The Vulcan Letter

Voice of the MSTP at the Universtiy of Alabama at Birmingham

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THE FIRST ANNUAL SOUTHEASTERN MEDICAL SCIENTIST SYMPOSIUM

Vishnu Cudapah

On October 9, 2010, the inaugural Southeastern Medical Scientist Symposium was held at the Children's Harbor building at the University of Alabama at Birmingham. Hosted by MSTP students from UAB, Emory, and Vanderbilt, this was the first meeting of MD/PhD programs in the Southeastern US. About 140 MSTP students and undergraduates attended the symposium, composed of talks, small-group discussions, poster presentations, and schmoozing. More than a year ago, Dr. Robin Lorenz, Director of the UAB MSTP, wanted to provide her MD/PhD students an opportunity to meet and network with other MD/PhD students from around the country. Given that networking and research presentation are very important aspects of any MD/PhD student's training, she decided to advocate for a regional MD/PhD meeting completely run by students. The MSTPs at Emory University and Vanderbilt University and the American Physician Scientist Association (APSA) enthusiastically agreed to co-sponsor the event, and an inaugural meeting was born.

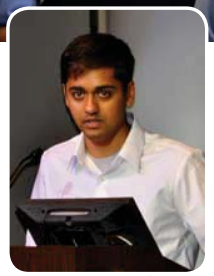
Goals for the meeting included: (1) dialogue and networking among MD/PhD trainees; (2) opportunities to present research beyond a school-wide setting; and (3) providing information for undergraduate students interested in MD/PhD programs. Besides providing a forum to allow MD/PhD students from different institutions to converse, the symposium also sought to provide information for undergraduate students interested in learning about MSTPs. Undergraduate students had the opportunity to meet students and directors from the UAB, Emory, and Vanderbilt MSTPs to gain first-hand insight into the application process.

Keynote lectures were presented by leaders in translational research. Speakers included Dr. David Standaert, Interim Chairman of Neurology and Professor of Neurology at UAB, who discussed his path to a successful career as an MD/PhD; Dr. Roger Cone, Professor and Chairman of the Department of Molecular Physiology and Biophysics at Vanderbilt and member of the National Academy of Sciences, who discussed his research regarding obesity; and Dr. Richard Whitley, Distinguished Professor of Pediatrics, Vice Chairman of the Department of Pediatrics and Division Director of Pediatric Infectious Diseases at UAB, who discussed his research regarding herpes viruses.

The symposium also included small group discussions regarding a variety of themes relevant to the training of physician-scientists. Thematic discussions included (1) Being a Female Physician-Scientist, (2) Successful Grant Writing, and (3) MD/

PhD and the Match. About 40 MD/PhD students and undergraduates presented posters regarding their laboratory/clinical research, and awards were given to exceptional presentations. Michael Alberti (UAB), Asher Albertson (UAB), David Gaston (UAB), and Taymour Hammoudi (Emory) won in the graduate student category, and Tia Barclay (UAB) and Eunlim Kim (UAB) won in the undergraduate category.

The day-long symposium was co-sponsored by the MSTPs from UAB, Emory, and Vanderbilt, and additional funding was obtained from 10+ centers and departments at UAB, as well as the American Physician Scientists Association (APSA). This meeting will rotate annually between Birmingham, AL (UAB), Atlanta, GA (Emory), and Nashville, TN (Vanderbilt). Next year's meeting (Fall 2011) will be hosted by the Emory University MSTP in Atlanta, so please plan on attending!



CHOOSING A DISSERTATION LAB

Asher Albertson

As an MD/PhD student, you have chosen to make research a large portion of your career. Your next step is choosing a lab in which to complete your dissertation work. This is a daunting task. It is one of the most important decisions you will make in your post-graduate career. Completing it should not be embarked upon timidly. Aggressive, forward-thinking action will help you make the best decision. This article will provide some general guidelines for choosing a lab. In addition, the UAB MSTP is overflowing with knowledgeable individuals willing to aid you in this task.

Like most things in life, the biggest mistake you can make in choosing a lab is thinking with your heart. "It just feels right" has no place here. Choose a set of objective criteria your dissertation lab must have. ***These criteria should primarily apply to three things: the lab environment, the PI, and the potential dissertation project.*** Let's tackle some objective criteria for each of these categories.

