Scientific Journey of Prof G. P. S. Raghava

Gajendra Pal Singh Raghava was born in 1963 in Bulandshahr (UP), India. He did his M.Sc. in Physics from Meerut University, Meerut and M. Tech in Energy Studies from Indian Institute of Technology, Delhi. During M. Tech, He got interest in the field of computer science and write numerous software for real time applications like microprocessor based process control. In 1986, he joined Council of Scientific and Industrial Research (CSIR) lab Institute of Microbial Technology (IMTECH), Chandigarh, India as a Computer Scientist. He worked nearly 30 years (1986 to 2016) at IMTECH, Chandigarh. During 1986 to 1990, He mainly developed software for scientific management.

In 1990, on request of institute he developed a software for calculating concentration of antibody and antigen from ELISA data. It was demonstrated experimentally that his software is better than any existing software. A paper based on this software was published in Journal of Immunological Methods. It was a turning point in his life to enter in the field of bioinformatics. He decided that he will develop need-based free software for scientific community, working in the field of bioscience. In order to provide service to community, he distributed/share these software packages to public. He talk to researchers to understand their problem, so he may provide solution to them. In simple words, he was not working for him-self instead he worked for the community. This is the reason, he contributed to diverse fields over the years.

In order to make presence of Indian bioinformaticians at global level, Raghava successfully participate in international competitions like Critical Assessment of protein Structure Prediction (CASP), Dream Challenges. Kaggle . He worked at Oxford University, UK as postdoctoral fellows from 1996 to 1998; visiting professor at POSTECH, South Korea in 2014; established bioinformatics centre at University of Arkansas for Medical Sciences (UAMS), USA in year 2002 and 2006. Though, he got lot of job offers from international universities/institutes but he decided to work in India.

In year 2000, he established his group with few Ph.D. students and focus on annotation of genomes and proteomes. His team developed numerous methods for predicting structure and function of proteins. In case of functional annotation of proteins, his group particularly focused on subcellular localization of proteins. His contribution was recognized by Department of Biotechnology and awarded National Bioscience award in 2006. In order to identify drug and vaccine target against dread diseases, he successfully participated in CSIR national project "In Silico Drug Targets" under my leadership. His contribution in the field of drug/vaccine candidate has been recognized by CSIR and awarded Shanti Swarup Bhatnagar in year 2008; most prestigious science award in India.

In 2007, CSIR initiated a project "Open Source for Drug Discovery (OSDD)" to bring down the cost of drug discovery, in order to make drug affordable against dread disease like tuberculosis. Raghava did outstanding job in OSDD project where his team developed and maintain inslico module of OSDD called "Computational Resources for Drug Discovery (CRDD)". His group developed a linux based operating system for drug discovery called OSDDlinux which integrate most of bioinformatics software. His scentific contribution making big economic impact on scientific community
particularly on researchers working in developing countries. His contribution was recognized by Department of Science and Technology and conferred the prestigious J. C. Bose fellowship in 2010.

Raghava's group established experimental lab in the year of 2012 to validate discoveries of molecules as well as for sequencing genomes of bacterial strains using NGS. His group discover novel drug delivery vehicles using combination of in silico and experimental techniques. This leads to discovery of experimentally validated novel drug delivery vehicles. These vehicles not only deliver drugs inside cell even they can be used to deliver drug via skin. His lab also demonstrate that drug delivery vehicles can be used to handle drug resistant bacteria as it facilitates drugs to cross membrane of bacteria. This contribution was recognized by "Sun Pharma Research" and awarded "Research Award" in 2018.

In year 2017, he joined as a professor in department of computational biology, IIIT, Delhi. Here, his group is mainly working on genomics based solutions for understanding and managing treatment of diseases particularly cancer. In last few years, number of software has been developed based on genomic features for predicting biomarkers for diagnostics, progression and prognostics/outcome. This work was recognized by "Organisation of Pharmaceutical Producers of India" and awarded "Scientist of the Year" in 2019. All resources developed by Dr Raghava is available to developing world who cannot afford commercial software.