Welcome to a new year! As usual, within these pages you'll find an overview of the great work being done by DBS faculty and students, and their collaborators. We've grown and are still growing: more grants submitted (and won!), more high-impact publications in print, and more research shared at conferences. Importantly too, our recruitment continues to grow, offering a diverse and talented pool of potential students to DBS. The benefits of this can be seen in our newest cohort of students - please take a look at the profiles for Andrew, Mihye, Sarah, Isabelle, and Brooke in this issue!

Andrew, Mihye, Sarah, Isabelle, and Brooke put us officially at critical mass, just shy of 20 students; four cohorts spread across four years. This brings greater dynamism, and greater potential for fruitful interaction, to the program. As well, this will be our first year taking full advantage of the new ISC facilities. The new research infrastructure will bring students and faculty closer than ever, further facilitating collaboration. I'm looking forward to telling you about the fruits of these new connections in our next issue!

E. Blaser

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The 2nd year graduate students completed one of their DBS program milestones this past May — The Mentored Research Project Oral Presentation (MRP). The MRP marks the culmination of each graduate students first two years of research. The one day symposium, that is open to the public, is where each student highlights their work and focuses on their specific research question in a formal 45 min talk.

The event began with Doris Chow presenting on “How much spikier is ‘kiki’? Quantifying individual differences in the strength of sound-shape correspondence”. Doris, who works under Dr. Vivian Ciaramitaro, described the phenomenon where a particular shape is often associated with a sound and vice versa. Her research, collected through a community engagement project at the Museum of Science, mapped the trajectory of this correspondence from early childhood into late adulthood. Her research has shown that in early childhood the effects of the association aren’t as strong, but through early adulthood it strengthens.

The second presenter, Hannah Lapp, discussed her research in a talk titled “Stress and Resiliency”. Hannah, who is mentored by Dr. Celia Moore, explained the complicated relationship between genes, environmental factors, and coping with stressful situations. Investigating childhood trauma and acute stress response, her research looks at the interaction between cortisol (a hormone released in response to stress) and oxytocin (a neuropeptide implicated in social buffering of stress) as well as influences of genetic variants of 5HTTLPR, the glucocorticoid receptor, and the oxytocin receptor genes which have been implicated in anxiety-related traits and acute stress response. Her research has implications in identifying individuals with a susceptibility to stress or show a resiliency to stressors.

Allison Fitch, who is advised by Dr. Zsuzsa Kaldy, investigated “The role of labels in infants’ visual working memory” in the third talk. Her research focused on the advantage that labels may have in strengthening the memory representation. Her work involving 8- to 12-month olds in a delayed match retrieval paradigm shows interesting results, where in a ‘no label’ control condition older infants’ performance reflect unsuccessful matching, but infants in the ‘label’ condition show a below chance performance. These results could suggest that labels may have an effect on both memory and rule learning.

Following this presentation was Hayley Smith’s talk, titled “Top-down attentional control in toddlers with and without autism spectrum disorder”. Her research, advised by Dr. Richard Hunter, described the phenomenon where voluntary attention (top-down) and involuntary, bottom-up attention. These attentional systems modulate performance by directing the flow of information processing. Her research compared the performance of toddlers diagnosed with ASD with typically developing toddlers.

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Attended by faculty in both the DBS and clinical psychology program as well as students, the audience was engaged and impressed with the level of productivity and scientific rigor that was displayed and the research accomplished by the second year students.
Spotlight: Scott Templin

Fourth-Year Grad Student, Scott Templin, Sits Down for a Q & A Session

Scott completed a Bachelor of Psychology at the University of Maryland in 2008. He then went on to complete a Master’s in Neuroscience at Brandeis University. Since joining the DBS PhD program he has been working with Dr. Jin Ho Park on investigating the genetic and molecular underpinnings of social and reproductive behaviors.

Before starting your PhD you worked at Boston Children's Hospital for 2 years. Can you briefly describe the research you were involved in?

