wwPDB EM Validation Summary Report

Apr 17, 2024 – 03:06 am BST

PDB ID	:	8B2L
EMDB ID	:	EMD-15806
Title	:	Cryo-EM structure of the plant 80S ribosome
Authors	:	Smirnova, J.; Loerke, J.; Kleinau, G.; Schmidt, A.; Buerger, J.; Meyer, E.H.; Mielke, T.; Scheerer, P.; Bock, R.; Spahn, C.M.T.; Zoschke, R.
Deposited on	:	2022-09-14
Resolution	:	2.20 Å(reported)

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

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

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

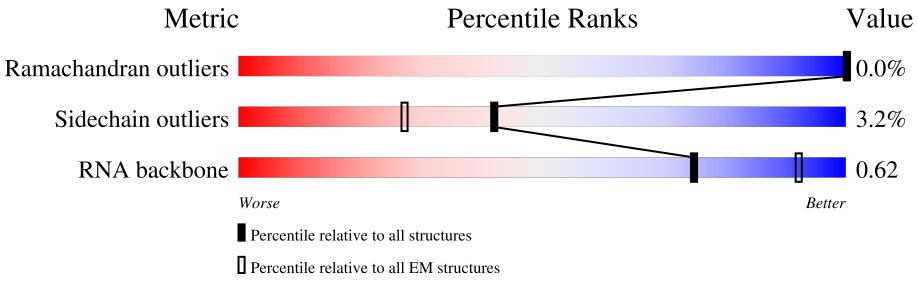
EMDB validation analysis	:	0.0.1.dev92
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.20 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	A1	264	95%
2	k1	249	21% 90% 8%
3	h1	1808	74% 15% 10%
4	l1	208	14% 43% 56%
5	C1	144	81% 78% 19%
6	D1	149	28% 74% 5% 20%
7	E1	143	6% 94% 5%
8	F1	261	80% 17%

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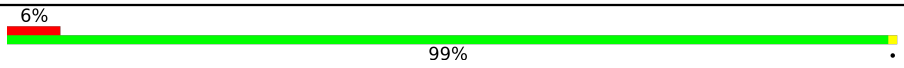
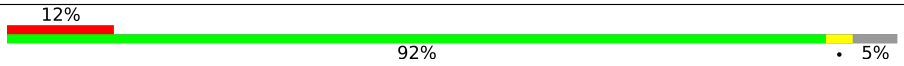
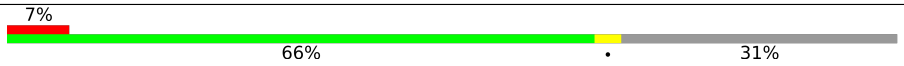
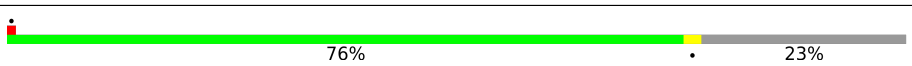
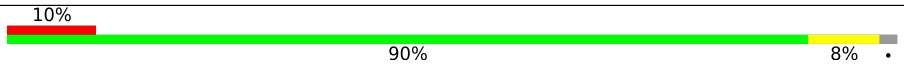
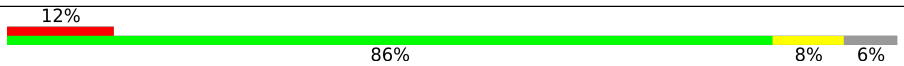
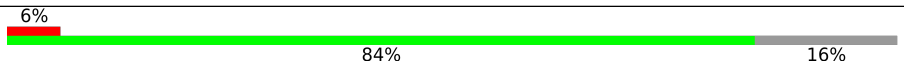
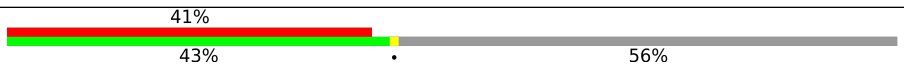
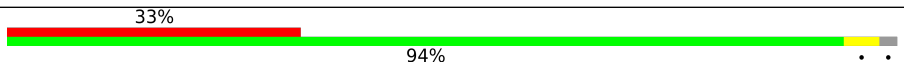
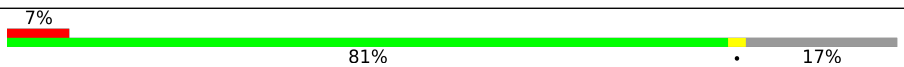
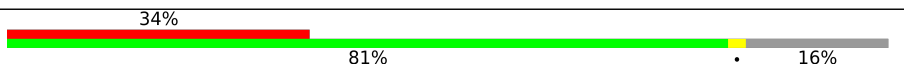
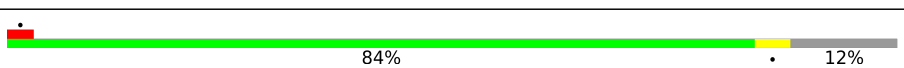
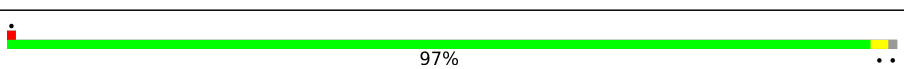
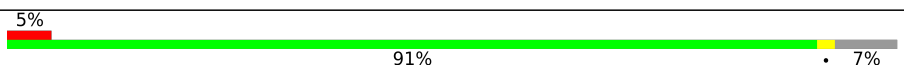
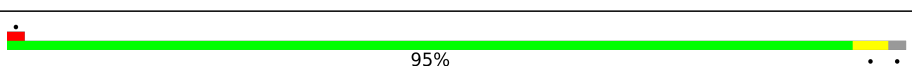
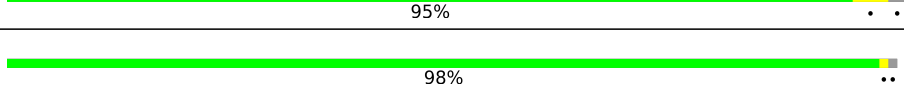
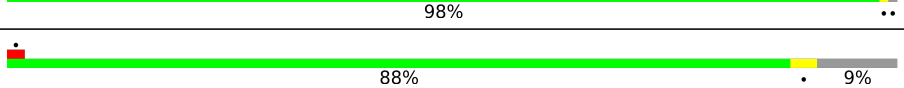
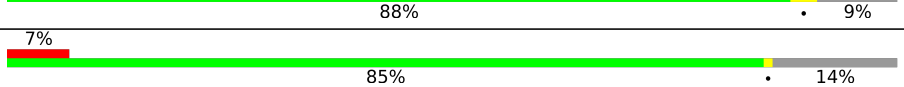
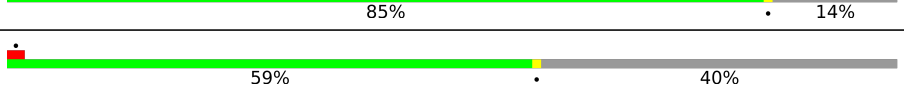
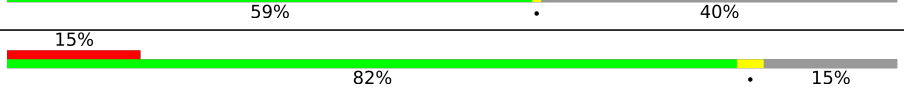
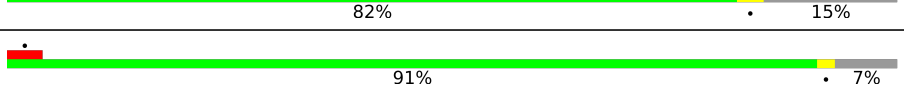
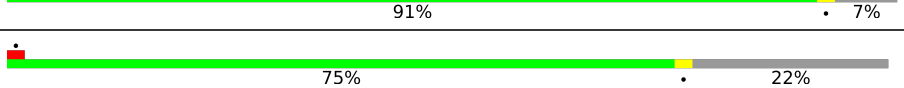
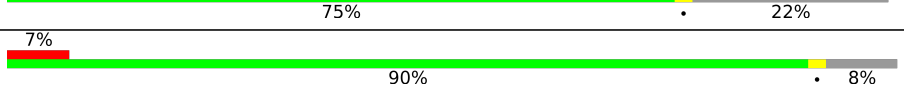
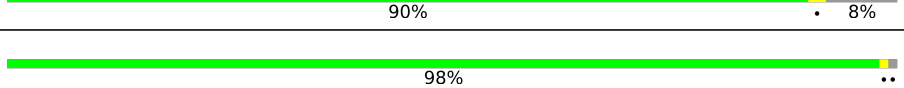
Mol	Chain	Length	Quality of chain
9	G1	83	
10	H1	133	
11	I1	107	
12	J1	127	
13	K1	86	
14	L1	65	
15	M1	62	
16	N1	156	
17	O1	191	
18	P1	224	
19	Q1	328	
20	R1	122	
21	S1	150	
22	T1	142	
23	U1	152	
24	V1	56	
25	W1	151	
26	X1	159	
27	Y1	152	
28	Z1	336	
29	a1	248	
30	b1	197	
31	c1	280	
32	d1	210	
33	e1	130	

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Mol	Chain	Length	Quality of chain
34	f1	147	11% 91% 5%
35	B1	12	8% 92% 8%
36	W2	76	7% 87% 11%
36	i2	76	13% 88% 12%
37	C3	119	93% 7%
38	D3	206	95%
39	E3	134	95%
40	F3	204	97%
41	G3	187	99%
42	H3	214	8% 83% 15%
43	I3	178	98%
44	J3	164	98%
45	K3	127	8% 75% 22%
46	L3	164	35% 62%
47	M3	135	98%
48	N3	143	97%
49	O3	61	79% 20%
50	P3	113	85% 14%
51	Q3	120	7% 88% 10%
52	R3	133	92% 5%
53	S3	112	98%
54	T3	120	5% 92% 5%
55	U3	110	86% 11%
56	V3	95	89% 9%
57	W3	69	93% 6%

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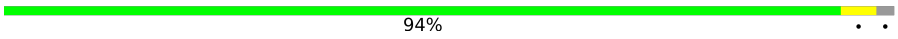
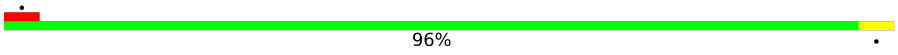
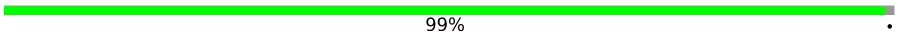
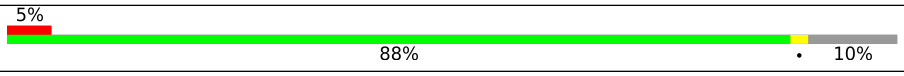
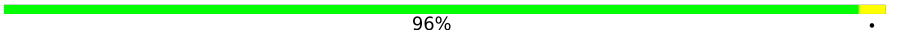
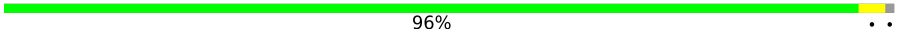
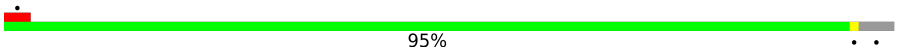
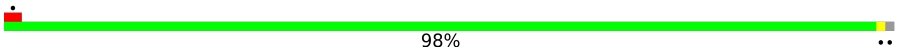
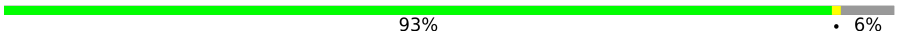
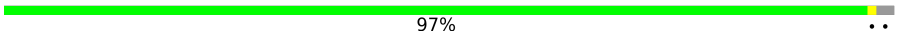
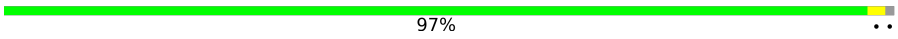
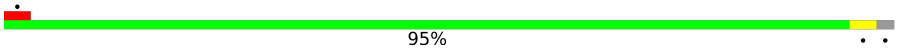
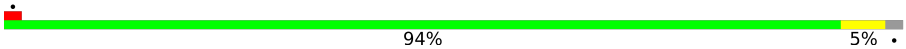
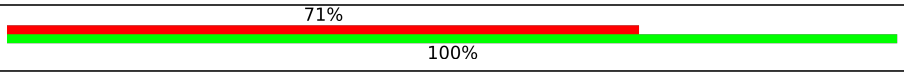
Mol	Chain	Length	Quality of chain
58	X3	51	
59	Y3	128	
60	p3	25	
61	Z3	105	
62	a3	92	
63	b3	230	
64	c3	258	
65	d3	206	
66	e3	140	
67	f3	148	
68	g3	221	
69	h3	301	
70	j3	175	
71	k3	154	
72	m3	146	
73	n3	123	
74	o3	260	
75	q3	242	
76	r3	389	
77	s3	405	
78	t3	181	
79	u3	194	
80	l3	24	
81	A3	3390	
82	B3	163	

2 Entry composition (i)

There are 88 unique types of molecules in this entry. The entry contains 361205 atoms, of which 151371 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called 40S ribosomal protein S4.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
1	A1	259	4254	1323	2180	387	357	7	0	0

- Molecule 2 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
2	k1	230	3816	1156	1965	361	326	8	0	0

- Molecule 3 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	P		
3	h1	1626	52270	15549	17529	6195	11371	1626	0	0

- Molecule 4 is a protein called 40S ribosomal protein S10-1-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
4	l1	91	1549	508	776	125	136	4	0	0

- Molecule 5 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
5	C1	117	1778	553	900	153	165	7	0	0

- Molecule 6 is a protein called 40S ribosomal protein S17-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
6	D1	119	1989	604	1026	178	177	4	0	0

- Molecule 7 is a protein called 40S ribosomal protein S19-3.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	E1	136	Total	C	H	N	O	S	0	0
			2172	676	1091	211	190	4		

- Molecule 8 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms						AltConf	Trace
8	F1	216	Total	C	H	N	O	S	0	0
			3578	1118	1818	314	320	8		

- Molecule 9 is a protein called 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms						AltConf	Trace
9	G1	83	Total	C	H	N	O	S	0	0
			1295	404	643	120	125	3		

- Molecule 10 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms						AltConf	Trace
10	H1	127	Total	C	H	N	O	S	0	0
			2145	657	1111	200	174	3		

- Molecule 11 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms						AltConf	Trace
11	I1	74	Total	C	H	N	O	S	0	0
			1204	365	621	109	106	3		

- Molecule 12 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms						AltConf	Trace
12	J1	98	Total	C	H	N	O	S	0	0
			1610	491	818	161	132	8		

- Molecule 13 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms						AltConf	Trace
13	K1	84	Total	C	H	N	O	S	0	0
			1307	404	656	122	118	7		

- Molecule 14 is a protein called 40S ribosomal protein S28.

Mol	Chain	Residues	Atoms						AltConf	Trace
14	L1	61	Total	C	H	N	O	S	0	0
			1018	303	525	102	86	2		

- Molecule 15 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms						AltConf	Trace
15	M1	52	Total	C	H	N	O	S	0	0
			851	249	442	94	65	1		

- Molecule 16 is a protein called ubiquitin-40S ribosomal protein S27a-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
16	N1	69	Total	C	H	N	O	S	0	0
			1143	360	581	103	94	5		

- Molecule 17 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms						AltConf	Trace
17	O1	188	Total	C	H	N	O	S	0	0
			3125	972	1591	281	279	2		

- Molecule 18 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms						AltConf	Trace
18	P1	186	Total	C	H	N	O	S	0	0
			3081	944	1570	300	263	4		

- Molecule 19 is a protein called guanine nucleotide-binding protein subunit beta-like protein.

Mol	Chain	Residues	Atoms						AltConf	Trace
19	Q1	309	Total	C	H	N	O	S	0	0
			4756	1512	2362	414	456	12		

- Molecule 20 is a protein called 40S ribosomal protein S20-2.

Mol	Chain	Residues	Atoms						AltConf	Trace
20	R1	102	Total	C	H	N	O	S	0	0
			1668	505	864	151	145	3		

- Molecule 21 is a protein called 40S ribosomal protein S14-2.

Mol	Chain	Residues	Atoms						AltConf	Trace
21	S1	132	Total	C	H	N	O	S	0	0
			2026	611	1028	197	185	5		

- Molecule 22 is a protein called 40S ribosomal protein S23.

Mol	Chain	Residues	Atoms						AltConf	Trace
22	T1	141	Total	C	H	N	O	S	0	0
			2264	695	1164	215	187	3		

- Molecule 23 is a protein called 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms						AltConf	Trace
23	U1	142	Total	C	H	N	O	S	0	0
			2337	718	1184	227	202	6		

- Molecule 24 is a protein called 40S ribosomal protein S29.

Mol	Chain	Residues	Atoms						AltConf	Trace
24	V1	55	Total	C	H	N	O	S	0	0
			871	274	430	90	71	6		

- Molecule 25 is a protein called 30S ribosomal protein S15, chloroplastic.

Mol	Chain	Residues	Atoms						AltConf	Trace
25	W1	149	Total	C	H	N	O	S	0	0
			2467	762	1278	223	202	2		

- Molecule 26 is a protein called 40S ribosomal protein S11-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
26	X1	145	Total	C	H	N	O	S	0	0
			2362	734	1207	222	194	5		

- Molecule 27 is a protein called 40S ribosomal protein S15-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
27	Y1	131	Total	C	H	N	O	S	0	0
			2193	681	1132	199	176	5		

- Molecule 28 is a protein called 40S ribosomal protein SA.

Mol	Chain	Residues	Atoms						AltConf	Trace
28	Z1	202	Total	C	H	N	O	S	0	0
			3233	1023	1623	289	288	10		

- Molecule 29 is a protein called 40S ribosomal protein S3-2-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
29	a1	211	Total	C	H	N	O	S	0	0
			3413	1052	1752	306	295	8		

- Molecule 30 is a protein called 40S ribosomal protein S9-2-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
30	b1	183	Total	C	H	N	O	S	0	0
			3118	964	1595	301	253	5		

- Molecule 31 is a protein called 40S ribosomal protein S2-3-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
31	c1	217	Total	C	H	N	O	S	0	0
			3472	1089	1786	300	289	8		

- Molecule 32 is a protein called 40S ribosomal protein S5-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
32	d1	194	Total	C	H	N	O	S	0	0
			3103	953	1572	290	280	8		

- Molecule 33 is a protein called 40S ribosomal protein S15a-1.

Mol	Chain	Residues	Atoms						AltConf	Trace
33	e1	129	Total	C	H	N	O	S	0	0
			2100	659	1068	188	180	5		

- Molecule 34 is a protein called 40S ribosomal protein S16.

Mol	Chain	Residues	Atoms						AltConf	Trace
34	f1	141	Total	C	H	N	O	S	0	0
			2332	722	1197	221	188	4		

- Molecule 35 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
35	B1	12	Total	C	H	N	O	P	0	0
			360	108	120	24	96	12		

- Molecule 36 is a RNA chain called tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
36	i2	76	Total	C	H	N	O	P	0	0
			2452	726	822	298	530	76		
36	W2	76	Total	C	H	N	O	P	0	0
			2451	726	822	298	529	76		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
37	C3	119	Total	C	H	N	O	P	0	0
			3823	1133	1285	457	829	119		

- Molecule 38 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms						AltConf	Trace
38	D3	200	Total	C	H	N	O	S	0	0
			3296	1007	1691	324	270	4		

- Molecule 39 is a protein called 60S ribosomal protein L14-1.

Mol	Chain	Residues	Atoms						AltConf	Trace
39	E3	130	Total	C	H	N	O	S	0	0
			2206	678	1150	196	179	3		

- Molecule 40 is a protein called Ribosomal protein L15.

Mol	Chain	Residues	Atoms						AltConf	Trace
40	F3	203	Total	C	H	N	O	S	0	0
			3469	1071	1768	350	277	3		

- Molecule 41 is a protein called 60S ribosomal protein L18-2-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
41	G3	186	Total	C	H	N	O	S	0	0
			3042	931	1580	283	245	3		

- Molecule 42 is a protein called Ribosomal protein L19.

Mol	Chain	Residues	Atoms						AltConf	Trace
42	H3	182	Total	C	H	N	O	S	0	0
			3181	946	1652	327	247	9		

- Molecule 43 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms						AltConf	Trace
43	I3	177	Total	C	H	N	O	S	0	0
			3061	969	1556	277	251	8		

- Molecule 44 is a protein called 60S ribosomal protein L21-1-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
44	J3	163	Total	C	H	N	O	S	0	0
			2672	823	1366	255	224	4		

- Molecule 45 is a protein called 60S ribosomal protein L22-2-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
45	K3	99	Total	C	H	N	O	S	0	0
			1653	515	845	141	150	2		

- Molecule 46 is a protein called 60S ribosomal protein L24-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
46	L3	62	Total	C	H	N	O	S	0	0
			1079	341	553	101	81	3		

- Molecule 47 is a protein called eL27 (60S ribosomal protein L27).

Mol	Chain	Residues	Atoms						AltConf	Trace
47	M3	134	Total	C	H	N	O	S	0	0
			2283	708	1184	206	183	2		

- Molecule 48 is a protein called eL28 (60S ribosomal protein L28).

Mol	Chain	Residues	Atoms						AltConf	Trace
48	N3	142	Total	C	H	N	O	S	0	0
			2298	701	1187	207	201	2		

- Molecule 49 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms						AltConf	Trace
49	O3	49	Total	C	H	N	O	S	0	0
			831	250	419	95	66	1		

- Molecule 50 is a protein called 60S ribosomal protein L30-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
50	P3	97	Total	C	H	N	O	S	0	0
			1526	475	781	130	135	5		

- Molecule 51 is a protein called eL31 (60S ribosomal protein L31).

Mol	Chain	Residues	Atoms						AltConf	Trace
51	Q3	108	Total	C	H	N	O	S	0	0
			1809	549	934	168	156	2		

- Molecule 52 is a protein called 60S ribosomal protein L32-1.

Mol	Chain	Residues	Atoms						AltConf	Trace
52	R3	126	Total	C	H	N	O	S	0	0
			2151	655	1115	207	169	5		

- Molecule 53 is a protein called eL33 (60S ribosomal protein L35a).

Mol	Chain	Residues	Atoms						AltConf	Trace
53	S3	111	Total	C	H	N	O	S	0	0
			1832	571	932	171	153	5		

- Molecule 54 is a protein called 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms						AltConf	Trace
54	T3	114	Total	C	H	N	O	S	0	0
			1939	579	1013	193	153	1		

- Molecule 55 is a protein called eL36 (60S ribosomal protein L36).

Mol	Chain	Residues	Atoms						AltConf	Trace
55	U3	98	Total	C	H	N	O	S	0	0
			1650	489	868	162	129	2		

- Molecule 56 is a protein called Ribosomal protein L37.

Mol	Chain	Residues	Atoms						AltConf	Trace
56	V3	86	Total	C	H	N	O	S	0	0
			1427	429	726	155	112	5		

- Molecule 57 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms						AltConf	Trace
57	W3	68	Total	C	H	N	O	S	0	0
			1160	358	602	99	98	3		

- Molecule 58 is a protein called 60S ribosomal protein L39-3.

Mol	Chain	Residues	Atoms						AltConf	Trace
58	X3	50	Total	C	H	N	O	S	0	0
			928	286	480	96	64	2		

- Molecule 59 is a protein called ubiquitin-60S ribosomal protein L40.

Mol	Chain	Residues	Atoms						AltConf	Trace
59	Y3	51	Total	C	H	N	O	S	0	0
			881	262	460	88	65	6		

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

Mol	Chain	Residues	Atoms						AltConf	Trace
60	p3	25	Total	C	H	N	O	S	0	0
			527	145	289	62	28	3		

- Molecule 61 is a protein called 60S ribosomal protein L44.

Mol	Chain	Residues	Atoms						AltConf	Trace
61	Z3	98	Total	C	H	N	O	S	0	0
			1629	494	842	157	131	5		

- Molecule 62 is a protein called 60S ribosomal protein L37a.

Mol	Chain	Residues	Atoms						AltConf	Trace
62	a3	91	Total	C	H	N	O	S	0	0
			1453	443	745	136	124	5		

- Molecule 63 is a protein called eL6 (60S ribosomal protein L6).

Mol	Chain	Residues	Atoms						AltConf	Trace
63	b3	208	Total	C	H	N	O	S	0	0
			3360	1046	1749	290	271	4		

- Molecule 64 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms						AltConf	Trace
64	c3	233	Total	C	H	N	O	S	0	0
			3907	1206	2028	347	319	7		

- Molecule 65 is a protein called uL13 (60S ribosomal protein L13a).

Mol	Chain	Residues	Atoms						AltConf	Trace
65	d3	205	Total	C	H	N	O	S	0	0
			3414	1046	1774	318	268	8		

- Molecule 66 is a protein called 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms						AltConf	Trace
66	e3	131	Total	C	H	N	O	S	0	0
			2029	623	1044	183	170	9		

- Molecule 67 is a protein called uL15 (60S ribosomal protein L27a).

Mol	Chain	Residues	Atoms						AltConf	Trace
67	f3	147	Total	C	H	N	O	S	0	0
			2361	740	1200	228	190	3		

- Molecule 68 is a protein called uL16 (60S ribosomal protein L10).

