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Leveraging natural compounds for network based anti-cancer medicine of oral cancer therapy

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Past century has witnessed success of chemotherapeutic regime in cancer management. However a chemotherapeutic regime comes with host of unavoidable toxicities because of its inherent nature of indiscriminate killing of diving cells. Advent of targeted therapy helped to address these unavoidable toxicities; certain adverse events like skin toxicity are commonly reported in cancer patients enrolled to targeted therapy. The rationale behind designing targeted drug involves modulation of single or few targets associated with disease mechanism, which leads to rapid development of resistance to these drugs due to evolution of bypass system or development of mutations in targeted protein/gene.

Network biology has enabled us to represent our understanding of complex biological process in the form of networks, wherein bio-molecules like gene/protein are depicted as node interconnected with other such bio-molecule based on relationship (like regulation, interaction, activation, inhibition etc). Network based drug designing would enable us to get better picture of drug's efficacy and would also allow to reduce side-effects by selecting right targets. Research efforts of our group includes working towards identifying potential bio-molecules involved in tumorigenesis of oral cancer, and generating Oral Cancer bio-network by integration with knowledge dispersed in public databases. Nature is tremendous source of medicinal compounds with anti-cancer activity, which are well tolerated among people in different geographies. Oral Cancer bio-network would allow us to interrogate these natural compounds for their biological and toxicity profile, and finally would act as tool to cherry-pick compounds which can be taken forward for management of malignancies associated with Oral Cancer.

Biography

Prakash S Bisen earned Ph.D in 1972 and was awarded D.Sc in 1981 After his postdoctoral work, he joined as Assistant Professor at Jabalpur University and was elevated as Associate Professor. He then joined at Bhopal University as a Professor of Microbiology in 1985. Prof. Bisen was Visiting Professor at Institute of Environmental and Biological Sciences, University of Lancaster, Lancaster, Englandduring 1994-96 as Marie Curie fellow of the European Commission, Visiting Research Professor at the Department of Biological Sciences, The University of Illinois at Chicago. He was U.S. National Science Foundation Fellow at University of California at Davis to work in the Department of Bacteriology on DNA recombinant technology during 1986-87. Prof. Bisen was WHO/ UNESCO Fellow for One Year at Institute of Microbiology, Czechoslovak Academy of Sciences, Budejovika, Praha, Czechoslovakia during 1981-1982; UNESCO/UNDP/ICRO and Hungarian Academy of Sciences Fellow at the Institute of Plant Physiology, Biological Research Center, Szeged, Hungary during 1978-79. He is honoured with Life Time Professorship of Bundhelkhand University, Jhansi, India and was also conferred with the highest award of the university in 2003 for his outstanding contributions in Science and Technology.. He is Honorary Professor of Biotechnology at Jiwaji University, Gwalior, India and pursued his research in the field of Medical Biotechnology as Emeritus Scientist at Defence Research Development Establishment, Defence Research Development Organization, Ministry of Defence, Govt. of India, Gwalior, India. He has published 200 research papers. 6 international patents and 55 students were awarded Ph.D degree under his guidance. Prof. Bisen is elected Fellow of National Academy of Sciences India for his enormous contributions in the field of biology.

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