THE SCHOOL OF MEDICINE
DEPARTMENT OF MICROBIOLOGY & IMMUNOLOGY
NEWSLETTER OF

VOLUME 4, ISSUE 2

# THE MICROSCOOP

FALL 2007

INSIDE THIS ISSUE:



## GPILS EXPLAINED BY BRIAN PETERS

The Graduate Program in Life Sciences, or GPILS as it is more commonly referred to, is a relatively new entity to the Graduate School. Following a nation-wide trend in graduate studies, GPILS was formed as an initiative to combine life sciences disciplines, giving new students a broader understanding of life science research and promoting collaborations spanning diverse fields.

The GPILS program officially started on July 1, 2006 and welcomed its first class of students the following fall semester. GPILS is currently comprised of five programs including Biochemistry and Molecular Biology, Molecular Medicine, Molecular Microbiology and Immunology, Neuroscience, and Physical Rehabilitation Science. The Molecular Medicine program is broken down even further into 4 sub-programs including Human Genetics and Genomics Medicine, Molecular and Cellular Cancer Biology, Molecular Cell Biology and Physiology, and Molecular Toxicology and Pharmacology. Collectively, these programs support M.Sc., Ph.D., and M.D./Ph.D. students. Each main GPILS program has an administrative head which oversees regulatory, payroll, and departmental planning activities.

In their first semester, incoming GPILS students from the five programs take the Core Course, which is broken down into individual comprehensive modules that focus on basic science from the five representative disciplines. For Microbiology and Immunology students, the GPILS Core Course has replaced the separate Cell Biology, Biochemistry, and Molecular Biology classes usually taken in the first and second semesters.

There are currently 68 faculty members in the GPILS program in Molecular Microbiology and Immunology in locations that vary from the Medical School to the Dental School to the Center of Marine Biotechnology. To become a member, faculty must formally apply to the GPILS program by submitting their CV to the director of the program of interest. Once the CV is received it is examined by a program-specific committee and a decision is made whether or not to accept the faculty member as part of the GPILS program. Criteria for judging faculty candidates include sharing of the department's academic and research vision as well as expressed interest from students. It is important to note that a faculty member can be part of the department, but not part of GPILS, which limits their ability to recruit students from other research disciplines.

The major advantage for a faculty member to become part of the GPILS program is greater flexibility in their access to graduate students. Prior to the formation of GPILS a faculty member had to be an official member of a department to have access to graduate students. This is not only great for faculty, but it is also an excellent opportunity for students to be able to explore research opportunities in a rotation outside of the department and make friends and colleagues in other disciplines. A student may do a rotation or undertake their thesis work with any mentor who is a member of the student's Program Faculty.

June Green, the Microbiology and Immunology GPILS administrative representative and resident GPILS guru, says that although the GPILS switch has given her more responsibilities, it has also increased money and flexibility to plan more departmental functions including graduate student lunches and happy hours. June is able to attend more recruitment fairs, giving her more opportunities to attract new graduate students.

The GPILS program is still in its infancy but committee members from all programs will be actively fine-tuning it each year to make the experience better for both faculty and graduate students alike.

More information can be found at the official GPILS website: http://lifesciences.umaryland.edu/.

Picture of faculty member featured.

# MEET THE NEW DEPARTMENT & PROGRAM FACULTY

## Dr. Tom Blanchard

**Tell us a little about your early years. Where did you grow up?**

I grew up in central Massachusetts and remained there until completing graduate school in 1991. Immediately before and several times during graduate school I made several trips to Europe where I traveled extensively by bicycle and hitchhiking.

**What institutions did you attend and what degrees did you attain?**

B.S. in Biology at the University of Massachusetts, Lowell

Ph.D., Molecular and Cellular Biology, University of Massachusetts, Amherst

Following graduate school I moved to Cleveland Ohio where I was a research associate at the Case Western Reserve University School of Medicine and at one point a visiting assistant professor at Oberlin College before joining the faculty at CWRU.

