Neuroscience and Cognitive Science Program

NACS Newsletter

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Program News

Curriculum Changes Approved!

Suggested changes to the curriculum were unanimously approved after a hearing by the Programs, Curricula, and Courses (PCC) committee of the university senate. These changes regard the first-year project, which aims to provide NACS students with research experience early during their Ph.D., and changes to existing course requirements, which aim to broaden the exposure to interdisciplinary NACS courses.

Jens Herberholz Succeeds Bob Dooling as NACS Director

Dr. Jens Herberholz was officially appointed director of the NACS Program on July 1, 2013, succeeding Dr. Bob Dooling who served as director for six years.

During his tenure as NACS director, Dr. Dooling was highly successful in elevating the status and enhancing the visibility of NACS, and he made impressive progress in improving both its training program and its research program. Due to his continuous efforts, UMD now has its very own Neuroimaging Center, and he has ignited new campus-wide excitement to take action and facilitate the scientific study of Brain & Behavior on a much larger scale at UMD.

Dr. Herberholz is an associate professor in Psychology and has been an active member of NACS for 9 years. He served on both the NACS admissions committee and the executive committee for many years, chaired the NACS-Fest committee, has been a member of numerous student committees, and actively mentors NACS students. His goals are to continue the development of NACS into a top-quality training and research program; this includes attracting and recruiting the best students, improving the experience for current students, establishing closer connections with nearby partner programs and institutions, and promoting the significance of neuroscience and cognitive science research on campus and beyond.

Photo: Jens Herberholz, NACS Director and Pam Komarek, NACS Assistant Director

Katie Sacksteder joins NACS

In October 2013, Dr. Katherine Sacksteder joined NACS as the Grants Development Specialist. Since being with NACS, Katie has supported faculty and students in their individual research and fellowship grants. Currently she is working on three NIH T32 training grants: two renewal applications and a new grant. If the new proposal is funded, it will specifically fund NACS students during their first two years in the program. Katie is also working on a grant in response to the NIH Director's Biomedical Research Workforce Innovation Award. This award proposes a university-wide initiative. If awarded, this program will effectively educate and train pre- and post-doctoral trainees in the "what" and "how" of different career paths and provide them with the knowledge and experiences to make informed career decisions.

Photo: Katie Sacksteder, NACS Grants Development Specialist

Pam Komarek Receives Gift from Students

Assistant director, Pam Komarek, was recently honored by the NACS students with a gift of appreciation for all of her hard work. The students surprised Pam before one of the Friday NACS seminars with the gift, which consisted of a travel voucher, gift card, and a pair of extra cool sunglasses.

Photo: Emerald Brooks, new full-time Administrative Assistant for NACS

9th Annual NACS Retreat at Driskell Center

NACS held its 9th Annual NACS Retreat at the David C. Driskell Center for the Study of the Visual Arts and Culture of African Americans and the African Diaspora on October 4, 2013. The program began with an overview of the sculpture exhibition "Alison Saar: Still" by operations manager Kayleigh Bryant, and a brief introduction on the history of the Driskell Center and the artistry of the man after whom the center is named. The program continued with new student introductions, brief talks by new faculty, program updates, and lunch. The program ended with a game of NACS trivia. Over 70 NACS faculty and students attended the retreat.

Recent Student Awards

Jeff Chrabaszcz, Graduate School Summer Fellowship

Molly Hyer, Graduate Research Interaction Day (GRID) Award

David Logan, Graduate School Wylie Fellowship

Krystyna Orzechowski, NRSA F31—NIDCD

Aminah Sheikh, Graduate School International Fellowship

Yuwei Cui, Graduate School Summer Fellowship

Alice Jackson, NACS Hodos Assistantship

Hyuk Oh, Human-Computer Interaction Best Paper Award

Alex Presacco, Graduate School International Fellowship

Kathryn Yoo, APA Student Grant Competition Award

Recent Student Publications

(students and alumni in **bold** & *italics*; faculty in **bold**)

Burton AC, Kashtelyan V, ***Bryden DW***, **Roesch MR**. (2013). Increased firing to cues that predict low-value reward in the medial orbitofrontal cortex. *Cerebral Cortex*.

