

Special Issue on
Function of Transient Structures of Nucleic Acids

CALL FOR PAPERS

Biomolecules have contributed to build up the vital system of organisms. Among those, RNA/DNA and peptides/proteins were crucially important. Since the findings of the double helix of DNA and Hb/Mb 3D structures in the mid-20th century, structure-based biology has remarkably progressed up to the current state of the knowledge on lives. Naturally, the findings on biological phenomena at the molecular level had been performed on the stable structures of nucleic acids and proteins, employing X-ray crystal structure analysis, NMR analysis, and others. Owing to those studies, substantial amount of findings had been done until now. At the same time, unstable structures, long put aside, have been spotlighted owing to the accumulation of puzzling related phenomena and technological advances.

There is a growing tendency for tackling this tough problem. This was accelerated by the recent discovery of miRNA and ncRNA at large and universal IDPs (intrinsically disordered proteins). This field is necessarily involved in short lifetime phenomena of milliseconds to picoseconds. Thus, highly sensitive detection methods and/or ingeniously sophisticated approaches are required. Unfortunately, this important field has not been integratively overviewed up to present although related findings have been accumulating. This special issue is to try to contribute to the advance of this field by widely collecting buried excellent works.

Potential topics include but are not limited to the following:

- ▶ Introduction to this special issue
- ▶ Short lifetime structures observed in RNA
 - ▶ mRNA
 - ▶ rRNA
 - ▶ miRNA
 - ▶ Noncoding RNAs in general
- ▶ Short lifetime structures observed in DNA
 - ▶ Single stranded DNA
 - ▶ Man-made DNA (aptamers)
 - ▶ Deoxyoligonucleotides
- ▶ Detection methods and applications
 - ▶ Instrumental approach
 - ▶ Single-molecule spectroscopy
 - ▶ Digital quantification
 - ▶ Computational approach
 - ▶ Experimental and theoretical approach
- ▶ Function of short lifetime structures at large
 - ▶ Case of polypeptides
 - ▶ Case of nucleic acid

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