



2006 Fund for Medicine Gala is a Grand Success



Gala Chair and former Secretary of Defense Frank Carlucci, Dean Wilson and Patricia Wilson at the gala.

“On the Track of Discovery” was the theme of this year’s Fund for Medicine Gala, which was held on March 25 at the historic B&O Railroad Museum. The gala raised \$340,000 in support of academic, research and clinical care programs within the Departments of Neurology, Psychiatry and Physical Therapy & Rehabilitation Science.

Great discoveries have long been a part of the School of Medicine’s history, and the evening emphasized many of these accomplishments. Guests viewed a video highlighting the achievements of the aforementioned departments and a special film tribute honoring retiring Dean Donald E. Wilson, MD, MACP.

Additionally, the School of Medicine made its first public announcement regarding its ambitious \$200 million bicentennial campaign. “When initially envisioning the bicentennial campaign, we had two primary goals in mind,” says Pat Madden, associate dean for development. “First, to provide the resources necessary to continue the tremendous progress the school has made in recent years under the leadership of Dean Wilson and, second, to celebrate

two centuries of leadership and discovery in academic medicine.”

More than 500 guests attended the event including dignitaries such as former Secretary of Defense Frank Carlucci, who served, along with his wife Marcia, as honorary chairs of the gala, Maryland State Senator Paula Hollinger and Willard Hackerman, President & Chief Executive Officer of the Whiting-Turner Contracting Company and a member of the School of Medicine’s Board of Visitors. Local business leaders, media, faculty, staff and students also attended.

The gala’s silent auction raised \$15,000 for the Medical Student Activities Fund. Auction items included a week’s stay at a villa in St. Maarten, a week’s stay at a condo in Costa Rica, a champagne dessert reception for 50 guests and a dine-around package at several of Baltimore’s finest restaurants.

Next year’s Fund for Medicine event will be the Bicentennial Gala on May 18, 2007, at the Baltimore Convention Center. 

The Daily Record’s 2006 Health Care Heroes Awards

Congratulations to the following Health Care Heroes:

Advancements in Health Care—
Top Winner Category

- **Angela H. Brodie, PhD**, professor, Department of Pharmacology & Experimental Therapeutics

Community Outreach—Winners Category

- **The Violence Intervention Program** created by **Carnell Cooper, MD**, associate professor, Department of Surgery and Program in Trauma.
- **Get Fit Maryland: 10,000 Steps a Day Program**, created by the University of Maryland School of Medicine, University of Maryland Medical Center and Merritt Athletic Club.

Physician Hero—Finalists Category

- **William Clark Gray, MD**, associate professor, Department of Otorhinolaryngology—Head and Neck Surgery
- **Neil M. Siegel, MD**, assistant professor, Department of Family Medicine



Effective May 8th, **University Physicians, Inc.** will relocate its human resources, business development, compliance, finance, and executive functions from the second floor of the professional building on W. Redwood Street to the ninth floor of the 250 W. Pratt building.

Practice operations and IT are not moving, they will remain in their current locations at 405 W. Redwood Street.

“What Do We Do?”

OFFICE OF
POLICY AND PLANNING

Reaching beyond the walls of the School of Medicine and bridging the gap between academic medicine and community endeavors is the mission of the Office of Policy and Planning. This multi-faceted office has created unique partnerships with faith-based and health organizations across the state of Maryland in an effort to improve the health of the state’s citizens and eliminate health disparities.

Claudia Baquet, MD, MPH, a professor of medicine and the associate dean for policy and planning, was recruited by Dean Wilson in 1995 to lead the newly formed Office of Policy and Planning. Her public health background at the National Institutes of Health made her the perfect candidate to take the School of Medicine’s community outreach initiatives to the next level.

“In just 11 short years, we’ve made a lot of progress in partnering with community groups and have worked hard to make ourselves not only a resource for the community and policy makers but for the School of Medicine faculty as well,” says Dr. Baquet.


The state’s Cigarette Restitution Fund, allowed for the establishment of the Statewide Health Network, which consists of one central and six regional offices and more than 25 telemedicine linkages to support a wide variety of cancer and tobacco-related disease prevention and control activities. The Statewide Health Network also focuses on improving access for underserved populations to cancer clinical trials.