The importance of choosing a lab with an environment conducive to your personality and work style cannot be overemphasized. Some things to consider- Do you like to work on a consistent schedule, or would you rather accomplish things randomly? Do you like a neat work space? Is socializing at work important to you? Do you like to work with others or would you rather have complete ownership over your project? Answer these questions and any others you can think of in a yes or no fashion before beginning your search. After you know what you want, begin deciding if a potential lab fits. While a rotation is a great time to gain insight, more intense detective work is usually required. Ask current and past members of the lab for their opinions on the environment. Ask other members of the department when not around members of that lab. Perhaps most importantly, ask individuals within the UAB MSTP. Chances are very likely that students, current or past, and program administrators have dealt with that lab and can speak honestly to the environment.

The most important part of choosing a lab is choosing a PI with whom you can be successful. Management styles and competency differ vastly among researchers. Your PI can only make you successful if he or she is successful. A great personality and lots of enthusiasm don't have anything to do with their ability to get your career off on the right track. Don't think with your heart. Some things to consider- does their management style match your work style? Do you need lots of supervision? Are you frustrated by harsh criticism? Will you get to write your own papers and grants? Ask members of the lab and the UAB MSTP how your potential mentor responds to all of the above. Also remember- you are being trained to be a scientist. You are not one yet. Work for someone eager to train you. Graduate school is an apprenticeship. Luke never would have become a Jedi without the patience and hard work of Master Yoda. As with Jedi, training graduate students is a skill not shared by all. Ask as many people as possible for their honest opinion of the ability of a potential PI to train you.

Most importantly, remember, you can't be successful if your PI isn't. What defines success as a graduate student? Feeling good about yourself? No. Publications and grants in a timely fashion definitely do however. If your potential PI doesn't publish and secure grant funding on a regular basis, how do you expect to? If you join a lab without first exhaustively examining a potential mentor's publication record you risk career lobotomy. Match the names of previous graduate students to publications. You need to aim for at least two publications in four years. If past graduate students have not achieved this, you probably won't either. You're not special. No matter how well your personalities match and how awesome the project sounds, don't lose sight of the end goal. If a potential PI has two 6th year graduate students and hasn't published in five, it's a red flag.

The final thing to consider is the dissertation project itself. While important, this is the least crucial of the three things to consider. The vast majority of successful scientists do not work on the same project they worked on in graduate school. Most new PI's start with data they gain in their post-doc or fellowship. Your job as a graduate student is to learn to be a scientist. This includes learning experimental design, writing, and scientific literacy. Don't sacrifice having a good PI and a good lab environment because you want to work on a particular project. You aren't choosing your research career yet. That said, there are a few things to consider when choosing a potential dissertation project. Never develop a new technique for a lab during your dissertation years. While this can sound exciting, you are guaranteed to take longer. You publish by producing experimental results, not from getting a new rig or assay running. The best projects are the type with which you can hit the ground running. That's not to say you won't have to learn anything, but being able to start generating data regularly and early is crucial. Aim for a project that already has some pilot data. As with all of the above, discuss potential research projects with students and administrators of the UAB MSTP for guidance.

The purpose of this article is to inspire within students preparing to seek a dissertation lab a sense of urgency and an understanding of the diligence required. It certainly doesn't cover everything, but the advice here will point you in the right direction.

FOCUS ON THE GROSS LAB

Nicholas Reish

Dr. Alecia Gross arrived at UAB in 2007 and holds the position of assistant professor in the Department of Vision Sciences, which is a part of the UAB School of Optometry. Dr. Gross earned her B.S. in biochemistry from the University of New Hampshire in Durham, NH, and her Ph.D. in biochemistry from Brandeis University in Waltham, Mass. Before coming to UAB, she completed a Postdoctoral Fellowship at Baylor College of Medicine in Houston.

Dr. Gross' decision to come to UAB was strongly influenced by the environment here. "I came to UAB not only because of the high level of research and grants awarded to the UAB scientists, but because of the collegial & collaborative atmosphere here." In addition to her primary appointment, she holds secondary appointments in Cell Biology, Neurobiology, and Biochemistry & Molecular Genetics. Being involved in different departments allows her to be "constantly interacting with leaders in these fields and have collaborations to help answer some fundamental questions about GPCR trafficking and rod cell formation." Each of her three graduate students is from a different departmental training program. In addition to running a lab, Dr. Gross is heavily involved with teaching honors undergraduates and optometry students.