**What is your lab's research focus? Who's working in your lab?**

We are an immunology-based laboratory with a particular interest in the immune system of the gastrointestinal tract. We study Helicobacter pylori infection of the stomach and we can use this system as a model to study both vaccine-induced protective immune responses at the mucosa as well as immunoregulation of the host in response to noninvasive bacteria. Unlike the colon which is home to hundreds of distinct bacterial species and strains, H. pylori is one of the only bacteria that can live in the stomach. Therefore, the stomach proves to be a much simpler model in which to work, yet the information gained may be used to understand the host immune response in the lower gastrointestinal tract as well. Currently the lab consists of Hua Ding, a post doctoral fellow from CWRU with prior experience in H. pylori research; Guanghui Li, a research assistant with a variety of expertise in biological assays; and Eunhee Lim, a research assistant with strong molecular biology and microbiology skills.

**Tell us a little about your experience so far at UMAB. What role do you see for yourself at UMAB, in the department and/or in our GPILS program?**

The Department of Microbiology and Immunology, the MBRC, and CVD all have outstanding reputations and were important factors in my decision to join UMAB. I have been very impressed with the level of energy and enthusiasm in the research community at UMAB and the amount of cooperativity and the fostering of collaborations is also very evident. I hope to work towards three goals. First, the expertise of the CVD should help us rejuvenate our H. pylori vaccine research and therefore I am looking forward to developing new subunit vaccines and novel vectors to build on our prior success in small animal models. Second, our model of H. pylori infection and immunity has many themes in common with research on the lower gastrointestinal mucosa. Therefore, I hope to form collaborations with members of the MBRC in an effort to expand funding opportunities and strengthen the potential for program project development. Third, I have been impressed with the quality of the graduate students in GPILS and hope to become an active advisor and mentor and contribute the department's mission of educating high caliber scientists. I enjoy committee work and look forward to interacting with students within my own lab and from other labs as well. By enlisting students of my own, we should be able to delve further into the unique pathogenesis of H. pylori and complement the reputation already enjoyed by the department as a leader in pathogenic microbiology.

**What's your favorite thing to do in Baltimore?**

I currently live in Fells Point so my wife and I have enjoyed sampling the wide variety of small restaurants and pubs that are so prevalent within walking distance or a short drive. However, I also enjoy learning about the history of the small neighborhoods and the metamorphosis that many of them have experienced in the last several years.

**Is there anything else you'd like us to know about you?**

I enjoy reading, history, politics, and renovating homes.

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## Dr. Gregory Melikian

**Where did you grow up?**

I grew up in Armenia, which back then was a part of the Soviet Union.

**What institutions did you attend and what degrees did you attain?**

I graduated from Yerevan State University (Armenia) with an M.S. in Biophysics and then went to Moscow (Russia) for my graduate studies. I received my Ph.D. in Biophysics in 1984 from

"...I have been impressed with the quality of the graduate students in GPILS and hope to become an active advisor and mentor and contribute the department's mission of educating high caliber scientists."
- T. Blanchard

Gregory Melikian

"Our interest is the mechanisms by which disparate viral proteins induce membrane fusion. " - G. Melikian

## NEW FACULTY CONTINUED

Moscow State University.

**What is your lab's research focus? Who's working in your lab?**

Our interest is the mechanisms by which disparate viral proteins induce membrane fusion. The primary focus of my research has been the molecular mechanism of human immunodeficiency virus (HIV) and Avian Sarcoma and Leukosis virus (ASLV) entry into host cells. The combination of sensitive techniques that monitor early steps of membrane fusion with capturing and characterizing the fusion intermediates enabled us to delineate the basic mechanisms by which these proteins carry forward the fusion reaction.

There are currently four Research Associates in my lab: Vladimir Morozov, Olga Latinovic, Kosuke Miyauchi and Yuri Kim.

**What's your favorite thing to do in Baltimore?**

Still searching.

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### Dr. Vishvanath Nene

**Tell us a little about your early years. Where did you grow up?**

I was born in Mombasa, Kenya, and grew up there. Although the second largest city, Mombasa is a small island linked to the mainland by a permanent causeway. My high school and university education was in England where I spent 16 years before heading to the capital city of Kenya in 1986. I worked in Nairobi at a livestock research institute until I arrived at The Institute for Genome Research (TIGR) in August 2001, a fate full year by many accounts! [P.S. – this picture is out of date and needs more shades of lighter color added to it.]

