BioSpectrum the business of Bio & Health Sciences

Radical impact of stem cells

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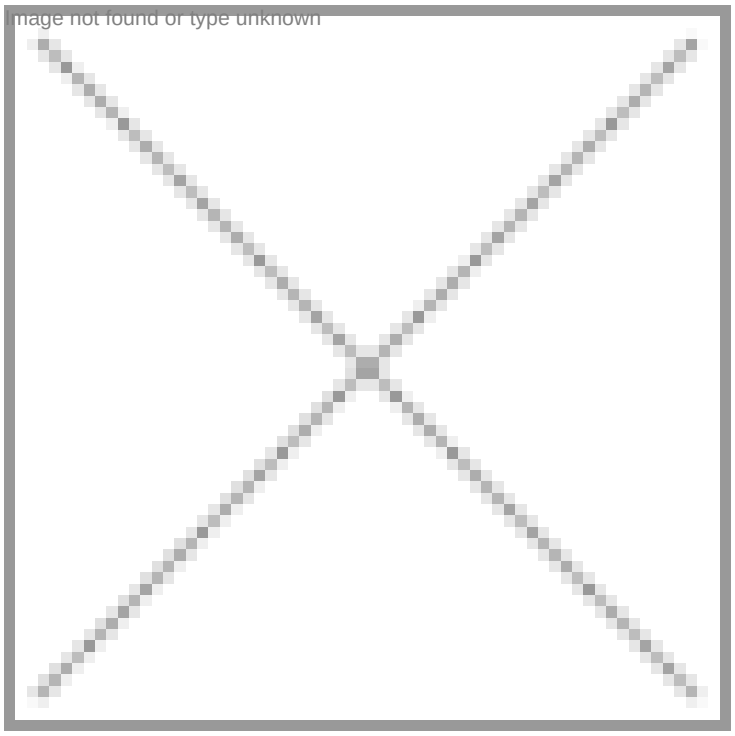

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s appointed as Presidentâ€“Stempeutics Research, in August 2007 and he later took on the CEO ned the Manipal Education & Medical Group (MEMG) as CEO-Manipal Infocom in 2002. There, he ontribution to the migration of the call center business into Manipalâ€“Omega Healthcare BPO JV. In nts at Wipro GE Medical Systems, he has taken up challenging roles ranging from manager- ment to COO.

Mr BN Manohar,
CEO, Stempeutics

lt is envisaged that stem cells would be a major branch of medical treatments and would be a standard of the years to come.

Allogeneic therapy products

Stem Cells will be available as off-the-shelf product in the near future for treating various unmet medical needs. These products will be based either on adult stem cells or on embryonic stem cells. Advances in cell culture technologies have revealed a remarkable plasticity of stem cells from embryonic and adult tissues. Transplantation models will be developed to test the ability of these cells to protect at-risk cells and replace cells lost to injury or disease. Human mesenchymal stem cells, isolated from various post-natal human tissues, are becoming an attractive tool for their potential in cell therapy and will hit the market at the earliest. New up-scaling technologies are emerging for mass production of stem cells without losing their inherent properties-thereby making stem cell products affordable.

The potential of mesenchymal and other stem cells will certainly attract pharma companies to expand their horizons in stem cell field not only to develop stem cell as a drug but also to consider them as a platform for developing new drugs to simulate stem cell action in vivo. Big pharma companies have already started investing in stem cell companies i.e., Pfizer has tied-up

with Athersys, Genzyme with Osiris, Teva with Gamida Cell, Cephalon with Mesoblast and in India Cipla has tied-up with Stempeutics. Pharma companies will invest billions of dollars in stem cell research in the next decade.

Autologous therapy products

Even though allogeneic stem cell products will be available in the market in future, there will be a good scope for autologous therapy for certain indications-in particular for cosmetic applications. It is envisaged that autologous therapy using adult stem cells will move from a hospital service model to a medical device model. Considering the difficulties in moving patients' tissues from different locations to a centralized lab and the cost associated with their processing and transportation, point-of-care medical devices can be made available in the operating room where stem cells can be isolated in minutes from patient's own bone marrow or adipose tissue followed by their administration. Millions of dollars will be spent in developing efficient, cost effective medical devices for autologous therapy.

Also in the next decade, generation of induced pluripotent stem cell (iPSC) lines and their derivatives will promote patient specific and disease specific drug development. The major concerns of tumors have to be overcome before their clinical application. Due to their pluripotent nature, iPSCs might change the entire scenario in drug development and open avenues in personalized medicine.

Drug screening & toxicity studies

Another important application of stem cells is in drug screening and toxicity studies. Pluripotent stem cells possess the essential characteristics required for the development of cell-based assays in the fields of drug discovery and predictive toxicology. Human embryonic stem cell lines or iPSCs will be the ideal candidates for drug development program. In fact, stem cells, of either embryonic or adult origin, are now finding a place in drug discovery. Collectively, these cells are expanding the utility of tissue-derived human cells, either as screening tools or as therapeutics. Taken together, the greater availability of novel stem cell phenotypes and sources as well as new detection technologies is heralding a new era of cellular screening. This convergence will offer unique opportunities to identify drug candidates for disorders for which few therapeutics are presently available.