Cannon E, ***Yoo K***, Vanderwert R, Ferrari P, Woodward A, and **Fox N.** (2014). Action experience, more than observation, influences mu rhythm desynchronization. *PloS one*.

Choi JM, ***Padmala S***, Spechler P, & **Pessoa L**. (2013). Pervasive competition between threat and reward in the brain. *Social Cognitive and Affective Neuroscience*.

Cuevas K., Cannon E, ***Yoo K***, and **Fox NA.** (2014). The infant EEG mu rhythm: Methodological considerations and best practices. *Developmental Review*.

Cui Y, Liu LD, Khawaja FA, Pack CC, and **Butts DA**. (2013). Diverse suppressive influences in area MT and selectivity to complex motion features. *Journal of Neuroscience*.

Guth LM, Ludlow AT, Witkowski S, Marshall MR, Lima LC, ***Venezia AC***, Xiao T, Ting Lee ML, Spangenburg EE, and **Roth SM**. (2013). Sex-specific effects of exercise ancestry on metabolic, morphological and gene expression phenotypes in multiple generations of mouse offspring. *Experimental Physiology*.

Hatfield BD, ***Costanzo ME, Goodman RN,*** Lo L-C, ***Oh H, Rietschel JC, Saffer M,*** Bradberry TJ, Contreras-Vidal JL, Haufler A. (2013). The influence of social evaluation on cerebral cortical activity and motor performance: A study of "real-life" competition. *Journal of Psychophysiology*.

Kan IP, ***Teubner-Rhodes SE***, Drummey AB, and **Novick JM**. (2013). To adapt or not to adapt: The question of domain-general cognitive control. *Cognition*.

McFarland J, ***Cui Y,*** and **Butts DA.** (2013). Inferring nonlinear neuronal computation based on physiologically plausible inputs. *PLoS Computational Biology*.

Moore PJ, ***Chrabaszcz JS***, Peterson RA, Rohrbeck CA, Roemer EC, Mercurio AE. (2013). Psychological resilience: the impact of affectivity and coping on state anxiety and positive emotions during and after the Washington, DC sniper killings. *Anxiety Stress Coping*.

Petrus E, Isaiah A, ***Jones AP***, Li D, ***Wang H***, Lee HK, and **Kanold PO.** (2013). Cross-modal induction of thalamocortical potentiation leads to enhanced information processing in the auditory cortex. *Neuron***.**

Sprenger AM, ***Atkins SM***, **Bolger DJ**, Harbison J, **Novick JM**, ***Chrabaszcz JS***, ... and **Dougherty MR**. (2013). Training working memory: Limits of transfer. *Intelligence*.

Tidwell JW, **Dougherty MR,** ***Chrabaszcz JR***, Thomas RP, Mendoza JL. (2013). What counts as evidence for working memory training? Problems with correlated gains and dichotomization. *Psychonomic Bulletin & Review*.

Congratulations 2013 Graduates!

Kim Drnec, Ph.D.
Advisors: William Stricklin and Jonathan Simon

Erica Hussey, Ph.D.
Advisors: Michael Dougherty and Jared Novick

Alexia Nunez-Parra, Ph.D.
Advisor: Ricardo Araneda

Vanessa Rogers, M.S.
Advisor: Tracy Riggins

Bartlett Russell, Ph.D.
Advisor: Bradley Hatfield

Ghedem Solomon, M.S.
Advisor: Bradley Hatfield

Student Outreach

The Outreach Committee is designed to bring neuroscience and cognitive science to the wider community, such as schools and other community functions. This year they were involved with Higher Achievement, an after-school program designed for lower income middle school students. Cait Baxter, Chris Heffner, Katie Willis, and Kathryn Yoo gave a guest lecture about neuroscience to a class of students from several DC schools. The lecture was held at the Kelly Miller Middle School in Benning Heights in December.

This semester the committee started organizing faculty participation in local high school internship programs. They also will have a tent at Maryland Day on April 26.

