



# IGB NEWS

Achievements, awards, and information about the IGB community

Volume 4, Number 2



Featured News

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## {Upcoming Events}

### Translational Biomedical Research Seminar

Monday, March 14, 2011

12:00 p.m.

Institute for Genomic Biology, Room 612

Steven O'Hara, Ph.D.

*Mayo Clinic*

**"Biliary Epithelia Cellular Responses to  
Microbial Insult"**

### Pioneers in Genomic Biology

Monday, March 28, 2011

12:00 p.m.

Institute for Genomic Biology, Room 612

David C. Schwartz, Ph.D.

*University of Wisconsin-Madison*

*Department of Chemistry*

*Laboratory of Genetics*

**"A Singular View of the Genome"**

### IGB Seminars

Tuesday, April 5, 2011

12:00 p.m.

Institute for Genomic Biology, Room 612

Debra Dunaway-Mariano, Ph.D.

*University of New Mexico*

*Department of Chemistry and Chemical Biology*

**"Title To Be Announced"**

### Biocomplexity Seminars

All seminars will be in IGB conference  
room 3140 (third floor south) at noon

Thursday, March 10, 2011

Jim Davis

Thursday, March 17, 2011

Pan Jun Kim

**"Sociology in the Genetic World: What  
We Can Learn from Bacterial Genetic  
Co-Occurrence"**

Thursday, April 7, 2011

Yiran Dong and Charu Gupta Kumar

Thursday, May 5, 2011

Wen-Tso Liu

Thursday, May 26, 2011

Lee DeVille

### Nutrition Symposium

Wednesday, April 6, 2011

9:00 a.m.

103 Mumford

2011 University of Illinois Nutritional Sciences

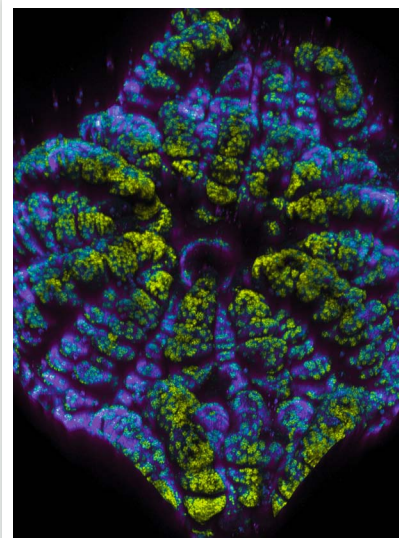
Graduate Student Association Nutrition Symposium

### Fellows Symposium

Save the date!

May 6, 2011

## {Image of the Month}



This month's image of the month, "Coral Polyp" was made by Carly Hill from Bruce Fouke's lab, on the Zeiss LSM 710 Confocal Microscope.

## IGB News

Share your news with the IGB. Send your  
story ideas to [mme@illinois.edu](mailto:mme@illinois.edu)



## Brenda Wilson Revealing Mysteries of the Microbiome

Brenda Wilson has got to be among the very few people in the world who talk about microbes as if they are individuals.

“We’re looking at not only who is there,” she says, referring to microbes, “but what they are doing.”

Wilson, associate professor of microbiology and Host-Microbe Systems (HMS) theme leader, is particularly interested in the human vaginal microbiome and how it relates to women’s reproductive health. When looking at human microbiomes, researchers have typically focused on the intestinal tract and the mouth. The IGB group is one of the few to look at the vaginal microbiome.

The medical community has long recognized that women with bacterial vaginosis are at a dramatically increased risk of STDs, HIV, and complications during pregnancy, including preterm birth. Wilson’s group has identified specific vaginal microbe populations that represent a diseased state and how that population differs from a non-diseased state in relation to bacterial vaginosis. Her team also has observed specific metabolic pathways that are associated with the diseased state and not the healthy state, though characterizing those metabolic pathways and metabolites in order to understand and applying this information toward developing novel therapies is still on the horizon.

“The idea is that at some point in that progression (from healthy to diseased state) you have a trigger

that sets off a change in the microbial biome pattern. We are hoping to figure out what that trigger is,” says Wilson.

The metagenome, which contains information about all microbial genes, not just the ones that identify the species, will enable them to achieve this goal. That genetic information will tell researchers what genes are involved in the metabolism and the physiology of the whole microbial community associated with any particular body site at any given time.

