

Animal cell transplants "could" treat human disease

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A Spanish researcher is suggesting that transplanted animal cells could be used in the treatment of several long-term illnesses.

Dr Ainhoa Murua of the University of the Basque Country, Spain, believes that the transplant of cells from other species (called xenotransplants) could be an answer to the shortage of donated human tissue.

It could offer a new treatment for Alzheimer's disease and Parkinson's disease, she says, but brings potential problems relating to ethics, faster-aging animal cells, and transmission of disease.

The analysis comes after senior British academics set out their view on the future of the mixing of human and animal material - calling for tighter regulation.

The report of the UK Academy of Medical Sciences says scientists should be cautious of mixing brain material or of creating animals with human characteristics.

In her PhD thesis, Dr Murua outlined possible methods of cell "microencapsulation" and how to make the transplants compatible with the recipient.

Microencapsulation involves coating the cells with biomaterials to form microparticles, which discharge therapeutic proteins "in a controlled and continuous manner inside the organism in which they have been implanted".

These proteins can be beneficial for chronic illnesses which require frequent medication, Dr Murua says.

Her research team carried out xenotransplants on rats which avoided the normal immune rejection by giving the immunosuppressive drug Tacrolimus.

The rats received cells genetically engineered to secrete erythropoietin, which promotes red blood cell survival. One group of animals had Tacrolimus for two to four weeks. These rats showed higher levels of red blood cells than those not given Tacrolimus, particularly those on the immunosuppressive drug for longer.

"These results highlight the importance of applying a minimum period (four weeks) of transient immunosuppression for the host acceptance of xenogeneic implants based on microencapsulated erythropoietin-secreting cells," say the researchers in the *Journal of Controlled Release*.

"The possibility is opened up of using cells of other species to treat chronic patients using microencapsulation," Dr Murua adds.

PhD thesis "Cell microencapsulation for therapeutic purposes: towards greater control over biocompatibility" by Ainhoa Murua Ugarte at the University of Navarre, Spain.

Murua, A. et al. Xenogeneic transplantation of erythropoietin-secreting cells immobilized in microcapsules using transient immunosuppression. The Journal of Control Release, Vol. 137, August 4, 2009, pp. 174-78.

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http://www.englemed.co.uk/11/11jul262_animal_cell_transplants.php