Mol	Chain	Residues	Atoms						AltConf	Trace
68	g3	209	Total	C	H	N	O	S	0	0
			3397	1058	1726	329	273	11		

- Molecule 69 is a protein called 60S ribosomal protein L5-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
69	h3	288	Total	C	H	N	O	S	0	0
			4715	1481	2374	426	429	5		

- Molecule 70 is a protein called 50S ribosomal protein L22, chloroplastic.

Mol	Chain	Residues	Atoms						AltConf	Trace
70	j3	154	Total	C	H	N	O	S	0	0
			2515	775	1270	246	219	5		

- Molecule 71 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms						AltConf	Trace
71	k3	117	Total	C	H	N	O	S	0	0
			1980	609	1030	170	169	2		

- Molecule 72 is a protein called uL24 (60S ribosomal protein L26).

Mol	Chain	Residues	Atoms						AltConf	Trace
72	m3	126	Total	C	H	N	O	S	0	0
			2124	634	1103	209	175	3		

- Molecule 73 is a protein called 60S ribosomal protein L35-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
73	n3	122	Total	C	H	N	O	S	0	0
			2140	642	1141	191	165	1		

- Molecule 74 is a protein called uL2 (60S ribosomal protein L8).

Mol	Chain	Residues	Atoms						AltConf	Trace
74	o3	245	Total	C	H	N	O	S	0	0
			3791	1174	1911	381	315	10		

- Molecule 75 is a protein called 60S ribosomal protein L7-4-like.

Mol	Chain	Residues	Atoms						AltConf	Trace
75	q3	238	Total	C	H	N	O	S	0	0
			4016	1256	2058	359	339	4		

- Molecule 76 is a protein called uL3 (60S ribosomal protein L3).

Mol	Chain	Residues	Atoms						AltConf	Trace
76	r3	386	Total	C	H	N	O	S	0	0
			6327	1981	3223	578	530	15		

- Molecule 77 is a protein called uL4 (60S ribosomal protein L4).

Mol	Chain	Residues	Atoms						AltConf	Trace
77	s3	398	Total	C	H	N	O	S	0	0
			6324	1956	3227	583	548	10		

- Molecule 78 is a protein called uL5 (60S ribosomal protein L11).

Mol	Chain	Residues	Atoms						AltConf	Trace
78	t3	172	Total	C	H	N	O	S	0	0
			2836	882	1444	259	244	7		

- Molecule 79 is a protein called uL6 (60S ribosomal protein L9).

Mol	Chain	Residues	Atoms						AltConf	Trace
79	u3	191	Total	C	H	N	O	S	0	0
			3124	963	1604	276	276	5		

- Molecule 80 is a protein called nascent chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	l3	24	Total	C	H	N	O	0	0
			169	72	49	24	24		

- Molecule 81 is a RNA chain called 25S rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
81	A3	3196	Total	C	H	N	O	P	0	0
			103169	30602	34651	12456	22264	3196		

- Molecule 82 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
82	B3	163	Total	C	H	N	O	P	0	0
			5243	1555	1763	627	1135	163		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B3	85	U	C	conflict	GB 1782605526

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

Mol	Chain	Residues	Atoms	AltConf
83	h1	73	Total Mg 73 73	0
83	S1	1	Total Mg 1 1	0
83	U1	1	Total Mg 1 1	0
83	B1	1	Total Mg 1 1	0
83	C3	4	Total Mg 4 4	0
83	V3	1	Total Mg 1 1	0
83	e3	1	Total Mg 1 1	0
83	j3	1	Total Mg 1 1	0
83	q3	1	Total Mg 1 1	0
83	r3	2	Total Mg 2 2	0
83	A3	49	Total Mg 49 49	0

- Molecule 84 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	AltConf
84	h1	42	Total K 42 42	0
84	S1	1	Total K 1 1	0
84	T1	1	Total K 1 1	0
84	U1	1	Total K 1 1	0
84	V1	1	Total K 1 1	0
84	W1	1	Total K 1 1	0
84	D3	1	Total K 1 1	0
84	R3	1	Total K 1 1	0
84	T3	1	Total K 1 1	0

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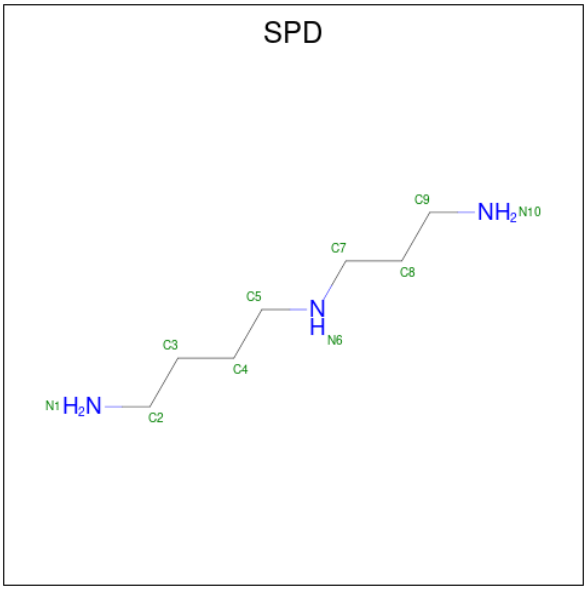
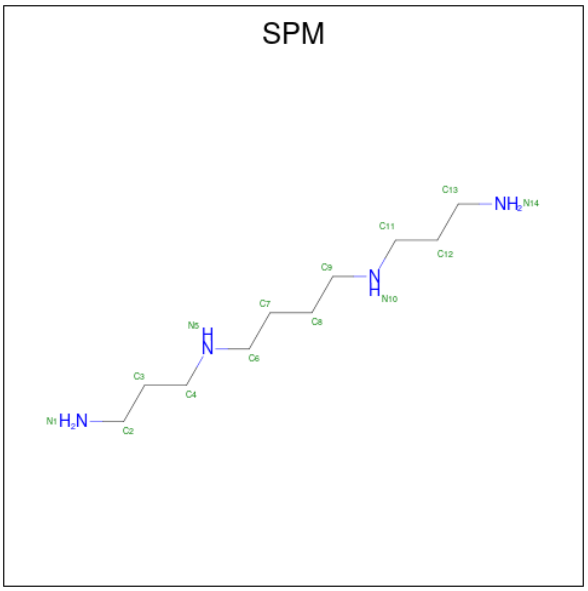
Mol	Chain	Residues	Atoms	AltConf
84	Z3	1	Total K 1 1	0
84	f3	2	Total K 2 2	0
84	g3	1	Total K 1 1	0
84	o3	2	Total K 2 2	0
84	r3	1	Total K 1 1	0
84	A3	83	Total K 83 83	0
84	B3	1	Total K 1 1	0

- Molecule 85 is SPERMIDINE (three-letter code: SPD) (formula: $C_7H_{19}N_3$).



Mol	Chain	Residues	Atoms	AltConf
85	h1	1	Total C N 10 7 3	0
85	A3	1	Total C N 10 7 3	0

- Molecule 86 is SPERMINE (three-letter code: SPM) (formula: $C_{10}H_{26}N_4$).



Mol	Chain	Residues	Atoms	AltConf
86	h1	1	Total C H N 40 10 26 4	0
86	h1	1	Total C H N 40 10 26 4	0
86	h1	1	Total C H N 40 10 26 4	0
86	A3	1	Total C H N 40 10 26 4	0
86	A3	1	Total C H N 40 10 26 4	0

- Molecule 87 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
87	J1	1	Total Zn 1 1	0
87	N1	1	Total Zn 1 1	0
87	V1	1	Total Zn 1 1	0
87	V3	1	Total Zn 1 1	0
87	Y3	1	Total Zn 1 1	0
87	Z3	1	Total Zn 1 1	0
87	a3	1	Total Zn 1 1	0

- Molecule 88 is water.

Mol	Chain	Residues	Atoms	AltConf
88	A1	7	Total O 7 7	0
88	k1	5	Total O 5 5	0
88	h1	2039	Total O 2039 2039	0
88	E1	12	Total O 12 12	0
88	F1	13	Total O 13 13	0
88	I1	1	Total O 1 1	0
88	J1	25	Total O 25 25	0
88	K1	6	Total O 6 6	0
88	M1	1	Total O 1 1	0
88	O1	1	Total O 1 1	0
88	P1	20	Total O 20 20	0
88	R1	12	Total O 12 12	0
88	S1	32	Total O 32 32	0
88	T1	43	Total O 43 43	0
88	U1	7	Total O 7 7	0
88	V1	4	Total O 4 4	0
88	W1	20	Total O 20 20	0
88	X1	21	Total O 21 21	0
88	Y1	6	Total O 6 6	0
88	Z1	1	Total O 1 1	0
88	b1	11	Total O 11 11	0

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Mol	Chain	Residues	Atoms	AltConf
88	c1	12	Total O 12 12	0
88	d1	12	Total O 12 12	0
88	e1	16	Total O 16 16	0
88	f1	10	Total O 10 10	0
88	B1	17	Total O 17 17	0
88	i2	7	Total O 7 7	0
88	W2	13	Total O 13 13	0
88	C3	91	Total O 91 91	0
88	D3	43	Total O 43 43	0
88	F3	105	Total O 105 105	0
88	G3	52	Total O 52 52	0
88	H3	10	Total O 10 10	0
88	I3	14	Total O 14 14	0
88	J3	27	Total O 27 27	0
88	M3	2	Total O 2 2	0
88	N3	10	Total O 10 10	0
88	O3	27	Total O 27 27	0
88	Q3	3	Total O 3 3	0
88	R3	42	Total O 42 42	0
88	S3	6	Total O 6 6	0
88	T3	14	Total O 14 14	0

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Mol	Chain	Residues	Atoms	AltConf
88	U3	4	Total O 4 4	0
88	V3	29	Total O 29 29	0
88	X3	7	Total O 7 7	0
88	Y3	2	Total O 2 2	0
88	p3	9	Total O 9 9	0
88	Z3	21	Total O 21 21	0
88	a3	6	Total O 6 6	0
88	b3	1	Total O 1 1	0
88	c3	10	Total O 10 10	0
88	d3	13	Total O 13 13	0
88	e3	12	Total O 12 12	0
88	f3	48	Total O 48 48	0
88	g3	16	Total O 16 16	0
88	h3	15	Total O 15 15	0
88	j3	16	Total O 16 16	0
88	k3	14	Total O 14 14	0
88	m3	9	Total O 9 9	0
88	n3	15	Total O 15 15	0
88	o3	56	Total O 56 56	0
88	q3	29	Total O 29 29	0
88	r3	27	Total O 27 27	0

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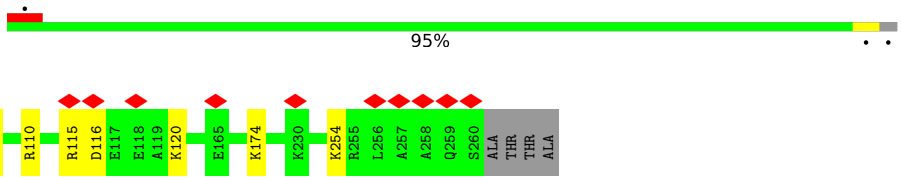
Mol	Chain	Residues	Atoms	AltConf
88	s3	65	Total O 65 65	0
88	t3	1	Total O 1 1	0
88	u3	2	Total O 2 2	0
88	A3	3383	Total O 3383 3383	0
88	B3	162	Total O 162 162	0

3 Residue-property plots (i)

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

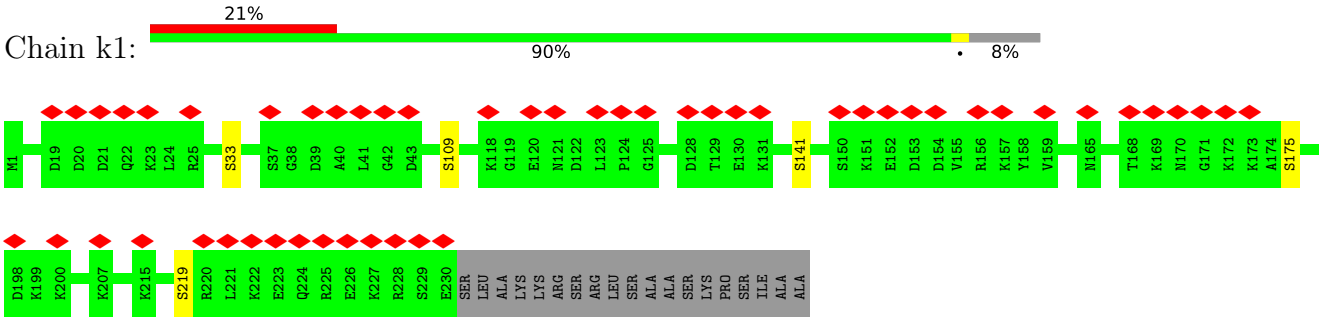
• Molecule 1: 40S ribosomal protein S4

Chain A1:



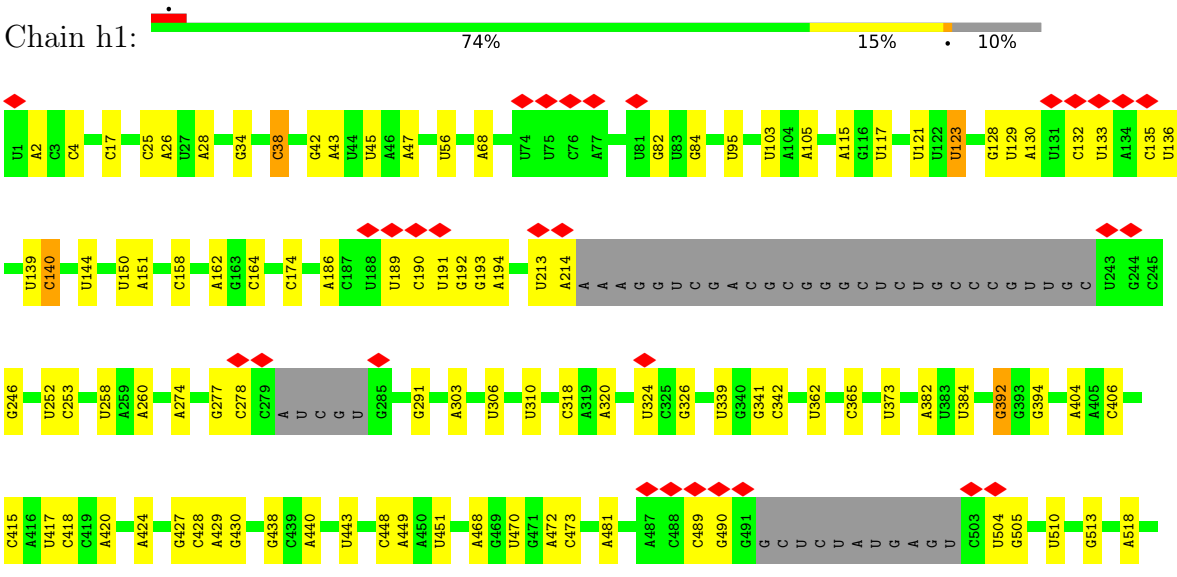
• Molecule 2: 40S ribosomal protein S6

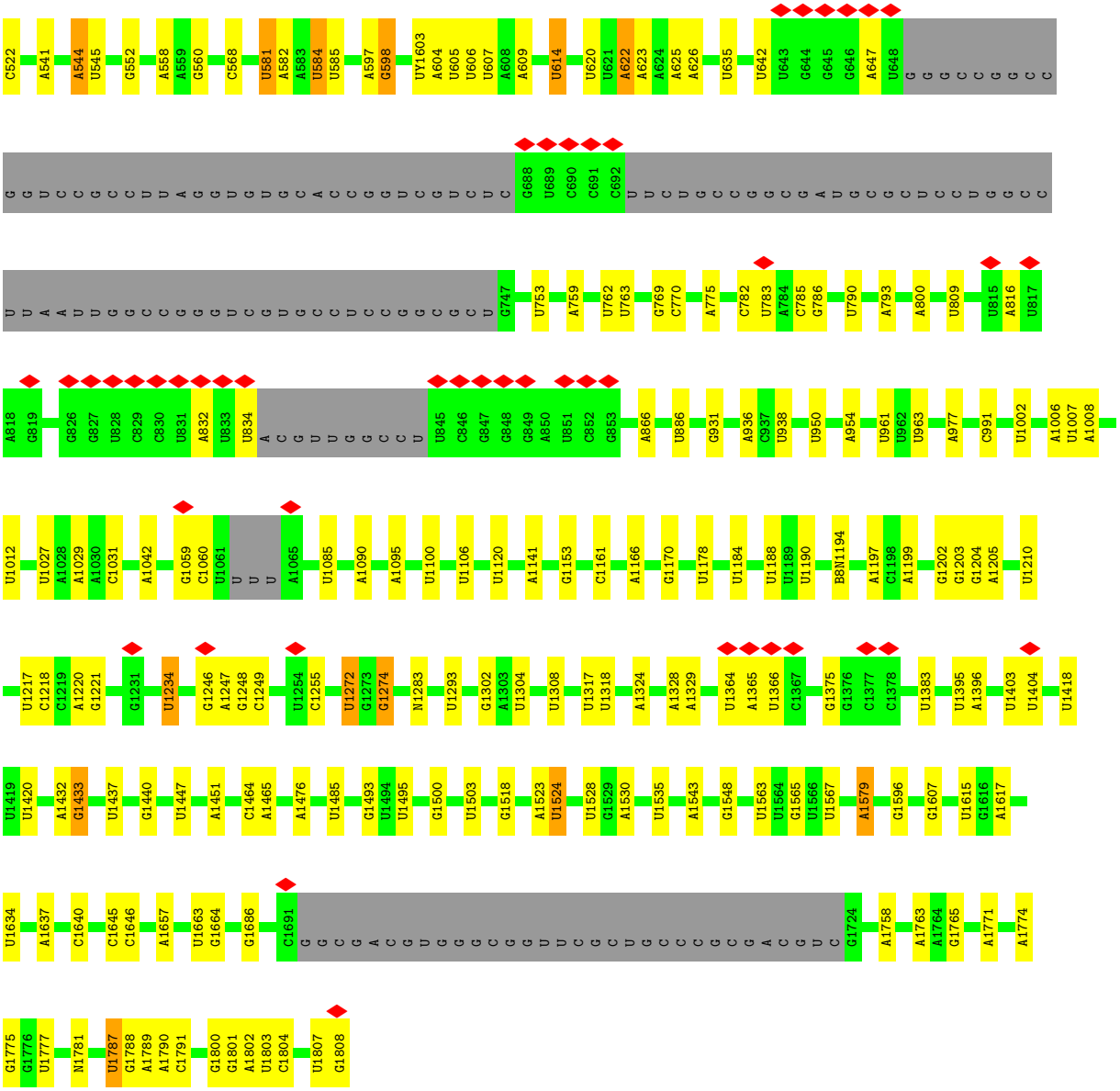
Chain k1:



• Molecule 3: 18S rRNA

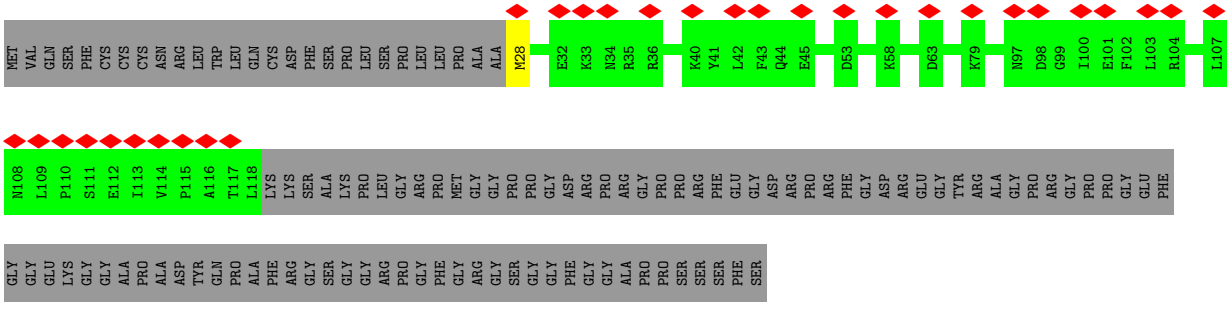
Chain h1:





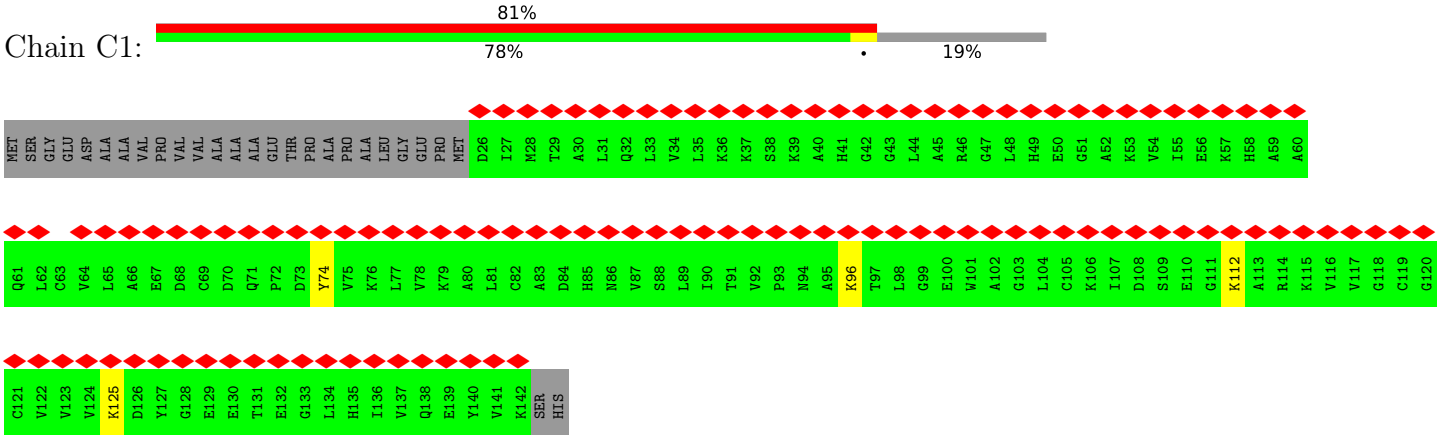
• Molecule 4: 40S ribosomal protein S10-1-like

Chain l1:



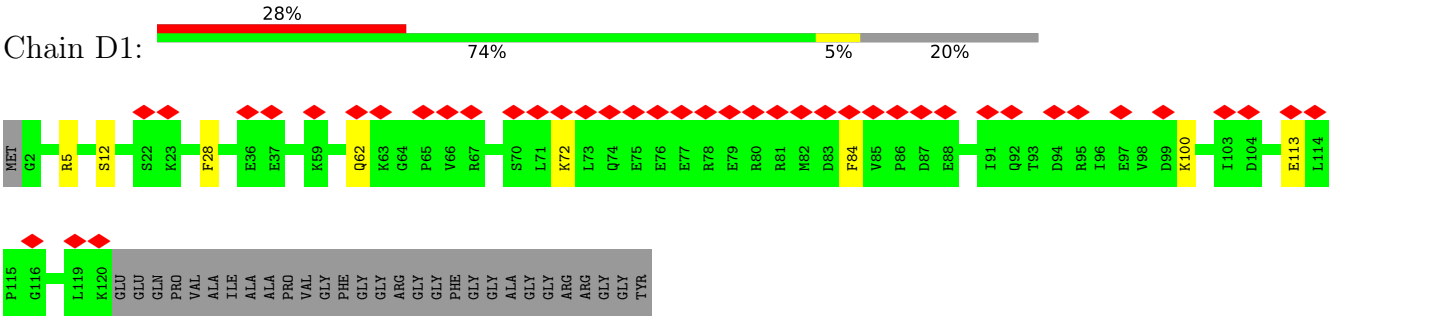
• Molecule 5: 40S ribosomal protein S12

Chain C1:



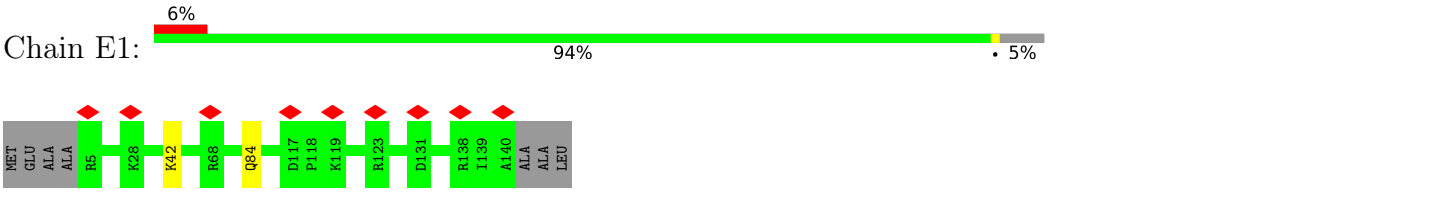
• Molecule 6: 40S ribosomal protein S17-like

Chain D1:



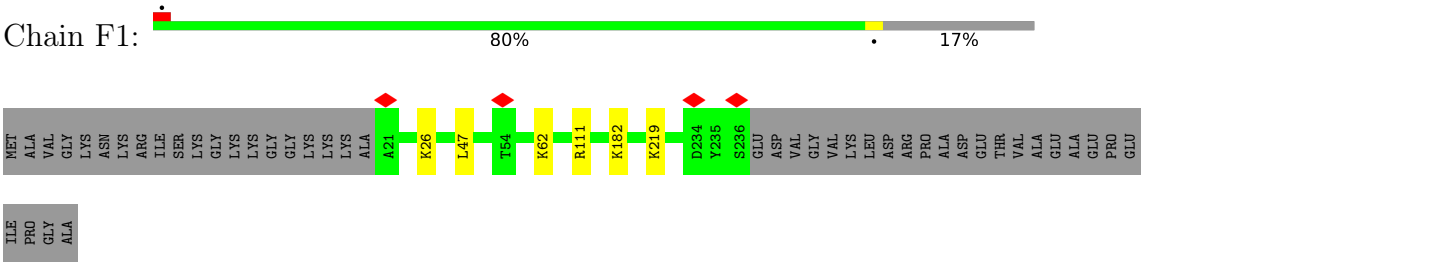
• Molecule 7: 40S ribosomal protein S19-3

Chain E1:



• Molecule 8: 40S ribosomal protein S3a

Chain F1:

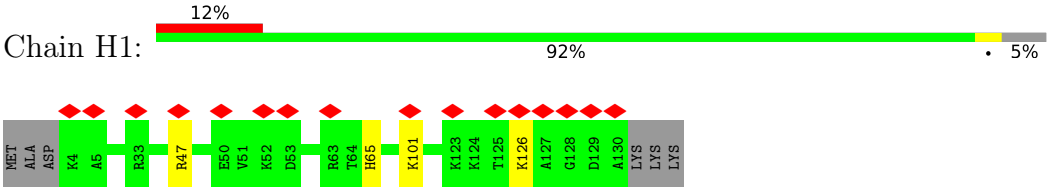


• Molecule 9: 40S ribosomal protein S21

Chain G1:

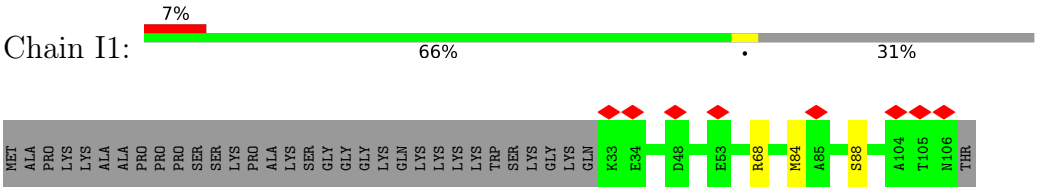
• Molecule 10: 40S ribosomal protein S24

Chain H1:



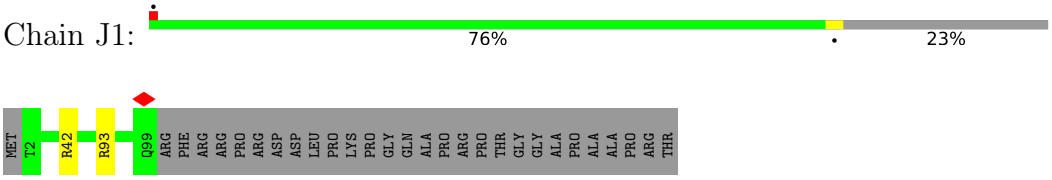
• Molecule 11: 40S ribosomal protein S25

Chain I1:



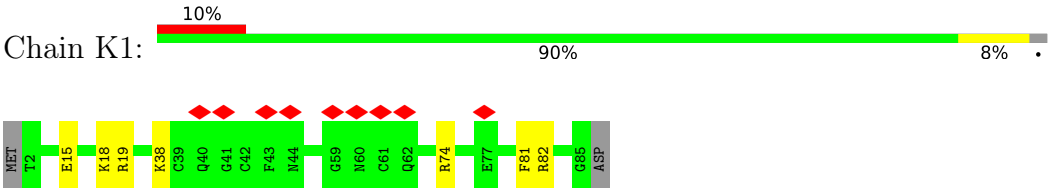
• Molecule 12: 40S ribosomal protein S26

Chain J1:



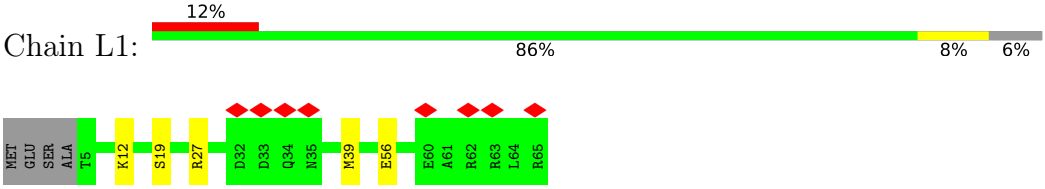
• Molecule 13: 40S ribosomal protein S27

Chain K1:



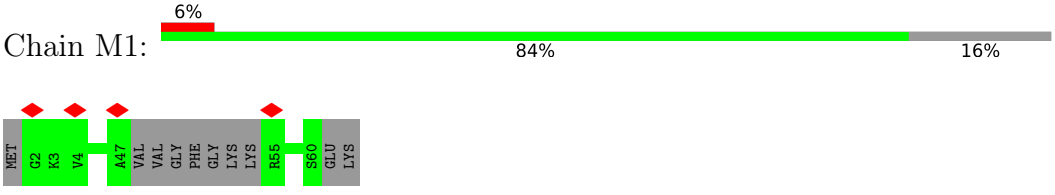
• Molecule 14: 40S ribosomal protein S28

Chain L1:



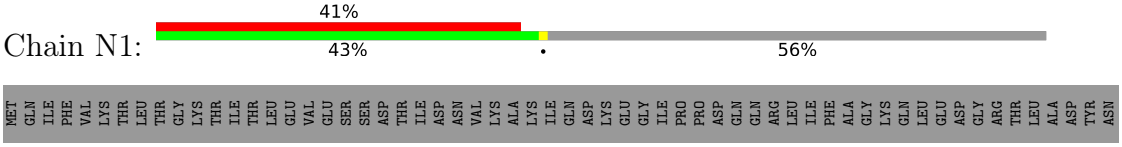
• Molecule 15: 40S ribosomal protein S30

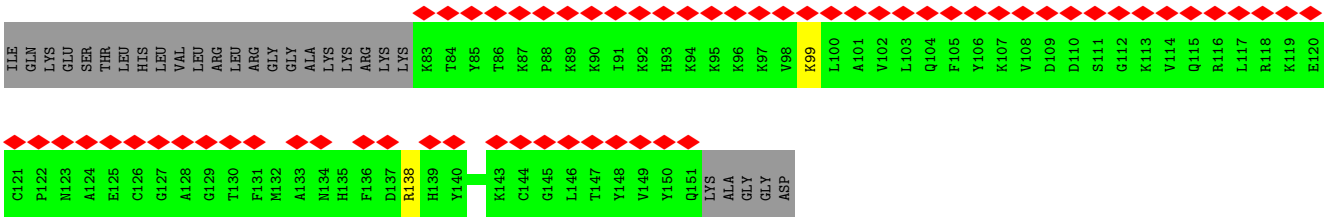
Chain M1:



• Molecule 16: ubiquitin-40S ribosomal protein S27a-like

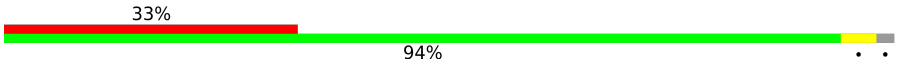
Chain N1:

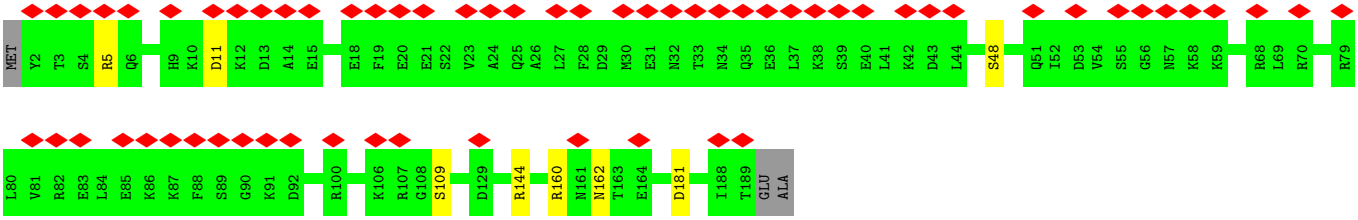




• Molecule 17: 40S ribosomal protein S7

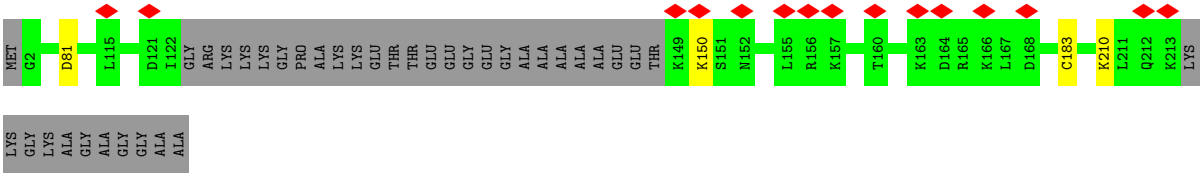
Chain O1:





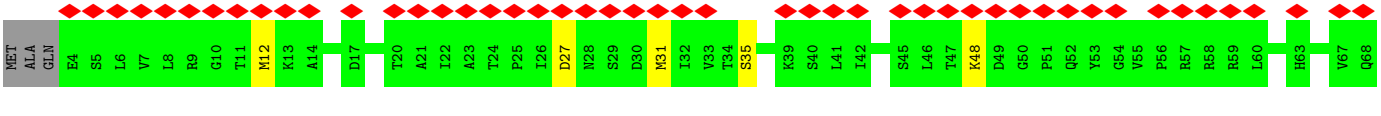
• Molecule 18: 40S ribosomal protein S8

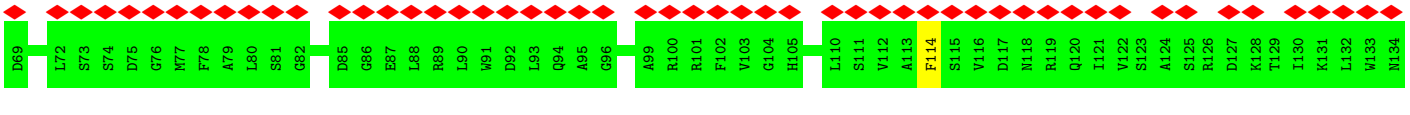
Chain P1:

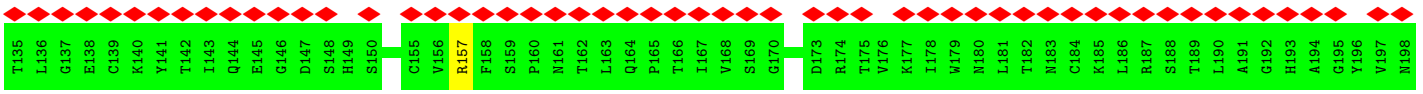


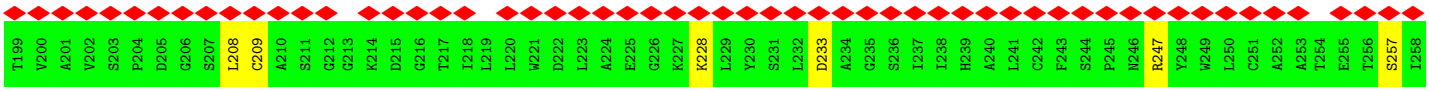
• Molecule 19: guanine nucleotide-binding protein subunit beta-like protein

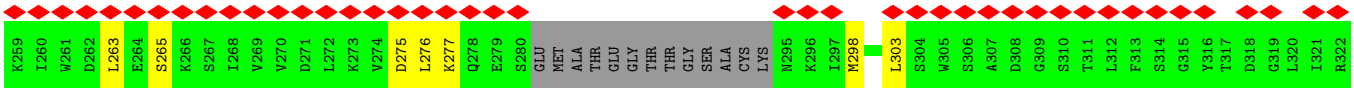
Chain Q1:

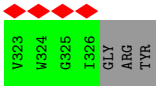






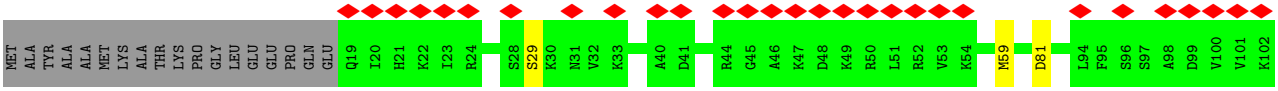


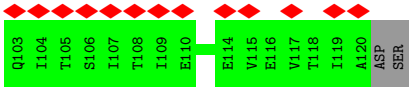




• Molecule 20: 40S ribosomal protein S20-2

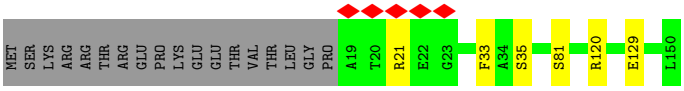
Chain R1:





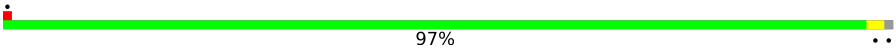
• Molecule 21: 40S ribosomal protein S14-2

Chain S1:



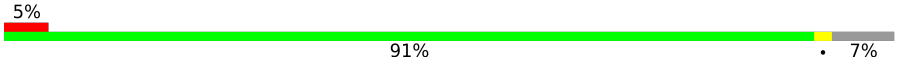
• Molecule 22: 40S ribosomal protein S23

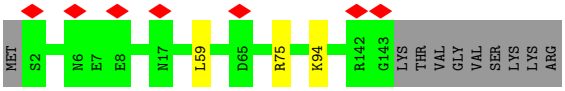
Chain T1:



• Molecule 23: 40S ribosomal protein S18

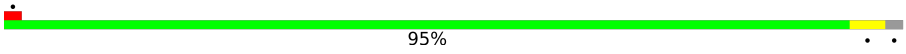
Chain U1:

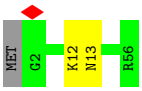




• Molecule 24: 40S ribosomal protein S29

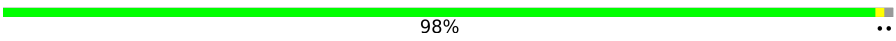
Chain V1:





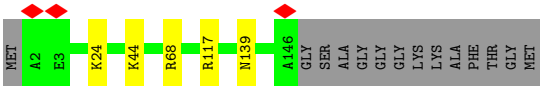
• Molecule 25: 30S ribosomal protein S15, chloroplastic

Chain W1:



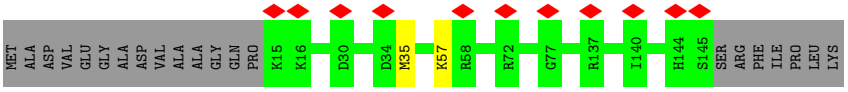
• Molecule 26: 40S ribosomal protein S11-like

Chain X1:



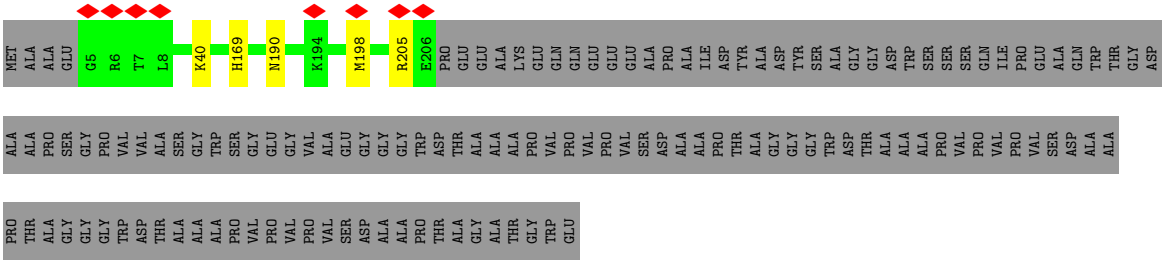
• Molecule 27: 40S ribosomal protein S15-like

Chain Y1:



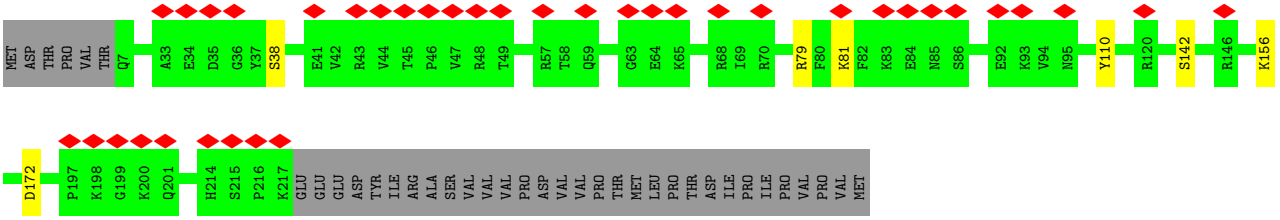
• Molecule 28: 40S ribosomal protein SA

Chain Z1:



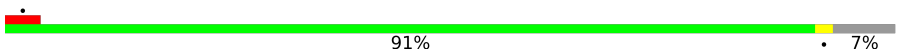
• Molecule 29: 40S ribosomal protein S3-2-like

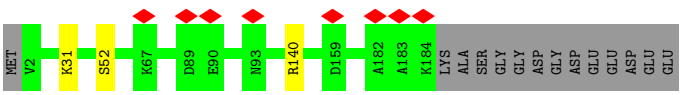
Chain a1:



• Molecule 30: 40S ribosomal protein S9-2-like

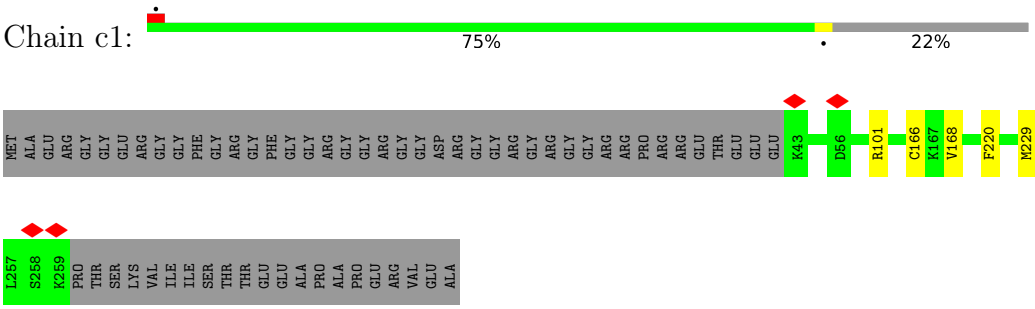
Chain b1:





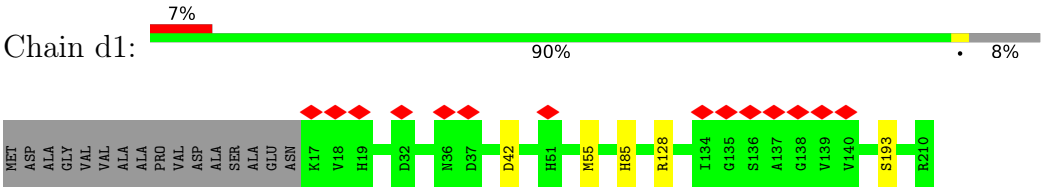
• Molecule 31: 40S ribosomal protein S2-3-like

Chain c1:



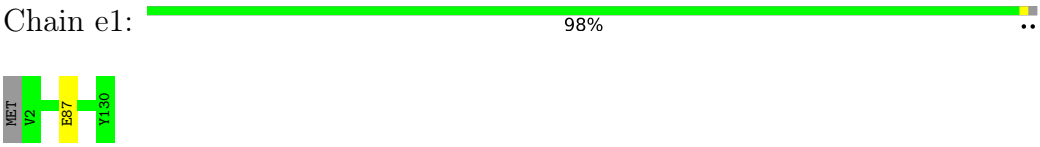
• Molecule 32: 40S ribosomal protein S5-like

Chain d1:



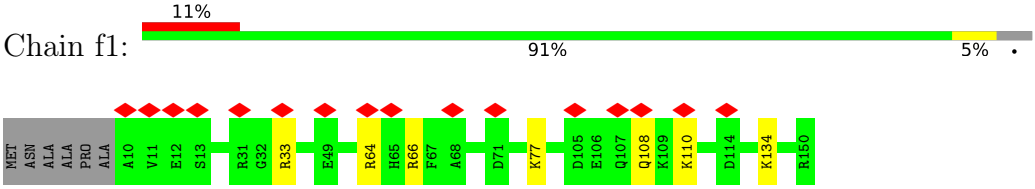
• Molecule 33: 40S ribosomal protein S15a-1

Chain e1:



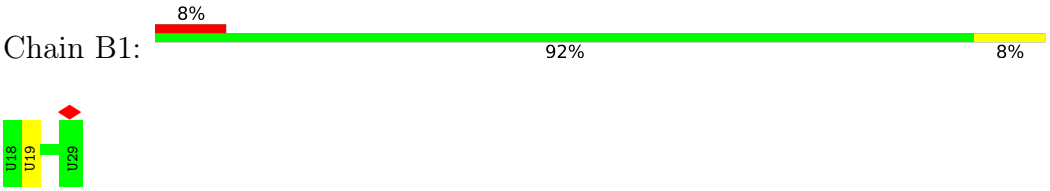
• Molecule 34: 40S ribosomal protein S16

Chain f1:



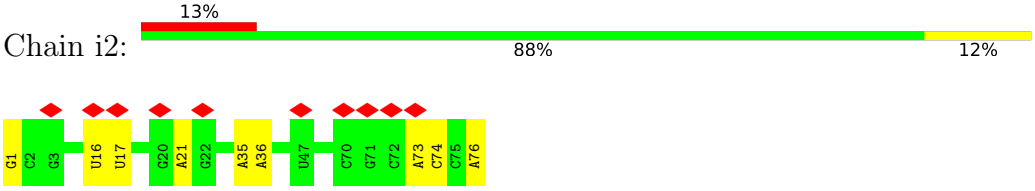
• Molecule 35: mRNA

Chain B1:



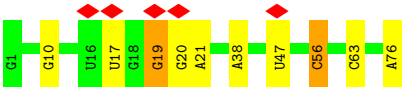
• Molecule 36: tRNA

Chain i2:



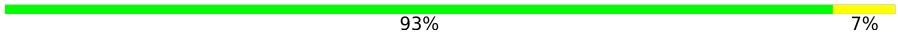
• Molecule 36: tRNA

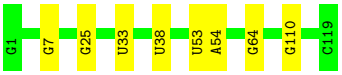
Chain W2:



• Molecule 37: 5S rRNA

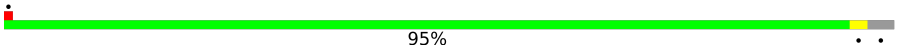
Chain C3:

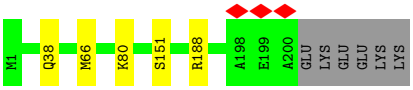




• Molecule 38: 60S ribosomal protein L13

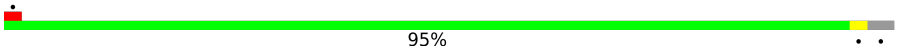
Chain D3:





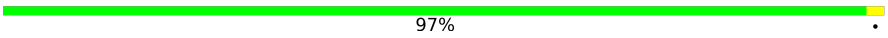
• Molecule 39: 60S ribosomal protein L14-1

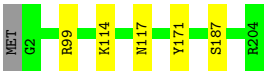
Chain E3:



• Molecule 40: Ribosomal protein L15

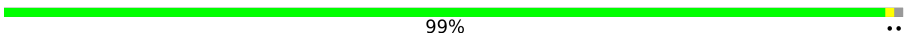
Chain F3:

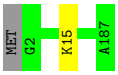




• Molecule 41: 60S ribosomal protein L18-2-like

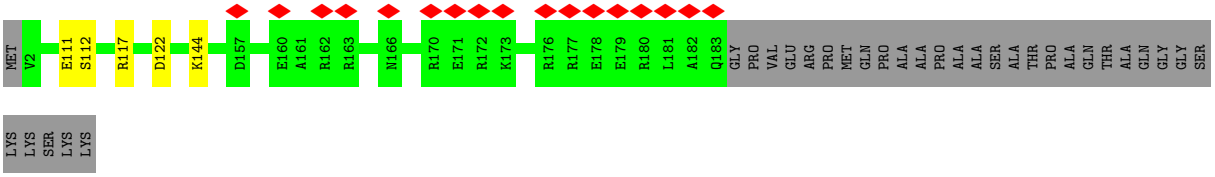
Chain G3:





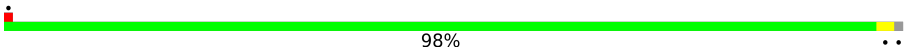
• Molecule 42: Ribosomal protein L19

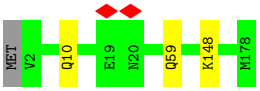
Chain H3:



• Molecule 43: 60S ribosomal protein L18a

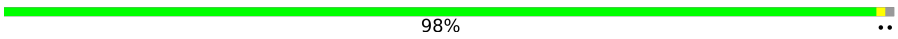
Chain I3:





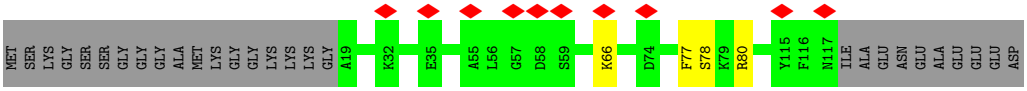
• Molecule 44: 60S ribosomal protein L21-1-like

