

**Table S4.**  
**RNA 3D modules similar to the D-loop/T-loop interaction motif. The reference module is *6ugg\_0*.**  
**The list includes all the modules having at least one local structural alignment with *6ugg\_0* satisfying the following thresholds: *SIZE* ≥ 7 residues, *RMSD* ≤ 3.0 Å, *RMSD/SIZE* ≤ 0.25.**  
**For each module only the alignment with the smallest *RMSD/SIZE* value is presented.**  
**Bases in round brackets are not part of the modules due to exceeding the 6.0 Å threshold for long-range nucleotide doublets.**  
**\* - not annotated with any of the automatic annotation tools**  
**\*\* - not included in the non-redundant set, but interacts with a representative Bacterial RNaseP (A) (RF00010) chain (3Q1Q, chain B)**  
**\*\*\* - not included in the LORA dataset**

#	Module ID	Chain	RNA type	Local superposition parameters			The UG(tSW) pair is nested / local / long-range	Loop 1	Loop 1 residues							Loop 2	Loop 2 residues							Stack 1	Stack 2	
				RMSD	SIZE	RMSD/SIZE																				
1	6ugg_0	B	tRNA (RF00005)	0	15	0	LR	hairpin (T-loop)	U54 tWH	U55 tSW	C56 cWW	G57	A58 tHW	G59	U60	C61	hairpin (D-loop)	G14	U15	C16	G17 tWS	G18 cWW	U19	U20	C56-G18 (cWW) G57 U55-G17 (tSW) U54-A58 (tWH)	U60 G59 G14
2	3rg5_0	B	tRNA-Sec (RF01852)	0.631	10	0.063	LR	hairpin	U54 tWH	U55 tSW	C56 cWW	A57	A58 tHW	U59 tWW	U60	C61	hairpin	G15 cWW	U16 tWW	-	G18 tWS	G19 cWW	U20	C20A cWW	(cWW)C56-G19-U20 (cSH) A57 U55-G18 (tSW) U54-A58 (tWH)	U60 U16-U59 (tWW) G15-C20A (cWW)
3	6cu1_0	A	Y RNA (RF02553)	0.929	10	0.093	LR	hairpin	U25 tWH	U26 tSW	C27 cWW	G28	A29 tHW	G30	A31	-	hairpin	A60	U61	-	G62 tWS	G63 cWW	U64	A65	(cWW)C27-G63-U64 (cSH) G28 U26-G62 (tSW) U25-A29 (tWH)	A31 G30 A60 A65
4	3q1q_0	C**	tRNA (RF00005)	0.695	7	0.099	LR	hairpin	U64 tWH	U65 tHW*	C66 cWW	(G67)	A68 tHW	U69	U70	C71	hairpin	G15	U16	U17	G18 tWH*	G19 cWW	U20	-	B. G156-B. A112 (tHH) C66-G19 (cWW) G67 U65-G18 (tHW*) U64-A68 (tWH)	U70 U69 G15
5	4fm_1	B	AdoCbl-variant (RF01689)	0.799	7	0.114	LR	hairpin	U29 tWH	G30 tSH	U31 BR	A32	A33 tHW	U34	U35	C36	hairpin	C64	A61 tHW	U60	A59 tHS	U58 BR	-	U57 tWH	U31-U58 (BR-BR) A32 G30-A59 (tSH) U29-A33 (tWH)	U35 U57-A61 (tWH) C64
6	6mj0_0	B	Tymovirus tRNA-like 3' UTR (RF00233)	1.198	9	0.133	LR	hairpin	U67 tWH	G68 tSH	C69 cWW	A70	A71 tHW	C72 tWW	U73	-	hairpin	C32	C33 tWW	-	A34 tHS	G35 cWW	U36	U37	(cWW)C69-G35-U36 (cSH) A70 G68-A34 (tSH) U67-A71 (tWH)	U73 C33-C72 (tWW) (cWW)C32-G39-A38 (cHS)
