IGBNEWS

Achievements, awards, and information about the IGB community

Volume 5, Number 7

Featured News

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{Upcoming Events}

IGB Seminar
November 27, 2012
12:00 p.m.
612 Institute for Genomic Biology

Irene L.G. Newton, PhD
Assistant Professor, Department of Biology
Indiana University

"The Honey Bee as a Model for Social Transmission of Microflora"

IGB Special Lecture
November 27, 2012
4:00 p.m.
612 Institute for Genomic Biology

Steffan Nass
Weapons of Mass Destruction Coordinator,
Federal Bureau of Investigation, Springfield Division

"Terrorist Threats In/To the Lab"

Innovation and Commercialization Seminar
December 4, 2012
12:00 p.m.
612 Institute for Genomic Biology

Gary P. Durack, Entrepreneur
Champaign, IL

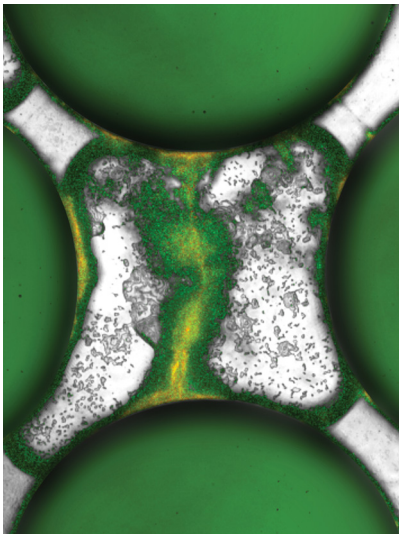
"Lessons Learned from Commercializing University of Illinois Originating Technology"

IGB Holiday Luncheon
December 14, 2012
12:00 p.m.
IGB Concourse Level

Ticket Required
(Available at IGB Reception Desk from 12/3 to 12/7)

Bring a new, unwrapped toy or a can/box of food to donate.

{Image of the Month}



This month's image, "The GeoBioCell: Biofilm mapping in a simulated subsurface rock reservoir environment" courtesy of Rajveer Singh from the Bruce Fouke group.

This image was taken using the Zeiss LSM 710 confocal microscope using reflection and fluorescence microscopy techniques.

IGB News

Share your news with the IGB. Send your story ideas to **nvasi@illinois.edu**

New Grant to Establish Pan-Continental Bio-informatics Research Network in Africa

Victor Jongeneel, director of the High-Performance Biological Computing (HPCBio) program and affiliate of the Institute for Genomic Biology and the National Center for Supercomputing Applications at the University of Illinois, is a key participant in a grant awarded by the Human Heredity and Health in Africa Initiative, or H3Africa, to establish a pan-continental bioinformatics network to aid research.

» Victor Jongeneel, director of the High-Performance Biological Computing program, and affiliate of the Institute for Genomic Biology and the National Center for Supercomputing Applications

Founded in June 2010, H3Africa is a joint initiative of the African Society of Human Genetics, the National Institutes of Health (NIH), and the Wellcome Trust, a UK based charity organization, to "study genetic diversity in health and disease in African populations." The grant will dispense approximately $2 million dollars per year for five years to cover travel, training, and technical support.

"This is a great opportunity for African bioinformaticians to be confronted with real and relatively large scale data," Jongeneel said. "The research projects are going to generate all sorts of very interesting data sets. I think that this project could really be a catalyst to develop capability in bioinformatics on the African continent anchored in good research."

Jongeneel's project, which is led by Nicola ("Nicky") Mulder of the University of Cape Town and involves many research groups across the continent, is known as the H3ABioNet. It will serve to aggregate and analyze large datasets, establish collaborations among preexisting bioinformatics centers, and train African students and scientists in bioinformatics.

"We've committed to make trainers available for everything that has to do with applying high performance computing techniques to the analysis of biological data, to helping with the installation of HPC devices, and, if they have trouble processing a large data set because they don't have sufficient infrastructure, we've committed to doing it here," he said.

By harnessing the existing structures of the African Bioinformatics Network and the African Society for Bioinformatics and Computational Biology, the H3ABioNet will be the first adequately-funded and pan-continental bioinformatics network in Africa. "We're trying to bring together people from very different research centers with different capabilities," Jongeneel explained.

