25TH ANNIVERSARY
MCLE SPECTACULAR!
Friday, November 22, 2019

The CCCBA Intellectual Property Section proudly presents.

#12 Recent Trends in the Food and Wine Industry and Their Legal Implications

Laurie Hall - The Wine Group
Babak Kusha - Kilpatrick Townsend & Stockton LLP
Gwen Peterson - Kilpatrick Townsend & Stockton LLP
Siegmar Pohl - Kilpatrick Townsend & Stockton LLP
Dr. Ricardo San Martin - UC Berkeley - Alternative Meat Program
William Sawyers - Del Monte Foods, Inc.
Joseph R. Snyder, Ph.D. - Kilpatrick Townsend & Stockton LLP

AGENDA

1. **Introductions**
2. **Plant Based Meats And Alternative Meats**
3. **IP Protection of These New Products**
4. **New Products Launches**
5. **Business Investments in this Nascent Industry**
6. **Meat and Dairy Labeling Laws**

Recent Trends in the Food and Wine Industry and Their Legal Implications

25th Annual MCLE Spectacular, November, 22, 2019

Agenda

1. Introductions
2. Plant Based Meats And Alternative Meats (Professor Riccardo San Martin)
    - Science behind the products
    - Cell-cultured meats
    - Cell-cultured fish company
    - Alternative dairy and cheese
3. IP Protection of These New Products (Babak Kusha)
    - Patent filing trends
    - Who is filing and on what
    - Trade secret protection
4. New Products Launches (Gwen Peterson and Laurie Hall)
    - Branding issues
    - Trademark
5. Business Investments in this Nascent Industry (Siegmar Pohl)
    - What are VC looking for
    - Due diligence
    - Risks and rewards
6. Meat and Dairy Labeling Laws (Bill Sawyers/Joe Snyder)
    - Missouri law prohibits misrepresenting any products as meat if it does not come from a slaughtered animal
    - Tofurkey sued Missouri to defend its use of the words “Sausage” and “Hot Dogs” to describe its products
    - Mississippi law restricts words like meatless meatball, hot dogs and veggie burgers to describe non-meat products
    - Upton Natural Co., a vegan meat maker in Chicago sued

Speaker Biographies

- **Laurie Hall**
  Senior Corporate Counsel
  The Wine Group
- **Babak Kusha**
  Partner
  Kilpatrick Townsend & Stockton LLP
- **Gwen Peterson**
  Partner
  Kilpatrick Townsend & Stockton LLP
- **Siegmar Pohl**
  Partner
  Kilpatrick Townsend & Stockton LLP
- **Joseph Snyder**
  Partner
  Kilpatrick Townsend & Stockton LLP
- **Dr. Ricardo San Marti**
  Research Director of the Alternative Meat Program
  University of California Berkeley
- **William Sawyers**
  Senior Vice President, General Counsel, Chief Compliance
  Del Monte Foods, Inc.

Laurie Hall
Senior Corporate Counsel
The Wine Group

Laurie Hall is a Senior Corporate Counsel at The Wine Group, an American alcoholic-beverage company founded in 1981, and based in Livermore, California.

Prior to going in-house, Laurie was a partner at Duane Morris LLP where her practice focused on the protection and enforcement of trademarks and trade dress, including the litigation of disputes in federal and state courts as well as before the Trademark Trial and Appeal Board. She assisted brand owners in developing global brand protection strategies, including anti-counterfeiting efforts such as the seizure of counterfeit goods by U.S. Customs and Border Protection. She advised clients concerning copyrights, internet domain names, design patents, trade secrets, unfair competition, and the licensing of intellectual property.

Before working at Duane Morris, she taught U.S. trademark law as an adjunct professor and the Golden Gate University School of Law. Prior to teaching at Golden Gate University, she was special counsel at Townsend and Townsend and Crew LLP.

Education

- Georgetown University Law Center, J.D.·(1996)
- University of California, Berkeley, B.A. in History with Honors (1989)

Babak Kusha
Partner
Kilpatrick Townsend

Babak Kusha is a partner at Kilpatrick Townsend's Intellectual Property practice and serves as co-chair of the multidiscipline Retail & Consumer Group. Previously, he has served as a co-chair of the firm's Mechanical & Medical Device Patent Team. Babak focuses his practice on patent prosecution and counseling, with special emphasis in the electromechanical, mechanical, biomedical, related software technologies, food and beverage, and consumer goods areas. As an accomplished patent attorney and expert in design rights, Babak helps clients evaluate IP risks, implement carefully-calculated IP plans and acquisitions, and strategize the use of IP to achieve business-related goals.

Babak has extensive experience in the field of design law, including strategic design protection and enforcement including coordinating U.S. and International utility and design patent, trademark and copyright protections. He counsels clients on various aspects of intellectual property law, including clearance or freedom-to-operate, invalidity and non-infringement issues, competitive analyses, patentability opinions, invention identification and assessment, as well as preparation and prosecution of patent applications. With 20 years of experience as a Registered Patent Attorney and 12 years as a Mechanical and Nuclear Engineer, Babak advises clients on patent strategy for new products, including assisting inventors with invention disclosures; he works closely with the product management team, technical directors, design staff, technical staff and in-house corporate counsel, IP and patent attorneys.

Prior to his work in the legal field, Babak worked for 12 years as an engineer. He held his first engineering position at ABB Impell Corporation, where he specialized in nuclear and fossil fuel power. He then worked with Fluid Dynamics International, initially working with computational fluid dynamics and later opening and managing Fluent's Western Region office. His clients included many of the world's leading automotive, aerospace, defense, electronic and power utility corporations.

Babak was recommended by Legal 500 US in 2019 for Patent Prosecution.

Education

- Illinois Institute of Technology, J.D. (1999)
- University of Wisconsin-Madison, B.S. (1986)
- University of Wisconsin-Madison, B.S., Mechanical Engineering (1984)

Gwen Peterson
Partner
Kilpatrick Townsend

Gwen Peterson has been practicing law in the intellectual property field for over 20 years and is an experienced transactional and trademark practitioner. Ms. Peterson's practice focuses on intellectual property licensing and related transactions, with an emphasis on the strategic negotiation, drafting and review of agreements having intellectual property implications. She has experience with a broad range of intellectual property-related agreements, including patent and technology license agreements, trademark and copyright license agreements, asset transfer agreements, patent and trademark assignments, material transfer agreements, research and collaboration agreements, joint development agreements, research consulting agreements, marketing and merchandising agreements, co-branding agreements, co-existence agreements, software licenses, software development agreements, copyright license agreements, artist agreements and a variety of web-related agreements. Ms. Peterson also assists clients with large-scale global recordals of intellectual property assignments and licenses.

In additional to her transactional practice, Ms. Peterson maintains an active practice in trademark portfolio management, including trademark clearance, domestic and international trademark prosecution and the development of international and domestic trademark protection strategies. Ms. Peterson also handles trademark and licensing due diligence for clients involved in asset acquisitions and in funding events.

Ms. Peterson works with clients in a broad range of industries, including the chemical, pharmaceutical and biotechnology fields, the consumer food and alcoholic beverage space, the software industry and the financial services industry. Her clients span the size spectrum, from individual intellectual property owners to publicly traded companies to large privately held companies, and she enjoys the opportunities and challenges that each brings to the table. Ms. Peterson has been recognized as a Northern California "Super Lawyer" for Intellectual Property by Super Lawyers magazine, named one of *East Bay Business Times*' "40 under 40," and listed in the 2017, 2018 and 2019 editions of *World Trademark Review 1000 – The World's Leading Trademark Professionals*.

Education

- University of Texas Law School, J.D., with honors (1991)
- Texas A&M University, B.S., Biomedical Science, *summa cum laude* (1987)

Siegmar Pohl
Partner
Kilpatrick Townsend

Dr. Siegmar Pohl, with nearly two decades of experience, focuses his practice on cross-border M&A and technology transactions, including deals involving particularly complex or expansive intellectual property (IP) assets. He represents U.S. clients with their domestic corporate and restructuring transactions, as well as investments and acquisitions in Germany and Europe. Siegmar also counsels European and Asian clients in acquisitions, venture capital, and technology transactions in the U.S.

Frequently, his clients ask Siegmar to advise them on minimizing their liability risks when launching technology products and when entering the U.S. market. Siegmar regularly holds workshops and training sessions for foreign board members and managers, coaching them on their duties, liabilities, and corporate governance issues. He is also a frequent speaker at international conferences and workshops.

Prior to joining the firm, Siegmar was a partner in the San Francisco, California office of an international law firm. Previously, he worked as an associate with the same firm.

Siegmar is fluent in German.

