UNC COLLEGE OF ARTS & SCIENCES

**DEPARTMENT OF BIOLOGY**
The University of North Carolina at Chapel Hill
CB# 3280, Coker Hall
Chapel Hill, NC 27599-3280



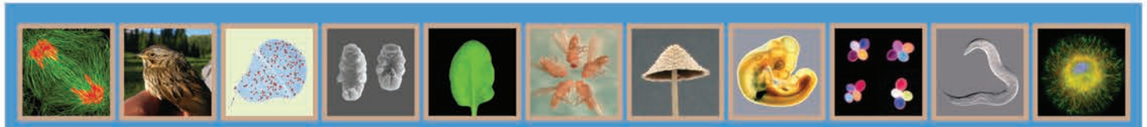
## Support the UNC Department of Biology

It is a great time to be a part of UNC Biology's community of students, faculty, staff and alumni. With your help, our department continues to be a leader in both research and teaching.

We are proud to report that many of our undergraduates are going on to medical school, graduate school, or careers in health and STEM related fields after graduation. Our graduate students and postdoctoral associates continue to make groundbreaking discoveries in collaboration with our research faculty, and our teaching faculty are setting the bar for excellence and innovation in teaching at a national level. Thanks to enthusiastic giving by our alumni and friends, the goal for our **Jean DeSaix Excellence in Teaching Fund** (104630) is in sight. We have raised more than $29,000 to date, but we still need your help to reach $50,000 so that the fund can be endowed. Once endowed, the fund will provide professional development awards for teaching faculty, as well as excellence awards to undergraduate and graduate students who support the department's teaching mission.

Our department's impressive scope, standard of excellence, commitment to active learning and leadership in cutting-edge research depend on the generosity of alumni, parents and friends. Please make your gift today by returning the enclosed reply card, or by visiting bio.unc.edu/donate.

For questions about creating your own fund, making stock or estate gifts, donating to specific programs, or suggestions on how you can help UNC Biology, please contact Cassie Diltz at (919) 843-0345 or cassie.diltz@unc.edu. Thank you for your support.



# BIOLOGY Newsletter | Department of Biology

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

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IN THIS ISSUE



*Oophaga pumilio, from a publication by Maria Servedio. Photo credit: Yusan Yang.*

**For more information, please visit our website: https://bio.unc.edu/**

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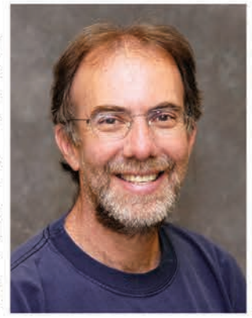
UNC COLLEGE OF ARTS & SCIENCES

## A Note from the Chair



Welcome to the seventh issue of the Department of Biology Annual Newsletter. As I begin my second year as Department Chair, we find ourselves in an exciting time with new leadership at UNC and in the College of Arts & Sciences. These transitions help to foster strong feelings of camaraderie and teamwork in the administration.

Biology continues to lead the university, not only in enrollment and research, but also by addressing real and perceived inequalities in our work and lab spaces. Last year we began implementing new guidelines on mentoring, developed by the Diversity & Inclusion Committee, chaired by Dr. Amy Gladfelter. These guidelines address best practices in navigating power dynamics and transparency among faculty, staff, and students (visit the Diversity & Inclusion page on our NEW Biology website for more information).

Biology participated in a new General Education curriculum pilot program - Ideas, Information, and Inquiry (Triple-I for short). Launched in spring 2019, Triple-I offers first-year seminars that are collaboratively taught across three distinct disciplines. "The Idea of Race" is one such course created and taught by Drs. Daniel Matute (Biology), David Pier (African, African American, and Diaspora Studies) and J. Michael Terry (Linguistics).

I am excited as we build these collaborative bridges on our campus; to inspire innovation and discovery toward understanding the origin, form, and function at all scales of life. Thank you for your interest and support, without which none of these things would be possible.

