wwPDB EM Validation Summary Report

Mar 18, 2023 – 09:47 am GMT

PDB ID	:	8A3D
EMDB ID	:	EMD-15113
Title	:	Human mature large subunit of the ribosome with eIF6 and homoharringtonine bound
Authors	:	Faille, A.; Warren, A.J.; Dent, K.C.
Deposited on	:	2022-06-08
Resolution	:	1.67 Å(reported)
Based on initial model	:	6EK0

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 (i) 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 (i)) were used in the production of this report:

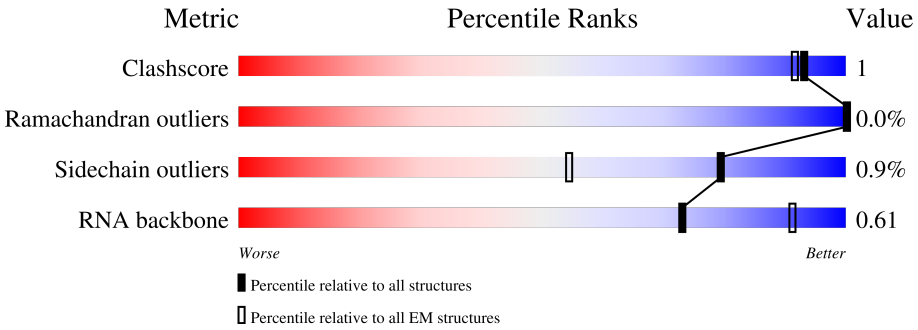
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.32.1

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 1.67 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)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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

Mol	Chain	Length	Quality of chain
1	A	5069	16% 46% 16% · 35%
2	B	121	11% 84% 13% ••
3	C	157	16% 65% 22% 6% · 6%
4	D	257	5% 92% · ·
5	E	403	20% 94% · ·
6	F	427	10% 81% · 16%
7	G	297	45% 93% · ·

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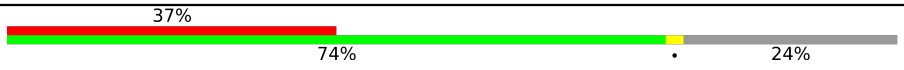
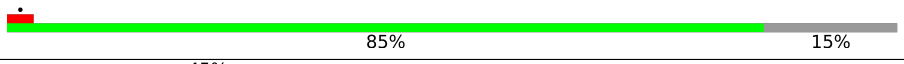
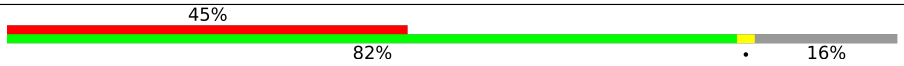
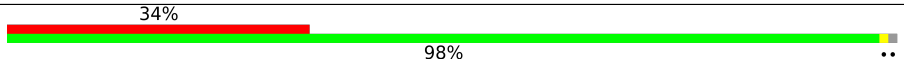
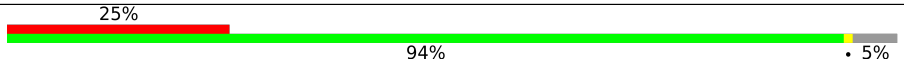
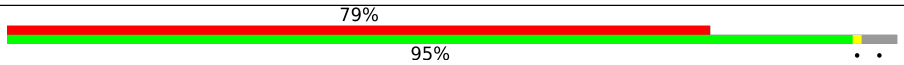
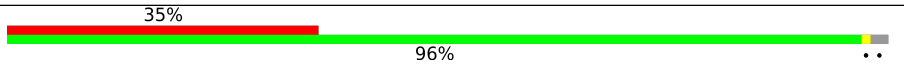
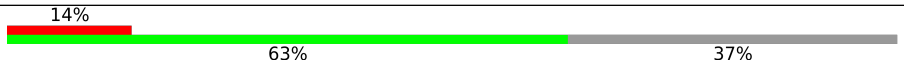
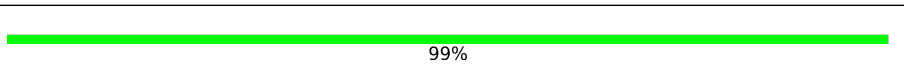
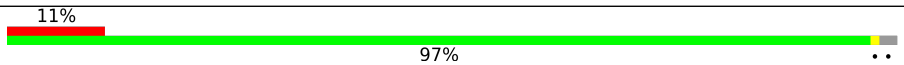
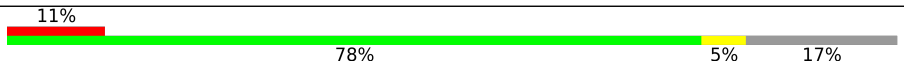
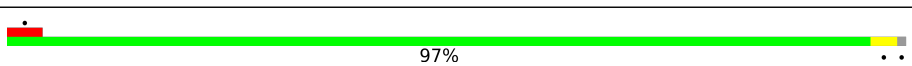
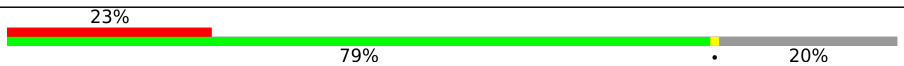
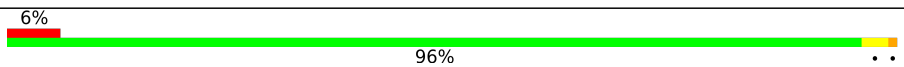
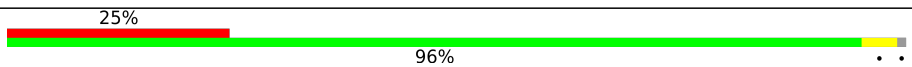
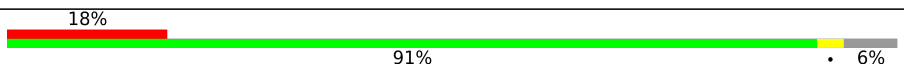
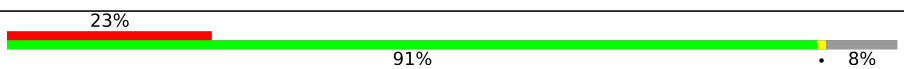
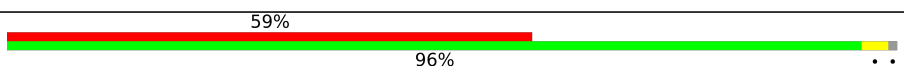
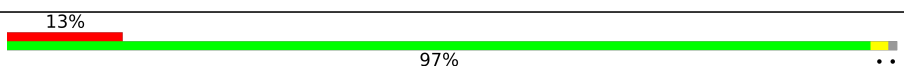
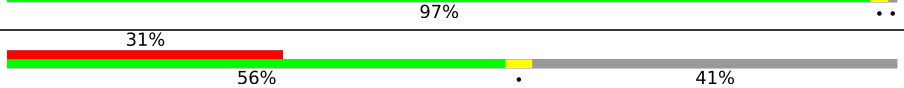
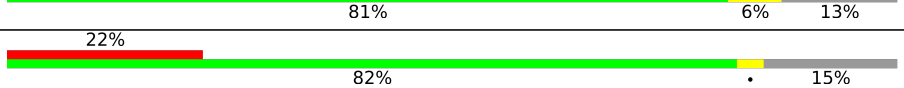
Mol	Chain	Length	Quality of chain
8	H	288	
9	m	248	
10	n	266	
11	o	192	
12	p	214	
13	q	178	
14	r	211	
15	s	220	
16	l	204	
17	I	203	
18	J	184	
19	K	188	
20	L	196	
21	M	176	
22	N	160	
23	O	128	
24	P	140	
25	Q	157	
26	R	156	
27	S	145	
28	T	136	
29	U	148	
30	V	159	
31	W	115	
32	X	125	

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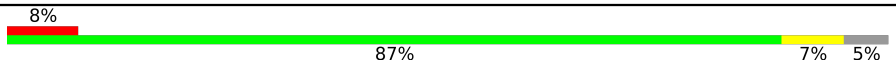
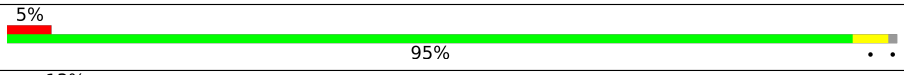
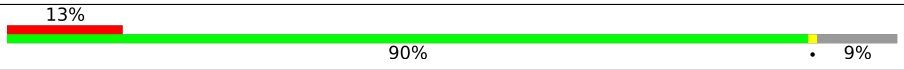
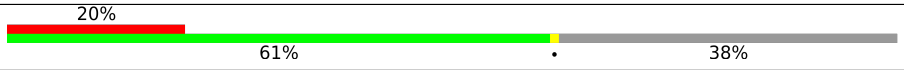
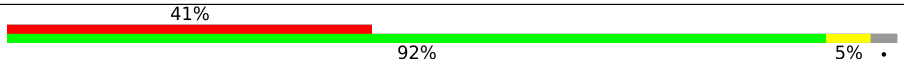
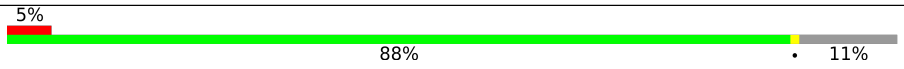
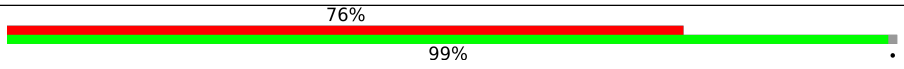
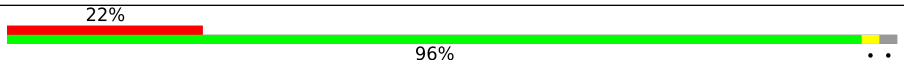
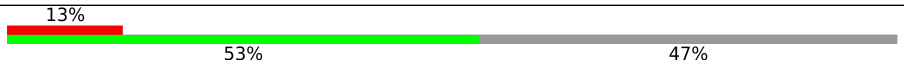
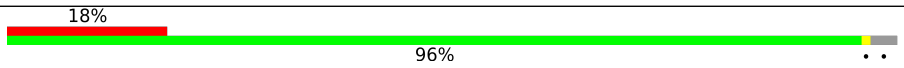
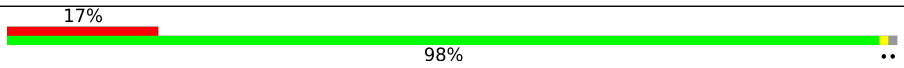
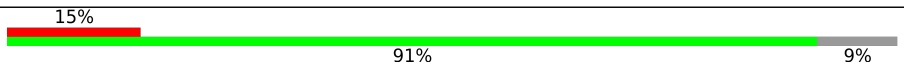
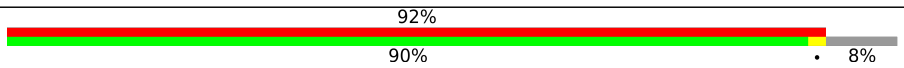
Mol	Chain	Length	Quality of chain
33	Y	135	
34	Z	110	
35	a	117	
36	b	196	
37	c	105	
38	d	97	
39	e	70	
40	f	51	
41	g	99	
42	i	106	
43	j	92	
44	k	137	
45	h	245	

2 Entry composition (i)

There are 53 unique types of molecules in this entry. The entry contains 142233 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 ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	3303	70928	31625	12983	23017	3303	1	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	4910	A	G	conflict	GB 86475748

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	C	148	3153	1408	563	1035	147	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	246	1887	1183	387	311	6	0	0

- Molecule 5 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	395	3194	2034	600	545	15	1	0

- Molecule 6 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	359	Total	C	N	O	S	0	0
			2855	1797	571	474	13		

- Molecule 7 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	285	Total	C	N	O	S	0	0
			2308	1460	419	415	14		

- Molecule 8 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	219	Total	C	N	O	S	0	0
			1757	1132	333	288	4		

- Molecule 9 is a protein called 60S ribosomal protein L7.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	m	212	Total	C	N	O	S	0	0
			1755	1127	334	285	9		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
10	n	223	Total	C	N	O	S	0	0
			1809	1153	349	303	4		

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
12	p	204	Total	C	N	O	S	0	0
			1654	1051	318	272	13		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
13	q	170	Total	C	N	O	S	0	0
			1358	858	253	241	6		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
14	r	206	Total	C	N	O	S	0	0
			1664	1041	345	274	4		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
15	s	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	l	203	Total	C	N	O	S	1	0
			1708	1077	360	267	4		

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
18	J	152	Total	C	N	O	S	0	0
			1233	771	240	213	9		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
19	K	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
20	L	157	Total	C	N	O	S	0	0
			1304	813	280	202	9		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
21	M	176	Total	C	N	O	S	0	0
			1461	930	284	236	11		

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
23	O	99	Total	C	N	O	S	0	0
			804	516	140	146	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
24	P	132	Total	C	N	O	S	0	0
			985	621	185	174	5		

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
26	R	119	Total	C	N	O	S	0	0
			976	624	183	168	1		

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

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

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

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

- Molecule 29 is a protein called 60S ribosomal protein L27a.

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
30	V	94	Total	C	N	O	S	0	0
			773	480	171	119	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
31	W	100	Total	C	N	O	S	0	0
			772	490	136	139	7		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
32	X	106	Total	C	N	O	S	0	0
			868	551	170	145	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
33	Y	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
34	Z	109	Total	C	N	O	S	1	0
			879	557	174	144	4		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
35	a	106	Total	C	N	O	S	0	0
			845	530	174	135	6		

- Molecule 36 is a protein called Ribosomal protein uL29.

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
38	d	86	Total	C	N	O	S	1	0
			713	442	155	111	5		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
39	e	69	Total	C	N	O	S	0	0
			569	366	103	99	1		

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
41	g	52	Total	C	N	O	S	0	0
			429	266	90	67	6		

- Molecule 42 is a protein called 60S ribosomal protein L36a.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	i	103	Total	C	N	O	S	0	0
			842	528	172	136	6		

- Molecule 43 is a protein called 60S ribosomal protein L37a.

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

- Molecule 44 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	k	124	Total	C	N	O	S	0	0
			992	615	206	167	4		

- Molecule 45 is a protein called Eukaryotic translation initiation factor 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	h	225	Total	C	N	O	S	0	0
			1712	1065	295	340	12		

- Molecule 46 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
46	A	214	Total	Mg	0
			214	214	
46	B	3	Total	Mg	0
			3	3	
46	C	6	Total	Mg	0
			6	6	
46	J	1	Total	Mg	0
			1	1	
46	L	2	Total	Mg	0
			2	2	
46	P	1	Total	Mg	0
			1	1	

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Mol	Chain	Residues	Atoms	AltConf
46	U	1	Total Mg 1 1	0
46	d	1	Total Mg 1 1	0

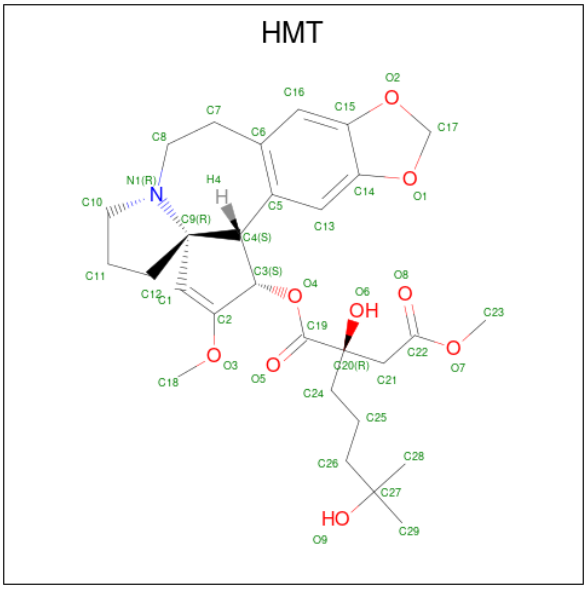
- Molecule 47 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	AltConf
47	A	139	Total K 139 139	0
47	B	1	Total K 1 1	0
47	D	3	Total K 3 3	0
47	o	1	Total K 1 1	0
47	p	1	Total K 1 1	0
47	l	2	Total K 2 2	0
47	J	1	Total K 1 1	0
47	N	1	Total K 1 1	0
47	V	1	Total K 1 1	0
47	Y	1	Total K 1 1	0
47	Z	1	Total K 1 1	0
47	a	1	Total K 1 1	0
47	f	1	Total K 1 1	0
47	i	1	Total K 1 1	0

- Molecule 48 is SODIUM ION (three-letter code: NA) (formula: Na).

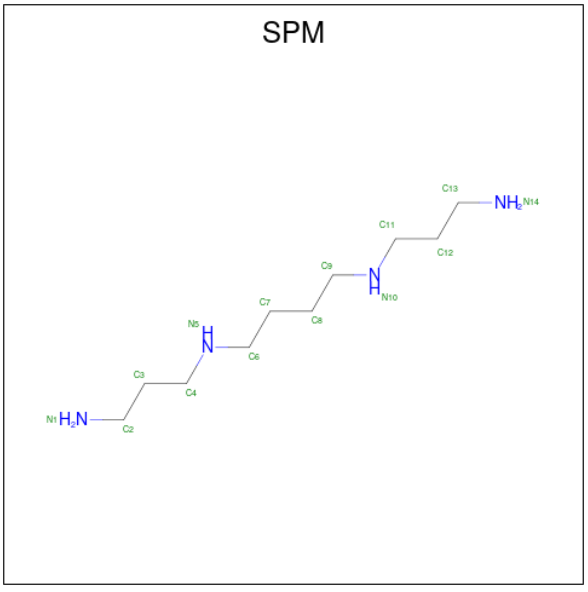
Mol	Chain	Residues	Atoms	AltConf
48	A	2	Total Na 2 2	0

- Molecule 49 is (3beta)-O 3 -[(2R)-2,6-dihydroxy-2-(2-methoxy-2-oxoethyl)-6-methylheptano yl]cephalotaxine (three-letter code: HMT) (formula: $C_{29}H_{39}NO_9$).



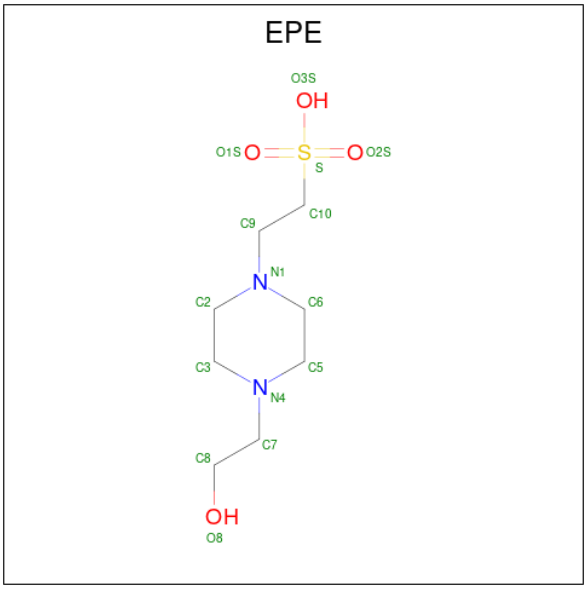
Mol	Chain	Residues	Atoms				AltConf
49	A	1	Total	C	N	O	0
			39	29	1	9	

- Molecule 50 is SPERMINE (three-letter code: SPM) (formula: $C_{10}H_{26}N_4$).



Mol	Chain	Residues	Atoms			AltConf
50	A	1	Total	C	N	0
			14	10	4	

- Molecule 51 is 4-(2-HYDROXYETHYL)-1-PIPERAZINE ETHANESULFONIC ACID (three-letter code: EPE) (formula: $C_8H_{18}N_2O_4S$).



Mol	Chain	Residues	Atoms					AltConf
51	A	1	Total	C	N	O	S	0
			15	8	2	4	1	

- Molecule 52 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
52	a	1	Total	Zn	0
			1	1	
52	d	1	Total	Zn	0
			1	1	
52	g	1	Total	Zn	0
			1	1	
52	i	1	Total	Zn	0
			1	1	
52	j	1	Total	Zn	0
			1	1	

- Molecule 53 is water.

