Three University of Pennsylvania Perelman School of Medicine labs received $12.5 million in research funding for gene research and cancer treatment from the National Institutes of Health, reinforcing the medical school's position as one of the country's top grant recipients.

Sunil Singhal M.D., director of the Thoracic Surgery Research Laboratory at the Perelman School of Medicine, shared a $7 million, five-year Transformative Research Project Award with a team of researchers from Emory University and Georgia Tech. They have developed fluorescent nanoparticle probes that hone in on cancer cells with the goal of making the cells easier to identify against the surrounding tissues, particularly the edges of a tumor, and easier to remove surgically. One of the complex aspects of cancer surgery is the tumor is sometimes not completely removed, according to a statement from the medical school.

The grant includes plans for tests of the nanoparticles in animal models and a first-in-human clinical trial for patients with lung cancer. The proposed technologies could be broadly applicable to many types of solid tumors, particularly in reducing recurrence rates of lung cancer after surgery, the statement said.

Arjun Raj Ph.D., assistant professor of bioengineering with Penn's School of Engineering and Applied Science, received a New Innovator Award for $1.5 million over five years. His research focuses on microscopic imaging tools to reveal how the physical organization of the genetic code determines the manner in which the cell reads the code itself. The research would allow researchers to visualize genetic organization in single cells, giving scientists clearer insight into how defects in translating the genetic code contribute to cancer and other diseases.

A project at the F.M. Kirby Center for Molecular Ophthalmology, Scheie Eye Institute at the Perelman School of Medicine to use gene therapy to treat inherited forms of blindness, which can be caused by genetic mutations, received a $4 million Pioneer Award over the next five years. The award is being given to investigators Luk Vandenberghe Ph.D., and Albert M. Maguire M.D., and Jean Bennett, M.D., Ph.D., principal investigator.
The plan is to develop a small number of therapeutics that could restore vision to millions of patients who are blind due to a diverse set of retinal disorders. By delivering light-sensitive molecules to the remaining retinal cells, the researchers seek to "re-sensitize" the blind eye. This approach takes advantage of circuitry between the retina and the brain that remains intact in many individuals long after they have become blind.

Penn’s medical school received more than $507 million in federal funding from the NIH in fiscal year 2010 compared with $397 million the previous year. University of Pennsylvania ranked second nationally in NIH funding in fiscal year 2010, according to an NIH spokeswoman.