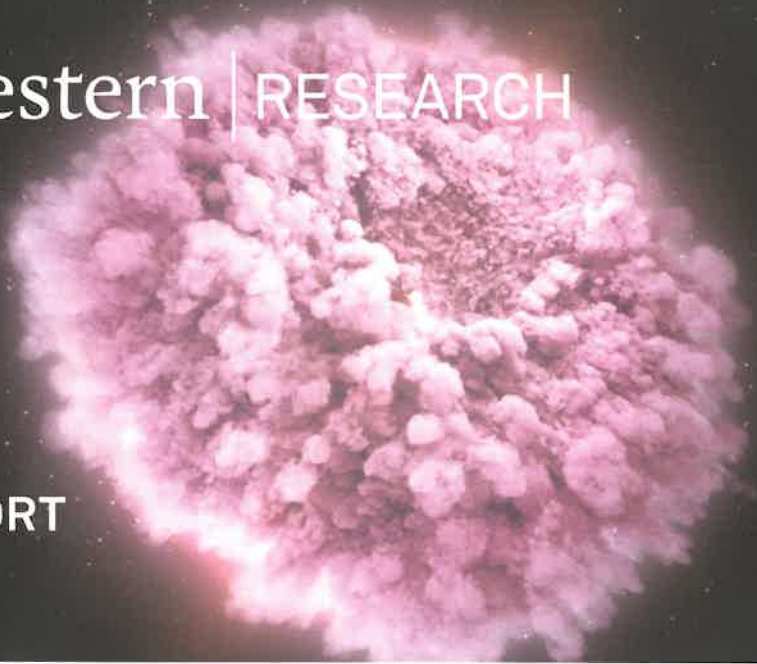




# Northwestern | RESEARCH

IMPACT REPORT  
2017



# Northwestern University

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## DRUG INNOVATIONS TARGET DEADLY BRAIN CANCER

In the fight against glioblastoma, Northwestern scientists at the Lurie Comprehensive Cancer Center have developed two new investigational drugs that may offer patients the best chance at beating this aggressive brain cancer. One of those drugs uses a novel approach of combining neural stem cells as a vehicle to infect cancer cells with a modified common cold virus, which then replicates and selectively destroys malignant cells. The very first human clinical trial is currently ongoing and has already recruited six patients. The innovation is founded on a decade of preclinical development by principal investigator **Maciej “Matt” Lesniak**, neurological surgery, and a treatment framework established by renowned neuro-oncologist and co-PI **Roger Stupp**. By combining novel therapy and medical expertise, the researchers created what Lesniak calls “a powerful weapon against brain cancer ... that our patients are desperate for.” Also approved for Phase 0 clinical trial this year is a second drug, which uses spherical nucleic acids — globular, rather than linear, forms of DNA and RNA linked to gold nanoparticles invented by **Chad Mirkin** at Northwestern. This effort aims to deliver cancer-fighting medicine across the blood-brain barrier. The drug was developed in collaboration with

**Alexander Stegh**, neurology, and Mirkin, chemistry, biological engineering, and medicine. “The development of a therapeutic vehicle that can stably and robustly deliver small molecules to a brain tumor was groundbreaking,” says Stegh, an affiliate of Northwestern’s International Institute for Nanotechnology, an interdisciplinary research hub directed by Mirkin. The PI of this early stage trial with four participants is neuro-oncologist **Priya Kumthekar**, neurology and medicine.



Photo by Eileen Maloney

Priya Kumthekar, neurology and medicine; Alexander Stegh, neurology

## ART + SCIENCE REVEALS ANCIENT MYSTERIES

A new collaboration between the Block Museum of Art and the McCormick School of Engineering sheds light on ancient artifacts. The exhibit, “Paint the Eyes Softer,” features mummy portraits produced in Egypt during the Roman period, a complete intact portrait mummy, and other archeological finds from the Fayum region. Combining expertise from across the University — including from classics, materials science, medicine, archeology, art history, and molecular biology — this groundbreaking installation explores how interdisciplinary partnerships can deliver new insights into ancient mysteries. As part of a comprehensive investigation,

the mummy traveled to Argonne National Laboratory to undergo a synchrotron X-ray experiment — led by **Stuart R. Stock**, cell and molecular biology — that probed the materials and objects inside without damaging the wrappings. “This is a once-in-a-lifetime opportunity for our undergraduate students,” says **Marc Walton**, materials science. “Today’s powerful analytical tools allow us to nondestructively do what archaeology scientists couldn’t do 100 years ago.” Previous Block-McCormick initiatives have focused on intersections of creativity and scientific research, allowing artists and engineers to learn from one another.