Education

- University of Iowa College of Law, LL.M. (1996)
- Rheinische Friedrich-Wilhelms-Universität Bonn, Bonn, Germany, Ph.D., Law, *magna cum laude* (2001)
- Universität Trier, Trier, Germany, J.D., Law and Politics (1994)
- University of East Anglia, Norwich, United Kingdom, Certificate in English Law (1991)

Joseph Snyder, Ph.D.
Partner
Kilpatrick Townsend

Joseph Snyder is the Managing Partner of the firm's Walnut Creek office. He focuses his practice on patent prosecution and counseling, emphasizing patent drafting, patent procurement, client counseling and opinion writing, primarily in the chemical arts, biotechnology, life sciences and clean technology. He counsels clients on planning and portfolio analysis for patent protection, including strategic review of technologies' commercial potential, enforcement of patent rights and defense of infringement allegations. Dr. Snyder represents U.S. and foreign companies, such as pharmaceutical companies, diagnostic laboratories, universities and start-ups in all areas of intellectual property counseling and protection.

He conducts and performs due diligence investigations in connection with commercial transactions, such as mergers, acquisitions and the establishment of strategic business alliances. These investigations involve intellectual property including patents, technology licenses, acquisition agreements and asset purchase agreements. Dr. Snyder advises on the creation of start-ups and their patent portfolio development. He coordinates and negotiates the transfer and licensing of intellectual property as it relates to office of technology transfer agreements, collaborative/sponsored research agreements and other transfer agreements.

His technology experience includes small molecules, pharmaceutical formulations, drug delivery technologies, medical diagnostics, nucleic acid assays, nucleic acid sequencing technologies, dyes and clean technology, such as fuel cells.

Before joining the firm, Dr. Snyder worked as a patent attorney for Zeneca Ag Products in the areas of patent drafting, patent prosecution and patent validity opinions.

Prior to joining the legal profession, he was a senior scientist in their analytical department doing organic structural analysis using NMR and mass spectrometry.

Dr. Snyder was recognized as a Northern California "Super Lawyer" for Intellectual Property in 2018 and the four years immediately preceding by *Super Lawyers* magazine.

Education

- University of San Francisco School of Law, J.D. (1995)
- University of Notre Dame, Ph.D., Chemistry (1987)
- University of Akron, M.S., Chemistry (1983)
- Xavier University, B.S., Chemistry (1980)

Ricardo San Marti, Ph.D.
Research Director of the Alternative Meat Program
University of California Berkeley

Dr. Ricardo San Martin is the Research Director of the Alternative Meat Program at the Sutardja Center for Entrepreneurship and Technology at UC Berkeley.

The Alternative Meat Program allows students to explore entrepreneurial opportunities in alternatives to animal meat. This is a meaningful and complex challenge about which he cares deeply, especially since two of his four children are vegan. He believes that Berkeley is the most powerful place on earth to tackle this immense challenge and make real change, particularly for the large population of our planet that needs low cost, nutritious and sustainable protein.

His background is in chemical engineering (MSc. UC Berkeley) and Biotechnology (Ph.D. Imperial College). For over 30 years, he was a hands-on inventor and entrepreneur of plant-extracts, some of which are used today by the companies that are developing alternatives to meat.

Education

- Imperial College, London, Ph.D. in Biotechnology
- University of California, Berkeley, M.S.c. in Chemical Engineering
- Universidad Catolica de Chile, B.S. in Chemical Engineering

William Sawyers
Senior Vice President, General Counsel, Chief Compliance Officer & Secretary
Del Monte Foods, Inc.

William Sawyers is the senior vice president, general counsel, chief compliance officer and secretary at Del Monte Foods. As a member of the executive leadership team, Bill advise board and management on strategic, legal and risk-management issues.

Prior to joining Del Monte Foods, Bill was the executive vice president, chief administrative officer and general counsel at Ernest Gallo Clinic and Research Center where he managed operations at independent, nonprofit, neuroscience research institute affiliated with the University of California.

Before working at Ernest Gallo Clinic and Research Center, Bill was a corporate partner at Orrick, Herrington & Sutcliffe LLP; vice president, general counsel and secretary at Del Monte Corporation and an associate at Sherman and Sterling.

Education

- University of California, Berkeley, Haas School of Business, BioExec Institute (2012)
- University of California, Berkeley Extension, The Drug Development Process (2007)
- University of California, Berkeley, School of Law, J.D. (1987)
- Harvard Law School, Harvard - Boalt Exchange Program (1986)
- Williams College, B.A. cum laude (1984)

KILPATRICK TOWNSEND

Contra Costa County BAR ASSOCIATION

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Our Speakers

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- **Dr. Ricardo San Martin**
  Research Director of the Alternative Meat Program for the Sutardja Center for Entrepreneurship and Technology
  University of California Berkeley
- **William Sawyers**
  General Counsel
  Del Monte Foods

Agenda

- Plant Based Meats and Alternative Meats
- Science Behind the Products
- IP Protection of These New Products
- Patent Filing Trends
- New Products Launches
- Business Investments in this Nascent Industry
- Meat and Dairy Labeling Laws
- Hypothetical

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Alternative Meats

Production of Plant-Based and Lab-Grown Meat

Dr. Ricardo San Martin

Topics

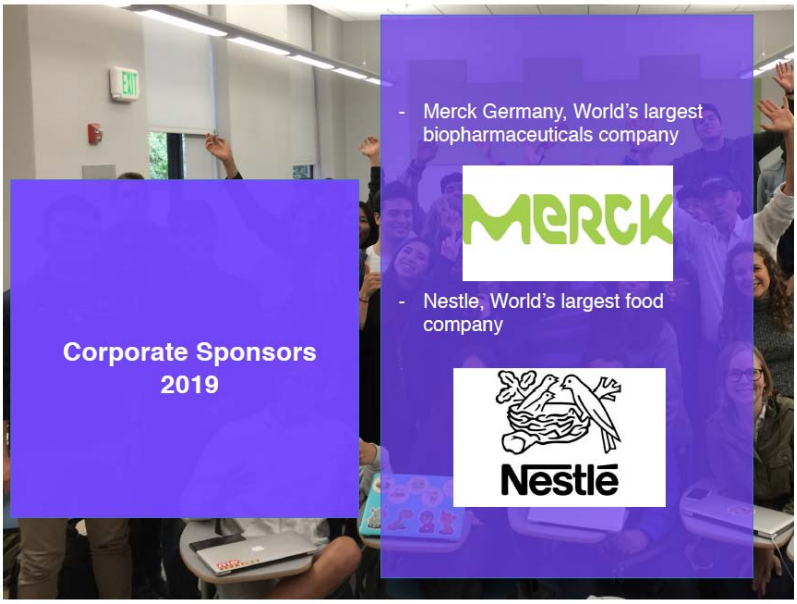
- The Alt.Meat Program @ UC Berkeley
- Production of plant-based meat
- Production of cell-based meat
- Concluding remarks

Sutardja Center at Berkeley Metrics at a Glance

- Undergraduate:
  - 12-14 Courses, 1500+
  - Undergraduates. 50/50%
  - Engineering, Business, etc.
- Graduate, Labs and Professional
  - 80+ Grad students
  - 100+ Executives
  - Labs: Data-X, Blockchain
  - Sustainable Food
- Ecosystem:
  - 14+ Global Partners
  - 500+ Executives
  - 50+ Investors

MY JOB?: TO CREATE A GREAT LEARNING ENVIRONMENT

WE ARE ALL LEARNERS !!!



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Winning Team Spring 2019
Plant-based chicken drumstick

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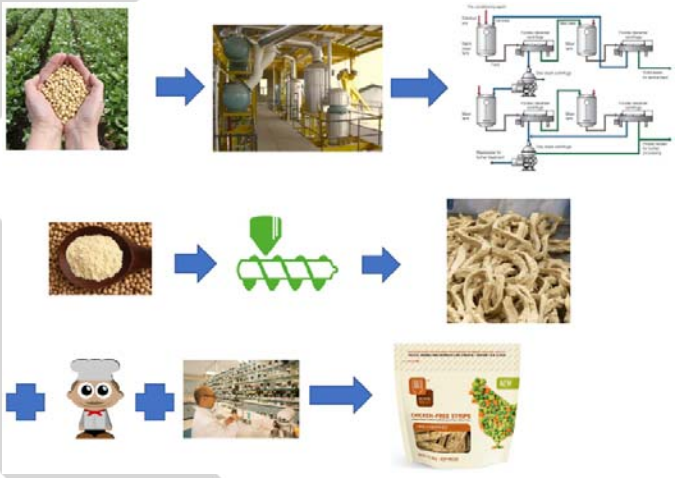
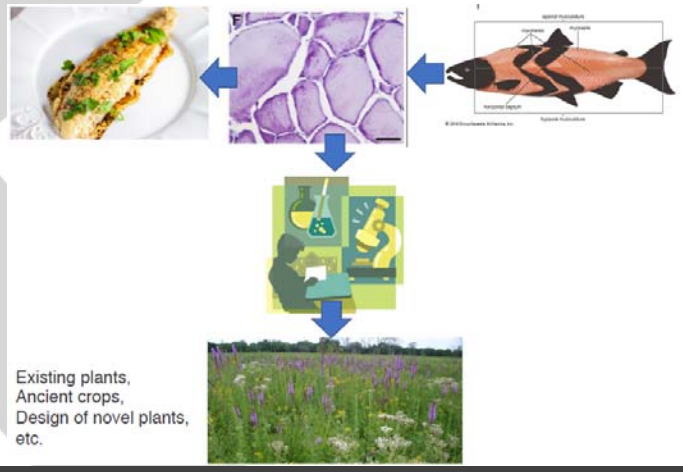
Production of Plant-Based Meat

