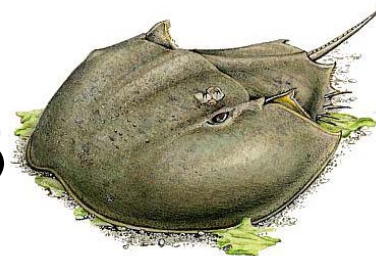


LIMULUS



NEWSLETTER

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

Volume 2008, Issue Fall-01

September, 2008

LETTER FROM THE EDITOR

THE SEPTEMBER LIMULUS

This issue of our newsletter is again a special issue that reviews the activities of our department during the last semester. The LIMULUS is now one year old and it is time to think about necessary changes. As this September newsletter clearly shows, I cannot complain about too few contributions. Nevertheless, I would very much like to still increase contributions by students. During the spring semester, editing the newsletter became more and more a challenge for me and my computer. Therefore, I want to renew my offer to one or two students to act as Assistant Editors of the LIMULUS. Moreover, I will try a change of the format. It is very laborious to pull the content of the newsletter from month to month. I chose this format in the beginning, because I feared that the monthly newsletters could not even fill a single page. After one year of LIMULUS it seems clear that there is no reason for this fear. I will still collect all the material for a comprehensive special issue in the beginning of the semesters. However, the regular, monthly issues will only present the new submissions.

I very much hope you enjoy the review of spring 2008,

Dr. Horst Onken, The Editor

LETTERS TO THE EDITOR

Dr. Onken -

Thank you so much for including me on the distribution list for the newsletter. Also thanks for your time in putting it together - it looks great! If it's not too much trouble may I please be included on the monthly distribution list. Thanks again and I appreciate your time, Michele Leone (formerly Belliveau)

Michele, thank you very much for your nice and encouraging response. Your address was included in our monthly distribution list. We are glad to have you as a monthly reader and we would be delighted to hear more from you. If you like, tell us about your time after Wagner College in a contribution for the "ALUMNI" section. The Editor.

Thank you for sending me the newsletter. Nice to read what the dept. is doing as well as the people doing it. I graduated in '71, BS Biology, Dale Yarns was dept. chairman, Dr. Kanzler, Dr. Kiley as well as others were there. Pls keep me on your e-mail list. bob piegari.

Bob, thank you very much for your response. Unfortunately, I have never heard of the names you mention, since I am a member of the faculty at Wagner only in my 4th semester. May

be somebody of the "older" Wagnarians could give us a clue. Of course, Bob, we would also love to hear more of your time at Wagner College, or what you have done since then. Use the "ALUMNI" section of the newsletter, if you like. The Editor.

Dr. O.,

Thanks for including me on your note. I enjoyed reading the Newsletter. I'm going to go out on a limb...if my Bregenz exchange experience serves me well, "Es gibt immer Möglichkeiten" would be better translated, "There are always possibilities" There is folly, I recognize, in presuming to challenge a professor named Horst on German usage! No offense intended. Cheers (Tschüß), Ed (BS '77)

Ed, thank you very much for your mail. Like the others you are very much invited to tell us about your post Wagner experiences in the "ALUMNI" section. I have to admit that Ed and I already had a little e-mail exchange about the translation issue. Would you be surprised to hear that Wagner's German education was excellent (hopefully not only in the 70s)? No doubt, Ed's correction of my translation is absolutely right!

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





ADJUNCT PROFESSOR SERIES

LISAMARIE ALBA



Professor Lisamarie Alba came to Wagner College as an undergraduate student in the 1970's majoring in Bacteriology (the old name before it switched to Microbiology). She was an undergraduate student laboratory assistant for the Department of Bacteriology, became a graduate assistant and worked on a research project for

the Megerles (the science building is named for the family) using the electron microscope, different types of hair and the shampoo that they manufactured. She has a B.S. and M.S. degree in Bacteriology. She was hired by the department as a full time instructor. While an instructor she served on many committees and advised and taught many students. She started working on a Ph.D. at St John's University. While working at Wagner College she worked at Maimonides Medical Center. She presently works full time for Maimonides Medical Center and has been an adjunct professor in the department for many years.

Contributed by Dr. Bobbit

JOSEPH BERBERENA

In the spring semester 2008, Professor Joseph Berberena became the newest member of our adjunct faculty. He teaches the four lab sections of Human Anatomy and Physiology. Professor Berberena is a very experienced teacher who has been an adjunct professor at a number of colleges in New York, New Jersey and Nevada for 27 years. He holds Bachelor and Master degrees in Education and has a broad background of completed biomedical coursework from the New York Medical College Graduate School.



Contributed by Dr. Onken

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

GRADUATES OF THE DEPARTMENT OF BIOLOGICAL SCIENCES IN SPRING 2008

BS with a major in Biology: Carmine Cataldo, Justine Cicalo, Aleksey Etinger, Jusuf Husic, Nina Eliza Krietchman, Christina Lamb.

BS with a major in Biopsychology: Chelsey Bunyer, Alfred Phillips.

BS with a major in Microbiology: Michael Bois, Kristin Dybing, Mouhamed Halwani, Edmond Kurtovic, Lauren Maltese.

MS in Microbiology: Diana Catanzariti, Chris Corbo, Melanie M. Corebello, Vincenzo D. DiMaggio, Edmond C. Jenkins, Richard A. Maltese Jr., Nicholas Salvatore Senise, William Sheu, Edlira Tafani.

CONGRATULATIONS!

Contributed by Stephanie Rollizo and Dr. Onken

A VISIT AT THE NATIONAL INSTITUTES OF HEALTH

Recently, I had the experience of interviewing with the National Institute of Health at the National Institute of Allergy and Infectious Disease in Bethesda, MD for a 1-year postbaccalaureate research position. It was a really great experience and I was immediately impressed with both the campus (which was huge and very highly secured) and the lab I interviewed with. The program is for recent graduates who are planning on attending graduate school after the year with the NIH ends. They provide you with the research and possible publications that graduate schools would be looking for. You are assigned to work with a post-doctoral fellow that you have matched with and are allowed to work both independently and with anyone else who is involved in your post-doc's research. The interview was fun since I was able to meet all of the scientists working in the lab and listen to each of their research projects all day and ask them lots of questions. The laboratory works with many different aspects of the anthrax toxin and I am very excited to start in August.



