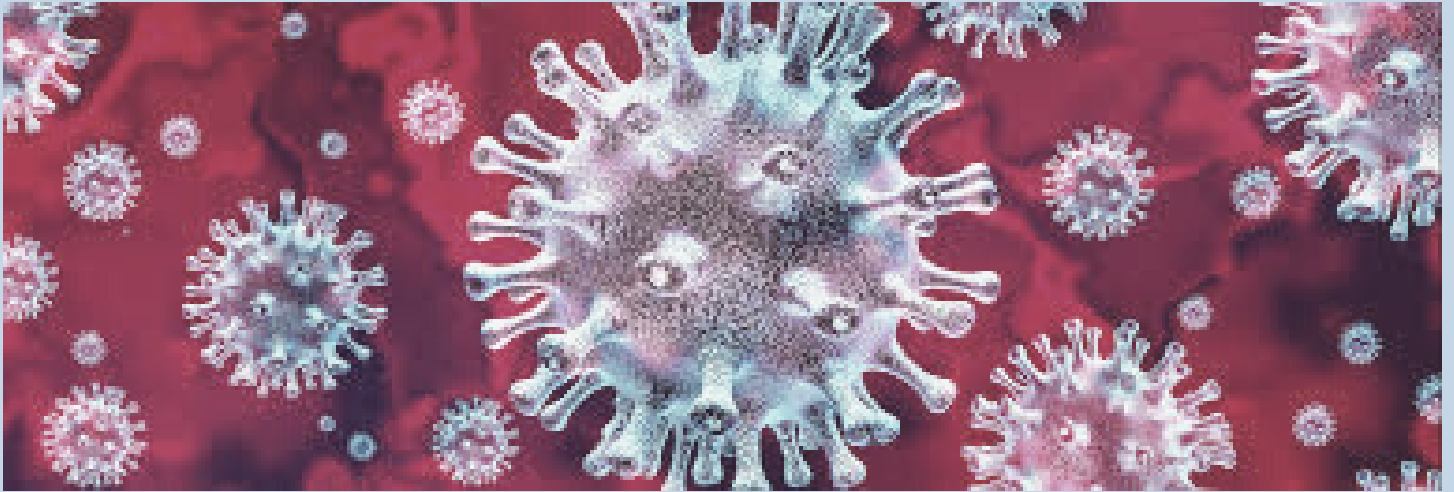


# CBP IN THE LOOP

THE LATEST NEWS AND UPDATES FROM CELL BIOLOGY AND  
PHYSIOLOGY



## A GLOBAL CRISIS

The novel coronavirus pandemic continues to spread worldwide. UNC and CBP have taken action to fight this historic crisis as a community.



## DEPARTMENTAL MISSION

*The Department of Cell Biology and Physiology follows the guiding principles of our School of Medicine: to be nationally recognized for excellence in our discipline by leading, teaching, and caring.*

- *Leading: to conduct cutting-edge, innovative research that advances the discipline of cell biology and physiology, with emphasis on topics that contribute to the improvement of human health*
- *Teaching: to provide a rigorous and competitive educational experience for a diverse population of graduate and professional trainees which enables them to succeed in their future careers*
- *Caring: to serve the people of North Carolina, the United States, and the international community, by excelling in our research and education missions which advance the discipline of cell biology and physiology*

