

IGB NEWS

Upcoming Events
Monthly Profiles
Happenings at IGB

Image Of The Month
Research News
Department Announcements

Volume 13 Number 1

UPCOMING EVENTS

IGB Science of Team Science Seminar
Practicing Interdisciplinary Teamwork
February 18, 2020, 12:00 p.m.
612 Carl R. Woese Institute for Genomic Biology

Jonathan Kramer, PhD
Director for Interdisciplinary Science
National Socio-Environmental Synthesis Center (SESYNC), University of Maryland

Lunch with the Core
Applications of High-Throughput Cell Microenvironment Engineering
February 19, 2020, 12:00 p.m.
612 Carl R. Woese Institute for Genomic Biology

Professor Greg Underhill
Department of Bioengineering

IGB Pioneers Seminar
Mechanisms of Brain Tumor Evolution
February 25, 2020, 12:00 p.m.
612 Carl R. Woese Institute for Genomic Biology

Joseph Costello, PhD
University of California, San Francisco
Professor, School of Medicine

Fox Family Innovation and Entrepreneurship Lecture
Funding Innovation: A Non-Dilutive Approach
March 10, 2020, 12:00 p.m.
612 Carl R. Woese Institute for Genomic Biology

Eva Garland, PhD
CEO at Eva Garland Consulting, LLC

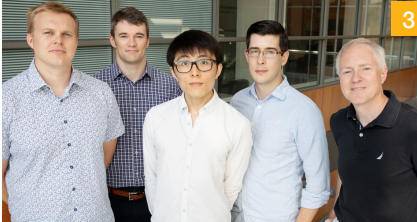
Rubisco Oxygenase: 50 Years of Progress and Looking into the Future
March 27-29, 2020, 12:00 p.m.
612 Carl R. Woese Institute for Genomic Biology

Join us for a symposium celebrating the 50th anniversary and highlighting the centrality of Bill Ogren's discovery of Rubisco oxygenase activity. Register for free at <https://rubiscosymposium.igb.illinois.edu/>.


FEATURED NEWS



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BRIDGE-ing the gap between diagnostics and diabetes



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Single-molecule detection of cancer markers



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On the Grid: Happenings at IGB

IMAGE OF THE MONTH



This month features an image of a cross section of a corn cob (behind) and a group of spikelets bearing anthers, the location where the corn pollen is produced. It was imaged on the Zeiss Axioscan V16 with the 506 color camera. This image comes courtesy of the Nyla-Cattail Group from the 2019 Pollen Power Camp.

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



BRIDGE-ing the gap between diagnostics and gestational diabetes

As a result of intersecting research interests in women's health, a new collaboration was forged between Zeynep Madak-Erdogan (GSP/ONC-PM), Assistant Professor in Food Science and Human Nutrition, and Justina Zurauskiene (ONC-PM), Birmingham-Illinois Partnership for Discovery, Engagement and Education (BRIDGE) fellow and fellow at the Institute of Cancer and Genomic Sciences in Birmingham, England. Founded in 2014, the BRIDGE program is an ongoing partnership between the University of Birmingham and the University of Illinois at Urbana-Champaign. The goal of the program is to provide a platform for exchange of creative knowledge through research and academic excellence, with the goal of addressing major global challenges.

Zurauskiene will be working with Madak-Erdogan for one year, where she plans to harness her computational biology expertise for generating and analyzing diverse datasets. Emphasis will be placed on health disparities in pregnant women and environmental factors that impact birth.

"We are focusing on gestational diabetes, a type of diabetes that appear in pregnant women who didn't have the condition before," said Madak-Erdogan.

"This disease is multifaceted. Once pregnant women develop the disease, the ball starts rolling and these women are at greater risk of developing Type II diabetes and so require more frequent monitoring of their health. They are also at risk of developing cardiovascular diseases later in life - so lot of long-term risks," explained Zurauskiene.

The researchers pointed out that the baseline for levels of the detected predictors of the disease might be variable across different races. Given that the majority of the tests are developed in Caucasian populations, the diagnostic tests represent one of the gaps or health disparities associated with this condition.

