



Full wwPDB EM Validation Report ⓘ

Apr 24, 2023 – 11:42 am BST

PDB ID : 8BRM
EMDB ID : EMD-16222
Title : Giardia ribosome in POST-T state, no E-site tRNA (A6)
Authors : Majumdar, S.; Emmerich, A.G.; Sanyal, S.
Deposited on : 2022-11-23
Resolution : 3.33 Å (reported)

This is a Full wwPDB EM Validation 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.dev50
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) : 2.32.2

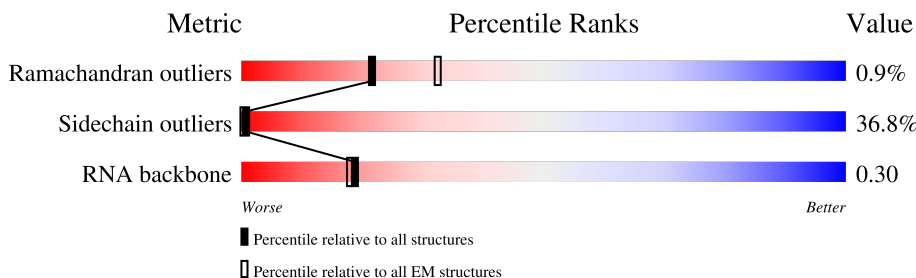
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.33 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	LA	251	<div style="display: flex; justify-content: space-between;"> <div style="width: 10%; background-color: red; height: 10px;"></div> <div style="width: 79%; background-color: green; height: 10px;"></div> <div style="width: 21%; background-color: yellow; height: 10px;"></div> </div>
2	LB	379	<div style="display: flex; justify-content: space-between;"> <div style="width: 10%; background-color: red; height: 10px;"></div> <div style="width: 72%; background-color: green; height: 10px;"></div> <div style="width: 28%; background-color: yellow; height: 10px;"></div> </div>
3	LC	316	<div style="display: flex; justify-content: space-between;"> <div style="width: 8%; background-color: red; height: 10px;"></div> <div style="width: 76%; background-color: green; height: 10px;"></div> <div style="width: 22%; background-color: yellow; height: 10px;"></div> <div style="width: 2%; background-color: grey; height: 10px;"></div> </div>
4	LD	143	<div style="display: flex; justify-content: space-between;"> <div style="width: 1%; background-color: red; height: 10px;"></div> <div style="width: 58%; background-color: green; height: 10px;"></div> <div style="width: 41%; background-color: yellow; height: 10px;"></div> <div style="width: 1%; background-color: grey; height: 10px;"></div> </div>
5	LE	121	<div style="display: flex; justify-content: space-between;"> <div style="width: 1%; background-color: red; height: 10px;"></div> <div style="width: 50%; background-color: green; height: 10px;"></div> <div style="width: 46%; background-color: yellow; height: 10px;"></div> <div style="width: 3%; background-color: grey; height: 10px;"></div> </div>
6	LF	297	<div style="display: flex; justify-content: space-between;"> <div style="width: 43%; background-color: red; height: 10px;"></div> <div style="width: 70%; background-color: green; height: 10px;"></div> <div style="width: 28%; background-color: yellow; height: 10px;"></div> <div style="width: 1%; background-color: grey; height: 10px;"></div> </div>
7	LG	51	<div style="display: flex; justify-content: space-between;"> <div style="width: 10%; background-color: red; height: 10px;"></div> <div style="width: 69%; background-color: green; height: 10px;"></div> <div style="width: 29%; background-color: yellow; height: 10px;"></div> <div style="width: 1%; background-color: grey; height: 10px;"></div> </div>
8	LH	235	<div style="display: flex; justify-content: space-between;"> <div style="width: 22%; background-color: red; height: 10px;"></div> <div style="width: 69%; background-color: green; height: 10px;"></div> <div style="width: 22%; background-color: yellow; height: 10px;"></div> <div style="width: 9%; background-color: grey; height: 10px;"></div> </div>

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Mol	Chain	Length	Quality of chain
9	LI	225	14% 60% 23% 17%
10	LJ	185	19% 63% 35% ..
11	LK	210	56% 45% 25% 30%
12	LL	173	53% 61% 34% 5%
13	LM	234	13% 65% 21% 14%
14	LN	131	11% 67% 32% .
15	LO	204	. 74% 25%
16	LP	197	12% 79% 19% .
17	LQ	164	17% 63% 29% . 7%
18	LR	179	16% 72% 28% .
19	LS	196	26% 68% 30% ..
20	LT	173	12% 66% 32% .
21	LU	159	25% 68% 30% .
22	LV	124	19% 53% 30% 17%
23	LW	142	11% 72% 20% . 7%
24	LX	189	8% 21% 11% . 67%
25	LY	141	6% 64% 20% . 16%
26	LZ	135	5% 68% 30% .
27	La	135	21% 58% 36% 6%
28	Lb	149	15% 77% 23% .
29	Lc	62	42% 61% 18% .. 18%
30	Ld	109	18% 60% 34% 6%
31	Le	106	10% 64% 29% . 6%
32	Lf	136	12% 64% 32% .
33	Lg	123	. 59% 20% 20%

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Mol	Chain	Length	Quality of chain
34	Lh	120	8% 58% 22% 20%
35	Li	124	11% 65% 31% .
36	Lj	90	29% 63% 33% ..
37	Lk	89	24% 65% 33% ..
38	Ll	77	34% 57% 36% 6%
39	Ln	217	96% 49% 46% ..
40	Lo	25	48% 68% 32%
41	Lp	106	46% 54% 34% 12%
42	Lq	94	11% 68% 28% ..
43	Ls	127	15% 23% 14% 63%
44	Lt	2697	9% 55% 41% ..
45	SA	245	27% 57% 23% 20%
46	SB	242	24% 62% 28% 11%
47	SC	217	61% 65% 31% .
48	SD	248	22% 61% 31% 8%
49	SE	268	34% 68% 29% .
50	SF	190	67% 66% 31% ..
51	SG	248	53% 48% 36% 16%
52	SH	190	61% 57% 39% .
53	SI	174	24% 67% 32% .
54	SJ	130	25% 62% 36% ..
55	SK	189	35% 57% 35% 7%
56	SL	134	60% 45% 30% 25%
57	SM	154	23% 65% 32% ..
58	SO	143	41% 62% 34% ..

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Mol	Chain	Length	Quality of chain
59	SP	154	25% 71% 27%
60	SQ	145	19% 61% 25% 14%
61	SR	145	70% 46% 34% 20%
62	ST	158	72% 59% 36%
63	SU	137	56% 55% 24% 21%
64	SV	154	74% 53% 37% 8%
65	SW	139	67% 68% 29%
66	SX	126	56% 53% 26% 21%
67	SY	89	39% 62% 33%
68	Sb	132	45% 53% 36% 11%
69	Sc	88	65% 47% 36% 17%
70	Sd	109	17% 65% 27% 7%
71	Se	81	43% 64% 33%
72	Sg	64	66% 50% 48%
73	Sh	51	59% 59% 37%
74	Sj	69	57% 51% 39% 10%
75	St	1454	10% 55% 44%

2 Entry composition [i](#)

There are 75 unique types of molecules in this entry. The entry contains 173978 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 Ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	LA	250	1886	1163	389	322	12	0	0

- Molecule 2 is a protein called Ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	LB	378	2987	1886	566	514	21	0	0

- Molecule 3 is a protein called Ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	LC	309	2408	1514	468	418	8	0	0

- Molecule 4 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	LD	142	3038	1350	563	983	142	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	LE	117	2502	1116	457	812	117	0	0

- Molecule 6 is a protein called Ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	LF	291	2337	1479	435	415	8	0	0

- Molecule 7 is a protein called Ribosomal protein L39.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	LG	50	439	281	94	64	0	0

- Molecule 8 is a protein called Ribosomal protein L7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	LH	213	1726	1097	314	310	5	0	0

- Molecule 9 is a protein called Ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	LI	187	1494	952	274	263	5	0	0

- Molecule 10 is a protein called Ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	LJ	184	1452	917	264	261	10	0	0

- Molecule 11 is a protein called Ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	LK	147	1207	762	231	210	4	0	0

- Molecule 12 is a protein called Ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	LL	165	1322	833	247	237	5	0	0

- Molecule 13 is a protein called Ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	LM	201	1605	999	325	274	7	0	0

- Molecule 14 is a protein called Ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	LN	130	1024	649	186	183	6	0	0

- Molecule 15 is a protein called Ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	LO	203	1708	1080	357	265	6	0	0

- Molecule 16 is a protein called Ribosomal protein L13a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	LP	194	1578	994	306	266	12	0	0

- Molecule 17 is a protein called Ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	LQ	153	1231	778	239	210	4	0	0

- Molecule 18 is a protein called Ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	LR	178	1402	871	279	243	9	0	0

- Molecule 19 is a protein called Ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	LS	192	1592	983	334	270	5	0	0

- Molecule 20 is a protein called Ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	LT	170	1423	899	272	243	9	0	0

- Molecule 21 is a protein called Ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	LU	156	Total	C	N	O	S	0	0
			1257	784	259	207	7		

- Molecule 22 is a protein called Ribosomal protein L22e.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	LV	103	Total	C	N	O	S	0	0
			845	540	145	158	2		

- Molecule 23 is a protein called Ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	LW	132	Total	C	N	O	S	0	0
			1015	641	193	176	5		

- Molecule 24 is a protein called Ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	LX	63	Total	C	N	O	S	0	0
			538	340	109	82	7		

- Molecule 25 is a protein called Ribosomal protein L23A.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	LY	119	Total	C	N	O	S	0	0
			962	619	174	166	3		

- Molecule 26 is a protein called Ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	LZ	133	Total	C	N	O	S	0	0
			1076	665	219	184	8		

- Molecule 27 is a protein called Ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	La	127	Total	C	N	O	S	0	0
			1013	638	190	179	6		

- Molecule 28 is a protein called Ribosomal protein L27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	Lb	148	Total	C	N	O	S	0	0
			1201	759	240	199	3		

- Molecule 29 is a protein called Ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	Lc	51	Total	C	N	O	S	0	0
			425	254	97	72	2		

- Molecule 30 is a protein called Ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	Ld	102	Total	C	N	O	S	0	0
			770	485	135	146	4		

- Molecule 31 is a protein called Ribosomal protein L31B.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	Le	100	Total	C	N	O	0	0
			818	518	158	142		

- Molecule 32 is a protein called Ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	Lf	130	Total	C	N	O	S	0	0
			1077	683	215	173	6		

- Molecule 33 is a protein called Ribosomal protein L35a.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	Lg	98	Total	C	N	O	S	0	0
			778	498	147	130	3		

- Molecule 34 is a protein called Ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	Lh	96	Total	C	N	O	S	0	0
			774	478	161	131	4		

- Molecule 35 is a protein called Ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	Li	120	Total	C	N	O	S	0	0
			969	613	190	161	5		

- Molecule 36 is a protein called Ribosomal protein L36-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	Lj	89	Total	C	N	O	S	0	0
			731	462	146	119	4		

- Molecule 37 is a protein called Ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	Lk	88	Total	C	N	O	S	0	0
			711	435	152	117	7		

- Molecule 38 is a protein called Ribosomal protein L38e.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	Ll	72	Total	C	N	O	S	0	0
			558	353	99	102	4		

- Molecule 39 is a protein called Ribosomal protein L10a.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	Ln	211	Total	C	N	O	S	0	0
			1678	1082	294	297	5		

- Molecule 40 is a protein called Ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	Lo	25	Total	C	N	O	S	0	0
			227	140	57	27	3		

- Molecule 41 is a protein called Ribosomal protein L44.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	Lp	93	Total	C	N	O	S	0	0
			767	478	159	125	5		

- Molecule 42 is a protein called Ribosomal protein L37a.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	Lq	91	Total	C	N	O	S	0	0
			708	437	144	120	7		

- Molecule 43 is a protein called Ubiquitin/Ribosomal protein L40e.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	Ls	47	Total	C	N	O	S	0	0
			388	234	83	64	7		

- Molecule 44 is a RNA chain called Large Subunit rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	Lt	2594	Total	C	N	O	P	0	0
			55663	24736	10313	18020	2594		

- Molecule 45 is a protein called Ribosomal protein SA.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	SA	196	Total	C	N	O	S	0	0
			1569	1013	274	274	8		

- Molecule 46 is a protein called Ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	SB	216	Total	C	N	O	S	0	0
			1667	1059	302	301	5		

- Molecule 47 is a protein called Ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	SC	209	Total	C	N	O	S	0	0
			1658	1045	305	292	16		

- Molecule 48 is a protein called Ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	SD	229	Total	C	N	O	S	0	0
			1855	1172	346	324	13		

- Molecule 49 is a protein called Ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	SE	260	2085	1333	384	356	12	0	0

- Molecule 50 is a protein called Ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	SF	186	1442	896	275	262	9	0	0

- Molecule 51 is a protein called Ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	SG	209	1646	1033	312	291	10	0	0

- Molecule 52 is a protein called Ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	SH	184	1481	948	258	268	7	0	0

- Molecule 53 is a protein called Ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
53	SI	173	1357	850	260	244	3	0	0

- Molecule 54 is a protein called Ribosomal protein S15A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
54	SJ	129	1031	659	192	177	3	0	0

- Molecule 55 is a protein called Ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
55	SK	176	1423	889	281	247	6	0	0

- Molecule 56 is a protein called Ribosomal protein S10B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	SL	100	819	530	138	148	3	0	0

- Molecule 57 is a protein called Ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	SM	151	1251	794	246	205	6	0	0

- Molecule 58 is a protein called Ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	SO	139	1080	683	213	181	3	0	0

- Molecule 59 is a protein called Ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	SP	150	1192	758	228	201	5	0	0

- Molecule 60 is a protein called Ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
60	SQ	125	916	564	189	160	3	0	0

- Molecule 61 is a protein called Ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	SR	116	943	601	184	150	8	0	0

- Molecule 62 is a protein called Ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
62	ST	151	1180	736	229	212	3	0	0

- Molecule 63 is a protein called Ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	SU	108	872	542	167	158	5	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
SU	104	THR	ALA	conflict	UNP A8BRG5

- Molecule 64 is a protein called Ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	SV	141	1117	687	227	197	6	0	0

- Molecule 65 is a protein called Ribosomal protein S19e.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
65	SW	137	1071	680	202	186	3	0	0

- Molecule 66 is a protein called Ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
66	SX	100	794	507	145	137	5	0	0

- Molecule 67 is a protein called Ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
67	SY	86	651	403	120	122	6	0	0

- Molecule 68 is a protein called Ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
68	Sb	118	941	598	177	160	6	0	0

- Molecule 69 is a protein called Ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	Sc	73	Total	C	N	O	S	0	0
			578	366	104	102	6		

- Molecule 70 is a protein called Ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	Sd	101	Total	C	N	O	S	0	0
			821	504	171	139	7		

- Molecule 71 is a protein called Ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	Se	79	Total	C	N	O	S	0	0
			621	392	109	115	5		

- Molecule 72 is a protein called Ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	Sg	63	Total	C	N	O	S	0	0
			505	311	100	92	2		

- Molecule 73 is a protein called Ribosomal protein S29A.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	Sh	50	Total	C	N	O	S	0	0
			417	264	80	67	6		

- Molecule 74 is a protein called Ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	Sj	62	Total	C	N	O	S	0	0
			509	322	104	82	1		

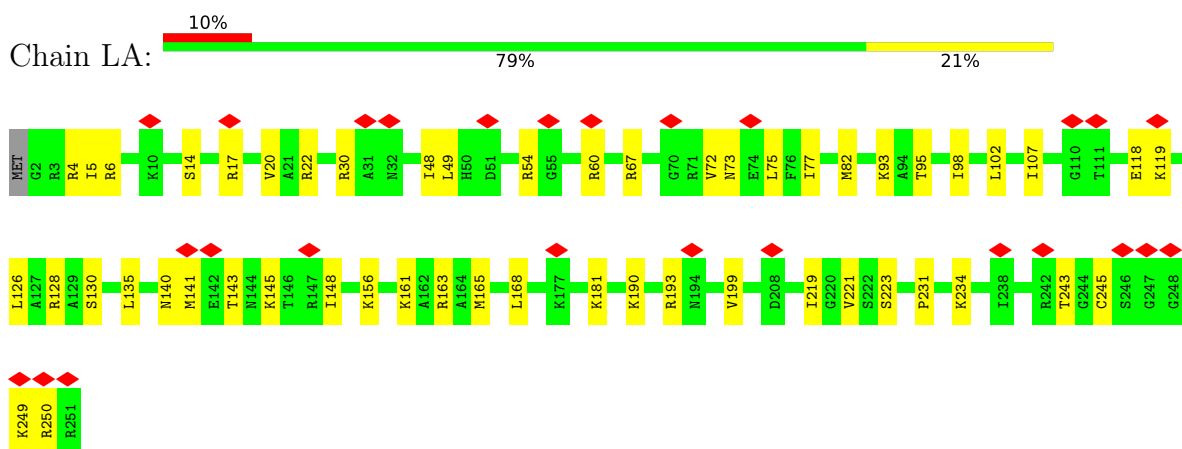
- Molecule 75 is a RNA chain called Small Subunit rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	St	1454	Total	C	N	O	P	0	0
			31176	13861	5772	10090	1453		

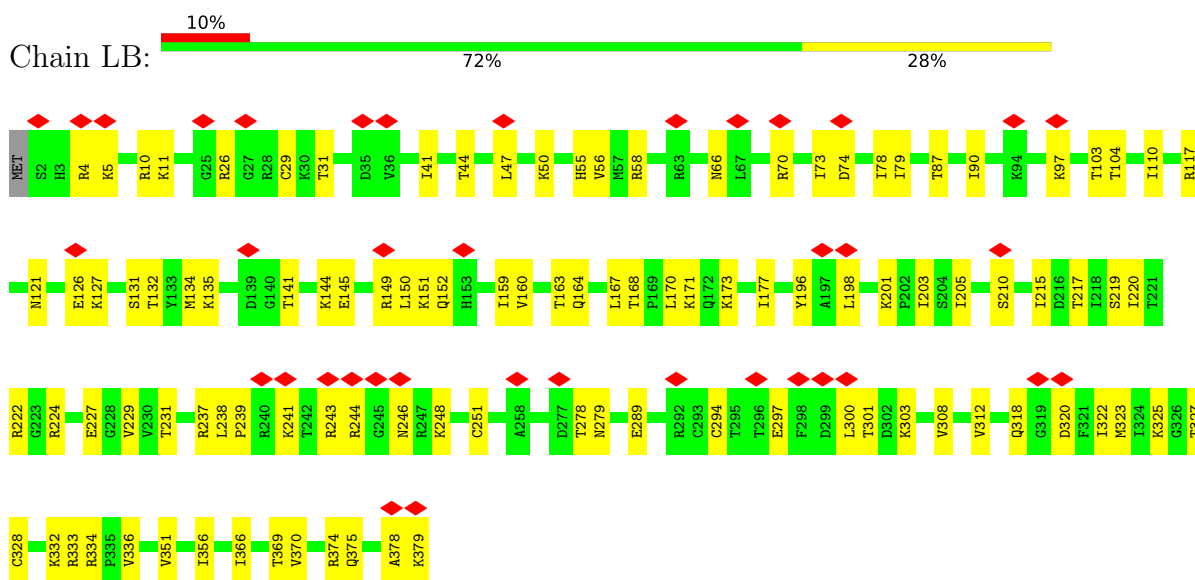
3 Residue-property plots [i](#)

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.

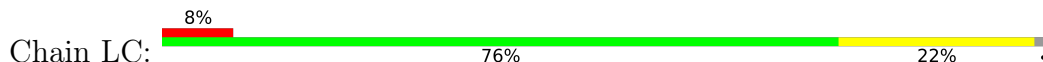
- Molecule 1: Ribosomal protein L2

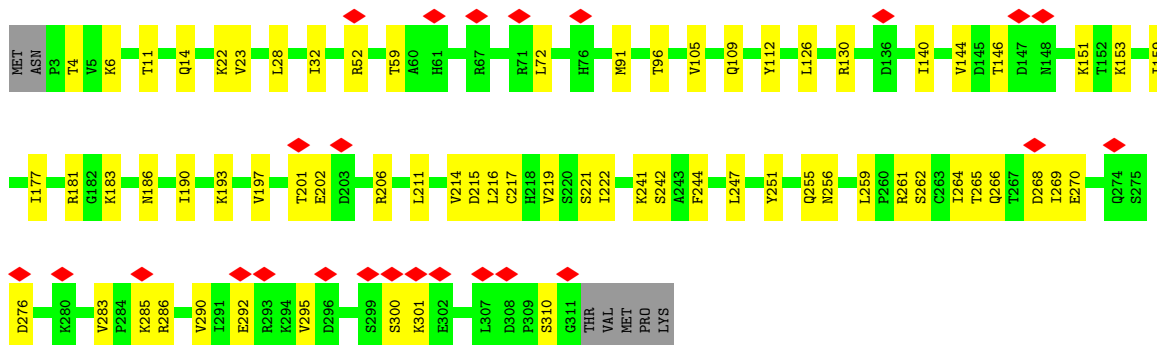


- Molecule 2: Ribosomal protein L3

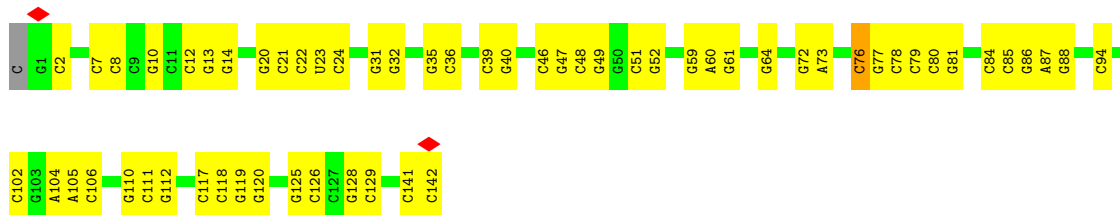


- Molecule 3: Ribosomal protein L4

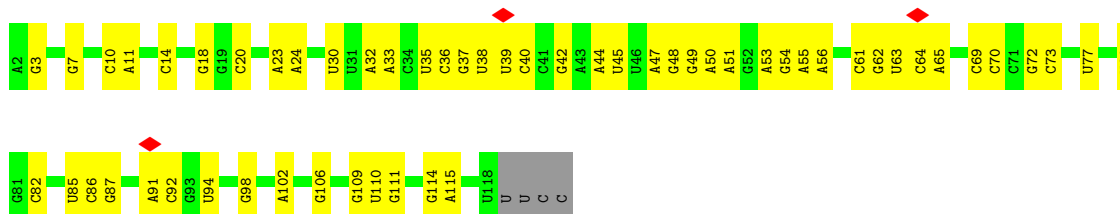




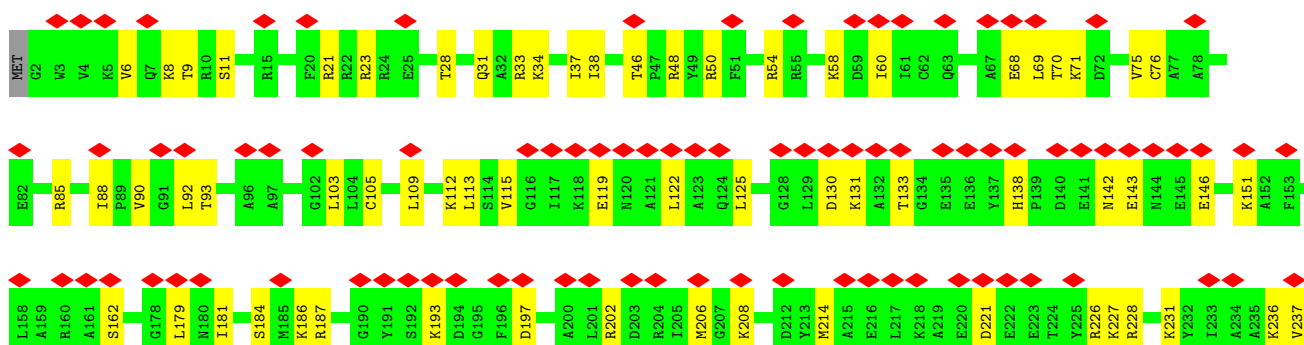
• Molecule 4: 5.8S rRNA

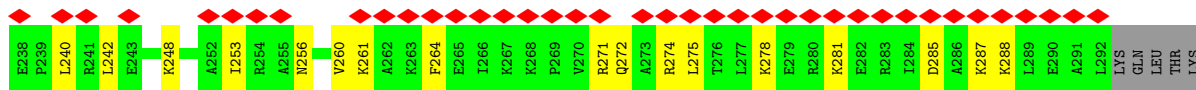


• Molecule 5: 5S rRNA

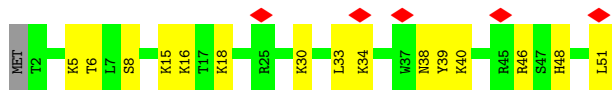


• Molecule 6: Ribosomal protein L5

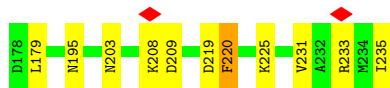
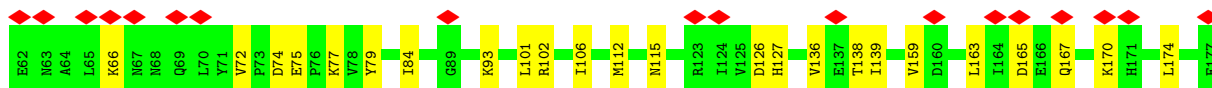
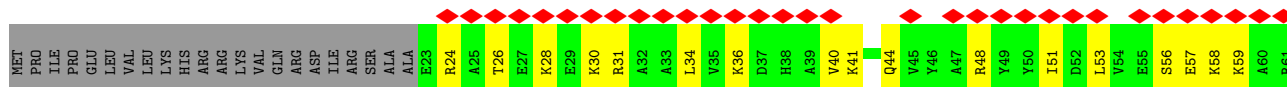




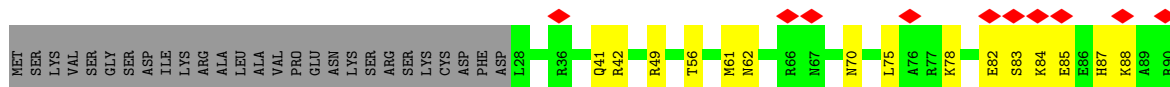
• Molecule 7: Ribosomal protein L39



• Molecule 8: Ribosomal protein L7

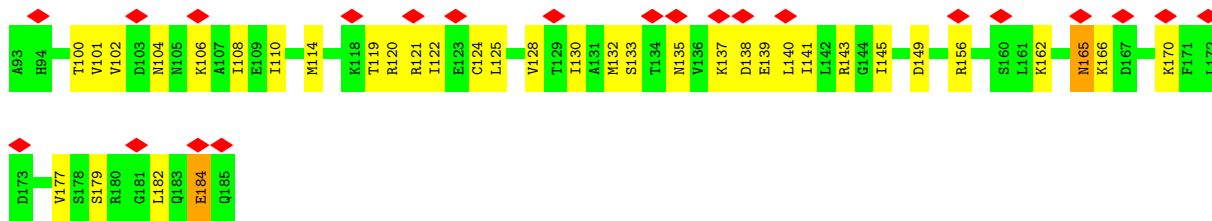


• Molecule 9: Ribosomal protein L7a

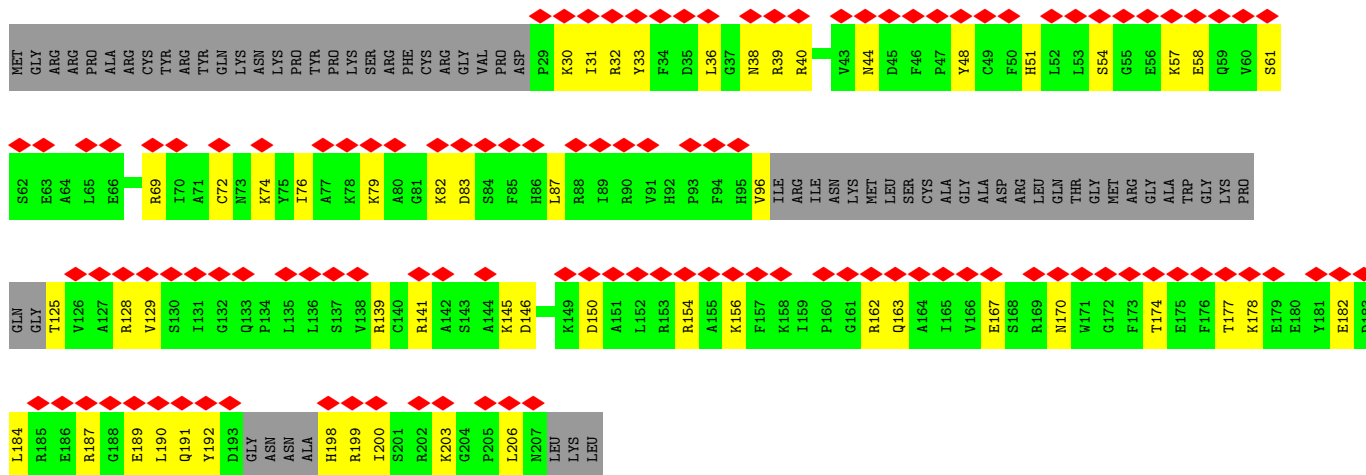


• Molecule 10: Ribosomal protein L6

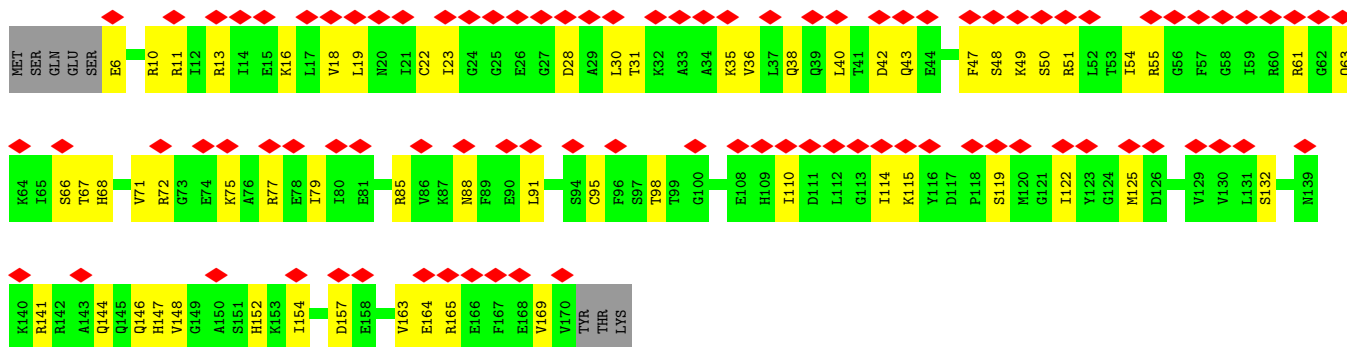




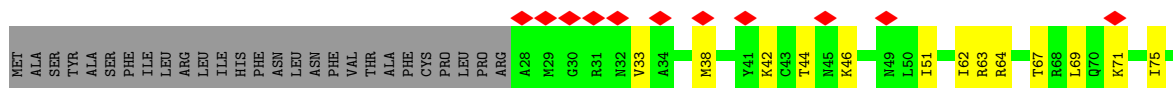
• Molecule 11: Ribosomal protein L10

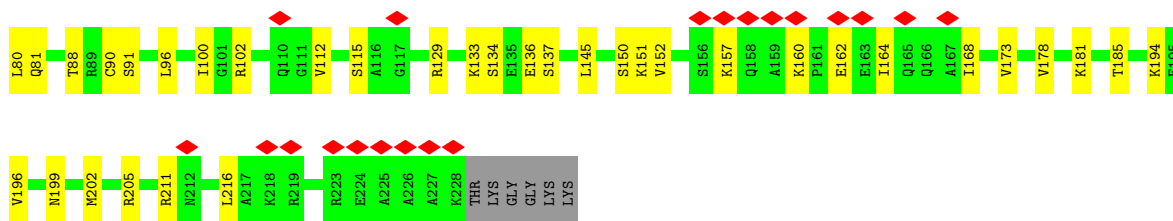


• Molecule 12: Ribosomal protein L11

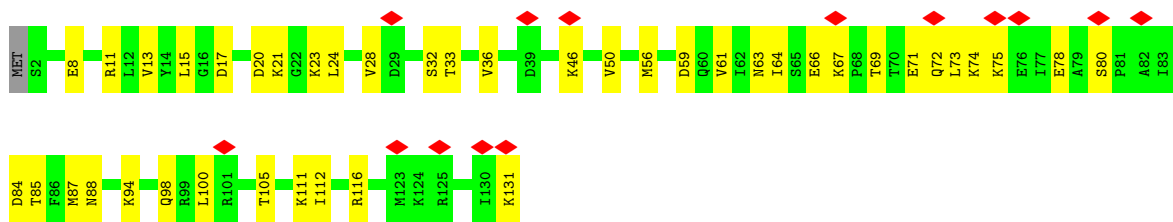


• Molecule 13: Ribosomal protein L13

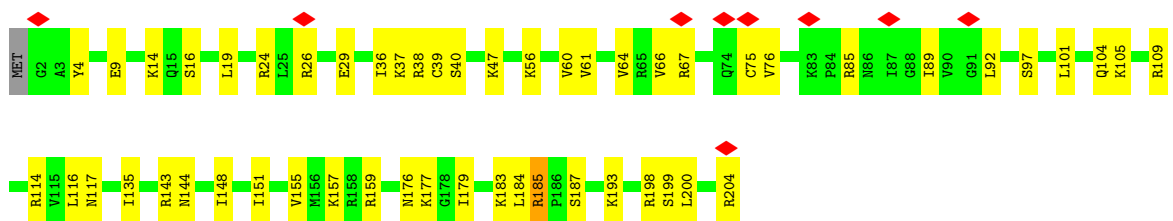
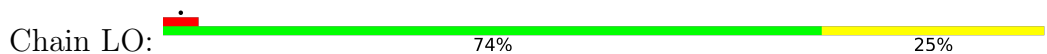




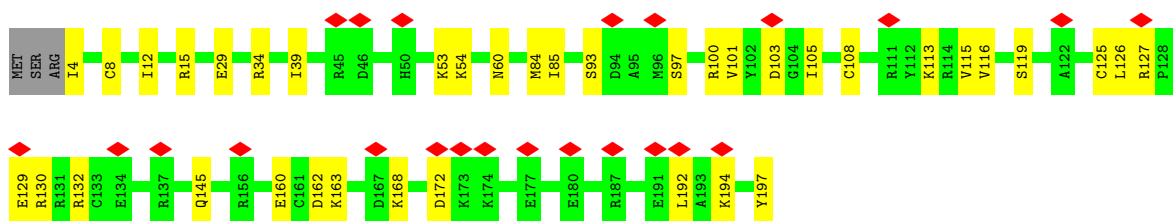
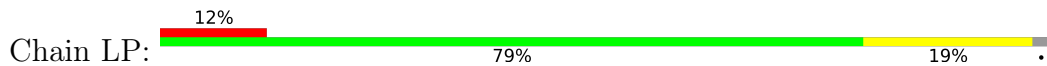
- Molecule 14: Ribosomal protein L14



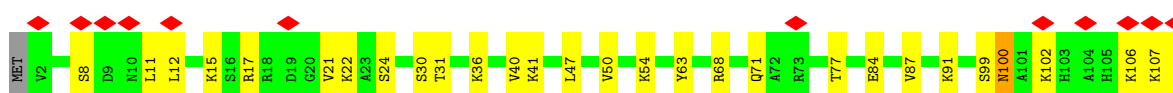
- Molecule 15: Ribosomal protein L15

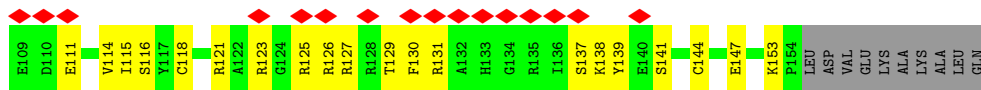


- Molecule 16: Ribosomal protein L13a

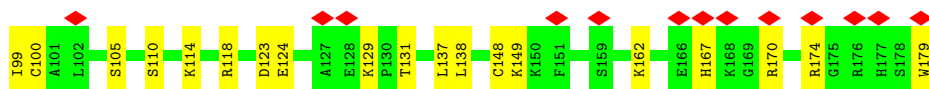
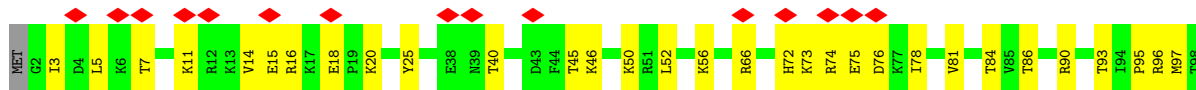
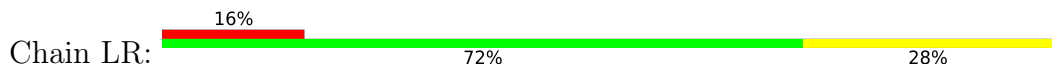


- Molecule 17: Ribosomal protein L17

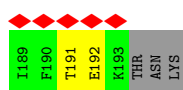
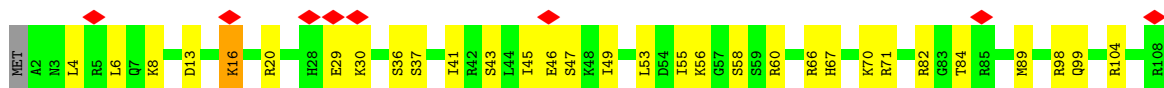




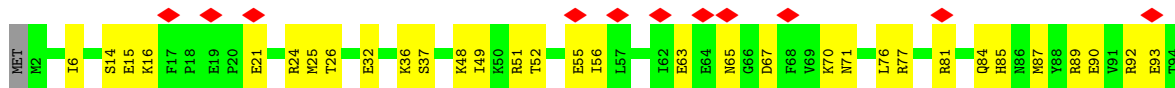
• Molecule 18: Ribosomal protein L18



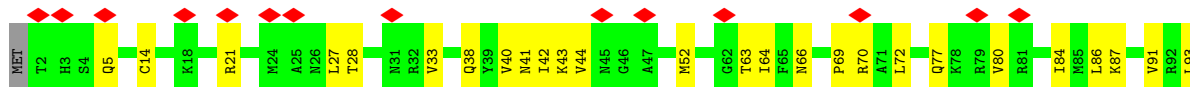
• Molecule 19: Ribosomal protein L19



• Molecule 20: Ribosomal protein L18a

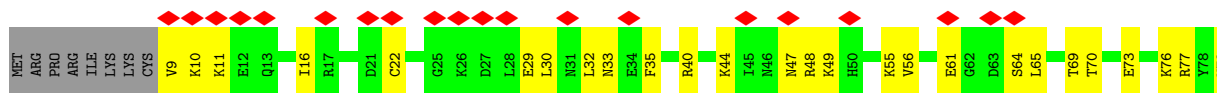


• Molecule 21: Ribosomal protein L21

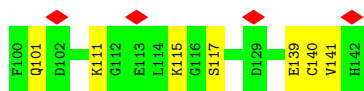
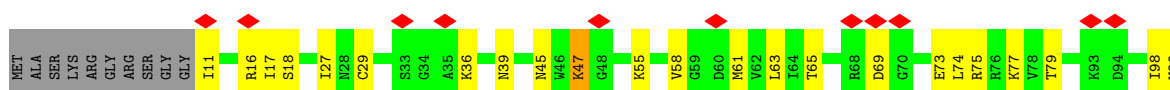
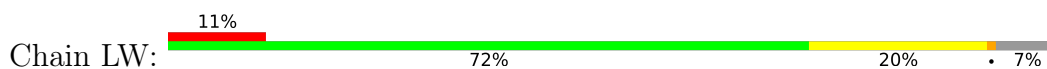




