



2015-16 COSG Committee
c/o Dr. Chippewa Thomas, Director of Faculty Engagement
Office of the Vice President for University Outreach
Auburn University

October 21st, 2015

Dear Dr. Thomas & Competitive Outreach and Scholarship Grant Committee,

Attached, please find our renewal application, the "Auburn University Brain Imaging Visiting Fellowship" (shortened to "AU Brain Camp" throughout the proposal) for consideration in the 2015-2016 review cycle. Through the generous support of the COSG mechanism, we were able to convert our local camp into a national camp last year, with attendees from 8 different states. This year, we hope to continue to improve upon the camp, and also request funds to invite an engaged scholar to increase our visibility at the national level. Importantly, we have leveraged the University's contract with Hanover Services and identified additional mechanisms to pursue long-term sustainability. We are currently working on extramural applications (our camp was held in late July of 2015), as well as an outreach article chronicling our experiences with a hands-on neuroscience camp. We anticipate submitting these in the coming months, as indicated in our application last year.

We would also like to extend an invitation to visit our website at <http://aubraincamp.com> and take a peek at some of the fun we had this past summer.

We appreciate your thoughtful consideration of our application.

Sincerely,

Jennifer L. Robinson, Ph.D. (Director, AU Brain Camp)
Assistant Professor
Department of Psychology

Jeffrey S. Katz, Ph.D.
Professor
Department of Psychology

2015-16 AU Competitive Outreach Scholarship Grant Application

ENGAGED PRINCIPAL INVESTIGATORS

Name:	Jennifer L. Robinson, Ph.D.	Name:	Jeffrey S. Katz, Ph.D.
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PROPOSAL TITLE

Auburn University Brain Imaging Visiting Fellowship (AU Brain Camp)

PROPOSAL ABSTRACT

Over the last decade, the National Science Foundation has emphasized and encouraged the growth of STEM disciplines, education, and outreach. Higher education has almost universally adopted STEM-related priorities into their missions and visions, with Auburn University (AU) being no exception. Specifically, AU's mission states that we "will serve the citizens...through (our) instructional, research and outreach programs and prepare Alabamians to respond successfully to the challenges of a global economy. (We) will provide traditional and non-traditional students broad access to (our) educational resources. In the delivery of educational programs on campus and beyond, (we) will draw heavily upon the new instructional and outreach technologies available in the emerging information age." Our proposal seeks to fulfill this mission by hosting a weeklong summer camp in which high-school students will be exposed to cognitive neuroscience via a multidisciplinary approach leveraging existing collaborations between the Departments of Psychology and Electrical and Computer Engineering, utilizing the unique state-of-the-art Auburn University MRI Research Center (AUMRIRC). In partnership with high schools (both local and across the nation), AU will invite juniors and seniors to apply for the camp, prioritizing diverse and underrepresented applicants. The program will be designed to expose high school students to STEM concepts and advancements which have ultimately led to discoveries about the brain. This outreach initiative is important because we are in an era of new discovery with large federal incentives, such as the BRAIN Initiative [1]. For such an initiative to be successful, three focus areas have been identified in training the next generation, and overcoming the existent underrepresentation in STEM disciplines: 1) create programs that will encourage the study of technology, 2) rework the K-12 curriculum, and 3) combat stereotypes [2-7]. AU Brain Camp holds tremendous promise in facilitating transformative change along these dimensions.

PROJECT NEED

In 2003, the National Science Board identified an impending crisis involving workforce shortages in jobs that require higher-level science, technology, engineering, and mathematics (STEM) degrees and skill sets. Leading economists agreed that this shortage would inevitably, and significantly, stunt our economic growth and development, further jeopardizing our economic well-being. Over the last decade, the National Science Foundation (NSF) has emphasized and encouraged the growth of STEM disciplines, education, and outreach. Higher education has almost universally adopted STEM-related priorities into their missions and visions, with Auburn University being no exception, in an effort to reverse this potentially devastating trend. The efforts have resulted in a slow, but steady increase in the STEM workforce at a rate of 3.3%, which is higher than 1.5% for the total workforce [8]. However, despite this increase, women and minorities continue to be underrepresented. The issue has been of national importance, and has been featured in public outlets such as NPR [7], Forbes.com [5], and the Huffington Post [2-4]. Three broad areas have been identified as

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targets for evening the distribution of representation in STEM, including creating programs that encourage women and minorities to study technology, reworking the K-12 curriculum, and combating stereotypes [5-7]. With regards to the latter, our camp has been incredibly successful at recruiting women and minorities (i.e., our 2015 session included 20 females out of a total of 22 campers, with 8 coming from underrepresented backgrounds).

Our proposal seeks to fill this gap by providing a weeklong summer camp for high school students for them to experience, learn about, and engage in cognitive neuroscience via a multidisciplinary approach utilizing the unique state-of-the-art resources at the Auburn University MRI Research Center (AUMRIRC). We believe that our program will have robust local and trickle-up global effects. From a global perspective, we believe that such educational outreach programs can be potent factors in spurring Alabama's economic growth indirectly in the long-term, hopefully improving the state's per capita income, which is currently ranked 42nd in the nation at \$34,800. As recently as 2012, science and innovation have been identified as the most promising path toward improving this statistic [9]. Our program will take place at the AUMRIRC, home to one of the only 7T MRI human imaging scanners in the world, thus students will be introduced to technology that is state-of-the-art and unique to our campus, allowing us to introduce scientific concepts that are currently shaping the next decade of neuroscience research. This is a critically important aspect of the proposal, as rural communities generally have underdeveloped human capital, and have difficulty retaining their brightest scholars, commonly referred to as "the brain drain" [10]. By engaging student's curiosity and demonstrating the resources at the AUMRIRC, we hope to ignite their desire to remain in the community. As a more direct and immediate effect, we believe that this program will expose students to careers that integrate STEM concepts into disciplines that are not traditionally oriented toward mathematics, such as psychology and medicine, thus capturing an audience that may otherwise shy away from academic tracks with strong STEM emphasis. Furthermore, it may reduce the "summer lapse" that is commonly acknowledged by educators. This effect is exacerbated in rural and low socioeconomic communities [10]. Unfortunately, these same communities suffer in developing summer programming as they face unique challenges such as community resources and program accessibility [10]. In addition, Halpern (2012) proposes that the structure of learning during the high school years "urgently needs rethinking" and that "too many young people in our society lack access to the kinds of vital, productive learning experiences that will enrich their lives now and provide a foundation for adulthood". From this perspective, our program would be a critically important development to the community as a whole.

We have partnered with the Office of Professional and Continuing Education to place the AU Brain Camp under the Summer Youth Camps administrative umbrella. This allows us to offer the opportunity to a much larger, more inclusive and diverse set of students. Part of the funds in this application will go toward funding scholarships for individuals from economically challenged regions. We have already contacted the Lee County Superintendent who has expressed great interest in distributing information about our camp, and have reached out to Tuskegee and surrounding communities to promote this opportunity. Additionally, we have contacted several communities (Chamber of Commerce and Community Centers) and newspaper sources who have also agreed to highlight the camp when applications come out. This strategy proved to be incredibly successful last year, as we had to turn away applications because of the limited space in the camp.

