

# M.D./Ph.D. News

PENN STATE MILTON S. HERSHEY MEDICAL CENTER • PENN STATE COLLEGE OF MEDICINE

## Alumni Spotlight



*Dr. Rasimas graduated from the Penn State MD/PhD program in 2003.*

*Residency: Psychiatry, Mayo Clinic ('03-'07)*

*Fellowships: Consult-Liaison, Georgetown/NIH ('07-'09), Toxicology, Penn State ('09-'11)*

*Current position: Staff clinician, NIH; Assoc. Prof. of Psychiatry and Emergency Medicine, Penn State*

### What lab did you work in at Penn State? What was your project?

Originally, thought I was going to want to be in a hard-core structural biology lab. I was interested in x-ray crystallography, and went out to main campus for such a rotation, but it became clear that this lab was not going to be a good fit. I then rotated and chose to work with Tony Pegg, a well-funded PI with a large lab in Cellular and Molecular Physiology. As I was still interested in biophysics and understanding structure & function of molecules, I branched out in collaboration to learn techniques to study important oncologic macromolecules in Tony Pegg's lab. I started learning NMR spectroscopy up at State College with Juliette Lecomte, but it turned out that protein instability made this difficult. Through an exploratory process, I learned a lot of techniques, such as mass spec, fluoroscopy, etc. in attempts to characterize these molecules. I ended up working most closely with Mike Fried, who was using analytic centrifugation and DNA binding assays.

### How important is it, do you think, for a student's PhD work to reflect what they do later?

My experience is an example it doesn't have to at all. I shifted from a lab doing cancer research to the field of psychiatry. Now, there is some relation, as I have chosen to

integrate toxicology training into my work, which brings a molecular approach to what I do. However, none of the physical techniques I learned then do I still use today. The important thing is that I was taught about science and both its practical and cognitive processes. That prepared me to be a better clinical scientist, regardless of my specialty choice. It's important that students not narrow their range of residency options based on the type of lab they worked in.

### Any advice in choosing a mentor, for a PhD thesis or otherwise?

Many people share common advice about what to look for in a mentor- personality, accessibility, etc. One perhaps less-stressed area that I find important is stability. From a PhD training standpoint, this is critical. Issues of stability include whether the lab is well funded, but also how the individual PI is regarded within the institution, and where that scientist is in their career. The other thing to remember is you can have additional, perhaps unofficial, mentors. Combining mentors at different stages in their career and with different styles and expertise allows you to benefit from the best of each. There can be downsides to working at the interface of a scientific collaboration, but there's a great deal that can be learned, as well.

### Any suggestions on easing the transition between graduate school and the clinical years?

This is often something that students worry about, but I think rarely creates a problem. You feel like you're far behind everyone else going back into clinic, but really you're not. We didn't have much formal structure to keep us clinically active during our graduate years when I was an MD/PhD student. I know today they have good structure in place to help you keep up with your physical exam and diagnostic skills. However, rather than feeling like you have to fulfill some obligation, you should make sure to gain exposure to things you are interested in. As I became more interested in mental health, for example, I made time during my graduate years to attend grand rounds and lectures in psychiatry. That kind of targeted, self-driven education will stick because you care about it—and you won't mind finding time between experiments and lab meetings to fit it in.

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# Meet the Incoming Class

## Yifu Ding

### Medical/Research Interests?

Medical: Interventional Radiology/Radiation Oncology. Research: Medical Imaging, Bioinformatics



**Why Penn State?** The availability of faculty at both Hershey and University Park is outstanding.

**Surprises since starting?** Everyone here is really friendly. It took me off-guard at first.

**Current hobbies?** Photography, astronomy and watching sports.

## Derek Nye

### What are your medical and research interests?

Medical: Internal medicine, subspecialty

Research: molecular biology, immuno/ID



**Why Penn State?** Because the Hulk and Sasquatch are Penn State alumni.

**Surprises since starting?** Mudphuds still find time to party.

**Current hobbies?** Backpacking/hiking, travel, mountaineering.

## Sarah Jefferson

### Medical/Research Interests?

Medical: Psychiatry and internal medicine. Research: Psychiatry and Neuroscience



### Why Penn State?

Access to wide variety of research labs across both University Park and Hershey campuses

**Surprises since starting?** People in Hershey are extremely friendly- like your neighbors will help you break into your apartment when you lock yourself out

**Current hobbies?** Rock climbing, yoga, beating my classmates at fantasy football

## Eunice Chen

### Medical/Research Interests?

At the moment I am interested in either Infectious Disease or Emergency Medicine. My research interests are in Virology and the application of -omics and unbiased screening techniques to the study of host-pathogen interactions.



**Why Penn State?** I like chocolate.. and also the people here are really nice.

**Surprises since starting?** Seasons are really pretty but really cold. Anatomy is surprisingly fun even though it is a lot of information to memorize.

**Current hobbies?** I like to read, knit and bake.

## RJ Dhani

### Medical/Research Interests?

Medical: Oncology or any IM sub-specialty which my research can be applied to. Research: Nanomedicine. Specifically targeted drug delivery.



**Why Penn State?** Coming from a bioengineering background, the engineering resources and quality of research available at UPark were highly enticing. Additionally the Hershey campus seems like a great place to train.

**Surprises since starting?** The sense of community among the MD/PhD cohorts as well as the pure awesomeness of the individuals in my cohort.

**Current hobbies?** Going to the gym and gaming

## Aditya Pisupati

### Medical/Research Interests?

I'm interested in doing neuroscience research and so I'm mostly considering specialties related to the nervous



system, such as neurology, ophthalmology and psychiatry.

### Why Penn State?

I went to Penn State- University Park and so I have firsthand experience with the quality research that happens at Penn State.

**Surprises since starting?** People kept saying how you could smell chocolate from the factory every now and then. I thought that was just a joke...

