

## Tufts University School of Medicine

has a vital and growing research community, internationally known for its remarkable basic science, translational, and clinical research. Classified as a university with “very high research activity” by the Carnegie Foundation, its highest classification for degree-granting colleges and universities, TUSM’s interdisciplinary research spans across academic departments and schools. TUSM has one of the richest concentrations of health sciences research programs in the world, sharing its campus with Tufts Medical Center, Tufts’ Schools of Nutrition and Dental Medicine, and the Jean Mayer USDA Human Nutrition Research Center on Aging.

**Tufts** | School of  
Medicine

Individual. Community. World.

Innovative Approaches to Curing Disease

## POSTPARTUM DEPRESSION

Nearly 20% of mothers suffer from postpartum depression brought on by changes in hormone levels after pregnancy. As hormone levels in the body change, the amount of specialized receptors in the brain also fluctuates. Research in **Jamie Maguire's** lab focuses on how the body's inability to regulate these receptors is related to postpartum depression, and the potential for therapeutic interventions through control of these receptor levels.



Jamie Maguire, PhD  
**Assistant Professor  
Neuroscience**



Gail Sonenshein, PhD  
**Professor  
Biochemistry**

## BREAST CANCER

The lifetime risk of developing breast cancer for American women has increased from 1 in 20 in 1960 to 1 in 8 today. Genetics alone cannot explain the rising incidence of this disease over a relatively short time frame. **Gail Sonenshein's** research focuses on the 90% of breast cancers that are not caused by inherited genes, but are possibly related to exposure to carcinogens or due to nutrient deficiencies. She is examining dietary compounds that can revert or prevent the spread of cancerous tumors; in particular, the effects of green tea on inflammatory breast cancer.



Charlotte Kuperwasser, PhD  
**Associate Professor  
Anatomy & Cell Biology**

**Charlotte Kuperwasser's** work focuses on understanding the various aspects of breast cancer development. Her research studies the mechanisms that cause breast cancer, from the early stages of promotion to the later stages of invasion and multiplication. Her most recent work discovered the cellular origin of a rare form of breast cancer. By understanding more about the cellular beginnings of cancer, Kuperwasser can direct her research toward investigating preventive methods and possibly even developing new therapies.

Our research mission is further expanded through ongoing investigations into pressing global health problems such as cholera and HIV/AIDS.

In the ongoing fight against cancer and cardiovascular disease, TUSM partners closely with Tufts Medical Center to investigate contemporary questions about these deadly diseases.

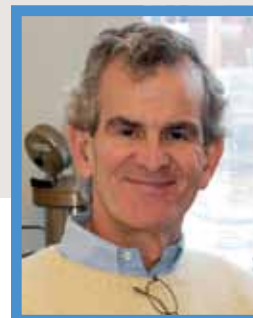
## HERPESVIRUSES

**Katya Heldwein's** laboratory focuses on herpesviruses and how they enter cells. Herpesviruses are a family of human pathogens that infect their hosts for life, causing cold sores, blindness, encephalitis, and cancers. Knowing the detailed mechanism of their entry into cells may lead to the design of antiviral therapeutics.



Ekaterina Heldwein, PhD  
**Associate Professor  
Microbiology**

In **David Thorley-Lawson's** lab, researchers are studying the human herpesvirus Epstein-Barr virus (EBV). EBV infects over 90% of the human population and usually persists benignly for life. However, the virus has also been found to be associated with a number of cancers. Thorley-Lawson is analyzing the pathways that regulate benign persistence and what changes occur in these pathways to produce EBV-associated cancerous tumors.



David Thorley-Lawson, PhD  
**Professor  
Pathology**

## REGENERATIVE MEDICINE

### WOUND HEALING & SPINAL CORD REGENERATION

**Ira Herman** leads the Tufts Center for Innovations in Wound Healing Research (TIWR), a cross-disciplinary regenerative medicine and wound repair initiative that combines expertise from the areas of biology, materials sciences, and bioengineering. TIWR investigators combine their knowledge with cutting-edge technologies to create innovative, personalized wound healing therapeutics, including "next-generation" wound care products for civilian and soldier use.



Ira Herman, PhD  
**Professor  
Molecular Physiology  
& Pharmacology**

## WATER SAFETY

**Jeff Griffiths** has devoted his career to studying parasitic organisms from a standpoint that encompasses science, medicine, and public health, as well as economics and the environment. Griffiths' current focus is on water-borne diseases; his interest is not only in the biology of the pathogens but also their epidemiology—the effects of the disease on populations of people, and how to prevent infection by eliminating exposure. Griffiths is involved in the public policies surrounding water-borne diseases: he is on the National Drinking Water Advisory Council and the Science Advisory Board of the Environmental Protection Agency.



Jeffrey Griffiths,  
MD, MPH, TM  
**Professor  
Public Health and  
Community Medicine**



Eric Frank, PhD  
**Professor & Chair  
Molecular Physiology  
& Pharmacology**

Research in **Eric Frank's** laboratory is focused on developing therapies for promoting recovery from spinal injuries. He discovered a treatment that allows sensory nerves to re-establish functional connections in the spinal cord after injury. Recently, he began to investigate changes in the synaptic connectivity of spinal circuits caused by amyotrophic lateral sclerosis, or Lou Gehrig's Disease, using a mouse model. This model will allow him to test therapeutic agents that are being developed to treat this debilitating disease.

# Tufts Medical Center

Researchers at Tufts University School of Medicine collaborate extensively with their colleagues at Tufts Medical Center. By partnering with physicians and scientists at the Molecular Cardiology Research Institute, the Molecular Oncology Research Institute, the Mother Infant Research Institute, and other units at Tufts Medical Center, our scientists are accelerating progress toward cures for disease.

