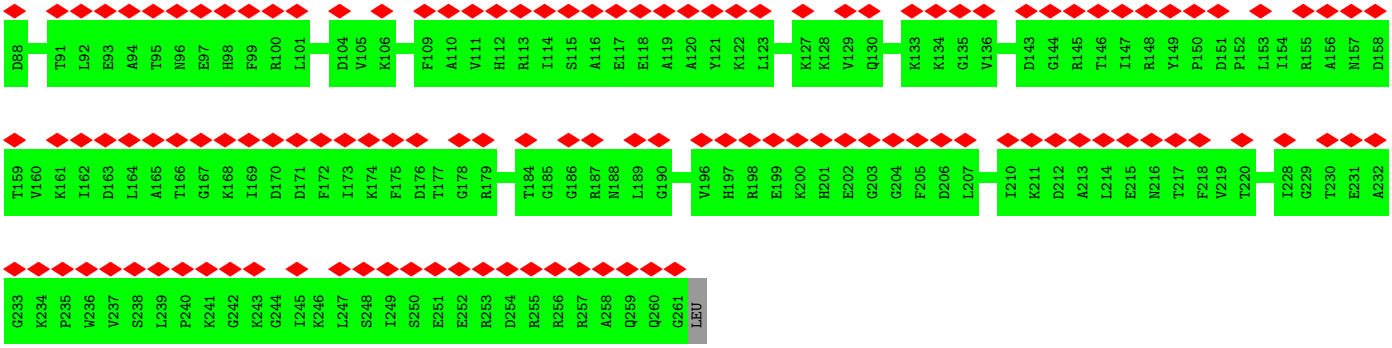






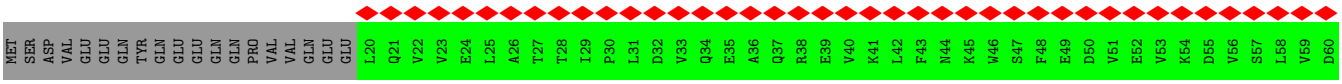
• Molecule 52: 40S ribosomal protein S4

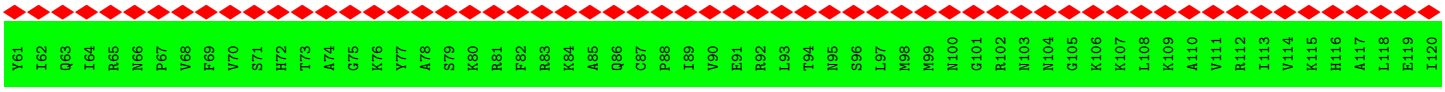


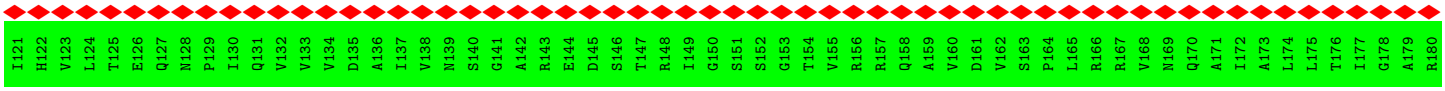


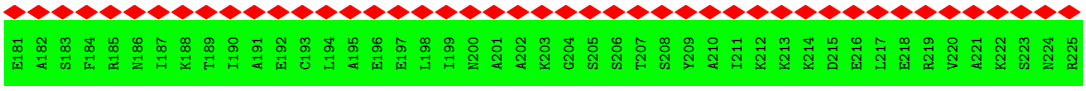
• Molecule 53: Ribosomal 40S subunit protein S5

Chain G:



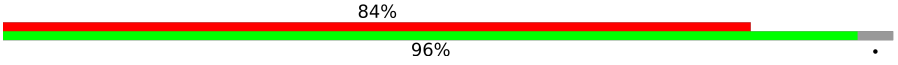


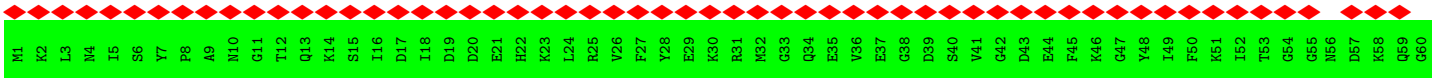


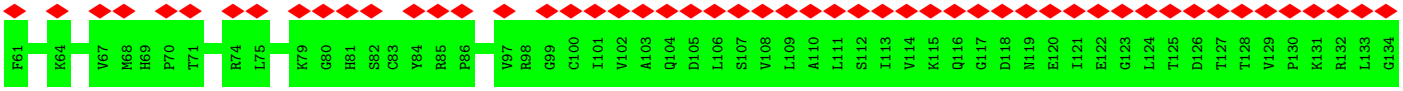


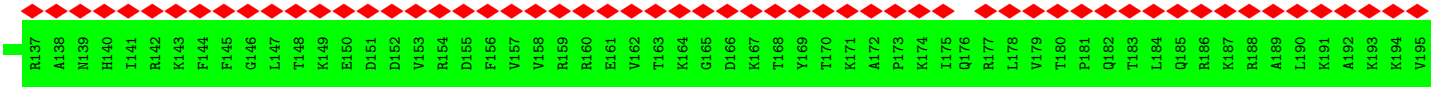
• Molecule 54: 40S ribosomal protein S6

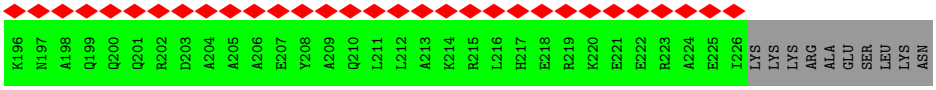
Chain H:





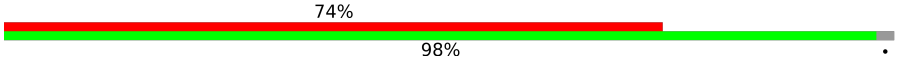


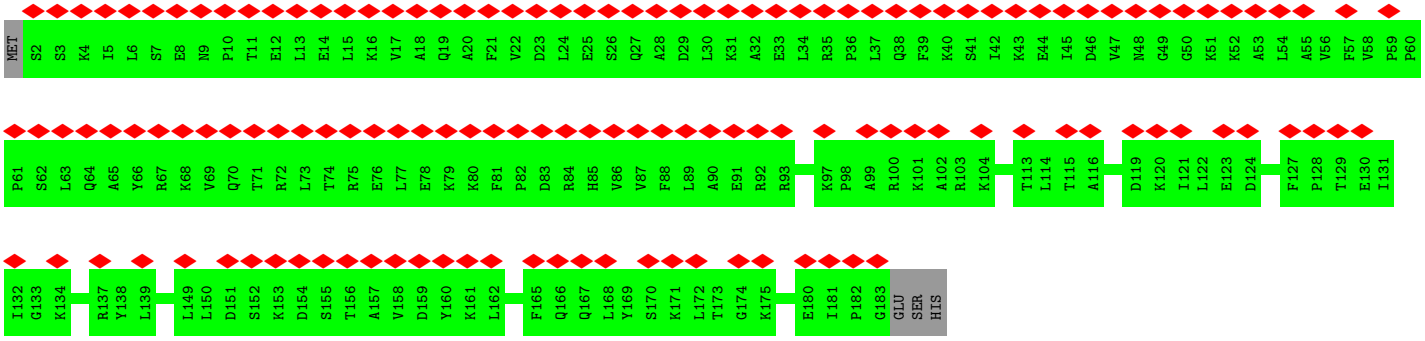




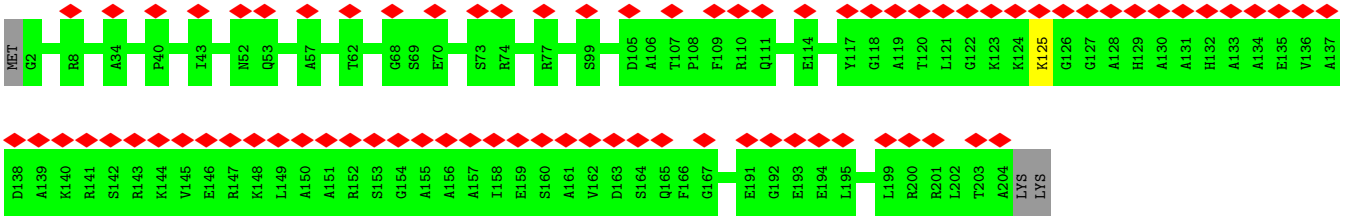
• Molecule 55: 40S ribosomal protein S7

Chain I:

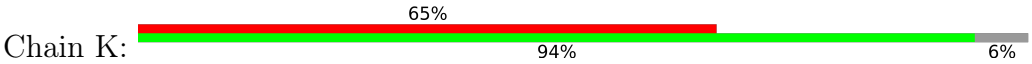


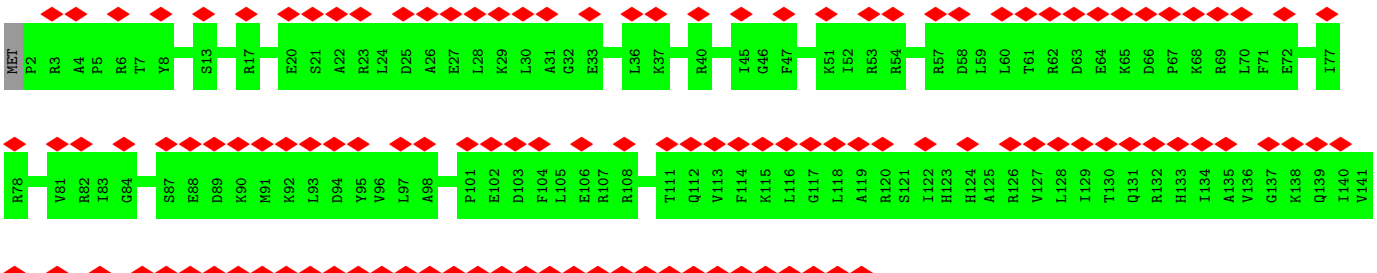


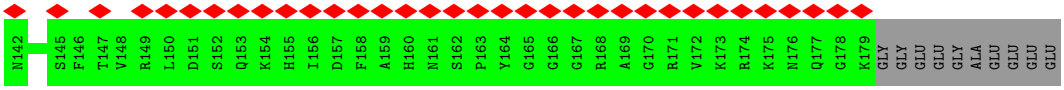
• Molecule 56: 40S ribosomal protein S8



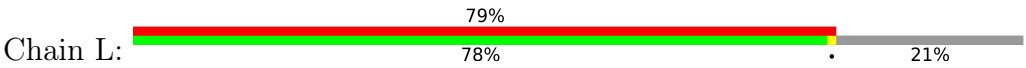
• Molecule 57: Ribosomal 40S subunit protein S9B

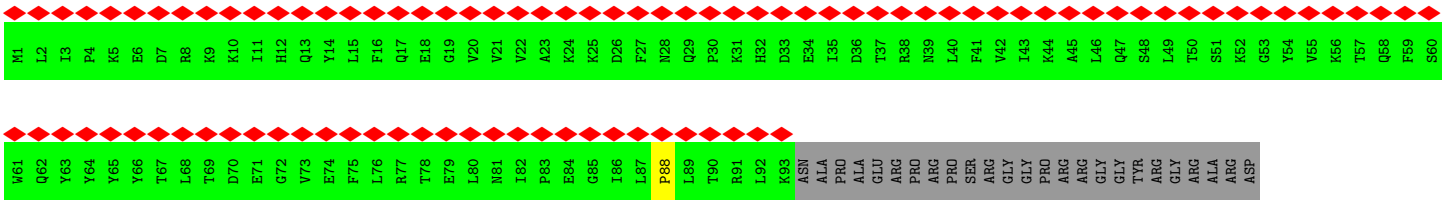






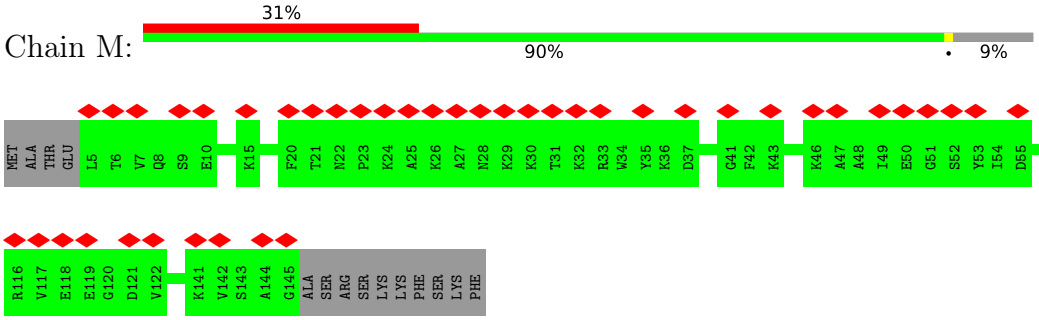
• Molecule 58: Ribosomal 40S subunit protein S10A





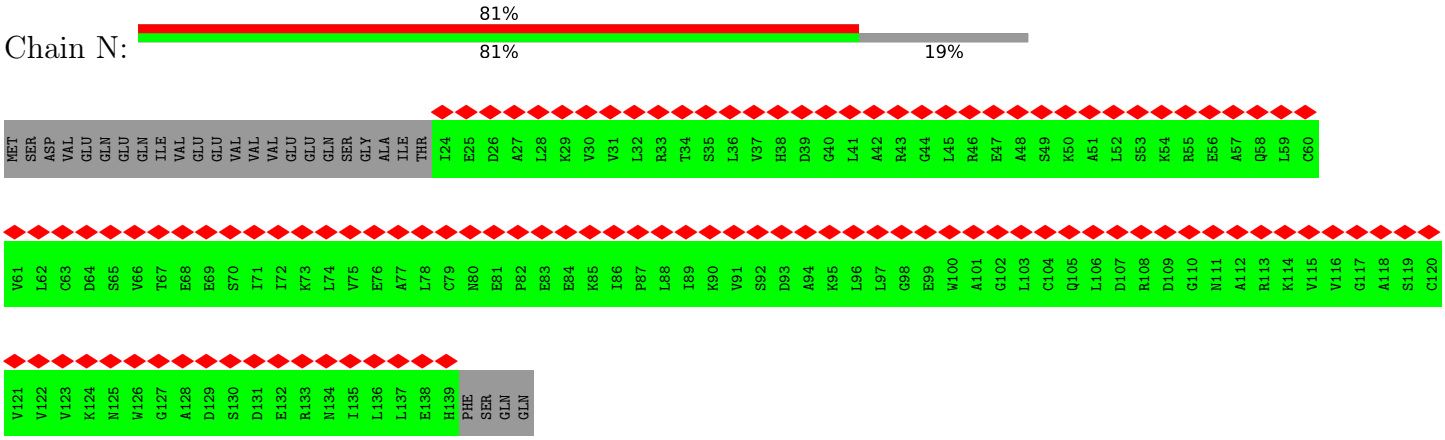
• Molecule 59: Ribosomal 40S subunit protein S11A

Chain M:



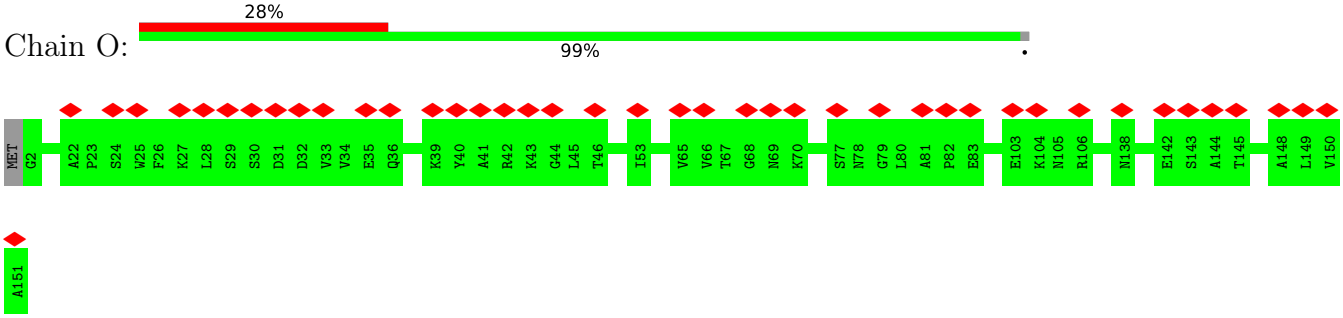
• Molecule 60: 40S ribosomal protein S12

Chain N:



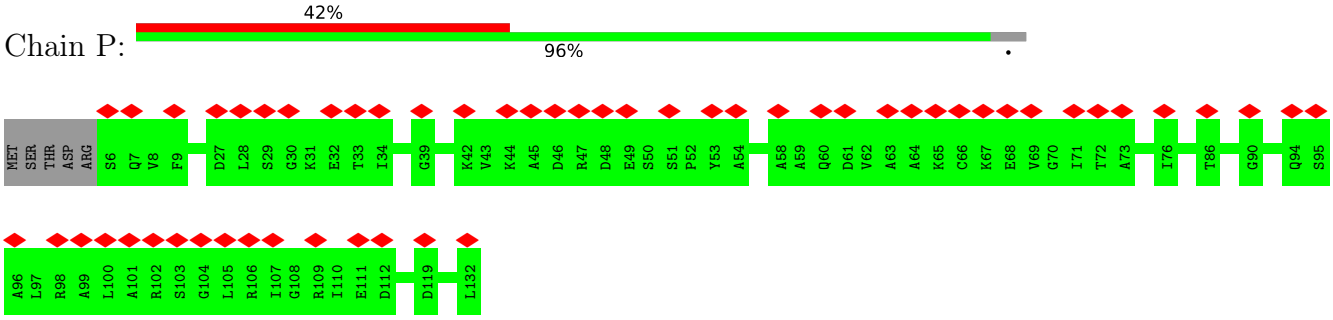
• Molecule 61: Ribosomal 40S subunit protein S13

Chain O:



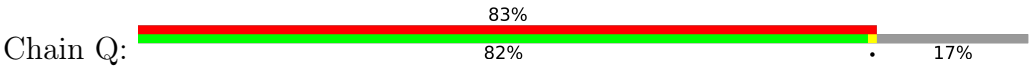
• Molecule 62: Ribosomal 40S subunit protein S14B

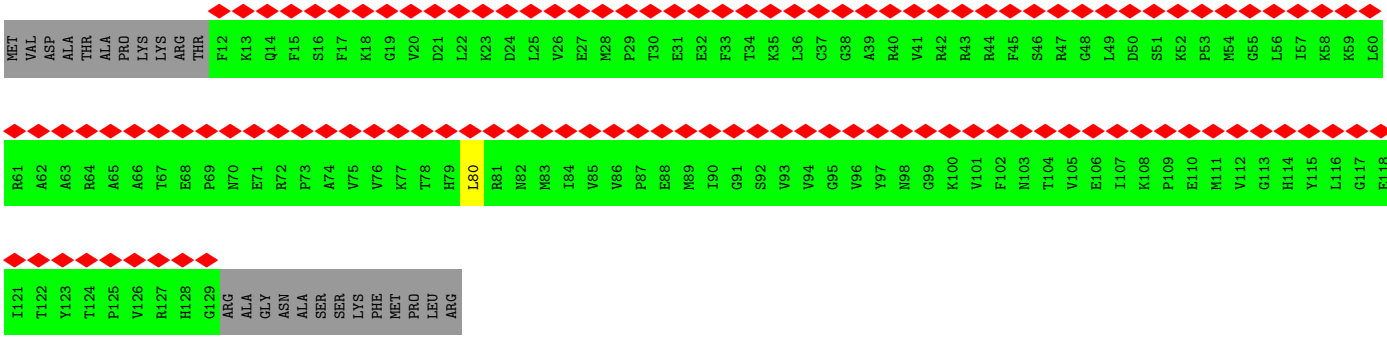
Chain P:



• Molecule 63: Ribosomal 40S subunit protein S15

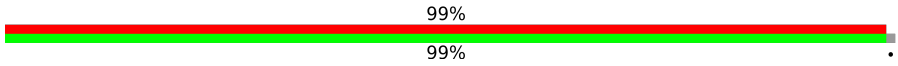
Chain Q:

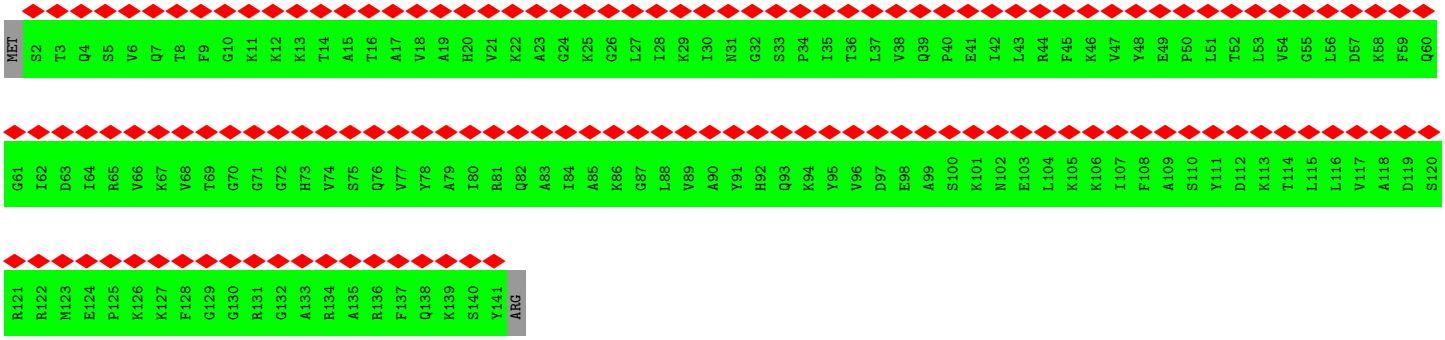




• Molecule 64: Ribosomal 40S subunit protein S16A

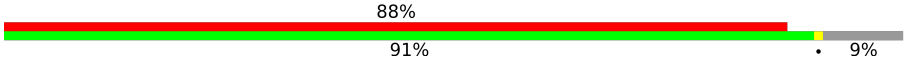
Chain R:

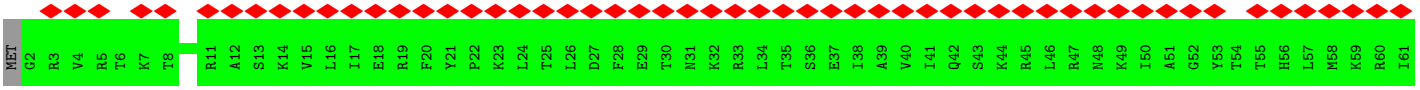


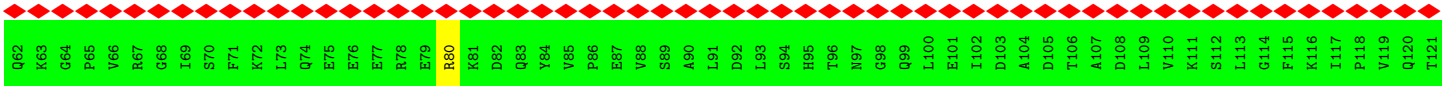


• Molecule 65: Ribosomal 40S subunit protein S17B

Chain S:

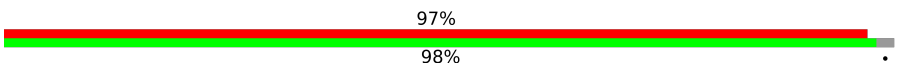


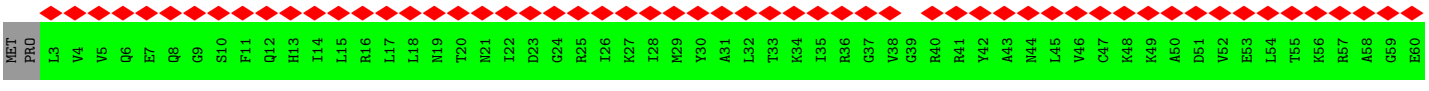


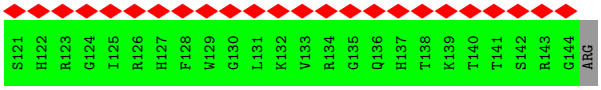


• Molecule 66: Ribosomal 40S subunit protein S18B

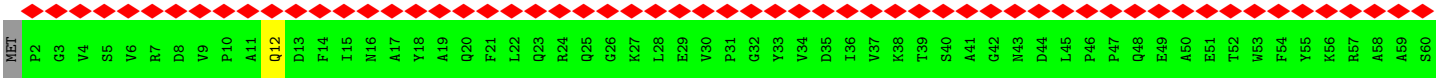
Chain T:

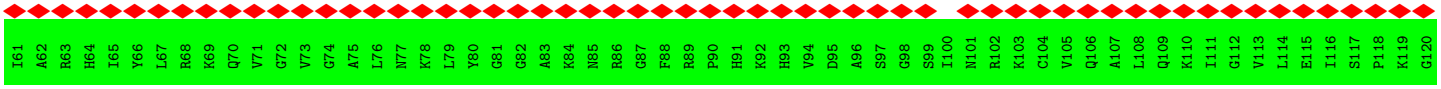


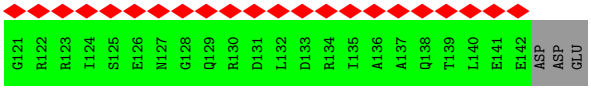




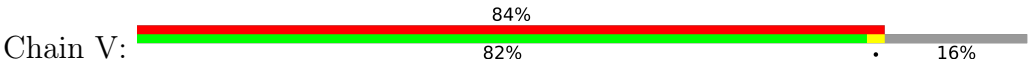
• Molecule 67: Ribosomal 40S subunit protein S19A

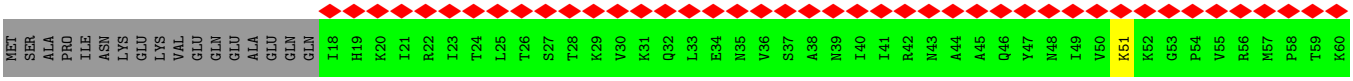




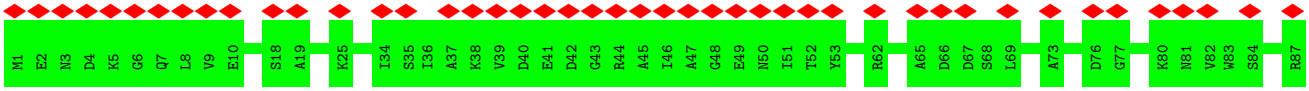


• Molecule 68: Ribosomal 40S subunit protein S20

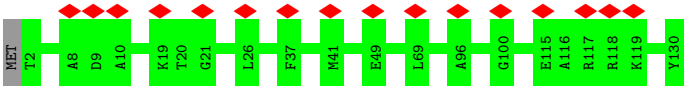




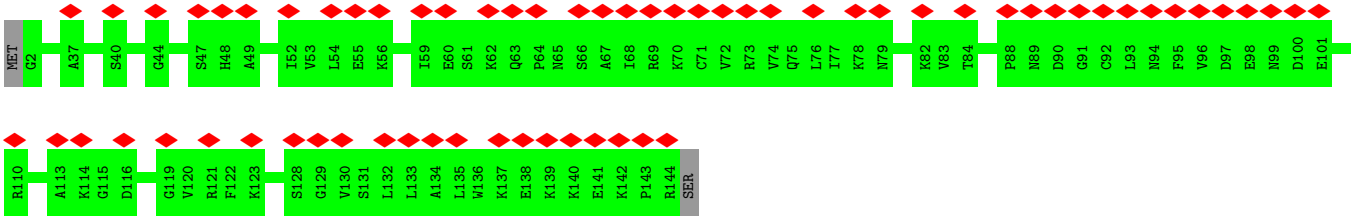
• Molecule 69: 40S ribosomal protein S21



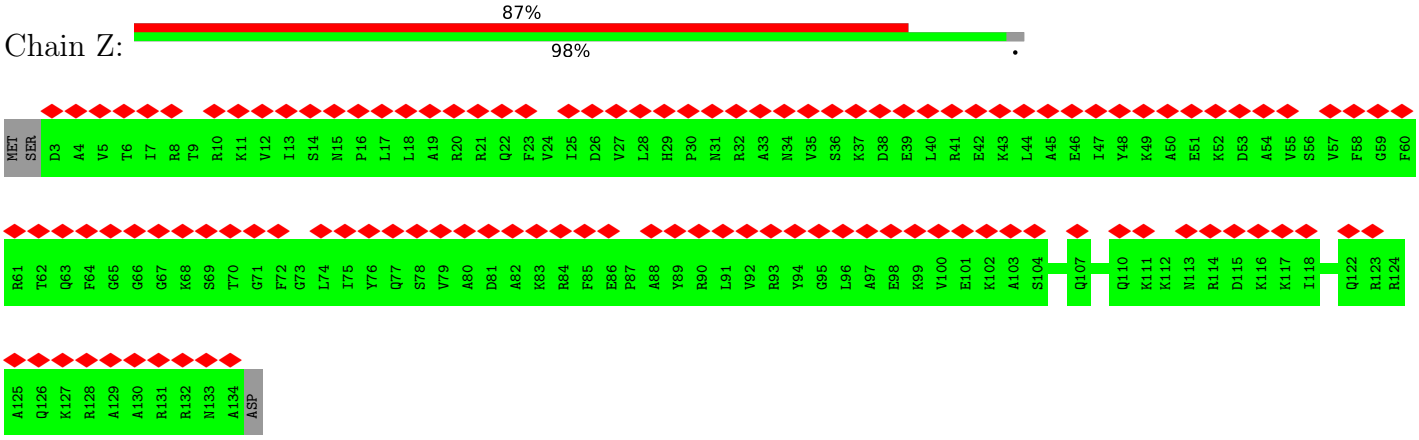
• Molecule 70: 40S ribosomal protein S22-A



