



## News Release

FOR IMMEDIATE RELEASE

### **Ten UNM Cancer Center Researchers Earn Patents for Innovative Technologies**

*40% of recent UNM faculty patents were awarded to Cancer Center-affiliated scientists*

**Albuquerque, NM—July 5, 2011**—It's been an innovative year at the University of New Mexico Cancer Center. Since last June, nine patents have been awarded to 10 scientists associated with the Center. These patents, which represent nearly 40 percent of the 23 total patents earned by UNM researchers during the 2010-11 academic year, cover a wide range of technologies, from better ways of detecting infection to new methods for monitoring DNA damage in skin cells.

How hard is it to get a patent? Each year, hundreds of thousands of applications for so-called "utility" patents (covering most new inventions and processes) are filed with the United States Patent and Trademark Office. Less than half of those patent applications are accepted, giving the filing individual or institution intellectual property rights to the invention. Each inventor whose work is patented is granted the right to stop others from making, selling or importing the same item for 20 years.

At the University of New Mexico, a nonprofit corporation called STC.UNM, formed and owned by the University, works to support researchers in patenting their innovations by first reviewing new research and then helping researchers improve their methods or manuscripts to maximize a project's patent-worthiness. STC.UNM (short for Science and Technology Corporation) also helps connect businesses and institutions looking for specific new technologies with UNM researchers who have created innovations in those areas, thereby facilitating the use and commercialization of faculty members' patented inventions.

And, indeed, the UNM faculty is an inventive group. The university ranks in the top half of the nation's 250 leading research-focused colleges and universities in terms of total patents issued, according to the latest data from the US Patent and Trademark Office. In April, STC.UNM recognized the university's 36 faculty, staff and students who had received patents or disclosed technologies in the last year, and paid special honor to one prolific inventor, Larry Sklar, PhD,

named the 2011 STC.UNM Innovation Fellow. The holder of 17 patents, including two awarded in the past year, Dr. Sklar is a Regents' and Distinguished Professor of Pathology and the Associate Director of Basic Research at the UNM Cancer Center.

### **Highlighted Patents from UNM Cancer Center Researchers**

The cross-disciplinary nature of cancer research at the UNM Cancer Center creates especially fertile ground for new discoveries and innovations. The Center brings together physicians and researchers from a broad range of disciplines in order to better understand the underlying biology of tumors and find more effective ways to diagnose, treat and prevent cancer. These strategic collaborations, funded by major grants from the National Cancer Institute, the National Institutes of Health and other federal agencies, fuel the number and quality of groundbreaking innovations developed here. While many of the recent patents detailed below have specific implications for cancer research and treatment, others reflect the cross-disciplinary and often trans-disease nature of research focused on important cellular pathways and mechanisms that are held in common among many diseases.

#### **Faster flow cytometry**

Larry Sklar, PhD, and Bruce Edwards, PhD, both of the Dept. of Pathology, have developed a device and accompanying protocol that allow for the simultaneous analysis of multiple, composite samples of cells and small molecules. The new technology vastly increases the efficiency of existing flow cytometry, a method of analyzing particles by suspending them in a stream of fluid and passing them by an electronic detection apparatus. Flow cytometry is helping researchers better understand cellular interactions and discover new drugs for cancer and other diseases.

#### **A new platform for flow cytometry**

UNM Cancer Center members Larry Sklar, PhD, Dept. of Pathology, Eric Prossnitz, PhD, Dept. of Cell Biology & Physiology, and Angela Wandinger-Ness, PhD, Dept. of Pathology, together with UNM collaborator Peter Simons, PhD, Dept. of Pathology, have modified special beads with a specific class of proteins (GST fusion proteins) and adapted these for analysis by flow cytometry. These cell-sized beads, also known as microspheres, are suited for detecting interactions between GST proteins and molecules that bind to them, and are being used for drug discovery relevant to cancer and other diseases. In a paper published in the July issue of *Nature Protocols*, Drs. Larry Sklar and Bruce Edwards leverage this platform to demonstrate a method for detecting molecules that target the regulation of cancer cell life and death. (See separate press release.)

