The Vulcan Letter

Voice of the MSTP at the University of Alabama at Birmingham

Summer 2009

A Big Welcome to Our New Classmates

by Asher J. Albertson

Jennifer Stanley

Jennifer is a native of Saint Louis, Missouri; she attended Purdue University and graduated with a bachelor's degree in biological science. Throughout college she participated in research through the Purdue Cancer Center. Her honors thesis examined how tissue architecture, specifically the formation and maintenance of apical polarity, controls gene expression in mammary epithelium and how this relates to breast cancer. Jennifer enjoyed working at Boilermaker sporting events as a volunteer EMT-B and playing intramural sports. She hopes to continue her studies in cancer biology and possibly pursue radiology. In her free time she likes to read Ayn Rand and do Ashtanga yoga.

Mikael Guzman Karlsson

Mikael, who goes by Mika, was originally born in Sweden but grew up in La Paz, Bolivia for most of his childhood. When he was thirteen, he and his family moved to Los Angeles where he attended UCLA studying Neuroscience and Physiological Science. As an undergraduate, he was involved with the UCLA rowing team, the UGADA, and the SACNAS student groups. While at UCLA he also worked with Dr. Alcino Silva studying the cellular, molecular, and systems mechanisms involved in memory allocation and consolidation. After college, Mika continued to work in Dr. Silva's lab as a research associate for two years and now plans to expand his neuroscience interests by pursuing a neurology or psychiatry specialty. In his spare time, he enjoys playing soccer, bike riding, snowboarding, watching movies, and playing the drums. Above all though, he loves to spend quality time with his two cats, Max and Sophie.

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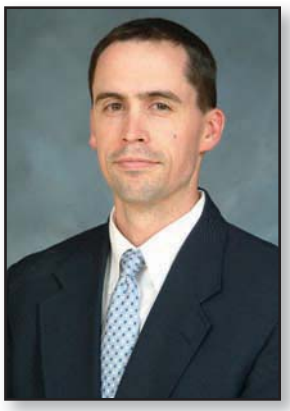
Congratulation Graduates 2009

by Matt N. Alder

Another year passes which means we lose another part of our MSTP family. Six members of the MSTP program graduated this year. If there is one thing that stands out, it would be the predominance of pediatrics in this year's graduates. This year four of the six graduates went into categorical pediatrics or pediatrics/neurology. Each year at this time we offer the graduates an opportunity to tell us why they chose the path they did, tell us about their interviews, or give some final words of advice. Here's what they said:

Matthew N. Alder



I chose pediatrics because it is the best field of medicine. Actually, it wasn't an easy choice. I liked a lot of things I did in medical school. It came down to a gut feeling and where I saw myself ten years from now. Pediatrics is broad, like internal medicine, in that it allows for subspecialization, research tracks, and flexibility in residency/fellowship.

The interview process was a lot more fun than I thought it would be. I think I was nervous for my first interview and then realized that no one was going to ask me the differential for chest pain or the fifteen causes of fever and rash. In general, people respected UAB and the PhD helped in some places. What I mean is this: the residency director needs a clinical resident to cover the clinical services for the next three years. They are much more concerned about your ability to function as a member of the wards team than your most recent publication. On the other hand, when talking to the chair of the department or the fellowship director in the field of your research, the PhD helped A LOT. The ranking process for me was a family decision, and while we were very impressed with the program here at UAB, we thought seven years was enough and it was time to try something else. Thanks UAB MSTP, program directors past and present, and program coordinators past and present. It has been a fun seven years. Keeping going; it's great when you reach the end.

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Chris H. Dodd

I chose pediatrics for the fulfilling life of caring for the most important resource we have. I love caring for children, and I feel a special kinship with the parents of the kids, as I can only imagine the way I would be feeling if my child was sick. I love the people that choose the field of pediatrics; they are kind, warm, love children, are eager to share their passion with anyone that wants to learn about it, and generally seem to find joy in life, even during residency. And finally, there is an incredible need for physician scientists in the field of pediatrics, and I look forward to spending the rest of my life discovering better ways to care for children challenged with illness.

