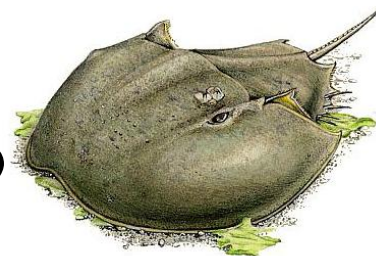


# Limulus



## NEWSLETTER

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

Volume 2009, Issue Fall-05

November/December, 2009

### LETTER FROM THE EDITOR

Like this year, the November newsletter has always been late. The reason is evident. There is a peak of work at the end of a semester when term papers are due and final exams are coming up. I have always a little of a bad conscience when the newsletter is late. In order to get rid of this I use the power of the editor and rename this last issue of the fall semester. It is the November/December issue! Consequently, it is not late.

Again, I think, we succeeded to make up a wonderful issue, containing reports of success and tons of opportunities and experiences in our department. At this point I would like to especially mention and underline one Name: Nidhi Khanna. Nidhi has done a marvelous job as Assistant Editor of the Limulus, not only in this issue, but during the whole year she is supporting me. Nidhi, thank you so much.

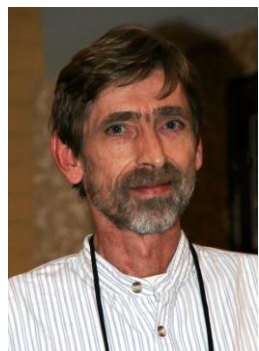
Students, I hope all of you have great final exams and finish the fall semester with success. I wish everybody Merry Christmas and all the best for the new year. I am very much looking forward to see you back at Wagner College for the spring semester 2010.

Dr. Horst Onken  
The Editor

### BIOLOGY STAFF AND FACULTY NEWS

#### BIOLOGY PROFESSORS RECEIVE HONORS AT FACULTY AWARD DINNER

The faculty awards dinner took place on Tuesday, November 17<sup>th</sup>. The Biology Department's very own Dr. Onken and Dr. Cook were both honored at this dinner.



Dr. Onken was awarded the Faculty Award for Exceptional Performance in the Area of Scholarship. Dr. Onken began teaching at Wagner only three years ago, but has made tremendous contributions to the Biology Department, particularly by expanding research opportunities for undergraduate students. Dr. Onken research deals with mosquitoes, and he has been published in six times in scientific journals while at Wagner.

Dr. Onken has inspired students and faculty to realize that research in an important part of the learning process, and his accomplishments have helped the Biology Department grow.

Dr. Cook was awarded the Teaching with Technology Award.



Dr. Cook incorporates a variety of technological resources into the majority of the courses that she teaches. In today's world, students need to be better acquainted with technology in order to compete with others, and Dr. Cook continues to prepare her students for the rapidly changing and technological advance world. Many of the assignments and learning tools that she uses are

technology based, and she has even made use of new and improved technology in her molecular cell research. Congratulations Dr. Onken and Dr. Cook!

*Contributed by Nidhi Khanna* (information, including photographs, was compiled from the Wagner Website)

#### BIOLOGY LC RECEIVES SPECIAL RECOGNITION

Dr. Stearns and Dr. Houlihan are teaching an LC together called "Bacteria, Human Health, and Survival." In accordance to the Wagner Plan, students in learning community must complete an experiential component, which requires students to complete 30 hours of community service. Students in Dr. Stearns and Dr. Houlihan's LC have been teaching middle-school students in local schools about bacteria and hygiene. Wagner students made presentations to the middle-school students about "good and bad bacteria" and also told the youngsters about the importance of maintaining good hygiene. The LC was recently featured in an article in the *Staten Island Advance*. To view the article, please visit the following link: <http://www.wagner.edu/news/sites/wagner.edu.news/files/091125%20Advance%20%28Diane%20Lore%29%2C%20Outreach%20by%20college%20students%20%28WEB%29.jpg>. *The information for this article was provided from the Staten Island Advance.*

*Contributed by Nidhi Khanna*

#### BIOLOGY CLUB NEWS

The Biology Club sponsored a table in the Union raising awareness about animal cruelty on November 17<sup>th</sup>. Biology Club members encouraged people from the Wagner community to donate money to that would help save animals from abusive owners. Members also gave out free bags of candy that included startling facts about animal cruelty.