"We are partnering with a local public health department in Champaign-Urbana and they have a clinic within the department called Women Infants Children (WIC) Clinic. Their clientele are women who

Justina Zurauskiene, left, is a BRIDGE Fellow collaborating with Assistant Professor in Food Science and Human Nutrition Zeynep Madak-Erdogan. Zurauskiene is also a fellow at the Institute of Cancer and Genomic Sciences in Birmingham, England.

come from less advantaged backgrounds or don't have such a good medical care plan," said Zurauskiene. "We will be recruiting those women and hope to target a diverse population."

"Based on our findings, we will move forward towards finding better, universal markers for the disease that can be informative independent of race or ethnicity," said Madak-Erdogan.

Once patient recruitment is finalized and samples collected, the researchers will use metabolomics to separate chemicals in the blood and identify them using gas chromatography-mass spectrometry (GC-MS) since diabetes is a metabolism-associated disease.

"In the long run, we would love to look into any changes in DNA that might be associated with the condition and any changes that come from the message of DNA or mRNA for example that might have differences," said Madak-Erdogan. "In an ideal

world, we would have the biomarkers or indicators for the disease in a couple of years. The idea is to develop biosensors (in partnership with Illinois engineers) that can be used by anyone who is in the public health department or works in the field so that we have a cheap way of identifying this risk early on."

"We would like to measure how sugars are changing in these pregnant women. We are developing some pipelines on how to process the data and how to do quality control, how to clean it and fill in missing values, and extract some patterns from the data," explained Zurauskiene.

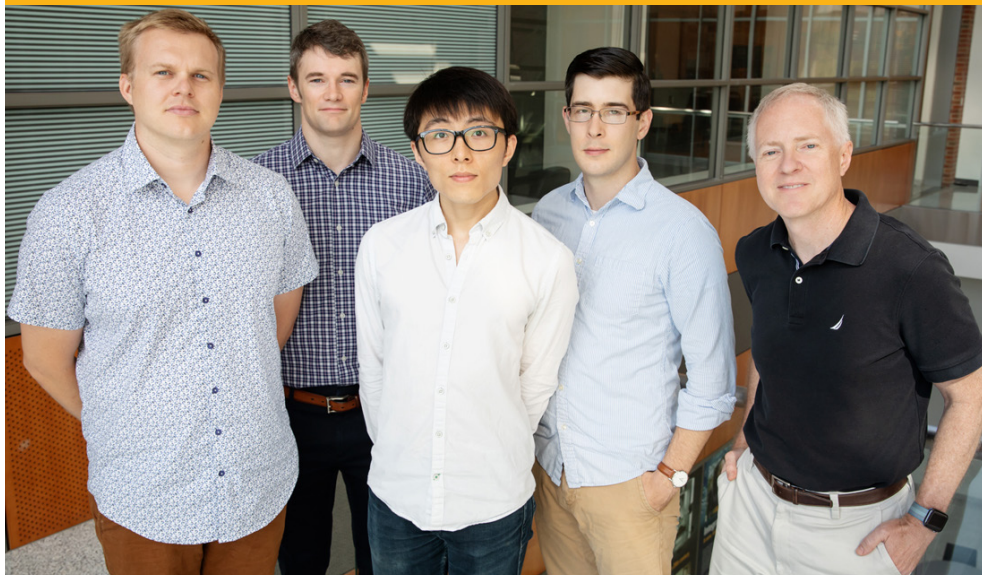
Given that sugars taken in during pregnancy are redirected to the developing baby, perspective mothers are less efficient at using glucose. Due to exposure to higher levels of glucose in the uterus, the baby is also at higher risk of developing obesity, Type II diabetes, and cardiovascular disease. More than ever, robust diagnostic tests are crucial to take necessary precautions early in development.

"The impact will be great given that obesity is rising and we are now learning more and more that exposures in the uterus are actually changing the outcomes for the baby," said Madak-Erdogan. "We are trying to catch these things as early as possible so that the future generations are healthier and you know, they are born with a biology that is less prone to these problems later in life."

This research is supported by Agricultural, Consumer and Environmental Sciences-Division of Nutritional Sciences Vision 20/20, United States Department of Agriculture-National Institute of Food and Agriculture, and the BRIDGE Fellowship. ■

Written by Alisa King. Photo by Jillian Nickell.

RESEARCH



Single-molecule detection of cancer markers brings liquid biopsy closer to clinic

A fast, inexpensive yet sensitive technique to detect cancer markers is bringing researchers closer to a “liquid biopsy” – a test using a small sample of blood or serum to detect cancer, rather than the invasive tissue sampling routinely used for diagnosis.

