

IGM Seminar

Date : 30 Nov, 2018 16:00 start

Place : 5st Floor IGM Seminar Room

Dr. Tristan Rodriguez

Reader in Cell and Developmental Biology

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Title

Regulation of cell fitness by cell competition during early mouse development and beyond

During the early stages of mammalian embryonic differentiation, a vast array of cellular changes take place, including a dramatic increase in the proliferation rate and a rewiring of the transcriptional, epigenetic, metabolic and signalling networks. The dimension of these changes and the requirement for their timing to be carefully orchestrated implies that stringent quality control mechanisms must be in place to ensure the elimination of aberrant cells prior to the specification of the germline. Here I will discuss the work my laboratory has done to unravel the mechanism of elimination of non-lethally damaged cells during differentiation. I will present evidence to show that during embryonic differentiation, cell competition eliminates cells with mild forms of cellular damage, such as mis-patterned or karyotypically abnormal cells. I will discuss how during this process the interplay of p53 and mTOR signalling governs the competitive interactions that ensue between cells with different fitness levels, as well as the implications of these interactions for the growth and patterning of the developing embryo. Finally, I will provide an example of how these competitive interactions can be hijacked by glioblastoma cancer cells to promote their expansion at the expense of non-transformed adult neural stem cells. Together, these studies highlight the importance of cell competition for governing cell-cell interactions from the embryo to the adult.

Host : Yasuyuki FUJITA (Molecular Oncology) 5530