From getting kicked out of a bar during our first week in Boston to our Friday night potluck dinners in Vanderbilt Hall to the grand festivities of Solapalooza in Craig’s back yard, it was clear from the start that this year’s MD-PhD class would have a special bond. Despite breaking off into separate HMS societies, separate graduate programs, and separate labs, our group of 12 only continues to get closer and depend on each other more and more for moral support, academic guidance, and comic relief.

At the risk of sounding trite, we thought it worthwhile to take a few sentences to highlight the diversity of our class. We are a group with varied interests and backgrounds, drawn together by a common passion for basic science, clinical medicine, and free food. The twelve of us hail from five different countries, seven different states, and eleven different kindergartens. We have worked with organisms that range in genome size from 30,000 to 3,000,000,000 base pairs. We have birthdays in seven of the twelve months. And our dorm rooms can be found on three of the six floors of Vanderbilt Hall. These are but a few examples that underscore the fact that our class simply defies all conventional labels.

Below are short blurbs that describe each of the members of the first year MD-PhD class. We wrote these ourselves, but deftly employed the third person to convey a sense of deep significance and import.

Quentin Baca is a New Mexico native who graduated from Stanford University in chemistry in 2004. At 6’2” and the shortest of his three brothers, he suffers from a “short complex” and hopes to justify his existence through cooking and research. He does not mind being one of the few New Pathway students in this year’s MD-PhD class, and he hopes he can find a lab that lets him mix his physical chemistry background with biological and medical applications before his need for green chile drives him back to visit New Mexico.

Lauren Barr comes to Boston from the tiny town of Pendleton, IN, via the bustling metropolis of Philadelphia where she studied biochemistry and biotechnology at the University of Pennsylvania. Lauren is an avid football fan, and her love of the Indianapolis Colts and their dreamy place kicker Mike Vanderjagt is surpassed only by her hatred of the New England Patriots. When she’s not out expanding her impressive shoe collection or perfecting her margarita recipe, Lauren can be found studying neuroscience in hopes of someday figuring out synaptic transmission at the molecular level. She aspires to be a roadie for U2, but in case that doesn’t work out, she’d also love to be a great PI, professor, and pediatric neurologist.

Daniel Herman graduated from MIT in 2004 with a degree in biology. As an undergraduate he performed research in many subfields within neuroscience, including hippocampal learning and memory and cortical development. Daniel’s current biomedical interests are focused around ...
Meet the New Executive Committee

Addressing the key issues and priorities of the MD-PhD Program

In his first year as program director, Dr. Chris A. Walsh set up a new MD-PhD Executive Committee (EC) to address the key issues and priorities of the basic sciences MD-PhD track. The committee, which has been meeting regularly since last fall, is charged with improving the integration of medical and graduate studies, ensuring that we maintain an open and responsive career advising system for all MD-PhD students, providing strategic advice to the director, and facilitating the operational aspects of the program. Dr. Chris Walsh chairs the committee which includes Linda Burnley, administrative director; Stephen Blacklow, MD, PhD, associate professor of pathology, HMS, associate pathologist, Brigham & Women’s Hospital; Joel N. Hirschhorn, MD, PhD, assistant professor of genetics and pediatrics, Children’s Hospital/HMS, associate member, Broad Institute of MIT and Harvard; Alan M. Michelson, MD, PhD, associate professor of medicine, HMS, associate physician, Brigham and Women’s Hospital, associate investigator, Howard Hughes Medical Institute; and Maria Ann Rupnick, MD, PhD, instructor in cardiovascular medicine, HMS, Brigham and Women’s Hospital, research associate, Vascular Biology Program, Children’s Hospital Boston Research Affiliate, Chemical Engineering, MIT.

Dr. Stephen Blacklow replaces Richard Maas, MD, PhD, professor of genetics and Howard Hughes Investigator, as course director of the first MD-PhD summer course “Molecular Biology of Human Disease.” Dr. Maas conceived and developed the original course that started in 2000 and served as an inspiring teacher and enthusiastic course leader for the past five years. Dr. Blacklow co-directed the course last summer with Dr. Maas and planning for the 2005 course is underway to begin again in July for next year’s new class. Dr. Blacklow also serves as advisor for MD-PhD students in the New Pathway’s Peabody Society as well as the graduate programs in BBS and biophysics.