The Office of Policy and Planning also created the Center for Health Policy and Health Services Research, a multi-disciplinary campus-wide organized research center to stimulate, support and conduct interdisciplinary health policy and health services research, and the Center for Health Disparities to identify specific disparities and collaborate with local communities to find culturally appropriate ways to eliminate them.

“Our research in the field of health disparities has really mushroomed in recent years,” says Dr. Baquet. “Through research and technology, education, patient care and community service programs, the Center for Health Disparities works to reduce geographic and socioeconomic barriers to health care.”

Another component of the Office of Policy and Planning is the administration of the Maryland Area Health Education Centers (AHECs) in Western Maryland, Baltimore City and the Eastern Shore.

“The AHECs are state and federally supported programs that aim to increase access to healthcare for underserved and rural populations,” says Dr. Baquet. “They provide training for healthcare professionals who work in those communities and are a learning resource for students from the medical school and the pharmacy and dental schools who rotate through to provide care to patients in those areas.”

Despite mainly focusing on partnerships outside of the School of Medicine, the Office of Policy and Planning is a resource for faculty. “We are here to help anyone who is interested in the topic of health disparities, telemedicine and improving access to clinical trials,” Dr. Baquet says. “We can lend our expertise on science-guided policy research.” 

L-R: Denise Papatkakis, senior public relations and communications specialist; Shiraz I. Mishra, MBBS, PhD, deputy director, evaluation and outcomes, Maryland Statewide Health Network; Claudia R. Baquet, MD, MPH, associate dean for policy and planning; Barbara McLean, senior policy fellow; Adanech Agaje, administrative assistant; Darlene McCain, operations coordinator; Meseret Bezuneh, MS, Ed, deputy director for strategic initiatives; Charlotte Jones-Burton, MD, clinical coordinator, Maryland Statewide Health Network; and LaRondi Flowers, administrative assistant.



Bicentennial


Student Services Project Will Be a Highlight of Bicentennial Year

CORNER

Mark your calendars: no classes will be held at the School of Medicine on Friday, April 27, 2007!

In a recent meeting with class officers, Dean Wilson offered to cancel classes school-wide for one day in 2007 to provide students time to participate in a massive bicentennial public service project for area children and youth.

Student representatives and the dean’s staff are exploring options for the project, which is the first of its kind in the school’s history. The goal is to make a lasting impact with a project that is self-sustaining and can be replicated. Some students suggested tutoring and mentoring while others prefer fixing up facilities like schools and parks. Others want to do both. So far, contacts have been made with leaders of Baltimore City schools, the Maryland school systems, the Poppleton community (located in West Baltimore), the mayor’s office, and directors of non-profit models in other cities. Students are not required to participate, but those who do will have a commendation letter added to their permanent files and will be able to attend a “thank you” celebration.


Decisions on the scope of the student project and a party celebrating its success will be made by early summer. If you have ideas and contacts and/or would like to join the organizing group, contact Jo Martin, bicentennial program director, at 6.2007 or jmartin@som.umaryland.edu. Updates will follow in upcoming issues of this newsletter. 



QUICK STUDIES

► **Bradley E. Alger, PhD**, professor, Department of Physiology, received a 5-year \$1,420,030 grant from the National Institutes of Health National Institute of Mental Health for his work entitled "Interactions Among Hippocampal Interneuron Circuits."

► **Louis DeTolla, VMD, PhD**, associate professor, Department of Pathology, director, Comparative Medicine Program and chief, Veterinary Resources Program, was awarded a \$281,150 Shared Equipment Grant from the National Institutes of Health National Center for Research Resources. The grant will allow the purchase of a Xenogen IVIS-200 small animal biophotonic imaging system which can produce computer enhanced images of luciferase labeled tumors or microbes in a whole animal. The equipment and appropriate training will be available to all School of Medicine faculty.