**What institutions did you attend and what degrees did you attain?**

I graduated with a BSc in Physiology & Biochemistry from the University of Southampton, United Kingdom, and then went on to do a PhD in Bacterial Genetics, at the University of Nottingham.

**What is your lab's research focus? Who's working in your lab?**

I have a primary interest in tick and tick-borne diseases. My focus has been the use of modern molecular tools, including genomics, to support development of subunit vaccines against East Coast fever, a disease of cattle in sub-Saharan Africa, and to gain a better understanding of vector and pathogen biology.

Currently, my lab consists of me, myself and I – a situation which I expect will not last too long!

**Tell us a little about your experience so far at UMAB. What role do you see for yourself at UMAB, in the department and/or in the GPILS program in Molecular Microbiology and Immunology?**

The challenge of setting up a new shop is considerable but SOM and Micro/Immunol have been incredibly welcoming, supportive and positive. However, coming into a State system does take some adjustments. The research opportunities at UMAB are many and there is a superb track record in infectious disease research.

My interests are many and varied but revolve around disease control. I hope that it will be possible to entice graduate students to this area of research and to make use of my international contacts for research and training opportunities. Over the next few years I would like to develop a theme of functional vector genomics by utilizing high throughput tools to study molecular interactions that take place at the pathogen-tick interface.

**What's your favorite thing to do in Baltimore?**

Besides the delicacies of Lexington market I have not had an opportunity to explore Baltimore yet. I have heard about the post-doc happy hour and hope the grad students have the same.

**Is there anything else you'd like us to know about you?**

My family and I enjoy outdoor activities - in particular high altitude (>10,000 ft) trekking.

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### Dr. Jacques Ravel

**Tell us a little about your early years. Where did you grow up?**

I grew up in the Eastern part of France, and moved to the United States in May 1991 after spending a year in Montreal in Canada.

**What institutions did you attend and what degrees did you attain?**

I received a B.Sc and a M.Sc from the University of Nancy in France in 1990 and 1992, respectively. I did my Ph.D work at the Center of Marine Biotechnology in Baltimore and received my Ph.D. in 1999 from the University of Maryland at College Park. After a three year postdoctoral fellowship in the Department of Chemistry at Johns Hopkins University, I joined the Institute for Ge-

Vish Nene

"...to entice graduate students to this area of research and to make use of my international contacts for research and training opportunities." - V. Nene

## NEW FACULTY CONTINUED

nomic Research (TIGR) in Rockville, which I recently left to join the faculty of the Department of Microbiology & Immunology and the Institute for Genome Sciences at UMSOM.

**What is your lab's research focus? Who's working in your lab?**

My research focuses on the application of microbial genomics to three main topics:

• Exploring the human microbiome: ecology and metagenomics;

• Microbial genome sequence comparative analyses: the making of a genome with a special emphasis on human microbial pathogens, including Bacillus anthracis, Bacillus cereus, Yersinia pestis, Yersinia pseudotuberculosis, Enteropathogenic Escherichia coli (including E. coli 0157:H7 from contaminated food), Shigella spp., and Salmonella sp.;

• Chemical genomics: from genes to structure with a emhphasis on the development of novel bioinformatics tools for the analysis of the secondary metabolic potential of microbes. These are being integrated into 2METDB: a knowledge-based predictive tool for secondary metabolism.

The major sources of funding for my research activities include NIH, NSF, USDA and DoJ.

For more details see my GPILS web-page at lifesciences.umaryland.edu

**Tell us a little about your experience so far at UMAB. What role do you see for yourself at UMAB, in the department and/or in the GPILS Molecular Microbiology and Immunology program?**

My laboratory moved to UMB on 9/4/2007 and so far I have enjoyed UMB enormously.

My background is in microbial genomics, and I hope to bring to UMB, along with the faculty of The Institute for Genome Sciences, expertise that I believe is becoming essential to deal with the exponentially growing amount of genomic data. Genomic sciences use high-throughput and top-down approaches to study biological systems and integrating genomic and bioinformatics as part of the GPILS curriculum will prepare the students to maximize the use of genomic data in their graduate studies but also in their future careers.

**What's your favorite thing to do in Baltimore?**

I really enjoy biking in the rolling hills and though the horse farms north of Baltimore.