# MESSAGE FROM OUR CHAIR

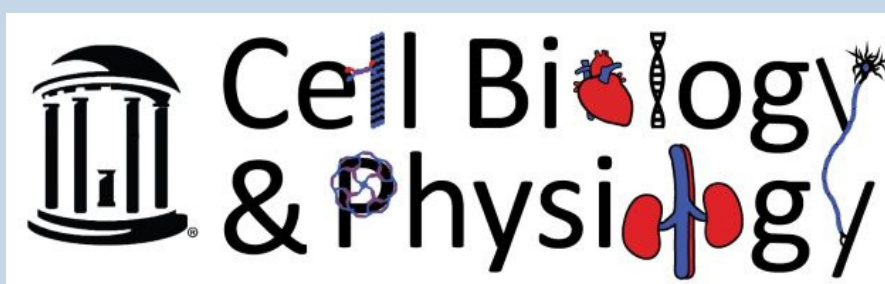


---

Dear CBP Community,

We are delighted to be sharing with you our CBP “In the Loop” Newsletter! This has been such a difficult year for everyone in our expanded community, from current colleagues to former alumni members. None of us were prepared for the effects of the global COVID-19 pandemic and the political and social unrest in our country. Fortunately, with vaccination breakthroughs and meaningful programs of diversity and equity change, we are finally starting to look hopefully towards a new future. Our Core Department Missions were challenged in ways that I personally could have never imagined. This past year brought forth rapid pivots to remote learning, attenuated research progress and a new normality of 9-5 Zoom meetings. I hope that you will enjoy this special Issue and be inspired about the many ways that our community was strengthened over the past year. It is difficult to highlight the contributions of everyone, but it is easy to recognize that our collective success could only be achieved by the remarkable contributions of many individuals! Your continued input, feedback and participation is always appreciated. Most of all, I hope that you and yours remain safe, healthy and hopeful for the future.

Kathleen



Please visit our **Make a Gift** website to give:

<https://www.med.unc.edu/cellbiophysio/make-a-gift/funding-opportunities>

***Current opportunities to support the Department of Cell Biology and Physiology:***

**CELL BIOLOGY AND PHYSIOLOGY GIFT TRUST**

This fund is a general fund to help support invited experts, informative speakers, and events that foster collaboration, professional development, and scientific growth.

**MAREN TRUST FOR GRADUATE STUDENTS**

The Thomas P. Maren Graduate Student Fund is intended to provide CBP Curriculum graduate students with opportunities to learn new skills and gain experience with emerging technologies.

**CELL BIOLOGY AND PHYSIOLOGY POST-DOC FUND**

This fund is intended to provide CBP postdoctoral trainees with funds to support travel expenses and registration fees for scientific conferences and specialized training opportunities or workshops.



**Stay Connected to Cell Biology and Physiology**

**<https://www.med.unc.edu/cellbiophysio>**

**Follow us on Twitter:**



**[https://twitter.com/UNC\\_CBP](https://twitter.com/UNC_CBP)**



# CBP ANSWERS THE DONATION CALL



*“At this critical time, we are calling on our community to donate supplies that will help ensure we can continue to protect our patients, providers, and staff,” “This situation is unprecedented, and we are asking for extra help.”*

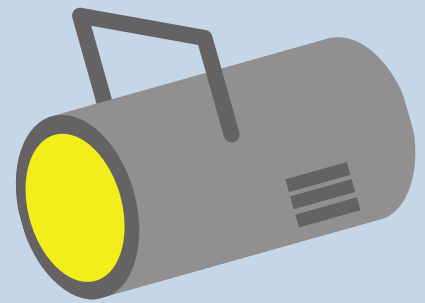
*-Dr. Wesley Burks, CEO of UNC Health*

**Our research laboratories were called upon for donations of surgical and N95 masks for our health care colleagues across the street. Within hours, Matt Billard had collected over 1,200 masks, more donations than that collected from all other research units in the School of Medicine combined!**

**UNC  
HEALTH<sup>SM</sup>**

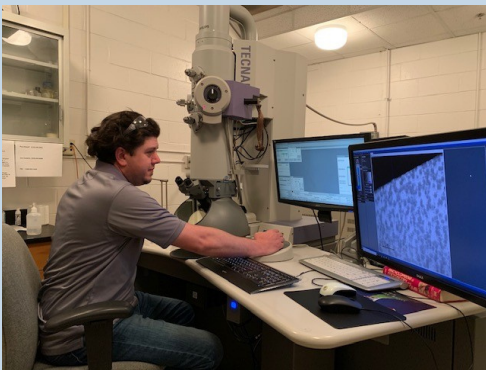


# CBP CORE SPOTLIGHT



## Hooker Imaging Core (HIC) Electron Microscopy

Paul Risteff is a Research Specialist with the Hooker Imaging Core who works with a variety of researchers to assist them with their Transmission Electron Microscopy (TEM) projects. Paul is an expert in electron microscopy (EM) who was trained under Professor Robert Smith at the NC Brown Center for Ultrastructure at SUNY-ESF. He also holds a B.S. in Biotechnology from the same institution. Paul received his first TEM position at the Wadsworth Center working with Dr. Rajendra Agrawal on mechanism of protein-synthesis in ribosomes utilizing high-resolution cryo-electron microscopy (cryo-EM). Paul then moved to North Carolina to do TEM work at a pharma company in RTP, before accepting his current position here at UNC working with Dr. M. Joseph Costello and the Hooker Imaging Core.



