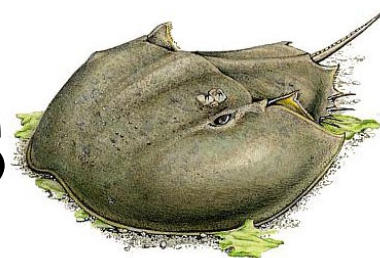


Limulus



NEWSLETTER

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

Volume 2010, Issue Fall-03

November/December, 2010

LETTER FROM THE EDITOR

The 25th issue of the LIMULUS newsletter of the Department of Biological Sciences! It is a Christmas present for you, our readers. Almost, it appears as if it were yesterday when I edited the first newsletter in October of 2007. Time flies by! Of course, everybody agrees that holidays pass by too fast and can never be long enough for those who know what to do with their time. For many students, I hear, the semesters appear long. For me this is not the case. The fall semester 2010 appeared to have passed faster than the fall semester 2009. Not only semesters, time in general, seems to accelerate with age, a pretty common observation. May be I should direct my research to this phenomenon of nonlinear time. However, I guess this is more a research topic for somebody from the departments of physics or psychology. In any case, I wish everybody a longer winter break!

MERRY CHRISTMAS and a HAPPY NEW YEAR!

Dr. Horst Onken
The Editor

FACULTY NEWS

ONE MORE PAPPAW AT WAGNER



On behalf of the Limulus staff, and the entire biology department, we welcome the latest papaw of the college: Congratulations to Dr. Donald Stearns on the birth of his twin grandchildren, John Edison (right) weighing 7 lbs, and Lucy Grace (left) weighing 6 lbs 13 oz.



Contributed by Gregory Balaes

DR. MOORTHY SPENDS HER SABBATICAL IN INDIA



Dr. Moorthy will be going on sabbatical this coming spring 2011 semester. She will be spending a good part of her sabbatical in Kerala, India where she will be teaching courses on "Applications of Bio Technology," and "Ethical, Legal and Social Implications (ELSI) of the Human Genome." Her coursework will be taught in the Teacher's College, who is involved with keeping college

and university professors updated on current events in their fields. The Teaching College is housed under the Kerala University Campus at Kariavattam, Trivandrum in Kerala, India.

While Dr. Moorthy is in India, she will be meeting a Wagner Alumni, Ms. Christina Lamb, a graduate from the Biology Department. Christina is currently studying for her PH.D in public health at the University of North Carolina, Chapel Hill. Dr. Moorthy would like to remind the campus that she will be checking her email, and can be reached at asmooth@wagner.edu.

Contributed by Gregory Balaes

CURRICULUM NEWS

BIOLOGY MAJOR:

Students can now count any 300-level or higher microbiology course with a lab as one of the three upper-level electives in the biology major.

The list of upper-level electives in the biology major will now read (changes in italics):

"Any 300-level or higher biology *or microbiology* course(s) with a laboratory or BI493 or CH517 or the second Capstone Course..."

ENVIRONMENTAL STUDIES MINOR:

- BI 110 *Environmental Biology* is now a required course for the minor. It is the only required course.
- HI 237 *Environment: History, Society and Change in the Modern World (I)* is now an elective for the minor. However, because History is in the Humanities, the





course will not satisfy the Social Sciences requirement of the minor.

COURSE FREQUENCY CHANGES:

- **BI306** *Neuroanatomy and Neurophysiology* will now be taught every spring.
- **BI323** *Basic Medical Histology* will move to fall of even-numbered years.

Contributed by Dr. Palestis

BIOLOGY STUDENT NEWS

SENIOR ACCEPTED BY TOP SCHOOLS



Senior Biology major and psychology minor Peter Pisano recently received acceptances from two prestigious dental schools. Peter was accepted to the University of Medicine and Dentistry of New Jersey (UMDNJ) and New York University's College of Dentistry.

On the behalf of the Limulus staff, I would like to congratulate Peter on his acceptances to two great dental schools!

Contributed by Nidhi Khanna

BIOLOGY CLUB NEWS

The Biology Club planned a "Biology Club Bake Night" last month. Due to unexpected events, the event was cancelled, but will be postponed until next semester. Lastly, please look out for the Biology Club on Facebook. Member Melanie Krongold created the Wagner College Biology Club group on Facebook, so make sure you keep yourself updated on upcoming club news!

