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"India is at the crux of vaccine innovation"

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India is all set to make significant investment in research and development (R&D) to build a roadmap for design and delivery of vaccine development for future pandemics. But this requires a detailed inspection of challenges associated with the process of vaccine R&D. During an exclusive chat with BioSpectrum, Aditya Sharma, Head of Bioprocessing Business, India Region, Merck shares his thoughts on the growth & challenges of vaccines R&D in India.



India has long been a leader in vaccine manufacturing, but now it is reaching new heights in vaccine R&D. How do you foresee the growth of India in the vaccine R&D space in the coming years?

India has been the world's top vaccine supplier, in volume terms, meeting over 60% of the vaccine demand for Global immunisation programmes. The focus has been in non-regulated markets for pediatric vaccines. Post pandemic, with awareness increasing for adult vaccines, vaccine manufacturers have started focussing on adult vaccines and regulated markets.

There has been a growth in Universal immunisation programme to increase immunisation coverage against vaccine preventable diseases in the country. In the coming years, we will witness a rise in R&D investments not just in general medicines but vaccines, and the biologics sector as well. With the government developing favourable conditions for investment, many global players will look at India as a preferred destination to open research centres. India’s diverse gene pool and vast population also make the country a potential destination for clinical trials. The combination of all these factors gives the country a very high potential to become a global innovation hub in the future.

Is the Indian vaccine industry technologically equipped to handle the entire process of vaccine R&D or would global partnerships still be required?

India is a world leader in vaccine manufacturing, and Indian pharmaceutical companies supply more than 60% of the global demand for different vaccines needed for global immunization problems. Further, many vaccines R&D innovations have emerged because of the COVID-19 pandemic, and India's technological prowess in handling the entire process of vaccine R&D in just ten months was highly praised. This displays India’s capabilities as a leading pharma player in the world.

While the country was at the forefront of the global response to the pandemic it also looked at solutions to accelerate its production programmes. This made the country’s response a mix of private partnerships and collaborations. By adding private players to the mix, the process gained speed, expertise, and robust infrastructure, which boosted the entire process. Going forward, the country’s indigenous production capacity will rise but collaboration with private players will also play a critical role in overall growth.

We also constantly lead the way in innovation and emerging technologies. At Merck, our mission is to collaborate with drug makers around the world and scale up to make treatments and therapies available to everyone. We do this by investing in cutting-edge technologies that will make treatment easier and more accessible to everyone who needs it. ADC (Antibody-drug Conjugates), HP-API (high-potency API), viral vector, and mRNA (Messenger Ribonucleic Acid) are some of the traditional and novel modalities that Merck's Life Science business sector has made significant investments to advance through acquisitions, expansions, and the introduction of new technologies. We have also made acquisitions that have helped us become one of the top CDMO providers in the fields of gene therapy and mRNA vaccines, providing an integrated CDMO that spans the entire value chain, from pre-clinical to commercial.

Therefore, a collaboration between every value chain be it technology, production or logistics in the industry is required as it plays a very critical role in the development of the market.

What are the hurdles that India needs to overcome in order to emerge as a leader in vaccine development globally?

Due to the variations' highly mutating and changeable nature of viruses, which presents grave and unknowable hazards to people's lives, there are many hurdles that India needs to overcome in vaccine development. Indigenous research in the country at the moment is still nascent, which is a hurdle involving significant investment in research and talent by both government and industry.

Does India need more skilled labour in the vaccine R&D space? If yes, what is the basic requirement?

According to the special report on "Skills Strategies for a Strong, Sustainable and Balanced World of Work" by TeamLease Degree Apprenticeship, the fastest growing apprenticeship programme in India, the country will need 30 million professionals with digital skills by 2026 and 50% of the current workforce is expected to be retrained in emerging technology sectors.

Vaccine science is very broad and encompasses many skills. It includes different classes for professions including researchers, healthcare experts, machine handlers, testers and more. While some people may be better at innovating early; others may have the skills to figure out how to scale a vaccine or be familiar with process innovation or programmatic management. The sequence from early detection to having a product in a bottle that can be marketed and globally relevant requires an entire team.

How is Merck helping build the skill demand in the vaccine industry?

The vaccine industry has emerged as a sunrise segment and hot destination for jobs, the demand for skilled workforce is on the rise, but the industry is grappling with a talent crunch. To reduce that gap, Merck has collaborated with businesses and universities to empower and grow this industry with a commitment to academic growth. Our centres of excellence for skill development and academic collaboration are in Jigani in Bengaluru, IMTech in Chandigarh, MLab Collaboration Centre in Bangalore. We have trained over 12,000 scholars at 1000 colleges and universities through the Peenya initiative. Several collaborations in skill development and lab services have also been started by Merck via MoU.

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