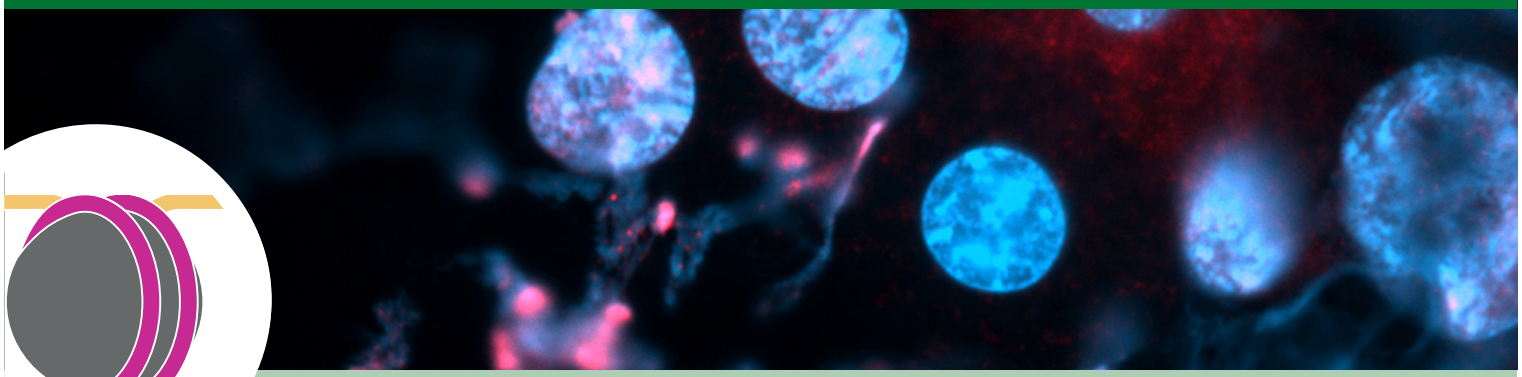
# Licensing opportunities at the Babraham Institute



## Enhancing the potency of stem cells

**Stem cells have the capacity to self-renew and differentiate into multiple lineages, with pluripotent cells being able to contribute to all embryonic cell lineages, and totipotent cells to both embryonic and extraembryonic lineages. Related human induced pluripotent stem (iPS) cells have the potential to provide patient-specific therapies and to model human disease. However, routine adoption of stem cell technology across all areas of research has been hampered due to difficulties encountered in establishing and culturing bespoke cell lines in a robust and reproducible way. Researchers at the Babraham Institute have identified a novel technique that provides a method of increasing the state of potency of a cell, which can help to overcome these problems.**

### The Technology

The novel invention provides a method for increasing potency, reducing differentiation bias and consequently allowing the generation of standard protocols applicable across pluripotent stem cell lines.

The invention, based on the expression of an evolutionarily conserved epigenetic regulator (TET3 and derivatives), has been shown to:

- increase potency - cells shown to have expanded potency compared to WT cells
- produce cells similar to a recently identified subpopulation of ES cells which expresses genes specific to the 2-cell state, and which can contribute to both embryonic and extraembryonic lineages (Macfarlan *et al.*, Nature, 2012)
- direct human ES cells towards a naive pluripotent stem cell state
- produces trophoblast-like cells without the need for donor blastocyst cells

### Potential Opportunities:

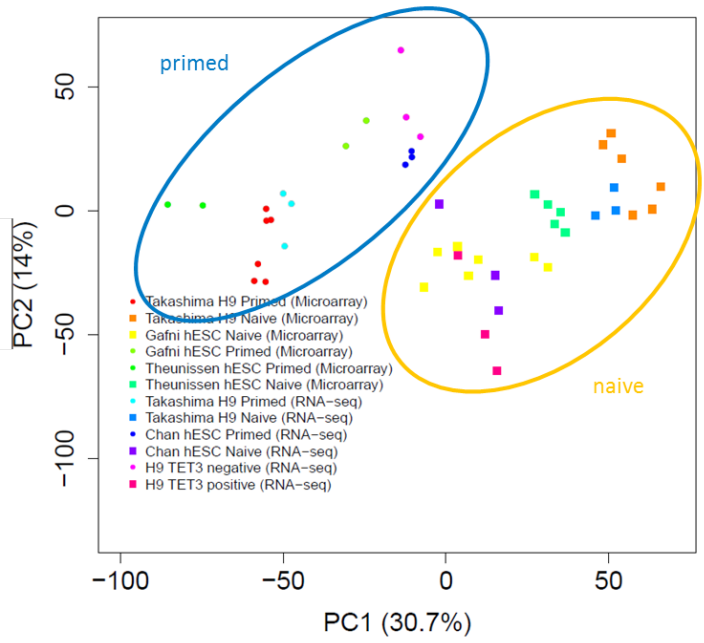
- Standardisation of somatic cell reprogramming and robust maintenance of stem cell cultures
- Reducing differentiation bias
- Enhancing the versatility of cultured stem cells

### Intellectual Property and Licensing:

**Patent Application:** PCT/GB2013/053317, Filed US, Europe, Japan, Australia, Canada, China.

**Inventors:** Wolf Reik, Christel Krueger, Tim Hore, Julian Peat

**Available for licensing worldwide**




Principal Component Analysis plot showing expression data for primed and naive hES cells from different studies. TET3 positive cells cluster with naive hES cells. Credit: Jong Kyoung Kim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