



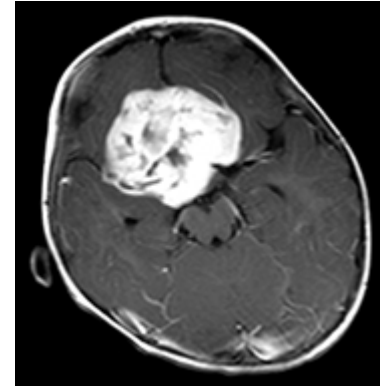
# A New Twist On Glioblastomas

Olesya Mironchuk

UW Medicine South Lake Union  
Institute for Stem Cells and Regenerative  
Medicine  
Dr. Robert Rostomily Lab

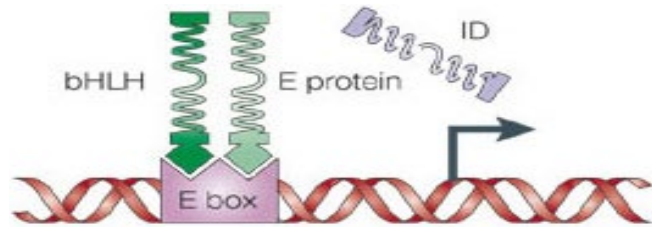
# Gliomas & Glioblastomas

- Glioma - tumor that arises in the brain  
Highly malignant and deadly
- Glioblastoma (GBM) – glioma that arises from neural progenitor or glial cells  
Accounts for more than half of malignant gliomas



# TWIST's Role in Cancer & GBM

TWIST- bHLH transcription factor



→ Epithelial -to-Mesenchymal Transition (EMT)

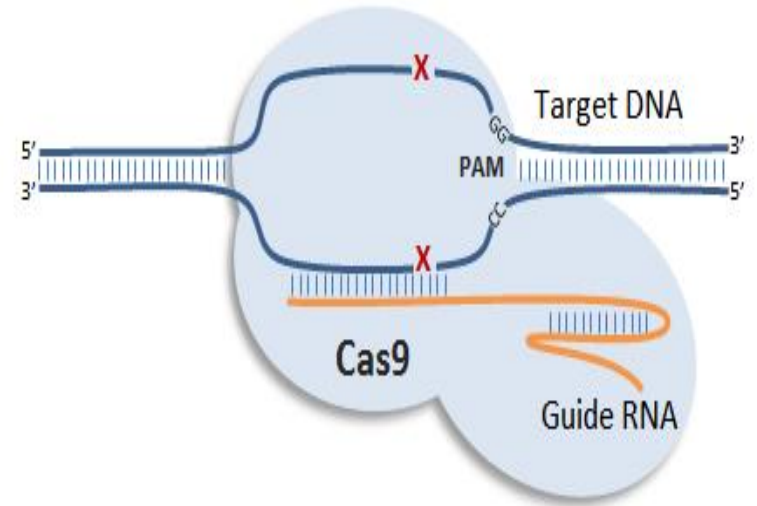
- ↑ Invasion
- ↑ Metastasis
- ↑ Cancer cell survival
- ↑ Stem-like properties

In GBM

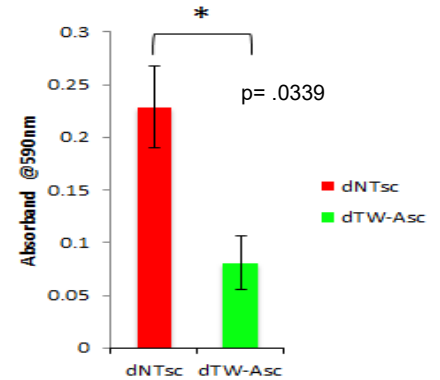
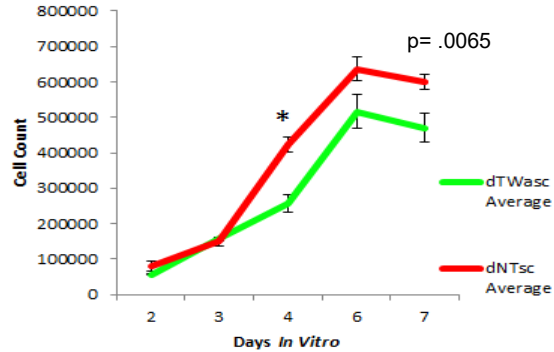
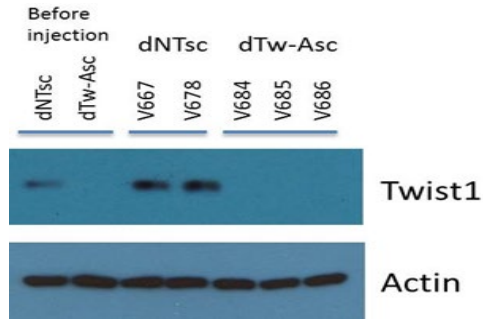
- Promotes EMT-like properties
- Expression proportional to tumor malignancy

