Upcoming TIBBS-sponsored events:

Tues./January 15th, 9:00am to 12:00pm in Bondurant G010: Science Writing Workshop with Pam Hurley
This workshop is for graduate students starting or getting ready to start writing proposals, manuscripts, dissertations, etc. Workshop attendees will learn about topics such as writing abstracts, creating tables, writing to meet audience needs, using the IMRAD method correctly, and editing, proofing, and revising your documents. Click here for more information and to register: http://tinyurl.com/avsn3qq

One-on-One Writing Consultations
If you would like individual help with a writing project, Pam is available for 20-minute one-on-one consultations with students during the afternoon of January 15th. Please email Erin Hopper (erin.hopper@unc.edu) to request a slot.

Wed./January 23rd at 3 pm in Bondurant 3074: “What’s myIDP?” Workshop with Dr. Erin Hopper
You’ve probably heard the buzz about the Science Careers myIDP tool, but what’s all the fuss about? Take just a single hour out of the lab to think about your future career, and you’ll gain insight into what careers may be a good fit for you and how to set goals to position yourself for that career. Please be prepared to bring a laptop or mobile device to complete the myIDP profile. A limited number of loaner laptops will be available at the workshop. Please register here: http://tinyurl.com/bar5mzm

Coming on February 27th at 3 pm: The Third Annual TIBBS Career Blitz!
Join us for one of our most popular yearly events! We’ll have over 20 PhD-trained scientists in one location for you to learn all about different career tracks for scientists. Stay tuned for more information!
All scientists love a good model. Biomedical science more often than not includes observations of complicated molecular interactions and counterintuitive physiology, so few things are more satisfying than placing this oddball data in an intuitive context.

As a neuroscientist-in-training, many of the models central to my field appear untouchable, brilliant in their explanatory power and in perfect consistency with empirical observation. How satisfying it must have been for Hodgkin and Huxley to describe the enigmatic neuronal action potential in terms of simple ionic fluxes! Despite the awe that we hold for our dear models, it is imperative that we never lose the ability to critically evaluate even the most dogmatic tenets of bioscience, maintaining a ready eagerness to test their hypothetical components.

A recent reminder of this comes from a collaborative effort between the UNC Cystic Fibrosis Center (CFC) and Department of Chemistry, the results of which were published this past August in Science. Members of the group included CFC member and Research Assistant Professor of Medicine Brian Button and John P. Barker Distinguished Professor of Chemistry Michael Rubinstein. Drawing on their diverse knowledge and skill sets, the team set out to test a long-held model of mucus flow within the airway epithelia, uncovering some major surprises for the pulmonary field.

How do our lungs dispose of the particulate matter that we inhale with every breath? This job is accomplished by mucus, which traps and expels particulates as it travels down the airway epithelia. Below this mucus lies a layer of motile cilia, continuously beating to generate a flow gradient. When the mucus is not cleared efficiently, as occurs in cystic fibrosis, the results can be life threatening.

Consequently, the relationship between the airway mucus and cilia is of intense interest, both in the lab and clinic. One of the major unanswered questions in the field concerns the discrete nature of the cilia and mucus layers, which do not appear to intermix, even under the most favorable conditions. The classical description of the airway epithelial landscape held that the cilia reside in an aqueous solution, and thus provided no hint as to why the mucus is completely segregated in a top layer. Unsatisfied with

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Panels A-D show successive magnifications of the airway epithelia, highlighting the new gel-on-brush model of mucus interaction with the periciliary layer (PCL). The epithelial landscape of the bronchi (Panel A) includes epithelial cells resting below the PCL, with ciliary beating critical for proper mucus flow (Panels B and C). Mucus is prevented from entering PCL by a mesh-like concentration of sugar and protein macromolecules, forming the brush below the gelatinous mucus (Panel D).
this “gel-on-liquid” model, Brian Button’s group in the CFC sought the help of Michael Rubinstein, an expert in polymer physics, and together they planned the critical experiments to test the model.

