

Supplementary materials

FIGURE LEGENDS

Table S1 Sequences and accession numbers of computational identified snoRNA genes in *C. elegans*.

Structure elements of snoRNAs are boxed. The sequences complementary to the target RNAs are indicated by shadows. The sequences in red indicate the genes were also identified from Deng's cDNA library⁽²⁰⁾. The gene names used in Deng's study are also shown behind the sequences.

Table S2. Oligonucleotides used in this study

Figure S1. Functional prediction of the novel box C/D snoRNAs. Methylation guide duplex between snoRNAs and rRNAs/snRNAs are predicted. The snoRNA sequences in a 5' to 3' orientation are shown in upper strands, while rRNA/snRNA sequences in a 3' to 5' orientation are shown in lower strands. Sequence motifs of box D' /D are boxed. The positions of predicted methylation sites are indicated by numbers. Only one isoform is shown if the snoRNA has more isoforms. (A) Methylation sites predicted by novel snoRNAs. (B) Novel methylation sites predicted in this study for the snoRNAs identified previously⁽¹⁸⁾.

Figure S2. Functional prediction of the novel box H/ACA snoRNAs. Pseudouridylation guide duplex between snoRNAs and rRNAs/snRNAs are predicted. The snoRNA sequences in a 5' to 3' orientation are shown in upper strands, while rRNA/snRNA sequences in a 3' to 5' orientation are shown in lower strands. The two sequence motifs are boxed and the upper parts of the hairpins are represented by solid lines. The positions of pseudouridines are indicated by numbers. Only one isoform is shown if the snoRNA has more isoforms. (A) Pseudouridylation sites predicted by novel snoRNAs. (B) Novel pseudouridylation sites predicted in this study for the snoRNAs identified previously⁽¹⁸⁾.

Figure S3. Structural and functional evolution of H/ACA snoRNA. Schematic representation of the homologous sno/scaRNAs in yeast and metazoa are shown. The box elements are present and the homologous guide hairpins are boxed. The names of snoRNAs and the guiding functions of the hairpins are also shown. *S.c.*, *C.e.*, *D.m.* and *H.s.* represent *S. cerevisiae*, *C. elegans*, *D. melanogaster* and *H. sapiens*, respectively.

Table S1 Sequences and accession numbers of computational identified snoRNA genes in *C. elegans*

Novel SnoRNA	Accession No.	Sequence
Box C/D snoRNA		
MeCeSSU-A90	AM050148	caagc gatgacgat tgatatctgctctaagt ctga attaccatggtgagatctt ctgag ctc (CeN65)
MeCeSSU-C400	AM050149	aggct gcgatgat tgagattgtcccacacgcaatttctcctgatccacatgaaggctaa cttcttggacgtctgag cgc (CeN33)
MeCeSSU-A422	AM050287	aaaagt gcatga atgacttggataagtttc gctga aacttggatgccaactttttaaact ctgag cac (CeN108)
MeCeSSU-A601	AM050288	aagca atgacga aatcgacctcgcccgactccaacctggggcgaaatgagctttt taactcagat gct (CeN24)
MeCeSSU-C980	AM050289	catca atgatga gagtttgcgactagggc gctta cacaatcatggtgattctagtcatt ctgat ggt (CeN27)
MeCeSSU-C1180	AM050290	acgat gatgatga agaatttt tgataggtgctcaggac ctgag agttccgtgatgatgtagagtt ctgaa tct (CeN106)
MeCeSSU-C1196	AM050291	cgggca atgatgt catactcaaatctgctagtc ctcag accatccctggtgataaacggttttccgagtg ctgag cag
MeCeSSU-U1342	AM050838	ggatt gaagatga aatcaacgacgctgaccgtagtgatggtgtcgaac ctctaaga agt actgac cg
MeCeLSU-G668	AM050839	aag caatgatgt tttt caagacgggaccg actggtgaatgatcataat gaaatctgag act (CeN13)
MeCeLSU-A678	AM050840	ctggc agtgatga tcacaaatccgtgtt ctga caagcgattgacgatagaaa accggctgag cca (CeN5)
MeCeLSU-G860	AM050841	atgtgc cgatga actctttaccatctt tcgggcata aactcttgatgataacataccatt ctgag cgc (CeN70)
MeCeLSU-A1185	AM050842	gaatc gtagatgt gatatccagttctg ctgag ttattggaagattaactt ccccctgag att (CeN118)
MeCeLSU-C1502	AM050843	tgtcc gtgatga caacatacatacaccattacgat ctga agacttctgctgatcatgtatccatgcaacac caactgag gac (CeN15)
MeCeLSU-U1566	AM050844	gggtc gatgatt agattattctactgttcag taaccg actgttcagtggtgataaac cttctatg agact
MeCeLSU-C2300	AM050845	gggtt gtgatga ctgcatacggatcactgg ctgaa tctctatgaaccgataat atccgttctga tacc (CeN54)
MeCeLSU-A2317	AM050846	atgtca atgatgt ctaaaaattactacgatt taattcga attgctgtgagatcaatcttataca attctgag aca (CeN119)
MeCeLSU-G2343	AM050847	acggc gtgatga tttctattt gccgttaccg ctgaggaaa accgtgctt gatacaactggaaa aggctgag cgc (CeN121)
MeCeLSU-A2384a	AM050848	cactaa atgacga atcctaataaccaatgggtt ctcattg cgatagaggcatt gtctgag cgg (CeN23-1)
MeCeLSU-A2384b	AM050849	cactaa atgacga atcctaatagcccaatgggtt ctcattg cgatagaggcatt gtctgag cgg (CeN23-2)
MeCeLSU-A2384c	AM050850	tcacca atgatga aatggttaaatcagacgagtcattt ggctatctat tcagatttctcgaagaa attgcc ctaagcgggtgaa attgaggcattt gt ctgag gtg (CeN17)
MeCeLSU-C2407	AM051009	ccgc ctgatgct tttcatgctgtcag ctgag atcccctgattagaaccacc cttgag gttgattaa actgag gct
MeCeLSU-U2417	AM051010	gaggag ttgatga aa cttaatccattctctgag cgagaaggatggccgaagcgggttcg cattgaggc attaagtagacgacagatttctt gaaactactgc ctcgc ctgac gctc (CeN117)

