September 2013 Issue

Publications


Awards and Recognition
Anton Iliuk and Andy Tao received an NIH Small Business Technology Transfer (STTR) grant for Tymora Analytical, LLC in the amount of $300,000 for a project entitled, “Proteomic differentiation of leukemia cells based on multiplexed arrays and mass spectrometry” (09/16/2013-09/15/2014).

Mark Hall received $5,500 from the Center for Cancer Research for a project entitled, “Develop a specific and effective Inhibitor of the Cdc14 phosphatase family” (10/01/2013-01/31/2014).

Vikki Weake received $2,900 from the Center for Cancer Research for a project entitled, “Cheminformatics and medicinal chemistry proposal: Cdc7 inhibitor synthesis” (11/01/2013-01/31/2014).

New Faces

Zhiyong Yue joined the Hall lab on September 3 as a Visiting Scholar from Hebei, China. He received his B.S. in horticulture from Northwest A&F University and is currently a graduate student in horticulture there. He was awarded a scholarship from A&F University to conduct research in the U.S. During his stay, he will be using mass spectrometry and proteomic methods to study the strigolactone response in apple and Arabidopsis. Zhiyong will visit through March 2014.

Sarah Griffith joined the Tran lab on August 26 as a Research Assistant. Sarah is from Dayton, OH, and she received her B.S. and M.S. from Purdue, both in microbiology. During her graduate career she worked in Dr. Louis Sherman’s lab in the Department of Biological Sciences. Sarah is married and says in her free time that she enjoys riding her bicycle, playing badminton, being outdoors, eating, and she loves dogs.
Kalyani Josyula joined the Chapple lab on September 1 as a Visiting Scholar. She is a graduate student in the Department of Biochemistry at the Indian Institute of Science in Bangalore, India. Kalyani will be visiting through February, but plans to return as a postdoc in the Chapple lab once she has completed her degree in India. While in the Chapple lab, she will work on metabolic flow within the phenylpropanoid pathway for the optimization of plants used for bioenergy production. Her husband Vineyak is a graduate student at Purdue in Mechanical Engineering.

Yan Lin joined the Tao lab on September 8 as a Visiting Scholar. She is joined by her five year old son Shilin, and her husband Yingde Qu will visit later. Yan is a Lecturer at China Agricultural University in the Department of Science, Central Laboratory of Mass Spectrometry, and Yingde is an administrator at China Agricultural University. Yan’s expertise is in the detection of small chemicals in the environment, such as pesticides and herbicides. During her visit in the Tao lab she will mainly work and gain experience on the analysis of proteins in plants. Yan will be here through August 2014.

Saying Goodbye

Nick Bonawitz has accepted a position as a Molecular Biologist in the Advanced Technology Development section of Dow AgroSciences. Located in northwestern Indianapolis, Dow AgroSciences is an agricultural biotechnology company specializing in the improvement of crop seeds and traits, as well as crop protection products and services. Nick's work at Dow will focus on the development and implementation of the EXZACT technology platform to perform precision genome editing in crop plants using zinc-finger nucleases. His anticipated start date is November 4.

Staff News

Research Assistant KK Ho joined the Kirchmaier lab on August 19 on a part-time basis to work on the analysis of nucleosome composition for a Keck project. He will split his time between the Kirchmaier and Ogas labs.

Graduate News

Aamir Mir (Golden lab) passed his preliminary examination on September 3.
The College of Agriculture Scholarship Dinner was held on September 11 at the Beck Center. About 250 people attended including students, donors and Purdue faculty and staff. One Biochemistry scholarship donor, David Schroeder (Ph.D. 1968, Axelrod), attended. Biochemistry students who received the Fuller Scholarship (established by Dr. Schroeder) included Misha Remy and Kayleigh Nyffeler. Several other Biochemistry students attended who received scholarships from the College of Agriculture: Quinton Nannet, Alexis Zobel, Brooke Wamsley, Caolin Hoctor and Monica Bomber. Clint Chapple and Sherry Pogranichny represented the Department at this event.

