

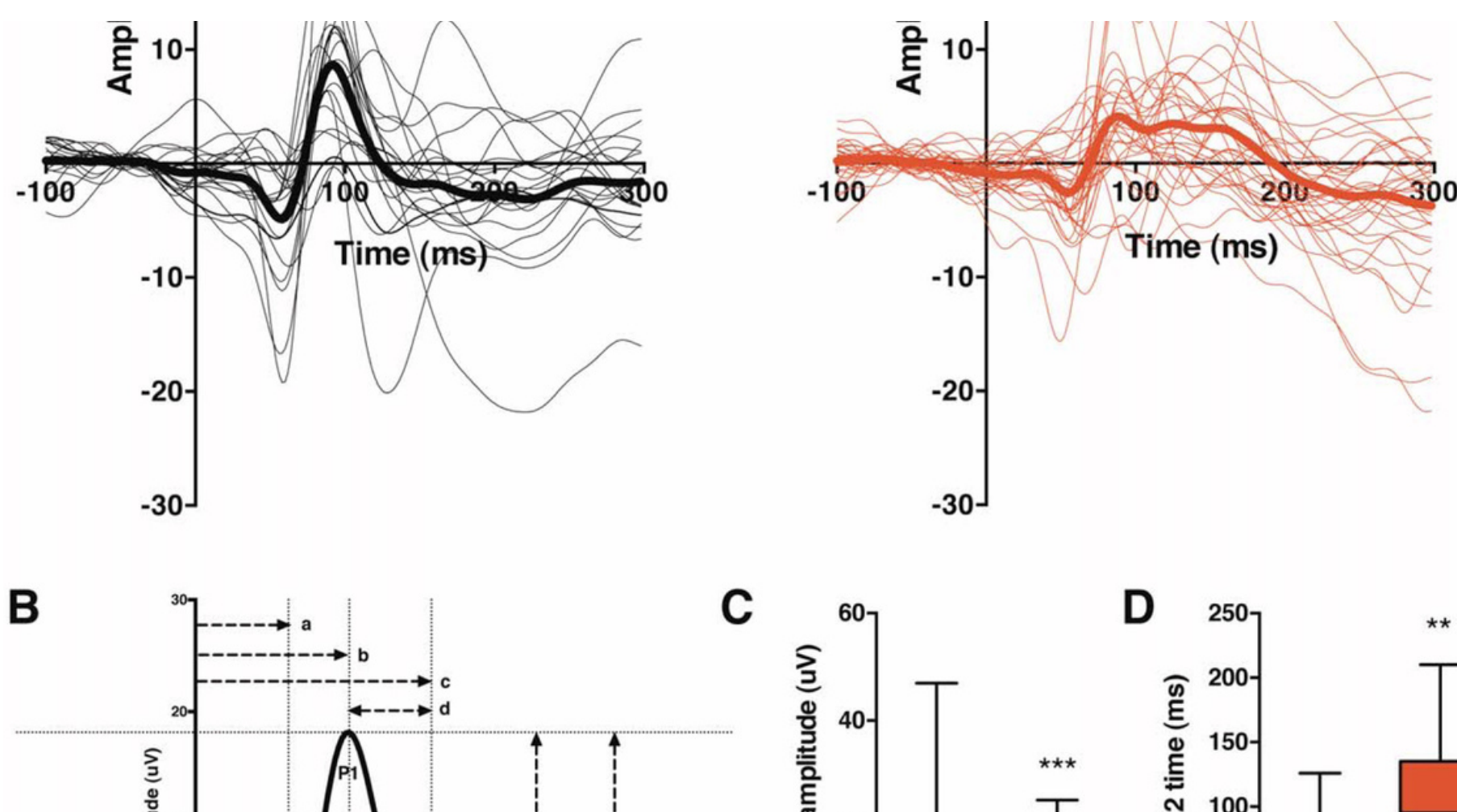
29 JUNE 2023, 3:00 PM
SALA SEMINARI VIMM

