



IQ - ISEE Quarterly

An update from the Institute for Sustainability, Energy, and Environment

What's new at CABBI ...

Center Hires New Leader, Celebrates Official Kickoff

The Center for Advanced Bioenergy and Bioproducts Innovation (CABBI) has named Donald Ort its new Deputy Director for Research & Development.



ORT

Ort, the Robert Emerson Professor of Plant Biology at the University of Illinois at Urbana-Champaign, is a renowned photosynthesis expert with longtime ties to major granting agencies such as the U.S. Department of Agriculture and the Gates

Foundation. He will lead CABBI's scientific efforts.

The \$115 million U.S. Department of Energy Bioenergy Research Center made the Ort announcement in mid-January, two weeks before its Feb. 1-2 celebration kickoff and science meeting.

More than 100 scientists and staff from Illinois and its 17 partner institutions — as well as government and campus dignitaries including Chancellor Robert J. Jones —



attended the Feb. 1 celebration emceed by CABBI and iSEE Director Evan H. DeLucia. The day included talks by campus leadership, U.S. Rep. Rodney Davis, R-Illinois 13, and CABBI Theme Leaders. In addition, visitors from partner institutions received tours of the CABBI lab space at the Carl R. Woese Institute for Genomic Biology as well as IGB core facilities and the Illinois Biological Foundry for Advanced Bioman-

ufacturing (iBioFAB), a core element of the CABBI Conversion Theme. Tours of the 320-acre Illinois Energy Farm and the new Integrated Bioprocessing Research Laboratory were also included.

On Feb. 2, researchers gathered in one big group and theme breakout sessions to discuss first-year research challenges and objectives.

[Check out more at https://cabbi.bio](https://cabbi.bio)

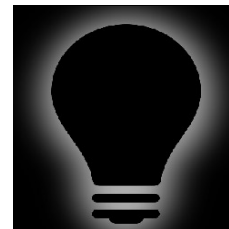
What's inside ...

Team Publishes Paper on Electric Vehicle Choices

— Page 2

First 'Green Century' Staff Convenes

— Page 3



iSEE's ILO: Good News for a Switch

— Page 4

In the Spotlight: Allison Parker

The saying goes that in war you must “know your enemy” to defeat it, and that’s exactly the aim of Allison Parker’s research. She’s a fifth-year Ph.D. Candidate in Entomology at the University of Illinois, and for more than half a decade, she’s been collecting, inventorying, and raising mosquito larvae to learn more about them so she can force their retreat from urban environments.

In most temperate and tropical areas of the world, mosquitoes pose a serious human health threat because of the diseases they transmit through bites. In a world growing more urban each day — and as the world climate warms extending mosquitoes’ livable range — a way to combat these pests in developed residential areas has become a grand world challenge. Pesticides are one option, but those chemicals have some negative environmental consequences. iSEE’s Stormwater and Mosquito Control team seeks less chemically reliant solutions.

Allison’s work focuses on the egg-laying stage of the mosquito lifecycle. Simply put: Intervening at that stage can reduce the number of babies that survive to become disease-spreading adults.

Every day, Allison and a few undergraduate research assistants visit all the test sites to gather the eggs and baby mosquitoes they find in each container. In the middle of the summer months, that’s hot and sweaty work. They record the number and kind of specimens collected in each container at each house. These data will tell whether one type of container consistently outperforms another over an entire mosquito season.

Spending four to six hours a day in



the field means there isn’t much lab time to process all the samples — counting mosquito eggs, hatching them, and then raising the larvae to identify the adult species. Luckily, Allison has the help of seven undergraduate students who work in shifts throughout the week to make sure that the lab work doesn’t lag behind.

“My favorite part of this research is working with the undergrads. They’re very enthusiastic, and we all share the fun and not-so-fun tasks,” she said.

Combined with all her teammates’ work, Allison thinks that her work is contributing to an overall shift in how cities may create mosquito control programs.

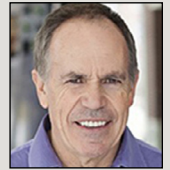
“We’re all tackling the problem in our own little way, but taken together our results can make really good recommendations for control measures for city- and resident-implemented mosquito control programs.”

[Read the full Parker profile.](#)

[More about the Stormwater and Mosquito Control project.](#)

iSEE Researchers in the News ...

