

Human cloning a decade after Dolly

Ten years ago this month, Ian Wilmut and colleagues from the Roslin Institute in Scotland published an article in *Nature* unceremoniously entitled: “Viable offspring derived from fetal and adult mammalian cells.” This was, of course, the publication that announced the birth of Dolly the cloned sheep.

The paper immediately made headlines around the world and stirred international debate. The scientific community hailed it as a major technical advance that could, among other things, facilitate the creation of animals for research, the production of pharmaceuticals and xenotransplantation. *Science* selected it as the scientific breakthrough of the year. And, with concomitant advances in embryonic stem cell research, speculation began about using somatic cell nuclear transfer, the technique that created Dolly, to engineer human tissue for the purposes of transplantation — a technique dubbed “therapeutic cloning.”

But it was the potential social issues that created the biggest stir. The creation of Dolly led to concerns about cloning a human being — a thought that reportedly horrified Wilmut. This concern spurred policy-makers everywhere to action. Indeed, the United Nations (UN) spent 3 years trying to negotiate an international ban on human cloning. Bogged

down by differing views on the ethical acceptability of “therapeutic cloning,” in 2005 the UN General Assembly settled on an ambiguous non-binding Declaration that calls upon countries to prohibit all forms of human cloning that are “incompatible with human dignity.”

In Canada, the Assisted Human Reproduction Act bans all forms of human cloning.

Since 1997, there have been many other cloning controversies, including a 2002 human cloning hoax perpetrated by the Canadian cult, the Raelians, and, most recently, fraudulent somatic cell nuclear transfer research in Korea.

Where is cloning today? There is no evidence that anyone has successfully cloned a human, but the hoped for therapeutic breakthroughs have also been slow to emerge. And despite the hype and controversy, somatic cell nuclear transfer remains a relatively marginal research activity. Still, many researchers remain optimistic about the scientific potential of somatic cell nuclear transfer, including Wilmut. He recently switched his research focus to the cloning of human tissue for research purposes, an activity that remains illegal in Canada. — Timothy Caulfield, Edmonton

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Revised Quarantine Act has serious limitations

The federal government has taken a tentative step toward bolstering national capacity to handle global health threats by enhancing its authority to deal with suspected cases of communicable diseases at international entry points like airports.

But the revamped Quarantine Act neither applies to domestic travel nor compels provinces to share information about disease outbreaks within their borders. Nor does it give Ottawa the authority to declare or manage a public health emergency within a province. Given these limitations, critics fear the Act falls well short of oversight measures recommended in the aftermath of the SARS outbreak.

The Act does enable officials to take action at ports by denying entry or compelling passengers to disembark for transfer to quarantine centers (essentially any facility, including hotels, which the government designates and commandeers for the purpose of isolating, examining and treating infected passengers or those who may have been exposed to a communicable disease.

The new law also allows officials to divert a plane or vessel to another location. And it requires the airline and shipping industries to report an illness or death of a passenger before arrival or departure. Failure to do so, or other willful or reckless contravention of the regulations, causing risk of imminent death is punishable by stiff penalties ranging from a fine of \$1 million to 3 years in prison.

Quarantine officers will also be authorized to obligate travelers to report to local public health authorities, detain people who refuse medical examination and prevent Canadians from traveling abroad while infectious. They can also order the decontamination, or even the destruction, of conveyances like airplanes and cargo ships.

But Acting Director General of the Centre for Emergency Preparedness and Response within the Public Health Agency of Canada Dr. Howard Njoo says the Act doesn't address issues such as provincial surveillance and reporting requirements, information exchange or



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Dolly died in 2003, but the debate about the ethics of cloning continues.