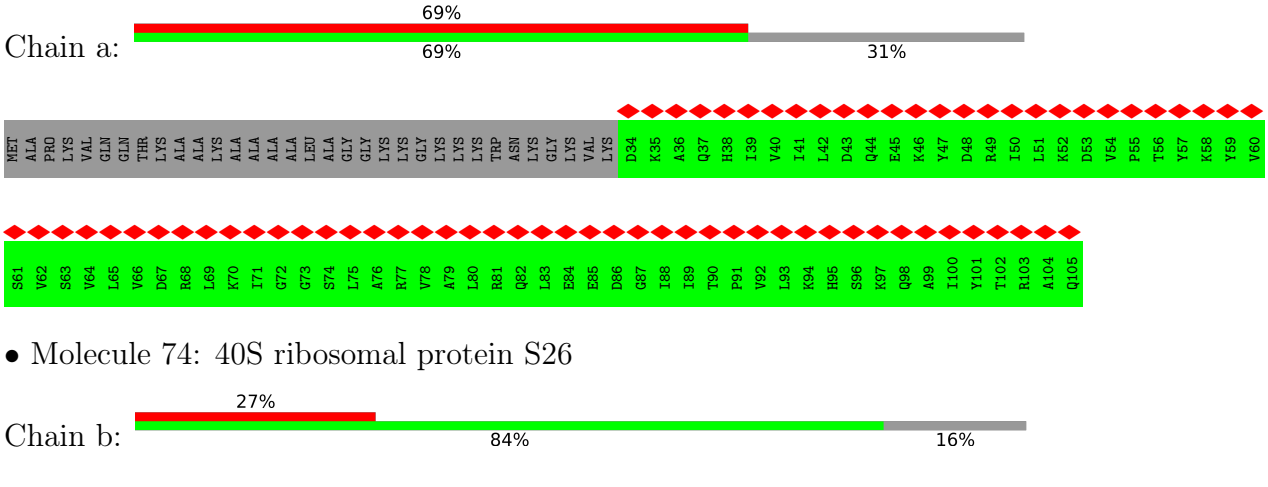
• Molecule 71: Ribosomal 40S subunit protein S23B



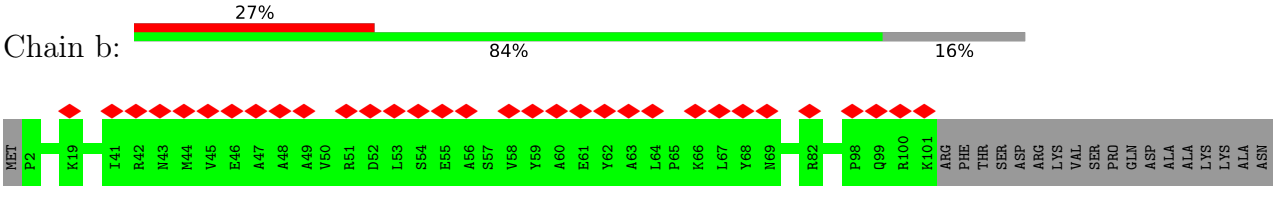
• Molecule 72: 40S ribosomal protein S24



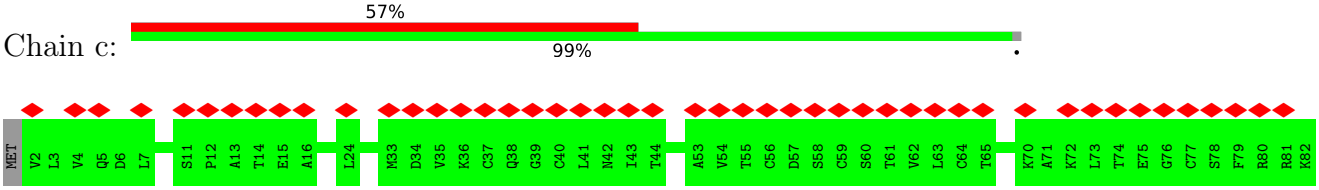
• Molecule 73: 40S ribosomal protein S25



• Molecule 74: 40S ribosomal protein S26

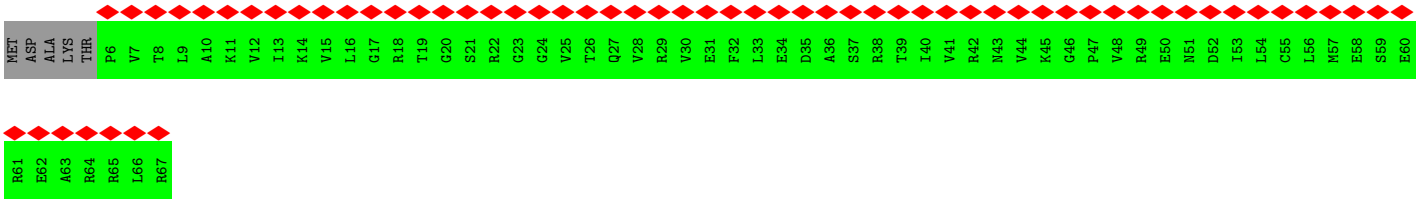


• Molecule 75: 40S ribosomal protein S27



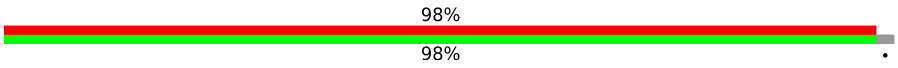
• Molecule 76: Ribosomal 40S subunit protein S28B

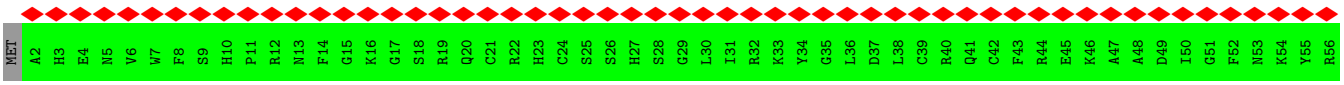
Chain d:



• Molecule 77: Ribosomal 40S subunit protein S29A

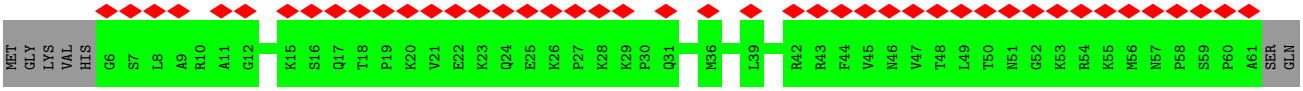
Chain e:





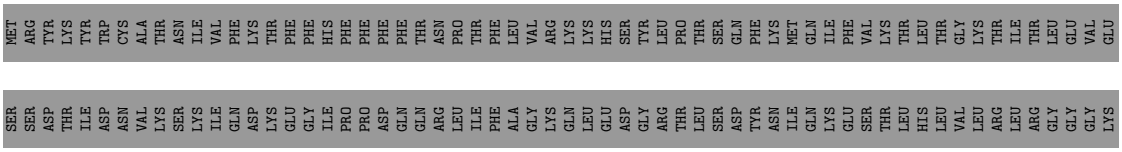
• Molecule 78: 40S ribosomal protein S30

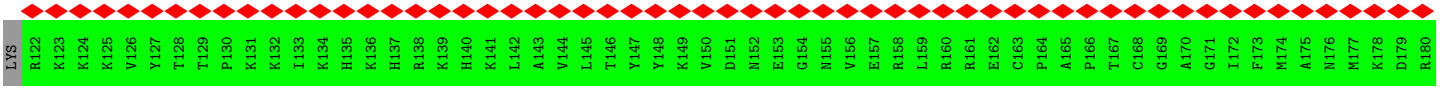
Chain f:



• Molecule 79: Ubiquitin-ribosomal 40S subunit protein S31 fusion protein

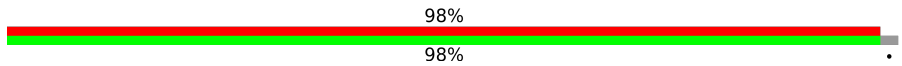
Chain g:

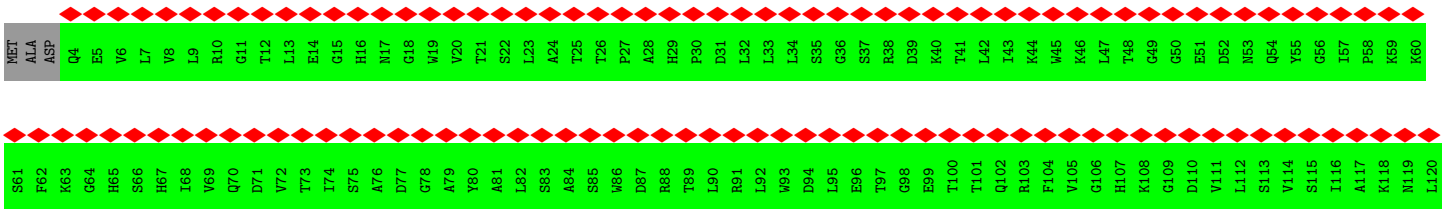


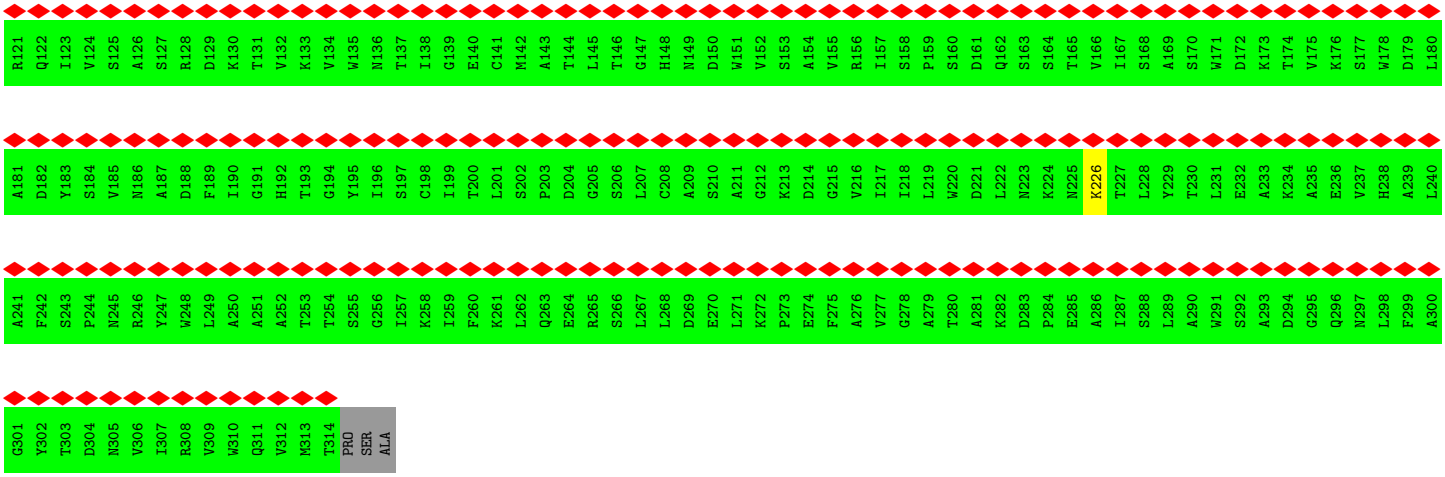


• Molecule 80: Guanine nucleotide-binding protein subunit beta-like protein

Chain h:






R121 Q122 I123 V124 S125 A126 S127 R128 D129 K130 T131 V132 K133 V134 W135 N136 T137 I138 G139 E140 C141 M142 A143 T144 L145 T146 G147 H148 N149 D150 W151 V152 S153 A154 V155 R156 I157 S158 P159 S160 D161 Q162 S163 S164 T165 V166 I167 S168 A169 S170 W171 D172 K173 T174 V175 K176 S177 W178 D179 L180
A181 D182 Y183 S184 V185 N186 A187 D188 F189 I190 G191 H192 T193 G194 Y195 I196 S197 C198 I199 T200 L201 S202 P203 D204 G205 S206 L207 C208 A209 S210 A211 G212 K213 D214 G215 V216 I217 I218 L219 W220 D221 L222 N223 K224 N225 K226 T227 L228 Y229 T230 L231 E232 A233 K234 A235 E236 V237 H238 A239 L240
A241 F242 S243 P244 N245 R246 Y247 W248 L249 A250 A251 A252 T253 T254 S255 G256 I257 K258 I259 F260 K261 L262 Q263 E264 R265 S266 L267 L268 D269 E270 L271 K272 P273 E274 F275 A276 V277 G278 A279 T280 A281 K282 D283 P284 E285 A286 I287 S288 L289 A290 W291 S292 A293 D294 G295 Q296 N297 L298 F299 A300
G301 Y302 T303 D304 N305 V306 I307 R308 V309 W310 Q311 V312 M313 T314 PRO SER ALA

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	243386	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	60	Depositor
Minimum defocus (nm)	900	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.113	Depositor
Minimum map value	-0.967	Depositor
Average map value	0.007	Depositor
Map value standard deviation	0.063	Depositor
Recommended contour level	0.226	Depositor
Map size (Å)	426.36002, 426.36002, 426.36002	wwPDB
Map dimensions	510, 510, 510	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.836, 0.836, 0.836	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: PUT, MLZ, OMG, OMC, ZN, MG, IAS, SPD

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	1	0.46	12/76718 (0.0%)	0.85	51/119600 (0.0%)
2	3	0.38	0/2884	0.78	0/4492
3	4	0.42	0/3746	0.79	0/5832
4	10	0.43	1/375 (0.3%)	0.77	0/579
5	j	0.31	0/1931	0.56	0/2592
6	k	0.31	0/3156	0.55	0/4246
7	l	0.28	0/2799	0.53	0/3777
8	m	0.28	0/2447	0.50	0/3294
9	n	0.29	0/1258	0.51	0/1696
10	o	0.29	0/1929	0.51	0/2589
11	p	0.27	0/1869	0.46	0/2519
12	q	0.28	0/1537	0.52	0/2067
13	r	0.28	0/1724	0.53	0/2314
14	s	0.27	0/1404	0.54	0/1880
15	t	0.48	2/1637 (0.1%)	0.60	1/2195 (0.0%)
16	u	0.27	0/1044	0.52	0/1407
17	v	0.31	0/1753	0.58	0/2347
18	w	0.29	0/1620	0.51	0/2167
19	x	0.28	0/1398	0.55	0/1879
20	y	0.28	0/1511	0.58	0/2022
21	z	0.26	0/1483	0.55	0/1972
22	0	0.30	0/1483	0.53	0/1997
23	2	0.30	0/1305	0.52	0/1749
24	5	0.29	0/871	0.47	0/1175
25	6	0.29	0/994	0.57	0/1339
26	7	0.29	0/536	0.54	0/712
27	8	0.29	0/990	0.53	0/1337
28	9	0.28	0/999	0.54	0/1334
29	AA	0.29	0/1112	0.47	0/1488
30	AB	0.30	0/1199	0.52	0/1607
31	AC	0.26	0/522	0.50	0/692
32	AD	0.29	0/738	0.46	0/994

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	AE	0.27	0/902	0.52	0/1212
34	AF	0.29	0/1039	0.53	0/1390
35	AG	0.32	0/895	0.53	0/1201
36	AH	0.29	0/934	0.57	0/1242
37	AI	0.26	0/1004	0.56	0/1337
38	AJ	0.26	0/780	0.54	0/1033
39	AK	0.30	0/690	0.63	0/916
40	AL	0.30	0/632	0.53	0/842
41	AM	0.25	0/458	0.58	0/609
42	AN	0.27	0/436	0.56	0/577
43	AO	0.39	0/237	0.66	0/304
44	AP	0.29	0/840	0.52	0/1108
45	AQ	0.29	0/705	0.57	0/940
46	i	0.24	0/864	0.49	0/1156
47	A	0.38	2/40362 (0.0%)	0.84	23/62888 (0.0%)
48	B	0.28	0/1666	0.49	0/2273
49	C	0.26	0/1750	0.52	0/2354
50	D	0.28	0/1648	0.49	0/2237
51	E	0.27	0/1731	0.54	0/2324
52	F	0.29	0/2096	0.52	0/2822
53	G	0.26	0/1631	0.51	0/2199
54	H	0.27	0/1845	0.53	0/2464
55	I	0.28	0/1490	0.52	0/2004
56	J	0.28	0/1606	0.57	0/2150
57	K	0.28	0/1478	0.52	0/1978
58	L	0.28	0/801	0.56	0/1081
59	M	0.30	0/1154	0.53	0/1553
60	N	0.25	0/892	0.58	0/1203
61	O	0.27	0/1210	0.47	0/1631
62	P	0.27	0/944	0.58	0/1265
63	Q	0.28	0/954	0.58	1/1282 (0.1%)
64	R	0.26	0/1109	0.51	0/1486
65	S	0.25	0/1014	0.54	0/1361
66	T	0.25	0/1186	0.53	0/1590
67	U	0.27	0/1120	0.52	0/1508
68	V	0.25	0/800	0.51	0/1082
69	W	0.29	0/683	0.54	0/918
70	X	0.29	0/1049	0.52	0/1412
71	Y	0.40	0/1128	0.58	0/1505
72	Z	0.28	0/1086	0.54	0/1447
73	a	0.27	0/585	0.51	0/789
74	b	0.27	0/811	0.57	0/1085
75	c	0.27	0/624	0.50	0/843

