

Cloning science is suspect without peer review

By PETER K. ROGAN
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Despite the U.S. House of Representatives' recent vote to outlaw human cloning, well-funded efforts to clone human beings are under way in Italy and Canada.



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I don't believe that these efforts will be successful anytime soon, given our poor understanding of cloning biology. The strong religious and ethical arguments

against cloning have been aired. It is also irresponsible purely on scientific grounds.

Most attempts to produce clones fail, especially when the process is begun from mature cells. Humans (and, probably, all placental mammals) exhibit genomic imprinting, a genetic mechanism that requires genetic contributions from each parent in order to produce a baby that survives to term and develops normally.

In the case of Dolly (the first cloned sheep), a mature cell was reprogrammed so that it resembled both of the original parental contributions. This reprogramming is currently hit-or-miss. Most animal cloning attempts produce dead or deformed offspring because the reprogramming is incorrect.

Scientists don't understand why different parental genetic contribu-

tions are necessary for normal human development, but we do know that numerous imprinted genes are found on multiple chromosomes. Defective imprinting is responsible for several serious genetic disorders, the majority of which are not recognized until after birth.

The anticipated outcomes of multiple cloning failures and children with serious developmental abnormalities (and presumably short lives) do not justify this approach as a reproductive option for infertile couples and should not be viewed as a scientific or medical achievement.

There should be zero tolerance for errors in reprogramming cells used in cloning experiments. "Medical professionals" who pur-

port to be doing this to assist infertile couples should be required first to assure the public and colleagues that they have addressed the problems with aberrant reprogramming of genes during development.

By proceeding without appropriate peer review, they make the public more distrustful of legitimate genetic research.

Until it is understood why these abnormalities occur and how to prevent them, it is irresponsible to make empty promises of cloned babies. Such efforts will cause emotional distress, inflate expectations and be tantamount to fraud.

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