Chain J3:



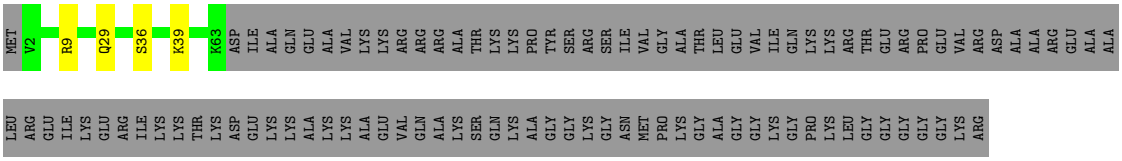
• Molecule 45: 60S ribosomal protein L22-2-like

Chain K3:



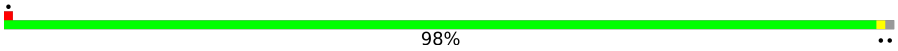
• Molecule 46: 60S ribosomal protein L24-like

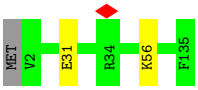
Chain L3:



• Molecule 47: eL27 (60S ribosomal protein L27)

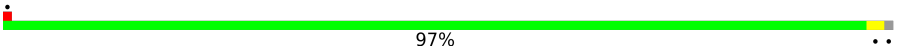
Chain M3:

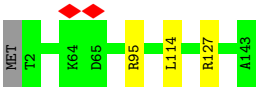




• Molecule 48: eL28 (60S ribosomal protein L28)

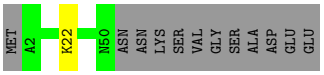
Chain N3:





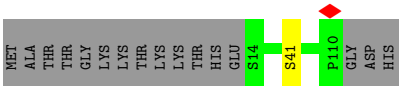
• Molecule 49: 60S ribosomal protein L29

Chain O3:



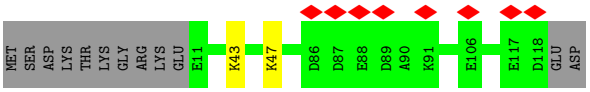
• Molecule 50: 60S ribosomal protein L30-like

Chain P3:



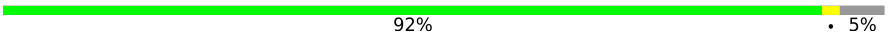
• Molecule 51: eL31 (60S ribosomal protein L31)

Chain Q3:



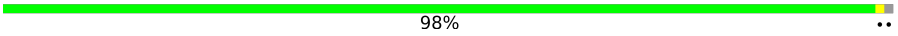
• Molecule 52: 60S ribosomal protein L32-1

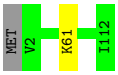
Chain R3:



• Molecule 53: eL33 (60S ribosomal protein L35a)

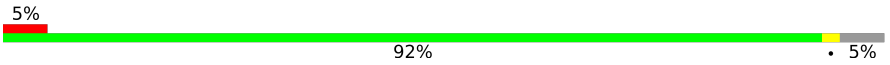
Chain S3:





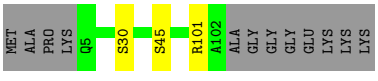
• Molecule 54: 60S ribosomal protein L34

Chain T3:



• Molecule 55: eL36 (60S ribosomal protein L36)

Chain U3:

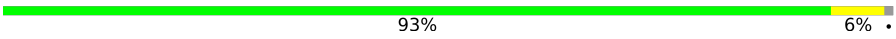


• Molecule 56: Ribosomal protein L37

Chain V3:

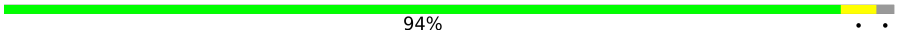
• Molecule 57: 60S ribosomal protein L38

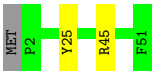
Chain W3:



• Molecule 58: 60S ribosomal protein L39-3

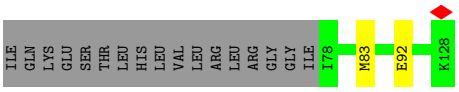
Chain X3:





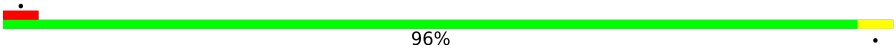
• Molecule 59: ubiquitin-60S ribosomal protein L40

Chain Y3:



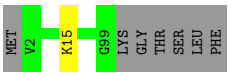
• Molecule 60: 60S ribosomal protein L41

Chain p3:



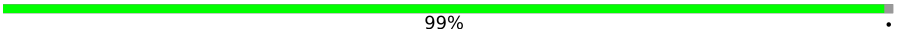
• Molecule 61: 60S ribosomal protein L44

Chain Z3:



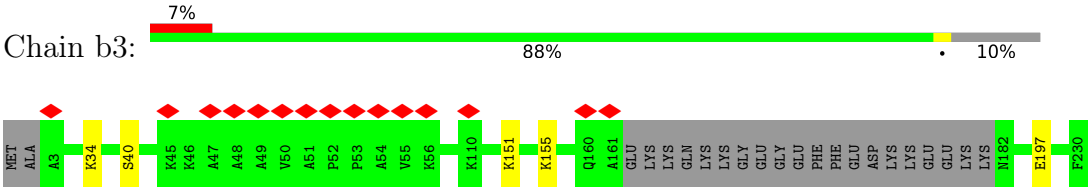
• Molecule 62: 60S ribosomal protein L37a

Chain a3:



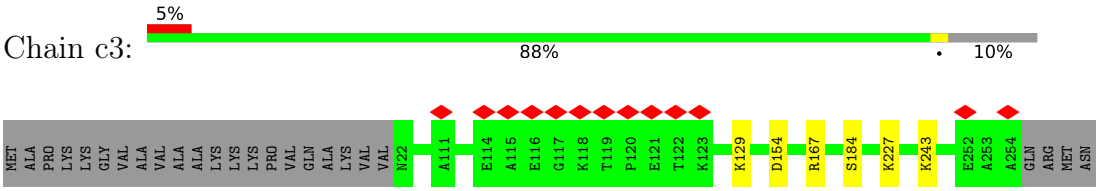
• Molecule 63: eL6 (60S ribosomal protein L6)

Chain b3:



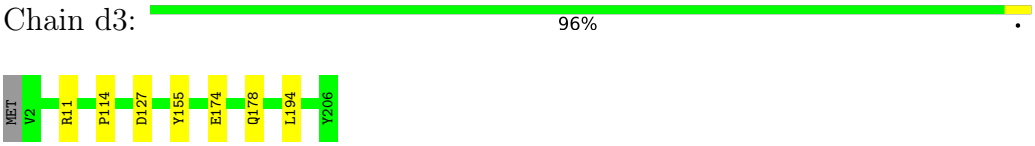
• Molecule 64: 60S ribosomal protein L7a

Chain c3:



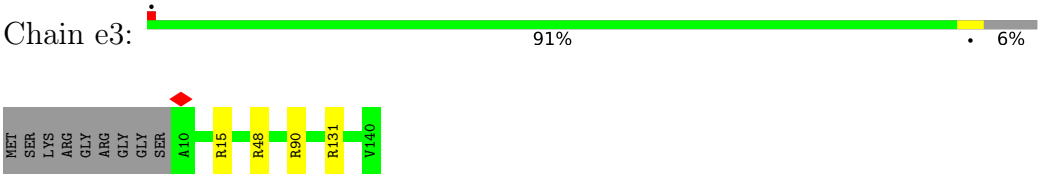
• Molecule 65: uL13 (60S ribosomal protein L13a)

Chain d3:



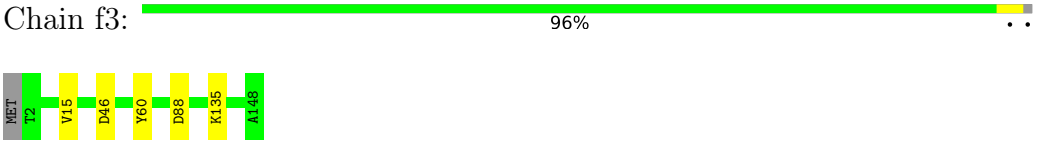
• Molecule 66: 60S ribosomal protein L23

Chain e3:



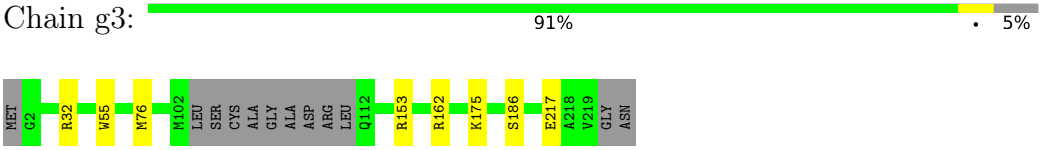
• Molecule 67: uL15 (60S ribosomal protein L27a)

Chain f3:



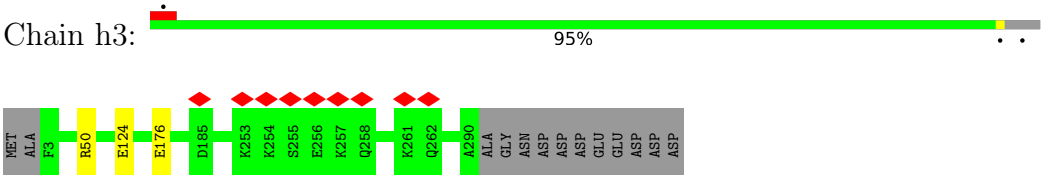
• Molecule 68: uL16 (60S ribosomal protein L10)

Chain g3:



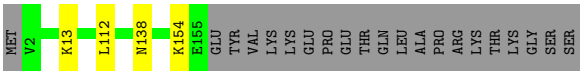
• Molecule 69: 60S ribosomal protein L5-like

Chain h3:



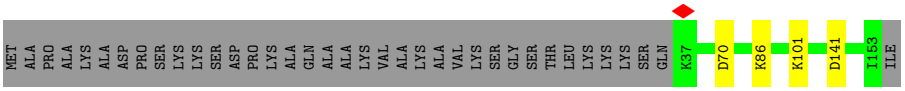
• Molecule 70: 50S ribosomal protein L22, chloroplastic

Chain j3:



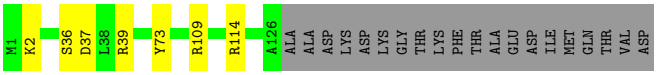
• Molecule 71: 60S ribosomal protein L23a

Chain k3:



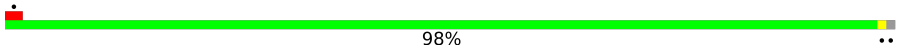
• Molecule 72: uL24 (60S ribosomal protein L26)

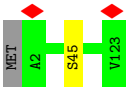
Chain m3:



• Molecule 73: 60S ribosomal protein L35-like

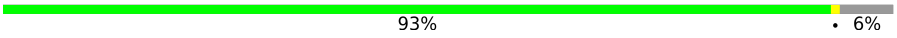
Chain n3:





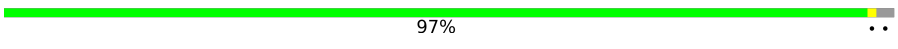
• Molecule 74: uL2 (60S ribosomal protein L8)

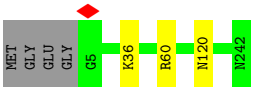
Chain o3:



• Molecule 75: 60S ribosomal protein L7-4-like

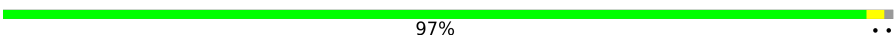
Chain q3:

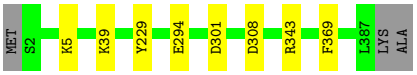




• Molecule 76: uL3 (60S ribosomal protein L3)

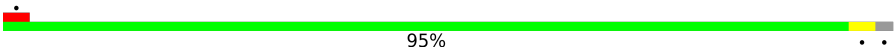
Chain r3:





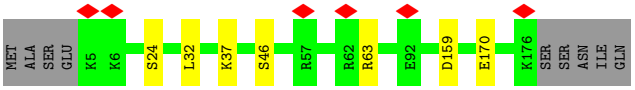
• Molecule 77: uL4 (60S ribosomal protein L4)

Chain s3:



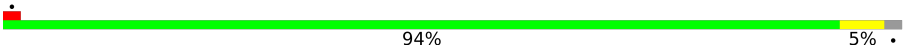
• Molecule 78: uL5 (60S ribosomal protein L11)

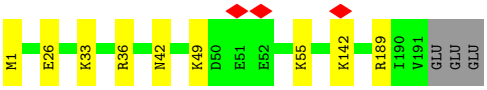
Chain t3:



• Molecule 79: uL6 (60S ribosomal protein L9)

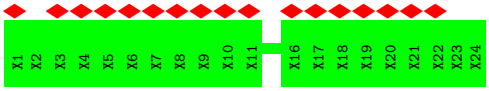
Chain u3:





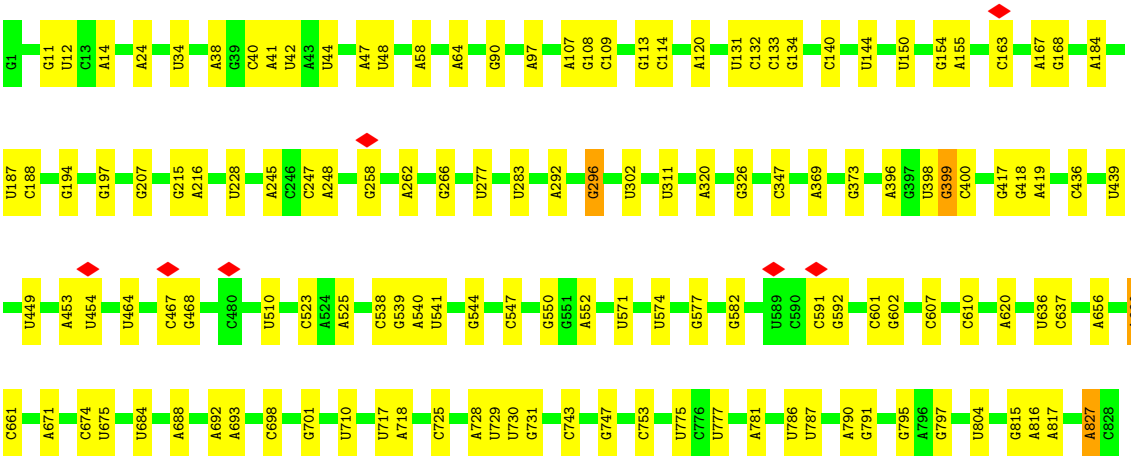
• Molecule 80: nascent chain

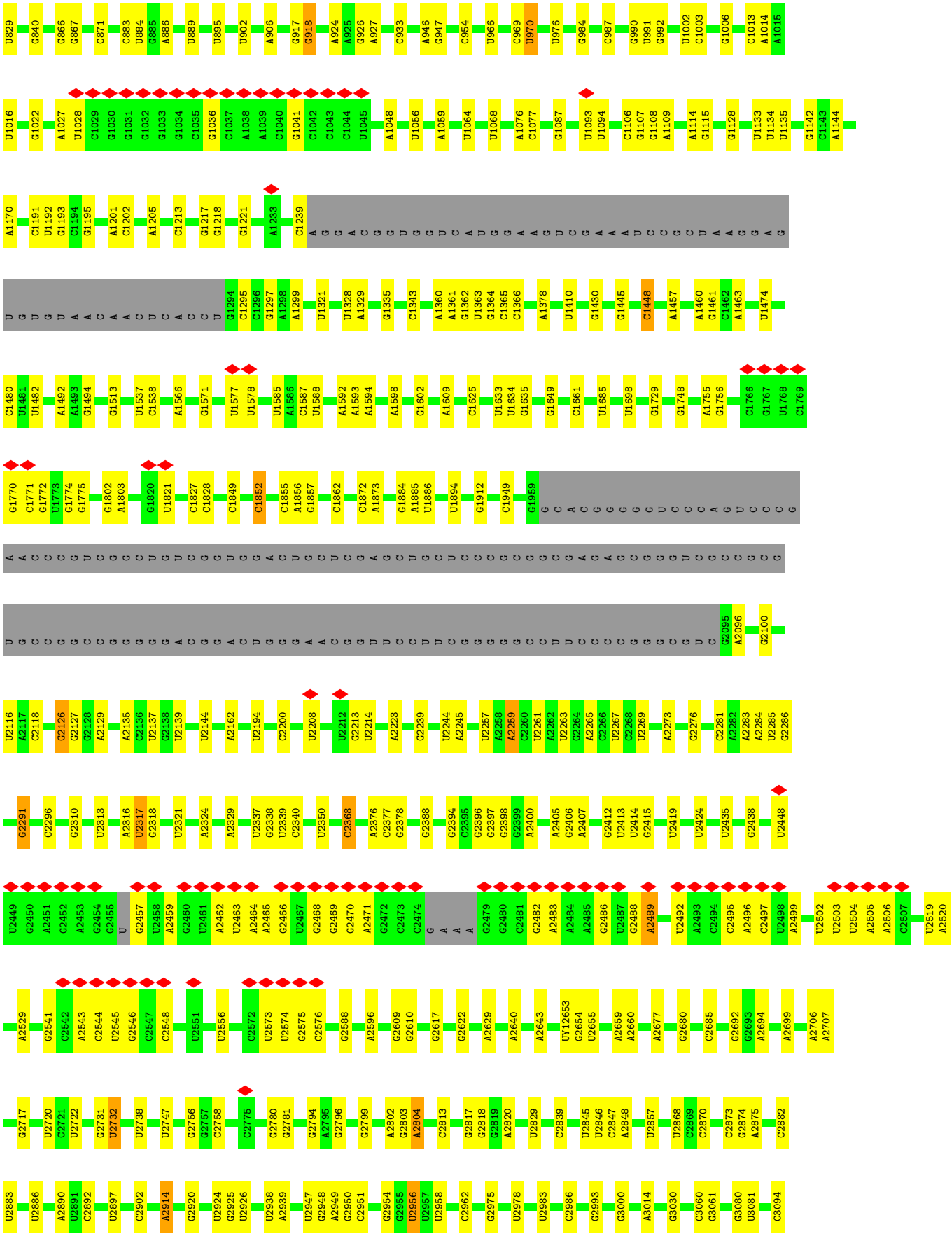
Chain l3:

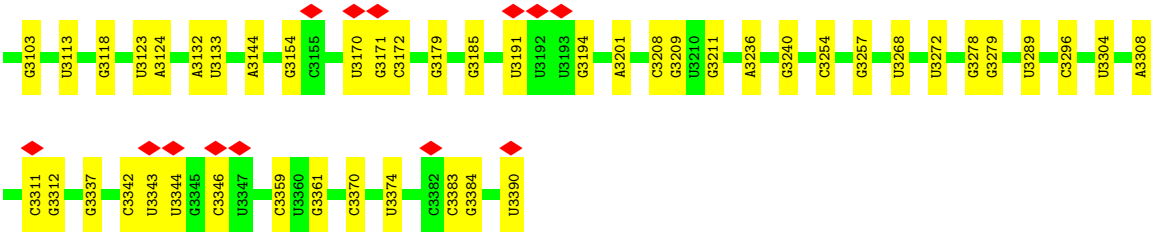


• Molecule 81: 25S rRNA

Chain A3:

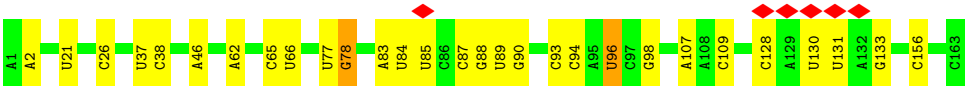






• Molecule 82: 5.8S rRNA

Chain B3:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	335291	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 ($e^-/Å^2$)	27	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	14.499	Depositor
Minimum map value	-6.970	Depositor
Average map value	0.031	Depositor
Map value standard deviation	0.323	Depositor
Recommended contour level	0.6	Depositor
Map size (Å)	381.6, 381.6, 381.6	wwPDB
Map dimensions	450, 450, 450	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.848, 0.848, 0.848	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: OMU, SPM, UY1, UR3, 4AC, 6MZ, OMG, PSU, 1MA, 5MC, SPD, OMC, K, B8N, A2M, ZN, MG, MA6

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	A1	0.25	0/2114	0.53	0/2837
2	k1	0.27	0/1875	0.57	0/2494
3	h1	0.17	0/36945	0.72	1/57563 (0.0%)
4	l1	0.25	0/794	0.44	0/1074
5	C1	0.25	0/889	0.52	0/1198
6	D1	0.26	0/973	0.55	0/1299
7	E1	0.25	0/1103	0.53	0/1480
8	F1	0.24	0/1790	0.51	0/2402
9	G1	0.25	0/662	0.50	0/891
10	H1	0.25	0/1049	0.54	0/1391
11	I1	0.24	0/589	0.54	0/789
12	J1	0.24	0/805	0.57	0/1076
13	K1	0.26	0/662	0.53	0/892
14	L1	0.24	0/496	0.62	0/661
15	M1	0.27	0/414	0.58	0/544
16	N1	0.27	0/574	0.50	0/763
17	O1	0.26	0/1560	0.56	0/2097
18	P1	0.25	0/1535	0.56	0/2050
19	Q1	0.25	0/2446	0.53	0/3324
20	R1	0.24	0/813	0.53	0/1095
21	S1	0.25	0/1010	0.59	0/1352
22	T1	0.25	0/1119	0.53	0/1487
23	U1	0.25	0/1170	0.55	0/1562
24	V1	0.26	0/453	0.52	0/605
25	W1	0.25	0/1214	0.50	0/1632
26	X1	0.26	0/1180	0.54	0/1579
27	Y1	0.26	0/1084	0.53	0/1450
28	Z1	0.26	0/1644	0.51	0/2223
29	a1	0.27	0/1684	0.56	0/2257
30	b1	0.24	0/1550	0.55	0/2073
31	c1	0.25	0/1721	0.51	0/2320

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
32	d1	0.24	0/1553	0.52	0/2095
33	e1	0.25	0/1050	0.53	0/1405
34	f1	0.25	0/1154	0.55	0/1542
35	B1	0.13	0/263	0.71	0/404
36	W2	0.20	0/1822	0.79	3/2840 (0.1%)
36	i2	0.30	1/1823 (0.1%)	0.75	0/2840
37	C3	0.17	0/2837	0.70	0/4420
38	D3	0.25	0/1635	0.55	0/2194
39	E3	0.24	0/1069	0.52	0/1427
40	F3	0.24	0/1740	0.60	0/2333
41	G3	0.25	0/1487	0.55	0/1989
42	H3	0.25	0/1548	0.59	0/2042
43	I3	0.25	0/1544	0.51	0/2071
44	J3	0.24	0/1331	0.54	0/1784
45	K3	0.24	0/819	0.51	0/1098
46	L3	0.26	0/539	0.51	0/716
47	M3	0.25	0/1118	0.52	0/1492
48	N3	0.25	0/1126	0.48	0/1508
49	O3	0.26	0/422	0.55	0/558
50	P3	0.26	0/757	0.48	0/1018
51	Q3	0.25	0/885	0.56	0/1184
52	R3	0.23	0/1053	0.55	0/1408
53	S3	0.26	0/920	0.53	0/1232
54	T3	0.24	0/939	0.57	0/1251
55	U3	0.25	0/791	0.56	0/1047
56	V3	0.26	0/714	0.64	0/949
57	W3	0.26	0/566	0.51	0/752
58	X3	0.22	0/460	0.57	0/611
59	Y3	0.24	0/427	0.54	0/562
60	p3	0.26	0/239	0.74	0/302
61	Z3	0.25	0/801	0.49	0/1058
62	a3	0.24	0/717	0.55	0/952
63	b3	0.27	0/1645	0.47	0/2210
64	c3	0.25	0/1912	0.50	0/2562
65	d3	0.25	0/1669	0.52	0/2235
66	e3	0.26	0/1001	0.55	0/1345
67	f3	0.26	0/1190	0.50	0/1591
68	g3	0.25	0/1707	0.56	0/2283
69	h3	0.26	0/2386	0.51	0/3200
70	j3	0.25	0/1270	0.54	0/1704
71	k3	0.25	0/965	0.49	0/1295
72	m3	0.24	0/1035	0.57	0/1383
73	n3	0.25	0/1009	0.51	0/1343

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
74	o3	0.25	0/1924	0.56	0/2585
75	q3	0.26	0/1992	0.49	0/2670
76	r3	0.25	0/3172	0.51	0/4249
77	s3	0.24	0/3159	0.51	0/4259
78	t3	0.26	0/1414	0.55	0/1890
79	u3	0.25	0/1539	0.51	0/2059
81	A3	0.20	0/73585	0.74	7/114781 (0.0%)
82	B3	0.19	0/3772	0.74	0/5878
All	All	0.22	1/212412 (0.0%)	0.66	11/311066 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
36	i2	1	G	OP3-P	-10.59	1.48	1.61

The worst 5 of 11 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
81	A3	2548	C	N3-C2-O2	-7.99	116.31	121.90
81	A3	2489	A	C6-N1-C2	-7.95	113.83	118.60
81	A3	2489	A	C5-C6-N1	7.53	121.47	117.70
3	h1	604	A	OP1-P-OP2	7.50	130.85	119.60
36	W2	56	C	C2-N3-C4	-6.84	116.48	119.90

