



wwPDB EM Validation Summary Report ⓘ

Aug 17, 2024 – 03:20 pm BST

PDB ID : 8QOI
EMDB ID : EMD-18539
Title : Structure of the human 80S ribosome at 1.9 Å resolution - the molecular role of chemical modifications and ions in RNA
Authors : Holvec, S.; Barchet, C.; Frechin, L.; Hazemann, I.; von Loeffelholz, O.; Klaholz, B.P.
Deposited on : 2023-09-29
Resolution : 1.90 Å (reported)
Based on initial model : 6QZP

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev92
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

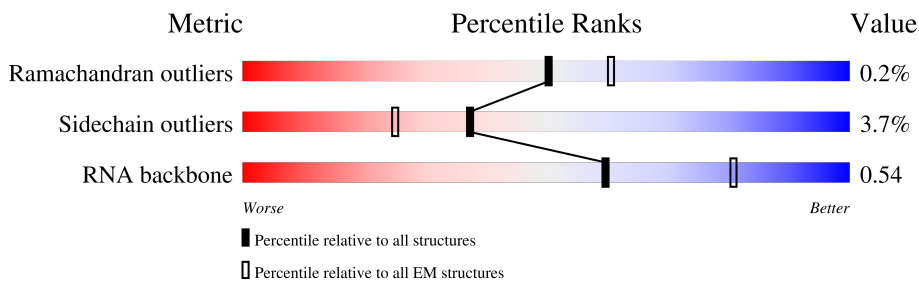
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 1.90 Å.

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



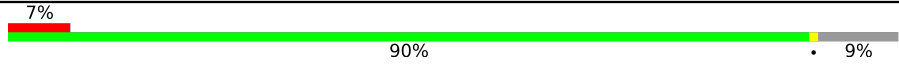

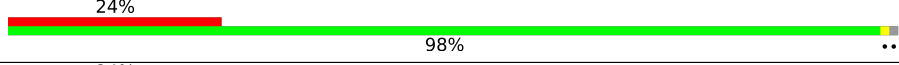
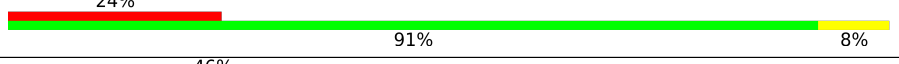
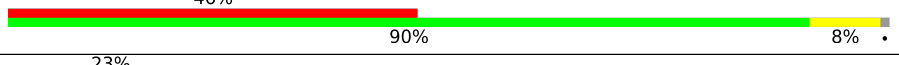
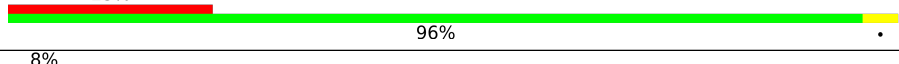
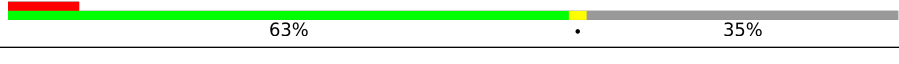
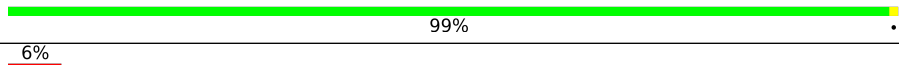
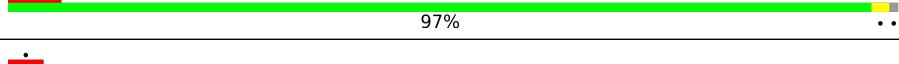

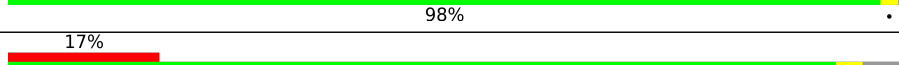
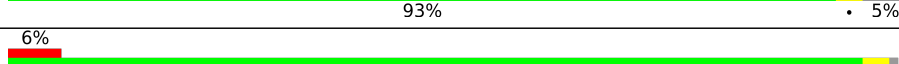
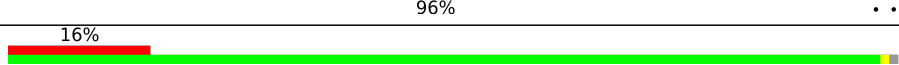
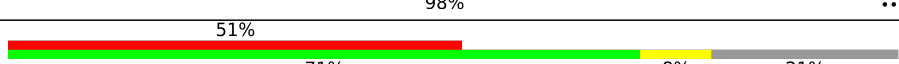
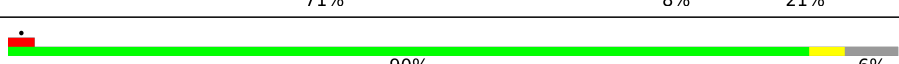
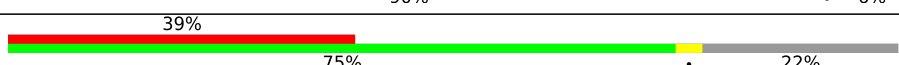
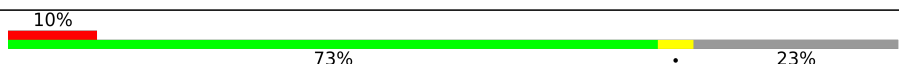
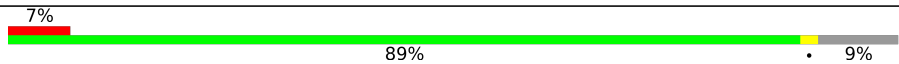
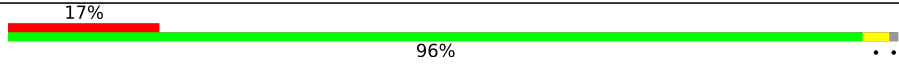
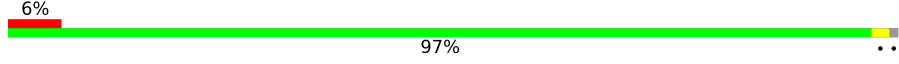

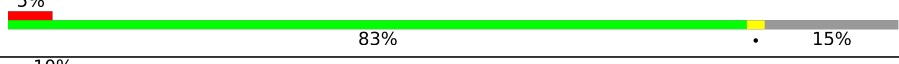
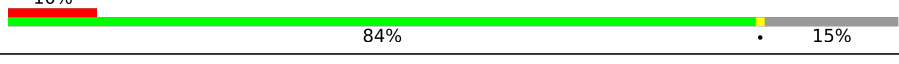
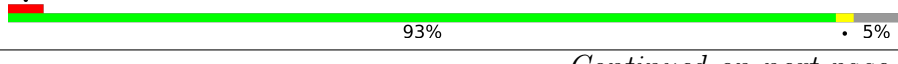

Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	L5	5069	
2	L7	120	
3	L8	157	
4	LA	257	
5	LB	402	
6	LC	368	
7	LD	293	
8	LE	247	

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Mol	Chain	Length	Quality of chain
9	LF	248	
10	LG	266	
11	LH	192	
12	LI	214	
13	LJ	178	
14	LL	211	
15	LM	215	
16	LN	204	
17	LO	203	
18	LP	184	
19	LQ	188	
20	LR	196	
21	LS	176	
22	LT	160	
23	LU	128	
24	LV	140	
25	LW	157	
26	LX	156	
27	LY	145	
28	LZ	136	
29	La	148	
30	Lb	159	
31	Lc	115	
32	Ld	125	
33	Le	135	

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Mol	Chain	Length	Quality of chain
34	Lf	110	6% 97% ..
35	Lg	117	9% 91% 7%
36	Lh	123	13% 98% ..
37	Li	105	17% 90% 5% 6%
38	Lj	97	89% 11%
39	Lk	70	46% 90% 7%
40	Ll	51	14% 96% ..
41	Lm	128	6% 36% 60%
42	Ln	25	96% .
43	Lo	106	21% 92% 5%
44	Lp	92	93% ..
45	Lr	137	6% 86% 10%
46	S2	1869	13% 68% 23% 7%
47	SE	263	5% 98% .
48	SA	295	9% 72% 26%
49	SB	264	5% 78% 19%
50	SD	243	15% 92% 7%
51	SF	204	8% 91% 6%
52	SH	194	53% 91% 5%
53	SI	208	16% 97% ..
54	SK	165	8% 57% 41%
55	SL	158	15% 92% 5%
56	SP	145	12% 84% 14%
57	SQ	146	. 92% ..
58	SS	152	12% 91% 5%

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Mol	Chain	Length	Quality of chain
59	ST	145	
60	SU	119	
61	SV	83	
62	SX	143	
63	Sa	115	
64	Sc	69	
65	Sd	56	
66	Sg	317	
67	SC	293	
68	SG	249	
69	SJ	194	
70	SM	132	
71	SN	151	
72	SO	151	
73	SW	130	
74	SY	133	
75	SZ	125	
76	Sb	84	
77	Se	133	
78	Sf	156	
79	SR	135	

2 Entry composition [i](#)

There are 84 unique types of molecules in this entry. The entry contains 233370 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 28S rRNA (3773-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	L5	3773	80205	35722	14588	26123	3772	0	0

- Molecule 2 is a RNA chain called 5S rRNA (120-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	L7	120	2558	1141	456	842	119	0	0

- Molecule 3 is a RNA chain called 5.8S rRNA (156-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	L8	156	3316	1482	585	1094	155	0	0

- Molecule 4 is a protein called 60S ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	LA	248	1898	1189	389	314	6	0	0

- Molecule 5 is a protein called Large ribosomal subunit protein uL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	LB	402	3239	2061	608	556	14	0	0

- Molecule 6 is a protein called Large ribosomal subunit protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	LC	368	2927	1840	583	489	15	0	0

- Molecule 7 is a protein called Large ribosomal subunit protein uL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	LD	293	2382	1507	434	427	14	0	0

- Molecule 8 is a protein called Large ribosomal subunit protein eL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	LE	236	1904	1222	361	317	4	0	0

- Molecule 9 is a protein called Large ribosomal subunit protein uL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	LF	225	1878	1207	361	301	9	1	0

- Molecule 10 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	LG	241	1935	1233	374	324	4	1	0

- Molecule 11 is a protein called 60S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	LH	190	1518	956	284	272	6	0	0

- Molecule 12 is a protein called 60S ribosomal protein L10-like.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	LI	213	1713	1083	329	285	16	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
LI	49	CYS	GLY	conflict	UNP Q96L21

- Molecule 13 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	LJ	176	Total	C	N	O	S	0	0
			1410	888	263	253	6		

- Molecule 14 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	LL	210	Total	C	N	O	S	0	0
			1701	1064	352	281	4		

- Molecule 15 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	LM	139	Total	C	N	O	S	0	0
			1138	730	218	183	7		

- Molecule 16 is a protein called 60S ribosomal protein L15.

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

- Molecule 17 is a protein called 60S ribosomal protein L13a.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	LO	201	Total	C	N	O	S	0	0
			1650	1063	321	261	5		

- Molecule 18 is a protein called 60S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	LP	153	Total	C	N	O	S	0	0
			1242	776	241	216	9		

- Molecule 19 is a protein called 60S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	LQ	187	Total	C	N	O	S	0	0
			1513	944	314	250	5		

- Molecule 20 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	LR	187	1566	971	336	250	9	0	0

- Molecule 21 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	LS	175	1453	925	283	235	10	0	0

- Molecule 22 is a protein called 60S ribosomal protein L21.

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

- Molecule 23 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	LU	101	825	529	144	150	2	0	0

- Molecule 24 is a protein called 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	LV	131	979	618	184	172	5	0	0

- Molecule 25 is a protein called 60S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	LW	122	997	622	203	168	4	0	0

- Molecule 26 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	LX	120	985	630	185	169	1	0	0

- Molecule 27 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	LY	132	Total	C	N	O	S	0	0
			1102	692	223	184	3		

- Molecule 28 is a protein called 60S ribosomal protein L27.

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

- Molecule 29 is a protein called Large ribosomal subunit protein uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	La	147	Total	C	N	O	S	0	0
			1163	736	237	187	3		

- Molecule 30 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	Lb	99	Total	C	N	O	S	0	0
			808	502	177	125	4		

- Molecule 31 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	Lc	98	Total	C	N	O	S	0	0
			764	485	135	138	6		

- Molecule 32 is a protein called 60S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	Ld	106	Total	C	N	O	S	0	0
			879	555	170	152	2		

- Molecule 33 is a protein called 60S ribosomal protein L32.

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

- Molecule 34 is a protein called 60S ribosomal protein L35a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	Lf	109	876	555	174	144	3	0	0

- Molecule 35 is a protein called 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	Lg	109	868	544	179	139	6	0	0

- Molecule 36 is a protein called 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	Lh	122	1015	641	205	168	1	0	0

- Molecule 37 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	Li	99	813	509	173	126	5	0	0

- Molecule 38 is a protein called 60S ribosomal protein L37.

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

- Molecule 39 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	Lk	68	559	360	101	97	1	0	0

- Molecule 40 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	Ll	50	444	281	98	64	1	0	0

- Molecule 41 is a protein called Ubiquitin-60S ribosomal protein L40.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	Lm	51	Total	C	N	O	S	0	0
			419	260	88	65	6		

- Molecule 42 is a protein called 60S ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	Ln	24	Total	C	N	O	S	0	0
			230	139	62	26	3		

- Molecule 43 is a protein called 60S ribosomal protein L36a.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	Lo	102	Total	C	N	O	S	1	0
			842	527	174	135	6		

- Molecule 44 is a protein called 60S ribosomal protein L37a.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	Lp	88	Total	C	N	O	S	0	0
			681	430	131	113	7		

- Molecule 45 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	Lr	123	Total	C	N	O	S	0	0
			987	612	205	166	4		

- Molecule 46 is a RNA chain called 18S rRNA (1740-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
46	S2	1740	Total	C	N	O	P	0	0
			36955	16511	6600	12105	1739		

- Molecule 47 is a protein called 40S ribosomal protein S4, X isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	SE	262	Total	C	N	O	S	0	0
			2076	1324	386	358	8		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
48	SA	219	Total	C	N	O	S	0	0
			1727	1096	302	320	9		

- Molecule 49 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	SB	215	Total	C	N	O	S	0	0
			1747	1109	312	312	14		

- Molecule 50 is a protein called 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	SD	227	Total	C	N	O	S	0	0
			1765	1125	317	315	8		

- Molecule 51 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	SF	191	Total	C	N	O	S	0	0
			1509	943	286	273	7		

- Molecule 52 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	SH	186	Total	C	N	O	S	0	0
			1497	956	274	266	1		

- Molecule 53 is a protein called 40S ribosomal protein S8.

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

- Molecule 54 is a protein called 40S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	SK	97	Total	C	N	O	S	0	0
			816	533	144	133	6		

- Molecule 55 is a protein called 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
55	SL	154	1258	802	235	215	6	0	0

- Molecule 56 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	SP	125	1027	653	193	174	7	0	0

- Molecule 57 is a protein called 40S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	SQ	141	1124	715	212	194	3	0	0

- Molecule 58 is a protein called 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	SS	145	1198	751	242	203	2	0	0

- Molecule 59 is a protein called Small ribosomal subunit protein eS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	ST	143	1113	698	214	198	3	0	0

- Molecule 60 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
60	SU	103	817	511	155	147	4	0	0

- Molecule 61 is a protein called 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	SV	83	636	393	117	121	5	0	0

- Molecule 62 is a protein called 40S ribosomal protein S23.

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

- Molecule 63 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	Sa	102	829	517	174	133	5	1	0

- Molecule 64 is a protein called 40S ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	Sc	64	506	308	102	94	2	0	0

- Molecule 65 is a protein called 40S ribosomal protein S29.

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

- Molecule 66 is a protein called Receptor of activated protein C kinase 1.

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

- Molecule 67 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
67	SC	221	1724	1115	298	301	10	1	0

- Molecule 68 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
68	SG	234	1903	1188	384	324	7	0	0

- Molecule 69 is a protein called 40S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
69	SJ	182	1520	967	306	245	2	1	0

- Molecule 70 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
70	SM	118	906	568	158	172	8	0	0

- Molecule 71 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
71	SN	150	1208	773	229	205	1	0	0

- Molecule 72 is a protein called 40S ribosomal protein S14.

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

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
SO	138	IAS	ASP	conflict	UNP P62263

- Molecule 73 is a protein called 40S ribosomal protein S15a.

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

- Molecule 74 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
74	SY	128	1048	661	207	175	5	1	0

- Molecule 75 is a protein called 40S ribosomal protein S25.

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

- Molecule 76 is a protein called 40S ribosomal protein S27.

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

- Molecule 77 is a protein called Ubiquitin-like FUBI-ribosomal protein eS30 fusion protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
77	Se	58	459	284	100	74	1	0	0

- Molecule 78 is a protein called Ubiquitin-40S ribosomal protein S27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
78	Sf	67	548	346	102	93	7	0	0

- Molecule 79 is a protein called 40S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
79	SR	131	1064	668	198	194	4	0	0

- Molecule 80 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
80	L5	198	Total	Mg	0
			198	198	
80	L7	2	Total	Mg	0
			2	2	
80	L8	4	Total	Mg	0
			4	4	
80	LI	1	Total	Mg	0
			1	1	
80	LN	1	Total	Mg	0
			1	1	
80	LP	1	Total	Mg	0
			1	1	

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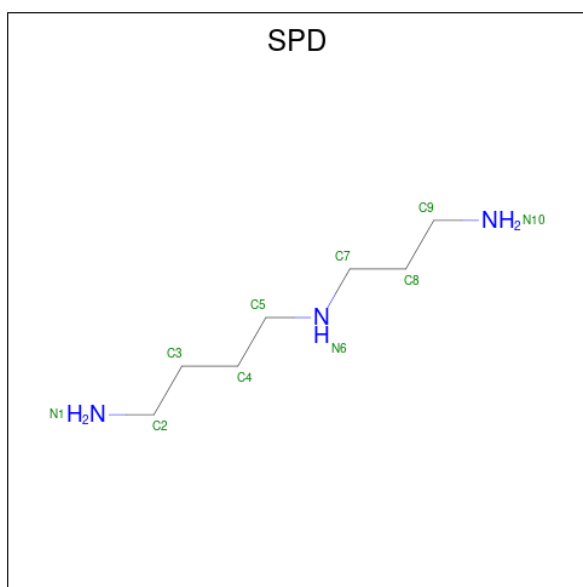
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Mol	Chain	Residues	Atoms		AltConf
80	LV	1	Total 1	Mg 1	0
80	S2	84	Total 84	Mg 84	0

- Molecule 81 is POTASSIUM ION (three-letter code: K) (formula: K) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
81	L5	78	Total 78	K 78	0
81	L7	1	Total 1	K 1	0
81	LA	1	Total 1	K 1	0
81	LB	1	Total 1	K 1	0
81	LI	1	Total 1	K 1	0
81	Le	1	Total 1	K 1	0
81	Lf	1	Total 1	K 1	0
81	Lo	1	Total 1	K 1	0
81	S2	21	Total 21	K 21	0
81	Sd	1	Total 1	K 1	0
81	SO	1	Total 1	K 1	0

- Molecule 82 is SPERMIDINE (three-letter code: SPD) (formula: C₇H₁₉N₃).



