

IGB NEWS

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Image Of The Month

IP @ IGB

Department Announcements

Volume 10 Number 7

UPCOMING EVENTS

IGB Seminar (GNDP)

Impact of Regulatory Variation Across Human iPSCs and Differentiated Cells

November 28, 2017, 12:00 p.m.

612 Carl R. Woese Institute for Genomic Biology

Yoav Gilad, PhD

University of Chicago

Department of Human Genetics

Lunch with the Core

University IP, what is it, how do you know when you have it, what can you do with it, and why should you care?

November 29, 2017, 12:00 p.m.

612 Carl R. Woese Institute for Genomic Biology

Brad Edwards, Sr. Technology Manager

Lisan Smith, Technology Manager

Office of Technology Management

Fox Family Innovation and Entrepreneurship Lecture

A Novel Series of Efflux Pump Inhibitors to Combat Multidrug Resistant Enterobacteriaceae

December 5, 2017, 12:00 p.m.

612 Carl R. Woese Institute for Genomic Biology

Tim Opperman, PhD

Senior Proposal Scientist, Microbiotix, Inc.

IGB Special Seminar

Engaging with US Department of Defense for Medical Research

December 11, 2017, 12:00 p.m.

612 Carl R. Woese Institute for Genomic Biology

Brian Pfister, PhD, MBA

The Conafay Group

The Conafay Group specializes in representing biomedical organizations before the federal government and associated stakeholders. They have consulted a wide array of life sciences organizations to advance their research and policy goals by harnessing the power of the federal government.

