Evripidis Lantis, BS, a PhD candidate working in the laboratory of Dr. Daniel J. Powell Jr., PhD at the OCRC, was recently awarded the Presidential Travel Award by the International Society for Biological Therapy of Cancer (iSBTc). He was invited to give an oral presentation in the prestigious Presidential Session of the iSBTc Annual Meeting held October 2 to 4, 2010 in Washington, D.C. for his detailed analysis of HER-2/neu protein expression in ovarian cancer cells.

It is frequently reported that less than one-third of ovarian cancers overexpress the HER-2 protein when measured by the standard method of immuno-histochemistry (IHC). However, using more sensitive detection methods, the Powell Lab team found that virtually all ovarian cancers express HER-2, and generally at higher levels than those detected in normal ovary tissue. This result suggests that HER-2 is more widely expressed in ovarian cancer than previously reported, and supports the use of HER-2 targeted therapy for women with ovarian cancer in the future.

Evripidis demonstrated that all ovarian cancers are susceptible to immune attack by T-cells engineered to recognize the HER-2 proteins on the surface of cancer cells. Even more, the engineered T-cells are able to functionally distinguish ovarian cancer from normal targets, thereby minimizing the potential for “off target” reactivity. Together, these findings show that ovarian cancers ubiquitously express HER-2, and generally at higher levels than normal ovary tissue, thus providing the rationale for the development of HER-2-directed T-cell-based immunotherapy in women with ovarian carcinoma.

Dr. George Coukos was promoted to the Coho Ramon Garcia Professor of Obstetrics and Gynecology. Dr. Coukos won a highly competitive $3.2 million Transformative R01 grant by the National Institute of Health’s Office of the Director to develop novel lymphocyte therapies that attack the tumor blood vessels.

Dr. Sarah Adams received the 2010 CREOG National Faculty Award for Excellence in Resident Education at Pennsylvania Hospital.

Stephen Santoro was appointed to the Multidisciplinary Cancer Pharmacology Training Program.

Denardia Dangaj was awarded the Best Presentation at the annual CRWH retreat in May.

Nathalie Scholler, MD, PhD, at the Penn Ovarian Cancer Research Center was invited to give an oral presentation in the prestigious Presidential Session of the iSBTc Annual Meeting held October 2 to 4, 2010 in Washington, D.C. for his detailed analysis of HER-2/neu protein expression in ovarian cancer cells.

It is frequently reported that less than one-third of ovarian cancers overexpress the HER-2 protein when measured by the standard method of immuno-histochemistry (IHC). However, using more sensitive detection methods, the Powell Lab team found that virtually all ovarian cancers express HER-2, and generally at higher levels than those detected in normal ovary tissue. This result suggests that HER-2 is more widely expressed in ovarian cancer than previously reported, and supports the use of HER-2 targeted therapy for women with ovarian cancer in the future.

Evripidis demonstrated that all ovarian cancers are susceptible to immune attack by T-cells engineered to recognize the HER-2 proteins on the surface of cancer cells. Even more, the engineered T-cells are able to functionally distinguish ovarian cancer from normal targets, thereby minimizing the potential for “off target” reactivity. Together, these findings show that ovarian cancers ubiquitously express HER-2, and generally at higher levels than normal ovary tissue, thus providing the rationale for the development of HER-2-directed T-cell-based immunotherapy in women with ovarian carcinoma.

Dr. George Coukos was promoted to the Coho Ramon Garcia Professor of Obstetrics and Gynecology. Dr. Coukos won a highly competitive $3.2 million Transformative R01 grant by the National Institute of Health’s Office of the Director to develop novel lymphocyte therapies that attack the tumor blood vessels.

Dr. Sarah Adams received the 2010 CREOG National Faculty Award for Excellence in Resident Education at Pennsylvania Hospital.

Stephen Santoro was appointed to the Multidisciplinary Cancer Pharmacology Training Program.

Denardia Dangaj was awarded the Best Presentation at the annual CRWH retreat in May.

Announcements

Dr. Christina Chu received the 2010 CREOG National Faculty Award for Excellence in Resident Education at the Hospital of the University of Pennsylvania.

Dr. George Coukos is the 2010 recipient of both the Kaleidoscope of Hope Foundation Research Award and the Ovarian Cancer National Alliance Research Award.

Dr. George Coukos was promoted to the Coho Ramon Garcia Professor of Obstetrics and Gynecology.

Dr. Coukos won a highly competitive $3.2 million Transformative R01 grant by the National Institute of Health’s Office of the Director to develop novel lymphocyte therapies that attack the tumor blood vessels.

Dr. Sarah Adams received the 2010 CREOG National Faculty Award for Excellence in Resident Education at Pennsylvania Hospital.

Stephen Santoro was appointed to the Multidisciplinary Cancer Pharmacology Training Program.

Denardia Dangaj was awarded the Best Presentation at the annual CRWH retreat in May.

TWO NEW VACCINE STUDIES START AT PENN

Educating your own cells to fight your tumor

OSCRC launched the first personalized whole tumor vaccine Phase I trial at Penn Medicine in July 2010. This study uses patient’s own tumor in combination with a patient’s own blood cells (autologous mature dendritic cells) to manufacture a personalized vaccine, which is tested in combination with drugs that could help boost the vaccine’s efficiency. Another Phase I trial was also launched in February 2011. This study will also use a patient’s own tumor tissue in combination with a different set of drugs that could enhance targeting a patient’s own dendritic cells in vivo.

