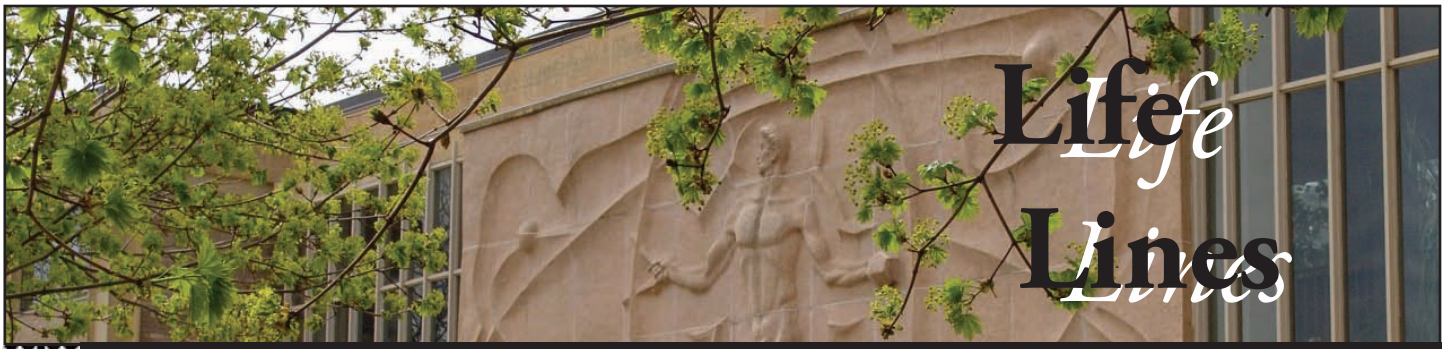


LifeLines

Gustavus Adolphus College ~ Biology department

Fall 2008-Spring 2009

Greetings from the Department:

Hello fellow biologists. Happy spring! This season is a reminder of the diversity and rhythm of life. It's hard to ignore the riotous 4 a.m. birdsong. In response to light and warmer temperatures, cells divide and dormant gene reading programs churn out proteins anew producing colorful flowers and glistening leaves. Spring's sweet smells also coincide with happy academic events such as handing out (or getting) diplomas as well as opportunities to reflect on all that we have accomplished together. The Department completed the first year implementation of our four year million dollar Howard Hughes Medical Institute grant aimed at transforming the first year experience. We selected a stellar group of 13 upper-class students to serve as peer mentors to first year students; we are piloting new modules that better integrate first year Biology and Chemistry courses; we will be purchasing high powered microscopes to help students at all levels better visualize biology, and several rising sophomores will engage in summer research. Our majors past and present continue to impress us with their talents. Current students completed honor's theses and a series of challenging courses as well as initiated an interdisciplinary campus farm. Others are conducting research in university, NIH, NSF and USDA-funded labs or field sites. Our alumni work in industry, in clinics or hospitals, run green start-ups, serve non-profit educational or community service organizations, and heal hearts, land, minds and spirit alike. As a group we are remarkably diverse, and it is such a privilege to pause this spring to appreciate the richness of the biological world and of Gustavus biologists. We look forward to continuing our working together and hearing from you in the year to come!

Pamela Kittelson, Co-Chair
Biology Department
Gustavus Adolphus College

Biologists Laura Dummer ('10), Katie Peterson ('10) and Alyssa Brekke (L to R) search the Minnesota River for life.

In This Issue:

LifeLines
Editor: Christine Askham
Writers: Leah Hogdal
Brandon Baartman
Advisor: Jon Grinnell

If you have stories or news to share, please don't hesitate to contact Jon Grinnell at grinnell@gac.edu

Members of Tri-Beta for the 2008-2009 school year.

Tri-Beta (BBB) Update

by Ashley Baumann, President-elect

TriBeta is a National Biological Honors Society that all biology majors and biology-loving students are encouraged to join. It provides a wonderful opportunity for students to gain insight on what the Gustavus Biology department has to offer and to learn about research other students and faculty are currently involved in. TriBeta is advised by Professor Jon Grinnell.

The events we put on throughout this year include the 'Meet the Profs' picnic, Adopt a Highway and Highway Clean-ups, student/faculty research presentations at monthly meetings, Science on Saturday, Earth Day tabling and awareness, graduate and pre-professional panels, and the end of the Year "Hot as Hell" picnic.

I encourage you to consider joining if you are a Biology major, or if you're simply passionate about the natural world!

New Officers elected:

President- *Ashley Baumann*
Vice-President- *Cassie Breitenfeld*
Historian- *Alina Stevenson*
Secretary- *Melissa Mackeley*
Treasurer- *Sarah Yungner*
Social Coordinator- *Sam Frank*

Gusties through Mayo Scholars learn the business of science

Letter from Dr. Sanjive Qazi,

I was Faculty adviser for 8 students who completed the Mayo Innovation Scholars program this academic year. The Mayo scholarship program is a cross collegiate award involving the participation of 9 Minnesota Private Colleges. The objective is to expose students to the business of science.

The two groups representing Gustavus (8 students) were headed by two MBA students from Augsburg College (Brian Burgess, Jane Mary Beth Hagen) and they were charged with providing recommendations to the Mayo Licensing Manager to how to market and license recently issued Mayo patents. The groups became very proficient in understanding complex patents in the field of Medical devices and Genetic Engineering. These technologies hope to provide improvements in patient care for diseases that are very difficult to treat, but also present economic and ethical barriers. Market research and strategies for licensing the patents were explored by the student teams that required productive and demanding collaborations with business leaders.