7	7o7y_31	A2	Eukaryotic SSU rRNA (RF01960)	0.949	7	0.136	LR	hairpin	U1617 tWH	G1618 tSW	C1619 cWS	A1620	A1621 tHW	(U1622)	(U1623)	U1625	internal loop	-	-	A1260	A1261 tWS	C1262 cSW	-	-	C1619-C1262 (cWS) A1620 G1618-A1261 (tSW) U1617-A1621 (tWH)	-
8	6th6_5	BA	Archaeal LSU rRNA (RF02540)	1.24	9	0.138	LR	hairpin	C658 tWH	U659 cSW	U660	G661	G662 tHW	A663 tWS	U664	A666	hairpin	A2M 2145 tHW	U2144	A2143	C2142 cWS	-	G2141 tSW	C2140 tWH	U660 G661 U659-C2142 (cSW) C658-G662 (tWH)	U664 G2141-A663 (tSW) C2140-A2M2145 (tWH)
9	7m4y_11	a	Bacterial SSU rRNA (RF00177)	1.001	7	0.143	LR	hairpin	U1312 tWH	G1313 tSW	C1314	A1315	A1316 tHW	U1318	C1319	G1320	multiple junction	A972	G973	A974	A975 tWS	C976	C977	-	C1314 A1315 G1313-A975 (tSW) (cSS)A1357-U1312-A1316 (tWH)	C1317 U1318 C1319 U1221 A974
10	2a64_0	A	Bacterial RNaseP (B) (RF00011)	1.155	8	0.144	LR	hairpin	U70 tWH	G71 tSW	A72 cHW	G73	A74 tHW	U75	-	G76	hairpin	-	-	-	A291 tWS	U293 cWH	-	-	A292 A72-U293 (cHW) G73-G294 (tWW) (tSW)G71-A291-A295 (tHW) (tWH)U70-A74-A290 (cWS)	-
11	7lyf_0	A	Dengue virus SLA (RF02340) with tRNA-scaffold	1.755	12	0.146	LR	hairpin	U117 tWH	U118 tSW	C119 cWW	A120	A121 tHW	G122 cWH	U123	C124	hairpin	G15	U16 cHW	-	G18 tWS	G19 cWW	U20	A21	C119-G19 (cWW) A120 U118-G18 (tSW) U117-A121 (tWH)	U123 U16-G122 (cHW) G15 A21
12	7o7y_0	B5	Eukaryotic LSU rRNA (RF02543)	1.461	10	0.146	LR	hairpin	C1262 tWH	U1263 cSW	U1264	G1265	1MA 1266 tHW	A1267 tWS	A1268	A2M 1270	hairpin	G3611 tHW	C3610	A3609	A3608 cWS	G3607 tSW	G3606 tWH	-	U1264-A1830 (cSW) G1265 U1263-A3608 (cSW) C1262-1MA1266 (tWH)	A1268 A1267-G3607 (tWS) (cWW)C1257-G3611-G3606 (tWH)
13	6th6_100	Aa	Archaeal SSU rRNA (RF01959)	1.026	7	0.147	LR	hairpin	U174 tWH	G175 tSW	G176	A177	A178 tHW	(G179)	-	G180	bulge	-	G107	U108	A109 tWS	-	-	-	G176 A177 G175-A109 (tSW) U174-A178 (tWH)	-
14	6zu5_2	S60	Microsporidia SSU rRNA (RF02542)	1.221	8	0.153	LR	hairpin	U1194 tWH	G1195 tSW	G1196	A1197	A1198 tHW	G1199	-	G1200	multiple junction	-	G894	C895	A896 tWS	G897	C898	-	G1196 A1197 (tSW)G1195-A896-A1237 (tHW) (tWH)U1194-A1198-C1238 (tWS)	-
15	6jq5_0	A	Hatchet ribozyme (RF02678)	1.253	8	0.157	LR	hairpin	U7 tWH	G8 cSW	A9	G10	A11 tHW	A12	U13	C14	bulge	-	C40	-	U39 cWS	-	-	A38	A9 G10 G8-U39 (cSW) U7-A11 (tWH)	C40 A38 (cWW)A57-U37-U13 (tSW) (cWW)A36-U58-A12 (cSS)
16	6zu5_25	S60	Microsporidia SSU rRNA (RF02542)	1.129	7	0.161	LR	hairpin	G173 tWH	G174 tSW	G175	A176	G177 tHW	(G178)	-	C179	bulge	-	A101	U102	A103 tWS	-	-	-	G175 A176 G174-A103 (tSW) G173-G177 (tWH)	-