► **Aikaterini Kontrogianni-Konstantopoulos, PhD**, assistant professor, Department of Physiology, received a five-year \$1,470,150 grant from the National Institutes of Health National Institute of Arthritis and Musculoskeletal and Skin Diseases for his work entitled "M-Line Proteins and A-Band Assembly in Skeletal Muscle." ► **David Litwack, PhD**, assistant professor, Department of Anatomy & Neurobiology, received a four-year \$1,336,500 grant from the National Institutes of Health National Institute of Neurological Disorders and Stroke for his work entitled "Transcriptional Regulation of Pontine Development." ► **Ming T. Tan, PhD**, professor, Department of Epidemiology & Preventive Medicine and a member of the Program in Oncology, was recently appointed associate editor for *Statistics in Medicine*. He was also awarded a two-year \$150,000 National Cancer Institute grant for pilot biostatistics research in the design and analysis of cancer epidemiology and biomarker studies involving high dimensional data from genomics and proteomics. 

Nurse Sharks, Professor Studies Evolution of the Immune System

With Help from

Nurse Sharks,

In a unique partnership with Baltimore's National Aquarium and the University of Maryland Biotechnology Institute's

(UMBI) Center for Marine Biotechnology, Martin Flajnik, PhD, is investigating the evolution of the immune system by using nurse sharks as models. Housed in the National Aquarium's holding facility in Fells Point, the sharks are the oldest known jawed vertebrates and hold interesting clues on the origins of adaptive immunity.

"Sharks are primitive in some ways but in other ways they have evolved certain features that have never been found in humans," says Dr. Flajnik, a professor of microbiology & immunology. "They are interesting animals to study and have developed unique immune molecules that could be beneficial to humans if used in the right way."

One highly evolved process seen in sharks is how they fight off infections. Like all other vertebrates—but not invertebrates—they respond to any molecule different from their own by making antibodies and T-cell receptors through a gene rearrangement process where they mix and match genes to combat the foreign molecule. This process generates billions of different specificities to combat a multitude of viruses and bacteria.

"Sharks have a different organization of their antibody genes than what's found in humans and mice. It's called a cluster-type organization," says Dr. Flajnik. "That's probably how antibody genes were organized in animals at the origins of adaptive immunity and somewhere along the evolutionary process, the genes adapted to a more streamlined organization seen in humans today."

The way a shark's genes are organized gives them the ability to change their adaptive immune system more easily than in humans. Flajnik and his colleagues are interested in knowing more about this gene regulation phenomenon and have turned to nurse sharks for help. They immunize sharks with a variety of foreign molecules



Martin Flajnik, PhD


called antigens and track their immune response.

During this process, they recently discovered a new type of antibody in the nurse shark, one with a single-chain binding site instead of the more commonly known two-chain antibody binding site. "We think that this may be how antibodies looked originally," Dr. Flajnik says. "They are capable of better fitting into the crevices of antigens than conventional antibodies, which make them effective at fighting infections."

Postdoctoral fellow Helen Dooley, PhD, showed that the immune response made with this antibody matures over time, through extensive mutation and selection, which was unexpected in sharks. This work was published in the February 7, 2006, issue of the *Proceedings of the National Academy of Sciences (PNAS)*.

According to Dr. Flajnik, this unusual antibody is extraordinarily stable, resistant to heat and other denaturing agents. Drs. Dooley and Flajnik have collaborated with Les Baille, PhD, at UMBI in generating antibodies to biodefense agents, such as anthrax.

Dr. Flajnik's lab has done subsequent research to study other characteristics of the shark's immune system. Their findings led to an additional *PNAS* paper in March 2006. In that work, postdoctoral fellow Michael Criscitiello, PhD, studied a special type of T-cells called Gamma/Delta T-cells, which have properties of both the innate and adaptive immune system. He found the same type of variable (antigen binding) domain on an antibody and a T-cell receptor. "We think this means that Gamma/Delta T-cell receptors can recognize antigens similar to antibodies and they are adaptive," Dr. Flajnik says. "This supports the premise that these Gamma/Delta T-cell receptors aren't involved in innate immunity in sharks but are rather adaptive."

Dr. Flajnik is highly complimentary of the partnership he formed with the National Aquarium in 2000. "None of this work would be possible without our colleagues at the aquarium. They maintain our shark colony, provide adequate space and food for them and share their expertise on the health of the sharks." 