MeCeLSU-A2429	AM051011	ctgggaatgatgaccttctgttaggaatctcaatgagtgactgtgacataaaaatgcagtaaatcactgacccc (CeN122)
MeCeLSU-C2440	AM051012	ctgtgatgacgacaacgtgtaggacatctgacccaaccgtgaagatttaacgaaagtagtactgacaca (CeN50-1)
MeCeLSU-U2762	AM051013	agagttgtgatgacttacttaggacaccttggaggcctcggtctgctgaaaagaaaaatagtagccttagtctgagctc
MeCeLSU-U2841	AM051014	actgcggtgacgatcaactcttacctactatgacaaaaacaatggttagacgttactcgtactgtctgagcag (CeN14)
MeCeLSU-G2903	AM051015	cgagcggatgaaatgacaggtattgctctgacacctcttatgttagcggtaaatttccgtgccgcatgagtcactaggatctctgagctc (CeN124)
MeCeLSU-A3023	AM051016	ttggctgtgacgattactattccaacgcttggatgaaccaaagtattattaaccaatccttttctgagcca (CeN30)
MeCeLSU-C3060	AM051017	gcttctgtgatcgacaacaaaccagctctctgaatgattgtgaggttaagaaaacagctgagaag
MeCeLSU-C3071	AM051018	agatctatgatgagactttcagacggtcttccgatgtaatacatacctgtggatattcttactggaagctgagatc (CeN123)
MeCeLSU-A3159	AM051019	aagccgatgattaccaaaaataaccaaatgtttgagtgattgtttgtgatcgaattttgtcactatcgctgaggct (CeN120)
MeCeU2-G12	AM051020	gacaggatgatgagtcactcgtgagtgacaataagccgagtgttagcggttttatgtaatcgtgatgatccttccctaaaagcgataattgtgaactgactgt (CeN69)
MeCeU2-C42	AM051021	tgcgcatgaggattgataacacatacacacactctgaagtatgtgaagataattgaagaacggatatctgagcgc (CeN89)
MeCeU2-U49	AM051022	cccaaatgacgaaaccctatccccaatgattttacgacgttcaagtcatctccatcaatcgcgacactactacaccgtcttttgattgacctgaaacgctagagctagtgaatcttcatcataacgataagatctgattgg
MeCeU6-A48	AM051024	cctgcgatgatgagaatcatgctaatcatgagagagactcgtcagctccaacctccatgttgtaaacaatcgatagctgagcag
MeCeU6-C55	AM051023	agtgtctgtagagaacgtgccactgtactttgccatcggaagggcattgaaatggagatatacctggcacaggggcccactgagcac (CeN98)

