



INDIANA ACADEMY OF SCIENCE NEWSLETTER

Issue 173

December 2019

Note from the President's Corner



Fellow Academy Members,

Greetings and thank you for taking the time to read this newsletter. The 135th Annual Academy Meeting will be March 21, 2020 in Indianapolis, Indiana. We are excited to see your research and share science with other Hoosiers. This will be my 18th meeting because it was one of my first meetings I attended as a graduate student at Indiana State University. These meetings give undergraduate and graduate students, faculty, and other professional scientists the opportunity to present research and connect with other scientists.

One of the new programs that the Academy has started is a collaboration with the Department of Education to develop relationships with Indiana High School STEM teachers and university faculty. The first meeting for these teachers and faculty was October 29th. High School teachers and university faculty discussed projects in STEM that would be practical in a high school setting and engaging for this population of students. This group will meet again in December and have a final meeting at the Annual Meeting in 2020.

Please take a moment to find the Indiana Academy of Science on Facebook, Instagram, and Twitter. We are working hard to improve our social media presence to ensure we can attract and retain the new generation of scientists who communicate their science online.

I look forward to seeing all of you in Indianapolis on March 21st.

Yours in Scholarship
Vanessa S. Quinn, Ph.D.

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From the Desk of the Executive Director

Dear Indiana Academy of Science Members,

Membership in the Indiana Academy of Science is vital to its growth and sustainability. Your membership enables the Academy to continue to realize a mission that has helped to keep science at the forefront in our state. For that you are deeply appreciated.

Most recently, with your membership support, we fully funded 10 highly rated Senior Research Grant proposals submitted by investigators from throughout the state; published and disseminated to our regular Academy members the first issue of the 128th volume of the *Proceedings* of the Indiana Academy of Science, and actively participated in and helped to fund several community science education initiatives for Indiana youth, to include *Celebrate Science Indiana*, Indiana State Museum *fieldtrips for school age youth*, and the *Science Talent Search Program*. In addition, with your membership support, in September the Academy launched the piloting of the Indiana Academy of Science STEM partnership with the Indiana Department of Education school educators, involving 50 9-12th grade science teachers and 11 Indiana Academy of Science senior scientists are:

- Azeem Ahmad, Microbiologist, Marian U.
- Nick Harby, Botanist, Purdue Herbarium
- Jennifer Latimer, Geologist, Indiana St. U.
- Shannon Lieb, Chemist, Butler University
- Michelle Marincel Payne, Engineering, RHIT
- Horia Petrache, Physicist, IUPUI
- Vanessa Quinn, Biologist, Purdue NW
- Chris Stobart, Microbiologist, Butler U.
- John Taylor, Physicist & Astronomist, ETHOS Innovation Center
- Wes Tobin, Physicist, IU East
- Dean Wiseman, Biologist, U. Indianapolis



Delores G. Brown, Ph.D.
Executive Director

These are but some of the many examples of what the Academy has made possible, because of you. The work of the Academy is strong today because of the strength of our members.

Our nearly 800 members represent the full range of the sciences, from anthropology to zoology. Consider inviting a colleague, friend, young scientist, or science enthusiast to join the Academy; or gift an Academy membership to someone whom you wish to enjoy the Indiana Academy of Science experience.

Thank you for your continued commitment to the Indiana Academy of Science.

Membership Renewal Reminder

If you have not done so already, please renew your membership for 2020. Membership is easily renewed online at <http://www.indianaacademyofscience.org>.

\$🔔\$ Spring 2020 Senior Research Grants Deadline 🔔\$

March 1 is the Spring deadline for receipt of senior research grant proposals from the membership. Go online at <https://www.indianaacademyofscience.org/research-grants/senior-research-grants> to get the specifics.

👥 Annual Meeting News 👥

The 135th Annual Academy Meeting is **Saturday March 21**. Plan now to attend this meeting.

Registration for the annual meeting and abstract uploads will open on January 6, 2020. It is important that your membership is current to receive the member discount for annual meeting registration. You can update your membership now by simply going to the Website at <http://www.indianaacademyofscience.org> and renewing. A membership renewal now will take you through the remainder of this year and through all of 2020.