Mol	Chain	Residues	Atoms			AltConf
82	L5	1	Total	C	N	0
			10	7	3	
82	L5	1	Total	C	N	0
			10	7	3	

- Molecule 83 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
83	Lg	1	Total	Zn	0
			1	1	
83	Lj	1	Total	Zn	0
			1	1	
83	Lm	1	Total	Zn	0
			1	1	
83	Lo	1	Total	Zn	0
			1	1	
83	Lp	1	Total	Zn	0
			1	1	
83	Sa	1	Total	Zn	0
			1	1	
83	Sd	1	Total	Zn	0
			1	1	
83	Sf	1	Total	Zn	0
			1	1	

- Molecule 84 is water.

Mol	Chain	Residues	Atoms		AltConf
84	L5	9116	Total 9116	O 9116	0
84	L7	175	Total 175	O 175	0
84	L8	376	Total 376	O 376	0
84	LA	176	Total 176	O 176	0
84	LB	135	Total 135	O 135	0
84	LC	149	Total 149	O 149	0
84	LD	29	Total 29	O 29	0
84	LE	32	Total 32	O 32	0
84	LF	83	Total 83	O 83	0
84	LG	40	Total 40	O 40	0
84	LH	27	Total 27	O 27	0
84	LI	36	Total 36	O 36	0
84	LJ	5	Total 5	O 5	0
84	LL	71	Total 71	O 71	0
84	LM	16	Total 16	O 16	0
84	LN	131	Total 131	O 131	0
84	LO	59	Total 59	O 59	0
84	LP	61	Total 61	O 61	0
84	LQ	99	Total 99	O 99	0
84	LR	103	Total 103	O 103	0
84	LS	55	Total 55	O 55	0
84	LT	59	Total 59	O 59	0

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Mol	Chain	Residues	Atoms		AltConf
84	LU	6	Total 6	O 6	0
84	LV	61	Total 61	O 61	0
84	LW	49	Total 49	O 49	0
84	LX	32	Total 32	O 32	0
84	LY	36	Total 36	O 36	0
84	LZ	13	Total 13	O 13	0
84	La	70	Total 70	O 70	0
84	Lb	34	Total 34	O 34	0
84	Lc	55	Total 55	O 55	0
84	Ld	29	Total 29	O 29	0
84	Le	81	Total 81	O 81	0
84	Lf	47	Total 47	O 47	0
84	Lg	52	Total 52	O 52	0
84	Lh	34	Total 34	O 34	0
84	Li	24	Total 24	O 24	0
84	Lj	55	Total 55	O 55	0
84	Lk	6	Total 6	O 6	0
84	Ll	22	Total 22	O 22	0
84	Lm	17	Total 17	O 17	0
84	Ln	39	Total 39	O 39	0
84	Lo	22	Total 22	O 22	0

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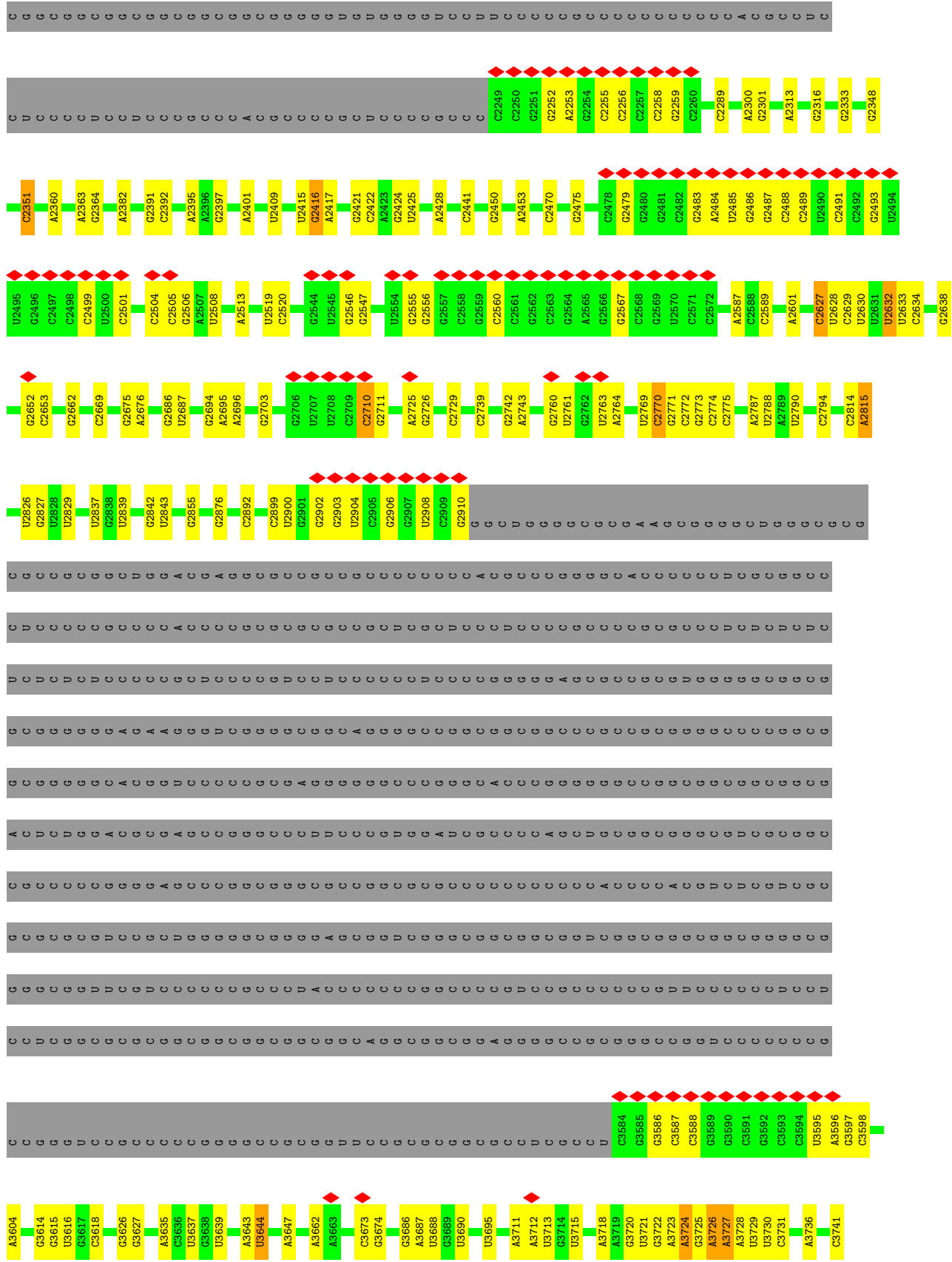
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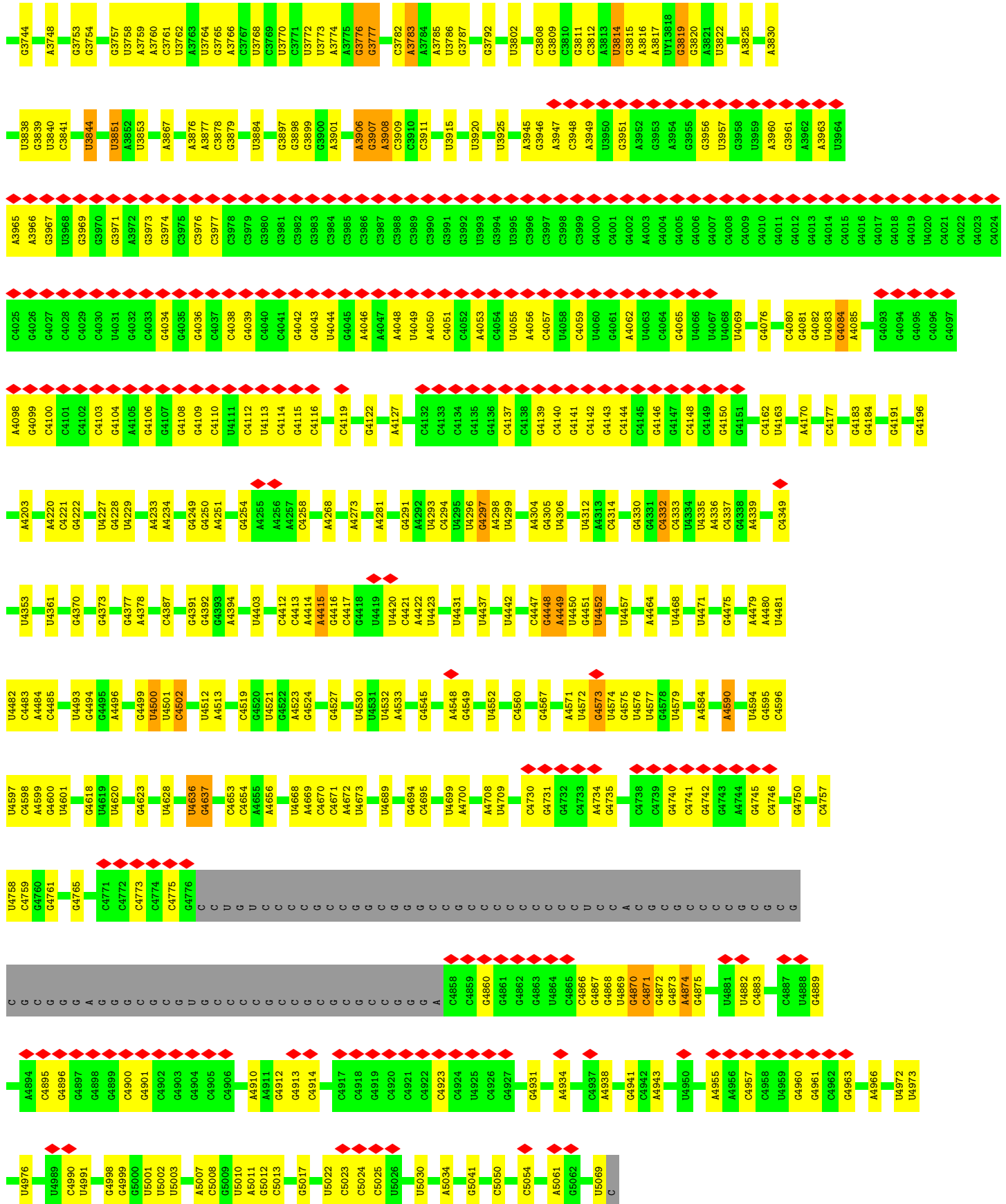
Mol	Chain	Residues	Atoms		AltConf
			Total	O	
84	Lp	82	82	82	0
84	Lr	41	41	41	0
84	S2	4529	4529	4529	0
84	SE	85	85	85	0
84	SA	26	26	26	0
84	SB	71	71	71	0
84	SD	53	53	53	0
84	SF	39	39	39	0
84	SH	18	18	18	0
84	SI	96	96	96	0
84	SK	1	1	1	0
84	SL	98	98	98	0
84	SP	8	8	8	0
84	SQ	29	29	29	0
84	SS	10	10	10	0
84	ST	15	15	15	0
84	SU	8	8	8	0
84	SV	27	27	27	0
84	SX	95	95	95	0
84	Sa	62	62	62	0
84	Sc	21	21	21	0

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Mol	Chain	Residues	Atoms		AltConf
84	Sd	8	Total 8	O 8	0
84	Sg	3	Total 3	O 3	0
84	SC	79	Total 79	O 79	0
84	SG	28	Total 28	O 28	0
84	SJ	76	Total 76	O 76	0
84	SN	87	Total 87	O 87	0
84	SO	52	Total 52	O 52	0
84	SW	64	Total 64	O 64	0
84	SY	32	Total 32	O 32	0
84	SZ	1	Total 1	O 1	0
84	Sb	27	Total 27	O 27	0
84	Se	21	Total 21	O 21	0
84	SR	29	Total 29	O 29	0






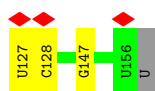
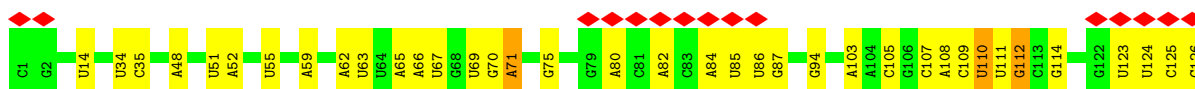
- Molecule 2: 5S rRNA (120-MER)

Chain L7:  82% 16%



- Molecule 3: 5.8S rRNA (156-MER)

Chain L8:  11% 74% 24%



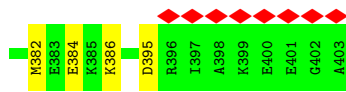
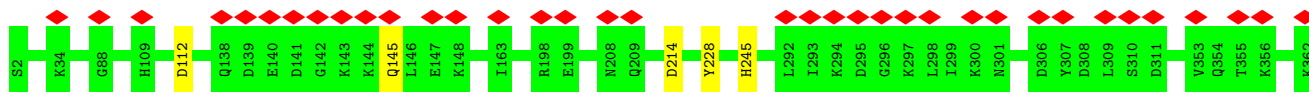
- Molecule 4: 60S ribosomal protein L8

Chain LA:  94%



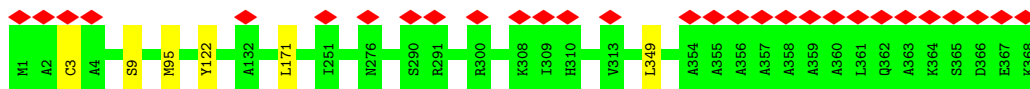
- Molecule 5: Large ribosomal subunit protein uL3

Chain LB:  11% 98%



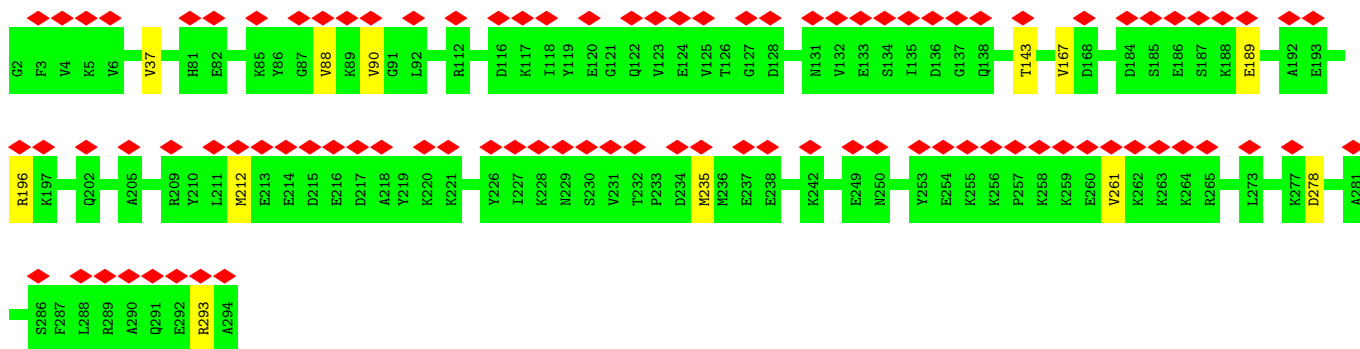
- Molecule 6: Large ribosomal subunit protein uL4

Chain LC:  8% 98%

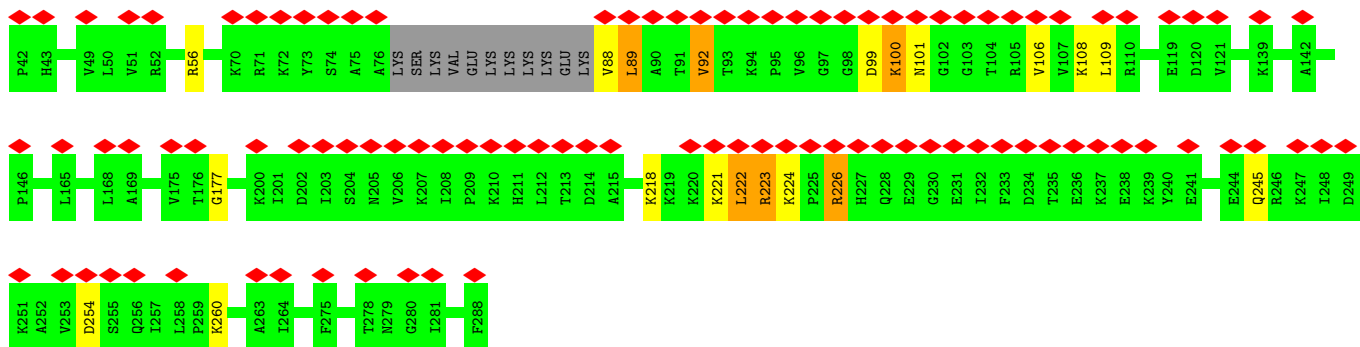
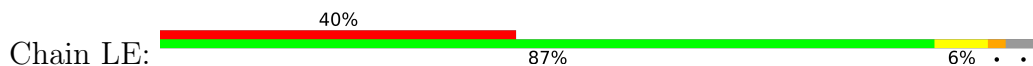


- Molecule 7: Large ribosomal subunit protein uL18

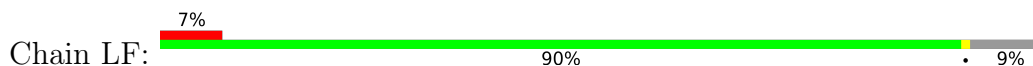
Chain LD:  32% 96%



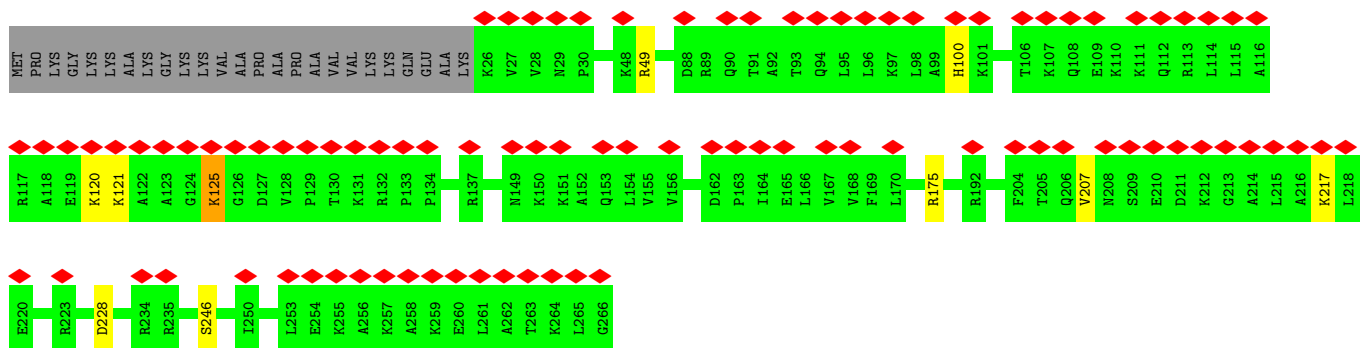
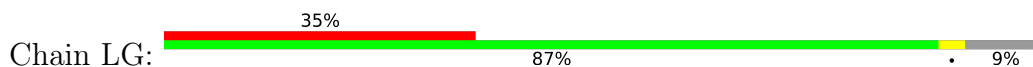
• Molecule 8: Large ribosomal subunit protein eL6



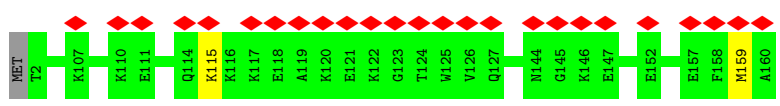
• Molecule 9: Large ribosomal subunit protein uL30