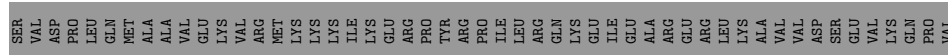
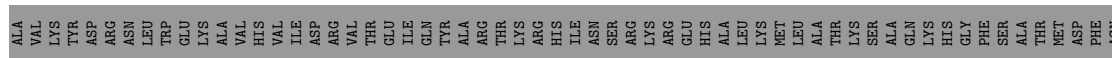
• Molecule 22: Ribosomal protein L22e



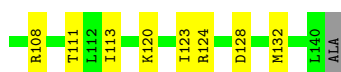
• Molecule 23: Ribosomal protein L23



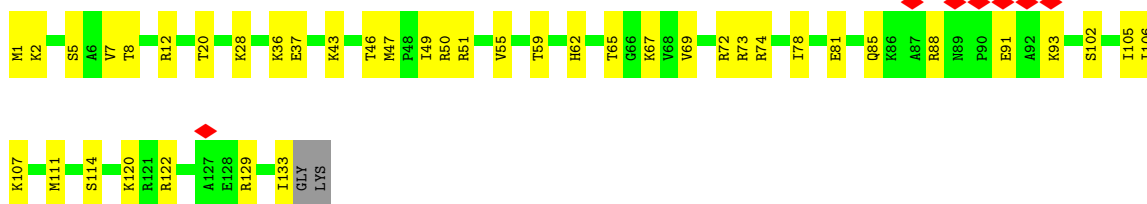
• Molecule 24: Ribosomal protein L24



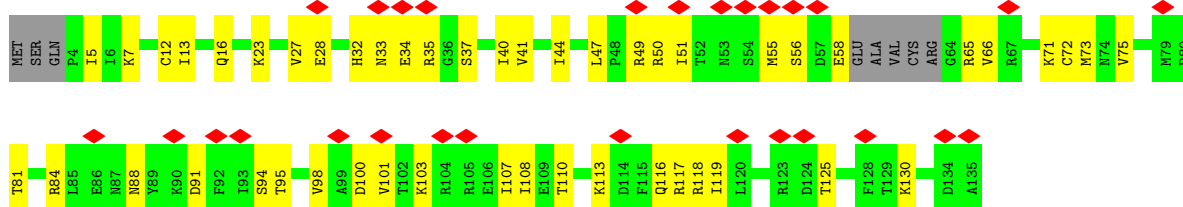
• Molecule 25: Ribosomal protein L23A



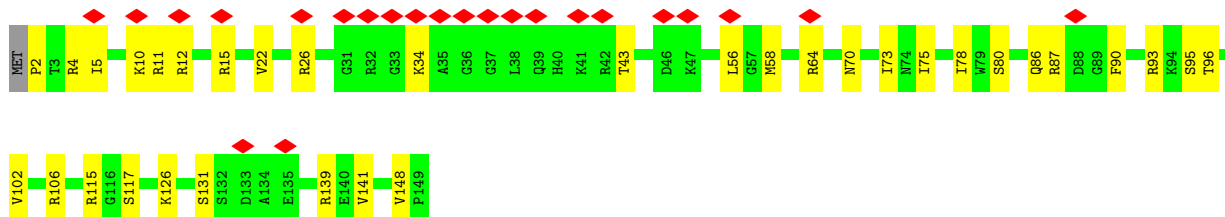
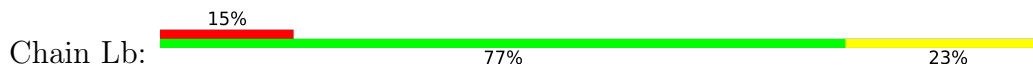
• Molecule 26: Ribosomal protein L26



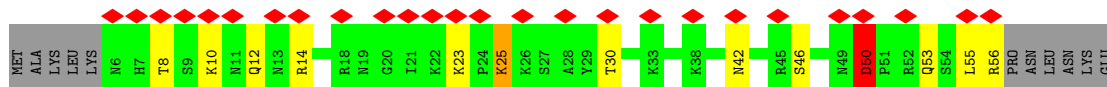
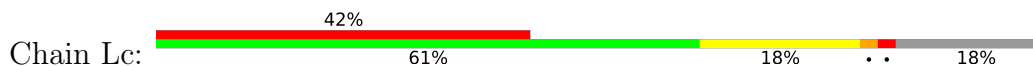
• Molecule 27: Ribosomal protein L27



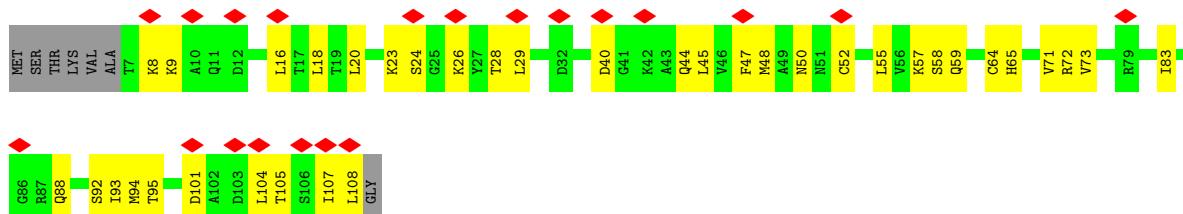
• Molecule 28: Ribosomal protein L27a



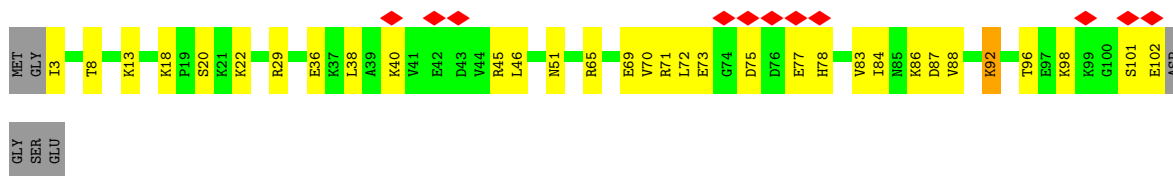
• Molecule 29: Ribosomal protein L29



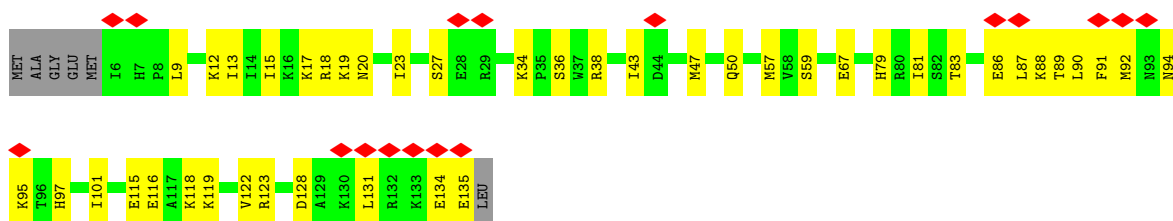
• Molecule 30: Ribosomal protein L30



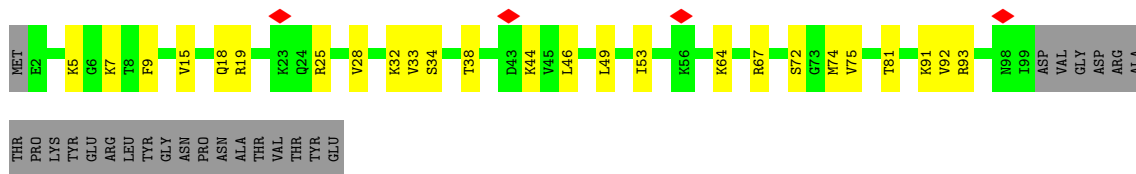
• Molecule 31: Ribosomal protein L31B



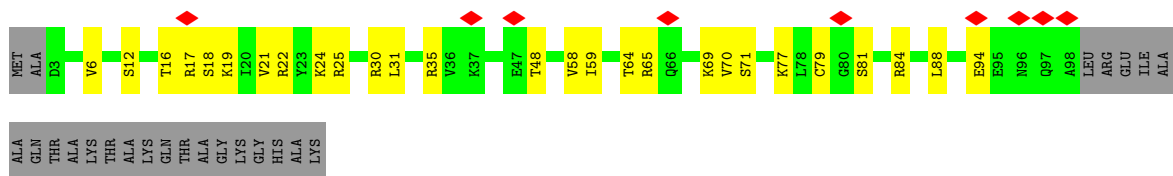
• Molecule 32: Ribosomal protein L32



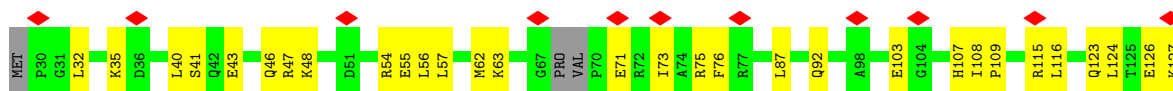
• Molecule 33: Ribosomal protein L35a

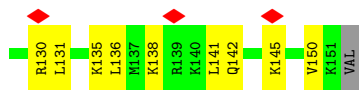


• Molecule 34: Ribosomal protein L34

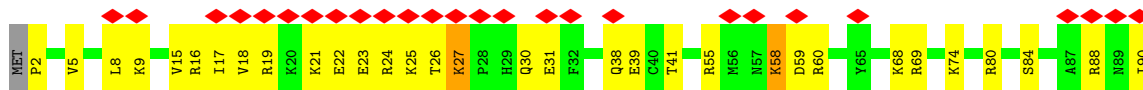


• Molecule 35: Ribosomal protein L29

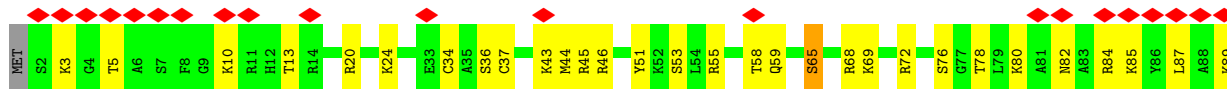




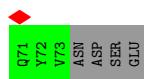
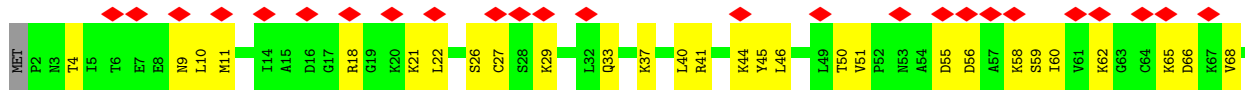
• Molecule 36: Ribosomal protein L36-1



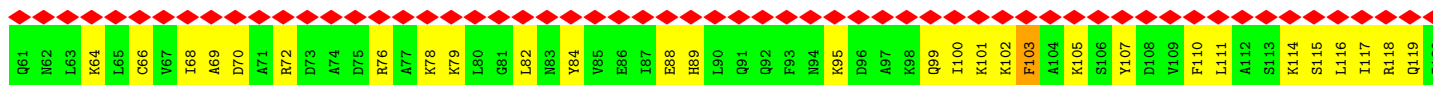
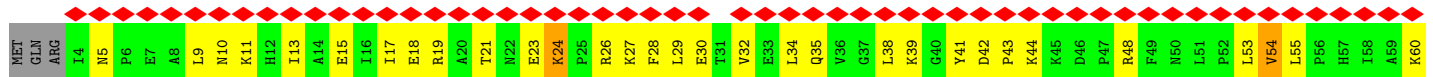
• Molecule 37: Ribosomal protein L37



• Molecule 38: Ribosomal protein L38e



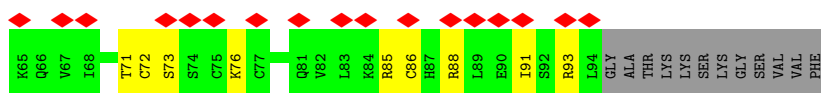
• Molecule 39: Ribosomal protein L10a



• Molecule 40: Ribosomal protein L41



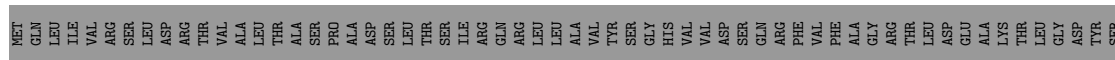
• Molecule 41: Ribosomal protein L44



• Molecule 42: Ribosomal protein L37a



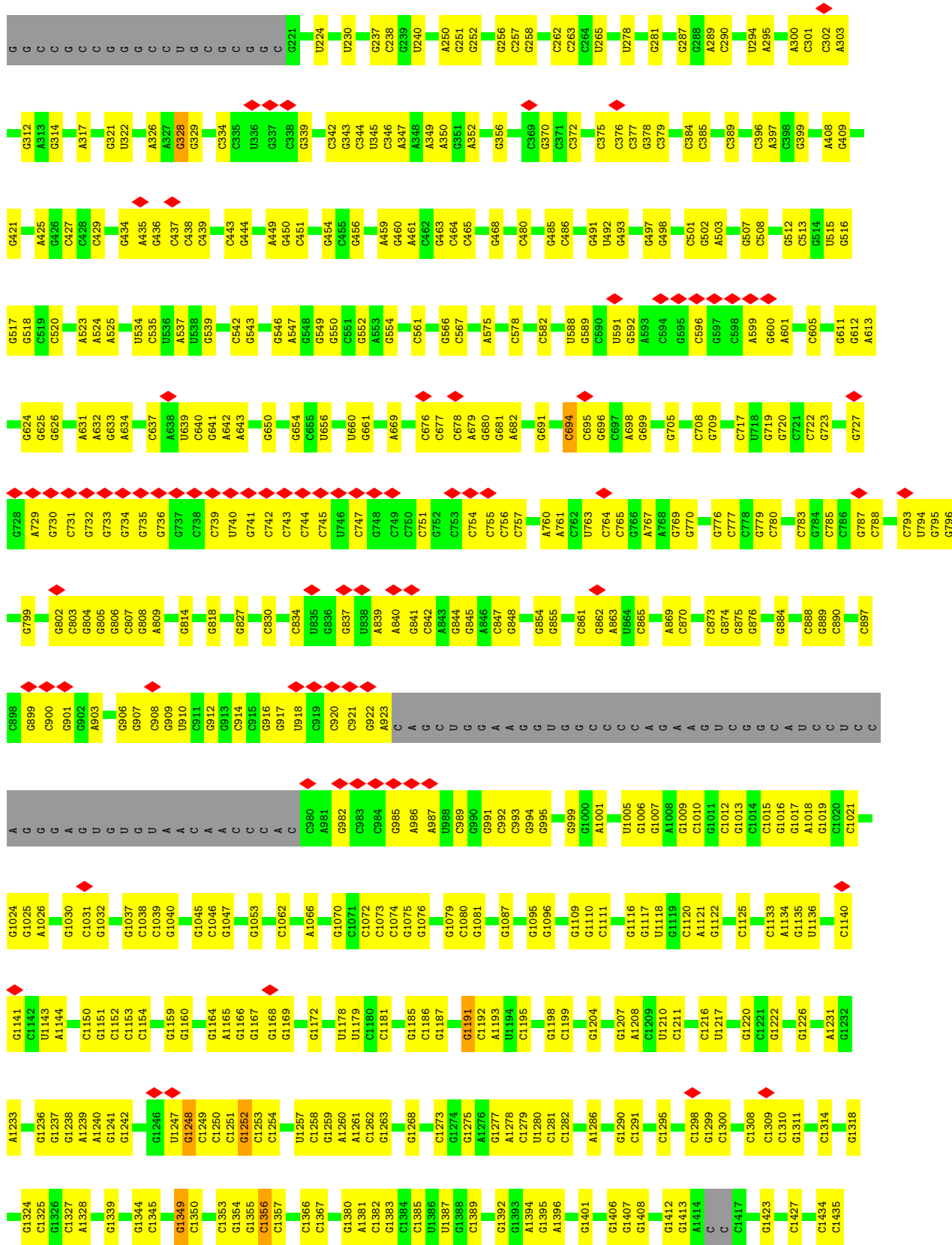
• Molecule 43: Ubiquitin/Ribosomal protein L40e

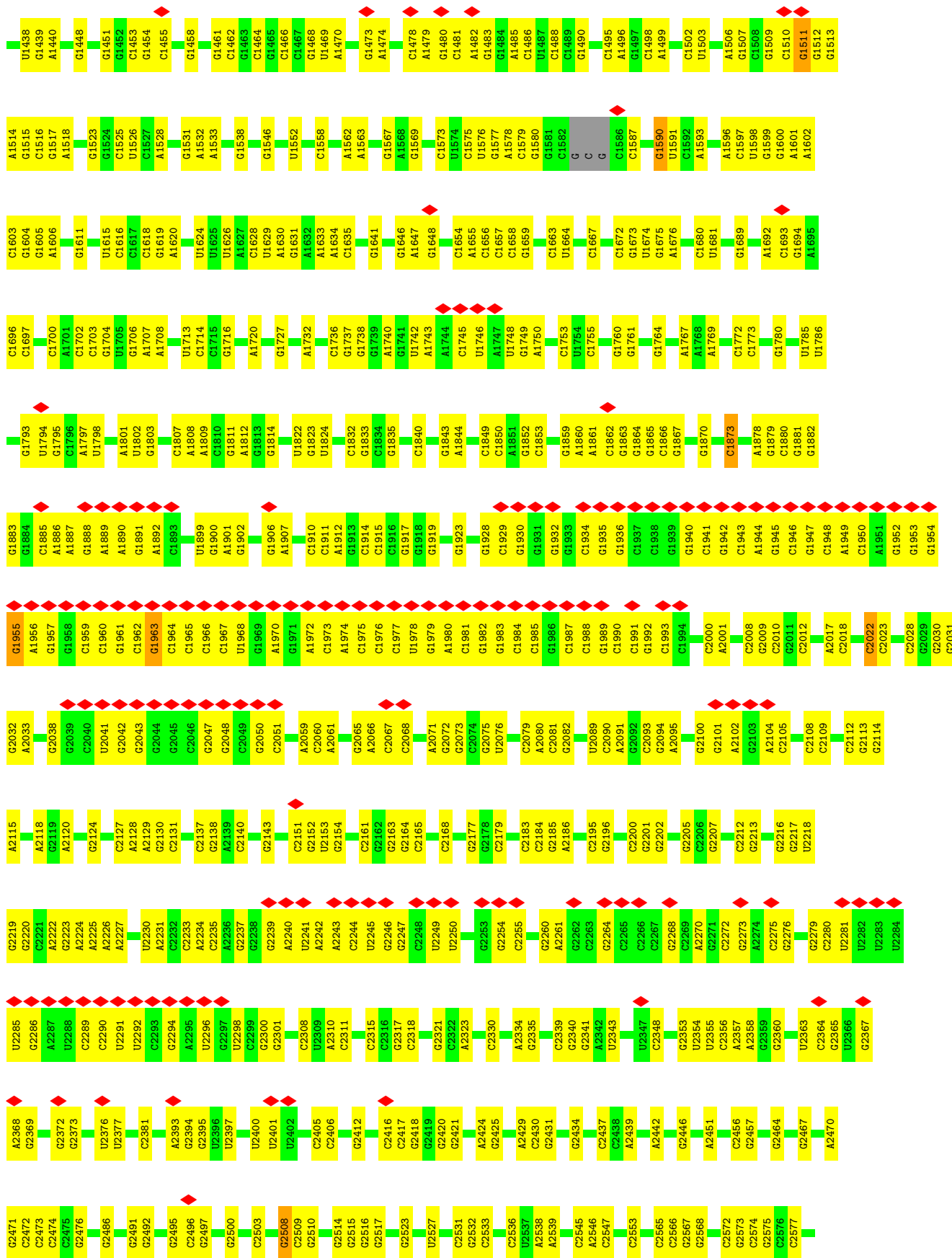


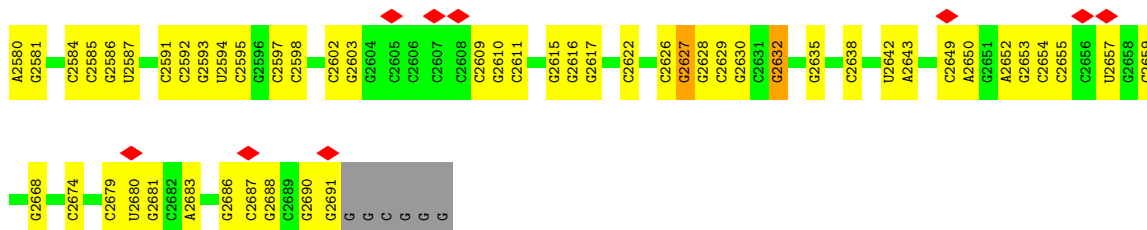
ALA

• Molecule 44: Large Subunit rRNA

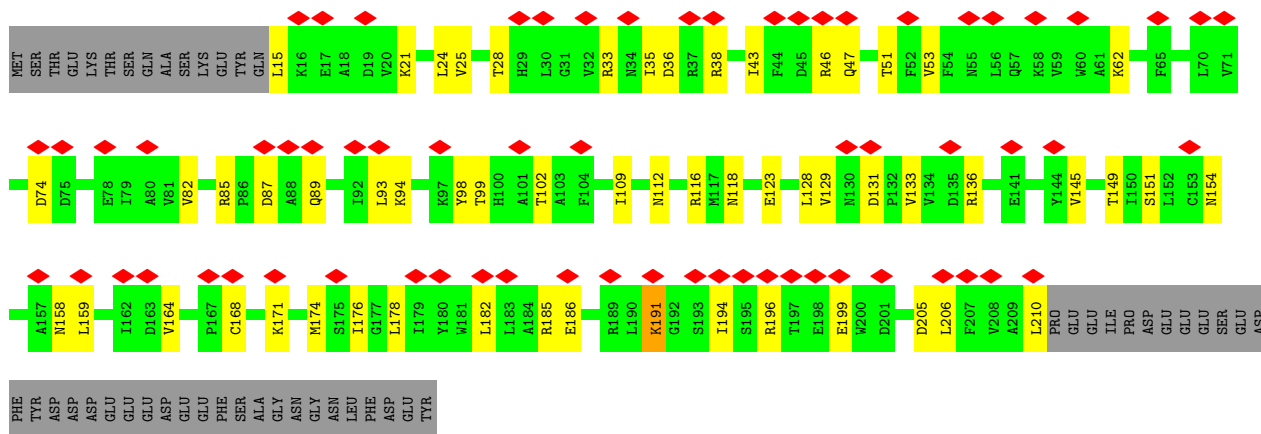




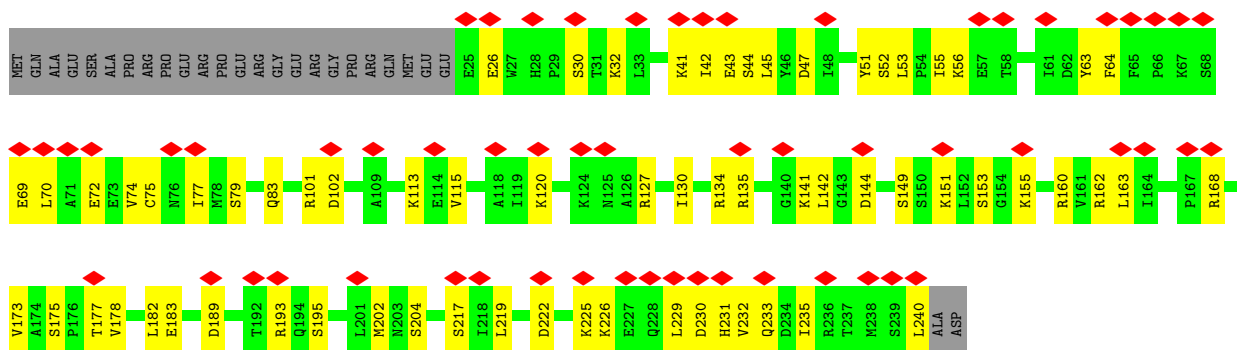




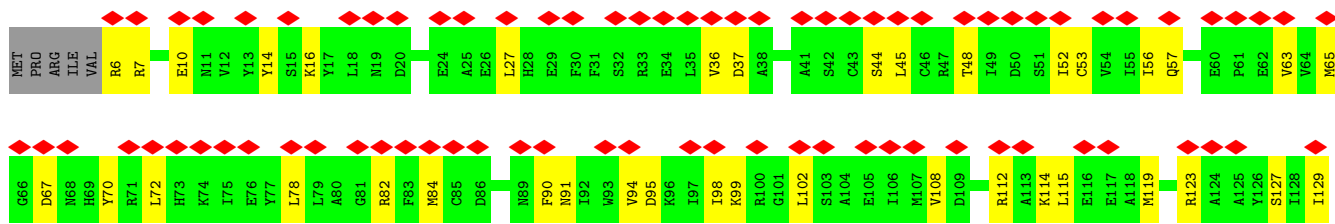
• Molecule 45: Ribosomal protein SA

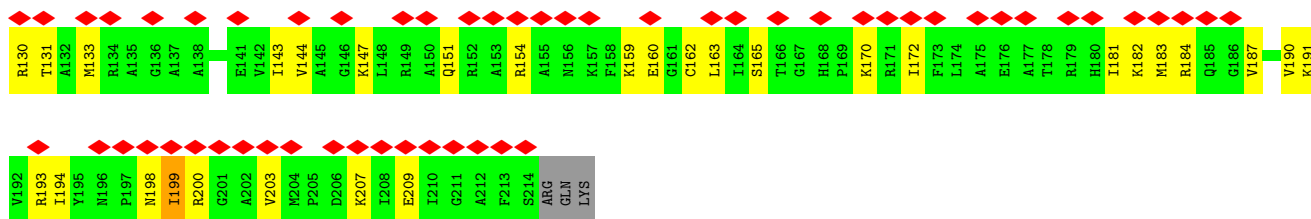


• Molecule 46: Ribosomal protein S2

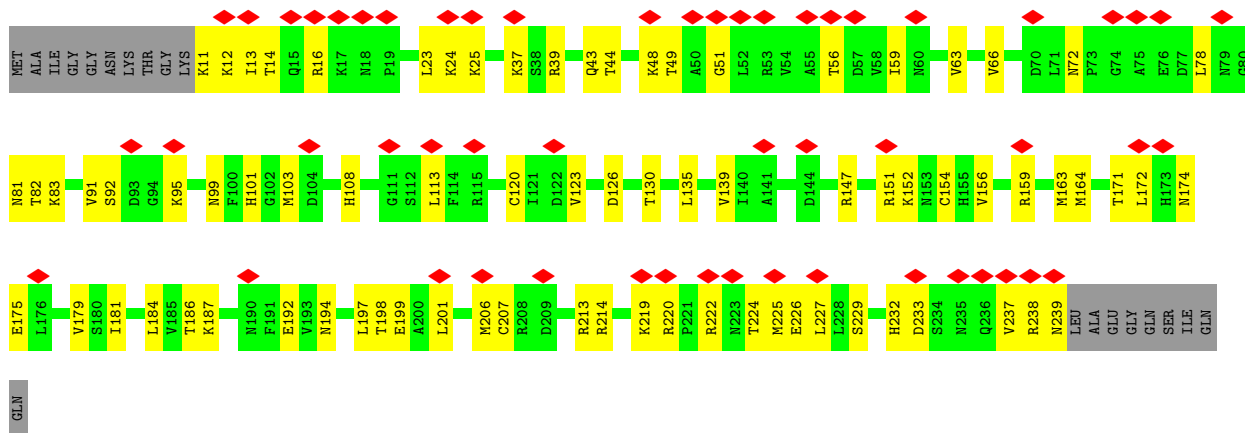


• Molecule 47: Ribosomal protein S3

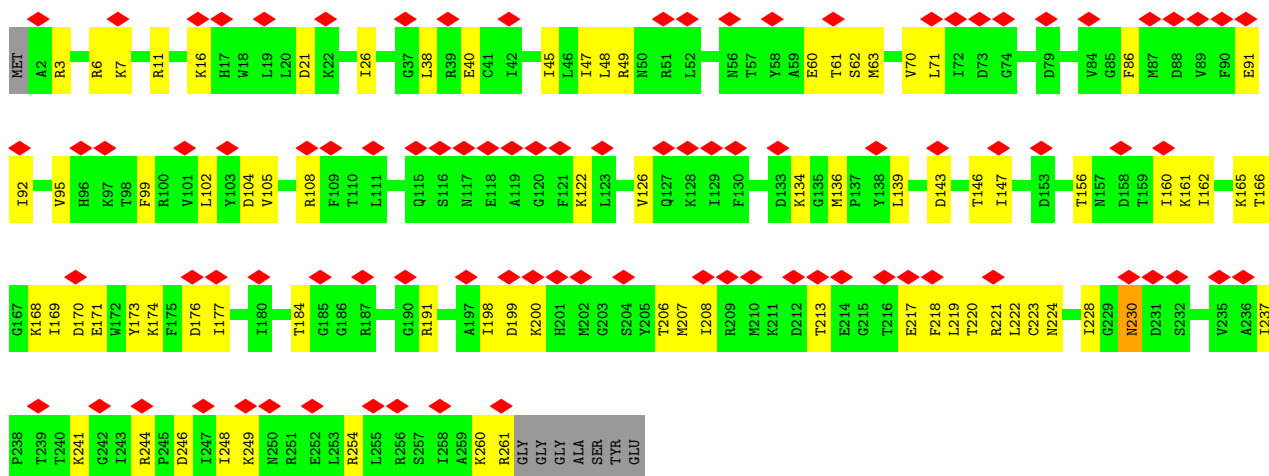




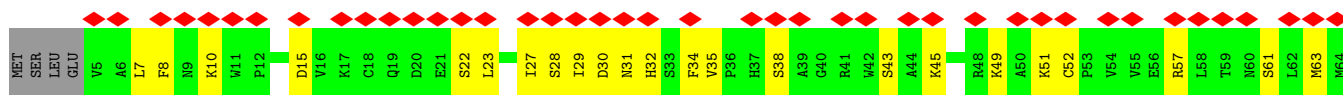
• Molecule 48: Ribosomal protein S3a

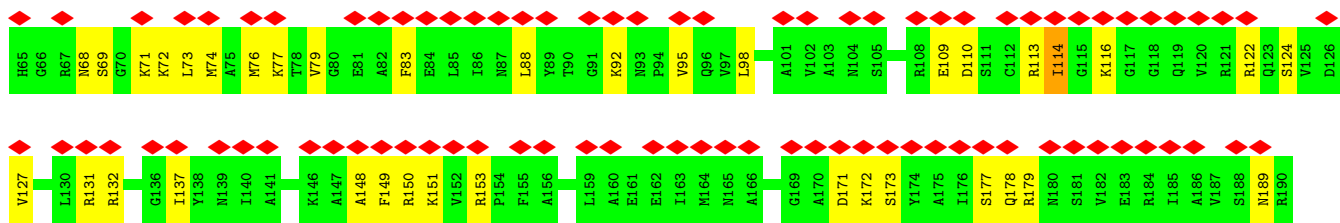


• Molecule 49: Ribosomal protein S4

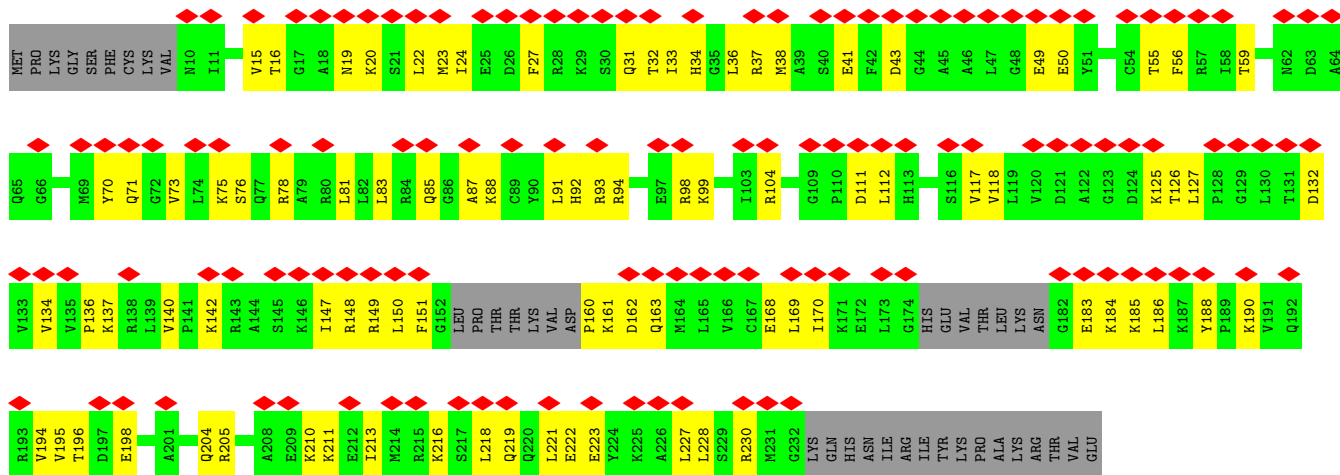


• Molecule 50: Ribosomal protein S5

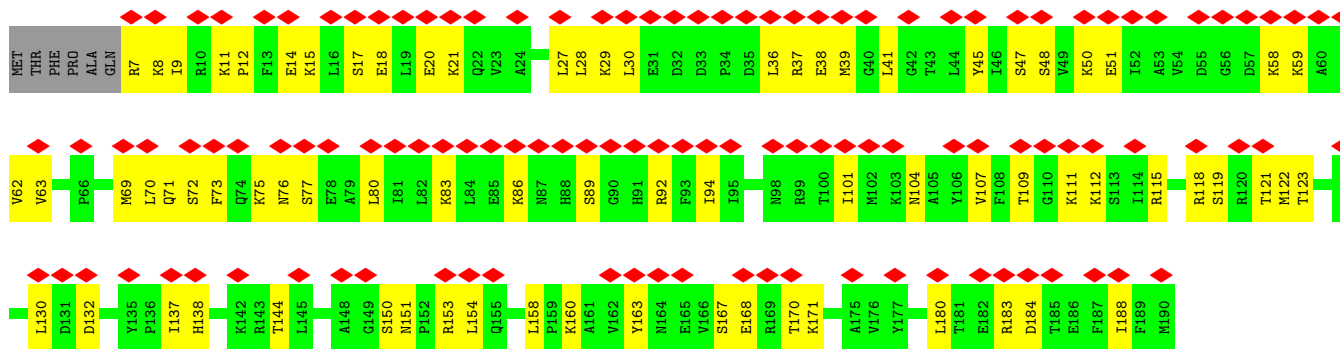




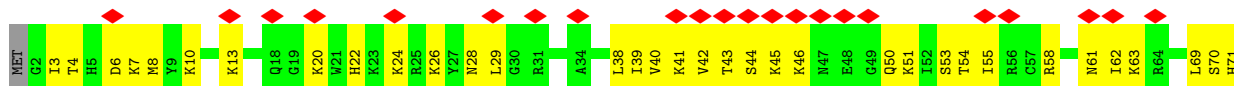
• Molecule 51: Ribosomal protein S6



• Molecule 52: Ribosomal protein S7

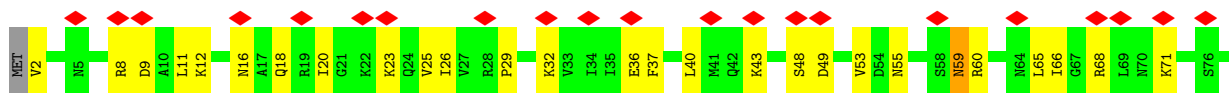


• Molecule 53: Ribosomal protein S8

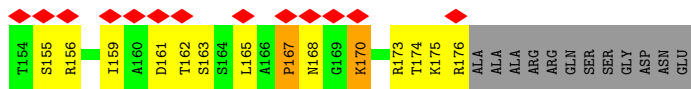
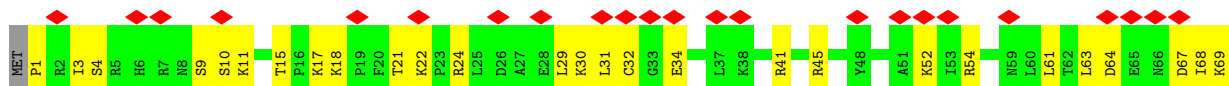




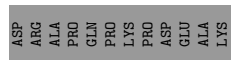
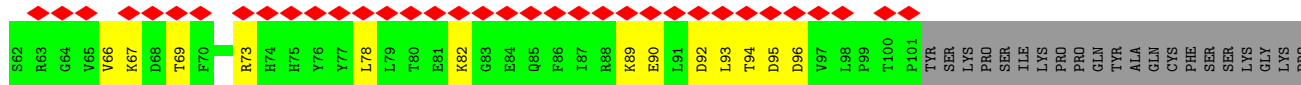
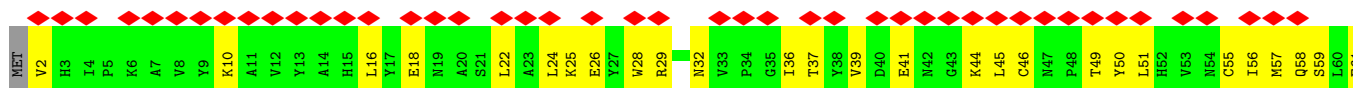
• Molecule 54: Ribosomal protein S15A



