



## wwPDB EM Validation Summary Report ⓘ

Mar 24, 2026 – 04:06 AM UTC

PDB ID : 8EVR / pdb\_00008evr  
EMDB ID : EMD-28634  
Title : Hypopseudouridylated yeast 80S bound with Taura syndrome virus (TSV) internal ribosome entry site (IRES), eEF2, GDP, and sordarin, Structure II  
Authors : Zhao, Y.; Rai, J.; Li, H.  
Deposited on : 2022-10-20  
Resolution : 2.87 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](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

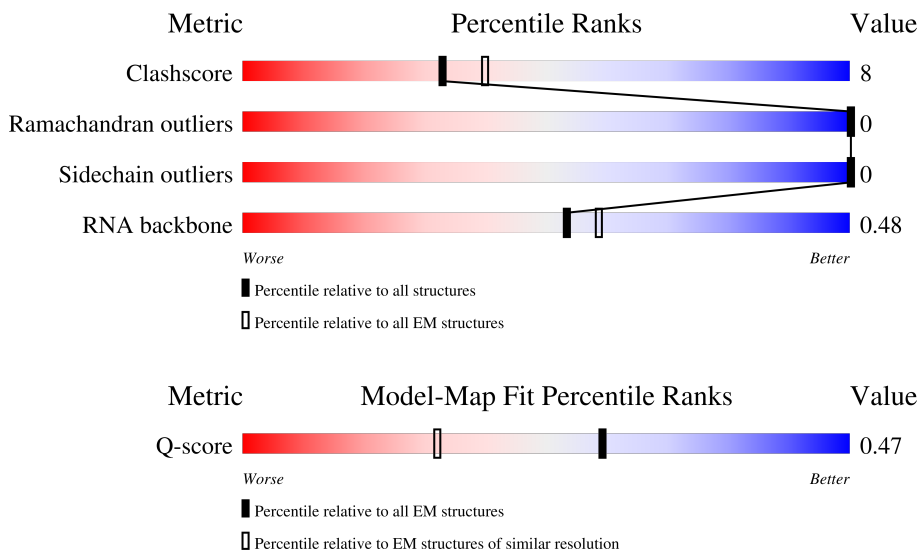
EMDB validation analysis : 0.0.1.dev132  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4-5-2 with Phenix2.0  
Buster-report : wwPDB partial adaption of 1.1.7 (2018)  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.49

# 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 2.87 Å.

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















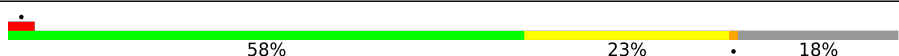
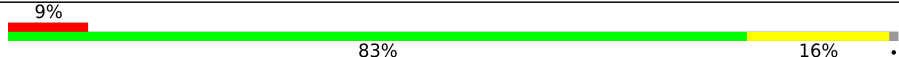
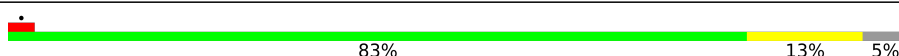

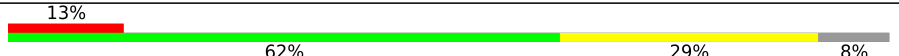
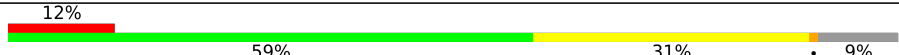
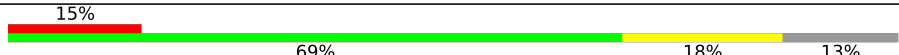
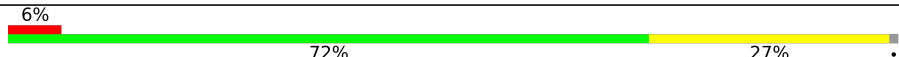
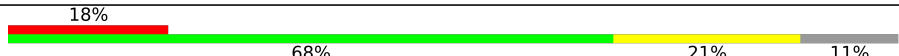



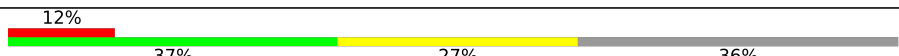
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	12062 ( 2.37 - 3.37 )

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

Mol	Chain	Length	Quality of chain
1	BA	252	
2	BB	255	
3	BC	254	

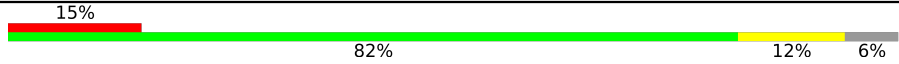




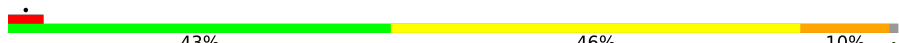


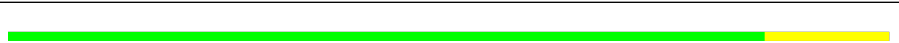

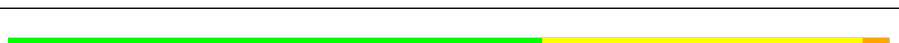


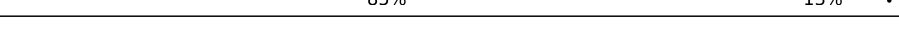
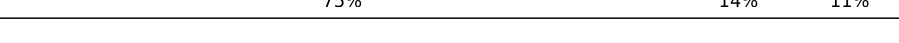
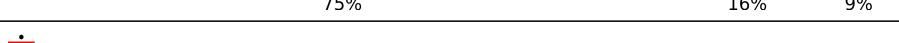
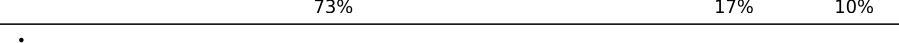
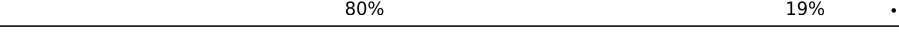
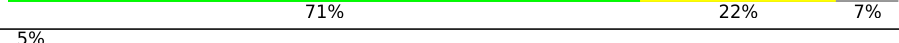






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Mol	Chain	Length	Quality of chain
4	BE	261	
5	BG	236	
6	BH	190	
7	BI	200	
8	BJ	197	
9	BL	156	
10	BN	151	
11	BO	137	
12	BV	87	
13	BW	130	
14	BX	145	
15	BY	135	
16	Ba	119	
17	Bb	82	
18	Be	63	
19	BD	240	
20	BF	225	
21	BK	105	
22	BP	142	
23	BQ	143	
24	BR	136	
25	BS	146	
26	BT	144	
27	BU	121	
28	BZ	108	

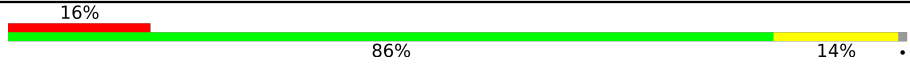







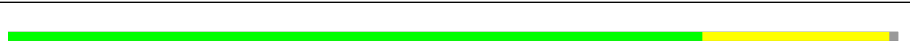

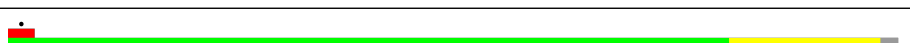


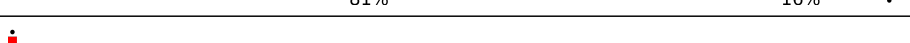
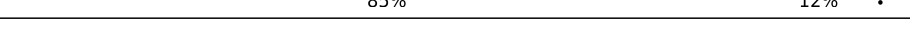
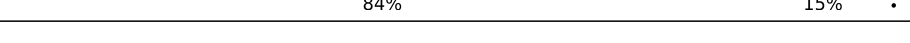
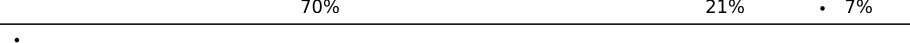
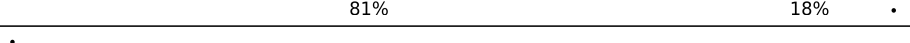
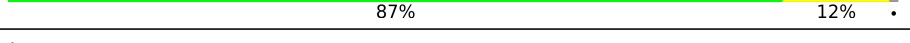






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Mol	Chain	Length	Quality of chain
29	Bc	67	
30	Bd	56	
31	Bg	319	
32	Bf	152	
33	BM	143	
34	B5	1798	
35	AA	254	
36	AB	387	
37	AC	362	
38	A1	3360	
39	A3	121	
40	A4	158	
41	AD	297	
42	AE	176	
43	AF	244	
44	AG	256	
45	AH	191	
46	AI	221	
47	AJ	174	
48	AL	199	
49	AM	138	
50	AN	204	
51	AO	199	
52	AP	184	
53	AQ	186	

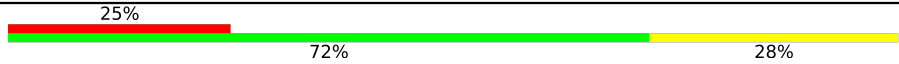

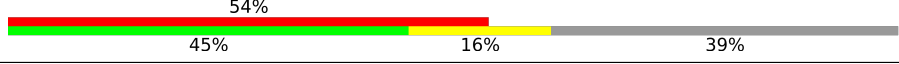
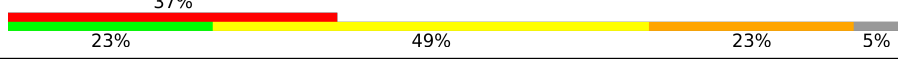
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Mol	Chain	Length	Quality of chain
54	AR	189	
55	AS	178	
56	AT	160	
57	AU	121	
58	AV	137	
59	AW	155	
60	AX	142	
61	AY	127	
62	AZ	136	
63	Aa	149	
64	Ab	59	
65	Ac	105	
66	Ad	113	
67	Ae	130	
68	Af	107	
69	Ag	121	
70	Ah	120	
71	Ai	100	
72	Aj	88	
73	Ak	78	
74	Al	51	
75	Am	128	
76	An	25	
77	Ao	106	
78	Ap	92	

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Mol	Chain	Length	Quality of chain
79	E	217	
80	DC	842	
81	V	312	
82	EC	202	

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
86	W9C	DC	902	X	-	-	-

## 2 Entry composition [i](#)

There are 86 unique types of molecules in this entry. The entry contains 213962 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called 40S ribosomal protein S0-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	BA	206	Total	C	N	O	S	0	0
			1612	1034	285	291	2		

- Molecule 2 is a protein called RPS1A isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	BB	214	Total	C	N	O	S	0	0
			1709	1084	310	311	4		

- Molecule 3 is a protein called RPS2 isoform 1.

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

- Molecule 4 is a protein called 40S ribosomal protein S4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	BE	260	Total	C	N	O	S	0	0
			2068	1316	389	360	3		

- Molecule 5 is a protein called 40S ribosomal protein S6-A.

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

- Molecule 6 is a protein called 40S ribosomal protein S7-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
6	BH	184	Total	C	N	O	0	0
			1481	951	265	265		

- Molecule 7 is a protein called 40S ribosomal protein S8-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	BI	188	Total	C	N	O	S	0	0
			1489	925	298	264	2		

- Molecule 8 is a protein called 40S ribosomal protein S9-A.

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

- Molecule 9 is a protein called 40S ribosomal protein S11-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	BL	155	Total	C	N	O	S	0	0
			1244	798	235	208	3		

- Molecule 10 is a protein called 40S ribosomal protein S13.

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

- Molecule 11 is a protein called 40S ribosomal protein S14-A.

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

- Molecule 12 is a protein called 40S ribosomal protein S21-A.

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

- Molecule 13 is a protein called RPS22A isoform 1.

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

- Molecule 14 is a protein called 40S ribosomal protein S23-A.

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

- Molecule 15 is a protein called 40S ribosomal protein S24-A.

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

- Molecule 16 is a protein called RPS26B isoform 1.

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

- Molecule 17 is a protein called 40S ribosomal protein S27-A.

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

- Molecule 18 is a protein called 40S ribosomal protein S30-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	Be	60	475	299	98	77	1	0	0

- Molecule 19 is a protein called RPS3 isoform 1.

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

- Molecule 20 is a protein called Rps5p.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	BF	206	1609	1007	300	299	3	0	0

- Molecule 21 is a protein called 40S ribosomal protein S10-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	BK	96	Total	C	N	O	S	0	0
			817	529	133	153	2		

- Molecule 22 is a protein called RPS15 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	BP	124	Total	C	N	O	S	0	0
			991	631	187	166	7		

- Molecule 23 is a protein called 40S ribosomal protein S16-A.

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

- Molecule 24 is a protein called 40S ribosomal protein S17-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	BR	121	Total	C	N	O	S	0	0
			975	611	183	179	2		

- Molecule 25 is a protein called 40S ribosomal protein S18-A.

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

- Molecule 26 is a protein called 40S ribosomal protein S19-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	BT	141	Total	C	N	O	S	0	0
			1095	685	206	202	2		

- Molecule 27 is a protein called RPS20 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	BU	107	Total	C	N	O	S	0	0
			855	539	156	159	1		

- Molecule 28 is a protein called RPS25A isoform 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
28	BZ	69	Total	C	N	O	0	0
			558	357	103	98		

- Molecule 29 is a protein called RPS28A isoform 1.

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

- Molecule 30 is a protein called RPS29A isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	Bd	53	Total	C	N	O	S	0	0
			442	274	92	72	4		

- Molecule 31 is a protein called Guanine nucleotide-binding protein subunit beta-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	Bg	312	Total	C	N	O	S	0	0
			2401	1522	410	461	8		

- Molecule 32 is a protein called Ubiquitin-40S ribosomal protein S31.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	Bf	75	Total	C	N	O	S	0	0
			605	386	116	99	4		

- Molecule 33 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	BM	124	Total	C	N	O	S	0	0
			935	587	165	181	2		

- Molecule 34 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	B5	1782	Total	C	N	O	P	1	0
			38004	17005	6718	12499	1782		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B5	1280	4AC	C	modified residue	GB 1329886537
B5	1773	4AC	C	modified residue	GB 1329886537

- Molecule 35 is a protein called 60S ribosomal protein L2-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	AA	247	1878	1170	381	326	1	0	0

- Molecule 36 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	AB	386	3081	1956	584	533	8	0	0

- Molecule 37 is a protein called RPL4A isoform 1.

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

- Molecule 38 is a RNA chain called 25S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
38	A1	3198	68444	30595	12331	22320	3198	0	0

- Molecule 39 is a RNA chain called 5s rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
39	A3	121	2579	1152	461	845	121	0	0

- Molecule 40 is a RNA chain called 5.8 S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
40	A4	158	3353	1500	586	1109	158	0	0

- Molecule 41 is a protein called RPL5 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	AD	292	Total	C	N	O	S	0	0
			2341	1478	408	453	2		

- Molecule 42 is a protein called 60S ribosomal protein L6-A.

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

- Molecule 43 is a protein called 60S ribosomal protein L7-A.

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

- Molecule 44 is a protein called 60S ribosomal protein L8-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	AG	230	Total	C	N	O	S	0	0
			1798	1149	323	323	3		

- Molecule 45 is a protein called 60S ribosomal protein L9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	AH	190	Total	C	N	O	S	0	0
			1510	957	273	276	4		

- Molecule 46 is a protein called RPL10 isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	AI	205	Total	C	N	O	S	0	0
			1672	1063	316	288	5		

- Molecule 47 is a protein called RPL11A isoform 1.

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

- Molecule 48 is a protein called 60S ribosomal protein L13-A.

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

- Molecule 49 is a protein called 60S ribosomal protein L14-A.

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

- Molecule 50 is a protein called 60S ribosomal protein L15-A.

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

- Molecule 51 is a protein called 60S ribosomal protein L16-A.

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

- Molecule 52 is a protein called 60S ribosomal protein L17-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
52	AP	175	Total	C	N	O	0	0
			1388	862	277	249		

- Molecule 53 is a protein called 60S ribosomal protein L18-A.

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

- Molecule 54 is a protein called 60S ribosomal protein L19-A.

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

- Molecule 55 is a protein called 60S ribosomal protein L20.

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

- Molecule 56 is a protein called 60S ribosomal protein L21-A.

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

- Molecule 57 is a protein called 60S ribosomal protein L22-A.

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

- Molecule 58 is a protein called 60S ribosomal protein L23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	AV	136	1003	628	189	179	7	0	0

- Molecule 59 is a protein called RPL24A isoform 1.

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

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

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

- Molecule 61 is a protein called 60S ribosomal protein L26-A.

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

- Molecule 62 is a protein called 60S ribosomal protein L27-A.

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

- Molecule 63 is a protein called 60S ribosomal protein L28.

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

- Molecule 64 is a protein called RPL29 isoform 1.

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

- Molecule 65 is a protein called 60S ribosomal protein L30.

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

- Molecule 66 is a protein called 60S ribosomal protein L31-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
66	Ad	109	890	565	168	156	1	0	0

- Molecule 67 is a protein called RPL32 isoform 1.

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

- Molecule 68 is a protein called 60S ribosomal protein L33-A.

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

- Molecule 69 is a protein called 60S ribosomal protein L34-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	Ag	112	Total	C	N	O	S	0	0
			880	545	179	152	4		

- Molecule 70 is a protein called 60S ribosomal protein L35-A.

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

- Molecule 71 is a protein called 60S ribosomal protein L36-A.

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

- Molecule 72 is a protein called 60S ribosomal protein L37-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	Aj	87	Total	C	N	O	S	0	0
			681	414	148	114	5		

- Molecule 73 is a protein called RPL38 isoform 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
73	Ak	77	Total	C	N	O	0	0
			612	391	115	106		

- Molecule 74 is a protein called 60S ribosomal protein L39.

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

- Molecule 75 is a protein called Ubiquitin-60S ribosomal protein L40.

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

- Molecule 76 is a protein called 60S ribosomal protein L41-A.

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

- Molecule 77 is a protein called 60S ribosomal protein L42-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	Ao	105	Total	C	N	O	S	0	0
			847	534	170	138	5		

- Molecule 78 is a protein called 60S ribosomal protein L43-A.

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

- Molecule 79 is a protein called RPL1A isoform 1.

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

- Molecule 80 is a protein called Elongation factor 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	DC	824	Total	C	N	O	S	0	0
			6419	4085	1096	1208	30		

- Molecule 81 is a protein called 60S acidic ribosomal protein P0.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	V	189	Total	C	N	O	S	0	0
			1473	942	257	270	4		

- Molecule 82 is a RNA chain called TSV IRES.

Mol	Chain	Residues	Atoms					AltConf	Trace
82	EC	191	Total	C	N	O	P	0	0
			4045	1806	718	1330	191		

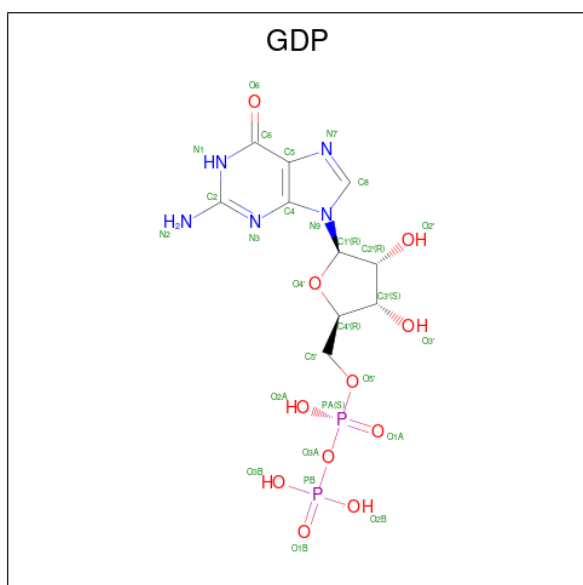
- Molecule 83 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	AltConf
83	Ba	1	Total Mg 1 1	0
83	B5	33	Total Mg 33 33	0
83	AB	1	Total Mg 1 1	0
83	A1	173	Total Mg 173 173	0
83	A3	2	Total Mg 2 2	0
83	A4	4	Total Mg 4 4	0
83	AL	1	Total Mg 1 1	0
83	AO	1	Total Mg 1 1	0
83	DC	1	Total Mg 1 1	0

- Molecule 84 is ZINC ION (CCD ID: ZN) (formula: Zn).

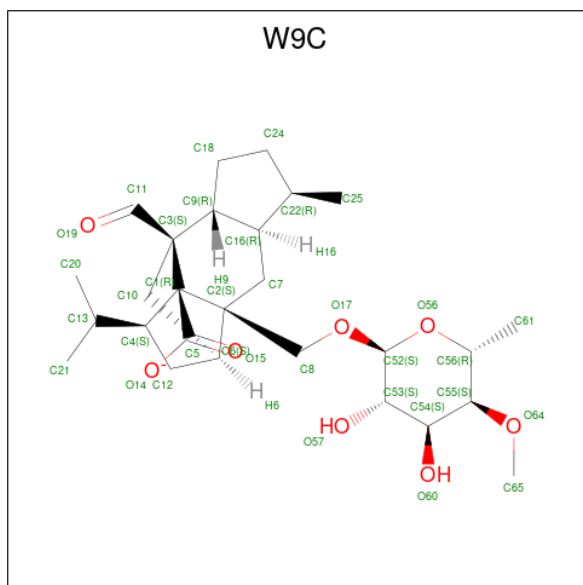
Mol	Chain	Residues	Atoms	AltConf
84	Ao	1	Total Zn 1 1	0

- Molecule 85 is GUANOSINE-5'-DIPHOSPHATE (CCD ID: GDP) (formula: C<sub>10</sub>H<sub>15</sub>N<sub>5</sub>O<sub>11</sub>P<sub>2</sub>).



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

- Molecule 86 is (1S,3S,3aR,4S,4aR,7R,7aR,8aS)-8a-[[[(6-deoxy-4-O-methyl-alpha-D-altropyranosyl)oxy]methyl]-4-formyl-7-methyl-3-(propan-2-yl)decahydro-1,4-methano-s-indacene-3a(1H)-carboxylate (CCD ID: W9C) (formula: C<sub>27</sub>H<sub>41</sub>O<sub>8</sub>).

