Full wwPDB EM Validation Report ⓘ

Oct 13, 2024 – 12:39 pm BST

PDB ID	:	8BTD
EMDB ID	:	EMD-16228
Title	:	Giardia Ribosome in PRE-T Hybrid State (D1)
Authors	:	Majumdar, S.; Emmerich, A.G.; Sanyal, S.
Deposited on	:	2022-11-28
Resolution	:	4.90 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:

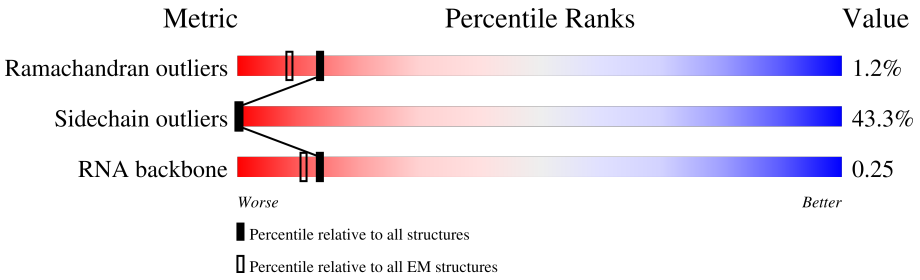
EMDB validation analysis	:	0.0.1.dev113
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 4.90 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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

Mol	Chain	Length	Quality of chain
1	LA	251	32% 65% 35%
2	LB	379	21% 70% 30%
3	LC	316	25% 68% 31%
4	LD	142	5% 51% 49%
5	LE	121	46% 50%
6	LF	297	39% 65% 33%
7	LG	51	25% 69% 29%
8	LH	235	34% 64% 28% 8%

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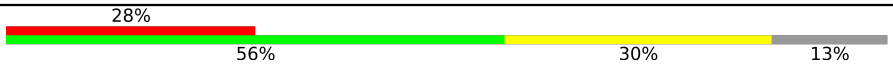
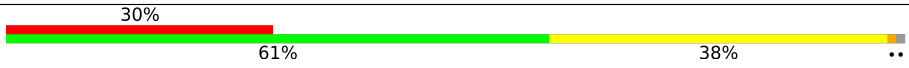
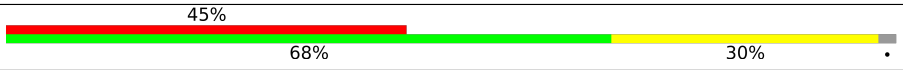
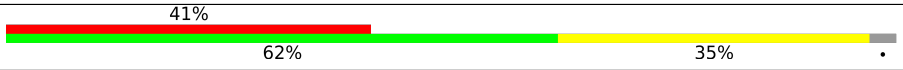
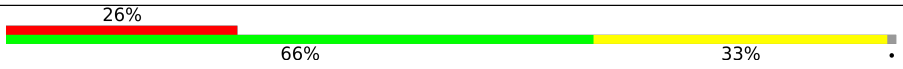
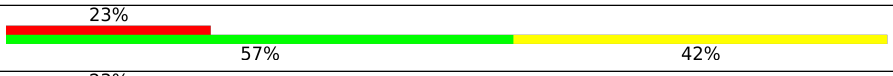
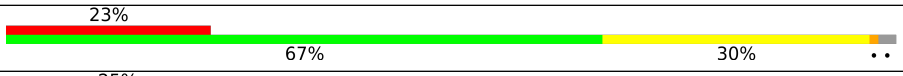
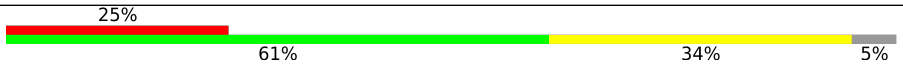
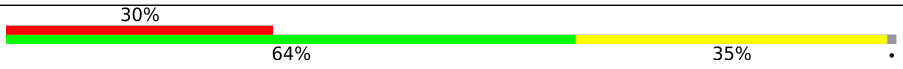
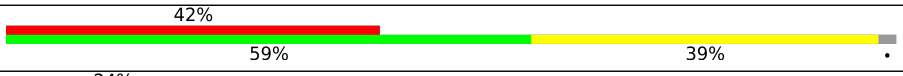
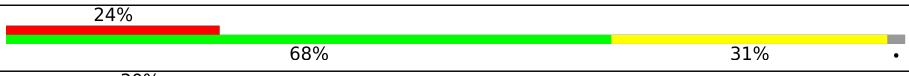
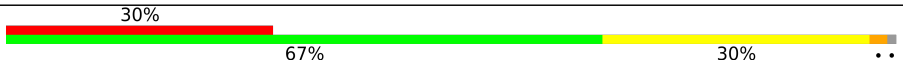
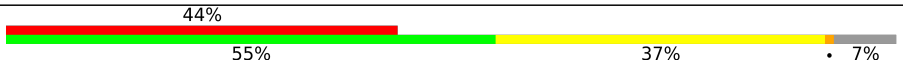
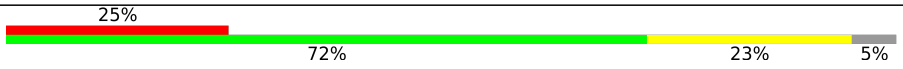
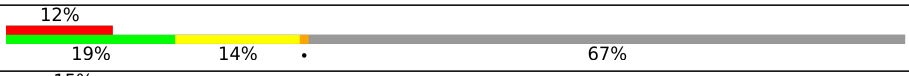
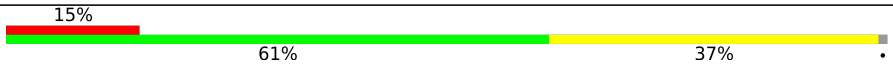
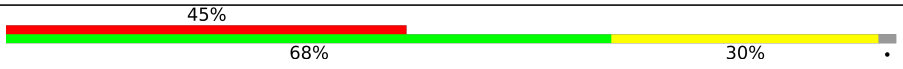
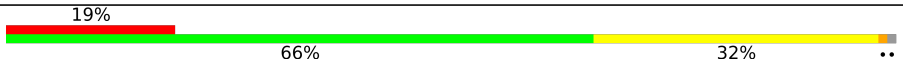
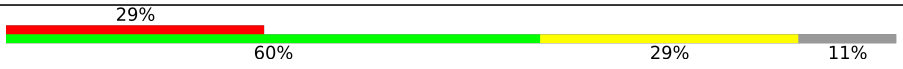
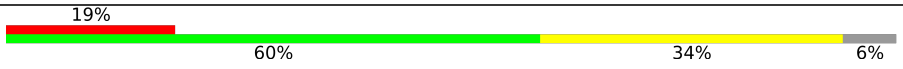
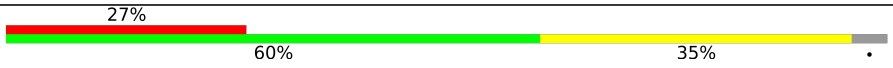
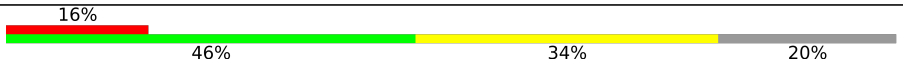
Mol	Chain	Length	Quality of chain
9	LI	225	
10	LJ	185	
11	LK	210	
12	LL	173	
13	LM	234	
14	LN	131	
15	LO	204	
16	LP	197	
17	LQ	164	
18	LR	179	
19	LS	196	
20	LT	173	
21	LU	159	
22	LV	124	
23	LW	142	
24	LX	189	
25	LY	141	
26	LZ	135	
27	La	135	
28	Lb	149	
29	Lc	62	
30	Ld	109	
31	Le	106	
32	Lf	136	
33	Lg	123	

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Mol	Chain	Length	Quality of chain
34	Lh	120	41% 59% 37%
35	Li	124	32% 73% 25%
36	Lj	90	37% 62% 37%
37	Lk	89	19% 69% 29%
38	Ll	77	38% 45% 48% 6%
39	Ln	217	88% 44% 45% 8%
40	Lo	25	76% 64% 36%
41	Lp	106	24% 53% 34% 12%
42	Lq	94	26% 63% 34%
43	Ls	127	13% 22% 13% 63%
44	Lt	2697	6% 48% 47%
45	SA	245	65% 51% 29% 20%
46	SB	242	57% 56% 32% 11%
47	SC	217	79% 57% 39%
48	SD	248	62% 55% 38% 7%
49	SE	268	80% 51% 45%
50	SF	190	82% 57% 41%
51	SG	248	91% 55% 40%
52	SH	190	84% 53% 42%
53	SI	174	86% 59% 41%
54	SJ	130	67% 52% 47%
55	SK	189	77% 51% 41% 7%
56	SL	134	65% 54% 25% 20%
57	SM	154	87% 56% 43%
58	SO	144	69% 59% 38%

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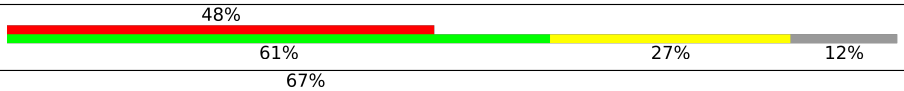
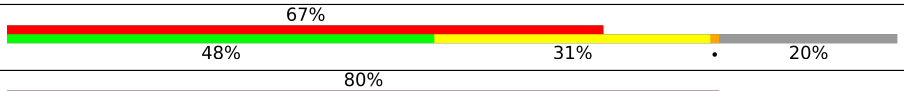
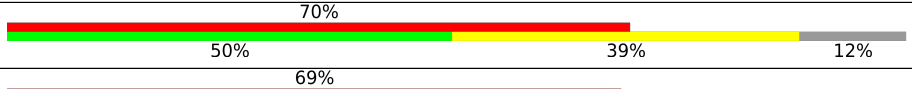
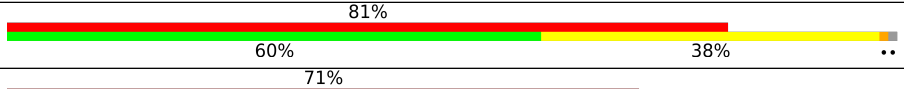
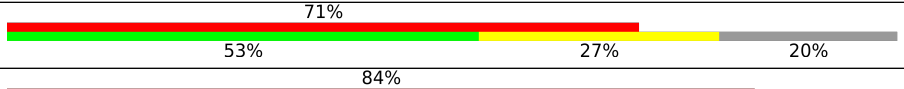
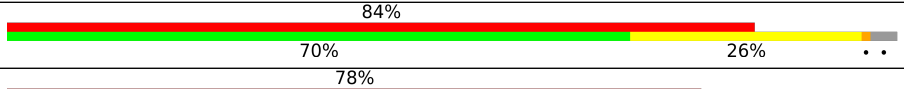
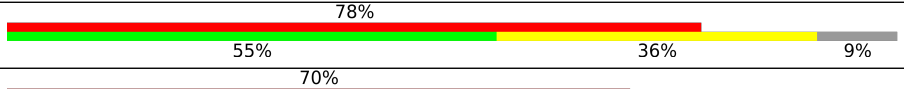
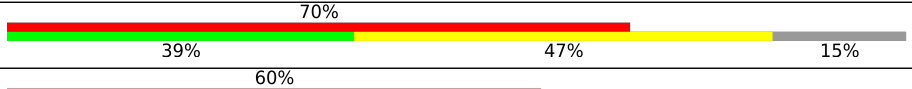
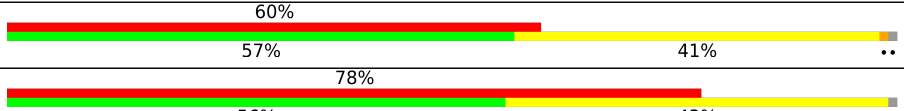
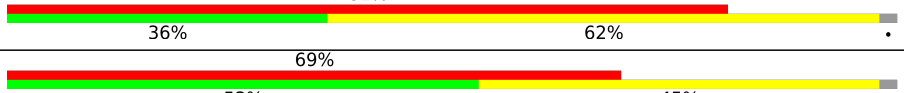
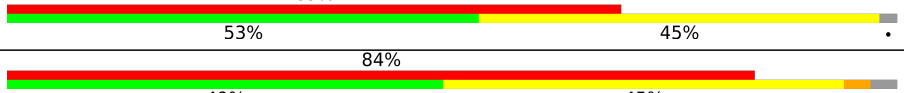
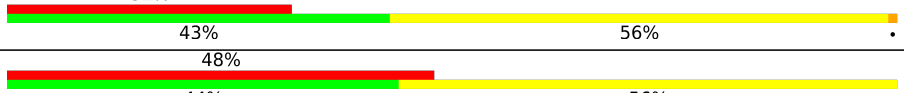
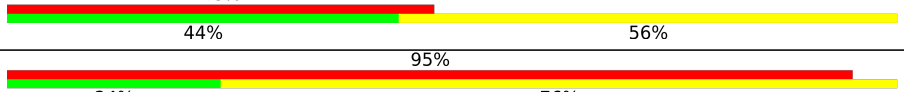
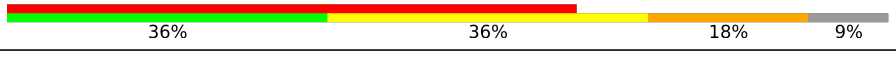
Mol	Chain	Length	Quality of chain
59	SP	154	
60	SQ	145	
61	SR	145	
62	ST	158	
63	SU	137	
64	SV	154	
65	SW	139	
66	SX	126	
67	SY	89	
68	Sb	132	
69	Sc	88	
70	Sd	109	
71	Se	81	
72	Sg	64	
73	Sh	51	
74	Sj	69	
75	St	1454	
76	u	75	
77	v	75	
78	y	11	

2 Entry composition

There are 78 unique types of molecules in this entry. The entry contains 178901 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	315	2454	1543	476	426	9	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	293	2355	1490	439	418	8	0	0

- Molecule 7 is a protein called Ribosomal protein L39.

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

- Molecule 8 is a protein called Ribosomal protein L7.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	LH	216	Total	C	N	O	S	0	0
			1742	1106	317	314	5		

- Molecule 9 is a protein called Ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	LI	195	Total	C	N	O	S	0	0
			1554	989	284	276	5		

- Molecule 10 is a protein called Ribosomal protein L6.

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

- Molecule 11 is a protein called Ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	LK	206	Total	C	N	O	S	0	0
			1671	1046	330	286	9		

- Molecule 12 is a protein called Ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	LL	168	Total	C	N	O	S	0	0
			1349	850	250	244	5		

- Molecule 13 is a protein called Ribosomal protein L13.

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

- Molecule 14 is a protein called Ribosomal protein L14.

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

- Molecule 15 is a protein called Ribosomal protein L15.

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

- Molecule 16 is a protein called Ribosomal protein L13a.

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

- Molecule 17 is a protein called Ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	LQ	156	Total	C	N	O	S	0	0
			1254	793	242	215	4		

- Molecule 18 is a protein called Ribosomal protein L18.

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

- Molecule 19 is a protein called Ribosomal protein L19.

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

- Molecule 20 is a protein called Ribosomal protein L18a.

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

- Molecule 21 is a protein called Ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	LU	157	Total	C	N	O	S	0	0
			1264	789	260	208	7		

- Molecule 22 is a protein called Ribosomal protein L22e.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	LV	115	Total	C	N	O	S	0	0
			935	589	157	187	2		

- Molecule 23 is a protein called Ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	LW	135	Total	C	N	O	S	0	0
			1029	648	196	180	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	132	Total	C	N	O	S	0	0
			1051	660	198	186	7		

- 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	55	Total	C	N	O	S	0	0
			456	275	103	76	2		

- Molecule 30 is a protein called Ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	Ld	97	Total	C	N	O	S	0	0
			731	461	127	139	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	116	Total	C	N	O	S	0	0
			914	563	189	158	4		

- Molecule 35 is a protein called Ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	Li	122	Total	C	N	O	S	0	0
			983	623	192	163	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	200	Total	C	N	O	S	0	0
			1592	1025	278	284	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	2593	Total	C	N	O	P	0	0
			55643	24727	10311	18012	2593		

- Molecule 45 is a protein called Ribosomal protein SA.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	SA	197	Total	C	N	O	S	0	0
			1578	1018	276	276	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	210	Total	C	N	O	S	0	0
			1665	1050	306	293	16		

- Molecule 48 is a protein called Ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	SD	231	Total	C	N	O	S	0	0
			1868	1180	349	326	13		

- Molecule 49 is a protein called Ribosomal protein S4.

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

- Molecule 50 is a protein called Ribosomal protein S5.

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

- Molecule 51 is a protein called Ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	SG	238	Total	C	N	O	S	0	0
			1889	1188	360	331	10		

- Molecule 52 is a protein called Ribosomal protein S7.

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

- Molecule 53 is a protein called Ribosomal protein S8.

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

- Molecule 54 is a protein called Ribosomal protein S15A.

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

- Molecule 55 is a protein called Ribosomal protein S9.

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

- Molecule 56 is a protein called Ribosomal protein S10B.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	SL	107	Total	C	N	O	S	0	0
			876	568	147	158	3		

- Molecule 57 is a protein called Ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	SM	153	Total	C	N	O	S	0	0
			1265	802	248	209	6		

- Molecule 58 is a protein called Ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	SO	140	Total	C	N	O	S	0	0
			1089	688	216	182	3		

- Molecule 59 is a protein called Ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	SP	150	Total	C	N	O	S	0	0
			1193	762	225	202	4		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
SP	6	ALA	SER	conflict	UNP A8BE02
SP	7	PRO	LYS	conflict	UNP A8BE02
SP	38	TYR	CYS	conflict	UNP A8BE02
SP	49	GLN	ARG	conflict	UNP A8BE02

- Molecule 60 is a protein called Ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	SQ	127	Total	C	N	O	S	0	0
			926	569	190	164	3		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
SQ	110	GLY	GLN	conflict	UNP E2RU83
SQ	112	SER	GLY	conflict	UNP E2RU83
SQ	113	ALA	SER	conflict	UNP E2RU83
SQ	115	GLY	ALA	conflict	UNP E2RU83

- Molecule 61 is a protein called Ribosomal protein S15.

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

- Molecule 62 is a protein called Ribosomal protein S16.

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

- Molecule 63 is a protein called Ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	SU	121	Total	C	N	O	S	0	0
			965	598	184	178	5		

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
64	SV	146	Total	C	N	O	S	0	0
			1162	715	238	203	6		

- Molecule 65 is a protein called Ribosomal protein S19e.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	SW	138	Total	C	N	O	S	0	0
			1080	686	204	187	3		

- Molecule 66 is a protein called Ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	SX	101	Total	C	N	O	S	0	0
			802	511	146	140	5		

- Molecule 67 is a protein called Ribosomal protein S21.

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

- Molecule 68 is a protein called Ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	Sb	120	Total	C	N	O	S	0	0
			952	604	179	163	6		

- Molecule 69 is a protein called Ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	Sc	75	Total	C	N	O	S	0	0
			597	377	107	107	6		

- Molecule 70 is a protein called Ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	Sd	108	Total	C	N	O	S	0	0
			884	544	184	149	7		

- Molecule 71 is a protein called Ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	Se	80	Total	C	N	O	S	0	0
			629	397	110	116	6		

- 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	67	Total	C	N	O	S	0	0
			543	341	114	87	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		

- Molecule 76 is a RNA chain called tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	u	75	Total	C	N	O	P	0	0
			1604	717	298	515	74		

- Molecule 77 is a RNA chain called tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	v	75	Total	C	N	O	P	0	0
			1602	716	296	516	74		

- Molecule 78 is a RNA chain called mRNA.

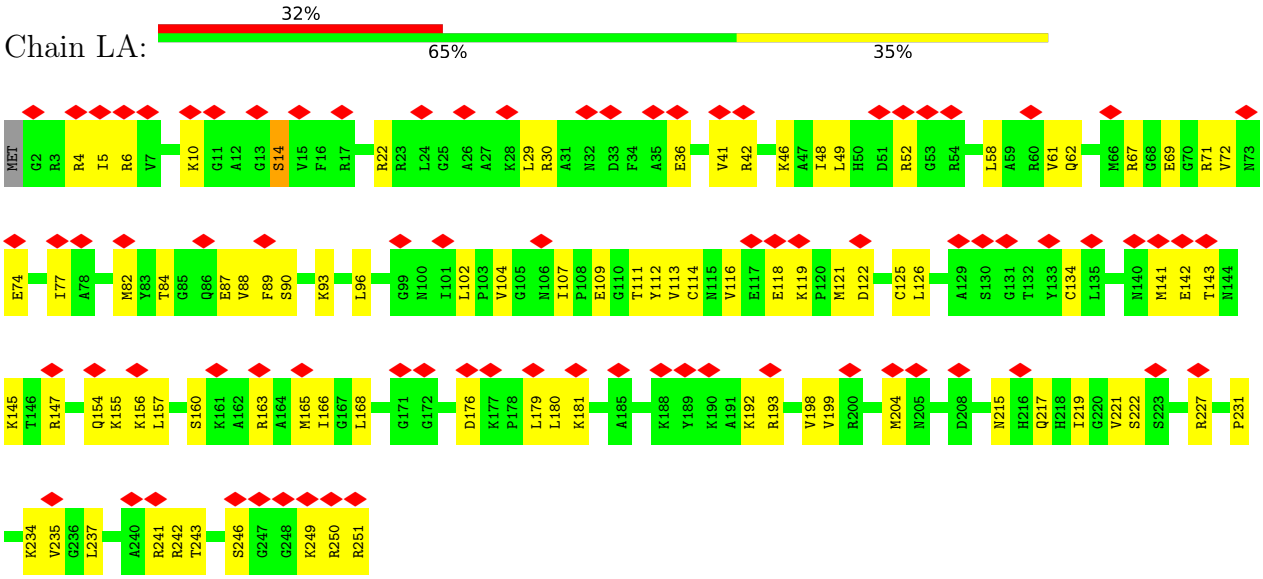
Mol	Chain	Residues	Atoms					AltConf	Trace
78	y	10	Total	C	N	O	P	0	0
			221	99	47	65	10		

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.

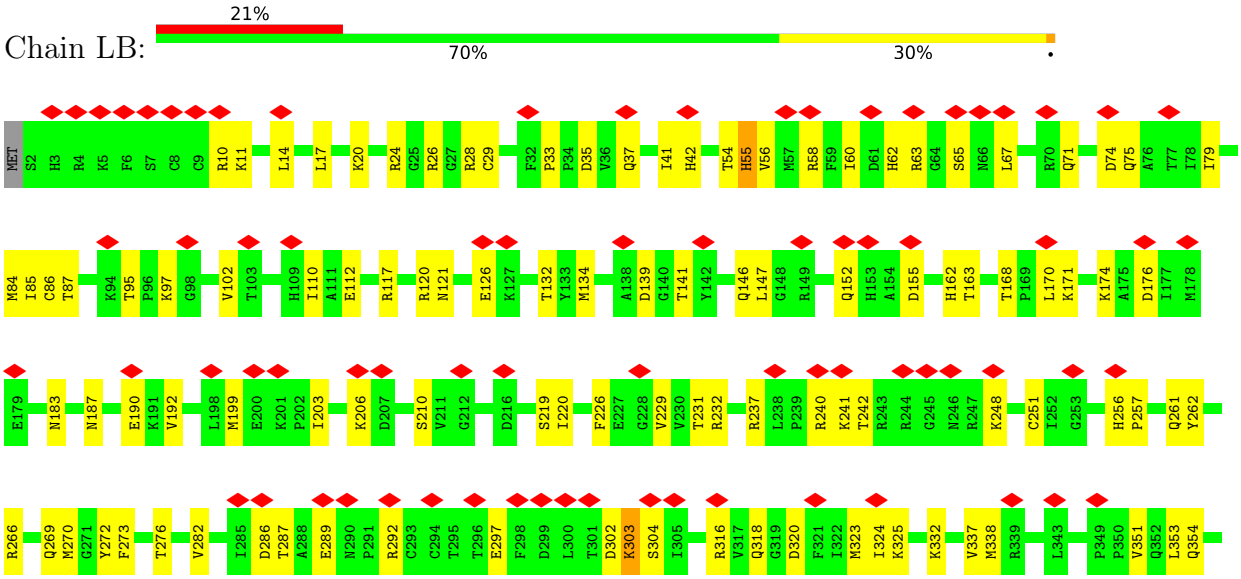
• Molecule 1: Ribosomal protein L2

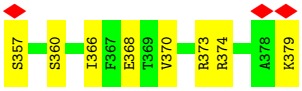
Chain LA:



• Molecule 2: Ribosomal protein L3

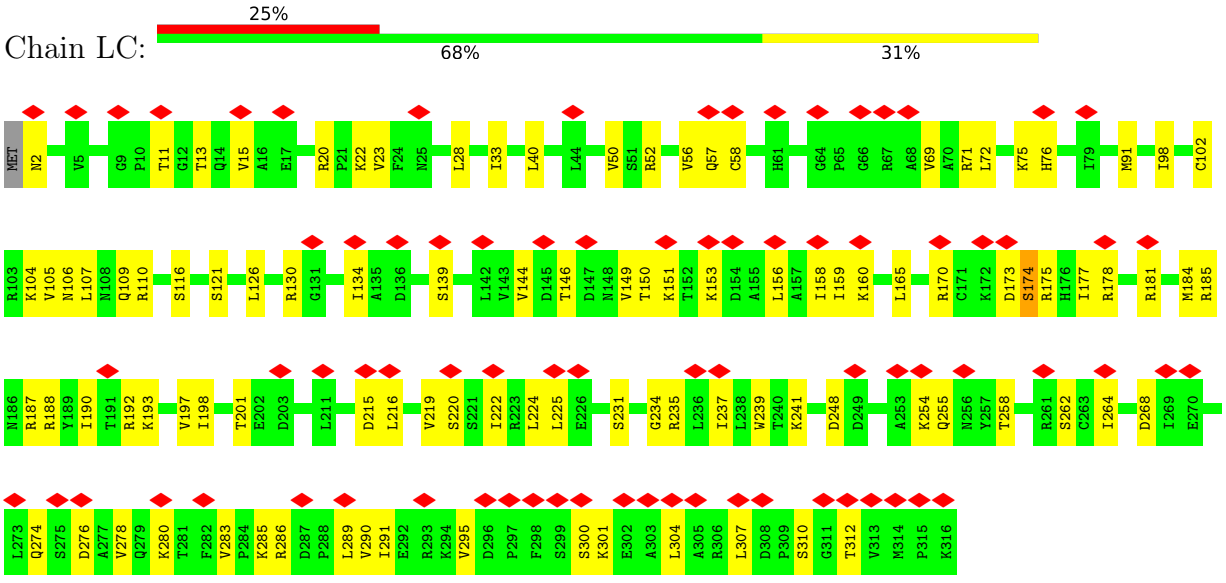
Chain LB:





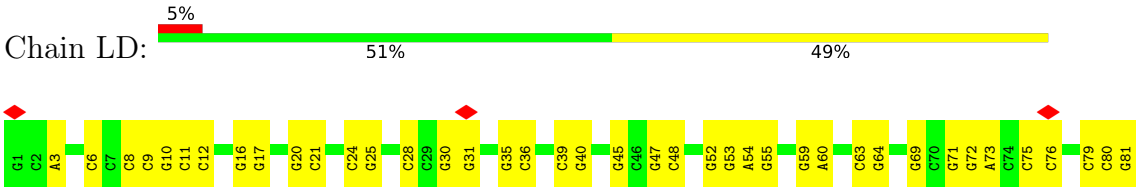
• Molecule 3: Ribosomal protein L4

Chain LC:



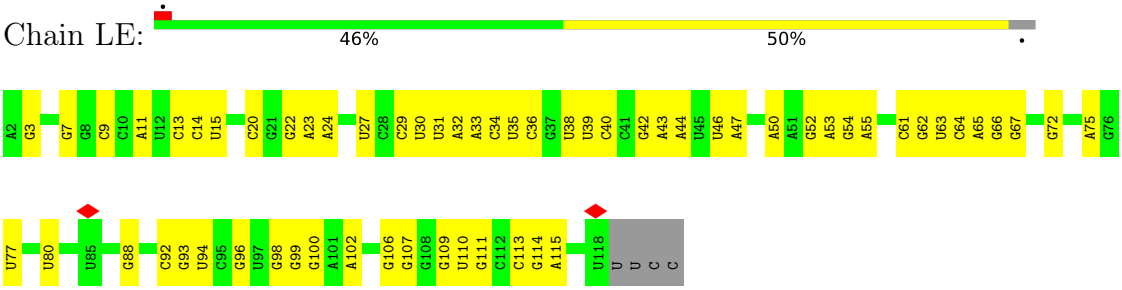
• Molecule 4: 5.8S rRNA

Chain LD:



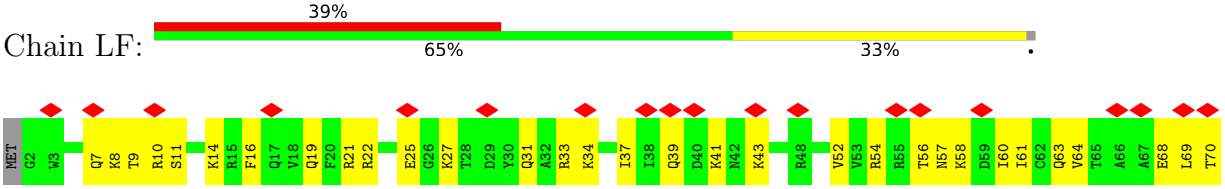
• Molecule 5: 5S rRNA

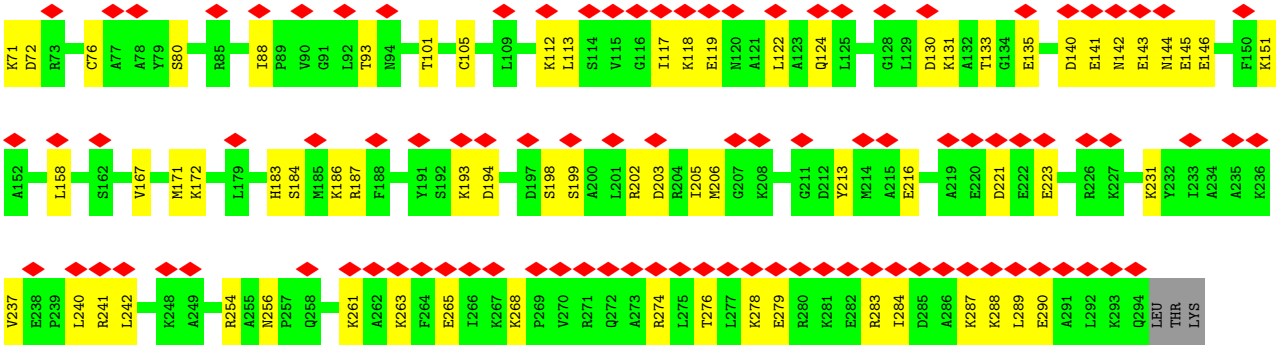
Chain LE:



• Molecule 6: Ribosomal protein L5

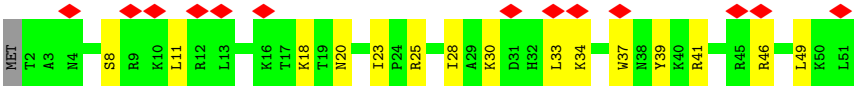
Chain LF:





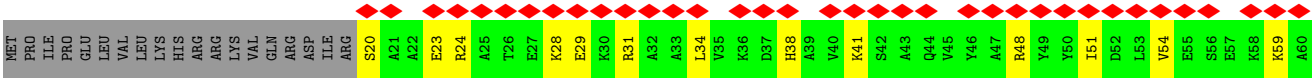
• Molecule 7: Ribosomal protein L39

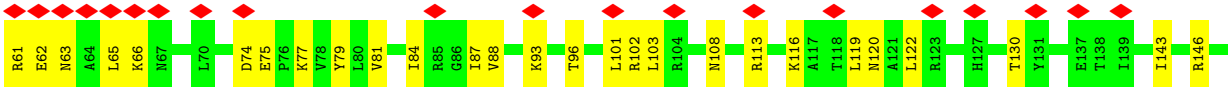
Chain LG:

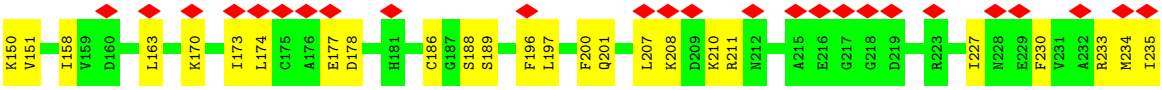


• Molecule 8: Ribosomal protein L7

Chain LH:

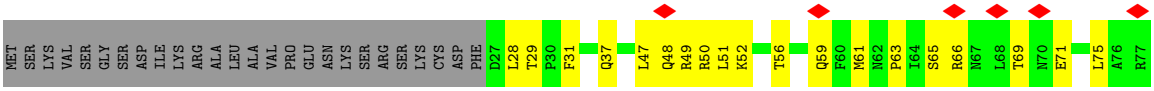


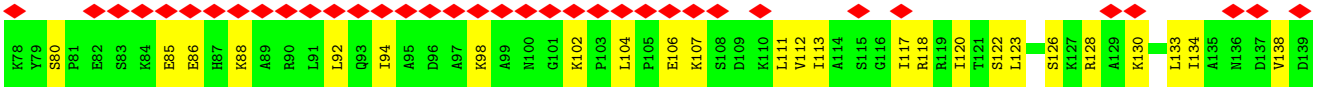


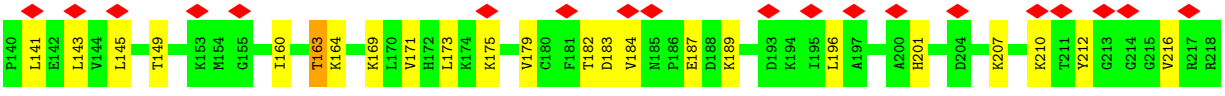


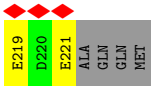
• Molecule 9: Ribosomal protein L7a

Chain LI:



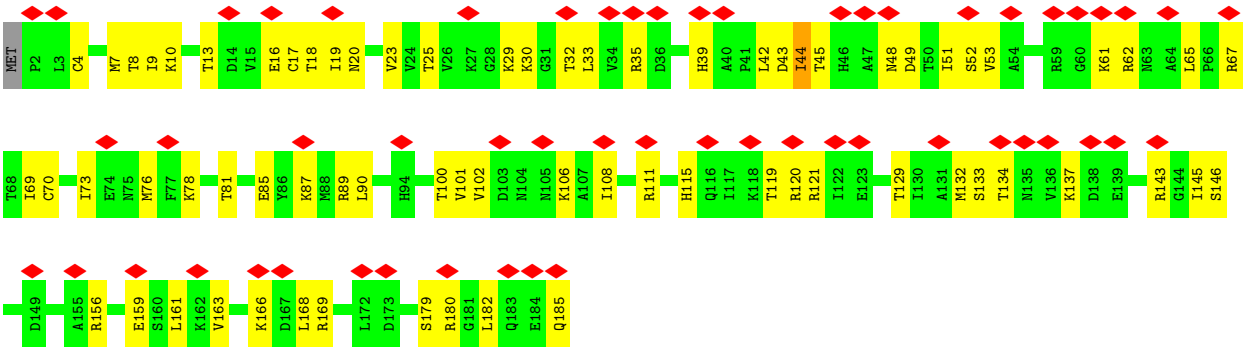






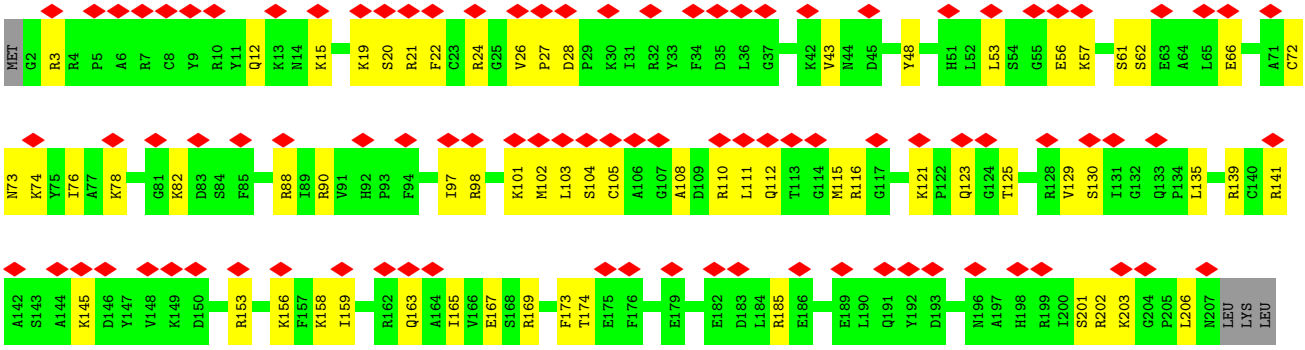
• Molecule 10: Ribosomal protein L6

Chain LJ:



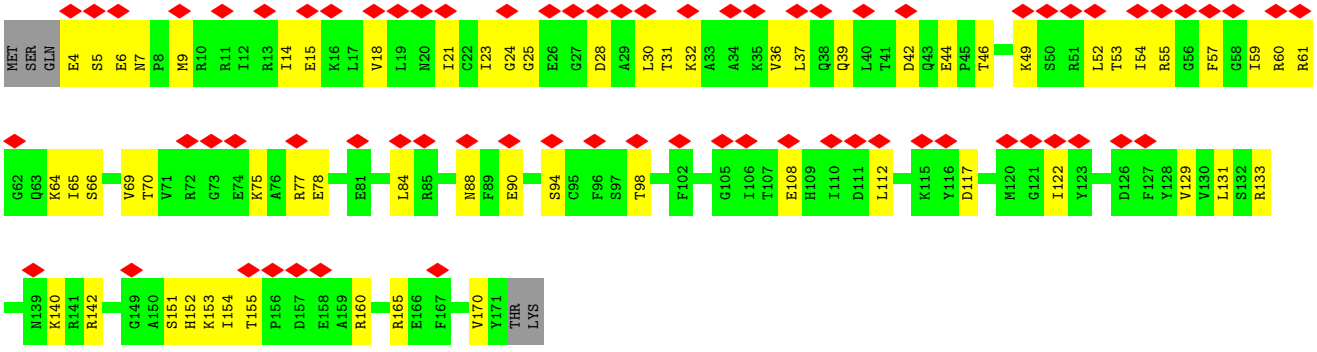
• Molecule 11: Ribosomal protein L10

Chain LK:



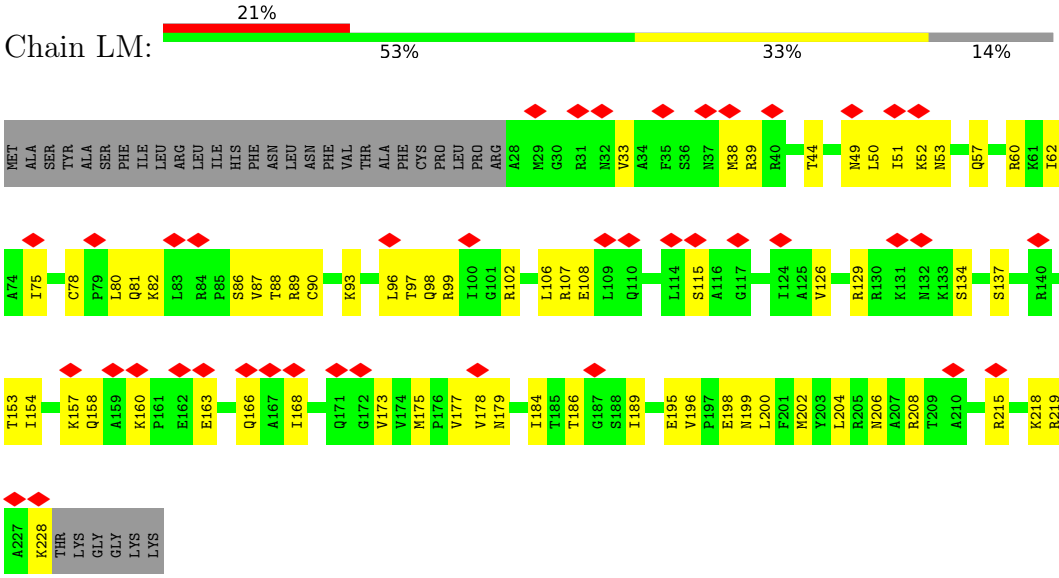
• Molecule 12: Ribosomal protein L11

Chain LL:



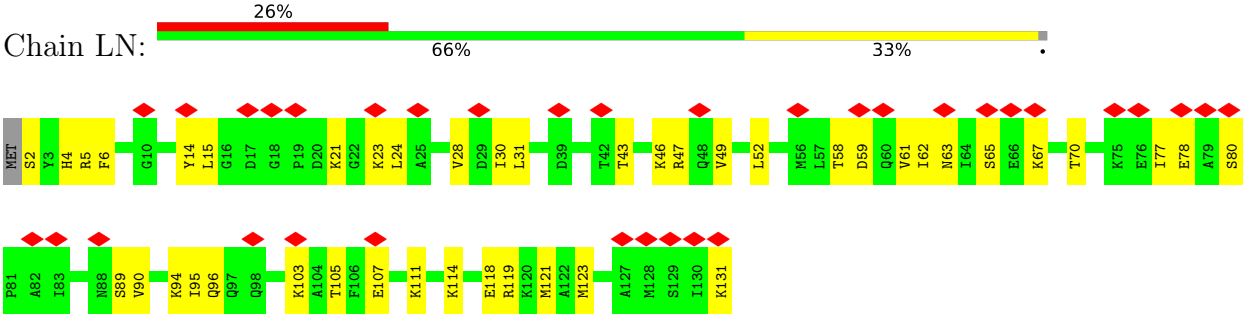
• Molecule 13: Ribosomal protein L13

Chain LM:



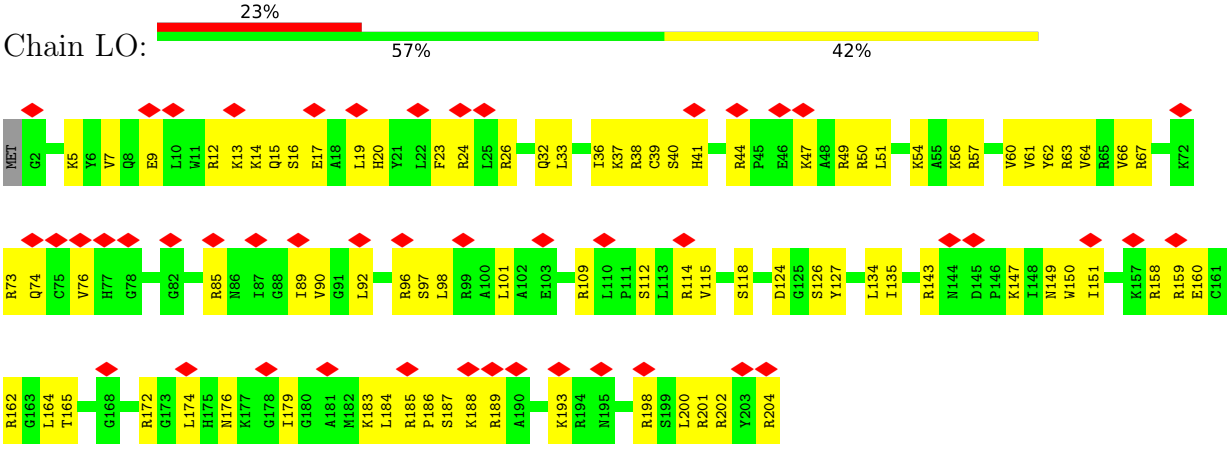
• Molecule 14: Ribosomal protein L14

Chain LN:



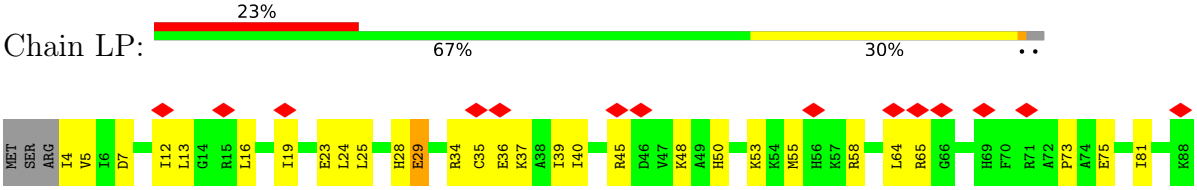
• Molecule 15: Ribosomal protein L15

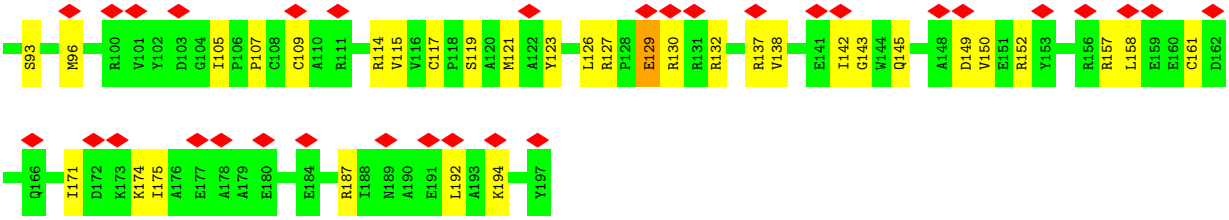
Chain LO:



• Molecule 16: Ribosomal protein L13a

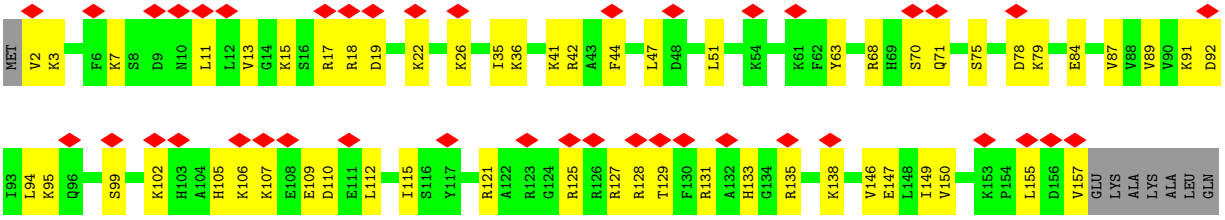
Chain LP:





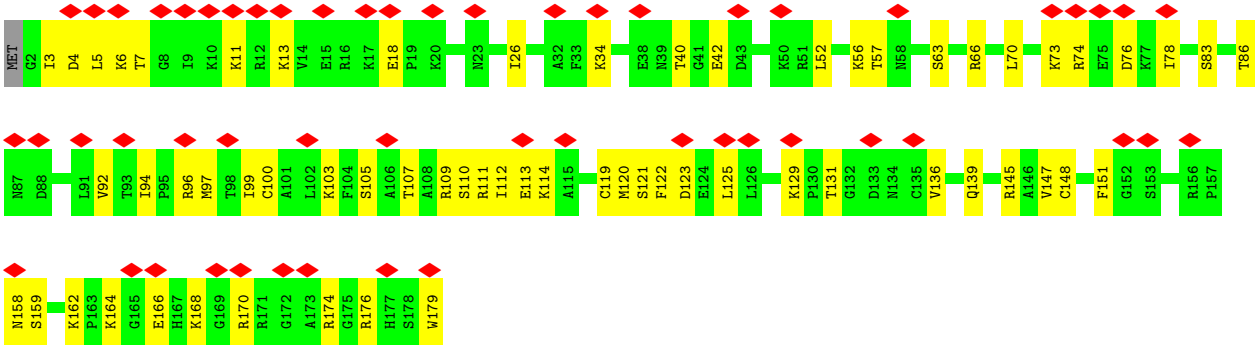
• Molecule 17: Ribosomal protein L17

Chain LQ:



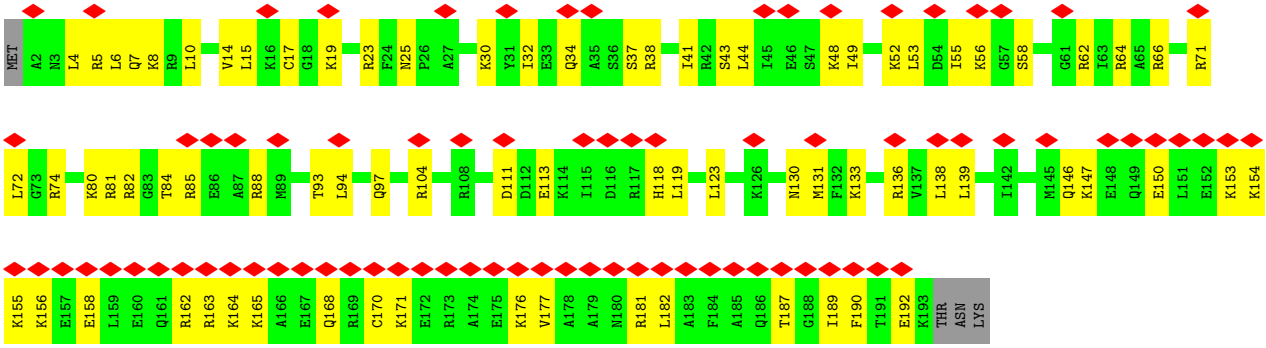
• Molecule 18: Ribosomal protein L18

Chain LR:



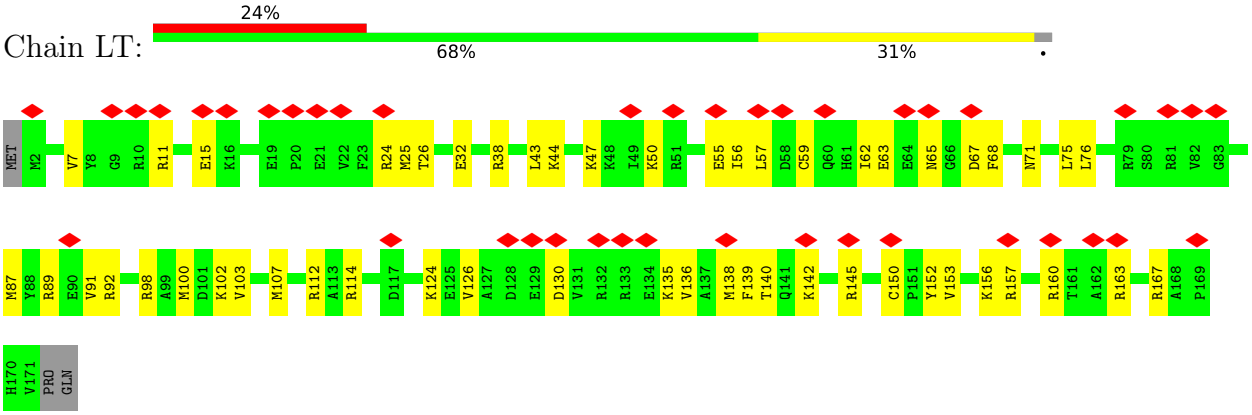
• Molecule 19: Ribosomal protein L19

Chain LS:



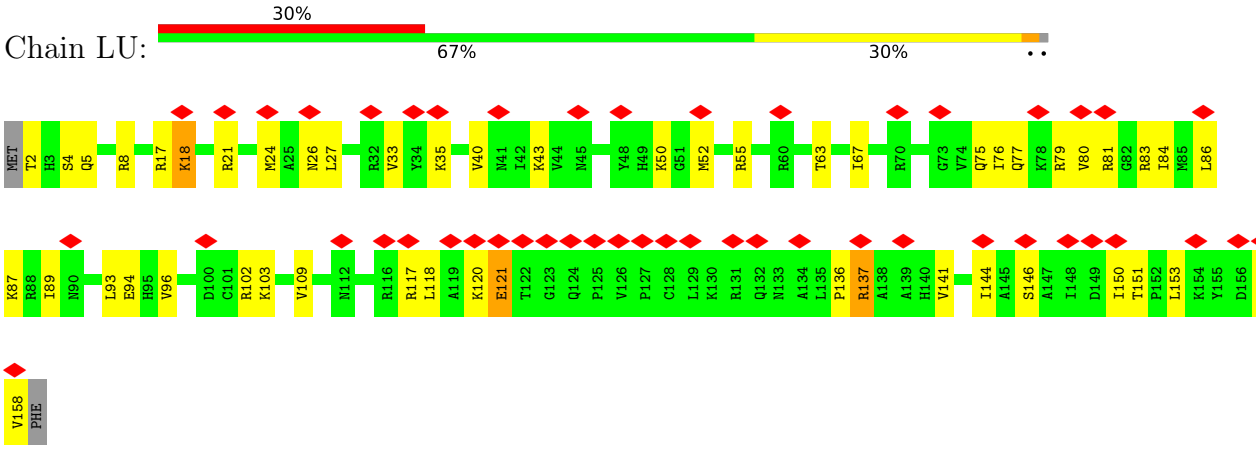
• Molecule 20: Ribosomal protein L18a

Chain LT:



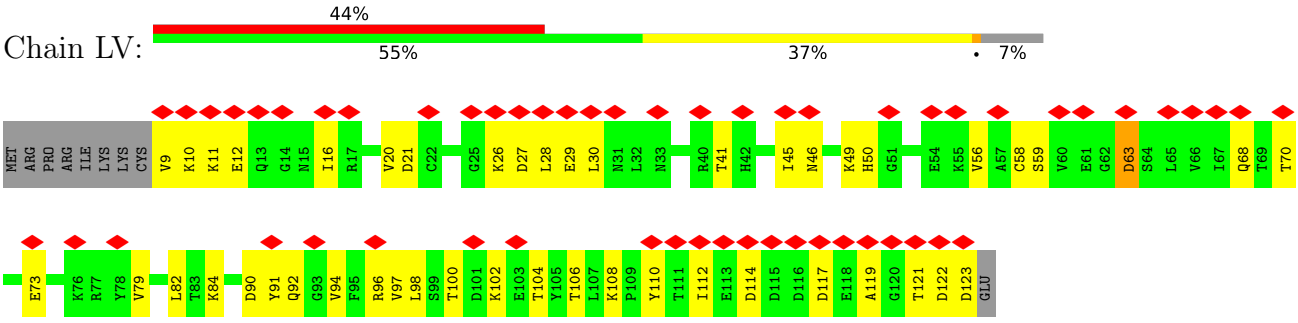
• Molecule 21: Ribosomal protein L21

Chain LU:



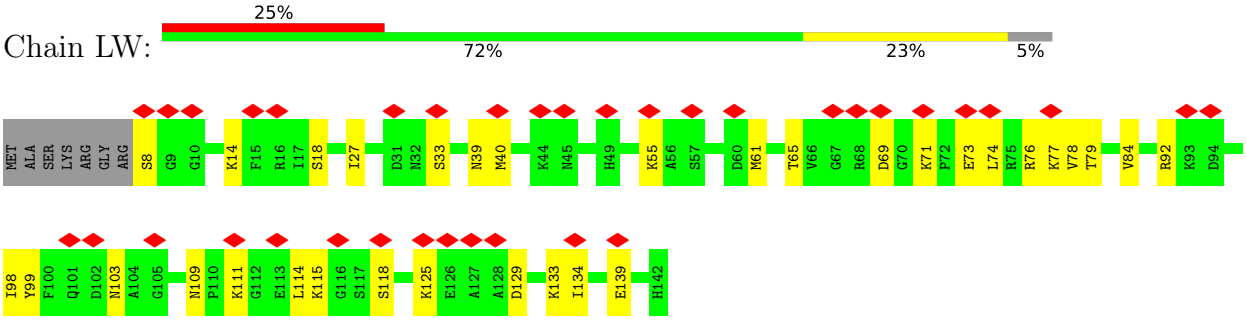
• Molecule 22: Ribosomal protein L22e

Chain LV:



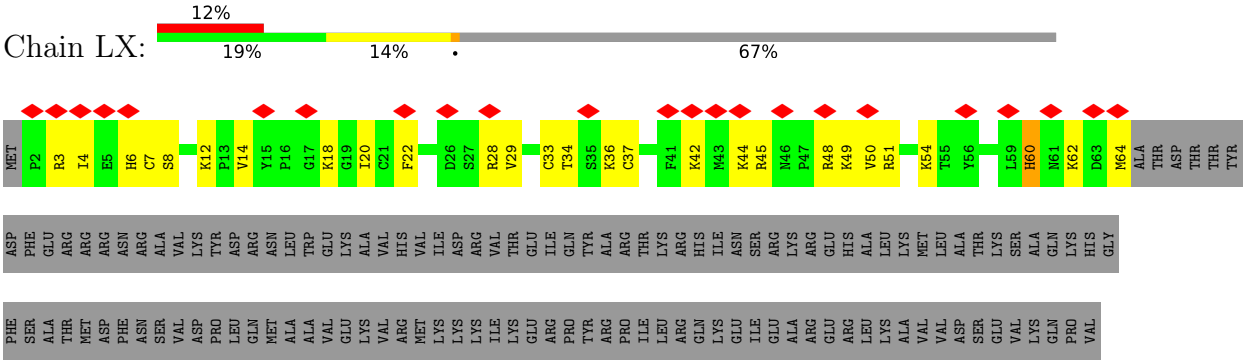
• Molecule 23: Ribosomal protein L23

Chain LW:



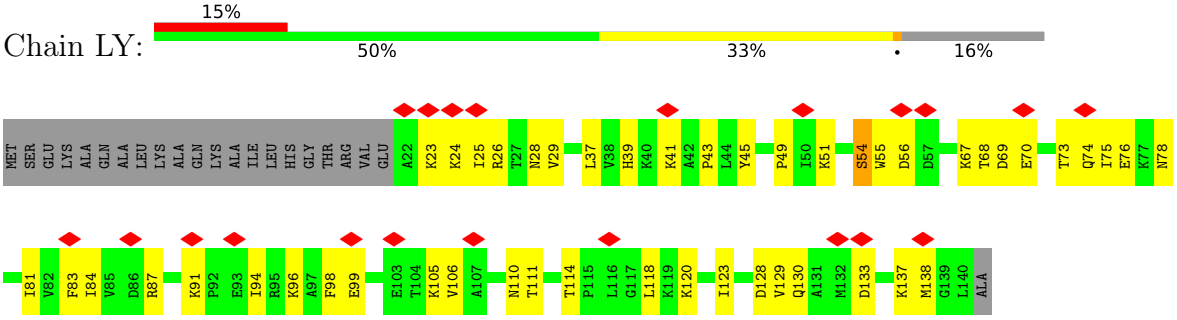
• Molecule 24: Ribosomal protein L24

Chain LX:



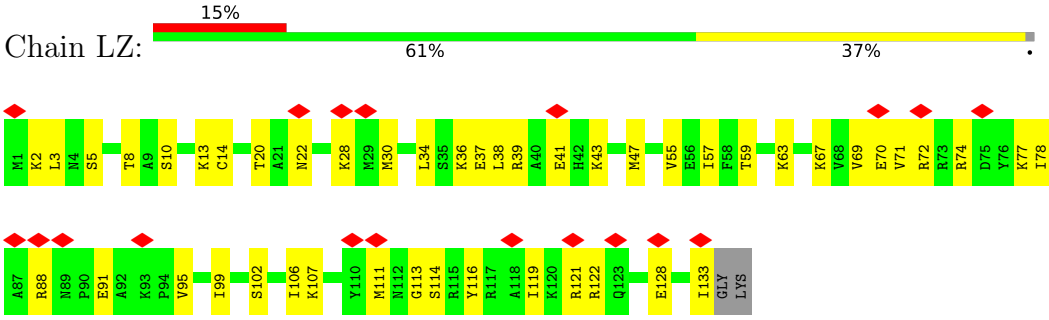
• Molecule 25: Ribosomal protein L23A

Chain LY:



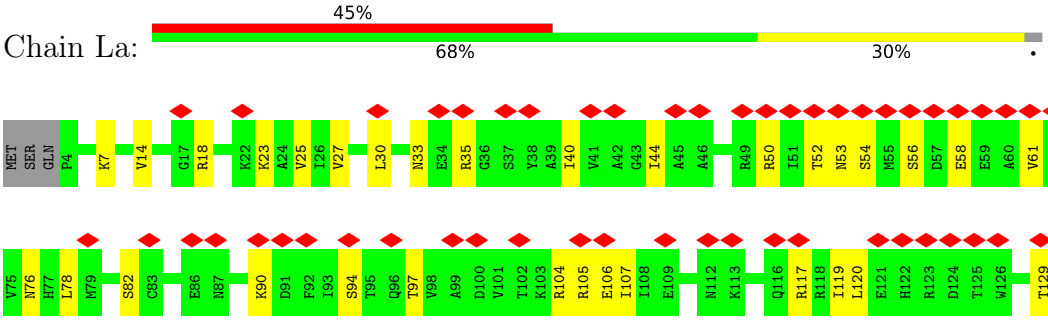
• Molecule 26: Ribosomal protein L26

Chain LZ:



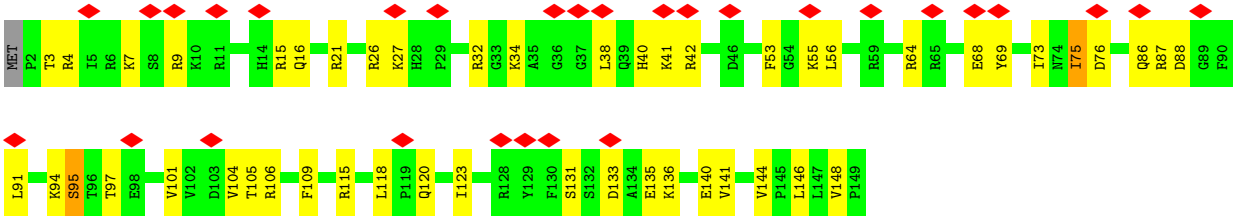
• Molecule 27: Ribosomal protein L27

Chain La:



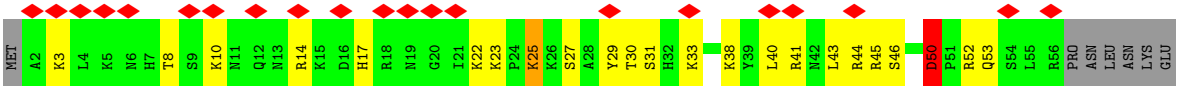
• Molecule 28: Ribosomal protein L27a

Chain Lb:



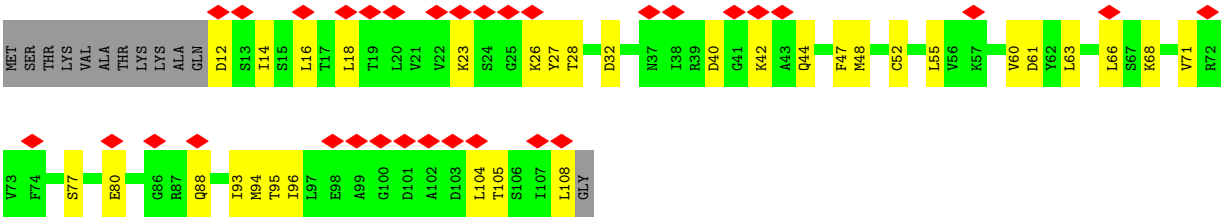
• Molecule 29: Ribosomal protein L29

Chain Lc:



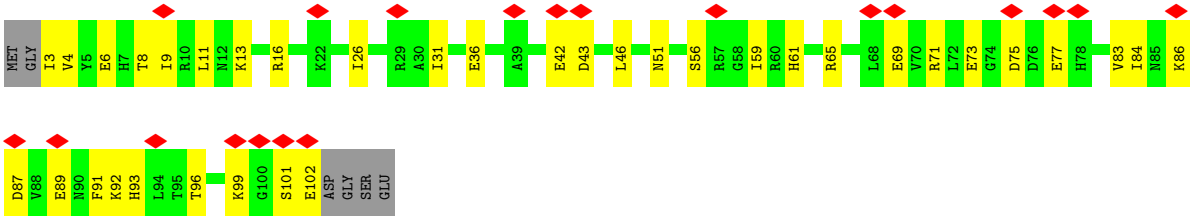
• Molecule 30: Ribosomal protein L30

Chain Ld:



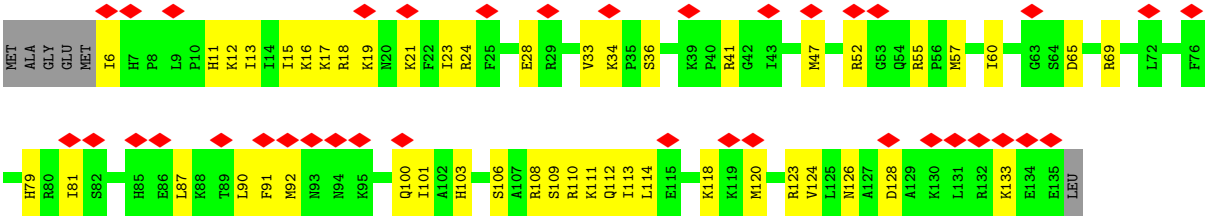
• Molecule 31: Ribosomal protein L31B

Chain Le:



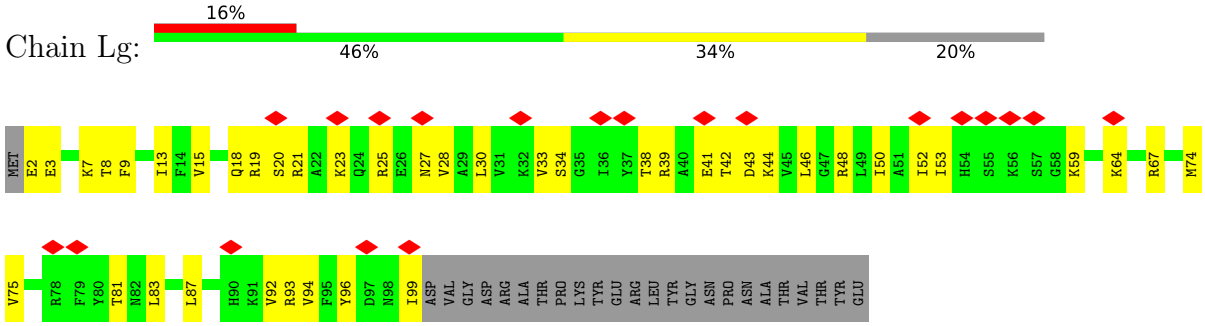
• Molecule 32: Ribosomal protein L32

Chain Lf:



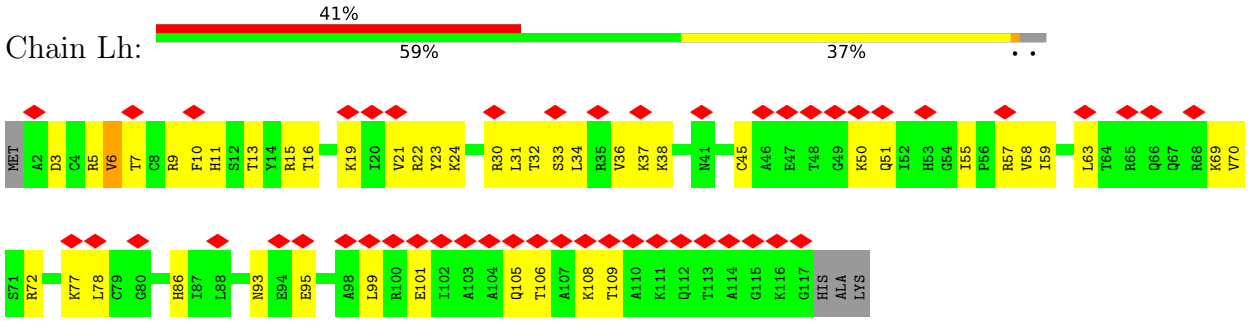
• Molecule 33: Ribosomal protein L35a

Chain Lg:



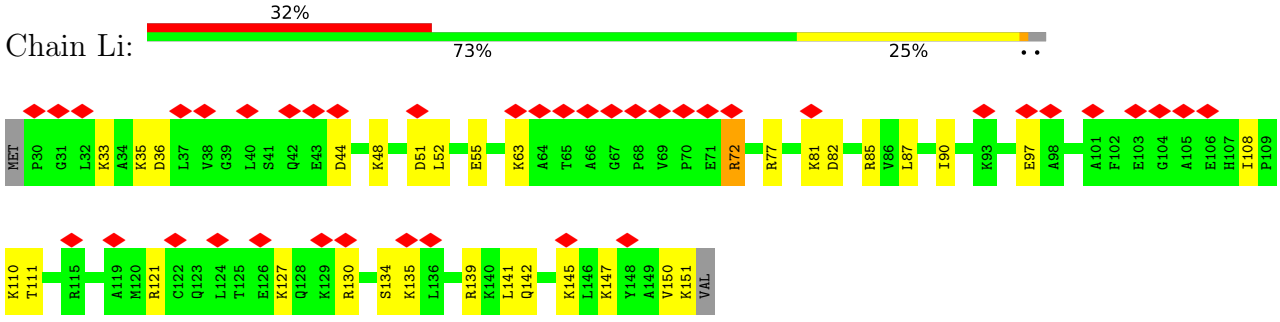
• Molecule 34: Ribosomal protein L34

Chain Lh:



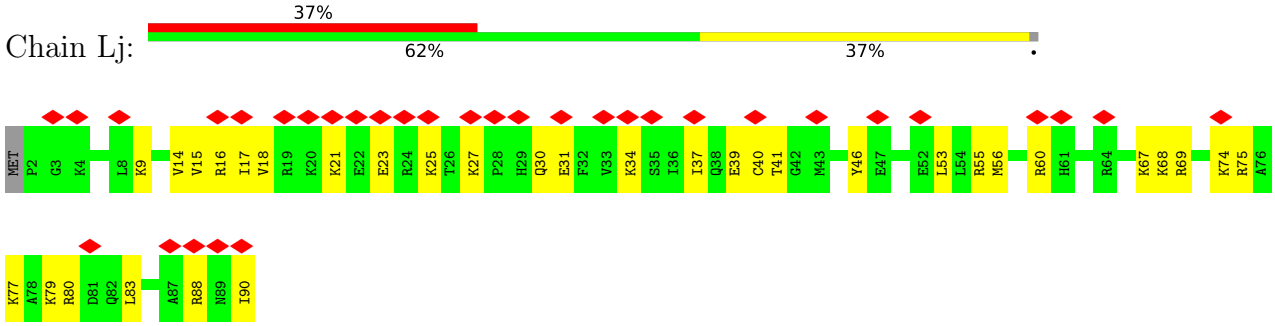
• Molecule 35: Ribosomal protein L29

Chain Li:



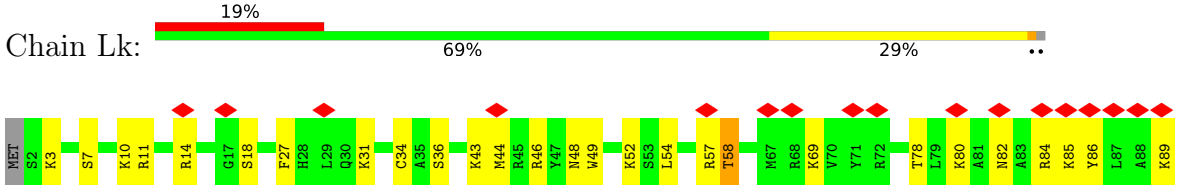
• Molecule 36: Ribosomal protein L36-1

Chain Lj:



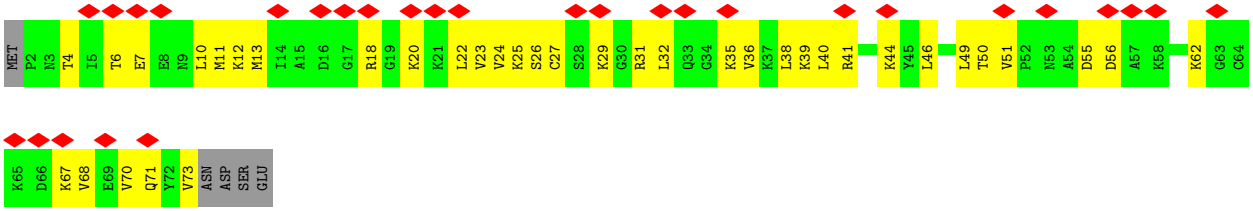
• Molecule 37: Ribosomal protein L37

Chain Lk:



• Molecule 38: Ribosomal protein L38e

Chain Ll:

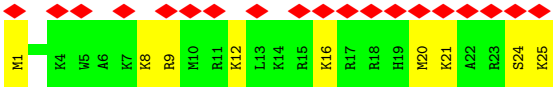


• Molecule 39: Ribosomal protein L10a

Chain Ln:

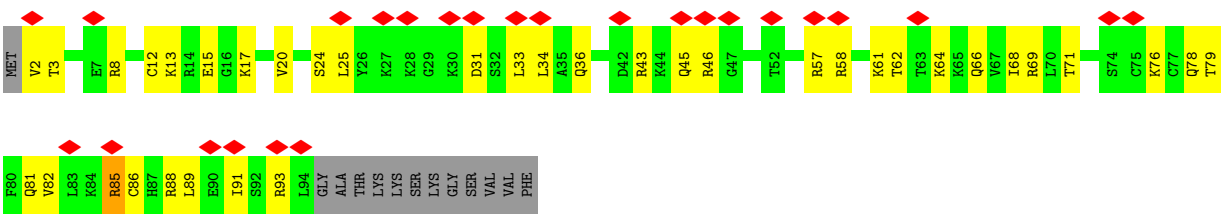
• Molecule 40: Ribosomal protein L41

Chain Lo:



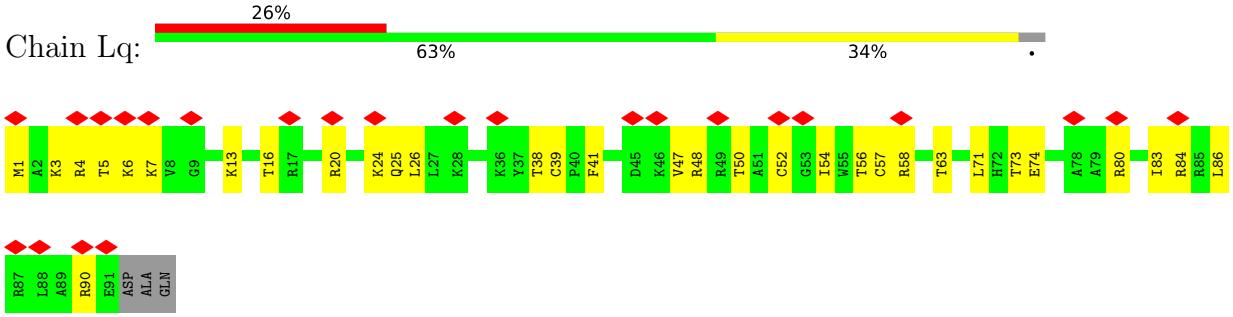
• Molecule 41: Ribosomal protein L44

Chain Lp:



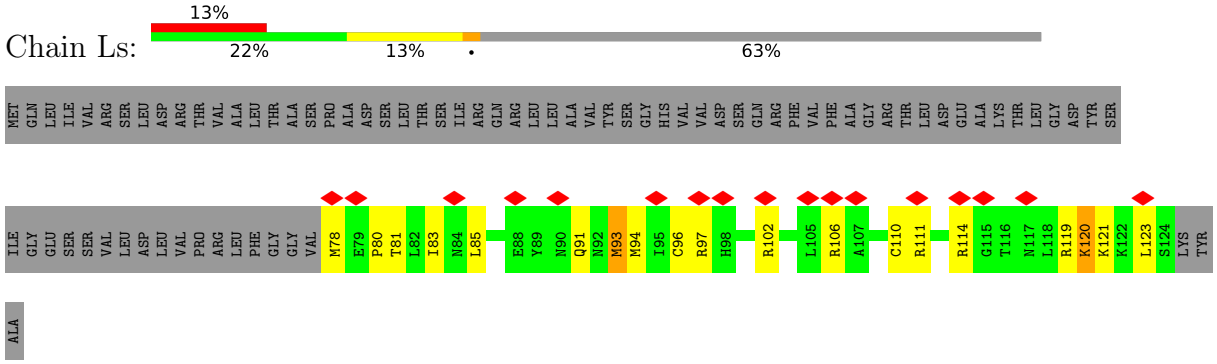
• Molecule 42: Ribosomal protein L37a

Chain Lq:



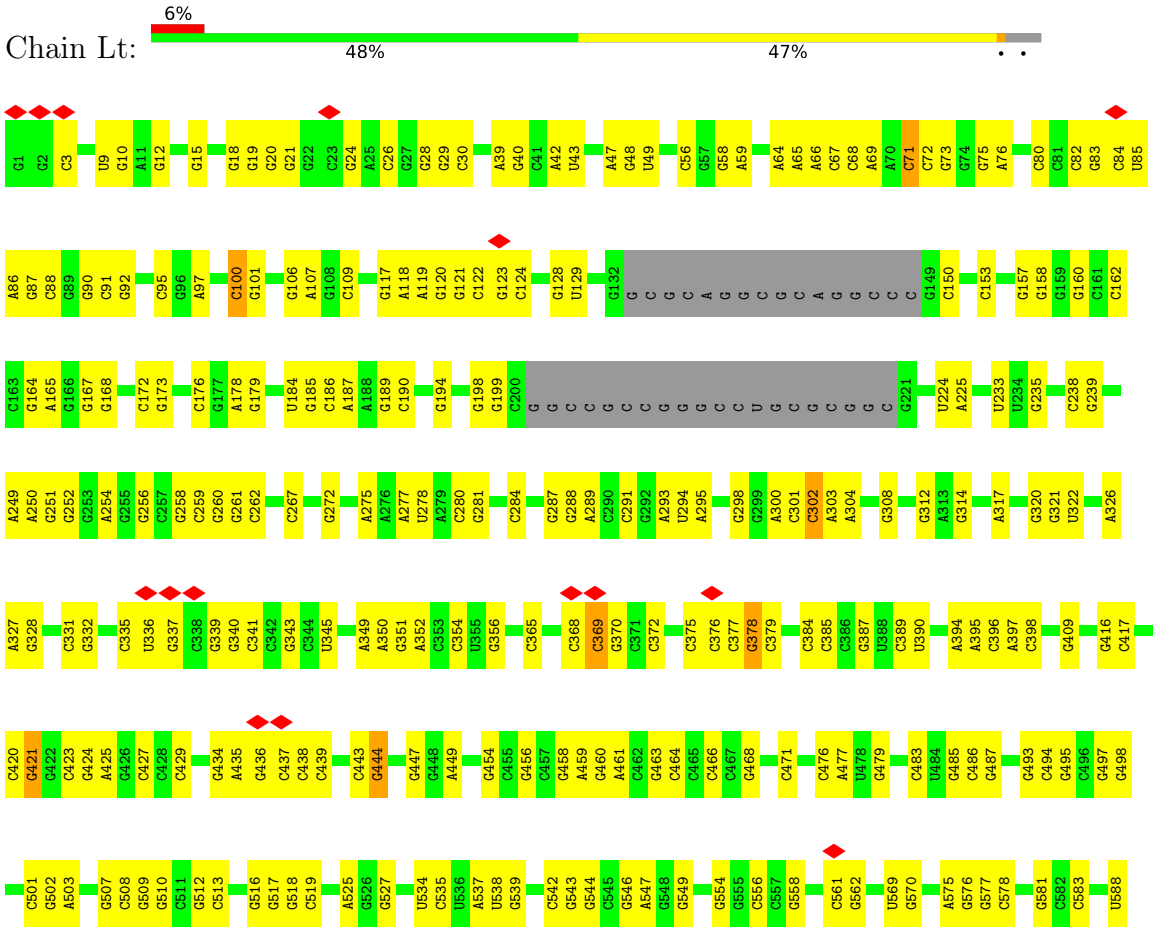
• Molecule 43: Ubiquitin/Ribosomal protein L40e

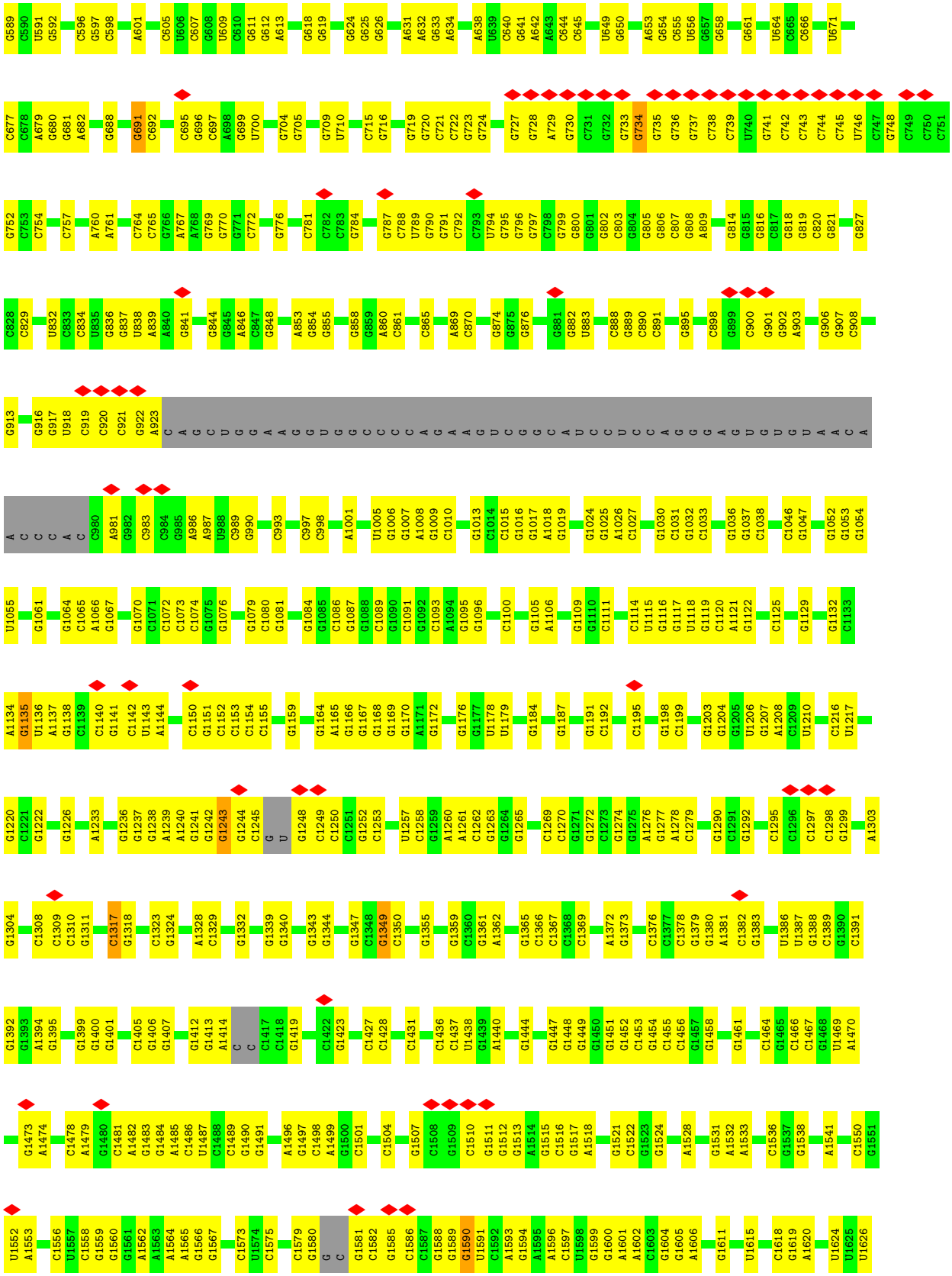
Chain Ls:

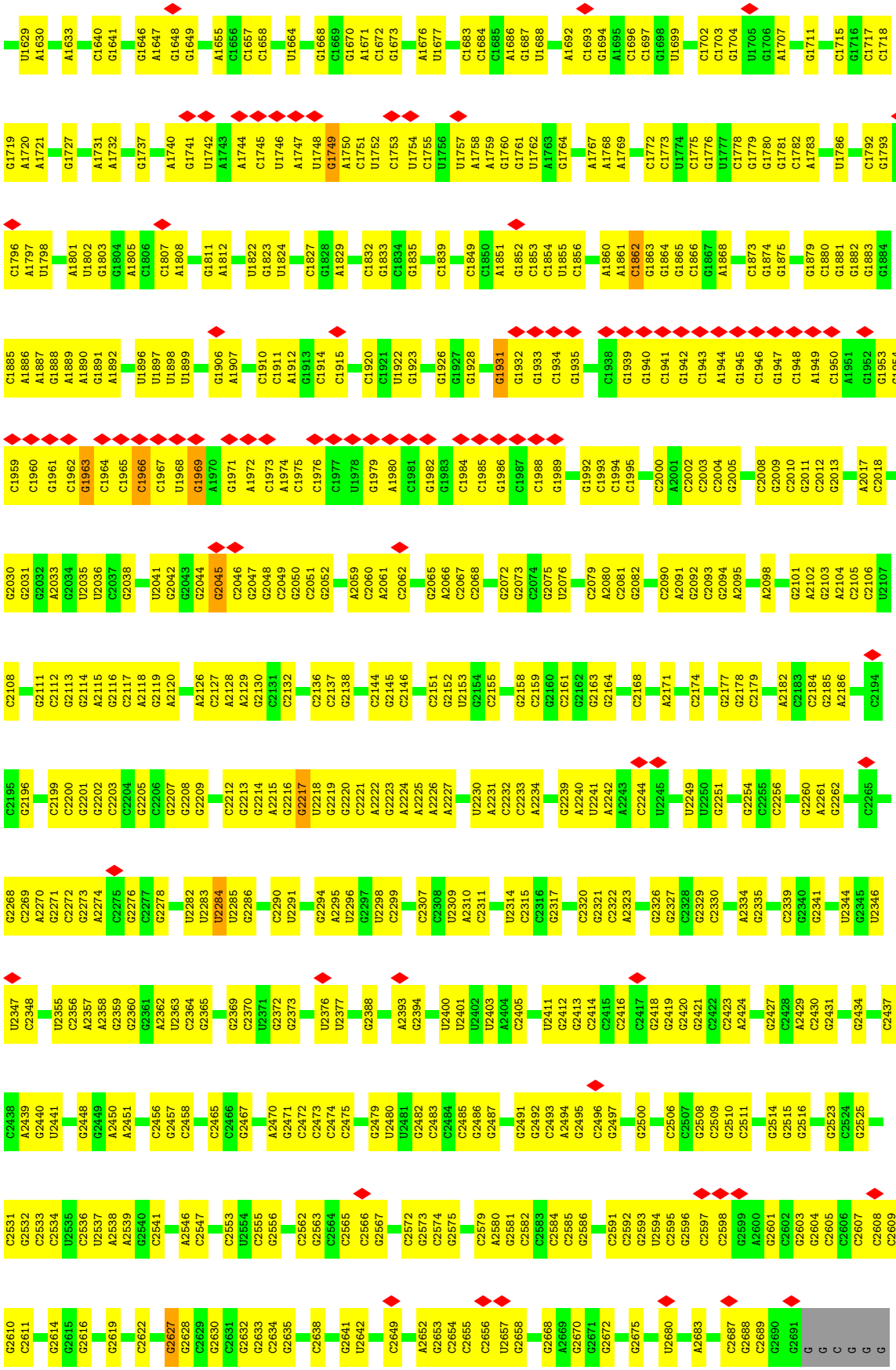


• Molecule 44: Large Subunit rRNA

Chain Lt:

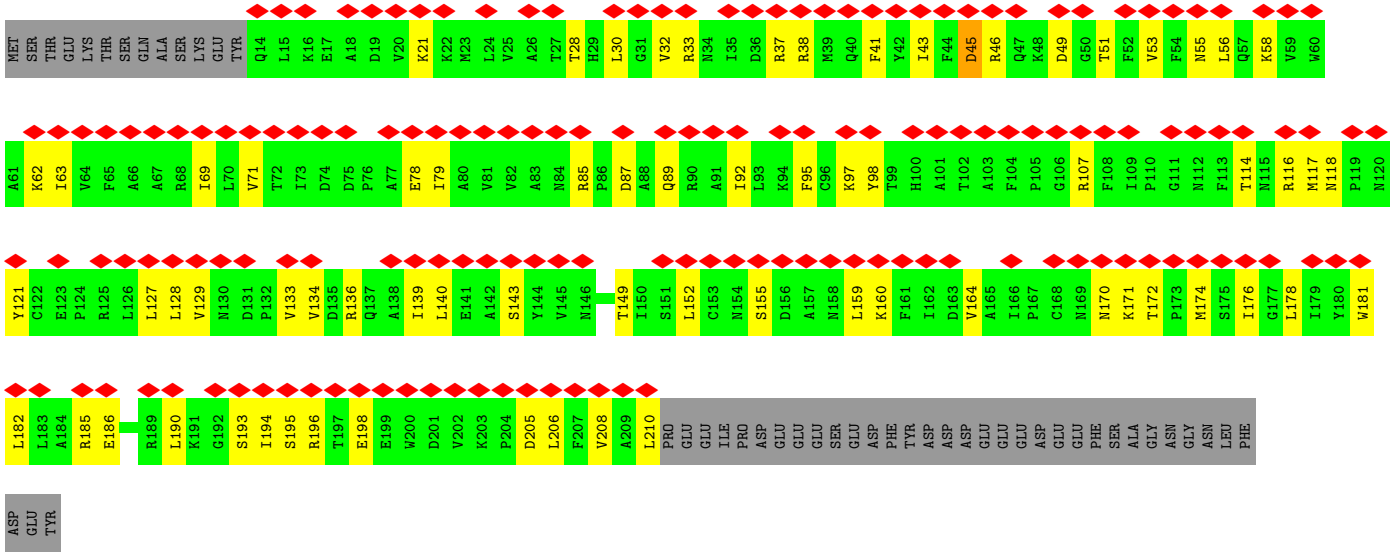






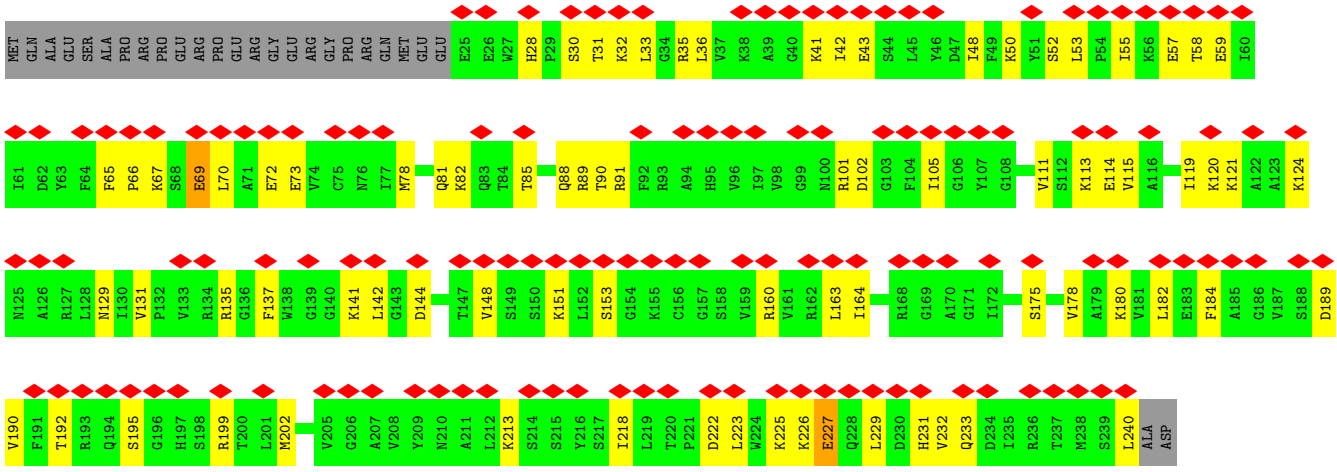
• Molecule 45: Ribosomal protein SA

Chain SA:



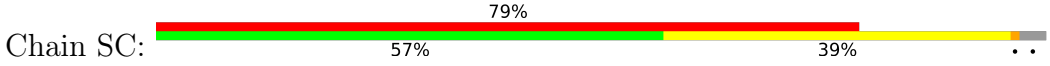
• Molecule 46: Ribosomal protein S2

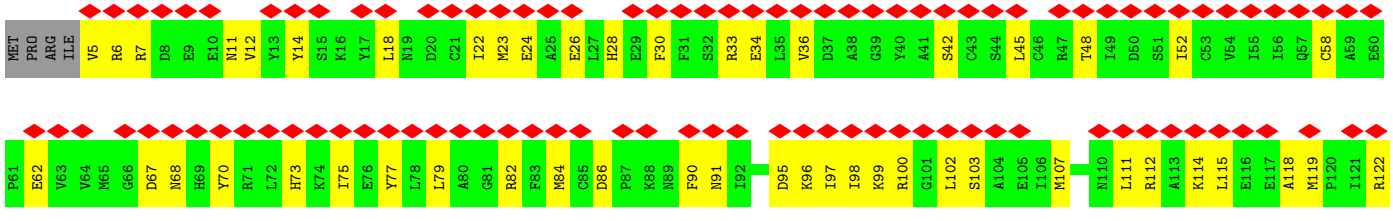
Chain SB:

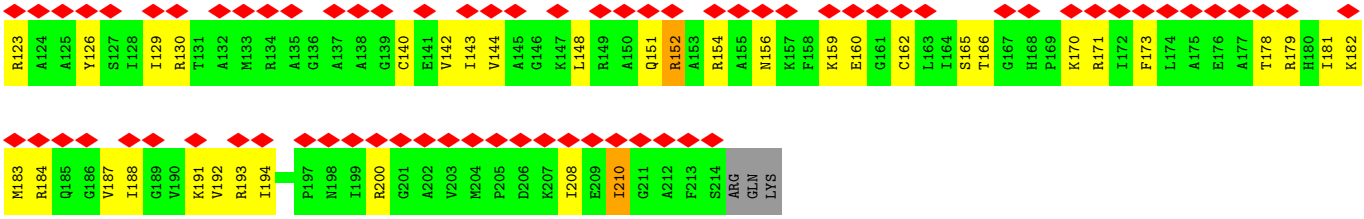


• Molecule 47: Ribosomal protein S3

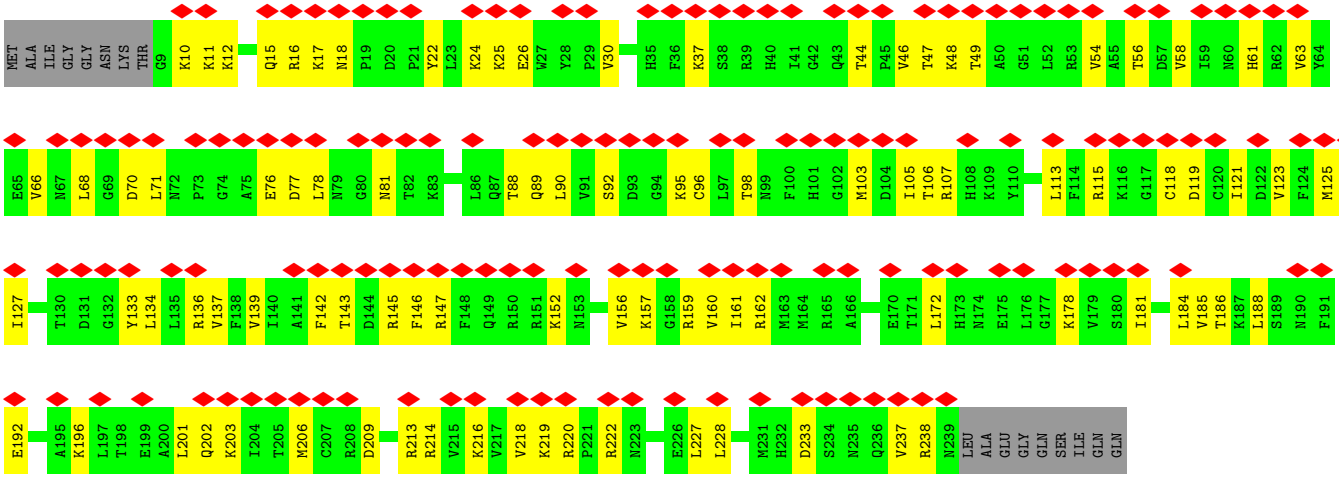
Chain SC:



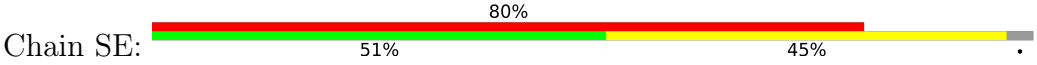


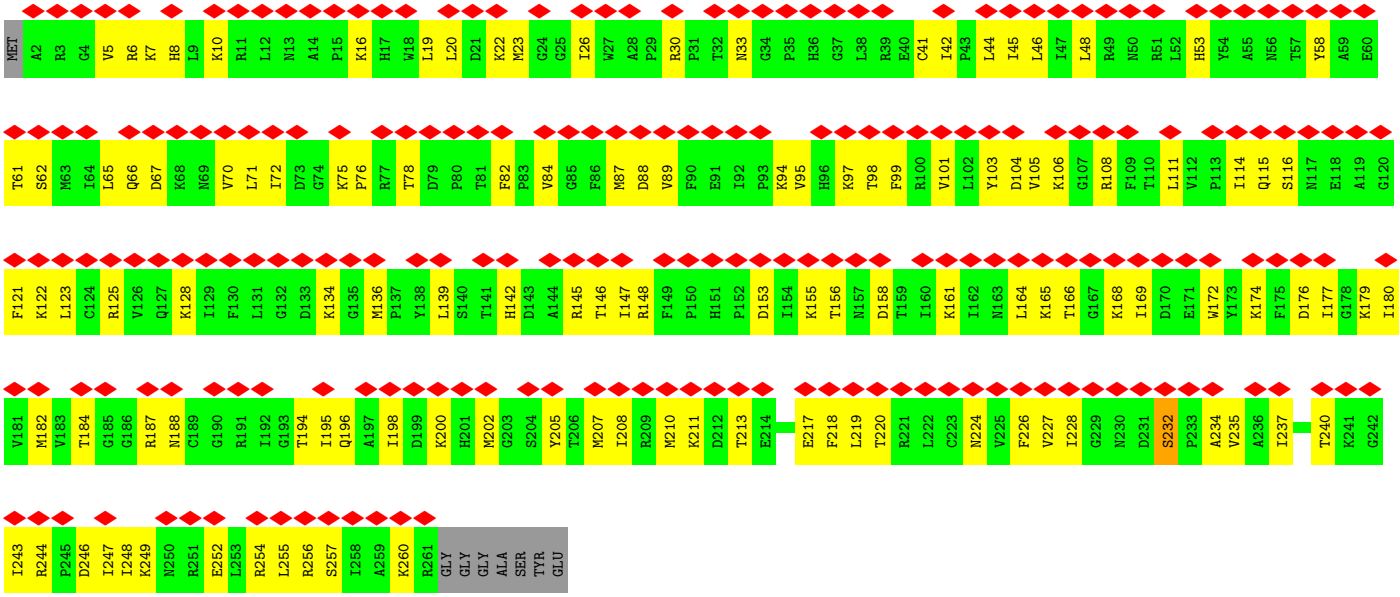


• Molecule 48: Ribosomal protein S3a



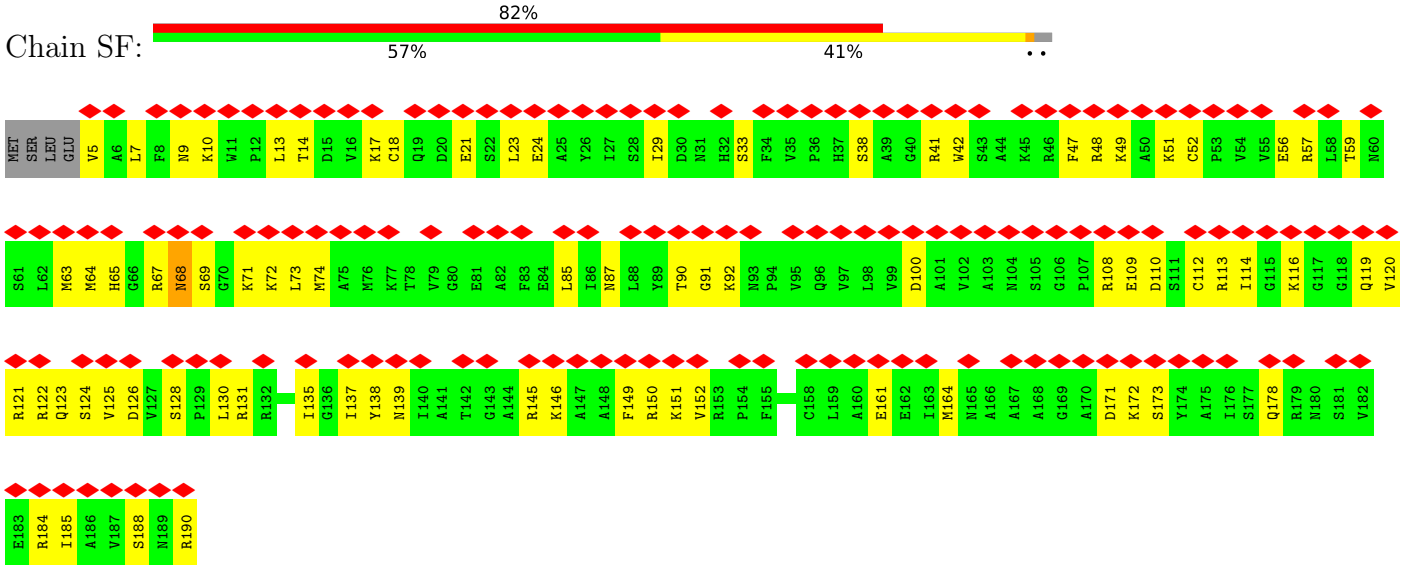
• Molecule 49: Ribosomal protein S4





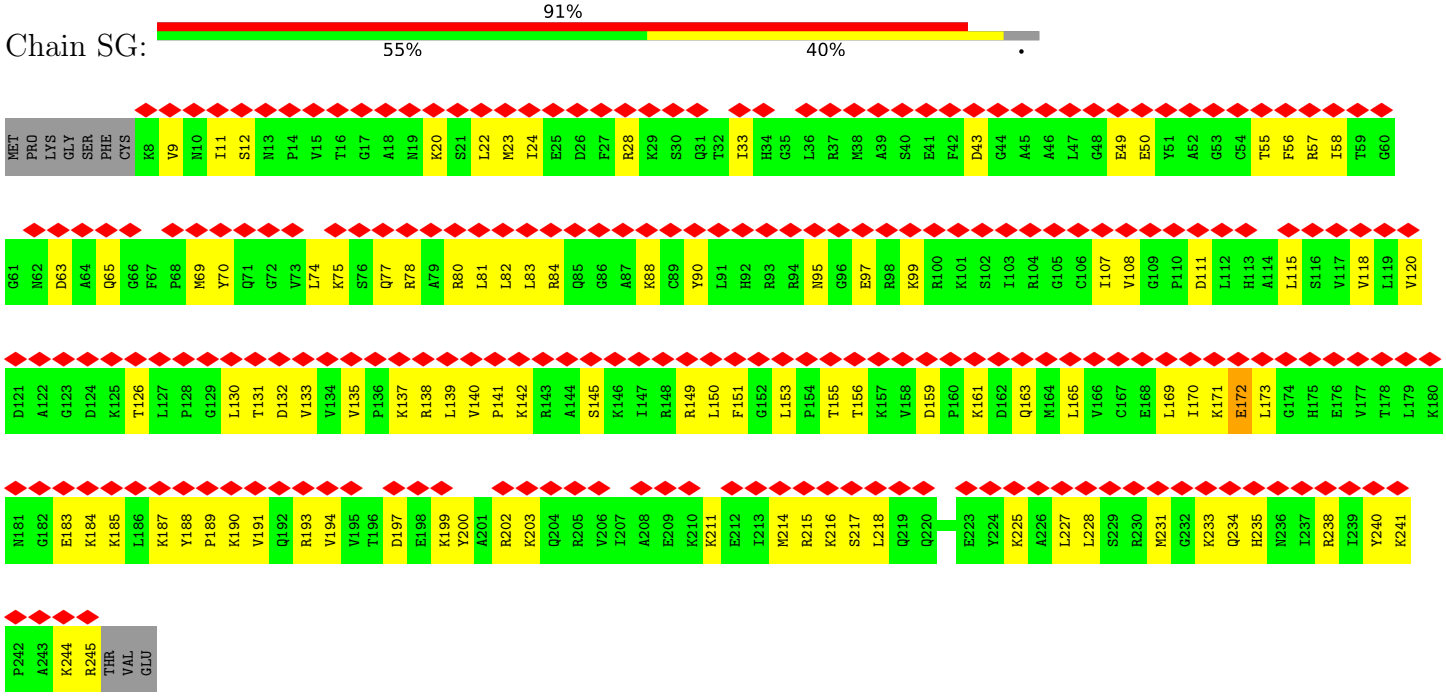
• Molecule 50: Ribosomal protein S5

Chain SF:



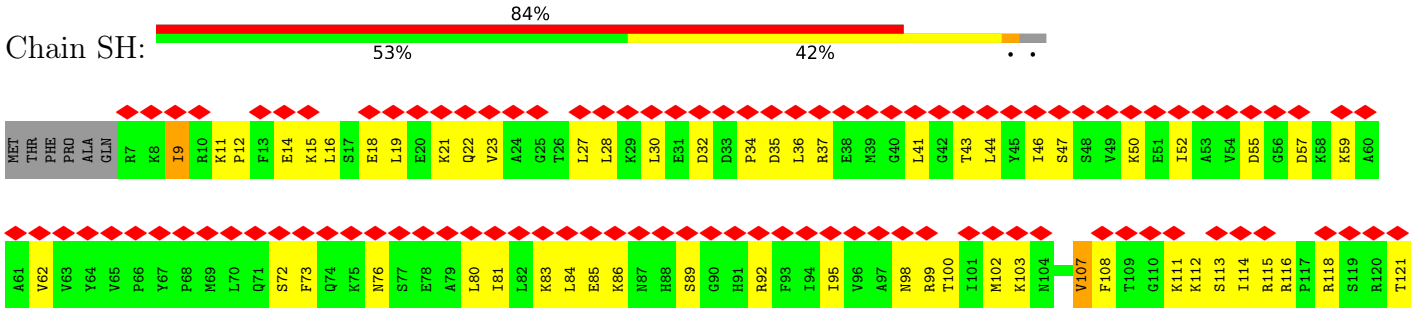
• Molecule 51: Ribosomal protein S6

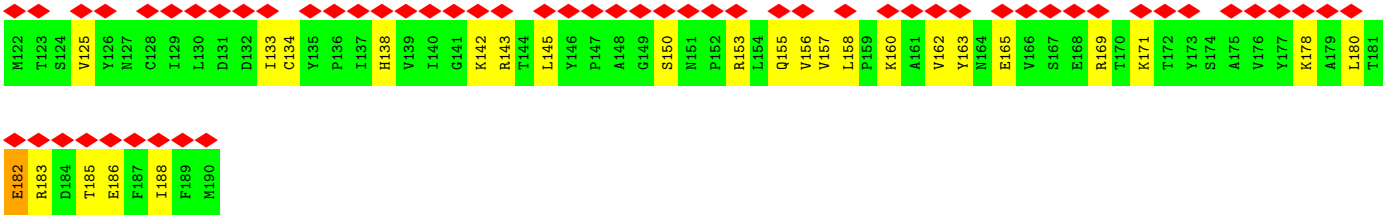
Chain SG:



• Molecule 52: Ribosomal protein S7

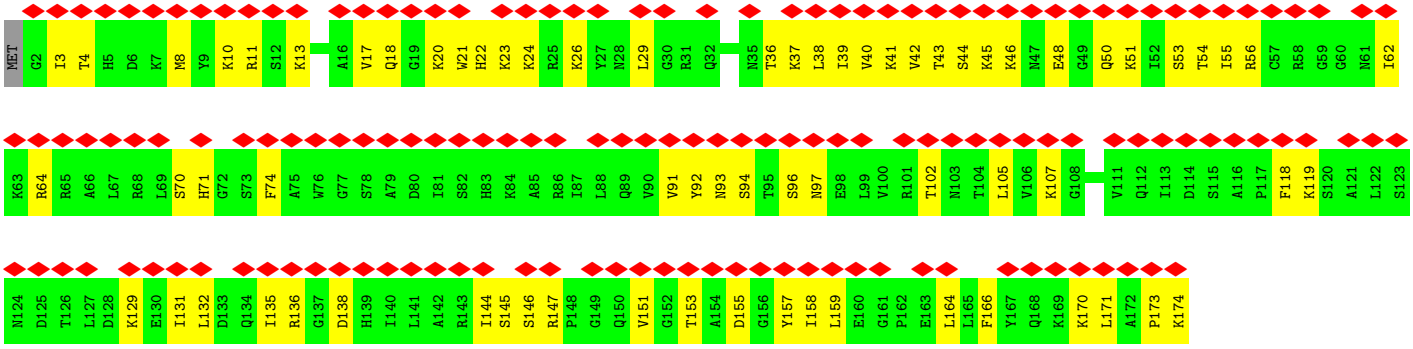
Chain SH:





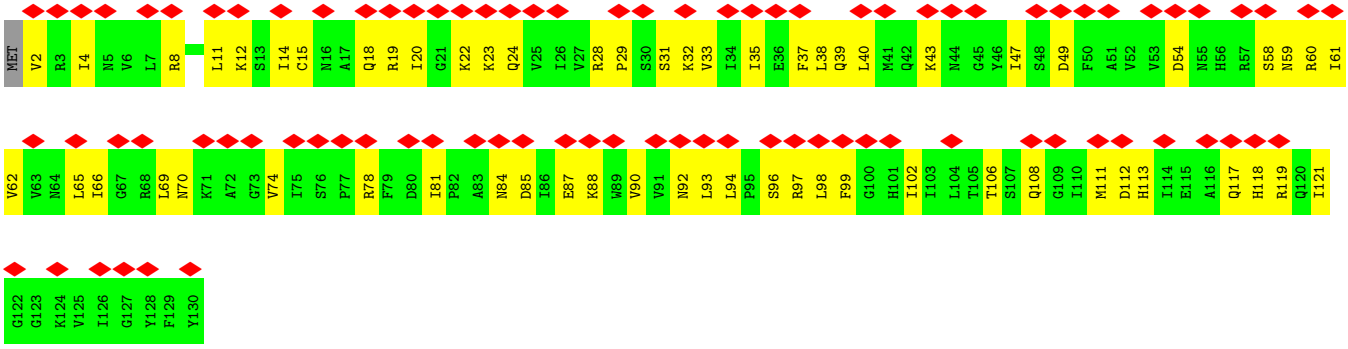
• Molecule 53: Ribosomal protein S8

Chain SI:



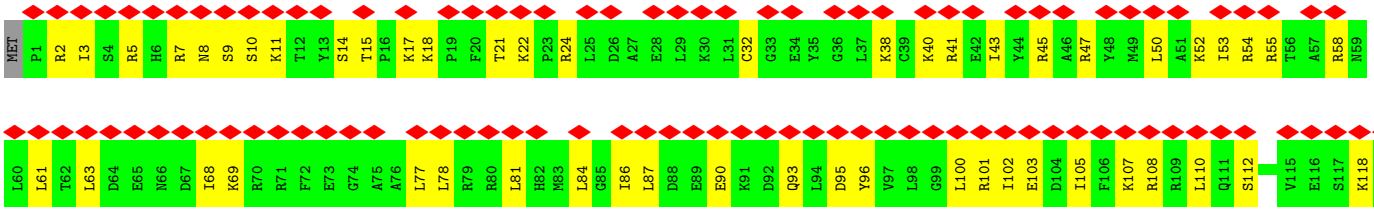
• Molecule 54: Ribosomal protein S15A

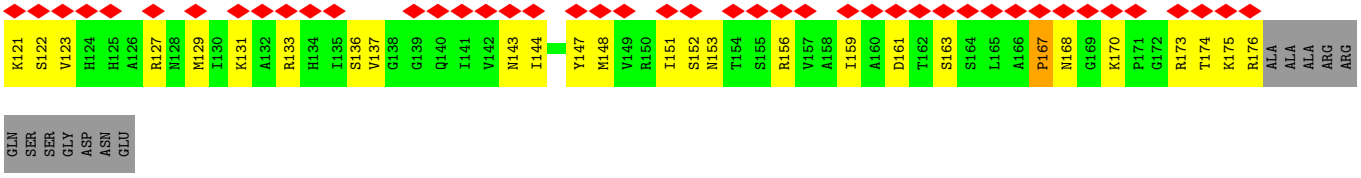
Chain SJ:



• Molecule 55: Ribosomal protein S9

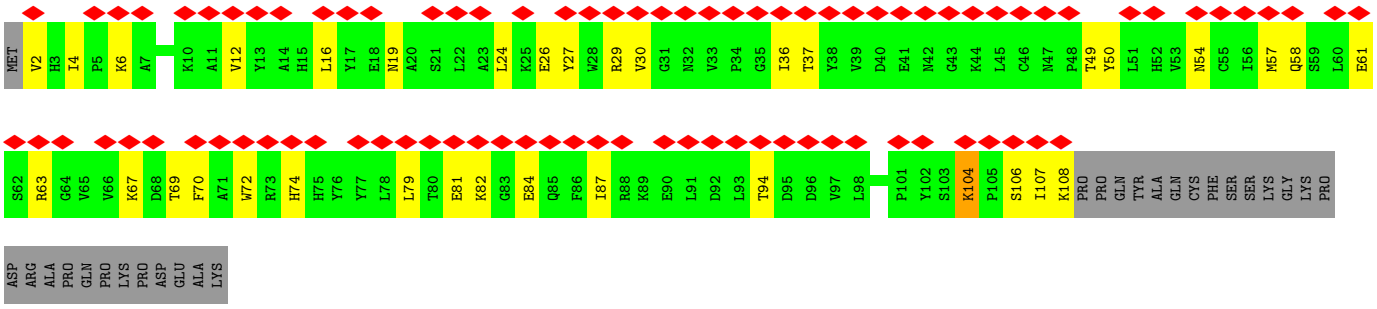
Chain SK:





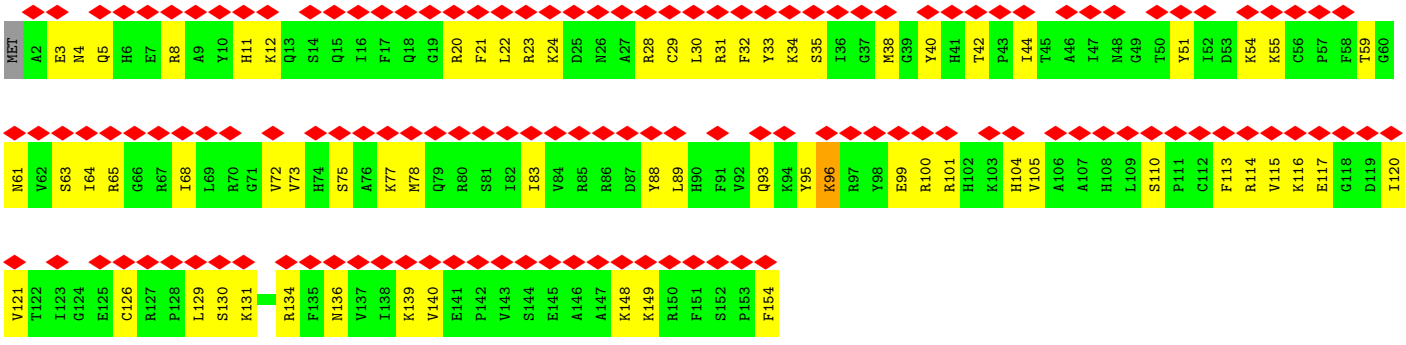
• Molecule 56: Ribosomal protein S10B

Chain SL:



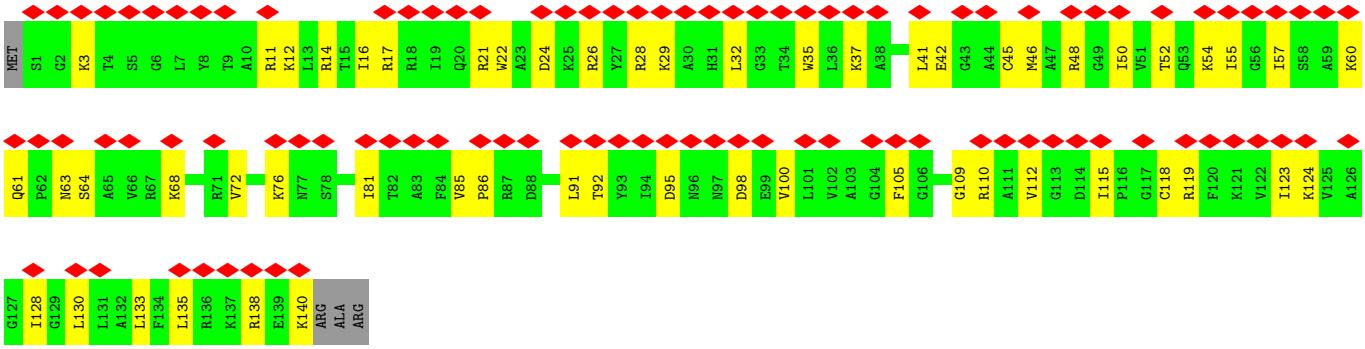
• Molecule 57: Ribosomal protein S11

Chain SM:



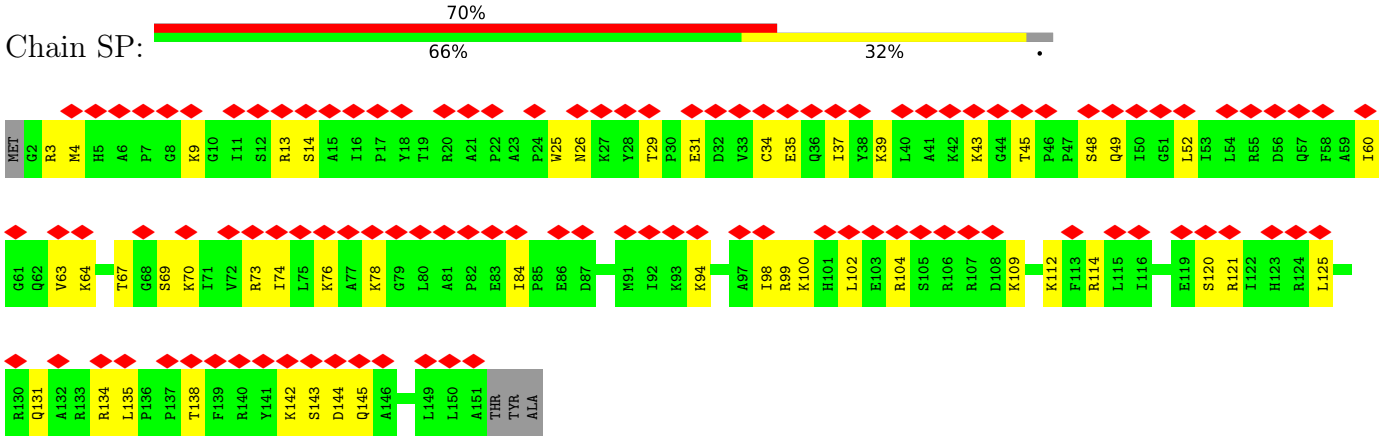
• Molecule 58: Ribosomal protein S23

Chain SO:



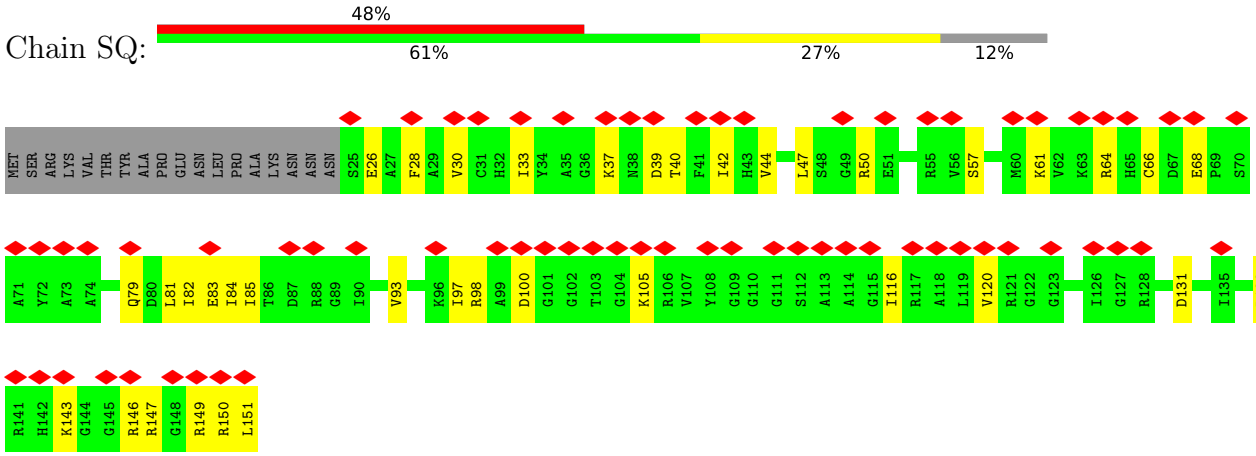
• Molecule 59: Ribosomal protein S13

Chain SP:



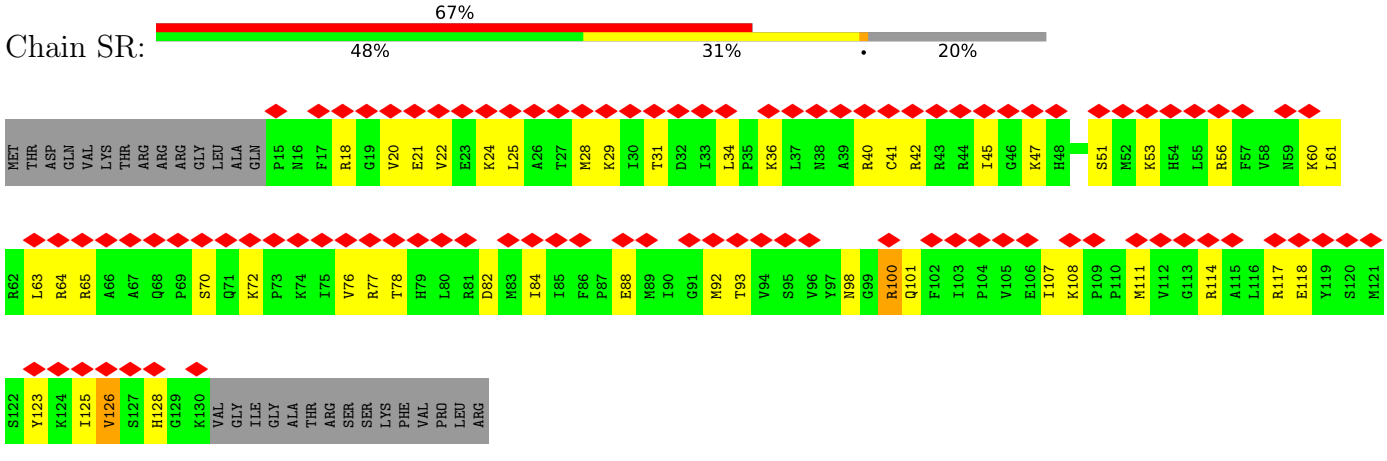
• Molecule 60: Ribosomal protein S14

Chain SQ:



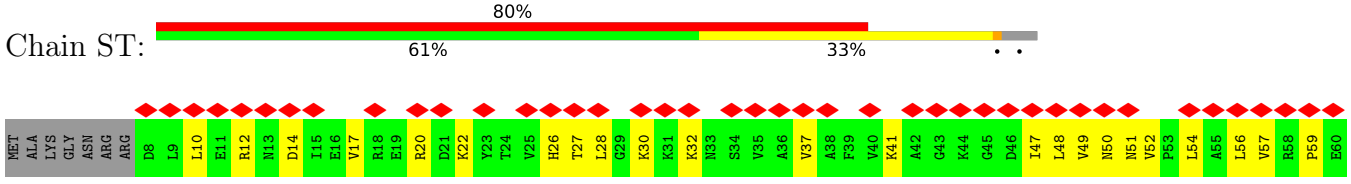
• Molecule 61: Ribosomal protein S15

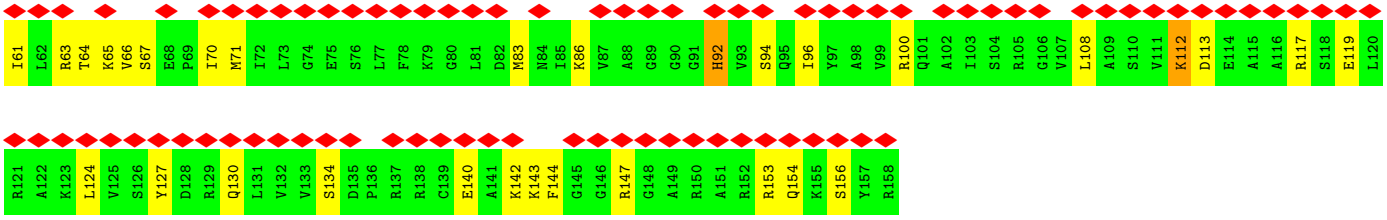
Chain SR:



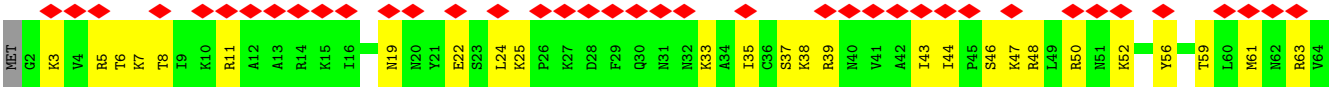
• Molecule 62: Ribosomal protein S16

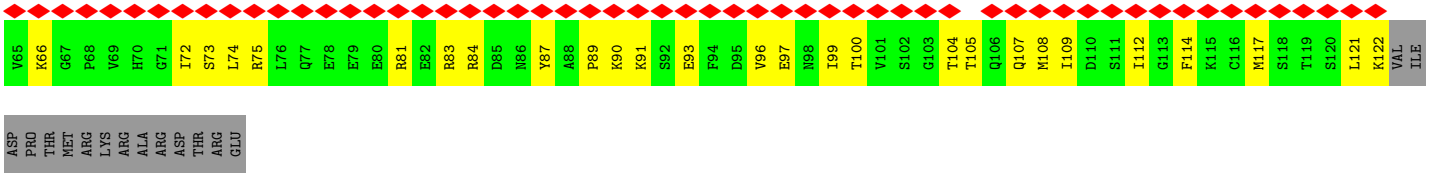
Chain ST:



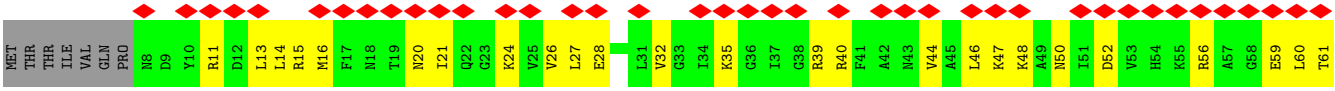


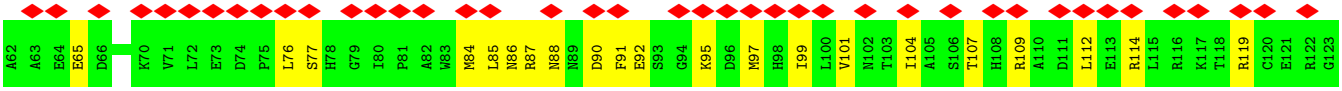
• Molecule 63: Ribosomal protein S17

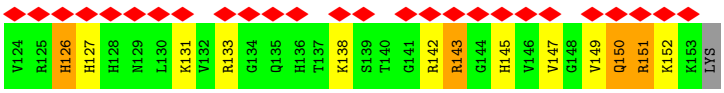




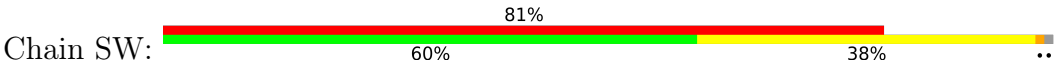
• Molecule 64: Ribosomal protein S18

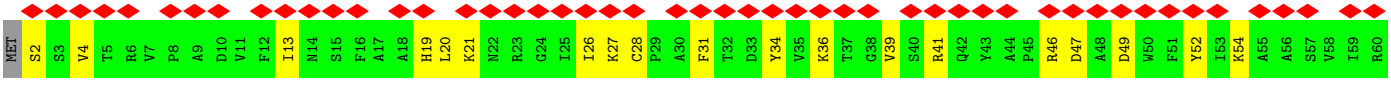


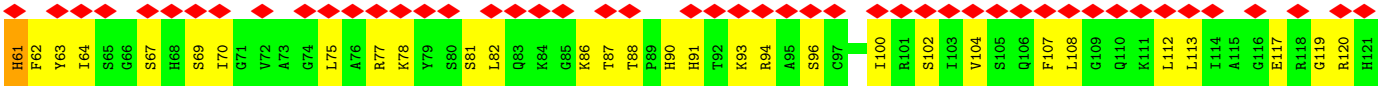


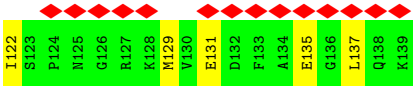


• Molecule 65: Ribosomal protein S19e







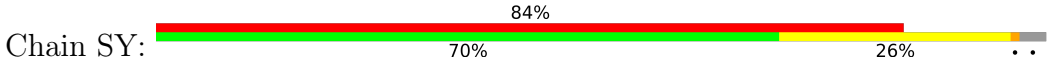


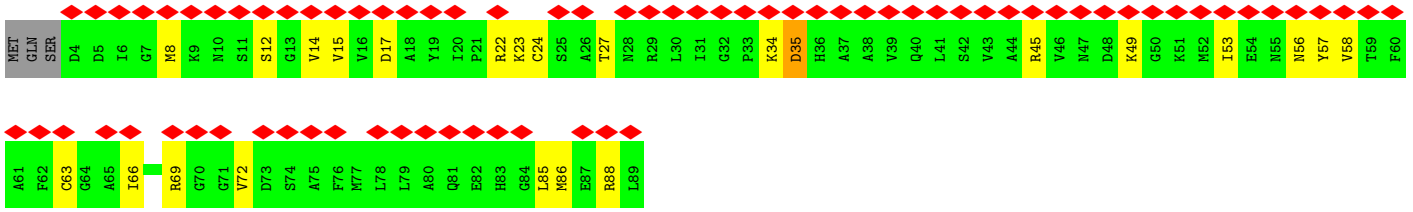
• Molecule 66: Ribosomal protein S20

Chain SX:

• Molecule 67: Ribosomal protein S21

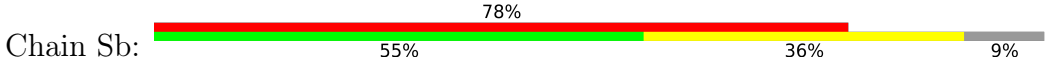
Chain SY:

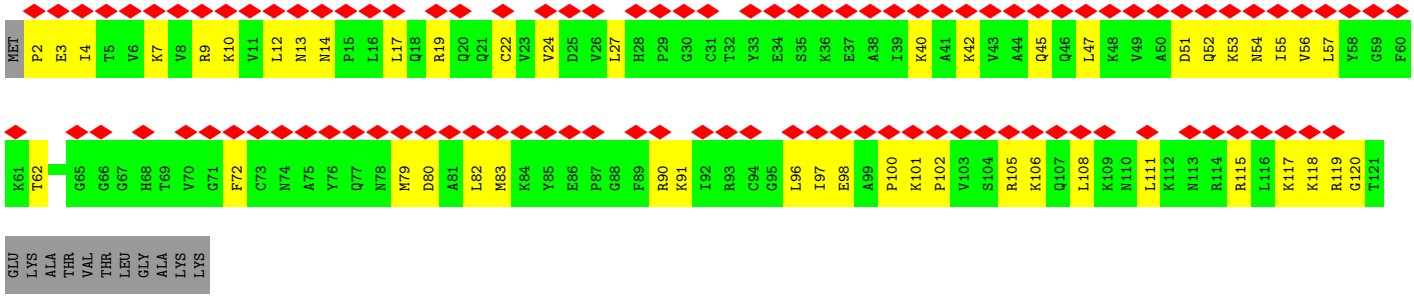




• Molecule 68: Ribosomal protein S24

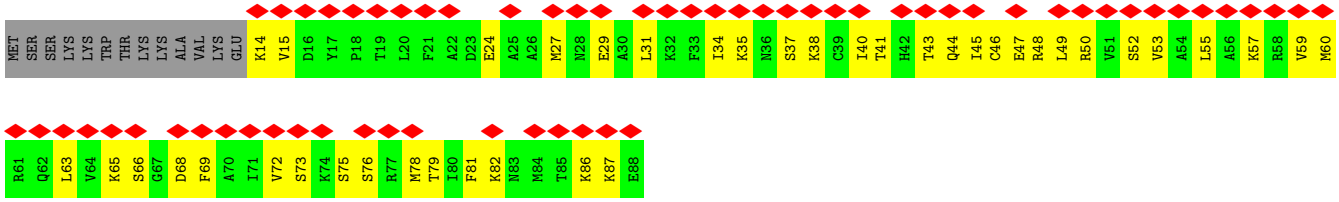
Chain Sb:





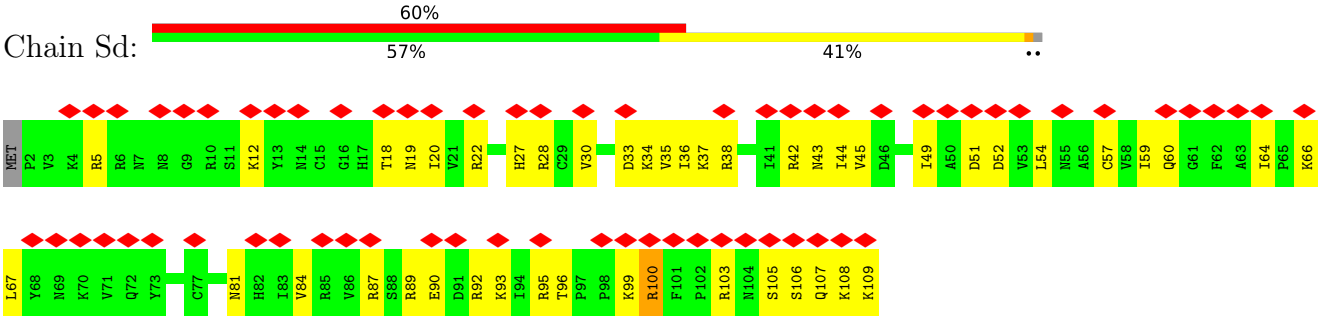
• Molecule 69: Ribosomal protein S25

Chain Sc:



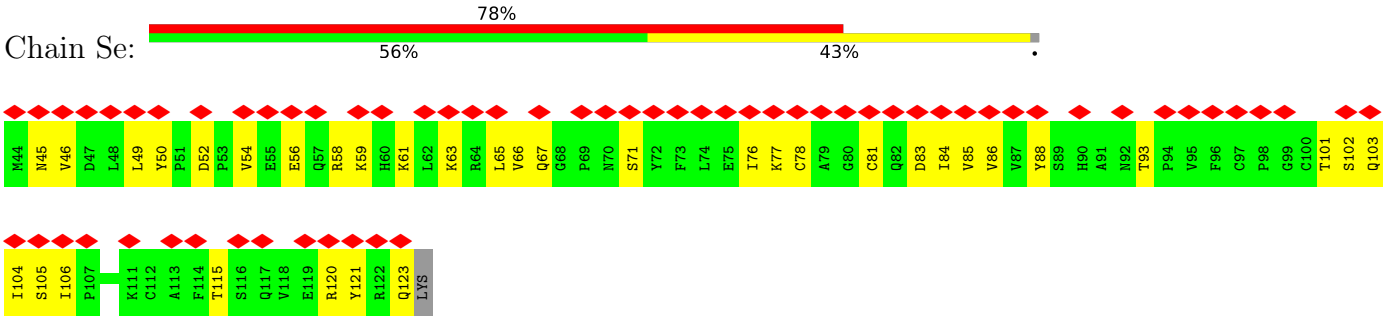
• Molecule 70: Ribosomal protein S26

Chain Sd:



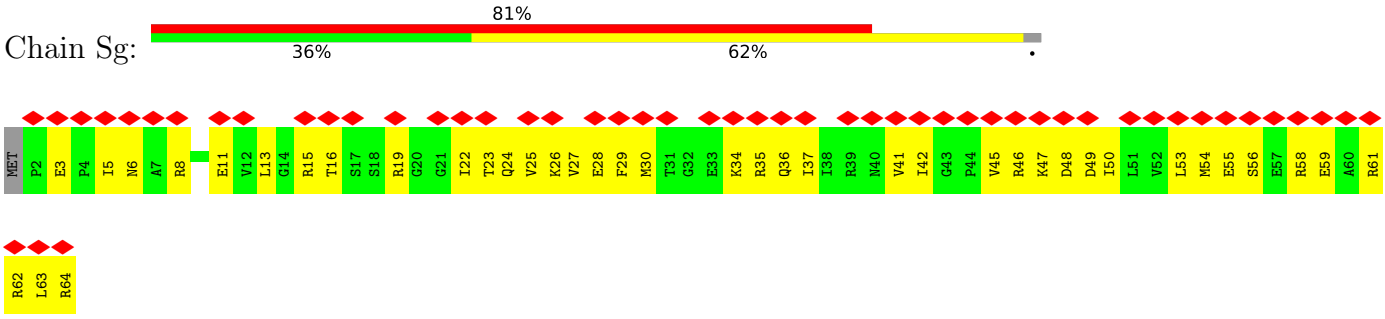
• Molecule 71: Ribosomal protein S27

Chain Se:



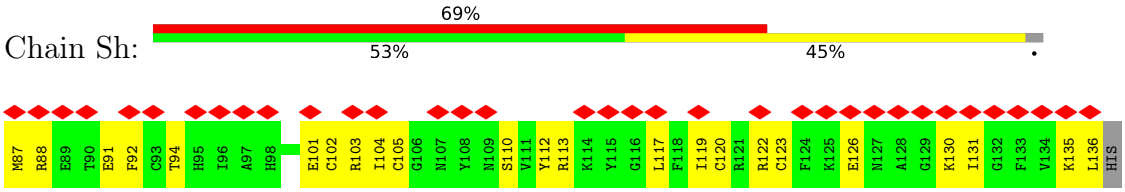
• Molecule 72: Ribosomal protein S28

Chain Sg:



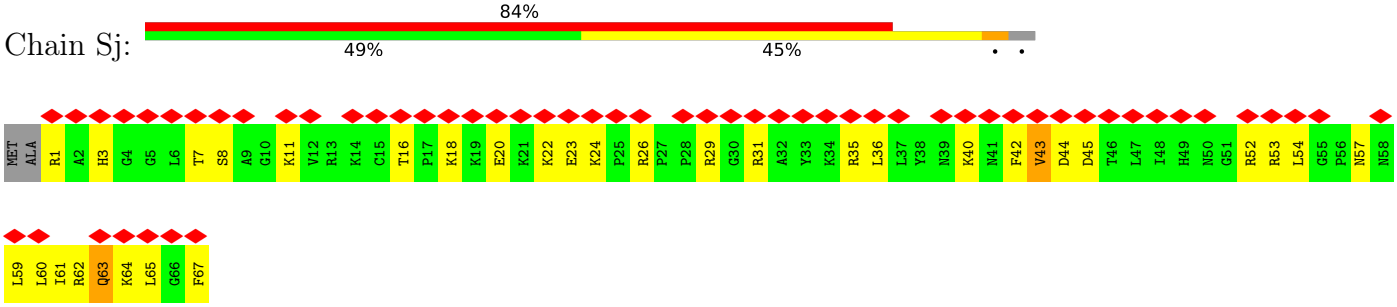
• Molecule 73: Ribosomal protein S29A

Chain Sh:



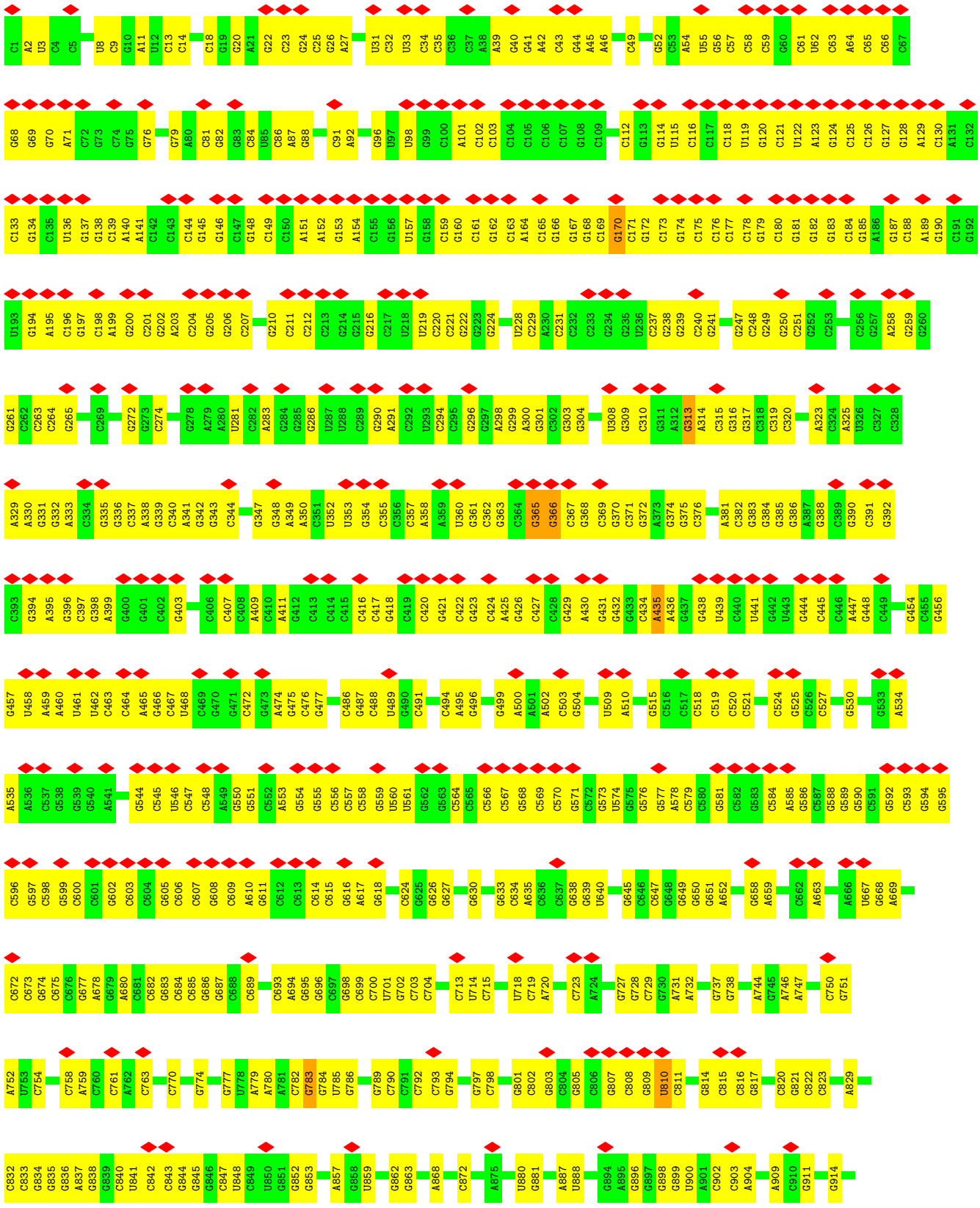
• Molecule 74: Ribosomal protein S30

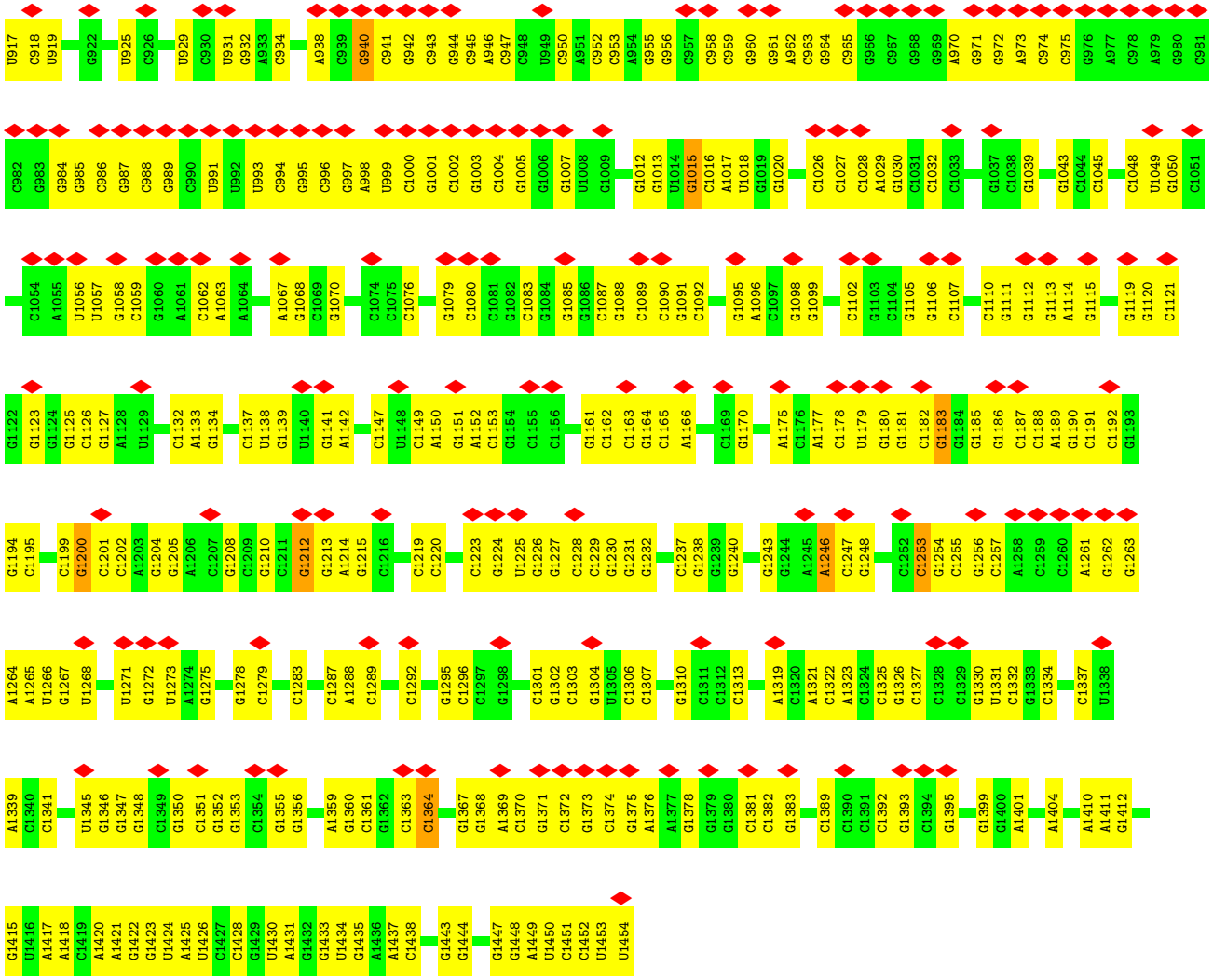
Chain Sj:



• Molecule 75: Small Subunit rRNA

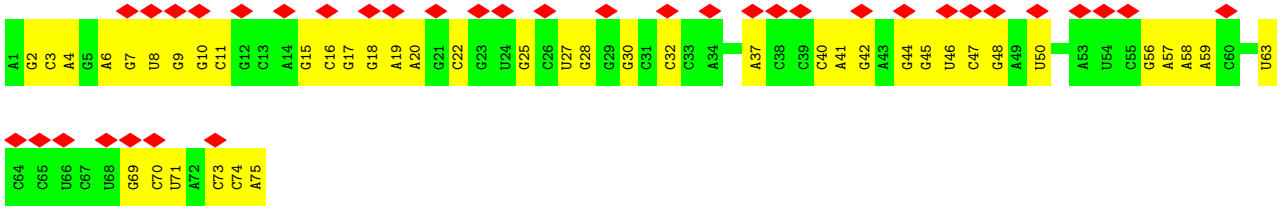
Chain St:





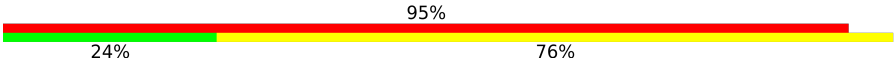
- Molecule 76: tRNA

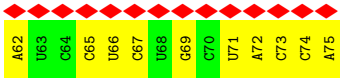
Chain u:



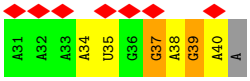
- Molecule 77: tRNA

Chain v:





• Molecule 78: mRNA



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	4500	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	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	13.691	Depositor
Minimum map value	-8.031	Depositor
Average map value	0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	4	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

5.1 Standard geometry

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	0.59	0/1919	0.84	0/2577
2	LB	0.57	0/3058	0.84	1/4129 (0.0%)
3	LC	0.59	0/2506	0.82	0/3400
4	LD	0.61	0/3393	0.85	0/5292
5	LE	0.57	0/2798	0.81	0/4361
6	LF	0.56	0/2398	0.83	0/3216
7	LG	0.55	0/450	0.82	0/601
8	LH	0.57	0/1772	0.85	1/2389 (0.0%)
9	LI	0.58	0/1583	0.86	0/2140
10	LJ	0.59	0/1479	0.83	0/1997
11	LK	0.58	0/1708	0.82	0/2288
12	LL	0.57	0/1374	0.81	0/1845
13	LM	0.58	0/1628	0.83	0/2180
14	LN	0.57	0/1037	0.80	0/1390
15	LO	0.57	0/1751	0.83	1/2346 (0.0%)
16	LP	0.57	0/1610	0.84	2/2160 (0.1%)
17	LQ	0.60	0/1280	0.84	0/1713
18	LR	0.59	0/1425	0.81	0/1907
19	LS	0.57	0/1609	0.77	0/2129
20	LT	0.57	0/1457	0.81	0/1957
21	LU	0.57	0/1290	0.84	1/1735 (0.1%)
22	LV	0.58	0/951	0.85	0/1281
23	LW	0.59	0/1049	0.82	0/1414
24	LX	0.57	0/553	0.98	3/736 (0.4%)
25	LY	0.58	0/982	0.82	0/1326
26	LZ	0.58	0/1091	0.81	0/1454
27	La	0.59	0/1069	0.83	0/1442
28	Lb	0.59	0/1231	0.85	0/1647
29	Lc	0.58	0/463	0.94	1/612 (0.2%)
30	Ld	0.61	0/739	0.84	0/1000
31	Le	0.57	0/832	0.79	0/1118
32	Lf	0.58	0/1101	0.80	0/1467
33	Lg	0.56	0/793	0.81	0/1062
34	Lh	0.60	0/929	0.84	0/1247

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
35	Li	0.55	0/996	0.81	0/1328
36	Lj	0.56	0/741	0.82	0/982
37	Lk	0.62	0/727	0.84	1/963 (0.1%)
38	Ll	0.57	0/562	0.79	0/749
39	Ln	0.63	0/1621	0.94	3/2183 (0.1%)
40	Lo	0.51	0/229	0.67	0/291
41	Lp	0.55	0/778	0.84	0/1029
42	Lq	0.57	0/717	0.89	0/955
43	Ls	0.58	0/392	0.86	0/522
44	Lt	0.61	1/62214 (0.0%)	0.87	42/97098 (0.0%)
45	SA	0.60	0/1612	0.84	0/2190
46	SB	0.62	0/1700	0.83	1/2293 (0.0%)
47	SC	0.60	0/1692	0.88	0/2272
48	SD	0.57	0/1903	0.79	0/2562
49	SE	0.61	0/2131	0.86	0/2874
50	SF	0.60	0/1465	0.86	1/1970 (0.1%)
51	SG	0.62	0/1915	0.87	2/2560 (0.1%)
52	SH	0.59	0/1508	0.82	0/2032
53	SI	0.62	0/1378	0.84	0/1848
54	SJ	0.60	0/1048	0.86	0/1412
55	SK	0.60	0/1443	0.85	0/1930
56	SL	0.59	0/901	0.83	0/1226
57	SM	0.60	0/1294	0.80	0/1731
58	SO	0.59	0/1104	0.82	0/1478
59	SP	0.59	0/1218	0.81	0/1640
60	SQ	0.62	0/938	0.85	1/1259 (0.1%)
61	SR	0.60	0/961	0.81	0/1284
62	ST	0.62	0/1192	0.83	0/1594
63	SU	0.62	0/975	0.85	0/1303
64	SV	0.59	0/1178	0.88	0/1577
65	SW	0.62	0/1104	0.88	1/1484 (0.1%)
66	SX	0.63	0/817	0.86	0/1103
67	SY	0.61	0/659	0.83	0/883
68	Sb	0.60	0/967	0.85	0/1294
69	Sc	0.62	0/603	0.82	0/802
70	Sd	0.59	0/899	0.83	0/1205
71	Se	0.61	0/643	0.80	0/871
72	Sg	0.61	0/508	0.87	0/677
73	Sh	0.59	0/425	0.86	0/563
74	Sj	0.58	0/553	0.83	1/736 (0.1%)
75	St	0.63	3/34858 (0.0%)	0.89	19/54401 (0.0%)
76	u	0.58	0/1795	0.83	0/2798
77	v	0.64	0/1792	0.89	0/2793

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\|>5$	RMSZ	$\#\|Z\|>5$
78	y	0.62	0/249	1.10	2/387 (0.5%)
All	All	0.60	4/191713 (0.0%)	0.86	84/280690 (0.0%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
75	St	1364	C	O3'-P	5.20	1.67	1.61
75	St	247	G	O3'-P	5.17	1.67	1.61
44	Lt	2002	C	O3'-P	5.03	1.67	1.61
75	St	313	G	O3'-P	5.02	1.67	1.61

All (84) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
44	Lt	2045	G	C1'-O4'-C4'	-10.30	101.66	109.90
75	St	1183	G	C3'-C2'-C1'	-9.18	94.16	101.50
75	St	365	G	C3'-C2'-C1'	-9.04	94.27	101.50
44	Lt	2022	C	C2'-C3'-O3'	7.95	126.98	109.50
24	LX	33	CYS	CB-CA-C	-7.68	95.04	110.40
44	Lt	1349	G	C2'-C3'-O3'	7.60	126.21	109.50
44	Lt	691	G	C2'-C3'-O3'	7.57	126.16	109.50
39	Ln	47	PRO	N-CA-CB	-7.22	94.64	103.30
44	Lt	2284	U	C2'-C3'-O3'	7.08	125.07	109.50
75	St	599	G	C2'-C3'-O3'	6.98	124.88	113.70
44	Lt	1448	G	C2'-C3'-O3'	6.90	124.74	113.70
29	Lc	50	ASP	CB-CA-C	6.84	124.08	110.40
44	Lt	734	G	C3'-C2'-C1'	-6.75	96.10	101.50
44	Lt	1969	G	C1'-O4'-C4'	-6.73	104.52	109.90
44	Lt	1135	G	C2'-C3'-O3'	6.67	124.37	113.70
44	Lt	302	C	C2'-C3'-O3'	6.62	124.28	113.70
75	St	1212	G	C3'-C2'-C1'	-6.57	96.24	101.50
24	LX	60	HIS	CB-CA-C	6.54	123.47	110.40
44	Lt	157	G	C3'-C2'-C1'	-6.54	96.27	101.50
39	Ln	137	PRO	N-CA-C	6.40	128.75	112.10
44	Lt	2574	C	C2'-C3'-O3'	6.35	123.86	113.70
39	Ln	72	ARG	CB-CA-C	-6.34	97.73	110.40
44	Lt	1931	G	C2'-C3'-O3'	6.30	123.77	113.70
75	St	588	G	C2'-C3'-O3'	6.28	123.74	113.70
44	Lt	2627	G	C2'-C3'-O3'	6.26	123.72	113.70
44	Lt	1963	G	C1'-O4'-C4'	-6.26	104.89	109.90
44	Lt	1914	C	C2'-C3'-O3'	6.22	123.65	113.70
44	Lt	1317	C	C2'-C3'-O3'	6.21	123.64	113.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
75	St	783	G	C3'-C2'-C1'	-6.17	96.56	101.50
75	St	1253	C	C4'-C3'-O3'	6.14	125.28	113.00
75	St	1303	C	C2'-C3'-O3'	6.08	123.42	113.70
75	St	435	A	C2'-C3'-O3'	6.04	123.37	113.70
50	SF	68	ASN	CB-CA-C	5.96	122.32	110.40
44	Lt	2622	C	O4'-C1'-N1	5.93	112.95	108.20
51	SG	189	PRO	N-CA-C	-5.88	96.80	112.10
44	Lt	1931	G	C3'-C2'-C1'	-5.85	96.82	101.50
75	St	170	G	C4'-C3'-C2'	-5.81	96.79	102.60
78	y	37	G	C4'-C3'-C2'	-5.71	96.89	102.60
44	Lt	1243	G	C3'-C2'-C1'	-5.67	96.96	101.50
44	Lt	369	C	P-O3'-C3'	5.61	126.43	119.70
44	Lt	71	C	C2'-C3'-O3'	5.59	122.65	113.70
44	Lt	734	G	O4'-C1'-N9	5.59	112.68	108.20
44	Lt	1236	G	C2'-C3'-O3'	5.57	122.62	113.70
21	LU	136	PRO	N-CA-C	5.55	126.52	112.10
2	LB	257	PRO	N-CA-C	-5.52	97.74	112.10
44	Lt	1862	C	P-O3'-C3'	5.51	126.31	119.70
75	St	1183	G	O4'-C1'-N9	5.48	112.59	108.20
24	LX	34	THR	CB-CA-C	-5.42	96.97	111.60
65	SW	61	HIS	CB-CA-C	5.41	121.23	110.40
78	y	39	G	C3'-C2'-C1'	-5.38	97.19	101.50
44	Lt	129	U	O4'-C1'-N1	5.35	112.48	108.20
75	St	1200	G	C4'-C3'-C2'	-5.35	97.25	102.60
44	Lt	378	G	C3'-C2'-C1'	-5.34	97.23	101.50
44	Lt	100	C	O4'-C1'-N1	5.34	112.47	108.20
74	Sj	63	GLN	CB-CA-C	5.32	121.05	110.40
75	St	940	G	C3'-C2'-C1'	-5.32	97.25	101.50
75	St	1201	C	O4'-C1'-N1	5.32	112.45	108.20
8	LH	200	PHE	CB-CA-C	-5.29	99.81	110.40
37	Lk	58	THR	CB-CA-C	-5.26	97.40	111.60
44	Lt	421	G	C4'-C3'-C2'	-5.26	97.34	102.60
16	LP	129	GLU	CB-CA-C	5.25	120.89	110.40
44	Lt	259	C	C2'-C3'-O3'	5.23	122.07	113.70
75	St	457	G	C1'-O4'-C4'	-5.23	105.72	109.90
44	Lt	1749	G	C3'-C2'-C1'	-5.20	97.34	101.50
44	Lt	444	G	O4'-C1'-N9	5.19	112.35	108.20
44	Lt	1966	C	P-O3'-C3'	5.18	125.92	119.70
75	St	1246	A	C2'-C3'-O3'	-5.18	98.11	109.50
15	LO	127	TYR	CB-CA-C	-5.16	100.07	110.40
75	St	1015	G	C1'-O4'-C4'	-5.16	105.77	109.90
75	St	810	U	P-O3'-C3'	5.15	125.88	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
44	Lt	356	G	O4'-C1'-N9	5.13	112.31	108.20
60	SQ	39	ASP	CB-CA-C	-5.12	100.15	110.40
16	LP	73	PRO	CB-CA-C	-5.12	99.21	112.00
44	Lt	2217	G	C2'-C3'-O3'	5.12	121.88	113.70
44	Lt	734	G	C1'-O4'-C4'	-5.11	105.81	109.90
44	Lt	512	G	C4'-C3'-C2'	-5.09	97.51	102.60
44	Lt	356	G	C1'-O4'-C4'	-5.09	105.83	109.90
44	Lt	1135	G	P-O3'-C3'	5.09	125.81	119.70
44	Lt	1590	G	C3'-C2'-C1'	-5.05	97.46	101.50
44	Lt	2627	G	C3'-C2'-C1'	-5.04	97.47	101.50
75	St	366	G	C1'-O4'-C4'	-5.03	105.88	109.90
46	SB	137	PHE	CB-CA-C	-5.02	100.36	110.40
51	SG	172	GLU	CA-C-O	-5.02	109.56	120.10
44	Lt	485	G	C3'-C2'-C1'	-5.01	97.50	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 (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	LA	248/251 (99%)	228 (92%)	19 (8%)	1 (0%)	30	68
2	LB	376/379 (99%)	359 (96%)	15 (4%)	2 (0%)	25	64
3	LC	313/316 (99%)	294 (94%)	17 (5%)	2 (1%)	22	59
6	LF	291/297 (98%)	272 (94%)	19 (6%)	0	100	100
7	LG	48/51 (94%)	46 (96%)	2 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
8	LH	214/235 (91%)	202 (94%)	12 (6%)	0	100 100
9	LI	193/225 (86%)	172 (89%)	17 (9%)	4 (2%)	5 30
10	LJ	182/185 (98%)	167 (92%)	14 (8%)	1 (0%)	25 64
11	LK	204/210 (97%)	188 (92%)	13 (6%)	3 (2%)	8 39
12	LL	166/173 (96%)	153 (92%)	10 (6%)	3 (2%)	7 34
13	LM	199/234 (85%)	186 (94%)	12 (6%)	1 (0%)	25 64
14	LN	128/131 (98%)	125 (98%)	3 (2%)	0	100 100
15	LO	201/204 (98%)	190 (94%)	10 (5%)	1 (0%)	25 64
16	LP	192/197 (98%)	180 (94%)	9 (5%)	3 (2%)	8 37
17	LQ	154/164 (94%)	146 (95%)	8 (5%)	0	100 100
18	LR	176/179 (98%)	164 (93%)	11 (6%)	1 (1%)	22 59
19	LS	190/196 (97%)	183 (96%)	6 (3%)	1 (0%)	25 64
20	LT	168/173 (97%)	163 (97%)	5 (3%)	0	100 100
21	LU	155/159 (98%)	134 (86%)	17 (11%)	4 (3%)	4 25
22	LV	113/124 (91%)	96 (85%)	14 (12%)	3 (3%)	4 25
23	LW	133/142 (94%)	131 (98%)	2 (2%)	0	100 100
24	LX	61/189 (32%)	59 (97%)	2 (3%)	0	100 100
25	LY	117/141 (83%)	102 (87%)	12 (10%)	3 (3%)	4 25
26	LZ	131/135 (97%)	128 (98%)	2 (2%)	1 (1%)	16 54
27	La	130/135 (96%)	117 (90%)	13 (10%)	0	100 100
28	Lb	146/149 (98%)	136 (93%)	8 (6%)	2 (1%)	9 40
29	Lc	53/62 (86%)	46 (87%)	5 (9%)	2 (4%)	2 19
30	Ld	95/109 (87%)	90 (95%)	4 (4%)	1 (1%)	12 46
31	Le	98/106 (92%)	95 (97%)	3 (3%)	0	100 100
32	Lf	128/136 (94%)	121 (94%)	7 (6%)	0	100 100
33	Lg	96/123 (78%)	91 (95%)	5 (5%)	0	100 100
34	Lh	114/120 (95%)	105 (92%)	8 (7%)	1 (1%)	14 50
35	Li	120/124 (97%)	114 (95%)	5 (4%)	1 (1%)	16 54
36	Lj	87/90 (97%)	78 (90%)	9 (10%)	0	100 100
37	Lk	86/89 (97%)	80 (93%)	6 (7%)	0	100 100
38	Ll	70/77 (91%)	64 (91%)	6 (9%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
39	Ln	194/217 (89%)	145 (75%)	37 (19%)	12 (6%)	1 13
40	Lo	23/25 (92%)	23 (100%)	0	0	100 100
41	Lp	91/106 (86%)	90 (99%)	0	1 (1%)	12 46
42	Lq	89/94 (95%)	85 (96%)	4 (4%)	0	100 100
43	Ls	45/127 (35%)	39 (87%)	3 (7%)	3 (7%)	1 12
45	SA	195/245 (80%)	186 (95%)	8 (4%)	1 (0%)	25 64
46	SB	214/242 (88%)	197 (92%)	14 (6%)	3 (1%)	9 40
47	SC	208/217 (96%)	190 (91%)	13 (6%)	5 (2%)	5 27
48	SD	229/248 (92%)	217 (95%)	11 (5%)	1 (0%)	30 68
49	SE	258/268 (96%)	222 (86%)	29 (11%)	7 (3%)	4 25
50	SF	184/190 (97%)	170 (92%)	12 (6%)	2 (1%)	12 46
51	SG	236/248 (95%)	213 (90%)	20 (8%)	3 (1%)	10 42
52	SH	182/190 (96%)	163 (90%)	13 (7%)	6 (3%)	3 21
53	SI	171/174 (98%)	154 (90%)	14 (8%)	3 (2%)	7 34
54	SJ	127/130 (98%)	120 (94%)	5 (4%)	2 (2%)	8 37
55	SK	174/189 (92%)	161 (92%)	11 (6%)	2 (1%)	12 46
56	SL	105/134 (78%)	98 (93%)	6 (6%)	1 (1%)	13 48
57	SM	151/154 (98%)	132 (87%)	18 (12%)	1 (1%)	19 56
58	SO	138/144 (96%)	127 (92%)	8 (6%)	3 (2%)	5 29
59	SP	148/154 (96%)	144 (97%)	4 (3%)	0	100 100
60	SQ	125/145 (86%)	110 (88%)	14 (11%)	1 (1%)	16 54
61	SR	114/145 (79%)	100 (88%)	11 (10%)	3 (3%)	4 25
62	ST	149/158 (94%)	140 (94%)	6 (4%)	3 (2%)	6 31
63	SU	119/137 (87%)	101 (85%)	15 (13%)	3 (2%)	4 26
64	SV	144/154 (94%)	122 (85%)	16 (11%)	6 (4%)	2 17
65	SW	136/139 (98%)	125 (92%)	9 (7%)	2 (2%)	8 39
66	SX	99/126 (79%)	95 (96%)	4 (4%)	0	100 100
67	SY	84/89 (94%)	78 (93%)	5 (6%)	1 (1%)	11 44
68	Sb	118/132 (89%)	103 (87%)	11 (9%)	4 (3%)	3 21
69	Sc	73/88 (83%)	68 (93%)	5 (7%)	0	100 100
70	Sd	106/109 (97%)	100 (94%)	5 (5%)	1 (1%)	14 50

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
71	Se	78/81 (96%)	77 (99%)	1 (1%)	0	100	100
72	Sg	61/64 (95%)	52 (85%)	9 (15%)	0	100	100
73	Sh	48/51 (94%)	45 (94%)	3 (6%)	0	100	100
74	Sj	65/69 (94%)	58 (89%)	6 (9%)	1 (2%)	8	39
All	All	10257/11193 (92%)	9455 (92%)	680 (7%)	122 (1%)	14	44

All (122) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	LB	55	HIS
9	LI	102	LYS
12	LL	24	GLY
16	LP	107	PRO
19	LS	130	ASN
29	Lc	50	ASP
34	Lh	6	VAL
39	Ln	17	ILE
39	Ln	47	PRO
39	Ln	72	ARG
39	Ln	160	LYS
39	Ln	197	GLY
43	Ls	80	PRO
47	SC	68	ASN
47	SC	152	ARG
47	SC	210	ILE
49	SE	76	PRO
51	SG	149	ARG
51	SG	173	LEU
52	SH	182	GLU
56	SL	104	LYS
58	SO	86	PRO
61	SR	70	SER
61	SR	100	ARG
61	SR	126	VAL
64	SV	151	ARG
9	LI	184	VAL
10	LJ	44	ILE
15	LO	186	PRO
22	LV	119	ALA
29	Lc	25	LYS
35	Li	72	ARG

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Mol	Chain	Res	Type
39	Ln	27	LYS
41	Lp	85	ARG
46	SB	69	GLU
46	SB	227	GLU
52	SH	9	ILE
52	SH	46	ILE
52	SH	107	VAL
54	SJ	29	PRO
58	SO	3	LYS
58	SO	109	GLY
62	ST	92	HIS
63	SU	89	PRO
63	SU	96	VAL
64	SV	13	LEU
64	SV	90	ASP
70	Sd	100	ARG
2	LB	303	LYS
3	LC	174	SER
11	LK	28	ASP
12	LL	25	GLY
16	LP	29	GLU
21	LU	18	LYS
21	LU	137	ARG
21	LU	157	GLY
22	LV	63	ASP
25	LY	43	PRO
25	LY	49	PRO
30	Ld	77	SER
39	Ln	32	VAL
39	Ln	134	THR
43	Ls	93	MET
45	SA	45	ASP
47	SC	118	ALA
49	SE	205	TYR
49	SE	234	ALA
50	SF	91	GLY
51	SG	133	VAL
55	SK	148	MET
55	SK	167	PRO
57	SM	96	LYS
62	ST	112	LYS
64	SV	126	HIS

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Mol	Chain	Res	Type
67	SY	35	ASP
68	Sb	51	ASP
68	Sb	102	PRO
74	Sj	43	VAL
9	LI	163	THR
11	LK	108	ALA
22	LV	94	VAL
28	Lb	95	SER
43	Ls	120	LYS
50	SF	149	PHE
60	SQ	138	ASP
63	SU	99	ILE
64	SV	143	ARG
65	SW	69	SER
68	Sb	100	PRO
1	LA	14	SER
11	LK	27	PRO
13	LM	158	GLN
18	LR	11	LYS
21	LU	121	GLU
25	LY	54	SER
39	Ln	113	SER
39	Ln	171	ASN
47	SC	11	ASN
48	SD	18	ASN
49	SE	177	ILE
12	LL	108	GLU
39	Ln	21	THR
49	SE	244	ARG
52	SH	34	PRO
53	SI	3	ILE
54	SJ	59	ASN
64	SV	150	GLN
65	SW	119	GLY
53	SI	173	PRO
9	LI	63	PRO
16	LP	143	GLY
53	SI	144	ILE
68	Sb	120	GLY
3	LC	234	GLY
28	Lb	75	ILE
39	Ln	163	VAL

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Mol	Chain	Res	Type
46	SB	66	PRO
62	ST	59	PRO
26	LZ	113	GLY
49	SE	180	ILE
49	SE	232	SER
52	SH	12	PRO

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%)	103 (54%)	88 (46%)	0	0
2	LB	312/313 (100%)	199 (64%)	113 (36%)	0	1
3	LC	262/263 (100%)	163 (62%)	99 (38%)	0	0
6	LF	238/242 (98%)	139 (58%)	99 (42%)	0	0
7	LG	47/48 (98%)	32 (68%)	15 (32%)	0	2
8	LH	185/204 (91%)	121 (65%)	64 (35%)	0	1
9	LI	172/198 (87%)	106 (62%)	66 (38%)	0	0
10	LJ	163/164 (99%)	92 (56%)	71 (44%)	0	0
11	LK	173/177 (98%)	112 (65%)	61 (35%)	0	1
12	LL	144/149 (97%)	86 (60%)	58 (40%)	0	0
13	LM	169/197 (86%)	93 (55%)	76 (45%)	0	0
14	LN	110/111 (99%)	67 (61%)	43 (39%)	0	0
15	LO	174/175 (99%)	90 (52%)	84 (48%)	0	0
16	LP	162/165 (98%)	103 (64%)	59 (36%)	0	1
17	LQ	133/139 (96%)	77 (58%)	56 (42%)	0	0
18	LR	154/155 (99%)	92 (60%)	62 (40%)	0	0
19	LS	163/167 (98%)	87 (53%)	76 (47%)	0	0
20	LT	151/154 (98%)	98 (65%)	53 (35%)	0	1
21	LU	131/133 (98%)	83 (63%)	48 (37%)	0	1

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
22	LV	101/110 (92%)	56 (55%)	45 (45%)	0	0
23	LW	109/114 (96%)	76 (70%)	33 (30%)	0	2
24	LX	61/174 (35%)	36 (59%)	25 (41%)	0	0
25	LY	107/123 (87%)	61 (57%)	46 (43%)	0	0
26	LZ	114/115 (99%)	65 (57%)	49 (43%)	0	0
27	La	116/119 (98%)	76 (66%)	40 (34%)	0	1
28	Lb	126/127 (99%)	77 (61%)	49 (39%)	0	0
29	Lc	50/57 (88%)	27 (54%)	23 (46%)	0	0
30	Ld	83/92 (90%)	52 (63%)	31 (37%)	0	0
31	Le	88/92 (96%)	52 (59%)	36 (41%)	0	0
32	Lf	116/120 (97%)	68 (59%)	48 (41%)	0	0
33	Lg	82/103 (80%)	40 (49%)	42 (51%)	0	0
34	Lh	97/100 (97%)	52 (54%)	45 (46%)	0	0
35	Li	105/107 (98%)	73 (70%)	32 (30%)	0	2
36	Lj	77/78 (99%)	44 (57%)	33 (43%)	0	0
37	Lk	73/74 (99%)	46 (63%)	27 (37%)	0	0
38	Ll	63/68 (93%)	26 (41%)	37 (59%)	0	0
39	Ln	173/189 (92%)	75 (43%)	98 (57%)	0	0
40	Lo	22/22 (100%)	13 (59%)	9 (41%)	0	0
41	Lp	83/93 (89%)	46 (55%)	37 (45%)	0	0
42	Lq	71/73 (97%)	39 (55%)	32 (45%)	0	0
43	Ls	43/110 (39%)	25 (58%)	18 (42%)	0	0
45	SA	172/217 (79%)	101 (59%)	71 (41%)	0	0
46	SB	179/201 (89%)	101 (56%)	78 (44%)	0	0
47	SC	175/182 (96%)	92 (53%)	83 (47%)	0	0
48	SD	208/220 (94%)	115 (55%)	93 (45%)	0	0
49	SE	228/232 (98%)	112 (49%)	116 (51%)	0	0
50	SF	153/157 (98%)	77 (50%)	76 (50%)	0	0
51	SG	204/213 (96%)	107 (52%)	97 (48%)	0	0
52	SH	165/170 (97%)	85 (52%)	80 (48%)	0	0
53	SI	147/148 (99%)	79 (54%)	68 (46%)	0	0

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
54	SJ	114/115 (99%)	55 (48%)	59 (52%)	0	0
55	SK	155/164 (94%)	77 (50%)	78 (50%)	0	0
56	SL	96/119 (81%)	61 (64%)	35 (36%)	0	1
57	SM	135/136 (99%)	68 (50%)	67 (50%)	0	0
58	SO	111/114 (97%)	59 (53%)	52 (47%)	0	0
59	SP	124/129 (96%)	75 (60%)	49 (40%)	0	0
60	SQ	87/112 (78%)	50 (58%)	37 (42%)	0	0
61	SR	104/128 (81%)	58 (56%)	46 (44%)	0	0
62	ST	125/130 (96%)	72 (58%)	53 (42%)	0	0
63	SU	109/124 (88%)	59 (54%)	50 (46%)	0	0
64	SV	123/131 (94%)	66 (54%)	57 (46%)	0	0
65	SW	114/115 (99%)	62 (54%)	52 (46%)	0	0
66	SX	90/110 (82%)	56 (62%)	34 (38%)	0	0
67	SY	69/72 (96%)	45 (65%)	24 (35%)	0	1
68	Sb	104/113 (92%)	60 (58%)	44 (42%)	0	0
69	Sc	67/79 (85%)	26 (39%)	41 (61%)	0	0
70	Sd	102/103 (99%)	56 (55%)	46 (45%)	0	0
71	Se	72/73 (99%)	37 (51%)	35 (49%)	0	0
72	Sg	56/57 (98%)	16 (29%)	40 (71%)	0	0
73	Sh	44/45 (98%)	21 (48%)	23 (52%)	0	0
74	Sj	57/58 (98%)	24 (42%)	33 (58%)	0	0
All	All	8883/9573 (93%)	5040 (57%)	3843 (43%)	0	0

All (3843) 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	10	LYS
1	LA	14	SER
1	LA	22	ARG
1	LA	29	LEU
1	LA	30	ARG
1	LA	36	GLU

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Mol	Chain	Res	Type
1	LA	41	VAL
1	LA	42	ARG
1	LA	46	LYS
1	LA	48	ILE
1	LA	49	LEU
1	LA	52	ARG
1	LA	58	LEU
1	LA	61	VAL
1	LA	62	GLN
1	LA	67	ARG
1	LA	69	GLU
1	LA	71	ARG
1	LA	72	VAL
1	LA	74	GLU
1	LA	77	ILE
1	LA	82	MET
1	LA	84	THR
1	LA	87	GLU
1	LA	88	VAL
1	LA	89	PHE
1	LA	90	SER
1	LA	93	LYS
1	LA	96	LEU
1	LA	102	LEU
1	LA	104	VAL
1	LA	107	ILE
1	LA	109	GLU
1	LA	111	THR
1	LA	112	TYR
1	LA	113	VAL
1	LA	114	CYS
1	LA	116	VAL
1	LA	118	GLU
1	LA	119	LYS
1	LA	121	MET
1	LA	122	ASP
1	LA	125	CYS
1	LA	126	LEU
1	LA	134	CYS
1	LA	141	MET
1	LA	142	GLU
1	LA	143	THR

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Mol	Chain	Res	Type
1	LA	145	LYS
1	LA	147	ARG
1	LA	154	GLN
1	LA	155	LYS
1	LA	156	LYS
1	LA	157	LEU
1	LA	160	SER
1	LA	163	ARG
1	LA	165	MET
1	LA	166	ILE
1	LA	168	LEU
1	LA	176	ASP
1	LA	179	LEU
1	LA	180	LEU
1	LA	181	LYS
1	LA	192	LYS
1	LA	193	ARG
1	LA	198	VAL
1	LA	199	VAL
1	LA	204	MET
1	LA	215	ASN
1	LA	217	GLN
1	LA	219	ILE
1	LA	221	VAL
1	LA	222	SER
1	LA	227	ARG
1	LA	231	PRO
1	LA	234	LYS
1	LA	235	VAL
1	LA	237	LEU
1	LA	241	ARG
1	LA	242	ARG
1	LA	243	THR
1	LA	246	SER
1	LA	249	LYS
1	LA	250	ARG
1	LA	251	ARG
2	LB	10	ARG
2	LB	11	LYS
2	LB	14	LEU
2	LB	17	LEU
2	LB	20	LYS

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Mol	Chain	Res	Type
2	LB	24	ARG
2	LB	26	ARG
2	LB	28	ARG
2	LB	29	CYS
2	LB	33	PRO
2	LB	35	ASP
2	LB	37	GLN
2	LB	41	ILE
2	LB	42	HIS
2	LB	54	THR
2	LB	55	HIS
2	LB	56	VAL
2	LB	58	ARG
2	LB	60	ILE
2	LB	62	HIS
2	LB	63	ARG
2	LB	65	SER
2	LB	67	LEU
2	LB	71	GLN
2	LB	74	ASP
2	LB	75	GLN
2	LB	79	ILE
2	LB	84	MET
2	LB	85	ILE
2	LB	86	CYS
2	LB	87	THR
2	LB	95	THR
2	LB	97	LYS
2	LB	102	VAL
2	LB	110	ILE
2	LB	112	GLU
2	LB	117	ARG
2	LB	120	ARG
2	LB	121	ASN
2	LB	126	GLU
2	LB	132	THR
2	LB	134	MET
2	LB	139	ASP
2	LB	141	THR
2	LB	146	GLN
2	LB	147	LEU
2	LB	152	GLN

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Mol	Chain	Res	Type
2	LB	155	ASP
2	LB	162	HIS
2	LB	163	THR
2	LB	168	THR
2	LB	170	LEU
2	LB	171	LYS
2	LB	174	LYS
2	LB	176	ASP
2	LB	183	ASN
2	LB	187	ASN
2	LB	190	GLU
2	LB	192	VAL
2	LB	199	MET
2	LB	203	ILE
2	LB	206	LYS
2	LB	210	SER
2	LB	219	SER
2	LB	220	ILE
2	LB	226	PHE
2	LB	229	VAL
2	LB	231	THR
2	LB	232	ARG
2	LB	237	ARG
2	LB	240	ARG
2	LB	241	LYS
2	LB	242	THR
2	LB	248	LYS
2	LB	251	CYS
2	LB	256	HIS
2	LB	261	GLN
2	LB	262	TYR
2	LB	266	ARG
2	LB	269	GLN
2	LB	270	MET
2	LB	272	TYR
2	LB	273	PHE
2	LB	276	THR
2	LB	282	VAL
2	LB	286	ASP
2	LB	287	THR
2	LB	289	GLU
2	LB	292	ARG

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Mol	Chain	Res	Type
2	LB	297	GLU
2	LB	302	ASP
2	LB	303	LYS
2	LB	304	SER
2	LB	316	ARG
2	LB	318	GLN
2	LB	320	ASP
2	LB	323	MET
2	LB	324	ILE
2	LB	325	LYS
2	LB	332	LYS
2	LB	337	VAL
2	LB	338	MET
2	LB	351	VAL
2	LB	353	LEU
2	LB	354	GLN
2	LB	357	SER
2	LB	360	SER
2	LB	366	ILE
2	LB	368	GLU
2	LB	370	VAL
2	LB	373	ARG
2	LB	374	ARG
2	LB	379	LYS
3	LC	2	ASN
3	LC	11	THR
3	LC	13	THR
3	LC	15	VAL
3	LC	20	ARG
3	LC	22	LYS
3	LC	23	VAL
3	LC	28	LEU
3	LC	33	ILE
3	LC	40	LEU
3	LC	50	VAL
3	LC	52	ARG
3	LC	56	VAL
3	LC	57	GLN
3	LC	58	CYS
3	LC	69	VAL
3	LC	71	ARG
3	LC	72	LEU

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Mol	Chain	Res	Type
3	LC	75	LYS
3	LC	76	HIS
3	LC	91	MET
3	LC	98	ILE
3	LC	102	CYS
3	LC	104	LYS
3	LC	105	VAL
3	LC	106	ASN
3	LC	107	LEU
3	LC	109	GLN
3	LC	110	ARG
3	LC	116	SER
3	LC	121	SER
3	LC	126	LEU
3	LC	130	ARG
3	LC	134	ILE
3	LC	139	SER
3	LC	144	VAL
3	LC	146	THR
3	LC	149	VAL
3	LC	150	THR
3	LC	151	LYS
3	LC	153	LYS
3	LC	156	LEU
3	LC	158	ILE
3	LC	159	ILE
3	LC	160	LYS
3	LC	165	LEU
3	LC	170	ARG
3	LC	173	ASP
3	LC	174	SER
3	LC	175	ARG
3	LC	177	ILE
3	LC	178	ARG
3	LC	181	ARG
3	LC	184	MET
3	LC	185	ARG
3	LC	187	ARG
3	LC	188	ARG
3	LC	190	ILE
3	LC	192	ARG
3	LC	193	LYS

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Mol	Chain	Res	Type
3	LC	197	VAL
3	LC	198	ILE
3	LC	201	THR
3	LC	215	ASP
3	LC	216	LEU
3	LC	219	VAL
3	LC	220	SER
3	LC	222	ILE
3	LC	224	LEU
3	LC	225	LEU
3	LC	231	SER
3	LC	235	ARG
3	LC	237	ILE
3	LC	239	TRP
3	LC	241	LYS
3	LC	248	ASP
3	LC	254	LYS
3	LC	255	GLN
3	LC	258	THR
3	LC	262	SER
3	LC	264	ILE
3	LC	268	ASP
3	LC	274	GLN
3	LC	276	ASP
3	LC	278	VAL
3	LC	280	LYS
3	LC	283	VAL
3	LC	285	LYS
3	LC	286	ARG
3	LC	289	LEU
3	LC	290	VAL
3	LC	291	ILE
3	LC	295	VAL
3	LC	300	SER
3	LC	301	LYS
3	LC	304	LEU
3	LC	307	LEU
3	LC	310	SER
3	LC	312	THR
6	LF	7	GLN
6	LF	8	LYS
6	LF	9	THR

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Mol	Chain	Res	Type
6	LF	10	ARG
6	LF	11	SER
6	LF	14	LYS
6	LF	16	PHE
6	LF	19	GLN
6	LF	21	ARG
6	LF	22	ARG
6	LF	25	GLU
6	LF	27	LYS
6	LF	31	GLN
6	LF	33	ARG
6	LF	34	LYS
6	LF	37	ILE
6	LF	39	GLN
6	LF	41	LYS
6	LF	43	LYS
6	LF	52	VAL
6	LF	54	ARG
6	LF	56	THR
6	LF	57	ASN
6	LF	58	LYS
6	LF	60	ILE
6	LF	61	ILE
6	LF	63	GLN
6	LF	64	VAL
6	LF	68	GLU
6	LF	69	LEU
6	LF	70	THR
6	LF	71	LYS
6	LF	72	ASP
6	LF	76	CYS
6	LF	80	SER
6	LF	88	ILE
6	LF	93	THR
6	LF	101	THR
6	LF	105	CYS
6	LF	112	LYS
6	LF	113	LEU
6	LF	117	ILE
6	LF	118	LYS
6	LF	119	GLU
6	LF	122	LEU

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Mol	Chain	Res	Type
6	LF	124	GLN
6	LF	130	ASP
6	LF	131	LYS
6	LF	133	THR
6	LF	135	GLU
6	LF	140	ASP
6	LF	141	GLU
6	LF	142	ASN
6	LF	143	GLU
6	LF	144	ASN
6	LF	145	GLU
6	LF	146	GLU
6	LF	151	LYS
6	LF	158	LEU
6	LF	167	VAL
6	LF	171	MET
6	LF	172	LYS
6	LF	183	HIS
6	LF	184	SER
6	LF	186	LYS
6	LF	187	ARG
6	LF	193	LYS
6	LF	194	ASP
6	LF	198	SER
6	LF	199	SER
6	LF	202	ARG
6	LF	203	ASP
6	LF	205	ILE
6	LF	206	MET
6	LF	213	TYR
6	LF	216	GLU
6	LF	221	ASP
6	LF	223	GLU
6	LF	231	LYS
6	LF	237	VAL
6	LF	240	LEU
6	LF	241	ARG
6	LF	242	LEU
6	LF	254	ARG
6	LF	256	ASN
6	LF	261	LYS
6	LF	263	LYS

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Mol	Chain	Res	Type
6	LF	265	GLU
6	LF	268	LYS
6	LF	274	ARG
6	LF	276	THR
6	LF	278	LYS
6	LF	279	GLU
6	LF	283	ARG
6	LF	284	ILE
6	LF	287	LYS
6	LF	288	LYS
6	LF	289	LEU
6	LF	290	GLU
7	LG	8	SER
7	LG	11	LEU
7	LG	18	LYS
7	LG	20	ASN
7	LG	23	ILE
7	LG	25	ARG
7	LG	28	ILE
7	LG	30	LYS
7	LG	33	LEU
7	LG	34	LYS
7	LG	37	TRP
7	LG	39	TYR
7	LG	41	ARG
7	LG	46	ARG
7	LG	49	LEU
8	LH	20	SER
8	LH	23	GLU
8	LH	24	ARG
8	LH	28	LYS
8	LH	29	GLU
8	LH	31	ARG
8	LH	34	LEU
8	LH	38	HIS
8	LH	41	LYS
8	LH	48	ARG
8	LH	51	ILE
8	LH	54	VAL
8	LH	59	LYS
8	LH	61	ARG
8	LH	62	GLU

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Mol	Chain	Res	Type
8	LH	63	ASN
8	LH	65	LEU
8	LH	66	LYS
8	LH	74	ASP
8	LH	75	GLU
8	LH	77	LYS
8	LH	79	TYR
8	LH	81	VAL
8	LH	84	ILE
8	LH	87	ILE
8	LH	88	VAL
8	LH	93	LYS
8	LH	96	THR
8	LH	101	LEU
8	LH	102	ARG
8	LH	103	LEU
8	LH	108	ASN
8	LH	113	ARG
8	LH	116	LYS
8	LH	119	LEU
8	LH	120	ASN
8	LH	122	LEU
8	LH	130	THR
8	LH	143	ILE
8	LH	146	ARG
8	LH	150	LYS
8	LH	151	VAL
8	LH	158	ILE
8	LH	163	LEU
8	LH	170	LYS
8	LH	173	ILE
8	LH	174	LEU
8	LH	177	GLU
8	LH	178	ASP
8	LH	186	CYS
8	LH	188	SER
8	LH	189	SER
8	LH	196	PHE
8	LH	197	LEU
8	LH	201	GLN
8	LH	207	LEU
8	LH	208	LYS