**- Kerry Bloom**

***Distinguished Professor and Chair, Department of Biology***

## In Memory of Dr. Patricia J. Pukkila – 1948-2019

Professor Patricia Pukkila, a highly respected member of our faculty since 1979, passed away on June 20, 2019 after being diagnosed with advanced pancreatic cancer. She was an accomplished scientist and loved by many. Pat received her undergraduate degree from the University of Wisconsin-Madison and went on to join Joe Gall's lab at Yale for her Ph.D. research. After Yale, Pat was a postdoc with Robin Holliday at the National Institute of Medical Research in Mill Hill, London, England, and then with Matthew Meselson at Harvard University in Cambridge, Massachusetts. At UNC she rose through the ranks to Professor and then Associate Dean and founding Director of the Office of Undergraduate Research, which successfully promoted opportunities for independent research for undergraduate students in all disciplines. Pat was a cell biologist par excellence who pioneered inquiry-based methods for scientific study. In 2007, Pat received the ASCB Bruce Alberts Award for Excellence in Science Education in recognition of her passion, creativity and commitment that brought inquiry-based education and undergraduate research to UNC. In 2005 Pat was elected as a Fellow of the American Associate for the Advancement of Science for her work on regulation of meiosis, and for her leadership in promoting undergraduate education and research. Pat retired in 2013, but retained her ties with UNC, serving as President of the Retired Faculty Council. We have lost a talented researcher, educator, administrator and friend who enriched the lives of many and made significant contributions to multiple aspects of the Department of Biology and UNC-Chapel Hill.

**- Kerry Bloom**

# DEPARTMENT NEWS

## Spring 2019 Undergraduate Award Accolades

* **Stephen Brantley Award - ABBY BERGMAN**
*The Brantley Award is given to a senior biology major for excellence in research in molecular, cell, and developmental biology.*

* **Robert Coker Award - BAILEY THOMASSON**
*The Coker Award is given to a senior biology major for excellence in research in organismal biology and ecology.*

* **John Couch Award - HOPE ALLEN**
*The Couch Award is given to a senior biology major with interests in plant biology who has demonstrated the highest ideals of scholarship and research.*

* **Lawrence Gilbert Award - GRACE TAN and LEAH OSWALT**
*The Gilbert Award is given to two senior biology majors for excellence in serving as a supplemental instructor, peer mentor, or tutor in a Biology class.*

* **Irvin Hagadorn Award - KEVIN LIU**
*The Hagadorn Award is given to the top junior biology major based on academic and research excellence. This award was presented at the Spring 2019 Chancellor's Awards Ceremony.*

* **Frances LeClair Award - HANNAH MEDFORD**
*The LeClair Award is given to a senior biology major for academic excellence in biology with an emphasis in plant sciences.*

### TALIA HATKEVICH RECEIVES 2019 DELILL NASSAR AWARD

Talia Hatkevich, a graduate student in the laboratory of Jeff Sekelsky, received the 2019 Delill Nassar Award for Professional Development in Genetics. This award recognizes and supports young geneticists in their graduate or postdoctoral career. This esteemed award goes to those who conduct high-impact research in the field of genetics, with demonstrated service and leadership in their labs.

### A DANGL-GRANT LAB REUNION SYMPOSIUM

This fall **Dr. Jeff Dangl** and **Dr. Sarah Grant** held a "30 Years of Plant-Microbe Interactions" symposium to celebrate their 30 year lab anniversary. Presentations were given by scientists who traveled from four continents to celebrate science and the extraordinary work of these two dedicated researchers and mentors.

## Biology Teaching and Advising Award Winners for 2019

**DR. GIDI SHEMER** was honored with the 2019 UNC-CH Chapman Family Teaching Award. The award honors a distinguished record of teaching undergraduates at UNC over an extended period of time. The ChapmanTeaching Awards were created in 1993 during the Bicentennial Campaign through a generous gift by Max Carrol Chapman, Jr. '66 on behalf of the Chapman family.

**DR. JEFF SEKELSKY** was one of ten UNC faculty members awarded an "Excellence in Basic Science Mentoring Award" from the Office of Graduate Education and the Office of Faculty Affairs and Leadership Development. This honor exemplifies Jeff's outstanding mentoring skills and dedication to the success of his students.

**DR. LILLIE SEARLES** won the 2018-2019 Biology Faculty Teaching Award presented by Tri-Beta. "Beta Beta Beta is a National Biology Honor Society for students dedicated to improving the understating and appreciation of biological study through research and teaching."