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Dr. Blanchard is a Program Faculty member; Dr. Melikian is Primary Faculty in our department; Drs. Nene & Ravel are program and department faculty members.

Jacques Ravel

**"...integrating genomic and bioinformatics as part of the GPILS curriculum will prepare the students to maximize the use of genomic data in their graduate studies and also in their future careers." - J. Ravel**

## MEETINGS & POSTERS

**Dr. Laure Aurelian** gave the keynote address at the 14th Japan Herpesvirus Infections Forum 2007, entitled "Herpes simplex virus (HSV)-associated erythema multiforme (HAEM)".

**Dr. Martin Flajnik** chaired a symposium on 'Evolution of the Immune System' at the AAI Meeting in Miami (18-22 May).

♦**Kelsy Smith** (Oram lab) presented a poster titled 'Transcriptional Regulation of a fur-like Gene and its Role in *Corynebacterium diptheriae* Metal Ion Response' at the ASM Annual General Meeting in Toronto in May.

♦**Zoe Worthington**, **Roger Plaut** and **Charlotte Andreasen** from the Carbonetti lab each presented a poster at the ASM Meeting.

♦**Sandy Jacobsen** and **Rebecca Brady** presented posters at the ASM Biofilms meeting in Quebec City, Quebec, Canada, March 25-29, 2007.

♦**Nicole Ammerman** and **Khandra Sears** (Azad lab) both presented posters at the Gordon Research Conference on Microbial Adhesion & Signal Transduction held at Salve Regina University, Newport, RI (July 22-27).

**Dr. Abdu Azad** and **Magda Sexton** attended the Aerobiology in Bio-Defense II Conference at the Rock Gap Lodge, Cumberland, MD (July).

♦Several members of the Azad lab attended the 21st American Society for Rickettsiology meeting in Colorado Springs, CO Sept. 8-11. **Shane Ceraul** gave a talk and was an ASR travel award recipient; **Nicole Ammerman**, **Joseph Gillespie**, **Rebecca Maag** and **Khandra Sears**

## MEETINGS & POSTERS CONTINUED

each presented posters. **Dr. Azad**, **Dr. Sayeed Rahman** and **Magda Sexton** also attended the meeting.

**Joyce Sakamoto** (Azad lab) presented a poster at the Cold Spring Harbor meeting on Microbial Pathogenesis and Host Response, Sept. 15-19.

## PUBLICATIONS

**Azad AF**. Pathogenic rickettsiae as bioterrorism agents. Clin Infect Dis 2007 Jul 15;45 Suppl 1:S52-5.

Barnes KI, Lindegardh N, Ogundahunsi O, Olliaro P, **Plowe CV**, Randrianarivelojosia M, Gbotosho GO, Watkins WM, Sibley CH and White NJ: World Antimalarial Resistance Network (WARN) IV: Clinical pharmacology. Malaria Journal Sep 2007.

♦**Brady RA**, Leid JG, Kofonow J, Costerton JW, and **Shirtliff ME**. Immunoglobulins to surface-associated biofilm immunogens provide a novel means of visualization of methicillin-resistant Staphylococcus aureus biofilms. Appl Env Micro.73(20) 2007. (This article will be featured on the journal cover/front page!)

♦Calhoun J, Christensen G, **Brady RA**, **Shirtliff ME**. Osteomyelitis. In: Expert Guide to Infectious Diseases. ed. Tan JS. American College of Physicians-American Society of Internal Medicine. Philadelphia, PA. 2007.

**Carbonetti, NH** (2007) Immunomodulation in the pathogenesis of Bordetella pertussis infection and disease. Current Opinion in Pharmacology 7:272-278

♦King-Lyons ND, **Smith KF**, Connell TD. Expression of hurP, a Gene Encoding a Prospective Site 2 Protease, Is Essential for Heme-Dependent Induction of bhuR in Bordetella bronchiseptica. J Bacteriol. 2007 Sep;189 (17):6266-75. Epub 2007 Jun 22.

**Plowe CV**, Roper C, Barnwell JW, Happi CT, Joshi HH, Mbacham W, Meshnick SR, Mugittu K, Naidoo I, Price RN, Shafer RW, Sibley CH, Sutherland CJ, ZimmermanCPA and Rosenthal PJ: World Antimalarial Resistance Network (WARN) III: Molecular markers for drug resistant malaria. Malaria Journal Sep 2007.