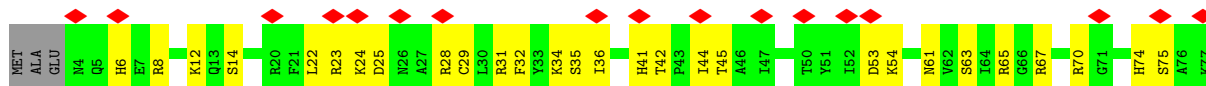
• Molecule 55: Ribosomal protein S9



• Molecule 56: Ribosomal protein S10B

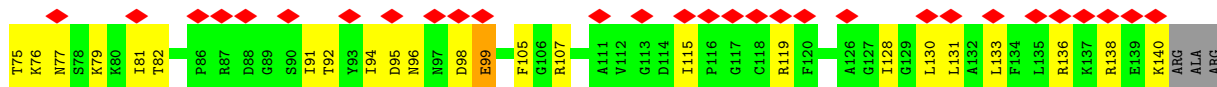
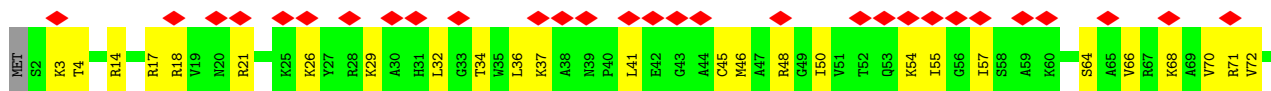
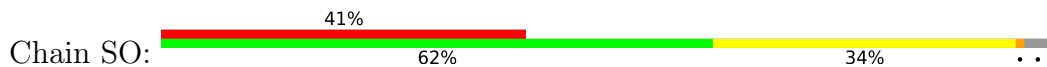


• Molecule 57: Ribosomal protein S11

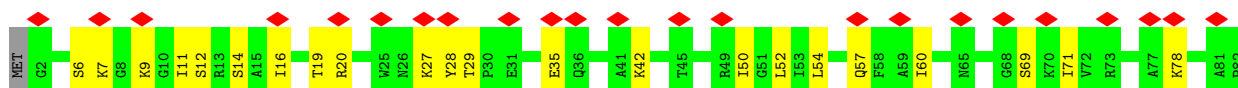




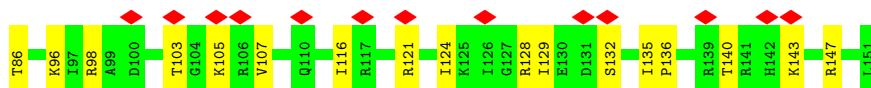
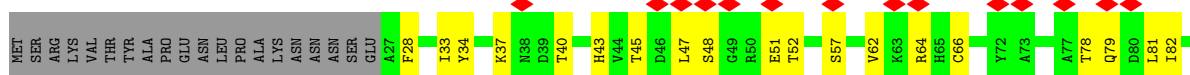
• Molecule 58: Ribosomal protein S23



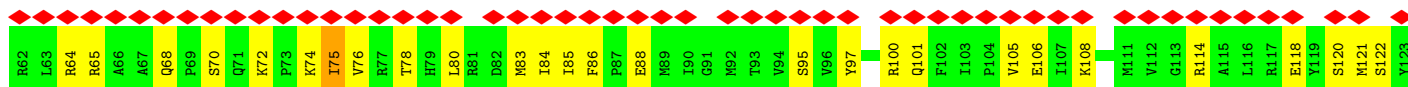
• Molecule 59: Ribosomal protein S13

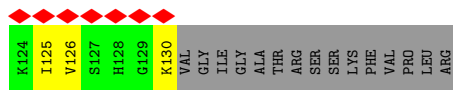


• Molecule 60: Ribosomal protein S14

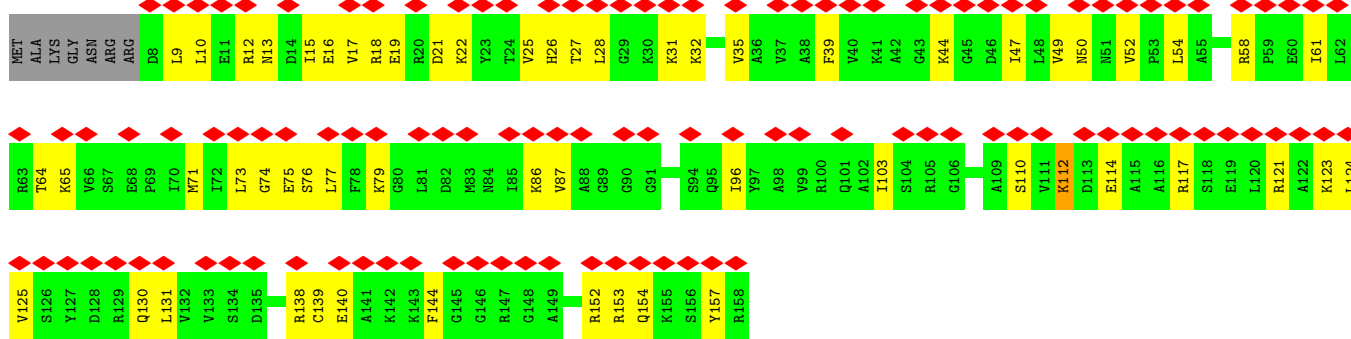
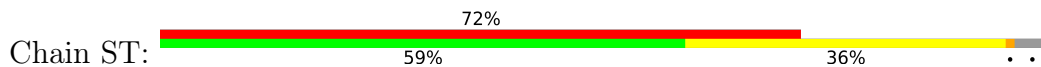


• Molecule 61: Ribosomal protein S15

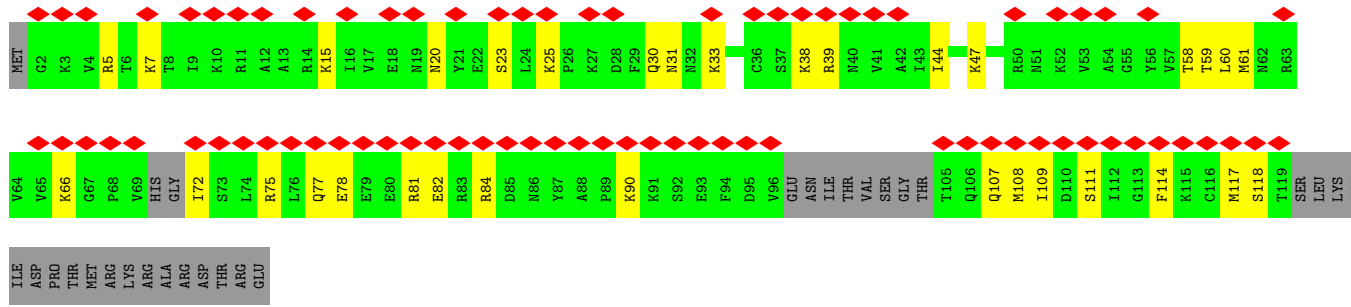




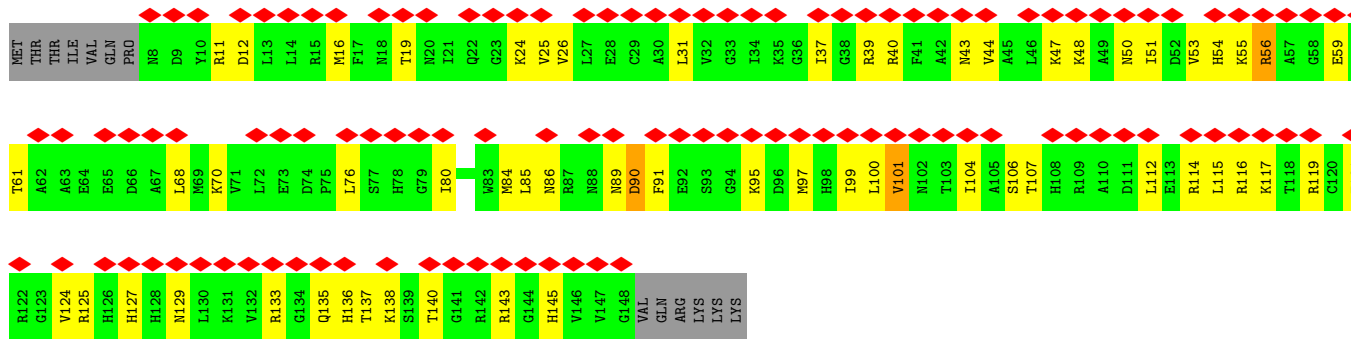
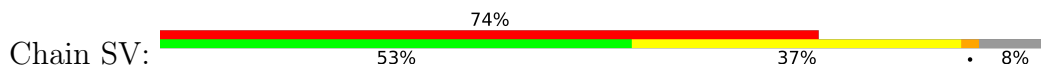
• Molecule 62: Ribosomal protein S16



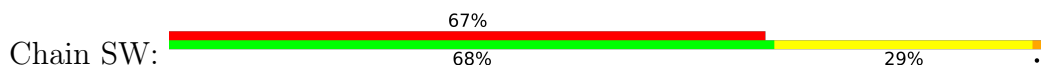
• Molecule 63: Ribosomal protein S17

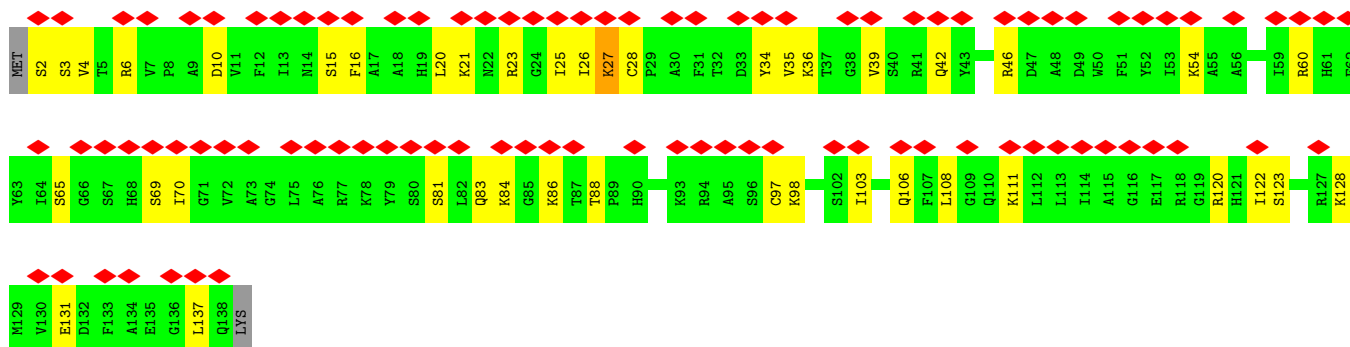


• Molecule 64: Ribosomal protein S18

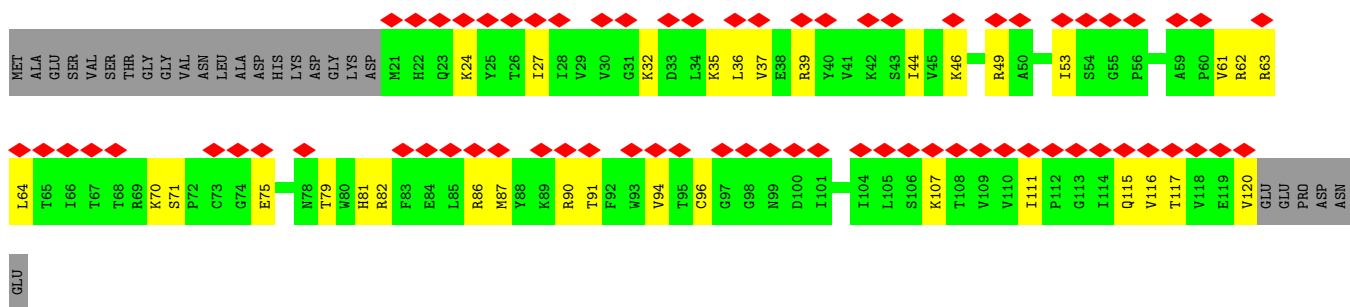


• Molecule 65: Ribosomal protein S19e

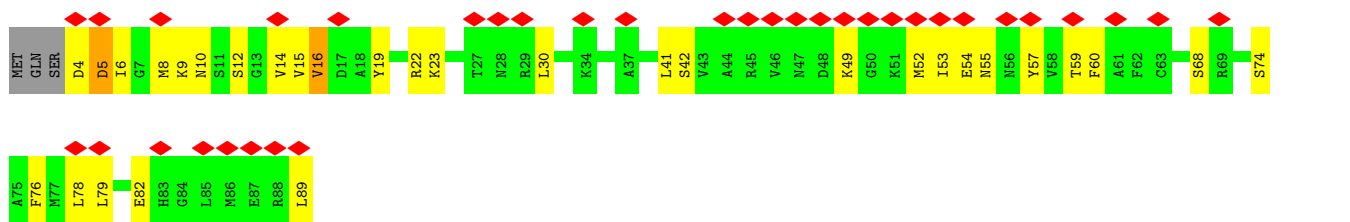




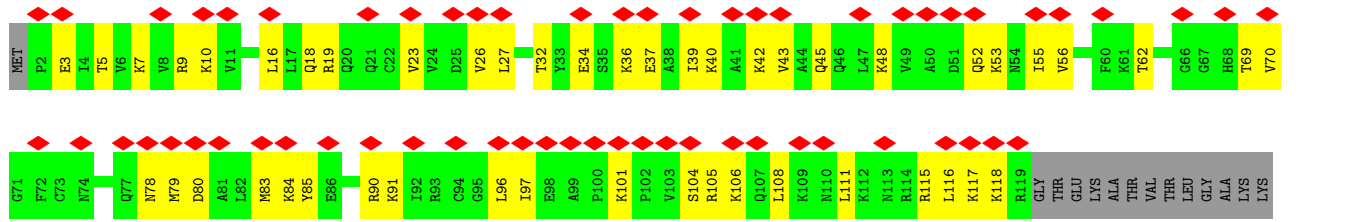
• Molecule 66: Ribosomal protein S20



• Molecule 67: Ribosomal protein S21

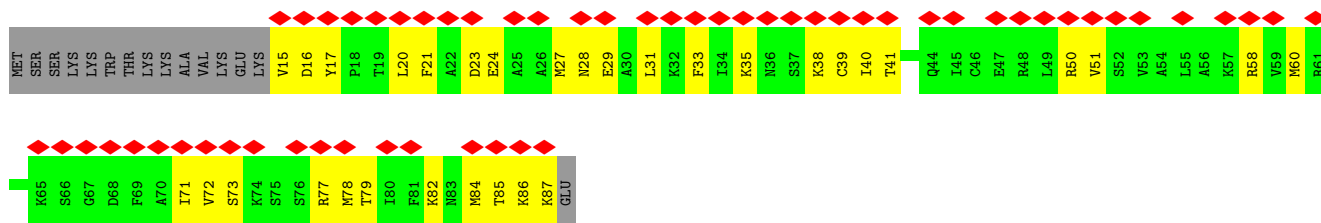


• Molecule 68: Ribosomal protein S24

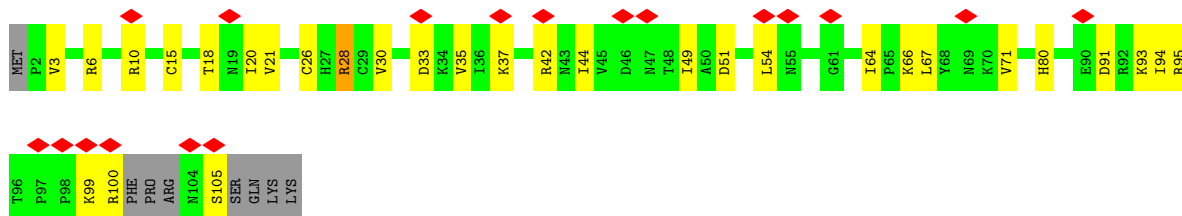


• Molecule 69: Ribosomal protein S25

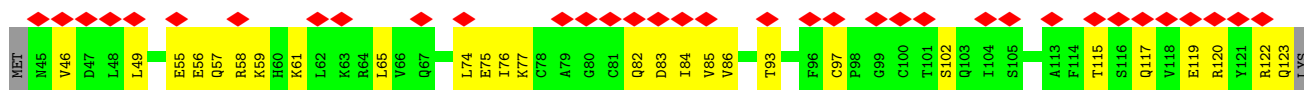
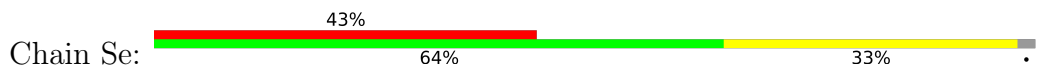




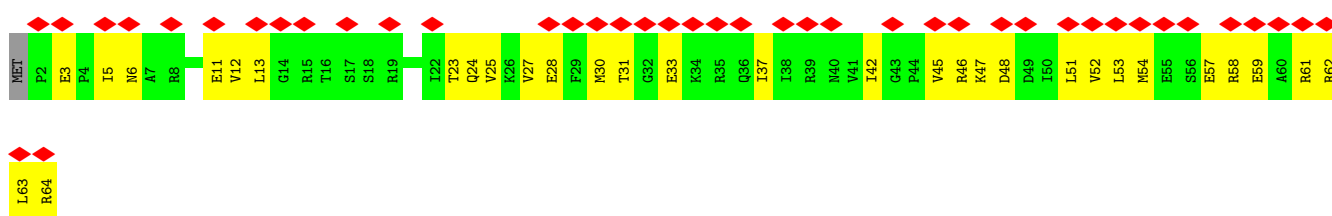
• Molecule 70: Ribosomal protein S26



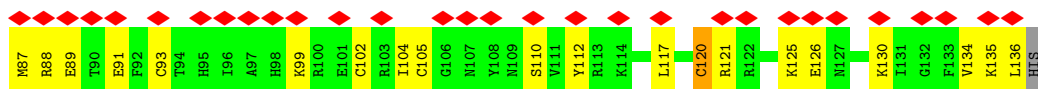
• Molecule 71: Ribosomal protein S27



• Molecule 72: Ribosomal protein S28

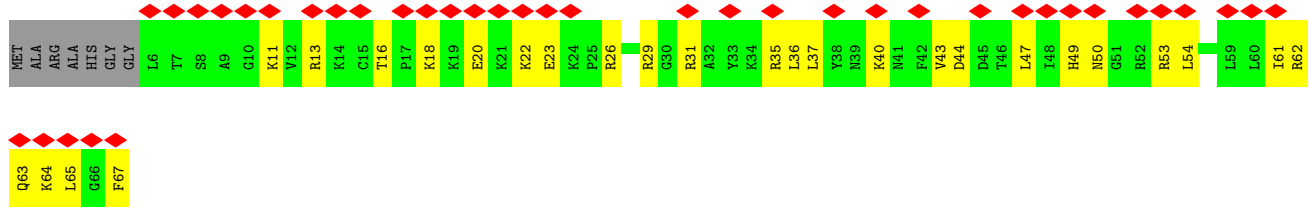


• Molecule 73: Ribosomal protein S29A

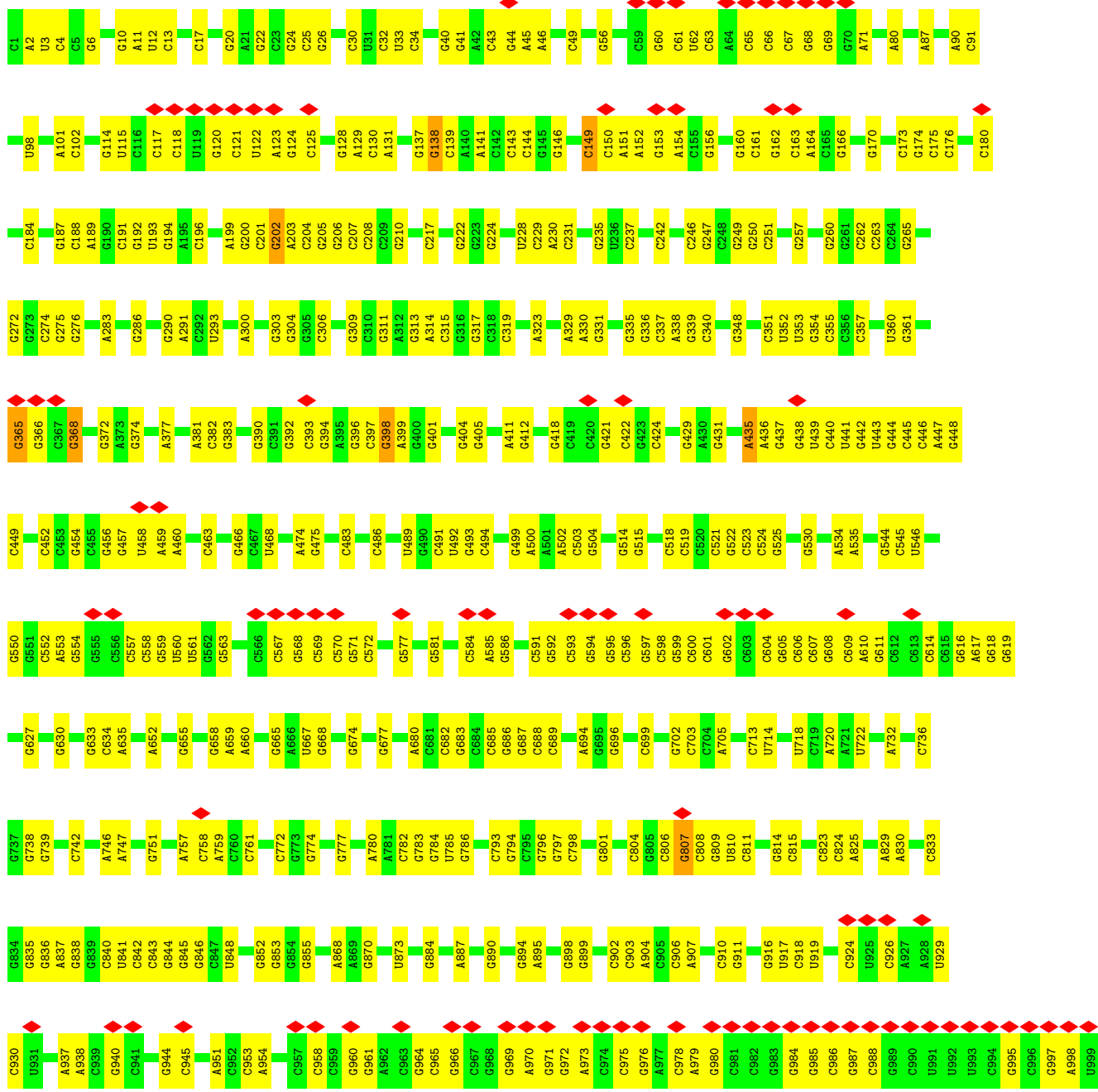


• Molecule 74: Ribosomal protein S30





● Molecule 75: Small Subunit rRNA



C1000	G1001	C1002	G1003	C1004	G1005	C1006	G1007	C1008	G1009	C1010	G1011	C1012	G1015	C1026	C1027	G1028	C1029	G1030	G1034	C1040	G1043	U1047	C1048	U1049	G1050	C1051	U1052	C1053	C1054	A1055	U1056	U1057	G1058	C1059	G1060	A1061	C1062	A1063	A1067	G1068	C1069	C1076	G1079	C1080	C1083	C1087	G1088	C1089						
C1090	G1091	C1092	G1093	C1094	G1095	A1096	C1097	G1098	C1099	G1103	C1104	G1105	G1106	C1107	A1108	G1109	C1110	G1111	C1112	G1113	A1114	G1115	C1116	A1117	C1118	G1119	C1120	G1121	C1122	G1123	C1124	G1125	C1126	G1127	A1128	U1129	A1133	G1134	C1135	U1138	G1139	U1140	G1141	U1148	C1149	A1150	G1151	A1152	C1153	G1154	C1157	U1158	G1159	G1160
G1161	C1162	C1163	G1164	C1165	A1166	C1167	G1168	A1175	C1176	A1177	C1178	U1179	G1180	G1181	C1182	G1183	C1184	G1185	C1186	C1187	A1188	A1189	G1190	C1191	G1193	C1194	C1195	C1198	C1201	C1202	A1203	G1204	A1205	A1206	C1207	G1208	C1209	G1210	C1211	G1212	C1213	A1214	G1215	C1223	G1224	U1225	G1226	C1227	C1228	C1229	G1230	C1231	G1232	
C1235	G1236	C1237	G1240	C1241	U1242	G1243	A1246	C1247	G1248	G1254	C1255	G1256	C1257	A1258	C1259	G1260	A1261	G1262	A1265	U1266	G1267	U1271	G1272	U1273	G1278	C1279	C1285	G1286	C1287	A1288	C1289	C1290	G1293	C1294	G1295	C1296	C1297	C1301	U1305	C1306	C1307	G1310	C1314	A1319	C1322									
A1323	C1324	C1325	U1345	G1346	C1347	G1348	C1349	G1350	C1351	G1352	G1353	A1359	G1367	G1368	A1369	C1370	G1371	C1372	G1373	C1374	G1375	A1376	A1377	G1380	C1384	G1385	A1386	C1391	C1392	G1393	U1398	G1399	G1400	A1401	G1402	G1403	A1404	A1405	G1406	G1407	A1408	G1409	A1410	A1411	G1412	U1413	C1414	G1415	U1416	A1417	A1421			
G1422	G1423	U1424	A1425	U1426	C1427	U1430	G1433	U1434	G1435	A1436	A1437	C1438	U1446	G1447	G1448	A1449	U1450	C1451	C1452	U1453	U1454																																	

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	17963	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 ($e^-/\text{\AA}^2$)	30.0	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	1900	Depositor
Magnification	Not provided	
Image detector	GATAN K2 BASE (4k x 4k)	Depositor
Maximum map value	15.203	Depositor
Minimum map value	-7.156	Depositor
Average map value	0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	3.84	Depositor
Map size (Å)	410.0, 410.0, 410.0	wwPDB
Map dimensions	500, 500, 500	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.82, 0.82, 0.82	Depositor

5 Model quality i

5.1 Standard geometry i

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	LA	0.58	0/1919	0.81	0/2577
2	LB	0.57	0/3058	0.82	0/4129
3	LC	0.58	0/2459	0.78	0/3335
4	LD	0.59	0/3393	0.85	1/5292 (0.0%)
5	LE	0.59	0/2798	0.83	0/4361
6	LF	0.58	0/2380	0.77	0/3193
7	LG	0.52	0/450	0.82	0/601
8	LH	0.56	0/1756	0.80	1/2367 (0.0%)
9	LI	0.57	0/1520	0.76	0/2052
10	LJ	0.58	0/1479	0.82	1/1997 (0.1%)
11	LK	0.58	0/1231	0.76	0/1646
12	LL	0.60	0/1346	0.78	0/1807
13	LM	0.58	0/1628	0.79	0/2180
14	LN	0.55	0/1037	0.79	0/1390
15	LO	0.56	0/1751	0.80	1/2346 (0.0%)
16	LP	0.55	0/1610	0.78	0/2160
17	LQ	0.60	0/1257	0.80	1/1681 (0.1%)
18	LR	0.60	0/1425	0.84	0/1907
19	LS	0.55	0/1609	0.77	0/2129
20	LT	0.56	0/1457	0.80	0/1957
21	LU	0.55	0/1283	0.79	0/1725
22	LV	0.56	0/861	0.85	0/1158
23	LW	0.58	0/1035	0.80	1/1396 (0.1%)
24	LX	0.54	0/553	0.93	2/736 (0.3%)
25	LY	0.56	0/982	0.84	1/1326 (0.1%)
26	LZ	0.59	0/1091	0.80	0/1454
27	La	0.58	0/1030	0.80	0/1388
28	Lb	0.59	0/1231	0.80	0/1647
29	Lc	0.59	0/432	0.89	1/572 (0.2%)
30	Ld	0.60	0/778	0.77	0/1051
31	Le	0.56	0/832	0.79	0/1118
32	Lf	0.59	0/1101	0.77	0/1467
33	Lg	0.58	0/793	0.83	0/1062
34	Lh	0.59	0/789	0.83	0/1060

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
35	Li	0.55	0/980	0.77	0/1302
36	Lj	0.58	0/741	0.80	0/982
37	Lk	0.61	0/727	0.86	0/963
38	Ll	0.58	0/562	0.83	1/749 (0.1%)
39	Ln	0.64	0/1710	0.86	0/2305
40	Lo	0.51	0/229	0.68	0/291
41	Lp	0.57	0/778	0.75	0/1029
42	Lq	0.55	0/717	0.81	0/955
43	Ls	0.58	0/392	0.90	0/522
44	Lt	0.61	0/62235	0.86	33/97128 (0.0%)
45	SA	0.59	0/1603	0.82	1/2178 (0.0%)
46	SB	0.61	0/1700	0.84	2/2293 (0.1%)
47	SC	0.60	0/1685	0.81	0/2262
48	SD	0.58	0/1890	0.80	0/2546
49	SE	0.58	0/2131	0.77	0/2874
50	SF	0.62	0/1465	0.79	0/1970
51	SG	0.58	0/1665	0.83	1/2219 (0.0%)
52	SH	0.58	0/1508	0.84	0/2032
53	SI	0.58	0/1378	0.80	0/1848
54	SJ	0.59	0/1048	0.80	1/1412 (0.1%)
55	SK	0.58	0/1443	0.84	1/1930 (0.1%)
56	SL	0.60	0/842	0.81	0/1147
57	SM	0.57	0/1280	0.83	0/1712
58	SO	0.57	0/1095	0.80	0/1467
59	SP	0.57	0/1215	0.74	0/1632
60	SQ	0.60	0/928	0.88	0/1246
61	SR	0.61	0/961	0.82	0/1284
62	ST	0.62	0/1192	0.83	0/1594
63	SU	0.59	0/879	0.82	0/1170
64	SV	0.60	0/1133	0.87	0/1519
65	SW	0.63	0/1095	0.79	0/1473
66	SX	0.59	0/809	0.77	0/1092
67	SY	0.61	0/659	0.83	0/883
68	Sb	0.57	0/956	0.81	0/1279
69	Sc	0.62	0/584	0.78	0/779
70	Sd	0.57	0/833	0.79	1/1118 (0.1%)
71	Se	0.61	0/635	0.79	0/861
72	Sg	0.61	0/508	0.83	0/677
73	Sh	0.58	0/425	0.92	2/563 (0.4%)
74	Sj	0.57	0/518	0.87	0/690
75	St	0.60	1/34858 (0.0%)	0.87	17/54401 (0.0%)
All	All	0.60	1/186346 (0.0%)	0.84	70/272644 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
75	St	149	C	O3'-P	5.11	1.67	1.61

All (70) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
44	Lt	1356	C	C2'-C3'-O3'	8.06	127.24	109.50
44	Lt	1506	A	C2'-C3'-O3'	8.01	127.12	109.50
55	SK	167	PRO	N-CA-CB	-7.99	93.71	103.30
44	Lt	1349	G	C2'-C3'-O3'	7.98	127.06	109.50
29	Lc	50	ASP	CB-CA-C	7.86	126.13	110.40
44	Lt	2022	C	C2'-C3'-O3'	7.61	126.25	109.50
44	Lt	1252	G	C2'-C3'-O3'	7.52	126.04	109.50
75	St	202	G	C3'-C2'-C1'	-7.41	95.57	101.50
73	Sh	120	CYS	CB-CA-C	-7.39	95.63	110.40
75	St	1416	U	C2'-C3'-O3'	6.95	124.82	113.70
44	Lt	1511	G	C2'-C3'-O3'	6.91	124.75	113.70
75	St	435	A	C2'-C3'-O3'	6.86	124.67	113.70
44	Lt	2574	C	C2'-C3'-O3'	6.81	124.60	113.70
44	Lt	1590	G	C3'-C2'-C1'	-6.61	96.21	101.50
51	SG	56	PHE	CB-CA-C	-6.54	97.33	110.40
75	St	807	G	C3'-C2'-C1'	-6.47	96.32	101.50
44	Lt	2627	G	C2'-C3'-O3'	6.41	123.96	113.70
44	Lt	1236	G	C2'-C3'-O3'	6.33	123.83	113.70
8	LH	220	PHE	CB-CA-C	6.29	122.99	110.40
75	St	368	G	C3'-C2'-C1'	-6.11	96.62	101.50
46	SB	64	PHE	CB-CA-C	6.09	122.57	110.40
44	Lt	1590	G	O4'-C1'-N9	6.03	113.02	108.20
44	Lt	176	C	O4'-C1'-N1	6.00	113.00	108.20
44	Lt	157	G	C3'-C2'-C1'	-5.97	96.73	101.50
44	Lt	2622	C	O4'-C1'-N1	5.92	112.94	108.20
44	Lt	328	G	C1'-O4'-C4'	-5.91	105.17	109.90
75	St	191	C	C2'-C3'-O3'	5.90	123.15	113.70
15	LO	4	TYR	CB-CA-C	5.88	122.16	110.40
44	Lt	1914	C	C2'-C3'-O3'	5.87	123.10	113.70
38	Ll	45	TYR	CB-CA-C	-5.80	98.80	110.40
75	St	365	G	C3'-C2'-C1'	-5.80	96.86	101.50
44	Lt	1248	G	C2'-C3'-O3'	5.73	122.86	113.70
44	Lt	1873	C	O4'-C1'-N1	5.72	112.77	108.20
75	St	599	G	C2'-C3'-O3'	5.67	122.77	113.70
25	LY	26	ARG	CB-CA-C	5.61	121.63	110.40
44	Lt	694	C	P-O3'-C3'	5.53	126.34	119.70
73	Sh	120	CYS	CA-CB-SG	5.53	123.95	114.00

Continued on next page...

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
70	Sd	28	ARG	CB-CA-C	-5.52	99.36	110.40
75	St	138	G	C3'-C2'-C1'	-5.52	97.08	101.50
44	Lt	71	C	C2'-C3'-O3'	5.52	122.53	113.70
44	Lt	356	G	O4'-C1'-N9	5.52	112.61	108.20
75	St	1201	C	O4'-C1'-N1	5.44	112.55	108.20
75	St	90	A	P-O3'-C3'	5.44	126.22	119.70
24	LX	22	PHE	CB-CA-C	-5.41	99.59	110.40
45	SA	98	TYR	CB-CA-C	5.37	121.14	110.40
44	Lt	2508	G	P-O3'-C3'	5.36	126.13	119.70
44	Lt	1590	G	C1'-O4'-C4'	-5.30	105.66	109.90
75	St	1059	C	C2'-C3'-O3'	5.29	122.17	113.70
44	Lt	1191	G	C3'-C2'-C1'	5.28	105.72	101.50
4	LD	76	C	P-O3'-C3'	5.28	126.03	119.70
75	St	1185	G	C3'-C2'-C1'	-5.27	97.28	101.50
44	Lt	1453	C	O4'-C1'-N1	5.27	112.42	108.20
44	Lt	582	C	O4'-C1'-N1	5.23	112.39	108.20
23	LW	47	LYS	C-N-CA	-5.23	111.31	122.30
75	St	365	G	P-O3'-C3'	5.23	125.97	119.70
44	Lt	2632	G	O4'-C1'-N9	5.22	112.38	108.20
44	Lt	1955	G	C3'-C2'-C1'	5.21	105.67	101.50
24	LX	7	CYS	CB-CA-C	-5.20	100.00	110.40
44	Lt	660	U	O5'-P-OP1	-5.20	101.02	105.70
54	SJ	59	ASN	CB-CA-C	5.19	120.78	110.40
75	St	807	G	C4'-C3'-C2'	-5.14	97.46	102.60
44	Lt	1914	C	P-O3'-C3'	5.14	125.87	119.70
10	LJ	2	PRO	CA-N-CD	-5.11	104.34	111.50
44	Lt	1963	G	C3'-C2'-C1'	5.10	105.58	101.50
75	St	398	G	O4'-C1'-N9	5.04	112.24	108.20
44	Lt	1654	C	O4'-C1'-N1	5.04	112.23	108.20
75	St	655	G	O4'-C1'-N9	5.04	112.23	108.20
17	LQ	100	ASN	CB-CA-C	5.03	120.46	110.40
46	SB	51	TYR	CB-CA-C	5.02	120.45	110.40
44	Lt	1268	G	C3'-C2'-C1'	-5.01	97.49	101.50

There are no chirality outliers.

There are no planarity outliers.