PROJECT METHOD

In partnership with Auburn and Opelika High Schools, along with Lee County Schools and surrounding communities (relationships that we are actively forging), we will invite high school juniors and seniors to apply for our summer camp, entitled the "Auburn University Brain

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Imaging Visiting Fellowship (AUBIVF)”, prioritizing diverse and underrepresented applicants. This will be an interdisciplinary effort led by the Department of Psychology teamed with the Department of Electrical and Computer Engineering. The objectives of the proposed outreach are to expose high school students to advancements in STEM that have led to discoveries about the brain using a mix of hands-on activities and educational presentations and to increase interest in STEM careers. In addition, we anticipate providing students with an iPad for use during the camp, complete with pre-installed applications that will allow them to actively engage in class, perform out-of-class learning exercises, interact with the brain using a “virtual neuroanatomy lab”, and expose them to technology in a way they likely have not had an opportunity to experience yet. In our first year, we had 17 participants from Auburn and Opelika, which allowed the students to work in groups of 3-4 for the iPad activities/ Last year, through the generous support of the COSG mechanisms, we were able to purchase an addition 12 iPads. This allowed our 22 campers to have more one-on-one access with the devices, and allowed for a much more hands-on curriculum. The iPads were a tremendous success (please see photos). Comments from the days in which we used the iPads were resoundingly positive (“awesome day! Loved getting the opportunity!” “wish we had more lab time!”, “in class discussion/lab was very interactive and fun”, please see Figure 1, 2, 3, and 5). Furthermore, the days in which we used the iPads were rated significantly higher than those in which we did not use the iPads, and only second to the experience of having their brains scanned (which we used the iPads to demonstrate how to analyze the brain imaging data, and allowed them to look at their own brain activation patterns, please see Figure 2 and Figure 6). During AU Brain Camp, we held a virtual neuroanatomy lab (Figure 3 and Figure 5), went through common psychological tasks that are often used in research (demonstrating them on the iPads, and having the students perform them for themselves), and performed hands-on data analysis of the student’s own brain images. Students overwhelmingly loved interacting with the iPads (to see more, please visit the website <http://aubraincamp.com> or read the article featured in the CLA Perspectives by going to <http://www.cla.auburn.edu/perspectives/articles/high-school-students-discover-their-brains/>).

AU Brain Camp 2016 will take place from July 25th to July 29th. The camp will be held from 9am-4pm, with students having a commuter option (\$200), or a Summer Camp Experience option (\$550). We will have lectures, labs, and discussion sessions as this format seemed to appeal to the students in our inaugural camp. Lab sessions will include activities with the iPads, as well as scanning sessions for those interested (and able) in having their brain scanned. This latter activity was the highlight for most of the participants in our camp. We will continue to collect survey data on the camp’s effectiveness. For samples of the Brain Camp curriculum, please visit our website (<http://aubraincamp.com/resources>).

We will assess the anonymous evaluations after every session for quality assurance and to incorporate any feedback that we receive. Following completion of AU Brain Camp, we will immediately begin preparing applications to external agencies with our evaluation information demonstrating the effectiveness of the program, and serving as proof of concept (please see ‘Sustainability Plan’). Additionally, we will also develop a manuscript on our program for submission to the Journal of Higher Education Outreach and Engagement (JHEOE). We are currently in the process of preparing these materials from our 2014-2015 COSG award. We have leveraged the University’s contract with Hanover Services to identify grant mechanisms outside of those we had identified to increase our chances of long term sustainability.

PROJECT MISSION

As an educational outreach project, our mission will be to expose high school students and their families to the rich intellectual and physical resources of the AUMRIRC. We hope to invigorate student’s desires to pursue STEM disciplines by demonstrating the strength of these

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fields, and how they can be applied to other disciplines. Our project serves the mission of Auburn University by serving the community, and state, with the development of an instructional, heavily research-oriented outreach program that will have an effect on the next generation of students. Our proposal will also give students an opportunity to access the institution's unique resources, through an intense educational experience. All of these objectives are specifically mentioned in the AU mission statement as quoted in the 'Project Abstract' section of the proposal.

PROJECT SCHOLARSHIP

AU Brain Camp will draw on the expertise of the PIs. Dr. Katz's research focuses on the comparative mechanism of learning and cognition. He has over 20 years conducting research and teaching about cognitive processes. Ongoing projects involve behavioral and functional neuroimaging methods to investigate change detection, visual search, same/different concept learning, post-concussive syndrome, Alzheimer's disease, and post-traumatic stress disorder. He has been honored with the APA's Division 3 (Experimental Psychology) 2001 Young Investigator Award, Outstanding Professor-Auburn University Panhellenic Council (2003), Psi Chi Excellence in Undergraduate Teaching - Department of Psychology Auburn University (2002, 2013), College of Liberal Arts Early Career Teaching Award, Auburn University (2004-2005), Who's Who Among America's Teachers (2002, 2004, 2005), and an Auburn University Alumni Professorship (2006-2011). He has a history of teaching and research grants from the NSF and NIMH. Dr. Robinson's research is focused on the interplay between emotion and cognition. Her research program uses psychophysiological measures of the peripheral nervous system in conjunction with ultra high-field high-resolution functional magnetic resonance imaging (fMRI). She has been at Auburn since August of 2012. Both PIs are enthusiastic about developing the next generation of scientists and introducing them to STEM-related aspects of psychology that are becoming increasingly important for society. The project will provide the co-PIs with an opportunity to discuss hot topics in cognitive neuroscience, which may lead to creative approaches to their research questions. From a teaching perspective, the breadth of the evaluations will allow the co-PIs to better understand how effective the program is, how to improve it in the future, and how effective the iPads are for instructional purposes. iPads have demonstrated effectiveness in developmental disability populations and for use in medical education settings, however, there is very little data on their effectiveness in teaching complex neuroscience topics [11-13].

More profoundly, our project is the result of observations that the science community needs to teach "real science" firmly based on hands-on and inquiry methodology [14]. It also addresses the disconnect between the emphasis, yet scarcity of support, for educational activities outside the classroom [15]. Developing partnerships with community educational systems, such as high schools, has been demonstrated to have positive, withstanding effects for both the students and the institutions supporting the programs [16].

PROJECT/PROGRAM EVALUATION

Evaluations will be completed after every session. Students will log-in to an Online Qualtrics survey using the iPads provided to them through the program. The evaluation form will consist of a set of general questions to gauge the interest of the material and the effectiveness of the teaching. Parents will also be asked to complete evaluations at the start and end of the camp. All questionnaires and evaluation materials have been approved by the IRB. The results from the evaluation will be used to generate manuscripts for outreach journals, and to provide proof of concept on external grant applications. Drs. Robinson and Katz will consider our program a success if we achieve over >90% approval ratings as determined by

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questions as to whether students would return to the program, and daily interest/effectiveness scores. We have IRB approval to collect data during the camp (#14-217 EX 1406).

2015 Program Results: Our 2015 AU Brain Camp post-program evaluation data revealed that students felt that they learned a lot during the program ($M \pm SD$: 4.58 ± 0.51 on a 1-5 point scale with 1 being 'Do Not Agree' and 5 being 'Strongly Agree'), that the program enhanced their interest in STEM fields (4.68 ± 0.58), and that they would recommend the program to another student (4.68 ± 0.48). Importantly, students also agreed that the camp changed the way that they viewed how the brain works (4.79 ± 0.54). Parents also rated the program highly. Specifically, they agreed that the program represents an important educational experience (4.75 ± 0.62), that it is important to the community (4.67 ± 0.65), and that it helped their child with career ideas (4.58 ± 0.51).

2-Year Program Results: We compiled data from both AU Brain Camp sessions to examine the overall ratings of the camp. Across all sessions, the average participant rating was 87.95 ± 9.48 on a scale of 0-100 (we asked participants how the session compared to their other educational experiences with 0 being the worst educational experience they have ever had, and 100 being the best). We also found that labs (i.e., interaction with the iPads, and getting their brains scanned) were rated slightly higher (4.36 ± 0.89), compared to lectures (4.22 ± 0.90) and discussions (4.28 ± 0.94). Most profoundly, however, was that students found the sessions to be interesting (4.52 ± 0.56), made them think differently about the brain (4.42 ± 0.75), and got them excited about math and science (4.28 ± 0.87). These data were collected on a 5-point scale. Finally, the student's rated the instruction as being well-prepared (4.75 ± 0.43), clear (4.57 ± 0.59), and enthusiastic (4.76 ± 0.44).

