Chen Institute Retreat 2023

Presenter: Jin Xu

Poster title: High-throughput functional analysis of autism risk genes using zebrafish

Abstract: Autism spectrum disorder (ASD) is caused by both environmental and genetic factors, with the heritable contribution estimated at 60-80%. A majority of the genetic contribution to ASD is predicted to result from inherited genetic variants, but few such genes have been identified. Recent whole-genome sequencing of multiplex families by our collaborators identified tens of ASD risk genes, many of which contain rare inherited mutations. To accelerate validating their involvement in ASD, choosing a suitable model system is crucial. The zebrafish occupies a unique niche as a vertebrate model in which high-throughput anatomical and behavioral approaches for mechanistic understanding are feasible. I established zebrafish mutants for 24 prioritized candidate genes, and am characterizing behavioral, neurodevelopmental, and neuronal network phenotypes in a quantitative, systematic and unbiased manner. These studies will suggest mechanisms that underlie phenotypes, potential convergent pathways and may eventually lead to novel ASD therapies.