Box H/ACA snoRNA

Ψ CeSSU-499	AM051025	tgtgtcatttattcctcctcgatagtgatattgttcccttttcgagctcactgacaca aaagca atggcagatttgcaactagttgcgttctacttgatcgtggctatactttcttctgacc acatt
Ψ CeSSU-513a	AM051026	gcagatgtccattacgcaatgctgtgcttttcgacgtttagtttagtctgca agataga attgatgtctcgaagacaggtagatcagcttttagagttcctgttcaagatcagca aaac (CeN110)
Ψ CeSSU-513b	AM051027	cactctacgcctttctttcaatgggttggtatgatttaataaggatgcaagaga atagta cgggaagttcgaagacttgcggtttgcttccacggctccgagttcataactgtcacc acaatt (CeN41)
Ψ CeSSU-970	AM051028	cgcttcattggtgacattacactttgtaacttgcattgtgtgctgactaataagca atacca aatatctgcagtatctgctcattcgcggtgttagttgatgagctcgtagtcagata acaatt (CeN64)
Ψ CeSSU-971	AM051029	gcacacagaaagtgcagattgcccgttcaaaggctttatcgttgattacgtgtgct ataaaca acgccataggtatcattcttctgcttcttaggcggaacatc taaatatggtcaca ttt (CeN48)
Ψ CeSSU-1146	AM051030	caccacggca caaat tccaattgtgtgtaacattcaatgcaattgagccgacccgtggg aaatca ctttcgtggaaccatttgatccacgctcgttactgttaatgattgtggtttgacgtggttt acaatt (CeN125)
Ψ CeSSU-1152	AM051031	cacggccagtttgagttgattcgtctttcgaatagagctttgagtc aaatta ctgtccgg aaatta tagagatgaagctcatttgagcaataacaattgttgaagctccgaaaatgatgctcttccc acaatt (CeN59)
Ψ CeSSU-1266a	AM051032	tctcgttataagccggggactagcctttgctgagttcactagtaaacgcgaggaa aat tagagacatccagacaccgattatgttgatataatcggtcacttctgatgtcccacagtt
Ψ CeSSU-1266b	AM051033	acctcttataagccggggactagcattttgtaagttcactagtaaatgagaggt aaagca tagagacaaccagacaccgagaatgtttgatgtttcggtcactttgtgtgtccc acaat (CeN101)
Ψ CeSSU-1523a	AM051034	gcatgaaaatggacggactttcccgatggatcgtttcgtataattttgggtc aaaatag tagagagacgcagtgttacttcttctacgttacctgtatctggagaggtc aaagc gtttccc acaatt (CeN80)