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A1	257/264 (97%)	254 (99%)	3 (1%)	0	100	100
2	k1	228/249 (92%)	228 (100%)	0	0	100	100
4	l1	89/208 (43%)	87 (98%)	2 (2%)	0	100	100
5	C1	115/144 (80%)	114 (99%)	1 (1%)	0	100	100
6	D1	117/149 (78%)	115 (98%)	2 (2%)	0	100	100
7	E1	134/143 (94%)	132 (98%)	2 (2%)	0	100	100
8	F1	214/261 (82%)	213 (100%)	1 (0%)	0	100	100
9	G1	81/83 (98%)	80 (99%)	1 (1%)	0	100	100
10	H1	125/133 (94%)	123 (98%)	2 (2%)	0	100	100
11	I1	72/107 (67%)	70 (97%)	2 (3%)	0	100	100
12	J1	96/127 (76%)	96 (100%)	0	0	100	100
13	K1	82/86 (95%)	81 (99%)	1 (1%)	0	100	100
14	L1	59/65 (91%)	58 (98%)	1 (2%)	0	100	100
15	M1	48/62 (77%)	45 (94%)	3 (6%)	0	100	100
16	N1	67/156 (43%)	66 (98%)	1 (2%)	0	100	100
17	O1	186/191 (97%)	182 (98%)	4 (2%)	0	100	100
18	P1	182/224 (81%)	180 (99%)	2 (1%)	0	100	100
19	Q1	305/328 (93%)	297 (97%)	8 (3%)	0	100	100
20	R1	100/122 (82%)	98 (98%)	2 (2%)	0	100	100
21	S1	130/150 (87%)	129 (99%)	1 (1%)	0	100	100
22	T1	139/142 (98%)	136 (98%)	3 (2%)	0	100	100
23	U1	140/152 (92%)	136 (97%)	4 (3%)	0	100	100
24	V1	53/56 (95%)	53 (100%)	0	0	100	100
25	W1	147/151 (97%)	146 (99%)	1 (1%)	0	100	100
26	X1	143/159 (90%)	141 (99%)	2 (1%)	0	100	100
27	Y1	129/152 (85%)	126 (98%)	3 (2%)	0	100	100
28	Z1	200/336 (60%)	197 (98%)	3 (2%)	0	100	100
29	a1	209/248 (84%)	201 (96%)	8 (4%)	0	100	100
30	b1	181/197 (92%)	176 (97%)	5 (3%)	0	100	100
31	c1	215/280 (77%)	210 (98%)	5 (2%)	0	100	100
32	d1	192/210 (91%)	184 (96%)	7 (4%)	1 (0%)	29	31
33	e1	127/130 (98%)	126 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
34	f1	139/147 (95%)	138 (99%)	1 (1%)	0	100	100
38	D3	198/206 (96%)	195 (98%)	3 (2%)	0	100	100
39	E3	128/134 (96%)	126 (98%)	2 (2%)	0	100	100
40	F3	201/204 (98%)	199 (99%)	2 (1%)	0	100	100
41	G3	184/187 (98%)	182 (99%)	2 (1%)	0	100	100
42	H3	180/214 (84%)	179 (99%)	1 (1%)	0	100	100
43	I3	175/178 (98%)	174 (99%)	1 (1%)	0	100	100
44	J3	161/164 (98%)	160 (99%)	1 (1%)	0	100	100
45	K3	97/127 (76%)	93 (96%)	4 (4%)	0	100	100
46	L3	60/164 (37%)	57 (95%)	3 (5%)	0	100	100
47	M3	132/135 (98%)	131 (99%)	1 (1%)	0	100	100
48	N3	140/143 (98%)	136 (97%)	4 (3%)	0	100	100
49	O3	47/61 (77%)	46 (98%)	1 (2%)	0	100	100
50	P3	95/113 (84%)	94 (99%)	1 (1%)	0	100	100
51	Q3	106/120 (88%)	106 (100%)	0	0	100	100
52	R3	124/133 (93%)	123 (99%)	1 (1%)	0	100	100
53	S3	109/112 (97%)	108 (99%)	1 (1%)	0	100	100
54	T3	112/120 (93%)	111 (99%)	1 (1%)	0	100	100
55	U3	96/110 (87%)	96 (100%)	0	0	100	100
56	V3	84/95 (88%)	82 (98%)	2 (2%)	0	100	100
57	W3	66/69 (96%)	66 (100%)	0	0	100	100
58	X3	48/51 (94%)	47 (98%)	1 (2%)	0	100	100
59	Y3	49/128 (38%)	49 (100%)	0	0	100	100
60	p3	23/25 (92%)	23 (100%)	0	0	100	100
61	Z3	96/105 (91%)	95 (99%)	1 (1%)	0	100	100
62	a3	89/92 (97%)	84 (94%)	5 (6%)	0	100	100
63	b3	204/230 (89%)	201 (98%)	3 (2%)	0	100	100
64	c3	231/258 (90%)	228 (99%)	3 (1%)	0	100	100
65	d3	203/206 (98%)	199 (98%)	4 (2%)	0	100	100
66	e3	129/140 (92%)	125 (97%)	4 (3%)	0	100	100
67	f3	145/148 (98%)	137 (94%)	7 (5%)	1 (1%)	22	22

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
68	g3	205/221 (93%)	202 (98%)	3 (2%)	0	100	100
69	h3	286/301 (95%)	278 (97%)	8 (3%)	0	100	100
70	j3	152/175 (87%)	150 (99%)	2 (1%)	0	100	100
71	k3	115/154 (75%)	113 (98%)	2 (2%)	0	100	100
72	m3	124/146 (85%)	120 (97%)	4 (3%)	0	100	100
73	n3	120/123 (98%)	117 (98%)	3 (2%)	0	100	100
74	o3	243/260 (94%)	234 (96%)	9 (4%)	0	100	100
75	q3	236/242 (98%)	231 (98%)	5 (2%)	0	100	100
76	r3	384/389 (99%)	380 (99%)	4 (1%)	0	100	100
77	s3	396/405 (98%)	390 (98%)	6 (2%)	0	100	100
78	t3	170/181 (94%)	168 (99%)	2 (1%)	0	100	100
79	u3	189/194 (97%)	188 (100%)	1 (0%)	0	100	100
All	All	11033/12575 (88%)	10841 (98%)	190 (2%)	2 (0%)	100	100

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
32	d1	85	HIS
67	f3	15	VAL

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	
1	A1	225/228 (99%)	216 (96%)	9 (4%)	31	40
2	k1	199/213 (93%)	194 (98%)	5 (2%)	47	60
4	l1	85/169 (50%)	84 (99%)	1 (1%)	71	83
5	C1	94/112 (84%)	90 (96%)	4 (4%)	29	36
6	D1	109/124 (88%)	101 (93%)	8 (7%)	14	15
7	E1	111/114 (97%)	109 (98%)	2 (2%)	59	72

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
8	F1	195/228 (86%)	189 (97%)	6 (3%)	40 51
9	G1	70/70 (100%)	69 (99%)	1 (1%)	67 80
10	H1	108/113 (96%)	104 (96%)	4 (4%)	34 43
11	I1	64/89 (72%)	61 (95%)	3 (5%)	26 33
12	J1	87/109 (80%)	85 (98%)	2 (2%)	50 63
13	K1	76/78 (97%)	69 (91%)	7 (9%)	9 9
14	L1	54/57 (95%)	49 (91%)	5 (9%)	9 8
15	M1	41/49 (84%)	41 (100%)	0	100 100
16	N1	60/134 (45%)	58 (97%)	2 (3%)	38 49
17	O1	169/171 (99%)	161 (95%)	8 (5%)	26 33
18	P1	158/178 (89%)	154 (98%)	4 (2%)	47 60
19	Q1	266/279 (95%)	246 (92%)	20 (8%)	13 14
20	R1	93/108 (86%)	90 (97%)	3 (3%)	39 50
21	S1	103/120 (86%)	97 (94%)	6 (6%)	20 23
22	T1	113/114 (99%)	110 (97%)	3 (3%)	44 57
23	U1	122/131 (93%)	119 (98%)	3 (2%)	47 60
24	V1	46/47 (98%)	44 (96%)	2 (4%)	29 36
25	W1	130/131 (99%)	129 (99%)	1 (1%)	81 90
26	X1	124/131 (95%)	119 (96%)	5 (4%)	31 40
27	Y1	115/130 (88%)	113 (98%)	2 (2%)	60 74
28	Z1	171/256 (67%)	166 (97%)	5 (3%)	42 54
29	a1	179/215 (83%)	172 (96%)	7 (4%)	32 41
30	b1	161/171 (94%)	158 (98%)	3 (2%)	57 71
31	c1	184/226 (81%)	178 (97%)	6 (3%)	38 49
32	d1	165/175 (94%)	161 (98%)	4 (2%)	49 62
33	e1	111/112 (99%)	110 (99%)	1 (1%)	78 88
34	f1	116/120 (97%)	109 (94%)	7 (6%)	19 22
38	D3	165/171 (96%)	160 (97%)	5 (3%)	41 53
39	E3	114/117 (97%)	111 (97%)	3 (3%)	46 58
40	F3	176/177 (99%)	171 (97%)	5 (3%)	43 56
41	G3	154/155 (99%)	153 (99%)	1 (1%)	86 93

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
42	H3	160/182 (88%)	155 (97%)	5 (3%)	40 51
43	I3	163/164 (99%)	160 (98%)	3 (2%)	59 72
44	J3	140/141 (99%)	138 (99%)	2 (1%)	67 80
45	K3	91/109 (84%)	87 (96%)	4 (4%)	28 35
46	L3	57/133 (43%)	53 (93%)	4 (7%)	15 16
47	M3	117/118 (99%)	115 (98%)	2 (2%)	60 74
48	N3	123/124 (99%)	120 (98%)	3 (2%)	49 62
49	O3	43/53 (81%)	42 (98%)	1 (2%)	50 63
50	P3	85/98 (87%)	84 (99%)	1 (1%)	71 83
51	Q3	95/106 (90%)	93 (98%)	2 (2%)	53 67
52	R3	114/121 (94%)	111 (97%)	3 (3%)	46 58
53	S3	98/99 (99%)	97 (99%)	1 (1%)	76 86
54	T3	100/104 (96%)	97 (97%)	3 (3%)	41 53
55	U3	83/90 (92%)	80 (96%)	3 (4%)	35 45
56	V3	72/77 (94%)	71 (99%)	1 (1%)	67 80
57	W3	64/65 (98%)	60 (94%)	4 (6%)	18 20
58	X3	47/48 (98%)	45 (96%)	2 (4%)	29 36
59	Y3	46/114 (40%)	44 (96%)	2 (4%)	29 36
60	p3	24/24 (100%)	23 (96%)	1 (4%)	30 38
61	Z3	86/92 (94%)	85 (99%)	1 (1%)	71 83
62	a3	73/74 (99%)	73 (100%)	0	100 100
63	b3	175/194 (90%)	170 (97%)	5 (3%)	42 54
64	c3	202/221 (91%)	196 (97%)	6 (3%)	41 53
65	d3	173/174 (99%)	166 (96%)	7 (4%)	31 40
66	e3	103/109 (94%)	99 (96%)	4 (4%)	32 41
67	f3	119/120 (99%)	115 (97%)	4 (3%)	37 47
68	g3	173/181 (96%)	165 (95%)	8 (5%)	27 34
69	h3	244/254 (96%)	241 (99%)	3 (1%)	71 83
70	j3	135/154 (88%)	131 (97%)	4 (3%)	41 53
71	k3	106/134 (79%)	102 (96%)	4 (4%)	33 42
72	m3	115/131 (88%)	108 (94%)	7 (6%)	18 21

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
73	n3	109/110 (99%)	108 (99%)	1 (1%)	78 88
74	o3	190/197 (96%)	187 (98%)	3 (2%)	62 76
75	q3	207/209 (99%)	204 (99%)	3 (1%)	67 80
76	r3	330/332 (99%)	322 (98%)	8 (2%)	49 62
77	s3	326/329 (99%)	312 (96%)	14 (4%)	29 36
78	t3	149/157 (95%)	142 (95%)	7 (5%)	26 33
79	u3	167/170 (98%)	158 (95%)	9 (5%)	22 26
All	All	9617/10634 (90%)	9309 (97%)	308 (3%)	42 50

5 of 308 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
66	e3	90	ARG
77	s3	288	MET
68	g3	55	TRP
72	m3	73	TYR
79	u3	26	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
28	Z1	16	GLN
34	f1	65	HIS
43	I3	23	HIS
48	N3	86	ASN
79	u3	37	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
3	h1	1610/1808 (89%)	222 (13%)	0
35	B1	11/12 (91%)	1 (9%)	0
36	W2	75/76 (98%)	10 (13%)	0
36	i2	75/76 (98%)	8 (10%)	0
37	C3	118/119 (99%)	8 (6%)	0
81	A3	3190/3390 (94%)	414 (12%)	19 (0%)
82	B3	162/163 (99%)	26 (16%)	0

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
All	All	5241/5644 (92%)	689 (13%)	19 (0%)

5 of 689 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
3	h1	2	A
3	h1	4	C
3	h1	17	C
3	h1	25	C
3	h1	26	A

5 of 19 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
81	A3	2482	G
81	A3	2543	A
81	A3	3123	U
81	A3	2503	U
81	A3	926	G