For questions about research, *hot topics* or workshops that you wish to present at the 135th Annual Academy Meeting, please consult your Section Chair or Vice Chair. Their names and contact information can be found on the Website.

A call for papers can be found on the following page of this issue of the newsletter.

New Section Leadership—Mathematics Section

The Academy is very happy to announce that Dr. Kevin Drury (assistant professor of mathematics at Huntington University) will lead the Mathematics Section as the new Section Chair this year. He can be reached at kdrury@huntington.edu. Mathematics research abstracts, *hot topics*, and workshops are welcomed for presentation at the 135th Annual Academy Meeting. Those of you with a mathematics interest, please feel free to indicate this section in your membership profile, and make contact with your new Section Chair.

135th INDIANA ACADEMY OF SCIENCE Annual Meeting

21 March 2020

Indianapolis, Indiana

The 135th Annual Academy Meeting will take place at the J.W. Marriott Hotel in downtown Indianapolis, Indiana on March 21, 2020, (7:15 a.m. - 6:00 p.m.). It will bring together nearly 500 Indiana scientists, science educators, science graduate and undergraduate students, and science enthusiasts; to share some of this country's latest developments in scientific research, and practice.

Join us for a whole day of Indiana Science!

135th ANNUAL ACADEMY MEETING REGISTRATION and ABSTRACT SUBMISSION are quick and convenient, and are available on-line January 6, 2020 through February 17, 2020 at

<http://www.indianaacademyofscience.org/Events-Meetings/Event/13.aspx>.

Prepare now to share your research and insight--The Indiana Academy of Science encourages abstracts from Indiana field scientists, academic scientists, industry scientists, science educators, graduate science students, and undergraduate science students whose work could be of interest to other Indiana scientists, science educators and science students. Abstracts are approved by the Section Chair before being presented. The Section Chair (or Section Vice-Chair) is the point of contact for Academy members who would like to discuss their abstract before submitting it for review, or have other questions pertaining to their intended presentation. Academy members can access the name and contact information for Section Chairs and Section Vice-Chairs on the Academy Website at <http://www.indianaacademyofscience.org>. **Abstracts will be published on the Indiana Academy of Science Website following the 135th Annual Academy Meeting.**

General Criteria

- The research must be of sufficient scientific importance.
- **Science presenters must FIRST register for the 135th Annual Academy Meeting and pay the Annual Meeting registration fee before an abstract can be uploaded.** Academy members receive a discount Annual Meeting registration. **Please go to <https://www.indianaacademyofscience.org> to renew your membership for 2020 or register a new membership in the Indiana Academy of Science.**
- **All presentations will take place on Saturday March 21, 2020. See on-line guidelines for preparing abstracts for Oral, Poster, Workshop, and Hot Topic presentations after November 11th. <http://www.indianaacademyofscience.org>.**
- A single individual may submit only one abstract as the first author (per Section). It is expected that this individual will make the presentation.

Technical Requirements

- Abstracts must be submitted on the on-line submission form found at (<http://www.indianaacademyofscience.org>) which includes title, first author's name, address, and email address, as well as co-author names, addresses, and email addresses, and brought to the Annual Academy Meeting on a flash drive, ready to upload between 7:15 a.m. and 8:00 a.m. **Abstracts submitted are limited to 300 words (not including the title or author names).**

The Indiana Academy of Science has been an important voice of Indiana science since its inception in 1885. It continues to enjoy a rich tradition of science excellence, as well as a high professional stature with membership that includes many of the state of Indiana's premier scientists and science educators, and graduate and undergraduate students

🏆 Procedure for Nomination of Individuals for IAS Awards 🏆

While the awards for 2020 have already been decided, the Awards Committee of the Indiana Academy of Science accepts nominations any time of the year. Forms for Nominations for Distinguished Scholar and Distinguished Service Awards and the Recommendation Forms for Fellow may be found at <http://www.indianaacademyofscience.org/award-fellows>, follow the link to obtain each form. Please keep in mind that Recommendations for Academy Fellows are put forth by Fellows of the Academy only. Recommended nominees for ALL Awards must also be current members of the Indiana Academy of Science. Please direct questions or send nominations to: awards@indianaacademyofscience.org

