
The 155th iCeMS SEMINAR

Wed 05 February 2014
15:00-17:00

Aptamers: a world of structural and functional oligonucleotide diversity

Lecturer: **Prof Jean-Jacques Toulmé**

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Venue: **2nd Floor Seminar Room (#A207)**
iCeMS Main Building (#70), Kyoto University

Aptamers are oligonucleotides identified in large randomly synthesized libraries containing up to 10¹⁵ different oligomers, through in vitro selection, a process known as SELEX (Systematic Evolution of Ligands by EXponential enrichment). Aptamers have been successfully raised against a wide range of targets: amino acids, nucleic acid bases, proteins, intact viruses and live cells. They generally display a high efficiency of binding thanks to their 3D shape resulting from intramolecular interactions. We raised aptamers against many different target molecules, such as foldamers or biomarkers of human tumors. Following physico-chemical characterization, structural investigation, truncation and optimization these aptamers were converted into biotechnological tools such as probes for imaging brain tumors. We also developed methodologies for improving the selection process, a tedious and slow process. The use of in house assembled automated platforms and of functional screening speeds up the identification of aptamers. Aptamers are of high interest for analytical purposes as well as for therapeutic application.

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