

## Introductory Remarks to Symposium 10

### Sex, glia and disease: understanding sex-specific glia biology in health and disease

*Barbara Di Benedetto and Julia Schulze-Hentrich, Regensburg and Saarbrücken*

While it has been known for a long time that sex differences exist in the human brain, the consistency, causes and consequences of such dimorphic phenomena are poorly characterized and strongly debated. Masculinization of the brain is induced by the neonatal surge of male gonadal activity and organizes long-term brain architecture by structuring neuronal circuits to be activated by sexual functions after puberty.

Based on recent advancement in single cell-technologies, a systematic transcriptomic and epigenomic annotation of regional and cell type-specific sex differences in human brain anatomy is becoming apparent. Besides neuronal cell-types, glia cells seem to play a crucial role and glia cells and glial-neuron-interactions need to be further evaluated. Access to large genomic, transcriptomic, epigenomic and proteomic datasets will help to discriminate the differential impact of sex on various biological parameters. For decades, it has been observed that several neurodegenerative as well as stress-related disorders and psychiatric diseases have symptoms reported to be strongly influenced by biological sex. However, our understanding of whether and how sex might contribute to the development of distinct brain diseases is still in its early stages.

This symposium brings together speakers who will present novel insights about: 1) astrocytes: modulators of cortical synaptic sexual dimorphism in health and major depressive disorder (B. Di Benedetto); 2) the epigenome as a layer to drive sex-specific glia changes (J. Schulze-Hentrich); 3) prefrontal inputs to lateral hypothalamus to cope with stress (A. Bakhareva); 4) gender-specific computational glial cell models (K. Lenk); 5) omics analysis of sex differences in neurodegenerative disorders (E. Glaab).

As it requires a joint effort using physiological and system-level approaches to better understand the sex-specific role of glia cells in health and disease., we think that the present proposal discusses a timely and highly relevant topic of general interest for the glia scientific community.

## Symposium 10

*Thursday, March 27, 2025  
10:30 - 12:30, Lecture Hall 104*

Chairs: Barbara Di Benedetto and Julia Schulze-Hentrich, Regensburg and Saarbrücken

- 10:30 **Opening Remarks**
- 10:35 Barbara Di Benedetto, Regensburg  
SEX DIFFERENCES IMPACT AN ASTROCYTE-MEDIATED SYNAPTIC ELIMINATION IN HEALTH AND MAJOR DEPRESSIVE DISORDER (S10-1)
- 10:55 Julia Schulze-Hentrich, Saarbrücken  
THE FEMALE EPIGENOME: SEX-SPECIFIC EPIGENETIC PROFILES IN HEALTH AND DISEASE (S10-2)
- 11:15 Alisa Bakhareva, Cologne  
A ROLE OF PREFRONTAL INPUTS TO LATERAL HYPOTHALAMUS AND THEIR NORADRENERGIC MODULATION IN COPING WITH STRESS (S10-3)
- 11:25 Kerstin Lenk, Graz, Austria  
MIND THE GENDER GAP: CHARTING NEW TERRITORIES WITH COMPUTATIONAL GLIAL MODELS (S10-4)
- 11:55 Enrico Glaab, Belvaux, Luxembourg  
COMPUTATIONAL ANALYSIS OF SEX DIFFERENCES IN OMICS DATA FOR ALZHEIMER'S AND PARKINSON'S DISEASE (S10-5)
- 12:15 **Discussion and Concluding Remarks**