Biology Newsletter: December 2014

The College at Brockport
I would like to start by welcoming the new Biology and Medical Technology majors as well as the Biology minors to the department. I hope you will enjoy your time with the department and take advantage of all of its opportunities. The department will be offering a new BIO course offered in the spring semester called Bioinformatics. The course instructor will be Dr. Rongkun Shen who joined the department just this semester. Next semester, Dr. Laurie Cook will be back full-time with the department having completed her fall semester sabbatical.

I want to acknowledge the great work done by all of the officers and members of the departmental clubs, the Honors Club and the Pre-Professional and Biology club. Your work in generating more student and faculty involvement in the department is truly outstanding. You have provided career information to your members, enlisted speakers, performed fundraising activities, and sponsored interdepartmental sporting events. This last activity involved a flag football game between the departments of Biology Department Represented at the 2014 New York State Fair

Kathryn Wershing (Sia Lab)  Kendra Andrew (Hing Lab)  Valerie Courtwright (Ortega Lab)

Have a wonderful holiday season and we look forward to a happy and successful 2015!

-Dr. Rey Sia, Assoc. Prof & Chair
Brockport Biology Students at the 2014 RAS meeting

The Rochester Academy of Science Meeting was held this year on November 15 at our school and the Department was well-represented. Congratulations to all!
Ian Shannon:

When I discuss my future plans, which hopefully involve going to medical school, I am often asked the same two questions. First, “does this mean you can take care of me in my old age?” This is asked mostly by my parent’s friends, and the answer is no. The second is “why did you decide to get a masters degree?” This is asked by professors, and when I answer I am told “wait, don’t tell me now. Put it into a short essay of about 300 words so I can print it in the department newsletter.”

The truth is my reasons for going to graduate school and what I got out of it are not entirely the same. My initial motivation was two-fold. First I humbly admit that I could benefit from a slight GPA boost to impress the medical school admissions committees. Second, I began doing research my senior year of undergraduate and enjoyed it so much I felt I had to continue. I felt that if I could get an advanced degree in something I enjoyed this much it would be foolish not to see it through.

So what am I getting out of graduate school? (The unspoken question of course being is what is it worth it to me?) The short answer is: a lot. More than I could have predicted.

I have gained invaluable research experience, not only in my direct thesis work, but also in collaboration with other professors, researchers, and laboratories. This has included several professors and students here at Brockport, but also labs in Syracuse, Buffalo, Amherst, and Rochester.

Through my research and through the lab I have had multiple opportunities to present my work, both to colleagues and other students. I have given talks and presented posters to students, faculty, and other researchers. This has helped me in several ways. I am now completely over my fear of public speaking, and I have learned how to collect my thoughts and information into an organized way, and I’ve almost learned how to then communicate it to others. These are skills that will follow me throughout my career.

So was graduate school worth it? Yes, but not just in the ways I predicted. Was it invaluable in so many other ways? Absolutely.

Noah Reger:

Continuing my education at Brockport as a graduate student has provided me with many opportunities that I feel have enabled me to become a better student and a better person. I was fortunate enough to be able to start my graduate work at Brockport while I was still an undergraduate by taking part in the 3+2 Combined B.S. and M.S. Program.

I have greatly enjoyed acting as a teaching assistant (TA) for Anatomy and Physiology despite the fact that it is a great deal of responsibility. Teaching has enabled me to practice effective communication skills in a unique environment. Being a TA has also allowed me to obtain a much deeper understanding of the material since I was now accountable to my students.

The aspect that I enjoy most about being a graduate student is the opportunity to focus on original research. My love of research is what drove me to apply to the 3+2 Program. I began working in Dr. Hing’s lab during my junior year and research has been a part of my life ever since. Research is radically different than most college courses in that there is no predetermined answer and it feels more like learning an art form. It gives perspective to things learned in class and you begin to appreciate how much work went into discovering the material we learn in class and sometimes take for granted. What seems so obvious to us now was at one point a brilliant discovery.