**Current hobbies?** What are these hobbies of which you speak?

## Maximiliano Castruita

### Medical/Research Interests?

Pathology, Molecular Genetics



### Why Penn State?

It seemed attractive considering the potential patient population, unique local industry, and variable weather patterns.

**Surprises since starting?** Medical school is almost a surrealist manifestation of my expectations of it.

**Current hobbies?** Building small scale electronics, playing with cats, sleeping.

## Nicole Gong

### Medical/Research Interests?

Medical: Neurology, Research: Neurobiology/ neuroscience, oncology, cellsignaling



### Why Penn State?

There are so many resources and research opportunities that we have access to, it's small and safe, but close to Philadelphia, Baltimore, even New York, and the people here are so, so nice.

**Surprises since Starting?** How close our class has become in a very short time

**Current Hobbies?** I love to swim and run, and Sarah's going to teach me to rock climb

## Meet the Incoming Class, continued



## Brian Kinsman

### Medical/Research Interests?

My interests are divided between neurology and emergency medicine: neurology for how thoughtful and longitudinal patient involvement can be, and emergency medicine for the rapid fire fluidity required and the wide range of people you meet/see. My research background is an intermingling of physiology and cell biology with a good deal of rodent work. Very broadly, I am interested in neuroscience research with a physiological bend.

**Why Penn State?** Beyond the chocolate aroma and Bob's legs, I was looking for a new home that fostered a sense of community, supported medical humanities and scientific achievement without flaunting hubris. Also, coming from Illinois I was really looking to move somewhere with a bit more topographical variability.

**Surprises since starting?** After spending three and half years in a research lab, the effort and amount of caffeine required for medical school was a shock to my systems.

**Current hobbies?** I enjoy cooking vast quantities of food, strategy-oriented board games, home-brewing beer, reading (literature-not just textbooks and journal articles) and spending time with my partner, Lisa.

# Entering the Lab...



## Rich Albertson

Melissa Rolls, Ph.D. (University Park), Neuroscience

**Rich's Research:** Neurons represent a highly specialized cell type that is largely not replenished from a stem cell population. Thus it is critical for neurons to survive the lifetime of the organism to perform their function. However, neurons suffer from a wide array of insults including trauma, ischemic injury, infection, and autoimmune attack.

Regeneration of either axons or dendrites represents a mechanism for neurons to regain function following such insults. While much is already known about the mechanisms of axon regeneration, dendrite regeneration remains a little studied area. *Drosophila melanogaster* is a well defined genetic model organism, and is easily visualized by confocal microscopy. Because of this, the *Drosophila* peripheral nervous system is a good model system to study these regenerative processes. Specifically, we use the dorsal dendritic arborization (dda) neurons in *Drosophila* larvae to study dendrite regeneration. Following complete dendriotomy using a pulsed UV laser, dendrite regeneration is evident within 24 hours post-injury, and continues up to 96 hours or longer in both class I and IV dda neurons. Initial studies have also shown that dendrite regeneration does not share the same machinery as axon regeneration. Thus, our goal is to discover the molecular mechanisms of dendrite regeneration. To achieve this we plan to use candidate RNAi screens, pharmacological perturbations, transcriptome analysis, and other fly genetic tools. It is our hope that these studies can reveal a mechanism of injury response applicable to a broad range of neurological diseases.



## Michal Kidacki

Kevin Staveley-O'Carroll, M.D., Ph.D., Biomedical Sciences

**Michal's Research:** I work at Dr.Staveley-O'Carroll's lab on hepatocellular carcinoma, its immune environment, and the effects of nanoliposomal ceramide treatment on both. Being co-mentored by Dr. Kester yields the therapeutical approach of ceramide. We are investigating reversal of immunotolerance in a mouse model of HCC.

My work consists mostly of in vivo experiments, with some in vitro investigation whenever I hear the hood calling my name. Immune system approach towards cancer is a fascinating way of tapping into natural resources of our body to fight cancerous cells running amok. As this is my first year in the lab I can honestly say that one of my first surprises was my complete and utter loss of math skills, which I probably lost some time in July, when I memorized First Aid top to bottom. After defeating that small obstacle I have resumed my mission to cure cancer (HCC only so far), and hopefully I can uncover the full mechanism behind this immunophenomenon (I coined this word!).



## Ron Panganiban

Faoud Ishmael, M.D., Ph.D., Biomedical Sciences

**Ron's Research:** My research interest is in the posttranscriptional regulation of the immune response. Specifically, I am interested in studying the proteins and microRNAs involved in this process.



## Tulasi Khandan

Thomas Loughran, M.D. Biomedical Sciences

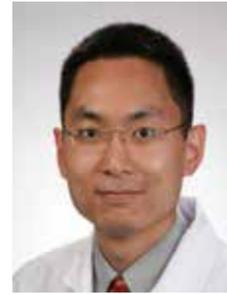


## Yanli Wang

Istvan Albert, PhD and Colin Barnstable, Ph.D. Bioinformatics & Genomics

# Research Spotlight

by Bill Su, G2 (Advisor: Jim Connor, Ph.D.)



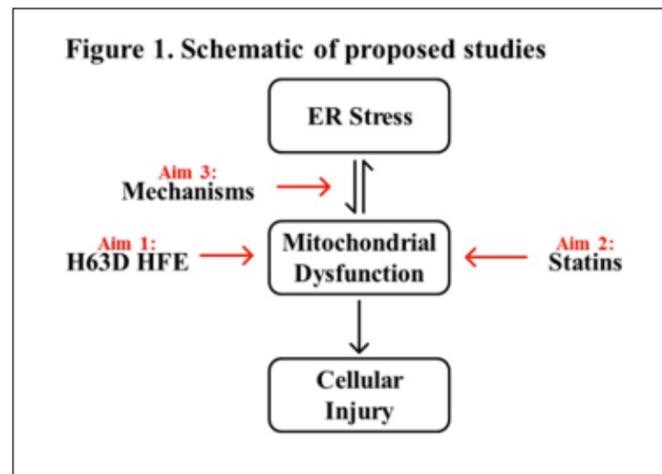
Amotrophic lateral sclerosis (also known as ALS or Lou Gehrig's disease) is the most common adult-onset motor neuron disorder, and causes degeneration of critical regions in the central nervous system. The disease affects approximately 1-2 per 100,000 individuals worldwide, and is uniformly fatal, causing progressive paralysis with a median survival time of 2-4 years. Death results from respiratory failure. Though the primary site of dysfunction in ALS remains unknown, the disease is specific for motor neurons, sparing sensory and autonomic functions.