Donald Gill, PhD, and Maria Spassova, PhD

Researchers Detail Calcium Signaling Process

Researchers in the Department of Biochemistry & Molecular Biology have recently identified the process by which calcium is exchanged within the millions of cells inside the human body. Their finding is unique because it is a process scientists have been studying for at least 15 years and one that could lead to the development of pharmaceuticals targeted to specific receptor sites on cells. Their findings have been published recently in the *Proceedings of the National Academy of Sciences*.

"We have huge amounts of calcium in our bones and in our teeth, but this calcium has been specialized for structural purposes," says Donald Gill, PhD, a professor of biochemistry & molecular biology. "Over time, our bodies have evolved to pump calcium out of cells and to use it as a very powerful signaling mechanisms. We work on the mechanisms that control calcium in the cells."

The millions of cells inside the human body are all coded in receptors that receive signals, which tell the cell how to act and what to do. Calcium signals are special because they control all types of cell activities, including muscle contractions, metabolism, neural firing, and growth. Calcium is present in stores, or stashes, inside cells and on a cell's plasma membrane.


Maria Spassova, PhD, an assistant professor of biochemistry & molecular biology and an electro-physiologist, was able to identify special channels on the outside perimeter of the cell which seem to facilitate the ebb and flow of calcium inside the cell. She found that the STIM1 protein, known for regulating interaction between cells, is also essential in the calcium signaling process.

"STIM1 is a calcium binding protein that recognizes the stores of calcium inside the cell," Dr. Gill says. "When a cell receives a calcium signal, it usually secretes calcium into the body. As this stash is decreased, the STIM1 protein starts to move towards the plasma membrane on the outside of the cell. This movement triggers the opening of store-operated calcium channels on the surface of the cell to allow more calcium to enter the cell, basically replenishing the supply that was just used and increasing the signaling time to stimulate growth and proliferation."

"A lot of people have looked for this specific store-operated calcium channel for years," adds Dr. Gill. "We've been able to show that this STIM1 protein is the mediator of the calcium ebb and flow process in the cell."

According to Dr. Gill, this process of communication is universally important to the function of all cells in the human body. "The identification of this specific calcium channel on the cell can aid in the development of medications to treat high blood pressure, autoimmune diseases and a host of other illnesses," he says. "We can potentially design drugs to modify the function of the STIM1 protein and change all kinds of functions in the cell."

"My lab for years has been looking at the process of calcium signaling and how they are generated, so this is a huge breakthrough," says Dr. Gill.

Drs. Gill and Spassova's research has been funded by the National Heart, Lung and Blood Institute and the National Institute of Allergies and Infections Disease at the National Institute of Health. 

“THE IDENTIFICATION OF THIS SPECIFIC CALCIUM CHANNEL ON THE CELL CAN AID IN THE DEVELOPMENT OF MEDICATIONS TO TREAT HIGH BLOOD PRESSURE, AUTOIMMUNE DISEASES AND A HOST OF OTHER ILLNESSES.”

Investigators Probe Health Insurance Parity

Mental health and substance abuse insurance benefits for federal employees have been expanded without increasing costs, contrary to the concerns of some policy makers and legislators. That is the conclusion of the most comprehensive study ever conducted of employer-based health insurance benefits. The study, led by Howard Goldman, MD, PhD, a professor of psychiatry, was published in the March 30 issue of the *New England Journal of Medicine*.

The study evaluated the Federal Employees Health Benefit (FEHB) Program, which has provided insurance parity since 2001. Parity means that coverage for mental health and substance abuse services is comparable to coverage for other health problems. The researchers found that when the care was managed, the cost of coverage for mental health problems attributable to parity did not increase and the quality of care remained constant.

With parity, insurance coverage for behavioral disorders such as depression, schizophrenia and bipolar disorder is equal to coverage for all other medical conditions in terms of limits on services, deductibles, co-pays and other costs that patients might be expected to pay out-of-pocket.

The FEHB Program has 8.5 million enrollees; approximately 25 percent are current federal employees, another 25 percent are retirees and 50 percent are spouses and dependents of current or retired employees. Enrollees select from over 350 health insurance products. The program is a model for private health insurance.

In June 1999, President Bill Clinton directed the Office of Personnel Management to ensure parity in mental health and substance abuse benefits for the FEHB Program. To improve insurance coverage of those services, beginning in January 2001 the FEHB Program offered these benefits at the same coverage level as general medical benefits. Participating insurance plans were encouraged to manage patient care in order to control utilization and cost.


