

The Rise of Cultured Meat – Why, Who, What, When, and Where?



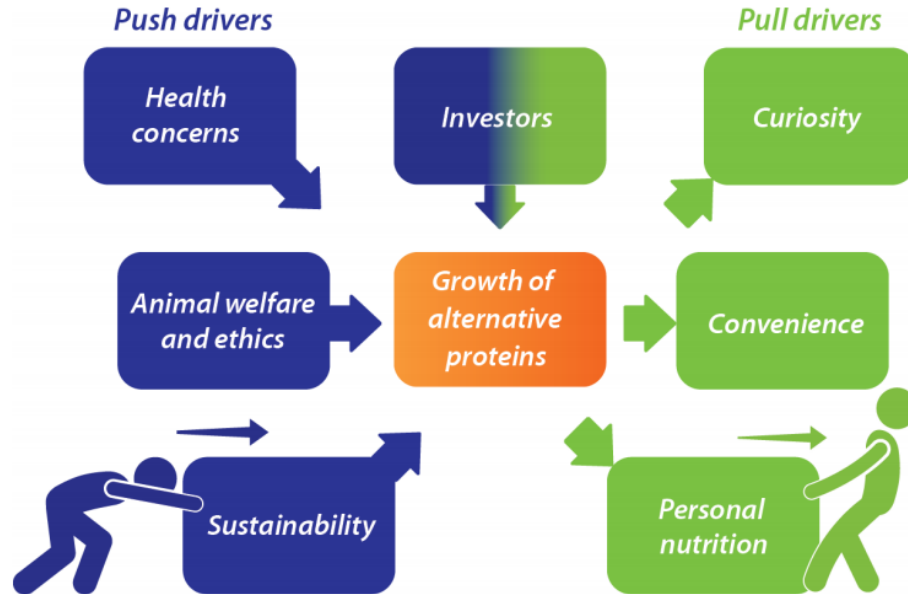
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Why?

What is driving consumer interest in alternatives to meat?



Source: Rabobank, 2017

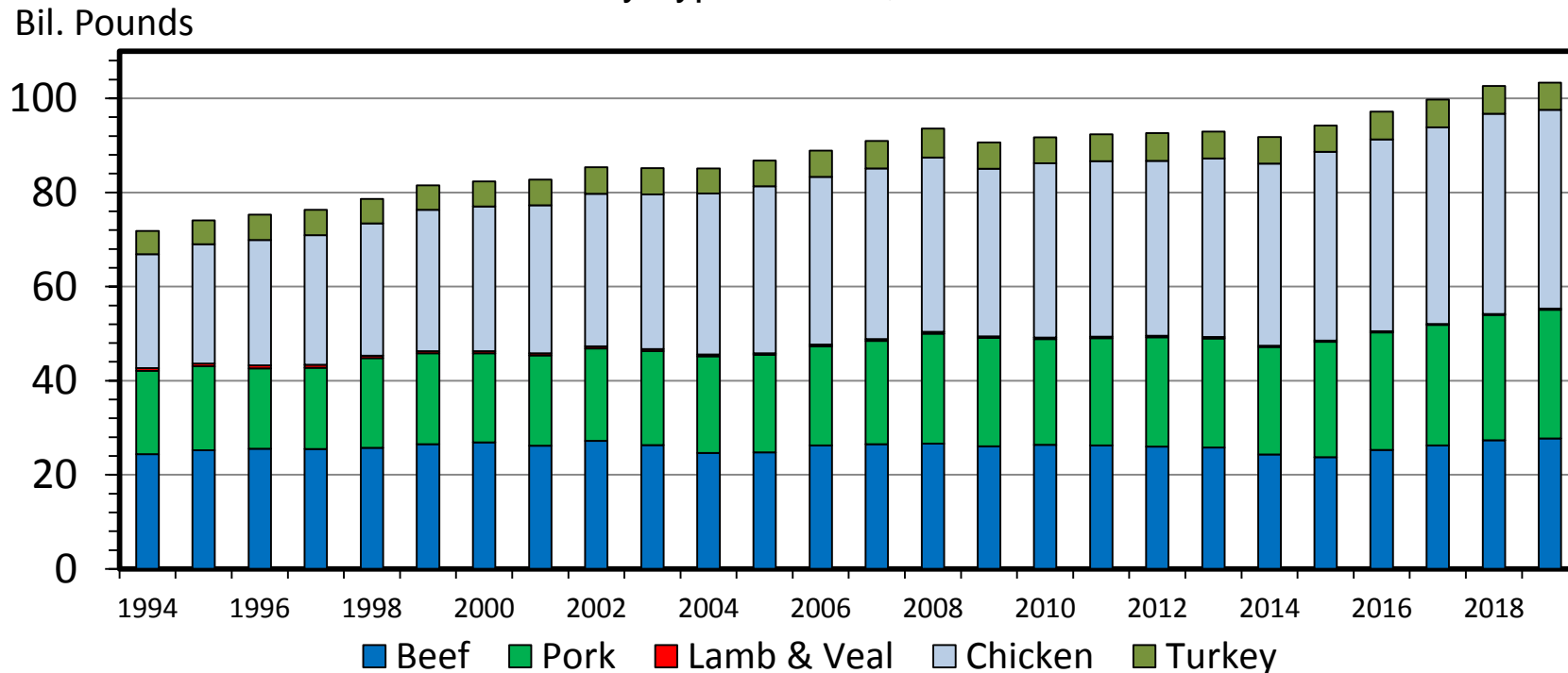
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Source: USDA Ag Outlook Forum, Gilles Boumeester, Rabobank
https://www.usda.gov/oce/forum/2018/speeches/Gilles_Boumeester.pdf



