

# RESEARCH PRESENTATIONS

## CELLULAR/DEVELOPMENT

Christine Charvet

Deni Galileo

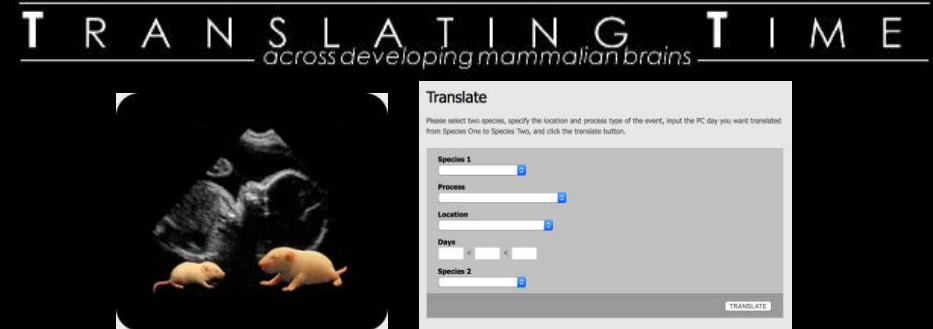
Sigrid Langhans

Hakeem Lawal

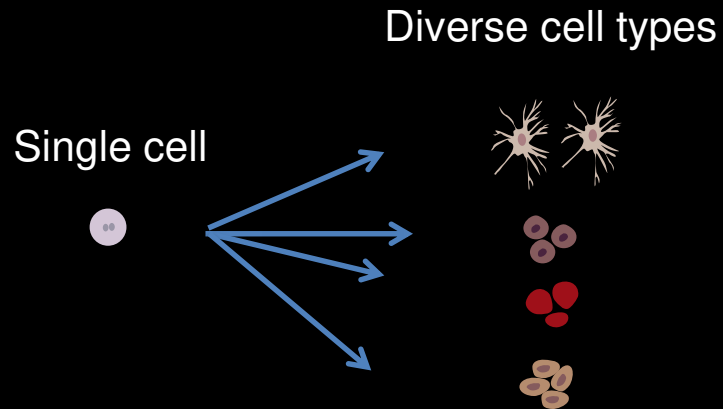
## 1) Diverse brains and behaviors



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



## 2) Variation emerges in development

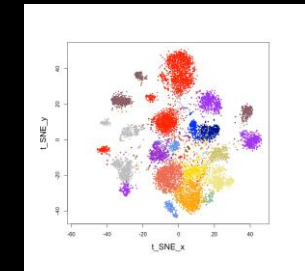


## 4) Integrating across scales of organization: what's special about our brains?

Neuroimaging



RNA sequencing



Behavior



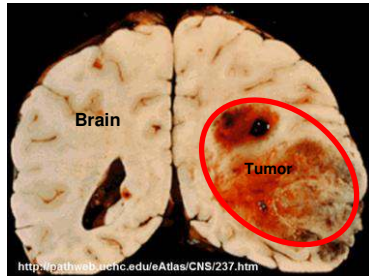
# Glioblastoma Brain Cancer Research at UD

Deni S. Galileo, Department of Biological Sciences

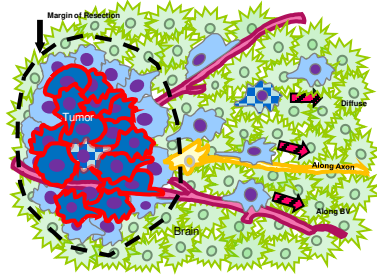


UNIVERSITY OF  
DELAWARE

## Glioblastoma

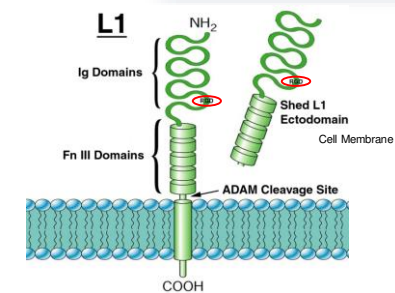


Glioblastoma (GBM)

