

**Directory of Neuroscience Independent Study Mentors
2010-2011**

	General Research Interests	Methodologies used	Current Projects	Research Activities	Requirements
<p>Abood, PhD Mary E. mabood@temple.edu Associate Professor Anatomy and Cell Biology Temple University School of Medicine</p>	<p>Mechanism of action of Cannabinoids – receptors involved.</p>	<p>Cellular/molecular biology techniques</p>	<p>cDNA expression of candidate GPCR that might be Cannabinoid; identifying the roles of GPR55 and GPR35 in development and degeneration of the nervous system; Site-directed mutagenesis – how receptor function changes.</p>	<p>Cell culture, Western-blot analysis, immunocytochemistry, radio-ligand binding assay</p>	<p>Highly motivated, self-driven students should apply. Biochemistry or Cellular/Molecular Biology coursework or lab experience is helpful but not necessary.</p>
<p>Chein, PhD Jason jason.chein@temple.edu Assistant Professor Department of Psychology Temple University</p>	<p>Cognitive control and working memory</p>	<p>Behavioral experimentation, fMRI</p>	<p>Working memory training effects on short-term memory to yield more benefits; adolescent risk-taking vs. adult risk-taking; investigations of reasoning /decision making.</p>	<p>Test human subjects, program experiments, data-entry, literature and library searches.</p>	<p>Highly motivated, self-driven students who have a 3.0 GPA and have completed foundation or fundamental courses in cognitive psych or neuroscience; MS excel, SPSS, eprime, matLab experience preferred.</p>
<p>Curby, PhD Kim M. curby@temple.edu Assistant Professor Department of Psychology Temple University</p>	<p>What changes occur in the brain, and what visual processing strategies does one learn, as one develops skill with a particular visual task? This is the question driving most of the research we do in our lab.</p>	<p>Psychophysics; functional Magnetic Resonance Imaging (fMRI)</p>	<p>Understanding the changes in cognitive processing and the neural regions recruited that underlie skilled processing of visual information; how a perceiver's emotional state or pre-existing knowledge changes the way visual information is processed in the brain.</p>	<p>Test/train human subjects, program experiments, create visual stimuli in Photoshop, data-entry, literature and library searches.</p>	<p>Students should be rising Sophomores or Juniors (beginning seniors will be considered on a case-by-case basis) with at least a 3.0 GPA. Preference will be given to those with Photoshop, Excel, E-prime, MatLab, or any computer programming experience.</p>

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<p>Giovannetti, PhD Tania tgio@temple.edu Associate Professor Department of Psychology Temple University</p>	<p>The breakdown of everyday functioning in people with brain damage/disease. Interventions and rehabilitation techniques to improve functioning of people with brain damage/disease.</p>	<p>Behavioral studies of healthy people as well as people with brain damage/disease</p>	<p>Examining the efficacy of executive function training on everyday action performance in people with schizophrenia; examining everyday action performance in healthy older adults, examining everyday action knowledge in people with Alzheimer's disease vs. Parkinson's disease.</p>	<p>Test human subjects, code participant behaviors from videotape, literature searches</p>	<p>Students should be rising Sophomores or Juniors with at least a 3.0 GPA. Students should be very organized, conscientious, motivated, and curious about the brain, cognition, and human behavior. Preference will be given to students who have taken and done well in Cognitive Psychology and Cognitive Neuroscience. Experience with Excel is highly desirable.</p>
<p>Gould, PhD Thomas J. tgould@temple.edu Associate Professor Department of Psychology Director – Neuroscience Temple University</p>	<p>The effects of nicotine on learning and memory; therapeutics that facilitate smoking cessation; the effects of other drugs of abuse and nicotine on cognition</p>	<p>Behavioral analysis, histology, molecular biology</p>	<p>Examination of the effects of nicotine on hippocampus functioning and hippocampus-dependent learning. This research also examines genetic factors that may contribute to the effects of nicotine on cognition.</p>	<p>Data collection, analysis, microbiology lab techniques</p>	<p>Students should be rising Sophomores or Juniors (no Seniors) with a 3.0 GPA. Prerequisite: either Fundamentals of Neuroscience, Foundations of Cognitive Neuroscience, or Foundations of Behavioral Neuroscience. MS Office familiarity is desirable.</p>
<p>Keshner, PT, EdD Emily A. ekeshner@temple.edu Professor and Chair Department of Electrical and Computer Engineering College of Engineering Temple University</p>	<p>To understand how the central nervous system calculates the neural and bio-mechanical components of complex, whole body movements when engaged in postural and spatial orientation tasks. Sensorimotor</p>	<p>Virtual Environment; Dynamic Posture Platform; 3D Motion analysis infrared camera system; Electromyography (EMG); linear sled</p>	<p>Effects of visual dynamics on postural orientation in elderly and patients post-stroke; role of vestibular reflexes in head stabilization during visual-vestibular conflict; reaching in a dynamic virtual environment.</p>	<p>Data collection from human subjects during combined physical and visual perturbations includes kinematic measures using force plates, 3D motion analysis, and EMG.</p>	<p>Interest in working with people; excellent communication skills given the majority of subjects are elderly. Comfort with matLab preferred. Prerequisite courses: Fundamentals of Neuroscience.</p>

