



wwPDB EM Validation Summary Report ⓘ

Nov 16, 2022 – 10:54 AM JST

PDB ID : 6LSR
EMDB ID : EMD-0963
Title : Cryo-EM structure of a pre-60S ribosomal subunit - state B
Authors : Liang, X.; Zuo, M.; Zhang, Y.; Li, N.; Ma, C.; Dong, M.; Gao, N.
Deposited on : 2020-01-20
Resolution : 3.13 Å (reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

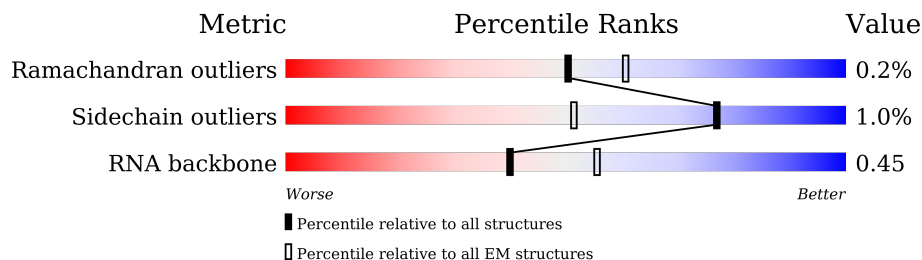
EMDB validation analysis : 0.0.1.dev43
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

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 3.13 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	0	477	18% (Poor fit) 39% (0 outliers) 60% (1-3 outliers)
2	1	658	23% (Poor fit) 37% (0 outliers) 62% (1-3 outliers)
3	2	5070	5% (Poor fit) 44% (0 outliers) 21% (1 outlier) 31% (2-3 outliers)
4	3	534	46% (0 outliers) 52% (1-3 outliers)
5	5	120	78% (0 outliers) 19% (1 outlier) 3% (2-3 outliers)
6	6	245	7% (Poor fit) 91% (0 outliers) 9% (1-3 outliers)
7	8	156	69% (0 outliers) 28% (1 outlier) 3% (2-3 outliers)
8	A	217	55% (Poor fit) 92% (0 outliers) 6% (1 outlier)


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Mol	Chain	Length	Quality of chain
9	B	403	98%
10	C	159	58% 42%
11	D	427	83% 16%
12	E	115	78% 18%
13	F	117	90% 7%
14	G	266	7% 86% 13%
15	H	123	99%
16	I	192	98%
17	K	105	94%
18	L	148	99%
19	M	97	87% 11%
20	N	178	12% 89% 9%
21	O	70	96%
22	P	51	98%
23	Q	211	5% 99%
24	S	215	62% 38%
25	T	125	5% 83% 14%
26	U	204	98%
27	V	203	96%
28	W	106	9% 99%
29	X	92	98%
30	Y	184	82% 17%
31	Z	188	99%
32	a	196	74% 26%
33	b	176	98%

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Mol	Chain	Length	Quality of chain
34	c	160	 97%
35	d	128	 8% 77% 23%
36	e	140	 91% 8%
37	f	157	 39% 61%
38	g	156	 75% 25%
39	h	145	 92% 8%
40	i	136	 97%
41	l	137	 89% 9%
42	m	257	 94%
43	r	297	 6% 92% 7%
44	t	135	 95% 5%
45	u	110	 94% 5%
46	v	288	 9% 79% 18%
47	w	248	 90% 9%
48	z	394	 90% 89% 10%

2 Entry composition i

There are 50 unique types of molecules in this entry. The entry contains 141172 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Zinc finger protein 622.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	0	190	1537	968	266	287	16	0	0

- Molecule 2 is a protein called Large subunit GTPase 1 homolog.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	1	247	988	494	247	247	0	0

- Molecule 3 is a RNA chain called 28S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	2	3482	74786	33362	13689	24254	3481	0	0

- Molecule 4 is a protein called 60S ribosomal export protein NMD3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	3	255	2053	1305	358	373	17	0	0

There are 31 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
3	504	GLY	-	expression tag	UNP Q96D46
3	505	SER	-	expression tag	UNP Q96D46
3	506	GLU	-	expression tag	UNP Q96D46
3	507	ASN	-	expression tag	UNP Q96D46
3	508	LEU	-	expression tag	UNP Q96D46
3	509	TYR	-	expression tag	UNP Q96D46
3	510	PHE	-	expression tag	UNP Q96D46
3	511	GLN	-	expression tag	UNP Q96D46
3	512	GLY	-	expression tag	UNP Q96D46

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Chain	Residue	Modelled	Actual	Comment	Reference
3	513	ASP	-	expression tag	UNP Q96D46
3	514	TYR	-	expression tag	UNP Q96D46
3	515	LYS	-	expression tag	UNP Q96D46
3	516	ASP	-	expression tag	UNP Q96D46
3	517	HIS	-	expression tag	UNP Q96D46
3	518	ASP	-	expression tag	UNP Q96D46
3	519	GLY	-	expression tag	UNP Q96D46
3	520	ASP	-	expression tag	UNP Q96D46
3	521	TYR	-	expression tag	UNP Q96D46
3	522	LYS	-	expression tag	UNP Q96D46
3	523	ASP	-	expression tag	UNP Q96D46
3	524	HIS	-	expression tag	UNP Q96D46
3	525	ASP	-	expression tag	UNP Q96D46
3	526	ILE	-	expression tag	UNP Q96D46
3	527	ASP	-	expression tag	UNP Q96D46
3	528	TYR	-	expression tag	UNP Q96D46
3	529	LYS	-	expression tag	UNP Q96D46
3	530	ASP	-	expression tag	UNP Q96D46
3	531	ASP	-	expression tag	UNP Q96D46
3	532	ASP	-	expression tag	UNP Q96D46
3	533	ASP	-	expression tag	UNP Q96D46
3	534	LYS	-	expression tag	UNP Q96D46

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	5	120	2558	1141	456	842	119	0	0

- Molecule 6 is a protein called Eukaryotic translation initiation factor 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	6	224	1704	1060	294	339	11	0	0

- Molecule 7 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
7	8	155	3294	1471	583	1086	154	0	0

- Molecule 8 is a protein called 60S ribosomal protein L10a.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	A	212	Total	C	N	O	S	0	0
			1708	1092	308	300	8		

- Molecule 9 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	B	402	Total	C	N	O	S	0	0
			3238	2060	608	556	14		

- Molecule 10 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	C	92	Total	C	N	O	S	0	0
			757	471	166	117	3		

- Molecule 11 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	D	357	Total	C	N	O	S	0	0
			2846	1791	569	472	14		

- Molecule 12 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	E	94	Total	C	N	O	S	0	0
			732	465	130	131	6		

- Molecule 13 is a protein called 60S ribosomal protein L34.

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

- Molecule 14 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	G	231	Total	C	N	O	S	0	0
			1853	1180	359	310	4		

- Molecule 15 is a protein called 60S ribosomal protein L35.

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

- Molecule 16 is a protein called 60S ribosomal protein L9.

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

- Molecule 17 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	K	102	832	521	177	129	5	0	0

- Molecule 18 is a protein called 60S ribosomal protein L27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	L	147	1162	736	237	186	3	0	0

- Molecule 19 is a protein called 60S ribosomal protein L37.

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

- Molecule 20 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	N	162	1302	823	244	230	5	0	0

- Molecule 21 is a protein called 60S ribosomal protein L38.

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

- Molecule 22 is a protein called 60S ribosomal protein L39.

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

- Molecule 23 is a protein called 60S ribosomal protein L13.

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

- Molecule 24 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	S	134	Total	C	N	O	S	0	0
			1103	707	212	177	7		

- Molecule 25 is a protein called 60S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	T	107	Total	C	N	O	S	0	0
			888	560	171	155	2		

- Molecule 26 is a protein called 60S ribosomal protein L15.

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

- Molecule 27 is a protein called 60S ribosomal protein L13a.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	V	199	Total	C	N	O	S	0	0
			1634	1053	319	257	5		

- Molecule 28 is a protein called 60S ribosomal protein L36a.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	W	105	Total	C	N	O	S	0	0
			862	542	175	139	6		

- Molecule 29 is a protein called 60S ribosomal protein L37a.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	X	91	Total	C	N	O	S	0	0
			708	445	136	120	7		

- Molecule 30 is a protein called 60S ribosomal protein L17.

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

- Molecule 31 is a protein called 60S ribosomal protein L18.

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

- Molecule 32 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	a	145	Total	C	N	O	S	0	0
			1217	759	262	187	9		

- Molecule 33 is a protein called 60S ribosomal protein L18a.

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

- Molecule 34 is a protein called 60S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	c	157	Total	C	N	O	S	0	0
			1284	815	250	214	5		

- Molecule 35 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	d	99	Total	C	N	O	S	0	0
			808	518	141	147	2		

- Molecule 36 is a protein called 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	e	129	969	613	182	169	5	0	0

- Molecule 37 is a protein called 60S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	f	62	519	332	101	83	3	0	0

- Molecule 38 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	g	117	958	612	179	166	1	0	0

- Molecule 39 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	h	134	1115	700	226	186	3	0	0

- Molecule 40 is a protein called 60S ribosomal protein L27.

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

- Molecule 41 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	l	125	1002	622	207	168	5	0	0

- Molecule 42 is a protein called 60S ribosomal protein L8.

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

- Molecule 43 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	r	275	2237	1414	405	404	14	0	0

- Molecule 44 is a protein called 60S ribosomal protein L32.

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

- Molecule 45 is a protein called 60S ribosomal protein L35a.

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

- Molecule 46 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	v	235	1897	1217	360	316	4	0	0

- Molecule 47 is a protein called 60S ribosomal protein L7.

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

- Molecule 48 is a protein called Proliferation-associated protein 2G4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	z	354	2837	1792	483	543	19	13	0

- Molecule 49 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
49	2	236	Total	Mg	0
			236	236	
49	5	3	Total	Mg	0
			3	3	
49	8	1	Total	Mg	0
			1	1	

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Mol	Chain	Residues	Atoms		AltConf
49	F	1	Total 1	Mg 1	0
49	a	1	Total 1	Mg 1	0
49	c	1	Total 1	Mg 1	0
49	m	2	Total 2	Mg 2	0
49	w	1	Total 1	Mg 1	0

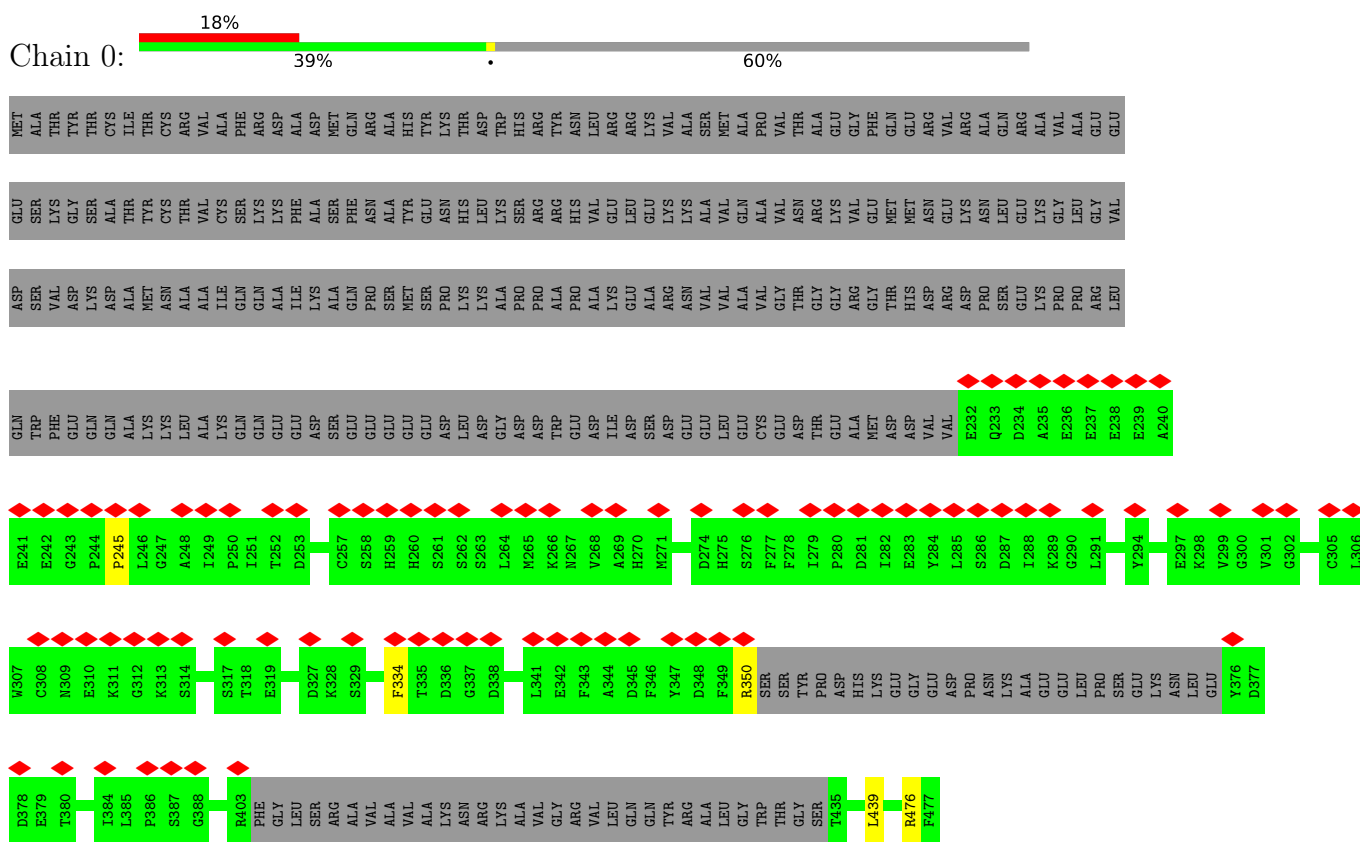
- Molecule 50 is water.

