



Preparing People to Lead Extraordinary Lives

LOYOLA
UNIVERSITY
CHICAGO

DEPARTMENT OF BIOLOGY

NEWSLETTER

**No. 5: November/December
2005**

And to All a Good Night: Biology Ends the Year on a High Note



Caitlyn Schluep and Santa, December, 2005

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A Note from the Chair

Dear Friends,

The end of the semester always brings hectic activity, and this year is no exception. In this issue you are introduced to more of the new faculty who joined us this semester. If you have not had the chance to meet them all yet, please do get acquainted and help them become full members of our departmental family.

The gift program for less fortunate families was a resounding success again this year thanks to all of your generosity and Nancy McVittie's exceptional organizational skills. A special thanks to Audrey and Nancy for helping make this year's departmental holiday party another great event. This issue also reports the continued outstanding research productivity of our faculty and students, and the recognitions they receive for it.

Thank you all for your dedicated service to students and the department as a whole, and best wishes for a productive and happy new year and new semester.



Jeffrey Doering, PhD.
Professor and Chair
O: 773-508-3620

Meet the New Kids: Part Two

The Biology Department welcomed several new members to our family this year, including full-time and part-time faculty and staff. Below we continue our introduction to some of these new faces and tell you a bit about them.



Name and title: Erin Hayes, Lab Instructor
Teaching: Anatomy and Physiology
Where she's from originally: I have been in Chicago since I started my undergrad work at University of Chicago in 1980
A bit of background: I Have done a wide variety of activities, ranging from working in a Montessori preschool to spina bifida genetics to assistant volunteer director at Children's Memorial Hospital
Where she's joined us from: Northwestern University
Research Interests: Cognitive neuroscience, audiovisual perception and neurophysiology
Outside interests/hobbies: Sailing, looking forward to rediscovering life after graduate school and first year of teaching

Name and Title: Jennifer Mach, PhD. Instructor.
Teaching: Biology 111 and Biology 112.
Where she's originally from: Massachusetts, but the end of the state that does not have the Bah-stohn accent.
A bit of background: In graduate school I studied *Drosophila* oogenesis and as a postdoc I studied plant disease resistance.
Where she's joined us from: I'm a refugee from the Chicago biotech 'scene', such as it is.
Research Interests: Genetics and developmental biology.
Other interests: Bicycling, home cheesemaking.



Name and Title: Christian Wagner, PhD.
Teaching: I am teaching bio101 as well as a lab section bio111, both sessions take place on the Lake Shore campus.
Where he's originally from: I was born in Germany, studied in Germany, France and Switzerland before moving to the United States.
A bit of background: After high school I had to fulfill mandatory military service. I spent three months in the Netherlands before returning to an Air Force unit in Germany. Following military service, I completed a three month internship with a German energy provider working as trainee in the machine shop. Then I studied chemical engineering, which comprised general and organic chemistry, mathematics, physics, thermodynamics, material science, mechanics and machine design.

Attracted by research I applied and passed the entry exam to the European biotechnology school of the Higher Rhine universities at Strasbourg, France. Studying in France, Germany and Switzerland, I obtained my master of science in biotechnology in collaboration with the pharma company F. Hoffmann-La Roche, where I applied a genome wide approach to identification of signal transduction systems in *Streptococcus pneumoniae*. Continuing on this project while studying at the Biocenter of the University of Basel, I completed my PhD in microbiology. Subsequently, I worked for GlaxoSmithKline in the mode of action analysis group, implementing and developing RNA extraction protocols and light cycler based mutation detection methods.

Where he's joined us from: For the last three years I've been working in Global Pharma Research and Development of Abbott Laboratories at Abbott Park. I developed a fast mutation mapping method for orphan compounds and most recently I studied mode of action of drugs using proteomics technologies such as differential gel electrophoresis (DIGE) and SELDI.

Research Interests: Proteome analysis and signal transduction.

Other interests: Jogging, hiking, swimming and reading.

Name and title: Susana Ugarte Cuadros, Ph.D., Neuroscience

Teaching: Human Anatomy and Physiology (Biology 152 and 153)

Where she's from originally: Born in Chicago

A bit of background: Went to University of Michigan for Undergrad, majored in Biopsychology, grad in 1995, went straight to Grad School at University of Chicago, grad in 2000, worked at first post-doctoral position at University of Pittsburgh studying cellular mechanism underlying Parkinson's Disease.