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

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	LA	248/251 (99%)	237 (96%)	11 (4%)	0	100	100
2	LB	376/379 (99%)	357 (95%)	17 (4%)	2 (0%)	29	63
3	LC	307/316 (97%)	293 (95%)	12 (4%)	2 (1%)	22	57
6	LF	289/297 (97%)	271 (94%)	17 (6%)	1 (0%)	41	72
7	LG	48/51 (94%)	46 (96%)	2 (4%)	0	100	100
8	LH	211/235 (90%)	205 (97%)	6 (3%)	0	100	100
9	LI	183/225 (81%)	177 (97%)	6 (3%)	0	100	100
10	LJ	182/185 (98%)	168 (92%)	11 (6%)	3 (2%)	9	39
11	LK	141/210 (67%)	133 (94%)	8 (6%)	0	100	100
12	LL	163/173 (94%)	159 (98%)	3 (2%)	1 (1%)	25	60
13	LM	199/234 (85%)	190 (96%)	7 (4%)	2 (1%)	15	49
14	LN	128/131 (98%)	120 (94%)	7 (6%)	1 (1%)	19	53
15	LO	201/204 (98%)	194 (96%)	6 (3%)	1 (0%)	29	63
16	LP	192/197 (98%)	187 (97%)	4 (2%)	1 (0%)	29	63
17	LQ	151/164 (92%)	144 (95%)	7 (5%)	0	100	100
18	LR	176/179 (98%)	166 (94%)	8 (4%)	2 (1%)	14	47
19	LS	190/196 (97%)	183 (96%)	5 (3%)	2 (1%)	14	47
20	LT	168/173 (97%)	160 (95%)	8 (5%)	0	100	100
21	LU	154/159 (97%)	142 (92%)	9 (6%)	3 (2%)	8	36
22	LV	101/124 (82%)	87 (86%)	12 (12%)	2 (2%)	7	34
23	LW	130/142 (92%)	128 (98%)	2 (2%)	0	100	100
24	LX	61/189 (32%)	58 (95%)	3 (5%)	0	100	100
25	LY	117/141 (83%)	110 (94%)	6 (5%)	1 (1%)	17	51
26	LZ	131/135 (97%)	124 (95%)	6 (5%)	1 (1%)	19	53
27	La	123/135 (91%)	112 (91%)	10 (8%)	1 (1%)	19	53

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
28	Lb	146/149 (98%)	140 (96%)	4 (3%)	2 (1%)	11	41
29	Lc	49/62 (79%)	44 (90%)	3 (6%)	2 (4%)	3	19
30	Ld	100/109 (92%)	96 (96%)	4 (4%)	0	100	100
31	Le	98/106 (92%)	94 (96%)	3 (3%)	1 (1%)	15	49
32	Lf	128/136 (94%)	121 (94%)	6 (5%)	1 (1%)	19	53
33	Lg	96/123 (78%)	93 (97%)	3 (3%)	0	100	100
34	Lh	94/120 (78%)	89 (95%)	4 (4%)	1 (1%)	14	47
35	Li	116/124 (94%)	109 (94%)	6 (5%)	1 (1%)	17	51
36	Lj	87/90 (97%)	79 (91%)	6 (7%)	2 (2%)	6	32
37	Lk	86/89 (97%)	79 (92%)	5 (6%)	2 (2%)	6	32
38	Ll	70/77 (91%)	67 (96%)	3 (4%)	0	100	100
39	Ln	207/217 (95%)	169 (82%)	30 (14%)	8 (4%)	3	21
40	Lo	23/25 (92%)	23 (100%)	0	0	100	100
41	Lp	91/106 (86%)	91 (100%)	0	0	100	100
42	Lq	89/94 (95%)	82 (92%)	6 (7%)	1 (1%)	14	47
43	Ls	45/127 (35%)	42 (93%)	2 (4%)	1 (2%)	6	33
45	SA	194/245 (79%)	183 (94%)	10 (5%)	1 (0%)	29	63
46	SB	214/242 (88%)	199 (93%)	15 (7%)	0	100	100
47	SC	207/217 (95%)	191 (92%)	14 (7%)	2 (1%)	15	49
48	SD	227/248 (92%)	213 (94%)	13 (6%)	1 (0%)	34	68
49	SE	258/268 (96%)	244 (95%)	13 (5%)	1 (0%)	34	68
50	SF	184/190 (97%)	173 (94%)	8 (4%)	3 (2%)	9	39
51	SG	203/248 (82%)	192 (95%)	9 (4%)	2 (1%)	15	49
52	SH	182/190 (96%)	166 (91%)	15 (8%)	1 (0%)	29	63
53	SI	171/174 (98%)	161 (94%)	9 (5%)	1 (1%)	25	60
54	SJ	127/130 (98%)	117 (92%)	8 (6%)	2 (2%)	9	39
55	SK	174/189 (92%)	164 (94%)	7 (4%)	3 (2%)	9	37
56	SL	98/134 (73%)	92 (94%)	5 (5%)	1 (1%)	15	49
57	SM	149/154 (97%)	135 (91%)	9 (6%)	5 (3%)	3	24
58	SO	137/143 (96%)	132 (96%)	4 (3%)	1 (1%)	22	57
59	SP	148/154 (96%)	144 (97%)	4 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
60	SQ	123/145 (85%)	111 (90%)	11 (9%)	1 (1%)	19	53
61	SR	114/145 (79%)	103 (90%)	8 (7%)	3 (3%)	5	29
62	ST	149/158 (94%)	141 (95%)	6 (4%)	2 (1%)	12	43
63	SU	102/137 (74%)	99 (97%)	3 (3%)	0	100	100
64	SV	139/154 (90%)	123 (88%)	12 (9%)	4 (3%)	4	27
65	SW	135/139 (97%)	126 (93%)	7 (5%)	2 (2%)	10	40
66	SX	98/126 (78%)	97 (99%)	1 (1%)	0	100	100
67	SY	84/89 (94%)	79 (94%)	2 (2%)	3 (4%)	3	23
68	Sb	116/132 (88%)	108 (93%)	8 (7%)	0	100	100
69	Sc	71/88 (81%)	67 (94%)	4 (6%)	0	100	100
70	Sd	97/109 (89%)	91 (94%)	6 (6%)	0	100	100
71	Se	77/81 (95%)	74 (96%)	3 (4%)	0	100	100
72	Sg	61/64 (95%)	53 (87%)	7 (12%)	1 (2%)	9	39
73	Sh	48/51 (94%)	45 (94%)	3 (6%)	0	100	100
74	Sj	60/69 (87%)	55 (92%)	4 (7%)	1 (2%)	9	37
All	All	10042/11192 (90%)	9447 (94%)	506 (5%)	89 (1%)	21	51

All (89) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	LC	255	GLN
27	La	98	VAL
29	Lc	25	LYS
29	Lc	50	ASP
36	Lj	58	LYS
37	Lk	76	SER
39	Ln	69	ALA
43	Ls	98	HIS
45	SA	191	LYS
49	SE	230	ASN
55	SK	167	PRO
61	SR	22	VAL
74	Sj	44	ASP
16	LP	129	GLU
21	LU	69	PRO
31	Le	92	LYS
37	Lk	65	SER

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Mol	Chain	Res	Type
39	Ln	24	LYS
48	SD	51	GLY
50	SF	114	ILE
55	SK	163	SER
57	SM	150	ARG
61	SR	76	VAL
62	ST	74	GLY
62	ST	112	LYS
64	SV	44	VAL
67	SY	16	VAL
2	LB	378	ALA
6	LF	142	ASN
15	LO	185	ARG
18	LR	167	HIS
21	LU	140	HIS
22	LV	30	LEU
25	LY	54	SER
28	Lb	15	ARG
34	Lh	48	THR
39	Ln	103	PHE
39	Ln	151	CYS
50	SF	148	ALA
51	SG	87	ALA
53	SI	92	TYR
57	SM	53	ASP
57	SM	153	PRO
65	SW	27	LYS
65	SW	69	SER
67	SY	5	ASP
2	LB	103	THR
3	LC	292	GLU
10	LJ	165	ASN
12	LL	144	GLN
19	LS	16	LYS
19	LS	113	GLU
26	LZ	62	HIS
32	Lf	50	GLN
50	SF	35	VAL
54	SJ	59	ASN
56	SL	32	ASN
58	SO	99	GLU
61	SR	75	ILE

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Mol	Chain	Res	Type
64	SV	90	ASP
64	SV	101	VAL
72	Sg	33	GLU
13	LM	168	ILE
14	LN	69	THR
18	LR	95	PRO
21	LU	136	PRO
22	LV	95	PHE
28	Lb	95	SER
35	Li	107	HIS
39	Ln	60	LYS
39	Ln	188	ASN
47	SC	147	LYS
47	SC	199	ILE
52	SH	12	PRO
57	SM	148	LYS
64	SV	56	ARG
10	LJ	41	PRO
10	LJ	184	GLU
13	LM	91	SER
60	SQ	136	PRO
39	Ln	43	PRO
55	SK	170	LYS
36	Lj	27	LYS
39	Ln	54	VAL
42	Lq	8	VAL
51	SG	136	PRO
54	SJ	29	PRO
57	SM	128	PRO
67	SY	14	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	LA	191/192 (100%)	139 (73%)	52 (27%)	0 1

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	LB	312/313 (100%)	209 (67%)	103 (33%)	0	1
3	LC	256/263 (97%)	190 (74%)	66 (26%)	0	2
6	LF	236/242 (98%)	155 (66%)	81 (34%)	0	1
7	LG	47/48 (98%)	32 (68%)	15 (32%)	0	1
8	LH	184/204 (90%)	132 (72%)	52 (28%)	0	1
9	LI	165/198 (83%)	113 (68%)	52 (32%)	0	1
10	LJ	163/164 (99%)	98 (60%)	65 (40%)	0	0
11	LK	127/177 (72%)	74 (58%)	53 (42%)	0	0
12	LL	141/149 (95%)	83 (59%)	58 (41%)	0	0
13	LM	169/197 (86%)	123 (73%)	46 (27%)	0	1
14	LN	110/111 (99%)	69 (63%)	41 (37%)	0	0
15	LO	174/175 (99%)	122 (70%)	52 (30%)	0	1
16	LP	162/165 (98%)	125 (77%)	37 (23%)	1	3
17	LQ	130/139 (94%)	81 (62%)	49 (38%)	0	0
18	LR	154/155 (99%)	106 (69%)	48 (31%)	0	1
19	LS	163/167 (98%)	105 (64%)	58 (36%)	0	0
20	LT	151/154 (98%)	96 (64%)	55 (36%)	0	0
21	LU	130/133 (98%)	85 (65%)	45 (35%)	0	1
22	LV	91/110 (83%)	56 (62%)	35 (38%)	0	0
23	LW	108/114 (95%)	78 (72%)	30 (28%)	0	1
24	LX	61/174 (35%)	38 (62%)	23 (38%)	0	0
25	LY	107/123 (87%)	79 (74%)	28 (26%)	0	2
26	LZ	114/115 (99%)	74 (65%)	40 (35%)	0	1
27	La	112/119 (94%)	64 (57%)	48 (43%)	0	0
28	Lb	126/127 (99%)	94 (75%)	32 (25%)	0	2
29	Lc	47/57 (82%)	34 (72%)	13 (28%)	0	1
30	Ld	87/92 (95%)	50 (58%)	37 (42%)	0	0
31	Le	88/92 (96%)	56 (64%)	32 (36%)	0	0
32	Lf	116/120 (97%)	74 (64%)	42 (36%)	0	0
33	Lg	82/103 (80%)	57 (70%)	25 (30%)	0	1
34	Lh	85/100 (85%)	59 (69%)	26 (31%)	0	1

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
35	Li	103/107 (96%)	65 (63%)	38 (37%)	0	0
36	Lj	77/78 (99%)	45 (58%)	32 (42%)	0	0
37	Lk	73/74 (99%)	44 (60%)	29 (40%)	0	0
38	Ll	63/68 (93%)	36 (57%)	27 (43%)	0	0
39	Ln	183/189 (97%)	83 (45%)	100 (55%)	0	0
40	Lo	22/22 (100%)	14 (64%)	8 (36%)	0	0
41	Lp	83/93 (89%)	47 (57%)	36 (43%)	0	0
42	Lq	71/73 (97%)	44 (62%)	27 (38%)	0	0
43	Ls	43/110 (39%)	26 (60%)	17 (40%)	0	0
45	SA	171/217 (79%)	115 (67%)	56 (33%)	0	1
46	SB	179/201 (89%)	114 (64%)	65 (36%)	0	0
47	SC	174/182 (96%)	107 (62%)	67 (38%)	0	0
48	SD	207/220 (94%)	130 (63%)	77 (37%)	0	0
49	SE	228/232 (98%)	150 (66%)	78 (34%)	0	1
50	SF	153/157 (98%)	95 (62%)	58 (38%)	0	0
51	SG	176/213 (83%)	90 (51%)	86 (49%)	0	0
52	SH	165/170 (97%)	91 (55%)	74 (45%)	0	0
53	SI	147/148 (99%)	92 (63%)	55 (37%)	0	0
54	SJ	114/115 (99%)	68 (60%)	46 (40%)	0	0
55	SK	155/164 (94%)	88 (57%)	67 (43%)	0	0
56	SL	89/119 (75%)	50 (56%)	39 (44%)	0	0
57	SM	134/136 (98%)	87 (65%)	47 (35%)	0	1
58	SO	111/114 (97%)	61 (55%)	50 (45%)	0	0
59	SP	125/130 (96%)	84 (67%)	41 (33%)	0	1
60	SQ	86/113 (76%)	51 (59%)	35 (41%)	0	0
61	SR	104/128 (81%)	56 (54%)	48 (46%)	0	0
62	ST	125/130 (96%)	68 (54%)	57 (46%)	0	0
63	SU	98/124 (79%)	65 (66%)	33 (34%)	0	1
64	SV	118/131 (90%)	59 (50%)	59 (50%)	0	0
65	SW	113/115 (98%)	72 (64%)	41 (36%)	0	0
66	SX	89/110 (81%)	56 (63%)	33 (37%)	0	0

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
67	SY	69/72 (96%)	39 (56%)	30 (44%)	0	0
68	Sb	103/113 (91%)	55 (53%)	48 (47%)	0	0
69	Sc	65/79 (82%)	33 (51%)	32 (49%)	0	0
70	Sd	95/103 (92%)	65 (68%)	30 (32%)	0	1
71	Se	71/73 (97%)	44 (62%)	27 (38%)	0	0
72	Sg	56/57 (98%)	26 (46%)	30 (54%)	0	0
73	Sh	44/45 (98%)	24 (54%)	20 (46%)	0	0
74	Sj	55/58 (95%)	29 (53%)	26 (47%)	0	0
All	All	8726/9575 (91%)	5518 (63%)	3208 (37%)	1	0

All (3208) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	LA	4	ARG
1	LA	5	ILE
1	LA	6	ARG
1	LA	14	SER
1	LA	17	ARG
1	LA	20	VAL
1	LA	22	ARG
1	LA	30	ARG
1	LA	48	ILE
1	LA	49	LEU
1	LA	54	ARG
1	LA	60	ARG
1	LA	67	ARG
1	LA	72	VAL
1	LA	73	ASN
1	LA	75	LEU
1	LA	77	ILE
1	LA	82	MET
1	LA	93	LYS
1	LA	95	THR
1	LA	98	ILE
1	LA	102	LEU
1	LA	107	ILE
1	LA	118	GLU
1	LA	119	LYS
1	LA	126	LEU

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Mol	Chain	Res	Type
1	LA	128	ARG
1	LA	130	SER
1	LA	135	LEU
1	LA	140	ASN
1	LA	141	MET
1	LA	143	THR
1	LA	145	LYS
1	LA	148	ILE
1	LA	156	LYS
1	LA	161	LYS
1	LA	163	ARG
1	LA	165	MET
1	LA	168	LEU
1	LA	181	LYS
1	LA	190	LYS
1	LA	193	ARG
1	LA	199	VAL
1	LA	219	ILE
1	LA	221	VAL
1	LA	223	SER
1	LA	231	PRO
1	LA	234	LYS
1	LA	243	THR
1	LA	245	CYS
1	LA	249	LYS
1	LA	250	ARG
2	LB	4	ARG
2	LB	5	LYS
2	LB	10	ARG
2	LB	11	LYS
2	LB	26	ARG
2	LB	29	CYS
2	LB	31	THR
2	LB	41	ILE
2	LB	44	THR
2	LB	47	LEU
2	LB	50	LYS
2	LB	55	HIS
2	LB	56	VAL
2	LB	58	ARG
2	LB	66	ASN
2	LB	70	ARG

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Mol	Chain	Res	Type
2	LB	73	ILE
2	LB	74	ASP
2	LB	78	ILE
2	LB	79	ILE
2	LB	87	THR
2	LB	90	ILE
2	LB	97	LYS
2	LB	104	THR
2	LB	110	ILE
2	LB	117	ARG
2	LB	121	ASN
2	LB	126	GLU
2	LB	127	LYS
2	LB	131	SER
2	LB	132	THR
2	LB	134	MET
2	LB	135	LYS
2	LB	141	THR
2	LB	144	LYS
2	LB	145	GLU
2	LB	149	ARG
2	LB	150	LEU
2	LB	151	LYS
2	LB	152	GLN
2	LB	159	ILE
2	LB	160	VAL
2	LB	163	THR
2	LB	164	GLN
2	LB	167	LEU
2	LB	168	THR
2	LB	170	LEU
2	LB	171	LYS
2	LB	173	LYS
2	LB	177	ILE
2	LB	196	TYR
2	LB	198	LEU
2	LB	201	LYS
2	LB	203	ILE
2	LB	205	ILE
2	LB	210	SER
2	LB	215	ILE
2	LB	217	THR

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Mol	Chain	Res	Type
2	LB	219	SER
2	LB	220	ILE
2	LB	222	ARG
2	LB	224	ARG
2	LB	227	GLU
2	LB	229	VAL
2	LB	231	THR
2	LB	237	ARG
2	LB	238	LEU
2	LB	239	PRO
2	LB	241	LYS
2	LB	243	ARG
2	LB	244	ARG
2	LB	246	ASN
2	LB	248	LYS
2	LB	251	CYS
2	LB	278	THR
2	LB	279	ASN
2	LB	289	GLU
2	LB	294	CYS
2	LB	297	GLU
2	LB	300	LEU
2	LB	301	THR
2	LB	303	LYS
2	LB	308	VAL
2	LB	312	VAL
2	LB	318	GLN
2	LB	320	ASP
2	LB	322	ILE
2	LB	323	MET
2	LB	325	LYS
2	LB	327	THR
2	LB	328	CYS
2	LB	332	LYS
2	LB	333	ARG
2	LB	334	ARG
2	LB	336	VAL
2	LB	351	VAL
2	LB	356	ILE
2	LB	366	ILE
2	LB	369	THR
2	LB	370	VAL

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Mol	Chain	Res	Type
2	LB	374	ARG
2	LB	375	GLN
2	LB	379	LYS
3	LC	4	THR
3	LC	6	LYS
3	LC	11	THR
3	LC	14	GLN
3	LC	22	LYS
3	LC	23	VAL
3	LC	28	LEU
3	LC	32	ILE
3	LC	52	ARG
3	LC	59	THR
3	LC	72	LEU
3	LC	91	MET
3	LC	96	THR
3	LC	105	VAL
3	LC	109	GLN
3	LC	112	TYR
3	LC	126	LEU
3	LC	130	ARG
3	LC	140	ILE
3	LC	144	VAL
3	LC	146	THR
3	LC	151	LYS
3	LC	153	LYS
3	LC	159	ILE
3	LC	177	ILE
3	LC	181	ARG
3	LC	183	LYS
3	LC	186	ASN
3	LC	190	ILE
3	LC	193	LYS
3	LC	197	VAL
3	LC	201	THR
3	LC	202	GLU
3	LC	206	ARG
3	LC	211	LEU
3	LC	214	VAL
3	LC	215	ASP
3	LC	216	LEU
3	LC	217	CYS

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Mol	Chain	Res	Type
3	LC	219	VAL
3	LC	221	SER
3	LC	222	ILE
3	LC	241	LYS
3	LC	242	SER
3	LC	244	PHE
3	LC	247	LEU
3	LC	251	TYR
3	LC	256	ASN
3	LC	259	LEU
3	LC	261	ARG
3	LC	262	SER
3	LC	264	ILE
3	LC	265	THR
3	LC	266	GLN
3	LC	268	ASP
3	LC	269	ILE
3	LC	270	GLU
3	LC	276	ASP
3	LC	283	VAL
3	LC	285	LYS
3	LC	286	ARG
3	LC	290	VAL
3	LC	295	VAL
3	LC	300	SER
3	LC	301	LYS
3	LC	310	SER
6	LF	6	VAL
6	LF	8	LYS
6	LF	9	THR
6	LF	11	SER
6	LF	21	ARG
6	LF	23	ARG
6	LF	28	THR
6	LF	31	GLN
6	LF	33	ARG
6	LF	34	LYS
6	LF	37	ILE
6	LF	38	ILE
6	LF	46	THR
6	LF	48	ARG
6	LF	50	ARG

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Mol	Chain	Res	Type
6	LF	54	ARG
6	LF	58	LYS
6	LF	60	ILE
6	LF	68	GLU
6	LF	69	LEU
6	LF	70	THR
6	LF	71	LYS
6	LF	75	VAL
6	LF	76	CYS
6	LF	85	ARG
6	LF	88	ILE
6	LF	90	VAL
6	LF	92	LEU
6	LF	93	THR
6	LF	103	LEU
6	LF	105	CYS
6	LF	109	LEU
6	LF	112	LYS
6	LF	113	LEU
6	LF	115	VAL
6	LF	119	GLU
6	LF	122	LEU
6	LF	125	LEU
6	LF	130	ASP
6	LF	131	LYS
6	LF	133	THR
6	LF	138	HIS
6	LF	143	GLU
6	LF	146	GLU
6	LF	151	LYS
6	LF	162	SER
6	LF	179	LEU
6	LF	181	ILE
6	LF	184	SER
6	LF	186	LYS
6	LF	187	ARG
6	LF	193	LYS
6	LF	197	ASP
6	LF	202	ARG
6	LF	206	MET
6	LF	208	LYS
6	LF	214	MET

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Mol	Chain	Res	Type
6	LF	221	ASP
6	LF	226	ARG
6	LF	227	LYS
6	LF	228	ARG
6	LF	231	LYS
6	LF	236	LYS
6	LF	237	VAL
6	LF	240	LEU
6	LF	242	LEU
6	LF	248	LYS
6	LF	253	ILE
6	LF	256	ASN
6	LF	260	VAL
6	LF	261	LYS
6	LF	264	PHE
6	LF	271	ARG
6	LF	272	GLN
6	LF	274	ARG
6	LF	275	LEU
6	LF	278	LYS
6	LF	281	LYS
6	LF	285	ASP
6	LF	287	LYS
6	LF	288	LYS
7	LG	5	LYS
7	LG	6	THR
7	LG	8	SER
7	LG	15	LYS
7	LG	16	LYS
7	LG	18	LYS
7	LG	30	LYS
7	LG	33	LEU
7	LG	34	LYS
7	LG	38	ASN
7	LG	39	TYR
7	LG	40	LYS
7	LG	46	ARG
7	LG	48	HIS
7	LG	51	LEU
8	LH	24	ARG
8	LH	26	THR
8	LH	28	LYS

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Mol	Chain	Res	Type
8	LH	30	LYS
8	LH	31	ARG
8	LH	34	LEU
8	LH	36	LYS
8	LH	40	VAL
8	LH	41	LYS
8	LH	44	GLN
8	LH	48	ARG
8	LH	51	ILE
8	LH	53	LEU
8	LH	56	SER
8	LH	57	GLU
8	LH	58	LYS
8	LH	59	LYS
8	LH	66	LYS
8	LH	72	VAL
8	LH	74	ASP
8	LH	75	GLU
8	LH	77	LYS
8	LH	79	TYR
8	LH	84	ILE
8	LH	93	LYS
8	LH	101	LEU
8	LH	102	ARG
8	LH	106	ILE
8	LH	112	MET
8	LH	115	ASN
8	LH	126	ASP
8	LH	127	HIS
8	LH	136	VAL
8	LH	138	THR
8	LH	139	ILE
8	LH	159	VAL
8	LH	163	LEU
8	LH	165	ASP
8	LH	167	GLN
8	LH	170	LYS
8	LH	174	LEU
8	LH	179	LEU
8	LH	195	ASN
8	LH	203	ASN
8	LH	208	LYS

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Mol	Chain	Res	Type
8	LH	209	ASP
8	LH	219	ASP
8	LH	220	PHE
8	LH	225	LYS
8	LH	231	VAL
8	LH	233	ARG
8	LH	235	ILE
9	LI	41	GLN
9	LI	42	ARG
9	LI	49	ARG
9	LI	56	THR
9	LI	61	MET
9	LI	62	ASN
9	LI	70	ASN
9	LI	75	LEU
9	LI	78	LYS
9	LI	82	GLU
9	LI	83	SER
9	LI	84	LYS
9	LI	85	GLU
9	LI	87	HIS
9	LI	88	LYS
9	LI	91	LEU
9	LI	93	GLN
9	LI	98	LYS
9	LI	107	LYS
9	LI	110	LYS
9	LI	112	VAL
9	LI	113	ILE
9	LI	115	SER
9	LI	119	ARG
9	LI	120	ILE
9	LI	127	LYS
9	LI	130	LYS
9	LI	143	LEU
9	LI	152	HIS
9	LI	153	LYS
9	LI	164	LYS
9	LI	173	LEU
9	LI	174	LYS
9	LI	175	LYS
9	LI	180	CYS

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Mol	Chain	Res	Type
9	LI	182	THR
9	LI	184	VAL
9	LI	185	ASN
9	LI	187	GLU
9	LI	189	LYS
9	LI	191	THR
9	LI	194	LYS
9	LI	196	LEU
9	LI	202	GLU
9	LI	203	VAL
9	LI	204	ASP
9	LI	207	LYS
9	LI	209	MET
9	LI	212	TYR
9	LI	216	VAL
9	LI	217	ARG
9	LI	218	ARG
10	LJ	4	CYS
10	LJ	5	SER
10	LJ	7	MET
10	LJ	8	THR
10	LJ	10	LYS
10	LJ	14	ASP
10	LJ	19	ILE
10	LJ	20	ASN
10	LJ	22	ARG
10	LJ	23	VAL
10	LJ	27	LYS
10	LJ	29	LYS
10	LJ	32	THR
10	LJ	35	ARG
10	LJ	42	LEU
10	LJ	45	THR
10	LJ	48	ASN
10	LJ	50	THR
10	LJ	51	ILE
10	LJ	59	ARG
10	LJ	65	LEU
10	LJ	67	ARG
10	LJ	68	THR
10	LJ	74	GLU
10	LJ	85	GLU

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Mol	Chain	Res	Type
10	LJ	88	MET
10	LJ	89	ARG
10	LJ	90	LEU
10	LJ	92	TYR
10	LJ	100	THR
10	LJ	101	VAL
10	LJ	102	VAL
10	LJ	104	ASN
10	LJ	106	LYS
10	LJ	108	ILE
10	LJ	110	ILE
10	LJ	114	MET
10	LJ	119	THR
10	LJ	120	ARG
10	LJ	121	ARG
10	LJ	122	ILE
10	LJ	124	CYS
10	LJ	125	LEU
10	LJ	128	VAL
10	LJ	130	ILE
10	LJ	132	MET
10	LJ	133	SER
10	LJ	135	ASN
10	LJ	137	LYS
10	LJ	138	ASP
10	LJ	139	GLU
10	LJ	140	LEU
10	LJ	141	ILE
10	LJ	143	ARG
10	LJ	145	ILE
10	LJ	149	ASP
10	LJ	156	ARG
10	LJ	162	LYS
10	LJ	165	ASN
10	LJ	166	LYS
10	LJ	170	LYS
10	LJ	177	VAL
10	LJ	179	SER
10	LJ	182	LEU
10	LJ	184	GLU
11	LK	30	LYS
11	LK	31	ILE

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Mol	Chain	Res	Type
11	LK	32	ARG
11	LK	33	TYR
11	LK	36	LEU
11	LK	38	ASN
11	LK	39	ARG
11	LK	40	ARG
11	LK	44	ASN
11	LK	48	TYR
11	LK	51	HIS
11	LK	54	SER
11	LK	57	LYS
11	LK	58	GLU
11	LK	61	SER
11	LK	69	ARG
11	LK	72	CYS
11	LK	74	LYS
11	LK	76	ILE
11	LK	79	LYS
11	LK	82	LYS
11	LK	83	ASP
11	LK	87	LEU
11	LK	96	VAL
11	LK	125	THR
11	LK	128	ARG
11	LK	129	VAL
11	LK	139	ARG
11	LK	141	ARG
11	LK	145	LYS
11	LK	146	ASP
11	LK	150	ASP
11	LK	154	ARG
11	LK	156	LYS
11	LK	162	ARG
11	LK	163	GLN
11	LK	167	GLU
11	LK	170	ASN
11	LK	174	THR
11	LK	177	THR
11	LK	178	LYS
11	LK	182	GLU
11	LK	184	LEU
11	LK	187	ARG

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Mol	Chain	Res	Type
11	LK	189	GLU
11	LK	190	LEU
11	LK	191	GLN
11	LK	192	TYR
11	LK	198	HIS
11	LK	199	ARG
11	LK	200	ILE
11	LK	203	LYS
11	LK	206	LEU
12	LL	6	GLU
12	LL	10	ARG
12	LL	11	ARG
12	LL	13	ARG
12	LL	16	LYS
12	LL	18	VAL
12	LL	19	LEU
12	LL	22	CYS
12	LL	23	ILE
12	LL	28	ASP
12	LL	30	LEU
12	LL	31	THR
12	LL	35	LYS
12	LL	36	VAL
12	LL	38	GLN
12	LL	40	LEU
12	LL	42	ASP
12	LL	43	GLN
12	LL	47	PHE
12	LL	48	SER
12	LL	49	LYS
12	LL	50	SER
12	LL	51	ARG
12	LL	54	ILE
12	LL	55	ARG
12	LL	61	ARG
12	LL	63	GLN
12	LL	66	SER
12	LL	67	THR
12	LL	68	HIS
12	LL	71	VAL
12	LL	72	ARG
12	LL	75	LYS

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Mol	Chain	Res	Type
12	LL	77	ARG
12	LL	79	ILE
12	LL	85	ARG
12	LL	88	ASN
12	LL	91	LEU
12	LL	95	CYS
12	LL	98	THR
12	LL	110	ILE
12	LL	114	ILE
12	LL	115	LYS
12	LL	119	SER
12	LL	122	ILE
12	LL	125	MET
12	LL	132	SER
12	LL	141	ARG
12	LL	146	GLN
12	LL	147	HIS
12	LL	148	VAL
12	LL	152	HIS
12	LL	154	ILE
12	LL	157	ASP
12	LL	163	VAL
12	LL	164	GLU
12	LL	165	ARG
12	LL	169	VAL
13	LM	33	VAL
13	LM	38	MET
13	LM	42	LYS
13	LM	44	THR
13	LM	46	LYS
13	LM	51	ILE
13	LM	62	ILE
13	LM	63	ARG
13	LM	64	ARG
13	LM	67	THR
13	LM	69	LEU
13	LM	71	LYS
13	LM	75	ILE
13	LM	80	LEU
13	LM	81	GLN
13	LM	88	THR
13	LM	90	CYS

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Mol	Chain	Res	Type
13	LM	96	LEU
13	LM	100	ILE
13	LM	102	ARG
13	LM	112	VAL
13	LM	115	SER
13	LM	129	ARG
13	LM	133	LYS
13	LM	134	SER
13	LM	136	GLU
13	LM	137	SER
13	LM	145	LEU
13	LM	150	SER
13	LM	151	LYS
13	LM	152	VAL
13	LM	157	LYS
13	LM	160	LYS
13	LM	162	GLU
13	LM	164	ILE
13	LM	173	VAL
13	LM	178	VAL
13	LM	181	LYS
13	LM	185	THR
13	LM	194	LYS
13	LM	196	VAL
13	LM	199	ASN
13	LM	202	MET
13	LM	205	ARG
13	LM	211	ARG
13	LM	216	LEU
14	LN	8	GLU
14	LN	11	ARG
14	LN	13	VAL
14	LN	15	LEU
14	LN	17	ASP
14	LN	20	ASP
14	LN	21	LYS
14	LN	23	LYS
14	LN	24	LEU
14	LN	28	VAL
14	LN	32	SER
14	LN	33	THR
14	LN	36	VAL

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Mol	Chain	Res	Type
14	LN	46	LYS
14	LN	50	VAL
14	LN	56	MET
14	LN	59	ASP
14	LN	61	VAL
14	LN	63	ASN
14	LN	64	ILE
14	LN	66	GLU
14	LN	67	LYS
14	LN	71	GLU
14	LN	72	GLN
14	LN	73	LEU
14	LN	74	LYS
14	LN	75	LYS
14	LN	78	GLU
14	LN	80	SER
14	LN	84	ASP
14	LN	85	THR
14	LN	87	MET
14	LN	88	ASN
14	LN	94	LYS
14	LN	98	GLN
14	LN	100	LEU
14	LN	105	THR
14	LN	111	LYS
14	LN	112	ILE
14	LN	116	ARG
14	LN	131	LYS
15	LO	9	GLU
15	LO	14	LYS
15	LO	16	SER
15	LO	19	LEU
15	LO	24	ARG
15	LO	26	ARG
15	LO	29	GLU
15	LO	36	ILE
15	LO	37	LYS
15	LO	38	ARG
15	LO	39	CYS
15	LO	40	SER
15	LO	47	LYS
15	LO	56	LYS

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Mol	Chain	Res	Type
15	LO	60	VAL
15	LO	61	VAL
15	LO	64	VAL
15	LO	66	VAL
15	LO	67	ARG
15	LO	75	CYS
15	LO	76	VAL
15	LO	85	ARG
15	LO	89	ILE
15	LO	92	LEU
15	LO	97	SER
15	LO	101	LEU
15	LO	104	GLN
15	LO	105	LYS
15	LO	109	ARG
15	LO	114	ARG
15	LO	116	LEU
15	LO	117	ASN
15	LO	135	ILE
15	LO	143	ARG
15	LO	144	ASN
15	LO	148	ILE
15	LO	151	ILE
15	LO	155	VAL
15	LO	157	LYS
15	LO	159	ARG
15	LO	176	ASN
15	LO	177	LYS
15	LO	179	ILE
15	LO	183	LYS
15	LO	184	LEU
15	LO	185	ARG
15	LO	187	SER
15	LO	193	LYS
15	LO	198	ARG
15	LO	199	SER
15	LO	200	LEU
15	LO	204	ARG
16	LP	4	ILE
16	LP	8	CYS
16	LP	12	ILE
16	LP	15	ARG

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Mol	Chain	Res	Type
16	LP	29	GLU
16	LP	34	ARG
16	LP	39	ILE
16	LP	53	LYS
16	LP	54	LYS
16	LP	60	ASN
16	LP	84	MET
16	LP	85	ILE
16	LP	93	SER
16	LP	97	SER
16	LP	100	ARG
16	LP	101	VAL
16	LP	103	ASP
16	LP	105	ILE
16	LP	108	CYS
16	LP	113	LYS
16	LP	115	VAL
16	LP	116	VAL
16	LP	119	SER
16	LP	125	CYS
16	LP	126	LEU
16	LP	127	ARG
16	LP	130	ARG
16	LP	132	ARG
16	LP	145	GLN
16	LP	160	GLU
16	LP	162	ASP
16	LP	163	LYS
16	LP	168	LYS
16	LP	172	ASP
16	LP	192	LEU
16	LP	194	LYS
16	LP	197	TYR
17	LQ	8	SER
17	LQ	11	LEU
17	LQ	12	LEU
17	LQ	15	LYS
17	LQ	17	ARG
17	LQ	21	VAL
17	LQ	22	LYS
17	LQ	24	SER
17	LQ	30	SER

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Mol	Chain	Res	Type
17	LQ	31	THR
17	LQ	36	LYS
17	LQ	40	VAL
17	LQ	41	LYS
17	LQ	47	LEU
17	LQ	50	VAL
17	LQ	54	LYS
17	LQ	63	TYR
17	LQ	68	ARG
17	LQ	71	GLN
17	LQ	77	THR
17	LQ	84	GLU
17	LQ	87	VAL
17	LQ	91	LYS
17	LQ	99	SER
17	LQ	100	ASN
17	LQ	102	LYS
17	LQ	106	LYS
17	LQ	107	LYS
17	LQ	108	GLU
17	LQ	111	GLU
17	LQ	114	VAL
17	LQ	115	ILE
17	LQ	116	SER
17	LQ	118	CYS
17	LQ	121	ARG
17	LQ	123	ARG
17	LQ	125	ARG
17	LQ	126	ARG
17	LQ	127	ARG
17	LQ	129	THR
17	LQ	130	PHE
17	LQ	131	ARG
17	LQ	137	SER
17	LQ	138	LYS
17	LQ	139	TYR
17	LQ	141	SER
17	LQ	144	CYS
17	LQ	147	GLU
17	LQ	153	LYS
18	LR	3	ILE
18	LR	5	LEU

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Mol	Chain	Res	Type
18	LR	7	THR
18	LR	11	LYS
18	LR	14	VAL
18	LR	15	GLU
18	LR	16	ARG
18	LR	18	GLU
18	LR	20	LYS
18	LR	25	TYR
18	LR	40	THR
18	LR	45	THR
18	LR	46	LYS
18	LR	50	LYS
18	LR	52	LEU
18	LR	56	LYS
18	LR	66	ARG
18	LR	72	HIS
18	LR	73	LYS
18	LR	74	ARG
18	LR	75	GLU
18	LR	76	ASP
18	LR	78	ILE
18	LR	81	VAL
18	LR	84	THR
18	LR	86	THR
18	LR	90	ARG
18	LR	93	THR
18	LR	96	ARG
18	LR	97	MET
18	LR	99	ILE
18	LR	100	CYS
18	LR	105	SER
18	LR	110	SER
18	LR	114	LYS
18	LR	118	ARG
18	LR	123	ASP
18	LR	124	GLU
18	LR	129	LYS
18	LR	131	THR
18	LR	137	LEU
18	LR	138	LEU
18	LR	148	CYS
18	LR	149	LYS

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Mol	Chain	Res	Type
18	LR	162	LYS
18	LR	170	ARG
18	LR	174	ARG
18	LR	179	TRP
19	LS	4	LEU
19	LS	6	LEU
19	LS	8	LYS
19	LS	13	ASP
19	LS	16	LYS
19	LS	20	ARG
19	LS	29	GLU
19	LS	30	LYS
19	LS	36	SER
19	LS	37	SER
19	LS	41	ILE
19	LS	43	SER
19	LS	45	ILE
19	LS	46	GLU
19	LS	47	SER
19	LS	49	ILE
19	LS	53	LEU
19	LS	55	ILE
19	LS	56	LYS
19	LS	58	SER
19	LS	60	ARG
19	LS	66	ARG
19	LS	67	HIS
19	LS	70	LYS
19	LS	71	ARG
19	LS	82	ARG
19	LS	84	THR
19	LS	89	MET
19	LS	98	ARG
19	LS	99	GLN
19	LS	104	ARG
19	LS	110	ARG
19	LS	122	THR
19	LS	128	LYS
19	LS	131	MET
19	LS	133	LYS
19	LS	136	ARG
19	LS	145	MET

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Mol	Chain	Res	Type
19	LS	148	GLU
19	LS	149	GLN
19	LS	153	LYS
19	LS	154	LYS
19	LS	156	LYS
19	LS	159	LEU
19	LS	160	GLU
19	LS	162	ARG
19	LS	163	ARG
19	LS	164	LYS
19	LS	165	LYS
19	LS	168	GLN
19	LS	171	LYS
19	LS	173	ARG
19	LS	176	LYS
19	LS	181	ARG
19	LS	182	LEU
19	LS	184	PHE
19	LS	191	THR
19	LS	192	GLU
20	LT	6	ILE
20	LT	14	SER
20	LT	15	GLU
20	LT	16	LYS
20	LT	21	GLU
20	LT	24	ARG
20	LT	25	MET
20	LT	26	THR
20	LT	32	GLU
20	LT	36	LYS
20	LT	37	SER
20	LT	48	LYS
20	LT	49	ILE
20	LT	51	ARG
20	LT	52	THR
20	LT	55	GLU
20	LT	56	ILE
20	LT	63	GLU
20	LT	65	ASN
20	LT	67	ASP
20	LT	70	LYS
20	LT	71	ASN

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Mol	Chain	Res	Type
20	LT	76	LEU
20	LT	77	ARG
20	LT	81	ARG
20	LT	84	GLN
20	LT	85	HIS
20	LT	87	MET
20	LT	89	ARG
20	LT	90	GLU
20	LT	92	ARG
20	LT	93	GLU
20	LT	95	THR
20	LT	101	ASP
20	LT	102	LYS
20	LT	106	GLU
20	LT	114	ARG
20	LT	122	ASN
20	LT	124	LYS
20	LT	126	VAL
20	LT	128	ASP
20	LT	132	ARG
20	LT	134	GLU
20	LT	135	LYS
20	LT	136	VAL
20	LT	138	MET
20	LT	140	THR
20	LT	144	VAL
20	LT	145	ARG
20	LT	150	CYS
20	LT	156	LYS
20	LT	157	ARG
20	LT	160	ARG
20	LT	163	ARG
20	LT	167	ARG
21	LU	5	GLN
21	LU	14	CYS
21	LU	21	ARG
21	LU	27	LEU
21	LU	28	THR
21	LU	33	VAL
21	LU	38	GLN
21	LU	40	VAL
21	LU	41	ASN

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Mol	Chain	Res	Type
21	LU	42	ILE
21	LU	43	LYS
21	LU	44	VAL
21	LU	52	MET
21	LU	63	THR
21	LU	64	ILE
21	LU	66	ASN
21	LU	70	ARG
21	LU	72	LEU
21	LU	77	GLN
21	LU	80	VAL
21	LU	84	ILE
21	LU	86	LEU
21	LU	87	LYS
21	LU	91	VAL
21	LU	93	LEU
21	LU	94	GLU
21	LU	96	VAL
21	LU	99	SER
21	LU	100	ASP
21	LU	102	ARG
21	LU	103	LYS
21	LU	107	GLU
21	LU	113	ASP
21	LU	116	ARG
21	LU	121	GLU
21	LU	126	VAL
21	LU	128	CYS
21	LU	130	LYS
21	LU	132	GLN
21	LU	137	ARG
21	LU	146	SER
21	LU	148	ILE
21	LU	151	THR
21	LU	153	LEU
21	LU	154	LYS
22	LV	9	VAL
22	LV	10	LYS
22	LV	11	LYS
22	LV	16	ILE
22	LV	22	CYS
22	LV	29	GLU