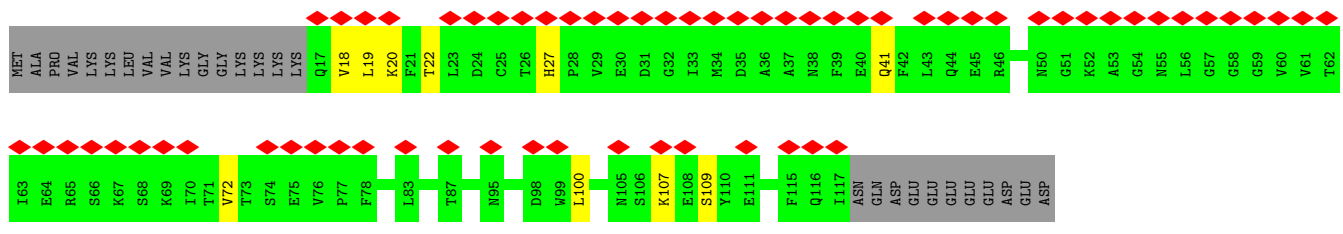
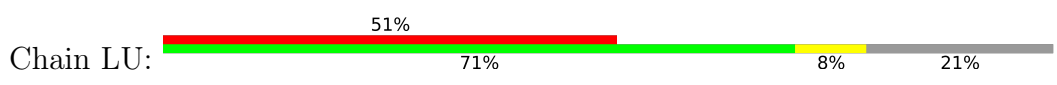
• Molecule 10: 60S ribosomal protein L7a



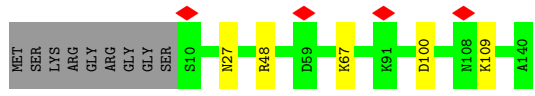
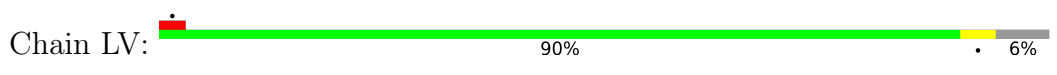
• Molecule 11: 60S ribosomal protein L9



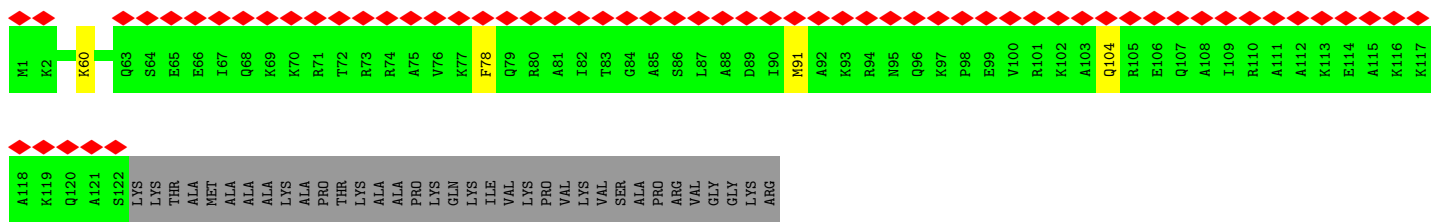
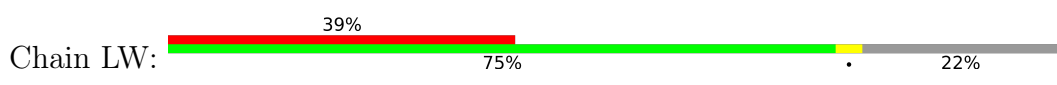
• Molecule 23: 60S ribosomal protein L22



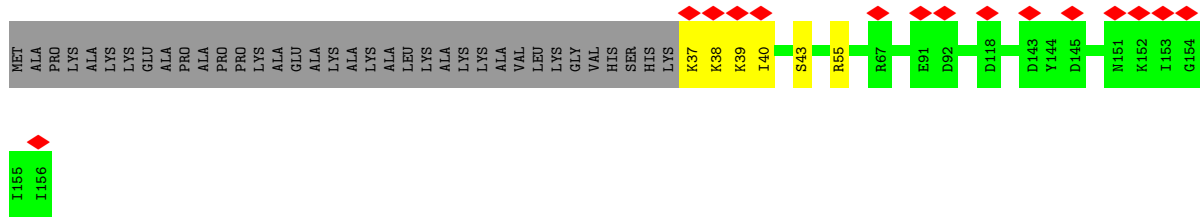
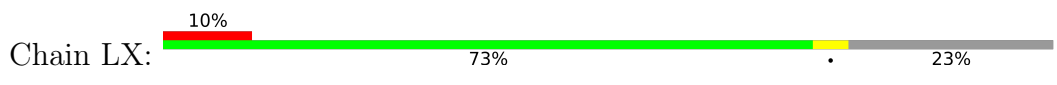
• Molecule 24: 60S ribosomal protein L23



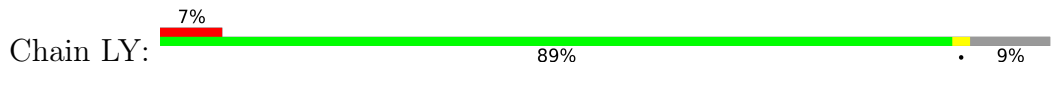
• Molecule 25: 60S ribosomal protein L24

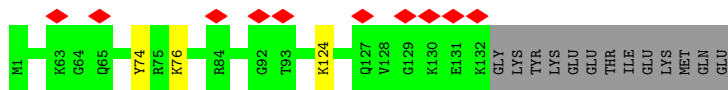


• Molecule 26: 60S ribosomal protein L23a

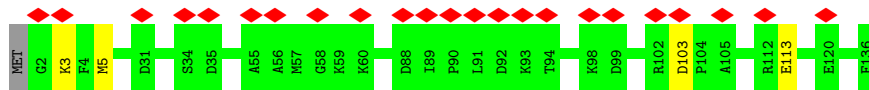


• Molecule 27: 60S ribosomal protein L26

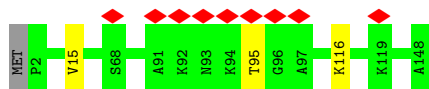




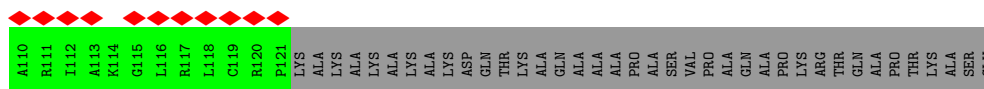
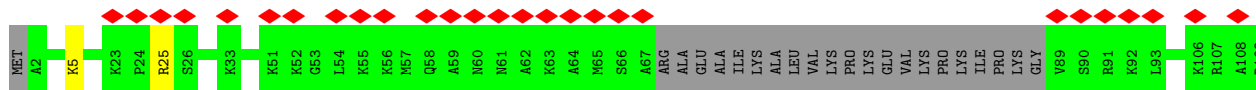
• Molecule 28: 60S ribosomal protein L27



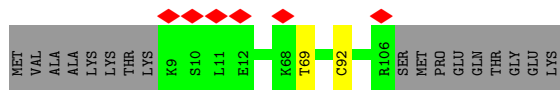
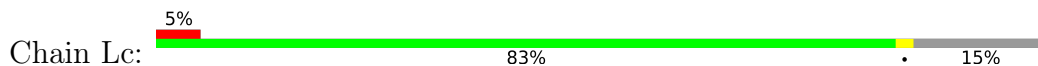
• Molecule 29: Large ribosomal subunit protein uL15



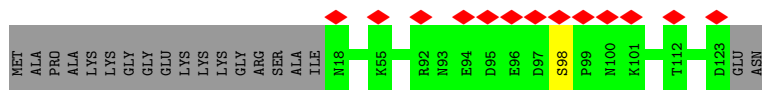
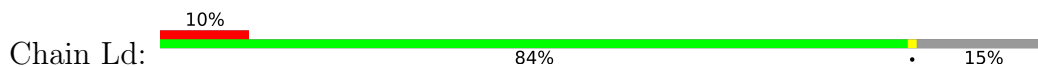
• Molecule 30: 60S ribosomal protein L29



• Molecule 31: 60S ribosomal protein L30

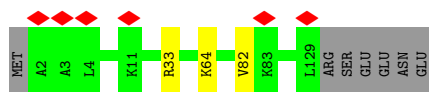


• Molecule 32: 60S ribosomal protein L31

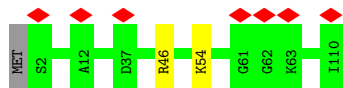


• Molecule 33: 60S ribosomal protein L32

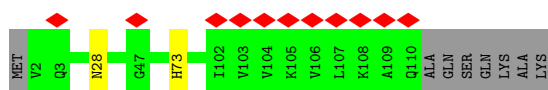
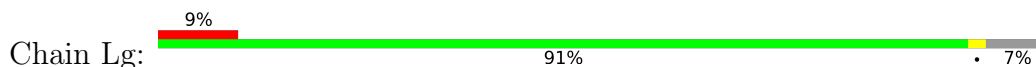




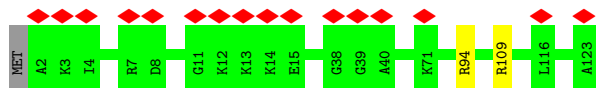
- Molecule 34: 60S ribosomal protein L35a



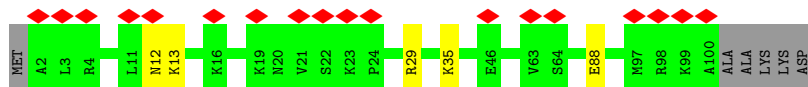
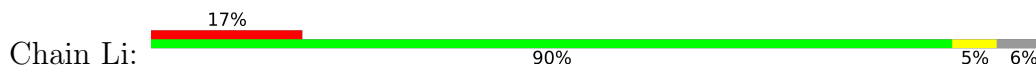
- Molecule 35: 60S ribosomal protein L34



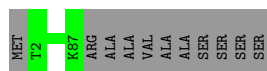
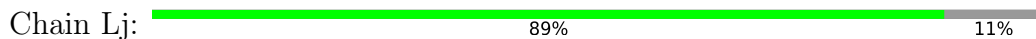
- Molecule 36: 60S ribosomal protein L35



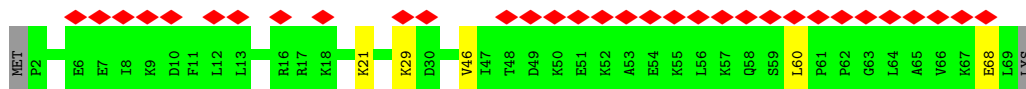
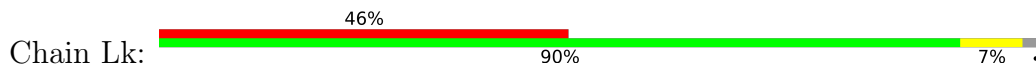
- Molecule 37: 60S ribosomal protein L36



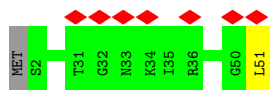
- Molecule 38: 60S ribosomal protein L37



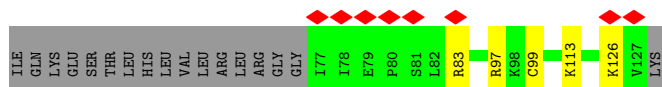
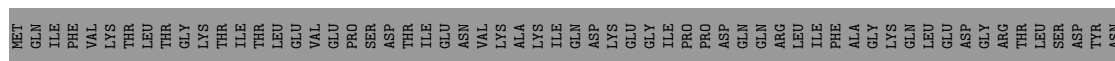
- Molecule 39: 60S ribosomal protein L38



- Molecule 40: 60S ribosomal protein L39



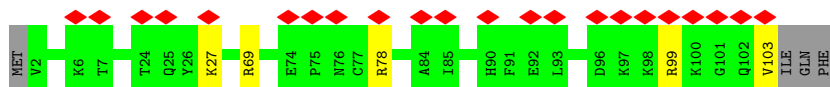
- Molecule 41: Ubiquitin-60S ribosomal protein L40



- Molecule 42: 60S ribosomal protein L41



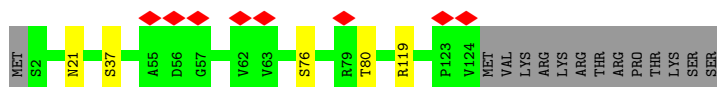
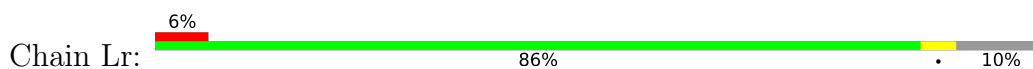
- Molecule 43: 60S ribosomal protein L36a



- Molecule 44: 60S ribosomal protein L37a

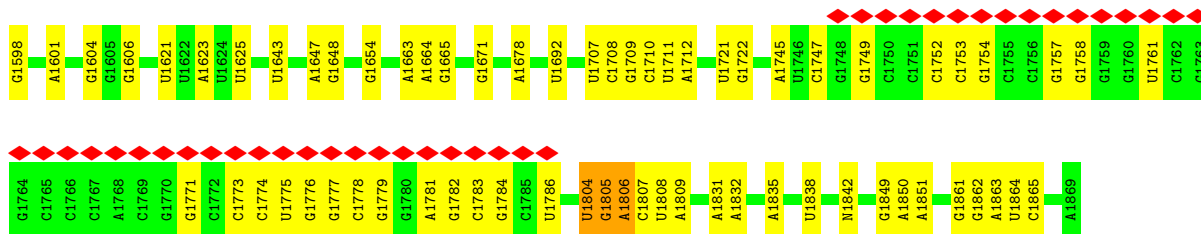


- Molecule 45: 60S ribosomal protein L28

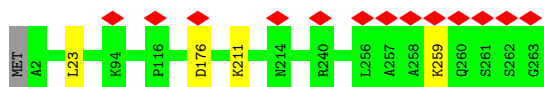


- Molecule 46: 18S rRNA (1740-MER)

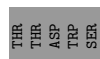
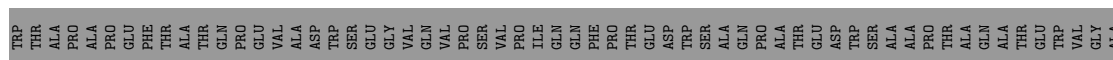
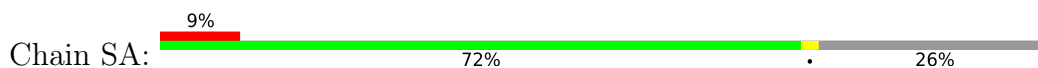




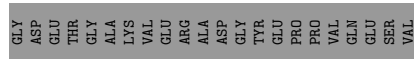
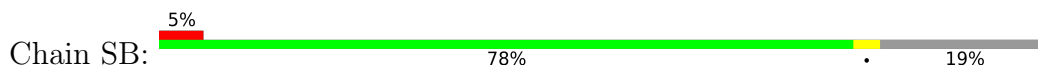
• Molecule 47: 40S ribosomal protein S4, X isoform



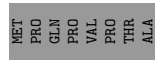
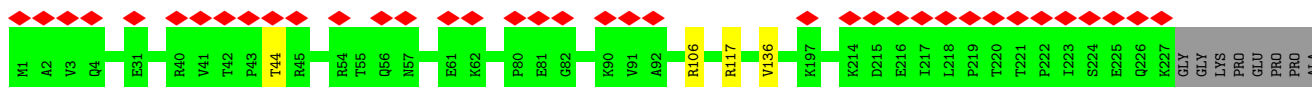
• Molecule 48: 40S ribosomal protein SA



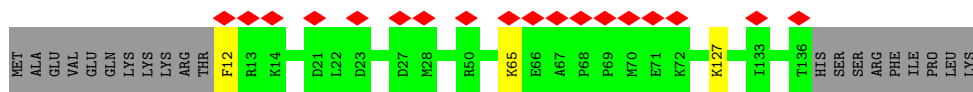
• Molecule 49: 40S ribosomal protein S3a



• Molecule 50: 40S ribosomal protein S3



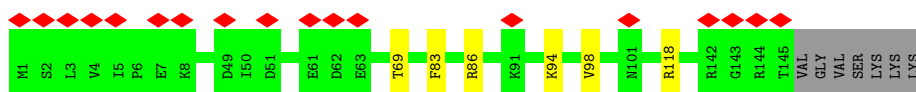
• Molecule 51: 40S ribosomal protein S5



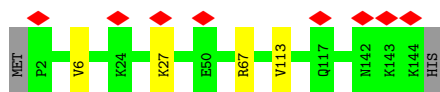
• Molecule 57: 40S ribosomal protein S16



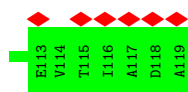
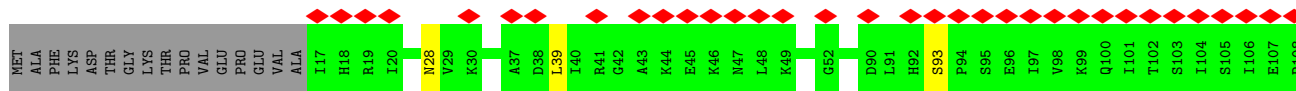
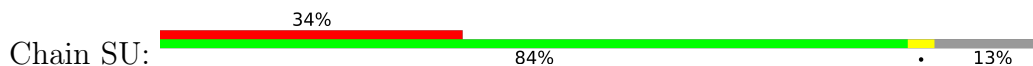
• Molecule 58: 40S ribosomal protein S18



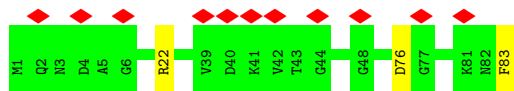
• Molecule 59: Small ribosomal subunit protein eS19



• Molecule 60: 40S ribosomal protein S20



• Molecule 61: 40S ribosomal protein S21

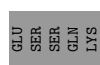
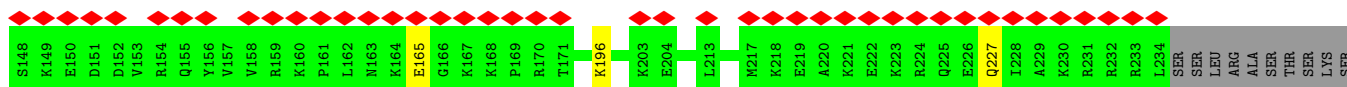
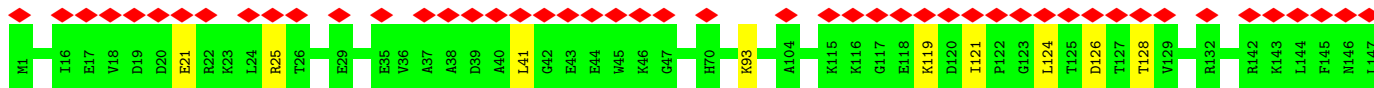
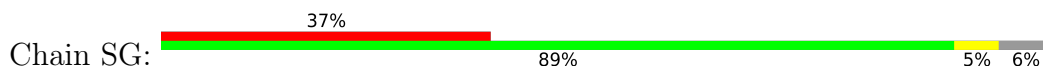


