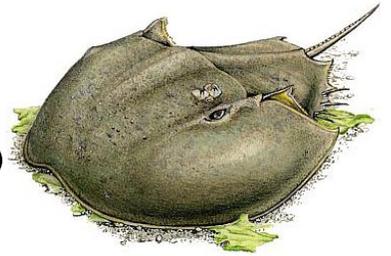


Lunenburg



NEWSLETTER

Department of Biological Sciences, Wagner College, Staten Island, NY

Volume 2012, Issue Spring-02

February, 2012



Darwin Day (from left to right): Stephanie Rollizo, Brian Palestis, Vincenzo DiMaggio, Ammini Moorthy, Zoltan Fulop, Roy Mosher, Linda Raths, and Heather Cook: HAPPY BIRTHDAY DR. MOSHER!,

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LETTER FROM THE EDITOR

I hope everybody's semester is going well. Spring break is already close and this certainly promises some relaxation. On the other hand, I guess, exams and assignments are due before. Good luck!

The February newsletter gives information about activities of clubs and societies, reviews an experience from LC 17, updates publications and presentations by students and faculty, and tries to entertain a little.

I hope you enjoy!

Best regards,

Dr. Horst Onken, The Editor



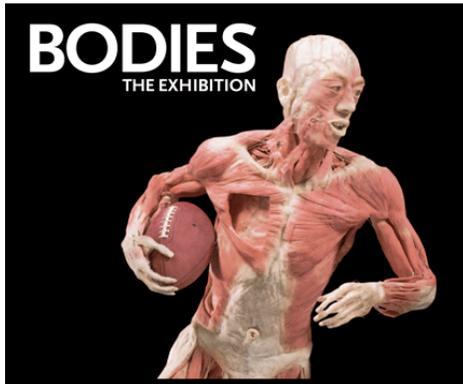


NEWS FROM CLUBS AND SOCIETIES

BIOLOGY CLUB

During the Spring 2012 semester, the Biology Club will host a variety of events including a meet and greet, Body's Alive Exhibition, as well as participate in Wagner's Health Fair. The meet and greet is for club members and biology majors to meet professors from the science departments. It allows science majors an opportunity to become acquainted with the teachers, what subjects they teach and potential research opportunities. It will be held towards the end of the semester. We will also thank the professors for all their help with the club by having a luncheon at this event.

Further information regarding the Bodies Alive Exhibition will be sent via email.



Contributed by Gregory Balaes.

TRI-BETA BIOLOGY HONORS SOCIETY

On February 20, 2012, Tri-Beta celebrated Darwin's birthday with members of the science department and students alike. A wonderful exhibit of the history of evolution was displayed in laboratory 402 in Megerle Hall (pictured below). Students had the opportunity to discuss science and mingle with the faculty of the biology department for a few hours throughout the day. Darwin's birthday will forever be an anticipated annual celebration and educational day among students and faculty at Wagner College.



At the same time, Dr. Mosher's birthday was celebrated. Guess which birthday it was!



Contributed by Gregory Balaes with photos by Joanna Emilio and Dr. Moorthy.



PRE-DENTISTRY SOCIETY



The Pre-Dentistry Society intends to host a variety of events during the Spring 2012 semester,” said Gregory Balaes, Pre-Dentistry Society President. Among the events include a seminar titled, “Determining Identity Using Dental Forensics,” which will be presented by Dr. Albicocco, a local dentist and alumni of Wagner College. The lecture will highlight dentistry’s integral role in determining identity of unknown individuals who were involved in accidents.



Additionally, the Spring 2012 Health Fair, to be held on the Sutter Lawn, has certainly been quite the “hot topic.” To date, fifteen clubs and organizations plan to host activities. The latest addition will be a blood drive where the Pre-Dentistry Society expects to help donate well over 40 pints of blood. If any club is interested in having a table to promote health on April 19th, then please email gregory.balaes@wagner.edu
Contributed by Philip Fomina.

