Cambridge Society for the Application of Research

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Stem Cells; overcoming the embryo

Professor Austin Smith
Director, Wellcome Trust Centre for Stem Cell Research
University of Cambridge

7.30 p.m., TUESDAY 2ND February, 2010

The Wolfson Lecture Theatre, **Churchill College**, Storey's Way, Cambridge

Please note that this lecture will take place on a TUESDAY

Professor Smith writes:

"The main objective of my research group is to characterise the cellular and molecular mechanisms governing the self-renewal and differentiation of multipotential embryo stem cells, of mouse, rat and human origin. Stem cells are defined by the ability both to produce identical daughter cells (self-renewal), and to produce progeny with more restricted fates (*commitment* and *differentiation*).

This property of stem cells underpins growth and diversification during development and sustains homeostasis and repair processes throughout adult life. An understanding of molecular mechanisms which govern stem cell fate is therefore of fundamental significance in cell and developmental biology and the capabilities arising from such knowledge have major biomedical applications.

Embryonic stem cells, which are derived directly from the pluripotential cells of the early-mouse embryo, can be propagated and manipulated *in vitro* whilst retaining their full potential for multi-lineage development. Our strategy is to exploit these prototypic stem cell cultures for the identification and characterisation of key regulatory molecules, to determine the significance of these molecules in vitro and in vivo, and thence to develop improved methods of stem cell propagation and manipulation."
(Copied off Professor Smith's website, with additional material from the speaker)

Professor Smith adds

"Stem cell research provokes, in equal measure, exaggerated claims of miracle cures and moral outrage over "cannibalism" of human embryos. In reality, stem cells are basic building blocks of life and objects of scientific wonder. Unlocking their secrets will illuminate our understanding of fundamental processes in human biology and disease""

About the speaker:

Professor Austin Smith was captivated by pluripotency and stem cell self-renewal by undergraduate lectures from Professor Chris Graham in Oxford. He pursued this interest through PhD studies with Martin Hooper at the University of Edinburgh from 1982-86. Following postdoctoral research at the University of Oxford with John Heath, he returned to Edinburgh in 1990 as a Group Leader at the Centre for Genome Research.

Professor Smith was awarded an MRC Research Professorship, and then moved to the University of Cambridge where he is currently Director of the Wellcome Trust Centre for Stem Cell Research. He coordinated the European Commission integrated project EuroStemCell (2004-2008) and currently coordinates the EuroSyStem project (2008-2012). Professor Smith is a Fellow of the Royal Society of Edinburgh, an elected member of EMBO, and a Fellow of the Royal Society of London.

See http://www.cscr.cam.ac.uk for more about the laboratory

The Organising Secretary adds....

Culturing stem cells is a major challenge, and huge advances have been made over the past decade. Professor Smith's group (and indeed, the UK as a whole) is at the forefront of this research, which is just now beginning to bring about practical applications in medicine.

DON'T FORGET – THIS LECTURE IS ON A **TUESDAY!**

Best Regards
Richard Freeman
Organising Secretary

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