SUSTAINABILITY PLAN

For AU, there is a unique opportunity to capitalize on our community's demographic profile, which has been a target to funding agencies such as the NSF (Alabama is an EPSCoR state), as well as the Presidential Initiative for the BRAIN project (described in more detail under "Sustainability Plan"). For this reason, AU sits in a favorable position to obtain external funding for a STEM-based educational outreach program, that could easily be expanded to include multiple sessions for high school students, undergraduate sessions, or develop into a regional workshop for students in the rural southeast. We aim to submit several external applications following the completion of our summer program and subsequent evaluation analysis. Specifically, we believe that our program would be appealing to a number of agencies including the National Science Foundation (NSF) Cognitive Neuroscience Panel, the American Psychological Foundation (APF), the Robert Wood Johnson Foundation (RWJF), and the National Institutes of Health (NIH). For NSF, we will initially target their Advancing Informal STEM Learning (AISL) mechanism, which we are preparing a proposal for to be submitted this December (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504793). If unsuccessful, next year we will target their ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers mechanism (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5383). We will also target the Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP), which has a due date in December. For the American Psychological Foundation, we will submit a competitive proposal in March of 2016 (we submitted a proposal to this mechanism in March and were not funded). The APF's Esther Katz Rosen Fund Grant (<http://www.apa.org/apf/funding/rosen.aspx>) is an ideal target for our proposal, as it is consistent with the goals of the RFP, which are to 1) reinforce the discipline of psychology as a science in secondary school curricula, 2) expand the profile of psychology as a science to attract talented high school students to pursue the discipline, 3) convey to high school students that psychological science is a tool to improve society, and 4) teach students about career options

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that apply psychology outside of an academic setting (e.g. NASA). Finally, we will frequently look for opportunities within foundations such as the RWJF, which awarded \$6.7 million over a 10-year period to medical, medical/dental schools, or other educational organizations to support minority students and encourage these students to pursue medically-oriented careers. The RWJF funds “innovative projects that can have measurable impact and can create meaningful, transformative change” prioritizing service demonstrations, public education, and training and fellowship programs.

We believe this type of program is a priority for these funding organizations as the Presidential’s Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative is in its infancy and aims to revolutionize the way we study the brain. To prepare our youth for the next decade of neuroscience research, it is imperative to start exposing them to research methods and directing their enthusiasm toward STEM-related careers. In addition to the above mechanisms, we will continue to search for funding opportunities, and utilize the resources within the AU Outreach office. Specifically, as we begin to finalize the extramural applications, we will work closely to establish a budget that will allow for cost recovery from the support we have graciously received through the COSG mechanism.

Finally, as stewards of the COSG support, we are working diligently toward sustainability through the pursuit of non-traditional grant mechanisms, so that we can continue to provide these opportunities to the next generation. To this end, we have leveraged the University’s contract with Hanover Research to identify mechanisms that we can apply to, in addition to the mechanisms identified in our original application stated above. Hanover Research provided us with a comprehensive report in May 2015 which identified 6 funding agencies (Upward Bound Math and Science, American Honda Foundation, Amgen Foundation, Toyota U.S.A. Foundation, 3M Foundation, and Wells Fargo Foundation). We are currently developing applications to pursue these opportunities, and hope to secure external funding soon. In addition, we have attended and presented at the This Is Research Faculty Symposium in the STEM Education lightning session. This allowed us to network with like-minded faculty with similar STEM-related initiatives. We intend to hold a focus group meeting soon, to target and pursue a relevant external mechanism.

ADDITIONAL SUPPORT AND FUNDING

We have secured \$4,000 each from the College of Liberal Arts and the Department of Psychology to pursue this outreach scholarship initiative. These monies will mostly be used to support salaries, so that time can be devoted to camp development as well as the development of extramural applications. The AUMRIRC has donated in-kind use of their facilities. Please see ‘Supporting Documents’ for letters of support/commitment. Drs. Robinson and Katz will make in-kind contributions of their time in preparation of the program.

QUALIFICATIONS OF FACULTY AND PERSONNEL

Drs. Robinson and Katz have distinct, yet established, productive research programs utilizing a variety of cognitive neuroscience measures. Dr. Robinson’s research program examines the interplay between cognition and emotion. She has over 8 years of experience using fMRI methods, and has published in some of the top journals in the field of neuroimaging including Human Brain Mapping and NeuroImage. Dr. Robinson was hired in August of 2012 to bridge the Departments of Psychology and Electrical and Computer Engineering with respect to neuroimaging projects. Dr. Katz has been actively involved with the AUMRIRC since its inception. His research focuses on comparative neuroscience and examines psychological constructs such as change detection. Both engaged scholars have been actively involved in outreach activities within the community (Auburn High School) as well as at Auburn University.

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Dr. Robinson serves as a faculty co-advisor for the Auburn University Psi Chi chapter, a national undergraduate honor society for psychology majors.

PROJECT BUDGET

Personnel

Drs. Robinson & Katz have devoted extensive amounts of time to develop and host AU Brain Camp, and have contributed in-kind their time and personal financial resources. As part of this grant, we are requesting 0.5 summer months of salary support for Dr. Katz, and 1 month of salary support for Dr. Robinson to help offset our other duties to focus on the camp, and more importantly, to devote time toward the development of extramural applications. Including fringe benefits, this comes to a total of \$15761, with \$7524 coming from the College of Liberal Arts and the Department of Psychology. University Outreach's contribution to salary support would be \$8237.

Participant Scholarships

We have been working with Jeff Dyal from the Office of Professional and Continuing Education (OPCE). For our inaugural camp, we recruited locally, and the camp was completely free to the students but they were responsible for their own transportation to and from the facility. Because of the overwhelmingly positive response we received about the camp, and the feedback acquired from our surveys, parents and students were willing to pay for this type of opportunity. However, we would like to target rural and underrepresented communities. In order to do that, we partnered with the Summer Youth Camp folks in OPCE to provide a University experience. For \$420, students were provided with housing, 2 Summer Experience counselors, 10 meals (breakfast/dinner), 2 Martin Aquatics Center swim sessions, an Auburn Summer Experience t-shirt, a professional group photo, a certificate of completion, and snacks/drinks/water during the camp. The cost of the camp has increased this year to an estimated \$550 for on-campus participants and \$200 for commuters, as we will be including lunch this year. We are requesting 10 scholarships to provide students without the economic means to attend the camp (\$5500). The application process for the camp is competitive, and applicants will be selected based on academic achievement, underrepresentation in STEM fields, and academic trajectory. Scholarships will be awarded based on economic need and distance from Auburn University.

Materials and Supplies

The maximum number of students that we will accept into the program will be 22. To enhance the program, we will be using iPad's to hold virtual anatomy labs, have active/interactive learning sessions, assign out-of-class activities, and to allow each student to analyze and view their own brain data. Due to the generosity of University Outreach, we were able to purchase 17 iPads for the camp over the last 2 years. The iPads were a tremendous success. Therefore, we'd like to purchase the remaining 5 iPad's so that every student will have one for the duration of the camp. These will remain within the Department of Psychology for instructor use during the academic year (e.g., Dr. Robinson and Dr. Katz will integrate iPad learning activities into their existing graduate and undergraduate courses) ($\$399 \times 5 = \1995). We are also requesting \$1000 for miscellaneous materials (e.g., thumbdrives, binders with course materials, DVDs for copies of brain scans, and promotional materials). Additionally, we are \$2000 to provide an honorarium and travel costs for a nationally renown cognitive neuroscientist (TBD) to come and talk at the camp. This will be open to the University, and we will advertise across Colleges and Departments to maximize this expenditure. Finally, we are requesting 10 hours of scan time costs at \$500/hour since we will be using the scanner during regular business hours due to the shift in camp structure ($10 \times \$500 = \5000). We are requesting \$14519 of these funds to come from the Outreach office, and \$476 from CLA/Psychology.

Auburn University
Office of Vice President for University Outreach
2013-14 Competitive Outreach Scholarship Grant (COSG) Budget Request Form

Proposal Title:					YEAR		2015-16	
A. SENIOR PERSONNEL: PI/PI, Co-PI'S, Faculty and Other Senior Associates							Outreach Funds	Cost Share
					Outreach Months	Cost Share Months		
First Name	M	Last Name	Title					
Jennifer	L	Robinson	Ph.D.	0.63	0.37	\$5,998	\$3,522	
Jeffrey	S	Katz	Ph.D.	0.05	0.45	\$242	\$2,178	
(1) TOTAL SENIOR PERSONNEL (1-6)							\$6,240	\$5,700
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)								
1. (0) POST DOCTORAL ASSOCIATES					0.0	0.0	\$0	\$0
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)					0.0	0.0	\$0	\$0
3. (0) GRADUATE STUDENTS							\$0	\$0
4. (0) UNDERGRADUATE STUDENTS							\$0	\$0
5. (0) OTHER							\$0	\$0
TOTAL SALARIES AND WAGES (A+B)							\$6,240	\$5,700
C. FRINGE BENEFITS @ 32% for full time employees; 9.8% part time employees; 4.8% for graduate assistants							\$1,997	\$1,824
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A+B+C)							\$8,237	\$7,524
D. PERMANENT EQUIPMENT					COSG	Cost Share		
Equipment Item								
TOTAL EQUIPMENT							\$0	\$0
E. TRAVEL								
1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							\$0	\$0
2. FOREIGN							\$0	\$0
F. PARTICIPANT SUPPORT COSTS					COSG	Cost Share		
1. STIPENDS					\$0	\$0		
2. TRAVEL					\$0	\$0		
3. SUBSISTENCE					\$0	\$0		
4. OTHER					\$0	\$0		
(10) TOTAL NUMBER OF PARTICIPANTS							\$5,500	\$0
G. OTHER DIRECT COSTS								
1. MATERIALS AND SUPPLIES							\$2,519	\$476
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION							\$0	\$0
3. CONSULTANT SERVICES							\$2,000	\$0
4. COMPUTER SERVICES							\$0	\$0
5. OTHER							\$5,000	\$0
TOTAL OTHER DIRECT COSTS							\$9,519	\$476
H. TOTAL DIRECT COSTS (A THROUGH G)							\$23,256	\$8,000
I. TOTAL FUNDS APPROVED								

FIGURES



Figure 1. Students at AU Brain Camp looking at their own brain activation patterns with the iPads.

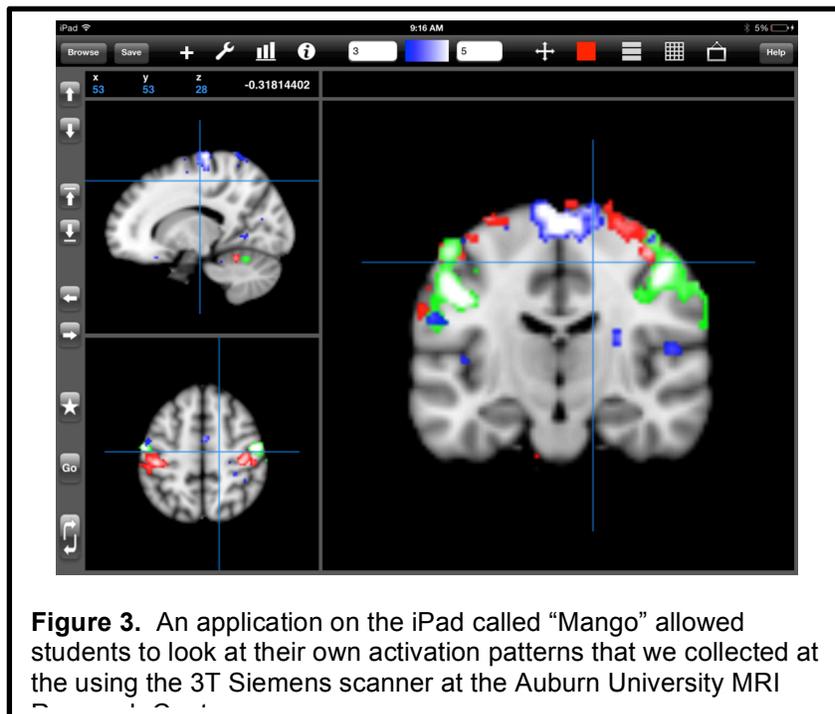


Figure 3. An application on the iPad called "Mango" allowed students to look at their own activation patterns that we collected at the using the 3T Siemens scanner at the Auburn University MRI

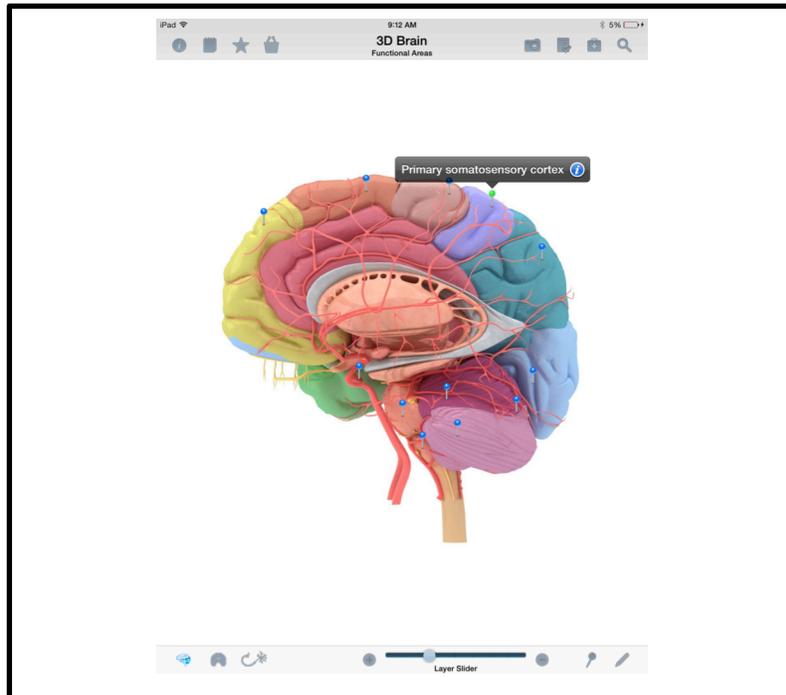


Figure 3. Example image from the virtual neuroanatomy lab exercises that we implemented in AU Brain Camp. This is from an application called “Pocket Brain” which allows students to rotate and interact with the 3D brain model, and click on the pins for information about the name of the area, as well as its functional contributions.



Figure 4. Aubie and the 2015 AU Brain Camp participants and staff.



Figure 5. 2015 AU Brain Camp – Students use the iPads to complete a virtual neuroanatomy lesson.



Figure 6. Students had the opportunity to have their brains scanned in the AUMRIRC 7T Siemens Magnetom scanner.

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EVALUATIONS

STUDENT PRE-PROGRAM EVALUATION

Auburn University Brain Imaging Visiting Fellowship

Instructions: Please select the appropriate descriptions below to indicate how strongly you agree or disagree with the following statements about the Auburn University Brain Imaging Visiting Fellowship. Your responses will assist us in providing valuable feedback to the instructors as well as the present and future funding agencies of the program. Please give responses that truly reflect your personal opinion. Your responses will be strictly confidential. No information relating to personal identity will be linked with your responses. This form is optional, but strongly encouraged!

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am looking forward to this program	<input type="radio"/>				
I understand that I have expectations to carry out work outside of the program	<input type="radio"/>				
The program requirements have been clearly explained to me	<input type="radio"/>				
I hope that this experience helps me better understand career options in neuroscience	<input type="radio"/>				
I hope that this experience helps me to identify an area of interest that I can pursue at the college level	<input type="radio"/>				
I would be interested in a follow-up program	<input type="radio"/>				
I hope to learn more about the brain from this program	<input type="radio"/>				

On a scale of 1-10 with 1 being "not very much" and 10 being "very much", how much are you looking

_____ Discussions
 _____ Lectures
 _____ MRI Lab Time

What motivated you to apply to the Auburn University Brain Imaging Visiting Fellowship?

What occupation do you hope to hold one day?

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PARENT PRE-PROGRAM EVALUATION

Auburn University Brain Imaging Visiting Fellowship

Instructions: Please select the appropriate descriptions below to indicate how strongly you agree or disagree with the following statements about the Auburn University Brain Imaging Visiting Fellowship. Your responses will assist us in providing valuable feedback to the instructors as well as the present and future funding agencies of the program. Please give responses that truly reflect your personal opinion. Your responses will be strictly confidential. No information relating to personal identity will be linked with your responses. This form is optional, but strongly encouraged!

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I believe that this opportunity is important to my child's education	<input type="radio"/>				
I believe that these types of programs improve the community	<input type="radio"/>				
I believe that this program is an asset to the community	<input type="radio"/>				
I believe that this program will help my child find an area of interest to pursue in a higher-education setting	<input type="radio"/>				
My child would be unlikely to participate in this program if it cost money	<input type="radio"/>				
I would be willing to pay a fee for my child to participate in this opportunity (assuming the fee would be under \$200)	<input type="radio"/>				
I believe that hands-on experiences outside of the classroom will better encourage my child to pursue a degree related to math, science, engineering, and/or technology.	<input type="radio"/>				

Please tell us what you hope your child will get from this experience:

Additional Comments:

2015-16 AU Competitive Outreach Scholarship Grant Application

Please answer the following questions regarding today's session.

Evaluate the following:

	Excellent	Very Good	Good	Fair	Poor	Not Applicable
Class organization	<input type="radio"/>					
Handouts and Class Materials	<input type="radio"/>					
Lecture	<input type="radio"/>					
Lab Time	<input type="radio"/>					
Dinner Discussion	<input type="radio"/>					

Evaluate the content of the lecture:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
The lecture was very interesting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel I learned a lot from this lecture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This lecture made me think about the brain differently.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This lecture made me excited about math, science, or engineering, and how they can be used in disciplines like psychology.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This lecture was informative.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would like to hear more about this topic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Evaluate the instructors:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
The instructor(s) were prepared and educated.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The instructor(s) communicated enthusiasm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2015-16 AU Competitive Outreach Scholarship Grant Application

The instructor(s) encouraged creative thinking.	<input type="radio"/>				
The instructor(s) presented material in a clear and comprehensive way.	<input type="radio"/>				
The instructor(s) used time effectively.	<input type="radio"/>				

Rate this session overall on a scale of 1-100; with 1 being "not very good", and 100 being "one of the best educational experiences I've had".

	0	10	20	30	40	50	60	70	80	90	100
I give today's session a:											

Additional comments:

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2015-16 AU Competitive Outreach Scholarship Grant Application

STUDENT POST-PROGRAM EVALUATION

Auburn University Brain Imaging Visiting Fellowship

Instructions: Please select the appropriate descriptions below to indicate how strongly you agree or disagree with the following statements about the Auburn University Brain Imaging Visiting Fellowship. Your responses will assist us in providing valuable feedback to the instructors as well as the present and future funding agencies of the program. Please give responses that truly reflect your personal opinion. Your responses will be strictly confidential. No information relating to personal identity will be linked with your responses. This form is optional, but strongly encouraged!

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The program was well organized.	<input type="radio"/>				
The program met my educational needs and expectations.	<input type="radio"/>				
I had adequate support and supervision by the program staff.	<input type="radio"/>				
It was clear who I should speak to about any problems that I encountered during the program.	<input type="radio"/>				
Any problems I encountered during the program were adequately addressed.	<input type="radio"/>				
The program requirements were clearly explained.	<input type="radio"/>				
Expectations of me as a program participant were reasonable for the program purpose and timeframe.	<input type="radio"/>				
The program experience has enhanced my interest in a career in one of the following disciplines: science, engineering, mathematics, psychology, and/or medicine.	<input type="radio"/>				
I look forward to my participation in the program next summer.	<input type="radio"/>				
I learned a lot this summer.	<input type="radio"/>				
I would recommend this program to a peer.	<input type="radio"/>				
I would be interested in a follow-up program.	<input type="radio"/>				
Overall, I liked the program.	<input type="radio"/>				
The program changed how I view the brain.	<input type="radio"/>				
The program changed how I view diseases.	<input type="radio"/>				
The instructors were well-prepared.	<input type="radio"/>				
I liked the informal discussions during dinner.	<input type="radio"/>				

On a scale of 1-10 with 1 being "did not like it" and 10 being "loved it", please rate the following portions of the course:

_____ Discussions
 _____ Lectures
 _____ MRI Lab Time

If you could change one thing about the camp, what would it be?

What is one thing you learned that has really stuck with you?

What occupation do you hope to hold one day?

2015-16 AU Competitive Outreach Scholarship Grant Application

PARENT POST-PROGRAM EVALUATION

Auburn University Brain Imaging Visiting Fellowship

Instructions: Please select the appropriate descriptions below to indicate how strongly you agree or disagree with the following statements about the Auburn University Brain Imaging Visiting Fellowship. Your responses will assist us in providing valuable feedback to the instructors as well as the present and future funding agencies of the program. Please give responses that truly reflect your personal opinion. Your responses will be strictly confidential. No information relating to personal identity will be linked with your responses. This form is optional, but strongly encouraged!

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I believe that this opportunity was important to my child's education.	<input type="radio"/>				
I believe that these types of programs improve the community.	<input type="radio"/>				
I believe that this program is an asset to the community.	<input type="radio"/>				
My child would be unlikely to participate in this program if it cost money.	<input type="radio"/>				
I believe that this program helped my child find an area of interest to pursue in a higher-education setting.	<input type="radio"/>				
I would be willing to pay a fee for my child to participate in this opportunity (under \$200).	<input type="radio"/>				
My child talked about the brain, science, and technology more as a result of this course.	<input type="radio"/>				
My child seemed to enjoy this course.	<input type="radio"/>				
I felt comfortable with the resources and personnel of the program.	<input type="radio"/>				

Please tell us what you think your child got from this experience.

I would like to see the following components of the program improved upon:

Additional Comments:

2015-16 AU Competitive Outreach Scholarship Grant Application

REFERENCES

1. Collins, F. *BRAIN: Launching America's next moonshot*. NIH Director's Blog 2014 [cited 2014 09/30/2014]; Available from: <http://directorsblog.nih.gov/2014/09/30/brain-launching-americas-next-moonshot/>.
2. Levine, D.J., *My STEM story: Lessons in denial*. 2014, Huffington Post.
3. McCuien, A., *Encourage - Don't discourage - STEM dreams*. 2014, Huffington Post.
4. Smith, P., *We need humanities as much as science to solve the world's problems*. 2014, Huffington Post.
5. Huhman, H.R. *STEM fields and the gender gap: Where are the women?* 2012; Available from: <http://www.forbes.com/sites/work-in-progress/2012/06/20/stem-fields-and-the-gender-gap-where-are-the-women/>.
6. St. Rose, A. *STEM major choice and the gender pay gap*. 2014; Available from: http://archive.aacu.org/ocww/volume39_1/feature.cfm?section=1.
7. St. Rose, A., C. Riegler-Crumb, and L. Kekelis, *NPR*, in *The STEM gender gap*. 2013.
8. NSF. *Science and engineering indicators 2014*. 2014; Available from: <http://www.nsf.gov/statistics/seind14/index.cfm/chapter-3/c3h.htm>.
9. Hosur, M. *The scientific tide: Using research to drive Alabama's economy*. 2012; Available from: <http://nsfmessengers.wordpress.com/2012/11/27/the-scientific-tide-using-research-to-drive-alabamas-economy/>.
10. Phillips, R., S. Harper, and S. Gamble, *Summer programming in rural communities: Unique challenges*. New Directions for Youth Development, 2007. **114**: p. 65-73.
11. Mayfield, C.H., P.T. Ohara, and P.S. O'Sullivan, *Perceptions of a mobile technology on learning strategies in the anatomy laboratory*. Anatomical Sciences Education, 2013. **6**(2): p. 81-89.
12. Kagohara, D.M., et al., *Using iPods® and iPads® in teaching programs for individuals with developmental disabilities: A systematic review*. Research in Developmental Disabilities, 2013. **34**(1): p. 147-156.
13. Kagohara, D.M., et al., *Teaching students with developmental disabilities to operate an iPod Touch® to listen to music*. Research in Developmental Disabilities, 2011. **32**(6): p. 2987-2992.
14. Alberts, B., *Teaching real science*. Science, 2012. **335**(6067): p. 380.
15. Stevens, C., *Integrating community outreach into the undergraduate neuroscience classroom*. J Undergrad Neurosci Ed, 2011. **10**: p. A44-A49.
16. de Lacalle, S. and A. Petruso, *The value of partnerships in science education: A win-win situation*. J Undergrad Neurosci Educ, 2012. **11**(1): p. A97-A105.

2015-16 AU Competitive Outreach Scholarship Grant Application



SAMUEL GINN COLLEGE OF ENGINEERING AUBURN UNIVERSITY MRI RESEARCH CENTER

October 21, 2015

Dear Dr. Robinson and Dr. Katz,

As Director of the Auburn University MRI Research Center (AUMRIRC), I strongly support your Competitive Outreach Scholarship Grant application, "Auburn University Brain Imaging Visiting Fellowship."

Hosting a summer camp for high school students to better understand how the brain works, and demonstrate first-hand how we use advanced technologies to uncover the mysteries of the brain will undoubtedly have a significant, positive impact on the students, and bring to light the possibilities of careers integrating STEM and the liberal arts. Because of our location, we can have a significant impact on the students of rural Alabama (and beyond) who may not otherwise have the opportunity to be exposed to cutting-edge neuroscience technologies.

The previous two camps have been a huge success, and I look forward to continuing the AUMRIRC's contributions. To that end, I am happy to have you use our state-of-the-art classroom facilities and kitchenettes to host the educational portions of the camp, in-kind. We also commit to 10 hours of scan time at the rate of \$500 per hour to be paid through this grant mechanism for day time scans to carry out the project and to perform demonstrations of our facilities.

This type of program has high potential to be funded through the National Science Foundation, as it highlights many of their focus areas. The AUMRIRC looks forward to a successful summer camp, and placing an external application for sustainability this winter.

I wish you the best of luck with your application.

Sincerely,

Thomas S. Denney Jr., Ph.D.
Professor, Department of Electrical and Computer Engineering
Director, Auburn University MRI Research Center

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2015-16 AU Competitive Outreach Scholarship Grant Application



October 21st, 2015

Dear Competitive Outreach Scholarship Grant Review Committee,

Please let this serve as a letter of support and commitment for Dr. Robinson and Dr. Katz's Competitive Outreach and Scholarship Grant (COSG) proposal entitled, "Auburn University Brain Imaging Visiting Fellowship". This proposal is consistent with Auburn University's mission to "serve the citizens of the State through its instructional research and outreach programs" by providing "traditional and non-traditional students broad access to the institution's educational resources", drawing "heavily upon the new instructional and outreach technologies available in the emerging information age". The College of Liberal Arts will provide \$4,000 from account 101001 134502 1020 and the Department of Psychology will contribute \$4,000 from account 101002 134709 4000 should the proposal be funded through the COSG mechanism.

Sincerely,

Paula E. Bobrowski, Associate Dean of Research

Peter Chen, Department Head of Psychology

321 TICHENOR HALL
AUBURN, AL 36849-5223

TELEPHONE:
334-844-4026

FAX:
334-844-2378

Jennifer L. Robinson, Ph.D.

226 Thach Hall
 Department of Psychology
 Auburn University, AL 36849

Web: <http://aubraincamp.com>
 Cell: (254) 931-3213
 Email: jrobinson@auburn.edu

EDUCATION

- Ph.D. Case Western Reserve University**
 Doctor of Philosophy, Experimental Psychology
 Degree conferred, May 2006
- M.A. Case Western Reserve University**
 Master of Arts. Experimental Psychology
 Degree conferred, August, 2004
- B.A. Case Western Reserve University**
 Bachelor of Arts
 Major fields of study: Biochemistry and Psychology
 Minor field of study: Chemistry
 Degree conferred, May 2002

HONORS AND AWARDS

- Selected for Participation in the Early Career Reviewer Program at the Center for Scientific Review, National Institutes of Health, 2014
- Article nominated for the Editor's Choice Award (Organization for Human Brain Mapping), 2011
- Nominated for the Early Investigator Award for the HMO Research Network, 2010
- Feature article and cover art of the February issue of Human Brain Mapping, February 2010
- Received invitation to attend the MIT/MGH/NMR Martinos Center Multi-Modal Neuroimaging Shortcourse, 2010
- Received Organization for Human Brain Mapping Travel Award, 2008
- Received Multimodal Neuroimaging Training Program Fellowship, 2008
- Received Wellcome Masterclass Postdoctoral Fellow Research Award in Clinical Neuroscience (Mood Disorders), 2008
- Received the Endowment Sponsored Mentorship Travel Fund Award, 2005
- Ruth Barber Moon Graduate Student Award, 2005
- NIH Fellowship (Mental Retardation Research Training in Psychology, HD-07176), 2003-2005
- Research ShowCASE Outstanding Graduate Student Poster Award, 2004

RESEARCH EXPERIENCE**2012-present Assistant Professor**

Department of Psychology (adjunct appointments in Kinesiology and Electrical and Computer Engineering)
 Auburn University
 Auburn, AL

Developed functional neuroimaging presence in psychology; strengthened existing collaborations with engineering and statistics; established collaborations with neurosurgeons in the community providing education on the advancements in neuroimaging techniques

2008-2012 Director, Functional Neuroimaging

Scott & White Memorial Hospital
Neuroscience Institute
Temple, Texas

Designed and built a psychophysiological laboratory and a functional neuroimaging laboratory. Directed both laboratories, including the development of grant proposals and research protocols. Created and developed novel stimuli. Responsible for the acquisition, analysis, and interpretation of data collected in both labs, in addition to the communication of the data to the scientific community by way of posters, peer-reviewed publications, and presentations.