Price RN, Dorsey G, Ashley EA, Barnes KI, Baird JK, d'Alessandro U, Guerin PJ, Laufer MK, Naidoo I, Nosten F, Olliaro P, **Plowe CV**, Ringwald P, Sibley CH, Stepniewska K and White NJ: World Antimalarial Resistance Network (WARN) I: Clinical efficacy of antimalarial therapy. Malaria Journal Sep 2007.

Pyrski M, Koo JH, Polumuri S, **Ruknudin A**, Margolis J, **Schulze DH** and Margolis F: Expression of Na/Ca exchangers in the mouse olfactory and vomeronasal systems. J Comp. Neurol. 501:944-958, 2007.

**Ruknudin A** and Lakatta EG: Regulation of the Na/Ca Sibley CS, Barnes KI and exchanger (NCX1) and Plasmalemmal Ca2+ ATPase (PMCA) by other Proteins. Ann N Y Acad Sci. 2007 Mar 1099:86-102.

**Ruknudin A**, Wei SK, Haigney MC, Lederer WJ and **Schulze DH**: Phosphorylation and other conundrums of Na/Ca exchanger, NCX1. Ann. N.Y.Acad.Sci. 2007 1099:103-18.

**Sakamoto JM**, **Azad AF**. Rickettsial growth in permissive mosquito cells. Appl Environ Microbiol doi:10.1128/AEM.00923-07 published online ahead of print on 31 August.

♦**Sears KT**, Daino H and **Carey GB**: ROS-Dependent Destruction of MEK and Akt In Manumycin Stimulated Death of Lymphoid Tumor and Myeloma Cell Lines. International Journal of Cancer (2007).

Sibley SH, Barnes KI and **Plowe CV:** The rationale and plan for creating a World Antimalarial Resistance Drug Network (WARN), Malaria Journal Sep 2007.

Wei SK, **Ruknudin A**, Shou M, McCurley JM, Hanlon SU, Elgin E, **Schulze DH**, Haigney MCP,: Muscarinic Modulation of the Sodium-Calcium Exchanger in Heart Failure. Circulation 115:1225-1233 2007.

Worthington, ZEV, and **Carbonetti, NH** (2007) Evading the Proteasome: Absence of lysine residues contributes to pertussis toxin activity by evasion of proteasome degradation. Infection & Immunity 75:2946-2953.

Caption describing picture or graphic.

**Comments, suggestions? Let someone on the Scoop staff know. See pg.8 for contact info.**

Caption describing picture or graphic.

## GOOD NEWS

### Weddings

**Michelle Weber** (Vogel lab) married Eric Laird on June 23, 2007 at Swan Harbor Farm in Havre De Grace, MD.

On August 11, 2007 **Steve Bowen** married Corrine Levenstein in Baltimore County. The newlyweds honeymooned in Vancouver". Congratulations Michelle and Steve!

### Awards

**Rebecca Brady** from the Shirtliff lab received the Ollie Eylar Award for Graduate Student of the Year and the highly honored Graduate Program in Life Sciences Otani Award, 2007.

### Grants

**Dr. Laure Aurelian** has been awarded a 5 year $1,250,000 grant from the NIH for her project: *Apoptosis of skin melanoma by the new Hsp H11*. The objective of these studies is to define the mechanism of apoptosis in melanoma tumor cells caused by the new heat shock protein H11 cloned in her laboratory.

**Dr. Gregory B. Carey** will be awarded a grant from the NCI entitled: *Selective Targeting of MEK and Akt in Lymphoma and Myeloma Apoptosis*. The award will run from 10/1/07 to 9/30/10.

**Dr. Martin Flajnik** renewed one of his R01s entitled *Evolution of Adaptive Immunity* for the fourth time. The grant will run through to March 2012.

**Dr. Mark Shirtliff** was awarded the following grants: *Staphylococcus aureus biofilms: in vitro and in vivo studies*- National Institutes of Health - R01- $1,250,000. June 1, 2007 -May 31, 2012.

*Determination of differential gene expression in Staphylococcus aureus biofilms through microarray analysis.* NIH. $200,000 in microarrays.