Contributed by Lauren Maltese





GRADUATE SCHOOL INTERVIEWS



This semester has been quite a time of traveling. I was so fortunate to attend five graduate school interviews this semester, and I wanted to tell students interested in graduate school a little bit about what they are like. First off, graduate school interviews are not as scary as you may think. Most of the professors are very laidback and just want to hear about what your research interests are. Sometimes you will have that tough and aloof interviewer, but as long as you know your stuff, you do not have to worry. Here are three main things I would want to tell anyone doing graduate school interviews.

Here are three main things I would want to tell anyone doing graduate school interviews.

Know your research: It is extremely important that you know everything about your research and its significance. I had every interviewer ask me about the zebrafish embryos. You will find that after you spend so much time in your project, it is very easy to answer these questions.

Know the program: It is critical that you know about the program you have applied to, and more importantly why you are specifically interested in it. You will be asked why you applied to this program and not another. Have that answer ready so the interviewer knows that you are excited about their program and put time into choosing the schools you applied to.

Ask questions: Please ask questions during the interview. A great tip if you need some fuel for more questions is to ask your interviewer what he or she studies. You would be amazed how effective that question can be. Your interviewer will be very pleased to share his/her work, and it will allow you to ask specific questions about what he/she does.

Stay calm, and have fun! It is not everyday that you get to talk to so many excellent researchers from places around the country. Take advantage of the interview, and you will be great!

Contributed by Christina Lamb

CURRICULUM NEWS

Some curricula changes of the courses taught by the department have been implemented in the fall semester 2008. The updated requirements for the majors are given below. The department's website has been updated also contains the changes made to the descriptions of the individual courses:

Requirements for a Major in Biology (B.S.)

A minimum of 18 units with the following distribution:

Foundation requirements—5 units of Biology as follows: BI 213, 215, 217, 219, and 221

Upper-level requirements—2 units as follows: BI 311, 333

Upper-level electives—3 units chosen from the following: Any 300-level or higher Biology course(s) with a laboratory or BI 493 or CH 517 or the second Capstone Course listed below.

Senior Learning Community—2 units: BI 400E (zero units), 400, and either 495 Molecular Cell Biology or 492 Ecological and Evolutionary Theory

Cognate courses—4 units of Chemistry and 2 units of Physics: CH 111, 112, 211, and either CH 212 or 517 (if not used as an elective); PY 131, 132 or PY 141, 142

Requirements for a Major in Microbiology (B.S.)

A minimum of 18 units with the following distribution:

Core requirements - 8 units of microbiology as follows: Microbiology 200, 219, 221, 314, 512, 521, 522, 525

Electives - 2 units chosen from: 200-level or higher microbiology courses, Chemistry 517

Senior Learning Community - 2 units: Microbiology 400, 400E, 491

Cognate courses - 6 units of Chemistry and Physics: Chemistry 111, 112, 211, and either 212 or 517 (if not used as an elective); Physics 131, 132 or Physics 141, 142

New Summary of the Biopsychology Major:

14 units including the following required courses and electives: Biology 213, 217, 306; Psychology 101, 351, 442; Biology 221 or Psychology 116; Chemistry 111.

Elective courses (Select two courses from Experimental Psychology and two from Biology)

Experimental Psychology: select 2 courses

Biology: Biology 219, 304, 311, 312, 324, 333.

One of the following senior-level learning communities:

Biology 400 and 400E, and Biology 495 Molecular Cell Biology (recommended for students considering medical school or graduate studies in the biological sciences or neuroscience/neurobiology) or Psychology 400 and Psychology 441 (recommended for students considering graduate studies in psychology or neuroscience with emphasis on biopsychology). *Student must make this decision in their junior year and inform the appropriate department. Students selecting the Biology Senior Learning Community must take Biology 219, because it is the prerequisite to Biology 495.*

Students majoring in biopsychology may not also major or minor in psychology or biology.

Requirements for a Minor in Biology

A minimum of five units in biology, including BI 213 and at least two additional courses at the 200-level or higher.

Requirements for a Minor in Microbiology

A minimum of five units at the 200-level or higher in microbiology. MI 200 is required and MI 314 and 512 are strongly recommended.

Contributed by Dr. Onken

BIOLOGY CLUB NEWS

The Biology Club met on Sunday, March 2, at Blazing Star Cemetery for another clean-up of the cemetery and the grass-





land at the Arthur Kill shore line near Rossville Avenue in southwestern Staten Island.



Contributed by Dr. Onken

TRI BETA NEWS

TriBeta organized a faculty luncheon on the 13th of February, offering delicious food, fun and lots of conversation. The following photographs of the event were contributed by Dr. Moorthy:



Organizers



Three very helpful graduate students of the microbiology program get their share.



Hmmmmmm!



Contributed by Dr. Onken with photographs by Dr. Moorthy

NEW MEMBERS

I am so proud to announce the new members of the Beta Beta Beta Biological Honor Society for this year: Samantha Cook, Georgia Dellas, Nicole DePergola, Yolana Fuks, Colleen Janson, Christina Locantore, Michele Marotto, Kristina McEvoy, Robyn McLaughlin, Lillian Reilly, Danielle Sheehan, Ashley Stackpole and Michael Stanton.

The Executive Board for 2008-2009:

President: Ryan Rogers, Vice President: Yulia Seldina, Secretary: Tanya Modica, Treasurer: Dina Hussam, Historian: Georgia Dellas.

I am so proud of all the new members, and I cannot speak more highly of next year's executive board. I cannot wait to see the exciting things that Tri Beta will do in 2008-2009. Thank you for all of the support this year, and a special thank you to Dr. Palestis for being such a wonderful advisor. As Dr. Palestis goes on sabbatical next semester, Dr. Linda Rath will be the new Tri Beta advisor. We are very happy to have her, and look forward to another great year.

Contributed by Christina Lamb



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 straight forward to fight these vectors as long as they are confined in an aquatic habitat.



In collaboration with colleagues from the US (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 2-3 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

VISITING A NATIVE PLANT CENTER

Professor Beecher's Environmental Biology class recently enjoyed a trip to the Staten Island Greenbelt Native Plant Center (GNPC). GNPC taxonomists collect the seeds, shoots, and rhizomes of native plants from various New York City parks and bring them back to the center where they are processed, catalogued, stored, and propagated for use in many local and regional restoration efforts. This is not such an easy task! For example, many native plant seeds require several environmental cues such as temperature and moisture regimes that must occur in a special sequence in order to germinate.

GNPC staff must do much research about the ecology and life histories of the plants that they are coaxing into propagation, and use many innovative methods to simulate natural climatic

conditions in order to be successful. The GNPC houses Staten Island's native seed bank...one of the very few native seed banks in the country! While walking through their greenhouses, we got an inside peek at some native grasses and sedges, and Tim Chambers and Ed Toth (GNPC directors) shared information on what types of restoration projects these plants were headed for. We learned that the GNPC fills a lot of orders for salt marsh grass *Spartina alterniflora* which provides habitat for nesting birds and is an important component of the estuarine ecosystem on Staten Island and elsewhere throughout NYC. *Spartina alterniflora* can grow in these special ecosystems because it is salt tolerant, and not inhibited by brackish water.

The GNPC is providing most of the native plant needs for the



restoration of the Staten Island landfill. This is one of the most ambitious urban restoration projects underway on the planet. It aims to turn a 2,000 acre abandoned landfill into a beautiful interconnected park that will provide not only recreation opportunities and economic development, but also wildlife habitat and ecosystem functions like flood and pollution control to Staten Islanders. Native plants are important to these efforts, because they are co-evolved with other native species and the conditions of the area. They will provide habitat for native animal species and won't require a lot of irrigation and care...planting native species of plants will give the area the opportunity to restore itself!



Contributed by Professor Beecher





WAGNER IN THE SNOW

February 22, 6am, I get out of bed. I had promised Dr. Stearns to give a presentation in his class at 8:30am. When I look out of the window I see white, nothing but white snow. It is a lot of snow, at least a couple of inches. What will my commute be like? After getting through the shower I start the computer in the hope for an e-mail that may release me from the terrible drive during the rush hour. At 06:17:36 AM EST Lee Manchester wrote: "Wagner College is closed for the day due to snow." Thank you so much - you just made my day, preventing me from the hurry through the winter storm.

After a relaxing breakfast I dig my car out of the snow and risk the drive. It took me about an hour for the 12 miles from Rossville to Grymes Hill. When I arrive at the College only staff is there - and students who live on campus. On our floor I meet Ruth who is, as always, busy cleaning. A walk through the snow-covered campus unravels fairy-tale atmosphere: We have a beautiful campus, don't we? At 1pm I am back home, grading with a hot cup of tea in my hand.



Contributed by Dr. Onken.

THE OSPREYS ARE BACK



Our athletes run, throw and bat as "seahawks". Through the eyes of biologists there is only one bird that can be meant by this - the osprey *Pandion haliaetus*, also known in colloquial language as fish hawk, fish eagle, or seahawk even. Ospreys are distributed worldwide and they live almost exclusively on fish. Even for ornithomaniacs it is a very special event to observe an osprey at hunt. These majestic raptors can hover above a lake to then

dive claws first into the water and grab a meal. In Cheesequake State Park, half an hour south of the Outerbridge in Middlesex County, NJ, a pair of ospreys has just ar-



rived from their winter holidays in the south and is now settling into a nest prepared by the park rangers. Do not miss visiting the observation platform close by to see the birds to perfect the home for their future offspring. Cheesequake State-park is also a great place to enjoy a hike through saltwater and freshwater marshes, a white cedar swamp, pine barrens, and northeastern hardwood forest.

The image is taken from Naumann's "Naturgeschichte der Vögel Mitteleuropas" (Natural History of the Birds of Central Europe).

Contributed by Dr. Onken.

IT'S JUST ANOTHER ELEPHANT



Over spring break, I was given the opportunity to travel to South Africa with my boyfriend Charles Nicolais and his family. For eleven days, we stayed in chalets, went on hikes, and drove on safaris. For five days, we stayed in

Kruger National Park, where expert game rangers whisk you off on game drives and walking safaris, tracking the wildlife in their natural habitat. According to the biodiversity statistics, Kruger accounts for as many as 1,500 lions, 11,672 elephants, 4,859 rhinoceros, 1,000 leopards, and 27,000 buffalo. Of course there are many other animals, but these are what Kruger designates as the "Big five"- the animals that are most dangerous if they are injured but not killed.

We were lucky enough to not only catch a glimpse of the "Big Five" but many other spectacular sights. On our first sunrise safari drive, we saw a cheetah stalking its prey. On our second night, two male lions, guarding a water buffalo they had killed earlier. The park rangers who took us on the drives were outstanding. On our way out that night that we saw the lions, he pointed them out to us down in the bush. Later, he said, we might find the lions laying in the road, because it retains heat from the day. Sure enough, an hour and a half later, two lions were lounging in the middle of the road. Right in front of us. They moved- slowly, once our car approached, and one of them appeared to be ready to pounce by the side of the road! As if reading our thoughts, the ranger said, "he is going to the bathroom!!"

After having a semester of Cells Genes and Evolution, and currently being in the middle of Forms and Functions of Life, I realize the applications of my education in biology. My boyfriend's nine-year-old brother asked, "why don't the roofs of those huts get really wet?" "Well," I said, "some plants have this outer waxy covering called a cuticle." Or one time, in the





middle of a safari, I felt the urge to explain that giraffes don't have long necks so they can eat leaves on tall trees, but because they fight with their necks during courtship. And then while looking through our bird book I wondered why there are two different species of hornbill, one with a yellow bill and one with an orange bill. What would be the environmental and lifestyle reason for a change in color of the bill? The trip turned out to be just as much an educational experience as it was an eye-opener to the possibilities of the natural world at its finest.

It's funny when you spend so much time seeing these animals close up and in their natural habitat. On the first day, you are thrilled to catch a glimpse of a zebra a half-mile away. By the fifth day, you are saying, "Dad!! Keep going! It's just another elephant!"

Contributed by Taylor Wheaton, Chemistry Major.

FENCING WITH A CHAMPION

This semester Christina Lamb and I took fencing lessons using the sabre with Dr. Palestis at Master's Fencing Academy in NJ. Did you know that Dr. Palestis was highly placed nationally? We learned so much and had so much fun that we plan to continue fencing after we graduate. "EN GARDE!"



Contributed by Lauren Maltese

DUKE FARMS: INDOOR DISPLAY GARDEN END OF AN ERA



Duke farms is a private property, 2740 acres of park like setting, in Hillsborough, New Jersey, owned and operated through the trust fund set up by Doris Duke, the Million Dollar Baby who at age 12 inherited

enormous amount of wealth and power from her father the tobacco magnate James Duke. The park and the indoor gardens are open to the public for a nominal fee and the display gardens have exquisite flowers



and plants from all over the world.



The indoor gardens are housed in elegant turn-of-the-century glass conservatories. The eleven linked green houses display elegant miniatures of garden styles from the different cultures of the world. It

took Doris Duke six years (1958-1964) to accomplish this task. She traveled all over the world collecting specimens and ideas to complete these gardens and for almost 43 years the gardens have been open to the public for their enjoyment. In this marvelous display, Italian, Colonial, French, English, Chinese Japanese and



Indo Persian designs are juxtaposed near desert, tropical and semi-tropical environments. In addition to the garden style



variations, one also sees seasonal changes in annuals and perennials all through the year. The displays will take a few hours to walk through and enjoy and is filled with photo opportunities.

This lovely display is going to become a thing of the past soon. On May 25th, 2008 the indoor display gardens will close the door for good and never open again. My husband and I visit these indoor displays frequently and when we read about its closing in the local paper, we were saddened and went for our final



goodbye to the gardens this week. This is what we were able to find out about the closing. "The garden will be dismantled as the Doris Duke Charitable Foundation pursues a mission



that emphasizes the practical and holistic over the merely ornamental". I for one do not quite understand the jargon, but in layman's term what it means is that they are no longer interested in just gar-

dens. According to a recent article in the Newspaper Star Ledger "Trustees will not just talk the talk about global warming, carbon emission, habitat loss and threatened species but





walk the walk devoting the foundation's considerable resources to funding the best approaches that technology and natural sciences can supply. Together with partners in environmental and educational communities the foundation hopes to define what "living Green" really means. In essence the Duke foundation is going to spend a good part of their resources to find



tions for a variety of global and environmental issues. I do applaud them for this, but do we have to get rid of thing so magnificent and beautiful like the in-



door gardens to achieve their goals? I am sure Doris Duke, if she were alive, would emphatically say

No.

The thousands of flowering plants, shrubs and the trees in the indoor gardens will be given away to garden clubs and charitable organizations and the rest will be thrown out as trash and the gardens will be dismantled. I encourage all of you to take a trip to the gardens before this happens. You will be glad you did.



Contributed by Dr. Moorthy

MORE FIELD TRIPS IN ENVIRONMENTAL BIOLOGY



Professor Beecher's Environmental Biology class enjoyed two very different and interesting field trips this month. We toured a wastewater treatment plant and learned about the processes of primary and secondary waste-

water treatment and the importance of these processes to the reduction of biological oxygen demand, organic matter, and fecal coliform that would otherwise be sent into receiving waters. If these wastes were discharged directly into the Arthur Kill without undergoing these processes first, Dr. Onken's Animal Physiology class may have a much harder time finding local fiddler crabs for their research! We also learned how anaerobic digesters supply the plant with 30% of their power by generating useful methane gas, which is burned to generate energy. Planned upgrades to the system will increase this ca-

capacity, and may even bring the plant to 100% energy independence. We discussed the possibilities for recycling water instead of discharging it, and the opportunities that exist for producing biogas from sewage lagoons at animal feeding operations. The odors encountered during the tour were pretty unpleasant to us, but the plant operators informed us that they were "#1 in the #2 business," and that the odor smelled like money to them!

We also experienced the ginnings of spring by visiting Clay Pit Ponds State Park. This piece of land is an excellent example of how many valuable ecosystem services are provided by our earth and how important it is to preserve open space, even in densely populated urban areas. Clay Pit Ponds has served humanity for many years. We viewed artifacts of Lenape Nation origin that have been found in this park including potshards, tools and arrowheads. Later,



the "Free Blacks of Sandy Ground" inhabited this area, where they maintained a thriving oyster business and established a notable amount of wealth. After the waters became too polluted to farm oysters, the area was mined for clay to make bricks. Now the area serves as a functional wet-

land, providing wildlife habitat, flood mitigation, filtering of pollutants, and a peaceful and tranquil park for people to enjoy. Mother Earth keeps giving and giving!!!!!! We encountered birds, frogs, bees, butterflies, wildflowers, snakes, and signs of unseen wildlife like large rodent burrows and fresh deer prints by a brook. We practiced identifying trees with the help of our field guides, and didn't do too bad! We observed the surface tension of water by watching water striders, and noted an abundance of benthic macroinvertebrates. We also were able to check out the composting operation and some domestic livestock that have a home at Clay Pit Ponds State Park. We would definitely commend this park to anyone who loves to go outside and play!!!!!!

Contributed by Professor Beecher with a photograph by Claudia Grammatico

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Contributed by Professor Beecher with a photograph by Claudia Grammatico

BUTTERFLIES HELP TEACHING DEVELOPMENT

As part of her double major in Elementary Education and Natural Science, Jacqualea Grigoli completed a tutorial with me this semester--BI 490 (Biology Research for Elementary School Teachers)--during which she researched and invented ways to teach elementary school children some of the fundamental biological concepts required by New York State. She prepared lesson plans, which we went over each week. One lesson was on development, for which Jackie chose to demon-





strate the development of butterflies. Brian Pales-tis approved partment funding of some lars and a butterfly kit complete with a net "cage" and food. Jackie timed the development process so that the butterflies appeared during Earth Week, when she visited a local third-grade class taught by the wife of Dr. Falabella (Physics, Wagner College). Jackie also brought along some caterpillars. She taught the students the life cycle of the butterfly. They then took the cage outside and released the butterflies. The students themselves are taking care of the caterpillars, until they become butterflies as well.



Contributed by Dr. Stearns with a photograph by Jacqualena Grigoli

NEW MICROBIOLOGY LABS

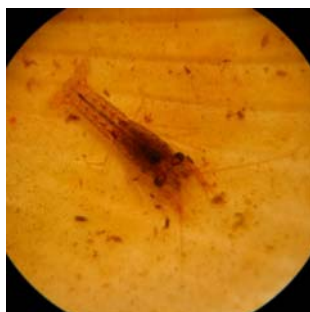


During the summer the microbiology labs on the 3rd floor of the Megerle Science Hall were renovated. This project was long overdue and could finally be realized thanks to funding from "the anonymous donor" whose family is supporting the sciences at Wagner College since a long time. The transformation of the labs almost reminds of an insect metamorphosis from caterpillar to butterfly. Visit the microbiology labs to get an impression. The old furniture was largely saved and served to improve the equipment of other labs on the 3rd and 4th floor. Special thanks go to Chris Corbo, Stephanie Rollizo and to Professor Linda Rath who guaranteed that the pupal stage during the summer was successfully finished.

Contributed by Dr. Onken

CRAYFISH BABIES

This summer, while caring for the crayfish from Dr. Onken's Forms and Functions Lab, we were given a pleasant surprise! One of the crayfish had developed eggs and was carrying hundreds of fertilized eggs under her tail! With a separate tank set up for the mom-to-be, babies slowly began hatching! The process is continual, with weeks passing between the arrivals of the newborns! As of today, there are still baby crayfish waiting to



hatch, with their bigger brothers and sisters waiting to greet (or eat) them! Come and visit!

Contributed by Stephanie Rollizo

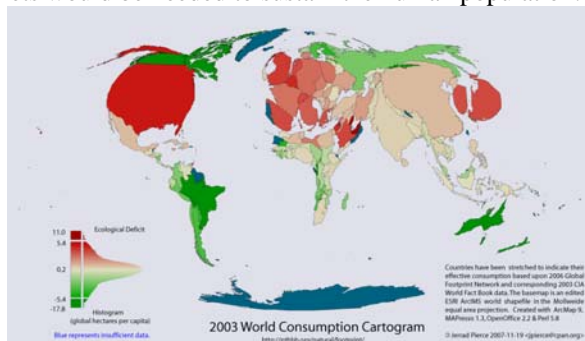
OPINION

GLOBAL WARMING AND SUSTAINABILITY

In the last 100 years the average air temperature at the earth's surface rose by about 3/4 of a centigrade and according to the IPCC (Intergovernmental Panel on Climate Change) "most of the observed increase in globally averaged temperatures since the mid-twentieth century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations." The above conclusion by the IPCC has been endorsed by numerous important scientific societies and academic institutions. For example, the American Association for the Advancement of Science stated "The scientific evidence is clear: global climate change caused by human activities is occurring now, and it is a growing threat to society" and the website of the American Physical Society reads "Emissions of greenhouse gases from human activities are changing the atmosphere in ways that affect the Earth's climate. The evidence is incontrovertible: Global warming is occurring." Depending on the measures taken to reduce greenhouse gas emission, climate models predict a temperature increase of up to 6 centigrades during this century, which is a catastrophic threat to the current composition of the biosphere.

The above sounds very convincing to me. Nevertheless, there are some scientists who express doubts about the conclusions of the IPCC. Although they reflect a small minority, their critical input should not be neglected. However, I welcome the direction that the discussion about global warming has taken for another reason. I believe that the threat of global warming offers a chance to change human activities on this planet to return to a sustainable coexistence of the human society with the rest of the natural world, a path that humanity has evidently left before or during my lifetime.

Sustainability can be defined as the capacity of an ecosystem to maintain ecological processes and functions, biological diversity, and productivity over time. For the human society it means to use ecosystems and their resources in a manner that satisfies present requirements without compromising the requirements or choices of future generations. As estimated on www.earthday.net my personal ecological footprint amounts to 3.7 global hectares. If everybody would live like I do, two planets would be needed to sustain the human population.





The consumption of most nations of the earth is shown as the area occupied in the map above. The color indicates the ecological footprint of the average citizen of a country, with dark red being over 10 global hectares per person. Thanks to the small ecological footprint of the vast majority of the global population humanity's footprint exceeded the biological capacity of the planet only by 25% in 2003. We consume the "capital" of the natural resources offered by the earth instead of using the "interest." I very much welcome the initiative of Dr. Guarasci to sign the American College & University Presidents Climate Commitment, the installation of the Sustainability Committee, the initiative of Professor Wesby in the Committee of the Whole, and all other efforts to reduce the ecological footprint of Wagner College. I promote below the "Ten Things You Can Do" forwarded by Professor Wesby:

Contributed by Dr. Onken

TEN THINGS YOU CAN DO

1. **Change a light bulb:** Replace regular bulbs with compact florescent bulbs; save 150 lbs of CO₂ per year per bulb.
2. **Drive less:** Walk, bike, carpool, use mass transit; you save one pound of CO₂ for every mile you don't drive.
3. **Recycle more:** Save 2,400 lbs of CO₂ per year by recycling half of your household waste.
4. **Check your tires:** Proper inflation can improve gas mileage by more than 3%; every gallon saved keeps 20 lbs of CO₂ out of the atmosphere.
5. **Use less hot water:** It takes a lot of energy to heat water. Install a low flow showerhead to use less hot water (saves 350 lbs of CO₂ per year). Wash your clothes in cold or lukewarm water (saves 500 lbs of CO₂ per year).
6. **Avoid products with a lot of packaging:** Save 1200 lbs of CO₂ per year by cutting down your garbage by 10%.
7. **Adjust your thermostat:** Move down 2 degrees in winter and up 2 degrees in summer - save 2000 lbs of CO₂ per year.
8. **Plant a tree:** A single tree will absorb a ton of CO₂ in its lifetime.
9. **Be smart about electronics:**
 - a. Turn off electronic devices. Turn off your TV, DVD player, computer or other device when you're not using them; save thousands of pounds of CO₂ per year
 - b. Unplug electronics from the wall when you're not using them. Even when turned off, things like hairdryers, cell phone chargers and televisions use energy. In fact, the energy used to keep display clocks lit and memory chips working accounts for 5 percent of total domestic energy consumption and spews 18 million tons of carbon into the atmosphere every year!
 - c. Choose energy efficient appliances when making new purchases. Look for the Energy Star label on new appliances to choose the most efficient models. If each household in the U.S. replaced its existing appliances with the most efficient models available, we'd eliminate 175 million tons of carbon dioxide emissions every year!
10. **Spread the word:** (visit www.climatecrisis.net) See *An Inconvenient Truth* and other films and programs on cli-

mate crisis. Stay informed. Support measures to curb further carbon emissions.

Contributed by Professor Roger Wesby

PUBLICATIONS

Onken, H., Moffett, S. B. and Moffett, D. F. (2008). Alkalization 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.

The above article is currently featured on the homepage of the Journal of Insect Science.

Moffett, D.F. and **Onken, H.** (2008, *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.

PROFESSIONAL MEETINGS

CONTRIBUTIONS

Bois, M., Kurtovic, E., Bobbitt, K. (2008). Antimicrobial properties of chios mastic *in vitro*. 62nd Annual Eastern Colleges Science Conference. Program and Abstracts, page 48 and 79/80 (platform presentation and poster).

Etinger, A., Palestis, B.G. (2008). The effect of ethanol on the escape response of zebrafish. 2nd Annual Undergraduate Research Symposium in the Biological Sciences. William Paterson University of New Jersey, April 26.

Gerwing, J., Adair, S., **Stearns, D.**, McConnell, D. (2008). Collaborative research: critical thinking for civic thinking in science." Inventions and Impact 2: Building Excellence in Undergraduate Science, Technology, Engineering, and Mathematics (STEM) Education. National Science Foundation, Division of Undergraduate Education, Course, Curriculum, and Laboratory Improvement (CCLI) Program Conference, August 13-15, 2008, Renaissance Washington, D.C. Hotel, Washington, D.C.

Izeirovski, S., Onken, H. (2008). The effects of different nutrients on the transepithelial voltage of the isolated and perfused anterior midgut of larval *Aedes aegypti*. 62nd Annual Eastern Colleges Science Conference. Program and Abstracts, page 61 (poster).

Lamb, C. M., Moorthy, A. S., Fulop, Z. L. (2008). Teratogenic effects of lithium chloride exposure on eye development during early embryogenesis in zebrafish (*Danio rerio*). 62nd Annual Eastern Colleges Science Conference. Program and Abstracts, page 35 and 67/68 (platform presentation and poster).

Maltese, L. M., Corbo, C., Bobbitt, K. A. (2008). Pathogenesis of various induced bacterial infections of the cardiothoracic region of adult zebrafish. 62nd Annual Eastern Colleges Science Conference. Program and Abstracts, page 79 (poster).

Mosher, R. and **Stearns, D.** (2008). Direct Measures for Assessing the General Education Program at Wagner College.





Association of American Colleges and Universities. Integrative Designs for General Education and Assessment. Network for Academic Renewal Conference, Boston (MA), February 21-23.

Onken, H., Cataldo, C.S., Coppolo, J.A., Lamb, C.M., LoRe, E.G., Post, A.K., Zangara, N.E. (2008). An Animal Physiology lab project that promotes undergraduate student interest and responsibility. *FASEB Journal* 22: 575.2.

Onken, H., Moffett, S.B., Moffett, D.F. (2008). Revisiting the mechanism of strong alkalization in the anterior midgut of larval yellow fever mosquitoes *Aedes aegypti*. *Comparative Biochemistry and Physiology* 150A, p. S137.

Onken, H., Parks, S., Goss, G., Moffett, D.F. (2008). Extremely alkaline intracellular pH in the anterior stomach of larval yellow fever mosquitoes (*Aedes aegypti*). *FASEB Journal* 22: 759.4.

Onken, H., Patel, M., Javoroncov, M., Moffett, S.B., Moffett, D.F. (2008). Apical Na^+/K^+ -ATPase and strong alkalization in the anterior stomach of larval yellow fever mosquitoes (*Aedes aegypti*). *FASEB Journal* 22: 1239.9.

Pistilli, A., Roxbury, C., Zambidis, E. (2008). Role of micro RNAs in the regulation of both normal and malignant hematopoiesis. 62nd Annual Eastern Colleges Science Conference. Program and Abstracts, page 34 and 74/75 (platform presentation and poster).

Earth Week Event:

Wagner Scholars Discuss Their Research on the Environment (April 23-24, 2008)

Alexa Dietrich (Anthropology), "Community Politics and the Environment"

Brian Palestis (Biology), "Conservation of Coastal Birds"

Maria Gelabert (Chemistry), "Energy and Carbon"

Don Stearns (Biology), "Critically Thinking about the Environment"

Mohammad Alauddin (Chemistry), "Environmental pollution, climate change, and their impact on public health"

FUTURE MEETINGS

DO NOT MISS TO ATTEND THE FOLLOWING CONFERENCES:

The 41st annual fall meeting of the Metropolitan Association of College and University Biologists (MACUB) will be held at Montclair State University (Montclair, NJ) on Saturday, November 1, 2008.

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



REVIEWS

Dr. MOSHER AND Dr. STEARNS REPRESENT WAGNER COLLEGE IN BOSTON



Approximately 800 participants attended the conference of the Association of American Colleges and Universities (AAC&U) in Boston, MA. Drs. Mosher and Stearns presented a poster during a well-attended poster session. The presentation was identified as a LEAP (Liberal Education and America's Promise) Campus Action Network Exemplar by the AAC&U, because it addressed some of the desired student learning outcomes presented by LEAP as important for a liberal education.

During the conference, Drs. Mosher and Stearns also met with representatives from Belmont University, a small university in Nashville, Tennessee. Belmont and Wagner are working together on a funded grant with the goal of developing assessment tools to directly measure the value-added component of experiential education. Dr. Mosher served on a panel at the AAC&U conference, to discuss this joint venture with a larger audience.

Contributed by Dr. Stearns

EXPERIMENTAL BIOLOGY IN SAN DIEGO



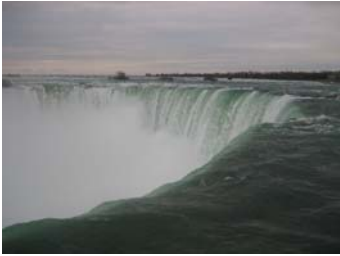
Between April 5 and 9, over 12,000 biological and biomedical scientists gathered in the San Diego Convention Center for a meeting organized by the Federation of American Societies for Experimental Biology. According to EurekAlert "Experimental Biology offers an unparalleled opportunity to see medical advances being made."

Wagner College was represented by Dr. Onken, an active member of the American Physiological Society who studies midgut function of larval mosquitoes. He presented results from collaborations with researchers from Washington State University, from the University of Alberta, and with students from Wagner College. The posters were well visited and resulted in interesting discussions and in the initiation of a new collaboration with a research group from the Mayo Clinic in Rochester, Minnesota.

Contributed by Dr. Onken

EASTERN COLLEGES SCIENCE CONFERENCE

The 62nd Eastern College Science Conference was held at Niagara University, outside Buffalo. This year 26 faculty members and students attended the conference on April 12, 2008. There were 18 students who presented their work as either a paper, platform (oral) or poster presentation. Wagner College did an enviable job at the conference and Andrew Pistilli, Sejmir Izeirovski, Michael Bois, Lauren Maltese, Kathryn Chepiga, and Christina Lamb received outstanding presentation awards for their work.



I never went north of New York and it was a great experience for me as well as evidently for everyone from Wagner College who went on the trip to Niagara. We left Wagner about 1 p.m. on Friday 04/11/08 and arrived at the Grand Niagara Hotel

around 9 p.m. The seven hour drive through enormous crop fields, farms and forests was beautiful and passed fast with a lot of chatting.

When arriving at the hotel we ordered food right away, because we were starving. After dinner some of the students gathered and practiced for their presentations, and some had fun just being there. The next morning we got up at 7 a.m. After a ten minute drive to Niagara University we attended the first meeting at 8 a.m. Afterwards we had breakfast and students started to get ready for their platform presentations between 9:30 and 12. After a lunch break the conference continued with poster pre-sentations from 1:30 to 4:30.

After the presentations were finished we returned to the hotel and made a field trip to the Niagara Falls only five minutes away. The falls were very beautiful and enormous with thunderous sounds and the mist in the air. It was a little chilly and most of us had underestimated the climate difference in the north of our state.

On our way back I was very surprised when I saw a statue of one of my idols, Nikola Tesla. This researcher and inventor was from Croatia in Southern Europe, not too far from where I was born. Tesla changed the world with his numerous contributions to the field of electrical science. Among his many path-breaking achievements is the first hydro-electric power plant in the world in Niagara Falls.



After returning to the hotel we got ready to attend the 8 p.m. dinner and the award ceremony. As the awards ceremony started everyone became excited, hoping to be among the recipients. I was very happy that Wagner College did so wonderful at the Eastern College Science Conference and brought six awards back home. This was better than any other college attending the conference.

After the awards ceremony we crossed the border to Canada where we visited a club and celebrated our success. Unfortunately, we had to keep our visit to Canada short because we had to return to Wagner College early the next day.

Contributed by Sejmir Izeirovski

SEB MEETING IN MARSEILLE, FRANCE

The Society for Experimental Biology (SEB) had its annual meeting this year in Parc Chanot in Marseille in Southern France from July 6th to July 10th. Besides symposia like “Climate Change: from genes to ecosystems,” “Green Products:



Bioenergy and Pharmaceuticals,” or “Circadian Clocks” there was one symposium that attracted my special interest and to which I contributed with a presentation (see list of contributions to professional meetings above) – “Insect homeostasis: a tribute to Simon Maddrell FRS”.

It is clear that insect homeostasis is interesting for an invertebrate physiologist, but who is Simon Maddrell and what means FRS. Well, to begin with the easy part: FRS means Fellow of the Royal Society. Simon Maddrell is Honorary Professor in Comparative Physiology at the University of Cambridge, UK. He very significantly influenced the field of insect homeostasis over the last decades not only through his own research. Quite a few first rate insect physiologists all over the world have their roots in the lab of Simon Maddrell. The symposium encompassed exciting news presented by researchers who dominated the field in the last decades as well as presentations addressing the life of Simon Maddrell. Professor Nathan Tublitz from the University of Oregon described everyday life in the Maddrell lab in Cambridge in a very entertaining way. Remarkable was also the visibility of technological progress. One contributor gave his talk while being at a different meeting in Cape Town (South Africa) and another presenter talked from Ontario (Canada). These contributions were made possible through video conferencing, using Skype. In the last lecture Simon Maddrell himself addressed the question: “Insect Malpighian tubules: what does past research suggest about future investigations?” I do not know the exact age of Simon Maddrell, but I got the impression that he will have quite an impact on this future and not only through the work of his students and collaborators.



Contributed by Dr. Onken

THE HORMESIS RESEARCH PROJECT

BEGINNING OF THE END OR END OF THE BEGINNING

At the end of March 2008 the Hormesis Research Project was finished with an exhibition in the Spotlight Gallery in the Horrmann Library and with a reception on March 31.

In the very center of the Hormesis Research Project are two people, Dr. Zoltan Fulop and a very generous and anonymous donor. At the reception, Dr. Fulop explained the meaning of hormesis for all those who did not yet know it: Hormesis is the stimulating or beneficial biological response to low concentrations of a toxin or stressor. Thus, a toxin that shows hormesis has opposite effects at low and high doses. In the last five years, hormesis was studied in





the frame of the project under the guidance of Dr. Fulop who had received a research grant. Although not urged to follow the suggestion by the anonymous donor, Dr. Fulop explored this topic and used the grant in a truly admirable way for the benefit of the whole Department of Biological Sciences at Wagner College.

Dr. Fulop did not only advance his own research into the field of hormesis, but he supported all other faculty members who directed hormesis-related research projects. In this way, the project boosted research activity at the department. Hormesis-related research was mainly conducted with the nervous system of a model organism, the zebra fish, *Danio rerio*, and alcohol was the stressor that was studied predominantly. However, research about effects of different stressors, on different systems, like zebra fish behavior, or on completely different animal systems like the fruit fly *Drosophila melanogaster* was supported and integrated.

Under the wings of Dr. Fulop the project also spread to other departments at Wagner College, generating successful inter-departmental collaboration that is not seen too often. In this regard the contributions of Professor Andy Needle from the Art Department is especially noteworthy. He clearly left his "fingerprints" through the magnificent graphics used for publications and presentations of the project's results.



Most remarkably though is the involvement of students of Wagner College. In five years, over 40 students have actively participated in the Hormesis Project. Many of them presented their research at scientific conferences, including Eastern College Science Conferences (ECSC), annual meetings of the Metropolitan Association of College and University Biologists (MACUB), meetings of the Sigma Xi Research Society, and the New England Science Symposium. Numerous students won awards for outstanding presentations, which is especially remarkable for a relatively small college like Wagner. Many students selected hormesis-related topics as the basis of the experimental work for their senior thesis. Among the many outstanding students who participated in the Hormesis Project only one can be highlighted in this article.



Chris Corbo contributed to the success of the project in truly remarkable ways, not only because he was involved from the very beginning. Chris has learned all facets of scientific research within the project. He has not only become an outstanding experimenter, but he also presented the project multiple times and won award after award. As a graduate student in

the Microbiology Program, Chris developed into a peer for other students to assist with the solution of experimental and technical challenges. He has taught courses as an adjunct professor and assisted faculty members in many other ways. Everybody in the department regrets that Chris will move into a PhD program at the College of Staten Island in fall of this year. On the other hand, everybody wants to see Chris continue on his way into a certainly successful future in science.

At the reception, the success of the Hormesis Project was honored by the President of the College, Dr. Richard Guarasci, and by the Provost, Dr. Devorah Lieberman. In a very pleasant and relaxed atmosphere as it is so typical for Wagner College a number of collaborating faculty members and students reflected on their experiences with the project and offered the opportunity to guide visitors through their parts.

At the end of my tribute to the Hormesis Research Project and to those who made it so successful I want to return to the beginning of the reception. "It is the end of the project," Dr. Fulop said, in order to let everybody know that the financial support from the grant has ended. "End" is an ambiguous word, especially in science, where the course of one research project just generates questions worthwhile to be explored in future research efforts. I do not believe that the end of the Hormesis Project is the "Beginning of the End." Instead, I am convinced that it is just the "End of the Beginning" of even extended and intensified research activities at Wagner College that will also reflect a return to the generous anonymous donors who facilitated the Hormesis Research Project.



Contributed by Dr. Onken

ALUMNI

WELCOME BACK JESSICA VEGA



Ms. Jessica Vega, a Genetic Counselor working for Reprogenetics in Livingston New Jersey was the ACE lecturer at Wagner on March 10. More than 100 students and faculty attended this event. Ms. Vega is a Wagner Alum, who did her BS in Biology and MS in Microbiology. She was a student athlete with President's Merit Scholarship and was the captain of the Women's Volley Ball team at Wagner. She graduated with honors from Wagner and worked in Sloan Kettering Cancer Research Institute in New York City. Her graduate degree in Genetic Counseling is from Sarah Lawrence College. Her presentation was on "Preimplantation Genetic Screening and the Ethical, Legal and Social Issues that Stem from this." It was a very well attended lecture. Approximately 100 students and a dozen faculties were there as audi-





ence. Students and faculty had several questions to ask her after the lecture and on the whole her ture was very well appreciated by the audience. All students from the “ILC ELSI of the Genome” team taught by Dr. John Esser and Dr. Ammini Moorthy attended this lecture as part of their course requirements and many of them asked valid and thought provoking questions to Ms. Vega.



Contributed by Dr. Moorthy

your weekend trip to the NJ shore? Post it here, if you need help to fix your car or if you are able to fix them.

WANT TO POST YOUR AD HERE?

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!

Dear Alumni,

if you are interested to contribute to our newsletter, your 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 where you are, how and what you do!

You will receive this newsletter by e-mail every first month of a semester (January and September). These two newsletters are special issues that review the previous semester. If you would also like to receive the monthly newsletter (that repeats itself until it grows into the next special issue), send me an e-mail requesting to be put on the respective mailing list, or visit our website to download the current issue at

http://www.wagner.edu/departments/biological_sciences/newletter

RECOMMENDED

Recommended reading:

I strongly recommend the following book on the history of biological thought: Sapp, Jan. 2003. *Genesis: The Evolution of Biology*. Oxford University Press. It is a fascinating, well-written overview of the development of biology reviewing historical and current controversies. This one book covers the major subfields of biology concisely and with an evolutionary focus. For example, there are chapters on early non-Darwinian evolutionary ideas, the cell theory and development, the rediscovery of Mendel’s rules, the tree of life, and symbiosis.

Contributed by Dr. Palestis

Recommend a website, a book or a restaurant that you think everybody at our department should have experienced.

YOUR RECOMMENDATION COULD BE HERE!

CLASSIFIED

You want to sell your PC, buy a used printer? Are you looking for company for your Friday night trip to Manhattan or for





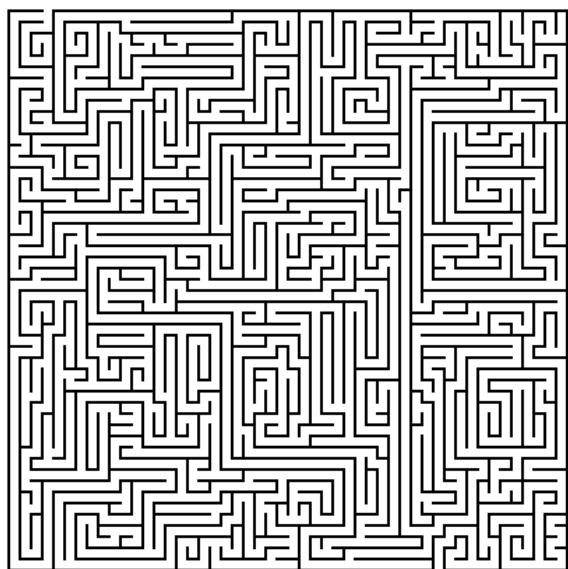
PUZZLES, JOKES, QUOTES, CARTOONS

NUMBERS:

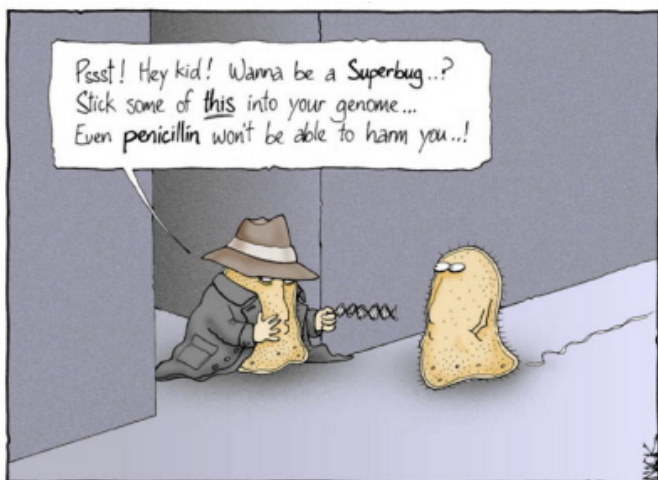
- 1
- 11
- 21
- 1211
- 111221
- 312211
- 13112221

What row of numbers comes next? Solution: 1113213211.
What is the next row? Send an e-mail to the editor with the system that explains which row is next.

MAZE:



CARTOON:



It was on a short-cut through the hospital kitchens that Albert was first approached by a member of the Antibiotic Resistance.

From Nearing Zero, by Nick D. Kim

(<http://www.lab-initio.com>)

IMAGE OF THE MONTH:



Found on <http://www.worth1000.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 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.

DEADLINE FOR THE NEXT MONTHLY

NEWSLETTER:

MONDAY, October 27

The Editorial Board:

Editor: Dr. Horst Onken

Assistant Editor: Stephanie Rollizo, Department Secretary

Student Assistant Editor: N.N.

Student Assistant Editor: N.N.

