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The will to excel

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My major work, spanning the last three decades, consists of in-depth studies of different aspects of Japanese encephalitis (JE) – its epidemiology, transplacental transmission, persistence, immune mechanism and chemotactic cascade, along with the creation of multidisciplinary state-of-the-art facilities in the field of medical virology at King George’s Medical College, Lucknow, the aim of which is to provide diagnostic and investigative assistance for a wide spectrum of viral diseases.

I was born in 1938 to an accomplished family of Uttar Pradesh (UP), the second daughter of Jagdish Narain an eminent engineer. He introduced a number of innovative construction technologies in hydraulic engineering and was popularly known as the “walking encyclopedia”. My mother, Bindeshwari was a talented artist and a zealous reader. When patches of leucoderma began to appear on my face during my teenage years, my classmates and friends started avoiding me as there was much social stigma associated with it at that time. Though an enthusiastic and devoted student I stopped going to school, which resulted in depression and a severe inferiority complex. With support and encouragement from my parents, however, an indomitable will to excel awakened in me. After a break of two years I successfully completed my

schooling. I was inspired by my grandfather, one of the first Indian civil surgeons, and my uncle, a leading eye surgeon, to study medicine, and joined the Agra Medical College, from where I completed my MBBS degree. Subsequently, I joined King George's Medical College, Lucknow, where I earned the Doctor of Medicine (MD) degree, in Pathology and Microbiology, and was awarded a gold medal.

I accepted a faculty position in Microbiology at King George's Medical College and started teaching undergraduate and post-graduate medical students, as well as initiating research programmes in virology. I worked in various capacities at my Alma Mater for more than thirty years. Besides teaching, I also initiated research programmes based on scientific and humanitarian concerns. During my tenure, my colleagues and I brought the Department of Virology at King George's Medical College to another level.

In 1971, early in my career, I was awarded a World Health Organization (WHO) Fellowship to work on respiratory viruses at the Common Cold Unit in Salisbury, England, where I worked with the well-known virologists, Dr D.A.J. Tyrrell and Sir John Andrews. They motivated me towards basic research in viruses, which was still at a nascent stage in India.

The sternest test of my medical skills, knowledge of viruses, and of my perseverance came in 1978 when an unknown epidemic swept across the districts of eastern UP. The high mortality rate of this epidemic, especially amongst children, affected me deeply, and I resolved to crack this mystery killer. My team and I made a number of visits to the affected area, and worked hard to identify the cause of the epidemic. We successfully isolated and identified the Japanese encephalitis (JE) virus as the causative organism, and soon after developed a quick immunofluorescent technique for the early diagnosis of JE in patients. This was a turning point in my career.

Several questions baffled me about the epidemiology of JE. Delving into these questions led to the startling discovery that a JE viral infection during pregnancy could be transmitted to the foetus, resulting in abortion and foetal abnormality. This was a

completely new phenomenon, and led us to identify a series of mechanisms to explain the persistence, latency and reactivation of the JE virus in humans as well as in experimental animals. This work on JE captured international attention, and I was invited to present the results in London in 1980, and later at a number of international congresses on virology.

Around that time, an extensive discussion with a eminent immunologist Prof. C. A. Mims, London, UK led me to start work on molecular biology and to study the host response to JE. My post-graduate researchers and I realized that in response to JE infection, the immune cells of the body function through a regulated network of a unique chemokine which inhibits replication of the virus. This regulated network may be the reason why less than one percent of JV-infected patients actually develop encephalitis. Between 1992 and 2003, our work on cytokines received global recognition. This corpus of work was possible only because of a great team that included, over the years, fifteen Ph.D students. I have now retired from the faculty of KG Medical College, Lucknow, but continue to work as an emeritus medical scientist and still enjoy exploring new areas of research in the field of medical virology. Currently, I am working on dental fluorosis and the role of calcium at the Saraswati Dental and Medical College in Lucknow.

Over 190 original research papers have been widely cited in various monographs and textbooks. I have been conferred the First Senior National Women Bioscientist Award by Dept. of Biotechnology in 1999. I was also awarded the prestigious Om Prakash Bhasin Research Award in 1994, Indian Council of Medical Research Awards in 1983, 1987, 1996 and Medical Council of India awards in 1984 and 2004. I have been conferred the fellowships of the Indian National Science Academy, Indian Academy of Sciences, National Academy of Medical Sciences, National Academy of Sciences (Allahabad), the Third World Academy of Sciences and the British Royal College of Pathologists in 1987. My work has been included as the Pathfinder in the National Science Centre, New Delhi.

I have myriad interests which are as varied as fine arts (like

embroidery and painting), kathak dance and travel. I have been very fortunate to have had a galaxy of wonderful people around me – my students, friends, and especially my family including my nieces and nephews – who have made my accomplishments all the more rewarding and fulfilling. Society has given me so much unconditionally which has made me all the more generous and humble.