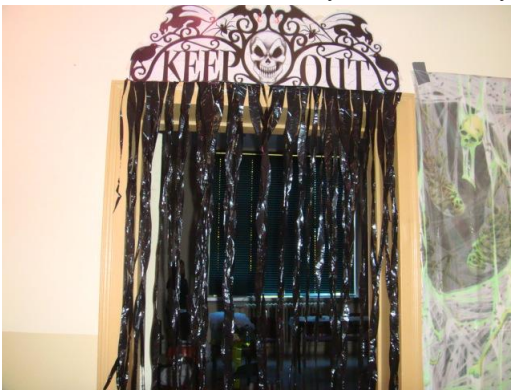
Victor Stora, Jessica Cozzolino, and Michael Migliorini help out at the Animal Cruelty table.  
*Contributed by Nidhi Khanna*

### TRI-BETA NEWS

The members of Tri-Beta have been extremely busy towards the end of this semester. They completed their on and off-campus community service, and pictures from both of these events are featured below. Everyone is excited that winter break is approaching, and they are looking forward to a new semester filled with more fun activities and community service!

*Contributed by Yolana Fuks*

Pictures from Haunted Hallways contributed by Yolana Fuks:



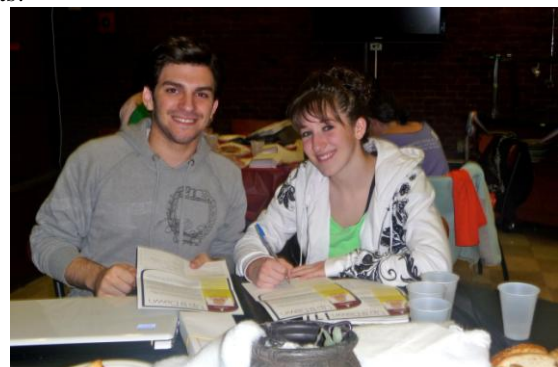
Pictures from Breast Cancer Walk contributed by Shannon O'Neill:



*Contributed by Nidhi Khanna*

### PRE-HEALTH SOCIETY

The Pre-Health Society participated in two on-campus community service events this past month. Members took part in the letter writing campaign that thanked soldiers for the sacrifices that they were making overseas. Members also participated in the Up 'Til Dawn event that occurred on November 18<sup>th</sup>. Up 'Til Dawn is also a letter writing campaign that helps raise money for St. Jude's Research Hospital. The Pre-Health Society had a great turn out for both of these events!



Victor Stora (Pre-Health Society Treasurer) and Jessica Cozzolino (Pre-Health Society's Pre-Veterinary VP) write letters at Up 'Til Dawn.  
*Contributed by Nidhi Khanna*







## OPPORTUNITIES

### SCHOLARSHIP OPPORTUNITIES

Scholarship opportunities for sophomores and juniors are available from the Morris K. Udall Foundation ([www.udall.gov](http://www.udall.gov)) for the following categories:

- 1.) Students committed to an environmental career
- 2) Native American/Alaskan Native students interested in Native health care or tribal public policy

The scholarship is for \$5000 and includes a mandatory 4-day conference in August. Honorary Mention awards are for \$350. Any students interested in applying should contact Brian Palestis ([bpalesti@wagner.edu](mailto:bpalesti@wagner.edu)).

*Contributed by Dr. Palestis*

### 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](mailto: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](mailto:horst.onken@wagner.edu)).

*Contributed by Dr. Onken*

### 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](mailto: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](mailto:horst.onken@wagner.edu)) or phone 420-4211.

*Contributed by Dr. Onken*

## EXPERIENCES

### TRIP TO STATEN ISLAND ZOO

This semester, I am taking Forms and Functions with Professor Beecher. For one of our assignments, the class was asked to visit the Staten Island Zoo. Despite being a Staten Island native, I must admit that this was the first time I actually paid a visit to the zoo that literally minutes away from my home.

