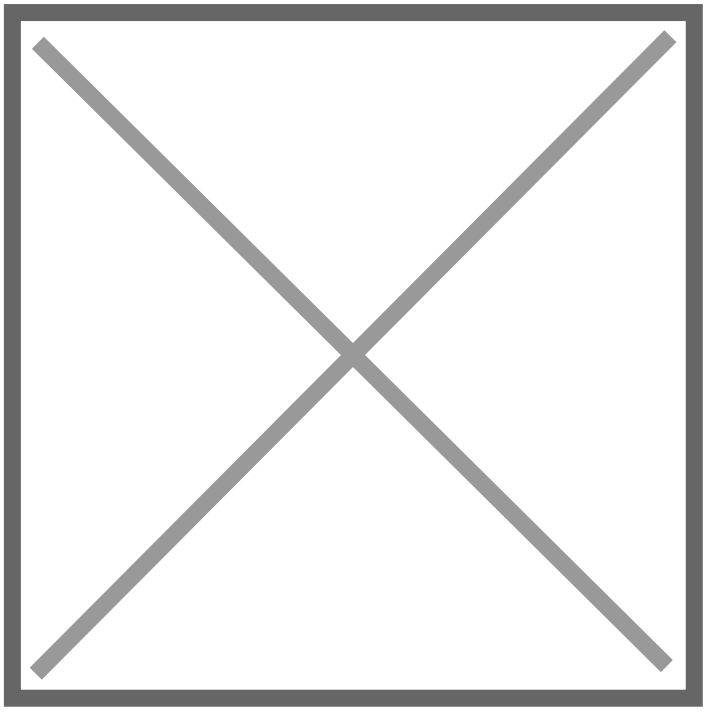
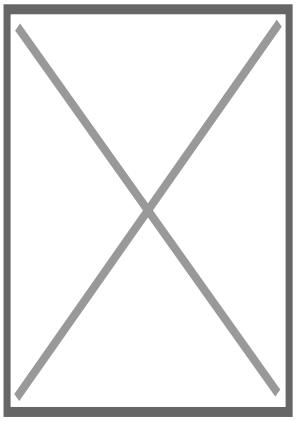
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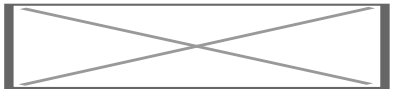


ARA Healthcare develops three anti-cancer molecules



Dr Rama Mukherjee
managing director, ARA Healthcare, Gurgaon

Drugs are vital for tackling various body ailments but at the same time the efforts made in identifying the key molecules is a time consuming affair. In this CSO Series, we profile the achievements of Dr Rama Mukherjee, managing director, ARA Healthcare, Gurgaon



Widely respected in the field of pharma and biotech R&D in India, Dr Rama Mukherjee has devoted 35 years of her career in carrying out research related to human diseases. Her research and development focus has been in the field of leprosy, tuberculosis and cancer. She has spent a significant part of her research career in understanding molecular pathology and in developing products for the treatment of diseases.

With proven leadership qualities, she has been successful in delivering results. She has significantly contributed to the understanding of molecular pathology of nerve damage in leprosy. She has also developed in vitro model of nerve damage in leprosy consisting of partially myelinated dorsal root ganglion, murine and human Schwann cell cultures and demonstrated for the first time that nerves can be infected in vitro with M. leprae. Also, she was the first to demonstrate that the interaction of M. leprae with Schwann cell at the membrane level is very specific and that there is a 10-fold multiplication of M. leprae within Schwann cells in vitro.

The Journey

Dr Rama Mukherjee, who holds a PhD from the All India Institute of Medical Sciences (AIIMS), initially worked there as co-investigator and later was promoted as principle investigator in designing and conducting the phase II and phase III clinical trials of Mw vaccine. She was further involved in technology transfer and commercialization of the vaccineÂ at the National Institute of Immunology (NII), New Delhi. Her group demonstrated therapeutic as well as prophylactic effect of Mw vaccine against tuberculosis for the first time. She also coordinated the immunodiagnostics project. She played a significant role in the basic research on Non A and Non B hepatitis virus. Simultaneously, she carried out research on the role of neuropeptides in cancer and came up with a combination of peptides called MuJ-7 (the idea was conceived in 1989) for the treatment of colon cancer. This technology was subsequently transferred to the industry. It was a non cytotoxic targeted and mechanism-based approach, which is the focus of international cancer research today.

While holding the position of president Ã¢â?¬â?? R&D at Dabur Research Foundation (DRF), she led a team of 300 scientists in developing generic and novel anticancer drugs, diagnostics and biotherapeutics for the treatment of cancer. She developed a pipeline of generic and novel molecules in parallel, which met the global regulatory and quality requirements. The products being developed at the DRF consists of small organic molecules, peptides and proteins as injections, capsules and tablets. She also directly supervised the new drug delivery system consisting of nanoparticle, liposome and microsphere technologies.

Nanoxel, a Paclitaxel nano particle delivery system that was developed by her group, was commercialized in 2006. During her time at DRF, the company filed over 400 patents and 30 drug registration dossiers in the US, Europe, Canada and Australia for the registration of anticancer drugs. Her most significant achievement has been the successful commercialization of nanotechnology based Paclitaxel delivery system that was developed by her group. She has been successful in setting up R&D facility at DRF, which follows the GLP-GMP norms and the products developed have been approved by the US FDA, European and Canadian regulatory agencies.

Besides being in the Drugs and Pharma committee of the Confederation of Indian Industries (CII) and Federation of Indian Chambers of Commerce & IndustryÂ (FICCI), she has been an active participant in a number of committees constituted by Department of Biotechnology (DBT) and Department of Science & Technology (DST). She is still actively filing patents and publishing in peer-reviewed journals. Dr Rama Mukherjee has over 48 patents and 125 research publications to her credit. She has also supervised a number of PhD and MD students and is presently supervising three doctoral students.

She has traveled globally as an expert member of leprosy and mycobacterial immunology of the World Health Organization (WHO). She has regularly been delivering numerous guest lectures and keynote addresses in many national and international forums.

Dr Mukherjee is on the board of ARA Healthcare, ARA Research Foundation and a trustee of Ayurvet Research Foundation. Currently, she is the managing director of ARA Healthcare, a drug, diagnostic and healthcare R&D company focused on the development of new class of targeted biotherapeutics and humanized or human antibodies and provides diagnostic services.

Looking Ahead

Under her leadership, ARA Healthcare has made good progress in developing anticancer molecules. The project initiated towards the third quarter of 2008Â has led to the development of three molecules namely, ARA-I, ARA-II and ARA-III. The research team at the company has carried out pre-clinical and phase I clinical development of ARA-I, a novel anti-metastatic protein with a potential therapeutic effect in several cancer types; ARA-II , a novel recombinant pro apoptotic protein that selectivelyÂ targets cancer cells with the potential of wider application in variety of cancer types including cancers of GI, lung, ovaries, pancreas, gliomas and ARA-III, a thrombopoietic growth factor that is being evaluated for its ability to suppress the cytokine induced inflammations.

Dr Mukherjee, who is very hopeful about the future of the cancer molecules, says, Ã¢â?¬Å?An aggressive effort is beingÂ made to raise funds. As all these three molecules will be valuable to current line of therapy in cancer and inflammation,Â their commercial potential is high.Ã¢â?¬?

With the rise in the number of diseases in India, it is highly critical to address various unmet medical needs. Therefore, for addressing the absence of new drug molecules, it is necessary for the companies to use different approaches towards R&D of new drug candidates. Dr Rama Mukherjee is a case in point.

Rahul Koul in New Delhi