



The 133rd ANNUAL ACADEMY MEETING

**SATURDAY, MARCH 24, 2018
JW MARRIOTT HOTEL
10 S. WEST STREET
INDIANAPOLIS, IN.**

MEETING AGENDA AND HIGHLIGHTS

133rd Annual Academy Meeting AGENDA

SATURDAY March 24, 2018

(JW Marriott Hotel, Indianapolis)

7:15 a.m. (FOYER, Level 3)

REGISTRATION

Poster and Oral presentation set-up; Exhibitor set-up

CONTINENTAL BREAKFAST (Level 3 Foyer)

NEW ACADEMY MEMBER MEET/GREET (Rm.313)

BREAKFAST (w/ Academy President, Academy Past Presidents, and Section Vice Chairs)

8:15 a.m. (GRAND BALLROOM 5)

WELCOME

Dr. Horia Petrache
President, Indiana Academy of Science

AWARDS : Distinguished Scholar, Distinguished Service, Academy Fellows

PLENARY: LET'S TALK SCIENCE

Horia Petrache, Ph.D.

'Physical Objects and Fields'

9:20 a.m.

SECTION MEETINGS (all Academy members)

9:45 a.m.

SCIENCE PRESENTATIONS

Research papers, *Hot Topics*, Workshops

12:30 p.m.

133rd ANNUAL ACADEMY MEETING LUNCHEON
Academy President Horia Petrache

GUEST SPEAKER: Daniel McCarthy

'Indiana's Contribution in the Research and Development of Understanding Tornadoes and Severe Thunderstorms'

Membership Summit: Election Results, Passing of the Gavel...

2:15 p.m.

SCIENCE PRESENTATIONS

Research papers, *Hot Topics*, Workshops, Panel Discussion

2:15 p.m. - 4:45 p.m.

Ecoblitz SYMPOSIUM

4:15 p.m. – 5:55 p.m.

POSTER PRESENTATIONS w/ concurrent
NETWORKING RECEPTION

6:00 p.m.

ADJOURN

Posters and Exhibits are available for viewing all day, from 8:15 a.m. to 4:30 p.m. in GB 6.

'Let's Talk Science...'



Dr. Horia Petrache is the President of the Indiana Academy of Science and

an Associate Professor and Interim Chair in the Department of Physics at Indiana University Purdue University Indianapolis where he teaches general physics and mathematical physics. He conducts research on biological membranes using x-ray scattering and NMR spectroscopy (Biomembrane Physics laboratory website: <http://www.iupui.edu/~lab59>).



Dr. Petrache obtained a Diploma in Theoretical Physics from University of Bucharest, Romania, in 1992 after which he held a research position for one year at the Ettore Majorana Center in Erice, Italy. He then moved to U.S. for graduate studies at Carnegie Mellon University in Pittsburgh and obtained a Ph.D. in Physics in 1998.

Dr. Horia Petrache open the 133rd Annual Academy Meeting, confer the Academy Awards (with Awards Chair Marcia Moore), and present the Plenary entitled '*Physical Objects and Fields*'.

133rd Annual Academy Luncheon Speaker

Hoosiers have experienced their share of tornado events during the last century. These events have led to extraordinary opportunities to enhance the science of meteorology through research in topics such as satellite imagery to forecasting of severe storms and even the classification of certain types of storms that bring damaging winds and tornadoes.

These accomplishments and how they improved severe storm meteorology will be presented. Future research of tornadoes in Indiana is being planned using radar at Purdue University which could provide keys to help.

Daniel McCarthy is the Meteorologist in Charge at the National Weather Service Forecast Office in Indianapolis, IN. Dan arrived at the Weather Forecast Office in Indianapolis in September 2007 after 20 years with the Storm Prediction Center in Norman, OK. He was the first Warning Coordination Meteorologist for the Storm Prediction Center serving as the liaison between SPC and its national partners and users of SPC products and services. Daniel has done numerous interviews on tornadoes and severe storms on local television stations across the country, and on networks such as NBC, ABC, CBS, CNN, The Learning Channel, The Discovery Channel, The History Channel and The Weather



Dan McCarthy is the 133rd Annual Academy Meeting Luncheon Speaker. His presentation is entitled "*Indiana's Contribution in the Research and Development of Understanding Tornadoes and Severe Thunderstorms*"



- **Becoming a Professional Scientist: How to Get Started!** In this **Workshop** facilitated by **Dr. Jessi Ghezz**, Assistant Professor, Ball State University, students will learn how to introduce themselves as a candidate within a one-minute time frame, what exactly constitutes professional dress in various environments, interview styles and common questions, small steps they can take at conferences to get noticed, small steps they can take at the start of a new position to get noticed in the right way, one-on-one resume and cover letter help and the importance of professional mentorship, as well as networking tips for introverts. By

the end of the workshops students will have an arsenal of tools to work towards becoming a successful, professional scientist. It is never too soon to start moving up the ladder, let us help you jump-start your career while you are still in college! Students will get advice and one-on-one tips/edits on the different resume/CV styles for the wide-array of job opportunities from each sector (academia, industry and consulting). **Participants should bring a notepad and current resume' and/or cover letter for a position in which you'd like to apply.**