New members are welcome to join. Contact chair Chris Heffner (heffner@umd.edu) for more information about membership or outreach activities.

In the Spotlight

Dr. Avis Cohen

Dr. Avis Cohen is a Professor Emerita in the Department of Biology. She also has an appointment in the Institute for Systems Research (ISR). Avis is the founding director of the NACS program. In light of her upcoming retirement, we asked her to answer five questions for the NACS Newsletter.

"...one must look beyond and ask the harder questions that are often unpopular."

1. When and why did you decide to become a scientist?

OMG I'm not even sure! I think it was as an undergrad. I loved the work of the embryologists, but was particularly drawn to the work of Don Maynard, a neuroscientist, now long deceased. He hired me to be a lab tech for him, but I found him so smart, and so precise that he scared me. However, I stuck it out until I found I couldn't work and get good grades. I had previously worked for a psychologist who I actually published a paper with, but his work turned out to be built on sand – it was shown after being published to be based on false assumptions! I was very distressed and horrified. And felt that psychology was no place for me! I later learned from my mentor at Cornell, Eric Lenneberg, that psychology can be done right, but it takes hard work and very clear thinking. I finished college and was pregnant (that was in 1964). My first son was born that year, and my second son was born in 1967. However, after being a stay-at-home mom for 6 years with the two kids, I was going crazy – literally and figuratively. I did some deep thinking about my future and decided that being a professor was the best way to have the kind of life and intellectual independence, which I craved. Fortunately, my husband Marshall was an academic mathematician, and living in the university setting, I could see the life and "taste" it, so to speak. And knew that it was for me.

2. Who influenced you the most during your career and how?

So, Don Maynard had a strong influence on shaping my scientific taste, if you will, but perhaps my strongest influence was Eric Lenneberg, my professor at Cornell. His view and intellectual struggles were highly influential, as they showed that the simple answer is rarely correct. That one must look beyond and ask the harder questions that are often unpopular. Miriam (Mika) Salpeter also was a strong figure in my early career. She was an extraordinary woman. She showed me that one could have a strong marriage, good relations with your children, AND a strong career. She should have been elected into the National Academy, but one man told me it would never happen, as her "best" work was done by her husband, Ed – an astronomer – with whom she collaborated. But this was an outlandish belief that Ed denied! She did the hard intellectual and experimental work behind her research, and he helped her with some of the equations. This demonstrates what women were up against!

3. What are some of your greatest achievements and biggest challenges?

Perhaps one of my greatest achievements is starting the NACS program! The other major accomplishment is getting the ADVANCE Program at UMD. Those two have had enormous impact on the campus. The latter addresses one of my greatest challenges: how to balance life and family with the academic career. I have to admit, if one is being honest, that another challenge for me has been to convince men of my generation that I have a brain and not just a body..... But I leave the rest of those thoughts and the impact they have on a person to you to try to grapple with. I've also always felt that my intellectual contributions were not understood until the younger generation began to embrace my views. The major intellectual view that has been a hard sell is that biological organisms are systems. Yes, one takes them apart to study the parts, and also tries to understand the molecular structures underlying this or that part. But the entire organism is one system. If one breaks the organism up into pieces, the pieces no longer behave as they do when they are all connected together. This means that biological organisms are more complex than many biologists would like to believe. My view was not popular among my generation, but the younger generation has embraced it. Several have said to me that my work strongly influenced them. That has felt wonderful. Then the Distinguished Scholar Teacher Award gave me a wonderful feeling of being recognized at UMD. I also finally found my niche in the Institute for Systems Research. The notion of systems to them is obvious. Finally, now there is a field of Bioengineering! Perfect!

4. In your opinion, what makes the NACS program unique compared to other graduate programs?

What makes the NACS program truly unique compared to other graduate programs is that it is so truly interdisciplinary. It gives students a real opportunity to cross intellectual boundaries freely - even if there haven't been recognized ways to cross those boundaries until now. Some of our best NACS students have done some pretty impressive work, and they are still just beginning their careers. I will let time be the judge.