At the conclusion of the project, the teams presented their findings to leaders of the Mayo Science and Technology Transfer departments and Directors of MBA programs. The Gustavus team was exemplary in providing Mayo with company leads for the patents studied. All students became accomplished at formal speaking and communication of state of the art scientific discoveries. Both the scientists and business leaders were very impressed with the Gustavus team this year and I am looking forward to setting up new teams next year.

The Mayo Scholars Team (Back row): Kathryn Linstrand, Allison Dittmer, Nick Murray, John Kennedy. (Front row): TJ Ridley, Nicole Soiseth, Chelsea Zamora, Dr. Qazi, Matt Chroust.

Student teams: Cellular Vehicles patents were investigated by Matt Chroust, Nicole Soiseth, Chelsea Zamora and Alison Dittmer. The medical devices patent for lung resection was researched by John Kennedy, Kathryn Linstrand, Nick Murray and TJ Ridley.

Adventures on the Farm

A note from Big Hill Farm's co-founder: Cat Weichmann:

Big Hill Farm is an organic farm managed mainly by Gustavus students. The farm was founded by Eliza Swedenborg and Cat Wiechmann who did the preliminary work to start the farm but will be carried on by the Big Hill Student Organization and four interns who will be farming all summer! The mission of Big Hill is to increase interest in sustainable agriculture, encourage conscious food consumption, and strengthen community relationships around common values.

This summer will be our first season growing produce, which we plan to grow following organic principles. Our intention is to plant about one third of an acre this summer for harvest and another third in cover crop. The crops will include lots of tomatoes, peppers, squash, onions, beans, melons, herbs and tons of other delicious items! Most of the produce will be bought by Gustavus' Market Place, but we are also working with The Kitchen, the soup kitchen at Trinity Lutheran in Saint Peter, to occasionally help them with meals. As part of our goals to get involved with youth in the community, we also plan to host a "farmer for a day" workshop for Saint Peter children, introducing them to where their food comes from and excite them about gardening and good food. At Gustavus, we hope to integrate the farm into the curriculum by inviting professors to use some aspect of the farm as a teaching point. For example, an entomology class could survey and compare insect populations in the new coneflower prairie compared to the farm, a business class could study sustainable business models, and a physics class could help design a renewable energy-heated four-season greenhouse.

The farm kick-off on May 9th was encouraging due to the large turn out and we are excited to see what the future holds! We are looking forward to continuing to network on and off campus and get more people interested in agriculture and their own food choices. The farm is blooming just as planned and should turnip to be a success for years to come!

A map to Big Hill Farm, the new 1.5 acre vegetable farm created this year. Planting has started and four interns will tend to the farm this summer.

The Bio Department was honored to have two guest lecturers this year:
Dr. Curtis Marean and Dr. Micheal Menaker.

Dr. Curtis Marean (center) returned to Gustavus after the Nobel Conference as the Rydell Professor. He is pictured with four Gusties (L-R: Kirsten Ruser, Justin Anderson, Keisha Bates, Linnea Schmidt).

Dr. Curtis Marean (Institute of Human Origins, Arizona State University) returned to Gustavus as the Rydell Professor after participating in the 2008 Nobel Conference "Who were the first humans?" During his time on campus he gave a public lecture: "The cape floral kingdom, shellfish, and modern human origins," and lectured various classes on campus, including a talk in Bio 202 (Ecology, Evolution and Behavior) on Neandertals. Did you know that Neandertals were red-haired (evidence from the reconstructed Neandertal genome)? Or pale-skinned (necessary for vitamin D acquisition in northern climates)?

Dr. Michael Menaker from the University of Virginia spoke to a packed Nobel Auditorium on biological clocks.

The invited seminar speaker for the year was Dr. Michael Menaker (Professor of Biology, University of Virginia), a pioneer in the field of biological clocks. He spoke to a packed Nobel Auditorium on: "Circadian organization: from black box to molecular mechanism and back," an historical tour-de-force on the state of our understanding of biological clocks. He, too, gave guest appearances in biology classes, including Intro to Neuroscience and Circadian Clocks (a new offering by Dr. Karla Marz).

Congratulations!
to the four Seniors who will graduate with honors this year after completing an honors thesis:

Sarah Cowles
(Jon Grinnell / Tom LoFaro --joint Bio / Math)
Leah Hogdal
(Margaret Bloch Qazi)
Jason Pitt
(Sanjive Qazi)
Isaac Weeks
(Margaret Bloch Qazi)

Student Research

A large number of Gusties conduct research alongside professors. Here are a couple of outstanding student researchers:

Ben Johnson-Tesch
First-year

Ben Johnson-Tesch is one of this year's summer interns that will be funded by the recent HHMI grant received by Gustavus. He is among five other freshman students awarded this opportunity to experience extracurricular scientific research with a department faculty member. Ben will spend the summer on campus working with Dr. Brenda Kelly on a project focused on characterizing an enzyme involved in the synthesis of glutathione, a protein implicated in human cancer. Being a pre-med student, this project aligns nicely with Ben's interests, and he is looking forward to beginning his research as soon as the semester ends.

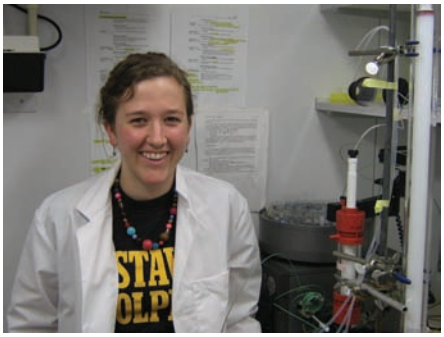
Right now, Ben is an undeclared major, but he has a strong interest in biochemistry and has been enjoying the rigorous pre-med track. He is the first in his family to take an interest in medicine, as well as the first to attempt a major in a scientific field, so this territory is quite new to him. "I don't know what's par for the course," he said, "but everything's going really well." In addition to his courses, Ben plays the trombone in the Gustavus Symphony Orchestra and is looking forward to getting involved in volunteering at Gustavus in the coming years.