- **How to Use the Consortium of Midwest Herbaria Data Portal in Research and Teaching** In this **Workshop** facilitated by **Dr. Paul E. Rothrock and Dr. Eric B. Knox** Department of Biology, Indiana University-Bloomington, participants will be introduced to the features of the CMH data portal, with tips on how to search and download botanical information for a range of disciplines from plant systematics to community ecology. The CMH data portal also has online plant identification tools that can be used for teaching a broad range of audiences, from primary school through advanced college courses. The taxonomic structure of the data portal includes most of the old names previously used for Indiana plant species, so you do not need to be a professional botanist to use the site. The portal provides an up-to-date inventory of Indiana's flora, along with the species descriptions from Gleason & Cronquist's (1991) *Manual of Vascular Plants* and the species observations from Deam's (1940) *Flora of Indiana*. The CMH site can host floristic inventories from individual conservation areas, and the National Park Service has already posted a species list for Indiana Dunes National Lakeshore. Note: **Participants should bring a fully charged laptop with Wi-Fi capability in order to access the CMH data portal. (Sign up was requested at Meeting registration)**

- **Replacing Old Myths About Secondary and College Teaching with New Opportunities** In this **Workshop**, **Dr. Chris Edwards** Fishers High School, Fishers, Indiana, will provide an opportunity for educators to discuss the role of the teachers and professor and to engage with each other on the topics of scientific content and classroom practice. Specifically, the format and results of a new summer institute program which has brought secondary teacher and college professors together for the last three summers will be presented and analyzed. **Chris Edwards is a frequent contributor to the science and philosophy journal *Skeptic* on the topics of law, logic, theoretical physics, the history and philosophy of science, education, philosophy, and psychology. He directs the *Sciencetech/Ball State University Summer Institute for Math and Science Teachers* which is now supported through the Sciencetech Club Foundation and through the state of Indiana's education budget.**



Science for Everyone: Informal Science Education in Our Communities In this

Panel Discussion **Dr. Melanie Fox**, Indiana State Museum; **Karen Jepson-Innes**, WonderLab Museum; and **Mitch Luman**, Evansville Museum, will share information about some of their organization's science engagement and outreach activities. **Come ready to share and discuss ideas with colleagues from across the state!**

Hot Topics

Stand out from the Crowd: Communicating Your Science in an Online World. Dr. Bill Sullivan, Professor, Indiana University School of Medicine, will discuss tips on communicating your science to diverse audiences, whether they are fellow scientists, grant reviewers, the press, or the public.

“What’s Wrong with Forensic Anthropology These Days? How We’ve Forgotten the Science and Can’t Do the Math.” Dr. Stephen Nawrocki, Professor, Department of Biology, University of Indianapolis, will outline some of the dire problems in the field as reflected in the recent anthropological literature.

“Indiana’s Opioid Epidemic...Behind the Numbers” Pam Pontones. Deputy Health Commissioner, State Epidemiologist, Indiana State Department of Public Health, will discuss The opioid epidemic--- a public health emergency that affects people in all walks of life. This presentation will explain factors contributing to the epidemic, current state and national statistics, strategies and efforts underway to combat it, and actions everyone can take to make a positive difference and build hope. Let me know if you would like more detail.

A Brief History of CRIPR and its potential roles in feeding the world Dr. Doug Bernstein, Assistant Professor, Department of Biology, Ball State University, will discuss some of the foundational discoveries made by scientists in the United States and around the world that have paved the way for these advances. Furthermore, we will discuss the required components of a CRISPR genome editing system and the role these components play in genome editing. In addition, we will examine how CRISPR is being used in plant agriculture and how CRISPR is/could be leveraged to increase food production and increase farm efficiency. Finally, we will discuss how CRISPR mediated genome editing has the potential to impact natural product and drug production.

Rett Syndrome-a beacon of hope for Autism Dr. Daniel Tarquinio, Director of the Rett Syndrome Center, Atlanta, Georgia, will discuss Rett Syndrome, the neurodevelopmental disorder caused by a mutation in a single gene (*MECP2*). Some of the areas he will cover in this discussion are:

- Rett syndrome is the most common cause of profound intellectual disability in females
- Natural history data have paved the way for clinical trials
- Despite a deep understanding of the course of the disorder, reliable outcome measures are lacking
- Biomarkers, particularly treatment-response biomarkers, would be valuable in clinical trials
- Strong evidence suggests that this disorder can be reversed using gene therapy approaches

Natural killers are made, not born: Cancer immunotherapies with genetically-engineered immune cells

Dr. Sandro Matosevic, Ph.D. Purdue University, Dr. Jiao Wang Purdue University, Andrea Chambers, Purdue University, will discuss the foundational principles of engineering immune cells by equipping them with genetic machinery aimed at enhancing their anti-tumor effector function, and how cutting-edge nanomedicine approaches can help these advances toward safer clinical therapies. With specific examples from our lab’s own work, we will illustrate how engineering NK cells can enhance the targeting of solid tumors and the profound translational relevance for the treatment of complex cancers. Additionally, we will discuss next-generation immunotherapeutic cell reprogramming approaches that can evade cancer mutations and control the harsh tumor microenvironment that is created around metastatic tumors and which fuels their growth.

Abating Indianapolis' Combined Sewer Overflow System – An Overview of the Dig Indy Tunnel System **Michael Miller** PE, *Citizens Energy Group*, will provide an in-depth look into the Dig Indy Tunnel System and share the benefits to our environment that the program will provide.

Research and Teaching Opportunities in the Sciences with the US Fulbright Program **Peter Raucci, MPA**, *Fulbright Institute of International Education, New York*, will provide attendees with an overview of both the Fulbright Scholar, and the Student Programs. Mr. Raucci will highlight opportunities in the science fields for research and/or teaching. Additionally, he will share examples of successful Fulbrighters in these fields. Finally, participants will have the opportunity to participate in the discussion by asking questions and sharing their own experiences and best practices

One Health in Action: Investigating Zoonotic Diseases **Dr. Jen Brown**, *Indiana State Department of Public Health Veterinarian*, will provide updates on multistate outbreaks of enteric diseases associated with animal contact, including multidrug resistant salmonellosis associated with dairy calves and multidrug resistant campylobacteriosis associated with puppies at a large retail pet store, with emphasis on recent investigations in Indiana.

