



# Biological Sciences

## SUNY College at Brockport

*Lennon Hall, 350 New Campus Drive, Brockport, NY*

*Volume 2, Issue 1*

*September, 2009*  
*Welcome Back*

### The State of the Department

To the new biological science majors, Welcome! The faculty and staff are pleased that you have chosen to join our department. We will provide guidance and support to help you meet your career goals. To the returning biological science majors, Welcome Back! Hopefully, you have had an enjoyable summer, and feel invigorated and eager to resume the pursuit of your career goals.

I would also like to welcome two new faculty members. Dr. Michel Pelletier will be our new Assistant Professor. This academic year Dr. Pelletier will be teaching Immunology and Microbiology. Dr. Pelletier will be developing an upper level microbiology course to be taught in future

years. Dr. Christina Baker will be our new Adjunct. She will be teaching Anatomy and Physiology I this Fall. In addition, Dr. Baker will be doing a postdoctoral research at the University of Rochester.

The 2009-10 academic year will be the start of new curricular changes in the department. New incoming students in the major will have different requirements at the 300/400 level electives from that of returning students. However, returning students have the option of moving into these requirement changes if they feel the changes are more suited towards their career goals. For those highly motivated students interested in attaining a

BS and MS degree in a total of 5 years, we now offer a 3+2 BS/MS program. For those students interested in graduate school, we now offer a new graduate degree called a Professional Science Masters or PSM degree for short. It is geared for those students interested in more of the business side of science. Specifics to all of these curricular changes are discussed below in the newsletter.

Have a great semester! - Rey Sia, Ph.D.,  
Assoc. Prof & Chair



### Inside this issue:

Med Tech Grads	2
Summer Research	2
External Funding	2
BIO Degree Changes	3
Student Successes	3
Faculty News	4

### Special Notes:

***Save the date! Student Success in the Sciences Poster Session and Seminar is scheduled for Friday, September 18th. Come see what our undergraduates and graduates have accomplished in the research labs!***

### Welcome Dr. Michel Pelletier

Dr. Michel Pelletier earned his Ph.D. in Microbiology from Laval University in Quebec City, Canada. As a graduate student, he was interested in how oral bacteria, particularly streptococci, are able to transport sugars and convert them into acid to cause dental caries. Following graduation, Dr. Pelletier joined the lab of Dr. Laurie K. Read at the University at Buffalo. His research has focused on the parasite *Trypanosoma brucei*, the causative agent of African Sleeping Sickness. Since 2003, when he became a Research Assistant Profes-

sor, he has been very interested in elucidating how protein arginine methylation, a rather novel post-translational modification, works in regulating gene expression in this evolutionary ancient organism. He is pursuing his research at SUNY Brockport, focusing more on how protein arginine methylation may influence *Trypanosoma brucei* phospholipids biogenesis and cell development. Dr. Pelletier strongly believes that to, achieve excellence, a researcher must also be an accomplished teacher, and be an active

member of the department, the faculty, and the community. This academic year, he will be teaching BIO414/BIO514-Immunology during the Fall Semester, and BIO323 Microbiology in the Spring Semester.



---

# Congratulations Medical Technology Graduates!

Brockport's Department in Biological sciences offers a competitive Medical Technology Degree in concert with Rochester General Hospital. Students in this program must complete a rigorous year of clinical training prior to graduation. We are pleased to announce the following graduates have accepted positions at Rochester General Hospital:

- **Andrey Fesyuk**- Anatomic Pathology/Histology
- **Brandon Bach**- Hematology/Chemistry
- **Amanda Marzell-Wheeler** - Chemistry/Hematology/Blood Bank
- **Tim McVeigh** - Microbiology

In addition, **Betsy Underhill** accepted a Microbiology position at ACM Laboratories. She won the Talluto Hematology Award at Graduation. We are also happy to report that **Danielle Feligno** has been accepted to our Master's in Biological Sciences Program. If you'd like more information regarding the Degree Program in Medical Technology, please contact Dr. Thomas Bonner at 585-395-2633, [tbonner@brockport.edu](mailto:tbonner@brockport.edu).

## Students Spend Summer Doing Research with Faculty

Once classes are over in May, and the mass exodus out of Brockport begins...however some students decide to spend their summers working on research projects in the laboratories of Brockport faculty members. This year, three faculty hosted a total of seven students.

