

## Preface

Gene cloning, genetic engineering, gene-splicing recombinant DNA and biotechnology are a few current catch words in biology. The ability to isolate a specific gene, alter its sequence *in vitro* and express it back in a suitable host has revolutionized our understanding of the very basis of life processes. These technologies are also being exploited by scientists worldwide to benefit mankind both in the areas of health and agriculture. The recent embarkment on Human Genome Project in the western countries is being viewed with tremendous hope that such a knowledge will be of great benefit to mankind.

In the late 1970s a few groups of scientists at the Indian Institute of Science, Bangalore, who were working in molecular biology got together and created a nucleus to initiate research employing genetic engineering technology which culminated in the creation of a Genetic Engineering Unit. The initial emphasis was on understanding the regulation of gene expression in eukaryotic cells which continues to be one of the strong areas being pursued even today on the campus. Keeping in pace with the rapid advancements in genetic engineering the Unit was upgraded to a Centre in 1989 to provide an opportunity for young faculty to interact and undertake focussed research. In the meantime, several faculty members in various departments of the Biology Division have intensified research activities in the areas of molecular virology, gene expression, protein-DNA interactions and homologous recombination. At about the same time a new laboratory for Developmental Biology and Genetics was created to complement the ongoing research activities in the Biology Division.

This issue was conceived by the Editorial Board about a year ago to present a glimpse of the research activity carried out at the Institute employing genetic engineering technologies. Senior faculty have reviewed their activities for the past several years while the two recently established centres have given a perspective of their research goals. The first paper on research activities of the Centre for Genetic Engineering written by the faculty of the Centre gives an account of the ongoing research activities encompassing interferon resistance in cancer cells, molecular virology of Japanese encephalitis virus, mechanism of transcription activation and translation and molecular biology of *Mycobacterium tuberculosis*. This is followed by another paper on Developmental Biology and Genetics by its faculty describing the research activities on cryptic genes, transcription termination and pattern formation. These two papers are followed by review papers. The first one by K. P. Gopinathan summarizes the accomplishments of his group on molecular biology of *Mycobacterium tuberculosis* for the past 20 years. The second paper by G. Padmanaban summarizes the major contributions of his laboratory in the area of regulation of eukaryotic gene expression using cytochrome P-450 as the model system. The next two papers deal with molecular virology. The first one by Savithri and Jacob deals with a plant virus while the second one by Durga Rao and coworkers deals with rotavirus. The paper by Muniyappa summarizes his research findings on homologous pairing and strand exchange. The last paper by the undersigned highlights findings on protein-DNA interactions with specific reference to some of the testis-specific proteins.

When Prof. M. Vijayan, the then Editor of the *Journal* requested me to guest edit this issue, I was a little hesitant to accept the assignment as I suspected it to be a difficult job. To the contrary, it turned out to be not only enjoyable, but also an easy one particularly because of ready acceptance and timely submission of manuscripts by my colleagues. I am extremely thankful to them for their willing support and cooperation.

M. R. S. Rao  
Guest Editor