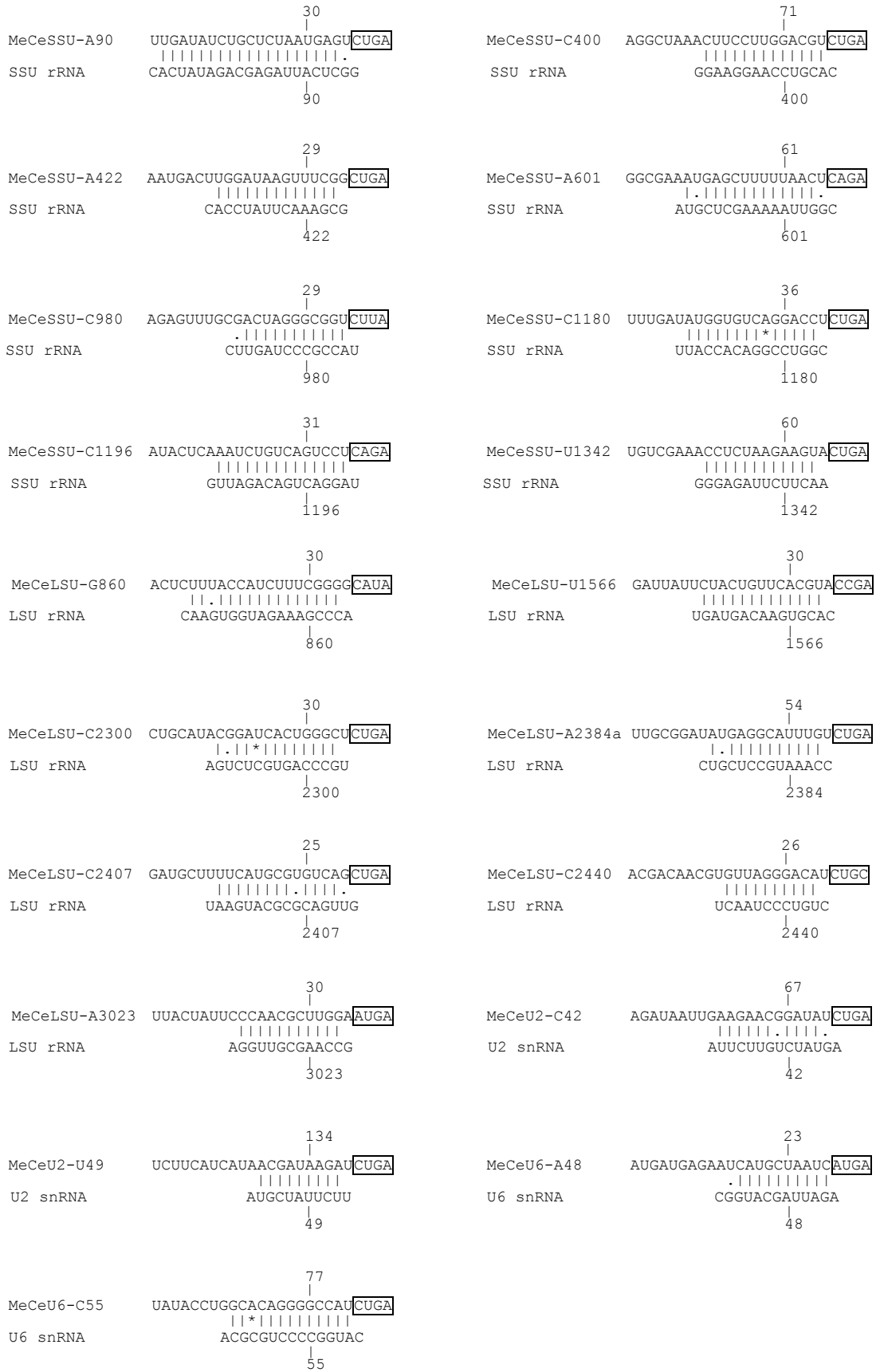
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Ψ CeLSU-1058	AM051036	ggcatgtatttaatgcgggtgatgatttttagttcagccgttttagcttgcataaataatattttctattgaagattttatctgcctgcactcggtcatattcagatctatgattttctgaaattggtacattt
Ψ CeLSU-1176	AM051037	ccgcgctagaaactcagcgggtgtttgtctttatgatcatgagctggttagcaggtgcaatattgattcggagcttaccggcgtccaccttctgaagggtgtgcgttaaaagtccatccgacaatt (CeN55)
Ψ CeLSU-1573	AM051038	gcgtctctccaaccggacaactcgcaacttgttgcaatggctcagttcgaactgttagagacgtaaataagaaaattggcggattcgcgtaacgtcgcgtcccatgaccggagtttgaagtaggcccgtgacaatt (CeN58)
Ψ CeLSU-1996	AM051039	gcccggctttgcccggatcaactttaatagtattgacgggtttccgactcgggaaaatagattcttgcataacgacgaaatttcagagttgttctgaatgtctccagtcatgtgcaatacaatt (CeN43)
Ψ CeLSU-2294a	AM051040	tgctcagtgctgggcaaagcagactgttttaatagtactgacttaaccactgatggctatagaaaacattgtgtaatccccgaacacctgtggtgtattgattcatgacattgtgacaatt (CeN84)
Ψ CeLSU-2294b	AM051041	tgccacaatgtctgggcaaggtgcctgcaccgcttgagcaacctaatccattgatggctatataaaattcattgagtaacctctgttgagtatatagaacttccagtttcatatcattgatacaatt
Ψ CeLSU-2361	AM051042	cgaagagtgtcattttgtatacgtgatacacttatacagattacacttttctgatatagaatgcttctctcgttggagttgtttatattagcaattaccttaactgaaagcaacaatt (CeN81)
Ψ CeLSU-2483	AM051043	tttccattaagtgtcccgtagcttgaattttcacgtacggtttggacaatatggagaatgaatgttactcttttgcgaatgacgctgaaacatattttcgtttgttagccataagtttaaaacaatt (CeN93)
Ψ CeLSU-2519a	AM051044	cgaggtccagagtcacctctgagaatattgatctcttcgggtgctaggattgtctgaaaatgaattaggtactttatgcaaacagttcttgcgttatgctcatctgtttcacctcgtttctgacaaa
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Ψ CeLSU-2836	AM051046	gcgtgagtactgctgtttgtgtctccgccattgccaatcagctgtcattaaccacgcaataccgtacagaggtgctaaattaccgtgaaaaccactttaaaaattggtcactcggaggagccactcaacaatt (CeN51)
Ψ CeLSU-2966	AM051047	tgctcttcaaaagcactggttttaggatccactattatccaagccagcgtcaaaactgagctataagaattatcttgttttgggtgaggtgtattcaattcagaatgcgtctcaataacacgatgacaatt (CeN87)
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Ψ CeLSU-3220	AM051049	aagcagtcgttcagtgccgcaagcattttcccatgcgcttgcctaatctttagctgagataaaaatgtcagagtcgaagcgggtccgctatctgttagcattctgttcaagattgactgataatt (CeN126)
Ψ CeU2-16	AM051050	gcggatattataaacagattcctataaatttacaaggtagtcagtagccgaaattcgcaatataaaattttccattaaaggcgagaaatcatccttttgcgtgatatctagaaaataaaactggagacaatt
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Ψ CeU4-62	AM051052	cgcacctgttttcacgcattctcggtcagttttctcgagattcaacgcgtccagaaagtgtgctatatagaaaataagagctattataaggccatacaggtttaatttaccggctatggtagtttaacgggtgctacaatt
Ψ CeU5-45	AM051053	gttttctagagatttaccgattcttttgaagtatcgggtgaccaagtgaaaaataaaattgacgcttttagtgacgctggagaaaattttatccagtgcttaaggcggcgcaacaatt (CeN128)
Ψ CeU5-48	AM051054	ttgtcgtgaatcttgatcggcgtgtttattttaccgcggtgattgtaaggccgacatatacaaaatttgacattaatgctggaagtttctgaaatagttccattttcttccaattatttcaaatgtcaaacacaac (CeN105)
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CeACAOrph2	AM051058	gggcacagagttgagttgattgaaactaatcatgtcgcctaagttgtcccgaagtagcttttgatttctacaaaacagtttcttcttttaggatgctgatccgtagagatctgacaacaatt (CeN45)