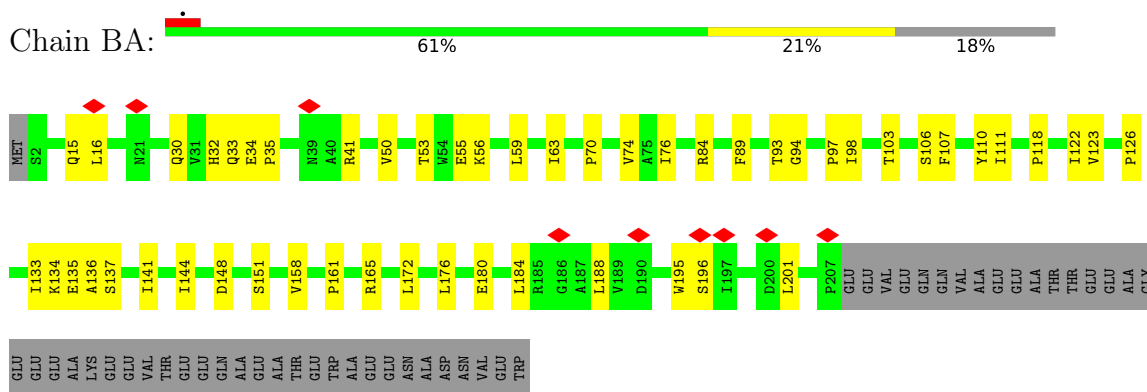


Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
86	DC	1	35	27	8	0

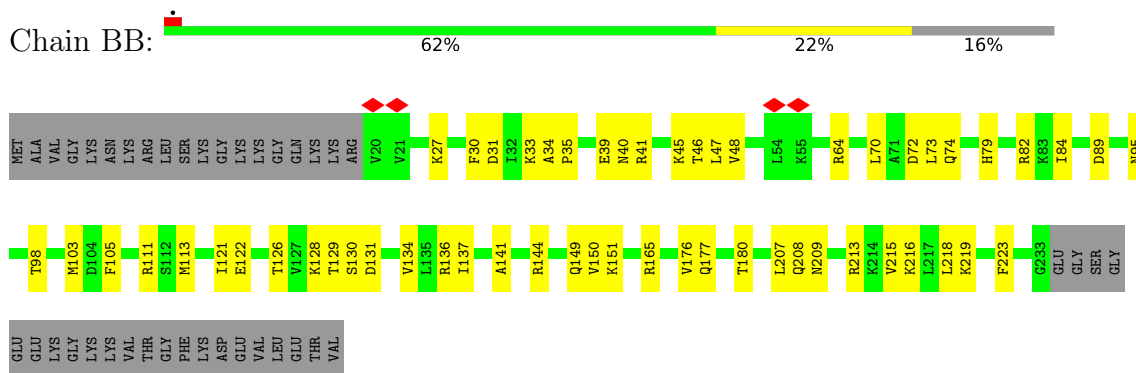
### 3 Residue-property plots [i](#)

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.

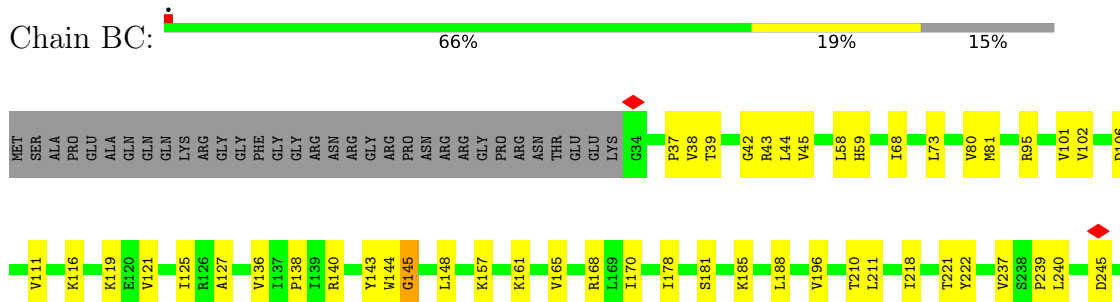
- Molecule 1: 40S ribosomal protein S0-A

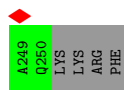


- Molecule 2: RPS1A isoform 1

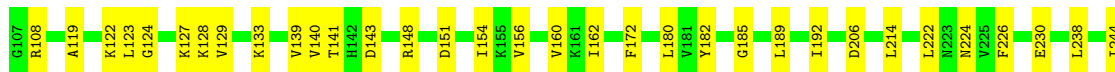
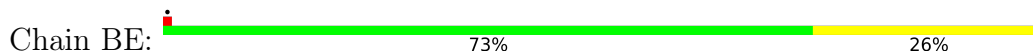


- Molecule 3: RPS2 isoform 1

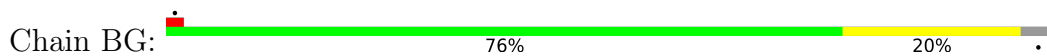




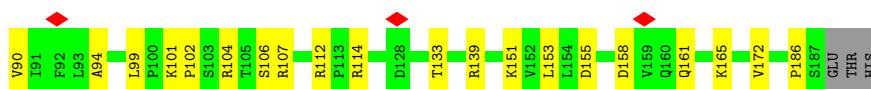
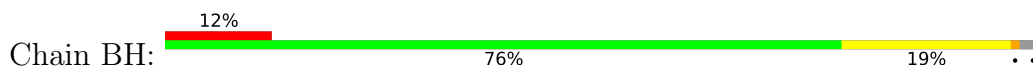
• Molecule 4: 40S ribosomal protein S4-A



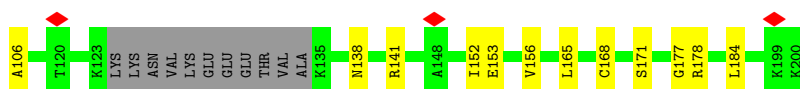
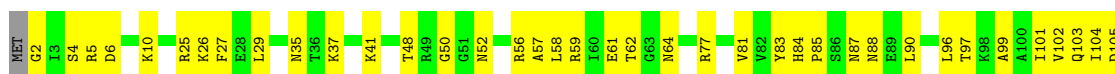
• Molecule 5: 40S ribosomal protein S6-A



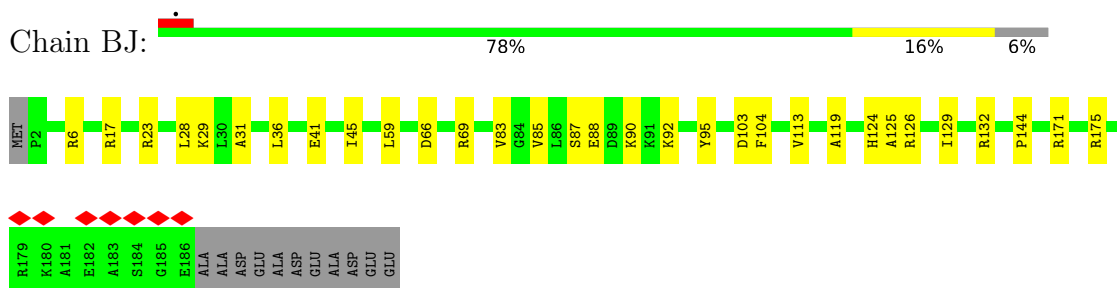
• Molecule 6: 40S ribosomal protein S7-A



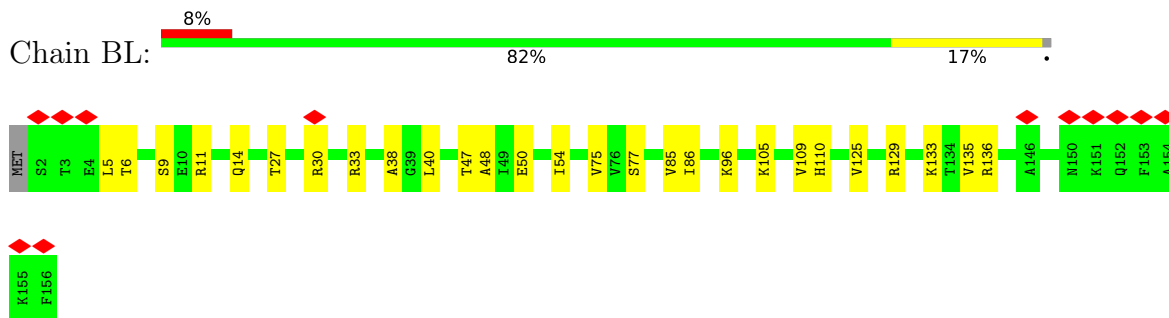
• Molecule 7: 40S ribosomal protein S8-A



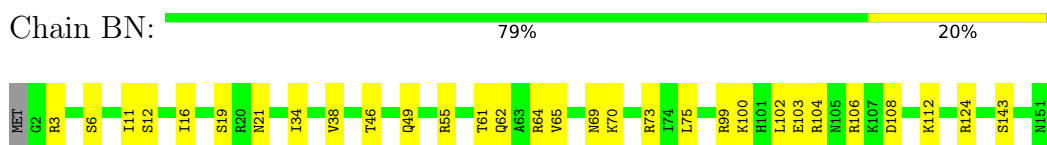
• Molecule 8: 40S ribosomal protein S9-A



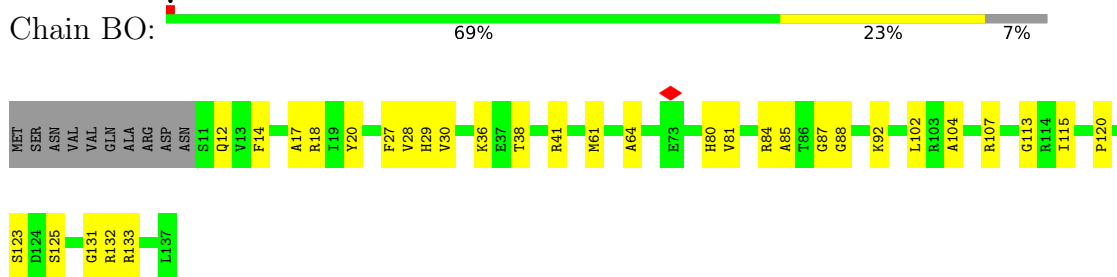
• Molecule 9: 40S ribosomal protein S11-A



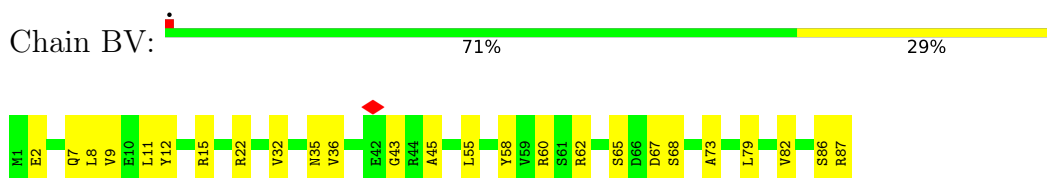
• Molecule 10: 40S ribosomal protein S13



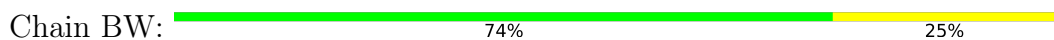
• Molecule 11: 40S ribosomal protein S14-A



• Molecule 12: 40S ribosomal protein S21-A

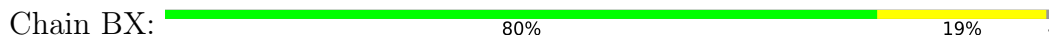


• Molecule 13: RPS22A isoform 1

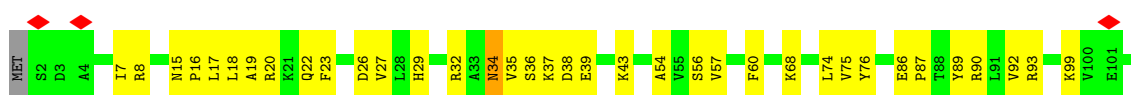




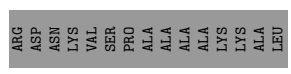
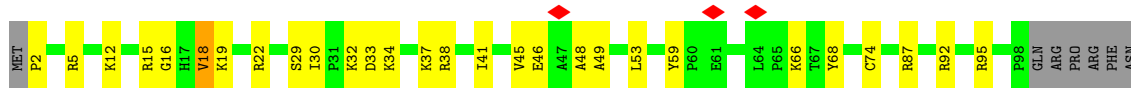
- Molecule 14: 40S ribosomal protein S23-A



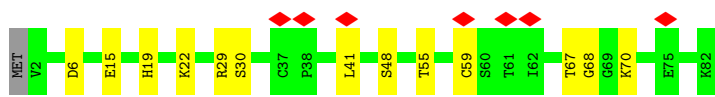
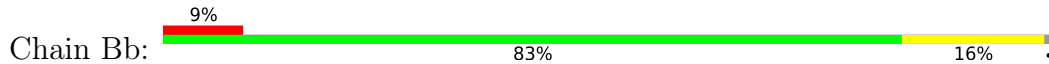
- Molecule 15: 40S ribosomal protein S24-A



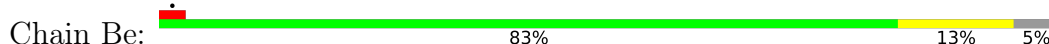
- Molecule 16: RPS26B isoform 1



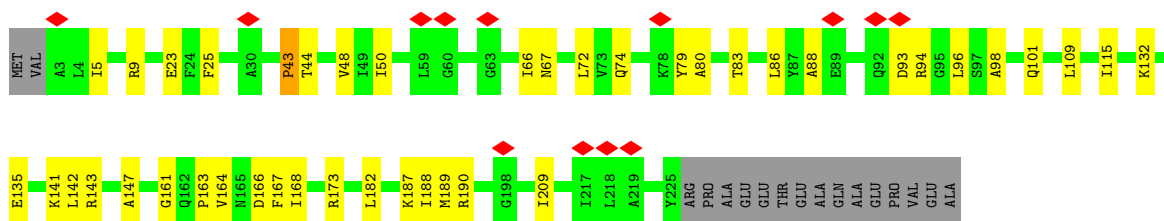
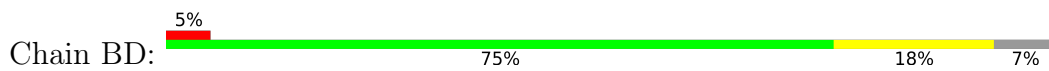
- Molecule 17: 40S ribosomal protein S27-A



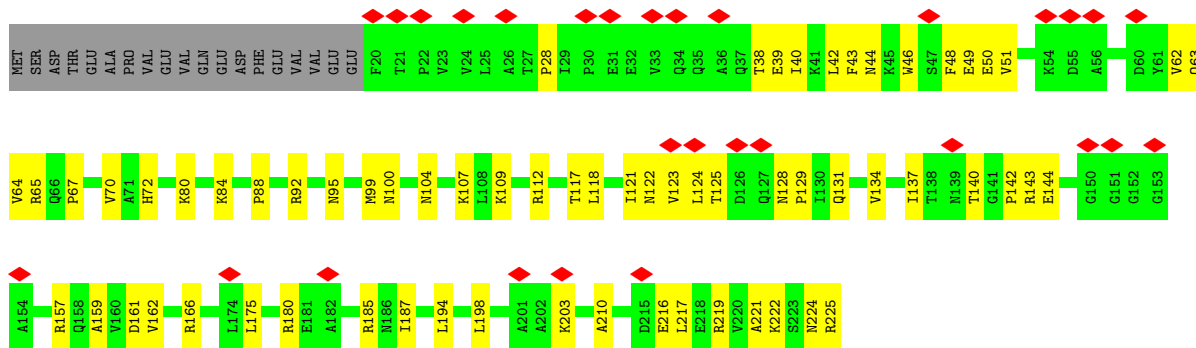
- Molecule 18: 40S ribosomal protein S30-A



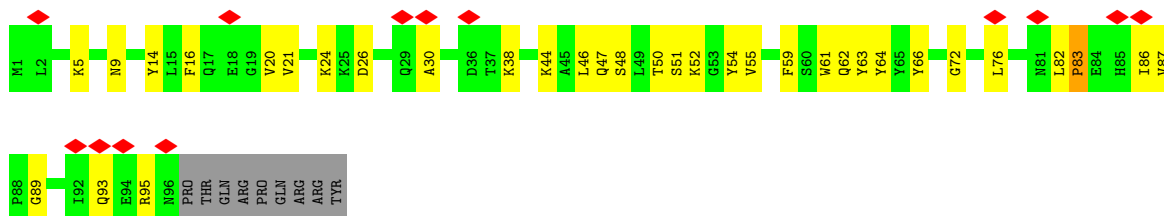
- Molecule 19: RPS3 isoform 1



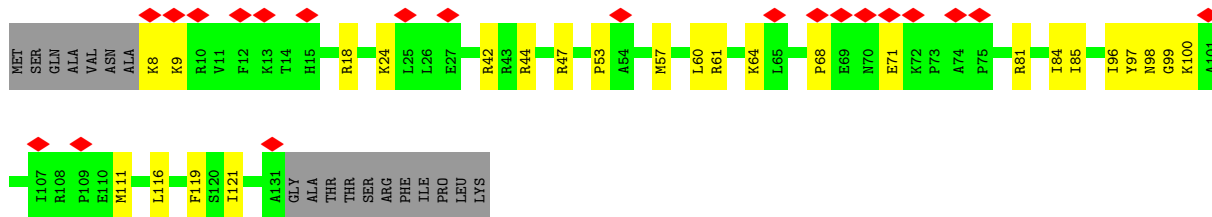
• Molecule 20: Rps5p



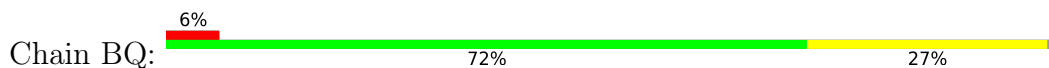
• Molecule 21: 40S ribosomal protein S10-A

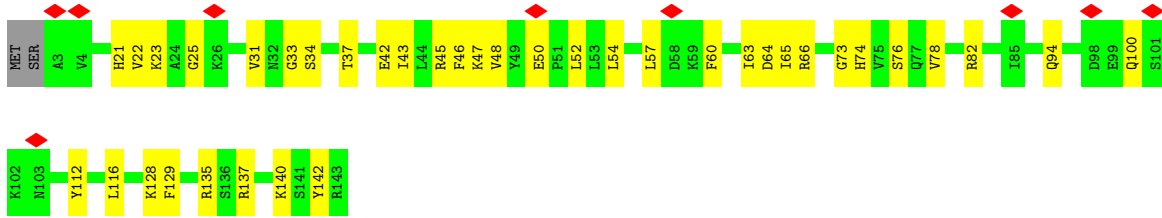


• Molecule 22: RPS15 isoform 1

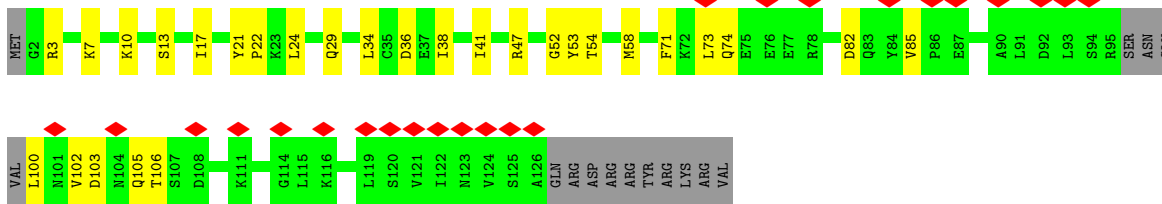


• Molecule 23: 40S ribosomal protein S16-A

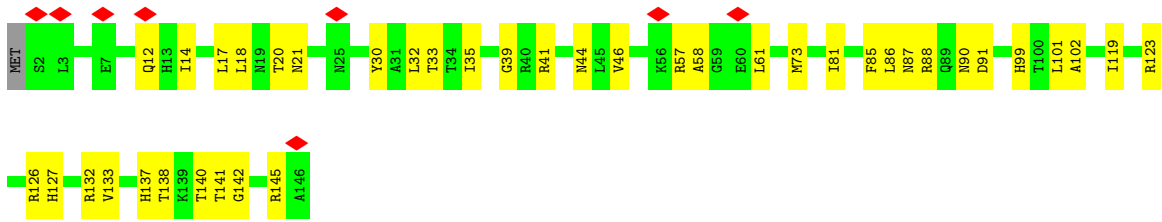
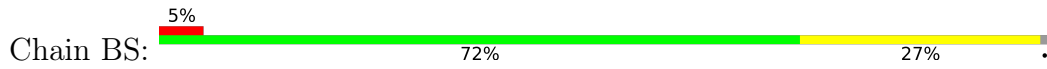




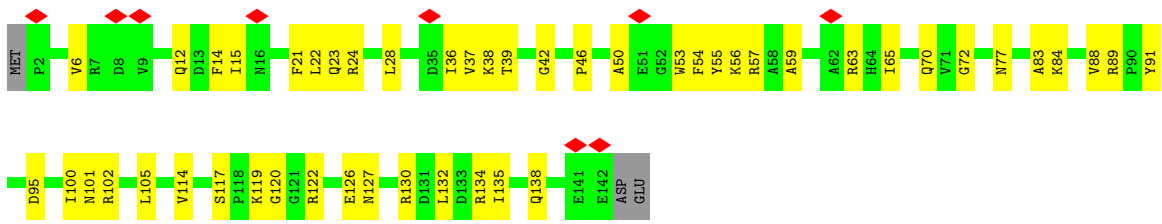
• Molecule 24: 40S ribosomal protein S17-A



• Molecule 25: 40S ribosomal protein S18-A

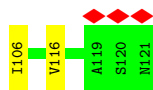


• Molecule 26: 40S ribosomal protein S19-A

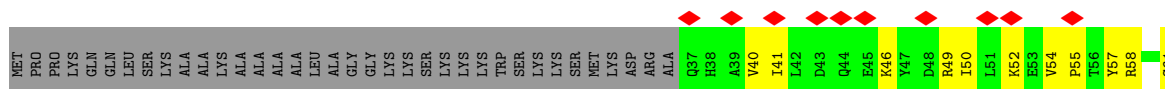


• Molecule 27: RPS20 isoform 1

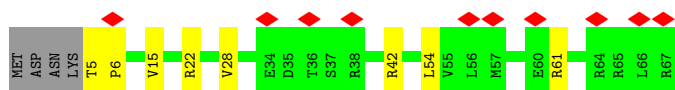
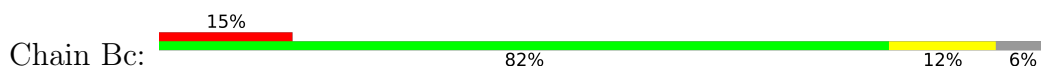