Paul believes it is fundamental to visualize specimens by generating a highly magnified image and TEM provides this ability. TEM can be used to complement quantitative data with a visual representation of the specimen. As TEM is approaching its ninetieth anniversary, Paul is happy to be sharing his expertise in tissue processing, ultramicrotomy, negative staining, and immunogold labeling with the UNC community. When Paul isn't engaged with work responsibilities, he is usually planning new culinary recipes to try out on his family, or he is hitting golf balls out of bounds at a variety of local golf courses.

The HIC EM Core is supervised by Dr. Joe Costello, a Professor in Cell Biology in Physiology, who has had a phenomenal career investigating the development of the lens and the eye. His research program uses electron microscopy extensively and the HIC EM Core benefits greatly from his knowledge and mentorship, as well as Paul's expertise and enthusiasm! If you're looking for fantastic electron microscopy imaging and service, look no further. Contact Paul ([pristeff@email.unc.edu](mailto:pristeff@email.unc.edu)) or Dr. Costello ([joe\\_costello@med.unc.edu](mailto:joe_costello@med.unc.edu)) today!

At the HIC EM, modern electron optics produce high resolution images of a variety of sample types including thin sections, negative stain on grids and freeze-fracture replicas. Find out more about the EM facility, their equipment, and available services at the HIC website:

<https://www.med.unc.edu/cellbiophysio/research-facilities/hic/>

### *Don't Miss Our Other CBP Core Facilities!*

**HIC EM is a branch of the Hooker Imaging Core.** The HIC also provides numerous high-end, cutting-edge Light Microscopy services under the Direction of HIC Director Robert Currin ([robert\\_currin@med.unc.edu](mailto:robert_currin@med.unc.edu)) Check out the HIC website to find out more about our flagship confocal, the Zeiss 880 with Fast Airyscan, and other equipment, services, and training. The HIC has everything for your light microscopy needs.

<https://www.med.unc.edu/cellbiophysio/research-facilities/hic/>

**The Histology Research Core** in the Department of Cell Biology and Physiology is an innovative histology resource designed to provide expertise, service, and consultation on histological and immunohistochemical methods. The HRC provides fast and high-quality services from imbedding and staining, to immunohistochemistry and in situ hybridization! Contact Director Ashley Ezzell ([jezzell@email.unc.edu](mailto:jezzell@email.unc.edu)) or visit their website for more information.

<https://histologyresearchcorefacility.web.unc.edu/>

# cbph 710

## Advanced Light Microscopy

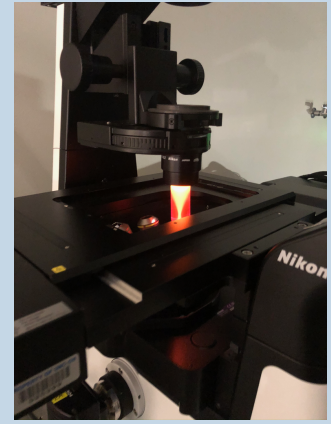
### Cell Biology Microscopy Course Donates Supplies

With the university's move to distance learning, our Cell Biology and Physiology Advanced Light Microscopy course put their unused course supplies to good use. The course directors, Drs. Jim Bear and Michelle Itano reached out to ThermoFisher to find out if we could utilize course supply funds to help support COVID-related research. Once approval was given, they were able to identify and reach out to the Ralph Baric Lab who is currently engaged in COVID-research. With the help of Tim Sheahan and Caitlin Edwards, Drs. Bear and Itano were able identify the needs of the lab. A donation of 30 bottles of media for their ongoing cell assays were made in the name of all the students in the course.