Aside from bioinformatics, H3Africa research is divided into two areas: communicable and non-communicable disease. Goals include better diagnosis, the development of new drugs, and the development of personal medicine through the study of genome-environment interactions. According to information from the H3A website, "most African countries are being left behind in this genomic revolution and if this is not urgently addressed, genomics will contribute to the widening of global and ethnic inequalities in health and economic well-being."

> "This is a fantastic opportunity to educate not just the African bioinformaticians, but the scientific community in general about what can be done with computational techniques in biomedical research."

This will not be Jongeneel's first time in Africa. From 2002 to 2006, he was involved in the development of the South African National Bioinformatics Network, which was led from the University of the Western Cape, and where he served as the chair of the scientific advisory board.

Jongeneel anticipates that some aspects of the program will be challenging. "There is a tendency to organize workshops where people come, are excited, learn lots of things, and then go back to their home country and have no opportunity to actually apply any of what they learned. So there's always an uphill struggle in not only teaching skills to people, but in giving them enough support so that they can actually leverage those skills once they're in their normal working environment," he said.

"We need enough expertise, coordination, infrastructure across the African continent to handle all the data produced by these research projects," he added.

However, Jongeneel is optimistic. "This is a fantastic opportunity to educate not just the African bioinformaticians, but the scientific community in general about what can be done with computational techniques in biomedical research. If this project can generate a few new self-sufficient bioinformatics centers across Africa, that would be a big victory." ■

{Monthly Profile}

Data Emergency? Librarian Sarah Williams To the Rescue

As researchers generate bumper crop upon bumper crop of data, many are starting to wonder how to manage and store this data cornucopia.

Many granting agencies have recognized this need and are requiring data management plans as part of all grant applications. The NSF, for example, requires a data management plan that includes determining what kind of data will be generated, how it will be saved and for how long, how sustainable the repository is, whether researchers will share their data, and, if so, how.

So, how does a researcher fulfill this need for a data management plan? They might call Sarah Williams, life sciences data services librarian. Williams, who splits her time between the IGB and the Funk ACES Library, joined the IGB as its librarian in August. The Indianapolis native, who has two master's degrees, one in library science and another in IT, is well positioned to help IGB members with a wide variety of data management issues.

When Williams was an undergraduate at Purdue, she intended to pursue a career in plant sciences. But a librarian there encouraged her to pursue a library science degree, observing that librarians with science backgrounds were fairly rare and sought after. So after earning a bachelor's degree in soil and crop sciences from Purdue, Williams did just that. Coincidentally, the position at IGB opened up after that same librarian, Katie Newman, retired. Newman had moved to the University of Illinois several years earlier. And Newman was right; the combination of both a science and a library science background is a perfect recipe for the work Williams does now.

›› Data services librarian Sarah Williams

What is a data services librarian, exactly? Not surprisingly, data services librarians handle all things data related. They help find out if a certain data set already exists and track it down, purchase data sets, figure out the best repository for research data and determine the longevity of that repository. Williams says librarians like her also can help with metadata: describing a researcher's data in a way that would be helpful to other researchers looking for certain types of data. It's a matter of taking expertise that librarians already have and applying it to a data set rather than to a book or dissertation, she says.

Aside from being required for grant applications, data management also just makes good sense. The MIT library website page on data management (**http://libraries.mit.edu/guides/subjects/data-management/**), notes that proper data management helps make that data and a researcher's work more visible, saves time in the long run, and protects the data in a repository for future researchers to use.

Williams can guide researchers regarding data management tools, including the DMPTool, developed by the University of Illinois and several other research universities. The DMPTool works like an online wizard for creating data management plans. Williams is working to have it customized for the life sciences.

"Researchers are busy with so many others things, they might not have time to investigate all these options," says Williams. "I'm here to help because I have the luxury of keeping up with data management tools and issues and I have the time that researchers typically don't."

Libraries are in the very early stages of working to help researchers store, share and otherwise manage their data sets, says Williams, and a big part of her job right now is to let people know data services expertise exists at the library. In fact, researchers often tell Williams that they don't think of coming to the library for help with data. "I speak with my colleagues about things like that," they tell her.