**2013 Summer Stories**

**Summer undergraduate research fellowship:** This summer I participated in Purdue's SURF program and I worked in Dr. Li's lab in the Industrial and Physical Pharmacy department. We were testing the efficacy and cytotoxicity of nanocrystalline forms of current chemotherapy drugs with the hope of improving cancer treatment options. I really enjoyed the experience and I am continuing as a member of Dr. Li's lab as an undergraduate researcher this semester. **By Iris Archer**

**Intern for Eli Lilly:** This was my first time experiencing Indianapolis and I had an absolute blast. I learned a lot about biochemical techniques, such as HPLC and mass spectrometry. It was interesting to see that these two are incredibly common techniques, and are more than just a chapter we read in class. I also discovered much about business and policy within a large pharmaceutical company. I had interned before, but it was a much smaller company with only 12 interns. This year, there were 160 of us in all different facets- quality, finance, engineering, and IT. I had the opportunity to speak with employees in many areas as well, to discover where I thought I would fit in best in the future, should I choose to work for Lilly. **By Elizabeth Bell**

**Soils research:** This summer, I worked at the National Soil Erosion Research Laboratory. Having never taken a soils class and never worked in a lab, I didn't really know what to expect going into it. Fortunately, it was one of the greatest experiences I've had. Every day I was doing something different: rainfall simulations, gas sampling, biomass sampling, planning projects, or processing samples. I never did the same thing two days in a row. At the lab, I gained a lot of experience as well as a lot of new friends in many different majors. I'm very happy that I got to work at the lab this summer, and even happier that I am continuing to work there during this semester. **By Crystal Cory**
Summer undergraduate research fellowship: I spent the summer working in Ann Kirchmaier’s lab as part of the SURF program. My research, which was a continuation of my work during the past two semesters, looked at mutations in histone protein modifications, which combine with other assembly factors to make chromatin during DNA replication and repair. I liked that I learned a lot of new things. I worked on one thing for a whole semester and this summer I was adding new areas to focus on in my research. **By Jessica Gabbard**

Summer camp wrangler: After returning from studying abroad during Maymester in Ukraine, I worked as a wrangler at a Christian summer camp: Springhill. I led trail rides and taught kids arena lessons. I also got to stay in a cabin and be a sort of part-time counselor when I wasn’t at the barn with the horses. I also got to do a lot of medical things with the horses! We had a lame horse that I worked with and also two horses with pink eye. The horses with pink eye (their names were Salty and Magic) needed to be sedated so we could stain their eyes. We tried giving them the medicine intramuscularly, but it wasn’t knocking them out. The vet (who was on the phone, not there) said we needed to give it to them in the jugular. I was able to do it because I drew blood on a cow while in Ukraine! It was so cool to use something I learned there back home. After their eyes were stained, we learned they had developed corneal ulcers. After treating them all summer we saved Magic's eye, but Salty's left eye is now blind. It was a big learning opportunity for me to get to play veterinarian this summer at camp. **By Jaclyn Goodman**

Law firm intern: This summer I worked in my first job as an intern at Brinks Hofer Gilson and Lione, a patent law firm in downtown Indianapolis. There I had the opportunity to learn about the process of obtaining a patent or trademark from the U.S. Patent and Trademark office. I also had the chance to participate in some of the steps in this process myself. In addition, I learned a lot about office management and how to make a physical and social environment in an office setting that is conducive to employee satisfaction, contentedness, and productivity. I learned many things about employment and grew a lot from my summer intern experience. **By Mikala Hillis**

Intern at NOW Foods: This summer, I had the pleasure of returning to work as a summer intern at NOW Foods, a vitamin, supplement and food manufacturing plant based in Bloomingdale, Illinois. My main project this summer involved working with the electronic database that housed almost all of the information for each of the 1,200 products the company sells. Specifically, my job was to audit the electronic database and check to make sure all of the necessary paperwork had been uploaded correctly. I also participated in taste tests as our head chef continued to expand our line of organic cake and muffin mixes as well as various types of coconut oils, pastry fillings and breads. It is quite obvious that the company has been family-owned since its start in 1968 from the alwaysinviting atmosphere and never-faltering desire to improve their products. **By Emma Lendy**