Be on the look out for upcoming events during the spring 2011 semester, including Metric System Bake Night (which was postponed), and a trip to the Bodies Alive Exhibit in New York City. Biology Club t-shirts are now in. Please contact Janna Denisenko, the club's secretary, at janna.denisenko@wagner.edu. Meetings will resume after break. Leonid Denisenko, the club's president, would like to wish everyone has a safe winter, a happy holiday. New members and ideas are always welcome. Please email leonid.denisenko@wagner.edu if interested.

Contributed by Gregory Balaes and Nidhi Khanna

TRI-BETA & PRE-HEALTH SOCIETY

TEAMING UP TO RAISE MONEY

Tribeta president Medije Mashkulli and Pre-Health Society president Felicia Giunta teamed up to complete their respective organization's community service requirement for the semester. The organizations conducted a joint donation drive for the Ovarian Cancer Research Fund (OCRF). The items that were donated will be sold by the OCRF to for-profit wholesalers. The profits from the donations are used by the OCRF to develop new methods of detecting, preventing, and treating this deadly disease that affects many women.

Contributed by Nidhi Khanna



PRE-DENTISTRY SOCIETY UPDATES

Dental Health Promotion day was once again a great success. The Pre-Dentistry Society held this event on November 29th in the Union Building, where club members handed out toothbrushes, floss, and information regarding dental health. A total of \$95.49 was raised to benefit cleft palate and cleft lip surgeries through the Operation Smile organization. The Pre-Dentistry Society would like to send a "thank you" to all those who donated and participated.

Next semester, the society will vote on candidates for an available treasurer position. Candidates were selected at the final meeting, and include Radislav Meylikh, Sara Mfarrej, and Adriana Castillo. Also, the society would like to remind members that the Pre-Dentistry Society t-shirts have arrived. If you have not yet received your t-shirt, please email pre-dental@wagner.edu. Any student is always welcome to join the society, please email Gregory Balaes, the club's President, at gregory.balaes@wagner.edu, or pre-dental@wagner.edu if interested.

Contributed by Gregory Balaes

OPPORTUNITIES

RESEARCH WITH MOSQUITOES AND CRABS

Dr. Onken offers research opportunities for students in the frame of a project in which he collaborates with scientists from Washington State University, the University of Idaho, and the University of Alberta (Edmonton, CA). The project is funded by the National Institute of Health and studies the physiology of the midgut of larval yellow fever mosquitoes (*Aedes aegypti*). Mosquitoes are vectors of a number of parasites, transmit devastating diseases like malaria, yellow fever and dengue, and are a major threat to the health of billions of people on our planet. The principal investigators of this project address larval mosquitoes, because it appears more straightforward to fight these vectors as long as they are confined in an aquatic habitat.



In collaboration with colleagues from the U.S. (Mt. Desert Island Biological Laboratories, Maine), Brazil (University of São Paulo in Ribeirão Preto, University of Paraná in Curitiba) and Canada (University of Manitoba in Winnipeg) Dr. Onken pursues research with Crustacea related to the osmoregulatory capacities and mechanisms of crabs. Together with Dr. Alauddin (Chemistry) and Professor Beecher (Biology), an ecophysiological study is in an early stage of planning.

Dr. Onken can offer research opportunities for two to three students. If interested contact Dr. Onken in his office (Megerle Science Hall Room 411), lab (Megerle Science Hall Room 406) or via e-mail (horst.onken@wagner.edu) or phone 420-4211.

For the spring semester Dr. Onken offers a work study position related to his work with mosquitoes.

Contributed by Dr. Onken



WORK IN THE GARDEN

Students interested in collaborating in the greenhouse and/or garden during the fall and winter of 2010 are encouraged to contact Dr. Onken (horst.onken@wagner.edu). There is also an official student job for collaboration in greenhouse and garden.

Contributed by Dr. Onken

LIMULUS WELCOMES STUDENT ASSISTANT EDITOR



Gregory J. Balaes is a second-year student at Wagner College. He is a Biology major and is double minoring in Spanish and Chemistry. Greg has been an active member of the Wagner community and has served as a senator in SGA since his first year. He is currently a member of both the Biology Club, and the Pre-Health Society. Additionally, he helped found the Pre-Dentistry Society this year, and currently serves as President of the society.

