wwPDB EM Validation Summary Report (i)

Dec 11, 2022 – 08:33 am GMT

PDB ID	:	6RXY
EMDB ID	:	EMD-10055
Title	:	Cryo-EM structure of the 90S pre-ribosome (Kre33-Noc4) from Chaetomium thermophilum, state a
Authors	:	Cheng, J.; Kellner, N.; Griesel, S.; Berninghausen, O.; Beckmann, R.; Hurt, E.
Deposited on	:	2019-06-10
Resolution	:	4.70 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

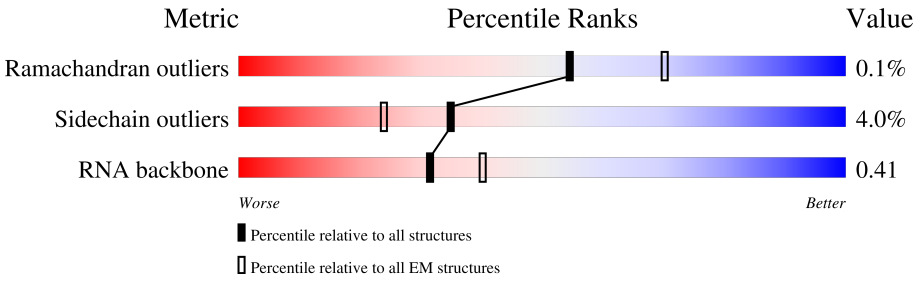
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

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 4.70 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	UA	904	89% · 7%
2	UB	907	56% · 44%
3	UC	648	11% 89%
4	UD	884	86% · 13%
5	UF	414	80% 20%
6	UG	558	76% · 20%
7	UJ	1802	20% 44% · 55%
8	UK	270	79% · 20%

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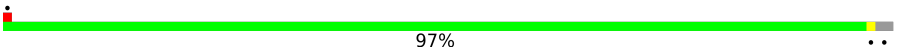
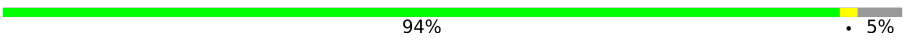
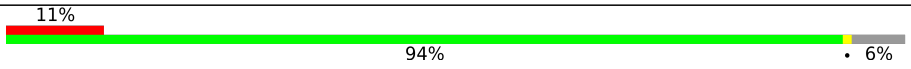
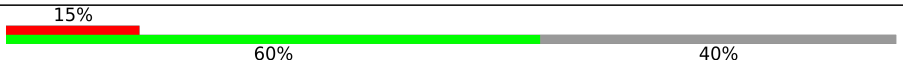
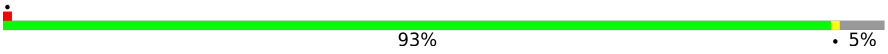
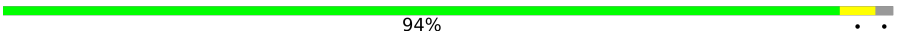
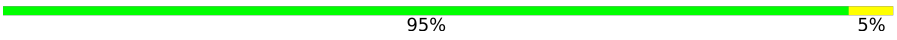
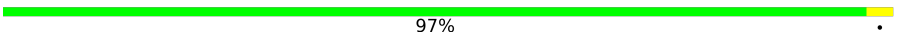
Mol	Chain	Length	Quality of chain
9	UL	962	
10	UM	912	
11	UN	938	
12	UO	557	
13	UQ	960	
14	UR	618	
15	UU	1049	
16	UX	193	
17	UZ	391	
18	CA	313	
18	CB	313	
19	CC	523	
20	CD	582	
21	CE	127	
21	CF	127	
22	CG	630	
23	CH	411	
24	CI	1163	
25	CJ	183	
26	CK	297	
27	CL	785	
28	CM	446	
29	CN	252	
29	CO	252	
30	CP	322	

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Mol	Chain	Length	Quality of chain
31	CQ	259	66% 32%
32	CR	1073	30% 53% 16% 29%
32	CS	1073	66% 53% 16% 29%
33	CT	203	64% 35%
34	Cc	212	89% 9%
35	Ce	203	78% 76% 22%
36	Cg	190	41% 83% 16%
37	Ch	151	27% 32% 68%
38	Ci	150	33% 76% 23%
39	Cj	143	85% 12%
40	Cm	130	68% 95%
41	Cn	145	66% 34%
42	Cp	68	90% 10%
43	CU	311	11% 40% 58%
44	C1	2323	6% 24% 19% 5% 52%
45	C2	230	17% 48% 37% 15%
46	UV	1171	91% 88% 9%
47	CV	322	46% 44% 54%
48	UH	930	38% 61%
49	UE	410	23% 7% 70%
49	UI	410	23% 7% 70%
50	US	549	81% 18%
51	Cl	156	8% 49% 49%
52	CX	480	9% 55% 44%
53	UP	364	15% 85%

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Mol	Chain	Length	Quality of chain
54	Cz	1796	13% 15% 85%

2 Entry composition (i)

There are 55 unique types of molecules in this entry. The entry contains 180242 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 Periodic tryptophan protein 2-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	UA	839	6366	4101	1136	1105	24	0	0

- Molecule 2 is a protein called Utp2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	UB	512	4079	2576	781	711	11	0	0

- Molecule 3 is a protein called Utp3.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
3	UC	74	588	371	120	97	0	0

- Molecule 4 is a protein called Utp4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	UD	772	6071	3851	1093	1103	24	0	0

- Molecule 5 is a protein called Utp6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	UF	331	2591	1674	504	399	14	0	0

- Molecule 6 is a protein called Utp7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	UG	448	3444	2197	646	590	11	0	0

- Molecule 7 is a protein called Utp10.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	UJ	808	Total	C	N	O	S	0	0
			6180	3965	1077	1115	23		

- Molecule 8 is a protein called U3 small nucleolar RNA-associated protein 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	UK	217	Total	C	N	O	S	0	0
			1687	1062	351	269	5		

- Molecule 9 is a protein called Utp12.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	UL	785	Total	C	N	O	S	0	0
			6175	3940	1088	1130	17		

- Molecule 10 is a protein called Utp13.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	UM	679	Total	C	N	O	S	0	0
			5273	3351	924	986	12		

- Molecule 11 is a protein called Utp14.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	UN	154	Total	C	N	O	S	0	0
			1209	770	228	206	5		

- Molecule 12 is a protein called Utp15.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	UO	504	Total	C	N	O	S	0	0
			3819	2422	699	684	14		

- Molecule 13 is a protein called Utp17.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	UQ	789	Total	C	N	O	S	0	0
			6008	3831	1037	1119	21		

- Molecule 14 is a protein called Utp18.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	UR	447	Total	C	N	O	S	0	0
			3491	2209	656	616	10		

- Molecule 15 is a protein called Utp21.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	UU	902	Total	C	N	O	S	0	0
			6734	4336	1236	1136	26		

- Molecule 16 is a protein called Utp24.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	UX	190	Total	C	N	O	S	0	0
			1470	932	282	246	10		

- Molecule 17 is a protein called Utp30.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	UZ	235	Total	C	N	O	S	0	0
			1815	1184	330	298	3		

- Molecule 18 is a protein called Nop1.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	CA	242	Total	C	N	O	S	0	0
			1778	1149	327	293	9		
18	CB	237	Total	C	N	O	S	0	0
			1816	1154	318	335	9		

- Molecule 19 is a protein called Nop56.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	CC	387	Total	C	N	O	S	0	0
			2866	1836	527	492	11		

- Molecule 20 is a protein called Nop58.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	CD	420	Total	C	N	O	S	0	0
			3150	2023	560	557	10		

- Molecule 21 is a protein called Snu13.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	CE	121	Total	C	N	O	S	0	0
			879	557	165	154	3		
21	CF	120	Total	C	N	O	S	0	0
			864	550	161	150	3		

- Molecule 22 is a protein called Rrp9.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	CG	378	Total	C	N	O	S	0	0
			2922	1865	527	517	13		

- Molecule 23 is a protein called RNA 3'-terminal phosphate cyclase-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	CH	389	Total	C	N	O	S	0	0
			2888	1827	526	525	10		

- Molecule 24 is a protein called Bms1.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	CI	822	Total	C	N	O	S	0	0
			6486	4169	1213	1077	27		

- Molecule 25 is a protein called Imp3.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	CJ	179	Total	C	N	O	S	0	0
			1434	918	283	226	7		

- Molecule 26 is a protein called Imp4.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	CK	297	Total	C	N	O	S	0	0
			2329	1476	445	400	8		

- Molecule 27 is a protein called Mpp10.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	CL	231	Total	C	N	O	S	0	0
			1786	1114	339	327	6		

- Molecule 28 is a protein called Sof1.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	CM	445	Total	C	N	O	S	0	0
			3501	2195	672	619	15		

- Molecule 29 is a protein called Emg1.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	CN	226	Total	C	N	O	S	0	0
			1762	1119	306	327	10		
29	CO	215	Total	C	N	O	S	0	0
			1683	1067	293	313	10		

- Molecule 30 is a protein called KRR1 small subunit processome component.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	CP	187	Total	C	N	O	S	0	0
			1504	961	269	265	9		

- Molecule 31 is a protein called Pre-rRNA-processing protein PNO1.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	CQ	175	Total	C	N	O	S	0	0
			1361	862	250	242	7		

- Molecule 32 is a protein called Kre33.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	CR	760	Total	C	N	O	S	0	0
			5989	3851	1024	1087	27		
32	CS	760	Total	C	N	O	S	0	0
			5989	3851	1024	1087	27		

- Molecule 33 is a protein called Fcf2.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	CT	131	Total	C	N	O	S	0	0
			1035	656	197	178	4		

- Molecule 34 is a protein called 40S ribosomal protein s5-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	Cc	192	Total	C	N	O	S	0	0
			1464	926	278	253	7		

- Molecule 35 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms				AltConf	Trace
35	Ce	159	Total	C	N	O	0	0
			1279	810	237	232		

- Molecule 36 is a protein called 40S ribosomal protein s9-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	Cg	159	Total	C	N	O	S	0	0
			1242	801	255	184	2		

- Molecule 37 is a protein called 40S ribosomal protein S13-like protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
37	Ch	49	Total	C	N	O	0	0
			416	270	82	64		

- Molecule 38 is a protein called 40S ribosomal protein S14-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	Ci	115	Total	C	N	O	S	0	0
			791	492	154	141	4		

- Molecule 39 is a protein called 40S ribosomal protein S16-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	Cj	126	Total	C	N	O	S	0	0
			943	613	177	151	2		

- Molecule 40 is a protein called 40S ribosomal protein S22-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	Cm	126	Total	C	N	O	S	0	0
			985	632	184	164	5		

- Molecule 41 is a protein called 40S ribosomal protein s23-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	Cn	96	Total	C	N	O	S	0	0
			702	456	134	110	2		

- Molecule 42 is a protein called 40S ribosomal protein S28-like protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
42	Cp	61	Total	C	N	O	0	0
			455	284	97	74		

- Molecule 43 is a protein called Faf1.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	CU	131	Total	C	N	O	S	0	0
			1009	623	205	175	6		

- Molecule 44 is a RNA chain called 35S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	C1	1106	Total	C	N	O	P	0	0
			23604	10525	4233	7740	1106		

- Molecule 45 is a RNA chain called U3 snoRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	C2	230	Total	C	N	O	P	0	0
			4891	2182	856	1623	230		

- Molecule 46 is a protein called U3 small nucleolar RNA-associated protein 22.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	UV	1061	Total	C	N	O	S	0	0
			8424	5399	1480	1523	22		

- Molecule 47 is a protein called Rrp7.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	CV	148	Total	C	N	O	S	0	0
			1145	729	198	216	2		

- Molecule 48 is a protein called Utp8.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	UH	359	Total	C	N	O	S	0	0
			2809	1773	496	527	13		

- Molecule 49 is a protein called Utp5.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	UE	125	Total	C	N	O	S	0	0
			972	608	183	175	6		
49	UI	125	Total	C	N	O	S	0	0
			972	608	183	175	6		

- Molecule 50 is a protein called Noc4.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	US	451	Total	C	N	O	S	0	0
			3672	2389	608	660	15		

- Molecule 51 is a protein called Rps18.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	Cl	80	Total	C	N	O	S	0	0
			633	400	115	117	1		

- Molecule 52 is a protein called Enp1.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	CX	267	Total	C	N	O	S	0	0
			2130	1384	374	362	10		

- Molecule 53 is a protein called Utp16.

Mol	Chain	Residues	Atoms				AltConf	Trace
53	UP	54	Total	C	N	O	0	0
			422	264	88	70		

- Molecule 54 is a protein called Rrp5.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	Cz	275	Total	C	N	O	S	0	0
			2259	1435	401	420	3		

- Molecule 55 is ZINC ION (three-letter code: ZN) (formula: Zn).

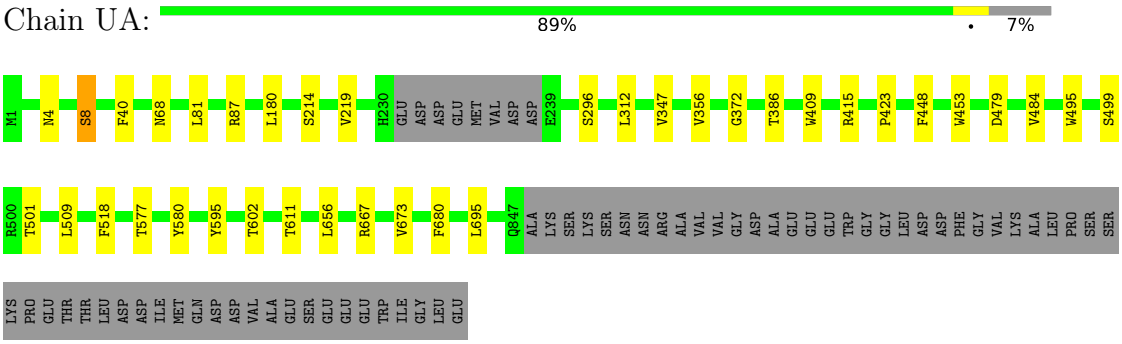
Mol	Chain	Residues	Atoms		AltConf
55	UX	1	Total	Zn	0
			1	1	

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.

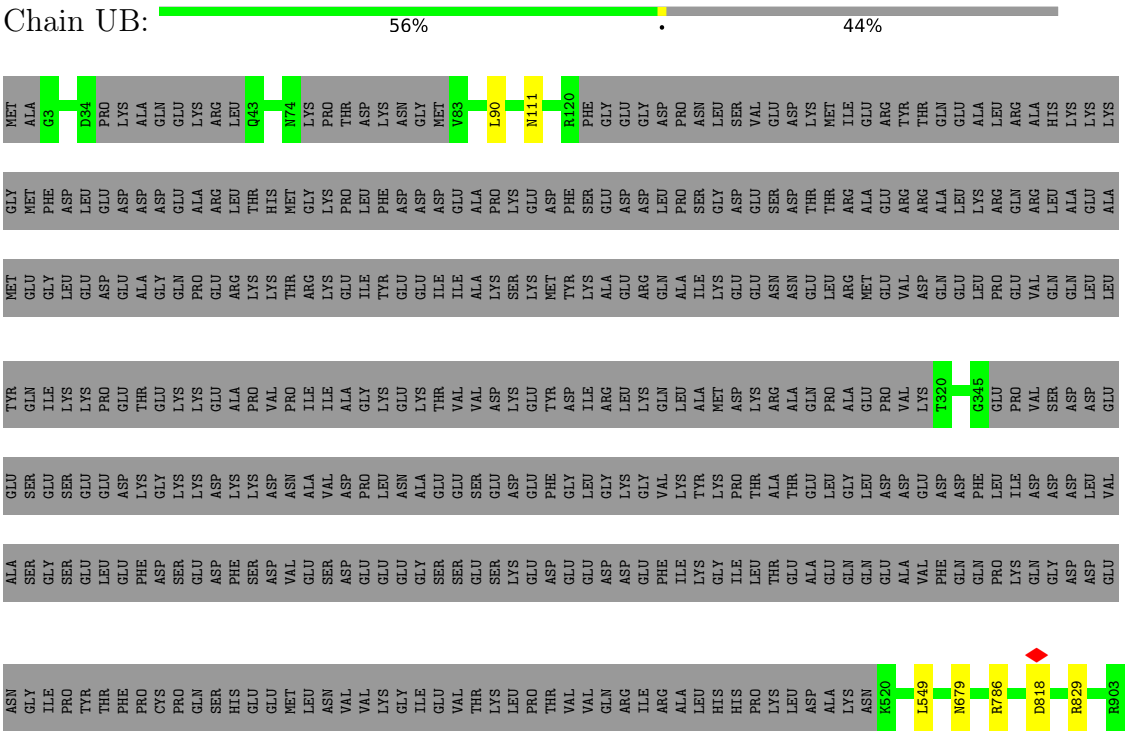
• Molecule 1: Periodic tryptophan protein 2-like protein

Chain UA:



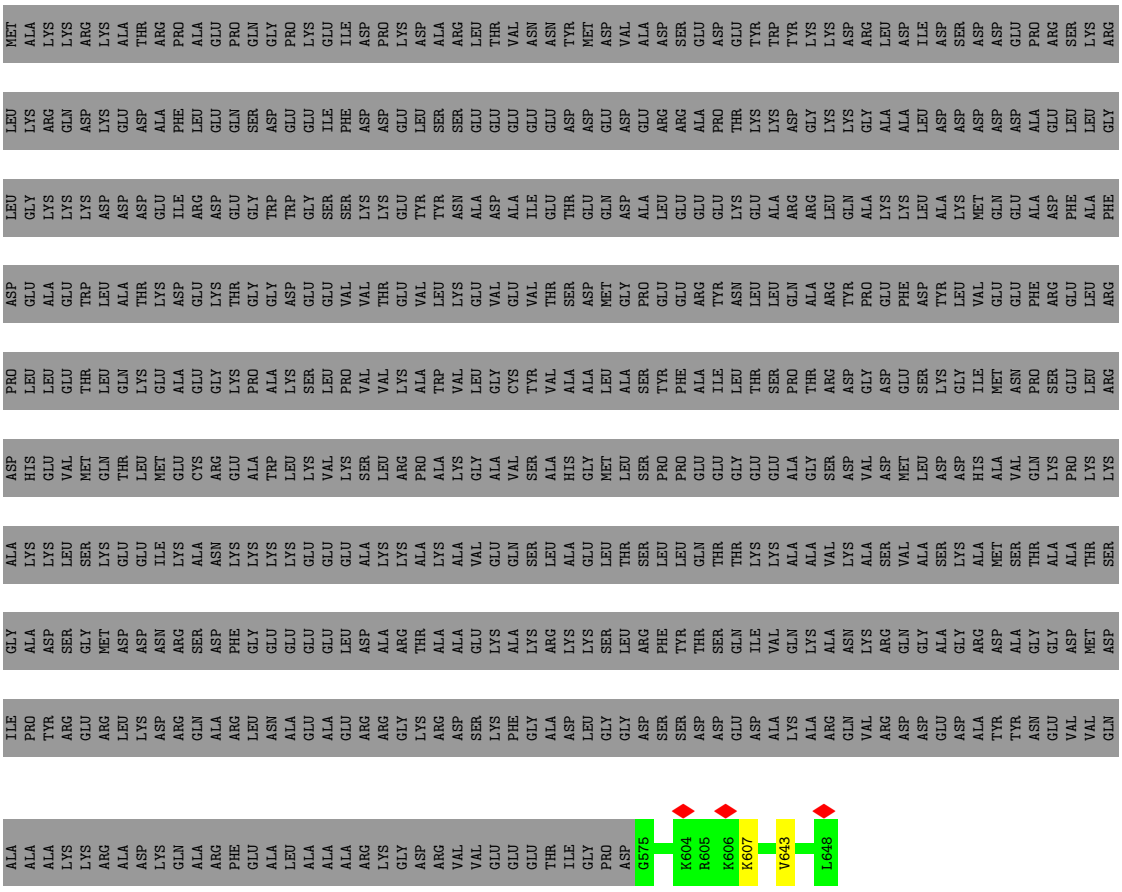
• Molecule 2: Utp2

Chain UB:



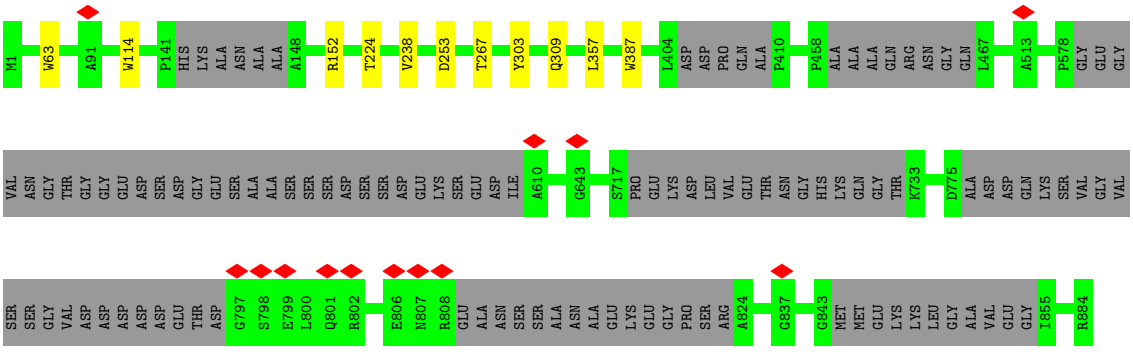
• Molecule 3: Utp3

Chain UC:



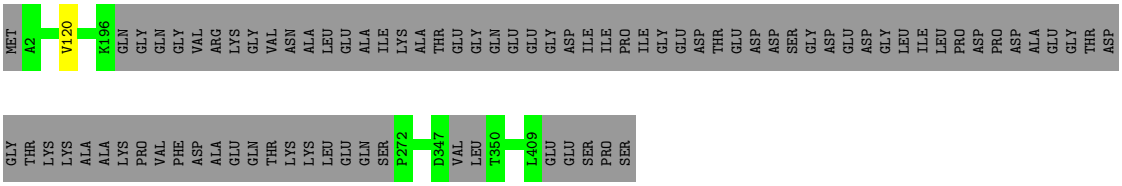
• Molecule 4: Utp4

Chain UD:



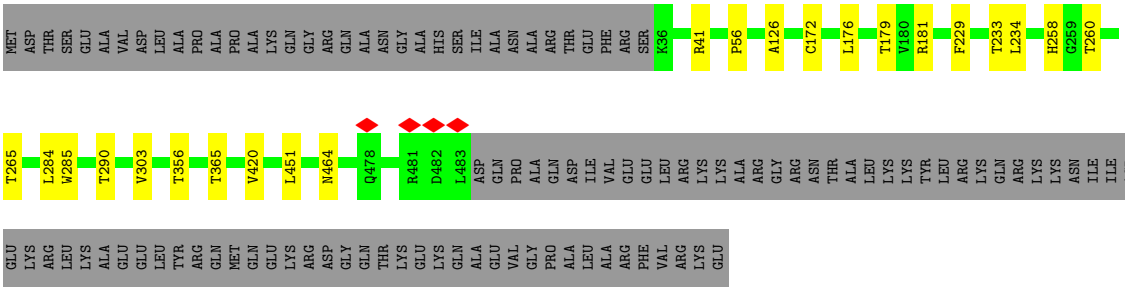
• Molecule 5: Utp6

Chain UF:



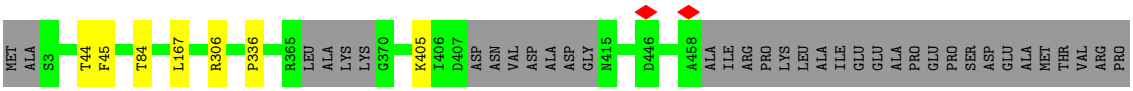
• Molecule 6: Utp7

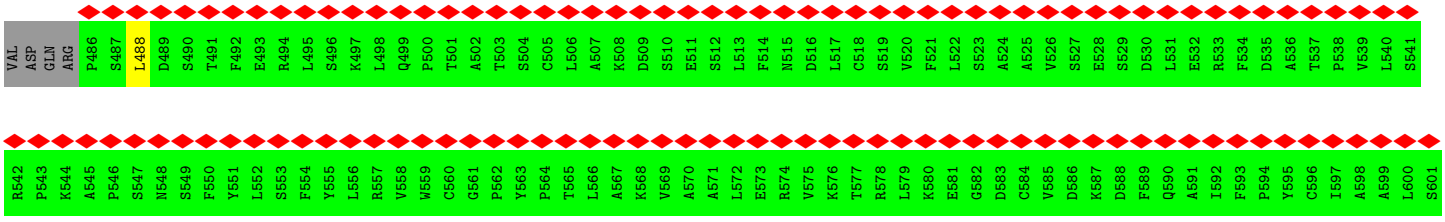
Chain UG:

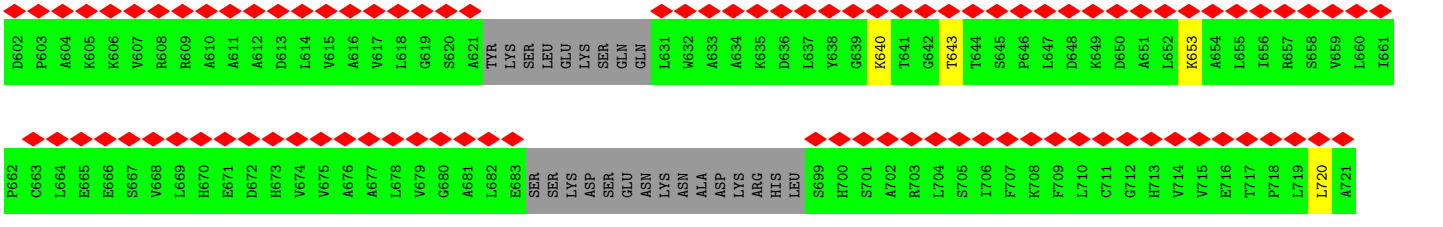


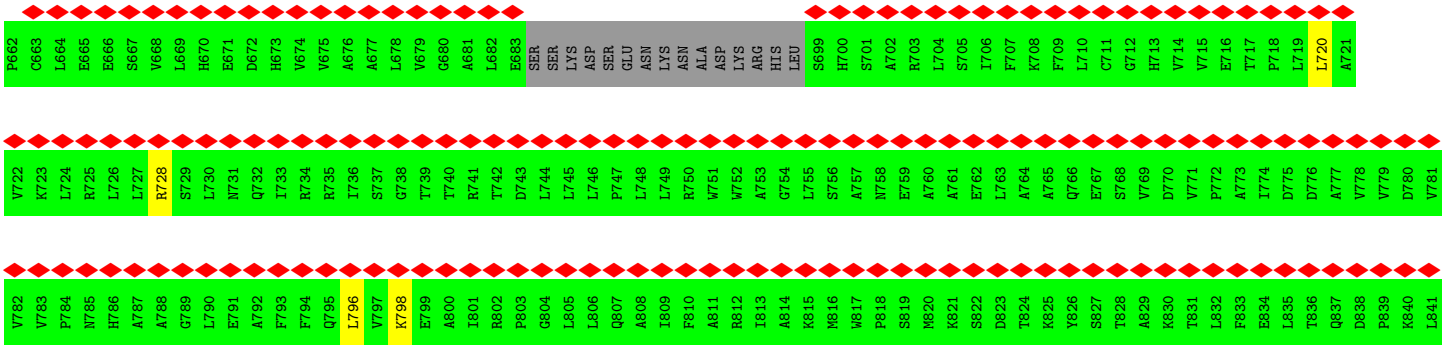
• Molecule 7: Utp10

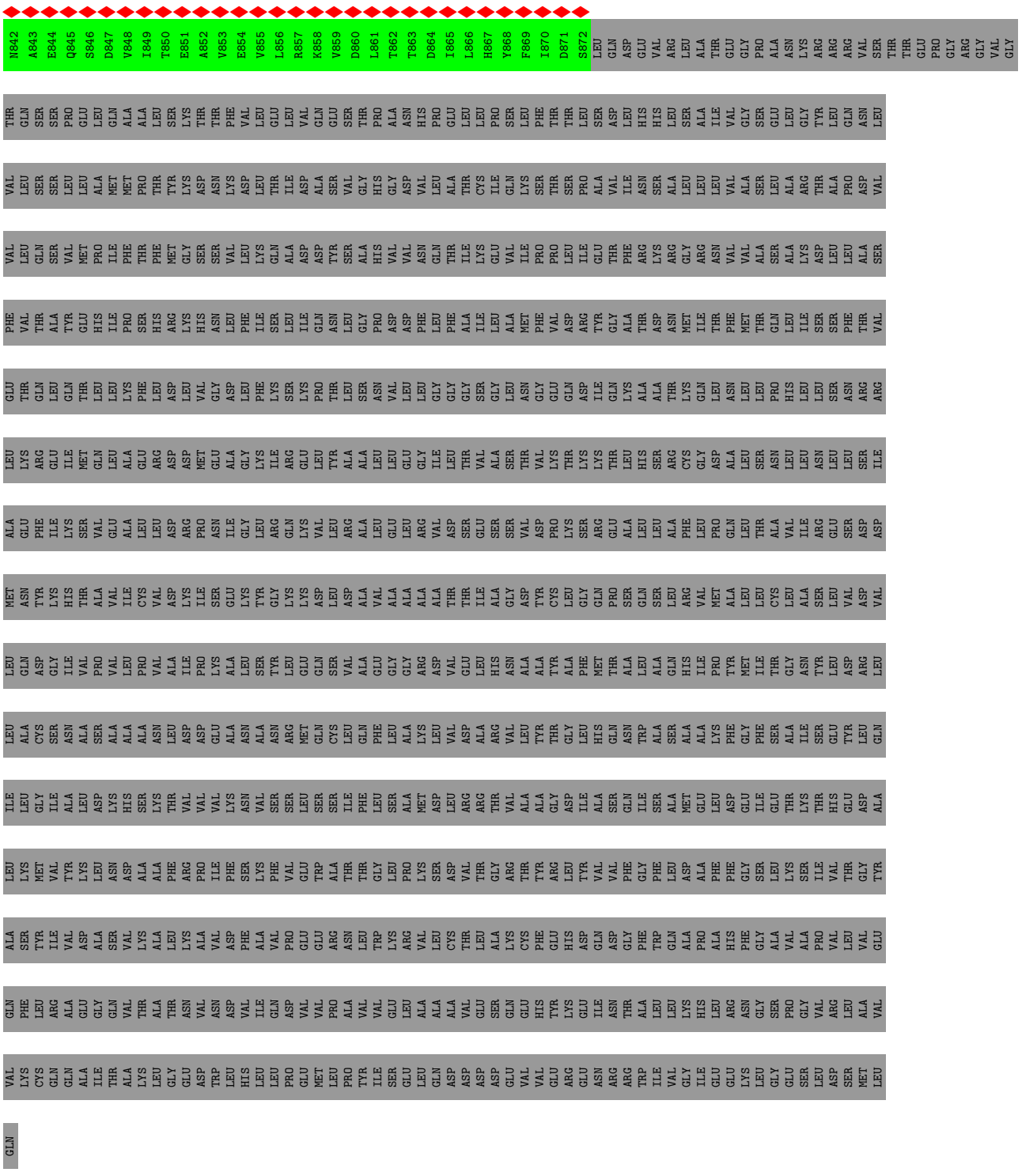
Chain UJ:





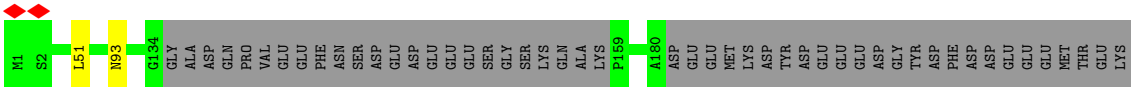






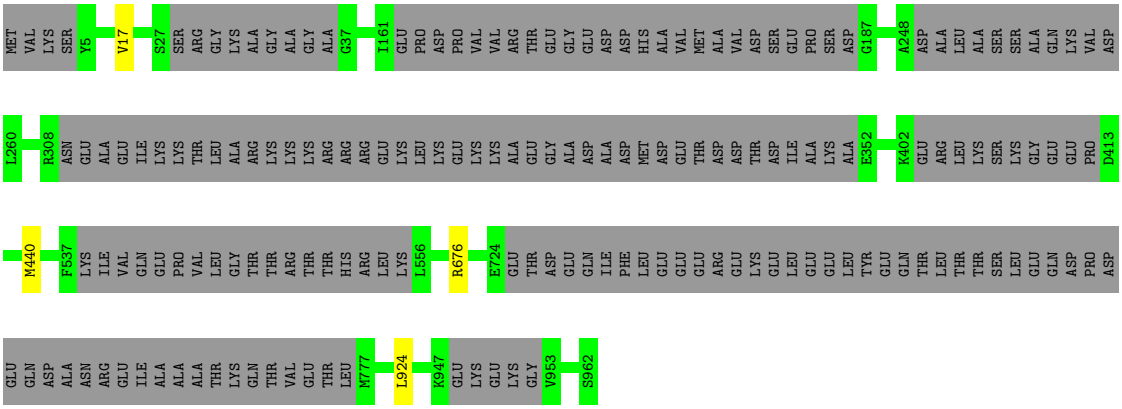
• Molecule 8: U3 small nucleolar RNA-associated protein 11

Chain UK:



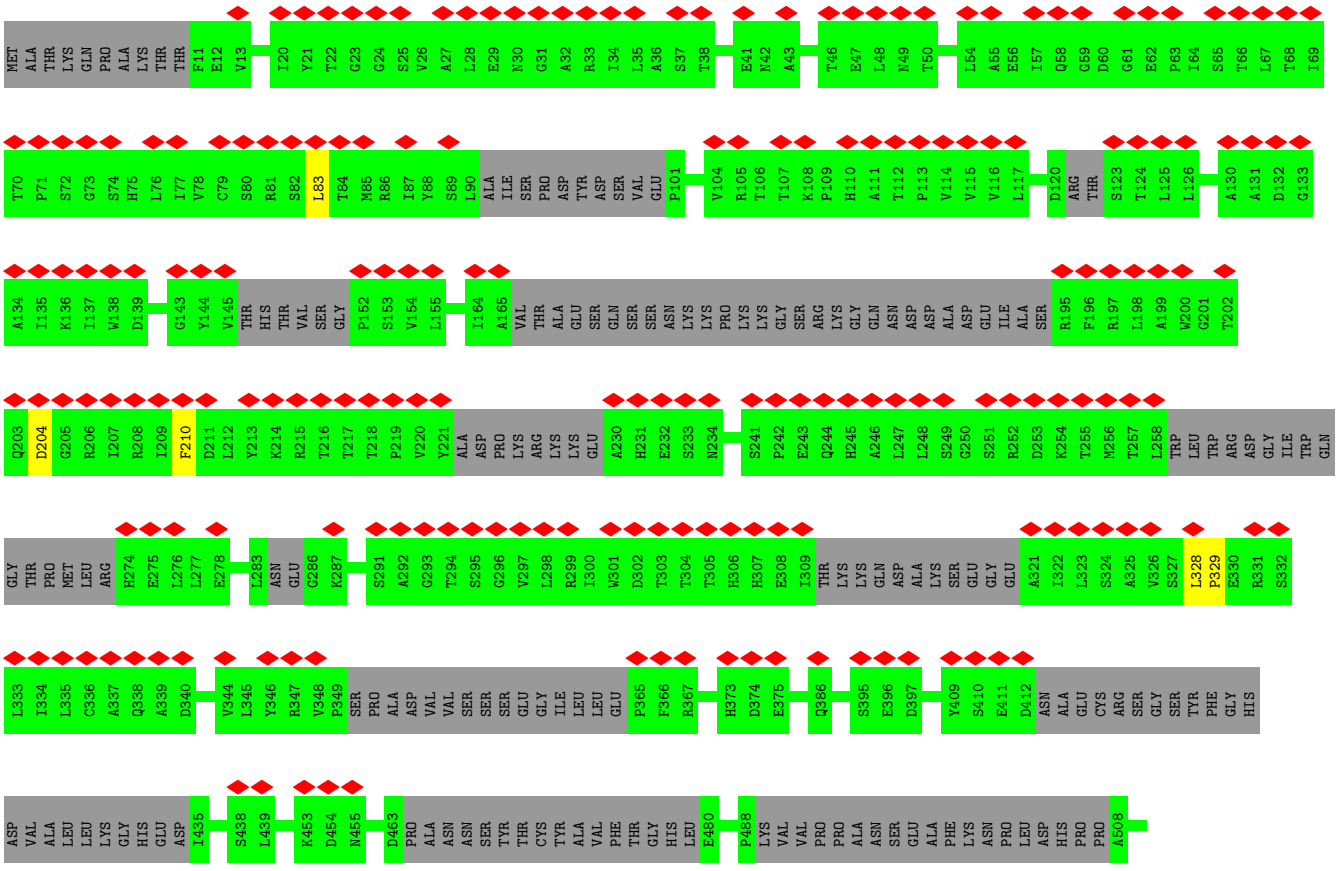
• Molecule 9: Utp12

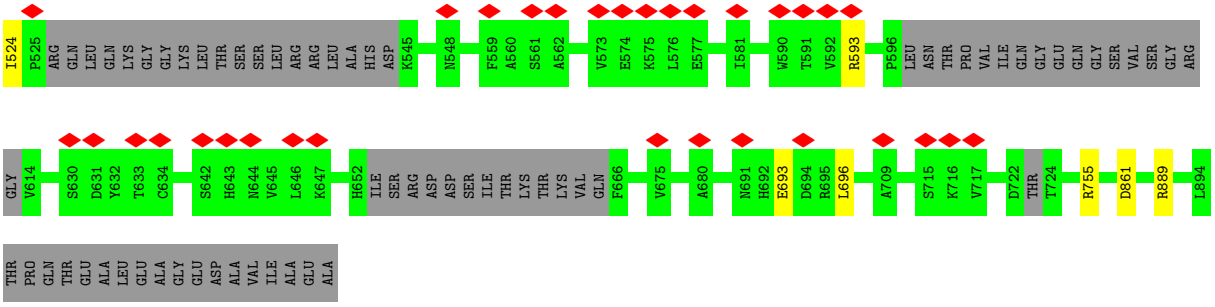
Chain UL:



• Molecule 10: Utp13

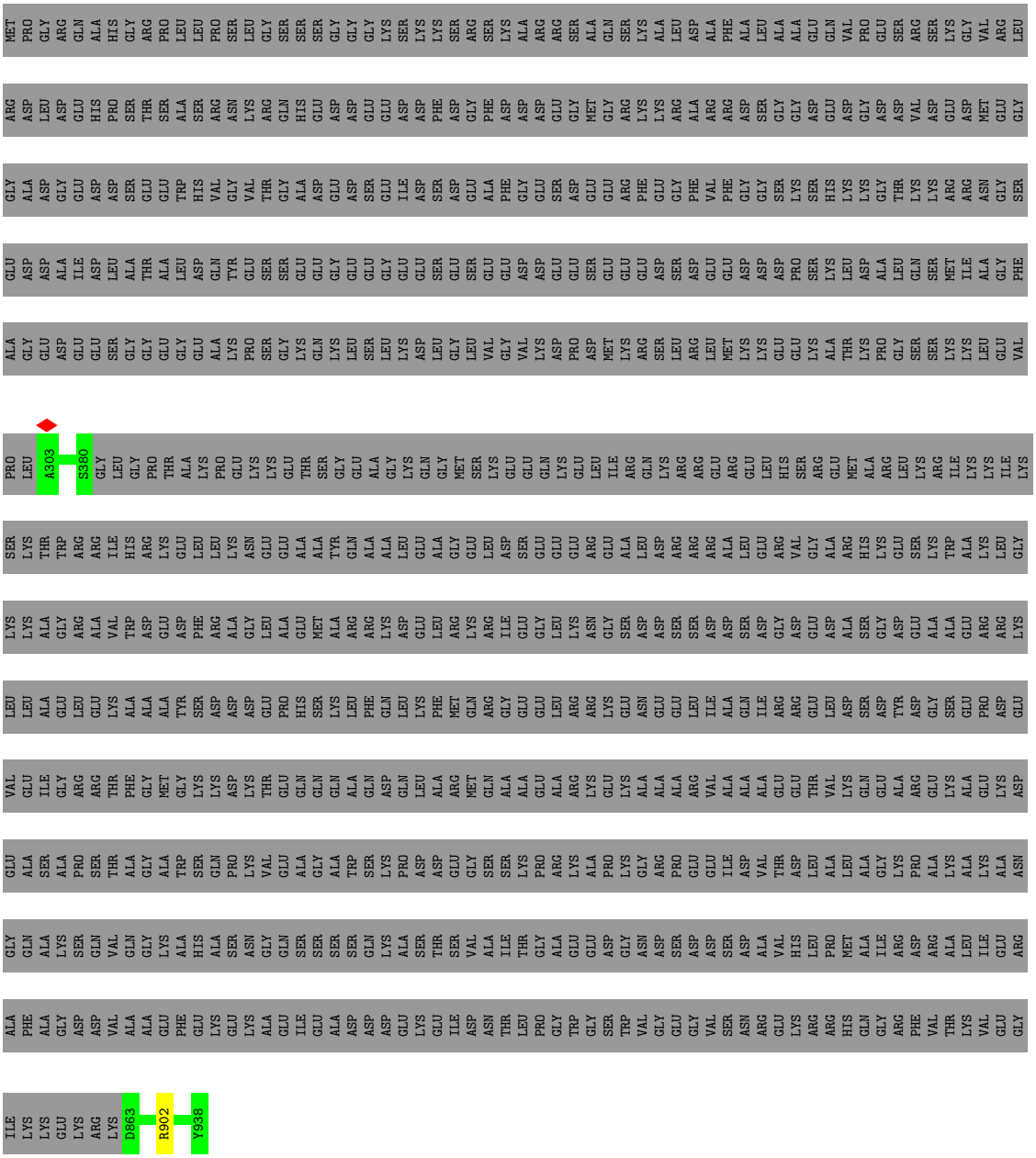
Chain UM:





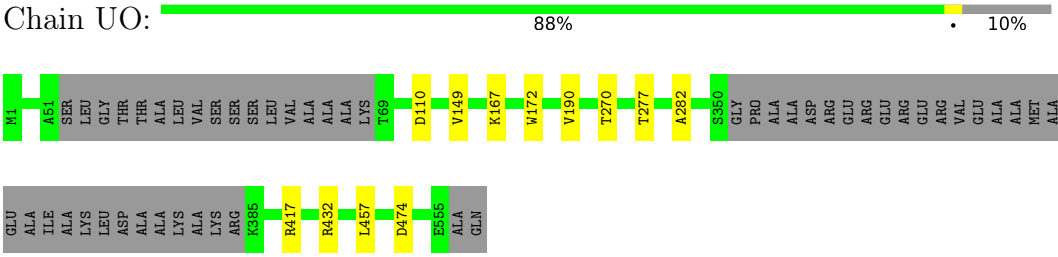
• Molecule 11: Utp14

Chain UN:



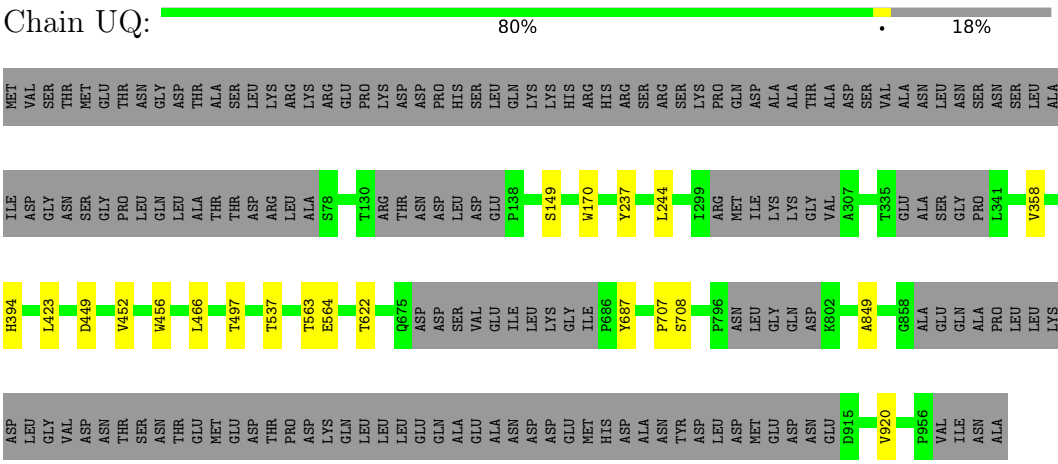
• Molecule 12: Utp15

Chain UO:



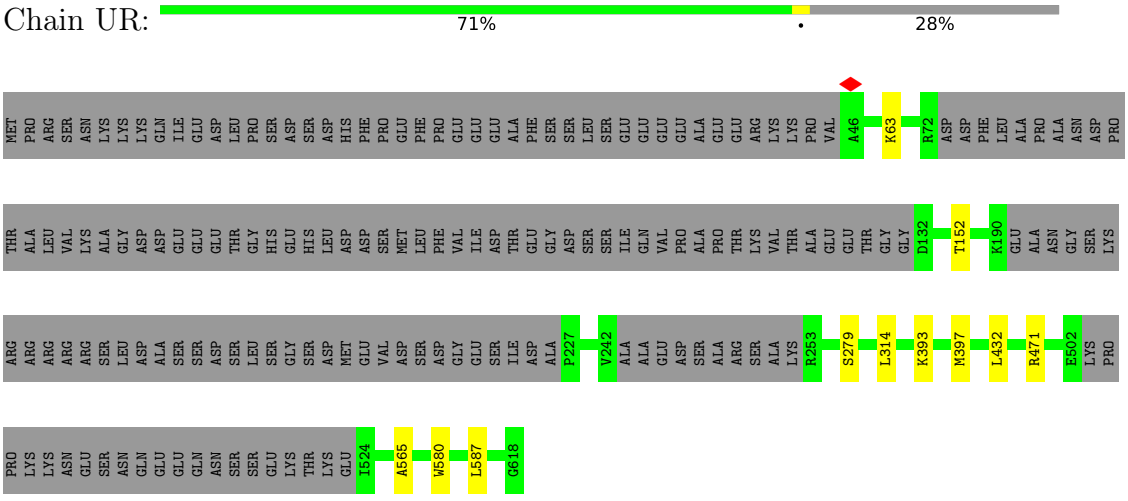
• Molecule 13: Utp17

Chain UQ:



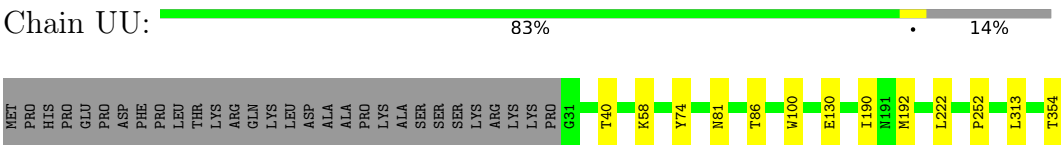
• Molecule 14: Utp18

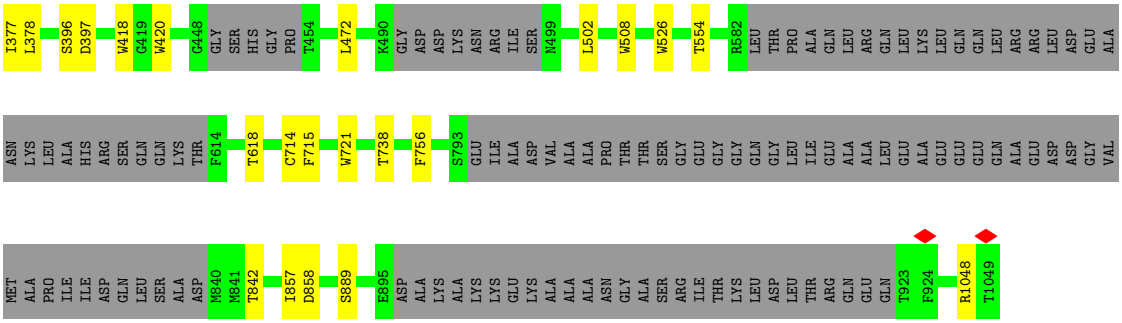
Chain UR:



• Molecule 15: Utp21

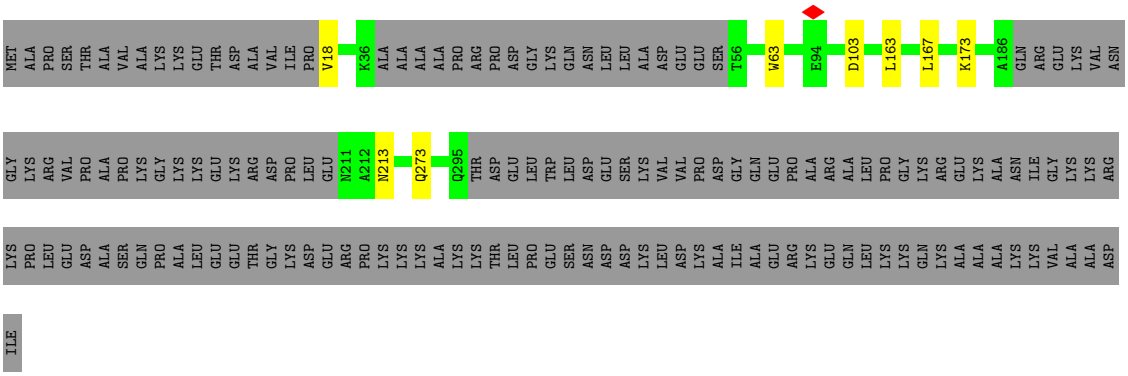
Chain UU:



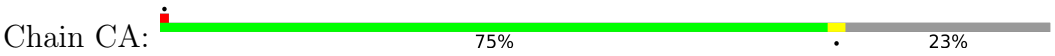


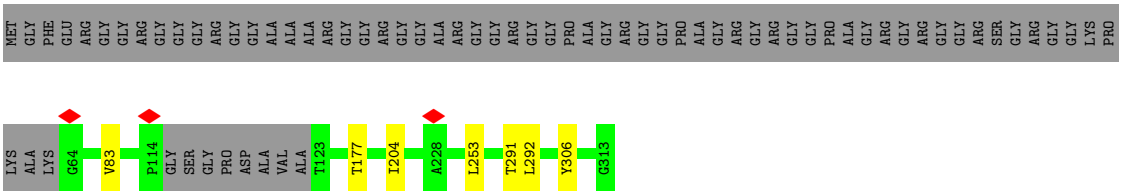
• Molecule 16: Utp24

• Molecule 17: Utp30

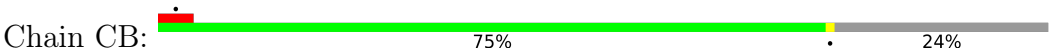


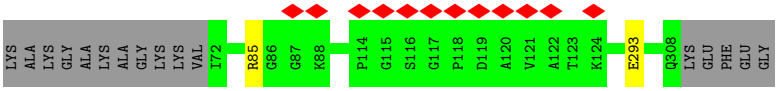
• Molecule 18: Nop1





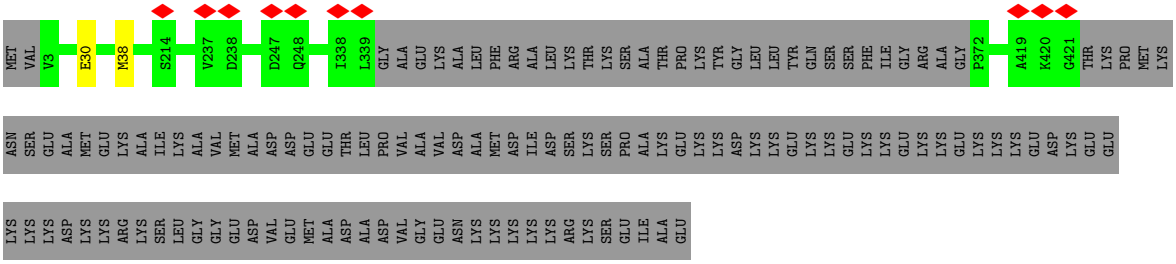
• Molecule 18: Nop1





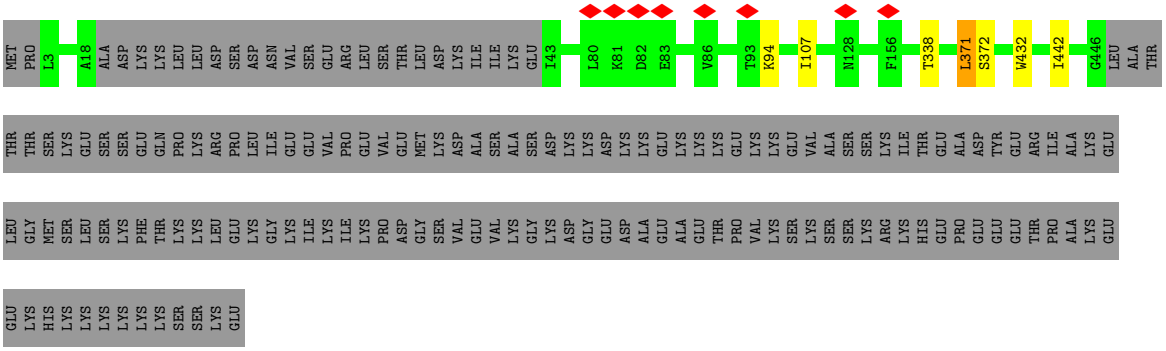
• Molecule 19: Nop56

Chain CC:



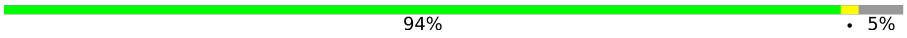
• Molecule 20: Nop58

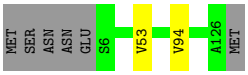
Chain CD:



• Molecule 21: Snu13

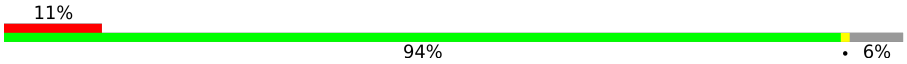
Chain CE:

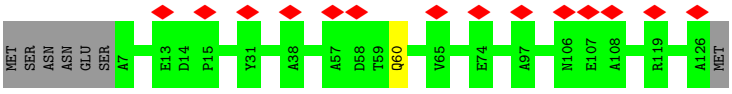




• Molecule 21: Snu13

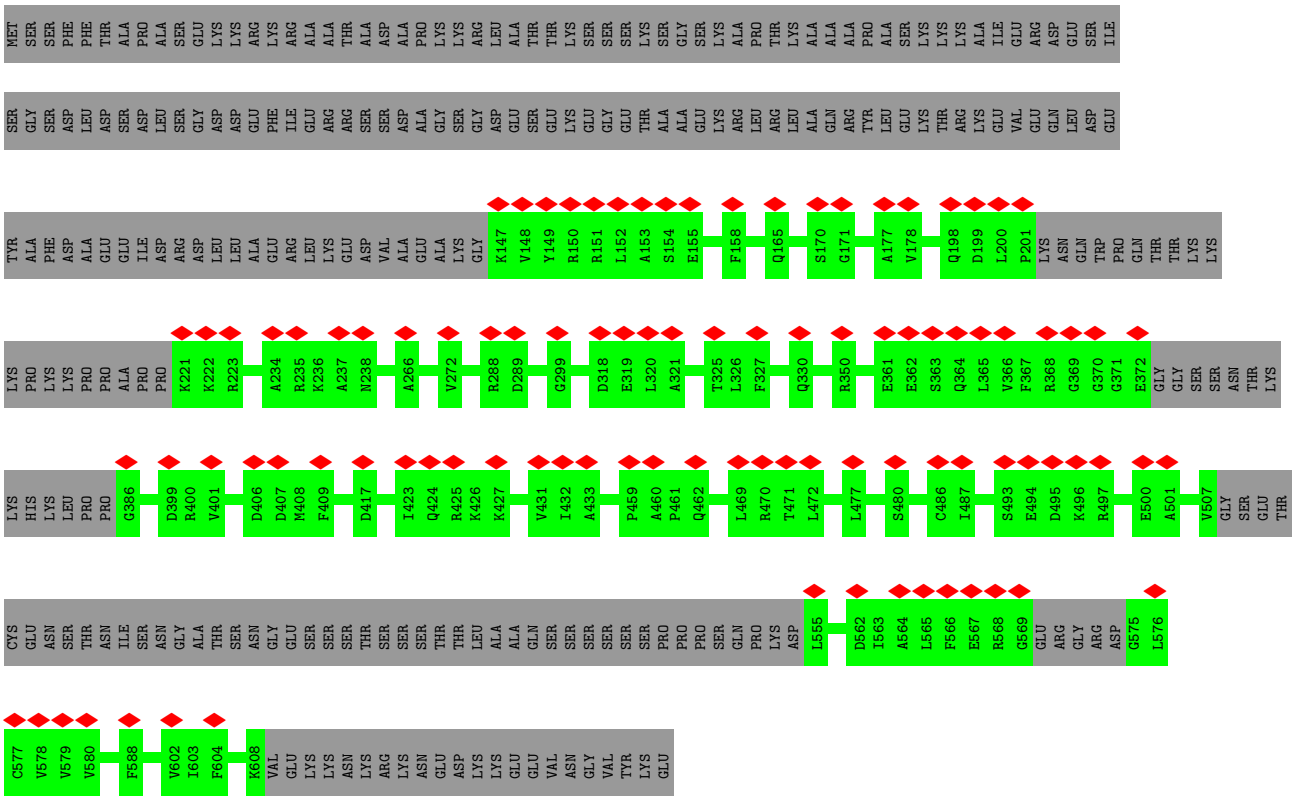
Chain CF:





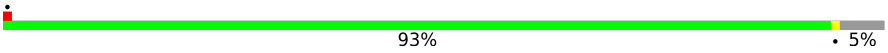
• Molecule 22: Rrp9

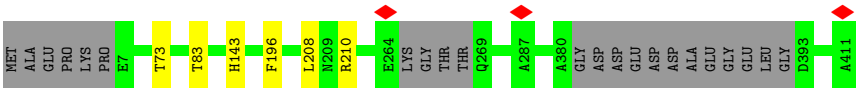
Chain CG:



• Molecule 23: RNA 3'-terminal phosphate cyclase-like protein

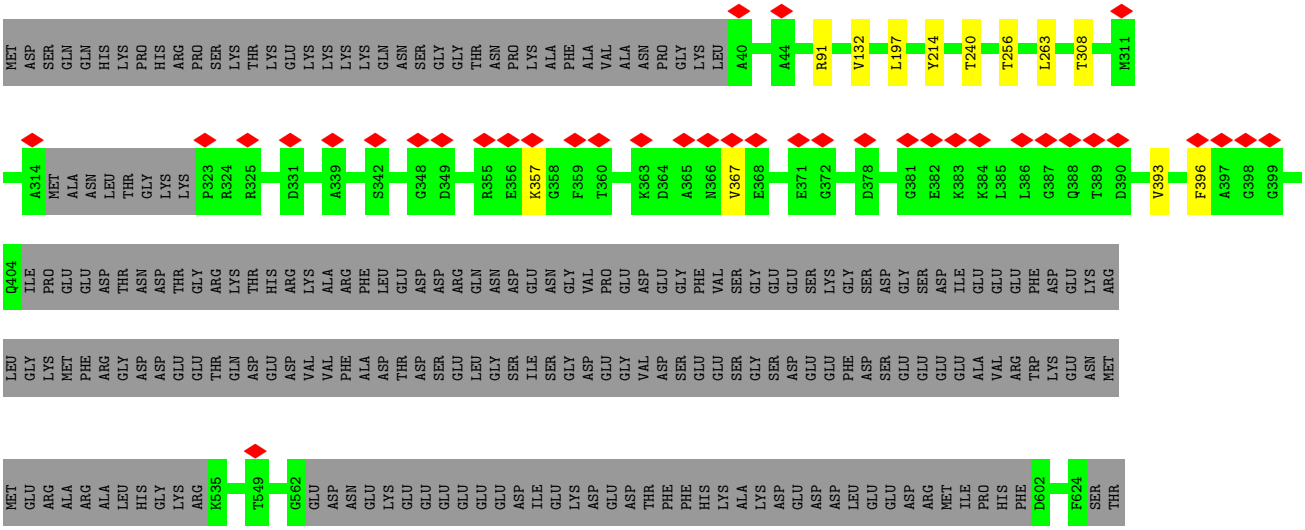
Chain CH:

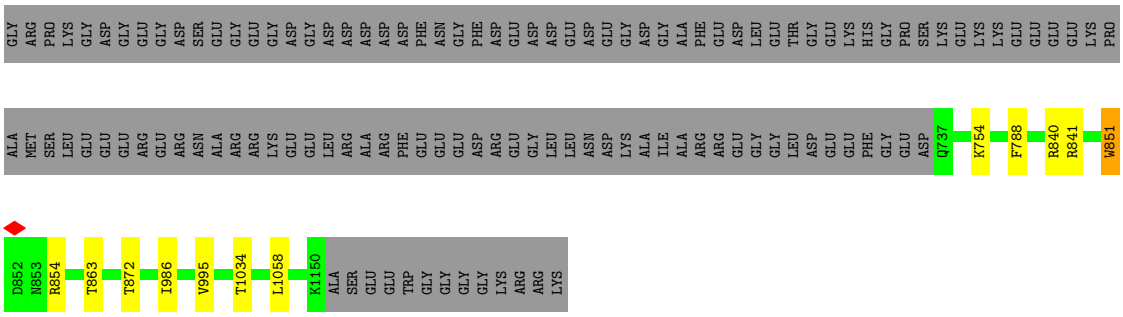




• Molecule 24: Bms1

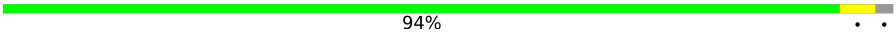
Chain CI:





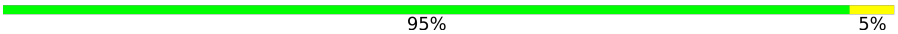
• Molecule 25: Imp3

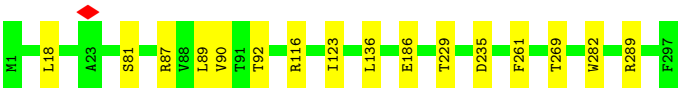
Chain CJ:



• Molecule 26: Imp4

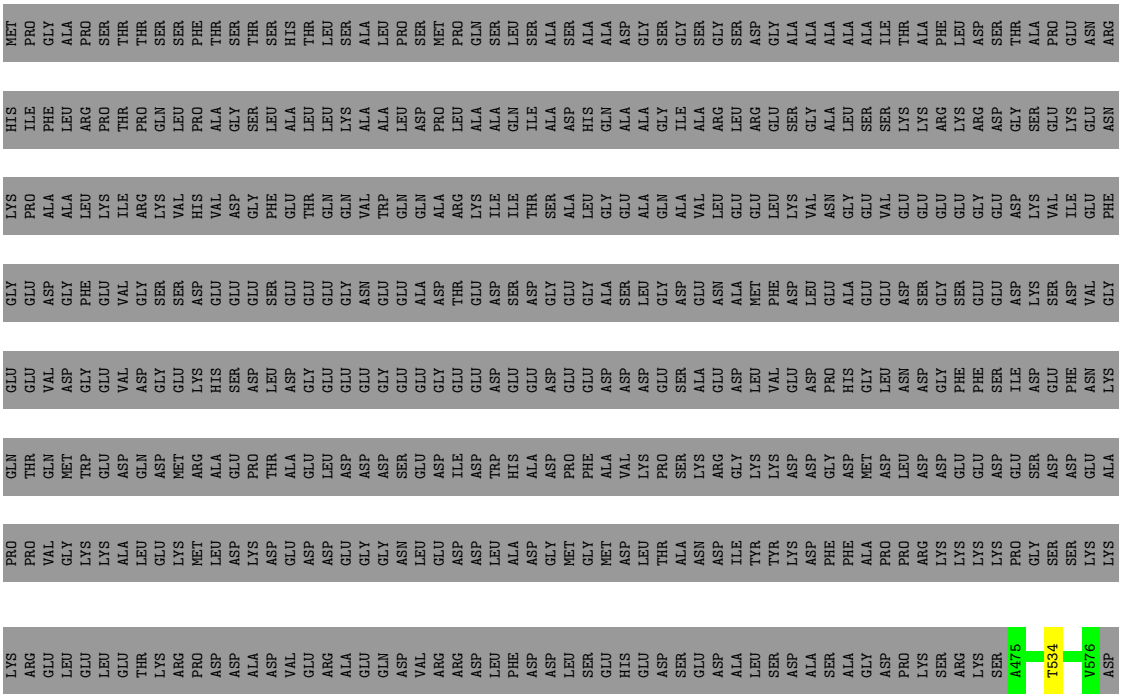
Chain CK:

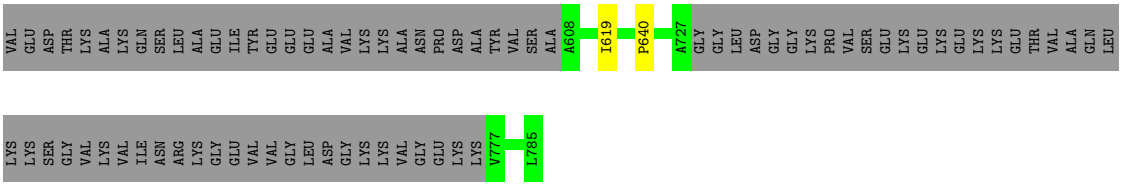




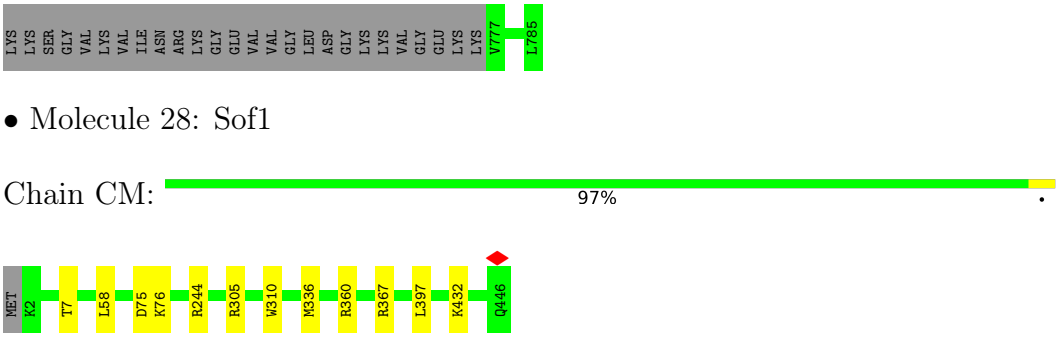
• Molecule 27: Mpp10

Chain CL:

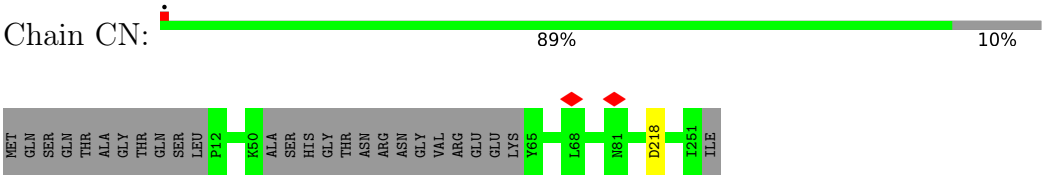




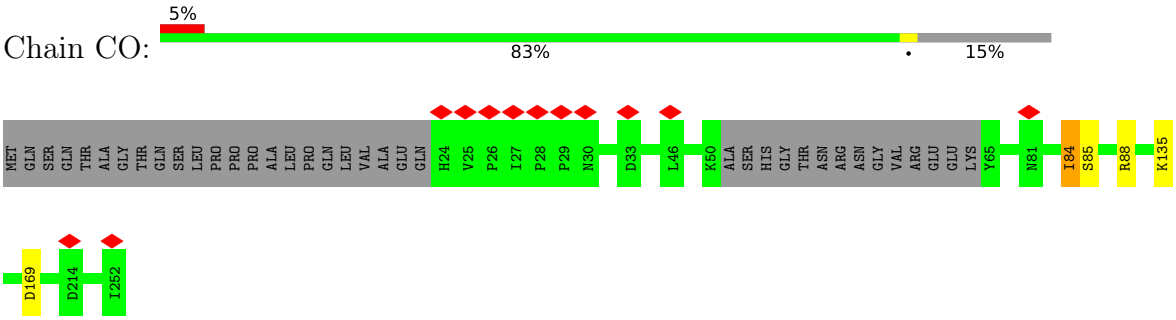
• Molecule 28: Sof1



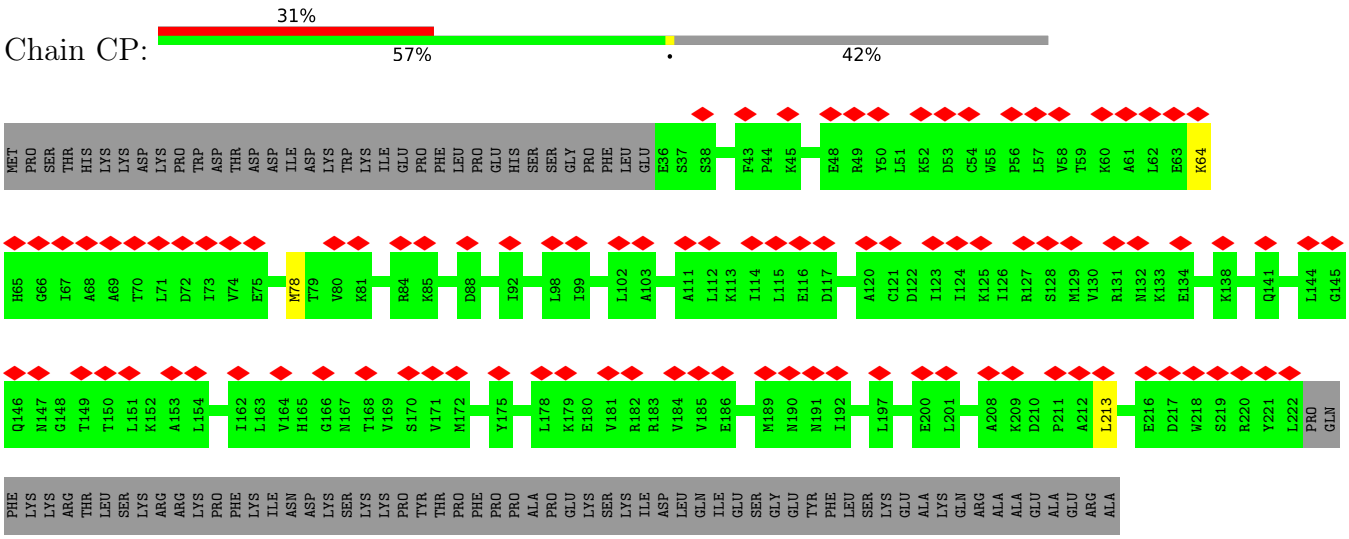
• Molecule 29: Emg1

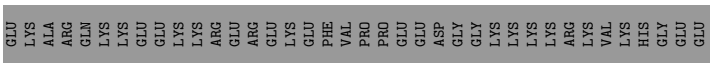


• Molecule 29: Emg1



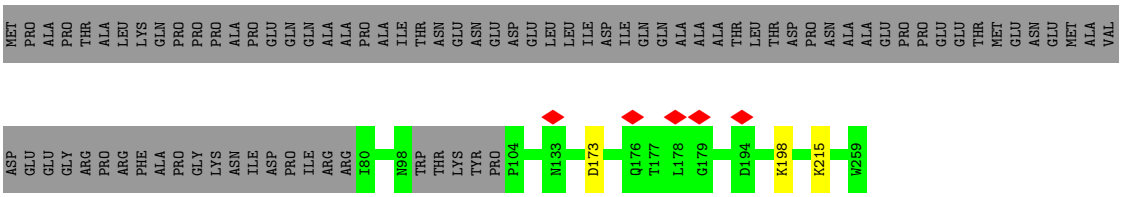
• Molecule 30: KRR1 small subunit processome component





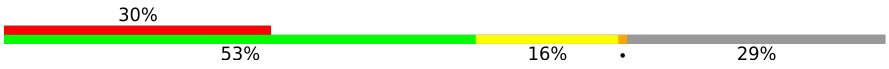
• Molecule 31: Pre-rRNA-processing protein PNO1

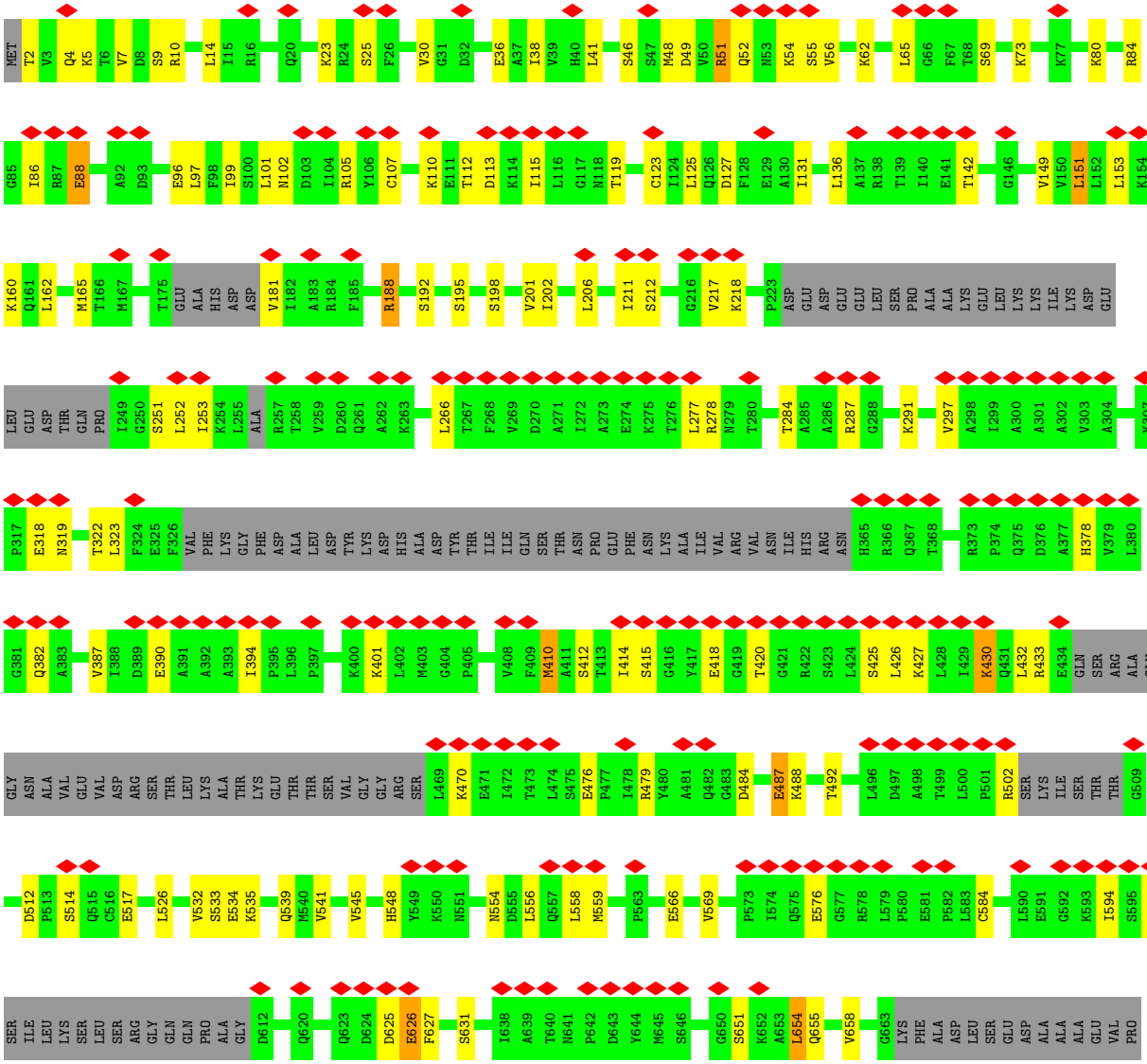
Chain CQ:

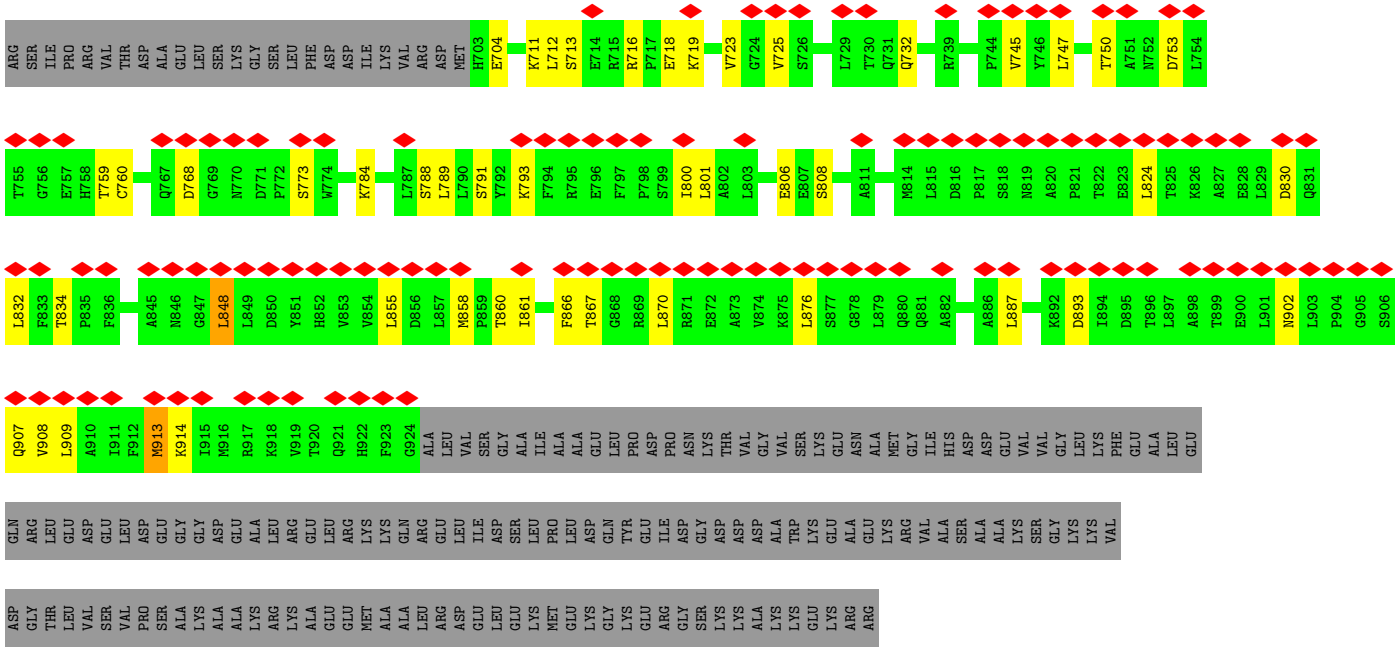


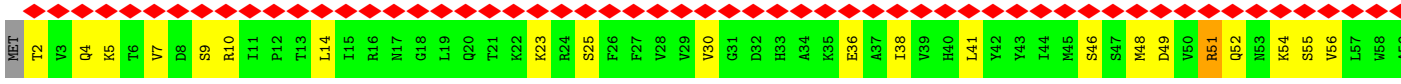
• Molecule 32: Kre33

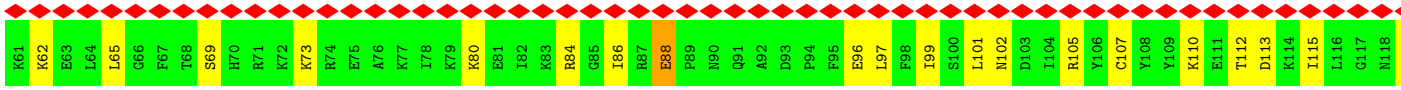
Chain CR:





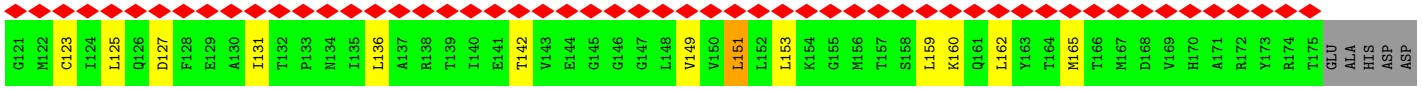


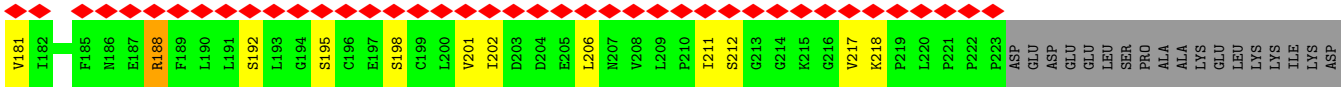


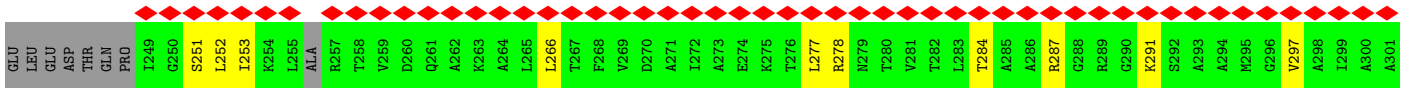


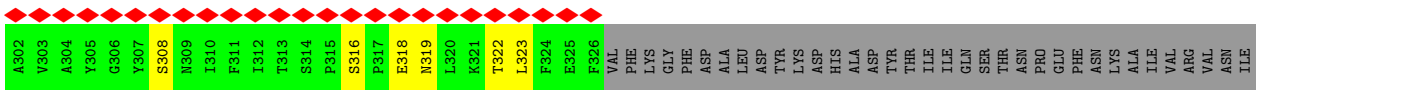
- Molecule 32: Kre33

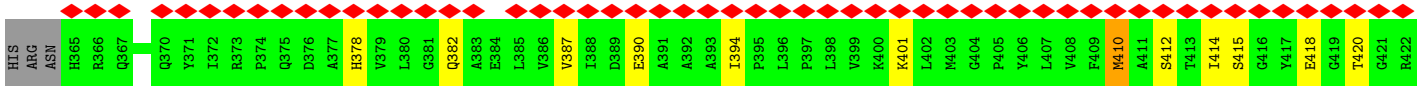
Chain CS:

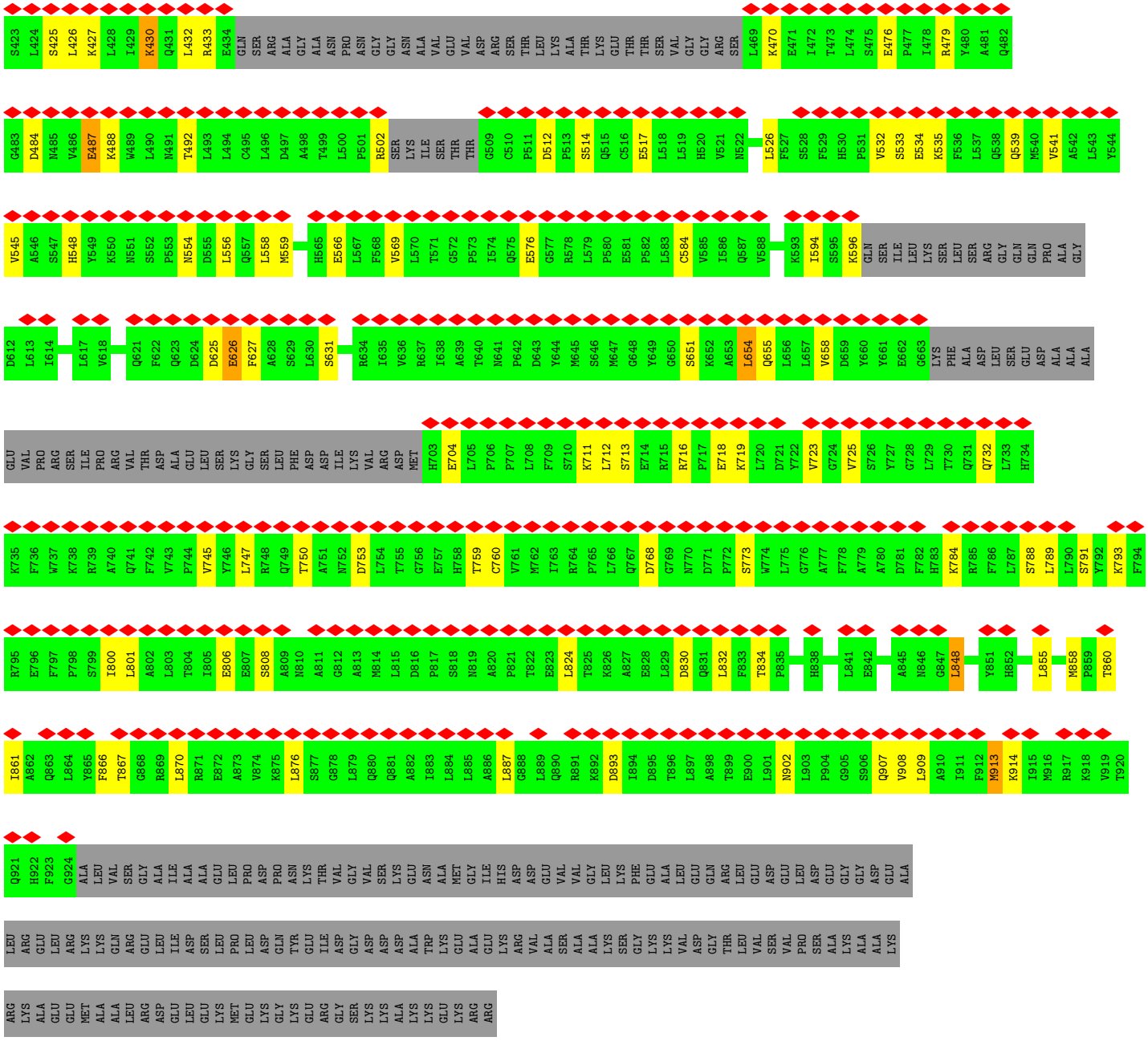






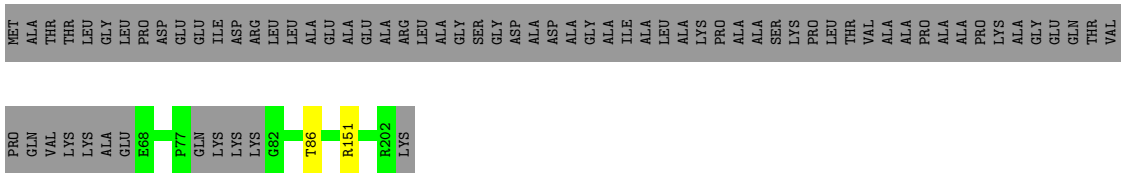






• Molecule 33: Fcf2

Chain CT:

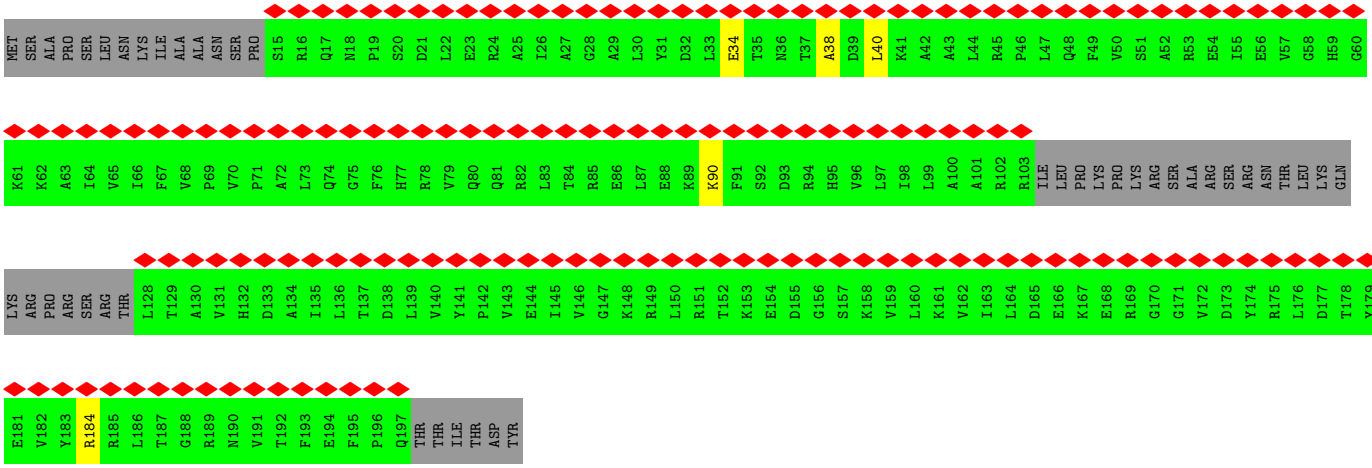


• Molecule 34: 40S ribosomal protein s5-like protein

Chain Cc:

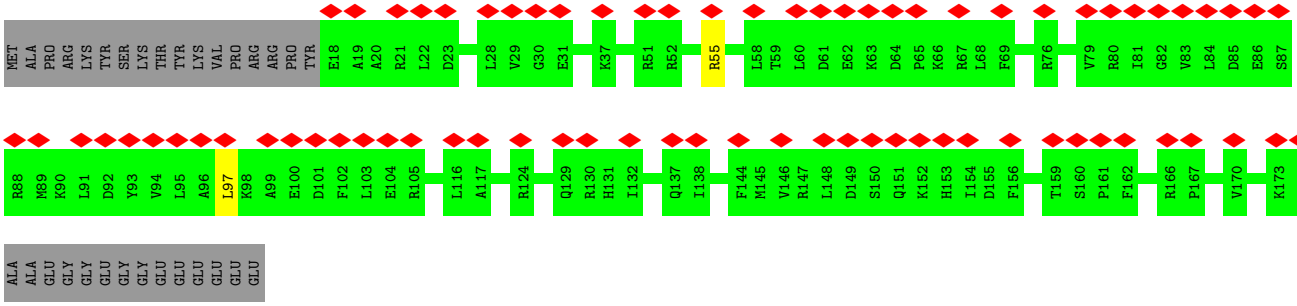
• Molecule 35: 40S ribosomal protein S7

Chain Ce:



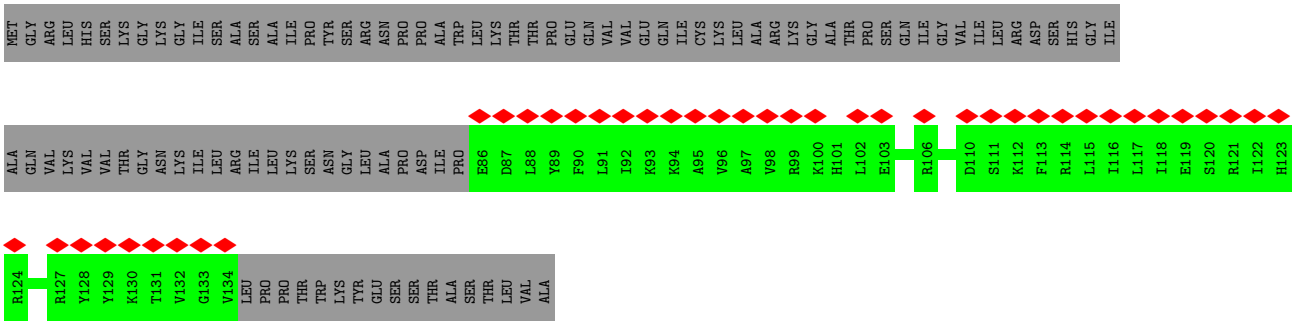
• Molecule 36: 40S ribosomal protein s9-like protein

Chain Cg:



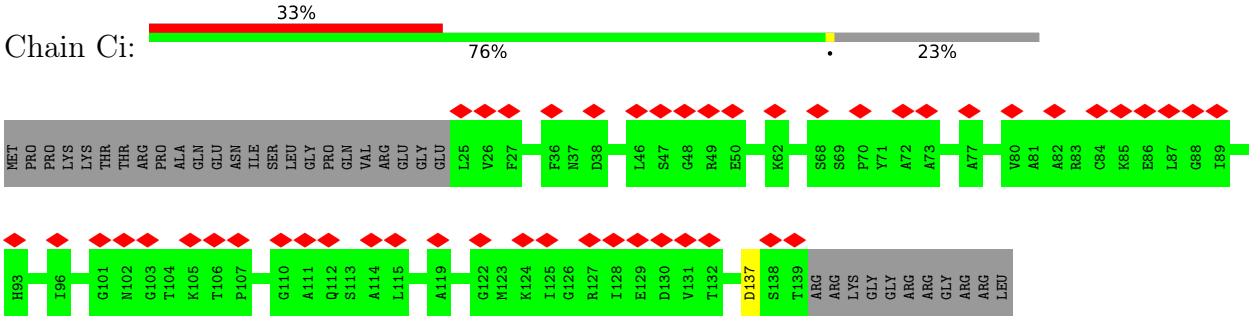
• Molecule 37: 40S ribosomal protein S13-like protein

Chain Ch:



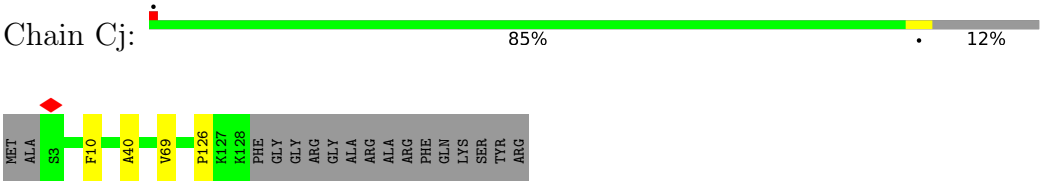
• Molecule 38: 40S ribosomal protein S14-like protein

Chain Ci:



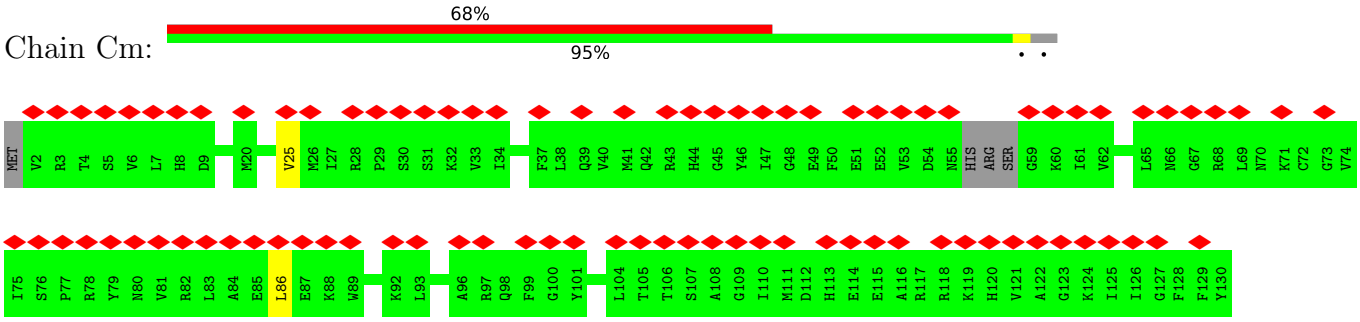
• Molecule 39: 40S ribosomal protein S16-like protein

Chain Cj:



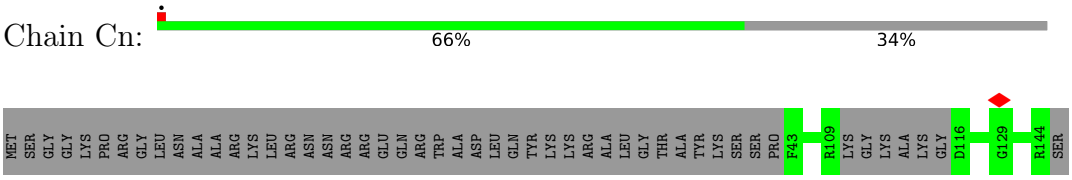
• Molecule 40: 40S ribosomal protein S22-like protein

Chain Cm:



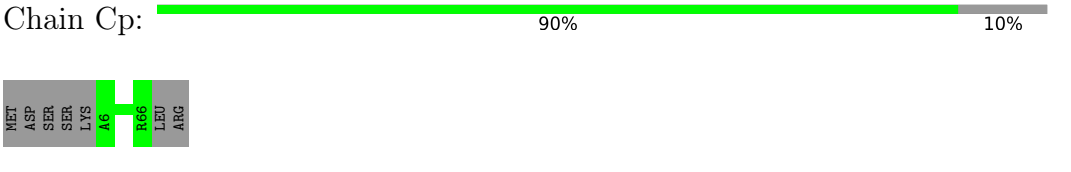
• Molecule 41: 40S ribosomal protein s23-like protein

Chain Cn:



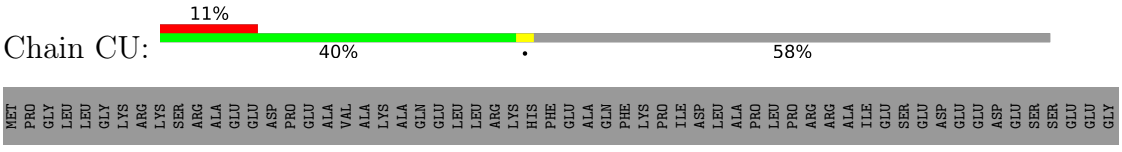
• Molecule 42: 40S ribosomal protein S28-like protein

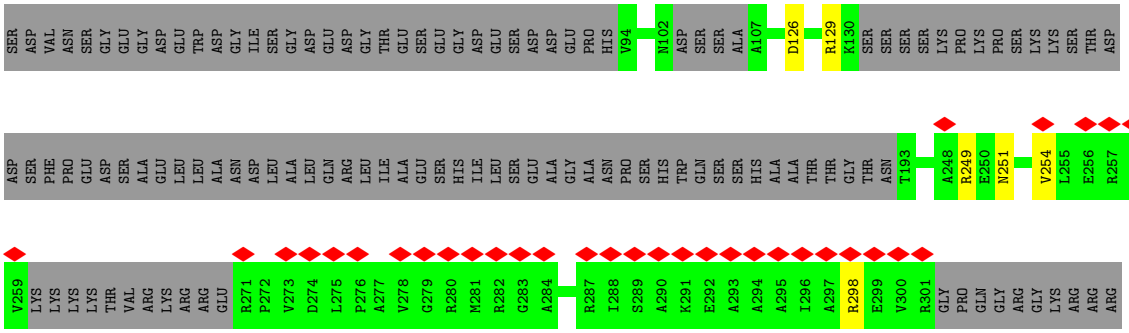
Chain Cp:



• Molecule 43: Faf1

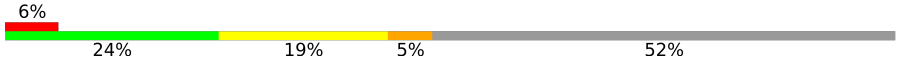
Chain CU:

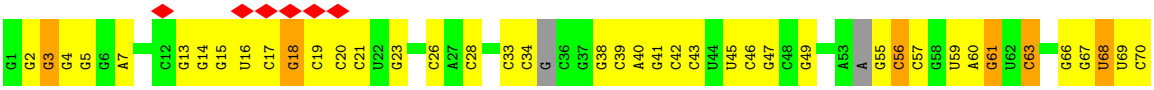


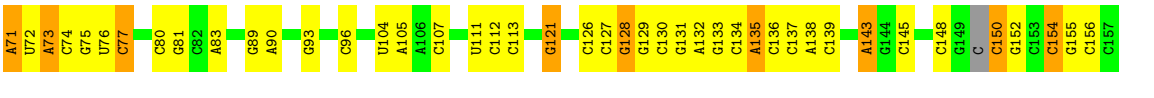


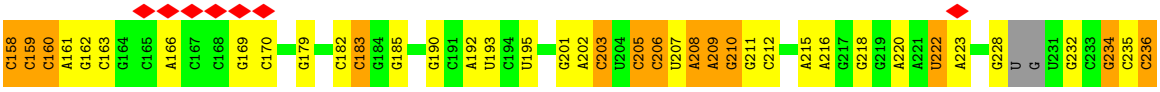
• Molecule 44: 35S rRNA

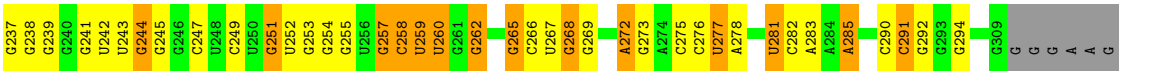
Chain C1:

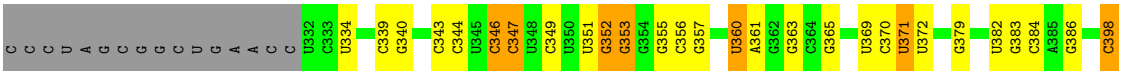


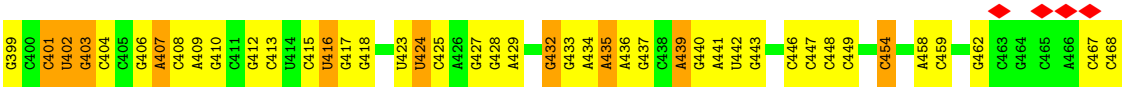


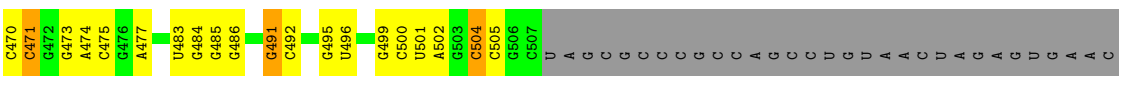


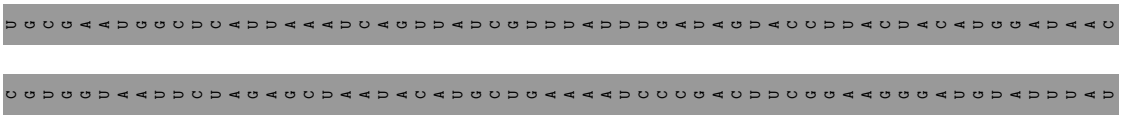


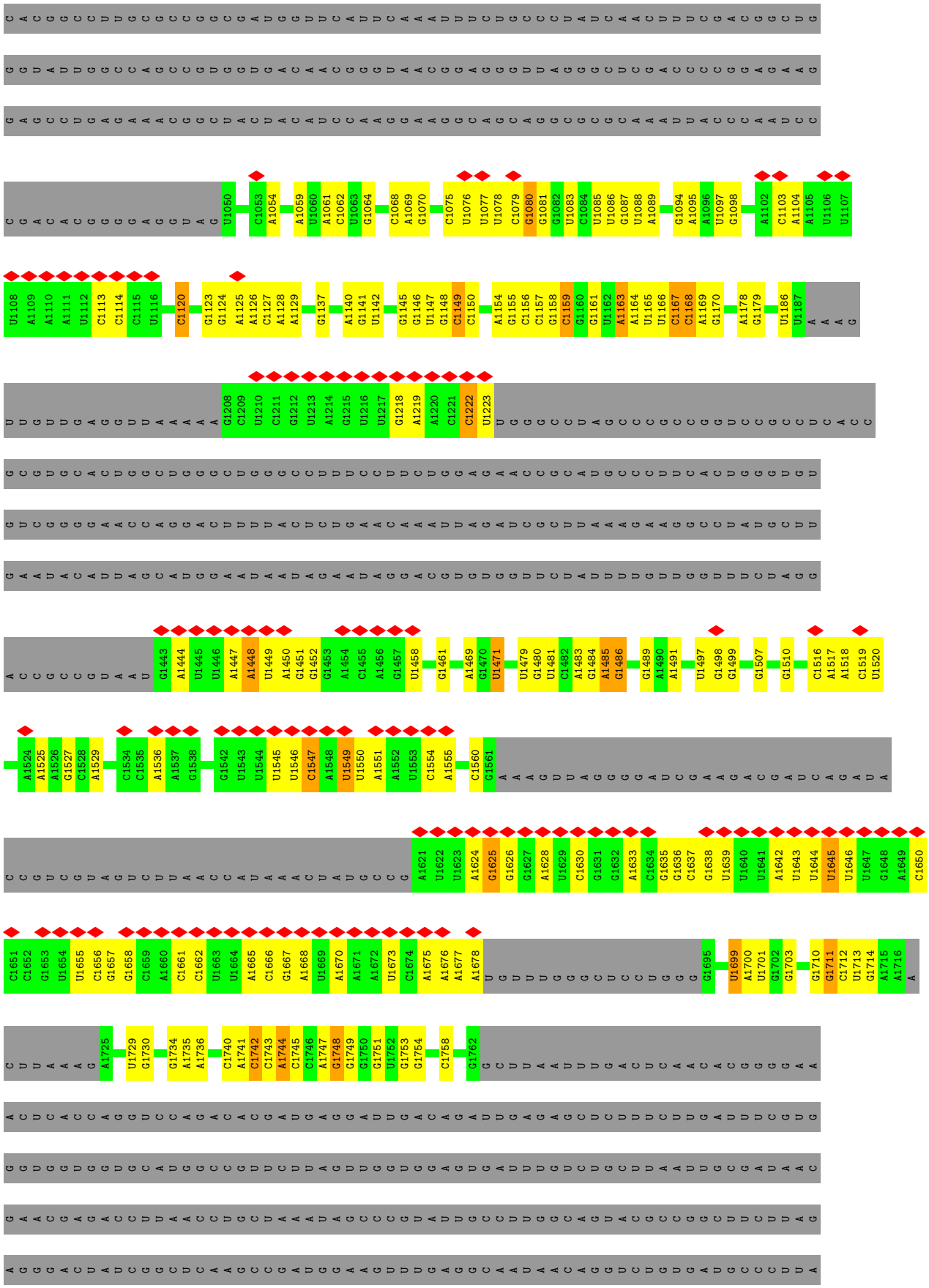


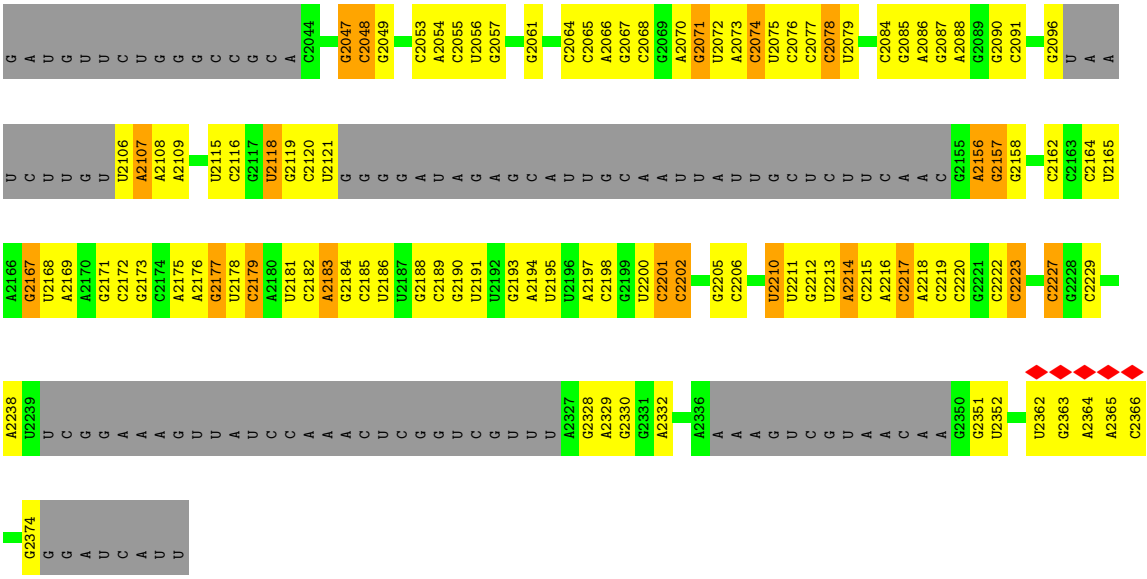






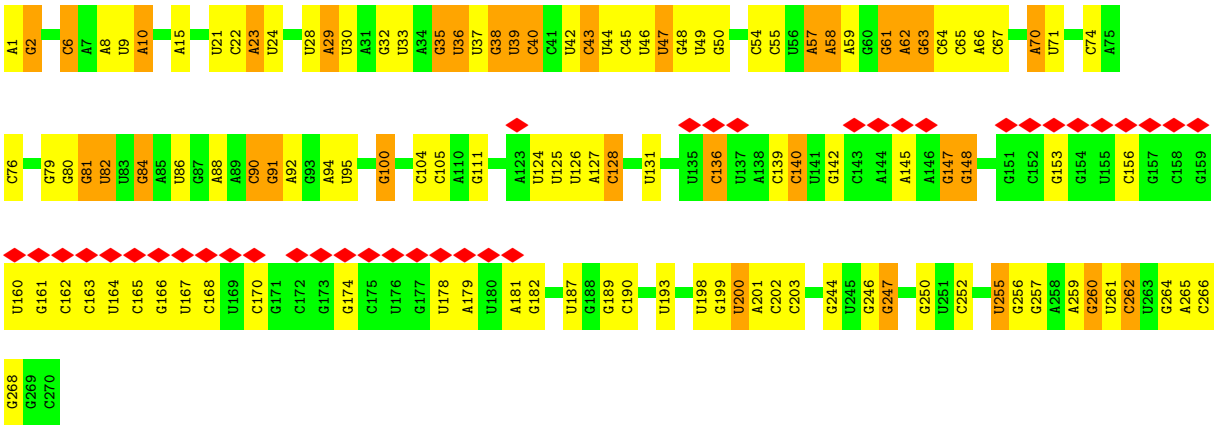






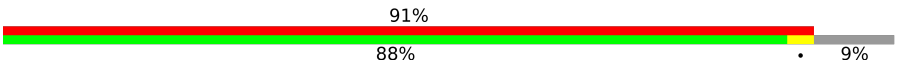
• Molecule 45: U3 snoRNA

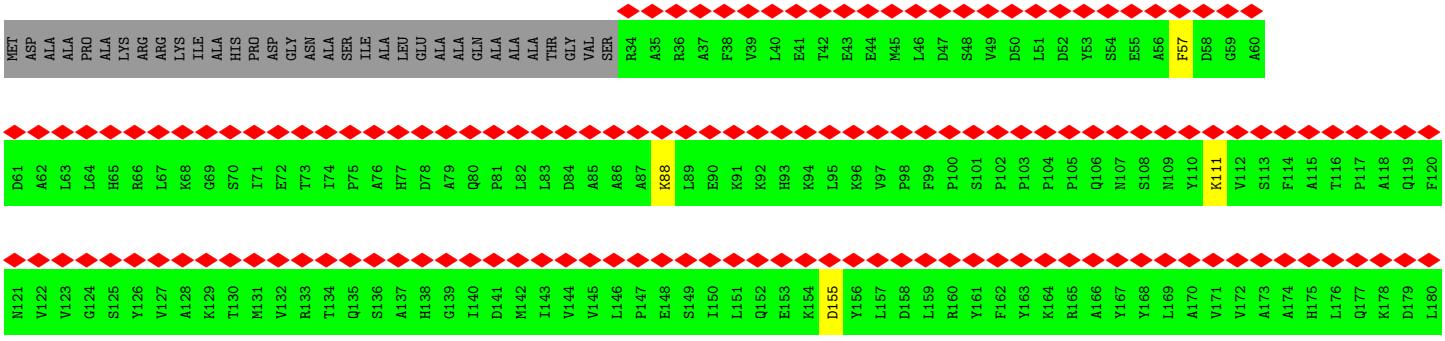
Chain C2:

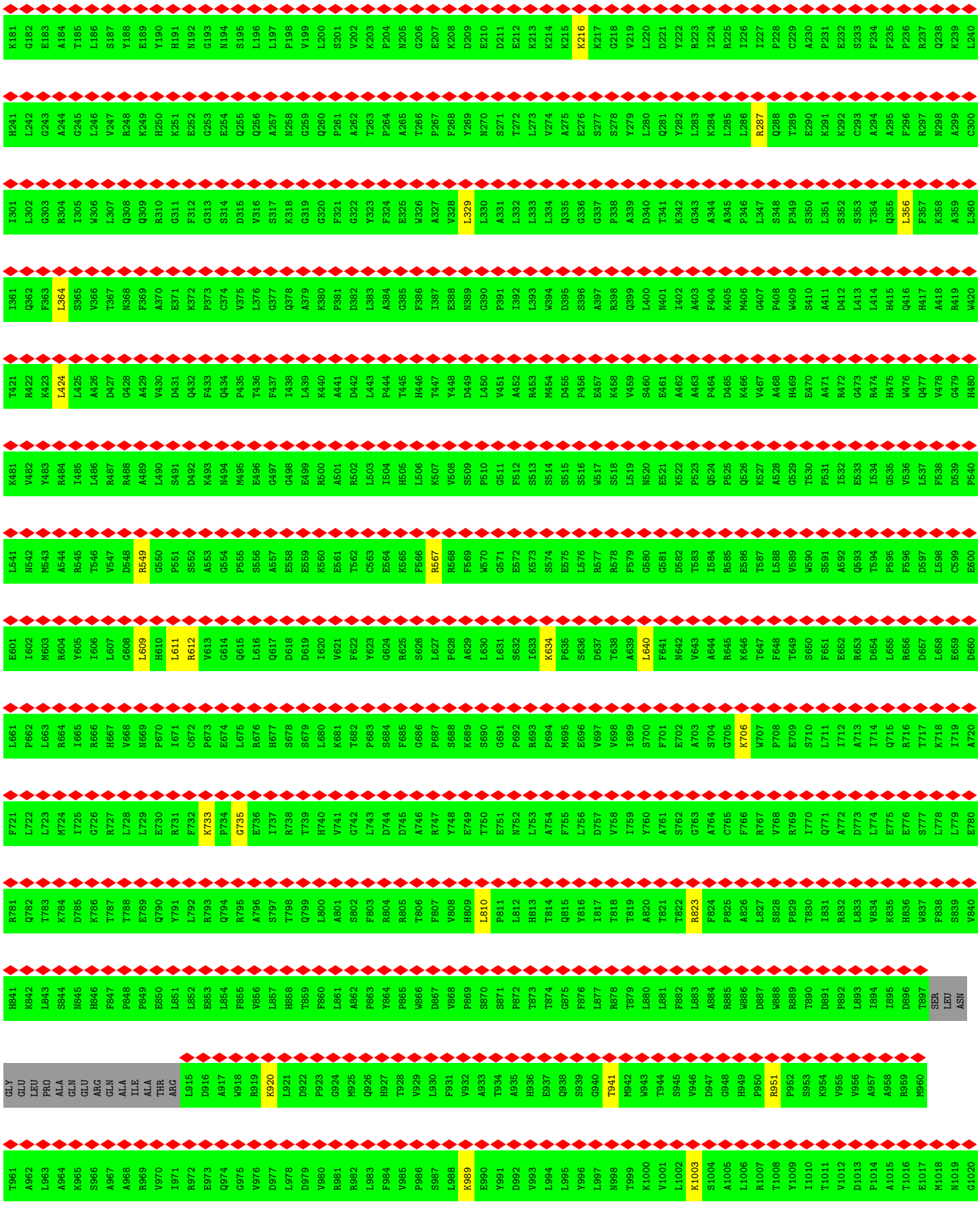


• Molecule 46: U3 small nucleolar RNA-associated protein 22

Chain UV:



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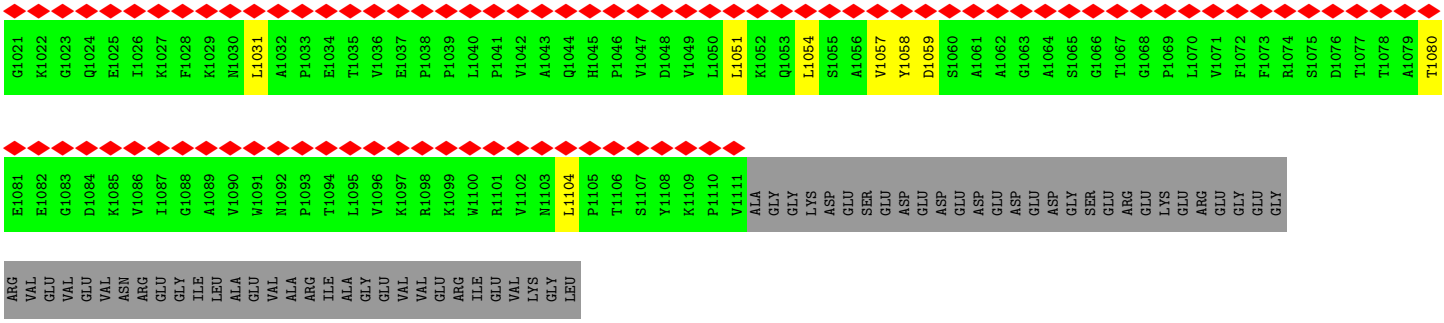
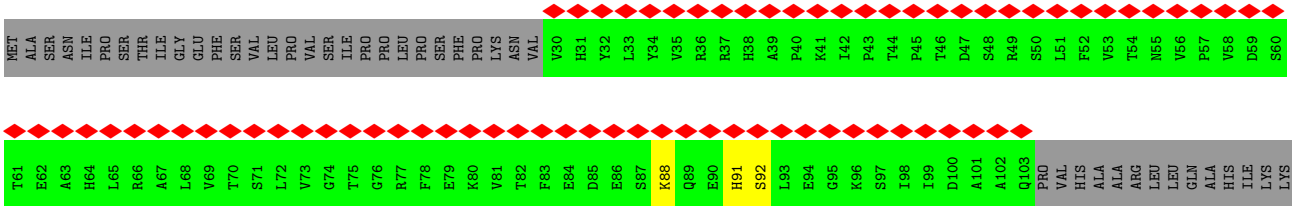
H241 L242 G243 A244 G245 L246 V247 R248 K249 H250 K251 E252 G253 E254 Q255 Q256 A257 N258 G259 Q260 P261 A262 T263 P264 A265 T266 P267 F268 Y269 N270 S271 T272 L273 V274 A275 E276 S277 S278 Y279 L280 Q281 Y282 L283 K284 L285 L286 R287 Q288 T289 E290 K291 K292 C293 A294 A295 F296 R297 N298 A299 C300
I301 L302 G303 R304 I305 W306 L307 Q308 Q309 R310 G311 F312 G313 S314 D315 V316 S317 K318 G319 G320 F321 G322 Y323 F324 E325 W326 A327 V328 L329 L330 A331 L332 L333 L334 Q335 G336 G337 P338 A339 D340 T341 K342 G343 A344 A345 P346 L347 S348 P349 S350 L351 S352 S353 T354 Q355 L356 F357 K358 A359 L360
I361 Q362 F363 L364 S365 V366 T367 N368 F369 A370 E371 K372 P373 C374 V375 L376 G377 Q378 A379 G319 G320 K380 P381 D382 L383 A384 G385 F386 I387 E388 N389 G390 P391 I392 L393 W394 D395 S396 A397 R398 Q399 L400 N401 I402 A403 F404 K405 M406 G407 P408 W409 S410 A411 D412 L413 L414 H415 Q416 H417 A418 R419 W420
T421 R422 K423 L424 L425 A426 D427 G428 A429 V430 D431 Q432 F433 Q434 P435 T436 F437 I438 L439 K440 A441 D442 L443 P444 T445 H446 T447 Y448 D449 L450 V451 A452 R453 M454 D455 P456 E457 K458 V459 S460 E461 A462 A463 P464 D465 K466 V467 A468 H469 E470 A471 R472 G473 R474 H475 W476 Q477 V478 G479 H480
K481 V482 Y483 R484 I485 L486 R487 R488 A489 L490 S491 D492 K493 N494 M495 E496 G497 G498 E499 R500 A501 R502 L503 I504 H505 L506 K507 V508 S509 P510 G511 F512 S513 S514 S515 S516 W517 S518 L519 N520 E521 K522 P523 Q524 P525 Q526 K527 A528 G529 T530 P531 I532 E533 I534 G535 V536 L537 F538 D539 P540
L541 N542 W543 A544 R545 T546 V547 D548 R549 G550 P551 S552 A553 G554 P555 S556 A557 E558 E559 K560 E561 T562 C563 E564 K565 F566 R567 R568 F569 W570 G571 E572 K573 S574 E575 L576 R577 R578 F579 G580 G581 D582 T583 I584 R585 E586 T587 L588 V589 W590 S591 A592 Q593 T594 P595 F596 D597 L598 C599 E600
E601 I602 M603 R604 Y605 I606 L607 G608 L609 H610 L611 R612 V613 G614 Q615 L616 Q617 D618 D619 I620 V621 F622 Y623 G624 R625 S626 L627 P628 A629 L630 L631 S632 I633 K634 P635 S636 D637 T638 A639 L640 F641 N642 V643 A644 R645 K646 T647 F648 T649 S650 F651 E652 R653 D654 L655 R656 D657 L658 E659 D660
L661 P662 L663 R664 I665 R666 H667 V668 N669 P670 I671 C672 P673 E674 L675 R676 H677 S678 S679 L680 K681 T682 P683 S684 F685 G686 P687 S688 K689 S690 G691 P692 R693 P694 M695 E696 V697 V698 I699 S700 F701 E702 A703 S704 G705 K706 W707 P708 E709 S710 L711 I712 A713 I714 Q715 R716 T717 K718 I719 A720
F721 L722 L723 M724 I725 G726 R727 L728 L729 E730 R731 F732 K733 P734 G735 E736 I737 R738 T739 H740 V741 G742 L743 D744 D745 A746 R747 Y748 E749 T750 E751 N752 L753 A754 F755 L756 D757 V758 I759 Y760 A761 S762 G763 A764 C765 F766 R767 V768 R769 I770 Q771 A772 D773 L774 E775 E776 S777 L778 L779 E780
R781 Q782 T783 K784 D785 K786 T787 T788 E789 Q790 Y791 L792 R793 Q794 R795 A796 S797 T798 Q799 L800 A801 S802 F803 R804 R805 T806 F807 V808 H809 L810 P611 L812 H813 T814 Q815 Y816 I817 T818 T819 A820 T821 T822 R823 F824 P825 A826 L827 S828 P829 T830 I831 R832 L833 V834 K835 H836 W837 F838 S839 V840
H841 K842 L843 S844 N845 H846 F847 P848 P849 E850 L851 L852 E853 L854 F855 V856 L857 H858 T859 F860 L861 A862 P863 Y864 P865 W866 D867 V868 P869 S870 S871 P872 T873 T874 G875 F876 L877 R878 T879 L880 L881 F882 L883 A884 R885 W886 D887 W888 R889 T890 D891 P892 L893 I894 I895 D896 T897 SER LEU ASN
GLY GLU LEU PRO ALA GLN GLU ARG GLN ALA ILE ALA THR ARG L915 D916 A917 W918 R919 K920 L921 D922 P923 G924 M925 Q926 H927 T928 V929 L930 F931 V932 A933 T934 A935 H936 E937 Q938 S939 G940 T941 M942 W943 T944 S945 V946 D947 G948 H949 P950 R951 P952 S953 K954 V955 V956 A957 A958 R959 M960
T961 A962 L963 A964 K965 S966 A967 A968 R969 V970 I971 R972 E973 Q974 G975 V976 D977 L978 D979 V980 R981 R982 L983 F984 V985 P986 S987 L988 K989 E990 Y991 D992 V993 L994 L995 Y996 L997 N998 T999 K1000 V1001 L1002 K1003 S1004 A1005 L1006 R1007 T1008 Y1009 I1010 T1011 V1012 D1013 P1014 A1015 T1016 E1017 M1018 N1019 G1020



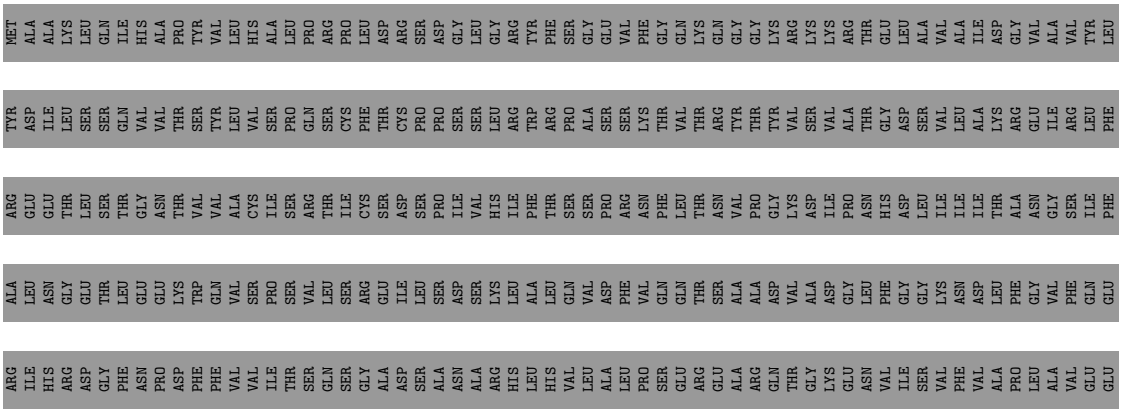
• Molecule 47: Rrp7

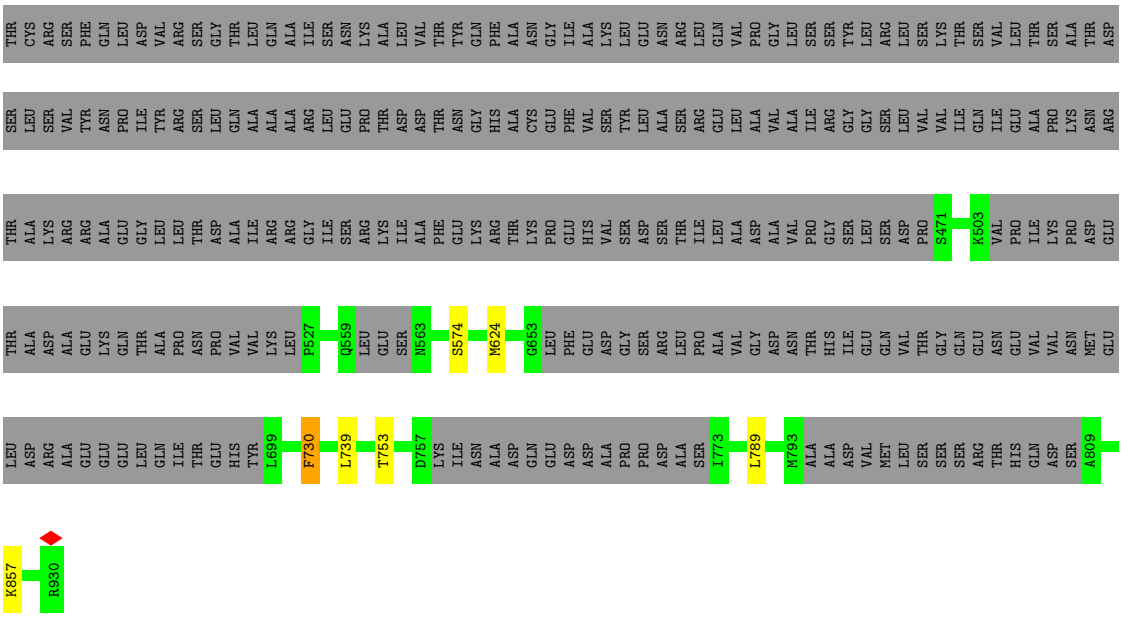
Chain CV:



• Molecule 48: Utp8

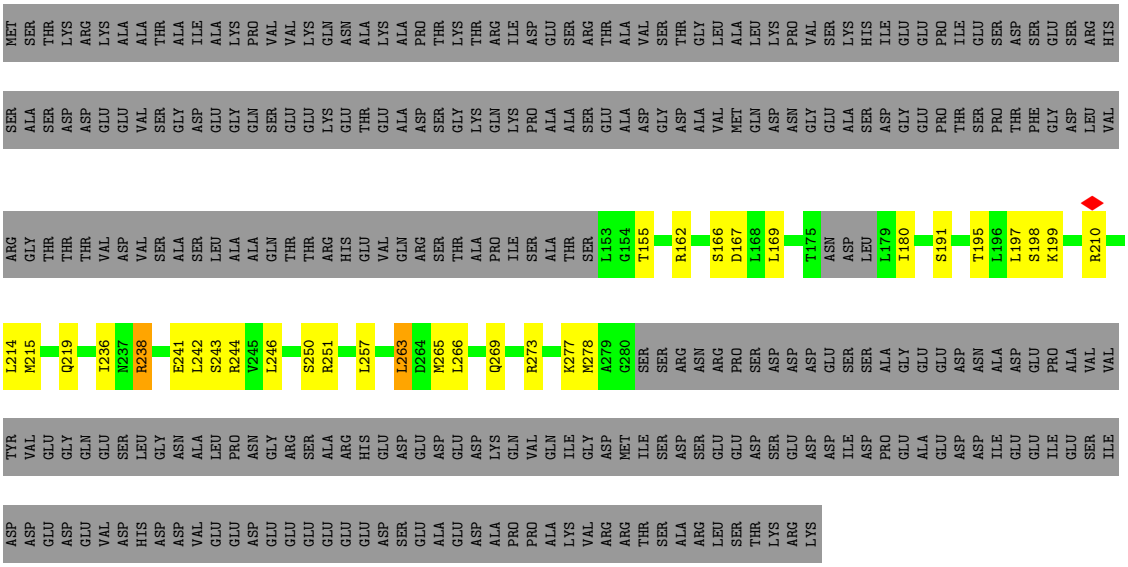
Chain UH:





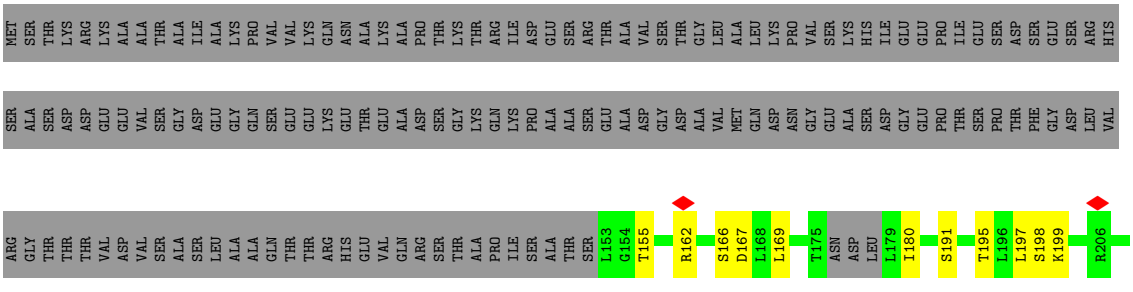
• Molecule 49: Utp5

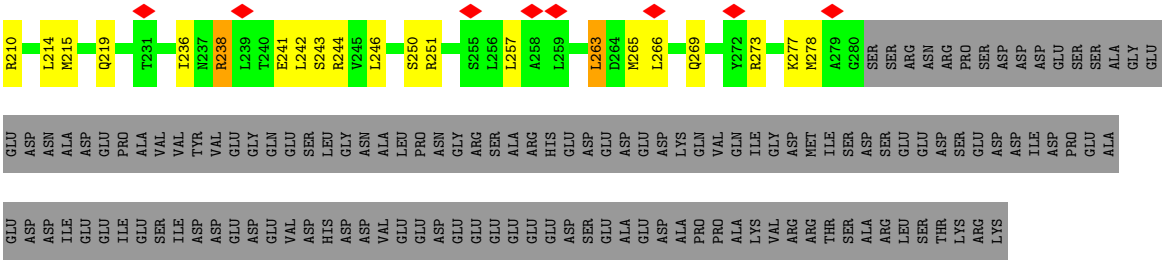
Chain UE:



• Molecule 49: Utp5

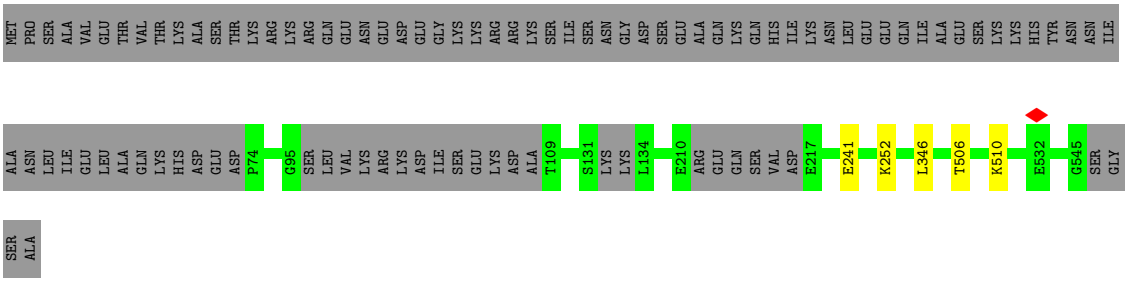
Chain UI:





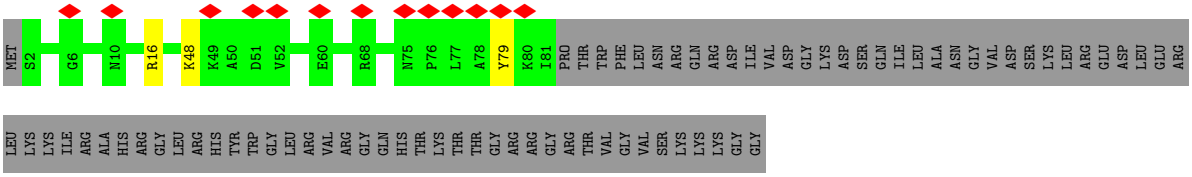
• Molecule 50: Noc4

Chain US:



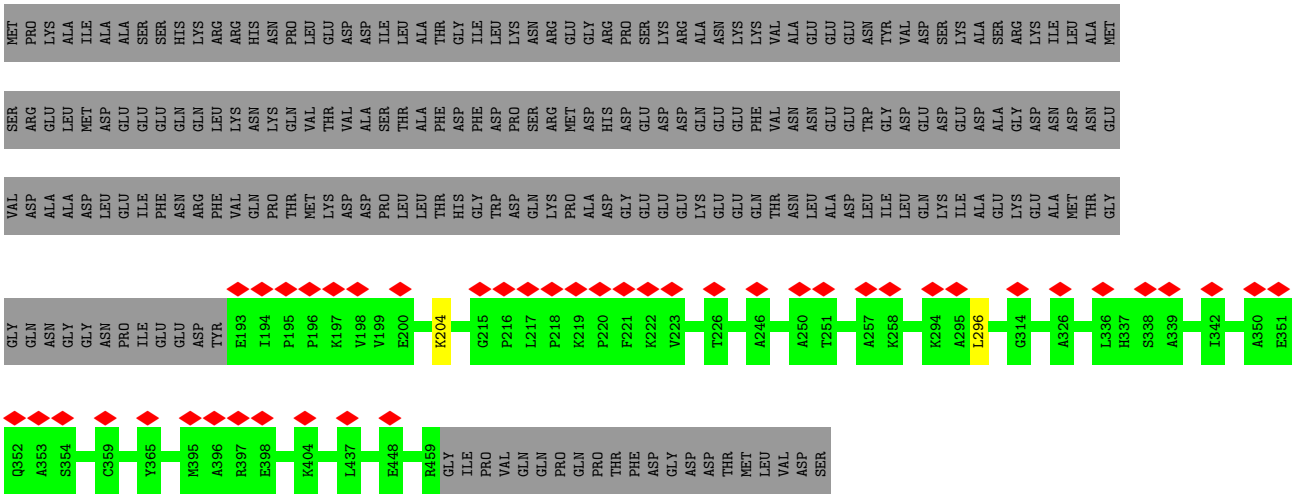
• Molecule 51: Rps18

Chain Cl:



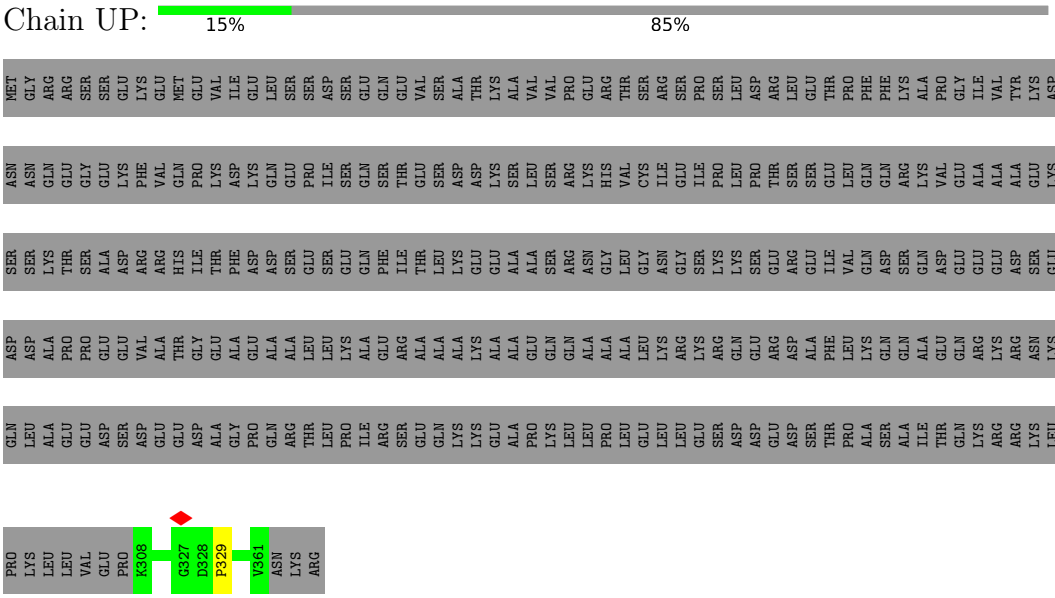
• Molecule 52: Enp1

Chain CX:



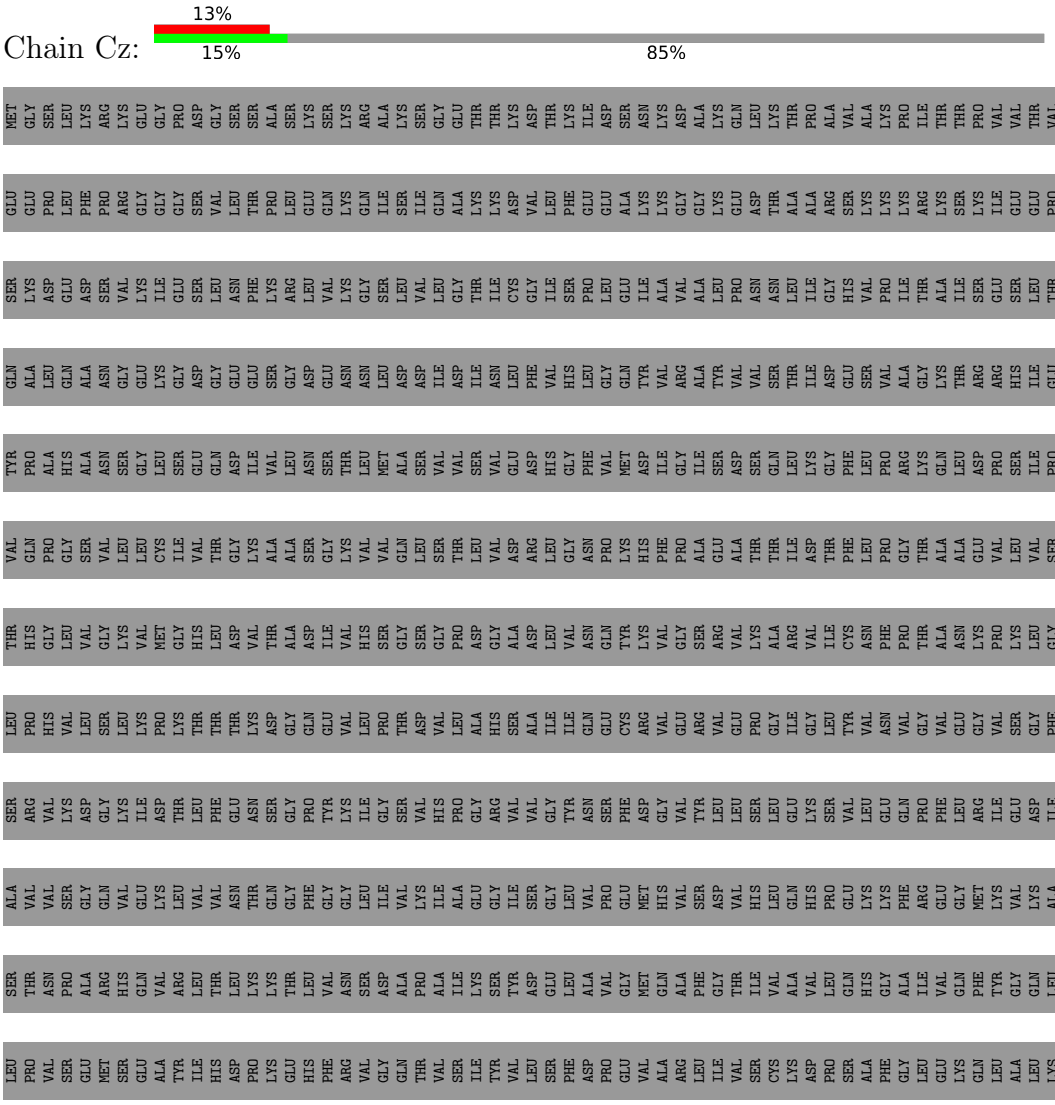
• Molecule 53: Utp16

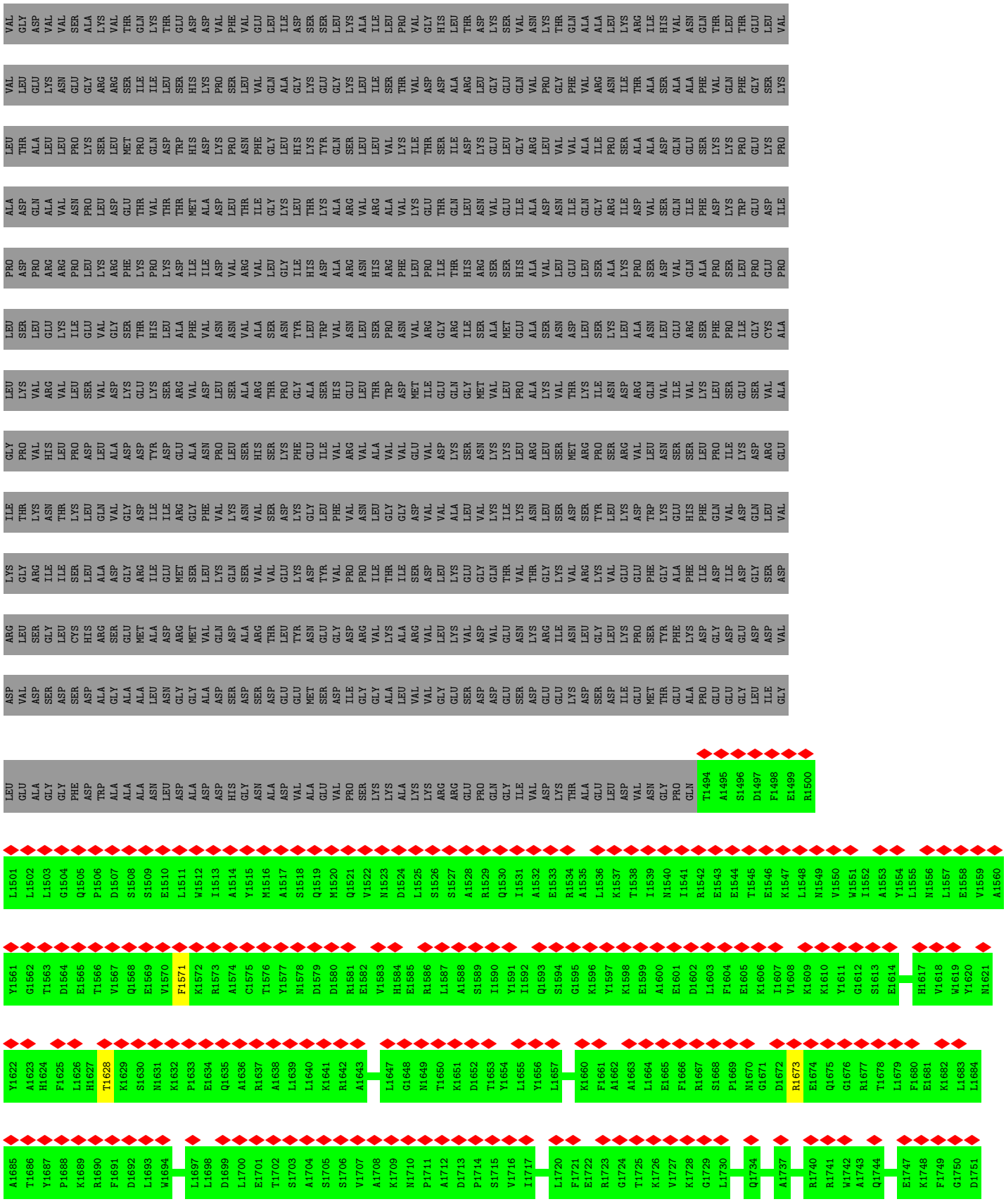
Chain UP:

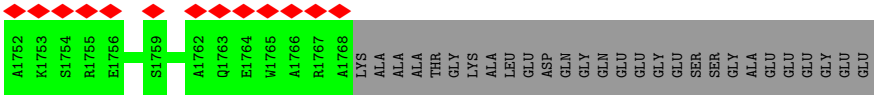


• Molecule 54: Rrp5

Chain Cz:




VAL GLY ASP VAL VAL SER ALA LYS VAL THR GLN LYS THR GLU ASP ASP VAL PHE VAL GLU LEU ILE ASP SER SER LEU LYS ALA ILE LEU PRO VAL GLY HIS LEU THR ASP LYS SER VAL ASN LYS THR GLN ALA ALA LEU LYS ARG ILE HIS VAL ASN GLN THR LEU THR GLU LEU VAL
VAL LEU GLU LYS ASN GLU GLY ARG ARG SER ILE ILE LEU SER HIS LYS PRO SER LEU VAL GLN ALA GLY LYS GLU GLY LYS LEU ILE SER THR VAL ASP ASP ARG LEU GLY GLU GLN VAL PRO GLY PHE VAL ARG ASN ILE THR ALA ASP ALA ALA PHE VAL GLN PHE GLY SER LYS
LEU THR ALA LEU LEU PRO LYS SER LEU MET PRO GLN ASP TRP HIS ASP LYS PRO ASN PHE GLY LEU HIS LYS TYR GLN SER LEU LEU VAL LYS ILE THR SER ILE ASP LYS GLU LEU GLY ARG LEU VAL ALA ILE PRO SER ALA ALA ASP GLN GLU SER LYS LYS PRO GLU LYS SER PRO
ALA ASP GLN ALA VAL ASN PRO LEU ASP GLU THR VAL THR THR MET ALA ASP LEU THR LYS ALA ARG VAL GLU ILE GLY LYS LEU THR LYS ALA ARG VAL ALA ASP GLU GLN LEU ASN VAL GLU ILE ALA ASP ASN LEU GLN GLY ARG ILE ASP VAL GLN ILE PHE ASP LYS TRP GLU ASP ILE
PRO ASP PRO ARG ARG PRO LEU LYS ARG PHE LYS PRO LYS ASP ILE ILE ASP VAL ARG VAL LEU GLY ILE HIS ASP ALA ARG ASN HIS ARG PHE LEU PRO ILE THR HIS ARG SER SER HIS ALA VAL LEU GLU LEU SER ALA LYS PRO SER ASP VAL GLN ALA PRO SER LEU PRO GLU PRO
LEU SER LEU GLU LYS ILE GLU VAL GLY SER THR HIS LEU ALA PHE VAL ASN ASN VAL ALA ASN LEU SER PRO ASN VAL ARG VAL GLU ALA ASP SER ASN TYR LEU TRP VAL ASN LEU SER PRO ASN VAL ARG GLY GLY ARG ILE SER ALA ALA SER ASN ASP LEU SER LYS LEU ALA ASN SER PHE PRO ILE LEU GLY CYS ALA
LEU LYS VAL ARG VAL LEU SER VAL ASP LYS GLU LYS SER ARG VAL ASP LEU SER ALA ARG THR PRO GLY ALA SER HIS GLU LEU THR TRP ASP MET ILE GLU GLN GLY MET VAL LEU PRO ALA LYS VAL THR LYS ILE ASN ASP ARG GLN VAL ILE VAL LYS LEU SER GLU SER VAL ALA
GLY PRO VAL HIS LEU PRO ASP LEU ALA ASP ASP TYR ASP GLU GLU ALA ASN PRO LEU SER HIS SER LYS PHE GLU ILE VAL ARG VAL ALA ALA VAL GLU VAL ASP LYS SER GLN GLY MET VAL LEU PRO ALA LYS VAL LEU ARG LEU SER MET GLY ARG PRO SER ARG VAL LEU GLN ALA GLU
ILE THR LYS ASN THR LYS LEU GLN VAL GLY ASP ILE ILE ARG GLY PHE VAL VAL LYS ASN VAL SER ASP LYS GLY LEU PHE VAL ASN LEU GLY GLY ASP VAL VAL ALA LEU VAL LYS ILE LYS ASN LEU SER ASP SER TYR LEU LYS ASP TRP LYS GLU HIS PHE GLN VAL ASP GLN GLY LEU VAL
LYS GLY ARG ILE SER LEU ALA ASP GLY ARG ILE GLU MET SER LEU LYS GLN SER VAL VAL VAL GLU LYS GLY GLN THR VAL THR GLY LYS VAL ARG LYS VAL GLU GLU PHE GLY ALA PHE ILE ASP ILE ASP GLY SER ASP
ARG LEU SER GLY LEU CYS HIS ARG SER GLU MET ALA ASP ARG MET VAL GLN ASP ALA ARG THR LEU TYR ASN GLU GLY ASP ARG VAL LYS VAL LEU LYS ASP TYR VAL PRO PRO ILE THR ILE SER ASP LEU LYS GLU GLY GLN THR VAL THR GLY LYS VAL ARG LYS VAL GLU GLU PHE GLY LYS ASP TRP LYS GLU HIS PHE GLN VAL ASP GLN LEU VAL
ASP VAL ASP SER ASP ASP VAL ALA ALA LEU ASN GLY GLY ALA ASP SER ASP ILE GLY GLY LEU ALA LEU VAL VAL GLY GLU SER ASP ASP GLU GLU LYS ASP SER ASP ILE GLU MET THR MET GLU GLY ILE GLY GLY PRO GLU GLU GLY LEU ILE GLY
LEU GLU ALA GLY GLY PHE ASP TRP ALA ALA ALA ASN LEU ASP ASP HIS GLY ASN ALA ASP SER VAL ALA GLU VAL PRO SER LYS LYS LYS ARG ARG GLU PRO GLN GLY ILE VAL ASP LYS THR ALA GLU LEU ASP VAL ASN GLY PRO T1494 A1495 S1496 D1497 F1498 E1499 R1500
L1501 L1502 L1503 G1504 Q1505 P1506 D1507 S1508 S1509 E1510 L1511 W1512 I1513 A1514 Y1515 M1516 A1517 S1518 Q1519 M1520 Q1521 V1522 N1523 D1524 L1525 S1526 S1527 A1528 R1529 Q1530 I1531 A1532 E1533 R1534 A1535 L1536 K1537 T1538 I1539 N1540 I1541 R1542 E1543 E1544 T1545 E1546 K1547 L1548 N1549 V1550 W1551 I1552 A1553 Y1554 L1555 N1556 L1557 E1558 V1559 A1560
Y1561 G1562 T1563 D1564 E1565 T1566 V1567 Q1568 E1569 V1570 F1571 K1572 R1573 A1574 C1575 T1576 Y1577 N1578 D1579 D1580 R1581 E1582 V1583 H1584 E1585 R1586 L1587 A1588 S1589 I1590 Y1591 I1592 Q1593 S1594 G1595 K1596 Y1597 K1598 E1599 A1600 E1601 D1602 L1603 F1604 E1605 K1606 I1607 V1608 K1609 K1610 Y1611 G1612 S1613 E1614 H1617 V1618 W1619 Y1620 N1621
Y1622 A1623 H1624 F1625 L1626 H1627 T1628 K1629 S1630 N1631 K1632 P1633 E1634 Q1635 A1636 R1637 A1638 L1639 L1640 K1641 R1642 A1643 L1647 G1648 N1649 T1650 K1651 D1652 T1653 Y1654 L1655 Y1656 L1657 K1660 F1661 A1662 A1663 L1664 E1665 F1666 R1667 S1668 P1669 N1670 G1671 D1672 R1673 E1674 Q1675 G1676 R1677 T1678 L1679 F1680 E1681 K1682 L1683 L1684
A1685 T1686 Y1687 P1688 K1689 R1690 F1691 D1692 L1693 W1694 L1697 L1698 D1699 L1700 E1701 T1702 S1703 A1704 S1705 S1706 V1707 A1708 K1709 N1710 P1711 A1712 D1713 P1714 S1715 V1716 I1717 L1720 F1721 E1722 R1723 G1724 T1725 K1726 V1727 K1728 G1729 L1730 Q1734 A1737 R1740 R1741 W1742 A1743 Q1744 E1747 K1748 F1749 G1750 D1751


