

the effort to identify more appropriate instructional activities. We would be wise to heed the call to "use only labs that work" by paying close attention to our students and their lab results and modifying/replacing activities as needed. This suggestion was, in fact, precisely the recommendation we made in the original article: "In the long run, for labs that often produce inaccurate or confusing student data, the first choice is to replace the activity with a more reliable one" (p. 659). Nevertheless, it is very important to remember that even professional scientists and technicians sometimes have trouble replicating scientific results. To be blunt, "LIFE HAPPENS!" Sometimes, even in labs that usually work well, buffers go bad and the proteins denature; sometimes the power source fails mid-gel; and sometimes the mice die! Faced with that situation short hours before the students arrive, a teacher must think quickly to come up with viable pedagogical alternatives—that was the main point of our paper. However, if "life is happening" too much and too often and the lab procedures are not producing valid and reliable results, then it is our professional duty to make changes.

Second, LaBanka suggests "always collect class data"—which we also support. The advent and growth of computers and networks, which LaBanka effectively described, have made this an easy task which is now almost expected by our students. The use of more data points adds statistical power to experimental results and also helps students feel like they are contributing to the outcomes of the lab, just as individual scientific findings contribute to the larger body of knowledge. This suggestion is also directly in line with our original recommendation to combine data over classes and analyze the combined data set (p. 659).

Finally, we completely agree with LaBanka when he writes, "Our students deserve to have the best possible experience in their science classes." To achieve this goal teachers should not only present effective learning experiences in the laboratory, but also be prepared when things go bad at the last minute.

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Ethical Issue Missed in Bioethics Article

Dear Editor:

In his outline of a bioethics course, Kevin Murray suggests discussion of the use of bovine growth hormone (BGH) to increase milk production as a possible case study (Bioethics in the Laboratory: Synthesis and Interactivity, *The American Biology Teacher*, 61, 662–667). Fine, this is indeed an ethically controversial issue. But few readers would understand what the ethical dilemma is from his meager description of the harms that befall cows treated with BGS. Murray says, "Unfortunately, there are physiological side effects for the cow." That is all. A compelling ethical issue fails to emerge because, from this description, it is impossible to assess the extent of the harms to the animals that must be weighed against the increased production of milk and greater profits for the farmer. In fact, use of BGH increases the chance of mastitis, a bovine udder infection, by 25%, increases fertility by 18%, and increases the chance of lameness by about 50%. Because of these serious animal welfare issues, BGH has been banned in Canada (but not in the U.S.). A fuller description was needed.

Sincerely,

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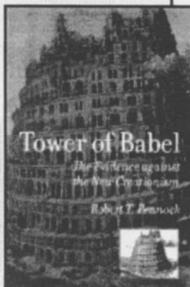
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