Ananth Narayanan
PhD Candidate

“Pharmacological Modulation of Functional Connectivity in Neuropsychological Disorders”

November 7th, 2012
Davis Heart & Lung Research Institute, Room 170
2:30PM
VITA

January 19th, 1980. . . . . . . . . . Born – Chennai, Tamil Nadu, India

June, 2003. . . . . . . . . . . . . . . . . . . . . . . . . . BS: Electrical &
Computer
Engineering,
Molecular Genetics;
The Ohio State
University

FUTURE PLANS

Will work in the industry.

COMMITTEE MEMBERS

Petra Schmalbrock, PhD
David Beversdorf, MD
Michael Knopp, PhD
Douglas Scharre, MD
Virginia Sanders, PhD
ABSTRACT

A decrease in interaction between brain regions is observed in individuals with autism spectrum disorder (ASD), which is believed to be related to restricted neural network access in ASD. Propranolol, a beta-adrenergic antagonist, has revealed benefit during performance of tasks involving flexibility of access to networks, a benefit also seen in ASD. Our goal was to determine the effect of propranolol on functional connectivity in ASD during a verbal decision making task as compared to nadolol, thereby accounting for the potential spurious fMRI effects due to peripheral hemodynamic effects of propranolol. Ten ASD subjects underwent fMRI scans after administration of placebo, propranolol or nadolol, while performing a phonological decision making task. Comparison of functional connectivity between predefined ROI-pairs revealed a significant increase with propranolol compared to nadolol, suggesting a potential imaging marker for the cognitive effects of propranolol in ASD.

Recent research revealed decreased access to semantic and associative networks in acute cocaine withdrawal. In autism, such behavioral outcomes are associated with decreased functional connectivity using functional magnetic resonance imaging. Therefore, we wished to determine whether connectivity is also decreased in acute cocaine withdrawal. Eight subjects in acute cocaine withdrawal were compared to controls for connectivity in language areas while performing a word categorization task. Acute withdrawal subjects had...
significantly less overall connectivity during semantic categorization and a trend towards less connectivity during phonological categorization. This is of interest due to recent research revealing pharmacological effects on connectivity in autism.

**RECENT ABSTRACTS AND PRESENTATION**


