

BONE-TEC 2010 INTERNSHIP REPORT

Name: Guak-Kim Tan (University of Queensland, Australia)

Host researcher: Prof. Yasuhiko Tabata

Host institute: Institute for Frontier Science, Kyoto University, Japan.

Internship periods: 23 Feb – 1 May 2011

General:

It was a great honour and privilege for me to receive The Best Young Scientist award from the Bone-Tec 2010, which allows me to do an internship in Prof. Tabata's laboratory at Kyoto University, Japan. Prof. Tabata's research group has been working in the use of drug delivery systems for tissue repair and regenerative for the past 10 years, and has extensive knowledge and expertise in studying the effect of a variety of bioactive molecules on stem cell behaviours. Professor himself has an open mind and is very kind to foreign researchers. Furthermore, members of Tabata's laboratory were very supportive during my stay at his laboratory. I have built a network of contacts with the members and other visiting scholars in his lab at the end of the internship. Overall, the internship does not only to increase my knowledge of my field of research, but to also learn more about Japan and Japanese culture.

Research achievements:

During my internship at Prof. Tabata's laboratory, I have developed an intense interest in the use of gelatin microspheres as a biodegradable and injectable vehicle for controlled delivery of bioactive compounds. To this end, I have successfully fabricated gelatin microspheres with different sizes, and covalently immobilized polysaccharide molecules onto the microspheres using chemical crosslinking. Characterisation of the resulting microspheres, including quantification of the immobilised molecules, *in vitro* degradation test, swelling test, scanning electron microscopy etc were also performed. After 14 days of culture, fluorometric DNA assay shows that the presence of immobilised polysaccharide on the microspheres resulted in higher rat bone marrow-derived mesenchymal stem cell proliferation.

Career Development:

With the advice and guidance from Prof. Tabata, I have applied for a postdoctoral fellowship to continue the work of my internship in his research group.

Photo:



Prof. Yasuhiko Tabata's research group at the Kyoto University, Japan. The photo was taken on Hanami (花見), i.e. cherry blossom festival. Front row: (middle) Prof. Tabata; (5th from right) Guak-Kim.