• Molecule 62: 40S ribosomal protein S23

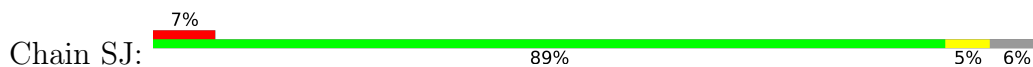




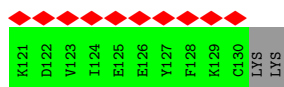
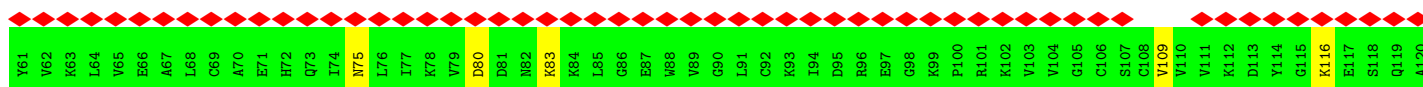
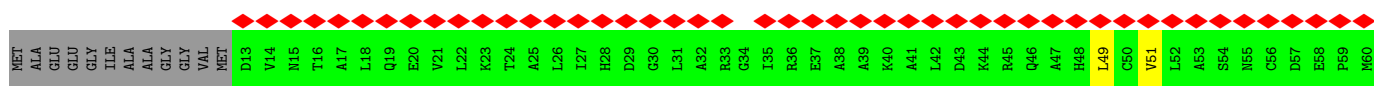
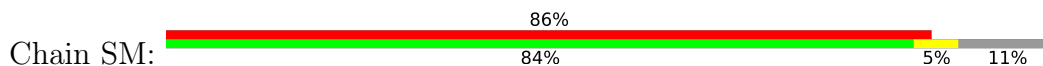
- Molecule 68: 40S ribosomal protein S6



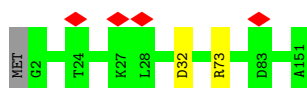
- Molecule 69: 40S ribosomal protein S9



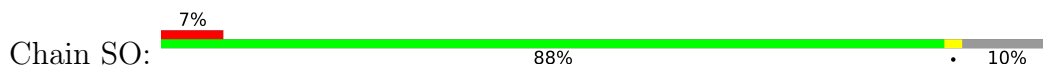
- Molecule 70: 40S ribosomal protein S12

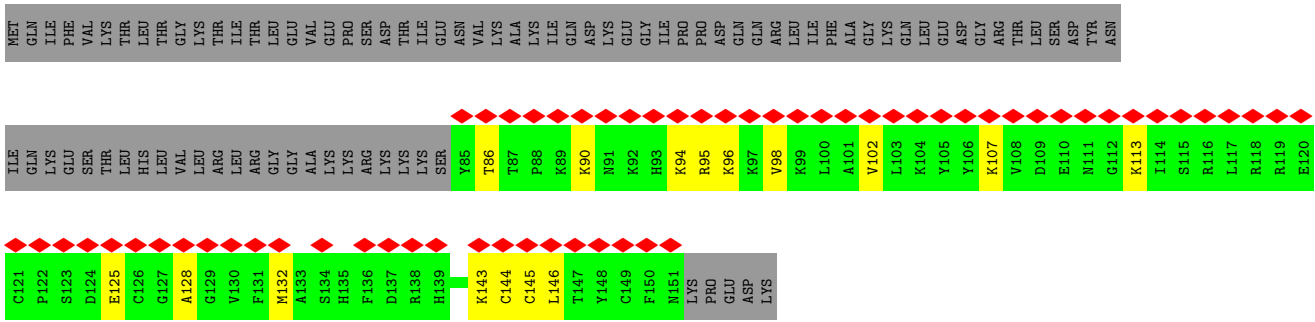


- Molecule 71: 40S ribosomal protein S13

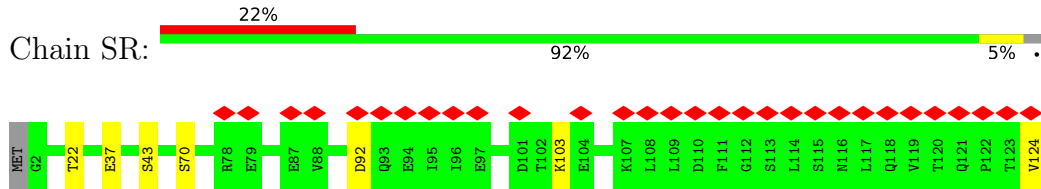


- Molecule 72: 40S ribosomal protein S14





• Molecule 79: 40S ribosomal protein S17



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	382016	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS, JEOL CRYO ARM 300	Depositor
Voltage (kV)	300, 300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	1.0, 1.0	Depositor
Minimum defocus (nm)	500, 1000	Depositor
Maximum defocus (nm)	1100, 2000	Depositor
Magnification	Not provided, Not provided	Depositor
Image detector	FEI FALCON IV (4k x 4k), GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.426	Depositor
Minimum map value	-0.161	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.0266	Depositor
Map size (\AA)	419.84, 419.84, 419.84	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	0.82, 0.82, 0.82	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: UY1, OMC, V5N, B8N, PSU, SPD, 1MA, UR3, A2M, MA6, 5MC, IAS, MG, 6MZ, 4AC, M7G, OMG, ZN, HIC, NMM, K, OMU

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	L5	0.43	0/86723	0.90	234/135219 (0.2%)
2	L7	0.41	0/2858	0.93	13/4455 (0.3%)
3	L8	0.41	0/3609	0.88	12/5623 (0.2%)
4	LA	0.32	0/1936	0.61	0/2596
5	LB	0.29	0/3294	0.54	0/4406
6	LC	0.26	0/2981	0.56	1/4002 (0.0%)
7	LD	0.28	0/2428	0.52	0/3252
8	LE	0.33	0/1942	0.55	0/2606
9	LF	0.27	0/1916	0.54	0/2553
10	LG	0.28	0/1971	0.53	0/2651
11	LH	0.26	0/1537	0.53	0/2066
12	LI	0.32	0/1753	0.55	0/2343
13	LJ	0.29	0/1433	0.56	0/1915
14	LL	0.27	0/1732	0.56	0/2315
15	LM	0.27	0/1161	0.52	0/1554
16	LN	0.28	0/1746	0.58	0/2338
17	LO	0.28	0/1682	0.55	0/2250
18	LP	0.28	0/1268	0.54	0/1701
19	LQ	0.27	0/1537	0.61	0/2052
20	LR	0.27	0/1582	0.59	0/2091
21	LS	0.29	0/1493	0.57	0/2003
22	LT	0.28	0/1326	0.53	0/1770
23	LU	0.25	0/839	0.52	0/1126
24	LV	0.32	0/993	0.56	0/1332
25	LW	0.29	0/1012	0.57	0/1342
26	LX	0.29	0/1002	0.53	0/1345
27	LY	0.28	0/1119	0.57	0/1488
28	LZ	0.29	0/1130	0.53	0/1507
29	La	0.27	0/1179	0.54	0/1573
30	Lb	0.25	0/821	0.54	0/1084
31	Lc	0.32	0/774	0.52	0/1038

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
32	Ld	0.28	0/894	0.57	0/1204
33	Le	0.29	0/1071	0.57	0/1429
34	Lf	0.30	0/895	0.58	0/1198
35	Lg	0.27	0/878	0.58	0/1170
36	Lh	0.26	0/1023	0.53	0/1351
37	Li	0.27	0/824	0.58	0/1090
38	Lj	0.29	0/720	0.60	0/952
39	Lk	0.26	0/565	0.50	0/750
40	Ll	0.26	0/454	0.57	0/599
41	Lm	0.32	0/425	0.54	0/564
42	Ln	0.29	0/231	0.73	0/294
43	Lo	0.28	0/858	0.56	0/1131
44	Lp	0.35	0/691	0.58	0/919
45	Lr	0.30	0/1002	0.60	0/1344
46	S2	0.46	0/39125	0.92	137/60957 (0.2%)
47	SE	0.27	0/2118	0.56	0/2849
48	SA	0.31	0/1764	0.51	0/2396
49	SB	0.27	0/1774	0.50	0/2373
50	SD	0.28	0/1793	0.53	0/2414
51	SF	0.25	0/1531	0.52	0/2059
52	SH	0.27	0/1519	0.51	0/2033
53	SI	0.29	0/1715	0.55	0/2287
54	SK	0.29	0/840	0.57	2/1133 (0.2%)
55	SL	0.34	0/1280	0.58	0/1712
56	SP	0.27	0/1047	0.52	0/1399
57	SQ	0.28	0/1142	0.55	0/1528
58	SS	0.25	0/1216	0.57	0/1628
59	ST	0.26	0/1119	0.49	0/1498
60	SU	0.25	0/827	0.56	0/1110
61	SV	0.28	0/643	0.53	0/860
62	SX	0.31	0/1116	0.56	0/1490
63	Sa	0.30	0/847	0.61	0/1135
64	Sc	0.29	0/508	0.65	0/680
65	Sd	0.27	0/470	0.57	0/623
66	Sg	0.25	0/2493	0.51	0/3394
67	SC	0.28	0/1764	0.50	0/2382
68	SG	0.29	0/1926	0.57	0/2563
69	SJ	0.27	0/1548	0.57	0/2066
70	SM	0.26	0/916	0.50	0/1233
71	SN	0.29	0/1232	0.52	0/1656
72	SO	0.29	0/1020	0.58	0/1366
73	SW	0.30	0/1051	0.56	0/1406
74	SY	0.27	0/1068	0.55	0/1418

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
75	SZ	0.27	0/604	0.59	0/810
76	Sb	0.27	0/665	0.53	0/891
77	Se	0.26	0/465	0.58	0/612
78	Sf	0.38	0/560	0.56	0/745
79	SR	0.27	0/1078	0.54	0/1447
All	All	0.38	0/226092	0.79	399/331744 (0.1%)

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
8	LE	0	2
12	LI	0	2
14	LL	0	1
41	Lm	0	1
57	SQ	0	1
73	SW	0	1
All	All	0	8

There are no bond length outliers.

The worst 5 of 399 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
46	S2	609	PSU	P-O3'-C3'	-11.44	105.97	119.70
46	S2	1081	U	P-O3'-C3'	-11.42	105.99	119.70
1	L5	5010	PSU	P-O3'-C3'	-10.99	106.51	119.70
46	S2	798	G	P-O3'-C3'	-10.95	106.56	119.70
1	L5	513	U	P-O3'-C3'	-10.56	107.03	119.70

There are no chirality outliers.

5 of 8 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
8	LE	223	ARG	Sidechain
8	LE	226	ARG	Sidechain
12	LI	110	ARG	Sidechain
12	LI	116	ARG	Sidechain
14	LL	36	ARG	Sidechain

5.2 Too-close contacts [i](#)

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

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	LA	246/257 (96%)	238 (97%)	8 (3%)	0	100	100
5	LB	399/402 (99%)	387 (97%)	12 (3%)	0	100	100
6	LC	366/368 (100%)	358 (98%)	8 (2%)	0	100	100
7	LD	291/293 (99%)	279 (96%)	11 (4%)	1 (0%)	41	31
8	LE	232/247 (94%)	213 (92%)	13 (6%)	6 (3%)	5	1
9	LF	224/248 (90%)	219 (98%)	5 (2%)	0	100	100
10	LG	240/266 (90%)	227 (95%)	12 (5%)	1 (0%)	34	24
11	LH	188/192 (98%)	185 (98%)	3 (2%)	0	100	100
12	LI	211/214 (99%)	198 (94%)	9 (4%)	4 (2%)	8	1
13	LJ	174/178 (98%)	161 (92%)	10 (6%)	3 (2%)	9	2
14	LL	208/211 (99%)	194 (93%)	13 (6%)	1 (0%)	29	18
15	LM	137/215 (64%)	135 (98%)	2 (2%)	0	100	100
16	LN	201/204 (98%)	198 (98%)	3 (2%)	0	100	100
17	LO	199/203 (98%)	194 (98%)	5 (2%)	0	100	100
18	LP	151/184 (82%)	148 (98%)	3 (2%)	0	100	100
19	LQ	185/188 (98%)	182 (98%)	3 (2%)	0	100	100
20	LR	185/196 (94%)	183 (99%)	2 (1%)	0	100	100
21	LS	173/176 (98%)	165 (95%)	8 (5%)	0	100	100
22	LT	157/160 (98%)	153 (98%)	4 (2%)	0	100	100
23	LU	99/128 (77%)	88 (89%)	11 (11%)	0	100	100
24	LV	129/140 (92%)	128 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
25	LW	120/157 (76%)	112 (93%)	8 (7%)	0	100	100
26	LX	118/156 (76%)	116 (98%)	2 (2%)	0	100	100
27	LY	130/145 (90%)	128 (98%)	2 (2%)	0	100	100
28	LZ	133/136 (98%)	130 (98%)	3 (2%)	0	100	100
29	La	144/148 (97%)	141 (98%)	2 (1%)	1 (1%)	22	12
30	Lb	95/159 (60%)	91 (96%)	4 (4%)	0	100	100
31	Lc	96/115 (84%)	91 (95%)	5 (5%)	0	100	100
32	Ld	104/125 (83%)	100 (96%)	4 (4%)	0	100	100
33	Le	126/135 (93%)	126 (100%)	0	0	100	100
34	Lf	107/110 (97%)	106 (99%)	1 (1%)	0	100	100
35	Lg	107/117 (92%)	106 (99%)	1 (1%)	0	100	100
36	Lh	120/123 (98%)	118 (98%)	2 (2%)	0	100	100
37	Li	97/105 (92%)	94 (97%)	3 (3%)	0	100	100
38	Lj	84/97 (87%)	84 (100%)	0	0	100	100
39	Lk	66/70 (94%)	64 (97%)	2 (3%)	0	100	100
40	Ll	48/51 (94%)	48 (100%)	0	0	100	100
41	Lm	49/128 (38%)	49 (100%)	0	0	100	100
42	Ln	22/25 (88%)	22 (100%)	0	0	100	100
43	Lo	101/106 (95%)	100 (99%)	1 (1%)	0	100	100
44	Lp	86/92 (94%)	83 (96%)	3 (4%)	0	100	100
45	Lr	121/137 (88%)	118 (98%)	3 (2%)	0	100	100
47	SE	260/263 (99%)	259 (100%)	1 (0%)	0	100	100
48	SA	217/295 (74%)	209 (96%)	8 (4%)	0	100	100
49	SB	213/264 (81%)	204 (96%)	9 (4%)	0	100	100
50	SD	225/243 (93%)	219 (97%)	6 (3%)	0	100	100
51	SF	189/204 (93%)	173 (92%)	14 (7%)	2 (1%)	14	5
52	SH	182/194 (94%)	166 (91%)	14 (8%)	2 (1%)	14	5
53	SI	204/208 (98%)	200 (98%)	4 (2%)	0	100	100
54	SK	95/165 (58%)	90 (95%)	5 (5%)	0	100	100
55	SL	152/158 (96%)	140 (92%)	10 (7%)	2 (1%)	12	4
56	SP	123/145 (85%)	121 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
57	SQ	139/146 (95%)	131 (94%)	8 (6%)	0	100	100
58	SS	143/152 (94%)	136 (95%)	7 (5%)	0	100	100
59	ST	140/145 (97%)	138 (99%)	2 (1%)	0	100	100
60	SU	101/119 (85%)	95 (94%)	6 (6%)	0	100	100
61	SV	81/83 (98%)	79 (98%)	2 (2%)	0	100	100
62	SX	139/143 (97%)	137 (99%)	2 (1%)	0	100	100
63	Sa	101/115 (88%)	100 (99%)	1 (1%)	0	100	100
64	Sc	62/69 (90%)	53 (86%)	9 (14%)	0	100	100
65	Sd	53/56 (95%)	52 (98%)	1 (2%)	0	100	100
66	Sg	311/317 (98%)	294 (94%)	17 (6%)	0	100	100
67	SC	220/293 (75%)	216 (98%)	4 (2%)	0	100	100
68	SG	232/249 (93%)	223 (96%)	8 (3%)	1 (0%)	34	24
69	SJ	181/194 (93%)	176 (97%)	5 (3%)	0	100	100
70	SM	116/132 (88%)	108 (93%)	7 (6%)	1 (1%)	17	7
71	SN	148/151 (98%)	146 (99%)	2 (1%)	0	100	100
72	SO	132/151 (87%)	124 (94%)	8 (6%)	0	100	100
73	SW	127/130 (98%)	121 (95%)	6 (5%)	0	100	100
74	SY	127/133 (96%)	125 (98%)	2 (2%)	0	100	100
75	SZ	73/125 (58%)	68 (93%)	5 (7%)	0	100	100
76	Sb	81/84 (96%)	75 (93%)	6 (7%)	0	100	100
77	Se	56/133 (42%)	51 (91%)	5 (9%)	0	100	100
78	Sf	65/156 (42%)	52 (80%)	10 (15%)	3 (5%)	2	0
79	SR	129/135 (96%)	125 (97%)	4 (3%)	0	100	100
All	All	11286/12657 (89%)	10866 (96%)	392 (4%)	28 (0%)	50	38

5 of 28 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	LE	99	ASP
10	LG	125	LYS
12	LI	110	ARG
13	LJ	62	ILE
14	LL	47	ALA

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	LA	190/199 (96%)	183 (96%)	7 (4%)	34	25
5	LB	347/347 (100%)	339 (98%)	8 (2%)	50	45
6	LC	306/306 (100%)	301 (98%)	5 (2%)	62	60
7	LD	246/247 (100%)	235 (96%)	11 (4%)	27	18
8	LE	209/220 (95%)	191 (91%)	18 (9%)	10	4
9	LF	195/215 (91%)	192 (98%)	3 (2%)	65	62
10	LG	204/223 (92%)	194 (95%)	10 (5%)	25	15
11	LH	169/171 (99%)	167 (99%)	2 (1%)	71	70
12	LI	181/182 (100%)	165 (91%)	16 (9%)	10	4
13	LJ	148/149 (99%)	136 (92%)	12 (8%)	11	4
14	LL	176/177 (99%)	170 (97%)	6 (3%)	37	28
15	LM	118/161 (73%)	114 (97%)	4 (3%)	37	28
16	LN	171/172 (99%)	169 (99%)	2 (1%)	71	70
17	LO	173/174 (99%)	168 (97%)	5 (3%)	42	35
18	LP	134/163 (82%)	131 (98%)	3 (2%)	52	47
19	LQ	164/165 (99%)	161 (98%)	3 (2%)	59	55
20	LR	166/175 (95%)	161 (97%)	5 (3%)	41	33
21	LS	156/157 (99%)	150 (96%)	6 (4%)	33	24
22	LT	139/140 (99%)	137 (99%)	2 (1%)	67	65
23	LU	91/115 (79%)	81 (89%)	10 (11%)	6	2
24	LV	101/107 (94%)	96 (95%)	5 (5%)	24	15
25	LW	101/126 (80%)	97 (96%)	4 (4%)	31	22
26	LX	108/133 (81%)	102 (94%)	6 (6%)	21	11
27	LY	123/135 (91%)	120 (98%)	3 (2%)	49	43
28	LZ	117/118 (99%)	113 (97%)	4 (3%)	37	28
29	La	119/120 (99%)	117 (98%)	2 (2%)	60	57