Mol	Chain	Residues	Atoms		AltConf
53	A	8641	Total	O	0
			8641	8641	
53	B	261	Total	O	0
			261	261	

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Mol	Chain	Residues	Atoms	AltConf
53	C	363	Total O 363 363	0
53	D	131	Total O 131 131	0
53	E	177	Total O 177 177	0
53	F	202	Total O 202 202	0
53	G	67	Total O 67 67	0
53	H	49	Total O 49 49	0
53	m	131	Total O 131 131	0
53	n	46	Total O 46 46	0
53	o	43	Total O 43 43	0
53	p	81	Total O 81 81	0
53	q	13	Total O 13 13	0
53	r	101	Total O 101 101	0
53	s	38	Total O 38 38	0
53	l	155	Total O 155 155	0
53	I	117	Total O 117 117	0
53	J	63	Total O 63 63	0
53	K	139	Total O 139 139	0
53	L	57	Total O 57 57	0
53	M	100	Total O 100 100	0
53	N	87	Total O 87 87	0
53	O	5	Total O 5 5	0

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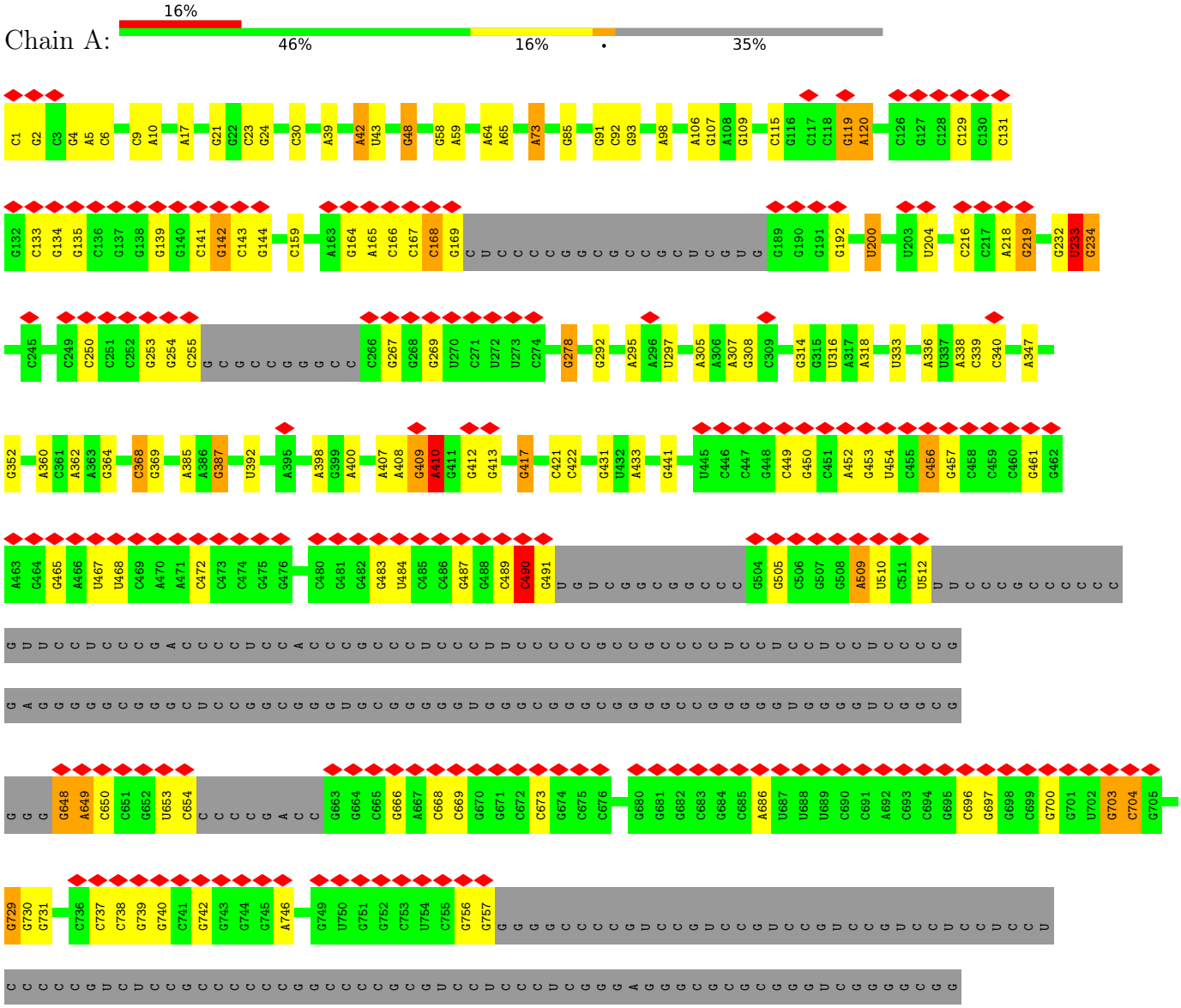
Mol	Chain	Residues	Atoms	AltConf
53	P	40	Total O 40 40	0
53	Q	21	Total O 21 21	0
53	R	35	Total O 35 35	0
53	S	49	Total O 49 49	0
53	T	13	Total O 13 13	0
53	U	92	Total O 92 92	0
53	V	39	Total O 39 39	0
53	W	9	Total O 9 9	0
53	X	37	Total O 37 37	0
53	Y	112	Total O 112 112	0
53	Z	72	Total O 72 72	0
53	a	58	Total O 58 58	0
53	b	29	Total O 29 29	0
53	c	32	Total O 32 32	0
53	d	62	Total O 62 62	0
53	e	3	Total O 3 3	0
53	f	19	Total O 19 19	0
53	g	14	Total O 14 14	0
53	i	52	Total O 52 52	0
53	j	40	Total O 40 40	0
53	k	78	Total O 78 78	0

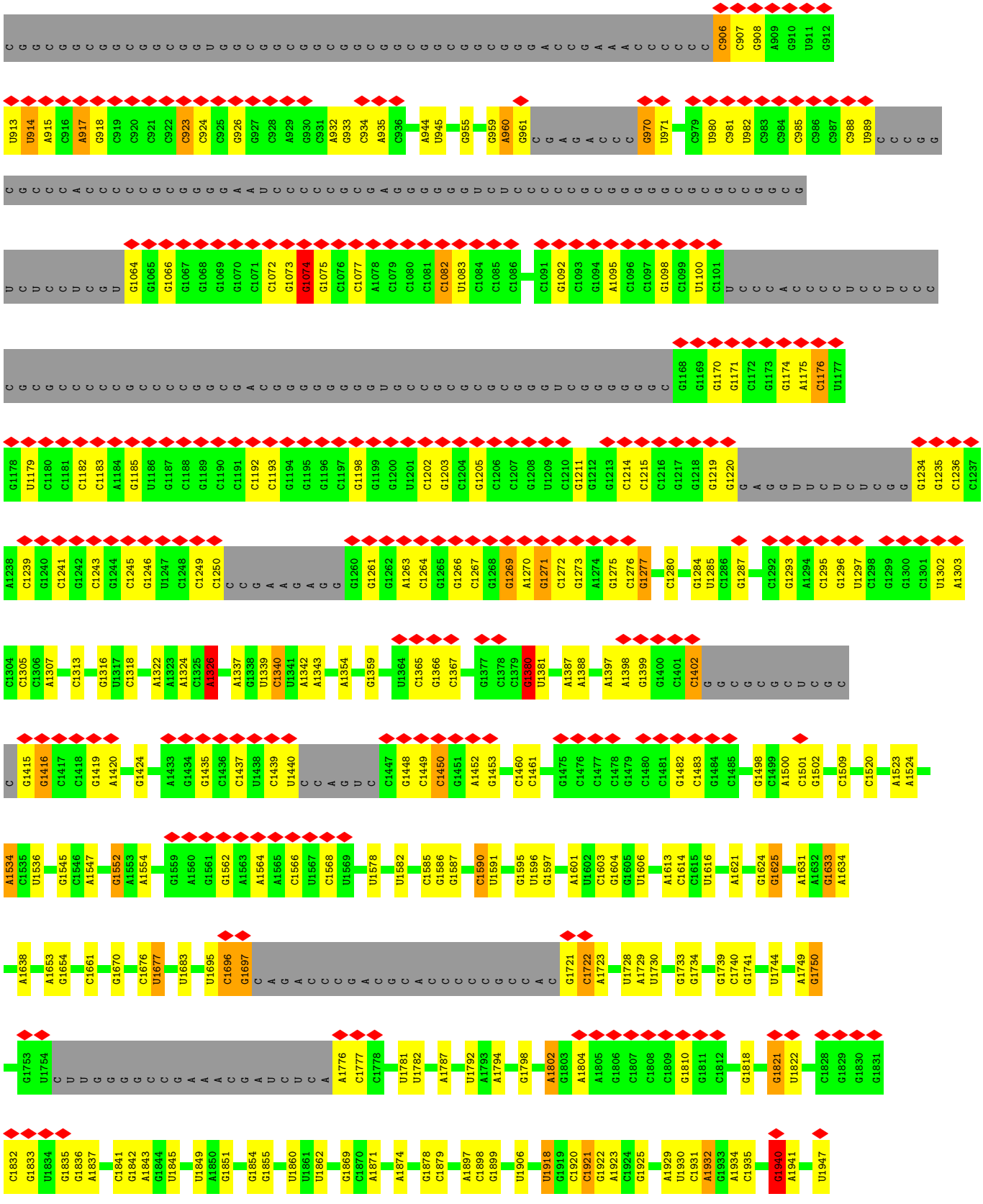
3 Residue-property plots (i)

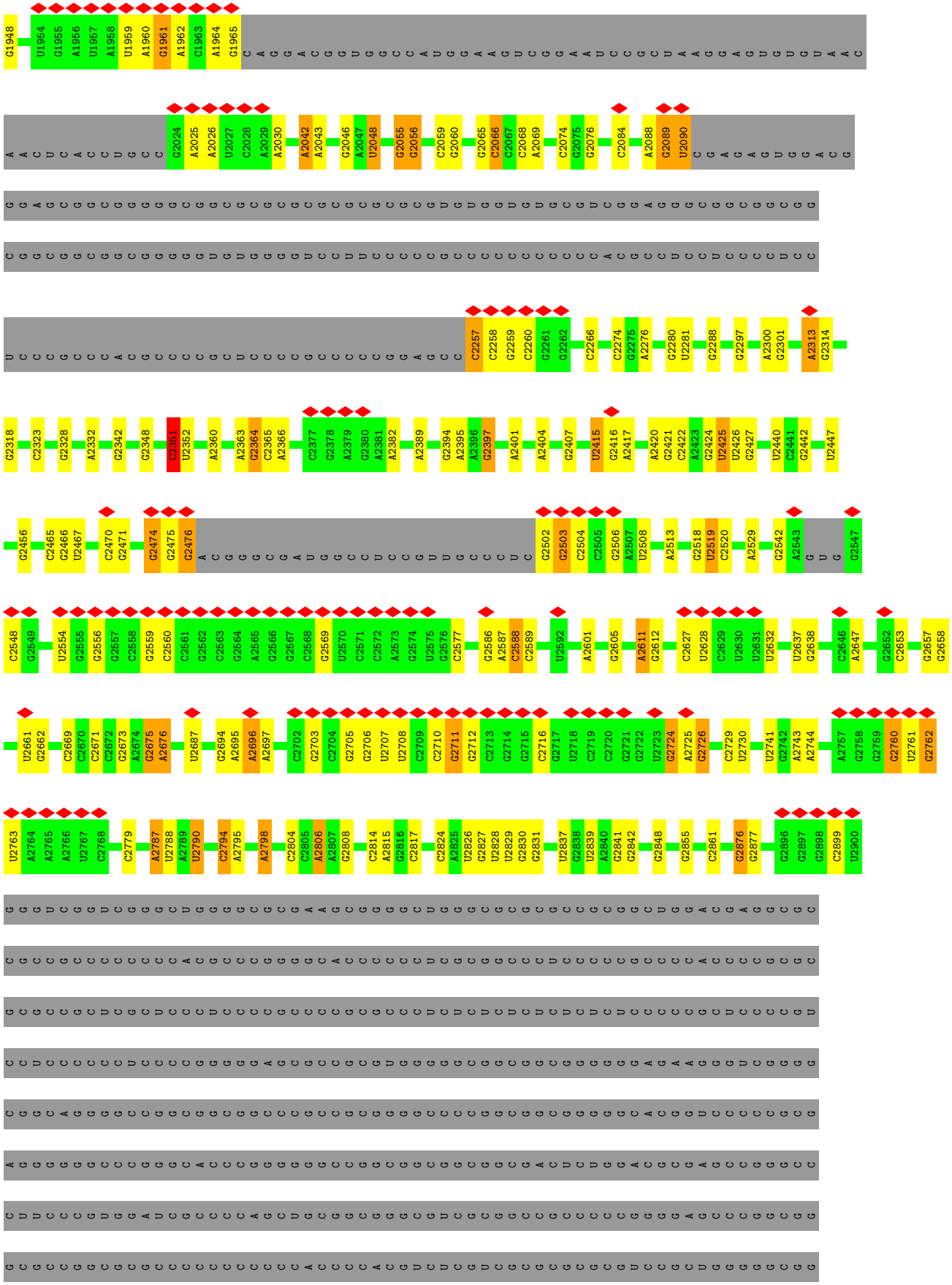
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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.

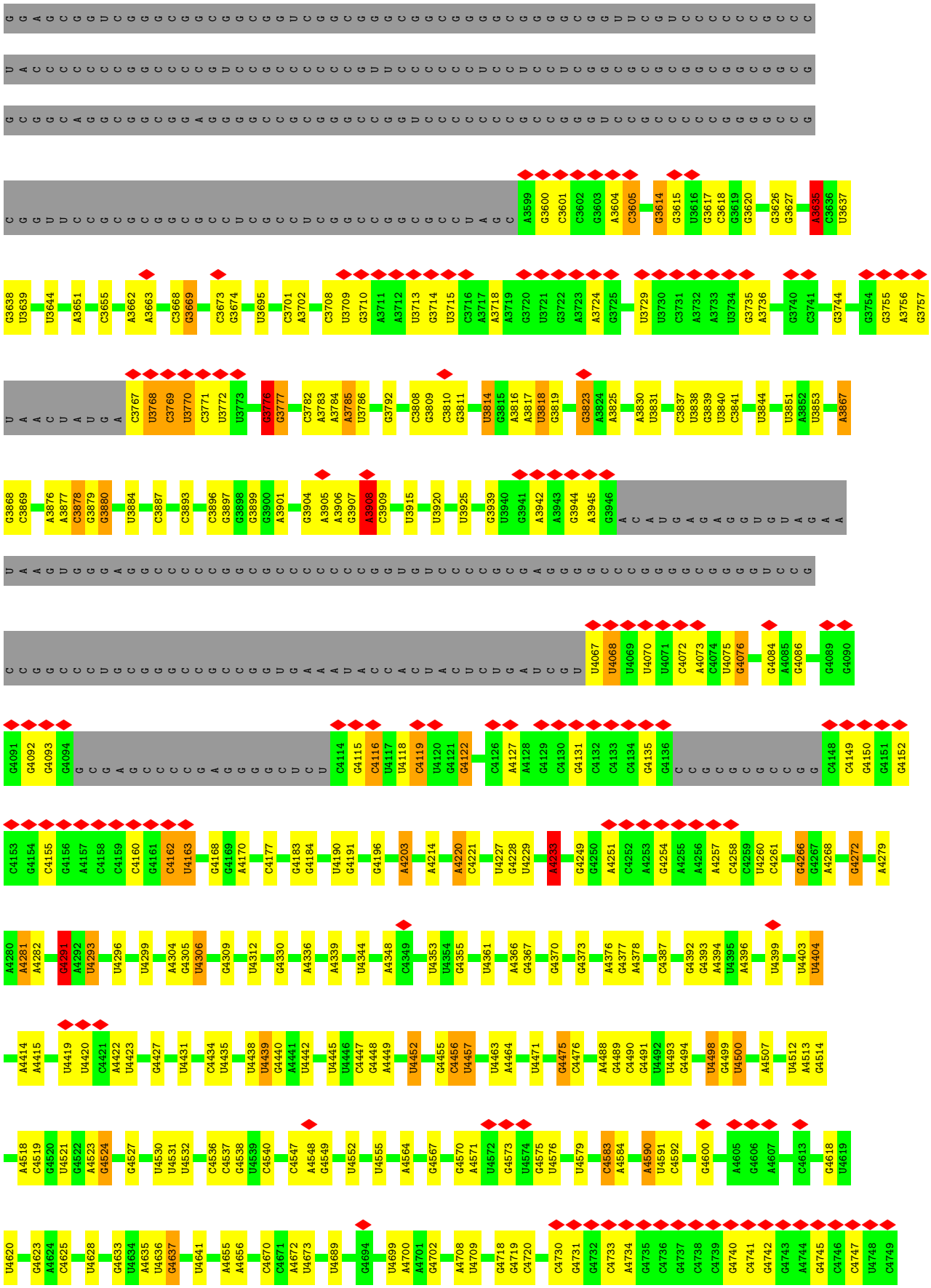
- Molecule 1: 28S ribosomal RNA

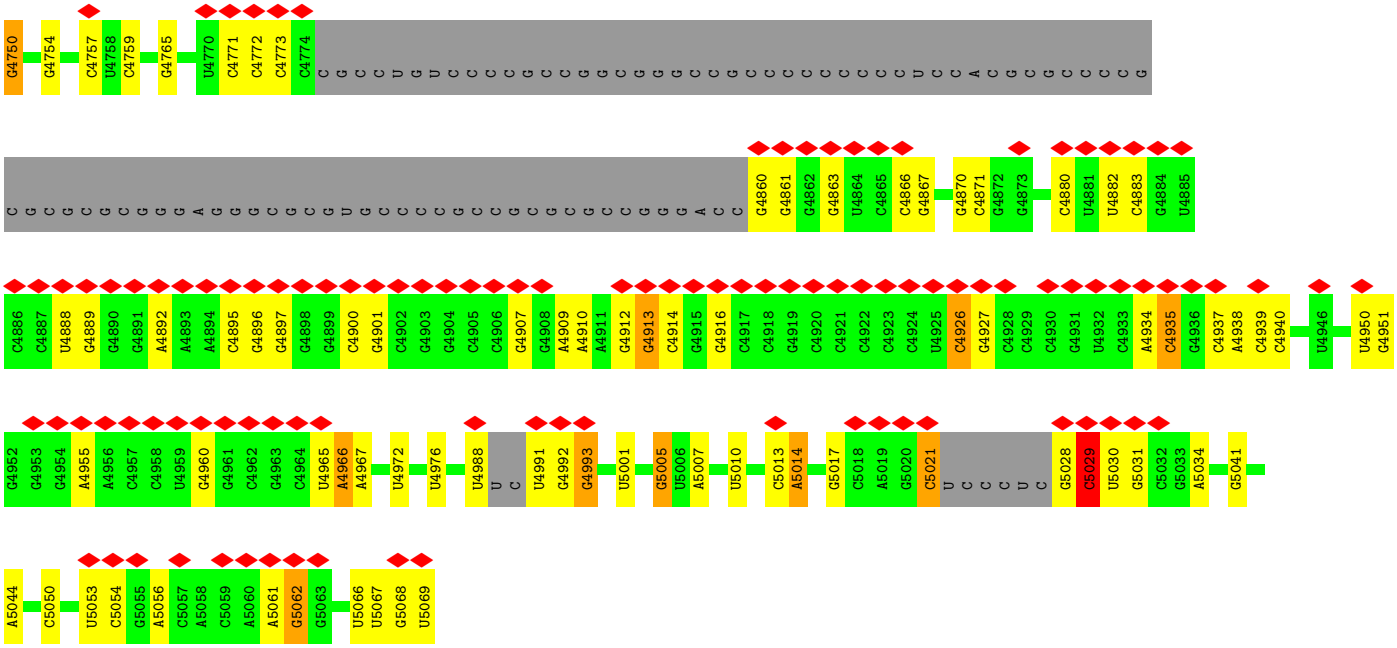
Chain A:





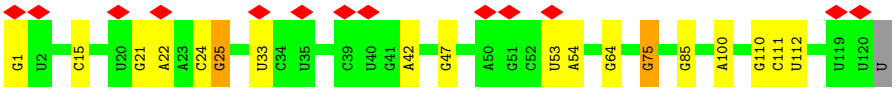






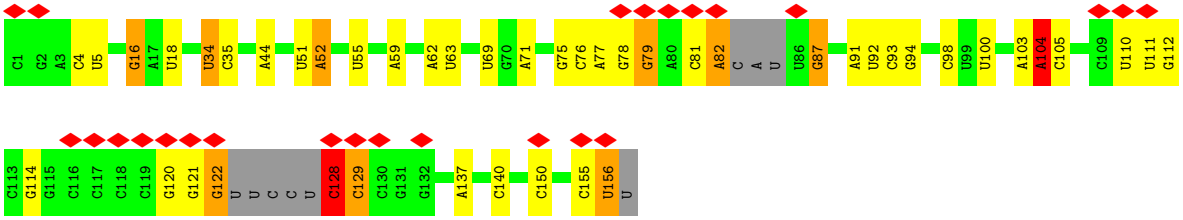
• Molecule 2: 5S ribosomal RNA

Chain B:



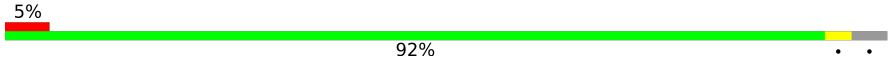
• Molecule 3: 5.8S ribosomal RNA

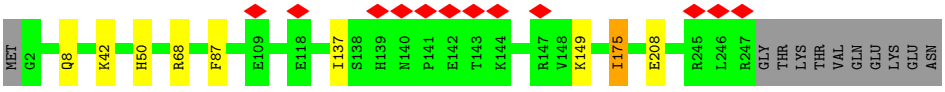
Chain C:



• Molecule 4: 60S ribosomal protein L8

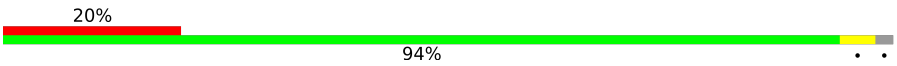
Chain D:

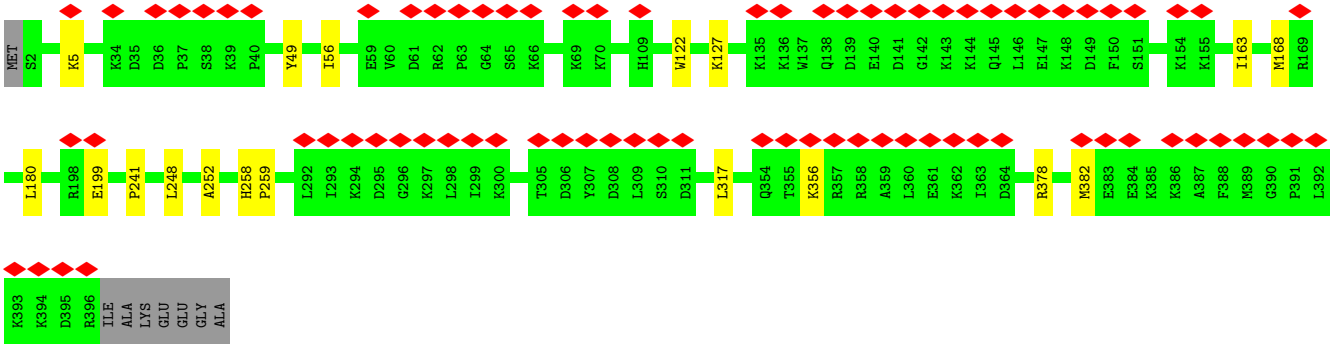




• Molecule 5: 60S ribosomal protein L3

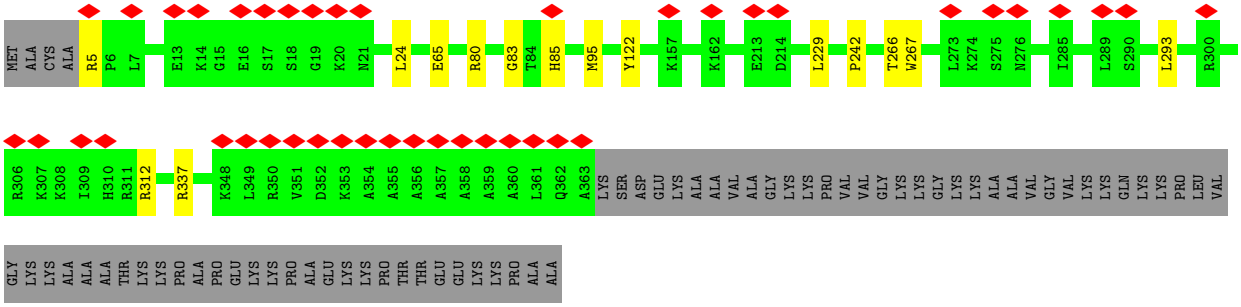
Chain E:





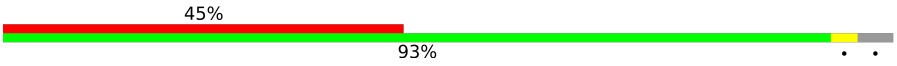
• Molecule 6: 60S ribosomal protein L4

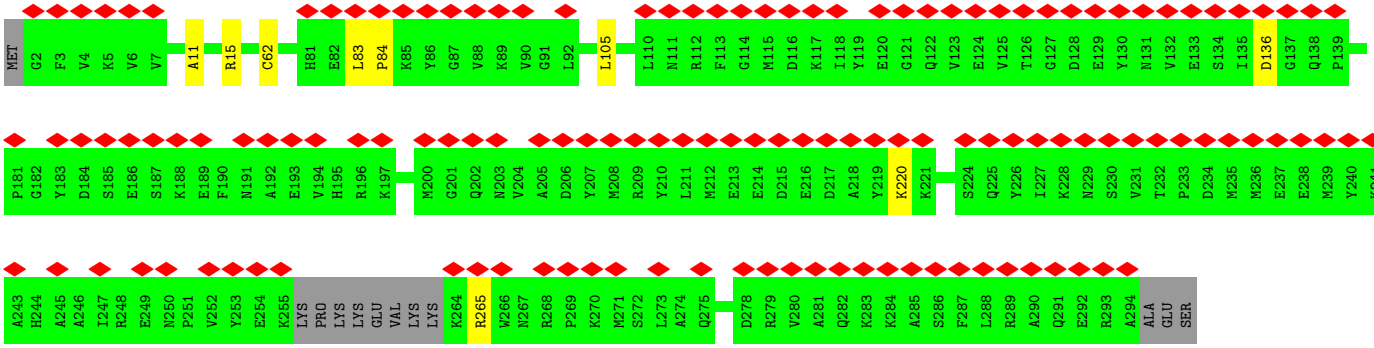
Chain F:



• Molecule 7: 60S ribosomal protein L5

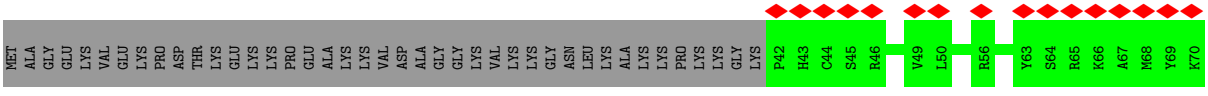
Chain G:

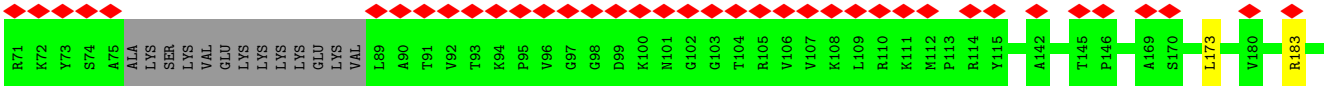


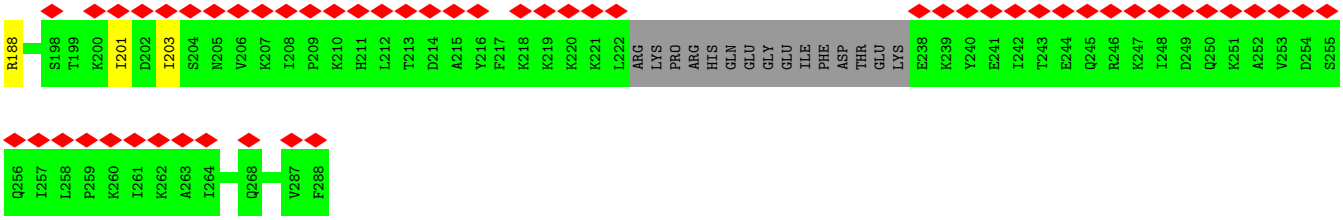


• Molecule 8: 60S ribosomal protein L6

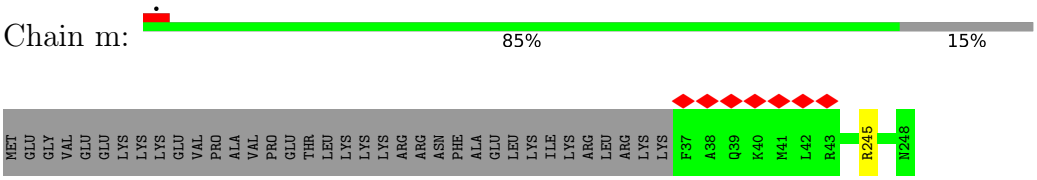
Chain H:



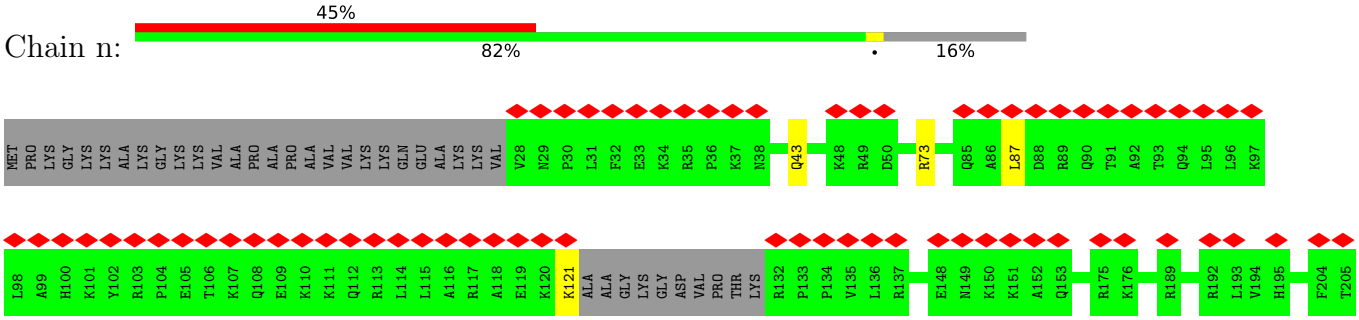




• Molecule 9: 60S ribosomal protein L7

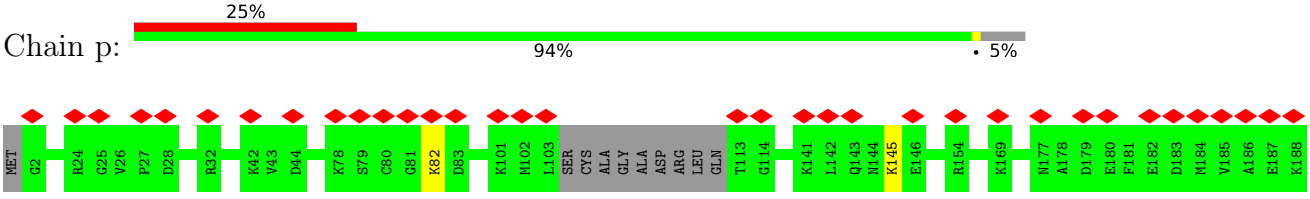


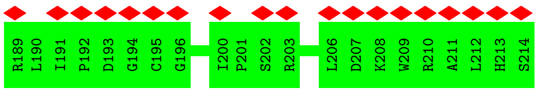
• Molecule 10: 60S ribosomal protein L7a



• Molecule 11: 60S ribosomal protein L9

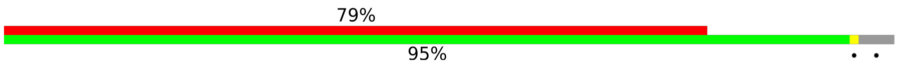
• Molecule 12: 60S ribosomal protein L10

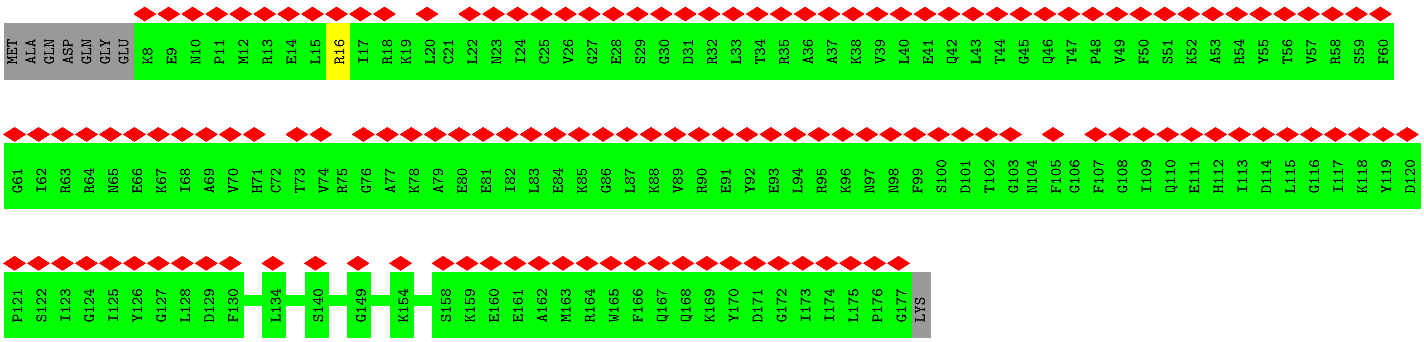




- Molecule 13: 60S ribosomal protein L11

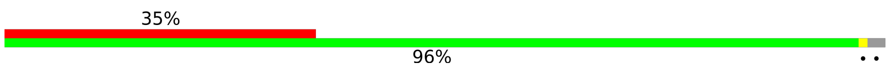
Chain q:

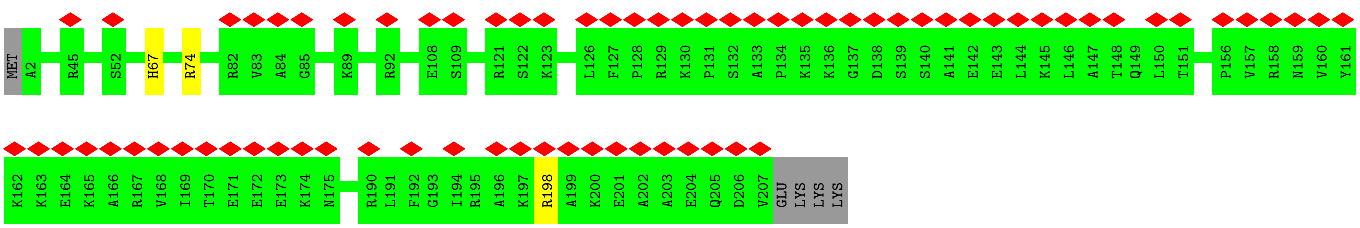




- Molecule 14: 60S ribosomal protein L13

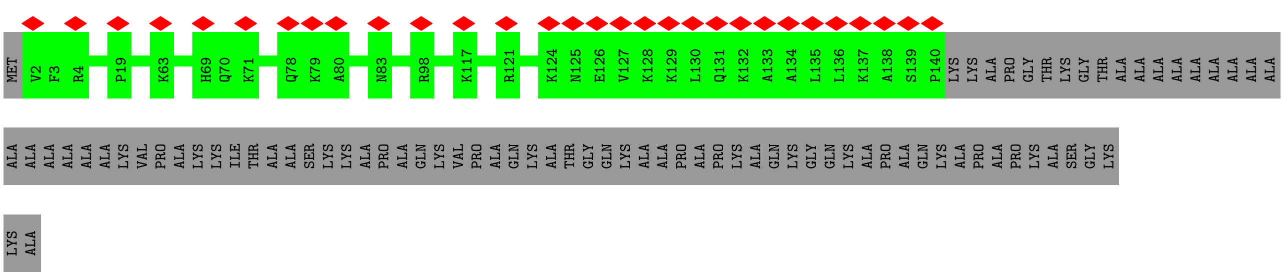
Chain r:





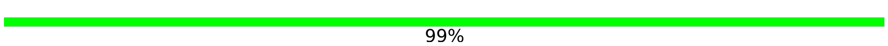
- Molecule 15: 60S ribosomal protein L14

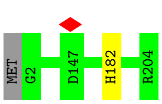
Chain s:



- Molecule 16: 60S ribosomal protein L15

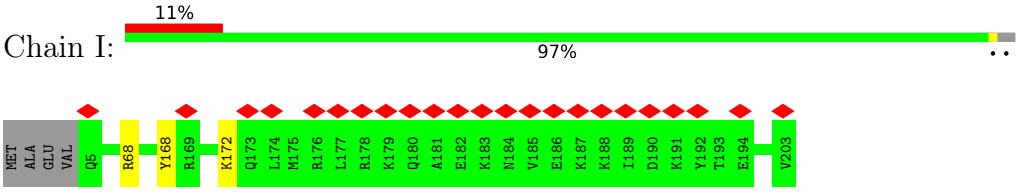
Chain l:





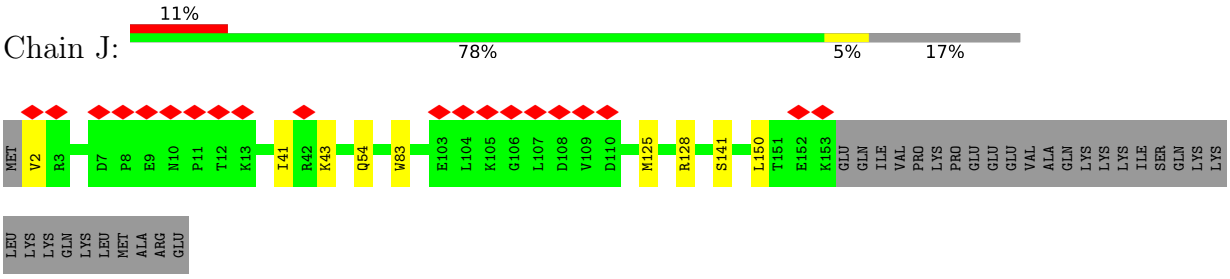
- Molecule 17: 60S ribosomal protein L13a

Chain I:



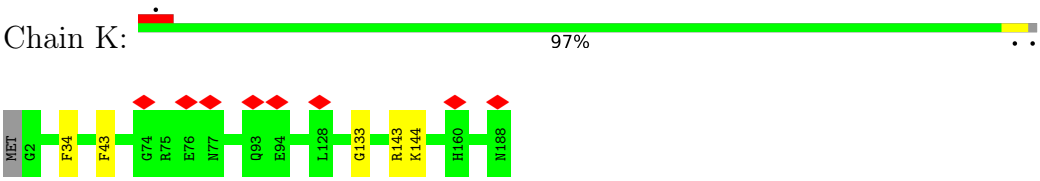
• Molecule 18: 60S ribosomal protein L17

Chain J:



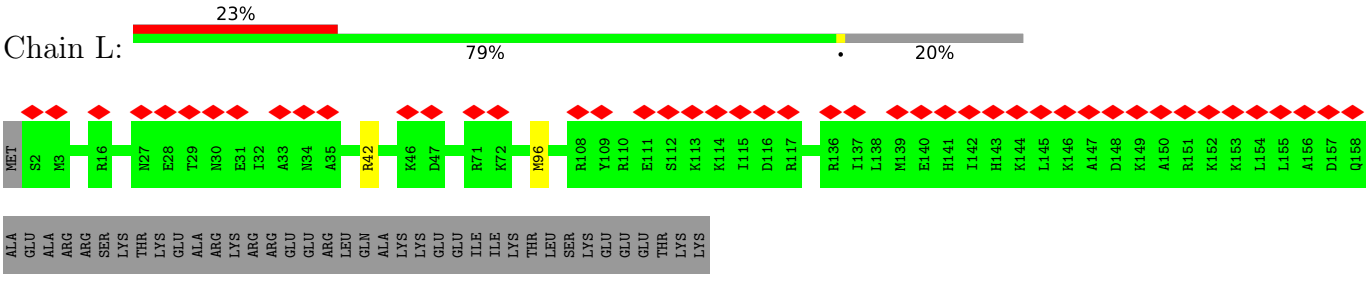
• Molecule 19: 60S ribosomal protein L18

Chain K:



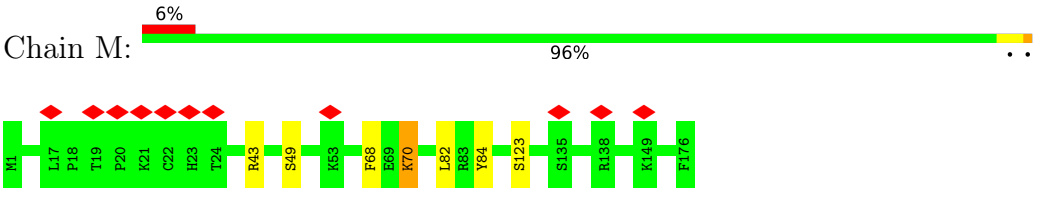
• Molecule 20: 60S ribosomal protein L19

Chain L:



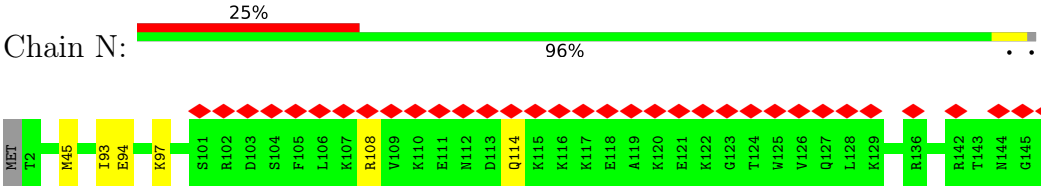
• Molecule 21: 60S ribosomal protein L18a

Chain M:

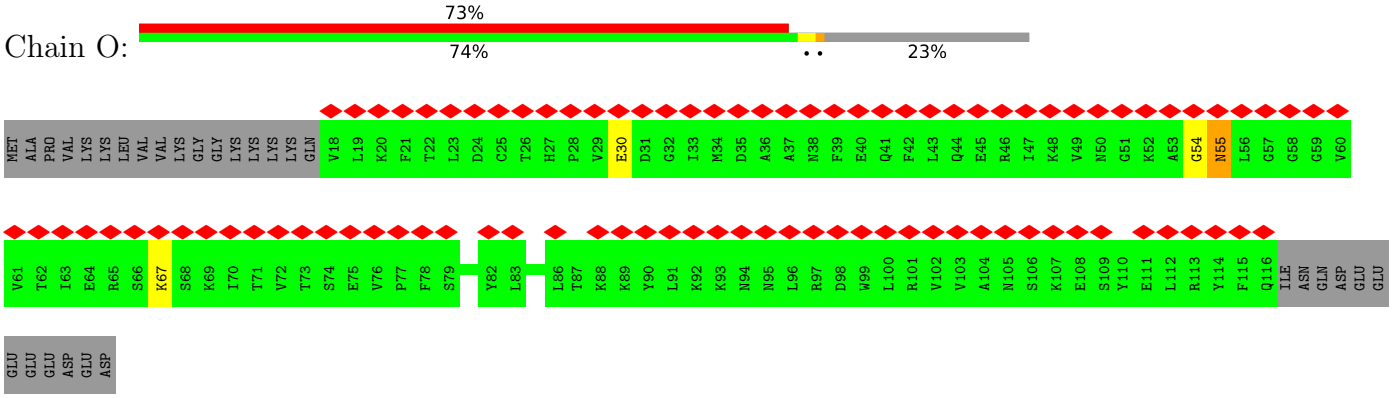


• Molecule 22: 60S ribosomal protein L21

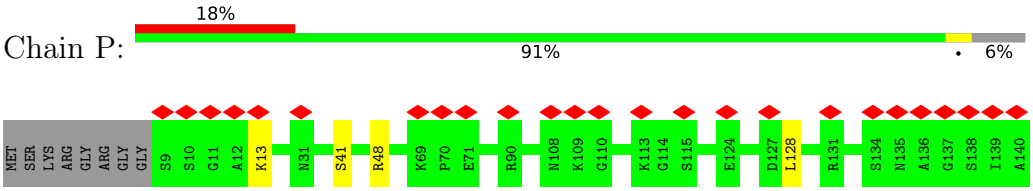
Chain N:



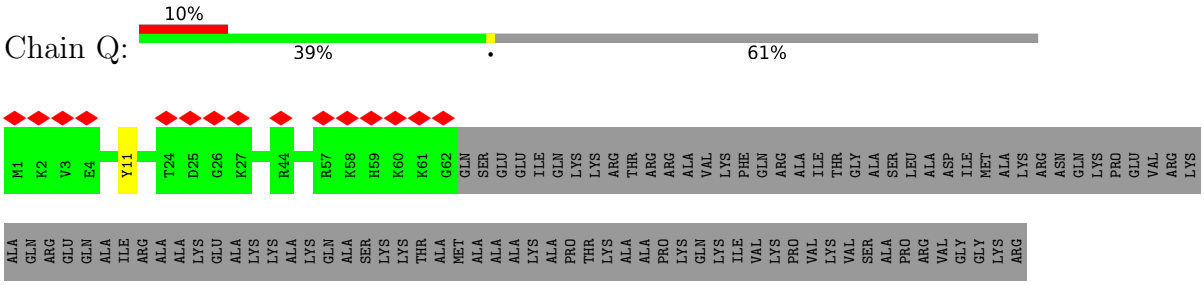
• Molecule 23: 60S ribosomal protein L22



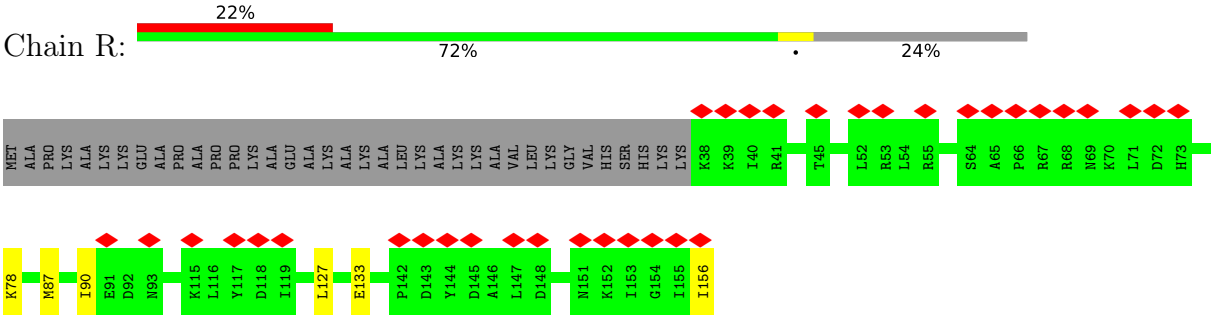
• Molecule 24: 60S ribosomal protein L23



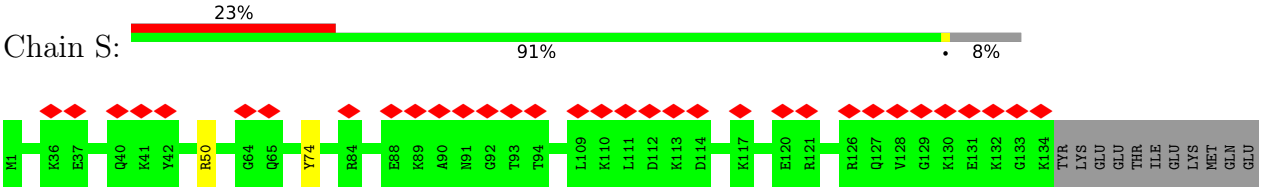
• Molecule 25: 60S ribosomal protein L24



• Molecule 26: 60S ribosomal protein L23a

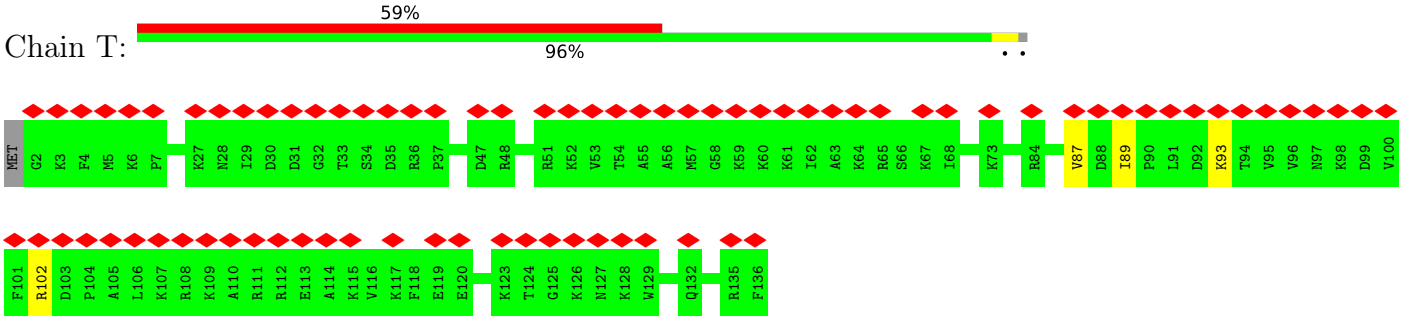


• Molecule 27: 60S ribosomal protein L26



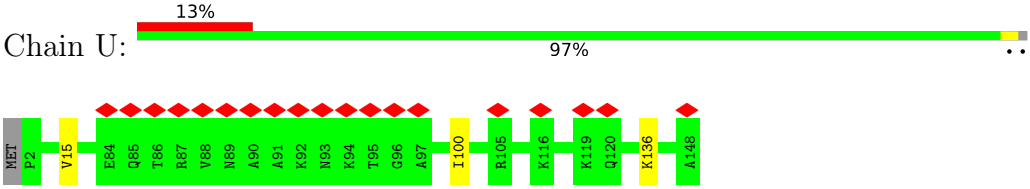
• Molecule 28: 60S ribosomal protein L27

Chain T:



• Molecule 29: 60S ribosomal protein L27a

Chain U:

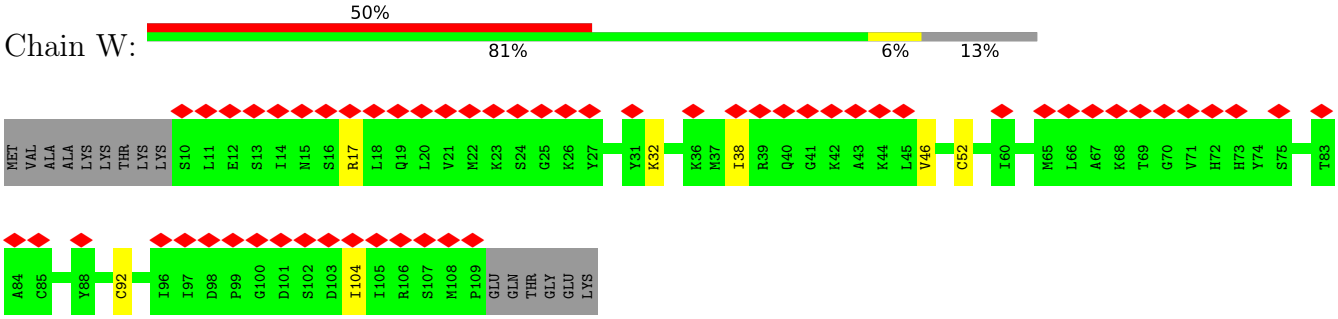


• Molecule 30: 60S ribosomal protein L29

Chain V:

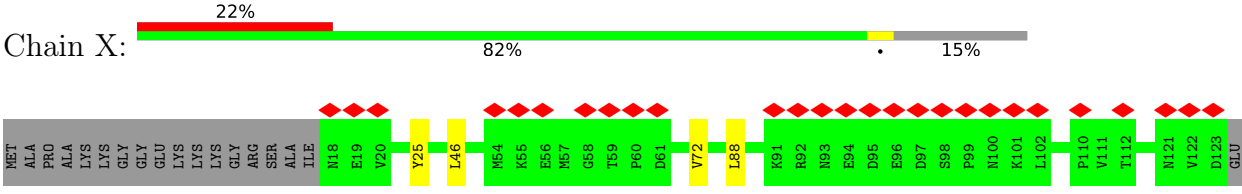
• Molecule 31: 60S ribosomal protein L30

Chain W:



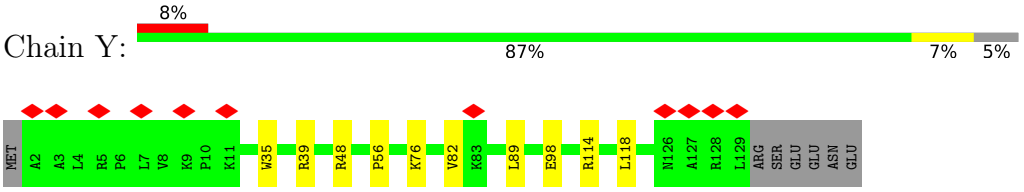
• Molecule 32: 60S ribosomal protein L31

Chain X:



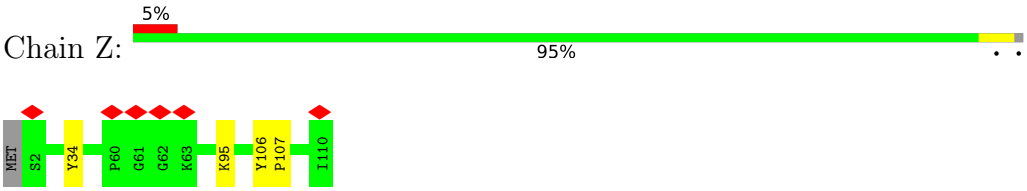
• Molecule 33: 60S ribosomal protein L32

Chain Y:



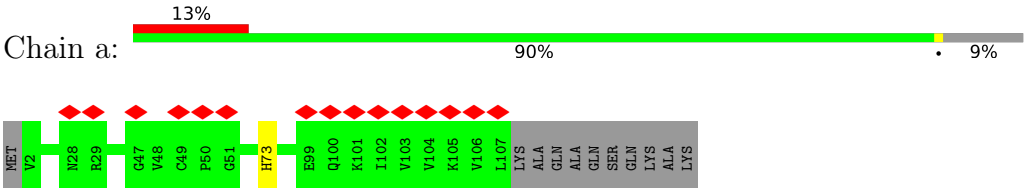
• Molecule 34: 60S ribosomal protein L35a

Chain Z:



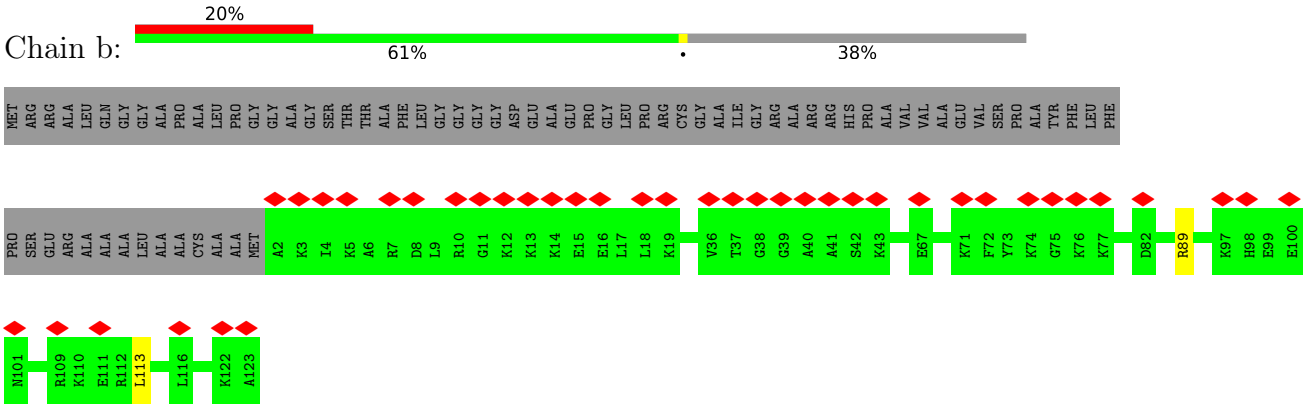
• Molecule 35: 60S ribosomal protein L34

Chain a:



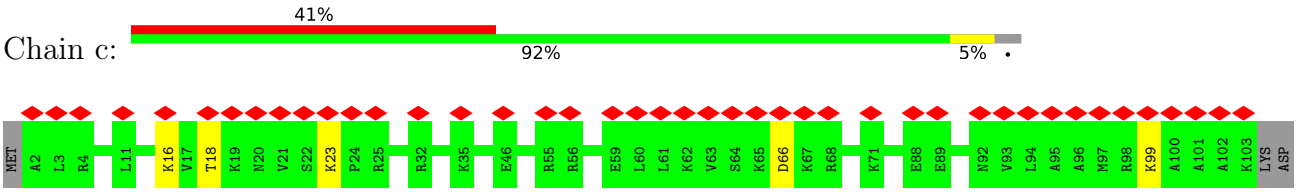
• Molecule 36: Ribosomal protein uL29

Chain b:



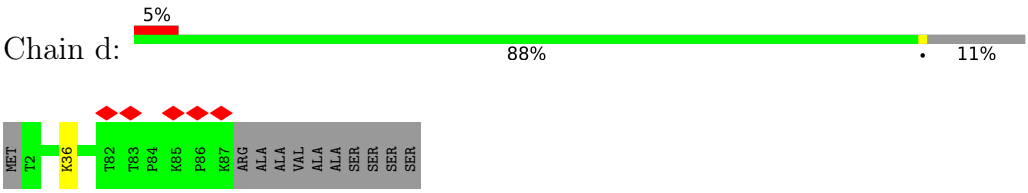
• Molecule 37: 60S ribosomal protein L36

Chain c:



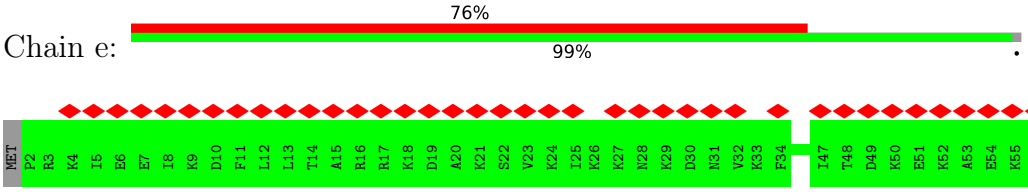
• Molecule 38: 60S ribosomal protein L37

Chain d:



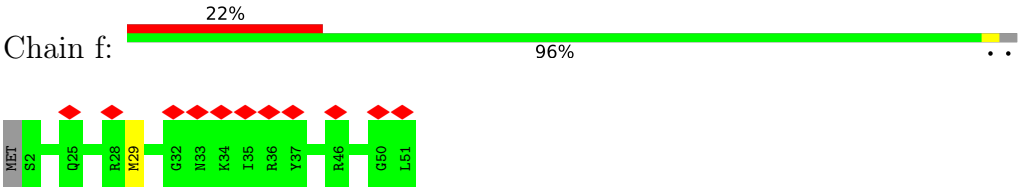
• Molecule 39: 60S ribosomal protein L38

Chain e:



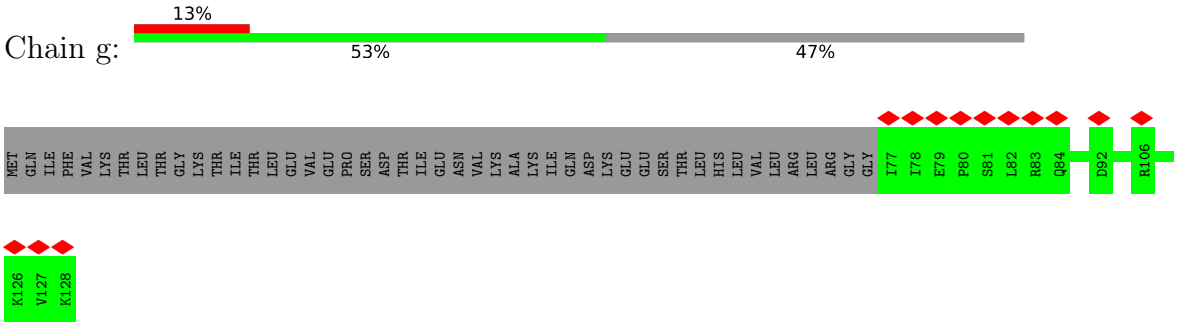
• Molecule 40: 60S ribosomal protein L39

Chain f:



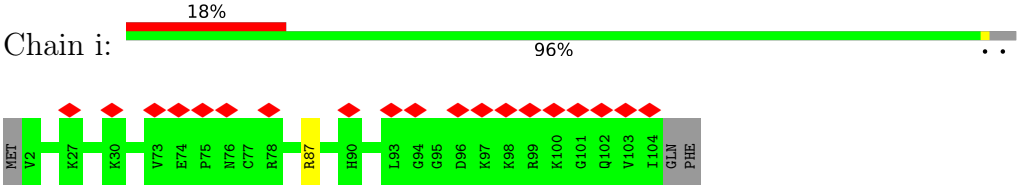
• Molecule 41: Ubiquitin-60S ribosomal protein L40

Chain g:



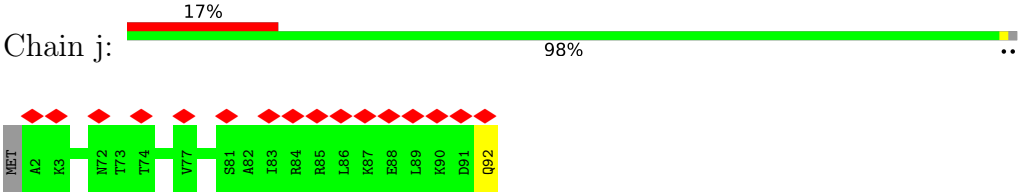
• Molecule 42: 60S ribosomal protein L36a

Chain i:



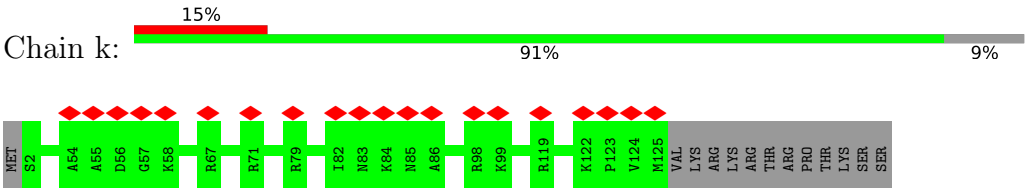
• Molecule 43: 60S ribosomal protein L37a

Chain j:



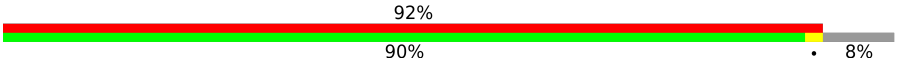
• Molecule 44: 60S ribosomal protein L28

Chain k:



• Molecule 45: Eukaryotic translation initiation factor 6

Chain h:



M1 A2 V3 R4 A5 S6 F7 E8 N9 N10 C11 E12 I13 G14 C15 F16 A17 K18 L19 T20 N21 T22 Y23 C24 L25 V26 A27 I28 G29 G30 S31 E32 N33 F34 Y35 S36 V37 F38 E39 G40 E41 L42 S43 D44 T45 I46 P47 V48 V49 H50 A51 S52 I53 A54 G55 C56 R57 I58 I59 G60

R61 M62 C63 V64 G65 N66 R67 H68 G69 L70 L71 V72 P73 N74 N75 T76 T77 D78 Q79 E80 L81 Q82 H83 I84 R85 N86 S87 L88 P89 D90 T91 V92 Q93 I94 R95 R96 V97 E98 E99 R100 L101 S102 A103 L104 G105 N106 V107 T108 T109 C110 N111 D112 Y113 V114 A115 L116 V117 H118 P119 D120

L121 D122 R123 E124 T125 E126 E127 I128 L129 A130 D131 V132 L133 K134 V135 E136 V137 F138 R139 Q140 T141 V142 A143 D144 Q145 V146 L147 V148 G149 S150 Y151 C152 V153 F154 S155 N156 Q157 G158 G159 L160 V161 H162 P163 K164 T165 S166 I167 E168 D169 Q170 D171 E172 L173 S174 S175 L176 L177 Q178 V179 P180

L181 V182 A183 G184 T185 V186 N187 R188 G189 S190 E191 V192 I193 A194 A195 G196 M197 V198 V199 N200 D201 W202 C203 A204 F205 C206 G207 L208 D209 T210 T211 S212 T213 E214 L215 S216 V217 V218 E219 S220 V221 F222 K223 L224 W225 GLU ALA GLN PRO SER THR ILE ALA THR SER MET ARG ASP SER LEU

ILE ASP SER LEU THR

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	1088709	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 ($e^-/Å^2$)	51	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.602	Depositor
Minimum map value	-0.207	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.009	Depositor
Recommended contour level	0.07	Depositor
Map size (Å)	424.448, 424.448, 424.448	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.829, 0.829, 0.829	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: HMT, NA, UR3, MG, 5MC, PSU, A2M, OMC, OMG, 1MA, EPE, 6MZ, OMU, SPM, K, ZN

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	A	0.81	10/76619 (0.0%)	1.32	313/119498 (0.3%)
2	B	0.75	0/2858	1.27	7/4455 (0.2%)
3	C	0.78	0/3450	1.33	15/5372 (0.3%)
4	D	0.57	0/1925	0.85	0/2581
5	E	0.58	0/3265	0.79	0/4369
6	F	0.58	0/2909	0.82	0/3908
7	G	0.60	0/2352	0.76	0/3152
8	H	0.60	0/1791	0.75	0/2403
9	m	0.56	0/1789	0.80	1/2388 (0.0%)
10	n	0.60	0/1840	0.79	1/2476 (0.0%)
11	o	0.59	0/1537	0.78	0/2066
12	p	0.58	0/1692	0.77	0/2258
13	q	0.62	0/1381	0.78	0/1848
14	r	0.59	0/1695	0.82	1/2270 (0.0%)
15	s	0.57	0/1161	0.76	0/1554
16	l	0.57	0/1753	0.89	0/2348
17	I	0.56	0/1666	0.83	1/2228 (0.0%)
18	J	0.58	0/1259	0.81	0/1689
19	K	0.58	0/1537	0.90	1/2052 (0.0%)
20	L	0.59	0/1320	0.79	1/1749 (0.1%)
21	M	0.55	0/1501	0.80	0/2013
22	N	0.58	0/1326	0.80	0/1770
23	O	0.64	0/818	0.81	0/1098
24	P	0.59	0/999	0.81	0/1340
25	Q	0.58	0/532	0.76	0/708
26	R	0.57	0/993	0.73	0/1334
27	S	0.59	0/1132	0.81	0/1504
28	T	0.60	0/1130	0.80	0/1507
29	U	0.57	0/1191	0.83	0/1591
30	V	0.62	0/786	0.88	2/1038 (0.2%)
31	W	0.62	0/783	0.75	0/1052
32	X	0.57	0/883	0.81	0/1190

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	Y	0.59	0/1071	0.86	2/1429 (0.1%)
34	Z	0.55	0/901	0.81	0/1206
35	a	0.61	0/855	0.85	0/1140
36	b	0.59	0/1023	0.80	1/1351 (0.1%)
37	c	0.59	0/843	0.86	0/1115
38	d	0.61	0/732	0.92	0/968
39	e	0.62	0/575	0.79	0/761
40	f	0.58	0/454	0.83	0/599
41	g	0.63	0/435	0.81	0/575
42	i	0.60	0/855	0.86	0/1128
43	j	0.65	0/718	0.80	0/953
44	k	0.58	0/1007	0.82	0/1351
45	h	0.70	0/1736	0.79	0/2362
All	All	0.73	10/137078 (0.0%)	1.17	346/201747 (0.2%)

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
1	A	0	16
3	C	0	1
All	All	0	17

The worst 5 of 10 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	4291	G	P-O5'	6.95	1.66	1.59
1	A	4633	G	P-O5'	-6.86	1.52	1.59
1	A	2090	U	P-O5'	6.08	1.65	1.59
1	A	1723	A	P-O5'	5.84	1.65	1.59
1	A	347	A	P-O5'	5.45	1.65	1.59

The worst 5 of 346 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	417	G	O4'-C1'-N9	12.12	117.89	108.20
1	A	1925	G	O5'-P-OP2	-11.77	95.11	105.70
1	A	1947	U	P-O3'-C3'	-10.87	106.66	119.70
1	A	73	A	O5'-P-OP1	-10.40	96.34	105.70
1	A	3776	G	O4'-C1'-N9	9.95	116.16	108.20

There are no chirality outliers.

5 of 17 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	292	G	Sidechain
1	A	307	A	Sidechain
1	A	369	G	Sidechain
1	A	417	G	Sidechain
1	A	93	G	Sidechain

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	70928	0	35879	138	0
2	B	2558	0	1295	3	0
3	C	3153	0	1603	15	0
4	D	1887	0	1983	6	0
5	E	3194	0	3336	14	0
6	F	2855	0	3021	13	0
7	G	2308	0	2318	3	0
8	H	1757	0	1910	2	0
9	m	1755	0	1859	0	0
10	n	1809	0	1941	0	0
11	o	1518	0	1600	0	0
12	p	1654	0	1705	0	0
13	q	1358	0	1388	0	0
14	r	1664	0	1773	0	0
15	s	1138	0	1204	0	0
16	l	1708	0	1756	0	0
17	I	1634	0	1779	1	0
18	J	1233	0	1263	5	0
19	K	1513	0	1628	3	0
20	L	1304	0	1433	0	0
21	M	1461	0	1502	6	0
22	N	1298	0	1366	4	0
23	O	804	0	825	1	0
24	P	985	0	1044	2	0
25	Q	519	0	533	1	0
26	R	976	0	1053	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
27	S	1115	0	1205	1	0
28	T	1107	0	1182	1	0
29	U	1162	0	1213	2	0
30	V	773	0	828	2	0
31	W	772	0	808	4	0
32	X	868	0	913	2	0
33	Y	1053	0	1147	5	0
34	Z	879	0	917	3	0
35	a	845	0	933	0	0
36	b	1015	0	1148	0	0
37	c	832	0	917	0	0
38	d	713	0	746	0	0
39	e	569	0	637	0	0
40	f	444	0	482	0	0
41	g	429	0	465	0	0
42	i	842	0	912	0	0
43	j	708	0	756	0	0
44	k	992	0	1052	0	0
45	h	1712	0	1689	0	0
46	A	214	0	0	0	0
46	B	3	0	0	0	0
46	C	6	0	0	0	0
46	J	1	0	0	0	0
46	L	2	0	0	0	0
46	P	1	0	0	0	0
46	U	1	0	0	0	0
46	d	1	0	0	0	0
47	A	139	0	0	0	0
47	B	1	0	0	0	0
47	D	3	0	0	0	0
47	J	1	0	0	0	0
47	N	1	0	0	0	0
47	V	1	0	0	0	0
47	Y	1	0	0	0	0
47	Z	1	0	0	0	0
47	a	1	0	0	0	0
47	f	1	0	0	0	0
47	i	1	0	0	0	0
47	l	2	0	0	0	0
47	o	1	0	0	0	0
47	p	1	0	0	0	0
48	A	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
49	A	39	0	39	1	0
50	A	14	0	26	0	0
51	A	15	0	17	0	0
52	a	1	0	0	0	0
52	d	1	0	0	0	0
52	g	1	0	0	0	0
52	i	1	0	0	0	0
52	j	1	0	0	0	0
53	A	8641	0	0	9	0
53	B	261	0	0	0	0
53	C	363	0	0	1	0
53	D	131	0	0	1	0
53	E	177	0	0	0	0
53	F	202	0	0	3	0
53	G	67	0	0	0	0
53	H	49	0	0	0	0
53	I	117	0	0	0	0
53	J	63	0	0	0	0
53	K	139	0	0	0	0
53	L	57	0	0	0	0
53	M	100	0	0	2	0
53	N	87	0	0	1	0
53	O	5	0	0	0	0
53	P	40	0	0	0	0
53	Q	21	0	0	0	0
53	R	35	0	0	0	0
53	S	49	0	0	0	0
53	T	13	0	0	0	0
53	U	92	0	0	0	0
53	V	39	0	0	0	0
53	W	9	0	0	0	0
53	X	37	0	0	0	0
53	Y	112	0	0	0	0
53	Z	72	0	0	2	0
53	a	58	0	0	0	0
53	b	29	0	0	0	0
53	c	32	0	0	0	0
53	d	62	0	0	0	0
53	e	3	0	0	0	0
53	f	19	0	0	0	0
53	g	14	0	0	0	0
53	i	52	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
53	j	40	0	0	0	0
53	k	78	0	0	0	0
53	l	155	0	0	0	0
53	m	131	0	0	0	0
53	n	46	0	0	0	0
53	o	43	0	0	0	0
53	p	81	0	0	0	0
53	q	13	0	0	0	0
53	r	101	0	0	0	0
53	s	38	0	0	0	0
All	All	142233	0	95029	215	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 1.

The worst 5 of 215 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1721:G:N2	1:A:1841:C:O2	1.87	1.08
34:Z:95:LYS:NZ	53:Z:301:HOH:O	1.81	1.08
1:A:1721:G:N2	1:A:1841:C:C2	2.26	1.03
21:M:70:LYS:NZ	53:M:201:HOH:O	1.94	1.01
1:A:5028:G:O2'	1:A:5029:C:O5'	1.91	0.86

There are no symmetry-related clashes.

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	D	244/257 (95%)	240 (98%)	4 (2%)	0	100	100
5	E	394/403 (98%)	389 (99%)	5 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
6	F	357/427 (84%)	350 (98%)	7 (2%)	0	100	100
7	G	281/297 (95%)	279 (99%)	2 (1%)	0	100	100
8	H	213/288 (74%)	209 (98%)	4 (2%)	0	100	100
9	m	210/248 (85%)	206 (98%)	4 (2%)	0	100	100
10	n	219/266 (82%)	214 (98%)	5 (2%)	0	100	100
11	o	188/192 (98%)	183 (97%)	5 (3%)	0	100	100
12	p	200/214 (94%)	198 (99%)	2 (1%)	0	100	100
13	q	168/178 (94%)	166 (99%)	2 (1%)	0	100	100
14	r	204/211 (97%)	202 (99%)	2 (1%)	0	100	100
15	s	137/220 (62%)	136 (99%)	1 (1%)	0	100	100
16	l	202/204 (99%)	198 (98%)	4 (2%)	0	100	100
17	I	197/203 (97%)	194 (98%)	3 (2%)	0	100	100
18	J	150/184 (82%)	148 (99%)	2 (1%)	0	100	100
19	K	185/188 (98%)	181 (98%)	4 (2%)	0	100	100
20	L	155/196 (79%)	155 (100%)	0	0	100	100
21	M	174/176 (99%)	172 (99%)	2 (1%)	0	100	100
22	N	157/160 (98%)	153 (98%)	4 (2%)	0	100	100
23	O	97/128 (76%)	93 (96%)	3 (3%)	1 (1%)	15	3
24	P	130/140 (93%)	128 (98%)	2 (2%)	0	100	100
25	Q	60/157 (38%)	59 (98%)	1 (2%)	0	100	100
26	R	117/156 (75%)	116 (99%)	1 (1%)	0	100	100
27	S	132/145 (91%)	130 (98%)	2 (2%)	0	100	100
28	T	133/136 (98%)	130 (98%)	3 (2%)	0	100	100
29	U	145/148 (98%)	140 (97%)	4 (3%)	1 (1%)	22	8
30	V	90/159 (57%)	86 (96%)	4 (4%)	0	100	100
31	W	98/115 (85%)	98 (100%)	0	0	100	100
32	X	104/125 (83%)	103 (99%)	1 (1%)	0	100	100
33	Y	126/135 (93%)	125 (99%)	1 (1%)	0	100	100
34	Z	108/110 (98%)	108 (100%)	0	0	100	100
35	a	104/117 (89%)	102 (98%)	2 (2%)	0	100	100
36	b	120/196 (61%)	119 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
37	c	100/105 (95%)	97 (97%)	3 (3%)	0	100	100
38	d	85/97 (88%)	84 (99%)	1 (1%)	0	100	100
39	e	67/70 (96%)	66 (98%)	1 (2%)	0	100	100
40	f	48/51 (94%)	48 (100%)	0	0	100	100
41	g	50/99 (50%)	50 (100%)	0	0	100	100
42	i	101/106 (95%)	100 (99%)	1 (1%)	0	100	100
43	j	89/92 (97%)	84 (94%)	5 (6%)	0	100	100
44	k	122/137 (89%)	121 (99%)	1 (1%)	0	100	100
45	h	223/245 (91%)	215 (96%)	7 (3%)	1 (0%)	34	17
All	All	6484/7481 (87%)	6375 (98%)	106 (2%)	3 (0%)	100	100

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
23	O	67	LYS
29	U	15	VAL
45	h	58	ILE

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	D	189/199 (95%)	187 (99%)	2 (1%)	73	61
5	E	345/349 (99%)	343 (99%)	2 (1%)	86	79
6	F	297/348 (85%)	295 (99%)	2 (1%)	84	76
7	G	237/250 (95%)	234 (99%)	3 (1%)	69	54
8	H	193/252 (77%)	192 (100%)	1 (0%)	88	83
9	m	182/215 (85%)	182 (100%)	0	100	100
10	n	193/223 (86%)	190 (98%)	3 (2%)	62	46
11	o	169/171 (99%)	168 (99%)	1 (1%)	86	79

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
12	p	174/181 (96%)	172 (99%)	2 (1%)	73 61
13	q	142/149 (95%)	141 (99%)	1 (1%)	84 76
14	r	172/177 (97%)	170 (99%)	2 (1%)	71 57
15	s	118/161 (73%)	118 (100%)	0	100 100
16	l	172/172 (100%)	171 (99%)	1 (1%)	86 79
17	I	171/174 (98%)	171 (100%)	0	100 100
18	J	133/163 (82%)	131 (98%)	2 (2%)	65 48
19	K	164/165 (99%)	164 (100%)	0	100 100
20	L	138/175 (79%)	137 (99%)	1 (1%)	84 76
21	M	157/157 (100%)	156 (99%)	1 (1%)	86 79
22	N	139/140 (99%)	137 (99%)	2 (1%)	67 51
23	O	88/115 (76%)	86 (98%)	2 (2%)	50 30
24	P	102/107 (95%)	101 (99%)	1 (1%)	76 65
25	Q	54/126 (43%)	54 (100%)	0	100 100
26	R	107/133 (80%)	106 (99%)	1 (1%)	78 69
27	S	124/135 (92%)	123 (99%)	1 (1%)	81 72
28	T	117/118 (99%)	115 (98%)	2 (2%)	60 43
29	U	120/121 (99%)	120 (100%)	0	100 100
30	V	79/126 (63%)	78 (99%)	1 (1%)	69 54
31	W	84/97 (87%)	84 (100%)	0	100 100
32	X	93/110 (84%)	93 (100%)	0	100 100
33	Y	114/121 (94%)	114 (100%)	0	100 100
34	Z	89/89 (100%)	89 (100%)	0	100 100
35	a	92/100 (92%)	91 (99%)	1 (1%)	73 61
36	b	109/153 (71%)	108 (99%)	1 (1%)	78 69
37	c	86/89 (97%)	81 (94%)	5 (6%)	20 5
38	d	74/80 (92%)	73 (99%)	1 (1%)	67 51
39	e	64/65 (98%)	64 (100%)	0	100 100
40	f	47/48 (98%)	46 (98%)	1 (2%)	53 33
41	g	48/91 (53%)	48 (100%)	0	100 100
42	i	91/94 (97%)	90 (99%)	1 (1%)	73 61

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
43	j	74/75 (99%)	73 (99%)	1 (1%)	67 51
44	k	107/121 (88%)	107 (100%)	0	100 100
45	h	195/213 (92%)	192 (98%)	3 (2%)	65 48
All	All	5643/6348 (89%)	5595 (99%)	48 (1%)	79 69

5 of 48 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
24	P	48	ARG
36	b	113	LEU
26	R	156	ILE
28	T	102	ARG
37	c	18	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 8 such sidechains are listed below:

Mol	Chain	Res	Type
43	j	56	HIS
29	U	60	HIS
19	K	45	GLN
16	l	29	GLN
24	P	135	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	3278/5069 (64%)	510 (15%)	71 (2%)
2	B	119/121 (98%)	8 (6%)	0
3	C	146/157 (92%)	20 (13%)	2 (1%)
All	All	3543/5347 (66%)	538 (15%)	73 (2%)

5 of 538 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	2	G
1	A	39	A
1	A	42	A
1	A	43	U
1	A	48	G

5 of 73 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	4116	C
3	C	51	U
1	A	4266	G
1	A	4870	G
1	A	1501	C

