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From light to circuits: using Danio rerio to dissect neural circuits

Wednesday, March 18, 2026 4:40 PM (20 minutes)

Neural circuits underpin behavior, yet dissecting their function at single-cell resolution remains challenging due to complexity and inaccessibility in vivo. In this talk, I will show how larval zebrafish (Danio rerio) enables optical approaches that connect brain-wide activity to circuit organization and behavior. Leveraging volumetric calcium imaging, I will present experiments probing experience-dependent plasticity through manipulations of sensory input and neuromodulatory state, combining recordings of spontaneous and visually evoked activity to reveal circuit reorganization during development. I will then discuss ongoing work on disease models created using CRISPR, using imaging-based measurements of visual responses and retinotopy to characterize how genetic perturbations impact circuit development. Finally, I will outline future directions toward more complex behaviors, including social interactions in juvenile fish.

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Session Classification: T2 - UNIPD Speakers