A1752 K1753 S1754 R1755 E1756 S1759 A1762 Q1763 E1764 W1765 A1766 R1767 A1768 LYS ALA ALA ALA THR GLY LYS ALA LEU GLU ASP GLN GLY GLN GLU GLU GLY GLU SER SER GLY ALA GLU GLU GLU GLY GLU GLU

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	20250	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 ($e^-/Å^2$)	28	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.437	Depositor
Minimum map value	-0.319	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.011	Depositor
Recommended contour level	0.03	Depositor
Map size (Å)	520.32, 520.32, 520.32	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.084, 1.084, 1.084	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ZN

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	UA	0.99	12/6521 (0.2%)	0.86	6/8867 (0.1%)
2	UB	0.48	1/4154 (0.0%)	0.60	1/5583 (0.0%)
3	UC	0.49	0/595	0.59	0/786
4	UD	0.68	4/6211 (0.1%)	0.70	3/8408 (0.0%)
5	UF	0.54	0/2657	0.60	0/3596
6	UG	0.88	4/3516 (0.1%)	0.79	3/4761 (0.1%)
7	UJ	0.52	0/6291	0.69	3/8543 (0.0%)
8	UK	0.80	0/1701	0.79	1/2251 (0.0%)
9	UL	0.47	0/6299	0.65	1/8531 (0.0%)
10	UM	0.38	0/5366	0.62	4/7282 (0.1%)
11	UN	0.60	0/1232	0.62	0/1662
12	UO	0.72	3/3903 (0.1%)	0.74	3/5312 (0.1%)
13	UQ	0.70	1/6136 (0.0%)	0.72	3/8348 (0.0%)
14	UR	0.94	2/3564 (0.1%)	0.80	2/4816 (0.0%)
15	UU	0.81	8/6903 (0.1%)	0.77	5/9392 (0.1%)
16	UX	0.63	0/1493	0.67	0/2011
17	UZ	0.48	1/1857 (0.1%)	0.66	3/2526 (0.1%)
18	CA	0.75	1/1814 (0.1%)	0.72	0/2456
18	CB	0.48	0/1853	0.61	0/2511
19	CC	0.53	0/2911	0.65	1/3937 (0.0%)
20	CD	0.53	1/3205 (0.0%)	0.68	2/4338 (0.0%)
21	CE	0.84	0/891	0.80	0/1214
21	CF	0.40	0/876	0.64	0/1195
22	CG	0.33	0/2983	0.58	0/4032
23	CH	0.51	0/2939	0.67	0/3988
24	CI	0.63	1/6631 (0.0%)	0.67	3/8943 (0.0%)
25	CJ	1.09	3/1462 (0.2%)	0.86	0/1967
26	CK	0.95	2/2376 (0.1%)	0.86	4/3214 (0.1%)
27	CL	0.70	0/1812	0.66	0/2437
28	CM	0.70	1/3573 (0.0%)	0.71	2/4829 (0.0%)
29	CN	0.52	0/1797	0.64	0/2443
29	CO	0.41	0/1714	0.62	0/2325

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
30	CP	0.31	0/1528	0.67	1/2057 (0.0%)
31	CQ	0.37	0/1379	0.58	0/1850
32	CR	0.42	1/6108 (0.0%)	0.84	20/8266 (0.2%)
32	CS	0.42	1/6108 (0.0%)	0.84	20/8266 (0.2%)
33	CT	0.67	0/1053	0.70	0/1413
34	Cc	0.78	0/1485	0.74	0/2008
35	Ce	0.36	0/1298	0.75	1/1750 (0.1%)
36	Cg	0.37	0/1259	0.63	0/1687
37	Ch	0.28	0/422	0.50	0/561
38	Ci	0.31	0/801	0.60	0/1087
39	Cj	1.02	0/958	0.88	0/1293
40	Cm	0.35	0/1001	0.65	1/1345 (0.1%)
41	Cn	0.62	0/712	0.67	0/954
42	Cp	0.58	0/458	0.68	0/617
43	CU	0.37	0/1015	0.60	0/1351
44	C1	1.32	203/26369 (0.8%)	1.49	504/41071 (1.2%)
45	C2	1.37	62/5459 (1.1%)	1.61	134/8498 (1.6%)
46	UV	0.35	1/8638 (0.0%)	0.72	9/11725 (0.1%)
47	CV	0.33	0/1172	0.69	0/1592
48	UH	0.50	1/2852 (0.0%)	0.68	2/3846 (0.1%)
49	UE	0.47	0/980	0.91	5/1316 (0.4%)
49	UI	0.47	0/980	0.91	5/1316 (0.4%)
50	US	0.52	0/3765	0.62	0/5100
51	Cl	0.42	0/638	0.66	0/857
52	CX	0.31	0/2180	0.57	1/2956 (0.0%)
53	UP	0.55	0/428	0.62	0/570
54	Cz	0.33	0/2310	0.58	0/3120
All	All	0.78	314/186592 (0.2%)	0.92	753/258976 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	UA	0	4
4	UD	0	2
5	UF	0	1
6	UG	0	2
9	UL	0	1
10	UM	0	3
12	UO	0	2

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Mol	Chain	#Chirality outliers	#Planarity outliers
13	UQ	0	6
15	UU	0	8
17	UZ	0	3
18	CA	0	1
18	CB	0	1
21	CF	0	1
23	CH	0	1
24	CI	0	2
26	CK	0	1
29	CO	0	2
31	CQ	0	1
32	CR	0	2
32	CS	0	2
34	Cc	0	2
35	Ce	0	1
38	Ci	0	1
39	Cj	0	2
46	UV	0	5
47	CV	0	2
48	UH	0	2
50	US	0	1
51	Cl	0	1
54	Cz	0	1
All	All	0	64

The worst 5 of 314 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	UQ	394	HIS	CA-CB	-13.98	1.23	1.53
45	C2	57	A	N7-C5	-10.06	1.33	1.39
15	UU	418	TRP	CB-CG	-9.97	1.32	1.50
44	C1	2107	A	N9-C4	-9.80	1.31	1.37
44	C1	254	G	N7-C5	-9.57	1.33	1.39

The worst 5 of 753 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
45	C2	2	G	O5'-P-OP1	-32.44	71.78	110.70
45	C2	2	G	OP1-P-OP2	-26.35	80.07	119.60
45	C2	2	G	O5'-P-OP2	19.04	133.54	110.70
44	C1	258	C	N1-C2-O2	13.22	126.83	118.90
45	C2	1	A	OP1-P-O3'	13.10	134.03	105.20

There are no chirality outliers.

5 of 64 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	UA	214	SER	Peptide
1	UA	386	THR	Peptide
1	UA	667	ARG	Peptide
1	UA	8	SER	Peptide
4	UD	309	GLN	Peptide

5.2 Too-close contacts (i)

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

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	UA	835/904 (92%)	730 (87%)	103 (12%)	2 (0%)	47 81
2	UB	502/907 (55%)	466 (93%)	36 (7%)	0	100 100
3	UC	72/648 (11%)	67 (93%)	5 (7%)	0	100 100
4	UD	754/884 (85%)	689 (91%)	65 (9%)	0	100 100
5	UF	325/414 (78%)	304 (94%)	21 (6%)	0	100 100
6	UG	446/558 (80%)	384 (86%)	60 (14%)	2 (0%)	34 72
7	UJ	796/1802 (44%)	750 (94%)	45 (6%)	1 (0%)	51 85
8	UK	211/270 (78%)	201 (95%)	10 (5%)	0	100 100
9	UL	767/962 (80%)	685 (89%)	82 (11%)	0	100 100
10	UM	645/912 (71%)	605 (94%)	39 (6%)	1 (0%)	47 81
11	UN	150/938 (16%)	143 (95%)	6 (4%)	1 (1%)	22 62
12	UO	498/557 (89%)	450 (90%)	48 (10%)	0	100 100
13	UQ	775/960 (81%)	691 (89%)	81 (10%)	3 (0%)	34 72

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
14	UR	437/618 (71%)	399 (91%)	38 (9%)	0	100	100
15	UU	890/1049 (85%)	786 (88%)	103 (12%)	1 (0%)	51	85
16	UX	188/193 (97%)	174 (93%)	14 (7%)	0	100	100
17	UZ	229/391 (59%)	211 (92%)	18 (8%)	0	100	100
18	CA	238/313 (76%)	213 (90%)	25 (10%)	0	100	100
18	CB	235/313 (75%)	211 (90%)	24 (10%)	0	100	100
19	CC	383/523 (73%)	353 (92%)	30 (8%)	0	100	100
20	CD	416/582 (72%)	382 (92%)	34 (8%)	0	100	100
21	CE	119/127 (94%)	107 (90%)	12 (10%)	0	100	100
21	CF	118/127 (93%)	110 (93%)	8 (7%)	0	100	100
22	CG	368/630 (58%)	342 (93%)	26 (7%)	0	100	100
23	CH	383/411 (93%)	348 (91%)	35 (9%)	0	100	100
24	CI	812/1163 (70%)	737 (91%)	73 (9%)	2 (0%)	47	81
25	CJ	177/183 (97%)	151 (85%)	26 (15%)	0	100	100
26	CK	295/297 (99%)	271 (92%)	24 (8%)	0	100	100
27	CL	225/785 (29%)	200 (89%)	24 (11%)	1 (0%)	34	72
28	CM	443/446 (99%)	398 (90%)	44 (10%)	1 (0%)	47	81
29	CN	222/252 (88%)	207 (93%)	15 (7%)	0	100	100
29	CO	211/252 (84%)	193 (92%)	16 (8%)	2 (1%)	17	56
30	CP	185/322 (58%)	179 (97%)	6 (3%)	0	100	100
31	CQ	171/259 (66%)	165 (96%)	6 (4%)	0	100	100
32	CR	746/1073 (70%)	699 (94%)	47 (6%)	0	100	100
32	CS	746/1073 (70%)	699 (94%)	47 (6%)	0	100	100
33	CT	127/203 (63%)	111 (87%)	16 (13%)	0	100	100
34	Cc	188/212 (89%)	170 (90%)	18 (10%)	0	100	100
35	Ce	155/203 (76%)	140 (90%)	15 (10%)	0	100	100
36	Cg	157/190 (83%)	153 (98%)	4 (2%)	0	100	100
37	Ch	47/151 (31%)	46 (98%)	1 (2%)	0	100	100
38	Ci	113/150 (75%)	103 (91%)	10 (9%)	0	100	100
39	Cj	124/143 (87%)	104 (84%)	20 (16%)	0	100	100
40	Cm	122/130 (94%)	116 (95%)	6 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
41	Cn	92/145 (63%)	86 (94%)	6 (6%)	0	100 100
42	Cp	59/68 (87%)	53 (90%)	6 (10%)	0	100 100
43	CU	123/311 (40%)	108 (88%)	15 (12%)	0	100 100
46	UV	1057/1171 (90%)	946 (90%)	108 (10%)	3 (0%)	41 76
47	CV	144/322 (45%)	130 (90%)	13 (9%)	1 (1%)	22 62
48	UH	349/930 (38%)	327 (94%)	22 (6%)	0	100 100
49	UE	121/410 (30%)	109 (90%)	12 (10%)	0	100 100
49	UI	121/410 (30%)	109 (90%)	12 (10%)	0	100 100
50	US	443/549 (81%)	414 (94%)	28 (6%)	1 (0%)	47 81
51	Cl	78/156 (50%)	72 (92%)	6 (8%)	0	100 100
52	CX	265/480 (55%)	252 (95%)	13 (5%)	0	100 100
53	UP	52/364 (14%)	42 (81%)	9 (17%)	1 (2%)	8 40
54	Cz	273/1796 (15%)	257 (94%)	15 (6%)	1 (0%)	34 72
All	All	19223/30592 (63%)	17548 (91%)	1651 (9%)	24 (0%)	54 85

5 of 24 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
6	UG	176	LEU
29	CO	85	SER
46	UV	1059	ASP
13	UQ	708	SER
11	UN	902	ARG

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	UA	651/775 (84%)	635 (98%)	16 (2%)	47 68
2	UB	425/788 (54%)	420 (99%)	5 (1%)	71 84
3	UC	61/536 (11%)	59 (97%)	2 (3%)	38 61

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
4	UD	653/738 (88%)	650 (100%)	3 (0%)	88 93
5	UF	248/341 (73%)	248 (100%)	0	100 100
6	UG	344/474 (73%)	333 (97%)	11 (3%)	39 62
7	UJ	658/1526 (43%)	647 (98%)	11 (2%)	60 78
8	UK	159/227 (70%)	155 (98%)	4 (2%)	47 68
9	UL	667/821 (81%)	665 (100%)	2 (0%)	92 95
10	UM	569/770 (74%)	565 (99%)	4 (1%)	84 90
11	UN	123/765 (16%)	123 (100%)	0	100 100
12	UO	404/456 (89%)	400 (99%)	4 (1%)	76 86
13	UQ	650/817 (80%)	640 (98%)	10 (2%)	65 80
14	UR	360/524 (69%)	353 (98%)	7 (2%)	57 75
15	UU	672/863 (78%)	657 (98%)	15 (2%)	52 71
16	UX	150/167 (90%)	148 (99%)	2 (1%)	69 82
17	UZ	186/329 (56%)	185 (100%)	1 (0%)	88 93
18	CA	175/228 (77%)	170 (97%)	5 (3%)	42 64
18	CB	195/228 (86%)	194 (100%)	1 (0%)	88 93
19	CC	287/435 (66%)	286 (100%)	1 (0%)	92 95
20	CD	319/489 (65%)	314 (98%)	5 (2%)	62 79
21	CE	91/108 (84%)	89 (98%)	2 (2%)	52 71
21	CF	88/108 (82%)	88 (100%)	0	100 100
22	CG	299/525 (57%)	299 (100%)	0	100 100
23	CH	303/320 (95%)	298 (98%)	5 (2%)	60 78
24	CI	661/1009 (66%)	644 (97%)	17 (3%)	46 67
25	CJ	147/169 (87%)	142 (97%)	5 (3%)	37 61
26	CK	245/266 (92%)	236 (96%)	9 (4%)	34 59
27	CL	181/642 (28%)	179 (99%)	2 (1%)	73 85
28	CM	364/383 (95%)	356 (98%)	8 (2%)	52 71
29	CN	202/223 (91%)	201 (100%)	1 (0%)	88 93
29	CO	193/223 (86%)	191 (99%)	2 (1%)	76 86
30	CP	164/287 (57%)	162 (99%)	2 (1%)	71 84
31	CQ	145/215 (67%)	143 (99%)	2 (1%)	67 81

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
32	CR	654/916 (71%)	474 (72%)	180 (28%)	0 3
32	CS	654/916 (71%)	474 (72%)	180 (28%)	0 3
33	CT	108/167 (65%)	106 (98%)	2 (2%)	57 75
34	Cc	149/178 (84%)	147 (99%)	2 (1%)	69 82
35	Ce	137/177 (77%)	134 (98%)	3 (2%)	52 71
36	Cg	122/162 (75%)	120 (98%)	2 (2%)	62 79
37	Ch	43/130 (33%)	43 (100%)	0	100 100
38	Ci	74/117 (63%)	74 (100%)	0	100 100
39	Cj	92/115 (80%)	90 (98%)	2 (2%)	52 71
40	Cm	103/113 (91%)	102 (99%)	1 (1%)	76 86
41	Cn	70/116 (60%)	70 (100%)	0	100 100
42	Cp	46/61 (75%)	46 (100%)	0	100 100
43	CU	103/260 (40%)	97 (94%)	6 (6%)	20 47
46	UV	908/989 (92%)	891 (98%)	17 (2%)	57 75
47	CV	129/276 (47%)	127 (98%)	2 (2%)	62 79
48	UH	301/788 (38%)	298 (99%)	3 (1%)	76 86
49	UE	105/346 (30%)	74 (70%)	31 (30%)	0 2
49	UI	105/346 (30%)	74 (70%)	31 (30%)	0 2
50	US	404/493 (82%)	401 (99%)	3 (1%)	84 90
51	Cl	71/135 (53%)	69 (97%)	2 (3%)	43 65
52	CX	227/411 (55%)	226 (100%)	1 (0%)	91 94
53	UP	44/314 (14%)	44 (100%)	0	100 100
54	Cz	235/1533 (15%)	234 (100%)	1 (0%)	91 94
All	All	15923/25834 (62%)	15290 (96%)	633 (4%)	35 56

5 of 633 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
32	CS	559	MET
49	UE	198	SER
32	CS	655	GLN
32	CS	558	LEU
32	CS	908	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 265 such sidechains are listed below:

Mol	Chain	Res	Type
46	UV	520	ASN
46	UV	998	ASN
49	UI	183	ASN
15	UU	236	GLN
14	UR	370	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
44	C1	1088/2323 (46%)	373 (34%)	31 (2%)
45	C2	226/230 (98%)	83 (36%)	8 (3%)
All	All	1314/2553 (51%)	456 (34%)	39 (2%)

5 of 456 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
44	C1	2	G
44	C1	3	G
44	C1	4	G
44	C1	5	G
44	C1	7	A

5 of 39 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
44	C1	2177	G
45	C2	91	G
44	C1	2214	A
45	C2	35	G
45	C2	255	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 monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
45	C2	3
2	UB	1
48	UH	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	C2	206:G	O3'	240:C	P	18.53
1	C2	105:C	O3'	110:A	P	15.27
1	C2	119:C	O3'	123:A	P	11.89
1	UB	679:ASN	C	680:PHE	N	1.20
1	UH	730:PHE	C	731:LYS	N	1.18

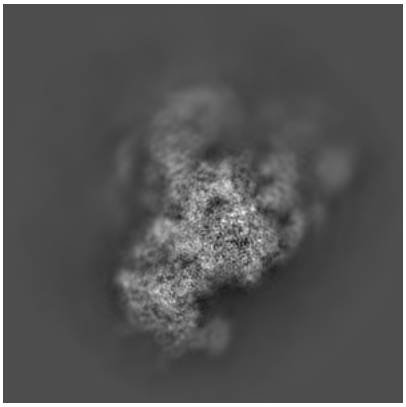
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-10055. These allow visual inspection of the internal detail of the map and identification of artifacts.

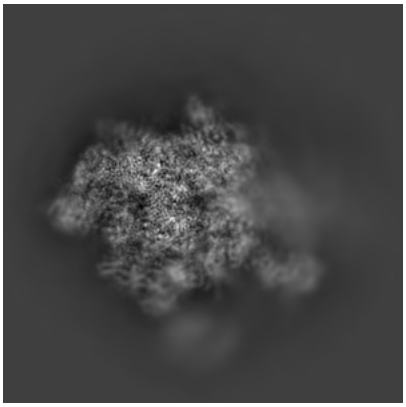
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

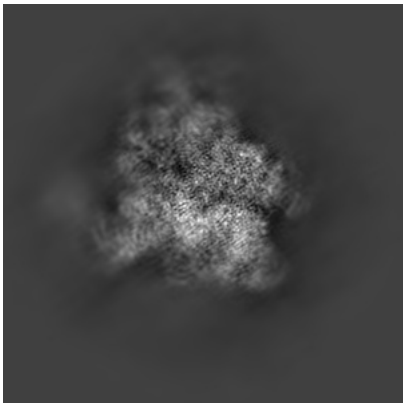
6.1.1 Primary map



X



Y

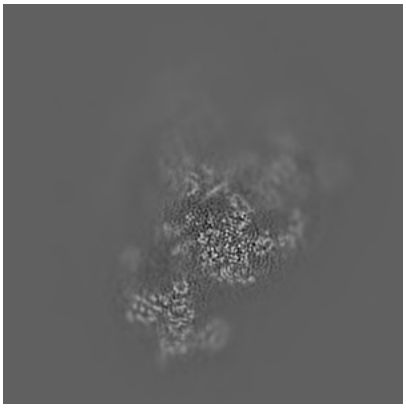


Z

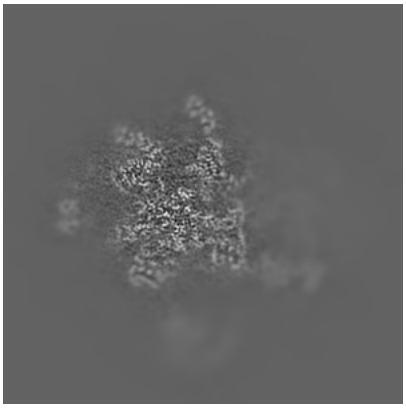
The images above show the map projected in three orthogonal directions.

