



BIOLOGY Newsletter

Department of Biology
THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

VOLUME 6 ISSUE 1

FALL 2018

IN THIS ISSUE

From the Chair.....	1
Jean DeSaix Retirement.....	1
Vicki Bautch Reflections.....	1
Department News Items.....	2
BGSA Message.....	2
Ty Hedrick Profile.....	3
Amy Gladfelter Profile.....	3
Support Biology.....	4



A tardigrade, or "water bear" - a tiny research animal being studied in Bob Goldstein's lab.

For more information,
please visit our website:
<http://www.bio.unc.edu/>

The Newsletter is published by:

The Department of Biology
The University of North Carolina at Chapel Hill
CB# 3280, Coker Hall
Chapel Hill, NC 27599-3280

Phone: (919) 962-2077

Department Chair
Kerry Bloom

Department Manager
Marie Fholer

Newsletter Editor
Bill Kier

Printing
UNC Student Stores Print Shop

© UNC-CH Department of Biology

UNC IS AN EQUAL OPPORTUNITY/
AFFIRMATIVE ACTION INSTITUTION

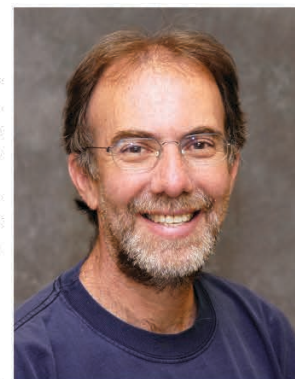


UNC
COLLEGE OF
ARTS & SCIENCES

A Note from the Chair

Welcome to the sixth issue of the Department of Biology newsletter. I'd like to introduce myself as the new chair of the department. I started my first (and only) job at UNC-CH in 1982. I feel very fortunate to have had the support of wonderful colleagues, including faculty, staff and students, through my formative years as a scientist. A major reason for accepting an administrative position is my gratitude to the department and for the opportunity to foster the development of new and current faculty, staff and students.

We revel in the revolution biological sciences has enjoyed in the past decade. Advances in genomics, microscopy, neuroscience, plant and animal microbiomes, to name a few, have literally changed the practice of our profession. As a consequence, we face significant challenges in preparing students with the tools required for the next generation. I'm excited for the opportunity to connect biology with areas throughout the campus and the UNC School of Medicine to prepare our students to face this brave new world. I look forward to sharing this and other news as we transform traditional boundaries into new modalities consonant with new challenges. Thank you for your continued interest as we look ahead to new programs that, with your support, will help us reach our goals.



- **Kerry Bloom**

Distinguished Professor and Chair, Department of Biology

Dr. Jean DeSaix Retires



Jean DeSaix, Chancellor Carol Folt & Vicki Bautch.

The career of Teaching Professor **Dr. Jean DeSaix** was celebrated at a reception in March. Current and former colleagues, university administrators, friends, family, and students had the opportunity to share their appreciation for her years of service and dedication to UNC and the Department of Biology. The "Jean DeSaix Excellence in Teaching Fund" has been established to provide professional development awards for teaching faculty and excellence awards for students who support the teaching mission. Donations to the fund may be made at <https://give.unc.edu/> (enter fund number 104630 in the search box).

Reflections from Former Chair Vicki Bautch

It has been an honor and a privilege to lead UNC Biology for the last 5 years. We accomplished much—we recruited numerous faculty and increased diversity, we moved to first in the College for outside research funding, and we stayed in first place for overall majors as we increased our undergraduate student numbers substantially. We led the way for Carolina in modern teaching practices, and we made strong new outreach efforts to our alums and friends. Many contributed to these successes - our outstanding research and teaching faculty, our excellent and dedicated staff, our engaged and enthusiastic students, a supportive administration, and our growing network of alums and friends - thanks to all for your support and dedication. I am most proud that we tackled important issues, with the help of our students, and engaged in difficult conversations around cultural diversity and power dynamics, striving to live up to our motto: "Inquire, Innovate, Integrate... to understand life".

- **Victoria Bautch**

Distinguished Professor and Former Chair, Department of Biology

DEPARTMENT NEWS

Spring 2018 Undergraduate Award Accolades

* **Stephen Brantley Award - CLAIRE DRYSDALE**

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

* **Robert Coker Award - ALEXANDER DAVIS**

The Coker Award is given to a senior biology major for excellence in research in organismal biology and ecology.