# Studying Impact Of TWIST & Validation

- 1) Delete TWIST1 in U87 cell line using CRISPR
  - Proliferation rate in vitro
  - Invasion rate in vitro
  - Survival in vivo
- 2) Validating results:
  - Reexpression of TWIST & Characterization
  - Reproducibility: Use Another Guide RNA



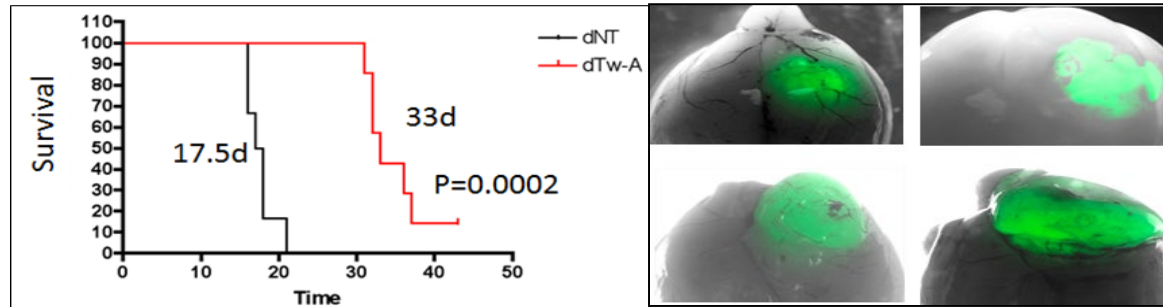
# Findings



1) TW lost with CRISPR  
gRNA "A" in U87 dTW-A

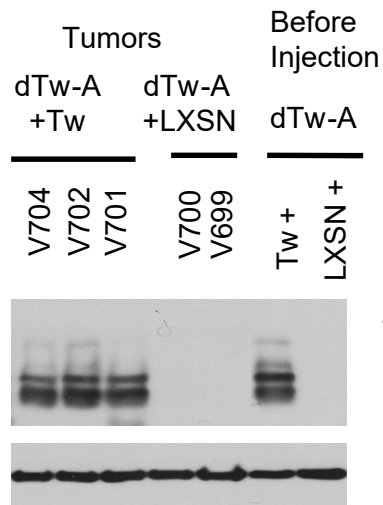
2) U87 dTW-A has slightly  
↓ proliferation rate