**Jeff Satora, Lauren Saeva** and **Kevin Tylock** worked on developing assays for measuring gastrointestinal motility in zebrafish with Dr. Rich. **Regina Harrison** and **Laura Shum** measured motility of preadi-

pocytes and **Mac Cerasaro** prepared DNA for cloning with Dr. Cook. And **Girija Vijayaraghavan** researched the mating behavior of mutated drosophila flies. Biological sciences together with the departments of chemistry and physics met for weekly research meetings to discuss project design, troubleshooting, and presentation techniques. The summer research students presented their work in a poster session at the end of July. You'll get a second chance



to learn about their work in a Student Success in the Sciences Poster Session on September 18th following a Guest Lecture by Dr. Fang Zhou from St. John Fisher College.

## External Funding: Proposals for the future

Careers in science require a wide range of skills, not the least of which is communication. Grant writing is a challenging and important type of communication! Scientific research costs money and biology faculty are actively pursuing external funding to support basic science research. Dr. Cook submitted a proposal to the NSF titled "**An Investigation into the Molecular Mechanisms of Melanin-concentrating Hormone Receptor Desensitization**" for \$230,374 to

fund 3 years of work in her laboratory. Dr. Hing submitted a proposal to the NIH titled "**Wnt5 and the Patterning of the Olfactory Map**" for \$150,000 to fund 3 years of work in his laboratory. Dr. Rich submitted a proposal to purchase a spinning disk confocal microscope for \$113,000 that will enable optical sectioning of tissues and live cell imaging experiments. A second proposal to purchase a laser scanning confocal microscope, titled **Acquisition of a La-**

**ser Scanning Confocal Microscope for Research and Education**, was also submitted by Dr Rich with Drs Cook, Hing, Pelletier, and Sia for \$241,000. This powerful microscope will enable 3 dimensional reconstructions and volume rendering, and has an automated stage controller. Let's keep our fingers crossed for these proposals!

### Important Dates

- Monday Sept. 7th, LABOR DAY—No Class
- Add Period Ends Tuesday Sept. 8th
- Late Add Period Ends Friday Sept. 18th
- Drop Period Ends Tuesday Sept. 29th

### Newsletter Volunteers Needed!

Dr. Laurie Cook is looking for undergraduate majors in the biological sciences to assist with the collection and writing of news stories related to the department throughout the semester. If interested, please notify her at [lcook@brockport.edu](mailto:lcook@brockport.edu). The Newsletter Club will have it's first academic year meeting in mid- to late September. Please join us!

---

# Biological Sciences Degree Programs — Updates

## B.S. Degree Changes

This year's 2009-2010 matriculated undergraduates will no longer be *required* to take two 300-level courses in addition to cell biology and genetics as part of the B.S. degree program in biological sciences. Although up to two of these courses will count towards the major, Anatomy and Physiology I/II, Ecology, and Microbiology are no longer required and students have the added freedom to choose from course offerings at the 400-level as early as the sophomore year. To increase the hands-on training students receive from this degree program, students starting this fall 2009 are required to take at least two 400-level lab courses listed to the right.

- BIO 401—Advanced Cell Laboratory
- BIO 404—Developmental Biology
- BIO 417—Recombinant DNA Laboratory
- BIO 424—Experimental Research
- BIO 429—Biomolecular Imaging
- BIO 470—Biochemistry Lab
- BIO 480—Genomes and Proteomes in Biomedicine
- BIO 489—Neurobiology in Memory, Self, and Brain
- BIO 495—Systems Physiology

## New M.S. Degree Program Offerings

### 3 + 2 Combined B.S./M.S. Degree

This new Masters Program is a 3+2 degree, allowing qualified students to obtain both an undergraduate B.S. degree and a graduate M.S. degree in only 5 years. Admission requirements include a 3.25 GPA in science/math courses through the end of the junior year, then a continuing 3.0 GPA to remain in the program. Admission is very selective. Program requirements necessitate the completion of a focused research project culminating in a thesis defense, as is typical of the Department's regular M.S. degree plan.

If you are interested in pursuing any Master's degree in the Biological Sciences, speak with your advisor to determine which path is right for you. To learn more about this program, contact Dr. Tom Bonner at [tbonner@brockport.edu](mailto:tbonner@brockport.edu)

### Professional Science Masters Degree

The department is proud to announce the addition of a Professional Science Masters degree program to its graduate offerings. This innovative program combines rigorous science coursework with business and management training. Our graduates will have a competitive edge in the biotechnology market. Those interested in pursuing administrative careers in the pharmaceutical industry are encouraged to apply. In addition to normal coursework, students will be required to take on an internship in a biotechnology company in the local area. Admission requirements include a 3.0 GPA, satisfactory GRE scores, and positive letters of recommendation. If you are interested in this degree program, please contact Dr. Stuart Tsubota for more information at [stsubota@brockport.edu](mailto:stsubota@brockport.edu).