5. What are your plans for the next 10 years?

So long as my health permits it, my plan is to work in a new lab that I'm requesting that will cut across Engineering and CMNS to build neurorobots! I have a vision of truly bringing the neuroscientific understanding of motor control to build autonomous robots. There are a list of faculty who are interested in joining the lab, and plans for projects to do in it. I am very excited about my opportunity to work with several of them on projects they have discussed with me. I am also going to continue on the line of research I've begun using the synchrotron beam at the Advanced Photon Source at the Argonne Laboratory to image live lampreys with spinal injuries to understand what goes wrong during the regeneration of some of them. This has revealed already that there are remarkable forces at play when the spinal cord is injured. These two projects will keep me very busy along with visiting and enjoying my 6 grandchildren, one of whom is a graduate student at UMD in Sociology with my younger son, Philip Cohen, a Professor in Sociology. So, I will be busy – never fear!

In the Spotlight

Dr. Arthur Popper

Dr. Arthur Popper is a professor in the Department of Biology and a former director of the NACS program. In light of his upcoming retirement, we asked him to answer five questions for the NACS Newsletter.

"...everything in doing science is a challenge, but these are always exciting, fun, and the things that keep us going."

1. When and why did you decide to become a scientist?

My interest in science started with my remarkable 6th grade teacher Thomas Vinci. Mr. Vinci, who is 91 years old and still involved in science education, was a truly wonderful teacher who loved science, and excited and stimulated his students. In fact, many of his students went on to careers in some aspect of science. It was his inspiration and excitement that set me on a path that resulted in my being where I am. I will also add that I am still in touch with Mr. Vinci, and have told him several times how much he influenced my life. And he has told me how much he appreciates knowing this, and how proud he is of me.

2. Who influenced you the most during your career and how?

Four people, starting with Mr. Vinci. Then there was Dr. Douglas Webster, my comparative anatomy teacher at New York University. One day I came to Doug (I can call him by his first name since we subsequently did two books together) with my "discovery" in a pet store of fish without eyes. Rather than just tell me about these fish, Doug challenged me to do research on them. This resulted in a 2 year undergraduate research project in Doug's lab, my studying (besides blind cave fish) the ears of desert rodents (for which Doug was quite well known). Doug also arranged for me to get a job in the Department of Ichthyology at the American Museum of Natural History – far and away the finest natural history museum in the world. I worked for Donn Rosen, head of Ichthyology, and it was one of the other curators, Dr. C. Lavett Smith (Smitty) who showed me my first otolith (fish ear bone). Then there was my mentor Dr. William Tavolga. Bill was, and is (at 92) the consummate mentor and greatest of friends. He got me working on fish hearing, taught me what good science was all about, and demonstrated to me what a great mentor can mean and be. Finally, there is my mother, Evelyn Popper. My mother was absolutely the finest teacher I have ever encountered. She could teach most any subject to anyone. She was a charismatic personality who could dominate a room, whether it be of scientists or post-pubescent males. Her total love of teaching, and her ability to make her students excited about ideas and learning, was truly amazing and inspiring.

3. What are some of your greatest achievements and biggest challenges?

This is a very hard question to answer, and could take pages. But, certainly one of my greatest achievements was to evolve my science so that it stayed modern, relevant, interesting to others, and interesting and fun for me to pursue. I started out doing behavioral studies of hearing by fish, moved through several stages where my work asked questions about physiology and morphology, and "ended" with my getting into "translational" neuroethology where I have taken my basic science and applied it to very relevant and exciting "real life" problems associated with the effects of man-made noise on aquatic life. This work is particularly exciting since it has a direct impact on regulation and policy around the world. I think that another "achievement" has been the development and execution of my series of books, the Springer Handbook of Auditory Research (SHAR). My great friend and colleague Dr. Richard Fay and I "invented" SHAR one day in his house in Falmouth, and expected it to be eight volumes. Well, volume 50 was just published and we have a dozen or more books in the works. Dick and I are told over and over again that our "green" books inhabit every lab doing hearing research in the world, and that they have been instruments of instruction and reference for innumerable people. As for challenges, everything in doing science is a challenge, but these are always exciting, fun, and the things that keep us going. Of course, I have had to deal with funding, getting good students (and I have had wonderful students!), and things like that, but in looking back, even challenges were mostly interesting and resulted in new ideas and new hurdles to climb.