Researchers at the University of Illinois developed a method to capture and count cancer-associated microRNAs, or tiny bits of messenger molecules that are exuded from cells and can be detected in blood or serum, with single-molecule resolution. The team published its results in the *Proceedings of the National Academy of Science*.

“Cancer cells contain gene mutations that enable them to proliferate out of control and to evade the immune system, and some of those mutations turn up in microRNAs,” said study leader Brian Cunningham (ONC-PM leader/MMG), an Illinois professor of electrical and computer engineering. Cunningham also directs the Holonyak Micro and Nanotechnology Lab at Illinois.

“There are specific microRNA molecules whose presence and concentration is known to be related to the presence and aggressiveness of specific types of cancer, so they are known as biomarkers that can be the target molecule for a diagnostic test,” he said.

Cunningham’s group developed a technique named Photonic Resonator Absorption Microscopy to capture and count microRNA biomarkers. In collaboration with professor Manish Kohli at the Moffitt Cancer Center in Florida, they tested PRAM on two microRNAs that are known markers for prostate cancer.

They found it was sensitive enough to detect small amounts that would be present in a patient’s serum, yet also selective enough to detect the marker among a cocktail of molecules that also would be present in serum.

“One of the main challenges of biosensing is to maintain sensitivity and selectivity at the same time,” said Nantao

Li, a graduate student and co-first author. “You want it to be sensitive enough to detect very small amounts, but you don’t want it to pick up every RNA in the blood. You want this specific sequence to be your target.”

PRAM achieves both qualities by combining a molecular probe and a photonic crystal sensor. The probe very specif-

Above: Illinois researchers developed a method to detect cancer markers called microRNA with single-molecule resolution, a technique that could be used for liquid biopsies. From left: postdoctoral researcher Taylor Canady, professor Andrew Smith, graduate student Nantao Li, postdoctoral researcher Lucas Smith and professor Brian Cunningham.

ically pairs to a designated microRNA and has a protective cap that comes off when it finds and binds to the target biomarker. The exposed end of the probe can then bind to the sensor, producing a signal visible through a microscope.

Each individual probe that binds sends a separate signal that the researchers can count. This means researchers are able to detect much smaller amounts than traditional methods like fluorescence, which need to exceed a certain

threshold to emit a measurable signal. Being able to count each biomarker also carries the added benefit of allowing researchers to monitor changes in the concentration of the biomarker over time.

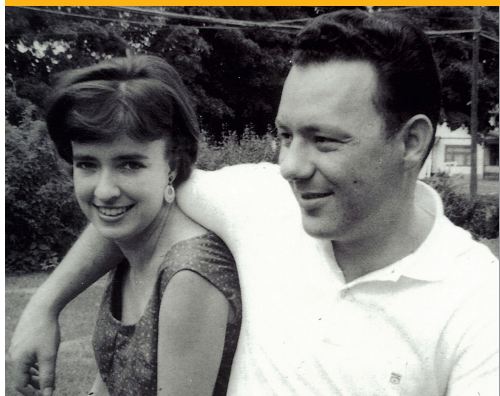
“With PRAM, we squirt a sample into a solution and get a readout within two hours,” said IGB Fellow Taylor Canady, a co-first author of the study. “Other technologies that produce single-molecule readouts require extra processing and additional steps, and they require a day or more of waiting. PRAM seems like something that could be much more feasible clinically. In addition, by using an optical signal instead of fluorescence, we could one day build a miniaturized device that doesn’t need a trained laboratory technician.”

The PRAM approach could be adapted to different microRNAs or other biomarkers, the researchers say, and is compatible with existing microscope platforms.

“This approach makes the idea of performing a ‘liquid biopsy’ for low-concentration cancer-related molecules a step closer to reality,” Cunningham said. “This advance demonstrates that it is possible to have an inexpensive and routine method that is sensitive enough to require only a droplet of blood. The results of the test might tell a physician whether a regimen of chemotherapy is working, whether a person’s cancer is developing a new mutation that would make it resistant to a drug, or whether a person who had been previously treated for cancer might be having a remission.”