Dr. Joel Hirschhorn has been named associate director of the program to focus primarily on the graduate education aspects of the training program. He is currently organizing a summer poster session to promote scientific exchange between medical students interested in pursuing graduate training and the first and second year MD-PhD students completing summer lab rotations. Dr. Hirschhorn also serves in the capacity as special advisor to medical students who are planning to pursue graduate training. More recently, he is co-chairing the program’s admissions process for the cycle 2 applicants.

Dr. Alan Michelson, a longstanding member of the admissions and advising committees, continues, along with Dr. Walsh, to co-chair the MD-PhD Committee of Advisors that meets regularly to review the progress of all MD-PhD students. Dr. Michelson offers a compassionate understanding of the complexities and challenges that arise from transitioning back and forth between medical and graduate training. He continues to offer advice not only to the Castle Society students where he is the designated advisor for MD-PhD students but he is often called upon to help with sensitive and unique issues that arise from navigating the dual degree training.

Dr. Maria Rupnick, also named associate director, will continue to examine the clinical aspects of the training program. In her role as course director for the longitudinal course in clinical medicine (LCCM) at the Brigham and Women’s Hospital, Dr. Rupnick has long been committed to helping students at the crucial transition as they face the return to patient care following a long hiatus in the lab. Dr. Rupnick is a facilitator in the annual meeting to introduce the clerkship directors to the year 2 students in preparation for their upcoming required 2 month summer clerkship. As course director of the LCCM, Dr. Rupnick is charged with identifying faculty preceptors to help link students to patients in the hospitals. With medical education reform ahead at HMS, Dr. Rupnick expects to expand her role in improving and overseeing the clinical experience of the program.

The new executive committee augments the program’s more traditional organizational committees: the Faculty Standing Committee, the Subcommittee on Admissions, the Committee of Advisors and the program’s administrative staff. Dr. Walsh is thrilled to have a new team of leaders to support the goal of ensuring that students receive an excellent medical scientist training experience.
NEWEST CLASS
continued from page 1

rological diseases, spanning from pathophysiology to neurorregeneration. Beyond Longwood he has continued to adapt to the New England lifestyle by recently learning to ski and enjoying Super Bowl and World Series victories.

Peggy Hsu is from Bethlehem, PA and graduated in 2003 with a degree in molecular biology from Princeton University. Having conducted thesis research on nutrient sensing and growth regulation in S. cerevisiae, she has spent a considerable amount of time commuting with mutant yeast. After graduation, Peggy spent a year in Dresden, Germany, where she not only studied post-Golgi sorting and transport but also immersed herself in good music, engorged her belly with almond cake, and hopes to explore how the recombination events that occur in maturing lymphocytes contribute to the process of lymphoma formation. In his spare time, you will find Craig enjoying time with his fiancée Lauren and attempting to pry the remains of his Harvard ID from the ferocious jaws of his beagle puppy Lily.

Mai Anh Huynh’s family, part of a wave of “boat people” from Vietnam, settled in Evansville, IN, after they were sponsored from their refugee camp by a Midwestern Catholic charity. A Hoosier at heart, Mai Anh nevertheless liked Harvard enough to stay on for her MD-PhD after graduating with an A.B. in biochemical sciences in 2004. Mai Anh spent her undergrad summers in the “real” Cambridge, working on a thesis in structural biology at the MRC-LMB. Her experience there inspired her to pursue a career as a physician-scientist. During her nine months in the UK, she enjoyed traveling through Spain, Switzerland, France, and Italy. Now that her travels are limited to exploring Boston by foot, Mai Anh also finds time to run, dance, and spend time outdoors. She enjoys all types of music but limits performance to whistling or singing when no one is in earshot. Mai Anh is happy that BBS offers enough options to encompass the breadth of her research interests, which currently include structural biology, cancer biology, and neuroscience. She’s even happier to have found such wonderful classmates in the HST and MST program.