Following President Clinton's suggestion that the policy be evaluated, the Department of Health and Human Services, working with the Office of Personnel Management, contracted with Northrop Grumman Information Technologies to conduct the first national study of comprehensive parity in order to guide federal policy. Northrop Grumman tapped Dr. Goldman to lead the team. Dr. Goldman, a leading expert in mental health

policy research, gathered researchers from Harvard Medical School, the University of California-Los Angeles, the RAND Corporation and Westat, Inc. The newly formed Parity Evaluation Research Team began the study in 2000.

The analysis found an increased rate in the usage of mental health and substance abuse services following the introduction of the parity policy but determined that this was almost entirely due to a general trend in increased usage also seen in the comparison plans. The same was true for total spending. Out-of-pocket spending attributable to parity declined in five of the seven plans evaluated. One measure of quality for the treatment of depression showed a small improvement.

"Opposition to legislating parity has been strong, but the recent success of managed care in controlling spending on mental health and substance abuse services provides a counterweight to cost considerations. Managed care, however, still raises concerns about access and quality," says Dr. Goldman. "Our study is expected to influence deci-

sions on mental health parity legislation in legislatures across the country and in Congress."

Funding for the study was provided by several federal agencies and the office of the Assistant Secretary for Planning and Evaluation in the U.S. Department of Health and Human Services. The John D. and Catherine T. MacArthur Foundation Network on Mental Health Policy Research provided support for preparation of the published study results. 



Howard Goldman, MD, PhD

Mental health and substance abuse insurance benefits for federal employees have been expanded without increasing costs, contrary to the concerns of some policy makers and legislators.

"The main argument against parity has been a concern that more generous coverage of mental health services would result in large increases in spending," says Dr. Goldman. "We found, however, that when coupled with managed care, parity between insurance benefits for mental health care and general medical care can be accomplished with improved insurance protection and without increasing total costs."

Dr. Goldman calls parity in insurance coverage for mental health services the "Holy Grail of mental health policy for decades." Historically, insurance coverage for behavioral health conditions has imposed special limitations on the number of office visits, days in the hospitals or on the maximum amount of treatment that would be reimbursed.

Researchers Test "Trojan Peptide" Vaccines to Treat Head and Neck Cancer

School of Medicine researchers have begun testing "Trojan peptide" vaccines to treat squamous cell carcinoma, a common type of head and neck cancer. The goal is to learn whether the vaccines, which target specific proteins made by tumors, can stimulate the body's immune system to destroy the cancer.

Made from peptides, or fragments of proteins found in select tumor cells, the vaccines being used in this Phase I clinical study are designed to slip into cells with the help of a "chaperone" that carries the bulky protein molecules through dense cell membranes, much like a "Trojan horse" bringing soldiers behind enemy lines before a surprise attack.

"We hope that these vaccines will stimulate the patients' T cells, or immune cells, to recognize the proteins as invaders and seek out and kill the cancer cells throughout the body that produce the same proteins," says Scott E. Strome, MD, professor and chair of the Department of Otorhinolaryngology-Head and Neck Surgery and the lead investigator of the study.

Both vaccines being tested target proteins linked to squamous cell cancers of the head and neck, most commonly seen in the mouth, throat and other parts of the upper digestive tract. The proteins are human papillomavirus (HPV) 16 and MAGE-A3. HPV 16 is also linked to cervical cancer.

Dr. Strome, who helped to develop these unique peptide vaccines, says that they are experimental and it is not known yet if they will reduce or eliminate patients' tumors. Researchers hope that the vaccine therapy will improve the survival rate and quality of life for patients.


Cancers of the head and neck—including those of the throat, mouth, voicebox, sinuses, salivary glands and skin—are often difficult to treat and have a high risk of recurrence. Treatments include surgery, chemotherapy and radiation therapy.

"If patients have finished radiation treatment and chemotherapy and no more surgery can be performed, they are out of standard options," Dr. Strome says. "Advanced head and neck cancer is an absolutely devastating disease. That is why a vaccine to treat this type of cancer would be very beneficial to patients."

