IGBNEWS

Achievements, awards, and information about the IGB community

Volume 3, Number 8

Featured News

IGB Director Harris Lewin has accepted a position as the Vice Chancellor for Research at the University of California, Davis. His last day at the IGB will be March 30, 2011. An interim director will be named prior to his departure, and in the long term an international search will be conducted to find a permanent director. More information will follow as it becomes available. ■

{Upcoming Events}

Pioneers in Genomic Biology Lecture Series

January 25, 2011
12:00 p.m.
IGB Conference Center #612

Aviv Regev, Ph.D.
Assistant Professor, Department of Biology, Massachusetts Institute of Technology (MIT)

Core Member, Broad Institute

Early Career Scientist, Howard Hughes Medical Institute

Pioneers in Genomic Biology Lecture Series

Tuesday, February 15, 2011
12:00 p.m.
IGB Conference Center #612

Jennifer A. Marshall Graves, PhD, FAA, AO
Head, Comparative Genomics Research Group

Foreign Secretary, The Australian Academy of Science

Research School of Biology, The Australian National University

Fellows Symposium

April 15, 2011
Mark your calendars!

Holiday Break Hours

December 24, 2010 — January 2, 2011

All exterior doors will be locked and all card access doors will require entry with a valid IGB prox card.

Array Cafe Hours

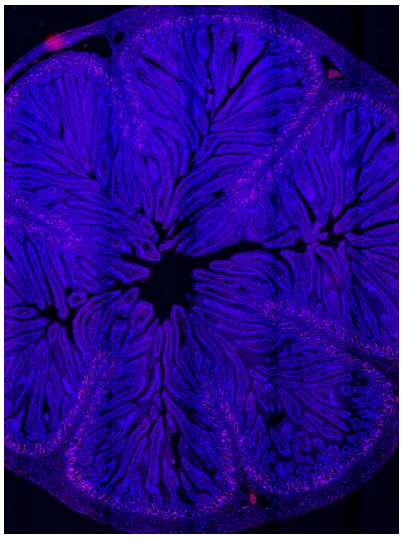
December 20, 2010 — January 2, 2011

The cafe will be closed during the break.

January 3, 2011 — January 14, 2011

The cafe will be open reduced hours, from 8:00 a.m. - 1:00 p.m. daily. Regular hours will resume January 18, 2011.

{Image of the Month}



This month's Core Facilities Image of the Month, "Cellular proliferation in a Jejunal intestinal section from a 14-day-old piglet," was made on the Nanozoomer by Elizabeth Reznikov and Sarah Comstock from Sharon Donovan's lab.

IGB News

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

Paul Hergenrother: Finding new targets by way of novel pathways

While there are thousands of drugs on the market for human diseases, they only hit in the neighborhood of 200 targets, says Paul Hergenrother, professor of chemistry and a member of the Cellular Decision Making in Cancer (CDMC) Theme at the IGB. Many drugs aim at the same target and are either minor improvements or work in a different way. And, while there is some rationale for developing new drugs for old targets, Hergenrother has an entirely different goal.

"To make a large advance in therapy you need to find new targets," Hergenrother says. And to do that his group "explicitly tries to think about novel pathways and novel ways of targeting proteins inside the cell."

Hergenrother makes finding new targets sound straightforward, but it is rather like seeking, if not a needle in a haystack, then at least a pincushion's worth of needles in a haystack — one reason drug companies do not undertake the effort. Tools like the University's high-throughput facility, which Hergenrother helped create, help make such an undertaking possible. These kinds of projects also require large applications of time and resources. Hergenrother has a lab of more than two dozen, including 16 graduate students, 4 post-docs and 10 undergraduates.

As one of the driving forces in the development of the new CDMC theme, Hergenrother is particularly interested in various cancers, though his work also has potential for drug-resistant bacteria and neuro-degeneration. Because there are countless complex mechanisms by which cancers arise, this line of inquiry presents a particularly exciting challenge for investigators like Hergenrother.

"A growing area of interest in our laboratory is the development of strategies in which we exploit defined molecular defects in cancer to specifically kill these cells," he says.

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One such complex mechanism is apoptosis, programmed cell death. In many cancers apoptosis has been inactivated, leading to unregulated cell proliferation, while in neuro-degenerative diseases, apoptosis has been revved up, attacking healthy cells. In either case, understanding the underlying mechanisms of how cells behave is essential to making large advances against disease.

