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Decoding of non-coding DNA and non-coding RNA: Noncoding RNA-encoded novel peptides/proteins regulate migration of cancer cells

Only two percent of the human genome was shown to code for proteins and the rest of the 80–90 percent was shown to transcribe into non-coding RNAs. Micro RNAs (miRNAs) and long noncoding RNAs (lnc RNAs) fall into this category of non-coding RNAs. Recently, it was shown that noncoding RNA codes for peptides that regulate the expression of active mature miRNAs in plant cells. Here, we demonstrate the presence of an ORF in non-coding RNAs which codes for peptides or small proteins that show novel biological properties in human cells. We show noncoding RNAs-encoded peptides/ proteins (miPEPs) have homology to breast cancer tumor suppressor and to proteins that promote longevity and health span. They also inhibit the migration of cancer cells by regulating epithelial to mesenchymal transition of these cells. These miPEPs have the potential to serve as diagnostic markers for metastasis and can

also be used as therapeutic agents to many cancers. We have also discussed how these novel peptides/proteins encoded by noncoding RNAs are evolved in nature and their potential role in cancer and other human diseases. Thus, these novel tumor suppressors will revolutionize the future biology, diagnosis and therapy.

Speaker Biography

E Shyam P Reddy is a Professor and Director, Cancer Biology Program, Department of OB/GYN, Morehouse School of Medicine, Georgia Cancer Center for excellence, Grady Memorial Hospital, Atlanta, Ga. He carried out his PhD work at the Center for Cellular and Molecular Biology, Hyderabad, India and at Max Planck Institute for Biophysical Chemistry, Gottingen, West Germany. His PhD work was published as two papers (back to back) in the prestigious Nature journal for which he was awarded National Young Scientist award by the Prime Minister of India. He obtained postdoctoral training in Molecular Biology at Yale University, CT (Dr Weissman, PNAS member).

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