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—Kathy Freston, *New York Times* Bestselling Author of *Quantum Wellness* and *The Lean*

# VEGANOMICS

The Surprising Science on What Motivates Vegetarians,  
from the Breakfast Table to the Bedroom



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# MEAT 2.0

## WHAT VEGETARIANS AND MEAT-EATERS REALLY THINK OF VEGETARIAN MEATS

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VEGETARIAN MEAT IS A BIG DEAL. THERE WOULD BE FAR fewer vegetarians in the industrialized world if vegetarian burgers, patties, hot dogs, chicken nuggets, and similar products didn't exist. Whether made of soy, wheat, or—in the case of the popular European product Quorn™—fungus, these products have one thing in common: their meaty texture, flavor, and aroma can satisfy even the most carnivorous cravings.

But just how popular are vegetarian meats? Who eats them? What types of vegetarian meats do omnivores prefer? And if you're going to prepare a vegetarian meal for meat-eating friends, what does the research suggest you do to get them to love it?

### VEGETARIAN MEAT'S STORIED ROOTS

In the U.S., the quality of vegetarian meats has increased dramatically over the past two decades. Talk to anyone who's been vegetarian since the early 1990s, and they'll tell you horror stories of the cardboard-tasting products they used to buy from the health-food store. It's the vegetarian equivalent of, *When I was a kid, I used to have to walk three miles to school in the snow with no shoes*. Their point is that new vegetarians don't know how good they have it. Even mainstream grocery stores now stock whole shelves of mouth-watering plant-based meats, which seem to taste better with each passing year.

Vegetarian meats may be more popular now than ever before, but if you thought they were a new phenomenon, think again. They've been bought and sold in the U.S. as far back as the late nineteenth century, when you could order them through the mail from the Battle Creek Sanitarium in Michigan, a health and wellness center

run by the Seventh Day Adventist Church. In addition to creating the first vegetarian meats, the Sanitarium also popularized the use of nuts and nut butters as meat replacements. In a sales pitch that might not work so well today, they promoted nuts as being “nearly equivalent in blood-making qualities to a pound and a quarter of beef-steak.”

The unlikely duo that created the first line of plant-based meats was John Harvey Kellogg—the man behind Kellogg’s breakfast cereals—and an Assistant Secretary of the USDA, Dr. Charles Dabney. Kellogg and Dabney wanted to develop a product that had the taste and texture of meat, but which was healthier and cheaper so that poor Americans could enjoy it.

Two of their early products were Nuttose, a mixture of ground-up nuts and cereal grains, and Granose, a wheat-based biscuit meant to mimic a fillet of beef. But their breakout success was Protose, a mixture of wheat gluten, grains, and ground peanuts that resembled beef or mutton. As spokesperson (and Civil War hero and Red Cross founder) Clara Barton declared, “Protose looks like meat, tastes like meat, contains the same nutritive properties, and is an absolutely pure product of the animal kingdom.” Labeled as “vegetable meat,” and sold at a lower price than canned meat, Protose was promoted as a substitute for breakfast meats, steaks, and even picnic sandwiches. By 1912, 144,000 pounds of Protose were being sold annually across the U.S. Its sales run lasted over a hundred years until Morningstar Foods, the inheritors of Protose, pulled it from their product line in 2000.

Vegetarian meat had its fans from the beginning. In the early 1900s, major newspapers praised it as almost indistinguishable from the real thing. The *Chicago Tribune* regularly printed recipes for meat-replacement dishes. Vegetarian chicken croquettes and fish cakes were served at gala events to politicians who didn’t realize they were eating faux meat. The Vegetarian Meat Company, a competitor to Battle Creek, opened its doors in Washington, D.C., in 1910 (Shprintzen 2012).

A hundred years later, U.S. retail sales of soy-based meats have topped \$630 million and have been rising steadily for years. Overall sales of vegan specialty products passed \$2 billion in 2009 (Priority Ventures Group). Walmart and Target stock vegan chicken patties, baseball stadiums offer vegetarian hot dogs, and mainstream newspapers gush over the meat-like consistency of new products like Beyond Meat™. In the U.K., sales of meat-free and “free-from” foods reached £950 million in 2012 (Statistics). Perhaps the deluge of new meat substitutes is why only a quarter of British

vegetarians are unhappy with the vegetarian offerings at their supermarket (Public Attitudes/Consumer Behavior).