Mol	Chain	Residues	Atoms		AltConf
50	2	7	Total 7	O 7	0

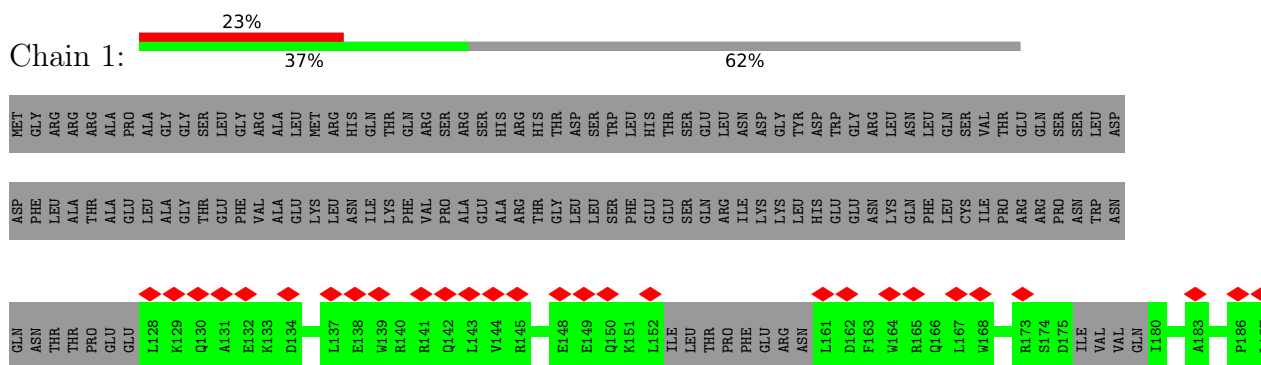
3 Residue-property plots [i](#)

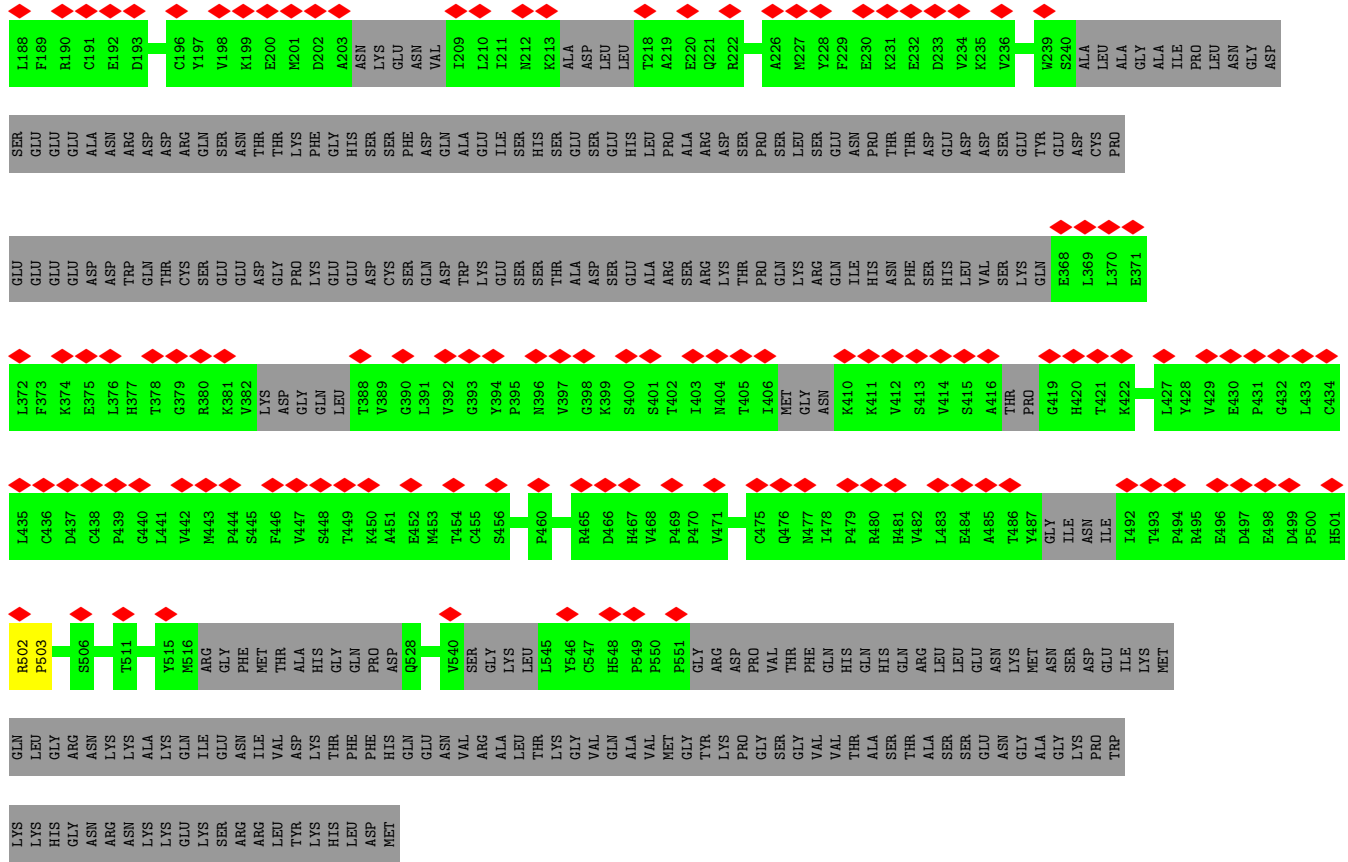
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: Zinc finger protein 622

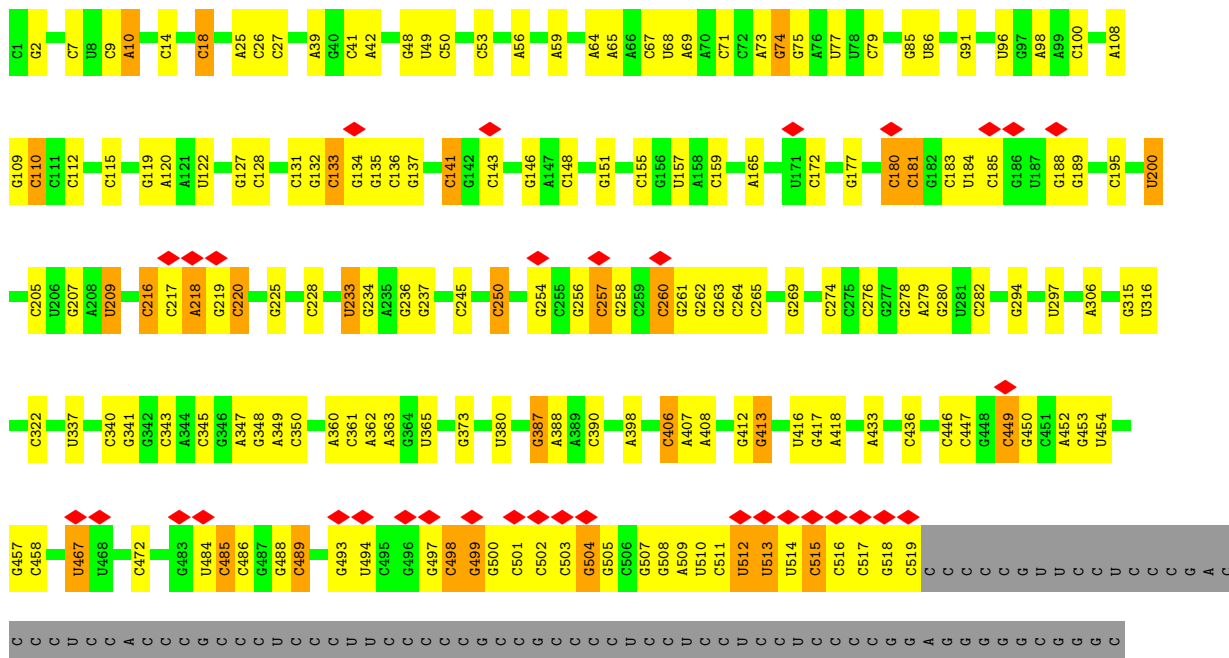


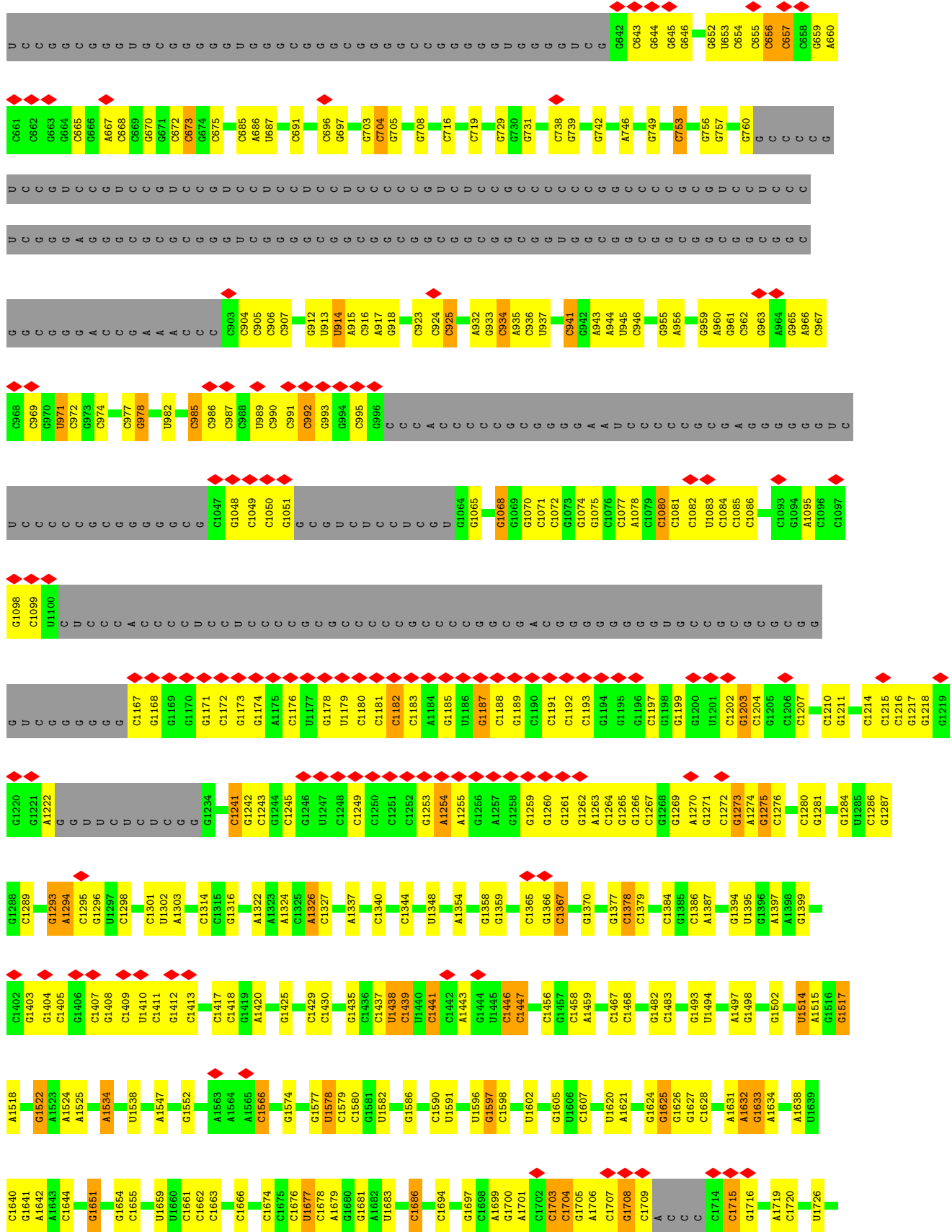
- Molecule 2: Large subunit GTPase 1 homolog

