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Hottest Indian Start-up: Eradicating Measles from the world

15 December 2015 | Features | By BioSpectrum Bureau

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Gone are the days when start-ups were associated with young-blooded, fresh graduates from prestigious universities abroad and iconic Indian institutes.

Today, age is proving to be an ignorable factor for pursuing passionate entrepreneurial adventures.

Fifty-two-year-old Dr Vishwas Joshi founded Pune-based start-up Seagull BioSolutions (SBPL) along with Dr Shailendra Maheshwari in 2011.

The company is incubated at Venture Center, an Entrepreneurship Development Center, hosted by National Chemical Laboratory (NCL), Pune.

Seagull is involved in developing and commercializing new technologies for advanced healthcare applications and medicines addressing unmet medical needs in the country and are affordable to the common man.

Dr Joshi holds a PhD in Molecular Virology from Indian Institute of Science (IISc), Bangalore, and has extensively worked in the biopharmaceutical discovery research in leading companies including Ranbaxy, DRL, and Glenmark.

Dr Shailendra Maheshwari has a medical degree coupled with a MD in Radiology from B J Medical College, Pune, and later was a resident fellow at the University of North Carolina, USA. Dr Maheshwari is currently a practicing Radiologist at the Hinduja Hospital, Mumbai, whose interest majorly falls into imaging cellular therapies.

Innovative Technology Platforms

Seagull has developed 2 technology platforms for producing protein and viral therapies and vaccines: eSAME and Active

Virosome Technology.

The former is useful for expressing recombinant proteins and RNA products in different animal cells. The latter helpful in producing new viral vaccines and gene therapy agents.

Both these technologies are proprietary to Seagull, and allow development of biosimilar versions of existing therapies and vaccines, and also produce innovative therapies and vaccines belonging to emerging therapeutic classes.

"Thus, they can be called as 'futuristic technologies'", says Dr Joshi.
Seagull has already tied-up with a US-based biotech company for using the eSAME technology to deliver anti-sense RNA molecules into the cancer cells.

If successful, this will be a more preferred method, since unlike the currently used systems, the eSAME system will not involve integration of the DNA into host cell genomic DNA.

Novel Products

Using both these platforms, the start-up has developed 3 novel products: SBPL-0100, SBPL-0200, and SBPL-0500.

SBPL-0100 is an innovative oncolytic virotherapy which also induces anti-cancer immunity.

This therapy will be effective against breast, lung and prostate cancers and represents a fast follower of US-based drug maker Amgen's T-Vec, which has opened a new class of non-toxic anti-cancer immunotherapies.

SBPL-0200 is another innovative vaccine agent for Dengue prevention.

"This is our first product produced using the Active Virosome Platform. The efficacy of the product was shown by in-house testing, and also confirmed by testing at the Center for Vaccine Development at Mahidol University (MU) in Thailand," reveals Dr Joshi.

The third product, SBPL-0500 -- according to him -- is the world's first Virus Like Particles (VLP) vaccine for Measles.

This vaccine is expected to be useful for immunizing infants aged between 4 to 9 months, who cannot be vaccinated with currently used vaccine, and still remain susceptible to measles infection and mortality.

"If successful, this will help us get closer to the dream of eradicating Measles from the world altogether," voices Dr Joshi optimistically.

The Dengue vaccine and the cancer therapeutic agent will be developed further up to Phase II clinical studies, and the products are planned to be out-licensed to interested biopharmaceutical companies at an appropriate stage.

He adds, "This development will also provide an increased validation to our technology platforms, and establish their acceptability as a tool for producing new therapies and vaccines from regulatory point of view."

Simultaneously, the company will also initiate Contract Research Services (CRS) to both academia and the industry to produce new Active Virosome Vaccines for other viral diseases like Chikungunya, Japanese Encephalitis (JE), other flaviviral diseases, Ebola virus, MERS (Middle East Respiratory Syndrome) and SARS (Severe Acute Respiratory Syndrome) among others.

