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Evolutionary dynamics of "functional" processed pseudogenes that stabilize Makorin1 mRNAs in mammals

The transcribed processed pseudogene Makorin1-p1 in mice is shown to stabilize Makorin1 mRNAs. We examined the presence or absence of Makorin1-derived processed pseudogenes in mice, rats, primates and some other mammals. Makorin1-p1 is specific to subgenus Mus and emerged 4.5mya. In Mus caroli, both Makorin1-p1 and another older Makorin1-derived processed pseudogene are transcribed, demostrating the rapid generation and turnover. In Catarrhini, we found two processed pseudogenes, MKRN4 and MKRNP1, which possess the conserved "functional" the B region. These pseudogenes are transcribed in humans. For MKRN4, conservation of the B region is limited in the comparison between humans and chimpanzees. For MKRNP1, the B region is commonly conserved among primates. We concluded that the evolutionary dynamics of Makorin1-derived processed pseudogenes in other mammals depends on how frequently processed pseudogenes occurred. When they frequently occurred as in rodents, even the region responsible for stability evolved in a neutral fashion. On the other hand, when they rarely occurred as in primates, they are subjected to negative selection, suggesting the functional role.

CV

Education

2003.10-2007.3 :	Ph.D. at The Graduate University for Advanced Studies (SOKENDAI); Supervisors: Prof. Yoko Satta and Prof. Naoyuki Takahata
1999.4-2001.3:	M.S. at the Ochanomizu University; Advisor: Prof. Sadao Chigusa-Ishiwa

Work experience

2008.3-Present:	assistant professor at the Ochanomizu University
2007.4-2008.2:	research fellow at The Graduate University for Advanced Studies (SOKENDAI) (N. Takahata and Y. Satta's lab.)
2001.4-2003.9:	technical staff at the RIKEN Genomic Sciences Center (Y. Gondo's team)

Research interests

-The evolution of non-coding DNA
-The robustness of genomes