## A Message from the Biology Graduate Student Association (BGSA)

The BGSA continues to promote departmental cohesion through various events, such as the BGSA and Biology Department sponsored Fall Picnic and Spring Research Symposium, as well as with monthly coffee hours and happy hours. This year we hope to further develop connections between graduate students, postdocs and faculty by adding some new social events that will aid in creating a sense of community in our department. One such event will be weekly coffee hours on Tuesdays at 12 p.m. which will take place before the departmental symposiums in Coker Hall. Additionally, we aim to establish a plan that will provide younger graduate students in the department with mentorship from older graduate students. For more information on the BGSA and our programs please see our website: bgsa.web.unc.edu. We hope to see you all at our various events throughout the year!

***- Kayla Goforth, BGSA President***



## Faculty: In their own words ...

*Dr. Kelly Hogan interacting with a student during her Biol 101 course.*
*Photo credit: Travis Dove*

Practice, practice, practice. We know authentic practice is how learning works (think about how we learn to drive or speak a second language). I'm interested in ensuring that my own courses, and others in the department, are centered around this principle of practice. For example, rather than telling students what scientists discovered, I often ask students to construct their own interpretation of data and justify their ideas with peers. This mimics an authentic skill that scientists are required to master. This mindset has transformed my teaching from a majority of talking and explaining in lecture, to more periods of silence and noisy discussion in my classes of hundreds of students.

I find it exciting to design learning activities and experiment with what will help students learn most effectively. To collect evidence of student learning, I track real-time data through technology and student interactions, and I consider the classroom "my lab". I'm lucky to have many colleagues who have the same philosophy around effective teaching. Our Biology Department is known as having some of the most effective professors in the College of Arts & Sciences. I have measured my effectiveness using techniques that provide more opportunities for students to construct ideas and collaborate. The data from my class, corroborated by others in a variety of disciplines, show that all students benefit. Importantly, some student groups, such as first-generation college students and underrepresented minority students, benefit even more. As we think about how we can diversify science, I consider the weight of my role in teaching introductory students. I'm fortunate to be part of a team that believes our role isn't to "weed out" students but to provide opportunities for students to cultivate their talents. In turn, this allows more students to feel included and remain in STEM.

**- Kelly Hogan**
***STEM Teaching Professor***
***Associate Dean of Instructional Innovation, College of Arts & Sciences***

My research interests lie at the intersection of biology and engineering. At its core, engineering is about developing solutions to problems. Biology is about understanding solutions exemplified in nature, i.e., organismal evolution. Many engineering applications deal with perception and action while learning and adapting to new challenges and pressures. In nature, animals routinely demonstrate perception and action while adapting to their environments in order to survive and reproduce. A better understanding of how animals employ these concepts may help reveal insights and principles that can be leveraged to develop improved engineered systems. New technologies in various areas of engineering can be applied as experimental tools to study and answer biological questions in exciting ways. The goal of my lab is to use engineering-based tools and techniques (e.g., modeling and simulation, robotics) to advance our understanding of biology and animal behavior, while also leveraging design principles observed in biology to develop innovative engineering systems.

Our current research focuses on animal magnetoreception and navigation. A wide variety of animals use the earth's magnetic field to accomplish navigational feats that range from local homing to long distance migration on the scale of continents and oceans. Despite extensive work in this area, animal magnetic reception remains enigmatic. The engineering community has shown interest in using magnetic reception to develop navigation methods that are less reliant on man-made navigational systems (e.g., GPS). Put simply, many animals are born with the ability to accomplish navigational tasks that parallel the goals of man-made systems. Our work explores 1) how animals sense, process, and use earth's magnetic field to navigate from one point to another, and 2) how the principles at play in animals might be leveraged to develop improved autonomous engineered systems.

**- Brian K. Taylor**
***Assistant Professor of Biology***
***Quantitative Biology and Engineering Sciences (QBES) Lab***

*Dr. Brian K. Taylor (Assistant Professor), Dr. Catherine Kehl (Postdoctoral Researcher), and Mr. Luc Tourangeau (Research Associate) working with a motion capture system.*