Introductory Remarks to Symposium 32

Hearing system adaptation for diverse lifestyles across the animal kingdom

Manuela Nowotny and Stefan Schöneich, Frankfurt/Main and Leipzig

Hearing is essential for central aspects of the lifestyle in many animals, e.g. for mate finding, predator avoidance or prey detection. This symposium will present latest research on how the ears and auditory pathways in different animals are adapted to the special demands and challenges that come with the behaviours of their specific lifestyles. Jan Clemens will present new results on an auditory feature detector that drives male and female behavioural responses to the mating song in fruit flies. By combining behavioural quantification, 2-photon calcium imaging and optogenetic techniques, he and his collaborators identified a cluster of neurons in the Drosophila brain that recognizes a specific song mode. Manuela Nowotny will explain how the extensive overrepresentation of a narrow frequency band (auditory fovea) in a bushcricket ear can improve neuronal detection of conspecific mating calls. Hannah ter Hofstede will review bat detection strategies in insects and provide examples of auditory adaptations in moths and katydids for hearing bat echolocation calls. The number and diversity of insects that have ears, tuned to the echolocation calls of bats demonstrates the enormous selection pressure that these predators exert on these insects. Christine Köppl will talk about nocturnal hunting specialization in barn owls. Her talk will give an overview and then focus specifically on the inner ear (basilar papilla) with its auditory fovea and the associated massive neural overrepresentation of a behaviourally salient frequency band. In a comparative approach that draws its examples from research in invertebrate and vertebrate organisms, the 4 main talks and two short presentations by student researchers in this symposium will highlight a variety of adaptions in hearing organs and neural auditory processing in different animals that are specialists for very different auditory behaviours.
Symposium 32
Saturday, March 23, 2019
8:30 - 10:30, Lecture Hall 102

Chairs: Manuela Nowotny and Stefan Schöneich, Frankfurt/Main and Leipzig

08:30 Jan Clemens, Göttingen
ACOUSTIC COMMUNICATION IN THE WILD - A SHARED SONG FEATURE DETECTOR DRIVES MALE AND FEMALE RESPONSES TO SONG IN DROSOPHILA (S32-1)

08:55 Manuela Nowotny, Frankfurt/Main
TALK TO ME DARLING - NEURONAL ADAPTATIONS FOR INTRASPECIFIC COMMUNICATION IN THE BUSHCRICKET EAR (S32-2)

09:20 Hannah M. ter Hofstede, Hanover, USA
AUDITORY ADAPTATIONS FOR DETECTING ECHOLOCATING PREDATORS IN MOTHS AND KATYDIDS (S32-3)

09:45 Christine Köppl, Oldenburg
DEATH ON SILENT WINGS - ADAPTATIONS FOR SOUND LOCALIZATION IN THE BARN OWL (S32-4)

10:10 Lina Maria Jaime Tobon, Göttingen
UNDERSTANDING SOUND ENCODING: CORRELATION OF RESPONSE PROPERTIES OF AFFERENT INNER HAIR CELL SYNAPSES AT NEAR PHYSIOLOGICAL CONDITIONS (S32-5)

10:20 Ajayrama Kumaraswamy, Martinsried
ADAPTATIONS IN AN IDENTIFIED HONEYBEE AUDITORY INTERNEURON RESPONSIVE TO WAGGLE DANCE VIBRATION SIGNALS (S32-6)