

CellCentric epigenetic imprint erasure factor published in Nature

New data from Prof. Wolf Reik of the Babraham Institute, Cambridge, highlights the key role of the cytidine deaminase AID in DNA demethylation and the reprogramming of cells.

CellCentric, the biotechnology company unlocking epigenetic control mechanisms, has an ongoing research relationship with Prof. Wolf Reik at the Babraham Institute, Cambridge. New work from his lab published today in Nature, highlights the substantial degree to which DNA demethylation occurs in early mammalian development and that AID is a critical component of the process. It builds upon Wolf Reik's earlier work on the biochemistry of AID's activities in cells.

It is becoming increasingly clear that cell fate is governed not just by the genome, but by the modifications to DNA and its associated proteins - epigenetics. This is an emerging area of research of fundamental importance. When epigenetic processes go wrong, disease arises, including cancer.

The new work published has both near term and long term commercial implications. Through the use of AID, it should be possible in the lab to induce DNA demethylation within cells for research purposes, to understand the impact that DNA methylation has on genes.

As demethylation of DNA is a key component of cellular reprogramming, there are longer term implications for regenerative medicine. In recent years it has been shown that adult cells can be induced to have stem-cell like properties. However these methods are inefficient, with one of the major road blocks being the removal of DNA methylation in the adult cells. The identification of AID and its activity may offer the opportunity of overcoming this epigenetic barrier and improving induced pluripotent cell production.

Wolf Reik's work is complementary to other recent publications including that of Yi Zhang, University of North Carolina and Helen Blau at Stanford University.

CellCentric has helped fund and support some of the research. The company has worked with Prof Reik and the Babraham Institute to protect and take forward his findings for commercial purposes.

Commenting on the new developments, Wolf Reik, said:

"Clear mechanisms for DNA demethylation have been elusive for some time. The body of evidence is now pointing to indirect demethylation through the action of key enzymes such as AID. I am delighted to be working with CellCentric to accelerate this important area of research into commercial utility".

Nessa Carey, Director of Exploratory Research at CellCentric, added:

"Our relationship with Wolf has been highly productive over the last four years. These new findings on AID reinforce our early view that this was going to be an important factor in reprogramming. It also fuels our overall understanding of epigenetic change within cells".

CellCentric has built a network of over 30 relationships with leading academic researchers across the world. The company helps identify early findings of potential commercial importance. Working with the appropriate Technology Transfer Offices, it helps protect and patent new inventions. CellCentric then carries out and drives the next steps towards commercialisation. The company currently has 7 novel epigenetic drug discovery programmes underway, as well as supporting projects relating to reprogramming and epigenetic tools.