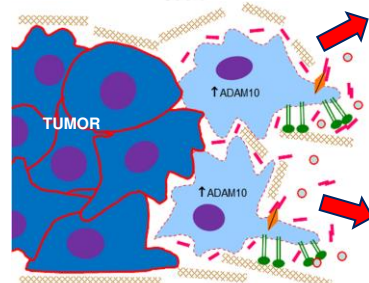


Glioblastoma Model

## L1CAM Protein



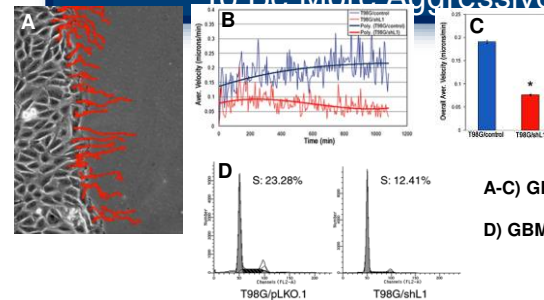
The L1 cell adhesion molecule (L1CAM)



L1 Stimulation Model

## L1CAM Causes GBM Cancer Cells

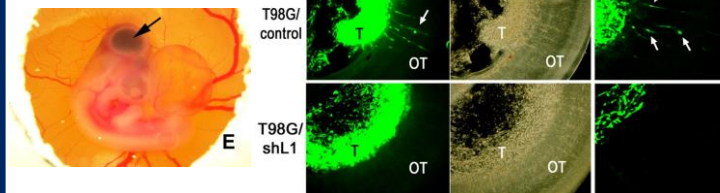
To Be More Aggressive



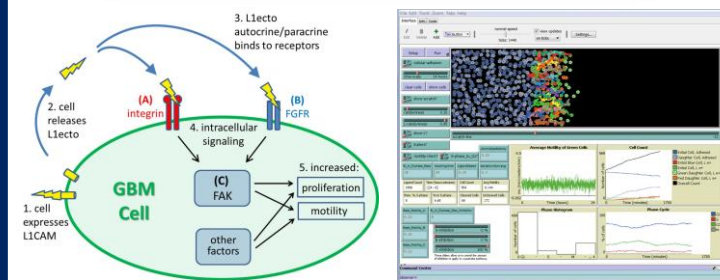
A-C) GBM cell motility.

D) GBM cell division.

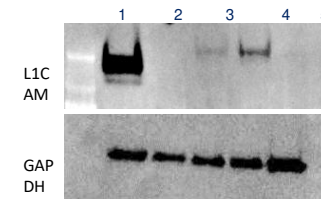
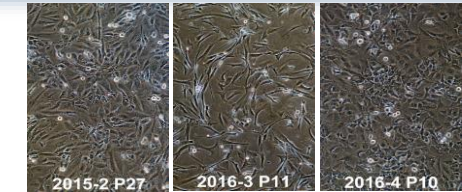
## In vivo system



## Modeling GBM Cell Motility



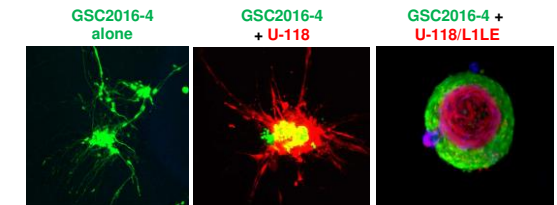
## Role of L1CAM in Glioblastoma Stem Cells



