

# Guest lecture

## (Re-)programming of cellular potency – learning from the embryo

**27 April 2016**

**2.15 PM in BMB seminar room**



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**Abstract:** In early mammalian embryogenesis dramatic epigenetic reprogramming of the oocyte and sperm genome gives rise to toti- and pluripotent cells, which are capable to differentiate into any cell type of our body. The mechanism and impact of this embryo intrinsic process on early cell fate decisions and cellular potency is not well understood. We now show that DNA methylation reprogramming by Ten-eleven translocation (Tet) enzymes is essential for the establishment of totipotent 2-cell embryos. Moreover, we demonstrate that dynamic gene expression analysis of single cells in the human blastocyst in vivo can be used to derive naive human pluripotent stem cells in vitro. Future experiments combining epigenetic and metabolic approaches on understanding cellular potency in early embryogenesis will reveal fundamental aspects of developmental biology and provide novel tools for regenerative medicine.

**Host:** Professor Susanne Mandrup, Department of Biochemistry and Molecular Biology, SDU.