FEATURED NEWS



Sharon Donovan Elected to National Academy of Medicine



Expanding Brazilian Sugarcane Could Dent Global CO2 Emissions

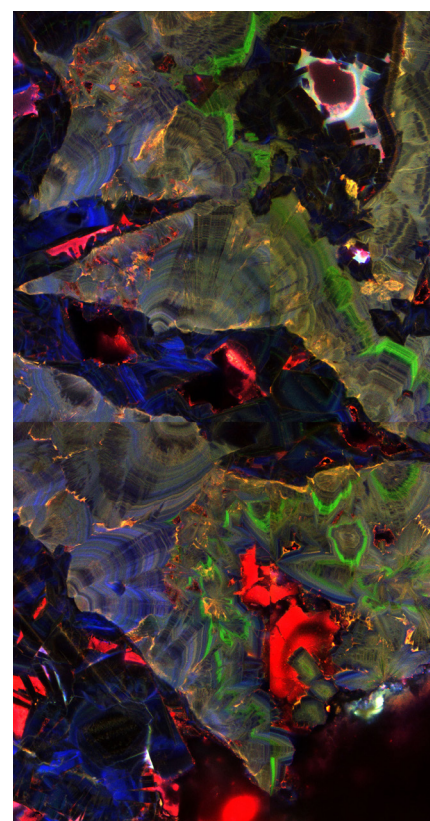


Monthly Profile: Brent Roberts



On the Grid: Happenings at IGB

IMAGE OF THE MONTH

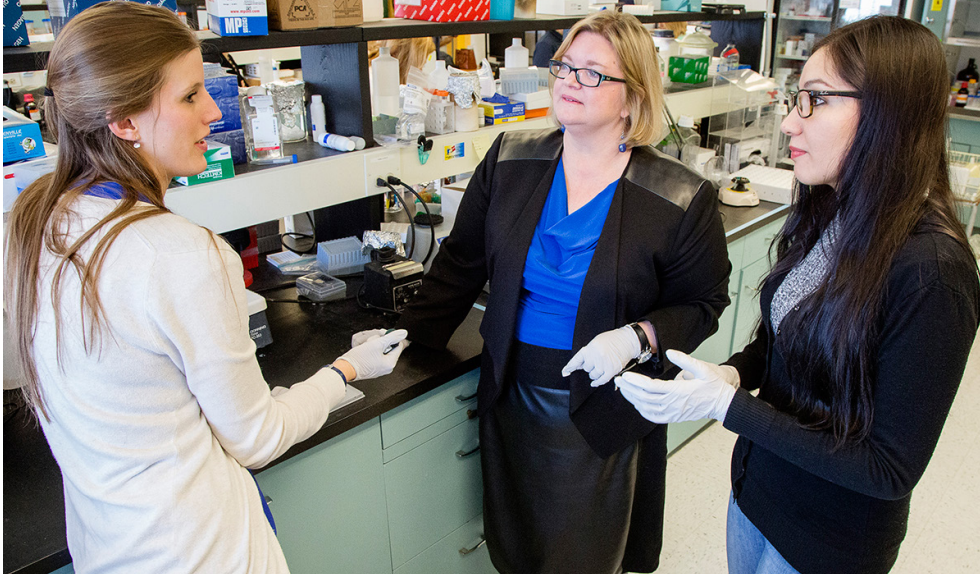


This month features an autofluorescence image of a human kidney stone collected from a patient using percutaneous nephrolithotomy (PCNL) at the Mayo Clinic in Rochester, Minnesota. Image provided by Jessica Saw, PhD Student in Illinois Molecular and Integrated Physiology, Fouke Lab, MD Graduate Student at Mayo Clinic; Bruce Fouke, Geology, Microbiology; and Mayandi Sivaguru, Associate Director of Core Facilities, IGB.

IGB News

Share your news with the IGB. Send ideas on stories, articles, and features to nvasi@illinois.edu.

FEATURE



Nutrition Scientist Sharon Donovan Elected to National Academy of Medicine

Sharon M. Donovan, a professor of nutrition and the Melissa M. Noel Endowed Chair in Nutrition and Health at the University of Illinois, was elected today, October 16, to the National Academy of Medicine.

Considered one of the highest honors in the fields of health and medicine, induction into NAM recognizes individuals who have demonstrated outstanding professional achievements and commitment to service.

Donovan is among 70 new members and 10 new international members announced by the academy. With the additions announced today, NAM has 1,812 active members and 151 international members.

"Being inducted into NAM is an incredible honor that very few people achieve," said Kim Kidwell, the dean of the College of Agricultural, Consumer and Environmental Sciences. "Sharon Donovan embodies the spirit of this honor through the incredible contributions she has made to advancing our understanding of digestive tract and brain development, childhood obesity and autism. Sharon's work helps people throughout the world to live better lives. I am thrilled that she has been acknowledged for her contribution in this way and am very proud that she is a member of the ACES family."

A registered dietitian, Donovan and her group conduct basic and translational research in pediatric nutrition, focusing on three areas: optimal intestinal development of neonates, prevention of childhood obesity and determinants of picky eating in 2- to 5-year-old children.

Donovan also is principal investigator with the Illinois Transdisciplinary Obesity Prevention Program; an affiliate with the IGB; and an adjunct professor of pediatrics at the U. of I. at Chicago College of Medicine.

Her work has garnered numerous honors, including awards from the International Life Sciences Institute

North America and the American Society for Nutrition. She is an active member of the American Society for Nutrition, serving as that organization's president from 2011 to 2012, and currently is present-elect of the International Society for Research on Human Milk and Lactation.

"Sharon Donovan embodies the spirit of this honor through the incredible contributions she has made to advancing our understanding of digestive tract and brain development, childhood obesity and autism."

Donovan earned a bachelor of science degree in nutrition science and a doctorate in nutrition from the University of California, Davis. After completing a postdoctoral fellowship in pediatric endocrinology at Stanford University School of Medicine, she joined the U. of I. faculty in 1991. She served as the director of the Division of Nutritional Sciences Graduate Program at Illinois from 1999-2009.

Established in 1970 as the Institute of Medicine, NAM is an independent organization of eminent professionals from diverse fields including health and medicine, and the natural, social and behavioral sciences. The academy works to address critical issues in health, medicine and related policy and to inspire positive action across sectors. ■

**Written by Sharita Forrest.
Photo by L. Brian Stauffer.**



NATIONAL ACADEMY OF MEDICINE

The National Academy of Medicine (NAM), established in 1970 under the name Institute of Medicine (IOM), is an independent organization of eminent professionals from diverse fields including health and medicine; the natural, social, and behavioral sciences; and beyond. It serves alongside the National Academy of Sciences and the National Academy of Engineering as adviser to the nation and the international community.

