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Technology to target HIV, cancer

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Dr Vijayan V
VP, R&D operations Transgene Biotek

Recently in the news for out-licensing their technology to produce human erythropoetin, Transgene Biotek has had an illustrious past with developing novel technologies to produce a span of products, including monoclonal antibodies, proteins and biogenerics. Leading the operations from the front is Dr Vijayan V, head of R&D, Transgene.

Dr Vijayan believes that finding novel ways to target diseases such as HIV, diabetes and cancer is important in order tomake a breakthrough. Highlighting their commitment to creating useful intellectual property, Dr Vijayan mentions that Transgene has applied for 30 patents in the last six months.

Dr Vijayan has over 24 years of multifaceted experience in different biotechnology companies. After completing his PhD in microbiology from Pondicherry University, he worked at the Vector Control Research Center on insecticidal antibiotics. He went on to work at Spic Pharma, where he helped develop the protocols for production of up to 1,000 tonnes of Penicillin, the largest quantity producible at that time. Later, during his stint at Indian Immunologicals, where he was involved in the development of the rabies vaccine, he got further insight into research and manufacturing aspects of vaccines. He has also served as the head of the biotech division at Cadila Pharmaceuticals where he helped start the production of recombinant

erythropoetin from scratch.
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One of the major breakthroughs in research at Transgene has been in the area of a therapeutic vaccine for HIV. â€œInAIDS, the humoral immunity or specifically the gp120 B cells suppress the cell mediated immunity consisting of T cells. This prevents the necessary clearance of the HIV virus from the body. We have developed a novel toxin protein that selectively targets and inhibits the gp120 B cells. This form of therapy will only target this subset of B cells, and hence will not negatively impact the overall immunity. It has been characterized in vitro and is in pre-clinical trials. We hope to develop a therapeutic vaccine on these lines that could help restore the immunity in HIV patients,â€? explains Dr Vijayan.

Transgene is using a similar immunomodulation approach in the treatment of multiple sclerosis. Dr Vijayan was already well-versed in the manufacturing aspects of monoclonal antibodies, when he embarked upon the R&D pipeline for humanized monoclonal antibodies.

These antibodies are directed towards extracellular ligands present on cancerous cells, such as multiple myeloma and esophageal cancer. These have shown up to 90 percent reduction in tumors in animals at the preclinical stages. RNA silencing technology is also being explored to counter other cancers by using patented technology.

Dr Vijayan is also confident of developing an oral or transdermal route of delivery for insulin using their patented nano lattice technology. â€œI believe that the transdermal route of administration of drugs and vaccines is a very exciting opportunity for us to conduct research. We hope to develop a platform technology to be able to use it for a variety of compounds,â€? he says.

Biogenerics is another important area where newer methods are being used by Dr Vijayan. Erythropoetin is produced via adherent cell cultures, which are relatively difficult to scale up to large quantities. With the aid of a new technique, it is now being produced in a suspension cell culture in large fermentors.

Dr Vijayan's 'never say die' attitude comes across when he says, â€œI believe in not leaving anything half way.â€? We have faced some roadblocks and will continue to do so, but we always try to explore alternative routes. Our perseverance has paid off so far and we are beginning to make tremendous progress.â€?

Manasi Vaidya in Bangalore