A number of genetic and environmental risk factors may contribute to ALS. Mutation in the gene encoding superoxide dismutase (SOD1), a protein that prevents oxidative damage in cells such as neurons, was the first genetic abnormality associated with familial (inherited) ALS. However, SOD1 mutation only accounts for 20% of familial cases, or 2% of the total caseload. Although researchers have identified other genetic abnormalities in ALS, together these account for only 10-15% of all cases. The cause for the remaining 85-90% of sporadic cases is largely unknown.

Dr. James Connor, my principal investigator, was the first to demonstrate that up to 30% of individuals with sporadic ALS carry a mutation in the hemochromatosis (HFE) iron regulatory gene. A single base-pair substitution in the DNA encoding HFE causes a change in the structure of the HFE protein, which normally limits iron uptake into cells. Although this H63D HFE variant does not by itself cause ALS, it can increase the risk for disease 4-fold. Understanding the biological basis for this effect may yield important insights into the pathophysiology of ALS.

My CTSI-funded project focuses on the role of H63D HFE mutation in ALS, and comprises three specific aims (Fig. 1). In aim 1 I will study the effect of H63D HFE on mitochondria in ALS. Abnormalities in mitochondria, which are the major energy-producing powerhouses of the cell, occur in ALS. Because iron is absolutely required for proper mitochondrial function, I hypothesized that H63D HFE-induced dysregulation of iron metabolism causes mitochondrial dysfunction. I will use cellular and animal models to study mitochondrial function in this aim.

In aim 2 I will study the effects of statins, commonly prescribed cholesterol-lowering medications, on disease progression in ALS. Intriguingly, recent research suggests that statins may negatively impact mitochondria. Using transgenic mice carrying mutations that cause both ALS and altered HFE, I will test the hypothesis that statins worsen disease progression in the subset of ALS patients



harboring H63D HFE. This is clinically relevant because up to 30% of individuals with sporadic ALS have H63D HFE and statins are widely prescribed.

In aim 3 I will focus on the cellular mechanisms governing the effects of HFE genotype on ALS. Mitochondrial dysfunction may contribute to ALS, an effect worsened by H63D HFE mutation. A number of cellular processes cause mitochondrial dysfunction, the latter of which participates in negative feedback loops. Signaling pathways connect mitochondria and the endoplasmic reticulum (ER), a membranous cellular structure that regulates protein folding and export. I will use cellular models to test the hypothesis that ER stress induces mitochondrial dysfunction.

Additionally, I am conducting studies to identify biomarkers for disease progression in ALS. Together, these projects use translational research to address unanswered clinical questions, a CTSI goal. My studies target substantive issues in ALS, a devastating neurodegenerative disease.

Bill is the recent recipient of the CTSI TLI Career Development Award, which provides training for biomedical researchers committed to translational research. In addition to funding, the program includes coursework in epidemiology, biostatistics, general and patient-oriented research methodology, as well as clinical trials design and analysis. Seminars, research presentations, and mentoring from faculty are integral to the program. Upon completion, awardees obtain certification in translational research, which becomes a dual-title PhD in translational research upon graduation. This NIH-sponsored program addresses the increasing need for trained researchers who can translate basic science findings into successful clinical trials and therapies.

# Recent Publications

**Dispenza MC**, Wolpert EB, Gilliland KL, Dai JP, Cong Z, Nelson AM, Thiboutot DM (2012) Systemic Isotretinoin therapy normalizes exaggerated TLR-2-mediated innate immune responses in acne patients *J of Invest Dermatol* [Epub ahead of print]

**Dispenza M**, Craig T (2012) Discrepancies between guidelines and international practice in treatment of hereditary angioedema *Allergy and Asthma Proceedings* 33(3):241-8

**Mully ER**, Berlin C (2011) Tourette Syndrome, Pregnancy, and Breastfeeding. In: Walkup J, Mink J, McNaught K (Eds) *A Family's Guide to Tourette Syndrome*. Tourette Syndrome Association.

**Pinzon-Guzman C**, Zhang S S-M, and Barnstable CJ (2011) Specific Protein Kinase C Isoforms Are Required for Rod Photoreceptor Differentiation *J Neurosci* 31:18606-18617

Origanti S, Nowotarski SL, **Carr TD**, Sass-Kuhn S, Xiao L, Wang JY, Shantz LM (2012) Ornithine decarboxylase mRNA is stabilized in an mTORC1-dependent manner in Ras-transformed cells *Biochem J* 442(1):199-207

**Erickson-Ridout, K.K.**, Sun, D., Lazarus, P. (2012) Glucuronidation of the second-generation antipsychotic clozapine and its active metabolite N-desmethylclozapine. Potential importance of the UGT1A1 A(TA)7TAA and UGT1A4 L48V polymorphisms. *Pharmacogenetics and Genomics* 22(8):561-76

**Erickson-Ridout, K.K.**, Zhu, J., Lazarus, P. (2011) Olanzapine metabolism and the significance of the UGT1A448V and UGT2B1067Y variants. *Pharmacogenetics and Genomics*. 21(9):539-51.