The Gross lab studies the process of rhodopsin trafficking in the retina and its role in forming the rod outer segment, the light-sensing organelle of rod cells. The formation of this structure depends upon the proper trafficking of special post-golgi vesicles containing rhodopsin. These vesicles traffic to the primary cilium of the rod cells and are then assembled into larger flattened vesicles known as disks. Defects in this process cause retinal degeneration and blinding diseases such as retinitis pigmentosa. Work from Dr. Gross and others has shown that the carboxy-terminal portion of rhodopsin is essential for this trafficking – without this part of the protein the disks and outer segment do not form. In particular Dr. Gross has shown that adding amino acids to the end of rhodopsin (such as an eGFP fusion) can also disrupt disk formation. Rod cells do not form outer segments in culture, which makes unraveling the specific protein interactions of the c-terminal tail difficult. To this end, the lab employs a wide variety of techniques beyond biochemistry such as generation of knock-in mice and transgenic Xenopus laevis tadpoles and the use of confocal and two-photon microscopy.

I came to the Gross lab after my previous Ph.D. mentor left this institution. Like Dr. Gross, I have an undergraduate background in biochemistry and feel at home in a lab with a foundation in biochemical techniques. Where I have been most impressed with Dr. Gross is with her creativity in experimental design and willingness to adopt and adapt new techniques to the lab. This creativity plays a large role in her ability to secure funding, both from NIH in the form of an R01 and from several private foundations. She is an energetic and highly motivated mentor. Because the lab is still small, she is very accessible. Perhaps more importantly, she understands the different needs of an MSTP student versus a normal graduate student in terms of training, which eased my mind considerably when I decided to change to her lab for my thesis work.

The Gross lab works on interesting questions of protein trafficking, signaling, and cell biology. As few physician-scientists go into ophthalmology or vision research, there is a huge demand from the community, and hence many opportunities. The lab is a great fit for me as an MSTP student and I feel that it could be for others as well.

FOCUS ON THE SWEATT LAB

Faraz Sultan

Dr. J. David Sweatt currently serves as Professor and Chairman of the Department of Neurobiology and Director of the McKnight Brain Institute at UAB. Additionally, he is affiliated with the Departments of Psychology, Physiology & Biophysics and Genetics, the Alzheimer's Disease Research Center and the Center for Aging, among other organizations at UAB. Dr. Sweatt completed his Ph.D. in the laboratory of Dr. Lee Limbird at Vanderbilt University in 1986 and completed his post-doctoral training with Dr. Eric Kandel at Columbia University in 1989. After accepting a faculty position at Baylor College of Medicine, he was later awarded tenure and remained at Baylor until 2006 when he was recruited to UAB. Having mentored 16 graduate students including several in M.D./Ph.D. programs and 16 post-doctoral fellows, Dr. Sweatt has created a superb environment for research training in molecular, behavioral and physiological neuroscience. These opportunities drove students such as me to join the lab.

Dr. Sweatt has a long history of training MSTP students. Seven have successfully graduated from the lab, each within 3 - 5 years. All have gone on or are preparing to join prestigious residencies at institutions such as Johns Hopkins and the University of California at San Francisco. In fact, Dr. Sweatt's first four MSTP graduates each served as Chief Residents in Neurology at UCSF, one of the most renowned programs in the country. In addition, MSTP graduates have landed faculty appointments in Neurology and Neuroimmunology departments at a number of institutions.

Still, as rewarding as it was, these graduates agree their training did not entail an easy track to a Ph.D. Dr. Sweatt has always allowed his students a great degree of flexibility in choosing and pursuing a thesis project, and MSTP students are no exception. A rotation student is usually paired with a post-doctoral associate and typically works on a specific set of experiments under one of the aims of the post-doc's grant. Incoming graduate students have the option of continuing to train with a post-doc until they feel ready to work independently. At that time, the student must choose an independent avenue of research. Dr. Sweatt usually does not direct a student to a specific hypothesis but instead helps guide him or her to a viable starting point from which a fully developed experimental design follows. Ambitious candidates may be attracted to the lab because these ideas need not be "safe," especially when a student just begins in the lab. Instead, Dr. Sweatt believes that in some circumstances, risky but reasonable studies should be undertaken. This was the case with his most recent post-docs and graduate students who performed pioneering studies on dynamic epigenetics in the context of memory and behavior, now the central focus of the lab.