John Harvey Kellogg's work in the late 1800s has had lasting effects on the meat-free foods we eat, from our cereal-laden breakfast table to our lunchtime peanut butter sandwiches to our dinner plates piled high with savory vegetarian meats.

### WHO EATS VEGETARIAN MEATS?

Just who is chowing down on today's meatless meats?

A lot of people: 15 percent of Dutch consumers and 20 percent of U.K. residents say they eat vegetarian meats at least once a week. Less frequent users make up another 16 percent of the Netherlands' population and another 35 percent of Brits. A 2005 U.S. study discovered that 6 percent of Americans frequently purchased and 17 percent occasionally purchased vegetarian meats (Hoek *et al.*, Replacement of Meat). Still, there's a long way to go. A United Soybean Board survey found that only half of all American consumers were familiar with veggie burgers and tofu, and fewer still knew about vegetarian hot dogs and other soy-based meats (Priority Ventures Group).

Vegetarians aren't the only ones tucking into mock meats. One study indicated that among those who ate vegetarian meats at least once a week, two-thirds were meat-eaters (Hoek *et al.*, Replacement of Meat). A 1999 study found that 80 percent of mock-meat consumers were not vegetarian (Chapman). Vegetarians do love their mock meats though. Half of British vegetarians eat them at least weekly, and in the Netherlands that figure is an enormous 85 percent (Hoek *et al.*, Replacement of Meat).

Demographically, vegetarian-meat consumers (whether vegetarian or omnivore) look a lot like vegetarians. They tend to be better educated, have higher incomes, be younger, live in smaller households, and live in more urban areas. Overall, women are more likely than men to eat plant-based meats. But when you look at carnivores who eat mock meat, or are occasional consumers of plant-based meats, the gender gap is not large (Schosler *et al.* 2012; Hoek *et al.*, Replacement of Meat; de Boer and Aiking 2011). One study found that Hispanic households were twice as likely as white households to report eating vegetarian meats, with African-Americans scoring highest on a few meat-free items (Heller).

## WHY PEOPLE EAT (OR DON'T EAT) VEGETARIAN MEATS

Why do some meat-eaters choose Tofurky® over turkey when filling up their shopping cart?

In terms of their attitudes and motivations, omnivorous mock meat-eaters stand at a halfway point between vegetarians and regular omnivores. They don't hold strong food ideologies, but they have some uneasiness with how meat is produced. They are interested in eating less meat, have a lower appreciation for meat, and are more interested in going vegetarian (Hoek *et al.* 2004; de Boer and Aiking 2011). This is particularly true among heavy users of vegetarian meats, many of whom are motivated by a concern for animals. Light users are more often solely interested in trying out new foods (Hoek *et al.*, Replacement of Meat). For all groups, the desire to eat healthfully is another motivating factor.

Not surprisingly, the more people eat vegetarian meats the more they like them. Heavy users think vegetarian meats are healthier, more convenient, better tasting, more luxurious, and more ethical than meat. Light to medium users feel the same way, but not as strongly. However, even heavy users of vegetarian meats find animal meats more familiar and satisfying (Hoek *et al.*, Replacement of Meat; Hoek 2010).

A Dutch study found that one out of every ten meat-eaters said they preferred the taste of plant-based meats to animal meats (de Boer and Aiking 2011). That's impressive when you consider that two-thirds of the Dutch have never tried or only rarely eaten vegetarian meats (Hoek *et al.*, Replacement of Meat). In several blind taste tests, consumers actually preferred meat-free burgers and partially meat-free pizza toppings to the original meat versions (Roche; Qammar *et al.* 2010).

Why don't more meat-eaters pick up vegetarian meats? A pair of studies found the main barriers were practical concerns. People said that buying vegetarian meats was inconvenient and that they didn't know how to prepare them (Bosman *et al.* 2009; Gunert 2006). But there are two other big concerns omnivores have: vegetarian meats are unfamiliar, and may not look, smell, or taste appetizing to them (Hoek *et al.*, Replacement of Meat).

In other words, some meat-eaters are scared. Ground-up bloody entrails of an animal? Easy to prepare and delicious to eat! Ground up seasoned mixture of beans and plants? Disgusting! Joking aside, the fact is that most people are averse to trying

new foods. The closer vegetarian meats come to the real thing, the more willing meat-eaters will be to eat them.

Interestingly though, it's not just taste, familiarity, and convenience that matter. People's beliefs about the world seem to influence their food choices, including what they think of vegetarian meat.