Take the lactobacillus bacterium, for example. Sequencing just the 16s rRNA gene may reveal

the presence of lactobacillus species in the community, but there are many different types of lactobacilli, each with different metabolisms and physiological properties, says Wilson.

“Some lactobacilli may degrade certain compounds, while others will be able to use certain compounds and not others. So they actually have personalities of their own,” she says, smiling.

Wilson and her colleagues are collaborating with the Mayo Clinic and the J. Craig Venter Institute to study the vaginal microbial communities of hundreds of women in various stages of high-risk pregnancy. Wilson and her collaborators will follow the patients’ vaginal microbiome over time and observe the dynamic changes in the numbers and types of the microbes and the host immune response to those changes. This work will be supported in part by a grant from the National Institute of Health’s Institute of Allergy and Infectious Diseases. The project also represents the first major initiative of the newly formed Mayo-Illinois Strategic Alliance for Technology-Based Health Care.

Results from Wilson and her colleagues’ work already have impacted the biomedical research community. For example, their paper, published in the *Journal of Clinical Microbiology*, showed that how a sample is collected could be critical for correctly interpreting the research data obtained. A vaginal swab does not provide a representational sample of all the microbes present, they found. Researchers need also to collect bacteria that are adhering to the vaginal surface.

“You need a scrape as well as a swab,” says Wilson of the proper sample collecting technique. “That technique may change your diagnosis in terms of what microbes you see and whether it is diseased or not.”

Wilson hopes that identifying microbial patterns will help researchers understand what is happening in host-microbe interactions, such as whether the host is being helped or hurt by the microbe or group of microbes. Researchers also hope to characterize the activity between microbes. Microbes can feed off one another, fight one another—by secreting toxins to kill other microbes competing for the same niche or resource, or peacefully coexist.

“The idea is that at some point in that progression (from healthy to diseased state) you have a trigger that sets off a change in the microbial biome pattern. We are hoping to figure out what that trigger is.”

In addition to studying the human vaginal microbiome, Wilson’s group, which includes several anthropologists as well as microbiologists and immunologists, is also conducting comparative genomics with up to 16 different non-human primate species. The first part of their project is simply to identify and document what microbes exist in what primate species and in what concentrations.

## »» Monthly Profile cont.

"No one has really looked at what's present in primates in terms of microbes," says Wilson of this undertaking. "There are some non-human primate species that have microbes that we have not explored before."

Wilson's group has determined that microbes found in both the intestinal and vaginal microbiomes of non-human primates are more closely related within a species than another way, such as geographically. In other words, microbes found in a macaque in Malaysia are more similar to those of a Moroccan macaque than the microbes of an orangutan in the original macaque's Malaysian neighborhood.

This provides a clue that perhaps microbes may have evolved along with their host, says Wilson. This project will continue to examine how these microbes might reflect differences in sexual practices, behavioral patterns, and food consumption patterns of primates, as well as evolutionary mechanisms.

From microbiologists, immunologists, animal scientists, and the anthropologists studying primates in the field (and trying to get the samples back to the United States) to bioinformatics experts and physician scientists, not to mention hundreds of pregnant women or women with bacterial vaginosis, this project represents an impressively

interdisciplinary team, says Wilson, even for the IGB.

Ultimately Wilson hopes that getting to know "her" microbes, with all their different personalities, will help advance maternal-fetal health, as well as provide insights into how microbes have impinged on our human origins. And now that they have some basic information about the vaginal microbial environments, researchers can begin to do more longitudinal, dynamic studies with specific questions in mind.

"We're right at the cusp," says Wilson of her work. "This is taking off; we are in the growth phase." ■

## {IP @ IGB}

# iOS and Android App Development

Calling all campus developers—the University of Illinois now supports iOS and Android development on campus and is set up to deploy apps to the Apple App Store and Android Market.

The iOS Developer Program License Agreement and the Android Market Developer Distribution Agreements have been signed so the Office of Technology Management (OTM) can now help you get access to iOS and Android developer tools and is managing the submission of University-owned apps to Apple's App Store and the Android Market.

