

November 13, 2017

# CLEAN MEATS: WILL REGULATIONS HINDER THE NEW MEATS MARKET?

[Agriculture \(/full-blog/category/Agriculture\)](#)

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Global meat production has tripled over the last forty years and continues to rise.[i] The human population is expected to grow to 9.7 billion by 2050, and at that size, to meet demand, food production must increase by 70%.[ii] Many argue, without a sustainable meat alternative that meat consumption will outpace production, causing meat to become scarce instead of the commodity it is now. Although meat is portrayed to be associated with certain cardiovascular diseases[iii], scientists say meat is one of the most nutritional foods.[iv]

In addition to the increased demand, due to the inefficiency of animals in converting feed to meat, traditional farm raised meat is one of the most environmentally devastating food products.[v] According to scientists, it is estimated that between 75-90% of energy consumed by livestock is needed for body maintenance or excreted through waste.[vi] Plants expend vast amounts of energy and water through producing meat.[vii]

Ken Caldeira, an environmental scientist, concluded that "eating a pound of beef causes more greenhouse warming than burning a gallon of gasoline." [viii] Cows release methane, a greenhouse gas, that is dozens of times more potent than carbon dioxide.[ix] Regardless of the assessment used to evaluate the environmental impact, meat production is one of the leading polluters in the food industry.[x]

In 2013, Dr. Mark Post, the "father" of clean meat, engineered the world's first clean meat hamburger[xi]—made completely of muscle tissue.[xii] The fatless lab-created hamburger received poor reviews for taste.[xiii] Proponents argue that the "key to an as-real-as-it-gets burger is fat." [xiv] The Mosa Meat team is currently developing clean fat for their clean meat.[xv] In March 2017, Memphis Meats announced it had developed both chicken and duck meat from cultured cells—the first "clean poultry." [xvi] Unlike the disappointing test-tube hamburger, participants of the clean poultry tasting said the chicken tasted like actual chicken.[xvii]

To produce clean meat, scientists extract cells from animal muscle.[xviii] These cells are then placed on scaffolds to be grown into desired sized.[xix] Although no clean meats are available on the market yet, companies expect such products will be available for consumers as early as 2020.[xx] In 2011, researchers concluded that clean meat compared to traditional meat used approximately 7–45% less energy, 99% less land, 82-96% less water, and produced 78-96% less greenhouse gases.[xxi]



<http://www.ruralnewsgroup.co.nz/item/12644-farmers-back-culling-of-4000-cows-from-infected-farms>

Meanwhile, adversaries argue that one concern of a large-scale switch to clean meat is the amount of heat and electricity needed to produce the alternative meats.<sup>[xxii]</sup> Such a shift could have massive environmental trade-offs.<sup>[xxiii]</sup> Many agree that there are several major barriers prohibiting clean meats from entering the market: the cost to produce, the public's concern for these new meats, and the current regulation systems for the food industry. This article will discuss regulations.

In the U.S., under current regulation or the lack thereof, the traditional lines that establish oversight authority quickly become blurred with the rise of biotechnology to produce “animal-like” food products. Until regulations are clearly defined, the easiest way for clean meats, and similar cultured products, to legally reach the marketplace is for suppliers to prove that their product is similar to safe-existing products.<sup>[xxiv]</sup>

Recently, the most analogous product to enter the food market is genetically modified organisms (GMO) or genetically engineered (GE) foods. GE foods allow producers to selectively breed and enhance plants to survive certain common problems in production.<sup>[xxv]</sup> Dr. Post advocates, “Cultured meat is not genetically engineered. It is meat grown from the same cells that produce the meat in the cow, but this time outside the cow.”<sup>[xxvi]</sup> Nevertheless, the United States lacks any federal legislation for GMOs.<sup>[xxvii]</sup> Instead, Congress attempts to regulate GMOs pursuant to other legislation.<sup>[xxviii]</sup>

Nonetheless, the Food and Drug Administration possibly asserts jurisdiction over cultured meats, pursuant to its authority to regulate “new animal drugs” (NADs)—which gives them power to regulate genetically engineered animals.<sup>[xxix]</sup> Moreover, adversaries argue that the current regulation system gives rise to problems of adequately governing the emerging field of cellular agriculture.<sup>[xxx]</sup> Overlapped regulation could cause huge problems for the clean meat industry.