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Mol	Chain	Res	Type
22	LV	32	LEU
22	LV	33	ASN
22	LV	35	PHE
22	LV	40	ARG
22	LV	44	LYS
22	LV	47	ASN
22	LV	48	ARG
22	LV	49	LYS
22	LV	55	LYS
22	LV	56	VAL
22	LV	61	GLU
22	LV	64	SER
22	LV	65	LEU
22	LV	69	THR
22	LV	70	THR
22	LV	73	GLU
22	LV	76	LYS
22	LV	77	ARG
22	LV	79	VAL
22	LV	84	LYS
22	LV	85	ARG
22	LV	87	LEU
22	LV	90	ASP
22	LV	94	VAL
22	LV	100	THR
22	LV	102	LYS
22	LV	104	THR
22	LV	107	LEU
22	LV	111	THR
23	LW	11	ILE
23	LW	16	ARG
23	LW	17	ILE
23	LW	18	SER
23	LW	27	ILE
23	LW	29	CYS
23	LW	36	LYS
23	LW	39	ASN
23	LW	45	ASN
23	LW	47	LYS
23	LW	55	LYS
23	LW	58	VAL
23	LW	61	MET

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Mol	Chain	Res	Type
23	LW	63	LEU
23	LW	65	THR
23	LW	69	ASP
23	LW	73	GLU
23	LW	74	LEU
23	LW	75	ARG
23	LW	77	LYS
23	LW	79	THR
23	LW	98	ILE
23	LW	99	TYR
23	LW	101	GLN
23	LW	111	LYS
23	LW	115	LYS
23	LW	117	SER
23	LW	139	GLU
23	LW	140	CYS
23	LW	141	VAL
24	LX	4	ILE
24	LX	7	CYS
24	LX	8	SER
24	LX	14	VAL
24	LX	15	TYR
24	LX	21	CYS
24	LX	22	PHE
24	LX	26	ASP
24	LX	28	ARG
24	LX	29	VAL
24	LX	31	ARG
24	LX	37	CYS
24	LX	38	HIS
24	LX	42	LYS
24	LX	44	LYS
24	LX	49	LYS
24	LX	50	VAL
24	LX	51	ARG
24	LX	54	LYS
24	LX	56	TYR
24	LX	59	LEU
24	LX	62	LYS
24	LX	64	MET
25	LY	23	LYS
25	LY	24	LYS

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Mol	Chain	Res	Type
25	LY	25	ILE
25	LY	26	ARG
25	LY	37	LEU
25	LY	40	LYS
25	LY	50	ILE
25	LY	51	LYS
25	LY	57	ASP
25	LY	59	CYS
25	LY	61	LEU
25	LY	67	LYS
25	LY	69	ASP
25	LY	73	THR
25	LY	81	ILE
25	LY	83	PHE
25	LY	84	ILE
25	LY	88	ARG
25	LY	96	LYS
25	LY	100	THR
25	LY	108	ARG
25	LY	111	THR
25	LY	113	ILE
25	LY	120	LYS
25	LY	123	ILE
25	LY	124	ARG
25	LY	128	ASP
25	LY	132	MET
26	LZ	1	MET
26	LZ	2	LYS
26	LZ	5	SER
26	LZ	7	VAL
26	LZ	8	THR
26	LZ	12	ARG
26	LZ	20	THR
26	LZ	28	LYS
26	LZ	36	LYS
26	LZ	37	GLU
26	LZ	43	LYS
26	LZ	46	THR
26	LZ	47	MET
26	LZ	49	ILE
26	LZ	50	ARG
26	LZ	51	ARG

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Mol	Chain	Res	Type
26	LZ	55	VAL
26	LZ	59	THR
26	LZ	65	THR
26	LZ	67	LYS
26	LZ	69	VAL
26	LZ	72	ARG
26	LZ	73	ARG
26	LZ	74	ARG
26	LZ	78	ILE
26	LZ	81	GLU
26	LZ	85	GLN
26	LZ	88	ARG
26	LZ	91	GLU
26	LZ	93	LYS
26	LZ	102	SER
26	LZ	105	ILE
26	LZ	106	ILE
26	LZ	107	LYS
26	LZ	111	MET
26	LZ	114	SER
26	LZ	120	LYS
26	LZ	122	ARG
26	LZ	129	ARG
26	LZ	133	ILE
27	La	5	ILE
27	La	7	LYS
27	La	12	CYS
27	La	13	ILE
27	La	16	GLN
27	La	23	LYS
27	La	27	VAL
27	La	28	GLU
27	La	32	HIS
27	La	33	ASN
27	La	34	GLU
27	La	35	ARG
27	La	37	SER
27	La	40	ILE
27	La	41	VAL
27	La	44	ILE
27	La	47	LEU
27	La	49	ARG

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Mol	Chain	Res	Type
27	La	50	ARG
27	La	51	ILE
27	La	55	MET
27	La	56	SER
27	La	58	GLU
27	La	65	ARG
27	La	66	VAL
27	La	71	LYS
27	La	72	CYS
27	La	73	MET
27	La	75	VAL
27	La	81	THR
27	La	84	ARG
27	La	88	ASN
27	La	91	ASP
27	La	94	SER
27	La	95	THR
27	La	100	ASP
27	La	101	VAL
27	La	103	LYS
27	La	107	ILE
27	La	108	ILE
27	La	110	THR
27	La	113	LYS
27	La	116	GLN
27	La	117	ARG
27	La	118	ARG
27	La	119	ILE
27	La	125	THR
27	La	130	LYS
28	Lb	2	PRO
28	Lb	4	ARG
28	Lb	5	ILE
28	Lb	10	LYS
28	Lb	11	ARG
28	Lb	12	ARG
28	Lb	22	VAL
28	Lb	26	ARG
28	Lb	34	LYS
28	Lb	43	THR
28	Lb	56	LEU
28	Lb	58	MET

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Mol	Chain	Res	Type
28	Lb	64	ARG
28	Lb	70	ASN
28	Lb	73	ILE
28	Lb	75	ILE
28	Lb	78	ILE
28	Lb	80	SER
28	Lb	86	GLN
28	Lb	87	ARG
28	Lb	90	PHE
28	Lb	93	ARG
28	Lb	96	THR
28	Lb	102	VAL
28	Lb	106	ARG
28	Lb	115	ARG
28	Lb	117	SER
28	Lb	126	LYS
28	Lb	131	SER
28	Lb	139	ARG
28	Lb	141	VAL
28	Lb	148	VAL
29	Lc	8	THR
29	Lc	10	LYS
29	Lc	12	GLN
29	Lc	14	ARG
29	Lc	23	LYS
29	Lc	25	LYS
29	Lc	30	THR
29	Lc	42	ASN
29	Lc	46	SER
29	Lc	50	ASP
29	Lc	53	GLN
29	Lc	55	LEU
29	Lc	56	ARG
30	Ld	8	LYS
30	Ld	9	LYS
30	Ld	16	LEU
30	Ld	18	LEU
30	Ld	20	LEU
30	Ld	23	LYS
30	Ld	24	SER
30	Ld	26	LYS
30	Ld	28	THR

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Mol	Chain	Res	Type
30	Ld	29	LEU
30	Ld	40	ASP
30	Ld	44	GLN
30	Ld	45	LEU
30	Ld	47	PHE
30	Ld	48	MET
30	Ld	50	ASN
30	Ld	52	CYS
30	Ld	55	LEU
30	Ld	57	LYS
30	Ld	58	SER
30	Ld	59	GLN
30	Ld	64	CYS
30	Ld	65	HIS
30	Ld	71	VAL
30	Ld	72	ARG
30	Ld	73	VAL
30	Ld	83	ILE
30	Ld	88	GLN
30	Ld	92	SER
30	Ld	93	ILE
30	Ld	94	MET
30	Ld	95	THR
30	Ld	101	ASP
30	Ld	104	LEU
30	Ld	105	THR
30	Ld	107	ILE
30	Ld	108	LEU
31	Le	3	ILE
31	Le	8	THR
31	Le	13	LYS
31	Le	18	LYS
31	Le	20	SER
31	Le	22	LYS
31	Le	29	ARG
31	Le	36	GLU
31	Le	38	LEU
31	Le	40	LYS
31	Le	45	ARG
31	Le	46	LEU
31	Le	51	ASN
31	Le	65	ARG

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Mol	Chain	Res	Type
31	Le	69	GLU
31	Le	70	VAL
31	Le	71	ARG
31	Le	72	LEU
31	Le	73	GLU
31	Le	75	ASP
31	Le	77	GLU
31	Le	78	HIS
31	Le	83	VAL
31	Le	84	ILE
31	Le	86	LYS
31	Le	87	ASP
31	Le	88	VAL
31	Le	92	LYS
31	Le	96	THR
31	Le	98	LYS
31	Le	101	SER
31	Le	102	GLU
32	Lf	9	LEU
32	Lf	12	LYS
32	Lf	13	ILE
32	Lf	15	ILE
32	Lf	17	LYS
32	Lf	18	ARG
32	Lf	19	LYS
32	Lf	20	ASN
32	Lf	23	ILE
32	Lf	27	SER
32	Lf	34	LYS
32	Lf	36	SER
32	Lf	38	ARG
32	Lf	43	ILE
32	Lf	47	MET
32	Lf	57	MET
32	Lf	59	SER
32	Lf	67	GLU
32	Lf	79	HIS
32	Lf	81	ILE
32	Lf	83	THR
32	Lf	86	GLU
32	Lf	87	LEU
32	Lf	88	LYS

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Mol	Chain	Res	Type
32	Lf	89	THR
32	Lf	90	LEU
32	Lf	91	PHE
32	Lf	92	MET
32	Lf	94	ASN
32	Lf	95	LYS
32	Lf	97	HIS
32	Lf	101	ILE
32	Lf	115	GLU
32	Lf	116	GLU
32	Lf	118	LYS
32	Lf	119	LYS
32	Lf	122	VAL
32	Lf	123	ARG
32	Lf	128	ASP
32	Lf	131	LEU
32	Lf	134	GLU
32	Lf	135	GLU
33	Lg	5	LYS
33	Lg	7	LYS
33	Lg	9	PHE
33	Lg	15	VAL
33	Lg	18	GLN
33	Lg	19	ARG
33	Lg	25	ARG
33	Lg	28	VAL
33	Lg	32	LYS
33	Lg	33	VAL
33	Lg	34	SER
33	Lg	38	THR
33	Lg	44	LYS
33	Lg	46	LEU
33	Lg	49	LEU
33	Lg	53	ILE
33	Lg	64	LYS
33	Lg	67	ARG
33	Lg	72	SER
33	Lg	74	MET
33	Lg	75	VAL
33	Lg	81	THR
33	Lg	91	LYS
33	Lg	92	VAL

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Mol	Chain	Res	Type
33	Lg	93	ARG
34	Lh	6	VAL
34	Lh	12	SER
34	Lh	16	THR
34	Lh	17	ARG
34	Lh	18	SER
34	Lh	19	LYS
34	Lh	21	VAL
34	Lh	22	ARG
34	Lh	24	LYS
34	Lh	25	ARG
34	Lh	30	ARG
34	Lh	31	LEU
34	Lh	35	ARG
34	Lh	58	VAL
34	Lh	59	ILE
34	Lh	64	THR
34	Lh	65	ARG
34	Lh	69	LYS
34	Lh	70	VAL
34	Lh	71	SER
34	Lh	77	LYS
34	Lh	79	CYS
34	Lh	81	SER
34	Lh	84	ARG
34	Lh	88	LEU
34	Lh	94	GLU
35	Li	32	LEU
35	Li	35	LYS
35	Li	40	LEU
35	Li	41	SER
35	Li	43	GLU
35	Li	46	GLN
35	Li	47	ARG
35	Li	48	LYS
35	Li	54	ARG
35	Li	55	GLU
35	Li	56	LEU
35	Li	57	LEU
35	Li	62	MET
35	Li	63	LYS
35	Li	71	GLU

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Mol	Chain	Res	Type
35	Li	73	ILE
35	Li	75	ARG
35	Li	76	PHE
35	Li	87	LEU
35	Li	92	GLN
35	Li	103	GLU
35	Li	108	ILE
35	Li	109	PRO
35	Li	115	ARG
35	Li	116	LEU
35	Li	123	GLN
35	Li	124	LEU
35	Li	126	GLU
35	Li	127	LYS
35	Li	130	ARG
35	Li	131	LEU
35	Li	135	LYS
35	Li	136	LEU
35	Li	138	LYS
35	Li	141	LEU
35	Li	142	GLN
35	Li	145	LYS
35	Li	150	VAL
36	Lj	2	PRO
36	Lj	5	VAL
36	Lj	8	LEU
36	Lj	9	LYS
36	Lj	15	VAL
36	Lj	16	ARG
36	Lj	17	ILE
36	Lj	18	VAL
36	Lj	19	ARG
36	Lj	21	LYS
36	Lj	22	GLU
36	Lj	23	GLU
36	Lj	24	ARG
36	Lj	25	LYS
36	Lj	26	THR
36	Lj	27	LYS
36	Lj	30	GLN
36	Lj	31	GLU
36	Lj	38	GLN

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Mol	Chain	Res	Type
36	Lj	39	GLU
36	Lj	41	THR
36	Lj	55	ARG
36	Lj	58	LYS
36	Lj	59	ASP
36	Lj	60	ARG
36	Lj	68	LYS
36	Lj	69	ARG
36	Lj	74	LYS
36	Lj	80	ARG
36	Lj	84	SER
36	Lj	88	ARG
36	Lj	90	ILE
37	Lk	3	LYS
37	Lk	5	THR
37	Lk	10	LYS
37	Lk	13	THR
37	Lk	20	ARG
37	Lk	24	LYS
37	Lk	34	CYS
37	Lk	36	SER
37	Lk	37	CYS
37	Lk	43	LYS
37	Lk	44	MET
37	Lk	45	ARG
37	Lk	46	ARG
37	Lk	51	TYR
37	Lk	53	SER
37	Lk	55	ARG
37	Lk	58	THR
37	Lk	59	GLN
37	Lk	65	SER
37	Lk	68	ARG
37	Lk	69	LYS
37	Lk	72	ARG
37	Lk	78	THR
37	Lk	80	LYS
37	Lk	82	ASN
37	Lk	84	ARG
37	Lk	85	LYS
37	Lk	87	LEU
37	Lk	89	LYS

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Mol	Chain	Res	Type
38	L1	4	THR
38	L1	9	ASN
38	L1	10	LEU
38	L1	11	MET
38	L1	18	ARG
38	L1	21	LYS
38	L1	22	LEU
38	L1	26	SER
38	L1	27	CYS
38	L1	29	LYS
38	L1	33	GLN
38	L1	37	LYS
38	L1	40	LEU
38	L1	41	ARG
38	L1	44	LYS
38	L1	46	LEU
38	L1	50	THR
38	L1	51	VAL
38	L1	55	ASP
38	L1	56	ASP
38	L1	58	LYS
38	L1	59	SER
38	L1	60	ILE
38	L1	62	LYS
38	L1	65	LYS
38	L1	66	ASP
38	L1	68	VAL
39	Ln	5	ASN
39	Ln	9	LEU
39	Ln	10	ASN
39	Ln	11	LYS
39	Ln	13	ILE
39	Ln	15	GLU
39	Ln	17	ILE
39	Ln	18	GLU
39	Ln	19	ARG
39	Ln	21	THR
39	Ln	23	GLU
39	Ln	24	LYS
39	Ln	26	ARG
39	Ln	27	LYS
39	Ln	28	PHE

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Mol	Chain	Res	Type
39	Ln	29	LEU
39	Ln	30	GLU
39	Ln	32	VAL
39	Ln	34	LEU
39	Ln	35	GLN
39	Ln	38	LEU
39	Ln	39	LYS
39	Ln	41	TYR
39	Ln	42	ASP
39	Ln	44	LYS
39	Ln	48	ARG
39	Ln	53	LEU
39	Ln	54	VAL
39	Ln	55	LEU
39	Ln	64	LYS
39	Ln	66	CYS
39	Ln	68	ILE
39	Ln	70	ASP
39	Ln	72	ARG
39	Ln	76	ARG
39	Ln	78	LYS
39	Ln	79	LYS
39	Ln	82	LEU
39	Ln	84	TYR
39	Ln	88	GLU
39	Ln	89	HIS
39	Ln	95	LYS
39	Ln	99	GLN
39	Ln	100	ILE
39	Ln	101	LYS
39	Ln	102	LYS
39	Ln	103	PHE
39	Ln	105	LYS
39	Ln	107	TYR
39	Ln	110	PHE
39	Ln	111	LEU
39	Ln	114	LYS
39	Ln	115	SER
39	Ln	116	LEU
39	Ln	117	ILE
39	Ln	118	ARG
39	Ln	119	GLN

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Mol	Chain	Res	Type
39	Ln	122	VAL
39	Ln	123	TYR
39	Ln	128	PHE
39	Ln	129	THR
39	Ln	130	LYS
39	Ln	133	ARG
39	Ln	136	LEU
39	Ln	138	LEU
39	Ln	141	ASP
39	Ln	142	GLU
39	Ln	144	LEU
39	Ln	147	LYS
39	Ln	148	VAL
39	Ln	149	LEU
39	Ln	151	CYS
39	Ln	152	LYS
39	Ln	160	LYS
39	Ln	161	LYS
39	Ln	165	LEU
39	Ln	166	ASN
39	Ln	167	TRP
39	Ln	169	ILE
39	Ln	174	MET
39	Ln	179	ILE
39	Ln	183	ILE
39	Ln	185	THR
39	Ln	187	LEU
39	Ln	189	PHE
39	Ln	192	THR
39	Ln	193	GLN
39	Ln	194	LEU
39	Ln	195	LYS
39	Ln	196	LYS
39	Ln	198	TRP
39	Ln	201	ILE
39	Ln	203	THR
39	Ln	204	VAL
39	Ln	205	TYR
39	Ln	207	LYS
39	Ln	209	THR
39	Ln	210	MET
39	Ln	213	SER

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Mol	Chain	Res	Type
39	Ln	215	ARG
40	Lo	10	MET
40	Lo	12	LYS
40	Lo	15	ARG
40	Lo	16	LYS
40	Lo	18	ARG
40	Lo	20	MET
40	Lo	21	LYS
40	Lo	24	SER
41	Lp	2	VAL
41	Lp	3	THR
41	Lp	7	GLU
41	Lp	10	THR
41	Lp	12	CYS
41	Lp	14	ARG
41	Lp	17	LYS
41	Lp	18	HIS
41	Lp	19	THR
41	Lp	20	VAL
41	Lp	22	LYS
41	Lp	27	LYS
41	Lp	28	LYS
41	Lp	33	LEU
41	Lp	34	LEU
41	Lp	36	GLN
41	Lp	39	ARG
41	Lp	46	ARG
41	Lp	48	PHE
41	Lp	53	LYS
41	Lp	55	ILE
41	Lp	57	ARG
41	Lp	58	ARG
41	Lp	59	LYS
41	Lp	61	LYS
41	Lp	63	THR
41	Lp	64	LYS
41	Lp	71	THR
41	Lp	72	CYS
41	Lp	73	SER
41	Lp	76	LYS
41	Lp	85	ARG
41	Lp	86	CYS

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Mol	Chain	Res	Type
41	Lp	88	ARG
41	Lp	91	ILE
41	Lp	93	ARG
42	Lq	1	MET
42	Lq	3	LYS
42	Lq	7	LYS
42	Lq	8	VAL
42	Lq	10	LEU
42	Lq	11	THR
42	Lq	13	LYS
42	Lq	16	THR
42	Lq	17	ARG
42	Lq	24	LYS
42	Lq	27	LEU
42	Lq	28	LYS
42	Lq	32	SER
42	Lq	33	GLN
42	Lq	36	LYS
42	Lq	41	PHE
42	Lq	50	THR
42	Lq	52	CYS
42	Lq	64	MET
42	Lq	70	SER
42	Lq	71	LEU
42	Lq	74	GLU
42	Lq	80	ARG
42	Lq	83	ILE
42	Lq	84	ARG
42	Lq	85	ARG
42	Lq	91	GLU
43	Ls	78	MET
43	Ls	81	THR
43	Ls	91	GLN
43	Ls	93	MET
43	Ls	94	MET
43	Ls	96	CYS
43	Ls	105	LEU
43	Ls	106	ARG
43	Ls	110	CYS
43	Ls	111	ARG
43	Ls	114	ARG
43	Ls	118	LEU

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Mol	Chain	Res	Type
43	Ls	119	ARG
43	Ls	120	LYS
43	Ls	122	LYS
43	Ls	123	LEU
43	Ls	124	SER
45	SA	15	LEU
45	SA	21	LYS
45	SA	24	LEU
45	SA	25	VAL
45	SA	28	THR
45	SA	33	ARG
45	SA	35	ILE
45	SA	36	ASP
45	SA	38	ARG
45	SA	43	ILE
45	SA	46	ARG
45	SA	47	GLN
45	SA	51	THR
45	SA	53	VAL
45	SA	62	LYS
45	SA	74	ASP
45	SA	82	VAL
45	SA	85	ARG
45	SA	87	ASP
45	SA	89	GLN
45	SA	93	LEU
45	SA	94	LYS
45	SA	99	THR
45	SA	102	THR
45	SA	109	ILE
45	SA	112	ASN
45	SA	116	ARG
45	SA	118	ASN
45	SA	123	GLU
45	SA	128	LEU
45	SA	129	VAL
45	SA	131	ASP
45	SA	133	VAL
45	SA	136	ARG
45	SA	145	VAL
45	SA	149	THR
45	SA	151	SER

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Mol	Chain	Res	Type
45	SA	154	ASN
45	SA	158	ASN
45	SA	159	LEU
45	SA	164	VAL
45	SA	168	CYS
45	SA	171	LYS
45	SA	174	MET
45	SA	176	ILE
45	SA	178	LEU
45	SA	182	LEU
45	SA	185	ARG
45	SA	186	GLU
45	SA	191	LYS
45	SA	194	ILE
45	SA	196	ARG
45	SA	199	GLU
45	SA	205	ASP
45	SA	206	LEU
45	SA	210	LEU
46	SB	26	GLU
46	SB	30	SER
46	SB	32	LYS
46	SB	41	LYS
46	SB	42	ILE
46	SB	43	GLU
46	SB	44	SER
46	SB	45	LEU
46	SB	47	ASP
46	SB	52	SER
46	SB	53	LEU
46	SB	55	ILE
46	SB	56	LYS
46	SB	63	TYR
46	SB	69	GLU
46	SB	70	LEU
46	SB	72	GLU
46	SB	74	VAL
46	SB	75	CYS
46	SB	77	ILE
46	SB	79	SER
46	SB	83	GLN
46	SB	101	ARG

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Mol	Chain	Res	Type
46	SB	102	ASP
46	SB	113	LYS
46	SB	115	VAL
46	SB	120	LYS
46	SB	127	ARG
46	SB	130	ILE
46	SB	134	ARG
46	SB	135	ARG
46	SB	141	LYS
46	SB	142	LEU
46	SB	144	ASP
46	SB	149	SER
46	SB	151	LYS
46	SB	153	SER
46	SB	155	LYS
46	SB	160	ARG
46	SB	162	ARG
46	SB	163	LEU
46	SB	168	ARG
46	SB	173	VAL
46	SB	175	SER
46	SB	177	THR
46	SB	178	VAL
46	SB	182	LEU
46	SB	183	GLU
46	SB	189	ASP
46	SB	193	ARG
46	SB	195	SER
46	SB	202	MET
46	SB	204	SER
46	SB	217	SER
46	SB	219	LEU
46	SB	222	ASP
46	SB	225	LYS
46	SB	226	LYS
46	SB	229	LEU
46	SB	230	ASP
46	SB	231	HIS
46	SB	232	VAL
46	SB	233	GLN
46	SB	235	ILE
46	SB	240	LEU

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Mol	Chain	Res	Type
47	SC	6	ARG
47	SC	7	ARG
47	SC	10	GLU
47	SC	14	TYR
47	SC	16	LYS
47	SC	27	LEU
47	SC	36	VAL
47	SC	37	ASP
47	SC	44	SER
47	SC	45	LEU
47	SC	48	THR
47	SC	52	ILE
47	SC	53	CYS
47	SC	56	ILE
47	SC	57	GLN
47	SC	63	VAL
47	SC	65	MET
47	SC	67	ASP
47	SC	70	TYR
47	SC	72	LEU
47	SC	78	LEU
47	SC	82	ARG
47	SC	84	MET
47	SC	90	PHE
47	SC	91	ASN
47	SC	94	VAL
47	SC	95	ASP
47	SC	98	ILE
47	SC	99	LYS
47	SC	102	LEU
47	SC	108	VAL
47	SC	112	ARG
47	SC	114	LYS
47	SC	115	LEU
47	SC	119	MET
47	SC	123	ARG
47	SC	127	SER
47	SC	129	ILE
47	SC	130	ARG
47	SC	131	THR
47	SC	133	MET
47	SC	143	ILE

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Mol	Chain	Res	Type
47	SC	144	VAL
47	SC	151	GLN
47	SC	154	ARG
47	SC	159	LYS
47	SC	160	GLU
47	SC	162	CYS
47	SC	163	LEU
47	SC	165	SER
47	SC	170	LYS
47	SC	172	ILE
47	SC	181	ILE
47	SC	182	LYS
47	SC	183	MET
47	SC	184	ARG
47	SC	187	VAL
47	SC	190	VAL
47	SC	191	LYS
47	SC	193	ARG
47	SC	194	ILE
47	SC	198	ASN
47	SC	199	ILE
47	SC	200	ARG
47	SC	203	VAL
47	SC	207	LYS
47	SC	209	GLU
48	SD	11	LYS
48	SD	12	LYS
48	SD	13	ILE
48	SD	14	THR
48	SD	16	ARG
48	SD	23	LEU
48	SD	24	LYS
48	SD	25	LYS
48	SD	37	LYS
48	SD	39	ARG
48	SD	43	GLN
48	SD	44	THR
48	SD	48	LYS
48	SD	49	THR
48	SD	56	THR
48	SD	59	ILE
48	SD	63	VAL

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Mol	Chain	Res	Type
48	SD	66	VAL
48	SD	72	ASN
48	SD	78	LEU
48	SD	81	ASN
48	SD	82	THR
48	SD	83	LYS
48	SD	91	VAL
48	SD	92	SER
48	SD	95	LYS
48	SD	99	ASN
48	SD	101	HIS
48	SD	103	MET
48	SD	108	HIS
48	SD	113	LEU
48	SD	120	CYS
48	SD	123	VAL
48	SD	126	ASP
48	SD	130	THR
48	SD	135	LEU
48	SD	139	VAL
48	SD	147	ARG
48	SD	151	ARG
48	SD	152	LYS
48	SD	154	CYS
48	SD	156	VAL
48	SD	159	ARG
48	SD	163	MET
48	SD	164	MET
48	SD	171	THR
48	SD	172	LEU
48	SD	174	ASN
48	SD	175	GLU
48	SD	179	VAL
48	SD	181	ILE
48	SD	184	LEU
48	SD	186	THR
48	SD	187	LYS
48	SD	192	GLU
48	SD	194	ASN
48	SD	197	LEU
48	SD	198	THR
48	SD	199	GLU

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Mol	Chain	Res	Type
48	SD	201	LEU
48	SD	206	MET
48	SD	207	CYS
48	SD	213	ARG
48	SD	214	ARG
48	SD	219	LYS
48	SD	220	ARG
48	SD	222	ARG
48	SD	224	THR
48	SD	225	MET
48	SD	226	GLU
48	SD	227	LEU
48	SD	229	SER
48	SD	232	HIS
48	SD	233	ASP
48	SD	237	VAL
48	SD	238	ARG
48	SD	239	ASN
49	SE	3	ARG
49	SE	6	ARG
49	SE	7	LYS
49	SE	11	ARG
49	SE	16	LYS
49	SE	21	ASP
49	SE	26	ILE
49	SE	38	LEU
49	SE	40	GLU
49	SE	45	ILE
49	SE	47	ILE
49	SE	48	LEU
49	SE	49	ARG
49	SE	60	GLU
49	SE	61	THR
49	SE	62	SER
49	SE	63	MET
49	SE	70	VAL
49	SE	71	LEU
49	SE	86	PHE
49	SE	91	GLU
49	SE	92	ILE
49	SE	95	VAL
49	SE	99	PHE

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Mol	Chain	Res	Type
49	SE	102	LEU
49	SE	104	ASP
49	SE	105	VAL
49	SE	108	ARG
49	SE	122	LYS
49	SE	126	VAL
49	SE	134	LYS
49	SE	136	MET
49	SE	139	LEU
49	SE	143	ASP
49	SE	146	THR
49	SE	147	ILE
49	SE	156	THR
49	SE	160	ILE
49	SE	161	LYS
49	SE	162	ILE
49	SE	165	LYS
49	SE	166	THR
49	SE	168	LYS
49	SE	169	ILE
49	SE	170	ASP
49	SE	171	GLU
49	SE	173	TYR
49	SE	174	LYS
49	SE	176	ASP
49	SE	177	ILE
49	SE	184	THR
49	SE	191	ARG
49	SE	198	ILE
49	SE	199	ASP
49	SE	200	LYS
49	SE	206	THR
49	SE	207	MET
49	SE	208	ILE
49	SE	213	THR
49	SE	217	GLU
49	SE	218	PHE
49	SE	219	LEU
49	SE	220	THR
49	SE	221	ARG
49	SE	222	LEU
49	SE	223	CYS

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Mol	Chain	Res	Type
49	SE	224	ASN
49	SE	228	ILE
49	SE	230	ASN
49	SE	237	ILE
49	SE	241	LYS
49	SE	244	ARG
49	SE	246	ASP
49	SE	248	ILE
49	SE	249	LYS
49	SE	254	ARG
49	SE	260	LYS
49	SE	261	ARG
50	SF	7	LEU
50	SF	8	PHE
50	SF	10	LYS
50	SF	15	ASP
50	SF	22	SER
50	SF	23	LEU
50	SF	27	ILE
50	SF	28	SER
50	SF	29	ILE
50	SF	30	ASP
50	SF	31	ASN
50	SF	32	HIS
50	SF	34	PHE
50	SF	38	SER
50	SF	43	SER
50	SF	45	LYS
50	SF	49	LYS
50	SF	51	LYS
50	SF	52	CYS
50	SF	57	ARG
50	SF	61	SER
50	SF	63	MET
50	SF	68	ASN
50	SF	69	SER
50	SF	71	LYS
50	SF	72	LYS
50	SF	73	LEU
50	SF	74	MET
50	SF	76	MET
50	SF	77	LYS

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Mol	Chain	Res	Type
50	SF	79	VAL
50	SF	83	PHE
50	SF	88	LEU
50	SF	92	LYS
50	SF	95	VAL
50	SF	98	LEU
50	SF	109	GLU
50	SF	110	ASP
50	SF	113	ARG
50	SF	114	ILE
50	SF	116	LYS
50	SF	122	ARG
50	SF	124	SER
50	SF	127	VAL
50	SF	131	ARG
50	SF	132	ARG
50	SF	137	ILE
50	SF	149	PHE
50	SF	150	ARG
50	SF	151	LYS
50	SF	153	ARG
50	SF	171	ASP
50	SF	172	LYS
50	SF	173	SER
50	SF	177	SER
50	SF	178	GLN
50	SF	179	ARG
50	SF	189	ASN
51	SG	15	VAL
51	SG	16	THR
51	SG	19	ASN
51	SG	20	LYS
51	SG	22	LEU
51	SG	23	MET
51	SG	24	ILE
51	SG	27	PHE
51	SG	31	GLN
51	SG	32	THR
51	SG	33	ILE
51	SG	34	HIS
51	SG	36	LEU
51	SG	37	ARG

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Mol	Chain	Res	Type
51	SG	38	MET
51	SG	41	GLU
51	SG	43	ASP
51	SG	49	GLU
51	SG	50	GLU
51	SG	55	THR
51	SG	59	THR
51	SG	70	TYR
51	SG	71	GLN
51	SG	73	VAL
51	SG	75	LYS
51	SG	76	SER
51	SG	78	ARG
51	SG	81	LEU
51	SG	83	LEU
51	SG	85	GLN
51	SG	88	LYS
51	SG	91	LEU
51	SG	92	HIS
51	SG	93	ARG
51	SG	94	ARG
51	SG	98	ARG
51	SG	99	LYS
51	SG	104	ARG
51	SG	111	ASP
51	SG	112	LEU
51	SG	117	VAL
51	SG	118	VAL
51	SG	125	LYS
51	SG	126	THR
51	SG	127	LEU
51	SG	132	ASP
51	SG	134	VAL
51	SG	137	LYS
51	SG	140	VAL
51	SG	142	LYS
51	SG	147	ILE
51	SG	148	ARG
51	SG	149	ARG
51	SG	150	LEU
51	SG	151	PHE
51	SG	160	PRO

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Mol	Chain	Res	Type
51	SG	161	LYS
51	SG	162	ASP
51	SG	163	GLN
51	SG	168	GLU
51	SG	169	LEU
51	SG	170	ILE
51	SG	183	GLU
51	SG	184	LYS
51	SG	185	LYS
51	SG	186	LEU
51	SG	188	TYR
51	SG	190	LYS
51	SG	194	VAL
51	SG	195	VAL
51	SG	196	THR
51	SG	198	GLU
51	SG	204	GLN
51	SG	205	ARG
51	SG	210	LYS
51	SG	211	LYS
51	SG	213	ILE
51	SG	216	LYS
51	SG	218	LEU
51	SG	219	GLN
51	SG	221	LEU
51	SG	222	GLU
51	SG	223	GLU
51	SG	227	LEU
51	SG	228	LEU
51	SG	230	ARG
52	SH	7	ARG
52	SH	8	LYS
52	SH	9	ILE
52	SH	11	LYS
52	SH	14	GLU
52	SH	15	LYS
52	SH	17	SER
52	SH	18	GLU
52	SH	20	GLU
52	SH	21	LYS
52	SH	27	LEU
52	SH	28	LEU

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Mol	Chain	Res	Type
52	SH	29	LYS
52	SH	30	LEU
52	SH	36	LEU
52	SH	37	ARG
52	SH	38	GLU
52	SH	39	MET
52	SH	41	LEU
52	SH	45	TYR
52	SH	47	SER
52	SH	48	SER
52	SH	50	LYS
52	SH	51	GLU
52	SH	58	LYS
52	SH	59	LYS
52	SH	62	VAL
52	SH	63	VAL
52	SH	69	MET
52	SH	70	LEU
52	SH	71	GLN
52	SH	72	SER
52	SH	73	PHE
52	SH	75	LYS
52	SH	76	ASN
52	SH	77	SER
52	SH	80	LEU
52	SH	83	LYS
52	SH	86	LYS
52	SH	89	SER
52	SH	92	ARG
52	SH	94	ILE
52	SH	101	ILE
52	SH	104	ASN
52	SH	107	VAL
52	SH	109	THR
52	SH	111	LYS
52	SH	112	LYS
52	SH	115	ARG
52	SH	118	ARG
52	SH	119	SER
52	SH	121	THR
52	SH	122	MET
52	SH	123	THR

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Mol	Chain	Res	Type
52	SH	130	LEU
52	SH	132	ASP
52	SH	137	ILE
52	SH	138	HIS
52	SH	144	THR
52	SH	150	SER
52	SH	151	ASN
52	SH	153	ARG
52	SH	154	LEU
52	SH	158	LEU
52	SH	160	LYS
52	SH	163	TYR
52	SH	167	SER
52	SH	168	GLU
52	SH	170	THR
52	SH	171	LYS
52	SH	180	LEU
52	SH	183	ARG
52	SH	184	ASP
52	SH	188	ILE
53	SI	3	ILE
53	SI	4	THR
53	SI	6	ASP
53	SI	7	LYS
53	SI	8	MET
53	SI	10	LYS
53	SI	13	LYS
53	SI	20	LYS
53	SI	22	HIS
53	SI	24	LYS
53	SI	26	LYS
53	SI	28	ASN
53	SI	29	LEU
53	SI	38	LEU
53	SI	39	ILE
53	SI	40	VAL
53	SI	41	LYS
53	SI	42	VAL
53	SI	43	THR
53	SI	44	SER
53	SI	45	LYS
53	SI	46	LYS

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Mol	Chain	Res	Type
53	SI	50	GLN
53	SI	51	LYS
53	SI	53	SER
53	SI	54	THR
53	SI	55	ILE
53	SI	58	ARG
53	SI	61	ASN
53	SI	62	ILE
53	SI	63	LYS
53	SI	69	LEU
53	SI	70	SER
53	SI	71	HIS
53	SI	78	SER
53	SI	86	ARG
53	SI	91	VAL
53	SI	94	SER
53	SI	97	ASN
53	SI	102	THR
53	SI	104	THR
53	SI	106	VAL
53	SI	119	LYS
53	SI	127	LEU
53	SI	128	ASP
53	SI	130	GLU
53	SI	132	LEU
53	SI	139	HIS
53	SI	140	ILE
53	SI	141	LEU
53	SI	147	ARG
53	SI	153	THR
53	SI	165	LEU
53	SI	170	LYS
53	SI	174	LYS
54	SJ	2	VAL
54	SJ	8	ARG
54	SJ	9	ASP
54	SJ	11	LEU
54	SJ	12	LYS
54	SJ	16	ASN
54	SJ	18	GLN
54	SJ	20	ILE
54	SJ	23	LYS

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Mol	Chain	Res	Type
54	SJ	25	VAL
54	SJ	26	ILE
54	SJ	32	LYS
54	SJ	36	GLU
54	SJ	37	PHE
54	SJ	40	LEU
54	SJ	43	LYS
54	SJ	48	SER
54	SJ	49	ASP
54	SJ	53	VAL
54	SJ	55	ASN
54	SJ	60	ARG
54	SJ	65	LEU
54	SJ	66	ILE
54	SJ	68	ARG
54	SJ	71	LYS
54	SJ	80	ASP
54	SJ	84	ASN
54	SJ	85	ASP
54	SJ	86	ILE
54	SJ	93	LEU
54	SJ	96	SER
54	SJ	98	LEU
54	SJ	102	ILE
54	SJ	103	ILE
54	SJ	104	LEU
54	SJ	105	THR
54	SJ	107	SER
54	SJ	108	GLN
54	SJ	112	ASP
54	SJ	114	ILE
54	SJ	115	GLU
54	SJ	117	GLN
54	SJ	118	HIS
54	SJ	124	LYS
54	SJ	125	VAL
54	SJ	126	ILE
55	SK	1	PRO
55	SK	3	ILE
55	SK	4	SER
55	SK	9	SER
55	SK	10	SER

