The 16th Annual BCMB Symposium  
Emily Kuiper

The 2012 NIH Biochemistry, Cell and Molecular Biology training grant supported students are pleased to announce the topic for the 16th annual BCMB Symposium: “Ubiquitin-Dependent Trafficking and Sorting.” This year’s symposium will be an all day celebration of Ubiquitin starting at 8:30 am on Friday, April 13th in Whitehead auditorium. Our speakers use a wide range of model systems from purified proteins to yeast, mammalian cell culture, and mice to address a wide range of topics including cellular signaling, cancer, neurodegenerative diseases and viral infection. With such an expansive array of topics, spanning from protein structure to the ERAD pathway, these speakers are sure to interest everyone in the BCDB program. This year’s speakers include: 

**Serge Fuchs**, University of Pennsylvania. The Fuchs lab studies aberrations in ubiquitin regulatory proteins that contribute to cell transformation and tumor progression. They specifically study the molecular mechanisms of trafficking and degradation of cytokine and hormone receptors such as interferon alpha receptor and prolactin receptor.  

**Ron Kopito**, Stanford University. The Kopito lab has spent decades elucidating the Endoplasmic Reticulum Associated protein-Degradation (ERAD) pathway. Their work includes defining an ERAD interactome and understanding how the cell recognizes ERAD substrates.

(Continued on page 2)

Rockin’ Around Rollins  
Matthew Randolph

This past holiday season, the BCDB held its first annual Christmas party! Thanks to the work of Susan Hoffstadter, Julie Fritz, Chelsey Chandler, Megan Allen, and Mike East, a time of giving and laughter was enjoyed by most (it’s always difficult to determine if Mike East is enjoying a party or not).

Students and faculty were asked to participate in a Secret Santa event. Participants bought gifts that their person would have wanted when they were a child. Some received Barbies, one a Ken doll, while others received stuffed monkeys or wrestling men. To add to the fun, each giver was asked to write a poem explaining their gift; some were quite witty while others...well, it’s the thought that counts. For those poets that left something to be desired with their rhymes, let me show you how it’s done...

Everyone enjoyed the poems being read, but what about Santa, was he still in bed?

Why now that you ask, I am glad to say, that Dr. Keith Wilkinson was Santa for the day.

He did a great job collecting the toys, which were now destined for girls and boys.

The charitable giving of our BCDB members through Toys-for-Tots brought shivers to me timbers.

The trove of toys were then taken to a drop where a Toys-for-Tots collection bin was filled to the top.

With this new festive party bringing such merry and cheer, I can hardly wait to repeat it next year!

The Director’s Corner  

Rick Kahn

I am sitting in my office a day after being “reminded” that it is time to knock out another riveting newsletter article from the BCDB Director. I am also trying to decide if I have time to go to a teaching workshop this afternoon on “Students’ Misconceptions in Science and the Process of Science”. The phrase “science misconceptions” always makes me think of the movie that changed how I approach teaching, “A Private Universe”; in which a very bright high school student layers misconceptions on top of misconceptions to create a figure eight pattern for the earth’s orbit around the sun (http://www.learner.org/resources/series28.html).

I also just came out of class at the end of the first week of the Membrane Traffic module in Foundations, in which Victor and I have been talking about the Golgi and posing questions about how proteins and lipids move through the cis, medial, and trans compartments and why it is important to understand the mechanisms. Today we discussed a meeting of the leading scientists in this field, who developed seven questions that will guide future research. We asked the first year students to design experiments that will answer them. In the course of developing approaches to answer #6 (How are Golgi compartments constructed and remodeled?) we learned that at least half the class was confused as to what is meant by cis, medial, and trans Golgi and the basic architecture of the Golgi itself.

To repeat, this fundamental aspect of the Golgi that had been discussed all week and which Victor and I took as a “given” was misunderstood by more than half the class. Had we been in a lecture course those students would still not understand today what is meant by cis, medial, and trans compartments and they would be well on their way towards constructing their own “figure eight” structure for the Golgi. They would likely have layered the new findings and ideas on top of a flawed concept of Golgi organization, essentially disqualifying them from contributing to our understanding of the Golgi and related organelles.