**Huber-Keener KJ**, Yang JM (2011) The impact of metabolic and therapeutic stresses on glioma progression and therapy. In CC Chen (Ed.), *Advances in the Biology, Imaging, and Therapies for Glioblastoma* (pp.23-52). Rejeka, Croatia: Intech Open Access Publisher ISBN 979-953-307-197-7

Cheng Y, Zhang Y, Zhang L, Ren X, **Huber-Keener KJ**, Liu X, Zhou L, Liao J, Keihack H, Yan L, Rubin E, Yang JM (2012) MK-2206, a novel allosteric inhibitor of Akt, synergizes with gefitinib against malignant glioma via modulating both autophagy and apoptosis *Mol Cancer Ther* 11:154-164.

Zhang Y, Cheng Y, Zhang L, Ren X, **Huber-Keener KJ**, Lee S, Yun J, Wang HG, Yang JM (2011) Inhibition of eEF-2 kinase sensitizes human glioma cells to TRAIL and down-regulates Bcl-xL expression *Biochem Biophys Res Commun* 414:129-134.

**Huber-Keener KJ**, Liu X, Wang Z, Freeman W, Wu S, Planas-Silva M, Ren X, Cheng Y, Zhang Y, Vrana K, Liu CG, Yang JM, Wu R (2012) Differential gene expression in tamoxifen-resistant breast cancer cells revealed by a new analytical model of RNA-Seq data *PLoS One* 8(7):e41333

Dluzen D, Li G, **Tacelosky D**, Moreau M, Liu DX (2011) Bcl-2 is a downstream target of ATF5 that mediates ATF5' pro-survival function in a cell type-dependent manner *JBC* 286(9):7705-13

Woll MP, De Cotiis Da, Bewley MC, **Tacelosky DM**, Levenson R, Flanagan JM (2011) Interaction between the D2 Dopamine Receptor and Neuronal Calcium Sensor-1 analyzed by fluorescence anisotropy *Biochemistry* 50(41): 8780-91

**Lloyd SA**, Simske SJ, Bogren LK, Olesiak SE, Bateman TA, Ferguson VF (2011) Effects of Combined Insulin-Like Growth Factor 1 and Macrophage Colony-Stimulating Factor on the Skeletal Properties of Mice *In Vivo* 25(3):297-305

Willey JS, **Lloyd SA**, Nelson GA, Bateman TA (2011) Ionizing Radiation and Bone Loss: Space Exploration and Clinical Therapy Applications *Clin Rev in Bone and Miner Metab* 9(1):54-62

Willey JS, **Lloyd SA**, Nelson GA, Bateman TA (2011) Space Radiation and Bone Loss *Gravit Space Biol* 25(1):14-21

Willey JS, **Lloyd SA**, Bateman TA (2012) Radiation Therapy-Induced Osteoporosis in Primer on the Metabolic Bone Diseases and Disorders of Mineral Metabolism, 98th Edition edited by Justin Jeffryews. John Wiley & Sons (accepted)

**Weston CL**, Glantz MJ, Connor JR (2011) Detection of cancer cells in the cerebrospinal fluid: current methods and future directions *Fluids Barriers CNS* 3:8(1):14

**LeBlanc F**, Zhang D, Liu X, Loughran Jr. TP (2012) LGL leukemia: Large granular lymphocyte leukemia: From dysregulated pathways to therapeutic targets *Future Oncology* 8(7):787-801

**Bann DV**, Parent LJ (2012) Application of Live-Cell RNA Imaging Techniques to the Study of Retroviral RNA Trafficking *Viruses* 4(6):963-979

Origanti S, Nowotarski SL, **Carr TD**, Sass-Kuhn S, Xiao L, Wang JY, Shantz LM (2012) Ornithine decarboxylase mRNA is stabilized in an mTORC1-dependent manner in Ras-transformed cells *Biochem J* 442(1):199-207

**Hasanali Z**, Sharma K, Epner E. (2012) Flipping the cyclin D1 switch in mantle cell lymphoma *Best Pract Res Clin Haematol* 25(2):143-152

Fleming JM, Miller TC, **Kidacki M**, Ginsburg E, Stuelten CH, Stewart DA, Troester MA, Vonderhaar BK (2012) Paracrine interactions between primary human macrophages and human fibroblasts enhance murine mammary gland humanization *in vivo Breast Cancer Res* 14(3):R97 [Epub ahead of print]



# Recent Thesis Defenses

## Olivier Rolin

Undergraduate Degree: BS/03 Human Biology/Brown U., RI

Advisor: Eric Harvill, Ph.D.

Graduate Program: BIOS/Immunobiology

Defense date: May 4, 2012

Thesis Title: "How Host and Pathogen Adaptations Influence the Transmission of Bordetella bronchiseptica"



## Katie Huber

Undergraduate Degree: BA/04 Physics/Saint Olaf College, MN

Advisor: Jin-Ming Yang, Ph.D.

Graduate Program: Pharmacology

Defense date: May 4, 2012

Thesis Title: Alterations in Gene Expression as a Response of Tumor Cells to Stresses



# Recent Graduates

## Jay Jin

Residency: Mayo School of Graduate Medical Education, Rochester, MN

Specialty: Internal Medicine

Yr-Start – 2012

Ph.D. – 2010, M.D. – 2012



## Kristen Plitcha

Penn State Hershey Medical Center

Specialty: Medicine, preliminary year

Yr-Start – 2012

Ph.D. – 2010, M.D. – 2012



# Recent Student Awards

## Recognition & Travel Awards

- **Jay Jin**, graduated May 2012 (Advisor: Robert Levenson, Ph.D.)  
Dean's Award for Graduate Education  
John W. Kreider Award for research and academic excellence
- **Carolina Pinzon-Guzman**, M4 (Advisor: Colin Barnstable, Ph.D.)  
Judith Bond award for overall performance in the MD/PhD Program  
Jackson Lab Medical & Experimental Genetics Annual Scholarship  
Travel Award to the MD/PhD National Student Conference, Keystone, CO
- **Yanli Wang**, G1 (Advisors: Colin Barnstable, Ph.D. & Istvan Albert, Ph.D.)  
Judith Bond award for pre-clinical performance  
Madeline K. Dietz memorial Scholarship
- **Trevor Jackson**, M2  
Judith Bond award for pre-clinical performance
- **Cody Weston**, G3 (Advisor James Connor, Ph.D.)  
Graduate Alumni Endowed Scholarship
- **Shane Lloyd**, G3 (Advisor Henry Donahue, Ph.D.)  
Alumni Society Endowed Scholarship