Martin Kurtev graduated from MIT in 2004 with degrees in biology and neuroscience. His research at MIT focused on studying the molecular basis of aging. Currently in the HST medical program, Martin intends to pursue a PhD in the molecular neuroscience. Martin was born in Bulgaria and at the age of 15 moved to Chicago, IL where he attended high school. In his spare time he enjoys playing soccer and other sports and reading novels. Craig Mermel graduated from Washington University in St. Louis in 2004 with degrees in Biochemistry and Mathematics. As an undergraduate, Craig studied the molecular mechanisms regulating granulocytic development. He is currently fascinated by the parallels between normal developmental pathways and tumorigenesis, and hopes to explore how the recombination in physics. Before entering the M.D.-Ph.D. program he completed a second master’s degree in mathematics at Oxford University, where his research focused on mathematical models of neural systems. Ben is pursuing his Ph.D. in the MIT Physics Department and is particularly interested in electronic interfaces with the human nervous system. He is also an avid long-distance runner and erstwhile cartoonist.

Sol Schulman is from Buffalo Grove, IL and graduated from Brandeis University in May, 2004 with a BS/MS in biochemistry. Although best known for his landmark 7th grade poster entitled “The Effect of Light and Salt on Brine Shrimp,” his subsequent research has been in medicinal chemistry and protein biochemistry. Sol is currently interested in how proteins and viruses cross membranes and regularly assures interviewers and self alike that a better understanding of these processes will be of clinical utility. A once-serious musician and avid outdoorsman, Sol is known to enjoy his remote wilderness excursions with trumpet in hand.

Michael Tibbetts graduated from Princeton University with a degree in molecular biology and is now in the HST program. He was raised in Clearwater, Florida but spent many vacations in the Cayman Islands where his family can trace its roots to the 18th century. He grew up playing soccer competitively and along with several other first-year MD-PhD students competed in the Vanderbilt Hall indoor soccer league this past fall. He has previously studied gynodioecious plant species and solved protein crystal structures, but is now interested in targeted cancer therapies.

Srinivas Viswanathan was raised in Tenafly, NJ. He attended college at Yale and graduated in 2004 with a BS/MS degree in molecular biophysics & biochemistry. As an undergraduate, he worked in a molecular virology lab, studying Kaposi Sarcoma Herpesvirus. Srinii is now in the HST program, and his current scientific interests lie in stem cell biology and the cellular pathways that are disrupted in human cancers. He enjoys squash, playing the violin, and ruminating on the plight of the follicular dendritic cell. Most recently, he has taken to riding the E line for free and wearing winter hats indoors. In the future, he plans to combine basic science with clinical practice in an academic setting. He hopes that his poor sense of direction does not cause him to get lost on his way from the bench to the bedside.
Over one hundred faculty and students participated in the MD-PhD Program’s Annual Retreat last October 2004 at Waterville Valley, New Hampshire.

Dr. Anne B. Young, Julieanne Dorn professor of neurology at HMS and the chief of neurology service at MGH, delivered the Eva J. Neer Memorial Lecture, “Huntington’s Disease: From the Shores of Lake Maracaibo to the Clinic.” Dr. Young who holds MD and PhD degrees from Johns Hopkins, delivered a wonderful talk that stretched from bench to bedside, summarizing her work on finding families with Huntington’s disease, mapping the gene, studying the gene function, and now moving to developing therapeutics that might slow neuronal degeneration.

Senior students who gave oral presentations were Jakob Begun, Martin Burke, Irene Chen, Christopher Connor, Jean-Marc Gauguet, Arlo Miller, and Bradley Molyneaux. An exciting faculty discussion on stem cell research was moderated by Jeffrey D. Macklis, MD, associate professor of medicine (MGH): “Science, Politics, and Applications of Stem Cell Research.”

On Sunday morning, Drs. Maria Rupnick, Joel Hirschhorn, Denisa Wagner and Chris A. Walsh led a discussion with the students on how to choose a research problem. Everything from the differences between Bacon and Aristotle’s theories of knowledge, to the burning question of how to get out of the lab before your hair turns gray, was discussed.

The general principles provided again by Dr. Hirschhorn for this article are:

- **Ask important questions**
- **Be passionate about your questions or your field of inquiry or your approach**
- **Expose yourself to other ideas**
- Be aware of different types of experiments/projects: hypothesis-testing (“Gallilean”) vs. descriptive (“Baconian”), which can give unexpected results (but, “you can’t plan unexpected results”)
- “Class I” experiments: No matter how they turn out, the answer is interesting. Descriptive experiments, or experiments in new fields are often class I
- “Class II” experiments: If the experiment comes out one way, you learn something, but the other result is uninformative
- “Class III” experiments: No matter how it comes out, you learn nothing.
- Do as many class I experiments as you can and avoid class III experiments.