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

216 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	$\#\|Z\| > 2$
81	A2M	A3	2914	81	18,25,26	4.15	7 (38%)	18,36,39	3.88	4 (22%)
81	OMC	A3	1480	81	19,22,23	3.30	8 (42%)	26,31,34	0.73	0
81	PSU	A3	2829	81	18,21,22	4.62	8 (44%)	22,30,33	1.90	6 (27%)
3	PSU	h1	470	3	18,21,22	4.64	8 (44%)	22,30,33	1.83	5 (22%)
3	A2M	h1	424	3	18,25,26	4.16	7 (38%)	18,36,39	3.86	4 (22%)
81	OMG	A3	296	81	18,26,27	2.84	8 (44%)	19,38,41	1.54	4 (21%)
81	PSU	A3	34	81	18,21,22	4.63	8 (44%)	22,30,33	1.87	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	PSU	h1	1524	3	18,21,22	4.69	8 (44%)	22,30,33	1.75	5 (22%)
3	MA6	h1	1790	3	18,26,27	0.96	1 (5%)	19,38,41	2.68	3 (15%)
3	OMU	h1	614	3	19,22,23	3.21	8 (42%)	26,31,34	1.65	5 (19%)
81	PSU	A3	1002	81	18,21,22	4.67	8 (44%)	22,30,33	1.85	5 (22%)
81	A2M	A3	369	81	18,25,26	4.12	7 (38%)	18,36,39	3.85	5 (27%)
81	OMU	A3	1068	81	19,22,23	3.20	8 (42%)	26,31,34	1.70	5 (19%)
81	OMC	A3	1862	81	19,22,23	3.26	8 (42%)	26,31,34	0.68	0
81	OMG	A3	2239	81	18,26,27	2.85	8 (44%)	19,38,41	1.52	4 (21%)
81	A2M	A3	2329	81	18,25,26	4.13	7 (38%)	18,36,39	3.82	5 (27%)
81	PSU	A3	2947	81,84	18,21,22	4.64	9 (50%)	22,30,33	1.85	6 (27%)
82	PSU	B3	77	82	18,21,22	4.65	8 (44%)	22,30,33	1.86	5 (22%)
3	PSU	h1	258	3	18,21,22	4.66	8 (44%)	22,30,33	1.81	5 (22%)
3	PSU	h1	1308	3	18,21,22	4.64	8 (44%)	22,30,33	1.78	5 (22%)
3	A2M	h1	1579	3	18,25,26	4.11	7 (38%)	18,36,39	3.88	5 (27%)
81	OMU	A3	787	81	19,22,23	3.21	8 (42%)	26,31,34	1.65	5 (19%)
3	PSU	h1	1002	3	18,21,22	4.65	8 (44%)	22,30,33	1.83	5 (22%)
81	OMG	A3	2818	81	18,26,27	2.81	8 (44%)	19,38,41	1.56	5 (26%)
81	PSU	A3	2269	81	18,21,22	4.68	8 (44%)	22,30,33	1.78	5 (22%)
3	OMU	h1	886	3	19,22,23	3.22	8 (42%)	26,31,34	1.80	5 (19%)
81	PSU	A3	3113	81	18,21,22	4.63	8 (44%)	22,30,33	1.77	5 (22%)
3	PSU	h1	362	3	18,21,22	4.62	8 (44%)	22,30,33	1.81	5 (22%)
81	PSU	A3	1474	81	18,21,22	4.64	8 (44%)	22,30,33	1.82	5 (22%)
81	OMG	A3	815	81	18,26,27	2.83	8 (44%)	19,38,41	1.56	5 (26%)
3	OMC	h1	38	3	19,22,23	3.32	8 (42%)	26,31,34	0.71	0
81	A2M	A3	817	81	18,25,26	4.14	7 (38%)	18,36,39	3.79	5 (27%)
81	OMC	A3	2296	81	19,22,23	3.29	8 (42%)	26,31,34	0.74	0
81	PSU	A3	970	81	18,21,22	4.66	9 (50%)	22,30,33	1.89	5 (22%)
81	PSU	A3	2263	81	18,21,22	4.66	8 (44%)	22,30,33	1.84	5 (22%)
3	OMU	h1	581	84,3	19,22,23	3.23	8 (42%)	26,31,34	1.67	4 (15%)
3	A2M	h1	28	3,83	18,25,26	4.14	7 (38%)	18,36,39	3.82	4 (22%)
81	PSU	A3	2883	81	18,21,22	4.65	8 (44%)	22,30,33	1.85	6 (27%)
3	OMU	h1	123	3	19,22,23	3.21	8 (42%)	26,31,34	1.66	5 (19%)
81	PSU	A3	895	81	18,21,22	4.61	8 (44%)	22,30,33	1.78	5 (22%)
81	OMU	A3	2350	81	19,22,23	3.23	8 (42%)	26,31,34	1.67	5 (19%)
3	PSU	h1	1293	3	18,21,22	4.66	8 (44%)	22,30,33	1.82	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	PSU	h1	635	3	18,21,22	4.62	8 (44%)	22,30,33	1.79	5 (22%)
3	PSU	h1	1106	3	18,21,22	4.65	8 (44%)	22,30,33	1.82	5 (22%)
3	PSU	h1	1634	3	18,21,22	4.64	8 (44%)	22,30,33	1.80	5 (22%)
81	PSU	A3	684	81	18,21,22	4.64	8 (44%)	22,30,33	1.80	5 (22%)
3	PSU	h1	1567	3	18,21,22	4.67	8 (44%)	22,30,33	1.83	5 (22%)
81	PSU	A3	1133	81	18,21,22	4.63	8 (44%)	22,30,33	1.82	5 (22%)
81	A2M	A3	2259	81	18,25,26	4.17	7 (38%)	18,36,39	3.89	4 (22%)
81	A2M	A3	1144	81	18,25,26	4.13	7 (38%)	18,36,39	3.88	4 (22%)
81	A2M	A3	1378	81	18,25,26	4.13	7 (38%)	18,36,39	3.72	4 (22%)
81	OMU	A3	2738	81	19,22,23	3.21	8 (42%)	26,31,34	1.67	5 (19%)
81	PSU	A3	277	81	18,21,22	4.62	8 (44%)	22,30,33	1.83	5 (22%)
82	PSU	B3	21	81,82	18,21,22	4.62	8 (44%)	22,30,33	1.78	5 (22%)
3	PSU	h1	1615	3	18,21,22	4.63	8 (44%)	22,30,33	1.81	5 (22%)
3	PSU	h1	95	3	18,21,22	4.67	8 (44%)	22,30,33	1.80	5 (22%)
81	OMG	A3	2126	81	18,26,27	2.80	8 (44%)	19,38,41	1.56	5 (26%)
81	A2M	A3	2643	81	18,25,26	4.12	7 (38%)	18,36,39	3.75	4 (22%)
81	A2M	A3	660	81	18,25,26	4.14	7 (38%)	18,36,39	3.98	6 (33%)
81	5MC	A3	2281	81	18,22,23	4.01	7 (38%)	26,32,35	1.04	2 (7%)
3	PSU	h1	1120	3	18,21,22	4.64	8 (44%)	22,30,33	1.77	5 (22%)
81	OMU	A3	675	81	19,22,23	3.22	8 (42%)	26,31,34	1.69	5 (19%)
81	OMG	A3	2398	81	18,26,27	2.81	8 (44%)	19,38,41	1.60	5 (26%)
3	OMU	h1	1234	3	19,22,23	3.20	8 (42%)	26,31,34	1.65	4 (15%)
3	OMC	h1	473	3	19,22,23	3.30	8 (42%)	26,31,34	0.72	0
81	OMC	A3	2962	81	19,22,23	3.25	8 (42%)	26,31,34	0.77	0
3	A2M	h1	977	3	18,25,26	4.14	7 (38%)	18,36,39	3.73	4 (22%)
81	PSU	A3	228	81	18,21,22	4.66	8 (44%)	22,30,33	1.83	5 (22%)
81	PSU	A3	902	81,84,83	18,21,22	4.65	8 (44%)	22,30,33	1.81	5 (22%)
81	OMU	A3	1894	81	19,22,23	3.23	8 (42%)	26,31,34	1.71	5 (19%)
81	OMG	A3	2394	81	18,26,27	2.82	8 (44%)	19,38,41	1.59	5 (26%)
81	OMG	A3	2796	81	18,26,27	2.81	8 (44%)	19,38,41	1.52	5 (26%)
3	PSU	h1	1787	3	18,21,22	4.66	8 (44%)	22,30,33	1.84	5 (22%)
3	OMG	h1	392	3	18,26,27	2.86	8 (44%)	19,38,41	1.55	4 (21%)
81	OMC	A3	2368	81	19,22,23	3.27	8 (42%)	26,31,34	0.69	0
81	OMU	A3	3289	81	19,22,23	3.20	8 (42%)	26,31,34	1.63	4 (15%)
81	PSU	A3	311	81,84	18,21,22	4.66	8 (44%)	22,30,33	1.73	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
81	OMG	A3	918	81,84	18,26,27	2.81	8 (44%)	19,38,41	1.50	4 (21%)
3	B8N	h1	1194	3	24,29,30	3.04	7 (29%)	29,42,45	1.73	6 (20%)
3	PSU	h1	1217	3	18,21,22	4.68	8 (44%)	22,30,33	1.81	5 (22%)
3	PSU	h1	121	3,83	18,21,22	4.66	8 (44%)	22,30,33	1.80	5 (22%)
81	A2M	A3	2129	81	18,25,26	4.17	7 (38%)	18,36,39	3.84	4 (22%)
81	PSU	A3	2214	81	18,21,22	4.65	8 (44%)	22,30,33	1.87	5 (22%)
81	OMG	A3	2291	81	18,26,27	2.82	8 (44%)	19,38,41	1.52	4 (21%)
81	OMC	A3	1849	81	19,22,23	3.25	8 (42%)	26,31,34	0.70	0
81	1MA	A3	656	81	16,25,26	3.83	5 (31%)	18,37,40	1.70	3 (16%)
81	OMG	A3	2925	81	18,26,27	2.82	8 (44%)	19,38,41	1.52	4 (21%)
81	OMG	A3	2622	81,36	18,26,27	2.82	8 (44%)	19,38,41	1.49	4 (21%)
3	OMC	h1	1218	3	19,22,23	3.31	8 (42%)	26,31,34	0.71	0
3	OMU	h1	1012	3	19,22,23	3.20	8 (42%)	26,31,34	1.67	4 (15%)
81	PSU	A3	829	81	18,21,22	4.63	8 (44%)	22,30,33	1.86	5 (22%)
3	PSU	h1	417	3	18,21,22	4.66	8 (44%)	22,30,33	1.82	5 (22%)
3	OMU	h1	1272	3	19,22,23	3.23	8 (42%)	26,31,34	1.66	4 (15%)
81	OMU	A3	144	81	19,22,23	3.21	8 (42%)	26,31,34	1.65	4 (15%)
81	OMU	A3	804	81	19,22,23	3.22	8 (42%)	26,31,34	1.69	5 (19%)
81	OMU	A3	2720	81	19,22,23	3.20	8 (42%)	26,31,34	1.64	4 (15%)
81	5MC	A3	2873	81,84	18,22,23	4.02	7 (38%)	26,32,35	1.09	1 (3%)
81	OMG	A3	2654	81	18,26,27	2.81	8 (44%)	19,38,41	1.69	6 (31%)
81	PSU	A3	2897	81	18,21,22	4.64	8 (44%)	22,30,33	1.80	5 (22%)
3	6MZ	h1	1771	84,3,83	18,25,26	2.02	4 (22%)	16,36,39	2.33	4 (25%)
81	A2M	A3	2223	81	18,25,26	4.16	7 (38%)	18,36,39	3.77	4 (22%)
81	PSU	A3	1685	81	18,21,22	4.65	8 (44%)	22,30,33	1.87	6 (27%)
3	A2M	h1	622	3,83	18,25,26	4.10	7 (38%)	18,36,39	3.97	5 (27%)
81	PSU	A3	717	81	18,21,22	4.65	8 (44%)	22,30,33	1.86	5 (22%)
81	PSU	A3	976	81,84	18,21,22	4.67	8 (44%)	22,30,33	1.83	5 (22%)
3	PSU	h1	950	3	18,21,22	4.64	8 (44%)	22,30,33	1.79	5 (22%)
81	A2M	A3	1460	81	18,25,26	4.13	7 (38%)	18,36,39	3.81	4 (22%)
81	OMU	A3	2924	81,84	19,22,23	3.21	8 (42%)	26,31,34	1.68	4 (15%)
3	PSU	h1	1210	3	18,21,22	4.63	8 (44%)	22,30,33	1.83	5 (22%)
81	PSU	A3	1064	81	18,21,22	4.64	8 (44%)	22,30,33	1.85	5 (22%)
3	OMU	h1	1383	3,83	19,22,23	3.23	8 (42%)	26,31,34	1.67	4 (15%)
3	OMC	h1	1645	3	19,22,23	3.30	8 (42%)	26,31,34	0.71	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
81	PSU	A3	1135	81	18,21,22	4.64	8 (44%)	22,30,33	1.86	5 (22%)
81	OMC	A3	1448	81	19,22,23	3.29	8 (42%)	26,31,34	0.87	1 (3%)
3	PSU	h1	606	3	18,21,22	4.61	8 (44%)	22,30,33	1.79	5 (22%)
3	A2M	h1	162	3	18,25,26	4.18	7 (38%)	18,36,39	3.84	4 (22%)
3	A2M	h1	1758	3	18,25,26	4.12	8 (44%)	18,36,39	3.75	4 (22%)
3	MA6	h1	1789	3	18,26,27	0.94	1 (5%)	19,38,41	2.64	3 (15%)
81	OMC	A3	674	81	19,22,23	3.25	8 (42%)	26,31,34	0.68	0
81	OMG	A3	2920	81	18,26,27	2.81	8 (44%)	19,38,41	1.54	5 (26%)
81	PSU	A3	510	81	18,21,22	4.65	8 (44%)	22,30,33	1.85	5 (22%)
3	PSU	h1	762	3	18,21,22	4.65	8 (44%)	22,30,33	1.80	5 (22%)
81	OMG	A3	2412	81,84	18,26,27	2.83	8 (44%)	19,38,41	1.59	5 (26%)
81	PSU	A3	2419	81	18,21,22	4.64	8 (44%)	22,30,33	1.81	5 (22%)
81	PSU	A3	2261	81	18,21,22	4.65	8 (44%)	22,30,33	1.82	5 (22%)
81	PSU	A3	2257	81	18,21,22	4.64	8 (44%)	22,30,33	1.85	5 (22%)
3	A2M	h1	800	3	18,25,26	4.20	7 (38%)	18,36,39	3.77	5 (27%)
3	PSU	h1	1027	3	18,21,22	4.68	9 (50%)	22,30,33	1.81	5 (22%)
81	A2M	A3	827	81,84,83	18,25,26	4.18	7 (38%)	18,36,39	3.87	4 (22%)
81	PSU	A3	1016	81,84	18,21,22	4.65	8 (44%)	22,30,33	1.84	5 (22%)
81	OMU	A3	2732	81	19,22,23	3.20	8 (42%)	26,31,34	1.61	4 (15%)
81	PSU	A3	1134	81	18,21,22	4.60	8 (44%)	22,30,33	1.88	5 (22%)
3	4AC	h1	1781	3	21,24,25	3.26	11 (52%)	29,34,37	1.04	3 (10%)
81	OMG	A3	2794	81	18,26,27	2.80	8 (44%)	19,38,41	1.46	5 (26%)
3	PSU	h1	1304	3	18,21,22	4.66	8 (44%)	22,30,33	1.82	5 (22%)
81	PSU	A3	966	81	18,21,22	4.61	8 (44%)	22,30,33	1.74	5 (22%)
3	A2M	h1	1329	3	18,25,26	4.16	7 (38%)	18,36,39	3.86	4 (22%)
81	OMC	A3	2839	81	19,22,23	3.28	8 (42%)	26,31,34	0.78	0
81	A2M	A3	2949	81	18,25,26	4.15	7 (38%)	18,36,39	3.77	4 (22%)
81	PSU	A3	2321	81,83	18,21,22	4.65	8 (44%)	22,30,33	1.84	5 (22%)
81	OMG	A3	2127	81	18,26,27	2.82	8 (44%)	19,38,41	1.62	5 (26%)
81	PSU	A3	2267	81	18,21,22	4.64	8 (44%)	22,30,33	1.83	5 (22%)
81	PSU	A3	786	81	18,21,22	4.66	8 (44%)	22,30,33	1.73	5 (22%)
81	OMC	A3	40	81	19,22,23	3.27	8 (42%)	26,31,34	0.89	1 (3%)
3	PSU	h1	1535	3	18,21,22	4.67	8 (44%)	22,30,33	1.80	5 (22%)
82	OMG	B3	78	82	18,26,27	2.81	8 (44%)	19,38,41	1.52	4 (21%)
81	PSU	A3	2978	81	18,21,22	4.65	8 (44%)	22,30,33	1.80	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
82	A2M	B3	46	82	18,25,26	4.14	7 (38%)	18,36,39	3.82	4 (22%)
81	OMC	A3	2951	81	19,22,23	3.23	8 (42%)	26,31,34	0.78	0
81	PSU	A3	42	81,84	18,21,22	4.64	8 (44%)	22,30,33	1.83	5 (22%)
81	OMU	A3	2424	81	19,22,23	3.22	8 (42%)	26,31,34	1.68	5 (19%)
81	OMG	A3	1857	81	18,26,27	2.80	8 (44%)	19,38,41	1.51	5 (26%)
3	A2M	h1	468	3	18,25,26	4.17	7 (38%)	18,36,39	3.84	4 (22%)
81	PSU	A3	1482	81	18,21,22	4.62	8 (44%)	22,30,33	1.76	5 (22%)
3	PSU	h1	1184	3	18,21,22	4.65	8 (44%)	22,30,33	1.83	5 (22%)
3	PSU	h1	753	3	18,21,22	4.64	8 (44%)	22,30,33	1.81	5 (22%)
3	OMC	h1	418	3	19,22,23	3.30	8 (42%)	26,31,34	0.89	1 (3%)
3	PSU	h1	605	3	18,21,22	4.64	8 (44%)	22,30,33	1.81	5 (22%)
3	OMG	h1	1433	3,83	18,26,27	2.80	8 (44%)	19,38,41	1.47	5 (26%)
3	OMG	h1	1274	3	18,26,27	2.84	8 (44%)	19,38,41	1.52	4 (21%)
81	A2M	A3	2284	81	18,25,26	4.04	7 (38%)	18,36,39	3.99	4 (22%)
3	OMU	h1	1447	3	19,22,23	3.20	8 (42%)	26,31,34	1.61	4 (15%)
81	OMU	A3	3304	81	19,22,23	3.20	8 (42%)	26,31,34	1.64	4 (15%)
3	UY1	h1	603	3	19,22,23	4.17	7 (36%)	22,31,34	1.84	5 (22%)
81	PSU	A3	1056	81	18,21,22	4.65	8 (44%)	22,30,33	1.84	5 (22%)
3	PSU	h1	103	84,3	18,21,22	4.64	8 (44%)	22,30,33	1.84	5 (22%)
3	OMU	h1	373	3	19,22,23	3.22	8 (42%)	26,31,34	1.66	4 (15%)
81	PSU	A3	464	81	18,21,22	4.67	8 (44%)	22,30,33	1.80	6 (27%)
3	PSU	h1	1178	3	18,21,22	4.64	8 (44%)	22,30,33	1.82	5 (22%)
82	PSU	B3	96	84,82	18,21,22	4.66	8 (44%)	22,30,33	1.75	5 (22%)
81	UY1	A3	2653	81	19,22,23	4.20	7 (36%)	22,31,34	1.87	5 (22%)
81	OMU	A3	44	81,84	19,22,23	3.23	8 (42%)	26,31,34	1.63	4 (15%)
81	UR3	A3	2956	81	19,22,23	2.79	8 (42%)	26,32,35	1.31	2 (7%)
3	OMG	h1	598	3	18,26,27	2.83	8 (44%)	19,38,41	1.54	4 (21%)
81	PSU	A3	2139	81	18,21,22	4.64	8 (44%)	22,30,33	1.81	5 (22%)
3	PSU	h1	961	84,3	18,21,22	4.67	8 (44%)	22,30,33	1.85	5 (22%)
81	OMG	A3	1461	81	18,26,27	2.81	8 (44%)	19,38,41	1.52	4 (21%)
3	4AC	h1	1283	3	21,24,25	3.25	11 (52%)	29,34,37	0.98	2 (6%)
81	OMU	A3	48	81	19,22,23	3.19	8 (42%)	26,31,34	1.63	4 (15%)
81	A2M	A3	886	81	18,25,26	4.14	7 (38%)	18,36,39	3.81	6 (33%)
81	A2M	A3	2324	81	18,25,26	4.11	7 (38%)	18,36,39	3.82	4 (22%)
81	OMC	A3	2340	81	19,22,23	3.28	8 (42%)	26,31,34	0.68	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
81	OMC	A3	2685	81	19,22,23	3.28	8 (42%)	26,31,34	0.73	0
81	PSU	A3	2747	81	18,21,22	4.62	8 (44%)	22,30,33	1.80	5 (22%)
3	PSU	h1	1190	3	18,21,22	4.65	8 (44%)	22,30,33	1.83	5 (22%)
81	PSU	A3	2857	81	18,21,22	4.64	8 (44%)	22,30,33	1.87	5 (22%)
81	OMU	A3	2886	81	19,22,23	3.21	8 (42%)	26,31,34	1.63	4 (15%)
3	PSU	h1	763	3	18,21,22	4.66	8 (44%)	22,30,33	1.83	5 (22%)
81	OMG	A3	399	81	18,26,27	2.86	8 (44%)	19,38,41	1.54	4 (21%)
81	PSU	A3	150	81,84	18,21,22	4.65	8 (44%)	22,30,33	1.85	5 (22%)
81	A2M	A3	946	81	18,25,26	4.14	8 (44%)	18,36,39	3.94	6 (33%)
81	OMU	A3	2413	81,84	19,22,23	3.17	8 (42%)	26,31,34	1.59	4 (15%)
81	PSU	A3	2926	81,84	18,21,22	4.65	8 (44%)	22,30,33	1.88	5 (22%)
3	A2M	h1	544	3	18,25,26	4.18	7 (38%)	18,36,39	3.66	4 (22%)
81	OMC	A3	2882	81	19,22,23	3.27	8 (42%)	26,31,34	0.75	0
81	PSU	A3	2958	81	18,21,22	4.66	8 (44%)	22,30,33	1.84	5 (22%)
81	PSU	A3	2317	81,84	18,21,22	4.65	8 (44%)	22,30,33	1.90	5 (22%)
81	OMU	A3	1537	81	19,22,23	3.21	8 (42%)	26,31,34	1.63	4 (15%)
81	OMC	A3	1852	81	19,22,23	3.31	8 (42%)	26,31,34	0.74	0
3	OMC	h1	140	3	19,22,23	3.31	8 (42%)	26,31,34	0.72	0
3	PSU	h1	310	3	18,21,22	4.64	8 (44%)	22,30,33	1.81	5 (22%)
81	PSU	A3	2137	81,84	18,21,22	4.65	8 (44%)	22,30,33	1.92	5 (22%)
3	OMG	h1	246	84,3	18,26,27	2.85	8 (44%)	19,38,41	1.50	4 (21%)
3	A2M	h1	440	3	18,25,26	4.15	7 (38%)	18,36,39	3.86	4 (22%)
3	PSU	h1	306	3	18,21,22	4.65	8 (44%)	22,30,33	1.76	5 (22%)
3	PSU	h1	339	84,3	18,21,22	4.66	8 (44%)	22,30,33	1.80	6 (27%)
3	PSU	h1	1485	3	18,21,22	4.67	8 (44%)	22,30,33	1.83	5 (22%)
3	PSU	h1	584	3	18,21,22	4.75	9 (50%)	22,30,33	1.79	5 (22%)
81	A2M	A3	2804	81	18,25,26	4.11	6 (33%)	18,36,39	4.11	6 (33%)
81	PSU	A3	2435	81	18,21,22	4.64	8 (44%)	22,30,33	1.90	6 (27%)
81	OMC	A3	2200	81,84	19,22,23	3.29	8 (42%)	26,31,34	0.80	0
3	PSU	h1	607	3	18,21,22	4.66	8 (44%)	22,30,33	1.86	6 (27%)
3	PSU	h1	809	3	18,21,22	4.66	8 (44%)	22,30,33	1.82	5 (22%)
81	PSU	A3	2194	81,84	18,21,22	4.63	8 (44%)	22,30,33	1.80	5 (22%)
81	PSU	A3	2868	81	18,21,22	4.64	8 (44%)	22,30,33	1.90	6 (27%)
3	PSU	h1	451	84,3	18,21,22	4.67	8 (44%)	22,30,33	1.87	6 (27%)

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	A2M	A3	2914	81	-	2/5/27/28	0/3/3/3
81	OMC	A3	1480	81	-	0/9/27/28	0/2/2/2
81	PSU	A3	2829	81	-	0/7/25/26	0/2/2/2
3	PSU	h1	470	3	-	0/7/25/26	0/2/2/2
3	A2M	h1	424	3	-	0/5/27/28	0/3/3/3
81	OMG	A3	296	81	-	2/5/27/28	0/3/3/3
81	PSU	A3	34	81	-	0/7/25/26	0/2/2/2
3	PSU	h1	1524	3	-	2/7/25/26	0/2/2/2
3	MA6	h1	1790	3	-	4/7/29/30	0/3/3/3
3	OMU	h1	614	3	-	3/9/27/28	0/2/2/2
81	PSU	A3	1002	81	-	2/7/25/26	0/2/2/2
81	A2M	A3	369	81	-	1/5/27/28	0/3/3/3
81	OMU	A3	1068	81	-	0/9/27/28	0/2/2/2
81	OMC	A3	1862	81	-	0/9/27/28	0/2/2/2
81	OMG	A3	2239	81	-	0/5/27/28	0/3/3/3
81	A2M	A3	2329	81	-	0/5/27/28	0/3/3/3
81	PSU	A3	2947	81,84	-	2/7/25/26	0/2/2/2
82	PSU	B3	77	82	-	0/7/25/26	0/2/2/2
3	PSU	h1	258	3	-	1/7/25/26	0/2/2/2
3	PSU	h1	1308	3	-	2/7/25/26	0/2/2/2
3	A2M	h1	1579	3	-	2/5/27/28	0/3/3/3
81	OMU	A3	787	81	-	0/9/27/28	0/2/2/2
3	PSU	h1	1002	3	-	0/7/25/26	0/2/2/2
81	OMG	A3	2818	81	-	0/5/27/28	0/3/3/3
81	PSU	A3	2269	81	-	2/7/25/26	0/2/2/2
3	OMU	h1	886	3	-	3/9/27/28	0/2/2/2
81	PSU	A3	3113	81	-	0/7/25/26	0/2/2/2
3	PSU	h1	362	3	-	0/7/25/26	0/2/2/2
81	PSU	A3	1474	81	-	0/7/25/26	0/2/2/2
81	OMG	A3	815	81	-	0/5/27/28	0/3/3/3
3	OMC	h1	38	3	-	2/9/27/28	0/2/2/2
81	A2M	A3	817	81	-	0/5/27/28	0/3/3/3
81	OMC	A3	2296	81	-	0/9/27/28	0/2/2/2
81	PSU	A3	970	81	-	1/7/25/26	0/2/2/2
81	PSU	A3	2263	81	-	1/7/25/26	0/2/2/2
3	OMU	h1	581	84,3	-	2/9/27/28	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	A2M	h1	28	3,83	-	0/5/27/28	0/3/3/3
81	PSU	A3	2883	81	-	0/7/25/26	0/2/2/2
3	OMU	h1	123	3	-	2/9/27/28	0/2/2/2
81	PSU	A3	895	81	-	0/7/25/26	0/2/2/2
81	OMU	A3	2350	81	-	0/9/27/28	0/2/2/2
3	PSU	h1	1293	3	-	0/7/25/26	0/2/2/2
3	PSU	h1	635	3	-	0/7/25/26	0/2/2/2
3	PSU	h1	1106	3	-	0/7/25/26	0/2/2/2
3	PSU	h1	1634	3	-	0/7/25/26	0/2/2/2
81	PSU	A3	684	81	-	0/7/25/26	0/2/2/2
3	PSU	h1	1567	3	-	0/7/25/26	0/2/2/2
81	PSU	A3	1133	81	-	0/7/25/26	0/2/2/2
81	A2M	A3	2259	81	-	2/5/27/28	0/3/3/3
81	A2M	A3	1144	81	-	0/5/27/28	0/3/3/3
81	A2M	A3	1378	81	-	2/5/27/28	0/3/3/3
81	OMU	A3	2738	81	-	0/9/27/28	0/2/2/2
81	PSU	A3	277	81	-	0/7/25/26	0/2/2/2
82	PSU	B3	21	81,82	-	0/7/25/26	0/2/2/2
3	PSU	h1	1615	3	-	0/7/25/26	0/2/2/2
3	PSU	h1	95	3	-	0/7/25/26	0/2/2/2
81	OMG	A3	2126	81	-	0/5/27/28	0/3/3/3
81	A2M	A3	2643	81	-	0/5/27/28	0/3/3/3
81	A2M	A3	660	81	-	2/5/27/28	0/3/3/3
81	5MC	A3	2281	81	-	0/7/25/26	0/2/2/2
3	PSU	h1	1120	3	-	0/7/25/26	0/2/2/2
81	OMU	A3	675	81	-	0/9/27/28	0/2/2/2
81	OMG	A3	2398	81	-	0/5/27/28	0/3/3/3
3	OMU	h1	1234	3	-	2/9/27/28	0/2/2/2
3	OMC	h1	473	3	-	0/9/27/28	0/2/2/2
81	OMC	A3	2962	81	-	0/9/27/28	0/2/2/2
3	A2M	h1	977	3	-	0/5/27/28	0/3/3/3
81	PSU	A3	228	81	-	1/7/25/26	0/2/2/2
81	PSU	A3	902	81,84,83	-	0/7/25/26	0/2/2/2
81	OMU	A3	1894	81	-	0/9/27/28	0/2/2/2
81	OMG	A3	2394	81	-	0/5/27/28	0/3/3/3
81	OMG	A3	2796	81	-	0/5/27/28	0/3/3/3
3	PSU	h1	1787	3	-	2/7/25/26	0/2/2/2
3	OMG	h1	392	3	-	2/5/27/28	0/3/3/3
81	OMC	A3	2368	81	-	3/9/27/28	0/2/2/2
81	OMU	A3	3289	81	-	0/9/27/28	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
81	PSU	A3	311	81,84	-	0/7/25/26	0/2/2/2
81	OMG	A3	918	81,84	-	2/5/27/28	0/3/3/3
3	B8N	h1	1194	3	-	3/16/34/35	0/2/2/2
3	PSU	h1	1217	3	-	0/7/25/26	0/2/2/2
3	PSU	h1	121	3,83	-	0/7/25/26	0/2/2/2
81	A2M	A3	2129	81	-	0/5/27/28	0/3/3/3
81	PSU	A3	2214	81	-	0/7/25/26	0/2/2/2
81	OMG	A3	2291	81	-	2/5/27/28	0/3/3/3
81	OMC	A3	1849	81	-	0/9/27/28	0/2/2/2
81	1MA	A3	656	81	-	0/3/25/26	0/3/3/3
81	OMG	A3	2925	81	-	0/5/27/28	0/3/3/3
81	OMG	A3	2622	81,36	-	0/5/27/28	0/3/3/3
3	OMC	h1	1218	3	-	0/9/27/28	0/2/2/2
3	OMU	h1	1012	3	-	0/9/27/28	0/2/2/2
81	PSU	A3	829	81	-	0/7/25/26	0/2/2/2
3	PSU	h1	417	3	-	0/7/25/26	0/2/2/2
3	OMU	h1	1272	3	-	2/9/27/28	0/2/2/2
81	OMU	A3	144	81	-	1/9/27/28	0/2/2/2
81	OMU	A3	804	81	-	0/9/27/28	0/2/2/2
81	OMU	A3	2720	81	-	0/9/27/28	0/2/2/2
81	5MC	A3	2873	81,84	-	4/7/25/26	0/2/2/2
81	OMG	A3	2654	81	-	0/5/27/28	0/3/3/3
81	PSU	A3	2897	81	-	0/7/25/26	0/2/2/2
3	6MZ	h1	1771	84,3,83	-	0/5/27/28	0/3/3/3
81	A2M	A3	2223	81	-	0/5/27/28	0/3/3/3
81	PSU	A3	1685	81	-	0/7/25/26	0/2/2/2
3	A2M	h1	622	3,83	-	2/5/27/28	0/3/3/3
81	PSU	A3	717	81	-	0/7/25/26	0/2/2/2
81	PSU	A3	976	81,84	-	0/7/25/26	0/2/2/2
3	PSU	h1	950	3	-	0/7/25/26	0/2/2/2
81	A2M	A3	1460	81	-	0/5/27/28	0/3/3/3
81	OMU	A3	2924	81,84	-	0/9/27/28	0/2/2/2
3	PSU	h1	1210	3	-	0/7/25/26	0/2/2/2
81	PSU	A3	1064	81	-	0/7/25/26	0/2/2/2
3	OMU	h1	1383	3,83	-	0/9/27/28	0/2/2/2
3	OMC	h1	1645	3	-	0/9/27/28	0/2/2/2
81	PSU	A3	1135	81	-	0/7/25/26	0/2/2/2
81	OMC	A3	1448	81	-	3/9/27/28	0/2/2/2
3	PSU	h1	606	3	-	0/7/25/26	0/2/2/2
3	A2M	h1	162	3	-	0/5/27/28	0/3/3/3
3	A2M	h1	1758	3	-	0/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	MA6	h1	1789	3	-	0/7/29/30	0/3/3/3
81	OMC	A3	674	81	-	0/9/27/28	0/2/2/2
81	OMG	A3	2920	81	-	0/5/27/28	0/3/3/3
81	PSU	A3	510	81	-	0/7/25/26	0/2/2/2
3	PSU	h1	762	3	-	0/7/25/26	0/2/2/2
81	OMG	A3	2412	81,84	-	1/5/27/28	0/3/3/3
81	PSU	A3	2419	81	-	0/7/25/26	0/2/2/2
81	PSU	A3	2261	81	-	1/7/25/26	0/2/2/2
81	PSU	A3	2257	81	-	0/7/25/26	0/2/2/2
3	A2M	h1	800	3	-	0/5/27/28	0/3/3/3
3	PSU	h1	1027	3	-	1/7/25/26	0/2/2/2
81	A2M	A3	827	81,84,83	-	3/5/27/28	0/3/3/3
81	PSU	A3	1016	81,84	-	0/7/25/26	0/2/2/2
81	OMU	A3	2732	81	-	0/9/27/28	0/2/2/2
81	PSU	A3	1134	81	-	0/7/25/26	0/2/2/2
3	4AC	h1	1781	3	-	0/11/29/30	0/2/2/2
81	OMG	A3	2794	81	-	0/5/27/28	0/3/3/3
3	PSU	h1	1304	3	-	0/7/25/26	0/2/2/2
81	PSU	A3	966	81	-	0/7/25/26	0/2/2/2
3	A2M	h1	1329	3	-	0/5/27/28	0/3/3/3
81	OMC	A3	2839	81	-	0/9/27/28	0/2/2/2
81	A2M	A3	2949	81	-	0/5/27/28	0/3/3/3
81	PSU	A3	2321	81,83	-	2/7/25/26	0/2/2/2
81	OMG	A3	2127	81	-	0/5/27/28	0/3/3/3
81	PSU	A3	2267	81	-	0/7/25/26	0/2/2/2
81	PSU	A3	786	81	-	3/7/25/26	0/2/2/2
81	OMC	A3	40	81	-	1/9/27/28	0/2/2/2
3	PSU	h1	1535	3	-	0/7/25/26	0/2/2/2
82	OMG	B3	78	82	-	2/5/27/28	0/3/3/3
81	PSU	A3	2978	81	-	0/7/25/26	0/2/2/2
82	A2M	B3	46	82	-	0/5/27/28	0/3/3/3
81	OMC	A3	2951	81	-	0/9/27/28	0/2/2/2
81	PSU	A3	42	81,84	-	0/7/25/26	0/2/2/2
81	OMU	A3	2424	81	-	0/9/27/28	0/2/2/2
81	OMG	A3	1857	81	-	0/5/27/28	0/3/3/3
3	A2M	h1	468	3	-	0/5/27/28	0/3/3/3
81	PSU	A3	1482	81	-	0/7/25/26	0/2/2/2
3	PSU	h1	1184	3	-	0/7/25/26	0/2/2/2
3	PSU	h1	753	3	-	0/7/25/26	0/2/2/2
3	OMC	h1	418	3	-	2/9/27/28	0/2/2/2
3	PSU	h1	605	3	-	0/7/25/26	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	OMG	h1	1433	3,83	-	1/5/27/28	0/3/3/3
3	OMG	h1	1274	3	-	2/5/27/28	0/3/3/3
81	A2M	A3	2284	81	-	2/5/27/28	0/3/3/3
3	OMU	h1	1447	3	-	0/9/27/28	0/2/2/2
81	OMU	A3	3304	81	-	0/9/27/28	0/2/2/2
3	UY1	h1	603	3	-	0/9/27/28	0/2/2/2
81	PSU	A3	1056	81	-	0/7/25/26	0/2/2/2
3	PSU	h1	103	84,3	-	0/7/25/26	0/2/2/2
3	OMU	h1	373	3	-	0/9/27/28	0/2/2/2
81	PSU	A3	464	81	-	0/7/25/26	0/2/2/2
3	PSU	h1	1178	3	-	0/7/25/26	0/2/2/2
82	PSU	B3	96	84,82	-	2/7/25/26	0/2/2/2
81	UY1	A3	2653	81	-	0/9/27/28	0/2/2/2
81	OMU	A3	44	81,84	-	0/9/27/28	0/2/2/2
81	UR3	A3	2956	81	-	2/7/25/26	0/2/2/2
3	OMG	h1	598	3	-	3/5/27/28	0/3/3/3
81	PSU	A3	2139	81	-	0/7/25/26	0/2/2/2
3	PSU	h1	961	84,3	-	0/7/25/26	0/2/2/2
81	OMG	A3	1461	81	-	1/5/27/28	0/3/3/3
3	4AC	h1	1283	3	-	0/11/29/30	0/2/2/2
81	OMU	A3	48	81	-	0/9/27/28	0/2/2/2
81	A2M	A3	886	81	-	0/5/27/28	0/3/3/3
81	A2M	A3	2324	81	-	0/5/27/28	0/3/3/3
81	OMC	A3	2340	81	-	0/9/27/28	0/2/2/2
81	OMC	A3	2685	81	-	0/9/27/28	0/2/2/2
81	PSU	A3	2747	81	-	0/7/25/26	0/2/2/2
3	PSU	h1	1190	3	-	0/7/25/26	0/2/2/2
81	PSU	A3	2857	81	-	0/7/25/26	0/2/2/2
81	OMU	A3	2886	81	-	0/9/27/28	0/2/2/2
3	PSU	h1	763	3	-	0/7/25/26	0/2/2/2
81	OMG	A3	399	81	-	2/5/27/28	0/3/3/3
81	PSU	A3	150	81,84	-	0/7/25/26	0/2/2/2
81	A2M	A3	946	81	-	2/5/27/28	0/3/3/3
81	OMU	A3	2413	81,84	-	2/9/27/28	0/2/2/2
81	PSU	A3	2926	81,84	-	3/7/25/26	0/2/2/2
3	A2M	h1	544	3	-	2/5/27/28	0/3/3/3
81	OMC	A3	2882	81	-	0/9/27/28	0/2/2/2
81	PSU	A3	2958	81	-	0/7/25/26	0/2/2/2
81	PSU	A3	2317	81,84	-	3/7/25/26	0/2/2/2
81	OMU	A3	1537	81	-	0/9/27/28	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
81	OMC	A3	1852	81	-	0/9/27/28	0/2/2/2
3	OMC	h1	140	3	-	2/9/27/28	0/2/2/2
3	PSU	h1	310	3	-	0/7/25/26	0/2/2/2
81	PSU	A3	2137	81,84	-	0/7/25/26	0/2/2/2
3	OMG	h1	246	84,3	-	0/5/27/28	0/3/3/3
3	A2M	h1	440	3	-	0/5/27/28	0/3/3/3
3	PSU	h1	306	3	-	0/7/25/26	0/2/2/2
3	PSU	h1	339	84,3	-	0/7/25/26	0/2/2/2
3	PSU	h1	1485	3	-	0/7/25/26	0/2/2/2
3	PSU	h1	584	3	-	6/7/25/26	0/2/2/2
81	A2M	A3	2804	81	-	2/5/27/28	0/3/3/3
81	PSU	A3	2435	81	-	0/7/25/26	0/2/2/2
81	OMC	A3	2200	81,84	-	4/9/27/28	0/2/2/2
3	PSU	h1	607	3	-	0/7/25/26	0/2/2/2
3	PSU	h1	809	3	-	0/7/25/26	0/2/2/2
81	PSU	A3	2194	81,84	-	0/7/25/26	0/2/2/2
81	PSU	A3	2868	81	-	0/7/25/26	0/2/2/2
3	PSU	h1	451	84,3	-	0/7/25/26	0/2/2/2

