ANALYTICAL SEMINAR

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"Molecular Fingerprints of Health and Disease: Chemical Strategies for High-Resolution Spatial Biology"

Living organisms comprise structures that span orders of magnitude in size, assembled from tens of thousands of, if not more, distinct molecular entities. Uncovering how these complex systems function and malfunction requires investigating their molecular organization, interactions, and dynamics at high spatiotemporal resolution. Conventional analytical methods, however, face fundamental trade-offs between spatial resolution, molecular specificity, and throughput, among other limitations.

In this talk, I will highlight my lab's ongoing development of novel molecular tools designed to overcome key limitations in spatial resolution, multiplexity, and scalability for imaging-based spatial biology. I will further discuss how we apply these tools to our investigations of brain function and dysfunction, focusing on the cellular and molecular mechanisms driving synaptic transmission, neuronal connectivity, neurodegeneration, and mental disorders.

PURDUE UNIVERSITY | James Tarpo Jr. and Margaret Tarpo Department of Chemistry

Tuesday, September 29, 2026 | 3:30 PM | WTHR 172