The IGB and the National Institutes of Health supported this work. Illinois chemistry professor Yi Lu (BSD/CAB-BI/ONC-PM) and bioengineering professor Andrew Smith (ONC-PM) were coauthors of the work. ■

*Written by Liz Ahlberg Touchstone.
Photo by L. Brian Stauffer.*



*Dr. Martha Oehmke Loustaunau
and her late husband
Joaquin O. Loustaunau.*

Honoring their walk of life through fellowships in genomic biology

For Martha Loustaunau, the University of Illinois will always be known as a stop on her walk of life where she met late husband Joaquin Loustaunau, with whom she later shared an interest in genomic biology.

Beginning in the spring, the Drs. Martha Oehmke Loustaunau and Joaquin O. Loustaunau Graduate Travel Fellowship for Computational Genomics will provide professional development support to graduate students in the areas of computational genomics, systems biology, genome technology, and metabolic engineering.

“I found an opportunity for research in genetics in the Carl R. Woese Institute of Genomic Biology,” said Loustaunau. “This fellowship seemed to be the answer to a legacy that would be a real contribution to the future. For both of us.”

Growing up in the small rural town of Monticello, Illinois, Loustaunau began her studies at the University of Illinois, receiving her BA in Latin American Studies and later a MS in Journalism. Loustaunau had attended summer school in Guadalajara, Mexico the previous summer and was therefore interested in connecting with Latin American students at the U of I. It was there that she met Joaquin, who was pursuing a PhD in mathematics.

After they both graduated and got married, they moved to New Mexico State University (NMSU), where Joaquin held a teaching position in the mathematics department. Loustaunau obtained her PhD in Ibero-American studies and Sociology at the University of New Mexico in Albuquerque, where Joaquin conducted research during his sabbatical, joining the sociology department at NMSU soon after.

Later on, the Loustaunau’s interests in genomic biology stemmed from a passion for horses.

“I had an interest in horses, having had six of my own, and participated in numerous shows and rodeos,” said Loustaunau. “Joaquin also became interested and with his background in applied mathematics, we focused on horse racing. As a result, we spent time at the races at Sunland Park near El Paso, Texas.”

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For both of us.”*

After retirement, Joaquin expanded his interest in horse racing by studying equine genetics, with emphasis on breeding for optimal speed and stamina.

“His interest in genetics grew and expanded to animal and human genetics, and he told me that if he had it all do over again, he would become a geneticist,” said Loustaunau.

After Joaquin’s passing in 2002, Loustaunau started an academic graduate scholarship in Joaquin’s name at NMSU geared towards underrepresented minority students from the departments of mathematics, biology, and sociology, with a focus on genetics. Throughout the years, winners spanning all three departments were provided with a monetary gift for books, tuition, or other academic needs. Thereafter,

Loustaunau established a similar scholarship at the U of I.

“I chose graduate students because they are the most underfunded and are more committed to pursuing their academic interests,” said Loustaunau. “I look for students with talent and strong interests in contributing to building a better world.”

Alongside other pavers that comprise the IGB Walk of Life, one can find the words “In gratitude that our walk of life brought us together, Drs. Joaquin and Martha Loustaunau” inscribed on her paver. This paver represented the Loustaunau’s lasting connection to the U of I, both sharing a strong desire to contribute what they could for the benefit of others and ultimately, to making the world a better place.

“I felt I had to say a lot in very few words,” said Loustaunau. “The word “Gratitude” expresses the way I feel for my life. For whatever reasons, my own “walk of life” took me to the University of Illinois where I met my husband, to Mexico where I became fluent in Spanish, and New Mexico where we both had our teaching careers. And so, it all came together and for that, I am immensely and eternally grateful.”

Students interested in the Drs. Martha Oehmke Loustaunau and Joaquin O. Loustaunau Graduate Travel Fellowship for Computational Genomics can apply [here](#). ■

Written by Alisa King.

Photo courtesy of Martha Oehmke Loustaunau.

ON THE GRID HAPPENINGS AT THE IGB

AWARDS



MATTHEW HUDSON

Matthew Hudson, Professor of Crop Sciences (CABBI/CGRH/GNDP) received the Runge Faculty Distinguished Achievement Award, of the College of Agricultural, Consumer and Environmental Sciences (ACES) Paul A. Funk Recognition Awards.



STEPHEN LONG

Stephen Long, Professor of Crop Sciences and Plant Biology (BSD/CABBI/GEGC) was invested as the Stanley O. Ikenberry Chair Professor of Plant Biology and Crop Sciences.



