

A PhD position entitle: Estrogen-mediated coupling in the central clock

An exciting three-year PhD position is currently available at the renowned Institute of Neurobiology, University of Lübeck, Germany, in the group of Dr Violetta Pilorz. This unique opportunity will allow the successful candidate to investigate the complex interplay of female sex hormones, in particular estrogen and progesterone, on the neuronal network of the central clock in the mouse hypothalamus, known as the suprachiasmatic nucleus (SCN), and its dynamic response to external stimuli.

This position offers an excellent opportunity to contribute to cutting-edge research in neurobiology and chronobiology, thereby deepening our understanding of the complex mechanisms governing circadian rhythms and hormone regulation in the mammalian brain. The ideal candidate for this position will have a strong background in neuroscience, molecular biology and chronobiology, coupled with proven initial hands-on experience working with laboratory rodents and knowledge of surgical procedures. In terms of the scientific background for investigating aspects of the central clock as a rhythm generator, it must be understood that time-dependent long-term studies are required, which will involve working after office hours and at weekends. Possession of a Felasa certificate is an advantage but not a requirement.

Our recent findings Pilorz et al. (2020) and Schlaeger et al. (2024) shed light on the potential of estrogen to strengthen SCN coupling via astrocytic gap junctions, potentially enhancing its resilience to environmental fluctuations. The counteracting role of progesterone on estrogen functionality prompts us to investigate the differential effects of estrogen and progesterone on SCN coupling. Our primary goal is to elucidate the signalling pathways of estrogen and progesterone that might influence changes in intercellular coupling mediated by neurons and astrocytes. To achieve this, we will take a multifaceted approach, using organotypic brain slices from the PER2::LUC mouse model and working with hypothalamic astrocyte and neuronal cells. We also aim to validate our findings obtained in vitro using in vivo experiments by comparing the effects of estrogen and progesterone on SCN neuronal coupling in ovariectomised females under varying light and dark stimuli.

Interested candidates are invited to send a covering letter together with their CV and the contact details of two referees to Dr Pilorz [violetta.pilorz@uni-luebeck.de](mailto:violetta.pilorz@uni-luebeck.de). Informal inquiries are also welcome.

CV should not only highlight academic achievements, research and practical experience, but also demonstrate the candidate's scientific writing skills and ability to communicate effectively in a team environment. In addition, the cover letter should outline the applicant's research interests and learning ambitions and explain why they are a suitable candidate for the advertised project.

If you have an unwavering passion for neuroscience and a desire to explore this fascinating area of research, I strongly encourage you to apply for this position, which is available immediately.