

Press Information, September 25, 2024

## Brain Detox During Sleep New Approaches to Treating Alzheimer's Disease

### Ernst Schering Prize 2024 goes to Maiken Nedergaard for her discovery of the glymphatic system

**The Schering Stiftung awards the Ernst Schering Prize 2024 to Maiken Nedergaard, M.D., D.M.Sc. Her discovery of the glymphatic system, which effectively removes toxins from the brain, reveals promising new pathways for the treatment of Alzheimer's and other neurodegenerative diseases.**

Maiken Nedergaard's discovery of the glymphatic system, a previously unknown brain clearance mechanism, has revolutionized the world of medicine. This system, which she first elucidated in 2012, plays an essential role during the nightly brain cleansing. It removes toxic metabolic waste – including  $\beta$ -amyloid, which is characteristic of Alzheimer's disease – and thus makes an important contribution to brain health. Her work at the University of Rochester and the University of Copenhagen has not only broadened our understanding of how sleep supports brain function; it has also revealed potential new treatment approaches for a number of neurodegenerative diseases.

An international jury selected Professor Nedergaard from a large pool of excellent nominations for the 50,000-euro prize. Awarded annually by the Schering Stiftung, the Ernst Schering Prize honors scientists worldwide whose pioneering research has yielded new, inspiring models or led to fundamental shifts in biomedical knowledge. Prof. Dr. Max Löhning, Chairman of the Foundation Council of the Schering Stiftung, emphasized: "The work by Maiken Nedergaard has fundamentally changed our understanding of the brain's self-regulating and self-care abilities. Through her innovative research, Prof. Nedergaard has not only deepened the medical understanding of neurodegenerative diseases but also shown concrete ways for their treatment. Her work is a shining example of the role of basic research in the implementation of medical innovations."

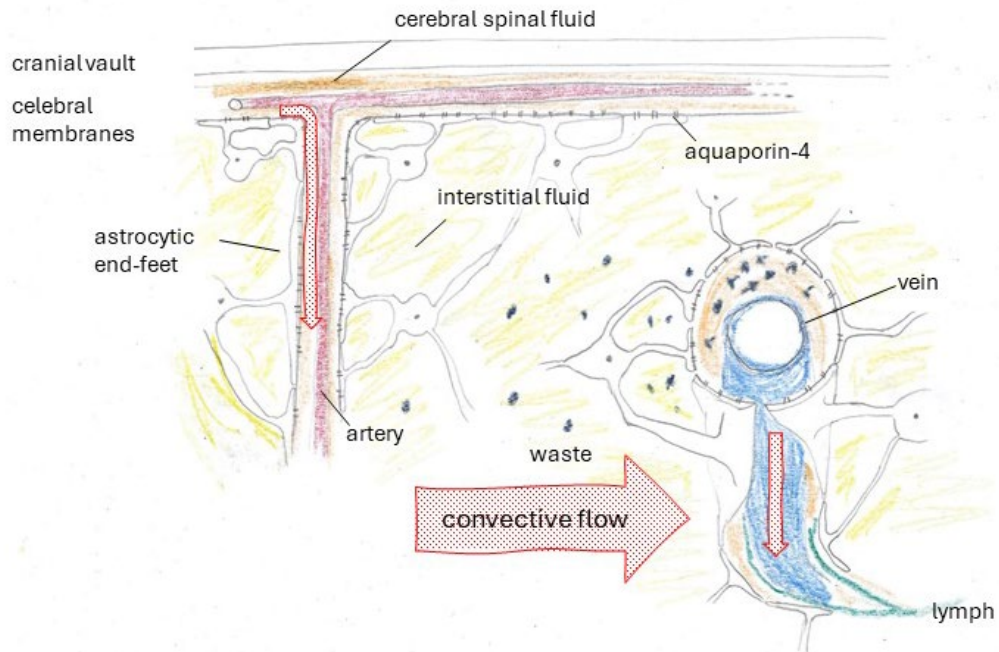
Prof. Dr. Ulrich Dirnagl, Department of Neurology and Experimental Neurology at Charité Universitätsmedizin Berlin, Germany and BIH QUEST Center for Responsible Research, Berlin Institute of Health at Charité, commented: "From the very beginning of her career, Maiken Nedergaard has been a pioneer in neuroscience, conducting fundamental experimental research with a steadfast focus on clinical problems. She has revolutionized our understanding of brain health and disease, illuminating crucial mechanisms of brain function and opening new avenues for treating neurological disorders, ranging from Alzheimer's disease to stroke." As part of the award ceremony, he will engage in a conversation with Maiken Nedergaard about the future of the neurosciences. The discussion promises to provide exciting insights into the next generation of research and to stress the importance of continuous innovation in this field.

