



UNC MD-PhD Newsletter

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Welcome, Dr. Rathmell, to the Program!!

An MD-PhD herself, she is the new Director for Translational Research

Dr Rathmell joins the MD-PhD leadership as the Director for Translational Research. She will work with Dr. O and Dr. S to provide student support, aid in identifying laboratory rotations and thesis labs, and provide mentorship through the transitions to clinical training and beyond. She is an oncologist, specializing in the treatment of kidney cancer. Dr. Rathmell also has a laboratory in the Genetics Department, housed in the Lineberger Cancer Center, where her group studies the genetic and molecular underpinnings of this disease. She also conducts clinical trials investigating new therapeutics in renal cancers and exploring imaging and molecular correlates of disease activity and response to therapy.

A little bit about Dr. Rathmell ("Dr. R"?). She grew up in Nebraska and Iowa, and attended college at the University of N. Iowa. There, she was a Presidential Scholar, and majored in Chemistry and Biology. She graduated top in her class in Chemistry, earning the Purple and

Old Gold Award for that major. There, she also met her husband, Jeff, the Purple and Old Gold Award winner in Biology. They have managed parallel scientific careers ever since (21 years).



Dr. Kim Rathmell

She attended Stanford University Medical School, initially as a medical scholar, but eventually joined the MD-PhD program, earning her PhD in Biophysics. Her son, Peter, now 16, was born during graduate school, conveniently in the middle of a Northern blot. It turns out several weeks of drying is really ideal, as that was her best Northern, ever.

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11-Term Congressman, Others, Speak

The UNC MD-PhD Program holds a Monday Evening Seminar twice each month during the academic year. These meetings begin at 5:30 with a light buffet dinner. At about 5:45, a current student speaks for 10 to 15 minutes, giving a "Work-in-Progress" talk describing his or her research. The featured speaker then begins at about 6:00 and talks for 45 minutes, after which questions are



Rep. David Price

entertained.

Page six of this newsletter presents a list of the speakers and titles for the upcoming semester's Seminar Series. Among last semester's speakers were such exceptional UNC faculty members as David Margolis, Stephan Moll, Mohanish Deshmukh, and Penny Gordon-Larsen. In addition, three representatives from the NIH will visit us this semester. These include: Drs. David Lovinger from NIAAA; Richard Woychik from NIEHS; and Geoff Schoenbaum from NIDA.

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Recent F30s awarded

Will Jeck — NIA — Grant No: F30AG041567

Endogenous Circular RNAs and the Control of Expression of Aging-related Genes

Rushina Cholera — NIMH — Grant No: F30MH096664

Psychosocial Barriers to Engagement in Care in Young South African Women with HIV

This brings the UNC MD-PhD program's total number of F30 awards to 27, or 36% of our 75 students — higher than any other MD-PhD program in the nation

Congratulations to Tony Law for his successful defense on Aug 20

Nate Sowa (MS4) Honored for Dissertation

Nate's dissertation, titled "Characterization of Ectonucleases in Nociceptive Circuits," won the 2011 Council of Graduate Schools/ProQuest Distinguished Dissertation

Award. Since 1982, this national award has been given annually to two students whose thesis projects have greatly impacted their fields. This is the first time that a UNC graduate student has ever won this award.



Recent References

Bolles M, Donaldson E, Baric R. (2011) SARS-CoV and emergent coronavirus-es: viral determinants of interspecies transmission. *Curr Opin Virol* **1**(6): 624-634.

Bolles M, Deming D, Long K, Agnihothram S, Whitmore A, Ferris M, Funkhouser W, Gralinski L, Totura A, Heise M, Baric RS. (2011) A double-inactivated severe acute respiratory syndrome coronavirus vaccine provides incomplete protection in mice and induces increased eosinophilic proinflammatory pulmonary response upon challenge. *J Virol* **85**(23): 12201-12215.

Bosch DE, Wittchen ES, Qiu C, Burrridge K, Siderovski DP. (2011) Unique structural and nucleotide exchange features of the Rho1 GTPase of *Entamoeba histolytica*. *J Biol Chem* **286**(45):39236-39246.

Kimble AJ, **Bosch DE**, Giguère PM, Siderovski DP. (2011) Regulators of G-protein signaling and their Gα substrates: promises and challenges in their use as drug discovery targets. *Pharmacol Rev* **63**(3):728-749.