While there got engaged to one of my best friend's older brother (was in same highschool class as my older brother....surprised the whole family!)

Moved back to Chicago, married in 2002

and continued post-doctoral studies on Parkinson's Disease while at Children's Memorial Hospital. We had our first child Alexander in 2004.

Joined Loyola in August 2005 as part-time lab instructor and loving my decision to focus on teaching, the student body here is wonderful!

Hobbies and interests: Knitting, hiking with my hubby David and Alex, watercolor painting, visiting art museums, reading biographies, cooking and cardio boxing to burn off the calories!!



Name and Title: Andrea M Holgado, Instructor

Teaching: I am currently teaching Cellular Biology lectures (BIOL251), Genetics labs (BIOL283) and Biochem Labs (366L)

Where she's from originally: I grew up in Argentina. "Home of the tango, Diego Maradona, Manu Ginobili, Andres Nocioni"

A bit of background In 1997, I received a PhD in Biology (Biophysics orientation) from the National University of Cordoba, Argentina. Few days after, I moved to Chicago and to the Neuroscience field. Since then I have been studying synaptic transmission using *C elegans* as the model organism.

Where she's joined us from: UIC

Research Interests: Synaptic transmission

is my passion. I enjoy pursuing research projects that can help the understanding of normal neurotransmission as well as neurological disorders.

Other Interests/Hobbies: I love gardening and outdoor activities.

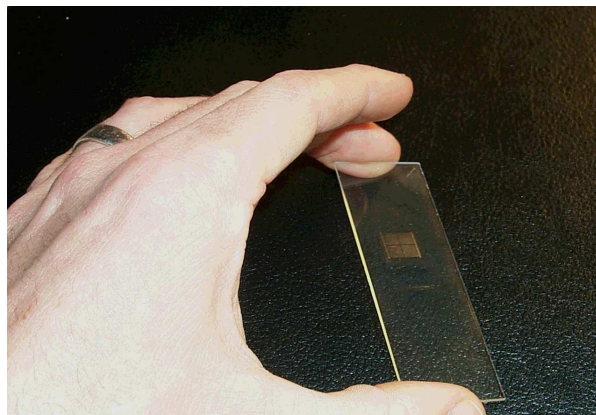
Dr. Kelly Receives Grant From USDA

Recently, Dr. John Kelly was awarded a \$100,000 grant from the USDA. The funding began Sept 1, 2005 and runs for 2 years. Below he tells us more about the project.

Development of Microarray-Based PCR for Analysis of Nitrogen Cycling Functional Guilds in Soil.

By John Kelly, PhD.

Functional genes are useful targets for the exploration of the bacterial functional guilds involved in the nitrogen cycle because well conserved functional genes have been identified for enzymes involved in critical steps of each of the stages of the nitrogen cycle, but current PCR-based techniques limit multiplexing (i.e. the number of gene targets which can be detected simultaneously). I am planning to apply an innovative new technology, Multiplex Microarray-Enhanced Polymerase Chain Reaction (MME-PCR), to the study of the microorganisms involved in the nitrogen cycle. MME-PCR was designed to enable highly efficient amplification of multiple gene targets on a DNA microarray.



The MME-PCR microarray consists of sets of PCR primers tethered to polyacrylamide gel pads arrayed on a glass slide. This format allows multiple independent PCR reactions to be run simultaneously on a single sample in an extremely small volume. This technique is still in the development stage, but it should allow for a much higher degree of multiplexing than is possible with conventional solution-based PCR while avoiding the primer-primer interactions that limit multiplexing. I am planning to build and test a MME-PCR microarray that will include primers targeting multiple variants of each of the identified functional genes involved in the nitrogen cycle: *amoA*, *nirK*, *nirS*, and *nifH*.

The MME-PCR Microarray will enable simultaneous, rapid detection of multiple variants of each of these functional genes in environmental samples, providing insight into the species composition of each of the nitrogen-cycling functional guilds. The tasks included in this project will include primer design, primer synthesis, microarray fabrication, testing of the microarray with DNA isolated from reference cultures both individually and in mixtures, and testing with DNA isolated from soil samples. This project will also explore the possibility of making the MME-PCR Microarray quantitative by monitoring the PCR amplification in real time. This work addresses the USDA's focus on Protecting and Enhancing the Nation's Natural Resource Base, and it specifically addresses the Fate and Transport focus in the Soil Processes Program.

Giving Back for the Holidays

This December, The Department of Biology took part in the annual Loyola Gives Sponsor a Family project, this year done in conjunction with Catholic Charities. The response from Biology was, to put it mildly, overwhelming...

