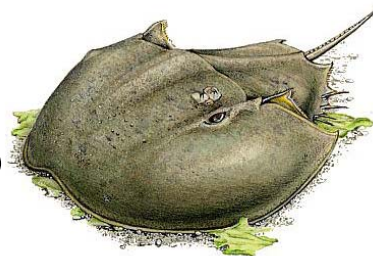


LIMULUS



NEWSLETTER

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

Volume 2009, Issue Spring-01

January, 2009

LETTER FROM THE EDITOR

THE JANUARY LIMULUS

I hope everybody had a nice winter break and I wish all the readers of the LIMULUS a healthy and successful 2009.

This January issue is again a magazine-style newsletter. In the beginning of the spring semester we review the last fall semester. Consequently, some contributions may appear familiar to those who read the LIMULUS on a regular basis. However, there are also some new contributions. Good news is that we finally found a student Assistant Editor for the newsletter. Nidhi Khanna has joined the editorial board of the LIMULUS. Welcome Nidhi! Stephanie and I are looking forward to work together with you. At the very end of the newsletter readers may find a little introduction of our new collaborator.

I wish everybody a great spring semester and I very much hope you enjoy the review of fall 2008,

Dr. Horst Onken, The Editor

BIOLOGY STAFF AND FACULTY NEWS

A NEW FACULTY MEMBER



On behalf of the Applied Microbiologist Search Committee, I am happy to announce that Dr. Adam J. Houlihan has joined the Faculty of the Department of Biological Sciences as of the Fall 2008 semester. Dr. Houlihan received his undergraduate degree in Molecular Biology from the University of Southern Mississippi, and his Ph.D. in Microbiology from Cornell University.

He has spent the past two years as a post-doctoral research associate with the USDA – Agricultural Research Service and the Department of Crop Sciences, University of Illinois at Urbana-Champaign. Dr. Houlihan's research is focused on plant-microbe interactions. He is interested in the ways in which plants respond to and resist infection; in particular, he would like to investigate plant-derived antimicrobial compounds and the responses of soil bacteria and fungi to these compounds. Dr. Houlihan teaches a number of courses in the undergraduate and graduate microbiology degree programs here at Wagner including Microbial Ecology, Applied, Food, and Industrial Microbiology, and Microbial Physiology.

Contributed by Dr. Mosher



Dr. STEARNS: MEGERLE ENDOWED CHAIR II



The science departments at Wagner College are very fortunate to have the generosity of the Megerle family. After a first endowed chair (Megerle Endowed Chair I; in the moment occupied by Dr. Fulop), a second endowed chair became available for the academic year 2008/2009. In the program announcement of the provost, Dr. Devorah Lieberman, it reads: "Qualified faculty are those who hold the rank of full professor in

one the following areas: biology, chemistry, computer science, mathematics, physics or physical anthropology/archeology." and "Candidates must have a distinguished record of past research and scholarship as well as an ongoing program of research." Dr. Stearns from our department was selected and appointed the Megerle Endowed Chair II. This decision is an honor for Dr. Stearns and the selection of another Biology Professor honors our department.

CONGRATULATIONS!

Contributed by Dr. Onken

BIOLOGY STUDENT NEWS

THE FIRST PFISTER SCHOLAR: ALINA GUSEYNOVA

Dr. Onken: Hello Alina. Although a little late, I would like to welcome you to Wagner College and to the Department of Biological Sciences. May be you can imagine that you, as the first Pfister Scholar, are of special interest to our department. Everybody here is curious and wants to know a little more of your background. Can you tell us where you are from, about your time in school and how it came that you chose Wagner College for the start of your higher education?



Alina: Thank you for that brief welcome, Dr. Onken. I appreciate the curiosity and would love to tell you a little about myself. I'm from Brook-



lyn, New York, not very far from Wagner College at all. I attended a very large, specialized high school that concentrated greatly on mathematics and the sciences. When it came down to applying to colleges in the fall of senior year, I very much wanted a small school with a general education concentration. Wagner College seemed like it had a great pre-med program and I was very impressed with the professors that teach many of the students that major in biology.