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
76	d	0.27	0/489	0.65	0/654
77	e	0.26	0/466	0.53	0/620
78	f	0.27	0/451	0.56	0/601
79	g	0.26	0/585	0.58	0/778
80	h	0.25	0/2451	0.52	0/3337
All	All	0.38	17/214283 (0.0%)	0.74	76/314481 (0.0%)

All (17) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	1	1738	U	O3'-P	-10.97	1.48	1.61
47	A	1362	C	O3'-P	-7.76	1.51	1.61
1	1	1575	A	O3'-P	-7.36	1.52	1.61
15	t	62	THR	C-O	-6.56	1.10	1.23
1	1	484	U	C1'-N1	6.47	1.58	1.48
1	1	1738	U	P-OP1	-6.39	1.38	1.49
1	1	482	U	C1'-N1	6.12	1.57	1.48
1	1	477	U	C1'-N1	6.11	1.57	1.48
1	1	1737	A	O3'-P	-6.06	1.53	1.61
15	t	3	ILE	C-O	-6.00	1.11	1.23
1	1	483	U	C1'-N1	5.92	1.57	1.48
1	1	486	C	C1'-N1	5.69	1.57	1.48
47	A	1363	U	O3'-P	-5.61	1.54	1.61
4	10	6	C	C1'-N1	5.46	1.56	1.48
1	1	479	C	C1'-N1	5.46	1.56	1.48
1	1	476	C	C1'-N1	5.45	1.56	1.48
1	1	1738	U	P-OP2	-5.02	1.40	1.49

All (76) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
47	A	451	C	N1-C2-O2	9.04	124.33	118.90
47	A	451	C	N3-C2-O2	-8.05	116.26	121.90
47	A	451	C	C2-N1-C1'	7.58	127.14	118.80
1	1	2215	C	N3-C2-O2	-7.47	116.67	121.90
1	1	620	A	N1-C6-N6	7.28	122.97	118.60
47	A	1375	C	C2-N1-C1'	7.23	126.75	118.80
1	1	2814	U	C2-N1-C1'	7.03	126.13	117.70
1	1	3182	C	C2-N1-C1'	6.85	126.33	118.80
1	1	3126	U	C2-N1-C1'	6.82	125.89	117.70
1	1	918	U	C2-N1-C1'	6.80	125.86	117.70
47	A	1242	U	C2-N1-C1'	6.70	125.74	117.70

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	1	2215	C	N1-C2-O2	6.50	122.80	118.90
1	1	2814	U	N1-C2-O2	6.46	127.32	122.80
47	A	1067	C	C2-N1-C1'	6.44	125.88	118.80
1	1	1273	C	N3-C2-O2	-6.43	117.40	121.90
1	1	977	U	C2-N1-C1'	6.42	125.40	117.70
1	1	620	A	C5-C6-N6	-6.36	118.61	123.70
47	A	579	U	C2-N1-C1'	6.34	125.31	117.70
1	1	1273	C	N1-C2-O2	6.22	122.63	118.90
47	A	451	C	C6-N1-C2	-6.12	117.85	120.30
63	Q	80	LEU	CA-CB-CG	6.12	129.37	115.30
1	1	831	G	O4'-C1'-N9	6.06	113.05	108.20
15	t	59	ARG	CG-CD-NE	-6.02	99.16	111.80
47	A	1242	U	N3-C2-O2	-6.00	118.00	122.20
1	1	2814	U	N3-C2-O2	-6.00	118.00	122.20
1	1	3030	U	C2-N1-C1'	5.82	124.68	117.70
1	1	977	U	N1-C2-O2	5.80	126.86	122.80
1	1	1492	C	C2-N1-C1'	5.78	125.16	118.80
1	1	406	G	O4'-C1'-N9	5.75	112.80	108.20
47	A	1242	U	N1-C2-O2	5.69	126.78	122.80
1	1	403	C	C6-N1-C2	-5.67	118.03	120.30
1	1	1738	U	O5'-P-OP1	-5.62	100.64	105.70
47	A	1462	C	C2-N1-C1'	5.61	124.97	118.80
1	1	3126	U	N1-C2-O2	5.59	126.72	122.80
47	A	62	A	O4'-C1'-N9	5.59	112.67	108.20
1	1	2235	C	N1-C2-O2	5.58	122.25	118.90
1	1	1720	U	O4'-C1'-N1	5.50	112.60	108.20
1	1	1276	C	N3-C2-O2	-5.50	118.05	121.90
1	1	403	C	C5-C6-N1	5.50	123.75	121.00
47	A	1444	G	C4-N9-C1'	5.45	133.58	126.50
1	1	620	A	C6-C5-N7	-5.44	128.50	132.30
47	A	1237	C	C2-N1-C1'	5.43	124.78	118.80
1	1	918	U	N1-C2-O2	5.42	126.59	122.80
47	A	579	U	N1-C2-O2	5.40	126.58	122.80
1	1	2235	C	C2-N1-C1'	5.40	124.74	118.80
1	1	956	U	C2-N1-C1'	5.40	124.18	117.70
1	1	437	G	N3-C4-N9	-5.37	122.78	126.00
47	A	561	U	N3-C2-O2	-5.35	118.46	122.20
1	1	977	U	N3-C2-O2	-5.33	118.47	122.20
1	1	3243	C	N1-C2-O2	5.33	122.10	118.90
1	1	3182	C	N1-C2-O2	5.29	122.08	118.90
1	1	3020	A	O4'-C1'-N9	5.28	112.42	108.20
1	1	1225	G	N3-C4-N9	5.24	129.14	126.00

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
47	A	1375	C	C6-N1-C1'	-5.23	114.52	120.80
1	1	918	U	N3-C2-O2	-5.23	118.54	122.20
1	1	620	A	N9-C4-C5	-5.22	103.71	105.80
47	A	579	U	N3-C2-O2	-5.21	118.55	122.20
1	1	1099	A	OP2-P-O3'	5.21	116.66	105.20
1	1	1197	C	C2-N1-C1'	5.20	124.52	118.80
1	1	3160	C	C2-N1-C1'	5.18	124.50	118.80
1	1	1197	C	N1-C2-O2	5.16	122.00	118.90
47	A	4	C	N1-C2-O2	5.16	122.00	118.90
47	A	4	C	C2-N1-C1'	5.15	124.47	118.80
1	1	3243	C	C2-N1-C1'	5.13	124.44	118.80
1	1	3243	C	N3-C2-O2	-5.13	118.31	121.90
47	A	591	A	O4'-C1'-N9	5.12	112.29	108.20
1	1	2044	U	C2-N1-C1'	5.09	123.81	117.70
1	1	2842	C	C6-N1-C1'	5.09	126.91	120.80
1	1	1347	U	N1-C2-O2	5.08	126.35	122.80
1	1	3029	U	N3-C2-O2	-5.06	118.66	122.20
47	A	1231	C	C2-N1-C1'	5.06	124.36	118.80
1	1	3126	U	N3-C2-O2	-5.05	118.66	122.20
47	A	1327	C	N1-C2-O2	5.05	121.93	118.90
1	1	3271	U	N3-C2-O2	-5.04	118.67	122.20
1	1	3151	C	C2-N1-C1'	5.01	124.31	118.80
1	1	2519	A	P-O3'-C3'	5.00	125.70	119.70

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
5	j	248/254 (98%)	240 (97%)	8 (3%)	0	100	100
6	k	385/389 (99%)	373 (97%)	12 (3%)	0	100	100
7	l	359/363 (99%)	349 (97%)	10 (3%)	0	100	100
8	m	290/298 (97%)	279 (96%)	11 (4%)	0	100	100
9	n	152/176 (86%)	150 (99%)	2 (1%)	0	100	100
10	o	233/241 (97%)	226 (97%)	7 (3%)	0	100	100
11	p	236/262 (90%)	231 (98%)	5 (2%)	0	100	100
12	q	188/191 (98%)	183 (97%)	5 (3%)	0	100	100
13	r	204/220 (93%)	201 (98%)	3 (2%)	0	100	100
14	s	171/174 (98%)	166 (97%)	5 (3%)	0	100	100
15	t	198/202 (98%)	196 (99%)	2 (1%)	0	100	100
16	u	128/131 (98%)	125 (98%)	3 (2%)	0	100	100
17	v	201/204 (98%)	198 (98%)	3 (2%)	0	100	100
18	w	197/200 (98%)	195 (99%)	2 (1%)	0	100	100
19	x	168/185 (91%)	165 (98%)	3 (2%)	0	100	100
20	y	186/186 (100%)	182 (98%)	4 (2%)	0	100	100
21	z	178/190 (94%)	175 (98%)	3 (2%)	0	100	100
22	0	171/172 (99%)	170 (99%)	1 (1%)	0	100	100
23	2	159/160 (99%)	157 (99%)	2 (1%)	0	100	100
24	5	103/124 (83%)	97 (94%)	5 (5%)	1 (1%)	15	17
25	6	129/137 (94%)	126 (98%)	3 (2%)	0	100	100
26	7	61/155 (39%)	61 (100%)	0	0	100	100
27	8	119/142 (84%)	118 (99%)	1 (1%)	0	100	100
28	9	124/127 (98%)	123 (99%)	1 (1%)	0	100	100
29	AA	133/136 (98%)	132 (99%)	1 (1%)	0	100	100
30	AB	146/149 (98%)	138 (94%)	8 (6%)	0	100	100
31	AC	62/63 (98%)	61 (98%)	1 (2%)	0	100	100
32	AD	94/106 (89%)	93 (99%)	1 (1%)	0	100	100
33	AE	107/112 (96%)	106 (99%)	1 (1%)	0	100	100
34	AF	124/131 (95%)	123 (99%)	1 (1%)	0	100	100
35	AG	107/107 (100%)	104 (97%)	3 (3%)	0	100	100
36	AH	114/122 (93%)	112 (98%)	2 (2%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
37	AI	118/120 (98%)	114 (97%)	4 (3%)	0	100	100
38	AJ	97/99 (98%)	96 (99%)	1 (1%)	0	100	100
39	AK	84/90 (93%)	81 (96%)	3 (4%)	0	100	100
40	AL	76/78 (97%)	73 (96%)	3 (4%)	0	100	100
41	AM	49/51 (96%)	48 (98%)	1 (2%)	0	100	100
42	AN	51/52 (98%)	51 (100%)	0	0	100	100
43	AO	23/25 (92%)	23 (100%)	0	0	100	100
44	AP	101/106 (95%)	100 (99%)	1 (1%)	0	100	100
45	AQ	89/92 (97%)	85 (96%)	4 (4%)	0	100	100
46	i	109/267 (41%)	102 (94%)	7 (6%)	0	100	100
48	B	206/261 (79%)	201 (98%)	5 (2%)	0	100	100
49	C	212/256 (83%)	207 (98%)	5 (2%)	0	100	100
50	D	214/249 (86%)	209 (98%)	5 (2%)	0	100	100
51	E	221/251 (88%)	214 (97%)	7 (3%)	0	100	100
52	F	258/262 (98%)	254 (98%)	4 (2%)	0	100	100
53	G	204/225 (91%)	197 (97%)	7 (3%)	0	100	100
54	H	224/236 (95%)	221 (99%)	3 (1%)	0	100	100
55	I	180/186 (97%)	174 (97%)	6 (3%)	0	100	100
56	J	201/206 (98%)	200 (100%)	1 (0%)	0	100	100
57	K	176/189 (93%)	175 (99%)	1 (1%)	0	100	100
58	L	91/118 (77%)	84 (92%)	6 (7%)	1 (1%)	14	15
59	M	139/155 (90%)	136 (98%)	3 (2%)	0	100	100
60	N	114/143 (80%)	96 (84%)	18 (16%)	0	100	100
61	O	148/151 (98%)	145 (98%)	3 (2%)	0	100	100
62	P	123/132 (93%)	119 (97%)	4 (3%)	0	100	100
63	Q	116/142 (82%)	107 (92%)	9 (8%)	0	100	100
64	R	138/142 (97%)	134 (97%)	4 (3%)	0	100	100
65	S	123/137 (90%)	120 (98%)	3 (2%)	0	100	100
66	T	140/145 (97%)	136 (97%)	4 (3%)	0	100	100
67	U	139/145 (96%)	136 (98%)	3 (2%)	0	100	100
68	V	98/119 (82%)	96 (98%)	2 (2%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
69	W	85/87 (98%)	83 (98%)	2 (2%)	0	100	100
70	X	127/130 (98%)	125 (98%)	2 (2%)	0	100	100
71	Y	141/145 (97%)	139 (99%)	2 (1%)	0	100	100
72	Z	130/135 (96%)	130 (100%)	0	0	100	100
73	a	70/105 (67%)	69 (99%)	1 (1%)	0	100	100
74	b	98/119 (82%)	96 (98%)	2 (2%)	0	100	100
75	c	79/82 (96%)	75 (95%)	4 (5%)	0	100	100
76	d	60/67 (90%)	55 (92%)	5 (8%)	0	100	100
77	e	53/56 (95%)	51 (96%)	2 (4%)	0	100	100
78	f	54/63 (86%)	52 (96%)	2 (4%)	0	100	100
79	g	68/193 (35%)	61 (90%)	7 (10%)	0	100	100
80	h	309/317 (98%)	291 (94%)	18 (6%)	0	100	100
All	All	11011/12138 (91%)	10716 (97%)	293 (3%)	2 (0%)	100	100

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
58	L	88	PRO
24	5	20	ALA

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
5	j	191/194 (98%)	191 (100%)	0	100	100
6	k	326/328 (99%)	326 (100%)	0	100	100
7	l	290/292 (99%)	289 (100%)	1 (0%)	92	96
8	m	247/252 (98%)	247 (100%)	0	100	100
9	n	135/154 (88%)	135 (100%)	0	100	100
10	o	199/204 (98%)	198 (100%)	1 (0%)	88	95

