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SALA RIUNIONI "C. MUSATTI"

PNC DISTINGUISHED LECTURES

A talk by Cristina Alberini
(New York University, USA)

FROM BENCH TO BEDSIDE: MECHANISMS OF LONG-TERM MEMORY INFORM THE DEVELOPMENT OF NOVEL TREATMENTS FOR NEURODEVELOPMENTAL DISORDERS AND NEURODEGENERATIVE DISEASES



Insulin-like growth factor 2 (IGF2), a growth factor vital for development, has emerged as a key mechanism underlying synaptic plasticity, learning, and memory.

We will examine two main findings: 1) the origin and function of IGF2 and its high-affinity receptor (IGF2R) in the brain and specifically in learning and memory, and 2) the roles of IGF2 and IGF2R in several neurodegenerative diseases, including Alzheimer's disease (AD), Parkinson's disease (PD), Huntington's disease (HD), and amyotrophic lateral sclerosis (ALS), as well as neurodevelopmental disorders like Angelman syndrome. A common issue in these diseases, which feature cognitive impairments among other symptoms, is disrupted protein metabolism leading to the overaccumulation of specific proteins in the brain. While current therapeutic efforts aim to develop treatments by targeting the accumulated specific proteins, our data suggest that IGF2R acts as a master regulator of neuronal protein metabolism, addressing the root cause of these diseases.

We will discuss the development of a novel therapeutic approach focused on reactivating healthy neuronal functions important for brain plasticity and cognition. Administration of IGF2R agonists improves memory in healthy rodents and reverses cognitive deficits in aging rats, as well as alleviates core symptoms in various mouse models of neurodegenerative and neurodevelopmental disorders. We will discuss the mechanisms behind these promising therapeutic effects.



Cristina Alberini obtained her PhD in Immunological Sciences from the University of Genoa. She trained as a postdoctoral fellow at Columbia University, New York, with Prof. Eric Kandel. She is currently a Julius Silver, Roslyn S. Silver & Enid Silver Winslow Professor of Neural Science at New York University.

Cristina Alberini's research focuses on understanding the molecular and cellular mechanisms underlying the consolidation and strengthening of long-term memories, as well as memory retrieval and reconsolidation. The results of these studies provide important information for improving brain functions in healthy conditions and for developing potential therapeutics against cognitive impairments and psychopathologies.

Cristina Alberini has received the Hirschl-Weill Career Scientist Award, NARSAD Independent Investigator Award, Golgi Medal, Athena Award, MERIT Award, the 2018 Jacob K. Javits NYU Award, and the NYU Julius Silver, Roslyn S. Silver & Enid Silver Winslow Professorship, and is a Member of the American Academy of Arts and Science.