I worked with pediatric anesthesiologist Dr. Charles Berde, currently Division Chief of Pain Medicine & the Pain Treatment Service at Boston Children's Hospital and Professor of Pediatric Anesthesia at Harvard Medical School. Dr. Berde has been working for many years to develop the next generation of local anesthetic, with the goal of both reducing reliance on morphine & promoting quicker recovery among other benefits. I conducted preclinical safety and efficacy testing of the investigational new drug (IND), in a rat model, which binds to a different site than other anesthetics not expressed on heart muscle cells, sparing cardiac toxicity. The data I generated was used in support of a Phase 1 clinical trial request to the FDA, which has since been approved and is now underway. This data was also recently published in a first-author manuscript in the journal "Anesthesiology."

Can you elaborate on your dissertation research and how this process has been for you?

My work has concentrated on uncovering the mechanisms underlying steroid-independent female sex behavior (SI-FSB). Although in many species, FSB is dependent upon gonadal steroids, FSB in many other species, including humans, is not under tight gonadal control. My first year project revealed a high proportion of female B6D2F1 mice retained receptivity for 30+ weeks after gonadectomy. This was very unusual, as FSB is dependent upon steroids in most rodent species. When I looked into the sex behavior-associated brain regions of these females I found increased density of dendritic spines, which now opens the door for genetic & neuroanatomical investigation of SI-FSB in a mouse model. Since then I have used stereotaxic brain injection of a peptide known to drive brain plasticity processes, to test whether the spine density changes I observed were actually causing B6D2F1 SI-FSB.

What are you looking forward to in the coming semester?

I am looking forward to the next study that I will be conducting to explore whether puberty is required for B6D2F1 males who display steroid-independent male sex behavior (SI-MSB). As the DBS program continues to blossom, I am also excited to meet our incoming class of Fall ’15 students!

Thanks, Scott for answering our questions and hope that you have a great birthday (Scott’s Birthday is July 27th).
Profile of the new class

Andrew Bartlett

Andrew Bartlett completed his B.S. in Biology and Psychology in 2015 at the University of Massachusetts, Boston. As an undergraduate, he worked with Dr. Susan Zup using Sprague-Dawley rats as an animal model to understand the development of anatomical sex differences in the brain. He was particularly interested in how serotonin shapes the brain during development, specifically in a subset of calbindin-positive neurons in the sexually dimorphic nucleus of the medial preoptic area (SDN-POA). He was afforded the opportunity to be one of the first to use the new stereotaxic instrument for direct brain injections, which culminated in pilot studies to verify the role of cell death and the internalization of the serotonin receptor in shaping the calbindin-positive population of the SDN-POA. Using his background in immunocytochemistry from his time in Dr. Zup’s laboratory, he is now working with Dr. Richard Hunter in collaboration with Dr. Alexia Pollack from the Biology department optimizing immunocytochemistry conditions for histones and histone modifications, responsible for the regulation of heterochromatin.

Sarah Izen

Sarah Izen completed her B.A. in Neuroscience and Psychology at Smith College in 2011. Following graduation, she worked as a research assistant in two different molecular neurobiology labs: first at the Neuroregeneration Labs at McLean Hospital helping to develop stem cell therapies for neurodegenerative diseases, and then in a developmental neurobiology lab at Children’s Hospital Boston studying cranial nerve development. During this time, she took a course at the Harvard Extension School titled “The Brain in Psychology” which furthered her interest in cognitive neuroscience. After deciding to pursue cognitive neuroscience in graduate school, she entered a graduate program at Boston University in order to gain more experience in that field. During her time at Boston University, Sarah worked in Dr. Chantal Stern’s Cognitive Neuroimaging lab examining resting state functional connectivity in healthy adults using fMRI. Sarah graduated with her M.A. in Psychology in 2015. As a lifelong musician, she’s always been keenly interested in auditory processing and she’s thrilled to join the Baby Lab under Dr. Vivian Ciaramitaro to study crossmodal attention.

Isabelle Mueller

Isabelle Mueller completed a combined B.Sc./M.Sc. program in Biological Psychology and Clinical Child Psychology at the University of Vienna, Austria. During this time she worked as a student research assistant for 4 years, has been a recurring lecturer at the Children’s University in Vienna, and spent a semester abroad at UC Berkeley where she developed a deeper interest in functional neuroanatomy. While working in different departments in Vienna she was exposed to various research methods e.g. neuroendocrinology and brain-imaging techniques like EEG and functional MRI, and she co-authored a cognitive-behavioral treatment manual for children. After connecting with Dr. Gabriela Markova her interests developed from a classical clinical perspective towards the environmental and biological underpinnings of infant cognitive and postnatal brain development. Her master’s thesis focused on the impact of oxytocin reactivity on infant social skills at 4 months of age, linking behavior with underlying brain processes and hormone levels. Isabelle will join Dr. Edward Tronick’s research team, focusing on the impact of stress on infant development with regard to the neuroendocrine system and epigenetics.

