

# INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

2A&B, Raja S.C. Mullick Road, Jadavpur, Kolkata700032, India

## Biological Sciences Colloquium

**Speaker:** Prof. Gautam Basu, Bose Institute., Kolkata

**Title:** Protein Evolution driven by genome redundancy

**Venue :** C V Raman Hall

**Time :** 3:30 PM

**Date :** March 12, 2018

**Abstract :** Genomes often contain multiple copies of the same gene, either identical or slightly altered. The functional role of such redundancy is poorly understood. For example, in addition to multiple copies of the same tRNA gene, genomes may contain more than one tRNA isoacceptor for the same amino acid although only a subset is sufficient for protein synthesis. Understanding the functional basis of genome redundancy is important, both to rationalize the phenomenon and for the implications it may have on the current efforts of creating artificial synthetic life forms that are based on minimalist genomes without any redundancy. I will discuss a new functional role of tRNA isoacceptor redundancy in the genome. Specifically, I will show how isoacceptor redundancy of tRNA(Gln) in proteobacteria facilitated the functional evolution of glutamyl-tRNA synthetase (GluRS) evolving to become tRNA(Glu)-specific from an ancestral version which was capable of aminoacylating both tRNA(Glu) and tRNA(Gln).

All are cordially invited to attend the Colloquium.