The other students awarded the HHMI Summer Science Research Program opportunity include Spencer Bonnerup, Steve Groskreutz, Audrey Messelt, Jeff Rossow, and Xiu Xiao.

Kendra Kesty
Sophomore Biochemistry Major, Music Minor

Kendra Kesty is one involved biology student. Even as a sophomore, Kendra has already gotten her hands dirty in two different biology research projects and has big plans for the future. Kendra is a Biochemistry major from North Bay, Ontario, Canada, who started her undergraduate research career during January of her freshman year. Working with Dr. Joel Carlin, she analyzed microsatellites from samples of dogfish (*Squalus acanthias*) from around the world in an attempt to quantify the number of existing breeding populations. Then, during the following summer, Kendra and Dr. Carlin collaborated again on an ecotoxicology project in which they attempted to identify how certain molecules released during agricultural chemical breakdown might be affecting the behavior and survival rate of minnows. Obviously, Kendra has built up quite the underclassman Curriculum Vitae already.

But this will come as no surprise to those "Gustavians" that are aware of the Kesty tradition in Gustavus research. Kendra's older sister Jenna ('08) spent over a year doing research with Dr. Heather Wenk (now Dr. Heather Cushman, Washington & Jefferson College). Even Kendra's dad, Dr. Kenneth Kesty ('76) was involved in research with Gustavus Psychology department faculty member Dr. Tim Robinson during his days on campus. Like both Kesty alumni, Kendra plans to attend medical school following her undergraduate career.



Chelsea Koepsell
Junior Biology major

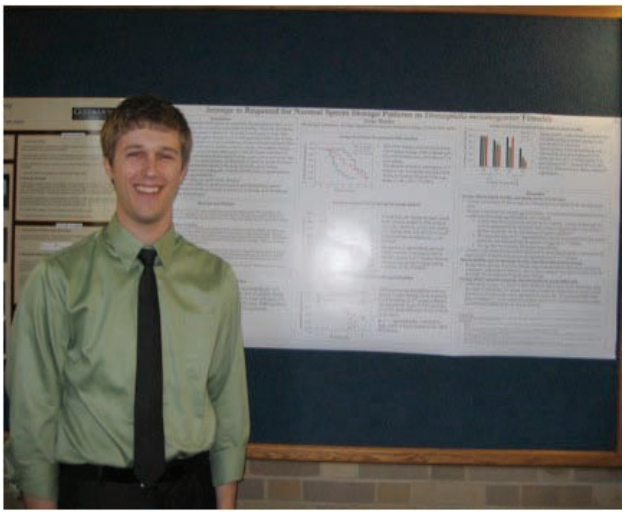
When asked to explain a typical day in the lab, Chelsea Koepsell just smiles and offers, "There really is no such thing as a typical day." Chelsea, a current Junior from Sioux Falls, S.D., has been doing research with Dr. Brenda Kelly since January of this year, and is currently working on characterizing the structural properties of the enzyme gamma-GCL. On average, she usually spends around eight hours in the lab every week, doing everything from pouring her own non-denaturing electrophoresis gels to analyzing data. Real data, she emphasizes. In fact, the pursuit of real, novel data is one of the things Chelsea likes most about doing research at Gustavus. "It's great to run an experiment and get meaningful data," she notes with a smile. "Unlike class, we're never sure what to expect."

But this inquisitive scientific fervor is exactly what you might expect from a student like Chelsea. As of now, she's medical school bound with an interest in working in a hospital setting, keeping open the possibilities of research in her future. For Chelsea, research offers her a different level of scientific understanding, as well as a great setting to interact with fellow science enthusiasts. If you asked Chelsea what advice she'd give to young Gusties interested in doing research here at Gustavus, she'd answer you just like any good scientist would answer a question; with another question. "I'd ask them, 'what's your motivation?'" Chelsea suggests that students figure out why they're interested in research, what they're interested in, and to talk with various professors about project opportunities.

Besides being a scientist, Chelsea is involved in G-Choir, Gustavus Ambassadors, the Elders Program, and the Tri-Beta Biological Honors Society.

by Brandon Baartman

Student Research



Isaac Weeks was one of four seniors this year pursuing honors in Biology. Issac's project was done in Bloch Qazi's lab on the effect of lozenge on female sperm storage in *Drosophila melanogaster.*

Isaac Weeks
Senior Biology major

Pursuing Honors in Biology requires drive and focus, both of which senior Biology major Isaac Weeks possesses. As a sophomore Isaac, a native of Marshall, MN, knew that he wanted to do research at Gustavus, and after hearing about the interesting research being performed in Dr. Bloch Qazi's lab by a friend, he decided to join the Fly Lab. Specifically he remembers hearing that the lab was interested in 'genes' and that these sounded 'cool', so he began working on the genetic screen of candidate genes which may be involved in female sperm storage. During his junior year Isaac decided to undertake an Honors Thesis project on the effect of lozenge, a transcription factor, on female sperm storage in *Drosophila melanogaster.* After over a year of intense work, Isaac discovered some interesting insights on lozenge. He found that lozenge affects the number of sperm stored, the utilization and motility of sperm.

