Research News …
from Albany Medical Center

Quickening the Pace of Medical Discovery

As northeastern New York’s only academic medical center, Albany Med has a three-fold mission of advanced patient care, medical education and research. Our research enterprise drives innovation in both patient care and education while also fueling the local economy and our reputation as a leader in developing new bio-scientific knowledge and technology.

The promise of biomedical and clinical research, and the combination of the two, has never been greater, and research projects at Albany Medical Center are flourishing. Grants from the National Institutes of Health, the American Heart Lung Association, the American Heart Association and other private, government and corporate sources are supporting studies both with patients and in the laboratories at Albany Medical College.

In the search for medical breakthroughs and to offer our patients hope by providing access to the best available treatment options, at any time Albany Med physicians are conducting more than 130 clinical studies. These include clinical trials of new treatments and drugs for people with illnesses that have no standard cure.

With this newsletter, we bring you up-to-date on some of the research activities happening at Albany Med.

With this newsletter, each quarter, we will bring you up-to-date on some of the many exciting research activities at Albany Medical Center.
Breast Cancer Drug Takes Next Step with $1 Million Grant

Research on a drug created using the premise that women who have been pregnant have a significantly lower risk of breast cancer has received new funding that could bring it closer to being tested in humans, said Albany Medical College researchers.

The scientists have received a $1 million three-year grant from the U.S. Department of Defense (U.S. Army Medical Research and Materiel Command) to continue laboratory testing of AFPeP, which they said has the potential to prevent or treat breast cancer in humans. The drug, which mimics a molecule naturally produced during pregnancy, was developed over the past 10 years by researchers at Albany Med.

“AFPeP has been shown to be safe and effective in both the prevention and treatment of breast cancer in lab animals, and we are hopeful that these results can be translated to humans sometime in the near future,” said Thomas Andersen, Ph.D., professor and co-principal investigator. “We have estimated that if short-term administration of a drug to at-risk women would decrease their risk of breast cancer to the same extent as would the experience of pregnancy, then we could prevent up to 100,000 cases of breast cancer every year.”

Pregnancy is associated with a lower risk of developing breast cancer later in life. Early on in this research, Dr. Andersen and co-investigators, professors James Bennett, Ph.D., and Herbert Jacobson, Ph.D., theorized that alpha-fetoprotein, a molecule produced by the fetus that crosses into the mother’s bloodstream, helps protect women from estrogen-related growth of precancerous tumors during pregnancy. (Estrogen is known to “fuel” 80 percent of all breast cancers.) This effect stays with the mother for life, and her risk of breast cancer lowers even further with each subsequent pregnancy, said Dr. Jacobson.

The drug developed at Albany Med is a synthetic peptide, and was designed to have only the anti-tumor characteristics of alpha-fetoprotein. The researchers identified the part of the alpha-fetoprotein molecule that had the protective effect and used that information to create the drug.

At this point AFPeP has only been tested in the lab. However, in studies repeated over several years, AFPeP has inhibited and prevented tumor growth in mice and rats. The drug stopped the growth of human breast cancer cells implanted in immune deficient mice. It also decreased the incidence of breast cancers in rats that had been injected with a chemical carcinogen. Further studies have shown that oral administration of AFPeP appeared to be safe in animal models.

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“This is encouraging because tamoxifen, a pill currently used to help prevent breast cancer in at-risk women, does have side effects, and tumors can become resistant to tamoxifen. Based on our studies, AFPeP may not have these downsides,” said Dr. Bennett.

The Department of Defense funding is the latest in a stream of support for this research, including a $1.4 million grant from the National Institutes of Health, as well as grants from the U.S. Army Medical Research and Materiel Command Breast Cancer Research Program and the Susan B. Komen Foundation.
Clinical Research

Research Reveals Patients’ Understanding of Orthopaedic Health

Using an innovative new patient survey, physicians at Albany Medical Center have been able to accurately measure patients’ understanding of their musculoskeletal health—an area of research that has been largely unexplored until now. The study’s findings could help orthopaedic surgeons improve patient outcomes.

“Being able to gauge patients’ understanding of their musculoskeletal health is a game changer in helping us identify at-risk individuals and improve communication between doctors and patients,” said Richard Uhl, M.D., head of the Division of Orthopaedic Surgery and a co-author of the study.

The nine-question survey, geared specifically to orthopaedic health, was created by Andrew Rosenbaum, M.D., a resident in the Division of Orthopaedic Surgery.

“We’ve known for a long time that when doctors think they’re explaining something, often patients feel as though they’re being spoken to in a foreign language,” Dr. Rosenbaum said. “What this study showed us is when it comes to orthopaedic conditions, the gap in patients’ understanding of their conditions is even greater than it is for general health issues. The hope is that by improving communication between physicians and patients, outcomes can be improved.”

Health literacy, or patients’ understanding of health conditions, has been shown to be a better predictor of a person’s health than age, income, employment status, education level and race, but it has often proved difficult for physicians to assess.

The Literacy in Musculoskeletal Problems (LiMP) Project, developed at Albany Med, measured patients’ understanding of anatomy, diagnosis and treatment by presenting the survey to patients in Albany Med’s Emergency Department, as well as those seeking treatment for carpal tunnel syndrome and foot and ankle injuries.

The study suggests that patients’ understanding of musculoskeletal health is lower than their general health literacy, with minorities and those with lower education levels having the lowest orthopaedic health literacy.

“We now have tangible building blocks to help us identify at-risk individuals, so patients don’t fall through the cracks,” said Dr. Uhl. “To our knowledge, this is the first orthopaedic literacy screening tool of its kind.”

