BioSpectrum the business of Bio & Health Sciences

Bangalore-based biotech start-up prints country's first artificial liver tissue

24 December 2015 | News | By BioSpectrum Bureau

Bangalore-based biotech start-up prints country's first artificial liver tissue

Pandorum is involved in the design and manufacturing of functional human tissues serving as test platforms for drug discovery and development, medical research, personalized therapeutics and other applications.

For the first time in the country, it has created artificial liver tissue that behave and mimic the human liver tissue.

"Liver cells are difficult to grow outside the human body. The global pharmaceutical industry spends about $10 billion and 10 years to develop new drugs. The cost of failure is high. The 2D culture and animal models are not human-like. We cannot test the effects of radiation on real human beings. Here artificially developed tissues will play a significant role as test platforms,"

said Mr Arun Chandru, cofounder & MD, Pandorum Technologies.

According to the company, at the moment, in India, there are no other companies which are developing artificial human tissues.

The artificial liver tissue is said to live for 4-8 weeks.

Pandorum's team consists of Dr Tuhin Bhowmick as the chairman and cofounder, and Mr Arun Chandru.

Today, companies in this area are capable of printing 10 million cells into a tissue which can help develop drugs that are affordable with better efficacy, lesser side effects, develop vaccines with quick turnaround time, and reduce animal and human trials.

By 2020, with 3D printing technology, companies would be able to print 1 billion cells enabling creations like implantable tissues, and mini organs like skin, pancreas, blood vessels and liver lobes.

In 2030, it is estimated that the technology will be so advanced and will empower companies to print 100 billion cells paving way for full-scale transplantable organs on demand, having the potential to fill the demand-supply gap in transplantation of organs like liver, kidneys, and pancreas.

Currently, Pandorum is in talks with pharmaceutical companies to commercialize its services.

The start-up has so far spent Rs 1 crore. It is also in talks with investors to raise further funding.

Today, the global in vitro toxicity testing market is estimated to be worth $20-30 million. By 2018, it is predicted to touch $4 billion.

Artificial human tissues are already being developed and commercialized in Japan, the US, England, Europe, and China.

In the future, Pandorum intends to print other human body parts like bladder, skin, muscle, bone, heart, nerves, lungs, kidneys, and pancreas.

In India, the organ supply-demand disparity is relatively higher. For every 50,000 livers and 50,000 hearts needed, only 1500 and 50 are fulfilled respectively. The numbers are far worse for kidneys. Only 7,000 transplantations are achieved out of a whopping 200,000 requirement.

The start-up company is incubated at Centre for Cellular and Molecular Platforms (C-CAMP).

The company was ideated in 2009. In 2010, the team participated in BEST-India (Biotechnology Entrepreneurship Student Teams) organized by Department of Biotechnology (DBT), and won a prize money of Rs 5 lakh. The following year Pandorum was incorporated.

It has been a recipient of the Biotechnology Ignition Grant (BIG) in 2012.

In 2013, it also received the 'Ignite' entrepreneurship fellowship by BIRAC (Biotechnology Industry Research Assistance Council) and Judge Business School, University of Cambridge, England.

Last year, it benefited through Small Business Innovation Research Initiative (SBIRI) scheme from BIRAC, DBT, Ministry of Science & Technology, Government of India.