

## Regenerative Medicine and Cell Based Therapy: The Future of Organ Transplant?

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### Abstract

Science is racing towards an era of breakthroughs. Organ replacement, which was once considered impossible is now a reality. Nonetheless, despite technological advances, there is shortage of donors and bioethical issues concerning transplantation. Additionally, organ rejection and long-term immunosuppression are a cause for concern. The need of the hour, thus, is an effective modality that can augment organ function as well as repair and regenerate damaged organs. Regenerative medicine and Cell based therapy has shown tremendous potential in management of several diseases; therefore, can be a favorable alternative to conventional transplantation techniques. This new branch of medicine utilizes cells and growth factors and aims to capitalize on the body's own repair and healing mechanisms. Furthermore, this promising field can be explored to address the current needs of organ transplantation namely inexhaustible source of tissues and immune-suppression free transplantation.

Stem cells are capable of differentiation into diverse populations of specialized cell types. Along with the properties of self renewal and anti-inflammation, these cells are also potent immune-modulatory agents. In context of organ transplantation, the major advantage of mesenchymal stem cells (MSCs) is that they escape immune recognition and can inhibit immune responses. Additionally, MSCs have immune-regulatory effects on T-regulatory (CD4+ and CD25high Foxp3 +) cells, B cells, NK cells, and dendritic cells. MSCs exert species specific immune-modulation. Direct cell-cell contact and paracrine mechanisms have been described as the mechanisms by which mesenchymal stem cells exert their immune-modulatory role. Cell based therapy can also address the shortcomings of current organ engineering techniques related to creation of natural scaffolds with vascular supply.

The existing dogma of organ transplantation is being challenged by the advent of regenerative medicine. Mesenchymal stem cells present with unexplored properties in transplantation immunobiology and can contribute significantly towards evolution of newer therapeutic avenues in organ replacement.

### Biography

Pradeep V Mahajan is a Urologist by qualification with additional training in Regenerative medicine and cell-based therapy. He established his brainchild StemRx Bioscience Solutions Pvt. Ltd. in the year 2011. Through this, he continues to set high standards in cell-based therapy for treatment of various degenerative disorders where the limits of conventional therapy end. StemRx has a state of the art GMP compliant and FDA approved facility and aims to provide affordable healthcare that will enable patients to enjoy an improved quality of life. Dr. Mahajan has numerous collaborations with national and international institutions and organizations for clinical trials along with patents and research publications related to regenerative medicine. He strongly believes in the innate healing potential of our body. His mantra is 'You carry your own repairing kits within yourself'. Soon, he believes that treatment of diseases will comprise of 'cells' and not 'pills'.



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