Rempel-Clower

Research in Rempel-Clower's lab investigates the brain circuitry involved in emotion processing. This summer, two MAP students will participate in this research studying the neural pathways connecting the rat orbitofrontal cortex and the amygdala. We will conduct stereotaxic surgery to make neural tracer injections, carry out histological processing of brain tissue, and use Neurolucida software and light microscopy to conduct analysis of the axon terminals of injected neurons. MAP students are expected to be highly motivated to take initiative in this work, conducting literature reviews, learning neuroanatomical techniques, analyzing stained brain sections, and writing complete final research reports of the projects. Students also are expected to present their work at the family weekend poster session and at a regional or national conference. Successful candidates should be comfortable working with rats, attentive to detail, and able to work independently. Interested candidates are encouraged to contact Professor Rempel-Clower.

D. Kelty-Stephen

My work investigates learning in perceptual-motor tasks in which available visual and touch-based streams of perceptual information are either decoupled or perturbed. Various tasks can be used to probe the effect of such perturbations to the available visual or touch-based information. For instance, in one paradigm, participants wield unseen objects, judge object length, and receive visual feedback regarding their accuracy, and this training can change the way that touch-based information is translated into a perception of length. Another task involves asking participants to toss bean bags to a target that they can only see through prism goggles that shift the visual field by a few degrees. Posing human participants with the problem of learning these sorts of novel coordinations of visual and touch-based information has been a rich source of insights into the discovery of new rules and perceptual flexibility. I would like to propose a MAP project involving three students who might design and carry out experiments along these lines.

E. Kelty-Stephen

I am interested in how children learn words. What information do they need to remember a new word? How quickly does it become part of their lexicon? In previous studies, adults have been trained to memorize nonsense words in different ways in an attempt to analyze how well they remember the words under different conditions, and also whether memorizing the words affects the way they hear phonemes. This effect is well-documented with real words; when a person hears a word that is slightly mispronounced, they typically "fill in" the correct sound. There are many open questions about how this happens, particularly with children. This summer, I would like to adapt this paradigm for use with preschool and/or grade-school children. I plan to advise 2-3 students on a project that will ask questions about how children learn new words and how deeply they process those words. We will read literature from developmental and cognitive perspectives, design experiments, recruit children to participate, collect data, and prepare papers and posters for presentation.

Tracy

Behavioral and physiological effects of high-fat diet consumption and obesity (in a rat model). There will be positions available in my lab this summer for students interested in using behavioral, physiological and pharmacological techniques to assess the effects of eating a high-fat diet on processes of learning, memory and motivation. Must be attentive to detail, have good time management skills and be willing to work with rats. Open to applicants from all majors - course work or research experience in any of: neuroscience, physiological psychology, behavior analysis, cellular/molecular biology, research methods, or statistics preferred.