Table S2. Oligonucleotides used in this study

Oligonucleotide name	Sequence
Oligonucleotides used for northern blotting	
PMeCeSSU-C1180	5' -CTCTAAACATCATCACGGAACCT-3'
PMeCeSSU-U1342	5' -GAGGTTTCGACAACACATCACTAC-3'
PMeCeLSU-C2300	5' -CATAGAGATTCAGAGCCCAGTG-3'
PMeCeLSU-A2317	5' -TTGTATAAGATTGATCTCACAGCA-3'
PMeCeLSU-A2384c	5' -GCTTAGCGGCAATTTCTTCG-3'
PMeCeLSU-C2440	5' -TCGTAAATCTTCACGGTTGGT-3'
PMeCeLSU-U2841	5' -AGTACGAGTAACGTCTAACCATTG-3'
PMeCeLSU-C3071	5' -TATTACATCGGAAGACCGTCGT-3'
PMeCeU2-C42	5' -TCCGTTCTTCAATTATCTCTTCAC-3'
PMeCeU6-C55	5' -TGCCAGGTATATCTCCATTCA-3'
PMeCeSSU-C1196	5' -CTGAGGACTGACAGATTTGAGTAT-3'
PMeCeLSU-C2407	5' -TCAAGGGTGGTTCTAATCAGG-3'
PMeCeLSU-C3060	5' -TAACCTCACAATCATTACAGAGAG-3'
PMeCeU2-U49	5' -CGTTATGATGAAGATTCACTAGC-3'
PΨCeSSU-499	5' -GTCAGAAGAAAGTATAGCCACGAT-3'
PΨCeSSU-970	5' -AACACGGCGAATGAGCAGATA-3'
PΨCeSSU-1146	5' -GCAAACCACAATCATTAAACAGTA-3'
PΨCeLSU-1573	5' -TTAGCGAATCCGCCAATTTTCTT-3'
PΨCeLSU-1996	5' -TTCCGTCGTTATGCAAGAATCTA-3'
PΨCeLSU-2294a	5' -GCCATCAGTGGATTAAGTCAGTAC-3'
PΨCeLSU-2361	5' -AAACAACCTCCAACGAGAAGAAGC-3'
PΨCeLSU-2992	5' -AAATCCATCCAGAAGCGACCT-3'
PΨCeU5-48	5' -CTATTTTCAGAAACTCCAGCATTA-3'
PCeACA0rph1a	5' -GAGATGCAAGACAAAACCCGAA-3'
PΨCeSSU-1266a	5' -CCGAATATATCACAACATAATCG-3'
PΨCeLSU-2294b	5' -CTGGAAAAGTTCTATATAACTCAACA-3'
PΨCeLSU-2519a	5' -TCATTTTCGAGCAATCCTAGC-3'
PΨCeU2-16	5' -ATTTCCGGCTACTGACTACCTTGT-3'
PΨCeU2-41	5' -CGCCTGTCAAGTAGACCTTATC-3'
PΨCeU4-62	5' -AGCACCGTTAAACTACCATAGC-3'
PΨCeU6-26	5' -GATGAGCACCGCTAATGACA-3'
Oligonucleotides used for cDNA libraries construction and screening	
<i>Hind</i> III (T) ₁₆	5' -CCCCAAAAGCTTTTTTTTTTTTTTTTTTTT-3'
<i>Bam</i> HI (C) ₁₆	5' -GGAATTCGGATCCCCCCCCCCCCCCC-3'
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Figure S1

