



FIU

FLORIDA INTERNATIONAL UNIVERSITY



BIOMEDICAL ENGINEERING LECTURE SERIES

THURSDAY, MAY 24, 2007, 10:30AM

**FIU Engineering Center
10555 West Flagler Street
Room EC 2300**

TARA H STEWART, PhD

THE PRIMARY AND EXTRASTRIATE VISUAL CORTEX: A CAT'S EYE VIEW

Cortical abnormalities present themselves in numerous diseases including childhood Strabismus, Huntington's Disease and Epilepsy. Comparative studies of cortical structure and neuronal function provide the basis for understanding a disease's particular clinical presentation, and guidance for possible therapeutic options. This presentation uses data from my experiences to outline a research approach to studying the developing brain and atypical neuronal organization, such as cortical dysplasia.

The extrastriate visual cortex of the cat is anatomically complex with no clear functional maps. Retrograde tracing was used to identify anatomic modules in extrastriate area 19 as well as projections to area 21a and PMLS. Cytochrome oxidase staining was used to determine how deprivation of motion input affects primary visual cortex maps.

The pyloric circuit of the lobster is a simplified neuronal circuit for examining the contribution of various ion channels to bursting neurons. A temperature acclimation model was used to physiologically adjust the circuit and demonstrate that neurons adapted to be functional over a wide range of frequencies. Intracellular recordings and ongoing proteomic analysis reveal channel specific changes which may account for this adaptation.

Somatosensory evoked potentials and Transcranial Motor evoked potentials are traditionally used to help detect damage during spinal surgeries, but they can also be used to detect neuropathies in adolescent females that are not evident on physical examination. Integrating basic science techniques and clinical medicine provides a powerful tool to test hypothesis in a clinical setting.

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