In an effort to spread the word, Williams gave a seminar in October that provided an overview of NSF and NIH requirements and then focused on the types of practical tools that are out there to help researchers meet these requirements, including the DMPTool and Databib. This fall Williams also offered an introduction to data management workshop, with two colleagues. That session addressed why data management is important, and some basics in versioning, file naming and describing one's data.

Williams recognizes that each research project has its own specific needs and she emphasizes her availability to sit down with researchers one-on-one to discuss those needs.

Williams has never regretted taking Newman's advice and turning from science to library science.

"I enjoy working with researchers and hearing about research they are doing," says Williams. "It is nice having that science background. It really helps me to understand, at least on a basic level, their research projects." ■

{IP @ IGB}

Nondisclosure agreements and material transfer agreements

Maintaining confidentiality and avoiding public disclosure are critical steps in preserving your rights to inventions and other intellectual property. "IP @ IGB" has already discussed what composes public disclosure in a previous article (IGB Newsletter Volume 5, Number 1). These issues lead to the question "How do I collaborate with colleagues at other institutions or companies and still protect my rights to my ideas and resulting IP?" The answer lies in documenting your ideas in writing, and using nondisclosure agreements (NDA), also known as "confidentiality agreements" , and material transfer agreements (MTA).

To protect an idea that might have commercial potential, the first step is to prepare a written description, date it, and either send it to the OTM or have the description signed by a witness who can understand it. The second step may involve an NDA or MTA.

An NDA is an agreement that states the terms and conditions of sharing confidential *information*. NDAs are important to protect unpublished details about inventions, so as to preserve the ability to protect by patent both in the US and internationally. Confidential information may

continued on page 4

{IP @ IGB}

Nondisclosure agreements and material transfer agreements cont.

include unpublished patent applications, business methods, research protocols, data, drawings, etc ... NDAs protect IP by 1) defining what information is confidential, 2) defining who may be privy to such information, 3) prohibiting further transfer of the confidential information, and 4) most importantly, specifying exactly what can be done with the confidential information (Purpose). You might want to consider an NDA when initiating a new collaboration with faculty from other universities regarding an idea that is not yet protected by patent filings. It is always recommended to have an NDA when talking to investors or a third party company interested in University IP. Having an agreement sets forth the basis for interactions and the expectations of the parties.

An MTA is an agreement used in connection with the transfer of *tangible* material and states the terms and conditions of using such material. Materials include biological (e.g., cell lines, antibodies), non-biologicals (e.g., chemicals, pharmaceuticals), devices, software, and even plants. MTAs protect IP by 1) defining what the materials are, 2) defining who owns the rights to the materials, and anything derived from them 3) defining how the materials may be used, and 4) prohibiting transfer of the materials to third parties. In addition, MTAs protect the University from any liability that might arise from the third party's use of the materials. Today, MTAs are most often used to protect the potential commercial value of the unique materials, even if the materials are not subject to any patent protection.

Both MTAs and NDAs are available to the University's researchers. The Office of Technology Management prepares NDAs and MTAs for University information and technologies transferred *out of* the University. The Office of Sponsored Programs and Research Administration (OSPRA) prepares NDAs and MTAs for information or materials transferred *into* the University. For more information, please visit **www.otm.illinois.edu** and **www.ospra.uiuc.edu**.

Want to know more? Contact Mirth Hoyt at **mhoyt2@illinois.edu** or Jen Rice at **jenrice@illinois.edu** at the Office of Technology Management: **www.otm.illinois.edu**. ■

{Around the IGB}

Genome Day

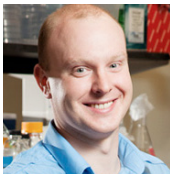
Genome Day a Great Success!

Thank you to everyone who attended Genome Day, a day of learning about genomes, genes, DNA, and evolution at the Orpheum Children's Science Museum in Champaign on Saturday, November 3, 2012.