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Mol	Chain	Res	Type
8	LH	210	LYS
8	LH	211	ARG
8	LH	227	ILE
8	LH	230	PHE
8	LH	233	ARG
8	LH	234	MET
8	LH	235	ILE
9	LI	28	LEU
9	LI	29	THR
9	LI	31	PHE
9	LI	37	GLN
9	LI	47	LEU
9	LI	48	GLN
9	LI	49	ARG
9	LI	50	ARG
9	LI	51	LEU
9	LI	52	LYS
9	LI	56	THR
9	LI	59	GLN
9	LI	61	MET
9	LI	65	SER
9	LI	66	ARG
9	LI	69	THR
9	LI	71	GLU
9	LI	75	LEU
9	LI	80	SER
9	LI	85	GLU
9	LI	86	GLU
9	LI	88	LYS
9	LI	92	LEU
9	LI	94	ILE
9	LI	98	LYS
9	LI	104	LEU
9	LI	106	GLU
9	LI	107	LYS
9	LI	111	LEU
9	LI	112	VAL
9	LI	113	ILE
9	LI	117	ILE
9	LI	118	ARG
9	LI	120	ILE
9	LI	122	SER

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Mol	Chain	Res	Type
9	LI	123	LEU
9	LI	126	SER
9	LI	128	ARG
9	LI	130	LYS
9	LI	133	LEU
9	LI	134	ILE
9	LI	138	VAL
9	LI	141	LEU
9	LI	143	LEU
9	LI	145	LEU
9	LI	149	THR
9	LI	160	ILE
9	LI	163	THR
9	LI	164	LYS
9	LI	169	LYS
9	LI	171	VAL
9	LI	173	LEU
9	LI	175	LYS
9	LI	179	VAL
9	LI	182	THR
9	LI	183	ASP
9	LI	187	GLU
9	LI	189	LYS
9	LI	196	LEU
9	LI	201	HIS
9	LI	207	LYS
9	LI	210	LYS
9	LI	212	TYR
9	LI	216	VAL
9	LI	219	GLU
9	LI	221	GLU
10	LJ	4	CYS
10	LJ	7	MET
10	LJ	8	THR
10	LJ	9	ILE
10	LJ	10	LYS
10	LJ	13	THR
10	LJ	16	GLU
10	LJ	17	CYS
10	LJ	18	THR
10	LJ	19	ILE
10	LJ	20	ASN

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Mol	Chain	Res	Type
10	LJ	23	VAL
10	LJ	25	THR
10	LJ	29	LYS
10	LJ	30	LYS
10	LJ	32	THR
10	LJ	33	LEU
10	LJ	35	ARG
10	LJ	39	HIS
10	LJ	42	LEU
10	LJ	43	ASP
10	LJ	44	ILE
10	LJ	45	THR
10	LJ	48	ASN
10	LJ	49	ASP
10	LJ	51	ILE
10	LJ	52	SER
10	LJ	53	VAL
10	LJ	61	LYS
10	LJ	62	ARG
10	LJ	65	LEU
10	LJ	67	ARG
10	LJ	69	ILE
10	LJ	70	CYS
10	LJ	73	ILE
10	LJ	76	MET
10	LJ	78	LYS
10	LJ	81	THR
10	LJ	85	GLU
10	LJ	87	LYS
10	LJ	89	ARG
10	LJ	90	LEU
10	LJ	100	THR
10	LJ	101	VAL
10	LJ	102	VAL
10	LJ	106	LYS
10	LJ	108	ILE
10	LJ	111	ARG
10	LJ	115	HIS
10	LJ	119	THR
10	LJ	120	ARG
10	LJ	121	ARG
10	LJ	129	THR

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Mol	Chain	Res	Type
10	LJ	132	MET
10	LJ	133	SER
10	LJ	134	THR
10	LJ	137	LYS
10	LJ	143	ARG
10	LJ	145	ILE
10	LJ	146	SER
10	LJ	156	ARG
10	LJ	159	GLU
10	LJ	161	LEU
10	LJ	163	VAL
10	LJ	166	LYS
10	LJ	168	LEU
10	LJ	169	ARG
10	LJ	179	SER
10	LJ	180	ARG
10	LJ	182	LEU
10	LJ	185	GLN
11	LK	3	ARG
11	LK	12	GLN
11	LK	15	LYS
11	LK	19	LYS
11	LK	20	SER
11	LK	21	ARG
11	LK	22	PHE
11	LK	24	ARG
11	LK	26	VAL
11	LK	43	VAL
11	LK	48	TYR
11	LK	53	LEU
11	LK	56	GLU
11	LK	57	LYS
11	LK	61	SER
11	LK	62	SER
11	LK	66	GLU
11	LK	72	CYS
11	LK	73	ASN
11	LK	74	LYS
11	LK	76	ILE
11	LK	78	LYS
11	LK	82	LYS
11	LK	88	ARG

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Mol	Chain	Res	Type
11	LK	90	ARG
11	LK	97	ILE
11	LK	98	ARG
11	LK	101	LYS
11	LK	102	MET
11	LK	103	LEU
11	LK	104	SER
11	LK	105	CYS
11	LK	110	ARG
11	LK	111	LEU
11	LK	112	GLN
11	LK	115	MET
11	LK	116	ARG
11	LK	121	LYS
11	LK	123	GLN
11	LK	125	THR
11	LK	129	VAL
11	LK	130	SER
11	LK	135	LEU
11	LK	139	ARG
11	LK	141	ARG
11	LK	145	LYS
11	LK	153	ARG
11	LK	156	LYS
11	LK	158	LYS
11	LK	159	ILE
11	LK	163	GLN
11	LK	165	ILE
11	LK	167	GLU
11	LK	169	ARG
11	LK	173	PHE
11	LK	174	THR
11	LK	185	ARG
11	LK	201	SER
11	LK	202	ARG
11	LK	203	LYS
11	LK	206	LEU
12	LL	4	GLU
12	LL	5	SER
12	LL	6	GLU
12	LL	7	ASN
12	LL	9	MET

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Mol	Chain	Res	Type
12	LL	14	ILE
12	LL	15	GLU
12	LL	18	VAL
12	LL	21	ILE
12	LL	23	ILE
12	LL	28	ASP
12	LL	30	LEU
12	LL	31	THR
12	LL	32	LYS
12	LL	36	VAL
12	LL	37	LEU
12	LL	39	GLN
12	LL	42	ASP
12	LL	44	GLU
12	LL	46	THR
12	LL	49	LYS
12	LL	52	LEU
12	LL	53	THR
12	LL	54	ILE
12	LL	55	ARG
12	LL	57	PHE
12	LL	59	ILE
12	LL	60	ARG
12	LL	61	ARG
12	LL	64	LYS
12	LL	65	ILE
12	LL	66	SER
12	LL	69	VAL
12	LL	70	THR
12	LL	75	LYS
12	LL	77	ARG
12	LL	78	GLU
12	LL	84	LEU
12	LL	88	ASN
12	LL	90	GLU
12	LL	94	SER
12	LL	98	THR
12	LL	112	LEU
12	LL	117	ASP
12	LL	122	ILE
12	LL	129	VAL
12	LL	131	LEU

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Mol	Chain	Res	Type
12	LL	133	ARG
12	LL	140	LYS
12	LL	142	ARG
12	LL	151	SER
12	LL	152	HIS
12	LL	153	LYS
12	LL	154	ILE
12	LL	155	THR
12	LL	160	ARG
12	LL	165	ARG
12	LL	170	VAL
13	LM	33	VAL
13	LM	38	MET
13	LM	39	ARG
13	LM	44	THR
13	LM	49	ASN
13	LM	50	LEU
13	LM	51	ILE
13	LM	52	LYS
13	LM	53	ASN
13	LM	57	GLN
13	LM	60	ARG
13	LM	62	ILE
13	LM	63	ARG
13	LM	68	ARG
13	LM	69	LEU
13	LM	73	LYS
13	LM	75	ILE
13	LM	78	CYS
13	LM	80	LEU
13	LM	81	GLN
13	LM	82	LYS
13	LM	86	SER
13	LM	87	VAL
13	LM	88	THR
13	LM	89	ARG
13	LM	90	CYS
13	LM	93	LYS
13	LM	96	LEU
13	LM	97	THR
13	LM	98	GLN
13	LM	99	ARG

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Mol	Chain	Res	Type
13	LM	102	ARG
13	LM	106	LEU
13	LM	107	ARG
13	LM	108	GLU
13	LM	115	SER
13	LM	126	VAL
13	LM	129	ARG
13	LM	134	SER
13	LM	137	SER
13	LM	145	LEU
13	LM	146	LYS
13	LM	149	LEU
13	LM	151	LYS
13	LM	152	VAL
13	LM	153	THR
13	LM	154	ILE
13	LM	157	LYS
13	LM	160	LYS
13	LM	163	GLU
13	LM	166	GLN
13	LM	168	ILE
13	LM	173	VAL
13	LM	175	MET
13	LM	177	VAL
13	LM	178	VAL
13	LM	179	ASN
13	LM	184	ILE
13	LM	186	THR
13	LM	189	ILE
13	LM	195	GLU
13	LM	196	VAL
13	LM	198	GLU
13	LM	199	ASN
13	LM	200	LEU
13	LM	202	MET
13	LM	204	LEU
13	LM	206	ASN
13	LM	208	ARG
13	LM	215	ARG
13	LM	218	LYS
13	LM	219	ARG
13	LM	222	GLU

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Mol	Chain	Res	Type
13	LM	223	ARG
13	LM	224	GLU
13	LM	228	LYS
14	LN	2	SER
14	LN	4	HIS
14	LN	5	ARG
14	LN	6	PHE
14	LN	14	TYR
14	LN	15	LEU
14	LN	21	LYS
14	LN	23	LYS
14	LN	24	LEU
14	LN	28	VAL
14	LN	30	ILE
14	LN	31	LEU
14	LN	43	THR
14	LN	46	LYS
14	LN	47	ARG
14	LN	49	VAL
14	LN	52	LEU
14	LN	58	THR
14	LN	59	ASP
14	LN	61	VAL
14	LN	62	ILE
14	LN	63	ASN
14	LN	65	SER
14	LN	67	LYS
14	LN	70	THR
14	LN	77	ILE
14	LN	78	GLU
14	LN	80	SER
14	LN	89	SER
14	LN	90	VAL
14	LN	94	LYS
14	LN	95	ILE
14	LN	96	GLN
14	LN	103	LYS
14	LN	105	THR
14	LN	107	GLU
14	LN	111	LYS
14	LN	114	LYS
14	LN	118	GLU

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Mol	Chain	Res	Type
14	LN	119	ARG
14	LN	121	MET
14	LN	123	MET
14	LN	131	LYS
15	LO	5	LYS
15	LO	7	VAL
15	LO	9	GLU
15	LO	12	ARG
15	LO	13	LYS
15	LO	14	LYS
15	LO	15	GLN
15	LO	16	SER
15	LO	17	GLU
15	LO	19	LEU
15	LO	20	HIS
15	LO	23	PHE
15	LO	24	ARG
15	LO	26	ARG
15	LO	32	GLN
15	LO	33	LEU
15	LO	36	ILE
15	LO	37	LYS
15	LO	38	ARG
15	LO	39	CYS
15	LO	40	SER
15	LO	41	HIS
15	LO	44	ARG
15	LO	47	LYS
15	LO	49	ARG
15	LO	50	ARG
15	LO	51	LEU
15	LO	54	LYS
15	LO	56	LYS
15	LO	57	ARG
15	LO	60	VAL
15	LO	61	VAL
15	LO	62	TYR
15	LO	63	ARG
15	LO	64	VAL
15	LO	66	VAL
15	LO	67	ARG
15	LO	73	ARG

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Mol	Chain	Res	Type
15	LO	74	GLN
15	LO	76	VAL
15	LO	85	ARG
15	LO	89	ILE
15	LO	90	VAL
15	LO	92	LEU
15	LO	96	ARG
15	LO	97	SER
15	LO	98	LEU
15	LO	101	LEU
15	LO	109	ARG
15	LO	112	SER
15	LO	114	ARG
15	LO	115	VAL
15	LO	118	SER
15	LO	124	ASP
15	LO	126	SER
15	LO	134	LEU
15	LO	135	ILE
15	LO	143	ARG
15	LO	147	LYS
15	LO	149	ASN
15	LO	150	TRP
15	LO	151	ILE
15	LO	158	ARG
15	LO	159	ARG
15	LO	160	GLU
15	LO	162	ARG
15	LO	164	LEU
15	LO	165	THR
15	LO	172	ARG
15	LO	174	LEU
15	LO	176	ASN
15	LO	179	ILE
15	LO	183	LYS
15	LO	184	LEU
15	LO	185	ARG
15	LO	187	SER
15	LO	188	LYS
15	LO	189	ARG
15	LO	193	LYS
15	LO	198	ARG

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Mol	Chain	Res	Type
15	LO	200	LEU
15	LO	201	ARG
15	LO	202	ARG
15	LO	204	ARG
16	LP	4	ILE
16	LP	5	VAL
16	LP	7	ASP
16	LP	12	ILE
16	LP	13	LEU
16	LP	16	LEU
16	LP	19	ILE
16	LP	23	GLU
16	LP	24	LEU
16	LP	25	LEU
16	LP	28	HIS
16	LP	29	GLU
16	LP	34	ARG
16	LP	35	CYS
16	LP	36	GLU
16	LP	37	LYS
16	LP	39	ILE
16	LP	40	ILE
16	LP	45	ARG
16	LP	48	LYS
16	LP	50	HIS
16	LP	53	LYS
16	LP	55	MET
16	LP	58	ARG
16	LP	64	LEU
16	LP	65	ARG
16	LP	75	GLU
16	LP	81	ILE
16	LP	93	SER
16	LP	96	MET
16	LP	105	ILE
16	LP	109	CYS
16	LP	114	ARG
16	LP	115	VAL
16	LP	117	CYS
16	LP	119	SER
16	LP	121	MET
16	LP	123	TYR

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Mol	Chain	Res	Type
16	LP	126	LEU
16	LP	127	ARG
16	LP	129	GLU
16	LP	130	ARG
16	LP	132	ARG
16	LP	137	ARG
16	LP	138	VAL
16	LP	142	ILE
16	LP	145	GLN
16	LP	149	ASP
16	LP	150	VAL
16	LP	152	ARG
16	LP	157	ARG
16	LP	158	LEU
16	LP	161	CYS
16	LP	171	ILE
16	LP	174	LYS
16	LP	175	ILE
16	LP	187	ARG
16	LP	192	LEU
16	LP	194	LYS
17	LQ	2	VAL
17	LQ	3	LYS
17	LQ	7	LYS
17	LQ	11	LEU
17	LQ	13	VAL
17	LQ	15	LYS
17	LQ	17	ARG
17	LQ	18	ARG
17	LQ	19	ASP
17	LQ	22	LYS
17	LQ	26	LYS
17	LQ	35	ILE
17	LQ	36	LYS
17	LQ	41	LYS
17	LQ	42	ARG
17	LQ	44	PHE
17	LQ	47	LEU
17	LQ	51	LEU
17	LQ	63	TYR
17	LQ	68	ARG
17	LQ	70	SER

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Mol	Chain	Res	Type
17	LQ	71	GLN
17	LQ	75	SER
17	LQ	78	ASP
17	LQ	79	LYS
17	LQ	84	GLU
17	LQ	87	VAL
17	LQ	89	VAL
17	LQ	91	LYS
17	LQ	92	ASP
17	LQ	94	LEU
17	LQ	95	LYS
17	LQ	99	SER
17	LQ	102	LYS
17	LQ	105	HIS
17	LQ	106	LYS
17	LQ	107	LYS
17	LQ	109	GLU
17	LQ	110	ASP
17	LQ	112	LEU
17	LQ	115	ILE
17	LQ	121	ARG
17	LQ	125	ARG
17	LQ	127	ARG
17	LQ	128	ARG
17	LQ	129	THR
17	LQ	131	ARG
17	LQ	133	HIS
17	LQ	135	ARG
17	LQ	138	LYS
17	LQ	146	VAL
17	LQ	147	GLU
17	LQ	149	ILE
17	LQ	150	VAL
17	LQ	155	LEU
17	LQ	157	VAL
18	LR	3	ILE
18	LR	4	ASP
18	LR	5	LEU
18	LR	6	LYS
18	LR	7	THR
18	LR	13	LYS
18	LR	18	GLU

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Mol	Chain	Res	Type
18	LR	26	ILE
18	LR	34	LYS
18	LR	40	THR
18	LR	42	GLU
18	LR	52	LEU
18	LR	56	LYS
18	LR	57	THR
18	LR	63	SER
18	LR	66	ARG
18	LR	70	LEU
18	LR	73	LYS
18	LR	74	ARG
18	LR	76	ASP
18	LR	78	ILE
18	LR	83	SER
18	LR	86	THR
18	LR	92	VAL
18	LR	94	ILE
18	LR	96	ARG
18	LR	97	MET
18	LR	99	ILE
18	LR	100	CYS
18	LR	103	LYS
18	LR	105	SER
18	LR	107	THR
18	LR	109	ARG
18	LR	110	SER
18	LR	111	ARG
18	LR	112	ILE
18	LR	113	GLU
18	LR	114	LYS
18	LR	119	CYS
18	LR	120	MET
18	LR	121	SER
18	LR	122	PHE
18	LR	123	ASP
18	LR	125	LEU
18	LR	129	LYS
18	LR	131	THR
18	LR	136	VAL
18	LR	139	GLN
18	LR	145	ARG

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Mol	Chain	Res	Type
18	LR	147	VAL
18	LR	148	CYS
18	LR	151	PHE
18	LR	158	ASN
18	LR	159	SER
18	LR	162	LYS
18	LR	164	LYS
18	LR	166	GLU
18	LR	168	LYS
18	LR	170	ARG
18	LR	174	ARG
18	LR	176	ARG
18	LR	179	TRP
19	LS	4	LEU
19	LS	5	ARG
19	LS	6	LEU
19	LS	7	GLN
19	LS	8	LYS
19	LS	10	LEU
19	LS	14	VAL
19	LS	15	LEU
19	LS	17	CYS
19	LS	19	LYS
19	LS	23	ARG
19	LS	25	ASN
19	LS	30	LYS
19	LS	32	ILE
19	LS	34	GLN
19	LS	37	SER
19	LS	38	ARG
19	LS	41	ILE
19	LS	43	SER
19	LS	44	LEU
19	LS	48	LYS
19	LS	49	ILE
19	LS	52	LYS
19	LS	53	LEU
19	LS	55	ILE
19	LS	56	LYS
19	LS	58	SER
19	LS	62	ARG
19	LS	64	ARG

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Mol	Chain	Res	Type
19	LS	66	ARG
19	LS	71	ARG
19	LS	72	LEU
19	LS	74	ARG
19	LS	80	LYS
19	LS	81	ARG
19	LS	82	ARG
19	LS	84	THR
19	LS	85	ARG
19	LS	88	ARG
19	LS	93	THR
19	LS	94	LEU
19	LS	97	GLN
19	LS	104	ARG
19	LS	111	ASP
19	LS	113	GLU
19	LS	118	HIS
19	LS	119	LEU
19	LS	123	LEU
19	LS	131	MET
19	LS	133	LYS
19	LS	136	ARG
19	LS	138	LEU
19	LS	139	LEU
19	LS	146	GLN
19	LS	147	LYS
19	LS	150	GLU
19	LS	153	LYS
19	LS	154	LYS
19	LS	155	LYS
19	LS	156	LYS
19	LS	158	GLU
19	LS	162	ARG
19	LS	163	ARG
19	LS	164	LYS
19	LS	165	LYS
19	LS	168	GLN
19	LS	170	CYS
19	LS	171	LYS
19	LS	176	LYS
19	LS	177	VAL
19	LS	181	ARG

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Mol	Chain	Res	Type
19	LS	182	LEU
19	LS	187	THR
19	LS	189	ILE
19	LS	190	PHE
19	LS	192	GLU
20	LT	7	VAL
20	LT	11	ARG
20	LT	15	GLU
20	LT	24	ARG
20	LT	25	MET
20	LT	26	THR
20	LT	32	GLU
20	LT	38	ARG
20	LT	43	LEU
20	LT	44	LYS
20	LT	47	LYS
20	LT	50	LYS
20	LT	55	GLU
20	LT	56	ILE
20	LT	57	LEU
20	LT	59	CYS
20	LT	62	ILE
20	LT	63	GLU
20	LT	65	ASN
20	LT	67	ASP
20	LT	68	PHE
20	LT	71	ASN
20	LT	75	LEU
20	LT	76	LEU
20	LT	87	MET
20	LT	89	ARG
20	LT	91	VAL
20	LT	92	ARG
20	LT	98	ARG
20	LT	100	MET
20	LT	102	LYS
20	LT	103	VAL
20	LT	107	MET
20	LT	112	ARG
20	LT	114	ARG
20	LT	124	LYS
20	LT	126	VAL

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Mol	Chain	Res	Type
20	LT	130	ASP
20	LT	135	LYS
20	LT	136	VAL
20	LT	138	MET
20	LT	139	PHE
20	LT	140	THR
20	LT	142	LYS
20	LT	145	ARG
20	LT	150	CYS
20	LT	152	TYR
20	LT	153	VAL
20	LT	156	LYS
20	LT	157	ARG
20	LT	160	ARG
20	LT	163	ARG
20	LT	167	ARG
21	LU	2	THR
21	LU	4	SER
21	LU	5	GLN
21	LU	8	ARG
21	LU	17	ARG
21	LU	18	LYS
21	LU	21	ARG
21	LU	24	MET
21	LU	26	ASN
21	LU	27	LEU
21	LU	33	VAL
21	LU	35	LYS
21	LU	40	VAL
21	LU	43	LYS
21	LU	50	LYS
21	LU	52	MET
21	LU	55	ARG
21	LU	63	THR
21	LU	67	ILE
21	LU	75	GLN
21	LU	76	ILE
21	LU	77	GLN
21	LU	79	ARG
21	LU	80	VAL
21	LU	81	ARG
21	LU	83	ARG

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Mol	Chain	Res	Type
21	LU	84	ILE
21	LU	86	LEU
21	LU	87	LYS
21	LU	89	ILE
21	LU	93	LEU
21	LU	94	GLU
21	LU	96	VAL
21	LU	102	ARG
21	LU	103	LYS
21	LU	109	VAL
21	LU	117	ARG
21	LU	118	LEU
21	LU	120	LYS
21	LU	121	GLU
21	LU	137	ARG
21	LU	141	VAL
21	LU	144	ILE
21	LU	146	SER
21	LU	150	ILE
21	LU	151	THR
21	LU	153	LEU
21	LU	158	VAL
22	LV	9	VAL
22	LV	10	LYS
22	LV	11	LYS
22	LV	12	GLU
22	LV	16	ILE
22	LV	20	VAL
22	LV	21	ASP
22	LV	26	LYS
22	LV	27	ASP
22	LV	28	LEU
22	LV	29	GLU
22	LV	30	LEU
22	LV	41	THR
22	LV	45	ILE
22	LV	46	ASN
22	LV	49	LYS
22	LV	50	HIS
22	LV	56	VAL
22	LV	58	CYS
22	LV	59	SER

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Mol	Chain	Res	Type
22	LV	63	ASP
22	LV	68	GLN
22	LV	70	THR
22	LV	73	GLU
22	LV	79	VAL
22	LV	82	LEU
22	LV	84	LYS
22	LV	90	ASP
22	LV	91	TYR
22	LV	92	GLN
22	LV	96	ARG
22	LV	97	VAL
22	LV	98	LEU
22	LV	100	THR
22	LV	102	LYS
22	LV	104	THR
22	LV	106	THR
22	LV	108	LYS
22	LV	110	TYR
22	LV	112	ILE
22	LV	114	ASP
22	LV	117	ASP
22	LV	121	THR
22	LV	122	ASP
22	LV	123	ASP
23	LW	8	SER
23	LW	14	LYS
23	LW	18	SER
23	LW	27	ILE
23	LW	33	SER
23	LW	39	ASN
23	LW	40	MET
23	LW	55	LYS
23	LW	61	MET
23	LW	65	THR
23	LW	69	ASP
23	LW	71	LYS
23	LW	73	GLU
23	LW	74	LEU
23	LW	76	ARG
23	LW	77	LYS
23	LW	78	VAL

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Mol	Chain	Res	Type
23	LW	79	THR
23	LW	84	VAL
23	LW	92	ARG
23	LW	98	ILE
23	LW	99	TYR
23	LW	103	ASN
23	LW	109	ASN
23	LW	111	LYS
23	LW	114	LEU
23	LW	115	LYS
23	LW	118	SER
23	LW	125	LYS
23	LW	129	ASP
23	LW	133	LYS
23	LW	134	ILE
23	LW	139	GLU
24	LX	3	ARG
24	LX	4	ILE
24	LX	6	HIS
24	LX	7	CYS
24	LX	8	SER
24	LX	12	LYS
24	LX	14	VAL
24	LX	18	LYS
24	LX	20	ILE
24	LX	22	PHE
24	LX	28	ARG
24	LX	29	VAL
24	LX	36	LYS
24	LX	37	CYS
24	LX	42	LYS
24	LX	44	LYS
24	LX	45	ARG
24	LX	48	ARG
24	LX	49	LYS
24	LX	50	VAL
24	LX	51	ARG
24	LX	54	LYS
24	LX	60	HIS
24	LX	62	LYS
24	LX	64	MET
25	LY	23	LYS

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Mol	Chain	Res	Type
25	LY	24	LYS
25	LY	25	ILE
25	LY	26	ARG
25	LY	28	ASN
25	LY	29	VAL
25	LY	37	LEU
25	LY	39	HIS
25	LY	41	LYS
25	LY	45	TYR
25	LY	51	LYS
25	LY	54	SER
25	LY	55	TRP
25	LY	56	ASP
25	LY	67	LYS
25	LY	68	THR
25	LY	69	ASP
25	LY	70	GLU
25	LY	73	THR
25	LY	74	GLN
25	LY	75	ILE
25	LY	76	GLU
25	LY	78	ASN
25	LY	81	ILE
25	LY	83	PHE
25	LY	84	ILE
25	LY	87	ARG
25	LY	91	LYS
25	LY	94	ILE
25	LY	96	LYS
25	LY	98	PHE
25	LY	99	GLU
25	LY	105	LYS
25	LY	106	VAL
25	LY	110	ASN
25	LY	111	THR
25	LY	114	THR
25	LY	118	LEU
25	LY	120	LYS
25	LY	123	ILE
25	LY	128	ASP
25	LY	129	VAL
25	LY	130	GLN

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Mol	Chain	Res	Type
25	LY	133	ASP
25	LY	137	LYS
25	LY	138	MET
26	LZ	2	LYS
26	LZ	3	LEU
26	LZ	5	SER
26	LZ	8	THR
26	LZ	10	SER
26	LZ	13	LYS
26	LZ	14	CYS
26	LZ	20	THR
26	LZ	22	ASN
26	LZ	28	LYS
26	LZ	30	MET
26	LZ	34	LEU
26	LZ	36	LYS
26	LZ	37	GLU
26	LZ	38	LEU
26	LZ	39	ARG
26	LZ	41	GLU
26	LZ	43	LYS
26	LZ	47	MET
26	LZ	55	VAL
26	LZ	57	ILE
26	LZ	59	THR
26	LZ	63	LYS
26	LZ	67	LYS
26	LZ	69	VAL
26	LZ	70	GLU
26	LZ	71	VAL
26	LZ	72	ARG
26	LZ	74	ARG
26	LZ	77	LYS
26	LZ	78	ILE
26	LZ	79	CYS
26	LZ	85	GLN
26	LZ	86	LYS
26	LZ	88	ARG
26	LZ	91	GLU
26	LZ	95	VAL
26	LZ	99	ILE
26	LZ	102	SER

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Mol	Chain	Res	Type
26	LZ	106	ILE
26	LZ	107	LYS
26	LZ	111	MET
26	LZ	114	SER
26	LZ	116	TYR
26	LZ	119	ILE
26	LZ	121	ARG
26	LZ	122	ARG
26	LZ	128	GLU
26	LZ	133	ILE
27	La	7	LYS
27	La	14	VAL
27	La	18	ARG
27	La	23	LYS
27	La	25	VAL
27	La	27	VAL
27	La	30	LEU
27	La	33	ASN
27	La	35	ARG
27	La	40	ILE
27	La	44	ILE
27	La	50	ARG
27	La	52	THR
27	La	53	ASN
27	La	54	SER
27	La	56	SER
27	La	58	GLU
27	La	61	VAL
27	La	63	ARG
27	La	65	ARG
27	La	66	VAL
27	La	71	LYS
27	La	73	MET
27	La	76	ASN
27	La	78	LEU
27	La	82	SER
27	La	90	LYS
27	La	94	SER
27	La	97	THR
27	La	104	ARG
27	La	105	ARG
27	La	106	GLU

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Mol	Chain	Res	Type
27	La	107	ILE
27	La	117	ARG
27	La	119	ILE
27	La	120	LEU
27	La	129	THR
27	La	130	LYS
27	La	131	LEU
27	La	133	ILE
28	Lb	3	THR
28	Lb	4	ARG
28	Lb	7	LYS
28	Lb	9	ARG
28	Lb	15	ARG
28	Lb	16	GLN
28	Lb	21	ARG
28	Lb	26	ARG
28	Lb	27	LYS
28	Lb	32	ARG
28	Lb	34	LYS
28	Lb	38	LEU
28	Lb	40	HIS
28	Lb	41	LYS
28	Lb	42	ARG
28	Lb	53	PHE
28	Lb	55	LYS
28	Lb	56	LEU
28	Lb	64	ARG
28	Lb	68	GLU
28	Lb	69	TYR
28	Lb	73	ILE
28	Lb	75	ILE
28	Lb	76	ASP
28	Lb	86	GLN
28	Lb	87	ARG
28	Lb	88	ASP
28	Lb	91	LEU
28	Lb	94	LYS
28	Lb	95	SER
28	Lb	97	THR
28	Lb	101	VAL
28	Lb	104	VAL
28	Lb	105	THR

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Mol	Chain	Res	Type
28	Lb	106	ARG
28	Lb	109	PHE
28	Lb	115	ARG
28	Lb	118	LEU
28	Lb	120	GLN
28	Lb	123	ILE
28	Lb	131	SER
28	Lb	133	ASP
28	Lb	135	GLU
28	Lb	136	LYS
28	Lb	140	GLU
28	Lb	141	VAL
28	Lb	144	VAL
28	Lb	146	LEU
28	Lb	148	VAL
29	Lc	3	LYS
29	Lc	8	THR
29	Lc	10	LYS
29	Lc	14	ARG
29	Lc	17	HIS
29	Lc	22	LYS
29	Lc	23	LYS
29	Lc	25	LYS
29	Lc	27	SER
29	Lc	29	TYR
29	Lc	30	THR
29	Lc	31	SER
29	Lc	33	LYS
29	Lc	38	LYS
29	Lc	40	LEU
29	Lc	41	ARG
29	Lc	43	LEU
29	Lc	44	ARG
29	Lc	45	ARG
29	Lc	46	SER
29	Lc	50	ASP
29	Lc	52	ARG
29	Lc	53	GLN
30	Ld	12	ASP
30	Ld	14	ILE
30	Ld	16	LEU
30	Ld	18	LEU

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Mol	Chain	Res	Type
30	Ld	23	LYS
30	Ld	26	LYS
30	Ld	27	TYR
30	Ld	28	THR
30	Ld	32	ASP
30	Ld	40	ASP
30	Ld	42	LYS
30	Ld	44	GLN
30	Ld	47	PHE
30	Ld	48	MET
30	Ld	52	CYS
30	Ld	55	LEU
30	Ld	60	VAL
30	Ld	61	ASP
30	Ld	63	LEU
30	Ld	66	LEU
30	Ld	68	LYS
30	Ld	71	VAL
30	Ld	80	GLU
30	Ld	88	GLN
30	Ld	93	ILE
30	Ld	94	MET
30	Ld	95	THR
30	Ld	96	ILE
30	Ld	104	LEU
30	Ld	105	THR
30	Ld	108	LEU
31	Le	3	ILE
31	Le	4	VAL
31	Le	6	GLU
31	Le	8	THR
31	Le	9	ILE
31	Le	11	LEU
31	Le	13	LYS
31	Le	16	ARG
31	Le	26	ILE
31	Le	31	ILE
31	Le	36	GLU
31	Le	42	GLU
31	Le	43	ASP
31	Le	46	LEU
31	Le	51	ASN

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Mol	Chain	Res	Type
31	Le	56	SER
31	Le	59	ILE
31	Le	61	HIS
31	Le	65	ARG
31	Le	69	GLU
31	Le	71	ARG
31	Le	73	GLU
31	Le	75	ASP
31	Le	77	GLU
31	Le	83	VAL
31	Le	84	ILE
31	Le	86	LYS
31	Le	87	ASP
31	Le	89	GLU
31	Le	91	PHE
31	Le	92	LYS
31	Le	93	HIS
31	Le	96	THR
31	Le	99	LYS
31	Le	101	SER
31	Le	102	GLU
32	Lf	6	ILE
32	Lf	11	HIS
32	Lf	12	LYS
32	Lf	13	ILE
32	Lf	15	ILE
32	Lf	16	LYS
32	Lf	17	LYS
32	Lf	18	ARG
32	Lf	19	LYS
32	Lf	21	LYS
32	Lf	23	ILE
32	Lf	24	ARG
32	Lf	28	GLU
32	Lf	33	VAL
32	Lf	34	LYS
32	Lf	36	SER
32	Lf	41	ARG
32	Lf	47	MET
32	Lf	52	ARG
32	Lf	55	ARG
32	Lf	57	MET

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Mol	Chain	Res	Type
32	Lf	60	ILE
32	Lf	65	ASP
32	Lf	69	ARG
32	Lf	79	HIS
32	Lf	81	ILE
32	Lf	87	LEU
32	Lf	90	LEU
32	Lf	91	PHE
32	Lf	92	MET
32	Lf	100	GLN
32	Lf	101	ILE
32	Lf	103	HIS
32	Lf	106	SER
32	Lf	108	ARG
32	Lf	109	SER
32	Lf	110	ARG
32	Lf	111	LYS
32	Lf	112	GLN
32	Lf	113	ILE
32	Lf	114	LEU
32	Lf	118	LYS
32	Lf	120	MET
32	Lf	123	ARG
32	Lf	124	VAL
32	Lf	126	ASN
32	Lf	128	ASP
32	Lf	133	LYS
33	Lg	2	GLU
33	Lg	3	GLU
33	Lg	7	LYS
33	Lg	8	THR
33	Lg	9	PHE
33	Lg	13	ILE
33	Lg	15	VAL
33	Lg	18	GLN
33	Lg	19	ARG
33	Lg	20	SER
33	Lg	21	ARG
33	Lg	23	LYS
33	Lg	25	ARG
33	Lg	27	ASN
33	Lg	28	VAL

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Mol	Chain	Res	Type
33	Lg	30	LEU
33	Lg	33	VAL
33	Lg	34	SER
33	Lg	38	THR
33	Lg	39	ARG
33	Lg	41	GLU
33	Lg	42	THR
33	Lg	43	ASP
33	Lg	44	LYS
33	Lg	46	LEU
33	Lg	48	ARG
33	Lg	50	ILE
33	Lg	52	ILE
33	Lg	53	ILE
33	Lg	59	LYS
33	Lg	64	LYS
33	Lg	67	ARG
33	Lg	74	MET
33	Lg	75	VAL
33	Lg	81	THR
33	Lg	83	LEU
33	Lg	87	LEU
33	Lg	92	VAL
33	Lg	93	ARG
33	Lg	94	VAL
33	Lg	96	TYR
33	Lg	99	ILE
34	Lh	3	ASP
34	Lh	5	ARG
34	Lh	6	VAL
34	Lh	7	THR
34	Lh	9	ARG
34	Lh	10	PHE
34	Lh	11	HIS
34	Lh	13	THR
34	Lh	15	ARG
34	Lh	16	THR
34	Lh	19	LYS
34	Lh	21	VAL
34	Lh	22	ARG
34	Lh	23	TYR
34	Lh	24	LYS

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Mol	Chain	Res	Type
34	Lh	30	ARG
34	Lh	31	LEU
34	Lh	32	THR
34	Lh	33	SER
34	Lh	34	LEU
34	Lh	36	VAL
34	Lh	37	LYS
34	Lh	38	LYS
34	Lh	45	CYS
34	Lh	50	LYS
34	Lh	51	GLN
34	Lh	55	ILE
34	Lh	57	ARG
34	Lh	58	VAL
34	Lh	59	ILE
34	Lh	63	LEU
34	Lh	69	LYS
34	Lh	70	VAL
34	Lh	72	ARG
34	Lh	77	LYS
34	Lh	78	LEU
34	Lh	86	HIS
34	Lh	93	ASN
34	Lh	95	GLU
34	Lh	99	LEU
34	Lh	101	GLU
34	Lh	105	GLN
34	Lh	106	THR
34	Lh	108	LYS
34	Lh	109	THR
35	Li	33	LYS
35	Li	35	LYS
35	Li	36	ASP
35	Li	44	ASP
35	Li	48	LYS
35	Li	51	ASP
35	Li	52	LEU
35	Li	55	GLU
35	Li	63	LYS
35	Li	72	ARG
35	Li	77	ARG
35	Li	81	LYS

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Mol	Chain	Res	Type
35	Li	82	ASP
35	Li	85	ARG
35	Li	87	LEU
35	Li	90	ILE
35	Li	97	GLU
35	Li	108	ILE
35	Li	110	LYS
35	Li	111	THR
35	Li	121	ARG
35	Li	127	LYS
35	Li	130	ARG
35	Li	134	SER
35	Li	135	LYS
35	Li	139	ARG
35	Li	141	LEU
35	Li	142	GLN
35	Li	145	LYS
35	Li	147	LYS
35	Li	150	VAL
35	Li	151	LYS
36	Lj	9	LYS
36	Lj	14	VAL
36	Lj	15	VAL
36	Lj	16	ARG
36	Lj	17	ILE
36	Lj	18	VAL
36	Lj	21	LYS
36	Lj	23	GLU
36	Lj	25	LYS
36	Lj	27	LYS
36	Lj	30	GLN
36	Lj	31	GLU
36	Lj	34	LYS
36	Lj	37	ILE
36	Lj	39	GLU
36	Lj	40	CYS
36	Lj	41	THR
36	Lj	46	TYR
36	Lj	53	LEU
36	Lj	55	ARG
36	Lj	56	MET
36	Lj	60	ARG

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Mol	Chain	Res	Type
36	Lj	67	LYS
36	Lj	68	LYS
36	Lj	69	ARG
36	Lj	74	LYS
36	Lj	75	ARG
36	Lj	77	LYS
36	Lj	79	LYS
36	Lj	80	ARG
36	Lj	83	LEU
36	Lj	88	ARG
36	Lj	90	ILE
37	Lk	3	LYS
37	Lk	7	SER
37	Lk	10	LYS
37	Lk	11	ARG
37	Lk	14	ARG
37	Lk	18	SER
37	Lk	27	PHE
37	Lk	31	LYS
37	Lk	34	CYS
37	Lk	36	SER
37	Lk	43	LYS
37	Lk	44	MET
37	Lk	46	ARG
37	Lk	48	ASN
37	Lk	49	TRP
37	Lk	52	LYS
37	Lk	54	LEU
37	Lk	57	ARG
37	Lk	58	THR
37	Lk	69	LYS
37	Lk	78	THR
37	Lk	80	LYS
37	Lk	82	ASN
37	Lk	84	ARG
37	Lk	85	LYS
37	Lk	86	TYR
37	Lk	89	LYS
38	Ll	4	THR
38	Ll	6	THR
38	Ll	7	GLU
38	Ll	10	LEU

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Mol	Chain	Res	Type
38	Ll	11	MET
38	Ll	12	LYS
38	Ll	13	MET
38	Ll	18	ARG
38	Ll	20	LYS
38	Ll	22	LEU
38	Ll	23	VAL
38	Ll	24	VAL
38	Ll	25	LYS
38	Ll	26	SER
38	Ll	27	CYS
38	Ll	29	LYS
38	Ll	31	ARG
38	Ll	32	LEU
38	Ll	35	LYS
38	Ll	36	VAL
38	Ll	38	LEU
38	Ll	39	LYS
38	Ll	40	LEU
38	Ll	41	ARG
38	Ll	44	LYS
38	Ll	46	LEU
38	Ll	49	LEU
38	Ll	50	THR
38	Ll	51	VAL
38	Ll	55	ASP
38	Ll	56	ASP
38	Ll	62	LYS
38	Ll	67	LYS
38	Ll	68	VAL
38	Ll	70	VAL
38	Ll	71	GLN
38	Ll	73	VAL
39	Ln	4	ILE
39	Ln	7	GLU
39	Ln	9	LEU
39	Ln	12	HIS
39	Ln	13	ILE
39	Ln	15	GLU
39	Ln	17	ILE
39	Ln	19	ARG
39	Ln	23	GLU

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Mol	Chain	Res	Type
39	Ln	24	LYS
39	Ln	26	ARG
39	Ln	27	LYS
39	Ln	30	GLU
39	Ln	31	THR
39	Ln	34	LEU
39	Ln	35	GLN
39	Ln	36	VAL
39	Ln	39	LYS
39	Ln	41	TYR
39	Ln	42	ASP
39	Ln	44	LYS
39	Ln	45	LYS
39	Ln	46	ASP
39	Ln	48	ARG
39	Ln	49	PHE
39	Ln	51	LEU
39	Ln	62	ASN
39	Ln	63	LEU
39	Ln	64	LYS
39	Ln	65	LEU
39	Ln	66	CYS
39	Ln	68	ILE
39	Ln	72	ARG
39	Ln	73	ASP
39	Ln	75	ASP
39	Ln	76	ARG
39	Ln	78	LYS
39	Ln	80	LEU
39	Ln	82	LEU
39	Ln	83	ASN
39	Ln	84	TYR
39	Ln	87	ILE
39	Ln	89	HIS
39	Ln	92	GLN
39	Ln	98	LYS
39	Ln	99	GLN
39	Ln	101	LYS
39	Ln	102	LYS
39	Ln	103	PHE
39	Ln	106	SER
39	Ln	107	TYR

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Mol	Chain	Res	Type
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
39	Ln	120	ILE
39	Ln	122	VAL
39	Ln	123	TYR
39	Ln	130	LYS
39	Ln	133	ARG
39	Ln	134	THR
39	Ln	136	LEU
39	Ln	141	ASP
39	Ln	147	LYS
39	Ln	148	VAL
39	Ln	149	LEU
39	Ln	150	GLU
39	Ln	151	CYS
39	Ln	157	VAL
39	Ln	158	GLN
39	Ln	159	PHE
39	Ln	160	LYS
39	Ln	163	VAL
39	Ln	165	LEU
39	Ln	167	TRP
39	Ln	173	LYS
39	Ln	181	GLN
39	Ln	183	ILE
39	Ln	187	LEU
39	Ln	188	ASN
39	Ln	189	PHE
39	Ln	190	LEU
39	Ln	193	GLN
39	Ln	194	LEU
39	Ln	195	LYS
39	Ln	199	GLN
39	Ln	201	ILE
39	Ln	202	LYS
39	Ln	204	VAL

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Mol	Chain	Res	Type
39	Ln	207	LYS
39	Ln	210	MET
39	Ln	213	SER
39	Ln	215	ARG
39	Ln	216	ILE
40	Lo	1	MET
40	Lo	8	LYS
40	Lo	9	ARG
40	Lo	12	LYS
40	Lo	16	LYS
40	Lo	20	MET
40	Lo	21	LYS
40	Lo	24	SER
40	Lo	25	LYS
41	Lp	2	VAL
41	Lp	3	THR
41	Lp	8	ARG
41	Lp	12	CYS
41	Lp	13	LYS
41	Lp	15	GLU
41	Lp	17	LYS
41	Lp	20	VAL
41	Lp	24	SER
41	Lp	25	LEU
41	Lp	31	ASP
41	Lp	33	LEU
41	Lp	34	LEU
41	Lp	36	GLN
41	Lp	43	ARG
41	Lp	45	GLN
41	Lp	46	ARG
41	Lp	57	ARG
41	Lp	58	ARG
41	Lp	61	LYS
41	Lp	62	THR
41	Lp	64	LYS
41	Lp	66	GLN
41	Lp	68	ILE
41	Lp	69	ARG
41	Lp	71	THR
41	Lp	76	LYS
41	Lp	78	GLN

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Mol	Chain	Res	Type
41	Lp	79	THR
41	Lp	81	GLN
41	Lp	82	VAL
41	Lp	85	ARG
41	Lp	86	CYS
41	Lp	88	ARG
41	Lp	89	LEU
41	Lp	91	ILE
41	Lp	93	ARG
42	Lq	1	MET
42	Lq	3	LYS
42	Lq	4	ARG
42	Lq	5	THR
42	Lq	6	LYS
42	Lq	7	LYS
42	Lq	13	LYS
42	Lq	16	THR
42	Lq	20	ARG
42	Lq	24	LYS
42	Lq	25	GLN
42	Lq	26	LEU
42	Lq	38	THR
42	Lq	39	CYS
42	Lq	41	PHE
42	Lq	47	VAL
42	Lq	48	ARG
42	Lq	50	THR
42	Lq	52	CYS
42	Lq	54	ILE
42	Lq	56	THR
42	Lq	57	CYS
42	Lq	58	ARG
42	Lq	63	THR
42	Lq	71	LEU
42	Lq	73	THR
42	Lq	74	GLU
42	Lq	80	ARG
42	Lq	83	ILE
42	Lq	84	ARG
42	Lq	86	LEU
42	Lq	90	ARG
43	Ls	78	MET

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Mol	Chain	Res	Type
43	Ls	81	THR
43	Ls	83	ILE
43	Ls	85	LEU
43	Ls	91	GLN
43	Ls	93	MET
43	Ls	94	MET
43	Ls	96	CYS
43	Ls	97	ARG
43	Ls	102	ARG
43	Ls	106	ARG
43	Ls	110	CYS
43	Ls	111	ARG
43	Ls	114	ARG
43	Ls	119	ARG
43	Ls	120	LYS
43	Ls	121	LYS
43	Ls	123	LEU
45	SA	21	LYS
45	SA	28	THR
45	SA	30	LEU
45	SA	32	VAL
45	SA	33	ARG
45	SA	37	ARG
45	SA	38	ARG
45	SA	41	PHE
45	SA	43	ILE
45	SA	45	ASP
45	SA	46	ARG
45	SA	49	ASP
45	SA	51	THR
45	SA	53	VAL
45	SA	55	ASN
45	SA	56	LEU
45	SA	58	LYS
45	SA	62	LYS
45	SA	63	ILE
45	SA	69	ILE
45	SA	71	VAL
45	SA	78	GLU
45	SA	79	ILE
45	SA	85	ARG
45	SA	87	ASP

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Mol	Chain	Res	Type
45	SA	89	GLN
45	SA	92	ILE
45	SA	95	PHE
45	SA	97	LYS
45	SA	98	TYR
45	SA	107	ARG
45	SA	114	THR
45	SA	116	ARG
45	SA	117	MET
45	SA	118	ASN
45	SA	121	TYR
45	SA	127	LEU
45	SA	128	LEU
45	SA	129	VAL
45	SA	133	VAL
45	SA	134	VAL
45	SA	136	ARG
45	SA	139	ILE
45	SA	140	LEU
45	SA	143	SER
45	SA	149	THR
45	SA	152	LEU
45	SA	155	SER
45	SA	159	LEU
45	SA	160	LYS
45	SA	164	VAL
45	SA	170	ASN
45	SA	171	LYS
45	SA	172	THR
45	SA	174	MET
45	SA	176	ILE
45	SA	178	LEU
45	SA	181	TRP
45	SA	182	LEU
45	SA	185	ARG
45	SA	186	GLU
45	SA	190	LEU
45	SA	193	SER
45	SA	194	ILE
45	SA	195	SER
45	SA	196	ARG
45	SA	198	GLU