More than two dozen members of the department, including faculty, staff and graduate students, volunteered to contribute with gifts and donations.

Many people chose to "claim" specific family members (two professors even claimed an entire family!) and purchased gifts for them, involving their own families and friends as well. An amazing level of enthusiasm and care was put into picking out a wide variety of gifts for children and adults.



In addition to these individual gift purchases, the department raised over \$300.00 in cash and gift certificates to buy the remaining presents. The money went a long way to providing multiple gifts for every one of our ten family members.

Once everything was said and done, each family member received a new pair of shoes, at least two complete outfits and at least two "fun" gifts, with everyone receiving a little more of something, be it extra clothes or toys. Our families also received coats, bedding, books, and grocery store gift certificates.



*Very special thanks
to our Gift Wrap
Elves:
Diane Jokinen
Pam Geddes
Jen Setlak
Michael Phipps
Ara Keegan Fairlie
Audrey Berry
Scott Mestrezat*

*And to our delivery
elf:
Jerome Lucas*

Update From the Family Quinn

Since John Quinn and family left for Georgia this past May, many in the department have been wondering how they're faring. Dr. Pat Duffie and Diane Jokinen visited the family while down south this past summer and brought back some great pictures. In addition, John has provided us with the following update:

I hope all is well with the department. I am enjoying being Mr.Mom for now. I know at some point I'm going to have to get a paying job, but for now doing what needs to be done around the house and watching the children is fun. We are settling in down here, Patrick is the only one who's picked up a bit of a drawl so far I expect with time we all will have one to some extent.

I sure Pat and Diane told you that the house didn't have any landscaping when they were here. After the children started school I put down a lot of sod.

We tried seed but it kept washing away with the rain. I also put in a bunch of shrubs, trees and flowers this fall. Gardening in the south is a bit different than up north, so I'm learning about a whole different set of plants.



We do miss ya'all and hope that life is treating you well. Happy Holidays, Merry Christmas and a Very Happy New Year from down here in Georgia. I'll see you when I get up there this spring.

John



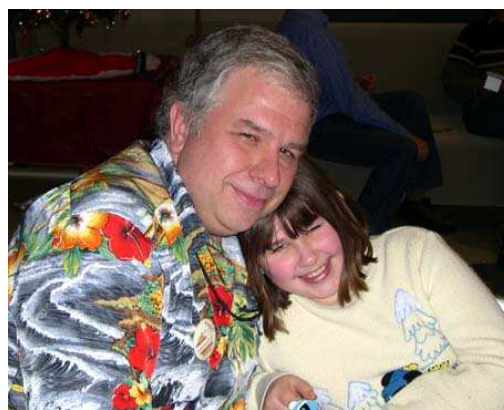
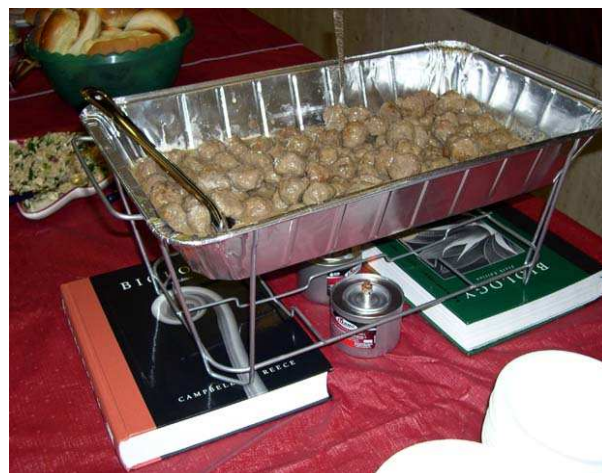
The children are adjusting well to the move. They are enjoying school and doing well. Today was the last day before Christmas break. I need to keep them occupied next week so it will give me a chance to see how well my mom skills have developed. Mary is enjoying the chair position. She has been very busy with setting up new programs and hiring new faculty for the department.

I am a bit surprised at how quickly I've gotten used to small town life. Finding stuff locally is sometimes hard but Savannah is just 50 min. away and it does have most things we want and there is always the internet



A Holly, Jolly Biology Party

Biology's annual holiday party (our second in the Life Science Building) was a great success and, as always, a lot of fun. Below are some snaps from the big event.



