RNAs in Molecular Crowding World

Professor Naoki Sugimoto[1,2]

[1]FIBER (Frontier Institute for Biomolecular Engineering Research), and [2]FIRST (Graduate School of Frontiers of Innovative Research in Science and Technology), Konan University, Kobe, Japan.

Abstract

Non-canonical structures of nucleic acids such as a triplex and a quadruplex are stabilized under conditions that mimic the crowded cellular conditions and have been detected in cells. It is possible that the non-canonical structures act as "functional codes" triggered by different molecular environments that regulate gene expression epigenetically.

In this lecture, I will talk how the structures, properties, and functions of nucleic acids differ under various conditions such as highly crowded environments and affect the gene expression (1). I also discuss quantitatively the effects of the chemical environments, especially crowding condition, on the gelation process of repeated RNAs *in vitro*, and the toxicity of RNAs in patients with neurodegenerative disorders.

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