He says that these vaccines are very different and more complex than traditional peptide vaccines. The peptides in these vaccines are comprised of approximately 40 to 50 amino acids, compared with much smaller numbers of amino acids in other vaccines. Researchers believe these larger peptides may trigger a stronger, two-pronged response by the body's immune system. The vaccines also contain a peptide sequence that helps to transport the proteins into cells that present them to the body's immune system.

Dr. Strome expects to enroll up to 90 patients over the next two to three years in the clinical trial, which is funded by the National Institutes of Health. The study is open to patients with advanced disease who have exhausted their treatment options as well as patients who choose not to receive standard therapies.

To be eligible for the trial, patients must be likely to develop an immune response to the vaccines. Researchers will determine that by testing blood and tissue samples. One group will receive the HPV 16 vaccine, another group will get the MAGE-A3 vaccine and a third group will receive both vaccines. They will also receive two immune-system stimulants, GM-CSF and Montanide ISA 51, to bring cancer-fighting white blood cells to the injection site.


Patients will receive four vaccinations over four months and may be eligible to receive another four injections if their tumors are responding to the treatments, Dr. Strome says. Researchers will use PET/CT scans and biopsies to determine whether the therapy is working. 



Scott E. Strome, MD



QUICK STUDIES

► **Christopher T. Bever, Jr., MD, MBA**, professor, and **Susan I.V. Judge, PhD**, assistant professor, both from the Department of Neurology, published "Potassium Channel Blockers in Multiple Sclerosis: Neuronal Kv Channels and Effects of Symptomatic Treatment" in the March 8, 2006, edition of *Pharmacology & Therapeutics*. ► **Toby C. Chai, MD**, associate professor, Department of Surgery, has been named recipient of the Best Reviewer in 2005 Award by the editors of *The Journal of Urology*, the official journal of the American Urological Association (AUA). He was chosen to receive this award for his dedicated service and timely reviews of basic science articles. Dr. Chai will accept his award at the end of May during the AUA Annual Meeting in Atlanta. Additionally, Dr. Chai was selected by his AUA Section to participate in the 2006–2007 AUA Leadership Program. He was chosen for the competitive program out of 63 applicants from across all eight AUA Sections who were vying for 16 spots. ► **Robert C. Gallo, MD**, professor, Department of Medicine, founder and director of the Institute of Human Virology (IHV) and a co-discoverer of the human immunodeficiency virus (HIV), received the prestigious Severo Ochoa Award for his work in HIV/AIDS. The Severo Ochoa Award, named after the first Hispanic American to win a Nobel Prize in medicine, is given to a distinguished scientist who is dedicated to eradicating HIV/AIDS in minority communities. Dr. Gallo received the award at the third annual National Minority Health Month Foundation leadership awards luncheon in Washington, D.C. 

Match Day



Can you recall that feeling of anticipation while waiting to hear about a job offer—one you really wanted? Fourth-year students at the School of Medicine experienced a similar feeling on Match Day, March 16. Held at the same time in medical

schools around the country, Match Day is the event where graduating medical students learn into which residency program they have been accepted.

Historic Davidge Hall was filled to the rafters for the ceremony. Many students brought their parents and grandparents, and a few students proudly toted their own children as they walked up to the podium to accept their red Match Day envelopes. The envelopes were handed out by a

tuxedo-clad Gary D. Plotnick, MD, assistant dean for student affairs, whose son Daniel was among those matched to a residency.



Oh, what a feeling! Shayna Murdock, Carrie Maiorana and Surbhi Panchal (L-R) learn where they will do their residencies.

It took more than an hour for all the envelopes to be delivered, but the student who had to wait the longest was rewarded for her patience. Joanna Kroll received the “pot of gold”—the bag into which each student had tossed a small monetary donation as he or she was handed an envelope—which is traditionally used for a post-Match party.

The Class of 2006 was accepted into 119 residency programs at 78 different hospitals. The University of Maryland Medical Center will be home to 21 percent of the class, while another seven percent will go to other Baltimore-area hospitals. The remaining 72 percent of students will head to 26 different states and even to Canada. The primary care fields of internal medicine, pediatrics, family medicine and medicine-pediatrics gained 32, 18, 11 and two students, respectively. In the specialty fields, 10 students matched to general surgery, nine to neurology, with two of these students going into pediatric neurology, eight to obstetrics and gynecology, five each to orthopaedic surgery, anesthesiology and radiology, four to psychiatry, three to urology and otolaryngology, and one a piece to the fields of pediatric-emergency medicine, medicine-emergency medicine, plastic surgery, dermatology, pathology and radiation oncology.