The End of the Antibiotic Era: Is Resistance Inevitable? **Dr. Jenny Fisher**, *Assistant Professor of Microbiology, Indiana University Northwest*, will explore how humans have contributed to widespread antibiotic resistance, the different mechanisms by which bacteria acquire resistance, and the current state of the ever-growing global “resistome.”

The Neutron Star Merger GW170817 **Dr. Patrick M Motl**, *Associate Professor, Associate Dean, Indiana University Kokomo*, will discuss the many questions this discovery has uncovered, and will conclude by highlighting some of these outstanding questions.

Science + Art = Symbiotic Learning **Dr. Roger P. Hangarter**, *Distinguished Professor, Department of Biology, Indiana University*, will look at examples of science/art and discuss their effectiveness for engaging public audiences.

Ecoblitz Symposium

Characterizing Biodiversity in Morgan-Monroe and Yellowwood State Forests **Rae Schnapp, Jeffrey Stant, and Samantha Buran**, *Indiana Forest Alliance*;



Since 2014, the Indiana Forest Alliance has conducted Ecoblitz surveys to characterize biodiversity on a 900-acre tract of interior hardwood forest within the Back Country Area of Morgan-Monroe and Yellowwood State Forests. We engaged teams of scientists from 13 Indiana colleges and universities and volunteers to collect data on many taxa over several growing seasons and reproductive cycles. Overall, our inventory of species from this relatively undisturbed mature hardwood forest identified more than 3,700 species to date, including at least 20 endangered, threatened and rare species of birds, mammals, reptiles and amphibians. **This symposium will report results to date.** **Dr. Leslie Bishop**, Moderator

Presentations:

Structural and compositional attributes of the Ecoblitz Study Area within Morgan Monroe-Yellowwood State Forest. **Leslie Bishop**, *Earlham College*; Paul Rothrock, *Indiana University Herbarium*; John Taylor, *Ball State University*; Jerome Delbridge, *Tree-Centric Solutions LLC*; and Samantha Buran, *Indiana Forest Alliance*.

Observations of Cerulean Warbler (*Setophaga cerulea*) Nesting Behavior in the Ecoblitz Area of Morgan-Monroe State Forest. [David Rupp](#), IndiGo Bird Tours of Bloomington, IN.

Mammals Surveys for the Ecoblitz of Morgan Monroe State Forest. [Jeremy Sheets](#), Orbis Environmental Consulting and John Whitaker, Professor Emeritus of Indiana State University

Ecoblitz Symposium presentations continued...

Moth Diversity of Morgan-Monroe State Forest and Yellowwood State Forest
[Leroy Koehn](#), LepTraps Inc

Diversity of Wasps from the Yellowwood State Forest Back Country Area (*Insecta: Hymenoptera*). [Keaton Veldkamp](#) and [Glene Mynhardt](#), Hanover College.

Bee Surveys in the Ecoblitz Area of Morgan-Monroe and Yellowwood State Forests in Indiana. [Robert P. Jean](#), Senior Entomologist, Environmental Solutions and Innovations, Inc.

New Data on Indiana Lichens Highlight of Under-studied and Imperiled Component of Biodiversity. [James Lendemer](#) New York Botanical Garden.



Distinguished Scholar Award

Dr. John Castrale

Distinguished Service Award

Dr. Rebecca Dolan

Fellow Awards

Dr. Bruce Kingsbury

Dr. Jennifer Kowalski

Dr. Jordan Marshall

Dr. Eric Rubens

TIME SCHEDULE for ALL PRESENTATIONS

**NOTE: THE POSTER PRESENTER TIME SCHEDULE IS
from 4:15 to 5:55 pm.**

**POSTERS will be on display in Grand Ballroom 6 for viewing all day,
from 8:a.m. – 6:00 pm.**

**(Carefully check the 'day-of schedule' on Saturday, March 24th for any
changes to presentation times and room #'s**

**SECTION MEETINGS 9:20 AM- 9:40 AM, SATURDAY MARCH 24
(All Academy Members)**

SECTION	ROOM #
ANTHROPOLOGY	301
BOTANY	302
CELL BIOLOGY	303
CHEMISTRY	304
MICROBIOLOGY & MOLECULAR BIOLOGY	305
ENVIRONMENTAL SCIENCE	306
EARTH SCIENCE	307
ECOLOGY	308
ENGINEERING	300
PHYSICS AND ASTRONOMY	310
PLANT SYSTEMATICS AND BIODIVERSITY	311
SCIENCE EDUCATION	309
ZOOLOGY AND ENTOMOLOGY	312

