RESEARCH PRESENTATIONS

CELLULAR/DEVELOPMENT

Christine Charvet
Deni Galileo
Sigrid Langhans
Hakeem Lawal
1) Diverse brains and behaviors

2) Variation emerges in development

3) Timing of developmental processes:
   a means to identify conservation and variation

4) Integrating across scales of organization:
   what's special about our brains?

- Diverse cell types
- Single cell
- Neuroimaging
- RNA sequencing
- Behavior
Glioblastoma Brain Cancer Research at UD
Deni S. Galileo, Department of Biological Sciences

Glioblastoma

Glioblastoma (GBM)

Glioblastoma Model

L1CAM Protein

The L1 cell adhesion molecule (L1CAM)

L1 Stimulation Model

Modeling GBM Cell Motility

L1CAM Causes GBM Cancer Cells To Be More Aggressive

In vivo system

Western blot

Role of L1CAM in Glioblastoma Stem Cells

Current Projects

• Characterize several GSC lines for several GSC markers and L1 expression.
• Perform in vitro experiments to determine GSC responsiveness to L1 ectodomain and to tracks of L1 on a dish.
• Study potential GBM “trailblazer” cells.
• Modify L1 expression in GSCs and determine effects on their motility and proliferation in vitro and invasiveness in vivo.
• Generate experimental brain tumors with mixtures of GSCs and other GBM cell lines that are not stem cells (e.g., U-118).
Cerebellar granule cells in health and disease
Sigrid A. Langhans, PhD

Proliferation, Migration, Differentiation
- Brain tumors
- Neurological disorders
- Neuropsychiatric disorders

3D Culture Platform for Automated High-Throughput Drug Discovery

Na,K-ATPase and Developmental Signaling Pathways

Non-Invasive Tumor Imaging (PET)
A Cholinergic Story: Effect of Changes in Central Acetylcholine Release on Synaptic Activity

Aim: Elucidate the effect of cholinergic release on synaptic physiology and behavior during aging.

Cholinergic neuronal firing decreases with age. Grigoryev et al. *in prep*

Defects in *Vacht* alter lifespan in *Drosophila*. White et al. *in prep*

Acknowledgement: Team Lawal and funding sources (NIH and DSU)