In a 2008 Australian study, researchers discovered a vegetarian sausage that meat-eaters couldn't tell from the real thing. In trying to pick out which sausage was meat and which was vegetarian, two-thirds of them guessed wrong. Researchers then presented the sausages to a new group of study participants. Some participants were told that the vegetarian sausage was vegetarian and that the meat sausage was meat. Others were lied to about which was which. People sampled each sausage, and rated how it tasted.

Overall, the sausages were rated as being equally tasty. But something interesting happened when you divided respondents up based on their beliefs about the world. Prior to the taste test, each person had filled out a survey that measured whether they thought having social power was very important or whether they were more egalitarian. Those who valued social power said the sausage labeled as real meat tasted better. This was true both when the sausage was actually meat, and when—unbeknownst to them—it was actually vegetarian sausage that had been falsely labeled. Respondents who were more egalitarian thought the sausage labeled vegetarian tasted better—even when, unbeknownst to them, they were actually eating the meat one (Allen *et al.* 2008).

So it wasn't just the taste and smell of the sausage that influenced how delicious people perceived it to be. People were also influenced by what the food symbolized to them. If it fit in with their values, it tasted better. If not, it tasted worse.

Getting the public to buy and enjoy vegetarian meats, then, is not just a question of creating a product that tastes identical to meat. It's also a matter of getting the values people attach to vegetarian meats to be values embraced by most Americans. Eating vegetarian chicken strips needs to become as American as eating apple pie.

Unfortunately, the deck may be stacked against animals when it comes to how people value food. One study revealed that people rate different foods as having different levels of status. Fish and red meat came first, then poultry, followed by dairy, fruits, and vegetables. Cereals—the predominant foodstuff of many vegetarians—came dead last. Sorry vegetarians, but your food is just not prestigious!

The study discovered that people are more likely to prefer foods higher up the food-status ladder. People who are self-conscious about what others think of them are particularly likely to seek high-status foods (Allen 2005).

### *LAYING IT ON THE TABLE: WHICH MEAT SUBSTITUTES ARE LIKED BEST?*

Some vegetarians turn up their noses at plant-based meats, calling them overly processed, unhealthful, and expensive. But many vegetarians and meat reducers depend on them for keeping their meals cruelty-free. Of all the protein-rich plant products out there, vegetarian meats seem to be the most popular among those who are starting to cut out meat.

One Dutch study asked meat reducers which products they usually replaced meat with. Respondents were able to pick out up to three products from a list. Unfortunately, the top choices were all animal products: 76 percent answered fish (which is meat, of course), followed by eggs at 49 percent, and then cheese at 34 percent. Among potentially vegan fare, mock meats topped the list at 26 percent. They led lentils and beans (17 percent), tofu (14 percent), nuts (9 percent), tempeh (3 percent) and seitan (1 percent) in popularity as a meat replacer (Schosler *et al.* 2012).

Another study by the same researchers found similar results: familiar dishes were most popular, followed by mock-meat dishes, with tofu dishes coming in last. In this study, meat-eaters were given pictures and descriptions of different meals and asked to rank them from best to worst. Their rankings went as follows: omelet, pasta with pesto, minced mock meat in tomato sauce, couscous with chickpeas and vegetables, stir fry with seitan, mock-meat steak, stir fry with tofu and vegetables, a tofu snack, and an Indian lentil dish. It should be noted that this was a Dutch study; Americans might have answered differently (Schosler *et al.* 2012).

For people who choose meat alternatives, how do they pick one over the other? One study showed that taste is key when choosing a vegetarian meat, followed by price, fat content, and convenience (Maurer). The less often a person eats vegetarian meat, the more important it is to them that it closely resemble the real thing. Taste and texture seem to be more significant than appearance or smell in judging how similar a product is to animal meat (Hoek *et al.*, Replacement of Meat).

In one study, vegetarian versions of processed meats were seen as being the most

similar to real meat. Vegetarian sausages were ranked highest, with vegetarian burgers, balls, breaded meats, and minced meat also seen as somewhat similar to the real thing. Plant-based versions of unprocessed chicken, pork, and beef weren't seen as very similar to the original (Hoek *et al.*, Identification of New Food Alternatives). As a result, we might conclude that vegetarian processed-meat products go over best with the general public. In fact, a 2008 industry report in the U.K. found it was pieces (such as chicken or beef nuggets), meat snacks (like jerky), and mince that were driving the growth of the vegetarian-meat market (Consumers Prefer Meat-Free).