IAS Member and Cicada Expert Dr. Gene Kritsky Honored By Entomological Society of America



Mount St. Joseph University Professor and Dean Gene Kritsky, Ph.D., one of the nation's leading authorities on cicadas, has been honored as a Fellow of the Entomological Society of America (ESA) at its Annual Meeting in November.

The ESA is the largest organization in the world serving the professional and scientific needs of entomologists - scientists who study insects - and individuals in related disciplines. The ESA cited Dr. Kritsky's work on periodical cicadas that warranted this recognition. Kritsky has been actively involved with cicada research for over 40 years. Dr. Kritsky has given hundreds of media interviews, published academic papers on cicadas and is the author of two books on Cicadas, "Periodical Cicadas: The Plague and the Puzzle" and "In Your Backyard: Periodical Cicadas".

"I hope that this recognition will inspire other entomologists at small liberal arts colleges to become more active in the field," he said.

Earlier this year, Dr. Kritsky worked in partnership with the Center for IT Engagement (ciTe) at Mount St. Joseph University to create the Cicada Safari app. It allowed users to search, photograph and help map the 17-year Brood VIII cicadas that began emerging in northeastern Ohio - as well as in parts of western Pennsylvania and northern West Virginia – starting in mid-May.

"Periodical cicadas are bugs of history," Dr. Kritsky said in explaining the public's fascination with cicadas. "They are generational events, and many people use the emergence to mark the passage of time, recall key events in their lives and just remember where they were and what they were doing the last time the cicadas came out. "

Kritsky is a Fellow of the American Association for the Advancement of Science and the Indiana Academy of Science, and he has received Distinguished Scholar Awards from both the Indiana Academy of Science and from Mount St. Joseph University. He served as Indiana Academy of Science President in 1995.

Plant I.D. workshops (2020), Lake Superior area (Isle Royale National Park & Keweenaw Peninsula)

Registration is now open for two 2020 Plant Identification (I.D.) workshops*, both of which will be held in Michigan's western Upper Peninsula near the shore of scenic Lake Superior on:

1. **Isle Royale National Park (June 8-13), based at Rock Harbor,** and
2. **Keweenaw Peninsula (July 7-9), based in Copper Harbor, Michigan's northernmost village.**

This is an excellent chance to visit a remote and wild portion of the northernmost part of Michigan near Lake Superior and learn the flora of the area at the same time. Both of these workshop locations feature rugged bedrock shorelines, ridges (with amazing views!), forests, and wetlands, which provide diverse habitat for numerous plant species, including boreal species and rare arctic disjuncts.

1. Isle Royale Plant I.D. workshop: This will be the 16th Plant I.D. workshop sponsored by IRKPA* that will be taught in Isle Royale National Park. **Dates: June 8-13**

Fee: US\$750 (\$25 discount for IRKPA members) NOTE: In addition to three days of instruction, the fee includes 13 meals from Tuesday lunch - Saturday lunch, transportation between Houghton MI and Isle Royale via the National Park Service ferry Ranger III (and while on Isle Royale), camping in a group campsite, park fees, and two IRKPA publications.

For more detailed information about Isle Royale (including map), workshop activities, evening options, instructor's background, workshop fee, cancellation policy, and how to register, please click on the flyer at: <http://irkpa.org/get-involved/workshops>

2. Keweenaw Plant I.D. workshop: This will be the 4th year that an IRKPA-sponsored plant I.D. workshop will be taught in the Keweenaw, a picturesque peninsula on Michigan's Upper Peninsula that juts out into Lake Superior. **Dates: July 7-9**

Fee: US\$399 (\$25 discount for IKRPA members)

For more detailed information about the Keweenaw (including map), workshop activities, evening options, instructor's background, workshop fee, cancellation policy, and how to register, please click on the flyer at <http://irkpa.org/get-involved/workshops> Enrollment is limited to 12 participants, so be sure to register early to guarantee a spot.