#### Background Information

Maiken Nedergaard has fundamentally transformed our understanding of brain functions and their self-regulation. Her research has shown that the human brain has its own waste elimination system, the glymphatic system, which works in ways similar to the lymphatic system in other body parts. Mostly active during sleep, this system efficiently removes neurotoxic metabolites such as  $\beta$ -amyloid and thus plays a crucial role in the treatment of Alzheimer's disease.

Before 2012 it was unclear how the brain removes waste, as there was no known direct connection to the lymphatic system. Nedergaard's pathbreaking discovery changed this. She showed that aquaporin-4, a protein forming water channels in the astrocytic end-feet, is essential for the flow of cerebral spinal fluid that collects and eliminates metabolic tissue waste. The insight that the glymphatic system is mainly active during sleep provides a new perspective on why sleep is so important for brain health.

This research has far-reaching implications since inefficient waste removal is linked to the progression of neurodegenerative diseases such as Parkinson's and Alzheimer's. Nedergaard's work not only provides new insights into fundamental physiological processes; it also offers innovative approaches for the diagnosis and treatment of neurodegenerative disorders, opening the door for new therapeutic strategies and providing the basis for future research.



**Maiken Nedergaard, M.D., D.M.Sc.**, is Dean's Professor and Co-director of the Center for Translational Neuromedicine at the University of Rochester Medical Center in Rochester, NY, as well as Professor of Glial Cell Biology at the Center for Neurosciences at the University of Copenhagen in Denmark. Her research interests range from neuron-glia interactions to the role of astrocytes in aging, small vessel diseases, stroke, and cerebral blood flow. Dr. Nedergaard is an elected member of the Royal Danish Academy of Sciences and Letters, the Royal Academy of Pharmacy of Spain, and Academia Europaea. In 2023, she received the 21st Perl-UNC Neuroscience Prize and the Anders Jahre Award for Medical Research.

Maiken Nedergaard's research focus is explored in a thematic partnership with [dasGehirn.info](https://www.dasGehirn.info), making her work accessible to a wide audience through various contributions.

## Program

### Monday, November 11, 2024

**10:00 a.m. (not open to the public):** High-school lecture for students, Schulfarm Insel Scharfenberg  
*Nightlife of the Brain*

**5:00 p.m.:** Public scientific lecture  
*The Glymphatic System in Health and Disease*

**Where:**  
Charité Campus Mitte  
Lecture Hall Ruin at the Berlin Museum of Medical History  
Virchowweg 16, 10117 Berlin

In English.

### Tuesday, November 12, 2024

**5:00 p.m.:** Ernst Schering Prize Lecture, Maiken Nedergaard, M.D., D.M.Sc.,  
*The Glymphatic System*

**6:00 p.m.:** Award Presentation  
Conversation between Laureate and Prof. Dr. Ulrich Dirnagl

**Where:** Berlin-Brandenburg Academy of Sciences and Humanities  
Leibniz Hall

Markgrafenstr. 38, 10117 Berlin

Registration required. Please register by November 3, 2024 at [www.scheringstiftung.de/Preisverleihung2024](http://www.scheringstiftung.de/Preisverleihung2024)

**More Information**

Press information and images related to Laureate Maiken Nedergaard can be found at <https://scheringstiftung.de/de/presse/>.

**Press Contact:**

Nicole Tanzini di Bella

Schering Stiftung

Unter den Linden 32-34

10117 Berlin

Phone: +49 (0)30-20 62 29-67

[press@scheringstiftung.de](mailto:press@scheringstiftung.de)