Undergraduate Research Presentations

On Wednesday, December 14th, students working in faculty labs took part in poster presentations, providing research data and discussion on a variety of biology topics. Their posters are the culmination of research they have taken part in during the summer and fall terms.

Presenters Included:

Chetan Aher, working under supervision of
Dr. Louis Lucas:
"Interaction of Opioid systems in Salt Intake
Behavior"

Nicholas Angeloni, working under
supervision of *Dr. John Kelly:*
"Impacts of Invasive Cattail Species on
Microbial Communities"

Brittney Bergemann, working under
supervision of *Dr. Jan Savitz:*
Title: "Analyses of Smallmouth Bass
Recapture Data"



Chetan Aher



Nick Angeloni

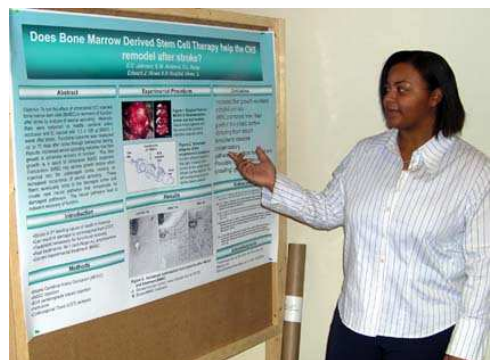
Emmanuel Favila, working under
supervision of *Dr. John Kelly:*
Assessment of Soil Microbial Communities in
Surface Applied River Sediment/Biosolids
Mixtures"

Stephanie Johnson, working under
supervision of *Dr. Barbara Haas:*
"Do Bone Marrow Stem Cells (BMSC) help the
CNS remodel after a stroke?"

Inkyung Lee, working under supervision of
Dr. Domenic Castignetti
"Are Quorum Sensors Used by *Mesorhizobium*
loti ?"

Patrick McGill, working under supervision of
Dr. Domenic Castignetti
"Generating and Characterizing Siderophore
Usage Mutants"

Scott Mestrezat, working under supervision
of *Dr. Nancy Tuchman*
"Does *Typha x glauca* inhibit plant
competitors by excreting allelopathic
chemicals from its roots?"



Stephanie Johnson

Talk

Announcements, greetings and miscellaneous news bits

Biology in Print

Dr. John Kelly published two papers recently:

Janus, L.R., N.L. Angeloni, J. McCormack, S.T. Rier, N.C. Tuchman, and J.J. Kelly. 2005. Elevated atmospheric CO₂ alters soil microbial communities associated with trembling aspen (*Populus tremuloides*) roots. *Microb. Ecol.* 50: 102-109.

Kelly, J.J., S. Siripong, J. McCormack, L.R. Janus, H. Urakawa, S. El Fantroussi, P.A. Noble, L. Sappelsa, B.E. Rittmann, and D.A. Stahl. 2005. DNA microarray detection of nitrifying bacterial 16S rRNA in wastewater treatment plant samples. *Water Res.* 39: 3229-3238.

Holiday Greetings

Graduate student **Anna Taber**, whose son Johnny's birth was announced in the First edition of the Biology Newsletter sends holiday greetings and shares an updated picture of Johnny.



Welcome Home

Biology very happily welcomes **Pam Bradley** back to our department as Office Manager. Pam held this position for a number of years and brings with her a host of skills that greatly benefit the department.

It's great to have you back, Pam!

Biology Goes Country

Congratulations to **Dr. Bill Kroll** whose band The Country Doctors recently recorded their second CD, the follow-up to their debut, *Malpractice*. The new CD, entitled *Second Opinion*, will be available this February.

Rock on, Country Doctors, Rock on.

Of Interest: Wetland Conservation Stamps

By Dr. Roberta Lammers-Campbell

In my new office in the Quinlan Center I have a large empty wall where many other offices have windows. That wall provides a space for me to display my father's duck stamps. The stamps do not have much monetary value – I think I could buy an entire set from Ducks Unlimited for about the price of the frames which display mine. But their sentimental value is immense. They reflect the concern that my father, and other duck hunters like him, had for wetland conservation before I was even born. Their concern was not based on the complex and sometimes esoteric concerns I have about ecosystem loss, but simply on the fact that duck populations were declining as the wetlands which supported their migrations, feeding, and breeding were being destroyed. By 1934, when the Migratory Bird Habitat Stamp Act was initiated, the entire continental waterfowl population had been reduced to 27 million birds.