Production of Plant-Based Meat: Bottom Down Approach



Production of Plant-Based Meat: Reverse Engineering Approach

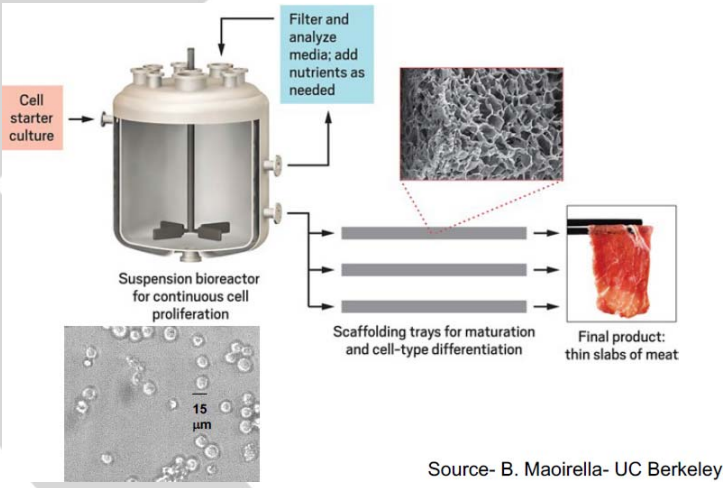


General Comments on 1st Generation Plant-Based Meat Products

- Plant based ≠ plants
- Highly processed foods
- Healthiness is questionable

Production of Cell-Based Meat

Two-Step Cell-Based Meat Production



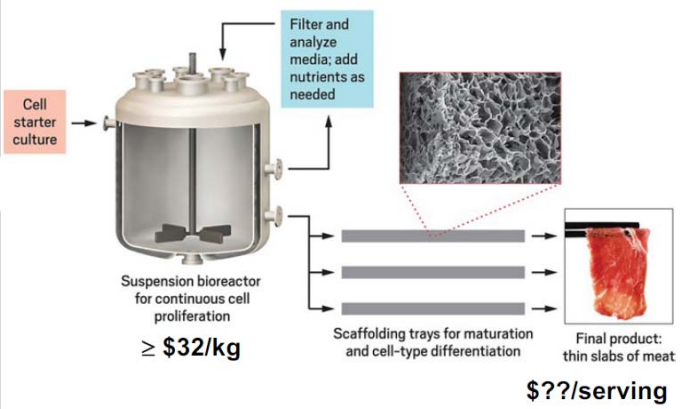
Source- B. Maoirella- UC Berkeley

Limitations to Current Processes

- Maximum mammalian cell concentrations achieved in industry: 2 x 10^7 cell/ml
- Maximum theoretical limit (based on cell packing): 1.5 x 10^8 cell/ml
- Cost @ max. theoretical limit: $ 32/kg of cells (not meat)

Source: B. Maoirella- UC Berkeley

Two-Step "Clean Meat" Culture



Wholesale beef price is $4.53- $22.78 / kg (depending on cut)

Source- B. Maoirella- UC Berkeley

Viral Contamination in Large Cell Culture Bioreactors

Virus	Cell	Year	Company	Reported By	
Epizootic hemorrhagic disease virus	CHO	1988	Bioferon GmbH	Bioferon GmbH	
Mouse minute virus	**CHO**	1993	Genentech	Genentech	
Mouse minute virus	**CHO**	1994	Genentech	Genentech	
Reovirus	Homo 1° Kidney	1999	Abbott Labs	FDA	
Reovirus	CHO	?	?	BioReliance	
Cache Valley virus	CHO	1999	Amgen/CMO	Amgen	★
Cache Valley virus	CHO	2000	?	BioReliance	★
Vesivirus 2117	CHO	2003	Boehringer Ingelheim	Boehringer Ingelheim	★
Cache Valley virus	CHO	2003	?	BioReliance	★
Cache Valley virus	CHO	2004	?	BioReliance	★
Human Adenovirus	HEK 293	?	Eli Lilly	Eli Lilly	★
Mouse minute virus	**CHO**	2006	Amgen	Amgen	
Vesivirus 2117	CHO	2008	Genzyme, Belgium	Genzyme	★
Vesivirus 2117	CHO	2008	Genzyme, USA	Genzyme	★
Vesivirus 2117	CHO	2009	Genzyme, USA	Genzyme	★
Mouse minute virus	**CHO**	2009	Merrimack	Merrimack	
Porcine circovirus-1	Vero	2010	GlaxoSmithKline	GlaxoSmithKline	

★ Virus capable of infecting humans and causing disease

Source- B. Maoirella- UC Berkeley

General Comments on Cell-Based Meat

- Scaling-up is a major hurdle
- Cell yields needed to make it economical not achievable due to biological constraints

Concluding Remarks

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Patent Landscape

Babak Kusha

The Patent Landscape in the Future Foods Area

- Animal-free foods are here
- Health benefits from reducing animal protein intake and consuming more plant-based proteins:
  - Bolster interest from investors; and
  - Drive further R&D in the field
- Humane arguments
  - Environmental damage
  - Destruction of animal species
- Environmental arguments
  - Calorie for calorie, raising livestock is far more environmentally taxing than growing plants
    - Space, energy, methane
- Plant-based calories are more efficient to feed 7 billion people

The Patent Landscape in the Future Foods Area

- If the alt-meat tastes the same, then people may switch
  - More environmentally friendly
  - Healthier?
  - Potentially a cheaper option
- Investors desire to transform consumer demand for meat into a desire to consume meat replicas
- Who are the big players?
- What types of patents / who has patents and on what?

Non-Animal Meat / Lab-Grown Meat – 1/2

- Plant-based
  - Eating less meat is the answer
- Cell culture-based
  - Growing meat in the lab – not eating less meat – is the answer
  - Cultured meat – biologically it is meat (for meat eaters); new kind of meat developed from advances in biology and engineering
    - Cell culture
    - Bio reactors
    - Avoids environmental degradation and mass slaughter
  - Relatively early stages – VC's typically don't invest in tech that's decades away
- Good Food Institute
  - Funds research, political muscle for the industry, fight to limit restrictions on cultured meat products

Non-Animal Meat / Lab-Grown Meat – 2/2

- Technical challenges and solutions
  - Growth media
    - Stock
      - Fetal bovine serum
      - Marine stock
  - Scaffolding
  - Bioreactor design
  - Large scale cellular agriculture behavior
- New Harvest
  - Not-for-profit, funds research on large scale / industrial scale bioreactors / large fermenting chambers
    - Current bioreactors are single-use and plastic
    - New Harvest helped launch Perfect Day and Clara Foods

Overview

- Animal-free meat is hot
- Beyond meat in the news – KFC offering plant-based chicken
  - People for the Ethical Treatment of Animals named Beyond Meat as its company of the year in 2013
  - Sold in the meat section of supermarkets
    - Right next to competing brands from the retailer
    - Food product label?
      - How patentable?
      - How secret?

Overview – continued

- Multiple fast food companies offer plant-based food options
  - BK – Impossible Whopper
  - Subway – Beyond meatball marinara
  - Carl's Jr. – meatless burger by Beyond Meat
  - White Castle – Impossible Slider
  - KFC – Beyond meat chicken
  - TGIF, Applebee's, Cheesecake Factory – offering plant-based options
- Nestle is planning the Awesome burger; Tyson is planning on offering plant-based meats
- Plenty of competition

Overview – continued

- Relatively low barriers to entry?
- Patents can provide a moat to competition
  - Compare with other food trends?
    - Organic as growth driver; big players come in, prices drop
  - How is alt meat different from other food stocks?
    - Like organic food? Or like flavored soda?
- Future?
  - One view: plant-based meat will be as popular as beef burgers today in 10 years
  - Valuations?
    - Beyond Meat is valued near Tyson
- Demand > supply
  - Beyond meat
  - Impossible

Background – to the patent landscape

- Plant-based
  - Ancient / Roman cuisine – falsification and disguise of ingredients
    - Anchovy casserole w/o anchovies
    - Turnips processed to look and taste like fish
  - Foodstuffs have been very diverse for a few thousand years
  - Disguising and creating faux foods have been known for a few thousand years
  - Food composition claims – *In re Lev*in: need a showing of coaction or cooperative relationship between the selected ingredients which produces a new, unexpected and useful scientific function.
    - Still good law or surpassed by section 103 – obviousness?