We all harbor misconceptions of current models and we all try to hide our ignorance because we believe that we are expected to know things that we don’t. I believe that it is only through intensive discussion-based instruction and openly wrestling with complex ideas in multiple formats (classroom, lab meetings, seminars, journal clubs, conversations in the hallway) that we may systematically eliminate our false premises and dig down to the more important core questions that might have the biggest impact on science (not to mention careers). The discussion styled class is also referred to as “active learning”. This is almost the only kind of learning that persists in long term memory in my view, though it can come out of lectures. And therefore should almost be the only type engaged in at the graduate school level.

I also mentioned in class last week that I remember almost to the day when I switched from being interested in reading review articles and preferred primary literature. Students seemed perplexed and unsure what I meant by this. I only rarely want to know the models that various people are pushing because science has become overly interested in selling the idea more through marketing than by building the strongest logical argument supported by data. I prefer to ask, what are the questions that we still haven’t answered and that the leaders are struggling with? These come out of the primary literature and typically provide incomplete and faulty answers but they point you towards the important questions and holes in our understanding.

It is only through understanding the weaknesses of the current models that we can contribute in substantial ways to the next generation of models and make important contributions in our field. I wish only for our students and faculty that they make a positive impact by asking the most important questions and devising creative ways to answer them. I believe that active learning gives way to active research and that the BCDB program is succeeding in setting up our students to succeed as both.
With the implementation of a new BCDB Foundations course, there will be changes in the Qualifying Exam I, which is required for all first-year BCDB students. The Foundations course prepares students for the background, critical thinking, and experimental design approaches on which the written Qualifying Exam I is designed to test. Feedback from the current second-year students indicated a preference for having Qualifying Exam I before Memorial Day; both because they did not need a full month to prepare for the exam and because they wanted to enjoy the holiday. To address this, the Qualifying Exam I will take place on May 22nd, a week earlier than in previous years. The exam will also now require passing 7 of 10 questions, with a 70%, and an overall average of at least 70%. This is an increase from the 6 of 10 questions that were required on past exams—based on the principle that BCDB students should be experts in a broad range of topics.

Sho Ono has inherited the Qualifying Exam Chair position from Paul Doetsch. He writes: “I am assembling the Qualifying Exam Committee, which has been confirmed to include Anita Corbett, Danny Reines, Larry Boise, and Victor Faundez. The committee is responsible for selecting and editing questions for the exam. The Part I exam is designed to test general background knowledge and critical thinking, with the goal of determining whether each student is prepared to progress in the BCDB PhD program. My advice is to read questions carefully and try to answer in a few words or single sentence, which can then be supported by rationale and supporting principles. If the answers hit the major points, short answers are often sufficient. If the answers miss the major points, long answers do not cover up fatal deductions. This practice also applies to advanced students and faculty in the oral Qualifying Exam II, research seminar discussions, and response to reviewer comments for manuscripts and grants. As scientists, we are constantly tested for critical thinking!”

No BCDB student will deny that studying for Qual I is a stressful experience. However, I think that most current students will agree that almost all preparation culminates from over the course of a year and not the few weeks (or months) prior to the exam. Being curious and asking questions is a good starting point for developing the thinking skills needed as scientists. So just do what you love, study hard, and the rest will follow!
Congratulations to BCDB Students With External Funding!

BCDB students receive excellent training in grantsmanship which is evident given the number of students with external funding. Keep up the good work everyone!

Allen, Megan - BCDB TG
Barnes, Dawn - NSF
Bowman, Beth - NSF
Cadwell, Shea - BCDB TG
Chandler, Chelsey - BCDB TG
Colucci, Jennifer - AHA
Fagan, Crys - NDSEG

Hwang, Chris - NEI NRSA
Kuiper, Emily - BCDB TG
Lattier, John - RBP Grant
Nanes, Ben - AHA, NHLBI NRSA
Newman, Laura - BCDB TG
Rha, Jen - Gates Scholar, NICHD NRSA

Randolph, Matthew - NIDCD NRSA
Ryan, Emily - HG TG
Schureck, Marc - BCDB TG
Viswanadha, Rasagnya - AHA
Wasson, Jadiel - BCDB TG
Williams, Katie - NIMH NRSA

Chromatin Club
When: second Monday of the month
Time: 12pm
Where: Rollins 2052
Contact: David Katz
email: djkatz@emory.edu

Integrative Cellular Imaging Data Club
When: first Thursday of the month
Time: 4pm
Where: SOM room Room 153A
Contact: Eric Vitriol or Alexa Mattheyses
email: eric.vitriol@emory.edu or mattheyses@emory.edu