2018 Indiana Academy of Science Annual Meeting | Final Program

GENERAL INTEREST

HOT TOPICS/ WORKSHOPS/PANEL DISCUSSION

TIME	PRESENTER(S)	PRESENTATION	RM#
9:45 AM-10:45 AM	Michael Miller , Citizens Energy Group	Abating Indianapolis' Combined Sewer Overflow System – An Overview of the DigIndy Tunnel System HOT TOPIC	307
9:45 AM-10:45 AM	Peter Raucci , Fulbright Institute of International Education	Research and Teaching Opportunities in the Sciences with the U.S. Fulbright Program HOT TOPIC	GB 3-4
10:00 AM-11:00 AM	Stephen Nawrocki , University of Indianapolis	“What’s Wrong with Forensic Anthropology These Days? How We’ve Forgotten the Science and Can’t Do the Math” HOT TOPIC	301
10:15 AM-11:15 AM	Jenny Fisher , Indiana University Northwest	The End of the Antibiotic Era: Is Resistance Inevitable? HOT TOPIC	305
10:30 AM-11:30 AM	Pam Pontones , Indiana State Department of Health	Indiana’s Opioid Epidemic....Behind the Numbers HOT TOPIC	302
10:45 AM- 11:45 AM	Patrick M Motl , Indiana University Kokomo	The Neutron Star Merger GW170817 HOT TOPIC	310
11:00 AM- 12:00 PM	Sandro Matosevic , Jiao Wang, and Andrea Chambers, Purdue University	Natural killers are made, not born: Cancer immunotherapies with genetically-engineered immune cells HOT TOPIC	303
11:15 AM-12:15 PM	Jen Brown , Indiana State Department of Health	One Health in Action: Investigating Zoonotic Diseases HOT TOPIC	306
2:15 PM-3:15 PM	Daniel Tarquinio , Rett Syndrome Clinic, Emory University Hospital	Rett Syndrome- A Beacon of Hope for Autism HOT TOPIC	305
2:15 PM-3:15 PM	Peter Raucci , Fulbright Institute of International Education	Research and Teaching Opportunities in the Sciences with the U.S. Fulbright Program HOT TOPIC	312
2:15 PM-3:00 PM	Roger P. Hangarter , Indiana University	Science + Art = Symbiotic Learning HOT TOPIC	309
2:15 PM-3:00 PM	Bill Sullivan , Indiana University School of Medicine	Stand out from the Crowd: Communicating Your Science in an Online World HOT TOPIC	310
2:15 PM-3:15 PM	Melanie Fox , Science and Innovation, Indiana State Museum and founder of Central Indiana Science Outreach (CINSO); Karen Jepson-Innes , WonderLab Museum of Science, Health and Technology; Mitch Luman , Evansville Museum	Science for Everyone: Informal Science Education in Our Communities PANEL DISCUSSION	GB 3-4
3:15 PM-4:15 PM	Doug Bernstein , Ball State University	A brief history of CRISPR and its potential roles in feeding the world HOT TOPIC	303
3:15 PM-4:15 PM	Pam Pontones , Indiana State Department of Health	Indiana’s Opioid Epidemic....Behind the Numbers HOT TOPIC	302
11:15 AM-12:15 PM	Chris Edwards , Fishers High School	Replacing Old Myths About Secondary and College Teaching with New Opportunities WORKSHOP	309
3:15 PM-4:15 PM	Paul E. Rothrock and Eric B. Knox , Indiana University-Bloomington	How to Use the Consortium of Midwest Herbaria Data Portal in Research and Teaching WORKSHOP	GB 3-4
3:00 PM-4:15 PM	Jessi Ghezzi , Ball State University	Becoming a Professional Scientist: How to Get Started! WORKSHOP	310

2018 Indiana Academy of Science Annual Meeting | Final Program

GENERAL INTEREST

Ecoblitz Symposium

2:15-4:45 p.m.

TIME	PRESENTER(S)	PRESENTATION	RM#
2:30 PM	Rae Schnapp, Jeffrey Stant and Samantha Buran , Indiana Forest Alliance	Ecoblitz: Characterizing Biodiversity in Morgan-Monroe and Yellowwood State Forests (Ecoblitz Symposium)	GB 1-2
2:45 PM	Leslie Bishop , Earlham College; Paul Rothrock, Indiana Univ. Herbarium; John Taylor, Ball State Univ.; Jerome Delbridge, Tree-Centric Solutions LLC; and Samantha Buran, Indiana Forest Alliance	Forest structure and composition of the Ecoblitz Area within Morgan Monroe-Yellowwood S.F. (Ecoblitz Symposium)	GB 1-2
3:00 PM	David Rupp , IndiGo Bird Tours/	Cerulean Warbler (<i>Setophaga cerulea</i>) Nesting Behavior in the Morgan-Monroe State Forest (Ecoblitz Symposium)	GB 1-2
3:15 PM	Jeremy Sheets , Indiana Forest Alliance and John O. Whitaker, Jr., Indiana State University	Mammal Surveys for the Ecoblitz in Yellowwood-Morgan Monroe Forest (Ecoblitz Symposium)	GB 1-2
3:30 PM	Leroy Koehn , LepTraps, LLC/	Moth Diversity of Morgan-Monroe State Forest and Yellowwood State Forest (Ecoblitz Symposium)	GB 1-2
3:45 PM	Keaton Veldkamp and Glené Mynhardt : Hanover College	Diversity of Wasps in the Yellowwood State Forest Back Country Area (Insecta: Hymenoptera) (Ecoblitz Symposium)	GB 1-2
4:00 PM	Robert P. Jean , Environmental Solutions & Innovations, Inc.	Bee Surveys in the Ecoblitz Area of Morgan-Monroe and Yellowwood State Forests in Indiana (Ecoblitz Symposium)	GB 1-2
4:15 PM	James C. Lendemer , The New York Botanical Garden	New data on Indiana lichens highlight an understudied and imperiled component of native biodiversity (Ecoblitz Symposium)	GB 1-2