Background – to the patent landscape

- Clean meats / cell cultured meats / lab-grown meat
  - 1930s Sci/Fi
  - 1990s - Dutch research
  - 1990s - NASA work on in-vivo fish flesh
  - 2010 Cell-cultured meat
- Patent examiners are not food scientist or culinary experts

Investing in Food Innovation

- Opportunities for investment in food and agriculture innovations
- Need for innovation remains
- Different breed of startup
  - Agritech is closer to biotech and less like traditional industrial segments
- Boom in consumption of plant-based meats
  - Beyond meat, Impossible, Memphis meats
  - Tyson
- Market size
  - Food innovation: $USD 700b by 2030 (current 135b)
  - Plant-based meat market $USD 4.6b in 2018; projected to be $USD 85b in 10 yrs
- Diversify
- Likely consolidation within 3-5 years
  - M&A opportunities

The Big Players and the Patents

- Relatively few patent families
- Patents are at very early stages
- Less IP barriers to entry
  - Safeway sells competing Organics brand next to Beyond Meat's products
- Ripe for a shake-up ?
- Impossible, Beyond Meat, and Just are leading the meatless meat revolution; Memphis Meats and others are also close behind.

Impossible Foods – 1/4

- Plant-based
- Founded in 2011
- Not a public company
- Holds many patents – but sold only in restaurants
- BK offers Impossible Whopper
- Bleeding and meaty flavor secret is iron-rich Heme – isolated from leghaemoglobin, isolated from soy plants
- Texture: isolated and purified proteins from plants to replicate muscle, connective tissue, fat and flesh
- Patent assets – 197; 139 active; 51 grants; 16 granted U.S. patents; 36 U.S. pending applications
- Patents cover method of extracting and purifying non-denatured proteins, genetically engineering methylotropic yeast, soy-based cheese and ground meat patents

Impossible Foods – 2/4

- U.S. 10,327,464 M & C for affecting the flavor and aroma profile of consumables
  - Covers a food product comprising:
    - .01-5% heme-containing protein;
    - Glucose, ribose, fructose, lactose, xylose ..
    - At least 1.5 mM of a compound selected from cysteine, cystine, thiamine, methionine, and mixtures of two or more thereof
    - One or more plant proteins,
    - Wherein the food product contains no animal products that contain heme; and
    - Wherein cooking the food product results in the production of at least two volatile compounds
- 10,314,325 M & C for affecting the flavor and aroma profile of consumables

Impossible Foods – 3/4

- 10,172,380 – Ground meat replicas
  - Method for imparting a beef-associated aroma to ground chicken, comprising adding a non-animal heme-containing protein to raw ground chicken to a final concentration of about 0.5% to about 1% (wt/wt), thereby producing heme protein-added, raw ground chicken, wherein cooking the heme protein-added, raw ground chicken results in the production of an increased amount of at least two volatile compounds that have a beef-associated aroma relative to the amount of the two volatile compounds produced upon cooking raw ground chicken lacking the added heme protein
- 10,172,381 – method and composition for consumables
  - How granted in view of *In Re Levin*?
  - *Levin* – additional test for / in place of section 103 obviousness
    - Impossible pushed back against the *In re Levin* rejection
    - Shows that ingredients coact in unexpected ways
    - Cucumis juice extract to increase the perceived meat flavor of the product
  - Examiner: “no reference was found for a meat replica containing … Cucumis juice
    - … added tallow fatty notes that are enhanced with cooking
  - Food ingredients must coact unexpectedly

Impossible Foods – 4/4

- Maraxi patents –
  - A meat replica product, comprising:
    a) Muscle replica comprising 0.1%-5% of a heme-containing protein, at least one sugar compound and at least one sulfur compound;
    b) Fat tissue replica comprising at least one plant oil; and
    c) Connective tissue replica;
      - Wherein said muscle replica, fat tissue replica, and connective tissue replica are assembled in a manner that approximates the physical organization of meat, wherein, upon cooking of the meat replica, two or more volatile compounds that are associated with a cooked meat aroma are produced in an increased amount relative to cooking a meat replica product lacking the heme-containing protein.

Impossible Foods

Patent Wordscape

Text Cluster

Beyond Meat (Savage River) – 1/2

- Building meat directly from plants
- Founded in 2009
- Public company
- Develops plant-based meats (chicken, and beef and pork sausage)
- Patents on meat structured protein products
- Cargill (pea protein supplier) invests an additional $75 million
- KFC offering the plant-based chicken
- Patents – 35 total assets; 8 pending U.S. applications; one U.S. grant;
  - U.S. 9,526,267 – Nutrient-dense meat structured protein product.
- A few abandoned, one application alleged as obvious – not a *Levin* bar to patentability

Beyond Meat – 2/2

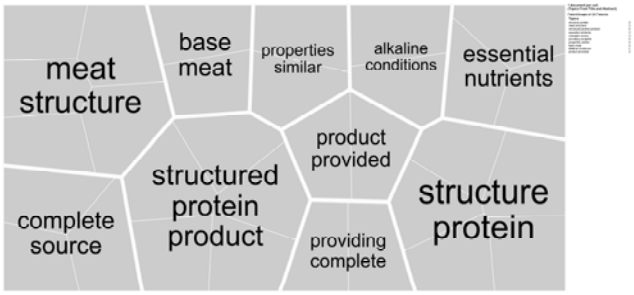
- U.S. 9,526,267 – Nutrient-dense meat structured protein product; claims to:

  A process for producing a nutrient-dense meat structured protein product comprising protein fibers that are substantially aligned, wherein the process comprises:

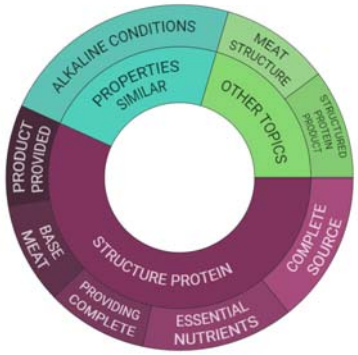
  a) Combining a non-animal protein material and water with at least one heat-stable nutrient to form a dough
  b) Shearing and heating the dough to denature the proteins in the protein material and produce protein fibers that are substantially aligned in a fibrous structure
  c) Setting the dough to fix the fibrous structure previously obtained, thereby obtaining a nutrient-dense meat structured protein product having a moisture content of at least 30% by weight and comprising at least 5% by weight of a non-animal protein material and at least 0.25 mg of heat-stable nutrient per ounce of the nutrient-dense meat structured protein product
  d) As a post-processing step, adding at least one non-heat stable nutrient to the nutrient-dense meat structured protein product

Beyond Meat

Patent Wordscape



Text Cluster



JUST – 1/2

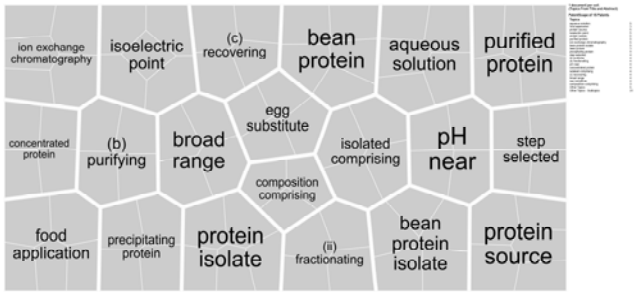
- Founded in 2011
- Making healthier food better for the environment, and more delicious and cheaper
- Most-funded food and beverage startup in the field of synthetic biology
- Makes plant-based egg substitutes; eggless mayo and cookie dough
- Licenses ingredients to direct competitors to make vegan versions
- Plans for cultured meat?
- Patents refer to isolating adzuki and mung beans for meat-like creations
- Hampton Creek – 18 total patent assets; 12 active; 3 grants (HK, CN and EP);
  - A few U.S. Grants
  - U.S. 10,321,705 – Functional mung bean-derived compositions – granted on 18, 2019
- 2 active U.S. applications
  - Functional adzuki bean-derived compositions – pub 2017
  - Functional mung bean-driven compositions – pub 2019

JUST – 2/2

- Just Inc.: 36 total patent assets; 8 patent grants; 5 U.S. grants and 8 pending U.S. applications covering functional mung bean-derived compositions and plant-based egg substitute.
  - U.S. 6,835,390 – Method for producing tissue engineering meat for consumption 2000 priority
    - Method of providing nutrition .. consuming meat product produced by culturing non-human muscle cells ex vivo
  - U.S. 7,270,829 Industrial production of meat using cell culture methods
  - U.S. 9,760,834 Discovery Systems for identifying entities that have a target property
  - U.S. 10,321,705 – see above assigned as originally assigned to Hampton Creek
  - U.S. 10,212,326 Notification for control sharing of camera resources Microsoft as original assignee

Just (Hampton Creek)

Patent Wordscape



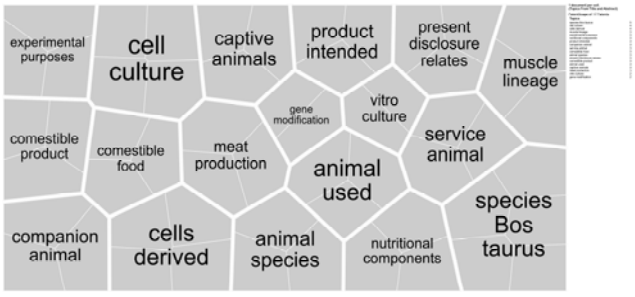
Text Cluster

Memphis Meats, Inc.

