The booming Indian proteomics scene

In India, proteomics research was initiated over a decade ago. Research groups in premier institutes started adopting proteomics technologies in biological research projects and the emerging field got considerable support from central research agencies. In 2009, the Proteomics Society, India (PSI) was established as a platform to foster interactions within the Indian proteomics community and to encourage exchange of ideas, enhance collaborations and boost innovations at the national and international level.

Although the development of proteomics research in India was rather slow in the beginning, the last few years have seen a significant expansion in the proteomics community. Presently, there are over a hundred research laboratories in 76 academic or research institutes across India involved in proteome-level research investigations (Figure 1).

Several research groups from India are actively involved in world-class research on proteomics of different human cancers and infectious diseases, and are also effectively contributing towards diverse aspects of bacterial, plant and animal proteomics at the global level.

Notable achievements

High quality data repositories are indispensable to the globalisation of proteomics research. Researchers from the Institute of Bioinformatics (IOB), Bengaluru have developed the Human Protein Reference Database (HPRD) and Human Proteinpedia (www.humanproteinpedia.org/), while important contribution in the Human Protein Atlas (http://www.proteinaatlas.org/) has come from researchers at Lab SurgPath, Mumbai.

Creation of the ‘Human Proteome Map’ has been one of the most remarkable achievements in proteomics research in recent times. Pandey and Kuster labs have independently drafted the ‘Human Proteome Maps’ using high-resolution mass spectrometry. More recently, a comprehensive tissue-based map of the Human Proteome using antibody-based microarrays was reported from Uhlén’s group. Indian researchers played a significant role in two of these three important projects contributing towards the characterisation of each and every protein present in the human body.

The Indian proteomics community has been on top of the learning curve, being exposed to international proteomics conferences, meetings and workshops from the very beginning of the proteomics boom. Besides, Indian researchers have developed various e-learning platforms and resources to facilitate learning and research.

Figure 1. Laboratories across India involved in proteome-level research investigations.