### iOS:

OTM has enrolled Illinois as a member in three Apple developer programs:

Standard Program: for distribution of free and fee-based apps via the App Store (requires submission of the app to Apple for approval)

Enterprise Program: for distribution of apps to Illinois-owned devices only (does not require submission of the app to Apple for approval)

University Program: an aid in teaching students how to develop apps, allows Illinois professors and instructors to designate up to 200 students to develop and share apps amongst themselves

Membership in the developer programs provides the opportunity to write and distribute iOS apps.

iOS was previously known as the iPhone OS, which runs on iPhone, iPod touch, and iPad.

These apps can be distributed via the App Store or to Illinois-affiliated members, provided that they are released under Illinois's name and ownership.

### Android:

OTM also enrolled Illinois into the Android Developer Program. Apps that are being developed for the Android OS will be distributed in the Android Market (<https://market.android.com/>) through the OTM. Android apps can be installed on both Android phones and most recently tablet computers that are running the Android OS.

Whether you are in the early stages of creating your smartphone or tablet app or have already developed one, fill out the Mobile App Disclosure Form to start working with the OTM. <http://otm.illinois.edu/node/4363>

Contact Dave Washburn, Senior Technology Manager, for more information. ([dwashbur@illinois.edu](mailto:dwashbur@illinois.edu); 217-265-0778) ■

## {Around the IGB}

### Fellows Symposium

#### 2011 IGB Fellows Symposium



Mark your calendar: the fifth annual Fellows Symposium is scheduled for Friday, May 6. The symposium will feature presentations on IGB research and current issues

in the life sciences. Six research themes will give talks about their work, including Biocomplexity, Host Microbe Systems, Genomics of Neural and Behavioral Plasticity, Genomic Ecology of Global Change, Regenerative Biology and Tissue Engineering, and the Energy Biosciences Institute.

The special guest speaker will be Adam Arkin from the University of California, Berkeley, and a

member of the Energy Biosciences Institute.

The symposium also will include a Poster Session with prizes for the top three posters. We hope you will join us! Registration is free, and everyone who attends will have the chance to win an iPod Shuffle.

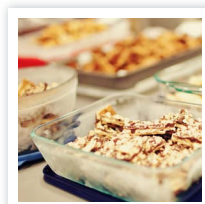
For more information, go to <http://conferences.igb.illinois.edu/fellows/> ■



## {Around the IGB}

### Bakeoff Winners

#### Congratulations!



Congratulations to all of the winners, bakers, and chefs for this year's bake-off and culinary competition.

#### Overall Theme Winner

Genomics of Neural and Behavioral Plasticity  
(For the third consecutive year!)

#### Overall Best Sweet Winner

Dina Leiding, GBB  
Better than Sex Cake

#### Overall Best Savory Winner

Huimin Zhang, GBB  
Pork Fried Rice

#### Best Cake/Pie

Dina Leiding, GBB  
Better than Sex Cake

#### Best Cookie

Nick Vasi, Admin  
Craisin White Chocolate Chip

#### Best Other Sweet

Annie Weisner, GBB  
Brickle

#### Best Cold Savory

Ben Warlick, MMG  
Sushi Cheetos

#### Best Hot Savory

Malissa Leistner, Admin  
Hot Chicken Dip

Containers may be picked up in the Gatehouse, 2nd floor reception area, during regular business hours. ■

### Lactation Room

The IGB has a lactation room designed specifically for nursing mothers. If you are a nursing mother and you want a key to the room, see Kathy at the receptionist's desk. If you have questions about this room, please contact [facilities@igb.illinois.edu](mailto:facilities@igb.illinois.edu) ■

### Biofuel Conference

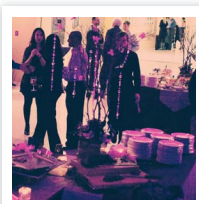
#### Third Annual Biofuels Law and Regulation Conference

The Third Annual Biofuels Law and Regulation Conference, "Exploring Cutting Edge Legal Issues at the Nexus of Bioenergy," will be held at the Illini Union on Friday, April 22, 2011. The Conference focuses on cross-cutting legal and regulatory issues relating to biofuels and bioenergy production, including:

- The role of ecosystem, lifecycle, and multi-criteria decision modeling in setting environmental, social and economic sustainability standards for biomass, biofuels, and other bioenergy, and how to arrive at an optimum standard for various stakeholders
- How legal and other regulatory mechanisms must evolve to address invasiveness of bioenergy feedstocks
- The variety of contractual issues related to bioenergy supply chains
- The Renewable Fuel Standard/Renewable Portfolio Standards ■

### Event Planning Help

#### Event Planning Guide Now Available



Want to ensure a successful event? Start planning! IGB has developed a guide and checklist to help ensure that your events run smoothly. From securing appropriate space to finding a great caterer to publicizing your event (and everything in between!), planning events can be a lot of work. We can help!