- **Melanie Dispenza**, M4 (Advisor: Diane Thiboutot, M.D.)  
Travel Award to APSA Conference, Chicago, IL  
Travel Award for AAAAI Conference, Orlando, FL
- **Kathryn Erickson-Ridout**, M4 (Advisor: Philip Lazarus, Ph.D.)  
The Doctors Kienle Center for Humanistic Medicine Grant for Underserved Medicine for Global Health Elective in Nepal  
Graham and Elizabeth Jeffries International Health Fund Scholarship for Global Health Elective in Nepal  
Travel Award to the American Academy of Child and Adolescent Psychiatry Meeting, San Francisco, CA
- **Darrin Bann**, G3 (Advisor Leslie Parent, M.D.)  
Travel Award to the MD/PhD National Student Conference, Keystone, CO

## Grants & Funding

- **Shane Lloyd**, G3 (Advisor: Henry Donahue, Ph.D.)  
NASA/NSBRI grant (Co-Investigator)
- **Bill Su**, G2 (Advisor: James Connor, Ph.D.)  
CTSI TL1 career development award
- **Emilie Muelly**, M3 (Advisors: Scott Bunce, Ph.D., Julie Mack, M.D.)  
RSNA Research & Education Foundation Grant

# Director's Letter, Fall 2012

The past year has been a productive one for the MD/PhD program. We greatly appreciate the dedication of the faculty, students and administrative staff to the advances we have made. To begin, we welcomed 9 outstanding new students (that's right 9!) into the program this fall. The students are excited, energetic and settling into medical school classes. The group was welcomed at our annual picnic, held at Leslie's house this year on a beautiful August afternoon. We look forward to more great things to come from our largest class to date!

We wish to congratulate our 2012 graduates, Jay Jin (Mayo Clinic, Internal Medicine) and Kristin Plitcha (Penn State, Internal Medicine). We will stay tuned to hear more about their continued development as Physician-Scientists as they progress through residency training and beyond.

Our steering committee has been very engaged in guiding the program in exciting, new directions. We are very appreciative of our University Park members, Ken Keiler and Melissa Rolls, who are active advocates of the program. Bill Su (G2) and Steve Steinway (G2), our student members, have provided us with valuable insights about the program from the student perspective. We have several new initiatives in the works, including a Clinical Research Conference, which will be spearheaded by Aron Lukacher, Keith Cheng, and Steve Steinway. We are planning to have our first CRC this winter. Other projects include improvements to the Clinical Exposure Program (headed by Ed Gunther) and activities organized by the Community-Building Committee (Tulasi Khandan (G1) and Saumya Maru (M2). Leslie participated in the September AAMC meeting in Nashville where she met many other MD/PhD program directors and administrators from across the country. She brought back some exciting new ideas that will help enrich our program.

Over the past year, we have added several new training faculty to the MD/PhD program, including Jim Broach, Roger Shi, Kevin Stavely-O'Carroll, Reka Albert, and Jiyue Zhu. We would like to welcome these new members of the training faculty, and look forward to their participation in the program.

We finally received official approval of the Joint MD/PhD Program with Engineering Sciences and Mechanics, thanks to the heroic efforts and leadership of Judy Todd, Chair of EMS. The EMS program is a separate option for students applying to the program, and we have received many applications already for the upcoming class. We have added Melik Demeril from EMS to our Steering Committee to participate in reviewing potential students who are interested in this joint degree program. Opportunities for graduate training on the University Park campus will continue to grow as we seek approval for other joint programs.

This year we have continued with our efforts to recruit the best students to Penn State. We recently completed a new and revised recruitment brochure as well as a recruitment poster to advertise the program (check it out on our bulletin board in the first floor BMR walkway). Bob and Leslie represented our program at the third NIH graduate and professional school fair held in Bethesda, MD in July. In addition, Bob has visited Goucher College, Bard College, Lehigh, and Penn State Schreyer Honors College (SHC) to promote our MD/PhD program. We had two outstanding SHC students participate in the inaugural year of the SHC MD/PhD Early Exposure Program.

These students performed research in the Cheng and Parent laboratories, and they shadowed 4 different physicians throughout the summer. They also participated in the Summer Undergraduate Research Internship programs, which are directed by Sarah Bronson. Both students made impressive presentations describing the outcomes of their research projects at the end of the SURIP Summer Symposium. We look forward to inviting 4 SHC students to participate in the summer of 2013.

We are happy to announce the upcoming retreat to be held April 6-7 at the Nittany Lion Inn in State College. The retreat committee (Darrin Bann, Cody Weston, Bill Su) is hard at work making preparations. We hope to see you there, and we appreciate everyone's commitment to the MD/PhD Program and your passion for training our physician scientists of the future.

And finally, we note that although we were largely spared from the devastation caused by Hurricane Sandy, the site visit involving our External Advisory Board (EAB) was canceled due to the storm. We have tentatively rescheduled the site visit for January 24th, 2013. We hope that all the students, training faculty, and Steering Committee will be available to meet with the EAB when they visit with us in January.



## Alumni Spotlight

*Continued from the cover*

### How did you decide which residency to go into?

Psychiatry kind-of sneaked up on me. I was very serious about a hard-science, mathematical PhD... the furthest thing from psychiatry in some ways. But, right away, I became intrigued by the dynamics of lab-life itself. Experiencing a big lab with lots of people, supposed to work and progress together, but at the same time competing for attention, resources, success, and also endorsement from a PI. I saw what this environment did to people, and observed healthy, young individuals doing what they wanted to do in their lives, but still not always happy day-to-day. I juxtaposed this in my mind to critically ill patients I had met in the hospital living happy lives and this mismatch threw the switch in my head. I became fascinated with the concept of distinguishing between “disease” and “illness” and became more interested in making peoples’ lives better rather than simply trying to fix the human body like a machine.