COMMERCIAL MEAT & POULTRY PRODUCTION

By Type of Meat, Annual



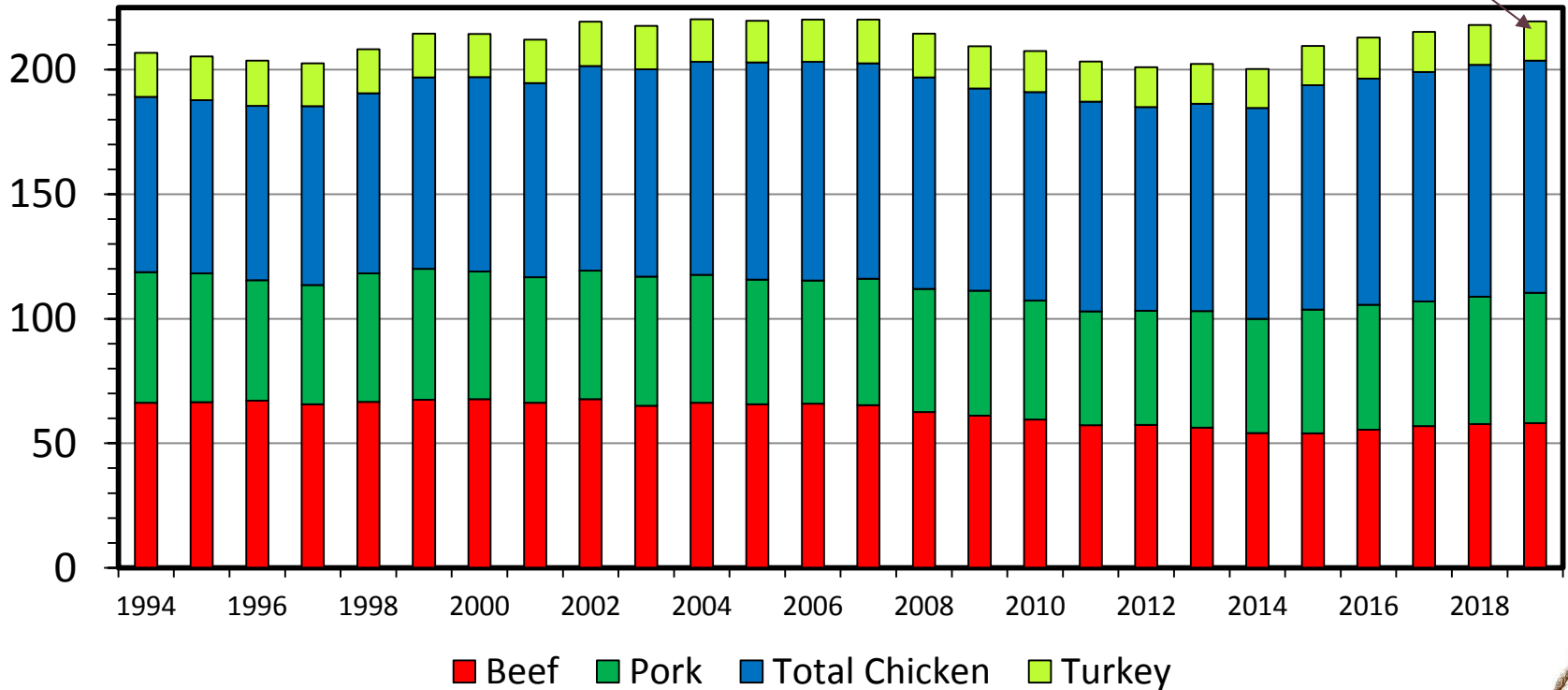
Data Source: USDA-NASS, Compiled & Forecasts by LMIC



