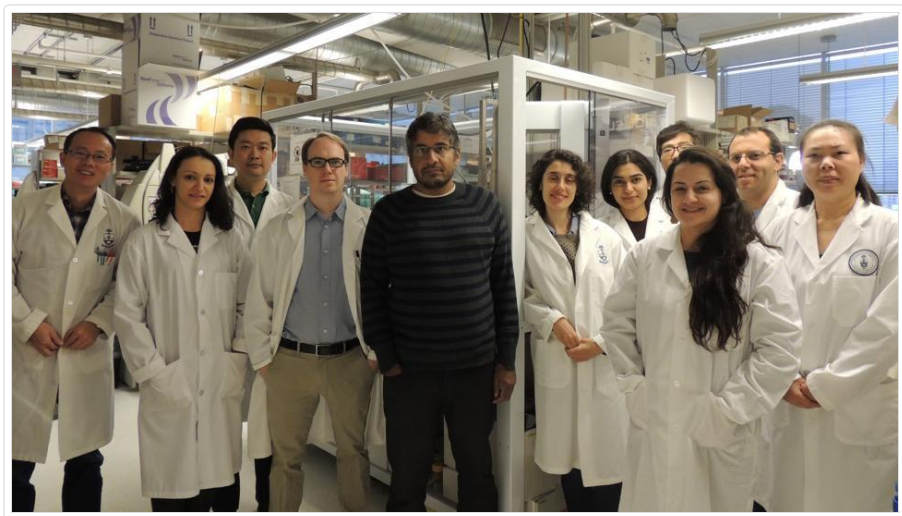
Indo-Canadian venture radicalises drug research

The pharmaceutical industry has so far been chained to a cycle of creating new drugs. The TRAC- MedGenome venture attempts to look at an existing drug and make it better.

WORLD Updated: Aug 13, 2017 07:41 IST

Anirudh Bhattacharyya
Hindustan Times, Toronto



Professor Sachdev Sidhu with his colleagues in his lab at the University of Toronto.(Christine Misquitta, University of Toronto)

A collaboration between Canadian and Indian entities aims to disrupt the development of drugs by making them more affordable and efficient while targeting what is perceived as the coming epidemic of age-related maladies in India.

The partnership will marry bleeding-edge Canadian research to multiple advantages that India brings to the table.

At the Canadian end is the Toronto Recombinant Antibody Center (TRAC), founded and led by Sachdev Sidhu, a professor in the department of molecular genetics at the University of Toronto. TRAC was spun out of Sidhu Lab and is conducting research into nearly 100 disease-countering antibodies.

In India, there's MedGenome led by serial entrepreneur Sam Santhosh. It is headquartered in San Francisco but has a strong presence in Bangalore as what is claimed to be India's largest genetic diagnostics operation.

The platform developed by Sidhu's team, Synthetic Antibody Engineering, will work with processes India has mastered. As Sidhu said in an interview at his office at the Donnelly Centre for Cellular and Biomolecular Research, what they do really well is "cell biology, antibody engineering".

India brings a complementary strength to the table – its strength in manufacturing derived from generic drug development.

"That's what India actually excels at – volume, quality. And when you have that drug scaled up, the last step is clinical trials. Again India is becoming more and more a player in clinical trials," he said.

Added to this are more pluses like a huge population that offers "incredible genetic diversity". And just as important, Sidhu pointed out, "India is also a world leader in informatics. Information technology, that is becoming the other big thing in medicine."

Professor Sachdev Sidhu in his office at the University of Toronto. (Christine Misquitta, University of Toronto)

At its core, the effort involves drugs based on antibodies, which "fight infection" in the body.

"It's a protein, so we can engineer it genetically. What we can now make is antibodies which target proteins in our own body. Antibodies bind to the defective protein, for instance that causing hyperproliferation of cells as in cancer, and shut it down," Sidhu explained.

The pharmaceutical industry has so far been chained to a cycle of creating novels, or altogether new drugs, and recently biosimilars, those that ape existing medication.

This venture attempts to manufacture "biobetters", which

Santhosh said was a “concept to make an improved drug, look at an existing drug and make it better.”

Sidhu said, “It’s time to retire or replace the old drug with a better one, that’s our simple definition of biobetter. Somehow it’s considered radical.”

Most drugs rely on discoveries made a decade, or even a quarter century ago. These will be “drugs made with current knowledge and technology, that hit proven targets. We want to make it better than existing drugs in key areas – stability, potency and specificity.”

While current drugs considered highly successful are also very expensive, putting them out of the reach of millions in India, this partnership aims to make them “affordable”, at prices a fraction of that now, while bringing them to market quicker.

“The pressure for faster and better drugs is coming from countries like India,” Sidhu said.

Part of the reason is improved longevity. But Sidhu said, “As people become healthier, they live longer but the downside is age-related diseases.”

So, the first company established under this venture – in Chennai – is working on a drug for age-related macular degeneration, a disease that causes blindness and could claim as many as 10 million victims over the next decade.

Professor Sachdev Sidhu in his lab at the University of Toronto. (Christine Misquitta, University of Toronto)

“We know what the treatment is, the problem is it’s too expensive. For me, the sensible thing is you make a drug that prevents that and you price it reasonably,” Sidhu said.

Santhosh asserted their drugs would reach the market earlier, “It will definitely have a big impact, it won’t take 10 or 15 years like it did earlier.” The expected period for such a drug to reach market is about five years.

On the horizon is drugs to fight arthritis, dengue fever, and, of course, cancer, a speciality of Sidhu’s laboratory.

Given the novelty of the concept, a regulatory mechanism for biobetters doesn’t really exist in India. Sidhu and Santhosh are hopeful the benefits that will accrue a large segment of population, that usually cannot access curatives due to the price barrier, will cause authorities to address this issue early.

As Sidhu said, “There’s actually been a more rapid advancement in technology in biology than in computers. Yet the model in biology has been – keep the prices high, limit it to patients who can afford the high prices.”

As they attempt to crash that model, there’s the hope India will emerge a pioneer in this sector. “I think the countries that will win in the future are those that are more flexible in drug approval. That’s doesn’t mean sloppy, it means look at the new technology, look at costs, look at what patients need,” Sidhu said.