

A Note From the Chairperson

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Jeffrey Doering, PhD, Chair

Dear Friends,

The end of the academic year was once again a very busy time in the department. Our Frontiers in Life Sciences symposium was highly successful thanks to the work of the faculty committee. The field course in the tropical rain forest of Costa Rica was once again a great experience for our students. Faculty and staff were recognized for their service and Jutta Heller won the Sujack award. Students presented their research at symposia and won a number of awards. New faculty research is beginning and our MAMS program continues to prosper. This high level of activity in so many areas is a hallmark of our department and makes it the exciting environment we all value.

As always I appreciate everything you all do to make all aspects of the department's mission thrive. Thanks to all of you who regularly respond to my requests for help. Much of what we accomplish would simply not be possible without your good-natured willingness to help on special projects.

It's been another great year. Best wishes for a productive and enjoyable summer.

2010 Frontiers In Life Sciences Symposium

On April 29, the Biology department hosted the 2010 Frontiers in Life Sciences Symposium. This year featured over twenty presentations from Graduate and Undergraduate Biology students (*see page 6 for a complete list*) leading up to the keynote address, "What Makes Us Humans: A Genomics View" by Dr. Yoav Gilad.

Dr. Gilad works in the Department of Human Genetics at the University of Chicago, and his research there focuses on the study of genetic and regulatory differences between humans and our close evolutionary relatives. In particular, Dr. Gilad is looking to determine the genetic basis for human specific traits that lead to higher susceptibility to certain diseases than other primates.

Dr. Gilad took a handful of questions from the near-capacity crowd that piled into the Life Sciences Auditorium. The talk was followed by a reception with students, faculty and staff present.



Drs Catherine Putonti (left), Howard Laten (center) and keynote speaker Yoav Gilad at the post-talk reception at the Frontiers in Life Sciences Seminar.

MAMS Graduates Excel in Medical School

By Sally Fell

When the Master of Arts in Medical Sciences (MAMS) Program opened its doors in Fall 2004 to an inaugural class of 55 students, no one dreamt it would be as successful as it has been. Not only are our graduates being admitted into both allopathic and osteopathic medical schools at unprecedented numbers, but the personal and professional growth they achieve over the course of our one-year, extremely rigorous curriculum of advanced biological sciences courses has significantly contributed to the strength of their scholarship once in medical school and has allowed them to contribute to their talents to their medical school class, community and research.

Korosh Sharain ('08), a first-year medical student at Loyola University Chicago's Stritch School of Medicine, writes, "The biochemistry has been a breeze, thanks to Dr. Castignetti."

Robert (Bob) Zemple ('07), a second-year medical student at the University of Wisconsin School of Medicine and Public Health, volunteers at two free healthcare clinics for Madison's underserved population (Waunakee Area EMS, and MEDiC), conducts medical student admission interviews, has engaged in research in the Cardiothoracic Surgery department and serves as the Class of 2012 co-president and president of the study body.

In a thank you email to MAMS Program Director Dr. F. Bryan Pickett and MAMS advisor Sally Fell, James Ballard ('08), writes: "Last semester, my first semester...at Michigan State University College of Human Medicine, I was at the top of the class. I had over a 90% in every class I took and I attribute a lot of that to what I learned about myself as a student (mostly how to be a good student) during MAMS and being exposed to all the material during MAMS. I truly could not be where I am today without you. I appreciate everything you have done for me and I pray for continued success and well-being for all of you."

After graduating MAMS, Jackie Renfro ('07) conducted research in the Department of Neurological Surgery, the Northwestern Brain Tumor Institute, the Lurie Center for Cancer Genetics Research, and Center for Genetic Medicine, which has resulted in two articles published in the July 14, 2009 issue of JAMA. She is currently in her first-year at Wake Forest University School of Medicine.

The list goes on. What is it that has contributed to the success of MAMS and our graduates? Dedicated faculty members provide a strong foundation for learning. Additionally, Dr. Diane Suter, founder and Director of MAMS 2004-06, originally envisioned a program that would be very demanding academically, but also noncompetitive. Consonant with Loyola's mission, we have sought out students passionate about learning and helping others, students whose character and values rise to the highest level. While students may credit the MAMS Program, it is they who deserve the accolades for their success. Like you, they make us very proud!



Sally Fell
Pre-Health Advisor, MAMS

Did You Know?