2018 Indiana Academy of Science Annual Meeting | Final Program

ORAL PRESENTATIONS BY SECTION

	TIME	AUTHOR(S)	PRESENTATION	RM#
ANTHROPOLOGY	9:45 AM	Savannah Leach Newell and Jonathan A. Karty, Indiana University	The detection of nicotine in skeletal remains to assess tobacco use in the prehistoric Midwest	301
	10:00 AM	Stephen Nawrocki , University of Indianapolis	"What's Wrong with Forensic Anthropology These Days? How We've Forgotten the Science and Can't Do the Math" HOT TOPIC	301
BOTANY	9:45 AM	Darrin L. Rubino , Hanover College and Christopher Baas, Ball State University	The Fort in the Doctor's House: Using Tree-Ring Growth Patterns to Discover Historic Fort Wayne	302
	10:00 AM	Stephen Russell and M. Catherine Aime, Purdue University	Creating a regional mycoflora – an Indiana case study	302
	10:15 AM	Jacob Hamilton , Stephen Randall, Indiana University Purdue University Indianapolis	Soybean: time-lapse examination of sleep movement and response to cold temperature	302
CELL BIOLOGY	9:45 AM	Manoj Panta , Andrew J. Kump, John M. Dalloul, Kristopher Schwab, Shaad M. Ahmad. Indiana State University	Notch activates expression of pericardial genes using distinct permissive and instructive mechanisms	303
	10:00 AM	Bryce Buchanan , Laura Scanameo, Eric M. Rubenstein, Ball State University	Effects of Endoplasmic Reticulum Stress on Hrd1-Mediated Protein Quality Control	303
	10:15 AM	Andrew J. Kump , Manoj Panta, Ye Chen, Xujing Wang, Shaad M. Ahmad. Indiana State University; National Heart, Lung and Blood Institute, NIH.	Forkhead protein-regulated genes mediating cardiac progenitor cell specification and division	303
	10:30 AM	Krista Jackson, Aaron Hudnall, Jonathan W. Lowery , Marian University College of Osteopathic Medicine	Identification of a gene signature associated with elevated bone formation rate in aging mice	303
	11:00 AM	Sandro Matosevic , Jiao Wang, and Andrea Chambers, Purdue University	Natural killers are made, not born: Cancer immunotherapies with genetically-engineered immune cells HOT TOPIC	303

2018 Indiana Academy of Science Annual Meeting | Final Program

ORAL PRESENTATIONS BY SECTION

TIME	AUTHOR(S)	PRESENTATION	RM#	
2:15 PM	Zach Deitch , Stephen Randall, Indiana University Purdue University Indianapolis, Nelson Osuagwu, Rob Wilson, Inland Norway University, Isam Fattash, American University of Madaba, Muath Alsheikh, Graminor Breeding Ltd. and Norwegian University of Life Sciences	Cold Regulation of the Dehydrins in Diploid Strawberry	303	CELL BIOLOGY
2:30 PM	Adib Behrouzi , Jennifer Robison, Stephen Randall, Indiana University Purdue University Indianapolis	Comparison of Soybean and Arabidopsis using the RD29A Cold-Regulated Promoter	303	
3:00 PM	Susan A. McDowell , Ball State University	Targeting the host cell rather than the bacteria to limit infection	303	
3:15 PM	Doug Bernstein , Ball State University	A bried history of CRISPR and its potential roles in feeding the world HOT TOPIC	303	
9:45 AM	Todd Hopkins , Butler University	Deep Eutectic Solvents for Chiral Discrimination	304	CHEMISTRY
10:00 AM	Shannon Lieb and Paula LeBlanc, Butler University	Effects of Conjugation on Dual Amide Hydrogen-Bonding in CCl ₄ : Theory and Experiment	304	
10:15 AM	Erika Nord and Sundeep Rayat*, Ball State University	Investigating the Interaction of Aryl Tetrazolones with Anions	304	
10:45 AM	Benjamin Goka and Sundeep Rayat*, Ball State University	An improved Method to Access 1,4-diaryl tetrazolones	304	
11:00 AM	Joe Kirsch , Butler University	Infrared Spectroscopic Investigations of the Interactions of <i>Lactams</i> with Nanoparticles	304	
11:15 AM	Kathryn Rowberg , Brandon Stieve, and Joshua Miranda	Microplastics and Water Quality of Waterways in Northwest Indiana	304	EARTH SCIENCE
9:45 AM	Michael Miller , Citizens Energy Group	Abating Indianapolis' Combined Sewer Overflow System – An Overview of the DigIndy Tunnel System HOT TOPIC	307	
11:00 AM	Mercy W. Ngunjiri , Joshua O. Minai, Darrell G. Schulze, Purdue University, Zamir Libohova, USDA Natural Resources Conservation Service, Cornelius Serrem, University of Eldoret	Predicting Soils Types and Properties with Limited Data in the Uasin Gishu Plateau, western Kenya	307	
11:15 AM	Nelson R. Shaffer , Nannovations	I need my space! Holes and Minerals	307	
11:30 AM	Darrell G. Schulze , Purdue University, and The Isee Network	Detailed Soil and Terrain Maps for the Conterminous United States	307	
11:45 AM	Shams R. Rahmani and Darrell G Schulze, Purdue University	Mapping Soil Spatial Variability at the Purdue Agronomy Center for Research and Education (ACRE)	307	

