



Cambridge Society for the Application of Research

Churchill College
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Prospects and Obstacles affecting Cell Replacement in Humans

Professor Sir John Gurdon
The Gurdon Institute, University of Cambridge

7.30pm, Monday 15th December 2014
Wolfson Hall Lecture Theatre, Churchill College, Storey's Way, Cambridge

The Lecture: John Gurdon writes

The early results of nuclear transplantation in animals will be described. These show that nearly all cells have a complete genome and therefore that, in principle, the nucleus of one kind of specialized cell can be used to generate all other kinds of cells. Over time, somatic cell nuclear transfer was achieved in mammals and most recently in humans.

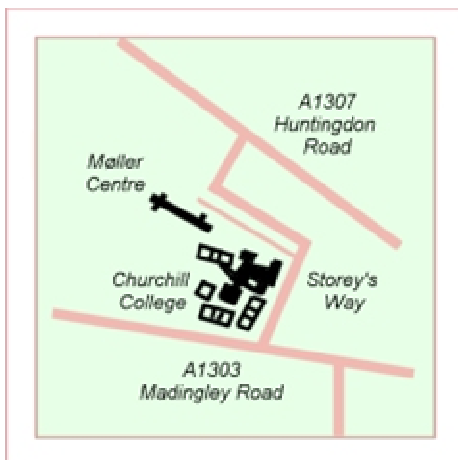
Induced pluripotency can now be achieved by incubating somatic cells in a selection of transcription factors. This method has the great advantage of making nuclear reprogramming possible without the use of eggs, but it is very inefficient and can lead to defects in reprogrammed cells as they are grown in the laboratory. This leads to the desire to understand the mechanism of nuclear reprogramming by eggs, which have a natural ability to reprogram the highly specialized sperm cell. Current knowledge about the mechanism of reprogramming by eggs will be discussed.

The talk will discuss the current level of success in cell replacement in humans. It will also discuss the ethical and legal constraints in bringing this new technology into general use for patients.

About the Speaker:

Dr John Gurdon did his undergraduate work in Zoology in the University of Oxford and later a one-year postdoctoral position at CalTech in the USA. He returned to Oxford and became a university lecturer in Embryology. In 1971 he moved to the MRC Molecular Biology Laboratory in Cambridge, continuing his work on Amphibian developmental biology. In 1983 he moved to the University of Cambridge as John Humphrey Plummer Professor of Cell Biology. He co-founded a research Institute of Developmental and Cancer biology with Professor Laskey as co-chairman and was Chairman of this Institute until 2002. During his career Dr Gurdon concentrated on nuclear transplantation in the frog *Xenopus*. He has also carried out a range of experiments with this material, discovering the value of messenger RNA microinjection, mechanisms of response to morphogen gradients, and, most recently, mechanisms of nuclear reprogramming by *Xenopus* oocytes and eggs. Dr Gurdon served as Master of Magdalene College Cambridge from 1995-2002, and has received various recognitions, including, most recently, the Lasker Award for Basic Medical Science, and the Nobel Prize for Physiology or Medicine in 2012.

Practical Matters



Those attending the CSAR lecture may park in the Senior Car Park on Churchill Road, which is off Storey's Way. More parking is available further along Churchill Road, and in the Möller Centre at the far end.

CSAR lectures are open to all; CSAR members are admitted free. Pupils and students may register for free membership at the lecture reception desk.

Non-members are asked to make a nominal contribution of £3.00.

Coffee and biscuits are available in the Wolfson Foyer from around 7pm. For further directions, see: www.chu.cam.ac.uk/about/visitors/directions.php