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	integration.				
Kiani, PhD FAHA, Mohammad F. mkiani@temple.edu Professor and Chair Mechanical Engineering College of Engineering Temple University	Targeted drug delivery to tumors and post-infarct cardiac tissue, tissue engineering, design and development of biofluidic devices, effects of radiation on brain tissue, and microcirculatory blood flow.	Intra-vital Microscopy; Nanotechnology; Microhemodynamics	Biofluidic devices; targeted drug delivery	In vitro and In vivo research.	Have a strong science background and have completed introductory level coursework in Physics, Chemistry and Biology. A background in math is helpful but not necessary.
Langford, PhD T. Dianne tdl@temple.edu Assistant Professor, Neuroscience Assistant Professor, Neurovirology Temple University School of Medicine	Blood brain interface and HIV Host and Viral Interaction				
Martin, PhD, CCC-SLP Nadine nmartin@temple.edu Professor Department of Communication Sciences and Disorders College of Health Professions and Social Work, Temple University	Aphasia (executive functions), STM in lexical processing, Computational Modeling, Aphasia Treatment	Cognitive tests of language, short-term memory and executive function. Theoretically motivated behavioral treatment programs to improve language and verbal STM abilities.	Sentence Processing, Syntactic Priming, New word learning after acquired brain damage, Bilingual (Spanish) aphasia study, STM and executive functions in aphasia.	Phonetic-transcription, data-collection/scoring, performance tests, assistance in administration of diagnostic battery/treatment protocols	Be excited about working with patients (adults) and the laboratory culture; coursework in psycholinguistics/psychology of language/memory (i.e. Language Processing (CSC+DIS 2218)). Computational-modeling experience (SPSS, MS Excel,

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					eprime) and Sophomore/Juniors preferred.
<p>Marshall, PhD Peter J. pjmarsh@temple.edu Associate Professor Department of Psychology Temple University</p>	Developmental cognitive neuroscience.	Electroencephalogram (EEG)/Event Related Potentials (ERP), autonomic, Electromyography (EMG)	Theoretical frameworks which propose that an observed action activates the same motor processes or motor schemas in the observer's brain that would be activated if he or she was performing or planning the same action. Questions concerning the ontogeny of the mirror system are of much current interest.	Assisting with testing, data-entry, administrative support.	Highly motivated, self-driven students with a 3.0 GPA, have completed foundation courses in cognitive psych, neuroscience or developmental psych (NSI 2121); Sophomores/juniors with MS excel, SPSS, eprime, and matLab experience preferred.
<p>Obeid, PhD Iyad iobeid@temple.edu Assistant Professor Electrical & Computer Engineering College of Engineering Temple University</p>	Neural prostheses, Neural engineering, neural signal processing, medical devices	Signal processing theory, analog and digital circuit design	Functional neural-muscular modeling, hardware implementations of neural signal processing	Data analysis, data collection, software development	matLab and/or C/C++
<p>Olson, PhD Ingrid iolson@temple.edu Assistant Professor Department of Psychology Temple University</p>	1. Neural basis of human memory; 2. High-level vision, especially in regards to perceptual functions of the anterior temporal lobes and dorsal visual stream.	Psychophysics, fMRI, transcranial magnetic stimulation (TMS), and patient testing	1. Hippocampal memory system and parietal lobe in visual short-term memory, spatial memory, and episodic memory; 2. fine-grained discrimination of objects, as well as distance and space perception.	Test human subjects, program experiments, data-entry, literature and library searches.	Students should be rising Sophomores or Juniors (no Seniors) with a 3.0 GPA. Preference will be given to those with eprime, matLab, SPSS, C++ or java experience.

