IGB NEWS

Upcoming Events

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Happenings at IGB

Image Of The Month

Research News

Department Announcements

Volume 10 Number 8

UPCOMING EVENTS

IGB Seminar (ONC-PM)

Functional Impact of Post-Transcriptional Gene Networks in Health and Disease

January 23, 2018, 12:00 p.m.

612 Carl R. Woese Institute for Genomic Biology

Auinash Kalsotra, PhD
University of Illinois
Department of Biochemistry

IGB Seminar (GEGC)

TBD

January 30, 2018, 12:00 p.m.

612 Carl R. Woese Institute for Genomic Biology

Li-Qing Chen, PhD
University of Illinois
Department of Plant Biology

IGB Seminar (IGOH)

TBD

February 13, 2018, 12:00 p.m.

612 Carl R. Woese Institute for Genomic Biology

Katia Koelle, PhD
Duke University
Biology Department

Fox Family Innovation and Entrepreneurship Lecture

TBD

February 13, 2018, 12:00 p.m.

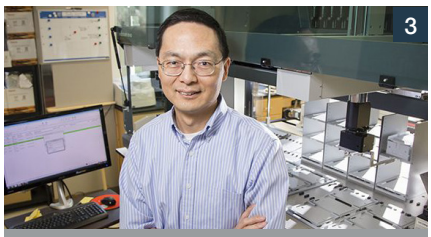
612 Carl R. Woese Institute for Genomic Biology

Andrew Miller, PhD
Co-Founder and CEO
Karuna Pharmaceuticals

FEATURED NEWS

2

Genomic Study Explores Evolution of Gentle 'Killer Bees'



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A New Way To Do Metabolic Engineering

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Monthly Profile: Auinash Kalsotra

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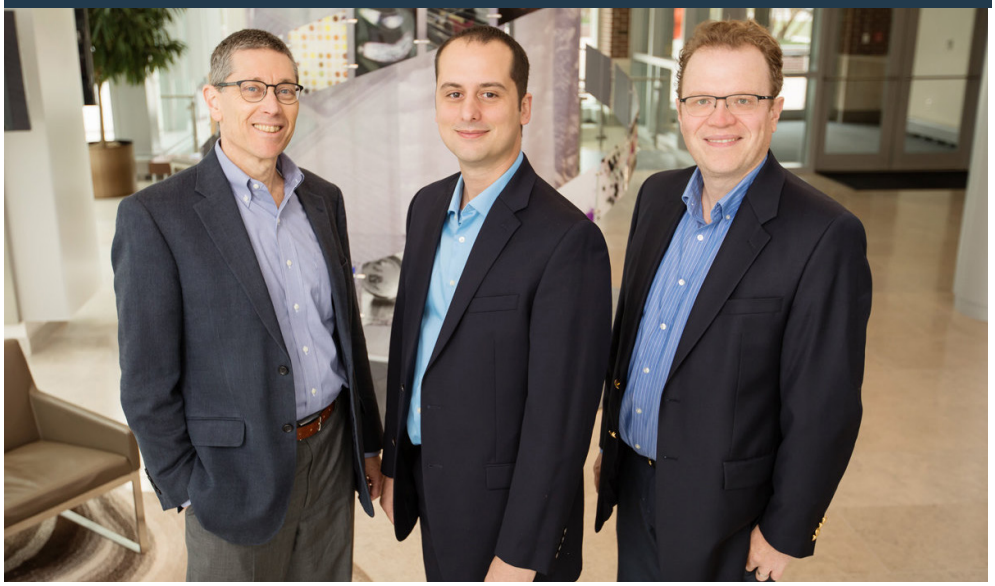
On the Grid: Happenings at IGB

IMAGE OF THE MONTH

This month features a newly hatched first instar honey bee larva captured on a Zeiss AxioZoom V16. This project aims to develop a system to rear honey bees in the laboratory using advanced robotics. Once established, the system will be used to study how parasites, pathogens, pesticides and nutrition interact to affect bee health. Supported by a DARPA grant, research was conducted by Julia Fine, William Streyer, Ran Chao and Nathan Beach of the Gene Robinson laboratory.