4. In your opinion, what makes the NACS program unique compared to other graduate programs?

People! When my friend Avis Cohen founded NACS we thought of NACS as "just" a graduate program. But thanks to Avis' leadership and NACS attracting wonderful faculty, any number of research areas evolved. I think this happened because the seminars and other NACS programs brought together people from across campus, and once people met they discovered complementary interests that resulted in research projects. Indeed, the diversity of interests of NACS faculty, and their excitement about finding colleagues that are open to collaboration, is really a remarkable and unique aspect of NACS.

5. What are your plans for the next 10 years?

My good friend Professor Jim Gates of Physics told me that retirement is the time when one gives up what one does not want to do and allows one to pursue what (s)he wants to do. I think that Jim is totally right. And I also am of the mind that one has to plan for retirement well in advance. So, for the past two years I have been "planning" my retirement. Of course, the most important thing to me is to spend more time with my wife Helen and our family, and especially our three grandchildren, Ethan, Emma, and Sophie. But, beyond that, I have five different projects planned. First, I was just selected as editor of *Acoustics Today*, the magazine of the Acoustical Society of America (www.AcousticsToday.org). This is a semi-popular magazine of science related to acoustics, and ensuring its success is a major, and interesting, challenge. I am very excited about this challenge, and am already having a great deal of fun moving the magazine from print to the web. Second, my colleague Dan Chazan (College of Education) and I have been awarded a grant of $1.5 million to develop a new and exciting program, Terrapin Teachers (www.tt.umd.edu). The goal of the program is to increase the number of UMD undergraduates who pursue careers in grades 9-12 science and math education. Adding to the fun is that Dan and I work with two remarkable people, Kathy Angeletti from COE and Joelle Presson of CMNS. What is particularly fun is that Joelle was, a number of years ago, my postdoc and we published perhaps a dozen papers together. In addition, I will continue to work in the UMD Graduate School as special advisor on STEM for Dean Charles Caramello. I will also continue with SHAR. And, finally, I will continue various research projects and consulting on the effects of man-made noise on aquatic animals.

Faculty Awards and Achievements

Derek Paley, assistant professor in Aerospace Engineering, received the Presidential Early Career Award for scientists and Engineers. He was also awarded the Willis H. Young Jr. Faculty Fellowship and has been selected for a 2013-2014 Office of Naval Research Sabbatical Fellowship.

Pamela Clark, research professor in Behavioral and Community Health, received a 5 year grant from NIH and FDA to study "Rapid Response Human Testing of New and Manipulated Tobacco Products."

Naomi Feldman, assistant professor in Linguistics, received an NSF award, "Integrating low-level speech features into a model of speech perception," which began in September 2013.

Matt Goupell, assistant professor in Hearing and Speech Sciences, was awarded the R. Bruce Lindsay Award from the Acoustical Society of America.

Rochelle Newman, professor in Hearing and Speech Sciences and graduate and admissions director of the NACS Program, was named the 2013 BSOS Outstanding Mentor.

Erica Glasper, assistant professor in Psychology, recently received a travel award from the UMD ADVANCE Program for Inclusive Excellence .

Lisa Taneyhill, assistant professor in Animal and Avian Sciences, will receive a 2014 Summer Research and Scholarship Award (RASA) from the Graduate School.

DJ Bolger, assistant professor in Human Development, and **Elizabeth Redcay**, assistant professor in Psychology, were awarded a 3-year grant from the Department of Defense to study "Brain mechanisms of affective language comprehension in autism spectrum disorders."

Jude Cassidy, professor in Psychology, has been selected as a 2014-2015 Distinguished Scholar-Teacher.

Ellen Lau, assistant professor in Linguistics, and **Polly O'Rourke**, assistant research scientist at the Center for Advanced Studies of Language (CASL), are co-PI's on a UMD ADVANCE Interdisciplinary and Engaged Research Seed Grant for an EEG project on "Predictive comprehension in a second language."

