Name:

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Annotations: As you read make notes on the text by doing the following:

* **Circle** any words you do not know- write the definition in the margin
* **Underline** any section which might be pertinent (applicable) to your research paper- write yourself a reminder note in the margins so you do not lose that brilliant thought!
* **Box** sections in which you see a clear connection with the text- write a short explanatory note in the margins.

Points:

Annotations: \_\_\_/5

Response: \_\_\_/5

The New York Times

October 14, 2013

The Clone Named Dolly

By NICHOLAS WADE

This week’s Retro Report video tells the story of Dolly the sheep, the first clone of an adult mammal. The Scottish scientists who created her recall the painstaking process of trying to get the experiment to work. After hundreds of tries, they successfully took a cell from an adult sheep, fused it to another sheep’s unfertilized egg and implanted the resulting embryo in a surrogate mother. But Dolly’s birth, and the rush of media attention that followed when the news broke in 1997, gave way almost instantaneously to fears and speculation about what this discovery meant for humanity’s ability to manipulate biology. The debate only intensified in 1998, when an American scientist isolated human embryonic stem cells, which can develop into any type of cell in the body, raising the hope of a new field of regenerative medicine. Here, one of the science reporters who covered the debate for The Times offers a rearview commentary.

Some events are just too emotive to be seen clearly until long after the dust has settled. The cloning of Dolly the sheep created a public ruckus because of the assumption that sheep clones would lead straight to human clones. The generation of human embryonic stem cells raised much the same set of fears. Both cases stirred deep anxieties that science was getting out of hand and moving deep into ethically fraught territory.

But in terms of the march of science, both events were of distinctly second-order magnitude, a fact almost impossible to convey at the time. The difficult step in animal cloning had in fact been taken many years before, in the cloning of frogs, and when the Nobel Prize jurors got around to recognizing the field, they gave their award to John Gurdon, frog cloner, not to Ian Wilmut, the so-called father of Dolly.

In a similar vein, the discoverer of embryonic stem cells was Martin Evans, an English biologist who developed the technique in mice in 1981. The world only started paying attention to stem cells in 1998 when James A. Thomson of the University of Wisconsin applied Dr. Evans’s recipe to people, but the Nobel Prize went to Dr. Evans.

Journalists are sometimes said to write the first draft of history. But it’s hard to write history about events that are being driven by emotion. In the debate over human embryonic stem cells, the opponents were concerned that federal funding for the research, in which castoff, early-stage human embryos are destroyed, would be the first step toward federal funding of abortion. Partly in reaction, some proponents of embryonic stem cell research vastly overpromised the probable medical treatments, which, 32 years after Dr. Evans’s experiment and 15 years after Dr. Thomson’s, are barely visible. (Clinical trials for a treatment for macular degeneration are proceeding, but a much-heralded one for spinal cord injury was abandoned in 2011.)

Basic scientific research is enormously risky. If it weren’t, the government wouldn’t have to finance it. Most research ideas end up as dry holes. It’s fine for the federal government to take such a risk, because it can afford to support 100 such projects, of which the one winner will make up for all the dogs. Yet in the frenzy of claims about the miraculous medical cures that President George W. Bush was seen as obstructing, voters in California in 2004 placed a $3 billion bet on stem cell research — a lot of risk for a single state to bear.

The frustration of reporting events like Dolly and stem cells is that it’s almost impossible to get such longer-term considerations into a daily news story, which typically focuses on a tiny piece of a large and complex puzzle.

The charged issue of human stem cell origins was eventually sidestepped by technology. In 2006 a Japanese biologist, Shinya Yamanaka, cleverly guessed the identity of the four transcription factors responsible for the stemness of stem cells. When these are injected into an adult cell, they make it revert to the egglike status from which it was once derived. Little or no need, anymore, to mess with the castoff embryos from fertility clinics.

The future of stem cell research almost certainly lies with the Yamanaka method, which can use the patient’s own cells and dodge any problem of immune incompatibility. But most schemes for therapeutic use still depend implicitly on the idea that stem cells can be converted into the right cell type in the test tube and then dropped into the body as well-behaved replacement cells. It’s far from certain that this will always be the case. No test tube treatment can exactly replicate the experience of a cell in a growing embryo as it is exposed to a complex sequence of signals from a constantly changing cast of neighboring cells.

In retrospect, Dolly the clone was just a sheep, not the start of a great moral collapse. Embryonic stem cells, despite the furor, may turn out to be a technical dead end. But reporters cannot stand aside from the waves of emotion that drive such issues. They just have to do the best they can with their first draft, and hope it doesn’t look too ridiculous in the cold light of history.

This week’s Retro Report is the 15th in a documentary series. The video project was started with a grant from Christopher Buck. Retro Report has a staff of 13 journalists and 10 contributors led by Kyra Darnton, a former “60 Minutes” producer. It is a nonprofit video news organization that aims to provide a thoughtful counterweight to today’s 24/7 news cycle. The videos are typically 10 to 14 minutes long.

Response: *Brave New World* warns of the dangers of giving the state control over new and powerful technologies. One illustration of this theme is the rigid control of reproduction through technological and medical intervention, including the surgical removal of ovaries, the Bokanovsky Process, and hypnopaedic conditioning. Do you believe the modern uses of genetic engineering are bringing our world closer to this possibility?

To answer the question make a connection between this article and the chapters read thus far in a clear and concise 3-5 sentence answer.

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