17	7m4y_13	A	Bacterial LSU rRNA (RF02541)	1.298	8	0.162	LR	hairpin	U1277 tWH	G1278 cSW	A1279	A1280	A1281 tHW	A1282	A1283	C1284	hairpin	G1326	C1325	-	U1324 cWS	-	A1323	A1322	G498 G488 A1279 A1280 G1278-U1324 (cSW) U1277-A1281 (tWH)	A1282 A1283 A1322 A1323-U1645 (tWW) G1319-C1325 (cWW) C1318-G1326 (cWW)
18	6th6_26	BA	Archaeal LSU rRNA (RF02540)	1.356	8	0.17	LR	hairpin	U345 tWH	G346 tSW	G347 tSS	A348	A349 tHW	C350	-	G351	pseudoknotted hairpin	A371 tHW	-	A370	A369 tWS	G368 tSS	-	U367 tWH	A516-A539 (tHH) G347-G368 (tSS) A348-C1345 (tWW) G346-A369 (tSW) U345-A349 (tWH)	C350 U367-A371 (tWH)
19	6th6_29	Aa	Archaeal SSU rRNA (RF01959)	1.391	8	0.174	LR	hairpin	U1267 tWH	G1268 tSW	C1269	A1270	A1271 tHW	U1273	C1274	G1275	multiple junction	G926	G927	A928	A929 tWS	C930	-	-	C1269 A1270 (tSW)G1268-A929-A1312 (tHW) U1267-A1271 (tWH)	C1272 U1273 C1274 U1176
20	3f2x_1	X	FMN riboswitch (RF00050)	1.243	7	0.178	LR	hairpin	U18 tWH	G19 tSH	(A20)	A21	A22 tHW	U23	U24	C25	pseudoknotted hairpin / bulge	C95 cWW	A92 tHW	G91	A90 tHS	-	U89 tWH	G88 cWW	A20 A21 G19-A90 (tSH) U18-A22 (tWH)	U24 U89-A92 (tWH) G88-C95 (cWW)
21	6th6_5	BA	Archaeal LSU rRNA (RF02540)	1.429	8	0.179	LR	hairpin	U1418 tWH	G1419 cSW	A1420	G1421	A1422 tHW	A1423	U1424	C1425	hairpin	A1467	C1466	-	U1465 cWS	-	G1464	C1463	G529 G528 A1420 G1421 G1419-U1465 (cWS) U1418-A1422 (tWH)	A1423 U1424-U1462 (tWW) C1463 G1464 G1460-C1466 (cWW) U1459-A1467 (cWW)
22	3f2x_0	X	FMN riboswitch (RF00050)	1.274	7	0.182	LR	hairpin	U69 tWH	G70 tSH	(A71)	A72	A73 tHW	U74	U75	C76	pseudoknotted hairpin	C43 cWW	A40 tHW	U39	A38 tHS	-	U37 tWH	G36 cWW	A71 A72 G70-A38 (tSH) U69-A73 (tWH)	U75 U37-A40 (tWH) G36-C43 (cWW)
23	4gxy_2	A	Cobalamin riboswitch (RF00174)	1.581	8	0.198	LR	hairpin	U50 tWH	G51 cSW	(C52)	A53	A54 tHW	G55 cSS	U56	C57	pseudoknotted internal loop / multiple junction	C153 cSS	A150 tHW	C80	A79 cWS	-	G78	U77 tWH	C52 A53 G51-A79 (cSW) U50-A54 (tWH)	G78 (tHW)A150-U77-U56 (tSW) (cWW)G76-C153-G55 (cSS)
24	7o7y_26	B5	Eukaryotic LSU rRNA (RF02543)	1.793	9	0.199	LR	hairpin	C2220 tWH	G2221 cSW	A2222	G2223	A2224 tHW	A2225	C2226	U2227	hairpin	G2270	U2269	-	U2268 cWS	-	OMG 2267	A2266	A2222 G2223 G2221-U2268 (cSW) C2220-A2224 (tWH)	A2225 C2226-OMC2265 (tWW) A2266 OMG2267 A2263-U2269 (cWW) G2259-G2270 (tWH)
25	7o7y_89	A2	Eukaryotic SSU rRNA (RF01960)	1.865	9	0.207	LR	hairpin	U444 tWH	G445 tSH	A446	G447	A448 tHW	A449 cSH	-	A450 cHS	multiple junction	C89	G90	A91	A92 tHS	-	PSU 93	G94	A446 G447 G445-A92 (tSH) U444-A448 (tWH) A449-A450 (cSH)	-