### What track did you follow after graduating? (training programs, jobs?)

When applying to residencies, I had the PhD but I wasn’t really sure at that point how I was going to integrate it into my life. I knew that the day-to-day wet-lab type science was not for me. I really wanted to focus on solid bedside training at that point. Mayo clinic felt like clinical medicine at its best. I had a different feeling there than anywhere else. There, the patient was really the center of all the structures of the institution—a great place to grow into the profession of medicine. But research came back around quickly. As a senior resident, because of my background, I was asked to serve on the research committee in the psychiatry department, took a stab at grant-writing, and collaborated with other departments on descriptive projects in psychosomatic medicine.

I wanted to do a fellowship in consult-liaison psychiatry, which was already a strong part of Mayo clinic’s residency, so I thought it best to gain new insights from a new place. I was looking at Georgetown’s program,

and they also suggested I consider their joint program with NIMH geared toward clinical research. There I was introduced to a captive patient population in a dedicated research environment, and was able to formulate meaningful questions, but before this fellowship, truly had no experience in clinical research! This program was ideal because it allowed me to learn how to do research with human subjects. I integrated CL and research by working with HIV/HepC patients who take interferon – a drug known to have depressive side effects. At NIH, my extra fellowship year also allowed me to train in bioethics—a helpful bank of knowledge when it comes to planning future work studying patients with complex conditions.

After fellowship, because of my interest in both molecular medicine and suicide, I did a second fellowship in toxicology. Penn State offered a great program focused at the bedside rather than behind a phone at a poison center. Entering such a program was tricky, because I needed to show that I could take care of medical patients with a psychiatry residency background. Some advanced planning for use of elective time in residency and my first fellowship in the ER and ICU was helpful. So it worked out, and I was also able to work part-time on the psychiatry consult service at HMC at the same time I studied toxicology.

NIH remembered me, and they needed more help with inpatient clinical trials in mental health. I wasn’t originally thinking this would be my next step, but it worked out well and enabled me to pursue research questions I was interested in without having to worry about funding a more traditional position in academic medicine with self-generated grant money. In the long run, I still see myself entering the standard academic tenure track, but for now, this place offers great opportunities to remain a kind of perpetual student and bolster my CV. We will soon be starting up research studying suicidal patients when they are acutely ill – a relatively uncharted path in psychiatric research that will integrate my expertise in suicidology, toxicology, and research ethics. I can’t wait!

### What doors has the MD/PhD opened for you that might not otherwise have been available with only one degree?

When I was not sure about what I was going to do with my PhD, I honestly fell back on clinical training. I saw myself as a clinician as I entered residency. However, my PhD made people around me look at me in a different way even if I wasn’t looking at myself that way. I was drawn into the research world at Mayo and introduced to NIH training and clinical research opportunities through good mentorship. Things ebb and flow, and you may feel like you’re one track or the other at some point. Don’t feel bad about that, but the people around you will remember you have both degrees. Collaborators, whether scientist or clinician, may come to you because they’re looking for that other piece – clinical insight into research, research experience into clinical arena. That’s one of the great advantages – opportunities will arise even if you aren’t actively looking.

### Now looking back, anything you wish you had known then as an MD/PhD student, or even before entering the program... that you know now?

Researchers often view the NIH simply as an ethereal source of money, but it is an actual place, with amazing training opportunities at every level of training. You should always include the NIH when thinking of what your next educational experience might be. Some Penn State MD/PhD students have even done some of their graduate work there. At the residency/fellowship level, they have fast-tracking options in some specialties where you can spend the end of your residency from any other program transitioning into a research-focused fellowship. It can further your pathway to independent funding status, make you a more scientifically sound clinician, or, even become a professional home like it has for me.

# Alumni Updates

## Christina Ryan

MD 09 / PhD 07, Advisor: Todd Schell

Residency: Pediatrics, Stanford University, CA

**Current Position:** I started as a Pediatric Hospitalist at Kaiser Permanente Santa Clara, CA after completing residency at Stanford University Lucile Packard Children’s Hospital in June 2012.

**Family Update:** Stuart and I just had our first child—Oliver Samuel Ort born on 9.30.12.

**Recent awards/grants:** Resident teaching award 2012

**Recent Publications:** Ryan CM, Khan M, Delgado E, Berquist W, Longhurst C. Multifactorial mechanisms of growth failure. *Pediatric Annals*, 2011; 40(8):397-400.

## Rick Conn

MD 03 / PhD 03, Advisor: Melvin Billingsley

**Residency:** Family Practice, Latrobe Area Hospital, PA

**Current Position:** I’m still in solo-practice family medicine in the Connellsville, PA area. The office is getting busy. I’m considering bringing on a partner, a PA or Nurse Practitioner to help me out. I continue to be active with the local hospital system as an ambulatory staff member and a member of the Pharmacy and Therapeutics committee. I am clinical faculty for LECOM Seton Hill (DO Program), Seton Hill University’s Physician Assistant Program, and Carlow University’s Nurse Practitioner Program. Also, I am the pharmacology professor for the Carlow University Nurse Practitioner Program, Greensburg Campus (I’ve dubbed myself the most feared professor in the program...).

**Family Update:** I have three teenagers in the house now, which keeps Tanya and me pretty busy.

## Paul Meyer

MD 04 / PhD 02, Advisor: Michael Chorney

**Residency:** Pathology, Loyola University Medical Center, Maywood, IL

**New Position:** I have recently changed jobs to physician (pathologist) at the Southern Arizona Veterans Affairs Health Center in Tucson, AZ, with an affiliate position at the University of Arizona Medical Center.

