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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY
Division of Life Science

LIFS Seminar Series

Neural circuits for prey capture in zebrafish larvae

by

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Abstract

Prey capture is a complex yet essential behaviour, requiring identification of the prey and tight coordination between sensory and motor systems. We study this behaviour in zebrafish, a model system that has the advantages of optical transparency, a relatively simple brain, and genetic tools. In zebrafish larvae, visual detection of a small moving object evokes a series of stereotyped orienting turns and swims that allow the larva to approach the prey, followed by a more propulsive swim coupled with jaw opening to create suction and consume the paramecium. We have begun to dissect the neural circuits involved in the initial orienting phase of prey capture. Using a head-fixed preparation, we can present visual stimuli while recording tail movements, and objectively classify the behavior using a machine learning algorithm. We were thus able to vary the stimulus parameters and determine the ideal prey stimulus. To identify the brain areas mediating this behavior, we used two photon imaging to record population responses in retinal ganglion cell (RGC) axons. Current projects in the lab are focused on how larvae actively control eye position during hunting, and how they use their visual system to gauge distance to the prey.

Date : 12 May 2017 (Friday)

Time : 4:00 p.m.

Venue : Lecture Theatre D
The Hong Kong University of Science & Technology
Clear Water Bay, Kowloon

(Host faculty: Prof. Karl Herrup)

All are Welcome!!