Emory Epithelial Biology Research Group
When: Thursdays, dates TBA
Time: 12pm
Where: Whitehead 400
Contact: Tricia Kowalczyk
email: pkowalc@emory.edu

RNA Club
When: second Wednesday of the month
Time: 6pm
Where: Whitehead 400
Contact: Katie Williams or Jack Dunkle
email: ktwillster@emory.edu or jackdunkle@emory.edu

Structure Club
When: second Tuesday of the month
Time: 12pm
Where: Rollins 4052
Contact: Crys Fagan or Jen Colucci
email: cefagan@emory.edu or jcolucc@emory.edu

Fundamental and Applied Molecular Evolution (FAME)
When: first Tuesday of the month
Time: 6pm
Where: Emory or Georgia Tech
Contact: Ichiru Matsumura
email: imatsum@emory.edu

Worm Club
When: second Monday of the month
Time: 12pm
Where: Rollins 2052
Contact: Shana Kerr
email: skerr@emory.edu

BCDB Clubs at a Glance
Shea Cadwell
Walking through the halls of Whitehead or Rollins, it is hard not to notice all the flyers announcing upcoming seminars. However, there are also many special interest clubs that meet monthly. To find out more information or to be added to the listserv, email the contact person listed for the club.
BCDB Dominates DSAC Student Symposium

In science, the quest for knowledge must be coupled with the ability to effectively communicate these new ideas. Fortunately, at Emory we don’t have to make the sudden leap from the small lab meeting to a large mega conference to learn how to convey our new discoveries. In addition to presenting yearly in Wednesday seminar and journal club, there are opportunities such as the DSAC Student Research Symposium.

For the uninitiated, the DSAC Student Research Symposium is a day-long science binge where students from every program in the Graduate Division of Biological and Biomedical Sciences (GDBBS) volunteer to present research posters or short talks. The students are evaluated by faculty and post-docs based on their clarity, stage presence, and overall ability to communicate their research. This is a unique opportunity to practice presenting their research in a low key yet scholarly environment.

While every program strives to provide the best training for their students, this research symposium also highlights BCDB’s commitment to scientific communication. Our program has always participated heavily in this research symposium and this year was no different. We had the largest number of participants with 20 poster presenters and 6 oral presenters. Even more incredible is that BCDB students won half of the available awards: 1st (Pearl Ryder, Faundez lab) and 2nd (Sharon Soucek, Corbett lab) place talks, and 1st (Beth Bowman, Kelly lab), 2nd (Andrew Bankston, Feng lab), and 3rd (Megan Allen, Feng lab) place posters, and 2nd place image (Crys Fagan, Dunham lab).

A major advantage to participating in this research symposium is just to see the work other students are completing. After talking to many participants, it was intriguing how many times they mentioned seeing someone else from a different program working on the same or similar project using a different approach. Will Hudson, an MSP student and member of the Ortlund lab, said, “While presenting my poster, I had the opportunity to talk to a student from a different program who worked on the same class of proteins. He even recommended a great review article.” Callie Wigington stated, “I really enjoy looking at the other posters. It helps me think about potential experiments I want to perform for my own project.” Additionally, many students felt that the practice they gained in communicating their research to those in other fields gave them a fresh perspective, and the act of discussing exciting results was enjoyable in and of itself.

During preparation for this event, each student must reevaluate the importance, progress, and eventual path of their research. Sharon Soucek agrees: “The biggest benefit from participating in the DSAC Symposium wasn’t actually the presentation itself, but came from the preparation. I had to look at the big global picture, see where my project was and where it was going.” This is one of the few times before our defense that we actually take time away from the bench and really take a hard look at the bigger picture. Participating in the DSAC Student Research Symposium isn’t just a place to showcase the great science we are doing, but is also an invaluable opportunity to practice your science communication skills and figure out how to explain your research to a larger audience.

New BCDB Faculty Members

Renhao Li (Dept. of Pediatrics)
Research: Structure, function, dynamics and regulation of transmembrane receptors that are involved in cardiovascular and immune diseases.

Greg Melikian (Dept. of Pediatrics)
Research: The study of molecular mechanisms of enveloped virus entry into cells with the main focus on entry and fusion of Human Immunodeficiency Virus (HIV) and the anti-viral activity of human defensins, highly charged cationic peptides capable of blocking entry of HIV and many other viruses. Utilization of real-time imaging, single particle tracking and fluorescence spectroscopy methods to better understand virus trafficking and fusion.

