

ARMI EXTERNAL SEMINAR SERIES 2021



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Making the mouse blastocyst - from totipotency to stem cell commitment

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Abstract

The preimplantation mouse embryo progresses over 4 days and 6 cleavage divisions from the totipotent zygote stage to the blastocyst with its three distinct cell lineages; the pluripotent epiblast and the extraembryonic trophoctoderm and the primitive endoderm. The key transcription factors and signaling pathways specifying cell fate in the blastocyst and its derived stem cells have been identified. By undertaking a careful experimental assessment of the dynamic processes of lineage commitment, combined with in vivo imaging and single cell gene expression analysis, we have shown that loss of totipotency is a gradual process and not complete until close to the blastocyst stage. This raises the possibility that stem cells with broader potential than ES cells could be generated by understanding and reversing the mechanisms of progressive lineage restriction. Development of human and mouse blastocysts show similarities and differences that can inform our understanding of the different pluripotent states of human and mouse stem cells.

Bio

Janet Rossant, CC, PhD, FRS, FRSC is Senior Scientist and Chief of Research Emeritus at the Hospital for Sick Children in Toronto and President and Scientific Director of the Gairdner Foundation. She is an internationally recognized developmental and stem cell biologist, exploring the biology of the early embryo and its stem cells and their applications to understanding and treating human disease. She has also been actively involved in ethics and public policy discussions around stem cell research and genetic modifications. She led the Research Institute at the Hospital for Sick Children from 2005 to 2015. She has received many honors and recognition for her work, including six honorary degrees, and election to the Royal Societies of London and Canada and the US National Academy of Sciences. In 2018 she received the N. American L'Oreal-UNESCO Women in Science Award.



EVENT DETAILS

DATE:

Tuesday, 16th March

TIME:

11:00am AEDT

ZOOM:

Please click this URL to start or join.

<https://monash.zoom.us/j/85888236254?pwd=a3NndFBZek5haGF3ZzJWY05kdjJDUk09> Or, go to <https://monash.zoom.us/join> and enter meeting ID: 858 8823 6254 and password: 21635133

HOST:

Dr Jennifer Zenker



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