Western blot for L1

1 = U-118/L1LE  
2 = U-118/1879  
3 = GSC 2015-2  
4 = GSC 2016-3  
5 = GSC 2016-4

## L1CAM influences GSC behavior during tumor formation

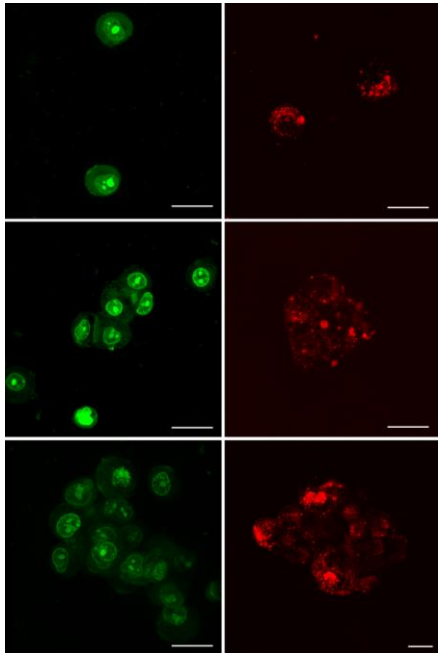


## Current Projects

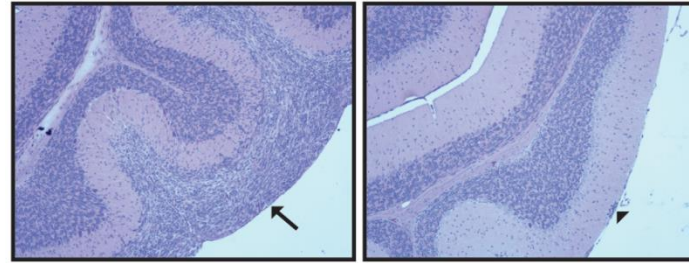
- Characterize several GSC lines for several GSC markers and L1 expression.
- Perform *in vitro* experiments to determine GSC responsiveness to L1 ectodomain and to tracks of L1 on a dish.
- Study potential GBM "trailblazer" cells.
- Modify L1 expression in GSCs and determine effects on their motility 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

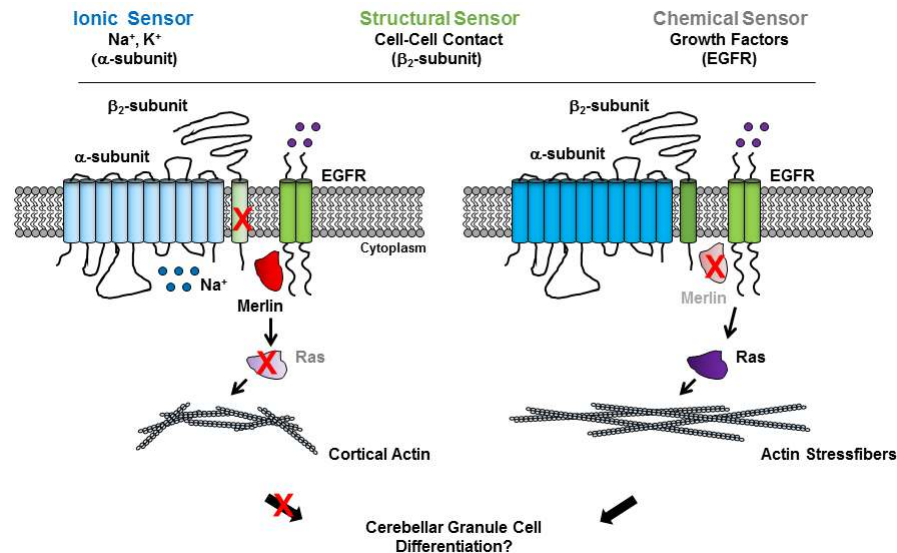


3D Culture Platform for  
Automated High-Throughput  
Drug Discovery

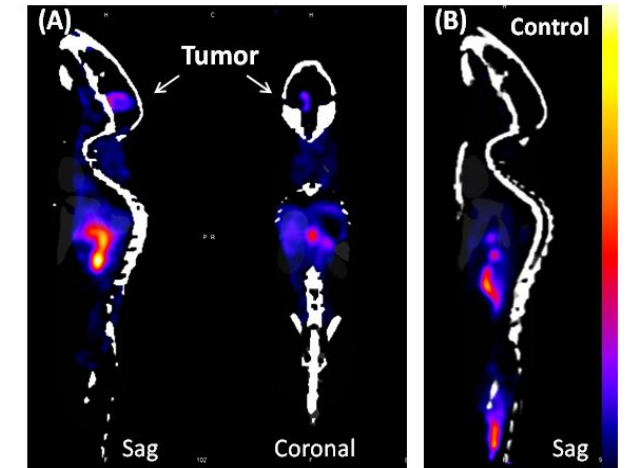
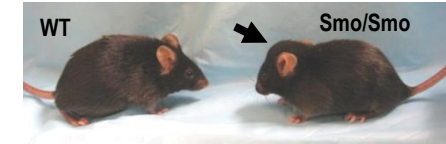