2018 Indiana Academy of Science Annual Meeting | Final Program

ORAL PRESENTATIONS BY SECTION

	TIME	AUTHOR(S)	PRESENTATION	RM#
EARTH SCIENCE	12:00 PM	James O. Farlow and Dan Cororian, Purdue University Fort Wayne	Body Size and Locomotor Performance of Non-Avian Theropod Dinosaurs: Evidence from Fossil Trackways	307
	2:15 PM	Martin R. Risch , U.S. Geological Survey and Donna M. Kenski, Lake Michigan Air Directors Consortium	Patterns and Changes in Atmospheric Mercury Transport to Indiana Landscapes	307
	2:30 PM	Joshua O. Minai , Darrell G. Schulze, Purdue University	Renewal of Archival Legacy Soil Data: A Case Study of Busia Area, Kenya	307
ECOLOGY	9:45 AM	Cecelia E. Smith , Vamsi J. Nalam, and Jordan M. Marshall, Indiana University- Purdue University Fort Wayne	SNP identification in <i>Fraxinus</i> linking genetic characteristics to tolerance of emerald ash borer	308
	10:00 AM	Lekeah Durden , Indiana University; Dong Wang, Inner Mongolia Agricultural University, China; Daniel Panaccione, West Virginia University, and Keith Clay, Indiana University	How fungal endosymbiont within <i>Ipomoea tricolor</i> affects <i>Meloidogyne incognita</i> gall formation	308
	10:15 AM	Jeffrey D. Holland , Purdue University	Beetle community resilience to harvest	308
	10:30 AM	E. R. Stern and M. A. Milne, University of Indianapolis; J. Campbell, University of Florida; C. Vigueira, and P. Vigueira, High Point University; K. Greenberg, US Forest Service Southern Research Station	The effect of cutting and burning on spider abundance, composition, and diversity in North Carolina	308
	10:45 AM	BaoThu Dinh and Marc Milne, University of Indianapolis; Joshua Campbell and Jamie Ellis, University of Florida	The effect of wildflower strips on spider abundance and diversity in Florida	308
	11:15 AM	Scott Haulton , Indiana Department of Natural Resources, Division of Forestry	Bat summer habitat use before and after timber harvest on two Indiana State Forests	308
	11:30 AM	Clayton D. Delancey and Kamal Islam, Ball State University	Roosting habitat use by Cerulean Warblers (<i>Setophaga cerulea</i>)	308
	11:45 AM	Garrett J. MacDonald and Kamal Islam, Ball State University	Do Cerulean Warblers (<i>Setophaga cerulea</i>) exhibit geographic song variation?	308
	12:00 PM	Kaitlin Gavenda , Kamal Islam, Clayton Delancey, Ball State University	Habitat preference of Migrating Northern Saw-whet Owls in Delaware and Henry counties, Indiana: preliminary results	308
	2:15 PM	Bruce Kingsbury , Jillian Josimovich, and Monica Matthews, Purdue University Fort Wayne; Michael Ravesi, Michigan Department of Military and Veterans Affairs; Sasha Tetzlaff, University of Illinois Urbana-Champaign; Brett DeGregorio, U.S. Army Corps of Engineers	Translocation Approaches for the Imperiled Massasauga Rattlesnake	308

2018 Indiana Academy of Science Annual Meeting | Final Program

ORAL PRESENTATIONS BY SECTION

TIME	AUTHOR(S)	PRESENTATION	RM #	
2:30 PM	Monica Matthews , Jillian Josimovich and Bruce A. Kingsbury, Indiana University-Purdue University	Roads Impact Massasauga (<i>Sistrurus catenatus</i>) Movement Behavior	308	ECOLOGY
2:45 PM	Spencer Siddons , Marin Bray, and Catherine Searle, Purdue University	Examining the fungal pathogen, <i>Batrachochytrium dendrobatidis</i> , in anurans during winter in Indiana	308	
2:30 PM	Rae Schnapp, Jeffrey Stant and Samantha Buran , Indiana Forest Alliance	Ecoblitz: Characterizing Biodiversity in Morgan-Monroe and Yellowwood State Forests (Ecoblitz Symposium)	GB 1-2	ECOBLITZ SYMPOSIUM
2:45 PM	Leslie Bishop , Earlham College; Paul Rothrock, Indiana Univ. Herbarium; John Taylor, Ball State Univ.; Jerome Delbridge, Tree-Centric Solutions LLC; and Samantha Buran, Indiana Forest Alliance	<i>Forest structure and composition of the Ecoblitz Area within Morgan Monroe-Yellowwood S.F.</i> (Ecoblitz Symposium)	GB 1-2	
3:00 PM	David Rupp , IndiGo Bird Tours/	Cerulean Warbler (<i>Setophaga cerulea</i>) Nesting Behavior in the Morgan-Monroe State Forest (Ecoblitz Symposium)	GB 1-2	
3:15 PM	Jeremy Sheets , Indiana Forest Alliance and John O. Whitaker, Jr., Indiana State University	Mammal Surveys for the Ecoblitz in Yellowwood-Morgan Monroe Forest (Ecoblitz Symposium)	GB 1-2	
3:30 PM	Leroy Koehn , LepTraps, LLC/	<i>Moth Diversity of Morgan-Monroe State Forest and Yellowwood State Forest (Ecoblitz Symposium)</i>	GB 1-2	
3:45 PM	Keaton Veldkamp and Glené Mynhardt : Hanover College	Diversity of Wasps in the Yellowwood State Forest Back Country Area (Insecta: Hymenoptera) (Ecoblitz Symposium)	GB 1-2	
4:00 PM	Robert P. Jean , Environmental Solutions & Innovations, Inc.	<i>Bee Surveys in the Ecoblitz Area of Morgan-Monroe and Yellowwood State Forests in Indiana</i> (Ecoblitz Symposium)	GB 1-2	
4:15 PM	James C. Lendemmer , The New York Botanical Garden	New data on Indiana lichens highlight an understudied and imperiled component of native biodiversity (Ecoblitz Symposium)	GB 1-2	
10:30 AM	Terry R. West and Alivia Shively , Purdue University	Exploration of the recent transition to roundabouts from intersections in West Lafayette, IN	300	ENGINEERING
10:45 AM	Joseph Marx , Keith Pate, Farid Breidi, University of Southern Indiana	Design and Construction of Mechanical Components Utilizing Layered Materials	300	
11:00 AM	Michael Ivanyo, Alexander Wray , Nuri Zeytinoglu, Connor Feeney, Purdue University Northwest	Experimental Analysis of an Air Foil in Engineering Education	300	