US RED MEAT & POULTRY CONSUMPTION

Per Capita, Retail Weight, Annual

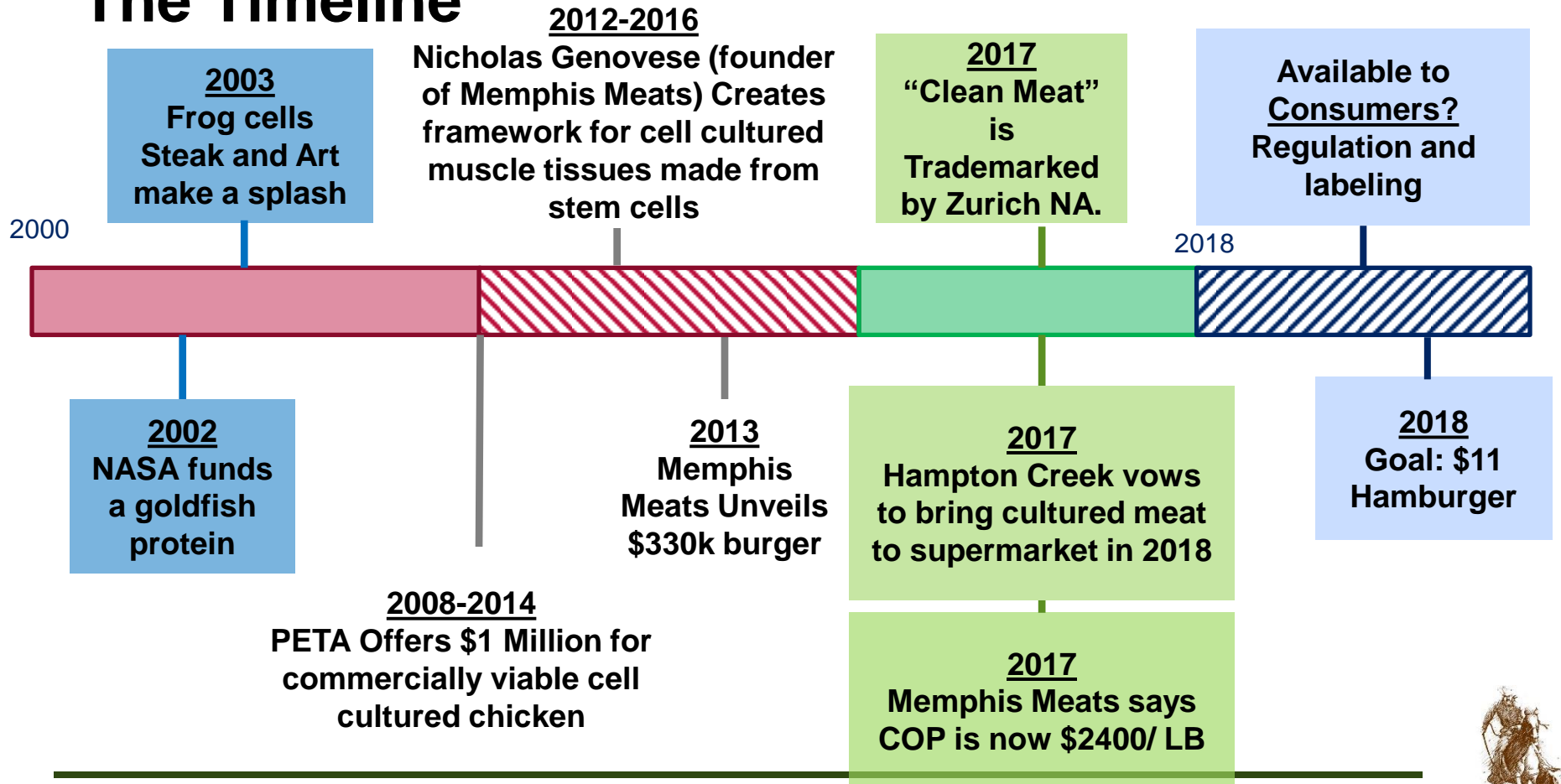
Pounds



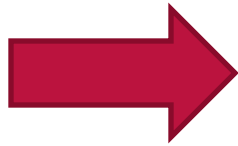
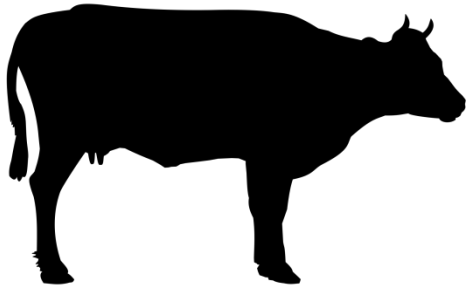
Data Source: USDA-NASS and USDA-ERS, Compiled & Analysis by LMIC



The Timeline



What is Cultured Meat?



OR



Who is producing it?



Other Interesting Ideas

- International Companies
- Israeli Start-Up: Future Meat Technologies
 - Bioreactor Banks in Integrator Production Model
 - \$2.2 Million Seed Funding from Tyson Ventures (also invested in Memphis Meats and Beyond Meat)
 - “We can probably get the price down in 6-8 months to \$8/kilo...we are around \$800/kilo now”



When will it come to market in a serious way?

- First to market: Beef, Chicken, Pork, Eggs or Dairy?
- Startup space: Still Seeking Investors
- Beef: “Could be 2018”, previous estimates were 2020
- Lengthy approval process?
 - GRAS?