6.2 Central slices

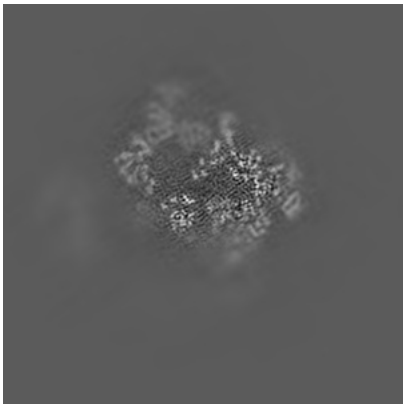
6.2.1 Primary map



X Index: 240



Y Index: 240

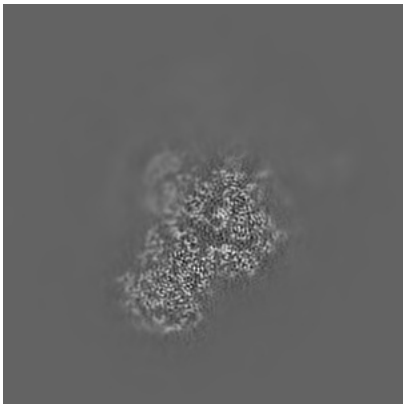


Z Index: 240

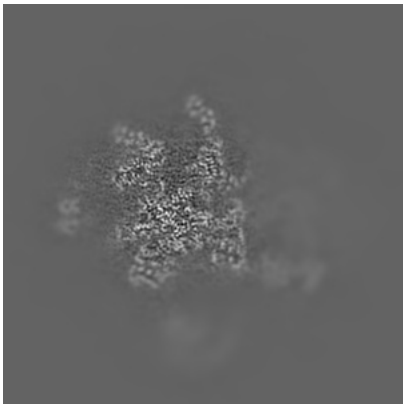
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

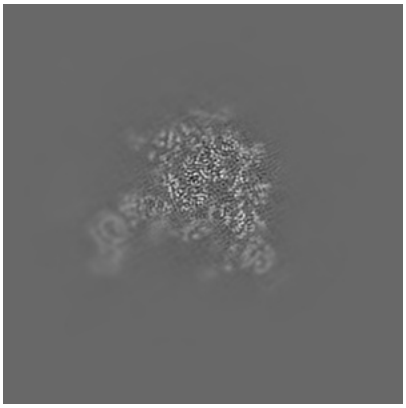
6.3.1 Primary map



X Index: 279



Y Index: 241



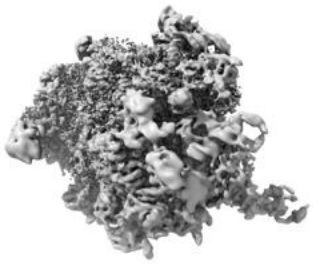
Z Index: 187

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

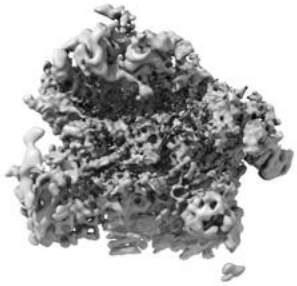
6.4 Orthogonal surface views (i)

6.4.1 Primary map

X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.03. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

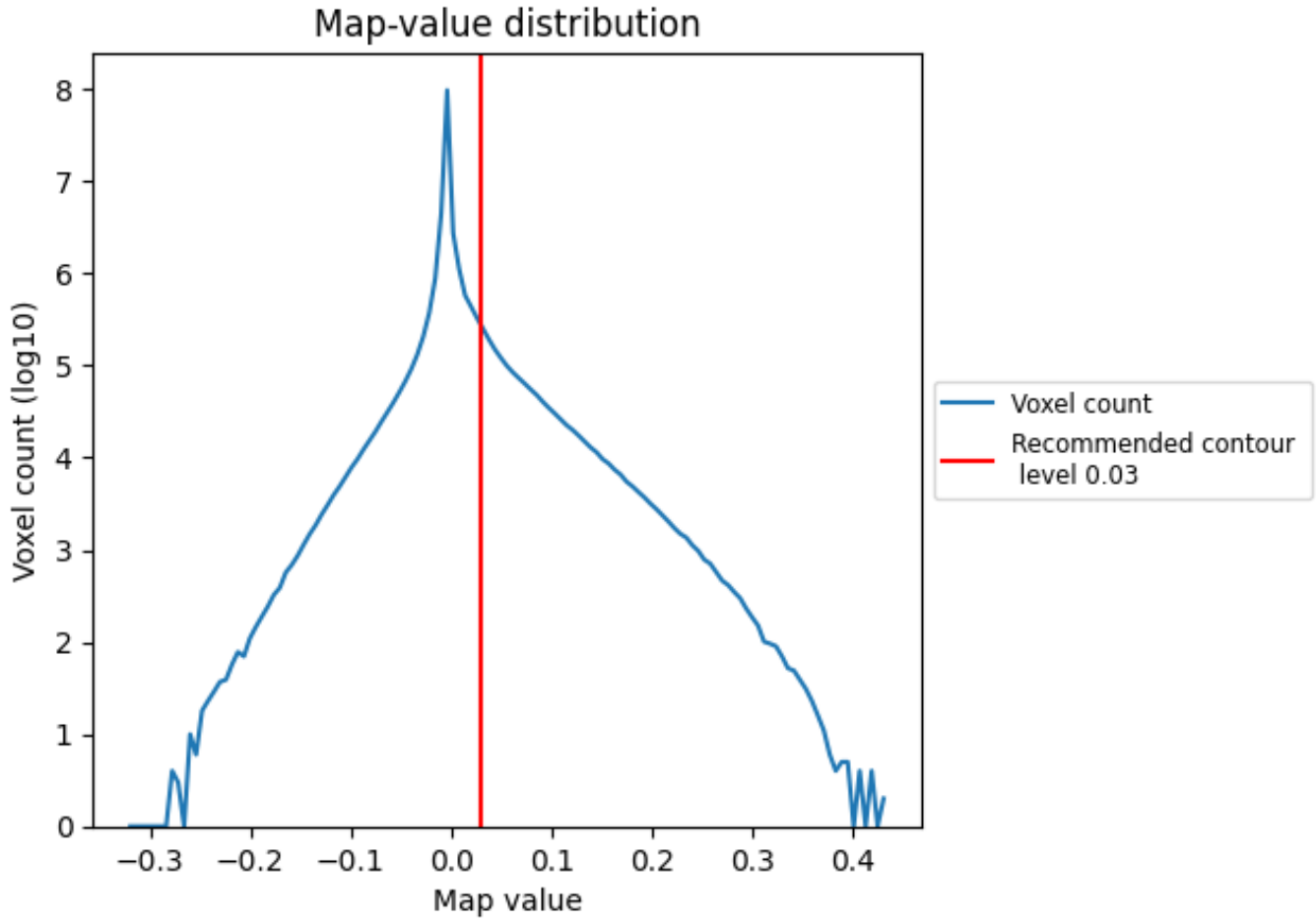
6.5 Mask visualisation (i)

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

7 Map analysis

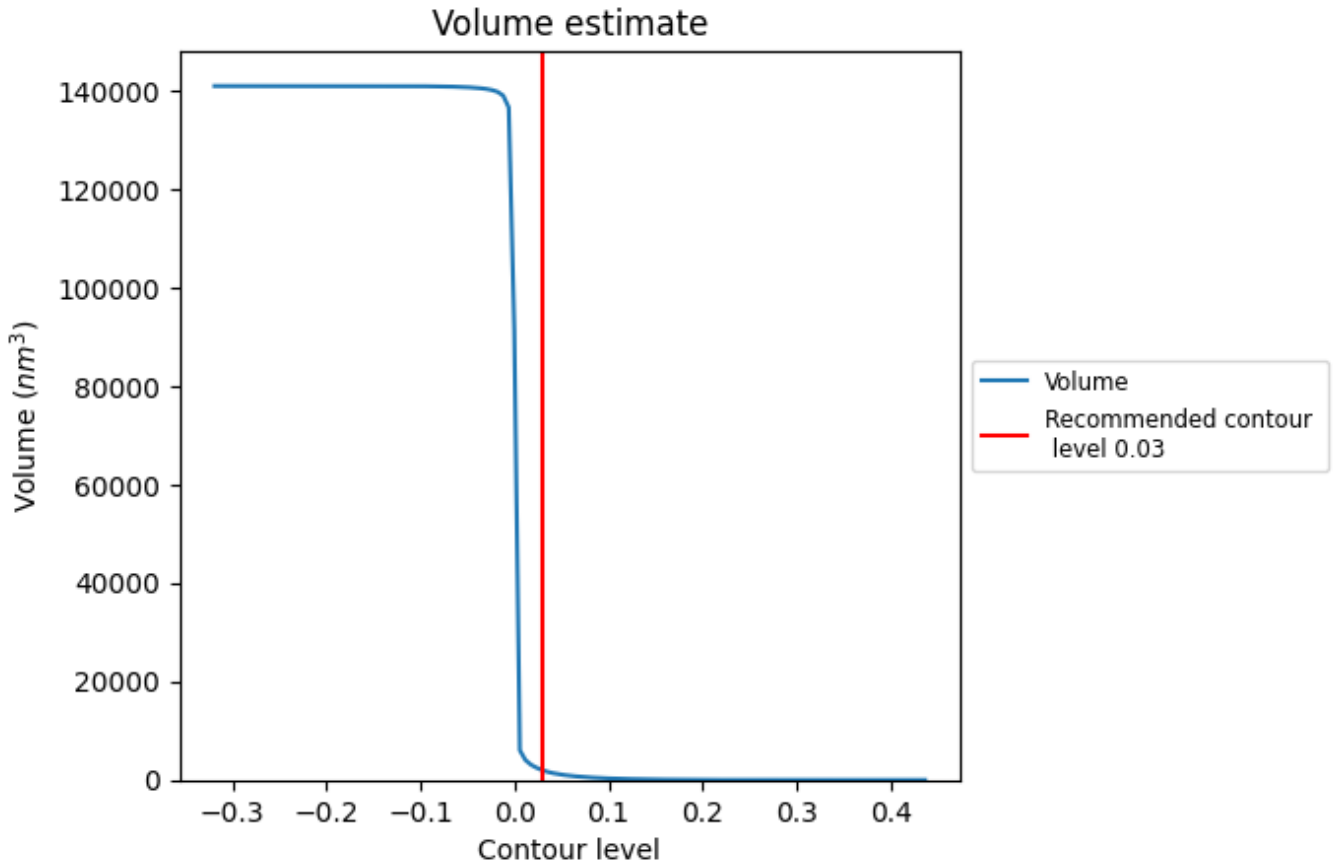
This section contains the results of statistical analysis of the map.

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.

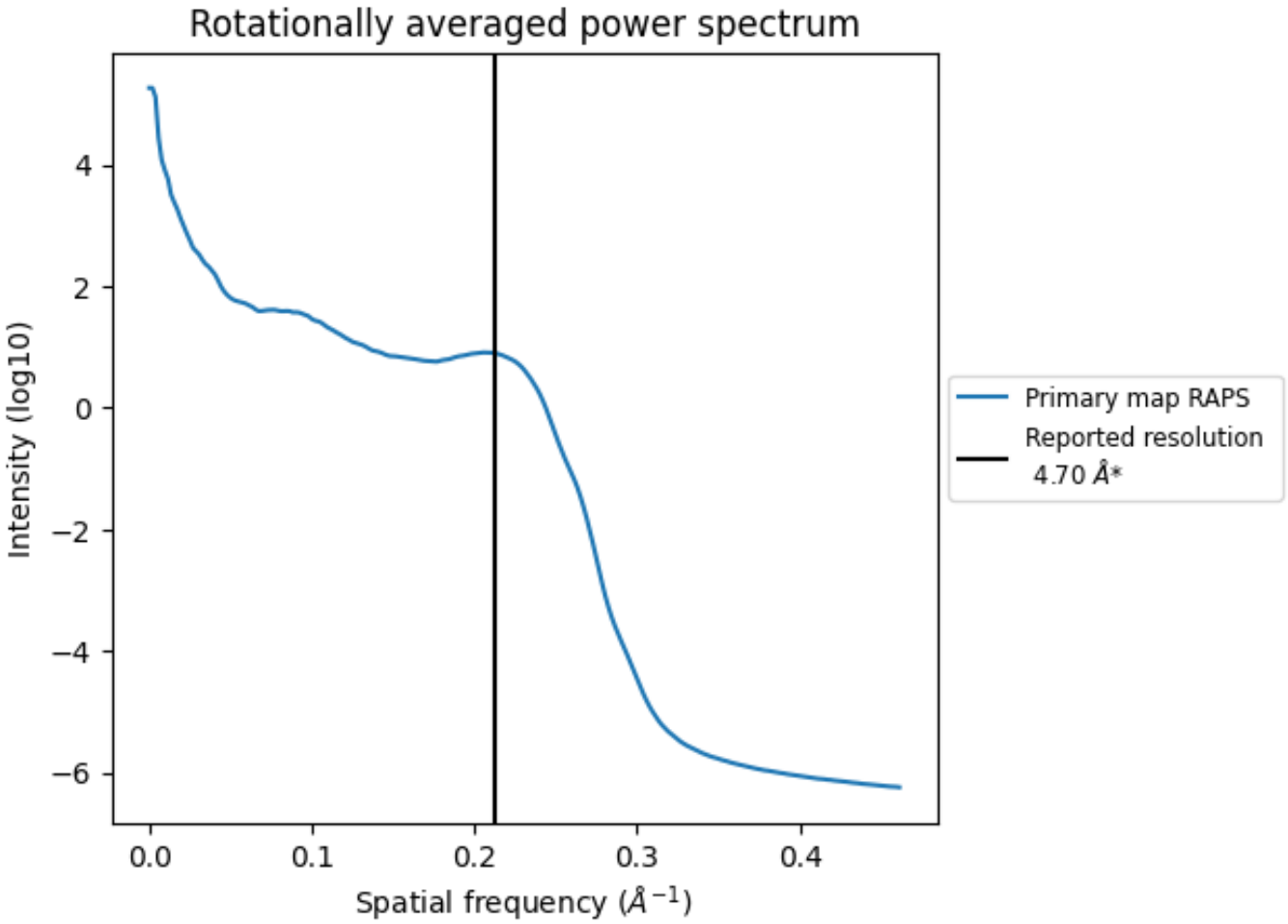
7.2 Volume estimate (i)



The volume at the recommended contour level is 1965 nm^3; this corresponds to an approximate mass of 1775 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)

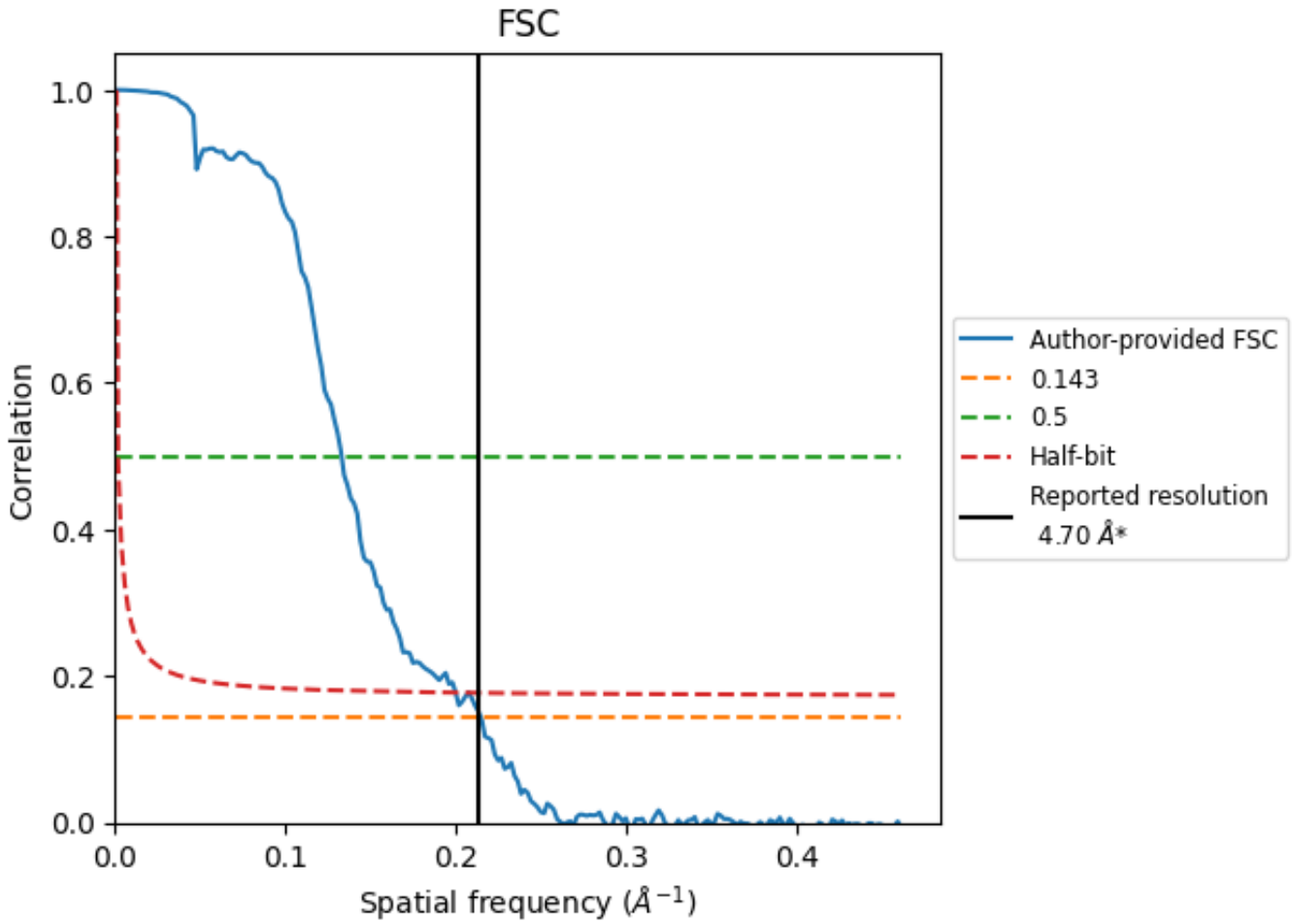


*Reported resolution corresponds to spatial frequency of 0.213 Å^{-1}

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 0.213 Å^{-1}

8.2 Resolution estimates (i)

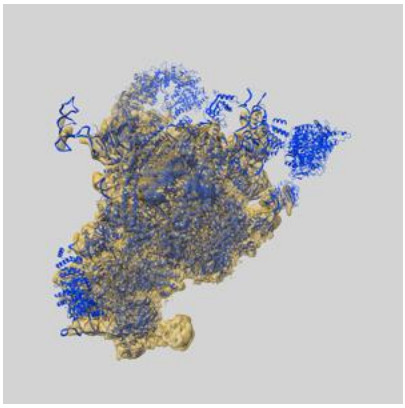
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.70	-	-
Author-provided FSC curve	4.66	7.52	5.00
Unmasked-calculated*	-	-	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

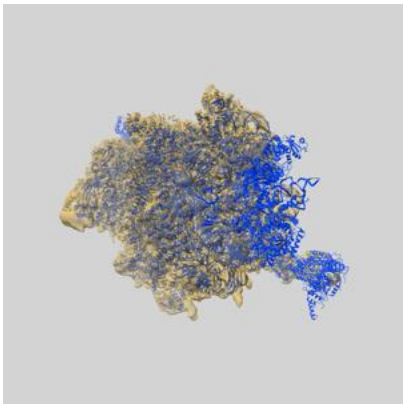
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-10055 and PDB model 6RXY. Per-residue inclusion information can be found in section 3 on page 14.

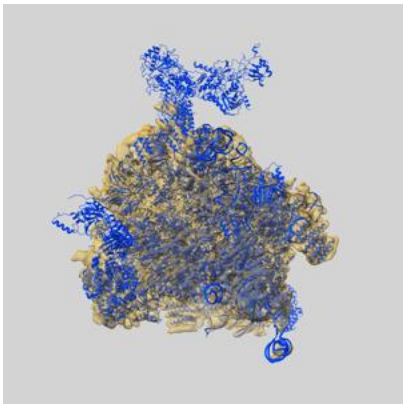
9.1 Map-model overlay



X



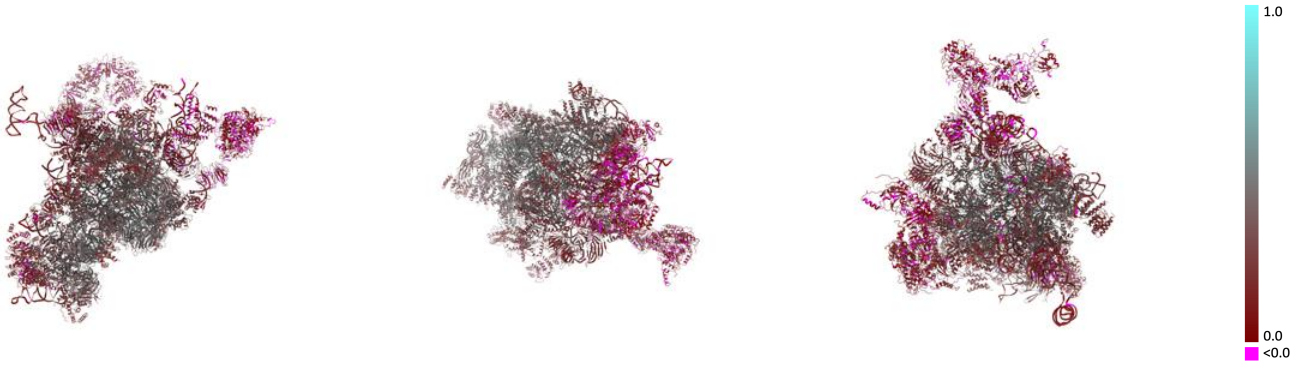
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

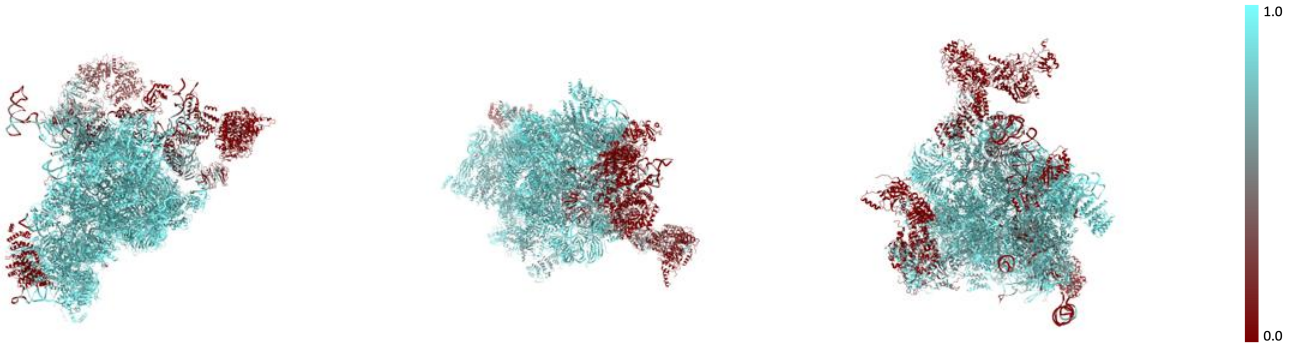
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

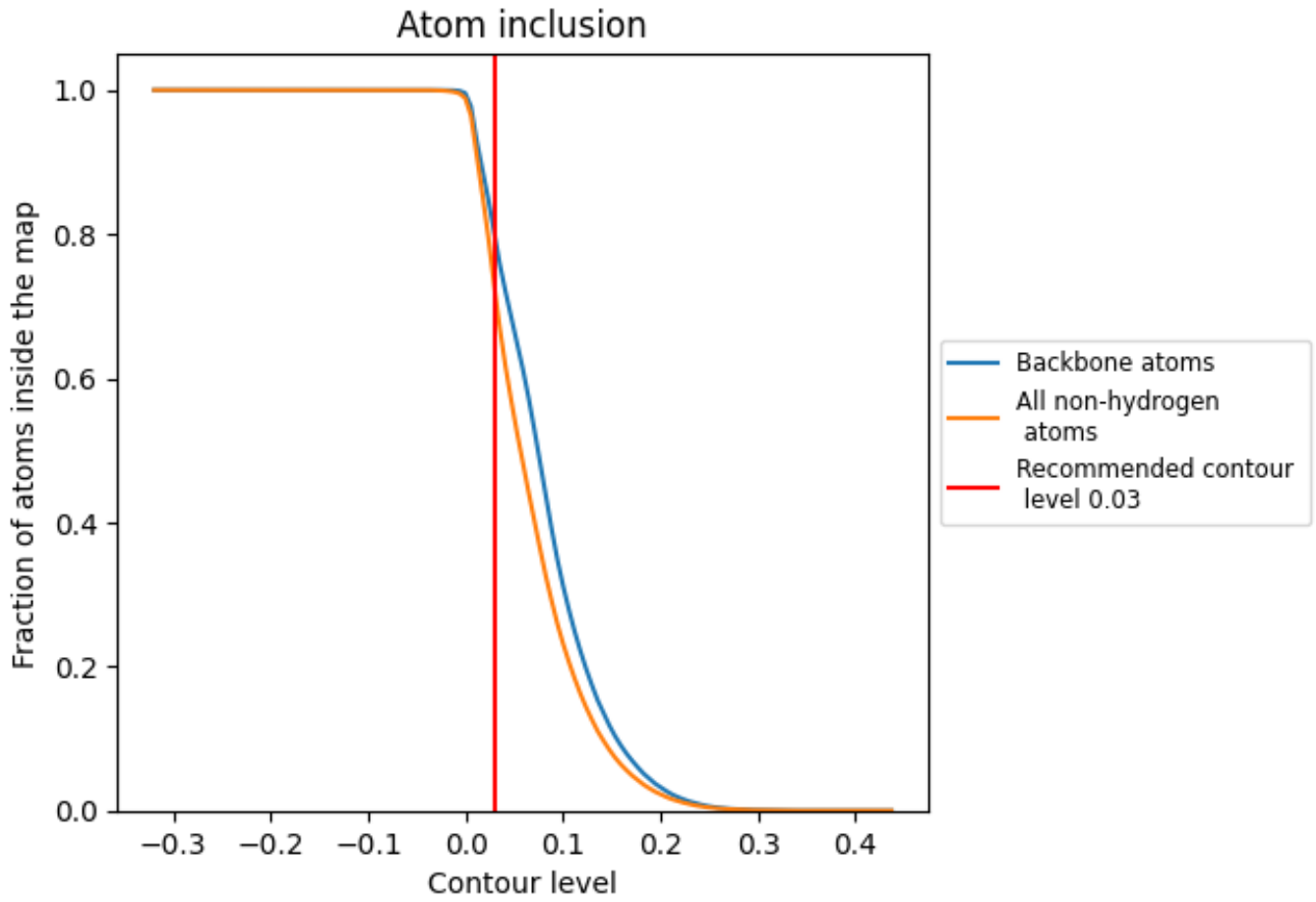
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.03).

9.4 Atom inclusion (i)



At the recommended contour level, 80% of all backbone atoms, 72% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7221	0.2860
C1	0.8230	0.2910
C2	0.7843	0.2890
CA	0.8907	0.4010
CB	0.7884	0.2650
CC	0.8329	0.2940
CD	0.8597	0.3010
CE	0.9210	0.4520
CF	0.6875	0.2260
CG	0.6172	0.1410
CH	0.8493	0.3060
CI	0.8292	0.3190
CJ	0.9338	0.4690
CK	0.9167	0.4410
CL	0.9008	0.3840
CM	0.9086	0.3920
CN	0.8396	0.3450
CO	0.7811	0.2220
CP	0.4007	0.1470
CQ	0.8352	0.2360
CR	0.4632	0.1440
CS	0.0677	0.0790
CT	0.8932	0.4100
CU	0.6205	0.2920
CV	0.0000	0.0470
CX	0.6833	0.1390
Cc	0.9179	0.4140
Ce	0.0048	0.1440
Cg	0.4204	0.1990
Ch	0.1504	0.0740
Ci	0.4974	0.1250
Cj	0.9349	0.4730
Cl	0.6355	0.2730
Cm	0.2661	0.2370
Cn	0.8596	0.3770

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Chain	Atom inclusion	Q-score
Cp	0.9149	0.4200
Cz	0.1529	0.1050
UA	0.9296	0.4450
UB	0.8646	0.2900
UC	0.7850	0.3260
UD	0.8939	0.3560
UE	0.8466	0.3050
UF	0.8891	0.2880
UG	0.9087	0.4320
UH	0.8533	0.2590
UI	0.7397	0.1610
UJ	0.4902	0.2670
UK	0.9126	0.4090
UL	0.8615	0.2650
UM	0.5662	0.1270
UN	0.8975	0.3630
UO	0.9161	0.4160
UP	0.8968	0.3780
UQ	0.9147	0.3900
UR	0.9332	0.4440
US	0.8449	0.2750
UU	0.9307	0.4210
UV	0.0000	0.0550
UX	0.8752	0.3830
UZ	0.8517	0.3060