For my assignment, I was required to pick an animal that I found interesting and research about its biology and create a fact sheet. Even though I was supposed to write about one animal at the zoo, I was eager to observe the large variety of species in the zoo's botanical garden. At the zoo, visitors can learn about amphibians, birds, reptiles, fish, and other mammals. In 1936, the zoo was opened and it was actually the only zoo in the entire world to have 32 rattlesnakes. Even today, the zoo has an extensive collection of rattlesnakes and other snakes including Anacondas. Another interesting fact about the Staten Island Zoo is that it was the first American zoo to employ a female veterinarian to serve as the zoo's doctor.

The zoo's mission is to educate visitors about the importance of animals and to appreciate the existence of the wide-range of animals that nature has to offer. The zoo is currently constructing a few new attractions including a Leopard exhibit, Red Panda Exhibit, and a carousel for children to enjoy. Many activities at the zoo are centered around children, but adults and individuals of all ages can visit the zoo and learn something new! The zoo also started a Meerkat Project that is focused on renovating the homes of the meerkats that inhabit the zoo. People that are interested in supporting this project can donate money directly to the zoo. The zoo also offers opportunities to the public to volunteer and adopt animals. This month, the zoo is hosting a few events including a "Charles Dickens" themed event that includes caroling and lighting of the Christmas Tree. Another scheduled event includes a holiday breakfast with a visit from another animal that will make an appearance at the zoo, a reindeer. For more





information about the zoo, please visit [www.statenislandzoo.org](http://www.statenislandzoo.org).

A selection of photographs follows on the next page:



Contributed by Nidhi Khanna

### VISIT TO THE MUSEUM OF NATURAL HISTORY

Recently, I paid a visit to the Museum of Natural History to do an assignment for Professor Beecher's Forms and Functions

Class. I have visited the museum several times, but I learn something new during every visit. While at the museum, I wandered into the Primates, Dinosaurs, and Reptile and Amphibians exhibit.



Currently, the museum has a few new exhibits that seem very interesting and educational. The *Spider Silk* exhibit includes an elaborate silk textile that was created by over one million spiders! The spiders spun the silk for four years, and about 80 people in Madagascar collected the millions of spiders to make this textile. Men and women wove the silk after the spiders produced this extremely soft and strong silk. Every thread in the textile actually represents 96 strands of spider silk! Currently, the Museum of Natural History is the only place in the world that has a textile of the woven spider silk.

Another great new exhibit is *Frogs: A Chorus of Colors*. This exhibit will be open until January 3<sup>rd</sup>. The museum has an extensive exhibit of various frog species including Fire-bellied toads, Waxy Monkey Frogs, and the Blue Dart Poison Frog. The exhibit provides visitors with a lot of fun facts about frogs. It is definitely a treat to see a variety of frog species and the different colors that each species comes in. Many frog species are getting smaller and this is primarily due to climate change, and human involvement. Human activity has destroyed frog habitats and humans have polluted the areas that are inhabited by frogs.

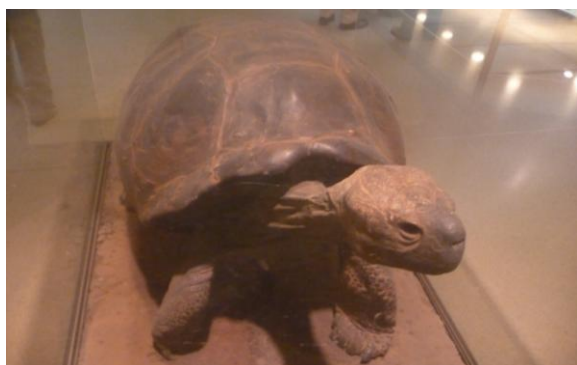
The Museum of Natural History is a great place to visit, especially when you are trying to think of something fun to do in New York City. The museum always has new and interesting exhibits that are not only educational but fun to visit as well. During my visit, I took some pictures, and I hope you like them! For more information on the museum, please visit <http://www.amnh.org/>.