Over 460 attendees participated in the 16 different activities, such as investigating planarian flatworms, learning how organisms relate to each other on the Tree of Life, extracting strawberry DNA to make necklaces, and dancing with plants on the big screen. As part of the outreach mission of the IGB to promote activities and undertake projects targeted to engage K-12 students as well as the east-central Illinois community with the University of Illinois, events such as Genome Day strive to present the key concepts of the research taking place at the IGB, in an approachable manner for all ages. ■

Award

Packard Fellowship



Doug Mitchell was awarded a 2012 Packard Fellowship in Science and Engineering from the David and Lucile Packard Foundation. Designed to support highly creative researchers in the natural and physical sciences or engineering, only 16 Fellowships are awarded each year to professors early in their careers. ■

Event

Join us for Holiday Luncheon

The IGB will hold its holiday luncheon on Friday, December 14 from Noon to 1:00 pm on the IGB concourse level.

Tickets are required for this event, and are available for pickup at the IGB reception desk from December 3 through December 7.

Theme Competition

We will also be holding a theme competition for the donation of toys and food items.

Bring a new, unwrapped toy to donate to Toys for Tots, and/or bring a can or box of food to donate to the Eastern Illinois Food Bank.

All donations will be collected at the Holiday Luncheon. Each food or toy item will equal 1 point, and the theme with the most points will win!

For the competition the following themes will be combined:

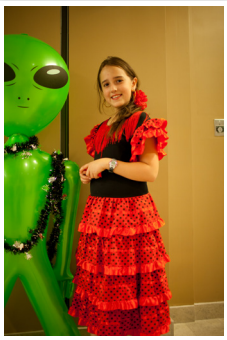
- Business, Economics and Law of Genomic Biology with Cellular Decision Making in Cancer
- Genomics of Neural & Behavioral Plasticity with Regenerative Biology & Tissue Engineering
- Biocomplexity with Host-Microbe Systems

Prizes include a theme lunch, breakfast at Array, or tokens for free drinks from the cafe! ■

{Around the IGB}

Halloween

Halloween Party Recap



Thank you to all who participated in the IGB Halloween Party. Congratulations go to the best costume winners: the Flamenco Dancer and the Super Hero Family.

Kudos to the social committee for another fabulous party! ■

Service

Service Award Lunch

Thank you to all staff who attended the Service Awards Lunch, and congratulations to those IGB members who celebrated specific milestones.

Janessa Gentry (*left, above*) and Kathy Millage (*right*) were both recognized for 5 years of service, and Melinda LaBorg was recognized for reaching 15 years of service. We are proud to acknowledge the contributions you have given. ■

CEM

New registration options

The Certificate in Entrepreneurship and Management (CEM) is a program for entrepreneurially minded MD, DVM, and PhD students, and postdoctoral associates in engineering, life sciences, and related disciplines who are interested in understanding the business, economic, and legal issues in scientific and high technical start-up ventures.

Previously available only as a full academic year program, students can now enroll only in the spring semester Kauffman FastTrac Tech Venture Course program. The Kauffman course runs from January-April, and completion of the program offers possible internships to further the experiential learning process.

To learn more about the program or to complete the application, visit **http://www.igb.illinois.edu/cem/** ■

ADMINISTRATIVE NEWS

{University Library}

Data Citation

The National Science Foundation has announced changes to its Grant Proposal Guidelines (**http://nsf.gov/pubs/policydocs/pappguide/nsf13001/gpg_sigchanges.jsp**), which take effect January 2013. One of the significant changes is related to Biographical Sketches. The "Publications" section has been changed to "Products," which means that datasets can be included along with publications and other research products. This is just one of example of the growing importance of citing data.

If you would like some guidance on citing data, there are resources available:

- Style Manuals – Some style manuals are beginning to provide directions for citing data. A recent data citation study by Mooney and Newton in the *Journal of Librarianship and Scholarly Communication* found that about half of the style manuals reviewed addressed data citation.
- Why Cite Data? (**http://datacite.org/whycitedata**) – DataCite, an international organization that promotes easier access to research data, provides a recommended data citation format.
- Quick Guide to Data Citation (**http://iassistdata.org/community/sigdc**) – The IASSIST Special Interest Group on Data Citation (SIGDC) has published a Quick Guide to Data Citation brochure, which is available on the SIGDC website. The brochure explains the importance of citing data, describes the elements of a data citation, and provides example data citations.

