



ALMA MATER STUDIORUM
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SCIENZE BIOMEDICHE E NEUROMOTORIE

JOURNAL CLUB 2020-INTERACTIVE HISTOLOGY
HEMATOPOIESIS, SIGNALING, BIOCHEMISTRY AND BEYOND

GEORG MAHLKNECHT

Aptamer Targeting ERBB Receptors in Cancer Therapy

June 7th 2021 - from 4PM - to 5PM (Italy time)

Online meeting on ZOOM

Organizers: Maria Luisa Genova, Mattia Lauriola, Anna Rita Migliaccio
Coordinator: Gisella Gaspari

Aptamers are promising therapeutic tools in the treatment of cancer and versatile molecules in biosensoristic platforms. In this presentation, evolutionary principles of aptamer selection will be described. Different qualitative aspects of aptamer generation with SELEX (Systematic Evolution of Ligands by Exponential Enrichment) and key concepts of aptamer characterization with biochemical methods and molecular biology techniques as well as sensoristic approaches will be discussed. Theoretical concepts of aptamer selection and application will be further explained with concrete examples of aptamer selections targeting the human epidermal growth factor receptor family (ERBB receptor family). The ERBB receptor signaling network has proven to be a highly relevant target in several therapeutic settings with small tyrosine kinase inhibitors and monoclonal antibodies. Combinations of these molecules have lead to additive and synergistic anti-tumoral effects in vitro and in animals. Unfortunately, some of these treatment strategies resulted in resistance mechanisms and toxicities. In this presentation, alternative combination strategies with antibodies and aptamers will be addressed that might broaden the spectrum of clinical cancer therapy.

Georg Mahlknecht is currently a researcher at the Consiglio Nazionale delle Ricerche (CNR Nanotec Lecce). He received his doctorate in cell biology from Technical University Munich (Germany). During his postdoctoral studies at the Weizmann Institute of Science in Israel he became interested in development and implementation of new therapeutic modalities in cancer therapy. Together with Prof. Michael Sela and Prof. Yosef Yarden he selected and characterized aptamers targeting oncogenic receptors of the human epidermal growth factor receptor family (ERBB receptors).

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