ROBIN FRETWELL WILSON

Robin Fretwell Wilson, Professor and Associate Dean, College of Law (GSP) has been appointed Director of the Institute of Government and Public Affairs (IGPA).

NEW ARRIVALS



CSABA VARGA

Professor Csaba Varga has joined the IGB as an affiliate member in the Infection Genomics for One Health (IGOH) Research Theme. Dr. Varga is an Assistant Professor in the Department of Pathobiology in the College of Veterinary Medicine. He received his PhD in population medicine and epidemiology from the Ontario Veterinary College at the University of Guelph. His research program evaluates infectious diseases at the interface of humans, animals, and the environment by assessing geographic differences in disease rates and investigating their environmental, genetic, socioeconomic, and demographic risk factors.



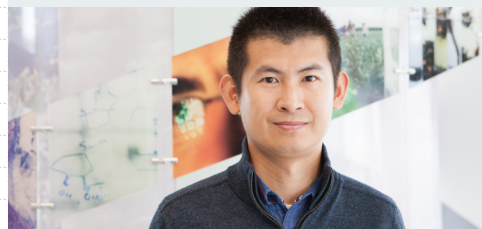
ALISA KING

Alisa King matriculated to Illinois after completing her bachelor's degree in microbiology at the University of Wisconsin-Madison in 2012. Working in the laboratory of Dr. Cari Vanderpool, she focused her thesis research on the improvement of small RNA (sRNA) target prediction and validation in *Escherichia coli*. Her approach combined both computational and experimental methods, and resulted in a computational pipeline called the sRNA-target Prediction Organizing Tool (SPOT). She used the pipeline to identify novel mRNA targets of well-characterized sRNAs. She graduated with a PhD in microbiology in 2019 and became an IGB Science Writing Fellow in 2019.



DIANA RANOA

Diana received her M.Sc. in Molecular Biology and Biotechnology from the University of the Philippines-Diliman. In 2006, she moved to the United States to pursue her PhD in Microbiology at the University of Illinois at Urbana-Champaign under the direction of Dr. Richard I. Tapping (Dept. of Microbiology). Her graduate studies focused on understanding the mechanisms of microbial sensing and the dynamics of interaction among members of the Toll-like receptor 2 subfamily of innate immune receptors. Diana joined Dr. Paul Hergenrother's lab as an ACPP Cancer Center Illinois/IGB Fellow in November 2019.



BIN ZHAO

Bin Zhao obtained his BS degree from Shandong University in 2008 and PhD degree from the University of Chinese Academy of Sciences under the direction of Professor Chunhai Fan in 2014. His PhD research focused on developing novel DNA-based functional nanostructures and their applications in biosensing, bioimaging and nanomedicine. He has conducted postdoctoral research for electrochemical DNA biosensors, surface-enhanced Raman spectroscopy (SERS)-based analytical techniques, and DNA/RNA-based sensors for biosensing and cellular imaging in Germany and the United States (2014-2019). In November 2019, he became an IGB fellow in the Omics Nanotechnology for Cancer Precision Medicine (ONC-PM) research theme under the supervision of Professor Brian Cunningham.

ON THE GRID HAPPENINGS AT THE IGB

SYMPOSIUM



RUBISCO OXYGENASE: 50 YEARS OF PROGRESS AND LOOKING INTO THE FUTURE

Celebrating the 50th anniversary of Bill Ogren's discovery of rubisco oxygenase, join us for our symposium "Rubisco Oxygenase: 50 Years of Progress and Looking Into the Future." Featuring a public lecture and a series of plenary talks from March 27 to 29, 2020, we'll hear from seventeen speakers representing leadership in research on environmental dynamics from the microbial to the global that Ogren's discovery has fundamentally impacted. The public lecture will take place at the I Hotel and Conference Center, with the remaining talks in the IGB building. Registration is free and meals are provided. To register and view the full agenda please visit rubiscosymposium.igb.illinois.edu.