If you have questions about citing data or would like to discuss other data issues, you can contact Sarah Williams, Life Sciences Data Services Librarian, at **scwillms@illinois.edu**. ■

{Safety}

Illinois Illini-Alert

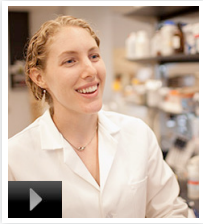
The Illini-Alert is the emergency messaging system for the University of Illinois, Champaign Urbana campus. The system will provide alerts about emergency situations on campus by way of mass text and e-mail messages. This includes tornado warnings, building fires, chemical spills, gas leaks and many more emergency situations. The Illini alert will also notify you when an emergency situation has ended and the "all clear" has been given to resume normal operations.

Most buildings on campus do not have PA systems to announce emergency instructions. In many cases, the Illini alert is the only way you will receive notification of emergency situations. Students, faculty and staff must be signed up for the Illini alert to receive the emergency messages. To sign up for the Illini alert system you will need to provide your net ID and password to gain access to the system and fill out the required information sheet.

Visit **http://emergency.illinois.edu/** for more information and to register. ■

{Communications}

IGB Video Features



Have you seen our latest video? Katie Amato, PhD candidate, Program in Ecology, Evolution and Conservation Biology, is working with members of our Host-Microbe Systems research theme on the relationship between primate foraging behavior and gut microbial communities. See it on our newly designed home page at **www.igb.illinois.edu**, or our YouTube channel at **www.youtube.com/IGBIllinois**. ■

{Operations & Facilities}

IGB Retrocommissioning

The Facilities and Services Retrocommissioning group is currently working in the IGB. They will be performing an in-depth analysis of our building systems focused on providing energy conservation and sustainability improvements.

You will notice the team working throughout the building measuring air flows in labs, offices, and public spaces. Thank you in advance for your patience and cooperation.

If you have any questions or concerns, please contact **facilities@igb.illinois.edu**.

I-Card Expiration Date

Please be mindful of the expiration date on your I-Card. If your card is scheduled to expire during the holiday break, make plans to visit the I-Card Center soon to update your card. If your card expires, your card access is deactivated!

Walking Safely in Slippery Conditions

As the temperatures begin to drop, many campus areas become slippery. Please visit the following link for more information:
http://www.igb.illinois.edu/safety/walking-safely-slippery-conditions

Building Temperatures

As we enter the heating season (outside air temperatures below 55 degrees), please be reminded that your office thermostats will be locked into a range of 70 – 74 degrees. You can manually adjust the temperature within this range. Please note that there are areas of the building where thermostats are non-adjustable (labs, public spaces, etc.)

Equipment Loan to Employees and Students

In accordance with the University of Illinois Office of Business and Financial Services (OBFS) Policies and Procedures, Section 12 – Property Accounting, an *Equipment Loan To Employees and Students* form must be completed annually for any University asset being used primarily off campus. Primarily is defined as more than 50% time or transporting between work and home, in case lost or stolen. It is especially important this form is completed and on file for laptops, iPads, or small electronics, which are targets of theft. If you need to complete an equipment loan form or question if this policy applies to you, please contact Kathy Millage at 265-8022 or **kmillage@igb.illinois.edu**. ■

{Recent Publications}

Agarwal V, Lin S, Lukk T, Nair SK, Cronan JE. Structure of the enzyme-acyl carrier protein (ACP) substrate gatekeeper complex required for biotin synthesis. *Proc Natl Acad Sci* U S A. 2012.

Branscomb E, Russell MJ. Turnstiles and bifurcators: The disequilibrium converting engines that put metabolism on the road. *Biochim Biophys Acta*. 2012.

Bruns A, Pollpeter D, Hadizadeh N, Myong S, Marko J, Horvath C. Single molecule analysis of the RIG-I-like receptor, LGP2. *Cytokine*. 2012;59(3):566-566.

Clark LV, Jasieniuk M. Spontaneous hybrids between native and exotic rubus in the western united states produce offspring both by apomixis and by sexual recombination. *Heredity*. 2012;109(5):320-328.

Cook DE, Geon Lee T, Guo X, et al. Copy number variation of multiple genes at Rhg1 mediates nematode resistance in soybean. *Science*. 2012:1-5.