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
11	p	198/216 (92%)	198 (100%)	0	100	100
12	q	169/170 (99%)	169 (100%)	0	100	100
13	r	178/186 (96%)	178 (100%)	0	100	100
14	s	148/149 (99%)	147 (99%)	1 (1%)	84	92
15	t	166/168 (99%)	164 (99%)	2 (1%)	71	83
16	u	108/109 (99%)	108 (100%)	0	100	100
17	v	177/178 (99%)	177 (100%)	0	100	100
18	w	166/167 (99%)	166 (100%)	0	100	100
19	x	142/154 (92%)	141 (99%)	1 (1%)	84	92
20	y	156/154 (101%)	156 (100%)	0	100	100
21	z	147/153 (96%)	147 (100%)	0	100	100
22	0	158/157 (101%)	158 (100%)	0	100	100
23	2	135/134 (101%)	134 (99%)	1 (1%)	84	92
24	5	95/112 (85%)	95 (100%)	0	100	100
25	6	101/103 (98%)	101 (100%)	0	100	100
26	7	57/127 (45%)	57 (100%)	0	100	100
27	8	108/121 (89%)	108 (100%)	0	100	100
28	9	111/112 (99%)	110 (99%)	1 (1%)	78	89
29	AA	117/118 (99%)	117 (100%)	0	100	100
30	AB	120/121 (99%)	120 (100%)	0	100	100
31	AC	50/49 (102%)	50 (100%)	0	100	100
32	AD	81/90 (90%)	81 (100%)	0	100	100
33	AE	98/100 (98%)	98 (100%)	0	100	100
34	AF	111/115 (96%)	111 (100%)	0	100	100
35	AG	94/92 (102%)	94 (100%)	0	100	100
36	AH	99/102 (97%)	99 (100%)	0	100	100
37	AI	106/106 (100%)	106 (100%)	0	100	100
38	AJ	79/79 (100%)	78 (99%)	1 (1%)	69	81
39	AK	70/73 (96%)	70 (100%)	0	100	100
40	AL	69/69 (100%)	69 (100%)	0	100	100
41	AM	47/47 (100%)	47 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
42	AN	48/47 (102%)	48 (100%)	0	100 100
43	AO	24/24 (100%)	18 (75%)	6 (25%)	0 0
44	AP	88/89 (99%)	88 (100%)	0	100 100
45	AQ	72/73 (99%)	72 (100%)	0	100 100
46	i	92/212 (43%)	92 (100%)	0	100 100
48	B	176/215 (82%)	176 (100%)	0	100 100
49	C	194/229 (85%)	194 (100%)	0	100 100
50	D	174/198 (88%)	174 (100%)	0	100 100
51	E	174/196 (89%)	173 (99%)	1 (1%)	86 93
52	F	218/220 (99%)	218 (100%)	0	100 100
53	G	178/197 (90%)	178 (100%)	0	100 100
54	H	195/204 (96%)	195 (100%)	0	100 100
55	I	163/167 (98%)	163 (100%)	0	100 100
56	J	157/160 (98%)	156 (99%)	1 (1%)	86 93
57	K	153/160 (96%)	153 (100%)	0	100 100
58	L	87/104 (84%)	87 (100%)	0	100 100
59	M	122/134 (91%)	121 (99%)	1 (1%)	81 90
60	N	98/123 (80%)	98 (100%)	0	100 100
61	O	129/130 (99%)	129 (100%)	0	100 100
62	P	96/101 (95%)	96 (100%)	0	100 100
63	Q	102/121 (84%)	102 (100%)	0	100 100
64	R	114/116 (98%)	114 (100%)	0	100 100
65	S	112/122 (92%)	111 (99%)	1 (1%)	78 89
66	T	126/129 (98%)	126 (100%)	0	100 100
67	U	113/117 (97%)	112 (99%)	1 (1%)	78 89
68	V	90/105 (86%)	88 (98%)	2 (2%)	52 68
69	W	71/71 (100%)	71 (100%)	0	100 100
70	X	112/113 (99%)	112 (100%)	0	100 100
71	Y	116/118 (98%)	116 (100%)	0	100 100
72	Z	109/112 (97%)	109 (100%)	0	100 100
73	a	64/85 (75%)	64 (100%)	0	100 100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
74	b	86/102 (84%)	86 (100%)	0	100 100
75	c	72/73 (99%)	72 (100%)	0	100 100
76	d	54/58 (93%)	54 (100%)	0	100 100
77	e	47/48 (98%)	47 (100%)	0	100 100
78	f	48/54 (89%)	48 (100%)	0	100 100
79	g	62/175 (35%)	62 (100%)	0	100 100
80	h	259/263 (98%)	258 (100%)	1 (0%)	91 96
All	All	9444/10220 (92%)	9421 (100%)	23 (0%)	93 97

All (23) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
7	l	99	ARG
10	o	13	LYS
14	s	13	ARG
15	t	4	SER
15	t	62	THR
19	x	165	GLN
23	2	83	ARG
28	9	3	LYS
38	AJ	98	ARG
43	AO	6	ARG
43	AO	12	ARG
43	AO	15	ARG
43	AO	23	ARG
43	AO	24	SER
43	AO	25	LYS
51	E	77	ARG
56	J	125	LYS
59	M	67	ARG
65	S	80	ARG
67	U	12	GLN
68	V	51	LYS
68	V	100	LYS
80	h	226	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
12	q	129	HIS
19	x	28	ASN
21	z	134	HIS
22	0	8	GLN
22	0	62	ASN
24	5	30	GLN
25	6	9	ASN
45	AQ	32	GLN
48	B	30	GLN
49	C	124	ASN
55	I	48	ASN
66	T	89	GLN
68	V	93	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	1	3205/3359 (95%)	560 (17%)	36 (1%)
2	3	120/121 (99%)	9 (7%)	0
3	4	157/158 (99%)	24 (15%)	3 (1%)
4	10	14/76 (18%)	3 (21%)	0
47	A	1685/1787 (94%)	390 (23%)	47 (2%)
All	All	5181/5501 (94%)	986 (19%)	86 (1%)

All (986) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	1	24	U
1	1	25	A
1	1	29	G
1	1	39	A
1	1	42	A
1	1	48	A
1	1	56	A
1	1	58	G
1	1	59	A
1	1	64	A
1	1	65	A
1	1	91	G
1	1	98	A
1	1	104	C
1	1	108	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	109	G
1	1	110	C
1	1	121	A
1	1	135	G
1	1	155	A
1	1	156	A
1	1	164	U
1	1	169	G
1	1	172	C
1	1	173	C
1	1	175	G
1	1	186	A
1	1	189	U
1	1	190	U
1	1	199	C
1	1	205	G
1	1	209	C
1	1	212	A
1	1	217	G
1	1	218	A
1	1	219	G
1	1	230	G
1	1	236	A
1	1	239	A
1	1	240	C
1	1	243	G
1	1	245	G
1	1	249	G
1	1	250	U
1	1	269	G
1	1	286	U
1	1	295	A
1	1	305	U
1	1	311	C
1	1	323	A
1	1	329	U
1	1	337	G
1	1	338	A
1	1	339	C
1	1	349	A
1	1	350	C
1	1	376	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	377	A
1	1	395	A
1	1	398	A
1	1	402	A
1	1	403	C
1	1	404	G
1	1	420	G
1	1	421	G
1	1	422	A
1	1	438	A
1	1	439	C
1	1	452	A
1	1	453	U
1	1	454	G
1	1	479	C
1	1	481	G
1	1	482	U
1	1	506	A
1	1	517	A
1	1	519	U
1	1	531	G
1	1	532	U
1	1	538	G
1	1	539	G
1	1	540	C
1	1	541	U
1	1	542	U
1	1	543	C
1	1	544	U
1	1	545	G
1	1	546	C
1	1	555	A
1	1	556	U
1	1	557	A
1	1	564	G
1	1	577	G
1	1	589	G
1	1	590	A
1	1	598	U
1	1	600	U
1	1	601	U
1	1	602	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	609	A
1	1	618	U
1	1	619	A
1	1	620	A
1	1	635	C
1	1	647	A
1	1	658	A
1	1	675	A
1	1	679	U
1	1	688	A
1	1	703	A
1	1	710	G
1	1	713	A
1	1	717	A
1	1	723	G
1	1	730	A
1	1	732	U
1	1	760	U
1	1	763	U
1	1	772	U
1	1	773	U
1	1	776	A
1	1	777	G
1	1	780	A
1	1	781	G
1	1	802	A
1	1	813	A
1	1	826	A
1	1	845	C
1	1	857	C
1	1	861	U
1	1	870	U
1	1	875	U
1	1	892	A
1	1	903	G
1	1	904	G
1	1	910	A
1	1	912	G
1	1	913	A
1	1	917	A
1	1	919	C
1	1	921	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	933	G
1	1	940	C
1	1	949	G
1	1	955	C
1	1	956	U
1	1	959	G
1	1	976	A
1	1	977	U
1	1	990	G
1	1	991	U
1	1	996	C
1	1	997	G
1	1	998	A
1	1	1006	G
1	1	1011	C
1	1	1012	U
1	1	1014	G
1	1	1019	U
1	1	1020	G
1	1	1021	A
1	1	1022	A
1	1	1023	A
1	1	1024	U
1	1	1025	G
1	1	1027	C
1	1	1030	U
1	1	1033	C
1	1	1043	A
1	1	1045	C
1	1	1060	A
1	1	1061	A
1	1	1068	G
1	1	1077	U
1	1	1078	U
1	1	1089	A
1	1	1090	A
1	1	1091	U
1	1	1092	U
1	1	1094	A
1	1	1099	A
1	1	1100	G
1	1	1113	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	1127	G
1	1	1140	U
1	1	1149	A
1	1	1150	A
1	1	1151	C
1	1	1155	A
1	1	1156	C
1	1	1164	U
1	1	1174	G
1	1	1176	A
1	1	1177	U
1	1	1178	G
1	1	1188	C
1	1	1189	A
1	1	1192	C
1	1	1197	C
1	1	1204	U
1	1	1205	G
1	1	1215	C
1	1	1218	G
1	1	1223	C
1	1	1224	C
1	1	1225	G
1	1	1228	C
1	1	1229	G
1	1	1230	G
1	1	1231	U
1	1	1232	G
1	1	1234	C
1	1	1238	G
1	1	1239	G
1	1	1241	A
1	1	1242	G
1	1	1243	U
1	1	1244	C
1	1	1245	G
1	1	1247	A
1	1	1249	U
1	1	1251	C
1	1	1252	G
1	1	1253	C
1	1	1255	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	1258	G
1	1	1259	A
1	1	1262	G
1	1	1263	U
1	1	1264	G
1	1	1265	U
1	1	1266	A
1	1	1267	A
1	1	1268	C
1	1	1269	A
1	1	1270	A
1	1	1273	C
1	1	1278	G
1	1	1280	C
1	1	1282	A
1	1	1283	A
1	1	1303	G
1	1	1304	A
1	1	1305	U
1	1	1309	G
1	1	1326	A
1	1	1345	G
1	1	1346	U
1	1	1347	U
1	1	1348	U
1	1	1349	U
1	1	1382	A
1	1	1395	U
1	1	1415	A
1	1	1417	G
1	1	1421	U
1	1	1427	G
1	1	1430	G
1	1	1433	C
1	1	1442	A
1	1	1446	G
1	1	1465	C
1	1	1471	A
1	1	1477	A
1	1	1484	G
1	1	1498	C
1	1	1504	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	1520	A
1	1	1523	C
1	1	1532	G
1	1	1535	A
1	1	1552	C
1	1	1556	G
1	1	1558	G
1	1	1559	C
1	1	1560	U
1	1	1561	U
1	1	1562	G
1	1	1563	A
1	1	1565	U
1	1	1566	U
1	1	1567	U
1	1	1568	U
1	1	1569	C
1	1	1571	G
1	1	1572	G
1	1	1574	C
1	1	1576	A
1	1	1577	C
1	1	1585	A
1	1	1589	A
1	1	1601	A
1	1	1603	U
1	1	1624	C
1	1	1625	U
1	1	1635	C
1	1	1638	A
1	1	1639	A
1	1	1641	U
1	1	1648	G
1	1	1654	G
1	1	1679	A
1	1	1720	U
1	1	1721	C
1	1	1732	G
1	1	1746	A
1	1	1747	G
1	1	1755	U
1	1	1756	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	1757	A
1	1	1758	U
1	1	1760	U
1	1	1761	U
1	1	1762	G
1	1	1763	C
1	1	1776	G
1	1	1793	A
1	1	1804	G
1	1	1809	A
1	1	1810	A
1	1	1811	U
1	1	1812	A
1	1	1814	U
1	1	1815	U
1	1	1816	U
1	1	1817	U
1	1	1835	A
1	1	1838	A
1	1	1842	C
1	1	1845	C
1	1	1862	C
1	1	1874	G
1	1	1877	A
1	1	1882	A
1	1	1889	A
1	1	1902	G
1	1	1944	G
1	1	1949	G
1	1	1950	G
1	1	1958	G
1	1	1961	C
1	1	1968	A
1	1	1973	C
1	1	2043	G
1	1	2045	C
1	1	2054	C
1	1	2055	G
1	1	2066	G
1	1	2067	U
1	1	2068	U
1	1	2069	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	2070	A
1	1	2071	A
1	1	2078	A
1	1	2088	G
1	1	2089	G
1	1	2090	U
1	1	2091	A
1	1	2092	C
1	1	2099	G
1	1	2100	G
1	1	2109	A
1	1	2118	U
1	1	2122	A
1	1	2136	A
1	1	2147	G
1	1	2149	G
1	1	2183	U
1	1	2184	G
1	1	2185	A
1	1	2186	A
1	1	2187	U
1	1	2188	G
1	1	2222	A
1	1	2227	G
1	1	2233	A
1	1	2234	A
1	1	2235	C
1	1	2250	G
1	1	2251	G
1	1	2257	A
1	1	2259	A
1	1	2260	U
1	1	2276	U
1	1	2285	G
1	1	2286	C
1	1	2288	U
1	1	2291	A
1	1	2292	U
1	1	2293	G
1	1	2312	U
1	1	2313	G
1	1	2314	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	2341	A
1	1	2351	A
1	1	2352	C
1	1	2353	G
1	1	2363	G
1	1	2366	U
1	1	2371	G
1	1	2372	G
1	1	2375	A
1	1	2380	A
1	1	2381	G
1	1	2382	A
1	1	2389	U
1	1	2413	G
1	1	2420	G
1	1	2489	A
1	1	2492	U
1	1	2493	A
1	1	2511	G
1	1	2513	A
1	1	2515	G
1	1	2516	U
1	1	2517	C
1	1	2518	A
1	1	2519	A
1	1	2520	A
1	1	2521	C
1	1	2529	U
1	1	2530	C
1	1	2533	G
1	1	2536	U
1	1	2538	A
1	1	2545	C
1	1	2546	U
1	1	2554	C
1	1	2557	G
1	1	2565	A
1	1	2566	C
1	1	2578	G
1	1	2579	G
1	1	2586	G
1	1	2598	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	2623	G
1	1	2624	U
1	1	2628	A
1	1	2644	G
1	1	2646	A
1	1	2649	G
1	1	2661	A
1	1	2662	G
1	1	2663	A
1	1	2666	A
1	1	2676	A
1	1	2677	A
1	1	2686	G
1	1	2699	A
1	1	2700	G
1	1	2701	U
1	1	2724	U
1	1	2725	G
1	1	2734	A
1	1	2745	C
1	1	2749	G
1	1	2750	G
1	1	2768	G
1	1	2771	A
1	1	2772	G
1	1	2773	A
1	1	2774	A
1	1	2782	C
1	1	2786	G
1	1	2789	A
1	1	2790	U
1	1	2814	U
1	1	2815	U
1	1	2817	A
1	1	2833	U
1	1	2839	C
1	1	2843	G
1	1	2844	A
1	1	2847	U
1	1	2859	A
1	1	2861	C
1	1	2866	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	2870	G
1	1	2871	C
1	1	2886	G
1	1	2895	U
1	1	2907	U
1	1	2908	A
1	1	2911	G
1	1	2914	C
1	1	2919	G
1	1	2920	C
1	1	2923	G
1	1	2926	U
1	1	2943	A
1	1	2955	C
1	1	2960	C
1	1	2962	G
1	1	2969	G
1	1	2984	A
1	1	3021	A
1	1	3028	U
1	1	3031	G
1	1	3050	A
1	1	3051	C
1	1	3052	G
1	1	3058	A
1	1	3064	C
1	1	3076	U
1	1	3094	A
1	1	3101	A
1	1	3102	A
1	1	3103	U
1	1	3114	A
1	1	3115	C
1	1	3134	C
1	1	3143	G
1	1	3144	A
1	1	3146	G
1	1	3149	U
1	1	3151	C
1	1	3157	A
1	1	3160	C
1	1	3163	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	3164	U
1	1	3171	C
1	1	3172	U
1	1	3182	C
1	1	3183	A
1	1	3184	G
1	1	3194	G
1	1	3208	A
1	1	3210	A
1	1	3212	G
1	1	3214	U
1	1	3221	G
1	1	3224	U
1	1	3228	G
1	1	3235	A
1	1	3241	G
1	1	3246	C
1	1	3252	C
1	1	3259	A
1	1	3260	A
1	1	3268	G
1	1	3269	C
1	1	3272	A
1	1	3278	U
1	1	3281	A
1	1	3284	U
1	1	3285	A
1	1	3306	U
1	1	3307	A
1	1	3309	A
1	1	3310	G
1	1	3316	U
1	1	3317	U
1	1	3318	G
1	1	3319	U
1	1	3320	U
1	1	3321	G
1	1	3334	G
1	1	3343	C
1	1	3351	G
1	1	3361	U
2	3	7	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	3	22	A
2	3	54	U
2	3	55	A
2	3	65	G
2	3	73	C
2	3	76	A
2	3	102	A
2	3	112	G
3	4	23	U
3	4	34	U
3	4	35	C
3	4	59	A
3	4	62	C
3	4	63	G
3	4	81	A
3	4	84	C
3	4	85	G
3	4	86	U
3	4	87	G
3	4	92	A
3	4	95	G
3	4	102	U
3	4	104	A
3	4	106	C
3	4	107	G
3	4	111	A
3	4	113	U
3	4	125	U
3	4	126	A
3	4	148	G
3	4	152	G
3	4	157	U
4	10	2	G
4	10	68	C
4	10	76	A
47	A	17	C
47	A	25	C
47	A	26	A
47	A	27	U
47	A	34	G
47	A	47	A
47	A	57	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
47	A	66	U
47	A	74	U
47	A	75	U
47	A	76	A
47	A	78	A
47	A	79	C
47	A	81	G
47	A	84	A
47	A	104	A
47	A	114	C
47	A	115	G
47	A	123	G
47	A	126	A
47	A	127	G
47	A	128	U
47	A	129	A
47	A	138	C
47	A	139	U
47	A	142	G
47	A	143	A
47	A	150	U
47	A	151	G
47	A	152	G
47	A	154	A
47	A	159	U
47	A	166	A
47	A	168	U
47	A	173	G
47	A	176	U
47	A	177	A
47	A	179	A
47	A	190	U
47	A	191	U
47	A	193	G
47	A	199	G
47	A	200	A
47	A	202	G
47	A	206	U
47	A	211	A
47	A	214	U
47	A	215	A
47	A	216	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
47	A	217	A
47	A	218	A
47	A	247	U
47	A	255	A
47	A	259	U
47	A	260	U
47	A	261	C
47	A	262	G
47	A	266	C
47	A	269	A
47	A	270	U
47	A	274	C
47	A	276	U
47	A	277	G
47	A	278	U
47	A	279	G
47	A	283	G
47	A	285	G
47	A	297	A
47	A	312	C
47	A	314	A
47	A	318	U
47	A	320	G
47	A	335	G
47	A	336	C
47	A	350	A
47	A	357	A
47	A	358	A
47	A	359	C
47	A	388	G
47	A	398	A
47	A	400	C
47	A	402	G
47	A	414	A
47	A	416	G
47	A	421	G
47	A	422	C
47	A	423	A
47	A	424	G
47	A	432	G
47	A	437	U
47	A	442	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
47	A	446	C
47	A	452	A
47	A	458	A
47	A	466	A
47	A	475	A
47	A	480	U
47	A	482	C
47	A	483	A
47	A	485	G
47	A	501	G
47	A	502	U
47	A	503	A
47	A	504	A
47	A	505	U
47	A	506	U
47	A	509	A
47	A	512	G
47	A	513	A
47	A	515	U
47	A	518	A
47	A	519	A
47	A	525	A
47	A	530	U
47	A	534	C
47	A	536	A
47	A	537	G
47	A	539	A
47	A	540	A
47	A	547	G
47	A	553	A
47	A	554	A
47	A	555	G
47	A	556	U
47	A	557	C
47	A	563	C
47	A	566	G
47	A	575	G
47	A	576	U
47	A	580	U
47	A	592	A
47	A	593	G
47	A	604	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
47	A	609	U
47	A	617	A
47	A	618	A
47	A	620	A
47	A	621	A
47	A	639	G
47	A	648	U
47	A	650	G
47	A	652	C
47	A	653	G
47	A	654	G
47	A	656	C
47	A	675	U
47	A	682	A
47	A	686	G
47	A	687	A
47	A	688	G
47	A	694	C
47	A	695	C
47	A	696	U
47	A	701	G
47	A	721	C
47	A	722	A
47	A	723	G
47	A	729	U
47	A	739	A
47	A	740	A
47	A	741	A
47	A	750	G
47	A	751	U
47	A	756	A
47	A	759	A
47	A	760	G
47	A	762	C
47	A	764	U
47	A	765	U
47	A	766	U
47	A	767	G
47	A	768	C
47	A	770	C
47	A	771	G
47	A	773	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
47	A	775	A
47	A	778	U
47	A	779	U
47	A	796	A
47	A	798	A
47	A	799	G
47	A	802	C
47	A	803	G
47	A	804	U
47	A	805	U
47	A	807	U
47	A	808	G
47	A	814	A
47	A	815	U
47	A	816	U
47	A	818	U
47	A	819	G
47	A	820	U
47	A	821	U
47	A	823	G
47	A	824	U
47	A	825	U
47	A	826	U
47	A	828	U
47	A	831	G
47	A	840	A
47	A	842	U
47	A	848	A
47	A	856	G
47	A	857	G
47	A	869	A
47	A	871	U
47	A	875	C
47	A	877	G
47	A	878	U
47	A	879	U
47	A	881	U
47	A	891	A
47	A	909	A
47	A	910	G
47	A	911	A
47	A	918	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
47	A	920	U
47	A	945	U
47	A	951	A
47	A	973	A
47	A	975	C
47	A	977	A
47	A	988	A
47	A	989	U
47	A	997	U
47	A	998	A
47	A	1004	A
47	A	1005	A
47	A	1011	A
47	A	1013	C
47	A	1017	G
47	A	1024	A
47	A	1025	G
47	A	1039	U
47	A	1042	U
47	A	1043	U
47	A	1044	U
47	A	1047	U
47	A	1055	A
47	A	1056	U
47	A	1057	C
47	A	1058	G
47	A	1059	G
47	A	1060	C
47	A	1061	A
47	A	1067	C
47	A	1077	A
47	A	1081	C
47	A	1085	G
47	A	1123	A
47	A	1135	G
47	A	1143	C
47	A	1145	A
47	A	1152	G
47	A	1168	A
47	A	1169	A
47	A	1170	U
47	A	1179	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
47	A	1181	A
47	A	1184	G
47	A	1185	G
47	A	1186	G
47	A	1187	A
47	A	1193	A
47	A	1202	A
47	A	1203	G
47	A	1206	A
47	A	1207	C
47	A	1212	A
47	A	1215	A
47	A	1219	A
47	A	1220	C
47	A	1221	A
47	A	1229	A
47	A	1230	G
47	A	1231	C
47	A	1236	U
47	A	1243	U
47	A	1250	G
47	A	1270	U
47	A	1284	G
47	A	1299	U
47	A	1300	U
47	A	1301	G
47	A	1306	A
47	A	1325	U
47	A	1330	A
47	A	1336	G
47	A	1339	G
47	A	1342	A
47	A	1343	G
47	A	1345	A
47	A	1346	U
47	A	1348	U
47	A	1349	G
47	A	1352	G
47	A	1355	A
47	A	1356	U
47	A	1357	A
47	A	1359	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
47	A	1360	C
47	A	1364	U
47	A	1365	C
47	A	1369	G
47	A	1370	A
47	A	1376	U
47	A	1380	G
47	A	1381	A
47	A	1382	U
47	A	1384	U
47	A	1385	C
47	A	1392	A
47	A	1397	A
47	A	1398	G
47	A	1399	U
47	A	1400	U
47	A	1401	U
47	A	1410	A
47	A	1413	A
47	A	1414	G
47	A	1415	G
47	A	1422	A
47	A	1431	G
47	A	1433	C
47	A	1445	C
47	A	1446	A
47	A	1455	A
47	A	1457	A
47	A	1458	C
47	A	1461	A
47	A	1462	C
47	A	1463	G
47	A	1468	C
47	A	1476	A
47	A	1477	U
47	A	1480	G
47	A	1483	U
47	A	1485	G
47	A	1491	G
47	A	1502	A
47	A	1503	A
47	A	1508	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
47	A	1510	G
47	A	1511	A
47	A	1523	G
47	A	1524	C
47	A	1529	G
47	A	1530	A
47	A	1541	U
47	A	1544	U
47	A	1546	G
47	A	1556	A
47	A	1560	A
47	A	1561	G
47	A	1571	G
47	A	1574	A
47	A	1575	G
47	A	1577	G
47	A	1580	A
47	A	1582	U
47	A	1584	A
47	A	1588	G
47	A	1621	C
47	A	1644	U
47	A	1645	G
47	A	1665	C
47	A	1667	G
47	A	1670	U
47	A	1671	G
47	A	1672	G
47	A	1673	U
47	A	1674	U
47	A	1677	G
47	A	1700	G
47	A	1704	C
47	A	1737	A
47	A	1743	A
47	A	1747	G
47	A	1749	A
47	A	1753	A
47	A	1756	U
47	A	1767	G
47	A	1769	A
47	A	1770	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
47	A	1779	G
47	A	1780	G
47	A	1781	A
47	A	1782	U
47	A	1783	C