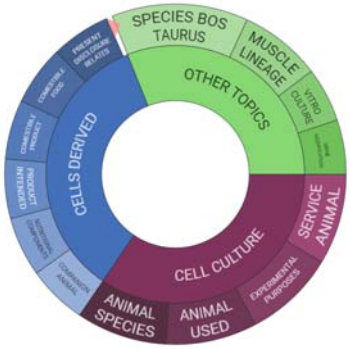
- Founded 2015
- Grows meat in small quantities using cells from cows, pigs, and chickens. Its products include hot dogs, sausages, burgers, and meatballs.
- Cultured meat from animal cells – chicken meat and beef
- Serum from unborn calves and chicks
- Patents on skeletal muscle cultivation
- Backed by Tyson and Cargill and others
- VC-funded growth
- Patents – 17 total assets; 15 active; 3 active U.S. patent application; none granted
- Three pending cases:
  - Method for scalable muscle lineage specification and cultivation – pub 2016
  - Method for scalable muscle lineage specification and cultivation – pub 2016
  - Method for extending the replicative capacity of somatic cells during ex vivo cultivation process – Pub 2019

Memphis Meats, Inc.

Patent Wordscape



Text Cluster



Perfect Day Foods (Muufri)

- Founded on 2014
- Produces animal-free dairy milk
- Milk protein made from yeast instead of from cows
- Patents disclose formulations comprising casein protein, lipids, flavor compounds, sweetening agents.
- Patents: 14 total assets; 4 pending U.S. application; 1 granted:
- U.S. 9,924,728 - Food compositions comprising one or both of recombinant beta-lactoglobulin protein and recombinant alpha-lactalbumin protein
- Claims to compositions
  - Wherein the food composition has one or more characteristics of a dairy food product selected from the group consisting of: taste, aroma, appearance, handling, mouthfeel, density, structure, texture, elasticity, springiness, coagulation, binding, leavening, aeration, foaming, creaminess, and emulsification; and
  - The food composition does not comprise any other milk proteins than those in (i)

Other Players – 1/4

- Ripple Foods, PBC
  - Founded 2014
  - Produces plant-based milk
  - Patents – 13 total assets; 2 pending U.S. applications pub 2019
    - Method for obtaining a yield of refined protein component from a non-animal natural and/or modified non-animal natural source
    - A refined protein component, wherein the refined protein component is obtained from a non-animal natural and/or modified non-animal natural source by the method
    - A plant-based yogurt analog comprising at least one of between 1% to 10% by weight of a plant protein, and between 1% to 90% by weight of a plant protein isolate

Other Players – 2/4

- New Wave Foods
  - Shrimp substitute made from algae and plants
  - One patent family – 3 total assets; none granted
    - Algae or plant based edible compositions:
      - An edible composition, comprising: a hydrocolloid material; a protein material; and an algal extract

Other Players – 3/4

- Wild Type Inc.
  - Founded 2016
  - Sustainable meat using cellular agriculture technology
  - 1 patent family – ex vivo meat production; filed in 2018
  - High-end meats – sushi-grade fish and foie gras
- Alpine Roads, Inc.
  - Founded in 2016
  - Develops and produces animal-based food substitutes by using plants
  - Focuses on transforming plants into bioreactors for producing protein
  - Patents – 1 family to cover a transgenic arabidopsis plant comprising a recombinant DNA construct; filed 2018/2017

Other Players – 4/4

- Clara Foods
  - Founded in 2015
  - Produces baking products, food and beverages ingredients, nutrition supplements, and animal/pathogen/salmonella free egg white products
  - Its egg white products are used in food cakes, meringues, and macarons
  - Patents – 6 total assets; 1 patent family; none granted
  - Compositions, proteins, polynucleotides, expression vectors, host cells, kits, and systems for producing egg white proteins
    - Recombinantly expressing a first egg white protein in a first host cell
- Zimitech Inc. dba Sugarlogix
  - Founded in 2012
  - Manufactures sugar with prebiotic functions
  - Patents: 1 patent family – Engineered Microorganisms for Enhanced Use of oligosaccaarides

Conclusions / Summary

- What did we cover?
  - The patent landscape in the future food area
    - Relatively few bigger players
    - Relatively few patent families
    - Relatively early in their lives
    - More opportunities for innovations
    - Likely to see consolidation
- How can audience benefit?
  - Learn what the patent landscape looks like
  - Recognize opportunities for innovation and investments
- What surprised me about the research?
  - Relatively few patents on the subject matter
  - Recipes and process know-how are kept a secret?
  - Many big players are supporting the early startups
  - Plenty of $; and much technology innovation remains to be developed

KILPATRICK TOWNSEND

Trademark Protection

Laurie Hall and Gwen Peterson

Building a Strong Brand

- More than selecting, registering, and enforcing one or more trademarks
- Word marks, slogans, logos, product design, packaging design, graphics, sounds, colors, etc.
- Possible overlapping protection:
  - Trademarks
  - Copyrights
  - Design patents
  - Utility patents
  - Trade secrets

A "Good" Trademark Should

- Be inherently distinctive
- Be easy to spell, pronounce and remember
- Fit the product or service
- Fit the company identity, image and reputation
- Have no undesired negative connotations

Spectrum of Distinctiveness

COINED	EXXON gasoline KODAK photographic supplies	Inherently Distinctive
ARBITRARY/ FANCIFUL	COBRA golf clubs APPLE computers	Inherently Distinctive
SUGGESTIVE	CHICKEN OF THE SEA tuna fish ROACH MOTEL insect traps	Inherently Distinctive
DESCRIPTIVE	RAISIN BRAN cereal AMERICA'S BEST POPCORN popcorn	May Acquire Distinctiveness Through Use
GENERIC	Shoes for shoes Laptops for computers	Not Registrable

The “IMPOSSIBLE” World

U.S. Reg. No. 5,459,255

United States of America
United States Patent and Trademark Office

IMPOSSIBLE

Reg. No. 5,459,255	IMPOSSIBLE FOODS INC. (DELAWARE CORPORATION) 121 Chesapeake Drive Redwood City, CALIFORNIA 94063
Registered May 01, 2018	
Int. Cl.: 29	CLASS 29: Substitutes for foods made from animals or animal products, namely, vegetable-based burger patties, meat substitutes
Trademark	FIRST USE 10-29-2015; IN COMMERCE 6-27-2016
Principal Register	THE MARK CONSISTS OF STANDARD CHARACTERS WITHOUT CLAIM TO ANY PARTICULAR FONT STYLE, SIZE OR COLOR
	SER. NO. 86-102,158, FILED 10-25-2013

OMNIPORK

U.S. Reg. No. 5,708,390

United States of America
United States Patent and Trademark Office

OMNIPORK

Reg. No. 5,708,390
Registered Mar. 26, 2019
Int. CL: 16, 29
Trademark
Principal Register

Plant A Foods Hong Kong Limited (HONG KONG LIMITED LIABILITY COMPANY)
3/E One Kowloon
1 Wang Yuen Street
Kowloon Bay, HONG KONG

CLASS 16: Paper and cardboard; paper for use as containers for packaging; printed books, reports, guides and printed educational materials, all in the field of or featuring formed textured plant-based proteins used as ingredient for foods; photographs; printed instructional and teaching materials in the field of food and beverages, also being educational; plastic sheets, films and bags for wrapping and packaging

CLASS 29: Meat substitutes; formed textured plant-based proteins being foodstuffs for human consumption; formed textured plant-based proteins used as ingredient for foods

THE MARK CONSISTS OF STANDARD CHARACTERS WITHOUT CLAIM TO ANY PARTICULAR FONT STYLE, SIZE OR COLOR

PRIORITY CLAIMED UNDER SEC. 44(D) ON HONG KONG APPLICATION NO. 304111790, FILED 03-02-2018, REG. NO. 304111790, DATED 03-02-2018, EXPIRES 03-02-2028

SER. NO. 88-020,833, FILED 06-29-2018

TOFURKY

U.S. Reg. No. 2,213,075

Int. Cl.: 29

Prior U.S. Cl.: 46

Reg. No. 2,213,075

United States Patent and Trademark Office

Registered Dec. 22, 1998

TRADEMARK
PRINCIPAL REGISTER

TOFURKY

TURTLE ISLAND FOODS INCORPORATED (WASHINGTON CORPORATION)
P.O. BOX 176
HOOD RIVER, OR 97031

FOR: FOODS, NAMELY, SOY AND WHEAT BASED MEAT AND GAME SUBSTITUTES, IN CLASS 29 (U.S. CL. 46).