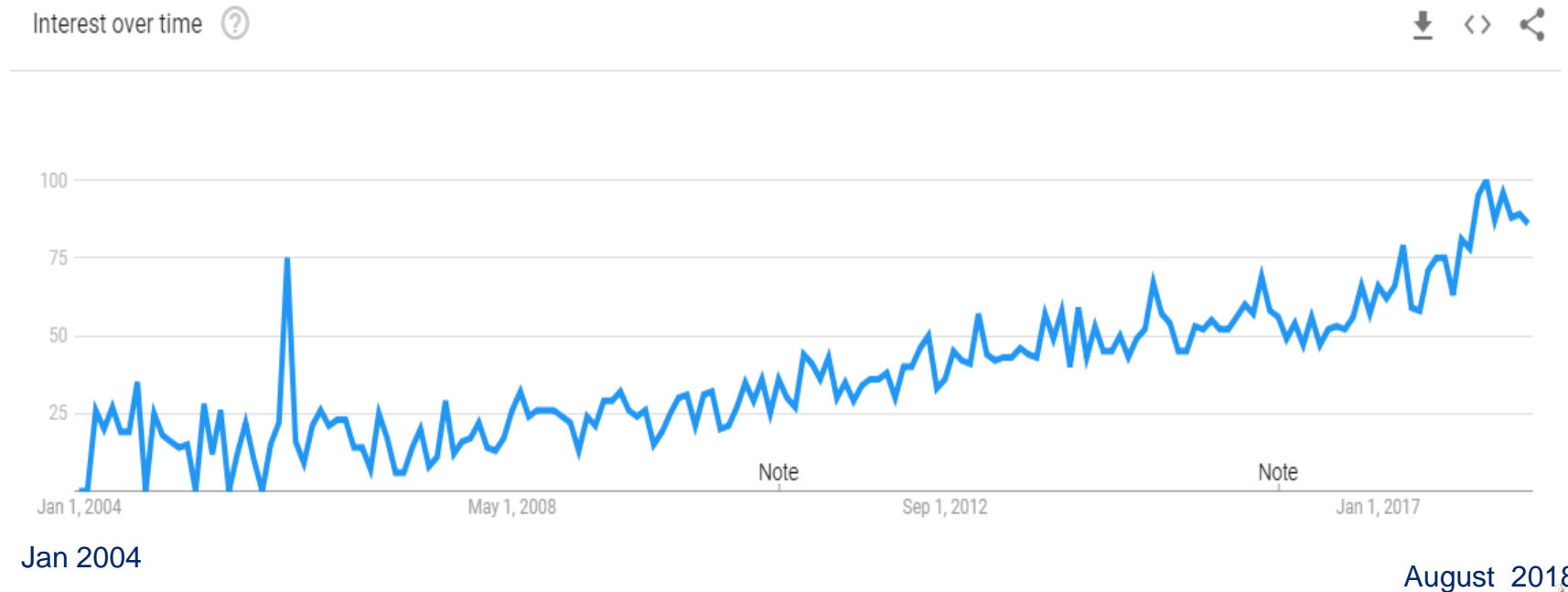


Production Challenges:

- Scalability- bio-reactors
- Texture – Ratio of tissue/fat
- Nutrients- replicating the critter's nutrient profile
- Consumer Acceptance
- Sustainability



Popularity and Coverage: Google Trends “clean meat”



Popularity and Coverage

- Dozens of articles in the last year.
 - PR vs. Political
- Desensitizing
- “Eat Meat, Not Animals”
- Limited Information on the Production/Taste/Texture
- Alternative Protein: One Big Headline



Consumer Acceptance: An Odd Battle

Factory Farm Foods LABS
Sustainable
Healthy
SAFE
CLEAN
Genetically Engineered
GMO



Who will regulate it?

- FDA

- Foods for human consumption
- Prescriptions/OTC drugs
- Biologics (Vaccines, blood, gene therapy products, tissue- tissue products)
- Medical Devices
- Veterinary drugs
- Tobacco
- Cosmetics

- FSIS

- Mission: “Protecting the public’s health by ensuring the safety of meat, poultry, and processed egg products.”



Well, Is It Meat?

Meat: The part of the muscle of any cattle, sheep, swine, or goats which is skeletal or which is found in the tongue, diaphragm, heart, or esophagus, with or without the accompanying and overlying fat, and the portions of bone (in bone-in product such as T-bone or porterhouse steak), skin, sinew, nerve, and blood vessels which normally accompany the muscle tissue and that are not separated from it in the process of dressing. As applied