A



B

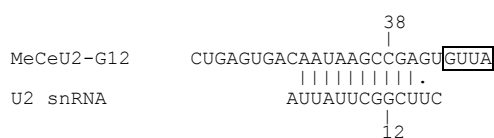
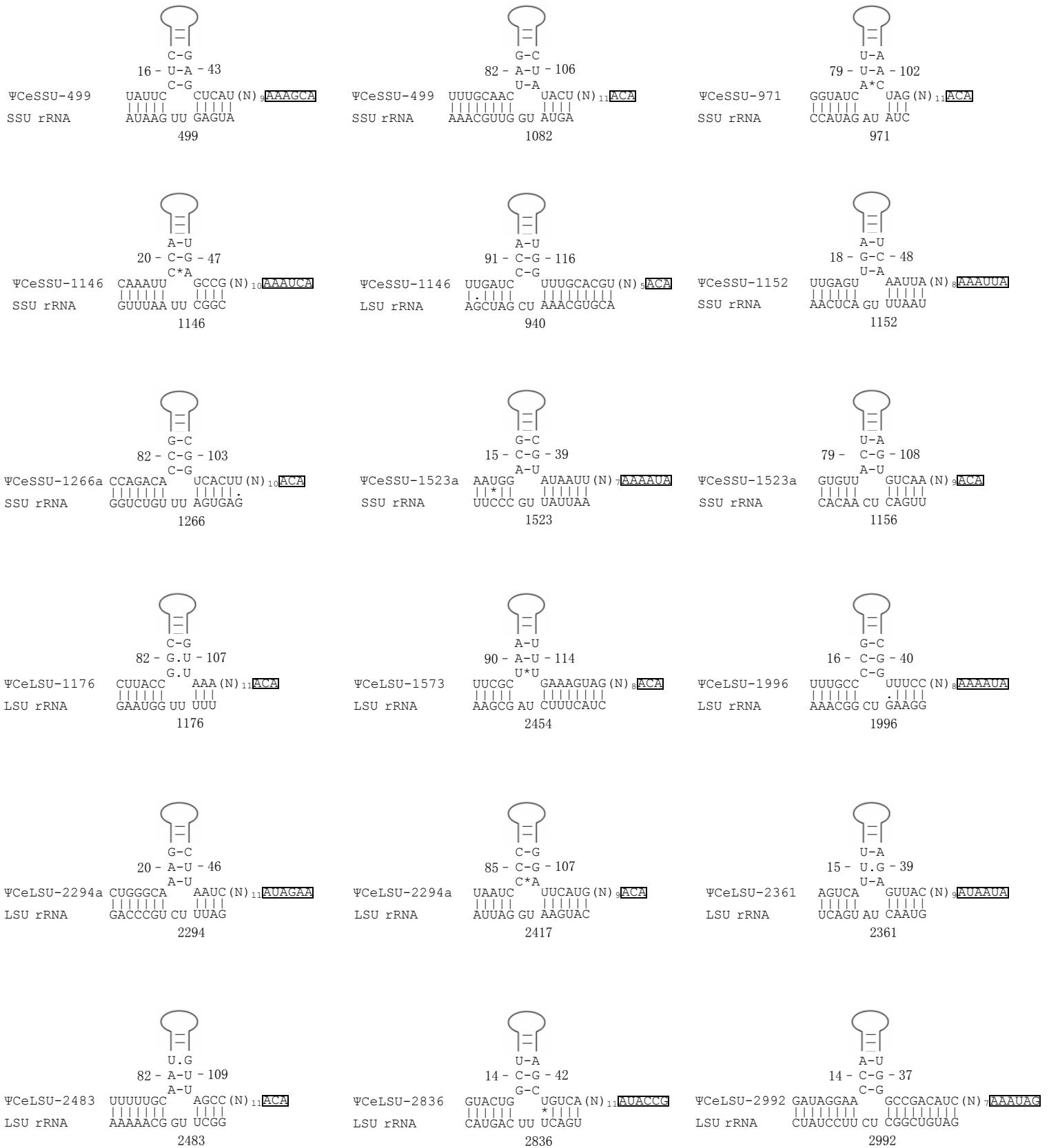
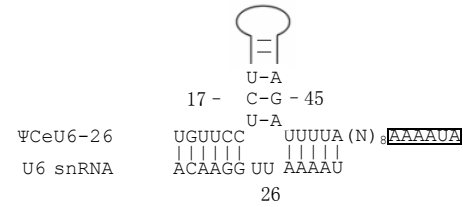
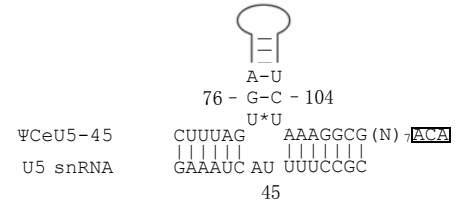
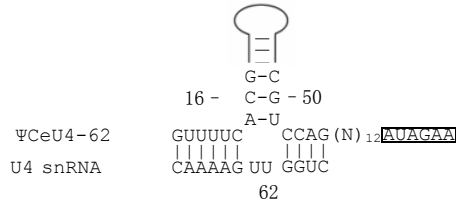
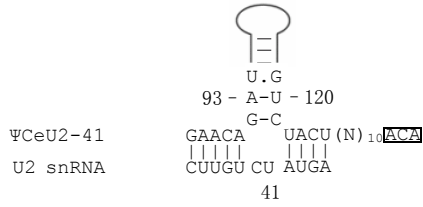
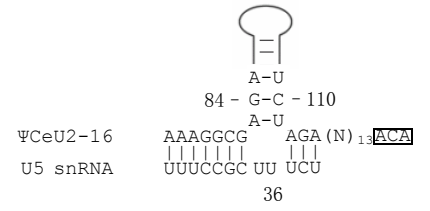
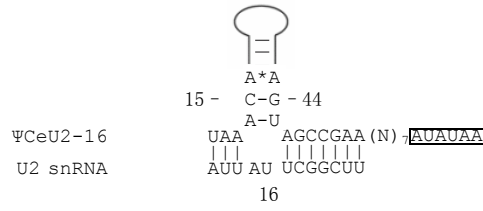
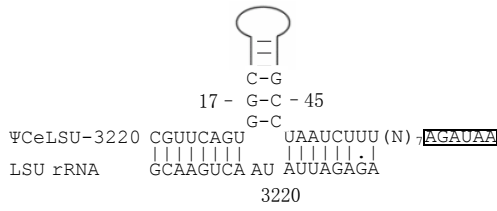