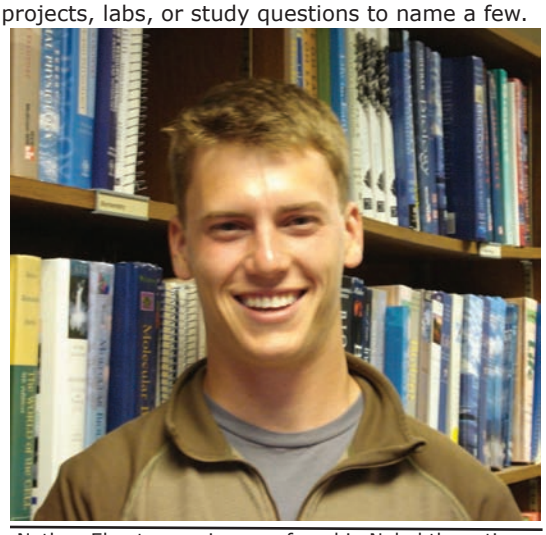
Outside of the lab Isaac enjoys playing the guitar in Gustavus' Jazz Band, watching marathons of Battlestar Gallactica, and being a member of African Partners Medical. As for Isaac's plans for after Gustavus, he is undecided. His long term goal is to receive his MD, but for the meantime he looks forward to finding a job through AmeriCorps or perhaps a position in a lab. Isaac encourages students to get into research early in their undergraduate career, and pursue research even if you think you are under-qualified. Isaac remarks that performing research is a very rewarding experience and that the unexpected results which are often associated with performing research are very exciting.

by Leah Hogdal

The Biology Tutors
When being a bookworm pays off

Who are those select few upperclassmen bio students who hang out in the evening hours just itching to be asked biology questions? These eager students answering questions about kingdoms and phyla, photosynthesis, mitosis, imprinting, if Pam's test is hard, citing sources, transcription and translation, labs, and more are the Biology Tutors.

The Biology Tutors are upperclassmen students who have completed the core sequence in Biology. This makes them great assets for any Biology student in Principles of Biology, Organismal, Cellular and Molecular, and/or E.E.B. The tutors will not lead a general review for a test, but welcome any student who has a specific question. These specific questions can be of any type; papers, projects, labs, or study questions to name a few.



Nathan Ebnet, a senior, was found in Nobel three times per week both Spring and Fall semesters serving as a Biology Tutor.

There is a larger demand for tutors in the fall semester, but demand tends to dwindle in the Spring. As a result, this year there were four tutors in the fall; Nathan Ebnet, Nick Murray, Rochelle Molitor, and Matt Croust but only one in the Spring; Nathan Ebnet. Nathan, a senior Biology major and Philosophy minor, finds tutoring to be very rewarding. Tutoring allows him to keep fresh on the core Biology subjects he took as a freshman and sophomore. Nathan also finds satisfaction when students leave after a tutoring session feeling more confident in the material. Because he feels he has a lot to contribute to papers, Nathan's favorite part of being a tutor is helping with papers.

The Biology Tutors do not know nor claim to know the answer to every question asked of them, the tutors serve more as a resource to finding these answers. Nathan pointed out some good points regarding how useful the biology tutors can be As upperclassmen Biology majors, the tutors have a wider perspective of where to look for materials when a student is stuck. Nathan claims the information he learned his freshman and sophomore year come back quickly, and, although he may not be able to say an answer immediately, he can usually figure out where to find the answer. According to Nathan, visiting the tutors is helpful because sometimes students benefit simply by talking to the tutors and sorting out their own thoughts, while other times a student just needs a push in the right direction.

Next fall the Biology Tutors will be back and ready to answer any biology related question, so keep posted on their office hours and make sure to swing on by.

by Christine Askham

J-Term Spotlight

Bio 146: The Natural History of Ecuador and the Galapagos

In January 2009 eighteen Gusties embarked on a tropical adventure scuba diving in the Pacific, riding turtles, identifying organisms they never knew existed, and learning about the natural history of Ecuador and the Galapagos. This twenty-six day excursion was led by Gustavus assistant professor of Biology Joel Carlin.

The J-term course was a Biology course in which topics such as conservation, biogeography, evolution, population ecology, and others were taught. Local guides helped students learn about what life was like living in Ecuador, while guest lecturers covered topics such as petroleum, bird and reptile diversity, endemism, and ecotourism. Students were held accountable for their learning through field notes, essays, quizzes, and readings.

This January Interim Experience lived up to the name experience; students learned as much or even more outside the classroom. Learning was done outside of the classroom simply by living in and exploring Ecuador. The Gusties on the Ecuador trip never stayed in one place for long. These 18 Gusties zipped around the area in their twenty-six days and were able to explore four different ecosystems; tropical rainforests, dry forests, cloud forests, and alpine grasslands. Also, one week was spent on the group of islands which made Darwin so famous, the Galapagos. Claire Campbell, a junior, says "it was neat to have our classroom be the different ecosystems of Ecuador and to see everything we were learning about hands-on in nature".

When planning for the trip, Dr. Carlin had a very specific idea of what type of student dynamic he wanted. He didn't want all Biology majors, he didn't want all Spanish speakers, nor did he want all one gender. Dr. Carlin was able to create a diverse group of Gusties; half were Bio majors, half were Spanish speakers, and there was an equal split of boys and girls. Dr. Carlin's aim in creating such a diverse group was not only to add different perspectives to discussion, but to give people in different majors the opportunity for a trip which they may never have the opportunity to go on again. The lectures and field trips had a lot of focus on the environmental problems in Ecuador, problems which may be known by Biologists, but need the help of other majors such as lawyers, economists, and anthropologists to fix. This J-term trip may be these other major's only real immersion in Biology, and Dr. Carlin's hope is for the trip to make a big impression now so changes can be made later. Kevin Johnson, a senior public accounting major who had never taken a college biology course before says he was able to keep up with the class and that he learned a ton.