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
30	Lb	83/126 (66%)	81 (98%)	2 (2%)	49	43
31	Lc	83/97 (86%)	81 (98%)	2 (2%)	49	43
32	Ld	97/110 (88%)	96 (99%)	1 (1%)	76	76
33	Le	114/121 (94%)	111 (97%)	3 (3%)	46	39
34	Lf	88/89 (99%)	86 (98%)	2 (2%)	50	45
35	Lg	94/100 (94%)	92 (98%)	2 (2%)	53	48
36	Lh	109/110 (99%)	107 (98%)	2 (2%)	59	55
37	Li	85/89 (96%)	80 (94%)	5 (6%)	19	10
38	Lj	73/80 (91%)	73 (100%)	0	100	100
39	Lk	63/65 (97%)	58 (92%)	5 (8%)	12	5
40	Ll	47/48 (98%)	46 (98%)	1 (2%)	53	48
41	Lm	47/116 (40%)	43 (92%)	4 (8%)	10	4
42	Ln	23/24 (96%)	23 (100%)	0	100	100
43	Lo	91/94 (97%)	86 (94%)	5 (6%)	21	12
44	Lp	71/75 (95%)	69 (97%)	2 (3%)	43	36
45	Lr	107/121 (88%)	102 (95%)	5 (5%)	26	16
47	SE	224/225 (100%)	220 (98%)	4 (2%)	59	55
48	SA	182/243 (75%)	175 (96%)	7 (4%)	33	24
49	SB	196/231 (85%)	188 (96%)	8 (4%)	30	21
50	SD	190/202 (94%)	186 (98%)	4 (2%)	53	48
51	SF	161/170 (95%)	158 (98%)	3 (2%)	57	53
52	SH	166/174 (95%)	158 (95%)	8 (5%)	25	16
53	SI	178/180 (99%)	174 (98%)	4 (2%)	52	47
54	SK	88/136 (65%)	86 (98%)	2 (2%)	50	45
55	SL	138/142 (97%)	132 (96%)	6 (4%)	29	19
56	SP	111/130 (85%)	108 (97%)	3 (3%)	44	38
57	SQ	117/121 (97%)	111 (95%)	6 (5%)	24	14
58	SS	126/132 (96%)	120 (95%)	6 (5%)	25	16
59	ST	112/114 (98%)	109 (97%)	3 (3%)	44	38
60	SU	94/107 (88%)	91 (97%)	3 (3%)	39	30
61	SV	67/67 (100%)	64 (96%)	3 (4%)	27	18

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
62	SX	113/115 (98%)	107 (95%)	6 (5%)	22	13
63	Sa	90/98 (92%)	88 (98%)	2 (2%)	52	47
64	Sc	57/62 (92%)	52 (91%)	5 (9%)	10	4
65	Sd	48/49 (98%)	48 (100%)	0	100	100
66	Sg	272/275 (99%)	258 (95%)	14 (5%)	24	14
67	SC	188/225 (84%)	183 (97%)	5 (3%)	44	38
68	SG	204/218 (94%)	193 (95%)	11 (5%)	22	13
69	SJ	162/168 (96%)	153 (94%)	9 (6%)	21	11
70	SM	98/108 (91%)	92 (94%)	6 (6%)	18	9
71	SN	130/131 (99%)	128 (98%)	2 (2%)	65	62
72	SO	105/118 (89%)	103 (98%)	2 (2%)	57	53
73	SW	112/113 (99%)	110 (98%)	2 (2%)	59	55
74	SY	111/115 (96%)	108 (97%)	3 (3%)	44	38
75	SZ	66/103 (64%)	63 (96%)	3 (4%)	27	18
76	Sb	75/76 (99%)	72 (96%)	3 (4%)	31	22
77	Se	47/104 (45%)	46 (98%)	1 (2%)	53	48
78	Sf	60/140 (43%)	47 (78%)	13 (22%)	1	0
79	SR	119/122 (98%)	112 (94%)	7 (6%)	19	10
All	All	9834/10776 (91%)	9467 (96%)	367 (4%)	37	25

5 of 367 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
52	SH	74	LYS
66	Sg	11	LEU
53	SI	56	ARG
58	SS	86	ARG
67	SC	68	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 6 such sidechains are listed below:

Mol	Chain	Res	Type
24	LV	27	ASN
62	SX	61	GLN
67	SC	267	GLN

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Mol	Chain	Res	Type
15	LM	33	GLN
8	LE	101	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	L5	3704/5069 (73%)	761 (20%)	21 (0%)
2	L7	119/120 (99%)	12 (10%)	0
3	L8	155/157 (98%)	28 (18%)	0
46	S2	1708/1869 (91%)	322 (18%)	10 (0%)
All	All	5686/7215 (78%)	1123 (19%)	31 (0%)

5 of 1123 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	L5	15	A
1	L5	39	A
1	L5	42	A
1	L5	48	G
1	L5	56	A

5 of 31 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	L5	3786	U
46	S2	1342	U
1	L5	4600	G
46	S2	1520	G
46	S2	866	PSU

