



## Nuclear Condensates in Gene Regulation and Disease



### Prof. Richard A. Young

Professor of Biology, Whitehead Institute/MIT  
National Academy of Sciences  
National Academy of Medicine

### Abstract

Nuclear processes such as transcription, splicing and chromosome maintenance depend on the concerted action of many protein and RNA molecules. Recent studies have shown that many nuclear processes occur within biomolecular condensates, which compartmentalize the community of protein and RNA molecules involved in each process, typically at specific genomic loci. I will discuss the features of condensates that provide the cell with regulatory capabilities beyond canonical molecular regulatory mechanisms, note where these are dysregulated by pathological mutations, and explain how our new understanding of chemical partitioning is influencing the development of new therapeutics for cancer and other diseases.

### Brief Introduction

Richard Allen Young is an American geneticist, a Member of Whitehead Institute, and a professor of biology at the Massachusetts Institute of Technology. He is a pioneer in the systems biology of gene control who has developed genomics technologies and concepts key to understanding gene control in human health and disease. He has served as an advisor to the World Health Organization and the National Institutes of Health. He is a member of the National Academy of Sciences and the National Academy of Medicine. Scientific American has recognized him as one of the top 50 leaders in science, technology and business. Young is among the most Highly Cited Researchers in his field.

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网络报告：Zoom 679 138 6278 (密码：Ua8mDb)

邀请人：陈鹏 教授 季雄 研究员



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