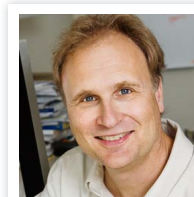
View the checklist at <http://www.igb.illinois.edu/facilities-services/event-guide> ■

### Donut Day

Stop by Array Cafe for coffee and donuts while they last on Friday, March 11 at 8:30 a.m. ■

### Theme Leader

#### David Clayton Named Interim Theme Leader



David Clayton will become the interim leader of the Genomics of Neural and Behavioral Plasticity Research Theme at the IGB, starting March 15. Clayton is a professor in the

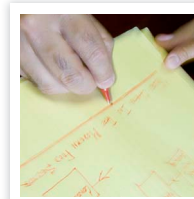
Department of Cell and Developmental Biology and a part-time faculty member in the Beckman Institute NeuroTech Group. He is also affiliated with the Bioengineering Department and the Neuroscience Program. Clayton succeeds Gene Robinson, who will become the Interim Director of the IGB following Harris Lewin's departure in late March. ■

### Library Workshops

#### Grant Writing March 9, 2011 3:00 – 4:00 p.m.

##### Where's the Money?

##### Finding and Securing Grant Funding



Are you trying to find grant funding for a fellowship or scholarship? A research project? We can help you find private and federal funding by searching and setting up alerts in Illinois Researcher Information Service, IRIS. We'll also help to increase your chance of success by covering the top 10 tips of how to get your funding approved.

- Introduction and setting alerts in IRIS
- Brief introduction to other funding sources
- Discussion with a grant writing expert on how to get your proposal funded

##### Lead Instructors:

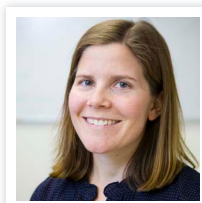
Kasia Hopkins  
[hopkins5@illinois.edu](mailto:hopkins5@illinois.edu)

Kathie Veach  
[veach@illinois.edu](mailto:veach@illinois.edu)

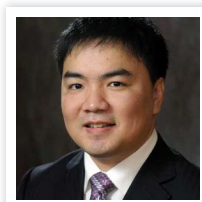
See more workshops and register at <http://www.library.illinois.edu/learn/basics/workshops.html> ■

## {Around the IGB}

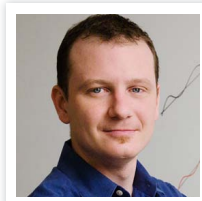
### IGB Faculty Awards



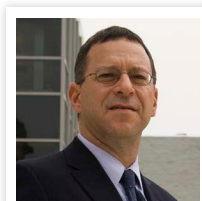
Lisa Ainsworth (Genomic Ecology of Global Change) has been selected to receive the President's Medal from the Society for Experimental Biology.



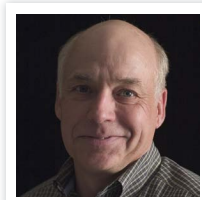
Jian Ma (Cellular Decision Making in Cancer) received a CAREER award from the National Science Foundation.



Ryan Bailey (Cellular Decision Making in Cancer) has been selected to receive a 2011 Sloan Research Fellowship from the Alfred P. Sloan Foundation.

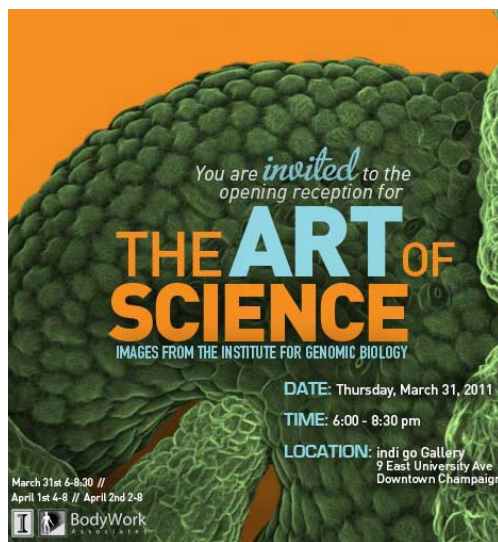


Harris Lewin (Director) has been named the winner of the 2011 Wolf Prize in Agriculture.