The worst 5 of 1681 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
81	A3	656	1MA	C2-N3	13.39	1.45	1.29
3	h1	1524	PSU	C6-C5	12.36	1.49	1.35
3	h1	584	PSU	C6-C5	12.34	1.49	1.35
81	A3	2137	PSU	C6-C5	12.29	1.49	1.35
81	A3	2269	PSU	C6-C5	12.27	1.49	1.35

The worst 5 of 914 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
81	A3	2284	A2M	C5-C6-N6	10.86	136.85	120.35
81	A3	2804	A2M	C5-C6-N6	10.80	136.77	120.35
81	A3	946	A2M	C5-C6-N6	10.79	136.75	120.35
81	A3	2259	A2M	C5-C6-N6	10.71	136.63	120.35
81	A3	827	A2M	C5-C6-N6	10.70	136.61	120.35

There are no chirality outliers.

5 of 128 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
82	B3	78	OMG	O4'-C4'-C5'-O5'
82	B3	78	OMG	C3'-C4'-C5'-O5'
82	B3	96	PSU	C3'-C4'-C5'-O5'
82	B3	96	PSU	O4'-C4'-C5'-O5'
3	h1	38	OMC	C3'-C4'-C5'-O5'

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 290 ligands modelled in this entry, 283 are monoatomic - leaving 7 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	$\#\|Z\| > 2$
85	SPD	h1	2016	-	9,9,9	0.33	0	8,8,8	0.66	0
86	SPM	h1	2017	-	13,13,13	0.47	0	12,12,12	0.95	0
86	SPM	A3	3451	-	13,13,13	0.35	0	12,12,12	1.05	0
85	SPD	A3	3450	-	9,9,9	0.31	0	8,8,8	0.51	0
86	SPM	h1	2018	-	13,13,13	0.38	0	12,12,12	1.01	0
86	SPM	h1	2019	-	13,13,13	0.42	0	12,12,12	1.03	0
86	SPM	A3	3452	-	13,13,13	0.37	0	12,12,12	1.03	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
85	SPD	h1	2016	-	-	4/7/7/7	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
86	SPM	h1	2017	-	-	5/11/11/11	-
86	SPM	A3	3451	-	-	5/11/11/11	-
85	SPD	A3	3450	-	-	2/7/7/7	-
86	SPM	h1	2018	-	-	3/11/11/11	-
86	SPM	h1	2019	-	-	2/11/11/11	-
86	SPM	A3	3452	-	-	7/11/11/11	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 28 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
86	A3	3452	SPM	N10-C11-C12-C13
86	A3	3452	SPM	C7-C8-C9-N10
86	h1	2017	SPM	C7-C8-C9-N10
85	h1	2016	SPD	C3-C4-C5-N6
85	h1	2016	SPD	N6-C7-C8-C9

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

The following chains have linkage breaks:

Mol	Chain	Number of breaks
81	A3	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A3	2973:C	O3'	2974:A	P	4.08

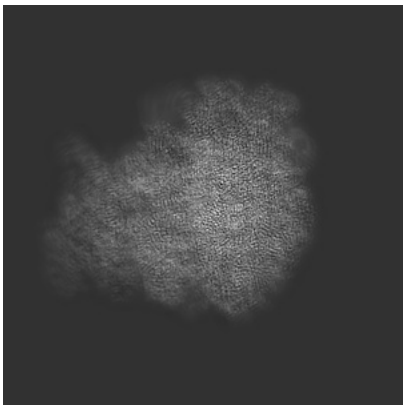
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-15806. These allow visual inspection of the internal detail of the map and identification of artifacts.

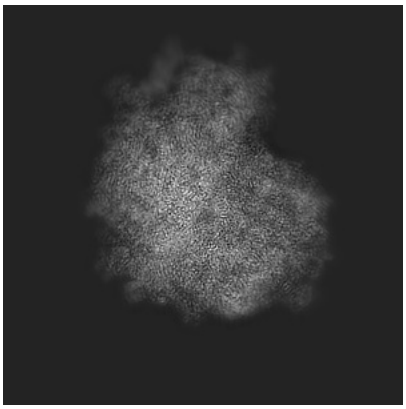
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

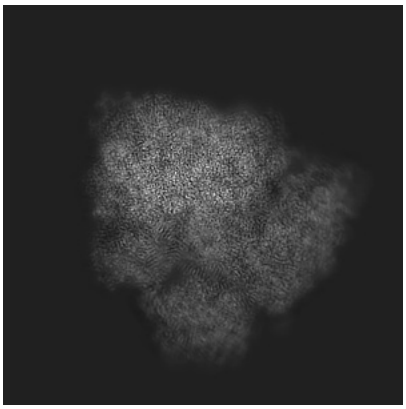
6.1.1 Primary map



X

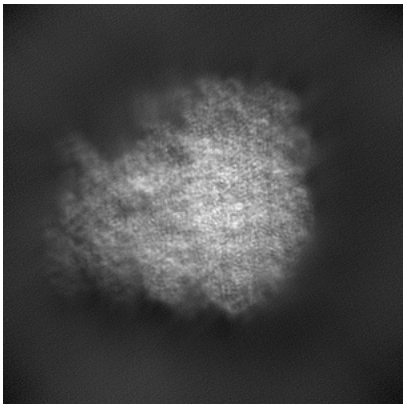


Y

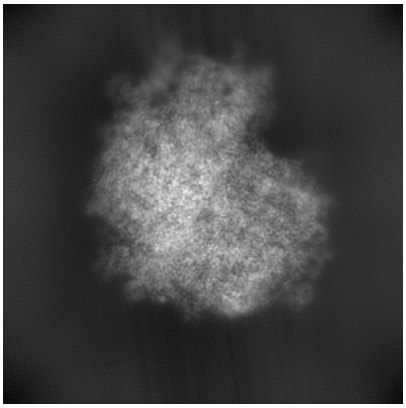


Z

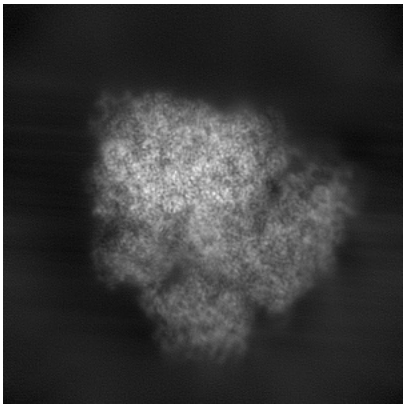
6.1.2 Raw map



X



Y

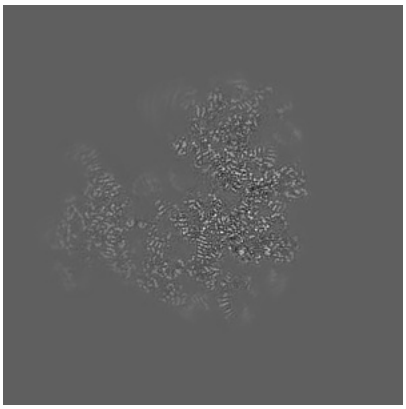


Z

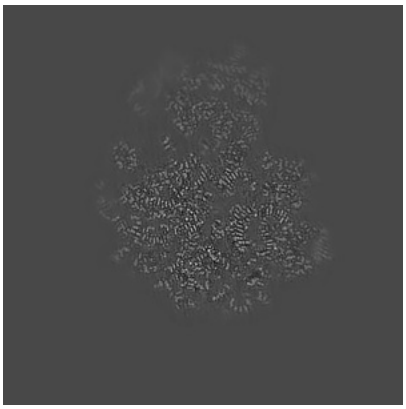
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

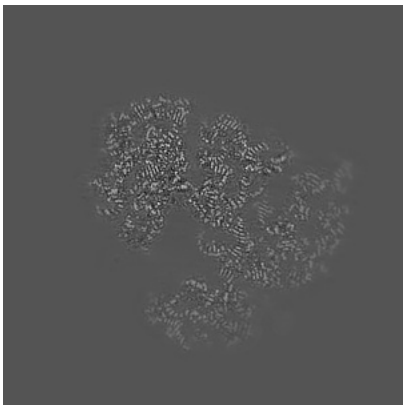
6.2.1 Primary map



X Index: 225

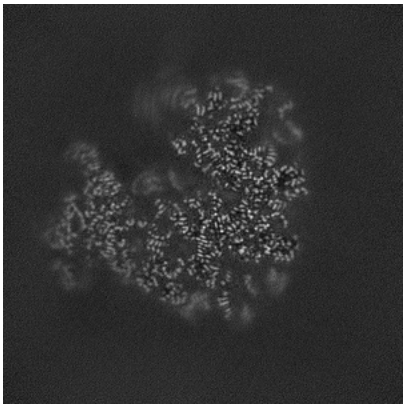


Y Index: 225

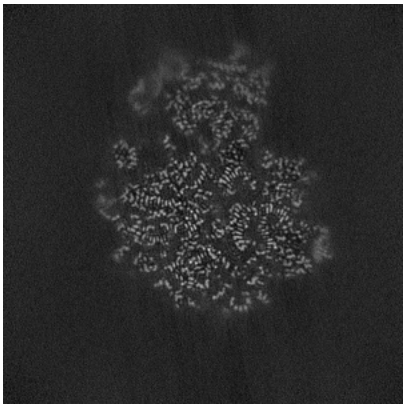


Z Index: 225

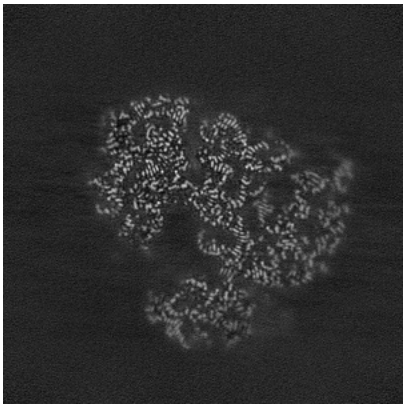
6.2.2 Raw map



X Index: 225



Y Index: 225

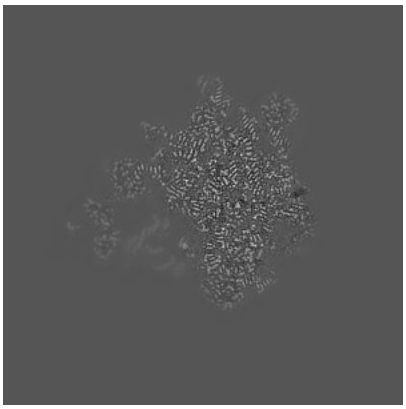


Z Index: 225

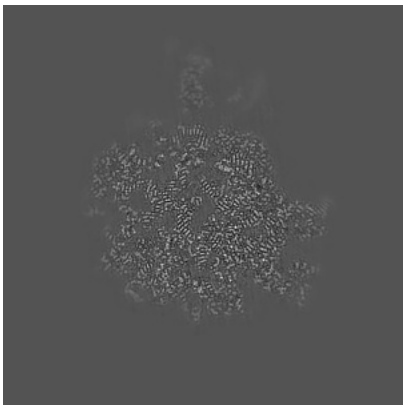
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

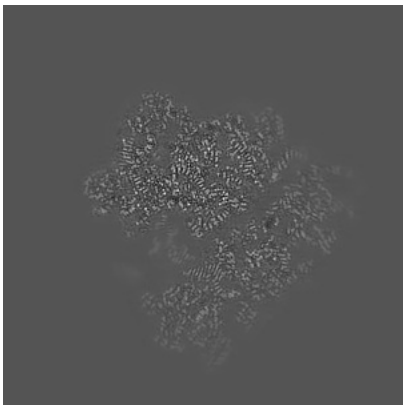
6.3.1 Primary map



X Index: 169

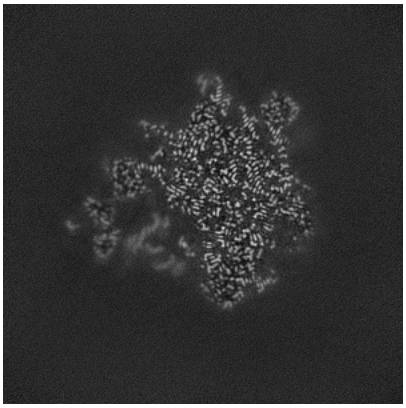


Y Index: 262

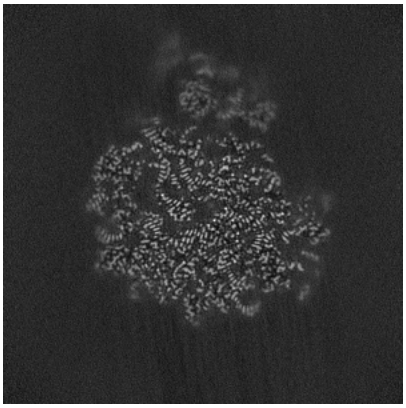


Z Index: 206

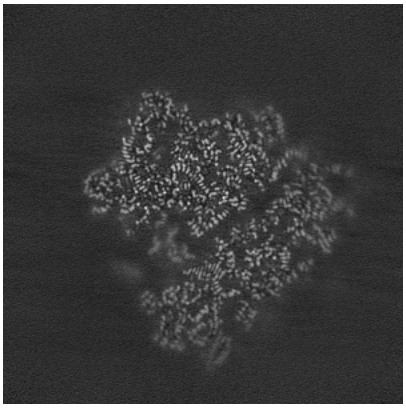
6.3.2 Raw map



X Index: 169



Y Index: 254

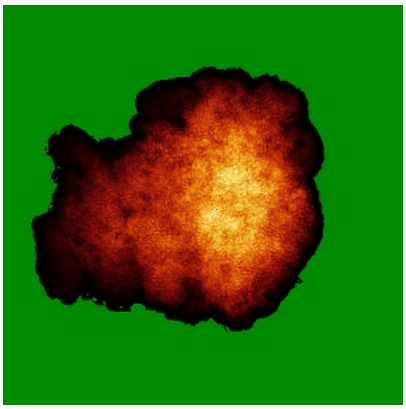


Z Index: 206

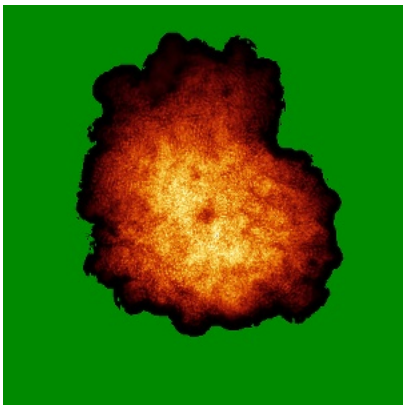
The images above show the largest variance slices of the map in three orthogonal directions.

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

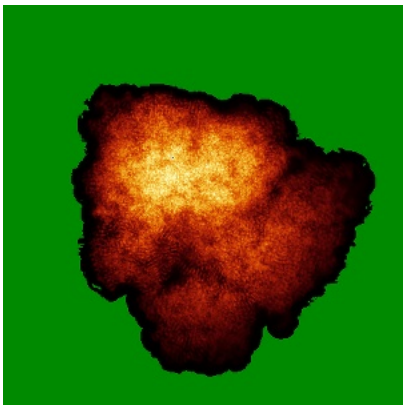
6.4.1 Primary map



X

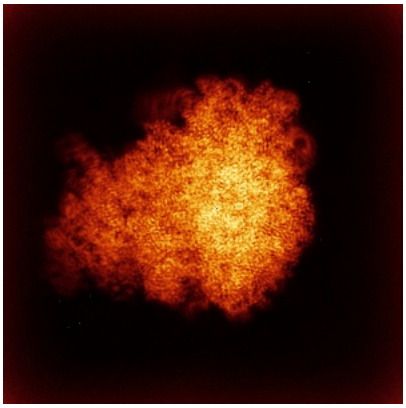


Y

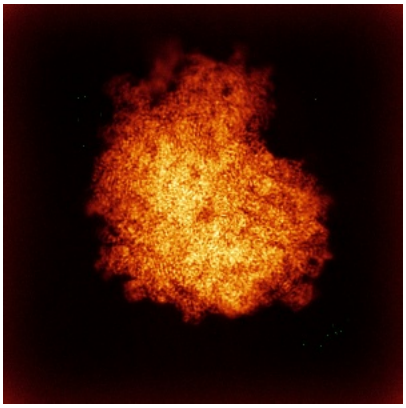


Z

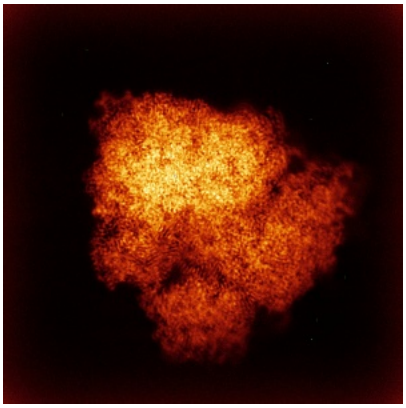
6.4.2 Raw map



X



Y

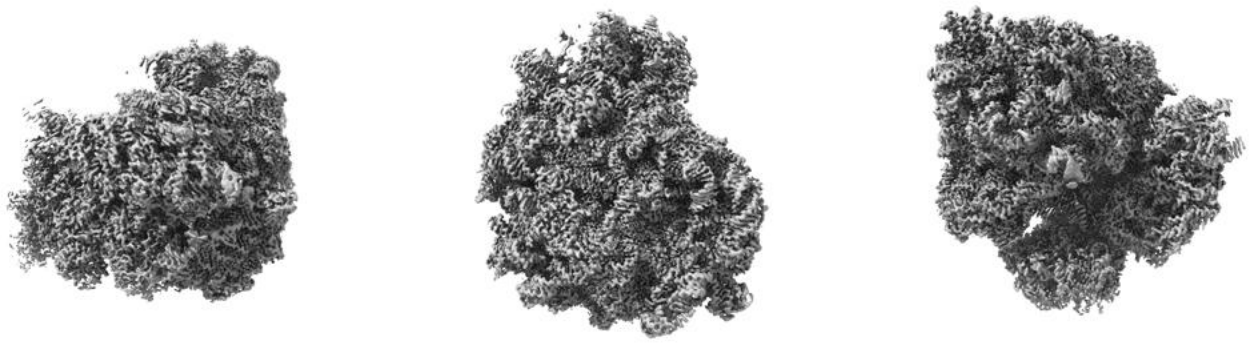


Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.6. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X Y Z

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

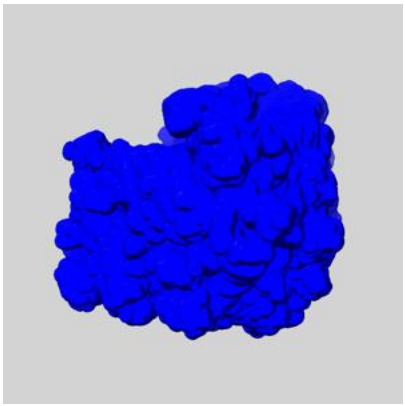
6.6 Mask visualisation (i)

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

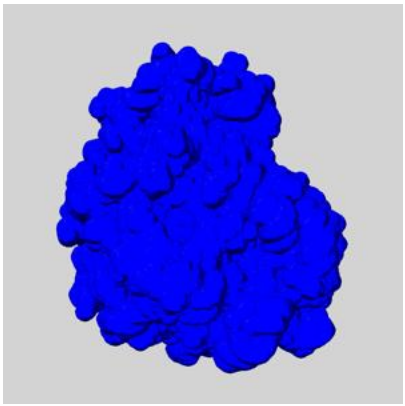
A mask typically either:

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

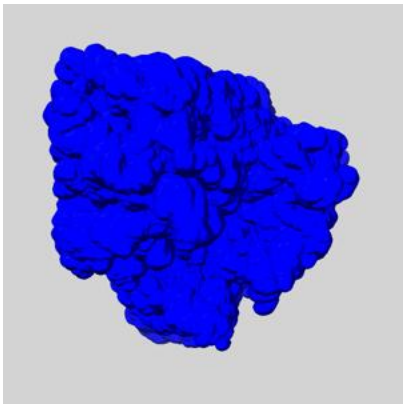
6.6.1 emd_15806_msk_1.map (i)