*Detection and evaluation of antimicrobial agent targets and vaccine candidates against Staphylococcus epidermidis in models of biofilm infection*- NIH - SBIR. $61,000 to Shirtliff Lab - Mar 1, 2007.

*Modern Molecular Methods for the Analysis of Supragingival and Subgingival Biofilm Populations: Location of the Aerobic/Anaerobic Boundary*- Philips, $99,000. May 1, 2007 - Sep. 30, 2007.

### Other News

The Center for Vaccine Development at UMB and the Malaria Research and Training Center at the University of Bamako, Mali have jointly started a clinical trial for a new vaccine against malaria. **Dr. Christopher Plowe** is the co-principal investigator on this study.

**Dr. Mark Shirtliff** has been invited to give several lectures at the Mayo Clinic and the University of Missouri Medical School this year. He will also be giving a talk on "Persistent Biofilm Infections" at the Department of Ophthalmology, Harvard Medical School in November.

Eric and Michelle Laird

**Department post-docs and students have Happy Hour at Pickles Pub (subject to change) every Thursday. E-mail ksear001@umaryland.edu to get on the mailing list & be notified of changes or special events.**

## RECENT GRADUATES

**Sandy Jacobsen** and **Rebecca Brady** from the Shirtliff lab successfully defended their PhDs on July 24, 2007 and September 24, 2007 respectively. Sandy is continuing her work as a postdoctoral fellow with Dr. Shirtliff while looking for a position elsewhere. Becca will be a postdoctoral fellow at the FDA.

**Zach Roberts** (Vogel lab) graduated this summer and has returned to the Medical School to complete his requirements for his M.D.

**Roger Plaut** graduated from the Carbonetti lab in June 2007. His thesis was titled "Retrograde transport of pertussis toxin in mammalian cells". He is now a postdoctoral fellow in Scott Stibitz' lab at the FDA.

On June 28, 2007 **Shailesh Satpute** (Moudgil lab) defended his thesis titled "Immunomodulation of Autoimmune Arthritis by Tolerance Induction Against Heat-Shock Protein 65". Shailesh is now a postdoctoral fellow at John Hopkins.

**Eugene Kim**, a former student in the Moudgil lab, and his wife had their 2nd child in July.

## NEW STUDENTS

**Caitlin Doremus** is originally from Clarence, New York, an area outside of Buffalo. She graduated from the University of Washington, Seattle with a BS in Molecular, Cellular & Developmental Biology. While in Seattle, Caitlin worked in the Monoclonal Antibody Target Discovery Group at ZymoGenetics, Inc. She also worked as a research technician in the Chamberlain lab in the Department of Neurology at the University of Washington in the Adeno-Associated Viral Vector Group, which worked on the production and purification of various AAV serotypes to achieve effective muscle transduction as treatment for Duchene Muscular Dystrophy. Caitlin is interested in pursuing research in virology. In her spare time, she enjoys reading, making cocktails and photography – especially historical and architectural photographs. She also likes playing old school Nintendo games and exploring Baltimore.

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**Teresa Hsi** (MD/PhD student) was raised in Anchorage, Alaska. She earned her BA from Harvard University. During her undergrad, Teresa worked under Dr. Nancy Kleckner studying *E. coli* cell cycle regulation. After graduation, she worked at the Harvard Center for Neurodegeneration and Repair in the Laser Capture Microscopy Core Facility. Teresa's research interests include tumor immunology and vaccine development, and she has completed two rotations at the Center for Vaccine Development in the labs of Dr. Christopher Plowe and Dr. Marcela Pasetti. Her hobbies include travel, photography, and music such as piano, violin and a cappella. She also enjoys horseback riding and scuba diving.

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**Carly Page** grew up in Galway, New York, near Saratoga Springs in upstate New York. She is a 2007 graduate of the University at Buffalo with a BS in Biochemical Pharmacology. Carly worked in a reproductive biology lab at Children's Hospital in Buffalo, New York exploring the presence of HCN channels in ovarian tissues with the prospect of using these channels as a marker for chemotherapy induced ovarian damage. She also studied ways of protecting the ovary during chemotherapy treatments in order to preserve fertility for women of childbearing age. She is interested in bacteriology and immunology. During her free time, Carly likes to run, crochet, read (anything but textbooks), as well as cook.