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

117 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	OMG	A	1316	47,1	18,26,27	1.01	1 (5%)	19,38,41	1.24	2 (10%)
1	A2M	A	2401	46,1	18,25,26	0.83	0	18,36,39	1.81	4 (22%)
1	OMC	A	2422	46,1	19,22,23	1.12	2 (10%)	26,31,34	0.84	1 (3%)
1	5MC	A	3782	46,1	18,22,23	1.11	1 (5%)	26,32,35	1.29	4 (15%)
1	PSU	A	4299	1	18,21,22	1.40	4 (22%)	22,30,33	2.36	5 (22%)
1	PSU	A	3853	46,1	18,21,22	1.28	3 (16%)	22,30,33	2.33	5 (22%)
1	PSU	A	1792	47,1	18,21,22	1.44	3 (16%)	22,30,33	2.29	7 (31%)
1	OMU	A	4306	1	19,22,23	1.28	3 (15%)	26,31,34	1.78	6 (23%)
1	PSU	A	4493	47,1	18,21,22	1.31	2 (11%)	22,30,33	2.34	6 (27%)
1	OMC	A	2824	1	19,22,23	0.89	0	26,31,34	0.97	1 (3%)
1	PSU	A	3844	1	18,21,22	1.39	3 (16%)	22,30,33	2.32	5 (22%)
1	PSU	A	4353	47,1	18,21,22	1.53	3 (16%)	22,30,33	2.37	5 (22%)
1	PSU	A	4361	47,1	18,21,22	1.77	4 (22%)	22,30,33	2.12	5 (22%)
1	OMC	A	3841	1	19,22,23	0.75	0	26,31,34	1.13	2 (7%)
1	A2M	A	4590	1	18,25,26	0.76	0	18,36,39	1.74	3 (16%)
1	PSU	A	3884	47,1	18,21,22	1.23	3 (16%)	22,30,33	2.05	4 (18%)
1	PSU	A	1781	1	18,21,22	1.43	2 (11%)	22,30,33	2.13	5 (22%)
1	PSU	A	3851	1	18,21,22	1.31	3 (16%)	22,30,33	2.35	6 (27%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
1	A2M	A	2363	46,1	18,25,26	0.76	0	18,36,39	1.95	5 (27%)
1	OMU	A	4620	1	19,22,23	1.15	2 (10%)	26,31,34	2.18	6 (23%)
1	PSU	A	1860	1	18,21,22	1.37	3 (16%)	22,30,33	2.15	6 (27%)
1	PSU	A	2508	1	18,21,22	1.32	3 (16%)	22,30,33	1.99	6 (27%)
1	OMG	A	2424	1	18,26,27	1.23	1 (5%)	19,38,41	1.22	2 (10%)
1	PSU	A	4312	1	18,21,22	1.44	2 (11%)	22,30,33	2.16	4 (18%)
1	PSU	A	3920	46,1	18,21,22	1.28	1 (5%)	22,30,33	2.05	5 (22%)
1	PSU	A	3639	1	18,21,22	1.39	2 (11%)	22,30,33	2.14	3 (13%)
1	OMC	A	4456	1	19,22,23	0.85	0	26,31,34	0.85	1 (3%)
1	PSU	A	4293	1	18,21,22	1.47	3 (16%)	22,30,33	2.08	6 (27%)
1	PSU	A	4576	47,1	18,21,22	1.35	3 (16%)	22,30,33	2.18	5 (22%)
3	PSU	C	55	3	18,21,22	1.23	3 (16%)	22,30,33	1.93	5 (22%)
1	OMC	A	2365	46,1	19,22,23	1.01	1 (5%)	26,31,34	1.06	2 (7%)
1	PSU	A	5010	1	18,21,22	1.28	2 (11%)	22,30,33	1.94	5 (22%)
1	PSU	A	1677	47,1	18,21,22	1.66	3 (16%)	22,30,33	2.41	6 (27%)
1	A2M	A	2787	46,1	18,25,26	1.04	1 (5%)	18,36,39	2.03	9 (50%)
1	A2M	A	3724	1	18,25,26	1.02	2 (11%)	18,36,39	1.39	2 (11%)
1	PSU	A	3637	47,1	18,21,22	1.31	3 (16%)	22,30,33	2.29	4 (18%)
1	OMG	A	3899	1	18,26,27	0.98	0	19,38,41	1.39	3 (15%)
1	A2M	A	398	1	18,25,26	1.23	3 (16%)	18,36,39	1.62	3 (16%)
1	PSU	A	4532	47,1	18,21,22	1.50	3 (16%)	22,30,33	2.33	6 (27%)
1	A2M	A	1871	46,1	18,25,26	0.65	0	18,36,39	1.79	4 (22%)
1	OMC	A	3701	47,1	19,22,23	0.93	0	26,31,34	1.45	4 (15%)
1	OMC	A	3869	1	19,22,23	0.84	1 (5%)	26,31,34	1.21	4 (15%)
1	PSU	A	4628	1	18,21,22	1.40	4 (22%)	22,30,33	2.35	5 (22%)
1	A2M	A	3718	1	18,25,26	0.97	1 (5%)	18,36,39	1.37	2 (11%)
1	OMC	A	4536	46,1	19,22,23	0.85	0	26,31,34	0.89	1 (3%)
1	PSU	A	4420	1	18,21,22	1.35	2 (11%)	22,30,33	1.99	5 (22%)
1	PSU	A	4471	47,1	18,21,22	1.53	3 (16%)	22,30,33	1.92	4 (18%)
1	OMG	A	1522	1	18,26,27	0.97	0	19,38,41	1.09	0
1	A2M	A	1534	46,1	18,25,26	1.08	3 (16%)	18,36,39	1.70	5 (27%)
1	OMU	A	3925	1	19,22,23	1.16	2 (10%)	26,31,34	1.92	5 (19%)
1	6MZ	A	4220	1	18,25,26	1.12	0	16,36,39	2.35	4 (25%)
1	A2M	A	1524	1	18,25,26	1.02	0	18,36,39	1.61	3 (16%)
1	A2M	A	3830	1	18,25,26	0.97	1 (5%)	18,36,39	1.65	6 (33%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
1	OMG	A	2364	1	18,26,27	1.14	2 (11%)	19,38,41	1.29	2 (10%)
1	A2M	A	2815	47,1	18,25,26	0.92	0	18,36,39	1.31	2 (11%)
1	A2M	A	1326	1	18,25,26	1.00	0	18,36,39	1.90	4 (22%)
1	PSU	A	4423	1	18,21,22	1.29	3 (16%)	22,30,33	1.88	3 (13%)
1	OMG	A	4637	47,1	18,26,27	1.05	1 (5%)	19,38,41	1.21	2 (10%)
1	PSU	A	4552	1	18,21,22	1.53	3 (16%)	22,30,33	2.25	6 (27%)
1	PSU	A	4689	1	18,21,22	1.26	3 (16%)	22,30,33	2.19	4 (18%)
1	PSU	A	1582	47,1	18,21,22	1.85	5 (27%)	22,30,33	2.12	5 (22%)
1	UR3	A	4530	1	19,22,23	0.92	1 (5%)	26,32,35	1.64	4 (15%)
1	5MC	A	4447	47,1	18,22,23	1.00	1 (5%)	26,32,35	1.51	5 (19%)
1	OMG	A	4499	1	18,26,27	1.03	1 (5%)	19,38,41	1.46	3 (15%)
1	PSU	A	4579	1	18,21,22	1.45	3 (16%)	22,30,33	2.09	4 (18%)
1	A2M	A	3785	1	18,25,26	1.01	1 (5%)	18,36,39	1.67	5 (27%)
1	A2M	A	3867	1	18,25,26	1.01	1 (5%)	18,36,39	1.49	2 (11%)
1	PSU	A	1862	1	18,21,22	1.49	3 (16%)	22,30,33	2.51	4 (18%)
1	A2M	A	4523	46,1	18,25,26	0.83	0	18,36,39	1.63	4 (22%)
1	PSU	A	1536	1	18,21,22	1.44	2 (11%)	22,30,33	2.31	4 (18%)
3	PSU	C	69	3	18,21,22	1.53	3 (16%)	22,30,33	2.20	5 (22%)
1	PSU	A	4521	47,46,1	18,21,22	1.49	3 (16%)	22,30,33	2.40	7 (31%)
1	PSU	A	1782	1	18,21,22	1.60	3 (16%)	22,30,33	2.06	5 (22%)
1	PSU	A	4296	1	18,21,22	1.41	3 (16%)	22,30,33	2.07	5 (22%)
1	PSU	A	4673	47,1	18,21,22	1.15	3 (16%)	22,30,33	1.81	3 (13%)
1	OMG	A	3627	1	18,26,27	1.09	1 (5%)	19,38,41	1.24	2 (10%)
1	PSU	A	1683	47,1	18,21,22	1.39	3 (16%)	22,30,33	2.34	6 (27%)
1	OMG	A	4392	1	18,26,27	1.02	1 (5%)	19,38,41	1.25	3 (15%)
1	OMU	A	2837	1	19,22,23	1.31	2 (10%)	26,31,34	2.02	7 (26%)
1	OMC	A	3887	1	19,22,23	0.85	1 (5%)	26,31,34	1.24	2 (7%)
1	OMG	A	4370	1	18,26,27	0.87	1 (5%)	19,38,41	1.14	2 (10%)
1	OMU	A	4498	47,1	19,22,23	1.27	3 (15%)	26,31,34	2.31	7 (26%)
3	OMG	C	75	3	18,26,27	0.91	1 (5%)	19,38,41	1.31	4 (21%)
1	PSU	A	3729	1	18,21,22	1.45	4 (22%)	22,30,33	1.95	4 (18%)
1	OMC	A	2804	1	19,22,23	0.86	1 (5%)	26,31,34	0.99	1 (3%)
1	1MA	A	1322	46,1	16,25,26	1.15	2 (12%)	18,37,40	1.37	2 (11%)
1	OMG	A	4623	1	18,26,27	0.98	1 (5%)	19,38,41	1.23	2 (10%)
1	PSU	A	5001	47,1	18,21,22	1.46	3 (16%)	22,30,33	2.37	4 (18%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
1	PSU	A	4500	1	18,21,22	1.44	4 (22%)	22,30,33	2.21	5 (22%)
1	A2M	A	400	1	18,25,26	1.12	2 (11%)	18,36,39	1.66	3 (16%)
1	OMG	A	4618	47,1	18,26,27	0.88	0	19,38,41	1.30	4 (21%)
1	PSU	A	4972	47,1	18,21,22	1.31	2 (11%)	22,30,33	2.42	6 (27%)
1	OMU	A	3818	47,1	19,22,23	1.35	3 (15%)	26,31,34	1.98	6 (23%)
1	OMG	A	4494	1	18,26,27	1.14	1 (5%)	19,38,41	1.25	1 (5%)
1	PSU	A	2839	1	18,21,22	1.41	3 (16%)	22,30,33	1.95	7 (31%)
1	PSU	A	3695	47,1	18,21,22	1.34	2 (11%)	22,30,33	2.08	6 (27%)
1	OMC	A	1340	1	19,22,23	0.92	1 (5%)	26,31,34	1.05	0
1	PSU	A	4442	1	18,21,22	1.44	2 (11%)	22,30,33	2.18	6 (27%)
1	OMC	A	3808	1	19,22,23	0.80	1 (5%)	26,31,34	0.97	1 (3%)
1	PSU	A	2632	1	18,21,22	1.46	3 (16%)	22,30,33	2.12	5 (22%)
1	OMG	A	3792	1	18,26,27	0.90	0	19,38,41	1.12	2 (10%)
1	OMC	A	2351	46,1	19,22,23	0.77	0	26,31,34	1.45	2 (7%)
1	OMU	A	2415	1	19,22,23	1.33	2 (10%)	26,31,34	1.85	8 (30%)
1	PSU	A	4431	47,1	18,21,22	1.44	3 (16%)	22,30,33	2.41	7 (31%)
1	PSU	A	3715	1	18,21,22	1.29	2 (11%)	22,30,33	2.05	4 (18%)
1	A2M	A	3825	1	18,25,26	0.84	0	18,36,39	1.46	4 (22%)
1	PSU	A	4403	47,1	18,21,22	1.64	2 (11%)	22,30,33	2.18	5 (22%)
1	A2M	A	4571	1	18,25,26	1.04	0	18,36,39	1.50	3 (16%)
1	PSU	A	4457	1	18,21,22	1.37	3 (16%)	22,30,33	2.31	5 (22%)
1	OMU	A	4227	1	19,22,23	1.24	3 (15%)	26,31,34	1.84	5 (19%)
1	OMG	A	3744	1	18,26,27	0.80	0	19,38,41	1.15	2 (10%)
1	OMG	A	4228	1	18,26,27	1.02	1 (5%)	19,38,41	1.54	4 (21%)
1	PSU	A	1744	47,1	18,21,22	1.38	2 (11%)	22,30,33	2.10	4 (18%)
1	OMG	A	1625	47,1	18,26,27	1.22	1 (5%)	19,38,41	1.59	4 (21%)
1	OMC	A	2861	1	19,22,23	0.93	2 (10%)	26,31,34	0.86	0
1	OMG	A	2876	1	18,26,27	1.05	1 (5%)	19,38,41	1.43	4 (21%)
1	OMG	A	4196	46,1	18,26,27	1.07	1 (5%)	19,38,41	1.34	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
1	OMG	A	1316	47,1	-	0/5/27/28	0/3/3/3
1	A2M	A	2401	46,1	-	1/5/27/28	0/3/3/3
1	OMC	A	2422	46,1	-	2/9/27/28	0/2/2/2
1	5MC	A	3782	46,1	-	0/7/25/26	0/2/2/2
1	PSU	A	4299	1	-	0/7/25/26	0/2/2/2
1	PSU	A	3853	46,1	-	0/7/25/26	0/2/2/2
1	PSU	A	1792	47,1	-	0/7/25/26	0/2/2/2
1	OMU	A	4306	1	-	0/9/27/28	0/2/2/2
1	PSU	A	4493	47,1	-	0/7/25/26	0/2/2/2
1	OMC	A	2824	1	-	0/9/27/28	0/2/2/2
1	PSU	A	3844	1	-	1/7/25/26	0/2/2/2
1	PSU	A	4353	47,1	-	0/7/25/26	0/2/2/2
1	PSU	A	4361	47,1	-	0/7/25/26	0/2/2/2
1	OMC	A	3841	1	-	0/9/27/28	0/2/2/2
1	A2M	A	4590	1	-	1/5/27/28	0/3/3/3
1	PSU	A	3884	47,1	-	0/7/25/26	0/2/2/2
1	PSU	A	1781	1	-	0/7/25/26	0/2/2/2
1	PSU	A	3851	1	-	0/7/25/26	0/2/2/2
1	A2M	A	2363	46,1	-	1/5/27/28	0/3/3/3
1	OMU	A	4620	1	-	0/9/27/28	0/2/2/2
1	PSU	A	1860	1	-	0/7/25/26	0/2/2/2
1	PSU	A	2508	1	-	0/7/25/26	0/2/2/2
1	OMG	A	2424	1	-	0/5/27/28	0/3/3/3
1	PSU	A	4312	1	-	0/7/25/26	0/2/2/2
1	PSU	A	3920	46,1	-	0/7/25/26	0/2/2/2
1	PSU	A	3639	1	-	0/7/25/26	0/2/2/2
1	OMC	A	4456	1	-	0/9/27/28	0/2/2/2
1	PSU	A	4293	1	-	0/7/25/26	0/2/2/2
1	PSU	A	4576	47,1	-	0/7/25/26	0/2/2/2
3	PSU	C	55	3	-	0/7/25/26	0/2/2/2
1	OMC	A	2365	46,1	-	0/9/27/28	0/2/2/2
1	PSU	A	5010	1	-	0/7/25/26	0/2/2/2
1	PSU	A	1677	47,1	-	1/7/25/26	0/2/2/2
1	A2M	A	2787	46,1	-	0/5/27/28	0/3/3/3
1	A2M	A	3724	1	-	0/5/27/28	0/3/3/3
1	PSU	A	3637	47,1	-	0/7/25/26	0/2/2/2
1	OMG	A	3899	1	-	0/5/27/28	0/3/3/3
1	A2M	A	398	1	-	0/5/27/28	0/3/3/3
1	PSU	A	4532	47,1	-	0/7/25/26	0/2/2/2
1	A2M	A	1871	46,1	-	0/5/27/28	0/3/3/3
1	OMC	A	3701	47,1	-	4/9/27/28	0/2/2/2
1	OMC	A	3869	1	-	0/9/27/28	0/2/2/2
1	PSU	A	4628	1	-	0/7/25/26	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	A2M	A	3718	1	-	0/5/27/28	0/3/3/3
1	OMC	A	4536	46,1	-	0/9/27/28	0/2/2/2
1	PSU	A	4420	1	-	0/7/25/26	0/2/2/2
1	PSU	A	4471	47,1	-	0/7/25/26	0/2/2/2
1	OMG	A	1522	1	-	0/5/27/28	0/3/3/3
1	A2M	A	1534	46,1	-	2/5/27/28	0/3/3/3
1	OMU	A	3925	1	-	0/9/27/28	0/2/2/2
1	6MZ	A	4220	1	-	0/5/27/28	0/3/3/3
1	A2M	A	1524	1	-	0/5/27/28	0/3/3/3
1	A2M	A	3830	1	-	0/5/27/28	0/3/3/3
1	OMG	A	2364	1	-	2/5/27/28	0/3/3/3
1	A2M	A	2815	47,1	-	0/5/27/28	0/3/3/3
1	A2M	A	1326	1	-	1/5/27/28	0/3/3/3
1	PSU	A	4423	1	-	0/7/25/26	0/2/2/2
1	OMG	A	4637	47,1	-	0/5/27/28	0/3/3/3
1	PSU	A	4552	1	-	0/7/25/26	0/2/2/2
1	PSU	A	4689	1	-	0/7/25/26	0/2/2/2
1	PSU	A	1582	47,1	-	0/7/25/26	0/2/2/2
1	UR3	A	4530	1	-	0/7/25/26	0/2/2/2
1	5MC	A	4447	47,1	-	4/7/25/26	0/2/2/2
1	OMG	A	4499	1	-	0/5/27/28	0/3/3/3
1	PSU	A	4579	1	-	0/7/25/26	0/2/2/2
1	A2M	A	3785	1	-	2/5/27/28	0/3/3/3
1	A2M	A	3867	1	-	0/5/27/28	0/3/3/3
1	PSU	A	1862	1	-	0/7/25/26	0/2/2/2
1	A2M	A	4523	46,1	-	0/5/27/28	0/3/3/3
1	PSU	A	1536	1	-	0/7/25/26	0/2/2/2
3	PSU	C	69	3	-	0/7/25/26	0/2/2/2
1	PSU	A	4521	47,46,1	-	0/7/25/26	0/2/2/2
1	PSU	A	1782	1	-	0/7/25/26	0/2/2/2
1	PSU	A	4296	1	-	0/7/25/26	0/2/2/2
1	PSU	A	4673	47,1	-	0/7/25/26	0/2/2/2
1	OMG	A	3627	1	-	0/5/27/28	0/3/3/3
1	PSU	A	1683	47,1	-	0/7/25/26	0/2/2/2
1	OMG	A	4392	1	-	0/5/27/28	0/3/3/3
1	OMU	A	2837	1	-	0/9/27/28	0/2/2/2
1	OMC	A	3887	1	-	0/9/27/28	0/2/2/2
1	OMG	A	4370	1	-	0/5/27/28	0/3/3/3
1	OMU	A	4498	47,1	-	0/9/27/28	0/2/2/2
3	OMG	C	75	3	-	0/5/27/28	0/3/3/3
1	PSU	A	3729	1	-	0/7/25/26	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	OMC	A	2804	1	-	0/9/27/28	0/2/2/2
1	1MA	A	1322	46,1	-	0/3/25/26	0/3/3/3
1	OMG	A	4623	1	-	0/5/27/28	0/3/3/3
1	PSU	A	5001	47,1	-	0/7/25/26	0/2/2/2
1	PSU	A	4500	1	-	1/7/25/26	0/2/2/2
1	A2M	A	400	1	-	0/5/27/28	0/3/3/3
1	OMG	A	4618	47,1	-	0/5/27/28	0/3/3/3
1	PSU	A	4972	47,1	-	0/7/25/26	0/2/2/2
1	OMU	A	3818	47,1	-	1/9/27/28	0/2/2/2
1	OMG	A	4494	1	-	1/5/27/28	0/3/3/3
1	PSU	A	2839	1	-	0/7/25/26	0/2/2/2
1	PSU	A	3695	47,1	-	0/7/25/26	0/2/2/2
1	OMC	A	1340	1	-	0/9/27/28	0/2/2/2
1	PSU	A	4442	1	-	0/7/25/26	0/2/2/2
1	OMC	A	3808	1	-	0/9/27/28	0/2/2/2
1	PSU	A	2632	1	-	0/7/25/26	0/2/2/2
1	OMG	A	3792	1	-	0/5/27/28	0/3/3/3
1	OMC	A	2351	46,1	-	1/9/27/28	0/2/2/2
1	OMU	A	2415	1	-	1/9/27/28	0/2/2/2
1	PSU	A	4431	47,1	-	0/7/25/26	0/2/2/2
1	PSU	A	3715	1	-	0/7/25/26	0/2/2/2
1	A2M	A	3825	1	-	0/5/27/28	0/3/3/3
1	PSU	A	4403	47,1	-	0/7/25/26	0/2/2/2
1	A2M	A	4571	1	-	0/5/27/28	0/3/3/3
1	PSU	A	4457	1	-	0/7/25/26	0/2/2/2
1	OMU	A	4227	1	-	0/9/27/28	0/2/2/2
1	OMG	A	3744	1	-	0/5/27/28	0/3/3/3
1	OMG	A	4228	1	-	0/5/27/28	0/3/3/3
1	PSU	A	1744	47,1	-	0/7/25/26	0/2/2/2
1	OMG	A	1625	47,1	-	0/5/27/28	0/3/3/3
1	OMC	A	2861	1	-	0/9/27/28	0/2/2/2
1	OMG	A	2876	1	-	0/5/27/28	0/3/3/3
1	OMG	A	4196	46,1	-	0/5/27/28	0/3/3/3

The worst 5 of 211 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	4403	PSU	C6-C5	4.87	1.41	1.35
1	A	4361	PSU	C6-C5	4.66	1.40	1.35
1	A	1782	PSU	C6-C5	4.21	1.40	1.35
1	A	4532	PSU	C6-C5	4.19	1.40	1.35
1	A	2632	PSU	C6-C5	4.15	1.40	1.35

The worst 5 of 473 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	4353	PSU	N1-C2-N3	7.77	123.94	115.13
1	A	1862	PSU	N1-C2-N3	7.45	123.57	115.13
1	A	5001	PSU	N1-C2-N3	7.41	123.53	115.13
1	A	4628	PSU	N1-C2-N3	7.17	123.26	115.13
1	A	4521	PSU	N1-C2-N3	7.15	123.23	115.13

There are no chirality outliers.