**A HUGE THANK YOU to Mike Janes at ThermoFisher for the donation approval on behalf of the class!!**

# CBP and Neuroscience Center offer new course



Jim Bear, Professor, Cell Biology and Physiology

As the noted baseball player/philosopher Yogi Berra once said: “You can observe a lot just by watching.” Microscope aficionados would certainly agree and the CBP and Neuroscience center have a new graduate level course to train the next generation of watchers (CBPH710/NBIO710). Put together by co-directors Michelle Itano and Jim Bear, this course seeks to train graduate students from across campus in both the theory and practice of modern light microscopy. Although the course for 2020 was forced to move to online instruction and cancel the hands-on lab sections due to the COVID-19 pandemic, the strong interest from the research community at UNC bodes well for a new version for the spring of 2021. The course is comprised of nine lectures from faculty members from both the School of Medicine and the College, as well as small group, hands-on labs led by faculty, postdocs and staff from the microscope cores on campus. The goal of the course is help students incorporate quantitative imaging approaches into their thesis projects. In addition, the lecture component of the course is open to all researchers at UNC (staff, students, postdocs) to audit.

“In addition to training the students in practical microscopy, we hope to bring together the imaging community across campus to share resources, ideas and talent” said Bear, one of the course directors. Although the online version of the course continues through April, plans are already in works to re-launch the full version next year with the students working on a small, independent project related to their thesis work incorporated into the course. Although UNC has had various imaging courses in the past, nothing like this has been offered for at least five years. The strong demand for such a course was validated by nearly 30 people contacting the course directors to be part of the course. To meet this demand, the course was expanded from an initial limit of 12 students to 18 students. Although this created some growing pains, it also indicated that this type of course is clearly needed to meet the graduate educational needs of the UNC campus. Be on the lookout for the announcement for next year’s course and contact the course directors if you have any questions about it.

# Distance Learning in the CBP Department

Contributors: Kurt Gilliland, Marianne Meeker, Virginia Shea, Ed Kernick, Richard Cheney, Emily Moorefield and Carol Otey.

Educators at UNC had to make dramatic changes in their courses this spring, due to the abrupt shift to remote learning when classes resumed after Spring Break Extension on March 23. In such difficult and unprecedented times, it was very impressive to see how the UNC education community worked together across programs and schools to put our students' education first.

For our graduate Physiology course (CBPH853), the pivot to distance learning was fairly straightforward, because the course had already completed the interactive journal club sessions, and was providing didactic lectures that could be recorded by the instructors at home and posted on Sakai.

Our graduate Cell Biology course (CBPH851) adapted to distance learning by moving to Zoom, both for the faculty PowerPoint sessions and for the student presentations of papers. This worked surprisingly well, especially when the students and faculty engaged in back-and-forth questioning. By continuing to meet regularly, the class also added an element of structure and academic normalcy to a world where much else was disrupted. Although we would all prefer to meet in person, Zoom can allow you to attend class while sitting outside in the beautiful spring weather, and several pets clearly enjoyed the opportunity to attend class with their owners.

For medical students in the Foundation Phase of the curriculum, it was challenging to teach "small group" sessions and labs using a distance education approach. Emily Moorefield, along with her colleague from the Division of Gastroenterology and Hepatology, co-directs the 5-week-long Gastrointestinal Block for first-year medical students. Although the block lost a week due to the extended spring vacation, Dr. Moorefield moved forward quickly to convert instruction to an online format. There were not only virtual "small-group sessions" using Zoom but also four live, online "office hours" sessions for physiology, histology, anatomy, and exam review. Histology was done a bit differently in that Kurt Gilliland demonstrated the digital slides in front of an empty room with lecture capture for posting online, although numerous faculty joined in for the "office hours" session in which questions were entertained.

Anatomy instruction is obviously different (for now) without student access to cadavers, but Ed Kernick has been able to update and modify UNC dissection videos from the past so that students can have a visual experience.

For Virginia Shea's Advanced Physiology class in the undergraduate pre-nursing curriculum, the major goal was to provide an environment that would "feel" like the pre-virus part of the semester but to do so in a manner that reduced the stress felt by the students. Dr. Shea decided against holding "live" on-line sessions, because she had 110 students and each student had gone home to unique circumstances. Some of those circumstances could limit participation in live, online class meetings. Therefore, her course offered students recorded lectures (lecture capture or narrated PowerPoints) that they could view and review at times most convenient for them.