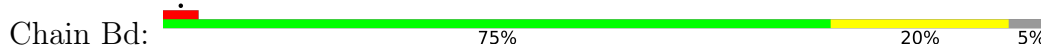
• Molecule 28: RPS25A isoform 1



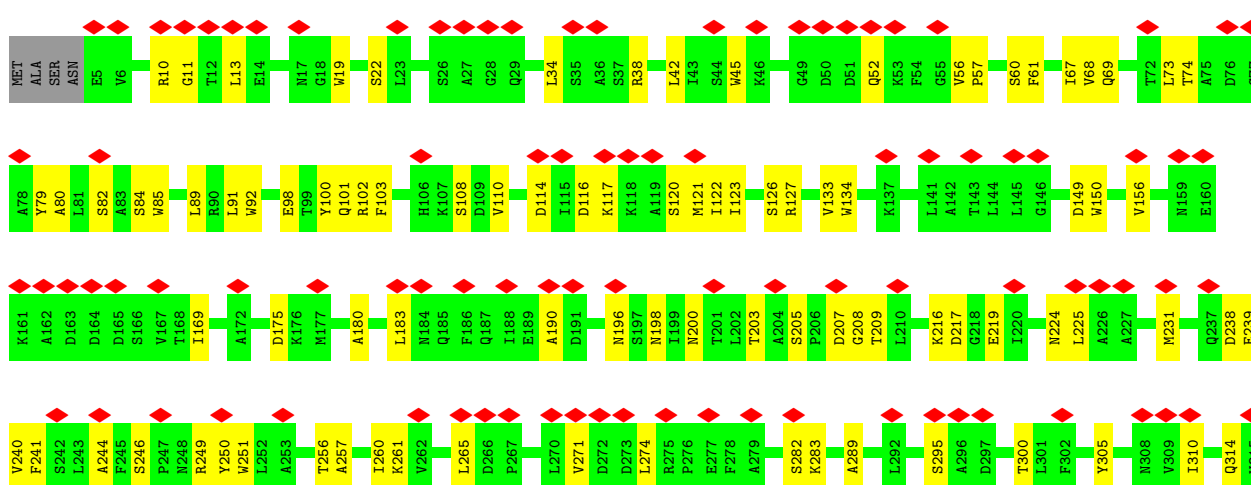
• Molecule 29: RPS28A isoform 1



• Molecule 30: RPS29A isoform 1

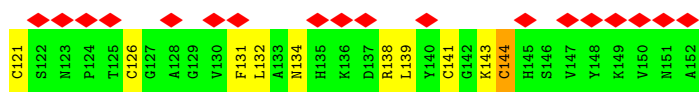
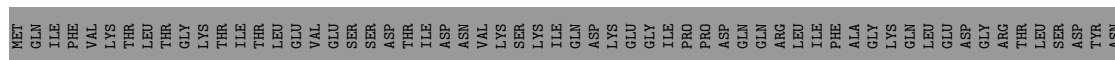
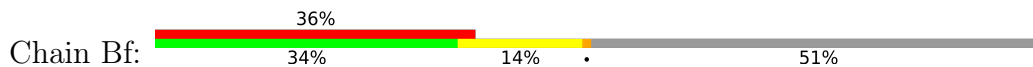


• Molecule 31: Guanine nucleotide-binding protein subunit beta-like protein

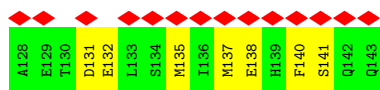
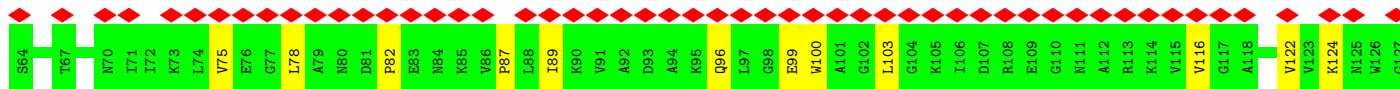
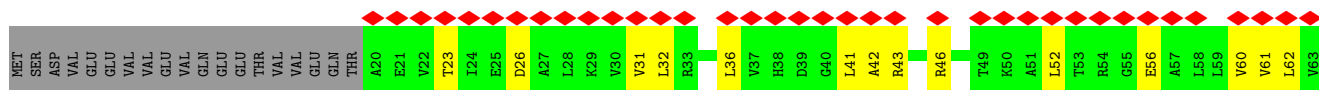
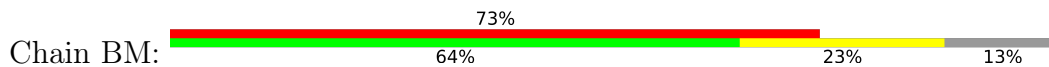




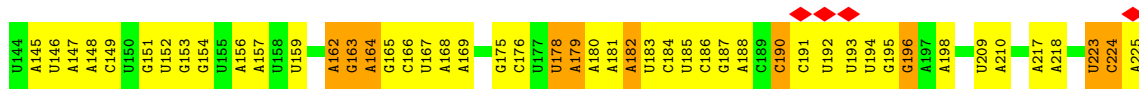
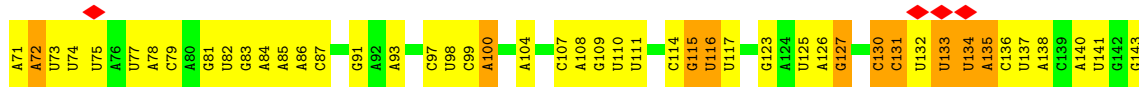
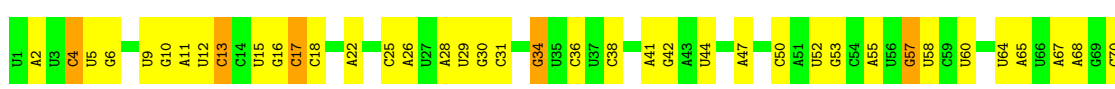
• Molecule 32: Ubiquitin-40S ribosomal protein S31

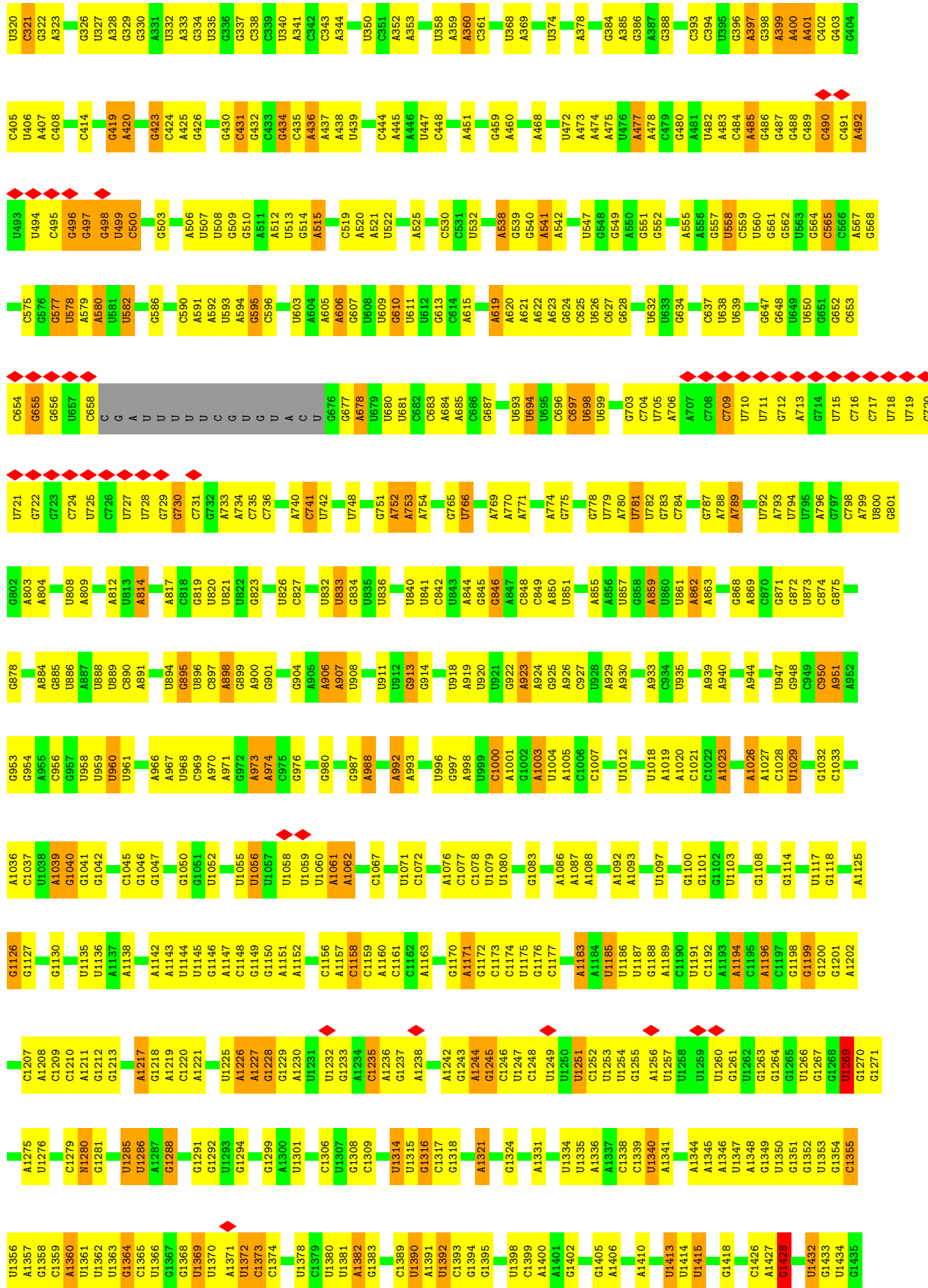


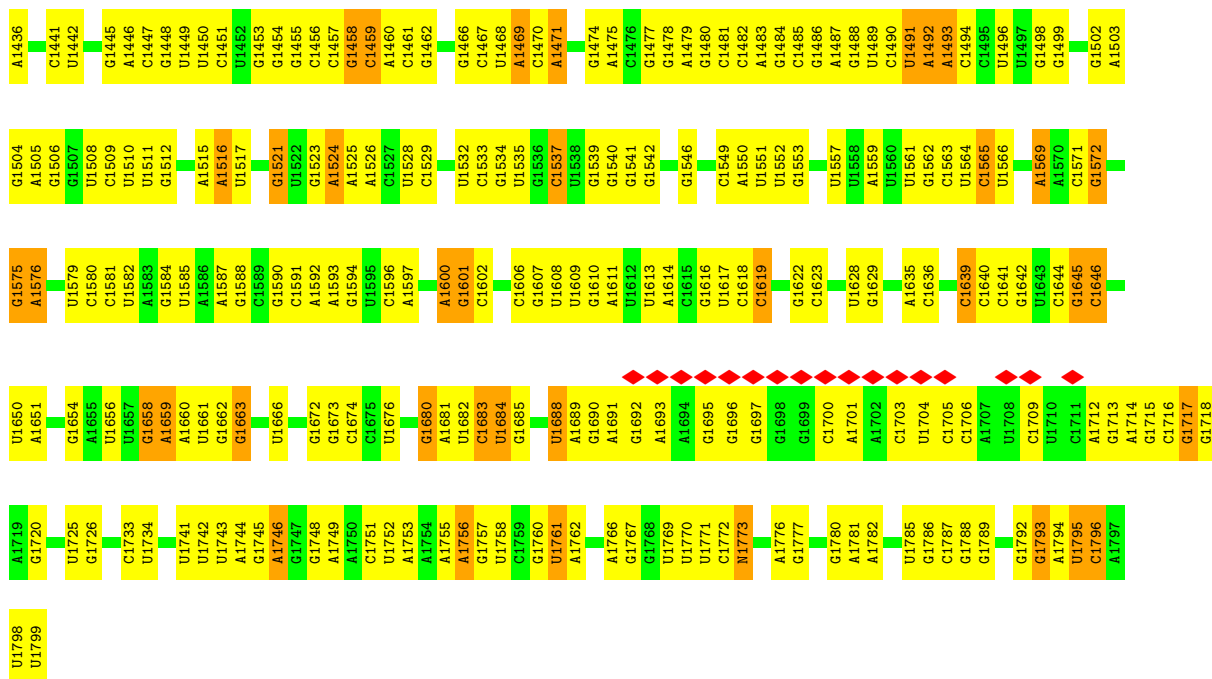
• Molecule 33: 40S ribosomal protein S12



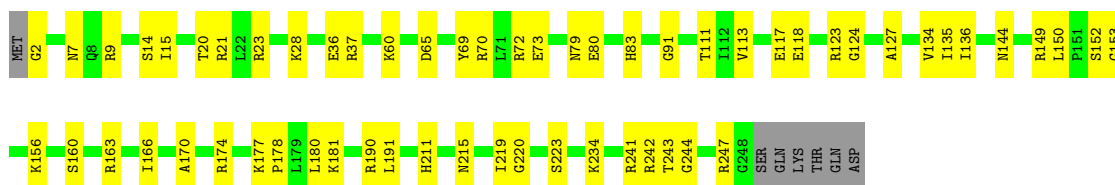
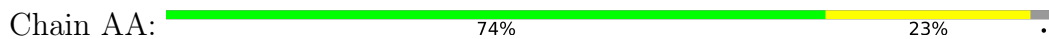
• Molecule 34: 18S rRNA



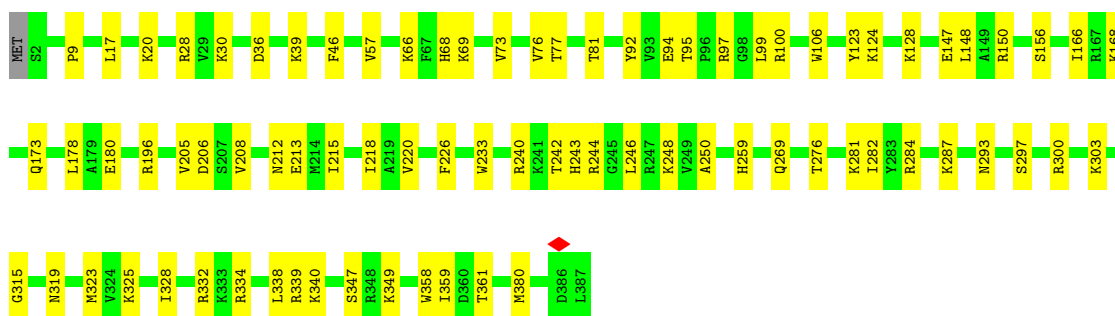
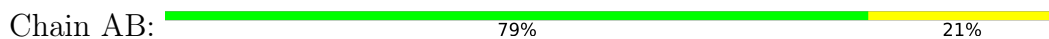




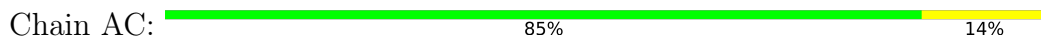
• Molecule 35: 60S ribosomal protein L2-A



• Molecule 36: 60S ribosomal protein L3



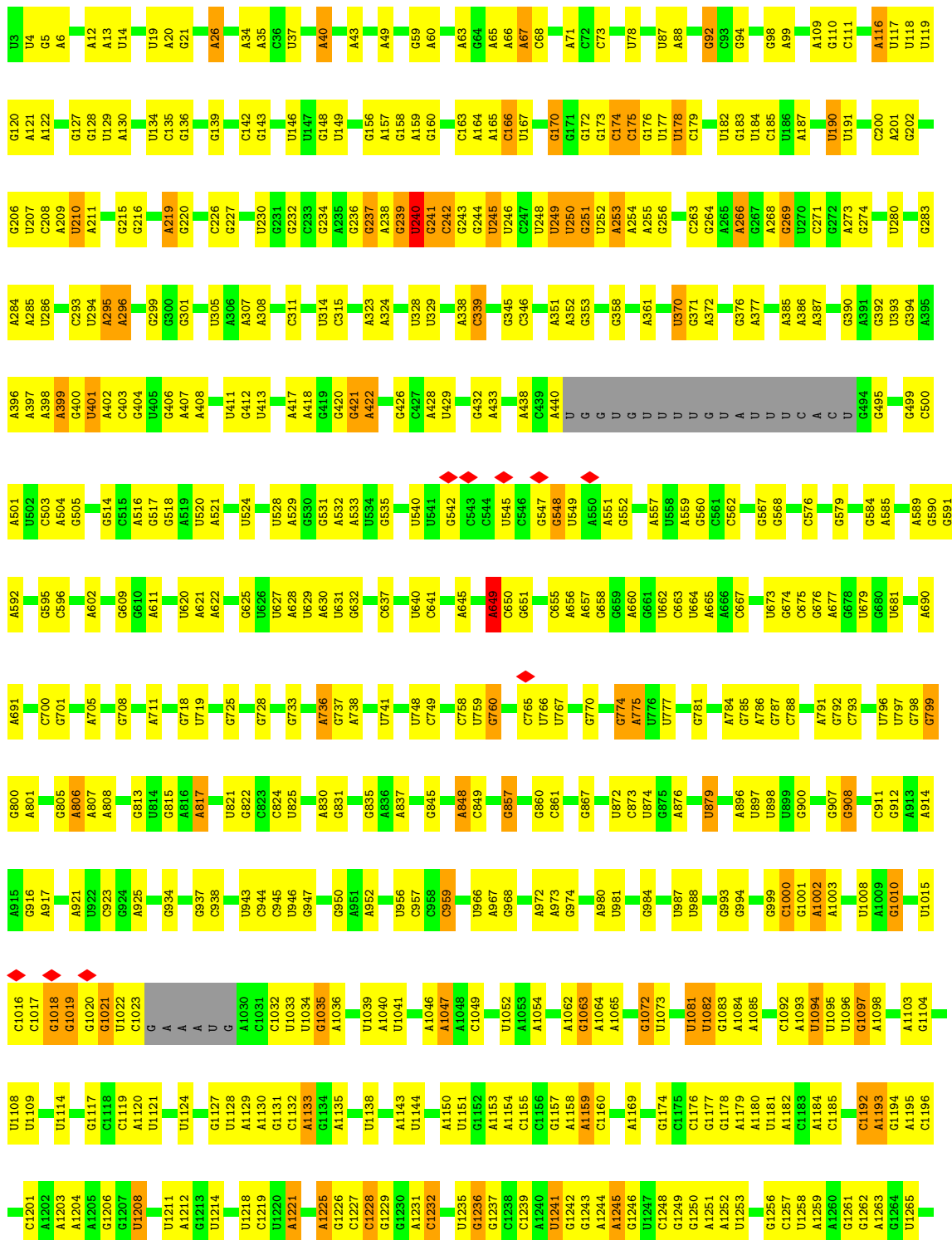
• Molecule 37: RPL4A isoform 1





• Molecule 38: 25S rRNA

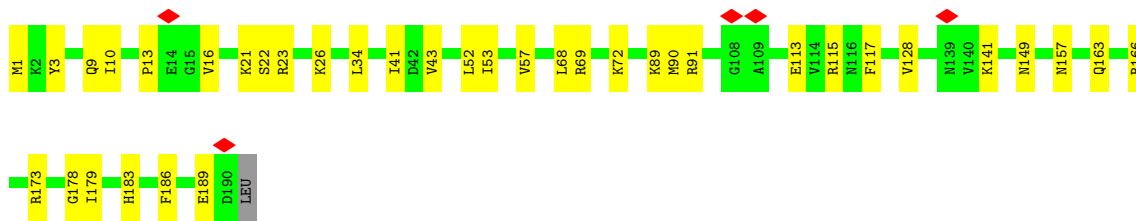
Chain A1:



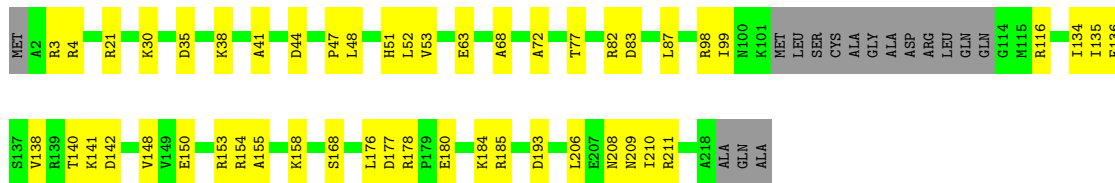
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C2389	A2390	G2393	A2397	A2402	G2403	A2404	C2405	G2406	U2407	U2408	G2409	U2410	U2411	U2412	G2413	G2414	G2415	U2416	G2417	G2418	U2421	U2426	U2427	U2428	G2429	A2430	G2435	A2436	A2439	G2440	A2441	G2442	C2443	A2444	U2445	A2446	A2447	G2448	G2449	G2450	U2453	U2454	U2455	A2456	G2457	A2458	A2459	U2460	A2461	A2462	G2463				
A2279	A2280	A2281	U2282	G2283	C2284	C2285	G2288	U2292	C2293	G2305	C2306	U2310	G2311	A2312	A2313	U2314	G2315	U2334	G2335	U2336	C2337	U2340	U2344	A2345	U2346	U2347	U2351	A2352	G2355	A2356	A2357	A2358	A2363	G2364	C2365	C2366	G2369	A2373	C2374	G2375	G2376	G2377	C2383	U2388											
C2196	C2197	G2201	C2202	C2203	C2204	U2205	A2206	A2213	A2214	G2218	A2219	A2220	A2223	U2224	U2225	A2228	A2229	A2232	A2233	U2241	A2242	C2245	G2249	A2252	G2253	U2254	A2255	A2256	C2257	U2258	A2259	U2260	G2261	A2262	C2263	U2264	C2265	U2266	C2267	U2268	A2270	A2271	G2272	G2273	C2277	C2278									
A2093	C2094	C2095	A2106	A2107	G2111	U2112	A2113	G2114	G2115	G2116	A2117	C2118	A2119	A2120	G2121	U2129	G2130	A2131	U2140	U2141	A2142	A2143	A2144	A2152	U2153	U2154	C2155	C2156	G2157	U2158	G2160	G2161	U2162	A2167	A2168	G2169	U2176	C2177	A2178	U2183	U2184	G2185	A2188	U2193	U2194	C2195									
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U1659	C1660	G1661	G1662	C1663	G1664	C1665	G1666	C1677	U1682	A1683	U1688	U1689	U1694	U1695	U1696	U1697	C1698	U1699	U1717	G1718	G1719	U1720	U1721	U1724	A1729	G1730	G1736	U1737	U1739	U1740	U1741	U1742	U1746	G1747	A1750	G1751	A1752	A1757	G1758	C1759	U1760	G1761	U1762	U1763	U1764										
U1570	A1571	U1572	G1573	C1574	A1575	G1576	C1579	A1583	A1589	A1593	A1594	U1595	C1596	G1597	G1598	A1603	A1604	A1605	U1606	U1607	A1612	A1613	C1614	C1615	G1616	G1617	A1618	A1619	U1620	A1621	U1622	G1623	G1624	A1625	U1626	U1627	C1628	U1629	U1630	C1631	C1639	G1640	U1641	A1642	A1643	C1644	U1645	G1646	A1656	U1657	C1658				
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G1357	C1364	G1367	U1368	U1376	G1379	G1380	C1385	A1386	G1387	U1388	A1390	C1391	G1392	A1399	G1400	A1401	G1404	A1407	C1411	U1415	A1418	A1419	A1428	G1429	U1430	G1431	C1432	U1433	G1434	A1435	U1436	C1437	A1446	G1447	U1448	A1449	G1450	U1347	U1348	G1349	A1350	U1351	A1352	U1353	A1354	U1355	A1461								
G1268	A1271	C1272	A1273	C1277	A1278	C1279	G1280	G1281	C1282	C1283	A1286	A1287	A1290	A1291	C1292	U1293	G1295	U1299	A1304	U1305	G1306	G1307	A1308	U1309	G1310	G1311	A1317	C1328	U1329	A1330	U1331	A1332	C1333	U1336	A1337	G1340	U1341	U1347	U1348	G1349	A1350	U1351	A1352	U1353	A1354	U1355									



