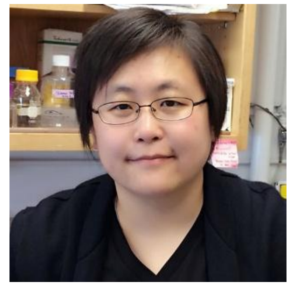
Decoding RNA language in plants

Prof. Yiliang Ding



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Abstract

RNA structure plays an important role in the post-transcriptional regulations of gene expression. Using in vivo RNA structure profiling methods, we have determined the functional roles of RNA structure in diverse biological processes such as mRNA processing (splicing and polyadenylation), translation and RNA degradation in plants. We also developed a new method to reveal the existence of tertiary RNA G-quadruplex structures in eukaryotes and uncovered that RNA G-quadruplex structure serves as a molecular marker to facilitate plant adaptation to the cold during evolution. Additionally, we have developed the single-molecule RNA structure profiling method and revealed the functional importance of RNA structure in long noncoding RNAs. Recently, we established a powerful RNA foundation model, PlantRNA-FM, that facilitates the explorations of functional RNA structure motifs across transcriptomes.

Biography

Professor Yiliang Ding FRSB has been a group leader with tenure at the John Innes Centre since 2014, focusing on RNA structure functionality in living cells. She also holds positions as an Honorary Group Leader at the Babraham Institute and an Honorary Professor at the University of East Anglia. Ding completed her bachelor's degree at Shanghai Jiao Tong University in 2005 and her PhD at the John Innes Centre in 2009. Professor Ding was a postdoc researcher at Penn State University from 2010 to 2013. Professor Ding's innovative methods for profiling RNA structures in living cells have delivered new insights into the functional roles of RNA structures in gene regulation. She has received several prestigious awards and grants, such as BBSRC David Phillips Fellowship, three ERC grants and Royal Society Faraday Fellowship. Professor Ding is one of the nine recipients of the 2024 Blavatnik Awards for Young Scientists in Life Sciences in the UK.