Because it's more similar to meat, vegetarian meat is more preferred by most people than tofu. Studies show that vegetarian meat usually ranks higher when it comes to texture, flavor, aroma, overall comparability with meat, and intention to use (Schosler *et al.* 2012; McIlveen *et al.* 1999; Elzerman *et al.* 2011; Hoek 2010).

Similarity to meat becomes less important once a meat substitute is part of a meal. The flavors and textures of the meal seem to mask many of the individual differences between products (Elzerman *et al.* 2011). One study on chicken, Quorn™, and tofu found that, although meat-eaters rated each product differently, they were equally happy with their overall meal (Hoek 2010).

So perhaps just as important as the meat substitute itself is the meal it comes in. The meal narrows the difference between meat and meat substitutes, as well as between individual vegetarian products. It can make or break how much people like vegetarian meat, and whether they continue eating it.

Thankfully, some good research from the field of food science can help us make meat-free meals as tasty as possible when we're cooking for friends and family. This research shows that when other elements of the meal are familiar, people enjoy the meal more and are more willing to try unfamiliar foods. Adding familiar seasonings and sauces will help a mock-meat dish go over well (Elzerman *et al.* 2011). And don't skimp on those side dishes! Having familiar and tasty side dishes is also helpful when the main dish is an unfamiliar one (Wansink 2002).

Most American families are used to the traditional three-part meal of meat, vegetables, and starch. So when preparing meat-free meals, it may be better to keep the same format and simply substitute a plant-based meat for an animal-based one. It's probably also better to introduce vegetarian meats gradually. It will help people see them as something interesting and new, and give people time to get used to them (Schosler *et al.* 2012; Wansink 2002).

If you want to make sure your guests aren't hungry again two hours after eating, protein is essential. High-protein vegetarian meats have been shown not only to fill people up more than low-protein vegetarian meats do, but to do so more than animal meats (Hoek 2010; Stubbs *et al.* 2000).

One final, important aspect to keep in mind when it comes to which vegetarian meats are best is to think about which do the most good for animals. It's a plus when someone replaces beef or pork with vegetarian meat. But it's a hundred times better for animals when someone substitutes vegetarian meat for chicken. Whether they swap their chicken sandwich for a vegetarian-chicken sandwich or with a vegetarian burger doesn't matter. But since many people may want to replace their meat with a similar product, it's particularly important for advocates of vegetarian eating to promote great vegetarian-chicken products.

Unfortunately, some vegetarian meats could be worse for animals than the flesh they replace. Many frozen vegetarian meats contain egg. A veggie burger with egg in it probably caused more suffering and killed more animals than the beef burger it was meant to replace. When promoting vegetarian meats, animal advocates should make sure the items are free of all animal products.

### LANGUAGE MATTERS, PART 1: VEGETARIAN, VEGAN, OR MEAT-FREE?

When encouraging people to switch to vegetarian meats, the words advocates use can make a difference. Some phrases appeal to meat-eaters and others may turn them off.

A study by British trade magazine *The Grocer* found the public was more likely to embrace vegetarian meats when the products were labeled "meat-free" than when they were labeled "vegetarian" (Consumers Prefer Meat Free). Over the past five years an increasing number of British supermarkets and vegetarian-meat producers have switched from "vegetarian" to "meat-free," and they are seeing increased sales among meat-eaters (Jamieson).

Vegetarian-meat companies in the U.S. are doing the same. Pick up a bag of Garden of Eatin'™ chicken, and you'll see the label "I'm meat-free!" Tofurky® hot dogs boast a label of "meatless." Lightlife labels their products "meat-free," or notes that they are packed with "veggie protein." Almost none of their products still carries a prominent "vegetarian" label.

Why does “meat-free” seem to go over better than “vegetarian” with the general public? Industry experts think the term “vegetarian” has negative connotations. Perhaps, due to guilt, social norms, or other reasons, people simply look down on all things “vegetarian.” The word might also conjure up memories of a flavorless tofu burger they tried once.

Unfortunately, people’s expectations about whether they will like a dish have a major impact on whether or not they do. If they expect it to taste bad, it will. For example, in one study people were given a nutrition bar and asked to rate how it tasted. Although the bars were identical, some had a label saying they contained soy and others didn’t. None of the bars actually had any soy in them. But the bars that supposedly had soy were rated as tasting much worse than those that didn’t. People expect soy products to taste bad, and that expectation led them to think the nutrition bar tasted worse (Wansink *et al.* 2000). Other taste-test studies have found similar results (Cooney 2011).