to products of equines, this term has a comparable meaning. (i) Meat does not include the muscle found in the lips, snout, or ears. (ii) Meat may not include significant portions of bone, including hard bone and related components, such as bone marrow, or any amount of brain, trigeminal ganglia, spinal cord (9 CFR 301.2)

The Food Additives Amendment of 1958 (Section 7) states that nothing in the amendment shall be construed to exempt any meat product from any requirement imposed under the Poultry Products Inspection Act or Meat Inspection Act. A food additive used in a meat (or poultry) product is subject to both FDA and USDA jurisdiction. Either agency may accede to the other's food additive regulation, or may publish its own regulation. In the absence of either agency taking such action, a meat product may not contain a food additive that has not been approved by both agencies.



Regulatory Timeline

- USDA and FDA, were quiet
- U.S. Cattlemen's Petition February 2018
 - Challenged the labeling of Cultured Meat as Meat
- State Legislation: Missouri Bill (April 2018): "Meat is derived from harvested production livestock or poultry"
- Appropriations Bill: May 2018
 - Section 736: USDA to regulate cultured meat



Regulatory Timeline

- WMC: USDA Secretary Perdue insisted USDA would have the authority to regulate the product.
- Politico: FDA Commissioner announced June 15, 2018 that FDA had jurisdiction.



