

PRESS RELEASE

Curing neurological diseases during sleep

Randolph Helfrich receives the Ernst Jung Career Advancement Award for Medical Research 2021 for his studies on brain activity during sleep

Hamburg, 20 May 2021. How neurological diseases are associated with our brain activity during sleep and the diagnostic and therapeutic methods that can be derived from this – these are the research topics of Dr. Dr. med. Randolph Helfrich. The young physician who completed two doctorates in Hamburg now receives the Ernst Jung Career Advancement Award for Medical Research 2021 from the Jung Foundation for Science and Research in Hamburg. The award will support his academic work at the University of Tübingen over the next three years with a total amount of €210,000.

Healthy sleep is essential for optimal cognitive performance. Each and every one of us has no doubt experienced how a single restless night can affect our concentration, motivation and mood. It is therefore not surprising that neurological disorders are also associated with changes in sleep, such as epilepsy, Alzheimer's or Parkinson's, right up to the normal cognitive ageing process. 'Often, these types of changes in sleep can be observed several years before the onset of the actual disease,' says Randolph Helfrich. However, the research appears to be dealing with the classic 'chicken-and-egg problem' here. Helfrich: 'What's unclear is: are these sleep disorders a consequence of neuropsychiatric illnesses or do they contribute to their development? The same applies to sleep disorders in old age – it is often assumed that older people simply need less sleep. Recent evidence, on the other hand, suggests that their sleep is more prone to disruption and sleep disturbances may be an early symptom of neurodegenerative disease.'

Understanding the relationship between sleep, cognitive performance and pathogenesis

Randolph Helfrich contributed to an improved understanding of the underlying physiology with his work at the Helen Wills Neuroscience Institute at the University of California in Berkeley. ‘Rhythmic brain activity, which occurs in particular during sleep, appears to play an important role,’ he explains. Helfrich demonstrated that new memories can only be stored if these rhythms interact optimally during sleep. He also demonstrated that these sleep rhythms enable direct communication between parts of the brain and thus support the transmission of memory content. In older people or those suffering from epilepsy, for example, this mechanism can be disturbed, which can lead to memory deficits.

Ernst Jung Career Advancement Award support’s Helfrich’s research

In his next project, which will now be supported by the Career Advancement Award of the Jung Foundation, the 34-year-old physician wants to establish methods that can potentially be used for the diagnosis of neurological diseases. ‘In the future, it may even be possible to bring the brain rhythms back into the correct rhythm through electrical stimulation, for example, and to use this as a therapy,’ says Helfrich. He will carry out the scientific work at the Hertie Institute for Clinical Brain Research at the University of Tübingen while he continues his training there to become a specialist in neurology. He graduated in Medicine from the University of Tübingen, before completing his doctorate in neurology at the University of Hamburg along with his Ph.D. in cognitive neurobiology.

The Ernst Jung Career Advancement Award now represents a considerable step forward in his career. ‘The Jung Foundation award is unique. It gives young doctors who are enthusiastic about research the opportunity to pursue project ideas completely independently,’ says Helfrich. ‘Unlike state

funding, the award money can be used flexibly. It allows me to work on new, less established ideas. In addition, it's one of the few awards that is aimed explicitly at physicians in the early stages of their careers and gives them the time to devote themselves to research alongside their specialist field. The award is therefore an important link between basic and applied research.' The Jung Foundation has been committed to the advancement of human medicine for over 40 years. With the Ernst Jung Career Advancement Award as well as two additional awards, the Foundation provides more than half a million euros each year for the benefit of science.

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About the Jung Foundation for Science and Research

The Jung Foundation for Science and Research, based in Hamburg, was founded by the Hamburg entrepreneur Ernst Jung in 1967. Its work, led by chairman Jochen Spethmann, aims to advance human medical research, promote new therapies and strengthen Germany as a centre of science. Each year, the Foundation awards three awards with these goals in mind, which, with an overall prize fund of €540,000, are among the most highly endowed medical prizes in Europe: the Ernst Jung Prize for Medicine, the Ernst Jung Gold Medal for Medicine and the Ernst Jung Career Advancement Award for Medical Research. Talented young physicians can apply directly for the Career Advancement Award. The candidates for the other awards are nominated.

For more information, visit www.jung-stiftung.de

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