Nanoparticle Mediated GPX4 Knockdown to Combat Radio-resistance in Glioblastoma

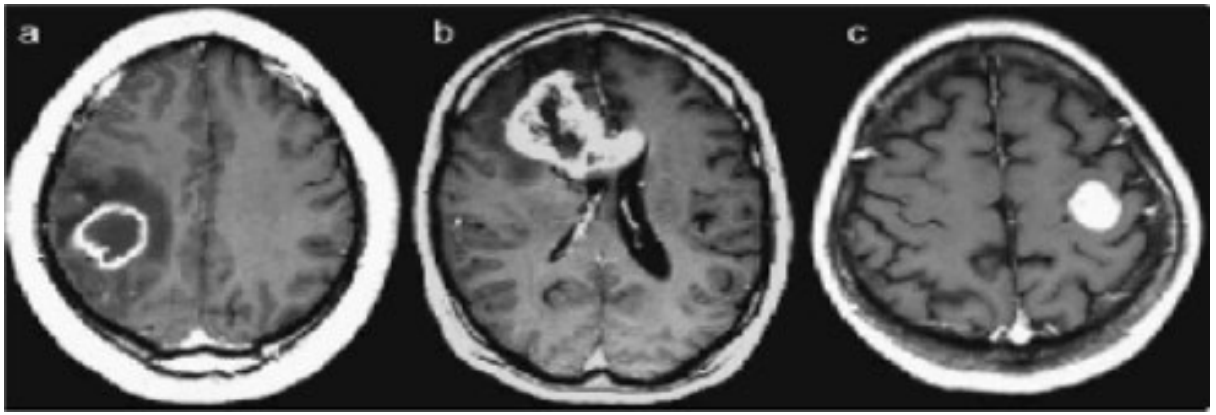
Dr. Ellenbogen/Dr. Zhang Lab
University of Washington Material Science and Engineering Dpt.
Neurological Surgery Summer Student Program

Roarick Schollmeyer

UNIVERSITY *of* WASHINGTON

Glioblastoma

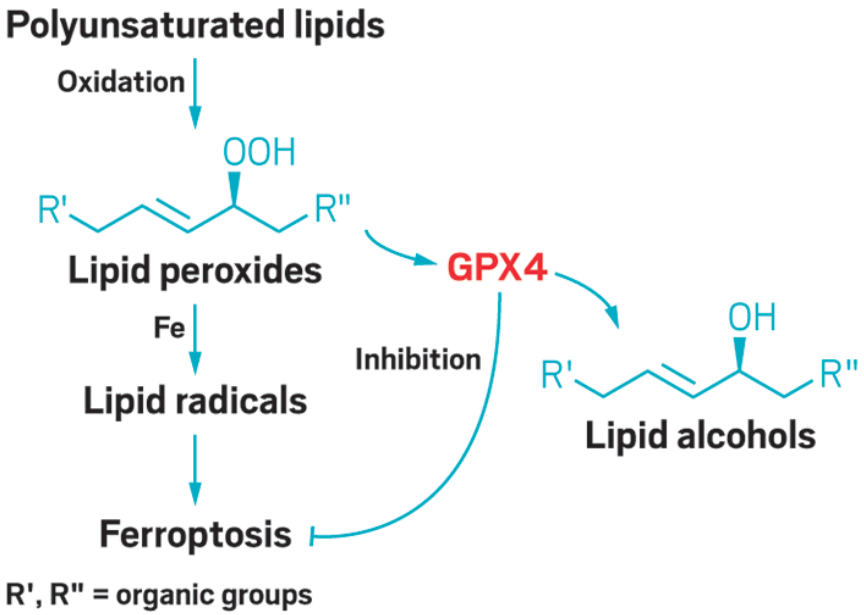
- **Common and Aggressive Cancer**
- **Difficult to treat due to:**
  - **Mesenchymal Cell State (MSC)**
  - **Blood-Brain Barrier (BBB)**



Glioblastoma Heterogeneity via MRI

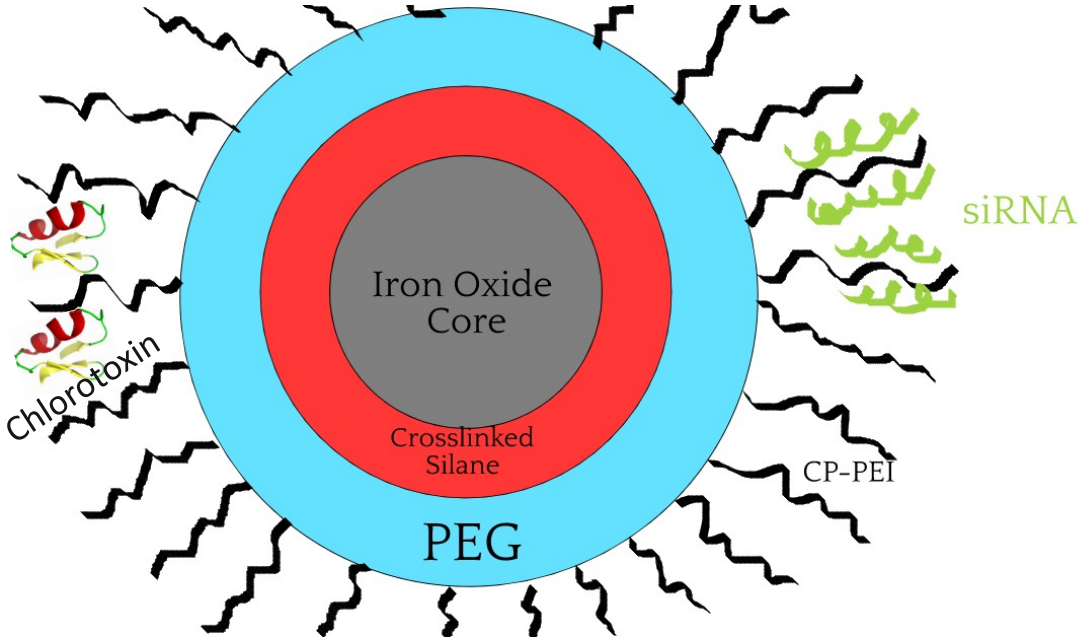
GPX4 Induced Radio Resistance in MSC

- Therapy resistance dependent on protection from ferroptosis
- GPX4 and lipid peroxide dissipation