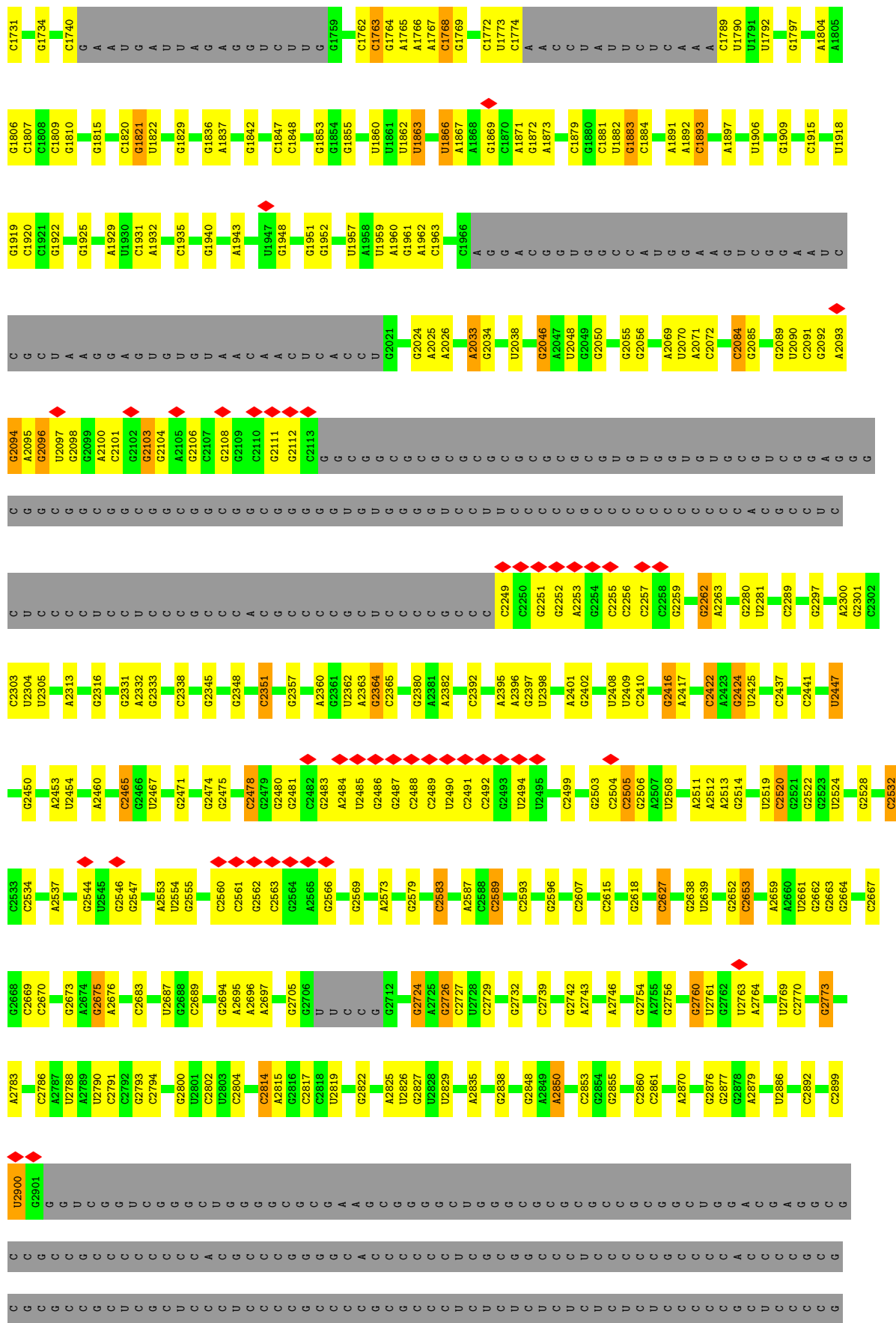


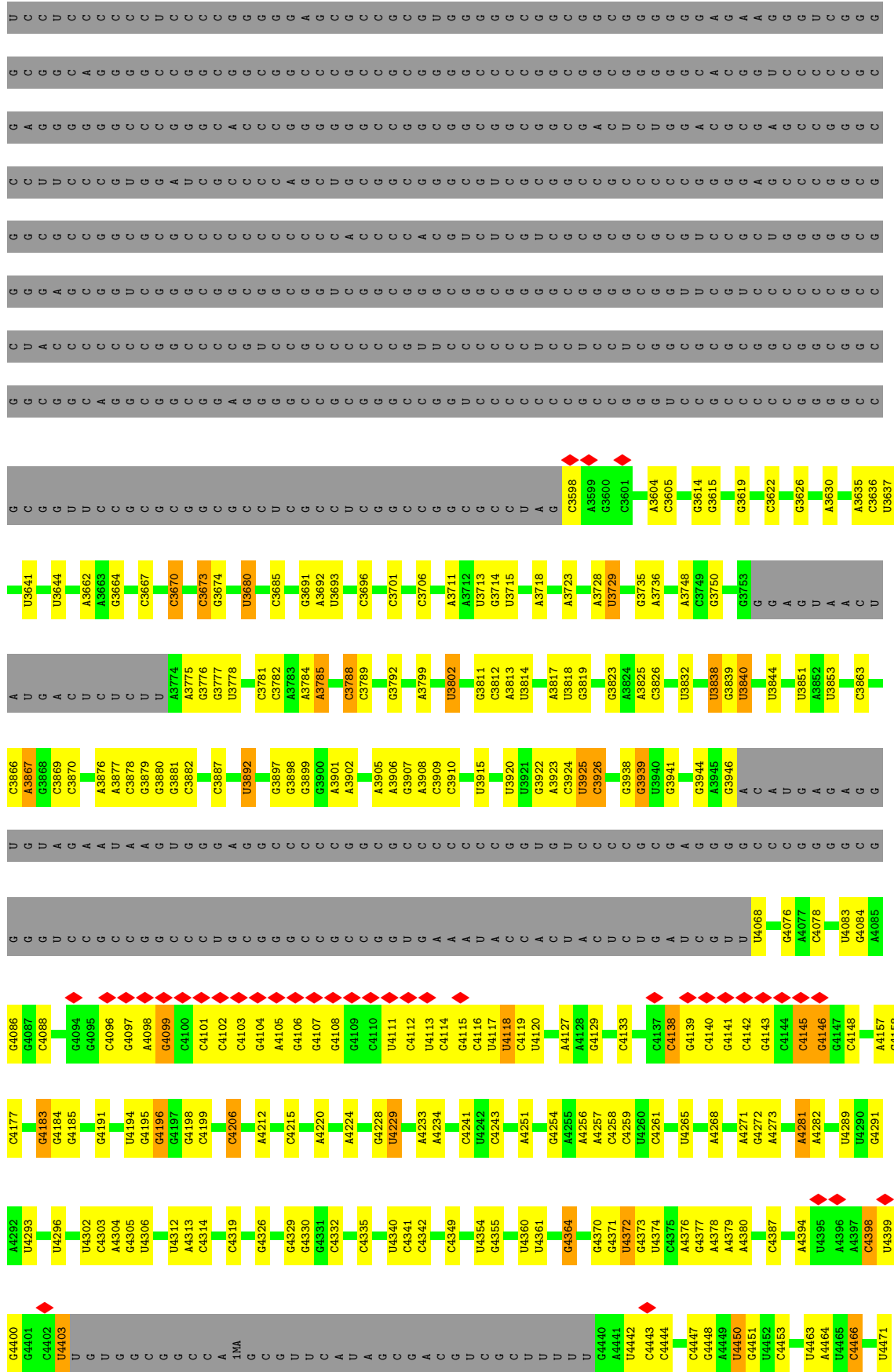


• Molecule 3: 28S rRNA



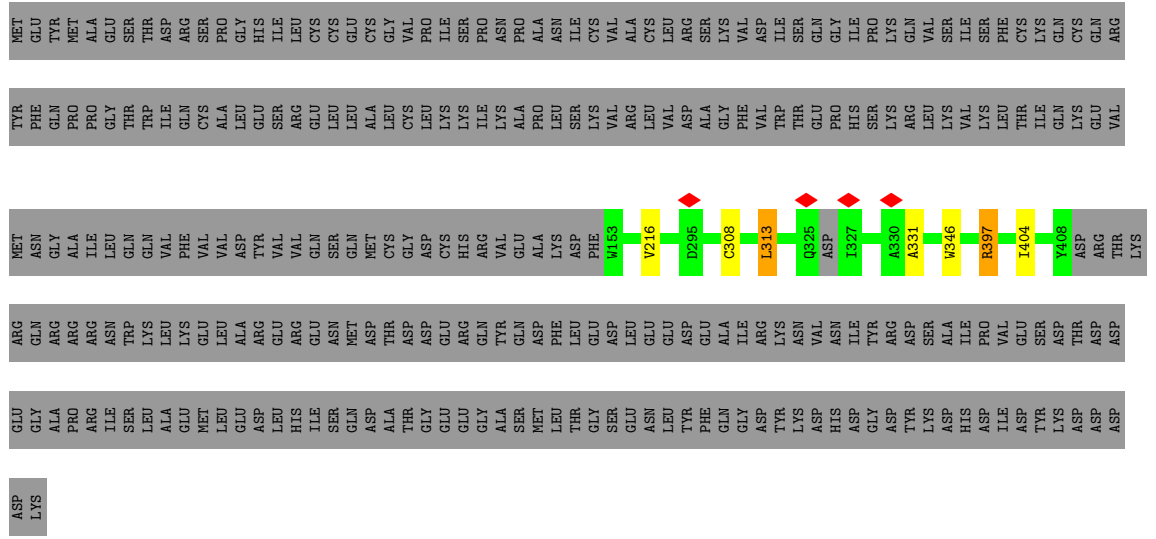




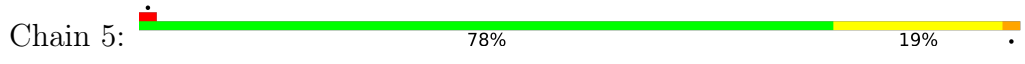


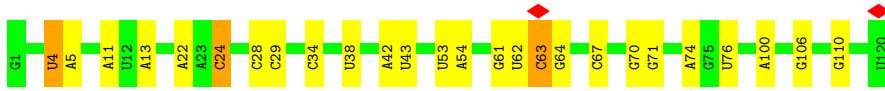


• Molecule 4: 60S ribosomal export protein NMD3

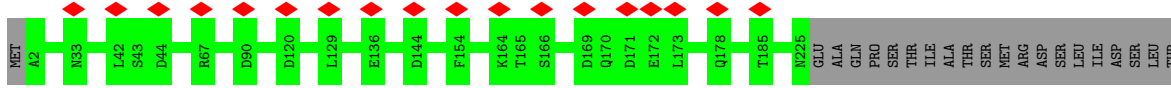
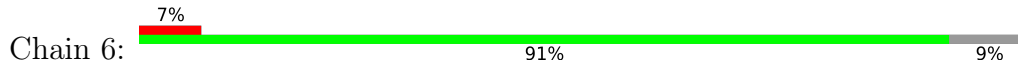


• Molecule 5: 5S rRNA

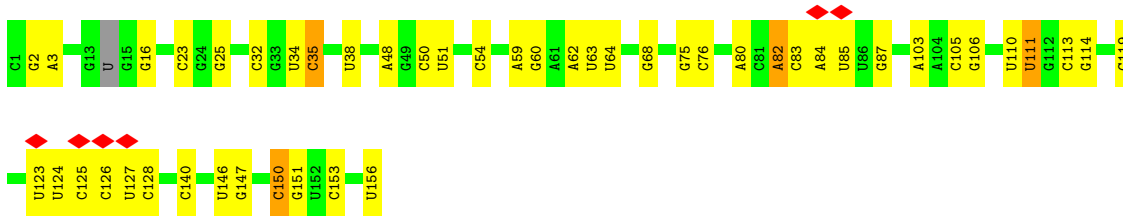




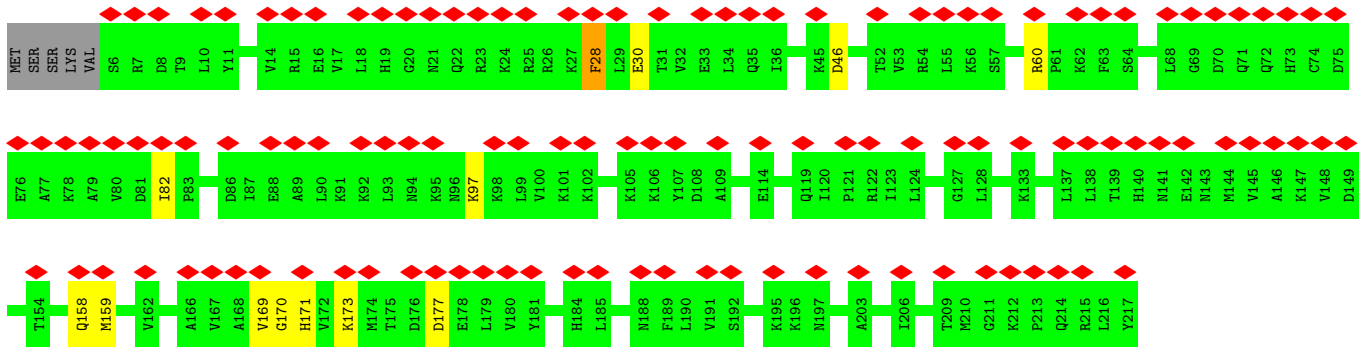
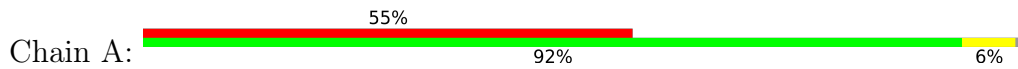
- Molecule 6: Eukaryotic translation initiation factor 6



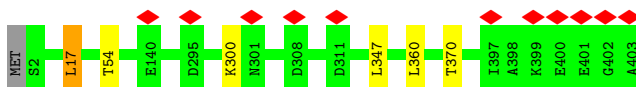
- Molecule 7: 5.8S rRNA



- Molecule 8: 60S ribosomal protein L10a

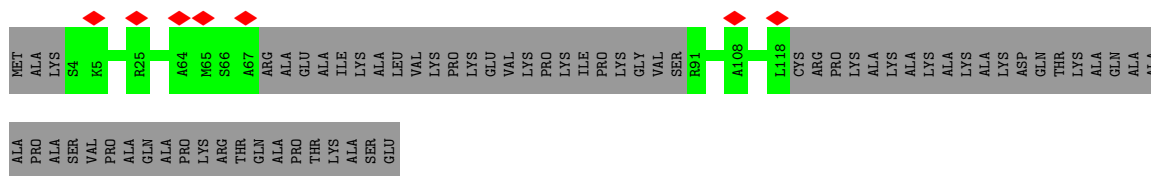


- Molecule 9: 60S ribosomal protein L3

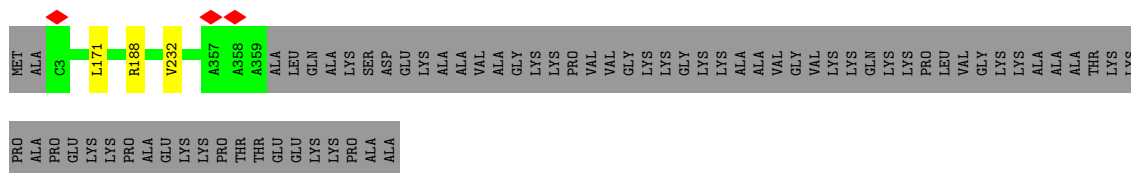
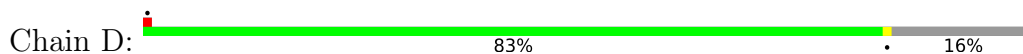


- Molecule 10: 60S ribosomal protein L29

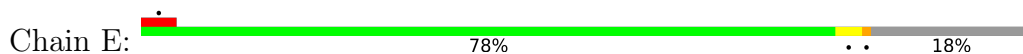




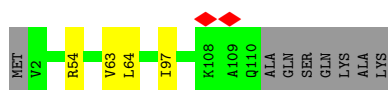
• Molecule 11: 60S ribosomal protein L4



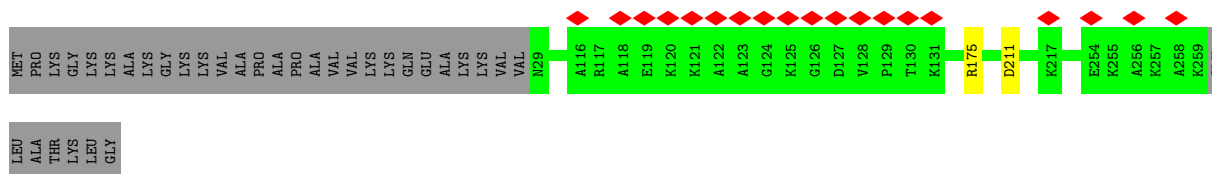
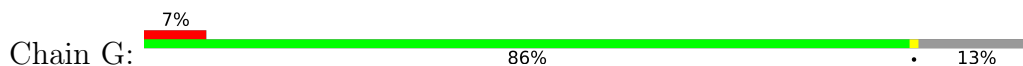
• Molecule 12: 60S ribosomal protein L30



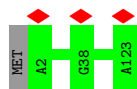
• Molecule 13: 60S ribosomal protein L34



• Molecule 14: 60S ribosomal protein L7a

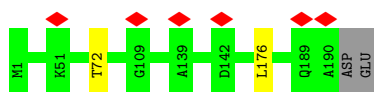


• Molecule 15: 60S ribosomal protein L35



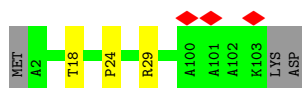
• Molecule 16: 60S ribosomal protein L9

Chain I:  98%



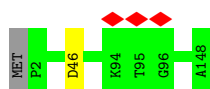
- Molecule 17: 60S ribosomal protein L36

Chain K:  94%




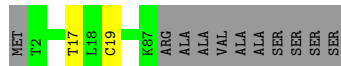
- Molecule 18: 60S ribosomal protein L27a

Chain L:  99%




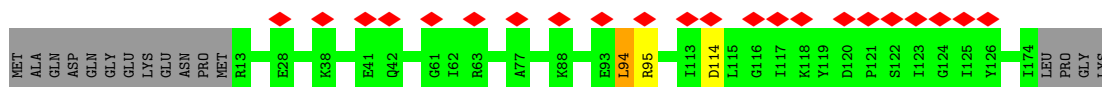
- Molecule 19: 60S ribosomal protein L37

Chain M:  87%



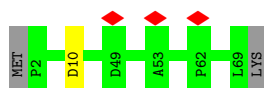
- Molecule 20: 60S ribosomal protein L11

Chain N:  12%



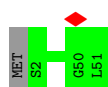
- Molecule 21: 60S ribosomal protein L38