Dr. Onken: Your first semester at Wagner College is almost over. What do you think so far? Does life at Wagner College meet your expectations? Do you like your first classes in college? Is there anything you think could be improved to make you feel more at home?

Alina: I know, it's very surreal because it feels like orientation was only yesterday. It's been pretty awesome getting to experience college life here. Wagner College has been both exciting and overwhelming at the same time which I was kind of hoping and expecting at the same time. I really like my first classes a lot because I enjoyed taking biology and chemistry in high school a lot. I think that being close to home kind of makes the adjustment easier and the setting doesn't really feel that different. A home-cooked meal every now and then would make it close to perfect though haha.

Dr. Onken: What about extracurricular activities? Have you already become interested in joining groups like the Biology Club or TriBeta?

Alina: I am part of the Pre-Health Society and enjoy the events they plan. I recently participated in Up 'Til Dawn and thought that it felt very rewarding and enjoyable at the same time. I am also a member of Habitat for Humanity and am excited on going to a build sometime in the near future.

Dr. Onken: Can you tell us a little about your future plans? Into which direction do you want to steer your educational career. Do you already have wishes or plans or your graduate education or for your choice of a profession?

Alina: My future plans, like probably some in the biology majors, are to attend medical school and become a physician. I am hoping to also get involved in medical research throughout my four years at Wagner and after graduation.

Dr. Onken: You are the Pfister Scholar. Do you have an idea who Dr. Anthony Pfister was?

Alina: Yes, many of the professors in the biology department were kind enough to tell me a little about his contributions to Wagner College and of course, who he was as a person. I was very surprised by the many years he spent at the college being a professor of both biology and microbiology. I am very flattered to be receiving such a scholarship named for someone who accomplished so much.

Dr. Onken: Alina, I wish you all the best for your time with us at Wagner College. It was a great pleasure to talk with you. Thank you for your time.

Alina: Thank you very much, Dr. Onken, the pleasure was all mine. I wish you a very happy Thanksgiving!

BIOLOGY CLUB NEWS

The Biology Club made again a field trip to the Arthur Kill shore cleaning the Blazing Star Burial Ground and the shore line. Apart of old tires and oil barrels the major part of the

trash was plastic bottles that have been inadequately disposed. When collecting these bottles it was easy to recognize their different ages. Evidently they drift around the New York water ways for different times until they are flooded onto the shore.

Contributed by Dr. Onken



TRI BETA NEWS

REPORT ABOUT A TRI BETA EVENT

Here at Wagner we offer a course dealing with the Ethical, Legal and Social Issues associated with genetic technology, "Genes to Genomics." It is a semester long course that delves into these issues while allowing students to share their voice regarding their personal beliefs on issues such as genetic screening and eugenics. On Monday October 27 Wagner was fortunate enough to have Dr. Miryam Wahrman come and speak to some of the biology students regarding similar issues. She is a professor at William Patterson in New Jersey and was part of the lab that was successful in the first "test tube" baby in New York State. The name of her talk was, "Genetic Technology & Eugenics," and in the course of one hour she was able to further discuss and present many issues that come up in the Genes to Genomics classroom. She was very knowledgeable in a number of areas, and had an interesting viewpoint on the issues due to her Ashkenazi background. Dr. Wahrman recently put out a book, [Brave New Judaism - When Science and Scripture Collide](#). She did not merely promote her book, rather she opened our eyes to see that science and religion do not always conflict, but rather they can agree to disagree on some topics. The topics discussed not only bring about religious controversy, but also cause debate regarding ethical issues surrounding life status of a zygote. She touched upon the possibility of a return to eugenics while also promoting the positive uses of genetic technology as well. Dr. Wahrman was able to captivate the audience and leave many students, as well as faculty, with a number of new questions regarding their position on genetic technology.