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**Carlita Phillip** is from Burtonsville, Maryland. She earned a BS in Biology from University of Maryland, Baltimore County. Carlita spent the summer of 2004 to summer of 2005 working at the Howard Hughes Medical Institute at UMBC in the lab of Dr. Michael Summers, and was involved in MMLV RNA dimerization studies. She spent the following summer working on N-,K-,H- Ras protein studies under Dr. Ruibao Ren at Brandeis University. She later joined the lab of Dr. David Eisenmann in the Biology Department at UMBC studying reporter gene construct production for *C. elegans*. Carlita is interested in studying bacteriology and parasitology, and spent this past summer in Dr. Suzana Radulovic's lab here at UMAB working on Cap-D purification from *R. akari*. She loves crocheting (when she has the patience), reading novels, playing video games and also watching comic book movies and cooking shows.

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**Anna Seekatz** is a native of Montesano, Washington. She graduated from Western Washington University with a degree in Cellular/Molecular Biology and a minor in Anthropology. She completed her undergraduate research with Dr. Jeff Young in an *Arabidopsis thaliana* lab studying plant genetics. Anna's research interests are wide ranging in the field of infectious disease and she is open to experiencing many disciplines. She loves dancing, playing tennis and playing with her dog (which happens to be the cutest obese Pomeranian ever).

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**Sunil Shrestha** hails from Scarsdale, New York. He attended University of Maryland College Park, where he received a BS in Chemistry, and has spent the last three years working as a lead chemist. His research interests include studying the adaptive immune response and signaling mechanisms. In his spare time, Sunil enjoys working out, watching football, baseball and old movies, as well as eating different foods (he loves everything and anything).

Caitlin Doremus

Teresa Hsi

Carly Page

Carlita Philip

Anna Seekatz

Sunil Shrestha

## SCIENCE IN THE PUBLIC INTEREST—BY SMITA CHANDRAN

**Smita Chandran interviewed Dr. Donna Farber on how her lab uses an influenza model to understand the role of memory CD4 T cells in disease.**

**SC**: Could you talk a little bit about the Influenza project in your lab?

**DF**: We study the immune response against Influenza challenge and focus on the CD4 T cell memory response. Most people have been exposed to flu and will therefore have memory T cells against both the variant and invariant epitopes. It is important to understand how this memory pool is generated and what the nature of protection afforded by it is. While the importance of CD8 T cells and antibody-mediated protection is well elucidated, the role of memory CD4 T cells is not very clear. A better understanding of this will enable us to devise better vaccines against flu pandemics.

**SC**: How much influence would a memory response have in a constantly-mutating virus like Influenza?

**DF**: The memory response against conserved determinants like matrix proteins and polymerase will still afford protection. However, it is known that memory responses to flu can also lead to inflammation. The severe inflammatory response has a role to play in the pathology associated with the infection. Therefore we need to clearly define the mechanism of memory CD4 T cell-mediated protection in order to harness the protective arm of the memory immune response with minimal associated-pathology.

**SC**: So you are looking for ways to modulate the memory immune response against flu?

**DF**: Yes, modulation is actually a big area of interest in the lab right now. Since about half of all adult T cells are memory cells, designing strategies to modulate these cells would be of importance not only for flu but for other disease states as well. For example, we could apply similar fundamental strategies to modulate trafficking of memory CD4 T cells to inflammatory sites in autoimmune diabetes which is another area of interest in the lab. The flu model can therefore be used not only to understand the role of memory CD4 T cells against flu challenge but also to understand the basics of memory generation and its modulation in other disease states as well.

University Student Government Association

Calendar of Events

October 2, 2007 Project JumpStart Weekly Food Drive
October 5, 2007 Project JumpStart Weekly Food Drive
October 7, 2007 Project JumpStart Weekly Food Drive
October 10, 2007 USGA Senate Meeting
October 12, 2007 Project JumpStart Weekly Food Drive
October 16, 2007 Project JumpStart Weekly Food Drive
October 19, 2007 Project JumpStart Weekly Food Drive
October 27, 2007 ASCP Alzheimer's Association Memory Walk


**NEWSLETTER OF THE SCHOOL OF MEDICINE DEPARTMENT OF MICROBIOLOGY & IMMUNOLOGY**

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