HOKKAIDO UNIVERSITY

～講演会のご案内～

モントリオール大学の Pascale Legault 教授による講演会を企画いたしました。Legault 教授は、RNA の機能構造解析において、多くの顕著な業績を上げておられます。先生の RNA 研究について、興味深いお話が伺えるものと思います。多数のご参加をお待ちしております。

演 題: “Structure and RNA engineering of a small nucleolytic ribozyme”

講 師: **Prof. Pascale Legault**
(Université de Montreal, Canada)

日 時: **2015 年 7 月 23 日（木）15:00～16:00**

場 所: 理学部 6 号館 6-204-02 室（多目的演習室）

共 催: 北海道大学大学院総合化学院，フロンティア化学教育研究センター
日本生化学会北海道支部，日本化学会北海道支部

要 旨:

Despite the increased awareness of the importance of RNA in biology, structural information is needed on many RNA molecules to improve our understanding of their function and better exploit their potential for biomedical applications. The overall goal of my laboratory is to correlate RNA structure with function in order to help develop RNA-based therapeutics and diagnostic agents. For this research seminar, I will first give an overview of the research projects in my laboratory and then focus on our most recent results pertaining to the structural, biophysical and engineering studies of the Neurospora VS ribozyme.

The VS ribozyme is a natural RNA enzyme that provides an ideal system for structure-function study of RNA. In addition, it has the unique ability among small nucleolytic ribozymes to cleave a stem-loop substrate, and thus has the potential to be engineered to cleave other stem-loops as part of folded RNAs. Although this ribozyme has been known for over 25 years and studied extensively by biochemical and biophysical methods, investigation of its complete high-resolution structure has been challenging. Our laboratory has successfully used a divide-and-conquer approach for structural characterization, which consists of determining NMR structures of individual subdomains with the ultimate goal of building a structure of the full VS ribozyme based on the structures of these individual subdomains. I will present a summary of our research progress and the advantages of NMR spectroscopy in the characterization of the high-resolution structure and dynamics of the VS ribozyme. In addition, I will describe our progress on the engineering of VS-derived ribozymes for specific cleavage of non-natural substrates. Our structural and engineering studies impact not only on our understanding of the VS ribozyme and its potential use for biomedical and biotechnological applications, but also help delineate fundamental principles of RNA structure and engineering.

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