CASE #12: SYNTHETIC MEAT

Science has always been on the forefront of making food easier to produce, but the possibility of synthetically produced meat has some people wondering if it has gone too far.

Traditionally, of course, making meat requires raising, feeding, and slaughtering animals. Scientists like Dr. Vladimir Mironov at the Medical University of South Carolina in Charleston, however, have begun to engineer rudimentary forms of meat without producing animals at all, merely growing the meat in a nutrient bath[1]. Muscle cells from various animals are isolated, then placed in a nutrient-rich mixture to divide. After a suitable number of cells are present, they are attached to a structure to grow in a "bioreactor."[2] Currently the synthetically grown meat is not ready for human consumption. It is slimy, visually unappealing, and lacks the familiar texture of meat grown on animals. Mentioning the technology also seems to turn off many meat-eaters, who see animal-grown meat as more "natural." If synthetically produced meat could eventually become cheap enough, however, it may feature in solutions to some of the world's hunger problems. Since it does not require the rest of the animal-production infrastructure, it may be able to accomplish this cost-savings at the same time it dodges the problems with animal hygiene and disease.

If synthetically produced meat were ever to become more appealing (either by matching animal-grown meat in terms of quality or undercutting it in terms of price), much of the agriculture surrounding meat may be threatened. Ranchers and farmers may lose important sources of income. Food policy reform advocates such as author and professor Michael Pollan say that modern society is already unfamiliar with the sources of its nourishment and synthetically produced meat would exacerbate that problem. Millennia of eating animal-grown meat has shown meat to be (largely) safe for human consumption. No such data exists on meat grown in nutrient baths. Since synthetic meat could also be genetically engineered to bring out desirable traits, some detractors claim it will suffer from the same criticisms leveled at other genetically modified foods.

Animal rights activists are also split on the potential benefits and costs associated with synthetic meat production. The controversial animal rights group known as People for the Ethical Treatment of Animals (PETA) has announced a $1 million dollar prize to the first scientist or group who can make synthetic chicken meat as commercially appealing as animal-grown meat.[3] PETA's reasoning seems to be that since synthetically produced meat does not harm any animals, it is ethically preferable to animal-grown meat. By growing the meat in laboratories, it will endure no more suffering than a plant does growing hydroponically or out in the field.

But not all animal rights supporters see a silver lining around the synthetic production of meat. If animal suffering is the only thing that makes meat production unethical, presumably we

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[1] Maddox, Bruno, "The Way of All Flesh," http://discovermagazine.com/2006/jul/blinded, *Discover Magazine* (July 12, 2006).
[2] Siegelbaum, D. J., "In Search of a Test-Tube Hamburger," http://www.time.com/time/health/article/0,8599,1734630,00.html, *Time* (Apr. 23, 2008).
[3] Levine, Ketzel, "Lab-Grown Meat a Reality, But Who Will Eat It?" http://www.npr.org/templates/story/story.php?storyId=90235492, *Morning Edition*, NPR Health and Science (May, 20 2008).

should feel fine about eating synthetically produced cat and dog meat, and maybe even human meat. Furthermore, the long term benefits of moving to a more vegetarian diet may be much better for human health and the environment than simply finding more substitutes for meat.

Scientists respond to these criticisms by noting that if meat were synthetically produced, it would contain pure muscle cells only, putting manufacturers in better control of fat content and other unhealthy by-products of non-synthetic meat.