FACULTY LUNCHEON

Every semester Beta Beta Beta Biological Honor Society likes to demonstrate their gratitude by hosting a faculty luncheon. On December 1, 2008, the fourth floor break room in Megerle Science Hall was transformed into a buffet of cold lunch fixings donated by tri-Beta. The dishes ranged from humus to the standard ham and cheese sandwich. Faculty members were able to filter in and out as their schedules permitted. Students and professors were able to enjoy each other's company on a more personal level discussing more than just science and school. Overall it was very successful, and in the spring look out for an even better spread of delicious treats!

Contributed by Ryan Rogers





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.

Contributed by Dr. Onken

EXPERIENCES

125 YEARS OF BIOLOGY AT WAGNER COLLEGE?

Wagner College celebrates its 125th anniversary. However, our college was originally founded as a “Proseminary” to educate future ministers for the Lutheran Church and Biology was very likely not a part of the curriculum. However, “Genesis” was certainly an important teaching topic, and 24 years after the publication of Darwin’s *On the Origin of Species* and a year after the author’s death it may be that the strange idea of evolution was “discussed.”

I do not know when Biology became a topic of the curriculum, or when the college began a Department of Biological Sciences. However, this year we were given a day when we can celebrate the birthday of our college: the 15th of October is “Founders Day.” This first Founders Day was celebrated in the theatre in Main Hall with the choir, greetings from the founders’ successors and descendants, and reflections about the history of the college by John Daggan (Archivist of the

Metropolitan New York Synod), Dr. Walter Kaelber (Professor of Religious Studies at Wagner College), and Dr. Richard Guarasci (President of Wagner College).

Although Biology played evidently a minor role (if a role at all) when the college was founded, it played a significant role after the celebration of this “Founders Day.” An apple tree was planted in the rose garden. In the Bible, an apple tree has a “challenging” role. In symbolism, apples relate to good health, relationship and love. In Biology, an apple tree is *Malus domestica*, a member of the rose family (Rosacea). Nevertheless, there is no doubt that it is Biology that lets it grow.

GROW, APPLE TREE, GROW!

Contributed by Dr. Onken

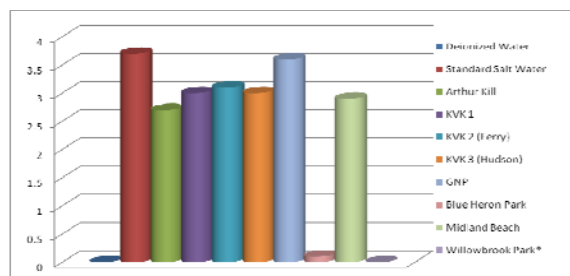
ADVENTURES IN ENVIRONMENTAL BIOLOGY

What is an Estuary? Brittany Frazza, an Environmental Biology student, answered this question eloquently as follows:

“Estuaries are places where freshwater and seawater mix together to form a body of water. Estuaries come in all shapes and sizes and are called many different names: bays, lagoons, harbors, inlets, or sounds to name a few. The secluded waters of estuaries are home to numerous plants and animals that are able to live in water that is comprised of both fresh and salt water. Estuaries provide important habitat for species that are valued commercially, recreationally, and culturally. Birds, fish, amphibians, insects, and other wildlife depend on estuaries to live, feed, nest, and reproduce. Some organisms, like oysters, make estuaries their permanent home; others, like horseshoe crabs, use them to complete only part of their life cycle. Estuaries provide stopovers for migratory bird species such as the mallard. Estuaries and the land surrounding them are also places where people live, sail, fish, and swim. As a result of these things, estuaries are often the centers of our coastal communities”. - B. Frazza, BI 110

