



BİLKENT UNIVERSITY
MOLECULAR BIOLOGY AND GENETICS
DEPARTMENTAL SEMINAR

“Oligonucleotide aptamers: emerging affinity probes for bioanalytical mass spectrometry and biomarker discovery”

Assoc. Prof. Basri Gülbakan

Pediatric Basic Sciences, Division of Metabolism
Institute of Child Health, Hacettepe University

Selective isolation of biological important molecules and their functional characterization is one of the primary goals of bioanalytical chemistry. Several different affinity tools such as antibodies, affimers, nanobodies, DARPins have been explored to achieve these goals. In recent years, oligonucleotide based affinity tools called aptamers have become progressively attractive and the research in this area has seen an exponential increase. Aptamer probes have been explored in many different areas of bioanalytical chemistry such as electrical and optical biosensor development, targeted drug delivery, logic gates, DNA nanotechnology, point of care diagnostics. However aptamers are still largely overlooked in mass spectrometry (MS) and biomarker discovery. After the completion of human genome project, the focus has shifted towards functional genomics and to understand the living systems by deciphering the functions of proteins and metabolites. Therefore identification and functional characterization of these molecules is of utmost importance. While identification of isolated biomolecules and analysis of simple biological mixtures using MS has become relatively simple, the power of MS gradually decreases as the complexity of the biological mixtures increases. Therefore development of selective and targeted approaches is at the forefront of mass spectrometry. Aptamers have great potential in affinity mass spectrometry to improve selectivity, specificity and throughput. This talk will discuss the development of new oligonucleotide aptamer-based MS methods. Specifically, aptamer-decorated nanostructures and their applications in analyzing real biological samples and next generation native mass spectrometry methods for biophysical characterization of aptamer-ligand interactions will be discussed.

Date-Time : Wednesday, October 19, 2016 – at 15:40

Place : SBZ-14

Host : Serkan Göktuna