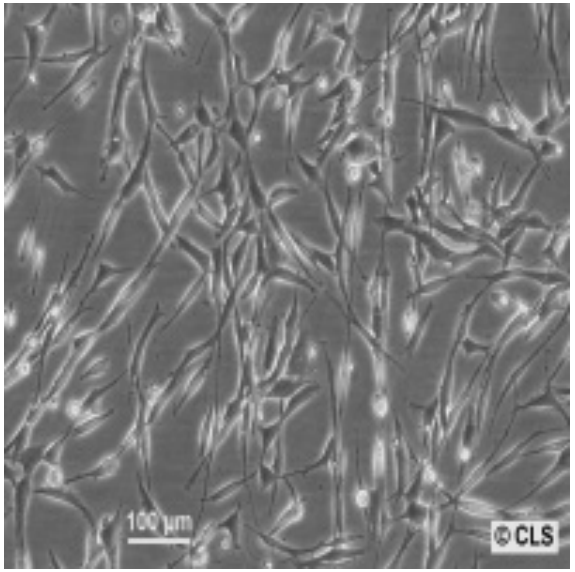
Nanoparticle for Crossing BBB

- **Successfully cross the BBB**
- **Effective siRNA Loading**
- **Tumor Targeting**



Methods

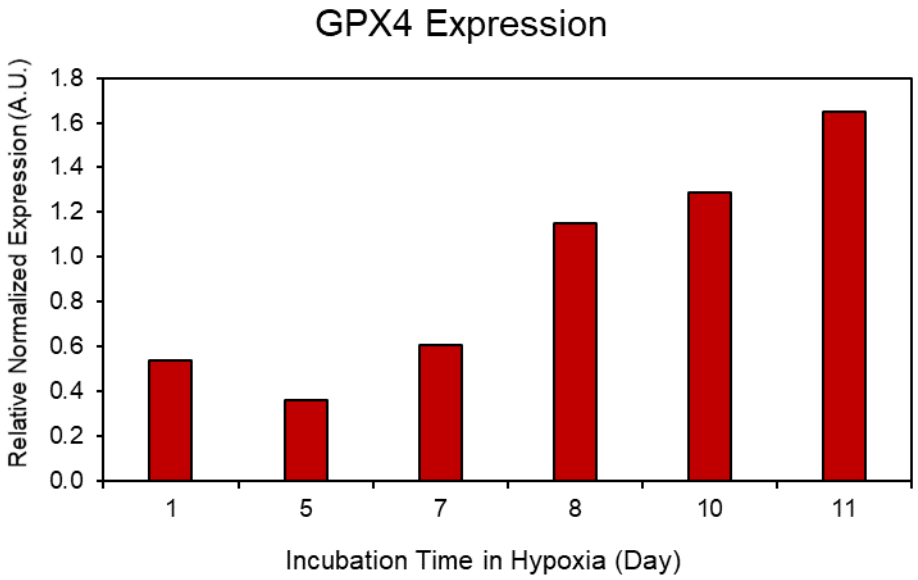
- Plated a U118 cell line and incubated in hypoxia
- 11 days of incubation
- Samples collected for GPX4 Expression analysis

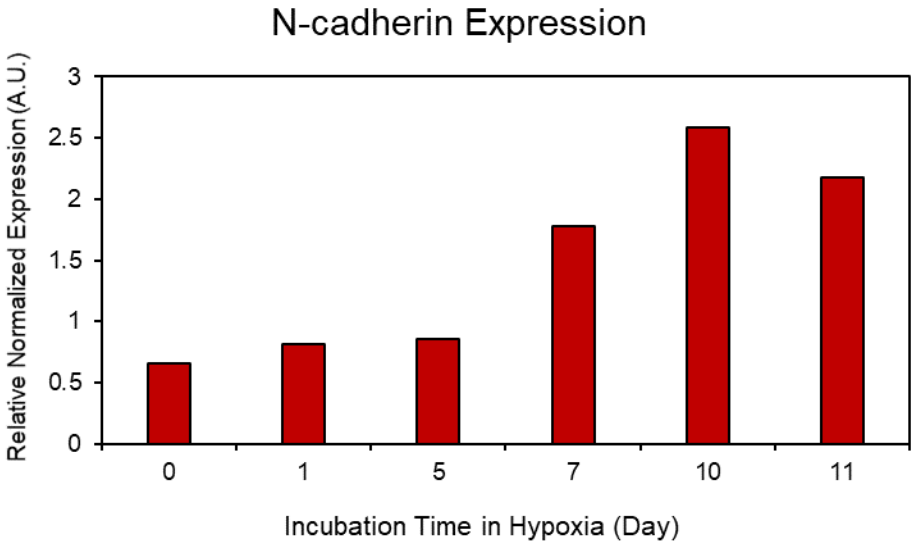


U118 Cell Line

Results

> qPCR shows a trend of GPX4 Upregulation





In Progress and Future Plans

- **Nanoparticle mediated siRNA treatment**
  - **1-11-day incubation with U118 cells**
- **Establish Comparative Radiation Survival Curves**
- **In vivo testing**

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