FIRST USE 10-0-1995; IN COMMERCE 10-0-1995.

SER. NO. 75-436,952, FILED 2-19-1998.

SAMUEL E. SHARPER JR., EXAMINING ATTORNEY

BEAF

U.S. Reg. No. 5,833,926

United States of America
United States Patent and Trademark Office

BEAF

Reg. No. 5,833,926
Registered Aug. 13, 2019
Int. Cl.: 29
Trademark
Principal Register

Honest Pastures (VIRGINIA SOLE PROPRIETORSHIP)
420 Constitution Drive
Virginia Beach, VIRGINIA 23462

CLASS 29: Meat substitutes; plant-based meat substitutes; wheat-based meat substitutes; formed plant-based protein for use as a meat substitute; meatless prepared entrees consisting primarily of formed plant-based protein as a meat substitute

FIRST USE 1-8-2019; IN COMMERCE 1-8-2019

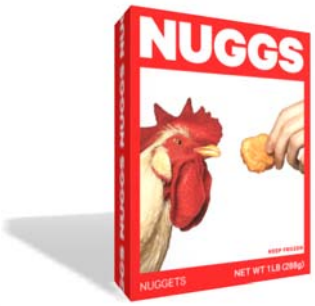
THE MARK CONSISTS OF STANDARD CHARACTERS WITHOUT CLAIM TO ANY PARTICULAR FONT STYLE, SIZE OR COLOR

SER. NO. 88-276,723, FILED 01-25-2019

Terms to Avoid

- Descriptive terms
- Terms that are misleading about nature of the product or service
- Foreign language equivalents
- Geographic place names
- Terms similar to well-known marks in another industry
- Terms prohibited in the industry (health claims, deceptive, etc.)
- First names or surnames

That's a No



Clearance: Is It "Available" for Use and Registration?

- Applications/registrations + common law (unregistered) use
- Include industry-specific elements (e.g., label searches for alcoholic beverages)
- Domain name availability and legibility
- Social media availability
- Jurisdiction-specific

Register and Use

- Register trademarks in appropriate jurisdictions
- Use trademarks properly and teach others to do so as well (e.g., use as adjective with a generic term, and with appropriate trademark symbol)
- Monitor for infringement and develop an enforcement plan
- Adequately control the quality of the products and services provided by trademark licensees
- Record trademark licenses, if required in the relevant jurisdictions

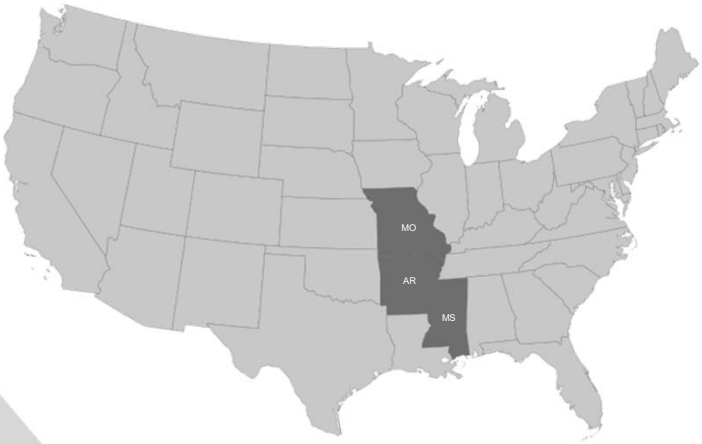
KILPATRICK TOWNSEND

Meat and Dairy Labeling Laws

Joseph Snyder and William Sawyers

Meat Labeling Laws

- Missouri
- Arkansas
- Mississippi



Background, Missouri

- Animal agriculture industry representatives have warned producers that competition from plant-based" and "clean-meat" substitutes is one of the "major challenges" the animal meat industry faces.
- The Missouri Cattlemen's Association proposed the language of the Statute in its initial form and presented it to Senator Sandy Crawford for introduction. The language that later became the Statute was introduced in a pair of House bills as well, the three lawmakers who initially introduced the language of the Statute—Senator Crawford, Representative Jeff Knight, and Representative Warren Love—have extensive ties to the animal agriculture industry.
- Senator Crawford publicly acknowledged that she championed the law because "we wanted to protect our cattlemen in Missouri and protect our beef brand."
- When discussing the perceived need for the Statute to be enacted, Representative Knight publicly stated that: "We're just trying to protect our product."

Missouri's Amendments to the Meat Advertising Law

- Amended Section 265.494(7), now prohibits:
- Misrepresenting a product as meat [any edible portion of livestock, poultry, or captive cervid carcass or part thereof] that is not derived from harvested production livestock [cattle, calves, sheep, swine, ratite birds including but not limited to ostrich and emu, aquatic products as defined in section 277.024, llamas, alpaca, buffalo, bison, elk documented as obtained from a legal source and not from the wild, goats, or horses, other equines, or rabbits raised in confinement for human consumption] or poultry [any domesticated bird intended for human consumption].
- MDA will not refer products whose labels contain the following:
  - Prominent statement on the front of the package, immediately before or immediately after the product name, that the product is "plant-based," "veggie," "lab-grown," "lab-created," or a comparable qualifier; and
  - Prominent statement on the package that the product is "made from plants," "grown in a lab," or a comparable disclosure.

Missouri Lawsuit

- Tofurky filed a complaint for declaratory and injunctive relief that the Statue is unconstitutional.
- Tofurky alleges that the Statute criminalizes truthful speech by prohibiting "misrepresenting" a product as "meat" if that product is not derived from harvested production livestock or poultry.
- A violation of the Statute carries a penalty of incarceration up to 1 year and up to $1000.
- Tofurky alleges that the statute is overbroad, and vague criminal law that prevents sharing of truthful information and impedes competition by "plant-based" and "clean-meat" companies in the marketplace.
- The complaint alleges that the Statute violates the free speech clause of the First Amendment, the Dormant Commerce Clause and the Due Process clause.

Missouri Lawsuit

- The history, context, and language of the Statute indicate that the General Assembly intended the Statute to apply to plant-based meat and clean meat companies and to prohibit them from marketing their products as "meat" analogues or using the term "meat" or related meat terminology (e.g., "chicken," "beef," "sausage") in the advertising, labeling, and packaging of their products.
- Tofurky alleges that the aim of the Statute is to protect the animal agriculture industry from competition from plant-based meat and clean meat producers.
- Tofurky alleges that the Statute was introduced and enacted with the intent of commercially harming the plant-based meat and clean meat industries and restricting speech by plant-based meat and clean meat producers to protect the conventional meat industry from competition.

Missouri Lawsuit

- Tofurky alleges that there was no evidence of consumer confusion about the ingredients or source of plant-based meats, including Tofurky's products, before the Statute went into effect.
- Tofurky alleges that the Office of the Missouri Attorney General—the agency responsible for protecting consumers and preventing misleading business practices—has received zero complaints from consumers who accidentally purchased plant-based meats that they believed to be meat from slaughtered animals.
- Commercial speech, including words on labels and in marketing materials, is protected by the First Amendment.

First Amendment Grounds

- Tofurky alleges that the Statute is content based and cannot withstand First Amendment scrutiny because there is no reason "remedies other than content-based rules would be inadequate." *Sorrell v. IMS Health Inc.*, 564 U.S. 552, 575 (2011).
- Any statute that restricts commercial speech to prevent deception may not be broader than reasonably necessary to prevent the deception.
- The Statute is specifically designed to and will significantly disadvantage Plaintiff Tofurky and the companies with which Plaintiff GFI works closely because it restricts how they can market, advertise, and sell their products in the marketplace. The Statute prevents marketing products as meat analogues or using meat terminology in truthful and non-misleading ways.

Tofurky's Labels

- The labels contain terms applied to conventional meats such as "sausage" "hot dogs" and "ham roasts," and Tofurky reasonably fears prosecution under the statute.

Commerce Clause

- Tofurky alleges that the Statute violates the Commerce Clause because the Statute aims to put Plaintiff at a disadvantage in order to protect local economic interests from interstate competition.
- The plain text and legislative history of the Statute make clear that it is intended not to protect consumers from deceptive marketing or labels but to disadvantage plant-based meat producers whose products are distributed in Missouri.
- Tofurky alleges that the Statute's targeting of plant-based meat products comes at the behest of in-state livestock and poultry producers who do not wish to compete against Plaintiff Tofurky and other plant-based meat producers' products. It imposes an excessive burden on interstate commerce in relation to its putative local benefits.
- Defendants cannot demonstrate that the benefits of the criminal law outweigh its discriminatory effects.
- The Statute will reduce Tofurky's business in the state. This is detrimental both or consumers and for interstate commerce.

