

Dear Faculty, IGERT Fellows, IGERT Associates and Students,

You are cordially invited to attend a Seminar presented by Vincent On. Please plan to attend.

# Vincent On

IGERT Fellow

Date: Friday, February 27, 2015

Location: WCH 216

Time: 11:00am

## "Concise Review: Induced Pluripotent Stem Cells Versus Embryonic Stem Cells: Close Enough or Yet Too Far Apart?"

by Bilic and Belmonte

### Abstract:

The state of a cell is defined by the genes it transcribes and the epigenetic landscape that regulates their expression. Pluripotent cells have markedly different epigenetic signatures when compared with differentiated cells. Permissive chromatin, high occurrence of bivalent domains, and low levels of heterochromatin allow pluripotent cells to react to distinctive stimuli and undergo changes of cell state by differentiating into various tissues. Differentiated cells can be reprogrammed by a set of transcription factors to induced pluripotent stem cells (iPSC) that convert their transcriptional and epigenetic state to pluripotency and thus closely resemble embryonic stem cells (ESC). However, questions remain on whether the epigenetic reprogramming is complete or if there are some recurring iPSC specific aberrations that impede their full pluripotency potential. For this reason, iPSC need to be closely compared with ESC, which is used as a golden standard for in vitro pluripotency. Transcribed genes, epigenetic landscape, differentiation potential, and mutational load show small but distinctive dissimilarities between these two cell types.