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

223 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
1	PSU	L5	3768	1	18,21,22	1.37	3 (16%)	22,30,33	1.97	3 (13%)
1	OMG	L5	4228	1	18,26,27	0.85	1 (5%)	19,38,41	1.22	3 (15%)
46	A2M	S2	1678	46	18,25,26	1.03	1 (5%)	18,36,39	1.21	2 (11%)
1	OMG	L5	2424	1	18,26,27	0.92	1 (5%)	19,38,41	1.03	2 (10%)
1	A2M	L5	2815	1	18,25,26	1.02	1 (5%)	18,36,39	1.19	2 (11%)
1	PSU	L5	4500	1	18,21,22	0.87	1 (5%)	22,30,33	0.60	0
46	PSU	S2	34	46	18,21,22	0.86	1 (5%)	22,30,33	0.67	0
1	5MC	L5	4447	1,81	18,22,23	0.36	0	26,32,35	0.61	0
3	OMU	L8	14	1,3	19,22,23	1.22	3 (15%)	26,31,34	1.67	5 (19%)
46	PSU	S2	1177	46	18,21,22	1.33	2 (11%)	22,30,33	1.97	4 (18%)
46	6MZ	S2	1832	80,46,81	18,25,26	0.84	1 (5%)	16,36,39	2.35	3 (18%)
1	PSU	L5	4299	1	18,21,22	0.86	1 (5%)	22,30,33	0.61	0
1	OMG	L5	3627	1	18,26,27	0.87	1 (5%)	19,38,41	1.28	2 (10%)
1	OMC	L5	1340	1	19,22,23	0.78	0	26,31,34	0.62	0
46	A2M	S2	484	46	18,25,26	0.99	1 (5%)	18,36,39	1.28	2 (11%)
46	OMC	S2	517	46	19,22,23	0.79	0	26,31,34	0.72	0
46	OMC	S2	462	46	19,22,23	0.82	0	26,31,34	0.76	0
46	PSU	S2	1232	46	18,21,22	1.35	2 (11%)	22,30,33	1.89	3 (13%)
1	PSU	L5	5001	1	18,21,22	0.83	1 (5%)	22,30,33	0.66	0
46	A2M	S2	576	46	18,25,26	0.89	1 (5%)	18,36,39	1.24	2 (11%)
1	PSU	L5	2839	1	18,21,22	1.39	3 (16%)	22,30,33	1.87	4 (18%)
46	OMG	S2	1490	80,46	18,26,27	0.86	1 (5%)	19,38,41	1.13	3 (15%)
46	PSU	S2	119	46	18,21,22	1.33	2 (11%)	22,30,33	1.84	3 (13%)
1	PSU	L5	3639	1	18,21,22	0.92	1 (5%)	22,30,33	0.63	0
46	A2M	S2	99	80,46	18,25,26	0.60	0	18,36,39	0.77	1 (5%)
46	PSU	S2	801	46	18,21,22	0.86	1 (5%)	22,30,33	0.62	0
1	PSU	L5	1536	1	18,21,22	1.34	2 (11%)	22,30,33	1.79	3 (13%)
1	PSU	L5	4689	1	18,21,22	1.33	2 (11%)	22,30,33	1.99	3 (13%)
5	HIC	LB	245	5	8,11,12	1.66	2 (25%)	6,14,16	0.93	0
46	PSU	S2	918	46	18,21,22	1.41	3 (16%)	22,30,33	1.99	4 (18%)
1	PSU	L5	2508	1	18,21,22	1.34	3 (16%)	22,30,33	1.89	3 (13%)
1	PSU	L5	4312	1	18,21,22	1.35	2 (11%)	22,30,33	1.88	3 (13%)
46	PSU	S2	863	46	18,21,22	0.88	1 (5%)	22,30,33	0.59	0
46	UY1	S2	1326	80,46	19,22,23	0.20	0	22,31,34	0.42	0
46	4AC	S2	1337	46	21,24,25	1.03	1 (4%)	29,34,37	1.08	3 (10%)
46	OMU	S2	354	46	19,22,23	1.22	2 (10%)	26,31,34	1.81	5 (19%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
46	A2M	S2	512	46	18,25,26	1.01	1 (5%)	18,36,39	1.29	2 (11%)
46	PSU	S2	93	46	18,21,22	1.40	3 (16%)	22,30,33	1.85	4 (18%)
46	OMU	S2	428	46	19,22,23	1.21	2 (10%)	26,31,34	1.67	4 (15%)
46	PSU	S2	1003	46	18,21,22	1.38	3 (16%)	22,30,33	1.85	3 (13%)
46	MA6	S2	1850	46	18,26,27	0.92	1 (5%)	19,38,41	1.46	3 (15%)
1	OMC	L5	1881	1,80	19,22,23	0.28	0	26,31,34	0.58	0
1	A2M	L5	3785	1,80	18,25,26	0.63	0	18,36,39	0.84	1 (5%)
1	OMU	L5	2837	1	19,22,23	1.20	2 (10%)	26,31,34	1.82	5 (19%)
46	OMC	S2	1272	46	19,22,23	0.81	0	26,31,34	0.86	1 (3%)
1	A2M	L5	3867	1	18,25,26	0.95	1 (5%)	18,36,39	1.24	2 (11%)
1	PSU	L5	3822	1	18,21,22	1.46	3 (16%)	22,30,33	1.93	5 (22%)
46	PSU	S2	218	46	18,21,22	1.33	2 (11%)	22,30,33	1.90	3 (13%)
3	PSU	L8	69	3	18,21,22	0.88	1 (5%)	22,30,33	0.70	0
1	A2M	L5	1871	1,80	18,25,26	1.00	1 (5%)	18,36,39	1.33	3 (16%)
1	A2M	L5	4523	1,80	18,25,26	1.04	2 (11%)	18,36,39	1.35	3 (16%)
1	A2M	L5	2787	1,80	18,25,26	1.01	1 (5%)	18,36,39	1.45	2 (11%)
1	PSU	L5	4576	1	18,21,22	0.88	1 (5%)	22,30,33	0.61	0
46	PSU	S2	1136	46	18,21,22	0.87	1 (5%)	22,30,33	0.70	0
46	OMU	S2	116	46	19,22,23	1.18	3 (15%)	26,31,34	1.75	5 (19%)
46	PSU	S2	63	46	18,21,22	1.36	2 (11%)	22,30,33	1.95	4 (18%)
46	PSU	S2	296	46	18,21,22	1.37	2 (11%)	22,30,33	1.94	4 (18%)
1	5MC	L5	3782	1,80	18,22,23	0.94	2 (11%)	26,32,35	1.15	2 (7%)
1	PSU	L5	1792	1,81	18,21,22	1.38	2 (11%)	22,30,33	1.88	3 (13%)
46	PSU	S2	1045	46	18,21,22	1.41	3 (16%)	22,30,33	1.83	3 (13%)
59	NMM	ST	67	59	9,11,12	1.54	1 (11%)	6,12,14	3.83	2 (33%)
1	PSU	L5	4442	1	18,21,22	1.35	2 (11%)	22,30,33	1.89	4 (18%)
46	PSU	S2	1244	46	18,21,22	0.88	1 (5%)	22,30,33	0.69	0
46	A2M	S2	668	80,46	18,25,26	0.58	0	18,36,39	0.81	1 (5%)
1	UR3	L5	4530	1	19,22,23	0.27	0	26,32,35	0.62	0
46	PSU	S2	651	46	18,21,22	1.33	3 (16%)	22,30,33	1.92	3 (13%)
1	PSU	L5	4636	1	18,21,22	1.36	2 (11%)	22,30,33	2.01	5 (22%)
46	PSU	S2	649	46	18,21,22	1.38	2 (11%)	22,30,33	1.95	3 (13%)
1	OMU	L5	2415	1	19,22,23	1.22	3 (15%)	26,31,34	1.72	5 (19%)
1	OMG	L5	4196	1,80	18,26,27	0.89	1 (5%)	19,38,41	1.05	2 (10%)
46	PSU	S2	1046	46	18,21,22	1.39	3 (16%)	22,30,33	1.94	4 (18%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	PSU	L5	4552	1	18,21,22	1.35	2 (11%)	22,30,33	1.90	3 (13%)
1	PSU	L5	1582	1	18,21,22	1.41	3 (16%)	22,30,33	1.83	4 (18%)
1	A2M	L5	2401	1	18,25,26	1.01	1 (5%)	18,36,39	1.24	2 (11%)
1	OMG	L5	4618	1	18,26,27	0.90	1 (5%)	19,38,41	1.14	2 (10%)
1	PSU	L5	4628	1	18,21,22	1.36	3 (16%)	22,30,33	1.88	3 (13%)
1	PSU	L5	5010	1	18,21,22	0.87	1 (5%)	22,30,33	0.65	0
46	PSU	S2	1596	46	18,21,22	0.87	1 (5%)	22,30,33	0.62	0
1	PSU	L5	4673	1,81	18,21,22	0.89	1 (5%)	22,30,33	0.56	0
46	A2M	S2	27	80,46	18,25,26	0.95	1 (5%)	18,36,39	1.39	3 (16%)
46	PSU	S2	1174	46	18,21,22	1.37	2 (11%)	22,30,33	2.04	3 (13%)
1	A2M	L5	3718	1	18,25,26	0.97	1 (5%)	18,36,39	1.14	2 (11%)
46	B8N	S2	1248	46	24,29,30	0.95	1 (4%)	29,42,45	1.53	6 (20%)
46	OMG	S2	1447	46	18,26,27	0.93	1 (5%)	19,38,41	1.07	2 (10%)
1	1MA	L5	1322	1,80	16,25,26	1.55	2 (12%)	18,37,40	1.14	3 (16%)
1	PSU	L5	3920	1,80	18,21,22	1.35	2 (11%)	22,30,33	1.92	3 (13%)
46	OMU	S2	1288	46	19,22,23	1.20	2 (10%)	26,31,34	1.71	5 (19%)
46	PSU	S2	1625	46	18,21,22	1.36	2 (11%)	22,30,33	1.86	3 (13%)
1	A2M	L5	1323	1	18,25,26	0.98	1 (5%)	18,36,39	1.28	2 (11%)
1	PSU	L5	3764	1	18,21,22	0.86	1 (5%)	22,30,33	0.54	0
46	PSU	S2	300	46	18,21,22	1.32	2 (11%)	22,30,33	1.90	4 (18%)
1	OMC	L5	2861	1	19,22,23	0.78	0	26,31,34	0.58	0
46	PSU	S2	366	46	18,21,22	1.39	3 (16%)	22,30,33	2.00	4 (18%)
1	OMG	L5	4637	1,81	18,26,27	0.99	1 (5%)	19,38,41	1.01	2 (10%)
1	OMU	L5	4227	1	19,22,23	1.23	2 (10%)	26,31,34	1.72	5 (19%)
1	PSU	L5	1781	1	18,21,22	1.33	2 (11%)	22,30,33	1.97	4 (18%)
1	A2M	L5	3724	1	18,25,26	0.60	0	18,36,39	0.74	1 (5%)
1	PSU	L5	4493	1,81	18,21,22	1.39	3 (16%)	22,30,33	1.87	4 (18%)
1	OMC	L5	2804	1	19,22,23	0.79	0	26,31,34	0.85	0
1	OMG	L5	4623	1	18,26,27	0.88	1 (5%)	19,38,41	1.14	3 (15%)
46	PSU	S2	822	46	18,21,22	0.87	1 (5%)	22,30,33	0.93	1 (4%)
1	A2M	L5	3825	1	18,25,26	0.93	1 (5%)	18,36,39	1.35	3 (16%)
46	A2M	S2	1383	46	18,25,26	1.00	1 (5%)	18,36,39	1.22	2 (11%)
1	PSU	L5	1782	1	18,21,22	1.38	3 (16%)	22,30,33	1.88	4 (18%)
1	PSU	L5	3637	1,81	18,21,22	0.86	1 (5%)	22,30,33	0.78	0
1	OMU	L5	4620	1	19,22,23	1.20	3 (15%)	26,31,34	1.69	5 (19%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
46	PSU	S2	36	46	18,21,22	0.86	1 (5%)	22,30,33	0.63	0
1	A2M	L5	398	1	18,25,26	1.06	2 (11%)	18,36,39	1.25	2 (11%)
1	OMC	L5	2824	1	19,22,23	0.79	0	26,31,34	0.68	0
1	PSU	L5	3730	1	18,21,22	0.87	1 (5%)	22,30,33	0.66	0
46	A2M	S2	468	46	18,25,26	0.99	1 (5%)	18,36,39	1.35	3 (16%)
46	PSU	S2	572	46	18,21,22	1.36	2 (11%)	22,30,33	1.84	4 (18%)
46	OMG	S2	683	46	18,26,27	1.01	2 (11%)	19,38,41	0.81	0
46	PSU	S2	681	46	18,21,22	1.32	3 (16%)	22,30,33	2.06	4 (18%)
1	OMG	L5	2364	1	18,26,27	0.90	1 (5%)	19,38,41	1.02	2 (10%)
1	OMU	L5	4498	1,80	19,22,23	0.21	0	26,31,34	0.47	0
1	PSU	L5	1779	1	18,21,22	1.37	2 (11%)	22,30,33	1.94	5 (22%)
1	PSU	L5	4293	1	18,21,22	0.88	1 (5%)	22,30,33	0.58	0
1	A2M	L5	1326	1	18,25,26	0.97	1 (5%)	18,36,39	1.15	2 (11%)
46	PSU	S2	966	46	18,21,22	0.86	1 (5%)	22,30,33	0.66	0
1	OMC	L5	2365	1,80	19,22,23	0.78	0	26,31,34	0.75	0
46	PSU	S2	1238	46	18,21,22	1.36	3 (16%)	22,30,33	1.99	5 (22%)
1	PSU	L5	3851	1	18,21,22	1.34	2 (11%)	22,30,33	2.00	3 (13%)
1	OMC	L5	3887	1	19,22,23	0.82	0	26,31,34	0.89	0
1	PSU	L5	4353	1	18,21,22	1.38	3 (16%)	22,30,33	1.97	4 (18%)
1	PSU	L5	4361	1	18,21,22	1.34	2 (11%)	22,30,33	1.98	4 (18%)
46	PSU	S2	1004	46	18,21,22	1.42	3 (16%)	22,30,33	1.91	3 (13%)
1	OMG	L5	1522	1	18,26,27	0.90	1 (5%)	19,38,41	1.20	2 (10%)
3	PSU	L8	55	3	18,21,22	1.36	2 (11%)	22,30,33	1.91	3 (13%)
1	OMG	L5	1316	1,81	18,26,27	0.87	1 (5%)	19,38,41	1.17	3 (15%)
46	PSU	S2	100	80,46	18,21,22	0.87	1 (5%)	22,30,33	0.67	0
46	OMG	S2	644	46	18,26,27	0.91	1 (5%)	19,38,41	1.06	2 (10%)
1	A2M	L5	400	1	18,25,26	1.02	1 (5%)	18,36,39	1.20	2 (11%)
1	A2M	L5	1524	1	18,25,26	0.99	1 (5%)	18,36,39	1.23	2 (11%)
1	OMG	L5	3899	1	18,26,27	0.89	0	19,38,41	1.15	2 (10%)
46	OMG	S2	509	80,46	18,26,27	0.93	1 (5%)	19,38,41	1.10	2 (10%)
29	V5N	La	39	29	4,11,12	1.19	0	5,14,16	1.33	0
1	OMC	L5	3808	1	19,22,23	0.80	0	26,31,34	0.75	1 (3%)
1	PSU	L5	1683	1,81	18,21,22	1.34	2 (11%)	22,30,33	1.89	3 (13%)
1	OMC	L5	4536	1	19,22,23	0.79	0	26,31,34	0.79	0
46	PSU	S2	1186	46	18,21,22	0.88	1 (5%)	22,30,33	0.73	0
1	OMG	L5	2876	1	18,26,27	0.90	1 (5%)	19,38,41	1.25	3 (15%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	PSU	L5	4431	1	18,21,22	1.35	2 (11%)	22,30,33	1.88	3 (13%)
46	PSU	S2	1347	46	18,21,22	0.87	1 (5%)	22,30,33	0.68	0
46	PSU	S2	1445	46	18,21,22	1.37	2 (11%)	22,30,33	1.90	3 (13%)
46	OMC	S2	1391	46	19,22,23	0.79	0	26,31,34	0.78	0
46	OMU	S2	172	46	19,22,23	1.17	2 (10%)	26,31,34	1.80	5 (19%)
1	PSU	L5	4973	1	18,21,22	1.31	2 (11%)	22,30,33	1.83	3 (13%)
1	OMG	L5	4370	1	18,26,27	0.86	1 (5%)	19,38,41	1.19	3 (15%)
1	PSU	L5	3770	1	18,21,22	1.44	3 (16%)	22,30,33	1.92	3 (13%)
46	PSU	S2	105	46	18,21,22	1.36	2 (11%)	22,30,33	1.95	3 (13%)
46	OMG	S2	436	46	18,26,27	0.90	1 (5%)	19,38,41	1.15	2 (10%)
1	PSU	L5	4471	1	18,21,22	1.40	2 (11%)	22,30,33	1.83	3 (13%)
1	PSU	L5	4296	1	18,21,22	0.89	1 (5%)	22,30,33	0.59	0
1	PSU	L5	3715	1	18,21,22	1.37	3 (16%)	22,30,33	1.97	3 (13%)
1	A2M	L5	4571	1	18,25,26	1.02	1 (5%)	18,36,39	1.26	2 (11%)
46	PSU	S2	686	46	18,21,22	0.86	1 (5%)	22,30,33	0.73	0
46	A2M	S2	590	46	18,25,26	1.01	2 (11%)	18,36,39	1.26	2 (11%)
1	OMC	L5	4456	1	19,22,23	0.78	0	26,31,34	0.67	0
1	PSU	L5	4579	1	18,21,22	0.88	1 (5%)	22,30,33	0.61	0
46	OMU	S2	1804	46	19,22,23	0.21	0	26,31,34	0.43	0
46	MA6	S2	1851	46	18,26,27	0.91	1 (5%)	19,38,41	1.50	3 (15%)
46	A2M	S2	159	46	18,25,26	1.00	1 (5%)	18,36,39	1.47	4 (22%)
1	OMC	L5	3841	1	19,22,23	0.81	1 (5%)	26,31,34	0.88	1 (3%)
1	PSU	L5	4521	1,80,81	18,21,22	1.29	2 (11%)	22,30,33	1.95	4 (18%)
46	OMG	S2	601	46	18,26,27	0.92	1 (5%)	19,38,41	1.04	2 (10%)
46	OMU	S2	1442	80,46	19,22,23	1.20	3 (15%)	26,31,34	1.69	5 (19%)
1	OMG	L5	1625	1,81	18,26,27	0.96	1 (5%)	19,38,41	1.06	3 (15%)
1	OMG	L5	3792	1	18,26,27	0.92	1 (5%)	19,38,41	1.14	3 (15%)
1	OMC	L5	3869	1	19,22,23	0.82	0	26,31,34	0.80	0
1	OMG	L5	4392	1	18,26,27	0.93	1 (5%)	19,38,41	1.11	2 (10%)
1	PSU	L5	3762	1	18,21,22	0.83	1 (5%)	22,30,33	0.64	0
46	PSU	S2	406	46	18,21,22	1.38	3 (16%)	22,30,33	1.89	3 (13%)
1	PSU	L5	3884	1	18,21,22	1.34	2 (11%)	22,30,33	1.90	3 (13%)
1	A2M	L5	2363	1,80	18,25,26	1.02	1 (5%)	18,36,39	1.25	2 (11%)
46	PSU	S2	1360	80,46,81	18,21,22	0.88	1 (5%)	22,30,33	0.80	1 (4%)
1	PSU	L5	3844	1	18,21,22	1.39	3 (16%)	22,30,33	1.97	3 (13%)
46	OMC	S2	174	46	19,22,23	0.79	0	26,31,34	0.73	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
46	4AC	S2	1842	46	21,24,25	0.94	1 (4%)	29,34,37	1.06	4 (13%)
46	PSU	S2	109	46	18,21,22	1.36	2 (11%)	22,30,33	1.91	3 (13%)
1	PSU	L5	1744	1	18,21,22	1.34	2 (11%)	22,30,33	1.91	3 (13%)
46	A2M	S2	1031	46	18,25,26	0.93	1 (5%)	18,36,39	1.40	3 (16%)
1	PSU	L5	3695	1,81	18,21,22	1.35	3 (16%)	22,30,33	1.98	4 (18%)
72	IAS	SO	138	72	6,7,8	1.04	0	6,8,10	1.66	3 (50%)
1	OMC	L5	2351	1,80	19,22,23	0.79	0	26,31,34	0.90	1 (3%)
1	OMG	L5	4499	1	18,26,27	0.99	2 (11%)	19,38,41	0.72	0
1	PSU	L5	4423	1	18,21,22	1.36	3 (16%)	22,30,33	1.92	3 (13%)
1	PSU	L5	4972	1	18,21,22	1.35	2 (11%)	22,30,33	1.93	4 (18%)
1	OMG	L5	4494	1	18,26,27	0.94	1 (5%)	19,38,41	1.06	2 (10%)
46	PSU	S2	1367	46	18,21,22	1.39	2 (11%)	22,30,33	1.91	4 (18%)
46	OMC	S2	1703	46	19,22,23	0.79	0	26,31,34	0.80	0
1	PSU	L5	3853	1,80	18,21,22	1.33	2 (11%)	22,30,33	1.75	3 (13%)
46	PSU	S2	1692	46	18,21,22	1.42	3 (16%)	22,30,33	1.88	3 (13%)
1	6MZ	L5	4220	1	18,25,26	0.85	1 (5%)	16,36,39	1.98	4 (25%)
1	PSU	L5	1860	1	18,21,22	1.38	2 (11%)	22,30,33	1.93	3 (13%)
1	OMG	L5	3744	1	18,26,27	0.93	1 (5%)	19,38,41	1.12	2 (10%)
1	A2M	L5	1534	1,80	18,25,26	1.03	1 (5%)	18,36,39	1.40	2 (11%)
1	A2M	L5	3830	1	18,25,26	0.99	1 (5%)	18,36,39	1.19	2 (11%)
1	OMC	L5	2422	1,80	19,22,23	0.83	0	26,31,34	0.76	0
1	PSU	L5	4403	1	18,21,22	1.33	3 (16%)	22,30,33	1.94	4 (18%)
1	OMC	L5	3701	1,81	19,22,23	0.76	0	26,31,34	0.87	0
46	PSU	S2	667	46	18,21,22	0.85	1 (5%)	22,30,33	0.61	0
46	PSU	S2	609	46	18,21,22	0.88	1 (5%)	22,30,33	0.62	0
46	PSU	S2	815	46	18,21,22	1.32	2 (11%)	22,30,33	1.86	3 (13%)
1	A2M	L5	4590	1	18,25,26	1.02	1 (5%)	18,36,39	1.34	3 (16%)
1	OMU	L5	3925	1	19,22,23	1.19	2 (10%)	26,31,34	1.70	5 (19%)
46	OMG	S2	867	46	18,26,27	1.00	2 (11%)	19,38,41	0.69	0
46	OMU	S2	121	46	19,22,23	1.20	3 (15%)	26,31,34	1.69	5 (19%)
3	OMG	L8	75	3	18,26,27	0.91	1 (5%)	19,38,41	1.07	2 (10%)
1	OMU	L5	4306	1	19,22,23	1.23	3 (15%)	26,31,34	1.71	5 (19%)
1	PSU	L5	1862	1	18,21,22	1.35	2 (11%)	22,30,33	1.96	4 (18%)
46	PSU	S2	814	46	18,21,22	1.35	3 (16%)	22,30,33	1.84	3 (13%)
1	UY1	L5	3818	1,81	19,22,23	0.22	0	22,31,34	0.50	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	PSU	L5	1677	1	18,21,22	1.36	3 (16%)	22,30,33	2.05	5 (22%)
1	PSU	L5	2843	1	18,21,22	1.36	3 (16%)	22,30,33	1.80	4 (18%)
1	PSU	L5	4457	1	18,21,22	1.39	2 (11%)	22,30,33	1.96	3 (13%)
46	PSU	S2	1056	46	18,21,22	1.47	3 (16%)	22,30,33	1.94	4 (18%)
1	PSU	L5	2632	1	18,21,22	0.86	1 (5%)	22,30,33	0.60	0
46	A2M	S2	166	46	18,25,26	1.07	1 (5%)	18,36,39	1.41	3 (16%)
46	PSU	S2	1643	80,46	18,21,22	1.37	2 (11%)	22,30,33	1.88	4 (18%)
46	PSU	S2	866	46	18,21,22	0.89	1 (5%)	22,30,33	0.96	1 (4%)
1	PSU	L5	4532	1	18,21,22	0.88	1 (5%)	22,30,33	0.65	0
46	OMG	S2	1328	46,81	18,26,27	1.02	2 (11%)	19,38,41	0.66	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	PSU	L5	3768	1	-	0/7/25/26	0/2/2/2
1	OMG	L5	4228	1	-	0/5/27/28	0/3/3/3
46	A2M	S2	1678	46	-	1/5/27/28	0/3/3/3
1	OMG	L5	2424	1	-	0/5/27/28	0/3/3/3
1	A2M	L5	2815	1	-	4/5/27/28	0/3/3/3
1	PSU	L5	4500	1	-	5/7/25/26	0/2/2/2
46	PSU	S2	34	46	-	0/7/25/26	0/2/2/2
1	5MC	L5	4447	1,81	-	4/7/25/26	0/2/2/2
3	OMU	L8	14	1,3	-	1/9/27/28	0/2/2/2
46	PSU	S2	1177	46	-	0/7/25/26	0/2/2/2
46	6MZ	S2	1832	80,46,81	-	1/5/27/28	0/3/3/3
1	PSU	L5	4299	1	-	0/7/25/26	0/2/2/2
1	OMG	L5	3627	1	-	0/5/27/28	0/3/3/3
1	OMC	L5	1340	1	-	0/9/27/28	0/2/2/2
46	A2M	S2	484	46	-	0/5/27/28	0/3/3/3
46	OMC	S2	517	46	-	0/9/27/28	0/2/2/2
46	OMC	S2	462	46	-	0/9/27/28	0/2/2/2
46	PSU	S2	1232	46	-	0/7/25/26	0/2/2/2
1	PSU	L5	5001	1	-	0/7/25/26	0/2/2/2
46	A2M	S2	576	46	-	2/5/27/28	0/3/3/3
1	PSU	L5	2839	1	-	0/7/25/26	0/2/2/2
46	OMG	S2	1490	80,46	-	3/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
46	PSU	S2	119	46	-	0/7/25/26	0/2/2/2
1	PSU	L5	3639	1	-	0/7/25/26	0/2/2/2
46	A2M	S2	99	80,46	-	0/5/27/28	0/3/3/3
46	PSU	S2	801	46	-	2/7/25/26	0/2/2/2
1	PSU	L5	1536	1	-	0/7/25/26	0/2/2/2
1	PSU	L5	4689	1	-	0/7/25/26	0/2/2/2
5	HIC	LB	245	5	-	0/5/6/8	0/1/1/1
46	PSU	S2	918	46	-	0/7/25/26	0/2/2/2
1	PSU	L5	2508	1	-	0/7/25/26	0/2/2/2
1	PSU	L5	4312	1	-	0/7/25/26	0/2/2/2
46	PSU	S2	863	46	-	0/7/25/26	0/2/2/2
46	UY1	S2	1326	80,46	-	2/9/27/28	0/2/2/2
46	4AC	S2	1337	46	-	0/11/29/30	0/2/2/2
46	OMU	S2	354	46	-	0/9/27/28	0/2/2/2
46	A2M	S2	512	46	-	2/5/27/28	0/3/3/3
46	PSU	S2	93	46	-	0/7/25/26	0/2/2/2
46	OMU	S2	428	46	-	6/9/27/28	0/2/2/2
46	PSU	S2	1003	46	-	0/7/25/26	0/2/2/2
46	MA6	S2	1850	46	-	0/7/29/30	0/3/3/3
1	OMC	L5	1881	1,80	-	0/9/27/28	0/2/2/2
1	A2M	L5	3785	1,80	-	1/5/27/28	0/3/3/3
1	OMU	L5	2837	1	-	0/9/27/28	0/2/2/2
46	OMC	S2	1272	46	-	1/9/27/28	0/2/2/2
1	A2M	L5	3867	1	-	1/5/27/28	0/3/3/3
1	PSU	L5	3822	1	-	0/7/25/26	0/2/2/2
46	PSU	S2	218	46	-	0/7/25/26	0/2/2/2
3	PSU	L8	69	3	-	0/7/25/26	0/2/2/2
1	A2M	L5	1871	1,80	-	0/5/27/28	0/3/3/3
1	A2M	L5	4523	1,80	-	0/5/27/28	0/3/3/3
1	A2M	L5	2787	1,80	-	0/5/27/28	0/3/3/3
1	PSU	L5	4576	1	-	0/7/25/26	0/2/2/2
46	PSU	S2	1136	46	-	0/7/25/26	0/2/2/2
46	OMU	S2	116	46	-	1/9/27/28	0/2/2/2
46	PSU	S2	63	46	-	0/7/25/26	0/2/2/2
46	PSU	S2	296	46	-	0/7/25/26	0/2/2/2
1	5MC	L5	3782	1,80	-	0/7/25/26	0/2/2/2
1	PSU	L5	1792	1,81	-	1/7/25/26	0/2/2/2
46	PSU	S2	1045	46	-	0/7/25/26	0/2/2/2
59	NMM	ST	67	59	-	0/9/11/13	-
1	PSU	L5	4442	1	-	0/7/25/26	0/2/2/2
46	PSU	S2	1244	46	-	0/7/25/26	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
46	A2M	S2	668	80,46	-	2/5/27/28	0/3/3/3
1	UR3	L5	4530	1	-	0/7/25/26	0/2/2/2
46	PSU	S2	651	46	-	0/7/25/26	0/2/2/2
1	PSU	L5	4636	1	-	4/7/25/26	0/2/2/2
46	PSU	S2	649	46	-	0/7/25/26	0/2/2/2
1	OMU	L5	2415	1	-	1/9/27/28	0/2/2/2
1	OMG	L5	4196	1,80	-	1/5/27/28	0/3/3/3
46	PSU	S2	1046	46	-	0/7/25/26	0/2/2/2
1	PSU	L5	4552	1	-	0/7/25/26	0/2/2/2
1	PSU	L5	1582	1	-	2/7/25/26	0/2/2/2
1	A2M	L5	2401	1	-	0/5/27/28	0/3/3/3
1	OMG	L5	4618	1	-	0/5/27/28	0/3/3/3
1	PSU	L5	4628	1	-	0/7/25/26	0/2/2/2
1	PSU	L5	5010	1	-	0/7/25/26	0/2/2/2
46	PSU	S2	1596	46	-	0/7/25/26	0/2/2/2
1	PSU	L5	4673	1,81	-	0/7/25/26	0/2/2/2
46	A2M	S2	27	80,46	-	1/5/27/28	0/3/3/3
46	PSU	S2	1174	46	-	0/7/25/26	0/2/2/2
1	A2M	L5	3718	1	-	1/5/27/28	0/3/3/3
46	B8N	S2	1248	46	-	3/16/34/35	0/2/2/2
46	OMG	S2	1447	46	-	1/5/27/28	0/3/3/3
1	1MA	L5	1322	1,80	-	0/3/25/26	0/3/3/3
1	PSU	L5	3920	1,80	-	0/7/25/26	0/2/2/2
46	OMU	S2	1288	46	-	0/9/27/28	0/2/2/2
46	PSU	S2	1625	46	-	0/7/25/26	0/2/2/2
1	A2M	L5	1323	1	-	0/5/27/28	0/3/3/3
1	PSU	L5	3764	1	-	2/7/25/26	0/2/2/2
46	PSU	S2	300	46	-	0/7/25/26	0/2/2/2
1	OMC	L5	2861	1	-	0/9/27/28	0/2/2/2
46	PSU	S2	366	46	-	0/7/25/26	0/2/2/2
1	OMG	L5	4637	1,81	-	1/5/27/28	0/3/3/3
1	OMU	L5	4227	1	-	0/9/27/28	0/2/2/2
1	PSU	L5	1781	1	-	0/7/25/26	0/2/2/2
1	A2M	L5	3724	1	-	3/5/27/28	0/3/3/3
1	PSU	L5	4493	1,81	-	0/7/25/26	0/2/2/2
1	OMC	L5	2804	1	-	0/9/27/28	0/2/2/2
1	OMG	L5	4623	1	-	0/5/27/28	0/3/3/3
46	PSU	S2	822	46	-	2/7/25/26	0/2/2/2
1	A2M	L5	3825	1	-	0/5/27/28	0/3/3/3
46	A2M	S2	1383	46	-	3/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	PSU	L5	1782	1	-	0/7/25/26	0/2/2/2
1	PSU	L5	3637	1,81	-	0/7/25/26	0/2/2/2
1	OMU	L5	4620	1	-	0/9/27/28	0/2/2/2
46	PSU	S2	36	46	-	0/7/25/26	0/2/2/2
1	A2M	L5	398	1	-	1/5/27/28	0/3/3/3
1	OMC	L5	2824	1	-	1/9/27/28	0/2/2/2
1	PSU	L5	3730	1	-	0/7/25/26	0/2/2/2
46	A2M	S2	468	46	-	1/5/27/28	0/3/3/3
46	PSU	S2	572	46	-	0/7/25/26	0/2/2/2
46	OMG	S2	683	46	-	0/5/27/28	0/3/3/3
46	PSU	S2	681	46	-	0/7/25/26	0/2/2/2
1	OMG	L5	2364	1	-	0/5/27/28	0/3/3/3
1	OMU	L5	4498	1,80	-	0/9/27/28	0/2/2/2
1	PSU	L5	1779	1	-	0/7/25/26	0/2/2/2
1	PSU	L5	4293	1	-	0/7/25/26	0/2/2/2
1	A2M	L5	1326	1	-	1/5/27/28	0/3/3/3
46	PSU	S2	966	46	-	2/7/25/26	0/2/2/2
1	OMC	L5	2365	1,80	-	0/9/27/28	0/2/2/2
46	PSU	S2	1238	46	-	0/7/25/26	0/2/2/2
1	PSU	L5	3851	1	-	2/7/25/26	0/2/2/2
1	OMC	L5	3887	1	-	1/9/27/28	0/2/2/2
1	PSU	L5	4353	1	-	0/7/25/26	0/2/2/2
1	PSU	L5	4361	1	-	0/7/25/26	0/2/2/2
46	PSU	S2	1004	46	-	0/7/25/26	0/2/2/2
1	OMG	L5	1522	1	-	0/5/27/28	0/3/3/3
3	PSU	L8	55	3	-	0/7/25/26	0/2/2/2
1	OMG	L5	1316	1,81	-	0/5/27/28	0/3/3/3
46	PSU	S2	100	80,46	-	2/7/25/26	0/2/2/2
46	OMG	S2	644	46	-	1/5/27/28	0/3/3/3
1	A2M	L5	400	1	-	1/5/27/28	0/3/3/3
1	A2M	L5	1524	1	-	1/5/27/28	0/3/3/3
1	OMG	L5	3899	1	-	0/5/27/28	0/3/3/3
46	OMG	S2	509	80,46	-	0/5/27/28	0/3/3/3
29	V5N	La	39	29	-	0/5/10/12	0/1/1/1
1	OMC	L5	3808	1	-	0/9/27/28	0/2/2/2
1	PSU	L5	1683	1,81	-	0/7/25/26	0/2/2/2
1	OMC	L5	4536	1	-	0/9/27/28	0/2/2/2
46	PSU	S2	1186	46	-	0/7/25/26	0/2/2/2
1	OMG	L5	2876	1	-	0/5/27/28	0/3/3/3
1	PSU	L5	4431	1	-	0/7/25/26	0/2/2/2
46	PSU	S2	1347	46	-	0/7/25/26	0/2/2/2
46	PSU	S2	1445	46	-	0/7/25/26	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
46	OMC	S2	1391	46	-	0/9/27/28	0/2/2/2
46	OMU	S2	172	46	-	0/9/27/28	0/2/2/2
1	PSU	L5	4973	1	-	0/7/25/26	0/2/2/2
1	OMG	L5	4370	1	-	0/5/27/28	0/3/3/3
1	PSU	L5	3770	1	-	2/7/25/26	0/2/2/2
46	PSU	S2	105	46	-	0/7/25/26	0/2/2/2
46	OMG	S2	436	46	-	0/5/27/28	0/3/3/3
1	PSU	L5	4471	1	-	0/7/25/26	0/2/2/2
1	PSU	L5	4296	1	-	0/7/25/26	0/2/2/2
1	PSU	L5	3715	1	-	0/7/25/26	0/2/2/2
1	A2M	L5	4571	1	-	1/5/27/28	0/3/3/3
46	PSU	S2	686	46	-	0/7/25/26	0/2/2/2
46	A2M	S2	590	46	-	1/5/27/28	0/3/3/3
1	OMC	L5	4456	1	-	0/9/27/28	0/2/2/2
1	PSU	L5	4579	1	-	0/7/25/26	0/2/2/2
46	OMU	S2	1804	46	-	0/9/27/28	0/2/2/2
46	MA6	S2	1851	46	-	3/7/29/30	0/3/3/3
46	A2M	S2	159	46	-	2/5/27/28	0/3/3/3
1	OMC	L5	3841	1	-	0/9/27/28	0/2/2/2
1	PSU	L5	4521	1,80,81	-	0/7/25/26	0/2/2/2
46	OMG	S2	601	46	-	0/5/27/28	0/3/3/3
46	OMU	S2	1442	80,46	-	1/9/27/28	0/2/2/2
1	OMG	L5	1625	1,81	-	1/5/27/28	0/3/3/3
1	OMG	L5	3792	1	-	0/5/27/28	0/3/3/3
1	OMC	L5	3869	1	-	0/9/27/28	0/2/2/2
1	OMG	L5	4392	1	-	0/5/27/28	0/3/3/3
1	PSU	L5	3762	1	-	0/7/25/26	0/2/2/2
46	PSU	S2	406	46	-	0/7/25/26	0/2/2/2
1	PSU	L5	3884	1	-	0/7/25/26	0/2/2/2
1	A2M	L5	2363	1,80	-	2/5/27/28	0/3/3/3
46	PSU	S2	1360	80,46,81	-	0/7/25/26	0/2/2/2
1	PSU	L5	3844	1	-	2/7/25/26	0/2/2/2
46	OMC	S2	174	46	-	0/9/27/28	0/2/2/2
46	4AC	S2	1842	46	-	0/11/29/30	0/2/2/2
46	PSU	S2	109	46	-	0/7/25/26	0/2/2/2
1	PSU	L5	1744	1	-	0/7/25/26	0/2/2/2
46	A2M	S2	1031	46	-	1/5/27/28	0/3/3/3
1	PSU	L5	3695	1,81	-	0/7/25/26	0/2/2/2
72	IAS	SO	138	72	-	1/7/7/8	-
1	OMC	L5	2351	1,80	-	2/9/27/28	0/2/2/2
1	OMG	L5	4499	1	-	0/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	PSU	L5	4423	1	-	0/7/25/26	0/2/2/2
1	PSU	L5	4972	1	-	0/7/25/26	0/2/2/2
1	OMG	L5	4494	1	-	1/5/27/28	0/3/3/3
46	PSU	S2	1367	46	-	0/7/25/26	0/2/2/2
46	OMC	S2	1703	46	-	0/9/27/28	0/2/2/2
1	PSU	L5	3853	1,80	-	0/7/25/26	0/2/2/2
46	PSU	S2	1692	46	-	0/7/25/26	0/2/2/2
1	6MZ	L5	4220	1	-	0/5/27/28	0/3/3/3
1	PSU	L5	1860	1	-	0/7/25/26	0/2/2/2
1	OMG	L5	3744	1	-	0/5/27/28	0/3/3/3
1	A2M	L5	1534	1,80	-	2/5/27/28	0/3/3/3
1	A2M	L5	3830	1	-	0/5/27/28	0/3/3/3
1	OMC	L5	2422	1,80	-	1/9/27/28	0/2/2/2
1	PSU	L5	4403	1	-	0/7/25/26	0/2/2/2
1	OMC	L5	3701	1,81	-	4/9/27/28	0/2/2/2
46	PSU	S2	667	46	-	0/7/25/26	0/2/2/2
46	PSU	S2	609	46	-	0/7/25/26	0/2/2/2
46	PSU	S2	815	46	-	0/7/25/26	0/2/2/2
1	A2M	L5	4590	1	-	1/5/27/28	0/3/3/3
1	OMU	L5	3925	1	-	0/9/27/28	0/2/2/2
46	OMG	S2	867	46	-	1/5/27/28	0/3/3/3
46	OMU	S2	121	46	-	1/9/27/28	0/2/2/2
3	OMG	L8	75	3	-	0/5/27/28	0/3/3/3
1	OMU	L5	4306	1	-	0/9/27/28	0/2/2/2
1	PSU	L5	1862	1	-	0/7/25/26	0/2/2/2
46	PSU	S2	814	46	-	0/7/25/26	0/2/2/2
1	UY1	L5	3818	1,81	-	6/9/27/28	0/2/2/2
1	PSU	L5	1677	1	-	2/7/25/26	0/2/2/2
1	PSU	L5	2843	1	-	0/7/25/26	0/2/2/2
1	PSU	L5	4457	1	-	0/7/25/26	0/2/2/2
46	PSU	S2	1056	46	-	0/7/25/26	0/2/2/2
1	PSU	L5	2632	1	-	0/7/25/26	0/2/2/2
46	A2M	S2	166	46	-	2/5/27/28	0/3/3/3
46	PSU	S2	1643	80,46	-	0/7/25/26	0/2/2/2
46	PSU	S2	866	46	-	0/7/25/26	0/2/2/2
1	PSU	L5	4532	1	-	0/7/25/26	0/2/2/2
46	OMG	S2	1328	46,81	-	0/5/27/28	0/3/3/3