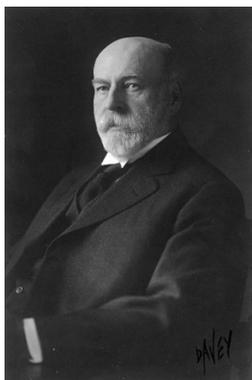
If you have questions or would like more information on either of these workshops, please contact Janet Marr at jkmarr@mtu.edu or phone # below. If you know of someone who may be interested in hearing about these Plant I.D. workshops, that would be great if you would pass this announcement on to them. If you would be able to post one or both flyers, that would be wonderful, too. Thank you!

Janet Marr
Botanist and Workshop Instructor
email: jkmarr@mtu.edu
phone: 906-369-5388

*IRKPA (Isle Royale & Keweenaw Parks Association) is the non-profit sponsor of these plant I.D. workshops and other workshops. Information is available at: <http://irkpa.org/get-involved/workshops>

Profiles: John Casper Branner 1850–1922

By Luke M. Jacobus, Newsletter Editor



John C. Branner was active in the Indiana Academy of Science from its inception, serving in numerous capacities and presenting many papers in its early years. Branner was born in Tennessee and earned a Bachelor's Degree from Cornell University in 1882, but not until after travelling the world and building a vast set of scientific experiences. While still an undergraduate, Branner was selected by noted geologist Prof. Charles F. Hartt to assist with a geological survey of Brazil, which led to several years of work. In 1882, he was sent back to Brazil at the behest of the United States government to study insect pests of sugar-cane and cotton. Thomas Edison hired him to search for South American plant fibers that might be suitable for incandescent light filaments. He worked for the Geological Survey of Pennsylvania.

Branner held multiple advanced degrees earned 1885–1916, including a Ph.D. from Indiana University (1885). In 1885, the founding year of our Academy, Indiana University President David Starr Jordan appointed his fraternity brother from Cornell to the professorship of Geology, a position Branner held until Jordan later called him to Stanford University. While at IU, he served as State Geologist of Arkansas.

After moving to California, Branner remained a member of the Indiana Academy of Science. While at Stanford, Branner served as Vice President and later President until forced to retire due to age limits. He assumed the title President Emeritus. Branner remained scientifically active, continuing to be involved with expeditions to Brazil, such as under the patronage of Alexander Agasiz. He was a special Government Commissioner on the Panama Canal and the 1906 California Earthquake. His work on the San Andreas Fault arguably contributed to the origins of modern earthquake science.

He was widely recognized for his scientific service. He was a member of the National Academy of Sciences and the American Philosophical Society. He served as president of the Indiana Academy of Science (1889), president of the American Geological Society (1904), vice-president of the American Association for the Advancement of Science (1890), and president of the American Seismological Society (1911).

He had a vast publication record on geology, but also on topics ranging from botany, entomology and other lines of natural science to cultural anthropology, genealogy and linguistics. He made a notable translation from Portuguese of *Establishment of the Inquisition in Portugal*. His grammar of Portuguese was published in multiple editions.

He was reported to be an inspiring educator with a simple, sincere and sympathetic personality who simultaneously maintained high courtesy and an informal attitude. Perhaps “dignified simplicity” describes him best.



Branner with President Jordan inspecting the university during reconstruction.
Stanford Archives GP 2785.

SOURCES

Stanford University Academic Council minutes, 7 April 1922.
 Proceedings of the Indiana Academy of Science, Volume 1.
<https://quake06.stanford.edu/centennial/gallery/people/branner.html>
https://siarchives.si.edu/collections/auth_per_fbr_eacp422
<http://edison.rutgers.edu/NamesSearch/glocpage.php?gloc=MJ&>

Marketing Opportunity for Industry & Corporate Interests and Indiana Local Colleges & Universities

Partner with the Indiana Academy of Science to present the 135th Annual Academy Meeting, March 21, 2020, at the J.W. Marriott Hotel in downtown Indianapolis. Welcoming over 400 scientists, science educators, and college and university science students to a full day of science, over 200 research papers and posters will be presented, together with "hot topic" discussions, workshops and tremendous opportunities to network. Contact the Executive Director now for specific partnership information at execdir@indianaacademyofscience.org.