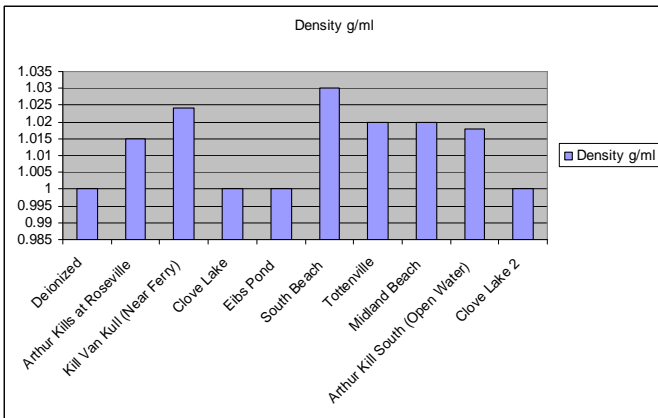
So, basically, estuaries are a great asset for any community. And Staten Island still has some functional estuarine wetlands, although industrialization has had impacts. We decided to visit them, as well as some freshwater sites, and collected water samples. We used public transportation or walked to minimize the environmental impact of our lab activity and to assess Staten Island’s public transportation resources. We expected estuarine water to have intermediate levels of salt and intermediate densities, and found this to be the case when we measured these parameters in the lab.

Solute Concentration %



Solute concentrations of various Staten Island water samples. KVK means Kill Van Kull. GNP means Gateway National Park. Contributed by Patrick Powers





Density measurements of various Staten Island water samples. *Contributed by Timothy Grady*

Some of the places we visited aroused concern among students. For example, one group found much garbage including a switchblade among the tall reeds and grasses. Learning about natural ecosystems is vital for their protection. Understanding the valuable services they provide brings to light their importance. Brian Bugbee had this to say in conclusion of our research and his personal experiences as a member of NY/NJ Baykeepers:

“Estuaries are important because they are the nursery for marine and aquatic plants, animals, and fish. It is important that they be protected; otherwise the species which depend on the estuaries will experience population loss and possibly extinction in the future.

Many times governments are not concerned with the state of natural environments in the surrounding area until the sites are so terribly polluted or destroyed that it becomes an issue for the EPA. In New York City, the government does not consider the natural environment a high priority, and as a result, private organizations have to take care of the local estuaries and rivers. One such organization is the NY/NJ Baykeepers. The organization coordinates clean ocean action projects and environmental projects to help clean up the rivers”. - *B. Bugbee, BI 110* (You can visit this organization at www.nynjbaykeeper.org)

Our public transportation experiences were variable. Some students found their sampling sites to be conveniently accessible by public transportation, while others found them time-consuming. All of the students who used the Wagner ferry shuttle service to the Kill Van Kull found this service to be extremely clean, efficient, and positive.



Michael Giangrande collecting a water sample from Blue Heron Park.



Garbage found on the beach at GNP by Vincent Deluca and Alexandra Ricciardi.



Vincent Deluca Collecting a water sample from GNP.



Gateway National Park. *Contributed by Alexandra Ricciardi*

Photo by Alexandra Ricciardi



Marsh/Mudflat near the Outer Bridge. *Contributed by Gregory Trenti*





Jereme Spinks collecting a water sample from the Kill Van Kull.



Clove Lakes Park photo. Contributed by Brittany Frazza

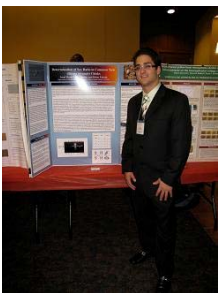


Switchblade found near the Outer Bridge by Gregory Trenti, Anjelica Cunningham and Jim Okun.

Contributed by Professor Beecher and students from her Environmental Biology class.