James R. Davenport

I chose internal medicine and GI because of the fame, glamour and the 9-5 schedule, similar to dermatology. No, I am kidding. I matched at Vanderbilt into the Physician Scientist Training Program, or American Board of Internal Medicine research pathway, or Harrison Society, depending on what title you want to give it. I have been promised a fellowship in gastroenterology and will fast-track 2 years of residency, then do a 4 year stretch that consists of 18 months of GI clinical fellowship and 30 months of GI or GI-related research fellowship.

Overall, I had a great interview process. I had wanted to match at Vanderbilt, as it is a solid academic institution with good training in internal medicine and a strong GI research department. There were also investigators studying topics like obesity, diabetes, cancer, and neurological disorders with whom I would be interested in doing a post-doc fellowship. Plus my wife Amy is a resident there and wanted to stay in Nashville, close to her family, and we really like the town. However, there were a couple other programs that were really good. I was recruited hard to pretty much everywhere I interviewed. There were advantages and disadvantages to a bunch of the places, but there are some top quality institutions close to Alabama if people are interested in internal medicine.

My future goal is to do academic medicine, essentially scope people 1-2 mornings a week and be in the lab doing basic science or clinical research the rest of the time. My advice is to enjoy your time at UAB, do solid research, and prior to applying, look at academic institutions that you want to go to and see if their research matches your interests.

Nola Jean Ernest

I chose child neurology for the following reasons: 1. Breadth of clinical practice – you see everything from common headaches and developmental delay to lethal diseases like neurocutaneous melanosis. 2. Combination of art/science of medicine – The history and physical are everything in neurology. In my opinion, more than any other field. The beauty of using the physical exam to localize a problem appeals to me. 3. Research opportunities – Less is known about the normal physiology of the nervous system, much less the pathophysiology, than any other organ system. 4. Pediatrics – I like kids. More importantly, though, I am simply more passionate about the diseases that afflict children. The intangible reason, however, is the most important: When I did my child neurology acting internship, I did not notice the time of day.

As a child neurology applicant, I had the opportunity to see two different worlds. The first day at each institution, I would interview with the pediatric residency program – primary care, less research based, not super competitive. The second day, I would interview for child neurology – SMALL programs, very few slots, highly research focused. The interviews were quite different. During my pediatric interviews, more emphasis was placed on my academic performance. While the PhD did give me an edge, it was only a slight edge – and my publication record meant very little. Interviewing for a specialty was quite different. For example, you are one of very few people interviewing on that day (≤ 3), and you receive a lot of personal attention. These programs were clearly seeking MD/PhD candidates and made an effort, in each interview, to persuade me to come to their program.

Ranking programs involves a similar decision process as choosing a specialty. There are tangible/logical reasons to rank programs as well as intangible. The tangible criteria that I used were strong tradition of research, opportunities for fellowships and funding for junior faculty, and proximity to my family. In the end, the intangible factor is very important. How do you feel in your

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Stephanie Brosius

Calling Moline, Illinois home for much of her life, Stephanie attended Washington University in St. Louis where she received her bachelor's degree in biochemistry with minors in painting and fine art. Her undergraduate research focused on developing an attenuated version of Herpes Simplex Virus-1 for use as a viral vector. In addition to research, she served as a teaching assistant for physical chemistry and was commissioned to create paintings for the Washington University Neurofibromatosis Center as well as the Chemistry Department. Stephanie received the Jesse Stoakes research award in summer of 2006 and was a California Institute of Technology Amgen scholar during the summer of 2008. When not hitting the books, Stephanie enjoys running long distance, baking, hiking, and volunteering with the community service fraternity Alpha Phi Omega.