The Master of Arts in Medical Sciences is a one year degree program that focuses on the development of skills and knowledge of scientific concept necessary for success in medical school.

While the national average of applicants accepted into medical school continues to hover around 45%, the acceptance rate of students graduating MAMS has remained at or near 91% since the first cohort of students completed the program back in Spring 2005.

Faculty and Staff Honored for Service

On April, 28, 2010, Loyola held its annual Service Recognition Luncheon honoring Faculty and Staff on the Lakeshore campus, hosted by university President, Rev. Michael J. Garanzini, S.J. Several dedicated employees working in the Biology Department were honored at the ceremony. We would like to extend congratulations and many warm thanks to these valuable faculty and staff that help to make the Biology Department such a special place to work and learn.

5 Years of Service

Pamela Bradley—Office Manager

G. Hunter Cole—Lecturer

Sally Fell—Pre-Health Advisor (MAMS)

Jutta Heller—Lecturer

Louis Lucas—Research Faculty (Neuroendocrinology)

10 Years of Service

M. William Rochlin—Research Faculty (Developmental Neurobiology)

15 Years of Service

Martin Berg—Research Faculty (Aquatic Ecologist)

Robert Morgan—Lab Instructor

Kim Williamson—Research Faculty (Physiology/Immunology)

20 Years of Service

Gordon Patrick Duffie—Instructor/UPD

Barbara Haas—Instructor

25 Years of Service

Joseph Schlupe—EM Technologist

40 Years of Service

Robert Hamilton—Research Faculty (Entomology)

Dr. Jutta Heller Awarded the Sujack

**(Left)
Dr. Jutta
Heller—
Sujack
award
recipient.**



The Biology Department extends further congratulations to Dr. Jutta Heller, winner of the Edwin T. and Vivijeanne F. Sujack Award for Teaching Excellence. The Sujack Award has been given annually since 1994 to two College of Arts & Sciences faculty members who have performed above and beyond the call of duty in the area of Undergraduate education. Dr. Heller received this award along with Dr. Peter Sanchez (Political Science) at a ceremony on April 28, 2010 in the Crown Center Auditorium. She joins the ranks of past Biology Department winners: John Smarrelli (1997), Howard Laten (2002), William Wasserman (2004), and Emma Rosi-Marshall (2007).

BIOLOGY: Now in 3-D!

This fall, Biology department faculty member William Wasserman will take a leave of absence to study 3-D computer animation for future incorporation into the classroom. In the abstract below he explains his reasoning for the move and why its so important for the contemporary student.



William Wasserman, Ph.D.

Cell Biology Animations: Impact On Student Learning

We are all teaching students who have grown up with computers, the Internet, watching videos and playing computer animation games. Their brains have been trained, from a very early age, to learn new skills by watching these videos and animations. It became very clear to me that my students grasp new biological concepts more quickly if they see a short movie or animation of that concept, rather than a still picture on a PowerPoint slide. I have tried to find professional biological animations on the Internet and on textbook CD-ROMs. Publishers are now restricting access to these professional animations only to Faculty who adopt their textbook. I would have to change my textbook each semester just to have access to these materials. Even then, their collection of animations does not contain specific biological concepts I want to cover in many of my lectures, they are simply not available. I propose to learn how to make professional biological animations by taking formal Biomedical Visualization & Computer Animation courses at UIC. I will learn how to design and create realistic 3-dimensional animations using state-of-the-art software, Autodesk Maya and Autodesk 3D Max.

Congrats Grad! Pamela Bradley Earns Her Masters

The Biology Department would like to congratulate long-time Office Manager, Pamela Bradley (pictured right) on the successful completion of her Masters of Arts in Urban Studies. Pamela has been working on her degree for about 5 years, while concurrently attending to her full-time duties in the department. She completed her thesis, "The Growth of Chicago and Its Diverse Neighborhood, Rogers Park." Friends, family and a good number of her department colleagues were in attendance the commencement ceremony on May, 13 2010 to cheer her on.



Undergraduate Research Posters
Final Requirement for
BIOL 396, 397H, or 398

Students seeking credit for research or internships must present their data in a poster presentation at the end of the semester. The Biology Department would like to recognize the following students for their hard work.