**Family news:** My wife Samantha and I have two children, Aidan (6 years) and Galen (3 months).

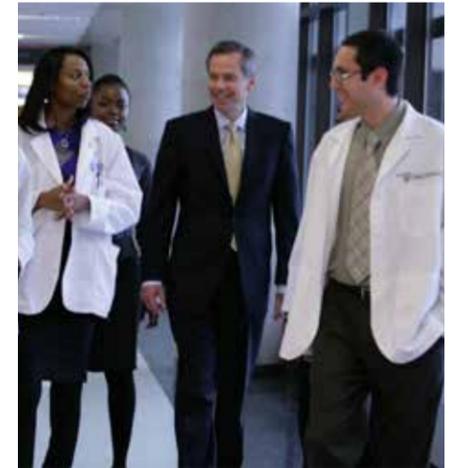
**Recent grants/awards:** I have received an intramural grant from Veterans Affairs to study stromal markers in diffuse large B cell lymphoma.

**Recent Publications:** Perry AM, Cardesa-Salzmann TM, Meyer PN, Colomo L, Smith LM, Fu K, Greiner TC, Delabie J, Gascoyne RD, Rimsza L, Jaffe ES, Ott G, Rosenqald A, Braziel RM, Tubbs R, Cook JR, Staudt LM, Connors JM, Sehn LH, Vose JM, Lopez-Guillermo A, Campo E, Chan WC, Weisenberger DD. 2012. A new biologic prognostic model based on immunohistochemistry predicts survival in patients with diffuse large B-cell lymphoma. *Blood* 120(11): 2290-2296.

Iqbal J, Meyer PN, Smith LM, Johnson NA, Vose JM, Greiner TC, Connors JM, Staudt LM, Rimsza L, Jaffe E, Rosenwald A, Ott G, Delabie J, Campo E, Braziel RM, Cook JR, Tubbs RR, Gascoyne RD, Armitage JO, Weisenburger DD, Chan WC. 2011. BCL2 predicts survival in germinal center B-cell-like diffuse large B cell lymphoma treated with CHOP-like therapy and rituximab. *Clin Cancer Res* 17(24): 7785-7795.

**Meyer PN, Fu K, Greiner TC, Smith LM, Delabie J, Gascoyne RD, Ott G, Rosenwald A, Braziel RM, Campo E, Vose JM, Lenz G, Staudt LM, Chan WC, Weisenburger DD.** 2011. Immunohistochemical methods for predicting cell of origin and survival in patients with diffuse large B-cell lymphoma treated with rituximab. *J Clin Oncol* 29(2): 200-207.

**Meyer PN, Fu K, Greiner TC, Smith LM, Delabie J, Gascoyne RD, Ott G, Rosenwald A, Braziel RM, Campo E, Vose JM, Lenz G, Staudt LM, Chan WC, Weisenburger DD.** 2011. The stromal cell marker SPARC predicts for survival in patients with diffuse large B-cell lymphoma treated with rituximab. *Am J Clin Pathol* 135(1): 54-61.



Schneider A, Meyer P, DiMaio D, Fu K. 2010. Diffuse large B-cell lymphoma with both CD5 and Cyclin D1 expression -- A case report and review of the literature. *J Hematopathol* 3(4): 145-148.

## An Do

MD 08 / PhD 06, Advisor: Leonard Jefferson

**Residency:** Medicine/Pediatrics, Indiana University School of Medicine, IN

**Current position:** I’m in year 1 of 3 Genetic residency/fellowship at Hopkins/NIH.

## Ryan Mitchell

MD 10 / PhD 09, Advisor: James Connor

**Residency:** Otolaryngology, University of Washington Affiliated Hospitals, Seattle, WA

**Current Position:** Otolaryngology-Head and Neck Surgery Resident at University of Washington. There is a research yr in my program and I am doing that now. No awards or pubs (yet).

## Stacey Clardy

MD 07 / PhD 05, Advisor: James Connor

**Residency:** Medicine and Neurology, Penn State HMC

**Current position:** I am currently completing a Fellowship in Autoimmune Neurology at the Mayo Clinic in Rochester, MN.

# Faculty Highlights

## Dr. Levenson honored as Distinguished Professor



We are very proud to that our very own Robert Levenson, Ph.D., was recently honored as a Penn State Distinguished Professor. Recipients of such a distinction are chosen based on their exceptional academic

contribution to Penn State, including leadership in teaching, research, and service. His research on developmental biology, ion transport, and dopamine signaling have had lasting impacts in the fields of cardiovascular physiology and neuropharmacology. His work has important applications in understanding the mechanisms of and developing therapeutics for many disorders including addictions, schizophrenia, bipolar disorder and Parkinson's disease. We are all fortunate to have experienced first-hand Dr. Levenson's outstanding leadership, mentorship, and teaching. Many of us have also been a part of the research he has done at Penn State as he has emerged as a leader in the fields of substance abuse and neuropharmacology. Congratulations, Dr. Levenson!

## Latest Additions to the MD/PhD Steering Committee



Melik Demirel, Ph.D. is associate professor in Engineering Science and Mechanics and Bioengineering at University

Park. His research includes understanding the nanoscale interfaces of biological and synthetic systems for designing novel engineering materials.



Kevin Staveley-O'Carroll, M.D., Ph.D. is professor of surgery/oncology; microbiology & immunology. His research includes therapeutic

strategy for hepatocellular carcinoma by combination of chemotherapy with immunotherapy.



James Broach, Ph.D. is professor & chair of Biochemistry & Molecular Biology, succeeding Judith Bond, Ph.D., who retired in fall of 2011. His research includes understanding

cell-environment interactions and cellular regulation at the molecular level, using the yeast *Saccharomyces cerevisiae* as a model system.