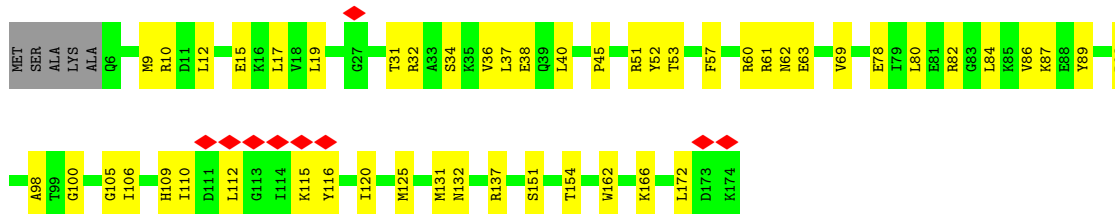




• Molecule 46: RPL10 isoform 1



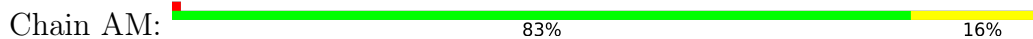
• Molecule 47: RPL11A isoform 1



• Molecule 48: 60S ribosomal protein L13-A



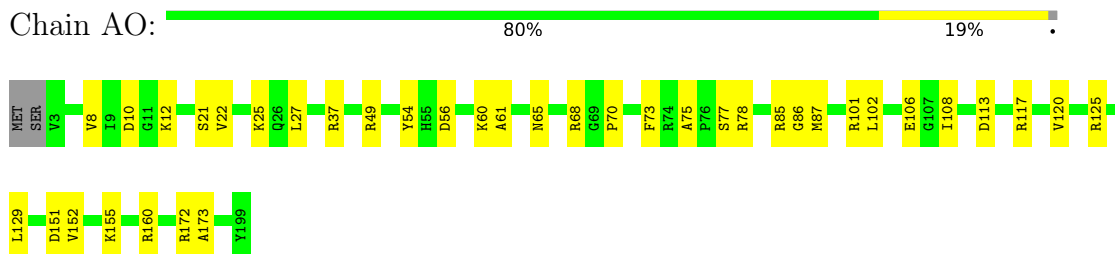
• Molecule 49: 60S ribosomal protein L14-A



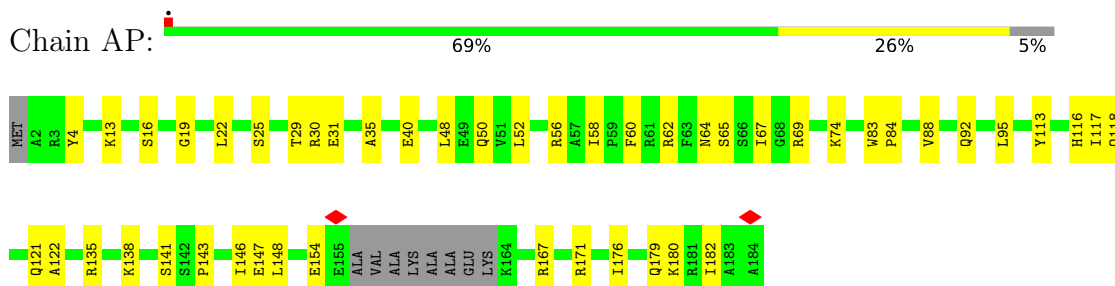
• Molecule 50: 60S ribosomal protein L15-A



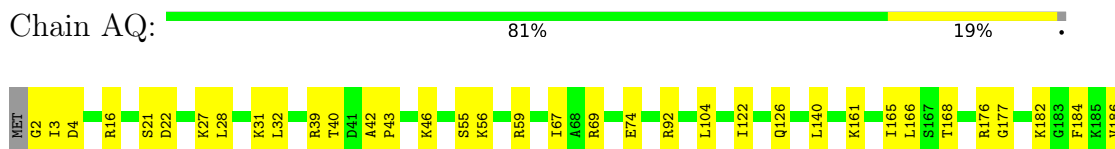
- Molecule 51: 60S ribosomal protein L16-A



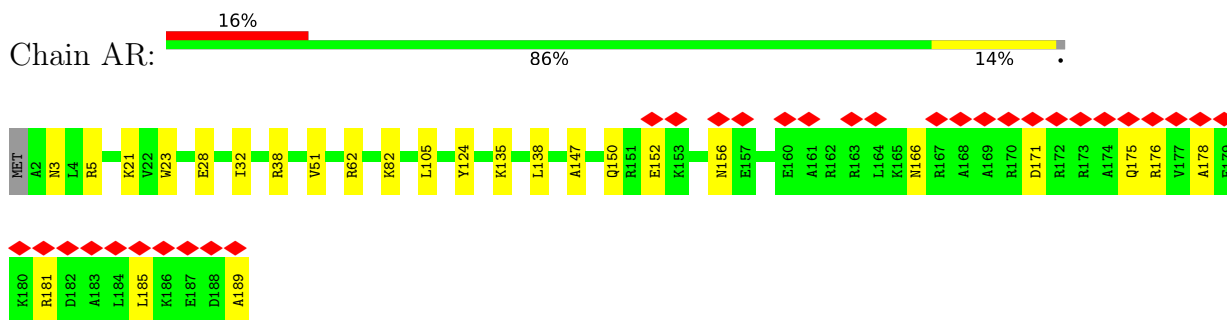
- Molecule 52: 60S ribosomal protein L17-A



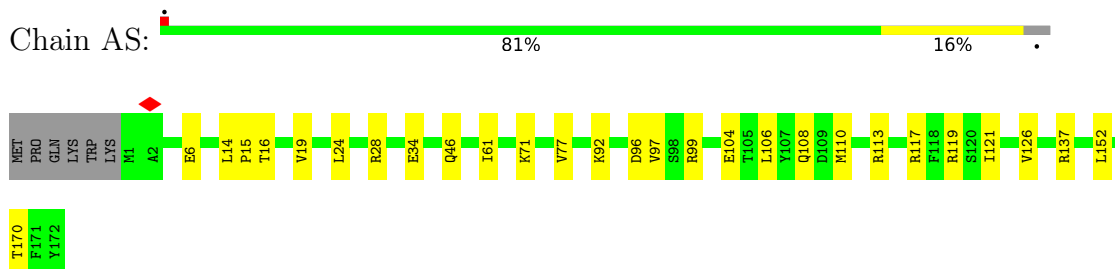
- Molecule 53: 60S ribosomal protein L18-A



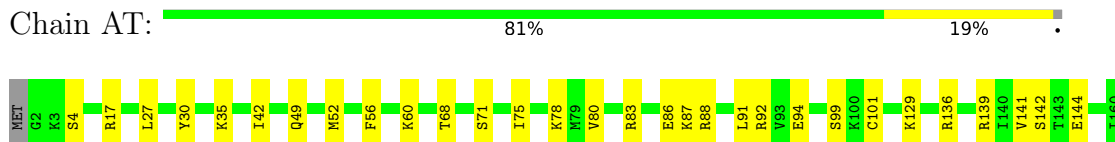
- Molecule 54: 60S ribosomal protein L19-A



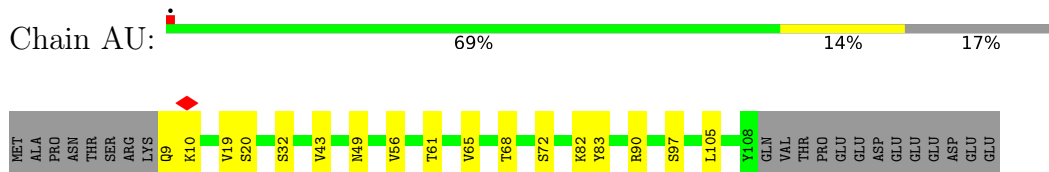
- Molecule 55: 60S ribosomal protein L20



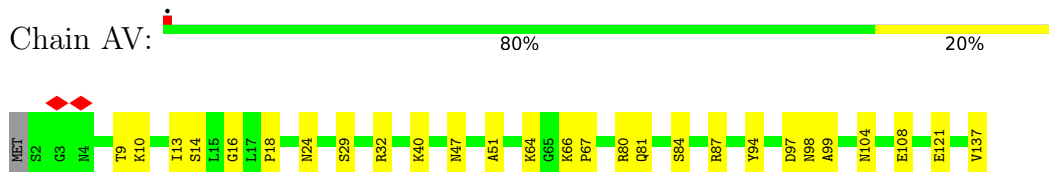
- Molecule 56: 60S ribosomal protein L21-A



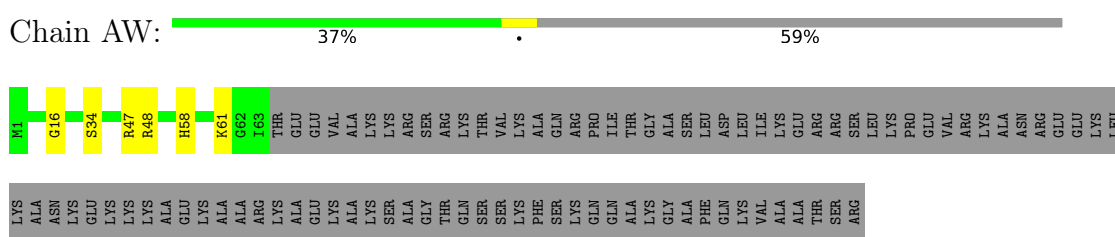
• Molecule 57: 60S ribosomal protein L22-A



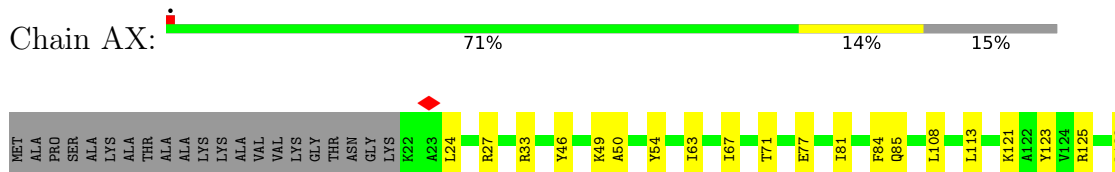
• Molecule 58: 60S ribosomal protein L23-A



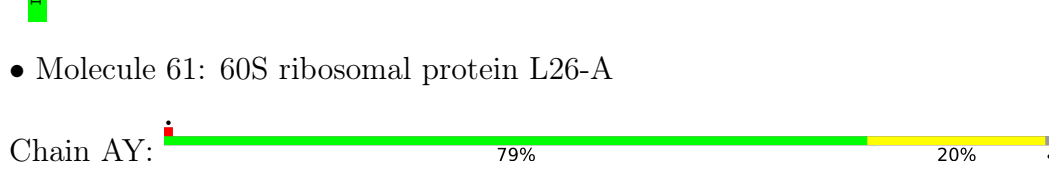
• Molecule 59: RPL24A isoform 1




• Molecule 60: 60S ribosomal protein L25

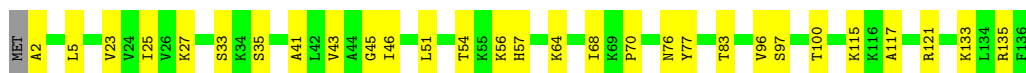


• Molecule 61: 60S ribosomal protein L26-A




• Molecule 62: 60S ribosomal protein L27-A

Chain AZ:  78% 21%




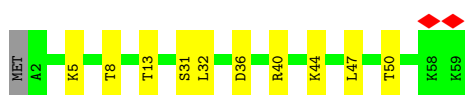
• Molecule 63: 60S ribosomal protein L28

Chain Aa:  78% 21%



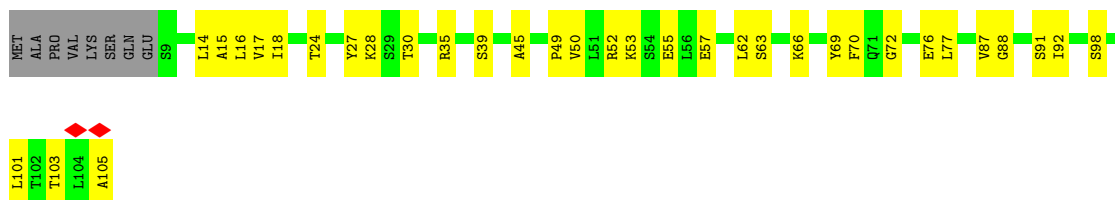
• Molecule 64: RPL29 isoform 1

Chain Ab:  81% 17%




• Molecule 65: 60S ribosomal protein L30

Chain Ac:  60% 32% 8%




• Molecule 66: 60S ribosomal protein L31-A

Chain Ad:  81% 16%




• Molecule 67: RPL32 isoform 1

Chain Ae:  85% 12%



• Molecule 68: 60S ribosomal protein L33-A

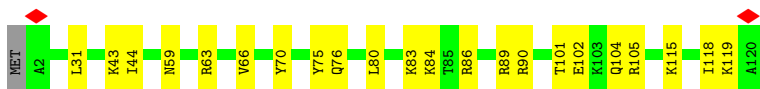
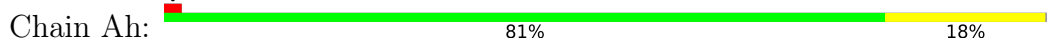
Chain Af:  84% 15%



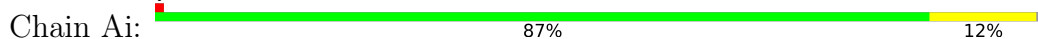
- Molecule 69: 60S ribosomal protein L34-A



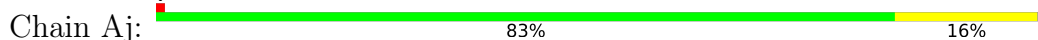
- Molecule 70: 60S ribosomal protein L35-A



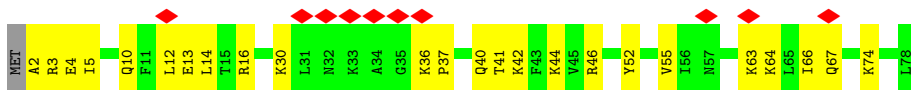
- Molecule 71: 60S ribosomal protein L36-A



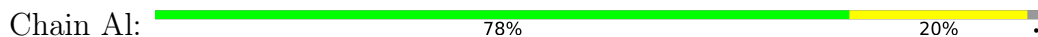
- Molecule 72: 60S ribosomal protein L37-A



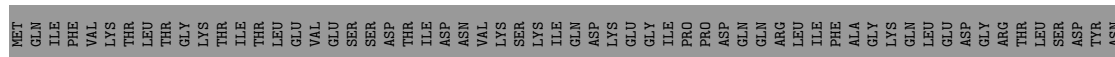
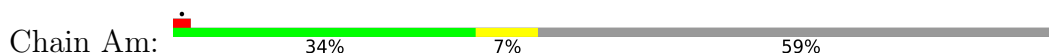
- Molecule 73: RPL38 isoform 1



- Molecule 74: 60S ribosomal protein L39



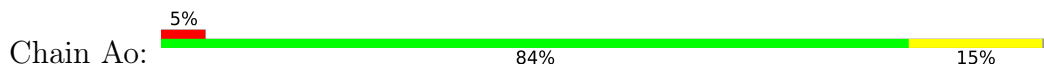
• Molecule 75: Ubiquitin-60S ribosomal protein L40



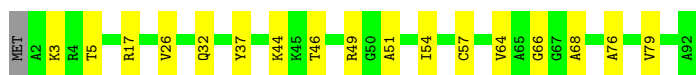
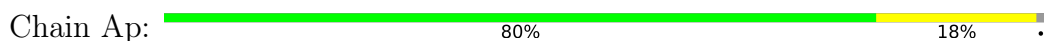
• Molecule 76: 60S ribosomal protein L41-A



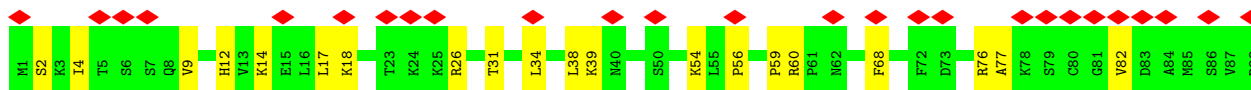
• Molecule 77: 60S ribosomal protein L42-A



• Molecule 78: 60S ribosomal protein L43-A

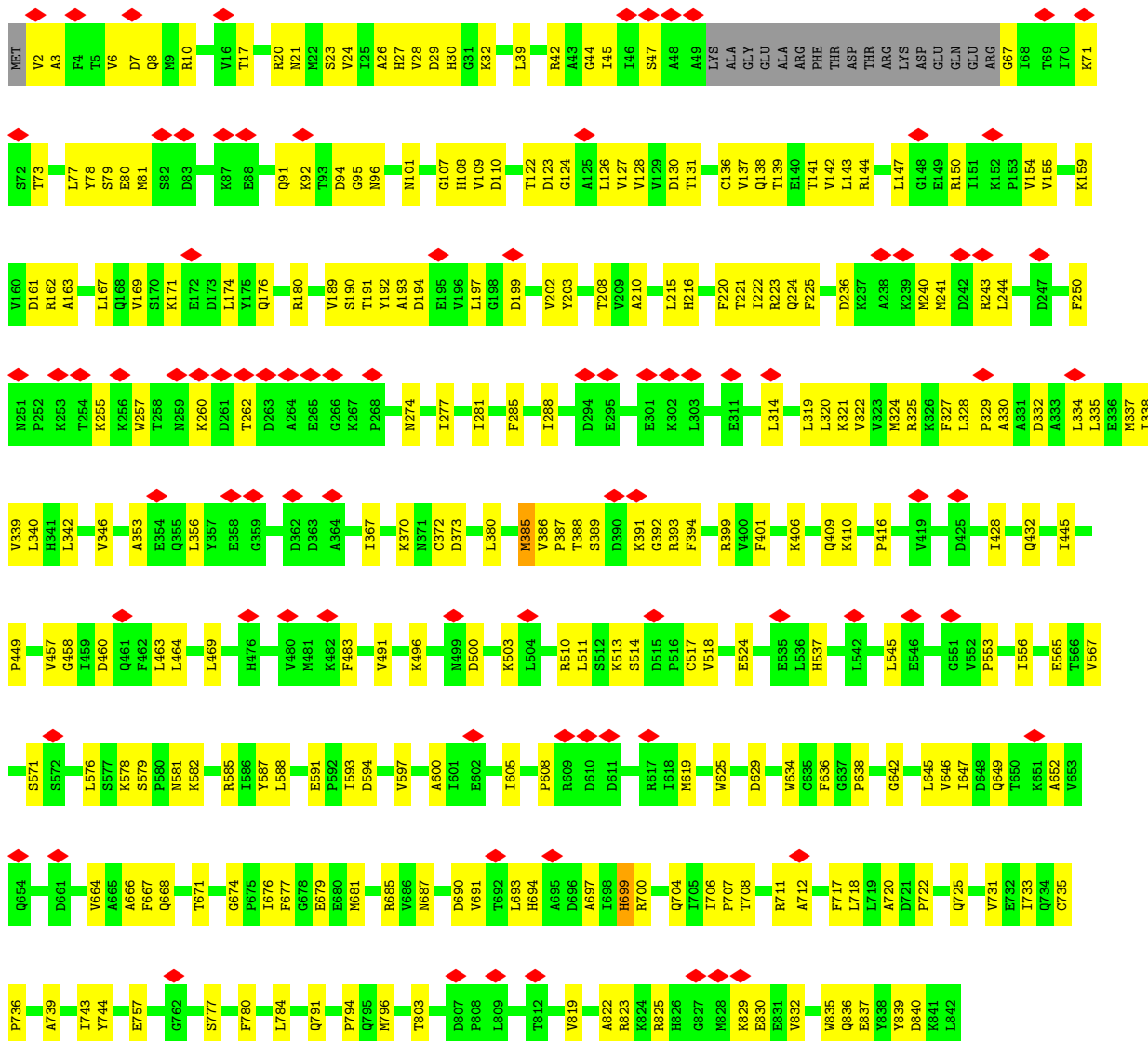


• Molecule 79: RPL1A isoform 1

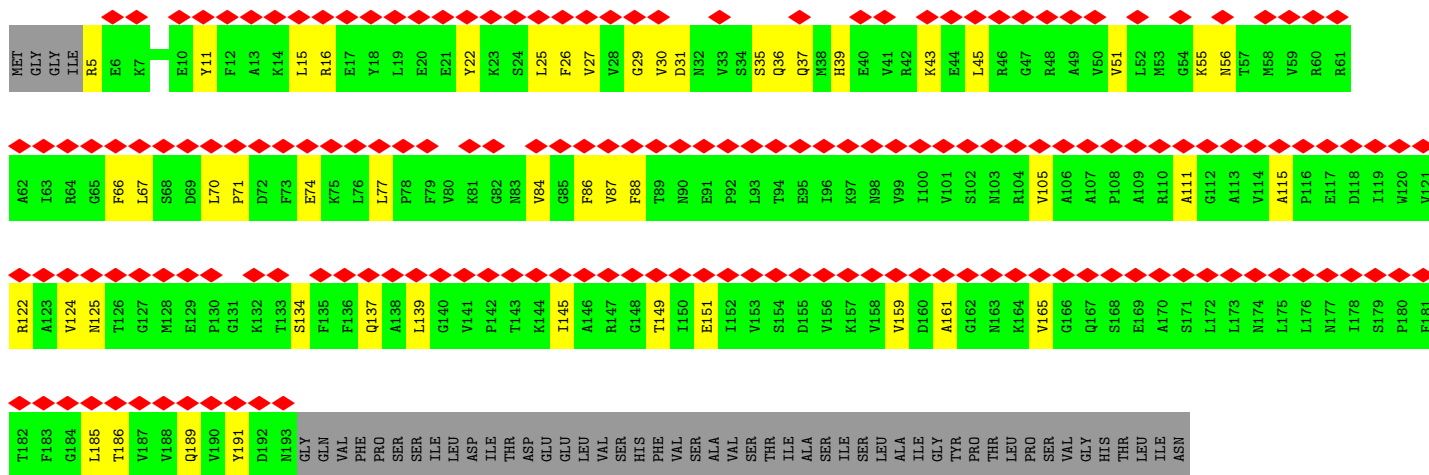
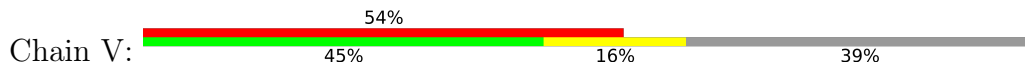