To aid in these experiments, the team relied on primary cultures of human bronchial epithelial (HBE) cells, complete with cilia and mucus layers. Ultrastructural evaluation of these cells uncovered what appeared to be a mesh-like layer surrounding the cilia - could this provide a hint about what was going on? The group hypothesized that instead of an aqueous environment, the ciliary layer may be riddled with tightly-bound macromolecules, making it more akin to a brush than a liquid. If this was indeed the case, then perhaps this macromolecular mesh provided the physical barrier preventing mucus entry.

Rubinstein’s expertise in polymer chemistry proved essential in confirming this hypothesis. The group reasoned that the ability of molecules to penetrate this mesh barrier would depend on their size, and molecules greater in size than the largest mesh diameter would not penetrate at all. Fluorescent beads of varying sizes were added to HBE cultures that had been washed to strip away the mucus layer, including 2nm dextran molecules that easily penetrated the entire ciliary layer. As the probe molecule size was increased, the penetration depth was reduced until, at diameters of 40nm or larger, the probe molecules did not enter the ciliary space at all. These results were entirely consistent with the presence of adherent (wash-resistant) macromolecules forming a mesh network with defined pore sizes, progressively decreasing proximal to the epithelium. Taken with other findings reported in the paper, Button and Rubinstein’s groups discarded the notion of a ciliary liquid layer in favor of a new gel-on-brush model, complete with quantitative descriptions of the porous brush.

A scientist-in-training can learn much from the experimental approaches of the authors. Collaborative efforts, a true strength of UNC, proved invaluable to the researchers. To this point, Button and Rubinstein are part of a larger group of 15 principal investigators with interests in cystic fibrosis, actively generating a common language among scientists of varying backgrounds. Equally impressive is the critical mindset exemplified by the authors in questioning a standard model of physiology that had been established for some time. According to Rubinstein, scientists-in-training should learn to develop such ready eagerness to question the dogma of their fields - no scientific model should be beyond a bit of healthy skepticism.

Dr. Li-Heng Cai, postdoctoral fellow in Dr. Rubinstein’s laboratory, stands beside the cover artwork for the group’s recent publication in Science. Dr. Cai contributed to this work while a graduate student in the Rubinstein Laboratory.

Let’s exercise our brains with some TIBBS trivia! The first UNC graduate student with a correct response will win a copy of the book *The Power of Habit: Why We Do What We Do in Life and Business*! Five runners up will receive a delicious candy bar! Here’s how to play:

1. Like us on Facebook
2. The trivia question will be posted on our wall a few minutes after distributing the TIBBS Times.
3. Email your answer to erin_hopper@unc.edu. Good luck!
Pioneering Postdoc Programs

Introducing Merck’s New Postdoctoral Research Fellow Program

The Merck Research Laboratories (MRL) Postdoctoral Research Fellow Program aims to be a best-in-industry program for industrial postdoctoral researchers, designed to provide you with an academic focus in a commercial environment. With the resources, reach, and expertise of a large pharmaceutical environment at your fingertips, as a MRL postdoc you will be positioned to excel in an institution committed to breakthrough innovation in research and discovery.

Postdoctoral Fellows at Merck will be part of a team of motivated scientists working to discover and develop medicines and vaccines that help meet the world’s unmet medical needs. You will work alongside outstanding researchers and collaborators as part of Merck’s industry-leading research and development organization. Postdocs at Merck will:

- Work in unique laboratory environments with top capabilities, equipment, expertise and knowledge
- Obtain experience in drug discovery and development
- Generate innovative science resulting in high-quality external publications
- Participate in seminars, lectures and meetings, and have the opportunity to interact with the local scientific community
- Be positioned for choice careers in pharma, biotechnology, and academia

As a MRL postdoc, you’ll also be entitled to receive a competitive salary, and access to the full benefits programs offered by Merck.

At Merck, our passion is improving health. By bringing important medicines and vaccines to people around the world we remain at the forefront of scientific discovery and innovation. The research conducted in the MRL Postdoctoral Research Program fuels this passion, and helps Merck fulfill our mission of improving lives – everyday.

Visit [http://www.merck.com/research/fellow/home.html](http://www.merck.com/research/fellow/home.html) for more information.
Click here to view seminars, workshops/events, and TIBBS events on our TIBBS calendar.

Cheap Things

Groupon
Groupon is a website that offers deals on things to do, services, and places to eat in your area.

Living Social
Offers one deal every day with discounts of up to 90% at local restaurants, bars, spas, theaters, and more.

Our Local Deals
Deals for the Greater Chapel Hill, Carrboro and Orange County Communities

JANUARY EVENTS:
Carolina Performing Arts presents The Rite of Spring
When: January 25th and 26th at 8:00 pm
Where: Memorial Hall
A Rite is a full-length collaborative work commissioned by Carolina Performing Arts, combines choreography from the Bill T. Jones/Arnie Zane Dance Company with the ensemble-based theater work of SITI Company and Anne Bogart.

Morehead Planetarium’s “The Longest Night”
“The Longest Night: A Winter’s Tale” is a one-of-a-kind fulldome planetarium show that captures its audience with a timeless fable of courage, generosity and renewal. Its story explores the concept that winter is a time for Earth to rest, waiting for new growth in the spring. Show times are Saturdays at 11:30 a.m. and Sundays at 2:30 p.m. Tickets adults $7.25, children, students & seniors $6. http://www.visitchapelhill.org/plan-a-visit/event/morehead-planetariums-the-longest-night
Playmaker’s Theater:  
http://playmakersrep.org/

Carolina Union Activities Board:  
Different activities organized by the CUAB. Free films are shown during the school year.  
http://www.unc.edu/cuab/events.shtml  
CUAB Free Film Series- Every Friday and Saturday, in the Union

HOLIDAY EVENTS  
Martin Luther King Jr. Birthday Celebration:  
http://www.unc.edu/diversity/mlkweek.htm

Raleigh Festivals this Month:  
http://eventful.com/raleigh/events/categories/festivals_parades

Triangle Film Events this Month:  
http://eventful.com/raleigh/events/categories/movies_film/this-month

Thorough List of Local Events by Category:  
http://eventful.com/raleigh/events

LOCAL EVENTS CALENDARS  
Chapel Hill Event Calendar:  
http://events.triangle.com/search?city=Chapel+Hill&new=n&srad=50&st=event&swhat=&swhere=&swhen=Next+30+Days  
http://www.visitchapelhill.org/calendar/events/index.php?year=2013&month=01&day=1

Durham Event Calendar:  
http://events.triangle.com/search?city=Durham&new=n&srad=50&st=event&swhat=&swhere=&swhen=Next+30+Days  
http://www.durham-nc.com/visitors/event_cal.php

Carrboro Citizen:  
http://twitter.com/#!/CarrboroCitizen  
http://www.carrborocitizen.com

Raleigh Carrboro Events  
http://events.triangle.com/raleigh-nc/events/carrboro+events

Independent Weekly:  
http://www.indyweek.com  
http://twitter.com/#!/indyweek

ATHLETIC EVENTS  
Full Schedules available for every sport:  http://www.goheels.com/

UNC Campus Recreation Intramural Sports  
http://campusrec.unc.edu/getting-involved
Runs:
For a complete list of local runs and races: http://runwellnc.com/

Fleet Feet in Carrboro has weekly free Pub Runs, yoga, and 4, 10, ½ marathon, and marathon training workouts: http://www.fleet-feetcarrboro.com/

THE ARTS AND SCIENCES

Carolina Performing Arts:
http://www.carolinaperformingarts.org/genres/all

Shows at Cat’s Cradle, Carrboro:
http://www.catscradle.com/schedule.html

UNC Music Department Performances and Events:
http://music.unc.edu/calendars/thecalendar
UNC Ackland Art Gallery Calendar:

Morehead Planetarium
250 E. Franklin St, Chapel Hill

Museum of Life and Science, Durham
http://www.ncmls.org/visit
$12.95 adults, $10.95 seniors 65+, $9.95 children (3-12)

DSI Comedy Theatre
Upcoming shows: http://www.dsicomedytheater.com/calendar/?year=2011&month=6