Due Process

- Tofurky alleges that the Statute fails to provide persons of ordinary intelligence a reasonable opportunity to understand when or how a product label or other marketing information misrepresents a product as meat and thus authorizes or encourages arbitrary and discriminatory enforcement.

Tofurky Requests

- Preliminary and permanent injunction preventing enforcement of the Statute;
- Declare Statute is unconstitutional;
- Award Attorney's fees.

Arkansas

- To Require Truth in Labeling of Agriculture Product Are Edible by Humans," into law (Act 501) last month.
- Arkansas joined the states that prohibit marketing a product as "meat" if it is not derived from livestock or poultry.
- Significantly, Arkansas Act 501, also bans manufacturers from marketing a product as rice if it doesn't contain rice. "Rice" is defined as "the whole, broken, or ground kernels or by-products obtained from the species *Oryza Sativa L. or Oryza glaverrima*, or wild rice, which is obtained from one of the four species of grasses from the genus *Zizania* or *Proteresia*."
- The Arkansas Truth in Labeling Law imposes a $1,000 fine for each violation.

Tofurkey Sued Arkansas

- Violates First Amendment
- Violates Dormant Commerce Clause
- Plaintiff requests
  - Declaration that the Act is unconstitutional
  - Preliminary injection
  - Permanent injunction
  - Attorney fees

Mississippi's Law

- SB2922: An Act To Amend Section 75-35-15, Mississippi Code Of 1972, To Provide:
- A Food Product That Contains Cultured Animal Tissue Produced From Animal Cell Cultures Outside Of The Organism From Which It Is Derived Shall Not Be Labeled As Meat Or A Meat Food Product; To Provide That A Plant-based Or Insect-based Food Product Shall Not Be Labeled As A Meat Or Meat Food Product; And For Related Purposes.

Mississippi Sued

- Led by the Institute for Justice, Upton's Naturals Co., and the Plant Based Food Association
- Violates Free Speech and Request a preliminary and permanent injunction;

Mississippi Reverses

- Mississippi Department of Agriculture issued proposed regulation that would nullify the terms of Senate Bill 2922.
  - Scheduled to be enacted in July, SB 2922 was backed by the state's cattlemen association and aimed to remove labels on vegan foods that use terminology it deems is only appropriate for animal-derived products.
  - The new proposed regulation allows animal-free products to use terms such as "meat" and "beef" in combination with a qualifier such as "plant-based."

Dairy Labeling Laws

Ocheesee Creamery, LLC v. Putnam
851 F.3d 1228 (11th Cir. 2017)

- Florida law prohibits the sale of milk and milk products that are not Grade "A," which requires, among other things, that vitamin A lost in the skimming process must be replaced. See Fla. Stat. § 502.091 ("Only Grade 'A' pasteurized milk and milk products . . . shall be sold at retail to the final consumer.");
- The Creamery sold its skim milk in Florida for nearly three years, beginning in 2010. In October 2012, the State issued two stop sale orders with respect to the Creamery's skim milk, stating the milk lacked vitamin A. That left the Creamery with two alternatives: add vitamin A to its skim milk or cease to sell the product.
- Initially, the State told the Creamery it could sell its product without adding vitamin A so long as it bore the label "imitation milk product," but the Creamery objected to describing its all-natural product this way.

Ocheesee Creamery, LLC v. Putnam
851 F.3d 1228 (11th Cir. 2017)

- The State informed the Creamery that "Florida law provides that only Grade 'A' pasteurized milk and milk products shall be sold at retail within the state." It nevertheless added that it had "determined that Florida law would allow [the Creamery] to offer this product for retail sale within the state" pursuant to the imitation milk statute if certain conditions were met, among them that the product label read as follows: "Non-Grade 'A' Milk Product, Natural Milk Vitamins Removed."
- Negotiations ceased and the Creamery filed its complaint on November 20, 2014, contending the State's refusal to allow it to call its product "skim milk" amounted to censorship in violation of the First Amendment.

Ocheesee Creamery, LLC v. Putnam 851 F.3d 1228 (11th Cir. 2017)

- The district court held the Creamery's use of the term "skim milk" to describe its product was inherently misleading because it conflicted with the State's definition of "skim milk," according to which the product would include replenished vitamin A. See U.S. Dep't of Health & Human Servs., Grade "A" Pasteurized Milk Ordinance, at App'x O (2005) ("[V]itamins A and D must be added to dairy products from which fat has been removed; such as, reduced fat, lowfat, and nonfat dairy products, in an amount necessary to replace the amount of these vitamins lost in the removal of fat.").
- The court asserted that "[a] state can recognize-and indeed deliberately create-a standard meaning of a term used to describe a food product, including, in this instance, skim milk."

Ocheesee Creamery, LLC v. Putnam 851 F.3d 1228 (11th Cir. 2017)

- 11th Circuit reversed, stating the States State's actions prohibiting the Creamery's truthful use of the term "skim milk" violates the First Amendment;
- Challenges to restrictions on commercial speech are evaluated according to the rubric set forth by the Court in Central Hudson Gas & Electric Corp. v. Public Service Commission.7 447 U.S. 557 , 100 S. Ct. 2343 , 65 L. Ed. 2d 341 (1980).
- Commercial speech does not merit First Amendment protection and may be regulated or even banned if (1) the speech concerns unlawful activity or (2) the speech is false or inherently misleading. See Zauderer v. Office of Disciplinary Counsel, 471 U.S. 626 , 638, 105 S. Ct. 2265 , 2275 , 85 L. Ed. 2d 652 , 17 Ohio B. 315 (1985)

Ocheesee Creamery, LLC v. Putnam 851 F.3d 1228 (11th Cir. 2017)

- If the speech neither concerns unlawful activity nor is inherently misleading, satisfying the threshold criterion and thus meriting First Amendment protection, then the government may only regulate the speech if its restriction satisfies intermediate scrutiny under Central Hudson's three-prong test.
- In the first prong, "we ask whether the asserted governmental interest is substantial." *Central Hudson*, 447 U.S. at 566, 100 S. Ct. at 2351.
- In the remaining two prongs, "we must determine whether the regulation directly advances the governmental interest asserted, and whether it is not more extensive than is necessary to serve that interest." Id . A regulation that fails to pass muster violates the First Amendment.

Labeling Laws

- Cattle, poultry and farming states are passing laws to prevent the easy sale of plant based meats and clean meat products.
- The labeling laws are being challenged on constitutional violations of 1st amendment free speech, commerce clause and due process.
- If the speech is not unlawful activity or inherently misleading, government may only regulate the speech if its restriction satisfies intermediate scrutiny under Central Hudson's three-prong test.

KILPATRICK TOWNSEND

Business Investments in the Nascent Alt Meat Industry

What Investors Are Looking For

Siegmar Pohl

Alternative Meat

Photo: New York Times.

Billionaires like Bill Gates and Kimbal Musk:

"The Food Industry is the New Internet"

Animal-free meat will become one part of the $200B market for meat.

Legal Structure preferred by Investors

- Delaware C-Corporation to attract investment
- Management (leadership is the most important factor in earlier stage investing)
  - Two co-founders, at least 1 technical founder; focusing on business 100%
  - Founders with skin in the game, coachable
- Due Diligence:
  - IP Assignment Agreements from Founders
  - Confidentiality and Invention Assignment Agreements from Employees/Consultants
  - Patentable Subject Matter/Freedom to Operate
- Careful with Co-Development Agreements that ass
  IP ownership or royalties/profit share to third partie
- Employee Stock Option Pool

Typical Formation Cap Table

Shareholder	Percent	Number of Shares	Price	Value
Amy	48%	48,000,000	$0.001	$4,800.00
Bill	32%	3,200,000	$0.001	$3,200.00
Option Pool	20%	2,000,000	$0.001	$2,000.00
	100%	**10,000,000**		**$10,000.00**

Financing Rounds

- Typical Seed Round (Internet)
  - $250,000 investment (SAFE) at $3 million dollar valuation cap; Alt Meat: $4-5M seed rounds.
- Typical Series A Round (Internet)
  - Conversion of the SAFE's
  - $3-5M to achieve the next development milestone; Alt Meat: $3-17-90M Series A (synthetic biology start-up Motif Ingredients)
  - Dilution of founders; board seat for preferred investors
  - Investors increasingly give money in tranches rather than lump sums
  - Alt Meat: Deals with high valuations and competitive forces impacting both term sheets and retail shelves

Company Organization

- Typical Series A Round
  - Know your competition; go strong on your USPs
  - Determine your burn rate and profitability
  - Put a transparent business plan together
  - Create a financial model and make projections within budget
  - Gather market data, in-depth knowledge of your target market,
  - Plus, for Alt Meat:

FIVE SEASONS VENTURES

"*Gorilla Marketing online*" (Niccolo Manzoni, Five Seasons)

Products and Market

- Product approachability and quality
- Potential market opportunity
- Revenue metrics (i.e. velocity vs. door count, discounting, etc.)
- Gross margin: What price are people willing to pay for your product? How does this compare to your unit cost?
- Scalability and quality controls embedded in the current supply chain
- Barriers to entry (which often include intellectual property)

What is Different In The Alternative Meat Space?

