



Press Release

Plant geneticist Chang Liu receives a European Research Council Starting Grant

The researcher from the University of Tübingen investigates 3D structures of plant DNA and the implications for cell function

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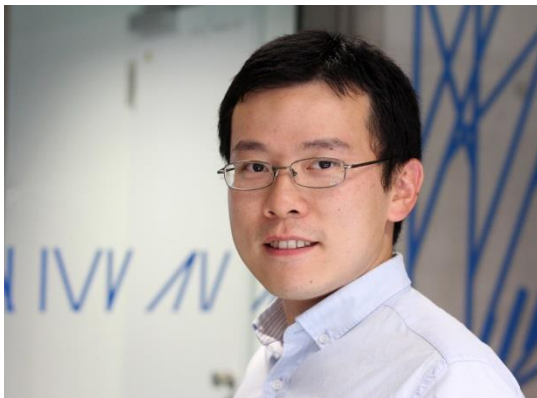
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Dr. Chang Liu.
Photo: Friedhelm Albrecht/ University of Tübingen

Dr. Chang Liu, junior research group leader at the Center for Plant Molecular Biology at the University of Tübingen, receives a Starting Grant of the European Research Council (ERC). His research project in Genetics “Chromatin Packing and Architectural Proteins in Plants” (CHROMATADS) will get 1.5 million euros over the next

five years. The ERC, a public body for funding of scientific and technological research within the European Union, assigns Starting Grants to young researchers with 2-7 years of experience since completion of PhD. Grants are awarded on the basis of excellent research work and innovative potential of the proposed research projects.

When fully stretched, the DNA of a cell might span meters. In reality, the DNA is folded and packed inside a nucleus, which is just a few micrometers in diameter – a micrometer being a millionth of a meter. The packed DNA together with other associated molecules, such as proteins and RNAs, is called chromatin. An investigation of how the chromatin is organized in a living cell, shows that it has a three-dimensional structure: Some regions are tightly packed, while some are relatively loose and accessible to many regulatory factors. Besides, some regions can be in physical contact with each other, regardless of the distance in the linear DNA. “These three-dimensional conformations of chromatin are highly relevant to the transcriptional profile of cells, that is which genes are active at a given moment, which in turn substantially determine how cells

function,” Chang Liu explains. Recently, research in the animal field has greatly advanced the researchers’ understanding of 3D chromatin structures. “In contrast, relevant work in plants has been much delayed, which is due to the lack of our knowledge of plant-specific factors regulating chromatin folding and organization.”

In his ERC project CHROMATADS, Chang Liu aims to fill this knowledge gap with state-of-the-art methods in both Molecular Biology and Computing. He envisages that this project will achieve a significant advancement in plant functional genomics, and will open many new directions of fundamental research related to chromatin structure and transcriptional regulation in plant science. “It will also represent a critical step in genetic engineering of crops, which aims for generating new varieties with stable agronomic traits,” he adds.

Dr. Chang Liu studied Life Sciences and obtained his Bachelor’s and Ph.D. degrees at National University of Singapore. In his Ph.D. thesis he investigated plant genes regulating the flowering time and flower development. After graduation, he continued his research in plant science as a Research Fellow at Temasek Life Sciences Laboratory in Singapore, and later as a Research Fellow of the Marie Skłodowska-Curie actions, a grant program of the European Union, at the Max Planck Institute for Developmental Biology in Tübingen. Chang Liu started his own plant genetics research group at the Center for Plant Molecular Biology at the University of Tübingen in September 2015.

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