The worst 5 of 325 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	L5	1322	1MA	C2-N3	4.94	1.35	1.29
59	ST	67	NMM	CZ-NH2	4.14	1.44	1.34
1	L5	3639	PSU	C6-C5	3.60	1.39	1.35
5	LB	245	HIC	CD2-CG	3.49	1.41	1.36
46	S2	866	PSU	C6-C5	3.44	1.39	1.35

The worst 5 of 498 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	ST	67	NMM	NE-CZ-NH2	-8.35	111.82	119.48
46	S2	1832	6MZ	C2-N1-C6	8.01	123.46	116.59
46	S2	1174	PSU	N1-C2-N3	6.41	122.39	115.13
46	S2	1056	PSU	N1-C2-N3	6.39	122.37	115.13
1	L5	1677	PSU	N1-C2-N3	6.37	122.35	115.13

There are no chirality outliers.

5 of 119 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	L8	14	OMU	C1'-C2'-O2'-CM2
1	L5	1582	PSU	O4'-C1'-C5-C4
1	L5	1582	PSU	O4'-C1'-C5-C6
1	L5	1677	PSU	C2'-C1'-C5-C6
1	L5	2824	OMC	C1'-C2'-O2'-CM2

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 410 ligands modelled in this entry, 408 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	$\# Z > 2$
82	SPD	L5	5378	-	9,9,9	0.34	0	8,8,8	0.92	0
82	SPD	L5	5377	-	9,9,9	0.33	0	8,8,8	0.76	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
82	SPD	L5	5378	-	-	4/7/7/7	-
82	SPD	L5	5377	-	-	3/7/7/7	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 7 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
82	L5	5378	SPD	N6-C7-C8-C9
82	L5	5377	SPD	C3-C4-C5-N6
82	L5	5378	SPD	C8-C7-N6-C5
82	L5	5378	SPD	C2-C3-C4-C5
82	L5	5377	SPD	N6-C7-C8-C9

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

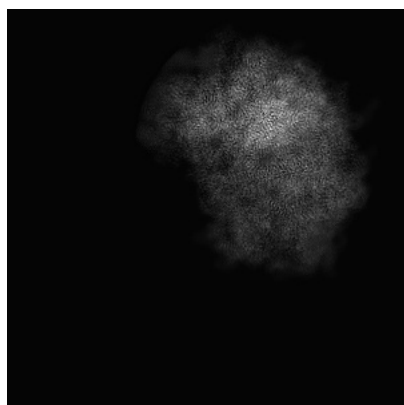
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-18539. These allow visual inspection of the internal detail of the map and identification of artifacts.

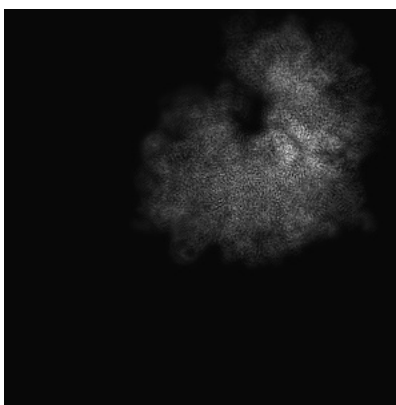
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

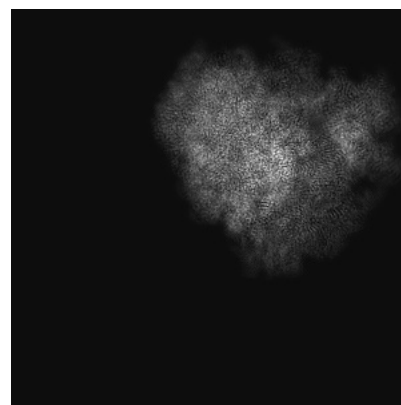
6.1.1 Primary map



X



Y

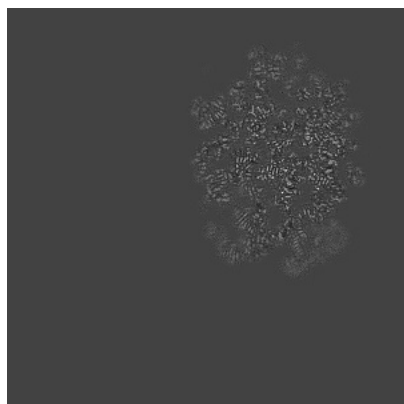


Z

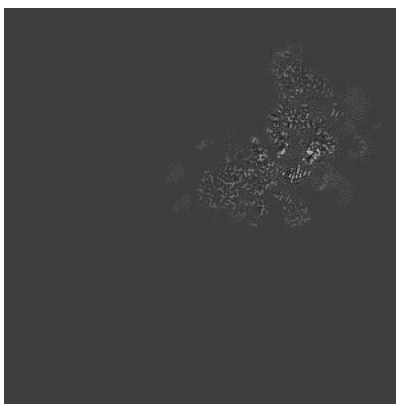
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 256



Y Index: 256

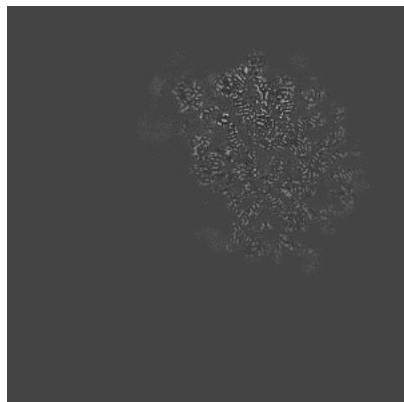


Z Index: 256

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

6.3 Largest variance slices [i](#)

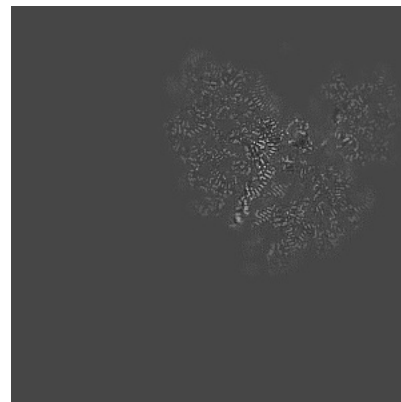
6.3.1 Primary map



X Index: 306



Y Index: 326

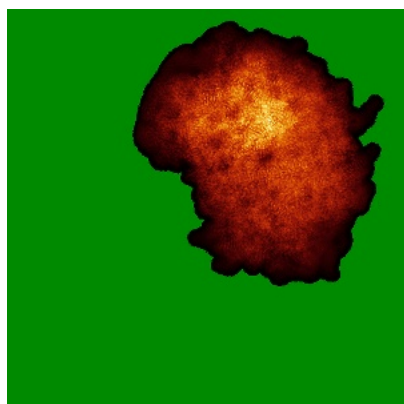


Z Index: 363

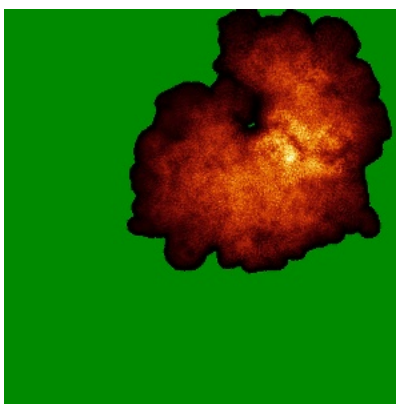
The images above show the largest variance slices of the map in three orthogonal directions.

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

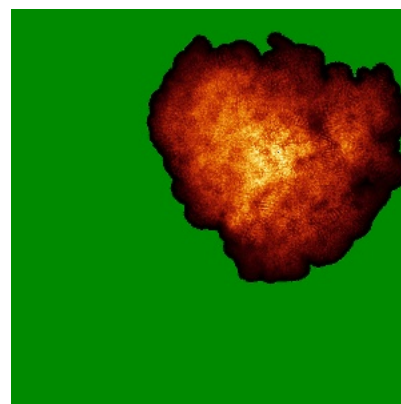
6.4.1 Primary map



X



Y



Z

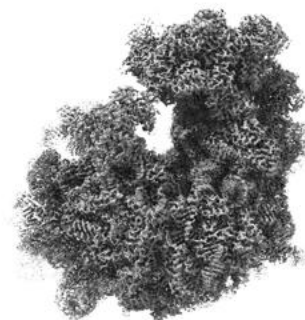
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0266. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

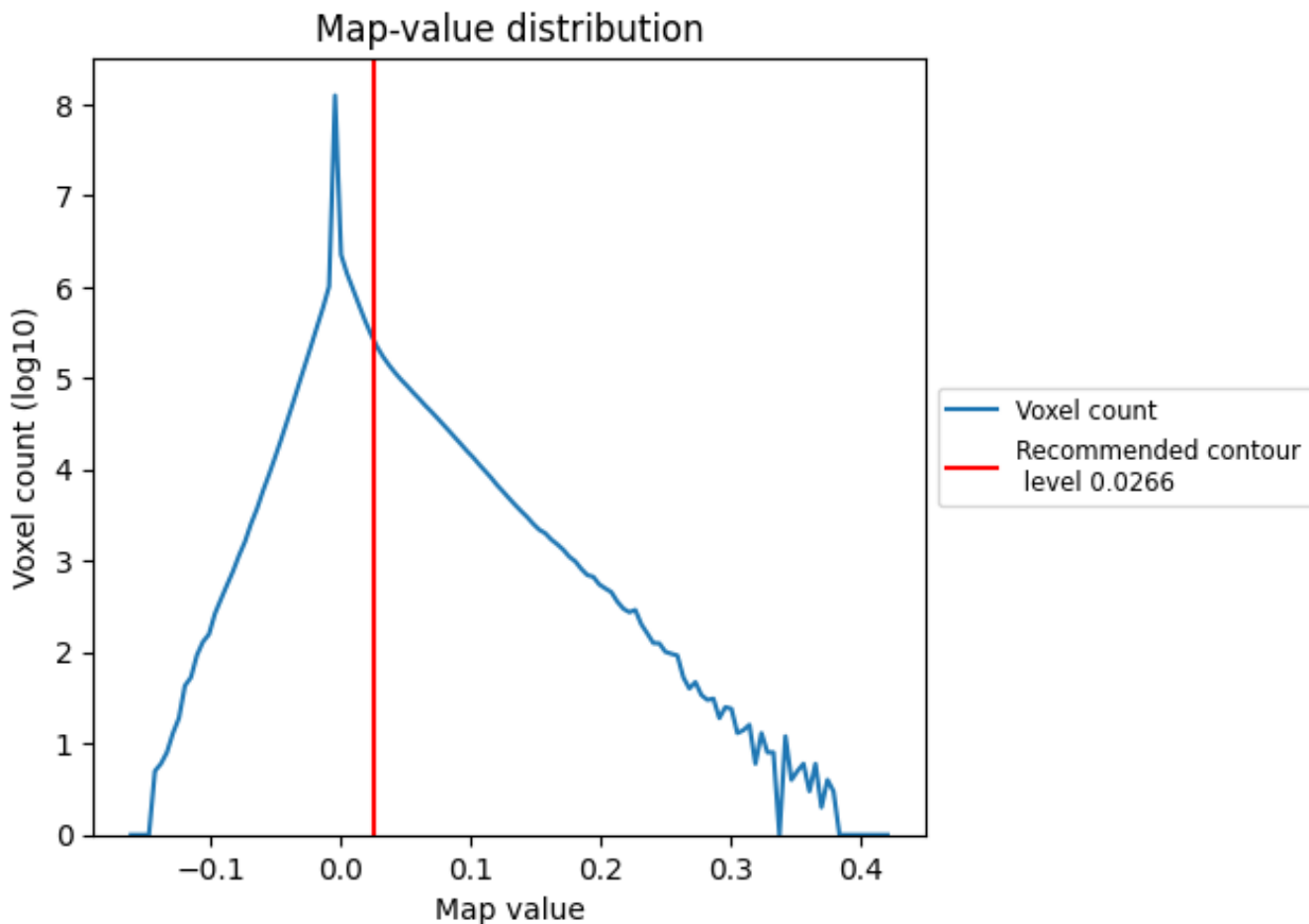
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