Intern at Dow AgroSciences: This summer I had an internship at Dow AgroSciences' headquarters in Indianapolis. There I worked on phenotyping of wheat to quantify the effects of foliar applications of small molecules and also had a project involving the cloning and preparation of RNAi constructs. **By Moriah Massafaro**
**Summer research Brown University:** I spent this summer at Brown University through the Leadership Alliance Program. I investigated the long-term effects of antipsychotics on motor learning and performance using mice models. My favorite new technique is optogenetics, which shines light on the brain to produce activity. As a result of this experience I plan on pursuing a Ph.D. in Neuroscience. I thoroughly enjoyed the east coast and am confident I want to seek further training in Boston or New York City. My favorite stops were Newport and Block Island. I also enjoyed making things using a 3D printer! *By Peter Mercado-Reyes*

**Ireland study abroad:** When I was abroad in Ireland, I went to the Dublin Horse Show. It was so awesome and is definitely my fondest memory. The horses were jumping 7'3"!! I will miss the rural areas of Ireland the most. They are so beautiful and relaxing. The roads are super curvy and fun to drive on too! It was a great experience where I not only learned a lot about the horse industry, but I also learned a great deal about another culture. Everyone should study abroad if they can! *By Bethany Monroe*

**Argentina study abroad:** This summer, I had the opportunity to study abroad in Argentina. I took classes at the Universidad de Buenos Aires and lived with a host family in the city. During my time off, I was able to travel to different areas of the country, including Mendoza (the wine capital of South America, see photo) and Iguazu Falls (one of the seven new natural wonders of the world). I loved having the chance to travel and meet new people while abroad. It was a fantastic experience and I would definitely recommend studying abroad for undergrads at Purdue! *By Erin Nicklow*
**Diabetes research internship:** I spent this summer working in an immunology lab at the Joslin Diabetes Center in Boston, Massachusetts. Type 1 diabetes is an autoimmune disease with recurring autoimmunity; that is, when a diabetic patient receives an insulin-secreting beta islet graft, the body’s immune system will attack that graft in a similar manner as it attacked their original beta islet cells at the start of the disease. My lab had previously found a tissue in the brain that, when in vivo, does not express major histocompatibility class 1 (MHC 1) and, as a result, can convey immunoprotection (prevents being attacked by the immune system). I found that after a few hours in vitro, MHC 1 was expressed in this tissue, so we began wondering what was missing in vitro that caused this expression. I then set up cell cultures from this tissue in the mouse brain, provided them with different drug treatments, and examined them for MHC 1 expression. The goal was that by discovering what prevents the expression of MHC 1 and makes the tissue immunoprotected, we could find a way to create beta islet grafts that are also immunoprotected and could be transplanted into diabetic patients to allow the secretion of insulin. Overall, I loved the experience and learned a lot! **By Hannah Pizzato**

**Spain study abroad:** My host mother and I took a trip out of Madrid one evening to visit one of her favorite places – Castillo de Manzanares El Real. We spent the unusually chilly evening exploring the old castle and the quaint town, and even stopped at a small Café to warm up with coffee and biscocho. During the trip, she told me stories of how she had spent her childhood in the town and how she met her husband there. That’s probably my favorite memory because at that moment I realized how lucky I was to be able to study abroad for a summer, and to be able to understand people in another language. **By Cody Schnur**

**Summer undergraduate research fellowship:** Summer undergraduate research fellowship: I am interested in biofuels because we are too dependent on fossil fuels and we need a viable alternative. So I spent the summer working in Clint Chapple’s lab on a project to find a way to genetically modify plants to produce fuel. We are developing a technique to detect all of the specialized metabolites derived from phenylalanine — an amino acid — in plants. It’s been an incredible opportunity to work in his lab. As an undergraduate, I can’t believe I’m doing useful research that will help contribute to solving the world’s fuel problem. **By Cole Wunderlich**

**France study abroad:** My favorite memory is when I travelled to a small fishing town in France with two of my French friends. We spent the weekend laughing, eating, and simply enjoying each other’s company in a “typical” French environment. There was a beach with a castle on one side and a church on the other with mountains in the background and vineyards on the hillsides. The scenery was unforgettable. **By Alexis Zobel**
Biochemistry Research Retreat

We gratefully acknowledge the financial support of the following sponsors for our 2013 Biochemistry Research Retreat:

Beckman Coulter
Bruno’s Pizza
EMD Millipore
Eppendorf
Greyhouse Coffee
IDT
LaScala Italian Restaurant
Maru Sushi

MidSci
New England Biolabs
Nine Irish Brothers
Puccini’s Smiling Teeth
Red Seven Bar & Grill
Sigma-Aldrich
ThermoFisher Scientific
VWR

Going the Extra Mile

Beth Tran travelled to the UK visiting Newcastle University for collaboration and Oxford to attend the EMBO Conference (RNA 3' ends: Mechanism and biological function in eukaryotic genomes) where she presented a talk entitled, “Long non-coding RNAs poise inducible genes for rapid regulation of gene expression.”

Jim Clemens travelled to the University of Wisconsin-Madison to assay mitochondria function using Seahorse technology in the laboratory of Dr. David Pagliarini.

Natalia Dudareva travelled to Les Diablerets, Switzerland, to teach graduate students and postdocs at EuroVol summer school on “Plant Volatiles: from lab bench to application”. She also travelled to the The Netherlands where she attended the 13th World Petunia Days in Nijmegen and presented a talk entitled, “Phenylalanine biosynthesis, regulation and transport in petunia flowers”; as well as visited the University of Amsterdam, Swammerdam Institute for Life Sciences, where she gave a Green Life Sciences seminar entitled, "Phenylalanine biosynthesis in plants: What's left to know?".

Fred Gimble chaired a session at a Structural and Computational Biology Symposium in honor of Professor Florante A. Quiocho at the Baylor College of Medicine.

Mark Hall travelled to the Midwest Yeast Meeting at Northwestern University in Chicago where he gave a talk entitled, “Cdc14 phosphatase and the response to DNA damage.”

Joe Kappock travelled to both the University of Kansas in Lawrence and The Ohio State University in Columbus where he gave a talk entitled, “An acid trip, from bacterial metabolism to enzyme mechanism.”

Andy Tao traveled to South Bend, to give a talk in the Department of Chemistry and Biochemistry at the University of Notre Dame, entitled, “Chemoproteomics to study cell signaling”. He also attended the American Chemical Society (ACS) meetings in Indianapolis and presented a talk entitled, “Developing a toolbox to study plant signaling”.

Vikki Weake travelled in August to Baltimore, MD to visit the National Eye Institute where she discussed research with Dr. Anand Swaroop.

IT Corner by Joe Levell

If you need access to the calendars for the following items please contact Madia Bickett in the main office. She will be handling calendar access for all instruments going forward.

BCHM A53 Flow Cytometer
BCHM A53 Microscope
BCHM 318 Pipette Robot
Safety Corner by Karyn Rodkey
Ethidium Bromide (EtBr) Waste Disposal Procedures

EtBr waste must be collected and managed as hazardous waste, not biological waste. Items that have come into contact with EtBr such as PPE, absorbent materials, liners or other debris must also be collected as hazardous waste. All solid EtBr waste, including debris and dry agarose gels, should be placed in an appropriate container and labeled accordingly. Please double-bag your solid waste in two black trash bags. Do not use orange biohazard waste bags unless the waste used to be infectious. All EtBr waste containers must be suitable for transportation and must not be leaking. For removal of EtBr waste from your laboratory, submit a Hazardous Materials Pickup Request Form.

The buffers and solutions you use with ethidium bromide gels can be submitted to REM as waste or put down the drain only if you use a filter especially designed for removal of EtBr. An ethidium bromide extractor such as the Whatman Extractor™ System or similar device can be purchased from several bioscience, laboratory, or chemical supply companies.

Birthdays
Hunter Balduf
Steve Broyles
KK Ho
Antje Klempien
Xiaoqi Liu
Joelle Muhlemann
Yichun Qian
Victor Rodwell
Rachel Stegeman
Andy Tao
Steve Widger
Joshua Widhalm

Upcoming Events

October 1
BCHM Seminar
Jessica Treisman
WSLR 116, 3:30pm

October 7-8
October Break

October 15
BCHM Seminar
Brian Calvi
WSLR 116, 3:30pm

October 22
BCHM Seminar
Natalia Dudareva
WSLR 116, 3:30pm

October 29
BCHM Seminar
Clint Chapple
WSLR 116, 3:30pm