



Volume 8,  
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*What's going on in  
the North Carolina  
Academy of Science:*

- Save the Date—  
2020 Annual  
Meeting!
- CASCAS Fall  
Workshop Up-  
dates
- Meet our 2020  
Keynote Speak-  
er, Dr. David  
Hu!

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## Why be involved in CASCAS... and what does that stand for anyway?

*By: Dr. Karen Guzman, Campbell University*

You may be asking yourself these questions when you see the acronym, CASCAS, and when you see the Fall Workshop advertised. Well, CASCAS stands for the Collegiate Academy of the North Carolina Academy of Science. Each year, CASCAS hosts a Fall Career & Research Workshop which is geared toward providing information and networking opportunities to its members. The workshop brings students from across the state, but the specific participants vary depending on the location, likely because driving a long way across the state when you have an exam or paper coming up can be challenging, yet the students that attend have always told me that they got more out of it than they thought they would. Knowing this, I decided to ask a few students to tell me what they thought and why they attended the workshop.

Many times, students know little about CASCAS, but when they attend the workshop, learn something from one of the sessions that clicks and helps them to realize that their goals are within reach. “The reason why I came to CASCAS is I’m a transfer student and had no idea what CASCAS was and then when I got the opportunity, its actually making life a lot more stress free and a lot easier.”  
[Katlin Solochier](#)

Why do they come to CASCAS if they know little about it? “So, the reason I came to CASCAS was the urging of my mentor that I’m doing research with. Being that I don’t want to go to grad school [] I really didn’t think I’d get much out of it, but I’m getting a lot between the resume, presentation skills, and research styles [workshops] and so everything ended up being worth it in the end.” [Evan Addison](#)

Sometimes faculty mentors know the benefits of attending the workshop and offer a carrot to get students to come. “I came here because its extra credit so we were encouraged to come. Some of the things that I found useful are that [] there’s a lot of really knowledgeable teachers and professors here. And it’s a really small setting, really intimate setting, so it provides you the opportunity to ask direct questions even more so than you would in even a small class setting, so providing some benefit in that aspect. [Luke Flint](#)

Networking brings students together with peers and faculty across the state, but that sometimes can make us look at the even bigger picture. “Being a CASCAS member gives you a constant reminder of how you will impact not only your community, but the world through an intriguing love for science” - [Mya Smith](#)

Part of seeing the bigger picture, sometimes, is also seeing how we



*CASCAS Students at the Fall Research Workshop*

*Photo credit: Laura Reichenberg*

fit into it, and better visualizing our next steps towards our goals, by seeing how others have attained those goals.

“As a student studying Biology and minoring in chemistry, it is important for me to see the different points of view that chemistry, physics, and biology provide to improve upon human health issues. Hearing a physician assistant talk about overall human health issues in today’s world, a Doctrine of chemistry finding more essential ways of providing nutrition to improve overall human health, and administrative to provide education to ones that would not receive it otherwise. The experiences of CASCAS members had a direct impact for me of the importance that networking provides” - [Tony Laughlin](#)

CASCAS hosts this workshop each fall and jointly sponsors the NCAS Annual Meeting in the spring. I hope you will be able to join us for the Annual Meeting in March and rub elbows with other scientists. You may just be inspired by their love of science and their perseverance to reach their goals.

# Featured Scientist: Dr. David Hu

By: Dr. Jessica McCann, Duke University

*We had a delightful conversation with our NCAS 2020 Annual Meeting Keynote Speaker, Dr. David Hu. The winner of not one, but two IgNobel prizes, Dr. Hu seeks to understand the physics and biology of animal movement and broadly communicate the science of animal locomotion.*

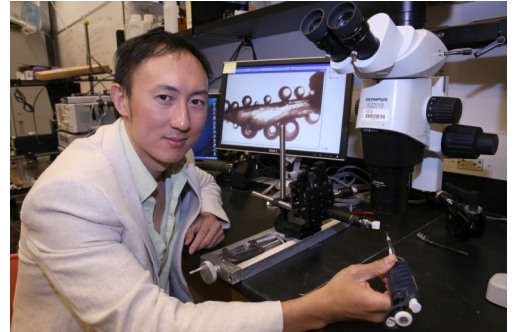
We asked the same question we often ask of our featured scientists, about when they first became interested in becoming a scientist, but Dr. David Hu's answer was a little different from most. Dr. Hu was a math major in college at MIT, and it wasn't until he interacted with his undergraduate advisor, Lakshminarayanan Mahadevan (now at Harvard), that his interest in science was piqued. When he discovered that Dr. Mahadevan had won an IgNobel prize for his theoretical study on how bedsheets become wrinkled, Hu realized research might be for him. Through this interaction, Dr. Hu understood that research questions are all around us, and that science can also be approached with a sense of humor and humility.