X



Y

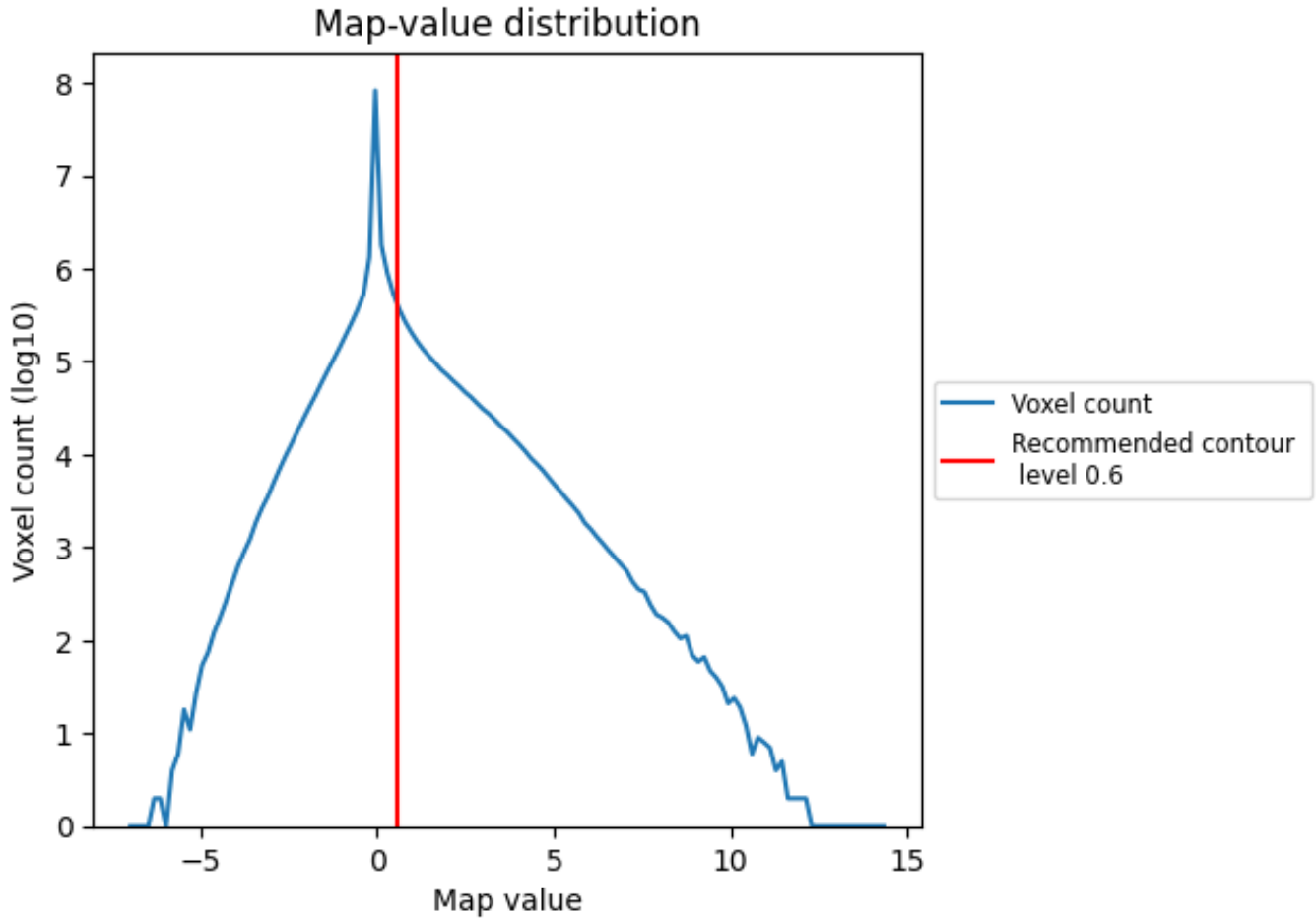


Z

7 Map analysis

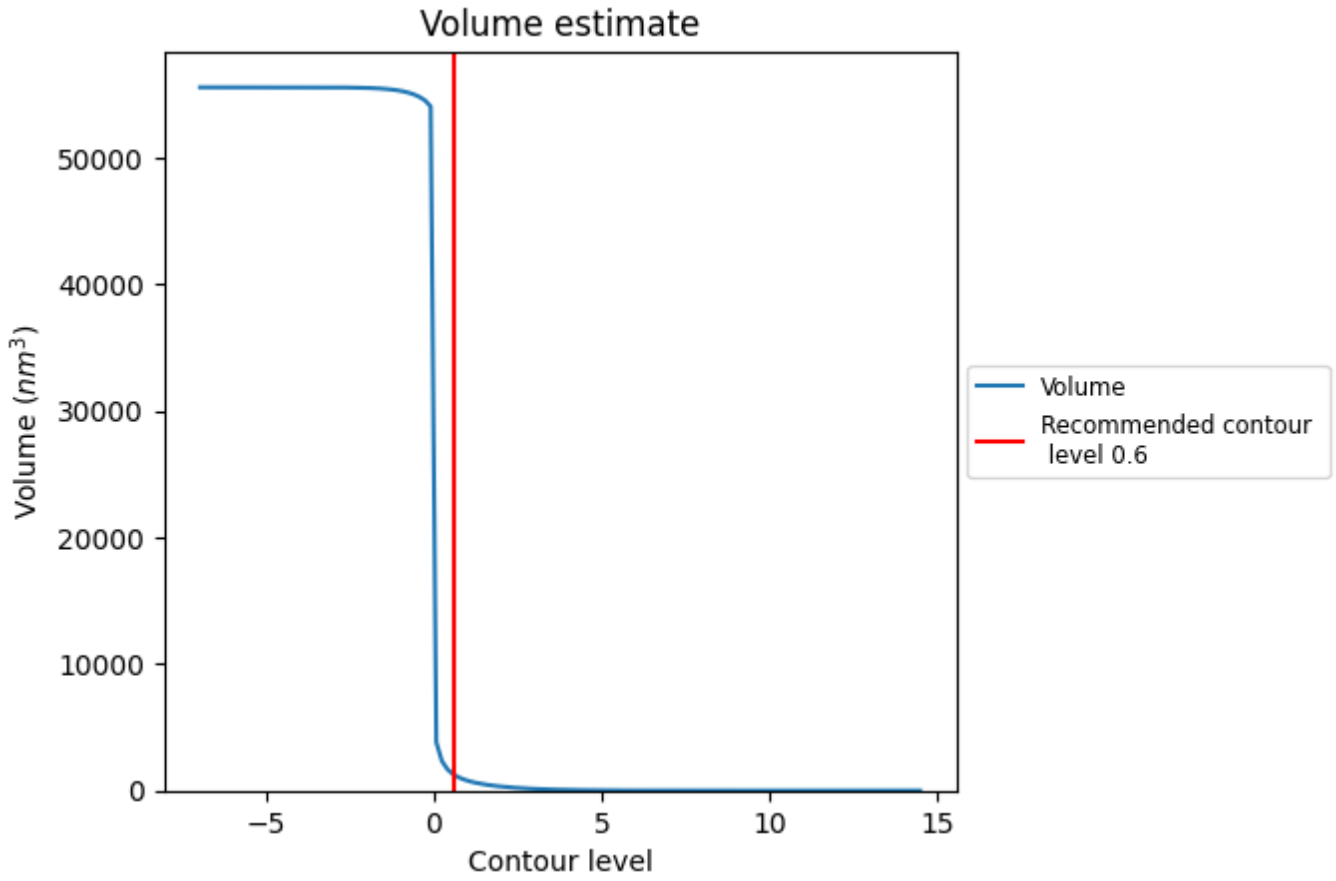
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

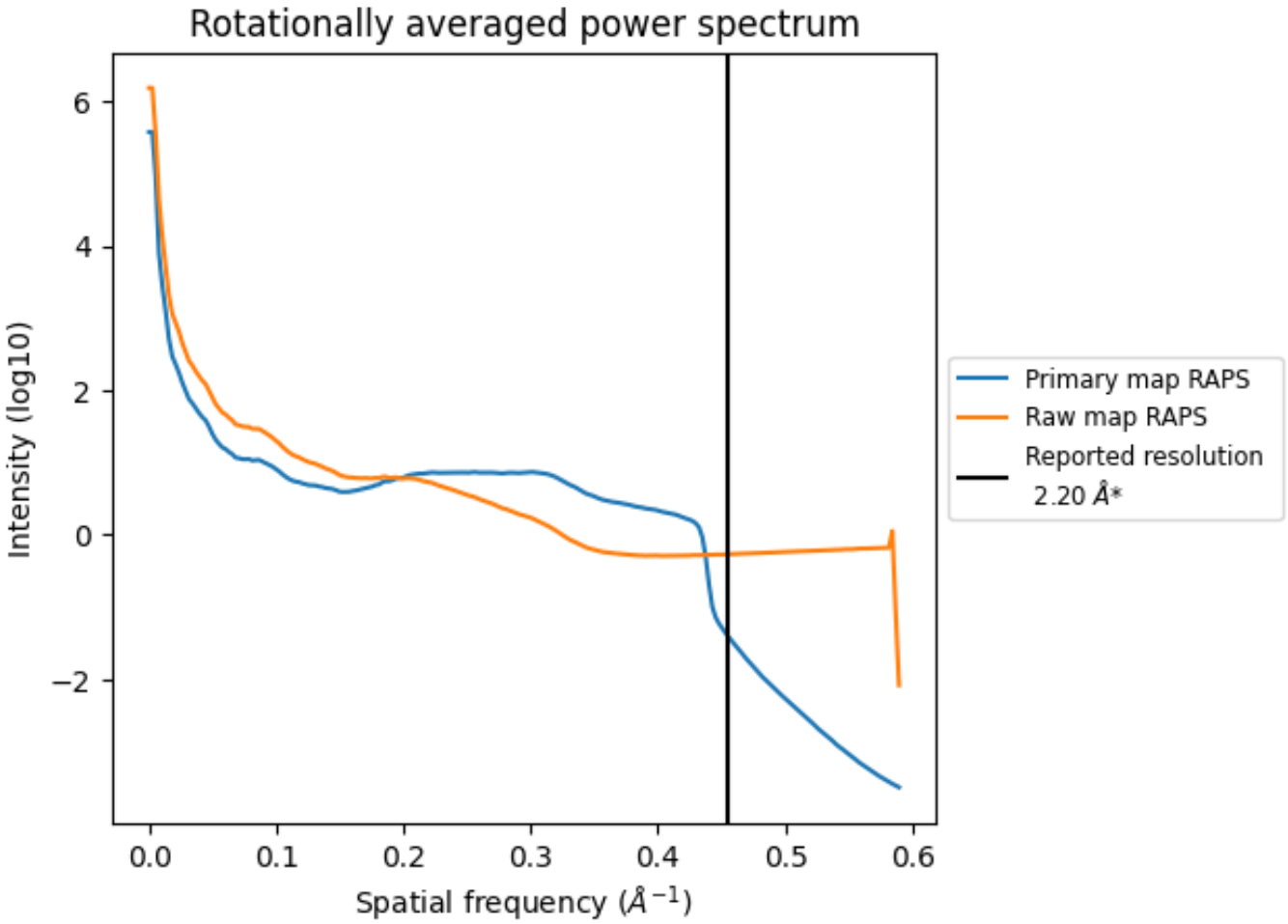
7.2 Volume estimate (i)



The volume at the recommended contour level is 1255 nm^3; this corresponds to an approximate mass of 1133 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)

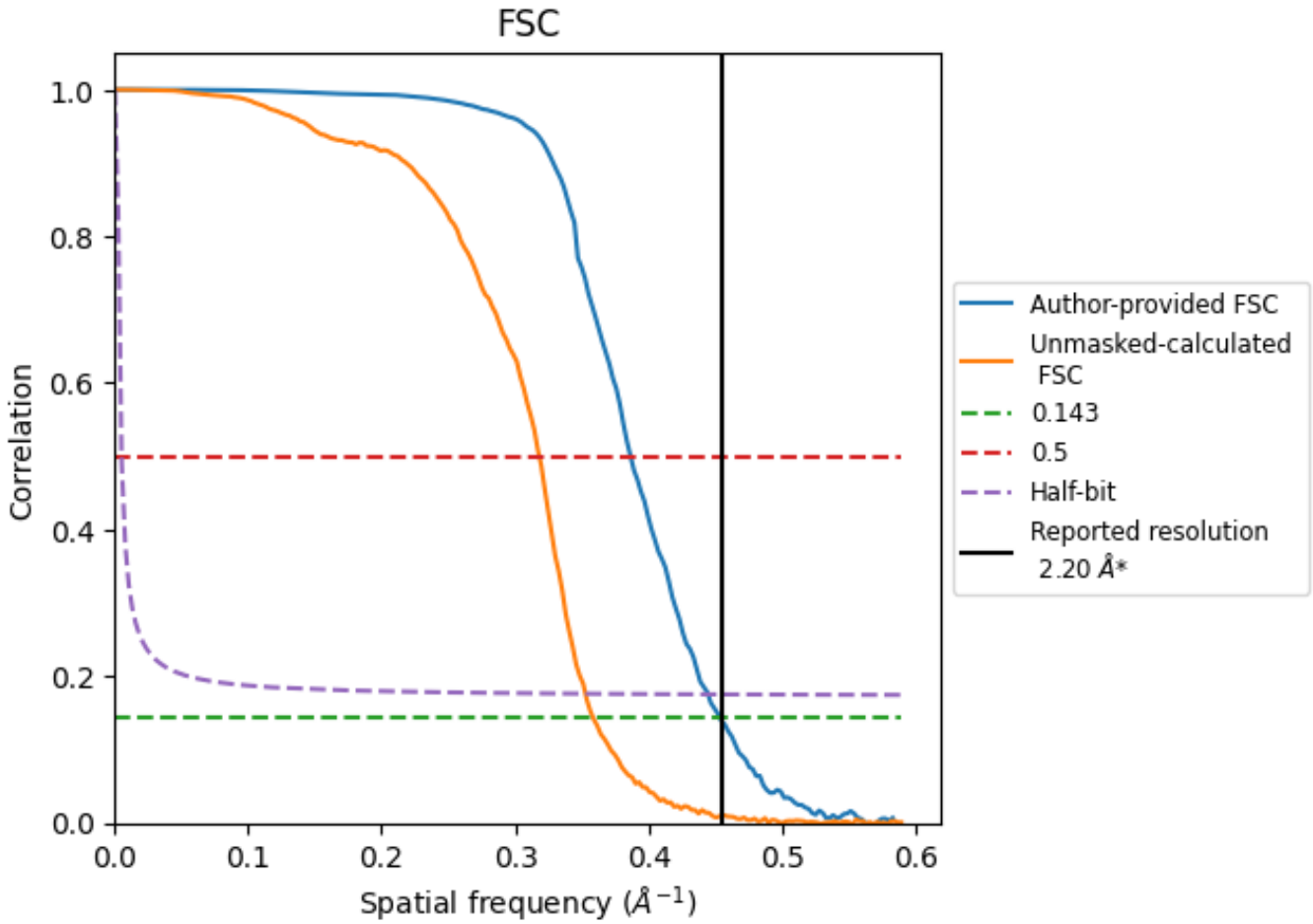


*Reported resolution corresponds to spatial frequency of 0.455 Å^{-1}

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 0.455 Å^{-1}

8.2 Resolution estimates (i)

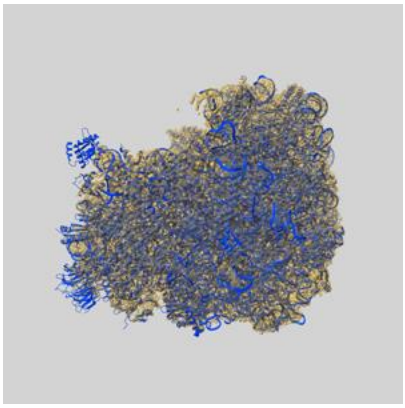
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.20	-	-
Author-provided FSC curve	2.20	2.59	2.25
Unmasked-calculated*	2.79	3.14	2.83

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 2.79 differs from the reported value 2.2 by more than 10 %

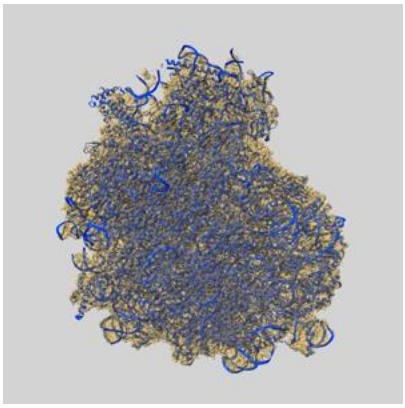
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-15806 and PDB model 8B2L. Per-residue inclusion information can be found in section 3 on page 25.

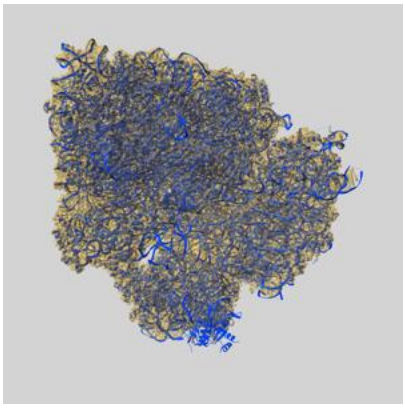
9.1 Map-model overlay



X



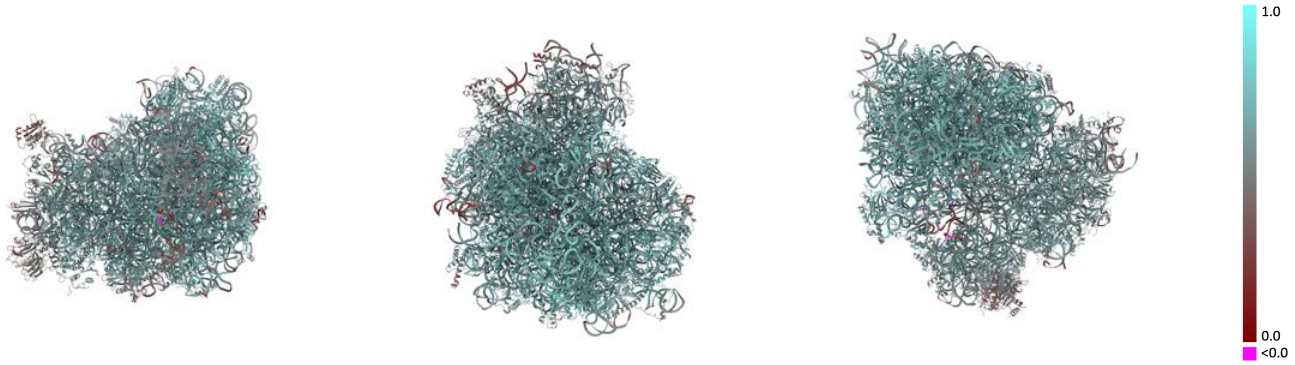
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.6 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

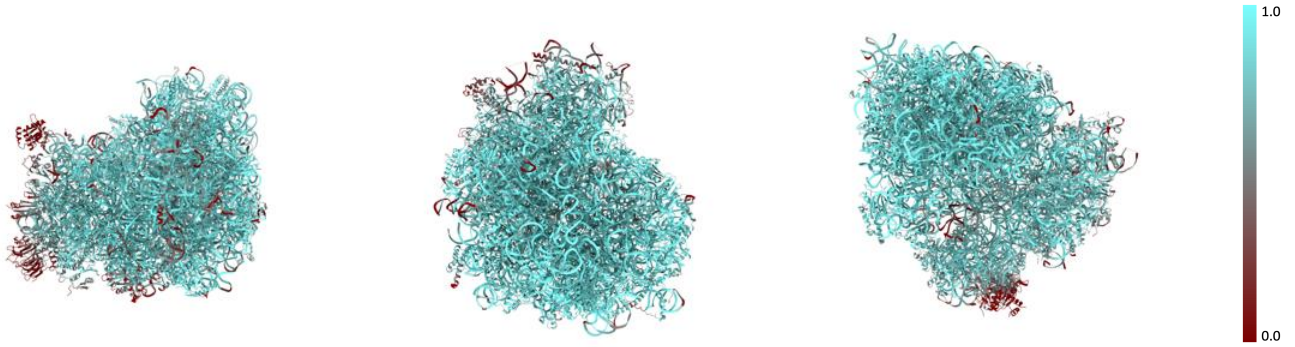
9.2 Q-score mapped to coordinate model



X Y Z

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

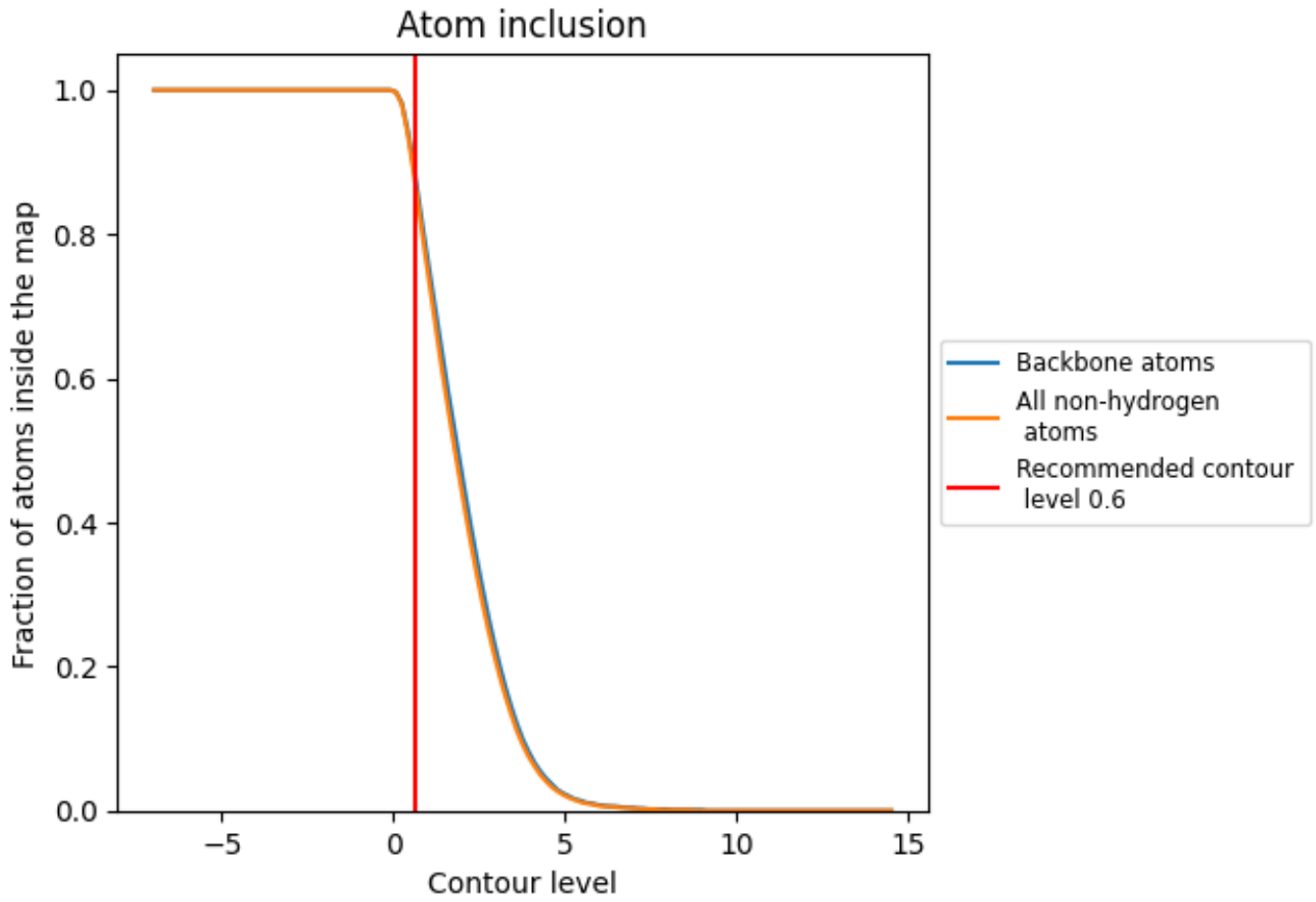
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.6).

9.4 Atom inclusion (i)



At the recommended contour level, 89% of all backbone atoms, 88% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.6) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8810	0.6390
A1	0.8190	0.5960
A3	0.9420	0.6580
B1	0.8630	0.5920
B3	0.9250	0.6540
C1	0.0330	0.3580
C3	0.9920	0.6690
D1	0.5440	0.5170
D3	0.9470	0.6870
E1	0.7930	0.5800
E3	0.9330	0.6720
F1	0.8900	0.6410
F3	0.9950	0.7280
G1	0.8220	0.6030
G3	0.9850	0.7180
H1	0.6990	0.5590
H3	0.8540	0.6410
I1	0.6890	0.5490
I3	0.9690	0.6980
J1	0.9250	0.6660
J3	0.9700	0.6940
K1	0.7610	0.5970
K3	0.7590	0.5600
L1	0.7270	0.5640
L3	0.9570	0.6940
M1	0.7750	0.6010
M3	0.9300	0.6620
N1	0.1380	0.4170
N3	0.9490	0.6890
O1	0.5500	0.5350
O3	0.9770	0.7160
P1	0.8080	0.5880
P3	0.9180	0.6510
Q1	0.1780	0.4430
Q3	0.8990	0.6680

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
R1	0.5160	0.5290
R3	0.9800	0.7230
S1	0.9260	0.6540
S3	0.9820	0.7150
T1	0.9500	0.6840
T3	0.9280	0.6820
U1	0.8230	0.6030
U3	0.9420	0.6640
V1	0.8900	0.6270
V3	0.9940	0.7270
W1	0.8970	0.6440
W2	0.7580	0.4970
W3	0.8320	0.6110
X1	0.8990	0.6400
X3	0.9840	0.7200
Y1	0.7710	0.5880
Y3	0.9610	0.6930
Z1	0.8330	0.6130
Z3	0.9730	0.7140
a1	0.6660	0.5540
a3	0.9650	0.7040
b1	0.8110	0.5990
b3	0.8580	0.6320
c1	0.8940	0.6520
c3	0.8650	0.6390
d1	0.7620	0.5730
d3	0.9680	0.7060
e1	0.9660	0.6780
e3	0.9690	0.7020
f1	0.7230	0.5770
f3	0.9620	0.7020
g3	0.9640	0.6900
h1	0.9020	0.6130
h3	0.8880	0.6410
i2	0.6690	0.5070
j3	0.9670	0.7050
k1	0.6380	0.5290
k3	0.9520	0.6830
l1	0.5510	0.5210
l3	0.3670	0.3350
m3	0.9560	0.6860
n3	0.9210	0.6620

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Chain	Atom inclusion	Q-score
o3	0.9910	0.7270
p3	0.9360	0.6640
q3	0.9460	0.6940
r3	0.9710	0.7100
s3	0.9290	0.6870
t3	0.8750	0.6240
u3	0.9090	0.6590