Chain O:  96%

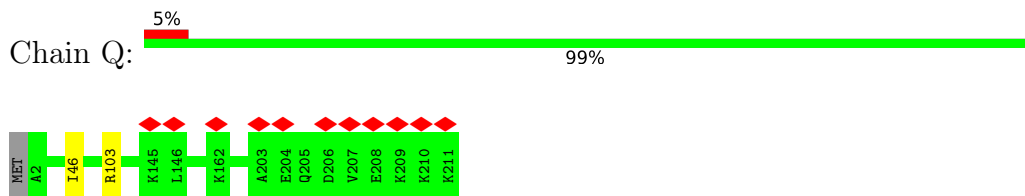


- Molecule 22: 60S ribosomal protein L39

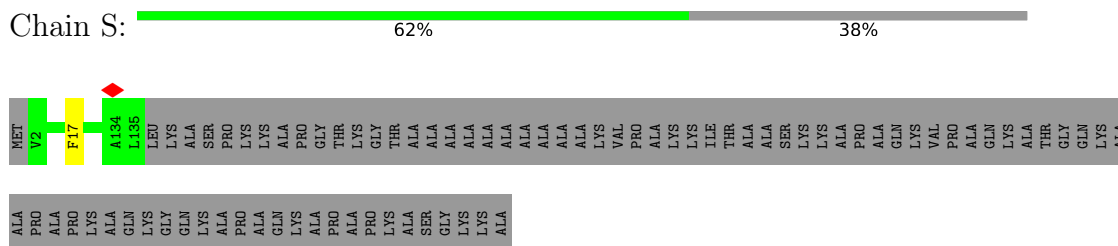
Chain P:  98%



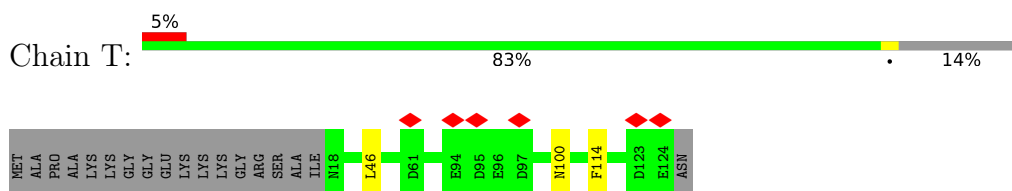
- Molecule 23: 60S ribosomal protein L13



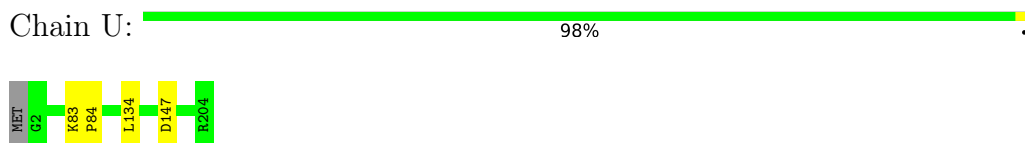
- Molecule 24: 60S ribosomal protein L14



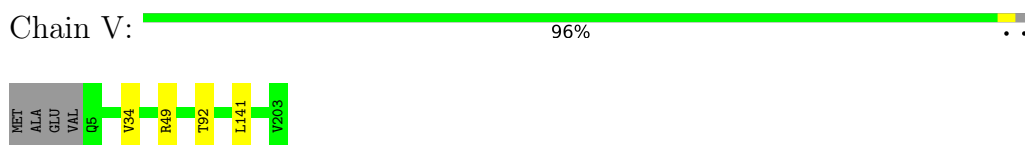
- Molecule 25: 60S ribosomal protein L31



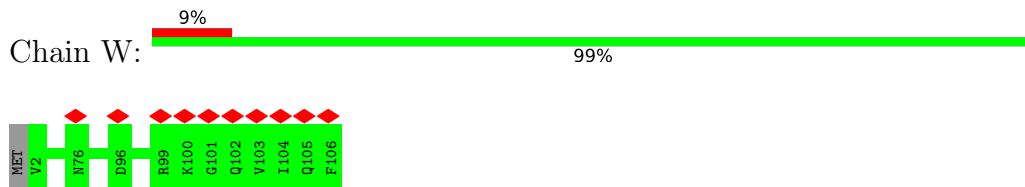
- Molecule 26: 60S ribosomal protein L15



- Molecule 27: 60S ribosomal protein L13a

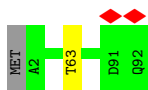


- Molecule 28: 60S ribosomal protein L36a

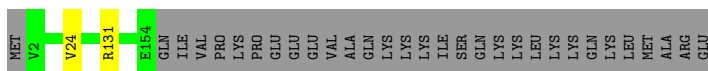
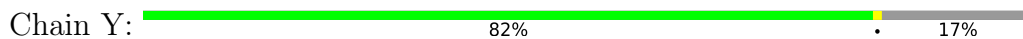


- Molecule 29: 60S ribosomal protein L37a





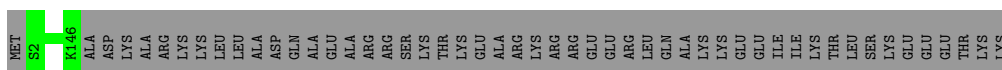
- Molecule 30: 60S ribosomal protein L17



- Molecule 31: 60S ribosomal protein L18



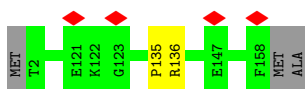
- Molecule 32: 60S ribosomal protein L19



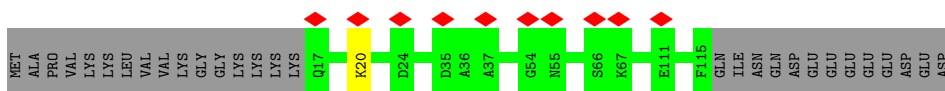
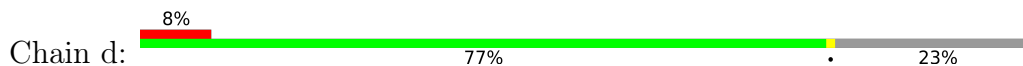
- Molecule 33: 60S ribosomal protein L18a



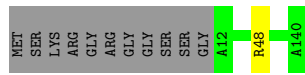
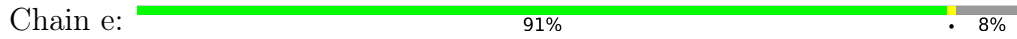
- Molecule 34: 60S ribosomal protein L21



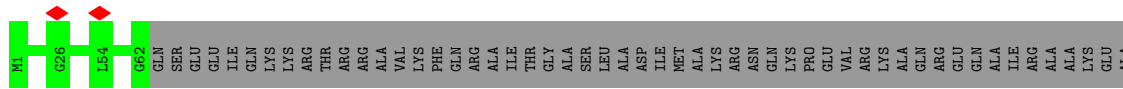
- Molecule 35: 60S ribosomal protein L22



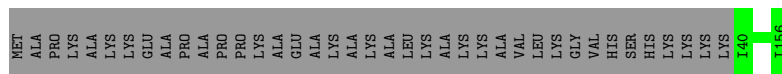
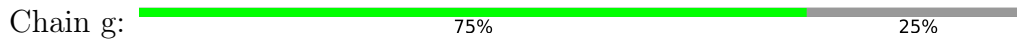
- Molecule 36: 60S ribosomal protein L23



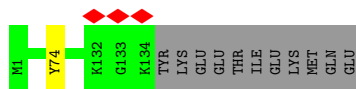
• Molecule 37: 60S ribosomal protein L24



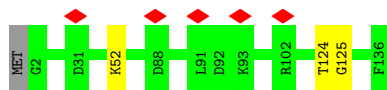
• Molecule 38: 60S ribosomal protein L23a



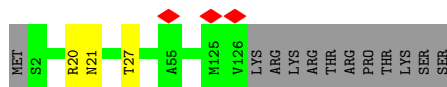
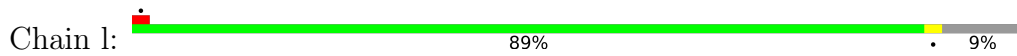
• Molecule 39: 60S ribosomal protein L26



• Molecule 40: 60S ribosomal protein L27



• Molecule 41: 60S ribosomal protein L28

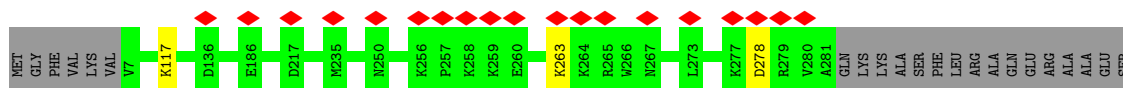
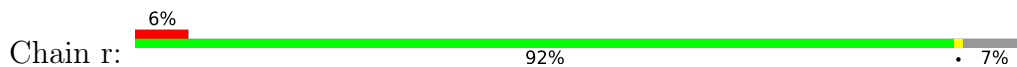


• Molecule 42: 60S ribosomal protein L8

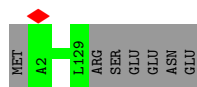




- Molecule 43: 60S ribosomal protein L5



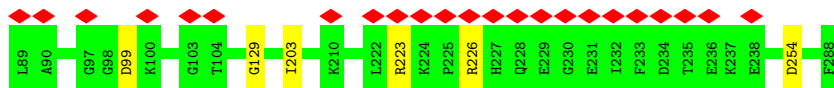
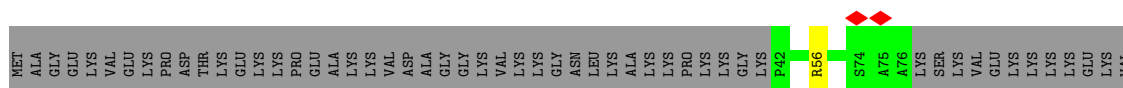
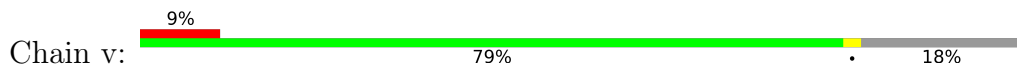
- Molecule 44: 60S ribosomal protein L32



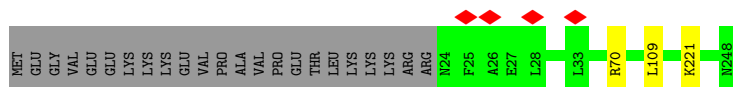
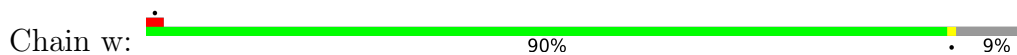
- Molecule 45: 60S ribosomal protein L35a



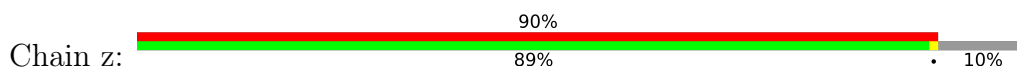
- Molecule 46: 60S ribosomal protein L6



- Molecule 47: 60S ribosomal protein L7



- Molecule 48: Proliferation-associated protein 2G4



MET	K61	V121	P181	G241	L301	S361
SER	K62	A122	I182	Q242	L302	A362
GLY	I63	H123	E183	R243	Q303	SER
GLU	F64	T124	G184	T244	P304	ARG
ASP	K65	F125	M185	T245	F305	LYS
GLU	K66	V126	L186	I246	N306	THR
Q7	E67	V127	S187	Y247	V307	GLN
Q8	K68	D128	H188	K248	L308	LYS
E9	E69	V129	Q189	R249	Y309	LYS
Q10	M70	A130	L190	D250	E310	LYS
T11	K71	Q131	K191	P251	K311	LYS
I12	K72	G132	Q192	S252	E312	ALA
A13	G73	T133	H193	K253	G313	SER
E14	I74	Q134	V194	Q254	E314	LYS
D15	A75	V135	I195	Y255	F315	THR
L16	F76	T136	D196	G256	V316	ALA
V17	F77	G137	E197	L257	A317	ASN
V18	T78	R138	E198	K258	Q318	ALA
T19	S79	K139	K199	M259	F319	THR
K20	I80	A140	T200	K260	K320	SER
Y21	S81	D141	I201	T261	F321	GLY
K22	V82	V142	I202	S262	T322	GLU
M23	M83	I143	Q203	R263	V323	GLU
G24	M84	K144	N204	A264	L324	GLU
G25	C85	A145	P205	F265	L325	ASN
D26	W86	A146	T206	F266	M326	GLU
I27	C87	H147	D207	S267	P327	ALA
A28	H88	L148	Q208	E268	N328	GLY
M29	F89	C149	Q209	V269	G329	ASP
R30	S90	A150	K210	E270	P330	
V31	P91	E151	K211	R271	M331	
L32	L92	A152	D212	R272	R332	
R33	K93	A153	H213	F273	I333	
S34	S94	L154	E214	D274	T334	
L35	D95	R155	K215	A275	S335	
V36	Q96	L156	A216	M276	G336	
E37	D97	V157	E217	P277	P337	
A38	Y98	K158	F218	F278	F338	
S39	I99	P159	E219	T279	E339	
S40	L100	G160	V220	L280	P340	
S41	K101	M161	H221	R281	D341	
O42	K102	Q162	E222	A282	L342	
V43	G103	M163	V223	F283	Y343	
S44	D104	T164	Y224	GLU	K344	
V45	Q165	Q165	A225	ASP	S345	
L46	L105	V166	V226	E286	E346	
S47	K107	T167	D227	K287	M347	
L48	I108	E168	V228	A288	E348	
C49	D109	A169	L229	A289	V349	
E50	L110	V170	V230	R290	Q350	
M51	G111	M171	S231	M291	D351	
O52	V112	K172	S232	G292	A352	
D53	H113	V173	G233	V293	E353	
A54	H114	A174	E234	V294	L354	
M55	D115	H175	G235	E295	K355	
I56	G116	S176	K236	C296	A356	
M57	F117	N178	A237	A297	L357	
E58	I118	C179	K238	K298	L358	
E59	A119	T180	D239	H299	Q359	
T60	M120		A240	E300	S360	

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	18819	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	64	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.551	Depositor
Minimum map value	-0.234	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.014	Depositor
Recommended contour level	0.07	Depositor
Map size (Å)	507.84, 507.84, 507.84	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.058, 1.058, 1.058	Depositor

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: B9H, M7A, 5MC, E7G, MG, 7MG, 6MZ, P4U, BGH, MHG, P7G, B8Q, OMG, I4U, A2M, B8T, OMU, 1MA, UR3, PSU, 2MG, OMC, B8W, 5MU, B8K, B8H, B9B, E6G

