# Auditory processing during sleep and awake states in songbirds

Songbirds have long captivated humankind with their ability to socially communicate through their beautiful and complex songs and calls. Birdsong is not only music to our ears, but also a highly complex acoustic signal that changes dynamically over time. The songbird's auditory system must therefore be able to interpret a continuous stream of acoustic information including the vocalizations of other birds and other animals in an environment filled with ambient noise.

While most animals rely on the ability to process auditory signals in order to classify the source of the signal (i.e., whether it originates from a conspecific, a stranger, or a mate), songbirds - like humans - also depend on auditory processing to learn their vocalizations. The ability to memorize and learn from the auditory input it receives in order to shape its own vocalizations implies that the songbird brain, not unlike the human brain, is uniquely built to process and discriminate complex sounds.

In this project, we will use chronically implanted Neuropixels probes to analyze population responses to behaviorally relevant auditory stimuli across brain states.

#### PhD Position: State-dependent auditory processing in a songbird

We are seeking a highly-motivated PhD student to research processing in the zebra finch auditory system in a DFGfunded, 3-year PhD position. This project integrates electrophysiological, behavioral, and computational approaches to investigate how sensory processing changes as a function of brain state. The project will be carried out at the Chair of Zoology at the Technical University of Munich, located at the TUM Life Sciences Campus in Weihenstephan-Freising.

#### **Required skills**

- MSc or equivalent degree in neuroscience or biology with emphasis on systems or computational neuroscience
- Experience using electrophysiological approaches
- Proficiency in at least one programming language (e.g. Python, MATLAB)
- Strong analytical and signal processing skills
- · Highly motivated and able to work independently
- · English language speaking and writing skills

## Applications should include

- 1) a curriculum vitae,
- 2) certificates and transcripts of academic degrees,
- 3) a letter of motivation,
- 4) example of experience with a programming language,
- 5) and contact information for at least 2 references



Graduate School of Systemic Neurosciences LMU Munich



## Our offer

The doctoral candidates will be employed by TUM (65 % TV-L E13) for a total duration of three years (with possible extension). Successful applicants will be enrolled in the Graduate School of Systemic Neurosciences (GSN) program at the Ludwig Maximilian University of Munich and receive a structured doctoral training.

The student will benefit from international research exchanges and collaborations with France and Switzerland, in addition to the networking opportunities available within the vibrant neuroscience community in Munich.

The position is anticipated to start in January 2026 and will remain open until filled.

## Please send your application as a PDFdocument to:

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