



The University of Hong Kong  
School of Biological Sciences

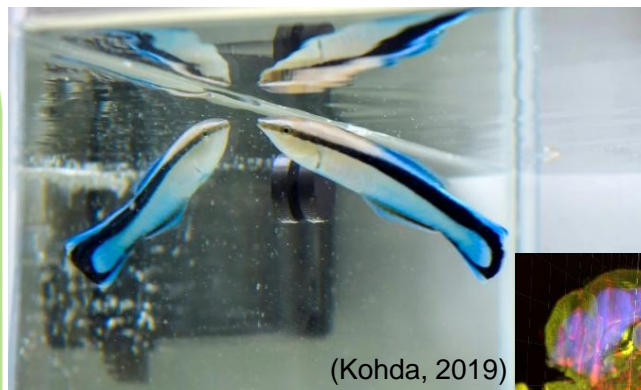
Qualifying  
Seminar

# Neuromolecular mechanisms of self-recognition and adaptive responses to environmental fluctuation in cleaner fish

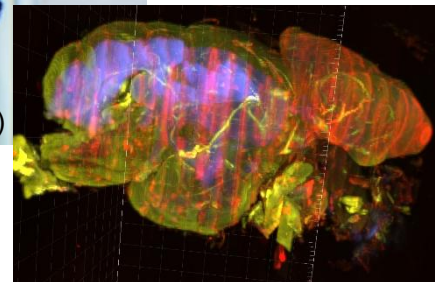
**Date: 17 April 2026**

**Time: 14:00**

**Venue: 6N-11**



(Kohda, 2019)



## About the speaker:

Maddalena Ranucci is a PhD student under the supervision of Prof. Celia SCHUNTER. Her research investigates the neuromolecular basis of (self-) recognition and explores how environmental conditions modulate cognitive processes, using the cleaner fish *Labroides dimidiatus* as a study system.

## Abstract:

Organisms constantly interact with other individuals and their environment to survive and reproduce. A key aspect of these interactions is the ability to recognize social partners, including cooperative partners, competitors, and predators. This ability relies on sensory and cognitive mechanisms that allow animals to distinguish between individuals and interpret social information. An important component of social cognition is the ability to distinguish between self-generated and external information, a process known as self-recognition. The cleaner wrasse (*Labroides dimidiatus*) provides a powerful model to study these mechanisms. This species shows complex social behaviour and behavioural evidence consistent with mirror self-recognition, yet the neural and molecular mechanisms underlying these abilities remain unknown. In my thesis, I aim to uncover the neural, cellular, and molecular mechanisms of self-recognition in a non-mammalian vertebrate.

Another key aspect of organisms behaviours and interactions is the physical environment. I will investigate whether this species responds to environmental fluctuations (of CO<sub>2</sub>) through a feedback or feedforward response. This work will contribute to comparative neuroscience and help clarify how environmental variability shapes cognitive plasticity.

