



Annual Meeting Research Highlights December 2008

Ability to Detect Stem Cells in the Brain May Help Treat Depression

Researchers have discovered a potential way to identify stem cells in the human brain using magnetic resonance spectroscopy. Although it was once thought that humans are born with all the brain cells they will ever have, we now know that neurogenesis—the birth and development of new nerve cells from stem cells—occurs throughout life. Previously, stem cells and neurogenesis could only be detected in the human brain after death, making it difficult to understand their importance. However, the new imaging methods will finally enable scientists to measure neurogenesis in the living human brain. Based on research in animals, scientists have hypothesized that abnormally low rates of neurogenesis may be a factor in the development of depression. For the first time, scientists will be able to study relationships between neurogenesis and mood states in humans, which may ultimately lead to the development of better treatments for depression.

Abstract Title: Hippocampal Neurogenesis in Young and Old: Implications of Antidepressant Effects
Author: Mirjana Maletic-Savatic, MD, PhD, Baylor College of Medicine
Presentation Date: Thursday, December 1, 2008
8:30 a.m. MST

Important New Research on Dementia in the Oldest Old

New research shows that dementia in very old people is associated with a different pattern of pathological changes in the brain than when dementia occurs in younger individuals. People that are 60-80 years of age showed the typical pattern of plaques and tangles and changes in neurotransmitters associated with Alzheimer's disease. However, the "oldest old" (90-107 years of age) didn't have these typical brain changes, but instead showed evidence of inflammatory and immune responses in the brain. The revelation that inflammation is associated with dementia in the very old suggests that new treatments might be developed that are uniquely effective in treating cognitive disorders in the longest living elderly, the most rapidly growing segment of the population.

Abstract Title: Neuropathology and Molecular Neurobiology of Healthy Aging and Dementia in the Oldest Old
Author: Vahram Haroutunian, MD, The Mount Sinai School of Medicine, New York, NY
Presentation Date: Thursday, December 11, 2008
12 p.m. MST

Neuroimaging Research Finds Discrete Brain Circuits That Are Critical For Parenting And Helps Individuals Adapt To Parenting Roles

Mothers can apparently tell her own baby's cry from a room of screaming infants, but now researchers have identified specific brain regions that allow her to do this and support her parenting responses. Using imaging methods, James Swain and colleagues at Yale University found that key emotion-related brain circuits are activated in parents' brain by their baby's cry also vary in their response according to measures of their parenting thoughts and behaviors. In subgroups, certain brain activity also vary according to sub-clinical mood and anxiety. Besides adding to our understanding of relationship formation, such information may lead to strategies for early identification of parents at risk for postpartum depression and enable improved coping for parenting and family health.

Abstract Title: Functional Brain Imaging Of Parent Responses To Infant Stimuli: Timing, Experience, Delivery
Author: James Swain, MD, PhD, FRCPC, Yale University
Presentation Date: Sunday, December 7, 2008
4:00-6:00 p.m. MST

Deep Brain Stimulation Shows Great Promise For Treating OCD

Despite the ability of drug or behavioral therapies to help many of those suffering from Obsessive-Compulsive Disorder (OCD), a large number of individuals whose lives are completely disrupted by this disorder fail to be helped by these traditional approaches. A new approach based on high-frequency electrical stimulation of deep brain areas (DBS) has shown immense promise for treatment of severe OCD. Using a rodent model, scientists tested the effects of DBS on electrical fields generated by brain neurons to see how DBS affects brain circuits. DBS was found to produce specific changes in rhythmic activity within the same brain regions that clinical studies found were disrupted in OCD. Therefore, by directly altering the balance of activity within selected brain regions, DBS may help to restore the rhythmic activity in the brain that is disrupted and that underlies the behavioral difficulties experienced by patients with OCD. Scientists caution that the specifics of how DBS acts on the brain to treat disorders is only at the initial stages of discovery.

Abstract Title: Effects of Nucleus Accumbens Deep Brain Stimulation on Local Field Potential Activity in Rat Frontal Cortex
Author: Clinton McCracken, PhD, University of Pittsburgh
Presentation Date: Wednesday December 10, 2008
5:30-7:30 p.m. MST