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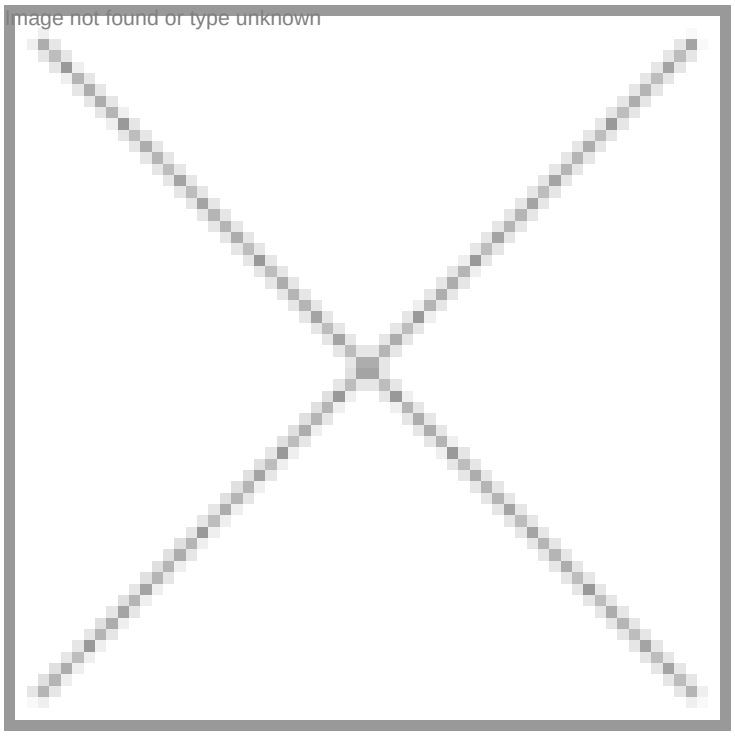
11 November 2005 | News



"DBT will help in creating missing links in existing biotech centers"

Dr MK Bhan, secretary, DBT, shares his vision about developing biotech-based clusters in the country, in an exclusive interview with Rolly Dureha of BioSpectrum.

How would you define a Biocluster?

A Biocluster should have a science institution, a technology institution, a medical, an agricultural or a veterinary institution, which are the core discipline institutions. Then there should be the industry and a legitimate clustering effect would be consonance between the institutions and the local industry that is growing in science and technology. A biotech park, a government department focused on biotechnology proactively, an incubator facility, a large number of Small and Medium Enterprises (SMEs) are some of its other components. So a cluster could be broadbased or there could be a cluster oriented to medical or industrial or agricultural biotechnology. It has also to take into account whether the concentration is more into medical, pharma and vaccine, therapeutic, agri or environment industry. There could also be foreign players operating in that area. In addition it can have services, R&D and joint manufacturing companies. In a sense, it has an element of globalization reflected there.

Within a specific field itself, a cluster may have focus. For example, if there is a cluster in the area of functional genomics, proteomics, then it should have centers that can do human studies in which both the genopyte and phenotype are assessed. It can have companies that make chip-based biomarkers and are into drug development. It should ideally have a strong

translational research unit, a strong clinical research unit and a proteomics group, a basic sciences group focused on proteomics. So, in a sense, a cluster is nothing, but an aggregation of a co-location of multiple capacities that can function as a network, as a web or mesh feeding on each other. Thus if you look at clusters in this way, you can have many different types of clusters and several different clusters in a city.

Essentially as long as the various units of a cluster are functionally linked and are working synergistically, the clustering model does not matter and can vary.

How do you see the existing biotech centers in the country?

Presently in the country, cities like Bangalore, Hyderabad, Pune, Mumbai and even Chennai, to some extent, have developed as biotech centers. Then there are some efforts that have been initiated in a number of other places like Kolkata, Gujarat, Orissa, Himachal Pradesh and Rajasthan. Now as a cluster what is missing in Bangalore? According to me, a great clinical academic centre is missing, which can be built. A translational unit in the big basic science school can be developed. A technology development center, a technology management center and a technology transfer center could be ideally located there. Similarly if you see Hyderabad and Pune, you will find that some pieces of the cluster are there while others are weak. Likewise, Delhi also has great potential. It has excellent scientific institutions but does not have enough concentration of the biotech industry. Delhi's strength in medical schools is great and it is probably the most powerful science city today after Bangaloreâ€“ICGEB, NII, NBRC, NCPGR, and Delhi University are located here but the industry is not here, the biotech park is not here.

Besides these city-based clusters, there can also be nation-based clusters and there are two that I would love to do on a national scaleâ€“one on stem cells and another on proteomics, where the partnerships/networks are across the states. This network is also a cluster if it has permanency and is long-lasting.

I think the weakest link in all the places is strong medical or agricultural or veterinary research. Our basic science is strong but the domain discipline research is very weak. Another observation is that the partnership between medical research centers and science centers is not very strong and does not exist in a world-class sort of way; like how MIT and Harvard are structured.

How is the DBT trying to promote clustering?

DBT's strategy is to look at the existing biotech centers and see if we can create the missing pieces. So I would say that we should strengthen medical school research, create one-two centers of excellence of medicine/medical biology both translational biology and clinical research in Bangalore, Hyderabad and other established places so that faster partnerships can develop between them. Like in Bangalore we are promoting a partnership between National Centre for Biological Studies (NCBS) and CMC Vellore. The idea is to strengthen CMC Vellore as a molecular medicine, translational and clinical research centre. We are likely to create a stem cell centre there soon and then we would also like to set up a molecular medicine unit there. At NCBS we are thinking of creating a translational research institute and together they will run a MD PhD program, as we need MD PhDs for translational research. At some point I would like to create a clinical academic center in Bangalore, where good disease biology and good clinical research is done. The stem cell cluster at Bangalore will consist of IISc, NCBS, Manipal Hospital, CMC Vellore and one local company whom we are going to support for production. The missing piece here has been the company and now we have located and spoken to the company.

Another thing that I would like to do in Bangalore is to set up a world-class undergraduate course in life sciences; have a place produce work force for the industry and human resource for the companiesâ€“the technicians, the technologists, etc. That could also be an interesting cluster. Then the city of Bangalore could benefit from a graduate school concept in which education at the PhD level is linked with a focused area of work. This is how education can be linked with research and clustering can be promoted.

In Delhi I would love to see more biotech companies, start-ups and a biotech park. We are also thinking of making a translational research institute separately in Gurgaon and are also planning to link some patient facility with the National Brain Research Centre (NBRC). As a part of the clustering approach, it would be great to have AIIMS partner with some science institute. Right now the science relationships between the institutes are not great.

In Hyderabad we are trying to create another stem cell cluster. Both the stem cell clusters in Hyderabad and Bangalore would find their own niches. For example, one could specialize in mesenchymal stem cell research, while the other would be doing embryonic stem cell long sighted research. So they may have different niches, organs may be different. In one place they may be doing adult cell research and in another place they are specializing in neurological applications. Also, it would also be great for a place like Hyderabad and Bangalore to have one institution where one can get interdisciplinary training. This

system will allow horizontal movement, mobility and help in acquiring all kinds of related skills.

Then, Punjab will be developed as a biotech corridor as per the recent announcement of the Prime Minister. We are trying to develop several areas including an agri biotech cluster in Punjab. We have visualized a biotechnology park and an institute of agri biotechnology there and there is a possibility of collaborations with Canada in the institute on agricultural biotechnology. Besides, we are trying to build medical biotechnology at PGI, Chandigarh and later would bring in IMTECH and Punjab University. A large number of companies in the agricultural area are moving in the region as the biotech park initiative has started. So for plant biotechnology, horticulture, bioresources, medicinal plants, Punjab could become a cluster.

Another way to promote clustering is to reengineer the existing institutions. And principle of that is to strengthen science where there is already domain expertise in medicine, agriculture or veterinary health and strengthen translational capacity and technology development where science is already strong.

Hence if we make a background of all the major cities where biotech is happening and find out which are the missing links, then clustering would be to understand and analyze the needs of each of the citiesâ€“assess their strengths, document their weak links and fulfil them. Hence we need to follow a case-by-case approach for each place. Each biotech center has some weakness and they need to be tied. Like in most places the business incubators do not function well, which is one of the biggest weakness and we need to find new solutions. Building customs officials as partners in movement of biological material is another area that we have neglected. Technician schools, industry required human resource and a great undergraduate school, which makes biology the centre of interest in the city and attracts a lot of young talent, are required.

Lastly a lot of clustering, of how it happens, depends on the drive of the local groups in each city. It happens best if the local groups are pushing us and we are providing support and feedback and not the other way round.