Goldsmith JR, Uronis JM, Jobin C. (2011) Mu opioid signaling protects against acute murine intestinal injury in a manner involving Stat3 signaling. *Am J Pathol* **179**(2):673-683.

Crespin DJ, **Federspiel JJ**, Biddle AK, Jonas DE, Rossi JS. (2011) Ticagrelor versus genotype-driven antiplatelet therapy for secondary prevention after acute coronary syndrome: a cost-effectiveness analysis. *Value Health* **14**(4):483-491.

Brannon AR, Haake SM, **Hacker KE**, Pruthi RS, Wallen EM, Nielsen ME, Rathmell WK. Meta-analysis of Clear Cell Renal Cell Carcinoma Gene Expression Defines a Variant Subgroup and Identifies Gender Influences on Tumor Biology. *Eur Urol*. 2012 Feb;61(2):258-68. PMID: 22030119

Teng BL, **Hacker KE**, Chen S, Means AR, Rathmell WK. Tumor Suppressive Activity of Prolyl Isomerase Pin1 in Renal Cell Carcinoma. *Mol Oncol*. 2011 Oct;5(5):465-74. PMID: 21764651 (Kate's figure on the cover)

Weddings & Babies

Julia Gambone (G1) was married in December, 2011. Congratulations!



ABOVE: Elliott Robinson (G2) and his wife, Katherine, welcomed their first child, Everett Haywood Robinson, into the world on Nov 30, 2011 at UNC Hospitals. He weighted 8lbs, 5oz.



A Photogenic Semester

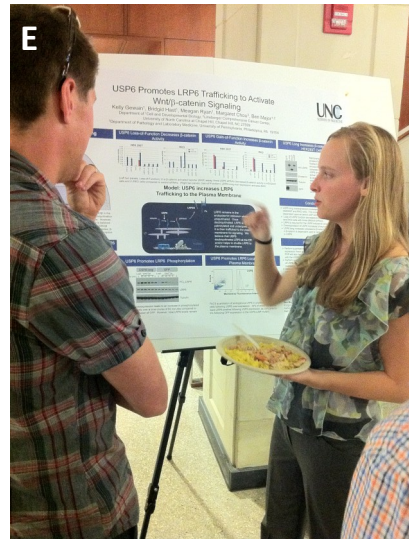
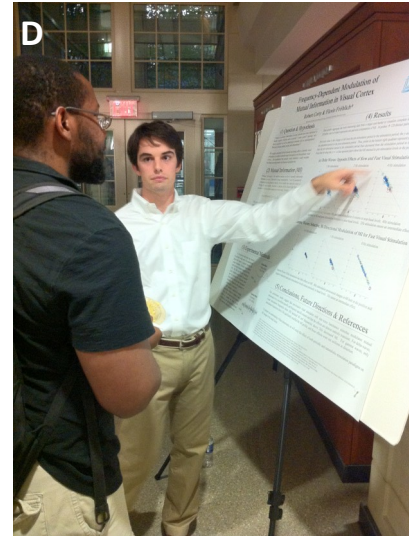


FIGURE 1: (A) Our program's new logo, courtesy of Audrey Verde (G2). (B) After lunch with the MD-PhD program, Dr. James Anderson, former Chair of UNC's Dept. of Physiology and current Director of the NIH Division of Program Coordination, Planning, and Strategic Initiatives, addresses the School of Medicine during Student Research Day. (C) Alumni of the MD PhD Program returned to UNC to counsel students about research, residency, and beyond. From left to right: Donna Coulton, Paul Armistead, Jonathan Berg, Yueh "Ray" Lee, Mattie Nicholas, Alisa Alker. (D) Robert Corty (MS1) shares his summer research with Ejiofor Ezekwe (G1). (E) Kelly Gewain (MS1) presenting her science while enjoying Med Deli.

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We were especially pleased to be able to welcome Geoff back to UNC, as he is a 1996 graduate of our Program. Thus, Geoff doubled as the MD-PhD Program Alumni Speaker for 2011-2012.