The point is this: when you label something in a way that makes people expect something to taste bad, it probably will. For whatever reason, many people think that “vegetarian” products will not taste good. They don’t seem to have as negative a perception about products labeled “meat-free.” So when sharing your tasty vegan chicken salad with co-workers, you’ll probably get a better response by calling it “meat-free” than by calling it “vegan” or “vegetarian.”

The same may apply when promoting cruelty-free eating. Encouraging people to go meat-free, or to ditch meat, may be more persuasive than encouraging people to go vegetarian. Since people seem to expect “meat-free” food to taste better than “vegetarian” food, switching to “meat-free” food should seem easier.

Using the word “vegetarian” also raises the sticky issue of self-identity. As we saw earlier, the public may think of vegetarians as a distinct group of people who are different from normal (!) Americans. That’s not good. We don’t want people to think they need to take on a new identity to cut cruelty out of their diet. Why? Because most people are loath to change their sense of who they are.

For example, if you were a Democrat, which of these statements would sound more palatable to you: “You should become a Republican,” or “You should vote Republican”? The first statement focuses on your identity, while the second focuses on your behavior. The second statement is probably more palatable to most Democrats. Similarly, “eating meat-free foods” or “not eating meat” may be more palatable to most omnivores than “going vegetarian.”

All that being said, “meat-free” might not go over well at all with certain audiences or in certain contexts. A study carried out by Mercy For Animals and the Humane Research Council found that young women aged thirteen to thirty-five reported they liked the term “vegetarian” much more than “meat-free.” They also liked it more than “vegan” or “meatless.” A full 36 percent of respondents said that if they saw an online advertisement for a free vegetarian brochure, they would be extremely likely or very likely to click on it. Only 14–16 percent said the same for a “free meat-free brochure” or a “free meatless brochure,” and 21 percent for a “free vegan brochure.” Perhaps young women view the term “vegetarian” much more favorably than other groups. Or perhaps context matters—so that while “meat-free” is useful on product labels it is less effective when promoting dietary change among certain groups (Humane Research Council, Results from MFA Survey).

### *LANGUAGE MATTERS, PART II: GOOD LABELS AND BAD LABELS*

When it comes to getting people to enjoy meat-free food, mentioning that it has soy in it is a bad idea.

We said earlier that people considered a nutrition bar less tasty when the label noted it contained soy. Among taste-conscious consumers, the bar that was not labeled as having soy was rated better in nearly every category measured, including texture, healthiness, appearance, feeling good about eating it, and being likely to purchase it. Even health-conscious consumers said they were less likely to buy the one with soy in it (Wansink *et al.* 2000).

Other tests have found the same thing: soy labels make regular customers enjoy the food less, and they have at best a neutral impact on vegetarians and health-conscious shoppers. Even researchers funded by the National Soy Board advise food companies not to tout the presence of soy in their products (Wansink 2003; Wansink and Park 2002).

So we know not to use the “soy” label. How about calling food “healthy”? Does a “healthy” label lead people to like food more, less, or the same? The data are mixed. In some studies, for some products, and with some audiences, the “healthy” label led people to like a product more. But in many situations, it led people to like it less. In

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other studies, the label had no impact (Wansink *et al.* 2004; Horgen and Brownell 2002; Wansink *et al.* 2000).

Are there any labels that would lead people to like meatless meals more?

An appetizing descriptive phrase should do the trick. By describing the food in mouth-watering terms, we set positive expectations about how the food will taste. Since people tend to taste what they expect to taste, these descriptions will lead people to enjoy the food more (Mela 1999; Kahkonen and Tuorila 1998).

One study found that the use of descriptive labels in a restaurant led people to like the food more and to want to dine at the restaurant again. A similar study was conducted and similar results found in a cafeteria setting. Menu items that were given descriptive phrases had increased sales and were rated as more tasty, flavorful, and satisfying (Wansink *et al.* 2001).

So rather than bringing “healthy vegan soy-chicken salad” to the family barbeque, try bringing “zesty meat-free chicken salad with fresh parsley and onion.” Because Romeo was wrong: a rose by any other name is not just as sweet. If we want to change habits and save lives, we need to satisfy the taste buds. The words we use can make a big difference in how effective we are at doing that.