Even with my responsibilities as a student and a teacher, I still have time to pursue other interests outside of biology. Being a graduate student has provided me with a great deal of freedom to actively study topics that are of interest to me. The graduate school has provided me with experience to act as a professional as well as given me the opportunity to practice skills that I will need in the future.
Greetings! I've missed seeing all of you in classes and during advisements this semester! I have been on a research sabbatical leave, which has allowed me to design and conduct experiments as well as spend time writing grants without the interruptions that teaching and committee work can bring to faculty. I've been very grateful to have the opportunity to refine detection methods for the melanin-concentrating hormone receptor, which helps control appetite in humans, and study its signaling in adipose cells. I've also submitted three grant applications: one to the Prader-Willi Foundation, one to the NIH and one to the NSF. Cross your fingers for me! I'll be presenting research findings from my lab at the American Society for Cell Biology meeting in Philadelphia, PA this December, and have been lucky enough to have received a travel grant to help with expenses.

We do have some news to report from the lab. I am excited to announce that Bryan Pratt recently defended his M.S. Thesis in Biology and is off on a new adventure! Also, Colin King (M.S. expected, 2015) will be presenting his research at the Rochester Academy of Sciences Fall Paper Session here at Brockport in mid-November and at Scholar’s Day this spring. Hopefully you’ll be able to stop by! I am looking forward to a fantastic spring semester and am eager to get back in the classroom!

Dr. Rey Sia

The research lab was pretty busy this past summer. Kathryn Wershing, Hugo Avalos, Allyson Burkhart, and Christina Seger received the 2014 Undergraduate Research Scholarship, the McNair Summer Research Program Award, the Paul and Agnes Bower Summer Undergraduate Research Award in Biology, and funding from the National Science Foundation, respectively, participated in research in the lab. The research that Kathryn, Allyson, and Christina performed will lead to an Honors Thesis. Chris Prevost also continued research towards his M.S. thesis. Chris also flew out to Seattle, WA in July to present his research at the National Yeast Genetics and Molecular Biology Meeting.

This fall has also been a busy time for the lab. Kathryn Wershing assisted with the recruiting activities of the School of Science and Mathematics at this year’s New York State Fair by presenting her research. In addition to Kathryn, Allyson, Christina, and Christopher returning, Amber Altrieth, Stephen Saginario, and Amber Blidy have also returned. New members to the lab this fall
are Kyle McAtee, Elizabeth Lindsey, Melissa Stoj, Christopher Haller, and Lucas Galbier. I am very grateful to the more senior members of the lab for stepping up and mentoring the newer members. Christopher Prevost, Allyson Burkhart, Amber Blydy, Amber Altrieth, Christina Seger, and Kathryn Wershing also presented four posters at the annual Rochester Academy of Sciences Annual Fall Paper Presentation this past November.

Finally, I would like to congratulate Stephen Saginario for his acceptance into optometry school and graduating this fall. He’ll be starting next fall at Salus University Pennsylvania College of Optometry. We’ll all miss him in the lab.

Dr. Huey Hing
1. The Hing lab publishes in the Journal of Neuroscience

Citation:

Summary of Paper:
The establishment of connections between neurons is important for brain development and neural plasticity. Indeed, dysfunction in neural connectivity is associated with mental retardation and psychiatric diseases. The goal of the Hing lab is to elucidate the molecular underpinnings of brain wiring using the Drosophila antennal lobe (AL) as a model. The fly AL contains a precise, three-dimensional arrangement of neuronal processes, termed dendrites, belonging to ~50 classes of projection neurons (PNs). Although it is known that the PN dendrites pioneer the wiring of the AL circuit, it is not known how the dendrites migrate to their final positions to form the 3D map. Ground breaking work done in the Hing lab showed that the PN dendrites undergo dramatic rotational movements of ~30° to produce the final 3D pattern (Diagram). In addition, the Hing lab showed that Wnt5, a member of the Wnt family of powerful oncoproteins, and its transmembrane receptor, Derailed (Drl) control the rotational rearrangements of the PN dendrites. While Wnt5 repels the dendrites, Drl functions in the dendrites to repress Wnt5 signaling. This work was done in part by the Brockport alumni, Emily Wexler, who is enrolled in the Ph.D. program at the University of Rochester and Jay-Christian Helt, who works as a technician at the University of Rochester.

