Invited Talks/Speakers in Biological Sciences

1. Dr. Manmohan Parida
   Scientist F & Head
   Department of Virology & Bioprocess
   Scale-up Facility
   Defence R & D Establishment
   DRDE, DRDO
   Ministry of Defence
   Jhanshi Road
   Gwalior – 474 002

2. Prof. Rinti Banerjee
   Professor
   Department of Biosciences & Bioengineering
   Indian Institute of Technology Bombay
   Powai
   Mumbai – 400 076

3. Prof. N.R. Jagnnathan
   Professor & Head
   Department of NMR & MRI Facility
   All India Institute of Medical Sciences
   New Delhi – 110 029

Abstract of the Invited Talk

Understanding of the Diseases that affect Humans by Magnetic Resonance Imaging (MRI)

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Magnetic resonance imaging (MRI) is a tool that revolutionized the field of clinical medicine. *In vivo* MR spectroscopy, on the other hand, provides biochemical (metabolites) distribution from a particular region of a human organ and/or tumor. MR images provide high spatial resolution anatomical information of any organ of the human body with excellent soft tissue contrast. It uses no ionizing radiation. MR images arise primarily from the protons of water and fat present in human tissues. Several MRI methods have been developed for studying specific disease processes like cancer. Diffusion and perfusion MRI are useful in the evaluation of epilepsy, stroke and other disorders. Functional MRI is yet another advance method for studying several brain functions and has immense potential in unraveling the mystery of human brain. It has the capability of identifying specific anatomical sites involved in many cognitive processes. *In vivo* MR spectroscopy can be used to determine the concentration and the relative levels of metabolites from normal and cancerous tissues. Both MRI and MRS are used to monitor the response of disease to various therapies. In this presentation an over view of the potential of MRI and *in vivo* MR spectroscopy in cancer and other disease processes will be presented.