One particularly notable speaker was the Honorable David E. Price, Congressman from North Carolina who represents us in the US House of Representatives. Mr. Price was first elected to Congress in 1987, and he currently serves North Carolina's fourth congressional district. This area includes the Research Triangle Area, a rapidly growing district that includes Raleigh, Cary, Durham, Chapel Hill, and numerous surrounding communities. This region also houses three major research universities (i.e., UNC-Chapel Hill, Duke University, and

North Carolina State University). Because of his seniority, Mr. Price currently serves on the House Appropriations Committee and as the ranking member of the Homeland Security Appropriations Subcommittee. He is also a member of the Appropriations subcommittees covering military construction, the Department of Veterans Affairs, and housing and transportation. He is a recognized leader in foreign policy, co-chairing the House Democracy Partnership. In North Carolina, David's constituents know him as a strong supporter of education, accessible health care, biomedical research, affordable housing, clean air and water, and improved transportation alternatives.

Rep. Price, who is very knowledgeable about the NIH, provided us with his view regarding the current funding climate in Congress and how we, as citizens, can advocate for



NIAAA Chief of Integrative Neuroscience visits Program

Dr. David Lovinger, Senior Investigator and Chief of the Laboratory of Integrative Neuroscience at the National Institute on Alcohol Abuse and Alcoholism (NIAAA), spoke to the program on September 26, 2011 about the effects of alcohol on synaptic plasticity in corticostriatal circuits. Aside from showing behavioral and electrophysiological data, he shared stories from various stages of his career and offered advice to the students.



Dr. Lovinger received a B.A. in Psychology from the University of Arizona in 1981 and a Ph.D. in Psychology from North-

western University in 1987. During his postdoctoral fellowship at the NIAAA, he used whole cell recording – then a relatively novel technique – to discover that alcohol inhibits glutamatergic NMDA receptors in the central nervous system. This pivotal discovery has profoundly influenced the field of alcoholism research and launched over two decades of investigation into the effects of alcohol on excitatory neurotransmission by myriad investigators in the field.

Dr. Lovinger joined the faculty at Vanderbilt University School of Medicine as an Assistant Professor in 1991 and rose to the rank of Professor before joining the NIAAA in 2001 as head of the Laboratory of Integrative Neuroscience (LIN). The LIN consists of four independent, interactive sections that regularly publish papers in high-impact journals, including *Neuron*, *Nature Neuroscience*, and the *Journal of Neuroscience*. — Elliott Robinson

2012

RECRUITING THE CLASS OF 2012

Recruitment Dates:

- Jan 21-23
- Jan 26 (local)
- Jan 28-30

For the 2011-2012 cycle, UNC's MD-PhD program received a record 370 applications.

Congratulations to the 45 students who have been invited to interview.

Thanks to Alison, Carol, and the student teams for organizing and planning the recruitment weekends.



Congratulations to our interviewees. We're looking forward to meeting you.

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Dr. Rathmell moved to Chicago, working as a post-doctoral fellow while finishing 4th year rotations at the University of Chicago, and then continued as an intern in internal medicine. An opportunity for her husband's post-doc advisor to take on the Cancer Center Directorship at the University of Pennsylvania prompted a mid-residency move to UPenn, where she fast-tracked into the Hematology and Oncology Fellowship program. There, Dori, now 11, joined the family. They moved one more time when Dr. Rathmell and her husband found ideal positions at UNC Chapel Hill and Duke, respectively.

On a more personal note, basketball is very important to almost all of the Rathmells. With season tickets to UNC and Duke, and a player on the Carrboro High School varsity men's team, there is almost always a basketball game to watch. Dori is breaking out, as an AAU volleyball player. Kim loves to cook, but likes to experiment with different ingredients, without a recipe. She rarely takes notes, and so nothing is quite the same from one time to the next. She does not advise this for working at the bench, or for trying to invent pumpkin chili. Finally, she is moderately addicted to coffee, and while happy to meet with students to talk in her office, much prefers the excuse to go to Starbucks, HSL, Kind Cafe, or La vita dolce in Southern Village, the other place where she can be found when not at UNC. — KR



The 2011-2012 Distinguished Medical Science Lecturer

Dr Helen Hobbs, Professor of Internal Medicine and Molecular Genetics and Director of the Eugene

McDermott Center for Human Growth and Development at the University of Texas Southwestern Medical Center at Dallas, visited the UNC MD-PhD

Program on November 10-11, 2011 as this year's Distinguished Medical Science Lecturer. Dr. Hobbs completed her Residency in Internal Medicine including a year as a chief resident under the leadership of Dr. Donald Seldin. At his encouragement, she became a postdoctoral fellow in the laboratory of two well-established inves-



tigators - Michael Brown and Joseph Goldstein - both of whom later went on to win a Nobel Prize for their discovery of the cell-surface receptor for LDL cholesterol and demonstrating its role in cholesterol metabolism.

