

Grantee: The Rockefeller University

Program Area: Health

Most recent grant: 2017; \$125,000; Toward the purchase of a VisiTech (VT) i-SIM (instant structured illumination microscope)

On October 2, 2017, the Nobel Committee announced that Professor Michael W. Young, Richard and Jeanne Fisher Professor at the Rockefeller University, won the 2017 Nobel Prize in Physiology or Medicine. He is being honored for his discoveries of molecular mechanisms controlling the circadian rhythm. These discoveries defined how plants, animals, and humans adapt their biological rhythms so that they are synchronized with the earth's revolution in relation to daylight and darkness. Dr. Young's work has enormous implications for understanding how the brain and complex physiology responds and adapts to a changing environment. The work also has important implications for understanding the regulation of human sleep behavior and metabolism. Dr. Young is the 25th scientist associated with the Rockefeller University to be honored with the Nobel Prize.

The F. M. Kirby Foundation has elevated the Rockefeller University's research on the neurobiology of the senses through its support of scientists, research initiatives, training activities, and technologies crucial to the work conducted within the F. M. Kirby Center for Sensory Neuroscience. Most recently, the Foundation assisted in the acquisition of a VisiTech (VT) i-SIM (instant structured illumination microscope), which uses patterned light to reveal extremely high-resolution images while maximizing the speed at which such images can be captured in vivo (cells which are alive), saving an immense amount of time and supply costs. In 2016, a leadership gift of \$125,000 helped acquire the University's first supercomputer, an important central resource to the F. M. Kirby Center that has already had a significant impact on research.

In 2007, the Foundation established the F. M. Kirby Fund for Regenerative Neuroscience with a grant of \$1.5 million. However, the market value of this fund was drastically affected by the global financial crisis, delaying use of the income it provided. In response to guidance from the F. M. Kirby Foundation, the University did not draw from the fund until it recovered in 2015 when the principal regained its original value; as a result, the University was able to allocate funds to help support a collaborative project between the Laboratory of Sensory Neuroscience, headed by Dr. James Hudspeth (who you may recall presented to the FMKF Board in September 2011), and the Laboratory of Stem Cell Biology and Molecular Embryology, headed by Dr. Ali Brivanlou. The goal of this project is to determine if human embryonic stem cells can regenerate damaged hair cells - the fragile and, so far, irreplaceable sensory cells that are damaged or destroyed in most cases of hearing loss.

Perhaps one day, we will receive a letter from the Rockefeller University informing us that Dr. Adrian Jacobo, who currently holds the F. M. Kirby Postdoctoral Fellowship, has won a Nobel Prize for his outstanding contributions to science. Until then, we can remain impressed with the two studies on which he is currently working that focus on a balance organ in the inner ear, as well as the activity of newly divided hair cells in zebrafish larvae (creatures that have just 100,000 neurons which share much in common with the human brain's 20 billion neurons). The creative research of sensory systems by Dr. James Hudspeth's team at the F. M. Kirby Center for Sensory Neuroscience is unique in its relevance to all sensory organisms as it melds, expertly, basic research of the molecular, genetic, and cellular components of sensory systems and perception, with inspired approaches that may translate successfully to the restoration of sensory systems damaged by illness, injury, or aging.