

application of agricultural biotechnology. This is illogical and dangerous. Unwanted gene flow is a serious problem that must be addressed, but food security for poor people and Farmers' Rights must not be sacrificed to solve industry's genetic pollution problem.

It is erroneous to suggest that agriculture is dependent on genetic seed sterilization as a method for minimizing genetic pollution from GM plants. In his article entitled "Molecular strategies for gene containment in transgenic crops" (*Nat. Biotechnol.* 20, 581–586, 2002) Henry Daniell reviews alternative strategies for gene-containment approaches. Clearly, much more research is needed. In the meantime, it is unacceptable to suggest that farmers and society should adopt an untested, immoral GM technology to fix the defects in biotech's first- and second-generation products.

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To the editor:

The poor reasoning in your editorial "Turning back the clock" (*Nat. Biotechnol.* 20, 411, 2002) fails to advance the cause for nuclear transplantation research. In your second paragraph, you correctly observe that to many Americans "nuclear transplantation research is bad *per se* because it requires the creation and destruction of embryos." Then you draw from this premise the illogical conclusion that "scientists cannot be trusted to work with cloned human embryos." To those who hold that human embryos are morally equivalent to adult human beings, the issue is not trust; the issue is murder. No degree of potential medical progress can justify murder. Is it possible that you do not understand the pro-life stance? I doubt it, but this bit of caricature puts your entire argument in a bad light. When you have a good case, there is no need to misrepresent the opposing view.

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ES research and immorality

To the editor:

Biotechnology advocates are consistently mystified that the general public is wary of biotechnology and science in general. Your editorial "Turning back the clock" (*Nat. Biotechnol.* 20, 411, 2002) provides one reason why. Although there can be no argument that the alleviation human suffering is a moral good, to many serious people the creation of an embryo is also the creation of a new human life. The subsequent destruction of that embryonic life for the purpose of research is therefore problematic. Apparently, a discussion of why the embryo is not a nascent human life (or, if its humanity is acknowledged, why it has no value other than as a means to an end for older human beings) wasn't worth mentioning, even though it is at the core of the stem cell debate. As a result, the editors of *Nature Biotechnology* come across as yet another group of technologists who believe that as long as science can do something, it should be done. In the case of stem cells, it's done under the false premise that ends (human disease) justify any means (the destruction of human life). If society accepts the idea that protecting human life is not an absolute good, then a potentially frightening slippery slope of other exceptions based on eugenics and other factors is a distinct possibility.

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Nature Biotechnology responds:

Careful readers will realize that we have already outlined our views on why embryos consisting of about 100 cells with no nervous system are not comparable to people with devastating diseases (*Nat. Biotechnol.* 20, 789, 2001). We do not share the view that a few microscopic cells are equivalent to a sentient human being just because they might become one some day. As the above correspondence testifies, many do believe this and their viewpoint should be respected.

Our editorial sought to highlight the flaws in the current legislation and the likely repercussions for biotechnology if it is passed in its present form. The moral stance currently taken by the Bush administration against embryonic stem cell research is inconsistent, particularly in the light that the US government currently provides federal employees with financial support for *in vitro* fertilization (IVF) programs. (Bush actually praised IVF in his August 9, 2001 television address on stem cell research.) It is important to remember that stem cell research does not cause the creation or destruction of a single additional embryo. It uses embryos that are discarded as part of IVF.

To say that a ball of cells no bigger than a pinprick should not be destroyed to allow a grown person to live is cruelly dogmatic. But it is equally clear that we should not let scientists create as many as embryos as they want for no good purpose. The area requires clear and consistent regulatory oversight, something that the present US administration has thus far failed to deliver.