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	0	0.40	0/1569	0.65	1/2098 (0.0%)
2	1	0.36	0/976	0.66	0/1199
3	2	1.16	10/81127 (0.0%)	1.28	853/126475 (0.7%)
4	3	0.47	1/2096 (0.0%)	0.64	1/2832 (0.0%)
5	5	0.91	0/2858	1.19	15/4455 (0.3%)
6	6	0.42	0/1728	0.66	0/2352
7	8	4.05	9/3678 (0.2%)	1.69	47/5728 (0.8%)
8	A	0.37	0/1736	0.70	1/2328 (0.0%)
9	B	0.56	0/3306	0.68	2/4424 (0.0%)
10	C	0.39	0/769	0.55	0/1014
11	D	0.56	0/2900	0.64	0/3895
12	E	0.60	2/742 (0.3%)	0.67	0/996
13	F	0.54	0/878	0.69	2/1170 (0.2%)
14	G	0.48	0/1886	0.62	0/2539
15	H	0.47	0/1023	0.60	0/1351
16	I	0.43	0/1537	0.62	1/2066 (0.0%)
17	K	0.45	0/843	0.59	0/1115
18	L	0.56	0/1191	0.61	1/1591 (0.1%)
19	M	0.64	0/720	0.70	1/952 (0.1%)
20	N	0.40	0/1323	0.67	1/1768 (0.1%)
21	O	0.44	0/565	0.57	0/750
22	P	0.56	0/454	0.61	0/599
23	Q	0.51	0/1732	0.60	0/2315
24	S	0.50	0/1125	0.58	0/1505
25	T	0.52	0/903	0.62	1/1216 (0.1%)
26	U	0.60	0/1746	0.65	1/2338 (0.0%)
27	V	0.57	0/1666	0.59	1/2228 (0.0%)
28	W	0.51	0/876	0.62	0/1156
29	X	0.59	0/718	0.62	0/953
30	Y	0.56	0/1268	0.62	0/1701
31	Z	0.58	0/1537	0.69	1/2052 (0.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
32	a	0.47	0/1233	0.58	0/1633
33	b	0.55	0/1493	0.58	0/2003
34	c	0.55	0/1312	0.61	0/1753
35	d	0.45	0/822	0.68	0/1103
36	e	0.49	0/983	0.68	2/1319 (0.2%)
37	f	0.47	0/532	0.60	0/708
38	g	0.50	0/975	0.63	0/1312
39	h	0.55	0/1132	0.63	0/1504
40	i	0.54	0/1130	0.63	0/1507
41	l	0.54	0/1017	0.59	0/1364
42	m	0.60	0/1936	0.71	1/2596 (0.0%)
43	r	0.48	0/2281	0.60	1/3058 (0.0%)
44	t	0.57	0/1071	0.64	0/1429
45	u	0.62	0/895	0.69	0/1198
46	v	0.45	0/1935	0.67	1/2596 (0.0%)
47	w	0.55	0/1916	0.65	1/2553 (0.0%)
48	z	0.56	0/2911	0.64	2/3913 (0.1%)
All	All	1.12	22/149050 (0.0%)	1.10	938/218710 (0.4%)

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
2	1	0	2
8	A	0	3
9	B	0	1
12	E	0	1
20	N	0	1
21	O	0	1
23	Q	0	1
26	U	0	1
30	Y	0	1
34	c	0	1
35	d	0	1
40	i	0	1
41	l	0	1
42	m	0	1
45	u	0	2
46	v	0	2
47	w	0	1
All	All	0	22

The worst 5 of 22 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	2	417	G	C2-N2	132.94	2.67	1.34
7	8	16	G	N3-C4	123.93	2.22	1.35
7	8	16	G	C2-N3	106.90	2.18	1.32
7	8	16	G	C6-N1	101.25	2.10	1.39
7	8	16	G	N1-C2	86.95	2.07	1.37

The worst 5 of 938 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	2	417	G	C2-N3-C4	38.59	131.19	111.90
7	8	16	G	C2-N3-C4	37.70	130.75	111.90
7	8	16	G	C4-C5-N7	-37.43	95.83	110.80
3	2	417	G	N1-C2-N3	-36.89	101.76	123.90
7	8	16	G	N3-C4-C5	-31.04	113.08	128.60

There are no chirality outliers.

5 of 22 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	1	502	ARG	Peptide
2	1	503	PRO	Peptide
8	A	158	GLN	Peptide
8	A	46	ASP	Peptide
8	A	82	ILE	Peptide

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	
1	0	184/477 (39%)	158 (86%)	25 (14%)	1 (0%)	29	63
2	1	223/658 (34%)	183 (82%)	40 (18%)	0	100	100
4	3	251/534 (47%)	227 (90%)	23 (9%)	1 (0%)	34	67
6	6	222/245 (91%)	208 (94%)	14 (6%)	0	100	100
8	A	210/217 (97%)	184 (88%)	22 (10%)	4 (2%)	8	31
9	B	400/403 (99%)	372 (93%)	28 (7%)	0	100	100
10	C	88/159 (55%)	84 (96%)	4 (4%)	0	100	100
11	D	355/427 (83%)	326 (92%)	28 (8%)	1 (0%)	41	72
12	E	92/115 (80%)	82 (89%)	10 (11%)	0	100	100
13	F	107/117 (92%)	104 (97%)	3 (3%)	0	100	100
14	G	229/266 (86%)	212 (93%)	17 (7%)	0	100	100
15	H	120/123 (98%)	114 (95%)	6 (5%)	0	100	100
16	I	188/192 (98%)	169 (90%)	19 (10%)	0	100	100
17	K	100/105 (95%)	92 (92%)	7 (7%)	1 (1%)	15	47
18	L	145/148 (98%)	131 (90%)	14 (10%)	0	100	100
19	M	84/97 (87%)	79 (94%)	5 (6%)	0	100	100
20	N	160/178 (90%)	146 (91%)	14 (9%)	0	100	100
21	O	66/70 (94%)	64 (97%)	2 (3%)	0	100	100
22	P	48/51 (94%)	45 (94%)	3 (6%)	0	100	100
23	Q	208/211 (99%)	188 (90%)	20 (10%)	0	100	100
24	S	132/215 (61%)	125 (95%)	7 (5%)	0	100	100
25	T	105/125 (84%)	96 (91%)	9 (9%)	0	100	100
26	U	201/204 (98%)	190 (94%)	9 (4%)	2 (1%)	15	47
27	V	197/203 (97%)	189 (96%)	8 (4%)	0	100	100
28	W	103/106 (97%)	95 (92%)	8 (8%)	0	100	100
29	X	89/92 (97%)	85 (96%)	4 (4%)	0	100	100
30	Y	151/184 (82%)	140 (93%)	11 (7%)	0	100	100
31	Z	185/188 (98%)	174 (94%)	11 (6%)	0	100	100
32	a	143/196 (73%)	136 (95%)	7 (5%)	0	100	100
33	b	173/176 (98%)	163 (94%)	10 (6%)	0	100	100
34	c	155/160 (97%)	145 (94%)	9 (6%)	1 (1%)	25	59
35	d	97/128 (76%)	87 (90%)	10 (10%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
36	e	127/140 (91%)	119 (94%)	8 (6%)	0	100	100
37	f	60/157 (38%)	57 (95%)	3 (5%)	0	100	100
38	g	115/156 (74%)	104 (90%)	11 (10%)	0	100	100
39	h	132/145 (91%)	123 (93%)	9 (7%)	0	100	100
40	i	133/136 (98%)	125 (94%)	7 (5%)	1 (1%)	19	53
41	l	123/137 (90%)	116 (94%)	6 (5%)	1 (1%)	19	53
42	m	246/257 (96%)	221 (90%)	24 (10%)	1 (0%)	34	67
43	r	273/297 (92%)	252 (92%)	21 (8%)	0	100	100
44	t	126/135 (93%)	115 (91%)	11 (9%)	0	100	100
45	u	107/110 (97%)	97 (91%)	8 (8%)	2 (2%)	8	31
46	v	231/288 (80%)	206 (89%)	24 (10%)	1 (0%)	34	67
47	w	224/248 (90%)	211 (94%)	13 (6%)	0	100	100
48	z	363/394 (92%)	354 (98%)	9 (2%)	0	100	100
All	All	7471/9370 (80%)	6893 (92%)	561 (8%)	17 (0%)	50	78

5 of 17 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
46	v	226	ARG
4	3	331	ALA
8	A	28	PHE
8	A	159	MET
8	A	169	VAL

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	0	165/404 (41%)	162 (98%)	3 (2%)	59	81
4	3	235/485 (48%)	229 (97%)	6 (3%)	46	73
6	6	194/213 (91%)	194 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
8	A	191/196 (97%)	185 (97%)	6 (3%)	40	69
9	B	348/349 (100%)	344 (99%)	4 (1%)	73	88
10	C	77/126 (61%)	77 (100%)	0	100	100
11	D	298/348 (86%)	296 (99%)	2 (1%)	84	93
12	E	79/97 (81%)	77 (98%)	2 (2%)	47	74
13	F	94/100 (94%)	92 (98%)	2 (2%)	53	78
14	G	195/223 (87%)	193 (99%)	2 (1%)	76	89
15	H	109/110 (99%)	109 (100%)	0	100	100
16	I	169/171 (99%)	168 (99%)	1 (1%)	86	94
17	K	86/89 (97%)	84 (98%)	2 (2%)	50	75
18	L	120/121 (99%)	120 (100%)	0	100	100
19	M	73/80 (91%)	72 (99%)	1 (1%)	67	85
20	N	136/149 (91%)	134 (98%)	2 (2%)	65	84
21	O	63/65 (97%)	63 (100%)	0	100	100
22	P	47/48 (98%)	47 (100%)	0	100	100
23	Q	176/177 (99%)	175 (99%)	1 (1%)	86	94
24	S	114/161 (71%)	113 (99%)	1 (1%)	78	90
25	T	98/110 (89%)	96 (98%)	2 (2%)	55	79
26	U	171/172 (99%)	171 (100%)	0	100	100
27	V	171/174 (98%)	168 (98%)	3 (2%)	59	81
28	W	93/94 (99%)	93 (100%)	0	100	100
29	X	74/75 (99%)	73 (99%)	1 (1%)	67	85
30	Y	134/163 (82%)	133 (99%)	1 (1%)	84	93
31	Z	164/165 (99%)	164 (100%)	0	100	100
32	a	131/175 (75%)	131 (100%)	0	100	100
33	b	156/157 (99%)	154 (99%)	2 (1%)	69	86
34	c	138/140 (99%)	138 (100%)	0	100	100
35	d	89/115 (77%)	89 (100%)	0	100	100
36	e	100/107 (94%)	100 (100%)	0	100	100
37	f	54/126 (43%)	54 (100%)	0	100	100
38	g	105/133 (79%)	105 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
39	h	124/135 (92%)	123 (99%)	1 (1%)	81	92
40	i	117/118 (99%)	116 (99%)	1 (1%)	78	90
41	l	109/121 (90%)	108 (99%)	1 (1%)	78	90
42	m	190/199 (96%)	186 (98%)	4 (2%)	53	78
43	r	232/250 (93%)	230 (99%)	2 (1%)	78	90
44	t	114/121 (94%)	114 (100%)	0	100	100
45	u	88/89 (99%)	86 (98%)	2 (2%)	50	75
46	v	208/252 (82%)	205 (99%)	3 (1%)	67	85
47	w	195/215 (91%)	193 (99%)	2 (1%)	76	89
48	z	316/336 (94%)	314 (99%)	2 (1%)	86	94
All	All	6340/7454 (85%)	6278 (99%)	62 (1%)	77	89

5 of 62 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
17	K	18	THR
46	v	56	ARG
25	T	100	ASN
45	u	109	ARG
47	w	70[B]	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 71 such sidechains are listed below:

Mol	Chain	Res	Type
40	i	78	ASN
42	m	132	ASN
45	u	20	ASN
14	G	208	ASN
14	G	195	HIS

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
3	2	3436/5070 (67%)	902 (26%)	23 (0%)
5	5	119/120 (99%)	20 (16%)	0
7	8	153/156 (98%)	35 (22%)	0

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
All	All	3708/5346 (69%)	957 (25%)	23 (0%)

5 of 957 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
3	2	2	G
3	2	10	A
3	2	18	C
3	2	25	A
3	2	39	A

5 of 23 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
3	2	3614	G
3	2	4378	A
3	2	3788	C
3	2	4600	G
3	2	1633	G