Figure S2

A





B

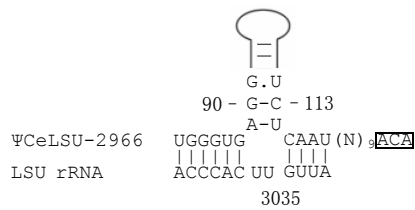
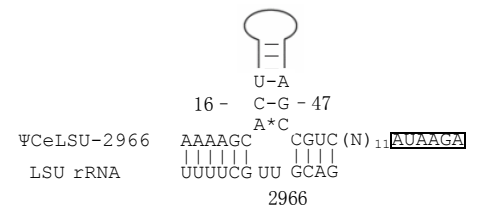
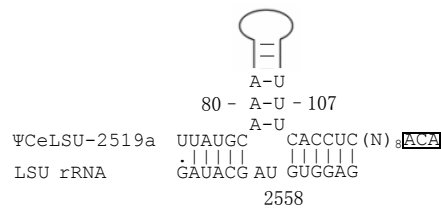
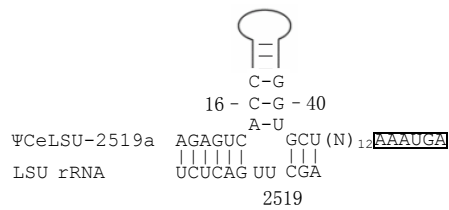
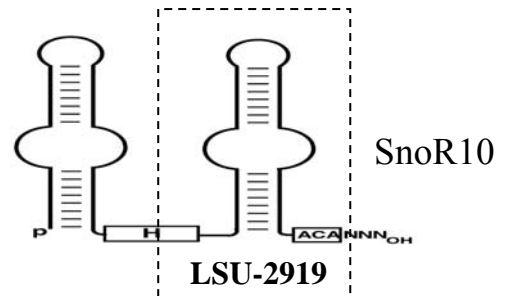