Don Ort (Genomic Ecology of Global Change) has been named Chair-Elect of the Section on Agriculture, Food, and Renewable Resources for the AAAS. ■

### Core Facilities Gallery Show



### Visualize Yourself at "The Art of Science" Opening Reception at the *indi go* Gallery in Downtown Champaign

Faculty, students, staff, and members of the community are invited to attend the opening reception for "The Art of Science: Images from the Institute for Genomic Biology" on Thursday, March 31 from 6:00-8:30 p.m. at downtown Champaign's *indi go* Gallery. The show will feature images created on some of the IGB's microscopy and imaging equipment.

## ADMINISTRATIVE NEWS

### {Business}

#### Renewal of Annual Orders and Standing Orders for FY2012

Please send Pam Rank your request for Annual orders (standing purchase orders, maintenance renewals) for FY2012 (July 1, 2011 – June 30, 2012) and the quotes as soon as possible, so they can be sent to Purchasing in a timely manner.

Orders that are between \$51,300 - \$999,999 for commodities and general services, or \$20,000 - \$999,999 for Professional and Artistic Services are due to Purchasing 3/14/11.

For all annual orders under the thresholds listed above the deadline is May 16, 2011, but please forward your information to Pam as soon as possible before May 16th, to ensure timely processing.

When you request a standing order for FY2012, please estimate the anticipated expenses on the high side if you are not sure how much to encumber. If we request a change order to increase the purchase order by 25% or more during the year, the request will be subject to Board of Trustee approval. ■

### {Safety}

#### Microwave Safe



Only use microwave safe cookware in the microwave ovens. Most plastics will melt, burn, smoke, and set off the IGB fire alarms. (This occurred at 12:50 p.m. on March 2, 2011, in Breakroom 1003.) Most plastics or glassware indicate on them whether they are safe for microwaves. If they do not have this wording, please do not use them. ■

## {CNRG}

### Wireless Upgrade

During the first three days of spring break, the CNRG is planning to upgrade the wireless network in the IGB to the new 802.11N standard. This newer network should allow for faster network connections and better connectivity throughout the IGB. As we replace these access points, there will be rolling hour long outages throughout the day while we swap each access point out with the new model. More details will be provided as we near this date.

### Cluster News

Since the deployment of the newer computation and large memory clusters, usage of the hive-cluster has steadily declined on this system to the point where it is virtually unused. In order to save energy and free up rack space, the decision has been made to shut this cluster down effective March 14. The hive cluster was developed with Bruce Schatz and the Beespace project, and we would like to take this last opportunity to thank them for their contribution to the IGB. The CNRG learned a lot about how to build and run clusters on this system, and we will always be grateful.

At the end of this semester, the CNRG is planning to take the computation and large memory systems down for up to a week while we implement some improvements on each system. When finished, it will be much easier to transfer files between the file server and the clusters, and the computation cluster will have more storage available. If you have any large projects that use these clusters with a deadline immediately following the end of semester, please let us know so we can schedule appropriately.

### GPU/Tesla Computing

Additionally CNRG is at work on developing a test platform for GPU/Tesla computing. If you are interested in using this type of service, please let us know at [help@igb.uiuc.edu](mailto:help@igb.uiuc.edu) ■

## {Communications}

### Logo Use



We do encourage you to acknowledge the Institute for Genomic Biology whenever appropriate (in papers, on posters, in presentations, etc.), but remember, campus units are not permitted to have individual logos. Please do not use the “IGB logo” but rather use the I mark and the words Institute for Genomic Biology. If you have any questions, please contact Melissa Edwards at [mme@illinois.edu](mailto:mme@illinois.edu) ■

## {Operations and Facilities}

### Bicycle Parking



Warmer temperatures mean more bicycles. Remember, bicycles should be parked in approved bike locations around the IGB—if they aren't they can be removed. Also, skateboards or longboards are not permitted on the IGB plaza. ■