Through its domestic and global initiatives, the NAM works to address critical issues in health, medicine, and related policy and inspire positive action across sectors. The NAM collaborates closely with its peer academies and other divisions within the National Academies of Sciences, Engineering, and Medicine.



Expanding Brazilian Sugarcane Could Dent Global CO₂ Emissions

Vastly expanding sugarcane production in Brazil for conversion to ethanol could reduce current global carbon dioxide emissions by as much as 5.6 percent, researchers report in the journal *Nature Climate Change*.

This would be a massive undertaking, involving the conversion of hundreds of thousands of square miles — at its most ambitious, more than the combined land area of Texas and California — to sugarcane fields. But it can be accomplished without impinging on environmentally sensitive areas in Brazil and while allowing for the expansion of other agricultural crops and human needs, the researchers report.

The carbon-related costs of converting the land to sugarcane fields were included in the analysis.

The research relied on a new approach to modeling the precise behavior of sugarcane crops growing in regions that vary in soil composition, temperature, rainfall and numerous other parameters, said Stephen P. Long, a University of Illinois professor of crop sciences and plant biology who led the analysis with an international team that included scientists from the University of Sao Paulo in Brazil. Long is a faculty member of the IGB's Genomic Ecology of Global Change research theme.

"Most models used to predict future crop production are statistical models that really don't take full account of the way changes in water, carbon dioxide and temperature interact to affect sugarcane production," Long said. "We've used a mechanistic model here that grows the plant, so it's driven by the factors that the plant is responding to on an hourly basis."

The Brazilian government has mapped out ecologically sensitive lands that cannot be used for agricul-

ture, industry or other types of development, Long said.

"We've kept the proposed sugarcane production within the area that can be legally converted," he said.

Brazil already has accomplished a lot with its sugarcane-to-ethanol industry, said study co-author Amanda De Souza, a postdoctoral researcher at Illinois and the University of Sao Paulo.

"Unlike in the U.S., Brazil uses almost all of the sugarcane plant for energy, extracting the sugar to make ethanol but also burning the stem residue, known as bagasse, to power the mill, with the excess being used to generate and sell electricity," De Souza said. "The conversion of the cellulose component of the bagasse to ethanol is also likely to become cost-effective in Brazil.

"Sugarcane-based ethanol production in Brazil today is much more efficient than corn ethanol, and generates only 14 percent of the carbon dioxide emissions of petroleum," De Souza said. Most cars in Brazil are flex-fuel, which can run on ethanol, gasoline or a mixture of both. By 2012, Brazilian gas stations were selling a greater volume of ethanol than gasoline, she said.

"Brazil's sugarcane production is probably the most advanced in the world," Long said. And to reduce its carbon footprint even further, the government of Sao Paulo, the major ethanol-producing state in Brazil, recently outlawed the burning of sugarcane before harvest. A practice still common in the U.S. sugarcane industry, burning removes the leaves and reduces the bulk of material that must be hauled to the mill, but adds particulate pollution to the atmosphere and reduces soil organic matter, the researchers said.

"Our conclusion is that this industry could expand quite a bit and make a significant contribution to decarbonizing fuel," Long said.

The team looked at three scenarios that would increase the sugarcane footprint in Brazil between 37.5 million and 116 million hectares (144,788 to 447,879 square miles).

"The larger scenario is similar to land area devoted to corn and soy in the U.S.," Long said. "We have about 90 million hectares in corn and soy in the U.S. - most of that, of course, in the Midwest."

The Paris climate agreement of December 2015, signed by 196 nations, aims to limit average the global temperature to less than 2 degrees C (3.6 degrees Fahrenheit) above preindustrial levels, Long said.