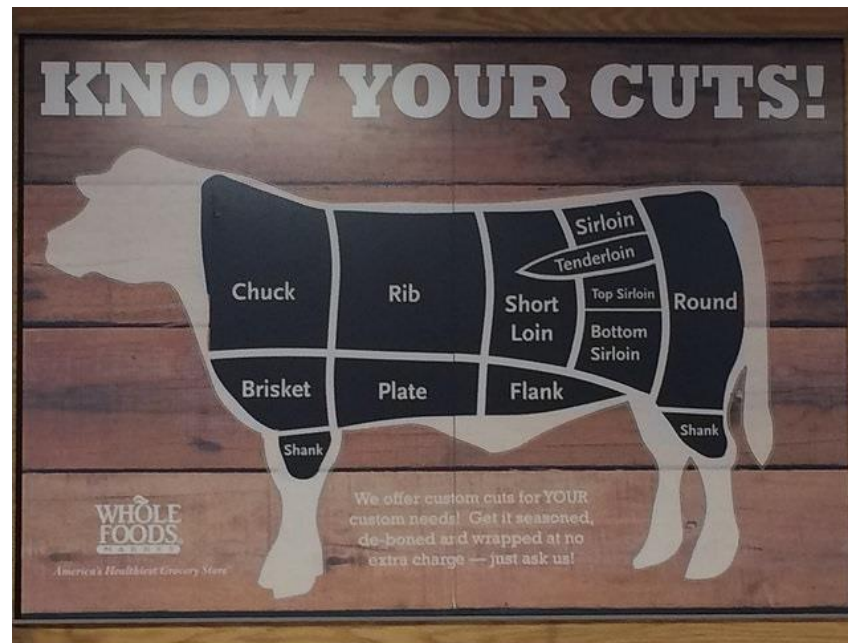
Credit: Plum Leaves//CC By 2.0

- Public meeting in July 12, 2018 in College Park, MD
- Openly Requesting Comments through Sept 25, 2018



FDA Public Meeting

- Tone/Emphasis
- Science
 - “Gold Standard:
Growing Tissue into an
actual cut of meat.”
- Takeaway



Credit: Luis Tamayo//CC By SA-2.0



The Rub- Do We Want Them to Play By the Same Rules?

- Truth in Origin/Labeling- Cook times, Food Safety Handling, Nutritional Information
- USDA Quality Seals
 - Premiums and Discounts Related to Grading
- Mandatory Price Reporting
- Inspection-flow system
 - HACCP, Inspectors, Monitoring Systems
 - Cross-roads: Premise Inspection and Packing



Labeling

- Meat or Not
- Comingling product
- Consumption
 - Cruelty-free, Environmental, Sustainable
 - Vegetarian/Vegan?



Application:

- Market Share
 - CNN reported in a 2014 Pew survey 80% of Americans would not be willing to eat meat grown in a lab
 - 2018 Survey: 66% of Americans are willing to try it; Only 25% have heard of it.
 - Branding- “Clean”
- Food Service-Fillers, Components-fat, protein, etc



Other Resources

- [U.S. Cattlemen's Petition](#)
- [USDA Ag Outlook Forum](#) Speaker from NAMI and Rabobank
- [Appropriations Draft for Section 736](#)
- Other Interesting Stories:
 - <https://www.foodnavigator-usa.com/Article/2018/05/17/Clean-meat-Traditional-animal-agriculture-has-really-reached-capacity-says-Future-Meat-Technologies>
 - https://www.foodnavigator-usa.com/Article/2018/08/01/Clean-meat-How-do-US-consumers-feel-about-cell-cultured-meat?utm_source=newsletter_daily&utm_medium=email&utm_campaign=01-Aug-2018&c=m0Aok1IldCAe4Hx8lf%2FhkLU2aKaZgKe%2B&p2=
- [FDA Public Meeting](#)
 - Presentations, Agenda, etc



Questions?



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