



## Graduate School Event

# Thesis Defense: Dissecting molecular and functional basis of motor control in *Xenopus laevis* frog

**David Vijatovic**

Host: Amelia Douglass

Motor circuits must generate distinct patterns of movement while adapting to developmental changes in body form and behavioral demands. Frog metamorphosis provides a unique opportunity to study this process, as *Xenopus laevis* transitions from axial, tail-based swimming to limb-based locomotion. This work investigates how spinal circuits are molecularly organized and functionally reorganized during this transition. I examine how spinal neuron composition changes across metamorphosis, showing that cell type diversity increases with the emergence of limb movement. In particular, inhibitory V1 interneurons and motor neurons expand and diversify into transcriptionally defined populations resembling those described in mammals. These findings support conserved organizational principles of vertebrate spinal circuits and link cell type diversification to the emergence of more complex motor behaviors. I further develop viral and optical approaches to probe how these molecularly defined circuits are functionally reorganized during this transition. Together, these findings establish *Xenopus laevis* as a powerful model for linking molecular identity, circuit dynamics, and behavior across vertebrate development.

**Wednesday, May 6, 2026 01:00pm - 04:00pm**

Sunstone Bldg / Ground floor / Big Seminar Room A / 27 seats (I23.EG.102)



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station. Please find a schedule of the ISTA Shuttle on our webpage: <https://ista.ac.at/en/campus/how-to-get-here/> The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.