Editorial

The science of genetics, a little over a hundred years old, has been 'moulting' rather rapidly: it has been 50 years from defining the laws of inheritance to unraveling the physicochemical nature of hereditary material. Once discovered, genetic material became a subject of intense exploration and a tool to influence life in myriad different ways. Genetics engendered genomics, and now we are in the post-genomic era. Whole genomes are being unraveled and older concepts are gaining newer meaning. 'Functional Genomics', one of the byproducts of the post-genomics era, in itself is a big branch that ramifies into almost every sphere of biological sciences. Like any new development, it brings in newer findings, newer applications and newer challenges each day. Therefore, it was appropriate to organize an international conference on 'Functional Genomics: Challenges and Prospects' at Banaras Hindu University from 2nd to 4th October 2010. The conference had three symposia, namely, Developmental genetics and stem cells; Molecular etiology of human diseases and epigenetics; and Stress and non-coding RNA. The conference included 12 invited talks by eminent scientists from different parts of the world and 21 invited talks by leading scientists from India. The conference was attended by a large number of scientists and students from various institutions, including a large number of past and present members of the Cytogenetics Family of BHU. The collage below gives a glimpse of the speakers.

Twelve full-length manuscripts from the invited talks are presented in this issue after the usual peer reviewing process. The first article is a narrative of the scientific journey of Lakhotia through the last 40 years during which he worked with the non-coding gene, hsr-omega (93D), whose transcripts along with other non-coding RNAs

may act as hubs in coordinating various levels of gene activities. The second article by Gan *et al.* deals with the chromatin proteins, Chir and Z4, which form a complex on polytene chromosomes, and recruit histone kinase JIL-1 for interband-specific phosphorylation required for maintaining the polytene chromosome structure. Varma and Mishra demonstrate the dynamicity of the nuclear matrix proteome during embryonic development of *Drosophila*. Notani *et al.* present gene expression profiling data to establish the N-terminal PDZ-like domain of special AT-rich DNA-binding protein 1 (SATB1), a matrix attachment region (MAR)-binding protein as a global regulator of transcription. Parnaik *et al.* review the effects of lamin mutations on cellular signalling and ubiquitin-mediated proteasomal degradation, giving important insights into possible mechanisms of pathogenesis. The article by Wang and Sen highlights the significance of aberrantly expressed miRNAs in human pancreatic cancer. Kao and Konsolaki review the involvement of FK506 binding Protein (FKBP) with prolyl *cis-trans* isomerase activity in Alzheimer's disease. Applications of multimodality imaging to track cancer progression using combinations of bioluminescent, fluorescent and PET reporter genes in fusion vectors for recordings from single live cell to whole animals with high sensitivity was presented by Ray. The article by Majumdar *et al.* demonstrates in chimeric groups of cells of social amoebae that specific trait development in a multi-cellular body is associated with the genotype but in a context-dependent manner. Chandramore and Ghaskadbi review evolutionary origin of BMP-Noggin antagonism and its functional conservation from the diploblastic animal, Hydra. Working on Malpighian tubules in *Drosophila*, Tapadia and Gautam demonstrate that the apoptotic genes, *Reaper*, *Hid*, *Grim*, *Dronc* and *Drice*, may have context-dependent non-apoptotic functions as well. Budatha *et al.* show that hexamerin-binding protein (HBP), which helps in the process of uptake of hexamerin during metamorphosis from insect haemolymph by fat body cells reminiscent of receptor-mediated endocytosis, may be a glycosylphosphatidylinositol (GPI)-anchored protein that is activated through lipid-linked non-receptor src tyrosine kinases.

Besides the scientific urge, there was another, more emotional, reason to organize this meeting. Our colleague, Prof SC Lakhotia, mentor to many of us, turned 65 and superannuated from the services of the Banaras Hindu University in October 2010. We found this an appropriate occassion to honour him by organizing this meeting and to felicitate him on his 65th birthday, on 4th October 2010.

Born in Churu (Rajasthan), on 4th October 1945, Subhash Chandra Lakhotia had his schooling and university education in Kolkata, completing his master's in zoology with the first rank. His doctoral work at Calcutta University under the supervision of Prof S Mukherjee elucidated the cellular autonomy of dosage compensation mechanism in the fruit fly, *Drosophila melanogaster*. During his doctoral work, he made a discovery that benzamide-induced specific puff at the 93D locus in polytene chromosomes of *Drosophila melanogaster*, which set the course of his future research as narrated in the first article in this issue. On the wings of the 'fruit fly', he has soared to great heights. He was honoured the coveted SS Bhatnagar Prize and Fellowship of the three major Indian science academies.

After his post-doctoral fellowship with Prof SRV Rao at Delhi University, he joined Burdwan University as lecturer in 1971, then moved to Gujarat University in 1972 and later joined the Zoology Department of Banaras Hindu University in 1976 as reader in cytogenetics. He served BHU with great distinction in various capacities: professor of zoology; coordinator, Centre of Advanced Study in Zoology; head, Department of Molecular and Human Genetics; and Dean, Faculty of Science.

As a teacher, he inspired and ignited the minds of thousands of students, many of whom now occupy distinguished academic positions within and outside India. Prof Lakhotia is a modest, friendly and pragmatic person. Even as he retires, he is fully engrossed in his research and teaching activities and is full of ideas and enthusiasm. We wish him many years of active science with good health and spirit.

I take this opportunity to thank the editor of this journal for bringing out this special issue and giving me the pleasant responsibility of editing it. I thank all the contributors for willingly contributing their manuscripts, all the reviewers for quickly reviewing and shaping better versions of the manuscripts, and the office of the journal for great cooperation and help.

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