PRE-HEALTH SOCIETY

On Monday, February 27, 2012 the Pre-Health Society hosted a Career Development workshop given by Natalie Johnson from the Center for Academic and Career Development. This presentation provided information on developing cover letters and resumes specifically for science majors. Moreover, we discussed how to develop a timeline for applying to health-professional schools (i.e., When should a pre-medical student take the MCAT? How much physician shadowing is necessary? etc.). Next, Ms. Johnson discussed how we can develop our pre-professional expertise (i.e., through research experience, professional shadowing, etc.)

Furthermore, the Pre-Health Society and Pre-Dentistry Society plans to host an admissions overview session in partnership with a medical school admissions faculty person in the coming weeks. Please look for further updates via email.
Contributed by Paki Mekki

EXPERIENCES

LC 17 VISITS NYU MEDICAL SCHOOL, BELLEVUE HOSPITAL, & THE VETERANS AFFAIRS HOSPITAL

There is perhaps nothing more valuable for pre med and pre health students than being in a clinical and laboratory environment first hand before pursuing their hopeful careers. Wagner students in Dr. Stearns' biostatistics freshman learning community got this chance last month in December, visiting NYU Medical School at Langone Center, Bellevue hospital, and the Veteran's Affairs Hospital to visit the laboratory of microbiologist, Martin Blaser, M.D.

Chaperoned by Dr. Mosher, professor of microbiology, the students first took a tour of NYU Medical school, led by two medical students. They were brought to the gross anatomy lab to observe medical students studying numerous cadavers. Dr. Stearns' students were actually able to view the cadavers alongside the medical students and witness the dissections up close. One would think that the cadavers would have a foul smell. However, a shared observation by the students was that the cadavers did not have a protruding odor of formaldehyde. The tour of the school was an enjoyable eye opener to the medical school curriculum.

The group then took a short walk down the street from NYU Medical School to Bellevue Hospital. There they met senior Medical resident Dr. Shin to have a tour of the historical hospital. After introducing the hospital, Dr. Shin took the students through the emergency departments and the trauma center. Although it was a quiet day, the students were able to see patients being taken care by doctors. As they walked through the emergency department, Dr. Shin reflected upon his work at the hospital commenting that the job has helped him to relate to his patients as people and not just objects of diagnosis. The students were spooked when they reached the trauma unit. As the students described, the department had a eerie aura. The room was set up with beds, IVs, and diagnostic machines, prepped for any incoming patient, at any moment. It was dramatic experience when the students were taken to the Medical ICU unit for pulmonary cases. Most of the patients were elderly, hooked up to machines, and had tubes coming out of them. The students realized that being a doctor is to overcome ones emotions and to accept the reality of a sobering situation such as that. Dr. Shin ended the tour by telling the students that he works everyday learning new techniques and reviewing concepts not like being in a classroom but to be always prepared to save lives, an experience that is overwhelmingly rewarding.

Visiting Dr. Blaser's laboratory was more of an academic experience. There were at least twenty people working in his lab, doctoral scientists and postdoctoral students. The students were presented with dense research with which they were very impressed. Dr. Blaser studies mainly infections and the microbiology of the gastrointestinal tract, specifically bacteria that cause ulcers and thousands of other microbes in the GI tract. He is trying to figure out what different microbes are in different people and how the microbio shifts in terms of drug treatment, change of diet, and disease. The tour of Dr. Blaser's





laboratory showed the students the theoretical side to medicine.

Dr. Stearns' students had a priceless experience that sometimes college students in the pre med and pre health fields often neglect to do or never have the opportunity. They both had a real world, applied experience visiting NYU medical school and Bellevue Hospital and an academic, conceptual observation of Dr. Blaser's research; two different fields that are in so many ways interconnected. In the future, these students may very well be in the same position as the professionals they viewed that day; the medical and scientific leaders of today's generation.

Contributed by Philip Fomina.

