BioSpectrum the business of Bio & Health Sciences

Pune's biotech offerings

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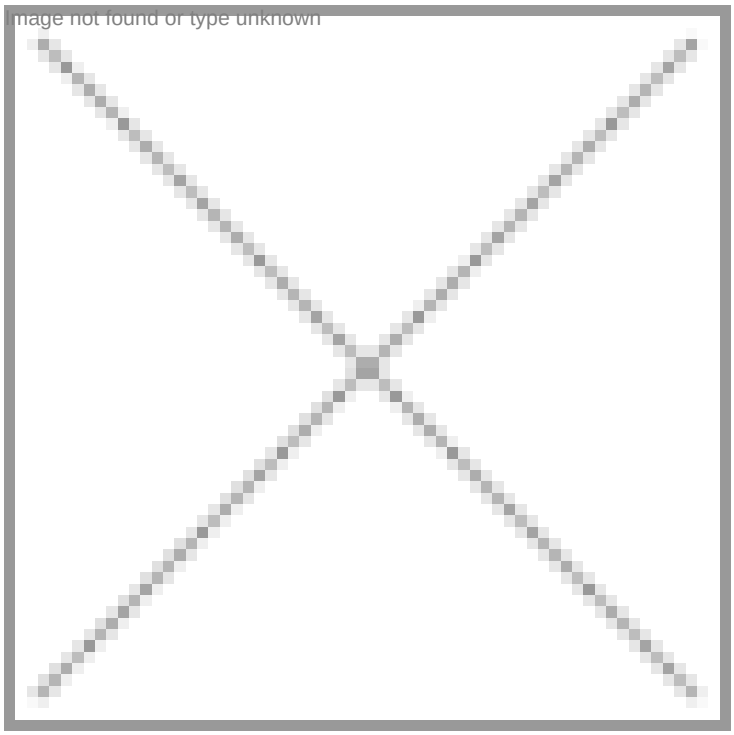

The large biotechnology research community in Pune is cranking out a number of significant methods to effectively combat some of the most troublesome diseases facing the humanity.

Pune has been known by a plethora of sobriquets. Popular among them: Queen of the Deccan, cultural capital of Maharashtra, pensioner's paradise and Oxford of the East. Pune is one of the historical cities of India with a glorious past, an innovative present and a promising future. The city has provided many social reformers, revolutionaries, political leaders, researchers, scientists, educationists and players. In the 21st century it is fast becoming one of the major hubs of industry and commerce in the country.

It is a base for many research institutions of national and international repute.

Presence of the institutions such as Agarkar Research Institute, National Institute of Virology, Therapeutic Drug Monitoring Laboratory, National Chemical laboratory, Bharati Vidhyapeeth's Institute of Environment Education and Research, C-DAC, National Aids Research Institute, Rajiv Gandhi Institute Information Technology and Biotechnology, Animal Diseases Investigations Laboratory, Hirabai Cowsaji Jahangir Medical Research Institute, Jahangir Hospital, King Edward Memorial Hospital, National Center for Cell Science, Sahyadri Laboratory and Haemotology Center have made Pune truly a center of excellence in research. There are also many private research organizations working towards developing newer technologies helpful for biotechnology and life sciences industries.

The institutions are working mainly on basic research and only a few have products ready for commercial use. Validating the

general trend, Dr G J Samadhanam, a director in the department of science and technology (DST) pointed out that a recent study conducted by AICTE showed only a few research papers of M Tech and PhD students of IITs and renowned institutions of north India were useful from commercialization angle in the last 10 years. Even the industry people have same view on the research being carried out at national institutions.

However, to present the rich intellectual properties of Pune, the Pune chapter of The Indus Entrepreneurs (TiE) under the leadership of Pratima Kirloskar organized a daylong event with theme Pune's potential to be the knowledge capital of India". As the theme itself indicates Pune's knowledge potential, the event saw many speakers making presentations on the technologies being developed at different institutes. Kirloskar had short listed these technologies based on their commercial potential from over 100 research breakthroughs in these institutions.

The new technologies showcased at the show include cancer tumor shrinkage, cancer marker, clot buster, vitamin B12 manufacturing, arsenic removal, bone grafting and ayurvedic treatment for AML. Besides there were some corporate presentations about their current projects such as molecular modeling software, algorithm for chemotherapy administration and MRI image enhancement and Ayursoft. Of these some are already patented technologies. The presentations were based on the basic research that may end up as frontier technologies to the industry.

Bone Transplants

Briefing on bone graft Dr Ramesh Sangle, consultant neurosurgeon, Jahangir Hospital said, "We have the facility to replace the bones through bone grafting. But still people like Shah Rukh Khan go to the US for bone grafting. Our hospital has a bone bank too." Continuing, he said, grafting carried out under scientific and physiological methods will reduce 50 percent of the surgery duration and also the cost. So far the Jahangir Hospital has conducted 89 operations involving bone replacement following bone loss due to disease or accidents have been carried out. Every year, at least a million Indians require artificial bone grafts with each import costing about Rs 40,000. The bone transplants from cadavers could reduce the cost by nearly 80 times.

Arsenic Poisons

Dr K M Paknikar of Agarkar Research Institute has developed a micro bacterium which can be used in the removal of arsenic from ground water. He said about 2700 villages in nine districts of West Bengal are affected with arsenic contamination. Over six million people are affected and 300,000 people are suffering due to arsenic contamination. Briefing about the salient features of micro bacterium, he said it will be economically viable, highly efficient, easy to operate and requires minimum power. The institute is planning to conduct field trials in March.