2. Hing lab student presentations
A. “Analysis of the response to CO2 by the Drosophila wnt5 mutant.” Poster by Kendra Andrew, presented at the Upstate NY Undergraduate Research Conference.
B. “Analysis of the response to apple cider vinegar by the Drosophila wnt5 mutant.” Poster by Kendra Andrew and Amanda Dragonette, presented at the 41st Annual...
Rochester Academy of Science Fall Scientific Paper Session.


Dr. Bernardo Ortega
Dr. Bernardo Ortega and his team of undergraduate students continue to work on the regulation of magnesium metabolism in mice. Last semester Emily Baldwin, Matthew Roides, David Crawford and Valerie Courtright presented their work during scholar’s day. Emily and Matthew graduated during the spring. Dr. Ortega was happy to learn that Emily joined Regeneron Pharmaceuticals as Manufacturing & process sciences associate. Valerie Courtright was awarded a scholarship for the Undergraduate Summer Research program by the Brockport Foundation. After a busy summer, she presented her work at the 2014 New York State Fair and the 2014 meeting of the Rochester Academy of Science. Dr. Ortega also welcomes new undergraduate students, Justin Leach, Jacob MacWilliams and Nicholas DeSain, and graduate student Nawaf Alrashedi. Dr. Ortega is also happy to announce that his new cell culture facility will be ready by the end of this semester.

Dr. Adam Rich
Physiology at Brockport is alive and well. First and foremost, the Systems Physiology students have done a great job this year examining the role of anoctamin 2 in zebrafish physiology. We know that this gene codes for a calcium activated chloride channel, but no one knows what the function is. This class’s goal was to learn more about function. They are measuring gene expression at different developmental time points and in different organs from adult zebrafish. A second group is looking for protein expression using fluorescence microscopy. They will tell you that, for such a small animal, it is hard to look everywhere using a 20X microscope objective on the fluorescence microscope! The last group is trying to develop an olfactory assay to learn if anoctamin 2 plays a functional role in smell. Yes, zebrafish do smell but...
group will tell you that developing a physiological assay is much, much tougher than predicted! The class presents their work at the Rochester Academy of Sciences meeting on the Brockport campus November 15.

Ian Shannon, Clayton Brady, Max DeNora and I presented September 19 at the Connecticut Valley Zebrafish Meeting at Williams College. An informal and informative meeting at a beautiful place! Our talks were well received, and we learned about neuromasts from Jason Trapani at Amherst. This may be important for us because anoctamin 2 might function in this organ. We also learned that Max is pretty good at darts, Ian at pool, and Clayton at foosball! Nikole Van Wie, Samantha Flint, and Adam Howard have joined the lab and we are grateful for the help.

Over winter break and next spring we will continue to examine the functional roles of anoctamin 1 and 2 in zebrafish motility. Two other projects will be reinstated. The potential effect of circadian rhythms on motility, and we plan to quantify the effects of stress on motility using quantitative PCR. Both projects are ‘repeats’ but we hope that better planning and newer technology will give clearer results.

Here are three YouTube links to performances. The first two were choreographed stage performances. The third was an improv at Kathy’s art gallery.

http://www.youtube.com/watch?v=Xm0Ruf4RwGU
http://www.youtube.com/watch?v=HdHC2JGB_kQ
http://www.youtube.com/watch?v=DtV0ehg-Y1s
Dr. Michel Pelletier

I cannot believe that the Fall semester is almost over. This semester, I taught microbiology (BIO323), and was also very busy working on my application for tenure. I also just submitted a grant proposal to the Natural Science Foundation (NSF). A scientific paper entitled “Characterization of the microbial population found in and around San Salvador Island, Bahamas” was also published in the International Journal of Bahamian Studies. This work is the result of collaboration with Dr. James Haynes from the department of Environmental Sciences, as well as two undergraduate students, Ashley Dungan and Jonathan Kroeckel.