Before moving on to a career in orthodontics, he aspires to pursue biomedical research at the graduate level. On behalf of the Limulus staff, I would like to welcome Greg to the Editorial Board!

Contributed by Nidhi Khanna

EXPERIENCES

LC 17: BACTERIA, HUMAN HEALTH, AND SURVIVAL

It is no secret that Wagner College focuses education on both learning inside and outside the classroom. In a recent interview with Dr. Stearns, and Dr. Houlihan, the backbone to LC 17 was revealed: the experiential learning component. As part of this component, students become actively involved during the semester in field trips and other exercises that demonstrate microbiological processes in the “real world.”

Fieldtrips began almost immediately in the semester, and include the Joint Meeting of Essex and Union Counties Wastewater Treatment Facility. Students have also traveled to a quality control center of Microbiology, ImClone Systems in Branchburg, NJ, as well as to the Northeast Regional Laboratory, U.S. Food and Drug Administration in Jamaica, NY. Moreover, students participate in a 5-6 week research experiment titled the “Bioremediation Project: Using Bacteria to Destroy Pollutants.”

Each year, chemicals that are not normally found in nature are manufactured, sold, and used for specific purposes. These chemicals include pesticides designed to kill weeds, insects, and crop parasites. Some of these industrial chemicals linger in the environment for long periods (years, decades) and accumulate with repeated use. This lingering occurs because manufactured chemicals do not decompose as quickly as most chemicals made by living creatures. After all, what are the odds that a completely unnatural molecule discarded in a natural environment would be quickly broken down when

such decomposition requires the presence of particular enzymes that specifically degrade that unnatural molecule?

The Bioremediation Project is designed to identify specific species of bacteria that can degrade certain compounds that are presently manufactured in industrial laboratories, sold in the marketplace, and thus introduced into the environment. After selecting a manufactured chemical from a provided list, students spent the majority of the semester researching information. With training, and supervision, students used the scientific method and standard procedures to culture bacteria in the presence (and absence) of the chosen chemical, to determine which species of bacteria decompose that compound. With different students using different compounds, the group results should indicate which of the tested chemicals are particularly resistant to degradation, and which are easier to break down. Group results should also indicate which species of bacteria are better at decomposing specific chemicals than other species of bacteria.

One may question why this information may be beneficial to the community. The answer is simple: this information helps the larger community by pointing out which species of bacteria should be applied to which chemicals to speed up the bioremediation process. The same bacteria will thus reduce each chemical’s possible impact on human health and the environment. Research in LC 17 has not only become a major component of the course, comprising of ¼ of the students overall GPA, but functions in exposing students to research at the college level during their very first semester at Wagner College.

Contributed by Gregory Balaes

CHEMICAL DEGRADATION OF BROMOXYNIL



On December 15th, 2010, the students and faculty of LC 17 invited the Wagner community to the Spiro building to view their research findings through presentations. In particular, a presentation by Ashley Anonsen and Laura Amorosa highlighted the bioremediation process of a pesticide called Bromoxynil. Bromoxynil’s purpose serves in inhibiting photosynthesis by binding to electron transport components of photosystem II and respiration to eventually kill weeds, and other unwanted plants. Ashley and Laura traveled to a farm in Pennsylvania to collect dirt samples from a farm, and ultimately successfully grew gram-negative bacteria called *Pseudomonas putida* from this soil bacterium.

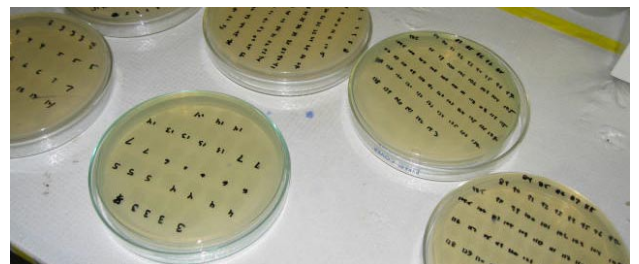
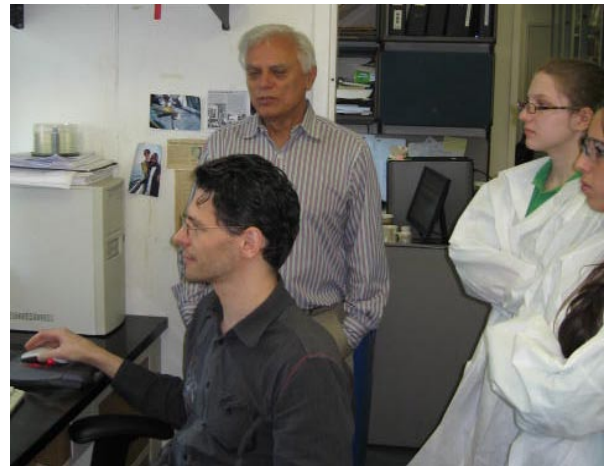
Contributed by Gregory Balaes





