

## India's competitive edge: Advance science at lower costs, Dr Shaw

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The conference is a one-stop platform for lifescience organizations, investors and bankers, offering them a panoramic view on the emerging investment opportunities in the lifesciences sector.

Addressing the conference delegates and Biotechnology Student Entrepreneurship Teams (BEST) participants, Dr Kiran Mazumdar-Shaw, CMD, Biocon, delivered her presentation on the theme 'Enabling an Efficient and Effective Research and Development Ecosystem in India'.

"Our recent Indian Mars mission's success shows our ability to be globally relevant and at the same time delivering scientific advances at lower costs. We need a winning attitude and a belief in ourselves that we can do great science in this country. However, it is not about 'me-too' research, but rather it's all about path-breaking research," she began.

Dr Kiran pointed out the critical components in a research ecosystem. "It starts with the academic research institutes. It is all about the symbiotic relationship between the academia and industry. Each component rely on each other to keep building that ecosystem. Unfortunately, in India, this critical component doesn't exist. Hence most researches die away within the walls of the laboratories," she opined.

The lab-to-market journey is a virtuous cycle, held Dr Kiran. "Academic research is about conceptualizing new ideas and discovering new ways of doing things. This academic research is supported by public funds. For academic research to be productive, we need to get people interested in it and take the ideas to proof-of-concept (PoC) stage. This is where young start-ups have an important role to play. So this is about creating accretive value to that concept. Funding for the proof-of-concept level has to come from various funding schemes offered by BIRAC and others. It is also important to find angel investors at this stage," she explained.

"Post the PoC stage, the start-ups need to become a larger organization, and take it to the industry and this would need the support of venture capitalists and capital markets," she added.

"When you create this important ecosystem, then you will find industries looking out for start-ups who are creating research with interesting concepts, and thus start-ups will be able to license their IPs. Simultaneously, the academic research will start to strengthen and the whole patenting culture will kick-in and the ecosystem will become an effective ecosystem," Dr Kiran elucidated.

Talking about the funding, Dr Kiran mentioned, "When you want to fund your research, new concepts and ideas, you will need government's funding, research-oriented funds and support from accelerators."

Dr Kiran feels that incubators needed to be created at every research institutes. "Very few research institutes have incubators in our country. If incubators do not move research ideas from concepts to PoC stage, then the virtuous cycle won't get initiated. However, once you start the cycle, the venture capitalists come on the scene and take the concept to the market," she added.

Adding on the imperativeness of incubators, she expressed that start-ups have to happen in incubators like government incubators preferably anchored by academic research institutes.

"The location of incubators is very crucial. Every technology institute in the country must have good incubators. Those incubators must be able to nurture start-ups and invite others as well. It is important that we give preference to our own researchers. Many incubators in the US charge about \$30 fee and let them take advantage of every part of that incubator," she revealed.

Dr Kiran believes that if we can create a good ecosystem and build a strong path from lab-to-market, it will pave way for an exciting ecosystem.

"If we want to get the government's attention in policy making, ABLE needs to write a whitepaper on building the ecosystem, about funding from the government, research institutes and incubators. We have to change the concept of how we access capital markets. We need to create the interest among companies to take the PoC to the market funded through capital markets," commented Dr Kiran.

She warned that investing in old, tried-and-tested archaic models is not going to pay any dividends. "It is going to take a long time before you see the profits. If people can do it in e-tailing, why not in biotech? This is all about investment in transformational change and investment in the future. We need to inculcate this thought-process among the government, investors and policy makers. Creating this ecosystem will create jobs through start-ups and take advanced scientific ideas to market. Our competitive edge is in taking advanced science at lower costs," held Dr Kiran.

She defined affordable innovation as high science at lower costs in a global landscape delivered in a competitive way. "That is what India's model is about. This is what Mangalyaan was all about. And we can do that in Biotechnology (BT)," she encouraged.

"We have to change," opined Dr Kiran, "India's narrative in Information Technology (IT) and Biotechnology; and today's era demands that change. IT has earned a huge name for India making a world-class name for its software capabilities. In lifesciences India is very strong. A third of the leading lifesciences companies in the world and research labs are of Indian origin. We need to build that credibility for ourselves."

Comparing the research culture in India and other countries, Dr Kiran said that in India the research focus is primarily on research publication rather than on creating IPs.

"We prefer to publish first and then try to patent the IP and ultimately lose the IP. However, globally, first they patent and then focus on publication. This is a golden rule followed in all academic institutes globally. This patenting culture has to start in a stronger way in Indian laboratories. It is the first starting point of value creation," Dr Kiran commented.

Dr Kiran emphasized that big companies are looking for good, new ideas. "The research landscape of big pharma companies is not what it used to be. They need redesigning. They are looking for start-up ideas and innovation. They are willing to fund

the companies to take it further. Biotechnology is the next frontier for investment. The next 5 years are going to be exciting and attractive on returns. We can do what the US is doing. If venture capitalists can get a product to the market, and investors can bet on that product, and if the government can subsidize 50 per cent of the investment, then there is some hope to see this ecosystem being created," she said optimistically.

Commenting on the job creation, she said that most jobs are not going to be from big companies.

"They will come from start-ups and smaller organizations. The government has to focus on start-ups and entrepreneurship to create those jobs. If this model is adopted, we need to make sure start-ups and entrepreneurs get funded through government, venture capitalists, angels, and capital markets have a role to play," she said.

Dr Kiran noted a few stellar milestones of the Indian lifesciences sector. She pointed, "Indian BT industry recorded CAGR of over 20 per cent in the last 10 years. The sector aims to realize \$100 billion in revenues by 2025. India is also ranked 12th in the biotech sector globally, and 3rd in APAC region. The exports themselves contribute over a half of Indian biotech industry revenues."

In her concluding remarks, Dr Kiran emphasized that going forward the Indian science and technology (S&T) sector needs thrust from the Prime Minister's Office.

"The research culture needs freedom to operate. Monitoring should be made significant in research institutes. There needs to be more investments in scaling up centers of excellence. Establishing more genomic research institutes based on big data analytics in Bangalore, Hyderabad and Pune through centre-state partnership should be welcomed. Also, establishing institutes for synthetic biology in Bangalore, Chennai and Visakhapatnam through centre-state partnership should be encouraged," she suggested.

"There is a need now for curriculum revamping in IT, BT, Nanotechnology (NT) and Computer Science in the country. Lastly, there is a need to frame S&T policies emulating the US, Australia and Israel, which have excellent policies," Dr Kiran ended.