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Somatic Cell Nuclear Transfer Technology is Justified and Essential for Producing Embryonic Stem Cells for Basic Research and Therapeutic Applications

Since 1997 The American Society for Cell Biology has stated and stood by its strong opposition to the reproductive cloning of human beings. Media claims notwithstanding, current scientific information suggests that the technology now available will not be able to lead to the creation of a cloned human being or to an embryo capable of being born as a cloned normal human. Equally important, no responsible scientist favors reproductive cloning.

It is unlikely that current biomedical technology can be used to clone adult human beings. But there is substantial justification to believe that somatic cell nuclear transfer (SCNT), or what many have referred to as therapeutic cloning, will energize scientific progress in the fight against the most debilitating illnesses known to man. New embryonic stem cell lines, potentially capable of avoiding the rejection complications of stem cell therapies for cancer, diabetes, spinal cord injury, kidney disease, and Parkinson's disease, may be produced by using the genetic material of the prospective transplant recipient to generate recipient-matched stem cells. These procedures could be vital in solving the persistent problem of a lack of genetically matched, qualified donors of organs and tissues that we face today. Stem cell research is an essential first step if we are ever to be able to achieve the promise of regenerative medicine, a wholly new approach for repairing cells and tissues in the treatment of currently intractable human diseases. Beside the therapeutic promise, the SCNT procedure permits entirely new approaches to the study of the earliest phases of human development, of how a single cell is transformed into the trillions of different cells and tissues with myriad fates and capabilities during embryonic development. By deriving embryonic stem cells with defined mutations scientists gain a new approach to understanding how such inherited predispositions lead to serious disease in adulthood.

Unfortunately, an onerous cloud has been cast on the term cloning because it has been used in the public discourse both to refer to attempts to create genetically identical adult humans and to describe other procedures that are less controversial. However, cloning is a scientific term that describes the preparation of an "infinite" number of copies of, for example a single molecule, cell, virus or bacterium. For example, cloning DNA molecules was essential for solving the human genome sequence. Similarly, cloning DNA is critical to fight against bioterrorism and has already been used in the determination of the entire genome sequences of several organisms identified as bioweapons. Furthermore, cloning is integral to modern forensic procedures, medical diagnostics, vaccine development, and the discovery and production of many of the most promising drugs. Cloning is also used to make genetically identical plants and livestock enabling continued agricultural breakthroughs necessary to feed a rapidly growing and undernourished world population.

Conflating the term cloning as it is used for the creation of genetically identical humans with the valuable and appropriate uses of cloning embryonic stem cell lines for basic research and therapeutic purposes is inappropriate. The two issues need to be considered separately; otherwise we run the serious risk of sacrificing certain great benefits to prevent a perceived undesirable practice.