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## Research of natural compounds: The crossroads between promotion of health and prevention of age-related neurodegeneration with polyphenols to avoid the catastrophic cliff of neuronal failure

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Polyphenols are a large and diverse group of naturally occurring compounds widely distributed in many plant-derived foods and beverages. Polyphenols are receiving increasing attention for their potential role in the promotion of resilience in response to stress-induced psychological impairment and cognitive deterioration. In particular, preclinical evidence demonstrated the efficacy of certain polyphenols, acting either individually or in combination, to modulate multiple diverse mechanisms relevant to depression and anxiety, which also pose a risk to neurodegeneration such as Alzheimer's disease, implicating the potential for novel development of polyphenols for multi-target engagement. In spite of the increasing efforts committed to clinical testing of polyphenols, these efforts are hindered by limited knowledge of polyphenol bioavailability, specific forms of brain-bioavailable bioactive polyphenols (including polyphenol metabolites) and their underlying mechanisms of actions. The overall goal of this presentation is to provide an overview on the "state of the art" on the development of polyphenols and eventually their translation into the clinical setting. In particular, I will discuss the mechanistic implications of brain-bioavailable bioactive polyphenol metabolites in modulating key physiological processes that are relevant in preventative and therapeutic approaches to stress-induced psychological impairment and cognitive deterioration. Moreover, emerging evidence suggests that there is a pivotal role of the gastrointestinal microbiota in mechanisms associated with bioavailability of bioactive polyphenol metabolites. Based on this consideration, I will discuss novel evidence about the role of microbiota in modulating the bioavailability of bioactive phenolic acids from polyphenols. Collectively, in my presentation, I will critically discuss the current complex mosaic of evidence, which puts the investigation of brain-bioavailable bioactive polyphenols at the cross-roads between promotion of health and prevention of age-related psychological resilience and prevention of age related degenerative disorders.

### Biography

Giulio Maria Pasinetti is The Saunders Family Chair and Professor of Neurology, Psychiatry, Neuroscience, Geriatrics and Adult Development at the Icahn School of Medicine at Mount Sinai. He is also the Program Director of the NIH funded P50 Center on Molecular Integrative Neuroresilience focused on understanding the molecular mechanisms and pathophysiology that may be at the basis of stress-induced mood disorders, including anxiety, depression, and other neuropsychiatric disorders and their influence on cognitive dysfunction. He is the recipient of several academic awards, including the prestigious Zenith and Temple awards and the Foundation Queen Sofia of Spain Research Center Award on Alzheimer's disease. Most recently, he received The Faculty Council Award for academic excellence at Mount Sinai School of Medicine and The Charles Dana Alliance for Brain Research Award from the Dana Foundation, recognizing productivity and worldwide leadership in his field of expertise. He is the recipient of more than 30 NIH federal, industry and non-profit organization research grants and has published over 300 groundbreaking manuscripts.

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