In conclusion, regulations seem to be the greatest obstacle keeping clean meats from consumers. In short, the clean meat industry should proactively seek regulation changes or follow the proven path, similar to GMOs, instead of getting tangled in the “bird’s nest” of the current regulations for food products.

[i] Zoran Petrovic, Vesna Djordjevic, Dragan Milicevic, Ivan Nastasijevic, & Nenad Parunovic, *Meat Production and Consumption: Environmental Consequences*, 5 *Procedia Food Sci.* 235, 236 (2015).

[ii] Brian Kateman, *Mosa Meat: All Beef No Butcher*, *The Good Food Inst.* (Jun. 17, 2016), <http://www.gfi.org/mosa-meat-all-beef-no-butcher>.

[iii] Milan Z. Baltic & Marija Boskovic, *When Man Met Meat: Meat in Human Nutrition From Ancient Times Till Today*, 5 *Procedia Food Sci.* 6, 8 (2015).

[iv] *Id.* at 6.

[v] Ilija Djekic, *Environmental Impact of Meat Industry – Current Status and Future Perspectives*, 5 *Procedia Food Sci.* 61 (2015).

[vi] *Id.*

[vii] Petrovic, *supra* note i at 236.

[viii] Associated Press, *The Most Polluting Protein? Environmental Impact of Beef, Pork, Poultry*, CBS News (Jul. 21, 2014), <https://www.cbsnews.com/news/the-most-polluting-protein-environmental-impact-of-beef-pork-poultry/>.

[ix] *Id.*

[x] Djekic, *supra* note v, at 63.

[xi] Emily Byrd, *Clean Meat's Path to Your Dinner Plate*, The Good Food Inst. (Dec. 7, 2016), <http://www.gfi.org/clean-meats-path-to-commercialization>.

[xii] Kateman, *supra* note ii.

[xiii] Elizabeth Devitt, *Artificial Chicken Grown From Cells Gets a Taste Test—but Who Will Regulate It?*, *Sci. Magazine* (Mar. 15, 2017), <http://www.sciencemag.org/news/2017/03/artificial-chicken-grown-cells-gets-taste-test-who-will-regulate-it>.

[xiv] Kateman, *supra* note ii.

[xv] Kateman, *supra* note ii.

[xvi] *Memphis Meats: Frequently Ask Questions*, Memphis Meats, <https://static1.squarespace.com/static/5674c0c22399a3a13cbc3af2/t/58c9812820099e2f735ada92/1489600808616/Memphis+Meats+FAQs.pdf> (last visited Sept. 13, 2017).

[xvii] Devitt, *supra* note xiii.

[xviii] *Id.*

[xix] *Id.*

[xx] Byrd, *supra* note xi.

[xxi] Carolyn Mattick & Brad Allenby, *The Future of Meat*, *Issues* (Fall 2013), <http://issues.org/30-1/carolyn/>.

[xxii] Markham Heid, *You Asked: Should I Be Nervous About Lab-Grown Meat*, *Time Health* (Sept. 14, 2016), <http://time.com/4490128/artificial-meat-protein/>.

[xxiii] *Id.*

[xxiv] Devitt, *supra* note xiii.

[xxv] *GMO: Frequently Asked Questions*, the Lugar Ctr., <http://www.thelugarcenter.org/ourwork-35.html> (last visited Sep. 13, 2017).

[xxvi] Heid, *supra* note xxii.

[xxvii] *Restriction on Genetically Modified Organisms: United States*, Library of Cong. (last updated Jun. 09, 2015), <https://www.loc.gov/law/help/restrictions-on-gmos/usa.php>.

[xxviii] *Id.*

[xxix] *Id.*

[xxx] Devitt, *supra* note xiii.

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