## Congratulations!

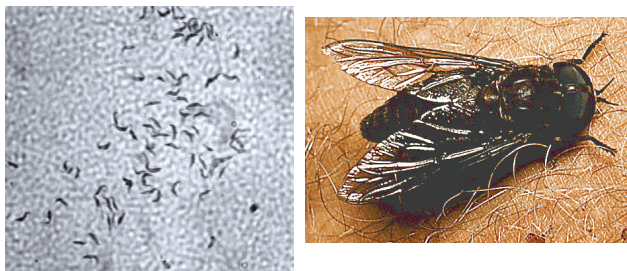
### Student Successes

- **Garry Coles** defended his M.S. thesis titled: The Role of MRX Complex and the Non-homologous End Joining DNA Repair Pathway in Mitochondrial Genome Stability and Repair in August, 2009. He is now working on his Ph.D. at the University of Rochester Medical Center in the Genetics, Genomics and Development Cluster.
- **Melissa (Carey) Kostrzebski** accepted a position as Lab Manager in a population genetics lab at the University of Rochester. We also wish her congratulations on her recent marriage!
- **Bethany Smith** defended her M.S. project titled: Gastrointestinal Motility: Fluctuating Levels of Interstitial Cells of Cajal Aggravate Irritable Bowel Syndrome and Inflammatory Bowel Disease in August, 2009. She is now in a Physician's Assistant Program working on her Master of Medical Science Degree at Salus University in Philadelphia, PA.
- **Angela Schwingel** accepted a position in the department to teach Microbiology laboratory this past summer.
- **Scott Portwood** accepted a position as a Lab Technician at Lake Immunogenics, Inc. in Ontario, NY.

## Faculty News and Profiles

### Dr. Michel Pelletier

It is with great pleasure and excitement that I joined this Department this Fall where I am teaching Immunology during the Fall, and Microbiology in the Spring. I'm originally from Quebec City, Canada (so the cold and the snow does not scare me). I've been working at U at Buffalo since 1998, as a postdoctoral associate then a Research Assistant Professor for the last 6 years, in the Dept. of Microbiology and Immunology. The focus of my research is to characterize and better understand lipid biosynthesis in the parasite *Trypanosoma brucei*, the causative agent of African sleeping sickness in human, using a dual genetic/biochemical approach. Lipid biosynthesis in trypanosome is very important and essential for several aspects of the parasite survival. It is very likely that enzymes involved in these biosynthetic pathways play essential roles and could potentially be used as drug targets. I will be setting up my lab in the months to come, and I anticipate having several opportunities for student research projects starting in January, 2010. Students will be able to learn techniques such as gene cloning and protein expression, PCR, protein and nucleic acid electrophoresis, and trypanosome culture, just to name a few. I am looking forward to meeting you over the next few months. Don't hesitate to stop me in the hallway if you have any questions or concerns, or even if you just want to talk hockey, football, or golf!



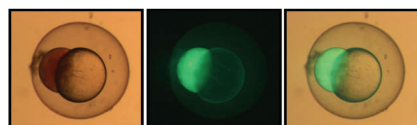
### Dr. Huey Hing

We are looking for students are interested in how the sense of smell controls sexual behavior. My lab looks at how sex pheromones emitted by one sex regulate the courtship and mating behaviors of the opposite sex. We have discovered mutants that showed unexpected homosexual behavior as a result of an impairment in their pheromone sensation. Please see our website at <http://www.brockport.edu/biology/faculty/hing.html> for more information.



### Dr. Adam Rich

The Rich lab uses the zebrafish as a model for human disease and focuses on gastrointestinal (GI) motility. During the summer Jeff Sattora learned morpholino injection to control gene expression, Kevin Tylock developed a GI transit assay, Lauren Saeva learned immunohistochemistry to characterize the *SPARSE* mutant, and Jenn Strouse optimized real time PCR experiments to quantify gene expression. Jessica Ouderkirk, Amber Karpe, and Christine Gliwa will join the lab this fall to contribute to experiments that focus on development of coordinated GI motility patterns.



Morpholino-injected zebrafish embryo at 3 h post-fertilization.