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

98 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
3	B8T	2	4483	3	19,22,23	3.47	8 (42%)	26,31,34	0.84	1 (3%)
3	B8T	2	4671	3	19,22,23	3.27	8 (42%)	26,31,34	1.12	1 (3%)
3	A2M	2	2363	49,3	18,25,26	4.13	7 (38%)	18,36,39	3.41	3 (16%)
3	OMC	2	2422	49,3,30	19,22,23	2.76	7 (36%)	26,31,34	1.43	3 (11%)
3	OMG	2	1522	3	18,26,27	2.31	7 (38%)	19,38,41	1.61	4 (21%)
3	PSU	2	1677	3	18,21,22	1.31	3 (16%)	22,30,33	2.08	5 (22%)
3	PSU	2	4450	3	18,21,22	1.07	2 (11%)	22,30,33	2.02	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	OMG	2	373	3	18,26,27	2.25	7 (38%)	19,38,41	1.53	4 (21%)
3	A2M	2	1524	3	18,25,26	4.14	7 (38%)	18,36,39	3.15	4 (22%)
3	OMC	2	4536	3	19,22,23	2.73	7 (36%)	26,31,34	0.75	0
3	6MZ	2	4220	3	18,25,26	1.84	3 (16%)	16,36,39	3.88	3 (18%)
3	5MU	2	4083	3	19,22,23	4.68	7 (36%)	28,32,35	3.85	10 (35%)
3	B9B	2	2754	3	21,28,29	5.58	8 (38%)	23,40,43	2.13	5 (21%)
3	PSU	2	4442	3	18,21,22	1.20	1 (5%)	22,30,33	1.65	4 (18%)
3	A2M	2	1871	3	18,25,26	4.31	6 (33%)	18,36,39	2.91	3 (16%)
3	B8H	2	4296	3	19,22,23	6.83	7 (36%)	22,32,35	2.40	5 (22%)
3	1MA	2	1322	49,3	16,25,26	3.69	4 (25%)	18,37,40	1.77	3 (16%)
3	5MC	2	4447	49,3	18,22,23	3.17	7 (38%)	26,32,35	1.67	2 (7%)
3	B8W	2	4185	3	18,26,27	6.19	7 (38%)	21,38,41	2.45	7 (33%)
3	OMG	2	4870	24,3,33	18,26,27	2.50	8 (44%)	19,38,41	1.47	6 (31%)
3	PSU	2	4403	3	18,21,22	1.07	1 (5%)	22,30,33	1.57	5 (22%)
3	A2M	2	4571	3	18,25,26	4.20	7 (38%)	18,36,39	3.02	4 (22%)
3	OMG	2	1625	49,3	18,26,27	2.27	7 (38%)	19,38,41	1.53	4 (21%)
3	UR3	2	1866	3	19,22,23	3.01	6 (31%)	26,32,35	1.65	4 (15%)
3	B8W	2	2380	3	18,26,27	6.11	7 (38%)	21,38,41	2.28	6 (28%)
3	OMU	2	4306	3	19,22,23	2.75	7 (36%)	26,31,34	1.74	5 (19%)
3	PSU	2	4531	3	18,21,22	1.04	1 (5%)	22,30,33	1.83	4 (18%)
3	A2M	2	2401	3	18,25,26	4.11	8 (44%)	18,36,39	3.06	3 (16%)
3	A2M	2	3723	3	18,25,26	4.25	7 (38%)	18,36,39	3.00	4 (22%)
3	7MG	2	2522	3	22,26,27	3.14	10 (45%)	29,39,42	2.01	7 (24%)
3	OMG	2	3792	3	18,26,27	2.32	7 (38%)	19,38,41	1.38	4 (21%)
3	A2M	2	3718	3	18,25,26	4.22	6 (33%)	18,36,39	3.18	3 (16%)
3	E7G	2	2297	3	24,27,28	3.43	11 (45%)	30,40,43	2.17	9 (30%)
3	B9B	2	237	3	21,28,29	5.59	9 (42%)	23,40,43	2.51	6 (26%)
3	I4U	2	4194	3	21,24,25	4.84	16 (76%)	27,34,37	1.60	6 (22%)
3	E6G	2	4355	3	20,27,28	5.90	9 (45%)	22,39,42	2.70	9 (40%)
3	OMG	2	4623	3	18,26,27	2.31	8 (44%)	19,38,41	1.61	3 (15%)
3	B8W	2	4472	3	18,26,27	6.10	7 (38%)	21,38,41	2.18	5 (23%)
3	B9B	2	1574	3,32	21,28,29	5.73	8 (38%)	23,40,43	2.17	5 (21%)
3	A2M	2	4523	3	18,25,26	4.17	7 (38%)	18,36,39	3.19	5 (27%)
3	OMC	2	2861	3	19,22,23	2.76	7 (36%)	26,31,34	0.66	0
3	OMG	2	4370	3	18,26,27	2.27	8 (44%)	19,38,41	1.46	4 (21%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	OMC	2	2365	49,3	19,22,23	2.69	7 (36%)	26,31,34	0.72	0
3	A2M	2	3785	3	18,25,26	4.00	7 (38%)	18,36,39	3.09	3 (16%)
3	P7G	2	3880	3	24,28,29	4.22	11 (45%)	27,41,44	1.71	5 (18%)
3	A2M	2	3825	3	18,25,26	4.21	7 (38%)	18,36,39	3.15	3 (16%)
3	M7A	2	4564	3	20,25,26	1.90	4 (20%)	28,37,40	3.91	7 (25%)
3	UR3	2	4597	3	19,22,23	2.78	6 (31%)	26,32,35	1.24	2 (7%)
3	B8W	2	4529	4,3	18,26,27	6.22	9 (50%)	21,38,41	3.04	9 (42%)
3	7MG	2	4550	3	22,26,27	3.11	10 (45%)	29,39,42	2.05	10 (34%)
3	A2M	2	398	3	18,25,26	4.17	6 (33%)	18,36,39	3.19	3 (16%)
3	B8K	2	4690	3	24,28,29	4.33	16 (66%)	30,42,45	2.55	12 (40%)
3	B8Q	2	1456	3	17,22,23	2.85	4 (23%)	22,32,35	2.24	6 (27%)
3	OMG	2	1883	3	18,26,27	2.24	6 (33%)	19,38,41	1.53	5 (26%)
3	OMG	2	2050	3	18,26,27	2.26	7 (38%)	19,38,41	1.57	3 (15%)
3	I4U	2	1659	49,3	21,24,25	4.57	15 (71%)	27,34,37	1.31	3 (11%)
3	OMG	2	2424	49,3	18,26,27	2.39	7 (38%)	19,38,41	1.64	4 (21%)
3	PSU	2	4293	3	18,21,22	1.12	2 (11%)	22,30,33	1.76	4 (18%)
3	B8W	2	4129	3	18,26,27	6.18	7 (38%)	21,38,41	2.70	9 (42%)
3	UR3	2	4530	3	19,22,23	2.75	7 (36%)	26,32,35	1.45	5 (19%)
3	OMC	2	3909	3	19,22,23	2.96	8 (42%)	26,31,34	1.44	4 (15%)
3	7MG	2	1605	3	22,26,27	2.99	10 (45%)	29,39,42	2.04	9 (31%)
3	PSU	2	3715	3	18,21,22	1.04	1 (5%)	22,30,33	1.49	3 (13%)
3	A2M	2	1326	49,3	18,25,26	4.11	6 (33%)	18,36,39	3.00	3 (16%)
3	BGH	2	3899	3	25,29,30	4.17	16 (64%)	31,43,46	2.53	12 (38%)
3	B9H	2	2786	3	20,25,26	2.69	5 (25%)	22,35,38	2.62	7 (31%)
3	OMC	2	3869	3	19,22,23	2.74	7 (36%)	26,31,34	0.75	0
3	2MG	2	1517	3	18,26,27	2.36	7 (38%)	16,38,41	1.77	5 (31%)
3	2MG	2	4872	24,3,27	18,26,27	2.24	7 (38%)	16,38,41	1.45	3 (18%)
3	E7G	2	1797	3	24,27,28	3.54	11 (45%)	30,40,43	2.21	9 (30%)
3	OMG	2	4494	3	18,26,27	2.31	7 (38%)	19,38,41	1.57	4 (21%)
3	PSU	2	4628	3	18,21,22	0.99	1 (5%)	22,30,33	1.87	4 (18%)
3	OMC	2	3701	49,3	19,22,23	2.61	8 (42%)	26,31,34	0.95	1 (3%)
3	PSU	2	1582	3	18,21,22	1.07	1 (5%)	22,30,33	1.76	4 (18%)
3	PSU	2	4636	3	18,21,22	1.17	3 (16%)	22,30,33	1.95	4 (18%)
3	5MC	2	4335	3	18,22,23	3.29	7 (38%)	26,32,35	1.16	2 (7%)
3	OMU	2	4620	3,36	19,22,23	2.82	8 (42%)	26,31,34	2.02	8 (30%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	A2M	2	3867	3	18,25,26	4.11	6 (33%)	18,36,39	2.81	3 (16%)
3	P4U	2	1348	31,3	21,24,25	3.50	8 (38%)	27,33,36	1.14	2 (7%)
3	B8H	2	1860	3	19,22,23	6.84	7 (36%)	22,32,35	2.50	5 (22%)
3	2MG	2	729	3	18,26,27	2.26	7 (38%)	16,38,41	1.44	3 (18%)
3	OMG	2	2773	3	18,26,27	2.44	8 (44%)	19,38,41	1.65	5 (26%)
3	PSU	2	3729	3	18,21,22	1.03	2 (11%)	22,30,33	1.74	4 (18%)
3	PSU	2	4500	3	18,21,22	1.09	3 (16%)	22,30,33	1.99	5 (22%)
3	OMG	2	1316	49,3	18,26,27	2.35	8 (44%)	19,38,41	1.78	5 (26%)
3	2MG	2	978	3	18,26,27	2.33	7 (38%)	16,38,41	1.61	4 (25%)
3	OMG	2	4196	3	18,26,27	2.48	8 (44%)	19,38,41	1.51	4 (21%)
3	B8K	2	3897	3	24,28,29	4.32	16 (66%)	30,42,45	2.51	12 (40%)
3	OMC	2	2804	3	19,22,23	2.64	7 (36%)	26,31,34	0.81	0
3	A2M	2	1534	49,3	18,25,26	4.18	7 (38%)	18,36,39	2.86	4 (22%)
3	PSU	2	1683	3	18,21,22	1.13	1 (5%)	22,30,33	1.84	3 (13%)
3	OMG	2	2364	3	18,26,27	2.20	7 (38%)	19,38,41	1.61	3 (15%)
3	OMC	2	3887	3	19,22,23	2.84	7 (36%)	26,31,34	1.00	1 (3%)
3	PSU	2	2508	3	18,21,22	1.03	1 (5%)	22,30,33	1.58	3 (13%)
3	MHG	2	4371	4,3	29,32,33	3.68	12 (41%)	34,46,49	2.20	10 (29%)
3	P7G	2	1909	3	24,28,29	4.26	11 (45%)	27,41,44	1.76	3 (11%)
3	5MC	2	3782	49,3	18,22,23	3.31	7 (38%)	26,32,35	1.15	3 (11%)
3	OMG	2	4637	3	18,26,27	2.33	7 (38%)	19,38,41	1.70	4 (21%)

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
3	B8T	2	4483	3	-	0/7/27/28	0/2/2/2
3	B8T	2	4671	3	-	0/7/27/28	0/2/2/2
3	A2M	2	2363	49,3	-	0/5/27/28	0/3/3/3
3	OMC	2	2422	49,3,30	-	2/9/27/28	0/2/2/2
3	OMG	2	1522	3	-	0/5/27/28	0/3/3/3
3	PSU	2	1677	3	-	4/7/25/26	0/2/2/2
3	PSU	2	4450	3	-	5/7/25/26	0/2/2/2
3	OMG	2	373	3	-	1/5/27/28	0/3/3/3
3	A2M	2	1524	3	-	2/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	OMC	2	4536	3	-	0/9/27/28	0/2/2/2
3	6MZ	2	4220	3	-	2/5/27/28	0/3/3/3
3	5MU	2	4083	3	-	0/7/25/26	0/2/2/2
3	B9B	2	2754	3	-	5/7/29/30	0/3/3/3
3	PSU	2	4442	3	-	0/7/25/26	0/2/2/2
3	A2M	2	1871	3	-	2/5/27/28	0/3/3/3
3	B8H	2	4296	3	-	2/7/25/26	0/2/2/2
3	1MA	2	1322	49,3	-	1/3/25/26	0/3/3/3
3	5MC	2	4447	49,3	-	4/7/25/26	0/2/2/2
3	B8W	2	4185	3	-	2/5/27/28	0/3/3/3
3	OMG	2	4870	24,3,33	-	3/5/27/28	0/3/3/3
3	PSU	2	4403	3	-	5/7/25/26	0/2/2/2
3	A2M	2	4571	3	-	0/5/27/28	0/3/3/3
3	OMG	2	1625	49,3	-	2/5/27/28	0/3/3/3
3	UR3	2	1866	3	-	2/7/25/26	0/2/2/2
3	B8W	2	2380	3	-	4/5/27/28	0/3/3/3
3	OMU	2	4306	3	-	1/9/27/28	0/2/2/2
3	PSU	2	4531	3	-	1/7/25/26	0/2/2/2
3	A2M	2	2401	3	-	2/5/27/28	0/3/3/3
3	A2M	2	3723	3	-	0/5/27/28	0/3/3/3
3	7MG	2	2522	3	-	0/7/37/38	0/3/3/3
3	OMG	2	3792	3	-	0/5/27/28	0/3/3/3
3	A2M	2	3718	3	-	0/5/27/28	0/3/3/3
3	E7G	2	2297	3	-	3/9/39/40	0/3/3/3
3	B9B	2	237	3	-	5/7/29/30	0/3/3/3
3	I4U	2	4194	3	-	0/9/29/30	0/2/2/2
3	E6G	2	4355	3	-	5/6/28/29	0/3/3/3
3	OMG	2	4623	3	-	0/5/27/28	0/3/3/3
3	B8W	2	4472	3	-	4/5/27/28	0/3/3/3
3	B9B	2	1574	3,32	-	3/7/29/30	0/3/3/3
3	A2M	2	4523	3	-	2/5/27/28	0/3/3/3
3	OMC	2	2861	3	-	0/9/27/28	0/2/2/2
3	OMG	2	4370	3	-	1/5/27/28	0/3/3/3
3	OMC	2	2365	49,3	-	0/9/27/28	0/2/2/2
3	A2M	2	3785	3	-	3/5/27/28	0/3/3/3
3	P7G	2	3880	3	-	4/10/40/41	0/3/3/3
3	A2M	2	3825	3	-	1/5/27/28	0/3/3/3
3	M7A	2	4564	3	-	0/7/37/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	UR3	2	4597	3	-	0/7/25/26	0/2/2/2
3	B8W	2	4529	4,3	-	2/5/27/28	0/3/3/3
3	7MG	2	4550	3	-	2/7/37/38	0/3/3/3
3	A2M	2	398	3	-	2/5/27/28	0/3/3/3
3	B8K	2	4690	3	-	0/11/41/42	0/3/3/3
3	B8Q	2	1456	3	-	0/7/42/43	0/2/2/2
3	OMG	2	1883	3	-	2/5/27/28	0/3/3/3
3	OMG	2	2050	3	-	0/5/27/28	0/3/3/3
3	I4U	2	1659	49,3	-	3/9/29/30	0/2/2/2
3	OMG	2	2424	49,3	-	2/5/27/28	0/3/3/3
3	PSU	2	4293	3	-	0/7/25/26	0/2/2/2
3	B8W	2	4129	3	-	2/5/27/28	0/3/3/3
3	UR3	2	4530	3	-	1/7/25/26	0/2/2/2
3	OMC	2	3909	3	-	2/9/27/28	0/2/2/2
3	7MG	2	1605	3	-	0/7/37/38	0/3/3/3
3	PSU	2	3715	3	-	0/7/25/26	0/2/2/2
3	A2M	2	1326	49,3	-	1/5/27/28	0/3/3/3
3	BGH	2	3899	3	-	0/13/43/44	0/3/3/3
3	B9H	2	2786	3	-	2/12/47/48	0/2/2/2
3	OMC	2	3869	3	-	0/9/27/28	0/2/2/2
3	2MG	2	1517	3	-	1/5/27/28	0/3/3/3
3	2MG	2	4872	24,3,27	-	2/5/27/28	0/3/3/3
3	E7G	2	1797	3	-	2/9/39/40	0/3/3/3
3	OMG	2	4494	3	-	1/5/27/28	0/3/3/3
3	PSU	2	4628	3	-	0/7/25/26	0/2/2/2
3	OMC	2	3701	49,3	-	4/9/27/28	0/2/2/2
3	PSU	2	1582	3	-	0/7/25/26	0/2/2/2
3	PSU	2	4636	3	-	4/7/25/26	0/2/2/2
3	5MC	2	4335	3	-	0/7/25/26	0/2/2/2
3	OMU	2	4620	3,36	-	1/9/27/28	0/2/2/2
3	A2M	2	3867	3	-	2/5/27/28	0/3/3/3
3	P4U	2	1348	31,3	-	1/10/29/30	0/2/2/2
3	B8H	2	1860	3	-	2/7/25/26	0/2/2/2
3	2MG	2	729	3	-	2/5/27/28	0/3/3/3
3	OMG	2	2773	3	-	2/5/27/28	0/3/3/3
3	PSU	2	3729	3	-	2/7/25/26	0/2/2/2
3	PSU	2	4500	3	-	3/7/25/26	0/2/2/2
3	OMG	2	1316	49,3	-	0/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	2MG	2	978	3	-	2/5/27/28	0/3/3/3
3	OMG	2	4196	3	-	2/5/27/28	0/3/3/3
3	B8K	2	3897	3	-	3/11/41/42	0/3/3/3
3	OMC	2	2804	3	-	0/9/27/28	0/2/2/2
3	A2M	2	1534	49,3	-	2/5/27/28	0/3/3/3
3	PSU	2	1683	3	-	0/7/25/26	0/2/2/2
3	OMG	2	2364	3	-	2/5/27/28	0/3/3/3
3	OMC	2	3887	3	-	1/9/27/28	0/2/2/2
3	PSU	2	2508	3	-	0/7/25/26	0/2/2/2
3	MHG	2	4371	4,3	-	8/16/46/47	0/3/3/3
3	P7G	2	1909	3	-	3/10/40/41	0/3/3/3
3	5MC	2	3782	49,3	-	0/7/25/26	0/2/2/2
3	OMG	2	4637	3	-	2/5/27/28	0/3/3/3

The worst 5 of 683 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	2	4472	B8W	O4'-C1'	17.68	1.65	1.41
3	2	4129	B8W	O4'-C1'	17.62	1.65	1.41
3	2	2380	B8W	O4'-C1'	17.50	1.65	1.41
3	2	4529	B8W	O4'-C1'	17.37	1.65	1.41
3	2	4185	B8W	O4'-C1'	17.34	1.65	1.41

The worst 5 of 444 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	2	4564	M7A	C5-C6-N6	13.91	147.49	123.74
3	2	4220	6MZ	C1'-N9-C4	-13.75	102.49	126.64
3	2	4083	5MU	C5-C4-N3	12.98	126.39	115.31
3	2	4564	M7A	N6-C6-N1	-11.44	93.29	118.35
3	2	2363	A2M	C5-C6-N6	10.30	136.01	120.35

There are no chirality outliers.