All (86) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	1	172	C
1	1	403	C
1	1	538	G
1	1	563	U
1	1	601	U
1	1	759	G
1	1	912	G
1	1	1029	U
1	1	1060	A
1	1	1099	A
1	1	1346	U
1	1	1347	U
1	1	1559	C
1	1	1561	U
1	1	1576	A
1	1	1762	G
1	1	1815	U
1	1	1943	G
1	1	1957	G
1	1	2090	U
1	1	2182	C
1	1	2183	U
1	1	2515	G
1	1	2519	A
1	1	2545	C
1	1	2789	A
1	1	2790	U
1	1	3093	U
1	1	3159	A
1	1	3193	C
1	1	3234	U
1	1	3240	U
1	1	3284	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	1	3309	A
1	1	3315	C
1	1	3317	U
3	4	85	G
3	4	125	U
3	4	156	U
47	A	25	C
47	A	78	A
47	A	137	A
47	A	151	G
47	A	176	U
47	A	214	U
47	A	259	U
47	A	265	U
47	A	278	U
47	A	415	A
47	A	451	C
47	A	502	U
47	A	504	A
47	A	505	U
47	A	514	G
47	A	518	A
47	A	529	C
47	A	533	A
47	A	553	A
47	A	556	U
47	A	638	U
47	A	685	C
47	A	740	A
47	A	763	C
47	A	769	U
47	A	817	U
47	A	820	U
47	A	824	U
47	A	855	C
47	A	874	U
47	A	876	A
47	A	1168	A
47	A	1335	U
47	A	1355	A
47	A	1359	U
47	A	1369	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
47	A	1396	A
47	A	1398	G
47	A	1457	A
47	A	1467	C
47	A	1479	A
47	A	1484	U
47	A	1523	G
47	A	1555	C
47	A	1573	A
47	A	1579	A
47	A	1581	G

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

6 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
25	MLZ	6	110	25	8,9,10	0.71	0	4,9,11	0.92	0
44	MLZ	AP	40	44	8,9,10	0.70	0	4,9,11	0.95	0
44	MLZ	AP	55	44	8,9,10	0.66	0	4,9,11	0.83	0
1	OMG	1	2765	1	18,26,27	3.46	7 (38%)	20,38,41	1.97	5 (25%)
62	IAS	P	119	62	4,7,8	0.90	0	2,8,10	1.55	0
1	OMC	1	2808	1	15,22,23	3.23	6 (40%)	17,31,34	1.34	3 (17%)

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
25	MLZ	6	110	25	-	3/7/8/10	-
44	MLZ	AP	40	44	-	0/7/8/10	-
44	MLZ	AP	55	44	-	3/7/8/10	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	OMG	1	2765	1	-	0/5/27/28	0/3/3/3
62	IAS	P	119	62	-	0/3/7/8	-
1	OMC	1	2808	1	-	1/7/27/28	0/2/2/2

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	1	2765	OMG	C4-N3	8.29	1.48	1.35
1	1	2808	OMC	C6-N1	7.50	1.45	1.35
1	1	2765	OMG	C5-C6	6.94	1.53	1.41
1	1	2765	OMG	C6-N1	5.95	1.43	1.33
1	1	2808	OMC	C2-N3	5.42	1.48	1.38
1	1	2808	OMC	C4-N3	5.21	1.44	1.35
1	1	2765	OMG	C2-N2	4.87	1.43	1.33
1	1	2808	OMC	C6-C5	4.73	1.48	1.38
1	1	2765	OMG	C2-N1	4.68	1.43	1.35
1	1	2808	OMC	C4-N4	3.43	1.45	1.35
1	1	2808	OMC	C5-C4	2.82	1.48	1.41
1	1	2765	OMG	O6-C6	-2.64	1.17	1.24
1	1	2765	OMG	C2-N3	2.44	1.46	1.34

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	1	2765	OMG	N3-C2-N1	-5.71	119.60	127.22
1	1	2765	OMG	C2-N3-C4	4.23	120.19	115.36
1	1	2808	OMC	C4-N3-C2	3.64	120.03	116.34
1	1	2765	OMG	C2-N1-C6	2.48	119.87	115.93
1	1	2808	OMC	N4-C4-N3	2.40	120.28	116.49
1	1	2765	OMG	C5-C6-N1	-2.35	120.22	123.43
1	1	2765	OMG	N2-C2-N1	2.21	120.68	117.25
1	1	2808	OMC	C5-C4-N3	-2.05	119.35	121.72

There are no chirality outliers.

All (7) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
25	6	110	MLZ	N-CA-CB-CG
25	6	110	MLZ	C-CA-CB-CG
44	AP	55	MLZ	CG-CD-CE-NZ
44	AP	55	MLZ	CA-CB-CG-CD

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
44	AP	55	MLZ	CE-CD-CG-CB
25	6	110	MLZ	CD-CE-NZ-CM
1	1	2808	OMC	C1'-C2'-O2'-CM2

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 463 ligands modelled in this entry, 451 are monoatomic - leaving 12 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	$\#\|Z\| > 2$
81	SPD	1	3406	-	9,9,9	0.15	0	8,8,8	0.24	0
81	SPD	1	3405	-	9,9,9	0.58	0	8,8,8	1.47	2 (25%)
81	SPD	1	3407	-	9,9,9	0.26	0	8,8,8	0.44	0
82	PUT	4	201	-	5,5,5	0.20	0	4,4,4	0.19	0
81	SPD	1	3402	-	9,9,9	0.16	0	8,8,8	0.18	0
81	SPD	1	3410	-	9,9,9	0.33	0	8,8,8	0.60	0
82	PUT	1	3403	-	5,5,5	0.14	0	4,4,4	0.20	0
81	SPD	1	3408	-	9,9,9	0.15	0	8,8,8	0.23	0
81	SPD	1	3409	-	9,9,9	0.16	0	8,8,8	0.18	0
81	SPD	1	3411	-	9,9,9	0.50	0	8,8,8	0.61	0
81	SPD	1	3404	-	9,9,9	0.14	0	8,8,8	0.16	0
81	SPD	1	3401	-	9,9,9	0.32	0	8,8,8	0.84	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns.