### Dr. Laurie Cook

Our lab studies how cells regulate receptor signaling, particularly for the melanin-concentrating hormone receptor, which participates in the regulation of appetite and energy expenditure. We have been very busy this summer. Our lab recently submitted a manuscript to Cellular and Molecular Endocrinology titled "Melanin-concentrating hormone facilitates 3T3-L1 preadipocyte migration". We have two national grant applications in review and are planning on presenting a poster at a national meeting in San Diego, CA this coming December. We want to welcome Jay Moden Jr., Danielle Feligno and Shawn Murray to the laboratory as M.S. students. Laura Shum and Michael Cerasaro will continue on as undergraduate independent research students. We look forward to another productive year!



---

## Dr. Tom Bonner

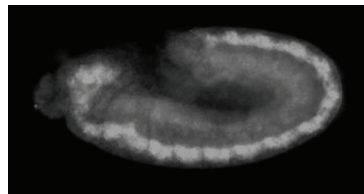
Dr. Bonner has been studying the structural and functional aspects of the synthesis, packaging, secretion and organization of extracellular proteins. Most of our research focused on the mechanism of cuticle formation in parasitic nematodes like hookworm. More recently we have examined the structure and function of the byssus in zebra mussels. The "byssus" is the protein anchoring (holdfast) organ that allows the mussel to attach so tenaciously to substrates. Techniques include light and electron microscopy, cytochemistry, and protein chemistry.



**"A combination of classical genetics, molecular genetics, bioinformatics, and cell biology are used in our studies." - S. Tsubota**

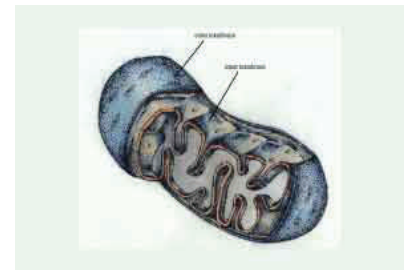
## Dr. Stuart Tsubota

We are studying a highly conserved transcription factor, Enhancer of Rudimentary (ER) in *Drosophila melanogaster*. This factor is found in the developing nervous system of the fly and in the nurse cells of the ovary. We have shown that ER is a positive regulator for the Notch signaling pathway and for pyrimidine biosynthesis. Recent studies suggest that the ER gene is activated by the transcription factor Zeste. A combination of classical genetics, molecular genetics, bioinformatics, and cell biology are used in our studies. Two past graduate students in the lab, Nick Rizzo and Melissa Carey are now research assistants in labs at the University of Rochester. This fall, Hannah Cushman has joined the lab as a Master's student, and Brandy Scott has entered to do an undergraduate research project.

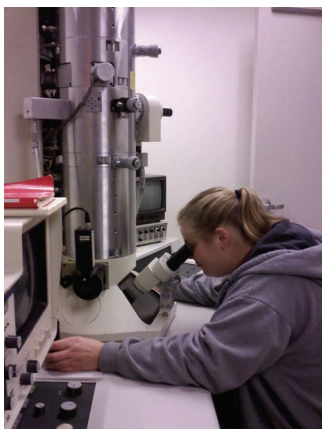


## Dr. Rey Sia

The goal of our research is to identify the genes that ensure the integrity of the mitochondrial genome. A functional mitochondrial genome is essential for the survival of eukaryotic cells. A number of inherited neurodegenerative disease syndromes arise as a result of mitochondrial mutation, demonstrating the profound importance of a functional mitochondrial genome to human health. Using genetic assays, we have identified a number of genes whose proteins are involved in maintaining the integrity of the mitochondrial genome in our model organism the budding yeast, *Saccharomyces cerevisiae*. The mammalian counterparts of some of these proteins have been found in mammalian mitochondria, suggesting the evolutionary conservation of these



## Dr. Craig Lending



Dr. Lending is interested in understanding molecular aspects of plant development. He uses a model system of seed storage proteins and examines the interaction of various classes of proteins during endosperm development. These interactions have profound effects on seed quality and structure, and provide an understanding into how small changes in protein structure can have significant implications during development. The lab uses a wide array of techniques, including light and electron microscopy. These methods include immunocytochemical techniques and 3-dimensional image reconstruction for understanding developmental processes. Dr. Lending is also very interested on the impact and utilization of technology in education, and continues his involvement with SUNY System Administration in fostering the appropriate application of emerging technologies to enhance teaching and learning.