NEWS IN THE BIOSCIENCES

A LONG LASTING COOPERATION

All of us know that our internal and external body surfaces are covered in bacteria. Their number easily overcomes the number of human cells by a factor of 10. They belong to 500-1000 different species. They are prokaryotes, characterized by their very small size (only about a thousandth of our average cell volume), by their a usually circular DNA that floats in the cytoplasm instead of being concentrated in a nucleus, and by having a different kind of ribosomes, the molecular factories that produce cellular protein from the template submitted by nucleic acids. Most of these prokaryotes are doing us no harm, actually protecting us by outcompeting potentially harmful species. Some of them even deliver vitamin.

A long time ago, some of these prokaryotes entered into a symbiotic relationship with eukaryotes, including us. Biologists call them mitochondria. They have become one type of our cells' organelles. Our average cell contains 1000-2000 of these little guys who can cover up to 20% of our cells' volume, and who make the conversion of conversion of nutrients into usable energy about 15 times more efficient than it would be without them. What we give in return is protection. Admitted, over time they have become absolutely dependent on us and are no longer free to leave. On the other hand, humans and most, if not all, eukaryotes, including protists, fungi, animals and plants have become completely dependent on their endosymbionts. Interestingly, plants and some protists became hosts for another type of endosymbiont, the chloroplasts, that convert light energy into chemical energy and fix carbon dioxide in sugars.



How do we know this? There are a number of very good indicators that have been figured out in the last decades. Mitochondria are as small as bacteria. Mitochondria are surrounded by two membranes as if they have been engulfed, but not digested. Mitochondria have circular DNA similar to bacteria, and mitochondria have ribosomes of the prokaryotic type.

Who figured this out? Like with all complex scientific findings, many



contributed. However, there is one leading evolutionary biologist who especially forwarded and popularized the endosymbiotic relationship between mitochondria and eukaryotic cells: Lynn Margulis. Her first publication about the idea of the endosymbiotic relationship was turned down by a dozen of scientific journals, before it was published in the Journal of Theoretical biology in 1967. Until the late 1980s she contributed to research her idea. Her achievements have put her among top ranked scientific thinkers. Dr. Margulis was elected to the National Academy of Sciences in 1983, and she received the National Medal of Science by President Bill Clinton in 1999. Dr. Margulis died on November 26, 2011.

Contributed by Dr. Onken.

HOW DID THE ZEBRA GET ITS STRIPES?



Biologists thought and are still thinking that zebras evolved the striped pattern as a camouflage to blend better into their surrounding and avoid to become prey for large cats, lions. However, how many zebras are actually eaten by lions? Have there ever been enough lions to cause the evolutionary advantage of the striped camouflage? Famous biologists participated in the discussion. Alfred Russel Wallace proposed that the stripes would serve as good camouflage in tall grass, but Charles Darwin argued that zebras do not occur in such environments, but in open savannas instead.

A team of Hungarian and Swedish scientists explored a different possibility for the evolution of the zebras' stripes. On a large horse farm in Hungary the team exposed horse models with different surface patterns and covered with glue to catch whatever is attracted. The results, published in the Journal of Experimental Biology, are impressively clear. The striped pattern attracted the least number of tabanid flies, horse flies.

The emission of polarized light from animal coats and the functioning of the insect eye correlate well. The more polarized the emitted light, the more it can serve as tracks for insects to move. The striped pattern destroys these tracks of polarized light.



If you have ever been bitten by one of these flies, you can certainly understand the benefit of a striped coat. Horseflies do not only bite viciously, they distract the animals from grazing and can even deliver diseases.

As usual in the sciences, this observation is not meant as the last response to the question heading this little contribution. However, it is one more possibility why zebras evolved their stripes.

Contributed by Dr. Onken.



OPPORTUNITIES

RESEARCH WITH DROSOPHILA

Dr. Cook offers research opportunities for students in the frame of a project with the classical insect model organism, *Drosophila melanogaster*. At this time, research in Dr. Cook's lab focuses on endocrine disruptors and their effects on fruit fly development. Please, contact Dr. Cook for further information at heather.cook@wagner.edu.