2008-2012 Assistant Professor

Department of Surgery (Neurosurgery) & Department of Psychiatry and Behavioral Sciences
Texas A&M Health Science Center
College of Medicine
Temple, Texas

Developed collaborations within the Department of Neurosurgery; provided educational opportunities for graduate and medical students; provided educational support on functional magnetic resonance imaging (fMRI); developed neuroimaging pre-surgical planning protocols to supplement existing traditional methodologies including fMRI language and memory localization, and diffusion tensor imaging (DTI)

MENTORING**Ph.D Dissertation Chair**

Jessica Busler (Psychology: Cognitive and Behavioral Science)

Ph.D. Dissertation Committees (serving as a member):

Robb Bubb (Psychology: Industrial/Organizational Psychology)
Maggie Davis Daniel (Psychology: Clinical Psychology)
Matthew Davis (Psychology: Cognitive and Behavioral Science)
Ranga Deshpande (Electrical and Computer Engineering)
Martha Forloines (Psychology: Cognitive and Behavioral Science)
Kirk Grand (School of Kinesiology)
Marc Jackson (Psychology: Cognitive and Behavioral Science)
Lucia Lazarowski (Psychology: Cognitive and Behavioral Science)
Daniel Lee (Psychology: Clinical Psychology)
Derek Pope (Psychology: Cognitive and Behavioral Science)
Andrew Shen (Psychology: Cognitive and Behavioral Science)
Tuo Shi (Electrical and Computer Engineering)
Andie Thompkins (Psychology: Cognitive and Behavioral Science)
Andrew Thompson (School of Kinesiology)
Yun Wang (Electrical and Computer Engineering)
Wenjing Yan (Electrical and Computer Engineering)
Xinyu Zhao (Electrical and Computer Engineering)

Master's Thesis Committee Chair

Ashley C. Hill (Psychology: Cognitive and Behavioral Science)
Lauren Ashley Jessica Kirby (Psychology: Cognitive and Behavioral Science)
Jerry E. Murphy (Psychology: Cognitive and Behavioral Science)

Julio Yanes (Psychology: Cognitive and Behavioral Sciences)

Master's Thesis Committees (serving as a member):

Elissa Hack (Psychology: Industrial/Organizational Psychology)

Graduated Students:

T. Alex Daniel (Psychology: Cognitive and Behavioral Science), Madhura Baxi (Electrical and Computer Engineering), Jessica Domino (Psychology: Clinical Psychology), Nikhil Garrepalli (Electrical and Computer Engineering), Adam Goodman (Psychology Cognitive and Behavioral Sciences), Sreenath Kyathanahally (Electrical & Computer Engineering), Karthik Sreenivasan (Electrical and Computer Engineering)

OUTREACH

Founder of the Auburn University Brain Imaging Visiting Fellowship (2013-present)
(<http://aubraincamp.com>)

TEACHING EXPERIENCE

Undergraduate Courses Taught:

Psychology of Personality (Case Western Reserve University)
General Psychology (Case Western Reserve University)
Physiological Psychology (Case Western Reserve University)
Emotional Processing (Case Western Reserve University)
Cognitive Neuroscience (Auburn University)
Introduction to the Psychology Major (Auburn University)

Graduate Courses Taught:

fMRI Statistics (Auburn University)
Cognitive Neuroscience (Auburn University)

REFEREED PUBLICATIONS (SELECTED FROM >40)

* = AU graduate student, **=AU undergraduate student

Kirby, L. A. J. K.* & **Robinson, J. L.** (in press). Affective mapping: An activation likelihood estimation (ALE) meta-analysis. *Brain and Cognition*. PMID: 26074298. Impact Factor: 3.790. Percent Contribution: 70%.

Robinson, J. L., Barron, D. S., Kirby, L. A. J.*, Bottenhorn, K. L.**, Hill, A. C.*, Murphy, J. E.*, Katz, J. S., Salibi, N., Eickhoff, S. B., & Fox, P. T. (in press). Neurofunctional topography of the human hippocampus. *Human Brain Mapping*. PMID: 26350954. Impact Factor: 6.924. *Percent Contribution = 85%*. *ISI Journal Citation Reports Ranking 2/14 for Neuroimaging, and 5/125 for Radiology Nuclear Medicine & Medical Imaging, and 27/252 for Neurosciences*.

Sanghera, M. K., Sales, S., **Robinson, J. L.**, Song, J., Encarnacion, E., & Stewart, R. M. (in press). Restless legs syndrome: Non-motor symptoms and medical co-morbidities – A controlled study. *Journal of Parkinsonism and Restless Legs Syndrome*. Impact Factor: Unavailable. Percent Contribution: 35%.

Buchanan, R. J., Darrow, D. P., Meier, K. T., **Robinson, J.**, Schiehser, D., Glahn, D., & Nadasdy, Z. (2015). Changes in GABA and glutamate concentrations during memory tasks in patients with Parkinson's disease undergoing DBS surgery. *Frontiers in Human Neuroscience*, 8, 81. PMID: 24639638. *Percent Contribution = 25%*.

Hill, A. C.**, Laird, A. R., & **Robinson, J. L.** (2014). Gender differences in working memory networks: A BrainMap meta-analysis. *Biological Psychology*, *102*, 18-29. PMID: 25042764. Impact Factor: 3.473. *Percent Contribution = 75%*.

Dolan, S.L., Martindale, S., **Robinson, J.**, Kimbrel, N., Meyer, E., Kruse, M., Morissette, S., Young, K., & Gulliver, S.B. (2012). Neuropsychological sequelae of PTSD and TBI following war deployment among OEF/OIF Veterans. *Neuropsychology Review*, *22*, 21-34. Impact Factor: 5.400. *Percent Contribution = 35%*.

Robinson, J. L., Zerris, V., Friehs, G. M. (2012). Advances in pediatric epilepsy surgery. *Current Pediatric Reviews*, *8(4)*, 77-81. Impact Factor: 2.520. *Percent Contribution = 95%*.

Robinson, J. L., Laird, A. R., Glahn, D. C., Blangero, J, Sanghera, M. K., Pessoa, L., Fox, P. M., Uecker, A., Friehs, G. M., Young, K. A., Griffin, J. L., Lovallo, W. R., & Fox, P. T. (2011). The functional connectivity of the human caudate: An Application of meta-analytic connectivity modeling with behavioral filtering. *NeuroImage*, *60(1)*, 117-129. PMID: 22197743. Impact Factor: 7.289. *Percent Contribution = 85%*.

Glahn, D.C., **Robinson, J. L.**, Tordesillas-Gutierrez, D., Monkul, E. S., Holmes, M. K., Fox, P. T., Green, M. J., Bearden, C. E. (2010). Fronto-temporal dysregulation in asymptomatic bipolar I patients: A paired associate functional MRI study. *Human Brain Mapping*, *31(7)*, 1041-1051. PMID: 20063304. Impact Factor: 6.924. *Percent Contribution = 40%*. *ISI Journal Citation Reports Ranking 2/14 for Neuroimaging, and 5/125 for Radiology Nuclear Medicine & Medical Imaging, and 27/252 for Neurosciences.*

Laird, A. R., **Robinson, J. L.**, McMillan, K., Tordesillas, D., Thelen, S., Lancaster, J. (2010). Comparison of Talairach and MNI coordinates in functional neuroimaging data: Validation of the icbm2tal transform. *NeuroImage*, *51(2)*, 677-683. PMID: 20197097. Impact Factor: 7.289. *Percent Contribution = 40%*.

Lovallo, W. R., **Robinson, J. L.**, Fox, P., & Glahn, D. C. (2010). Effects of exogenous cortisol on the human brain. *Psychoneuroendocrinology*, *35(1)*, 15-20. Impact Factor: 5.591. PMID: 19836143. *Percent Contribution = 50%*.

Robinson, J. L., Laird, A. R., Lovallo, W. R., Glahn, D. C., & Fox, P. T (2010). Meta-analytic connectivity modeling: Delineating the functional connectivity of the human amygdala. *Human Brain Mapping*, *31(2)*, 173-184. PMID: 19603407. Impact Factor: 6.924. *Percent Contribution = 95%*. *ISI Journal Citation Reports Ranking 2/14 for Neuroimaging, and 5/125 for Radiology Nuclear Medicine & Medical Imaging, and 27/252 for Neurosciences.*

Robinson, J. L., Bearden, C. E., Monkul, E. S., Tordesillas-Gutierrez, D., Velligan, D. I., Miller, A. L., Frangou, S., & Glahn, D. C. (2009). Fronto-temporal dysregulation in remitted bipolar patients: An fMRI delayed-non-match-to-sample (DNMS) study. *Bipolar Disorders*, *11*, 351-360. PMID: 19500088. Impact Factor: 4.888. *Percent Contribution = 75%*.