Some more photographs follow on the next page:



Contributed by Nidhi Khanna



### PARTICIPATION IN BLIND TASTE TEST

Professor Beecher's Environmental Biology class has been discussing several important environmental issues that affect the global community. Recently, the class started to do some research on various types of labels, like free trade, rainforest alliance, shade grown, and recycling. Some students gave individual presentations on specific labels and their meanings. Free trade products are basically sold directly from the vender to the consumer. The government or other "middlemen" do not have any involvement with the buying and selling of the products. Products that have a rainforest alliance label are deemed acceptable by this non-governmental organization. In order to be rainforest alliance certified, farming methods that are harmful to ecosystems cannot be used, and workers growing the crops must be treated fairly, and their lives should not be in danger. Farha Rashid (a student in the class) did a presentation on Fair Trade products. She discovered that farmers who produce these products are paid a fair price and fair trade ensures that forced child labor is not used in the production.

Shade grown coffee is basically grown under a number of trees. The coffee is grown under the shade, and this is beneficial to the environment. When coffee is grown under the sun, many farmers use hazardous insecticides and chemicals. Recycling labels are identifiable by almost everyone, and these labels have been encouraging the public to reduce and reuse recyclable materials.

Several other students gave presentations on labels. Tyler discussed on Certified Naturally Grown labels. These labels are geared towards small local farmers and focus on farm-to-market values. Lawrence researched Pure Fun Organic Candy and realized that this kind of label ensures that workers are treated nicely, and organic products are used in manufacturing processes. Lynette, Peter, Jim, and Ayn worked together and learned about USDA Organic labels. In order for foods to obtain this label, the food must be produced in an environmentally sustainable manner. Hormones and relatively few pesticides are utilized.

After each student in the class researched a specific label, they shared their findings with the rest of the class. Students learned how farmers get certified for certain labels. Professor Beecher conducted a blind taste test, and she had students try to detect the difference between organic shade coffee and Dunkin Donuts coffee. Students were blindfolded, drank each kind of coffee, and then revealed to the class which coffee they preferred. Emily Pierce liked the shade coffee, Pete Westwood liked the Dunkin Donuts coffee, and James Lee was unable to detect any difference between the two coffee types. The class enjoyed drinking coffee during the rest of the class, and then spoke about different kinds of renewable energy technologies like wind, photovoltaics, and hydrogen fuel cells. To learn more about these labels, please visit the following websites:

<http://www.naturallygrown.org/>

<http://www.organiccandy.com/>

<http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELDEV3004446&acct=nopgeninfo>



<http://www.transfairusa.org/>

Contributed by Professor Beecher, The Environmental Biology Class, and Nidhi Khanna

### EDWARD CALBRESE ABOUT HORMESIS



On a cold November night, Edward Calabrese, professor of toxicology and environmental science at the University of Massachusetts, came to inform students about the importance of the leading proponent of hormesis. Calabrese has published many papers on this topic, including several major review papers summarizing a large

number of studies that have shown hormesis (where a substance that is inhibitory at high doses can be stimulatory at low doses).

Coincidentally, this phenomenon has been the basis of many research projects at Wagner. A professor of Anatomy & Physiology, Dr. Fulop, along with his students have performed experiments on the effects of alcohol on zebrafish. Another professor in the biology department at Wagner College, Dr. Moorthy, has had students examine the effects of lithium chloride on zebrafish embryos and alcohol on *Drosophila*.

Dr. Calabrese explained this to us as “a response phenomenon characterized by a low dose stimulation and a high dose of inhibition.” Early in his speech, it was stressed to us that the beneficial/harmfulness of hormesis should not be included into the definition. Basically, hormesis is the idea that a toxin will have an opposite effect in small doses as in large doses. Hormesis is a generalized phenomenon: independent of model, endpoint and agent.

When applying the phenomenon of hormesis, two possible responses that could be graphed are: J-shaped or inverted U-shaped. One area of study with hormesis is aging. Survival capacity depends on homeostatic ability and was studied with mild stressors. These mild stressors were shown to have anti aging effects. Mild stressors included heat shock, irradiation, hyper gravity and food restrictions.

“The reasons for this reluctance to change are complex but can be traced in large part to the fact that toxicology has been, primarily, an applied discipline with the creditable goal of protecting health. Faced with a huge number of compounds to be tested, toxicologists therefore streamlined their processes to reduce the number of animals used per dose and the number of doses per experiment” stated Dr. Calabrese, in his effort to explain why hormesis was overlooked by toxicology.

