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# Conserved Stem-Loop Structure at the End of Short Interspersed Nuclear Elements (SINE) and Long Interspersed Nuclear Elements (LINE) Pairs of Different Species

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**Abstract :** Transposable elements play an important role in the evolution of various species from bacteria to human. Long Interspersed Nuclear Elements (LINEs) and Short Interspersed Nuclear Elements (SINEs) are two major classes of retrotransposons that occupy a considerable part of any genome and their copy numbers can range form several hundreds to a million. Both LINEs and SINEs multiply through a copy-and-paste mechanism. LINEs encode proteins, which make them capable of self-propagation while SINEs are parasitic and require the machinery of LINEs to multiply. The mechanisms how LINE and SINE RNA is recognized by the LINE-encoded reverse transcriptase (RT) remain unclear. For some SINE-LINE pairs, it was shown that they share a common 3'-end with a stem-loop structure. Majority of the SINE-LINE pairs do not have a common 3'-end. Recently we have shown that in the human genome Alu-L1 pairs have structurally similar stem-loop structure at the 3'-end. Here we extended our analysis to a wide range of species and analyzed LINEs from 161 different species from Repbase and 217 SINE sequences from SINEBase. It appeared that all of the analyzed sequences contained stem-loop structures at the 3'-end. Here we conclude that it is very likely that a common evolutionary mechanism of transposon RNA recognition requires the presence of stem-loop structures at their 3'-end.

**Keywords :** LINE, SINE, mechanisms of retrotransposition, retrotransposons, stem-loop, stem-loop structures, transposons
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