In order to encourage students to keep up with the material, the faculty provide frequent online quizzes. In addition, students continued to actively participate in Discussion Forums where they could ask questions, provide advice, and communicate with the faculty and with each other.

Several of our CBP teaching faculty are involved in teaching and directing courses this spring for students in the Adams School of Dentistry, the UNC Physician Assistant Program, and the Physical Therapy Program. Providing virtual lectures for each of these student populations in different programs which use different technologies for their lecture recordings or do not have lecture capture at all, has been a logistical hurdle for our educators. The inter-program collegiality and support from program administrators (Dr. Mary Beth McGranaghan, UNC Physician Assistant Program) and IT specialists alike, (Tarrl Morley,

Jake Stallard, Zach Moore, Adams School of Dentistry; and J. Gordon Palmer, UNC SOM) have been invaluable to meet these challenges. These individuals have zoomed, edited, uploaded and linked all types of files such that UNC students would not miss a beat.

***The CBP Department is fortunate to have experienced educators who were ready to rise to this extraordinary challenge.***



# Welcome New Students

## Cell Biology and Physiology Curriculum Graduate Students Entering Fall 2021



Jocelyn Alvarado  
(Sharon Campbell)



Danica Dy  
(Kathleen Caron)



Mark Hazelbaker  
(Jim Bear)



Becky Hirsch  
(Jessica Bowser)



Max Hockenberry  
(Jim Bear/Wesley Legant)



Andrew Kennedy  
(Doug Cyr)



Juliet King  
(Scott Williams)



Kimberly Lukasik  
(Stephanie Gupton)



Ian McCabe  
(Jen Jen Yeh)



Cassie Phillips  
(Natasha Snider)



David Rocco  
(Wolfgang Bergmeier)



Allie Woods  
(Chad Pecot/Benjamin Vincent)

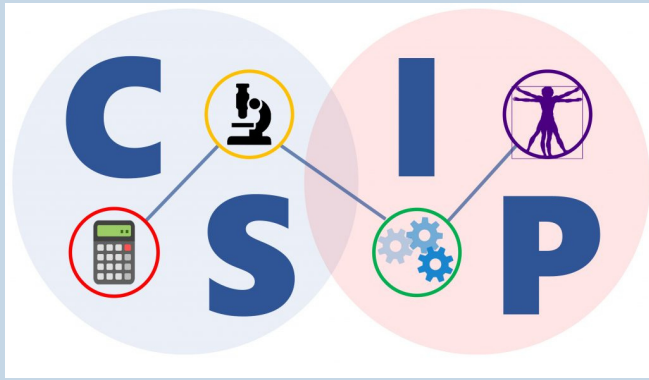
## Hernán Méndez selected as 2020 HHMI Gilliam Fellow



The Howard Hughes Medical Institute (HHMI) created the Gilliam program in 2004 to increase the diversity among scientists who are prepared to assume leadership roles in science, particularly as college and university faculty. The program provides awards to pairs of students and their dissertation advisers who are selected for their scientific leadership and commitment to advance diversity and inclusion in the sciences.

The HHMI selected 45 doctoral students and their advisers to advance diversity and inclusion in the sciences. CBP graduate student Hernán Méndez and his advisor Kathleen Caron, PhD were named Gilliam fellows.

Méndez was born and raised in Puerto Rico. The natural wonders of Puerto Rico instilled in him an inherent fascination for the biological world. This fascination directed him into pursuing a bachelor degree in Biology at the University of Puerto Rico at Cayey. During his time there, he explored different research areas thanks to research fellowships and three summer research internships. In the Caron Lab, he is working to elucidate distinct aspect of cardiac lymphatics. Neira, a native of Bogota, Colombia, received a BS in psychology from the University of Central Florida and came to UNC in 2016 for a post-baccalaureate program. She worked in the laboratory of Donita Robinson, PhD, associate professor of psychiatry and member of the UNC Bowles Center for Alcohol Studies, investigating the long-term effects of adolescent exposure to ethanol. Currently, in the Kash Lab, Neira is interested in circuit neuroscience and wants to understand and identify the neural circuits underlying the interactions between stress and alcohol.