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<p>Palter, PhD Karen Department of Biology palter@temple.edu Associate Professor College of Science and Technology Temple University</p>			<p>post translational modification of a shaker channel, the addition of sugars to two conserved sites on the shaker protein that affect the voltage sensing of the channel. Using real time PCR of shaker RNA and examining whether any of the sialic acid pathway transcripts are also up-regulated in response to stimulation</p>		
<p>Parikh, PhD Vinay vinay.parikh@temple.edu Assistant Professor Department of Psychology Temple University</p>	<p>Neurochemical basis of cognition and cognitive disorders</p>	<p><i>In vivo</i> extracellular electrochemical/ electrophysiological recordings in rodents; Operant training; immunohistochemistry, western-blotting, cell culture, PCR, vector-based RNA interference approaches</p>	<p>Trophic influences on neurodevelopment and aging, synaptic transmission/plasticity, and cognition. Neurochemical substrates of information processing in striatal and prefronto-cortical microcircuits. Exploration of neurochemical mechanisms that underlie cognitive dysfunction in neuropsychiatric disorders.</p>	<p>Behavioral training, electro-chem /phys anesthetized and awake/performing animal recordings, quantifying blots/imaging, data analyses, literature search, writing SOPs</p>	<p>Highly motivated, self-driven students interested in neuroscience bench laboratory work. Familiarity with SPSS, Sigma Plot/Prism, MATLAB, Medstate Notation and Photoshop would be a plus</p>
<p>Picone, PhD Joseph joseph.picone@temple.edu</p>	<p>Statistical modeling of speech and other</p>	<p>Signal processing; Machine learning;</p>	<p>Recognition of spoken language by computer;</p>	<p>Preparation and analysis of vast</p>	<p>Interest in computational modeling using tools such as</p>

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Professor and Chair Electrical Engineering Temple College of Engineering	biological signals.	Information theory	speaker and language identification; keyword search of voice; speech enhancement in extremely noisy environments.	amounts of audio data; mining of relevant information from the Internet; merging neuroscience and signal processing representations.	MATLAB or programming languages such as Java.
Pratico, PhD Domenico praticod@temple.edu Associate Professor Temple University School of Medicine - Pharmacology	Neurodegeneration	In vivo – drug interactions, animal husbandry, genotyping; In vitro – Western-blot, ELISA, transfection	1. Evaluate the novel role of enzyme metabolism in Alzheimer’s disease pathogenesis (modulate beta/tau); 2. dietary approach - acceleration/deceleration of disease (homocystine-induced).	Immunohistochemistry; Biochemistry; Molecular biology – PCR, quantitative over-expression system	Highly motivated, self-driven students interested in neurobiology – from the biochemistry/molecular biology perspective.
Raffa, PhD Bob robert.raffa@temple.edu Professor and Chair Department of Pharmaceutical Sciences Temple University School of Pharmacy	Analgesics and analgesic combinations.		1. Drug abuse (withdrawal in Planaria) 2. Mechanisms of action of acetaminophen 3. Thermodynamics – enzymes, drug binding, pharmaceuticals applications		
Ramirez, PhD Servio H. servio.ramirez@temple.edu Assistant Professor Pathology and Laboratory Medicine Temple University School of Medicine	Cerebral vascular biology; Molecular/ signaling mechanisms leading to regulation of the Blood Brain Barrier.	Proteomics, Intra-vital microscopy and live cell imaging; Immunohistochemistry (multiple modalities); In-vitro blood brain barrier modeling; Evaluation of	Assay development for evaluating Blood Brain Barrier functional; Neuroregeneration, focusing on understanding the interaction between brain endothelium and neural progenitor cells; Anti-	Primary human cultures (brain endothelial cells, astrocytes, immune cells and neural stem cells); In-vivo experimentation; Analysis of patient tissue/CSF/blood	A 3.0 GPA in core coursework is preferred. Courses in biochemistry, fundamental neuroscience, anatomy/physiology, and graduate level coursework in biomedical related topics are also preferred.