Jason LeGrand

Jason is originally from the Washington D.C area although he spent several years in St. Louis, Missouri while growing up. He attended Bob Jones University where he received his B.S. in premedical studies. He has spent the last three years working in the Laboratory of Cancer Biology and Genetics at the National Cancer Institute looking at genetic changes associated with the progression of mouse plasmacytomas. During college, he spent a good deal of his free time as a volunteer tutor to local elementary age children and working as a university usher. Besides being hopelessly addicted to chocolate chip cookies and his iPod touch, some of his other interests include violin, water skiing, cooking, investing, real estate, and sci-fi movies.

Evan Thomas

Evan is a transition into the MSTP from the MD track. He graduated from Arizona State with a B.S. in Materials Engineering. After graduation, he received a M.S. in Nuclear Engineering from UC-Berkeley where he worked on software to detect and eliminate patient positioning error in IMRT. Now his major research interests focus on several aspects of novel radiation therapy techniques, especially the use of synthetic chlorotoxin for targeted molecular cancer therapy and imaging. In his spare time, he enjoys anything outdoors such as playing ultimate frisbee for Birmingham's club team and competing in triathlons. The J Clyde is one of his favorite evening hangouts, where he can be found enjoying many of the newly liberated hops.

Jarrod Meadows

Jarrod grew up in Gastonia, NC and attended the University of North Carolina at Charlotte where he received a bachelor's degree in Cell Biology. As an undergraduate, he conducted research in organic chemistry and cell biology. After graduation, he worked for 2 years in nephrology research. In the first year, he worked as a clinical research coordinator at the Southeast Renal Associates in Charlotte, NC, coordinating a phase 2 clinical trial on the safety and efficacy of a vitamin D analog in patients with diabetic nephropathy and an observational study on hemodialysis patients with uremic pruritus. In the second year, he worked at Carolinas Medical Center (CMC) in Charlotte, NC, studying the pathological mechanisms underlying the poor outcomes seen in patients with pre-operative renal dysfunction who undergo cardiovascular surgery. His other interests include playing guitar, listening to music, reading, philosophy, longboarding, working out, and watching movies.

Travis Hull

Travis is originally from the very small, rural town of Summerhill, Pennsylvania. He attended Juniata College in Huntingdon, PA (usually pronounced "Juanita" by non-Juniataians) and received a B.S. in biology with an emphasis in microbiology. His most significant undergraduate research project was on microbial development and the function of conserved motility-associated genes in the cellular differentiation and sporulation of the non-motile soil bacterium, Streptomyces coelicolor. He also conducted research in immunology and physiology concerning the role of the complement system in the vascular damage that is associated with hyperglycemia. Although he is excited to explore many different career options as a physician-scientist, he is currently considering infectious disease. As an undergraduate at Juniata, he was the president of Health Occupations Students of America and Tri-Beta National Biological Honor Society and a member of the national and Juniata chapters of the American Society for Microbiology. He also served as a tutor and teaching assistant in organic chemistry, biology, and microscopy

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gut? There were some schools where I felt I simply did not belong. If my gut instinct was that I didn't belong, I didn't even rank the program.

Jennifer S. Guimbellot

I chose Pediatrics for many reasons. For one, it was a chance to work with young children and their parents in a field with a real commitment to research. Peds has worked a long time to develop an appropriate infrastructure for research that you don't see in all specialties. In the future I see myself doing a subspecialty, most likely neonatology or cardiology, with a goal of focusing on research most likely in pulmonary biology or neonatal genetics.

The interview process was very laid back. We chatted a lot about research and life in general in whichever city I happened to be in. I felt I was very well received as a member of the UAB MSTP. Almost everyone was really impressed and knew about our program. I had a couple of interviews where they didn't seem to care about me being an MSTP, but mostly everyone liked it. I ranked my programs based mostly on the following factors 1) if I felt I would be happy training there, among their current residents and faculty 2) academic/research reputation 3) availability of a highly respected adult rheumatology program for my spouse. All of my top 5 met these criteria, and my top 2 met it particularly well.

All and all, my time at UAB has been great. UAB has trained me well, and it definitely helped during the interview process this year.