3) U87 dTW-A has ↓  
invasion rate

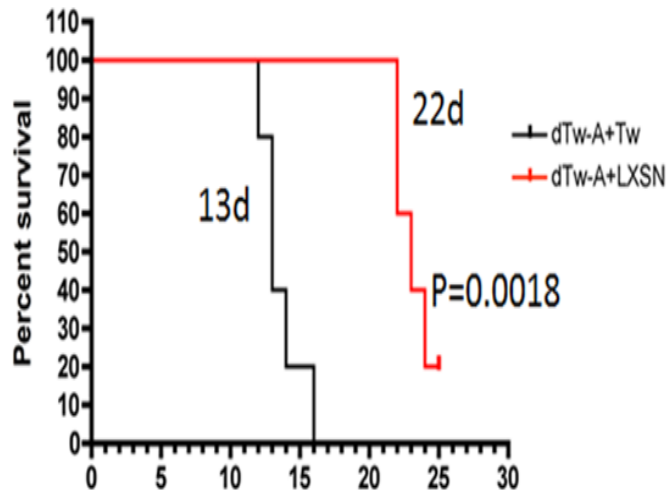


4) U87 dTW-A is ↓ tumorigenic

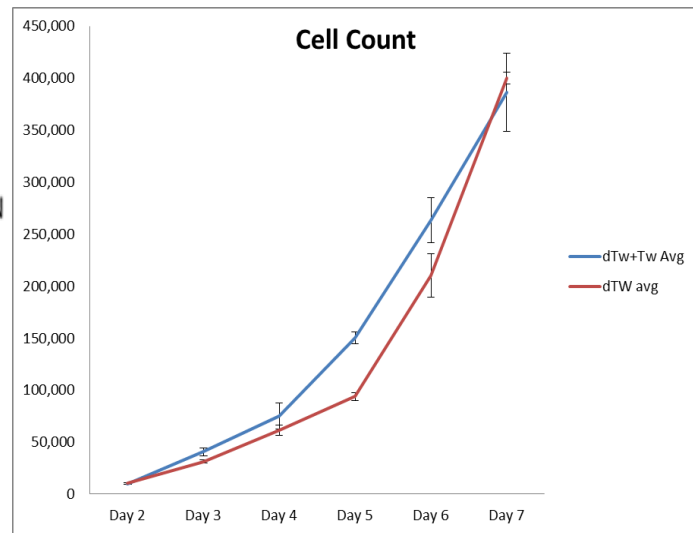
# Validating Results: Characterizing



1) TW is regained in U87 dTW-A+TW



2) U87 dTW-A LXSN is ↓ tumorigenic

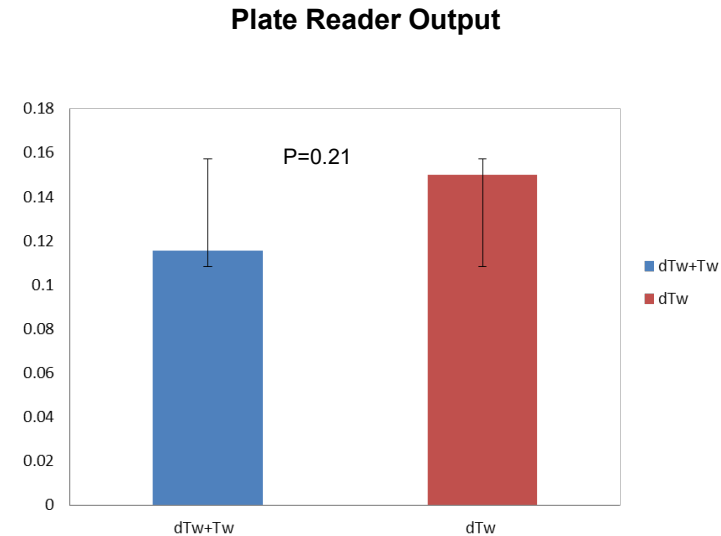
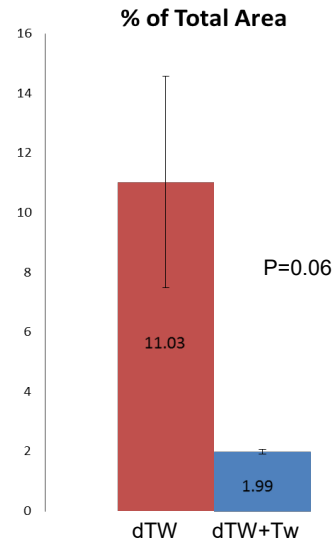
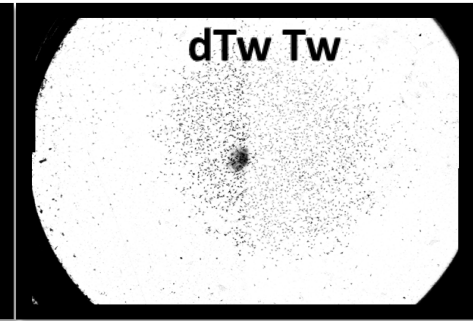
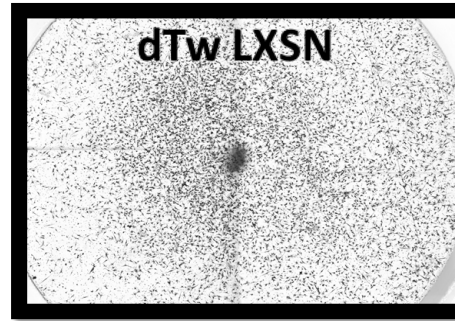