Brooke Plotkin

Brooke received her B.A. in psychology from The Ohio State University in 2012. After graduating she remained at Ohio State and took the position as lab manager for the social neurochemistry lab, where she researched inflammation in response to social rejection. Balancing between a neuroscience and psychology lab gave her an understanding of the molecular and psychological sides of stress research. During her time as lab manager she grew increasingly interested in individual differences and is looking forward to joining Dr. Park’s lab to investigate the neuroendocrinology of social behaviors, particularly aggression.
Lab Spaces

Lab of Neuroepigenetics & Genomics

Business is plugging along as usual in the Lab of Neuroepigenetics and Genomics, headed by Dr. Richard Hunter. The lab has been working just as hard as usual, but also having fun with their brand new space in the Integrated Sciences Center. The lab is excitedly settling in for another busy year, and enthusiastically welcome incoming DBS student Andrew Bartlett to the team! Andrew will certainly be new to the team, but still "right at home" in a sense, as he shares his new research space with Dr. Zup's, located right on the other side of the Hunter lab.

Moore Lab

Recent research in the Moore Lab has focused on understanding stress. Graduate student Hannah Lapp started a study using the Trier Social Stress Test (TSST) to measure hormone changes to correlate with stress resiliency factors. Another study under way examines how different types of stressors, including discrimination, affect women who are mothers and women who are not mother’s differently and which emotion regulation strategy is more effective specifically for discrimination stress. Helping Dr. Moore and Hannah with their research are students from the Bridges program which places undergrads from local community colleges in labs for the summer to gain hands on experience.

Behavioral Neuroendocrinology Lab

The Behavioral Neuroendocrinology Lab is in the process of moving to our brand new Integrated Sciences Complex, where many of our labs have both already transitioned into, and are next on the list to move in. Despite the hustle and bustle of moving lab equipment, animals, students and researchers, the Behavioral Neuroendocrinology Lab still managed to get a grant submission in over the summer. 4th year DBS PhD student, Amanda Madden, submitted her application for the Ruth L. Kirschstein National Research Service Award (NRSA) funding in August; the Zup lab team eagerly awaits news on her award!

Behavioral Psychopharmacology Neuroscience Lab

Dr. Donaldson’s research is focused on understanding the intersection of biological (e.g., sex and personality traits) and environmental factors that create vulnerabilities to drug addiction. Dr. Donaldson returns to Boston after a semester on sabbatical where she was able to submit a new grant and work on several abstracts. Along with her graduate student, Briana Mason, the lab has been transitioning into their new space in the ISC.

Child Development Unit

The Child Development Unit has been hard at work this year, which was rewarded in three fold! Dr. Tronick secured a grant from the Bial Foundation for his project entitled “Individual differences in stress reactivity.” This is in addition to two grants from the National Science Foundation and the National Institute of Child Health and Development, awarded to both Dr. Tronick and co-PI Nancy Snidman, Research Fellow. The Child Development Unit looks forward to a highly productive year, assisted by these additional funding supports, as well as more hands-on-deck from incoming DBS student Isabelle Mueller!

Baby Lab

As a follow-up to data collected from patrons of the Museum of Science, the Baby Lab authored a newsletter with updates from the experiments for subjects that participated. Much of this data was used to inform DBS student Doris Chow’s Mentored Research Project, examining the phenomenon where a shape and sound are often associated with one another, and how that association may differ between adult and child populations. Interested in the results? Check out page 2! This spring, the Baby Lab also celebrated undergraduate RA Alexa Williams’ start in the Neuroscience PhD Program at the University of California Davis. And Daniel Harris, yet another undergraduate student who completed his Psychology Honors Thesis in the Baby Lab, has won an Honorary Undergraduate Scholar Award from the New England Psychological Association, to be awarded in October. As we get into gear for the 15-16 academic year, the Baby Lab looks forward to even more exciting accomplishments, including the welcome of Sarah Izen and Mihye Choi, incoming DBS PhD Students, to the Baby Lab!