5 of 27 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	2415	OMU	C1'-C2'-O2'-CM2
1	A	3701	OMC	C2'-C1'-N1-C2
1	A	3701	OMC	C2'-C1'-N1-C6
1	A	4590	A2M	C4'-C5'-O5'-P
1	A	3785	A2M	O4'-C4'-C5'-O5'

There are no ring outliers.

15 monomers are involved in 17 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	4456	OMC	1	0
1	A	4293	PSU	1	0
1	A	2787	A2M	1	0
1	A	4220	6MZ	1	0
1	A	2364	OMG	1	0
1	A	1326	A2M	1	0
1	A	3867	A2M	2	0
1	A	4498	OMU	1	0
1	A	4500	PSU	1	0
1	A	3818	OMU	1	0
1	A	1340	OMC	1	0
1	A	2351	OMC	3	0
1	A	2415	OMU	1	0
1	A	4457	PSU	1	0
1	A	2876	OMG	1	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 394 ligands modelled in this entry, 391 are monoatomic - leaving 3 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	$\#\|Z\| > 2$
49	HMT	A	5455	-	40,43,43	0.62	0	41,66,66	0.67	0
51	EPE	A	5457	-	15,15,15	0.91	1 (6%)	18,20,20	1.89	2 (11%)
50	SPM	A	5456	-	13,13,13	0.22	0	12,12,12	0.24	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
49	HMT	A	5455	-	-	0/27/74/74	0/5/5/5
51	EPE	A	5457	-	-	1/9/19/19	0/1/1/1
50	SPM	A	5456	-	-	3/11/11/11	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
51	A	5457	EPE	O2S-S	3.20	1.54	1.45

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
51	A	5457	EPE	O2S-S-C10	-7.35	98.06	106.92
51	A	5457	EPE	O3S-S-O1S	2.76	118.01	111.27

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
50	A	5456	SPM	C2-C3-C4-N5

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Mol	Chain	Res	Type	Atoms
50	A	5456	SPM	C6-C7-C8-C9
51	A	5457	EPE	C9-C10-S-O3S
50	A	5456	SPM	C7-C6-N5-C4

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
49	A	5455	HMT	1	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

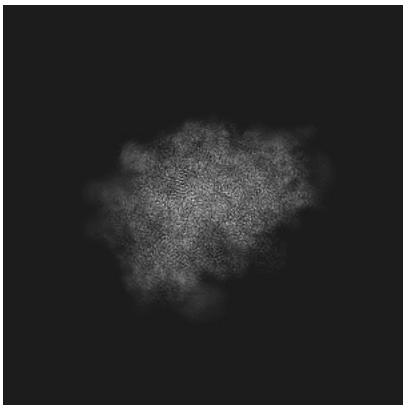
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-15113. These allow visual inspection of the internal detail of the map and identification of artifacts.

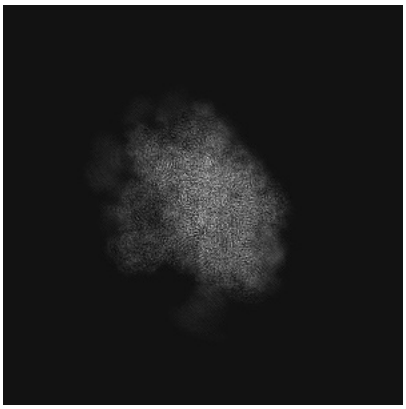
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

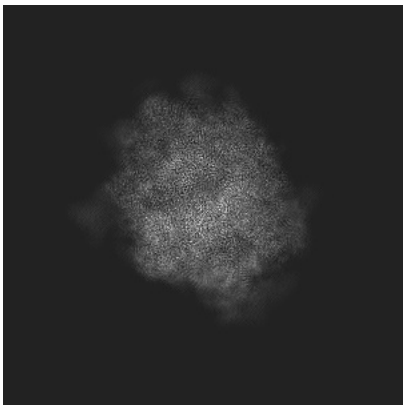
6.1.1 Primary map



X

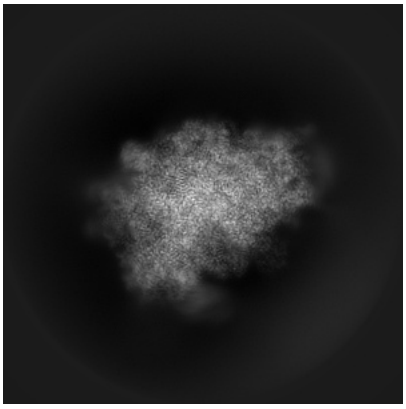


Y

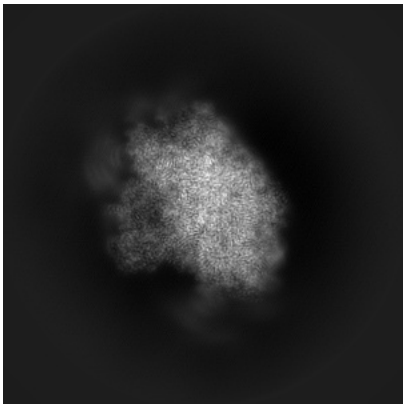


Z

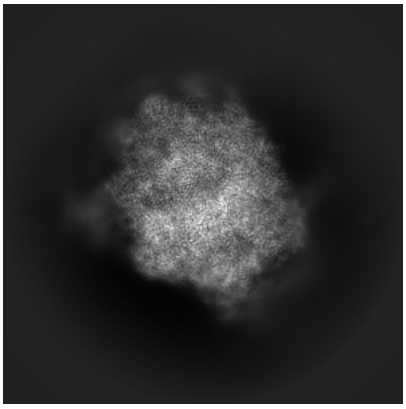
6.1.2 Raw map



X



Y

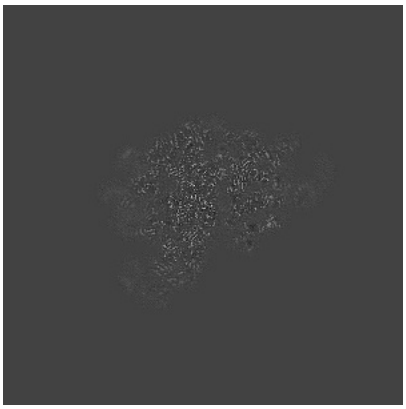


Z

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

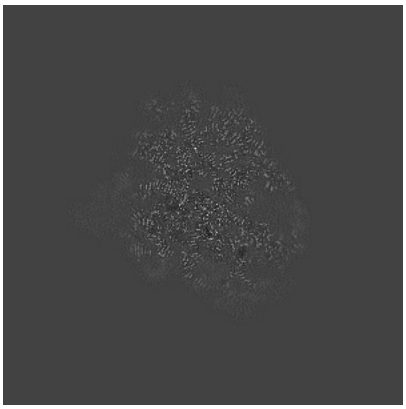
6.2 Central slices (i)

6.2.1 Primary map



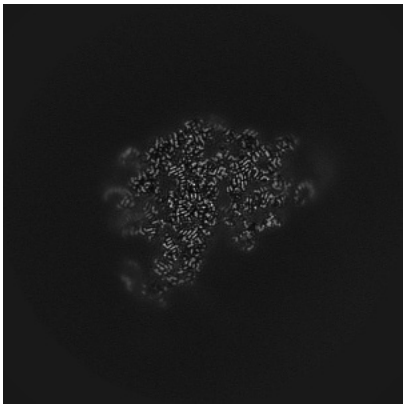
X Index: 256

Y Index: 256

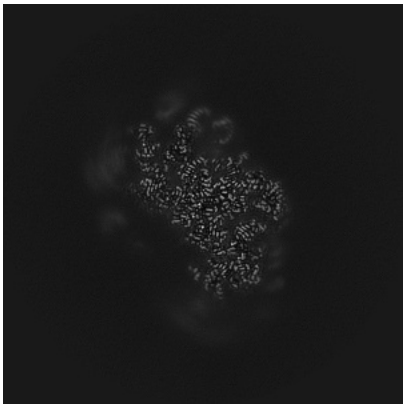


Z Index: 256

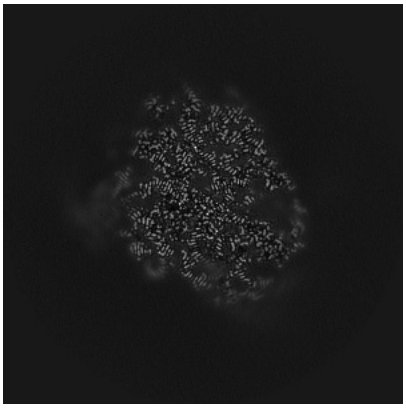
6.2.2 Raw map



X Index: 256



Y Index: 256

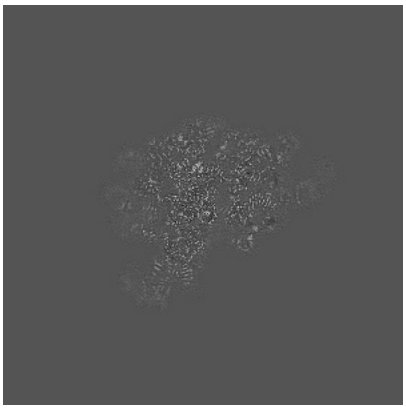


Z Index: 256

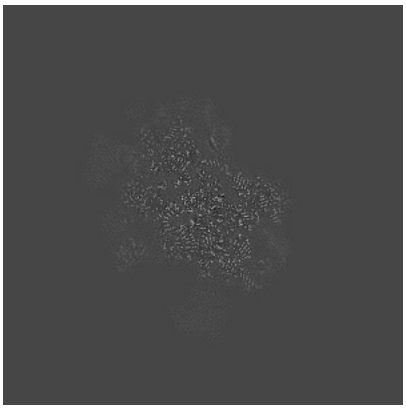
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

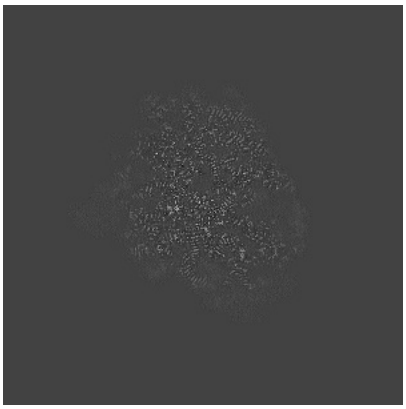
6.3.1 Primary map



X Index: 253

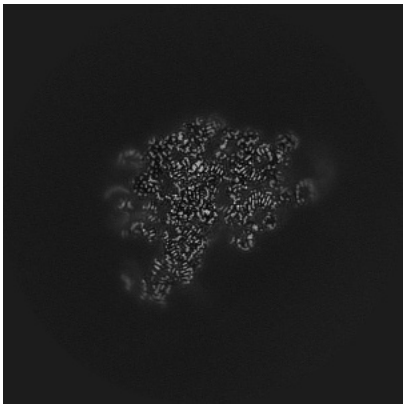


Y Index: 239

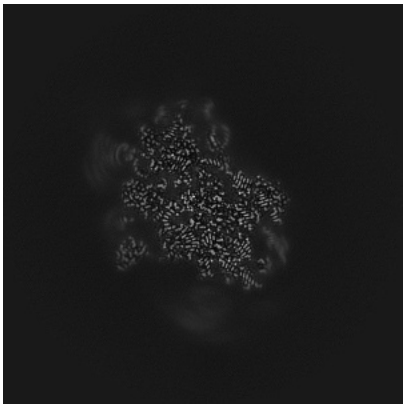


Z Index: 258

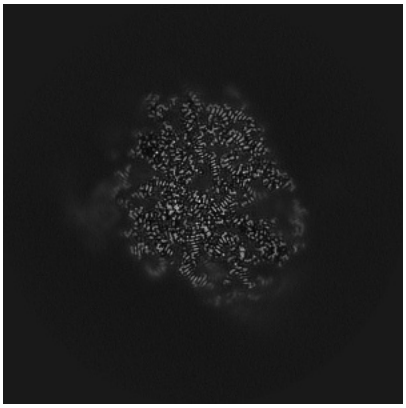
6.3.2 Raw map



X Index: 253



Y Index: 239

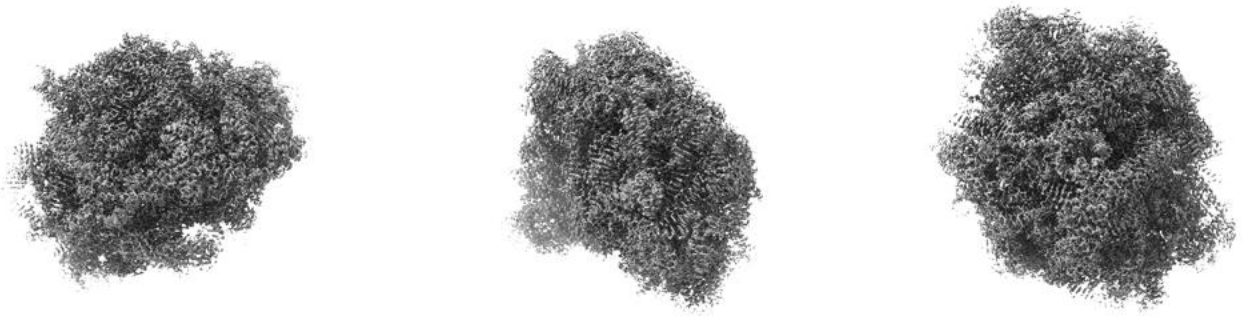


Z Index: 258

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.

6.4.2 Raw map

X Y Z

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

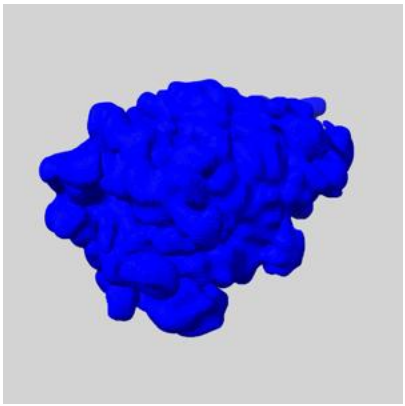
6.5 Mask visualisation (i)

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

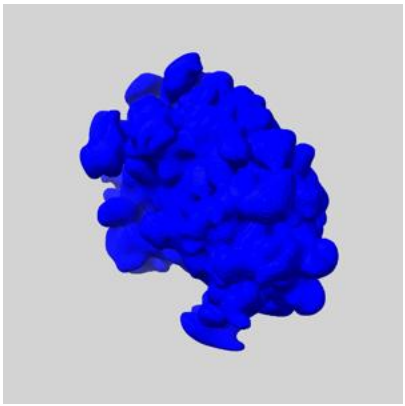
A mask typically either:

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

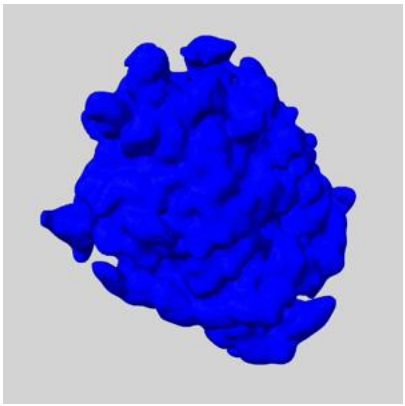
6.5.1 emd_15113_msk_1.map (i)



X



Y

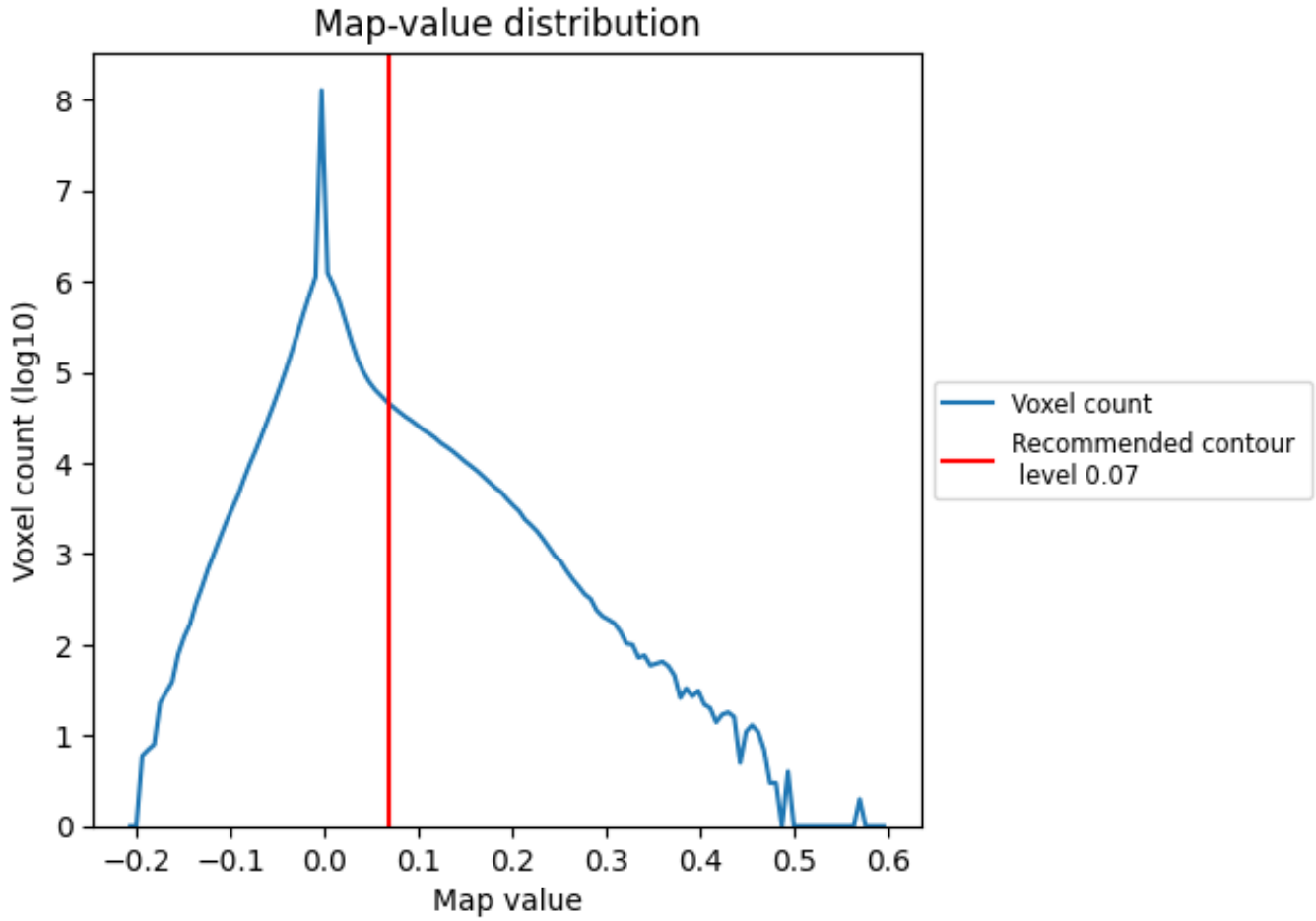


Z

7 Map analysis

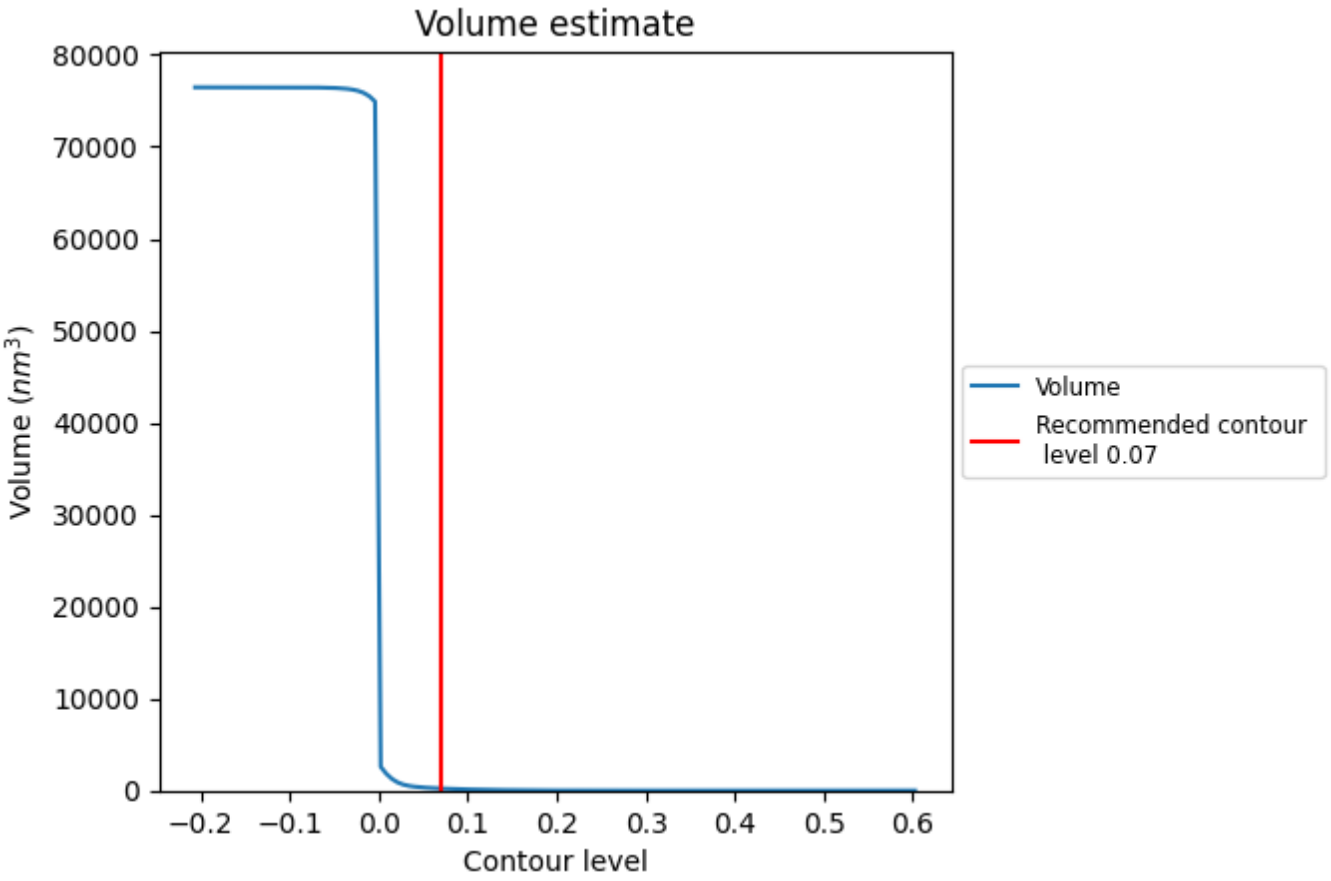
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

