

Notes about this draft comparison (Daniel Engber, Jan. 10, 2012):

This section, from the very top of the piece, gives a major example of how I edited the first draft to make it more direct in its argument, and show more clearly why this problem matters. (The first version was a little bit mealy-mouthed and understated.) The difference is the paragraph I added right after the first section break [highlighted in yellow here] going bigger on the idea that this monoculture in biology is slowing down research on deadly diseases.

First draft:

...That's the drawback of the modern lab mouse. It's cheap, efficient, and highly-standardized—all of which qualities have made it the favorite tool of large-scale biomedical research. But as Mattson points out, there's a danger to taking so much of our knowledge straight from the animal assembly line. The inbred, factory-farmed rodents in use today—raised by the millions in germ-free barrier rooms, overfed and understimulated and in some cases pumped through with antibiotics—may be placing unseen constraints on what we know and learn.

"This is important for scientists," he says, "but they don't think about it at all."

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Just how ubiquitous is the experimental rodent? In the hierarchy of lab animal species, the rat and mouse rule as queen and king. A recent report from the E.U. counted up the vertebrates used for experiments in 2008—that's every fish, bird, reptile, amphibian, and mammal that perished in a research setting, pretty much any animal more elaborate than a worm or fly—and found that some were a lot more equal than others. Fish and birds made up 15 percent of the total carnage; guinea pigs, rabbits and hamsters contributed 5 percent; and horses, monkeys, pigs and dogs added less than 1 percent. Taken together, lab rats and lab mice accounted for nearly all the rest—four-fifths of the 12 million animals used by the Europeans. If you extend those proportions around the world, the rodent bloodbath is truly astonishing: Scientists are going through some 88 million rats and mice for their experiments and testing every year.

Final draft:

...That's the drawback of the modern lab mouse. It's cheap, efficient, and highly standardized—all of which qualities have made it the favorite tool of large-scale biomedical research. But as Mattson points out, there's a danger to taking so much of our knowledge straight from the animal assembly line. The inbred, factory-farmed rodents in use today—raised by the millions in germ-free barrier rooms, overfed and understimulated and in some cases pumped through with antibiotics—may be placing unseen constraints on what we know and learn.

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Mattson is not the only one with doubts, nibbling away at the corner of his cage. The rise of the factory

mouse has implications that extend far beyond his work on Parkinson's disease and stroke. By focusing so intently on one organism, raised in a certain way, we may be limiting our knowledge of cancer, too, and heart disease, and tuberculosis—the causes of death for many millions of people every year. If Mattson is right, science may be faced with a problem that is mind-boggling in its scope. Funding agencies in the United States and Europe will spend hundreds of millions of dollars in the coming years to further fiddle with and refine the standard organism, doubling down on a bet that goes back at least six decades: Establishing a single animal as the central determinant of how we study human illness, design new medicines, and learn about ourselves.

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