"The only way we're going to get there is to have a massive reduction in net CO₂ emissions," he said. "No single solution will get us there. We'll need to implement a whole series of incremental steps. We're trying to point out that this could be a very important increment, and one that could be realized in a timely manner.

"This expansion does not have to stop at Brazil," he said. "Many acres that once grew sugarcane - from the Caribbean to Hawaii - lie idle today. Sugarcane-to-ethanol production would provide a use for this land again."

The Center for Advanced Bioenergy and Bioproducts Innovation at Illinois funded this research. ■

Written by Diana Yates. Photo by Paulo Viela.

MONTHLY PROFILE



Brent Roberts is a professor of psychology and chairs the Social and Behavioral Sciences Research Initiative at the University of Illinois at Urbana-Champaign. His research examines the stability and flexibility of a key aspect of personality, conscientiousness, across the human lifespan.

Brent Roberts: Using big data and genomics to help uncover the natural history of humans

In refining his approach to the study of the psychology of personality, Brent Roberts (GNBP) has benefited from comparing the study of human behavior with the approaches used to study the behaviors of other animals.

"I'm a developmental psychologist," Roberts said, "so I really like the developmental work that goes on at the IGB and in other biological fields, and it really struck me that I could do a lot of good if I did a better job on the developmental picture of humans."

Roberts' work stands at the intersection of several different disciplines. His research on the personality over the course of the human lifespan straddles schools of psychology that examine pathology and optimal function. His approach to understanding human behavior draws from both psychology and behavioral ecology.

"[One] thing that I only discovered by interacting with the biologists and the evolutionary biologists who are tied to the IGB was the need for something fundamental in humans that you typically have with any other species, which is the entire ecology of a species," Roberts said. "A fish doesn't live that long, and a bee doesn't live that long, and you have their entire life course multiple times in a year . . . despite the fact that psychology has been around for over a century, you can't say that we have this well-accepted and rich a depiction of the ecology of the human life, and the psychology that comes with it."

Roberts' pathway to interdisciplinary work began during his graduate work at University of California, Berkeley, where he matriculated after earning an undergraduate degree in Psychology from the University of California, San Diego. Berkeley's Department of Psychology was noteworthy for its recognition of the importance of investigating

not only psychopathologies, but the functions of healthy minds.

"At Berkeley we had a program where they studied optimal functioning, so highly creative people, high-functioning folks . . . they had an institute there that brought in really cool groups, so at one point they studied the teams that climbed Mount Everest for the first time, they pulled in the most famous architects in the country at the time" to get a picture of what makes those well-performing people successful, Roberts said.

In his post-graduate work, first in a faculty position at the University of Tulsa and subsequently at Illinois, Roberts has expanded his research on the development of personality to recognize the strengths and the overlap of both these areas, the positive and the pathological.

"I've kind of come full circle . . . because the field has come full circle. Clinicians and psychiatrists have done a lot of work in the last 20 years to try to figure out what kind of system they could use to assess psychopathology," Roberts said. "We all came up together, we are all doing research and comparing notes with one another, and realized at some point that we're really actually doing very much the same thing . . . I study conscientiousness, which is the opposite of disinhibition, which is the core of many of the forms of psychopathology that clinicians study."

Roberts' vision for the future of psychology is to combine these bridging concepts—a comprehensive approach to assessing personality, a quantitative approach to tracking environment and behavior—into a larger framework that aims to include physiological measures, including genomic and epigenomic data. He sees the nascent field of sociogenomics, an area of study that examines how social behavior is influenced by environmental and

heritable factors acting through the genome, as poised on the cusp of technological breakthroughs that will make these things possible.

"We've used some relatively artificial things to try to understand the phenotypes we're going after, so if you're a developmental researcher who's interested in childhood anxiety . . . your access to their experience is really limited," Roberts said. "[Researchers now aim to] develop a sensor t-shirt that they slap on a 10-year-old and get their heart rate, heart rate variability, skin conductance, and all the different things you can get from sensors, so that way you can see, a kid goes into a math class, does her heart rate go up? Does it stay flat? And how do they actually react in the situation at that time?"