Carrboro Artcenter:
Craft workshops, dance classes, and live music

Carolina Theatre’s “Retrofantasma” film series:
A monthly film series of double-features dedicated to bringing classic horror movies back to the big screen in 35mm! Created in 1998, RETROFANTASMA has developed a large dedicated audience of horror movie enthusiasts whose desire to see their favorite terror flicks is matched only by their willingness to cheer at the screen. Tickets: $7.
http://festivals.carolinatheatre.org/retrofantasma/

Varsity Theatre on Franklin St.
The Varsity Theatre has been a landmark of Chapel Hill and Franklin Street for over 50 years. Since the Sorrell building was built in 1927, it has always housed a movie theater, starting with the original Carolina Theater and then the Village Theater before becoming home to the Varsity.
http://www.varsionfranklin.com/nowplaying.asp
https://twitter.com/#!/varsitytheatre
FOOD AND DRINK
Comprehensive list of food and drink specials, bar events in the area:

Carrboro Farmers’ Market
301 W. Main St., www.carrborofarmersmarket.com
Saturdays 7 a.m.-noon (year-round)
Wednesdays 3:30-6:30pm (starting April 13th)
These fruits and veggies are in season: Belgian Endive, Brussels Sprouts, Butternut Squash, Cactus Pear, Cardoon, Cherimoya, Chestnuts, Clementines, Collard Greens, Date Plums, Dates, Delicata Squash, Grapefruit, Kale, Kiwifruit, Leeks, Mandarin Oranges, Maradol Papaya, Oranges, Passion Fruit, Pear, Persimmons, Pummelo, Red Banana, Red Currants, Sharon Fruit, Sweet Dumpling Squash, Sweet Potatoes, Tangerines, Turnips

Pick your own fruits and vegetables:
Check out these directories for local pick-your-own farms:
http://www.pickyourown.org/NCpiedmont.htm

CH Bar Specials:
Frequently updated nightly bar specials in Chapel Hill
https://twitter.com/#!/CHBarSpecials

The Stagger- Chapel Hill/Durham/Raleigh area drink specials. www.thestagger.com

Recession Tuesdays at ACME
Carrboro
All entrees $12.95 every Tuesday. Reservations highly recommended.

Tylers Taproom, Carrboro/Durham/Apex:
http://www.tylerstaproom.com/happenings

Rockfish Southpoint:
1/2 price bottles every Monday and Saturday
$2 all drafts and free glass for featured beer every Thursday at 6pm and free appetizers 9pm-11pm.
https://twitter.com/#!/RockfishNC

First Fridays, Downtown Raleigh
Art, Food, Music for free in downtown Raleigh
http://www.godowntownraleigh.com/first-friday-raleigh

Johnny’s of Carrboro
Live music and Food Truck schedule:
Johnny’s Monthly Event Calendar

Carolina Brewery:
http://www.carolinabrewery.com/carolina_brewery_news.html
City Beverage, Durham
http://www.citybeverage-durham.com/

Broadstreet Cafe, Durham
http://www.thebroadstreetcafe.com/events.html

Bull City Homebrew:
http://www.brewmasterstore.com/

Fifth Season Gardening Co., Carrboro:
Gardening, Home, and Beer/Wine making supplies
http://www.fifthseasongardening.com/

**VOLUNTEER OPPORTUNITIES**

UNC Hospitals Volunteer Information
http://www.unchealthcare.org/site/volunteers/adult_volunteers

United Way:
Requires creating an account. Once registered, search by zip code for nearby volunteer events.
http://volunteer.truist.com/triangle/user/login/?return_url=%2ftriangle%2fvolunteer%2fhome%2f&type=&_flash_message__=The+page+you+are+trying+to+reach+requires+you+to+log+in+or+register&_hs__flash_message__=ad9b4f32ce0331b664cebef21caae8fd2ab92f46

Habitat for Humanity:
Orange County:
http://www.orangehabitat.org/volunteer/

Durham:
http://durhamhabitat.org/volunteer/volunteer-worksite.html

Orange County Animal Shelter:
http://www.co.orange.nc.us/animalservices/volunteers.asp