

The Novel Long non-coding RNA nc97 regulates *Drosophila* Locomotion

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It is becoming increasingly clear that non-coding RNA(ncRNA) is the major part in the whole transcriptome and involved in many different biological processes, such as nearby protein-coding gene regulation; protein transportation and epigenetic modification, and so on. Previous studies indicated the development and function of neural system could be dependent on the RNA editing and complexed spatiotemporal expression of ncRNA.

In our study, we found a novel long ncRNA, *nc97*, expressed in the nervous system through the whole development stages in *Drosophila*, which could be responsible for the locomotor activity and climbing ability in adult *Drosophila*, and this effect was attributed to the regulation on the expression of the adjacent protein-coding gene, *nc97-related coding gene*. As for the molecular mechanism involved in the regulation on the expression level of *nc97-related coding gene* by *nc97*, our experiment indicated *nc97* promoted the promoter region of the protein-coding gene. Our study identified a new functional paradigm for long non-coding RNA which will be helpful to understand the roles of non-coding RNA on the development and function of nervous system.