IGB News

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



Genomic Study Explores Evolution of Gentle 'Killer Bees' in Puerto Rico

A genomic study of Puerto Rico's Africanized honey bees - which are more docile than other so-called "killer bees" - reveals that they retain most of the genetic traits of their African honey bee ancestors, but that a few regions of their DNA have become more like those of European honey bees. According to the researchers, these changes likely contributed to the bees' rapid evolution toward gentleness in Puerto Rico, a change that occurred within 30 years.

The findings, reported in the journal Nature Communications, could lead to advances that will bolster honey bee populations in the Americas, the researchers said.

Africanized bees are the offspring of African honey bees and their European counterparts. In the late 1950s, these aggressive "killer bees" escaped from an experimental breeding program in Brazil. That program had set out to produce a desirable mix of traits from the gentle European bees and their African counterparts, which were more aggressive, disease-resistant and adapted to a tropical climate.

Ironically, what scientists failed to do in the laboratory was eventually accomplished by happenstance. Africanized honey bees arrived in Puerto Rico (most likely on a ship, by accident) in the 1990s, and within three decades had evolved into the gentle, yet hardy, Africanized bees that dominate the island today. Biology professor Tugrul Giray, of the University of Puerto Rico, first reported on the gentle Puerto Rican bees in the journal Evolutionary Applications in 2012. Giray is a co-author of the new study.

To gain insight into how the bees became gentle, the researchers sequenced the genomes of 30 gentle Puerto Rican bees, 30 Africanized bees from Mexico and 30 European honey bees from central Illinois.

"The benefit of having these three populations is that you can compare and contrast between the three," said University of Illinois postdoctoral researcher Arian Avalos, who conducted the research with U. of I. entomology professor Gene Robinson; crop sciences professor Matthew Hudson; and Guojie Zhang and Hailin Pan, of the Chinese Academy of Sciences. "We asked, 'How is the genome of the gentle Africanized bee different than other Africanized populations? What parts of the genome are similar to European bees?'"

From left, IGB Director Gene Robinson, postdoctoral researcher Arian Avalos, and Professor of Crop Sciences Matthew Hudson.

The team discovered that, for the most part, the genomes of the gentle bees resembled those of their Africanized forebears. Specific regions of the DNA, however, had shifted in the gentle bees, reflecting more of their European heritage. These regions appeared to be under "positive selection." This means that something in the bees' environment was favoring these genetic signatures over others.

The scientists hypothesize that the bees evolved to be more docile as a result of living on a very densely populated island from which they could not easily escape. Humans likely eradicated the most aggressive bees, aiding their more docile counterparts.

"Evolution involves changes in the frequency of gene variants across a population, and that's what we're seeing in Puerto Rico," said Robinson, who directs the Carl R. Woese Institute for Genomic Biology at Illinois. "Now we know that these gentle Africanized bees can be genetically distinguished both from other Africanized honey bees and from European honey bees."

The new findings offer a bit of hope for the beleaguered beekeeping industry, the researchers said. European honey bees tend to have less genetic diversity than Africanized bees, which carry both European and African honey bee genes. European honey bees also are more susceptible to a host of debilitating parasites and pathogens. Their rapid decline since 2005, a phenomenon known as colony collapse disorder, is disrupting agriculture around the world.

"The fact that we've shown that the genetics of these Puerto Rican bees are very distinct from the European bees, and the fact that they are demonstrably gentle, makes it very interesting as a potential way to mitigate pollinator decline," Hudson said.