## Proliferation, Migration, Differentiation

- Brain tumors
- Neurological disorders
- Neuropsychiatric disorders

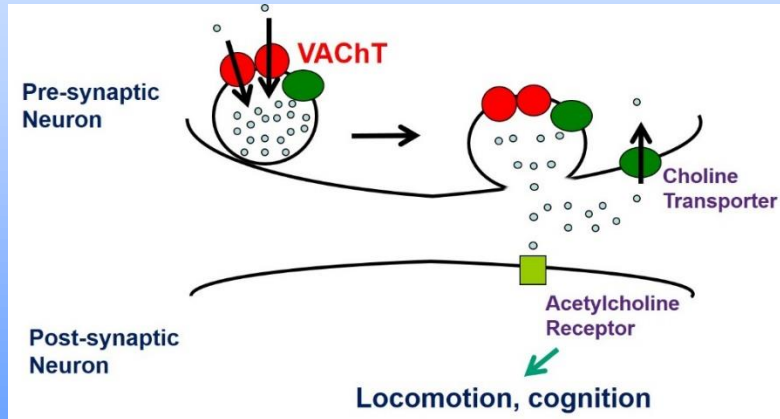


Na,K-ATPase and Developmental Signaling Pathways

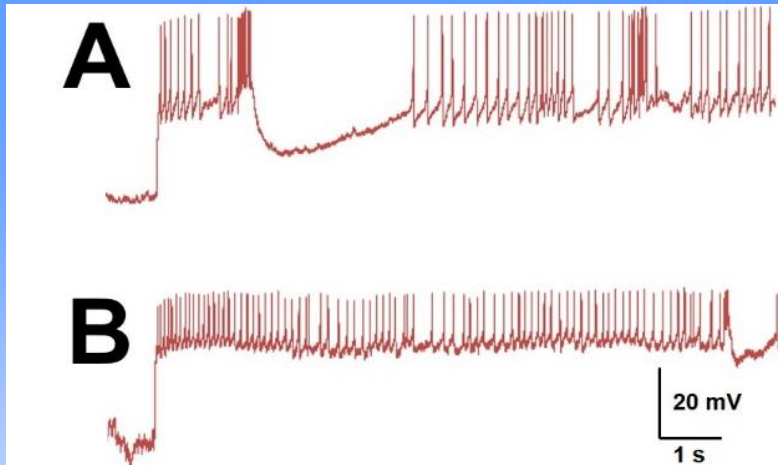


Non-Invasive Tumor  
Imaging (PET)

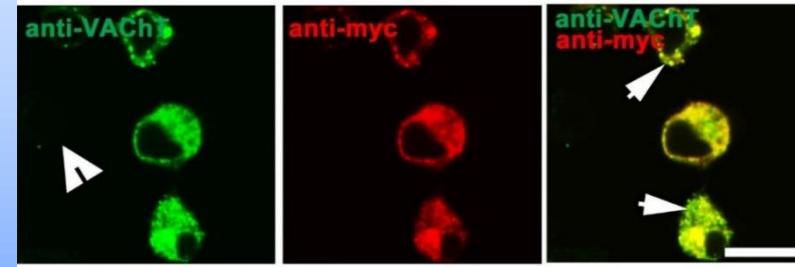
# A Cholinergic Story: Effect of Changes in Central Acetylcholine Release on Synaptic Activity



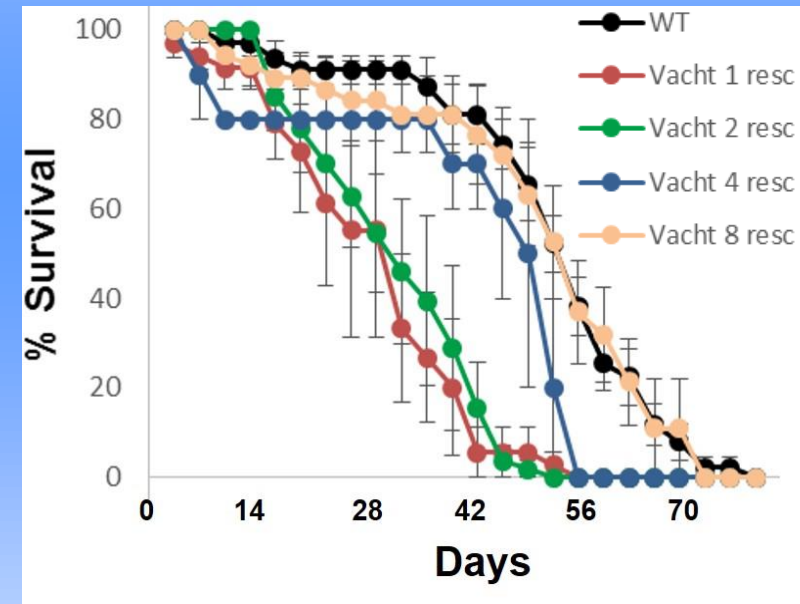
**Aim :** Elucidate the effect of cholinergic release on synaptic physiology and behavior during aging



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



**VACht** expression in cultured cells and in fly CNS.  
Boppana *et al.* 2017; Boppana & Lawal, 2017



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

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