

# 4<sup>th</sup> International Conference and Exhibition on **Immunology**

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## The potential mechanism behinds stem cells in immune privilege

Totipotent and pluripotent stem cells (e.g. ESCs or iPSCs) and adult tissue derived stem cells have been studied for many years. Stem cell transplantation has been considered a top priority for use to treat a variety of disease states and for various tissue regeneration regimes. Various autologous stem cells have been successfully used in clinical trials, though the scarcity of stem cells has limited their application. Allogeneic derived stem cells are a potential stem cell source; however, this remains a major challenge due to their potential to trigger an immune response or rejection after transplantation. Through several years of investigation, we have discovered and isolated a novel type of muscle derived small-size stem cells (Mu3SCs) from both mice and human tissues. These Mu3SCs have been characterized as being small in size, capable of multipotent differentiation and demonstrate a naturally aggressive migration capacity. We discovered that Mu3SCs were able to survive, proliferate and differentiate within a variety of tissues and are capable of engrafting throughout the skeletal muscles of mdx mice, a dystrophic mouse model of human Duchenne muscular dystrophy, via intravenous injection. We also demonstrated that GFP pre-labeled Mu3SCs remained in the blood stream for up to three weeks. We thus hypothesized that a percentage of small in size stem cells within the general stem cell populations that are “immune-privileged”, since the Mu3SCs have the ability to escape immunological recognition in the transplanted host, which is essential for inducing immunological tolerance.

## Biography

Yong Li is an Associate Professor within the Department of Pediatric Surgery at the University of Texas, School of Medicine at Houston. He is also appointed as an Associate Professor in the Center Stem Cell for Regenerative Medicine at the Brown Foundation Institute of Molecular Medicine (IMM), UT Health. He accomplished his MD and PhD training in China, and was a general surgeon before he went to London of UK in 1997. His first research career as a Post-Doctor fellow trained in Imperial College School of Medicine in UK (1998-1999), and later as a Post-doctoral Research Associate in Children’s Hospital of Pittsburgh of UPMC. He was promoted to a research Assistant Professor in 2002, Assistant Professor in 2004 (within tenure track system in 2006), and lead his research team approach success in the field of stem cell, anti-fibrosis in regeneration medicine. These projects also include the enlargement and application of adult stem cells (muscle and skin) to repair traumatic injury (muscle, tendon, spinal cord and brain) and congenital diseases. As in 2011, he has published over 66 refereed journal articles and review papers, and five book chapters. He has won twenty more international awards for his scientific advances, including most recently, he has won the Michael Miller Young Investigator Award at Children’s Hospital of UPMC.

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