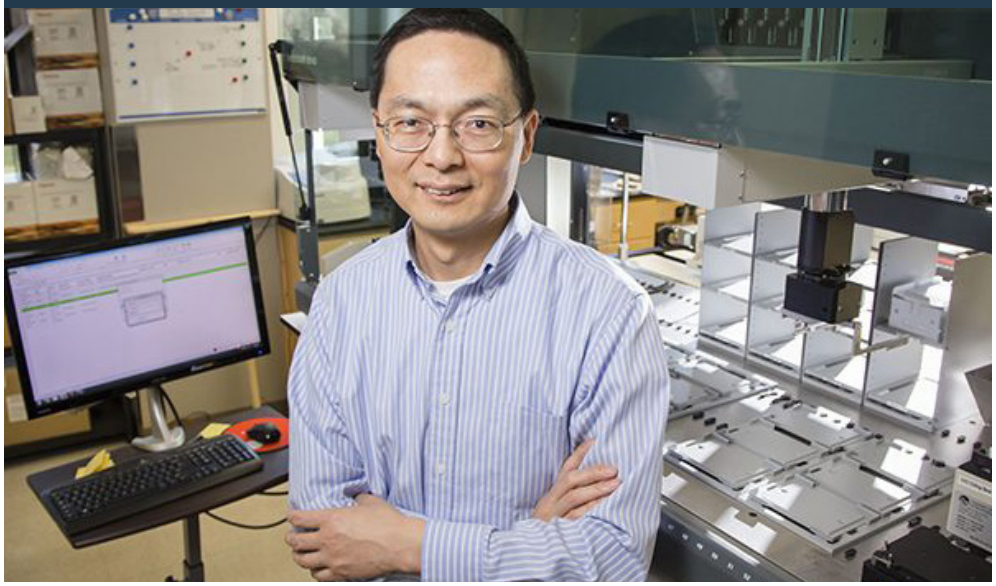
In particular, the Africanized bees are highly resistant to the varroa mite, a parasite of bees that undermines their health and spreads disease. The mites - along with pesticides used to treat infested bees - are believed to be major factors in the widespread decline of honey bees across the globe.

In previous research in the Giray laboratory, scientists showed that Puerto Rico's gentle Africanized bees groom themselves aggressively when infested with varroa, removing the mites almost as soon as they appear.

"Infestation of European honey bees with the mites elicits very little response," said Avalos, who previously worked with Giray in Puerto Rico. "This could be good news for beekeepers who want to develop a gentle honey bee that is also varroa-resistant."

The National Science Foundation, the Beijing Genomics Institute and the University of Illinois supported this research. ■

Written by Diana Yates. Photo by L. Brian Stauffer.



A New Way
To Do Metabolic Engineering

A novel method developed by a group of IGB researchers could change the way metabolic engineering is done.

Researchers from the IGB's Biosystems Design theme, including Steven L. Miller Chair of Chemical and Biomolecular Engineering Huimin Zhao, recently published a paper in Nature Communications outlining their new method, which could make the metabolic engineering process more efficient.

Metabolic engineering involves engineering microorganisms to produce value-added products such as biofuels and chemicals. This is achieved by changing or deleting the expression of genes to modify the microorganism's genome. In this process, several targets in the genome are modified in order to achieve specific goals.

"We can easily find several metabolic engineering targets to improve the desired phenotype," said Jiazhang Lian, a visiting research associate at the IGB who is a co-author of the paper. "How to combine these beneficial genetic modifications is one of the biggest challenges in metabolic engineering."

Traditionally, researchers test these targets individually in a series of time-consuming steps. These steps limit productivity and the yield of the final product—two crucial components in the metabolic engineering process.

The researchers decided to create a method that combines all of these steps and executes them simultaneously, making the process faster and easier.

They based this method on the CRISPR system, a method of genetic manipulation that uses a set of DNA sequences to modify genes within a cell.

This system uses three genetic manipulations that are frequently used in metabolic engineering: transcriptional activation, transcriptional interference, and gene deletion.

By using these manipulations simultaneously, scientists can explore different combinations of manipulations and discover which combination is best.

"We can now work with 20 targets," Zhao said. "We can implement all of these (manipulations) for each target in a combinatorial manner to find out which combination actually will give us higher productivity or yield of the final product."

The researchers tested the method in a species of yeast that is used in winemaking, baking, and the production of biofuels. They showed that using this method could improve the production of a specific product.

Their system, called CRISPR-AID, will allow researchers to easily explore all the possible target combinations. But the key is to find the optimal combination.

"If we compare metabolic engineering to a basketball team, we cannot build a strong team by simply putting the best players together," Lian said. "Instead, we should try to find those who can collaborate and work synergistically."

Their new system opens up thousands—even millions—of possibilities, which presents another logistical challenge.

They plan to find the best combinations by developing a high throughput screening method or using a robotic system such as the iBioFAB, a system located in the IGB that automatically produces synthetic biosystems.