MSTP students may also be particularly attracted to the lab's opportunities for more clinically focused research. Recently the lab has been studying mechanisms underlying diseases such as Rett Syndrome, Alzheimer's disease, addiction, and cognitive loss associated with aging and diabetes. The lab was even featured two years ago in an edition of the PBS show, NOVA. The lab is also ideally set up for a broad range of experiment types. Dr. Sweatt heads two core facilities dedicated to studying synaptic physiology and rodent behavior. These are run by individuals from the lab who are dedicated to training students on experiment design and technical matters regarding the instruments.

The composition of the Sweatt lab has changed considerably over the last few years, as many students have moved on to post-doc and faculty positions. Currently, the lab is home to five graduate students including myself, one post-doc and additional undergraduate students and technicians. Frankie Heyward, the most recent student to join the group, was motivated by the lab's working model and Dr. Sweatt's teaching style. "I feel I have Dave's full support," he says, "and he is great at giving constructive input without micromanaging everything I do. I also feel like I have the latitude to pursue my particular research interests." Frankie was pleased that Dr. Sweatt fully supported his project idea even though it is considerably different from the experiments proposed in the lab's funded grants.

Beyond science, the lab remains tight-knit, and members enjoy spending time together. Post-doc, Jeremy Day, describes the lab as a "cohesive group that is social both inside and outside the laboratory. This interactive environment flows over into the research projects going on in the lab." Many members enjoy going out to lunch together. Our favorites include Subway, Los Juan's and Moe's. In addition, at the beginning of every data meeting, Dr. Sweatt tests our knowledge on random topics such as current events, state treasures, geography and Alabama football (sometimes this requires us to make predictions about upcoming games). For the night-owls in the lab, we have unfettered access to a coffee maker and small fridge loaded with frothy beverages thanks to lab member, Dibs Almonte. For these reasons, he and other students who have joined or rotated in the lab have found it to be a superb working environment to foster their intellectual growth and development as scientists.

THE UAB VOLUNTEER CLINIC

Juan Calix

In 2005 a group of UAB medical students proposed the creation of a student-managed organization that would provide medical care for the underserved populations of Birmingham, Alabama. Over the next few years, with the strong support of UAB administration and especially UAB physician, Dr. Craig Hoesley, this organization has thrived and is now called Equal Access Birmingham (EAB). EAB is a non-profit organization composed of eight student officers and various committees charged with coordinating various service opportunities, advocacy events and fundraisers aimed to improve health care disparity among under-insured patients. These events offer the UAB medical student body chances for hands-on interactions with patients outside the classic pedagogic atmosphere and a perspective that is not normally found in regular clinical rotations.

EAB is best known for coordinating a Wednesday night clinic, commonly known as the "free clinic." The free clinic was borne out of a partnership with the local non-profit MPower Ministries and offers consultation with a physician and free pharmacy services for at least ten patients per evening. On February 7th, 2007 students and UAB physicians saw their first patients. In the beginning the clinic was open only on alternate Wednesday evenings, but due to the large demand for free clinical services and a stable supply of volunteers, the free clinic has operated on a weekly schedule since October 2007. UAB students are responsible for triage, initial medical encounters, and aiding UAB physician volunteers. Highlighting the large impact of these UAB students and physicians, the free clinic offered services to over 450 patients and filled over 1200 prescriptions, according to the 2009 EAB annual report.

MPower is located in Avondale only ten minutes away from the main campus, so volunteering at the free clinic is simple. Third year MSTP student Mark Stoddard has volunteered more than 15 times at the free clinic, mostly in the summer months, when MSTP students are called upon to fill the volunteering void left when the rest of the medical school goes on break. "I found the clinic to be a great place to practice some of the clinical skills I learned in my first and second year as well as an opportunity to present to and interact with attending [physicians]," says Stoddard. "I would recommend the EAB clinic for honing some of those early clinical skills in a fairly low-stress environment." MSTP students about to make their transition back into the clinics after their dissertation defenses have taken the opportunity to work at the clinic as a way to refresh their clinical manners and abilities. Students can also choose to volunteer at other MPower-sponsored clinics on Tuesday and Thursday nights.

Stephanie Brosius is a second year MSTP student. "I greatly enjoy the patient contact and I always enjoy translating for the Hispanic population in Birmingham," she says. "The patients we see are truly a joy to work with." EAB was originally envisioned to focus on Spanish-speaking demographics, which recently has seen a large population increase in Birmingham. Staying true to this mission, event organizers are constantly recruiting Spanish translators among the student body for all its events. "Given the shortage of translators and high percentage of Hispanic patients, I was inclined to put my bilingual skills to good use," says Mikail Guzman, 2nd year MSTP student. "I came away with the satisfaction that in one way or another I was able to assist people in need."