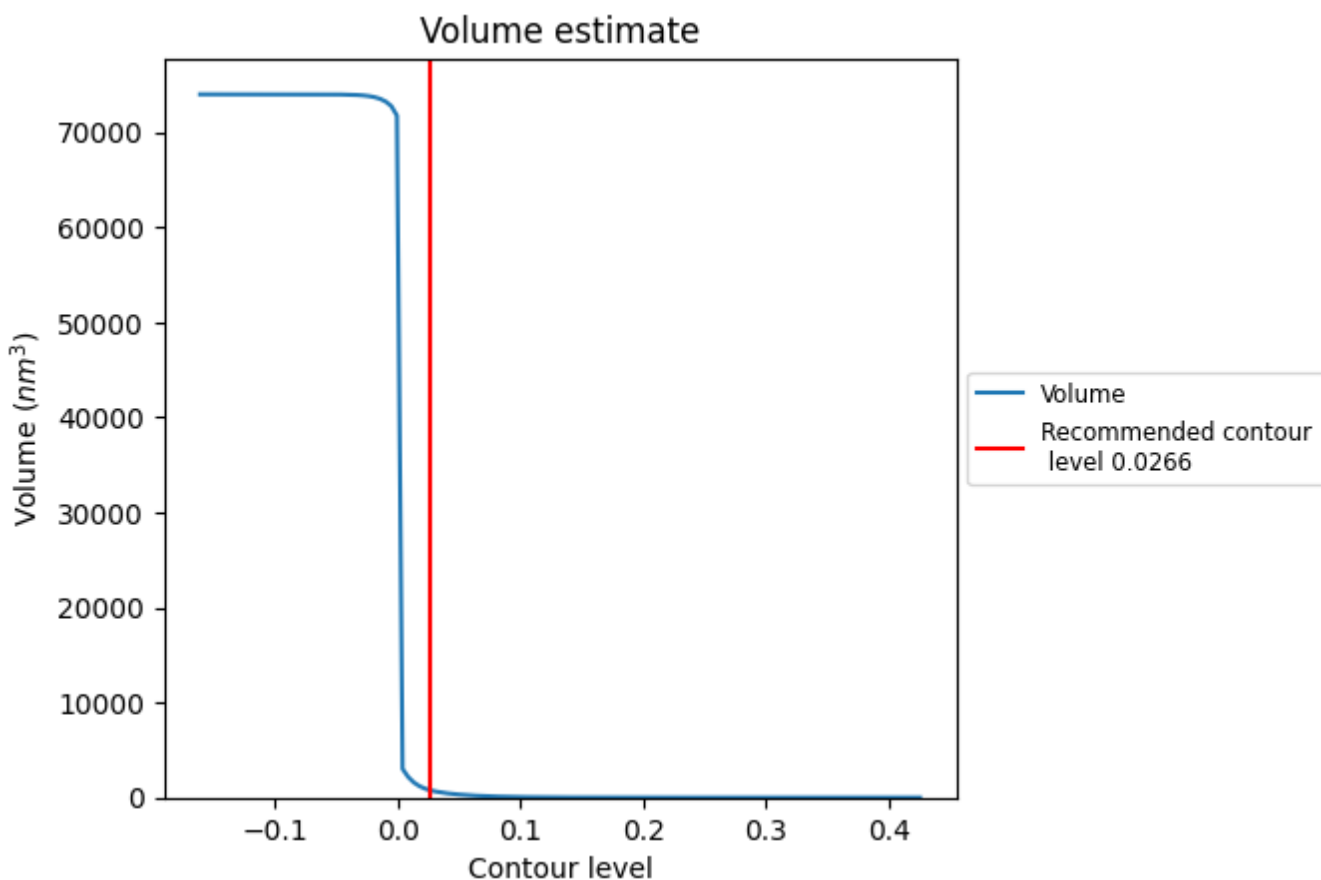
This section contains the results of statistical analysis of the map.

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.

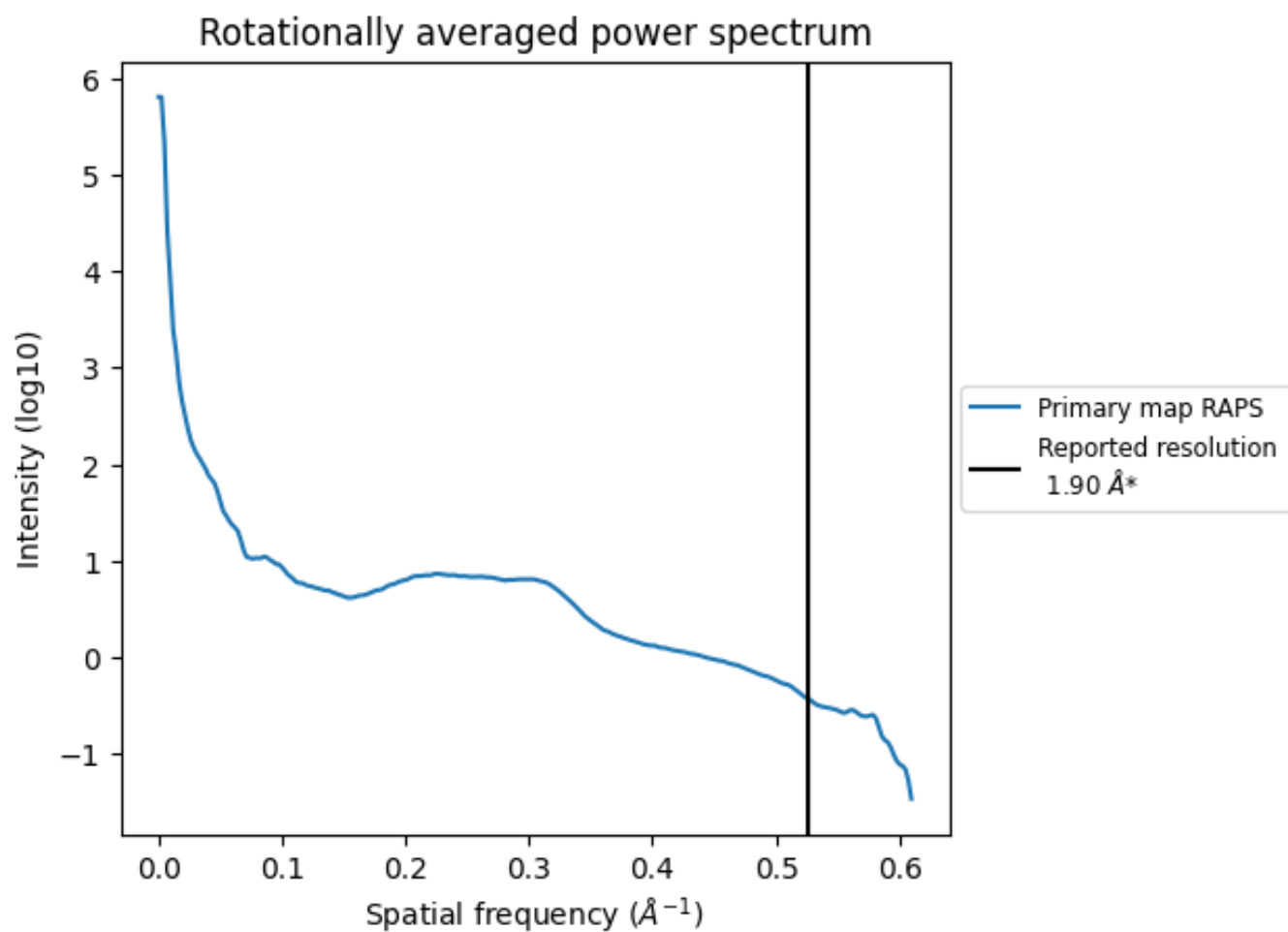
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 776 nm^3 ; this corresponds to an approximate mass of 701 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 0.526 Å⁻¹

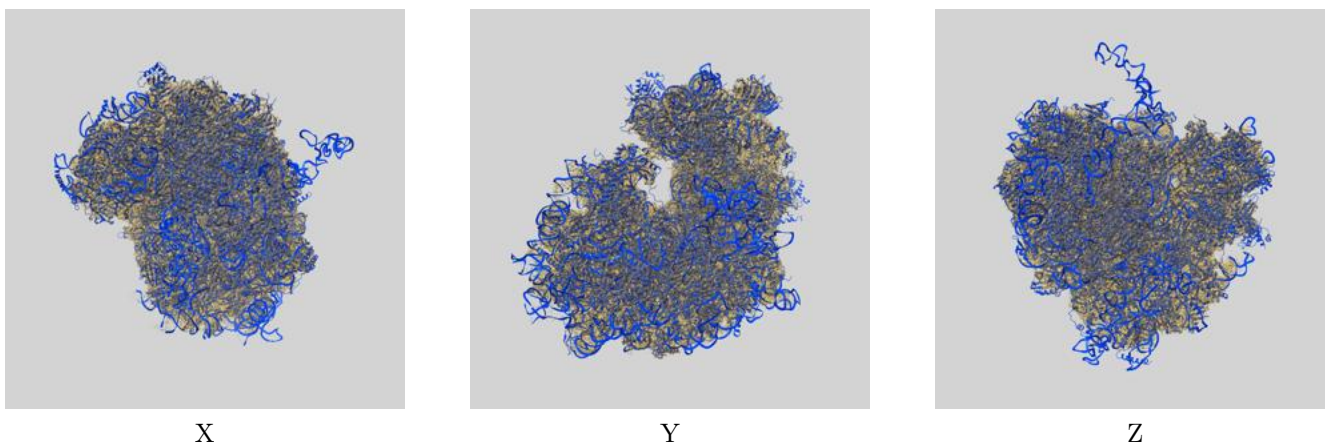
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

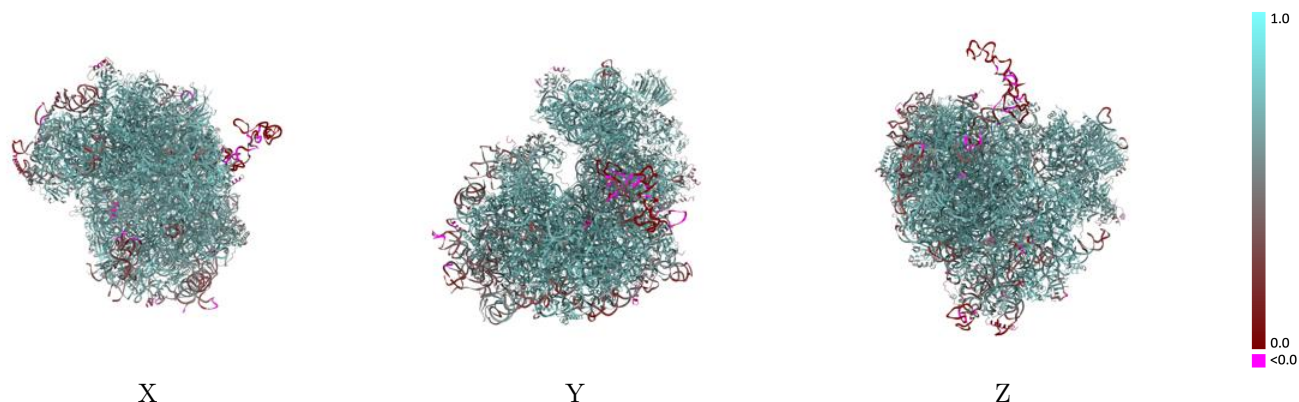
This section contains information regarding the fit between EMDB map EMD-18539 and PDB model 8QOI. Per-residue inclusion information can be found in section 3 on page 24.

9.1 Map-model overlay [i](#)



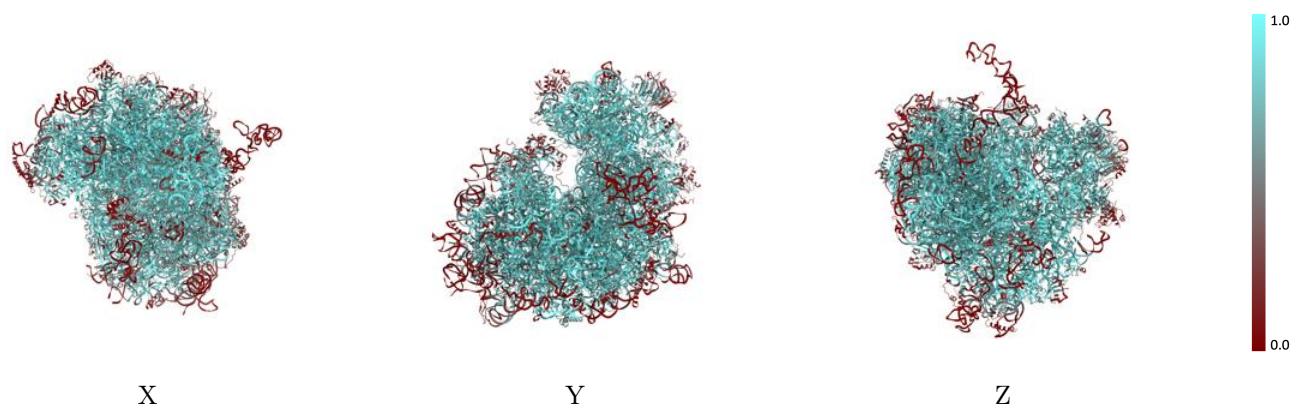
The images above show the 3D surface view of the map at the recommended contour level 0.0266 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



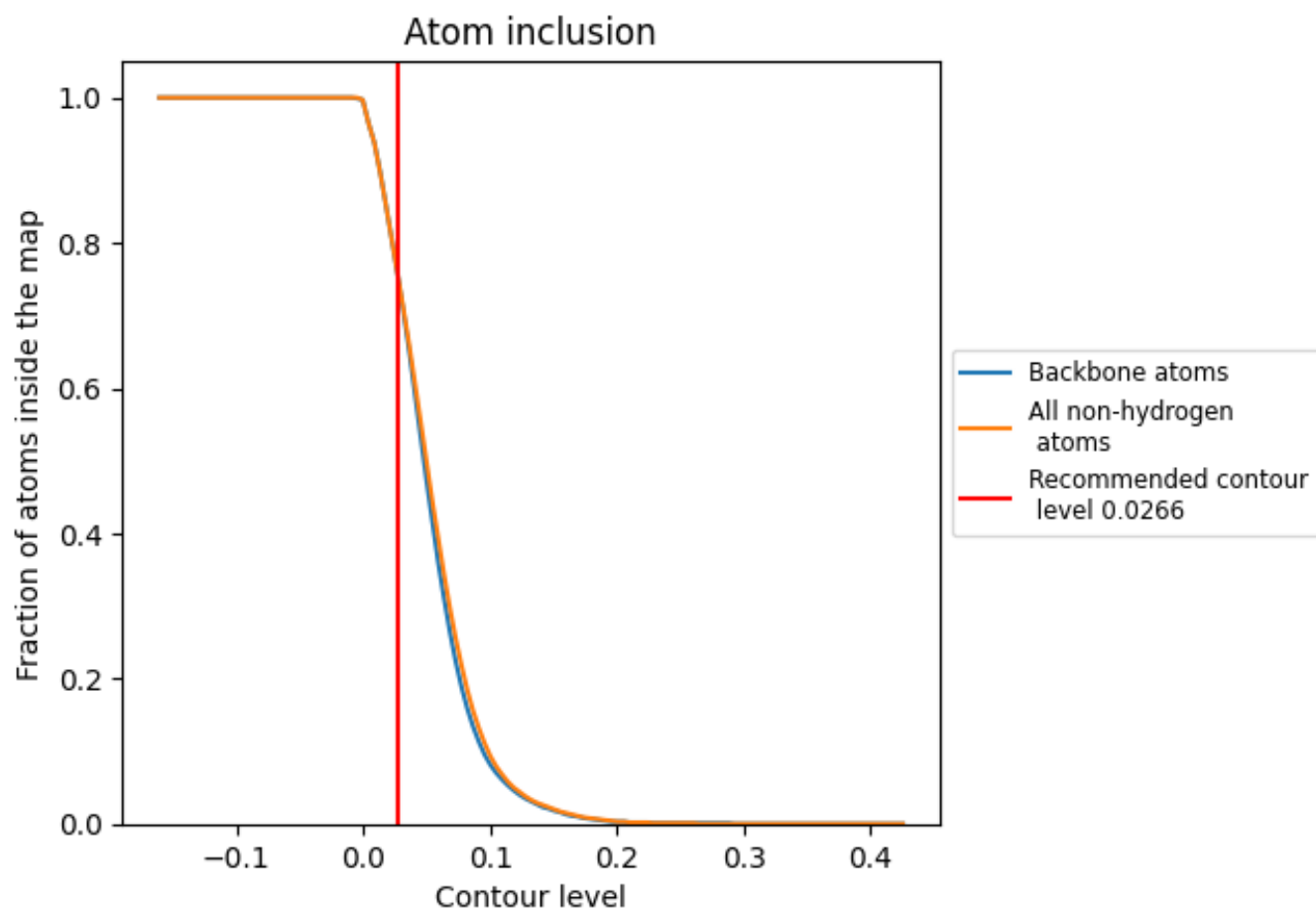
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0266).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 76% of all backbone atoms, 76% 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 (0.0266) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7630	 0.6690
L5	 0.7500	 0.6420
L7	 0.8910	 0.7000
L8	 0.8520	 0.6880
LA	 0.9720	 0.7900
LB	 0.8180	 0.7300
LC	 0.8300	 0.7310
LD	 0.5970	 0.6380
LE	 0.5300	 0.5970
LF	 0.8590	 0.7570
LG	 0.5650	 0.6050
LH	 0.6550	 0.6850
LI	 0.6850	 0.6830
LJ	 0.4600	 0.5790
LL	 0.7000	 0.6660
LM	 0.7880	 0.6920
LN	 0.9670	 0.7880
LO	 0.8460	 0.7410
LP	 0.8700	 0.7660
LQ	 0.8760	 0.7740
LR	 0.7860	 0.6910
LS	 0.8670	 0.7480
LT	 0.7820	 0.7160
LU	 0.3610	 0.5570
LV	 0.9200	 0.7640
LW	 0.5050	 0.5020
LX	 0.7840	 0.7180
LY	 0.7960	 0.7250
LZ	 0.7110	 0.6750
La	 0.8820	 0.7630
Lb	 0.5640	 0.6440
Lc	 0.8720	 0.7000
Ld	 0.7720	 0.7060
Le	 0.8720	 0.7690
Lf	 0.9190	 0.7720








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Chain	Atom inclusion	Q-score
Lg	0.8470	0.7210
Lh	0.7700	0.7160
Li	0.6880	0.6900
Lj	0.9540	0.7920
Lk	0.4920	0.5970
Ll	0.8320	0.7400
Lm	0.7810	0.7290
Ln	0.9950	0.7810
Lo	0.7210	0.7220
Lp	0.9740	0.7810
Lr	0.8270	0.7330
S2	0.8310	0.6640
SA	0.7790	0.6830
SB	0.8420	0.7050
SC	0.8400	0.7280
SD	0.7260	0.6640
SE	0.8430	0.7180
SF	0.8190	0.7090
SG	0.5280	0.6140
SH	0.3970	0.5370
SI	0.7950	0.6850
SJ	0.8150	0.7130
SK	0.6960	0.6760
SL	0.8230	0.7070
SM	0.0380	0.4540
SN	0.8920	0.7300
SO	0.8730	0.7040
SP	0.7340	0.6990
SQ	0.8360	0.7240
SR	0.6830	0.6390
SS	0.7530	0.7050
ST	0.8210	0.7210
SU	0.5530	0.6430
SV	0.7480	0.6930
SW	0.9450	0.7600
SX	0.9250	0.7620
SY	0.7100	0.6700
SZ	0.6230	0.6660
Sa	0.8580	0.7170
Sb	0.6450	0.6570
Sc	0.7860	0.6150
Sd	0.8870	0.7390

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Chain	Atom inclusion	Q-score
Se	 0.6280	 0.6400
Sf	 0.1090	 0.5240
Sg	 0.5000	 0.6450