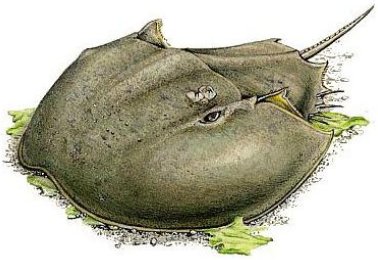
Limulus



NEWSLETTER

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

Volume 2010, Issue Spring-02 **February, 2010**

LETTER FROM THE EDITOR

The February newsletter looks back onto a month with relatively few classes, but with many snow days. Nevertheless, some vibrant things are always going on in our department. We celebrated Darwin Day and enjoyed the related exhibition set up by Professor Raths. Especially highlighted are two people in the current issue: Dr. Stearns (see below) and Luesoni Johnson, a visiting research student from Kingsborough Community College (see page 6).

The summer course offerings are reprinted on page 2, and you can meet our new student assistant editor, Joanna Kielkucki, on page 3.

Dr. Horst Onken

The Editor

BIOLOGY STAFF AND FACULTY NEWS

DR. STEARNS DISCUSSES RESEARCH PROJECTS

Dr. Donald Stearns has spent 23 years of his professional career serving as full-time college professor. During the week, students can find Dr. Stearns working away in his office until the late hours of the night. He is a dedicated and caring professor that is currently working on two important research projects. Dr. Stearns is studying the way organisms respond to different light cues. He also received a grant from the National Science Foundation to study the connection between critical thinking and civic thinking $(CT)^{2.}$

After receiving his B.A. in Biology from the Ivy League institution Dartmouth College, Dr. Stearns attended the University of New Hampshire and earned a Masters in Zoology. Before pursuing a PhD in Zoology at Duke University, he taught undergraduate students in Mexico at the University of Baja California.

As a graduate student at Duke University, Dr. Stearns focused on behavioral ecology, especially of marine organisms. He developed an interest in the cyclic behaviors of nocturnal migration. Dr. Stearns basically studied daily patterns of marine organisms and wanted to know how light played a role in effecting those behaviors. He proposed that organisms behave differently under various light conditions. "Organisms can see different light conditions that human beings are unable to see, and this is quite fascinating to me," he said.

The effects of light and behavior can help answer a lot of important questions, such as what specific light cues can trigger behavioral responses in the natural field. Currently Dr. Stearns has five research students at Wagner that are working in the photophysiology lab. In this dark room, the students are able to control the color and brightness of light using special filters. The students are using mosquitoes and observing how the insects respond to different light cues. If the mosquitoes do not respond to the light cues, then Dr. Stearns will conclude that the insects did not see the light. He is observing the organisms' behavior as a way to measure what the mosquitoes can and cannot see.

In addition to conducting research in the laboratory, Dr. Stearns has been working on a new project, $CT^{2.}$ He has been involved in the project with three other institutions. Dr. Stearns wants to encourage students to have a heightened sense of concern in their community, and believes that students must use critical thinking in order to develop into responsible citizens. Most colleges want students to volunteer or participate in civic engagement. However, Dr. Stearns stresses that volunteering is not the same as being a responsible citizen.

"You can have a heart of gold and decide that you want to donate to some charity. However, if you don't do your research and use critical thinking, you may end up donating money to an organization that uses those donations to pay high salaries to the heads of that organization. As an individual, you may think that you are helping improve conditions in your society by donating to that organization, but you actually have not used critical thinking correctly. People need to separate facts from falsehoods to achieve a clearer understanding of any situation," he said.

In order to become a critical thinker that is engaged in his or her community, an individual must recognize a problem in his or her community. The critical thinker needs to not only show a sense of concern for improving their community, but the individual should devise a plan to improve the situation in their community.

I would like to thank Dr. Stearns for taking the time to explain his two research projects to me.