With the genomic era in full swing, a remaining challenge is knowing what tissues might serve as the best proxies for brain tissue in human patients. For example, early findings suggest that for some traits, gene expression in blood cells can indicate or mirror molecular processes in the brain. For other traits, other peripheral tissues might be more closely aligned with neurophysiological activity. Roberts is excited to see where the work leads, and to be a part of shaping it.

"I think we have the potential here at the University of Illinois to be the experts, the go-to people for that type of work, because the engineers we have are so good, and the social scientists we have are great, and you can marry that to the IGB in ten years," Roberts said. "I'm trying to give people very simple structure and say look, here's how you might look at this from an evolutionary biology perspective, and that should affect how you think about your phenotypes in humans . . . the answer is there in sociogenomics." ■

Written by Claudia Lutz. Photo by L. Brian Stauffer.

ON THE GRID HAPPENINGS AT THE IGB

AWARDS



RASHID BASHIR

Rashid Bashir, Bioengineering Professor (RBTE) has been selected to receive the 2018 Robert A. Pritzker Distinguished Lecture Award, the Bio-medical Engineering Society's (BMES) premier recognition for outstanding achievements and leadership in the science and practice of biomedical engineering.



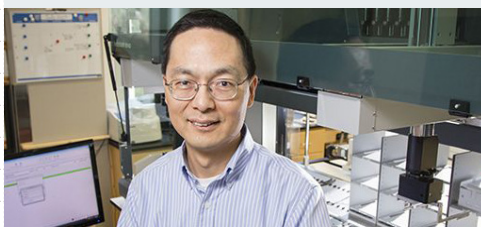
JONATHAN SWEEDLER

Jonathan Sweedler, James R. Eiszner Family Endowed Chair in Chemistry (MMG/BSD) was named to the 2017 "Magnificent Tens" Power List as one of the 10 Leaders influencing the progress of measurement science by The Analytical Scientist magazine.



MONICA UDDIN

Monica Uddin, Associate Professor of Psychology (CGRH) was named a Richard and Margaret Romano Professional Scholar for her outstanding achievements in research and campus leadership.



HUIMIN ZHAO

Huimin Zhao, Steven L. Miller Chair in Chemical and Biomolecular Engineering (BSD lead), has been selected as the 2018 Awardee for the Marvin Johnson Award by the Biochemical Technology Division of the American Chemical Society (ACS), which recognizes outstanding research contributions toward the advancement of microbial and biochemical technology.

CAMPAIGN



IGB FEATURED IN ILLINOIS CAMPAIGN LAUNCH EVENTS

Several IGB members were featured in the campus-wide campaign kick-off events this October. Near the Ferris wheel on the Quad was the TERRA-MEPP team, demonstrating their phenotyping robot with hyperspectral cameras that use the full spectrum of light to assess how well plants are photosynthesizing. Throughout the day, alumni and friends of the university toured the IGB, Core Facilities and iBioFAB. During a pre-event reception at the Traditions Club, IGB Art of Science images were seen on the overhead displays. IGB researchers took to the stage at the Fundraising Campaign Launch event at the State Farm Center including Associate Professor of Sociology Ruby Mendenhall (CGRH/GNDP); Professor of Veterinary Clinical Medicine Tim Fan (ACPP); and Professor of Chemistry Paul Hergenrother (ACPP Theme Leader). Two of ACPP's canine patients, Pretzel and Bretta, even made a guest appearance. You can see a video of the public kickoff celebration online: <http://with.illinois.edu/campaign-launch/>. The campaign launch celebration was designed to inspire the Illinois community to achieve its fundraising goal of \$2.25 billion. Thank you to IGB participants for helping to make this event a success.

