UMBC
AN HONORS UNIVERSITY IN MARYLAND

"The process of scientific discovery is, in effect, a continual flight from wonder." - Albert Einstein

OTD's Tech Transfer News

Volume 2, Issue 3 Spring 2007

Third Quarter Activity

OTD received 11 invention disclosures this quarter. Thank you to **Suzanne Ostrand-Rosenberg**, Biological Sciences, for *Tumor Cells from Immune Privileged Sites as Base Cells for Cell-based Cancer Vaccines*; **Marc Mogavero**, **Justin Garner**, **Harry Malecki**, and **Steve Townes**, Mechanical Engineering, for *Wind Turbine Electro-static Seal*; **Dhananjay Phatak**, Computer Science Electrical Engineering, for *Spread Identity (SI) Mechanisms for Security and Performance Enhancemet: Applications to the Internet and Beyond;* **Chein-I Chang**, Computer Science Electrical Engineering, for seven disclosures, *Hand Held Device for Chemical/ Biological Warfare Agent Detection, Band Prioritization, Simplex Growing Algorithm, Automatic CAD of Meniscal Tears on MR Imaging: A Morphology-based Approach, Variable Number Variable Band Selection (VNVBS) for Hyperspectral Signature Characterization, Constrained Band Selection,* and *Exploitation-based Dimensionality Reduction*; **Govind Rao**, **Wendy Lea**, and **Leah Tolosa**, CAST, for *Development and Validation of a Novel Antioxidant Capacity Assay Using sodA::gfp as a Living Sensor.*

Did you know?

OTD provides IP assistance with:

- *Licensing Agreements*
- *Non-disclosure Agreements*
- *Material Transfer Agreements*

Featured Technology

This quarter's featured technology, *Optical Alcohol Sensor*, was submitted by **Iordan Kostov**, **Silviya Petrova**, and **Govind Rao**, from CAST and the Dept. of Chemical and Biochemical Engineering.

The need for low-cost, robust alcohol sensors has increased with the renewed interest in alternative fuels. They are needed for monitoring and control of ethanol production bioprocesses, as feedback sensors in methanol/ethanol fuel cells, as well as for fuel identification in the FlexFuel cars.

This invention describes an alcohol sensor based on the use of a fluorescent dye, Nile Blue, immobilized in hydrophilic polymer, poly (ethylene glycol). The sensor changes both absorption (color)

cont'd

Interview with a UMBC Inventor **Suzanne Ostrand-Rosenberg** is a Professor in Biological Sciences

Prof. Ostrand-Rosenberg, tell us a little about your scientific background and current lab research.

I've been a tumor immunologist for over 25 years, although I started out my

Photo by Tim Ford

research career using the immune system to understand cellular events in mouse development.

My lab does research in the field of tumor immunology, which means that we study the ability of the immune system to respond to cancer cells. Our long term goal is to manipulate an individual's immune system so it can reject and/or prevent the onset and/or progression of metastatic cancers.

What first inspired you to go into your field?

I've always had an interest in cancer and how our bodies respond (or do not respond) to tumors. About 15 years ago, I became fascinated with the idea that the immune system could be used to destroy cancer cells in the same way that it eliminates bacteria, and virally-infected cells. At that time, I had an idea for how to manipulate the immune system, and this idea formed the basis for our current vaccines.

Did you ever change your field of research?

I trained as an immunologist in graduate school; however, I've moved several times into different sub-areas of the field. I've been doing tumor immunology since my arrival at UMBC, but, have gotten into the vaccine field relatively recently. Our immune suppression work is even more recent and this area is a completely new field for us.

What was your first scientific experiment?

I first became interested in scientific research when I was an undergraduate and participated in an NSF summer program. At that time, I was working on a neurobiology project aimed at understanding how vision influenced behavior. We were working with small invertebrates called rotifers.

In your opinion, what has been the greatest

cont'd

Interview with Suzanne Ostrand-Rosenberg cont'd

scientific discovery?

This is a very difficult question to answer because there have been many great experiments. In my general field of immunology, the identification of the major histocompatibility complex (MHC) molecules and their critical role in how the immune system recognizes its targets was particularly important. This work was recognized with a Nobel prize in Medicine and Physiology several years ago.

Three patents have issued from your *Tumor Cells with Increased Immunogenicity and Uses Therefor* application. Can you tell us about this discovery?

These patents describe the novel strategy we have used to develop our cancer vaccines. Our strategy is designed to by-pass the usual mechanisms for activating the immune system, and instead rely on the vaccine cells to activate white blood cells (lymphocytes) that will destroy the tumor cells. The vaccine itself is made by genetically modifying tumor cells so they express the genes necessary to activate the host's immune response.

What is the Laboratory for Mouse and Human Cancer Immunology and Immunotherapy? What is your role?

The Laboratory for Mouse and Human Cancer Immunology and Immunotherapy, or "MHCII" lab, is the name of our research group. We coined this name because we work with both mouse and human systems and because we study basic immunity to cancer and are also interested in developing effective immune-based therapies for the treatment of cancer. The name is also a play on words since one of the genes we use to prepare our vaccines is the major histocompatibility complex (MHC) class II gene. My role as the PI is to provide a research environment in which smart and talented individuals can explore and develop their ideas as they relate to the overall goals of the lab.

What types of projects do students work on in your lab?

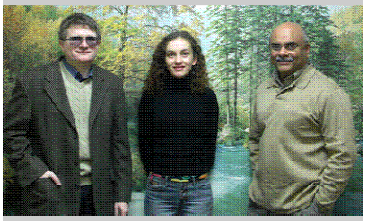
Students in the lab work on a variety of projects related to the overall goals of the lab. Roughly half of the lab members work on cancer vaccine development, while the other half work on understanding tumor-induced immune suppression.

What advice do you give your student scientists?

I try to encourage everyone in the lab - graduate students, post-doctoral fellows, research assistant professors, and technicians, to be creative and explore their ideas. For new students, it is particularly important to identify a research area that excites them and in which they are intellectually involved. I strongly encourage everyone in the lab to become involved in the projects of their colleagues and not just their own work. Research today benefits tremendously from collegial interactions and the sharing of ideas and approaches. Students need to understand that they can bring new ideas to projects, not just work on existing ideas.

Featured Technology cont'd

and fluorescence when in contact with different concentrations of ethanol. The sensor is also sensitive to methanol and isopropanol. There is no cross-sensitivity to other alcohols. The sensor can be sterilized by autoclaving, ethanol rinsing,



gamma radiation, etc. It is very low-cost and can be shaped in the form of a single-use patch.

Wacky Patent

United States Patent

Thomas Magdi

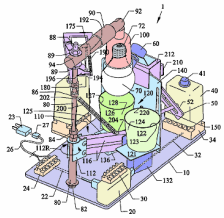
Light Bulb Changer

Patent Number: 6,826,983

Date of Patent: December 7, 2004

Abstract

A light bulb changer method and apparatus that contains components that allows for instantly detecting a burned out light, automatically removing the burned out light, and automatically replacing the burned out light with a replacement bulb. The changer operates without human intervention, and can be assembled from a kit having a light fixture, detecting sensor, removing and replacement hardware. The kit can allow a consumer to assemble the changer for use as a novelty item, and/or also to be used as a working light fixture, such as a table lamp, and the like.



Contact Information:

Office of Technology Development

5523 Research Park Dr.
Baltimore, MD 21228

Stephen Auvil, Director
410.455.3481

Wendy Martin, Manager
410.455.3658

Jeanne Stockwell, Coordinator, Editor
410.455.1414

Fax 410.455.8750