Donna Parker, MD, associate dean for student affairs, served as the mistress of ceremonies in her first Match Day ceremony as associate dean.



Neda Homayounpour beams as she accepts her red envelope from Gary Plotnick, MD, assistant dean for student affairs.

{THE EXPERIENCE}

Teenager Earns Patent for Discovery at the School of Medicine

A 16-year-old high school student from Howard County has been awarded a patent based on work she did at the School of Medicine over the course of three summers. Serena Fasano, a junior at Glenelg High School, discovered a protein in yogurt that seems to eradicate *E. coli* 042, the leading cause of diarrhea, which kills six million people a year, mostly children under the age of two, and mostly in Third World countries.

The idea began when Serena wondered what was actually in the yogurt she was eating. She noticed the word “lactobacillus” on the ingredients list and did an Internet search for more information. She discovered the world of probiotics and decided it would make an interesting topic for her freshman science fair project.

Serena approached her father, Alessio Fasano, MD, professor of pediatrics, medicine and physiology at the School of Medicine and director of the Mucosal Biology Research Center, for help. He set her up with James Nataro, MD, PhD, a professor of pediatrics and microbiology & immunology, who studies diarrheal diseases. “I expected this project to end like nearly all science fair projects do,” says Dr. Nataro. “Maybe some nice data to report but certainly not an actual discovery made.”

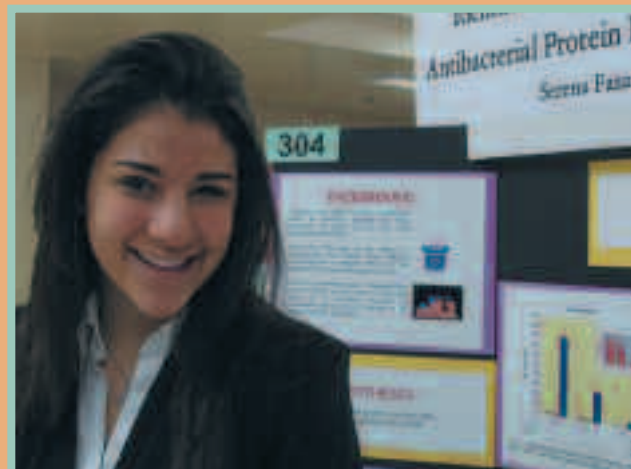
In the first year of her project, Serena discovered that something in yogurt kills *E. coli* 042. That discovery won her top prizes at the school and county science fairs. In her sophomore year, she discovered that the lactobacillus in the yogurt was secreting a substance that killed the *E. coli* 042. More science fair awards followed that discovery.

In January 2006, the third year of the project, Serena isolated the secretion into five components and found that one of them had a more deadly effect on *E. coli* 042. The compound, called Fraction 3, was identified by a lab as an “uncharacterized protein.” Serena was the first to discover it.

The University of Maryland, Baltimore applied for a patent for the protein on Serena’s behalf and received notification in March 2006 that it had been awarded. Serena now has naming rights for the protein and big plans for the future of her project. “I hope to produce a synthetic peptide and explore its possible use to treat intestinal diseases caused by *E. coli* 042, and even test it on enteric pathogens,” she says.

According to Dr. Nataro, Serena’s protein has great promise as an anti-infective because it is already known to be safe for human consumption. “Only clinical trials will determine if it will actually work in the setting of an infection or as a preventive agent,” he says.

“This whole experience has made me even more passionate about science than I was before,” Serena says. “I’m really excited about the future and feel incredibly lucky and blessed to have had this experience.”



Serena Fasano

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CORRECTION:

In the April 2006 issue of SOMnews, we printed an incorrect statement regarding Davidge Hall in the front page story “The Enduring Power of Leadership.” The sentence should have read as follows:

[Davidge Hall is owned by the state of Maryland and assigned by the University System of Maryland Board of Regents for use by the UMB campus.]

We regret the error.