After grasping a greater knowledge on this topic, it still leaves the lingering question: why is the phenomenon of hormesis important? To Dr. Calabrese he stresses that it will change how radiation health experts, chemical toxicologists, pharmacologists, high risk assessors, and physicians do their job. By applying this new way of thinking and approach to toxicology, it may open new doors to many professions. Ultimately, the decision of if you would like to believe in hormesis is up to you.

Contributed by Lynsey Brandwein and Julianna Maniscalco



### PUBLICATIONS

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

**Izeirovski, S., Moffett, S. B., Moffett, D. F. & Onken, H.** (2009). The anterior midgut of larval yellow fever mosquitoes (*Aedes aegypti*): Effects of nutrients on the transepithelial voltage and strong luminal alkalization. *Wagner College Forum for Undergraduate Research*.

**Izeirovski, S., Moffett, S. B., Moffett, D. F. & Onken, H.** (2009, in press). The anterior midgut of larval yellow fever mosquitoes (*Aedes aegypti*): effects of amino acids, dicarboxylic acids, and glucose on the transepithelial voltage and strong luminal alkalization. *Journal of Experimental Zoology*, published online, DOI: 10.1002/jez.561.

Jagadeshwaran, U., **Onken, H.**, Hardy, M., Moffett, S. B. & Moffett, D. F. (2009, in press). Cellular mechanisms of acid secretion in the posterior midgut of the larval mosquito *Aedes aegypti*. *Journal of Experimental Biology*, in press.

**Lamb, C. M., Moorthy, A. S., Corbo, C.P. & Fulop, Z. L.** (2009). Teratogenic effects of lithium chloride on eye development in early embryogenesis of Zebrafish (*Danio rerio*). *In Vivo* 31(1): 24-31.

Moffett, D.F. and **Onken, H.** (2009, in press). The Cellular Basis of Extreme Alkali Secretion in Insects: A Tale of Two Tissues. In: *Epithelial Transport Physiology* (ed. George A. Gerencser). Totowa, New Jersey: Humana Press.

**Onken, H.**, & Moffett, D. F. (2009). Revisiting the cellular mechanisms of strong luminal alkalization 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). Strong alkalization in the anterior midgut of larval yellow fever mosquitoes (*Aedes aegypti*): Involvement of luminal Na<sup>+</sup>/K<sup>+</sup>-ATPase. *Journal of Experimental Zoology*. 311A: 155-161.

**Palestis, B.G.** (2009). Fluctuating asymmetry in common tern chicks varies with hatching order and clutch size. *The Auk* 126: 815-822.

**Palestis, B.G.** (2009). Use of artificial eelgrass mats by saltmarsh-nesting common terns (*Sterna hirundo*). *In Vivo* 30(3): 11-16.

Trivers, R., **B.G. Palestis** & D. Zaatari. (2009). *The Anatomy of a Fraud: Symmetry and Dance*. TPZ Publishers. Antioch, CA.

Zaatari, D., **Palestis, B.G.** & Trivers, R. (2009). Fluctuating asymmetry of responders affects offers in the Ultimatum Game oppositely according to attractiveness or need as perceived by proposers. *Ethology* 115: 627-632.





## PROFESSIONAL MEETINGS

### “SEAHAWKS” PARTICIPATE IN WATERBIRDS CONFERENCE

The 33<sup>rd</sup> Annual Meeting of the Waterbird Society, a scientific organization dedicated to the study of marine and aquatic birds (<http://www.waterbirds.org/>), took place in Cape May, NJ, from November 4 through November 7. I attend this meeting in most years to present my research on the behavior and ecology of terns. The conference usually takes place in a good location to see birds and Cape May is certainly no exception. Although I enjoy the opportunity to travel to far away places (recent meetings have been in Barcelona and South Padre Island, Texas), the nearby location had the advantage that Wagner College was well-represented at the meeting.