A prickly pear cactus from South Plaza Island in the Galapagos in Ecuador. Black dipterans can be seen pollinating the flower. The Galapagos was just one destination the Gusties visited. *Photo courtesy of Peter Weeks*

This tree frog was spotted as the group was hiking in the early morning to watch the sunrise from a canopy tower near the Tipunti Biodiversity Station in the Amazon rainforest. *Photo courtesy of Claire Campbell*

The underclassmen Gusties are lucky, this trip is planned to happen again in January 2011. Peter Weeks, a junior Biology major, recommends the trip to anyone who is interested in hiking, volcanoes, rain forests, snorkeling with sharks, rays, penguins, sea turtles, biology, commercial flights, ice cold showers, rice and beans, or South American culture. To those who make the choice to embark on this adventure of a lifetime, Claire Campbell warns them to "be prepared to get hot, wet, and dirty".

by Christine Askham

Kevin Johnson, Charles Norgaar, Drew Messerschmidt, and Dan Jarrett (L to R) inspect a turtle on the Tortoise Reserve on the Island of Santa Cruz in the Galapagos where the tortoises had free reign and could roam as they pleased. *Photo courtesy of Kevin Johnson*

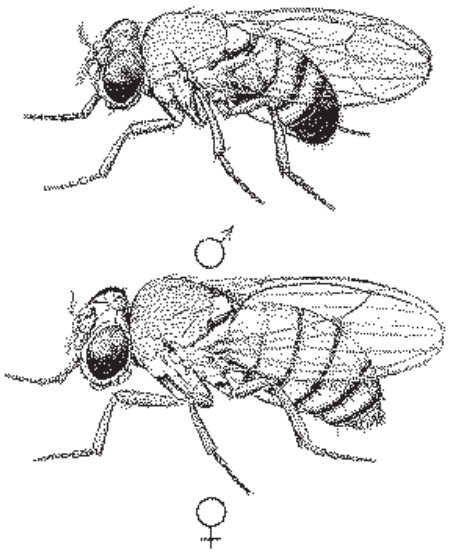
FACULTY SPOTLIGHT

DR. BLOCH QAZI

Meet Dr. Margaret Bloch Qazi, the Biology Department's newest tenured faculty member. Dr. Bloch Qazi, originally from Wisconsin, received her BA from Wellesley College and then pursued her PhD in Behavioral Ecology from Tufts University in Boston. After doing a post-doctorate for a year at Tufts, she moved her post-doctoral studies to Cornell University. After three years at Cornell, Dr. Bloch Qazi began at Gustavus in 2003 where she has taught a variety of courses including, Organismal, Developmental Biology, Entomology, Invertebrate Zoology and Bugs, Sex and Rock and Roll (FTS). Like many other faculty at Gustavus, what excites Dr. Bloch Qazi most about teaching at a liberal arts college is the creative environment fostered by examining questions from multiple disciplines.

Dr. Bloch Qazi is looking forward to spending her year of sabbatical pursuing her own research interests. The biological questions which particularly pique her interests are those relating to development, specifically in understanding the signals involved in cell movement and fate. She is also interested in understanding the complex interactions between the male and female which ultimately result in a reproductive outcome. Her research lab at Gustavus integrates these interests as the lab is involved in examining the male and female components which influence female sperm storage in *Drosophila melanogaster.* With the help of undergraduates, Dr. Bloch Qazi's fly lab has discovered seven candidate genes which may influence female sperm storage. Over the next year she hopes to target each of these genes using RNAi and rtPCR to determine if they do play a role in sperm storage. She will hopefully be spreading her time between her research lab at Gustavus, the University of MN and Cornell University in Ithaca, NY where she hopes to learn new research techniques. In addition to spending many hours in the lab over this upcoming year, Dr. Bloch Qazi also hopes to refine her chocolate dessert makingskills and improve on her lawn gnome collection.

by Leah Hogdal



In her reserach lab at Gustavus called 'the fly-lab', Bloch Qazi along with undergraduate research students investigate female sperm storage in *Drosophila melangogaster* (above).

Photo courtesy of www.Qspace.com

Dr. Margaret Bloch Qazi received tenure at Gustavus this past year. She will be spending the next year on sabbatical.

Dr. Bloch Qazi was asked a series of biology related questions. Here are her responses:

1. What questions intrigue you most about biology?

I am interested in understanding what signals direct cell fate (movement and developmental progression). I am also very interested in understanding the complex, complementary, and sometimes antagonistic interactions between male and female animals related to reproduction. I am able to satisfy both interests by studying the process of female sperm storage which describes the retention, support and utilization of sperm within the female reproductive tract.

2. What is your favorite biology course to teach and why?

My favorite biology courses to teach are the ones in which my students express interest in the subject and are ready to explore the living world with me.

In terms of topics…how can I pick just one? I love my FTS because it is all about our multi-faceted relationship with bugs. I am excited to teach Organismal Biology because it covers LIFE is all its weird and wonderful forms. Invertebrate Zoology and Entomology are chances to explore the most abundant and species-rich animals that exist. I am consistently amazed with the varied adaptations that evolved resulting in novel 'solutions' to environmental challenges. Finally, Developmental Biology is about life – its creation and its demise – and the meaning that we, as biologists and citizens, make of the technologies available to manipulate it. So they are all favorites!