"I believe the combination of CRISPR-AID with high throughput screening and iBioFAB will significantly advance the metabolic engineering field in the near future," Lian said.

Zhao hopes to test their method on other organisms, using the same engineering principles but modifying the protocol for different organisms.

Eventually, they hope to extend to the genome scale — to be able to test all the genes in an organism at once — which would be a considerable leap in the field of metabolic engineering.

"If we can do that, we can make it truly modularized and also standardize the procedure," Zhao said. "Then we really increase the throughput and the speed of metabolic engineering."

Several research efforts aim to engineer microorganisms for the production of biofuels and chemicals, so any tools that can speed up the process are significant. Zhao believes this is true for their method.

"It's not just an incremental improvement," he said. "It's a new way to do metabolic engineering." ■

Written by Emily Scott. Photo by L. Brian Stauffer.

Assistant Professor of Biochemistry Auinash Kalsotra and his laboratory bring together critical ideas in the fields of molecular and developmental biology, and offer a robust framework to better understand how, when, and where particular mRNAs are translated into proteins.

Auinash Kalsotra:
Piecing Together the RNA Puzzle

You never know what you might find when you go back to the basics.

By studying the basic mechanisms of ribonucleic acids, or RNA, Assistant Professor of Biochemistry Auinash Kalsotra (GNDP/ONC-PM) has found ways in which RNA can influence human disease.

His research has uncovered mechanisms of RNA that play a part in specific liver diseases and heart conditions—all by taking a closer look at this essential macromolecule.

RNA has an important role in making proteins and regulating genes. Each cell in the body produces a unique set of RNA—and therefore, a unique set of proteins—from the same set of genes.

Kalsotra's research begins with understanding how different RNAs are processed in different cells. The first step is to catalog the transcriptome, which includes all the RNA that are created by an organism. Through this process, crucial RNA-binding proteins are identified. These proteins influence many cellular functions, including how RNA is processed in the cell.

"We're trying to learn the whole code and how the system is set up," Kalsotra said. "What we are learning is that a lot of times, the same regulatory mechanisms that are normally used during development are misregulated in human diseases."

For example, they have found that individuals who are missing a specific RNA-binding protein can develop non-alcoholic fatty liver disease, a condition characterized by excess fat in the liver that is not caused by heavy alcohol use. Over 30 percent of adults in the United States have this disease, which often leads to liver failure or liver cancer.

Kalsotra wants to understand why the absence or silencing of this RNA-binding protein results in this condition.

"If we get a handle on that, then maybe we can get closer to identifying real mechanisms that are causing this disease, with the hope that we could correct that one day," he said.

"We're trying to learn the whole code and how the system is set up. What we are learning is that a lot of times, the same regulatory mechanisms that are normally used during development are misregulated in human diseases."

All of this came to be by examining the basic mechanisms of how cells and tissues are put together.

"While we're studying and trying to understand it, we accidentally and incidentally find things sometimes that relate directly to human disease," Kalsotra said.

Another example of this came about when Kalsotra and his colleagues studied another RNA-binding protein that was thought to be essential in all cells. To their surprise, they couldn't detect the presence of this protein in adult muscle tissues.

They eventually found that the RNA used to create this protein was present in muscle tissues, but the protein was not being made. Instead, the RNA is always kept in case a situation would arise where the protein needs to be made.

Kalsotra said this shows how analyzing protein levels, and not just RNA expression, is sometimes key.

"That tells us that we may be missing a lot by measuring RNA as the only readout for gene expression," he said.

Understanding more about this basic mechanism led them to connect it to cardiac hypertrophy, a condition that occurs when cardiac cells increase in size, causing an abnormal enlargement of the heart muscle. Cardiac hypertrophy is typically seen in many cases of heart disease, but not much is known about the mechanisms that allow the cells to grow in the first place.

"By just following this one protein, where we saw that the protein is absent in the adult heart, we started digging deeper," Kalsotra said. "We found out that this (protein) is actually essential for generating hypertrophy of the heart."

They are now looking into what mechanisms dictate whether the RNA creates this protein, and whether they can manipulate the expression of the protein to possibly control the growth of cells.