The retreat event capped the end of the program’s year long celebration of 30 years of continuous NIH grant support from the Medical Scientists Training Program (MSTP) Grant. Other sponsors for the 2004 retreat included Novartis Institutes for BioMedical Research, Inc, Abbott Laboratories, Genzyme Corporation, Invitrogen Life Technologies Corporation, Merck Research Laboratories, New England BioLabs, Inc, Praecis, Pharmaceuticals, Inc, Schering-Plough Research Institute.
The “P” word
BY JOSÉ O. ALEMÂN

Thanks to the generous support of the UCSD MD-Phd program, I had the opportunity to attend the 2004 “Days of Molecular Medicine” Conference at the Wellcome Trust Institute Genome Sequencing Campus in Hinxton, UK from March 18-20 hosted by Nature Medicine, UCSD and the Wellcome Trust. The theme for this meeting was Integrative Physiology and Human Disease: Neurohormonal and Metabolic Pathways. Fittingly, the symbol of the conference incorporated an integral to the surprise of us with technical backgrounds. My arrival in England began the day prior to the conference with a visit to Tate Britain in London before departing for Cambridge, a thoroughly historical and aesthetic experience before embarking on a weekend of cutting-edge science.

The conference was hosted by Steve O’Rahilly of Cambridge University (UK), who stressed the importance of physiological understanding to the biomedical research conducted by the attendees. In this current rethinking of metabolism within the context of genetic regulation, the field of metabolic disease must vanquish resistance to physiology, the dreaded “P” word for many administrators and grant evaluators. The meeting promptly began with a keynote address by Jeffrey Friedman (Rockefeller) of leptin fame, in a presentation entitled “Molecular Physiology of Human Obesity and Related Metabolic Diseases.” In a very eclectic and encompassing style, the discoverer of leptin deconstructed the social and clinical perceptions of obesity and the important role of physician researchers in developing therapy for obesity that will eventually update our classification from personal choice to disease. While quoting Lavoisier and Shakespeare in relating the importance of energy balance and the stigmatization of obesity, Professor Friedman carefully highlighted the intricate interplay among brain, fat, liver and muscle in the development of obesity. His analogy of leptin resistance and obesity with insulin resistance and diabetes bridged the physiology of metabolic syndrome in setting the stage for a weekend of engaging scientific discussion.

The first session focused on the hypothalamic control of feeding and energy expenditure. Harvard University’s Terry Maratos-Flier gave an interesting presentation on the role of melanin-concentrating hormone (MCH) as an important mediator of the obese phenotype in a leptin-deficient mouse model of obesity. Other notables in this session included Roger Cone (OHSU), Luciano Rosetti (AECOM) and David Cummings (U. Washington). Subsequently the DMM Forum showcased research around the globe to improve communications among scientists and possible scholarly collaborations. In a unique presentation, Kari Stefansson presented deCODE Genetics’ latest work identifying ALOX5AP allelic susceptibility to stroke in the Icelandic population. The forum included presenters from India, Pakistan, Estonia and other areas where the Wellcome Trust is involved in promoting medical research. The following day, the conference approached the field of intracellular mechanisms that regulate food intake through the understanding of transcription factors and signaling cascades. Harvard’s own Bruce Spiegelman presented work on genomic analysis of PGC-1α-dependent oxidative phosphorylation in diabetic muscle.

With focus on biological and signal integration, the following sessions exposed the dialogue of muscle, fat and liver in the development of metabolic disease. Barbara Kahn (Harvard) presented exciting results on the role of leptin-mediated inhibition of AMP-kinase in the hypothalamus and its importance on regulating food intake in mice. In addition, Gerald Shulman (Yale) communicated NMR human studies on impaired mitochondrial activity in the insulin-resistant offspring of Type 2 Diabetics. Gary Ruvkun (Harvard) discussed RNAi models for insulin signaling in C. elegans. Other presenters included Leif Groop (Lund), Steve O’Rahilly (Cambridge), Takashi Kadowaki (Tokyo) and Markus Stoffel (Rockefeller).