I presented a paper on fluctuating asymmetry in common tern chicks. Fluctuating asymmetry is a measure of small deviations from perfect bilateral symmetry and can be used as a measure of stress during development or of “good genes”. Microbiology Masters student Jusuf Husic gave a poster presentation on his work characterizing ectoparasites on tern feathers (feather lice) and testing for the presence of pathogenic bacteria in tern chicks (so far he has



found none). Coauthors on his paper include Microbiology professors Roy Mosher and Adam Houlihan and myself. Two undergraduate Biopsychology majors, Maleeha Memon and Ashley Nati, also attended part of the meeting. Ashley and Maleeha will be working in the field with me in the future, and they were able not only to learn about waterbirds but also to see what a scientific meeting is like.



Presentations by Wagner College authors are listed below:

Husic, J., R. Mosher, A. Houlihan, and B. Palestis. 2009. Evaluation for carriage of parasites and pathogens in common tern (*Sterna hirundo*) chicks. Presented at the Meeting of the Waterbird Society, 4-7 November, Cape May, NJ.

Palestis, B. 2009. Fluctuating asymmetry in common tern chicks varies with hatching order and clutch size. Presented at the Meeting of the Waterbird Society, 4-7 November, Cape May, NJ.



Ashley Nati and Maleeha Memon took these photos at Cape May Point State Park from the site of the Cape May Bird Observatory’s hawk watch platform.

Contributed by Dr. Palestis

## 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](mailto: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!

## PUZZLES, JOKES, QUOTES, CARTOONS

### POETRY:

From: [news:bionet.microbiology](https://news.bionet.microbiology) --by someone signing as Yersinia

### A Mad Scientist Christmas

Twass the night before Christmas and all thru my house,  
Not a specimen was stirring, not even a louse.  
The test tubes were capped and the rat cages closed,  
The mold cultures fuzzy, the mice in repose.  
The oven kept warm the ebola and pox,  
I still need to locate my husband's clean socks...  
But that has to wait till tomorrow, I know;  
My buggies still need that much more time to grow.

When from the kitchen came a massive explosion,  
I leapt from my bed in perpetual motion.  
Grabbing my lab coat I pulled on my pants,  
Struggling into them a sick sort of dance.  
With fury and haste I put on a shirt,  
Running out of the bedroom on feet black with dirt.  
Buttoning my lab coat and donning a mask,  
I ran into the kitchen holding an Erlenmeyer flask.

I nearly passed out when the man who I saw,  
dressed in containment gear sealed without flaw,  
Held high a huge sack with his arm stiff and straight,  
I could tell he must have a hard time with his weight.





Through the mike from his suit he said without pause,  
 "Ho Ho Ho, Merry Christmas, I'm Hanta Claus!"  
 Over his shoulder he hefted the sack,  
 We walked into the living room, I offered a snack.  
 He took it and smiled, placed the sack by my bench,  
 Instantly I noticed the Clostridium stench.  
 Brimming with joy, I cried out with glee,  
 "Did you bring all of these germies for me?"  
 "Oh yes," said Hanta, "I must show propriety;  
 By bringing you microbes, I'm saving society.  
 "You are the only one who loves these diseases.  
 Therefore I'm glad to oblige who it pleases."  
 Delirious with excitement I sat by his side  
 While he gave me a year's stock of microscope slides,  
 And pasteur pipettes, drug resistant bacteria,  
 Such as staph, strep and cultures from the genus Neisseria.  
 The gleam in my eyes caused the house to be lit,  
 The moment he gave me a gram-staining kit,  
 Clostridium tetani, perfringens and sporogenes,  
 Salmonella typhi and Streptococcus pyogenes!  
 Plus viruses known to produce hepatitis,  
 Herpes, and rabies, yellow fever and meningitis!  
 But that was not all, he had parasites too,  
 Plasmodia, trypanosomes and schistosomes true!  
 Tapeworms and roundworms, plague-carrying fleas.  
 How sincerely generous, Hanta did aim to please!  
 At long last he said he must now go away,  
 His sled was experiencing radioactive decay.  
 "Thanks for the presents," I said, shaking his hand,  
 "They'll keep me off the streets, you understand."  
 Hanta Claus smiled and bid me goodnight,  
 Shouting "Merry Christmas to all, and to all a good blight!"

### 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](mailto: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 20<sup>th</sup> 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 (Biology major)  
**Student Assistant Editor:** N.N.

CARTOON:

