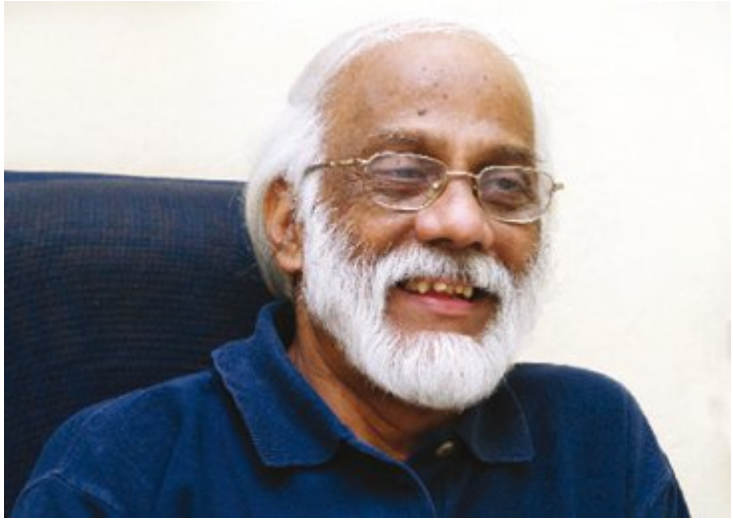
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Biotech industry should connect, innovate, prosper

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Let me first congratulate BioSpectrum for successfully completing a decade and also compliment them for having become a credible and authentic source of information for the biotech sector as a whole. I wish BioSpectrum a glorious future ahead.

In all my exposure to academia for over five decades, the last decade has been very eventful as a result of close interaction with the biotech industry through Small Business Innovation Research Initiative (SBIRI) and Biotechnology Industry Partnership Program (BIPP) of the DBT and New Millennium Indian Technology Leadership Initiative (NIMITLI) program of CSIR.

I have looked at around 1,500 projects from around 300 companies and this has been a great learning experience for me and has given me an insight into the industrial sector. Since I chair these committees, I have avoided going on site visits, but the committees get feed-back from experts. The presentations by industry colleagues on new projects and progress reports to the committees give a total perspective of the health of biotech industry in the country. I must say that the overall feeling is upbeat and that we are moving on the right track. This is in line with the 20 percent growth of the biotech sector, as reported by BioSpectrum.

SBIRI and BIPP have become popular with the industry and have attracted newer players with every round of advertisement. The latest is the BIG scheme to draw youngsters with an entrepreneurial bent of mind. While these schemes cater to the grass root level and follow a bottom-up approach to spread the biotech culture, NIMITLI is essentially a top-down exercise with the aim of achieving global leadership. Around 150 projects are underway and it is my perception that around 15-20 percent will lead to successful generation of projects and processes. An indirect fall out of these projects is a serious collaboration with academia in the case of at least 50 percent of the projects. This is a welcome development, since the concern has earlier been the disconnect between academic research and industry requirements. I believe that this is also because of the policy initiative of DBT, where the industry gets a grant component and loan on attractive terms, with the academic partner getting all the support as grants. I have often heard the industry acknowledging the vital contributions of the academic partner and more so the contribution of the Project Monitoring Committee (PMC) in actually steering the project. Of course, there is the odd case of an industry blaming the entire system and the bias of committees. There is also the odd case of a successful industry claiming that they did everything on their own with very little contribution from the experts. But, the overall feedback is very positive and encouraging.

The biopharma industry dominates the scene executing over 60 percent of the projects. The agriculture sector accounts for over 20 percent and the rest is accounted for by other areas such as food processing and environment, among others. India is really set to capture the vaccine and biosimilar/ biogeneric markets globally. But, I do feel that we need to be more adventurous, since there are around 50 biogenerics out there to capture and India is hovering over 20. There are multiple brands of the same product and one needs to get into newer biogenerics. This sector is very important for the developing world and India has the capability to beat the strategy of MNCs to resort to evergreening the patents. Competition from China is another matter! Only a handful of companies venture into new drug discovery based on contemporary molecular targets or even newer uses for known or failed drugs. There has to be an integration of bioinformatics capabilities with wet lab experimental studies, if we really want to make an impact in the drug discovery sector; otherwise, bioinformatics will only end up as a service sector as has been the case in IT sector. Obviously, these cannot be undertaken by small biotech companies and has to be the portfolio of drug industry majors.

The country still lacks credible clinical trial options of international standards, especially when it comes to phase III clinical trials. This essentially leads to most companies looking for licensing options rather than to manufacture. In general, our weakest link is the manufacturing sector and I have argued for DBT stepping in to support this effort-both through monetary help and infrastructure creation. The molecular diagnostics sector has to compete with imported versions and our weakness in hardware development shows up in this area. I do believe that tie-ups through DBT-Finland agreement and DBT-Stanford Biodesign program can help. We are also weak in the area of monoclonal antibody generation on a commercial scale.

In the agriculture sector, most of the seed companies have good crop breeding capabilities, but lack expertise in molecular techniques. In most of the cases the gene for a given transgenic application has come from the academic institution or from abroad. There is nothing wrong in this strategy, but it would eventually help to broaden the capabilities. The turn over in agri-biotech sector is due to a single product--Bt cotton! While there are projects on biofertilizers and biopesticides, one has not yet seen a major impact. But, the biggest set back is the Bt brinjal embargo and that companies are withdrawing from transgenic research and investments. This will prove to be detrimental for the country in the long run for agricultural productivity to keep pace with population growth. We need to move beyond Bt and arrive at an optimal integration of MAS/QTL and conventional strategies with transgenic options to tackle biotic/abiotic/nutrition challenges. Agriculture needs to be treated as a knowledge-driven industry and not just as a traditional vocation. There is some effort at generating useful products through secondary

agriculture, but this has to grow substantially.

Finally, biotech sector faces the challenge of serving the poorest of the poor in terms of disease diagnosis, healthcare delivery systems and nutrition requirement. While there are projects on enhancing telemedicine capabilities in the rural sector, developing simpler diagnostic tools for mass use and developing nutritious food for the acutely malnourished children, technology spread has to involve NGOs and this calls for social innovation. This would mean that several stake holders have to come together around the biotech industry. The $100 billion turn over, in my perception, has no meaning if this country cannot take care of the poor.

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