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MAX-PLANCK-ZENTRUM
FÜR PHYSIK UND MEDIZIN

Ein gemeinsames Forschungszentrum mit der
FAU und dem Universitätsklinikum Erlangen



Another ERC grant for brain research goes to Professor Tomohisa Toda in Erlangen

Tomohisa Toda, Professor of Neural Epigenomics at Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) has been awarded another European Research Council (ERC) grant to investigate the roles of long-lived nuclear RNA in the maintenance of brain function and brain ageing. Most of his research will take place in the laboratories of the Max-Planck-Zentrum für Physik und Medizin (MPZPM), a cooperative project of FAU, the University Hospital Erlangen and the Max Planck Institute for the Science of Light, with which the neuroscientist is affiliated.

In an important step towards unraveling the secrets of the human brain, Professor Tomohisa Toda has once again been awarded a prestigious ERC grant. The aim of the research project is to investigate the role of nuclear RNA in long-term epigenetic regulation in the brain.

Most Neurons in the human brain are there from birth and can only be replaced to a very limited extent through a lifetime. Since their normal functioning is often essential for viability, they must be particularly robust. "Understanding the basic mechanisms for the longevity and persistence of neurons is key to preventing and treating age-related neurological diseases," says Professor Toda.

Professor Toda and his research group have already investigated the epigenetic mechanisms underlying the long-term function of nerve cells as part of a previous ERC grant (EAGER). Epigenetics refers to cellular processes which influence gene activity but are not based on changes in the DNA sequence.



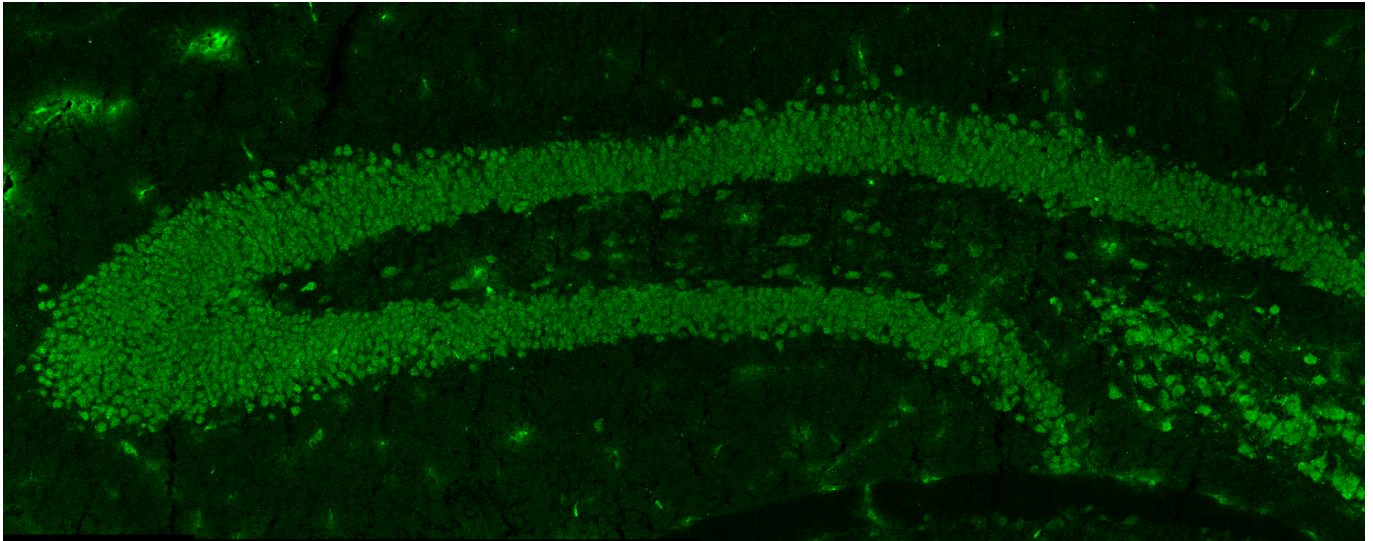
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Professor Tomohisa Toda will use his ERC grant to investigate the role of nuclear RNA in maintaining brain function and in brain ageing.

"My team was able to uncover several protein-based mechanisms that are responsible for the long-term function of nerve cells," explains the neuroscientist. The team also discovered that certain nuclear RNA, a type of RNA found in the cell nucleus, may be involved in long-term epigenetic regulation. With the newly awarded grant (NEUTIME), they can now expand their research and focus in particular on the involvement of specific RNA in the neuronal nuclei.

Professor Toda's lab will use NEUTIME to investigate the role of this long-lived RNA in maintaining brain function and in the ageing process.





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A green signal colors neuronal nuclei in the hippocampus of a mouse brain.

Toda: "Our goal is to gain deeper insights into epigenetic regulation by RNA. We also want to find out when RNA metabolism leads to biological dysregulation and ultimately to age-related neurological diseases - and what we might be able to do about it."

The Max-Planck-Zentrum für Physik und Medizin is conceived as a joint effort between the Max Planck Institute for the Science of Light (MPL), the Friedrich Alexander University (FAU) and the FAU University Hospital in Erlangen. The new scientific center aims to apply advanced methods from experimental physics and mathematics to basic biomedical research with an emphasis on the intercellular microenvironment.

