

Healthcare industry BW

Why we remember and forget

What happens in our brain when we see things, when we think, when we remember things and when we forget them? Prof. Dr. Hannah Monyer, Director of the Department of Clinical Neurobiology at the University Hospital in Heidelberg, has been working on the molecular principles of conscious awareness and memory for many years. Her scientific work, which has generated considerable insights in this field, is to be funded by the European Research Council (ERC) for the next five years with an “Advanced Investigator Researcher Grant” totalling 1.87 million euros.



Prof. Dr. Hannah Monyer, Director of the Department of Clinical Neurobiology at the University Hospital of Heidelberg
© University Hospital Heidelberg

Prof. Monyer is specifically interested in the interneurons, which constitute about ten per cent of all

brain cells. "The interneurons kind of act as orchestra conductors for the brain by synchronising the entire networks of other brain cells. They use GABA (gamma aminobutyric acid) as transmitter. The team of researchers from Heidelberg is investigating the molecular makeup of interneurons and their importance in the control of brain functions. Mice whose interneurons were genetically modified revealed altered cognitive abilities, for example reduced memory. "We are looking at the alterations at many levels including molecular as well as behavioural," said Professor Monyer.

The GABAergic interneurons are of particular interest to the researchers because they not only produce the most important inhibitory neurotransmitter GABA, but are also able to synchronise the activity of numerous principal neurons. The synchronicity of nerve cell ensembles is a mechanism that explains the development of coherent representations in the brain. Partial features of a perceived objective can be combined into a sensible whole by nerve cells that recognise these features and synchronise their activity. Temporal aspects of neuronal activity play an important role in the development of the representation of the outside world as well as in other cognitive activities such as learning, memory and attentiveness. The laboratory work focuses on the identification of key genes, whose expression in GABAergic interneurons enables the regulation and modulation of synchronous and oscillatory network activity. Hannah Monyer's research group at the Neurological Hospital at the University of Heidelberg is also interested in the function of glutamate receptors in terms of their development-dependent plasticity and for the part they play in pathological processes (e.g., ischaemia, epilepsy).

Excellence and experience are important selection criteria

Monyer's project "Linking GABAergic neurones to hippocampal-entorhinal system functions" was selected by the ERC at the end of 2009 from more than 1,500 research applications from the natural and engineering sciences, social sciences, humanities and life sciences from 18 European countries. Only 236 projects were successful. All applicants are required to have comprehensive research experience, to have published numerous papers in renowned international journals and to have already received international awards. The sole selection criterion for both the researchers and their projects is excellence.

Professor Monyer was awarded a Schilling professorship at the University of Heidelberg in 1999 where she became head of the Department of Clinical Neurobiology. In 2004, she was awarded the Gottfried Wilhelm Leibniz Prize by the German Research Foundation, which is the most lucrative of all German awards. Besides focusing on neurobiological research, Monyer is extremely keen to bring science to a wider public as well as maintaining a dialogue with other scientific disciplines and the humanities.

Further information:

Prof. Dr. Hannah Monyer
Medical Director
Department of Clinical Neurobiology
Im Neuenheimer Feld 364
69120 Heidelberg
Tel.: +49 (0)6221 / 56 24 01
Fax: +49 (0)6221 / 56 13 97

Press release

16-Apr-2010

Source: Universitätsklinikum Heidelberg (09.04.10)



UniversitätsKlinikum Heidelberg