Universität
Zürich UZH

JACOBS CENTER

Jacobs Center Seminar Series

Prof. Dr. Moriah Thomason

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How Do Neural Networks of the Fetal Brain Tell us about the Past, Present and Future

Processes beginning before birth set the stage for life-long health and development. New advances in fetal MRI have opened windows into the emergence of functional neural networks before birth that can be leveraged to better understand the developmental origins of disease. We will present recent work that addresses stress, inflammation and chemical exposures in utero and the relation of these to offspring neurobehavioral development. We have discovered that maternal prenatal negative affect/stress is associated with alterations in fetal frontoparietal, striatal, and temporoparietal connectivity. Further, our research shows that these associations are stronger in the context of positive health behavior and interpersonal support, and also that magnitude of stress-related differences in neural connectivity correlate with younger gestational age at delivery. Considerate of population level effects of COVID-19, we have also begun to address congenital exposure to the virus, and to explore the concept of 'uncertainty stress'. To the latter, we are pursuing the idea that uncertainty may be a bioenergetically expensive affective state with potential to uniquely contribute to maternal physiological health during pregnancy. We provide preliminary evidence of dissociable qualities of uncertainty stress and evidence that only in concert with psychological distress does COVID infection during pregnancy likely play an important fetal programming role. Overall, our data contribute to understanding of ways in which the perinatal environment may interact with the formation of neural networks in children, as well as insight into specific areas that may be targets for ameliorating perinatal risk.

Thursday, November 16, 2023, 16:30 h

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