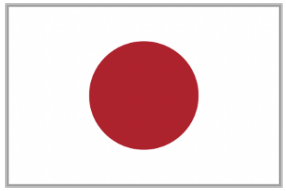


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SERIES 77

Dr. Madhu Biyani

Series – 77

Date and Time : 2022-06-29 (15:30 - 16:30 JST | 12:00 - 13:00 IST)
Venue : Zoom
Speaker : Dr. Madhu Biyani
Affiliation : Nano Life Science Institute
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DNA aptamers: A new window opened for cancer

The discovery of monoclonal antibodies (mAb) in the 1970s has been considered as a standard component of cancer therapy, however, the major challenges in the development and manufacturing of mAb did not achieve the expected results in cancer. Later, in the 1990s, SELEX (Systematic Evolution of Ligands by EXponential enrichment) technology was introduced to develop nucleic acid-based antibodies, called Aptamer, as an alternative of mAb. Owing to their unique qualities like as high specificity and binding affinity, low immunogenicity and toxicity, and ease in synthesis with high batch-to-batch reproducibility, aptamer technology has recently attracted a lot of attention as a promising alternative to antibodies A large number of aptamers have been identified to date, nonetheless, aptamers confront a significant obstacle in reaching clinical trials, mainly due to the selective recognition of cancer cells.

In this meeting, I will introduce our advanced selection technology, SELCOS (Systematic Evolution of Ligands by COmpetitive Selection), to overcome the challenges associated with the conventional SELEX method and describe the potential of SELCOS for obtaining the strong binders and inhibitory aptamers rapidly and selectively against potential cancer therapeutic biomarkers such as CYP24 and RNA binding proteins (e.g. ADAR1). I will also describe the Kanazawa University-in-built High Speed-Atomic Force Microscopy (HS-AFM) platform and molecular docking method for evaluating the “HIT” aptamer candidates rapidly and imaging the aptamer-protein dynamic complex for their real-time binding characterization and further directions for pre-clinical study. Overall, our findings clearly characterized and proposed that SELCOS-directed DNA aptamer molecules could be promising lead candidates for anticancer therapy.