EDITORIAL



NATURE GENETICS

A recent editorial from the journal *Nature Genetics* highlighted the first-ever international conference on Indigenous genomics, held in Aotearoa, New Zealand and organized by the Summer internship for INdigenous peoples in Genomics (SING). Professor of Anthropology Ripan Malhi (CGRH/GNDP/GSP/IGOH/RBTE) serves as SING Director. In addition to supporting the mission of SING, the authors further stated "The onus now is on the greater genetics community to learn from Indigenous colleagues ... We have not fully described here the ideas, perceptions and concerns shared by members of the Indigenous community; we prefer to let them speak for themselves, and we hope to see many of their contributions in these pages in the future." Read the editorial [here](#).

ART OF SCIENCE



ART OF SCIENCE NATIONAL INSTITUTES OF HEALTH EXHIBIT

The IGB's Art of Science program recently installed an exhibit at the National Institutes of Health Library Hall in Bethesda, Maryland. Featuring a broad range of images from IGB members engaged in NIH-funded research, over twenty images line the hallway.

DEPARTMENT ANNOUNCEMENTS

PURCHASING

OBFS POLICY UPDATE: PREMIUM TRANSPORTATION AS PART OF AN APPROVED ACCOMMODATION

The Office of the Vice President and Comptroller announces adjustments to policies and procedures regarding the purchase of premium transportation as part of an approved accommodation. Beginning March 1, 2020, persons seeking to purchase premium transportation as part of an approved accommodation must obtain written authorization from the appropriate university equal employment opportunity (EEO) office prior to making a purchase. This approval must be submitted with all related expense reports. Units should no longer attach medical or other health-related records to expense reports.

Click [here](#) for complete information. ■

OBFS POLICY UPDATE: RELOCATION ASSISTANCE PAYMENTS

The Office of the Vice President and Comptroller announces improvements to relocation assistance options offered to eligible newly hired or transferred employees. The new policies and procedures will be effective for relocation assistance documented in signed offer letters dated January 1, 2020 or later.

Click [here](#) for complete information. ■

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.

Qin, G., Liu, C., Li, J., Qi, Y., Gao, Z., Zhang, X., ... Xu, Y. (2020). Diversity of metabolite accumulation patterns in inner and outer seed coats of pomegranate: exploring their relationship with genetic mechanisms of seed coat development. *Horticulture Research*, 7(1), [10]. <https://doi.org/10.1038/s41438-019-0233-4>

Liu, F., Mao, J., Kong, W., Hua, Q., Feng, Y., Bashir, R., & Lu, T. (2020). Interaction variability shapes succession of synthetic microbial ecosystems. *Nature communications*, 11(1), [309]. <https://doi.org/10.1038/s41467-019-13986-6>

Garber, J. M., Nothaft, H., Pluvinae, B., Stahl, M., Bian, X., Porfirio, S., ... Szymanski, C. M. (2020). The gastrointestinal pathogen *Campylobacter jejuni* metabolizes sugars with potential help from commensal *Bacteroides vulgatus*. *Communications Biology*, 3(1), [2]. <https://doi.org/10.1038/s42003-019-0727-5>

Chen, L. Y., Xin, Y., Wai, C. M., Liu, J., & Ming, R. (2020). The role of cis-elements in the evolution of crassulacean acid metabolism photosynthesis. *Horticulture Research*, 7(1), [5]. <https://doi.org/10.1038/s41438-019-0229-0>

Allan, E. R. O., Dores, C. B., Nelson, E. R., & Habibi, H. R. (2020). Acute exposure to physiological doses of triiodothyronine does not induce gonadal caspase 3 activity in goldfish *in vitro*. *General and Comparative Endocrinology*, 289, [113382]. <https://doi.org/10.1016/j.ygcen.2019.113382>

Bauza, V., Madadi, V., Ocharo, R., Nguyen, T. H., & Guest, J. S. (2020). Enteric pathogens from water, hands, surface, soil, drainage ditch, and stream exposure points in a low-income neighborhood of Nairobi, Kenya. *Science of the Total Environment*, 709, [135344]. <https://doi.org/10.1016/j.scitotenv.2019.135344>

Goli, E., Parikh, N. A., Yourdkhani, M., Hibbard, N. G., Moore, J. S., Sottos, N. R., & Geubelle, P. H. (2020). Frontal polymerization of unidirectional carbon-fiber-reinforced composites. *Composites Part A: Applied Science and Manufacturing*, 130, [105689]. <https://doi.org/10.1016/j.compositesa.2019.105689>