3. What is the coolest/most exciting place biology has taken you?

I'd say here, because I have my own laboratory and am able to pursue the questions that interest me most.

4. Who is your favorite (famous) biologist?

I am quite fond of John Tyler Bonner, although I have deep admiration for a list of others including: Charles Darwin, Martha McClintock, Ernest Myer, Barbara McClintock, Aldo Leopold, E.O. Wilson, May Berenbaum, Tom Eisner and Seymour Benzer. However, many of my 'favorite' biologists are not people who would be considered famous!

PROFESSOR PROFILES

The Gustavus Biology professors were asked three questions:

1. *What questions intrigue you most about biology?*
2. *What is the coolest/most exciting place biology has taken you?*
3. *Who is your favorite (famous) biologist?*

Colleen Jacks

1. Questions about how genes are regulated. What turns genes on at one time and off at another? How does the disruption of this process lead to different phenotypic changes?

2. On my last leave I spent some time traveling in Britain, France and Germany. While in England I went up to Cambridge and did a Watson and Crick "pilgrimage," eating lunch at the pub where they would meet to discuss their current DNA model and finding the buildings where they worked and lived. Pretty nerdy.

3. I don't have a single favorite scientist/biologist. My favorites include the path breaking women who soldiered on in science in spite of the gender discrimination that was so prevalent in the first half of the twentieth century. I like Barbara McClintock who performed amazing genetics in corn, demonstrating that recombination of linked genes was due to physical exchange between chromosomes and that some DNA sequences moved around in the genome. She won the Nobel prize for her work on transposable elements decades after she first described them - she was written off as crazy by many of her male colleagues for proposing their existence. I also like Rosalind Franklin who was so instrumental in working out the structure of DNA but didn't get the credit she deserved.

Eric Elias

1. I am most fascinated by the effects of aquatic toxicants on the reproductive development, biology, and ecology of fishes.

2. Despite my intrigue with the vastness and wonder of the western United States, I am still ever-impressed with the floral and faunal diversity and ecology within the different biomes and ecoregions of Minnesota. My most cherished time has been spent along the Mississippi River in Southeastern Minnesota collecting and examining fish distribution and natural history. I have also spent time in this unique area video-taping seasonal use of the Mississippi River as a refuge for migrating waterfowl through the belly of a single-prop airplane in the fog only a few hundred feet from the enormous bluffs – surely, enough to keep the adrenaline pumping!

3. Charles Darwin. Natural selection. What else needs mentioning?

Kiki Harbitz

1. Questions about how species have become what they are. I am also interested with questions that investigate behavior.

2. To Swan Lake in Nicollet, MN. It is pretty exciting when it is windy and you are in a duck boat or a canoe picking up traps! White caps galore!

3. Charles Darwin (historic) and James Hansen (current)

Jon Grinnell

1. I am intrigued with how organisms interact with each other and their environment in a way that allows them to successfully pass on their genes. My professional focus has been on behavioral ecology of animals, especially how large mammals use vocalizations in a social setting, but my intrigues certainly include evolution, ecology, morphology, physiology, and conservation. I love biology because it encourages a fascination with it all.

2. Recently it's been a coffee farm run by ex-guerrilla fighters in a lush mountainous part of Guatemala. In my life it's been hard to top living three years with the seasons and 2.5 million migratory mammals in Serengeti National Park in Tanzania.

3. Aldo Leopold, because he was an influential outdoorsman and conservationist with a liberal arts heart.

Mike Ferragamo

1. "What is it like to be a bat?" The question is borrowed from the title of a very important article from the field of philosophy that was written by Thomas Nagel in 1974. What it means is that while I've done a lot of different things in science, I am still most interested in solving puzzles about neural mechanisms of animal behavior.

2. I met my wife while pursing the study of biology, so home with her and the kids is the coolest place it has taken me, and it can even get pretty exciting at times.

3. Isn't Darwin everyone's? A distant second for me is Lazzaro Spallanzani (1729-1799) an abbot in the Roman Catholic Church who did a set of very elegant experiments to determine that bats "see with their ears".

PROFESSOR PROFILES

1. What questions intrigue you most about biology?
2. What is the coolest/most exciting place biology has taken you?
3. Who is your favorite (famous) biologist?

Joel Carlin

1. How can geologic disasters continue to influence living creatures today? How do living creatures know who to mate with?

2. Hmmm…the islands of the Azores, in the middle of the North Atlantic. During my field work there I have seen many, many marine species (blue whales, giant Mola sunfish, sperm whales, marlin, mantas). And Napo River Basin in Ecuador, the tropical rainforest is incredible!

3. Alfred Russell Wallace, a founder of modern biogeography.

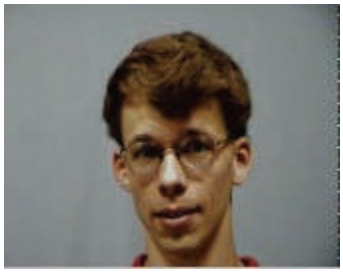
Pamela Kittelson

1. What forces generate and maintain diversity over time on this wonderful, complex planet?

2. It's a big beautiful world for biologists:
Lee Metcalf Wilderness, MT amongst the alpine meadows and grizzlies (any wilderness really). The Paramo (Andes alpine) and the Amazon, Glacier Bay, Alaska

3. I favor the explorer naturalists, Alexander von Humboldt and Alfred Wallace. Of the biologists I've met: Ledyard Stebbins, Peter and Rosemary Grant.