Robinson, J. L., & Demaree, H. A. (2009). Experiencing and regulating sadness: Physiological and cognitive consequences. *Brain and Cognition*, *70(1)*, 13-20. PMID: 19282081. Impact Factor: 2.683. *Percent Contribution = 90%*.

Robinson, J. L., Monkul, E. S., Tordesillas-Gutierrez, D. T., Franklin, C., Fox, P. T., & Glahn, D.C. (2008). Fronto-limbic circuitry in euthymic bipolar disorder: Evidence for prefrontal hyperactivation. *Psychiatry Research: Neuroimaging*, 164(2), 106-113. PMID: 18930635. Impact Factor = 2.831. *Percent Contribution = 75%*.

Robinson, J. L., & Demaree, H. A. (2007). Physiological and cognitive effects of expressive dissonance. *Brain and Cognition*, 63(1), 70-78. PMID: 17046129. Impact Factor: 2.683. *Percent Contribution = 75%*.

FUNDING

Funded

Auburn University Internal Grants Program

Title: Sleep disruptions and risk in adolescence: Physiological underpinnings

Years: 2014-2016

Funding: \$103,040

Position: Co-Principal Investigator

Goal: Use fMRI and psychophysiology to characterize sleep deprivation in adolescence.

Department of Defense (TATRC)

Title: The root cause of post-traumatic and developmental stress disorders

Years: 2007-2012

Position: Co-Investigator

Goal: This is a Program Project to investigate genetic and developmental stress effects on brain anatomy and function as it relates to predisposition to PTSD and Depression.

Department of Defense (University XXI)

Title: Post-traumatic stress disorder and traumatic brain injury: Probabilistic tracking

Years: 2010-2012

Position: Co-Investigator

Goal: This is a project to investigate new MRI-based procedures and scanning sequences that may have application in distinguishing the effects of TBI and stress-related neuropsychiatric disorders on behavioral problems.

Scott & White Memorial Hospital Research Grants Program

Title: Investigating models of functional connectivity in temporal lobe epilepsy

Years: 2010-2012

Funding: \$50,000

Position: Principal Investigator

Goal: Use fMRI to enhance pre-surgical planning and investigate the effectiveness of using functional connectivity measures in the evaluation of surgical risk

Scott & White Memorial Hospital Research Grants Program

Title: Neural tracts in de-novo and advanced Parkinson's disease

Years: 2009-2010

Funding: \$5,000

Position: Co-Mentor (Grant obtained for a student)

Goal: Examine disease symptomatology and their potential neuroanatomical correlates of Parkinson's disease

Jeffrey S. Katz

Department of Psychology

226 Thach

Auburn University

Auburn, AL 36849

<http://www.auburn.edu/~katzjef/>

E-mail: katzjef@auburn.edu

Telephone: (334)703-3922(c), (334)844-6490(w)

Education

- 1998 Ph.D. Experimental Psychology
Specialty areas: Learning and Cognition of Animals and Humans
Dissertation Title: *Stimulus Repetition Effects on Texture-Based Search by Pigeons*. Tufts University, Medford, MA.
Advisor: Robert G. Cook
- 1993-96 M.S. Masters Title: *Binding Processes and Compound Discrimination by Pigeons*. Tufts University, Medford, MA
Advisor: Robert G. Cook
- 1985-89 B.A. Psychology (Major)
Computer Science (Minor)
Ithaca College, Ithaca, NY

Professional Experience

- 2011- *Adjunct Professor*, Electrical & Computer Engineering, Auburn Univ.
2010- *Alumni Professor*, Department of Psychology, Auburn Univ.
2006-10 *Alumni Associate Professor*, Department of Psychology, Auburn Univ.
2005-06 *Associate Professor*, Department of Psychology, Auburn Univ.
2000-05 *Assistant Professor*, Department of Psychology, Auburn Univ.
1998-00 *Postdoctoral Fellow*, University of Texas Medical School at Houston
1990-93 *Laboratory Supervisor*, Oncolab, Inc. Boston, MA.
1989-90 *Laboratory Technician*, Oncolab, Inc. Boston, MA.

Honors and Awards

- Gerald and Emily Leischuck Endowed Presidential Award for Excellence in Teaching (2015)
Comparative Cognition Society Recognition of Service (2014)
Psi Chi Excellence in Undergraduate Teaching, Department of Psychology
Auburn University (2001-2002, 2012-2013)
College of Liberal Arts Academy of Teaching and Outstanding Teachers (2012 induction)
Alumni Professor Award, Auburn University (2006-2011)
American Psychological Association Fellow Status in Division 6 (Behavioral

Neuroscience and Comparative Psychology) (2008)
American Psychological Association Fellow Status in Division 3 (Experimental Psychology) (2007)
College of Liberal Arts Early Career Teaching Award, Auburn University (2004-2005)
Who's Who Among America's Teachers (2002, 2004, 2005) (Less than 2% of our nations teachers are included in more than one edition)
Outstanding Professor, Auburn University Panhellenic Council (2003)
American Psychological Association Division 3 (Experimental Psychology) 2001 Young Investigator Award Winner

Curriculum Development / Teaching Experience

Undergraduate at Auburn University

Advanced Experimental Psychology (Psychology 4240)
Cognitive Neuroscience (3970)
Cognitive Psychology (Psychology 3540)
Experiential Learning (Psychology 3940)
Honors Introduction to Psychology (Psychology 2017)
Honors Reading (Psychology 4967)
Honors Research and Thesis (4997)
Independent Study (Psychology 4900)
Orientation to the Psychology Major (Psychology 2020)
Sensation and Perception (Psychology 3530)
Seminar in Psychology: Animal Cognition (Psychology 4960)

Graduate at Auburn University

Cognitive Psychology (Psychology 7190)
Animal Cognition (Psychology 7200)
Experimental Analysis of Behavior Seminar (Psychology 8500)

Tufts University

Instructor

Cognitive Psychology (Psychology 28)
Experimental Psychology Laboratory (Psychology 32)
Research Projects Advisor (Psychology 121)

Research Grants (active)

Reid, M.A. (PI), Sponsors: Katz, J.S., Denney, T.S. National Institute of Mental Health. (2015-2017) (\$162,642) F32 MH106282. *7T functional MRS to study metabolite variations during working memory.*
Deshpande, G. (PI), CO-Is: Denney, T. S., Katz, J. S., et al. DARPA (2014-2016) (\$996,875) .G00008414 *Functional Imaging for Develop Outstanding Service Dogs (FIDOS)*

Publications (10 Most Recent from > 50)

1. Robinson, J. L., Barron, D. S., Kirby, L. A. J., Bottenhorn, K. L., Hill, A. C., Murphy, J. E., Katz, J. S., Salibi, N., Eickhoff, S. B., & Fox, P. T. (In Press). Neurofunctional topography of the human hippocampus. *Human Brain Mapping*.
2. Goodman, A. M., Katz, J. S., & Dretsch, M. N. (2016). Military Affective Picture System (MAPS): A new emotion-based stimuli set for assessing emotional processing in military populations. *Journal of Behavior Therapy and Experimental Psychiatry*, *25*, 152-161.
3. Daniel, T. A., Cook, R. G., & Katz, J. S. (2015). Temporal dynamics of task switching and abstract-concept learning in pigeons. *Frontiers in Psychology: Cognition*, *6*:1334. doi: 10.3389/fpsyg.2015.01334
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Student Supervision

- 6 Undergraduate Honors Thesis (Chamberlain, Everett, Mayhall, Rivera, Stokes, Thompson);
- 9 Masters Thesis (Bodily, Daniel, Farshid, Goodman, Hernandez, Magnotti, Schmidtke, Sturz, Thompkins);
- 8 Doctoral Dissertations (Bodily, Daniel, Farshid, Goodman, Hernandez, Magnotti, Schmidtke, Sturz)