Student Project Titles:

- William Adams (Dr. Grande) A geometric morphometric analysis of plastron morphology in marine chelonoids and their relatives
- Hadjer Bounamas (Dr. Pickett) Temperature Affects on RALDH2 and Limb Patterning in Zebrafish Embryos
- Victoria Giampaoli (Dr. Grande) A Comparison of Jaw Morphological Development Between *Esox lucius* and *Esox masquinongy*
- Austin Hicks (Dr. Laten) Does DNA methylation regulate silencing of a relatively young retrotransposon found in *Glycine max*?
- Don Jonker (Drs. Laten and Gallagher (LUMC)) Expression and Function of a Novel Gene from Soybean Retroelement, SIRE1
- Ioana Jucan (Dr. Fargo, LUMC) Steroid effects in a mouse model of nerve regeneration
- Gene Katsevman (Dr. Rochlin) Eph/Ephrin Signaling During Early Taste Nerve Development
- Muhammad J Khan (Dr. Doering) Characterization of Telomeric and Subtelomeric Regions of Human Acrocentric Chromosomes
- Kamil Slowikowski (Drs. Laten and Putonti) Automating Consensus Sequence Construction of Retrotransposons in the Soybean Genome
- James Tasch (Dr. Kanzok) Protein expression studies of Thioredoxin-1 and Thioredoxin(469) throughout the life cycle of the rodent model malaria parasite *Plasmodium berghei*
- Son Ton (Dr. Rochlin) Eph/ephrin Expression in Posterior Trigeminal Ganglion Neurites in Vitro.
- April Williams (Dr. Putonti) A comparison of the compositional proclivities of the complete genomes of *Plasmodium falciparum* and human

Frontiers in Life Sciences Research Symposium

April 29, 2010

Graduate Student Presentations

Bradley Drury (Drs. Rosi-Marshall, Kelly) Effects of Triclosan on Microbial Communities in Illinois Rivers and Streams

Garen Gaston (Dr. Laten) Functional characterization of the SIRE1 retroelement family from Glycine max

Michael Lamm (Dr. Kanzok) The role of the Mitochondrion in the Plasmodium ookinete

Pamela Long (Dr. Kelly) Development of Carbohydrate-Based Nanoarrays for the Capture and Detection of Pathogenic Bacteria

Mark Mitchell (Dr. Tuchman) Time-dependent impacts of cattail (Typha X glauca) invasion after more than fifty years of invasion in Great Lakes coastal wetlands

Matthew Najor (Dr. Duarte Mota de Freitas) Protein Folding of G Protein Alpha Subunits

William Ziccardi (Dr. Doering) Organization of the 121-II Region of Human Chromosome 21

Undergraduate Student Presentations

William Adams (Drs. Angielczyk, Parham) A geometric morphometric analysis of plastron morphology in marine chelonoids and their relatives

Ernest Chan (Dr. Doering) The Structure of the Subtelomeric Region of Human Chromosome 21p

Malcolm DeBaun (Dr. Putonti) Identifying Infectious Agents Causing Sepsis

Tanya Grancharova (Dr. Kelly) Impacts of Invasive Typha on Denitrifier Communities in Freshwater Wetland Sediments

Daniel Harris (Dr. Doering) Mapping the Chromatin Structure of HC21p

Donald Jonker (Dr. Laten) Expression and Function of a Novel Gene from Soybean Retroelement, SIRE1

Akadia Kachaochana (Dr. Doering) Filling the Gaps in the HC21p Physical Map

Lauren Mogil (Dr. Laten) Experimental and computational analyses of retrotransposon-associated satellite DNAs in the genomes of complex organisms

Kendra Oliver Absence of Vimentin is Protective under Hyperoxic Conditions by Attenuation of the Immune Response

Katherine Policht (Dr. Kelly) Addition of Biosolids to an Agricultural Soil Increases Nitrification and Produces Distinct Responses in Ammonia Oxidizing Archaea and Bacteria

Vinicio Reynoso (Dr. Putonti) Profiling Members of Microbial Communities Using New Computational Methods

Joseph Saelens (Dr. Putonti) Evolutionary Selection for Pathogen-Host Nucleotide Sequence

Correspondence

Maheen Siddiqi (Dr. Kanzok) Investigations into the Expression of ATP Synthase Subunits in the Mosquito Stages of the Rodent Malaria Parasite Plasmodium berghei

Malachy Sullivan (Drs. Peterson, Kelly) Impacts of Stream Characteristics on Denitrifying Biofilms

James Tasch (Dr. Kanzok) Protein expression studies of Thioredoxin-1 and Thioredoxin(469) throughout the life cycle of the rodent model malaria parasite Plasmodium berghei