Park Neuroendocrinology Lab

This summer, the Neuroendocrinology Lab celebrated Dr. Park’s recent promotion to Associate Professor! As Dr. Park celebrates his transition to tenure, he also welcomes incoming DBS student Brooke Plotkin to his research team. Congratulations, Dr. Park, and a hearty welcome to Brooke!

Human Vision Lab

The Human Vision lab examines human perception with current studies involving perceptual learning, visual attention, depth perception, and cognitive development. Dr. Erik Blaser, the lab’s principle investigator, was awarded the prestigious Chancellor’s award for Distinguished teaching. Also receiving recognition was graduate student, Mahalakshmi Ramamurthy who attended the Cold Spring harbor Laboratory course “Vision: a platform for linking circuits, perception, and behavior.” Attendees for the two week course included faculty, graduate students, and post-docs within the states and abroad.

Neurodevelopmental Teratology Lab

The research of Dr. Jane Adams and the lab focuses on the consequences of prenatal exposure to certain prescription medications as well as other agents. Her current research investigates the effects upon child neuropsychological development following in utero exposure to antiepileptic drugs. Jocelyn Lutes has been working on data collected from collaborators at California Teratogens Information Services.
Publications


Tronick, E., Cavelzani, A. Dyadically Expanded States of consciousness and therapeutic change in the interaction between analyst and adult patient. Psychoanalytic Dialogues. Under review


**Talks**


**Presentations**


Eid, S., Chow, H.M., Harris, D. & Ciaramitaro, V.M. Does a ‘kik’ sound look spiky or round to you? Crossmodal correspondence across development. University of Amherst, Undergraduate Research Conference, April 2015.


Harris, D. & Ciaramitaro, V.M. Contingent adaptation: investigating mechanisms for perceiving the emotion and gender of a face. University of Amherst, Undergraduate Research Conference, April 2015.


Tronick, E. Keynote/Plenary Address, Multi-Level Meaning Making by Infants, Center For Development and Disability, University of New Mexico, (June 17, 2015 - June 19, 2015). Infant meaning making.

Tronick, E. Lecture, Neuroscience, Attachment and Therapeutic Interventions, Psychological Trauma, Bessel A. Van Der Kolk, MD, Boston University, (May 2015).

Tronick, E. Keynote/Plenary Address, Rome, Italy, (November 2014).


Luca Bonatti talks logic and reasoning

Dr. Luca Bonatti, a professor at the Universitat Pompeu Fabra in Barcelona, whose work spans the domains of language learning and reasoning, was able to talk and discuss his current research interest at a recent joint lab meeting between the researchers in the Baby Lab and the Human Vision Lab. He is also head of the Reasoning and Infant Cognition Group (RICO) where the main interest is to understand the process of forming expectations and drawing conclusions based on interaction within the physical and psychological world.

Dr. Blaser receives Chancellor’s recognition

The Chancellor’s Awards for Distinguished Scholarship, Teaching, and Service recognizes exceptional faculty within the UMass Boston community that have contributed to the mission of the university. Dr. Erik Blaser, DBS Program Director and advisor to two DBS graduate students, was the recipient of the 2015 Teaching Award.

Dr. Blaser has demonstrated his commitment to students and his dedication to teaching as a course instructor who routinely receives praise for engaging students during his lectures. His mentoring of students, both undergraduate and graduate, as well as junior faculty have resulted in successful professional development in undergraduates who have sought graduate degrees and graduate students who have received grants & awards. Dr. Blaser was honored at this year’s commencement ceremony.

DBS students engage undergraduates at PCC event

The Psychology Connection Committee in collaboration with the Neuroscience Club hosted an event to address myths related to graduate school and to give tips on the graduate school application process to our current undergraduates.

The event was a success with a high turnout of undergraduates seeking information about graduate school. DBS graduate students participated in various capacities with Doris acting as Master of Ceremonies and Maha preparing an interactive talk to debunk common myths about graduate school. Other graduate students served as representatives at different stations with topics ranging from going to graduate school right after completing an undergraduate degree, switching between fields, and learning about the Graduate Record Examination.