"It's always fun to find unknown things," Kalsotra said. "That's the biggest motivation for me."

But Kalsotra's real passion is to understand how cells are programmed to form particular tissues—knowledge that could be used one day to enable regeneration of tissues that can't normally regenerate.

"We're trying to learn basic mechanisms from different angles to try and put together the puzzle of tissue-specific gene regulation," he said. "Once we know the pieces, then we can selectively use them for treating certain conditions." ■

Written by Emily Scott. Photo by L. Brian Stauffer.

ON THE GRID
HAPPENINGS AT THE IGB

AWARDS

CARLA CÁCERES

Carla Cáceres, Professor of Animal Biology (IGOH) was elected a 2017 Fellow of the American Association for the Advancement of Science.

HANNAH HOLSCHER

Hannah Holscher, Assistant Professor of Nutrition (MME) received the New Innovator in Food and Agriculture Research award from the Foundation for Food and Agriculture Research (FFAR) for outstanding research in food and agriculture.

CERTIFICATE

FOX FAMILY INNOVATION AND ENTREPRENEURSHIP CERTIFICATE PROGRAM

Academics and business leaders are realizing that science, technology and business are no longer separate entities, but actually require each other to thrive. The Fox family and the IGB have partnered to bring a series of speakers to discuss all aspects of innovation and entrepreneurship. Past speakers have included members from the Office of Technology Management and the Technology Entrepreneur Center on campus, to external speakers from public and private industry. This certificate program has been designed to introduce IGB and science academics to fundamental business methodologies including creating a business plan, managing intellectual property, overseeing finances, marketing and customer discovery, and other skills essential for entrepreneurial ventures.

The thirteen week curriculum will expose students to an environment and resources from around campus that are necessary to become a successful innovator and entrepreneur. Full details and program registration available here.

HIGHLY CITED

Clarivate Analytics

FIVE ILLINOIS RESEARCHERS RANK AMONG WORLD'S MOST INFLUENTIAL

Five faculty members at the University of Illinois at Urbana-Champaign have been named to the 2017 Clarivate Analytics Highly Cited Researchers list (previously known as the Thomson Reuters Highly Cited Researchers list), including four from the IGB. The list recognizes "leading researchers in the sciences and social sciences from around the world," according to Clarivate Analytics. It is based on an analysis of journal article publication and citation data, an objective measure of a researcher's influence, from 2005-15.

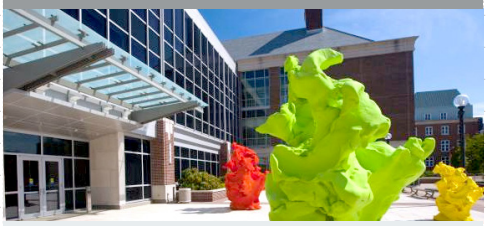
The highly cited Illinois researchers this year are: crop sciences and plant biology professor Lisa Ainsworth (GEGC, highly cited in plant and animal science), civil and environmental engineering professor Tami Bond (geosciences), crop sciences and plant biology professor Stephen P. Long (GEGC/BSD, plant and animal science), chemistry professor Yi Lu (BSD/ONC-PM, chemistry), and psychology professor Brent Roberts (GNDP, psychiatry, psychology).

MEETING

CENTER FOR COMPUTATIONAL BIOTECHNOLOGY AND GENOMIC MEDICINE (CCBGM)

The Center for Computational Biotechnology and Genomic Medicine (CCBGM)held its biannual meeting at Illinois this Fall to discuss the state of the center and present updates on the funded projects. CCBGM is a NSF Industry/University Cooperative Research Center under the CompGEN Initiative, with directors from Illinois, University of Chicago, and Mayo Clinic. Several IGB members in bioinformatics, computer science, bioengineering, and psychology, among other disciplines serve, including Mikel Hernaez, IGB Director of Computational Genomics, and each meeting brings industry representatives from companies including Abbott, IBM, Lilly, Intel, and Dow. Leader of the Computational Genomics for Reproduction Health theme, Professor of Molecular and Integrative Physiology Derek Wildman, gave the invited presentation, entitled Computational Methods for Insight into Hypoplastic Left Heart Syndrome.