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Mol	Chain	Res	Type
55	SK	11	LYS
55	SK	15	THR
55	SK	17	LYS
55	SK	18	LYS
55	SK	21	THR
55	SK	22	LYS
55	SK	24	ARG
55	SK	29	LEU
55	SK	30	LYS
55	SK	31	LEU
55	SK	32	CYS
55	SK	34	GLU
55	SK	41	ARG
55	SK	45	ARG
55	SK	52	LYS
55	SK	54	ARG
55	SK	61	LEU
55	SK	63	LEU
55	SK	64	ASP
55	SK	67	ASP
55	SK	68	ILE
55	SK	69	LYS
55	SK	73	GLU
55	SK	79	ARG
55	SK	80	ARG
55	SK	83	MET
55	SK	84	LEU
55	SK	86	ILE
55	SK	89	GLU
55	SK	90	GLU
55	SK	91	LYS
55	SK	93	GLN
55	SK	94	LEU
55	SK	95	ASP
55	SK	101	ARG
55	SK	102	ILE
55	SK	104	ASP
55	SK	106	PHE
55	SK	107	LYS
55	SK	110	LEU
55	SK	111	GLN
55	SK	112	SER

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Mol	Chain	Res	Type
55	SK	121	LYS
55	SK	127	ARG
55	SK	131	LYS
55	SK	135	ILE
55	SK	137	VAL
55	SK	149	VAL
55	SK	151	ILE
55	SK	152	SER
55	SK	155	SER
55	SK	156	ARG
55	SK	159	ILE
55	SK	161	ASP
55	SK	162	THR
55	SK	165	LEU
55	SK	168	ASN
55	SK	170	LYS
55	SK	173	ARG
55	SK	174	THR
55	SK	175	LYS
55	SK	176	ARG
56	SL	2	VAL
56	SL	10	LYS
56	SL	16	LEU
56	SL	18	GLU
56	SL	22	LEU
56	SL	24	LEU
56	SL	25	LYS
56	SL	26	GLU
56	SL	28	TRP
56	SL	29	ARG
56	SL	36	ILE
56	SL	37	THR
56	SL	39	VAL
56	SL	41	GLU
56	SL	44	LYS
56	SL	45	LEU
56	SL	46	CYS
56	SL	49	THR
56	SL	50	TYR
56	SL	51	LEU
56	SL	55	CYS
56	SL	56	ILE

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Mol	Chain	Res	Type
56	SL	57	MET
56	SL	58	GLN
56	SL	59	SER
56	SL	61	GLU
56	SL	66	VAL
56	SL	67	LYS
56	SL	69	THR
56	SL	73	ARG
56	SL	78	LEU
56	SL	82	LYS
56	SL	89	LYS
56	SL	90	GLU
56	SL	92	ASP
56	SL	93	LEU
56	SL	94	THR
56	SL	95	ASP
56	SL	96	ASP
57	SM	6	HIS
57	SM	8	ARG
57	SM	12	LYS
57	SM	14	SER
57	SM	22	LEU
57	SM	23	ARG
57	SM	24	LYS
57	SM	25	ASP
57	SM	28	ARG
57	SM	29	CYS
57	SM	31	ARG
57	SM	32	PHE
57	SM	34	LYS
57	SM	35	SER
57	SM	36	ILE
57	SM	41	HIS
57	SM	42	THR
57	SM	44	ILE
57	SM	45	THR
57	SM	54	LYS
57	SM	61	ASN
57	SM	63	SER
57	SM	65	ARG
57	SM	67	ARG
57	SM	70	ARG

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Mol	Chain	Res	Type
57	SM	74	HIS
57	SM	75	SER
57	SM	78	MET
57	SM	83	ILE
57	SM	86	ARG
57	SM	93	GLN
57	SM	96	LYS
57	SM	105	VAL
57	SM	110	SER
57	SM	114	ARG
57	SM	116	LYS
57	SM	117	GLU
57	SM	121	VAL
57	SM	122	THR
57	SM	125	GLU
57	SM	131	LYS
57	SM	138	ILE
57	SM	139	LYS
57	SM	145	GLU
57	SM	148	LYS
57	SM	149	LYS
57	SM	152	SER
58	SO	3	LYS
58	SO	4	THR
58	SO	14	ARG
58	SO	17	ARG
58	SO	18	ARG
58	SO	21	ARG
58	SO	26	LYS
58	SO	29	LYS
58	SO	32	LEU
58	SO	34	THR
58	SO	36	LEU
58	SO	37	LYS
58	SO	41	LEU
58	SO	45	CYS
58	SO	46	MET
58	SO	48	ARG
58	SO	50	ILE
58	SO	54	LYS
58	SO	55	ILE
58	SO	57	ILE

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Mol	Chain	Res	Type
58	SO	64	SER
58	SO	66	VAL
58	SO	68	LYS
58	SO	70	VAL
58	SO	71	ARG
58	SO	72	VAL
58	SO	75	THR
58	SO	76	LYS
58	SO	77	ASN
58	SO	79	LYS
58	SO	81	ILE
58	SO	82	THR
58	SO	91	ILE
58	SO	92	THR
58	SO	94	ILE
58	SO	95	ASP
58	SO	96	ASN
58	SO	98	ASP
58	SO	99	GLU
58	SO	105	PHE
58	SO	107	ARG
58	SO	115	ILE
58	SO	119	ARG
58	SO	128	ILE
58	SO	130	LEU
58	SO	131	LEU
58	SO	133	LEU
58	SO	136	ARG
58	SO	138	ARG
58	SO	140	LYS
59	SP	6	SER
59	SP	7	LYS
59	SP	9	LYS
59	SP	11	ILE
59	SP	12	SER
59	SP	14	SER
59	SP	16	ILE
59	SP	19	THR
59	SP	20	ARG
59	SP	27	LYS
59	SP	28	TYR
59	SP	29	THR

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Mol	Chain	Res	Type
59	SP	35	GLU
59	SP	42	LYS
59	SP	50	ILE
59	SP	52	LEU
59	SP	54	LEU
59	SP	57	GLN
59	SP	60	ILE
59	SP	69	SER
59	SP	71	ILE
59	SP	78	LYS
59	SP	83	GLU
59	SP	84	ILE
59	SP	91	MET
59	SP	93	LYS
59	SP	94	LYS
59	SP	98	ILE
59	SP	103	GLU
59	SP	109	LYS
59	SP	110	ASP
59	SP	120	SER
59	SP	127	ARG
59	SP	131	GLN
59	SP	134	ARG
59	SP	138	THR
59	SP	140	ARG
59	SP	142	LYS
59	SP	143	SER
59	SP	144	ASP
59	SP	145	GLN
60	SQ	28	PHE
60	SQ	33	ILE
60	SQ	34	TYR
60	SQ	37	LYS
60	SQ	40	THR
60	SQ	43	HIS
60	SQ	45	THR
60	SQ	47	LEU
60	SQ	48	SER
60	SQ	51	GLU
60	SQ	52	THR
60	SQ	57	SER
60	SQ	62	VAL

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Mol	Chain	Res	Type
60	SQ	64	ARG
60	SQ	66	CYS
60	SQ	78	THR
60	SQ	79	GLN
60	SQ	81	LEU
60	SQ	82	ILE
60	SQ	86	THR
60	SQ	96	LYS
60	SQ	98	ARG
60	SQ	103	THR
60	SQ	105	LYS
60	SQ	107	VAL
60	SQ	116	ILE
60	SQ	121	ARG
60	SQ	124	ILE
60	SQ	128	ARG
60	SQ	129	ILE
60	SQ	132	SER
60	SQ	135	ILE
60	SQ	140	THR
60	SQ	143	LYS
60	SQ	147	ARG
61	SR	21	GLU
61	SR	23	GLU
61	SR	24	LYS
61	SR	25	LEU
61	SR	29	LYS
61	SR	33	ILE
61	SR	34	LEU
61	SR	36	LYS
61	SR	40	ARG
61	SR	43	ARG
61	SR	44	ARG
61	SR	47	LYS
61	SR	50	LEU
61	SR	51	SER
61	SR	52	MET
61	SR	54	HIS
61	SR	56	ARG
61	SR	58	VAL
61	SR	61	LEU
61	SR	64	ARG

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Mol	Chain	Res	Type
61	SR	65	ARG
61	SR	68	GLN
61	SR	70	SER
61	SR	72	LYS
61	SR	74	LYS
61	SR	75	ILE
61	SR	78	THR
61	SR	80	LEU
61	SR	83	MET
61	SR	84	ILE
61	SR	85	ILE
61	SR	86	PHE
61	SR	88	GLU
61	SR	95	SER
61	SR	97	TYR
61	SR	100	ARG
61	SR	101	GLN
61	SR	105	VAL
61	SR	106	GLU
61	SR	108	LYS
61	SR	114	ARG
61	SR	118	GLU
61	SR	120	SER
61	SR	121	MET
61	SR	122	SER
61	SR	125	ILE
61	SR	126	VAL
61	SR	130	LYS
62	ST	9	LEU
62	ST	10	LEU
62	ST	12	ARG
62	ST	13	ASN
62	ST	15	ILE
62	ST	16	GLU
62	ST	17	VAL
62	ST	18	ARG
62	ST	19	GLU
62	ST	21	ASP
62	ST	22	LYS
62	ST	25	VAL
62	ST	26	HIS
62	ST	27	THR

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Mol	Chain	Res	Type
62	ST	28	LEU
62	ST	31	LYS
62	ST	32	LYS
62	ST	35	VAL
62	ST	39	PHE
62	ST	44	LYS
62	ST	47	ILE
62	ST	49	VAL
62	ST	50	ASN
62	ST	52	VAL
62	ST	54	LEU
62	ST	58	ARG
62	ST	61	ILE
62	ST	64	THR
62	ST	65	LYS
62	ST	71	MET
62	ST	73	LEU
62	ST	75	GLU
62	ST	76	SER
62	ST	77	LEU
62	ST	79	LYS
62	ST	86	LYS
62	ST	87	VAL
62	ST	96	ILE
62	ST	103	ILE
62	ST	110	SER
62	ST	112	LYS
62	ST	114	GLU
62	ST	117	ARG
62	ST	121	ARG
62	ST	123	LYS
62	ST	124	LEU
62	ST	125	VAL
62	ST	130	GLN
62	ST	131	LEU
62	ST	138	ARG
62	ST	139	CYS
62	ST	140	GLU
62	ST	144	PHE
62	ST	152	ARG
62	ST	153	ARG
62	ST	154	GLN

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Mol	Chain	Res	Type
62	ST	157	TYR
63	SU	5	ARG
63	SU	7	LYS
63	SU	15	LYS
63	SU	20	ASN
63	SU	23	SER
63	SU	25	LYS
63	SU	30	GLN
63	SU	31	ASN
63	SU	33	LYS
63	SU	38	LYS
63	SU	39	ARG
63	SU	44	ILE
63	SU	47	LYS
63	SU	58	THR
63	SU	59	THR
63	SU	60	LEU
63	SU	61	MET
63	SU	66	LYS
63	SU	72	ILE
63	SU	75	ARG
63	SU	77	GLN
63	SU	78	GLU
63	SU	81	ARG
63	SU	82	GLU
63	SU	84	ARG
63	SU	90	LYS
63	SU	107	GLN
63	SU	108	MET
63	SU	109	ILE
63	SU	111	SER
63	SU	114	PHE
63	SU	117	MET
63	SU	118	SER
64	SV	11	ARG
64	SV	12	ASP
64	SV	16	MET
64	SV	19	THR
64	SV	24	LYS
64	SV	25	VAL
64	SV	26	VAL
64	SV	31	LEU

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Mol	Chain	Res	Type
64	SV	37	ILE
64	SV	39	ARG
64	SV	40	ARG
64	SV	43	ASN
64	SV	47	LYS
64	SV	48	LYS
64	SV	50	ASN
64	SV	51	ILE
64	SV	53	VAL
64	SV	54	HIS
64	SV	55	LYS
64	SV	56	ARG
64	SV	59	GLU
64	SV	61	THR
64	SV	68	LEU
64	SV	70	LYS
64	SV	76	LEU
64	SV	80	ILE
64	SV	84	MET
64	SV	85	LEU
64	SV	86	ASN
64	SV	89	ASN
64	SV	90	ASP
64	SV	91	PHE
64	SV	95	LYS
64	SV	97	MET
64	SV	99	ILE
64	SV	100	LEU
64	SV	101	VAL
64	SV	104	ILE
64	SV	106	SER
64	SV	107	THR
64	SV	112	LEU
64	SV	114	ARG
64	SV	115	LEU
64	SV	116	ARG
64	SV	117	LYS
64	SV	119	ARG
64	SV	121	GLU
64	SV	124	VAL
64	SV	125	ARG
64	SV	127	HIS

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Mol	Chain	Res	Type
64	SV	129	ASN
64	SV	133	ARG
64	SV	135	GLN
64	SV	136	HIS
64	SV	137	THR
64	SV	138	LYS
64	SV	140	THR
64	SV	143	ARG
64	SV	145	HIS
65	SW	2	SER
65	SW	3	SER
65	SW	4	VAL
65	SW	6	ARG
65	SW	10	ASP
65	SW	15	SER
65	SW	16	PHE
65	SW	20	LEU
65	SW	21	LYS
65	SW	23	ARG
65	SW	25	ILE
65	SW	26	ILE
65	SW	27	LYS
65	SW	28	CYS
65	SW	34	TYR
65	SW	35	VAL
65	SW	36	LYS
65	SW	39	VAL
65	SW	42	GLN
65	SW	46	ARG
65	SW	54	LYS
65	SW	60	ARG
65	SW	65	SER
65	SW	70	ILE
65	SW	81	SER
65	SW	83	GLN
65	SW	84	LYS
65	SW	86	LYS
65	SW	88	THR
65	SW	97	CYS
65	SW	98	LYS
65	SW	103	ILE
65	SW	106	GLN

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Mol	Chain	Res	Type
65	SW	108	LEU
65	SW	111	LYS
65	SW	120	ARG
65	SW	122	ILE
65	SW	123	SER
65	SW	128	LYS
65	SW	131	GLU
65	SW	137	LEU
66	SX	24	LYS
66	SX	27	ILE
66	SX	32	LYS
66	SX	35	LYS
66	SX	36	LEU
66	SX	37	VAL
66	SX	39	ARG
66	SX	44	ILE
66	SX	46	LYS
66	SX	49	ARG
66	SX	53	ILE
66	SX	61	VAL
66	SX	62	ARG
66	SX	63	ARG
66	SX	64	LEU
66	SX	70	LYS
66	SX	71	SER
66	SX	75	GLU
66	SX	79	THR
66	SX	81	HIS
66	SX	82	ARG
66	SX	86	ARG
66	SX	87	MET
66	SX	90	ARG
66	SX	91	THR
66	SX	94	VAL
66	SX	96	CYS
66	SX	107	LYS
66	SX	111	ILE
66	SX	115	GLN
66	SX	116	VAL
66	SX	117	THR
66	SX	120	VAL
67	SY	4	ASP

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Mol	Chain	Res	Type
67	SY	5	ASP
67	SY	6	ILE
67	SY	8	MET
67	SY	9	LYS
67	SY	10	ASN
67	SY	12	SER
67	SY	15	VAL
67	SY	16	VAL
67	SY	19	TYR
67	SY	22	ARG
67	SY	23	LYS
67	SY	30	LEU
67	SY	41	LEU
67	SY	42	SER
67	SY	49	LYS
67	SY	52	MET
67	SY	53	ILE
67	SY	54	GLU
67	SY	55	ASN
67	SY	57	TYR
67	SY	59	THR
67	SY	60	PHE
67	SY	68	SER
67	SY	74	SER
67	SY	76	PHE
67	SY	78	LEU
67	SY	79	LEU
67	SY	82	GLU
67	SY	89	LEU
68	Sb	3	GLU
68	Sb	5	THR
68	Sb	7	LYS
68	Sb	9	ARG
68	Sb	10	LYS
68	Sb	16	LEU
68	Sb	18	GLN
68	Sb	19	ARG
68	Sb	23	VAL
68	Sb	26	VAL
68	Sb	27	LEU
68	Sb	32	THR
68	Sb	34	GLU

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Mol	Chain	Res	Type
68	Sb	36	LYS
68	Sb	37	GLU
68	Sb	39	ILE
68	Sb	40	LYS
68	Sb	42	LYS
68	Sb	43	VAL
68	Sb	45	GLN
68	Sb	48	LYS
68	Sb	52	GLN
68	Sb	53	LYS
68	Sb	55	ILE
68	Sb	56	VAL
68	Sb	62	THR
68	Sb	69	THR
68	Sb	70	VAL
68	Sb	78	ASN
68	Sb	79	MET
68	Sb	80	ASP
68	Sb	83	MET
68	Sb	84	LYS
68	Sb	85	TYR
68	Sb	90	ARG
68	Sb	91	LYS
68	Sb	96	LEU
68	Sb	97	ILE
68	Sb	101	LYS
68	Sb	104	SER
68	Sb	105	ARG
68	Sb	106	LYS
68	Sb	108	LEU
68	Sb	111	LEU
68	Sb	115	ARG
68	Sb	116	LEU
68	Sb	117	LYS
68	Sb	118	LYS
69	Sc	15	VAL
69	Sc	16	ASP
69	Sc	17	TYR
69	Sc	20	LEU
69	Sc	21	PHE
69	Sc	23	ASP
69	Sc	24	GLU

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Mol	Chain	Res	Type
69	Sc	27	MET
69	Sc	28	ASN
69	Sc	29	GLU
69	Sc	31	LEU
69	Sc	33	PHE
69	Sc	35	LYS
69	Sc	38	LYS
69	Sc	39	CYS
69	Sc	40	ILE
69	Sc	41	THR
69	Sc	50	ARG
69	Sc	51	VAL
69	Sc	58	ARG
69	Sc	60	MET
69	Sc	71	ILE
69	Sc	72	VAL
69	Sc	73	SER
69	Sc	77	ARG
69	Sc	78	MET
69	Sc	79	THR
69	Sc	82	LYS
69	Sc	84	MET
69	Sc	85	THR
69	Sc	86	LYS
69	Sc	87	LYS
70	Sd	3	VAL
70	Sd	6	ARG
70	Sd	10	ARG
70	Sd	15	CYS
70	Sd	18	THR
70	Sd	20	ILE
70	Sd	21	VAL
70	Sd	26	CYS
70	Sd	28	ARG
70	Sd	30	VAL
70	Sd	33	ASP
70	Sd	35	VAL
70	Sd	37	LYS
70	Sd	42	ARG
70	Sd	44	ILE
70	Sd	49	ILE
70	Sd	51	ASP

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Mol	Chain	Res	Type
70	Sd	54	LEU
70	Sd	64	ILE
70	Sd	66	LYS
70	Sd	67	LEU
70	Sd	71	VAL
70	Sd	80	HIS
70	Sd	91	ASP
70	Sd	93	LYS
70	Sd	94	ILE
70	Sd	95	ARG
70	Sd	99	LYS
70	Sd	100	ARG
70	Sd	105	SER
71	Se	46	VAL
71	Se	49	LEU
71	Se	55	GLU
71	Se	56	GLU
71	Se	57	GLN
71	Se	58	ARG
71	Se	59	LYS
71	Se	61	LYS
71	Se	65	LEU
71	Se	74	LEU
71	Se	75	GLU
71	Se	76	ILE
71	Se	77	LYS
71	Se	82	GLN
71	Se	83	ASP
71	Se	84	ILE
71	Se	85	VAL
71	Se	86	VAL
71	Se	93	THR
71	Se	97	CYS
71	Se	102	SER
71	Se	115	THR
71	Se	117	GLN
71	Se	119	GLU
71	Se	120	ARG
71	Se	122	ARG
71	Se	123	GLN
72	Sg	3	GLU
72	Sg	5	ILE

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Mol	Chain	Res	Type
72	Sg	6	ASN
72	Sg	11	GLU
72	Sg	12	VAL
72	Sg	13	LEU
72	Sg	23	THR
72	Sg	24	GLN
72	Sg	25	VAL
72	Sg	27	VAL
72	Sg	28	GLU
72	Sg	30	MET
72	Sg	31	THR
72	Sg	37	ILE
72	Sg	42	ILE
72	Sg	45	VAL
72	Sg	46	ARG
72	Sg	47	LYS
72	Sg	48	ASP
72	Sg	51	LEU
72	Sg	52	VAL
72	Sg	53	LEU
72	Sg	54	MET
72	Sg	57	GLU
72	Sg	58	ARG
72	Sg	59	GLU
72	Sg	61	ARG
72	Sg	62	ARG
72	Sg	63	LEU
72	Sg	64	ARG
73	Sh	87	MET
73	Sh	88	ARG
73	Sh	89	GLU
73	Sh	91	GLU
73	Sh	93	CYS
73	Sh	99	LYS
73	Sh	102	CYS
73	Sh	104	ILE
73	Sh	105	CYS
73	Sh	110	SER
73	Sh	112	TYR
73	Sh	117	LEU
73	Sh	120	CYS
73	Sh	121	ARG

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Mol	Chain	Res	Type
73	Sh	125	LYS
73	Sh	126	GLU
73	Sh	130	LYS
73	Sh	134	VAL
73	Sh	135	LYS
73	Sh	136	LEU
74	Sj	11	LYS
74	Sj	13	ARG
74	Sj	16	THR
74	Sj	18	LYS
74	Sj	20	GLU
74	Sj	22	LYS
74	Sj	23	GLU
74	Sj	26	ARG
74	Sj	29	ARG
74	Sj	31	ARG
74	Sj	35	ARG
74	Sj	36	LEU
74	Sj	37	LEU
74	Sj	40	LYS
74	Sj	43	VAL
74	Sj	47	LEU
74	Sj	49	HIS
74	Sj	50	ASN
74	Sj	53	ARG
74	Sj	54	LEU
74	Sj	61	ILE
74	Sj	62	ARG
74	Sj	63	GLN
74	Sj	64	LYS
74	Sj	65	LEU
74	Sj	67	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (126) such sidechains are listed below:

Mol	Chain	Res	Type
1	LA	50	HIS
1	LA	97	HIS
1	LA	144	ASN
2	LB	71	GLN
2	LB	152	GLN
2	LB	164	GLN

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Mol	Chain	Res	Type
2	LB	183	ASN
2	LB	274	HIS
2	LB	352	GLN
2	LB	354	GLN
3	LC	109	GLN
3	LC	266	GLN
6	LF	31	GLN
6	LF	142	ASN
6	LF	183	HIS
7	LG	4	ASN
8	LH	115	ASN
8	LH	154	GLN
8	LH	171	HIS
8	LH	195	ASN
8	LH	212	ASN
9	LI	41	GLN
9	LI	70	ASN
11	LK	191	GLN
12	LL	43	GLN
12	LL	63	GLN
12	LL	88	ASN
12	LL	101	ASN
12	LL	109	HIS
13	LM	49	ASN
13	LM	166	GLN
15	LO	149	ASN
16	LP	60	ASN
19	LS	28	HIS
21	LU	38	GLN
21	LU	45	ASN
21	LU	77	GLN
21	LU	97	HIS
21	LU	104	ASN
22	LV	47	ASN
22	LV	89	GLN
23	LW	13	ASN
23	LW	49	HIS
27	La	16	GLN
27	La	112	ASN
27	La	116	GLN
28	Lb	40	HIS
28	Lb	86	GLN

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Mol	Chain	Res	Type
30	Ld	37	ASN
30	Ld	51	ASN
30	Ld	59	GLN
31	Le	7	HIS
31	Le	90	ASN
35	Li	91	ASN
36	Lj	30	GLN
37	Lk	28	HIS
37	Lk	82	ASN
39	Ln	5	ASN
39	Ln	61	GLN
39	Ln	99	GLN
39	Ln	119	GLN
39	Ln	193	GLN
41	Lp	81	GLN
41	Lp	87	HIS
43	Ls	103	ASN
43	Ls	117	ASN
45	SA	112	ASN
45	SA	130	ASN
46	SB	146	HIS
46	SB	210	ASN
46	SB	233	GLN
47	SC	57	GLN
47	SC	68	ASN
48	SD	43	GLN
48	SD	87	GLN
48	SD	202	GLN
49	SE	66	GLN
49	SE	69	ASN
50	SF	31	ASN
50	SF	180	ASN
51	SG	10	ASN
51	SG	19	ASN
51	SG	85	GLN
52	SH	71	GLN
52	SH	127	ASN
53	SI	28	ASN
53	SI	112	GLN
53	SI	134	GLN
53	SI	150	GLN
53	SI	168	GLN

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Mol	Chain	Res	Type
54	SJ	16	ASN
54	SJ	42	GLN
55	SK	59	ASN
55	SK	128	ASN
56	SL	85	GLN
58	SO	61	GLN
58	SO	96	ASN
59	SP	5	HIS
60	SQ	38	ASN
60	SQ	43	HIS
60	SQ	142	HIS
61	SR	54	HIS
61	SR	68	GLN
62	ST	33	ASN
62	ST	95	GLN
63	SU	20	ASN
64	SV	50	ASN
64	SV	78	HIS
64	SV	89	ASN
64	SV	129	ASN
64	SV	135	GLN
65	SW	68	HIS
65	SW	83	GLN
65	SW	138	GLN
66	SX	115	GLN
68	Sb	45	GLN
68	Sb	52	GLN
68	Sb	77	GLN
69	Sc	36	ASN
69	Sc	42	HIS
69	Sc	83	ASN
71	Se	60	HIS
71	Se	117	GLN
72	Sg	24	GLN
72	Sg	40	ASN
74	Sj	58	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
4	LD	141/143 (98%)	57 (40%)	10 (7%)

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
44	Lt	2588/2697 (95%)	1103 (42%)	0
5	LE	116/121 (95%)	55 (47%)	4 (3%)
75	St	1453/1454 (99%)	649 (44%)	0
All	All	4298/4415 (97%)	1864 (43%)	14 (0%)

All (1864) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
4	LD	2	C
4	LD	7	C
4	LD	8	C
4	LD	10	G
4	LD	12	C
4	LD	13	G
4	LD	14	G
4	LD	20	G
4	LD	21	C
4	LD	22	C
4	LD	23	U
4	LD	24	C
4	LD	31	G
4	LD	32	G
4	LD	35	G
4	LD	36	C
4	LD	40	G
4	LD	46	C
4	LD	47	G
4	LD	48	C
4	LD	51	C
4	LD	52	G
4	LD	59	G
4	LD	60	A
4	LD	61	G
4	LD	64	G
4	LD	72	G
4	LD	73	A
4	LD	76	C
4	LD	77	G
4	LD	78	C
4	LD	79	C
4	LD	80	C
4	LD	81	G

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Mol	Chain	Res	Type
4	LD	84	C
4	LD	85	C
4	LD	86	G
4	LD	87	A
4	LD	88	G
4	LD	94	C
4	LD	102	C
4	LD	104	A
4	LD	105	A
4	LD	106	C
4	LD	110	G
4	LD	111	C
4	LD	112	G
4	LD	117	C
4	LD	118	C
4	LD	119	G
4	LD	120	G
4	LD	125	G
4	LD	126	C
4	LD	128	G
4	LD	129	C
4	LD	141	C
4	LD	142	C
5	LE	3	G
5	LE	7	G
5	LE	10	C
5	LE	11	A
5	LE	14	C
5	LE	18	G
5	LE	20	C
5	LE	23	A
5	LE	24	A
5	LE	30	U
5	LE	32	A
5	LE	33	A
5	LE	35	U
5	LE	36	C
5	LE	37	G
5	LE	38	U
5	LE	39	U
5	LE	40	C
5	LE	42	G

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Mol	Chain	Res	Type
5	LE	44	A
5	LE	45	U
5	LE	47	A
5	LE	48	G
5	LE	49	G
5	LE	51	A
5	LE	53	A
5	LE	54	G
5	LE	55	A
5	LE	56	A
5	LE	61	C
5	LE	62	G
5	LE	63	U
5	LE	64	C
5	LE	65	A
5	LE	69	C
5	LE	70	C
5	LE	72	G
5	LE	73	C
5	LE	77	U
5	LE	80	U
5	LE	82	C
5	LE	85	U
5	LE	86	C
5	LE	87	G
5	LE	91	A
5	LE	92	C
5	LE	94	U
5	LE	98	G
5	LE	102	A
5	LE	106	G
5	LE	109	G
5	LE	110	U
5	LE	111	G
5	LE	114	G
5	LE	115	A
44	Lt	2	G
44	Lt	3	C
44	Lt	4	G
44	Lt	5	G
44	Lt	8	C
44	Lt	10	G

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Mol	Chain	Res	Type
44	Lt	11	A
44	Lt	21	G
44	Lt	24	G
44	Lt	25	A
44	Lt	39	A
44	Lt	40	G
44	Lt	42	A
44	Lt	48	G
44	Lt	55	C
44	Lt	58	G
44	Lt	59	A
44	Lt	64	A
44	Lt	65	A
44	Lt	66	A
44	Lt	67	C
44	Lt	70	A
44	Lt	71	C
44	Lt	72	C
44	Lt	73	G
44	Lt	75	G
44	Lt	82	C
44	Lt	84	C
44	Lt	85	U
44	Lt	86	A
44	Lt	87	G
44	Lt	90	G
44	Lt	96	G
44	Lt	100	C
44	Lt	107	A
44	Lt	109	C
44	Lt	114	C
44	Lt	118	A
44	Lt	121	G
44	Lt	122	C
44	Lt	123	G
44	Lt	124	C
44	Lt	127	U
44	Lt	128	G
44	Lt	153	C
44	Lt	158	G
44	Lt	162	C
44	Lt	166	G

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Mol	Chain	Res	Type
44	Lt	167	G
44	Lt	169	C
44	Lt	170	C
44	Lt	172	C
44	Lt	173	G
44	Lt	174	C
44	Lt	175	C
44	Lt	176	C
44	Lt	178	A
44	Lt	179	G
44	Lt	180	A
44	Lt	181	G
44	Lt	185	G
44	Lt	186	C
44	Lt	190	C
44	Lt	194	G
44	Lt	224	U
44	Lt	230	U
44	Lt	237	G
44	Lt	238	C
44	Lt	240	U
44	Lt	250	A
44	Lt	251	G
44	Lt	252	G
44	Lt	256	G
44	Lt	257	C
44	Lt	258	G
44	Lt	262	C
44	Lt	263	C
44	Lt	265	U
44	Lt	278	U
44	Lt	281	G
44	Lt	287	G
44	Lt	289	A
44	Lt	290	C
44	Lt	294	U
44	Lt	295	A
44	Lt	300	A
44	Lt	301	C
44	Lt	302	C
44	Lt	303	A
44	Lt	312	G

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Mol	Chain	Res	Type
44	Lt	314	G
44	Lt	317	A
44	Lt	321	G
44	Lt	322	U
44	Lt	326	A
44	Lt	328	G
44	Lt	329	G
44	Lt	334	C
44	Lt	339	G
44	Lt	342	C
44	Lt	343	G
44	Lt	344	C
44	Lt	345	U
44	Lt	346	C
44	Lt	347	A
44	Lt	349	A
44	Lt	350	A
44	Lt	352	A
44	Lt	370	G
44	Lt	372	C
44	Lt	375	C
44	Lt	376	C
44	Lt	377	C
44	Lt	378	G
44	Lt	379	C
44	Lt	384	C
44	Lt	385	C
44	Lt	389	C
44	Lt	396	C
44	Lt	397	A
44	Lt	399	G
44	Lt	408	A
44	Lt	409	G
44	Lt	421	G
44	Lt	425	A
44	Lt	427	C
44	Lt	429	C
44	Lt	434	G
44	Lt	435	A
44	Lt	436	G
44	Lt	437	C
44	Lt	438	C

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Mol	Chain	Res	Type
44	Lt	439	C
44	Lt	443	C
44	Lt	444	G
44	Lt	449	A
44	Lt	450	G
44	Lt	451	C
44	Lt	454	G
44	Lt	456	G
44	Lt	459	A
44	Lt	460	G
44	Lt	461	A
44	Lt	463	G
44	Lt	464	C
44	Lt	465	C
44	Lt	468	G
44	Lt	480	C
44	Lt	485	G
44	Lt	486	C
44	Lt	491	G
44	Lt	492	U
44	Lt	493	G
44	Lt	497	G
44	Lt	498	G
44	Lt	501	C
44	Lt	502	G
44	Lt	503	A
44	Lt	507	G
44	Lt	508	C
44	Lt	512	G
44	Lt	513	C
44	Lt	515	U
44	Lt	516	G
44	Lt	517	G
44	Lt	518	G
44	Lt	520	C
44	Lt	523	A
44	Lt	524	A
44	Lt	525	A
44	Lt	534	U
44	Lt	535	C
44	Lt	537	A
44	Lt	539	G

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Mol	Chain	Res	Type
44	Lt	542	C
44	Lt	543	G
44	Lt	546	G
44	Lt	547	A
44	Lt	549	G
44	Lt	550	G
44	Lt	552	G
44	Lt	554	G
44	Lt	561	C
44	Lt	566	G
44	Lt	567	C
44	Lt	575	A
44	Lt	578	C
44	Lt	588	U
44	Lt	589	G
44	Lt	591	U
44	Lt	592	G
44	Lt	596	C
44	Lt	599	A
44	Lt	600	G
44	Lt	601	A
44	Lt	605	C
44	Lt	611	G
44	Lt	612	G
44	Lt	613	A
44	Lt	624	G
44	Lt	625	G
44	Lt	626	G
44	Lt	631	A
44	Lt	632	A
44	Lt	633	G
44	Lt	634	A
44	Lt	637	C
44	Lt	639	U
44	Lt	640	C
44	Lt	641	G
44	Lt	642	A
44	Lt	643	A
44	Lt	650	G
44	Lt	654	G
44	Lt	656	U
44	Lt	661	G

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Mol	Chain	Res	Type
44	Lt	669	A
44	Lt	676	C
44	Lt	677	C
44	Lt	678	C
44	Lt	679	A
44	Lt	680	G
44	Lt	681	G
44	Lt	682	A
44	Lt	691	G
44	Lt	694	C
44	Lt	695	C
44	Lt	696	G
44	Lt	698	A
44	Lt	699	G
44	Lt	705	G
44	Lt	708	C
44	Lt	709	G
44	Lt	717	C
44	Lt	719	G
44	Lt	720	G
44	Lt	722	C
44	Lt	723	G
44	Lt	727	G
44	Lt	729	A
44	Lt	730	G
44	Lt	731	C
44	Lt	732	G
44	Lt	733	G
44	Lt	734	G
44	Lt	735	G
44	Lt	736	G
44	Lt	739	C
44	Lt	740	U
44	Lt	741	G
44	Lt	742	C
44	Lt	743	C
44	Lt	744	C
44	Lt	745	C
44	Lt	747	C
44	Lt	751	C
44	Lt	754	C
44	Lt	755	C

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Mol	Chain	Res	Type
44	Lt	756	C
44	Lt	757	C
44	Lt	760	A
44	Lt	761	A
44	Lt	763	U
44	Lt	764	C
44	Lt	765	C
44	Lt	767	A
44	Lt	769	G
44	Lt	770	G
44	Lt	776	G
44	Lt	777	C
44	Lt	779	G
44	Lt	780	C
44	Lt	783	C
44	Lt	785	C
44	Lt	787	G
44	Lt	788	C
44	Lt	793	C
44	Lt	794	U
44	Lt	795	G
44	Lt	796	G
44	Lt	799	G
44	Lt	802	G
44	Lt	803	C
44	Lt	804	G
44	Lt	805	G
44	Lt	806	G
44	Lt	807	C
44	Lt	808	G
44	Lt	809	A
44	Lt	814	G
44	Lt	818	G
44	Lt	827	G
44	Lt	830	C
44	Lt	834	C
44	Lt	837	G
44	Lt	839	A
44	Lt	840	A
44	Lt	841	G
44	Lt	842	C
44	Lt	844	G

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Mol	Chain	Res	Type
44	Lt	845	G
44	Lt	847	C
44	Lt	848	G
44	Lt	854	G
44	Lt	855	G
44	Lt	861	C
44	Lt	862	G
44	Lt	863	A
44	Lt	865	C
44	Lt	869	A
44	Lt	870	C
44	Lt	873	C
44	Lt	874	G
44	Lt	875	G
44	Lt	876	G
44	Lt	884	G
44	Lt	888	C
44	Lt	889	G
44	Lt	890	C
44	Lt	897	C
44	Lt	899	G
44	Lt	900	C
44	Lt	901	G
44	Lt	903	A
44	Lt	906	G
44	Lt	907	G
44	Lt	908	C
44	Lt	909	G
44	Lt	910	U
44	Lt	912	G
44	Lt	914	C
44	Lt	916	G
44	Lt	917	G
44	Lt	918	U
44	Lt	920	C
44	Lt	921	C
44	Lt	922	G
44	Lt	923	A
44	Lt	982	G
44	Lt	985	G
44	Lt	986	A
44	Lt	987	A

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Mol	Chain	Res	Type
44	Lt	989	C
44	Lt	991	G
44	Lt	992	C
44	Lt	993	C
44	Lt	994	G
44	Lt	995	G
44	Lt	999	G
44	Lt	1001	A
44	Lt	1005	U
44	Lt	1006	G
44	Lt	1007	G
44	Lt	1009	G
44	Lt	1010	C
44	Lt	1012	C
44	Lt	1013	G
44	Lt	1015	C
44	Lt	1016	G
44	Lt	1017	G
44	Lt	1018	A
44	Lt	1019	G
44	Lt	1021	C
44	Lt	1024	G
44	Lt	1025	G
44	Lt	1026	A
44	Lt	1030	G
44	Lt	1031	C
44	Lt	1032	G
44	Lt	1037	G
44	Lt	1038	C
44	Lt	1039	C
44	Lt	1040	G
44	Lt	1045	G
44	Lt	1046	C
44	Lt	1047	G
44	Lt	1053	G
44	Lt	1062	C
44	Lt	1066	A
44	Lt	1070	G
44	Lt	1072	C
44	Lt	1073	C
44	Lt	1074	C
44	Lt	1075	G

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Mol	Chain	Res	Type
44	Lt	1076	G
44	Lt	1079	G
44	Lt	1080	C
44	Lt	1081	G
44	Lt	1087	G
44	Lt	1095	G
44	Lt	1096	G
44	Lt	1109	G
44	Lt	1110	G
44	Lt	1111	C
44	Lt	1116	G
44	Lt	1117	G
44	Lt	1118	U
44	Lt	1120	C
44	Lt	1121	A
44	Lt	1122	G
44	Lt	1125	C
44	Lt	1133	C
44	Lt	1134	A
44	Lt	1135	G
44	Lt	1136	U
44	Lt	1140	C
44	Lt	1141	G
44	Lt	1143	U
44	Lt	1144	A
44	Lt	1150	C
44	Lt	1151	G
44	Lt	1152	C
44	Lt	1153	C
44	Lt	1154	C
44	Lt	1159	G
44	Lt	1160	G
44	Lt	1164	G
44	Lt	1165	A
44	Lt	1166	G
44	Lt	1167	G
44	Lt	1168	G
44	Lt	1169	G
44	Lt	1172	G
44	Lt	1178	U
44	Lt	1179	U
44	Lt	1181	C