Bhatia, S. K., Jagtap, S. S., Bedekar, A. A., Bhatia, R. K., Patel, A. K., Pant, D., ... Yang, Y. H. (2020). Recent developments in pretreatment technologies on lignocellulosic biomass: Effect of key parameters, technological improvements, and challenges. *Bioresource Technology*, 300, [122724]. <https://doi.org/10.1016/j.biortech.2019.122724>

Zhang, J. J., Lan, T., & Lu, Y. (2020). Translating *in vitro* diagnostics from centralized laboratories to point-of-care locations using commercially-available handheld meters. *TrAC - Trends in Analytical Chemistry*, 124, [115782]. <https://doi.org/10.1016/j.trac.2019.115782>

Schachtschneider, K. M., Welge, M. E., Auvil, L., Chaki, S., Rund, L. A., Madsen, O., ... Schook, L. B. (2020). Altered Hippocampal Epigenetic Regulation Underlying Reduced Cognitive Development in Response to Early Life Environmental Insults. *Genes*, 11(2), [162]. <https://doi.org/10.3390/genes11020162>

Holmes, C. J., & Cáceres, C. E. (2020). Predation differentially structures immature mosquito populations in stormwater ponds. *Ecological Entomology*, 45(1), 97-108. <https://doi.org/10.1111/een.12783>

Manna, T. J., Hanley, D., Honza, M., Capek, M., Rutila, J., Samaš, P., ... Hauber, M. E. (2020). Fitting different visual models to behavioral patterns of parasitic egg rejection along a natural egg color gradient in a cavity-nesting host species. *Vision Research*, 167, 54-59. <https://doi.org/10.1016/j.visres.2019.12.007>

Ren, H., Shi, C., & Zhao, H. (2020). Computational Tools for Discovering and Engineering Natural Product Biosynthetic Pathways. *iScience*, 23(1), [100795]. <https://doi.org/10.1016/j.isci.2019.100795>

Renteria, C., Suárez, J., Licudine, A., & Boppart, S. A. (2020). Depixelation and enhancement of fiber bundle images by bundle rotation. *Applied Optics*, 59(2), 536-544. <https://doi.org/10.1364/AO.59.000536>

Blair, D. J., & Burke, M. D. (2020). A Computer Conquers Tactical Combinations. *Chem*, 6(1), 12-13. <https://doi.org/10.1016/j.chempr.2019.12.019>

He Li, J. X., Tang, V. W., & Brieher, W. M. (2020). Actin protrusions push at apical junctions to maintain E-cadherin adhesion. *Proceedings of the National Academy of Sciences of the United States of America*, 117(1), 432-438. <https://doi.org/10.1073/pnas.1908654117>

Berenbaum, M. R. (2020). On a subject no one wants to read about (about which no one wants to read?). *Proceedings of the National Academy of Sciences of the United States of America*, 117(1), 4-6. <https://doi.org/10.1073/pnas.1920932117>

Yeo, W. L., Heng, E., Tan, L. L., Lim, Y. W., Ching, K. C., Tsai, D. J., ... Wong, F. T. (2020). Biosynthetic engineering of the antifungal, anti-MRSA auroramycin. *Microbial cell factories*, 19(1), [3]. <https://doi.org/10.1186/s12934-019-1274-y>

Zhang, X., Fatima, M., Zhou, P., Ma, Q., & Ming, R. (2020). Analysis of MADS-box genes revealed modified flowering gene network and diurnal expression in pineapple. *BMC genomics*, 21(1), [8]. <https://doi.org/10.1186/s12864-019-6421-7>

Wolff, C. A., Reid, J. J., Musci, R. V., Linden, M. A., Konopka, A. R., Peelor, F. F., ... Hamilton, K. L. (2020). Differential Effects of Rapamycin and Metformin in Combination With Rapamycin on Mechanisms of Proteostasis in Cultured Skeletal Myotubes. *The journals of gerontology. Series A, Biological sciences and medical sciences*, 75(1), 32-39. <https://doi.org/10.1093/gerona/glz058>

Xiong, Y., Zhang, J., Yang, Z., Mou, Q., Ma, Y., Xiong, Y., & Lu, Y. (Accepted/In press). Functional DNA Regulated CRISPR-Cas12a Sensors for Point-of-Care Diagnostics of Non-Nucleic-Acid Targets. *Journal of the American Chemical Society*. <https://doi.org/10.1021/jacs.9b09211> ■

I ILLINOIS

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