'-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
81	SPD	1	3406	-	-	4/7/7/7	-
81	SPD	1	3405	-	-	4/7/7/7	-
81	SPD	1	3407	-	-	4/7/7/7	-
82	PUT	4	201	-	-	2/3/3/3	-
81	SPD	1	3402	-	-	4/7/7/7	-
81	SPD	1	3410	-	-	4/7/7/7	-
82	PUT	1	3403	-	-	0/3/3/3	-
81	SPD	1	3408	-	-	6/7/7/7	-
81	SPD	1	3409	-	-	5/7/7/7	-
81	SPD	1	3411	-	-	5/7/7/7	-
81	SPD	1	3404	-	-	5/7/7/7	-
81	SPD	1	3401	-	-	1/7/7/7	-

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
81	1	3405	SPD	C7-N6-C5	-3.11	98.78	113.45
81	1	3405	SPD	C4-C5-N6	2.04	117.64	112.14

There are no chirality outliers.

All (44) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
81	1	3409	SPD	C4-C5-N6-C7
81	1	3411	SPD	C7-C8-C9-N10
81	1	3411	SPD	N6-C7-C8-C9
81	1	3404	SPD	N6-C7-C8-C9
81	1	3405	SPD	C3-C4-C5-N6
81	1	3410	SPD	C3-C4-C5-N6
81	1	3406	SPD	N6-C7-C8-C9
81	1	3408	SPD	N6-C7-C8-C9
81	1	3409	SPD	N6-C7-C8-C9
81	1	3411	SPD	C4-C5-N6-C7
81	1	3404	SPD	C4-C5-N6-C7
81	1	3407	SPD	N6-C7-C8-C9
81	1	3402	SPD	C4-C5-N6-C7
81	1	3407	SPD	C4-C5-N6-C7

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
81	1	3409	SPD	C8-C7-N6-C5
81	1	3411	SPD	C8-C7-N6-C5
81	1	3411	SPD	C2-C3-C4-C5
81	1	3404	SPD	C7-C8-C9-N10
81	1	3406	SPD	C7-C8-C9-N10
81	1	3410	SPD	C7-C8-C9-N10
81	1	3404	SPD	C2-C3-C4-C5
81	1	3410	SPD	C2-C3-C4-C5
81	1	3408	SPD	C3-C4-C5-N6
81	1	3404	SPD	C8-C7-N6-C5
81	1	3402	SPD	N6-C7-C8-C9
81	1	3401	SPD	C7-C8-C9-N10
81	1	3402	SPD	C7-C8-C9-N10
81	1	3405	SPD	C7-C8-C9-N10
81	1	3408	SPD	C4-C5-N6-C7
81	1	3402	SPD	C8-C7-N6-C5
81	1	3406	SPD	N1-C2-C3-C4
81	1	3408	SPD	N1-C2-C3-C4
82	4	201	PUT	N1-C1-C2-C3
82	4	201	PUT	C1-C2-C3-C4
81	1	3407	SPD	C8-C7-N6-C5
81	1	3408	SPD	C7-C8-C9-N10
81	1	3410	SPD	N1-C2-C3-C4
81	1	3405	SPD	C2-C3-C4-C5
81	1	3405	SPD	C4-C5-N6-C7
81	1	3409	SPD	N1-C2-C3-C4
81	1	3408	SPD	C8-C7-N6-C5
81	1	3406	SPD	C4-C5-N6-C7
81	1	3407	SPD	N1-C2-C3-C4
81	1	3409	SPD	C2-C3-C4-C5

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

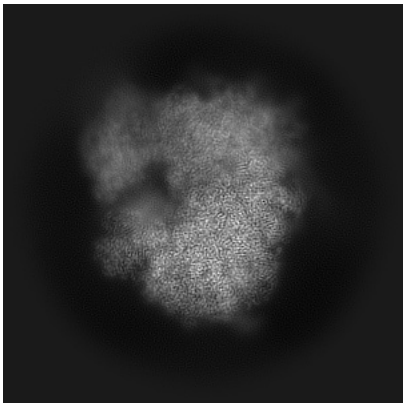
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-13737. These allow visual inspection of the internal detail of the map and identification of artifacts.

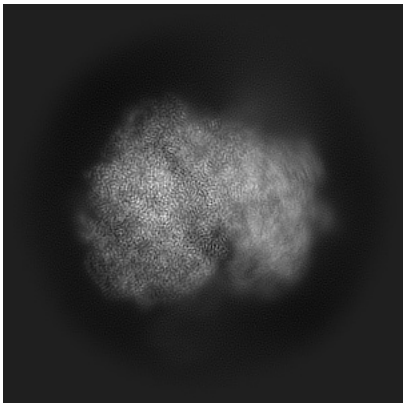
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

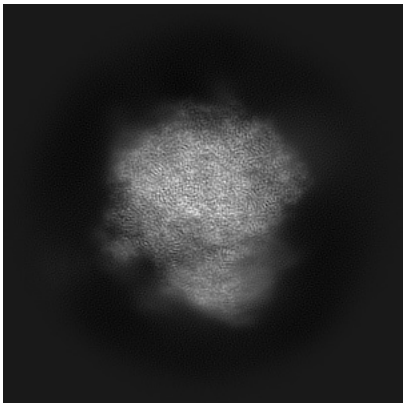
6.1.1 Primary map



X



Y

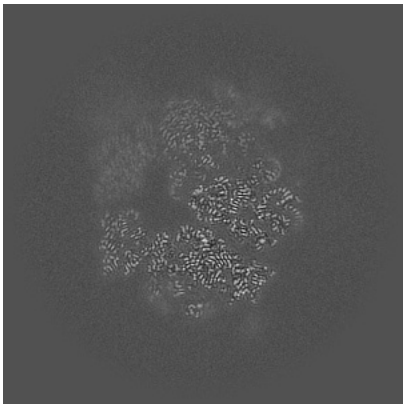


Z

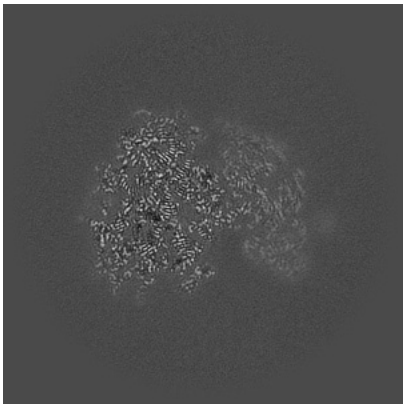
The images above show the map projected in three orthogonal directions.

6.2 Central slices

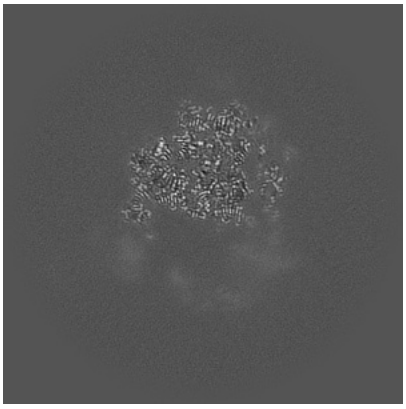
6.2.1 Primary map



X Index: 255



Y Index: 255

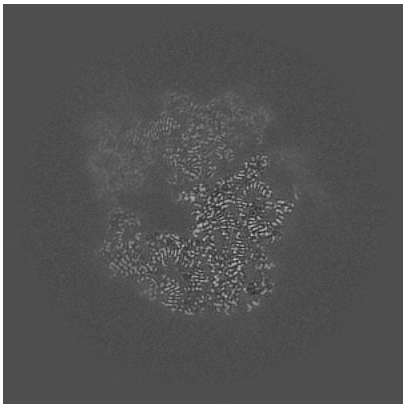


Z Index: 255

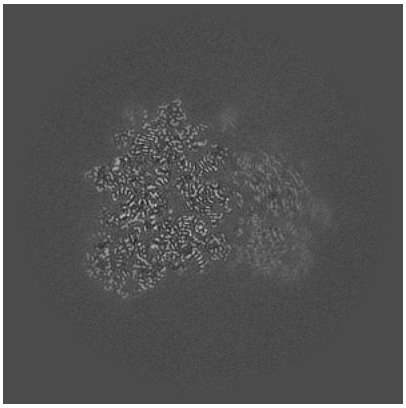
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

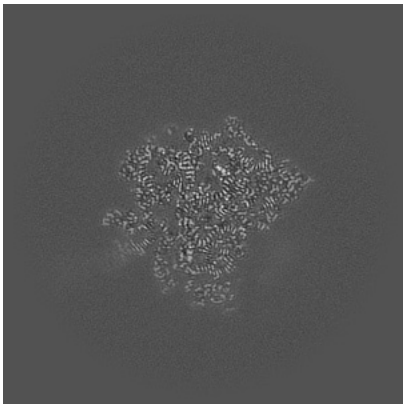
6.3.1 Primary map



X Index: 274



Y Index: 273



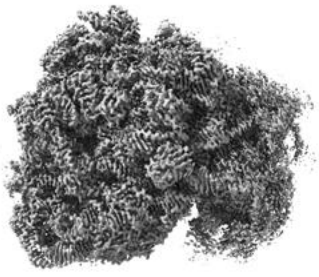
Z Index: 206

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X



Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.226. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

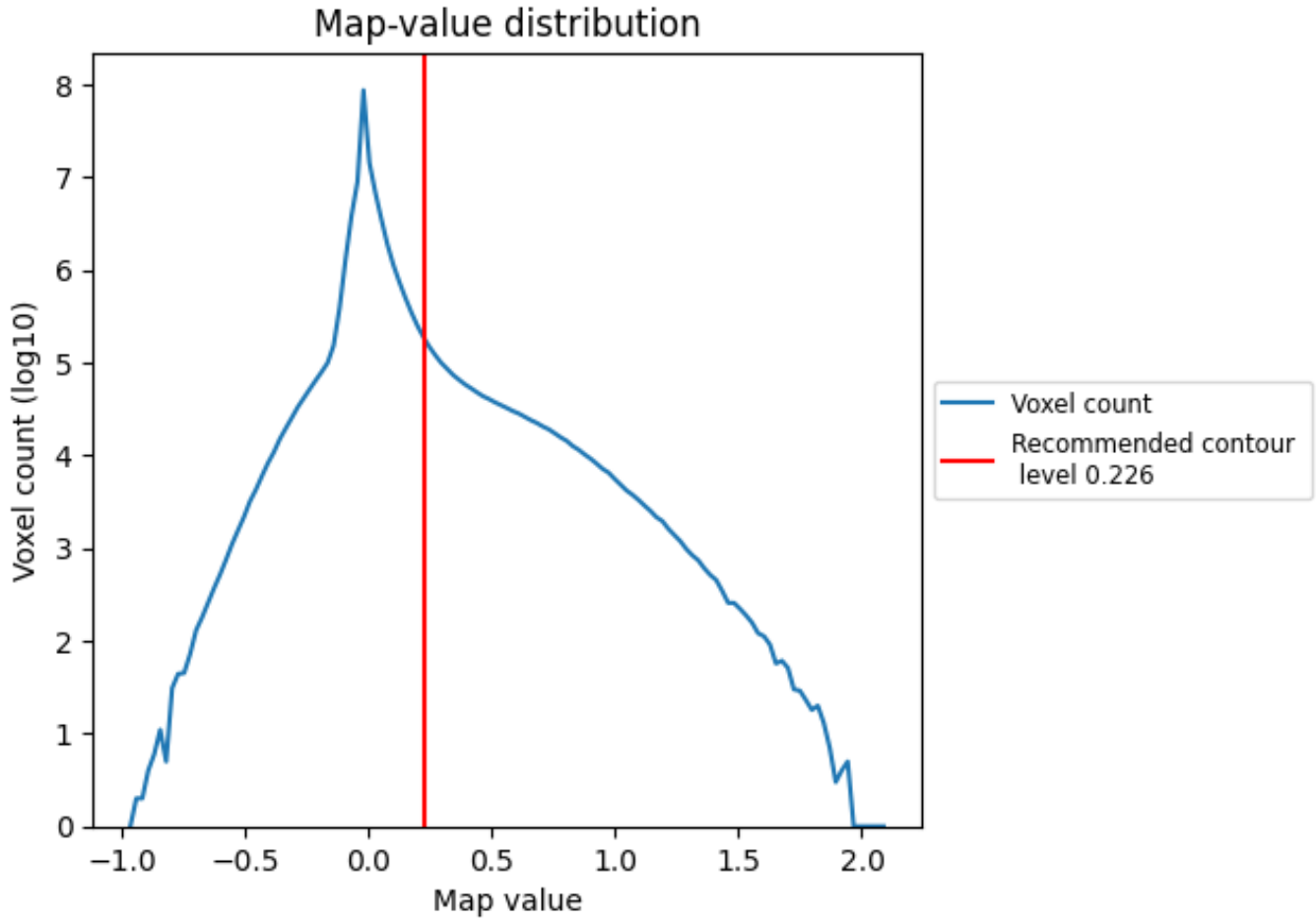
6.5 Mask visualisation (i)

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

7 Map analysis

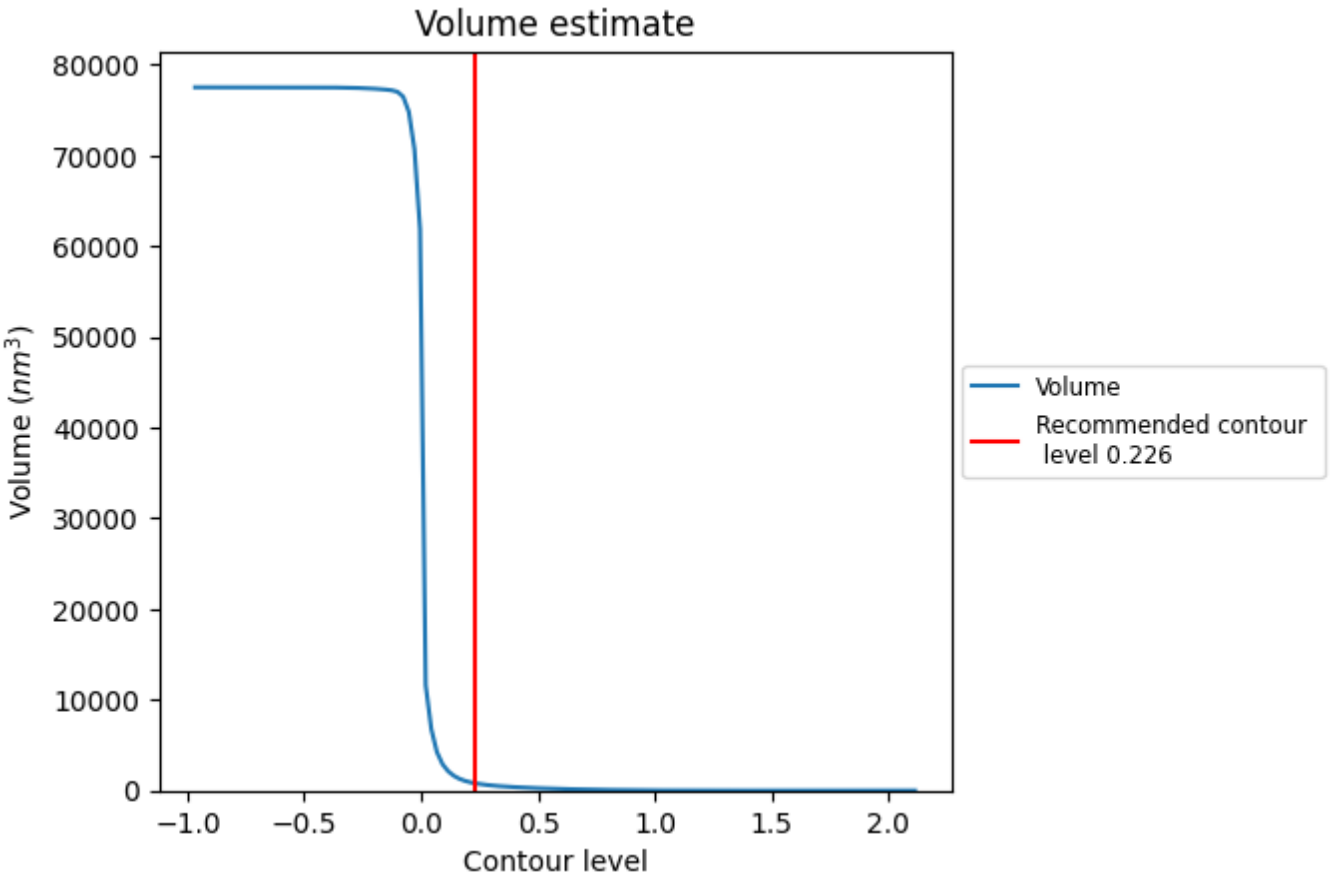
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

