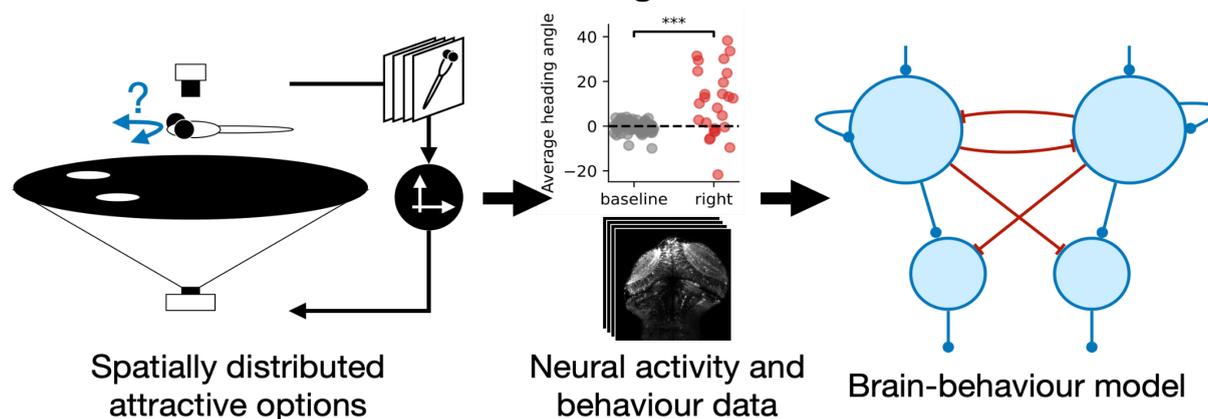


The neural basis of decision-making in zebrafish larvae



In this project, you help to investigate the neural mechanisms underlying decision-making. For this, you will be presenting larval zebrafish with spatially distributed attractive targets. Based on rigorous behavioural experiments and whole-brain functional imaging, we develop and validate a brain-behaviour model that represents the mechanistic implementation of spatial decision-making in the larval zebrafish brain.

Imagine you have two identical slices of pizza, both three meters away from you. Which one do you choose? This project aims to contribute to a deeper understanding of this type of decisions; spatial decision-making. For this, we apply a newly developed experimental paradigm to zebrafish larvae. These experiments will allow us to develop models that are useful starting points for further causal studies on brain diseases such as autism, schizophrenia and epilepsy.

Central in this project are rigorous behaviour experiments in which the zebrafish are presented with spatially distributed attractive cues. One of your tasks will be to perform and improve these experiments, allowing you to gain extensive experimental and fish handling experience. For this, we have built a high-throughput behavioural tracking setup that allows for quick hypothesis testing. Subsequently, you will perform data analysis and modelling based on these experiments. Next to this, you will learn and apply key experimental techniques, including electrophysiology, two-photon whole-brain imaging, applying genetics and transcriptomics techniques.

During the internship, you are part of a vibrant and interdisciplinary research community. Our lab is specialised in systems neuroscience by combining strong computational techniques with behavioural and brain-imaging experiments. The lab is an interdisciplinary environment, including researchers from computational, neuroscience, physics, toxicology and biology backgrounds. The lab fosters a culture of openness and personal development, and we actively promote and facilitate a creative, independent thinking process in all lab members.

Our lab is integrated into many research institutes, including the Max Planck Institute for Animal Behavior and the Excellence cluster of collective behaviour. In addition, we have close international collaborations with world-leading researchers in zebrafish systems and behavioural neuroscience, among which are in Harvard University and the Janelia Research Campus.

The University of Konstanz is characterised by its short distances and open doors, in which many scientific disciplines meet. It is situated in the beautiful Bodensee area in South Germany, in the heart of Europe. This gives many opportunities to enjoy outdoor sports while having a great view of the Swiss alps.

Do you want to have an opportunity to contribute to systems neuroscience in an inspiring environment? Apply now! For more info, have a look at our website (neurobiology-konstanz.com/bahl) or feel free to contact Max Capelle (maxim.capelle@uni.kn). Unfortunately, a purely virtual internship is not possible. The starting date is flexible.