Contributed by Nidhi Khanna

CURRICULUM NEWS

2010 Summer courses and intended audience:

BI 110/110L Environmental Biology. Session A (Non-science majors and Environmental Studies minors)
BI 120 Human Biology. Runs May 17-May 28 (Non-science majors)
BI 209/209L Human Anatomy and Physiology I. Session A **(**Nursing and Physician Assistant majors)
BI 210/210L Human Anatomy and Physiology II. Session B (Nursing and Physician Assistant majors)
BI/MI 213/213L Cells, Genes, and Evolution. Session B (Biology and Microbiology majors, Pre-health students)
BI 335/335L Natural History of the Mid-Atlantic States. Runs May 17-May 28 (Biology majors and Environmental Studies minors)
BI/MI 400E Experiential Component of the Senior RFT. Session A (Biology and Microbiology majors)
MI 109 Plagues, Outbreaks and Biological Warfare. Session B (Non-science majors)
MI 200/200L Microbiology. Session A (Microbiology, Nursing, and Physician Assistant majors)
MI/BI 517/517L Electron Microscopy. Session A (Microbiology and Biology majors and Microbiology graduate students)
MI 615/615L Electron Microscopy. Session A (Microbiology graduate students)
MI 797, 798, 799 Research. Session A (Microbiology graduate students)

BIOLOGY CLUB NEWS

The Biology club held several meetings during this semester. Members discussed a few important topics at the last meeting, which was held on Monday, February 22nd. Please look below for upcoming events.

- On-campus community service
  - Once the weather begins to get better, the on-campus community service will take place. Members will be sitting at a table outside the Union. The Biology club will be asking for donations (for a cause that is TBD). Donors will receive "prizes" in exchange for their contributions.
- Off-campus community service
  - Members are looking into the possibility of participating in the National Pillow Fight Day in the city. The date is Saturday, April 3rd. This is the Saturday before Easter Sunday. Please let email Cassandra Bray if anyone is interested in participating in this event. The pillow fight day works by asking the participants to donate their pillows at the end of the day. Any donated pillows are given to animal shelters in the NY area to make beds for the animals.
- PR events to make the campus aware of the Biology Club
  - Campus-wide trip to the Bodies: The Exhibition in Manhattan
  - Campus-wide trip to the National Museum of History
  - Table at Wagnerstock (April 17th)
  - Movie night
- Tie-dye of Biology Club t-shirts
- Members will be tie-dying our club t-shirts on Sunday, April 11th at 11am on the oval (pending good weather).

Contributed by Cassandra Bray and Nidhi Khanna

TRI-BETA NEWS

Members of Tri-Beta met early this month. Professor Raths serves as the faculty advisor for Tri-Beta and she suggested that members participate in an upcoming conference at The College of New Jersey. The conference will be held on Saturday March 27th. Students may already have a poster prepared at that time for the Eastern Colleges Science Conference and should consider going to this conference as well. The deadline for submitting abstracts electronically for all oral and poster presentations is March 16th. March 21st is the deadline for registering online. "Walk in" posters will be allowed the day of the conference, and students have the opportunity to register the day of the conference.

Contributed by Yolana Fuks, Professor Raths, and Nidhi Khanna

PRE-HEALTH SOCIETY

The Pre-Health Society held their first meeting of the semester this month. The organization is planning to get involved in a number of off-campus and on-campus community service events. Members plan to volunteer at the Soup Kitchen on Staten Island and will participate in the March of Dimes walk that will be held in April.

In addition, students that are interested in getting clinical experience are encouraged to volunteer at Staten Island University Hospital. The hospital procedures and instructions that volunteers must follow will be available to members on the Moodle site. If students would like to volunteer at SIUH, they should contact Violeta Capric (violeta.capric@wagner.edu).

Members are invited to join the Pre-Health Society's fundraising/community service committee. Please contact VP of Medicine (President of MAPS), Melanie Valencia (melanie.valencia@wagner.edu) for more information. The committee will be planning a Salsa Night event to raise money for the campus-wide Haiti relief efforts. The committee meets at 4pm on Tuesdays.

Students interested in applying to Medical School should look out for a presentation from Bryan Fleischman, the Associate Director of Admissions of the American University of Antigua-College of Medicine. The presentation will be held on Tuesday April 20th at 4:00pm, room TBA. Students that would like to learn more about AUA should visit the university's website (http://www.auamed.org/).

Contributed by Nidhi Khanna

OPPORTUNITIES

COMMUNITY SERVICE OPPORTUNITY

Greetings Everyone,

I am Nidhi Khanna and I am currently a junior. I am working with this non-profit organization called Planting Peace. Planting Peace has many sub-organizations including one called The Clean World Movement. The Clean World Movement is trying to encourage more individuals around the world to recycle and to take better care of the planet. I am working with The Clean World Movement as the environmental director in my community. I am organizing some clean-ups in Staten Island during the semester. If anybody is interested in helping out, please feel free to contact me at nidhi.khanna@wagner.edu. Thanks for your interest and I look forward hearing from you! If you would like more information about the organization I am working with, please visit: http://www.plantingpeace.org/.

