RESEARCH HIGHLIGHTS

IN THE NEWS

Realizing the potential

In theory, embryonic stem (ES) cells can generate any cell type in the body, but harnessing this potential is proving to be far from easy. Nevertheless, some promising results recently emerged from the University of Wisconsin, USA, where Su-Chun Zhang and colleagues generated functioning motor neurons from human ES cells.

The researchers exposed their cells to "a carefully timed cocktail of proteins" (*Reuters*, USA, 30 January 2005), including retinoic acid and sonic hedgehog, as well as various neurotrophic factors. Zhang said, "you need to teach [the cells] to change step by step, where each step has different conditions and a strict window of time" (*Reuters*). The resultant motor neurons showed electrical activity and formed functional synapses with their neighbours.

This protocol could have valuable applications in the field of neural repair: "the feat, which took more than two years of trial and error, is seen as an important step in the dream of creating spinal nerve cells in the laboratory to replace cells damaged by spinal cord injuries or by diseases such as amyotrophic lateral sclerosis" (*China View*, 1 February 2005). However, "the more immediate impact … will likely be to provide a supply of motor nerve cells that can be used to test new drugs intended to treat various nerve ailments" (*China View*).

Unfortunately, as several reports point out, translating this research into therapy is not just a matter of having the necessary technology. ES-cell derivation is still a highly contentious issue, particularly in the USA, where "the administration of President Bush does not support the use of embryonic stem cells except in limited circumstances using cells already in existence as of 2001. Federal funds may not be used to take new stem cells from human embryos" (*Reuters*).

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