In his graduate work, Dr. Hu worked with his advisor Dr. John Bush, also at MIT, to understand the paradox of how baby water strider bugs could walk on water. Based on the physics of water strider locomotion at the time, it was thought the legs of the baby insects should not yet be long

enough to keep the bug on the surface. However, as the News and Views perspective that accompanied the 2003 *Nature* article described, "Like the oars of a rowing-boat, a water strider's legs create swirling vortices that carry momentum beneath the surface of the water. It is the rearwards motion of these vortices, and not the surface waves, that propels the animal forwards."<sup>1</sup> To better understand this form of locomotion, Hu and his colleagues designed a mechanical water bug, "The Robostrider", and confirmed that this tiny robot generated the same water vortices and was able to skim across the surface, just like the real thing.

Publishing in a broad-audience journal like *Nature* early in his career made him realize that he enjoys making his work accessible to people other than just biomechanical engineers. "There is one PhD scientist for every 1000 people in the US. So to really do science outreach, you need to talk to 1000 people about your work and the possibility of doing research as a career," said Dr. Hu. His research has been mentioned and portrayed in some unexpected places, like *Ranger Rick* and *Highlights* magazines, and *Saturday Night Live*.

Dr. Hu now has 5 graduate students and 20 undergraduates in his lab at Georgia Tech, where they study all kinds of biomechanical problems that come with being an animal on Earth (side note: to read more about how Dr. Hu manages



*Dr. David Hu, Photo Credit: Candler Hobbs.*

*David Hu examines dew accumulated on a mosquito wing. Mosquitoes in such conditions do not fly, but instead wait for the dew to dry off.*

his laboratory "a bit like a farm," check out [ncacadsci.org/ncas-news](http://ncacadsci.org/ncas-news)). Their recent work has described the physics behind cuboidal feces of wombats and the fluid mechanics involved in urination. His popular science book, "How to Walk on Water and Climb Up Walls," describes the science behind the variety of methods animals use to get around.

We hope you can make it to the NCAS annual meeting to see what will definitely be an outstanding keynote address from Dr. Hu.

*Dr. David Hu is a Professor of Fluid Dynamics at Georgia Tech with a joint appointment in the Department of Biology.*

<sup>1</sup> Dickinson, M. How to walk on water. *Nature* **424**, 621–622 (2003) doi:10.1038/424621a

# CANCAS Fall Workshop Update

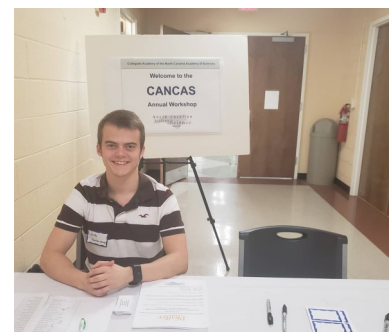
*Report by: Dr. Laura Reichenberg, Pfeiffer University*

The CANCAS Undergraduate Research Workshop was held on Saturday, October 26th at Pfeiffer University. There were 25 students in attendance representing four North Carolina Colleges. The event began with networking and refreshments, followed by a lively panel discussion with our three panelists Brenda Diaz MS, PA-C (Director of the Master of Science in Physician Assistant Studies, Pfeiffer University), Sarah Donnan (Admissions Coordinator, Edward Via College of Osteopathic Medicine) and Tom Schmedake Ph.D. (Associate Professor of Chemistry, UNC Charlotte). The audience was fully engaged and students enquired about a valuable range of topics including practical applications of specific degree types, the application process, standardized test requirements, and insight into the rigors of graduate school. The panel discussion was followed by a workshop focused on professional ethical practices by Dr. David Cartrette (Associate Professor of Chemistry, Pfeiffer University). During this workshop, students learned about ethical standards in science while applying their knowledge by discussing specific examples in the form of case studies.

Following lunch, students broke out into concurrent workshop sessions. Dr. Karen Guzman, Professor of Biology at Campbell University, demonstrated ways to develop oral and poster presentations to maximize impact on the audience. Dr. Chip Palmer, Learning Assistance Coordinator at Pfeiffer University, led a workshop on graduate school admission preparation, entrance requirements and timeline to assist students in preparing for academic programs. Dr. Jason Emory, Assistant Professor of Chemistry at Pfeiffer University, worked with students on professionalizing their social media in preparation for professional school admissions and employment, and Carolina Sawyer, Director of Internships and Career Development at Pfeiffer, led a workshop on resume preparation.

The feedback from student attendees showed that they had a positive experience and enjoyed the event. Many commented that they left the event excited, and with resources to help them prepare for their particular life path with answers to many questions about their future.

We would like to express our sincere appreciation to Pfeiffer University for hosting this event. We would also like to thank all of the student attendees as well as individuals who served as a panel members or workshop leaders. Your willingness to share your time was critical to the success of this event. Thank you for making the 2019 CANCAS Undergraduate Workshop a success, and please plan to join us next year!