Contributed by Nidhi Khanna

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.

Contributed by Dr. Onken

WORK IN THE GARDEN

Students interested in collaborating in the greenhouse and/or garden during the spring of 2010 should contact Dr. Onken (horst.onken@wagner.edu).

Contributed by Dr. Onken

BE A LIMULUS ASISTANT 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).

JOANNA KIELKUCKI

Joanna is our second student assistant editor. Joanna is 19 years old, majors in English, minors in Gender Studies, and concentrates on PreMed.

Joanna lists numerous special interests in her portfolio:

1) Judo athlete for 6 years - 2007 National Champion Gold Medalist, 2008 Olympic Trials Participant.

2) Musician - saxophone, flute, clarinet- attended LaGuardia High School with a major in Music.

3) Psychiatry dealing with adolescent/adult substance abuse and violence (what I anticipate to be in the future)

4) Haitian/Caribbean-American literature - Edwidge Danticat's "Breath, Eyes, Memory" and "Krik Krak" (favorite author and texts).

5) Biking and running

6) Traveling and learning about world culture, mostly dealing with gender equality and health care. Learning about my Polish culture (both of my parents are from Poland and Polish was my first language).

Joanna is a member of the Pre-Health Society, Habitat for Humanity, the Honors Program, the Jazz Ensemble, the Pre-Health Program, and Joanna is a Chemistry Lab Assistant. Off campus, Joanna is in the Columbia University College of Physicians & Surgeons NERA Med-Prep Program (3-year summer program), she is a NY DOJO - judo athlete, she participates in the CAMBA Ramp-Up Mentoring Program (P.S.92), and is active in the Maimonides Medical Center-Kids Weight Down Program.

Welcome to the team, Joanna!

Contributed by Dr. Onken

EXPERIENCES

DARWIN DAY BECOMES ANNUAL TRADITION

Last year, the Biology Department celebrated the 200th birthday of Charles Darwin. This year, Professor Raths and Secretary Stephanie Rollizo decided to hold a special lunch again this year in honor of Darwin's birthday. Last year, everyone had such a wonderful time at the event, and Professor Raths and Stephanie wanted to organize a celebration again this year.

Professor Raths had a special Darwin Exhibit set up in one of the laboratories. She did a marvelous job with the exhibit, and included interesting facts about Charles Darwin.

Some interesting facts about Charles Darwin include:

Darwin was not comfortable being on ships. He suffered from seasickness and did not spend that much time on the *Beagle*. He did most of his research on land rather than on ship due to his problem with seasickness.

His father was a physician wanted Darwin to attend medical school. Darwin's father did not think highly of his son, and pushed him to attend Edinburgh University to pursue a career in medicine. Darwin did not want to become a doctor, and his father said that he was "a disgrace to himself and his family."

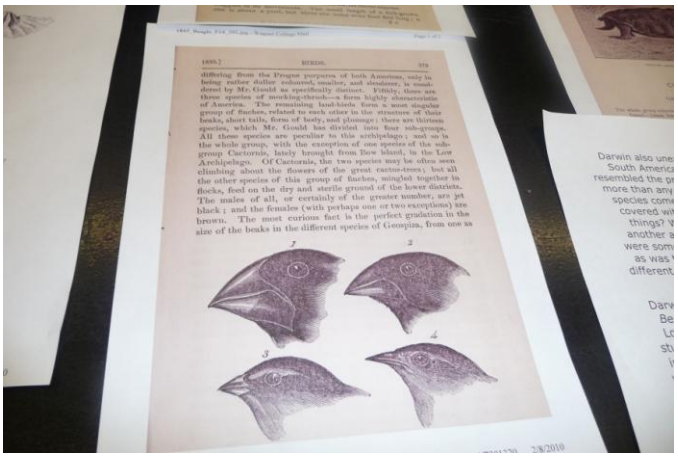
Charles Darwin's wife was very religious. When he was younger, he studied the University of Cambridge. He was interested in joining the clergy, but he later pursued other interests. Eventually, Darwin made the transition from being religious to becoming an agnostic.