Since establishing her own laboratory at UT Southwestern in the late 1980s, Dr. Hobbs has been able to make numerous important discoveries regarding the genetic defects that cause very high and very low blood levels of cholesterol. She has also identified and studied the protein defects that underlie these disorders.

In addition to her laboratory-based research, Dr. Hobbs also helped to create and now runs the Dallas Heart Study, a large, population-based study that is aimed at uncovering the risk factors for

heart disease and defining a variety of new therapeutic approaches to cardiac disease. First initiated in 1999, this study includes obtaining blood samples and performing detailed heart imaging studies on approximately 3,000 Dallas County residents, 50% of whom are African American. Using this work, Hobbs and her colleagues have been able to identify two beneficial genetic mutations that are linked to low levels of LDL cholesterol. It is interesting that these gene alterations were found almost exclusively among African Americans, even though as a group they have a higher risk of heart disease. She found that 1 in 50 African Americans participating in the study had one of the two mutations, both of which increase the amount of cholesterol that the liver removes from the body.

Dr. Hobbs has been the recipient of numerous honors and awards for her various research accomplishments. At UT-Southwestern, she holds the Dallas Heart Ball Chair in Cardiology Research, the Philip O'Bryan Montgomery Distinguished Chair in Developmental Biology, and the Eugene McDermott Distinguished Chair for the Study of Human Growth and Development. She is also an established investigator of the Howard Hughes Medical Institute, and she is a member of the National Academy of Sciences.

Following a dinner that was held in her honor and attended by the entire MD-PhD Program, Dr. Hobbs shared with us many stories about her career, her research program, and her various academic accomplishments. - EPO



2012 Seminar Calendar

Date	Speakers and titles
Jan 9, 2012	<p>Maureen Su, MD, MA Assistant Professor, Dept of Pediatrics, UNC Autoimmune regulator protein (Aire) in immune tolerance <i>Catherine Fahey, MS2</i> <i>Itch response in PIP5K-heterozygous mice</i></p>
Feb 6, 2012	<p>Penny Gordon-Larsen, PhD Associate Professor, Dept of Nutrition, UNC Linking biology, behavior, and environment to understand obesity <i>Julia Gambone, graduate student</i> <i>(Relationship between tissue factor expression by human pancreatic cancer cells and activation of coagulation and thrombosis in a mouse model)</i></p>
Feb 20, 2012	<p>Paula Brown Stafford, PhD President of Clinical Development, Quintiles Inc. The CRO Industry: An Alternative Opportunity for Combined-Degree Students <i>Christian Parobek, MS2</i> <i>(Finding signatures of balancing selection in Plasmodium vivax)</i></p>
Mar 26, 2012	<p>Richard Woychik, PhD Deputy Director, NIEHS Deciphering the Role of the Environment in Human Health and Disease <i>Perry Tsai, graduate student</i> <i>(HIV in the bone marrow: Between a rock and a hiding place)</i></p>
April 9, 2012	<p>Flavio Frohlich, PhD Assistant Professor, Dept of Psychiatry and Neuroscience Center, UNC Feel the Rhythm—Speak the Language of the Brain <i>Marybeth Anderson, graduate student</i> <i>(Topic to be announced)</i></p>
April 23, 2012	<p>Geoff Schoenbaum, MD, PhD (program alumnus) Investigator, Intramural Research Program (IRP) of the National Institute on Drug Abuse (NIDA) (Topic to be announced) <i>Meagan Bolles, graduate student</i> <i>(Plasticity and Escape Phenotypes of the SARS-CoV Receptor Binding Domain)</i></p>
May 7, 2012	<p>Stan Lemon, MD Professor, Dept of Medicine and Center for Infectious Diseases, UNC Revisiting Hepatitis A pathogenesis <i>Kate Hacker, graduate student</i> <i>(Topic to be announced)</i></p>