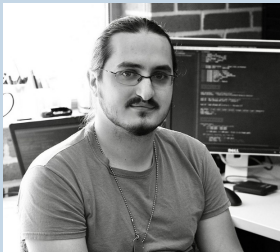


# Cellular Systems and Integrative Physiology (CSIP) Training Program

We are so excited to announce that Cell Biology and Physiology has been awarded a T<sub>32</sub> from the NIH/NIGMS entitled "Cellular Systems and Integrative Physiology (CSIP)".

The mission of the CSIP Training Program is to develop a diverse pool of responsible, rigorous scientists who have the skills to investigate the integrative, regulatory and developmental physiology of higher organisms and their organ systems by elucidating the functional cellular components of these processes and furthermore, can transition these skills into a wide variety of careers in the biomedical workforce and overall society.

This training grant is currently funding the following students:



**Keith Breau: (Co-mentors: Scott Magness, PhD & Timothy Elston, PhD)**

**Research:** Investigate the regulation of the cytoskeleton during the constant homeostatic renewal of the intestinal epithelium by intestinal stem cells (ISCs) and to understand how cytoskeletal remodeling in early differentiation influences biological processes, such as fate determination and cell cycle control, which are often dysregulated in disease.



**Rhianna Lee: (Mentor: Scott Randell, PhD)**

**Research:** Evaluating chemotaxis of CXCR1-expressing human bronchial epithelial cells (HBECs) to IL-8 and engraftment of engineered HBECs to the stem cell niche of the airway, an important step toward increasing the safety and efficacy of Cystic Fibrosis cell therapy.



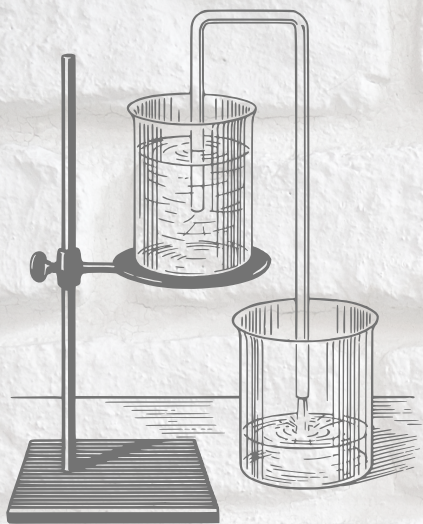
**Julie Necarsulmer: (Mentor: Todd Cohen, PhD)**

**Research:** The role of pathologic TDP-43 acetylation in neurodegeneration, particularly as it relates to frontotemporal lobar degeneration (FTLD) and amyotrophic lateral sclerosis (ALS).



**Nate Nelson-Maney: (Mentor: Kathleen Caron, PhD)**

**Research:** Identify, classify, and determine the function of lymphatic-enriched G protein coupled receptors (GPCR) that have the potential to be manipulated by pharmacologic intervention.



# Graduate STUDENT CORNER

## Congratulations!!



After several years of dating, CBP Graduate Student, Priya Stepp and her fiancé, Jon, got married in January. The ceremony took place at the Duke Chapel. Priya and Jon met at Duke, where she was an undergraduate and he was a graduate student. They were both in the biology department and attended the same church.



CBP Graduate Student, Danielle Berlin and Nick Buglak (4th year, Toxicology) got married on February 29, 2020 in Erie, PA! Several CBP students and faculty were in attendance!

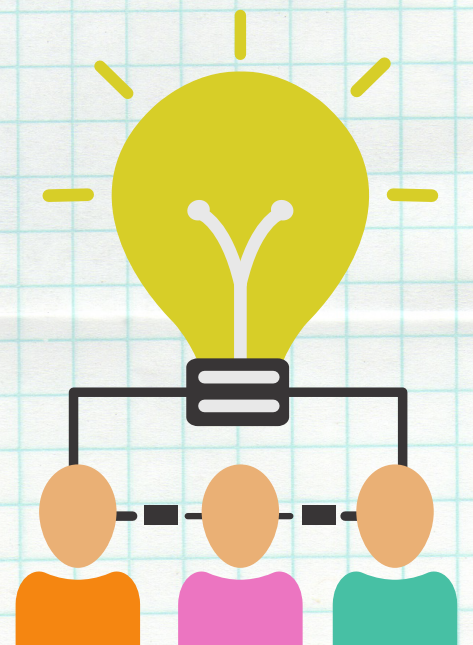


Cell Biology and Physiology



# *Exciting News!*

We are excited to announce the opening of our newly renovated conference room, 6200 MBRB.