Types of Alternative Meat Products and Technologies

1. **Taste, nutrition profile and texture closer to the real thing**
   - Plant-based hamburger (**Beyond Meat**, valued at about $9.1 billion) announced Burger 2.0 featuring coconut oil and cocoa butter that create a marbling effect and mimic the texture of real meat more accurately.
   - The "bleeding" burger made with the 'secret' ingredient *heme* — an organic molecule found in the protein leghemoglobin (**Impossible Foods**).
   - Provide new solutions and connect with the consumer in unique ways.

IMPOSSIBLE™

Types of Alternative Meat Products and Technologies

2. **Lab-grown meats**
   - Chicken strips and meatballs from pieces of lab-grown animal cells (**Memphis Meats**)
   - Cell-based chicken product (**JUST**). Not ready for mass market, winning over the FDA and USDA
   - Blue fin tuna from the lab (**Finless Foods**). Investment used to progress R&D as they work to lower production costs
   - Salmon from the lab (**Wild Type**), building technology that would allow any meat to be cultured in the lab

Types of Alternative Meat Products and Technologies

3. Additional plant-based meat and protein types

- New, versatile ground beef product **(Beyond Meat)**
- Egg substitute and egg-free mayonnaise (**JUST**)
- Seafood (**Good Catch),** using lentils, chickpeas, and fava beans
- Salmon Burger (**Terramino Foods),** using fungi, algae, other plant-based ingredients

Types of Alternative Meat Products and Technologies

4. Additional types of meat dishes

- Frozen burritos and pot pies (**Alpha Foods**); Investors: New Crop Capital and AccelFoods

Generations of Alternative Meat Products

Alt.Meat 1.0:	**Tasted like card board**
Alt. Meat 2.0:	**Taste and texture of meat**
Alt. Meat 3.0:	**Ingredients that give plant-based proteins flavor and can be used in today's consumer packaged goods to make them healthier**

Ethan Brown (Beyond Meat): *"If Nestlé or Perdue or Tyson think it's a good idea to buy our product and reverse-engineer it, they're*

…we've moved on from those models into new models and new iterations."

What are the Challenges for Future Food Companies?

- **Mass market scale at lower cost**
  - Especially in the cell based space
- **Regulatory approvals like FDA, USDA**
- **Sourcing** the necessary ingredients and supply chain
- **Much funding going toward research**, innovation of new products, but also toward marketing and scaling up production, and distribution
  - Example: New Wave Foods has concerns about the environmental impact of mass shrimp production. They spend their venture capital on research, innovation and scale rather than rushing their products to market.
- **Trickier products** like muscle cuts of beef, poultry, seafood, and dairy; same texture and mouthfeel of muscle cuts like chicken breast, thighs, and even wings
- **Market demand**: Perdue invests in blended products: almost-meatless meat

Who are the Investors?

- **Traditional Venture Capital Investors**, such as Draper Fisher
- **Specialized Accelerators,** such as IndieBio
  - Well-thought-out idea with the science worked out at least in principle
  - "Deep scientific insights aimed at solving intractable or difficult problems that will impact 1B+ members of humanity."
- **Impact Investors**
  - Consider the social good as well as the potential for financial returns, e.g. Blue Horizon, New Crop Capital and Stray Dog Capital. Philanthropic capital/patient capital.
    - Bill Gates
- **Other sources of financing**
  - Grants such as Small Business Innovation Research (SBIR) funding, coordinated by the Small Business Administration

Who are the Investors?

- **Consumer Packaged Goods Companies (CPG's)**
  - Tyson Foods: Tyson Ventures invests in disruptive food companies like Beyond Meat, Memphis Meats, and Future Meat Technologies.
    - "*We want to actively disrupt ourselves.*"
  - Cargill invests e.g. in Memphis Meats and PURIS, the largest North American producer of pea protein.
  - Perdue Farms invests in startups that offer vegan options and plant-based proteins.
  - Hormel Foods owns the natural and organic meat company Applegate Farms, and invests in the plant-based space.

Why Do CPGs Invest in Start-Ups?

- VC investing allows an apprenticeship model with these businesses (owing 50% or less). Learn about trends and preferences in the market.
- Integrate outside innovation by collaborating with startups that have typically found a niche market and consumer base already.
- Infuse passion, drive and experimentation in the complacency of bigger brands – the enemy of growth of innovation.
- Fight for brand loyalty as trends are emerging fast but fade
- Engage with customers, gain “share of heart.”

Why Do CPGs Invest in Start-Ups?

- They sell a story – direct to the consumer. Millennials and Generation Z: How is the product relevant to me, my community, my health?

“Authentic, healthy and functional”

- *Beyond Meat founder Ethan Brown detailed his experience as a kid on his family's farm in a letter to the SEC. Purple Carrot's founder, Andy Levitt: “I’ve got kids and that made me think about the world I was leaving for them.”*

Why Do Start-Ups Want to Partner with CPGs?

- Marketing expertise
- Massive distribution channels
- Supply chain expertise, and
- Scale
- Impossible Foods solved supply-chain problem by collaborating with the OSI Group (a global food processing firm that has worked with big-name brands like McDonald's and Starbucks).

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Challenges for CPG's Strategic Investments in Start-Ups

- Retain the culture and the identity of the new brands without gulping them down
- Leave the brands and their purposes alone
- Scale the brand in an agnostic way
- Important to decide upfront what is in the scope of the collaboration and what is not

Legal Consequences for Investment

- Much higher valuations due to new opportunities in huge food market
- Company friendly terms sheets due to competitive market
- Huge Series A rounds ($10 Million not unusual) to finance R&D, marketing and scaling before bringing product to market
- Strategic investments from CPG's:
  - Leave start-up intact
  - Leave management and branding intact
  - Enter into collaboration agreements concerning logistics and supply chain, intellectual property

New Types of Companies Investors are Looking For

- Plant-based: Same advantage as Beyond Meat and Impossible. 'Do you have that same moat?' It's going to take a huge amount of capital and time to get there.
- With intellectual property or supply chain
- Startups focusing on developing products and technology

New Types of Companies Investors Are Looking For (2)

- Startups offering tools & services to support existing brands
  - Developing proteins serving as meat and dairy replacements
  - Upstream, e.g., support for supply chain logistics, storage and crop science
  - Ingredient suppliers (for example pea protein and legumes like chickpeas and mung beans)
  - 3D-printing platforms for alternative proteins
  - Startups developing hardware to process vegan meat replacements (existing infrastructure isn't ideal)
  - Specialized services to larger vegan food companies, such as producing plant-based foodstock efficiently
- Vertical integration for plant-based products?

Recap

- Venture capital investments are different than in Internet times, except with regard to basic features of DD, seed rounds, SAFEs, and Series A.
- Impact investors have new goals, may allow for more investment in R&D until the product goes to market.
- Investments in alternative meats are hyper-competitive, especially for:
  - products that are closer to the real thing in terms of taste, texture and nutrition
  - companies that hold IP or have a supply chain
  - companies that offer tools and services to support existing brands.
- Strategic investments from CPCs require detailed collaboration agreements regarding management, IP, and keeping branding intact.

KILPATRICK TOWNSEND

Naturally Nature Pet Food

Hypothetical A

Naturally Nature Pet Food

- Company's founder and CEO, says she aims to eventually make pet food using real meat from mouse cells.
- The process would be similar to the way other companies aim to grow real animal meat from cells for human consumption.
- CTO founded the first institute for stem cell science at the University of Cambridge
- Located in Salt Lake City and Founded in 2017
- Raised $12 Million in Series A

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Timeless Meats

Hypothetical B

Timeless Meats

- Makes real meat from animal cells
- Clean Italian sausage and Kielbasa made using cells from both fat and muscle
- Tagline, “smoky, savory, and tastes like breakfast”
- Located in Boston and Founded in 2018 by a Harvard Professor of Biology
- Raised $9 million in Series A

KILPATRICK TOWNSEND

Questions?

Locations

Counsel to innovative companies and brands around the world

We help leaders create, expand, and protect the value of their companies and most prized assets by bringing an equal balance of business acumen, technical skill, and creative thinking to the opportunities and challenges they face.

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