26	7o7y_0	B5	Eukaryotic LSU rRNA (RF02543)	2.081	10	0.208	LR	hairpin	G3606 tWH	G3607 tSW	A3608 <<	-	G3611 tHW	G3612	G3613	C3614	hairpin	-	-	-	A1267 tWS	1MA 1266 <<	-	-	A1268 G3607-A1267 (tSW) (tWH)G3606-G3611-C1257 (cWW)	G3613 G3612
27	6hiw_1	CA	Trypanosomatid mitochondrial SSU rRNA (RF02545)	1.479	7	0.211	LR	hairpin	U142 cWW	U143 cSH	A144	A145	G147 cWW	U146	-	C148	multiple junction	-	-	U270	A271 cHS	-	-	-	A144 A145 U143-A271 (cSH) U142-G147 (cWW)	-
28	6th6_41	BA	Archaeal LSU rRNA (RF02540)	1.564	7	0.223	NESTED	hairpin	U768 cWW	G769 tSH	A770	A771	G773 cWW	-	-	C774	hairpin	-	-	-	A772 tHS	-	-	-	(cWS)A770-A2475-U2451 (cWW) (tWS)A771-G2452-C2474 (cWW) G769-A772 (tSH) U768-G773 (cWW)	-
29	7o7y_58	B5	Eukaryotic LSU rRNA (RF02543)	2.128	9	0.236	NESTED	hairpin	C205 tWH	U206 tSS	G207 tSS	A208 tSS	U209 tHW	C210	-	G211	pseudoknotted hairpin	A235 tHW	-	G234	U233	G232 tSS	U231 tWH	G230	A383-C406 (tHH) G207-G232 (tSS) U206-A208 (tSS) C205-U209 (tWH) U233	C210 U231-A235 (tWH) G230
30	7m4y_63	A	Bacterial LSU rRNA (RF02541)	2.13	9	0.237	LR	hairpin	U308 tWH	G309 tSW	G310 tSS	G311	A312 tHW	A313	-	G314	pseudoknotted hairpin	A334 tHW	-	U333	A332 tWS	G331 tSS	U330 tWH	-	A476-A500 (tHH) G310-G331 (tSS) G311 G309-A332 (tSW) U308-A312 (tHW)	A313 U330-A334 (tWH)
31	7m4y_3	a	Bacterial SSU rRNA (RF00177)	1.895	8	0.237	NESTED	hairpin	C894 cWW	G895 tSH	C896	A897	G899 cWW	-	-	A900	hairpin	-	-	-	A898 tHS	-	-	-	(cWS)C896-C767-G806 (cWW) (cWS)A897-G766-C807 (cWW) G895-A898 (tSH) C894-G899 (cWW)	-
32	3q1q_3	B	Bacterial RNaseP (A) (RF00010)	1.728	7	0.247	NESTED	hairpin	G77 cWW	U78 tWH	A79	A80	C83 cWW	G82	-	C84	hairpin	-	-	-	C81 tHW	-	-	-	A276-G56 (cWS) (cWS)A79-G55-C326 (cWW) (tWS)A80-G327-C54 (cWW) U78-C81 (tWH) G77-C83 (cWW)	-
33	6th6_5	BA	Archaeal LSU rRNA (RF02540)	2.231	9	0.248	LR	hairpin	C2140 tWH	G2141 tSW	C2142 <<	-	A2M 2145 tHW	U2146	(G2147)	C2148	hairpin	-	-	-	A663 tWS	G662 <<	-	-	U664 G2141-A663 (tSW) (tWH)-C2140-A2M2145-U653 (cWW)	G2147 U2146
34***	7ac7	4	tmRNA (RF00023)	1.133	11	0.103	LOCAL	hairpin	5MU341 tWH	PSU342 tSW	C343 cWW	A344	A345 tHW	C346	PSU347	C348	multiple junction	U10	C11	U12	G13 tWS	G14 cWW	A15	-	C343-G14 (cWW) A344 PSU342-G13 (tSW) 5MU341-A345 (tWH)	PSU347 C346
35***	3eog	A	Group II intron (RF00029)	1.829	11	0.166	LOCAL	hairpin	U31 tWH	G32 tSW	A33	G34	A35 tHW	G36	U37	C38	multiple junction	G243	G244	-	A245 tWS	-	A246	A247	A33 G34 G32-A245 (tSW) U31-A35 (tWH)	U37 G36 A247