Three undergraduate students conducted research in my lab this semester: Elise Cade, David Crawford, and Jennifer Taylor. Keep on the good work guys. In addition, William Bigham and Caitlyne Kocik were very busy doing experiments and obtaining data for their Master thesis that they should be writing this coming Spring semester. Three new graduate students also joined my lab in September: Andrew Bumstead, Daniel Steiner, and Dawn Newman (whom everyone knows).

Finally, to all of you who will be taking Immunology and/or General Microbiology in a few months: I am looking forward to teach these classes again next semester. It should be fun.

Dr. Rongkun Shen

I am very excited to join our department this Fall semester. I am teaching Genomics and Proteomics in Biomedicine course for both senior undergraduate and graduate students now. In the Spring semester I will be teaching Bioinformatics course at the same level. Through those courses, I hope the students are equipped with bioinformatics skills and hands-on experience to better accommodate the academic and industrial demands in this post-genomics era.

My research area is in bioinformatics and computational biology. My goal is to understand how gene expression is regulated during development, by environmental stimulation, or in diseases in a genome-wide scale. The lab is focusing on analyzing the next generation high-throughput sequencing data, including RNA-Seq and ChIP-Seq, from various projects to answer the specific biological questions using computational and statistical approaches. Welcome Matt Smith and Lauren Benoodt to join my lab. Both of them are senior undergraduate students. Matt is currently studying the potentials of the third-generation sequencer – Nanopore. Lauren is mining the long non-coding RNAs (lncRNAs) within the...
Biology Offers a Combined B.S. Plus M.S. Degree in 5 Years

In the Spring semester of your Junior Year, you are eligible to apply for this new opportunity. If you are considering graduate work, we offer well-qualified students with a 3.25 GPA or higher the chance to get an accelerated Masters degree in one year rather than the usual two years. If you are interested, please contact Dr. Laurie Cook, 3+2 Program Coordinator.

RNA-Seq data. In addition, I am expecting to open my wet lab next summer to study the gene regulation mechanism of CREB. Any students interested in bioinformatics/genomics research either in dry lab or wet lab may contact me at rshen@brockport.edu.

My family (with my wife and two kids) relocated to Rochester from Portland, Oregon in the summer and enjoyed the beautiful fall here. Now we are gradually getting prepared for the challenging winter and snow.

We wish Dr. Kanchana Mendes and her family good fortune in Naperville, Illinois. We are very sad to see her go and we will miss her good cheer, and her friendship. Dr. Mendes has been a great teacher and we were lucky to have her. Our students benefited from her expertise and her passion for teaching. Good luck in the Midwest, and get a very warm coat! Sincerely- The Biology Department

From the editors desk....

As my time here at the college (and hence my association with the newsletter) draws to a close, I would like to express my heartfelt gratitude to everyone here in the Brockport community, especially Dr. Sia, the faculty and staff in the Department of Biology. Thank you for giving me the opportunity and support to be a part of a well-knit educational unit, and for all the help and camaraderie you provided that helped me do my work to the best of my ability.

I have thoroughly enjoyed my interaction with students, both graduate and undergraduate alike, and to them I say- “Make use of the fact that you got talented faculty who genuinely care....Utilize their help to get to where you want to go and follow your dreams!

Although I share my kids (they are 10 and 7) nervousness and sadness about the move to Chicago, I cannot help but feel a little excited to embark on a new journey. I will take with me fond memories of my time spent here and I do hope that this is not “goodbye” but an “until we meet again”.....

~ Kanchana Mendes
**Student Successes and Alumni Updates**

**Alex Viavattine (Class of 2014):** Works at Genesee Brewing Company as a chemical technician. Tests product throughout the brewing process, start to finish. He is part of development of new product, but for now that is a secret! He optimized a new quality control measure using Gas Chromatography and Mass Spectroscopy to analyze volatile compounds during fermentation. Alex interned for 3 summers at Genesee Brewing Company. He loves the job because it combines science and beer, two of the most fun things you can get paid to do!