Fall 2019 Senior Research Grants

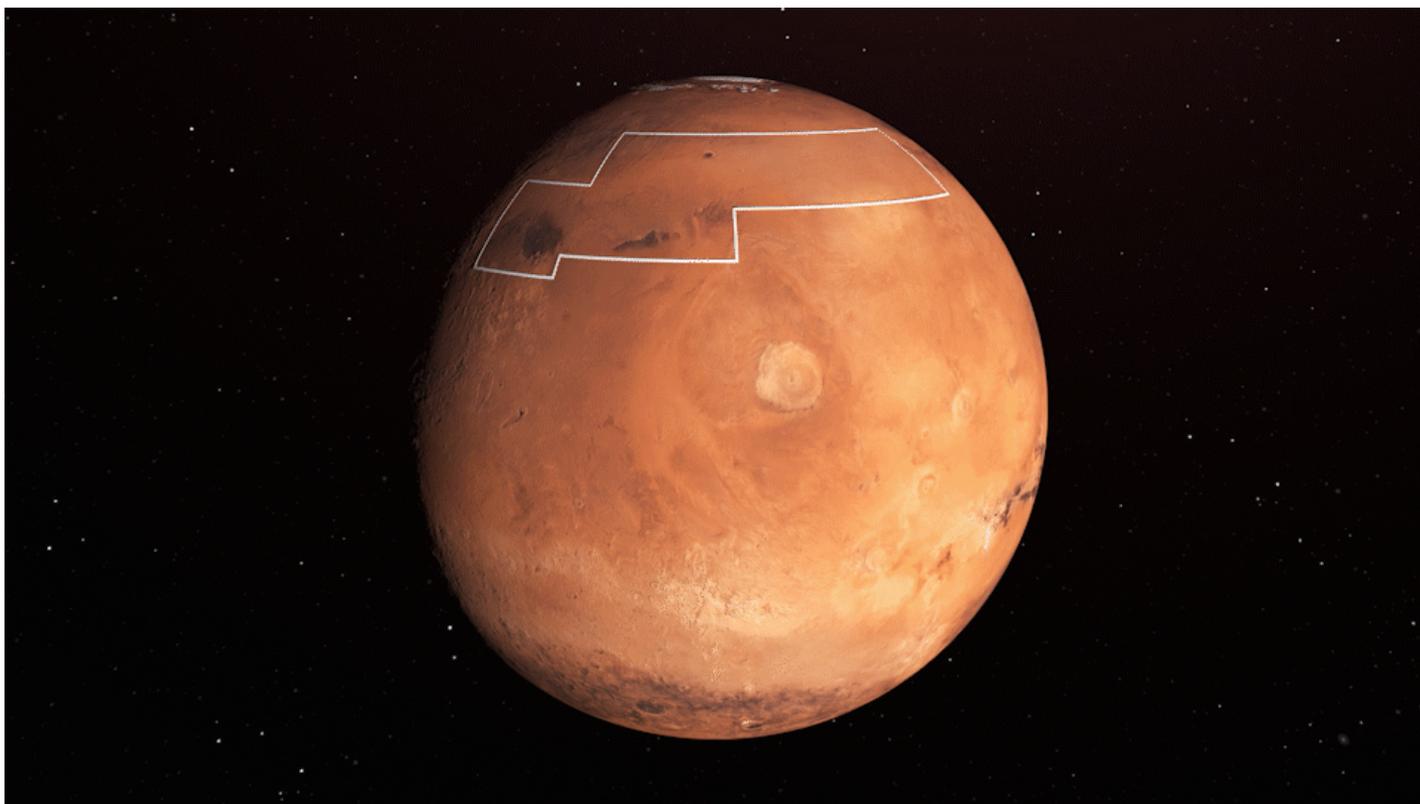
Principle Investigator	Institution	Discipline
Parisa Ebrahimbabaie	Ball State	Ecology
James Olesen	Ball State	Biology
Mahamud Subir	Ball State	Chemistry
Megan Freiler	IUB	Biology
Kara Million	IUB	Biology
Katie Talbott	IUB	Biology
Daniel Jones	Ind. Wesleyan	Biology
Dennis Brown	Manchester	Pharmacy
Scott Bergeson	Purdue FW	Biology
Michael Berberoglu	Valparaiso	Biology