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		transendothelial electrical resistance; Viral vector construction for transgene delivery.	inflammatory approaches for treatment of HIV-1 related neuropathologies; Biomarkers for neurotrauma		
Sawaya, PhD Basel E sawaya@temple.edu Associate Professor Neurology Temple University School of Medicine	Molecular mechanism of neurodegenerative disease: how HIV leads to dementia	Molecular biology techniques	Analyzing and comparing the blood/CSF/tissue of HIV infected patients in Asia/Africa v. USA; investigating biomarkers for neurofibromatosis and MS	Basic science bench work; literature and library searches; project meetings and small presentation.	Highly motivated, self-driven students need apply. Biochemistry or Cellular/Molecular Biology coursework or lab experience is helpful but not necessary.
Stefanatos, D. Phil. Gerry A. gerry.stefanatos@temple.edu Associate Professor Communication Sciences and Disorders College of Health Professions Temple University	Pediatric and adult neuropsychology; fMRI of auditory and language processing; Cognitive neurophysiology (Event-Related Potentials-ERP); Developmental disorders; Aphasia.	Neuropsychological assessment, behavioral experimentation fMRI, human electrophysiology (ERP)	Localization of language in the brain in neurosurgical patients/normal controls; Neuroplasticity in aphasia; Retrospective analysis of epileptic aphasia (LKS) and regressive autism; Cortical auditory processing of speech/nonspeech; Evoked potentials.	Test human subjects, data collection and analysis, literature and library searches. Unique skills sets are welcome. (e.g. video editing, sound editing, statistics, etc.)	Students must be self-motivated and conscientious. Prerequisite: Either Introduction to Neuroscience, Human Neuroscience, Neuropsychology or another foundational brain-behavior course.
Tuszynski, PhD George P. gpt@temple.edu Professor Department of Neuroscience Temple University School of Medicine	Angiogenesis in Cancer Biology; Development of experimental cancer therapeutics; Stem Cell biology.	ELISA, Western blot, tissue culture, immunohistochemical staining, Recombinant protein expression, protein purification.	Epigenetic Control in Neurogenesis and Neurodegeneration, Differentiation of cancer cells,	Performing in vitro assays. Data correlation. Presentation skills.	General Chemistry with lab is desirable; students should be familiar with solutions (i.e. molarities) and keeping a laboratory notebook. Training and laboratory skills booklet will be provided.
Unterwald, PhD Ellen M. ellen.unterwald@temple.edu Professor Department of Pharmacology Temple University School of	Neurobiology of addiction.	Behavioral assays including measurements of activity, reward, anxiety, and depression in rats and mice.	Neuroimmunopharmacology, receptor-ligand interactions for drugs of abuse, drug interactions, factors that control behaviors induced by the drugs of abuse in	Laboratory research including behavioral and/or neurochemical studies on drugs of abuse. Literature searches.	Highly motivated, self-driven students who are comfortable working with animals and not allergic to animal dander. Unique skills sets are welcome.

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Medicine		Protein analysis by Western blots and immunohistochemistry. Receptor measurements. Enzyme assays.	animals.	Data analysis, statistical analysis and graphic representation.	
Woodruff-Pak, PhD Diana S. pak@temple.edu Professor Department of Psychology Temple University	Neurobiology of learning and memory. Cognition in normal aging and Alzheimer's disease.	Neuropathology (histology) and behavior in animal models of Alzheimer's disease and normal aging.	Evaluation of drugs to treat Alzheimer's disease; assessment of behavior and brain changes in mice over the life span. Stress of effects on brain hormones and behavior in mice.	Animal behavioral testing; microscope and histology techniques.	Student must be comfortable with handling animals and/or interest/experience with microscope/histology/immunohistochemistry
Wright, W. Geoffrey william.geoffrey.wright@temple.edu Assistant Professor College of Health Professions and Social Work Temple University	The central nervous system in individuals with impairment to motor control, balance, and gait, with the intention of applying knowledge about sensorimotor integration in the central nervous system to shaping rehabilitation therapy.	Virtual Environment; Dynamic Posture Platform; 3D Motion analysis infrared camera system (kinematics); Electromyography (EMG); linear sled	Visual-vestibular interaction (sensorimotor integration) – virtual reality and head-mounted display; Parkinson's Disease – how it affects muscle rigidity and posture control.	Learning to use: motion analysis, EMG, fMRI, matLab; data collection and analysis; literature and library searches.	Students should be underclassmen or Juniors with at least a 3.0 GPA. Prerequisite: Fundamentals of Neuroscience. Preference will be given to those with matLab, SPSS, C++ or MS Excel experience.

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<p>Walker, PhD Ellen ellen.walker@temple.edu Professor Department of Pharmaceutical Sciences Temple School of Pharmacy</p>	<p>Cellular and molecular mechanisms involved in drug addiction. Particularly neuroadaptations in specific receptors, signal transduction pathways, and transcription factors that result from exposure to psychostimulants (eg, cocaine, amphetamine, and methylphenidate) and opiates (eg, morphine and heroin).</p>				