LC 17 VISITS FISCHETTI LAB

On November 22, the Freshmen Learning Community of Dr. Houlihan and Dr. Stearns visited the laboratory of Dr. Vincent Fischetti at Rockefeller University. Dr. Fischetti is an alumnus of Wagner (1962) who received an honorary doctorate in spring of 2010. For students and instructors a visit of a laboratory of a renowned microbiologist like Dr. Fischetti is certainly a special experience. The photographs below were kindly provided by Laura Barlament, editor of the Wagner Magazine and member of the Communications Department of Wagner College:



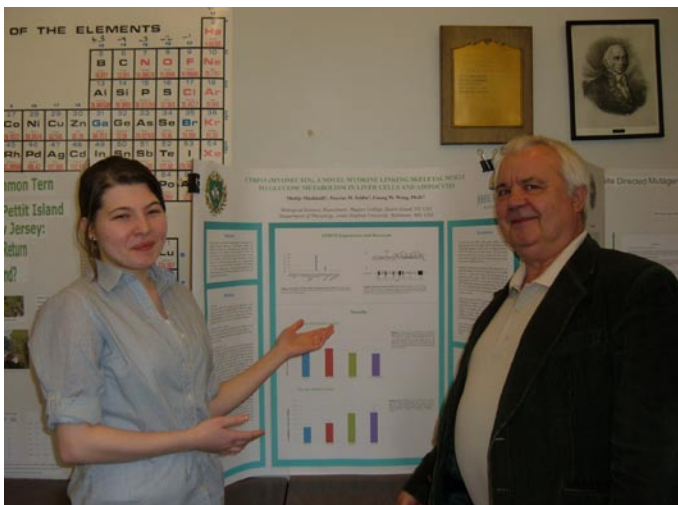
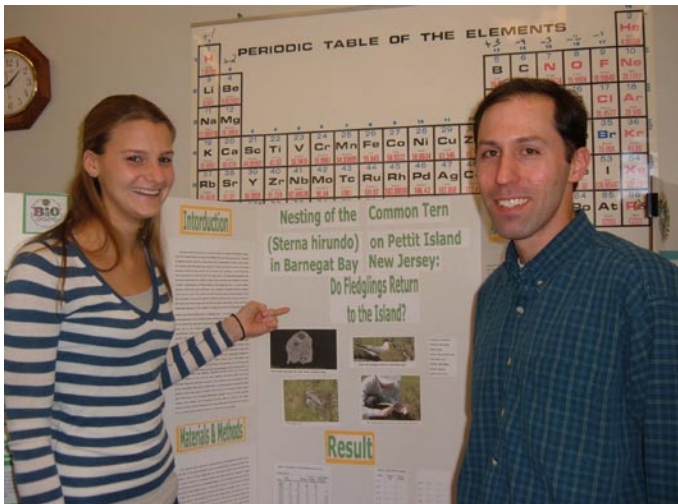
Contributed by Dr. Onken with photos from Laura Barlament





SENIOR POSTER PRESENTATION

On December 8, the seniors presented their work in a poster presentation. Professional discussions were accompanied by coffee, soda and snacks. Congratulations to our seniors Kaitlin Eppinger, Medije Mashkulli, Alex Molesan, and Caroline Mroz.



Contributed by Dr. Onken with photographs from Stephanie Rollizo

HOLIDAY CELEBRATION 2010

In the early afternoon of December 8, a number of science faculty and graduate students met in the Espana Royal in Richmond Road for the meanwhile traditional Holiday Celebration. Special thanks go to Stephanie Rollizo who again organized the event. What would we do without our Stephanie?!





A special event was the birthday celebration for Lisamarie Alba, a long-term adjunct professor of the Biology Department. Once more: Congratulations Lisamarie!