Community Grants Initiative

For many years, the Academy has been committed to offering science education projects and programs through Indiana community partners. These partnerships have allowed us to touch the lives of many. The Academy is very proud to continue this tradition and has now formalized our INDIANA COMMUNITY GRANTS initiative. Through a careful review process, the leadership of the Academy will work together to award science education community grants to Indiana Academy of Science senior scientists each year. These grants will help provide funding for science education projects and programming by other organizations with similar goals as the Academy, and further the importance of Indiana science. For more information, visit: <https://www.indianaacademyofscience.org/research-grants/community-grants> .

Thanks to Michael Finkler
for holding a **Facebook birthday fundraiser**
that generated \$220 for IAS.
Belated happy birthday, Michael.

IMAGE of the ISSUE



The annotated area of Mars in this illustration holds near-surface water ice that would be easily accessible for astronauts to dig up. The water ice was identified as part of a map using data from NASA orbiters. **Image Credit:** NASA/JPL-Caltech. **Image Addition Date:** 2019-12-10.

SOURCE: <https://photojournal.jpl.nasa.gov/catalog/PIA23515>

FEATURED *PROCEEDINGS* 128(1) ARTICLE:

Combining 3D printed models with magnets and simple electronics to make chemistry more approachable to students. Smiar, K. & J.D. Mendez. 2019. *PIAS* 128(1): 65–72.

ABSTRACT. Using 3D printing, magnets, and simple electronics, three different interactive models were made to demonstrate complex chemical reactions to introductory chemistry students. Models were made to represent how to balance chemical equations, bond formation, and the role of intermolecular forces in mixing. All of these models were designed to be interactive and give students a chance to work hands-on with topics that are normally only seen two dimensionally. Students showed an increased knowledge of the subject matter interacting with most models and overwhelmingly agree they were fun, easy to use, and helped them learn more.

NOTE: Build files (.stl) for all of the models presented along with detailed assembly instructions can be found on Thingiverse (www.thingiverse.com/jamesdmendez).

ABRIDGED DRAFT of FALL COUNCIL MEETING MINUTES: November 2, 2019 (Jessique Haeft, Secr.)

Academy Council members present: Vanessa Quinn (President), Eric Rubenstein (President-elect), Jessique Haeft (Secretary), Michael Finkler (Treasurer), Delores Brown (Executive Director), Patrick Motl (Member-at-Large). Academy Council members not in attendance: Alice Long Heikens (Immediate Past President), James Mendez (Chair, Sr. Research Grants), Dean Wiseman (Member-at-large). Appointed and Committee members present: Edward Frazier (Parliamentarian), Sarah Mordan-McCombs (Webmaster), Bill McKnight (Special Publications Chair), Luke Jacobus (Newsletter Editor), Marc Milne (Biodiversity & Natural Areas Comm. Chair).

The Fall Council Meeting was called to order on November 2, 2019 at at 9:40 AM by Vanessa Quinn.

