

Painless PCR

Franklin M. Loew

In this century, advances in understanding nutrition, animal breeding, and infectious diseases have led to healthier laboratory animals with less variability. In turn, these have led to as much as a 50% decline in the use of laboratory animals in the United States and elsewhere¹. With fewer animals necessary, now each one of them is both more valuable to the experiment and a source of more data than ever before. So improvements in techniques that further reduce any animal pain or discomfort ought to be regarded as being of the "win-win" type: Both science and the animals benefit.

The report in this issue by Pinkert and colleagues (pp. 1146–1148) represents such a scenario. They have developed a nonsurgical way of verifying the genetic integrity of transgenic mice, useful for even the smallest,

youngest weanlings. By replacing tissue biopsy (tail biopsy with or without anesthesia) and blood sampling by biopsy, surgery, toe docking, or venipuncture with saliva in their nested primer PCR analysis, they obviate what is at best an uncomfortable moment or two for the mice; at worst, it is a truly traumatic episode.

Of such seemingly small steps are larger strides made in the often-contentious realm of animal welfare. The development of tranquilizers in the 1960s enabled veterinarians and other scientists to handle animals more gently. Isolator technology, improved *Mycoplasma* diagnostics (much of it, as it happens, from the same university as Pinkert's group), and environmental controls led to healthier, respiratory disease free rats and mice whose lives, the nonexperimental parts at least, became easier.

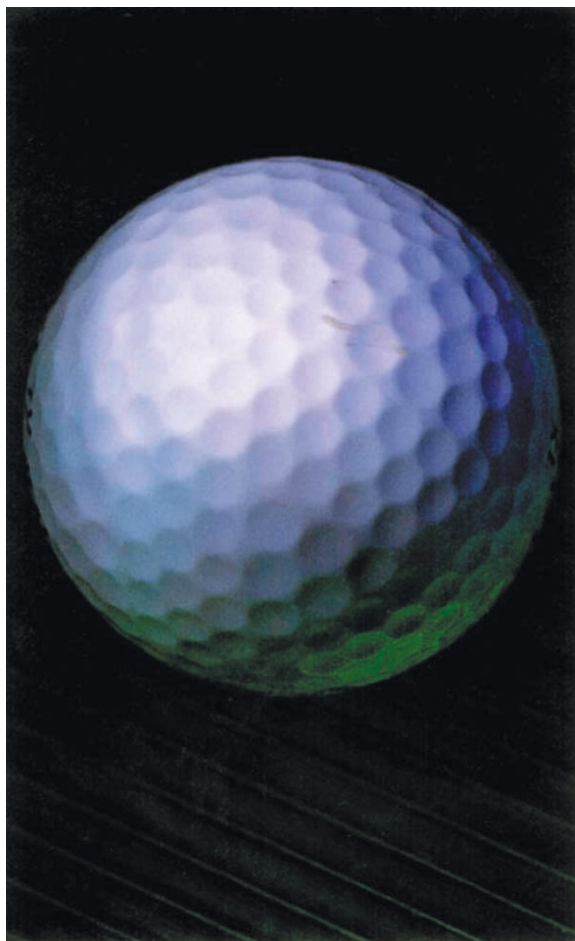
The use of analgesics, many of which were originally developed from research on animals, is also now much more widespread for laboratory animals than ever before². So technical improvements in the daily lives of animals in laboratories, like

the one described here, have emerged as part of the scientific enterprise itself. On the other hand, transgenic animals—or rather their creation—have been the subject of particular ethical concern³. Some of the concern is physical, some metaphysical⁴. In the case of the former, a less uncomfortable way to obtain a sample for PCR than, say, surgical removal of a segment of the tail, is a clear improvement.

For those who object a priori to the creation of transgenic animals, these incremental refinements of technique will not be persuasive. But to the mice and those who work with them, it appears to be a win-win situation.

Franklin M. Loew is dean and professor of veterinary medicine, College of Veterinary Medicine, Office of the Dean, Cornell University, Ithaca, NY 14853-6401 (fml3@cornell.edu).

1. Rowan, A., Loew, F., and Weer, J. 1995. *The Animal Research Controversy. Protest, Process and Public Policy: An Analysis of Strategic Issues*. Tufts University, North Grafton.
2. Flecknell, P.A. 1995. Anesthesia, pp.345–349, in *Laboratory Animals*, Edn 2. Tuffery A.A. (ed.). John Wiley & Sons, Chichester.
3. Loew, F.M. 1994. Beyond transgenics: Ethics and values. *Brit. Vet. J.* **150**:3–5.
4. Loew, F.M. 1991. Animal agriculture, pp. 118–131, in *The Genetic Revolution*. Davis B. (ed.). The Johns Hopkins University Press, Baltimore, MD.



Discover how Battelle's success with golf balls can take strokes off your drug discovery and development game.

If you've ever enjoyed a good round of golf, you've discovered Battelle. In the 1960s, Battelle researchers developed a protective coating for golf balls that prevents them from cracking when they are hit with the edge of an iron.

Battelle applies the same kind of creative solutions to the development of new pharmaceuticals. In fact, Battelle has established an international reputation for providing innovative biotechnology services, including molecular biology, microbiology, bioprocessing, biochemistry, cell biology, and immunology.

Clients around the world rely on Battelle for their drug-discovery and development needs. Discover Battelle's international reputation for innovation and quality for yourself. Call us at (614) 424-3600, and let us help you take strokes off your drug discovery and development game.

Make your own discovery. Discover Battelle.



505 King Avenue • Columbus, OH 43201-2693 • 1-800-201-2011