Alex C. Whitley

I chose Radiation Oncology because it is an ever-changing field with advancing technology and methodologies, i.e. with some cool toys! Aside from this, I chose the field for several different reasons. First, there is excellent continuity of care with patients in principally an outpatient environment. Second, from my limited perspective, it is one of the only areas of medicine where you can realistically do research successfully and continue to see patients. Lastly, radiation oncology for the better part of the last 20 years has been technology driven, with a lot of success I might add. However, in my mind, the next 20 or so years will likely be driven by translational/basic research in radiation sensitization/protection; main point – there are many untouched research areas in radiation oncology.

The process of choosing where to apply vs. blanketing everywhere is a little complicated. There are some schools that as an MD/PhD student you will NOT get an interview, so there is no need to waste your money applying. Along the same line, there are several places that "only" interview MD/PhDs. Most of the places I interviewed, most of the candidates were MD/PhD. The most important items, because just having an MD/PhD doesn't make you stand out, are your letter of recommendation. You should plan your rotations in Rad Onc accordingly. Overall, I got the impression that UAB MSTP was very well respected, mainly based on the perceptions of students from other MSTPs interviewing with me.

My future plans include completing my Rad Onc residency here at UAB and applying to a nationally funded research pathway in Rad Onc, i.e. the Holman pathway. From there I hope to move into a junior faculty position with the goal of staying in academic medicine doing radiosensitization/protection research. I greatly enjoyed my time at UAB in the MSTP. I realize that I am a transplant into the program but surely did not feel that way – thank you. Having the opportunity to stay involved in research during my clinical years has been very beneficial and exciting.

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and as the coach of the Huntingdon High School Science Olympiad team. He received several awards including the Barry M. Goldwater Scholarship, the Raymond W. Sarber Award, and the HOSA Leadership Scholarship. He received first place awards for oral presentations of his research at the ASM Allegheny Branch Meeting, the 29th and 30th Annual Western PA Biology Symposium, and the 2008 and 2009 Juniata College Liberal Arts Symposium. In his spare time he enjoys the outdoors, kayaking, skiing, music, friends, and carbohydrates.

by Robin Lorenz

Update from the Director

I want to begin by thanking all of you for your help with our recent NIH MSTP Training Grant submission. The inclusion of up-to-date and complete student data really strengthens our proposal. As part of that grant submission, we generated some interesting facts about the UAB MSTP, which are listed below.

Applicants: Over the past 5 years, 38% of our applicants have come from the Southeast and 8.6% have been from the state of Alabama.

2008-2009	Number of Applicants	M/F	States Represented	Average MCAT	Average GPA
All Applicants	225	150/75	39	29 (14-41)	3.58 (2.51-4)
Applicants Interviewed	40	30/10	23	34.1 (28-41)	3.77 (3.4-4)

Current Students: The average MCAT of our current students is 32.4 and the average GPA is 3.67. 51% of our students were co-authors on manuscripts performed prior to admission to the UAB MSTP. The graduate programs of our current students are: Microbiology (13), Cell Biology (11), Neurobiology (7), Molecular and Cellular Pathology (6), Physiology and Biophysics (3), and Genetics (1). The average number of publications for students who have been in the graduate phase more than three years is 2.2 publications (0.8 first author). Over the past 10 years, the average time to complete our program is 7.1 years.

Residency Matching: Since our program became a MSTP in 1992, 40% of our graduating students have matched at a top 10 ranked medical center and 62% have matched at a medical center ranked in the top 25 of US News and World Reports. 21% of our graduates have chosen to remain to do their residencies at UAB. We have had only 1/52 graduate defer residency.

Alumni: In the past 10 years, our alumni averaged a total of 5.2 publications during their time in the UAB MSTP (2.9 first author). 58% of our alumni who have completed training have careers where they combine both research and clinical work. 25% report that they currently only perform clinical duties, while 16% report only being involved in research.