Nicholas Seyfried (Biochemistry Dept.)
Research: Utilization of liquid chromatography coupled to tandem mass spectrometry (LC-MS/MS) to map and quantify proteins and associated PTMs in protein aggregates from patients with neurodegenerative disorders.

David Katz (Cell Biology Dept.)
Research: The study of histone modifications in the germline of C. elegans and mouse as a model for understanding basic stem cell biology and the function of chromatin as an epigenetic transcriptional memory.

Jadiel Wasson

Roger Deal (Biology Dept.)
Research: Utilization of the plant Arabidopsis as a model system to study the regulation of gene expression during cell differentiation and organ formation.
MSDS of Frozen Yogurt:

Product Information:
Frozen yogurt (aka; fro yo, healthy ice cream, frozen yozen)

Composition/Information on Ingredients:
Nutritional Facts (varies with flavor): 80-200 kcal, 0g to 5g fat, 15g to 40g carbs, 10g to 30g sugar, 2g to 5g protein, 10-15% daily value of calcium.
Composition: 15-17% sugar, 0.5-6% milkfat, 8-14% milk solids not fat (MSNF), 1% Lactobacillus bulgaricus, Streptococcus thermophilous, 0.5-0.6% stabilizers and emulsifiers. Other ingredients include egg solids, color, mineral salts, caseinate derivative, citrates, phosphates. Additional flavors include fruit, nuts, cocoa, vanilla, sugar, cinnamon, cloves, nutmeg, and ginger.

Hazards Identification:
Consumption too quickly might result in brain freeze. Allergies might ensue depending on frozen yogurt flavor. Frozen yogurt is not recommended for those lactose intolerant.
WARNING: Frozen yogurt is highly addictive, especially in the summertime.

Toxicological Information:
Over-consumption may result in abdominal discomfort, flatulence, bloating, diarrhea, nausea, acid reflux, and weight gain. May need to lay off the fro yo for a few days.

First Aid Measures:
Oral exposure: If swallowed, smile and enjoy! If brain freeze ensues, stick tongue on roof of mouth immediately. Have an anti-histamine on hand for possible allergic reactions. If lactose intolerant, take lactase pill and find nearest restroom, or stick to dairy-free sorbet.

Accidental Release Measures:
If lactose-sensitive, may experience uncontrollable gas. If in the presence of others, make noises from mouth to distract from unpleasant rear-end explosions. Be sure to carry perfume or body splash to prevent suffocation. Be sure to locate nearest bathroom for secondary uncontrollable urges.

Handling and Storage:
Frozen yogurt is kept at 0° to -15°C.

Physical/Chemical Properties:
Depends on flavor. Like yogurt, but frozen and so much better!

Disposal Considerations:
Please do not let frozen yogurt go to waste. Eat what you serve yourself! If you must, garbage or down the drain is safe.

No need to fight over fro yo! You can find some at several locations within a five-mile radius from Emory, such as Freshens (on campus), Menchies, Yogli Mogli, Red Mango, Yogurt Tap and TCBY. Hurry quickly to your nearest fro yo shop as sunny spring shuffles in!
Spring in Atlanta: 10 Things to do after visiting the Aquarium  Megan Allen

Visiting the new Georgia Aquarium is not-negotiable. If you’ve already been you know that it is the most exciting, reasonably-priced, indulgent place for a scientist to go in Atlanta and pet a stingray. You’ll probably go again soon to see if the whale sharks have grown. If you’ve been living in the Atlanta area for more than a week and haven’t been yet—I’m confused. You need to book your trip now for this weekend. Do it. Now: http://www.georgiaaquarium.org/acb/stores/1/Georgia-Aquarium-Tickets-Special-Offer-C32.aspx.

After you’ve been to the aquarium at least three times, you now have time to do something else around town. If you’re new to the city, you may want to check these cheesy but respectable tourist destinations off your list.

The Coca-Cola Museum: $$

A lot of Emory (and Atlanta) has been funded with Coke money and the museum is an Atlanta tradition. The newly renovated Coke museum is located directly adjacent to the Aquarium, so you can head over after your third obligatory Aquarium trip. There is a room in which you can sample any Coke product from around the world—and they shoot it three feet into your glass. This alone is probably worth your time.