April Williams (Dr. Putonti) A Study of the Culturable Microbial Diversity of Several Chicago Beaches

Angelika Zalewski (Dr. Kanzok) Expression analysis of oxidative defense genes in the mosquito stages of the malaria parasite Plasmodium berghei

Natural Resource Conservation Class in Costa Rica

By Robert Hamilton, PhD

Professors Robert Hamilton and Robert Morgan led another group of Loyola students to the lowland rain forest of northeastern Costa Rica. This was the 7th class trip to Costa Rica associated with Professor Hamilton's Natural Resource Conservation Class (Biology 393, NRC). NRC was first offered as a special topics class in 2000. Biology 393 uses Chiras and Reganold's text "Natural Resource Conservation" 10th Ed. 2010. The text includes coverage of local, regional, national and global resource and environmental issues. The course requires permission of the instructor and includes additional costs associated with the spring break trip to Costa Rica. Most of the additional cost is associated with air fare and station fees at La Selva.

The group arrived at the La Selva biological station on March 8, 2010. La Selva is a premier tropical biology teaching/research station that is well known throughout the world. It is owned and operated by the Organization of Tropical Studies (OTS) which is centered at Duke University. OTS is a consortium of universities from the U. S., Europe and Central America and operates two other research stations in Costa Rica: Palo Verde and Las Cruces. Last year's NRC class visited the Las Cruces station in southwestern Costa Rica near the Osa Peninsula (See article in last years biology newsletter). La Selva is approximately 1600 hectares (3,900 acres) that averages 4 meters (13 feet!) of rain each year and contains 70% old growth primary forest and well developed trails. The main class objective is to observe and photograph the rich biodiversity of Costa Rica's rain forests.

Each student focused on a particular rain forest species or group of related species. No collecting is allowed in this preserve (not even capture and release) so the only way to "bring 'em home" is on film or digital images. PPT presentations during class time and written papers on the niche characteristics of their particular organism(s) are now underway (at time of writing).

Two side trips were taken from La Selva. We visited a Dole banana plantation near La Selva and learned the history of the commercial banana as well as sustainable and eco friendly ways to propagate them. Lets hear it for "Parthenocarp!" We also traveled to Tortuguero National Park on the Caribbean coast. We were a little too early for the mass arrival of the green turtles for their egg laying on the beach. However, we did see a good video regarding the turtles and the importance of their preservation. Hope you enjoy the associated pictures. PURA VIDA.

PS: A big "Shout Out" for Jeff Doering who has always provided departmental support for this course and the rain forest experience for our students.



(From Top)1)The BIOL 393 crew at La Selva Biological station 2) Basilisk Lizard 3) Collared Peccaries 4) The BIOL 393 hits a turtle beach near Tortuguero on the Caribbean coast.



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Submission Guidelines

The newsletter will be used to promote and be devoted to covering the activities, seminars and events; initiatives and developments; faculty, student and staff awards. Creative works by our Departmental members, announcements and profiles will be covered.

The newsletter is circulated within the department and will be made available on the Internet via the Biology website. Our goal is to publish online on a bimonthly basis throughout the year.

Authors/contributors should keep in mind that readers may not specialize in their particular area of work.

Articles vary in length between about 50 and 600 words.

We welcome photographs and images to accompany articles; please provide captions when submitting the photographs/images. Either hard copy or digital formats of the images are acceptable.

Articles may be submitted by any method; however, the preferred transmittal is electronic format via e-mail; bnorto1@luc.edu

The Department of Biology newsletter is prepared and edited by Audrey Berry, Pam Bradley, Brian Norton and Jeff Doering.



Angelika Zalewski presenting her award winning poster at the 2010 Chicago Area Undergraduate Research Symposium held on April 10 at the Depaul University Lincoln Park campus.

You Ought to Know...

- Angelika Zalewski of the Kanzok lab took home the Top Poster Presentation honor at the 2010 Chicago Area Undergraduate Research Symposium. The award came complete with a plaque and a \$200 grant. Congratulations Angelika!
- The poster winners for this year's Frontiers in Life Sciences Symposium were Matthew Najor, Mark Mitchell, Michael Lamm
- Congratulations to Sarah Zahn-Seegert on the successful defense of her thesis, "Diet overlap and competition among native and non-native small-bodied fishes in the Colorado River, Grand Canyon, Arizona."