The 2004 “Days of Molecular Medicine” allowed me to bask in current translational research for the treatment of obesity, diabetes and metabolic disease. I met MD-PhD students from various universities around the world who shared a passion for understanding the intricacies of metabolism for the benefit of future patients. Likewise, faculty members at the meeting were accessible and supportive of combined degree education and bench-to-bedside research. Increasing interplay between disciplines to translate medical advances in metabolism from laboratory to the clinic was evident in the enthusiastic attendance at the conference and the intellectual exchange among the participants. I feel confident that MD-PhD education will allow me to seize strengths from medicine and science to further solidify the role of physician-scientists in understanding metabolic disorders by uttering the “P” word of physiology.

José Aleman is a second-year Castle student doing his PhD at MIT in HST MEMP.

REFERENCES:
For the Record

Current Student Awards and Honors

David Berry received the Lemelson-MIT Student Prize for innovation and invention in February 2005. He also won the $1k competition at MIT in December 2004.

Irene Chen received the 2005 Harold M. Weintraub Graduate Student Award sponsored by the Basic Sciences Division of Fred Hutchinson Cancer Research Center. The award is sponsored by the Fred Hutchinson Cancer Research Center and is given to 15 students internationally. Chen will participate in a scientific symposium from May 6 to 7 at the research center.

Jeremy Greene was awarded the 2004 Shroyer Medal by the American Association for the History of Medicine and the 2002 Roy Porter Essay Prize by the Society for the Social History of Medicine.

John Hanna was a recipient of the 2004 Karnowsky Fellowship offered by the Harvard Faculty of Arts and Sciences.

Ben Sommers was awarded the National Science Foundation (NSF) Graduate Fellowship in Economics (2004-05) and the Dean’s Award for Excellence in Student Teaching, John F. Kennedy School of Government–Harvard University (2003-04).

Zuzana Tothova was awarded the Presidential Fellowship by President Summers, for her PhD study in the BBS program within Harvard University’s Graduate School of Arts and Sciences–Division of Medical Sciences.

Recent Publications


[* = equal contributors]
PhDs Completed 2004-05

David A. Berry, Health Sciences and Technology, Biological Engineering at MIT. [Robert Langer, Ph.D.] Glycosaminoglycan regulation of cell function (4/05).

Vassilios J. Bezerides, Health Sciences and Technology, Biophysics (GSAS) at Harvard University [David Clapham, M.D., Ph.D.] Rapid Translocation of the TRPC5 Ion Channel: Implications for Growth Cone Motility (6/04).

Emanuela Binello, Health Sciences and Technology, Medical Engineering and Medical Physics- Nuclear Engineering at MIT [Richard Mitchell, M.D., Ph.D.] Role of Peroxisome Proliferator-activated Receptors in Mechanisms of Rejection in Heart Transplantation (5/04).

Jay H. Chyung, Holmes, Neuroscience at Harvard University [Dennis Selkoe, M.D.] Cell surface events in the amyloidogenic processing of the amyloid precursor protein (9/04).


Sophie C. Currier, Health Sciences and Technology, Neuroscience at Harvard University [Chris Walsh, M.D., Ph.D.] Genetics of Walker-Warburg Syndrome A Disorder of Brain, Muscle and Eye Development (6/04).

Thomas A.S. Deuel, Health Sciences and Technology, Neuroscience at Harvard University [Chris Walsh, M.D., Ph.D.] Doublecortin and the Doublecortin-like Kinase in CNS Development and Plasticity (8/04).

Jean-Marc Gauguet, Health Sciences and Technology, BBS-Pathology (DMS) at Harvard University [Ulrich R. von Andrian, Ph.D., M.D.] Normal and Malignant Lymphocyte Migration: Glycosyltransferases and Integrins in Lymphocyte Homing & CXCR4 Inhibition of Multiple Myeloma (4/05)

Yonatan H. Grad, Health Sciences and Technology, BBS-Genetics (DMS) at Harvard University [George Church, Ph.D.] Computational analysis and prediction of regulatory sequences in bilaterians (5/04).


