

***Drosophila* Short Neuropeptide F Regulates Food Intake and Body Size**

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Neuropeptides regulate a wide range of animal behavior including food consumption, circadian rhythms, and anxiety. Recently, *Drosophila neuropeptide F* (*dNPF*), which is the homologue of the vertebrate neuropeptide Y, was cloned and the function of dNPF in feeding behaviors was well characterized. However, the function of the structurally related *short neuropeptide F* (*sNPF*) was unknown. Here, we report the cloning, RNA and peptide localizations, and functional characterizations of the *Drosophila sNPF* gene. The *sNPF* gene encodes the pre-protein containing putative RLRamide peptides and was expressed in the nervous system of late stage embryos and larvae. The embryonic and larval localization of the *sNPF* peptide in the nervous systems revealed the larval CNS neural circuit from the neurons in the brain to thoracic axons and to connective axons in the ventral ganglion. In the adult brain, the *sNPF* peptide was localized in the medulla and the mushroom body. However, the *sNPF* peptide was not detected in the gut. The *sNPF* mRNA and the peptide were expressed during all developmental stages from embryo to adult. From the feeding assay, the gain-of-function *sNPF* mutants expressed in nervous systems promoted food intake, whereas the loss-of-function mutants suppressed food intake. Also, *sNPF* over-expression in nervous systems produced bigger and heavier flies. These findings indicate that the *sNPF* is expressed in the nervous systems to control food intake and regulate body size in *Drosophila melanogaster*.