Jeff Dahlseid



1. I am captivated by how cells encode, store, access and transmit information at a molecular level. Presently, I am drawn to study the features of RNA that determine cellular rates of degradation. Amazingly, this information is somehow embedded in the nucleic acid sequence of the RNA, right along with and at times overlapping the information specifying the encoded protein.

2. I think this would have to be the southwest U.S. I spent my last sabbatical at the University of Arizona, Tucson in perhaps the best lab in my field. That was plenty exciting, but the southwest desert made it even more so. It is an amazing place, biologically speaking, full of incredible adaptations for an extreme environment. Now that's 'cool' – or is it 'hot'…actually the desert was both, and at times very wet too!

3. Sir Alexander Fleming, who discovered penicillin and won the 1945 Nobel Prize in Medicine.

Sarah Hankerson

1. I like to learn about how all of the biological facts that we take for granted were discovered. Who did the research? How did they come up with the idea? What motivated them?

2. I do my field work in Brazil in Rio de Janeiro state. Perhaps the most interesting place the monkeys led me was a small island of firm land in the middle of a giant swamp. Of course I only got to the island after wadding through the swamp. I was covered in filth but I was happy.

3. W.S. Gossett, better known as "Student". While he is not a biologist, his work was extremely influential in developing statistical tests for small datasets. He got his start working at Guinness Brewing Co. in Dublin and developed the t-test as a way to maintain quality control.

Cindy Johnson-Groh

1. The intrigue and challenge of discovering something new about our living world. The study of life is nothing short of amazing. There is so much we don't know and with each new discovery we learn a little bit more about our world. And with each new discovery I am amazed how this giant puzzle of living systems is intricately woven together. Additionally, I have a disease called Moonwort Madness. Once infected, you forever have a fascination with moonworts!

2. Another difficult choice. Many places, but Yakutat and the Fairweather Mountains in Alaska would be among my favorites, along with Soit Orgoss in Tanzania. The former is a beautiful montane coastal ecosystem complete with moonworts and brown bears. The latter is a wild African savanna ecosystem with amazing rock kopjes where lions, klipspringers and rock hyraxes hang out.

3. This is an easy choice for me... Dr. Jane Goodall. Her accomplishments as a biologist are impressive and varied, but moreover her efforts to educate the general public about the importance of environmental stewardship and conservation are admirable.

PROFESSOR PROFILES

1. *What questions intrigue you most about biology?*
2. *What is the coolest/most exciting place biology has taken you?*
3. *Who is your favorite (famous) biologist?*

Karla Marz

1. I'm interested in the shapes of things – particularly small things like proteins and nucleic acids, how they fit together, and what governs when and where they do so.

2. Teaching a course in circadian biology for non-science majors eventually brought me to one of the monarch butterfly sanctuaries in Michoacán, Mexico, where millions of the butterflies were overwintering.

3. I don't have a single favorite, but I admire Oliver Sacks, who brings a compassionate, insightful sensibility to topics as diverse as neurology, chemistry, and botany.

John Lammert

1. How do immune cells and nerve cells communicate? How do bacteria sense the world around them?

2.The imaging center at Mayo Clinic. Hey, I'm an inside biologist.

3. Elia Metchnikoff.

Sanjive Qazi

1. Variation and Complexity: How elements that exhibit random noise and variation are fashioned into functioning complex systems capable of creating and appreciating art?

2. St. Peter. Even though St. Peter perhaps is not the most exciting place, my journey here was and included: sipping a drink overlooking Sydney Harbor talking about phospholipids in the insect brain and being convinced it was the most important thing ever; participating in meetings with 20000+ neuro nerds; eating English Scones for the first time in Tucson; talking to Margaret on a subway train in Boston; teaching Americans cricket…

3. Neher and Sakmann who developed patch clamping and Wigglesworth for his poetic prose in science.

CONGRATULATIONS

GUSTAVUS BIOLOGY DEPARTMENT

FULBRIGHT SCHOLAR

INDIA

FULL PROFESSOR

SABATTICAL

DR. BLOCH QAZI

JOHN LAMMERT

TANZANIA

HHMI GRANT

KARLA MARZ

CINDY JOHNSON-GROH- received a Fulbright Scholar Grant. During the 2009-2010 academic year she will be conducting research in Tanzania. She will teach courses on plant ecology, conservation biology, plant systematics, and organismal biology while researching and compiling information to include in her book on the natural history and conservation biology of Tanzania.

PAMELA KITTELSON- will lead a group of 16 students (12 Gusties and 4 Concordia students) to India for the fall semester 2010. This will be her first time leading the Social Justice, Peace, and Development course.

JOHN LAMMERT- is now a Full Professor of Biology.

GUSTAVUS- was awarded a $1 million science grant. Over the next four years, Gustavus will receive the grant from the Howard Hughes Medical Institute (HHMI). The grant will be used to support programs that seek to enhance the first-year experience in the STEM (Science, Technology, Engineering, and Math) disciplines.

MARGARET BLOCH-QAZI- received tenure this year and was promoted to associate professor. During her sabattical next year she will continue her scholarly life.

KARLA MARZ- completed her first year as assistant professor of cell biology. Her research examines some of the molecular underpinnings of circadian clocks. She earned her B.A. in Chemistry and Cellular/Molecular Neuroscience from Macalester College and her Ph.D. in Biochemistry from Washington University.

What's next for the graduating class of 2009?

