

# Report

The lecture workshop “**Cognitive Neurosciences – An interdisciplinary approach to understanding behavior**” on 10<sup>th</sup> and 11<sup>th</sup> January 2011 at Sophia College, Mumbai was an enriching experience for both students and faculty members of Psychology as well as Biological Sciences. A first of its kind especially for undergraduate students at Mumbai it gave them an opportunity to consider this as an emerging and exciting field of science which requires expertise from physics, biology, psychology and the medical field.

A brief introduction by Dr. Rohit Manchanda (Local Convener) explained that cognition as a subject is difficult to comprehend if studied in terms of the number of neurons in organism. He compared a housefly to human, in terms of the number of genes and synaptic connectivity. His talk introduced the various methods used to study cognition and also introduced all the other speakers who would be elaborating on these topics..

Dr. Aditya Murthy (IISc, Bangalore) explained how simple saccadic movements can be used to understand how the brain processes sensory information and prepares for responses using monkey as a model system.

Dr. N. Srinivasan (CBS, Allahabad) explained the significance of EEG/ERP methodology to understand cognitive processes. He also discussed the possible limitations of this technique and therefore suggested that it should be done along with other behavioral studies to understand cognition.

Dr. Bhoomika Kar’s (CBS, Allahabad) elaborate description of different wave forms of ERP to investigate various cognition processes helped to understand this technique by the audience who were being introduced to it for the first time.

Dr. R. Manchanda (IIT, Mumbai) effortlessly described how a medial spiny neuron of the Nucleus Accumbens can be virtually replicated using computational biology. The talk gave an insight into how a physicist can replicate the electrical connectivity, using capacitors and resistors to synthesize synaptic integration, ion channel and action potentials. By defining parameters he was able to get a response from his computational circuit identical to the actual experimental result. This technique therefore, provides a tool to predict responses from a circuit by altering the conditions without performing the actual experiment.

Dr. Anindya Sinha (IISc, Bangalore) with his humor and lucid approach explained about the difficulty of understanding whether there is cognition in primates the deception tactics employed by primates. Acquisition of social knowledge leading to cognitive development was explained with simplistic comparison to human behavior. A probable benefit of such study in understanding social communication deficiency in Autism was explained.

The panel session was chaired by Dr. M.C. Arunan (Hon. Professor, Sophia College, Mumbai ). The panelist Dr. Vidita Vaidya, Dr. Nagarjuna, and Ms. Jwala explained why this interdisciplinary approach is essential to undertake cognitive research. Ms. Jwala also mentioned that educational courses with

integrated approach are helpful for clinical neuropsychologist. The students of psychology discussed how it is difficult to work in a medical institution as they are considered to be lacking biological knowledge of education. Dr. Vidita described the educational knowledge avenues possible through internet sites including lecture sessions that can generate interest amongst students. Collaborative research between biologist and psychologist should be encouraged. Every one participated by mentioning how such an interdisciplinary approach is the urgent need at the Mumbai University. Dr. Nagarjuna mentioned that soon a website would be launched by the Homi Bhabha Centre for Science Education to provide a network of scientists and students including teachers from rural areas to generate interest and awareness in behavioral and in neurosciences study.

The session concluded with Rabindra Sangeet by Dr. Rita Mukhopadhyaya in celebration of 150 years of Rabinbdranath Tagore. Dr. A. Sinha and Ms Aparajita gave the musical presentation and the interpretation and an audio-visual presentation was given by Dr. Rita Mukhopadhyaya. The workshop ended with a vote of thanks by Dr. A. Lobo, Co-coordinator of the workshop.

The two day workshop gave students immense opportunity to interact with the resource persons and it enabled them to discuss with resource persons about the possibility of research work in the summer vacation. The faculty members and students greatly appreciated the support provided by the Science Academies in sponsoring this lecture workshop and for giving them an opportunity to participate in it.

**140 participants registered for the workshop.**

## Institutions/Colleges Participated in the Cognitive Neuroscience WorkShop

- 1) Maharashtra Dyslexia Association
- 2) Ruia College
- 3) Sophia College
- 4) IIT, Bombay
- 5) Mumbai University
- 6) K.C College
- 7) Ruparel College
- 8) St. Xaviers
- 9) V.G Vaze College
- 10) National College
- 11) Jai Hind College
- 12) LTMMC, Sion
- 13) RGIT
- 14) NIRRH