5 of 158 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	2	237	B9B	C5-C6-O6-C61
3	2	237	B9B	N1-C6-O6-C61
3	2	237	B9B	O4'-C4'-C5'-O5'
3	2	1348	P4U	N3-C4-O4-C41

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Mol	Chain	Res	Type	Atoms
3	2	1574	B9B	C5-C6-O6-C61

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 246 ligands modelled in this entry, 246 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

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.

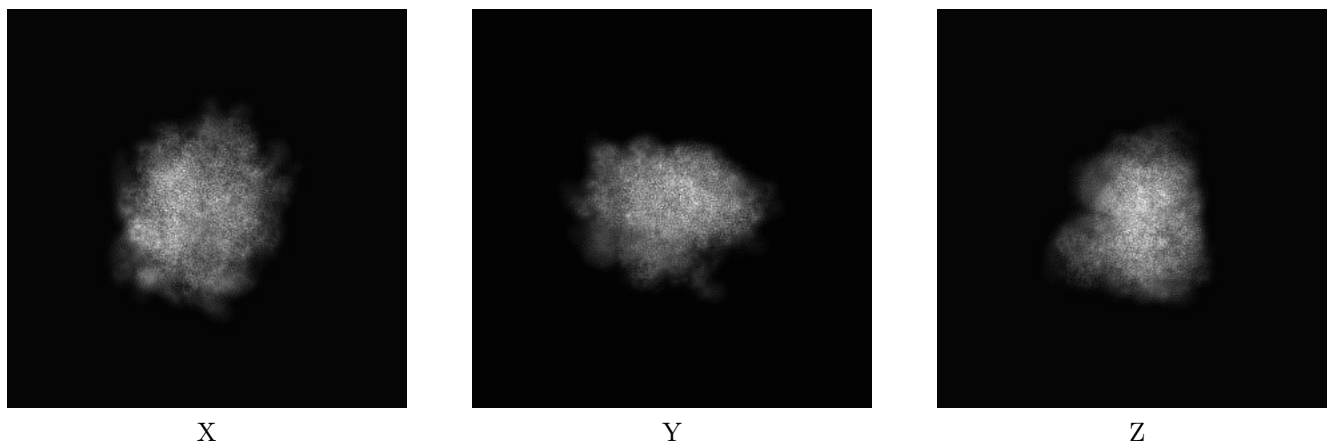
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-0963. 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](#)

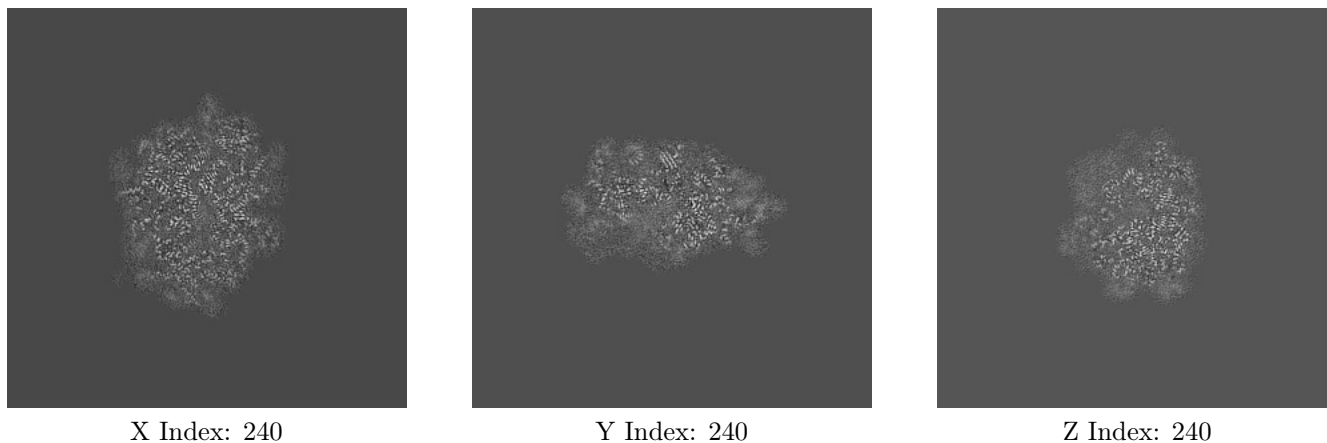
6.1.1 Primary map



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

6.2 Central slices [i](#)

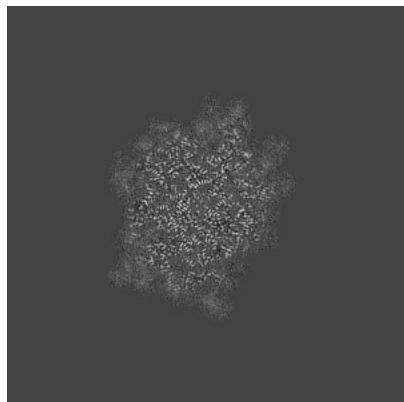
6.2.1 Primary map



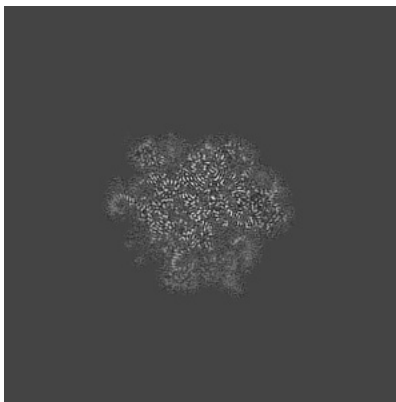
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

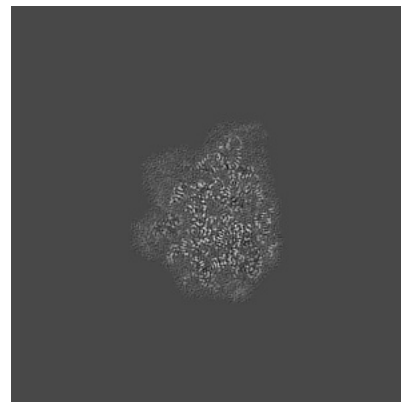
6.3.1 Primary map



X Index: 253



Y Index: 201

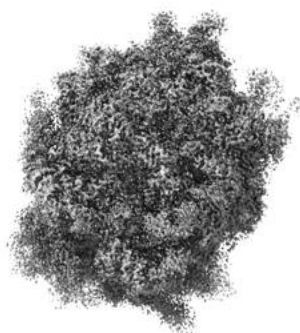


Z Index: 251

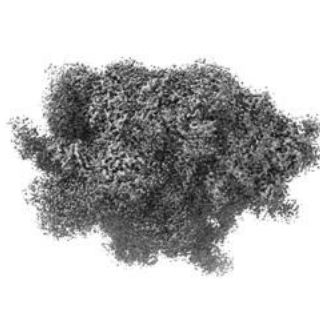
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views [i](#)

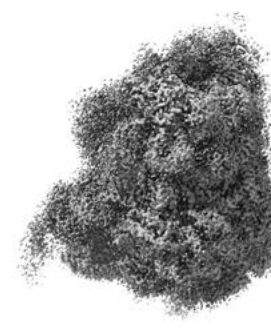
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.07. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

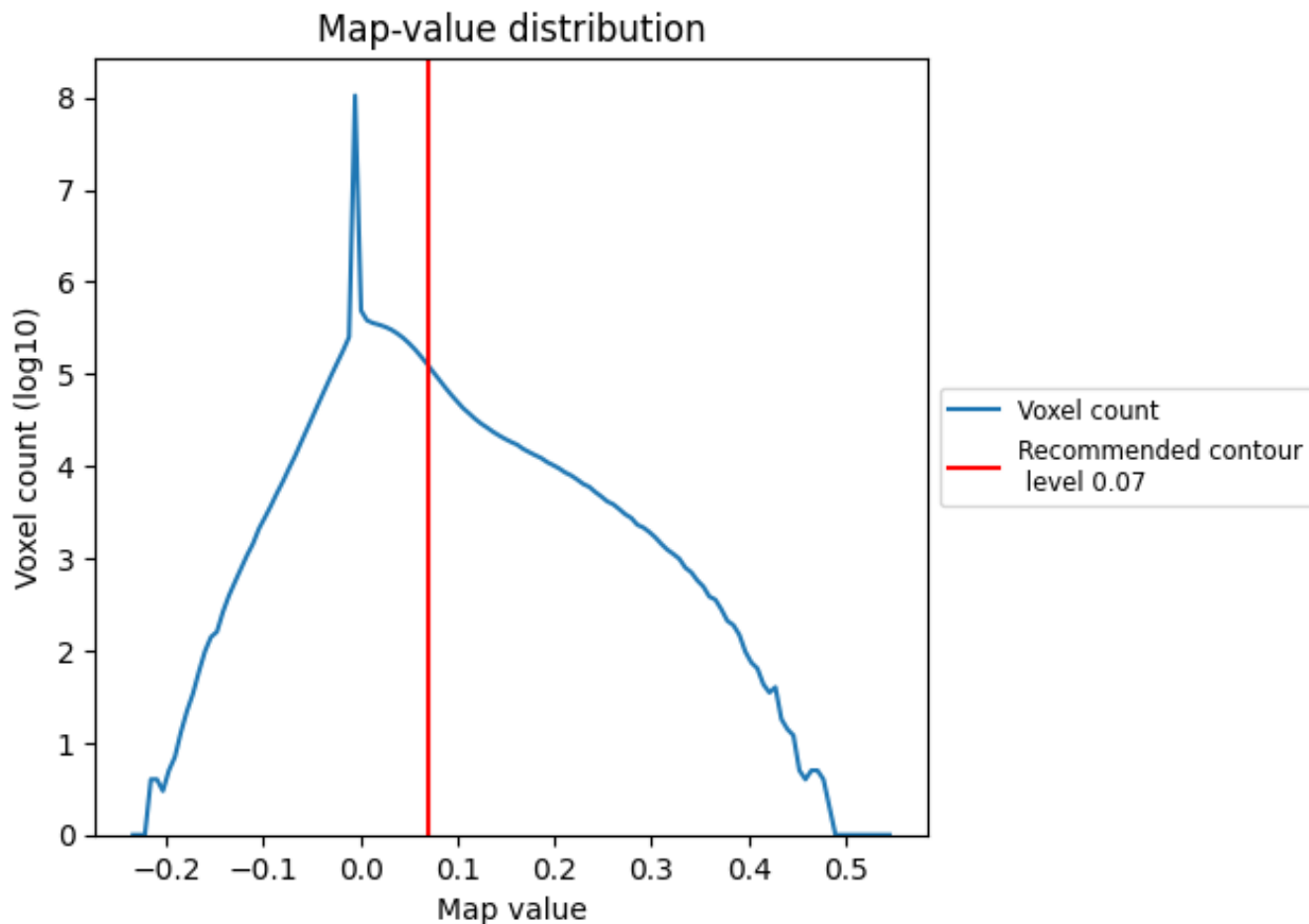
6.5 Mask visualisation

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

7 Map analysis [i](#)

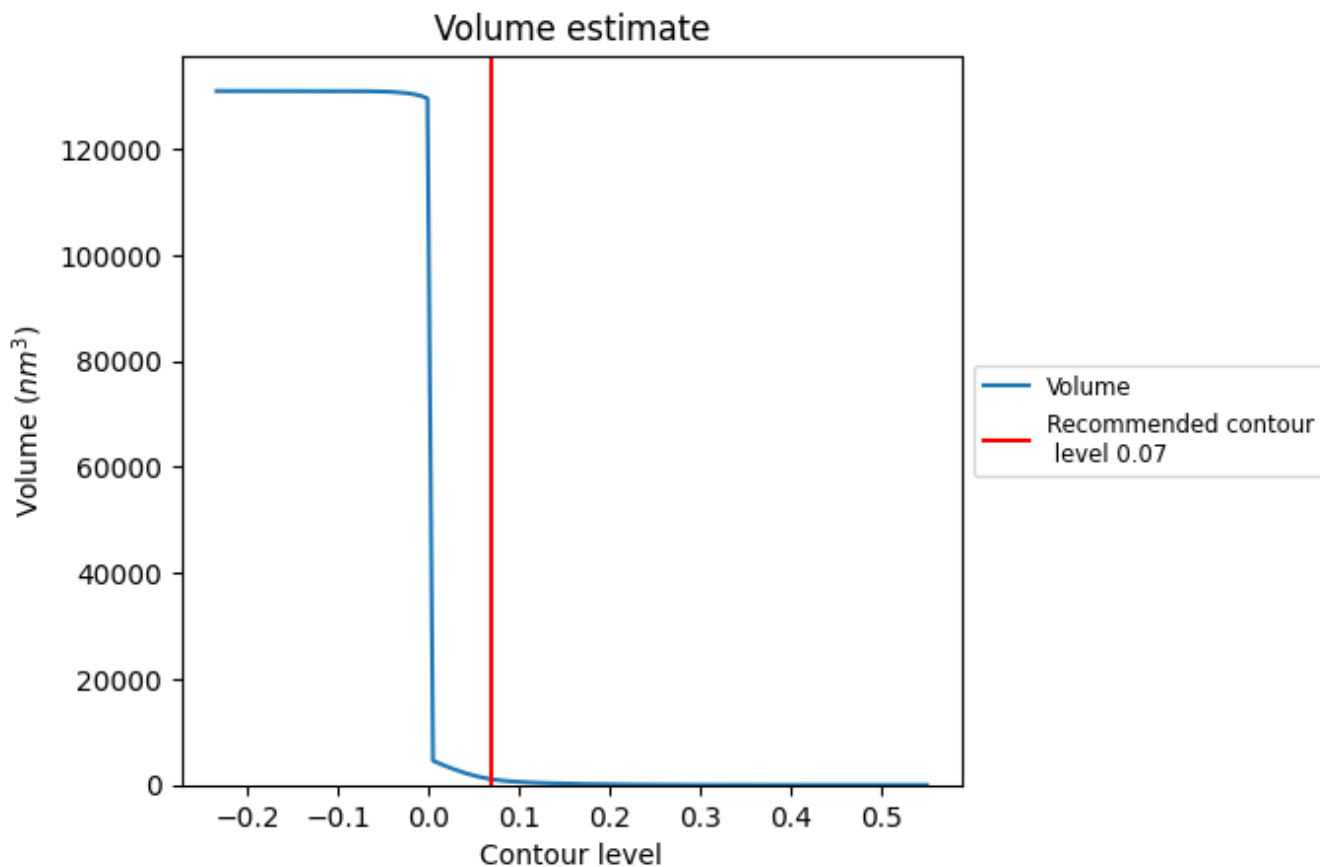
This section contains the results of statistical analysis of the map.

