

Scientists are growing human tissue from embryonic stem cells, a spectacular advance with huge medical potential but raising many ethical questions.

These embryonic stem cells are growing forever in the lab and are now being used to develop different human tissues for medical treatments, implantation, transplant etc.

The same embryonic stem cells could be genetically altered, and grown to make super sperm or super eggs, or could be replaced back in the ball they were taken from to make "improved" people.

Whatever Next ?

What happens when these new steps are combined with huge advances in human cloning research? Some people are worried about dismembering a small embryonic ball of stem cells. They may prefer a new technique which inserts a human nucleus into an egg from a cow (nuclear transfer). The first human clone has been made already by this method, and would be almost three years old by now, except that it was destroyed at 32 cell stage. Now there are claims that 3 babies have been cloned.

However, all this will look very last century soon following news that scientists have made liver cells from stem cells found in the bone marrow of an adult. In other words, why bother to clone an embryo when you can get the tissues you want direct from cell cultures taken from your own body? Less "tacky", less ethical minefields, better result all round.

Update 2008: Huge progress in use of adult stem cells has made research arguments for human cloning to cure disease look rather out-of-date.