Reka Albert, Ph.D. is professor of physics and biology at University Park. Her research includes biological physics and network modeling

# National Conference Report

Our trip to the 27th Annual National MD/PhD Student Conference in Keystone, CO began somewhat ominously when we encountered rain, wind, and hail on the mountain descent into Keystone. However, once we reached the meeting it was clear that the drive was worth it. The keynote speaker on the first night was Jeff Lictman, M.D., Ph.D., who discussed his work studying the structure-function relationship of neural connections. To track the fate of single neurons, Dr. Lictman developed a genetically-engineered mouse called "brainbow", where each neuron expresses a unique mixture of cyan, green, and red fluorescent proteins. Using this system, Dr. Lictman has been able to understand how neurons innervate skeletal muscle fibers during development. The evening concluded with a poster session, where we had the opportunity to present some of our research and to see what other MD/PhD students are working on.

The next morning consisted of student presentations on a variety of topics including immunology & infectious disease, biochemistry & cell biology, and neuroscience. Lunch was accompanied by a keynote talk by Joan Steitz, PhD, who discussed how she overcame some of the challenges she faced during her highly

successful career, and her work on non-coding viral RNAs. During the afternoon we attended small-group sessions on many important aspects in the career of a physician-scientist, including selecting and interviewing for residency positions, writing grants, presenting scientific findings, and building an independent research program. After additional student presentations in the afternoon, Francis Collins, M.D., Ph.D. and Director of the National Institutes of Health delivered the evening's keynote speech. During his talk, Dr. Collins emphasized the importance of physician-scientists to the mission of the NIH and discussed how the NIH plans to continue funding research by physician-scientists. In addition to running the NIH, Dr. Collins also maintains an active research program, and he took some time to discuss his research on progeria, a rare genetic disorder characterized by symptoms of premature aging. Dr. Collins is also an accomplished guitarist and songwriter, who enjoys interacting with students, and after his talk he played a three-hour concert of science-themed songs for us.

The final morning of the meeting, we had the opportunity to explore the area around Keystone, including a hike to the summit of Quandary Peak at an elevation of

14,265 feet. The hike was challenging, but the spectacular views from the mountain were worth it! The afternoon consisted of a keynote speech by Mark Anderson, MD, PhD on the genetic regulation of autoimmunity, followed by a panelist discussion on career options open to MD/PhDs. Much of the panelist discussion focused on the advantages of choosing a specialty such as internal medicine, pathology, or pediatrics, however a few panelists also noted that it is possible for MD/PhDs to pursue "non-traditional" career paths, such as neurosurgery, and still conduct research. The meeting concluded with a keynote address from Dr. Mauro Ferrari, PhD, who is the president, CEO, and Chair of the Methodist Hospital Research Institute, a new center designed entirely to facilitate and conduct basic and translational biomedical research. Overall, the conference provided an eye-opening look into the breadth of career options open to MD/PhDs and we were inspired by the panelist and speakers to continue our journey to become successful physician scientist. The meeting also emphasized the quality of training that Penn State College of Medicine offers to the MD/PhD students.

# New Recruiting Program

## Schreyer Honors College Summer Research Internship/MD/PhD Early Exposure Program

New for the summer of 2012, two students from the Schreyer Honors College at Penn State's main campus were chosen to participate in a research and clinical exposure program during the summer. Each student spent ten weeks in a research lab and once a week in clinic to learn more about our MD/PhD Program. These 2 students will be invited back again next summer and in addition to them, two new students will be chosen. This summer, our two students were:



**Abby Talbert (left)**  
Lab – Keith Cheng, M.D., Ph.D.  
Clinical Experience – Dennis Gingrich, M.D. and Diane Thiboutot, M.D.



**Kristin Lambert**  
Lab – Leslie Parent, M.D.  
Clinical Experience – Cynthia Whitener, M.D. and Kathleen Julian, M.D.

# Photo Corner

*Informal get-together, left to right: Derek Nye (M1), Tulasi Khandan (G1), Olivier Noel (M2), Katrina Heyrana (G3), Sarah Jefferson (M1), Brian Kinsman (M1), Nicole Gong (M1), Eunice Chen (M1), Ranjodh "RJ" Dhami (M1), Saumya Maru (M2), Jeff Nguyen (G2), Amy Lu (M2), and Paul Hsu (M2) at a get-together*



*Halloween, left to right: Paul Hsu (M2), Michal Kidacki (G1), Aditya "Adidas" Pisupati (M1), Brian Kinsman (M1), Ron Panganiban (G1), Olivier Noel (M2), Saumya Maru (M2), Rhanjodh "RJ" Dhami (M1), Shane Lloyd (G3), Katrina Heyrana (G3), Jimmy Kroll, Eunice Chen (M1), Sarah Jefferson (M1), Yifu Ding (M1)*



*Kathryn Erickson-Ridout (M4) and Sam Ridout*



*Shane Lloyd (G3) and Jimmy Kroll*



*Carolina Pinzo-Guzman (M4), Felipe Trott, and their daughter Camila*

# Penn State MD/PhD Program

Penn State College of Medicine M.D./Ph.D. Program provides an opportunity for students interested in careers in academic medicine and research to obtain the necessary training in clinical and basic sciences. This eight-year, dual-degree program provides students with knowledge of the breadth of clinical science plus the ability to design experiments and conduct biomedical research with modern technology.

Applications to the Penn State College MD/PhD Program can be submitted through the AMCAS application service by choosing the Combined Medical Degree/Ph.D. program.

For students in the MD/PhD Program, tuition and stipend are provided for all years in the program.

For more information, visit [www.pennstatemdphdprogram.com](http://www.pennstatemdphdprogram.com) or contact Barb Koch at 717-531-1188, [bkoch2@hmc.psu.edu](mailto:bkoch2@hmc.psu.edu).

## THE GRADUATE PROGRAM CHOICES FOR THE PH.D. PART OF THE DUAL DEGREE ARE:

- Anatomy
- Biochemistry and Molecular Biology
- Bioengineering
- Cell and Molecular Biology
- Genetics
- Immunobiology
- Microbiology and Immunology
- Molecular Medicine
- Neuroscience
- Pharmacology
- Physiology
- Integrative Biosciences (including Chemical Biology and Molecular Toxicology)

U.Ed. MED 13-7691 MDC

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