

CELL SIGNALING, CELL THERAPY AND CANCER THERAPEUTICS

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MicroRNAs in oral cancers

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Oral cancer is the fourth most common cancer, ranked as the sixth cause of cancer deaths. In the past few years, incidence of oral cancer was particularly high in South Asia. Oral cancer is mediated by both environmental carcinogens (including alcohol intake, tobacco consumption, and betel nut chewing) and genetic factors. Increasingly more evidence shows that miRNAs are associated with head and neck/ oral cancer, and several miRNAs have been shown to be unregulated in head and neck cancer. We have carried out studies to investigate the association of micro-RNA genetic polymorphism with the risk of oral cancer. The binding of miRNA to mRNA is critical for regulating the mRNA level and protein expression. However, this binding can be affected by single-nucleotide polymorphisms that can reside in the miRNA target site, which can either abolish existing binding sites or create illegitimate binding sites. Therefore, polymorphisms in miRNA can have a differing effect on gene and protein expression and represent another type of genetic variability that can influence the risk of certain human diseases. The increase or decrease in miRNA binding caused by the SNP variation would probably lead to a corresponding decrease or increase in protein translation. MicroRNA is a potent regulator controlling multiple biological processes including cell growth, differentiation, cell death, development and immune responses. With emerging data supporting that microRNA plays a central role in gene dysregulation in human malignancies, unraveling the microRNA genetic variations in cancer is essential and critical if we want to develop better diagnostic and prognostic system for our patients. On the other hand, gaining better insight into the regulatory mechanisms of microRNA would allow us to design therapeutic regime, which targets the disease with better outcome.

Biography

Kaiser Jamil is the Principle Investigator and the Head of Genetics Department, having published more than 250 papers in journals of repute and guided 34 scholars for PhD degree. During the last decade following her instincts, she has taken up several projects related to human health, for 'War against Cancer' she has contributed in the field of biomarkers in breast cancer, leukemia and head and neck cancer. Her work is on SNPs of drug metabolizing genes in cancers and it has been published in peer reviewed journals, unfolding the mechanisms of several genes and other genes which network with these genes, elucidating drug-gene interactions. She has also contributed on the role of some signaling pathways such as tyrosine kinase inhibitors (TKI) and MAPK in haematological malignancies and HNC. Her research continues to unravel genotypes leading towards personalized medicine.

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