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Mol	Chain	Res	Type
45	SA	205	ASP
45	SA	206	LEU
45	SA	208	VAL
45	SA	210	LEU
46	SB	28	HIS
46	SB	30	SER
46	SB	31	THR
46	SB	32	LYS
46	SB	33	LEU
46	SB	35	ARG
46	SB	36	LEU
46	SB	41	LYS
46	SB	42	ILE
46	SB	43	GLU
46	SB	48	ILE
46	SB	50	LYS
46	SB	52	SER
46	SB	53	LEU
46	SB	55	ILE
46	SB	57	GLU
46	SB	58	THR
46	SB	59	GLU
46	SB	65	PHE
46	SB	67	LYS
46	SB	69	GLU
46	SB	70	LEU
46	SB	72	GLU
46	SB	73	GLU
46	SB	78	MET
46	SB	81	GLN
46	SB	82	LYS
46	SB	85	THR
46	SB	88	GLN
46	SB	89	ARG
46	SB	90	THR
46	SB	91	ARG
46	SB	101	ARG
46	SB	102	ASP
46	SB	105	ILE
46	SB	111	VAL
46	SB	113	LYS
46	SB	114	GLU

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Mol	Chain	Res	Type
46	SB	115	VAL
46	SB	119	ILE
46	SB	120	LYS
46	SB	121	LYS
46	SB	124	LYS
46	SB	129	ASN
46	SB	131	VAL
46	SB	135	ARG
46	SB	141	LYS
46	SB	142	LEU
46	SB	144	ASP
46	SB	148	VAL
46	SB	151	LYS
46	SB	153	SER
46	SB	160	ARG
46	SB	163	LEU
46	SB	164	ILE
46	SB	175	SER
46	SB	178	VAL
46	SB	180	LYS
46	SB	182	LEU
46	SB	184	PHE
46	SB	189	ASP
46	SB	190	VAL
46	SB	192	THR
46	SB	195	SER
46	SB	199	ARG
46	SB	202	MET
46	SB	213	LYS
46	SB	218	ILE
46	SB	222	ASP
46	SB	223	LEU
46	SB	225	LYS
46	SB	226	LYS
46	SB	227	GLU
46	SB	229	LEU
46	SB	231	HIS
46	SB	232	VAL
46	SB	233	GLN
46	SB	240	LEU
47	SC	5	VAL
47	SC	6	ARG

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Mol	Chain	Res	Type
47	SC	7	ARG
47	SC	12	VAL
47	SC	14	TYR
47	SC	18	LEU
47	SC	22	ILE
47	SC	23	MET
47	SC	24	GLU
47	SC	26	GLU
47	SC	28	HIS
47	SC	30	PHE
47	SC	33	ARG
47	SC	34	GLU
47	SC	36	VAL
47	SC	42	SER
47	SC	45	LEU
47	SC	48	THR
47	SC	52	ILE
47	SC	58	CYS
47	SC	62	GLU
47	SC	67	ASP
47	SC	70	TYR
47	SC	73	HIS
47	SC	75	ILE
47	SC	77	TYR
47	SC	79	LEU
47	SC	82	ARG
47	SC	84	MET
47	SC	86	ASP
47	SC	90	PHE
47	SC	91	ASN
47	SC	95	ASP
47	SC	96	LYS
47	SC	97	ILE
47	SC	98	ILE
47	SC	99	LYS
47	SC	100	ARG
47	SC	102	LEU
47	SC	103	SER
47	SC	107	MET
47	SC	111	LEU
47	SC	112	ARG
47	SC	114	LYS

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Mol	Chain	Res	Type
47	SC	115	LEU
47	SC	119	MET
47	SC	122	ARG
47	SC	123	ARG
47	SC	126	TYR
47	SC	129	ILE
47	SC	130	ARG
47	SC	140	CYS
47	SC	142	VAL
47	SC	143	ILE
47	SC	144	VAL
47	SC	148	LEU
47	SC	151	GLN
47	SC	152	ARG
47	SC	154	ARG
47	SC	156	ASN
47	SC	159	LYS
47	SC	160	GLU
47	SC	162	CYS
47	SC	165	SER
47	SC	166	THR
47	SC	170	LYS
47	SC	171	ARG
47	SC	173	PHE
47	SC	178	THR
47	SC	179	ARG
47	SC	181	ILE
47	SC	182	LYS
47	SC	183	MET
47	SC	184	ARG
47	SC	187	VAL
47	SC	188	ILE
47	SC	191	LYS
47	SC	192	VAL
47	SC	193	ARG
47	SC	194	ILE
47	SC	200	ARG
47	SC	208	ILE
47	SC	210	ILE
48	SD	10	LYS
48	SD	11	LYS
48	SD	12	LYS

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Mol	Chain	Res	Type
48	SD	15	GLN
48	SD	16	ARG
48	SD	17	LYS
48	SD	22	TYR
48	SD	24	LYS
48	SD	25	LYS
48	SD	26	GLU
48	SD	30	VAL
48	SD	37	LYS
48	SD	44	THR
48	SD	46	VAL
48	SD	47	THR
48	SD	48	LYS
48	SD	49	THR
48	SD	54	VAL
48	SD	56	THR
48	SD	58	VAL
48	SD	61	HIS
48	SD	63	VAL
48	SD	66	VAL
48	SD	68	LEU
48	SD	70	ASP
48	SD	71	LEU
48	SD	76	GLU
48	SD	77	ASP
48	SD	78	LEU
48	SD	81	ASN
48	SD	88	THR
48	SD	89	GLN
48	SD	90	LEU
48	SD	92	SER
48	SD	95	LYS
48	SD	96	CYS
48	SD	98	THR
48	SD	103	MET
48	SD	105	ILE
48	SD	106	THR
48	SD	107	ARG
48	SD	113	LEU
48	SD	115	ARG
48	SD	118	CYS
48	SD	119	ASP

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Mol	Chain	Res	Type
48	SD	121	ILE
48	SD	123	VAL
48	SD	125	MET
48	SD	126	ASP
48	SD	127	ILE
48	SD	133	TYR
48	SD	134	LEU
48	SD	136	ARG
48	SD	137	VAL
48	SD	139	VAL
48	SD	142	PHE
48	SD	143	THR
48	SD	145	ARG
48	SD	146	PHE
48	SD	147	ARG
48	SD	152	LYS
48	SD	156	VAL
48	SD	157	LYS
48	SD	159	ARG
48	SD	160	VAL
48	SD	161	ILE
48	SD	162	ARG
48	SD	172	LEU
48	SD	178	LYS
48	SD	181	ILE
48	SD	184	LEU
48	SD	185	VAL
48	SD	186	THR
48	SD	188	LEU
48	SD	192	GLU
48	SD	196	LYS
48	SD	201	LEU
48	SD	202	GLN
48	SD	203	LYS
48	SD	206	MET
48	SD	209	ASP
48	SD	213	ARG
48	SD	214	ARG
48	SD	216	LYS
48	SD	218	VAL
48	SD	219	LYS
48	SD	220	ARG

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Mol	Chain	Res	Type
48	SD	222	ARG
48	SD	227	LEU
48	SD	228	LEU
48	SD	233	ASP
48	SD	237	VAL
48	SD	238	ARG
49	SE	5	VAL
49	SE	6	ARG
49	SE	7	LYS
49	SE	8	HIS
49	SE	10	LYS
49	SE	16	LYS
49	SE	19	LEU
49	SE	20	LEU
49	SE	22	LYS
49	SE	23	MET
49	SE	26	ILE
49	SE	30	ARG
49	SE	33	ASN
49	SE	41	CYS
49	SE	42	ILE
49	SE	44	LEU
49	SE	45	ILE
49	SE	46	LEU
49	SE	48	LEU
49	SE	53	HIS
49	SE	58	TYR
49	SE	61	THR
49	SE	62	SER
49	SE	65	LEU
49	SE	66	GLN
49	SE	67	ASP
49	SE	70	VAL
49	SE	71	LEU
49	SE	72	ILE
49	SE	75	LYS
49	SE	78	THR
49	SE	82	PHE
49	SE	84	VAL
49	SE	87	MET
49	SE	88	ASP
49	SE	89	VAL

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Mol	Chain	Res	Type
49	SE	94	LYS
49	SE	95	VAL
49	SE	97	LYS
49	SE	98	THR
49	SE	99	PHE
49	SE	101	VAL
49	SE	103	TYR
49	SE	104	ASP
49	SE	105	VAL
49	SE	106	LYS
49	SE	108	ARG
49	SE	111	LEU
49	SE	114	ILE
49	SE	115	GLN
49	SE	116	SER
49	SE	121	PHE
49	SE	122	LYS
49	SE	123	LEU
49	SE	125	ARG
49	SE	128	LYS
49	SE	134	LYS
49	SE	136	MET
49	SE	139	LEU
49	SE	142	HIS
49	SE	145	ARG
49	SE	146	THR
49	SE	147	ILE
49	SE	148	ARG
49	SE	153	ASP
49	SE	155	LYS
49	SE	156	THR
49	SE	158	ASP
49	SE	161	LYS
49	SE	164	LEU
49	SE	165	LYS
49	SE	166	THR
49	SE	168	LYS
49	SE	169	ILE
49	SE	172	TRP
49	SE	174	LYS
49	SE	176	ASP
49	SE	179	LYS

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Mol	Chain	Res	Type
49	SE	182	MET
49	SE	184	THR
49	SE	187	ARG
49	SE	188	ASN
49	SE	194	THR
49	SE	195	ILE
49	SE	196	GLN
49	SE	198	ILE
49	SE	200	LYS
49	SE	202	MET
49	SE	207	MET
49	SE	208	ILE
49	SE	210	MET
49	SE	211	LYS
49	SE	213	THR
49	SE	217	GLU
49	SE	218	PHE
49	SE	219	LEU
49	SE	220	THR
49	SE	224	ASN
49	SE	226	PHE
49	SE	227	VAL
49	SE	228	ILE
49	SE	232	SER
49	SE	235	VAL
49	SE	237	ILE
49	SE	240	THR
49	SE	243	ILE
49	SE	246	ASP
49	SE	247	ILE
49	SE	248	ILE
49	SE	249	LYS
49	SE	252	GLU
49	SE	254	ARG
49	SE	255	LEU
49	SE	256	ARG
49	SE	257	SER
49	SE	260	LYS
50	SF	5	VAL
50	SF	7	LEU
50	SF	9	ASN
50	SF	10	LYS

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Mol	Chain	Res	Type
50	SF	13	LEU
50	SF	14	THR
50	SF	17	LYS
50	SF	18	CYS
50	SF	21	GLU
50	SF	23	LEU
50	SF	24	GLU
50	SF	29	ILE
50	SF	33	SER
50	SF	38	SER
50	SF	41	ARG
50	SF	42	TRP
50	SF	47	PHE
50	SF	48	ARG
50	SF	49	LYS
50	SF	51	LYS
50	SF	52	CYS
50	SF	56	GLU
50	SF	57	ARG
50	SF	59	THR
50	SF	63	MET
50	SF	64	MET
50	SF	65	HIS
50	SF	67	ARG
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	85	LEU
50	SF	87	ASN
50	SF	90	THR
50	SF	92	LYS
50	SF	100	ASP
50	SF	108	ARG
50	SF	109	GLU
50	SF	110	ASP
50	SF	112	CYS
50	SF	113	ARG
50	SF	114	ILE
50	SF	116	LYS

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Mol	Chain	Res	Type
50	SF	119	GLN
50	SF	120	VAL
50	SF	121	ARG
50	SF	122	ARG
50	SF	123	GLN
50	SF	124	SER
50	SF	125	VAL
50	SF	126	ASP
50	SF	128	SER
50	SF	130	LEU
50	SF	131	ARG
50	SF	135	ILE
50	SF	137	ILE
50	SF	138	TYR
50	SF	139	ASN
50	SF	145	ARG
50	SF	146	LYS
50	SF	150	ARG
50	SF	151	LYS
50	SF	152	VAL
50	SF	161	GLU
50	SF	164	MET
50	SF	171	ASP
50	SF	172	LYS
50	SF	173	SER
50	SF	178	GLN
50	SF	184	ARG
50	SF	185	ILE
50	SF	188	SER
50	SF	190	ARG
51	SG	9	VAL
51	SG	11	ILE
51	SG	12	SER
51	SG	20	LYS
51	SG	22	LEU
51	SG	23	MET
51	SG	24	ILE
51	SG	28	ARG
51	SG	33	ILE
51	SG	43	ASP
51	SG	49	GLU
51	SG	50	GLU

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Mol	Chain	Res	Type
51	SG	55	THR
51	SG	56	PHE
51	SG	57	ARG
51	SG	58	ILE
51	SG	63	ASP
51	SG	65	GLN
51	SG	69	MET
51	SG	70	TYR
51	SG	74	LEU
51	SG	75	LYS
51	SG	77	GLN
51	SG	78	ARG
51	SG	80	ARG
51	SG	81	LEU
51	SG	82	LEU
51	SG	83	LEU
51	SG	84	ARG
51	SG	88	LYS
51	SG	90	TYR
51	SG	95	ASN
51	SG	97	GLU
51	SG	99	LYS
51	SG	107	ILE
51	SG	108	VAL
51	SG	111	ASP
51	SG	115	LEU
51	SG	118	VAL
51	SG	120	VAL
51	SG	126	THR
51	SG	130	LEU
51	SG	131	THR
51	SG	132	ASP
51	SG	135	VAL
51	SG	137	LYS
51	SG	138	ARG
51	SG	139	LEU
51	SG	140	VAL
51	SG	141	PRO
51	SG	142	LYS
51	SG	145	SER
51	SG	150	LEU
51	SG	151	PHE

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Mol	Chain	Res	Type
51	SG	153	LEU
51	SG	155	THR
51	SG	156	THR
51	SG	159	ASP
51	SG	161	LYS
51	SG	163	GLN
51	SG	165	LEU
51	SG	169	LEU
51	SG	170	ILE
51	SG	171	LYS
51	SG	172	GLU
51	SG	183	GLU
51	SG	184	LYS
51	SG	185	LYS
51	SG	187	LYS
51	SG	188	TYR
51	SG	190	LYS
51	SG	191	VAL
51	SG	193	ARG
51	SG	194	VAL
51	SG	197	ASP
51	SG	199	LYS
51	SG	200	TYR
51	SG	202	ARG
51	SG	203	LYS
51	SG	211	LYS
51	SG	214	MET
51	SG	215	ARG
51	SG	216	LYS
51	SG	217	SER
51	SG	218	LEU
51	SG	225	LYS
51	SG	227	LEU
51	SG	228	LEU
51	SG	231	MET
51	SG	233	LYS
51	SG	234	GLN
51	SG	235	HIS
51	SG	238	ARG
51	SG	240	TYR
51	SG	241	LYS
51	SG	244	LYS

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Mol	Chain	Res	Type
51	SG	245	ARG
52	SH	9	ILE
52	SH	11	LYS
52	SH	14	GLU
52	SH	15	LYS
52	SH	16	LEU
52	SH	18	GLU
52	SH	19	LEU
52	SH	21	LYS
52	SH	22	GLN
52	SH	23	VAL
52	SH	27	LEU
52	SH	28	LEU
52	SH	30	LEU
52	SH	32	ASP
52	SH	35	ASP
52	SH	36	LEU
52	SH	37	ARG
52	SH	41	LEU
52	SH	43	THR
52	SH	44	LEU
52	SH	47	SER
52	SH	50	LYS
52	SH	52	ILE
52	SH	55	ASP
52	SH	57	ASP
52	SH	59	LYS
52	SH	62	VAL
52	SH	72	SER
52	SH	73	PHE
52	SH	76	ASN
52	SH	80	LEU
52	SH	81	ILE
52	SH	83	LYS
52	SH	84	LEU
52	SH	85	GLU
52	SH	86	LYS
52	SH	89	SER
52	SH	92	ARG
52	SH	95	ILE
52	SH	98	ASN
52	SH	99	ARG

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Mol	Chain	Res	Type
52	SH	100	THR
52	SH	102	MET
52	SH	103	LYS
52	SH	107	VAL
52	SH	108	PHE
52	SH	111	LYS
52	SH	112	LYS
52	SH	113	SER
52	SH	114	ILE
52	SH	115	ARG
52	SH	116	ARG
52	SH	118	ARG
52	SH	121	THR
52	SH	125	VAL
52	SH	133	ILE
52	SH	134	CYS
52	SH	138	HIS
52	SH	142	LYS
52	SH	143	ARG
52	SH	145	LEU
52	SH	150	SER
52	SH	153	ARG
52	SH	155	GLN
52	SH	156	VAL
52	SH	157	VAL
52	SH	158	LEU
52	SH	160	LYS
52	SH	162	VAL
52	SH	163	TYR
52	SH	165	GLU
52	SH	169	ARG
52	SH	171	LYS
52	SH	178	LYS
52	SH	180	LEU
52	SH	182	GLU
52	SH	183	ARG
52	SH	185	THR
52	SH	186	GLU
52	SH	188	ILE
53	SI	4	THR
53	SI	8	MET
53	SI	10	LYS

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Mol	Chain	Res	Type
53	SI	11	ARG
53	SI	13	LYS
53	SI	17	VAL
53	SI	18	GLN
53	SI	20	LYS
53	SI	21	TRP
53	SI	22	HIS
53	SI	23	LYS
53	SI	24	LYS
53	SI	26	LYS
53	SI	29	LEU
53	SI	36	THR
53	SI	37	LYS
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
53	SI	48	GLU
53	SI	50	GLN
53	SI	51	LYS
53	SI	53	SER
53	SI	54	THR
53	SI	55	ILE
53	SI	56	ARG
53	SI	62	ILE
53	SI	64	ARG
53	SI	70	SER
53	SI	71	HIS
53	SI	74	PHE
53	SI	91	VAL
53	SI	92	TYR
53	SI	93	ASN
53	SI	94	SER
53	SI	96	SER
53	SI	97	ASN
53	SI	102	THR
53	SI	105	LEU

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Mol	Chain	Res	Type
53	SI	107	LYS
53	SI	118	PHE
53	SI	119	LYS
53	SI	129	LYS
53	SI	131	ILE
53	SI	132	LEU
53	SI	135	ILE
53	SI	136	ARG
53	SI	138	ASP
53	SI	145	SER
53	SI	146	SER
53	SI	147	ARG
53	SI	151	VAL
53	SI	153	THR
53	SI	155	ASP
53	SI	157	TYR
53	SI	158	ILE
53	SI	159	LEU
53	SI	164	LEU
53	SI	166	PHE
53	SI	170	LYS
53	SI	171	LEU
53	SI	174	LYS
54	SJ	2	VAL
54	SJ	4	ILE
54	SJ	8	ARG
54	SJ	11	LEU
54	SJ	12	LYS
54	SJ	14	ILE
54	SJ	15	CYS
54	SJ	18	GLN
54	SJ	19	ARG
54	SJ	20	ILE
54	SJ	22	LYS
54	SJ	23	LYS
54	SJ	24	GLN
54	SJ	28	ARG
54	SJ	31	SER
54	SJ	32	LYS
54	SJ	33	VAL
54	SJ	35	ILE
54	SJ	37	PHE

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Mol	Chain	Res	Type
54	SJ	38	LEU
54	SJ	39	GLN
54	SJ	40	LEU
54	SJ	43	LYS
54	SJ	47	ILE
54	SJ	49	ASP
54	SJ	54	ASP
54	SJ	58	SER
54	SJ	60	ARG
54	SJ	61	ILE
54	SJ	62	VAL
54	SJ	65	LEU
54	SJ	66	ILE
54	SJ	69	LEU
54	SJ	70	ASN
54	SJ	74	VAL
54	SJ	78	ARG
54	SJ	81	ILE
54	SJ	84	ASN
54	SJ	85	ASP
54	SJ	87	GLU
54	SJ	88	LYS
54	SJ	90	VAL
54	SJ	92	ASN
54	SJ	93	LEU
54	SJ	94	LEU
54	SJ	96	SER
54	SJ	97	ARG
54	SJ	98	LEU
54	SJ	99	PHE
54	SJ	102	ILE
54	SJ	106	THR
54	SJ	108	GLN
54	SJ	111	MET
54	SJ	112	ASP
54	SJ	113	HIS
54	SJ	117	GLN
54	SJ	118	HIS
54	SJ	119	ARG
54	SJ	121	ILE
55	SK	2	ARG
55	SK	3	ILE

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Mol	Chain	Res	Type
55	SK	5	ARG
55	SK	7	ARG
55	SK	8	ASN
55	SK	9	SER
55	SK	10	SER
55	SK	11	LYS
55	SK	14	SER
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	32	CYS
55	SK	38	LYS
55	SK	40	LYS
55	SK	41	ARG
55	SK	43	ILE
55	SK	45	ARG
55	SK	47	ARG
55	SK	50	LEU
55	SK	52	LYS
55	SK	53	ILE
55	SK	54	ARG
55	SK	55	ARG
55	SK	58	ARG
55	SK	61	LEU
55	SK	63	LEU
55	SK	68	ILE
55	SK	69	LYS
55	SK	77	LEU
55	SK	78	LEU
55	SK	81	LEU
55	SK	84	LEU
55	SK	86	ILE
55	SK	87	LEU
55	SK	90	GLU
55	SK	93	GLN
55	SK	95	ASP
55	SK	96	TYR
55	SK	100	LEU
55	SK	101	ARG

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Mol	Chain	Res	Type
55	SK	102	ILE
55	SK	103	GLU
55	SK	105	ILE
55	SK	107	LYS
55	SK	108	ARG
55	SK	110	LEU
55	SK	112	SER
55	SK	118	LYS
55	SK	121	LYS
55	SK	122	SER
55	SK	123	VAL
55	SK	127	ARG
55	SK	129	MET
55	SK	131	LYS
55	SK	133	ARG
55	SK	136	SER
55	SK	137	VAL
55	SK	143	ASN
55	SK	144	ILE
55	SK	147	TYR
55	SK	151	ILE
55	SK	152	SER
55	SK	153	ASN
55	SK	156	ARG
55	SK	159	ILE
55	SK	161	ASP
55	SK	163	SER
55	SK	167	PRO
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	4	ILE
56	SL	6	LYS
56	SL	12	VAL
56	SL	16	LEU
56	SL	19	ASN
56	SL	24	LEU
56	SL	26	GLU

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Mol	Chain	Res	Type
56	SL	27	TYR
56	SL	29	ARG
56	SL	30	VAL
56	SL	36	ILE
56	SL	37	THR
56	SL	49	THR
56	SL	50	TYR
56	SL	54	ASN
56	SL	57	MET
56	SL	58	GLN
56	SL	61	GLU
56	SL	63	ARG
56	SL	67	LYS
56	SL	69	THR
56	SL	70	PHE
56	SL	72	TRP
56	SL	74	HIS
56	SL	79	LEU
56	SL	81	GLU
56	SL	82	LYS
56	SL	84	GLU
56	SL	87	ILE
56	SL	94	THR
56	SL	104	LYS
56	SL	106	SER
56	SL	107	ILE
56	SL	108	LYS
57	SM	3	GLU
57	SM	4	ASN
57	SM	5	GLN
57	SM	8	ARG
57	SM	11	HIS
57	SM	12	LYS
57	SM	20	ARG
57	SM	21	PHE
57	SM	22	LEU
57	SM	23	ARG
57	SM	24	LYS
57	SM	28	ARG
57	SM	29	CYS
57	SM	30	LEU
57	SM	31	ARG

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Mol	Chain	Res	Type
57	SM	32	PHE
57	SM	33	TYR
57	SM	34	LYS
57	SM	35	SER
57	SM	38	MET
57	SM	40	TYR
57	SM	42	THR
57	SM	44	ILE
57	SM	51	TYR
57	SM	54	LYS
57	SM	55	LYS
57	SM	59	THR
57	SM	61	ASN
57	SM	63	SER
57	SM	64	ILE
57	SM	65	ARG
57	SM	68	ILE
57	SM	72	VAL
57	SM	73	VAL
57	SM	75	SER
57	SM	77	LYS
57	SM	78	MET
57	SM	83	ILE
57	SM	88	TYR
57	SM	89	LEU
57	SM	93	GLN
57	SM	95	TYR
57	SM	96	LYS
57	SM	99	GLU
57	SM	100	ARG
57	SM	101	ARG
57	SM	104	HIS
57	SM	105	VAL
57	SM	110	SER
57	SM	113	PHE
57	SM	114	ARG
57	SM	115	VAL
57	SM	116	LYS
57	SM	117	GLU
57	SM	120	ILE
57	SM	121	VAL
57	SM	126	CYS

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Mol	Chain	Res	Type
57	SM	129	LEU
57	SM	130	SER
57	SM	131	LYS
57	SM	134	ARG
57	SM	136	ASN
57	SM	139	LYS
57	SM	140	VAL
57	SM	148	LYS
57	SM	149	LYS
57	SM	154	PHE
58	SO	11	ARG
58	SO	12	LYS
58	SO	14	ARG
58	SO	16	ILE
58	SO	17	ARG
58	SO	21	ARG
58	SO	22	TRP
58	SO	24	ASP
58	SO	26	ARG
58	SO	28	ARG
58	SO	29	LYS
58	SO	32	LEU
58	SO	35	TRP
58	SO	37	LYS
58	SO	41	LEU
58	SO	42	GLU
58	SO	45	CYS
58	SO	46	MET
58	SO	48	ARG
58	SO	50	ILE
58	SO	52	THR
58	SO	54	LYS
58	SO	55	ILE
58	SO	57	ILE
58	SO	60	LYS
58	SO	61	GLN
58	SO	63	ASN
58	SO	64	SER
58	SO	68	LYS
58	SO	72	VAL
58	SO	76	LYS
58	SO	81	ILE

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Mol	Chain	Res	Type
58	SO	85	VAL
58	SO	91	LEU
58	SO	92	THR
58	SO	95	ASP
58	SO	98	ASP
58	SO	100	VAL
58	SO	105	PHE
58	SO	110	ARG
58	SO	112	VAL
58	SO	115	ILE
58	SO	118	CYS
58	SO	119	ARG
58	SO	123	ILE
58	SO	124	LYS
58	SO	128	ILE
58	SO	130	LEU
58	SO	133	LEU
58	SO	135	LEU
58	SO	138	ARG
58	SO	140	LYS
59	SP	3	ARG
59	SP	4	MET
59	SP	9	LYS
59	SP	13	ARG
59	SP	14	SER
59	SP	25	TRP
59	SP	26	ASN
59	SP	29	THR
59	SP	31	GLU
59	SP	34	CYS
59	SP	35	GLU
59	SP	37	ILE
59	SP	39	LYS
59	SP	43	LYS
59	SP	45	THR
59	SP	48	SER
59	SP	49	GLN
59	SP	52	LEU
59	SP	60	ILE
59	SP	63	VAL
59	SP	64	LYS
59	SP	67	THR

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Mol	Chain	Res	Type
59	SP	69	SER
59	SP	70	LYS
59	SP	73	ARG
59	SP	74	ILE
59	SP	76	LYS
59	SP	78	LYS
59	SP	84	ILE
59	SP	94	LYS
59	SP	98	ILE
59	SP	99	ARG
59	SP	100	LYS
59	SP	102	LEU
59	SP	104	ARG
59	SP	109	LYS
59	SP	112	LYS
59	SP	114	ARG
59	SP	120	SER
59	SP	121	ARG
59	SP	125	LEU
59	SP	131	GLN
59	SP	134	ARG
59	SP	135	LEU
59	SP	138	THR
59	SP	142	LYS
59	SP	143	SER
59	SP	144	ASP
59	SP	145	GLN
60	SQ	26	GLU
60	SQ	28	PHE
60	SQ	30	VAL
60	SQ	33	ILE
60	SQ	37	LYS
60	SQ	40	THR
60	SQ	42	ILE
60	SQ	44	VAL
60	SQ	47	LEU
60	SQ	50	ARG
60	SQ	57	SER
60	SQ	61	LYS
60	SQ	64	ARG
60	SQ	66	CYS
60	SQ	68	GLU

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Mol	Chain	Res	Type
60	SQ	79	GLN
60	SQ	81	LEU
60	SQ	82	ILE
60	SQ	83	GLU
60	SQ	84	ILE
60	SQ	85	ILE
60	SQ	93	VAL
60	SQ	97	ILE
60	SQ	98	ARG
60	SQ	100	ASP
60	SQ	105	LYS
60	SQ	116	ILE
60	SQ	120	VAL
60	SQ	131	ASP
60	SQ	139	ARG
60	SQ	140	THR
60	SQ	143	LYS
60	SQ	146	ARG
60	SQ	147	ARG
60	SQ	149	ARG
60	SQ	150	ARG
60	SQ	151	LEU
61	SR	18	ARG
61	SR	20	VAL
61	SR	21	GLU
61	SR	22	VAL
61	SR	24	LYS
61	SR	25	LEU
61	SR	28	MET
61	SR	29	LYS
61	SR	31	THR
61	SR	34	LEU
61	SR	36	LYS
61	SR	40	ARG
61	SR	41	CYS
61	SR	42	ARG
61	SR	45	ILE
61	SR	47	LYS
61	SR	51	SER
61	SR	53	LYS
61	SR	56	ARG
61	SR	60	LYS

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Mol	Chain	Res	Type
61	SR	61	LEU
61	SR	63	LEU
61	SR	64	ARG
61	SR	65	ARG
61	SR	72	LYS
61	SR	76	VAL
61	SR	77	ARG
61	SR	78	THR
61	SR	82	ASP
61	SR	84	ILE
61	SR	88	GLU
61	SR	92	MET
61	SR	93	THR
61	SR	98	ASN
61	SR	100	ARG
61	SR	101	GLN
61	SR	107	ILE
61	SR	108	LYS
61	SR	111	MET
61	SR	114	ARG
61	SR	117	ARG
61	SR	118	GLU
61	SR	123	TYR
61	SR	125	ILE
61	SR	126	VAL
61	SR	128	HIS
62	ST	10	LEU
62	ST	12	ARG
62	ST	14	ASP
62	ST	17	VAL
62	ST	20	ARG
62	ST	22	LYS
62	ST	26	HIS
62	ST	27	THR
62	ST	28	LEU
62	ST	30	LYS
62	ST	32	LYS
62	ST	37	VAL
62	ST	41	LYS
62	ST	47	ILE
62	ST	48	LEU
62	ST	49	VAL

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Mol	Chain	Res	Type
62	ST	50	ASN
62	ST	51	ASN
62	ST	52	VAL
62	ST	54	LEU
62	ST	56	LEU
62	ST	57	VAL
62	ST	61	ILE
62	ST	63	ARG
62	ST	64	THR
62	ST	65	LYS
62	ST	66	VAL
62	ST	67	SER
62	ST	70	ILE
62	ST	71	MET
62	ST	83	MET
62	ST	86	LYS
62	ST	92	HIS
62	ST	94	SER
62	ST	96	ILE
62	ST	100	ARG
62	ST	108	LEU
62	ST	112	LYS
62	ST	113	ASP
62	ST	117	ARG
62	ST	119	GLU
62	ST	124	LEU
62	ST	127	TYR
62	ST	130	GLN
62	ST	134	SER
62	ST	140	GLU
62	ST	142	LYS
62	ST	143	LYS
62	ST	144	PHE
62	ST	147	ARG
62	ST	153	ARG
62	ST	154	GLN
62	ST	156	SER
63	SU	3	LYS
63	SU	5	ARG
63	SU	6	THR
63	SU	7	LYS
63	SU	8	THR

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Mol	Chain	Res	Type
63	SU	11	ARG
63	SU	19	ASN
63	SU	22	GLU
63	SU	24	LEU
63	SU	25	LYS
63	SU	33	LYS
63	SU	35	ILE
63	SU	37	SER
63	SU	38	LYS
63	SU	39	ARG
63	SU	43	ILE
63	SU	44	ILE
63	SU	46	SER
63	SU	47	LYS
63	SU	48	ARG
63	SU	50	ARG
63	SU	52	LYS
63	SU	56	TYR
63	SU	59	THR
63	SU	61	MET
63	SU	63	ARG
63	SU	66	LYS
63	SU	72	ILE
63	SU	73	SER
63	SU	74	LEU
63	SU	75	ARG
63	SU	81	ARG
63	SU	83	ARG
63	SU	84	ARG
63	SU	87	TYR
63	SU	90	LYS
63	SU	91	LYS
63	SU	93	GLU
63	SU	97	GLU
63	SU	100	THR
63	SU	104	THR
63	SU	105	THR
63	SU	107	GLN
63	SU	108	MET
63	SU	109	ILE
63	SU	112	ILE
63	SU	114	PHE

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Mol	Chain	Res	Type
63	SU	117	MET
63	SU	121	LEU
63	SU	122	LYS
64	SV	11	ARG
64	SV	14	LEU
64	SV	15	ARG
64	SV	16	MET
64	SV	20	ASN
64	SV	21	ILE
64	SV	24	LYS
64	SV	26	VAL
64	SV	27	LEU
64	SV	28	GLU
64	SV	32	VAL
64	SV	35	LYS
64	SV	39	ARG
64	SV	40	ARG
64	SV	44	VAL
64	SV	46	LEU
64	SV	47	LYS
64	SV	48	LYS
64	SV	50	ASN
64	SV	52	ASP
64	SV	56	ARG
64	SV	59	GLU
64	SV	60	LEU
64	SV	61	THR
64	SV	65	GLU
64	SV	76	LEU
64	SV	77	SER
64	SV	84	MET
64	SV	85	LEU
64	SV	86	ASN
64	SV	87	ARG
64	SV	88	ASN
64	SV	91	PHE
64	SV	92	GLU
64	SV	95	LYS
64	SV	97	MET
64	SV	99	ILE
64	SV	101	VAL
64	SV	104	ILE

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Mol	Chain	Res	Type
64	SV	107	THR
64	SV	109	ARG
64	SV	112	LEU
64	SV	114	ARG
64	SV	119	ARG
64	SV	126	HIS
64	SV	127	HIS
64	SV	131	LYS
64	SV	133	ARG
64	SV	138	LYS
64	SV	142	ARG
64	SV	143	ARG
64	SV	145	HIS
64	SV	147	VAL
64	SV	149	VAL
64	SV	150	GLN
64	SV	151	ARG
64	SV	152	LYS
65	SW	2	SER
65	SW	4	VAL
65	SW	13	ILE
65	SW	19	HIS
65	SW	20	LEU
65	SW	21	LYS
65	SW	26	ILE
65	SW	27	LYS
65	SW	28	CYS
65	SW	31	PHE
65	SW	34	TYR
65	SW	36	LYS
65	SW	39	VAL
65	SW	41	ARG
65	SW	46	ARG
65	SW	47	ASP
65	SW	49	ASP
65	SW	52	TYR
65	SW	54	LYS
65	SW	61	HIS
65	SW	62	PHE
65	SW	63	TYR
65	SW	64	ILE
65	SW	67	SER

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Mol	Chain	Res	Type
65	SW	70	ILE
65	SW	75	LEU
65	SW	77	ARG
65	SW	78	LYS
65	SW	81	SER
65	SW	82	LEU
65	SW	86	LYS
65	SW	87	THR
65	SW	88	THR
65	SW	90	HIS
65	SW	91	HIS
65	SW	93	LYS
65	SW	94	ARG
65	SW	96	SER
65	SW	100	ILE
65	SW	102	SER
65	SW	104	VAL
65	SW	107	PHE
65	SW	108	LEU
65	SW	112	LEU
65	SW	113	LEU
65	SW	117	GLU
65	SW	120	ARG
65	SW	122	ILE
65	SW	129	MET
65	SW	131	GLU
65	SW	135	GLU
65	SW	137	LEU
66	SX	30	VAL
66	SX	32	LYS
66	SX	33	ASP
66	SX	34	LEU
66	SX	38	GLU
66	SX	44	ILE
66	SX	46	LYS
66	SX	47	GLU
66	SX	53	ILE
66	SX	58	ARG
66	SX	63	ARG
66	SX	64	LEU
66	SX	67	THR
66	SX	69	ARG

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Mol	Chain	Res	Type
66	SX	71	SER
66	SX	75	GLU
66	SX	77	THR
66	SX	79	THR
66	SX	84	GLU
66	SX	88	TYR
66	SX	89	LYS
66	SX	101	ILE
66	SX	103	THR
66	SX	104	ILE
66	SX	105	LEU
66	SX	106	SER
66	SX	107	LYS
66	SX	109	VAL
66	SX	110	VAL
66	SX	114	ILE
66	SX	115	GLN
66	SX	117	THR
66	SX	118	VAL
66	SX	119	GLU
67	SY	8	MET
67	SY	12	SER
67	SY	14	VAL
67	SY	15	VAL
67	SY	17	ASP
67	SY	22	ARG
67	SY	23	LYS
67	SY	24	CYS
67	SY	27	THR
67	SY	34	LYS
67	SY	35	ASP
67	SY	45	ARG
67	SY	49	LYS
67	SY	53	ILE
67	SY	56	ASN
67	SY	57	TYR
67	SY	58	VAL
67	SY	63	CYS
67	SY	66	ILE
67	SY	69	ARG
67	SY	72	VAL
67	SY	85	LEU

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Mol	Chain	Res	Type
67	SY	86	MET
67	SY	88	ARG
68	Sb	2	PRO
68	Sb	3	GLU
68	Sb	4	ILE
68	Sb	7	LYS
68	Sb	9	ARG
68	Sb	10	LYS
68	Sb	12	LEU
68	Sb	13	ASN
68	Sb	14	ASN
68	Sb	17	LEU
68	Sb	19	ARG
68	Sb	22	CYS
68	Sb	24	VAL
68	Sb	27	LEU
68	Sb	40	LYS
68	Sb	42	LYS
68	Sb	45	GLN
68	Sb	47	LEU
68	Sb	52	GLN
68	Sb	53	LYS
68	Sb	54	ASN
68	Sb	55	ILE
68	Sb	56	VAL
68	Sb	57	LEU
68	Sb	62	THR
68	Sb	72	PHE
68	Sb	79	MET
68	Sb	80	ASP
68	Sb	82	LEU
68	Sb	83	MET
68	Sb	90	ARG
68	Sb	91	LYS
68	Sb	96	LEU
68	Sb	97	ILE
68	Sb	98	GLU
68	Sb	101	LYS
68	Sb	105	ARG
68	Sb	106	LYS
68	Sb	108	LEU
68	Sb	111	LEU

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Mol	Chain	Res	Type
68	Sb	115	ARG
68	Sb	117	LYS
68	Sb	118	LYS
68	Sb	119	ARG
69	Sc	14	LYS
69	Sc	15	VAL
69	Sc	24	GLU
69	Sc	27	MET
69	Sc	29	GLU
69	Sc	31	LEU
69	Sc	34	ILE
69	Sc	35	LYS
69	Sc	37	SER
69	Sc	38	LYS
69	Sc	40	ILE
69	Sc	41	THR
69	Sc	43	THR
69	Sc	44	GLN
69	Sc	45	ILE
69	Sc	46	CYS
69	Sc	47	GLU
69	Sc	48	ARG
69	Sc	49	LEU
69	Sc	50	ARG
69	Sc	52	SER
69	Sc	53	VAL
69	Sc	55	LEU
69	Sc	57	LYS
69	Sc	59	VAL
69	Sc	60	MET
69	Sc	63	LEU
69	Sc	65	LYS
69	Sc	66	SER
69	Sc	68	ASP
69	Sc	69	PHE
69	Sc	72	VAL
69	Sc	73	SER
69	Sc	75	SER
69	Sc	76	SER
69	Sc	78	MET
69	Sc	79	THR
69	Sc	81	PHE

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Mol	Chain	Res	Type
69	Sc	82	LYS
69	Sc	86	LYS
69	Sc	87	LYS
70	Sd	5	ARG
70	Sd	12	LYS
70	Sd	18	THR
70	Sd	19	ASN
70	Sd	20	ILE
70	Sd	22	ARG
70	Sd	27	HIS
70	Sd	28	ARG
70	Sd	30	VAL
70	Sd	33	ASP
70	Sd	34	LYS
70	Sd	35	VAL
70	Sd	36	ILE
70	Sd	37	LYS
70	Sd	38	ARG
70	Sd	42	ARG
70	Sd	43	ASN
70	Sd	44	ILE
70	Sd	45	VAL
70	Sd	49	ILE
70	Sd	51	ASP
70	Sd	52	ASP
70	Sd	54	LEU
70	Sd	57	CYS
70	Sd	59	ILE
70	Sd	60	GLN
70	Sd	64	ILE
70	Sd	66	LYS
70	Sd	67	LEU
70	Sd	81	ASN
70	Sd	84	VAL
70	Sd	87	ARG
70	Sd	89	ARG
70	Sd	90	GLU
70	Sd	92	ARG
70	Sd	93	LYS
70	Sd	95	ARG
70	Sd	96	THR
70	Sd	99	LYS

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Mol	Chain	Res	Type
70	Sd	100	ARG
70	Sd	103	ARG
70	Sd	105	SER
70	Sd	106	SER
70	Sd	107	GLN
70	Sd	108	LYS
70	Sd	109	LYS
71	Se	45	ASN
71	Se	46	VAL
71	Se	49	LEU
71	Se	50	TYR
71	Se	52	ASP
71	Se	54	VAL
71	Se	56	GLU
71	Se	58	ARG
71	Se	59	LYS
71	Se	61	LYS
71	Se	63	LYS
71	Se	65	LEU
71	Se	66	VAL
71	Se	67	GLN
71	Se	71	SER
71	Se	76	ILE
71	Se	77	LYS
71	Se	78	CYS
71	Se	81	CYS
71	Se	83	ASP
71	Se	84	ILE
71	Se	85	VAL
71	Se	86	VAL
71	Se	88	TYR
71	Se	93	THR
71	Se	101	THR
71	Se	102	SER
71	Se	103	GLN
71	Se	104	ILE
71	Se	105	SER
71	Se	106	ILE
71	Se	115	THR
71	Se	120	ARG
71	Se	121	TYR
71	Se	123	GLN

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Mol	Chain	Res	Type
72	Sg	3	GLU
72	Sg	5	ILE
72	Sg	6	ASN
72	Sg	8	ARG
72	Sg	11	GLU
72	Sg	13	LEU
72	Sg	15	ARG
72	Sg	16	THR
72	Sg	19	ARG
72	Sg	22	ILE
72	Sg	23	THR
72	Sg	24	GLN
72	Sg	25	VAL
72	Sg	26	LYS
72	Sg	27	VAL
72	Sg	28	GLU
72	Sg	29	PHE
72	Sg	30	MET
72	Sg	34	LYS
72	Sg	35	ARG
72	Sg	36	GLN
72	Sg	37	ILE
72	Sg	41	VAL
72	Sg	42	ILE
72	Sg	45	VAL
72	Sg	46	ARG
72	Sg	47	LYS
72	Sg	48	ASP
72	Sg	49	ASP
72	Sg	50	ILE
72	Sg	53	LEU
72	Sg	54	MET
72	Sg	55	GLU
72	Sg	56	SER
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

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Mol	Chain	Res	Type
73	Sh	91	GLU
73	Sh	92	PHE
73	Sh	94	THR
73	Sh	101	GLU
73	Sh	102	CYS
73	Sh	103	ARG
73	Sh	104	ILE
73	Sh	105	CYS
73	Sh	110	SER
73	Sh	112	TYR
73	Sh	113	ARG
73	Sh	117	LEU
73	Sh	119	ILE
73	Sh	120	CYS
73	Sh	122	ARG
73	Sh	123	CYS
73	Sh	126	GLU
73	Sh	130	LYS
73	Sh	131	ILE
73	Sh	135	LYS
73	Sh	136	LEU
74	Sj	1	ARG
74	Sj	3	HIS
74	Sj	7	THR
74	Sj	8	SER
74	Sj	11	LYS
74	Sj	16	THR
74	Sj	18	LYS
74	Sj	20	GLU
74	Sj	22	LYS
74	Sj	23	GLU
74	Sj	24	LYS
74	Sj	26	ARG
74	Sj	29	ARG
74	Sj	31	ARG
74	Sj	35	ARG
74	Sj	36	LEU
74	Sj	40	LYS
74	Sj	42	PHE
74	Sj	43	VAL
74	Sj	44	ASP
74	Sj	45	ASP

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Mol	Chain	Res	Type
74	Sj	52	ARG
74	Sj	53	ARG
74	Sj	54	LEU
74	Sj	57	ASN
74	Sj	59	LEU
74	Sj	60	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 (112) such sidechains are listed below:

Mol	Chain	Res	Type
1	LA	140	ASN
1	LA	154	GLN
1	LA	216	HIS
2	LB	71	GLN
2	LB	75	GLN
2	LB	269	GLN
2	LB	281	GLN
2	LB	354	GLN
3	LC	34	ASN
3	LC	123	ASN
3	LC	232	HIS
3	LC	279	GLN
6	LF	144	ASN
6	LF	209	HIS
8	LH	69	GLN
10	LJ	152	HIS
11	LK	14	ASN
11	LK	59	GLN
11	LK	163	GLN
11	LK	170	ASN
11	LK	195	ASN
12	LL	7	ASN
13	LM	81	GLN
13	LM	165	GLN
15	LO	41	HIS
15	LO	117	ASN

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Mol	Chain	Res	Type
15	LO	149	ASN
15	LO	153	ASN
17	LQ	27	ASN
17	LQ	96	GLN
17	LQ	100	ASN
18	LR	58	ASN
18	LR	139	GLN
19	LS	75	HIS
20	LT	86	ASN
20	LT	165	GLN
21	LU	54	HIS
21	LU	77	GLN
21	LU	90	ASN
22	LV	68	GLN
23	LW	142	HIS
25	LY	28	ASN
25	LY	30	HIS
25	LY	39	HIS
26	LZ	85	GLN
28	Lb	28	HIS
28	Lb	70	ASN
28	Lb	86	GLN
29	Lc	12	GLN
29	Lc	53	GLN
34	Lh	93	ASN
36	Lj	61	HIS
36	Lj	82	GLN
37	Lk	30	GLN
37	Lk	82	ASN
38	Ll	71	GLN
39	Ln	62	ASN
39	Ln	94	ASN
39	Ln	119	GLN
39	Ln	158	GLN
39	Ln	193	GLN
42	Lq	25	GLN
45	SA	47	GLN
45	SA	118	ASN
45	SA	170	ASN
46	SB	81	GLN
46	SB	194	GLN
47	SC	91	ASN

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Mol	Chain	Res	Type
47	SC	110	ASN
48	SD	18	ASN
49	SE	151	HIS
49	SE	250	ASN
50	SF	119	GLN
50	SF	139	ASN
51	SG	19	ASN
51	SG	65	GLN
51	SG	192	GLN
52	SH	71	GLN
52	SH	91	HIS
52	SH	155	GLN
54	SJ	44	ASN
55	SK	128	ASN
56	SL	54	ASN
57	SM	5	GLN
57	SM	11	HIS
57	SM	13	GLN
57	SM	61	ASN
57	SM	136	ASN
58	SO	96	ASN
59	SP	65	ASN
59	SP	123	HIS
61	SR	128	HIS
62	ST	33	ASN
62	ST	50	ASN
62	ST	101	GLN
62	ST	154	GLN
64	SV	88	ASN
64	SV	127	HIS
64	SV	136	HIS
65	SW	121	HIS
67	SY	40	GLN
68	Sb	14	ASN
68	Sb	18	GLN
68	Sb	54	ASN
68	Sb	77	GLN
68	Sb	110	ASN
70	Sd	25	ASN
70	Sd	55	ASN
70	Sd	107	GLN
72	Sg	24	GLN