RETREAT



IGB RETREAT

The IGB Retreat will take place on April 14, 2018 within the building. Faculty members only, please use the following link to RSVP for the retreat so we have accurate attendance numbers:
http://www.igb.illinois.edu/igb-retreat-rsvp

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. ■

COMMUNICATIONS

ILLINOIS TRANSITIONS TO ONE LOGO

On October 13th, 2017 the Illinois system moved to one logo to use for all branding, rather than the "column I" and the "block I" as in the past. The column I has been retired, 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. ■

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/campussafety.html ■

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.

Kim, M., Kim, Y., Qian, L., & Song, J. S. (2017). TeachEnG: A Teaching engine for Genomics. *Bioinformatics*, 33(20), 3296-3298. DOI: 10.1093/bioinformatics/btx447

Guo, Z., Sevrioukova, I. F., Denisov, I. G., Zhang, X., Chiu, T. L., Thomas, D. G., ... Potter, D. A. (2017). Heme Binding Biguanides Target Cytochrome P450-Dependent Cancer Cell Mitochondria. *Cell Chemical Biology*, 24(10), 1259-1275.e6. DOI: 10.1016/j.chembiol.2017.08.009

Ping, P., Watson, K., Han, J., & Bui, A. (2017). Individualized knowledge graph: a viable informatics path to precision medicine. *Circulation Research*, 120(7), 1078-1080. DOI: 10.1161/CIRCRESAHA.116.310024

Fan, T. M. (2017). Cancer Patients. In Veterinary Anesthesia and Analgesia: *The Fifth Edition of Lumb and Jones* (pp. 993-1003). wiley. DOI: 10.1002/9781119421375.ch55

Kadam, D. C., Potts, S. M., Bohn, M. O., Lipka, A. F., & Lorenz, A. J. (2017). Erratum: Genomic prediction of single crosses in the early stages of a Maize hybrid breeding pipeline [G3 Genes-Genomes-Genetics, 6, (3443-3453)] DOI: 10.1534/g3.116.031286. G3: *Genes, Genomes, Genetics*, 7(10), 3557-3558. DOI: 10.1534/g3.117.300143

Khoueiry, P., Girardot, C., Ciglar, L., Peng, P. C., Hilary Gustafson, E., Sinha, S., & Furlong, E. E. M. (2017). Uncoupling evolutionary changes in DNA sequence, transcription factor occupancy and enhancer activity. *eLife*, 6, [e28440]. DOI: 10.7554/eLife.28440

Diao, H. Y., Feng, R., Dahmen, K. A., & Liaw, P. K. (2017). Fundamental deformation behavior in high-entropy alloys: An overview. *Current Opinion in Solid State and Materials Science*, 21(5), 252-266. DOI: 10.1016/j.cossms.2017.08.003

Guo, Z., Sevrioukova, I. F., Denisov, I. G., Zhang, X., Chiu, T. L., Thomas, D. G., ... Potter, D. A. (2017). Erratum: Heme Binding Biguanides Target Cytochrome P450-Dependent Cancer Cell Mitochondria (Cell Chemical Biology (2017) 24(10) (1259–1275.e6) (S2451945617302830)(10.1016/j.chembiol.2017.08.009)). *Cell Chemical Biology*, 24(10). DOI: 10.1016/j.chembiol.2017.09.012

Rababah, T., Al-U'Datt, M., Al-Mahasneh, M., Odeh, A., Ajouly, T. E., & Feng, H. (2017). Effect of processing and storage at different temperatures on the physicochemical and minerals content of sesame seeds and tehina. *Bulgarian Journal of Agricultural Science*, 23(5), 851-859.