GENOMICS FOR

GENOMICS FORtm POLICE

October 16, 8:30 am - 4:30pm
Carl R. Woese Institute for Genomic Biology
University of Illinois at Urbana Champaign
----- lunch provided -----

GENOMICS FOR POLICE

IGB recently hosted a genomics training course for 30 law enforcement officials to learn the latest scientific discoveries in genomics and their legal implications. Our thanks to the University of Illinois Police Training Institute for their collaboration with us to present this training, which was our first Genomics For program with law enforcement.

GENOME DAY



GENOME DAY GREAT SUCCESS

November 5th was the sixth annual Genome Day at the Orpheum Children's Science Museum in Champaign, and once again brought the local community together to engage with us on all things related to genome science with over 525 people in attendance during the four-hour event.

CELEBRATION



IGB HOLIDAY PARTY

Join us Thursday, December 7, from 2:00-3:30 pm, in Array café for the IGB holiday party, with cookies, sundae bar, hot drinks, and a holiday ugly sweater competition!

DEPARTMENT ANNOUNCEMENTS

BUSINESS OFFICE

HOLIDAY BREAK REDUCED SERVICE DAYS

As we approach the holiday season we are providing a reminder of the upcoming holiday schedule and the accompanying gift days.

Monday, December 25, 2017
Christmas Day Observed

Tuesday, December 26, 2017
Day after Christmas Holiday Observed – Designated Holiday

Wednesday, December 27, 2017
Gift Day

Thursday, December 28, 2017
Gift Day

Friday, December 29, 2017
Gift Day

Monday, January 1, 2018
New Year's Day Holiday Observed

Reduced Service Days:

As in the past, IGB will be closed starting December 25, 2017 through January 1, 2017 and most employees will not be working those three days.

Please note the three gift days must be used December 27th, 28th, and 29th; they cannot be "saved" to use at another point in time.

Questions regarding reduced service days, please contact Jacinda King at 244-2276 or jkking@illinois.edu. ■

OPERATIONS & FACILITIES

IGB HOLIDAY SCHEDULE AND BUILDING INFORMATION

- The IGB building will be closed. This includes administrative offices, purchasing, shipping and receiving, and Array Cafe.
- All exterior doors will be locked, and all card access doors require entry with a valid IGB prox card.
- Check your i-Card expiration date. Access will automatically be deactivated if your i-Card expires on or before December 31, 2017. You must renew your i-Card at the i-Card Center prior to December 20.
- Do not place orders for packages that may be scheduled for delivery December 25-January 1. No packages or mail will be received or sent during this time by IGB Shipping and Receiving. Please contact receiving@igb.illinois.edu for questions related to shipping, receiving, or mail. Questions related to purchasing should be directed to the IGB Business Office at purchasing@igb.illinois.edu.
- Take extra care when entering the IGB both via the exterior doors during off-hours and doors leading into secured spaces within the IGB at any time.
- Do not let unknown people into the IGB or secured spaces. Anyone needing access should be directed to Operations and Facilities for prox card or key access permissions.
- Be aware of people loitering around the doors and grabbing the door before it closes behind you to gain access.
- Absolutely NO doors should be propped open to compromise IGB security.
- Be observant of your surroundings and report any suspicious behavior immediately by calling 911 from a campus phone.
- Turn off all lights when you leave your area.
- If you notice any urgent building issues (water leaks, CT room temperature problems, etc.) please call the Public Safety Dispatch Office at 217-333-0340 for off-hours assistance. During holiday break, emails sent to facilities@igb.illinois.edu will not be immediately addressed.
- "No parking" and permit only parking areas are still enforced. IGB bagged meters on Mathews and IGB dock parking spaces are available by permit only. Ticketing/towing may occur at vehicle owner's expense if parked in non-assigned space without permit.
- Be aware of the potential for ice forming on streets, sidewalks, and parking lots across campus. Using customary winter caution is the most important means of protection against injury. Look at the walkway in front of you frequently or continuously when you suspect there could be slick spots. To report persistent areas of ice accumulation, please contact the Service Office at 217-333-0340.
- The University of Illinois Public Safety website has helpful information regarding personal safety, as well as other topics of interest. <http://www.dps.uiuc.edu/universitypolice/campusafety.html> ■

COMMUNICATIONS

ILLINOIS TRANSITIONS TO ONE LOGO

Beginning October 13th, 2017 the Illinois system will now use one logo for all branding, rather than using the "column I" and the "block I" as in the past. The column I will be retired and per the university guidelines "Using the block 'I' as the only logo consolidates and strengthens the university brand's impact. This return to a single graphic (logo) ensures that the entire campus can leverage the full benefit of our legacy and take advantage of the instant global recognition the block 'I' enjoys."