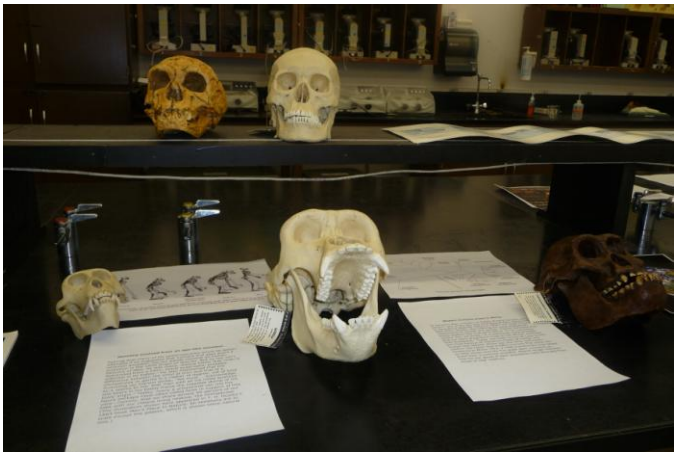
On behalf of the Limulus staff, I would like to thank Professor Raths and Stephanie for organizing the event. This event could not have been possible without all of their hard work and contributions. I would also like to acknowledge anyone else who made delicious treats for everyone else to enjoy.

Interesting facts were compiled from: (http://www.livescience.com/history/090211-darwin-facts.html)

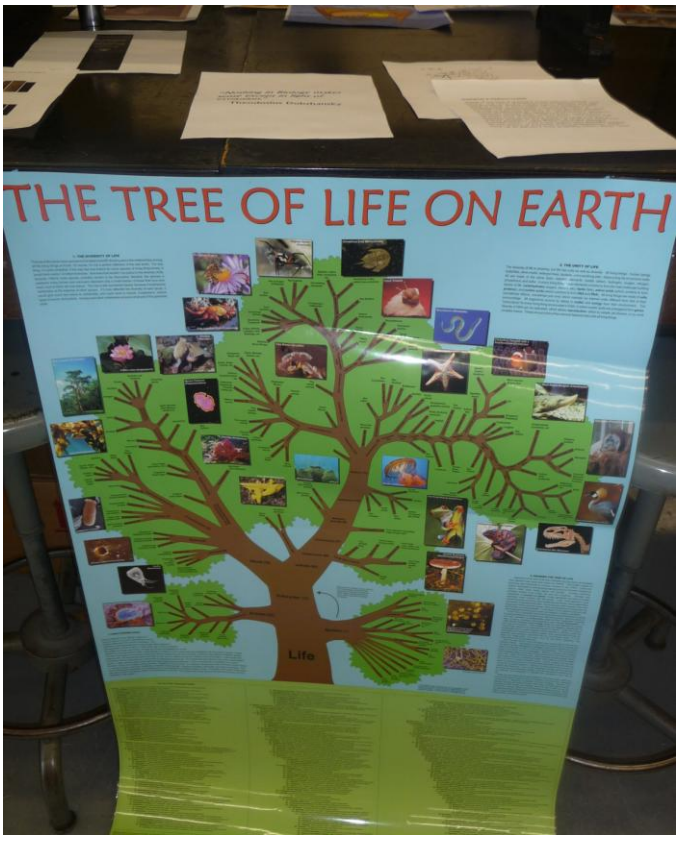
Contributed by Nidhi Khanna

From Professor Raths' Darwin Exhibit






Eyes


THE TREE OF LIFE ON EARTH
Life

WAGNER IN THE SNOW

PEOPLE

LUESONI JOHNSON
VISITING RESEARCH STUDENT COLLABORATES WITH DR. FULOP AND RECEIVES HONORS

In November, the annual Biomedical Research Conference for Minority Students was in Phoenix, Arizona. Biology students attend this prestigious conference to present their research in developmental biology. Luesoni Johnson, a sophomore from Kingsborough Community College received honors for her poster presentation that dealt with the effects of alcohol on zebrafish embryos. Johnson has been working on this research project with her advisor from Kingsborough, Dr. Kristen Polizzotto and Dr. Fulop since the summer 2009. Recently, I had the privilege to speak with both Dr. Polizzotto and Luesoni about the research collaboration they have formed with Wagner College.

Dr. Polizzotto described the different grants that are available to students at Kingsborough Community College. The first grant that the college offers is called the Bridges to the Baccalaureate Program. This grant is funded by the National Institute of Health (NIH) and is given to underrepresented students. This program helps students attending community colleges transition into a four-year college. The students work with a four-year college (Medgar Evers College) and must apply to this program. These individuals will then take a research methods class and get assigned to work with a mentor. Students have the opportunity to make connections with mentors and complete research over the summer. Eventually, these students will make posters and will be required to present at three different noteworthy conferences.

