

# Precise RNA targeting and manipulation

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### Abstract

As a central molecule in the flow of genetic information, RNA plays essential roles in cellular processes including protein synthesis, gene regulation, and signalling. The presenter has long been dedicated to research in RNA chemical biology, focusing on the development of RNA modification detection technologies, the functional investigation of RNA modifications, and the application of RNA modification-based interventions in physiological and pathological conditions, achieving a series of significant findings. Regarding the development of RNA modification detection technologies, various methods have been developed for the quantitative and unbiased detection of multiple RNA modifications, such as m<sup>6</sup>A, m<sup>6</sup>Am, and Ψ, based on specific enzymatic reactions and chemical small-molecule catalytic systems. In terms of the functional study of RNA modifications, the roles and mechanisms of pseudouridine and m<sup>1</sup>A modifications have been elucidated in various physiological and pathological processes, including cancer, aging, and immune responses. Furthermore, in the context of RNA modification-based interventions, an efficient base editor has been developed for effective RNA editing, and preliminary explorations into therapeutic strategies for genetic diseases have been conducted.

### Biography

Prof. Chengqi Yi is a Professor at Peking University, a recipient of the National Science Fund for Distinguished Young Scholars and the first batch of recipients of continued funding, and a leading talent in scientific and technological innovation under China's National High-Level Talents Special Support Program. He earned his B.S. in Chemistry from the University of Science and Technology of China in 2005 and his Ph.D. in Chemistry from the University of Chicago in 2010, followed by postdoctoral research in the Department of Biochemistry and Molecular Biology at the University of Chicago. He joined Peking University in December 2011 as a faculty member of the School of Life Sciences and the Peking-Tsinghua Joint Center for Life Sciences, and became a jointly appointed professor with the College of Chemistry and Molecular Engineering in 2014. Prof. Yi received the National Excellent Young Scientists Fund in 2015, the National Distinguished Young Scientists Fund in 2018, and the renewal award in 2024. He was selected for the National "Ten Thousand Talents Program" in 2019, became Chief Scientist of a National Key R&D Program in 2023, and joined the Beijing Institute for RNA Research in 2024.

He currently serves as Deputy Director of the National Key Laboratory of Gene Function Research and Regulation.

Prof. Yi's research focuses on nucleic acid modifications, particularly in the quantitative detection, functional analysis, and precise manipulation of RNA modifications. His group has made pioneering contributions to the field of epitranscriptomics, publishing over 60 papers as corresponding author in *Nature*, *Nature Biotechnology*, and other leading journals. His team's RNA modification detection method was named a "Method of the Year 2016" by *Nature Methods* and selected as *Molecular Cell*'s "Best Paper of 2017", while their RNA editing technology was recognized as *Molecular Cell*'s "Best Paper of 2023". Prof. Yi has received numerous honors, including the Chinese Chemical Society–Royal Society of Chemistry Young Chemist Award, the Zhongyuan Concord Life Science Award for Innovative Breakthroughs, the Mao Yisheng Beijing Youth Science and Technology Award, the China Youth Science and Technology Award, and the Xplorer Prize.