



## Colloquium Series



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### **Extracting Autism's Biomarkers in Placenta Using Multiscale Methods**

**Abstract:** The placenta is the essential organ of maternal-fetal interactions, where nutrient, oxygen, and waste exchange occur. In recent studies, differences in the morphology of the placental chorionic surface vascular network (PCSVN) have been associated with developmental disorders such as autism. This suggests that the PCSVN could potentially serve as a biomarker for the early diagnosis and treatment of autism. Studying PCSVN features in large cohorts requires a reliable and automated mechanism to extract vascular networks. In this talk, we present a method for PCSVN extraction. Our algorithm builds upon a directional multiscale mathematical framework based on a combination of shear-lets and the Graph Fourier Transform and can isolate vessels with high success in high-contrast images such as those produced in CT scans.

**Keywords:** Placenta, multiscale, directional, graph, Fourier transform.

**Wednesday, April 12, 1:25 – 2:10 pm in 4-1-314**