STEM CELL SOCIETY
SINGAPORE

STEM CELL CLUB

Thursday June 25th 2009 • Matrix Building, Aspiration Level 2M

Programme

5.30 - 6.00 pm	James Hui Hoi Po "Cell-based therapy in the treatment of osteoarthritis of the knee: An update"
6.00 - 6.30 pm	Young-Tae Chang "Colorful Chemical Genetics"
6.30 pm onwards	Refreshments
Host	Gerald Udolph, IMB

SPEAKER

James Hui Hoi Po

Abstract

Various attempts in cell-based therapy have been available to treat cartilage injuries since 1994. However, no method has been found to be superior as articular cartilage has limited potential to heal. However, the ultimate goal of treatment is not only to restore normal knee function by regenerating hyaline cartilage in the defect and complete integration of the regenerated cartilage, but also to delay the primary end point of total joint replacement.

To date, 200 cases of Autologous Chrondrocytes and Bone Marrow stem cells(BMSCs) Implantation had been performed in the author's institution. At the last review, 87% of the patients had good and excellent results in terms of symptoms and knee activities. Injectable intra-articular mesenchymal stem cells (BMSCs) suspended in hyaluronic acid as an alternative to the much more invasive methods had been found to have good experimental results in porcine models. The cell-treated groups showed improved cartilage healing both histologically and morphologically at 6 and 12 weeks compared to both controls. Following the good experimental result, this injectable method was commenced in clinical trial and it can be performed as an outpatient procedure.

Recent literature had also argued on the different cell sources, growth factors and their reproducible efficacy. The challenge is that for Clinicians and Basic Scientists to translate their findings from bench to bedside.

SPEAKER

Young-Tae Chang

Abstract

With the successful result of Human Genome Project, we are facing the problem of handling numerous target genes whose functions remain to be studied. In chemical genetics, instead of using gene knock-out or overexpression as in conventional genetics, a small molecule library is used to disclose a novel phenotype, eventually for the study of gene function. While a successful chemical genetics work will identify a novel gene product (target protein) and its on /off switch, the small molecule complement, and thus chemical genetics promises an efficient "two birds with one stone" approach, the most serious bottleneck of modern chemical genetics is the step of target identification. The currently popular affinity matrix technique is challenging because the transformation of the lead compound into an efficient affinity molecule without losing the biological activity is not easy, requiring intensive SAR studies. To surrogate the well known problem, our group has developed a linker tagged library and has successfully identified multiple target proteins so far. While successful, the affinity matrix technique requires a breakdown of the biological system to pool the proteins into one extract, which inherently introduce a lot of artifacts, such as dilution and abolishing the biological environment, etc.

As the next generation of tagged library, we are currently developing fluorescence tagged libraries for in situ target identification and a visualization of the biological events using Diversity Oriented Fluorescence Library Approach (DOFLA). The basic hypothesis is DOFLA of the same fluorescence scaffold, but with various diversity elements directly attached around the core, may selectively respond to a broader range of target proteins in intact biological system and facilitate the mechanism elucidation and target identification. The high throughput strategy using colorful chemical genetics for stem cell study will be discussed.