RESEARCH WITH ZEBRA FISH

Dr. Fulop offers research opportunities for students with an interest in vertebrate neuroanatomy and physiology. Zebrafish *Danio rerio* has become an important model organism for vertebrate anatomy and physiology. Dr. Fulop is an expert in using microscopic techniques for anatomical and physiological research. Please, contact Dr. Fulop for further information at zfulop@wagner.edu.



RESEARCH WITH MICROBES

Dr. Bobbitt and Dr. Mosher offer a variety of research opportunities with microorganisms for students. Both follow different aspects of microbiological research, using a wide array of experimental techniques. Please, contact Dr. Bobbitt and Dr. Mosher for further information at kbobbitt@wagner.edu or at rmosher@wagner.edu.



Contributed by Dr. Onken

WORK IN THE GARDEN

Students interested in collaborating in the greenhouse and/or garden during the spring of 2012 should contact Dr. Onken (horst.onken@wagner.edu).

Contributed by Dr. Onken

BE A LIMULUS ASSISTANT EDITOR

Proficient student writers are invited to become assistant editors for the newsletter of the Department of Biological Sciences. If you are interested, please, contact Dr. Onken (horst.onken@wagner.edu).

Contributed by Dr. Onken

PUBLICATIONS

Moffett, D. F., Jagadeshwaran, U., Wang, Z., Davis, H. M., **Onken, H.** and Goss, G. G. (*in press*). Signaling by intracellular Ca^{2+} and H^+ in larval mosquito (*Aedes aegypti*) midgut epithelium in response to serosal serotonin and lumen pH. *Journal of Insect Physiology*, available online at <http://dx.doi.org/10.1016/j.jinsphys.2011.11.019>



Palestis, B.G., J. Cabrero, R. Trivers, and J.P.M. Camacho. 2010. Prevalence of B chromosomes in Orthoptera is associated with shape and number of A chromosomes. *Genetica* 138: 1181-1189.

PRESENTATIONS

Palestis, B.G. and **K.E. Eppinger**. 2011. Few happy returns: Low return rates of common terns banded at Pettit Island, New Jersey. Presented at the 35th Annual Meeting of the Waterbird Society, 9-12 November, Annapolis, MD.

Rivera, W., **C. Gaylets**, **J. Husic**, **R. Mosher**, **B. Palestis**, and **A. Houlihan**. 2011. Carriage of bacterial and protozoan parasites among common tern chicks on Pettit Island, Barnegat Bay, NJ. Presented at the 35th Annual Meeting of the Waterbird Society, 9-12 November, Annapolis, MD.

Duncan, L., **Emilio, J.** and **Cook, H.** 2011. Analyzing the Effect of Phthalates on the Development of *Drosophila melanogaster*. 44th Annual MACUB Conference, Seton Hall University, South Orange, NJ, October 29, 2011.

Denisenko, L., **Corbo, C.** (Wagner College) and Alonso, A. (CSI). 2011. Electron Microscopic Analysis of Cell Membrane Integrity when Expressing Tau Pseudophosphorylated at Positions T212, T213 & S262. 44th Annual MACUB Conference, Seton Hall University, South Orange, NJ, October 29, 2011.

Gutkin, M. C., **Corbo, C. P.**, **Raths, L. A.** and **Fulop, Z. L.** 2011. Identification of Proliferating and Immunologically Active Cells in Surviving Organotypic Culture of Adult Zebrafish (*Danio rerio*) Optic Tectum. 44th Annual MACUB Conference, Seton Hall University, South Orange, NJ, October 29, 2011.

Auricchio, G. M. (Wagner undergraduate), Baily, J., McAllister, F., Maitra, A. and Leach, S. (Johns Hopkins University School of Medicine) 2011. Imaging Primary Cilia in Pancreatic Cancer Tumor Initiating Cells. 44th Annual MACUB Conference, Seton Hall University, South Orange, NJ, October 29, 2011.

Memon, M. A. (Wagner undergraduate), Fuchs, E., Bakshi, R. and Hendrix, C. (Johns Hopkins University School of Medicine) 2011. Measuring Distribution and Permeability of an HIV Microbicide Gel Vehicle using MRT, SPECT/CT and a Radiolabeled Small Molecule. 44th Annual MACUB Conference, Seton Hall University, South Orange, NJ, October 29, 2011.