Cooke HA, Peck SC, Evans BS, Van Der Donk WA. Mechanistic investigation of methylphosphonate synthase, a non-heme iron-dependent oxygenase. *J Am Chem Soc*. 2012;134(38):15660-15663.

Desai BJ, Wood BM, Fedorov AA, et al. Conformational changes in orotidine 5′-monophosphate decarboxylase: A structure-based explanation for how the 5′-phosphate group activates the enzyme. *Biochemistry*. 2012;51(43):8665-8678.

Erb TJ, Evans BS, Cho K, et al. A RubisCO-like protein links SAM metabolism with isoprenoid biosynthesis. *Nat Chem Biol*. 2012.

Gargi A, Reno M, Blanke SR. Bacterial toxin modulation of the eukaryotic cell cycle: Are all cytolethal distending toxins created equally? *Front Cell Infect Microbiol*. 2012;2:124.

Han Y, Agarwal V, Dodds D, et al. Biochemical and structural insights into xylan utilization by the thermophilic bacterium *caldanaerobius polysaccharolyticus*. *J Biol Chem*. 2012;287(42):34946-34960.

Jeya M, Kim T-, Kumar Tiwari M, Li J, Zhao H, Lee J-. A type III polyketide synthase from rhizobium etli condenses malonyl CoAs to a heptaketide pyrone with unusually high catalytic efficiency. *Mol Biosyst*. 2012;8(12):3103-3106.

Jeya M, Kim T-, Tiwari MK, Li J, Zhao H, Lee J-. The botrytis cinerea type III polyketide synthase shows unprecedented high catalytic efficiency toward long chain acyl-CoAs. *Mol Biosyst*. 2012;8(11):2864-2867.

Lee W, Pathanibul P, Quarterman J, et al. Whole cell biosynthesis of a functional oligosaccharide, 2 ‘-fucosyllactose, using engineered *escherichia coli*. *Microb Cell Fact*. 2012;11:48.

Niziolek OK, Berenbaum MR, Delucia EH. Impact of elevated CO 2 and increased temperature on japanese beetle herbivory. *Insect Sci*. 2012.

Peck SC, Gao J, Van Der Donk WA, eds. Discovery and biosynthesis of phosphonate and phosphinate natural products. ; 2012 *Methods in Enzymology*; No. 516.

Santos-Biase WKF, Biase FH, Buratini J, et al. Single nucleotide polymorphisms in the bovine genome are associated with the number of oocytes collected during ovum pick up. *Anim Reprod Sci*. 2012;134(3-4):141-149.

{Recent Publications}

Schlierf M, Ha T. A helicase with an extra spring in its step. *Cell*. 2012;151(2):244-246.

Shao Z, Zhao H, eds. DNA assembler: A synthetic biology tool for characterizing and engineering natural product gene clusters. ; 2012. Hopwood D.A., ed. *Methods in Enzymology*; No. 517.

Valsesia A, Stevenson BJ, Waterworth D, et al. Identification and validation of copy number variants using SNP genotyping arrays from a large clinical cohort. *BMC Genomics*. 2012;13:241.

Vo DT, Subramaniam D, Remke M, et al. The RNA-binding protein musashi1 affects medulloblastoma growth via a network of cancer-related genes and is an indicator of poor prognosis. *Am J Pathol*. 2012;181(5):1762-1772.

Warlick BP, Evans BS, Erb TJ, et al. 1-methylthio-d-xylulose 5-phosphate methylsulfurylase: A novel route to 1-deoxy-d-xylulose 5-phosphate in *rhodospirillum rubrum*. *Biochemistry*. 2012;51(42):8324-8326.

Wei N, Finneran KT. Low and high acetate amendments are equally as effective at promoting complete dechlorination of trichloroethylene (TCE). *Biodegradation*. 2012:1-13.

Wen S, Tan T, Zhao H. Improving the thermostability of lipase Lip2 from *yarrowia lipolytica*. *J Biotechnol*. 2012;164(2):248-253.

Ye L, Su X, Schmitz GE, et al. Molecular and biochemical analyses of the GH44 module of CbMan5B/Cel44A, a bifunctional enzyme from the hyperthermophilic bacterium *caldicellulosiruptor bescii*. *Appl Environ Microbiol*. 2012;78(19):7048-7059. ■

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