

Silk Nanoparticles to Treat Brain Tumors

Team: Maddie Yost, Sabrina Zhang, Olivia Zeiden and Elysia Chang
Mentor: Sunny Shaidani, **PI:** Dr. David Kaplan

Glioblastoma multiforme (GBM) is an aggressive form of brain tumor



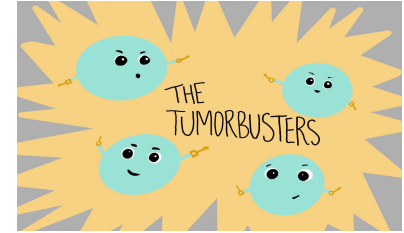
Tumors are clumps of bad cells that grow fast and make someone very sick

Imagine the brain is a neighborhood of houses... the Tumor House is haunted!



The brain is protected by a security guard named "The **Blood Brain Barrier**"

"The Tumorbusters" are **nanoparticles** who want to invade the Tumor House and make it healthy again



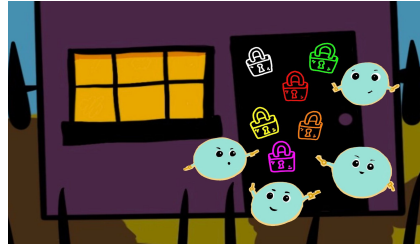
They can get around "The Blood Brain Barrier" into the brain because of their **silk camouflage**

The **blood vessels** are like fences protecting the outside of the houses



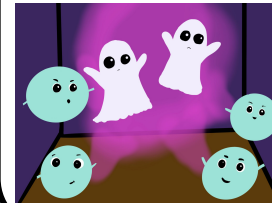
The Tumor House has a broken fence and the Tumorbusters are small enough to fit through

The Tumor House has many locks on the door to prevent invaders from getting inside



The Tumorbusters have two different keys called **antibodies**, at least one (or both) will open the door

Once inside the Tumor House, the Tumorbusters release a medicine called **chemotherapy** that kills the tumor ghosts



All houses in the brain neighborhood are healthy again!