

## **Robert Lanza**

### **Advanced Cell Technology**

Advanced Cell Technology, Inc. is a company engaged in the research and development of technologies enabling the genetic manipulation of cells and subsequent nuclear transfer to produce cloned transgenic animals for pharmaceutical protein production and cloned cells and tissues for applications in cell and organ transplant therapy.

The Company's initial focus is on the development of cloned transgenic cows to produce human serum albumin and as donors of neural cells for transplant therapies in the treatment of neurodegenerative diseases and diabetes. The Company is also developing transgenic swine for potential application in xenotransplantation.

In addition, ACT is advancing technology to produce primitive human stem cells through nuclear transfer techniques.

Using ACT's technology, production of human stem cells may overcome two major hurdles in the use of transplanted tissue to treat disease. First, the technique may prevent transplant rejection because the resulting therapeutic tissues are created from a patient's own cells and are therefore genetically identical. Second, ACT's approach may provide an accessible source of cells to meet the demand for large quantities of transplantable tissues.

Under an agreement with Genzyme Transgenics, the company is developing animals that produce human serum albumin in milk. The company is seeking additional collaboration in xenograft and human therapeutic cloning applications.

*In November 1998, the American company Advanced Cell Technology (ACT) caused a sensation announcing that it had, for the first time, successfully produced primitive human embryonic stem cells through nuclear transfer techniques (cloning)—that means a human embryo had for the first time ever been cloned from adult cells.*

*In the process, the nucleus of a human cell was isolated and subsequently transferred into a bovine egg cell from which the nucleus, containing the animal's entire DNA information, had been removed. In this case, the cell division and cell doubling that starts right after normal human fertilization took place in a chemical solution in the laboratory. Researchers assume that the human cell nucleus causes the initially hybrid embryo to evolve into a human embryo. The process of reprogramming the nucleus through the eggs and of stimulating cell division is still unclear. Moreover, the question of which nuclei might be most suitable for this operation remains unsolved.*

*The company points out that they do not intend to clone human beings. Their aim is to generate human tissue to be able to treat patients that suffer from diabetes or Parkinson's Disease. In addition, researchers hope to solve the problem of transplant rejection, since the cells generated by means of nuclear transfer are identical with the patients' cells. This technique might also provide an instrument to meet the demand for transplantable tissue.*

(ed.)