• Three iSEE-affiliated researchers have been named to the 2017 Clarivate Analytics Highly Cited Researchers list (previously known as the Thomson Reuters Highly Cited Researchers list). They are:



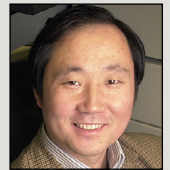
LONG

Gutgsell Endowed Crop Sciences and Plant Biology Professor Stephen P. Long; Civil and Environmental Engineering Professor Tami Bond; and Chemistry Professor Yi Lu.



BOND

• Long was also recently named a Stanley O. Ikenberry Endowed Chair.



LU

• Bond’s iSEE-supported Center for Applied Collaboration on Human Environments (CACHE) was recently awarded \$600,000 from the National Science Foundation to explore the complex chemistry that happens in wood in the moments just before it bursts into flames. [More on this project on the CACHE website.](#)

iSEE Team Publishes Paper on Optimal Electric Vehicle Choice

Members of the iSEE seed-funded Critical Infrastructure and Transportation team recently published a paper in the International Journal of Energy Research exploring the complex answer to a seemingly simple question: What type of electric vehicle — hybrid-electric, plugin hybrid or battery powered all-electric — best balances environmental and consumer needs?

Transitioning from petroleum-fueled passenger vehicles to renewably powered ones is a widely acclaimed tactic for cutting greenhouse gas (GHG) emissions, but putting it into practice has been slow. While electric vehicles are gaining popularity, they make up a small proportion of cars on the road because their

purchase and maintenance costs are high and yet their effective driving range remains low.

“Although there are studies on the environmental impacts of (electric vehicles), the optimal selection of these vehicles when several parameters vary has not been deeply investigated,” wrote iSEE Postdoctoral Research Associate Pouria Ahmadi, a co-author of the study along with Principal Investigators Ximing Cai and Madhu Khanna. “We aimed to comprehensively model and compare different vehicles to find the tradeoffs and tipping points in consumer choices.”

[More on the paper and the team on the iSEE website.](#)

First 'Green Century' Staff Convened for Spring '18

The first edition of "The Green Century," iSEE's student-written environmental magazine, will be produced in summer 2018.

More than a dozen students are in Professor Gillen D'Arcy Wood's ESE/ENGL 498 Environmental Writing for Publication course, and the works generated in that class will be the basis for the first edition. The students and iSEE communications staff, led by Wood, will produce the online magazine at the end of each spring and fall semester.

The 498 course is the culminating class in the three-step undergraduate Certificate in Environmental Writing, offered through iSEE, the Department of English, and the School for Earth, Society, and Environment (SESE). Wood, the Langan Professorial Scholar of Environmental Humanities and an iSEE Affiliate, is the Director of the Certificate program.

[Read more about the CEW.](#)



Capstone Celebration

Sustainability, Energy, and Environment Fellows Program (SEE FP) students were able to celebrate a successful Fall 2017 sustainability project with a representative from the business they worked with. Recently, Mike Nicholus of Accenture, second from left, got to meet in person with Illinois students — from left Hannah McCullough, Aaron Portante, Lucia Dunderman, and Olivia Yu — who collaborated on a capstone research project for Accenture as part of their requirements to complete the SEE FP undergraduate minor. More than a dozen students did their capstone projects for campus, corporate partners, and nongovernment organizations in Fall 2017 in the inaugural ENV5 492 course. Enrollment in the minor — a partnership iSEE formed with six academic units across the Illinois campus — has surpassed 70 students since it began in Spring 2016.

[Read more about the SEE FP.](#)

Four Major Earth Month Lectures Scheduled for April

This April, campus will mark Earth Month with a suite of interesting lectures about our planet and humanity's role in its stewardship.

iSEE, the Schools of Chemical Sciences and Earth, Society and Environment, the Departments of Atmospheric Sciences and Chemistry, the Student Sustainability Committee (SSC), and the University YMCA have worked together to bring the following slate of speakers to campus:

• **MillerComm Lecture guest speaker Michael Mann**, Distinguished Professor

of Meteorology at Penn State University and Director of the Earth System Science Center (ESSC) — 3 p.m. Friday, April 6, Spurlock Museum Knight Auditorium.

• **Friday Forum guest speaker Bill McKibben**, author, activist, and founder of 350.org. — noon Friday, April 13, University YMCA.