Contributed by Dr. Onken with photographs from Stephanie Rollizo



PUBLICATIONS

NEW! Palestis, B.G., J. Cabrero, R. Trivers, and J.P.M. Camacho. *In press*. Prevalence of B chromosomes in Orthoptera is associated with shape and number of A chromosomes. *Genetica*.

Jagadeshwaran, U., **Onken, H.**, Hardy, M., Moffett, S. B. & Moffett, D. F. (2010). Cellular mechanisms of acid secretion in the posterior midgut of the larval mosquito *Aedes aegypti*. *Journal of Experimental Biology* **213**: 295-300.

Moffett, D.F. and **Onken, H.** (2010). The Cellular Basis of Extreme Alkali Secretion in Insects: A Tale of Two Tissues. In: *Epithelial Transport Physiology* (ed. George A. Gerencser), pp. 91-112 . Totowa, New Jersey: Humana Press. ISBN: 978-1-60327-228-5.

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:



Cartoonas usual from www.lab-initio.com

Key:

- a. Satellite receiver for Global Positioning System
- b. Infrared night-vision glasses.
- c. Ceramic nose-cone and ceramic tiles, required to withstand the incredible temperatures associated with the immense speeds Santa must travel at nowadays in order to deliver presents to the ever-expanding population of children on earth.
- j. Asbestos-fibre beard and hair, to withstand high temperatures (as noted above) and yet also maintain that ring of Santa-authenticity. (All fabrics also soaked in fire-retardant phosphine compounds).
- d. Filtration unit and rebreathing apparatus, required due to Occupational Safety and Health considerations associated with the chronic inhalation of asbestos fibres.
- e. Recoilless Rifle (Bazooka). Santa hasn't got time any more to mess around trying to find your chimney, if that is you have one. He hasn't even got time to stand around while you answer your doorbell. This year, he intends to make a clean surgical hole through your living-room wall.
- f. Depleted Uranium shells ensure that the hole gets made, even if your living-room wall happens to be surrounded by 3-inch thick steel armour.
- g. Heads-up display.
- h. and i. Hand-held Laser Target Designation-Gun and Laser-Guided Smart Presents. Once the hole is made, Santa will aim the laser into your living room, and deliver Smart Presents with pin-point accuracy by the 'Fire-and-Forget' method. (This Christmas morning, you should awake to find a smoking hole



in your wall, a charred Christmas tree and a few Smart presents dotted about, each in their own little crater.)

k. (we did j. before...) Boot-mounted precision Gyroscope for backup navigation by dead-reckoning should the Global Positioning System fail.

l. Boot-mounted Magnetic Anomaly Detector for no apparent reason.

m. Belt-mounted Sextant, for navigation by starlight during 80% of the time when all the high-tech navigation gear is on the fritz.

n. High-Speed-Anti-Radiation-Missile (HARM) to deal with national defence networks or any further encounters with the notorious Santa-hating scientist known only as 'Biggins.' There's more about Biggins [on the Santa page](#).

o. MacDonnell-Douglas S-33 Relaxed-Stability Sleigh with the very latest in Fly-by-Wire avionics and externally mounted Quadraphonic-Surround Sound Audio system set permanently to 'Jingle-Bells' and featuring four 30 million watt speakers, audible from the moon, should that become an issue.

p. Compact shoulder-mounted Supercomputer to filter Population Data, the latest Census Statistics, Consumer Research Polls, and Council Building Permits to determine who is living where. Links through to ground-based spy network to ascertain which children are being good, and which children are being bad, and just how good or bad these children are being.

q. (Not shown). The XJ-970. A new type of Reindeer-based propulsion system designed specifically for the modern Santa featuring superconductor-based Gravity-Repulsion-Units and a unique Fly-by-Reins control system. Details of this highly-innovative system remain shrouded in secrecy even to this day.

The editors of the LIMULUS wish every reader HAPPY HOLIDAYS and all the best for a healthy and successful 2011!



The Editorial Board:

Editor: Dr. Horst Onken, Associate Professor

Assistant Editor: Stephanie Rollizo, Dept. Secretary

Student Assistant Editor: Nidhi Khanna (Biology)

Student Assistant Editor: Farha Rashid (Biology)

Student Assistant Editor: Gregory Balaes (Biology)