Sanjiv Harpavat, Cannon, Neuroscience at Harvard University [Constance Cepko, Ph.D.] Roles of Thyroid Hormones in Chick Retinal Development (10/04).

Ashutosh P. Jadhav, Health Sciences and Technology, BBS-Genetics (DMS) at Harvard University [Connie Cepko, Ph.D.] Regulation of vertebrate retinal development by the Notch signaling pathway (4/05).

Arlo J. Miller, Holmes, BBS-Cell and Developmental Biology (DMS) at Harvard University [David Fisher, M.D., Ph.D.] The Regulation of Melanoma Antigens by the Microphthalmia Transcription Factor (5/04).

David T. Miyamoto, Health Sciences and Technology, BBS-Cell and Developmental Biology (DMS) at Harvard University [Timothy Mitchison, Ph.D.] Probing the Functions of Kinesins in Mitosis (9/04).

Sahar Nissim, Peabody, BBS-Cell and Developmental Biology (DMS) at Harvard University [Clifford Tabin, Ph.D.] Sources of Difference Frequency Sound in a Dual-Frequency Imaging System with Implications for Monitoring Thermal Surgery (9/04).

Benjamin D. Sommers, Holmes, Health Policy (GSAS), at Harvard University [Joseph P. Newhouse, Ph.D.] The dynamics of public and private health insurance coverage in the United States (3/05).

Jonathan S. Thierman, Health Sciences and Technology, Medical Engineering and Medical Physics at MIT [Kullervo Hynynen, Ph.D.] Sources of Difference Frequency Sound in a Dual-Frequency Imaging System with Implications for Monitoring Thermal Surgery (9/04).

Lisa Zakhary, Castle, Neuroscience (DMS) at Harvard University [Catherine Dulac, Ph.D.] Anatomical and Functional Analysis of MicroRNAs in Mammalian Olfactory Neurogenesis (4/05).

GSAS = Graduate School of Arts and Sciences
BBS = Biological and Biomedical Sciences
DMS = Division of Medical Sciences

Special Events

Anna Farago, Ruth Foreman, Elizabeth Stover, and Zuzana Tothova outside the Salk Institute while attending the 2005 Days of Molecular Medicine Conference in March. Ashu Jadhav also attended the conference. The topic was “Stem Cell Biology and Human Disease.”

At the 10th annual MD-PhD women’s dinner hosted last December by Dr. Anne Young. Left to right: Rochelle Witt, Dr. Cammie Lesser, Jenny Chang and Savita Dandapani.
Class of 2005 Internship/Residency and Postgraduate Appointments

Francis J. Alenghat, Internal Medicine, Brigham & Women’s Hospital – Boston, MA.

Scott D. Boyd, Pathology, Stanford University Programs – Stanford, CA.

Martin D. Burke, Assistant Professor in Chemistry, University Of Illinois – Urbana, IL.

Bradley C. Carthon, Internal Medicine, Massachusetts General Hospital – Boston, MA.

Megan Purcell Coffee, Internal Medicine, Massachusetts General Hospital – Boston, MA.

Christopher W. Connor, Preliminary Medicine, Mt. Auburn Hospital – Cambridge MA; Anesthesiology, Brigham & Women’s Hospital – Boston MA.

Andrew E.H. Elia, Preliminary Medicine, Brigham & Women’s Hospital – Boston MA; Radiation Oncology, Brigham & Women’s Hospital – Boston MA.

Anita Goel, Research.

Jeremy A. Greene, Internal Medicine, Brigham & Women’s Hospital – Boston, MA.

Kumaran Kolandaivelu, Internal Medicine, Brigham & Women’s Hospital – Boston, MA.

Gabriela Motyckova, Internal Medicine, Massachusetts General Hospital – Boston, MA.

Jonathan G. Murnick, Transitional Year - Cambridge Hospital/CHA – Cambridge MA; Radiology – Massachusetts General Hospital – Boston MA.

Hien Thanh Tran, Preliminary Medicine, Mt. Auburn Hospital – Cambridge MA; Anesthesiology, Brigham & Women’s Hospital – New York University School of Medicine – New York, NY.

Thanh-Nga T. Tran, Preliminary Medicine, Brigham & Women’s Hospital – Boston MA; Dermatology – Massachusetts General Hospital – Boston MA.

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