2018 Indiana Academy of Science Annual Meeting | Final Program

ORAL PRESENTATIONS BY SECTION

	TIME	AUTHOR(S)	PRESENTATION	RM#
ENVIRONMENTAL SCIENCE	9:45 AM	Ashley Kissick , James Camberato, and Robert Nielsen, Purdue University	Spatial econometric modeling for determining relationships between crop yield and landscape features	306
	10:00 AM	E. O'Neil , J. Stone, J. Latimer, Indiana State University	Analyzing the water quality of the Wabash River using diatom species assemblages and geochemistry	306
	10:15 AM	Rachel Walker and John Mundell, Mundell & Associates	Chlorinated herbicide leaching from utility poles and potential impact on private water wells: first documented case from Indiana	306
	10:30 AM	John A. Mundell and Forrest Kunkel, Mundell & Associates	Ohio River Levee Performance Evaluation under Flood Conditions	306
	10:45 AM	Elena Solohin and Christopher B. Craft, Indiana University	Response of Tidal Wetlands to Rising Sea Level in Three Estuaries along the US Southeast Coast	306
MICROBIOLOGY & MOLECULAR BIOLOGY	9:45 AM	Minal Mulye , Marian University College of Osteopathic Medicine, Brianna Zapata, California State University, and Stacey D. Gilk, Indiana University School of Medicine	Altering lipid droplet homeostasis affects <i>Coxiella burnetii</i> intracellular growth	305
	10:00 AM	Tazin Fahmi ¹ , Gary Port ² & Kyu Hong Cho ¹ Indiana State University ² Washington University School of Medicine, St. Louis, MO	The second messenger c-di-AMP is involved in regulating diverse cellular activities and virulence in <i>S. pyogenes</i>	305
	10:15 AM	Jenny Fisher , Indiana University Northwest	The End of the Antibiotic Era: Is Resistance Inevitable? HOT TOPIC	305
	11:15 AM	Caleb Embree , Rebecca Kurtz Paulette, and Douglas Bernstein, Ball State University	Phenotypic consequences of <i>Candida albicans</i> PUS4 overexpression	305
	11:30 AM	Allyson R. Morris and Douglas A. Bernstein, Ball State University	The effect of <i>PUS5</i> deletion on mitochondrial protein expression in <i>C. albicans</i> and <i>S. cerevisiae</i>	305
	11:45 AM	Logan Ganzen , Purdue University; Chi Pui Pang, Chinese University of Hong Kong; Mingzhi Zhang, Shantou University; Motokazu Tsujikawa, Osaka University Graduate School of Medicine, Yuk Fai Leung, Purdue University	Visual Motor Response of a Transgenic Retinitis Pigmentosa Zebrafish Model	305
	2:15 PM	Daniel Tarquinio , Rett Syndrome Clinic, Emory University Hospital	Rett Syndrome HOT TOPIC	305

2018 Indiana Academy of Science Annual Meeting | Final Program

ORAL PRESENTATIONS BY SECTION

TIME	AUTHOR(S)	PRESENTATION	RM#	
3:15 PM	Azeem Ahmad , Marian University	Phylogenetic Diversity of Rhizosphere Bacteria of Amur Honeysuckle (<i>Lonicera maackii</i>) at the Nina Mason Pulliam EcoLab as Determined by 16S rRNA Gene Sequence Analysis	305	MICROBIOLOGY & MOLECULAR BIOLOGY
3:30 PM	Erica Cantor, Jessica Miller, Kayla Mueller and Krista Latham, University of Indianapolis Cynthia Cale and Gay Bush, Strand Analytical Laboratories	Examination of the persistence of secondarily transferred DNA on regularly used knives	305	
3:45 PM	Jonah W.P. Stone , Haley E. Rock, Rachel M. Kreher, and Krista E. Latham, University of Indianapolis; Cynthia Cale and Gay Bush, Strand Analytical Laboratories	Utilizing human toenail clippings for use in genetic studies and forensic identification	305	
9:45 AM	Patrick M Motl , Indiana University Kokomo	The Schönberg – Chandrasekhar Instability in Stars with a Core – Envelope Structure	310	PHYSICS AND ASTRONOMY
10:00 AM	Eric Hedin , Robin Klause, and Yong Joe, Ball State University	Charge Transport through a Double-Ring Molecule with Multiple Outputs	310	
10:15 AM	Robin Klause , Eric Hedin, and Yong Joe, Ball State University	Magnetic Switching in a Double-Ring Molecule with Multiple Outputs	310	
10:30 AM	Aaron Mosey and Ruihua Cheng, Indiana University-Purdue University Indianapolis	Harnessing Spin Crossover Phenomena	310	
10:45 AM	Patrick M Motl , Indiana University Kokomo	The Neutron Star Merger GW170817 HOT TOPIC	310	
10:45 AM	Donald G. Ruch , Ball State University	Results of the 2017 Red-Tail Land Conservancy Biodiversity Survey in East-Central Indiana	311	PLANT SYSTEMATICS AND BIODIVERSITY
11:00 AM	Michael A. Homoya , Indiana DNR Division of Nature Preserves	Efforts to Conserve the Indiana Genotype of Heart-leaved Plantain (<i>Plantago cordata</i>) in Nature	311	
11:15 AM	Scott A. Namestnik , Orbis Environmental Consulting	Filling in the Gaps: The Discovery of <i>Rhexia mariana</i> L. var. <i>mariana</i> in Northwest Indiana	311	
11:30 AM	Eric B. Knox , Indiana University-Bloomington, Andrea L. Case, Kent State University, Hannah Appiah-Madson, Northeastern University, Christina M. Caruso, University of Guelph	Post-glacial colonization of the Midwest by <i>Lobelia siphilitica</i>	311	
3:15 PM	Paul E. Rothrock and Eric B. Knox , Indiana University-Bloomington	How to Use the Consortium of Midwest Herbaria Data Portal in Research and Teaching WORKSHOP	GB 3-4	