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Mol	Chain	Res	Type
44	Lt	1185	G
44	Lt	1186	C
44	Lt	1187	G
44	Lt	1191	G
44	Lt	1192	C
44	Lt	1193	A
44	Lt	1195	C
44	Lt	1198	G
44	Lt	1199	C
44	Lt	1204	G
44	Lt	1207	G
44	Lt	1208	A
44	Lt	1210	U
44	Lt	1211	C
44	Lt	1216	C
44	Lt	1217	U
44	Lt	1220	G
44	Lt	1222	G
44	Lt	1226	G
44	Lt	1231	A
44	Lt	1233	A
44	Lt	1237	G
44	Lt	1238	G
44	Lt	1239	A
44	Lt	1240	A
44	Lt	1241	G
44	Lt	1242	G
44	Lt	1247	U
44	Lt	1248	G
44	Lt	1249	C
44	Lt	1250	C
44	Lt	1251	C
44	Lt	1252	G
44	Lt	1253	C
44	Lt	1254	C
44	Lt	1257	U
44	Lt	1258	C
44	Lt	1259	G
44	Lt	1260	A
44	Lt	1261	A
44	Lt	1262	C
44	Lt	1263	G

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Mol	Chain	Res	Type
44	Lt	1273	C
44	Lt	1275	G
44	Lt	1277	G
44	Lt	1278	A
44	Lt	1279	C
44	Lt	1280	U
44	Lt	1281	C
44	Lt	1282	C
44	Lt	1286	A
44	Lt	1290	G
44	Lt	1291	C
44	Lt	1295	C
44	Lt	1298	C
44	Lt	1299	G
44	Lt	1300	C
44	Lt	1308	C
44	Lt	1309	C
44	Lt	1310	C
44	Lt	1311	G
44	Lt	1314	C
44	Lt	1318	G
44	Lt	1324	G
44	Lt	1325	C
44	Lt	1327	C
44	Lt	1328	A
44	Lt	1339	G
44	Lt	1344	G
44	Lt	1345	C
44	Lt	1349	G
44	Lt	1350	C
44	Lt	1353	C
44	Lt	1354	G
44	Lt	1355	G
44	Lt	1356	C
44	Lt	1357	C
44	Lt	1366	C
44	Lt	1367	C
44	Lt	1380	G
44	Lt	1381	A
44	Lt	1382	C
44	Lt	1383	G
44	Lt	1385	C

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Mol	Chain	Res	Type
44	Lt	1387	U
44	Lt	1389	C
44	Lt	1392	G
44	Lt	1394	A
44	Lt	1395	G
44	Lt	1396	A
44	Lt	1401	G
44	Lt	1406	G
44	Lt	1407	G
44	Lt	1408	G
44	Lt	1412	G
44	Lt	1413	G
44	Lt	1423	G
44	Lt	1427	C
44	Lt	1434	C
44	Lt	1435	C
44	Lt	1438	U
44	Lt	1439	G
44	Lt	1440	A
44	Lt	1448	G
44	Lt	1451	G
44	Lt	1454	G
44	Lt	1455	C
44	Lt	1458	G
44	Lt	1461	G
44	Lt	1462	C
44	Lt	1464	C
44	Lt	1466	C
44	Lt	1468	G
44	Lt	1469	U
44	Lt	1470	A
44	Lt	1473	G
44	Lt	1474	A
44	Lt	1478	C
44	Lt	1479	A
44	Lt	1480	G
44	Lt	1481	C
44	Lt	1482	A
44	Lt	1483	G
44	Lt	1485	A
44	Lt	1486	C
44	Lt	1488	C

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Mol	Chain	Res	Type
44	Lt	1490	G
44	Lt	1495	C
44	Lt	1496	A
44	Lt	1498	C
44	Lt	1499	A
44	Lt	1502	C
44	Lt	1503	U
44	Lt	1507	G
44	Lt	1509	G
44	Lt	1510	C
44	Lt	1511	G
44	Lt	1512	G
44	Lt	1513	G
44	Lt	1514	A
44	Lt	1515	G
44	Lt	1516	C
44	Lt	1517	G
44	Lt	1518	A
44	Lt	1523	G
44	Lt	1525	C
44	Lt	1526	U
44	Lt	1528	A
44	Lt	1531	G
44	Lt	1532	A
44	Lt	1533	A
44	Lt	1538	G
44	Lt	1546	G
44	Lt	1552	U
44	Lt	1558	C
44	Lt	1562	A
44	Lt	1563	A
44	Lt	1567	G
44	Lt	1569	G
44	Lt	1573	C
44	Lt	1575	C
44	Lt	1576	U
44	Lt	1577	G
44	Lt	1578	A
44	Lt	1579	C
44	Lt	1580	G
44	Lt	1587	C
44	Lt	1590	G

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Mol	Chain	Res	Type
44	Lt	1591	U
44	Lt	1593	A
44	Lt	1596	A
44	Lt	1597	C
44	Lt	1598	U
44	Lt	1599	G
44	Lt	1600	G
44	Lt	1601	A
44	Lt	1602	A
44	Lt	1603	C
44	Lt	1604	G
44	Lt	1605	G
44	Lt	1606	A
44	Lt	1611	G
44	Lt	1615	U
44	Lt	1616	C
44	Lt	1618	C
44	Lt	1619	G
44	Lt	1620	A
44	Lt	1624	U
44	Lt	1626	U
44	Lt	1628	C
44	Lt	1629	U
44	Lt	1630	A
44	Lt	1631	G
44	Lt	1633	A
44	Lt	1634	A
44	Lt	1635	C
44	Lt	1641	G
44	Lt	1646	G
44	Lt	1647	A
44	Lt	1648	G
44	Lt	1655	A
44	Lt	1656	C
44	Lt	1657	C
44	Lt	1658	C
44	Lt	1659	G
44	Lt	1663	C
44	Lt	1664	U
44	Lt	1667	C
44	Lt	1672	C
44	Lt	1673	G

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Mol	Chain	Res	Type
44	Lt	1674	U
44	Lt	1675	G
44	Lt	1676	A
44	Lt	1680	C
44	Lt	1681	U
44	Lt	1689	G
44	Lt	1692	A
44	Lt	1693	C
44	Lt	1694	G
44	Lt	1696	C
44	Lt	1697	C
44	Lt	1700	C
44	Lt	1702	C
44	Lt	1703	C
44	Lt	1704	G
44	Lt	1706	G
44	Lt	1707	A
44	Lt	1708	A
44	Lt	1713	U
44	Lt	1714	C
44	Lt	1716	G
44	Lt	1720	A
44	Lt	1727	G
44	Lt	1732	A
44	Lt	1736	C
44	Lt	1737	G
44	Lt	1738	G
44	Lt	1740	A
44	Lt	1742	U
44	Lt	1743	A
44	Lt	1745	C
44	Lt	1746	U
44	Lt	1748	U
44	Lt	1749	G
44	Lt	1750	A
44	Lt	1753	C
44	Lt	1755	C
44	Lt	1760	G
44	Lt	1761	G
44	Lt	1764	G
44	Lt	1767	A
44	Lt	1769	A

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Mol	Chain	Res	Type
44	Lt	1772	C
44	Lt	1773	C
44	Lt	1780	G
44	Lt	1785	U
44	Lt	1786	U
44	Lt	1793	G
44	Lt	1794	U
44	Lt	1795	G
44	Lt	1797	A
44	Lt	1798	U
44	Lt	1801	A
44	Lt	1802	U
44	Lt	1803	G
44	Lt	1807	C
44	Lt	1808	A
44	Lt	1809	A
44	Lt	1811	G
44	Lt	1812	A
44	Lt	1814	G
44	Lt	1822	U
44	Lt	1823	G
44	Lt	1824	U
44	Lt	1832	C
44	Lt	1833	G
44	Lt	1835	G
44	Lt	1840	C
44	Lt	1843	G
44	Lt	1844	A
44	Lt	1849	C
44	Lt	1850	C
44	Lt	1852	G
44	Lt	1853	C
44	Lt	1859	G
44	Lt	1860	A
44	Lt	1861	A
44	Lt	1862	C
44	Lt	1863	G
44	Lt	1864	G
44	Lt	1865	G
44	Lt	1866	C
44	Lt	1867	G
44	Lt	1870	G

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Mol	Chain	Res	Type
44	Lt	1873	C
44	Lt	1878	A
44	Lt	1879	G
44	Lt	1880	C
44	Lt	1881	G
44	Lt	1882	G
44	Lt	1883	G
44	Lt	1885	C
44	Lt	1886	A
44	Lt	1887	A
44	Lt	1888	G
44	Lt	1889	A
44	Lt	1890	A
44	Lt	1891	G
44	Lt	1892	A
44	Lt	1899	U
44	Lt	1900	G
44	Lt	1901	A
44	Lt	1902	G
44	Lt	1906	G
44	Lt	1907	A
44	Lt	1910	C
44	Lt	1911	C
44	Lt	1912	A
44	Lt	1915	C
44	Lt	1917	G
44	Lt	1919	G
44	Lt	1923	G
44	Lt	1928	G
44	Lt	1929	C
44	Lt	1930	G
44	Lt	1932	G
44	Lt	1934	C
44	Lt	1935	G
44	Lt	1936	G
44	Lt	1940	G
44	Lt	1941	C
44	Lt	1942	G
44	Lt	1943	C
44	Lt	1944	A
44	Lt	1945	G
44	Lt	1946	C

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Mol	Chain	Res	Type
44	Lt	1947	G
44	Lt	1948	C
44	Lt	1949	A
44	Lt	1950	C
44	Lt	1952	G
44	Lt	1953	G
44	Lt	1954	G
44	Lt	1955	G
44	Lt	1956	A
44	Lt	1957	G
44	Lt	1959	C
44	Lt	1960	C
44	Lt	1961	G
44	Lt	1962	C
44	Lt	1963	G
44	Lt	1964	C
44	Lt	1965	C
44	Lt	1966	C
44	Lt	1967	C
44	Lt	1968	U
44	Lt	1970	A
44	Lt	1972	A
44	Lt	1973	C
44	Lt	1974	A
44	Lt	1975	C
44	Lt	1976	C
44	Lt	1977	C
44	Lt	1978	U
44	Lt	1979	G
44	Lt	1980	A
44	Lt	1981	C
44	Lt	1982	G
44	Lt	1983	G
44	Lt	1984	C
44	Lt	1985	C
44	Lt	1987	C
44	Lt	1988	C
44	Lt	1989	G
44	Lt	1990	C
44	Lt	1991	C
44	Lt	1992	G
44	Lt	1993	C

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Mol	Chain	Res	Type
44	Lt	2000	C
44	Lt	2001	A
44	Lt	2008	C
44	Lt	2009	G
44	Lt	2010	C
44	Lt	2012	C
44	Lt	2017	A
44	Lt	2018	C
44	Lt	2022	C
44	Lt	2023	C
44	Lt	2028	C
44	Lt	2030	G
44	Lt	2031	G
44	Lt	2032	G
44	Lt	2033	A
44	Lt	2038	G
44	Lt	2041	U
44	Lt	2042	G
44	Lt	2043	G
44	Lt	2047	G
44	Lt	2048	G
44	Lt	2050	G
44	Lt	2051	C
44	Lt	2059	A
44	Lt	2060	C
44	Lt	2061	A
44	Lt	2065	G
44	Lt	2066	A
44	Lt	2067	C
44	Lt	2068	C
44	Lt	2071	A
44	Lt	2072	G
44	Lt	2073	G
44	Lt	2075	G
44	Lt	2076	U
44	Lt	2079	C
44	Lt	2080	A
44	Lt	2081	C
44	Lt	2082	G
44	Lt	2089	U
44	Lt	2090	C
44	Lt	2091	A

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Mol	Chain	Res	Type
44	Lt	2093	C
44	Lt	2094	G
44	Lt	2095	A
44	Lt	2100	G
44	Lt	2101	G
44	Lt	2102	A
44	Lt	2104	A
44	Lt	2105	C
44	Lt	2108	C
44	Lt	2109	C
44	Lt	2112	C
44	Lt	2113	G
44	Lt	2114	G
44	Lt	2115	A
44	Lt	2118	A
44	Lt	2120	A
44	Lt	2124	G
44	Lt	2127	C
44	Lt	2128	A
44	Lt	2129	A
44	Lt	2130	G
44	Lt	2131	C
44	Lt	2137	C
44	Lt	2138	G
44	Lt	2140	C
44	Lt	2143	G
44	Lt	2151	C
44	Lt	2152	G
44	Lt	2153	U
44	Lt	2154	G
44	Lt	2161	C
44	Lt	2163	G
44	Lt	2164	G
44	Lt	2165	C
44	Lt	2168	C
44	Lt	2177	G
44	Lt	2179	C
44	Lt	2183	C
44	Lt	2184	C
44	Lt	2185	G
44	Lt	2186	A
44	Lt	2195	C

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Mol	Chain	Res	Type
44	Lt	2196	G
44	Lt	2200	C
44	Lt	2201	G
44	Lt	2202	G
44	Lt	2205	G
44	Lt	2207	G
44	Lt	2212	C
44	Lt	2213	G
44	Lt	2216	G
44	Lt	2217	G
44	Lt	2218	U
44	Lt	2219	G
44	Lt	2220	G
44	Lt	2222	A
44	Lt	2223	G
44	Lt	2224	A
44	Lt	2225	A
44	Lt	2226	A
44	Lt	2227	A
44	Lt	2230	U
44	Lt	2231	A
44	Lt	2233	C
44	Lt	2234	A
44	Lt	2235	C
44	Lt	2237	G
44	Lt	2239	G
44	Lt	2240	A
44	Lt	2241	U
44	Lt	2242	A
44	Lt	2243	A
44	Lt	2244	C
44	Lt	2245	U
44	Lt	2246	G
44	Lt	2247	G
44	Lt	2249	U
44	Lt	2250	U
44	Lt	2254	G
44	Lt	2255	C
44	Lt	2260	G
44	Lt	2261	A
44	Lt	2264	G
44	Lt	2268	G

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Mol	Chain	Res	Type
44	Lt	2270	A
44	Lt	2272	C
44	Lt	2273	G
44	Lt	2275	C
44	Lt	2276	G
44	Lt	2279	G
44	Lt	2280	C
44	Lt	2281	U
44	Lt	2285	U
44	Lt	2286	G
44	Lt	2289	C
44	Lt	2290	C
44	Lt	2291	U
44	Lt	2292	U
44	Lt	2294	G
44	Lt	2296	U
44	Lt	2298	U
44	Lt	2300	G
44	Lt	2301	G
44	Lt	2308	C
44	Lt	2310	A
44	Lt	2311	C
44	Lt	2315	C
44	Lt	2317	G
44	Lt	2318	C
44	Lt	2321	G
44	Lt	2323	A
44	Lt	2330	C
44	Lt	2334	A
44	Lt	2335	G
44	Lt	2339	C
44	Lt	2340	G
44	Lt	2341	G
44	Lt	2343	U
44	Lt	2348	C
44	Lt	2353	G
44	Lt	2354	U
44	Lt	2355	U
44	Lt	2356	C
44	Lt	2357	A
44	Lt	2358	A
44	Lt	2360	G

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Mol	Chain	Res	Type
44	Lt	2363	U
44	Lt	2364	C
44	Lt	2365	G
44	Lt	2367	G
44	Lt	2368	A
44	Lt	2369	G
44	Lt	2372	G
44	Lt	2373	G
44	Lt	2376	U
44	Lt	2377	U
44	Lt	2381	C
44	Lt	2393	A
44	Lt	2394	G
44	Lt	2395	G
44	Lt	2397	U
44	Lt	2400	U
44	Lt	2401	U
44	Lt	2405	C
44	Lt	2406	C
44	Lt	2412	G
44	Lt	2416	C
44	Lt	2417	C
44	Lt	2418	G
44	Lt	2420	G
44	Lt	2421	G
44	Lt	2424	A
44	Lt	2425	G
44	Lt	2429	A
44	Lt	2430	C
44	Lt	2431	G
44	Lt	2434	G
44	Lt	2437	C
44	Lt	2439	A
44	Lt	2442	A
44	Lt	2446	G
44	Lt	2451	A
44	Lt	2456	C
44	Lt	2457	G
44	Lt	2464	G
44	Lt	2467	G
44	Lt	2470	A
44	Lt	2471	G

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Mol	Chain	Res	Type
44	Lt	2472	C
44	Lt	2473	C
44	Lt	2474	C
44	Lt	2476	G
44	Lt	2486	G
44	Lt	2491	G
44	Lt	2492	G
44	Lt	2495	G
44	Lt	2496	C
44	Lt	2497	G
44	Lt	2500	G
44	Lt	2503	C
44	Lt	2508	G
44	Lt	2509	C
44	Lt	2510	G
44	Lt	2514	G
44	Lt	2515	G
44	Lt	2516	G
44	Lt	2517	G
44	Lt	2523	G
44	Lt	2527	U
44	Lt	2531	C
44	Lt	2532	G
44	Lt	2533	C
44	Lt	2536	C
44	Lt	2538	A
44	Lt	2539	A
44	Lt	2545	C
44	Lt	2546	A
44	Lt	2547	C
44	Lt	2553	C
44	Lt	2565	C
44	Lt	2566	C
44	Lt	2567	G
44	Lt	2568	G
44	Lt	2572	C
44	Lt	2573	G
44	Lt	2575	G
44	Lt	2577	C
44	Lt	2580	A
44	Lt	2581	G
44	Lt	2584	C

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Mol	Chain	Res	Type
44	Lt	2585	C
44	Lt	2586	G
44	Lt	2587	U
44	Lt	2591	C
44	Lt	2592	C
44	Lt	2593	G
44	Lt	2594	U
44	Lt	2595	C
44	Lt	2597	C
44	Lt	2598	C
44	Lt	2602	C
44	Lt	2603	G
44	Lt	2609	C
44	Lt	2610	G
44	Lt	2611	C
44	Lt	2615	G
44	Lt	2616	G
44	Lt	2617	G
44	Lt	2626	C
44	Lt	2627	G
44	Lt	2628	G
44	Lt	2629	C
44	Lt	2630	G
44	Lt	2632	G
44	Lt	2635	G
44	Lt	2638	C
44	Lt	2642	U
44	Lt	2643	A
44	Lt	2649	C
44	Lt	2650	A
44	Lt	2652	A
44	Lt	2653	G
44	Lt	2654	C
44	Lt	2655	C
44	Lt	2657	U
44	Lt	2659	C
44	Lt	2668	G
44	Lt	2674	C
44	Lt	2679	C
44	Lt	2680	U
44	Lt	2681	G
44	Lt	2683	A

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Mol	Chain	Res	Type
44	Lt	2686	G
44	Lt	2687	C
44	Lt	2688	G
44	Lt	2690	G
44	Lt	2691	G
75	St	2	A
75	St	3	U
75	St	4	C
75	St	6	G
75	St	10	G
75	St	11	A
75	St	12	U
75	St	13	C
75	St	17	C
75	St	20	G
75	St	22	G
75	St	24	G
75	St	25	C
75	St	26	G
75	St	30	C
75	St	32	C
75	St	33	U
75	St	34	C
75	St	40	G
75	St	41	G
75	St	43	C
75	St	44	G
75	St	45	A
75	St	46	A
75	St	49	C
75	St	56	G
75	St	60	G
75	St	61	C
75	St	62	U
75	St	63	C
75	St	65	C
75	St	66	C
75	St	67	C
75	St	68	G
75	St	69	G
75	St	71	A
75	St	80	A

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Mol	Chain	Res	Type
75	St	87	A
75	St	91	C
75	St	98	U
75	St	101	A
75	St	102	C
75	St	114	G
75	St	115	U
75	St	117	C
75	St	118	C
75	St	120	G
75	St	121	C
75	St	122	U
75	St	123	A
75	St	124	G
75	St	125	C
75	St	128	G
75	St	129	A
75	St	130	C
75	St	131	A
75	St	137	G
75	St	138	G
75	St	139	C
75	St	141	A
75	St	143	C
75	St	144	C
75	St	146	G
75	St	149	C
75	St	150	C
75	St	151	A
75	St	152	A
75	St	153	G
75	St	154	A
75	St	156	G
75	St	160	G
75	St	161	C
75	St	162	G
75	St	163	C
75	St	164	A
75	St	166	G
75	St	170	G
75	St	173	C
75	St	174	G

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Mol	Chain	Res	Type
75	St	175	C
75	St	176	C
75	St	180	C
75	St	184	C
75	St	187	G
75	St	188	C
75	St	189	A
75	St	192	G
75	St	193	U
75	St	194	G
75	St	196	C
75	St	199	A
75	St	200	G
75	St	201	C
75	St	202	G
75	St	203	A
75	St	204	C
75	St	205	G
75	St	206	G
75	St	207	C
75	St	208	C
75	St	210	G
75	St	217	C
75	St	222	G
75	St	224	G
75	St	228	U
75	St	229	C
75	St	230	A
75	St	231	C
75	St	235	G
75	St	237	C
75	St	242	C
75	St	246	C
75	St	247	G
75	St	249	G
75	St	250	G
75	St	251	C
75	St	257	G
75	St	260	G
75	St	262	C
75	St	263	C
75	St	265	G

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Mol	Chain	Res	Type
75	St	272	G
75	St	274	C
75	St	275	G
75	St	276	G
75	St	283	A
75	St	286	G
75	St	290	G
75	St	291	A
75	St	293	U
75	St	300	A
75	St	303	G
75	St	304	G
75	St	306	C
75	St	309	G
75	St	311	G
75	St	313	G
75	St	314	A
75	St	315	C
75	St	317	G
75	St	319	C
75	St	323	A
75	St	329	A
75	St	330	A
75	St	331	G
75	St	335	G
75	St	336	G
75	St	337	C
75	St	338	A
75	St	339	G
75	St	340	C
75	St	348	G
75	St	351	C
75	St	352	U
75	St	353	U
75	St	354	G
75	St	355	C
75	St	357	C
75	St	360	U
75	St	361	G
75	St	365	G
75	St	366	G
75	St	368	G

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Mol	Chain	Res	Type
75	St	372	G
75	St	374	G
75	St	377	A
75	St	381	A
75	St	382	C
75	St	383	G
75	St	390	G
75	St	392	G
75	St	393	C
75	St	394	G
75	St	396	G
75	St	397	C
75	St	398	G
75	St	399	A
75	St	401	G
75	St	404	G
75	St	405	G
75	St	411	A
75	St	412	G
75	St	418	G
75	St	421	G
75	St	422	C
75	St	424	C
75	St	429	G
75	St	431	G
75	St	435	A
75	St	436	A
75	St	437	G
75	St	438	G
75	St	439	U
75	St	440	C
75	St	441	U
75	St	442	G
75	St	443	U
75	St	444	G
75	St	445	C
75	St	446	C
75	St	447	A
75	St	448	G
75	St	449	C
75	St	452	C
75	St	454	G

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Mol	Chain	Res	Type
75	St	456	G
75	St	457	G
75	St	458	U
75	St	459	A
75	St	460	A
75	St	463	C
75	St	466	G
75	St	468	U
75	St	474	A
75	St	475	G
75	St	483	C
75	St	486	C
75	St	489	U
75	St	491	C
75	St	492	U
75	St	493	G
75	St	494	C
75	St	499	G
75	St	500	A
75	St	502	A
75	St	503	C
75	St	504	G
75	St	514	G
75	St	515	G
75	St	518	C
75	St	519	C
75	St	521	C
75	St	522	G
75	St	523	C
75	St	524	C
75	St	525	G
75	St	530	G
75	St	534	A
75	St	535	A
75	St	544	G
75	St	545	C
75	St	546	U
75	St	550	G
75	St	552	C
75	St	553	A
75	St	554	G
75	St	557	C

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Mol	Chain	Res	Type
75	St	558	C
75	St	559	G
75	St	560	U
75	St	561	U
75	St	563	G
75	St	567	C
75	St	568	G
75	St	569	C
75	St	570	C
75	St	571	G
75	St	572	C
75	St	577	G
75	St	581	G
75	St	584	C
75	St	585	A
75	St	586	G
75	St	591	C
75	St	592	G
75	St	593	C
75	St	594	G
75	St	595	G
75	St	596	C
75	St	597	G
75	St	598	C
75	St	600	C
75	St	601	C
75	St	602	G
75	St	604	C
75	St	605	G
75	St	606	C
75	St	607	C
75	St	608	G
75	St	609	C
75	St	610	A
75	St	611	G
75	St	614	C
75	St	616	G
75	St	617	A
75	St	618	G
75	St	619	G
75	St	627	G
75	St	630	G

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Mol	Chain	Res	Type
75	St	633	G
75	St	634	C
75	St	635	A
75	St	652	A
75	St	658	G
75	St	659	A
75	St	660	A
75	St	665	G
75	St	667	U
75	St	668	G
75	St	674	G
75	St	677	G
75	St	680	A
75	St	682	C
75	St	683	G
75	St	685	C
75	St	686	G
75	St	687	G
75	St	688	C
75	St	689	C
75	St	694	A
75	St	696	G
75	St	699	C
75	St	702	G
75	St	703	C
75	St	705	A
75	St	713	C
75	St	714	U
75	St	718	U
75	St	720	A
75	St	722	U
75	St	732	A
75	St	736	C
75	St	738	G
75	St	739	G
75	St	742	C
75	St	746	A
75	St	747	A
75	St	751	G
75	St	757	A
75	St	758	C
75	St	759	A

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Mol	Chain	Res	Type
75	St	761	C
75	St	772	C
75	St	774	G
75	St	777	G
75	St	780	A
75	St	782	C
75	St	783	G
75	St	784	G
75	St	785	U
75	St	786	G
75	St	793	C
75	St	794	G
75	St	796	G
75	St	797	G
75	St	798	C
75	St	801	G
75	St	804	C
75	St	806	C
75	St	807	G
75	St	808	C
75	St	809	G
75	St	810	U
75	St	811	C
75	St	814	G
75	St	815	C
75	St	823	C
75	St	824	C
75	St	825	A
75	St	829	A
75	St	830	A
75	St	833	C
75	St	835	G
75	St	836	G
75	St	837	A
75	St	838	G
75	St	840	C
75	St	841	U
75	St	842	C
75	St	843	C
75	St	844	G
75	St	845	G
75	St	846	G

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Mol	Chain	Res	Type
75	St	848	U
75	St	852	G
75	St	853	G
75	St	855	G
75	St	868	A
75	St	870	G
75	St	873	U
75	St	884	G
75	St	887	A
75	St	890	G
75	St	894	G
75	St	895	A
75	St	898	G
75	St	899	G
75	St	902	C
75	St	903	C
75	St	904	A
75	St	906	C
75	St	907	A
75	St	910	C
75	St	911	G
75	St	916	G
75	St	917	U
75	St	918	C
75	St	919	U
75	St	924	C
75	St	926	C
75	St	929	U
75	St	930	C
75	St	937	A
75	St	938	A
75	St	940	G
75	St	944	G
75	St	945	C
75	St	951	A
75	St	953	C
75	St	954	A
75	St	958	C
75	St	960	G
75	St	961	G
75	St	964	G
75	St	965	C

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Mol	Chain	Res	Type
75	St	966	G
75	St	969	G
75	St	970	A
75	St	971	G
75	St	972	G
75	St	973	A
75	St	975	C
75	St	976	G
75	St	978	C
75	St	979	A
75	St	980	G
75	St	984	G
75	St	985	G
75	St	986	C
75	St	987	G
75	St	988	C
75	St	995	G
75	St	997	G
75	St	998	A
75	St	1000	C
75	St	1001	G
75	St	1002	C
75	St	1003	G
75	St	1005	G
75	St	1007	G
75	St	1009	G
75	St	1012	G
75	St	1015	G
75	St	1026	C
75	St	1027	C
75	St	1028	C
75	St	1029	A
75	St	1030	G
75	St	1034	G
75	St	1040	C
75	St	1043	G
75	St	1047	U
75	St	1048	C
75	St	1049	U
75	St	1052	U
75	St	1054	C
75	St	1055	A

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Mol	Chain	Res	Type
75	St	1056	U
75	St	1057	U
75	St	1060	G
75	St	1061	A
75	St	1062	C
75	St	1063	A
75	St	1067	A
75	St	1068	G
75	St	1069	C
75	St	1079	G
75	St	1080	C
75	St	1083	C
75	St	1087	C
75	St	1088	G
75	St	1089	C
75	St	1090	C
75	St	1091	G
75	St	1093	G
75	St	1094	G
75	St	1096	A
75	St	1098	G
75	St	1099	G
75	St	1103	G
75	St	1105	G
75	St	1106	G
75	St	1107	C
75	St	1109	G
75	St	1110	C
75	St	1111	G
75	St	1112	G
75	St	1114	A
75	St	1115	G
75	St	1116	G
75	St	1117	A
75	St	1118	C
75	St	1120	G
75	St	1121	C
75	St	1122	G
75	St	1124	G
75	St	1125	G
75	St	1127	G
75	St	1128	A

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Mol	Chain	Res	Type
75	St	1133	A
75	St	1134	G
75	St	1135	G
75	St	1138	U
75	St	1139	G
75	St	1141	G
75	St	1150	A
75	St	1151	G
75	St	1152	A
75	St	1153	C
75	St	1154	G
75	St	1157	C
75	St	1160	G
75	St	1161	G
75	St	1162	C
75	St	1164	G
75	St	1165	C
75	St	1166	A
75	St	1168	G
75	St	1175	A
75	St	1177	A
75	St	1179	U
75	St	1180	G
75	St	1181	G
75	St	1182	C
75	St	1184	G
75	St	1185	G
75	St	1188	C
75	St	1189	A
75	St	1190	G
75	St	1192	C
75	St	1194	G
75	St	1195	C
75	St	1198	C
75	St	1202	C
75	St	1204	G
75	St	1206	A
75	St	1208	G
75	St	1209	C
75	St	1210	G
75	St	1211	C
75	St	1212	G

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Mol	Chain	Res	Type
75	St	1213	G
75	St	1214	A
75	St	1215	G
75	St	1223	C
75	St	1224	G
75	St	1225	U
75	St	1226	G
75	St	1227	G
75	St	1228	C
75	St	1230	G
75	St	1232	G
75	St	1235	C
75	St	1237	C
75	St	1240	G
75	St	1241	C
75	St	1242	U
75	St	1243	G
75	St	1246	A
75	St	1247	C
75	St	1248	G
75	St	1254	G
75	St	1255	C
75	St	1256	G
75	St	1257	C
75	St	1259	C
75	St	1261	A
75	St	1262	G
75	St	1266	U
75	St	1267	G
75	St	1271	U
75	St	1272	G
75	St	1273	U
75	St	1278	G
75	St	1279	C
75	St	1285	C
75	St	1287	C
75	St	1288	A
75	St	1289	C
75	St	1290	C
75	St	1293	G
75	St	1295	G
75	St	1296	C

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Mol	Chain	Res	Type
75	St	1297	C
75	St	1301	C
75	St	1305	U
75	St	1306	C
75	St	1307	C
75	St	1310	G
75	St	1314	C
75	St	1319	A
75	St	1322	C
75	St	1323	A
75	St	1324	C
75	St	1325	C
75	St	1345	U
75	St	1346	G
75	St	1348	G
75	St	1350	G
75	St	1351	C
75	St	1353	G
75	St	1359	A
75	St	1367	G
75	St	1369	A
75	St	1370	C
75	St	1371	G
75	St	1372	C
75	St	1373	G
75	St	1375	G
75	St	1376	A
75	St	1377	A
75	St	1380	G
75	St	1384	C
75	St	1386	A
75	St	1391	C
75	St	1393	G
75	St	1398	U
75	St	1399	G
75	St	1400	G
75	St	1401	A
75	St	1403	G
75	St	1405	A
75	St	1407	G
75	St	1408	A
75	St	1410	A

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Mol	Chain	Res	Type
75	St	1411	A
75	St	1412	G
75	St	1413	U
75	St	1415	G
75	St	1417	A
75	St	1421	A
75	St	1423	G
75	St	1424	U
75	St	1425	A
75	St	1426	U
75	St	1427	C
75	St	1430	U
75	St	1433	G
75	St	1435	G
75	St	1436	A
75	St	1437	A
75	St	1438	C
75	St	1446	U
75	St	1447	G
75	St	1448	G
75	St	1449	A
75	St	1450	U
75	St	1451	C
75	St	1452	C

All (14) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
4	LD	23	U
4	LD	39	C
4	LD	40	G
4	LD	49	G
4	LD	59	G
4	LD	76	C
4	LD	87	A
4	LD	111	C
4	LD	117	C
4	LD	118	C
5	LE	38	U
5	LE	50	A
5	LE	110	U
5	LE	114	G

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

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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.

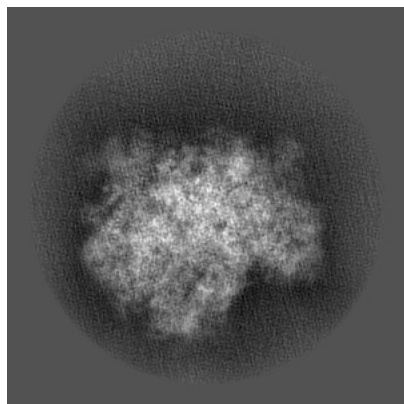
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-16222. These allow visual inspection of the internal detail of the map and identification of artifacts.

