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# Serotonergic network in the subesophageal zone modulates the motor pattern for food intake in *Drosophila*

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Keywords: serotonin (5-HT), motor pattern, feeding behavior, pharyngeal pump, subesophageal zone, cell ablation, Fluoxetine

## Abstract

The functional organization of central motor circuits underlying feeding behaviors is not well understood. We have combined electrophysiological and genetic approaches to investigate the regulatory networks upstream of the motor program underlying food intake in the *Drosophila* larval central nervous system. We discovered that the serotonergic network of the CNS is able to set the motor rhythm frequency of pharyngeal pumping. Pharmacological experiments verified that modulation of the feeding motor pattern is based on the release of serotonin. Classical lesion and laser based cell ablation indicated that the serotonergic neurons in the subesophageal zone represent a redundant network for motor control of larval food intake.

## Introduction

A core element of behavior is built up of stereotypical repetitive movements controlled by central pattern generators (CPGs), a circuitry of neurons capable of producing a rhythmic neural activity that can drive a given movement (Delcomyn, 1980). They are embedded into a complex network of higher order neural circuits whose excitatory and