Gage, J. L., Jarquin, D., Romay, C., Lorenz, A., Buckler, E. S., Kaeppler, S., ... De Leon, N. (2017). The effect of artificial selection on phenotypic plasticity in maize. *Nature Communications*, 8(1), [1348]. DOI: 10.1038/s41467-017-01450-2

Brooke, C. B. (2017). Population diversity and collective interactions during influenza virus infection. *Journal of Virology*, 91(22), [e01164-17]. DOI: 10.1128/JVI.01164-17

Taneja, I., Reddy, B., Damhorst, G., Dave Zhao, S., Hassan, U., Price, Z., ... Zhu, R. (2017). Combining Biomarkers with EMR Data to Identify Patients in Different Phases of Sepsis. *Scientific Reports*, 7(1), [10800]. DOI: 10.1038/s41598-017-09766-1

de Flamingh, A., Roca, A. L., & van Aarde, R. J. (2017). Origin and phylogeography of African savannah elephants (*Loxodonta africana*) in Kruger and nearby parks in southern Africa. *Conservation Genetics*, 1-13. DOI: 10.1007/s10592-017-1005-z

Duan, W., Huang, J., Kowalski, J. A., Shkrob, I. A., Vijayakumar, M., Walter, E., ... Wei, X. (2017). "wine-Dark Sea" in an Organic Flow Battery: Storing Negative Charge in 2,1,3-Benzothiadiazole Radicals Leads to Improved Cyclability. *ACS Energy Letters*, 2(5), 1156-1161. DOI: 10.1021/acsenergylett.7b00261

Wolfe, A. J., Si, W., Zhang, Z., Blanden, A. R., Hsueh, Y. C., Gugel, J. F., ... Movileanu, L. (2017). Quantification of Membrane Protein-Detergent Complex Interactions. *Journal of Physical Chemistry B*, 121(44), 10228-10241. DOI: 10.1021/acs.jpcb.7b08045

Kolossov, V. L., Sivaguru, M., Huff, J., Luby, K., Kanakaraju, K., & Gaskins, H. R. (2017). Airyscan super-resolution microscopy of mitochondrial morphology and dynamics in living tumor cells. *Microscopy Research and Technique*. DOI: 10.1002/jemt.22968

Kim, B., Takechi, K., Ma, S., Verma, S., Fu, S., Desai, A., ... Kenis, P. J. A. (2017). Non-Aqueous Primary Li–Air Flow Battery and Optimization of its Cathode through Experiment and Modeling. *ChemSusChem*, 10(21), 4198-4206. DOI: 10.1002/cssc.201701255

Jagtap, S. S., & Rao, C. V. (2017). Production of d-arabitol from d-xylose by the oleaginous yeast Rhodosporidium toruloides IFO0880. *Applied Microbiology and Biotechnology*, 1-9. DOI: 10.1007/s00253-017-8581-1

Andrade, F. C. D., Kramer, K. Z., Monk, J. K., Greenlee, A. J., & Mendenhall, R. (2017). Financial stress and depressive symptoms: the impact of an intervention of the Chicago Earned Income Tax Periodic Payment. *Public Health*, 153, 99-102. DOI: 10.1016/j.puhe.2017.08.017

Cheng, Q., Juen, J., Bellam, S., Fulara, N., Close, D., Silverstein, J. C., & Schatz, B. (2017). Predicting Pulmonary Function from Phone Sensors. *Telemedicine and e-Health*, 23(11), 913-919. DOI: 10.1089/tmj.2017.0008

Kim, M. J., Oh, H. J., Kim, G. A., Setyawan, E. M. N., Choi, Y. B., Lee, S. H., ... Lee, B. C. (2017). Birth of clones of the world's first cloned dog. *Scientific Reports*, 7(1), [15235]. DOI: 10.1038/s41598-017-15328-2

Park, K., Cho, N. H., Jeon, M., Lee, S. H., Jang, J. H., Boppart, S. A., ... Kim, J. (2017). Optical assessment of the in vivo tympanic membrane status using a handheld optical coherence tomography-based otoscope. *Acta Oto-Laryngologica*, 1-8. DOI: 10.1080/00016489.2017.1395515

Stelle, L., Schoenheit, T., Brubaker, A., Tang, X., Qu, P., Cradock, K., & Higham, A. (2017). Radioactive Seed Localization Versus Wire Localization for Nonpalpable Breast Lesions: A Two-Year Initial Experience at a Large Community Hospital. *Annals of Surgical Oncology*, 1-6. DOI: 10.1245/s10434-017-6102-1 ■

ILLINOIS

IGB News is published by the IGB Communications Office.
Contact Nicholas Vasi (nvasi@illinois.edu)
www.igb.illinois.edu 17.155