Brain Mapping Center

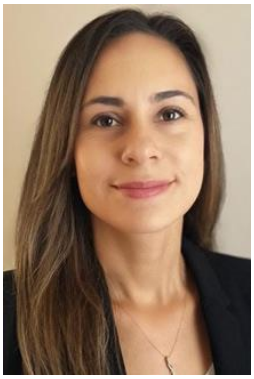
SEMINAR SERIES

Sponsored by the UCLA Brain Mapping Center Faculty

The focus of these talks is on advancing the use of brain mapping methods in neuroscience with an emphasis on contemporary issues of neuroplasticity, neurodevelopment, and biomarker development in neuropsychiatric disease.

Hosted By: Shantanu Joshi, PhD, Neurology, UCLA

"The Role of Neural-Immune Gene Expression in Shaping Adolescent Brain Development and Risk for Psychosis"



Leanna Hernandez, PhD

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There is on average a 6-10-year delay between psychiatric symptom onset and treatment, highlighting an urgent need to identify early biomarkers of disease risk in order to develop preventative interventions. The identification of predictive relationships between genetic variation, brain structure, and psychiatric symptoms in children has tremendous potential to aid in the early identification of high-risk youth - before the onset of severe symptoms and to accelerate the development of biologically-based treatments to prevent or mitigate the severity of mental illness within sensitive developmental periods. To this end, Dr. Hernandez's research program leverages methods in transcriptomics, statistical genetics, and in vivo magnetic resonance imaging to identify genes and molecular pathways that shape adolescent brain development to convey elevated risk for psychiatric disorders. In this talk, Dr. Hernandez will discuss her work examining the impact of complement component 4A (C4A) - a key neural-immune gene implicated in schizophrenia risk through its role in synaptic pruning and brain development - on brain morphology in both adolescents and young adults at typical and elevated risk for psychosis. Findings of this work show that elevated genetically predicted C4A gene expression accelerates cortical thinning during adolescence. Furthermore, the impact of C4A on longitudinal trajectories of brain morphology is more pronounced in individuals at clinical high risk for psychosis and those who later develop the disorder, underscoring its potential as a biomarker for disease progression. By integrating neuroimaging and genetics, this work provides novel insights into C4A's role in neurodevelopment and psychosis vulnerability and may ultimately facilitate the development of biologically-informed, personalized treatments to maximize outcomes and quality of life for children at high-risk for psychiatric disorders.

March 6, 2025 11:00am - 12:00pm PST

Hybrid: Zoom (https://tinyurl.com/BMCSeminar129) and Brain Mapping Center Conference Room (221) Charles E. Young Drive South

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