3) U87 dTW+TW has slightly ↑ proliferation rate

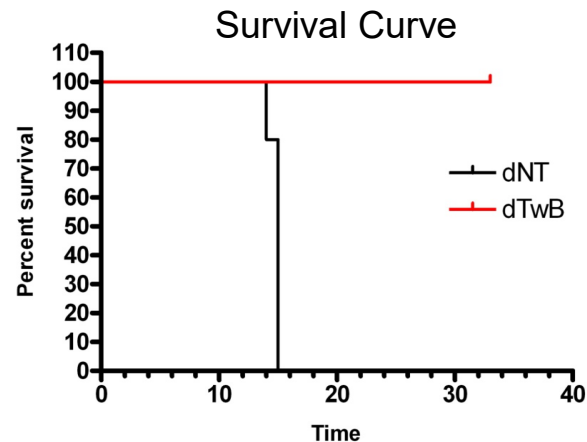
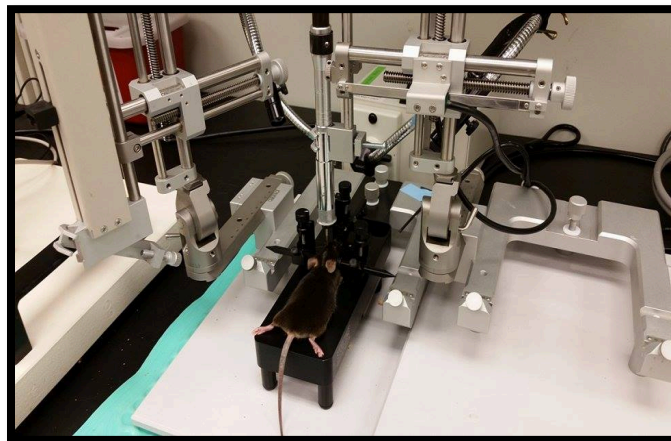
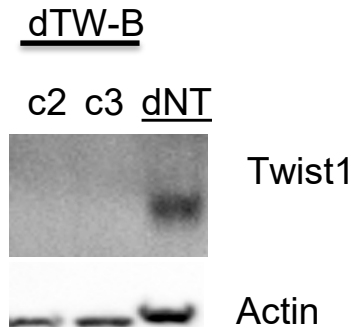
- Trypsinizing & Scraping cells

# Validating Results: Characterizing

- Plated U87 dTW-A+TW & U87 dTW-A LXS on matrigel coated transwell chambers
- Analyzed using Plate Reader & Image-J
- Results: U87 dTW+Tw ↓ Invasion Rate



# Reproducibility: Additional Guide



1) TW lost with CRISPRgRNA “B” in U87 dTW-B

2) Intracranial Injection with U87 dTW-B & U87 dNT

3) U87 dTW-B is ↓ tumorigenic





# Conclusion/Discussion

- Results from in vivo experiments using U87 dTW-A+Tw and U87 dTW-B cells support our findings while results from in vitro experiments do not ...

- Why?

- Limitations of in vitro experiments

- Failure of the “rescue” U87 dTW-A+Tw to properly express TWIST

# Out of Lab Activities

- Observing Dr. Samuel Browd perform dorsal rhizotomy and spinal decompression
- Shadowing Dr. David Primrose at HMC
- “Getting Into Science And Medicine” by Christine Mac Donald

# Thank you!

•Dr. Richard Ellenbogen

•Sandy Ellenbogen

•Dr. David C. Primrose

•Jim Pridgeon

•Christina Buckman

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•Svetlana Mikeeva

•Lisa Horowitz

•Liza Kobelt

•Jeanette Schwensen