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Mol	Chain	Res	Type
73	Sh	98	HIS
74	Sj	57	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
4	LD	141/142 (99%)	70 (49%)	9 (6%)
44	Lt	2588/2697 (95%)	1285 (49%)	0
5	LE	116/121 (95%)	60 (51%)	7 (6%)
75	St	1453/1454 (99%)	825 (56%)	0
76	u	74/75 (98%)	42 (56%)	0
77	v	74/75 (98%)	57 (77%)	0
78	y	9/11 (81%)	6 (66%)	0
All	All	4455/4575 (97%)	2345 (52%)	16 (0%)

All (2345) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
4	LD	3	A
4	LD	6	C
4	LD	8	C
4	LD	9	C
4	LD	10	G
4	LD	11	C
4	LD	12	C
4	LD	16	G
4	LD	17	G
4	LD	20	G
4	LD	21	C
4	LD	24	C
4	LD	25	G
4	LD	28	C
4	LD	30	G
4	LD	31	G
4	LD	35	G
4	LD	36	C
4	LD	39	C
4	LD	40	G
4	LD	45	G
4	LD	47	G
4	LD	48	C

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Mol	Chain	Res	Type
4	LD	52	G
4	LD	53	G
4	LD	54	A
4	LD	55	G
4	LD	59	G
4	LD	60	A
4	LD	63	C
4	LD	64	G
4	LD	69	G
4	LD	71	G
4	LD	72	G
4	LD	73	A
4	LD	75	C
4	LD	76	C
4	LD	79	C
4	LD	80	C
4	LD	81	G
4	LD	83	C
4	LD	84	C
4	LD	85	C
4	LD	86	G
4	LD	87	A
4	LD	88	G
4	LD	92	C
4	LD	93	A
4	LD	100	C
4	LD	104	A
4	LD	105	A
4	LD	106	C
4	LD	108	C
4	LD	109	A
4	LD	111	C
4	LD	112	G
4	LD	113	C
4	LD	115	C
4	LD	116	C
4	LD	117	C
4	LD	118	C
4	LD	119	G
4	LD	125	G
4	LD	126	C
4	LD	131	U

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Mol	Chain	Res	Type
4	LD	133	G
4	LD	135	C
4	LD	136	G
4	LD	140	G
4	LD	142	C
5	LE	3	G
5	LE	7	G
5	LE	9	C
5	LE	11	A
5	LE	14	C
5	LE	15	U
5	LE	20	C
5	LE	22	G
5	LE	23	A
5	LE	24	A
5	LE	27	U
5	LE	29	C
5	LE	30	U
5	LE	31	U
5	LE	32	A
5	LE	33	A
5	LE	34	C
5	LE	35	U
5	LE	36	C
5	LE	38	U
5	LE	39	U
5	LE	40	C
5	LE	42	G
5	LE	43	A
5	LE	44	A
5	LE	46	U
5	LE	47	A
5	LE	50	A
5	LE	52	G
5	LE	53	A
5	LE	54	G
5	LE	55	A
5	LE	61	C
5	LE	62	G
5	LE	63	U
5	LE	64	C
5	LE	65	A

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Mol	Chain	Res	Type
5	LE	66	G
5	LE	67	G
5	LE	72	G
5	LE	75	A
5	LE	77	U
5	LE	80	U
5	LE	88	G
5	LE	92	C
5	LE	93	G
5	LE	94	U
5	LE	96	G
5	LE	98	G
5	LE	99	G
5	LE	100	G
5	LE	102	A
5	LE	106	G
5	LE	107	G
5	LE	109	G
5	LE	110	U
5	LE	111	G
5	LE	113	C
5	LE	114	G
5	LE	115	A
44	Lt	3	C
44	Lt	9	U
44	Lt	10	G
44	Lt	12	G
44	Lt	15	G
44	Lt	18	G
44	Lt	19	G
44	Lt	20	G
44	Lt	21	G
44	Lt	24	G
44	Lt	26	C
44	Lt	28	G
44	Lt	29	G
44	Lt	30	C
44	Lt	39	A
44	Lt	40	G
44	Lt	42	A
44	Lt	43	U
44	Lt	47	A

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Mol	Chain	Res	Type
44	Lt	48	G
44	Lt	49	U
44	Lt	56	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	68	C
44	Lt	69	A
44	Lt	71	C
44	Lt	72	C
44	Lt	73	G
44	Lt	75	G
44	Lt	76	A
44	Lt	80	C
44	Lt	82	C
44	Lt	83	G
44	Lt	84	C
44	Lt	85	U
44	Lt	86	A
44	Lt	87	G
44	Lt	88	C
44	Lt	90	G
44	Lt	91	C
44	Lt	92	G
44	Lt	95	C
44	Lt	97	A
44	Lt	100	C
44	Lt	101	G
44	Lt	106	G
44	Lt	107	A
44	Lt	109	C
44	Lt	117	G
44	Lt	118	A
44	Lt	119	A
44	Lt	120	G
44	Lt	121	G
44	Lt	122	C
44	Lt	123	G
44	Lt	124	C

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Mol	Chain	Res	Type
44	Lt	128	G
44	Lt	150	C
44	Lt	153	C
44	Lt	158	G
44	Lt	160	G
44	Lt	162	C
44	Lt	164	G
44	Lt	165	A
44	Lt	167	G
44	Lt	168	G
44	Lt	172	C
44	Lt	173	G
44	Lt	176	C
44	Lt	178	A
44	Lt	179	G
44	Lt	184	U
44	Lt	185	G
44	Lt	186	C
44	Lt	187	A
44	Lt	189	G
44	Lt	190	C
44	Lt	194	G
44	Lt	198	G
44	Lt	199	G
44	Lt	224	U
44	Lt	225	A
44	Lt	233	U
44	Lt	235	G
44	Lt	238	C
44	Lt	239	G
44	Lt	249	A
44	Lt	250	A
44	Lt	251	G
44	Lt	252	G
44	Lt	254	A
44	Lt	256	G
44	Lt	258	G
44	Lt	260	G
44	Lt	261	G
44	Lt	262	C
44	Lt	267	C
44	Lt	272	G

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Mol	Chain	Res	Type
44	Lt	275	A
44	Lt	277	A
44	Lt	278	U
44	Lt	280	C
44	Lt	281	G
44	Lt	284	C
44	Lt	287	G
44	Lt	288	G
44	Lt	289	A
44	Lt	291	C
44	Lt	293	A
44	Lt	294	U
44	Lt	295	A
44	Lt	298	G
44	Lt	300	A
44	Lt	301	C
44	Lt	302	C
44	Lt	303	A
44	Lt	304	A
44	Lt	308	G
44	Lt	312	G
44	Lt	314	G
44	Lt	317	A
44	Lt	320	G
44	Lt	321	G
44	Lt	322	U
44	Lt	326	A
44	Lt	327	A
44	Lt	328	G
44	Lt	331	C
44	Lt	332	G
44	Lt	335	C
44	Lt	336	U
44	Lt	337	G
44	Lt	339	G
44	Lt	340	G
44	Lt	341	C
44	Lt	343	G
44	Lt	345	U
44	Lt	349	A
44	Lt	350	A
44	Lt	351	G

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Mol	Chain	Res	Type
44	Lt	352	A
44	Lt	354	C
44	Lt	365	C
44	Lt	368	C
44	Lt	369	C
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	387	G
44	Lt	389	C
44	Lt	390	U
44	Lt	394	A
44	Lt	395	A
44	Lt	396	C
44	Lt	397	A
44	Lt	398	C
44	Lt	409	G
44	Lt	416	G
44	Lt	417	C
44	Lt	420	C
44	Lt	421	G
44	Lt	423	C
44	Lt	424	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
44	Lt	439	C
44	Lt	443	C
44	Lt	444	G
44	Lt	447	G
44	Lt	449	A

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Mol	Chain	Res	Type
44	Lt	454	G
44	Lt	456	G
44	Lt	458	G
44	Lt	459	A
44	Lt	460	G
44	Lt	461	A
44	Lt	463	G
44	Lt	464	C
44	Lt	466	C
44	Lt	468	G
44	Lt	471	C
44	Lt	476	C
44	Lt	477	A
44	Lt	479	G
44	Lt	483	C
44	Lt	486	C
44	Lt	487	G
44	Lt	493	G
44	Lt	494	C
44	Lt	495	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	509	G
44	Lt	510	G
44	Lt	513	C
44	Lt	516	G
44	Lt	517	G
44	Lt	518	G
44	Lt	519	C
44	Lt	525	A
44	Lt	527	G
44	Lt	534	U
44	Lt	535	C
44	Lt	537	A
44	Lt	538	U
44	Lt	539	G
44	Lt	542	C

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Mol	Chain	Res	Type
44	Lt	543	G
44	Lt	544	G
44	Lt	546	G
44	Lt	547	A
44	Lt	549	G
44	Lt	554	G
44	Lt	556	C
44	Lt	558	G
44	Lt	561	C
44	Lt	562	G
44	Lt	569	U
44	Lt	570	G
44	Lt	575	A
44	Lt	576	G
44	Lt	577	G
44	Lt	578	C
44	Lt	581	G
44	Lt	583	C
44	Lt	588	U
44	Lt	589	G
44	Lt	591	U
44	Lt	592	G
44	Lt	596	C
44	Lt	597	G
44	Lt	598	C
44	Lt	601	A
44	Lt	605	C
44	Lt	607	C
44	Lt	609	U
44	Lt	611	G
44	Lt	612	G
44	Lt	613	A
44	Lt	618	G
44	Lt	619	G
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	638	A

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Mol	Chain	Res	Type
44	Lt	640	C
44	Lt	641	G
44	Lt	642	A
44	Lt	644	C
44	Lt	645	C
44	Lt	649	U
44	Lt	650	G
44	Lt	653	A
44	Lt	654	G
44	Lt	655	C
44	Lt	656	U
44	Lt	658	G
44	Lt	661	G
44	Lt	664	U
44	Lt	666	C
44	Lt	671	U
44	Lt	677	C
44	Lt	679	A
44	Lt	680	G
44	Lt	681	G
44	Lt	682	A
44	Lt	688	G
44	Lt	691	G
44	Lt	692	C
44	Lt	695	C
44	Lt	696	G
44	Lt	697	C
44	Lt	699	G
44	Lt	700	U
44	Lt	704	G
44	Lt	705	G
44	Lt	709	G
44	Lt	710	U
44	Lt	715	C
44	Lt	716	G
44	Lt	719	G
44	Lt	720	G
44	Lt	721	C
44	Lt	722	C
44	Lt	723	G
44	Lt	724	G
44	Lt	727	G

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Mol	Chain	Res	Type
44	Lt	728	G
44	Lt	729	A
44	Lt	730	G
44	Lt	733	G
44	Lt	734	G
44	Lt	735	G
44	Lt	736	G
44	Lt	737	G
44	Lt	738	C
44	Lt	739	C
44	Lt	741	G
44	Lt	742	C
44	Lt	743	C
44	Lt	744	C
44	Lt	745	C
44	Lt	746	U
44	Lt	748	G
44	Lt	752	G
44	Lt	754	C
44	Lt	757	C
44	Lt	760	A
44	Lt	761	A
44	Lt	764	C
44	Lt	765	C
44	Lt	767	A
44	Lt	769	G
44	Lt	770	G
44	Lt	772	C
44	Lt	776	G
44	Lt	781	C
44	Lt	784	G
44	Lt	787	G
44	Lt	788	C
44	Lt	789	U
44	Lt	790	G
44	Lt	791	G
44	Lt	792	C
44	Lt	794	U
44	Lt	795	G
44	Lt	796	G
44	Lt	797	G
44	Lt	799	G

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Mol	Chain	Res	Type
44	Lt	800	G
44	Lt	802	G
44	Lt	803	C
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	816	G
44	Lt	818	G
44	Lt	819	G
44	Lt	820	C
44	Lt	821	G
44	Lt	827	G
44	Lt	829	C
44	Lt	832	U
44	Lt	834	C
44	Lt	836	G
44	Lt	837	G
44	Lt	838	U
44	Lt	839	A
44	Lt	841	G
44	Lt	844	G
44	Lt	846	A
44	Lt	848	G
44	Lt	853	A
44	Lt	854	G
44	Lt	855	G
44	Lt	858	G
44	Lt	860	A
44	Lt	861	C
44	Lt	865	C
44	Lt	869	A
44	Lt	870	C
44	Lt	874	G
44	Lt	876	G
44	Lt	882	G
44	Lt	883	U
44	Lt	888	C
44	Lt	889	G
44	Lt	890	C

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Mol	Chain	Res	Type
44	Lt	891	C
44	Lt	895	G
44	Lt	898	C
44	Lt	900	C
44	Lt	901	G
44	Lt	902	G
44	Lt	903	A
44	Lt	906	G
44	Lt	907	G
44	Lt	908	C
44	Lt	913	G
44	Lt	916	G
44	Lt	917	G
44	Lt	918	U
44	Lt	919	C
44	Lt	920	C
44	Lt	921	C
44	Lt	922	G
44	Lt	923	A
44	Lt	981	A
44	Lt	983	C
44	Lt	986	A
44	Lt	987	A
44	Lt	989	C
44	Lt	990	G
44	Lt	993	C
44	Lt	997	C
44	Lt	998	C
44	Lt	1001	A
44	Lt	1005	U
44	Lt	1006	G
44	Lt	1007	G
44	Lt	1008	A
44	Lt	1009	G
44	Lt	1010	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	1024	G

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Mol	Chain	Res	Type
44	Lt	1025	G
44	Lt	1026	A
44	Lt	1027	C
44	Lt	1030	G
44	Lt	1031	C
44	Lt	1032	G
44	Lt	1033	C
44	Lt	1036	G
44	Lt	1037	G
44	Lt	1038	C
44	Lt	1046	C
44	Lt	1047	G
44	Lt	1052	G
44	Lt	1053	G
44	Lt	1054	G
44	Lt	1055	U
44	Lt	1061	G
44	Lt	1064	G
44	Lt	1065	C
44	Lt	1066	A
44	Lt	1067	G
44	Lt	1070	G
44	Lt	1072	C
44	Lt	1073	C
44	Lt	1074	C
44	Lt	1076	G
44	Lt	1079	G
44	Lt	1080	C
44	Lt	1081	G
44	Lt	1084	G
44	Lt	1086	C
44	Lt	1087	G
44	Lt	1089	C
44	Lt	1091	C
44	Lt	1093	C
44	Lt	1095	G
44	Lt	1096	G
44	Lt	1100	C
44	Lt	1105	G
44	Lt	1106	A
44	Lt	1109	G
44	Lt	1111	C

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Mol	Chain	Res	Type
44	Lt	1114	C
44	Lt	1115	U
44	Lt	1116	G
44	Lt	1117	G
44	Lt	1118	U
44	Lt	1119	G
44	Lt	1120	C
44	Lt	1121	A
44	Lt	1122	G
44	Lt	1125	C
44	Lt	1129	G
44	Lt	1132	G
44	Lt	1134	A
44	Lt	1135	G
44	Lt	1136	U
44	Lt	1137	A
44	Lt	1138	G
44	Lt	1140	C
44	Lt	1141	G
44	Lt	1142	C
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	1155	C
44	Lt	1159	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	1170	G
44	Lt	1172	G
44	Lt	1176	G
44	Lt	1178	U
44	Lt	1179	U
44	Lt	1184	G
44	Lt	1187	G

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Mol	Chain	Res	Type
44	Lt	1191	G
44	Lt	1192	C
44	Lt	1195	C
44	Lt	1198	G
44	Lt	1199	C
44	Lt	1203	G
44	Lt	1204	G
44	Lt	1206	U
44	Lt	1207	G
44	Lt	1208	A
44	Lt	1210	U
44	Lt	1216	C
44	Lt	1217	U
44	Lt	1220	G
44	Lt	1222	G
44	Lt	1226	G
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	1243	G
44	Lt	1244	G
44	Lt	1245	C
44	Lt	1248	G
44	Lt	1249	C
44	Lt	1250	C
44	Lt	1252	G
44	Lt	1253	C
44	Lt	1257	U
44	Lt	1258	C
44	Lt	1260	A
44	Lt	1261	A
44	Lt	1262	C
44	Lt	1263	G
44	Lt	1265	G
44	Lt	1269	C
44	Lt	1270	C
44	Lt	1272	G
44	Lt	1274	G

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Mol	Chain	Res	Type
44	Lt	1276	A
44	Lt	1277	G
44	Lt	1278	A
44	Lt	1279	C
44	Lt	1290	G
44	Lt	1292	G
44	Lt	1295	C
44	Lt	1297	C
44	Lt	1298	C
44	Lt	1299	G
44	Lt	1303	A
44	Lt	1304	G
44	Lt	1308	C
44	Lt	1309	C
44	Lt	1310	C
44	Lt	1311	G
44	Lt	1317	C
44	Lt	1318	G
44	Lt	1323	C
44	Lt	1324	G
44	Lt	1328	A
44	Lt	1329	C
44	Lt	1332	G
44	Lt	1339	G
44	Lt	1340	G
44	Lt	1343	G
44	Lt	1344	G
44	Lt	1347	G
44	Lt	1349	G
44	Lt	1350	C
44	Lt	1355	G
44	Lt	1359	G
44	Lt	1361	G
44	Lt	1362	A
44	Lt	1365	G
44	Lt	1366	C
44	Lt	1367	C
44	Lt	1369	C
44	Lt	1372	A
44	Lt	1373	G
44	Lt	1376	C
44	Lt	1378	C

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Mol	Chain	Res	Type
44	Lt	1379	G
44	Lt	1380	G
44	Lt	1381	A
44	Lt	1382	C
44	Lt	1383	G
44	Lt	1386	U
44	Lt	1387	U
44	Lt	1388	G
44	Lt	1389	C
44	Lt	1391	C
44	Lt	1392	G
44	Lt	1394	A
44	Lt	1395	G
44	Lt	1399	G
44	Lt	1400	G
44	Lt	1401	G
44	Lt	1405	C
44	Lt	1406	G
44	Lt	1407	G
44	Lt	1412	G
44	Lt	1413	G
44	Lt	1414	A
44	Lt	1419	G
44	Lt	1423	G
44	Lt	1427	C
44	Lt	1428	C
44	Lt	1431	C
44	Lt	1436	C
44	Lt	1437	C
44	Lt	1438	U
44	Lt	1440	A
44	Lt	1444	G
44	Lt	1447	G
44	Lt	1449	G
44	Lt	1451	G
44	Lt	1452	G
44	Lt	1453	C
44	Lt	1454	G
44	Lt	1455	C
44	Lt	1456	C
44	Lt	1458	G
44	Lt	1461	G

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Mol	Chain	Res	Type
44	Lt	1464	C
44	Lt	1466	C
44	Lt	1467	C
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	1481	C
44	Lt	1482	A
44	Lt	1483	G
44	Lt	1484	G
44	Lt	1485	A
44	Lt	1486	C
44	Lt	1487	U
44	Lt	1489	C
44	Lt	1490	G
44	Lt	1491	G
44	Lt	1496	A
44	Lt	1497	G
44	Lt	1498	C
44	Lt	1499	A
44	Lt	1501	C
44	Lt	1504	C
44	Lt	1507	G
44	Lt	1510	C
44	Lt	1511	G
44	Lt	1512	G
44	Lt	1513	G
44	Lt	1515	G
44	Lt	1516	C
44	Lt	1517	G
44	Lt	1518	A
44	Lt	1521	G
44	Lt	1522	C
44	Lt	1524	G
44	Lt	1528	A
44	Lt	1531	G
44	Lt	1532	A
44	Lt	1533	A
44	Lt	1536	C

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Mol	Chain	Res	Type
44	Lt	1538	G
44	Lt	1541	A
44	Lt	1550	C
44	Lt	1552	U
44	Lt	1553	A
44	Lt	1556	C
44	Lt	1558	C
44	Lt	1559	G
44	Lt	1560	G
44	Lt	1562	A
44	Lt	1564	A
44	Lt	1565	A
44	Lt	1566	G
44	Lt	1567	G
44	Lt	1573	C
44	Lt	1575	C
44	Lt	1579	C
44	Lt	1580	G
44	Lt	1581	G
44	Lt	1582	C
44	Lt	1585	G
44	Lt	1586	C
44	Lt	1588	G
44	Lt	1589	G
44	Lt	1590	G
44	Lt	1591	U
44	Lt	1593	A
44	Lt	1594	G
44	Lt	1596	A
44	Lt	1597	C
44	Lt	1599	G
44	Lt	1600	G
44	Lt	1601	A
44	Lt	1602	A
44	Lt	1604	G
44	Lt	1605	G
44	Lt	1606	A
44	Lt	1611	G
44	Lt	1615	U
44	Lt	1618	C
44	Lt	1619	G
44	Lt	1620	A

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Mol	Chain	Res	Type
44	Lt	1624	U
44	Lt	1626	U
44	Lt	1629	U
44	Lt	1630	A
44	Lt	1633	A
44	Lt	1640	C
44	Lt	1641	G
44	Lt	1646	G
44	Lt	1647	A
44	Lt	1648	G
44	Lt	1649	G
44	Lt	1655	A
44	Lt	1657	C
44	Lt	1658	C
44	Lt	1664	U
44	Lt	1668	G
44	Lt	1670	G
44	Lt	1671	A
44	Lt	1672	C
44	Lt	1673	G
44	Lt	1676	A
44	Lt	1677	U
44	Lt	1683	C
44	Lt	1684	C
44	Lt	1686	A
44	Lt	1687	G
44	Lt	1688	U
44	Lt	1692	A
44	Lt	1693	C
44	Lt	1694	G
44	Lt	1696	C
44	Lt	1697	C
44	Lt	1699	U
44	Lt	1702	C
44	Lt	1703	C
44	Lt	1704	G
44	Lt	1707	A
44	Lt	1711	G
44	Lt	1715	C
44	Lt	1717	C
44	Lt	1718	C
44	Lt	1719	G

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Mol	Chain	Res	Type
44	Lt	1720	A
44	Lt	1721	A
44	Lt	1727	G
44	Lt	1731	A
44	Lt	1732	A
44	Lt	1737	G
44	Lt	1740	A
44	Lt	1741	G
44	Lt	1742	U
44	Lt	1744	A
44	Lt	1745	C
44	Lt	1746	U
44	Lt	1747	A
44	Lt	1748	U
44	Lt	1749	G
44	Lt	1750	A
44	Lt	1751	C
44	Lt	1752	U
44	Lt	1753	C
44	Lt	1754	U
44	Lt	1755	C
44	Lt	1757	U
44	Lt	1758	A
44	Lt	1759	A
44	Lt	1760	G
44	Lt	1761	G
44	Lt	1762	U
44	Lt	1764	G
44	Lt	1767	A
44	Lt	1768	A
44	Lt	1769	A
44	Lt	1772	C
44	Lt	1773	C
44	Lt	1775	C
44	Lt	1776	G
44	Lt	1778	C
44	Lt	1779	G
44	Lt	1780	G
44	Lt	1781	G
44	Lt	1782	C
44	Lt	1783	A
44	Lt	1786	U

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Mol	Chain	Res	Type
44	Lt	1792	C
44	Lt	1793	G
44	Lt	1795	G
44	Lt	1796	C
44	Lt	1797	A
44	Lt	1798	U
44	Lt	1801	A
44	Lt	1802	U
44	Lt	1803	G
44	Lt	1805	A
44	Lt	1807	C
44	Lt	1808	A
44	Lt	1811	G
44	Lt	1812	A
44	Lt	1822	U
44	Lt	1823	G
44	Lt	1824	U
44	Lt	1827	C
44	Lt	1829	A
44	Lt	1832	C
44	Lt	1833	G
44	Lt	1835	G
44	Lt	1839	C
44	Lt	1849	C
44	Lt	1851	A
44	Lt	1852	G
44	Lt	1853	C
44	Lt	1854	C
44	Lt	1855	U
44	Lt	1856	C
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	1868	A
44	Lt	1873	C
44	Lt	1874	G
44	Lt	1875	G
44	Lt	1879	G

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Mol	Chain	Res	Type
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	1896	U
44	Lt	1897	U
44	Lt	1898	U
44	Lt	1899	U
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	1920	C
44	Lt	1922	U
44	Lt	1923	G
44	Lt	1926	G
44	Lt	1928	G
44	Lt	1931	G
44	Lt	1932	G
44	Lt	1933	G
44	Lt	1934	C
44	Lt	1935	G
44	Lt	1939	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
44	Lt	1947	G
44	Lt	1948	C

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Mol	Chain	Res	Type
44	Lt	1949	A
44	Lt	1950	C
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	1969	G
44	Lt	1971	G
44	Lt	1972	A
44	Lt	1973	C
44	Lt	1974	A
44	Lt	1975	C
44	Lt	1976	C
44	Lt	1979	G
44	Lt	1980	A
44	Lt	1982	G
44	Lt	1984	C
44	Lt	1985	C
44	Lt	1986	G
44	Lt	1988	C
44	Lt	1989	G
44	Lt	1992	G
44	Lt	1993	C
44	Lt	1994	C
44	Lt	1995	C
44	Lt	2000	C
44	Lt	2003	C
44	Lt	2004	C
44	Lt	2005	G
44	Lt	2008	C
44	Lt	2009	G

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Mol	Chain	Res	Type
44	Lt	2010	C
44	Lt	2011	G
44	Lt	2012	C
44	Lt	2013	G
44	Lt	2017	A
44	Lt	2018	C
44	Lt	2023	C
44	Lt	2024	C
44	Lt	2027	G
44	Lt	2030	G
44	Lt	2031	G
44	Lt	2033	A
44	Lt	2035	U
44	Lt	2036	U
44	Lt	2038	G
44	Lt	2041	U
44	Lt	2042	G
44	Lt	2044	G
44	Lt	2045	G
44	Lt	2046	C
44	Lt	2047	G
44	Lt	2048	G
44	Lt	2049	C
44	Lt	2050	G
44	Lt	2051	C
44	Lt	2052	G
44	Lt	2059	A
44	Lt	2060	C
44	Lt	2061	A
44	Lt	2062	C
44	Lt	2065	G
44	Lt	2066	A
44	Lt	2067	C
44	Lt	2068	C
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

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Mol	Chain	Res	Type
44	Lt	2090	C
44	Lt	2091	A
44	Lt	2092	G
44	Lt	2093	C
44	Lt	2094	G
44	Lt	2095	A
44	Lt	2098	A
44	Lt	2101	G
44	Lt	2102	A
44	Lt	2103	G
44	Lt	2104	A
44	Lt	2105	C
44	Lt	2106	C
44	Lt	2108	C
44	Lt	2111	G
44	Lt	2112	C
44	Lt	2113	G
44	Lt	2114	G
44	Lt	2115	A
44	Lt	2116	G
44	Lt	2117	C
44	Lt	2118	A
44	Lt	2119	G
44	Lt	2120	A
44	Lt	2126	A
44	Lt	2127	C
44	Lt	2128	A
44	Lt	2129	A
44	Lt	2130	G
44	Lt	2132	C
44	Lt	2136	C
44	Lt	2137	C
44	Lt	2138	G
44	Lt	2144	C
44	Lt	2145	G
44	Lt	2146	C
44	Lt	2151	C
44	Lt	2152	G
44	Lt	2153	U
44	Lt	2155	C
44	Lt	2158	G
44	Lt	2159	C

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Mol	Chain	Res	Type
44	Lt	2161	C
44	Lt	2163	G
44	Lt	2164	G
44	Lt	2168	C
44	Lt	2171	A
44	Lt	2174	C
44	Lt	2177	G
44	Lt	2178	G
44	Lt	2179	C
44	Lt	2182	A
44	Lt	2184	C
44	Lt	2185	G
44	Lt	2186	A
44	Lt	2196	G
44	Lt	2199	C
44	Lt	2200	C
44	Lt	2201	G
44	Lt	2202	G
44	Lt	2203	C
44	Lt	2205	G
44	Lt	2207	G
44	Lt	2208	G
44	Lt	2209	G
44	Lt	2212	C
44	Lt	2213	G
44	Lt	2214	G
44	Lt	2215	A
44	Lt	2216	G
44	Lt	2217	G
44	Lt	2218	U
44	Lt	2219	G
44	Lt	2220	G
44	Lt	2221	C
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	2232	C

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Mol	Chain	Res	Type
44	Lt	2233	C
44	Lt	2234	A
44	Lt	2239	G
44	Lt	2240	A
44	Lt	2241	U
44	Lt	2242	A
44	Lt	2244	C
44	Lt	2249	U
44	Lt	2251	G
44	Lt	2254	G
44	Lt	2256	C
44	Lt	2260	G
44	Lt	2261	A
44	Lt	2262	G
44	Lt	2268	G
44	Lt	2269	C
44	Lt	2270	A
44	Lt	2271	G
44	Lt	2272	C
44	Lt	2273	G
44	Lt	2274	A
44	Lt	2276	G
44	Lt	2278	G
44	Lt	2282	U
44	Lt	2283	U
44	Lt	2284	U
44	Lt	2285	U
44	Lt	2286	G
44	Lt	2290	C
44	Lt	2291	U
44	Lt	2294	G
44	Lt	2295	A
44	Lt	2296	U
44	Lt	2298	U
44	Lt	2299	C
44	Lt	2307	C
44	Lt	2309	U
44	Lt	2310	A
44	Lt	2311	C
44	Lt	2314	U
44	Lt	2315	C
44	Lt	2317	G

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Mol	Chain	Res	Type
44	Lt	2320	C
44	Lt	2321	G
44	Lt	2322	C
44	Lt	2323	A
44	Lt	2326	G
44	Lt	2327	G
44	Lt	2329	G
44	Lt	2330	C
44	Lt	2334	A
44	Lt	2335	G
44	Lt	2339	C
44	Lt	2341	G
44	Lt	2344	U
44	Lt	2346	U
44	Lt	2347	U
44	Lt	2348	C
44	Lt	2355	U
44	Lt	2356	C
44	Lt	2357	A
44	Lt	2358	A
44	Lt	2359	G
44	Lt	2360	G
44	Lt	2362	A
44	Lt	2363	U
44	Lt	2364	C
44	Lt	2365	G
44	Lt	2369	G
44	Lt	2370	C
44	Lt	2372	G
44	Lt	2373	G
44	Lt	2376	U
44	Lt	2377	U
44	Lt	2388	G
44	Lt	2393	A
44	Lt	2394	G
44	Lt	2400	U
44	Lt	2401	U
44	Lt	2403	U
44	Lt	2405	C
44	Lt	2411	U
44	Lt	2412	G
44	Lt	2413	G

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Mol	Chain	Res	Type
44	Lt	2414	C
44	Lt	2416	C
44	Lt	2418	G
44	Lt	2419	G
44	Lt	2420	G
44	Lt	2421	G
44	Lt	2423	C
44	Lt	2424	A
44	Lt	2427	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	2440	G
44	Lt	2441	U
44	Lt	2448	G
44	Lt	2450	A
44	Lt	2451	A
44	Lt	2456	C
44	Lt	2457	G
44	Lt	2458	C
44	Lt	2465	C
44	Lt	2467	G
44	Lt	2470	A
44	Lt	2471	G
44	Lt	2472	C
44	Lt	2473	C
44	Lt	2474	C
44	Lt	2475	C
44	Lt	2479	G
44	Lt	2480	U
44	Lt	2482	G
44	Lt	2483	C
44	Lt	2485	C
44	Lt	2486	G
44	Lt	2487	G
44	Lt	2491	G
44	Lt	2492	G
44	Lt	2493	C
44	Lt	2494	A

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Mol	Chain	Res	Type
44	Lt	2495	G
44	Lt	2496	C
44	Lt	2497	G
44	Lt	2500	G
44	Lt	2506	C
44	Lt	2508	G
44	Lt	2509	C
44	Lt	2510	G
44	Lt	2511	C
44	Lt	2514	G
44	Lt	2515	G
44	Lt	2516	G
44	Lt	2523	G
44	Lt	2525	G
44	Lt	2531	C
44	Lt	2532	G
44	Lt	2533	C
44	Lt	2534	C
44	Lt	2536	C
44	Lt	2537	U
44	Lt	2538	A
44	Lt	2539	A
44	Lt	2541	C
44	Lt	2546	A
44	Lt	2547	C
44	Lt	2553	C
44	Lt	2555	C
44	Lt	2556	G
44	Lt	2562	C
44	Lt	2563	G
44	Lt	2565	C
44	Lt	2566	C
44	Lt	2567	G
44	Lt	2572	C
44	Lt	2573	G
44	Lt	2575	G
44	Lt	2579	C
44	Lt	2580	A
44	Lt	2581	G
44	Lt	2582	C
44	Lt	2584	C
44	Lt	2585	C

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Mol	Chain	Res	Type
44	Lt	2586	G
44	Lt	2591	C
44	Lt	2592	C
44	Lt	2593	G
44	Lt	2594	U
44	Lt	2595	C
44	Lt	2596	G
44	Lt	2597	C
44	Lt	2598	C
44	Lt	2601	G
44	Lt	2603	G
44	Lt	2604	G
44	Lt	2605	C
44	Lt	2607	C
44	Lt	2608	C
44	Lt	2609	C
44	Lt	2610	G
44	Lt	2611	C
44	Lt	2614	G
44	Lt	2616	G
44	Lt	2619	G
44	Lt	2627	G
44	Lt	2628	G
44	Lt	2630	G
44	Lt	2632	G
44	Lt	2633	G
44	Lt	2634	C
44	Lt	2635	G
44	Lt	2638	C
44	Lt	2641	G
44	Lt	2642	U
44	Lt	2649	C
44	Lt	2652	A
44	Lt	2653	G
44	Lt	2654	C
44	Lt	2655	C
44	Lt	2656	C
44	Lt	2657	U
44	Lt	2658	G
44	Lt	2668	G
44	Lt	2670	G
44	Lt	2672	G

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Mol	Chain	Res	Type
44	Lt	2675	G
44	Lt	2680	U
44	Lt	2683	A
44	Lt	2687	C
44	Lt	2688	G
44	Lt	2689	C
75	St	2	A
75	St	3	U
75	St	8	U
75	St	9	C
75	St	11	A
75	St	13	C
75	St	14	C
75	St	18	C
75	St	20	G
75	St	22	G
75	St	23	C
75	St	24	G
75	St	25	C
75	St	26	G
75	St	27	A
75	St	31	U
75	St	32	C
75	St	33	U
75	St	34	C
75	St	35	C
75	St	39	A
75	St	40	G
75	St	41	G
75	St	42	A
75	St	43	C
75	St	44	G
75	St	45	A
75	St	46	A
75	St	49	C
75	St	52	G
75	St	54	A
75	St	55	U
75	St	56	G
75	St	57	C
75	St	58	C
75	St	59	C

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Mol	Chain	Res	Type
75	St	61	C
75	St	62	U
75	St	63	C
75	St	64	A
75	St	65	C
75	St	66	C
75	St	68	G
75	St	69	G
75	St	70	G
75	St	71	A
75	St	76	G
75	St	79	G
75	St	81	C
75	St	82	G
75	St	84	C
75	St	86	C
75	St	87	A
75	St	88	G
75	St	91	C
75	St	92	A
75	St	96	G
75	St	98	U
75	St	101	A
75	St	102	C
75	St	103	C
75	St	112	C
75	St	114	G
75	St	115	U
75	St	116	C
75	St	118	C
75	St	119	U
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	126	C
75	St	127	G
75	St	128	G
75	St	129	A
75	St	130	C

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Mol	Chain	Res	Type
75	St	133	C
75	St	134	G
75	St	136	U
75	St	137	G
75	St	138	G
75	St	139	C
75	St	140	A
75	St	141	A
75	St	144	C
75	St	145	G
75	St	146	G
75	St	148	G
75	St	149	C
75	St	151	A
75	St	152	A
75	St	153	G
75	St	154	A
75	St	157	U
75	St	159	C
75	St	160	G
75	St	161	C
75	St	162	G
75	St	163	C
75	St	164	A
75	St	165	C
75	St	166	G
75	St	167	G
75	St	168	G
75	St	169	C
75	St	170	G
75	St	171	C
75	St	172	G
75	St	173	C
75	St	174	G
75	St	175	C
75	St	176	C
75	St	177	C
75	St	178	C
75	St	179	G
75	St	180	C
75	St	181	G
75	St	182	G

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Mol	Chain	Res	Type
75	St	183	G
75	St	184	C
75	St	185	G
75	St	187	G
75	St	188	C
75	St	189	A
75	St	190	G
75	St	194	G
75	St	195	A
75	St	196	C
75	St	197	G
75	St	198	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	210	G
75	St	211	C
75	St	212	C
75	St	216	G
75	St	219	U
75	St	220	C
75	St	221	C
75	St	222	G
75	St	224	G
75	St	228	U
75	St	229	C
75	St	231	C
75	St	237	C
75	St	238	G
75	St	239	G
75	St	240	C
75	St	241	G
75	St	248	C
75	St	249	G
75	St	250	G
75	St	251	C

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Mol	Chain	Res	Type
75	St	258	A
75	St	259	G
75	St	261	G
75	St	263	C
75	St	264	C
75	St	265	G
75	St	272	G
75	St	274	C
75	St	281	U
75	St	283	A
75	St	286	G
75	St	290	G
75	St	291	A
75	St	294	C
75	St	296	G
75	St	298	A
75	St	299	G
75	St	300	A
75	St	301	G
75	St	303	G
75	St	304	G
75	St	308	U
75	St	309	G
75	St	310	C
75	St	313	G
75	St	314	A
75	St	315	C
75	St	316	G
75	St	317	G
75	St	319	C
75	St	320	C
75	St	323	A
75	St	325	A
75	St	329	A
75	St	330	A
75	St	331	G
75	St	332	G
75	St	333	A
75	St	335	G
75	St	336	G
75	St	337	C
75	St	338	A

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Mol	Chain	Res	Type
75	St	339	G
75	St	340	C
75	St	341	A
75	St	342	G
75	St	343	G
75	St	344	C
75	St	347	G
75	St	348	G
75	St	349	A
75	St	350	A
75	St	352	U
75	St	353	U
75	St	354	G
75	St	355	C
75	St	357	C
75	St	358	A
75	St	360	U
75	St	361	G
75	St	362	C
75	St	363	G
75	St	365	G
75	St	366	G
75	St	367	C
75	St	368	G
75	St	369	C
75	St	370	G
75	St	371	C
75	St	372	G
75	St	374	G
75	St	375	G
75	St	376	C
75	St	381	A
75	St	382	C
75	St	383	G
75	St	384	G
75	St	385	G
75	St	386	G
75	St	388	G
75	St	390	G
75	St	391	C
75	St	392	G
75	St	394	G

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Mol	Chain	Res	Type
75	St	395	A
75	St	396	G
75	St	397	C
75	St	398	G
75	St	399	A
75	St	403	G
75	St	407	C
75	St	409	A
75	St	411	A
75	St	416	C
75	St	417	C
75	St	418	G
75	St	420	C
75	St	421	G
75	St	422	C
75	St	423	G
75	St	424	C
75	St	425	A
75	St	426	G
75	St	427	C
75	St	429	G
75	St	430	A
75	St	431	G
75	St	432	G
75	St	434	C
75	St	435	A
75	St	436	A
75	St	438	G
75	St	439	U
75	St	441	U
75	St	444	G
75	St	445	C
75	St	447	A
75	St	448	G
75	St	454	G
75	St	456	G
75	St	458	U
75	St	459	A
75	St	460	A
75	St	461	U
75	St	462	U
75	St	463	C

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Mol	Chain	Res	Type
75	St	464	C
75	St	465	A
75	St	466	G
75	St	467	C
75	St	468	U
75	St	472	C
75	St	474	A
75	St	475	G
75	St	476	C
75	St	477	G
75	St	486	C
75	St	487	G
75	St	488	C
75	St	489	U
75	St	491	C
75	St	494	C
75	St	495	A
75	St	496	G
75	St	499	G
75	St	500	A
75	St	502	A
75	St	503	C
75	St	504	G
75	St	509	U
75	St	510	A
75	St	515	G
75	St	518	C
75	St	519	C
75	St	520	C
75	St	521	C
75	St	524	C
75	St	525	G
75	St	527	C
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	547	C
75	St	548	C
75	St	550	G

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Mol	Chain	Res	Type
75	St	551	G
75	St	553	A
75	St	554	G
75	St	555	G
75	St	556	C
75	St	557	C
75	St	558	C
75	St	559	G
75	St	560	U
75	St	561	U
75	St	564	C
75	St	566	C
75	St	567	C
75	St	568	G
75	St	569	C
75	St	570	C
75	St	571	G
75	St	573	G
75	St	574	U
75	St	576	G
75	St	577	G
75	St	578	A
75	St	579	C
75	St	581	G
75	St	584	C
75	St	585	A
75	St	586	G
75	St	589	G
75	St	590	G
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	602	G
75	St	603	C
75	St	605	G
75	St	606	C
75	St	607	C

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Mol	Chain	Res	Type
75	St	608	G
75	St	609	C
75	St	610	A
75	St	611	G
75	St	614	C
75	St	615	C
75	St	616	G
75	St	617	A
75	St	618	G
75	St	624	C
75	St	626	G
75	St	627	G
75	St	630	G
75	St	633	G
75	St	634	C
75	St	635	A
75	St	638	G
75	St	639	G
75	St	640	U
75	St	645	G
75	St	647	C
75	St	649	G
75	St	650	G
75	St	651	G
75	St	652	A
75	St	658	G
75	St	659	A
75	St	663	A
75	St	667	U
75	St	668	G
75	St	669	A
75	St	672	C
75	St	673	C
75	St	674	G
75	St	675	C
75	St	677	G
75	St	678	A
75	St	680	A
75	St	682	C
75	St	683	G
75	St	684	C
75	St	685	C

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Mol	Chain	Res	Type
75	St	686	G
75	St	687	G
75	St	689	C
75	St	693	C
75	St	694	A
75	St	695	G
75	St	696	G
75	St	698	G
75	St	699	C
75	St	700	C
75	St	701	U
75	St	702	G
75	St	703	C
75	St	704	C
75	St	713	C
75	St	714	U
75	St	715	C
75	St	718	U
75	St	719	C
75	St	720	A
75	St	723	C
75	St	727	G
75	St	728	G
75	St	729	C
75	St	731	A
75	St	732	A
75	St	737	G
75	St	738	G
75	St	744	A
75	St	746	A
75	St	747	A
75	St	750	C
75	St	751	G
75	St	752	A
75	St	754	C
75	St	758	C
75	St	759	A
75	St	761	C
75	St	763	C
75	St	770	C
75	St	774	G
75	St	777	G

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Mol	Chain	Res	Type
75	St	779	A
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	789	G
75	St	790	C
75	St	792	C
75	St	793	C
75	St	794	G
75	St	797	G
75	St	798	C
75	St	801	G
75	St	802	C
75	St	803	G
75	St	805	G
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	816	C
75	St	817	G
75	St	820	C
75	St	821	G
75	St	822	C
75	St	823	C
75	St	829	A
75	St	832	C
75	St	833	C
75	St	834	G
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

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Mol	Chain	Res	Type
75	St	843	C
75	St	844	G
75	St	845	G
75	St	847	C
75	St	848	U
75	St	852	G
75	St	853	G
75	St	857	A
75	St	859	U
75	St	862	G
75	St	863	G
75	St	868	A
75	St	872	C
75	St	880	U
75	St	881	G
75	St	887	A
75	St	888	U
75	St	896	G
75	St	898	G
75	St	899	G
75	St	900	U
75	St	902	C
75	St	903	C
75	St	904	A
75	St	909	A
75	St	911	G
75	St	914	G
75	St	917	U
75	St	918	C
75	St	919	U
75	St	925	U
75	St	929	U
75	St	931	U
75	St	932	G
75	St	934	C
75	St	938	A
75	St	940	G
75	St	941	C
75	St	942	G
75	St	943	C
75	St	944	G
75	St	945	C

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Mol	Chain	Res	Type
75	St	946	A
75	St	947	C
75	St	950	C
75	St	952	C
75	St	953	C
75	St	955	G
75	St	956	G
75	St	958	C
75	St	959	C
75	St	960	G
75	St	961	G
75	St	962	A
75	St	963	C
75	St	964	G
75	St	965	C
75	St	970	A
75	St	971	G
75	St	972	G
75	St	973	A
75	St	974	C
75	St	975	C
75	St	984	G
75	St	985	G
75	St	986	C
75	St	987	G
75	St	988	C
75	St	989	G
75	St	991	U
75	St	993	U
75	St	994	C
75	St	995	G
75	St	996	C
75	St	997	G
75	St	998	A
75	St	999	U
75	St	1000	C
75	St	1001	G
75	St	1002	C
75	St	1003	G
75	St	1004	C
75	St	1005	G
75	St	1007	G

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Mol	Chain	Res	Type
75	St	1012	G
75	St	1013	G
75	St	1015	G
75	St	1016	C
75	St	1017	A
75	St	1018	U
75	St	1020	G
75	St	1026	C
75	St	1027	C
75	St	1028	C
75	St	1029	A
75	St	1030	G
75	St	1032	C
75	St	1039	G
75	St	1043	G
75	St	1045	C
75	St	1048	C
75	St	1049	U
75	St	1050	G
75	St	1056	U
75	St	1057	U
75	St	1058	G
75	St	1059	C
75	St	1062	C
75	St	1063	A
75	St	1067	A
75	St	1068	G
75	St	1070	G
75	St	1076	C
75	St	1079	G
75	St	1080	C
75	St	1083	C
75	St	1085	G
75	St	1087	C
75	St	1088	G
75	St	1089	C
75	St	1090	C
75	St	1091	G
75	St	1092	C
75	St	1095	G
75	St	1096	A
75	St	1098	G

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Mol	Chain	Res	Type
75	St	1099	G
75	St	1102	C
75	St	1105	G
75	St	1106	G
75	St	1107	C
75	St	1110	C
75	St	1111	G
75	St	1112	G
75	St	1113	G
75	St	1114	A
75	St	1115	G
75	St	1119	G
75	St	1120	G
75	St	1121	C
75	St	1123	G
75	St	1125	G
75	St	1126	C
75	St	1127	G
75	St	1132	C
75	St	1133	A
75	St	1134	G
75	St	1137	C
75	St	1138	U
75	St	1139	G
75	St	1141	G
75	St	1142	A
75	St	1147	C
75	St	1149	C
75	St	1150	A
75	St	1151	G
75	St	1152	A
75	St	1153	C
75	St	1161	G
75	St	1162	C
75	St	1163	C
75	St	1164	G
75	St	1165	C
75	St	1166	A
75	St	1170	G
75	St	1175	A
75	St	1177	A
75	St	1178	C

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Mol	Chain	Res	Type
75	St	1179	U
75	St	1180	G
75	St	1181	G
75	St	1182	C
75	St	1183	G
75	St	1185	G
75	St	1186	G
75	St	1187	C
75	St	1188	C
75	St	1189	A
75	St	1190	G
75	St	1191	C
75	St	1192	C
75	St	1194	G
75	St	1195	C
75	St	1199	C
75	St	1200	G
75	St	1202	C
75	St	1204	G
75	St	1205	G
75	St	1208	G
75	St	1210	G
75	St	1212	G
75	St	1213	G
75	St	1214	A
75	St	1215	G
75	St	1219	C
75	St	1220	C
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	1229	C
75	St	1230	G
75	St	1231	G
75	St	1232	G
75	St	1237	C
75	St	1238	G
75	St	1240	G
75	St	1243	G

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Mol	Chain	Res	Type
75	St	1246	A
75	St	1247	C
75	St	1248	G
75	St	1253	C
75	St	1254	G
75	St	1255	C
75	St	1256	G
75	St	1257	C
75	St	1261	A
75	St	1262	G
75	St	1263	G
75	St	1264	A
75	St	1265	A
75	St	1266	U
75	St	1267	G
75	St	1268	U
75	St	1271	U
75	St	1272	G
75	St	1273	U
75	St	1275	G
75	St	1278	G
75	St	1279	C
75	St	1283	C
75	St	1287	C
75	St	1288	A
75	St	1289	C
75	St	1292	C
75	St	1295	G
75	St	1296	C
75	St	1301	C
75	St	1302	G
75	St	1304	G
75	St	1306	C
75	St	1307	C
75	St	1310	G
75	St	1313	C
75	St	1319	A
75	St	1321	A
75	St	1322	C
75	St	1323	A
75	St	1325	C
75	St	1326	G

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Mol	Chain	Res	Type
75	St	1327	C
75	St	1330	G
75	St	1331	U
75	St	1332	C
75	St	1334	C
75	St	1337	C
75	St	1339	A
75	St	1341	C
75	St	1345	U
75	St	1346	G
75	St	1347	G
75	St	1348	G
75	St	1350	G
75	St	1351	C
75	St	1352	G
75	St	1353	G
75	St	1355	G
75	St	1356	G
75	St	1359	A
75	St	1360	G
75	St	1361	C
75	St	1363	C
75	St	1364	C
75	St	1367	G
75	St	1368	G
75	St	1369	A
75	St	1370	C
75	St	1371	G
75	St	1372	C
75	St	1373	G
75	St	1374	C
75	St	1375	G
75	St	1376	A
75	St	1378	G
75	St	1381	C
75	St	1382	C
75	St	1383	G
75	St	1389	C
75	St	1392	C
75	St	1393	G
75	St	1395	G
75	St	1399	G

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Mol	Chain	Res	Type
75	St	1401	A
75	St	1404	A
75	St	1410	A
75	St	1411	A
75	St	1412	G
75	St	1415	G
75	St	1417	A
75	St	1418	A
75	St	1420	A
75	St	1421	A
75	St	1422	G
75	St	1423	G
75	St	1424	U
75	St	1425	A
75	St	1426	U
75	St	1428	C
75	St	1430	U
75	St	1431	A
75	St	1433	G
75	St	1434	U
75	St	1435	G
75	St	1437	A
75	St	1438	C
75	St	1443	G
75	St	1444	G
75	St	1447	G
75	St	1448	G
75	St	1449	A
75	St	1450	U
75	St	1451	C
75	St	1452	C
75	St	1453	U
75	St	1454	U
76	u	2	G
76	u	3	C
76	u	4	A
76	u	6	A
76	u	7	G
76	u	8	U
76	u	9	G
76	u	10	G
76	u	11	C

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Mol	Chain	Res	Type
76	u	15	G
76	u	16	C
76	u	17	G
76	u	18	G
76	u	19	A
76	u	20	A
76	u	22	C
76	u	25	G
76	u	27	U
76	u	28	G
76	u	30	G
76	u	32	C
76	u	37	A
76	u	40	C
76	u	41	A
76	u	42	G
76	u	44	G
76	u	45	G
76	u	46	U
76	u	47	C
76	u	48	G
76	u	50	U
76	u	56	G
76	u	57	A
76	u	58	A
76	u	59	A
76	u	63	U
76	u	69	G
76	u	70	C
76	u	71	U
76	u	73	C
76	u	74	C
76	u	75	A
77	v	2	G
77	v	3	C
77	v	4	A
77	v	5	G
77	v	6	A
77	v	7	G
77	v	9	G
77	v	10	G
77	v	11	C

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Mol	Chain	Res	Type
77	v	12	G
77	v	13	C
77	v	14	A
77	v	15	G
77	v	16	C
77	v	17	G
77	v	18	G
77	v	19	A
77	v	20	A
77	v	21	G
77	v	22	C
77	v	26	C
77	v	27	U
77	v	28	G
77	v	29	G
77	v	30	G
77	v	31	C
77	v	32	C
77	v	33	C
77	v	34	U
77	v	35	C
77	v	39	C
77	v	40	C
77	v	45	G
77	v	46	U
77	v	47	C
77	v	48	G
77	v	49	A
77	v	50	U
77	v	51	G
77	v	52	G
77	v	53	A
77	v	54	U
77	v	55	C
77	v	56	G
77	v	57	A
77	v	58	A
77	v	61	C
77	v	62	A
77	v	65	C
77	v	66	U
77	v	67	C

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Mol	Chain	Res	Type
77	v	69	G
77	v	71	U
77	v	72	A
77	v	73	C
77	v	74	C
77	v	75	A
78	y	34	A
78	y	35	U
78	y	37	G
78	y	38	A
78	y	39	G
78	y	40	A

All (16) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
4	LD	8	C
4	LD	24	C
4	LD	39	C
4	LD	40	G
4	LD	52	G
4	LD	73	A
4	LD	83	C
4	LD	87	A
4	LD	117	C
5	LE	13	C
5	LE	31	U
5	LE	38	U
5	LE	50	A
5	LE	62	G
5	LE	63	U
5	LE	110	U

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 oligosaccharides 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.