# Happy Retirement

DR. KENNETH JACOBSON



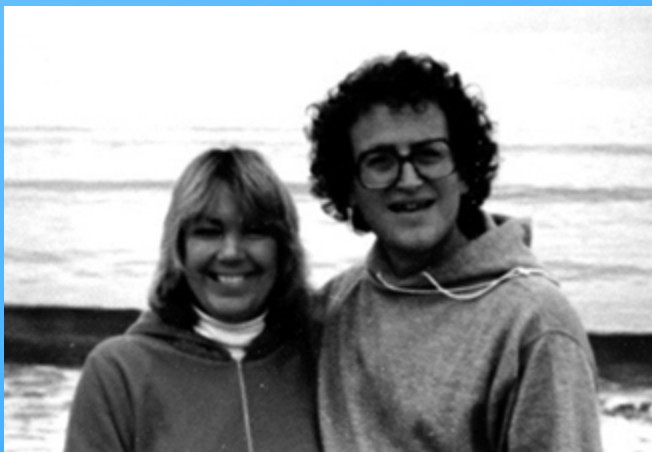
On January 23rd, 2020, friends and colleagues came together to celebrate the retirement of Kenan Distinguished Professor of Cell Biology and Physiology, Dr. Ken Jacobson. A valued member of the UNC community since his arrival in 1980 from SUNY-Buffalo, Ken made key contributions to the understanding of how the cell membrane is organized. Ken was one of the first developers of the FRAP (Fluorescence Recovery After Photobleaching) technique to measure lateral mobility of proteins and lipids in membranes and digitized fluorescence microscopy and its applications to cell biology. Under his guidance, the members of the Jacobson Lab developed novel tools and methods to study the physical properties of how cells migrate and how membrane nanodomains on dendritic cells function as receptors for

pathogens ranging from small viruses, specifically Dengue and HIV-1, to yeast in order to initiate the innate immune response. Additionally, over the past 20 years, Ken has been interested in renewable energy and has been involved in a project to develop a small solar powered vaccine cooler.

**Recently we contacted Dr. Jacobson and he agreed to answer a few questions.**

**When did you decide to pursue Science as a career and did you consider other careers?**

Well, I thought about becoming a journalist, patent lawyer, nuclear engineer or architect but really started in science as an undergraduate at the University of Wisconsin as a part time worker in a plasma physics laboratory; the lab was headed by a well-known physicist, Don Kerst, with whom I took an independent study course. I stayed at UW for a Masters degree working on the structure of Bromegrass Mosaic Virus, a small pH dependent plant virus. This effort initiated my interest in biophysics. It is interesting that my career really began and ended in virology as I finished working on the cell biology of dengue infection with Aravinda deSilva and his colleagues.



**Do you recall any thoughts about UNC that made you choose it as a place to work?**

Growing tired of the winters, my wife, Judy, wanted to move south from Buffalo and I inquired with my colleague in membrane research, Barry Lentz, whether opportunities existed at UNC. In 1979, Barry put me in touch with Charlie Hackenbrock, Chair of the Department of Anatomy who was rebuilding the Department with more emphasis on research. And the rest is.....

**What did you enjoy the most about your career at UNC, and what accomplishments (or things like mentoring or writing or collaborations) are you most proud of?**

In terms of research, I am most proud of being part of the introduction of several cell and membrane biophysical methods that have become widely used in cell biology. And, in the writing of a number of reviews that have, hopefully, stimulated the fields I worked in. In terms of people, the inherent collegiality that is UNC made for several long-standing and productive collaborations. Of course, working with my many colleagues at the undergraduate, graduate, post doc and research staff levels has been enormously enriching. Helping them to the extent I could with their careers has been a source of continual satisfaction.