PNC DISTINGUISHED LECTURES

A talk by Michela Fagiolini

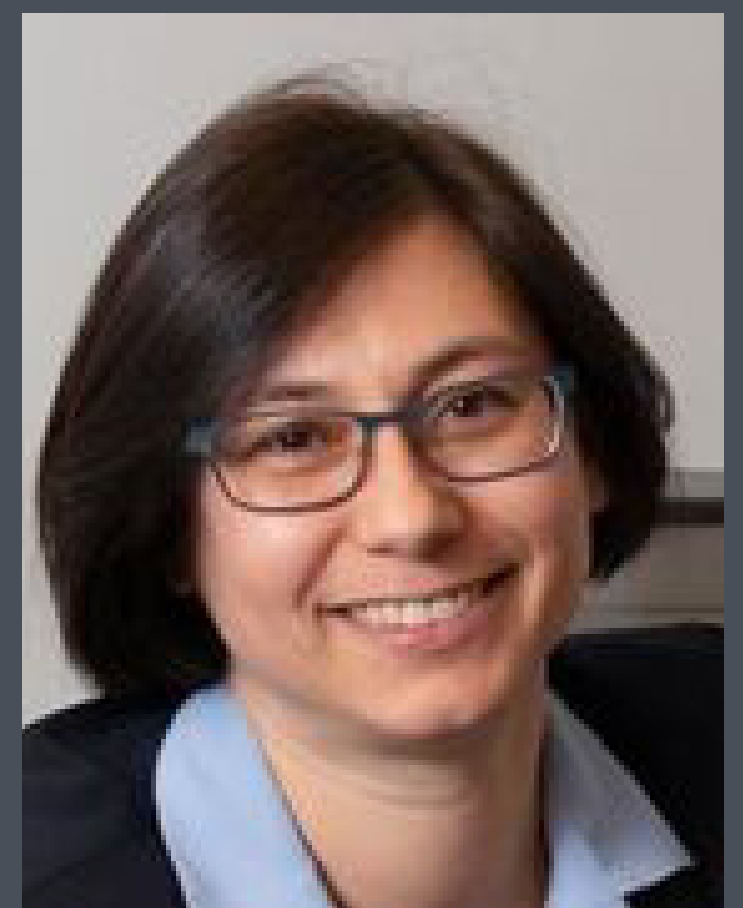
(Harvard Medical School & Boston Children's Hospital)

CIRCUIT DISSECTION IN NEURODEVELOPMENTAL DISORDERS FROM MOUSE TO HUMAN



Understanding the mechanisms underlying experience-dependent brain development and refinement in neurodevelopmental disorders can guide the design of effective target therapies. Over the past years, we have discovered a clear visual cortical phenotype in mouse models of Rett Syndrome (RTT), a monogenic neurodevelopmental disorder, and demonstrated its rescue by environmental, genetic, and pharmacological manipulation of the major inhibitory circuits, Parvalbumin-positive cortical circuits. These results reveal a specific role for MECP2 in the experience-dependent refinement of cortical circuits by regulating the excitation of pivotal inhibitory neurons.

In collaboration with the Rett Clinic at BCH, we have assessed the cortical function of the visual system in young girls with RTT and found significant morphological differences between groups, pointing to atypical development of early visual processing in patients similarly to what found in animal models. These results have paved the way to the identification and validation of visual evoked potentials as quantitative, noninvasive, and highly translational biomarkers for the early detection of developmental disorders. We will present our ongoing preclinical and clinical work investigating the impact of arousal on sensory processing in RTT.



Michela Fagiolini is Associate Professor of Neurology at Harvard Medical School and Associate in Neurology at Boston Children's Hospital. She serves as Specialty Chief Editor of *Frontiers of Neuroscience Neurodevelopment*.

Her work focuses on understanding how the brain develops and adapts to the external environment in health and disorders. Currently Prof. Fagiolini and her team are studying experience-dependent brain development in mouse models of autism spectrum disorders (ASDs). They are particularly focused on Rett Syndrome, and they are developing new strategies to restore cortical function and critical period timing by targeting Excitatory/Inhibitory circuits as a possible therapeutic intervention.