Palestis, B.G. and **K.E. Eppinger**. 2011. A banding study of common terns on Pettit Island, NJ: Preliminary results. Greater New York/New Jersey Harbor Herons and Waterbirds Working Group. Staten Island, NY. January 12-13.

Palestis, B., I. Nisbet, J. Hatch, J. Arnold, and P. Szczys. 2011. The importance of tail length for sexual selection in roseate terns. Waterbird Society. Grand Island, NE. March 13-16.



PROFESSIONAL MEETINGS

EASTERN COLLEGES SCIENCE CONFERENCE 2012
The 66th Eastern Colleges Science Conference and the 6th Undergraduate Research Symposium are held together on Saturday, April 14, on the campus of William Paterson University, in Wayne, NJ. March 15, 2012 is the deadline for submitting all individual registrations, abstracts and full-length papers.

GET READY TO ATTEND!

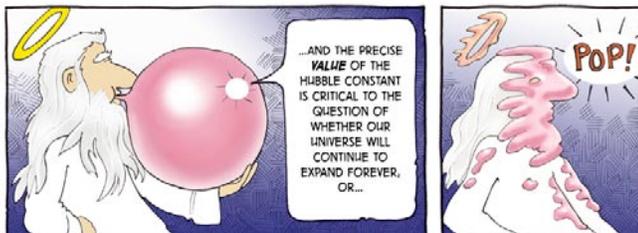
Contributed by Dr. Onken.

ALUMNI

Dear Alumni,

If you are interested in contributing to our newsletter, you are very welcome to do so. Contact Dr. Onken by e-mail (horst.onken@wagner.edu) with your submission, comment, ideas or questions! We are excited to hear about where you are, how and what you do!

CARTOON



Cartoons from www.lab-initio.com

JOKE

A doctor, an engineer, and a fungal taxonomist arrived before God at the gate to heaven.

The doctor said how he'd healed the sick, helped the lame; but he was a sinner and was sent to Hell.

The engineer told how he'd built homes for the homeless, etc.; but he messed up the environment, so he was sent to Hell.

The fungal taxonomist was frightened by all this, but as soon as he mentioned his occupation, God said "You've already been thru Hell, Welcome to Heaven."

WHAT IS THIS?



Who is looking at you?

This guy is not an insect. It is small and could sit down on the nail of your little finger. However, although it is quite small and will not harm you at all, most people are afraid of it, or at least dislike it. This animal has very good eye sight, which helps it to be a very active predator. It can jump very far to catch its prey. It mainly feeds on bugs, helping to hold those at bay. There are hundreds in your garden at home and thousands on campus.

GUIDELINES FOR CONTRIBUTORS

Authors in all sections should keep in mind that not all readers are specialized in their area of interest. Keep your contribution on a level that everybody can understand.

Contributions may vary in length between about 50 and 500 words and must be submitted by e-mail to horst.onken@wagner.edu.

Photographs or other images that accompany an article are very welcome, but must be submitted as separate files (high quality jpg is the preferred file format) attached to the e-mail. Be aware that photographs/images may be minimized in size.

Indicate the section of the newsletter where you want your contribution to appear.

The deadline for submission of a contribution is the 20th of the month. Contributions received later may or may not be considered.

The editor reserves his right to edit your contribution or post an immediate response.

Editing may involve to publish contributions in other sections as indicated by the author.

All contributions will clearly indicate the author's identity.

All contributions are reviewed and publication may be refused by the editor.

The Editorial Board:

Editor: Dr. Horst Onken, Associate Professor

Assistant Editor: Stephanie Rollizo, Dept. Secretary

Student Assistant Editor: Nidhi Khanna (graduated in 2011)

Student Assistant Editor: Gregory Balaes (Biopsychology)

Student Assistant Editor: Pakinam Mekki (Biology)

Student Assistant Editor: Philip Fomina (Biopsychology)

Student Assistant Editor: WANTED!