2013 Distinguished Biomedical Alumnus, School of Medicine and Biomedical Sciences, University of Buffalo

## *The Jacobson Raft Migration Oscillation Team*



**Any thoughts about the Department that make you especially proud or happy?**

In the course of nearly 40 years at UNC, our Department has had a number of name changes and gone through several highs and lows. I am most happy to see now that we have strong, stable leadership under which the new Department is prospering and that such leadership is taking the Department in new and important directions.

**Any thoughts on how you are enjoying (or not) being retired (with all acknowledgement that the Coronavirus pandemic is making nobody happy right now)?**

Well, for me, the time was right for retirement because we were going into areas that required technical expertise and intuition that I really did not have. I felt that others could do a better job in these areas and that I was not as able to make original and meaningful contributions. I am enjoying retirement pursuing other activities and the release from the pressure of academic research and its seemingly endless administrative tasks that take away “head time—a term my friend and colleague, Ted Salmon, employed—from actual research.





**Do you have any comments on the retirement celebration that CBP held for you?**

Coming from the upper middle west, we were happy to have our deeds speak for themselves without fanfare. But my neighbor in Southport, who had recently retired from Sanofi Pharmaceuticals, said I would really enjoy the celebration. And, he was right! It was great to see many colleagues and friends. I want to thank Kathleen, Janice, Vicki and the administrative staff for planning such a nice celebration. And special thanks to Maryna and Michelle for creating the wonderful book of memories.



**From Ken For the younger folks in our Department:**

Thomas Edison said that “Genius is 1% inspiration and 99% perspiration”. I think that can be applied to careers in research in that if you have a direction and a goal, perseverance is key especially in times like these. Notwithstanding, for individual projects, there is an art to know when to hold and know when to fold. And there are paths to take that may deviate from the conventional. In my own case, I went from graduate school for a Masters degree to industry, back to graduate school and then to a cancer research institute before arriving at UNC for a four decade career. While not as direct, this path did provide different, useful perspectives. Similarly, there are increasing numbers of non-traditional ways to take research training and make it productively address the many problems that mankind now faces.



Written by: Maryna Kapustina



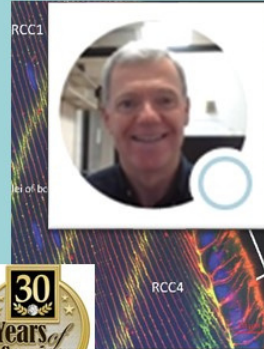
# Retirements...130 Years of Service!



**Marianne Meeker**  
Asst. Professor  
32 Years of Service



**Mary Wright**  
Executive Assistant  
30 Years of Service



**Robert Currin**  
Director, HIC  
34 Years of Service



**Virginia Shea**  
Asst. Professor  
34 Years of Service

*Congratulations!!*



## 2021 Service Awards



**Bill Arendshorst**



**Jim Alb**



**Eva Anton**



**Pat Brennwald**



**Doug Cyr**



**Mohanish Deshmukh**



**Tonya Murrell**



**Hua Zhang**



**Ashley Brown**



**Stephanie Gupton**



**Kara Clissold**



**Jimena Giudice**



**Damaris Lorenzo**



**Emily Moorefield**



**Lori O'Brien**



**Doug Phanstiel**

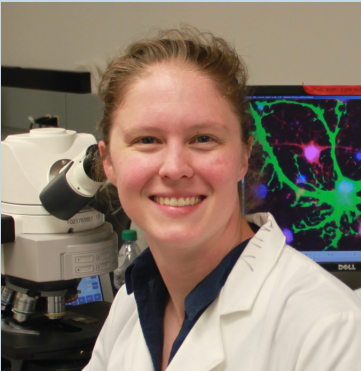


**Rose Thorp**

.....

# CBP WELCOMES

# Katie Baldwin, PhD



CBP welcomes Dr. Katie Baldwin as an Assistant Professor within Cell Biology and Physiology and the UNC Neuroscience Center. Her lab studies astrocyte cell biology during brain development and disease.

Prior to joining CBP, Dr. Baldwin was a Postdoctoral Fellow at Duke University Medical Center. She investigated astrocyte-synapse interactions in Dr. Carla Eroglu's laboratory.

.....

## CONGRATULATIONS CBP!!

The UNC-CH Department of Cell Biology and Physiology is nationally-recognized and ranked #2 in the country for our level of NIH funding in 2020!

