

## 2018 Awardee



### **Outstanding Alumnus Award of College of Basic Sciences and Humanities**

**Prof. D. N. Rao**

Professor D.N. Rao received his Ph.D. (Biochemistry) (1982) from Indian Institute of Science (IISc), Bangalore. He carried out post doctoral work at NIH, USA, Universities of Basel, Switzerland and Cambridge, UK before joining as Assistant Professor in 1989 at IISc where he still continues as Professor, Department of Biochemistry from 2001. He was the Chairman, Division of Biological Sciences at the Indian Institute of Science, Bangalore for eleven years from 2005-2015.

The long term goal of his research group is to understand how these enzymes work, both from a biochemical and structural standpoint and with this knowledge his laboratory hopes to design enzymes with newer specificities. Professor D.N. Rao's contributions to the study of restriction-modification enzymes has been extensive and has contributed greatly to our understanding of interactions of proteins with DNA in a site-specific manner. His work forms a major contribution to this area of research and paves the way for rational engineering of enzymes with designed specificities. Prof. D.N. Rao's work has led to the recognition of critical biochemical and structural events involved in DNA cleavage, methylation and repair.

Work from DN Rao's group on solitary DNA methyltransferases from *Helicobacter pylori* highlights the effects of DNA methylation especially the increased mutation rates, resulting in an accelerated micro-evolution of the MTase gene. Deletion of a C5 -cytosine or N4-cytosine methyltransferase, in *H. pylori* strains had a significant effect on the expression of a number of genes belonging to motility, adhesion and virulence. These studies highlight a possible significance of cytosine methylation in the physiology of *H. pylori*.

Professor Rao is a JC Bose Fellow (2008-2020), Fellow- Indian National Science Academy, Delhi, Indian Academy of Sciences, Bangalore and National Academy of Sciences (India), Allahabad.