The Fox Theater: $$$

Whether you’re going to see a play, a concert, a classic movie, or a Broadway musical, you will enjoy a trip to the Fox. Another historic staple, the Fox offers a variety of entertainment and an unforgettable magical experience. This is also a great place for a date—in the event that a graduate student has the time or opportunity to date.

Zoo Atlanta: $ 

Before it gets ridiculously hot outside—go see the pandas at the zoo. If you go now you’ll save yourself a huge line in which you’ll most likely have to elbow through a class of 8-year olds to see these adorable creatures. After you see the pandas, you can stroll by a large collection of mammals, birds, and reptiles that you will want to take home with you.

Some of us—let’s be honest almost all of us—are more often in the mood to do something free or cheap around Atlanta this spring. Lucky for some of you—or all of you—there are many things that you can do without spending all your coffee money.

The King Center: free

Located in Atlanta’s Sweet Auburn district the Martin Luther King Jr. Center attracts over a million visitors a year. You can visit the birth home of Dr. King, a museum highlighting the Civil Rights Movement, Ebenezer Baptist Church, and exhibits on the Civil Rights Movement free of charge. After a visit to The King Center, you can eat at a trendy restaurant on Edgewood Avenue or go shopping at the hip Little Five Points area close by.

Piedmont Park: free

It’s not too late to save the demise of your new year’s resolution. Visit Piedmont Park and do something active like take a bike ride or take a jog through one of the many loops or trails. You could also relax in the grass with a book—or paper—and read on one of those “75 and sunny” spring weekends.

St Patrick’s Day Parade: free

Do you want to see people dressed up like leprechauns dancing down Peachtree? Do you have a soft spot in your heart for Riverdance? I thought so. You should join me at Atlanta’s 130th St. Patrick’s Day Parade on March 17th at noon. I’m sure green beer will be part of the equation.

Bluegrass Festival: free

For anyone else who grew up on the beautiful twang of a banjo, you might enjoy the Stone Mountain Village Bluegrass Roots Music and Arts Festival on March 31st. With free general admission, this event will feature local artisans and sampling of classic north Georgia mountain music. More on my love of southern festivals in the Fall 2011 Leading Edge.

For an adventure that’s cheap but not free, you may want to try one of the following:

Braves Spring Training: $

Nothing says Atlanta like a $10 nosebleed seat in Turner Field and the purchase of a hotdog that will probably cost more than your ticket. Even if you can’t see anything on the field, the weather in April is perfect for baseball. You’ll need to learn the tomahawk chop. See me for details.

The High Museum of Art: $

The new Picasso to Warhol exhibit sounds intriguing and will be around until April. For around $15 you get admission to this exhibit as well as general admission to Atlanta’s decent art museum—it’s not New York, but the special exhibits are worth the money.

Atlanta Botanical Gardens: $$

Nothing says spring like flowers! For just under $20 you get full access to the tours and exhibits at the Atlanta Botanical Gardens. If you’re not from here, check their website! Flower blooming temperature arrival can vary enormously from season to season in Georgia.

Hopefully this will keep your empty spring days occupied. If you complete everything on this list or if nothing on this list interests you, you can always join the group of BCDB students that play trivia at Mellow Mushroom on Wednesdays at 8:30 pm—contact Katie Williams to be on the email reminder list. Our trivia team is improving dramatically and after countless losing weeks we placed third. It took twelve people and a world map, but we’re making progress.

Around Town

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<tr>
<th>Date</th>
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<tr>
<td>2/17/2012</td>
<td>High Museum of Art: “Picasso to Warhol: Twelve Modern Masters”</td>
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<tr>
<td>1/21/2012 - 4/15/2012</td>
<td>Fernbank IMAX: “Born to be Wild”</td>
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<td>1/2/2012 - 5/18/2012</td>
<td>Atlanta Botanical Garden: “Orchid Daze: Hanging Gardens”</td>
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<td>2/17/2012</td>
<td>High Museum of Art: “Friday Jazz”</td>
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<tr>
<td>1/21/2012 - 4/15/2012</td>
<td>Atlanta Hawks vs. Orlando Magic</td>
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HeLa cells were plated on matrigel coverslips at 50% confluence. The cells were ... and stained for Arl2 (green) and cytochrome-c (red) and visualized under N-SIM. Images courtesy of Samatha Mudigonda.

Following each minicourse in Foundations, the first years have given the professors of that minicourse some kind of memento. For the imaging minicourse, James Zheng and Eric Vitriol were given FRET paired t-shirts.