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.

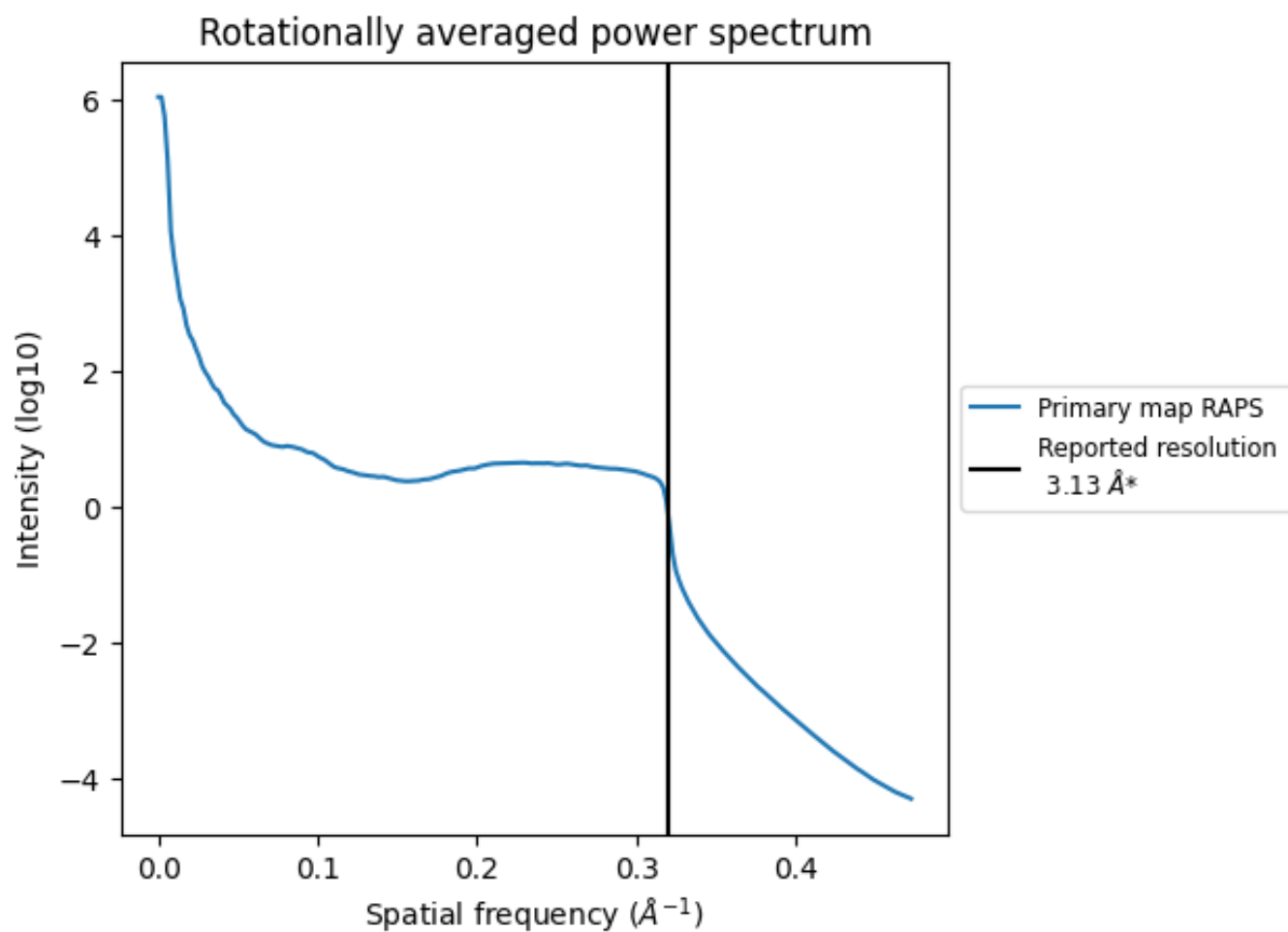
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 1084 nm^3 ; this corresponds to an approximate mass of 979 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 0.319\AA^{-1}

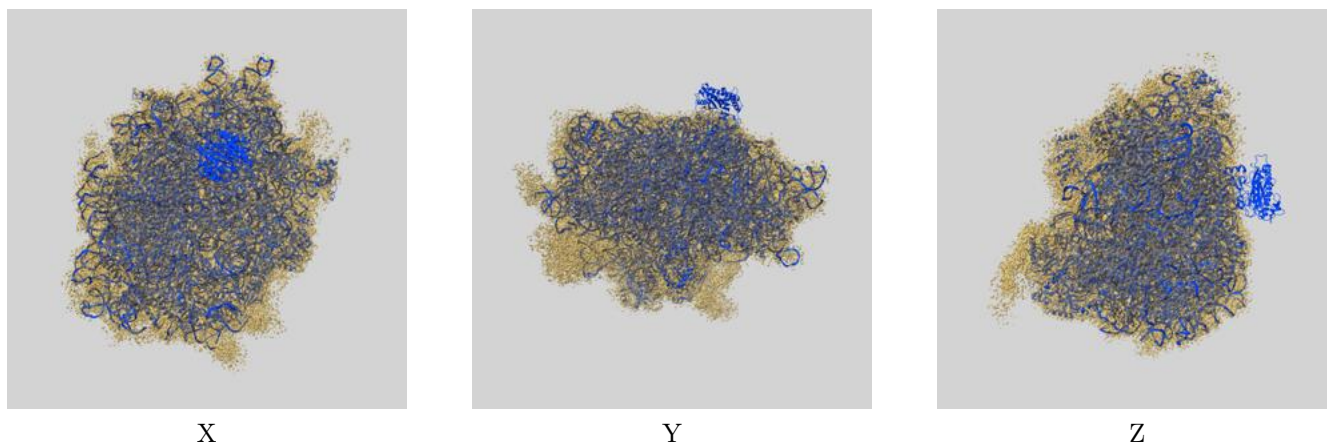
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

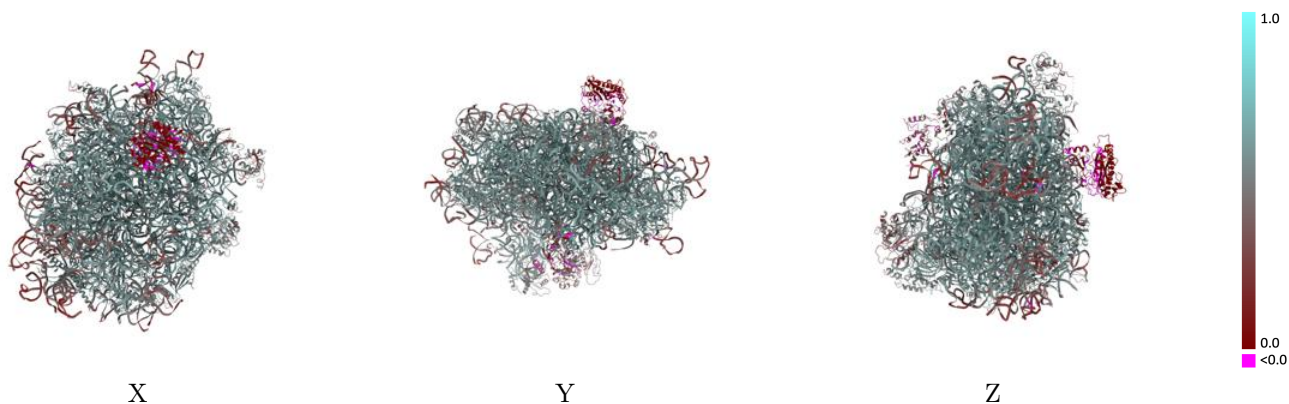
This section contains information regarding the fit between EMDB map EMD-0963 and PDB model 6LSR. Per-residue inclusion information can be found in section 3 on page 14.

9.1 Map-model overlay [i](#)



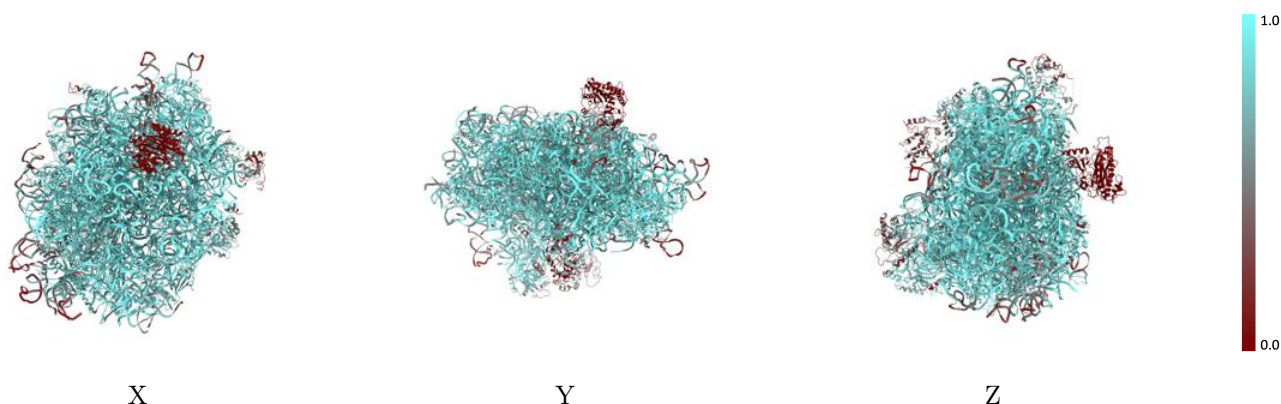
The images above show the 3D surface view of the map at the recommended contour level 0.07 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



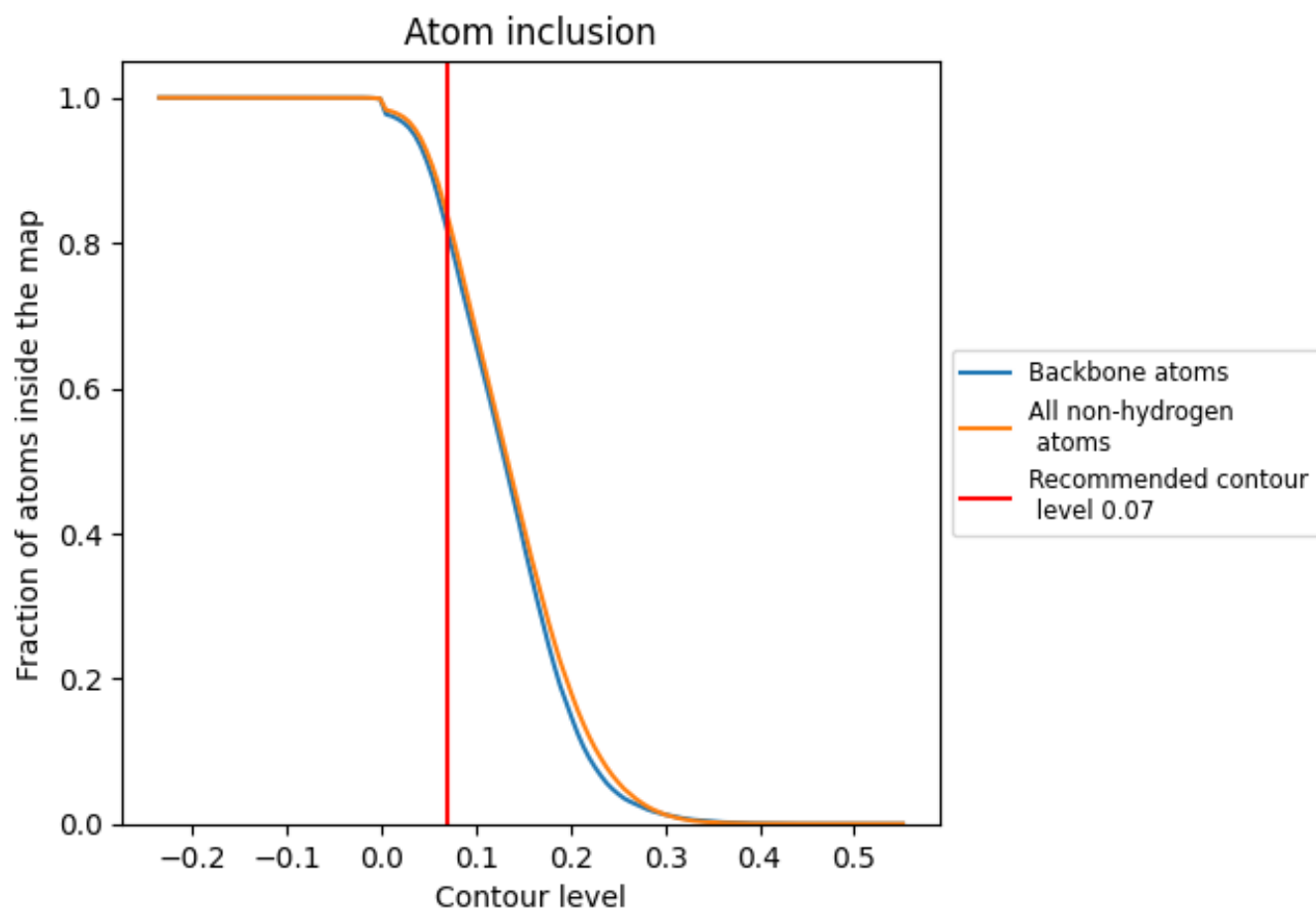
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.07).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 82% of all backbone atoms, 84% 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 (0.07) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8376	 0.5310
0	 0.5017	 0.4460
1	 0.3128	 0.2480
2	 0.8731	 0.5340
3	 0.8295	 0.5350
5	 0.9430	 0.5660
6	 0.6738	 0.4860
8	 0.9208	 0.5590
A	 0.3865	 0.3470
B	 0.8707	 0.5770
C	 0.8137	 0.5190
D	 0.9145	 0.5890
E	 0.8014	 0.5350
F	 0.8954	 0.5820
G	 0.8060	 0.5430
H	 0.8471	 0.5710
I	 0.8081	 0.5500
K	 0.8296	 0.5470
L	 0.9336	 0.6080
M	 0.9524	 0.6010
N	 0.6780	 0.4610
O	 0.7514	 0.5350
P	 0.9291	 0.5950
Q	 0.8433	 0.5670
S	 0.8769	 0.5680
T	 0.8436	 0.5730
U	 0.9586	 0.6120
V	 0.9133	 0.5880
W	 0.8445	 0.5550
X	 0.8474	 0.5610
Y	 0.9104	 0.5940
Z	 0.9316	 0.5970
a	 0.8979	 0.5770
b	 0.9208	 0.5870
c	 0.8712	 0.5710



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Chain	Atom inclusion	Q-score
d	 0.7215	 0.4980
e	 0.8807	 0.5780
f	 0.8120	 0.5590
g	 0.8690	 0.5640
h	 0.8766	 0.5760
i	 0.8155	 0.5560
l	 0.8993	 0.5810
m	 0.9320	 0.5970
r	 0.7867	 0.5330
t	 0.9351	 0.5980
u	 0.9525	 0.6020
v	 0.7759	 0.5240
w	 0.9043	 0.5830
z	 0.0121	 0.0190