Existing physical materials with the column I can be used until the supply is depleted, any new items created must have the block I as the primary identity.

If you have any questions about proper usage of the logo, refer to <http://creativeservices.illinois.edu/brand/> or feel free to contact Nicholas Vasi at nvasi@illinois.edu. ■

RECENT PUBLICATIONS

Please include your connection to the IGB in your author byline when submitting publications, as it will greatly help track potential newsworthy items and increase the possibility of coverage.

Rando, H. M., Stutchman, J. T., Bastoune, E. R., Johnson, J. L., Driscoll, C. A., Barr, C. S., ... Kukekova, A. V. (2017). Y-Chromosome markers for the red fox. *Journal of Heredity*, 108(6), 678-685. DOI: 10.1093/jhered/esx066

Joshi, A. D., Botham, R. C., Schlein, L. J., Roth, H. S., Mangraviti, A., Borodovsky, A., ... Riggins, G. J. (2017). Synergistic and targeted therapy with a procaspase-3 activator and temozolomide extends survival in glioma rodent models and is feasible for the treatment of canine malignant glioma patients. *Oncotarget*, 8(46), 80124-80138. DOI: 10.18632/oncotarget.19085

Fung, T., O'Dwyer, J. P., & Chisholm, R. A. (2017). Quantifying species extinction risk under temporal environmental variance. *Ecological Complexity*. DOI: 10.1016/j.ecocom.2017.09.006

Palmer, A. D., & Slauch, J. M. (2017). Mechanisms of Salmonella pathogenesis in animal models. *Human and Ecological Risk Assessment*, 23(8), 1877-1892. DOI: 10.1080/10807039.2017.1353903

D'Andrea, R., & O'Dwyer, J. P. (2017). Can editors save peer review from peer reviewers? *PLoS ONE*, 12(10), [e0186111]. DOI: 10.1371/journal.pone.0186111

Wai, C. M., Zhang, J., Jones, T. C., Nagai, C., & Ming, R. (2017). Cell wall metabolism and hexose allocation contribute to biomass accumulation in high yielding extreme segregants of a *Saccharum* interspecific F2 population. *BMC Genomics*, 18(1), [773]. DOI: 10.1186/s12864-017-4158-8

Xu, Y., Briley, D. A., Brown, J. R., & Roberts, B. W. (2017). Genetic and environmental influences on household financial distress. *Journal of Economic Behavior and Organization*, 142, 404-424. DOI: 10.1016/j.jebo.2017.08.001

Samee, M. A. H., Lydiard-Martin, T., Biette, K. M., Vincent, B. J., Bragdon, M. D., Eckenrode, K. B., ... DePace, A. H. (2017). Quantitative Measurement and Thermodynamic Modeling of Fused Enhancers Support a Two-Tiered Mechanism for Interpreting Regulatory DNA. *Cell Reports*, 21(1), 236-245. DOI: 10.1016/j.celrep.2017.09.033

Baek, A. E., Yu, Y. R. A., He, S., Wardell, S. E., Chang, C. Y., Kwon, S., ... Nelson, E. R. (2017). The cholesterol metabolite 27 hydroxycholesterol facilitates breast cancer metastasis through its actions on immune cells. *Nature Communications*, 8(1), [864]. DOI: 10.1038/s41467-017-00910-z

Shang, J., Jiang, M., Tong, W., Xiao, J., Peng, J., & Han, J. (2017). DP-Pred: An Effective Prediction Framework with Concise Discriminative Patterns. *IEEE Transactions on Knowledge and Data Engineering*. DOI: 10.1109/TKDE.2017.2757476