Bio Vitamins

Making a presentation on producing vitamin B 12 and allied compounds through biosynthesis, Dr Suresh Bhosale of Agarkar Research Institute said in addition to vitamin B 12, one will get methane (a good fuel) and Factor III (used in poultry feed industry) as by products. Even the yields are also very good. The method here uses anaerobic bacteria to synthesize vitamin B12 in large quantities.

Early Cancer Detection

The detection of cancer in the body is a difficult task. The detection of cancer itself will take time pushing the person to the last stages. Hence to detect the cancer at the early stages and at any part of the body Dr M B Sahasrabuddhe has come out with a technology called cancer tumor shrinkage. This will help to detect cancer in any part of the body and helps to treat the disease. It also helps to kill the multiplication of the cancer cells and to produce immune response against cancer. The cancer cells are immune to treatment for a short time ie for a period of 0-12 days. He said, "We have developed antigen to develop to respond to the immune system and to control multiplication of cancer cells," he said.

Clot Buster

Dr Sabita Dey of Agarkar Research Institute has developed a natural molecule with enormous medical potential in the area of clotting. The molecule is called as Actinokinase: a new clot buster. It was produced using an enzyme which is a non-pathogenic and non-allergic and has no effect on BP/pulse rate. It will reduce the clotting time to10 minutes against the normal clotting time of 20-30 minutes. She said this was an in house technology and was viable for commercialization.

Besides, Dr Madhavi Aghashe, Dr C B Koppikar of Prashanti Cancer Treatment Care Mission and Dr Vinay G Vaidya of Scientific Application Center, Siemens Information Systems Ltd made presentations on cancer marker a patented technology,

Ayurvedic treatment for AML and on algorithm for chemotherapy administration and MRI image enhancement software respectively.

Dr Vinay Vaidya said that the technology developed at the Siemens Scientific Application Center on computerized drug scheduling system for chemotherapy helps to destroy unwanted cells with minimum damage to the normal cells. It is very effective to treatment. This system will reduce the number of trials.

C-DAC's AyuSoft

Center for Development of Advanced Computing (C-DAC), an internationally acclaimed R&D organization of India involved in the design, development and deployment of advanced Information Technology based solutions, along with Pune University's Department of Health sciences, Department of Ayurveda, Pune's Janaprobodhini and Bombay's Mind Technologies Pvt Ltd is developing AyuSoft.

Briefing about the software Deepali Uppal said, AyuSoft is a decision support system offering a suite of applications like prakruti assessment, disease diagnostics software, diet and lifestyle advice, patient information management system. It also offers ayurveda knowledge database and ayurvedic encyclopedia.

Uppal said AyuSoft offers a comprehensive system including framework for integrating end to end solutions ranging from diagnostic software to lifestyle advice tailored to individual needs, complex query analysis along with a data mining engine and a range of products from a desktop solution to an intranet to an internet solution applicable to local / global markets. In a nutshell, AyuSoft is a comprehensive, interactive and intelligent system focusing on knowledge repository and decision support

VLife's Chemogenomics

VLife Sciences, a recent start up company concentrating on life sciences research is working on the pre-clinical research space of the drug discovery cycle. "Our aim is to reduce the cycle time and improve the quality of leads, thus addressing the two major challenges of the present pharmaceutical industry," said Atul Aslekar, director, VLife Sciences.VLife has completely incubated and successfully developed two ready-to-use technologies â€" ChemGen and MDS â€" that are complementary to each other.

ChemGen is the proprietary technology based on the novel computational approach towards Chemogenomics, which differs significantly from the traditional approach. It brings in lot of new advantages as well over the conventional methodology, in terms of quality of output, flexibility and speed of research. MDS is a software platform that integrates and speeds up the virtual experiments. It is a comprehensive set of research enabling modules that allows the researchers to work with better consistency in the defined research outline.

HandyLab's handy biochip

HandyLab Inc. is a US-based microfluidics startup company spun-out from technology developed at the University of Michigan during the late 1990s. The core HandyLab technology is one of the simplest embodiments of the so-called 'lab-on-a-chip' type technologies.

Nikhil Phadke a senior scientist at HandyLab Inc said, "We have developed devices that are capable of performing virtually all of the operations carried out in a standard biochemistry or molecular biology laboratory, on a microfluidic chip, in an automated and extremely rapid manner and at a nanoliter scale. The cutting-edge technology is truly interdisciplinary and incorporates latest developments in the fields of chemical engineering, chemistry, material science, electronics, computer science, optics, biochemistry, and molecular biology."

"Our first generation products are nucleic acid and protein based testing solutions designed to diagnose infectious diseases, hereditary diseases and detect adverse drug sensitivities. Due to the design of the system and method of manufacture, the devices are low-cost, highly portable and extremely adaptable. Furthermore due to the inherent nature of the system the devices provide highly accurate, critical diagnostic information in less than 30 minutes, " said Nikhil Phadke.

This is only a sample of technologies being showcased at the event. There are many more under the process of development. What next after technology development? So it is very much essential to establish a continuous platform between the scientists and the industry. This tech show has offered many opportunities for the industry to look at the research being carried out by the organizations based at Pune.

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