Hergenrother has two general approaches: one method is to understand the role of certain proteins in a pathway that leads to cancer and to then determine the effect of switching off or on a given protein. His lab then screens for compounds that can control that switch. The other approach is to test compounds on cancer cells and look for compounds that do "interesting" things, like induce death very fast or under hypoxic conditions, similar to conditions in which a cancer cell grows. Then his team works backwards to find the target that the compound is acting on.

In the context of this first approach, Hergenrother's lab has taken a massive library of compounds housed at the University of Illinois and, using the high-throughput facility, screened many of the compounds to determine their effect on a protein, procaspase-3, which is involved in apoptosis. In cancers like lymphoma, the ability of this protein to kill cells is somehow turned off, despite the fact that the protein is upregulated in the presence of lymphoma. Hergenrother's lab has both identified a compound, PAC-1, that reactivates the function of procaspase-3 and determined the mechanism by which procaspase-3 was being inhibited.

Of course the journey from the lab to the clinic can be a long one. His lab tested the compound in a test tube, then in cell culture and then in mouse models. In the course of this work they developed more than 50 derivatives of the compound, continually working to make it both safer and more effective. When the results looked promising Hergenrother moved up to a small trial in pet dogs, in collaboration with Tim Fan, professor of veterinary clinical medicine. Dogs are a good model because they develop lymphoma spontaneously and systemically, as do humans. This is different from the standard mouse model of cancer, where lab mice are injected with cancer cells and then treated with drugs.

The canine trial was concerned with determining both a safe dose and the most effective delivery system, whether via IV or injection, or orally. These experiments are complicated by the size of the patients, which can be as large as a 220-pound Mastiff, which required multiple grams of the compound. In the mouse trial, the mice themselves weighed only 40 grams, notes Hergenrother.

In dogs, lymphoma is very fast growing, doubling in size within four or six weeks. Investigators hoped that this trial might buy the dogs a little more time, and the results were encouraging. Of the six dogs in the trial, Hergenrother's team was able to reverse lymphoma in one dog and stabilize it in three. Although the trials continue and the testing process is far from over, Hergenrother hopes that PAC-1 will one day be helping humans, as well as dogs. ■

Biotechnology Method Patents Under Attack?

Summarized from: Genetic Engineering and Biotechnology News 2010 Vol 30 (17): 9-10

Recently, biotechnology patents have come under closer scrutiny than ever before. The courts have started narrowing qualifiers for patent novelty and what constitutes patentable subject matter, among other things. Some of these decisions are currently under appeal, but they demonstrate that what determines a valid biotechnology claim is a changing field. They also show a growing reliance on method claims (patenting the steps to accomplish something). What does all this mean for researchers?

This winter, the question of whether nucleic acids are patentable subject matter will be answered in *AMP v. Myriad*. In March 2010, the lower court decided that isolated DNA (for the BRCA 1/2 mutation) is not patentable because the information in the isolated molecule is not sufficiently transformed from its natural state. In other words, the court used the rule that you cannot patent nature. The court also found that methods for its diagnostic use were abstract mental processes, therefore nonpatentable. This decision defeated the main purpose of the entire invention.

As a result of these recent developments, it has become important to consider the validity of method patents, rather than the actual molecules themselves. In June 2010, The Supreme Court ruled in the validity of method claims in the decision of *Bilski v. Kappos*. In Bilski, business method claims were deemed too abstract for patenting. How is this related to biotechnology? The key is that the Court provided a test based on a prohibition against patenting abstract ideas, in addition to laws of nature and natural phenomenon. Since universities and biotech firms have started using method claims to protect their inventions, this case has made it clear that if a method claim is too abstract, it will not be patentable.

What about method claims in relation to natural phenomenon? In *Laboratory Corp v. Metabolite Labs*, the method claim of correlating homocysteine levels and vitamin deficiency was being disputed. The decision came down that the patent was valid, but the case was appealed. The Supreme Court dismissed Lab Corp's appeal, but questioned, in a dissent, if the diagnostic method claimed a natural phenomenon. In another method claims case, *Prometheus Labs v. Mayo*, the Federal Circuit ruled in September 2009 that the claimed methods, which included both diagnostic and treatment steps, were patentable. However, in light of the *Bilski* case, the Supreme Court has remanded *Prometheus* to be reconsidered.