* **John Couch Award - LUYU WANG**

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 - KARA RITTERPUSCH and CAROLINE TARALLO**

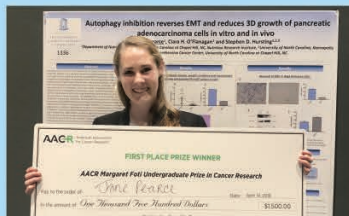
The Gilbert Award is given to two senior biology majors for excellence in serving as a supplemental instructor, peer mentor, or tutor in a Biology class.

* **Irvin Hagadorn Award - ALICIA CHEN**

The Hagadorn Award is given to the top junior biology major based on academic and research excellence.

* **Frances LeClair Award - PATRICK WINNER**

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

**JANE PEARCE WINS UNDERGRAD PRIZE FOR CANCER RESEARCH**

Junior Biology major **Jane Pearce** won first prize in the *13th Annual Undergraduate Student Caucus and Poster Competition* at the American Association for Cancer Research meetings in Chicago in April. She works in the laboratory of Dr. S. D. Hursting, Department of Nutrition, UNC Gillings School of Global Public Health.

AARON COMEAULT RECEIVES YOUNG INVESTIGATOR AWARD

Aaron Comeault, a postdoctoral scholar in the laboratory of Dr. Daniel Matute, received one of the prestigious *Jasper Loftus Young Investigator Awards* from the American Society of Naturalists.


**Biology Teaching and
Advising Award Winners
for 2018**

Dr. Jennifer Coble – 2017-2018 Biology Faculty Teaching Award presented by Tri-Beta

Dr. Bob Goldstein – Chapman Family Teaching Award

Dr. Amy Shaub Maddox – William C. Friday Award for Excellence in Teaching

Dr. Gidi Shemer – Class of 1996 Awards for Advising Excellence

BIOLOGY PROFESSORS JEFF DANGL & JOHN BRUNO AMONG THE WORLD'S MOST INFLUENTIAL RESEARCHERS

Dr. Jeff Dangel and **Dr. John Bruno** were among thirteen UNC faculty members included in the *2017 Clarivate Analytics List* of the world's most influential and highly cited researchers.

BIOLOGY PROFESSOR JOHN BRUNO CO-AUTHORS CLIMATE SCIENCE REPORT

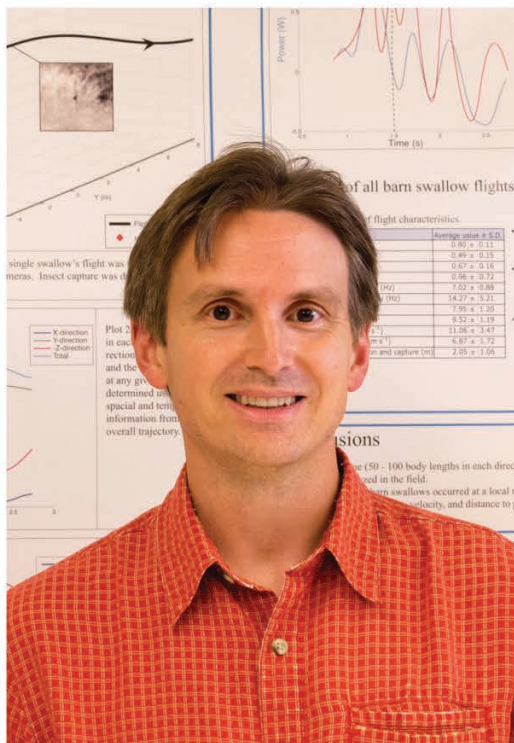
The Climate Science Special Report co-authored by **Dr. John Bruno** was released and is the first of two volumes of the 4th National Climate Assessment. The first volume describes the physical and chemical changes to the nation's land and coastal waters and concludes that human activities are the dominant cause of global warming.

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

The BGSA continues its efforts to foster community and collaboration among UNC Biology grad students, postdocs, and faculty, as well as members of other departments and institutions. This year, we again hosted the annual Department Research Symposium and Fall Picnic and we continued the tradition of organizing social events, including happy hours and butterfly walks at Mason Farm Biological Reserve, located near the NC Botanical Garden. In addition, we have been collaborating with grad students at other institutions to develop a report on teaching assistant stipends and research funding and how they compare across institutions, which will help inform future advocacy efforts at UNC and beyond. More information about the BGSA is available at: bgsa.web.edu, and alumni are welcome at all events!

