Invitation to a Guest Lecture
at the joint colloquium of the Institute of Biology and Environmental Sciences and the Department of Neuroscience

Module bio890: Current topics in biology

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What’s the Buzz? Tinnitus Assessment via Electrophysiology

Tinnitus is considered the perception of sound in the absence of an external sound source. It is estimated that worldwide over 740 million people are affected by this phantom sound, with 10-20% experiencing bothersome tinnitus. Unfortunately, the underlying mechanisms are poorly understood, and the most successful treatment option is cognitive behavioral therapy, which does not treat the tinnitus itself but instead helps the patient to live with it.

The lack of an objective test makes therapy development a challenge.

The inferior colliculus (IC) is a major hub in the central auditory system. A subset of neurons in the IC shows a phenomenon in which they have an increased spontaneous firing rate and increased firing rates in response to sound stimuli following a long-duration sound (LDS). We tested if this phenomenon is altered in tinnitus, as tinnitus has been associated with increased spontaneous activity.

To test this, we used a mouse model of noise-induced tinnitus to confirm the potential use of our LDS stimulus paradigm as an objective test for tinnitus.

Recordings from the IC in sound-exposed mice show a difference in firing rate in response to tone pips depending on the tinnitus status. This might reflect the reported increased spontaneous activity in tinnitus mice. Since the effect is reflected in recordings in response to sound and not only spontaneous activity, it might be used in non-invasive testing.

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Host: Prof. Dr. Christine Köppl (Cochlea und auditorische Hirnstammphysiologie), DfN

Members of all institutes are cordially invited to join the lecture.