Sandia National Labs and UNM Health Sciences Center win Regional Partnership Award

Award recognizes outstanding collaboration in technology transfer

FOR IMMEDIATE RELEASE:

September 30, 2013 — Albuquerque, NM (UNM Cancer Center) — The strong partnership between Sandia National Laboratories and the University of New Mexico Health Sciences Center has won regional recognition. The Federal Laboratory Consortium awards the “Outstanding Regional Partnership Award” for outstanding efforts to promote technology transfer between federal government facilities and the private or public sectors. The award will be presented at the October 21-23 Regional Meeting in San Diego.

Through this collaboration, Sandia Labs and the UNM Cancer Center, which is part of the UNM Health Sciences Center, have created a novel nanoparticle called a protocell. Protocells have a porous silica core infused with chemotherapy drugs and a coating that mimics cell membranes. Researchers from Sandia Labs and UNM Cancer Center have been able to engineer this coating to make protocells target cancer cells more effectively. By delivering chemotherapy drugs directly to cancer cells, protocells reduce damage to surrounding normal cells, minimizing toxic side effects. They outperform existing nanoparticle-based drug delivery by a million-fold.

In another project, Sandia Labs and UNM Cancer Center scientists developed another type of nanocarrier based on naturally occurring viruses. Called “virus-like particles” or “VLPs,” these hollow nanocarriers target specific cells by displaying different peptides—parts of proteins—on their surface. The scientists are able to engineer VLPs to display different kinds of peptides so that the VLPs can target different kinds of cells. VLPs can carry chemotherapy drugs to kill their target cells or imaging agents to help find target cells in the body.

The Health Sciences Center’s partnership with Sandia National Laboratories has also yielded important advances in non-invasive cancer imaging and detection, according to Dr. Richard Larson, Executive Vice Chancellor and Vice Chancellor for Research at the UNM Health Sciences Center. Dr. Larson, in collaboration with Senior Scientific and Sandia National Laboratories, has developed a novel technology that uses magnetic nanoparticles to detect breast, ovarian and other kinds of cancer years earlier than current diagnostics allow. As part of the collaboration, Sandia National Laboratories developed a technology to more robustly produce nanoparticles.
“Not only does it represent a very successful partnership between Sandia National Laboratories and our academic health center, but it represents the potential to have a very significant impact on the way physicians practice medicine,” Dr. Larson said.

These joint research projects are part of Sandia’s University Partnerships Program, which strives to nurture talent, collaborative research, and national advocacy by establishing enduring partnerships at a focused set of universities. Jeffrey Brinker, PhD, Sandia Fellow and Distinguished and Regent’s Professor of UNM, and Cheryl Willman, MD, Director and CEO of the UNM Cancer Center, lead the Sandia-UNM collaboration. The National Cancer Institute also supports the collaboration through the NCI Nanotechnology Alliance. The aim of these programs is to conduct nanoscience research while developing talent by involving students in undergraduate, graduate and postdoctoral programs.

Sandia also offers the Truman Fellowship for new PhD scientists and engineers who have shown insight into a major problem and been recognized for impact in their field. Carlee Ashley, PhD, is a Harry S. Truman Fellow in Biotechnology and Bioengineering at Sandia. Through her work with Dr. Brinker, Dr. Willman, Eric Carnes, PhD, Principal Member of the Technical Staff in Nanobiology at Sandia, and other UNM faculty including David Peabody, PhD, UNM Professor of Molecular Genetics and Microbiology, Dr. Ashley developed protocells. Her innovative ideas combined Dr. Brinker’s research in porous silica nanoparticles with Dr. Peabody’s research in lipid bilayers that embed various small peptides.

But, the Sandia-UNM team of Dr. Brinker, Dr. Willman, Dr. Ashley and Dr. Carnes faced daunting engineering challenges that they overcame only by blending the expertise of UNM’s medical and cancer research with Sandia’s materials science and nanotechnology research. Drs. Brinker, Willman, Ashley, and Carnes are starting a new company based on the protocell technology. They published their initial research findings in the scientific journals Nature Materials and ACS Nano and have moved their research into various animal models. The team is in the process of developing collaborations with local veterinary oncologists to use protocells for treating canine leukemia and lymphoma. This is the next step in the U.S. Food and Drug Administration’s approval of protocells for drug delivery in humans.

In addition, the Sandia-UNM team is also extending the protocell and VLP technologies to the prevention and treatment of infectious disease. Using their experience with cancer, the team can rapidly develop nanocarriers for antibiotics and antivirals, a capability that will substantially strengthen Sandia’s national security mission.

**About the Federal Laboratory Consortium**
The FLC is a nationwide network of more than 300 members that provides the forum to develop strategies and opportunities for linking laboratory mission technologies and expertise with the marketplace.
About Sandia National Laboratories
Sandia National Laboratories is a multiprogram laboratory operated and managed by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy’s National Nuclear Security Administration. With main facilities in Albuquerque, N.M., and Livermore, Calif., Sandia has major R&D responsibilities in national security, energy and environmental technologies, and economic competitiveness.

About the UNM Health Sciences Center
Established in 1994, the University of New Mexico Health Sciences Center is the largest academic health complex in the state. Located on the University of New Mexico campus in Albuquerque, New Mexico, the HSC combines its three missions areas - education, research and patient care - to provide New Mexicans with the highest level of health care.

The UNM Health Sciences Center includes the UNM School of Medicine, the UNM College of Nursing and the UNM College of Pharmacy, as well as UNM Hospitals and the UNM Cancer Center. The Health Sciences Center is working with communities across the state to make more progress in health and health equity than any other state by the year 2020.

About the UNM Cancer Center
The UNM Cancer Center is the Official Cancer Center of New Mexico and the only National Cancer Institute-designated Cancer Center in the state. One of just 68 premier NCI-Designated Cancer Centers nationwide, the UNM Cancer Center is recognized for its scientific excellence, contributions to cancer research, the delivery of high quality, state of the art cancer diagnosis and treatment to all New Mexicans, and its community outreach programs statewide. Annual federal and private funding of over $72 million supports the UNM Cancer Center’s research programs. The UNM Cancer Center treats more than 60 percent of the adults and virtually all of the children in New Mexico affected by cancer, from every county in the state. It is home to New Mexico’s largest team of board-certified oncology physicians and research scientists, representing every cancer specialty and hailing from prestigious institutions such as M.D. Anderson Cancer Center, Johns Hopkins University, and the Mayo Clinic.
Through its partnership with Memorial Medical Center in Las Cruces, the UNM Cancer Center brings world-class cancer care to the southern part of the state; its collaborative clinical programs in Santa Fe and Farmington serve northern New Mexico and it is developing new collaborative programs in Alamogordo and in Roswell/Carlsbad. The UNM Cancer Center also supports several community outreach programs to make cancer screening, diagnosis and treatment available to every New Mexican. Learn more at www.cancer.unm.edu.
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