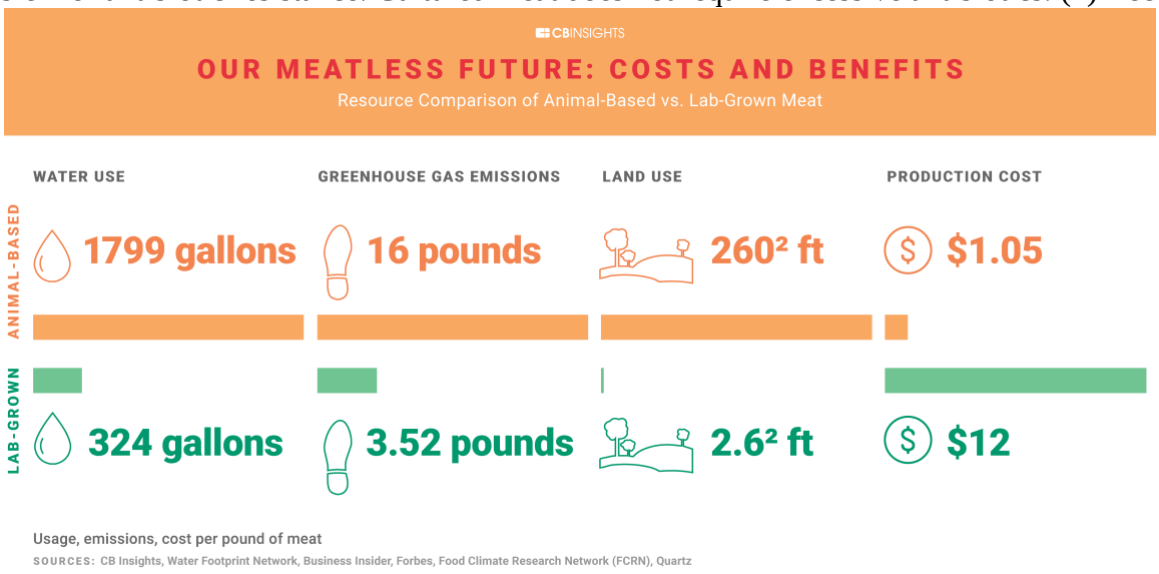
What's the beef with lab-grown meat?
By Mounika Bhaskara

Having been a vegetarian all my life, my meat-eating friend always told me that I was missing out because apparently meat tastes oh-so-delicious. To see what the hype was all about, I tried the Impossible burger, a plant-based burger patty that supposedly "delivers all the flavor, aroma and beefiness of meat from cows" despite containing no animal products[3]. While the Impossible burger did not win me over, my friends are big fans. Despite taking some issue with it not being "real meat," they were surprised at how similar it was to real meat. That's when I started to realize how lab-grown meat could be the next big thing!

Lab-grown meat, also referred to as cultured meat and clean meat, offers an alternative to regular meat as a form of slaughter-free meat. The process of making lab-grown meat starts with stem cells extracted from muscle tissue from a live animal. Stem cells are then cultured with nutrients, including sugars, salts and proteins that allow the stem cells to divide hundreds of times. As a result of these divisions, the cells produce different types of tissues including muscle and fat cells that are then allowed to bulk up to yield different kinds of meat. [4]

There is a lot of debate surrounding the production of cultured meats, including questions like whether this should even be called meat. People are also very reluctant to give up real meat in favor of cultured meat. Some very common arguments against cultured meat include the belief that it is "unnatural" and questions about safety for consumption.[6] In fact, a poll by the Washington Post found that only one-third of Americans would likely purchase cultured meat.[5] The unfortunate reality is that something has got to give with our problematic livestock agricultural practices…and cultured meat offers a lot of solutions. (1) Most of the beef consumed in the U.S. comes from cows that are treated inhumanely due to common slaughterhouse practices. Cultured meat does not involve inhuman practices. (2) Livestock agriculture contributes to global warming—a staggering 14.5% of all greenhouse emissions linked to human activity come from livestock agriculture.[2] Cultured meat does not release methane. (3) The amount of antibiotics used in livestock is thought to be a major contributor to the growing problem of antibiotic resistance. Cultured meat does not require excessive antibiotics. (4) Beef is



linked to a number of meat borne illnesses, like salmonella, E.coli, and mad cow disease. Since cultured meat is grown in extremely controlled conditions, it could decrease the number of cases of meat-borne illnesses. In fact, scientists could even improve the nutritional value in the meat, for instance, by swapping out the saturated fats with omega 3s to make it healthier.[4] It sounds too good to be true, but—as the burger has proved—it is certainly not impossible.

Researchers hope to make lab-grown meat cheaper in an effort to make it more accessible. The filed has come a long way from the first cultured meat burger, which cost about $300,000 to make. With the rise of the industry has come innovation—now a piece of steak costs about $50 to produce. Aleph farms, an Israel based company, hopes to have lab-grown steak ready for the supermarket shelves by 2022.[7]

The FDA and the Department of Agriculture announced in November of 2018 that they would jointly oversee the production of cell-cultured food. This seems to be a sign that more widespread commercialization of cultured meats is in our near future.

References

1. Our Meatless Future: How The $90B Global Meat Market Gets Disrupted. 2019; https://www.cbinsights.com/research/future-of-meat-industrial-farming/, 2019.
2. Rabbie P. The truth about lab-grown meat. 2019; https://scienceline.org/2019/01/the-truth-about-lab-grown-meat/, 2019.
3. Impossible Burger. https://impossiblefoods.com/food. Accessed 2019.
4. Post MJ. Cultured meat from stem cells: Challenges and prospects. *Meat Science.* 2012;92(3):297-301.
5. WAlter Johnson AM, Sheril Kirshenbaum. Burgers grown in a lab are heading to your plate. Will you bite? *Health and Science* 2018; https://www.washingtonpost.com/national/health-science/burgers-grown-in-a-lab-are-heading-to-your-plate-will-you-bite/2018/09/07/1d048720-b060-11e8-a20b-5f4f84429666_story.html?noredirect=on&utm_term=.bb04bf6f4868, 2019.
6. Bryant CJ, Barnett JC. What's in a name? Consumer perceptions of in vitro meat under different names. (1095-8304 (Electronic)).
7. Matt McDonald JB. Tasting the world's first test tube steak. https://www.wsj.com/articles/tasting-the-worlds-first-test-tube-steak-11544524201, 2019.