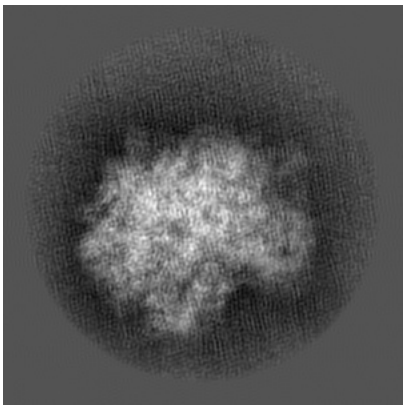
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-16228. These allow visual inspection of the internal detail of the map and identification of artifacts.

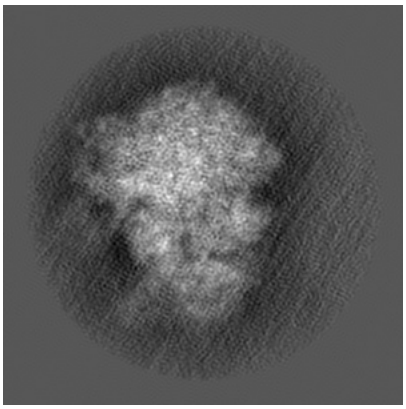
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

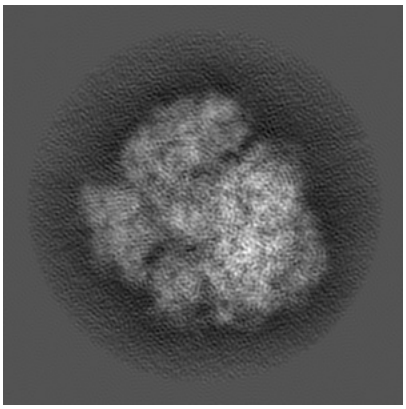
6.1.1 Primary map



X

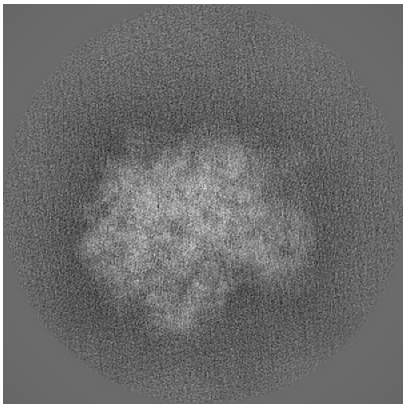


Y

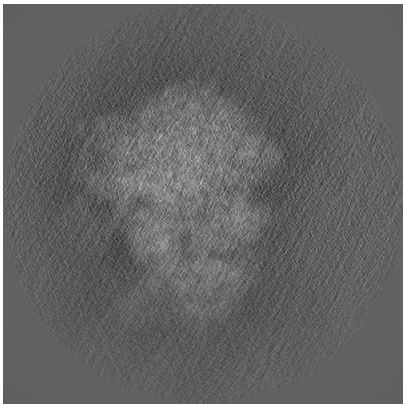


Z

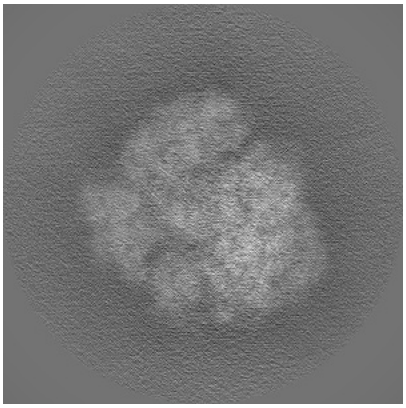
6.1.2 Raw map



X



Y

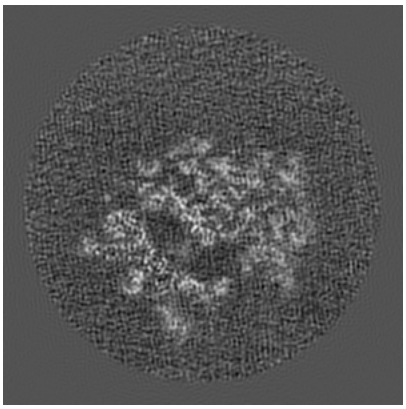


Z

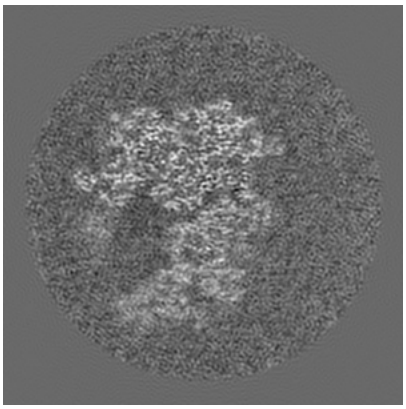
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

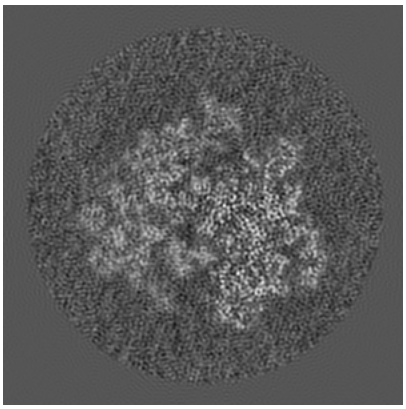
6.2.1 Primary map



X Index: 250

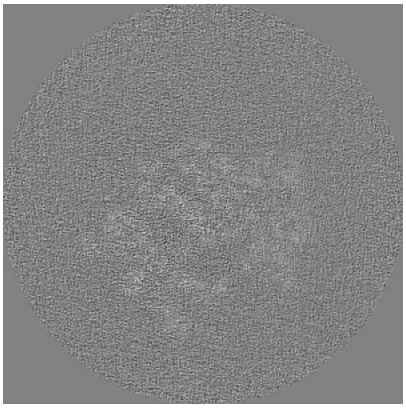


Y Index: 250

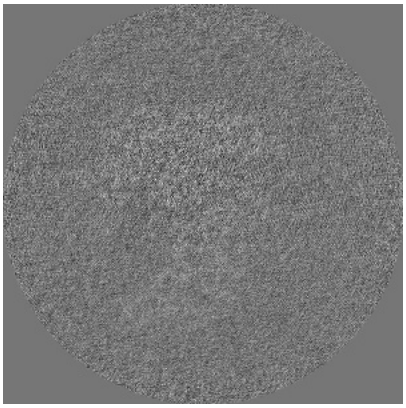


Z Index: 250

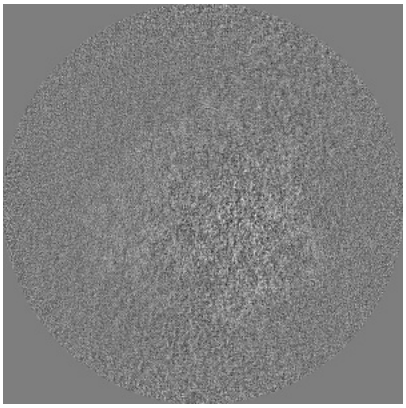
6.2.2 Raw map



X Index: 250



Y Index: 250

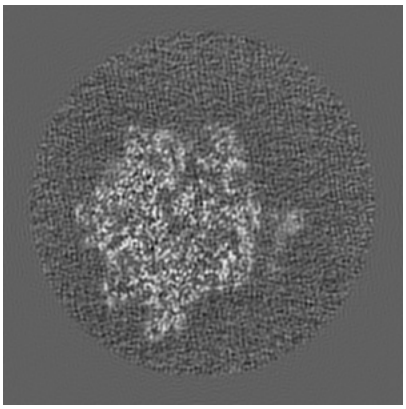


Z Index: 250

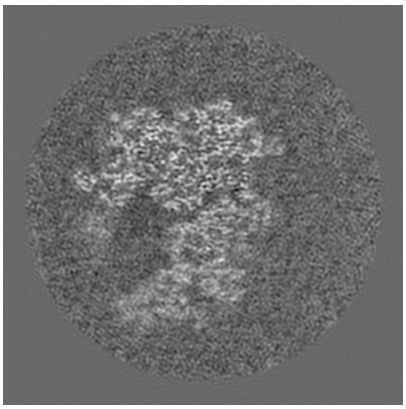
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

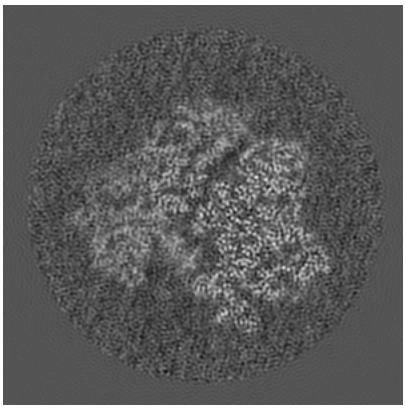
6.3.1 Primary map



X Index: 306

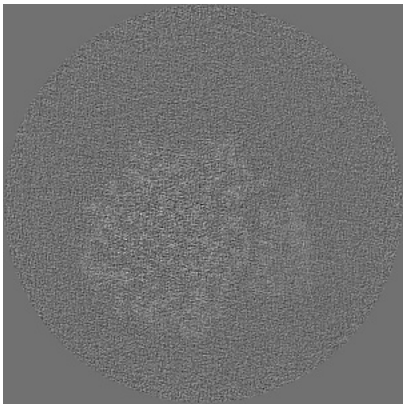


Y Index: 250

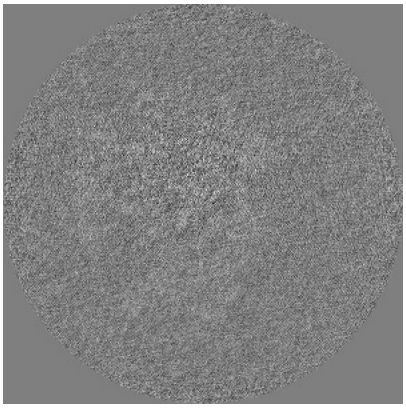


Z Index: 239

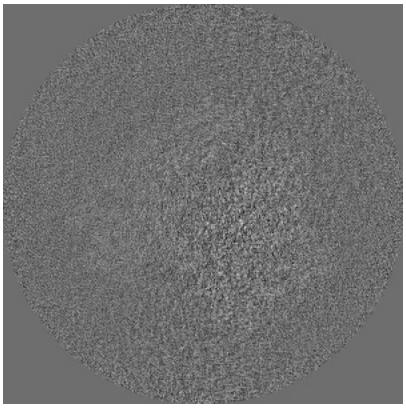
6.3.2 Raw map



X Index: 284



Y Index: 224

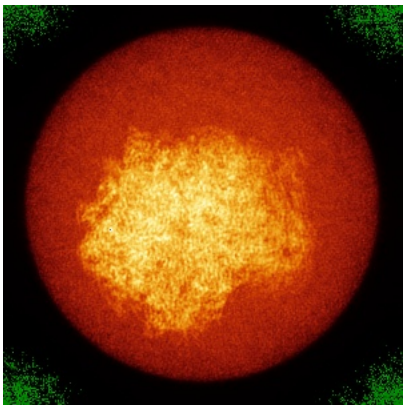


Z Index: 242

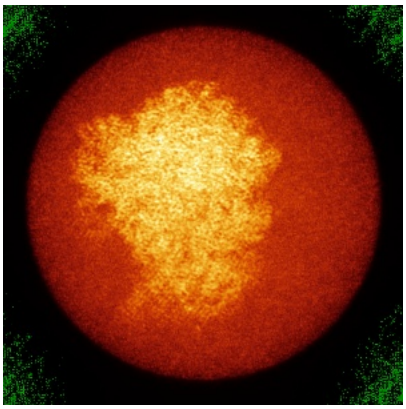
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

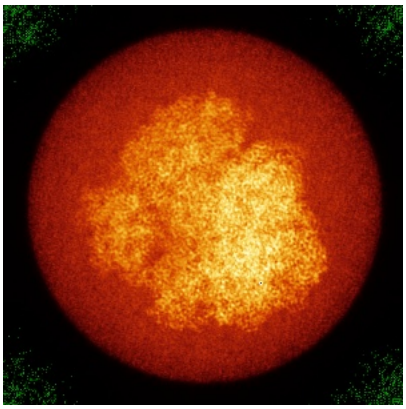
6.4.1 Primary map



X

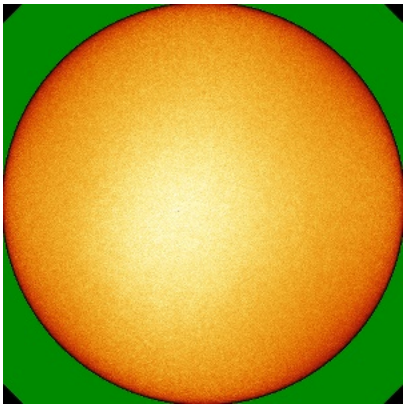


Y

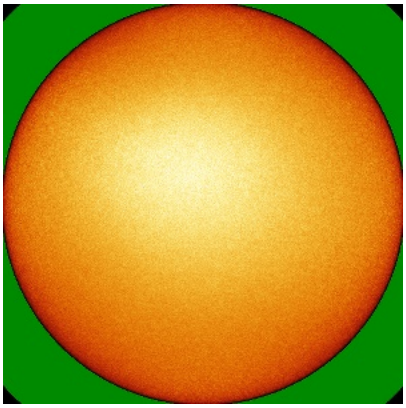


Z

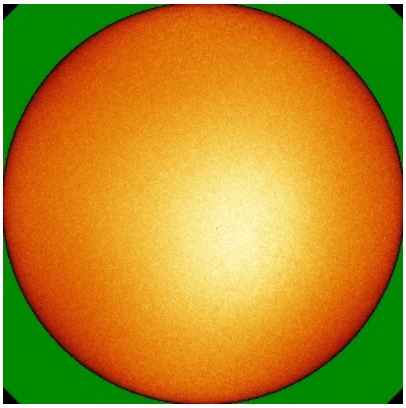
6.4.2 Raw map



X



Y



Z

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

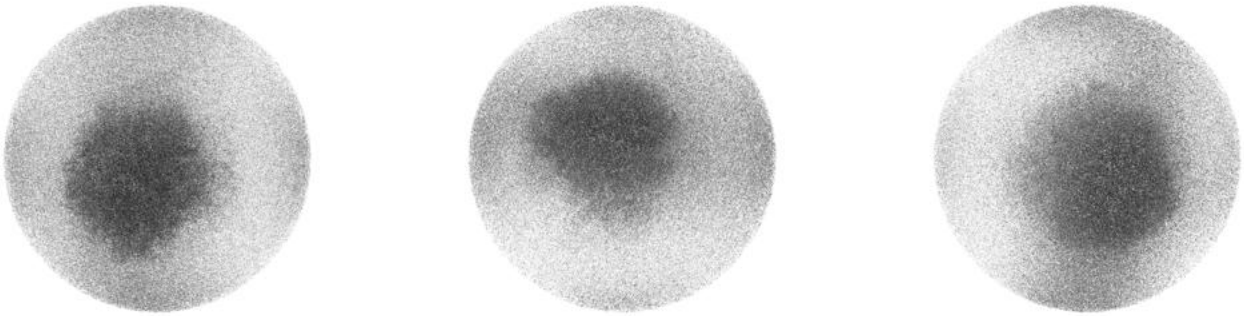
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 4.0. 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



X Y Z

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

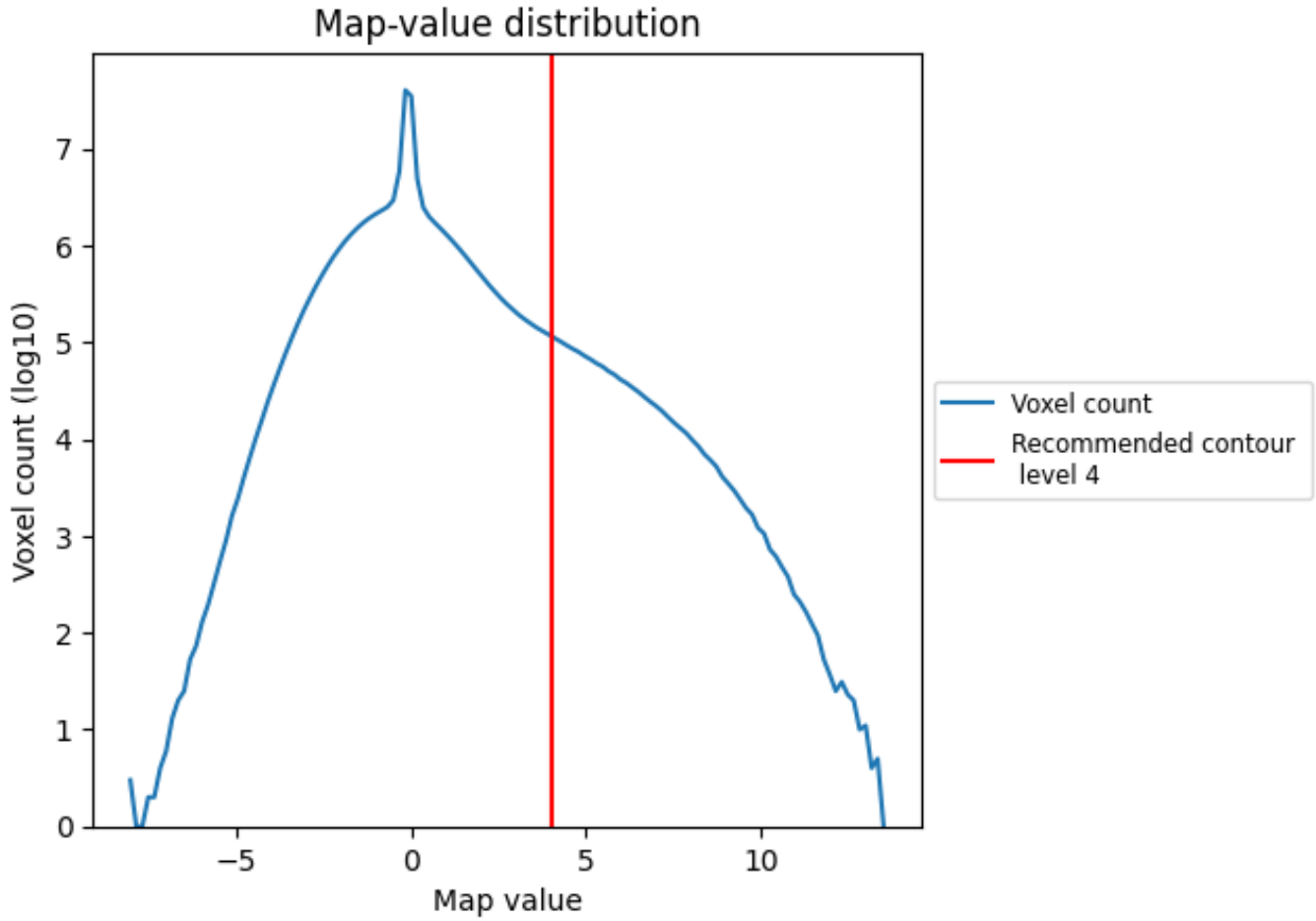
6.6 Mask visualisation (i)

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

7 Map analysis

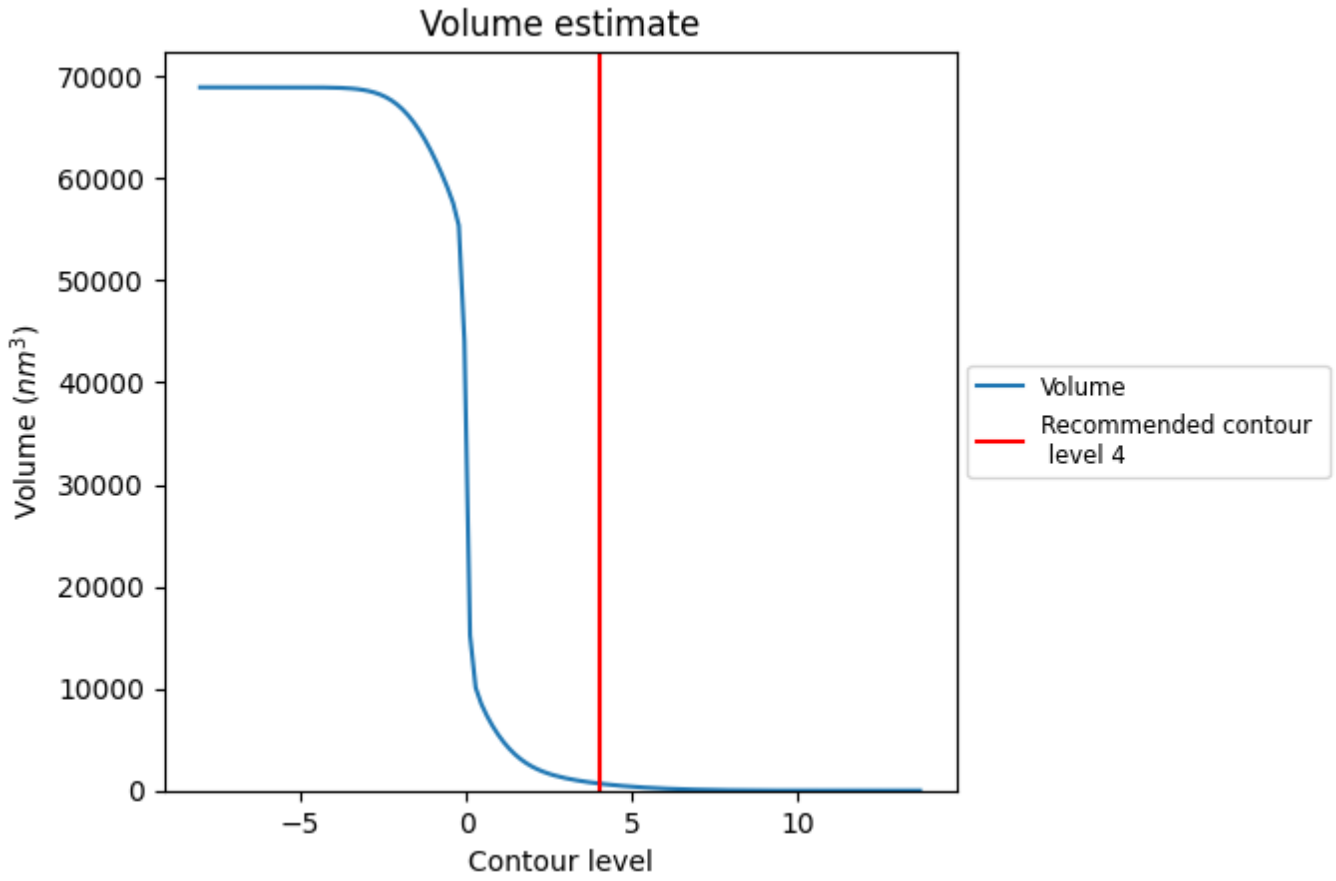
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

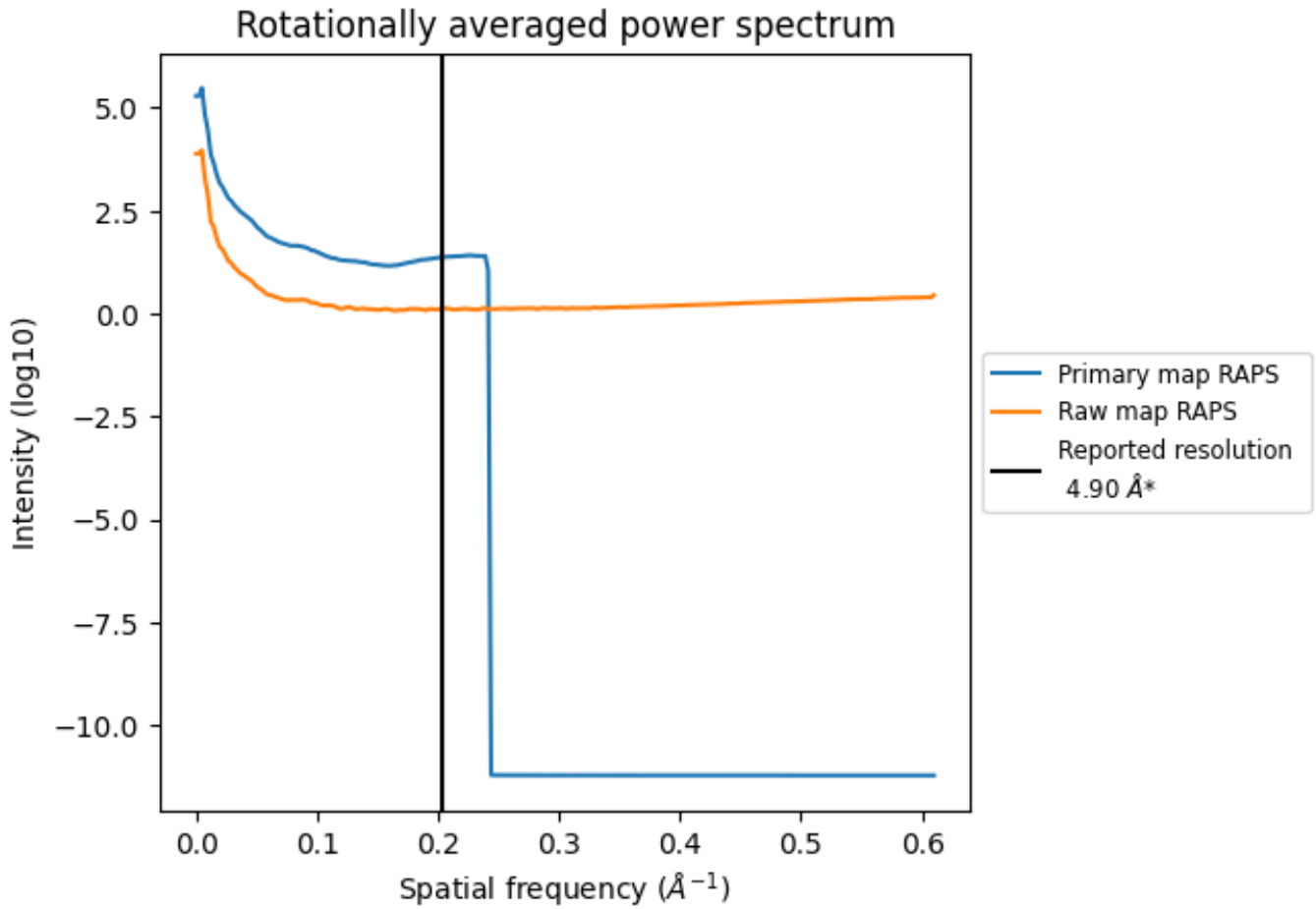
7.2 Volume estimate



The volume at the recommended contour level is 692 nm^3; this corresponds to an approximate mass of 625 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)

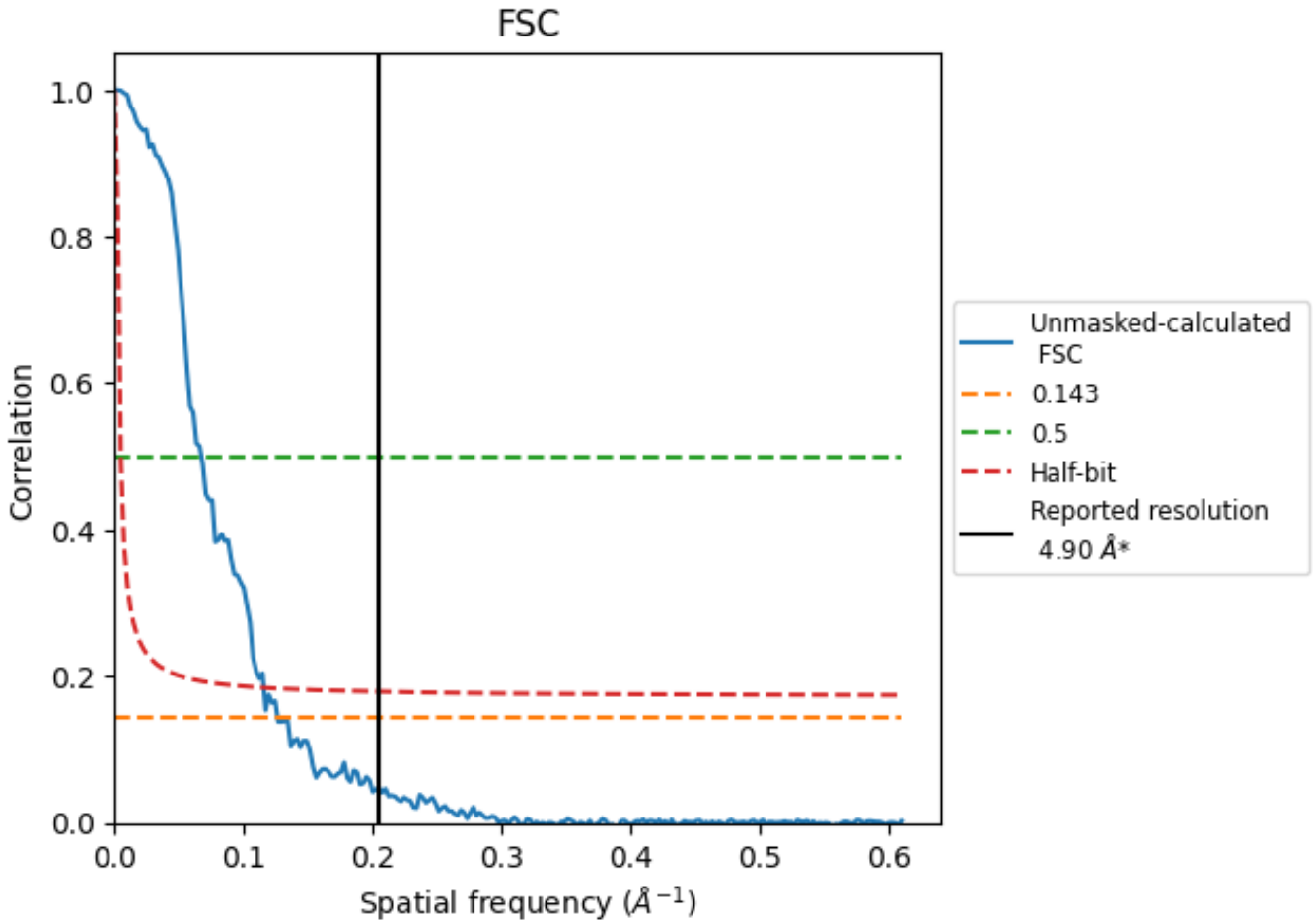


*Reported resolution corresponds to spatial frequency of 0.204 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.204 Å^{-1}

8.2 Resolution estimates (i)

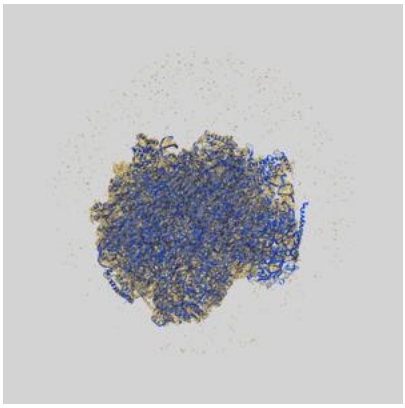
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.90	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	7.91	14.88	8.65

*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 7.91 differs from the reported value 4.9 by more than 10 %

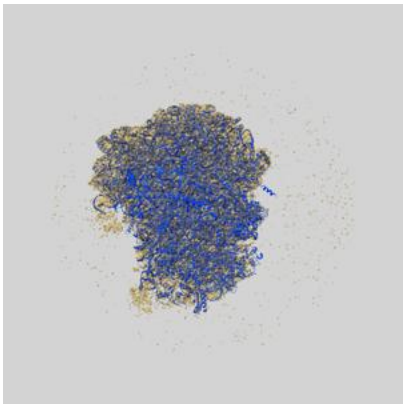
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-16228 and PDB model 8BTD. Per-residue inclusion information can be found in section 3 on page 18.

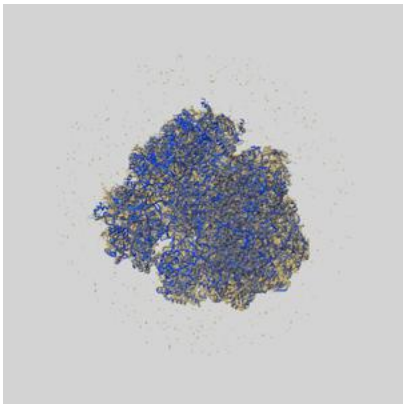
9.1 Map-model overlay



X



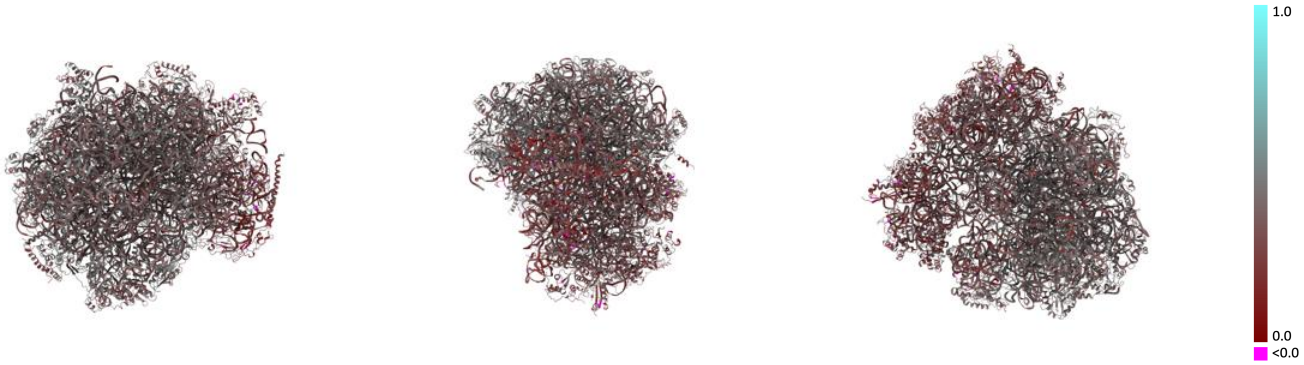
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 4.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

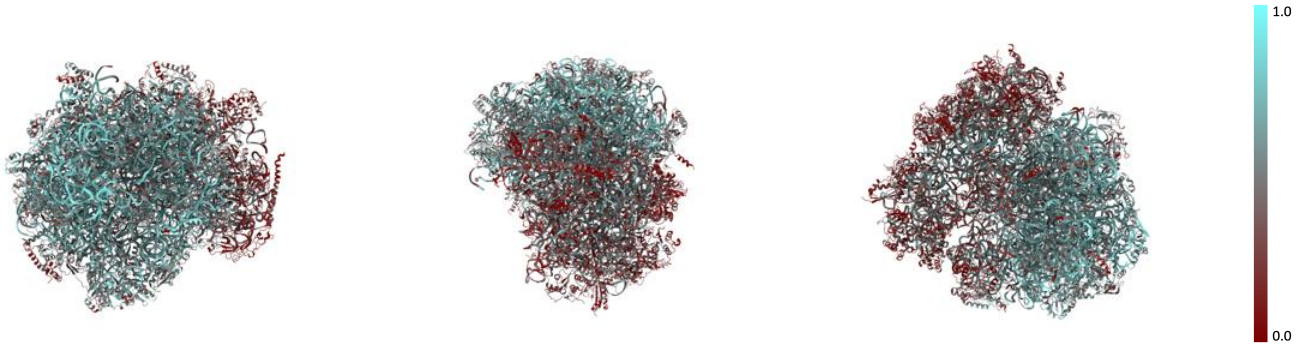
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

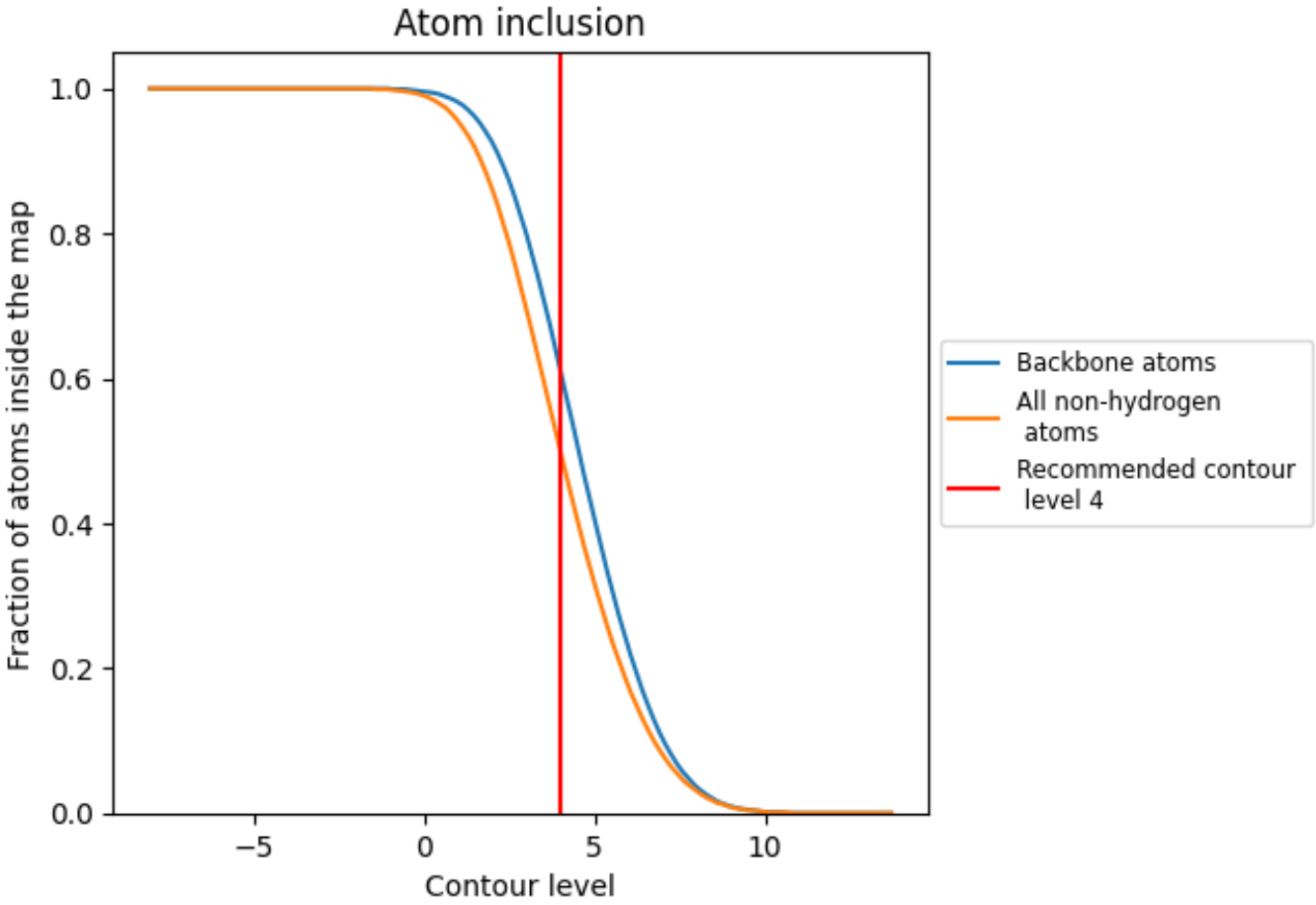
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (4).

9.4 Atom inclusion (i)



At the recommended contour level, 61% of all backbone atoms, 50% 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 (4) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.4980	0.3660
LA	0.4830	0.4370
LB	0.5250	0.4300
LC	0.5340	0.4260
LD	0.6830	0.3760
LE	0.7080	0.3780
LF	0.4580	0.4010
LG	0.4960	0.4190
LH	0.4510	0.4110
LI	0.4740	0.4090
LJ	0.5070	0.4290
LK	0.4230	0.4240
LL	0.4420	0.4070
LM	0.5320	0.4260
LN	0.5080	0.4120
LO	0.5360	0.4380
LP	0.5210	0.4090
LQ	0.5040	0.4300
LR	0.5080	0.4260
LS	0.4230	0.3910
LT	0.5240	0.4270
LU	0.4870	0.4280
LV	0.3960	0.3800
LW	0.5060	0.4230
LX	0.4930	0.4130
LY	0.5470	0.4390
LZ	0.5820	0.4300
La	0.3980	0.3880
Lb	0.5610	0.4360
Lc	0.4930	0.4090
Ld	0.4850	0.4150
Le	0.5420	0.4330
Lf	0.5000	0.4270
Lg	0.5450	0.4460
Lh	0.4440	0.4220

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Chain	Atom inclusion	Q-score
Li	0.5070	0.4080
Lj	0.4450	0.4160
Lk	0.5780	0.4510
Ll	0.4010	0.3810
Ln	0.1070	0.3090
Lo	0.3400	0.4030
Lp	0.5150	0.4480
Lq	0.5150	0.4120
Ls	0.5050	0.3990
Lt	0.6680	0.3820
SA	0.2590	0.3360
SB	0.3080	0.3600
SC	0.2300	0.3100
SD	0.3280	0.3650
SE	0.2170	0.2960
SF	0.2320	0.3270
SG	0.1210	0.2870
SH	0.1900	0.3310
SI	0.2000	0.3350
SJ	0.3270	0.3610
SK	0.2340	0.3010
SL	0.2250	0.2630
SM	0.1970	0.3300
SO	0.2890	0.3890
SP	0.2940	0.3470
SQ	0.3890	0.3870
SR	0.2090	0.3480
ST	0.2050	0.3120
SU	0.2040	0.3100
SV	0.2670	0.3600
SW	0.2550	0.3070
SX	0.1840	0.2540
SY	0.2210	0.3430
Sb	0.1830	0.2960
Sc	0.2130	0.3180
Sd	0.3320	0.3870
Se	0.2160	0.3640
Sg	0.2020	0.3380
Sh	0.2860	0.3270
Sj	0.1820	0.3340
St	0.4870	0.3070
u	0.4300	0.3030

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Chain	Atom inclusion	Q-score
v	0.0970	0.1980
y	0.2850	0.3110