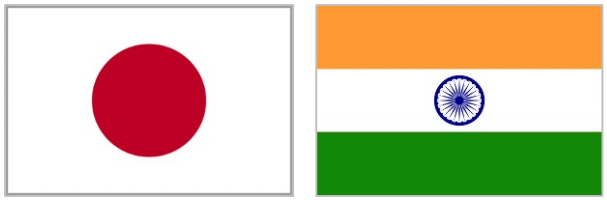

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SERIES 69 (2022-02-25)

Dr. Mangala Hegde, IIT-Guwahati, India

Series – 69

Date and Time - February 25, 2022 (15:00~16:00 JST)
Venue - Zoom

Speaker – Dr. Mangala Hegde
Affiliation – Cancer Biology Laboratory & DBT-AIST International CENter for Translational and Environmental Research (DAICENTER), Department of Biosciences and Bioengineering Indian Institute of Technology (IIT) Guwahati Guwahati, Assam-781039, INDIA.
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Title - Integrated analysis of genes regulating store-operated calcium entry and mitochondrial dynamics reveals potential prognostic predictors for head and neck squamous cell carcinoma: an *in-silico* approach

Calcium is a multifunctional ubiquitous second messenger which essentially regulates birth, metabolism, development, reproduction, death, and the etiopathogenesis of diseases such as cancer. In the electrically non-excitable cells, the intracellular concentration of calcium ions is regulated by store-operated calcium channels (SOCs). This pathway is activated upon the depletion of calcium ions in the endoplasmic reticulum. Several SOCs including stromal interaction molecules, ORAI proteins, and transient receptor potential cation channel (TRPC) subfamily members are implicated in tumorigenesis. In the current study, we have analyzed the mRNA and protein expression of SOCs in head and neck squamous cell cancer (HNSC) patients across TCGA and CPTAC datasets respectively. Our *in silico*analysis also showed the remarkable association between the expression of SOCs and genes that regulate mitochondrial dynamics (MDGs). Docking SOCs with MDGs using Clust Pro 2.0 platform showed significant negative binding energy indicating the high binding probability of these proteins. Subsequently, HNSC datasets retrieved from Gene Expression Omnibus (GEO) showed a significant correlation between SOCs and MDGs expression. In addition, single-cell RNA sequence analysis of HNSC tumor tissues revealed that SOCs expression is remarkably associated with the MDGs expression in both cancer and fibroblast cells. These results indicated that SOCs along with MDGs play a crucial role in driving cancer hallmarks at the tissue microenvironment and serve as better prognostic markers for HNSC.