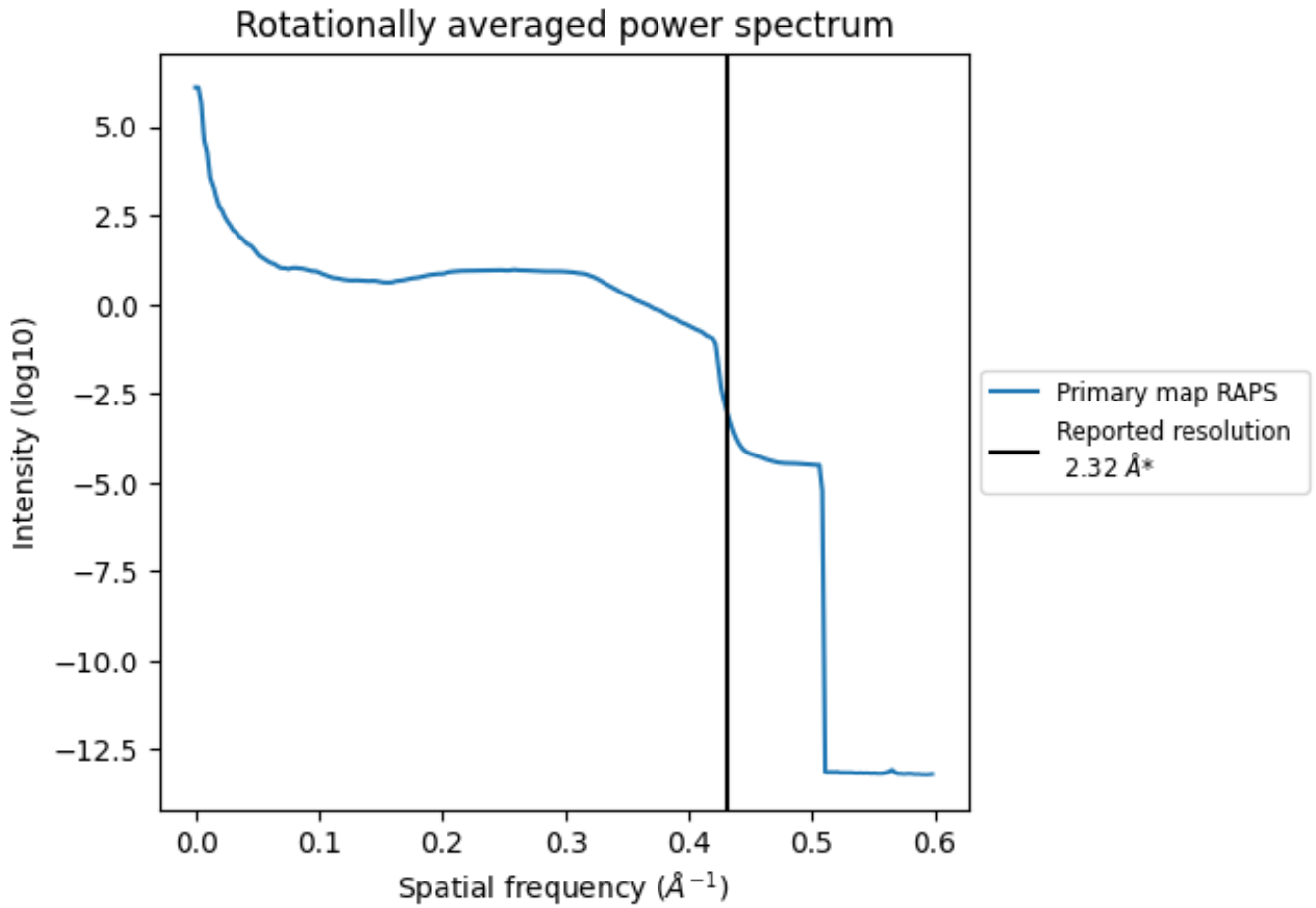
7.2 Volume estimate



The volume at the recommended contour level is 830 nm^3; this corresponds to an approximate mass of 750 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 (i)

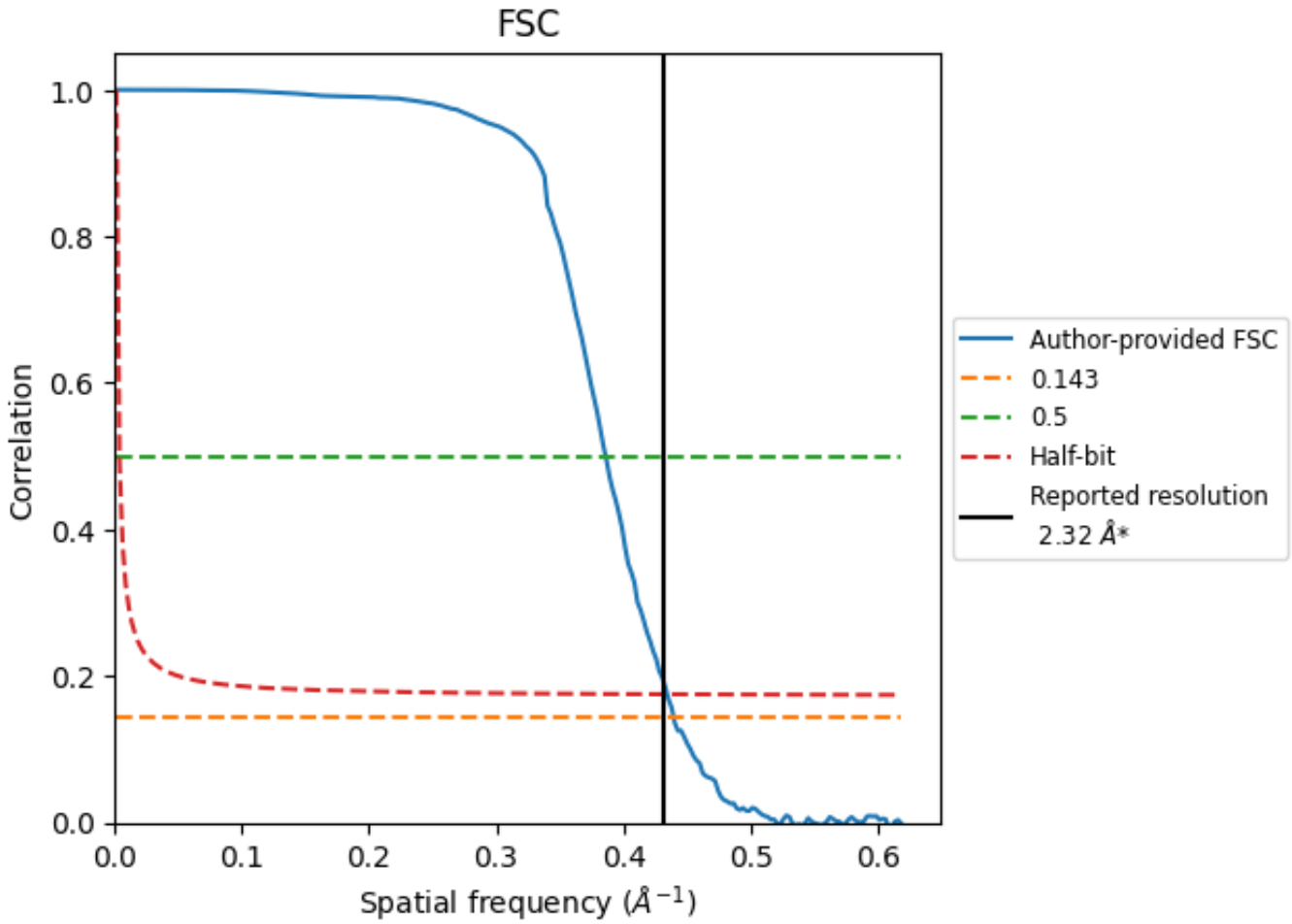


*Reported resolution corresponds to spatial frequency of 0.431 $Å^{-1}$

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 0.431 Å^{-1}

8.2 Resolution estimates (i)

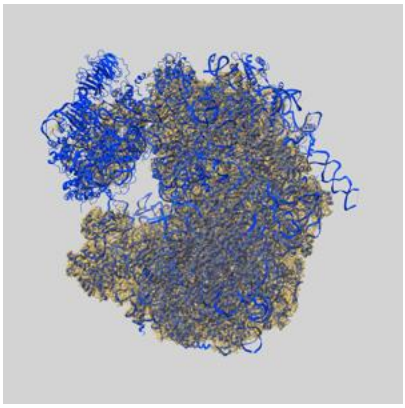
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.32	-	-
Author-provided FSC curve	2.27	2.59	2.30
Unmasked-calculated*	-	-	-

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

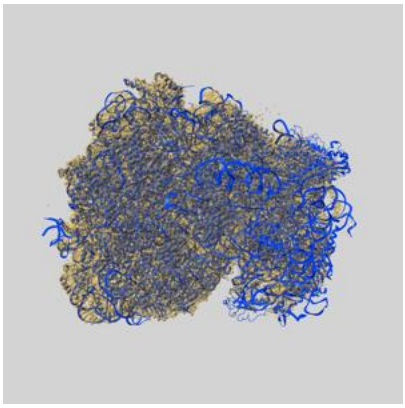
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-13737 and PDB model 7PZY. Per-residue inclusion information can be found in section 3 on page 23.

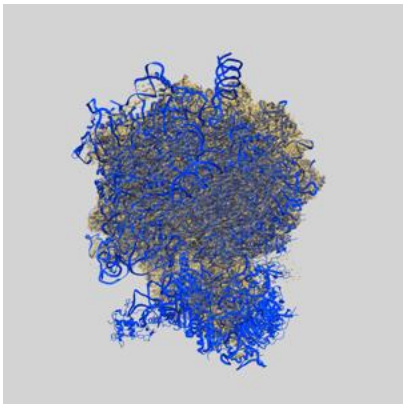
9.1 Map-model overlay



X



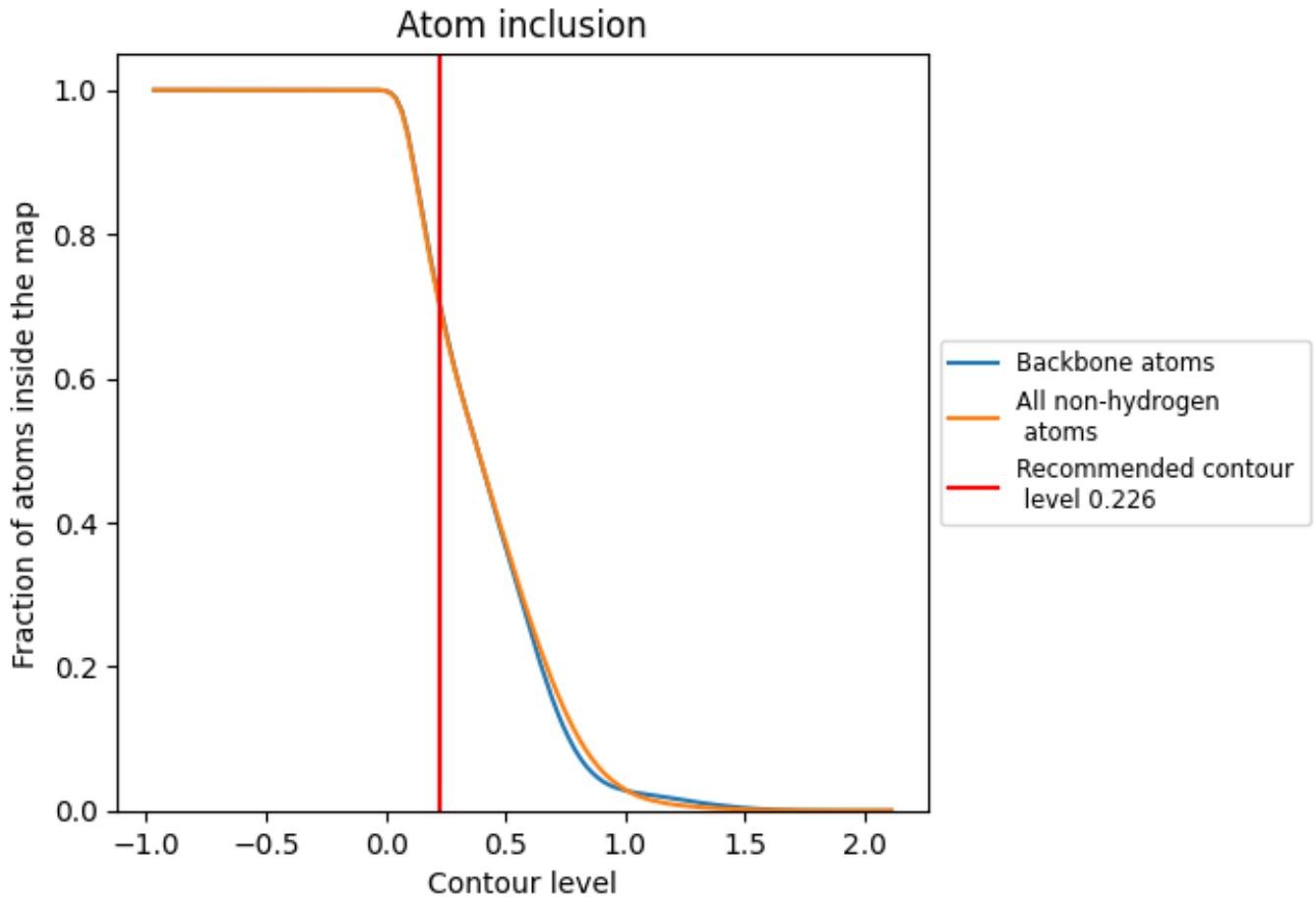
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.226 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 Atom inclusion (i)



At the recommended contour level, 70% of all backbone atoms, 70% of all non-hydrogen atoms, are inside the map.