Seo, S. O., Janssen, H., Magis, A., Wang, Y., Lu, T., Price, N. D., ... Blaschek, H. P. (2017). Genomic, Transcriptional, and Phenotypic Analysis of the Glucose Derepressed *Clostridium beijerinckii* Mutant Exhibiting Acid Crash Phenotype. *Biotechnology Journal*. DOI: 10.1002/biot.201700182

Vachaspati, P., & Warnow, T. (2017). Enhancing searches for optimal trees using SIESTA. In *Comparative Genomics - 15th International Workshop, RECOMB CG 2017, Proceedings* (Vol. 10562 LNBI, pp. 232-255). (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); Vol. 10562 LNBI). Springer Verlag. DOI: 10.1007/978-3-319-67979-2_13

Rossman, T., Uthamaraj, S., Rezaei, A., McEligot, S., Giambini, H., Jasiuk, I., ... Dragomir-Daescu, D. (2017). A method to estimate cadaveric femur cortical strains during fracture testing using digital image correlation. *Journal of Visualized Experiments*, 2017(127), [e54942]. DOI: 10.3791/54942

Weckle, A., McGowen, M. R., Xing, J., Chen, C., Sterner, K. N., Hou, Z. C., ... Wildman, D. E. (2017). Ancestral resurrection of anthropoid estrogen receptor β demonstrates functional consequences of positive selection. *Molecular Phylogenetics and Evolution*. DOI: 10.1016/j.ympev.2017.09.007

Hedhli, J., Konopka, C. J., Schuh, S., Bouvin, H., Cole, J. A., Huntsman, H. D., ... Dobrucki, L. W. (2017). Multimodal assessment of mesenchymal stem cell therapy for diabetic vascular complications. *Theranostics*, 7(16), 3876-3888. DOI: 10.7150/thno.19547

Studer, A. J., Wang, H., & Doebley, J. F. (2017). Selection during maize domestication targeted a gene network controlling plant and inflorescence architecture. *Genetics*, 207(2), 755-765. DOI: 10.1534/genetics.117.300071

Hite, J. L., Penczykowski, R. M., Shocket, M. S., Griebel, K. A., Strauss, A. T., Duffy, M. A., ... Hall, S. R. (2017). Allocation, not male resistance, increases male frequency during epidemics: A case study in facultatively sexual hosts. *Ecology*. DOI: 10.1002/ecy.1976

Dekker, J., Belmont, A. S., Guttman, M., Leshyk, V. O., Lis, J. T., Lomvardas, S., ... 4D Nucleome Network (2017). The 4D nucleome project. *Nature*, 549(7671), 219-226. DOI: 10.1038/nature23884

Sweedler, J. V. (2017). The Analytical Chemistry Award Winners. *Analytical Chemistry*, 89(19). DOI: 10.1021/acs.analchem.7b03730

Wang, X., Wang, J., & Zhai, C. (2017). Dual-clustering maximum entropy with application to classification and word embedding. In *31st AAAI Conference on Artificial Intelligence, AAAI 2017* (pp. 3323-3329). AAAI press.

Amos, J. R., Bashir, R., Cross, K. J., Herman, G. L., Loewenstein, J., Pool, M., & Silverman, D. (2017). Defining the frontiers of bioengineering education at Illinois and beyond. *ASEE Annual Conference and Exposition, Conference Proceedings*, 2017-June.

Zhou, Q., Ren, X., Bischoff, D., Weisgerber, D. W., Yamaguchi, D. T., Miller, T. A., ... Lee, J. C. (2017). Nonmineralized and Mineralized Collagen Scaffolds Induce Differential Osteogenic Signaling Pathways in Human Mesenchymal Stem Cells. *Advanced Healthcare Materials*. DOI: 10.1002/adhm.201700641 ■

ILLINOIS

IGB News is published by the IGB Communications Office.
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www.igb.illinois.edu 17.147