• Molecule 80: Elongation factor 2





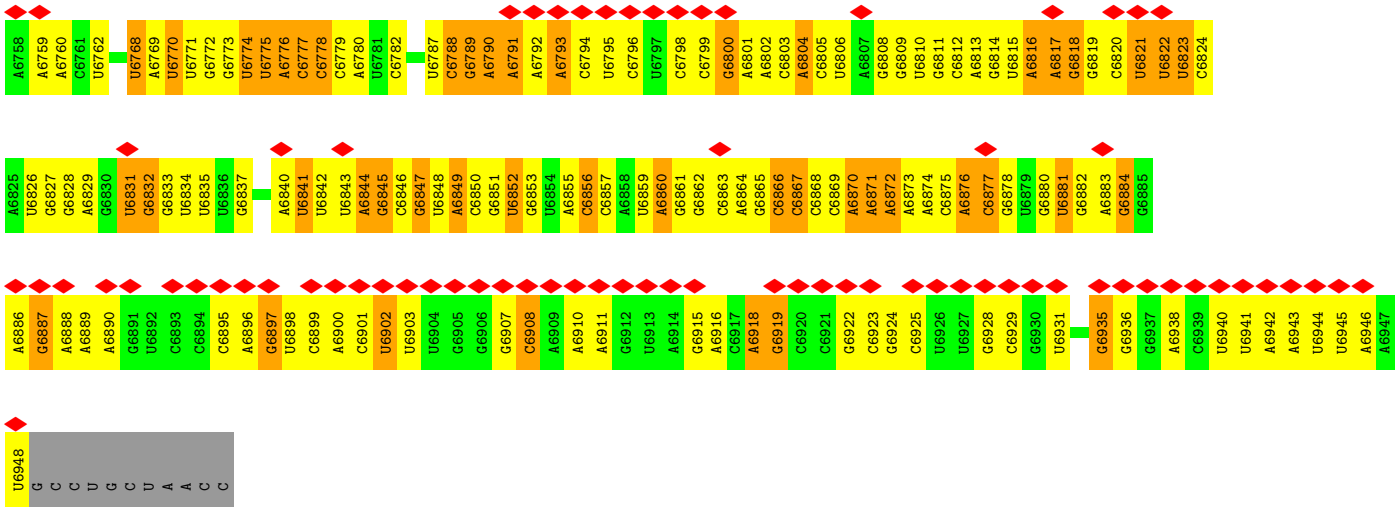
• Molecule 81: 60S acidic ribosomal protein P0



ASN TYR LYS ASP LEU LEU ALA VAL ILE ILE ALA ALA SFR TYR HIS TYR PRO GLU ILE GLU ASP LEU VAL ASP ARG ILE ILE ASN PRO GLU LYS TYR ALA ALA ALA PRD PRO ALA ALA THR SER ALA ALA SFR GLY ASP ALA PRO ALA ALA ALA GLU GLU ASP SER GLY ASP

SER ASP ASP MET GLY PHE GLY ASP

● Molecule 82: TSV IRES



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	47514	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	60	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	4.410	Depositor
Minimum map value	-1.730	Depositor
Average map value	0.058	Depositor
Map value standard deviation	0.237	Depositor
Recommended contour level	0.6	Depositor
Map size (Å)	423.99997, 423.99997, 423.99997	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.06, 1.06, 1.06	Depositor

## 5 Model quality i

### 5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: A2M, OMC, MG, GDP, UR3, ZN, 1MA, W9C, OMG, G7M, XSX, DDE, HIC, 5MC, MA6, OMU, 4AC

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	BA	0.40	2/1653 (0.1%)	0.77	4/2261 (0.2%)
2	BB	0.20	0/1735	0.51	0/2335
3	BC	0.22	0/1665	0.45	0/2263
4	BE	0.18	0/2109	0.47	1/2839 (0.0%)
5	BG	0.14	0/1844	0.36	0/2464
6	BH	0.21	0/1506	0.55	2/2028 (0.1%)
7	BI	0.17	0/1514	0.45	0/2021
8	BJ	0.15	0/1519	0.37	0/2035
9	BL	0.15	0/1272	0.37	1/1712 (0.1%)
10	BN	0.19	0/1215	0.50	0/1638
11	BO	0.21	0/952	0.48	0/1279
12	BV	0.20	0/693	0.58	2/935 (0.2%)
13	BW	0.17	0/1038	0.40	0/1395
14	BX	0.16	0/1139	0.45	0/1518
15	BY	0.18	0/1087	0.45	0/1449
16	Ba	0.24	0/782	0.65	2/1047 (0.2%)
17	Bb	0.17	0/620	0.53	0/838
18	Be	0.15	0/483	0.49	0/643
19	BD	0.19	0/1759	0.51	2/2368 (0.1%)
20	BF	0.22	0/1629	0.48	0/2202
21	BK	0.61	2/837 (0.2%)	1.10	4/1131 (0.4%)
22	BP	0.18	0/1012	0.46	0/1356
23	BQ	0.17	0/1125	0.40	0/1510
24	BR	0.18	0/984	0.48	0/1318
25	BS	0.19	0/1211	0.47	0/1628
26	BT	0.17	0/1113	0.45	0/1494
27	BU	0.17	0/865	0.42	0/1169
28	BZ	0.20	0/566	0.54	0/761
29	Bc	0.23	0/499	0.58	0/670
30	Bd	0.16	0/452	0.40	0/600
31	Bg	0.17	0/2454	0.47	0/3340

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
32	Bf	0.16	0/616	0.49	1/817 (0.1%)
33	BM	0.22	0/943	0.62	4/1274 (0.3%)
34	B5	0.18	1/41880 (0.0%)	0.33	0/65248
35	AA	0.22	0/1912	0.46	0/2569
36	AB	0.19	0/3139	0.40	0/4219
37	AC	0.19	0/2800	0.41	0/3790
38	A1	0.21	1/75586 (0.0%)	0.34	2/117845 (0.0%)
39	A3	0.18	0/2883	0.31	0/4491
40	A4	0.19	0/3746	0.31	0/5832
41	AD	0.17	0/2390	0.38	0/3225
42	AE	0.16	0/1260	0.38	0/1694
43	AF	0.18	0/1821	0.37	0/2451
44	AG	0.18	0/1830	0.44	0/2469
45	AH	0.21	0/1531	0.47	0/2062
46	AI	0.17	0/1708	0.36	0/2290
47	AJ	0.21	0/1374	0.54	0/1842
48	AL	0.18	0/1568	0.38	0/2106
49	AM	0.16	0/1068	0.33	0/1438
50	AN	0.19	0/1757	0.36	0/2354
51	AO	0.17	0/1585	0.35	0/2128
52	AP	0.20	0/1410	0.42	0/1893
53	AQ	0.18	0/1465	0.37	0/1965
54	AR	0.16	0/1538	0.37	0/2050
55	AS	0.21	0/1481	0.43	0/1990
56	AT	0.19	0/1300	0.37	0/1743
57	AU	0.20	0/812	0.55	2/1099 (0.2%)
58	AV	0.19	0/1018	0.42	0/1369
59	AW	0.19	0/533	0.43	0/707
60	AX	0.19	0/983	0.41	0/1325
61	AY	0.20	0/1004	0.44	0/1341
62	AZ	0.18	0/1118	0.42	0/1497
63	Aa	0.21	0/1204	0.45	0/1612
64	Ab	0.21	0/473	0.43	0/629
65	Ac	0.19	0/751	0.43	0/1008
66	Ad	0.18	0/904	0.40	0/1213
67	Ae	0.18	0/1041	0.36	0/1394
68	Af	0.21	0/868	0.40	0/1168
69	Ag	0.23	0/890	0.47	1/1189 (0.1%)
70	Ah	0.16	0/978	0.35	0/1301
71	Ai	0.20	0/778	0.47	0/1034
72	Aj	0.18	0/696	0.36	0/923
73	Ak	0.17	0/618	0.41	0/826
74	Al	0.23	0/443	0.50	0/588

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
75	Am	0.20	0/423	0.48	0/562
76	An	0.17	0/234	0.40	0/300
77	Ao	0.22	0/860	0.56	0/1136
78	Ap	0.18	0/701	0.39	0/934
79	E	0.16	0/1745	0.44	0/2342
80	DC	0.21	0/6521	0.51	3/8830 (0.0%)
81	V	0.19	0/1498	0.50	0/2025
82	EC	0.16	0/4521	0.38	0/7039
All	All	0.20	6/227538 (0.0%)	0.39	31/333423 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
3	BC	0	2
6	BH	0	1
15	BY	0	1
44	AG	0	2
47	AJ	0	1
76	An	0	1
All	All	0	8

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	BA	97	PRO	CB-CG	-11.29	0.93	1.49
21	BK	83	PRO	CB-CG	-11.22	0.93	1.49
21	BK	83	PRO	CG-CD	-9.76	1.17	1.50
1	BA	97	PRO	CG-CD	-8.70	1.21	1.50
34	B5	1575	G7M	O3'-P	6.09	1.62	1.56

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	BA	97	PRO	N-CD-CG	-18.30	75.76	103.20
21	BK	83	PRO	N-CD-CG	-17.68	76.67	103.20
21	BK	83	PRO	CB-CG-CD	17.59	162.40	106.10
1	BA	97	PRO	CA-CB-CG	-17.15	71.92	104.50
21	BK	83	PRO	CA-CB-CG	-16.80	72.59	104.50

There are no chirality outliers.

5 of 8 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
44	AG	30	THR	Peptide
3	BC	144	TRP	Peptide
3	BC	145	GLY	Peptide
6	BH	64	VAL	Peptide
15	BY	34	ASN	Peptide

## 5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	BA	1612	0	1623	44	0
2	BB	1709	0	1784	39	0
3	BC	1635	0	1723	32	0
4	BE	2068	0	2154	51	0
5	BG	1820	0	1918	37	0
6	BH	1481	0	1572	28	0
7	BI	1489	0	1525	39	0
8	BJ	1494	0	1573	26	0
9	BL	1244	0	1314	17	0
10	BN	1192	0	1255	26	0
11	BO	941	0	979	24	0
12	BV	684	0	672	18	0
13	BW	1021	0	1060	21	0
14	BX	1121	0	1196	22	0
15	BY	1073	0	1132	37	0
16	Ba	769	0	818	23	0
17	Bb	610	0	633	8	0
18	Be	475	0	525	8	0
19	BD	1734	0	1817	29	0
20	BF	1609	0	1675	56	0
21	BK	817	0	804	28	0
22	BP	991	0	1035	20	0
23	BQ	1105	0	1166	32	0
24	BR	975	0	1039	30	0
25	BS	1192	0	1222	31	0
26	BT	1095	0	1114	37	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
27	BU	855	0	917	22	0
28	BZ	558	0	598	20	0
29	Bc	497	0	535	6	0
30	Bd	442	0	432	11	0
31	Bg	2401	0	2356	64	0
32	Bf	605	0	654	18	0
33	BM	935	0	975	23	0
34	B5	38004	0	19142	671	0
35	AA	1878	0	1946	47	0
36	AB	3081	0	3162	56	0
37	AC	2748	0	2859	38	0
38	A1	68444	0	34451	800	0
39	A3	2579	0	1304	37	0
40	A4	3353	0	1695	39	0
41	AD	2341	0	2290	30	0
42	AE	1239	0	1326	18	0
43	AF	1784	0	1862	27	0
44	AG	1798	0	1894	30	0
45	AH	1510	0	1576	24	0
46	AI	1672	0	1711	33	0
47	AJ	1353	0	1383	33	0
48	AL	1543	0	1608	15	0
49	AM	1053	0	1149	16	0
50	AN	1720	0	1779	21	0
51	AO	1555	0	1659	28	0
52	AP	1388	0	1423	37	0
53	AQ	1441	0	1543	29	0
54	AR	1521	0	1617	20	0
55	AS	1445	0	1487	18	0
56	AT	1276	0	1323	23	0
57	AU	796	0	812	10	0
58	AV	1003	0	1048	18	0
59	AW	521	0	551	5	0
60	AX	968	0	1036	16	0
61	AY	993	0	1081	17	0
62	AZ	1092	0	1155	25	0
63	Aa	1173	0	1215	25	0
64	Ab	462	0	491	11	0
65	Ac	743	0	797	25	0
66	Ad	890	0	938	13	0
67	Ae	1020	0	1089	11	0
68	Af	850	0	880	10	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
69	Ag	880	0	945	17	0
70	Ah	969	0	1078	18	0
71	Ai	771	0	849	10	0
72	Aj	681	0	687	12	0
73	Ak	612	0	682	20	0
74	Al	436	0	475	10	0
75	Am	417	0	459	8	0
76	An	233	0	284	6	0
77	Ao	847	0	914	16	0
78	Ap	694	0	738	14	0
79	E	1718	0	1811	45	0
80	DC	6419	0	6491	182	0
81	V	1473	0	1514	34	0
82	EC	4045	0	2039	72	0
83	A1	173	0	0	0	0
83	A3	2	0	0	0	0
83	A4	4	0	0	0	0
83	AB	1	0	0	0	0
83	AL	1	0	0	0	0
83	AO	1	0	0	0	0
83	B5	33	0	0	0	0
83	Ba	1	0	0	0	0
83	DC	1	0	0	0	0
84	Ao	1	0	0	0	0
85	DC	28	0	12	4	0
86	DC	35	0	0	0	0
All	All	213962	0	160055	3065	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 8.

The worst 5 of 3065 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
38:A1:2457:G:N2	38:A1:2486:A:N1	2.05	1.03
34:B5:1187:U:H3	34:B5:1198:G:H1	0.99	0.98
38:A1:3234:A:N6	38:A1:3253:G:H1	1.63	0.97
34:B5:1158:C:H42	34:B5:1163:A:H61	1.05	0.95
38:A1:2482:U:H3	38:A1:2486:A:H62	1.13	0.94

There are no symmetry-related clashes.

## 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	BA	204/252 (81%)	182 (89%)	22 (11%)	0	100	100
2	BB	212/255 (83%)	184 (87%)	28 (13%)	0	100	100
3	BC	215/254 (85%)	204 (95%)	11 (5%)	0	100	100
4	BE	258/261 (99%)	233 (90%)	25 (10%)	0	100	100
5	BG	224/236 (95%)	215 (96%)	9 (4%)	0	100	100
6	BH	182/190 (96%)	170 (93%)	12 (7%)	0	100	100
7	BI	184/200 (92%)	167 (91%)	17 (9%)	0	100	100
8	BJ	183/197 (93%)	172 (94%)	11 (6%)	0	100	100
9	BL	153/156 (98%)	138 (90%)	15 (10%)	0	100	100
10	BN	148/151 (98%)	140 (95%)	8 (5%)	0	100	100
11	BO	125/137 (91%)	111 (89%)	14 (11%)	0	100	100
12	BV	85/87 (98%)	75 (88%)	10 (12%)	0	100	100
13	BW	127/130 (98%)	124 (98%)	3 (2%)	0	100	100
14	BX	142/145 (98%)	126 (89%)	16 (11%)	0	100	100
15	BY	132/135 (98%)	123 (93%)	9 (7%)	0	100	100
16	Ba	95/119 (80%)	80 (84%)	15 (16%)	0	100	100
17	Bb	79/82 (96%)	67 (85%)	12 (15%)	0	100	100
18	Be	58/63 (92%)	51 (88%)	7 (12%)	0	100	100
19	BD	221/240 (92%)	206 (93%)	15 (7%)	0	100	100
20	BF	204/225 (91%)	186 (91%)	18 (9%)	0	100	100
21	BK	94/105 (90%)	82 (87%)	12 (13%)	0	100	100
22	BP	122/142 (86%)	112 (92%)	10 (8%)	0	100	100
23	BQ	139/143 (97%)	134 (96%)	5 (4%)	0	100	100
24	BR	117/136 (86%)	109 (93%)	8 (7%)	0	100	100
25	BS	143/146 (98%)	126 (88%)	17 (12%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
26	BT	139/144 (96%)	126 (91%)	13 (9%)	0	100	100
27	BU	105/121 (87%)	97 (92%)	8 (8%)	0	100	100
28	BZ	67/108 (62%)	63 (94%)	4 (6%)	0	100	100
29	Bc	61/67 (91%)	56 (92%)	5 (8%)	0	100	100
30	Bd	51/56 (91%)	50 (98%)	1 (2%)	0	100	100
31	Bg	310/319 (97%)	278 (90%)	32 (10%)	0	100	100
32	Bf	73/152 (48%)	64 (88%)	9 (12%)	0	100	100
33	BM	122/143 (85%)	115 (94%)	7 (6%)	0	100	100
35	AA	245/254 (96%)	228 (93%)	17 (7%)	0	100	100
36	AB	383/387 (99%)	361 (94%)	22 (6%)	0	100	100
37	AC	359/362 (99%)	337 (94%)	22 (6%)	0	100	100
41	AD	290/297 (98%)	274 (94%)	16 (6%)	0	100	100
42	AE	152/176 (86%)	141 (93%)	11 (7%)	0	100	100
43	AF	220/244 (90%)	213 (97%)	7 (3%)	0	100	100
44	AG	228/256 (89%)	210 (92%)	18 (8%)	0	100	100
45	AH	188/191 (98%)	171 (91%)	17 (9%)	0	100	100
46	AI	201/221 (91%)	195 (97%)	6 (3%)	0	100	100
47	AJ	167/174 (96%)	150 (90%)	17 (10%)	0	100	100
48	AL	191/199 (96%)	178 (93%)	13 (7%)	0	100	100
49	AM	134/138 (97%)	127 (95%)	7 (5%)	0	100	100
50	AN	201/204 (98%)	191 (95%)	10 (5%)	0	100	100
51	AO	195/199 (98%)	194 (100%)	1 (0%)	0	100	100
52	AP	171/184 (93%)	163 (95%)	8 (5%)	0	100	100
53	AQ	183/186 (98%)	177 (97%)	6 (3%)	0	100	100
54	AR	186/189 (98%)	178 (96%)	8 (4%)	0	100	100
55	AS	170/178 (96%)	160 (94%)	10 (6%)	0	100	100
56	AT	157/160 (98%)	146 (93%)	11 (7%)	0	100	100
57	AU	98/121 (81%)	92 (94%)	6 (6%)	0	100	100
58	AV	134/137 (98%)	132 (98%)	2 (2%)	0	100	100
59	AW	61/155 (39%)	60 (98%)	1 (2%)	0	100	100
60	AX	119/142 (84%)	114 (96%)	5 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
61	AY	124/127 (98%)	118 (95%)	6 (5%)	0	100	100
62	AZ	133/136 (98%)	127 (96%)	6 (4%)	0	100	100
63	Aa	146/149 (98%)	133 (91%)	13 (9%)	0	100	100
64	Ab	56/59 (95%)	50 (89%)	6 (11%)	0	100	100
65	Ac	95/105 (90%)	94 (99%)	1 (1%)	0	100	100
66	Ad	107/113 (95%)	100 (94%)	7 (6%)	0	100	100
67	Ae	125/130 (96%)	121 (97%)	4 (3%)	0	100	100
68	Af	104/107 (97%)	100 (96%)	4 (4%)	0	100	100
69	Ag	110/121 (91%)	105 (96%)	5 (4%)	0	100	100
70	Ah	117/120 (98%)	111 (95%)	6 (5%)	0	100	100
71	Ai	97/100 (97%)	89 (92%)	8 (8%)	0	100	100
72	Aj	85/88 (97%)	81 (95%)	4 (5%)	0	100	100
73	Ak	75/78 (96%)	69 (92%)	6 (8%)	0	100	100
74	Al	48/51 (94%)	46 (96%)	2 (4%)	0	100	100
75	Am	50/128 (39%)	48 (96%)	2 (4%)	0	100	100
76	An	23/25 (92%)	23 (100%)	0	0	100	100
77	Ao	103/106 (97%)	91 (88%)	12 (12%)	0	100	100
78	Ap	89/92 (97%)	83 (93%)	6 (7%)	0	100	100
79	E	215/217 (99%)	206 (96%)	9 (4%)	0	100	100
80	DC	819/842 (97%)	759 (93%)	60 (7%)	0	100	100
81	V	187/312 (60%)	176 (94%)	11 (6%)	0	100	100
All	All	12115/13257 (91%)	11288 (93%)	827 (7%)	0	100	100

There are no Ramachandran outliers to report.

