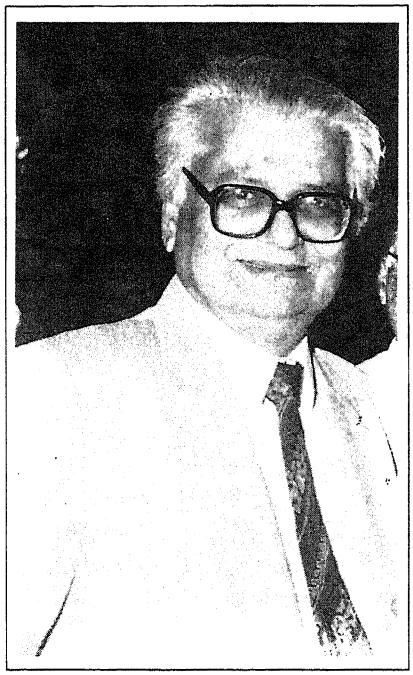
# Bimal Kumar Bachhawat

*An obituary*

B. K. Bachhawat, one of India's leading biologists, passed away peacefully on 23 September 1996. He was immersed in scientific activity till the very end.

Bimal Bachhawat was born on 26 August 1925 at Calcutta in a large family living modestly and consisting of five brothers and three sisters. All his brothers rose to high academic and social positions in the country. His tenacity and determination for education can be guaged from the fact that he used to swim across the river Hooglee to go to school. With a Master's degree in applied chemistry from Calcutta and inspired by B. C. Guha's work in biochemistry, Bachhawat obtained his Ph D degree in 1953 from the University of Illinois. Subsequently he worked at the school of Biological Chemistry, University of Michigan, Ann Arbor, where he discovered HMGCoA lyase with M. J. Coon – a fundamental contribution to the understanding of the formation of ketone bodies in mammals.

In 1957 he joined the Christian Medical College, Vellore where he established an internationally recognized school in the area of neurochemistry and glycobiology. Bachhawat began his studies on complex and difficult problems such as glycolipids, glycosaminoglycans and glycoproteins *vis-à-vis* neural development and neurological disorder. His efforts fructified in a short duration of few years only when he and his colleagues showed that the glycolipid storage disease metachromatic leucodystrophy is caused due to the absence of the enzyme arylsulphatase A. Until then the molecular basis for about 50 glycolipid storage disease had defied understanding. Soon this pathbreaking study set the pace for the elucidation of the enzymatic defects in other glycolipid storage diseases such as Gaucher's disease and Tay–Sachs disease, which led not only to the development of their prenatal diagnosis, but also to strategies for treating such genetic afflictions. His group also elucidated the mechanism for the biosynthesis and the degradation of cerebroside-3-sulphate, the lipid stored to abnormally high levels in the metachromatic leucodystrophy patients. Subsequently, his discovery of CMP-*N*-acetylneuraminic acid was crucial to defining the turnover of *N*-acetylneuraminic acid at cell surfaces. His demonstration of glycosaminoglycans in neuronal development was also far ahead of its time just as the elucidation of the role of glycolipids as biological receptors was. He also pioneered sugar-bearing liposomes as a molecular trojan horse for the site-specific delivery of drugs and enzymes to the diseased organ only. He dedicated the last decade of his life to the development of liposomal formulations for treating systemic fungal infections which have already benefited several human beings in the country. His research was respected widely – he was one of the most cited biologists of the country.



He was the recipient of numerous awards and honours which included Shanti Swarup Bhatnagar award (1962), Golden Jubilee Medal of IISc (1976), Birla Smarak Kosh (1986), FICCI award (1982), to name a few. He was honoured with the Padma Bhushan in 1990. He was elected to all the scientific academies in India and several of them conferred many honours and medals on him over the years. He was the first Indian to be elected to the Presidentship of the Federation of Asian and Oceanian Biochemists (1983–85) and had the rare distinction of leading the Society of Biological Chemists twice as its President (1970–72 and 1990–94). During the latter period of his presidentship, he was responsible for successfully organizing the International Union of Biochemistry and Molecular Biology. He had also organized at least ten international conferences in India for the younger scientists to have the opportunity to interact with acclaimed authorities of their field. He was also deeply involved with ethical and socio-economical issues of human genome studies and was busy organizing an international symposium to be held in New Delhi in February 1997.

Bachhawat was a great builder of Institutions as is apparent from the setting up of the neurochemistry laboratory in 1957 at the Christian Medical College Hospital, Vellore – the first of its kind in the world until recently and the Department of Biochemistry at the University of Delhi. He was responsible for making the Indian Institute of Chemical Biology, Calcutta a leading centre in the area of contemporary biology in the country. He nurtured a large number of institutions in India and was untiring in his efforts to support younger scientists. He was an inspiring researcher with a clear mind and an elephantine memory. He was fond of daily discussions with his colleagues on latest developments in science. He was always compassionate and composed even during adversity. He would enthuse his colleagues beyond their expectations even when a string of experimental failures were narrated to him and for which almost always he would apportion blame to himself for his inability to anticipate the same.

He helped, advised and encouraged younger scientists throughout the country, influenced and hastened the advent of modern biological disciplines in the country. He had a very informal and unorthodox style of administration and anyone could meet him at anytime and often obtain instant help or solutions to their

problems. He could become a youngster in the midst of young people and enjoy their jokes with boisterous laughter. He took a great delight in inviting and feeding his students and friends.

A large number of his students have earned academic distinctions both within India and outside. Bachhawat excelled in bringing people from different disciplines together to facilitate generation of novel ideas. As the Chairman of the Technical Advisory Board (Biological Sciences) of the Council of Scientific and Industrial Research, for example, he organized a large number of brain-storming sessions, on topics such as on fats and oils, membrane biology, cell surface, drug delivery, protein engineering and molecular immunology. This, in turn, led to the establishment of the molecular immunology forum which meets once a year and which has given a great impetus to the research in this area in the country during recent years. His imprint on the agencies which foster the growth of biological sciences in India will be felt for a long time.

Bachhawat was fond of Louis Pasteur's 'in the field of experimentation chance favours only the prepared mind' and the words of Frederick Gowland Hopkins' 'the biochemist should remember that his data gain their full significance only when he can relate them with the activities of the organism as a whole. He should be bold in his experiments, but cautious in his claims. His may not be the last word in the description of life, but without his help the last word will never be said.'

It is indeed difficult to describe completely an outstanding humanist like him but his warmth, affectionate and adoring nature which knew no boundaries will be missed in abundant measure by his colleagues and students for a long time to come.

Bachhawat is survived by his wife Kamala, daughters Kalpana and Kiran and son Anand.

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