In August 2010, treatment methods claims were again under inspection by the Federal Circuit in *King Pharm v. Eon Labs*. In King, the patent claims involved a method of increasing the bioavailability of metaxalone (a muscle relaxant) by taking with food. The dependent claim required telling the patient that taking metazalone with food increases bioavailability. The Federal Circuit recognized that treatment claims are patentable as they are transformative via the administration of varying compounds to the body. In other words, treatment is not natural phenomenon, so it is patentable. On the other hand, the Federal Circuit ruled that the claims were invalid for prior-art anticipation. This means that an additional claim set was "anticipated" or printed somewhere else.

In short, the Federal Circuit has extended the invalidity theory for nonfunctional printed matter to include spoken instructions in *King*. The result of this finding is that it permits the use of anticipation theory on the basis of non-functionally related printed, oral, or even mental correlation methods, rather than the traditional method of finding the element in the prior art. By using this approach, it prevents the patentee using secondary considerations such as commercial success, unexpected results, or non-obviousness opinions by others in the field. This may be a more formidable threat to method patents than obviousness or possibly the "abstract idea" subject matter prohibition.

Biotechnology method claims may still survive transformation and abstract tests under *Bilski*, but now also must pass the functional novelty test set forth in *King*. It remains to be seen what these changes will mean for innovation, especially in the private sector. The Office of Technology Management at the University of Illinois can help with questions regarding patenting and commercializing biotechnology inventions. ■

By Kathryn Cowles, MS. Kathryn is a PhD Candidate in the Department of Animal Sciences and is a Commercialization Analyst Intern for the Office of Technology Management, specializing in life sciences technologies. Questions can also be sent to her directly via email: **kcowles2@illinois.edu**

{Around the IGB}

Research Award

Award for Diabetes Research

Applications are now being accepted for the Britta L. & Charles J. Wolfe Award for Diabetes Research. The $25,000 prize will be given annually to a graduate student who's conducting diabetes research at the University of Illinois at Urbana-Champaign. The award can be given to any student on the Urbana campus who's conducting diabetes research, whether it's an engineer working on a new insulin pump, a sociologist studying the disease's lifestyle effects, or a medical researcher working to discover a cure. The application deadline is **January 31, 2011**.

Apply at: *www.med.illinois.edu/SA/Awards/WolfeScholarship2011.pdf* ■

Lost and Found

Lost a glove? Backpack? Something else? Check with IGB receptionist Kathy Millage in the Gatehouse to see if it has been turned in. ■

Bicycle Racks

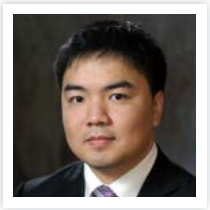
There are IGB bicycle racks now located on the plaza. We encourage you to take advantage of this new option. Please remember that bicycles are not allowed in the building. ■

Media Training

Learn about sharing your research with the news media. The campus News Bureau will be holding a media training workshop on February 9, 2011, at 2:00 p.m. All IGB researchers are welcome to attend.

For more information, contact Melissa Edwards at mme@illinois.edu. ■

Awards



Jian Ma will receive an NSF Career Award to develop new comparative genomics algorithms to analyze genome rearrangements and duplications. ■

Parking at the Dock

Reminder: University Police officers will ticket vehicles parked at locations marked "No Parking." Parking your car at the dock during off-hours subjects you to ticketing and/or towing. ■

Smoking

Please use the cigarette urn to dispose of your cigarette butts. Do not throw them on the plaza. ■

Building Hours

The IGB building will be closed December 24 – January 2. This means that all exterior doors will be locked and all card access doors will require entry with a valid IGB prox card. Please take care when entering or leaving the IGB and do not to allow someone you do not recognize into the building.

If you notice any urgent building issues (water leaks, CT room temperature problems, etc.) please call 333-0340 for the F&S Service Office. This number is answered by Public Safety during off-hours and they will be able to assist you. Emails sent to facilities@igb.illinois.edu during this time will not be immediately addressed.

IGB Shipping and Receiving will be closed December 24 – December 31. No packages or mail will be received or sent during this time period.

Array Cafe will be closed December 20 – January 2. We will have reduced hours (8:00 – 1:00) January 3 – January 14. We will resume regular hours on Monday, January 17.