### 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	BA	173/210 (82%)	173 (100%)	0	100	100
2	BB	191/224 (85%)	191 (100%)	0	100	100
3	BC	176/205 (86%)	176 (100%)	0	100	100
4	BE	221/222 (100%)	221 (100%)	0	100	100
5	BG	193/201 (96%)	193 (100%)	0	100	100
6	BH	165/170 (97%)	165 (100%)	0	100	100
7	BI	150/161 (93%)	150 (100%)	0	100	100
8	BJ	158/166 (95%)	158 (100%)	0	100	100
9	BL	136/137 (99%)	136 (100%)	0	100	100
10	BN	127/128 (99%)	127 (100%)	0	100	100
11	BO	96/105 (91%)	96 (100%)	0	100	100
12	BV	74/74 (100%)	74 (100%)	0	100	100
13	BW	110/111 (99%)	110 (100%)	0	100	100
14	BX	119/120 (99%)	119 (100%)	0	100	100
15	BY	112/113 (99%)	112 (100%)	0	100	100
16	Ba	83/100 (83%)	83 (100%)	0	100	100
17	Bb	70/71 (99%)	70 (100%)	0	100	100
18	Be	51/54 (94%)	51 (100%)	0	100	100
19	BD	182/195 (93%)	182 (100%)	0	100	100
20	BF	173/191 (91%)	173 (100%)	0	100	100
21	BK	89/98 (91%)	89 (100%)	0	100	100
22	BP	104/118 (88%)	104 (100%)	0	100	100
23	BQ	117/119 (98%)	117 (100%)	0	100	100
24	BR	110/124 (89%)	110 (100%)	0	100	100
25	BS	128/129 (99%)	128 (100%)	0	100	100
26	BT	113/116 (97%)	113 (100%)	0	100	100
27	BU	100/114 (88%)	100 (100%)	0	100	100
28	BZ	61/89 (68%)	61 (100%)	0	100	100
29	Bc	56/60 (93%)	56 (100%)	0	100	100
30	Bd	47/49 (96%)	47 (100%)	0	100	100
31	Bg	256/262 (98%)	256 (100%)	0	100	100
32	Bf	66/135 (49%)	66 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
33	BM	100/119 (84%)	100 (100%)	0	100	100
35	AA	189/196 (96%)	189 (100%)	0	100	100
36	AB	321/322 (100%)	321 (100%)	0	100	100
37	AC	288/289 (100%)	288 (100%)	0	100	100
41	AD	241/245 (98%)	241 (100%)	0	100	100
42	AE	134/153 (88%)	134 (100%)	0	100	100
43	AF	186/205 (91%)	186 (100%)	0	100	100
44	AG	189/208 (91%)	189 (100%)	0	100	100
45	AH	170/171 (99%)	170 (100%)	0	100	100
46	AI	176/187 (94%)	176 (100%)	0	100	100
47	AJ	147/150 (98%)	147 (100%)	0	100	100
48	AL	154/159 (97%)	154 (100%)	0	100	100
49	AM	107/109 (98%)	107 (100%)	0	100	100
50	AN	175/176 (99%)	175 (100%)	0	100	100
51	AO	160/162 (99%)	160 (100%)	0	100	100
52	AP	141/146 (97%)	141 (100%)	0	100	100
53	AQ	150/151 (99%)	150 (100%)	0	100	100
54	AR	153/154 (99%)	153 (100%)	0	100	100
55	AS	156/162 (96%)	156 (100%)	0	100	100
56	AT	136/137 (99%)	136 (100%)	0	100	100
57	AU	87/107 (81%)	87 (100%)	0	100	100
58	AV	104/105 (99%)	104 (100%)	0	100	100
59	AW	55/129 (43%)	55 (100%)	0	100	100
60	AX	105/118 (89%)	105 (100%)	0	100	100
61	AY	109/110 (99%)	109 (100%)	0	100	100
62	AZ	115/116 (99%)	115 (100%)	0	100	100
63	Aa	118/119 (99%)	118 (100%)	0	100	100
64	Ab	46/47 (98%)	46 (100%)	0	100	100
65	Ac	81/88 (92%)	81 (100%)	0	100	100
66	Ad	96/97 (99%)	96 (100%)	0	100	100
67	Ae	109/111 (98%)	109 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
68	Af	90/91 (99%)	90 (100%)	0	100	100
69	Ag	95/103 (92%)	95 (100%)	0	100	100
70	Ah	104/105 (99%)	104 (100%)	0	100	100
71	Ai	81/82 (99%)	81 (100%)	0	100	100
72	Aj	70/71 (99%)	70 (100%)	0	100	100
73	Ak	68/69 (99%)	68 (100%)	0	100	100
74	Al	45/46 (98%)	45 (100%)	0	100	100
75	Am	47/116 (40%)	47 (100%)	0	100	100
76	An	23/23 (100%)	23 (100%)	0	100	100
77	Ao	90/91 (99%)	90 (100%)	0	100	100
78	Ap	71/72 (99%)	71 (100%)	0	100	100
79	E	198/198 (100%)	198 (100%)	0	100	100
80	DC	699/714 (98%)	699 (100%)	0	100	100
81	V	160/254 (63%)	160 (100%)	0	100	100
All	All	10346/11154 (93%)	10346 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 123 such sidechains are listed below:

Mol	Chain	Res	Type
37	AC	237	GLN
77	Ao	59	HIS
48	AL	120	GLN
73	Ak	67	GLN
80	DC	355	GLN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
34	B5	1780/1798 (98%)	414 (23%)	11 (0%)
38	A1	3194/3360 (95%)	595 (18%)	21 (0%)
39	A3	120/121 (99%)	11 (9%)	1 (0%)
40	A4	157/158 (99%)	30 (19%)	0
82	EC	187/202 (92%)	101 (54%)	7 (3%)
All	All	5438/5639 (96%)	1151 (21%)	40 (0%)

5 of 1151 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
34	B5	2	A
34	B5	4	C
34	B5	9	U
34	B5	10	G
34	B5	11	A

5 of 40 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
38	A1	2241	U
82	EC	6844	A
38	A1	2280	A2M
39	A3	52	G
82	EC	6876	A

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
34	G7M	B5	1575	34	23,26,27	2.52	6 (26%)	34,39,42	3.17	16 (47%)
38	A2M	A1	876	38	22,25,26	1.49	4 (18%)	30,36,39	2.02	8 (26%)
38	A2M	A1	2280	38	22,25,26	1.48	4 (18%)	30,36,39	2.11	8 (26%)
34	MA6	B5	1782	34	23,26,27	1.44	5 (21%)	33,38,41	2.14	11 (33%)
38	A2M	A1	817	83,38	22,25,26	1.50	5 (22%)	30,36,39	2.07	9 (30%)
34	OMU	B5	578	34	19,22,23	1.19	2 (10%)	25,31,34	1.80	5 (20%)
38	OMC	A1	2337	38	19,22,23	0.80	0	25,31,34	0.90	1 (4%)
38	OMU	A1	2417	38	19,22,23	1.25	3 (15%)	25,31,34	1.76	4 (16%)
38	1MA	A1	2142	83,38	21,25,26	1.33	4 (19%)	30,37,40	1.70	4 (13%)
34	A2M	B5	28	34,83	22,25,26	1.50	4 (18%)	30,36,39	2.05	8 (26%)
38	A2M	A1	2946	83,38	22,25,26	1.47	5 (22%)	30,36,39	2.20	10 (33%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
38	OMG	A1	805	38	23,26,27	1.19	3 (13%)	32,38,41	1.98	6 (18%)
38	OMC	A1	2959	38	19,22,23	0.80	0	25,31,34	0.82	0
34	OMC	B5	1007	34	19,22,23	0.81	0	25,31,34	0.94	1 (4%)
34	A2M	B5	974	34	22,25,26	1.49	4 (18%)	30,36,39	2.07	9 (30%)
38	A2M	A1	2640	38	22,25,26	1.50	4 (18%)	30,36,39	2.06	8 (26%)
34	OMG	B5	1572	34	23,26,27	1.19	3 (13%)	32,38,41	2.01	6 (18%)
38	OMG	A1	2619	38	23,26,27	1.19	3 (13%)	32,38,41	1.99	6 (18%)
34	OMG	B5	1428	34	23,26,27	1.19	3 (13%)	32,38,41	1.96	6 (18%)
38	A2M	A1	649	38	22,25,26	1.48	4 (18%)	30,36,39	2.03	8 (26%)
38	A2M	A1	2281	38	22,25,26	1.43	4 (18%)	30,36,39	2.22	10 (33%)
34	OMU	B5	1269	34	19,22,23	1.29	4 (21%)	25,31,34	1.90	8 (32%)
34	OMG	B5	1126	34	23,26,27	1.19	3 (13%)	32,38,41	1.95	6 (18%)
34	OMG	B5	1271	34	23,26,27	1.19	3 (13%)	32,38,41	1.93	6 (18%)
38	5MC	A1	2870	83,38	19,22,23	1.48	3 (15%)	26,32,35	1.30	3 (11%)
34	A2M	B5	420	34	22,25,26	1.48	4 (18%)	30,36,39	2.07	10 (33%)
38	OMG	A1	908	38	23,26,27	1.21	3 (13%)	32,38,41	2.00	6 (18%)
38	OMG	A1	867	38	23,26,27	1.18	3 (13%)	32,38,41	1.99	6 (18%)
34	XSX	B5	1191	34	24,28,29	1.00	1 (4%)	30,40,43	2.10	7 (23%)
34	A2M	B5	100	34,83	22,25,26	1.49	4 (18%)	30,36,39	2.06	8 (26%)
38	OMG	A1	1450	83,38	23,26,27	1.19	3 (13%)	32,38,41	1.98	6 (18%)
38	OMU	A1	2729	38	19,22,23	1.29	3 (15%)	25,31,34	1.72	5 (20%)
38	OMC	A1	663	38	19,22,23	0.81	0	25,31,34	0.78	0
34	A2M	B5	619	34,83	22,25,26	1.48	5 (22%)	30,36,39	2.03	9 (30%)
38	A2M	A1	1133	38	22,25,26	1.48	5 (22%)	30,36,39	2.15	10 (33%)
38	OMC	A1	650	83,38	19,22,23	0.80	0	25,31,34	0.80	0
34	OMG	B5	562	34	23,26,27	1.19	3 (13%)	32,38,41	1.98	6 (18%)
34	MA6	B5	1781	34	23,26,27	1.55	4 (17%)	33,38,41	2.10	10 (30%)
38	OMU	A1	1888	38	19,22,23	1.28	3 (15%)	25,31,34	1.85	4 (16%)
38	A2M	A1	1449	83,38	22,25,26	1.52	4 (18%)	30,36,39	1.99	7 (23%)
34	4AC	B5	1280	34	21,24,25	1.04	1 (4%)	28,34,37	1.09	2 (7%)
38	OMU	A1	2347	38	19,22,23	1.31	4 (21%)	25,31,34	1.81	6 (24%)
38	1MA	A1	645	83,38	21,25,26	1.36	4 (19%)	30,37,40	1.71	6 (20%)
38	OMG	A1	2288	38	23,26,27	1.21	3 (13%)	32,38,41	2.03	6 (18%)
34	A2M	B5	541	34	22,25,26	1.53	4 (18%)	30,36,39	2.17	7 (23%)
38	UR3	A1	2634	38	19,22,23	0.98	0	26,32,35	1.71	3 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
38	OMU	A1	2921	38	19,22,23	1.24	3 (15%)	25,31,34	1.84	5 (20%)
34	OMC	B5	1639	34	19,22,23	0.79	0	25,31,34	0.80	1 (4%)
38	A2M	A1	2220	38	22,25,26	1.51	5 (22%)	30,36,39	1.97	10 (33%)
34	A2M	B5	436	34	22,25,26	1.50	4 (18%)	30,36,39	2.08	10 (33%)
38	OMC	A1	1437	83,38	19,22,23	0.84	0	25,31,34	1.24	3 (12%)
38	OMU	A1	2724	38	19,22,23	1.23	3 (15%)	25,31,34	1.82	5 (20%)
38	OMG	A1	2793	38	23,26,27	1.19	3 (13%)	32,38,41	1.93	6 (18%)
38	OMG	A1	2815	38	23,26,27	1.19	3 (13%)	32,38,41	2.00	6 (18%)
38	OMC	A1	2948	38	19,22,23	0.83	0	25,31,34	1.10	2 (8%)
36	HIC	AB	243	36	10,11,12	1.46	1 (10%)	9,14,16	1.40	2 (22%)
38	OMC	A1	2197	38	19,22,23	0.78	0	25,31,34	0.80	0
34	A2M	B5	796	34	22,25,26	1.49	4 (18%)	30,36,39	2.28	9 (30%)
38	A2M	A1	807	38	22,25,26	1.50	5 (22%)	30,36,39	2.05	9 (30%)
38	OMG	A1	2922	38	23,26,27	1.20	3 (13%)	32,38,41	1.96	6 (18%)
38	OMU	A1	898	38	19,22,23	1.25	3 (15%)	25,31,34	1.78	5 (20%)
34	4AC	B5	1773	34	21,24,25	1.05	1 (4%)	28,34,37	1.38	5 (17%)
38	OMU	A1	2421	38	19,22,23	1.26	3 (15%)	25,31,34	1.84	5 (20%)
80	DDE	DC	699	80	18,20,21	1.02	1 (5%)	17,28,30	0.91	1 (5%)
38	OMG	A1	2791	38	23,26,27	1.18	3 (13%)	32,38,41	1.97	5 (15%)
34	OMC	B5	414	34	19,22,23	0.80	0	25,31,34	0.82	1 (4%)
38	5MC	A1	2278	83,38	19,22,23	1.47	3 (15%)	26,32,35	1.27	3 (11%)

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
34	G7M	B5	1575	34	-	0/7/25/26	0/3/3/3
38	A2M	A1	876	38	-	1/9/27/28	0/3/3/3
38	A2M	A1	2280	38	-	2/9/27/28	0/3/3/3
34	MA6	B5	1782	34	-	5/11/29/30	0/3/3/3
38	A2M	A1	817	83,38	-	1/9/27/28	0/3/3/3
34	OMU	B5	578	34	-	4/9/27/28	0/2/2/2
38	OMC	A1	2337	38	-	1/9/27/28	0/2/2/2
38	OMU	A1	2417	38	-	1/9/27/28	0/2/2/2
38	1MA	A1	2142	83,38	-	1/7/25/26	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
34	A2M	B5	28	34,83	-	0/9/27/28	0/3/3/3
38	A2M	A1	2946	83,38	-	1/9/27/28	0/3/3/3
38	OMG	A1	805	38	-	0/9/27/28	0/3/3/3
38	OMC	A1	2959	38	-	0/9/27/28	0/2/2/2
34	OMC	B5	1007	34	-	1/9/27/28	0/2/2/2
34	A2M	B5	974	34	-	0/9/27/28	0/3/3/3
38	A2M	A1	2640	38	-	1/9/27/28	0/3/3/3
34	OMG	B5	1572	34	-	0/9/27/28	0/3/3/3
38	OMG	A1	2619	38	-	1/9/27/28	0/3/3/3
34	OMG	B5	1428	34	-	4/9/27/28	0/3/3/3
38	A2M	A1	649	38	-	1/9/27/28	0/3/3/3
38	A2M	A1	2281	38	-	1/9/27/28	0/3/3/3
34	OMU	B5	1269	34	-	4/9/27/28	0/2/2/2
34	OMG	B5	1126	34	-	2/9/27/28	0/3/3/3
34	OMG	B5	1271	34	-	1/9/27/28	0/3/3/3
38	5MC	A1	2870	83,38	-	4/7/25/26	0/2/2/2
34	A2M	B5	420	34	-	1/9/27/28	0/3/3/3
38	OMG	A1	908	38	-	0/9/27/28	0/3/3/3
38	OMG	A1	867	38	-	1/9/27/28	0/3/3/3
34	XSX	B5	1191	34	-	4/16/34/35	0/2/2/2
34	A2M	B5	100	34,83	-	2/9/27/28	0/3/3/3
38	OMG	A1	1450	83,38	-	1/9/27/28	0/3/3/3
38	OMU	A1	2729	38	-	3/9/27/28	0/2/2/2
38	OMC	A1	663	38	-	1/9/27/28	0/2/2/2
34	A2M	B5	619	34,83	-	3/9/27/28	0/3/3/3
38	A2M	A1	1133	38	-	0/9/27/28	0/3/3/3
38	OMC	A1	650	83,38	-	0/9/27/28	0/2/2/2
34	OMG	B5	562	34	-	0/9/27/28	0/3/3/3
34	MA6	B5	1781	34	-	3/11/29/30	0/3/3/3
38	OMU	A1	1888	38	-	0/9/27/28	0/2/2/2
38	A2M	A1	1449	83,38	-	0/9/27/28	0/3/3/3
34	4AC	B5	1280	34	-	2/11/29/30	0/2/2/2
38	OMU	A1	2347	38	-	0/9/27/28	0/2/2/2
38	1MA	A1	645	83,38	-	0/7/25/26	0/3/3/3
38	OMG	A1	2288	38	-	0/9/27/28	0/3/3/3
34	A2M	B5	541	34	-	4/9/27/28	0/3/3/3
38	UR3	A1	2634	38	-	0/7/25/26	0/2/2/2
38	OMU	A1	2921	38	-	0/9/27/28	0/2/2/2
34	OMC	B5	1639	34	-	0/9/27/28	0/2/2/2
38	A2M	A1	2220	38	-	0/9/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
34	A2M	B5	436	34	-	1/9/27/28	0/3/3/3
38	OMC	A1	1437	83,38	-	2/9/27/28	0/2/2/2
38	OMU	A1	2724	38	-	1/9/27/28	0/2/2/2
38	OMG	A1	2793	38	-	0/9/27/28	0/3/3/3
38	OMG	A1	2815	38	-	0/9/27/28	0/3/3/3
38	OMC	A1	2948	38	-	1/9/27/28	0/2/2/2
36	HIC	AB	243	36	-	0/5/6/8	0/1/1/1
38	OMC	A1	2197	38	-	6/9/27/28	0/2/2/2
34	A2M	B5	796	34	-	0/9/27/28	0/3/3/3
38	A2M	A1	807	38	-	0/9/27/28	0/3/3/3
38	OMG	A1	2922	38	-	0/9/27/28	0/3/3/3
38	OMU	A1	898	38	-	1/9/27/28	0/2/2/2
34	4AC	B5	1773	34	-	4/11/29/30	0/2/2/2
38	OMU	A1	2421	38	-	1/9/27/28	0/2/2/2
80	DDE	DC	699	80	-	6/20/21/23	0/1/1/1
38	OMG	A1	2791	38	-	1/9/27/28	0/3/3/3
34	OMC	B5	414	34	-	1/9/27/28	0/2/2/2
38	5MC	A1	2278	83,38	-	0/7/25/26	0/2/2/2

The worst 5 of 192 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	B5	1575	G7M	C8-N7	7.96	1.46	1.33
38	A1	2278	5MC	C5-C4	5.03	1.47	1.44
34	B5	541	A2M	C5-C4	4.86	1.47	1.39
34	B5	1781	MA6	C5-C4	4.85	1.47	1.39
38	A1	2870	5MC	C5-C4	4.85	1.47	1.44

The worst 5 of 390 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	B5	1575	G7M	CN7-N7-C8	-8.16	112.42	124.79
34	B5	1575	G7M	N9-C8-N7	-7.00	95.48	112.48
34	B5	1575	G7M	C8-N7-C5	6.79	116.27	107.78
38	A1	2634	UR3	C4-N3-C2	-6.76	119.14	124.58
34	B5	541	A2M	C5-C4-N3	-6.61	117.62	126.72

There are no chirality outliers.

5 of 87 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
34	B5	100	A2M	C1'-C2'-O2'-CM'
34	B5	414	OMC	C1'-C2'-O2'-CM2
34	B5	420	A2M	C1'-C2'-O2'-CM'
34	B5	436	A2M	C1'-C2'-O2'-CM'
34	B5	1007	OMC	C1'-C2'-O2'-CM2

There are no ring outliers.

25 monomers are involved in 32 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
34	B5	1575	G7M	1	0
38	A1	2417	OMU	1	0
34	B5	974	A2M	1	0
34	B5	1572	OMG	1	0
34	B5	1428	OMG	1	0
38	A1	649	A2M	1	0
38	A1	2281	A2M	1	0
34	B5	1269	OMU	1	0
34	B5	1126	OMG	1	0
34	B5	420	A2M	2	0
34	B5	100	A2M	1	0
38	A1	663	OMC	1	0
38	A1	1133	A2M	1	0
38	A1	650	OMC	1	0
38	A1	1449	A2M	1	0
34	B5	1280	4AC	3	0
34	B5	1639	OMC	1	0
38	A1	2220	A2M	3	0
34	B5	436	A2M	1	0
38	A1	2724	OMU	3	0
38	A1	2793	OMG	1	0
38	A1	2948	OMC	1	0
38	A1	2197	OMC	1	0
34	B5	1773	4AC	1	0
80	DC	699	DDE	1	0

## 5.5 Carbohydrates

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry

Of 220 ligands modelled in this entry, 218 are monoatomic - leaving 2 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	GDP	DC	901	83	29,30,30	1.23	4 (13%)	45,47,47	1.78	7 (15%)
86	W9C	DC	902	-	34,39,39	0.68	2 (5%)	38,64,64	1.13	4 (10%)

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	GDP	DC	901	83	-	4/16/32/32	0/3/3/3
86	W9C	DC	902	-	1/1/15/16	3/21/104/104	0/7/5/5

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
85	DC	901	GDP	C5-C4	3.18	1.47	1.38
86	DC	902	W9C	O14-C5	-2.90	1.20	1.30
85	DC	901	GDP	C6-N1	-2.66	1.33	1.38
85	DC	901	GDP	C5-N7	-2.51	1.34	1.39
85	DC	901	GDP	PA-O3A	2.16	1.61	1.59

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
85	DC	901	GDP	C5-C4-N3	-6.40	118.21	128.39
85	DC	901	GDP	N9-C4-N3	4.92	135.80	125.95
85	DC	901	GDP	C2-N3-C4	4.66	120.33	112.30
86	DC	902	W9C	C12-C6-C2	-4.32	98.40	105.09
86	DC	902	W9C	C20-C13-C4	2.95	120.28	112.41

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
86	DC	902	W9C	C52

5 of 7 torsion outliers are listed below:

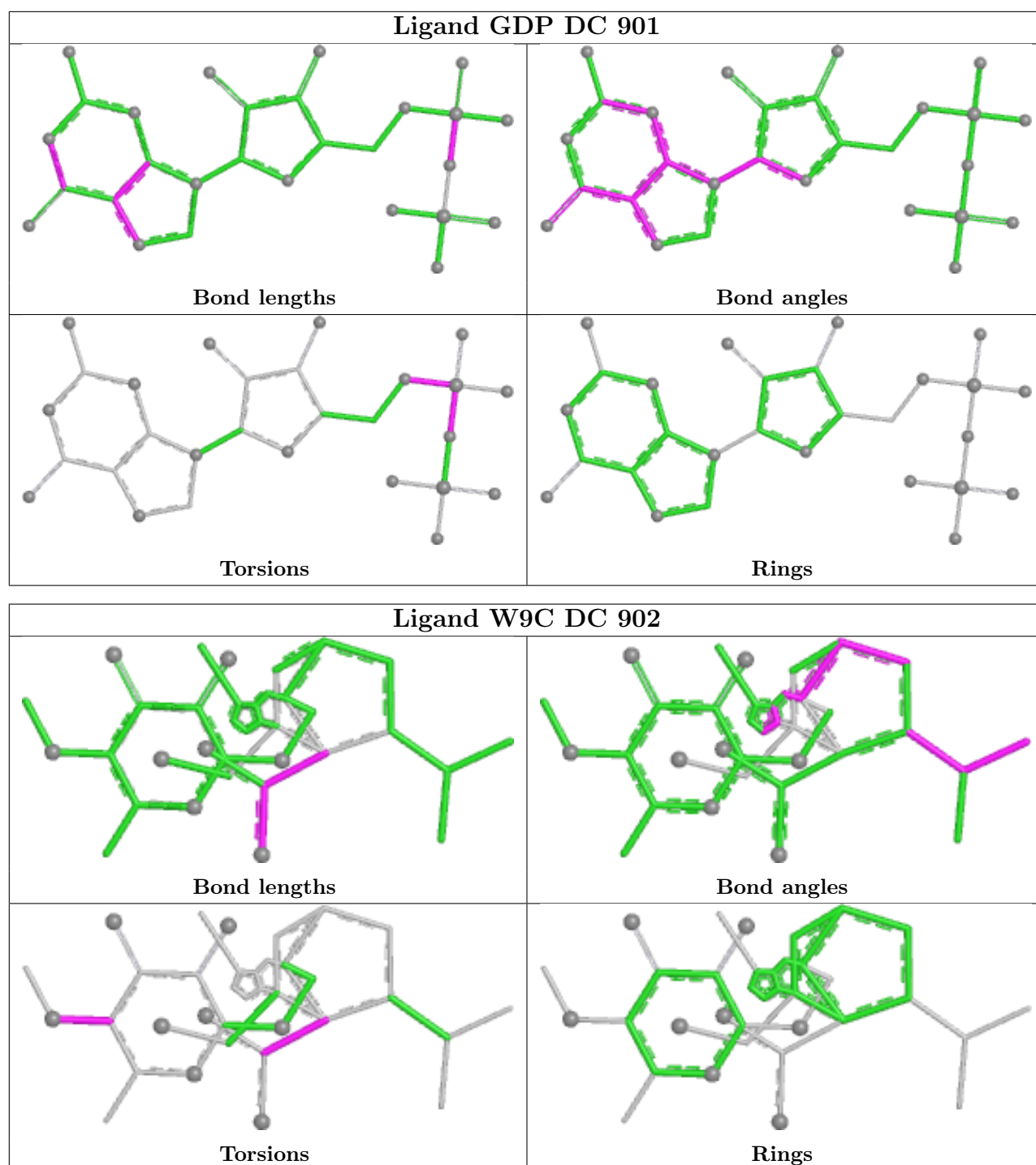
Mol	Chain	Res	Type	Atoms
85	DC	901	GDP	C5'-O5'-PA-O3A
85	DC	901	GDP	C5'-O5'-PA-O2A
86	DC	902	W9C	C2-C1-C5-O14
86	DC	902	W9C	C2-C1-C5-O15
86	DC	902	W9C	C54-C55-O64-C65

There are no ring outliers.

