



July 15<sup>th</sup> 2022, 4:30 pm

The 3<sup>rd</sup> Nagoya University:  
International Science Exchange Lecture



## Dr. Toshihide Hige

Assistant Professor at University of North Carolina at Chapel Hill

### Circuit mechanisms of higher-order associative learning

A large body of circuit mapping studies in the learning and memory field has focused on relatively simple forms of learning such as classical conditioning, which requires direct association between sensory stimulus and reward or punishment. However, learning we experience in our daily lives often involves indirect associations (e.g. observational learning). Circuit basis of such higher-order associative learning has been largely unknown. By exploiting the EM connectome data together with behavioral, electrophysiological and imaging approaches in *Drosophila*, we recently identified the circuit involved in second-order conditioning, an ethologically important form of higher-order associative learning observed across species. Our results highlight the importance of hierarchical connections between dopamine-dependent memory circuits.



I will also discuss how this newly identified circuit contributes to flexible action selection after learning.



SCHOOL OF MEDICINE  
Cell Biology and Physiology

**Date:** July 15<sup>th</sup> 2022, 4:30 pm

**Location:** to be announced

**Research fields:** Neuroscience,  
neural circuit, learning, conditioning



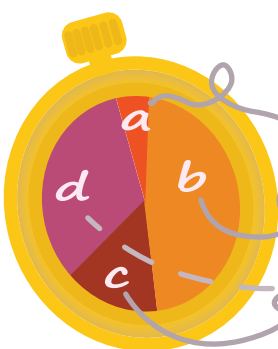
**Audience**

**Designated research groups':**

- ★ Students (M + PhD)
- ★ PDs + research fellows
- ★ Asst./Assc./Full professors
- ★ B students and external faculty welcome

**Lecture time:** 1 hour

**Form:** Hybrid on Teams & Face-to-Face



- Introduction of speaker by NU host (1-5 min)
- Lecture on research interests & results
- Presentation of unsolved problems that require input or collaboration
- Discussion & questions on b. + c.

**Register here:**



### About NU:ISE

Early career scientists from international institutes are invited to give a lecture on their research. The talk will include both published results and current open questions, with the aim of promoting discussion and potentially starting new collaborations.

Talks will be held in group(s) with matching research interests.

In the name of 'Science Exchange', the hosting group is encouraged to nominate a candidate from their network (from NU) to give a talk at the invitee's institute, either within the same or a different research group.

For more information, contact Katinka Wondergem: [cswondergem@chem.nagoya.ac.jp](mailto:cswondergem@chem.nagoya.ac.jp)