Autologous tumor-based vaccines can be effective, because they induce immune responses against unique antigens present in the patient’s own tumor. Although these antigens may not be known, they can induce potent immune response, because they can be effectively recognized by the immune system as “non-self”. Because the repertoire of these mutations is unique for each tumor, like a fingerprint, this type of immunotherapy is highly personalized and can be designed specifically for each patient. This study was launched with the generous support of the Immune Therapy Initiative for Ovarian Cancer (ITI-OC), founded by Randall Caudill and Patricia Dunn. We expect to treat up to 30 patients with advanced ovarian cancer and with the launching of the regional network, we hope to extend these trials to all patients in the community.

Because of Penn’s innovative research and clinical trials, the way the medical community approaches ovarian cancer is expanding and changing for the better. The Center’s goal is to contribute knowledge about early detection and treatment and give hope to the brave women battling this disease. None of the program’s accomplishments and continued success would be possible without the generous support of its donors.

On behalf of the Penn Ovarian Cancer Research Center, I would like to thank you for making our work possible and welcome the opportunity to update you on our progress in fighting this deadly disease.

Sincerely,

George Coukos, MD, PhD
Director, Penn Ovarian Cancer Research Center, Penn Medicine
Dr. Daniel Powell Jr. is an international expert in tumor vaccines and adoptive lymphocyte immunotherapy and was recruited from the National Cancer Institute in 2007. He is an experienced Research Assistant Professor in the Department of Pathology and Laboratory Medicine and the Department of Obstetrics and Gynecology. Dr. Coukos’s laboratory recently discovered antigens specific to ovarian cancer; 90% of ovarian cancers express uniquely identifiable antigens. They used these antigens to engineer T-cells to target ovarian cancer cells. These T-cells will soon be used in a phase-1 clinical trial to determine the feasibility, safety, and efficacy of this treatment approach in ovarian cancer patients with recurrent disease. The future potential of these engineered T-cells is promising, and future clinical trials are necessary to confirm these findings.

**IMPACTFUL STRIDES IN Ovarian Cancer**

**A phase-I trial of adoptive T-cell transfer of vaccine-pulsed dendritic cells for the treatment of ovarian cancer**

**UPCC-19809**

A phase-I trial of adoptive T-cell transfer of vaccine-pulsed dendritic cells for the treatment of ovarian cancer. The aim of this trial is to assess the safety and tolerability of this treatment approach in patients with recurrent ovarian cancer. The trial is currently enrolling patients at the University of Pennsylvania Cancer Center (UPCC).

**UPCC-26810**

A randomized pilot clinical trial of autologous DNA vaccination for recurrent ovarian cancer. The trial aims to determine the safety and feasibility of this treatment approach in patients with recurrent ovarian cancer. The trial is currently recruiting patients at the University of Pennsylvania Cancer Center (UPCC).

**UPCC-29810**

A randomized pilot clinical trial of autologous oxidized tumor cell lysate vaccine for recurrent ovarian cancer. The trial aims to determine the safety and efficacy of this treatment approach in patients with recurrent ovarian cancer. The trial is currently recruiting patients at the University of Pennsylvania Cancer Center (UPCC).

**MILESTONES IN THE CLINIC**

**UPCC-19809**

**UPCC-26810**

**UPCC-29810**

**THANK YOU**

The Ovarian Cancer Research Center thanks all of its donors for their generous support in our shared mission to eradicate ovarian cancer.

For those interested in giving to the center, please contact: Laura Rostock Ferraiolo. Phone: 215.746.2948. E-mail: lferr@exchange.upenn.edu.

The Ovarian Cancer Research Center work together with investigators from other Penn Medicine programs and the School of Bioengineering. This staff includes doctors Glickson, Tsourkas, Dirji and Muryankov to develop molecular imaging of ovarian tumors through the use of antibodies against these new tumor vascular markers. These antibodies could be injected directly into the bloodstream of patients to detect tumor vasculature using molecular imaging such as molecular MRI. By accelerating this work, the clinic could develop an imaging tool that could aid in early ovarian cancer detection.

**EARLY DETECTION OF OVARIAN CANCER**

The Elusive Whisper

Lack of early detection methods is presently a major cause of poor outcomes in ovarian cancer patients. A screening test for ovarian cancer could save many lives. A cure is more than 90 percent likely if cancer is detected early, but less than 30 percent if the disease is detected late. This is true for most cancers. For example, more than 80 percent of women survive breast cancer, because most breast cancers are diagnosed early. By contrast, most ovarian cancers are diagnosed late. If we could achieve early diagnosis, mortality from ovarian cancer could be as low as breast cancer mortality (see at right). Dr. Coukos’s laboratory recently discovered the unique molecular make-up of vascular cells in ovarian cancer. Using cutting-edge molecular techniques developed by the lab, numerous molecules expressed uniquely by the vasculature of ovarian cancer were identified. Because these molecules are bound to the surface of tumor blood vessels, they can be used to visualize tumors in the body using molecular imaging. In addition, some of these molecules may be shed into the bloodstream. These can be detected using a blood test. This discovery generates unique opportunities for the development of early detection tools using serum biomarkers or molecular imaging as well as targeted therapy.

Dr. Coukos and Zhao at the Penn Ovarian Cancer Research Center work together with investigators from four other Penn Medicine programs and the School of Bioengineering. This staff includes doctors Glickson, Tsourkas, Dirji and Muryankov to develop molecular imaging of ovarian tumors through the use of antibodies against these new tumor vascular markers. These antibodies could be injected directly into the bloodstream of patients to detect tumor vasculature using molecular imaging such as molecular MRI. By accelerating this work, the clinic could develop an imaging tool that could aid in early ovarian cancer detection.