Several of the changes that we put into place last year are having dramatic effects on our program. First, we had a fantastic recruiting year in 2009. There were a record number of applicants (225) for our entering class. Part of this dramatic increase in the number of applicants is due to your help in publicizing the UAB MSTP. I especially want to thank Juan Calix and Lena Gamble for their recruiting efforts at the Annual Biomedical Research Conference for Minority Students and the Society for Advancement of Chicanos and Native Americans in Science. We also did a panel discussion at the National Association of Advisors for the Health Professions which very well received; thanks go out to all of our students who participated.

Our goal for next recruiting season is to continue to increase the number of applications to our program, to increase our national recognition, and to get the word out about how great it is to be part of our family.

Finally, there have been some changes implemented as part of the new UASOM curriculum. First, all MS2 students are now required to take a 2-week long special topics course. The UAB MSTP designed a unique course for our MSTP students to take, titled "Survival Skills for Physician Scientists." This course is designed to give MD/PhD students a basic background in topics necessary to succeed as a physician-scientist. Topics covered include: the NIH funding system, how to write a fellowship, record keeping, authorship and publication, conflict of interest, animal and human subjects, and tips for selecting a mentor and establishing a positive relationship. Second, in order to ease the transition between the research years and the clinical years, we are now also requiring the MSTP students start their clinical rotation on either Internal Medicine, Pediatrics, or Family Medicine. We also recently instituted a new requirement for the Family Medicine rotation, as it is required for medical licensure in several states, including California. This rotation may be a clerkship or elective, here or at another institution. For students entering in 2007 or later, a 4-week Family Medicine Clerkship or Elective PRIOR to starting their third research rotation is now allowed. This option should help reinforce clinical skills prior to entry into the graduate years and subsequent participation in our new clinical exposure requirement.

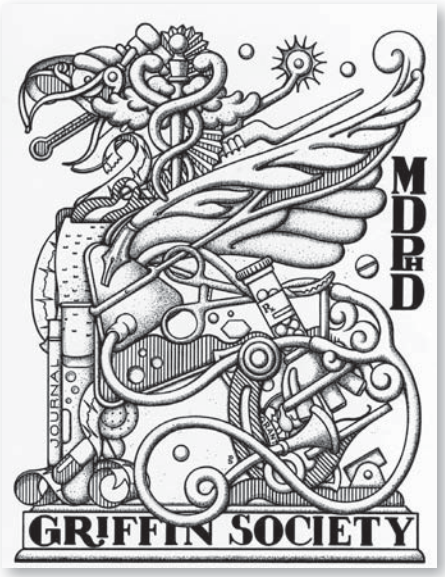
Starting with the entering class of 2009, all MSTP students during their dissertation years will be required to complete a total of 20 half-day clinics in the specialty of their choice. This experience is in the process of being approved by the UASOM as an Ambulatory Clinic Clerkship and clinical contacts for each major specialty either have been or are in the process of being determined.

In closing, I want to say how much I appreciate the fantastic MSTP team. Paula, Mindy, and Lou all care deeply about the success of this program and about each student's welfare. They, along with our students, are a significant part of what makes the UAB MSTP one of the best atmospheres for developing physician scientists anywhere in the US. To our new students, I want to say WELCOME. I look forward to the addition of your unique talents to our MSTP and your future efforts towards helping us achieve our goal of making the UAB MSTP one of the best programs in the country.

The Griffin Society

by Christopher J. Yuskaitis

The UAB MSTP recently announced the formation of the Griffin Society. The society is named for Frank Griffin, Jr., M.D., a physician in internal medicine who founded the UAB MD/PhD training program in 1986 and directed the MSTP for 12 years. The Griffin Society serves to advance understanding of biomedical research by clinical residents, fellows, and MSTP students. The Griffin Society promotes interactions between MSTP students, residents and fellows with interests in biomedical research, and physician-scientist faculty who have experienced the rewards and challenges of translational research, allowing these groups to enrich each other with their different experiences and viewpoints. It also helps MSTP students to understand the clinical context of their research and enables them to form contacts with people at more advanced stages of training. The society meets in a quarterly series of dinner/social hour discussions on a wide-range of issues. The Griffin Society is run jointly by MSTP Advisory Committee and appointed student representatives. Student representatives rotate on for a two year term—Sherry Yang is the incoming student representative and Chris Yuskaitis is the outgoing rep. For more information, contact the MSTP office (mstp@uab.edu).