**Julie McGrath (Class of 2013):** Will complete a MS degree in Natural Sciences at Roswell Park Cancer Institute/ Cancer Biology concentration and is currently applying for PhD programs, hopes to end up in Oregon or Colorado!

**Chris Brown (Class of 2008):** Getting married on March 28, 2015! Chris graduated from St George’s Medical School and is currently a resident at Yale Medical School.

**Scott Gordon (Class of 2008):** Got married November 8, 2014! Scott received a PhD at the University of Cincinnati and is currently a post-doctoral fellow at the National Institutes of Health in Bethesda, Maryland.

**Brittany Heatherington and Jay Moden (Class of 2012 and 2013):** Getting married Spring of 2015! Both are MS graduates working at Rochester General and Johnson and Johnson!

### ALUMNI DINNER ANNOUNCEMENT

**Attention Brockport Alumni!**

**Reconnect with Brockport friends & faculty!!**

The Department of Biology is planning an alumni dinner to be held Friday, March 20, 2015 at 4:00pm (location TBD). Please RSVP the department at (biodept@brockport.edu) by March 1, 2015 to let us know if you will be able to attend.

Hope to see you there!

### Call for Updates!

**If you are a current or former Brockport Biology Student, we want to hear about you! Please send us updates on your career, education, etc. to include in our Departmental Newsletter!**
Biology Honors Club has been very busy this semester! In September, we held our first tailgate and flag football game against the Chemistry Club to raise money for Gilda’s Club, a cancer support group in Rochester. We sold over 40 Brockport Science t-shirts, and were able to fundraise almost $200 to help families in need who have been afflicted with cancer. Fortunately (and to no one’s surprise), the biology majors beat the chemistry majors and won the overall game!

After the football game was over, we started to plan our next volunteer opportunity for Gilda’s Club. Every Halloween, Gilda’s Club has a Noogiefest event to allow children with cancer, or those whose parents are suffering from cancer, to be able to celebrate Halloween and trick-or-treat. Some of our members were able to help decorate the building before Noogiefest, while others were able to help out during the actual event.

Now that the semester is quickly ending, we will be holding our last fundraiser event until next semester. Please come out to Jimmy Z’s on Monday, December 1st all day long! Tell them that you are there for the Biology Honors Club, and they will donate 10% of your order to the club.

If anyone is interested in joining the club or applying for the Biology Honors Program, don’t hesitate! By being in the Biology Honors Program, every single member is able to gain many opportunities, such as real-life lab experience and participating in club activities. To become a member, you just have to maintain a certain GPA and fill out a simple application form that can be found online or in the biology department office.

~ Allyson Burkhart, President, Biology Honors
aburk3@brockport.edu

Help Support the Next Generation of Biology Students

Dear Alumni,

We are asking you to contribute to our Department and to help us provide research experiences for students. A research experience contributes to undergraduate and graduate education by providing hands-on experience with state of the art equipment, and an opportunity to work with faculty mentors directly. These skills are fundamental to success, and the research experience provides a competitive edge. Biology faculty are active, working with students, and presenting results at scientific meetings with students. Not surprisingly research is expensive and Biology faculty work hard to raise money for research. The College at Brockport is doing a great job in spite of funding cuts, and has found the funding to support equipment repair, equipment purchases, and support for summer research internships.

We ask that you consider donating to The College at Brockport, and specifically to the Biology Department. Your support will help us to help students. The faculty in the Department of Biology, and the College at Brockport, are committed to student excellence and student success. Donations of any amount will help us to provide significant and meaningful research experiences for students. Please consider helping to support our students’ research opportunities. For more information please contact Dr. Stuart Tsubota (ststubota@brockport.edu) or by making an online monetary gift by visiting the College’s Giving Website below, making sure that your gift is designated for use by The Biology Department in the appropriate box.

https://www.brockport.edu/giving/online/gift.php

-The Biology Faculty