1 monomer is involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
85	DC	901	GDP	4	0

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



## 5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

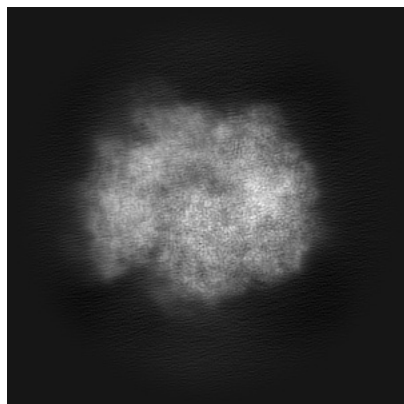
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-28634. These allow visual inspection of the internal detail of the map and identification of artifacts.

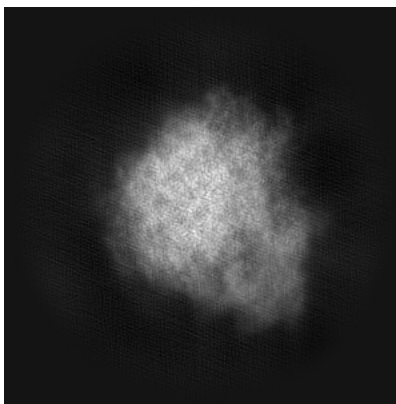
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

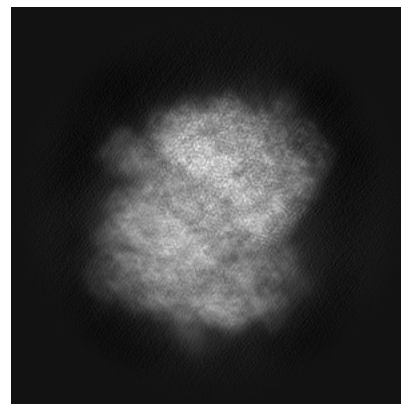
#### 6.1.1 Primary map



X

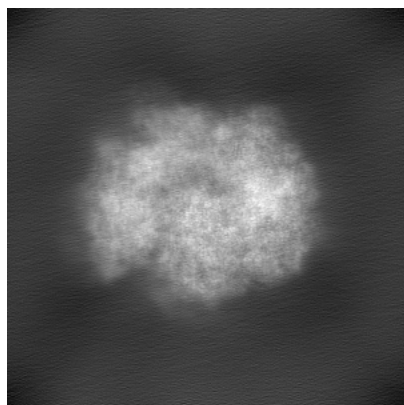


Y

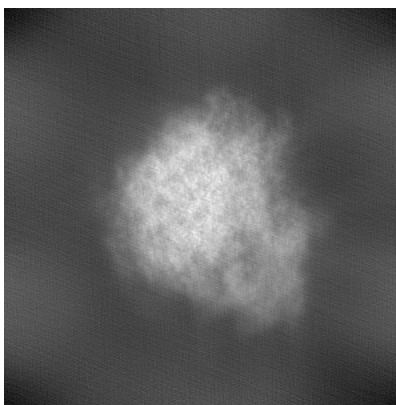


Z

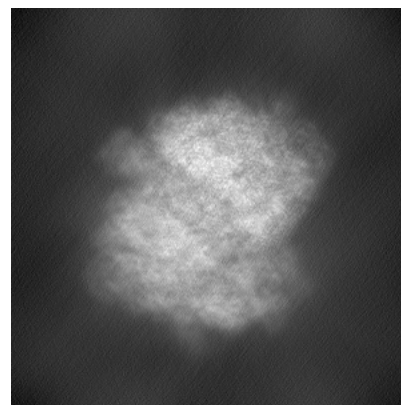
#### 6.1.2 Raw map



X



Y

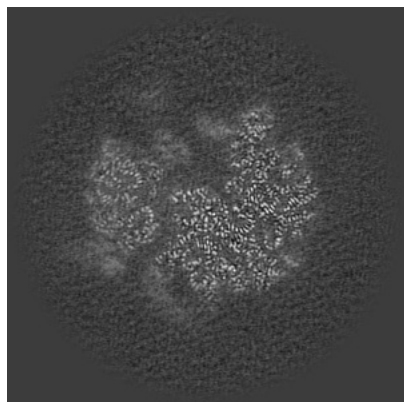


Z

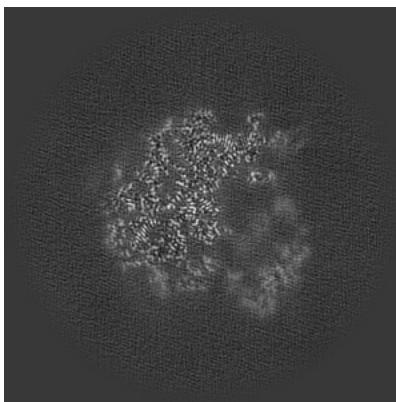
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

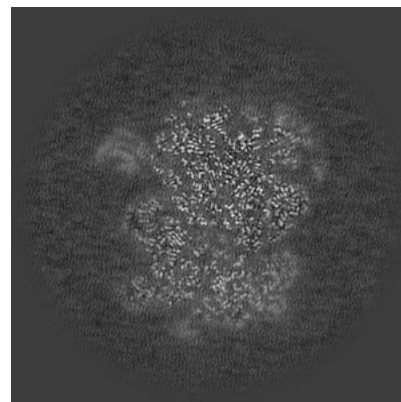
### 6.2.1 Primary map



X Index: 200

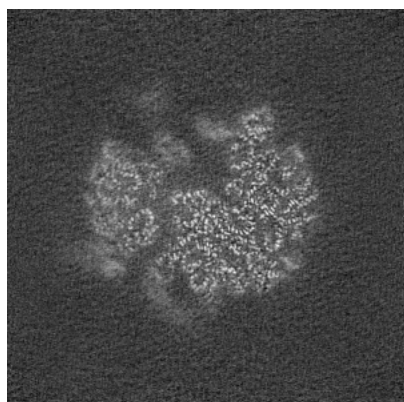


Y Index: 200

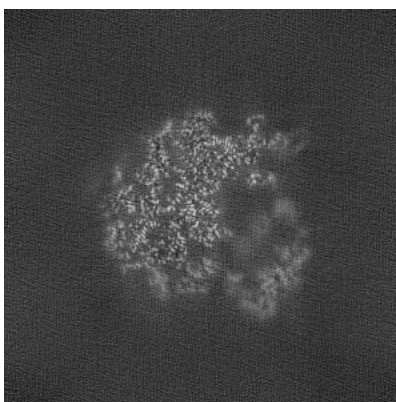


Z Index: 200

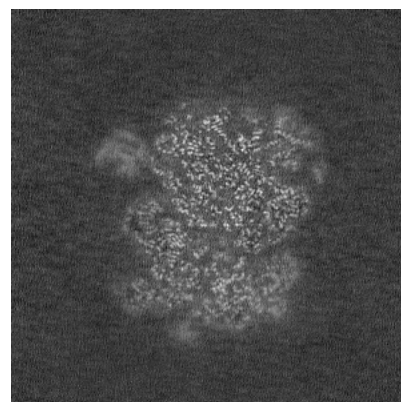
### 6.2.2 Raw map



X Index: 200



Y Index: 200

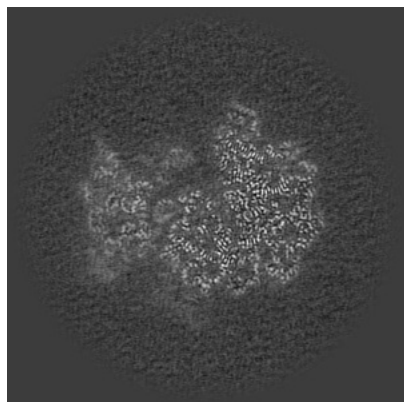


Z Index: 200

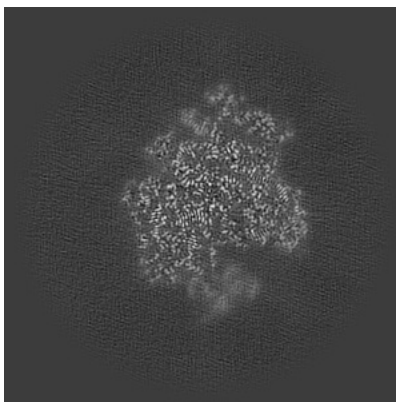
The images above show central slices of the map in three orthogonal directions.

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

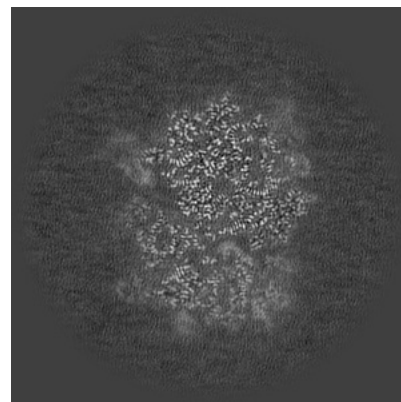
### 6.3.1 Primary map



X Index: 215

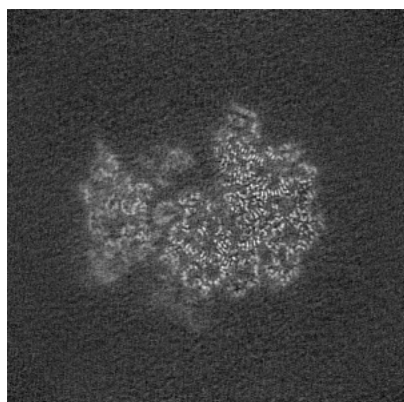


Y Index: 245

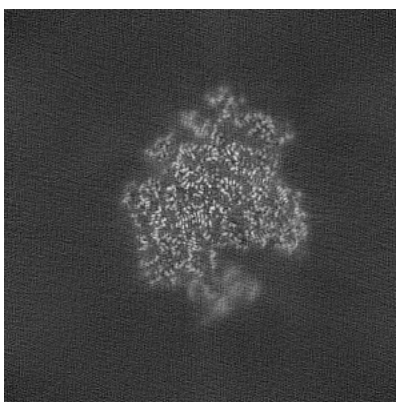


Z Index: 190

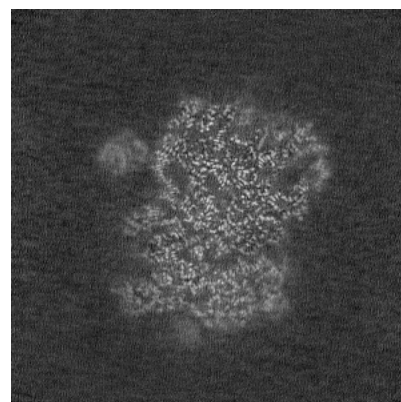
### 6.3.2 Raw map



X Index: 215



Y Index: 245

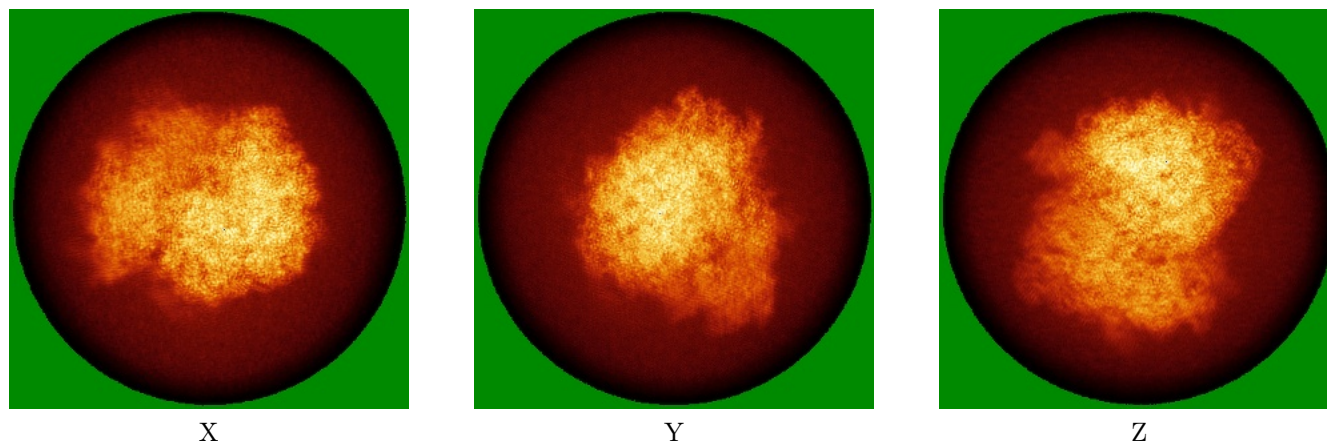


Z Index: 206

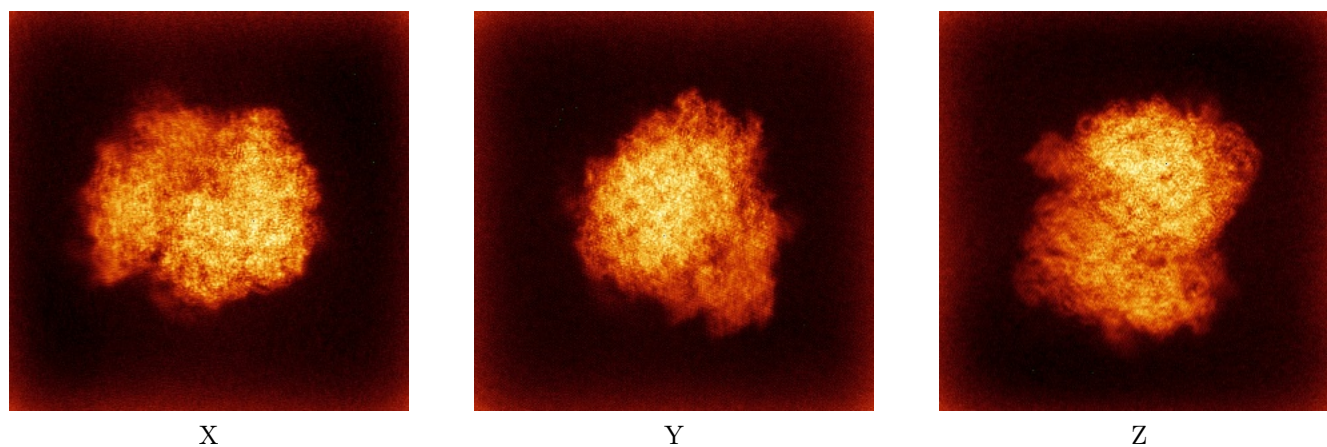
The images above show the largest variance slices of the map in three orthogonal directions.

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

### 6.4.1 Primary map



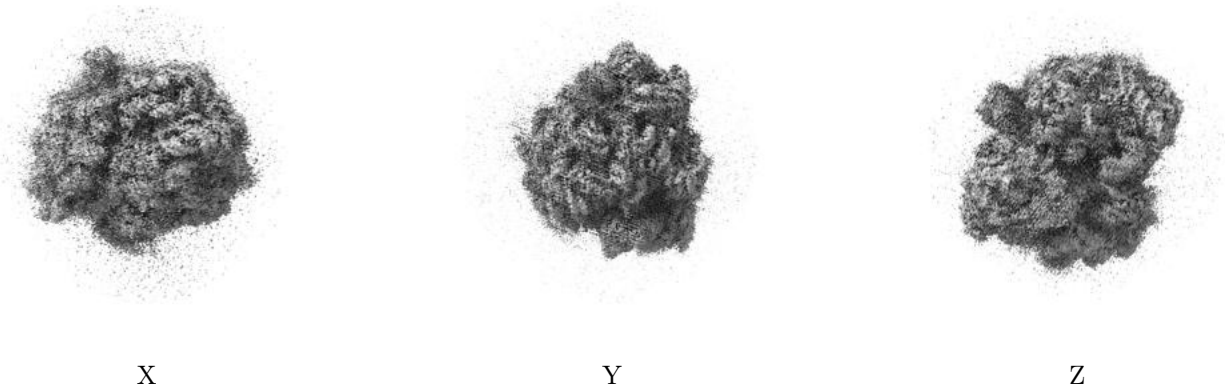
### 6.4.2 Raw map



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

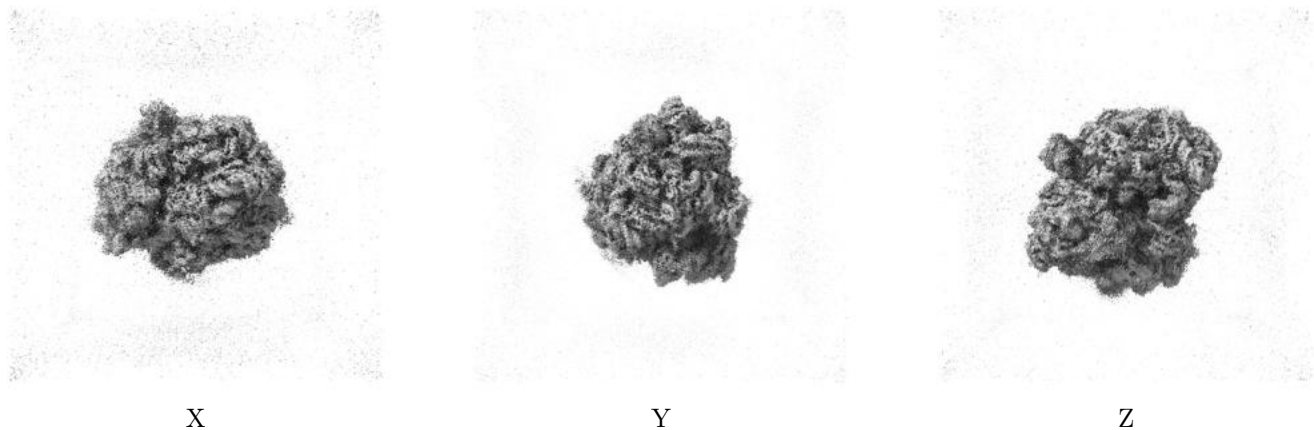
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.6. 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



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

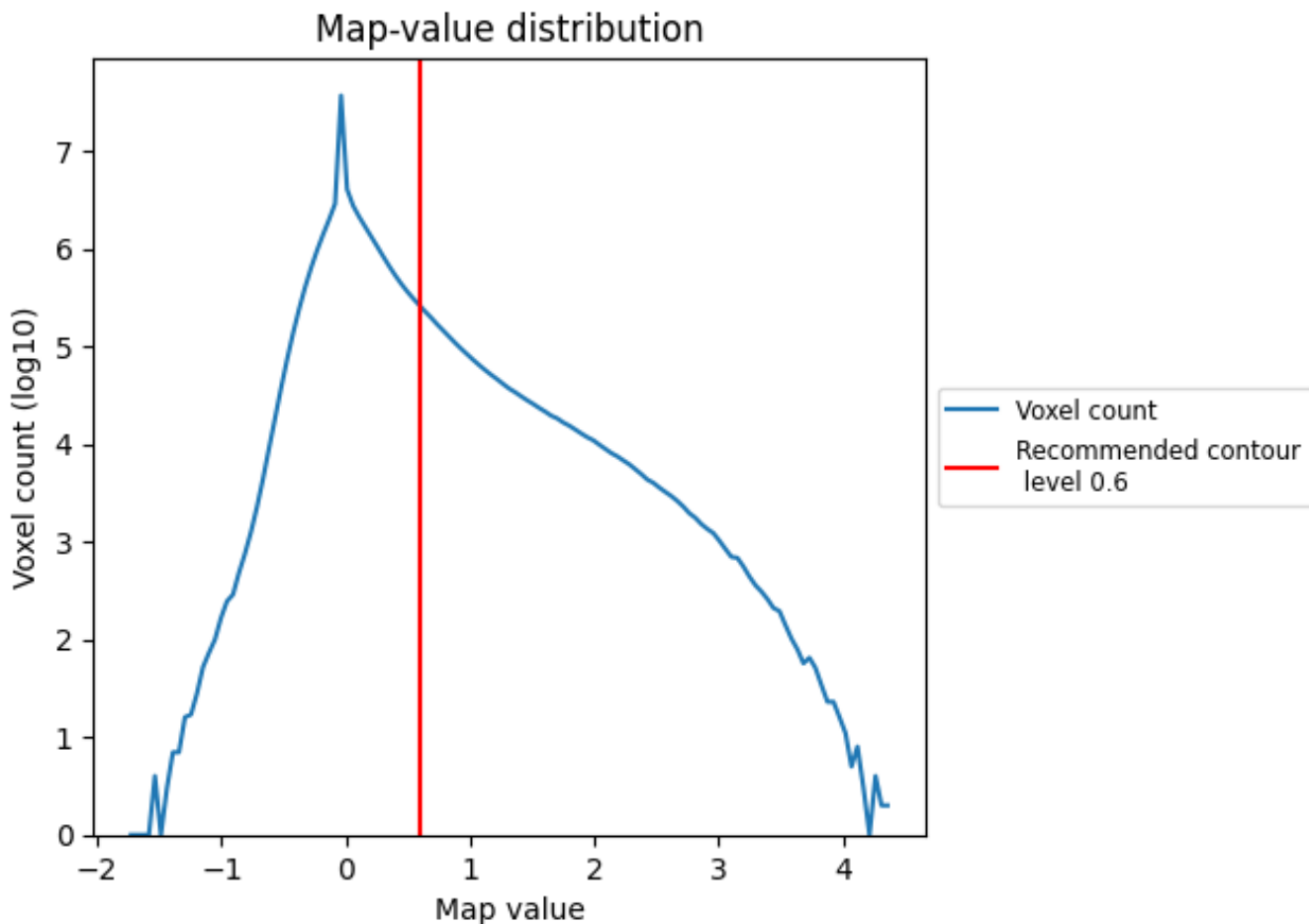
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

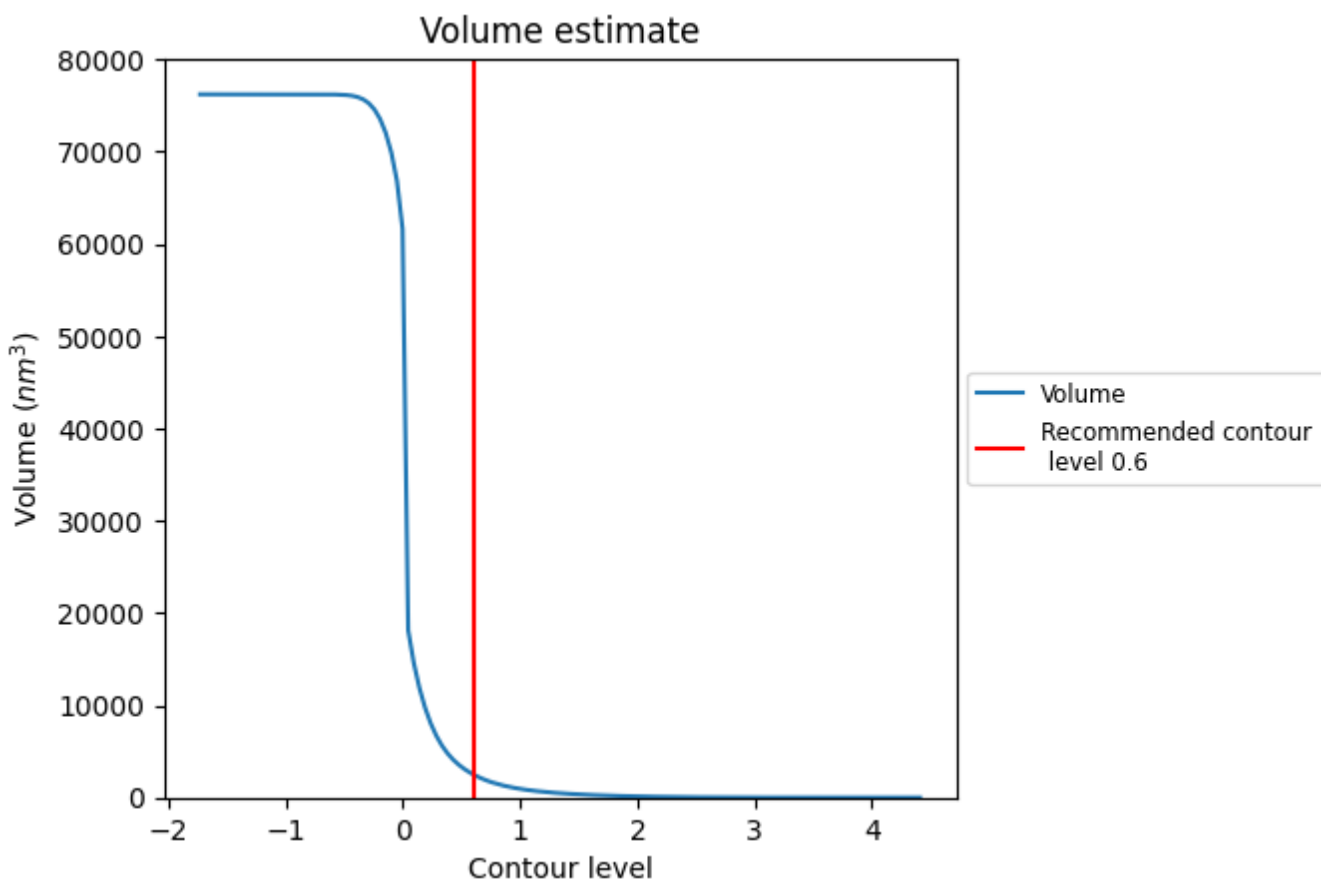
This section contains the results of statistical analysis of the map.