And remember to help conserve energy! If you are in the building when it is closed, please turn off all lights when you leave your area. ■

ADMINISTRATIVE NEWS

{Safety}

Winter Weather

This time of year all IGB occupants should take special care when walking across the plaza. The concrete pavers are extremely slippery, just like any concrete sidewalks with ice or frost. For tips on walking safely in the snow, visit: **www.igb.illinois.edu/safety/news** ■

Space heaters

The campus policy on space heaters states that "Space heaters should not be used in campus facilities, other than temporary outages when the primary building heat is not operational." Please discontinue the use of space heaters in the building. If you feel the temperature in your workspace needs to be adjusted, please contact facilities and operations at **facilities@igb.illinois.edu** for assistance. ■

{Biotechnology Information Center}

Are you getting the most out of PubMed?

PubMed is a free database. But if you are using the free URL for it, you are not getting as much out of PubMed as you can. Instead, use the library's special URL for PubMed:

http://www.library.uiuc.edu/orr/get.php?instid=406312

When you use this URL to search PubMed you will see attached to the citations two links that you otherwise would not see:

The "Discover link", which is attached to every record in PubMed, will lead you to links for the full text of articles. If we don't have a subscription providing us with access to the full text, the Discover window will provide a link to Interlibrary Loan where you can request a copy of the article from some other library; the ILL form will already be filled in—all you need to do is provide your NetID and password. Additional links in the Discover window will allow you to export the citation to EndNote or Ref Works, re-run the search with Google Scholar, and more.

The "Full Text for Illinois" button will take you directly to the full text of articles with just one click. This button is only attached to records that are verified to have full text access.

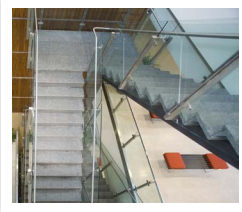
Additionally, did you know you can save PubMed searches and have them run automatically for you at regular intervals, with the results sent to you by email? Here's how:

www.library.illinois.edu/biotech/alertsdbvendor.html#ncbi

Questions?
Contact Katie Newman, Biotechnology Librarian: *Florador@illinois.edu* ■

{Operations and Facilities}

Facilities Reporting



If you notice a problem with the building, PLEASE report it right away. Most facilities personnel work from 7:30 a.m. to 4:00 p.m., so prompt reporting of problems is critical. Also, please do not email individuals directly about problems — send all emails to **facilities@igb.illinois.edu** ■

{Business}

W-2 Forms

The process for electronic access to Form W-2 is a quick, convenient, and secure way to access your W-2 online. You can retrieve the form anywhere you can access the internet, it will be available two weeks prior to the mailed forms, and it cannot get lost in the mail or sent to an old address.

Once you consent to have electronic access, you will not have to consent again each year. If you wish to have early access to your Form W-2, you have until January 18, 2011, to complete the consent process and receive your form W-2 electronically. If you previously consented, you will receive a separate notice from University Payroll with instructions on how to retrieve your form.

If you do not provide consent by January 18, you will receive a printed W-2 to be mailed no later than January 31, 2011. Printed forms will be mailed to the mailing address on file. If you do not receive your printed W-2 by February 8, 2011, and have not consented to receive an electronic form, you should contact the W-2 service provider, JAT Software, at 866-923-6767 and request a duplicate. You may also access NESSIE to print a duplicate after February 8, 2011.

NOTE: Electronic access is not available for foreign national employees receiving Form 1042-S.

If you receive your Form W-2 by mail, or if you are a nonresident foreign national employee receiving Form 1042-S, your form will be mailed to the mailing address listed on your Personal Information tab in NESSIE as of December 31, 2010. If you did not have an active mailing address at that time, the form will be sent to your listed home/permanent address.

Instructions for consent and retrieval of your electronic W-2 can be found under Electronic Distribution Process at:
http://www.obfs.uillinois.edu/payroll/tax-information/w-2/

Both consent and access to the W-2 is done through NESSIE under the compensation tab at:
https://nessie.uihr.uillinois.edu/cf/comp/index.cfm?Item_id=2935 ■

{Communications}

Media Relations

Have research news to share with the news media? Contact Melissa Edwards for help in determining the right path for sharing your story. IGB Communications works with the campus News Bureau to ensure that research news receives the appropriate level of coverage. ■

ILLINOIS

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www.igb.illinois.edu

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