#### **Method to isolate stem cells from the kidney**

UNM Cancer Center member Angela Wandinger-Ness, PhD, Dept. of Pathology, received another patent, this one in conjunction with UNM colleagues Tamara Roitbak, PhD, Dept. of

Neurosurgery, and Elsa Romero, Dept. of Pathology. Their patent covers a method of isolating human adult stem cells from the kidney. For patients with a range of kidney disorders, including renal cell carcinoma, these adult stem cells could offer an alternative to kidney transplantation (a shortage of donors means patients may spend years on transplant waiting lists) and the controversial use of embryonic stem cells.

### **Compounds for modulating GPR 30 and other estrogen receptors**

Five UNM Cancer Center researchers and their UNM colleagues have patented new compounds to modulate the effects of GPR30 and other estrogen receptors. These receptors have been found to play key roles in reproductive and hormone-dependent cancers, as well as a wide range of other diseases. The new compounds could thus be useful in combating certain cancers and other illnesses mediated by GPR30. The UNM Cancer Center researchers named on the patent are: Eric R. Prossnitz, PhD, Dept. of Cell Biology & Physiology; Jeffrey Arterburn, PhD, Dept. of Chemistry & Biochemistry at New Mexico State University; Larry A. Sklar, PhD, Dept. of Pathology; Bruce Edwards, PhD, Dept. of Pathology; and Tudor I. Oprea, PhD, Dept. of Biochemistry & Molecular Biology. Their UNM colleagues are Cristian Bologna, PhD, Dept. of Biochemistry & Molecular Biology, and Daniel Cimino, MS, Dept. of Cell Biology & Physiology.

### **Process for producing silica nanoparticles**

UNM Cancer Center member Abhaya Datye, PhD, together with UNM colleagues Timothy Ward, PhD, and Hien Pham, PhD, all of the Dept. of Chemical & Nuclear Engineering, have developed a new process for inducing “self-assembly” of silica into spherical nanoparticles. Such nanoparticles are being tested for a variety of medical applications, including use in targeted drug delivery systems designed to treat cancer and infectious disease.

### **Process for producing other nano-structures**

UNM Cancer Center member C. Jeffery Brinker, PhD, and UNM colleague Xingmao Jiang, PhD, both of the Dept. of Chemical & Nuclear Engineering, have developed a process for making hollow spheres and porous “nanofoams,” tiny structures that could have important applications as drug delivery vehicles for treating cancer and other diseases.

### **Method for detecting lung infections in cystic fibrosis patients**

Vojo Deretic, PhD, Dept. of Molecular Genetics & Microbiology, and Graham Timmins, PhD, College of Pharmacy, have developed a new method for detecting *P. aeruginosa* infection and bacterial burden in the lungs of cystic fibrosis patients and others at risk for such infections.

### **Non-invasive test for tuberculosis infection**

Vojo Deretic, PhD, Dept. of Molecular Genetics & Microbiology, and Graham Timmins, PhD, College of Pharmacy, have also received a patent for a non-invasive breath test that uses isotopically labeled TB drugs to detect tuberculosis infection in patients.

### **System for measuring DNA damage in skin**

Graham Timmins, PhD, College of Pharmacy, has received a third patent, this one for developing a system that calculates a skin protection factor related to UVA rays, otherwise known as Melanocyte Protection Factor (MPF). This new measure conveys the damage caused by light and indicates the efficacy of products (such as sunscreens and clothing) that protect the skin from light exposure. Specifically, MPF calculates the likely level of protection against DNA damage to melanocytes, melanin-producing cells in the skin. Damage to the DNA of these cells causes mutations and can result in melanoma.

### **About the UNM Cancer Center**

The UNM Cancer Center is the Official Cancer Center of New Mexico and the only National Cancer Institute (NCI)-designated cancer center in the state. One of just 66 NCI-designated cancer centers nationwide, the UNM Cancer Center is recognized for its scientific excellence, contributions to cancer research and delivery of medical advances to patients and their families. It is home to 85 board-certified oncology physicians representing every cancer specialty and 127 research scientists hailing from prestigious institutions such as MD Anderson, Johns Hopkins and the Mayo Clinic. The UNM Cancer Center treats more than 65 percent of the adults and virtually all of the children in New Mexico affected by cancer, from every county in the state. In 2010, it provided care to more than 15,800 cancer patients. The Center's research programs are supported by nearly \$60 million annually in federal and private funding.

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