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



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

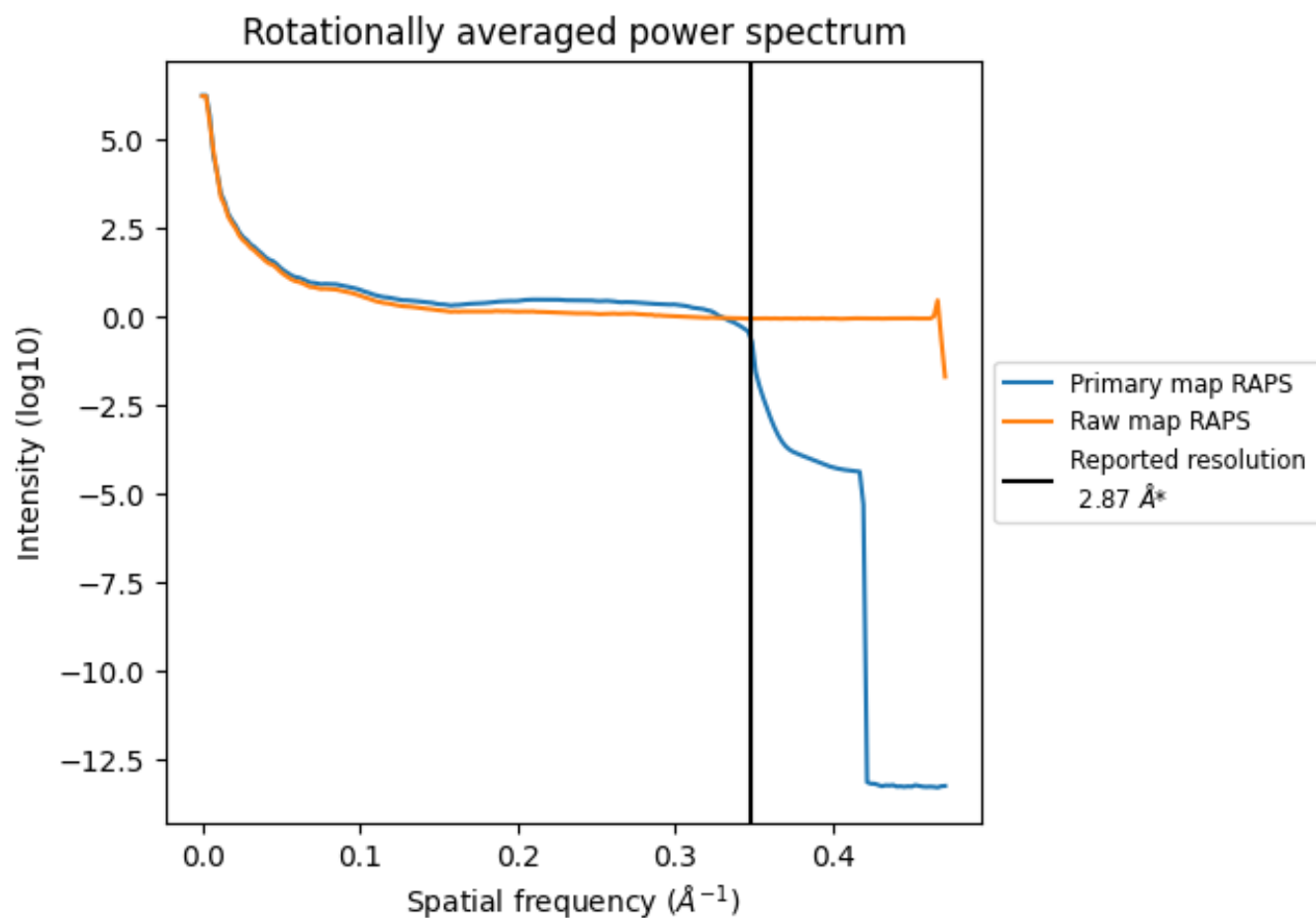
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 2515 nm<sup>3</sup>; this corresponds to an approximate mass of 2272 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](#)

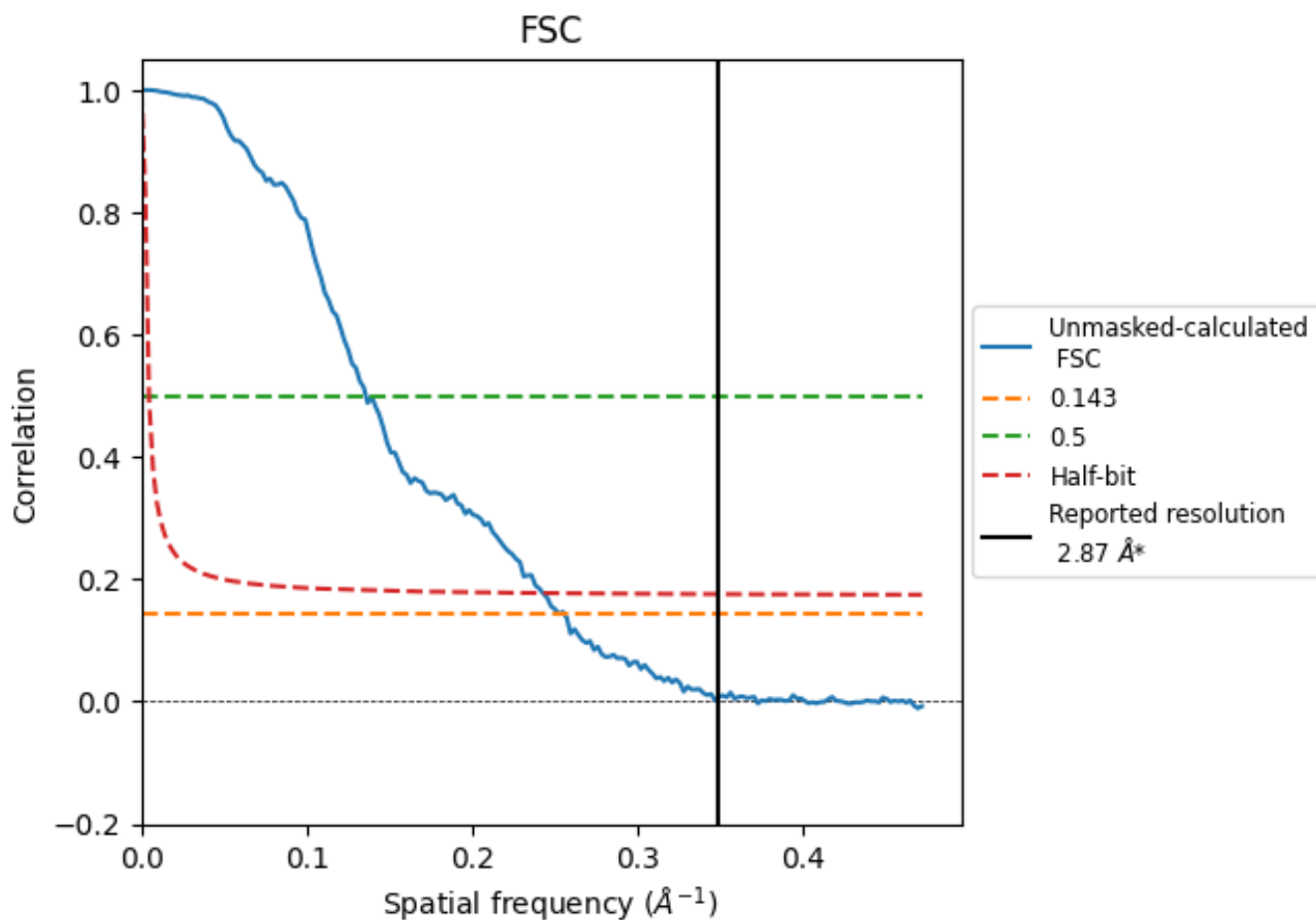


\*Reported resolution corresponds to spatial frequency of 0.348 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

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

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.348 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

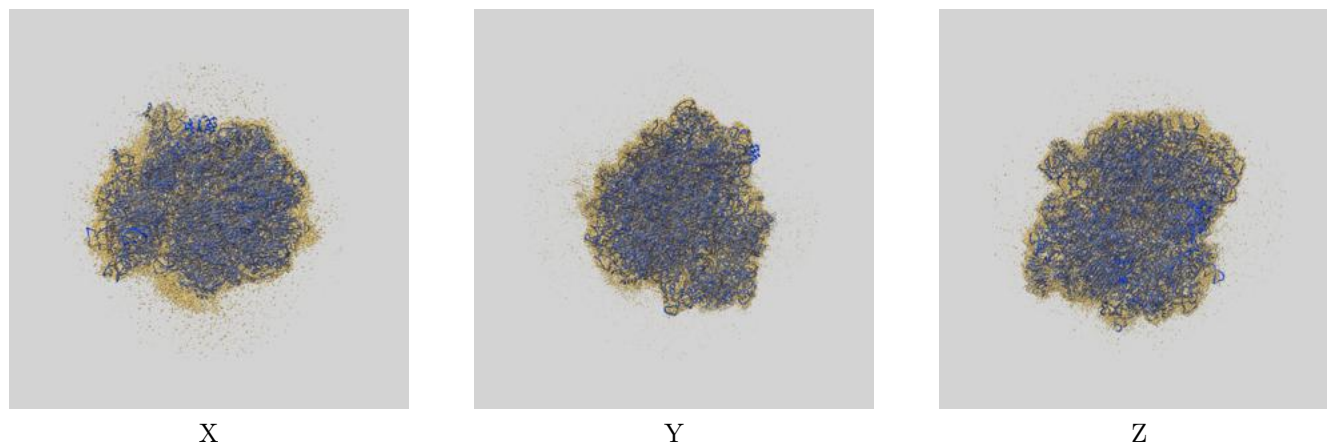
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.87	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.96	7.37	4.12

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.96 differs from the reported value 2.87 by more than 10 %

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

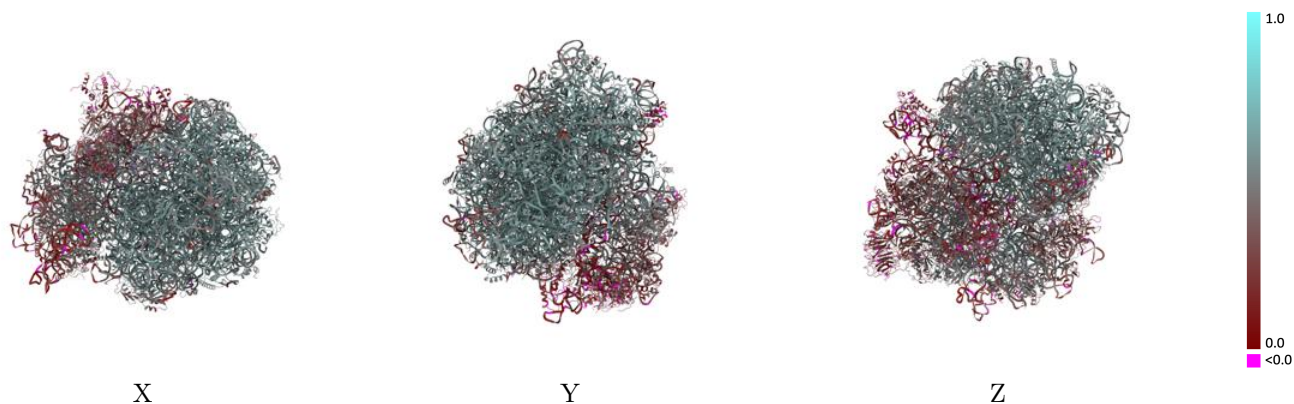
This section contains information regarding the fit between EMDB map EMD-28634 and PDB model 8EVR. Per-residue inclusion information can be found in section 3 on page 21.

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



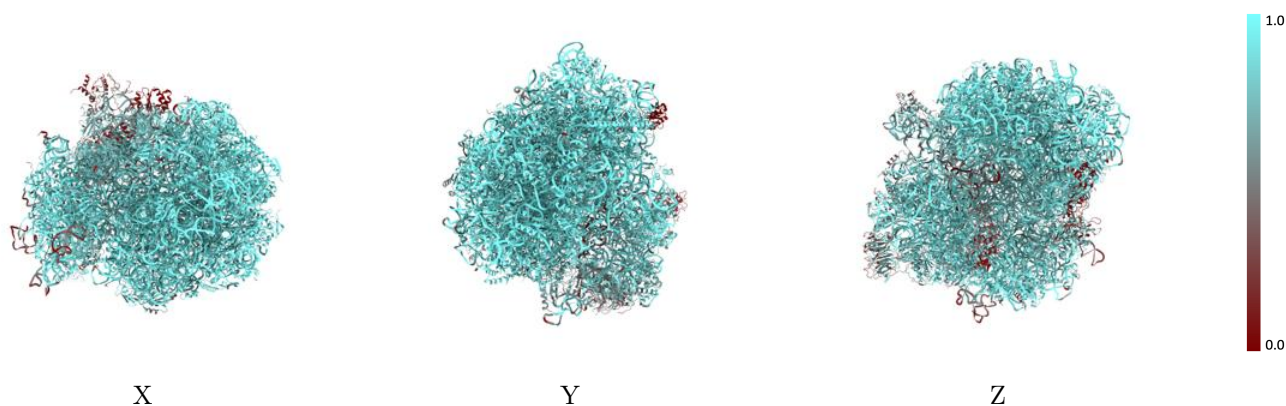
The images above show the 3D surface view of the map at the recommended contour level 0.6 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



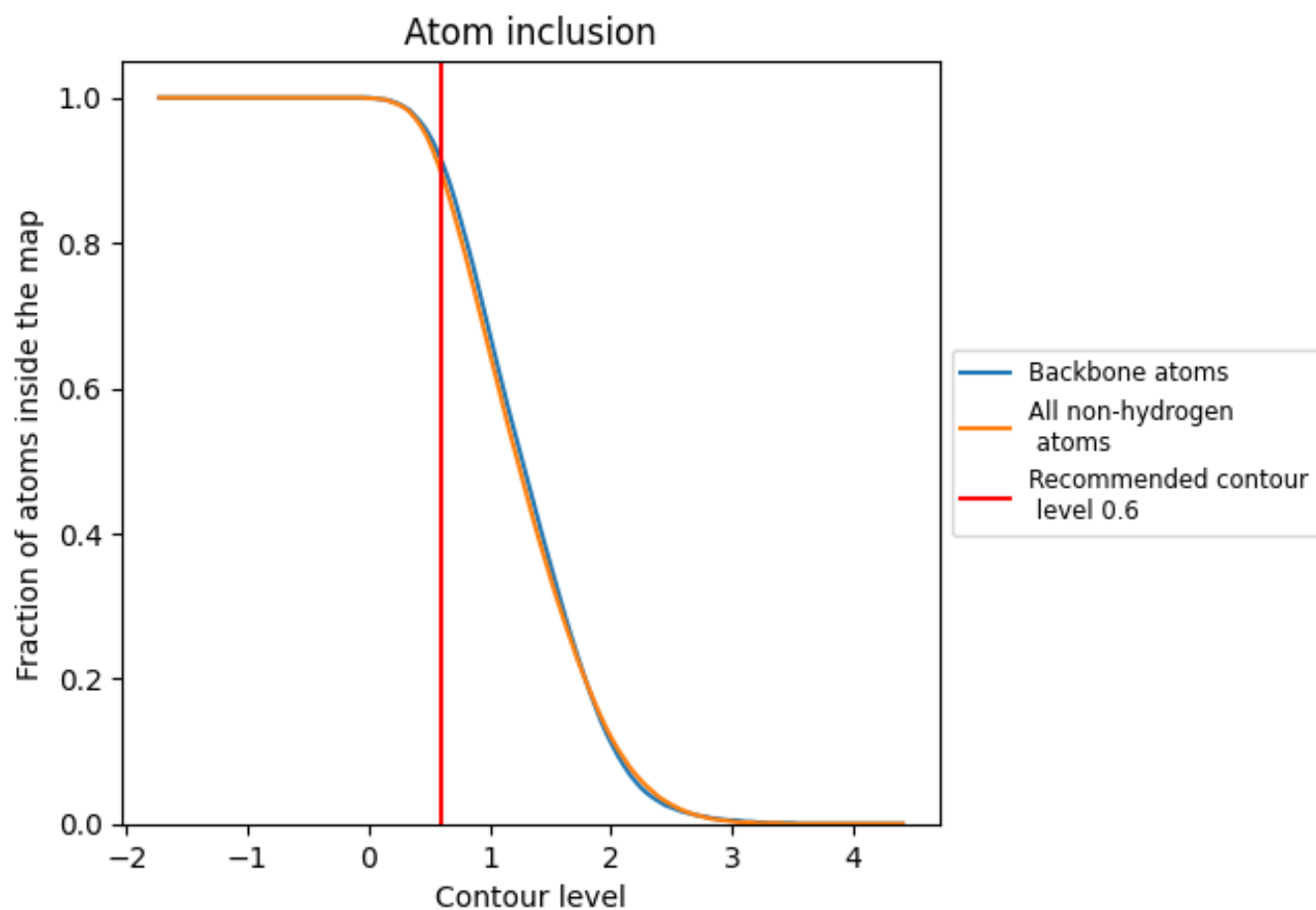
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



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







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 91% of all backbone atoms, 90% 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	 0.8960	 0.4700
A1	 0.9690	 0.5450
A3	 0.9880	 0.5370
A4	 0.9820	 0.5650
AA	 0.9650	 0.5960
AB	 0.9610	 0.5570
AC	 0.9600	 0.5680
AD	 0.9000	 0.4750
AE	 0.9400	 0.5160
AF	 0.9770	 0.5790
AG	 0.9170	 0.5240
AH	 0.9140	 0.5420
AI	 0.9570	 0.5560
AJ	 0.8430	 0.4180
AL	 0.9560	 0.5620
AM	 0.9560	 0.5510
AN	 0.9900	 0.6000
AO	 0.9620	 0.5680
AP	 0.9530	 0.5520
AQ	 0.9790	 0.5920
AR	 0.8140	 0.4660
AS	 0.9640	 0.5660
AT	 0.9600	 0.5490
AU	 0.8950	 0.4500
AV	 0.9550	 0.5720
AW	 0.9720	 0.5570
AX	 0.9420	 0.5390
AY	 0.9600	 0.5440
AZ	 0.9270	 0.5260
Aa	 0.9740	 0.5860
Ab	 0.9430	 0.5270
Ac	 0.9000	 0.5310
Ad	 0.9360	 0.5170
Ae	 0.9740	 0.5850
Af	 0.9820	 0.5850















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Chain	Atom inclusion	Q-score
Ag	 0.9400	 0.5430
Ah	 0.9640	 0.5500
Ai	 0.9600	 0.5280
Aj	 0.9860	 0.5960
Ak	 0.6730	 0.4290
Al	 0.9810	 0.5680
Am	 0.9230	 0.5480
An	 0.9580	 0.5180
Ao	 0.9050	 0.5520
Ap	 0.9700	 0.5790
B5	 0.9140	 0.4120
BA	 0.8380	 0.4370
BB	 0.8270	 0.4460
BC	 0.9330	 0.4880
BD	 0.7970	 0.3130
BE	 0.9220	 0.4430
BF	 0.6910	 0.2870
BG	 0.8690	 0.3610
BH	 0.7220	 0.3960
BI	 0.9090	 0.4430
BJ	 0.9200	 0.4600
BK	 0.7000	 0.2420
BL	 0.8850	 0.4680
BM	 0.1780	 0.1670
BN	 0.8830	 0.4760
BO	 0.8790	 0.4640
BP	 0.6790	 0.2990
BQ	 0.7860	 0.3070
BR	 0.6850	 0.3240
BS	 0.7510	 0.3010
BT	 0.8030	 0.3040
BU	 0.7410	 0.2740
BV	 0.9050	 0.4640
BW	 0.9740	 0.5400
BX	 0.9580	 0.5260
BY	 0.8900	 0.4040
BZ	 0.6720	 0.1990
Ba	 0.9040	 0.4920
Bb	 0.8000	 0.4400
Bc	 0.6500	 0.3000
Bd	 0.9030	 0.3510
Be	 0.8840	 0.4130

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Chain	Atom inclusion	Q-score
Bf	 0.2720	 0.1740
Bg	 0.5550	 0.2140
DC	 0.7140	 0.2960
E	 0.5730	 0.1810
EC	 0.5020	 0.1100
V	 0.1250	 0.2160