"In a brief span of 4 years, we established 2 technology platforms useful for producing new viral vaccines and therapeutic agents, and 3 innovative healthcare products which addresses critical unmet medical needs of common man in India and other developing countries," admits Dr Joshi.

Funds Galore

The company intends to expand further, probably in Europe, to begin with. "All our clients are expected to be in the West. So we are thinking of establishing a subsidiary in Europe. This will provide us with a greater visibility and access to our clients, and at the same time will provide access to knowledge-base which is currently lacking in India," he states.

Its main clientÃ¨le includes companies in the anti-cancer drug discovery & immunotherapies, new vaccine development, and organizations involved in intracellular delivery of RNA molecules.

The start-up plans to achieve revenues of $0.3 million in 2016 and increase it to well over $4 million.

Seagull was bootstrapped for the first two years with an investment of Rs 3 crore.

It then received its seed funding from the Indian Government's Technology Development Board (TDB) through the Entrepreneurship Development Center.

Subsequently it went on to win funding support in the form of grants from DSIR (TePP--phase I), & DBT (BIG); Bill & Melinda Gates Foundation, USA; and ICICI Bank, India.

"Several organizations like the Gates Foundation are currently working to solve problems in Life Sciences industry. Seeking funds from these organizations will be the most fruitful. Although bootstrapping cannot be eliminated altogether," he opines.

He points that, in Biotechnology, VC investments are very poor in India. "Many VCs claim to be ready to invest in biotech initiatives, but few actually invest. Justifiable reasons support this reluctance to invest. But then, the VCs have to develop mechanisms to overcome the problems they face. This is taking too long a time," he expresses.

IPs, Visibility

At the moment, the company is in discussion with 2 European companies for collaborative interaction to study the complementarity of Seagull's technologies with the technologies of these other companies and evolve applications using such complementary technologies.

"These collaborations will help generate shared IP with the collaborators, thus establishing a source for long-term revenues for the company," Dr Joshi notes.

Seagull has now started publishing its activities more actively. It has presented its work on cancer therapy at the Oncolytic Viruses meeting in Boston, USA, held in June 2015, and expects to make similar presentations at upcoming conferences in the field of immunotherapies and vaccines.

"Two research papers describing our products are currently being prepared and we expect them to be published soon. This will provide a very important publicity to Seagull. Additionally, we are seeking investments from interested parties so that a dedicated business development workforce can be established to actively connect with different clients and explore the available commercial opportunities," observes Dr Joshi.

Start-up Revolution

Dr Joshi thinks that Seagull managed to progress to its present stage only because of the active and ongoing initiatives of the Indian Government.

"However, there is still a lot which the Government can do to help start-ups. The Government has established excellent programs for a start-up revolution. But there is now a need to develop means for helping start-ups grow and accelerate this start-up revolution. It needs to play a catalyzing role in this process. It could incentivize bigger companies to work on R&D programs with smaller start-ups. Alternatively, it may be able to bring in some of its PPP programs to big pharma companies to collaborate with start-ups. Such approaches will not only reduce the burden of financing, but may also help generate confidence about start-ups in bigger companies," he explains.

He further says that an important drawback of India is that very often the Government of India fights a lonely battle in promoting and nurturing good innovative entrepreneurs and start-ups.

"If the bigger pharma companies are induced to participate in this process, it will reduce the financial burden on the Government; provide industry specific selection pressure to this evolving start-up landscape; and create a more supportive ecosystem for start-ups," he justifies. "....Our government needs to modify its current policies providing tax incentives to big

pharma companies based on merits, productivity and impact of the R&D undertaken."

As for myths about Biotech start-ups, he says, "The words 'high-risk' and 'uncertainty' are widely abused by many researchers."

He positively concludes by saying," Every successful start-up is a billion-dollar company - even if it doesn't make that many dollars."

Milestones:

1. Recipient of DBT grant under the first round of BIG initiative
2. Recipient of GCE 10th round grant award
3. Winner of the gold medal (3rd place) in DST-Lockheed Martin India Innovation Growth program
4. Selected by Government of Belgium to participate in AWEX 2015