Duck hunters still purchase stamps as their license to hunt. The stamps display beautiful paintings of waterfowl. Every year there is a national competition to select the painting for that year's stamp. Through 1995, 1.8 million acres of waterfowl habitat had been preserved with duck stamp money. However, that is a small area compared to what has been lost. Illinois alone has 9.8 million acres of artificially drained cropland that used to be wetland. And the effort to conserve wetlands is now much broader than selling duck stamps. Nevertheless, the stamps are an

important symbol of our connections to wetlands.

I studied wetlands when I was in graduate school at the University of Minnesota. At that time I had little appreciation for the efforts of my father's generation to preserve the habitats I was becoming increasingly concerned about. My father died sixteen years ago. Now, each day I walk into my office and see his stamps on my wall, I feel a real sense of connection to him and gratitude for his conservation efforts and those of duck hunters in general over the last seventy years.



Stop by and see my stamps sometime!

Profiles: John New

Dr. John New celebrates fifteen years at Loyola this year. Here he shares with us a bit about his research and teaching experiences on the Lake Shore Campus.

Tell us about your background and how you came to Loyola.

After completing my Bachelor's degree in marine biology at the University of Massachusetts I took a position in the Pharmaceutical Research Division of Warner-Lambert/Parke-Davis (now part of Pfizer) doing research on antitumor agents. While there, I completed my M.S. at the University of Michigan and then left to pursue my Ph.D. in neurobiology at Wesleyan University. After finishing my dissertation I was a postdoctoral fellow for one year at the Centre National de la Recherche Scientifique in Gif-sur-Yvette, France, working with forebrain organization in weakly electric fish. That was followed by two years as a postdoc in the lab of Theodore H. Bullock at Scripps Institution of Oceanography, University of California San Diego studying the brains of sharks and rays. I was a Grass Fellow at the Marine Biological Lab in Woods Hole before coming to Loyola as an Assistant Professor in the fall of 1989.



Tell us a bit about what you research and teach here at Loyola.

My principal area of interest is in the comparative neurobiology of vertebrate sensory systems. A principal function of brains is to interpret the electrical and chemical signals arriving from sensory receptors and nerves in order to construct a "picture of the world" that the animal can then use to organize purposeful behaviors. I work primarily with fishes because I find them interesting models to use in understanding basic vertebrate sensory circuitry and function (and I'm just too softhearted to work on mammals). Also, I think that fish are just cool, particularly some of the large sharks I have been lucky enough to work with. More recently I have also been thinking and writing about issues of science, public policy and the law. With respect to teaching, I genuinely enjoy teaching neurobiology; it is an endlessly fascinating and highly challenging field. I was fortunate enough to learn neurophysiology directly from scientific stars like Ed Furshpan and David Potter at the Marine Biological Laboratory and their approach, as well as the comparative emphasis I learned from Glenn Northcutt and Ted Bullock at SIO/UCSD has always informed my own approach to the subject matter. I also like to teach the neuroscience laboratory course and I very much enjoyed teaching General Biology for many years. I have also occasionally offered courses in the Biology of Sharks and Rays, Animal Navigation and Migration, and Neuroethology and hope to do more in the future.

What is the best thing about Loyola?

That's easy, the students. I enjoy the diversity of cultures and backgrounds that I have encountered among Loyola students, and I would confidently stack the best of them intellectually against students from any other university, bar none. I think that one of the good things about having a reputation as a rigorous and exacting professor is that I tend to encounter students who relish a challenge and learn to push themselves beyond what they believed were their own capabilities.

I also enjoy the Lake Shore Campus, particularly in the summer, when it is a green and peaceful lakeside oasis, seemingly far removed from the city.

What do you enjoy most about teaching?

Seeing students develop an interest in and enthusiasm for the subjects that I feel passionate about, and then taking that knowledge and enthusiasm out into the world. I also enjoy the one-on-one exchanges and small group teaching that I get to do in the labs.

Tell us one thing no one would ever guess about you?

I was a varsity saber fencer in college.

If someone knew nothing about our department here and asked you about it, what would you like them to know?

That here there is a unique admixture of talented scientists in a variety of areas who really care about excelling at both research and teaching

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.

Questions? Contact Us.

Should you have any questions, please do not hesitate to contact us at biologydept@luc.edu .

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

Hard copies of articles, images, etc. may be forwarded to us at LSC, LSB, Rm. 317, Attn: Newsletter.

**Submittal Deadline for
Newsletter No. 6:**

Friday, 02/10/06

**E-mail:
Biologydept@luc.edu**