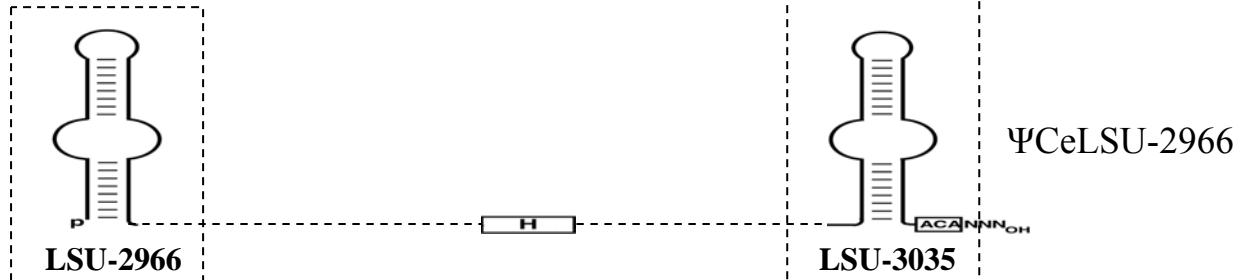
Figure S3

A

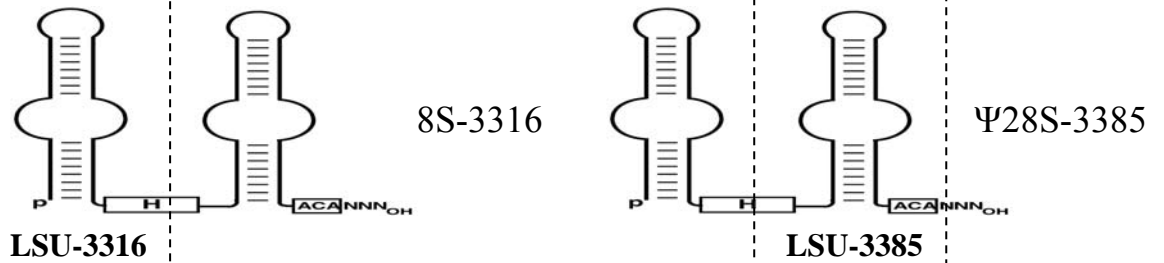
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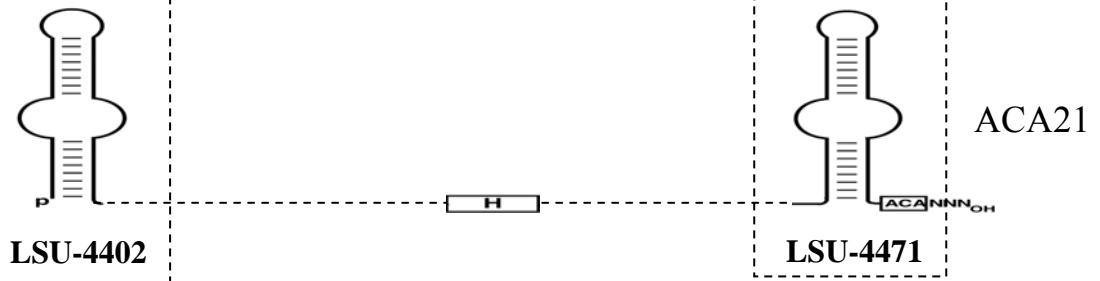
C. e.



D. m.

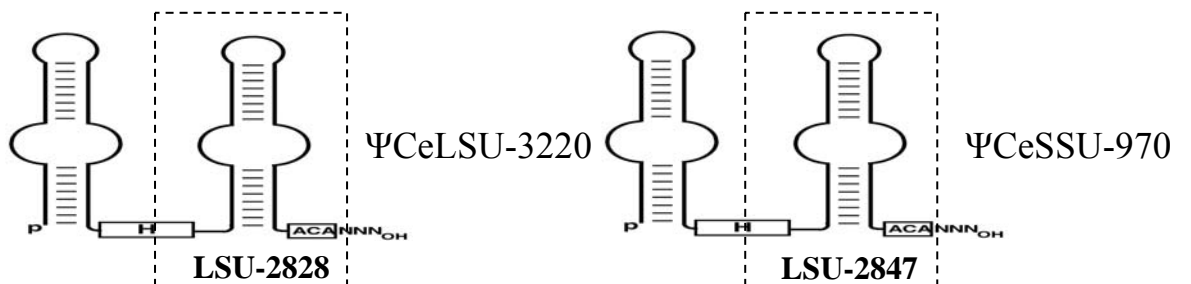


H. s.



B

C. e.



H. s.