*CANCAS Fall Workshop  
Photo credit: Laura Reichenberg*

## You can make a difference!

NCAS is looking for enthusiastic professionals to work on NCAS Committees. We are particularly looking for an additional member on the Publications Committee, but other committees could use additional help as well. Information about committees can be found at <https://www.ncacadsci.org/committees> (follow the link on this page to the handbook for information about committee responsibilities).

We hope you will join us!

# CANCAS Thanks Our Faculty Leaders

*Report By Dr. Laura Reichenberg, Pfeiffer University*



**CANCAS Undergraduate Workshop 2019 Workshop Leaders (from left to right): Dr. David Cartrette, Associate Professor of Chemistry; Dr. Karen Guzman, Professor of Biology, Campbell University ; Dr. Chip Palmer, Learning Assistance Coordinator, Pfeiffer University; Dr. Jason Emory, Assistant Professor of Chemistry; Pfeiffer University; Caroline Sowards, Director of Career Development, Pfeiffer University.**

## Call for Judges & Moderators for The 117th Annual Meeting of the North Carolina Academy of Science, March 27-28, 2020 at Lenoir Rhyne University in Hickory, NC.

Judges are needed for both the Friday evening poster session and Saturday oral presentations. Many of the biological science disciplines are represented at the meeting and, ideally, judges will be paired with presentations that match their area of expertise. You will be asked to judge either the poster session or oral presentation session, followed by a collaborative selection of Derieux winners in your area. Volunteering your time as a judge is a great way to help encourage our undergraduate researchers, while participate in the Annual Meeting! If you are interested, please email Dr. Laura Reichenberg at [laura.reichenberg@pfeiffer.edu](mailto:laura.reichenberg@pfeiffer.edu) or indicate your interest on your Annual Meeting registration form.

Moderators are needed to preside over oral presentations on Saturday at the Annual Meeting. Moderators can be graduate students, undergraduate students, or faculty from any content area. This is a great way to help facilitate smooth oral presentation sessions. If you are interested, please email Dr. Laura Reichenberg at [laura.reichenberg@pfeiffer.edu](mailto:laura.reichenberg@pfeiffer.edu) or indicate your interest on your Annual Meeting registration form.

### Thank you

Thank you to Meredith College, the headquarters of the North Carolina Academy of Science and site of our home office!

# CANCAS Group Membership Updates

*Report By Dr. Laura Reichenberg, Pfeiffer University*

Currently Campbell University, Pfeiffer University, and Guilford College have current institutional CANCAS memberships. The following institutions should renew their group memberships with CANCAS! Group memberships are \$100 and allow all students at the institution who are members of that group to attend the Annual Meeting at a discounted rate. CANCAS membership also gives students who are presenting poster or oral presentations the opportunity to be judged for prestigious Derieux Awards. Sign your group up today at <https://www.joinit.org/o/north-carolina-academy-of-science!>

East Carolina University  
Wake Technical Community College  
UNC-Pembroke  
NC State University  
UNC-Wilmington  
UNC-Greensboro  
Barton College  
Meredith College

## Save the date: NCAS Annual Meeting 2020

*Report by: Judy Moore & Angie Ramseur, Lenoir Rhyne University*

**SAVE THE DATE**  
**NCAS 2020 Annual Meeting**  
March 27-28, 2020  
**LENOIR-RHYNE UNIVERSITY**  
625 7<sup>th</sup> Ave. NE  
Hickory, NC 28601  
Check the NCAS website for updates!



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“Like” us on Facebook and follow us on Twitter (@NCAcadofSci) to get the latest updates and information on what’s happening at your North Carolina Academy of Science!



The **objective** of the North Carolina Academy of Science is to “encourage the advancement of science within the state of North Carolina by promotion of scientific research and by the fostering of education in the sciences”. The North Carolina Academy of Science meets these objectives by...

- Publishing a peer reviewed scholarly journal, the *Journal of the North Carolina Academy of Science*.
- Fostering and encouraging student involvement in the sciences through support of the Collegiate (CANCAS) and Student Academies (NCSAS).
- Promoting interactions among scientists and students throughout North Carolina.
- Providing a forum for exchange of ideas for solving issues important to North Carolina.

The Academy members include individuals from academia, industry, government, and all others who support the objectives and goals of the Academy.

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## North Carolina Academy of Science

### Our Mission

The North Carolina Academy of Science promotes public appreciation of science, science education, scientific research and a meaningful role for science in public policy.

### Our Goals:

#### Promote public appreciation of science

- Partnership with Science Centers
- Public Lecture Series
- Newsletter

#### Promote science education

- NCAS Webpage
- Academic Lecture Series
- NCAS Publications: Journal, Educational Publications
- Student Academy - Middle & High School

#### Promote scientific research

- Yarbrough and Bryden Research Grants
- CASCAS Undergraduate Research Workshop
- Presentation Opportunities at Annual Meetings
- Journal of the North Carolina Academy of Science

#### Promote science in public policy

- Symposia
- News Releases
- Position Statements
- Interactions with Public Officials