Kingsborough offers a second grant to underrepresented students. This grant is basically similar to the grant that is funded by NIH, but students have the chance to collaborate with mentors from different colleges. The grant is funded by the New York State Education Department and is entitled Collegiate Science and Technology Entry Program. Luesoni was the recipient of this grant and she became interested in studying zebrafish. Dr. Polizzotto had zebrafish in her lab at Kingsborough and searched for mentors at different colleges. Kingsborough has a limited faculty and Dr. Fulop was eager to serve as Luesoni's mentor.

Dr. Polizzotto was pleased with the way this research collaboration with Dr. Fulop turned out. She stated, " This collaboration may be one of the most successful programs. Luesoni had the opportunity to work with many Wagner students and faculty. She was lucky enough to be supported by such great faculty and was able to have a high quality research experience."

She added, "In Kingsborough, there are fewer opportunities for students because the college has a low-budget. The possibilities at Kingsborough are nothing like what Luesoni did here, and she was able to have a real lab experience."

Dr. Fulop was interested to help Luesoni and gave up his time without expecting anything in return. Professors Raths and Corbo and students Anna Lysenko and Zulmarie France assisted Luesoni with her research.

Luesoni's research included using 40 zebrafish embryos. She used three different concentrations of alcohol on the zebrafish and the experiment lasted 14 days. She analyzed the physical features of the zebrafish . She compared the features to zebrafish with fetal alcohol syndrome. In her findings, she discovered hormesis. Hormesis deals with biological effects that result from low levels of toxins. The biological effects appeared to be positive.

Dr. Polizzotto described the way hormesis works. "When you have a low dosage of a toxin, you won't get a linear graph. The toxin is expected to show steadily worse results in an organism."

She added, "Many people don't believe in hormesis, but many pharmaceutical companies use hormesis to indicate how much dosage doctors should give patients when dealing with medications. Zebrafish serve as a good model and can provide drug companies with more information when dealing with different dosages."

Luesoni felt that she had a very positive experience while conducting research at Wagner. Anna Lysenko, a senior Biopsychology major, served as Luesoni's student mentor. Anna helped Luesoni with her research while Anna worked on her own research as well. Zulmarie Franco, a recent graduate of the Microbiology program, was also generous enough to give up her time to help Luesoni with her research. Zulmarie allowed Luesoni to shadow and assist her while she completed her research for her thesis.

In addition to conducting research at Wagner, Luesoni was able to make an important decision about her future. Prior to studying zebrafish in the laboratory, Luesoni was not sure what field she would like to pursue after she graduated from college. After doing research at Wagner, she discovered that she was especially interested in developmental biology and neuroscience. Recently, Luesoni applied to Wagner as a transfer student and is looking forward to join organizations like the Biology Club.

I would like to thank Dr. Polizzotto and Luesoni for taking the time out of their schedules to meet with me. I would also like to congratulate Leusoni for all of the accolades she received for her research project!

Contributed by Nidhi Khanna

PUBLICATIONS

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.

PROFESSIONAL MEETINGS

EASTERN COLLEGES SCIENCE CONFERENCE

Get ready for the abstract submission deadline for ECSC. We reprint here a recent e-mail from the Wagner College coordinator for the ECSC, Dr. Adam Houlihan:

Dear colleagues,
I would like to remind you that the 2010 Eastern Colleges Science Conference will take place on Saturday, April 24 at Pace University's Pleasantville, NY campus.
This conference provides a forum for undergraduates from 20-30 colleges and universities to present their empirical research in the natural, health, and social sciences. Please see the current ECSC web site for registration information and presentation guidelines. A schedule of events is also available on the website.
The deadline for online registration is noon on **Tuesday, March 30**.
The deadline for online abstract submission for student poster and platform presentations has been extended to noon on **Monday, March 15**.
Individuals must register and submit abstracts via the conference website. Instructions for the submission of full-length student manuscripts is also available on the conference website.
Please let me know if you, or your students, will require transportation to the conference.
Thanks,
Adam J. Houlihan
Assistant Professor of Microbiology
Wagner College
Office phone: (718) 390-3385
Full URL for the 2010 ECSC conference: http://www.pace.edu/pace/dyson/academic-departments-and-programs/biology-and-health-sciences/events-and-announcements/ecsc2010/

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

Will the children of the future really ask *"Grandpa, what did you do to stop global warming?"* I don't think so. I think they'll be too preoccupied exploring its consequences.

Cartoon from www.lab-initio.com

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.