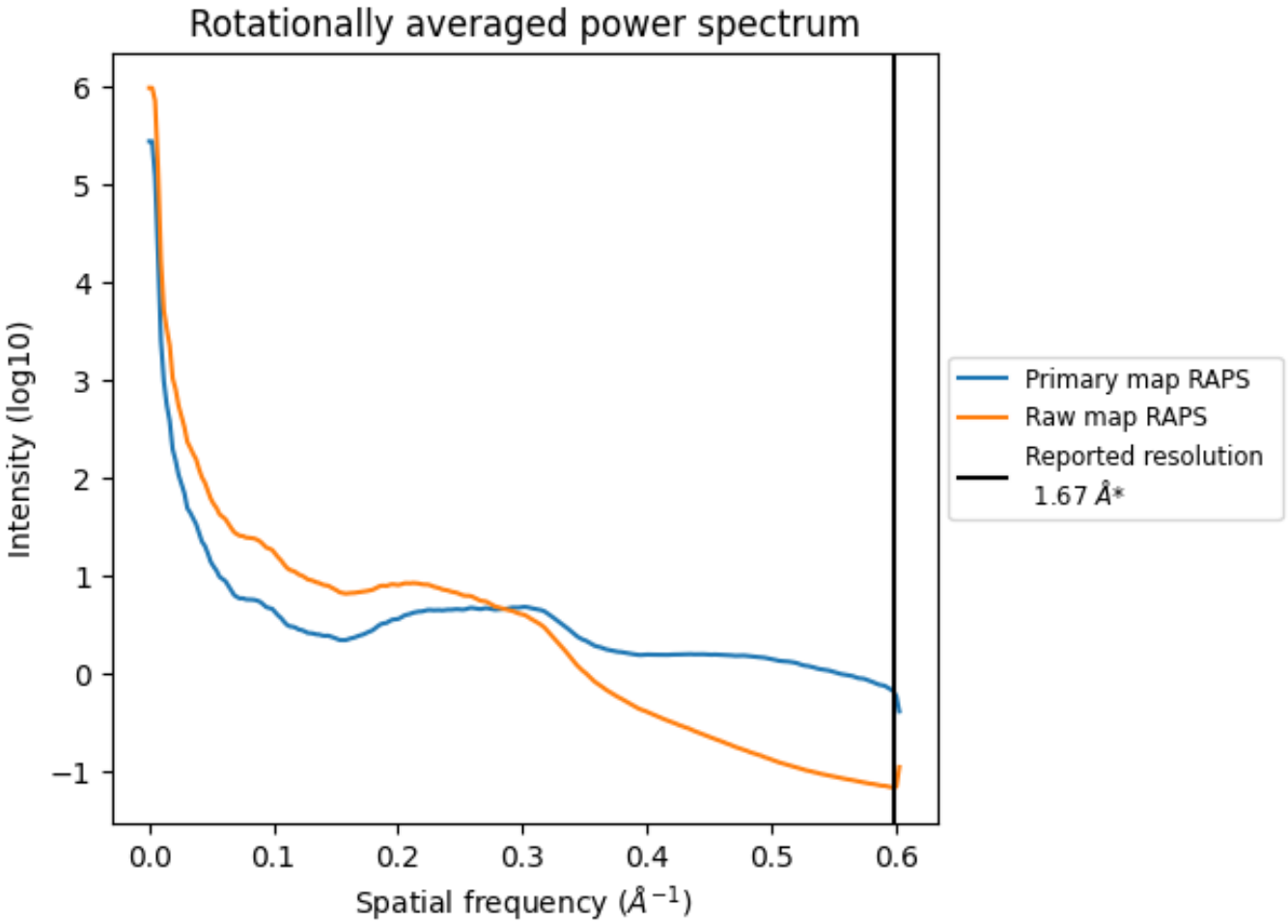
7.2 Volume estimate (i)



The volume at the recommended contour level is 222 nm^3; this corresponds to an approximate mass of 200 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)

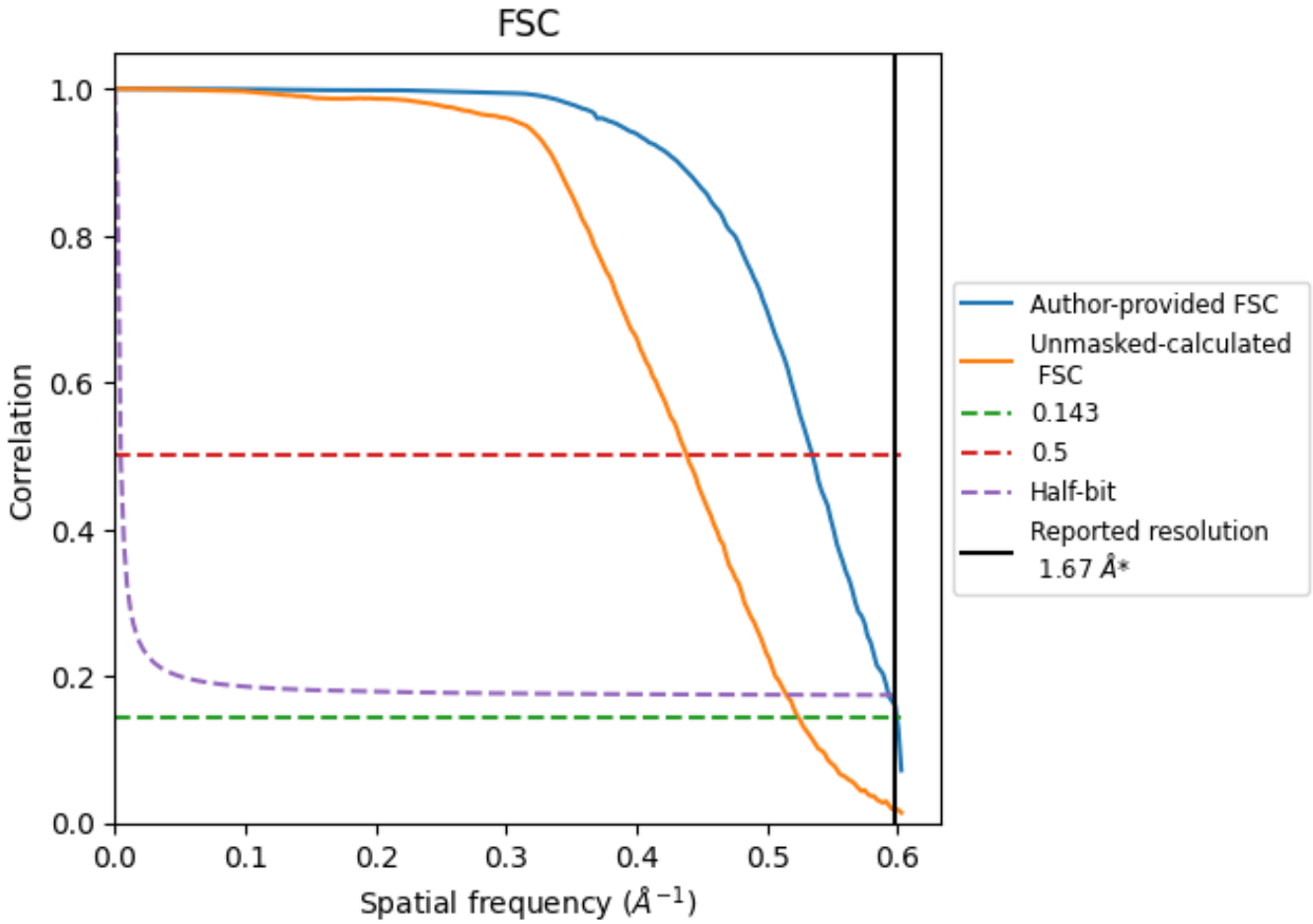


*Reported resolution corresponds to spatial frequency of 0.599 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.599 Å^{-1}

8.2 Resolution estimates (i)

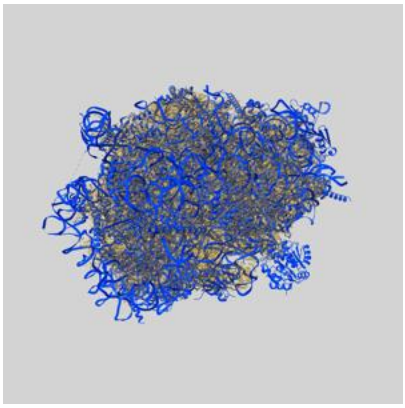
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	1.67	-	-
Author-provided FSC curve	1.67	1.87	1.69
Unmasked-calculated*	1.91	2.28	1.94

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 1.91 differs from the reported value 1.67 by more than 10 %

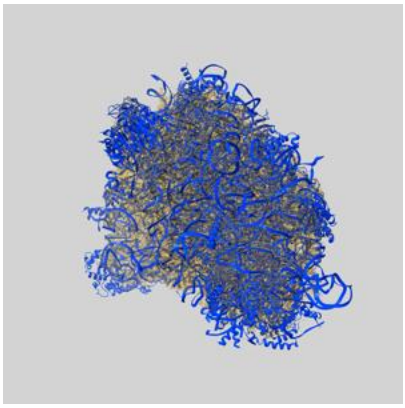
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-15113 and PDB model 8A3D. Per-residue inclusion information can be found in section 3 on page 17.

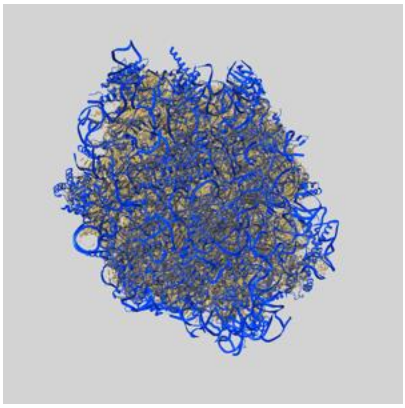
9.1 Map-model overlay



X



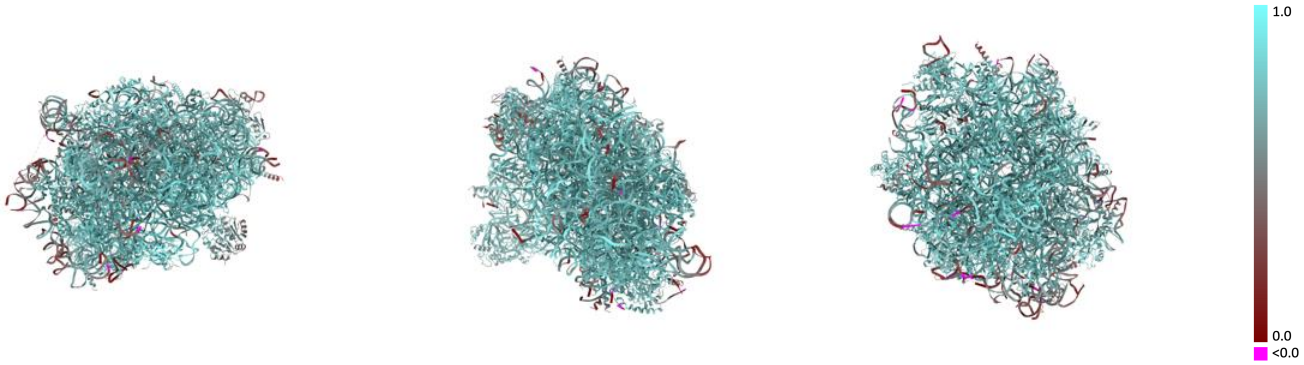
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.07 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.

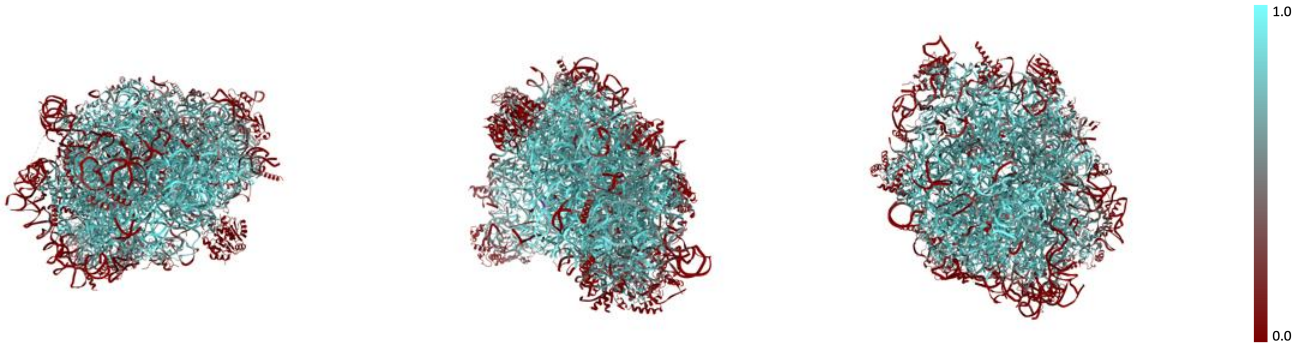
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

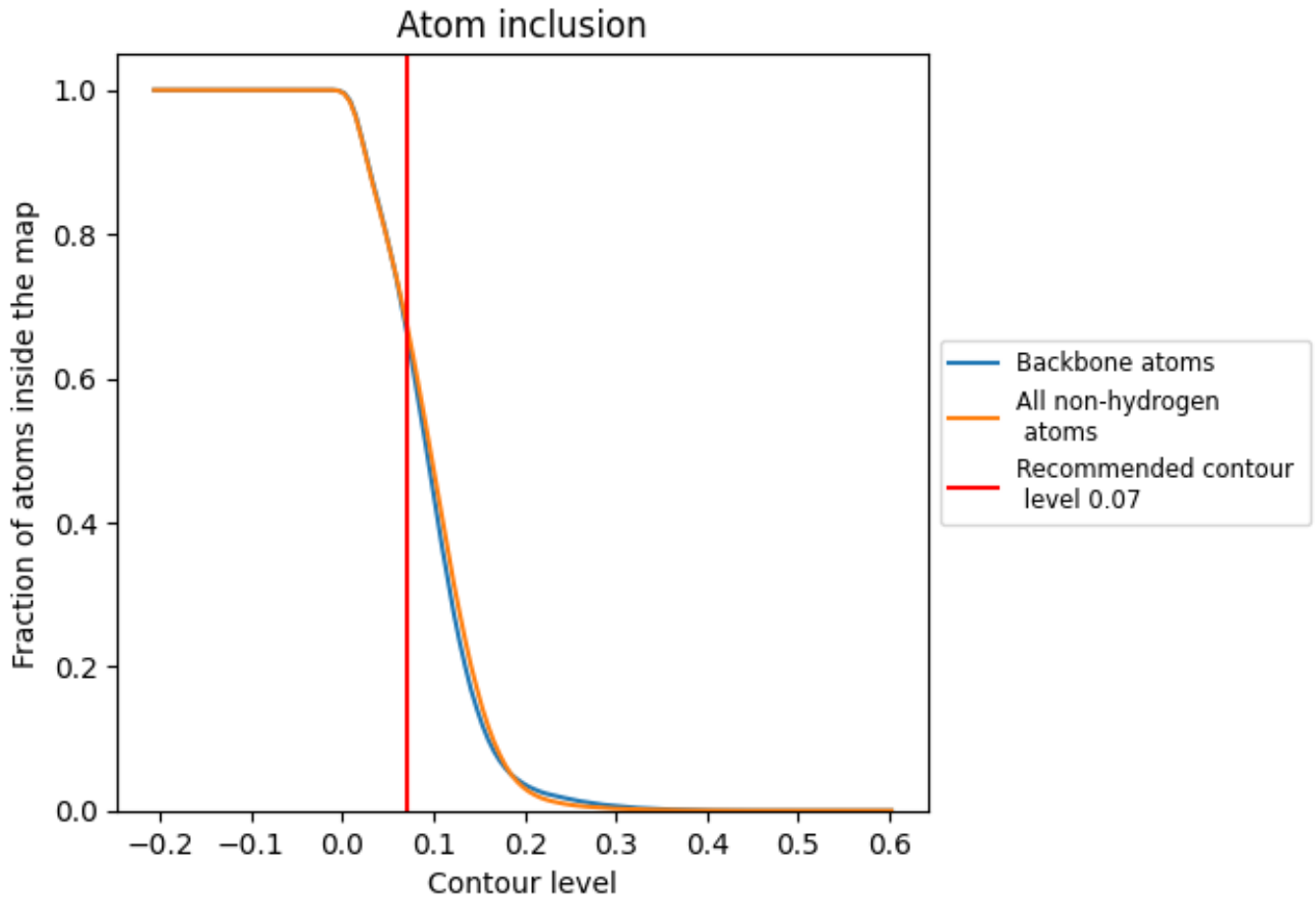
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.07).

9.4 Atom inclusion (i)



At the recommended contour level, 67% of all backbone atoms, 68% 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	0.6785	0.7690
A	0.7075	0.7530
B	0.7763	0.8070
C	0.7534	0.7850
D	0.8599	0.8430
E	0.7289	0.8170
F	0.8096	0.8270
G	0.4808	0.7720
H	0.4476	0.7440
I	0.7905	0.8260
J	0.7948	0.8340
K	0.8481	0.8450
L	0.6363	0.7650
M	0.8233	0.8330
N	0.6772	0.7700
O	0.0763	0.6310
P	0.7261	0.8190
Q	0.6560	0.8060
R	0.5975	0.7930
S	0.6800	0.8010
T	0.3672	0.7540
U	0.8019	0.8270
V	0.4416	0.7200
W	0.3788	0.7370
X	0.6272	0.7870
Y	0.8379	0.8400
Z	0.8636	0.8480
a	0.7506	0.8200
b	0.5586	0.7800
c	0.4712	0.7460
d	0.8546	0.8470
e	0.2352	0.6880
f	0.7028	0.8080
g	0.6683	0.7950
h	0.0000	0.5730

Continued on next page...

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Chain	Atom inclusion	Q-score
i	0.6773	0.8140
j	0.6981	0.7920
k	0.7692	0.8200
l	0.9168	0.8500
m	0.8756	0.8480
n	0.4023	0.7310
o	0.5348	0.7840
p	0.6679	0.8120
q	0.1648	0.6920
r	0.6018	0.7690
s	0.6621	0.7840