

PhD position available

Project: "Neurobiology of learning, memory and emotions: a bottom-up approach studying SPIRE/FMN actin nucleators in the sea anemone nerve net"

Human and mouse genetics revealed a role of the FMN2 actin filament assembly factor in learning, memory and fear expression. FMN-subgroup formins cooperate with SPIRE proteins in the assembly of actin filaments and function in myosin 5 actin motor protein driven exocytic vesicle transport processes. Gene expression experiments showed a predominant expression of the SPIRE1 and FMN2 isoforms in neuronal cells of the mammalian nervous system. The neurobiological functions of SPIRE1 and FMN2 are however still unknown today.

Our ongoing evolutionary studies show that SPIRE protein complex formation with FMN-subgroup formins and myosin 5 motor proteins is conserved throughout the animal kingdom. In order to address the neuronal functions of SPIRE and FMN actin filament assembly factors, we aim to follow a bottom-up approach, in which we will study the neurobiology of the SPIRE/FMN complex in the simplest form of an animal nervous system, the cnidarian nerve net.

The study will employ the sea anemone *Nematostella vectensis* as an animal model and will include *in situ* gene expression analysis, fluorescence microscopic localisation of SPIRE and FMN proteins in correlation to neuronal and synaptic markers and finally the analysis of knockout animals and the development of sea anemone behavioural testing. Next to a basic knowledge of SPIRE and FMN function in neuronal cells, the project should reveal important information on the evolution of animal learning and memory.

Start of funding is September 1st, 2023. The position is funded for up to three years, according to the German pay scale TV-L E13 (65%). The project is part of the DFG graduate program "Neurobiology of Social and Emotional Dysfunctions" GRK 2174 (<https://www.uni-regensburg.de/research/grk-emotion/grk-home/index.html>)

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sea anemone
Nematostella vectensis