- Pat Kelly, BGSA President

Faculty: In their own words ...



Ty Hedrick, standing in front of a research poster from his lab.

My lab studies how animals move, a cross-disciplinary question that combines physics, physiology, neurobiology and behavior. Movement, or locomotion, is a broadly recognized characteristic of animals and for many species movement costs and capabilities are deeply tied to their ecology and overall energy budgets. Animal movement also serves as a source for bio-inspired design in engineering because animals perform amazing feats despite their low available power and structurally weak materials as compared to modern robots and autonomous systems. For these reasons, research in my lab group is not only funded through basic science research funders, such as the National Science Foundation, but also through applied research agencies such as the Office of Naval Research.

Over the past decade, improvements in miniaturized electronics, battery capacity and computational power have helped my group move our animal movement research from the lab to the outdoors. Accelerometers, Global Positioning System receivers, and camera arrays have replaced treadmills, flow tanks and wind tunnels in part to permit us to study how animals use their locomotor capabilities in daily life. For example, a recent paper from my group showed that Common Swifts, a small insectivorous bird, are essentially flying “for free” when they forage over urban environments because they are so good at getting a boost from thermals, brief wind gusts, and other environmental factors. Similarly, we recently found that huge flocks of shorebirds are packed in a sort of 3-dimensional V-formation, which likely provides an aerodynamic boost to birds in the middle and rear of the group. These and similar effects show how animals in the real world can outperform even their in-lab capabilities and have led to a new generation of lab experiments in my group that takes into account more of these real world effects than ever before. 🐦

- Tyson Hedrick
Associate Professor of Biology

We are fascinated by the inner landscape of the cell, the basic building block of life. In textbook images, a cell looks like a static container, mostly filled with water and a few oddly shaped blobs within it. In reality, it is a teeming, crowded environment much more like a city sidewalk at rush hour. How can order and organization arise within the whirring crowded chaos of molecules? As a team of biologists, engineers, and mathematicians, we use a combination of cutting edge microscopes and quantitative modeling, to study the invisible, dynamic world of molecules within a cell.

One problem we study is the formation of liquid-like droplets in cells which serve as transient vessels for biochemical reactions so they happen at the right time and place. These droplets are made out of proteins and RNAs forming into droplets like dew condenses on grass. How these structures form, what governs their contents and lifetimes are a new frontier in cell biology. Understanding how the droplets condense is also highly relevant to neurodegenerative diseases which are thought to arise in part because these droplets turn into more solid-like, toxic aggregates. A second area of work focuses on how cells sense their shape and use their own geometry to make decisions. This is relevant for events as diverse as cell division and development of the nervous system. We are continually amazed by the order that emerges from the complexity of life at the molecular level. 🐦

- Amy Gladfelter
Associate Professor of Biology



Amy Gladfelter, conducting research in her laboratory.



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

NONPROFIT
ORGANIZATION
US POSTAGE
PAID
PERMIT NO. 177
CHAPEL HILL, NC

Support the UNC Department of Biology

UNC Biology is a leader within the university, in the South and across the nation. Our students, faculty, staff and alumni define new directions in biology in both research and teaching.

To strengthen and integrate the field, the department partners with numerous campus units, including the the Program in Integrated Biological and Genome Sciences (iBGS), the Environment, Ecology and Energy Program (E3P), and the UNC Lineberger Comprehensive Cancer Center. This year, I am excited to announce that we have established the **Jean DeSaix Excellence in Teaching Fund (104630)** to recognize one of our esteemed teaching colleagues and the students whose lives she has touched. The fund provides professional development awards for teaching faculty, as well as excellence awards to undergraduate and graduate students who

support our teaching mission. Your generous gifts will contribute to these efforts, as well as to undergraduate research and interdisciplinary seed grants. Our department's impressive scope, standards of excellence, leadership in active learning and future growth depend on the generosity of alumni, parents and friends.

Please make your donation by returning the enclosed reply card, or by visiting bio.unc.edu/donate. To learn more about supporting UNC Biology through estate gifts, professorships, graduate student fellowships or student research awards, please contact Cassie Diltz at (919) 843-0345 or send email to: cassie.diltz@unc.edu.

Kerry Bloom
Distinguished Professor and Chair
UNC Department of Biology
kerry_bloom@unc.edu