Here are plans for some of the Senior Biology Majors:

Elias Anosko- is working for the U.S. Forest Service's Pacific Southwest Research Station as a field crew leader. His field site will be the Stanislaus-Tuoloumne Experimental Forest near Pinecrest, CA.
Christine Askham- will spend the summer on the Mediterranean island of Cyprus, and will return in the fall hoping to do an environmental related internship.
Clement Auyeung- will be applying to architecture school.
Brandon Baartman- will be attending Wake Forest University School of Medicine.
Christine Dornbush- this summer will work as a field manager with The Fund For The Public Interest in Minneapolis working with Environment Minnesota to protect the Boundary Waters from the worst impacts of global warming. Starting in September, she will be serving a 10-month AmeriCorps term with Admission Possible (based in St.Paul) as a Senior Coach working with high school seniors through the process of applying for college.
Nathan Ebnet- will be working this summer at an environmental consulting firm Fortin Consulting Inc., located near Plymouth MN. Next year he hopes to volunteer with some conservation related organization.
Stephanie Erlandson- will be a year-long Graduate Student Naturalist Intern at Wolf Ridge Environmental Learning Center.
Tyler Geyen- will spend this summer working in Sitka, Alaska on a salmon fishing charter boat and will return in the fall to take classes at the University of Minnesota.
Andrew Haaheim- is planning on teaching middle school and high school life science.
Nathan Heggem- will spend the next year working as an Americorps VISTA with the Medicare Rights Center in New York City.
Leah Hogdal- will be doing Hepatitis C research as part of the Post-baccalaureate Intramural Research Training Award program at the National Institutes of Health.
Asitha Jayawardena- will either be teaching sciences in the Twin Cities through Teach for America or entering the MD/MPH program at the University of Iowa.
Kristen Johnson- will be participating in Augsburg Physician's Assistant Program.
Linda Kanne- is taking over her fiance's family dairy farm but is also hoping to find a local environmental job.
Mollie Kelly- will be attending a radiation therapy program at Argosy University in Eagan.
Stephanie Kling- will be starting pharmacy school at the University of Colorado-Denver.
Laura Lynch- will spend the summer studying health care in Sweden with the Jacobson Award for Premedical Studies and will start medical school at the University of Wisconsin in the fall.
Kristin Osterman- will be taking Physics at Hamline University this summer.
Jason Pitt- will be in Bethesda, MD working for the Gene Silencing Branch of the National Cancer Institute as part of the National Institutes of Health's Post baccalaureate CRTA program.
Alyssa Posterick- will be attending the Physician Assistant Program at King's College in Wilkes-Barre, PA.
Kayla Ricksham- will spend the summer working at Long Lake Conservation Camp in Palisade, MN.
Heather Rusk- will be attending UW-Madison medical school.
Matt Stewart- will be taking the next year off from school, working for some money, and is planning on applying for Vet school the following year.
Lindsey TeBrake- is planning on working, traveling, and continuing to get patient care experience while applying to Physician's Assistant programs she plans to attend the following year.
Ann Titzkowski- will be starting an Accelerated Nursing Program at Creighton University in Omaha, NE.
Chew Vang- is hoping to work for a biotech/biomedical company next year.
Kristen Willer- will spend the summer interning with Sauk River Watershed and will attend vet school at Iowa State University College of Veterinary Medicine in the fall.
Zeb Zacharias- is planning on going to Busan, South Korea and teaching English.

Motivated Alumni

Julie McDevitt '06
Since graduation Julie worked at a pharmaceutical manufacturing company in Eden Prairie called CIMA Labs. She first worked as a quality assurance auditor, but was promoted to testing drugs. She is applying to the University of Minnesota College of Pharmacy (both the Twin Cities and Duluth campuses) as well at the University of Washington, Seattle.

Anaya Mitra '03
Anaya successfully defended her dissertation last May looking at maternal obesity on physiological changes in the fetuses, using a rodent model. Last fall she began her post-doc at the Food and Human Nutrition labs on the St. Paul campus.

Nick Peterson '03
Last March, Nick was appointed to the role of Avian Program Lead for the the Western Riverside County Multi-Species Habitat Conservation Plan (MSHCP). The ultimate goals of the plan are to conserve 500,000 acres of land. This would then prevent the land from being developed and hopefully serve as Reserves or linkages between Reserves.

A note to Alumni:
Many professors are now on FACEBOOK. Look them up, be their friend.

Don't let being a science major stop you from studying abroad!

A common myth among science majors is that science majors can't study abroad. As an intern in the Center for International and Cultural Education office this fall I noticed many science majors believing this myth. Students are often apprehensive about going abroad for an entire semester because they believe they won't graduate on time or receive major credit. Although science majors have a more difficult time receiving science credit while abroad, there are ways around this small obstacle! The remedy for these concerns are either simple planning, or picking programs in which major credit can be given.

First, graduating on time is usually not an issue for students as long as they plan out their junior and senior year schedules before going abroad. While abroad, Gustavus guarantees 3.75 credits received, so students can plan to use these credits for electives. But this scenario is only possible if the student can fare a semester without getting a major credit.

If the student needs a major credit, all is not lost. In English speaking countries and universities taking science classes is a breeze. But Biology credit is still attainable in non-English speaking countries with special programs geared towards Biology. Students who study abroad through these programs can receive between one and three Biology credits. Such programs supported by Gustavus include SIT-Ecology and Conservation in Madagascar, SIT-Zanzibar Coastal Ecology in Tanzania, SIT-Amazon Resource Management and Human Ecology in Brazil, CIEE-Tropical Ecology and Conservation in Costa Rica, and SIT-Comparative Ecology and Conservation in Educador.

Being a Biology major does not, in an way shape or form, mean you can't go abroad for a semester or even an entire year. Choosing your study abroad destination wisely as well as planning out your schedule is all that is needed.

Christine Askham
A Biology Major who studied abroad

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