Arts in Medicine

The MSTP program and newly formed Griffin Society recently partnered with VSA arts of Alabama to present the inaugural Arts in Medicine (AiM) Lecture. The lecture, titled "The Neurobiology of Creativity," was given by Dr. David Sweatt, the Evelyn F. McKnight Chair and Director of the Department of Neurobiology and McKnight Brain Institute. Dr. Sweatt, not only a renowned scientist but also an accomplished artist, presented his ideas on where creativity may reside in the brain. He also briefly discussed several famous or amateur artists whose mental illnesses may have affected their inventive artwork. Dr. Sweatt's personal artwork can be seen adorning the walls of the Shelby building and on the pages of the Department of Neurobiology website (www.neurobiology.uab.edu).

A diverse crowd of over 90 medical students, clinicians, researchers, and artists attended the lecture in UAB Spain Auditorium in December. A reception followed the lecture, where the newly designed Griffin Society logo was unveiled. Don Stewart, a local artist and UASOM alumni, not only created the logo but also will give the annual Griffin Society AiM Lecture in 2009.

VSA arts of Alabama

Cosponsoring the event was VSA arts of Alabama, a statewide non-profit organization that provides opportunities in the arts for people with disabilities and chronic illnesses. The Arts in Medicine (AiM) Lecture Series is part of a broader initiative started by VSA, which is designed to increase programming opportunities targeted towards current and future healthcare professionals to bridge the gap between art and medicine. Currently, VSA displays artwork by adults and children with disabilities in the MSTP office as well as Spain Rehabilitation Center. For more information on the AiM Project or for creative volunteer opportunities, please contact Erin Wederbrook Yuskaitis (erin@vsartsalabama.org).

Applying for a NRSA

by Nicole M. Brossier

By the end of their graduate years, MD/PhD students attain a basic level of competency in many of the skills necessary to succeed as a scientist. A PhD recipient must demonstrate the ability to analyze scientific hypotheses and data, perform experiments to generate data to test hypotheses, and cogently present this data in a written form acceptable for publication in a scientific journal. Grant writing, however, is a skill that many fail to learn, but it is essential for a successful career as an academic physician-scientist.

Graduate programs have recognized this deficiency, and are requiring that students write and defend a grant style proposal in order to advance to candidacy for a PhD. However, this is not required by all programs, and orally defending a grant proposal before a graduate committee is very different from getting a proposal funded by an external source.

Enter the F30 awards, also known as the Ruth L. Kirschstein National Research Service Awards (NRSA) for Individual Predoctoral MD/PhD Fellows. These awards are funded by certain institutes at the National Institutes of Health (NIH) in order to promote the retention of future physician-scientists in biomedical research. In funding these awards, the NIH hopes to provide an experience that will guide the formation of future grant applications, eventually leading to a higher percentage of R01-funded physician-scientists. For MD/PhD fellows who are, as stated in the program announcement, "from underrepresented racial and ethnic groups, individuals with disabilities, or individuals from disadvantaged backgrounds," most NIH institutes also offer the related F31 award which is designed to promote diversity in health-related research.

The F30/F31 application is similar to that of a Research Project Grant (R01) application, the funding mechanism that is the cornerstone of most laboratory groups. The scientific portion is organized in roughly the same format, requiring sections for Specific Aims, Background Information, Preliminary Studies, and Research Design and Methods. The F30/F31 and R01 awards are designed to fund well-constructed hypothesis-driven research plans, but the F30/F31 application is substantially shorter than a R01. Many of the administrative portions are also very similar, including sections on human and animal research, resource sharing, and the

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Awards and Announcements from the UAB MSTP

John Jarboe won the "Outstanding Presentation in the Category of Bone Disease Award" for medical student research day 2008.

Louise Pyle was awarded an F30 training grant from the NHLBI for her project entitled "Potentiation of Mutant CFTR." She was also received a scholarship to attend the "Days of Molecular Medicine 2009" conference in Boston, MA.

