Physical Research Laboratory, Ahmedabad

COLLOQUIUM – 14 – 10

Speaker: **Dr. Manikandan Muthu**

IIT Madras, Chennai.

Title: **"Haloarchaea – an Astrobiological relevance"**

Time: **Wednesday, 27 August, 2014, 16.00 hrs.**

Venue: **Seminar Hall, Above NANOSIMS Laboratory, PRL.**

Abstract

Microorganisms are at the frontier of science in the study of origin of life due to their ubiquitous existence, survival and adaptability to harsh conditions. The extreme conditions include high and low pH, temperature, salts, radiation etc. Invariably, these extreme environments have been found to harbour at least a group of microorganism. Thus it of utmost interest to unravel the facts behind their adaptability, which perhaps will provide clues that would trace back their origin and existence in other planets since, many harsh conditions of earth share commonness of other planets. Salt loving microorganisms, halophiles, had been well known for their adaptation to extreme conditions such as radiation, halite and stromatolite inclusions that are expected in extra-terrestrial environments. In this background, the talk will address, the diversity of haloarchaea existing on halite crystals obtained from salterns of Tamilnadu, India and the reasons for their high sense of adaptability. The survival ability of microbes after a prolonged storage at refrigerated conditions will also be discussed. Finally, the probability of a possible voyage of these unique bacteria and their chances of survival under Martian or extraterrestrial environments would be postulated.

The Speaker

Dr. Mani obtained his masters and Ph.D degrees from University of Madras, India. After obtaining his doctorate he joined the Agricultural Biotechnology research Centre, Academia Sinica, Taiwan in 2010, as Postdoctoral scientist. From there he moved to another renowned research establishment, Center for Nanoscience and Nanotechnology, National Sun Yat Sen University in Taiwan as national science council postdoctoral fellow. He is currently working as a research associate at IIT Madras. His early research career drove him towards studying an unusual group of microorganisms dwelling in extreme environments called salterns – which are salt producing systems where no normal microbes grow. He had explored the extremophilic archaeal and microbial diversity that grow only in the presence of high NaCl (>15% to saturated concentration) for the first time in India by 16S rRNA gene based molecular phylogenetic approach. He has extended his research in understanding the molecular mechanism and the molecular network that regulate the cell cycle and salt tolerance in Chlamydomonas - an unicellular eukaryotic model organism. Further using Mass Spectrometry in combination with nanoplatforms he has unraveled the protein networks involved in cellular stress tolerance. He has a publication record of more than 22 papers in reputed international peer reviewed journals with three Taiwan patents.

Tea at 15:30 hrs.

ALL ARE WELCOME