• **Yoshi Ogura Lecture guest speaker Ed Zipser**, Professor of Atmospheric Sciences at the University of Utah — 3:30 p.m. Tuesday, April 24; Natural History Building Room 2079.

• **2018 Charles David Keeling Lecture guest speaker Eban Goodstein**, economist, author, and public educator, Director of the Center for Environmental Policy at Bard College, and Founder of the Green House Network — 4 p.m. Wednesday, April 25, National Center for Supercomputing Applications (NCSA) Auditorium.

[The full Earth Month schedule will be up soon on the iSEE website.](#)

[iSEE also will release more details on the speakers and lecture topics.](#)

[Illinois Sustainability Calendar.](#)

What's new with the Student Sustainability Committee (SSC) ...

Student-led Team Highlights Newly Funded Projects

In December, the Student Sustainability Committee (SSC) funded 13 projects, including E2E Paradigm for Food Waste to Biofuel and Biomaterial.

A student research team, under Agricultural and Biological Engineering Professor Yuanhui Zhang, will expand the Environment-Enhancing Energy (E2E) research program to campus application by augmenting food waste from campus dining halls.

Using hydrothermal liquefaction (HTL), a technology that utilizes elevated



temperatures and pressure to convert wet biomasses to oil, the student team will create motor fuel and asphalt from everyday foods. This project has the potential to greatly reduce the amount of food waste that goes from our dining halls to the landfill by producing an alternative fuel.

Not only will these student researchers turn food waste into fuel, but they'll also produce a report that details the type of food waste in our dining halls. Knowing students' dislikes will allow

dining services to alter the menu to reduce the amount of food waste altogether.

SSC is proud to support these students as they tackle a hot sustainability topic within our community and our Illinois Climate Action Plan (iCAP).

The spring funding proposal deadline was Feb. 5 for all students, faculty, and staff to offer projects that increase environmental stewardship, inspire change, and positively impact students on the Illinois campus.

[Get more updates and learn more about SSC.](#)

What's new in campus sustainability ...

Illini Lights Out: A Flipping Success

After a record-breaking series of Fall 2017 events, iSEE's Illini Lights Out program has returned in the spring semester to pursue further energy savings from lighting.

During four Friday events last fall, student volunteers turned out a total of 21,099 bulbs that would have otherwise been left on all weekend. In the end, it saved campus about \$3,000 in electricity costs.

On Feb. 2, more than 100 student volunteers visited buildings on or near the U of I main quad to shut off the lights they found left on in classrooms, lobbies, lounges, and other study spaces. In total, they turned off 3,876 bulbs resulting in approximately 6,686 kilowatt-hours of energy (and \$581) saved over the weekend.

iSEE Campus Sustainability Programming Intern Claire Kredens, a senior studying Earth, Society, and Environment, said she was "blown away" by the number of students who turned out for this event.

"Illini Lights Out is becoming a recognized program name, and people are taking notice of iSEE as a whole because of it. It's super exciting to be contributing in such a big way," she said.

[More about the program, which has three dates remaining during the spring semester.](#)



Illinois Shines in Sustainable Campus Index

In November, the University of Illinois was highlighted in the 2017 Sustainable Campus Index for its Campus Engagement efforts in advancing sustainability in higher education.

The Index, a publication of the Association for the Advancement of Sustainability in Higher Education (AASHE), highlights innovative and high-impact initiatives from colleges and universities that submitted a Sustainability Tracking, Assessment & Rating System (STARS) report in the 12 months prior to July 1, 2016.

The U of I's Fresh Press initiative was featured as an innovative program. This project, started by Professor Eric Benson in the School of Art + Design, looks to fundamentally change the commercial paper product industry to one that is more sustainable.

Agricultural residue from the campus student farm is used to create paper, with students involved in growing, harvesting, manufacturing, and selling the paper products. In 2016, the first shares of artisan and writing paper were completed, and 75 percent of these shares were sold to Illinois faculty, staff, and students. Sales from paper products continue to be reinvested to make the Fresh Press business model a sustainable one.

"The University of Illinois at Urbana-Champaign's feature in this report shows its significant leadership and commitment to advance sustainability," AASHE Executive Director Meghan Fay Zahniser said. "We are excited to recognize the University of Illinois for working to secure a thriving, equitable and ecologically healthy world through its comprehensive sustainability efforts."

[More about campus sustainability recognition at Illinois.](#)