Stacey Watkins received won the "Outstanding Presentation in the Category of Breast Cancer Research" for medical student research day 2008.

Juan Calix was an intermediate research project finalist for medical student research day 2008. Juan also proposed to and is now engaged to Marla Hertz.

Chris Yuskaitis completed his PhD project entitled "Neuroinflammation and Fragile X Syndrome: Regulation by Glycogen Synthase Kinase-3."

Brian Dizon was a long-term research project finalist for medical student research day 2008. He also won the "Best Presentation by a Graduate Student" award at the 2008 microbiology retreat for his talk entitled "Modulation of autoimmune diabetes by B lymphocytes specific for N-acetyl-D-glucosamine." Furthermore, Brian was awarded an F30 training grant from the NIDDK for this work. Brian would have taken home other awards, but he ran out of shelf space.

George Atkinson received second place in the category of life science at graduate student research day.

Dave Mayhew received the Ireland Research Travel Scholarship from UAB for 2009. He used the scholarship to travel to the University of Wisconsin and learn how to electroporate muscle cells for plasmid entry.

Lauren Van Duyn is engaged with a wedding scheduled for this fall. Furthermore, she completed the Mercedes half marathon in February. Lauren also received a travel award from the American Society of Matrix Biology for her poster presented at a meeting in San Diego, CA.

Travis Lewis was awarded an F30 training grant from the NINDS for his project entitled: "Developing an Adenoviral Vector for Selective Delivery to Neurons."

Ryan Wells got married on February 20, 2009.

Lisa Nowoslawski Akhtar received F30 training grant funding from the NINDS and was wed to former UAB MSTPer Rizwan Akhtar. We expect their children to achieve intelligence levels formerly reserved only for super villains.

Newly weds Lisa and Rizwan Akhtar

Publications:

Mindy D. Szeto, Gargi Chakraborty, Jennifer Hadley, Russ Rockne, Mark Muzi, Ellsworth C. Alvord Jr, Kenneth A. Krohn, Alexander M. Spence, Kristin R. Swanson "A Mathematical Model for Glioblastoma Growth and Invasion links Biological Aggressiveness Assessed by MRI with Hypoxia Assessed by FMISO-PET: A Pilot Study" Cancer Research 2009; 69: (10). May 15, 2009.

Crystal M. Ripplinger, Qing Lou, Wenwen Li, Jennifer Hadley, Igor R. Efimov "Panoramic Imaging Reveals Basic Mechanisms Of Induction and Termination of Ventricular Tachycardia in Rabbit Heart with Chronic Infarction: Implications for Low Voltage Cardioversion" Heart Rhythm 2009 Jan:6(1):87-97.

C.M. Franco, A.S. Andrade, J.G. Andrade, S.A. Silva, R.M. Oliveira, F.C. Pimenta, J. Lamaro-Cardoso, S.G. Almeida, J.J. Calix, M.H. Nahm, M.C. de Cunto Brandileone. "Carriage and risk factors for penicillin nonsusceptible Streptococcus pneumoniae isolates in children attending day-care centers in Brazil." Ped Inf Dis J 2009. (In Press)

Roarty K, Baxley SE, Crowley M, Frost A, and Serra R. 2009. "Loss of TGF-beta or Wnt5a results in an increase in Wnt/beta-catenin activity and redirects mammary tumour phenotype." Breast Cancer Research 11(2):R19.

Corey DM, Cuddapah VA. "Delayed auditory feedback effects during reading and conversation tasks: gender differences in fluent adults." J Fluency Disord. 2008 Dec;33(4):291-305

Chapleau CA, Calfa G, Lane MC, Albertson AJ, Larimore JL, Kudo S, Armstrong DL, Percy AK, Pozzo-Miller L. "Dendritic Spine Pathologies in Hippocampal Pyramidal Neurons from Rett Syndrome Brain and after Expression of Rett-associated MECP2 Mutations." Neurobiology of Disease (In Press).