Alexander Shackman, assistant professor in Psychology, was appointed to the editorial board of Cognitive, Affective, and Behavioral Neuroscience (CABN) and has been selected to participate in the Anxiety and Depression Association of America's Career Development Leadership Program.

Lea Dougherty and Tracy Riggins, assistant professors in Psychology, were awarded a Dean's MRI Research Initiative seed grant by the college of BSOS for their collaborative research, "The Effects of Early Experience on Brain Networks Supporting Memory during Early to Middle Childhood."

Nan Ratner, professor and chair in Hearing and Speech Sciences, received the college of BSOS 2013 Dean's Medal and the 2013 Mentor award from the Philip Merrill Presidential Scholar Program. **Nan Ratner** and **Lea Dougherty,** assistant professor in Psychology, are co-PI's in the study of "Maternal Depression and Child Language Development." This study is funded by NSF in partnership with the UMD ADVANCE Program for Inclusive Excellence.

Jonathan Simon, associate professor in Biology and in Electrical and Computer Engineering, and **Samira Anderson**, assistant professor in Hearing and Speech Sciences, submitted a UMD ADVANCE proposal that was recently accepted for their study, "Effects of aging on speech-in-noise processing in the auditory cortex and midbrain." They are both co-advisors to NACS student Alessandro Presacco, whose graduate dissertation work is integral to the study.

Didier Depireux, associate research scientist in the Institute for Systems Research (ISR), is co-PI with B. Shapiro and I. Weinberg (Weinberg Medical Physics) on a grant to study "Magnetically Directing Therapy into the Inner Ear. This grant is funded by the Translational Research in Hearing Foundation.

Art Popper, professor in Biology, is co-director of Terrapin Teachers, www.Terrapinteachers.umd.edu. Terrapin Teachers is directed at increasing the number and quality of science and math teachers in grades 9-12. Dr. Popper has also been selected to be the editor of Acoustics Today, the science magazine of the Acoustical Society of America (www.acousticstoday.org).

Sandra Gordon-Salant, professor in Hearing and Speech Science, received the Al Kawana Award from the American Speech-Language-Hearing Association for lifetime achievement in publications on November 2013.

Jared Linck was recently promoted to Associate Research Scientist at the Center for Advance Studies of Language (CASL).

Patrick Kanold, associate professor in Biology, and his colleague Bruce Krueger at the UMB School of Medicine, were awarded a UMD and UMB Seed Grant for their research "The role of early brain circuits in autism."

Maryland Language Science Center

The University of Maryland has made a huge commitment to language research through the formation of the Maryland Language Science Center. The new center broadly captures how language works in areas such as technology, health, and education. Colin Philips, a Distinguished Scholar and professor in the department of Linguistics, has been appointed director of the center. Rochelle Newman, professor in Hearing and Speech Sciences, has been appointed as the associate director.

Featured Alumni

NACS alumna ('11) Sarah Helfinstein is a postdoc at the University of Texas, Austin in the laboratory of Professor Russell Poldrack. She recently had a paper published in PNAS. The title of her paper is "Predicting risky choices from brain activity patterns." Sarah was advised by Dr. Nathan Fox.

NACS alumnus ('11) Greg Cogan is a postdoc at the Center for Neural Science at New York University. His paper "Sensory-motor transformations for speech occur bilaterally," was published in Nature. Greg was advised by Dr. David Poeppel.

Please Donate to NACS

We would like to take this opportunity to remind you that you can donate to the NACS Program Gift Fund. The NACS Gift Fund is a very important source of funding for our program. We use the funds to pay for expenses that we cannot pay for using our state funds, such as appreciation gifts or awards and our recruitment event.

Donating is easy and simple. To donate go to:

https://advancement.umd.edu/giving/addGiving.php

NACS
NEUROSCIENCE
AND COGNITIVE SCIENCE

NACS Facts!

Founded in 1996 with:

51 Faculty (now135)

5 Students (now 50)

0 Alumni (now 57)

6 Colleges (now 7)

11 Departments (now 18)

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