Among the events where speaking Spanish is invaluable – though not required – is the monthly health screens managed by partner organization Cahaba Valley Healthcare (CVH). On Sunday afternoons, CVH offers dental and vision consultations to over 50 patients. Starting in early 2008, CVH has relied on EAB to provide student volunteers to take blood pressure measurements and counsel participants in healthy practices. Most CVH screens focus on areas outside of Birmingham, where residents do not have access to the city-sponsored charity health system at Cooper Green Hospital.

Stoddard points out, "probably the best event I participated in was an eye-health day put on by Cahaba Valley Healthcare that put me in an almost one on one setting with an extremely capable optometrist."

"I liked working at [CVH] events because you get to see people with many different health concerns in a short period of time," says Brosius. "Yet at the same time most issues that arise have to do with patient education, so you can make a difference."

Education is a large part of EAB's mission. Officers coordinate with the medical school administration to give talks to first year students covering the types of services offered to patients unable to afford healthcare, as well as ways to get involved in the community. An important experience during medical student orientation is the health screenings organized by EAB at different locations around the city, where students have an early chance to develop patient interaction and basic vitals-taking skills. EAB has also branched to coordinate year-round health fair clinics and screens. These events are funded by monies raised by EAB-sponsored bake sales and donation drives. Also, EAB participates in events advocating for better health care provision, including the annual March for the Uninsured.

Current efforts are underway to work at other free clinics around the city and open a similar clinic on campus. Additionally, ideas about integrating volunteering into the medical school curriculum have been entertained. Officers continue to search for opportunities at the university and in the community to get more students involved, and assure that opportunities are always available for those who want to give something back.

EAB is an integral part of every medical student's experience at UAB, beginning with the early activities during orientation to the heavy recruitment of MS3 and MS4 students to volunteer at the free clinic. All students benefit from the activities sponsored by EAB and its partners. Everyone has the chance to get involved in leadership roles as an officer or to join the committees in charge of coordinating outreach and fundraising events. Due to the quantity and diversity of activities EAB puts on, it is easy to get involved, even if one does not hold a leadership role in the organization. Moreover, EAB is especially important for MSTP students. "The clinic provides an excellent opportunity to maintain [clinical] skills while in one's graduate years," remarks Brosius. The free clinic and other EAB-sponsored events offer a way for MSTP students during the research phase of their training to maintain an otherwise absent link to helping patients. All this makes EAB a very special addition to the experience of developing medical scientists at UAB.

Full disclosure, about the author: Juan Calix is 5th year MSTP student. He is among the founding members of EAB, is a past Vice President of Records and, subsequently, was on the EAB Board of Directors. Currently, he is primarily involved with managing blood pressure screens at Cahaba Valley Healthcare events.

NEW IN BIRMINGHAM

Asher Albertson

The Railroad Park

As Birmingham's downtown district slowly re-vitalizes itself, a new 19 acre green space has opened to aid the effort. Consisting of nine acres of well-groomed lawn, a small lake, and plenty of trees, the newly opened railroad park is an absolute gem dividing the south and north sides of Birmingham. This dog-friendly park features free Wi-fi, areas for kids, a skate park, and paths for joggers and bikers. Outdoor movies are screened in the summer providing a wonderful opportunity enjoy Birmingham's beautiful southern evenings. The park even features a rail car bistro. Open until 11:00 with great security, the railroad park makes a perfect outdoor study location.

Birmingham Mountain Radio

Birmingham has always been a great city for music. Featuring several fantastic venues including Workplay and Bottletree, Birmingham has never made it hard for residents to find awesome shows. Despite this, radio stations featuring anything beyond top 40 hits have found it nearly impossible to stay afloat. The newly established Birmingham Mountain Radio (bhammountainradio.com) looks to buck the trend by streaming exclusively online. Featuring live, local djs, information about local music, locally produced radio shows, and a great mix of classic and newer alternative and indie rock, this station is finally bringing great radio to Birmingham.

The Jones Valley Urban Farm

Further aiding the development of Birmingham's downtown district is the Jones Valley Urban Farm. Using 3 acres of vacant urban property, the working Jones Valley farm grows vegetables and flowers available at local farmers markets. The non-profit farm provides a variety of outreach programs including gardening workshops for both children and adults. The farm also host dinners and even allows Birmingham urbanites to grow their own plants on rental plots.

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