



GREAT STRIDES: (From L) Naveen Kulkarni, K.R. Rajyashri and Vinay Konaje at the Dhanwad agricultural university

Photographs: NEMANT MISHRA

# Small towns, big

**W**HEN Naveen Kulkarni, a scientist at the State University of New York (SUNY) in Albany, US, was on a lecture tour of the University of Agricultural Sciences, Dharwad, Karnataka, he was surprised to find that the university was equipped with all the basic molecular biology instrumentations needed for high-end research. That set him thinking. After two months of spadework, he set up a drug discovery services firm, Polyclone, in Dharwad.

That was in January. A few months ago, two scientists from Bangalore also floated a pharma research start-up in the same campus. Vinay Konaje and K.R. Rajyashri were colleagues at Avesthagen, a Bangalore-based services company. Like Kulkarni, they too were surprised by the quality of infrastructure in the university. Their company, Navya Biosciences, is another drug discovery services company. Says Konaje: "The quality of talent you get here is very high."

So far, small towns like Dharwad were not on the drug discovery map. Most of the services companies sprouted in Hyderabad and Bangalore, with the odd one coming up in Pune, Kolkata or Delhi. These two companies in Dharwad are the first indications of change. And the trend seems to be catching on in other small towns as well, if we go by what the Tamil Nadu Agricultural University (TNAU) does in Coimbatore.

In this beautiful sprawling campus, a few research students are busy looking into rare medicinal plants with anti-cancer properties, found in abundance only in the Western Ghats. "We are identifying the right kind of medicinal plants for discover-

ing new compounds. Entrepreneurs cannot do this kind of research on a large-scale basis. We are ready to partner with them," says TNAU vice-chancellor C. Ramasamy, adding, "A few companies have approached us for collaboration."

Drug discovery services is now a well-established business in India. It all began with chemistry services in the mid-1990s. Chemistry services form part of a later stage in drug discovery and include synthesising small molecule compounds to find out if they can become drugs. When a pharma company discovers a potential drug, it usually seeks someone's help to make this drug in enough quantities (pharma companies themselves would not like to waste time on this activity). India is an ideal place to outsource such chemistry work because of the high reputation of chemists here.



TRIPRAJAY SHARMA

## Taste of

**"Raw pharma research start-ups in universities in India can be funded if the business model is good. VCs are looking for start-up firms"**

Pramod Haque, managing partner, Norwest Venture Partners

## Universities in smaller towns are creating drug discovery research infrastructure, and attracting funds and entrepreneurs. By Vishal Krishna

Biology services, which are closer to actual drug discovery, took some more time to take off. But today there are firms like Syngene and Jubilant Biosys in Bangalore, Magene in Hyderabad and Chembiotek in Kolkata who offer these services. They can now be called drug discovery services companies because they also help in discovering and validating drug targets and in finding the best possible drug candidate against these targets. If the drug works, they find a way to synthesise this drug, and help make it in sufficient quantities as well. Yet, till last year, there was no sign that this activity would spread to the smaller towns.

Kulkarni believes that his start-up, Polyclone, and Dharwad university together have the skills and the equipment needed for target discovery and other services in the drug dis-

covery chain. For example, Dharwad university is one of the few academic institutions in small towns to have de-ionised nano pure water facility, which costs Rs 2 crore. Its molecular biology lab has equipment worth Rs 3 crore and more. But Kulkarni plans to work on R&D contract services first, before using this experience to move into target discovery.

# science

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Similarly, Navya Biologicals is working on biology services. Rajyashri, a molecular biologist, and Konaje, a chemical engineer, have 20 years of business and academic experience. Currently, they are into cloning of genes and expression of proteins (by which the information in a gene is translated into a protein). Both Polyclone and Navya can do a large amount of work from Dharwad, but they will later supplement this work with laboratories in Bangalore as well.

Polyclone will initially start with services like lead optimisation — the most critical area of drug discovery. Lead optimisation is the art of finding the best form of the molecule that has been found to be effective against a specific target. Kulkarni has a two-fold objective: first, to convince companies to invest in Polyclone's research facilities; two, to work on a retainer or milestone basis. The first milestone for a firm like Polyclone could come in about a year.

Not surprising, then, that Polyclone has tied up with the Biotechnology Department, SUNY, to extend its research capability. SUNY will make up for what Polyclone lacks in the same. Similarly, the university may also pass parts of research that Polyclone scientists may be able to handle better. Alex Brownstein, director (Business Development Center for Functional Genomics), SUNY, Albany, says: "It is easier to work with a firm incubating in the university as it has a core group of scientists who know the project they are handling."

However, skill and financial resources are both critical bottlenecks for start-ups. The skill is not just being able to do scientific experiments but having an end-to-end picture of taking an idea to lab experiments and developing it into a business successfully. Says Uday Saxena, chief scientific officer, Dr. Reddy's: "The most important skill for small firms is being creative and having ideas that can be converted into druggable targets and, eventually, drugs." A small firm may not have the same cost efficiency as a large company. The tie-up between Polyclone and SUNY-A is also to share the cost of research.

In Coimbatore, the university's Horticultural College and Research Institute (HC&RI) has been working on medicinal plants for a few years. It did DNA fingerprinting for *Coleus forskohlii*, a plant used for making anti-obesity drugs, to find out the extent of genetic variability in the plant for Bangalore-based Sami Labs. "Phytopharma research is a multi-million dollar opportunity. Plant-based drugs have proved to be a success for diseases like cancer," says K. Rajamani, head (plantation crops and medicinal plants), HC&RI, TNAU.

TNAU has tied up with the JSS College of Pharmacy, Ooty, for a project to discover anti-cancer drugs from medicinal plants. The Technology Information Forecasting Assessment Council (TIFAC) centre of the college has been working with several pharma companies and does drug validation and new molecule identification among others. While the university is engaging researchers to find out the right plants and separate unknown compounds, the centre will study how the compounds work in a cancer cell line. Finally, the college plans to sell the compound to a pharma company and the revenues would be shared. Not yet a company in formal terms, but it is close to working like one. ■

### the future

**"We do not rule out the possibility of working with smaller firms in the future, but we are actively looking at working with scientists from universities"**

K.V. Subramaniam, president, Reliance Life Sciences



With reports from M. Allirajan