2018 Indiana Academy of Science Annual Meeting | Final Program

ORAL PRESENTATIONS BY SECTION

	TIME	AUTHOR(S)	PRESENTATION	RM#
SCIENCE EDUCATION	9:45 AM	Josephine Shireen Desouza , Ball State University	Making Spatial Decisions using Geographic Information Systems (GIS) and the Geo Inquiry Process	309
	10:00 AM	Christopher Baas , Ball State University; Darrin Rubino, Hanover College; and Jonathan Spodek, Ball State University	Teaching Dendrochronology to Preservation Students: Linking Historic Sources to Scientific Inquiry	309
	10:15 AM	Ryan Jeske , Ball State University	Using Immediate Feedback Quizzes and Box.com as Learning Tools in the Active Learning Classroom	309
	10:30 AM	Jennifer Robison , Patrick Gentry, Nicolas Berbari, and Anusha Rao, Indiana University Purdue University Indianapolis	A Simple Intervention to Increase Inclusive Pedagogy in a Biology Laboratory	309
	10:45 AM	Marc Milne and Leah Milne: University of Indianapolis	How to Effectively Teach Biological Writing to College Freshmen and Sophomores	309
	11:00 AM	Erin Gerecke and Philip Villani, Butler University	Biology Indianapolis Outreach: A new undergraduate service learning course at Butler University	309
	11:15 AM	Chris Edwards , Fishers High School	Replacing Old Myths About Secondary and College Teaching with New Opportunities	309
	2:15 PM	Roger P. Hangarter , Indiana University	Science + Art = Symbiotic Learning HOT TOPIC	309
	2:15 PM	Bill Sullivan , Indiana University School of Medicine	Stand out from the Crowd: Communicating Your Science in an Online World HOT TOPIC	310
	2:15 PM	Melanie Fox , Science and Innovation, Indiana State Museum and founder of Central Indiana Science Outreach (CINSO); Karen Jepson-Innes , WonderLab Museum of Science, Health and Technology; Mitch Luman , Evansville Museum	Science for Everyone: Informal Science Education in Our Communities PANEL DISCUSSION	GB 3-4
3:00 PM	Jessi Ghezzi	Becoming a Professional Scientist: How to Get Started! WORKSHOP	310	
ZOOLOGY AND ENTOMOLOGY	9:45 AM	Marianna Zmlauski-Tucker and Bingwei Ye, Ball State University	Effect of Supplementation with Lipoic Acid on Nuclear Reduced Glutathione Levels in Rat Kidney	312
	10:00 AM	Maraiah Russell , Fort Wayne Children's Zoo	Collaborating for Conservation: Utilizing zoo resources for scientific advancement	312
	10:15 AM	Theresa E. Wrynn , and Brian G. Gall, Hanover College	Interactions between predatory dragonflies and early Eastern newt developmental stages	312
	10:45 AM	Rex Meade Strange , University of Southern Indiana	Intraspecific Phylogeography of the Southern Redbelly Dace <i>Chrosomus erythrogaster</i> .	312
	11:00 AM	Kent Edmonds , Indiana University Southeast	Regulation of Reproduction and Gastrointestinal Development in the Rice Rat (<i>Oryzomys palustris</i>)	312
	11:15 AM	Kenneth Saillant , Ashley Baum, and Ahmed Mustafa, Indiana University-Purdue University Fort Wayne	Probiotics in Aquaculture- I: Fish Growth	312

133rd Annual Academy Meeting, Saturday, March 24, 2018 8 a.m. - 6 p.m.

J. W. Marriott Hotel

10 S. West Street
Indianapolis, Indiana 46204

Other Questions?

<http://www.indianaacademyofscience.org>

Annual Meeting Registration is available online at <http://www.indianaacademyofscience.org> now through March 17, 2018. The registration fee for everyone is \$140.00.

On-site registration is available on Saturday, March 24, 2018, providing space is available. The onsite registration fee for everyone is \$140.00.

Parking: Underground Parking at the White River State Parking Garage (under the Indiana State Museum, 650 West Washington Street, Indianapolis, IN.) is available at a **discount daily parking rate of \$5.00 for the first 350 vehicles**. **Pull a parking ticket when you arrive at the Garage and get a discounted parking pass at the Meeting registration desk.** Discounted Self-Parking is also available at the J.W. Marriott Hotel for \$20.00 for the day, based on availability.

Hotel Accommodations: If you are planning to make hotel reservations, there still may be hotels available where we have secured discount rates for the Annual Academy Meeting. Please refer to the Academy Website at <http://www.indianaacademyofscience.org> for the lodging listing of hotels. Pay particular attention to the cut off dates. Most of the cut off dates are for March 10, 2018. Note: **The JW Marriott (the Meeting host hotel) has rooms available for \$196.00 for King or Doubles through March 10, 2018. The Doubles will accommodate up to 4 guests. Book now. Limited rooms available.**

***Please see the on-line Academy Website FAQ for information regarding the 133rd Annual Academy Meeting registration, as well as for other questions you might have.**