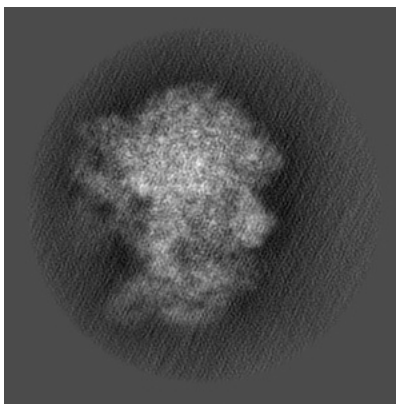
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

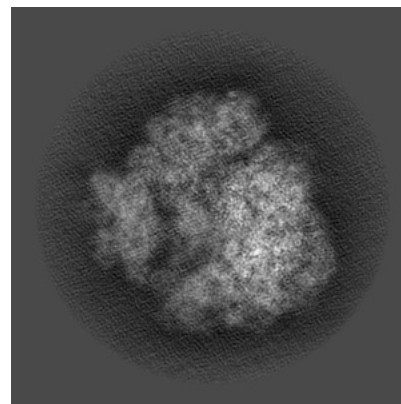
6.1.1 Primary map



X

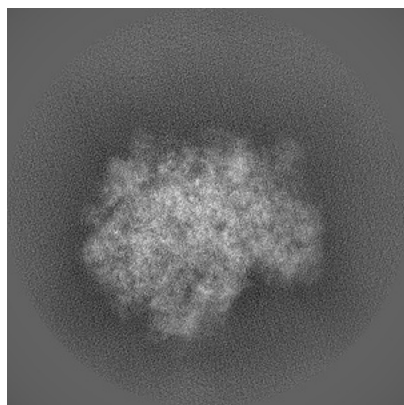


Y

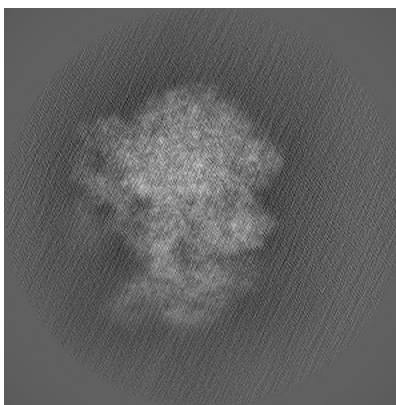


Z

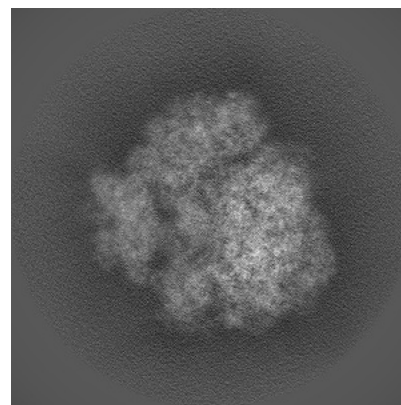
6.1.2 Raw map



X



Y

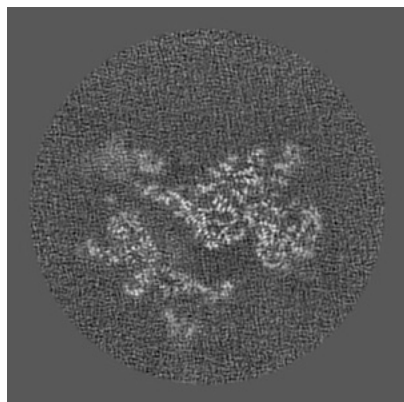


Z

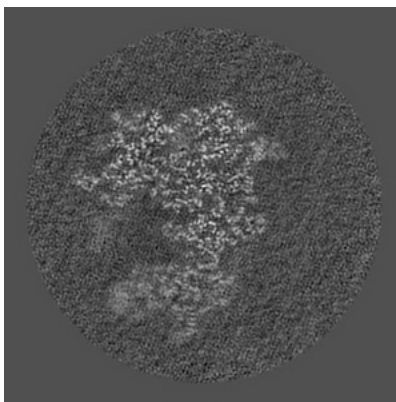
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

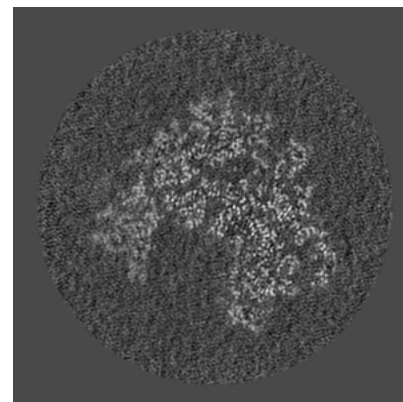
6.2.1 Primary map



X Index: 250

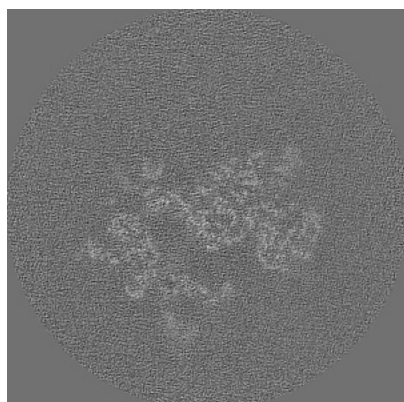


Y Index: 250

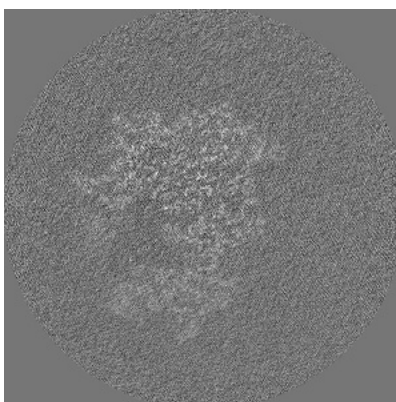


Z Index: 250

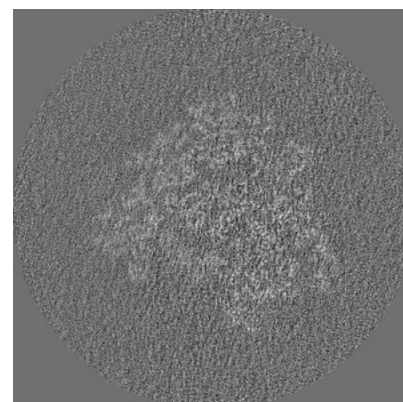
6.2.2 Raw map



X Index: 250



Y Index: 250

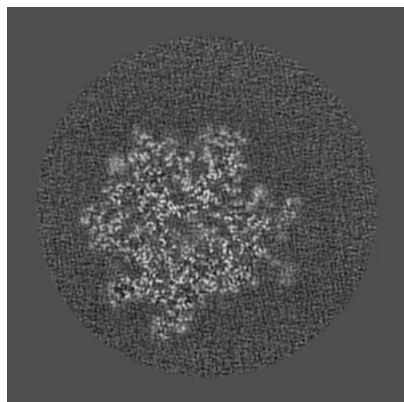


Z Index: 250

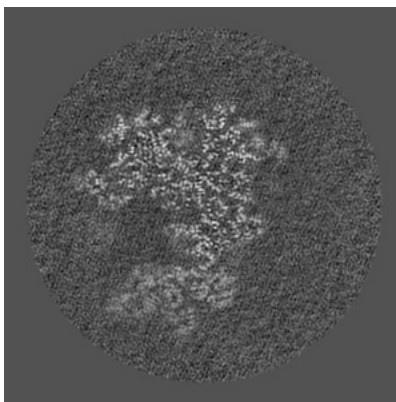
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

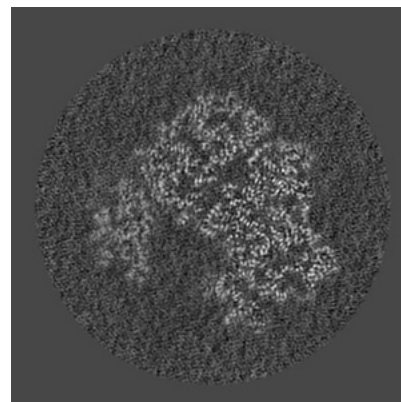
6.3.1 Primary map



X Index: 314

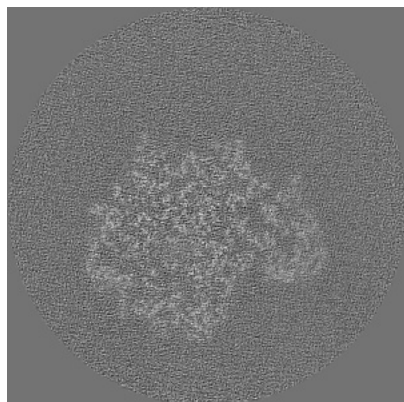


Y Index: 255

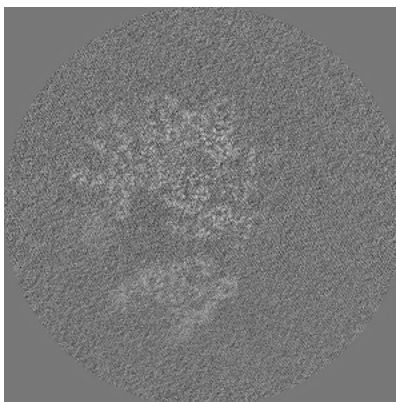


Z Index: 240

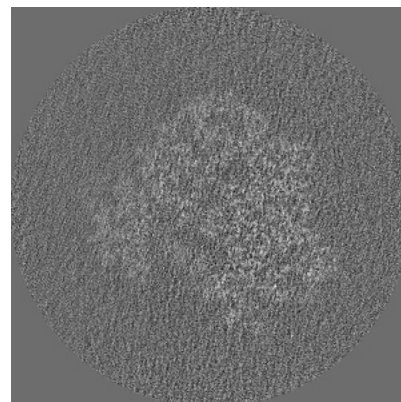
6.3.2 Raw map



X Index: 285



Y Index: 241

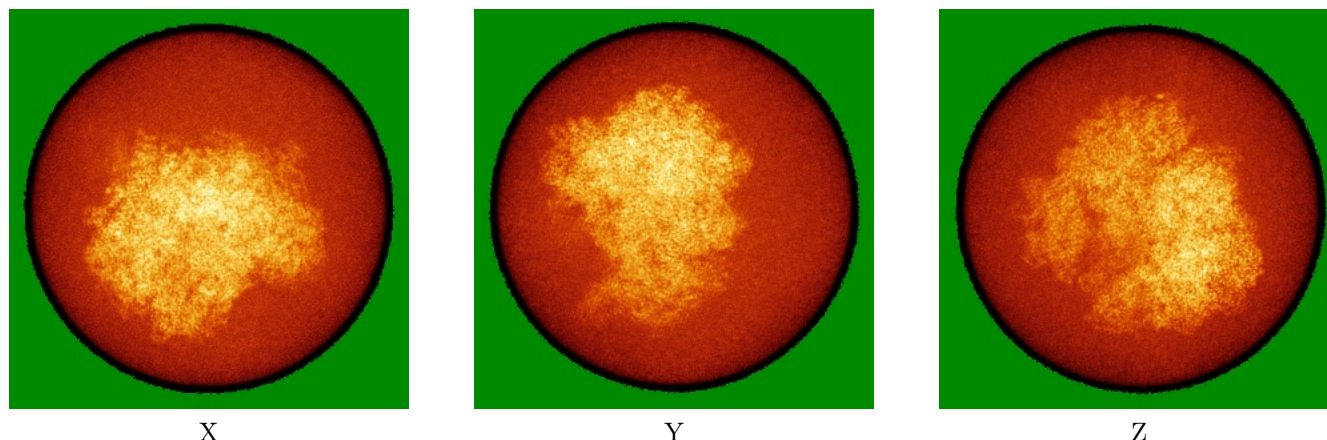


Z Index: 240

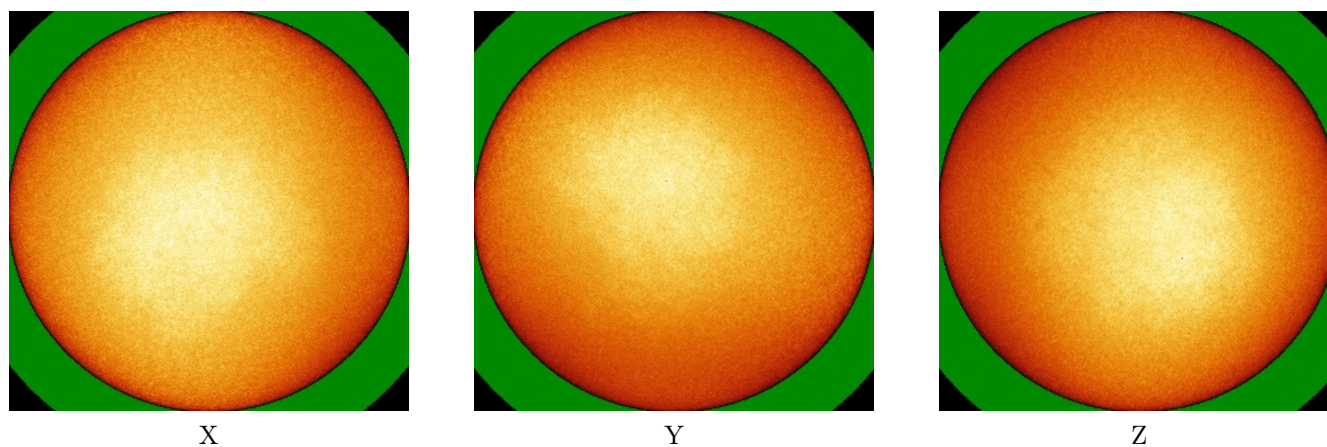
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map



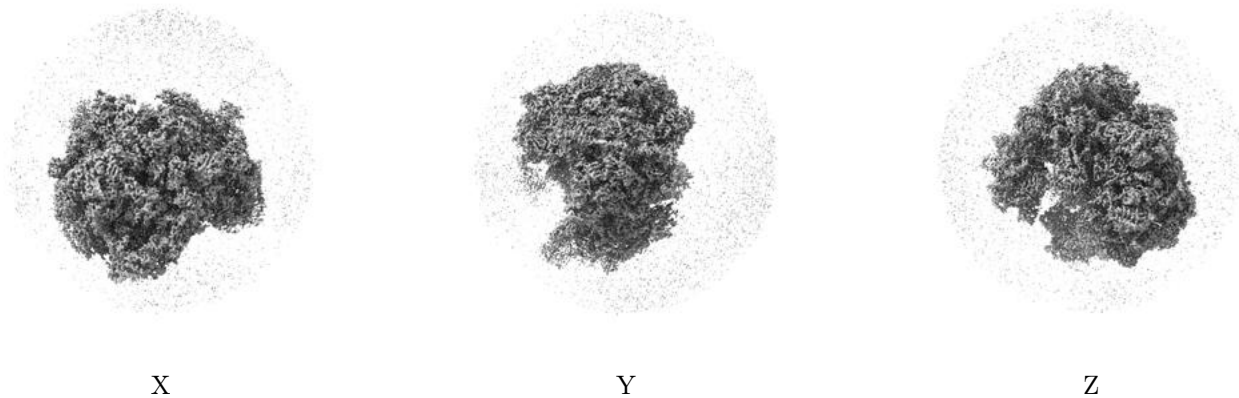
6.4.2 Raw map



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

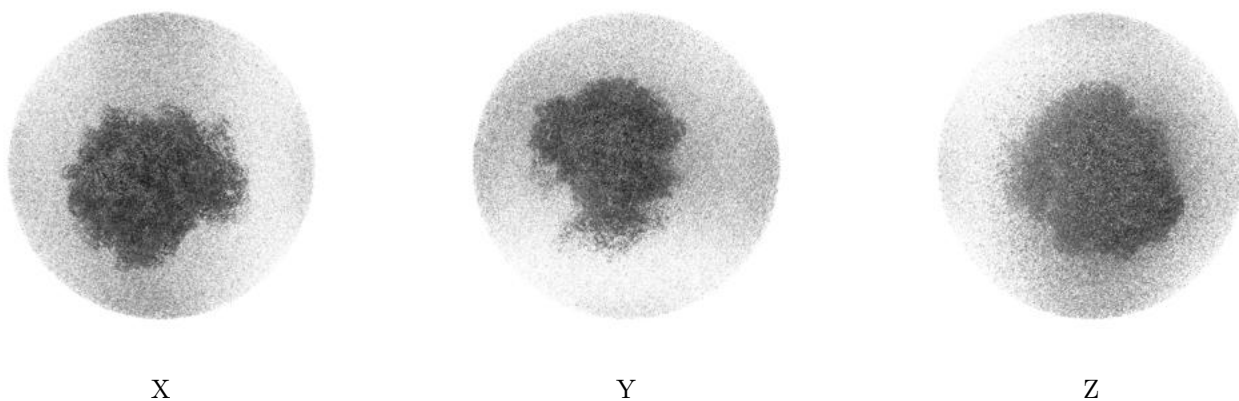
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 3.84. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

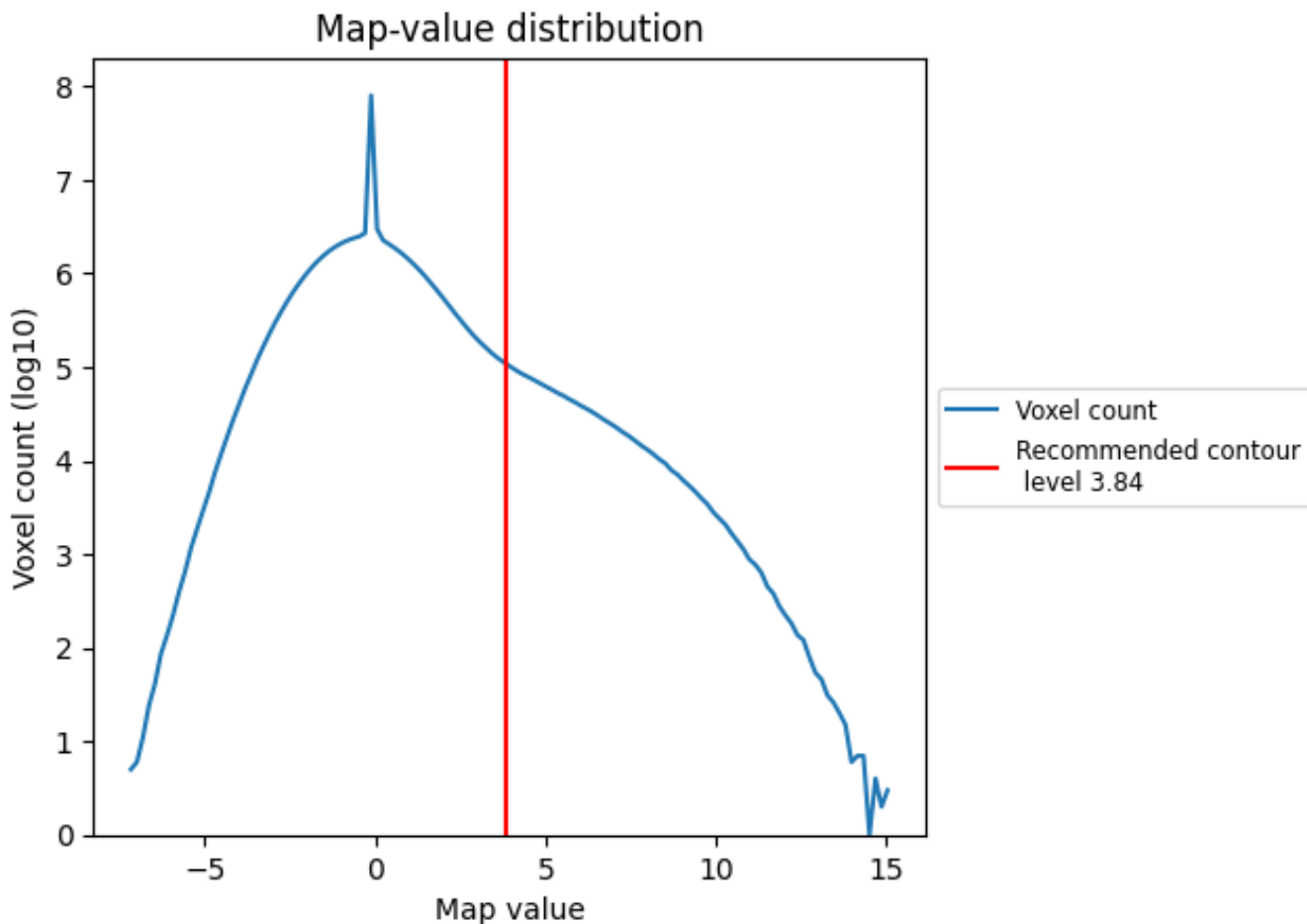
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

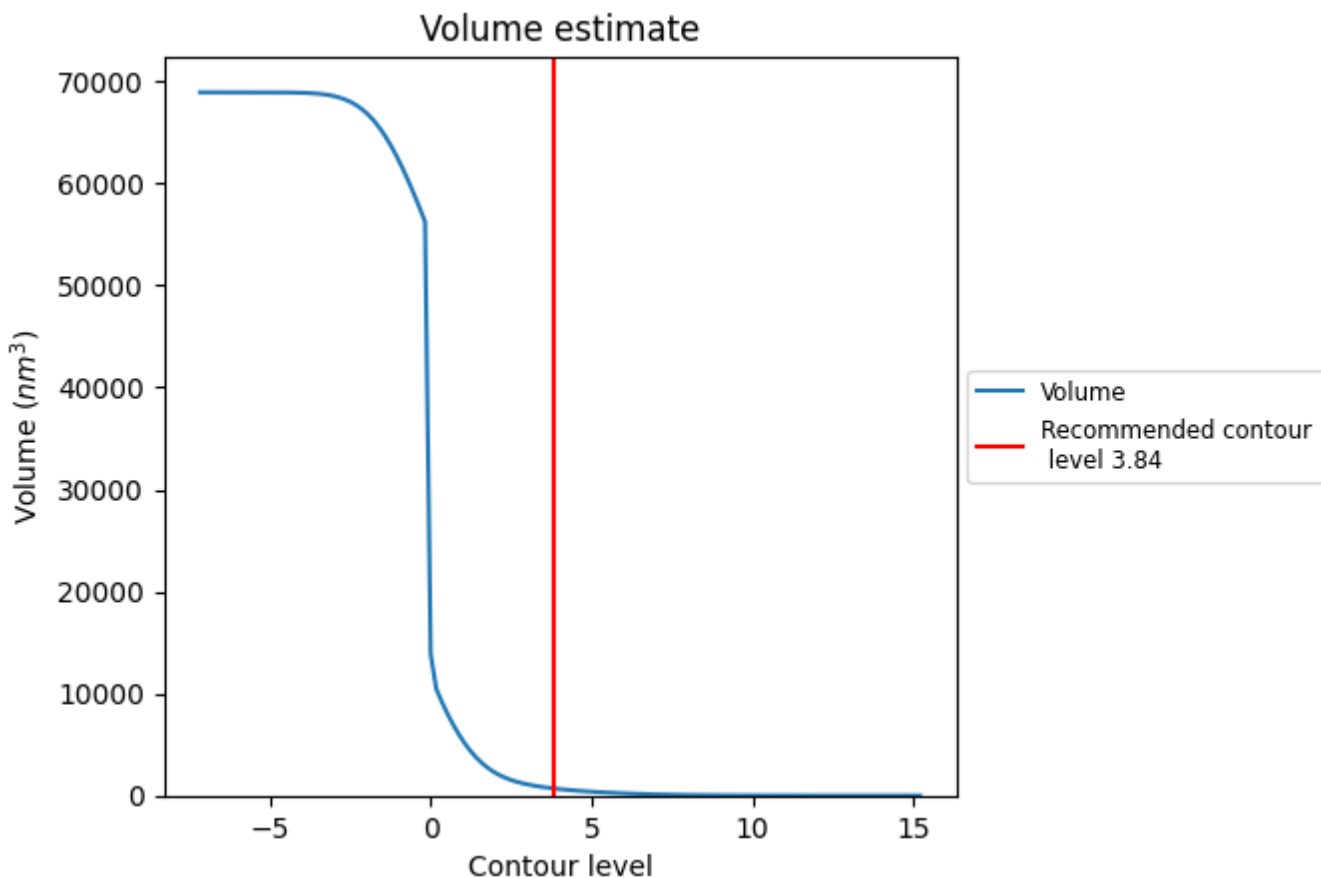
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

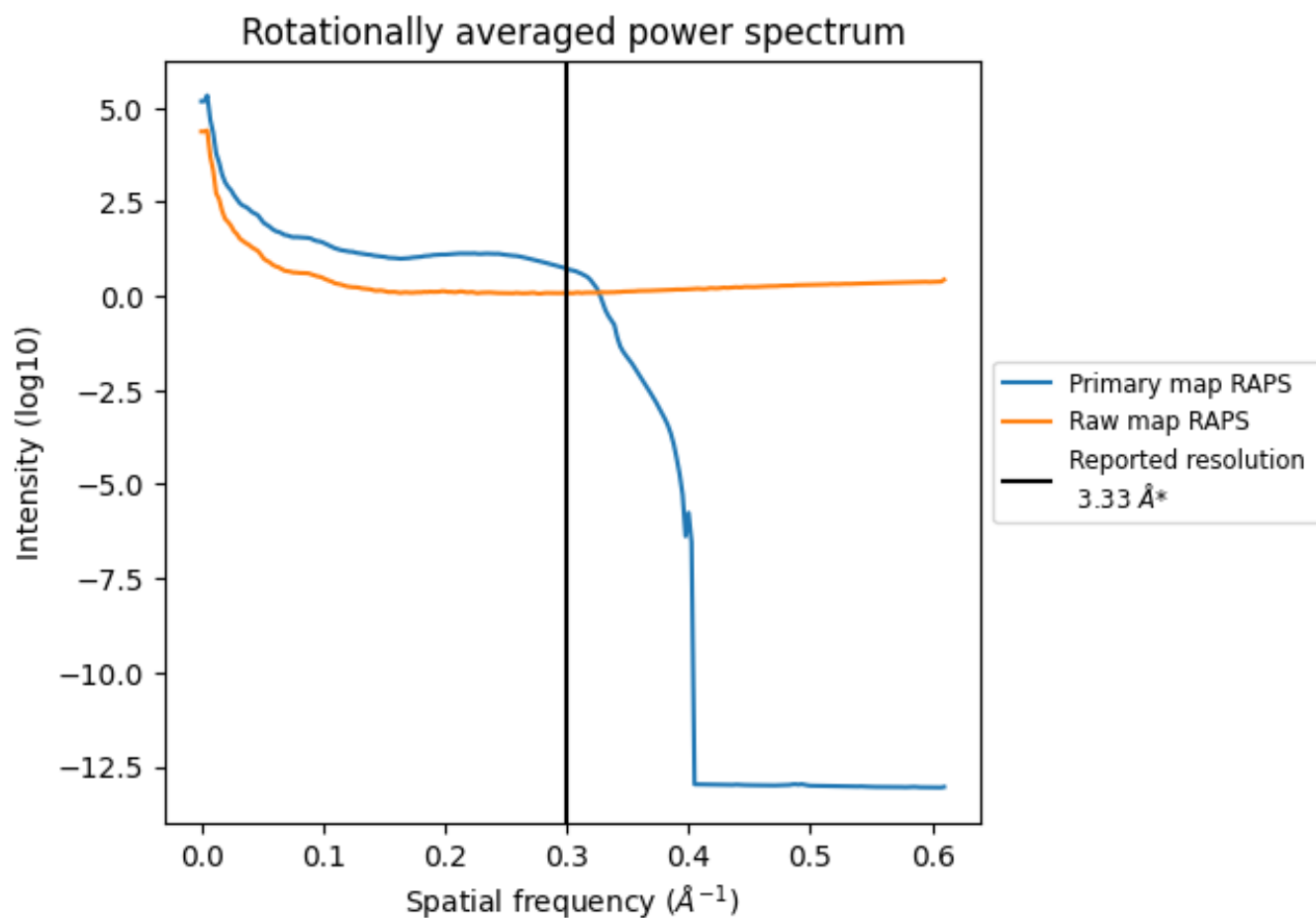
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 690 nm³; this corresponds to an approximate mass of 623 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](#)

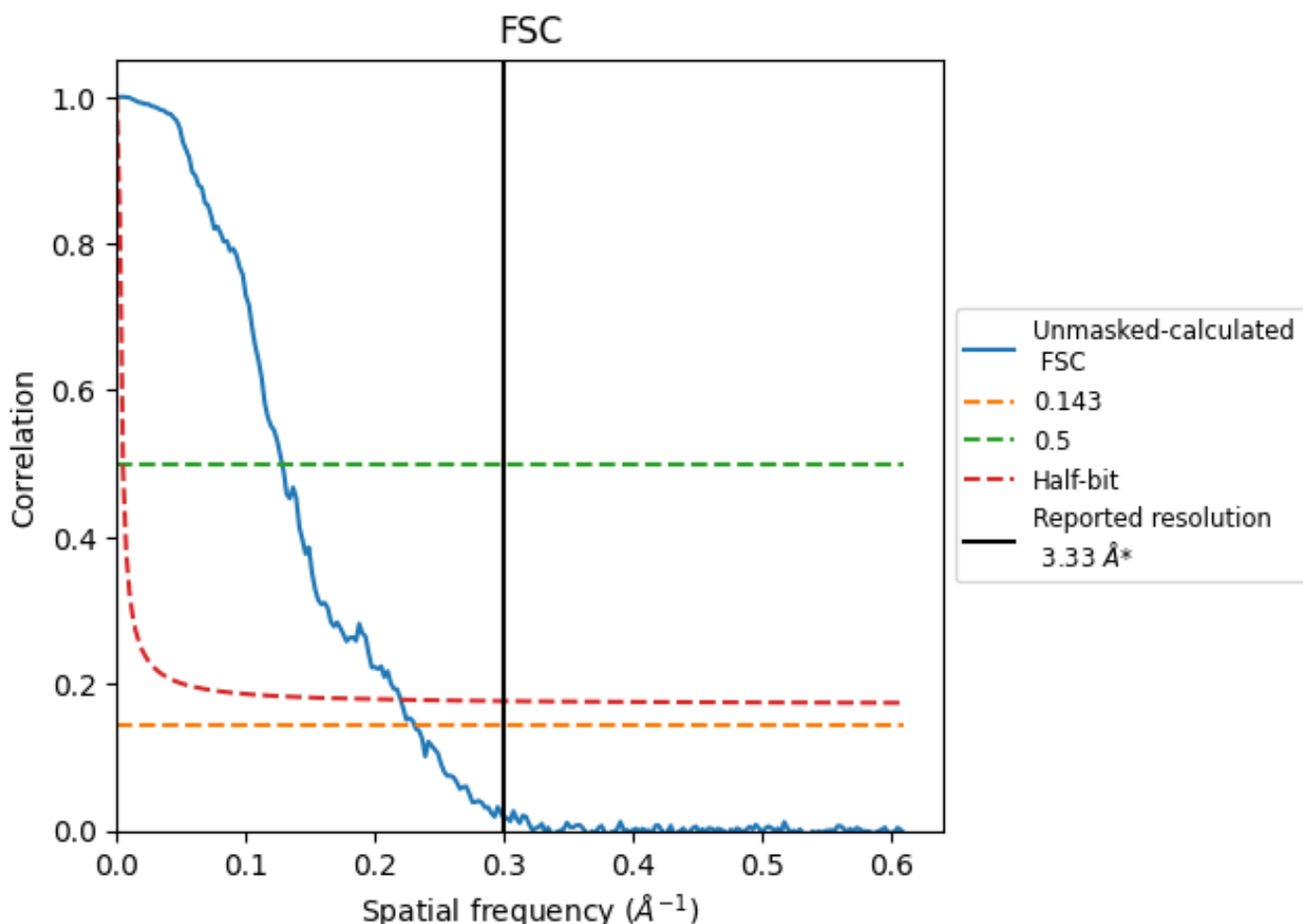


*Reported resolution corresponds to spatial frequency of 0.300 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.300 Å⁻¹

8.2 Resolution estimates [i](#)

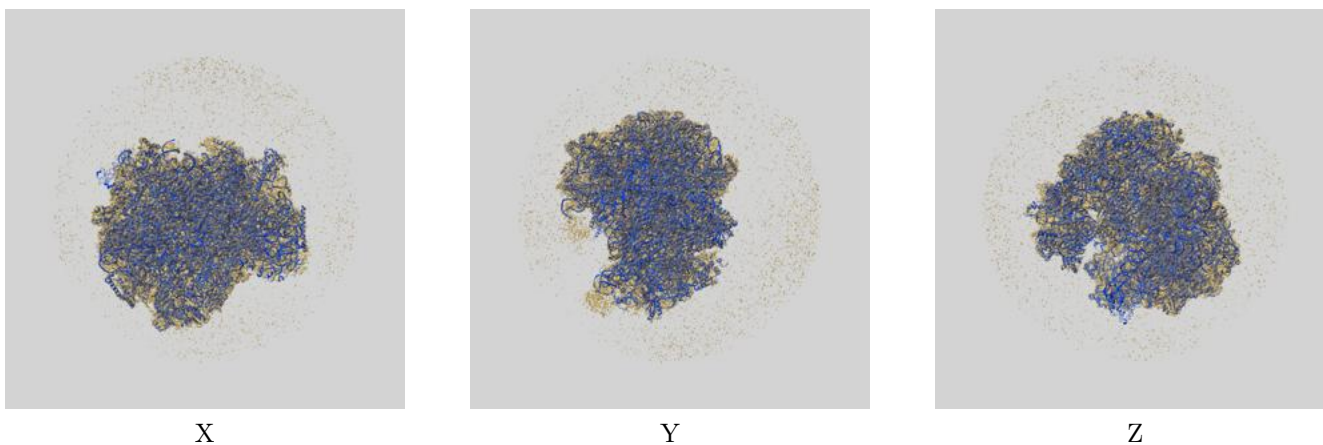
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.33	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.33	7.81	4.55

*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 4.33 differs from the reported value 3.33 by more than 10 %

9 Map-model fit [i](#)

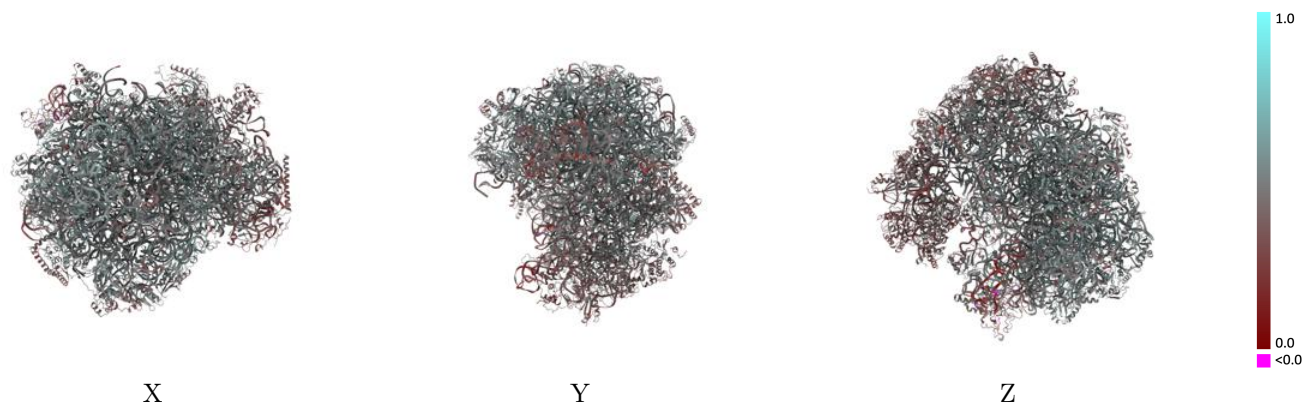
This section contains information regarding the fit between EMDB map EMD-16222 and PDB model 8BRM. Per-residue inclusion information can be found in section [3](#) on page [17](#).

9.1 Map-model overlay [i](#)



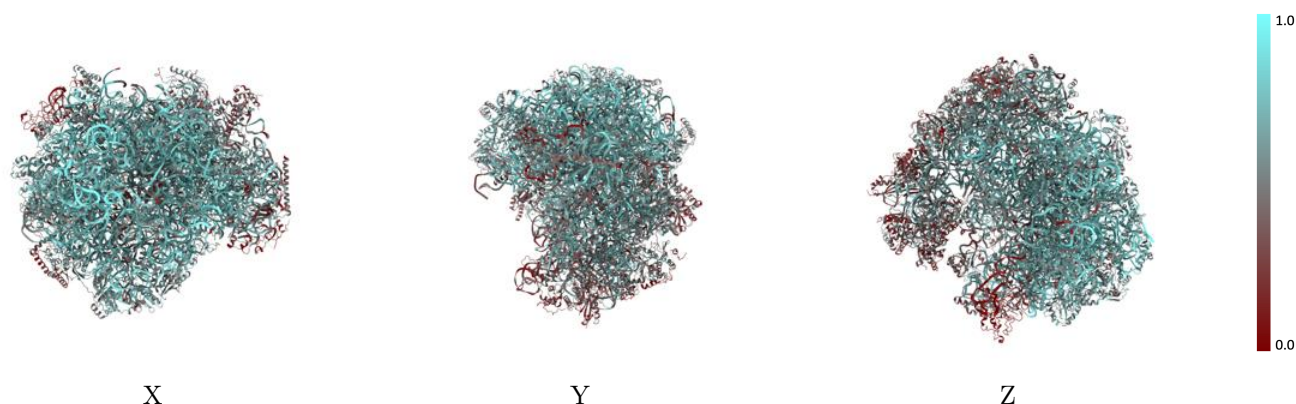
The images above show the 3D surface view of the map at the recommended contour level 3.84 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



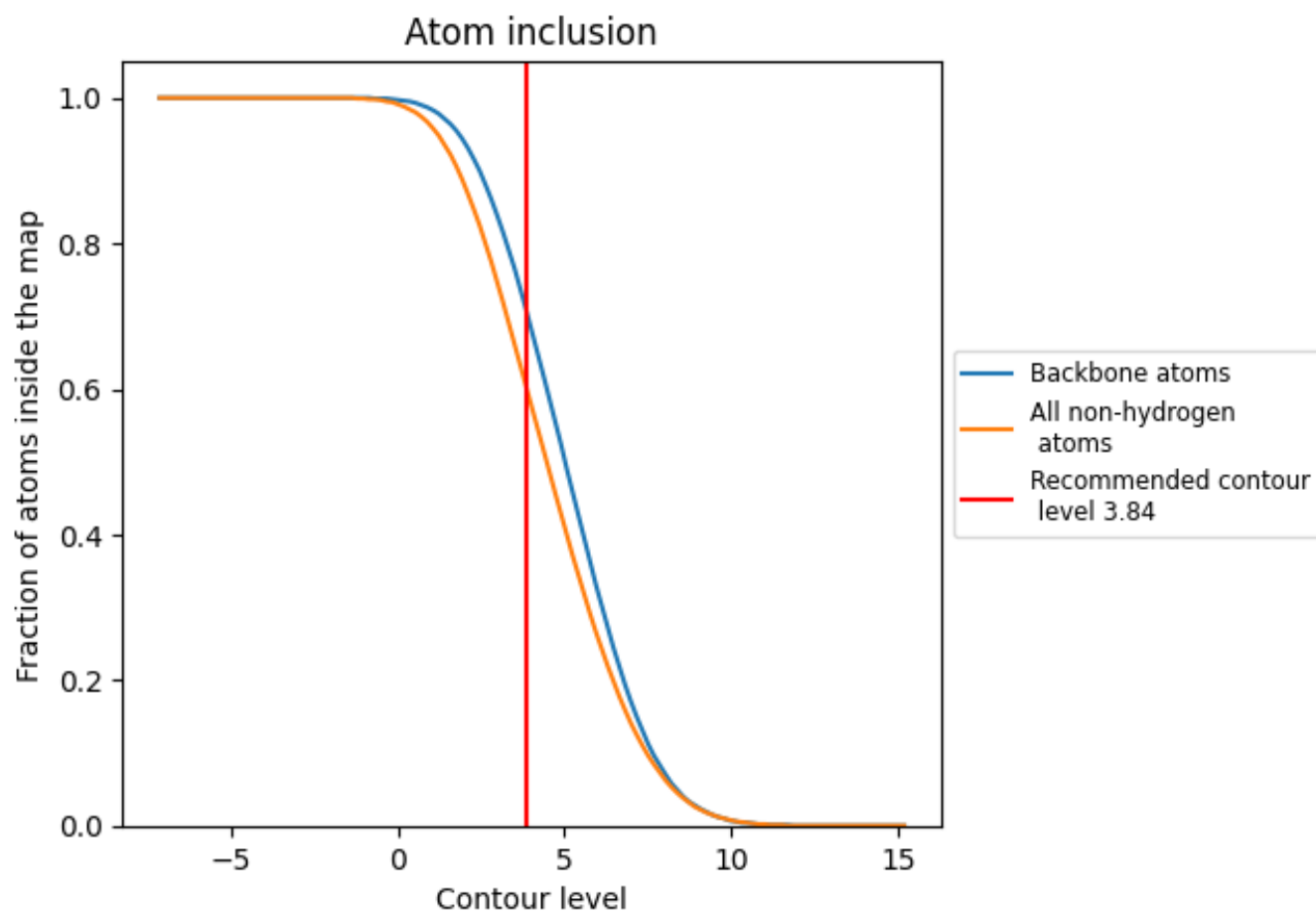
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (3.84).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 71% of all backbone atoms, 61% 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 (3.84) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6060	 0.4620
LA	 0.6240	 0.5340
LB	 0.6190	 0.5110
LC	 0.6410	 0.5090
LD	 0.8070	 0.5040
LE	 0.7330	 0.4610
LF	 0.4280	 0.4410
LG	 0.6480	 0.5170
LH	 0.5490	 0.4740
LI	 0.5590	 0.4750
LJ	 0.5570	 0.4720
LK	 0.2640	 0.3980
LL	 0.3910	 0.4250
LM	 0.5840	 0.4930
LN	 0.5890	 0.4600
LO	 0.6810	 0.5340
LP	 0.6170	 0.4810
LQ	 0.5950	 0.4910
LR	 0.5800	 0.5070
LS	 0.5650	 0.4830
LT	 0.6180	 0.4970
LU	 0.5400	 0.4850
LV	 0.5320	 0.4370
LW	 0.6000	 0.4970
LX	 0.5760	 0.4630
LY	 0.6300	 0.5090
LZ	 0.6690	 0.5010
La	 0.5180	 0.4570
Lb	 0.5600	 0.5150
Lc	 0.4200	 0.4750
Ld	 0.5420	 0.4720
Le	 0.6190	 0.5120
Lf	 0.5960	 0.5020
Lg	 0.6560	 0.5220
Lh	 0.6420	 0.5160



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Chain	Atom inclusion	Q-score
Li	 0.5970	 0.4830
Lj	 0.5140	 0.4700
Lk	 0.6340	 0.5170
Ll	 0.4920	 0.4250
Ln	 0.0400	 0.2830
Lo	 0.4430	 0.5050
Lp	 0.3860	 0.4610
Lq	 0.6190	 0.5110
Ls	 0.4570	 0.4570
Lt	 0.7260	 0.4880
SA	 0.4740	 0.4160
SB	 0.5130	 0.4580
SC	 0.3390	 0.3970
SD	 0.5300	 0.4600
SE	 0.4700	 0.4490
SF	 0.3170	 0.3810
SG	 0.3300	 0.3950
SH	 0.3470	 0.3910
SI	 0.5330	 0.4730
SJ	 0.5160	 0.4680
SK	 0.4670	 0.4250
SL	 0.2720	 0.3460
SM	 0.5330	 0.4920
SO	 0.4520	 0.4750
SP	 0.5320	 0.4670
SQ	 0.5540	 0.4650
SR	 0.2040	 0.3380
ST	 0.3000	 0.3600
SU	 0.2750	 0.3520
SV	 0.2610	 0.3570
SW	 0.3030	 0.3480
SX	 0.2930	 0.3810
SY	 0.4600	 0.4340
Sb	 0.3870	 0.4080
Sc	 0.2650	 0.3470
Sd	 0.5470	 0.4780
Se	 0.4300	 0.4350
Sg	 0.3340	 0.3990
Sh	 0.3730	 0.3760
Sj	 0.3420	 0.3940
St	 0.6570	 0.4310