1. Delores Brown requested that the funds allocated for IAS participation in the Beyond Boundaries IU event scheduled for April 3-4, 2020 at the Indianapolis Convention Center be used for both the Beyond Boundaries event and the IAS/DOE STEM Partnership Project. The whole of the budgeted amount for Beyond Boundaries (\$5,000) wasn't needed in its entirety, but could be used to cover the cost of AV and hosting needs of the STEM project at the Indiana State Museum as well as pilot program participants' registration for the 135th Annual Academy Meeting to include their poster presentation.
 - a. **Delores moved that the money allocated for the Beyond Boundaries/IU symposium be redirected as needed, but not to exceed a total of \$5,000 for the STEM partnership with the IN Department of Education. Seconded. Passed by a unanimous voice vote.**
2. The Section Leadership met on September 25th, 2019 for their annual planning meeting and at that meeting unanimously voted to be able to bring before the council draft position/policy statements, initiated and/or prepared at the section level, for consideration and approval, as official academy positions.
 - a. **There is no action needed as this is not currently prohibited.**
3. Alice asked that the committee consider changing the fiscal year to allow all receipts to be reconciled by the time the budget committee meets. Proposal to consider June 30th as the end of the fiscal year instead of May 31.
 - a. **We need to talk to KSM and consult with the Chair of the Foundation Committee. This requires a thirty day notice to the council to change operating policy. Vanessa tabled the motion.**
4. Marc Milne requested that a section workshop be permitted to take place on Friday prior to the Annual Meeting in place of during the meeting on Saturday.
 - a. **Delores (Marc will help with the verbiage) will email the section(s)/membership at large and gather information on what attendees want depending on these options:**
 - i. Ask for feedback from attendees, sections could have alternative workshop days outside of the academy meetings or do it the day before the meetings on Friday night.
 1. **Proposed workshops must have budgets attached, please include this information in the email sent to membership.**
5. Bill McKnight requested permission to use funds already appointed to Special Pubs to provide lunch for 8-10 people at a February meeting in NW Indiana to discuss digital/searchable database for *Flora of Chicago Region*.
 - a. **Jessi Haeft moved that permission be granted for the funds appointed to Special Pubs be allowable for a February lunch meeting in NW Indiana to discuss a digital/searchable database for Flora of Chicago Region. Seconded. Passed via voice vote unanimously.**
 - b. Also requested that the Executive Director approach ISM (Indiana State Museum) administration about displaying IAS publications.
 - i. **Delores will have a conversation and report back to the council via email.**
6. **Awards**
 - a. Distinguished Scholar, Fellows, and Distinguished Service Awardees were voted on, and they will be announced at Annual Meeting in March 2020
 - b. **Process of Awards**
 - i. **Posthumous awards need to be allowable. The awards committee is to be charged with making a recommendation to the council.**
 1. **Recommendations for posthumous awards and how the nominations are evaluated.**
 - a. **Also, consider nominating outside of their field.**
7. **Announcements**
 - a. **Social Media Intern hired. Encourage members to follow the Facebook, Instagram and Twitter accounts.**
8. Adjournment by Vanessa Quinn was completed at 11:08 A.M.

DID YOU KNOW? Indiana Science Trivia

Toothpastes with Indiana Origins

IU scientists **Joseph Muhler**, **William Nebergall**, and **Harry Day** filed a patent for a toothpaste that used stannous fluoride and a calcium pyrophosphate abrasive. Procter & Gamble later named it Crest. First sold nationally in 1956, the toothpaste revolutionized dental care.

READ MORE: <https://college.indiana.edu/about/history.html>

50 Years Ago in Indiana Science

In 1969, Indiana University scientists Thomas Brock and Hudson Freeze publish their findings on a bacterium species that lives at a temperature of 60-80°C in a Yellowstone National Park hot spring. *Thermus aquaticus* (Taq) later becomes a standard source of enzymes able to withstand higher temperatures than those from *E. coli* and is significant in the history of the polymerase chain reaction (PCR), used for rapid laboratory replication of DNA.

READ MORE: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC249935/>

UPCOMING NEWSLETTER DEADLINES

Send items to the Editor, Luke M. Jacobus, [lmjacobu @ iupuc.edu](mailto:lmjacobu@iupuc.edu)

- February 1, 2020 for the February, 2020 edition
- April 15, 2020 for the May 2020 edition



INDIANA ACADEMY OF SCIENCE NEWSLETTER

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