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Lisanby MW, Swiecki MK, Dizon BL, Pflughoeft KJ, Koehler TM, Kearney JF. "Cathelicidin administration protects mice from Bacillus anthracis spore challenge." J Immunol. 2008 Oct 1;181(7):4989-5000.

Qadri YJ, Berdiev BK, Song Y, Lippton HL, Fuller CM, Benos DJ. "Psalmotoxin-1 docking to human acid sensing Ion Channel-1" Biol Chem. 2009 Jun 26;284(26):17625-33

Bashari E, Qadri YJ, Zhou ZH, Kapoor N, Anderson SJ, Meltzer RH, Fuller CM, Benos DJ. "Two PKC consensus sites on human acid-sensing ion channel-1b differentially regulate its function." Am J Physiol Cell Physiol. 2009 Feb;296(2):C372-84

Guo X, Hamilton PJ, Reish NJ, Sweatt JD, Miller CA, Rumbaugh G. "Reduced Expression of the NMDA receptor-interacting protein SynGAP causes behavioral abnormalities that model symptoms of Schizophrenia." Neuropsychopharmacology. 2009 Jun;34(7):1659-72

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responsible conduct of research. However, there are differences as well. The most substantial of these are the requirements for a fellow training plan and a sponsor information section, which are discussed in more detail below.

Training Plan

One of the most common pieces of advice received from recipients of the F30 award is to not neglect the training plan. Jennifer Guimbellot, an F30-funded UAB MSTP alumnus, believes that the training portion is just as important as the research proposal for the overall score of the application. "Of course the research part must be good, but they are very familiar with how much a graduate student's focus may change over time," she said. "They are, however, very interested in training someone whose future research will fit in to their own institute's aims, so if the training portion is less than excellent due to the mistaken belief that the research proposal is the most important, you won't get as good a score."

For a good training plan section both the sponsor and the applicant should be involved in formulating the training plan. It is left up to the sponsor and the applicant to decide upon the organization and content of this section. One organization scheme that works well is to divide the training into subsections based on who is requiring the applicant to complete these goals. So, a separate subsection could be given to requirements by the fellow's graduate program, by the MSTP program, and by the sponsor. An advantage to this approach is that the UAB MSTP office has written a standard research training plan describing its requirements which should be a good starting point for any application.

Coursework, journal clubs, seminar series, lab meetings, committee meetings, and national meetings are some of the items that can be included in this section. The requirements for advancing to candidacy and for graduation from both the MD and PhD programs should also be discussed. Don't neglect training that has already been completed, and make sure to include continuing education on research ethics. You may also wish to include a list of available training opportunities that aren't required but are encouraged. In this section, how you describe the training is often just as important as the training experiences listed – a weekly meeting with a sponsor may not seem too impressive, but if it is emphasized that the applicant is required to intelligently analyze papers or data during this meeting, it may make this meeting appear to be a critical tool in training the applicant to think like a scientist.

Sponsor Information

Some of the information in the sponsor section can be taken directly from the sponsor's curriculum vitae (CV), biosketch, or previous grant applications, but some will require a more substantial time commitment, so make sure to get started early. This is a time-consuming process, and your application will be delayed if the sponsor section is not completed in time for the submission deadline. An especially critical piece of information in this section is the mentor's previous trainees and their current positions. If possible, noting that your mentor has successfully trained MD/PhD students in the past is particularly helpful. If your mentor does not have previous trainees, you may wish to contact a committee member or a collaborator and arrange for them to co-mentor you. This is also a helpful strategy if your mentor lacks experience in one or more of the key areas discussed in your research proposal.

Although, it's a long process, there's no better way to learn than by doing. In addition, UAB pays students $250 just for submitting the grant application; do you really have anything to lose? If you're successful, the MSTP will also supplement your stipend with an extra $2,000/year. Applications are due in April, August, or December. For more advice and tips from UAB MSTPers who have recently applied, as well as helpful links, check out the longer version of this article at www.uab.edu/mdphd.

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