In addition to Drs. Rosenbaum and Uhl, other researchers on the LiMP Project included orthopaedic surgeon Michael Mulligan, M.D., Emergency Department Physicians Daniel Pauze, M.D., and Denis Pauze, M.D., and Nancy Robak, R.N., MPH.

Drs. Mulligan, Rosenbaum and Uhl presented this research at the 128th Annual Meeting of the American Orthopaedic Association in Providence, R.I.
Research News of Note

Xinjun Cindy Zhu, M.D., assistant professor of medicine in the Division of Gastroenterology and assistant professor of cardiovascular science, led a translational research study published in *Gastroenterology*. The study found that noninfectious loose stool by the immunosuppressant rapamycin in organ transplant recipients is due to inhibition of the movement of sodium and water across the intestinal cell membrane. The study was co-authored by Jun Yang, M.D., Ph.D., Xiaofeng Zhao, Ph.D., Archana Patel, M.D., Sadra Azizi-Ghannad, M.D., ‘12, Michael Dolinger, M.D., ‘14, James Cao, M.D., ‘97, Ph.D., Catherine Bartholomew, M.D., ‘84, Joseph Mazurkiewicz, Ph.D., David Conti, M.D., David Jones, M.D., ‘97, and Yunfei Huang, M.D., Ph.D.

Edmund Gosselin, Ph.D., professor in the Center for Immunology & Microbial Disease, received a two-year, $400,000 grant from the National Institutes of Health, National Institute of Allergy and Infectious Diseases, in support of his work, “An Adjuvant-Independent Dual-Targeted (Multi-Function) Mucosal Vaccine Platform.” Michael DiPersio, Ph.D., professor at the Center for Cell Biology and Cancer Research, was invited by the National Institutes of Health to serve as a member of the Tumor Progression and Metastasis Study Section of the Center for Scientific Review. He was selected on the basis of his research accomplishments, publications and other significant scientific achievement.

Anupam Das, a Ph.D. candidate in the Center for Cardiovascular Sciences, wrote an article “Factors to Consider When Choosing a Lab for PhD Training” that appeared in the American Society for Cell Biology’s COMPASS Blog.

A portion of proceeds from the 3rd Annual Johnathan R. Vasiliou Foundation 5K road race in Queensbury will go to the Johnathan R. Vasiliou Memorial Fund at Albany Medical College.

Michelle Lennartz, Ph.D., professor in the Center for Cell Biology and Cancer Research, is studying why the immune system sometimes fails to protect from conditions like sepsis. Dr. Lennartz studies inflammation on a molecular level, and she is particularly interested in the role of certain proteins in the activation of macrophages. Her work could lead to the discovery of new targets for regulation of inflammation in sepsis and other inflammatory immune conditions, like atherosclerosis and rheumatoid arthritis. In other conditions, like cancer, stimulating macrophages to be more inflammatory may help kill tumor cells.
Scientists Host Conference to Educate Medical Professionals on Identifying Addiction

Albany Medical College will host the 12th Annual Addiction Medicine Weekend on Nov 13-14. The goal of the conference is to teach medical professionals to recognize and treat addiction in their patients, given its prevalence and the significant impact it has on health.

“In the years we’ve educated hundreds of physicians and other caregivers regarding addiction medicine to provide caregivers across the spectrum of care the tools they need to help patients,” said Stanley D. Glick, Ph.D., M.D., professor emeritus of the Center for Neuropharmacology and Neuroscience. “Addiction is a chronic and neglected disease, and we are working to ensure caregivers know what to do if confronted with a patient suffering from an addictive disorder.”

Dr. Glick, a world-renowned expert on researching new drugs to treat addiction, will deliver the keynote address, “The Neuroscience of Addiction.” Other topics this year will include addiction and the pro athlete, substance use and mental health, medical consequences of addiction, tobacco dependence treatment, and more.

In addition to Dr. Glick, the conference is organized by Isabelle Maisonneuve, Ph.D., of Albany Medical College and led by Steven Kipnis, M.D., former medical director of the New York State Office of Alcoholism and Substance Abuse Services.

Lecturers scheduled to present include: Michael Delman, M.D., senior vice president of academic affairs, Southside Hospital, North Shore Long Island Health System; Brian Freidenberg, Ph.D., psychologist, University at Albany; Robert Killar, addiction specialist from WWE, Inc., Stamford, Conn.; Petros Levounis, M.D., chair of the Department of Psychiatry at Rutgers-New Jersey Medical School; Gregory Miller, M.D., medical director of adult services, NYS Office of Mental Health; David Ockert, M.D., executive director, Parallax Center, Inc, New York, New York; and Sharon Stancliff, M.D., medical director, Harm Reduction Coalition, New York, New.

WHAT: Addiction Medicine Weekend
WHEN: 8:30 a.m.-4 p.m., Nov. 13 and 14, 2015
WHERE: Albany Medical College, ME-700
Click here for more information and registration
Biomedical Acceleration and Commercialization Center (BACC) Accepting Applications

The BACC is a new business incubator located on the Albany Medical Center campus that will help businesses discover and develop breakthrough biotechnologies that will improve patient care and promote economic growth. For additional information or to submit an application to the BACC, please visit: http://albanymedbacc.org

Medical Students Showcase Diverse Research Projects

Albany Medical College’s Medical Student Investigation Day takes place from 10 a.m. to 1 p.m. Tuesday, September 22, 2015 at the Hilton Garden Inn at Albany Medical Center. More than 100 medical students will displayed their research posters.

For more information, contact Jess Lewis at 518-262-5451.

Don’t forget.

Nominations for the 2016 Albany Medical Center Prize in Medicine and Biomedical Research open this fall. For more information, contact Carter Chaskey at Chaskec@mail.amc.edu or 518-262-8043.