MACUB CONFERENCE

Our trip to Montclair State University in Montclair, New Jersey for this year's MACUB conference was one that we will never forget. Upon hearing that we were signed up to present a poster on our research we had been working on since this past summer, feelings of both excitement and nervousness filled our minds--Will we be able to efficiently present these results to other students and professors? Considering this was the first biology conference for both of



us, we did not know what to expect but wanted it to be an event to look back on and be proud of. Seeing all the participants from the different colleges with their posters depicted the various types of research

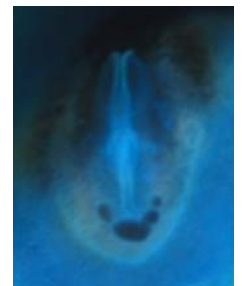
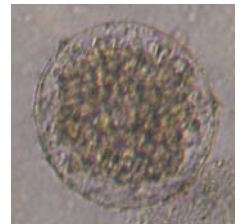
ranging in environmental, physiological, genetic even to microbiological was a great sight to see. All of the professors who stopped by were cordial and interested in what we were presenting. What was even better was that we were able to answer their questions, which gave us a great feeling of accomplishment. MACUB has prepared us for future presentations. We will continue with our research and hope to present our completed research this coming spring at the Eastern Science Conference here at Wagner.



Contributed by Georgia Dellas and Tanya Modica with photographs by Sejmir Izeirovski.

219 UNDER THE MICROSCOPE

Dr. Cook's class Gene Expression and Development (BI 219) is designed to familiarize students with fundamental biological principles emphasizing DNA replication, transcription, translation, control of gene expression, and genomics. Gametogenesis, fertilization, early embryonic development, sex, and reproduction are considered in light of the molecular mechanisms involved. The laboratory experiments give students hands-on experience with various aspects of molecular biology and development. Towards the end of the semester developmental stages of sea urchins (blastula, above) and chicken (embryo, below) are observed under the microscope.



Contributed by Dr. Onken, preparations by Victor Stora.

BIODIVERSITY AND ECOLOGY CLASS VISITS THE AMERICAN MUSEUM OF NATURAL HISTORY



Thursday, December 4, 2008, Dr. Stearns' Biodiversity and Ecology class went to the American Museum of Natural History, where the students were treated to a behind-the-scenes tour of some of the museum's research and

collection facilities that are not open to the general public. Showing frog specimens he and others had collected in Southeast Asia, Raoul Bain, a biodiversity specialist and herpetologist for the museum's Center for Biodiversity and Conservation, described how he was able to distinguish closely related





Center for Biodiversity and Conservation (<http://cbc.amnh.org>), "In 1993, responding to concern among its scientists over rapid species loss and increasing habitat degradation around the world, the Museum created the interdisciplinary Center for Biodiversity and Conservation...[Its] mission is to mitigate critical threats to global biological and cultural diversity by advancing scientific research in diverse ecosystems; strengthening the application of science to conservation practice and public policy; developing professional, institutional, and community capacity; and furthering the Museum's efforts to heighten public understanding and stewardship of biodiversity."

After lunch, the students went to the Hall of Biodiversity and the Milstein Hall of Ocean Life, both of which served as a good review of biodiversity, taxonomy, and animal phylogeny. The class gives a group thanks to Jay Holmes, Senior Educational Supervisor for the museum, for making the museum arrangements for a successful field trip.



Contributed by Dr. Stearns with photographs by Professor Rath.

PUBLICATIONS

Etlinger, A., J. Lebron, and B.G. Palestis. (2009, in press). Sex-assortative shoaling in zebrafish (*Danio rerio*). *Bios*.

Onken, H., Moffett, S. B. and Moffett, D. F. (2008). Alkalinization in the isolated and perfused anterior midgut of the larval mosquito, *Aedes aegypti*. 20pp. *Journal of Insect Science* 8:46, available online: insectscience.org/8.46.

Onken, H., & Moffett, D. F. (2009). Revisiting the cellular mechanisms of strong luminal alkalinization in the anterior midgut of larval mosquitoes. *Journal of Experimental Biology*. 212: 373-377.

Onken, H., Patel, M., Javoroncov, M., Izeirovski, S., Moffett, S.B. & Moffett, D.F. (2009, in press). Strong alkalinization in the anterior midgut of larval yellow fever mosquitoes (*Aedes aegypti*): Involvement of luminal Na^+/K^+ -ATPase. *Journal of Experimental Zoology*. Published online: DOI: 10.1002/jez.512

Moffett, D.F. and **Onken, H.** (2009, in press). The Cellular Basis of Extreme Alkali Secretion in Insects: A Tale of Two

species from each other based on morphological features. In the process, he described some of the dangers of collecting unknown, possibly poisonous, species in the wild. Quoting from the web page of the

Tissues. In: *Epithelial Transport Physiology* (ed. George A. Gerencser). Totowa, New Jersey: Humana Press.

PROFESSIONAL MEETINGS

CONTRIBUTIONS

Dellas, G., Modica, T., Khanna, N., Marin, A. Corbo, C. & Cook, H. (2008). Preparation of Thin Sections of *Drosophila* Ovaries for Examination by Transmission Electron Microscopy. 41st Annual Fall MACUB Conference.

Izeirovski, S., Moffett, S. B., Moffett, D. F. & Onken, H. (2008). The anterior midgut of larval yellow fever mosquitoes (*Aedes aegypti*): Effects of hemolymph-side or luminal nutrients on the transepithelial voltage and strong alkalization. 41st Annual Fall MACUB Conference.

Rogers, R. & Moorthy, A. S. (2008). The study of chromosomal aberrations in *Vicia faba* as a result of exposure to UVA and UVB radiation. 41st Annual Fall MACUB Conference.

Capelli, C. (2008). Gender Differences Caused by Urinary Creatinine Adjustments Made to Heavy Metal Measurements. 41st Annual Fall MACUB Conference.

Husic, J., Mosher, R. & Palestis, B. (2008). Determination, Sex Ratio, and Hatching Order of *Sterna hirundo* Chicks. 41st Annual Fall MACUB Conference.

Palestis, B.G. and S.E. O'Neill. (2008). Responses of common tern chicks to feather sample removal. Presented at the meeting of the Waterbird Society. South Padre Island, Texas. November 5-8.

Palestis, B. 2008. Feather samples: a useful tool in waterbird research. Presented at the meeting of the Greater New York/New Jersey Harbor Colonial Waterbirds Working Group. Lyndhurst, NJ. December 11-12.

FUTURE MEETINGS

DO NOT FORGET TO PREPARE FOR THE FOLLOWING CONFERENCE:

The next **Eastern Colleges Science Conference** will be held at Wagner College (Staten Island, NY) on Saturday, April 24, 2009.

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!





MISCELLANEOUS

If your contribution does not fit in any of the sections above, you can post it here.

DO YOU MISS A SECTION? LET ME KNOW WHICH AND MAKE A CONTRIBUTION!

PUZZLES, JOKES, QUOTES, CARTOONS

CARTOON:



"Have you seen that weedy little rat that we're using to test out our new growth hormone.?"

(from www.lab-initio.com)

PHOTO OF THE MONTH:



AMAZING:

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

Editing may involve publishing 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.

DEADLINE FOR THE NEXT NEWSLETTER:

MONDAY, February 23

NIDHI KHANNA: OUR NEW ASSISTANT EDITOR

Nidhi is currently a sophomore at Wagner College. She was born in India, but her family moved to Staten Island when she was a few months old. She is double majoring in Biology and Philosophy. Even though Nidhi is a commuter student, she tries to remain an active member of the Wagner community. She is a member of several clubs and organizations on campus including Kallista (Wagner's yearbook), the Wagnerian, Project Sunshine, The Interfaith Coalition, Spanish Club, and the Pre-Health Society. Nidhi also works as a Peer Tutor on campus (History and Philosophy). Most recently, she served as an active volunteer in the 2008 Presidential Election. During her free time, Nidhi enjoys listening to music, going on Facebook, and watching her favorite television shows, House and The Office.



The Editorial Board:

Editor: Dr. Horst Onken

Assistant Editor: Stephanie Rollizo, Department Secretary

Student Assistant Editor: Nidhi Khanna

Student Assistant Editor: N.N.

