

Date: **4 July 2016, Monday**  
Time: **4pm – 5pm**  
Venue: **School of Biological Sciences**  
**60 Nanyang Drive**  
**SBS Classroom 1**

Speaker:  
**Dr. Yen Choo**  
**CEO of Progenitor Labs and**  
**Executive Chairman of Plasticell, UK**

Host:  
**Prof. Daniela Rhodes**



## **Regulation of Stem Cells with Small Molecules: Towards New Therapies**

### **Abstract**

High efficiency and cost-effective directed differentiation of stem cells is technically challenging, but is absolutely required for many applications. Achieving differentiation using small molecule effectors is a longstanding goal in the field, as small molecules are cheaper, more stable and reliable than the recombinant growth factors currently used to drive differentiation, and can also be used in human therapy.

Plasticell Ltd has developed a high throughput screening system ('CombiCult') capable of multiplexing extremely large numbers of putative cell differentiation protocols to rapidly pinpoint combinations of variables (such as small molecules) that drive stem cell differentiation into given phenotypes.

Progenitor Therapeutics Ltd uses CombiCult to differentiate pluripotent stem cells in vitro into rare adult stem cells that are responsible for tissue maintenance and repair in the body. These cells are used in drug screening to discover molecules that stimulate the regeneration of specific cells, thereby restoring tissue function in serious degenerative diseases such as osteoarthritis, muscular dystrophy and multiple sclerosis.

### **Biography**

Yen Choo grew up in Singapore and obtained his PhD in Molecular Biology in 1995 from the University of Cambridge working on the structure and function of zinc finger proteins under Sir Aaron Klug. Between 1995 and 2000 he was a scientist at the MRC Laboratory of Molecular Biology, Cambridge.

In 1999 Yen co-founded (with Klug) Gendaq Ltd, a UK biotech company focused on engineering zinc fingers. Dr Choo served as CSO of the company until its acquisition by Sangamo Biosciences Inc. (Richmond, CA). Between 2001 and 2002 he was VP of research at Sangamo. Zinc finger technology is now used in clinical stage therapies and was the forerunner of similar gene editing technologies such as CRISPR and Talens.

In 2002 Yen founded Plasticell Ltd to develop high throughput techniques capable of accelerating stem cell research and regenerative medicine, and was the CEO and Chief Scientist until 2010.

In 2010 Yen founded Progenitor Labs Ltd to discover small molecule drugs that act on endogenous stem cell populations to regenerate tissues of the human body. Progenitor's lead programme is in osteoarthritis and further programmes are in multiple sclerosis and Duchenne muscular dystrophy.

Yen is a member of the Steering Committee for the UK Stem Cell Bank and for the Use of Stem Cell Lines, which oversees the UK Stem Cell Bank and all research involving human embryonic stem cell lines in the UK.